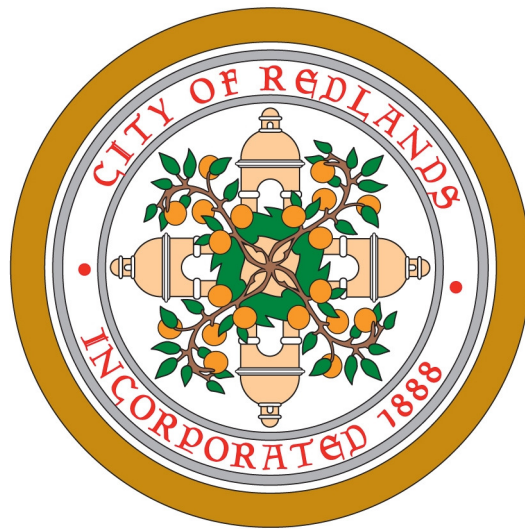


# **CITY OF REDLANDS MUNICIPAL UTILITIES AND ENGINEERING DEPARTMENT**



## **GENERAL PERMIT CONDITIONS AND TRENCH SPECIFICATIONS**

**Effective February 9, 2012  
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## **1 - GENERAL**

1.1 Standards and Specifications -- The work shall be done in accordance with the current City of Redlands Standards, Standard Specifications for Public Works Construction (Greenbook), latest edition, and these Conditions and Specifications. Any deviation from said requirements must be approved in writing by the City Engineer.

1.2 Changes or Additions to Permit -- The City reserves the right to make any changes or additions to a permit after issuance if such changes or additions are believed necessary for the protection of roads or for the health and safety of the public.

1.3 Relocation -- If any part of an installation interferes with the present use of roads by the general public or is in conflict with future or current City improvement projects, it shall be removed or relocated as directed by the City at the expense of the Permittee or his successor in interest.

1.4 Utility Construction -- Permits for utility trenching, including utility service trenching, within City right-of-way, shall be issued to the respective utility purveyor or a California licensed contractor. The Permittee shall warranty the trench repair in perpetuity.

1.5 Licensed Contractor -- All excavation, repair and restoration in City road right-of-way shall be performed by a contractor with the appropriate license issued by the State of California Contractors License Board or by utility purveyor's regular employees.

1.6 Permit Possession -- Other than emergency repairs, there shall be no work performed in City road right-of-way until an encroachment permit is issued. A copy of this permit, a set of approved plans and permits required by any other legally constituted authority shall be on site at all times construction is in progress. Permits that require excavation shall be valid only after an Underground Service Alert (USA) inquiry identification number is issued if an excavation is to take place.

1.7 Permittee Responsibility -- In addition to all conditions herein, the Permittee is responsible for safety and construction requirements within the limits of the project. The Permittee and his employees shall abide by all the regulations of any legally constituted authority.

1.8 Hold Harmless -- The Permittee shall preserve and save harmless the City and each officer and employee thereof, from any liability or responsibility for any accident, loss or damage to persons or property happening or occurring as a proximate result of Permittee's negligence or the negligence of Permittees' agents, servants, employees or contractors in the design or performance of any work undertaken under any permit granted to Permittee pursuant to the application.

1.9 Notification -- Except in emergencies, the Permittee shall notify the City one working day, excluding weekends and holidays, prior to starting a project and for each phase of construction. In addition, the Permittee shall notify USA 48 hours prior to any excavation.

1.10 Inspection -- All construction performed in relation to a road permit shall be inspected prior to and during installation by City personnel. Construction performed without inspection may be subject to removal and replacement. The entire cost of removal and replacement shall be borne by the Permittee, regardless of whether the installation removed was found to be defective.

1.11 Failure To Comply -- Should a Permittee fail to comply with the provisions of the encroachment permit or the requirements of any legally constituted authority, the City Engineer may order the Permittee to stop work, wholly or in part, until the discrepancies have been resolved to the City's satisfaction. Upon satisfactory completion of corrections, written approval from the City shall be required before work may resume. Failure to comply with this requirement shall result in revocation of permits. The City may perform work required or arrange for the work to be done and the entire cost of the required work shall be borne by the Permittee.

## **2 - PUBLIC CONVENIENCE AND SAFETY**

2.1 Traffic and Access -- The Permittee's operation shall cause no unnecessary inconvenience to the public. The access rights of the public shall be considered at all times and unless otherwise authorized, traffic shall be permitted to pass through the work area at all times. Safe and adequate pedestrian and vehicular access shall be provided and maintained to fire hydrants, residences, commercial and industrial establishments, churches, schools, parking lots, service stations, motels, fire and police stations, hospitals, and establishments of similar nature. Access to these facilities shall be continuous and unobstructed unless otherwise approved by the City Engineer.

2.2 Traffic Control -- Traffic Control shall conform to the current Work Area Traffic Control Handbook (WATCH) or other traffic control manuals may be used with approval of the City Engineer.

2.3 Working Hours -- Except for emergency repairs, no work shall be performed within City road right-of-way on weekends, City holidays, before 7 AM or after 4 PM unless authorized by the City Engineer.

2.4 Dewater Operations -- Release of, or the directing of water onto City roads shall be authorized only by the City and shall include traffic control per Section 2.2, clean-up per Section 4.1 and erosion control. If erosion occurs, grading shall be as required in Section 5.4. Discharges shall comply with the National Pollutant Discharge Elimination System (NPDES) and with federal law, state law and local ordinance.

2.5 Closing Roads -- No road shall be closed without authorization from the City Engineer except in the case of an emergency. An authorized road closure will allow the detour of through traffic only. The Permittee shall provide a smooth dust controlled route that allows unimpeded access for emergency vehicles and residents at all times. A minimum of ten (10) working days are required to process the application.

To apply for a road closure authorization, submit the following to the City of Redlands One Stop Permit Center, 35 Cajon Street Suite 15A, Redlands, CA 92373.

- Written request for the closure with the time schedule included.
- Detour route and sign locations, a detour plan designed by a Registered Civil or Traffic Engineer, if required by the City.

### **3 - PRESERVATION OF PROPERTY**

3.1 Protection of Property -- The Permittee shall be responsible for the protection of public and private property adjacent to the work and shall exercise due caution to avoid damage to such property.

The Permittee shall repair or replace all existing improvements damaged within the right-of-way which are not designated for removal on the approved plans to match the original in finish and dimension. Trees, lawns and shrubbery that are not designated for removal on the plans shall be protected from damage or injury. If damaged or removed because of the Permittee operations, they shall be restored or replaced in as nearly the original condition and location as is reasonably possible as approved by City personnel. The Permittee shall give seven (7) days notice to occupants or owners of adjacent property to allow them to salvage or relocate plants, trees, fences, sprinklers and other improvements within the right-of-way which are designated for removal on the plans and would be destroyed because of the work.

3.2 City Facilities -- Prior to construction, the Permittee shall assess the condition of City facilities within project limits and report to the inspector all damaged, defaced or missing pavement, sidewalk, curb, gutter, traffic signs, pavement markings or hazardous conditions that may exist before work is started. Prior to final acceptance of the project, all City facilities shall be in the same or better condition as determined by City personnel.

3.3 Traffic Signals -- Traffic signal detector loops, wiring or appurtenant facilities damaged by the Permittee's operation shall be reported immediately to the City. Any damage shall be repaired immediately at no expense to the City as directed by the City.

3.4 Survey Monuments -- The Permittee shall locate, protect or tie-out all survey monuments which may be disturbed or destroyed. Survey monuments shall be located, referenced and a Corner Record filed with the County Surveyor prior to the start of construction. Following completion of the work, the monuments shall be reset in the surface of the new construction, a suitable monument box placed thereon, or permanent witness monuments set and a Corner Record filed with the County Surveyor prior to final project notice of completion issued by the City. All work shall be performed under the direction of a licensed Land Surveyor or registered Civil Engineer at no expense to the City.

3.5 Underground Service Alert Markings -- All Underground Service Alert (USA) markings shall be accomplished by the use of marking chalk only. It shall be the responsibility of the Permittee to verify the use of marking chalk when requesting USA services. Any USA markings resulting from Permittee activity shall be removed by sandblasting, sodablasing or water blasting ensuring all NPDES regulations are complied with. Markings must be removed by the Permittee within thirty (30) days from the completion of construction at no expense to the City. If the Permittee fails to remove the markings within the 30 days, the City will remove the markings. The Permittee will be responsible for all costs incurred by the City in accordance with Section 12.20.170 of the City of Redlands Municipal Code. If damage to existing improvements occurs during the removal of USA markings, it shall be repaired to the original condition by the Permittee and approved by the City. Utilizing paint to cover over markings will not be accepted.

#### **4 - PROJECT SITE MAINTENANCE**

Surplus dirt, debris, rocks or building materials shall be contained during permit work and the site broomed daily to reduce possibility of being carried by runoff into a storm drain, stream or natural drainage course or lake. At the completion of the permit work, the previous drainage patterns must be restored. Material shall not be placed in such a manner which might result in the blockage of any drainage structure at either the inlet or outlet.

4.1 Clean-up and Dust Control -- Throughout all phases of construction, including suspension of work, the Permittee shall keep the work site clean and free from rubbish and debris. The Permittee shall also abate dust nuisance by cleaning, sweeping and sprinkling with water or other means as necessary. The use of water resulting in mud on roads or drainage facilities will not be allowed as a substitute for sweeping or other cleaning methods. All soil and construction material shall be removed prior to that portion of the road being made available to traffic.

4.2 Truck Routes -- When required by the City, obtain a truck route permit before beginning work. Permits are issued approximately five (5) working days after filing of proper plans, fees and application to the City. Care shall be exercised to prevent spillage on, or damage to City roads. Any such spillage or damage shall be removed or repaired immediately. Dust control and traffic control shall be provided for all hauling operations.

4.3 Storage in City Roads -- There shall be no equipment or materials stored or stockpiled in road right-of-way. Equipment and materials shall be removed from road right-of-way when not in use and at the end of each working day, except as approved by the City Engineer. Offsite storage locations must be approved by City and property owner prior to occupation of the site.

4.4 Emergency Response -- Before work is started, the Permittee shall furnish names and telephone numbers of persons on-call if emergency work is required by the City. The City, at its sole discretion, may elect to perform emergency work if it is judged as necessary for the protection of the roads or for the health and safety of the public. All emergency work shall be accomplished at no expense to the City.

4.5 Maintenance of Trenches -- Permittee shall perform continuing maintenance of all trenches, including periods of suspension of work, during the course of construction and shall maintain the trench for the life of the installation.

#### **5 - MATERIALS AND EQUIPMENT**

5.1 Pavement Traffic Markings and Striping – All damaged or removed pavement traffic markings and striping shall be replaced in kind within calendar 14 days from the completion of resurfacing operations. If the Permittee fails to replace damaged striping or markings within calendar 14 days, the City will complete the work and the Permittee will be responsible for all costs incurred by the City in accordance with Section 12.20.10 of the City of Redlands Municipal Code.

Visual uniformity, as determined by City personnel, may require that adjacent markings, additional length of marking on each side or all markings within an intersection be replaced by the Permittee at no cost to the City. Partial replacement of transverse markings (i.e. stop bars, crosswalks) will not be allowed and must be replaced in entirety.

5.2 Asphalt Concrete -- Paving asphalt shall be C2 or D1 – PG 64-10 (1/2” or 3/8”) for finish paving, depending on overlay thickness, and B – PG 64-10 (3/4”) for base paving. Asphalt concrete for Type D1 or Type D2 curb shall be D2 - PG 70-10.

5.3 Rubberized Asphalt Concrete – Rubberized asphalt concrete shall be Asphalt Rubber Hot Mix (ARHM) Wet Process per City of Redlands Standards and Standard Specifications for Public Works Construction (Greenbook), latest edition.

5.4 Base Material -- Base material shall be Crushed Aggregate Base (CAB), Crushed Miscellaneous Base, Fine Mix (CMB) per Greenbook, latest edition or Class 2 Base (3/4” Max.) per 2010 Caltrans Specifications or as approved by City personnel.

5.5 Grading Equipment -- Grading of soil roads or soil shoulders may be accomplished by any means that will provide a smooth, compacted and uniform surface that varies less than 0.1 foot in 10 feet for line or grade up to 300 feet. Projects greater than 300 feet in length will require grading be performed by an approved motor grader.

5.6 Track Equipment -- Track equipment and outriggers used on paved surfaces shall be equipped with street pads and be operated so as not to mar the surface or cause damage to any City facility. If pavement is marred, it shall be resurfaced over the entire width as required in Section 8, Trench Resurfacing. If City facilities are damaged, they shall be replaced or repaired as specified in Section 3, Preservation of Property.

5.7 Equipment -- Paving 6 feet wide or wider in a driving lane shall be accomplished by use of a paving machine approved by City personnel. Shoulder paving and miscellaneous paving shall be as approved by the City.

## **6 – TRENCHING**

6.1 Definition of Trenching -- Trenching shall be defined as any operation in which asphalt pavement, concrete pavement, earth, or other material on the surface is moved, removed, or otherwise displaced by means of hands, tools, or equipment in any of the following ways: trenching, digging, ditching, drilling, augering, tunneling, cutting or any other method not specified.

6.2 CalOSHA -- All excavations shall conform to the requirements of the State of California Division of Occupational Safety and Health. The applicant for a road permit shall possess a permit to excavate from the Division of Industrial Safety, Department of Industrial Relations, State of California.

6.3 New Roads – Per Section 12.20.030 of the City of Redlands Municipal Code, there shall be no trenching activity on streets paved or resurfaced within the previous 5 years unless otherwise

authorized by the City Engineer. If authorized, the Permittee shall be required to overlay the roadway to restore it to its original condition per Standard Drawing Number 193, Trench Overlay Detail or complete repair improvements as determined by City Engineer. To determine if a street is subject to a moratorium, visit [www.cityofredlands.org/MUED/engineering/encroachment](http://www.cityofredlands.org/MUED/engineering/encroachment) and access the Moratorium Streets Map. The map is updated regularly, however if conflicts or questions arise please contact the One Stop Permit Center at (909) 798-7551.

6.4 Pavement Removal -- Paving shall be cut for removal and excavated in a manner that does not disturb the adjacent pavement. Paving shall be sawcut or cold planed for permanent repair as specified in Section 8. Remnant strips of paving less than 5 feet wide shall be removed and included in the replacement paving. Replacement paving along the edge of paving that does not have curb and gutter, AC dike or AC berm shall be a minimum of 5 feet wide. When sidewall slippage occurs within the trench under the pavement, the pavement in the affected area shall be removed and the area of slippage shall be recompacted, paving of this area shall be included in the replacement paving. Any voids under the pavement shall be filled by an appropriate method approved by the inspector.

6.5 Open Trench -- The maximum length of open trench (excavation or backfill not resurfaced) allowed during construction shall be the distance of construction which can be reasonably installed in a single day. An open trench shall be attended by contractor's personnel at all times. Where pavement has been removed, a minimum of 2 inches of temporary paving shall be placed before that area is made available to traffic. Before leaving the project and at the end of each day, all areas of pavement removal, including sidewalk, drainage courses and driveway approaches shall be backfilled, compacted and surfaced with temporary asphalt. Upon approval of the City, appropriate areas of the trench may be protected by plate bridging or protective fencing.

6.6 Trench Bridging -- Plate bridging in the traveled way shall be per Standard Drawing Number 194, Plate Bridging Detail detail herein with traffic control per Section 2.2, Traffic Control.

6.7 Protective Fencing -- When protective fencing is used to secure an area, it shall be constructed of 6 foot high, pipe framed chain link panels or equal material, secured into position and placed in a manner that there are no gaps larger than 3 inches. Fencing shall be placed a minimum of 4 feet from the nearest driving lane and shall be protected by appropriate signing and barriers per Section 2.2, Traffic Control.

6.8 Trench Backfill -- Unless otherwise specified by the City, the trench shall be backfilled with Base Material, as defined within Section 5.4. Native soil backfill will not be allowed as backfill material and shall be disposed of at the cost of the Permittee. The backfill shall be installed per Standard Drawing Number 191, T-Cut Trench Repair.

Any trenching that involves bundled conduits of more than five (5) 2 inch conduits shall be slurry backfilled with 1-1/2 sack slurry.

6.9 Bedding Zone -- Unless otherwise specified by the City, imported sand shall be used backfill within the bedding zone area as defined on the attached surface restoration and trench backfill detail. Select native soil from excavation may be used as a suitable backfill if the material is



determined to provide a sand equivalent greater than 30 by use of California Test 217 (ASTM D2419-09).

6.10 Narrow Trench -- Unless otherwise authorized, trenches in paved areas, 1-foot or less in width, shall be backfilled to pavement subgrade with 1-1/2 sack aggregate/cement slurry. The slurry shall be protected until cured and pavement placed per Section 8, Trench Resurfacing.

6.11 Inclement Weather -- Other than emergency repairs or as directed by the City, there shall be no excavation within the traveled way of City roads during periods of inclement weather.

## **7 - COMPACTION**

7.1 Relative Compaction (RC) -- RC of 95% minimum shall be required for asphalt pavement, paving base material and backfill material. RC of 90% minimum shall be required for all backfill within the bedding zone as defined in Section 6.9. All compaction shall be in accordance with California Test No. 216 or No. 231 (ASTM D-1556 or D-1557-70). Use of an alternate compaction test method (e.g. Dynamic Cone Penetrometer) must be approved in advance and will be approved on a case-by-case basis.

7.2 Compaction Testing Frequency and Location -- Trench backfill testing shall be at 250 foot maximum intervals. One test shall be performed for each 4 feet of depth or fraction thereof. Pavement subgrade and pavement base material shall be tested at 500 foot intervals. Tests for backfill shall be taken at mid-depth of each 4 feet of backfill starting at the top of the installation. 20% of laterals and 100% of manholes shall be tested independently of the main line. Failure of a compaction test will result in the entire area represented by that test being uniformly reworked and retested at a random location.

7.3 Test Reports -- Tests shall be certified by a registered California Civil or Geotechnical Engineer or testing laboratory in accordance with the State of California test requirements. Test locations shall be determined by City personnel. Test reports shall be listed individually for each trench or for each type and phase of construction that includes an accurate description of the test location. Compaction reports shall be submitted to Inspector prior to permanent paving. If an alternate compaction method is approved per Section 7.1, alternate test reports specified at time of permit issuance shall be submitted.

7.4 Mechanical Compaction -- Backfill shall be placed in horizontal layers of thickness compatible to the material being placed and the type of equipment being used. Each layer shall be evenly spread then tamped or rolled until the specified relative compaction is attained.

7.5 Water Densification -- Densifying by ponding and jetting will not be allowed within 4-feet of finish grade unless confined to the pipe zone and approved by the Inspector. Water densification may be allowed when, as determined by City personnel, the base and backfill materials have a sand equivalent of 20 or greater (California Test No. 217) and are of such character that they will be self-draining when compacted and the foundation material will not soften, or otherwise be damaged by the applied water. For authorization to use water densification, submit request and test reports

representing the foundation soils and backfill material, at a maximum of 1000 foot intervals to the Inspector five (5) working days prior to starting work.

## **8 - TRENCH RESURFACING**

8.1 Temporary AC Pavement -- Temporary asphalt compacted to 2 inches thick shall be placed and maintained in a smooth and compacted condition at all locations where paving has been removed and before traffic is allowed to pass over areas of pavement removal. Temporary asphalt shall be removed for permanent repair.

8.2 Pavement Repair-General – Any damaged paving shall be replaced in kind. Permittee shall ensure any areas with existing rubberized asphalt concrete are repaired with rubberized asphalt concrete, independent of the amount of repairs necessary. Damaged paving adjacent to the trench edges shall be sawcut and removed in rectangular sections. Remnant strips of paving 5 feet wide or less will be removed and that area included in the paving repair. Asphalt paving shall be placed in a minimum of two lifts and be a minimum of 95% RC. The repaired section shall be 1 inch thicker than the existing paving but not less than 3 inches thick. Paving shall be placed within thirty (30) days of completion of the subsurface installation in accordance with Section 1.5. Areas to be joined with asphalt paving shall be cleaned of all soil and foreign material and tacked 100% coverage of asphaltic emulsion or paint binder.

8.3 Permanent Pavement Repair -- Base paving will be in compacted lifts a minimum of 2 inches and a maximum of 3 inches thick and shall be B – PG 64-10 (3/4”). Finish course shall be a minimum of 1 inch and a maximum of 2 inches thick of C2 or D1– PG 64-10 (1/2” or 3/8”), depending on overlay thickness, flush with the existing paving. In areas requiring rubberized asphalt concrete pavement repair the entire pavement section shall be replaced with ARHM Wet Process, per Section 5.3. Trench sections over 6 feet in width shall utilize a self-propelled vibrating screed paving machine (Barber-Greene or equivalent) and may be subject to additional requirements.

8.4 Overlay Paving -- An overlay will be required for any roads paved or resurfaced within the previous 5 years per Section 6.3, New Roads. Any roads with trenches that are classified as excessive pavement removal, as defined in Section 8.5, will also be required to provide an overlay per Standard Drawing Number 193, Trench Overlay Detail. The determination of the overlay shall be made by the City at the prebid/preconstruction meeting or prior to issuance of the permit. Substantial damage to the roadway beyond the trench excavation as a result of negligence by the Permittee or their contractor shall meet or exceed prior street conditions and will be determined by the City. The overlay, when required, shall be a minimum of 1 inch or 1-1/2 inches of C2 or D1 – PG 64-10 (1/2” or 3/8”), depending on overlay thickness, placed with a paving machine per Section 5.6 and shall extend beyond pavement removal a minimum of 18 inches laterally and 18 inches longitudinally from the sawcut edge and shall cover the driving lane or shoulder full width. Roads that have a superelevation or tilt cross section may require full road width overlay in the area of the superelevation or tilt section. When paving occurs where striping exists the paving joint shall be centered on the striping and all damaged striping replaced per Section 5.1, unless otherwise noted.

8.5 Excessive Pavement Removal -- Any road subjected to removal of six or more separate areas of pavement, or the removal of 15% of the total area of a lane or shoulder, by a Permittee within a 300 foot length of street, shall be classified as excessive pavement removal and require an overlay per

Section 8.4 and Standard Drawing Number 193, Trench Overlay Detail. Any trenching activities performed within 1 year, within a 300 foot length, by the same Permittee, shall be evaluated by City staff to determine if the trenching activities classifies as excessive pavement removal.

8.6 Pavement Surfacing -- Where there are existing surface coats on the existing paving, open graded paving, slurry seal, chip seal or any type of surfacing that has been removed, the surfacing and paving shall be replaced in kind to the extents of the pavement repair.

8.7 Driveway Approaches -- Driveway approaches constructed of asphalt concrete shall be repaired as required and shall also be overlaid with a 1-1/2 inch thick full width overlay to the property line or slurry sealed.

8.8 Portland Cement Concrete -- Potholes or trenches in PCC shall be repaired by sawcutting or grinding and removed in full panels at the score lines or as directed by City personnel.

8.9 Trench Failure and Repair -- When the City notifies Permittee of a failure of the trench (settlement, excessive cracking or alligating, etc.) Permittee shall coordinate the proposed trench repair method and schedule with the City. If the Permittee fails to repair the trench within calendar 14 days from the date of written notice, the City will complete the repair and the Permittee will be responsible for all costs incurred by the City in accordance with Section 12.20.170 of the City of Redlands Municipal Code.

# STANDARD DRAWINGS


Standard Drawings have been modified as noted below:

Std. Dwg. No.	Title	Date Approved	Date Last Revised	Date Deleted
N/A	Surface Restoration and Trench Backfill Detail	2/9/12	9/1/15	11/21/16
N/A	Surface Restoration and Trench Backfill Detail Adjacent to Curb/Road Edge	2/9/12	9/1/15	11/21/16
N/A	Trench Overlay Detail for 2 Lane Streets	2/9/12	N/A	11/21/16
N/A	Trench Overlay Detail for >2 Lane Streets	2/9/12	N/A	11/21/16
N/A	Plate Bridging Detail	2/9/12	N/A	11/21/16
190	Trench Repair General Notes	11/21/16		
191	T-Cut Trench Repair	11/21/16		
192	Butt Joint Trench Repair	11/21/16		
193	Trench Overlay Detail	11/21/16		
194	Plate Bridging Detail	11/21/16		

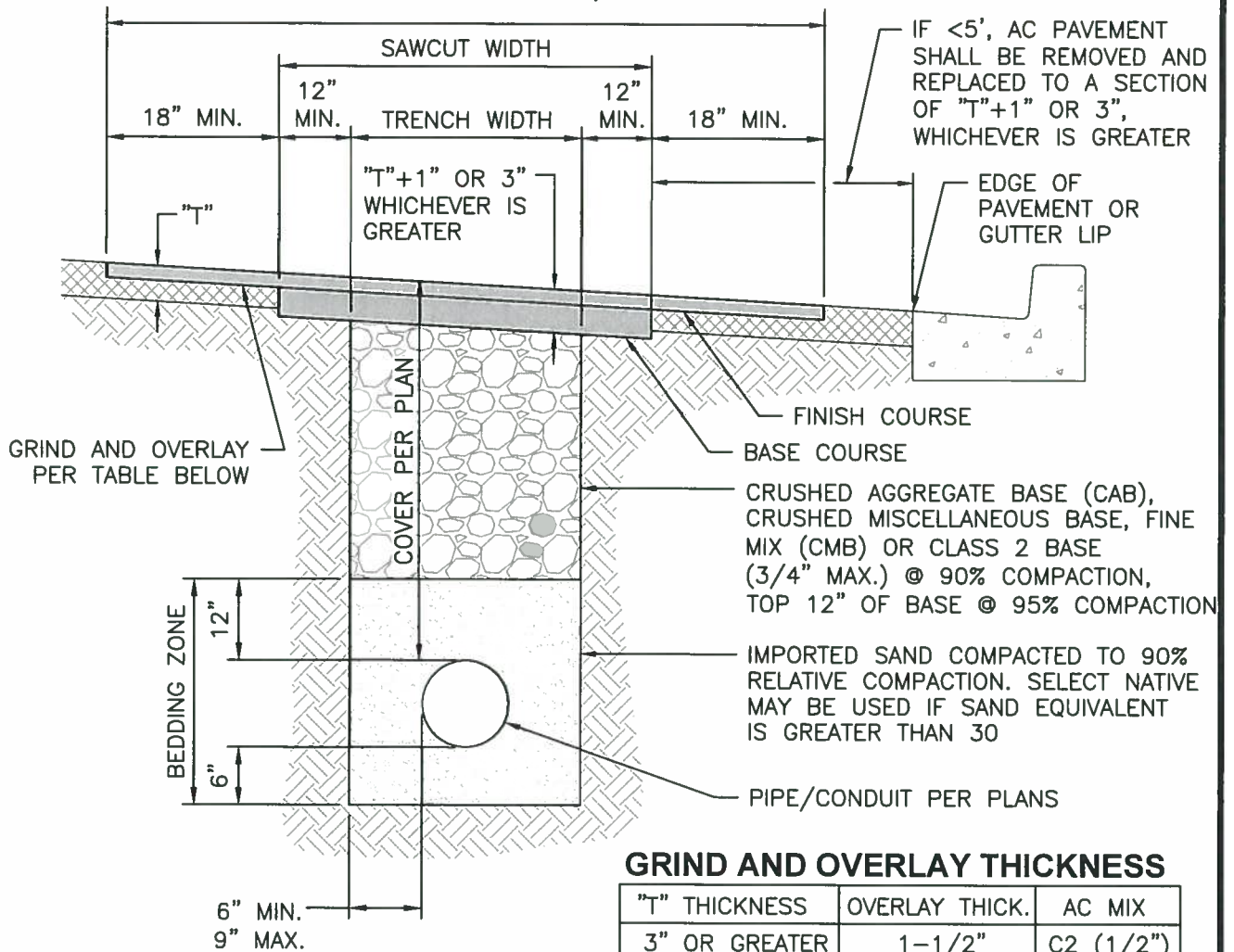
## TRENCH REPAIR GENERAL NOTES

1. ALL PAVEMENT REPAIR WORK SHALL CONFORM TO THE GENERAL PERMIT CONDITIONS AND TRENCH SPECIFICATIONS, 2012 GREENBOOK AND ANY ADDITIONAL REQUIREMENTS LISTED WITHIN THE PLANS OR PERMIT.
2. ALL TRENCH ACTIVITY SHALL BE REPAIRED WITH A T-CUT REPAIR AS SHOWN ON STD. DWG. NUMBER 191. A BUTT JOINT TRENCH REPAIR, PER STD. DWG. NUMBER 192, SHALL ONLY BE USED WHEN APPROVED IN WRITING BY THE CITY ENGINEER.
3. THERE SHALL BE NO TRENCHING ACTIVITY ON STREETS PAVED OR RESURFACED WITHIN THE PREVIOUS 5 YEARS UNLESS OTHERWISE AUTHORIZED BY THE CITY ENGINEER, SEE SECTION 6.3 OF GENERAL PERMIT CONDITIONS AND TRENCH SPECIFICATIONS, LATEST EDITION.
4. IN THE EVENT TRENCHING IS AUTHORIZED FOR A MORATORIUM STREET, THE OVERLAY AREA WILL BE DETERMINED BY STD. DWG. NUMBER 193.
5. WHEN "EXCESSIVE PAVEMENT REMOVAL" OCCURS, AS DEFINED BY SECTION 8.5 OF THE GENERAL PERMIT CONDITIONS AND TRENCH SPECIFICATIONS, LATEST EDITION, THE OVERLAY AREA WILL BE DETERMINED BY STD. DWG. NUMBER 193.
6. PRIOR TO THE PAVEMENT REPAIR, SAWCUT A CLEAN, STRAIGHT, VERTICAL FACE AT 12" MINIMUM BEYOND THE EDGE OF THE REQUIRED TRENCH WIDTH. ALL LIQUIDS GENERATED BY SAWCUTTING SHALL BE CAPTURED AND DISPOSED OF ACCORDINGLY.
7. A MINIMUM OF 2" OF TEMPORARY ASPHALT PAVEMENT SHALL BE INSTALLED WITHIN THE TRENCH AREA. TEMPORARY PAVING SHALL BE FLUSH WITH SURROUNDING GRADE AND MAINTAINED UNTIL PERMANENT ASPHALT IS INSTALLED.
8. BASE COURSE SHALL BE "B PG 64-10" SHALL BE COMPLETED IN LIFTS BETWEEN 2" AND 3" AND COMPACTED TO 95% RELATIVE COMPACTION.
9. FINISH COURSE SHALL BE "C2 PG 64-10" OR "D1 PG 64-10" (1/2" OR 3/8"), DEPENDING ON OVERLAY THICKNESS, PER STD. DWG. 191 AND COMPACTED TO 95% RELATIVE COMPACTION.
10. BASE PAVEMENT SHALL BE INSTALLED FLUSH WITH THE SURROUNDING GRADE AND GRINDED DOWN TO THE THICKNESS OF THE OVERLAY WHEN THE FINISH COURSE OVERLAY IS INSTALLED.
11. A MINIMUM OF 72 HOURS SHALL PASS BETWEEN THE INSTALLATION OF THE BASE COURSE TO THE INSTALLATION OF THE FINISH COURSE. NOTIFY THE INSPECTOR AT THE START OF THE 72 HOURS TO ALLOW TIME FOR INSPECTION PRIOR TO THE INSTALLATION OF THE FINISH COURSE.
12. APPLY A TACK COAT TO ALL VERTICAL EDGES AND SURFACES TO BE CAPPED.
13. APPLY A SEAL COAT AND #30 SILICA SAND TO FINISHED EDGES USING SS1H ASPHALT EMULSION.
14. ALL PAVEMENT REPAIR SHALL BE COMPLETED WITH LIKE MATERIALS, I.E. ARHM SHALL BE REPLACED WITH ARHM.
15. TRAFFIC CONTROL SHALL REMAIN IN PLACE UNTIL THE NEW PAVEMENT IS ALLOWED TO COOL TO A POINT THAT IT CAN SUSTAIN MOTOR VEHICLES WITHOUT DAMAGING THE FINISHED SURFACE. ANY TRACKING SHALL BE CORRECTED BY THE CONTRACTOR IN CONFORMANCE WITH THE REDBOOK.
16. ALL UNDERGROUND SERVICE ALERT (USA) MARKINGS SHALL BE REMOVED BY THE CONTRACTOR OR PERMIT HOLDER IN ACCORDANCE WITH SECTION 3.5 OF THE GENERAL PERMIT CONDITIONS AND TRENCH SPECIFICATIONS.

### CITY OF REDLANDS MUNICIPAL UTILITIES AND ENGINEERING DEPARTMENT

			<h2 style="margin: 0;">TRENCH REPAIR GENERAL NOTES</h2>	STD. DWG. NUMBER  <h1 style="margin: 0;">190</h1>
			APPROVED <u></u>	DATE <u>11/21/16</u>
REV.	BY	DATE	MICHAEL POOL, ASSISTANT CITY ENGINEER RCE 49585	SHEET 1 OF 1

WIDTH OF GRIND & OVERLAY = TRENCH WIDTH + 5' (MINIMUM),  
 AREA OF OVERLAY WILL BE GREATER ON MORATORIUM OR  
 EXCESSIVE PAVEMENT REMOVAL LOCATIONS, SEE NOTES BELOW



**GRIND AND OVERLAY THICKNESS**

"T" THICKNESS	OVERLAY THICK.	AC MIX
3" OR GREATER	1-1/2"	C2 (1/2")
2" TO <3"	1"	D1 (3/8")
<2"	NONE	N/A

**NOTES**

1. SEE STD. DWG. NUMBER 190 FOR TRENCH REPAIR GENERAL NOTES.
2. THERE SHALL BE NO TRENCHING ACTIVITY ON STREETS PAVED OR RESURFACED WITHIN THE PREVIOUS 5 YEARS UNLESS OTHERWISE AUTHORIZED BY THE CITY ENGINEER, SEE SECTION 6.3 OF GENERAL PERMIT CONDITIONS AND TRENCH SPECIFICATIONS, LATEST EDITION.
3. IN THE EVENT TRENCHING IS AUTHORIZED FOR A MORATORIUM STREET, THE OVERLAY AREA WILL BE DETERMINED BY STD. DWG. NUMBER 193.
4. WHEN "EXCESSIVE PAVEMENT REMOVAL" OCCURS, AS DEFINED BY SECTION 8.5 OF THE GENERAL PERMIT CONDITIONS AND TRENCH SPECIFICATIONS, LATEST EDITION, THE OVERLAY AREA WILL BE DETERMINED BY STD. DWG. NUMBER 193.

CITY OF REDLANDS MUNICIPAL UTILITIES AND ENGINEERING DEPARTMENT

**T-CUT TRENCH REPAIR**

STD. DWG. NUMBER

**191**

APPROVED

*Michael Pool*

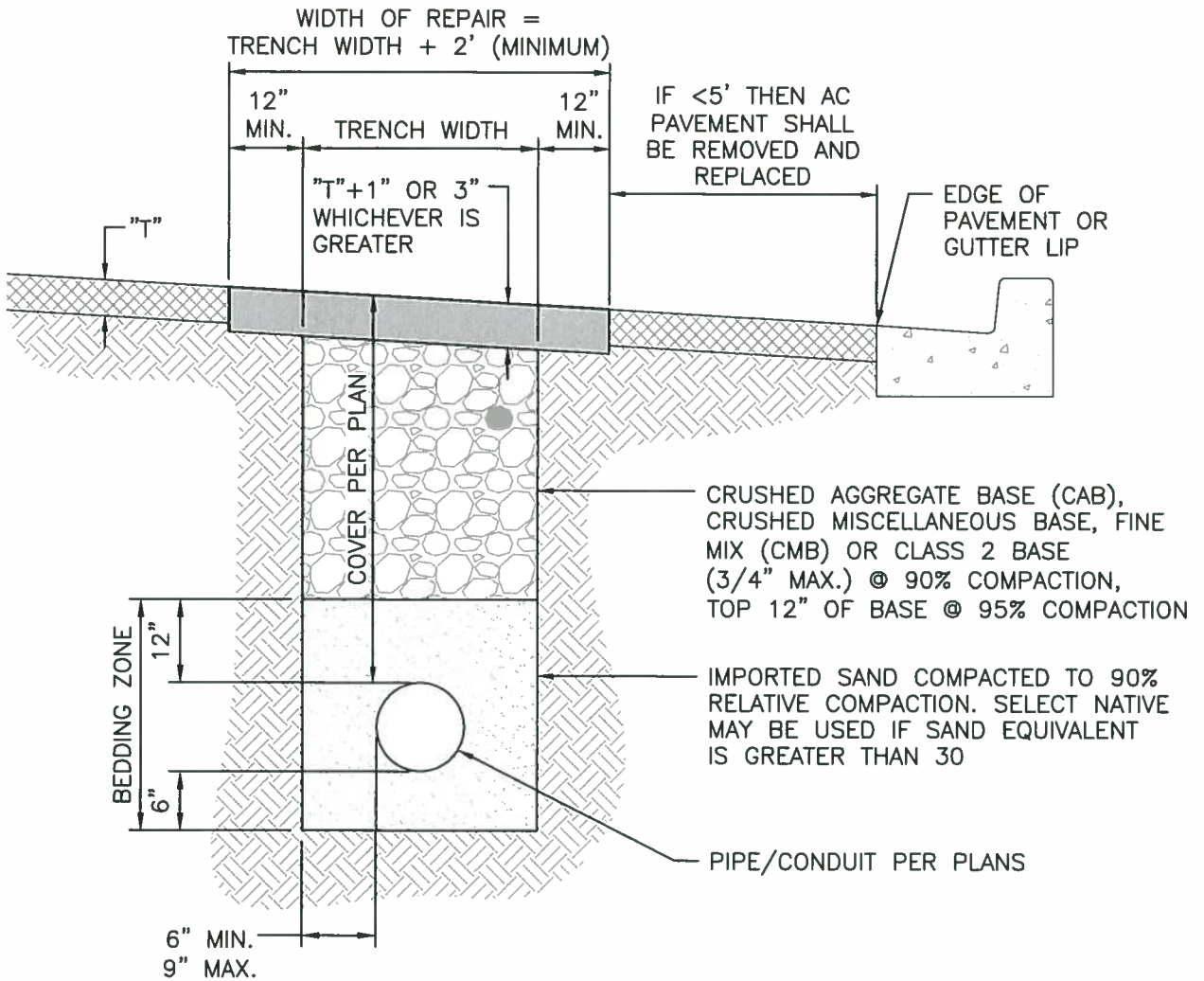
DATE

*11/21/16*

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SHEET 1 OF 1



**NOTES**

1. SEE STD. DWG. NUMBER 190 FOR TRENCH REPAIR GENERAL NOTES.
2. ALL TRENCH REPAIR SHALL BE COMPLETED PER STD. DWG. 191 UNLESS THIS REPAIR DETAIL IS EXPLICITLY APPROVED IN WRITING AS AUTHORIZED BY THE CITY ENGINEER.

CITY OF REDLANDS MUNICIPAL UTILITIES AND ENGINEERING DEPARTMENT

**BUTT JOINT TRENCH REPAIR**

STD. DWG. NUMBER

**192**

APPROVED

*Michael Pool*

DATE

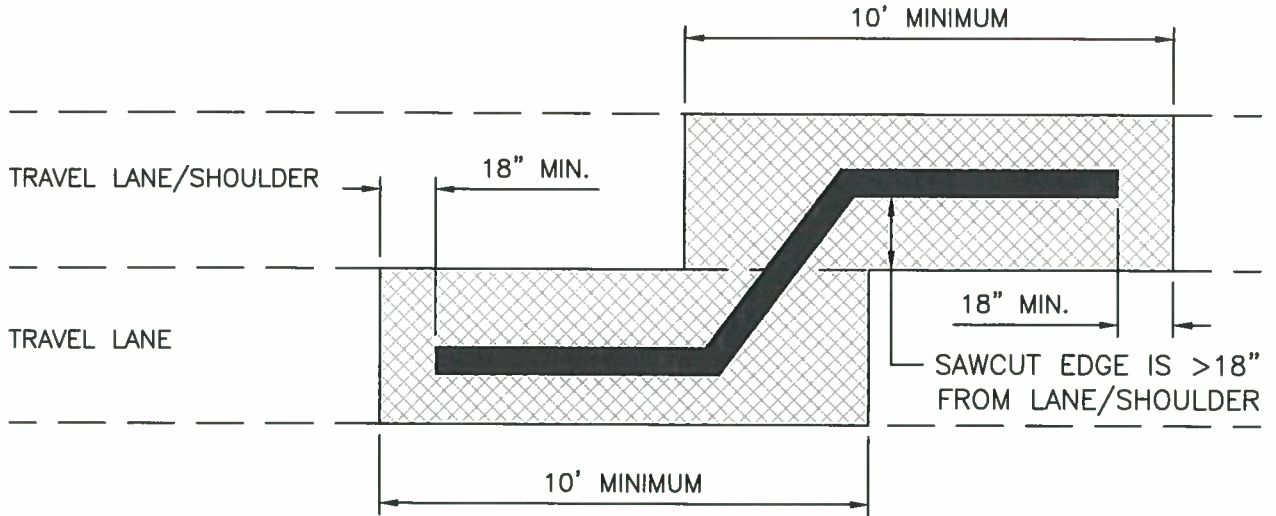
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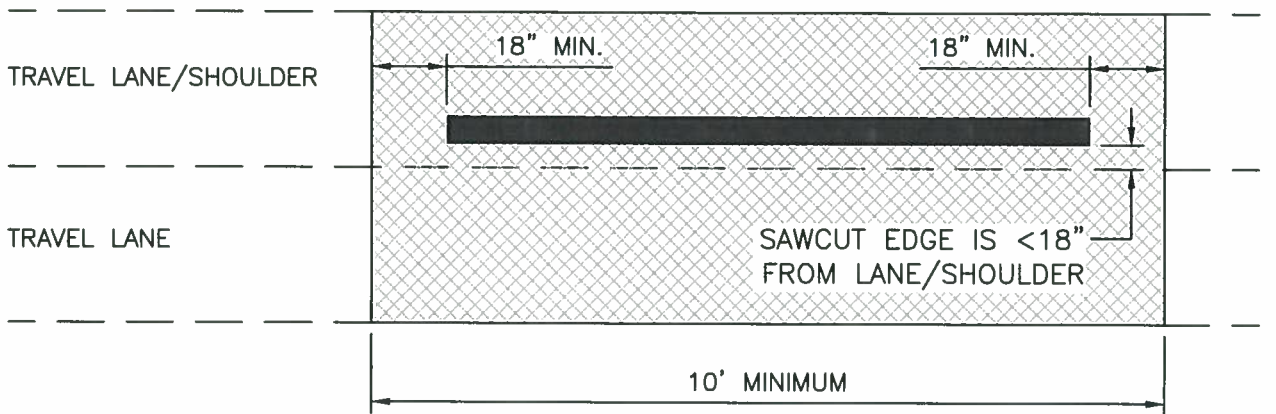
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SHEET 1 OF 1

### SINGLE LANE/SHOULDER OVERLAY



### MULTIPLE LANE/SHOULDER OVERLAY



OVERLAY AREA, SEE STD. DWG. NO. 191 FOR GRIND AND OVERLAY THICKNESS



SAWCUT AREA (12" OUTSIDE OF TRENCH AREA ON ALL SIDES)

### **NOTES**

1. THIS DETAIL APPLIES TO MORATORIUM STREETS OR EXCAVATIONS DETERMINED TO BE "EXCESSIVE PAVEMENT REMOVAL" AS DEFINED WITHIN SECTION 6.3 OR 8.5 OF THE GENERAL PERMIT CONDITIONS AND TRENCH SPECIFICATIONS.
2. OVERLAY AREA TO EXTEND 18" MINIMUM BEYOND TRENCH SAWCUT AREA IN ALL DIRECTIONS AND BE A MINIMUM OF THE LANE OR SHOULDER WIDTH X 10' LONG.
3. REVISIONS TO THE REQUIRED OVERLAY AREA MAY BE MADE AT THE DISCRETION OF THE CITY.
4. SEE STD. DWG. NUMBER 190 FOR TRENCH REPAIR GENERAL NOTES.

CITY OF REDLANDS MUNICIPAL UTILITIES AND ENGINEERING DEPARTMENT

## TRENCH OVERLAY DETAIL

STD. DWG. NUMBER

**193**

APPROVED

DATE

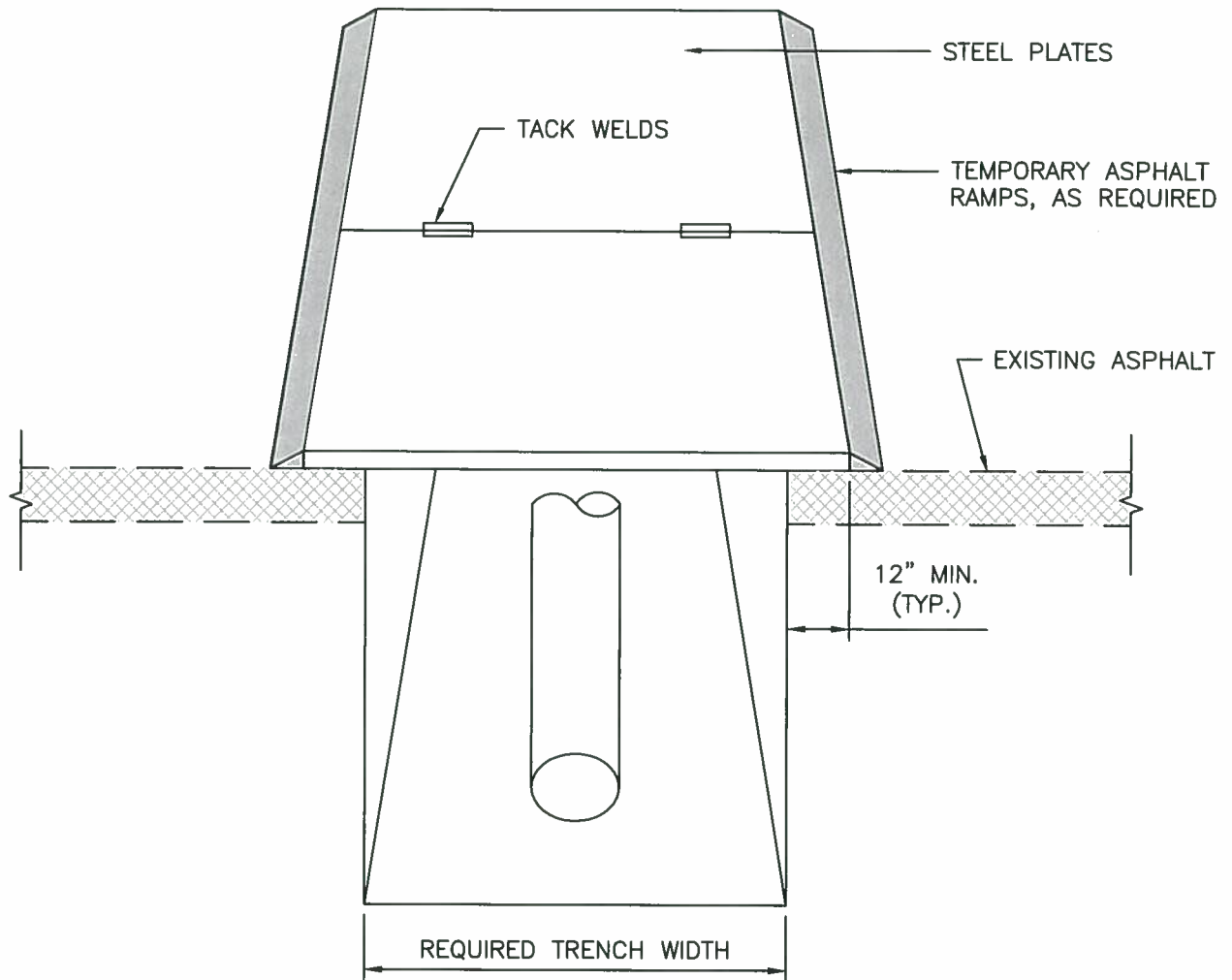
11/24/16

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SHEET 1 OF 1





**NOTES**

1. SEE SHEET 2 FOR NOTES.

CITY OF REDLANDS MUNICIPAL UTILITIES AND ENGINEERING DEPARTMENT

**PLATE BRIDGING DETAIL**

STD. DWG. NUMBER

**194**

APPROVED

*Michael Pool*

DATE

*11/21/16*

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SHEET 1 OF 2

# NOTES

1. STEEL PLATES USED FOR BRIDGING SHALL EXTEND A MINIMUM OF 12 INCHES BEYOND THE EDGES OF THE TRENCH.
2. INSTALL STEEL PLATE BRIDGING TO OPERATE WITH MINIMUM NOISE.
3. SHORE THE TRENCH TO SUPPORT THE BRIDGING AND TRAFFIC LOADS.
4. USE TEMPORARY PAVING WITH COLD ASPHALT CONCRETE TO FEATHER THE EDGES OF THE PLATES IF PLATE INSTALLATION BY METHOD 2 IS USED.
5. SECURE BRIDGING AGAINST DISPLACEMENT BY USING ADJUSTABLE CLEATS, SHIMS, OR OTHER DEVICES.
6. INSTALL STEEL PLATE BRIDGING AND SHORING USING EITHER METHOD 1 OR 2:  
METHOD 1 (FOR SPEEDS MORE THAN 45 MPH): THE PAVEMENT SHALL BE COLD PLANNED TO A DEPTH EQUAL TO THE THICKNESS OF THE PLATE AND TO A WIDTH AND LENGTH EQUAL TO THE DIMENSIONS OF THE PLATE. MAXIMUM OF 1 INCH GAP BETWEEN EXISTING PAVEMENT AND PLATE UNLESS WHEN PARALLEL TO TRAFFIC, MAXIMUM 1/2 INCH.  
METHOD 2 (FOR SPEEDS 45 MPH OR LESS): ATTACH APPROACH PLATE(S) AND ENDING PLATE (IF LONGITUDINAL PLACEMENT) TO THE ROADWAY BY A MINIMUM OF TWO DOWELS PREDRILLED INTO THE CORNERS OF THE PLATE AND DRILLED 2 INCHES INTO THE PAVEMENT. BUTT SUBSEQUENT PLATES TO EACH OTHER. COMPACT FINE GRADED ASPHALT CONCRETE TO FORM RAMPS, MAXIMUM SLOPE 8.5% WITH A MINIMUM 12-INCH TAPER TO COVER ALL EDGES OF THE STEEL PLATES, BACKFILL THE DOWEL HOLES IN THE PAVEMENT WITH EITHER GRADED FINES OF ASPHALT CONCRETE MIX OR CONCRETE SLURRY.
7. MAINTAIN THE STEEL PLATES, SHORING, AND ASPHALT CONCRETE RAMPS.
8. THE REQUIRED MINIMAL THICKNESS OF STEEL PLATE BRIDGING FOR A GIVEN TRENCH WIDTH:

<u>WIDTH OF TRENCH</u>	<u>MINIMUM PLATE THICKNESS</u>
1 FOOT – 3 FOOT	1 INCH
4 FOOT	1-1/4 INCH

NOTE: FOR SPANS GREATER THAN 4 FEET, PREPARE A STRUCTURAL DESIGN BY A REGISTERED CIVIL ENGINEER AND SUBMIT TO THE CITY FOR REVIEW.

9. STEEL PLATE BRIDGING SHALL BE STEEL PLATE DESIGNED FOR HS20-44 TRUCK LOADING PER CALTRANS BRIDGE DESIGN SPECIFICATIONS MANUAL. MAINTAIN ON THE STEEL PLATE A NONSKID SURFACE HAVING A MINIMUM COEFFICIENT OF FRICTION EQUIVALENT TO 0.35 AS DETERMINED BY CALIFORNIA TEST METHOD 342.

**CITY OF REDLANDS MUNICIPAL UTILITIES AND ENGINEERING DEPARTMENT**

## PLATE BRIDGING DETAIL

STD. DWG.  
NUMBER

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