

# **STREET MAINTENANCE PROGRAM**

## **INTRODUCTION**

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 3,034 lane miles of paved roadway within the City of Sacramento, which equates to a little over 27 million square yards.

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

1. Routine maintenance activities are comprised of crack sealing and patching potholes. City forces are able to respond to these needs so that repairs can take place immediately 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. Rehabilitation 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. Rehabilitation activities are described at the end of this section.

If the existing pavement condition is extremely poor then the street may need to be reconstructed. However, it is always much more cost effective to resurface a street before pavement deterioration becomes severe than to reconstruct it. The cost to reconstruct a street is significantly higher and can be upwards of \$55.00 per square yard. There is currently a significant backlog of street segments identified in the reconstruction section of this Transportation Programming Guide.

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 reconstruction.

## **GOALS AND POLICIES**

The Street Maintenance Program is consistent with the following City of Sacramento General Plan (adopted January 19, 1988, reflects City Council Amendments through September 2000) goals and policies

**Goals:**

1. Maintain the quality of the City street system in the most cost-effective manner.

**Policy:**

Continue to identify streets that are in need of major upgrading, and develop a priority listing for their inclusion in the Capital Improvement Program.

2. Update the City's Pavement Management Application (PMA) which prioritizes street sealing and overlay maintenance work and establishes a link between the Geographical Information System (GIS) for mapping capabilities.

**Policies:**

- Perform sealing of streets currently in good condition to delay the need for more costly street overlays.
- Perform street overlays and ultra thin wearing surface treatments to avoid street reconstruction costs.

**TEN-YEAR STREET MAINTENANCE PLAN**

The City currently has a Ten-Year Street Maintenance Plan that addresses approximately 2.6 million square yards of paved roadway annually. 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. There is only \$4-5 million per year available for the Plan. Additional fund sources need to be identified.

**PROJECT LIST DEVELOPMENT****Pavement Management Application**

The City performed an inventory of the entire road network, in segments of one hundred (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, and the arterial streets, which carry a higher amount of the traffic, get surveyed every year.

When the roadways are surveyed every year, thirteen different distress and roughness data is collected. Each distress is measured with three severity levels and five density levels. The roughness is collected using five levels.

### **Performance Indicators**

All of this 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) and Structural Adequacy Index (SAI).

## **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 rehabilitation program that maintains every street at the most cost-effective point.

## **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 other agencies and funding availability often times 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.

## **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.

### **Rehabilitation Activities**

Resurfacing Strategies include the techniques that are listed below. The appropriate resurfacing treatment for a roadway depends on the existing pavement condition. It is more cost effective to resurface a street before pavement deterioration becomes severe, requiring reconstruction.

Slurry Seal: A blend of oil and small aggregate that is applied to the streets. Slurry seal is a preventative maintenance procedure. The construction cost is approximately \$1.20 per square yard. Slurry sealing can extend the life of a street by 5-7 years.

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. The construction cost is approximately \$3.00 per square yard. REAS can extend the life of a street by 6-8 years.

Microsurface: A thin surfacing containing polymer modified asphalt emulsion and graded aggregate. Microsurface can be used for the same applications as slurry seals and REAS, but thicker layers can be placed allowing for slight rut filling. Construction cost is approximately \$3.50 per square yard. 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. Construction cost is approximately \$3.50 per square yard. 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, and additives. Construction cost is approximately \$6.00 per square yard. 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. The construction cost to overlay a street is approximately \$18 per square yard depending upon the thickness required. Properly maintained, an asphalt overlay can extend the life of the street by 20-25 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. The construction cost to rubber overlay a street is approximately \$27 per square yard depending upon the thickness required. Properly maintained, a rubberized overlay can extend the life of the street by 20-25 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.

TABLE B-1

**YEARS 2008 AND 2009  
RECOMMENDED NON-RESIDENTIAL STREET RESURFACING**

Planned Year	Council District	Street Name, Limits	Square Yards
2008	1	N 16th St, C St - Basler St	12,950
2008	1	N 12th St, N B St - Basler St	8,032
2008	1	N 5th St, Richards Blvd - End	2,900
2008	1	Richards Blvd, N 5th St - N 7th St	4,060
2008	1	Orchard Ln, Garden Hwy - River Plaza Dr	7,860
2008	1	I St, 8th St - 3rd St	11,402
2008	1	Gateway Oaks Dr, Garden Hwy - W El Camino Ave	36,100
2008	1	Richards Blvd, I-5 to N 5th St	11,960
2008	1	W El Camino Ave, Gateway Oaks Dr - I-5	7,320
2008	1	Garden Hwy, I-5 (W/S of overpass) - Truxel Rd	25,700
2008	1	Truxel Rd, Garden Hwy - El Camino Ave	13,411
2008	2	Main Ave, Kelton Wy - Sully St	21,500
2008	2	Royal Oaks Dr, Southgate Rd - Arden Way	6,820
2008	2	Connie Dr, Marconi Ave - Roseville Rd	5,864
2008	2	Leisure Ln, Royal Oaks Dr	4,722
2008	2	Canterbury Rd, Leisure Ln - Media Pl	3,900
2008	3	H St, 56th St - East End	8,800
2008	3	College Town Dr, Hornet Dr - Stadium East	14,050
2008	3	Arden Way (WB), Ethan Way - Bridgedeck	41,822
2008	4	S Land Park Dr, 35th Ave - 14th St	40,400
2008	4	Sutterville Rd, Freeport Blvd - I-5	25,300
2008	4	Havenside Dr, Gloria Dr - Riverside Blvd	11,050
2008	4	T St, 10th St - 16th St	12,460
2008	4	Sutterville Rd, I-5 Ramps to Riverside Blvd	6,778
2008	4	9th St, P St to W St	14,522
2008	5	Broadway, 21st St - Alhambra Blvd	21,340
2008	5	Fruitridge Rd, RR Trax - Franklin Blvd	15,500
2008	5	Intersection Fruitridge Rd & Franklin Blvd	13,400
2008	6	Folsom Blvd, State University Dr - Howe Ave	19,500
2008	6	Redding Ave, 14th Ave - 4th Ave	12,196
2008	6	Broadway, 59th St - Kroy St	7,833
2008	6	Broadway, Kroy St - 65th St	964
2008	7	Riverside Blvd, Park Riveria Wy - Deer River Wy	7,700
2008	7	Riverside Blvd, Park Riveria Wy (N) - Park Riveria Wy (S)	11,900
2008	7	Valley Hi Dr, Franklin Blvd - Center Pkwy	36,300
2008	8	25th St, Florin Rd - 24th St	5,230
2008	8	Brookfield Rd, Mack Rd - Franklin Blvd	20,000
2008	8	24th St, Meadowview Rd to N/O Gardendale Dr	22,000
2009	1	San Juan Rd, Truxel - Bridgeford Dr	22,100
2009	1	Azevedo Dr, El Camino Ave - San Juan Rd	46,000
2009	1	Northgate Blvd, San Juan Rd - I-80	31,300
2009	1	Bercut Dr, Richards Blvd - N 3rd St	8,500
2009	1	Railroad Dr, Del Paso Blvd - End	10,000
2009	1	Natomas Blvd (NB), N Bend Dr - N Park Dr	6,200
2009	2	Bell Ave, W End - Norwood Ave	12,400
2009	2	Royal Oaks Dr, Leisure Ln - Southgate Rd	5,200
2009	2	Rio Linda Blvd, Grand Ave - North Ave	10,100

All streets are subject to change based upon conflicts and funding.

TABLE B-1

**YEARS 2008 AND 2009  
RECOMMENDED NON-RESIDENTIAL STREET RESURFACING**

Planned Year	Council District	Street Name, Limits	Square Yards
2009	3	34th St, Stockton Blvd - Folsom Blvd	7,700
2009	3	Arden Way (EB), Ethan Way - Heritage Ln	16,000
2009	3	T St, 29th St - Alhambra Blvd	4,300
2009	4	43rd Ave, S Land ParkDr - Park Village St	14,100
2009	4	S Land Park Dr, I-5 - 13th St	13,900
2009	4	13th St, Fordham Way - 35th Ave	26,300
2009	4	14th St, S Land Park Dr - 43rd Ave	14,400
2009	4	S Land Park Dr, 35th Ave - Moss Dr	25,900
2009	5	14th Ave, Martin Luther King Jr Blvd - Stockton Blvd	10,300
2009	5	14th Ave, Stockton Blvd - 58th St	10,900
2009	5	50th St, Broadway - 49th St	8,400
2009	5	2nd Ave, Santa Cruz - Stockton Blvd	7,200
2009	5	49th St, Broadway - 50th St	8,700
2009	5	Intersection Stockton & Broadway	5,000
2009	5	24th St, Sutterville Rd - Donner Way	8,200
2009	5	Broadway, Stockton - 49th St	7,300
2009	5	Broadway, La Solidar Way - Stockton Blvd	12,000
2009	6	21st Ave, S Side, 65th St - 79th St	15,500
2009	6	Elder Creek Rd, Cougar Dr - Power Inn Rd	20,100
2009	6	Fruitridge Rd, Stockton Blvd - 65th St Expy	29,100
2009	7	Calvine Rd, Carlin Ave - Center Pkwy	19,900
2009	7	Havenside Dr, Florin Rd - Havenwood Cir	7,200
2009	7	Gloria Dr, Florin Rd - Riverside Blvd	44,800
2009	7	Riverside Blvd, Greenhaven Dr - Park Riveria Wy	45,000
2009	7	Valley Hi Dr, Center Pky - Grandstaff Dr	12,700
2009	7	Riverside Blvd, Park Riveria Wy - Deer River Wy	24,800
2009	8	Calvine Rd, Center Pkwy - Bruceville Rd	15,500
2009	8	Carlin Ave, Jacinto Ave - Ehrhardt Ave	20,200
2009	8	Mack Rd, Tangerine Ave - Center Pkwy	23,500
2009	8	Valley Hi Dr, Mack Rd - Grandstaff Dr	21,600

All streets are subject to change based upon conflicts and funding.

TABLE B-2

**YEARS 2008 AND 2009 RECOMMENDED  
RESIDENTIAL STREET SEALS**

Recommended Year	Council District	STREET NAME	AREA (SY)
2008	1	Residential area bounded by : Haggin Ave to the North, Northgate Blvd to the East, Garden Hwy to the South, I-5 to the West	59,000
2008	1	Residential area bounded by: Richards Blvd to the North, 18th St to the East, C St to the South, N 12th to the West	45,282
2008	1	Fong Ranch Rd from San Juan Rd -N End (Carryover from 2007 due to developer const)	15,830
2008	2	Residential area bounded by : Bell Ave to the North, Nimitz St to the East, North Ave to the South, Raley Blvd to the West	17,207
2008	2	Residential area bounded by: El Camino Ave to the North, Clay St to the East, Evergreen St to the South, Del Paso Blvd to the West	88,644
2008	3	Residential area bounded by: Arden Way to the North, Challenge Way to the East, Exposition Blvd to the South, River Park Dr to the West	68,022
2008	3	Residential area bounded by: Folsom Blvd to the North, 55th St to the East, US 50 to the South, 35th St to the West	89,008
2008	3	Residential area bounded by: Elvas to the North, Folsom Blvd to the South, 58th St to the West	33,619
2008	4	Residential area bounded by: R St to the North, 16th St to the East, X St to the South, 10th St to the West	103,119
2008	4	Residential area bounded by: Sutterville Rd to the North, Freeport Blvd to the East, Fruitridge Rd to the South, Euclid Ave to the West	96,000
2008	4	Residential area bounded by: Riverside Blvd to the North, I-5 to the East, Gloria Dr to the South, Havenside Dr to the West	64,628
2008	5	Residential area bounded by: 23rd Ave to the North, Franklin to the East, 24th Ave to the South, Deeble St to the West.	27,771
2008	5	Residential area bounded by: Hogan Dr to the North, 24th St to the East, Florin Rd to the South, Golf View Dr to the West	108,445
2008	6	Residential area bounded by: US 50 to the North, 65th St to the East, Broadway to the South, 59th St to the West	51,025
2008	6	Residential area bounded by: 4th Ave to the North, Business Dr to the East, 14th Ave to the South, 65th St to the West	42,200
2008	6	Residential area bounded by: US 50 to the North, Bennington Way to the East, Folsom Blvd to the South, Howe Ave to the West	154,827
2008	6	Residential area bounded by: Fruitridge Rd to the North, 64th St to the East, Lemon Hill Ave to the South, 61st St to the West	74,285
2008	7	Residential area bounded by: Mack Rd to the North, Center Pkwy to the East Valley Hi Dr to the South, and Franklin Rd to the West	111,462
2008	7	Residential area bounded by: Mack Rd to the North, Vally Hi to the East and South, Center Pkwy to the West	50,000
2008	8	Shoreside and surrounding Cul-de-sacs	13,548
2008	8	Residential area bounded by: Florin Rd to the North, 21st St to the East, Meadowview Rd to the South, Freeport Blvd to the West	249,891
2009	1	Residential area bounded by San Juan to the North, Northstead Dr to the East, Truxel Rd to the West, Pebblewood Dr to the South	111,000
2009	1	Residential area bounded by W El Camino Ave to the North, Morell St to the East, Garden Hwy to the South, Natomas Park Dr to the West	83,000
2009	2	Residential area bounded by Opportunity St to the North, Rio Linda Blvd to the East, Western Ave to the West, Morrison Ave to the South,	84,000
2009	2	Dixieanne Ave from Erikson St to E End	8,400
2009	3	Residential area bounded by H St to the North, 51st St to the East, Alhambra to the West, R St to the South	240,000
2009	4	Residential area bounded by W St to the North, Broadway to the South, 17th St to the West, Bus 80 to the East	57,700
2009	4	Residential area bounded by Sutterville Rd to the North, Freeport to the East, Euclid Ave to the West, Fruitridge Rd to the South	109,700
2009	4	Residential area bounded by 35th Ave to the North, S Land Park to the West, Park Village St to the East	113,900
2009	4	Residential area bounded by Sutterville to the North, I 5 to the West, Euclid to the West	104,100
2009	5	Residential area bounded by 14th Ave to the North, Stockton Blvd to the West, 58th St to the East, 21st Ave to the South	84,700
2009	6	Residential area bounded by Hwy 50 to the North, City limit to the East, Folsom to the South	119,300
2009	6	Residential area bounded by Elder Creek to the North, 75th St to the West, Power Inn to the East, 53rd Ave to the South	62,200