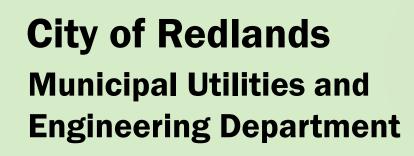
Pavement Management Program





February 2012



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Executive Summary

Introduction

The future of our local economy is uncertain, but one thing we know we must manage our infrastructure smarter. State and local agencies are facing challenging times. There are over 600 lane miles of roads with limited or reduced funds for maintenance. During the last 2 years MUED delivered \$3.8 million (43) lane miles) in pavement projects. This year we plan to deliver \$1.2 million in pavement project for over 14 lane miles of roads. This is due in large part to grants funds and sources other than general funds. Going forward we may not have access to these funds and will need to leverage our dollars to do more with less. A major challenge is how to balance the needs between preservation, system expansion, and system management and continue to serve our objective in providing class A service to our community. Our aim now is to slow the rate of deterioration of our existing road network using pavement preservation and rehabilitation treatments. The development of a new Pavement Management Program is a large step in the right direction. This new tool will assist in determining the most cost effective treatments to apply on a given street segment at a given time.

Purpose of the Study

Municipal Utilities and Engineering Department has developed a citywide 2012 Pavement Management Program (PMP). In developing this program, the physical condition of City street surfaces were evaluated, rated, and the projected life cycle determined. The PMP further identifies a schedule for maintenance and reconstruction of City streets at the appropriate time intervals in order to extend their overall life-expectancy in the most efficient and economical manner. Additionally, the PMP establishes a comprehensive process to prioritize rehabilitation of the City's roadway system and will be used in the decisionmaking process in order to best utilize the City's available financial resources.

Other advantages of this program include:

- 1. Improving the quality of the City's streets in a fiscally responsible manner;
- 2. Implementing a plan that considers both immediate and long-term needs;
- 3. Promoting transparency by educating public on the decision-making process involving selection and utilization of street improvement funds throughout the City.

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Summary of Findings

The City's street network system consists of over 292 street miles or approximately 640 lane miles of Asphalt Concrete paved streets.

Staff utilized eRoads Pavement technology, or simply "eRoads", as an automated pavement evaluation system to create a database of the current inventory of City street conditions, treatment options, and cost estimates for each treatment available. Using this system, it has been confirmed that due to the lack of a comprehensive and systematic maintenance program of the City's road system over a number of years, the City's average Pavement Condition Index (PCI) has dropped to 53 on a scale of 0-100, 100 being a new street and 0 being a street needing full reconstruction. An average PCI of 53 is considered poor according to industry standard and in comparison to surrounding cities.

Various rehabilitation and resurfacing methods are available to maintain a road surface, each with their own benefits and expected service life. To maximize the City's resources, the appropriate treatment must be selected for each road's condition, many of which are described in the PMP report.

New pavement deteriorates slowly at first, then at a continually increasing rate. This deterioration can be significantly slowed by use of systematic preventive maintenance starting in the early stages of a pavement's lifecycle. Examples of different pavement conditions and related PCI values are shown within the report for reference.

Analysis and Recommendations

Recent practices have demonstrated that it is fiscally prudent to maintain roads that are in a relatively good condition. This can be accomplished using low cost treatment methods to prevent them from deteriorating into a more damaged condition. The intent of this report is to provide a comprehensive plan for a strategic street maintenance and rehabilitation program.

Two methodologies for priority ranking have been established, one considers a short-term "value-engineering" that may be applied as funds become available, and the other considers long-term planning. Both methodologies account for the uncertainties of timing and the amount of available funding.

The *VMT Method* is a more focused, or fine-tuned method that relies primarily on the actual usage of each road, expressed in terms of average daily traffic (ADT). The ADT for a road segment is multiplied by the length of that segment (in miles) to produce the vehicle-miles of travel (VMT) per day. Each day there are 814,000 VMT on roads within the City of Redlands. By using the VMT as a guide for



choosing roads that will be included in a paving project, the dollars spent will impact the greatest possible number of vehicular trips.

A *Matrix-Method* used for road prioritization involves a variety of criteria including PCI. Although the ranking for the PCI determines its condition, other factors such as street type, bus routes, and the surrounding population density contribute to prioritizing for each road segment. The matrix methodology relies on the available data which is processed using the City's GIS system. The result is a long-term, "big-picture" approach that graphically shows roads that warrant treatments based on function, location, and condition of the road surface.

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Section 1 Introduction

Need for Pavement Management

The network of paved roads within the City has been without a comprehensive maintenance/rehabilitation plan since the City's incorporation in 1888. While the City has grown to its current population of 70,000+, increased demand has been placed on the road system as residents drive to work, shop, and have their needs met with the assistance of truck and bus services. Many roads experience traffic counts beyond their intended design, furthering the deterioration of the road surface. With a limited budget for road maintenance, identifying a solution to maintaining the City's road system using treatment methods that will provide the greatest benefit to the community is the objective of this program.

The City generally has three classes of roads: local, minor, and major. Local roads are typically those in residential neighborhoods. Minor roads generally function as collectors that receive traffic from multiple local roads and are usually within mixed-use areas. Examples of collector roads include Olive Avenue, Fern Avenue and Colton Avenue. Major roads experience the highest traffic volumes and function as major transportation corridors. Examples include Redlands Boulevard, Alabama Street and California Street. Figure 1 itemizes these street types by the number of street and lane miles.

CLASS	Street Miles	Lane Miles
Local		
Street	186	378
Minor		
Street	58	129
Major		
Street	48	133
Grand		
Total	292	640

Figure 1

Street miles are the lengths of all streets regardless of the number of lanes. Lane miles are defined as the sum of the miles for all lanes in each direction for all streets.

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Street Surface Evaluation

During 2007 the City contracted with eRoad to perform a vehicle-mounted survey of all paved roads within City limits. Each segment of road was assigned a PCI value. A verbal description of these values is shown on the table below based on the ASTM Standard Practice for Roads and Parking Lots Pavement Condition Index Surveys.

Rated on a scale of 0 to 100, the PCI originated with the U.S. Army Corps of Engineers and was then adopted by the Department of Defense (DOD) and American Public Works Association (APWA). The numerical rating, with 0 being the worst possible condition and 100 being the best possible condition, is accompanied by a written description of the pavement's condition (1). See Figure 2.

PCI Range	Condition	Description	Recommended Rehabilitation
86 - 100	Good	No significant distress.	Fog seal, Crack Seal, Slurry Seal
71 - 85	Satisfactory	Little distress, may include utility patch work that is in good condition, little weathering.	Crack Seal/ ARAM Slurry
56 - 70	Fair	Slightly to moderately weathered, some distress, some patchwork.	Dig-outs/ ARAM Slurry
41 - 55	Poor	Severely weathered, moderate distress limited to non-load-related cracking.	Edge Grind/ Overlay
26 - 40	Very Poor	Moderate to severe distress including load related cracking (i.e.; large amounts of alligatoring).	Grind/ Overlay
11 - 25	Serious	Severe distress or large amounts of distortion or alligatoring throughout the roadway.	Dig-outs/ Reconstruction
0 - 10	Failed	Pavement has failed; distress is beyond the capabilities of rehabilitation.	Reconstruction

Figure 2

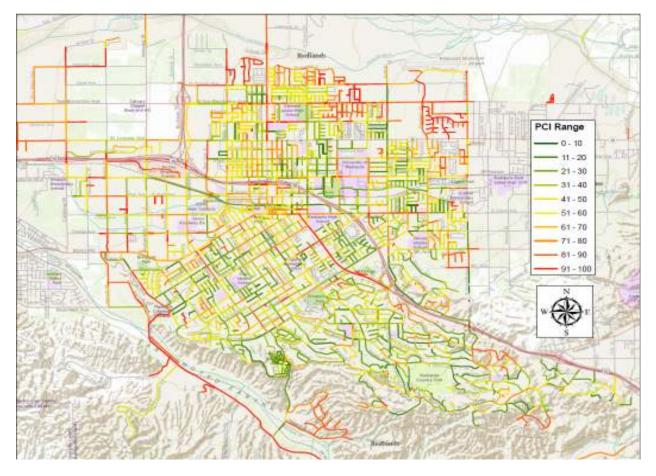
The information from eRoad allows the City to access the PCI of any road for planning purposes as well as for general inquiry from customers. eRoad also color-codes the PCI values onto a map of the City. See PCI Map, next page. Additional information can be obtained for each segment of road including the presence of cracking, rutting, and a recommended treatment as well as a cost estimate.

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The condition of a road is impacted by several factors:

- Traffic patterns and loading;
- Structural section (asphalt over aggregate base, asphalt over native soil, or asphalt over crushed rock);
- Characteristics of the underlying soil (high clay content, sandy, gravely);
- Drainage (excessive runoff from lawns, puddling, storm runoff);
- Previous maintenance;
- Quantity of utility trenching and related repairs.

The above items are contributing factors to the overall pavement condition and lifespan of a road. Because PCI varies along a length of road, there are challenges to selecting a uniform treatment for a paving project within a selected area.



PCI Map (Not to Scale)

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Designated bicycle and bus routes can be overlain onto the projected paving plan using GIS. This shows the user if coordination needs to be made with Omnitrans or if special temporary traffic controls, such as detours, are necessary for truck traffic for a paving project. Bicycle facilities are also shown to let designers know if new signage and/or striping are applicable.



In the eRoad database, it was determined the City has an average PCI of 53, which qualifies as a "poor" road condition. This rating is lower than the state PCI average of 66, and also lower than the San Bernardino County average PCI of 70 (2). Photographs on pages 15 and 16 provide visual representation of these road conditions.

Pavement Treatment Options

Options for treating and maintaining the paved surface include a combination of pavement rehabilitation and resurfacing in addition to reconstruction. Depending on the goals and available funding, various options are available to specify a scope of work for any given project. For example, some funding sources stipulate "green" technology that uses recycled material for asphalt production such as rubber. Any alternate construction materials and methods must be evaluated for feasibility on future projects. The following is a list of descriptions for conventional construction methods mentioned in this report.

The following 5 pages describe a variety of treatment methods for pavement rehabilitation. The appropriate method that would be selected is based on the condition of the existing pavement.

Fog Seal – Light application of a diluted asphalt emulsion applied directly on the road surface. This treatment seals pavement and slows oxidation.

Benefits:

- Rejuvenates dry and brittle asphalt surfaces
- Seals very small cracks voids at the surface
- Slows weathering and oxidation

Appropriate For:

Good pavements showing only the most minor cracking, weathering, or raveling.

Service Life: 1 - 2 years.

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Crack Seal- Bituminous sealant applied to cracks in the paved surface.

Benefits:

- Prevents intrusion of moisture and debris through cracks
- Prevents water damage to pavement structure



Appropriate for: Cracks less than 1" wide and spaced uniformly along the pavement.

Service Life: 3 – 5 years.

Slurry Seal – A mixture of dense-graded fine aggregates and asphalt emulsion applied to the road surface.

Benefits:

- Waterproofs the paved surface and seals small cracks
- Improves ride quality
- Provides skid resistance
- Provides a "sacrificial" wearing course for the roadway.



Appropriate for:

Stable pavements showing minor distress such as some cracking, raveling, and roughness.

Service Life: 3 - 5 years

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Microsurfacing – Generally a "high-end" slurry seal primarily used to prevent raveling and oxidation of the road surface.

Benefits:

- Waterproofs the paved surface and seals small cracks
- Improves ride quality
- Provides skid resistance
- Used to level minor rutting of the roadway

Appropriate for:

Stable pavements showing minor distress such as some cracking, raveling, and roughness. Also used for roads showing rutting.

Service Life: 5 – 7 years

Rubberized Emulsified Aggregate Slurry (REAS) – A "green" slurry seal manufactured with a recycled crumb rubber emulsifier.

Benefits:

- Waterproofs the paved surface and seals small cracks
- Improves ride quality
- Provides skid resistance
- Provides a "sacrificial" wearing course for the roadway.
- More resistance to fading allows pavement markings to remain sharp and bright longer

Appropriate for:

Stable pavements showing minor distress such as some cracking, raveling, and roughness.

Service Life: 5 – 7 years



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ARAM – Asphalt Rubberized Aggregate Membrane. Rubberized asphalt emulsion applied to the pavement surface, followed by a layer of aggregates that are rolled, followed by a top layer of rubberized slurry.

Benefits:

- Improves surface friction
- Slows surface raveling, seals small cracks
- Improves ride quality



Appropriate for:

Stable pavements showing minor distress such as cracking, raveling, and roughness. Also effective at sealing more severe cracking than a slurry seal treatment.

Service Life: 5 – 7 years



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Grind and overlay - 1" to 2" of roadway are milled to remove the upper portion of the road surface. New asphalt, preferably rubberized hot-mix (ARHM) is then applied at generally the same thickness as the removed portion.

Benefits:

- Removes bumps, cracks and irregularities
- Provides a new course of uniform pavement, not patchwork
- ARHM uses recycled tires and is considered a "green" construction product.





Appropriate for:

Roads with a stable, undamaged base course in which the pavement section is alligatored and/or severely weathered.

Service Life: Up to 20 years (when ARHM is used).

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Cold-in-Place Recycling (CIR) -2" -4" of the pavement are milled similar to the grind and overlay method. The grindings are blended on-site with an emulsion and rolled back onto the roadway as a new pavement course (typically performed using a caravan of special vehicles that executes these steps in a single pass). This is a "green" construction method that recycles portions of the existing asphalt concrete. Caution must be exercised; the existing pavement section must be capable of withstanding the loading from the caravan vehicles.

Full-Depth Reclamation (FDR) – Consists of removal of the pavement and nearly all of the base sections. Removed asphalt concrete and base material is pulverized and recycled into new base material. The final step is the application of a new course of pavement. This method requires soil testing so an appropriate pavement section may be designed prior to commencement of work.

Applying Pavement Treatment Options

It is recommended the City employ a strategy that prioritizes maintenance activities for streets that are already in a good condition or better. While it may be tempting to follow a "worst-first" plan in which those roads having the lowest PCI rating will receive paving treatments first, regardless of their location or usage, that strategy is generally not cost effective.

Treatments for failed streets will apply large budgets to relatively small sections of road, thereby having a minimal effect on increasing the city-wide PCI average. While failed streets are treated and reconstructed, the at-risk streets deteriorate into a failed condition, resulting in more backlog of failed roads, not less. This will also leave insufficient funds available for less costly treatments to be used at the right place and at the right time. Maintenance and rehabilitation treatments used in this manner will allow more section of road to experience improvement in its pavement condition.

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Pavement Lifecycle

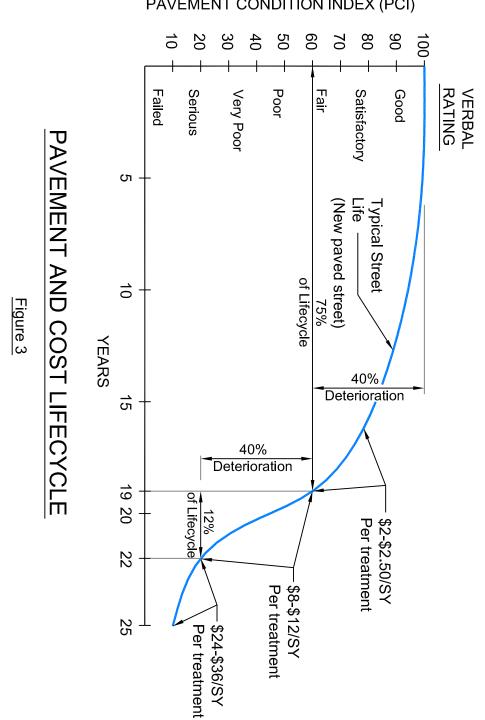
The City will consider various rehabilitation methods to maintain its streets. Figures 3 and 4 identify the life cycle of a typical street and the required maintenance based on the condition.

In a typical life cycle of pavement, the condition deteriorates slowly at first, then at a continually increasing rate. In general, a street's condition will deteriorate approximately 40% during the first 75% of its lifespan, assumed to be 25 years for illustration purposes. After 75% of the lifespan has passed, streets will deteriorate an additional 40% over the next 12-17% of the lifespan. (See *Pavement and Cost Lifecycle* curve, Figure 3).

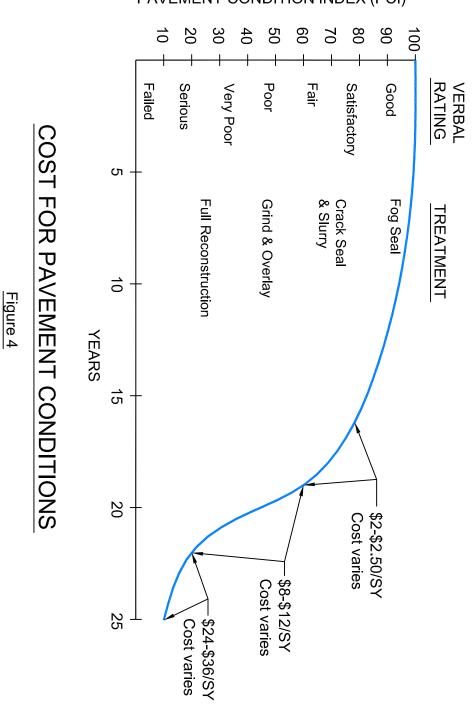
Preventive maintenance treatments performed systematically during the first 75% of the lifespan is key to providing the most cost effective method for extending the life of a paved surface. Re-paving a street once it has deteriorated to a PCI of 25 or less requires costly treatments, such as full reconstruction, which may cost more than twice as much as the sum of the preventative treatments made during the same time period.

Protecting the road subgrade from the negative impacts of water intrusion using crack and slurry seals during the early stages of the pavement lifecycle is one of the most cost effective means of extending the life of the pavement. The degree to which this occurs depends on the type of maintenance and timing of the application. Ideally, some means of maintenance should be performed on a road surface every 5-10 years depending on the condition of the road. Each treatment will improve the PCI and prolong the life of the paved surface if done regularly and will postpone the need for full reconstruction for many years. (See *Pavement Maintenance Cycle* curve on Figure 4).

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PAVEMENT CONDITION INDEX (PCI)



PAVEMENT CONDITION INDEX (PCI)

Photographs

The following pages contain photographs showing examples of various PCI values on Redlands streets.



Barbra Lane (PCI = 14). Severe alligator pattern of cracking on the surface. Very uneven road including patch work.



Brookside Avenue, west of Lakeside Avenue (PCI = 16). Severe alligatoring throughout the roadway. Many patches are uneven within the road surface.

Devon Place (PCI = 16). Severe alligator pattern throughout the road surface. Very uneven road surface.

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Michigan Street (PCI = 51). Road surface slightly uneven and weathered. Minor cracking throughout the road surface.



Stillman Avenue (PCI = 52). Road surface is relatively even, although weathered with block cracking and transverse cracks. Note: Church Street in the background with PCI = 100.



Cajon Street (PCI = 53) near Cypress Avenue. Low to medium severity transverse cracks with low severity of alligatoring.

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Palm Avenue near San Jacinto Street (PCI = 66). Weathered, medium severity transverse cracking with some edge cracks.



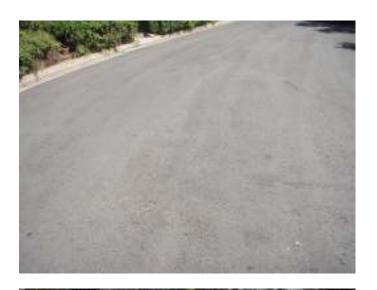
Stillman Avenue west of Judson (PCI = 66). Some weathering, medium severity transverse cracking, low-severity patch work.

Note the different distresses on two roads rated with a PCI of 66.

Barton Road west of Lakeside Avenue (PCI = 70). Moderately weathered road, little or no patchwork. Some minor transverse cracks.



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Grandview Avenue (PCI = 90). Note the slight wear/weathering on the road surface.

Church Street south of Colton Avenue (PCI = 100). ARHM is less than a year old. No sign of weathering or distress.



Note the contrast between the ARHM on Church Street (PCI = 100) and Stillman Avenue (PCI = 52).

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Section 2 Redlands Pavement Management Program

Methodologies

The Pavement Management Program takes a citywide approach to evaluate pavement. This approach requires attaining large amounts of data and resources for analysis to optimize solutions for the entire City, including such things as the coordination of various capital improvement and development projects with paving projects. Using this approach to pavement management has formed two distinct methodologies to prioritize the City's roads for resurfacing. These methodologies are vehicle miles of travel (VMT) and Matrix methods. The availability of funds determine which methodology is most suitable. If funding remains at or near its current level, the VMT is recommended in order to maximize the miles traveled on road surfaces that receive treatment. VMT method prioritizes roads that incur the greatest traffic miles driven, then applies the appropriate repair for that section. Alternatively, the Matrix Method prioritizes improvements based on a set of criteria (listed on pages 19 and 20) to strategize locations for repair. If funding levels exceed current resources available, the Matrix Method is recommended.

VMT Method. The total miles traveled by all vehicles each day in the City is 814,000 VMT/day. Understanding the significance of this number can be illustrated as a single car traveling one and one half round-trips to the moon. The VMT method allows staff to compare the cost of a road treatment with the volume of daily traffic. The total cost of repair or maintenance per average daily traffic (ADT) will yield cost/vehicle trip/day at that location. The lower the cost per vehicle trip, the more cost effective applying treatment to that road will be. See maps for Average Daily Traffic and for Cost/ADT Model Priority following this page.

To create a data model, the ADT for each road segment is multiplied by that segment's length, measured in miles. The result is the VMT. The highest priorities for treatments will be given to those roads with the greatest VMT. Once the data model had been established an annual budget can be entered into the model to chart the progress of road improvements each year for a 10-year time period. This is possible through the eRoad system as each road segment selected for improvement already has a corresponding cost estimate that is based on the recommended treatment for each road segment. Since this method ranks all roads according to their daily VMT, the roads that are selected each year for treatment is a function of the available budget for that year. Once a set of roads are selected according to a given budget, the sum of all VMTs for that group of streets can be used to compare VMT affected per dollars spent. Four different annual budgets were entered into the data model and graphed to illustrate this procedure. See figure 5 on page 18.

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Of the 814,000 VMT each day in Redlands, 256,500 of those have already received treatments during the past five years. This is due to high-volume traffic streets, such as Orange Street and Redlands Boulevard, having recently been paved. Using the list of remaining roads, the following ADT and Cost per ADT Priority maps show which streets can be paved based on volume of traffic. For any given budget, the roads with the highest VMT will receive treatment first. Figure 5 shows annual budgets of \$800,000, \$2 million, \$5 million, and \$7 million plotted against the total VMT that will benefit from treatment for each year, over the next ten years. Further analysis of these budgets and the impact they have on the city-wide average PCI is contained in appendix A.

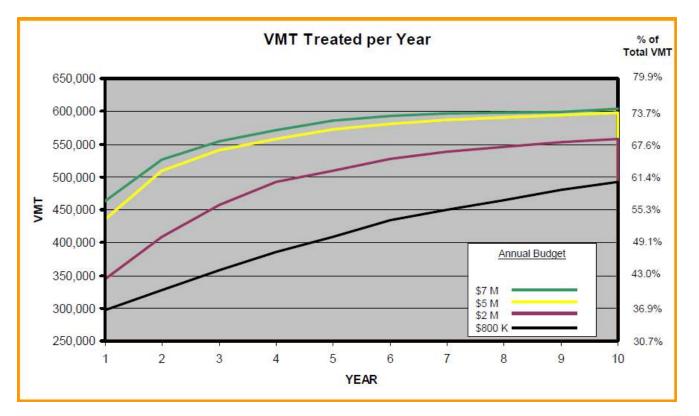
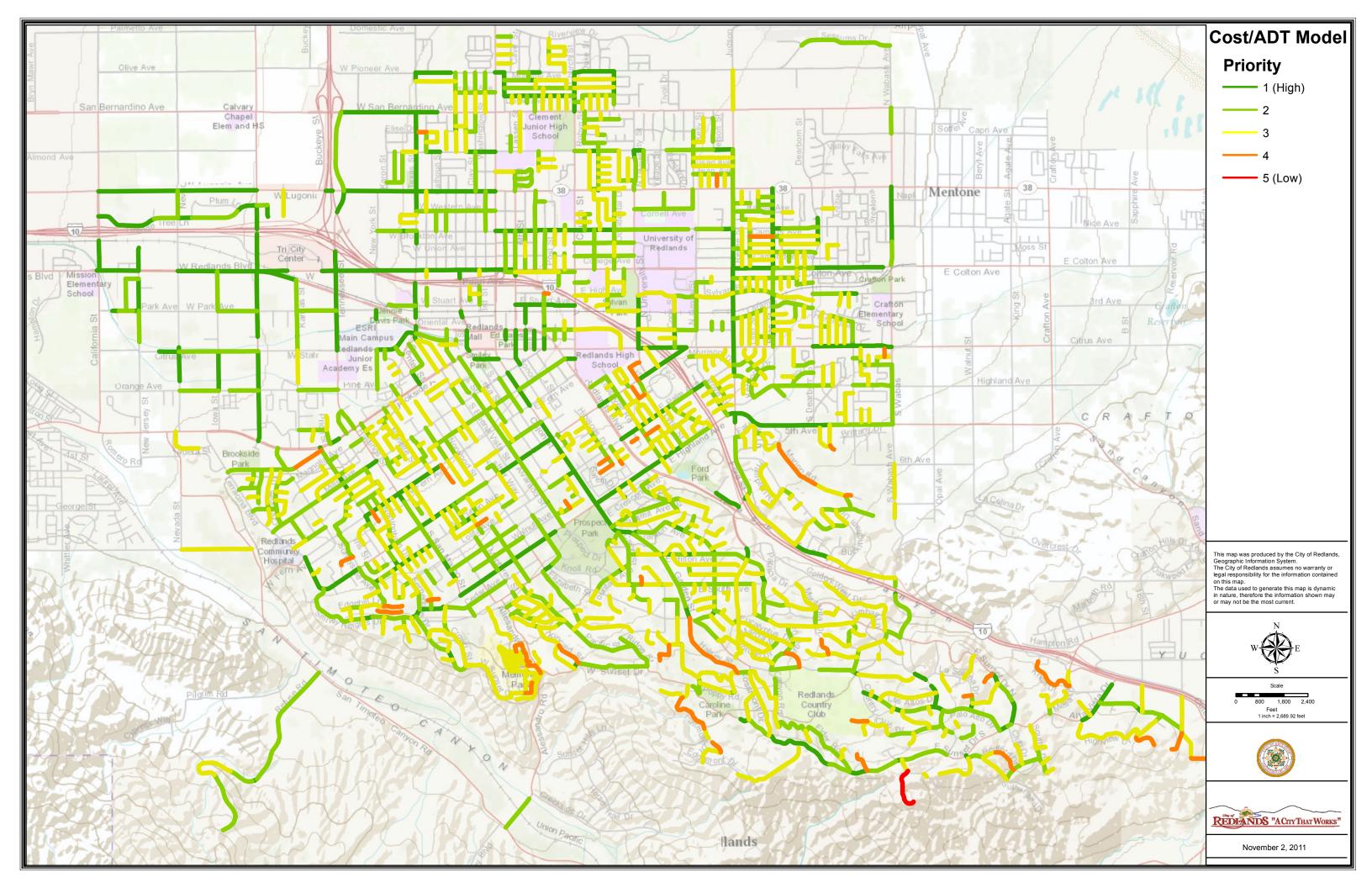
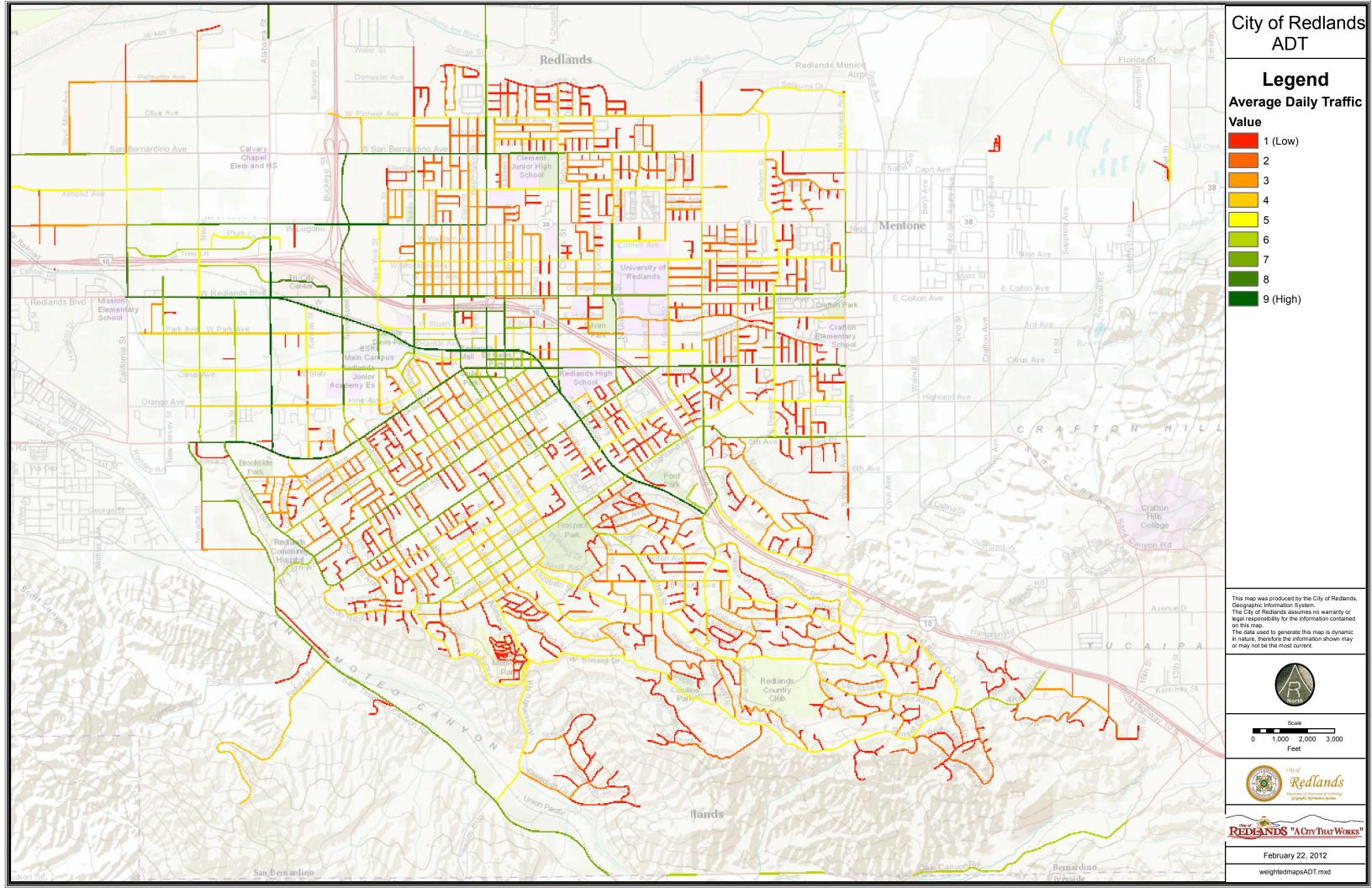


Figure 5

The greatest increase in affected VMT per dollars spent appears to be a \$2 million annual budget. All curves representing each budget rise sharply at first as funds are applied to a smaller quantity of larger roads with large traffic volumes. Starting around year seven the increase in affected VMT levels out as a larger quantity of smaller roads are treated, yet affecting a much smaller traffic volumes.







Matrix Method. In order to apply budgetary dollars to those roads of highest priority, an assessment was made of the City's needs. Some needs weigh more than others, therefore a weighted criteria was established to define the City's long-term priorities. The set of criteria that contribute to a roads need for treatment are as follows:

eRoad

eRoad is a system that prioritizes streets based on pavement condition.

ADT

The average number of vehicles passing a point, both directions, during a 24-hour period is the average daily traffic (ADT). Roads with higher ADT volumes will receive higher priorities for resurfacing.

Population

Roads that are within areas of higher population density will be given priority over roads that are within areas of low population density. This was determined using a kernel-density function on Census 2010 block centroids.

School or Health Facility

Roads that are within $\frac{1}{2}$ mile radius of a school or health facility will receive an increase in priority. The priority score increases from the $\frac{1}{2}$ mile radius in to the 500 ft buffer of the school or health facility.

Commercial Property

Streets next to commercial and retail centers receive pavement priority based on immediate proximity.

Street Type

Major roads have a greater priority for treatment than Minor roads, which have a greater priority than Local roads.

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Pothole

Roads that have a high number of customer-service based calls for pothole and road improvements will be given a higher priority than roads that have not received customer-generated calls. More information about collecting infrastructure problems through the Redlands311 smart phone app or online entry can be found at cityofredlands.org/311

PCI

Greater priority is assigned to roads with a lower PCI.

Bike lane or bike route

Roads that are designated to have a bike lane or are bike route will have a greater priority for resurfacing than roads that will not have either.

Bus Route

Roads that currently serve as Omintrans bus routes will have an increase in priority over roads that do not.

Rail Stop

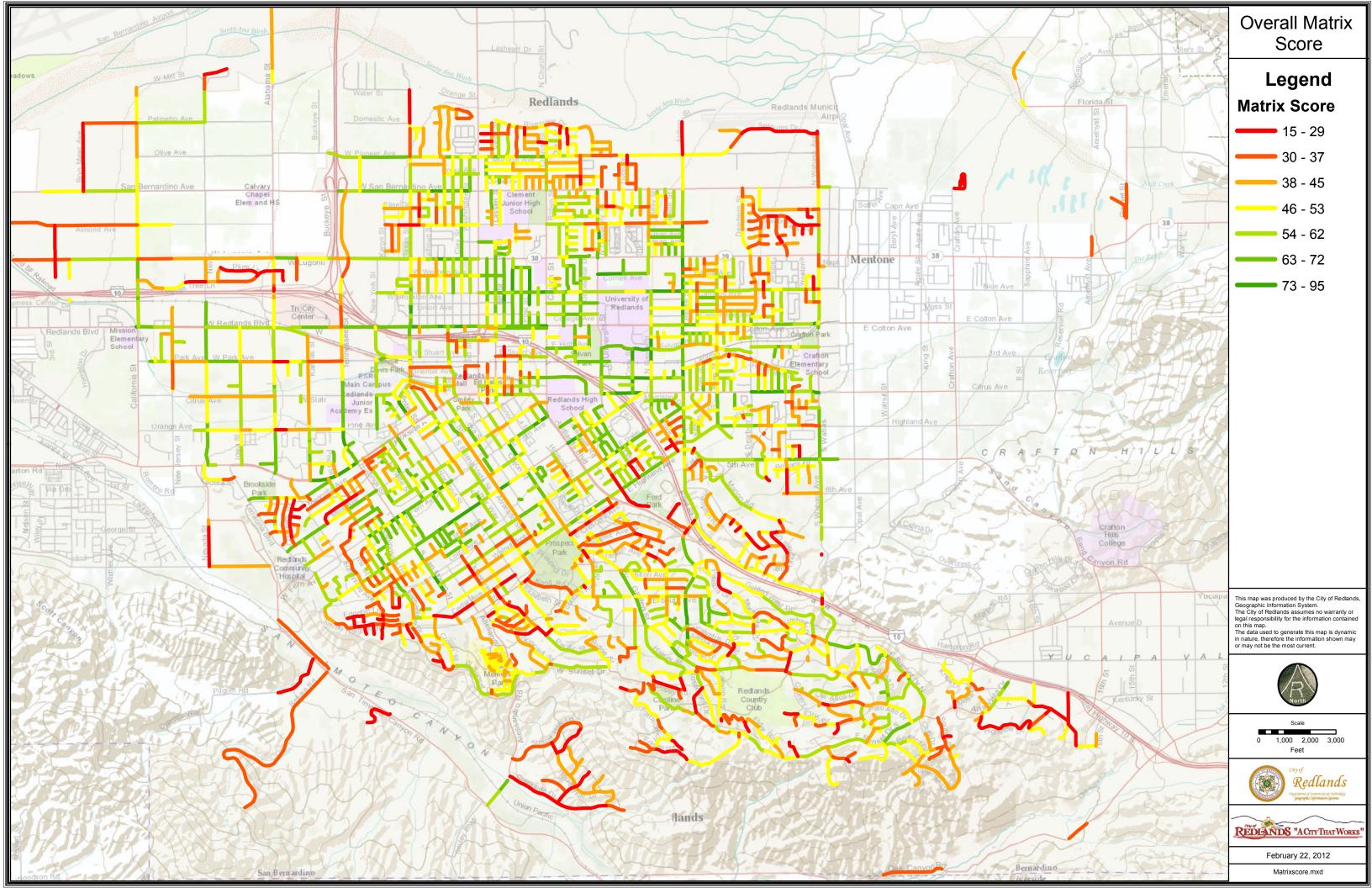
Roads that are within a $\frac{1}{2}$ -mile radius of a future rail stop will receive a uniform increase in priority.

A map of the Overall Matrix Score follows this page. Appendix B contains a map for each of the above criteria and their geographic "hot spots". Each was assigned a weighted value as a percentage of all the decision-making criteria. The weighted criteria produced a data model that would calculate a priority list of roads to receive treatment. The resulting data model is weighted as follows:

Criteria	Weights (%)
eRoad	20
Average Daily Traffic (ADT)	15
Population	14
School or Health Facility	10
Commercial Property	10
Street type	8
PCI	5
Bike lane or bike route	5
Pothole	5
Bus Route	5
Rail Stop	3
Total	100%

Figure 6

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Statistical analysis allowed staff to see in geographical terms those road segments where paving treatment was needed most. It is important to remember that this criteria was based on assigned values for each of the criteria listed above. The higher the resulting score for a given road, the higher priority that road has for surface treatment.

According to the Matrix Method priority map, as shown on the next page, those road segments of highest priority are scattered throughout the City. Engineering judgment is required to process this priority, based on weighted criteria, into a scope of work for a specific paving and rehabilitation project.

Utilities

Although outside the analysis process for either the Matrix Method or the VMT Method, future utility work, such as water and sewer facilities, will require adjustment of a road's priority for paving and resurfacing. There are two reasons for this part of the prioritization process. First, paving the full width of a road after completion of utility trenching and patchwork will contribute to an overall increase in the City's average PCI rating. Second, if the patchwork and paving portion of the utility work is concurrent with a separate project to pave the entire road, a cost benefit in the amount of the cost of utility patchwork may be applied towards the total resurfacing cost of that road.

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Conclusions

The Pavement Management Program utilizes two systematic approaches along with engineering judgment for determining the street selection priorities and methodologies of repairs. The two approaches are the VMT and Matrix Methods.

VMT Method is an appropriate approach when funds are limited to benefit the greatest amount of vehicle miles traveled throughout the City. With 814,000 vehicle miles traveled daily in the City, targeting the streets that most effect these traveled routes provide the greater benefit to the total miles driven. The downside to this approach is the roads that receive the majority of the attention for repairs will be primarily major streets. This will result in reducing or eliminating residential streets until funds become available or the major streets are all repaired.

The Matrix Method is an appropriate approach when more funding sources are available by using the 11 defined criteria and corresponding weights of each to set the priority for street repair. The benefit to this approach is that streets are paved based on these criteria and not simply vehicle miles traveled. Another benefit to this method is that it does not limit itself to major streets.

The reality is the average condition of City streets are far below what is considered desirable and therefore, it will take many years and resources before all streets receive treatment. The engineer's decision to utilize either of the referenced methodologies or a hybrid of the two for prioritizing resurfacing implementation is directly related to the existing physical condition of each street and availability of resources.

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Appendix A

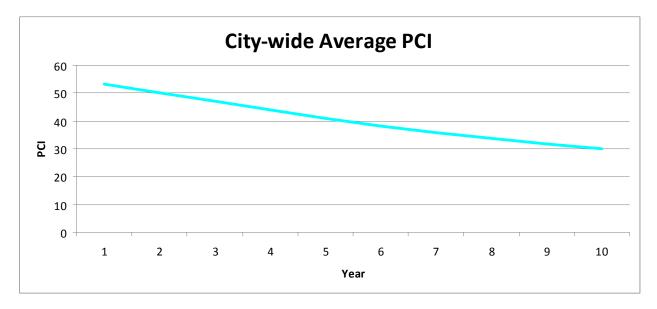
10-year Projections

All required road repairs identified in the eRoad system amount to a total construction value of \$78 million. This includes the total quantity of each treatment from crack seal and slurry to full reconstruction.

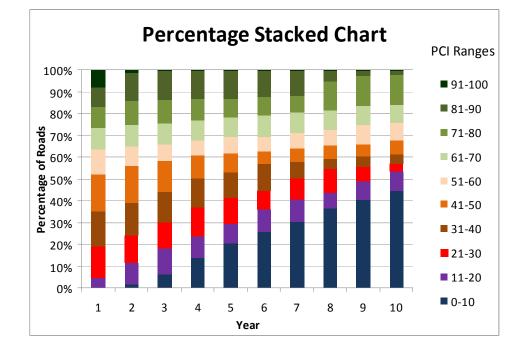
A hypothetical \$78 million annual budget will allow each of the recommended treatments throughout the City to be completed in one year and bring the city-wide average PCI to 100. However, a realistic annual budget will address road treatments over time and the average PCI can be updated each year.

The following pages illustrate how four different annual budgets for road treatments affect the average PCI over a 10-year time period. Each annual budget includes a PCI curve over a 10-year time frame. A stacked percentage chart is also provided showing the percentage of roads that fall within specified PCI ranges, also over a 10-year period.

It is important to recognize that these PCI projections are not based on either of the two prioritization methods described in this report. The eRoad system applies an annual budget to roads that are at risk of a rapid decrease in condition, which is approximately 60 PCI. As only a small portion of these roads will be treated each year, most will continue to deteriorate, bringing the average PCI down.

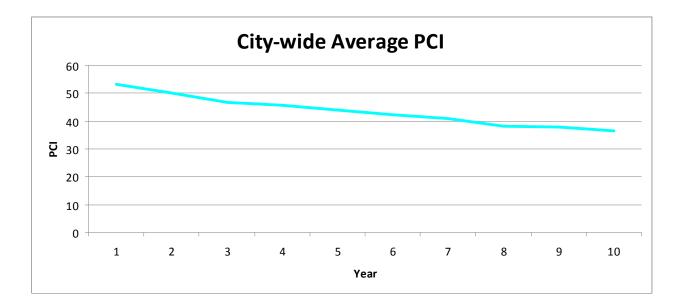


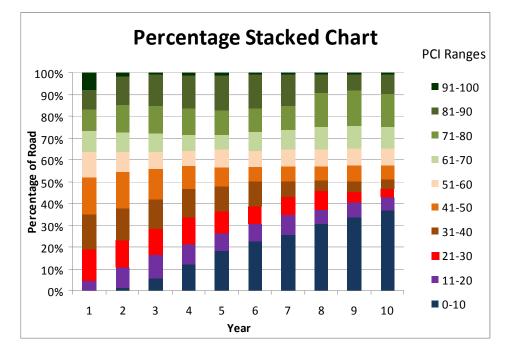
10-Year PCI Projection at \$800k/yr



Annual funding of \$800,000/yr, or approximately the current funding levels, the citywide average PCI will steadily decline, reaching an average PCI of 30 after 10 years. Note the sharp increase in the percentage of roads that are rated with a PCI between 0 and 10. Nearly half of City roads will be in this range after 10 years.

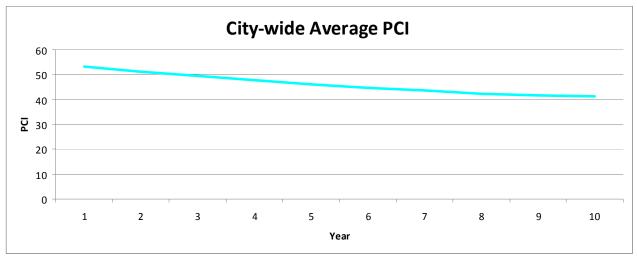
10-Year PCI Projection at \$2 m/yr



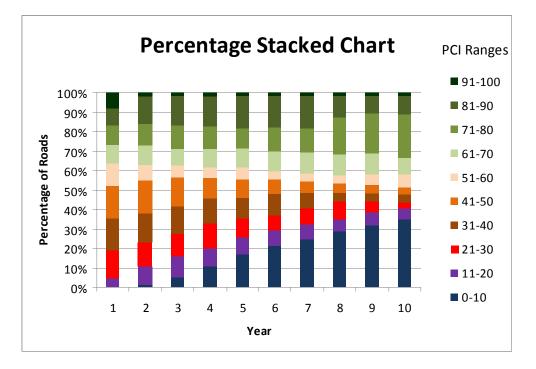


Annual funding of \$2 million/yr will also result in a steady decline in the average PCI value for the City of Redlands. Note the range of roads that are currently rated with a PCI value between 20 and 60. These are the roads that will rapidly decline over the next 10 years, resulting in a large percentage of roads that are projected to have a PCI value of 10 or less after 10 years.

10-Year PCI Projection at \$5 m/yr

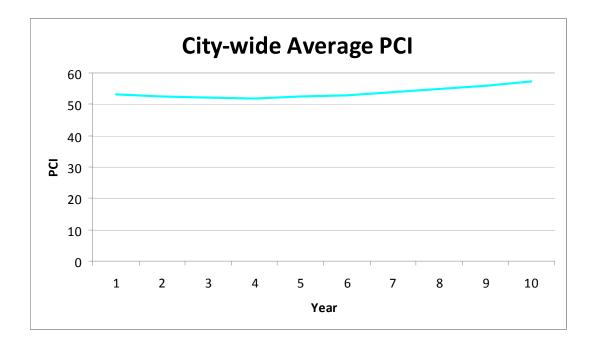


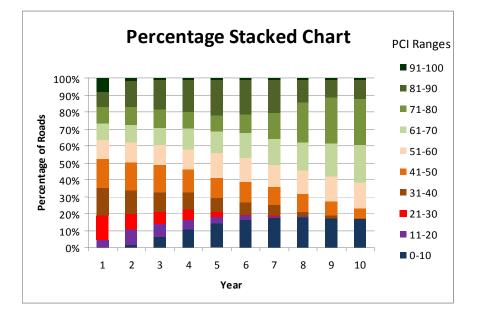
Year



The average PCI continues to decline each year with an annual funding of \$5 million/yr although much less drastically. In addition to a high percentage of roads projected to fall within the 0-10 PCI range, there is also an increase in the percentage of roads that will have a PCI of 70 or better.

10-Year PCI Projection at \$7 m/yr

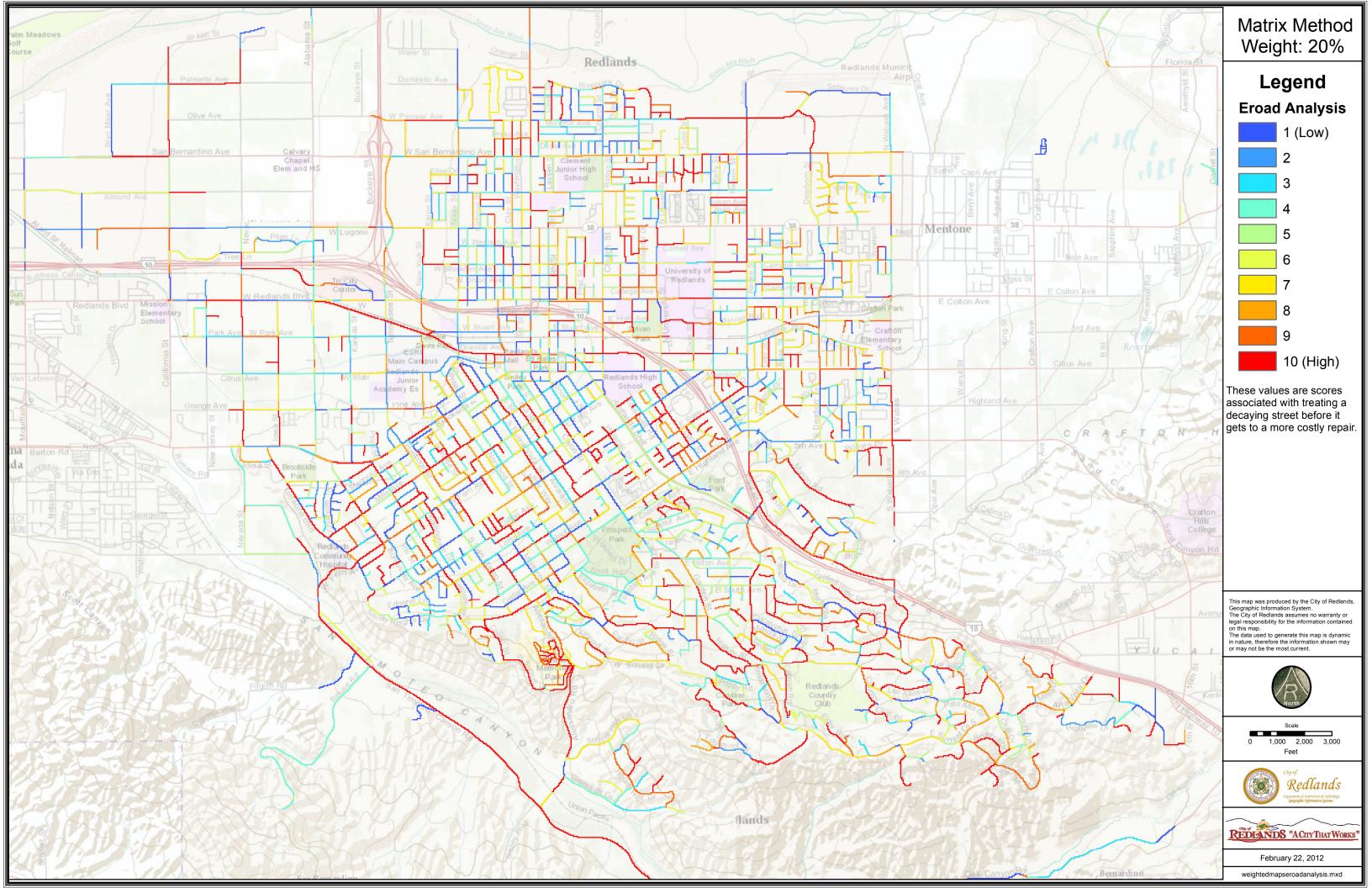


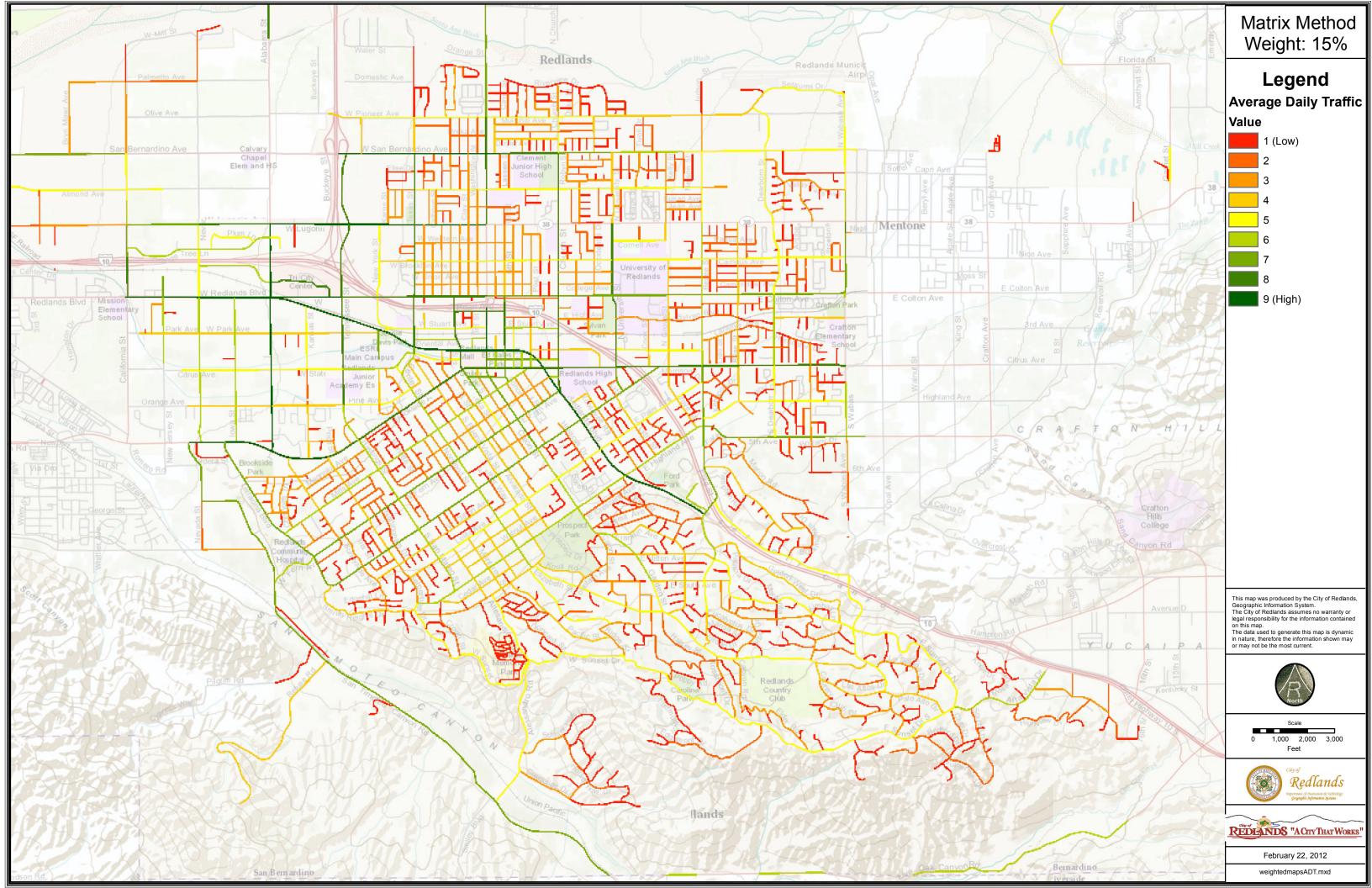


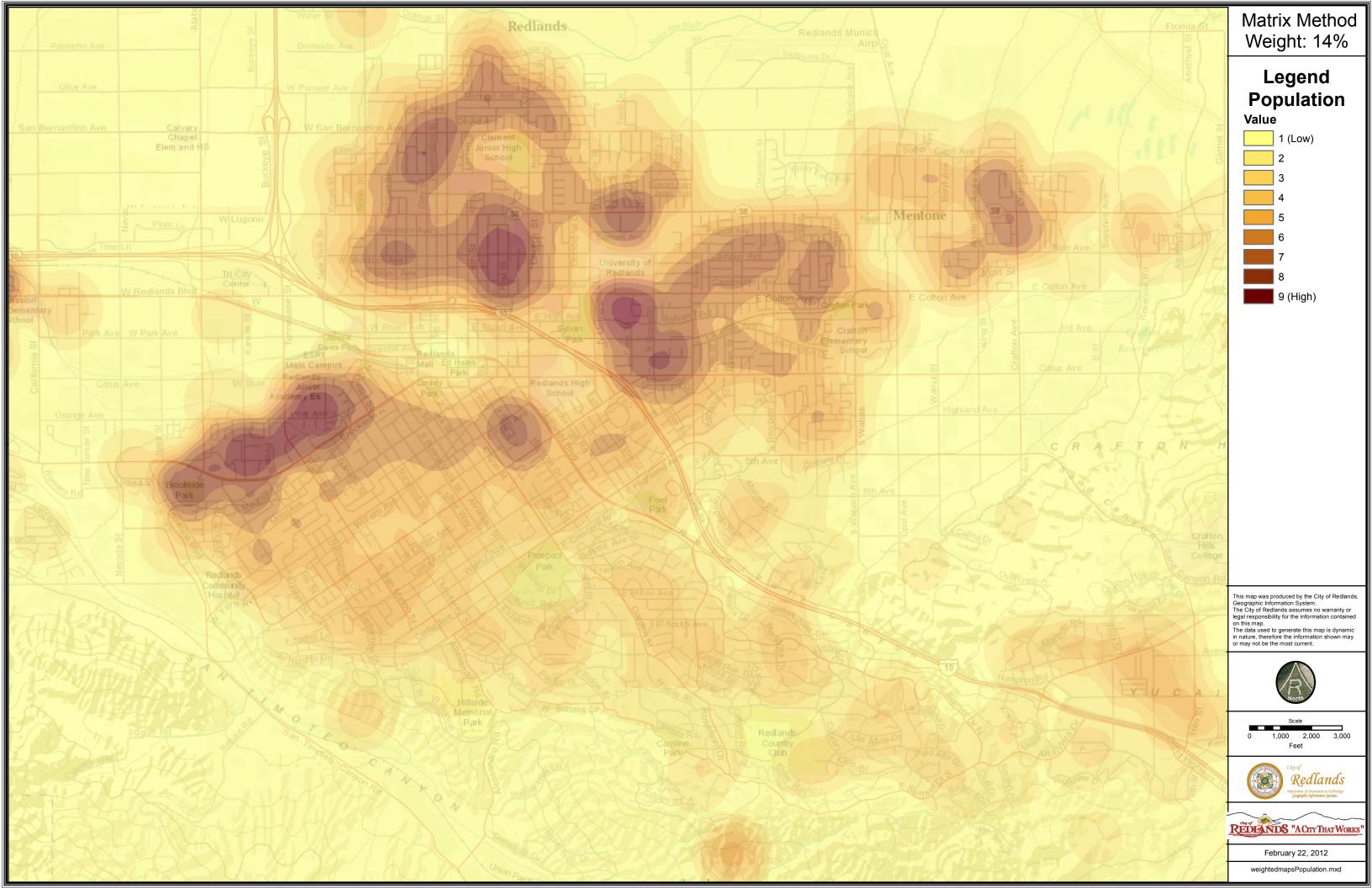
Funding at \$7 million/yr annually results in an increase in the average PCI each year, after an initial 4-year decline in the average PCI value. This is the result of roads that are currently rated with a PCI between 10 and 30, rapidly declining into the 0-10 PCI range. These roads are already considered "failed" roads today and thus not priority streets. However, as roads in the 31 to 60 PCI range are treated, approximately 61% of City roads will eventually have a PCI above 60. Today less than half of City roads have a PCI value above 60.

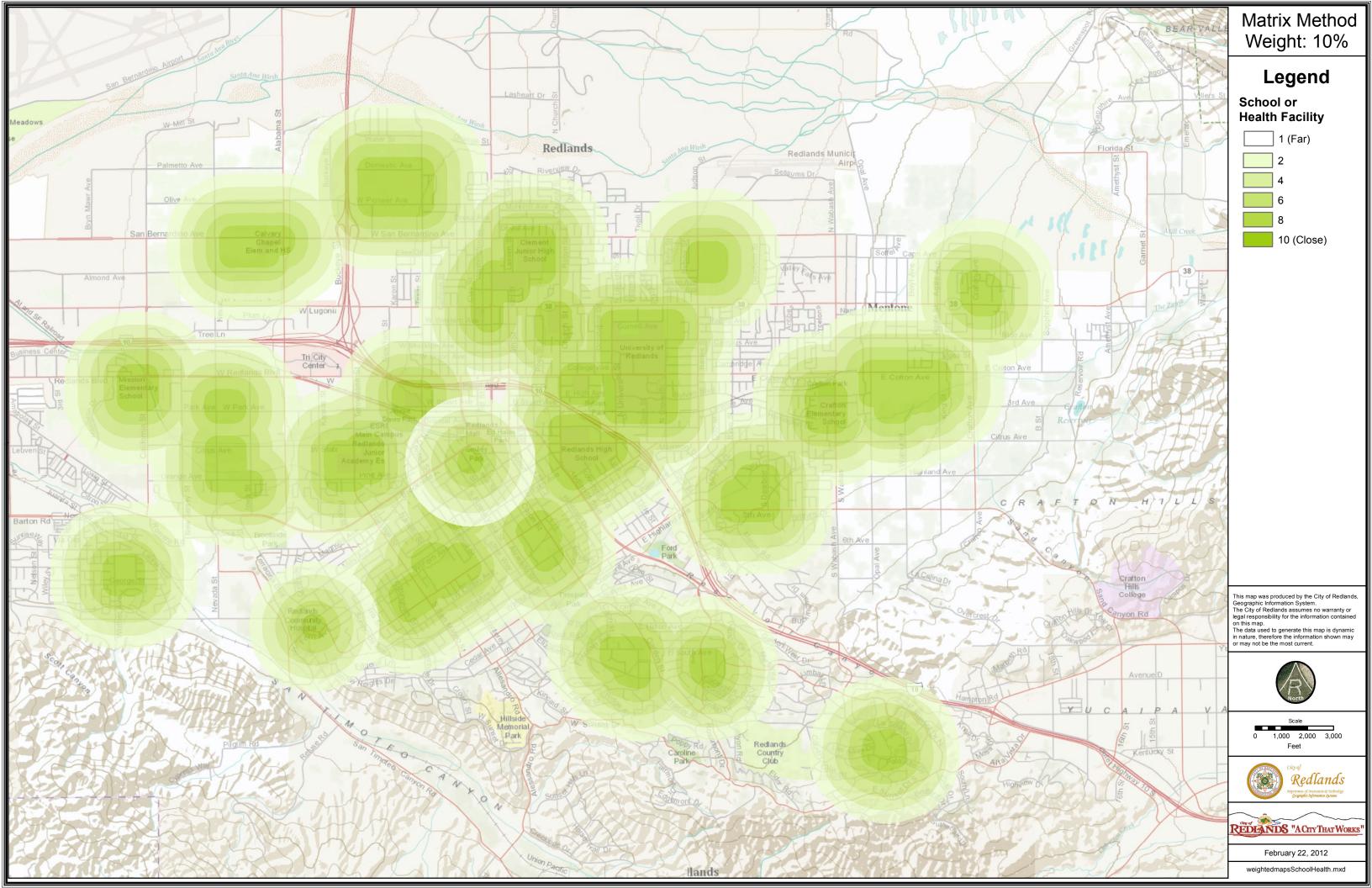
Appendix B

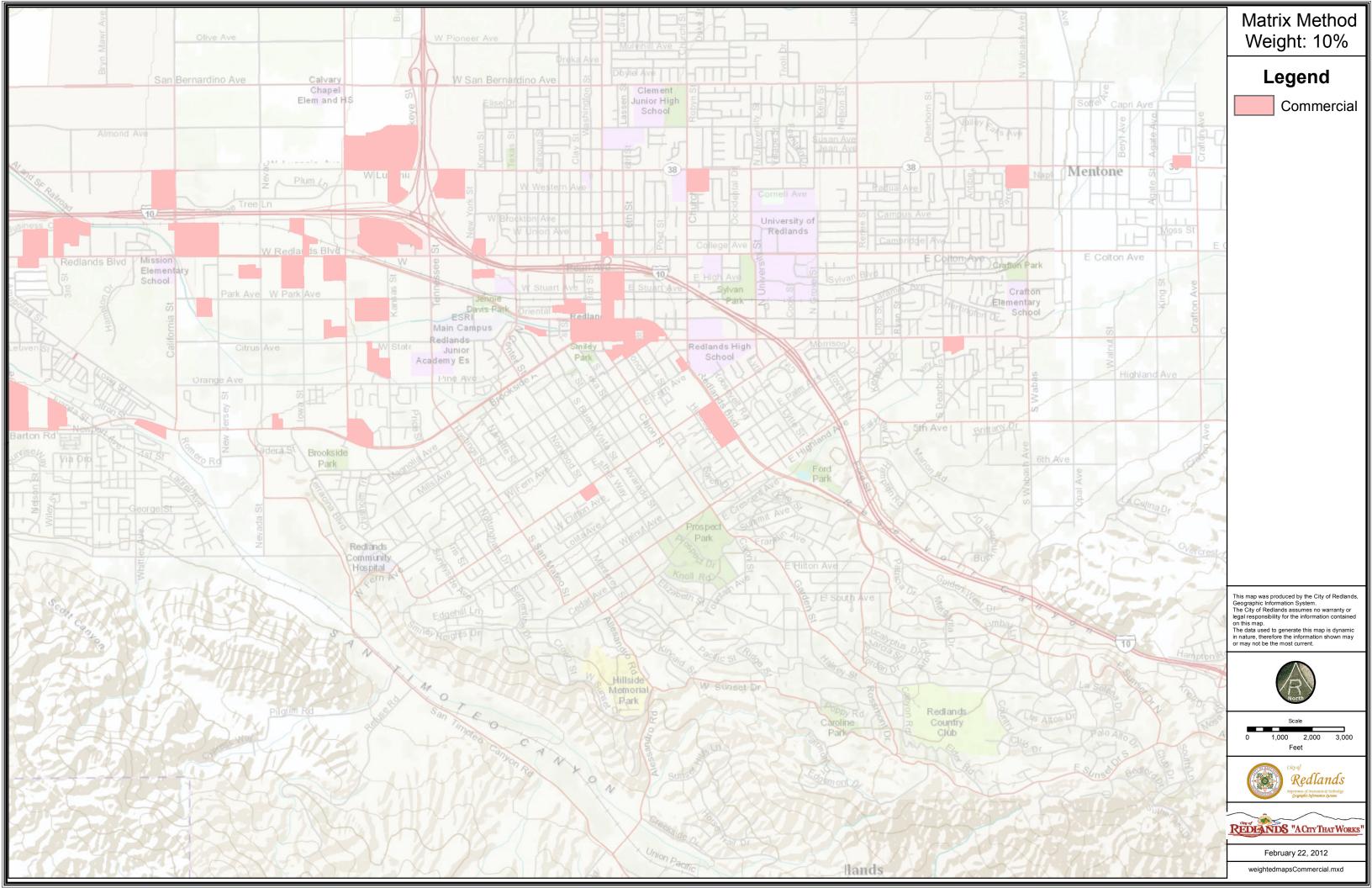
Matrix Method Criteria Maps

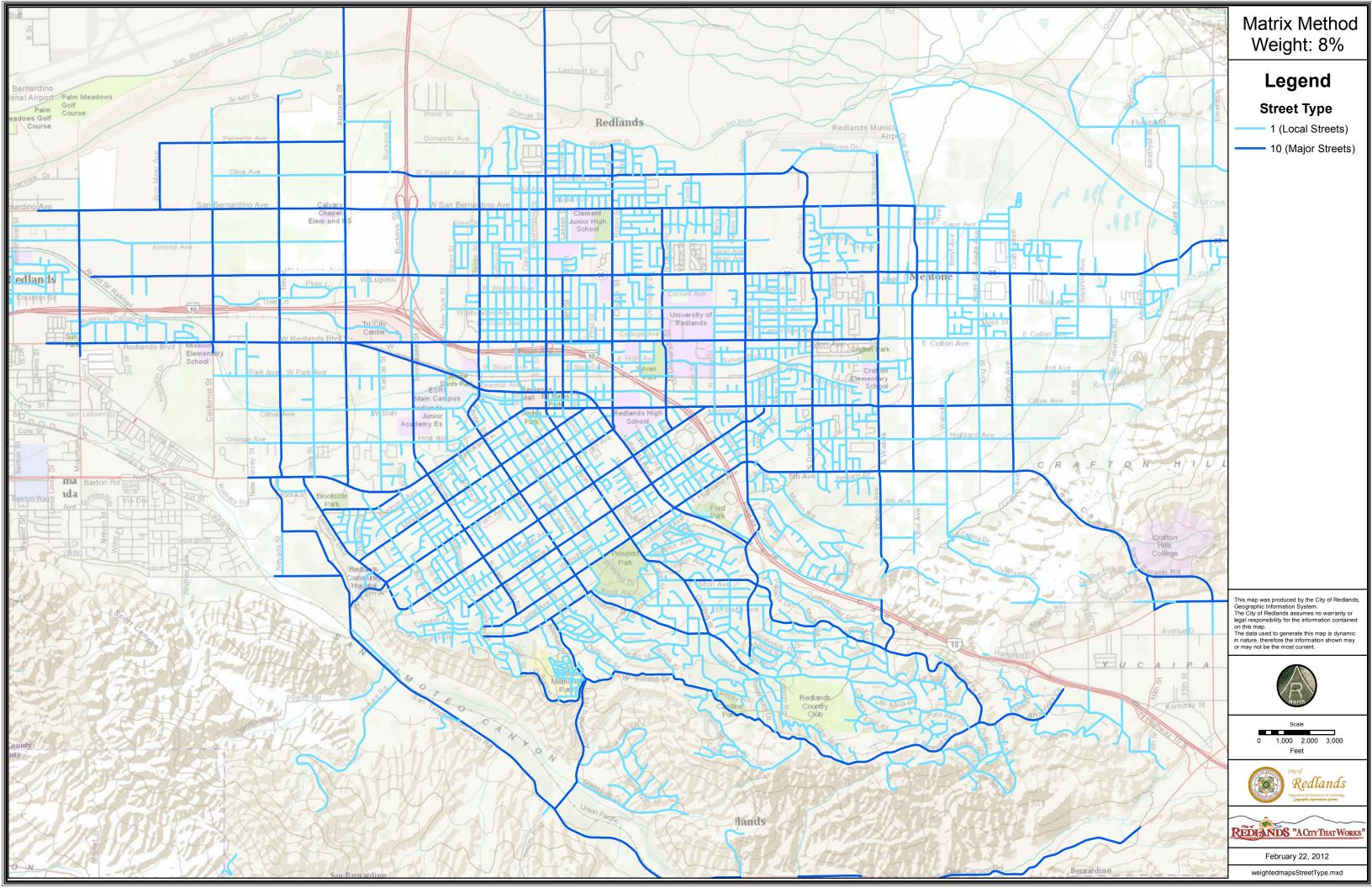


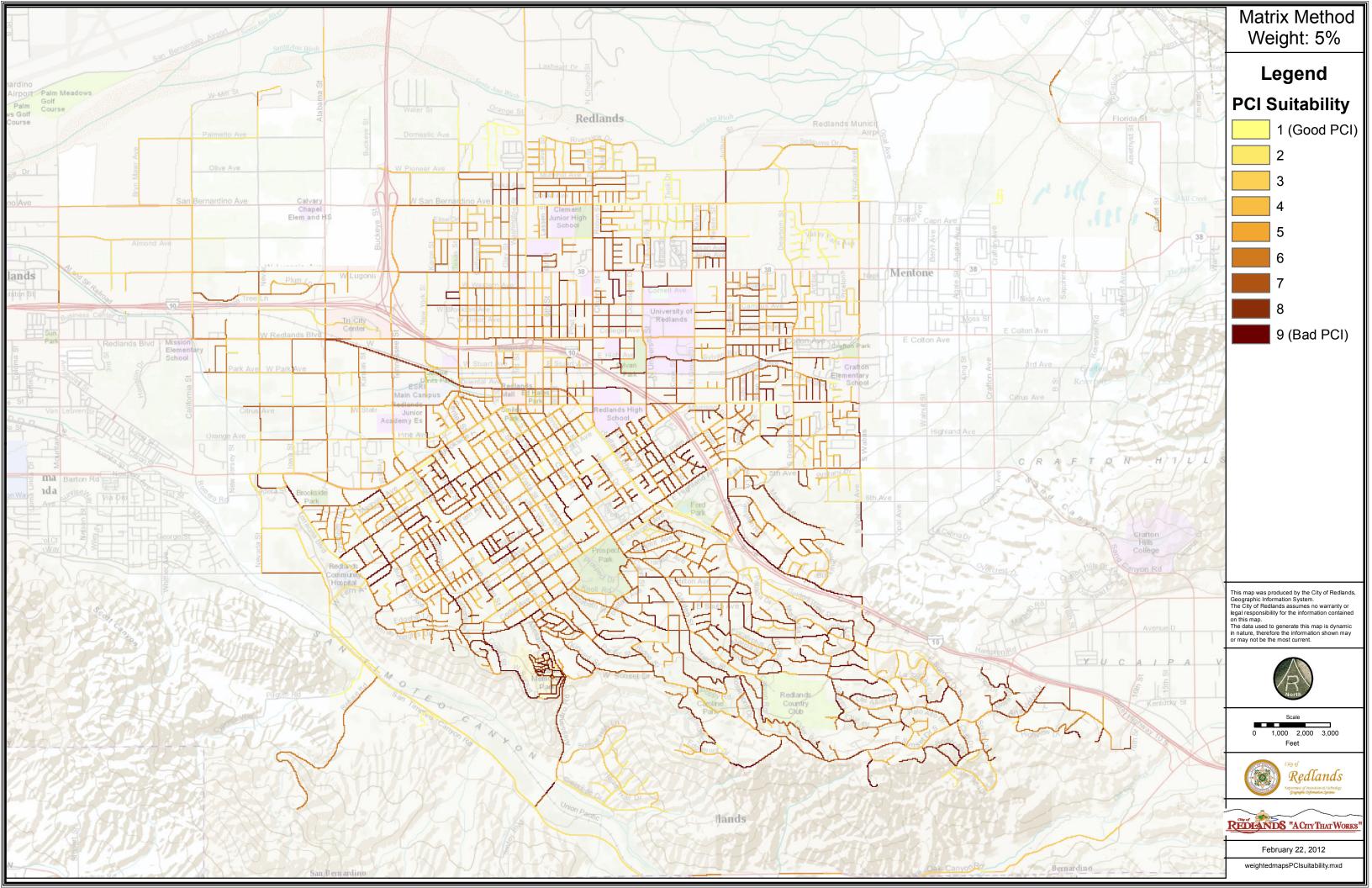


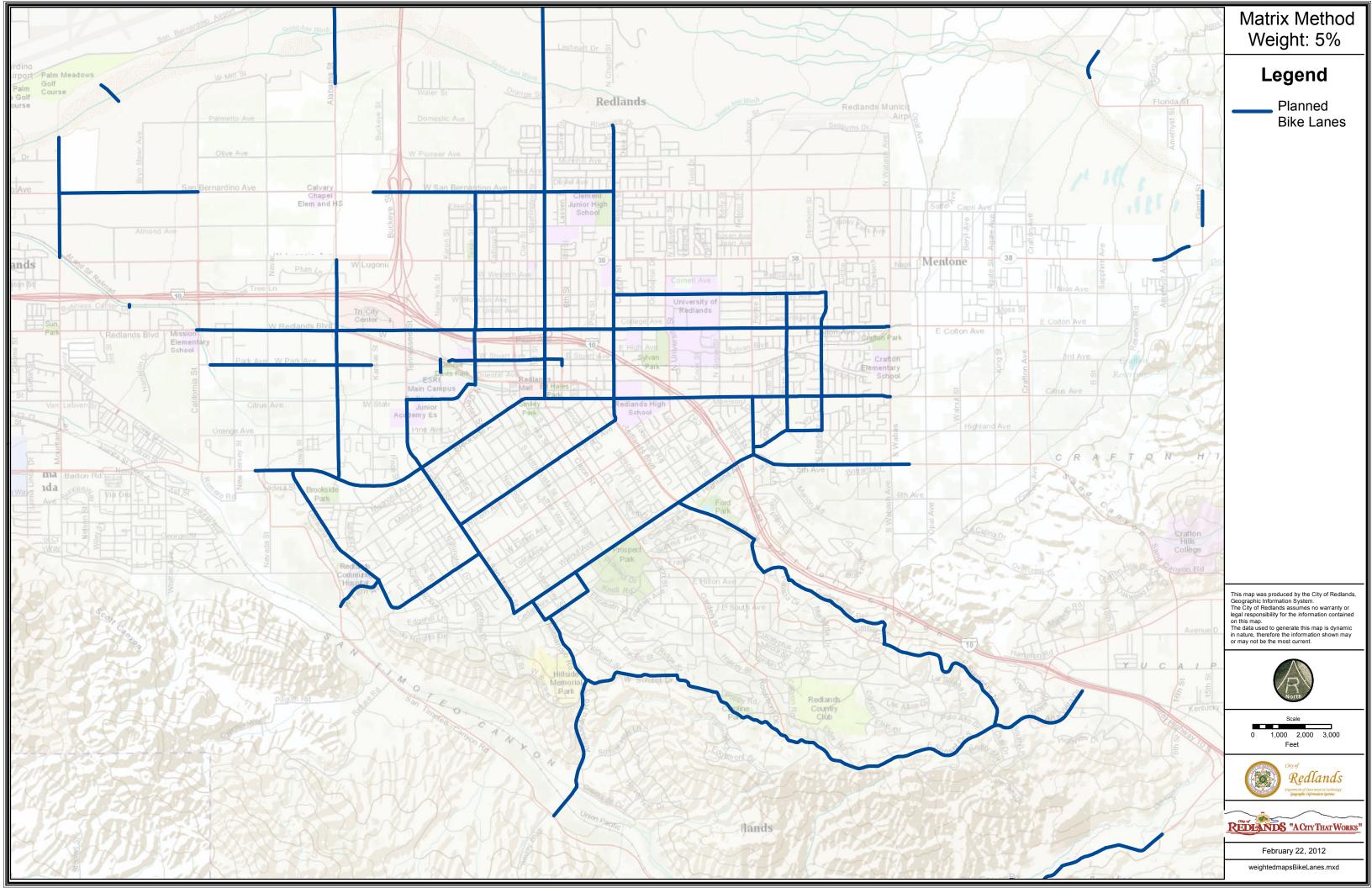


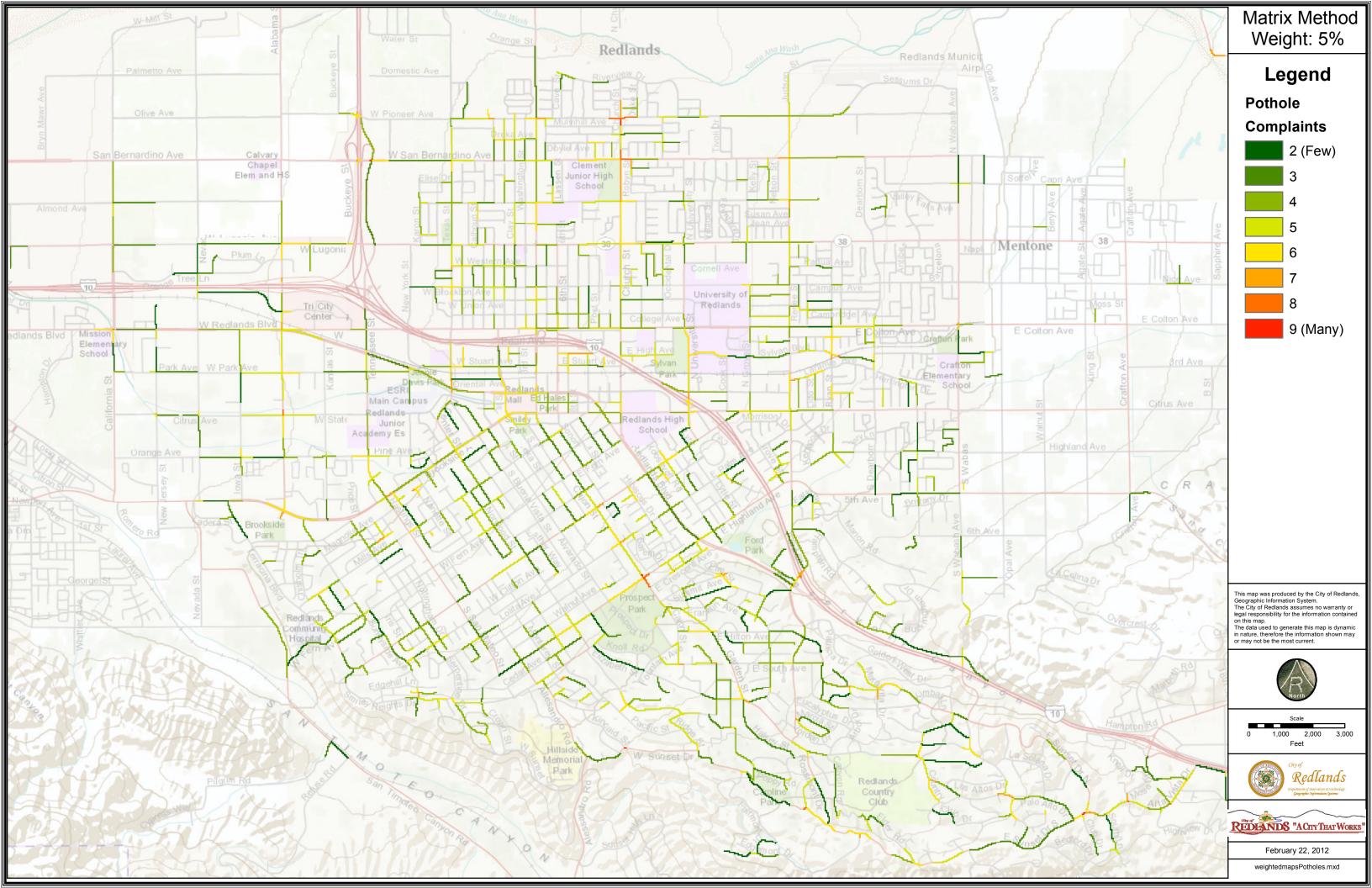


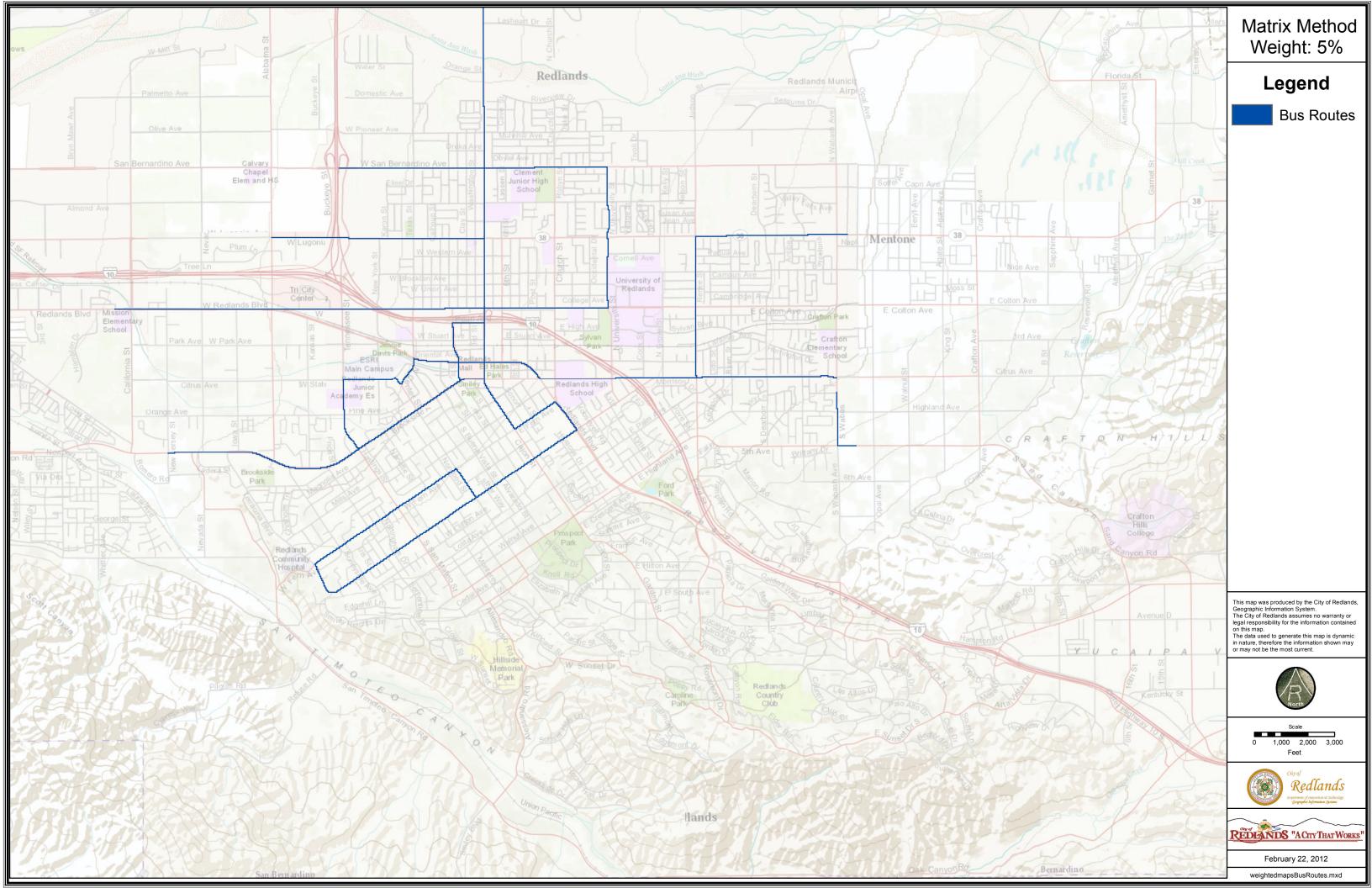


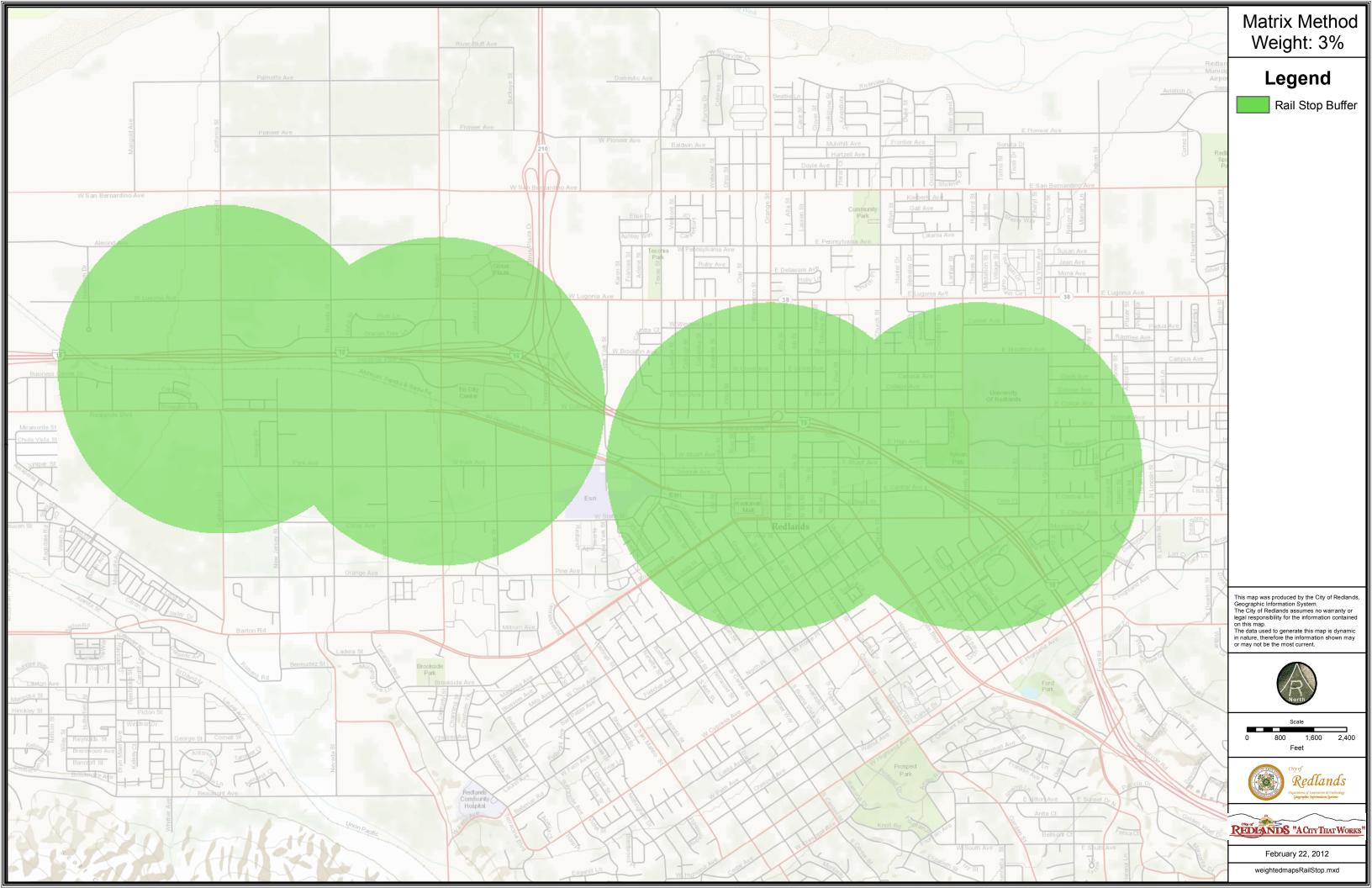












Appendix C

VMT Method Priority List

The attached list indicates approximately the first \$10 million worth of road treatments according to the VMT Method.

Priority Rank	Street Name	From Address	To Address	Length (ft)	Traffic Volume (ADT)	Repair Type	Repair Cost
1	CAJON ST	0	0	25	12000	*Mill + 2" RAC Overlay	\$801
2	COLTON AVE	119	121	21	11000	*Mill + 2" RAC Overlay	\$840
3	LUGONIA AVE	1191	1199	46	20000	*Mill + 2" RAC Overlay	\$3,128
4	UNIVERSITY ST	411	419	46	15000	*Mill + 2" RAC Overlay	\$2,745
5	REDLANDS BLVD	0	0	82	20000	*Rubberized THIN OVERLAY	\$4,564
6	ALABAMA ST	0	0	55	18308	*Mill + 2" RAC Overlay	\$4,439
7	FERN AVE	1121	1123	42	6808	*Rubberized THIN OVERLAY	\$1,780
8	UNIVERSITY ST	101	127	117	15000	2inch Grind Overlay	\$4,147
9	ALABAMA ST	0	0	67	18308	*Mill + 2" RAC Overlay	\$5,419
10	JUDSON ST	351	399	28	5208	*Mill + 2" RAC Overlay	\$1,710
11	COLTON AVE	123	131	98	11000	*Mill + 2" RAC Overlay	\$3,920
12	TEXAS ST	1145	1149	124	10008	1.5 Grind and Overlay	\$3,604
13	ALABAMA ST	0	0	91	18308	*Mill + 2" RAC Overlay	\$7,248
14	ALABAMA ST	0	0	97	18308	*Mill + 2" RAC Overlay	\$7,817
15	UNIVERSITY ST	51	99	109	15000	*Mill + 2" RAC Overlay	\$6,540
16	COLTON AVE	311	319	119	10000	*Mill + 2" RAC Overlay	\$5,117
17	ORANGE TREE LN	1615	1649	72	5008	2inch Grind Overlay	\$2,568
18	ALTA VISTA DR	31438	31440	45	3508	*Mill + 2" RAC Overlay	\$1,804
19	COLTON AVE	991	999	98	10000	*Mill + 2" RAC Overlay	\$5,265
20	COLTON AVE	1001	1025	89	10000	*Mill + 2" RAC Overlay	\$5,340
21	EUREKA ST	401	459	206	10000	1.5 Grind and Overlay	\$6,006
22	LUGONIA AVE	1201	1205	181	20000	*Mill + 2" RAC Overlay	\$12,274
23	TEXAS ST	377	425	211	10008	1.5 Grind and Overlay	\$6,152
24	CITRUS AVE	0	0	173	14000	*Mill + 2" RAC Overlay	\$8,650
25	LUGONIA AVE	601	623	193	18000	*Mill + 2" RAC Overlay	\$11,165
26	LUGONIA AVE	501	505	204	18000	*Mill + 2" RAC Overlay	\$11,803
27	COLTON AVE	1409	1499	329	16000	*Mill + 2" RAC Overlay	\$10,512
28	CITRUS AVE	1119	1127	188	14000	*Mill + 2" RAC Overlay	\$9,375
29	TEXAS ST	427	499	190	10008	2inch Grind Overlay	\$6,749
30	DOYLE AVE	0	0	22	1100	2inch Grind Overlay	\$765
31	NEVADA ST	301	309	140	4000	*Mill + 2" RAC Overlay	\$2,796
32	6TH ST	751	779	118	6000	2inch Grind Overlay	\$4,196
33	REDLANDS BLVD	2071	2099	103	20000	LOCALIZED BASE REPAIR / REPAVE	\$14,832
34	COLTON AVE	101	117	208	11000	*Mill + 2" RAC Overlay	\$8,320
35	COLTON AVE	301	309	211	11000	*Mill + 2" RAC Overlay	\$8,420

Priority Rank	Street Name	From Address	To Address	Length (ft)	Traffic Volume (ADT)	Repair Type	Repair Cost
36	ORANGE TREE LN	1601	1605	109	5008	2inch Grind Overlay	\$3,881
37	SUNSET DR	0	0	67	2000	*Rubberized THIN OVERLAY	\$1,561
38	ALABAMA ST	41	49	219	15508	*Rubberized THIN OVERLAY	\$12,406
39	TENNESSEE ST	0	0	80	12000	LOCALIZED BASE REPAIR / REPAVE	\$9,602
40	CITRUS AVE	1101	1105	225	14000	*Mill + 2" RAC Overlay	\$11,255
41	CITRUS AVE	1691	1699	208	12000	*Rubberized THIN OVERLAY	\$9,683
42	UNIVERSITY ST	1	49	205	15000	*Mill + 2" RAC Overlay	\$12,288
43	LUGONIA AVE	507	523	264	18000	*Mill + 2" RAC Overlay	\$15,283
44	FORD ST	1111	1139	118	8208	*Mill + 2" RAC Overlay	\$7,092
45	WABASH AVE	1527	1539	65	2700	*Mill + 2" RAC Overlay	\$2,340
46	UNIVERSITY ST	129	145	218	15000	*Mill + 2" RAC Overlay	\$13,050
47	CYPRESS AVE	1535	1599	125	7708	*Crack Repair & Thin Overlay	\$6,730
48	COLTON AVE	1027	1079	148	10000	*Mill + 2" RAC Overlay	\$8,880
49	CITRUS AVE	1107	1117	252	14000	*Mill + 2" RAC Overlay	\$12,580
50	COLTON AVE	921	989	167	10000	*Mill + 2" RAC Overlay	\$8,991
51	CYPRESS AVE	0	0	102	7708	*Rubberized THIN OVERLAY	\$6,981
52	CYPRESS AVE	0	0	103	7708	*Rubberized THIN OVERLAY	\$7,036
53	CYPRESS AVE	0	0	106	7708	*Rubberized THIN OVERLAY	\$7,228
54	TEXAS ST	1551	1557	325	10008	1.5 Grind and Overlay	\$9,481
55	EUREKA ST	709	799	270	10000	2inch Grind Overlay	\$9,594
56	CYPRESS AVE	1515	1519	107	7708	*Mill + 2" RAC Overlay	\$7,401
57	TEXAS ST	1559	1599	340	10008	1.5 Grind and Overlay	\$9,931
58	ALABAMA ST	801	849	231	18308	*Mill + 2" RAC Overlay	\$18,440
59	PIONEER AVE	901	921	75	2000	*Rubberized THIN OVERLAY	\$2,100
60	LUGONIA AVE	101	123	327	18000	*Mill + 2" RAC Overlay	\$18,966
61	LUGONIA AVE	201	227	329	18000	*Mill + 2" RAC Overlay	\$19,082
62	LUGONIA AVE	299	319	329	18000	*Mill + 2" RAC Overlay	\$19,082
63	LUGONIA AVE	401	499	330	18000	*Mill + 2" RAC Overlay	\$19,140
64	LUGONIA AVE	1	99	330	18000	*Mill + 2" RAC Overlay	\$19,140
65	LUGONIA AVE	701	719	332	18000	*Mill + 2" RAC Overlay	\$19,256
66	EUREKA ST	101	199	307	10000	2inch Grind Overlay	\$10,928
67	6TH ST	101	109	192	6000	2inch Grind Overlay	\$6,836
68	SAN BERNARDINO AVE	1001	1199	546	16000	*Mill + 2" RAC Overlay	\$18,547
69	CAJON ST	1011	1099	135	5000	*Mill + 2" RAC Overlay	\$5,805
70	LUGONIA AVE	901	999	316	18000	*Mill + 2" RAC Overlay	\$21,139

Priority Rank	Street Name	From Address	To Address	Length (ft)	Traffic Volume (ADT)	Repair Type	Repair Cost
71	TEXAS ST	1001	1039	410	10008	1.5 Grind and Overlay	\$11,953
72	COLTON AVE	1	99	330	11000	*Mill + 2" RAC Overlay	\$13,200
73	COLTON AVE	201	227	331	11000	*Mill + 2" RAC Overlay	\$13,220
74	MOUNTAIN VIEW AVE	1201	1299	488	11808	1.5 Grind and Overlay	\$14,226
75	COLTON AVE	701	799	366	10000	*Rubberized THIN OVERLAY	\$12,224
76	CITRUS AVE	26790	26798	185	3000	*Mill + 2" RAC Overlay	\$3,706
77	ALABAMA ST	501	599	388	18308	*Mill + 2" RAC Overlay	\$23,292
78	FERN AVE	1209	1211	250	6808	*Mill + 2" RAC Overlay	\$8,757
79	FORD ST	1201	1225	299	8208	2inch Grind Overlay	\$10,618
80	FORD ST	101	125	364	8208	1.5 Grind and Overlay	\$10,625
81	SUMMIT AVE	0	0	15	400	2inch Grind Overlay	\$526
82	FERN AVE	1221	1221	260	6808	*Mill + 2" RAC Overlay	\$9,083
83	CITRUS AVE	1129	1147	377	14000	*Mill + 2" RAC Overlay	\$18,850
84	CITRUS AVE	1149	1249	379	14000	*Mill + 2" RAC Overlay	\$18,950
85	FERN AVE	1201	1207	265	6808	*Mill + 2" RAC Overlay	\$9,272
86	COLTON AVE	1501	1599	688	16000	*Mill + 2" RAC Overlay	\$22,003
87	FERN AVE	1251	1299	270	6808	*Mill + 2" RAC Overlay	\$9,457
88	EUREKA ST	1	25	392	10000	2inch Grind Overlay	\$13,943
89	CITRUS AVE	0	0	280	12000	*Mill + 2" RAC Overlay	\$16,800
90	COLTON AVE	601	623	328	10000	*Mill + 2" RAC Overlay	\$14,083
91	FERN AVE	1223	1249	275	6808	*Mill + 2" RAC Overlay	\$9,629
92	COLTON AVE	501	525	330	10000	*Mill + 2" RAC Overlay	\$14,190
93	COLTON AVE	401	423	330	10000	*Mill + 2" RAC Overlay	\$14,190
94	FERN AVE	1125	1143	228	6808	*Rubberized THIN OVERLAY	\$9,753
95	TERRACINA BLVD	401	419	297	6000	1.5 Grind and Overlay	\$8,658
96	GROVE ST	0	0	48	1208	*Mill + 2" RAC Overlay	\$1,745
97	GRANT ST	0	0	29	600	*1.5 grind and overlay	\$880
98	MOUNTAIN VIEW AVE	1101	1199	595	11808	1.5 Grind and Overlay	\$17,352
99	JUDSON ST	641	649	128	5208	*Mill + 2" RAC Overlay	\$7,680
100	ALABAMA ST	851	899	338	18308	*Mill + 2" RAC Overlay	\$27,024
101	MOUNTAIN VIEW AVE	1001	1099	496	11808	2inch Grind Overlay	\$17,624
102	CYPRESS AVE	979	999	181	7708	*Mill + 2" RAC Overlay	\$11,552
103	KENDALL ST	0	0	25	1000	LOCALIZED BASE REPAIR / REPAVE	\$1,576
104	SUNSET DR	669	671	88	2000	*Mill + 2" RAC Overlay	\$3,164
105	HIGHLAND AVE	841	873	106	4000	*Mill + 2" RAC Overlay	\$6,369

	Priority Rank	Street Name	From Address	To Address	Length (ft)	Traffic Volume (ADT)	Repair Type	Repair Cost
-	106	TERRACINA BLVD	421	515	329	6000	1.5 Grind and Overlay	\$9,598
	107	PALM AVE	1063	1099	102	3000	*Mill + 2" RAC Overlay	\$4,889
	108	FERN AVE	1101	1119	260	6808	*Rubberized THIN OVERLAY	\$11,122
	109	CITRUS AVE	1781	1799	330	12000	*Mill + 2" RAC Overlay	\$19,800
	110	POPPY RD	0	0	13	200	*1.5 grind and overlay	\$340
	111	COLTON AVE	1201	1299	454	16000	*Mill + 2" RAC Overlay	\$27,240
	112	SUNSET DR	501	503	99	2000	*Mill + 2" RAC Overlay	\$3,465
	113	CAJON ST	1201	1227	220	4500	2inch Grind Overlay	\$7,824
	114	CAJON ST	1301	1309	223	4500	2inch Grind Overlay	\$7,937
	115	HIGHLAND AVE	463	499	142	4000	*Mill + 2" RAC Overlay	\$7,083
	116	ALABAMA ST	1	39	379	15508	*Mill + 2" RAC Overlay	\$27,631
	117	CYPRESS AVE	601	623	437	7708	*Mill + 2" RAC Overlay	\$13,974
	118	CYPRESS AVE	1001	1019	220	7708	*Mill + 2" RAC Overlay	\$14,061
	119	6TH ST	101	199	313	6000	2inch Grind Overlay	\$11,134
	120	5TH AVE	1301	1309	352	6708	2inch Grind Overlay	\$12,503
	121	6TH ST	1	99	320	6000	2inch Grind Overlay	\$11,383
	122	TEXAS ST	1501	1549	652	10008	1.5 Grind and Overlay	\$19,021
	123	REDLANDS BLVD	2057	2069	530	20000	*Mill + 2" RAC Overlay	\$38,124
	124	TEXAS ST	251	299	128	8000	LOCALIZED BASE REPAIR / REPAVE	\$15,360
	125	TEXAS ST	1201	1249	661	10008	1.5 Grind and Overlay	\$19,298
	126	5TH ST	101	125	310	4000	*Crack Repair & Thin Overlay	\$7,726
	127	WABASH AVE	12611	12613	118	2500	*Mill + 2" RAC Overlay	\$4,854
	128	CEDAR AVE	1237	1239	66	1200	*Mill + 2" RAC Overlay	\$2,376
	129	UNIVERSITY ST	421	599	502	15000	*Mill + 2" RAC Overlay	\$30,126
	130	HIGHLAND AVE	0	0	36	2000	Full Reconstruction	\$4,032
	131	CENTER ST	193	199	146	4308	*Mill + 2" RAC Overlay	\$8,748
	132	STUART AVE	201	235	330	4000	*Crack Repair & Thin Overlay	\$8,213
	133	CYPRESS AVE	1021	1029	250	7708	*Mill + 2" RAC Overlay	\$16,019
	134	6TH ST	1	25	351	6000	2inch Grind Overlay	\$12,478
	135	STATE ST	951	999	266	4000	*Mill + 2" RAC Overlay	\$8,496
	136	HIGHLAND AVE	817	839	143	4000	*Mill + 2" RAC Overlay	\$8,566
	137	COLTON AVE	101	119	330	9200	*Mill + 2" RAC Overlay	\$19,770
	138	COLTON AVE	1	99	330	9200	*Mill + 2" RAC Overlay	\$19,800
	139	SUNSET DR	31000	31010	182	2000	*Mill + 2" RAC Overlay	\$4,363
	140	IOWA ST	11090	11052	293	4000	*1.5 grind and overlay	\$8,864

Priority Rank	Street Name	From Address	To Address	Length (ft)	Traffic Volume (ADT)	Repair Type	Repair Cost
141	UNIVERSITY ST	201	351	568	15000	*Mill + 2" RAC Overlay	\$34,074
142	CYPRESS AVE	501	539	364	7708	*Rubberized THIN OVERLAY	\$17,529
143	NEW YORK ST	455	499	288	8000	LOCALIZED BASE REPAIR / REPAVE	\$18,419
144	ALTA ST	1709	1723	260	1200	*Crack Repair and SLURRY SEAL	\$2,773
145	HIGHLAND AVE	423	439	333	4000	*Rubberized THIN OVERLAY	\$9,318
146	ALTA ST	1627	1707	263	1200	*Crack Repair and SLURRY SEAL	\$2,803
147	HIGHLAND AVE	875	899	158	4000	*Mill + 2" RAC Overlay	\$9,481
148	CALIFORNIA ST	801	1035	984	12000	1.5 Grind and Overlay	\$28,709
149	REDLANDS BLVD	2001	2055	675	20000	*Mill + 2" RAC Overlay	\$48,564
150	VINE ST	1	99	411	6000	2inch Grind Overlay	\$14,597
151	CYPRESS AVE	1235	1243	285	7708	*Mill + 2" RAC Overlay	\$18,784
152	WABASH AVE	1151	1299	437	10000	*Mill + 2" RAC Overlay	\$24,472
153	SUNSET DR	31012	31014	205	2000	*Mill + 2" RAC Overlay	\$4,926
154	HIGHLAND AVE	1	19	200	4000	*Mill + 2" RAC Overlay	\$10,019
155	CYPRESS AVE	997	1017	283	7708	*Rubberized THIN OVERLAY	\$19,370
156	CLIFTON AVE	1063	1079	85	1200	2inch Grind Overlay	\$3,026
157	ALABAMA ST	901	1099	579	18308	*Mill + 2" RAC Overlay	\$46,328
158	ALABAMA ST	1101	1249	575	18308	*Mill + 2" RAC Overlay	\$46,535
159	BERKELEY DR	0	0	51	600	*1.5 grind and overlay	\$1,541
160	BROCKTON AVE	901	917	186	2308	*Mill + 2" RAC Overlay	\$5,952
161	PIONEER AVE	701	729	389	3000	*Mill + 2" RAC Overlay	\$7,780
162	OCCIDENTAL DR	1751	1769	88	1200	2inch Grind Overlay	\$3,129
163	FORD ST	1	61	603	8208	2inch Grind Overlay	\$21,432
164	CHURCH ST	1621	1639	204	2500	*Mill + 2" RAC Overlay	\$6,528
165	TENNESSEE ST	501	549	567	13000	*Mill + 2" RAC Overlay	\$33,996
166	WABASH AVE	12615	12635	160	2500	*Mill + 2" RAC Overlay	\$6,556
167	8TH ST	101	119	296	4000	2inch Grind Overlay	\$10,508
168	COOK ST	351	401	44	500	*1.5 grind and overlay	\$1,315
169	SAN BERNARDINO AVE	601	799	705	16000	*Mill + 2" RAC Overlay	\$42,300
170	CAJON ST	301	353	635	7000	1.5 Grind and Overlay	\$18,537
171	TEXAS ST	501	679	748	10008	2inch Grind Overlay	\$26,592
172	ALABAMA ST	281	299	697	15508	*Mill + 2" RAC Overlay	\$41,826
173	JUDSON ST	301	349	237	5208	*Mill + 2" RAC Overlay	\$14,244
174	GROVE ST	361	409	52	1208	LOCALIZED BASE REPAIR / REPAVE	\$3,304
175	LAKESIDE AVE	1	11	103	1200	*Mill + 2" RAC Overlay	\$3,296

Priority Rank	Street Name	From Address	To Address	Length (ft)	Traffic Volume (ADT)	Repair Type	Repair Cost
176	CAJON ST	1101	1117	351	4500	2inch Grind Overlay	\$12,473
177	7TH ST	101	199	312	4000	2inch Grind Overlay	\$11,105
178	REFUSE RD	0	0	78	1000	2inch Grind Overlay	\$2,788
179	COLTON AVE	1645	1663	826	9208	*Rubberized THIN OVERLAY	\$25,698
180	CYPRESS AVE	1031	1047	340	7708	*Mill + 2" RAC Overlay	\$21,734
181	CAJON ST	1229	1299	358	4500	2inch Grind Overlay	\$12,734
182	CYPRESS AVE	101	119	352	7708	*Mill + 2" RAC Overlay	\$21,830
183	8TH ST	1	99	320	4000	2inch Grind Overlay	\$11,383
184	CYPRESS AVE	201	333	458	7708	*Rubberized THIN OVERLAY	\$22,100
185	COLTON AVE	1601	1643	851	9208	*Rubberized THIN OVERLAY	\$26,476
186	PIONEER AVE	951	967	160	2000	*Mill + 2" RAC Overlay	\$5,760
187	COLTON AVE	1665	1689	663	9208	*Mill + 2" RAC Overlay	\$26,520
188	ALABAMA ST	101	169	612	15508	*Mill + 2" RAC Overlay	\$44,676
189	TENNESSEE ST	401	463	629	13000	*Mill + 2" RAC Overlay	\$37,740
190	CYPRESS AVE	1601	1655	325	7708	*Mill + 2" RAC Overlay	\$22,432
191	MARIPOSA DR	555	559	204	2500	*Mill + 2" RAC Overlay	\$7,357
192	SUNSET DR	30480	30526	204	2000	*Mill + 2" RAC Overlay	\$5,928
193	TENNESSEE ST	601	773	657	13000	*Mill + 2" RAC Overlay	\$39,390
194	ALABAMA ST	601	799	940	18308	*Mill + 2" RAC Overlay	\$56,412
195	STATE ST	901	949	386	4000	*Mill + 2" RAC Overlay	\$12,349
196	TENNESSEE ST	1177	1299	759	13000	*Crack Repair & Thin Overlay	\$40,148
197	SUNSET DR	201	205	195	2000	*Mill + 2" RAC Overlay	\$6,237
198	CITRUS AVE	1901	1949	472	3000	*Mill + 2" RAC Overlay	\$9,430
199	ALTA VISTA DR	31420	31436	277	3508	*Mill + 2" RAC Overlay	\$11,092
200	HIGHLAND AVE	1217	1311	264	4000	*Mill + 2" RAC Overlay	\$12,648
201	9TH ST	201	259	107	1200	2inch Grind Overlay	\$3,805
202	SAN MATEO ST	829	931	355	4000	*Mill + 2" RAC Overlay	\$12,776
203	CAJON ST	501	557	660	6000	1.5 Grind and Overlay	\$19,260
204	FERN AVE	915	949	399	6808	*Mill + 2" RAC Overlay	\$21,962
205	HIGHLAND AVE	159	171	259	4000	*Mill + 2" RAC Overlay	\$12,930
206	REDLANDS BLVD	1401	1599	1352	20000	*Mill + 2" RAC Overlay	\$64,886
207	ALTA VISTA DR	31536	31592	359	3508	*Mill + 2" RAC Overlay	\$11,498
208	PARKFORD DR	1000	1024	370	4000	2inch Grind Overlay	\$13,161
209	ALABAMA ST	323	499	851	15508	*Mill + 2" RAC Overlay	\$51,030
210	ALTA VISTA DR	31500	31534	362	3508	*Mill + 2" RAC Overlay	\$11,594

Priority Rank	Street Name	From Address	To Address	Length (ft)	Traffic Volume (ADT)	Repair Type	Repair Cost
211	CYPRESS AVE	1	99	411	7708	*Mill + 2" RAC Overlay	\$25,494
212	JUDSON ST	901	919	321	5208	*Mill + 2" RAC Overlay	\$17,307
213	CAJON ST	201	263	660	7000	2inch Grind Overlay	\$23,473
214	ORANGE TREE LN	1801	1899	473	5008	2inch Grind Overlay	\$16,820
215	JUDSON ST	1001	1079	329	5208	*Mill + 2" RAC Overlay	\$17,739
216	HILTON AVE	99	101	165	1200	*Rubberized THIN OVERLAY	\$4,094
217	JUDSON ST	921	939	330	5208	*Mill + 2" RAC Overlay	\$17,793
218	CHURCH ST	1721	1799	238	2500	*Mill + 2" RAC Overlay	\$8,568
219	SUNSET DR	101	199	108	2000	LOCALIZED BASE REPAIR / REPAVE	\$6,893
220	PALM AVE	1201	1207	216	3000	*Mill + 2" RAC Overlay	\$10,384
221	JUDSON ST	801	899	335	5208	*Mill + 2" RAC Overlay	\$18,079
222	CITRUS AVE	1701	1779	698	12000	*Mill + 2" RAC Overlay	\$41,886
223	ALTA ST	1725	1751	263	800	*Crack Repair and SLURRY SEAL	\$2,803
224	KANSAS ST	0	0	111	2000	LOCALIZED BASE REPAIR / REPAVE	\$7,081
225	WABASH AVE	941	1099	507	8000	*Mill + 2" RAC Overlay	\$28,364
226	PIONEER AVE	923	949	256	2000	*Rubberized THIN OVERLAY	\$7,168
227	CYPRESS AVE	401	411	449	7708	*Mill + 2" RAC Overlay	\$27,844
228	CYPRESS AVE	1501	1513	406	7708	*Mill + 2" RAC Overlay	\$28,014
229	LUGONIA AVE	801	857	978	18000	*Mill + 2" RAC Overlay	\$65,493
230	9TH ST	101	149	171	4000	*Full Reconstruction (LOCAL)	\$14,618
231	PALM AVE	901	959	233	3000	*Mill + 2" RAC Overlay	\$11,184
232	COLTON AVE	1401	1427	572	9200	*Mill + 2" RAC Overlay	\$34,320
233	FORD ST	0	0	400	5000	*Rubberized THIN OVERLAY	\$18,662
234	CLIFTON AVE	1217	1219	126	1200	2inch Grind Overlay	\$4,484
235	CHURCH ST	1641	1699	260	2500	*Mill + 2" RAC Overlay	\$9,360
236	PALM AVE	1209	1219	235	3000	*Mill + 2" RAC Overlay	\$11,256
237	HIGHLAND AVE	1251	1271	386	4000	*Mill + 2" RAC Overlay	\$15,040
238	ORANGE TREE LN	1607	1613	530	5008	2inch Grind Overlay	\$18,847
239	CYPRESS AVE	801	899	330	7708	*Mill + 2" RAC Overlay	\$29,075
240	STUART AVE	501	545	499	4000	*1.5 grind and overlay	\$15,090
241	JUDSON ST	727	799	331	5208	*Mill + 2" RAC Overlay	\$19,830
242	TERRACINA BLVD	517	567	643	6000	2inch Grind Overlay	\$22,869
243	CYPRESS AVE	1521	1533	430	7708	*Mill + 2" RAC Overlay	\$29,636
244	STUART AVE	301	425	622	4000	*Crack Repair & Thin Overlay	\$15,468
245	PENNSYLVANIA AVE	601	619	194	1800	*Mill + 2" RAC Overlay	\$6,984

Priority Rank	Street Name	From Address	To Address	Length (ft)	Traffic Volume (ADT)	Repair Type	Repair Cost
246	NEW JERSEY ST	701	799	765	7000	2inch Grind Overlay	\$27,211
247	LUGONIA AVE	1001	1119	1126	19000	*Mill + 2" RAC Overlay	\$75,409
248	STUART AVE	601	799	526	4000	*1.5 grind and overlay	\$15,882
249	PALM AVE	727	739	253	3000	*Mill + 2" RAC Overlay	\$12,163
250	LINCOLN ST	501	599	137	1200	2inch Grind Overlay	\$4,875
251	BROCKTON AVE	1377	1399	377	2308	*Rubberized THIN OVERLAY	\$9,383
252	CHURCH ST	1701	1719	283	2500	*Mill + 2" RAC Overlay	\$10,188
253	CLIFTON AVE	1209	1215	138	1200	2inch Grind Overlay	\$4,914
254	FRANKLIN AVE	385	399	198	1200	*Rubberized THIN OVERLAY	\$4,923
255	VINE ST	101	133	386	6000	LOCALIZED BASE REPAIR / REPAVE	\$24,685
256	GROVE ST	949	967	125	1208	*Mill + 2" RAC Overlay	\$4,983
257	CRESCENT AVE	601	617	155	1200	*Mill + 2" RAC Overlay	\$4,954
258	PALM AVE	701	713	259	3000	*Mill + 2" RAC Overlay	\$12,422
259	HIGHLAND AVE	1241	1249	425	4000	*Mill + 2" RAC Overlay	\$16,587
260	SAN BERNARDINO AVE	801	999	1955	16000	*Mill + 2" RAC Overlay	\$66,470
261	PALM AVE	801	899	261	3000	*Mill + 2" RAC Overlay	\$12,538
262	SERPENTINE DR	1203	1213	263	2000	*Mill + 2" RAC Overlay	\$8,400
263	CYPRESS AVE	1101	1199	510	7708	*Mill + 2" RAC Overlay	\$32,621
264	PIONEER AVE	855	899	304	2000	*Rubberized THIN OVERLAY	\$8,512
265	SUNSET DR	201	220	294	2000	*Mill + 2" RAC Overlay	\$8,519
266	JUDSON ST	601	639	371	5208	*Mill + 2" RAC Overlay	\$22,260
267	KENDALL ST	201	207	67	1000	LOCALIZED BASE REPAIR / REPAVE	\$4,288
268	BROCKTON AVE	821	833	230	1708	*Mill + 2" RAC Overlay	\$7,360
269	RESERVOIR RD	1625	1637	386	2700	*1.5 grind and overlay	\$11,666
270	RESERVOIR RD	1601	1623	388	2700	*1.5 grind and overlay	\$11,720
271	JUDSON ST	201	217	377	5208	*Mill + 2" RAC Overlay	\$22,614
272	CRESCENT AVE	619	625	164	1200	*Mill + 2" RAC Overlay	\$5,238
273	FRANKLIN AVE	1567	1575	146	1200	*Mill + 2" RAC Overlay	\$5,267
274	BROOKSIDE AVE	1259	1265	334	12708	LOCALIZED BASE REPAIR / REPAVE	\$56,078
275	BROCKTON AVE	821	847	320	2308	*Mill + 2" RAC Overlay	\$10,240
276	PALM AVE	715	725	278	3000	*Mill + 2" RAC Overlay	\$13,320
277	BROCKTON AVE	757	769	321	2308	*Mill + 2" RAC Overlay	\$10,272
278	CAJON ST	701	759	630	5000	2inch Grind Overlay	\$22,389
279	BROCKTON AVE	501	531	325	2308	*Mill + 2" RAC Overlay	\$10,400
280	SUNSET DR	31082	31094	379	2000	*Mill + 2" RAC Overlay	\$9,086

Priority Rank	Street Name	From Address	To Address	Length (ft)	Traffic Volume (ADT)	Repair Type	Repair Cost
281	PALM AVE	677	699	284	3000	*Mill + 2" RAC Overlay	\$13,642
282	BROCKTON AVE	1	99	329	2308	*Mill + 2" RAC Overlay	\$10,528
283	CHURCH ST	1601	1619	317	2500	*Mill + 2" RAC Overlay	\$11,412
284	BROCKTON AVE	201	299	330	2308	*Mill + 2" RAC Overlay	\$10,544
285	BROCKTON AVE	101	169	330	2308	*Mill + 2" RAC Overlay	\$10,544
286	BROCKTON AVE	301	323	330	2308	*Mill + 2" RAC Overlay	\$10,544
287	CHISHOLM TRL	137	139	92	500	*Crack Repair & Thin Overlay	\$2,290
288	SUNSET DR	30300	30350	317	2000	*Mill + 2" RAC Overlay	\$9,186
289	FRANKLIN AVE	341	349	153	1200	*Mill + 2" RAC Overlay	\$5,515
290	BROCKTON AVE	401	449	333	2308	*Mill + 2" RAC Overlay	\$10,656
291	PARKFORD DR	1026	1098	520	4000	2inch Grind Overlay	\$18,473
292	5TH AVE	1601	1649	523	6708	*Mill + 2" RAC Overlay	\$31,380
293	TEXAS ST	1301	1451	1317	10008	2inch Grind Overlay	\$46,829
294	SUNSET DR	901	939	247	2000	*Mill + 2" RAC Overlay	\$9,378
295	BROCKTON AVE	799	819	340	2308	*Mill + 2" RAC Overlay	\$10,880
296	BROCKTON AVE	601	699	341	2308	*Mill + 2" RAC Overlay	\$10,896
297	LUGONIA AVE	2001	2099	1304	8000	1.5 Grind and Overlay	\$38,054
298	ARIZONA ST	1151	1249	387	2000	*Crack Repair & Thin Overlay	\$9,637
299	SAN MATEO ST	401	413	323	4000	*Mill + 2" RAC Overlay	\$19,404
300	PARK AVE	2001	2009	193	1400	2inch Grind Overlay	\$6,845
301	NEVADA ST	10901	11051	978	4000	*Mill + 2" RAC Overlay	\$19,560
302	CAJON ST	601	659	690	5000	2inch Grind Overlay	\$24,536
303	RESERVOIR RD	1551	1599	439	2700	*1.5 grind and overlay	\$13,277
304	PALM AVE	1	27	325	3000	*Mill + 2" RAC Overlay	\$14,950
305	COLTON AVE	1429	1471	768	9200	*Mill + 2" RAC Overlay	\$46,080
306	DEARBORN ST	931	945	261	3108	*Mill + 2" RAC Overlay	\$15,660
307	REDLANDS BLVD	1701	1899	1310	20000	*Mill + 2" RAC Overlay	\$100,870
308	ARBOR DR	1691	1699	102	500	*Crack Repair & Thin Overlay	\$2,531
309	LA SOLANA DR	12697	12701	238	500	*Crack Repair and SLURRY SEAL	\$2,541
310	BROCKTON AVE	1501	1513	330	2308	2inch Grind Overlay	\$11,735
311	REDLANDS BLVD	1601	1699	1323	20000	*Mill + 2" RAC Overlay	\$101,833
312	7TH ST	1	99	320	4000	LOCALIZED BASE REPAIR / REPAVE	\$20,499
313	PENNSYLVANIA AVE	101	149	330	1800	*Rubberized THIN OVERLAY	\$9,226
314	PENNSYLVANIA AVE	1	49	331	1800	*Rubberized THIN OVERLAY	\$9,254
315	PALO ALTO DR	30660	30692	210	1308	*Mill + 2" RAC Overlay	\$6,733

	Priority Rank	Street Name	From Address	To Address	Length (ft)	Traffic Volume (ADT)	Repair Type	Repair Cost
-	316	ALABAMA ST	27240	11150	1096	15508	*Mill + 2" RAC Overlay	\$80,037
	317	ROOSEVELT RD	901	919	129	700	*Crack Repair & Thin Overlay	\$3,625
	318	COUNTRY CLUB DR	1663	1673	88	600	2inch Grind Overlay	\$3,116
	319	FLORIDA ST	31720	31724	142	600	*Mill + 2" RAC Overlay	\$3,117
	320	OLIVE AVE	1201	1225	450	5000	*Mill + 2" RAC Overlay	\$26,106
	321	FLORIDA ST	31726	31730	143	600	*Mill + 2" RAC Overlay	\$3,142
	322	SUNSET DR	115	117	364	2000	*Mill + 2" RAC Overlay	\$10,565
	323	PENNSYLVANIA AVE	511	599	265	1800	*Mill + 2" RAC Overlay	\$9,540
	324	OCCIDENTAL DR	1771	1799	179	1200	2inch Grind Overlay	\$6,365
	325	SUNSET DR	1	15	332	2000	*Mill + 2" RAC Overlay	\$10,611
	326	HIGHLAND AVE	21	157	425	4000	*Mill + 2" RAC Overlay	\$21,230
	327	SMILEY HEIGHTS DR	1401	1449	166	1000	*Mill + 2" RAC Overlay	\$5,322
	328	SAN MATEO ST	801	827	446	4000	*Mill + 2" RAC Overlay	\$21,384
	329	LINCOLN ST	919	945	258	1200	*Crack Repair & Thin Overlay	\$6,421
	330	PALO ALTO DR	30500	30554	219	1308	*Mill + 2" RAC Overlay	\$7,020
	331	PALO ALTO DR	643	661	110	1308	LOCALIZED BASE REPAIR / REPAVE	\$7,048
	332	HIGHLAND AVE	223	255	435	4000	*Mill + 2" RAC Overlay	\$21,750
	333	CYPRESS AVE	901	961	476	7708	*Mill + 2" RAC Overlay	\$41,923
	334	SUNSET DR	31054	31080	456	2000	*Mill + 2" RAC Overlay	\$10,934
	335	CLARK ST	623	723	342	4000	LOCALIZED BASE REPAIR / REPAVE	\$21,888
	336	NEW JERSEY ST	601	635	302	3500	LOCALIZED BASE REPAIR / REPAVE	\$19,315
	337	CITRUS AVE	1601	1689	1114	12000	*Mill + 2" RAC Overlay	\$66,846
	338	SUNSET DR	31000	31066	310	2000	*Mill + 2" RAC Overlay	\$11,164
	339	PIONEER AVE	1	27	309	2000	*Mill + 2" RAC Overlay	\$11,415
	340	CLIFTON AVE	1237	1243	277	1200	*Crack Repair & Thin Overlay	\$6,904
	341	5TH AVE	1311	1453	1092	6708	2inch Grind Overlay	\$38,832
	342	DEARBORN ST	1001	1031	300	3108	*Mill + 2" RAC Overlay	\$18,000
	343	COLTON AVE	801	845	1076	10000	*Mill + 2" RAC Overlay	\$58,077
	344	BURNS LN	12801	12803	123	640	*1.5 grind and overlay	\$3,723
	345	SUNSET DR	0	0	402	2000	*Mill + 2" RAC Overlay	\$11,664
	346	DEARBORN ST	1101	1117	305	3108	*Mill + 2" RAC Overlay	\$18,300
	347	NOTTINGHAM DR	521	523	50	300	2inch Grind Overlay	\$1,771
	348	PENNSYLVANIA AVE	865	879	296	1800	*Mill + 2" RAC Overlay	\$10,656
	349	LUGONIA AVE	1901	1999	1335	8000	2inch Grind Overlay	\$47,473
	350	HIGHLAND AVE	701	857	660	4000	*Mill + 2" RAC Overlay	\$23,756

Priority Rank	Street Name	From Address	To Address	Length (ft)	Traffic Volume (ADT)	Repair Type	Repair Cost
351	HIGHLAND AVE	1001	1053	661	4000	*Mill + 2" RAC Overlay	\$23,785
352	HIGHLAND AVE	901	957	661	4000	*Mill + 2" RAC Overlay	\$23,785
353	HIGHLAND AVE	501	655	661	4000	*Mill + 2" RAC Overlay	\$23,792
354	GARDEN ST	0	0	572	4500	*Mill + 2" RAC Overlay	\$26,875
355	FRANKLIN AVE	1577	1579	199	1200	*Mill + 2" RAC Overlay	\$7,170
356	ALTA VISTA DR	31442	31498	527	3508	*Mill + 2" RAC Overlay	\$21,060
357	SERPENTINE DR	1501	1527	335	2000	*Mill + 2" RAC Overlay	\$12,049
358	CLIFTON AVE	1463	1499	259	1200	*Crack Repair & Thin Overlay	\$7,260
359	GREENSPOT RD	32600	32638	217	2000	LOCALIZED BASE REPAIR / REPAVE	\$12,158
360	CLIFTON AVE	1339	1349	262	1200	*Crack Repair & Thin Overlay	\$7,330
361	FRANKLIN AVE	51	99	204	1200	*Mill + 2" RAC Overlay	\$7,333
362	HIGHLAND AVE	701	815	408	4000	*Mill + 2" RAC Overlay	\$24,456
363	9TH ST	261	299	123	1200	LOCALIZED BASE REPAIR / REPAVE	\$7,386
364	CYPRESS AVE	1019	1169	540	7708	*Mill + 2" RAC Overlay	\$47,485
365	WABASH AVE	1001	1149	883	8000	*Mill + 2" RAC Overlay	\$49,459
366	LINCOLN ST	101	199	210	1200	2inch Grind Overlay	\$7,471
367	REFUSE RD	0	0	175	1000	2inch Grind Overlay	\$6,237
368	GARDEN ST	1555	1593	423	3250	*Mill + 2" RAC Overlay	\$20,285
369	SUNSET DR	17	99	390	2000	*Mill + 2" RAC Overlay	\$12,483
370	TENNESSEE ST	301	343	625	12000	LOCALIZED BASE REPAIR / REPAVE	\$74,952
371	SUNSET DR	323	329	349	2000	*Mill + 2" RAC Overlay	\$12,546
372	PENNSYLVANIA AVE	1361	1375	318	1800	2inch Grind Overlay	\$11,308
373	FERN AVE	1001	1055	780	6808	*Mill + 2" RAC Overlay	\$42,884
374	PENNSYLVANIA AVE	1101	1117	320	1800	2inch Grind Overlay	\$11,379
375	WABASH AVE	1801	1839	481	2500	*Mill + 2" RAC Overlay	\$15,886
376	PALO ALTO DR	601	603	260	1308	*Mill + 2" RAC Overlay	\$8,324
377	PENNSYLVANIA AVE	201	227	321	1800	*Mill + 2" RAC Overlay	\$11,538
378	COLTON AVE	1081	1199	1084	10000	*Mill + 2" RAC Overlay	\$65,040
379	TEXAS ST	1751	1799	288	1408	*Mill + 2" RAC Overlay	\$9,213
380	BROCKTON AVE	919	999	474	2308	*Mill + 2" RAC Overlay	\$15,168
381	JUDSON ST	1	155	573	5208	*Mill + 2" RAC Overlay	\$34,392
382	WABASH AVE	1665	1681	405	2500	*Mill + 2" RAC Overlay	\$16,601
383	JUDSON ST	401	599	577	5208	*Mill + 2" RAC Overlay	\$34,590
384	TENNESSEE ST	801	899	637	13000	LOCALIZED BASE REPAIR / REPAVE	\$86,605
385	CENTER ST	1	17	480	4308	*Mill + 2" RAC Overlay	\$28,806

Priority Rank	Street Name	From Address	To Address	Length (ft)	Traffic Volume (ADT)	Repair Type	Repair Cost
386	SUNSET DR	101	105	419	2000	*Mill + 2" RAC Overlay	\$13,395
387	GROVE ST	1001	1019	204	1208	*Mill + 2" RAC Overlay	\$8,144
388	ORANGE TREE LN	1961	1999	950	5008	2inch Grind Overlay	\$33,771
389	PIONEER AVE	301	421	376	2000	*Mill + 2" RAC Overlay	\$13,536
390	INDEPENDENCE AVE	1631	1709	253	1200	*1.5 grind and overlay	\$8,127
391	CLIFTON AVE	925	959	230	1200	2inch Grind Overlay	\$8,186
392	7TH ST	301	343	384	2000	2inch Grind Overlay	\$13,666
393	9TH ST	1	99	321	4000	*Full Reconstruction (LOCAL)	\$27,358
394	CAJON ST	801	1009	1180	5000	1.5 Grind and Overlay	\$34,447
395	INDEPENDENCE AVE	1623	1629	258	1200	*1.5 grind and overlay	\$8,285
396	PENNSYLVANIA AVE	1339	1359	352	1800	2inch Grind Overlay	\$12,517
397	5TH AVE	1501	1599	1316	6708	2inch Grind Overlay	\$46,779
398	7TH ST	401	499	221	2000	LOCALIZED BASE REPAIR / REPAVE	\$14,170
399	HILTON AVE	103	109	266	1200	*Mill + 2" RAC Overlay	\$8,512
400	LUGONIA AVE	1601	1825	2635	13000	2inch Grind Overlay	\$93,704
401	PALM AVE	601	675	452	3000	*Mill + 2" RAC Overlay	\$21,707
402	STATE ST	801	899	912	4000	*Mill + 2" RAC Overlay	\$29,168
403	LAKESIDE AVE	619	629	275	1200	*Mill + 2" RAC Overlay	\$8,800
404	SOUTH AVE	311	313	165	800	2inch Grind Overlay	\$5,867
405	PIONEER AVE	801	853	525	2000	*Rubberized THIN OVERLAY	\$14,694
406	UNIVERSITY ST	1421	1441	251	1208	*Mill + 2" RAC Overlay	\$9,025
407	PALO ALTO DR	30694	30698	306	1308	*Mill + 2" RAC Overlay	\$9,789
408	ALVARADO ST	831	835	141	1200	LOCALIZED BASE REPAIR / REPAVE	\$8,992
409	WEBSTER ST	1541	1549	181	600	*Crack Repair & Thin Overlay	\$4,515
410	HIGHLAND AVE	1101	1167	836	4000	*Mill + 2" RAC Overlay	\$30,107
411	PARK AVE	26591	26599	209	1400	2inch Grind Overlay	\$10,617
412	LAKESIDE AVE	401	409	284	1200	*Mill + 2" RAC Overlay	\$9,101
413	LINCOLN ST	901	917	256	1200	2inch Grind Overlay	\$9,103
414	LINCOLN ST	1115	1127	256	1200	2inch Grind Overlay	\$9,103
415	CRESCENT AVE	0	0	36	300	LOCALIZED BASE REPAIR / REPAVE	\$2,278
416	PIONEER AVE	409	621	786	3000	*Mill + 2" RAC Overlay	\$22,794
417	ORANGE TREE LN	2001	2099	1075	5008	2inch Grind Overlay	\$38,209
418	IOWA ST	10901	11051	1013	4000	*1.5 grind and overlay	\$30,624
419	LINCOLN ST	315	323	260	1200	2inch Grind Overlay	\$9,231
420	LINCOLN ST	1217	1229	260	1200	2inch Grind Overlay	\$9,246

Priority Rank	Street Name	From Address	To Address	Length (ft)	Traffic Volume (ADT)	Repair Type	Repair Cost
421	SUNSET DR	107	113	532	2000	*Mill + 2" RAC Overlay	\$15,428
422	HIGHLAND AVE	601	699	516	4000	*Mill + 2" RAC Overlay	\$30,930
423	LINCOLN ST	947	975	262	1200	2inch Grind Overlay	\$9,317
424	LINCOLN ST	1201	1215	262	1200	2inch Grind Overlay	\$9,317
425	CLIFTON AVE	701	721	83	1200	Full Reconstruction	\$9,335
426	NEW JERSEY ST	501	535	767	3500	2inch Grind Overlay	\$27,264
427	SUMMIT AVE	77	101	88	400	2inch Grind Overlay	\$3,122
428	OCCIDENTAL DR	1701	1749	265	1200	2inch Grind Overlay	\$9,423
429	LINCOLN ST	1001	1015	265	1200	2inch Grind Overlay	\$9,434
430	DOYLE AVE	501	513	244	1100	2inch Grind Overlay	\$8,659
431	CLIFTON AVE	1221	1229	267	1200	2inch Grind Overlay	\$9,484
432	LINCOLN ST	203	219	267	1200	2inch Grind Overlay	\$9,491
433	CLIFTON AVE	1231	1235	267	1200	2inch Grind Overlay	\$9,505
434	FRANKLIN AVE	321	339	264	1200	*Mill + 2" RAC Overlay	\$9,508
435	HILTON AVE	131	139	298	1200	*Mill + 2" RAC Overlay	\$9,520
436	OCCIDENTAL DR	1651	1699	268	1200	2inch Grind Overlay	\$9,530
437	LAKESIDE AVE	201	209	299	1200	*Mill + 2" RAC Overlay	\$9,574
438	CLIFTON AVE	961	979	269	1200	2inch Grind Overlay	\$9,580
439	LINCOLN ST	325	331	270	1200	2inch Grind Overlay	\$9,608
440	COOK ST	101	199	267	1000	*1.5 grind and overlay	\$8,081
441	DOYLE AVE	233	311	250	1100	2inch Grind Overlay	\$8,890
442	DOYLE AVE	115	231	250	1100	2inch Grind Overlay	\$8,890
443	PROSPECT DR	1350	1352	86	200	*1.5 grind and overlay	\$1,620
444	PALO ALTO DR	619	625	333	1308	*Mill + 2" RAC Overlay	\$10,648
445	LINCOLN ST	801	873	275	1200	2inch Grind Overlay	\$9,779
446	BUENA VISTA ST	79	99	153	1200	LOCALIZED BASE REPAIR / REPAVE	\$9,792
447	CLIFTON AVE	1201	1207	276	1200	2inch Grind Overlay	\$9,804
448	LA SALLE ST	1	31	163	600	*1.5 grind and overlay	\$4,911
449	LINCOLN ST	1101	1113	277	1200	2inch Grind Overlay	\$9,843
450	SMILEY HEIGHTS DR	1531	1553	330	1000	*Crack Repair & Thin Overlay	\$8,223
451	DOYLE AVE	101	113	255	1100	2inch Grind Overlay	\$9,068
452	HIGHLAND AVE	301	461	660	4000	*Mill + 2" RAC Overlay	\$32,995
453	LAKESIDE AVE	131	169	310	1200	*Mill + 2" RAC Overlay	\$9,914
454	LINCOLN ST	401	499	280	1200	2inch Grind Overlay	\$9,971
455	ARROWVIEW DR	301	331	83	300	*1.5 grind and overlay	\$2,496

Priority Rank	Street Name	From Address	To Address	Length (ft)	Traffic Volume (ADT)	Repair Type	Repair Cost
456	MULVIHILL AVE	301	315	242	720	*Crack Repair & Thin Overlay	\$6,011
457	LINCOLN ST	1231	1245	282	1200	2inch Grind Overlay	\$10,028
458	FOUNTAIN AVE	201	219	188	800	2inch Grind Overlay	\$6,689
459	DOYLE AVE	313	339	259	1100	2inch Grind Overlay	\$9,210
460	DOYLE AVE	401	419	262	1100	2inch Grind Overlay	\$9,317
461	DOYLE AVE	627	641	263	1100	2inch Grind Overlay	\$9,352
462	DOYLE AVE	515	625	265	1100	2inch Grind Overlay	\$9,423
463	PARK AVE	2011	2033	237	1400	2inch Grind Overlay	\$12,014
464	SAN MATEO ST	1	19	716	4000	*Mill + 2" RAC Overlay	\$34,344
465	DOYLE AVE	701	799	266	1100	2inch Grind Overlay	\$9,459
466	COLTON AVE	1501	1599	1319	9200	*Mill + 2" RAC Overlay	\$79,140
467	WABASH AVE	1373	1399	864	1800	*Mill + 2" RAC Overlay	\$15,554
468	BROCKTON AVE	1515	1545	565	2308	2inch Grind Overlay	\$20,091
469	PARK AVE	2035	2043	242	1400	2inch Grind Overlay	\$12,268
470	CITRUS AVE	1601	1699	1316	3000	*Mill + 2" RAC Overlay	\$26,312
471	CITRUS AVE	1701	1899	1316	3000	*Mill + 2" RAC Overlay	\$26,320
472	SUNSET DR	673	699	488	2000	*Mill + 2" RAC Overlay	\$17,579
473	FRANKLIN AVE	1537	1565	294	1200	*Mill + 2" RAC Overlay	\$10,588
474	SUNSET DR	31016	31052	736	2000	*Mill + 2" RAC Overlay	\$17,657
475	COUNTRY CLUB DR	1401	1409	93	900	*Full Reconstruction (LOCAL)	\$7,953
476	CHESTNUT AVE	901	917	352	1200	*1.5 grind and overlay	\$10,629
477	SMILEY HEIGHTS DR	1451	1459	278	1000	*Mill + 2" RAC Overlay	\$8,896
478	ALVARADO ST	801	829	304	1200	2inch Grind Overlay	\$10,817
479	ALESSANDRO RD	2051	2099	697	2000	*Mill + 2" RAC Overlay	\$18,112
480	5TH AVE	1651	1699	798	6708	2inch Grind Overlay	\$60,808
481	UNIVERSITY ST	1301	1313	305	1208	*Mill + 2" RAC Overlay	\$10,980
482	MARIPOSA DR	1	99	59	400	LOCALIZED BASE REPAIR / REPAVE	\$3,646
483	ESTHER WAY	729	735	130	430	*1.5 grind and overlay	\$3,923
484	BROCKTON AVE	1001	1059	660	2308	*Mill + 2" RAC Overlay	\$21,120
485	CYPRESS AVE	1201	1233	1070	7708	*Mill + 2" RAC Overlay	\$70,607
486	GROVE ST	1021	1067	281	1208	*Mill + 2" RAC Overlay	\$11,232
487	CHISHOLM TRL	141	149	189	500	*Crack Repair & Thin Overlay	\$4,709
488	CYPRESS AVE	701	977	1139	7708	*Mill + 2" RAC Overlay	\$72,902
489	SAN MATEO ST	701	737	631	4000	*Mill + 2" RAC Overlay	\$37,836
490	BROCKTON AVE	1547	1581	614	2308	2inch Grind Overlay	\$21,834

Priority Rank	Street Name	From Address	To Address	Length (ft)	Traffic Volume (ADT)	Repair Type	Repair Cost
491	ROOSEVELT RD	515	537	321	1200	2inch Grind Overlay	\$11,405
492	CRESCENT AVE	501	517	357	1200	*Mill + 2" RAC Overlay	\$11,411
493	SMILEY HEIGHTS DR	1555	1575	384	1000	*Crack Repair & Thin Overlay	\$9,557
494	FRANKLIN AVE	361	369	360	1200	*Mill + 2" RAC Overlay	\$11,510
495	FRANKLIN AVE	1471	1499	321	1200	*Mill + 2" RAC Overlay	\$11,542
496	SOUTH AVE	215	223	271	1000	2inch Grind Overlay	\$9,637
497	COOK ST	1	99	320	1000	*1.5 grind and overlay	\$9,668
498	SERPENTINE DR	1529	1545	269	750	*Mill + 2" RAC Overlay	\$7,252
499	17TH ST	12865	12899	133	300	*Mill + 2" RAC Overlay	\$2,924
500	LINCOLN ST	701	725	330	1200	2inch Grind Overlay	\$11,717
501	LINCOLN ST	1	69	332	1200	2inch Grind Overlay	\$11,806
502	PENNSYLVANIA AVE	801	863	495	1800	*Mill + 2" RAC Overlay	\$17,820
503	BERKELEY DR	1501	1513	265	800	*1.5 grind and overlay	\$8,009
504	BROCKTON AVE	1201	1281	723	2308	*Mill + 2" RAC Overlay	\$23,120
505	IOWA ST	501	699	1326	4000	*1.5 grind and overlay	\$40,075
506	FULBRIGHT AVE	1307	1307	162	400	*Crack Repair & Thin Overlay	\$4,030
507	BOW C	0	0	43	50	*Crack Repair & Thin Overlay	\$504
508	TENNESSEE ST	17	31	170	600	2inch Grind Overlay	\$6,052
509	FRANKLIN AVE	1441	1469	338	1200	*Mill + 2" RAC Overlay	\$12,168
510	CARMODY ST	141	147	205	500	*Crack Repair & Thin Overlay	\$5,097
511	HARTZELL AVE	401	415	254	620	*Crack Repair & Thin Overlay	\$6,322
512	FRANKLIN AVE	1401	1439	343	1200	*Mill + 2" RAC Overlay	\$12,359
513	SAN MATEO ST	601	643	689	4000	*Mill + 2" RAC Overlay	\$41,364
514	CENTRAL AVE	501	531	349	1200	2inch Grind Overlay	\$12,410
515	LAKESIDE AVE	411	427	389	1200	*Mill + 2" RAC Overlay	\$12,442
516	SUNSET DR	119	129	716	2000	*Mill + 2" RAC Overlay	\$20,753
517	DIVISION ST	401	449	147	500	2inch Grind Overlay	\$5,213
518	UNIVERSITY ST	1315	1333	351	1208	*Mill + 2" RAC Overlay	\$12,629
519	9TH ST	151	199	161	1200	*Full Reconstruction (LOCAL)	\$12,880
520	JAMES CT	1621	1647	216	500	*Crack Repair & Thin Overlay	\$5,376
521	LAUREL AVE	1277	1299	130	300	*Crack Repair & Thin Overlay	\$3,233
522	PACIFIC ST	901	921	430	1200	*1.5 grind and overlay	\$12,983
523	SUNSET DR	31068	31096	127	2000	*Full Reconstruction (Major)	\$21,651
524	ROOSEVELT RD	539	559	366	1200	2inch Grind Overlay	\$13,019
525	HILTON AVE	111	129	407	1200	*Mill + 2" RAC Overlay	\$13,024

riority Rank	Street Name	From Address	To Address	Length (ft)	Traffic Volume (ADT)	Repair Type	Repair Cost
 526	GROVE ST	869	947	329	1208	*Mill + 2" RAC Overlay	\$13,156
527	FOUNTAIN AVE	101	199	247	800	2inch Grind Overlay	\$8,769
528	DELAWARE AVE	189	199	47	360	*Full Reconstruction (LOCAL)	\$3,968
529	CLIFTON AVE	1351	1461	473	1200	*Crack Repair & Thin Overlay	\$13,247
530	ARBOR DR	1649	1689	198	500	*Crack Repair & Thin Overlay	\$5,531
531	GROVE ST	801	867	335	1208	*Mill + 2" RAC Overlay	\$13,396
532	CAJON ST	1311	1319	250	800	2inch Grind Overlay	\$8,886
533	LAKESIDE AVE	601	617	419	1200	*Mill + 2" RAC Overlay	\$13,408
534	CENTER PL	101	199	350	2000	LOCALIZED BASE REPAIR / REPAVE	\$22,368
535	PACIFIC ST	1101	1127	445	1200	*1.5 grind and overlay	\$13,434
536	ORANGE TREE LN	1651	1795	1578	5008	2inch Grind Overlay	\$56,096
537	PACIFIC ST	1001	1023	445	1200	*1.5 grind and overlay	\$13,443
538	PACIFIC ST	801	819	447	1200	*1.5 grind and overlay	\$13,497
539	9TH ST	301	389	381	1200	2inch Grind Overlay	\$13,534
540	COULSTON AVE	1551	1599	353	2000	LOCALIZED BASE REPAIR / REPAVE	\$22,592
541	CHISHOLM TRL	151	157	228	500	*Crack Repair & Thin Overlay	\$5,675
542	HIGHLAND AVE	1551	1579	668	2000	*1.5 grind and overlay	\$22,712
543	OLIVE AVE	1301	1431	960	5000	*Mill + 2" RAC Overlay	\$57,594
544	PIONEER AVE	231	249	320	2000	LOCALIZED BASE REPAIR / REPAVE	\$23,040
545	CRAIG CT	201	217	260	240	*Crack Repair and SLURRY SEAL	\$2,772
546	SOUTH AVE	307	309	261	800	2inch Grind Overlay	\$9,263
547	LAUREL AVE	1247	1255	140	300	*Crack Repair & Thin Overlay	\$3,489
548	SOUTH AVE	117	123	330	1000	2inch Grind Overlay	\$11,717
549	FOUNTAIN AVE	401	499	265	800	2inch Grind Overlay	\$9,409
550	SERPENTINE DR	1215	1223	186	2000	*Full Reconstruction (MINOR)	\$23,744
551	LA LOMA DR	0	0	67	200	2inch Grind Overlay	\$2,390
552	SOUTH AVE	125	133	337	1000	2inch Grind Overlay	\$11,984
553	GROVE ST	1401	1449	270	800	2inch Grind Overlay	\$9,601
554	GROVE ST	1451	1499	272	800	2inch Grind Overlay	\$9,672
555	FRANKLIN AVE	371	383	454	1200	*Mill + 2" RAC Overlay	\$14,538
556	ELM ST	1281	1299	162	400	*1.5 grind and overlay	\$4,884
557	SHARON RD	825	839	246	600	*1.5 grind and overlay	\$7,423
558	ROOSEVELT RD	813	831	310	700	*Crack Repair & Thin Overlay	\$8,675
559	MARIPOSA DR	201	323	947	2750	*Mill + 2" RAC Overlay	\$34,103
560	SERPENTINE DR	1301	1329	626	2000	*Mill + 2" RAC Overlay	\$25,036

Priority Rank	Street Name	From Address	To Address	Length (ft)	Traffic Volume (ADT)	Repair Type	Repair Cost
561	CYPRESS AVE	625	699	293	7708	*Full Reconstruction (Major)	\$96,951
562	CLARK ST	601	609	215	600	2inch Grind Overlay	\$7,642
563	RAMONA DR	901	949	430	1200	2inch Grind Overlay	\$15,291
564	ALVARADO ST	901	933	430	1200	2inch Grind Overlay	\$15,291
565	PINE AVE	601	637	432	1200	2inch Grind Overlay	\$15,362
566	BROOKSIDE AVE	1617	1629	181	500	2inch Grind Overlay	\$6,419
567	PENNSYLVANIA AVE	1301	1337	650	1800	2inch Grind Overlay	\$23,114
568	HIGHLAND AVE	1743	1749	150	2000	LOCALIZED BASE REPAIR / REPAVE	\$25,715
569	STATE ST	601	799	634	3000	2inch Grind Overlay	\$38,630
570	HIGHLAND AVE	1735	1741	150	2000	LOCALIZED BASE REPAIR / REPAVE	\$25,801
571	SUMMIT AVE	301	309	145	400	2inch Grind Overlay	\$5,163
572	GROVE ST	1501	1511	261	500	*Crack Repair & Thin Overlay	\$6,503
573	PALO ALTO DR	627	641	533	1308	*Mill + 2" RAC Overlay	\$17,040
574	DOYLE AVE	811	823	262	500	*Crack Repair & Thin Overlay	\$6,521
575	DOYLE AVE	825	909	263	500	*Crack Repair & Thin Overlay	\$6,546
576	GARDEN ST	1301	1339	1115	4000	*Mill + 2" RAC Overlay	\$52,382
577	MARIPOSA DR	337	369	179	400	*1.5 grind and overlay	\$5,252
578	DOYLE AVE	941	967	264	500	*Crack Repair & Thin Overlay	\$6,571
579	DOYLE AVE	911	939	264	500	*Crack Repair & Thin Overlay	\$6,571
580	WESTWOOD LN	1	39	218	500	*1.5 grind and overlay	\$6,576
581	ALVARADO ST	1001	1039	445	1200	2inch Grind Overlay	\$15,817
582	6TH ST	901	939	447	1200	2inch Grind Overlay	\$15,892
583	FRANKLIN AVE	1501	1535	443	1200	*Mill + 2" RAC Overlay	\$15,934
584	ROBYN ST	1515	1529	263	700	2inch Grind Overlay	\$9,352
585	ARBOR DR	1639	1647	240	500	*Crack Repair & Thin Overlay	\$6,731
586	WABASH AVE	851	939	786	7000	LOCALIZED BASE REPAIR / REPAVE	\$94,320
587	STATE ST	501	549	421	3000	LOCALIZED BASE REPAIR / REPAVE	\$40,435
588	CRESTVIEW RD	1501	1519	383	1008	2inch Grind Overlay	\$13,609
589	CHELSEA AVE	1601	1619	271	500	*Crack Repair & Thin Overlay	\$6,755
590	FULBRIGHT AVE	925	939	135	300	*1.5 grind and overlay	\$4,080
591	HIGHLAND AVE	901	1057	1148	4000	*Mill + 2" RAC Overlay	\$55,114
592	SUNSET DR	1	99	861	2000	*Mill + 2" RAC Overlay	\$27,562
593	ORANGE TREE LN	1901	1959	786	5008	LOCALIZED BASE REPAIR / REPAVE	\$69,203
594	ROBYN ST	1561	1599	273	700	2inch Grind Overlay	\$9,708
595	KANSAS ST	301	375	434	2000	LOCALIZED BASE REPAIR / REPAVE	\$27,782

Priority Rank	Street Name	From Address	To Address	Length (ft)	Traffic Volume (ADT)	Repair Type	Repair Cost
596	PENNSYLVANIA AVE	901	945	695	1800	*Mill + 2" RAC Overlay	\$25,020
597	KANSAS ST	377	499	784	2000	2inch Grind Overlay	\$27,861
598	SUNSET DR	301	321	775	2000	*Mill + 2" RAC Overlay	\$27,911
599	PUESTA DEL SOL	12841	12877	220	500	*Mill + 2" RAC Overlay	\$7,050
600	LAUREL AVE	1201	1217	170	300	*Crack Repair & Thin Overlay	\$4,236
601	TENNESSEE ST	33	69	239	600	2inch Grind Overlay	\$8,502
602	MAGNOLIA AVE	1201	1229	429	750	*Crack Repair & Thin Overlay	\$10,687
603	SMILEY HEIGHTS DR	1501	1529	401	1000	2inch Grind Overlay	\$14,263
604	BRENTWOOD PL	851	871	116	200	*Crack Repair & Thin Overlay	\$2,877
605	BROCKTON AVE	835	999	770	1708	*Mill + 2" RAC Overlay	\$24,624
606	CORNELL AVE	1201	1299	961	2000	*1.5 grind and overlay	\$29,028
607	RIDGE ST	1585	1649	228	500	*Mill + 2" RAC Overlay	\$7,286
608	KENDALL ST	101	199	137	600	LOCALIZED BASE REPAIR / REPAVE	\$8,762
609	CHELSEA AVE	1621	1649	295	500	*Crack Repair & Thin Overlay	\$7,330
610	ALTA ST	1515	1529	260	440	*Crack Repair & Thin Overlay	\$6,474
611	CHISHOLM TRL	127	135	297	500	*Crack Repair & Thin Overlay	\$7,390

Total:

\$9,927,578

Appendix D

Matrix Method Priority List

The attached list indicates approximately the first \$10 million worth of road treatments according to the Matrix Method.

Priority	Street Name	From	То		Repair Type	Matrix	Repair Cost
Rank		Address	Address	PCI		Score	<u> </u>
1	CITRUS AVE	1119	1127	29	*Mill + 2" RAC Overlay	95	\$9,375.00
2	COLTON AVE	701	717	61	*Rubberized THIN OVERLAY	95	\$12,691.00
3	COLTON AVE	701	799	55	*Rubberized THIN OVERLAY	88	\$12,224.00
4	CITRUS AVE	1101	1105	29	*Mill + 2" RAC Overlay	86	\$11,255.00
5	CITRUS AVE	1601	1689	27	*Mill + 2" RAC Overlay	84	\$66,846.00
6	BARTON RD	1321	1399	70	LOCALIZED BASE REPAIR / REPAVE	83	\$118,205.00
7	FERNAVE	901	913	61	*Rubberized THIN OVERLAY	83	\$11,559.00
8	GROVE ST	411	599	55	LOCALIZED BASE REPAIR / REPAVE	83	\$33,626.00
9	SAN BERNARDINO AVE	101	199	72	LOCALIZED BASE REPAIR / REPAVE	82	\$39,600.00
10	BROOKSIDE AVE	1259	1265	60	LOCALIZED BASE REPAIR / REPAVE	82	\$56,078.00
11	TENNESSEE ST	71	99	64	LOCALIZED BASE REPAIR / REPAVE	81	\$70,320.00
12	FERN AVE	401	499	74	*Rubberized THIN OVERLAY	81	\$16,805.00
13	FERN AVE	801	829	61	*Rubberized THIN OVERLAY	80	\$13,847.00
14	REDLANDS BLVD	0	0	60	*Rubberized THIN OVERLAY	80	\$4,564.00
15	CITRUS AVE	1691	1699	55	*Rubberized THIN OVERLAY	80	\$9,683.00
16	JUDSON ST	601	639	31	*Mill + 2" RAC Overlay	79	\$22,260.00
17	SAN BERNARDINO AVE	401	599	81	Rubberized thin overlay	79	\$14,052.00
18	JUDSON ST	921	939	34	*Mill + 2" RAC Overlay	78	\$17,793.00
19	TEXAS ST	901	943	72	LOCALIZED BASE REPAIR / REPAVE	78	\$42,912.00
20	JUDSON ST	641	649	31	*Mill + 2" RAC Overlay	78	\$7,680.00
21	CYPRESS AVE	601	623	29	*Mill + 2" RAC Overlay	78	\$13,974.00
22	COLTON AVE	1691	1699	80	Rubberized thin overlay	77	\$5,646.00
23	CYPRESS AVE	201	333	60	*Rubberized THIN OVERLAY	77	\$22,100.00
24	JUDSON ST	1167	1257	24	*Full Reconstruction (Major)	77	\$154,592.00
25	OXFORD DR	927	1031	20	*Full Reconstruction (LOCAL)	77	\$41,114.00
26	COLTON AVE	201	227	35	*Mill + 2" RAC Overlay	77	\$13,220.00
27	BARTON RD	1301	1319	72	Rubberized thin overlay	77	\$5,297.00
28	BROOKSIDE AVE	1267	1299	72	Rubberized thin overlay	77	\$3,013.00
29	FERN AVE	1125	1143	56	*Rubberized THIN OVERLAY	77	\$9,753.00
30	SYLVAN BLVD	1201	1299	29	*1.5 grind and overlay	77	\$22,210.00
31	COOK ST	403	599	24	Full Reconstruction	77	\$55,429.00
32	FORD ST	1501	1625	24	*Full Reconstruction (Major)	77	\$374,905.00
33	COLTON AVE	401	423	38	*Mill + 2" RAC Overlay	77	\$14,190.00
34	CYPRESS AVE	1341	1351	62	LOCALIZED BASE REPAIR / REPAVE	77	\$36,432.00
35	GROVE ST	611	633	55	LOCALIZED BASE REPAIR / REPAVE	77	\$28,672.00
36	PALM AVE	727	739	29	*Mill + 2" RAC Overlay	77	\$12,163.00

Priority	Street Name	From	To	DOL	Repair Type	Matrix	Repair Cost
Rank 37	SAN MATEO ST	Address 801	Address 827	PCI 29	*Mill + 2" RAC Overlay	Score 77	\$21,384.00
37	JUDSON ST	1101	1151	29 24	*Full Reconstruction (Major)	77	\$21,384.00 \$167,184.00
30 39	BROOKSIDE AVE	1231	1257	24 63	LOCALIZED BASE REPAIR / REPAVE	77	\$50,266.00
39 40	CAJON ST	401	455	70	Rubberized thin overlay	77	\$30,200.00 \$15,142.00
40 41	CYPRESS AVE	601	433 673	61	*Rubberized THIN OVERLAY	77	\$24,299.00
41	BROOKSIDE AVE	1201	1229	63	LOCALIZED BASE REPAIR / REPAVE	77	\$52,332.00
42	CITRUS AVE	1781	1799	31	*Mill + 2" RAC Overlay	76	\$19,800.00
43	FERN AVE	1101	1119	56	*Rubberized THIN OVERLAY	76	\$11,122.00
44	REDLANDS BLVD	2071	2099	56	LOCALIZED BASE REPAIR / REPAVE	76	\$14,832.00
46	CITRUS AVE	1149	1249	40	*Mill + 2" RAC Overlay	70 76	\$18,950.00
40	CITRUS AVE	1129	1147	42	*Mill + 2" RAC Overlay	70 75	\$18,850.00
48	OXFORD DR	1101	1231	70	LOCALIZED BASE REPAIR / REPAVE	75	\$61,235.00
49	CENTRAL AVE	1201	1229	23	Full Reconstruction	75	\$81,704.00
40 50	UNIVERSITY ST	1401	1419	24	*Full Reconstruction (MINOR)	75	\$61,286.00
51	FERN AVE	301	319	77	Rubberized thin overlay	75	\$7,930.00
52	CORNELL AVE	1101	1199	21	*Full Reconstruction (LOCAL)	70 75	\$84,147.00
53	CITRUS AVE	0	0	37	*Mill + 2" RAC Overlay	76	\$8,650.00
54	CYPRESS AVE	701	977	32	*Mill + 2" RAC Overlay	74	\$72,902.00
55	SAN MATEO ST	829	931	28	*Mill + 2" RAC Overlay	74	\$12,776.00
56	CENTER ST	19	99	61	LOCALIZED BASE REPAIR / REPAVE	73	\$81,384.00
57	CYPRESS AVE	1001	1019	36	*Mill + 2" RAC Overlay	73	\$14,061.00
58	JUDSON ST	1451	1499	20	*Full Reconstruction (Major)	73	\$61,824.00
59	COLTON AVE	123	131	38	*Mill + 2" RAC Overlay	73	\$3,920.00
60	BROCKTON AVE	757	769	32	*Mill + 2" RAC Overlay	73	\$10,272.00
61	TRIBUNE ST	1101	1225	35	*1.5 grind and overlay	73	\$29,479.00
62	FERN AVE	1201	1207	33	*Mill + 2" RAC Overlay	73	\$9,272.00
63	FORD ST	1635	1657	12	*Full Reconstruction (Major)	73	\$137,952.00
64	HERALD ST	1001	1027	26	*1.5 grind and overlay	73	\$12,025.00
65	BROCKTON AVE	1301	1375	55	LOCALIZED BASE REPAIR / REPAVE	73	\$54,752.00
66	COOK ST	101	199	28	*1.5 grind and overlay	73	\$8,081.00
67	TEXAS ST	251	299	56	LOCALIZED BASE REPAIR / REPAVE	73	\$15,360.00
68	BROCKTON AVE	1377	1399	60	*Rubberized THIN OVERLAY	73	\$9,383.00
69	JUDSON ST	201	217	35	*Mill + 2" RAC Overlay	73	\$22,614.00
70	LUGONIA AVE	401	499	38	*Mill + 2" RAC Overlay	73	\$19,140.00
71	JUDSON ST	1153	1165	24	*Full Reconstruction (Major)	73	\$77,040.00
72	JUDSON ST	901	919	34	*Mill + 2" RAC Overlay	73	\$17,307.00

Priority Rank	Street Name	From Address	To Address	PCI	Repair Type	Matrix Score	Repair Cost
73	FERN AVE	1251	1299	31	*Mill + 2" RAC Overlay	73	\$9,457.00
74	OCCIDENTAL DR	801	899	28	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	72	\$15,728.00
75	BROCKTON AVE	601	699	33	*Mill + 2" RAC Overlay	72	\$10,896.00
76	CYPRESS AVE	979	999	38	*Mill + 2" RAC Overlay	72	\$11,552.00
77	OLIVE AVE	1201	1225	29	*Mill + 2" RAC Overlay	72	\$26,106.00
78	CITRUS AVE	1107	1117	37	*Mill + 2" RAC Overlay	72	\$12,580.00
79	SYLVAN BLVD	1101	1153	24	Full Reconstruction	72	\$139,115.00
80	OLIVE AVE	1631	1643	21	*Full Reconstruction (MINOR)	72	\$93,792.00
81	BROCKTON AVE	401	449	30	*Mill + 2" RAC Overlay	72	\$10,656.00
82	ALTA ST	1101	1159	71	CRACK FILL	71	\$1,067.00
83	HERALD ST	901	941	17	*Full Reconstruction (LOCAL)	71	\$38,110.00
84	COLTON AVE	301	309	38	*Mill + 2" RAC Overlay	71	\$8,420.00
85	PARKWOOD DR	107	147	60	*Crack Repair and SLURRY SEAL	71	\$4,954.00
86	NEVADA ST	501	799	70	LOCALIZED BASE REPAIR / REPAVE	71	\$106,112.00
87	CHAPEL ST	701	799	26	*1.5 grind and overlay	71	\$13,177.00
88	JUDSON ST	1001	1079	37	*Mill + 2" RAC Overlay	71	\$17,739.00
89	CENTRAL AVE	701	799	24	Full Reconstruction	71	\$38,584.00
90	OCCIDENTAL DR	901	933	22	Full Reconstruction	71	\$48,754.00
91	PALM AVE	1001	1061	23	*Full Reconstruction (MINOR)	71	\$153,466.00
92	EDWARDS ST	1201	1299	30	*1.5 grind and overlay	71	\$16,018.00
93	ARDMORE AVE	701	711	24	Full Reconstruction	71	\$29,557.00
94	TRIBUNE ST	901	937	28	*1.5 grind and overlay	71	\$13,497.00
95	CRAIG CT	201	217	60	*Crack Repair and SLURRY SEAL	71	\$2,772.00
96	CENTRAL AVE	801	915	20	Full Reconstruction	71	\$122,629.00
97	CLAY ST	1501	1535	70	CRACK FILL	71	\$1,078.00
98	PALM AVE	219	239	70	*Rubberized THIN OVERLAY	71	\$19,538.00
99	PIONEER AVE	423	641	61	LOCALIZED BASE REPAIR / REPAVE	71	\$59,508.00
100	SAN MATEO ST	601	643	40	*Mill + 2" RAC Overlay	71	\$41,364.00
101	OCCIDENTAL DR	1001	1033	29	2inch Grind Overlay	71	\$15,504.00
102	PARK AVE	26591	26599	28	2inch Grind Overlay	71	\$10,617.00
103	BERKELEY DR	901	999	26	*1.5 grind and overlay	71	\$13,159.00
104	ARDMORE AVE	713	717	24	Full Reconstruction	71	\$14,943.00
105	SUNSET DR	331	357	23	*Full Reconstruction (MINOR)	71	\$85,985.00
106	6TH ST	1301	1329	22	Full Reconstruction	71	\$22,221.00
107	COLLEGE AVE	901	945	27	*1.5 grind and overlay	71	\$19,947.00
108	BERKELEY DR	1001	1023	27	*1.5 grind and overlay	71	\$13,171.00

Priority	Street Name	From	To		Repair Type	Matrix	Repair Cost
Rank 109	GRANT ST	Address 201	Address 257	PCI 16	*Full Reconstruction (LOCAL)	Score 71	\$56,303.00
109	ROOSEVELT RD	0	0	20	*Full Reconstruction (LOCAL)	71	\$19,094.00
110	DIVISION ST	701	799	14	*Full Reconstruction (LOCAL)	71	\$37,205.00
112	DOYLE AVE	242	232	27	2inch Grind Overlay	71	\$8,129.00
112	FORD ST	1701	1799	15	*Full Reconstruction (Major)	71	\$95,520.00
113	DEVON PL	1101	1257	16	*Full Reconstruction (LOCAL)	71	\$87,629.00
115	HIGHLAND AVE	1501	1549	20	Full Reconstruction	71	\$71,120.00
116	PALM AVE	101	213	60	LOCALIZED BASE REPAIR / REPAVE	71	\$59,331.00
117	JUDSON ST	1401	1449	20	*Full Reconstruction (Major)	71	\$61,376.00
118	SAN BERNARDINO AVE	801	999	32	*Mill + 2" RAC Overlay	71	\$66,470.00
119	PALM AVE	1351	1355	70	*Rubberized THIN OVERLAY	71	\$5,281.00
120	JUDSON ST	1351	1399	22	*Full Reconstruction (Major)	71	\$61,376.00
120	COLTON AVE	1001	1025	38	*Mill + 2" RAC Overlay	70	\$5,340.00
122	SAN MATEO ST	1	19	49	*Mill + 2" RAC Overlay	70	\$34,344.00
123	PALM AVE	1313	1349	70	*Rubberized THIN OVERLAY	70	\$24,724.00
124	BROOKSIDE AVE	1301	1449	16	*Full Reconstruction (LOCAL)	70	\$231,235.00
125	UNIVERSITY ST	421	599	37	*Mill + 2" RAC Overlay	70	\$30,126.00
126	COLTON AVE	101	117	38	*Mill + 2" RAC Overlay	70	\$8,320.00
127	CYPRESS AVE	1021	1029	36	*Mill + 2" RAC Overlay	70	\$16,019.00
128	BROCKTON AVE	799	819	36	*Mill + 2" RAC Overlay	70	\$10,880.00
129	WASHINGTON ST	1601	1649	20	*Full Reconstruction (LOCAL)	70	\$56,243.00
130	COLTON AVE	1027	1079	38	*Mill + 2" RAC Overlay	70	\$8,880.00
131	GARDEN ST	1501	1553	24	*Full Reconstruction (Major)	70	\$197,811.00
132	HOME PL	601	699	25	*1.5 grind and overlay	70	\$21,148.00
133	ALABAMA ST	1	39	40	*Mill + 2" RAC Overlay	70	\$27,630.00
134	BERMUDA DR	601	627	24	Full Reconstruction	70	\$49,050.00
135	HIGHLAND AVE	901	1057	29	*Mill + 2" RAC Overlay	70	\$55,114.00
136	CAMPUS AVE	1001	1039	27	*1.5 grind and overlay	70	\$19,977.00
137	WABASH AVE	11001	11099	19	*Full Reconstruction (MINOR)	70	\$162,006.00
138	ARDMORE AVE	719	723	24	Full Reconstruction	69	\$14,461.00
140	COURIER AVE	401	431	30	*1.5 grind and overlay	69	\$9,490.00
142	LUGONIA AVE	299	319	42	*Mill + 2" RAC Overlay	69	\$19,082.00
143	POST ST	801	849	25	*1.5 grind and overlay	69	\$13,673.00
144	9TH ST	101	149	18	*Full Reconstruction (LOCAL)	69	\$14,618.00
145	TEXAS ST	801	837	64	LOCALIZED BASE REPAIR / REPAVE	69	\$36,816.00
146	COOK ST	1	99	35	*1.5 grind and overlay	69	\$9,668.00

Priority Rank	Street Name	From Address	To Address	PCI	Repair Type	Matrix Score	Repair Cost
147	CORNELL AVE	1201	1299	35	*1.5 grind and overlay	69	\$29,028.00
148	SAN MATEO ST	401	413	42	*Mill + 2" RAC Overlay	68	\$19,404.00
149	JUDSON ST	801	899	43	*Mill + 2" RAC Overlay	68	\$18,079.00
150	BROCKTON AVE	101	169	34	*Mill + 2" RAC Overlay	68	\$10,544.00
151	JUDSON ST	351	399	44	*Mill + 2" RAC Overlay	68	\$1,710.00
152	CITRUS AVE	301	317	80	Rubberized thin overlay	68	\$6,612.00
153	TENNESSEE ST	301	343	56	LOCALIZED BASE REPAIR / REPAVE	68	\$74,952.00
154	JUDSON ST	401	599	42	*Mill + 2" RAC Overlay	68	\$34,590.00
155	HIGHLAND AVE	423	439	55	*Rubberized THIN OVERLAY	68	\$9,318.00
157	GLENWOOD DR	501	553	61	LOCALIZED BASE REPAIR / REPAVE	68	\$24,998.00
158	COLTON AVE	501	525	42	*Mill + 2" RAC Overlay	68	\$14,190.00
159	WABASH AVE	745	799	82	LOCALIZED BASE REPAIR / REPAVE	68	\$19,497.00
160	HIGHLAND AVE	875	899	30	*Mill + 2" RAC Overlay	68	\$9,481.00
161	ALTA ST	1001	1037	35	*1.5 grind and overlay	68	\$12,038.00
162	PALM AVE	301	329	61	*Rubberized THIN OVERLAY	68	\$12,186.00
163	PARK AVE	1000	1098	28	2inch Grind Overlay	68	\$36,495.00
164	CYPRESS AVE	625	699	23	*Full Reconstruction (Major)	68	\$96,951.00
165	COLTON AVE	801	845	45	*Mill + 2" RAC Overlay	68	\$58,077.00
166	COLTON AVE	1	99	38	*Mill + 2" RAC Overlay	68	\$13,200.00
167	CYPRESS AVE	1101	1199	43	*Mill + 2" RAC Overlay	68	\$32,621.00
168	JUDSON ST	301	349	44	*Mill + 2" RAC Overlay	68	\$14,244.00
169	CAJON ST	601	659	38	2inch Grind Overlay	68	\$24,536.00
170	JUDSON ST	1301	1325	23	*Full Reconstruction (Major)	68	\$110,432.00
171	ALABAMA ST	41	49	57	*Rubberized THIN OVERLAY	68	\$12,406.00
172	COLTON AVE	1645	1663	57	*Rubberized THIN OVERLAY	68	\$25,698.00
173	UNIVERSITY ST	201	351	36	*Mill + 2" RAC Overlay	68	\$34,074.00
174	PALM AVE	901	959	31	*Mill + 2" RAC Overlay	68	\$11,184.00
175	JUDSON ST	727	799	42	*Mill + 2" RAC Overlay	68	\$19,830.00
176	FERN AVE	101	129	77	Rubberized thin overlay	68	\$8,497.00
177	CALIFORNIA ST	1201	1299	81	Rubberized thin overlay	67	\$19,174.00
178	CYPRESS AVE	1235	1243	50	*Mill + 2" RAC Overlay	67	\$18,784.00
179	OCCIDENTAL DR	1113	1121	21	Full Reconstruction	67	\$21,280.00
180	WESTERN AVE	101	199	63	LOCALIZED BASE REPAIR / REPAVE	67	\$21,120.00
181	PIONEER AVE	643	779	71	*Rubberized THIN OVERLAY	67	\$9,324.00
182	WESTERN AVE	1	99	73	LOCALIZED BASE REPAIR / REPAVE	67	\$21,120.00
183	COLTON AVE	991	999	38	*Mill + 2" RAC Overlay	67	\$5,265.00

Priority	Street Name	From	То	DOL	Repair Type	Matrix	Repair Cost
Rank	TEVACOT	Address	Address	PCI		Score	
184	TEXAS ST	701	799	64	*Rubberized THIN OVERLAY	67 67	\$15,461.00
185		1501	1511	23	*Full Reconstruction (MINOR)	67	\$95,280.00
186	GARDEN ST	1401	1435	32	*Mill + 2" RAC Overlay	67	\$54,393.00
187		501	529	23	Full Reconstruction	67	\$97,843.00
188	CENTRAL AVE	601	627	24	Full Reconstruction	67	\$36,344.00
189	BERKELEY DR	801	899	26	*1.5 grind and overlay	67	\$13,367.00
190	PALMAVE	801	899	35	*Mill + 2" RAC Overlay	67	\$12,538.00
191	SAN MATEO ST	0	0	81	Rubberized thin overlay	67	\$7,843.00
192	BROCKTON AVE	901	917	40	*Mill + 2" RAC Overlay	67	\$5,952.00
193	NEVADA ST	11053	11099	81	Rubberized thin overlay	67	\$7,533.00
194	HIGHLAND AVE	21	157	32	*Mill + 2" RAC Overlay	67	\$21,230.00
195	HIGH AVE	801	809	22	*Full Reconstruction (LOCAL)	67	\$32,171.00
196	SUNSET DR	901	999	81	Rubberized thin overlay	67	\$20,729.00
197	OLIVE AVE	1601	1617	23	*Full Reconstruction (MINOR)	67	\$100,008.00
198	COURIER AVE	501	533	63	*Crack Repair and SLURRY SEAL	67	\$3,573.00
199	DIVISION ST	501	549	20	*Full Reconstruction (LOCAL)	67	\$24,960.00
200	CENTRAL AVE	1101	1149	25	Full Reconstruction	67	\$135,106.00
201	5TH AVE	1601	1649	40	*Mill + 2" RAC Overlay	67	\$31,380.00
202	CYPRESS AVE	1031	1047	38	*Mill + 2" RAC Overlay	67	\$21,734.00
203	SUNSET DR	801	899	81	Rubberized thin overlay	67	\$23,449.00
204	REDLANDS BLVD	2057	2069	49	*Mill + 2" RAC Overlay	67	\$38,124.00
205	6TH ST	1101	1163	76	Rubberized thin overlay	67	\$15,248.00
206	PIONEER AVE	113	229	72	*Rubberized THIN OVERLAY	67	\$7,482.00
207	OLIVE AVE	1619	1629	22	*Full Reconstruction (MINOR)	67	\$83,112.00
208	OLIVE AVE	1433	1495	24	*Full Reconstruction (MINOR)	67	\$86,160.00
209	CENTRAL AVE	1319	1339	73	CRACK FILL	67	\$563.00
210	ALABAMA ST	315	321	81.6	Rubberized thin overlay	67	\$5,644.00
211	WESTERN AVE	201	227	63	LOCALIZED BASE REPAIR / REPAVE	67	\$21,088.00
212	HERALD ST	1101	1163	73	Rubberized thin overlay	67	\$15,174.00
213	GARDEN ST	1555	1593	32	*Mill + 2" RAC Overlay	67	\$20,285.00
214	NEW YORK ST	101	249	30	*1.5 grind and overlay	67	\$39,836.00
215	OXFORD DR	801	825	32	2inch Grind Overlay	67	\$15,536.00
217	HIGHLAND AVE	841	873	30	*Mill + 2" RAC Overlay	67	\$6,369.00
218	TAMARISK ST	139	179	63	*Crack Repair and SLURRY SEAL	67	\$4,228.00
219	LYTLE ST	601	629	23	Full Reconstruction	67	\$59,202.00
220	CYPRESS CIR	625	659	15	*Full Reconstruction (LOCAL)	67	\$69,816.00

Priority	Street Name	From	То		Repair Type	Matrix	Repair Cost
Rank		Address	Address	PCI		Score	<u> </u>
221	CLAY ST	1301	1343	30	*1.5 grind and overlay	67	\$20,170.00
222	HIGH AVE	811	869	16	*Full Reconstruction (LOCAL)	67	\$61,355.00
223	ROBINHOOD LN	401	403	24	Full Reconstruction	66	\$16,530.00
224	HEMLOCK CT	701	725	24	Full Reconstruction	66	\$53,525.00
225	MONTEREY ST	601	615	26	*1.5 grind and overlay	66	\$10,696.00
226	ESTHER WAY	521	539	28	*1.5 grind and overlay	66	\$10,994.00
227	SAN JACINTO ST	501	535	22	Full Reconstruction	66	\$77,022.00
228	ROMA ST	201	207	27	*1.5 grind and overlay	66	\$11,442.00
229	COLTON AVE	601	617	61	*Rubberized THIN OVERLAY	66	\$12,577.00
230	COLTON AVE	1301	1407	63	*Rubberized THIN OVERLAY	66	\$53,900.00
231	CYPRESS CIR	0	0	28	*1.5 grind and overlay	66	\$3,340.00
232	ROBINHOOD LN	405	429	24	Full Reconstruction	66	\$40,981.00
233	CYPRESS AVE	0	0	61	*Crack Repair and SLURRY SEAL	66	\$2,005.00
234	SUNSET DR	31012	31014	31	*Mill + 2" RAC Overlay	66	\$4,926.00
235	MONTEREY ST	617	631	26	*1.5 grind and overlay	66	\$10,152.00
236	SAN JACINTO ST	401	431	23	Full Reconstruction	66	\$71,142.00
237	DIVISION ST	601	649	18	*Full Reconstruction (LOCAL)	66	\$36,676.00
238	ASH ST	401	437	24	Full Reconstruction	66	\$79,498.00
239	STILLMAN AVE	1431	1439	26	*1.5 grind and overlay	66	\$8,054.00
240	SHARON RD	201	299	32	2inch Grind Overlay	66	\$16,471.00
241	DANA ST	701	725	16	*Full Reconstruction (LOCAL)	66	\$26,658.00
242	VIA VISTA DR	301	349	22	*Full Reconstruction (LOCAL)	66	\$23,262.00
243	ARROWVIEW DR	401	417	24	Full Reconstruction	66	\$43,355.00
244	COLTON AVE	501	517	61	*Rubberized THIN OVERLAY	66	\$12,443.00
245	MORRISON DR	1339	1359	24	Full Reconstruction	66	\$37,498.00
246	COLTON AVE	401	421	63	*Rubberized THIN OVERLAY	66	\$12,481.00
247	CORONADO DR	641	699	24	Full Reconstruction	66	\$25,637.00
248	COLTON AVE	311	319	38	*Mill + 2" RAC Overlay	66	\$5,117.00
249	HASTINGS ST	227	307	28	2inch Grind Overlay	66	\$16,756.00
250	ALTA VISTA DR	31536	31592	26	*Mill + 2" RAC Overlay	66	\$11,498.00
251	KEVIN AVE	965	995	26	*1.5 grind and overlay	66	\$7,435.00
252	EUCALYPTUS DR	201	207	26	*1.5 grind and overlay	66	\$7,825.00
253	JUANITA LN	1501	1649	26	*1.5 grind and overlay	66	\$17,281.00
254	CENTRAL AVE	917	999	24	Full Reconstruction	66	\$103,970.00
255	DEARBORN ST	801	899	62	*Rubberized THIN OVERLAY	66	\$14,499.00
256	FAWN CT	1441	1451	22	Full Reconstruction	66	\$29,994.00

Priority	Street Name	From	То		Repair Type	Matrix	Repair Cost
Rank		Address	Address	PCI		Score	·
257	SUSAN AVE	1301	1375	20	*Full Reconstruction (LOCAL)	66	\$112,742.00
258	MORRISON DR	1311	1323	24	Full Reconstruction	66	\$29,736.00
259	BROCKTON AVE	201	299	30	*Mill + 2" RAC Overlay	66	\$10,544.00
260	ALTA ST	1201	1259	72	Rubberized thin overlay	66	\$15,053.00
261	NEVADA ST	801	909	61	LOCALIZED BASE REPAIR / REPAVE	66	\$75,761.00
262	JEAN AVE	1301	1371	18	*Full Reconstruction (LOCAL)	66	\$112,683.00
263	WABASH AVE	351	399	24	*Full Reconstruction (MINOR)	66	\$77,582.00
264	ARDMORE AVE	725	739	24	Full Reconstruction	66	\$23,298.00
265	SUNSET DR	401	453	23	*Full Reconstruction (MINOR)	66	\$103,754.00
267	LYTLE ST	631	735	23	Full Reconstruction	66	\$89,096.00
268	JEFFERSON ST	451	569	27	*1.5 grind and overlay	66	\$12,240.00
269	TENNESSEE ST	101	287	68	*Rubberized THIN OVERLAY	66	\$59,068.00
270	FULBRIGHT AVE	1219	1259	20	*Full Reconstruction (LOCAL)	66	\$69,982.00
271	SAN RAFAEL ST	319	333	24	Full Reconstruction	66	\$31,382.00
273	ROMA ST	209	217	24	Full Reconstruction	66	\$22,042.00
274	FULBRIGHT AVE	1211	1217	20	*Full Reconstruction (LOCAL)	66	\$13,244.00
275	LA SOLANA CT	30828	30848	24	Full Reconstruction	66	\$30,262.00
276	GREENBRIAR CT	11	279	28	*1.5 grind and overlay	66	\$23,407.00
277	THE TERRACE	0	0	28	*1.5 grind and overlay	66	\$43,747.00
278	LUGONIA AVE	905	1051	27	*1.5 grind and overlay	66	\$19,895.00
279	INDEPENDENCE AVE	1623	1629	26	*1.5 grind and overlay	66	\$8,285.00
280	IDYLLWILD CT	707	725	24	Full Reconstruction	66	\$34,754.00
281	HERALD ST	1201	1259	82	Rubberized thin overlay	66	\$15,225.00

Total

\$9,950,651.00

REFERENCES

- 1. ASTM D 6433-07. Standard Practice for Roads and Parking Lots Pavement Condition Index Surveys.
- 2. California Statewide Local and Roads Needs Assessment, Final Report. League of California Cities. Nichols Consulting Engineers, Chtd. Feb. 2011.

SOURCE MATERIAL

- 1. The ABCs of Pavement Preservation. Ontario Hot Mix Producers Association, Issue1.0, February 2004
- 3. Pavement Management Primer. FHWA http://www.fhwa.dot.gov/infrastructure/asstmgmt/pmprimer.pdf
- 4. Distress Identification Manual for the Long-Term Pavement Performance Program. FHWA publication no. FHWA-RD-03-031, June 2003.
- 5. Optimal Timing of Pavement Preventative Maintenance Treatment Applications. NCHRP Report 523. Transportation Research Board, Washington D.C., 2004.
- 6. Pavement Management Systems. Pavement Interactive. http://pavementinteractive.org
- 7. Asphalt Pavement Distress Summary. Asphalt Institute. <u>http://www.asphaltinstitute.org/public/engineering/maintenance_rehab/distress_s</u> <u>ummary.asp</u>
- 8. Inland Empire's Infrastructure for Riverside and San Bernardino Counties. A Citizen's Guide. American Society of Civil Engineers, 2010.

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PAVEMENT MANAGEMENT PROGRAM