STREET MAINTENANCE PROGRAM

INTRODUCTION

The Department of Public Works recognizes that a quality street network is extremely important to the public and is one of the factors that contribute to the overall quality of life in the city. Given the need and importance to maintain streets at a level that is acceptable to the public and protects our street assets by mitigating pavement degradation during the life of the street, Public Works is committed to selecting and implementing the most cost effective and sustainable pavement maintenance strategies each year.

Street maintenance can be characterized as work performed in an effort to keep the pavement in a condition that is as close as possible to a newly constructed street. This results in a cost effective use of limited funds and provides maximum benefit to the traveling public by enhancing safety of the roadway and improving ride comfort of the road surface. There are 3,107 lane miles of paved roadway within the City of Sacramento, which equates to 27.7 million square yards of paved roadway, or approximately a two-lane paved road from Sacramento to Chicago.

GOALS AND POLICIES

The Street Maintenance Program is consistent with the following City of Sacramento 2030 General Plan (adopted March 3, 2009) and 2035 General Plan Update (to be adopted in 2014) goal and policy:

Goal

Comprehensive Transportation System. Provide a transportation system that is effectively planned, managed, operated, and maintained.

Policy:

- **Facilities and Infrastructure.** The City shall effectively operate and maintain transportation facilities and infrastructure to preserve the quality of the system.

TEN-YEAR STREET MAINTENANCE PLAN

The City currently has a Ten-Year Street Maintenance Plan that addresses paved roadway within the City. However some streets are not in the Plan because maintenance was deferred on the street for several years due to conflicts with other projects. More costly maintenance strategies are now required to actually move these streets into the ten-year cycle. The annual cost today for delivering the Plan, without addressing these backlog streets, is approximately $15 million.

Funding for this level of maintenance is problematic. The existing pavement backlog is approximately $90 million. There is only $3-5 million per year available for the Plan. Additional fund sources need to be identified or the existing backlog will grow to approximately $325 million over the next ten years.

PROJECT LIST DEVELOPMENT

Pavement Management Application

The City performed an inventory of the entire road network, in segments of 100 foot increments, in 2002. To keep the data current, the City collects data on all arterial streets every year, and one third of all non-arterial streets. In this manner, every street will be surveyed at least once every three years. The arterial streets, which carry a higher amount of the traffic, are surveyed every year.

Performance Indicators

When the roadways are surveyed, the data is converted to three performance indicators that make up the street segment's overall condition number or Pavement Quality Index (PQI). These indicators are:

- Ride Comfort Index (RCI)
- Surface Distress Index (SDI)
- Structural Adequacy Index (SAI)

The limits of PQI are from 20 to 100. A lower PQI indicates a street with poor pavement condition whereas a higher PQI would indicate a street that has just been resurfaced, or possibly, a new street. Public Works has adopted a target PQI of 75 which would indicate a street in "good" condition.

PROJECT RANKING PROCESS

The needs list is developed using the RoadMatrix™ computer program. The analytical routines unique to the RoadMatrix™ allow the City to better assess the whole street network objectively. They also allow the city to develop a pavement preservation program that maintains every street at the most cost effective point.

MAINTENANCE STRATEGIES

The overall street maintenance program can be divided into three strategies: routine maintenance, preventative, and transition strategies.

1. Routine maintenance activities are comprised of crack sealing, base repair, and patching potholes. City forces are able to respond to these needs so that repairs can take place quickly so as to minimize any long-term structural damage that might occur. Additionally, many of the routine maintenance activities are planned to be completed prior to one of the rehabilitation or transition activities. Routine maintenance activities are described at the end of this section.

2. Preventative activities include several types of resurfacing used to extend the life of a street. The appropriate resurfacing treatment for a roadway depends on the existing pavement condition. Preventative activities are described at the end of this section.

If the existing pavement condition is extremely poor then the street may need to be rehabilitated. However, it is always much more cost effective to resurface a street before pavement deterioration becomes severe than to rehabilitate it. Since street rehabilitation often involves other infrastructure and accessibility improvements (such as: curb, gutter and sidewalk, drainage improvements, curb ramps), the cost of roadway rehabilitation can be several million dollars per mile. The City of Sacramento does not have any funding program for roadway reconstruction.

3. Transition strategies are used on some streets needing reconstruction to improve the roadway condition of the streets to a level that makes it cost effective to apply one of our rehabilitation activities. For example, base repair may be done to improve the structural section and then apply a rubberized cape seal. At a minimum, this strategy can, in certain cases, improve the roadway and defer or eliminate the need for expensive rehabilitation.

DESCRIPTION OF SPECIFIC STRATEGIES

Routine Maintenance Activities

Crack Sealing: Cracks are filled with hot applied rubberized material to prevent water infiltration into the road base. This repair may take place one to two years in advance of the scheduled resurfacing.

Rideability Pass: Apply asphalt to improve the smoothness of the travel lanes but do not cover the entire roadway. For example, in this activity the parking lanes would not be treated.

Crown Pass: Apply asphalt down the center of the roadway. This strategy is used to develop adequate cross slope on flat roadways to allow water to drain to the sides.

Base Repair: Is the removal of any distressed areas where the pavement is fractured and broken and is allowing water to weaken the subgrade under the roadway. Once removed, new asphalt is placed. These repairs are accomplished prior to the scheduled resurfacing sometimes up to a year in advance.

Tree root removal: Removal of raised areas in the pavement caused by tree roots. Either the areas are completely removed and replaced or ground down and patched. These repairs take place up to a year in advance of resurfacing.

Skin patching: Low areas that are imperfections in the asphalt are patched with fine AC (asphalt concrete). Typically these depressions are small and have settled over time. This gives the street a patchwork appearance. These repairs are done during the warmer weather sometimes a year in advance but usually just prior to resurfacing.

Preventative Maintenance Activities

Preventative maintenance includes the techniques that are listed below. The appropriate resurfacing treatment for a roadway depends on the existing pavement condition. It is always more cost effective to resurface a street before pavement deterioration becomes severe, requiring rehabilitation.

Slurry Seal: A blend of oil and small aggregate that is applied to the streets.

Rubberized Emulsion Aggregate Slurry (REAS): This pavement treatment is produced when crumb rubber is blended into asphalt emulsion to create a slurry. This type of slurry has a higher cost than conventional slurry, but the advantages include an increase in longevity, long lasting color contrast for striping and has a higher resistance to cracking. In addition, REAS uses more than 78 waste tires per lane mile, thereby reducing tire waste going into our landfills.

Microsurfacing: A thin surfacing containing polymer modified asphalt emulsion and graded aggregate. Microsurfacing can be used for the same applications as slurry seals and REAS, but thicker layers can be placed allowing for slight rut filling. Microsurfacing can extend the life of the street by 7-10 years.

Chip Seal: Application of liquid asphalt followed by placement of small rock chips on the existing pavement. This treatment adds strength to the existing pavement and can extend the life of the street by 8-10 years. **Chip Seals are no longer used alone in the City of Sacramento due to the potential windshield damage from fly chips.**

Cape Seal: A chip seal followed by a slurry seal. This process gives the strength of a chip seal with the added benefit of a smoother riding surface; therefore it is used instead of a chip seal. Cape sealing can extend the life of a street by 9-12 years.

Asphalt Rubber Cape Seal: Same as cape seal but contains asphalt rubber, which can be used over cracked pavements and is resistant to reflective cracking. The asphalt rubber is a blend of asphalt cement, reclaimed tire rubber from waste tires, and additives. Rubber Cape sealing can extend the life of a street by 10-14 years. For each lane mile, this treatment uses the rubber from approximately 78 waste tires.

Asphalt Overlay: The highest form of street maintenance, overlay involves the placement of a new layer of asphalt, approximately one and a half to three and a half inches thick, on the street. Properly maintained, an asphalt overlay can extend the life of the street by 15-20 years although heavily used streets may require more frequent overlays.

Rubberized Asphalt Overlay: The rubberized asphalt overlay is a blend of asphalt cement, reclaimed tire rubber, and additives. Properly maintained, a rubberized overlay can extend the life of the street by 15-20 years and improves resistance to rutting and fatigue as well as reducing traffic noise. In addition, rubberized asphalt overlay uses more than 2,000 waste tires per lane mile, thereby reducing tire waste that would otherwise go into our landfills.

SUMMARY

The non-residential streets planned for resurfacing over the next two to three years are presented in Table B-1 based on the needs assessment of the PMA and anticipated funding. Table B-2 represents the local and residential streets planned for resurfacing in the next two to three years based on the needs assessment of the PMA. Conflicts with the work planned by other agencies and funding availability can often cause significant schedule changes to occur in the order that streets will be addressed. Additional information provided includes the council district, and approximate size in square yards for each project. While council district is listed, it is for informational purposes only. The geographic location of the planned projects is not factored into the ranking process. The ranking is solely based on the condition of the roadway and the most cost effective means of maintenance.

TABLE B-1

YEARS 2014 AND 2015
RECOMMENDED NON-RESIDENTIAL STREET RESURFACING*

Plan Year	Council District	Street Name	Limits	Est. Square Yards
2014	6	Power Inn Rd	Alpine Ave - Fruitridge Rd	26,199
2014	1	Natomas Blvd	N Bend Dr - Del Paso Rd	7,800
2014	3	Northgate Blvd	Potomac Ave - W El Camino Ave	27,000
2014	8	24th St	Meadowview Rd - Laramore Wy	19,100
2014	1	Duckhorn Dr	Saintsbury Dr - San Juan Rd	12,100
2014	6	Younger Creek Dr	Florin Perkins Dr - Elder Creek Rd	29,500
2014	6	Sky Creek Dr	Elder Creek Rd - Younger Creek Dr	11,000
2015	6	Florin Perkins Rd	Elder Creek Rd - 24th Ave	57,100
2015	3	Elvas Ave	C St - F St	53,700
2015	3	39th St	Folsom Blvd - J St	7,400
2015	4	Q St	4th St - 11th St	14,300
2015	4	13th St	L St - C St	17,900

*All Streets are subject to change based upon conflicts and funding

TABLE B-1

YEARS 2014 AND 2015
RECOMMENDED STREET SEAL*

Plan Year	Council District	Street Name	Square Yards
2014	1	Residential area bounded by Chateau Montelena Way to the North, San Juan Rd to the South, Shrike Cir to the West, Duckhorn Dr to the East	72,200
2014	2	Residential area bounded by Harris Ave to the North, South Ave to the South, Pinnell St to the West, Winters St to the East	31,200
2014	8	Residential area bounded by Meadowview Rd to the North, Laramore Way to the South, 24th St to the West, Teekay Way to the East	37,800
2015	4, 5	Residential area bounded by Broadway to the North, Vallejo Way to the South, Land Parkd Dr to the West, Freeport Blvd to the East	85,300
2015	5	Residential area bounded by 14th Ave to the North, 21st Ave to the South, Stockton Blvd to the West, 58th St to the East	78,300
2015	5	Residential area bounded by Seamas Ave to the North, Gloria Dr to the South, Riverside Blvd to the West, South Land Park Dr to the East	98,400
2015	2	Residential area bounded by Harris Ave to the North, South Ave to the South, Pinell St to the West, Winters St to the East	31,200

*All Streets are subject to change based upon conflicts and funding