



SAVE OUR STREETS

2005 YEAR-END REPORT





SAVE OUR STREETS

2005 YEAR-END REPORT

PREPARED BY:

Department of Public Works

MAYOR:

Pete Lewis

COUNCIL:

Rich Wagner, Public Works Committee Chairman

Bill Peloza, Public Works Committee

Roger Thordarson, Public Works Committee

Gene Cerino

Lynn Norman

Nancy Backus

Sue Singer

PUBLIC WORKS STAFF:

Dennis Dowdy, Public Works Director

Dennis Selle, City Engineer

Laura Philpot, Traffic Engineer

Seth Wickstrom, Street Systems Engineer

Photo On Cover: 104th Ave SE in Cobble Creek after overlay

SAVE OUR STREETS

2005 YEAR-END REPORT

TABLE OF CONTENTS

Title Page.....	i
Table of Contents.....	ii
Table of Figures.....	ii
Purpose.....	1
Background.....	1
Save Our Streets Program Background.....	1
Pavement Management BackGround.....	2
2005 Save Our Streets Program.....	3
Overview.....	3
Expenditures Summary.....	4
Administrative and Equipment Expenditures.....	5
CrackSeal Phase.....	5
Patching Phase.....	6
Overlay Phase.....	6
Lessons Learned.....	7
Improvement To Local Street System.....	8
Future Save Our Streets Programs.....	8
Appendix – Maps.....	9

TABLE OF FIGURES

Figure 1: The Pavement Condition Index (PCI) Scale.....	1
Figure 2: History of Funding for Local Streets.....	1
Figure 3: Maintenance Decision Tree for Local Streets.....	2
Figure 4: 2005 SOS Program Thin Overlay Map.....	3
Figure 5: Local Street Fund Breakdown for 2005.....	4
Figure 6: Administrative and Equipment Expenditure Breakdown.....	5
Figure 7: Crackseal Information and Expenditure Breakdown.....	5
Figure 8: Patching Information and Expenditure Breakdown.....	6
Figure 9: Thin Overly Information and Expenditure Breakdown.....	7
Figure 10: Improvement to Local Street System.....	8

PURPOSE

The purpose of the Save Our Streets (SOS) Program is to **improve the pavement condition** of the City's local street system by funding local street rehabilitation and replacement projects. The City measures the pavement condition of local streets by assigning each street segment a Pavement Condition Index, or PCI, value. As shown in Figure 1, PCI values are based on a scale from 0 to 100 with 100 being pavement in perfect condition and 0 indicating the pavement has failed. Before the SOS Program was established in 2004, the City's local street system had an average PCI of 66. The "goal" of the SOS Program is to **raise and maintain this average to 70 or above.**

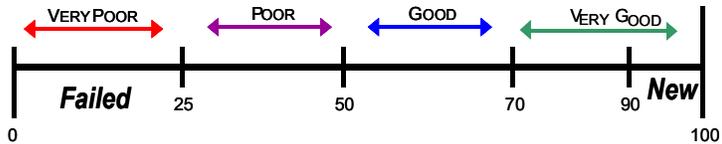


Figure 1: The Pavement Condition Index (PCI) Scale

The Department of Public Works will produce an annual Year-End Report to inform the public about the accomplishments of the SOS Program. This initial Year-End Report includes:

- A summary of all the projects the City implemented through the SOS Program during 2005.
- A breakdown of Local Street Fund expenditures during 2005.
- An update of the overall pavement condition of the City's local street system.
- An update of the City's plans for future SOS Programs.

BACKGROUND

SAVE OUR STREETS PROGRAM BACKGROUND

The City is responsible for maintaining a 160 centerline-mile street system of which 85 centerline-miles, or over half of the network, is made up of local streets. In 2004 the public was showing concern over the condition of the local-street system, but funding over the prior four years had dropped dramatically (see Figure 2) ensuring the system would continue to deteriorate.

With voter approval of Proposition No. 1 on the November 2004 ballot, the City's property tax levy now generates money for a **Dedicated Local Street Fund**, which is used solely by the SOS Program. Currently the levy generates about \$500,000, which is combined with other funding sources to supply the SOS Program with \$1.2 million annually. Overtime,

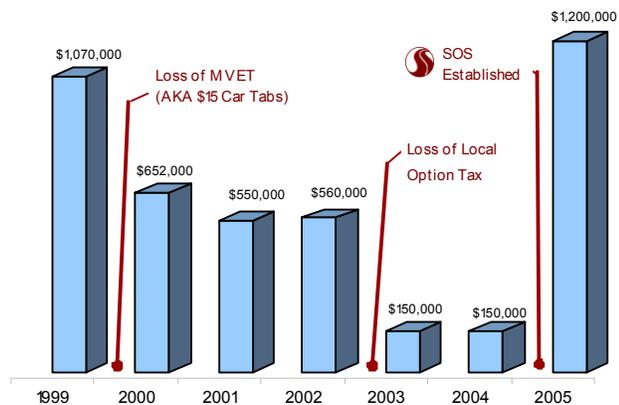


Figure 2: History of Funding for Local Streets

as property values increase, the levy will generate an increasingly greater portion of the total funding for the SOS Program.

Projects funded include:

- **Repair and maintenance** work needed to reduce the deterioration of local streets or streets considered local in nature by the Council.
- **Pedestrian improvements** such as rehabilitating sidewalks and streets in areas heavily used by school children. Priority will be given to safe-walking routes to schools and public facilities.
- **Traffic flow improvements** such as optimizing traffic signals, new ways to safely merge traffic at intersections, new four-way stops, neighborhood speed control and advisory devices, etc.
- **Reconstruction** of local streets or streets considered local in nature by the Council that are in very poor condition.

PAVEMENT MANAGEMENT BACKGROUND

The Department of Public Works uses PCI values to help determine the most effective type of maintenance for a pavement. Figure 3 shows the pavement maintenance **decision tree** for local streets that the City currently uses. This decision tree is simply a table that shows the City’s selected treatment for pavement in various conditions. Note that when pavements deteriorate into poor and very poor condition, the cost of treating them increases dramatically. This is because pavements in these conditions usually require a more extensive treatment that needs more materials, equipment and labor to perform. For example, a thick overlay requires almost twice as much new asphalt pavement as a thin overlay, as well as more patching and “edge grinding” (i.e. removing the pavement along the edge of the street to ensure the height of the overlay will “match” the existing curb and gutter). Reconstructing the road costs even more since the entire section of pavement, and often some of the subgrade, must be excavated and replaced.

PCI Rating	Treatment	Cost per Square Yard
90-100 (Like-New Condition)	No Treatment	\$0
70-90 (Very Good Condition)	Crackseal	\$0.25
50-70 (Good Condition)	Thin Overlay	\$7.50
25-50 (Poor Condition)	Thick Overlay	\$30.00
0-25 (Very Poor Condition)	Reconstruct	\$52.00

Figure 3: Maintenance Decision Tree for Local Streets

Since it is too expensive to treat every street in a single year, the City uses a **pavement management computer program** to assist in prioritizing street maintenance. By using the decision tree and predicting PCI values, this program is a very useful tool in determining which streets will produce the greatest cost/benefit if treated in a given year. The City used this pavement management program to develop the strategy of **preserving “good” streets before reconstructing “bad” ones** for the first three years of the SOS Program. The pavement management program has shown (and history

supports) that it is more cost effective to preserve streets in “good” condition than to reconstruct streets in “very poor” condition. This is because maintenance delayed on a “good” street will increase future maintenance costs exponentially overtime as these “good” streets are allowed to deteriorate into “poor” and “very poor” condition.

2005 SAVE OUR STREETS PROGRAM

OVERVIEW

As planned, the City devoted this year to maintaining and repairing streets in “good” condition and saved an estimated \$2.5 million in future reconstruction costs. Using engineer’s judgment and the City’s decision tree, the Department selected streets that would benefit the most from thin overlays. The \$1.2 million available in the Local Street Fund allowed the SOS Program to overlay 6¾ miles of local streets and begin preparing another 6 miles for the 2006 SOS Program.

To select streets for the 2005 SOS Program, the Department used the pavement management program to create a list of streets that were good candidates for a thin overlay (i.e. local streets with PCIs between 70 and 50). From this list, the Department formed six groups of streets. Department staff visited every street in each group to verify

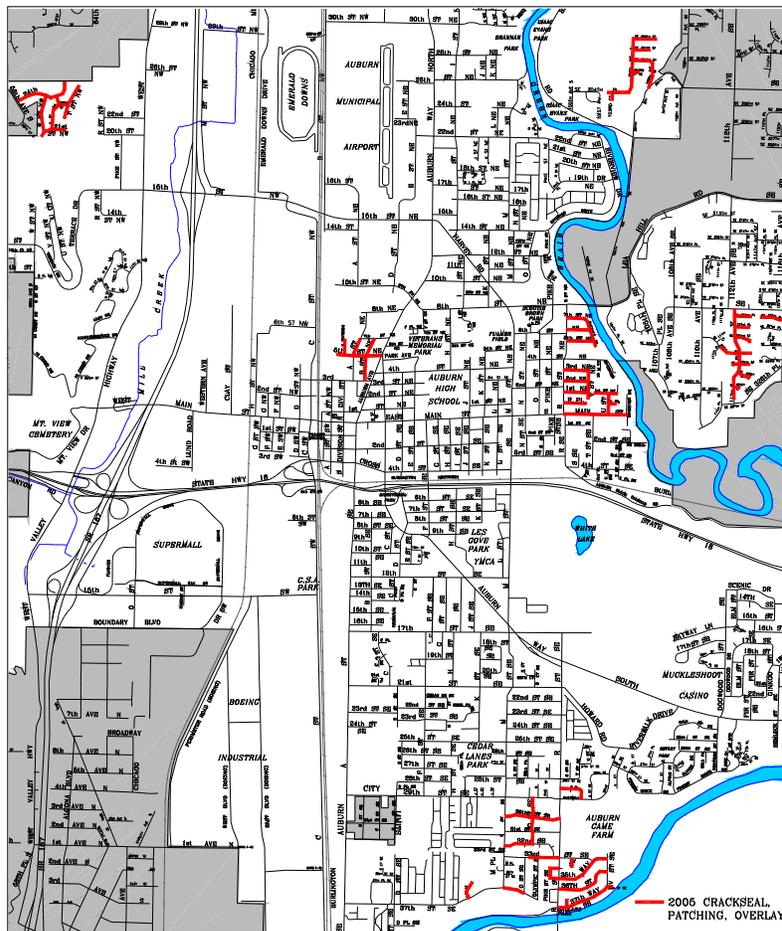


Figure 4: 2005 SOS Program Thin Overlay Map

its condition. Department staff also examined streets near each group to see if they could benefit from a thin overlay even though they did not necessarily meet the criteria used to develop the list. Grouping the streets not only takes advantage of economy of scale but also minimizes multiple disruptions to neighborhoods. The Department was also careful to ensure these groups were well dispersed throughout the City, so that many different neighborhoods would benefit from the SOS Program.

The Department included additional streets from the list to form a portion of the 2006 SOS Program. Due to better than expected construction bids some of these streets were moved to the 2005 SOS Program. The Department cracksealed the remaining 2006 streets in the 2005 SOS Program to slow their deterioration, which will save money on patching in 2006.

The Department applied the thin overlays in three different phases.

- Phase 1 Crackseal** – The crackseal phase involved sealing all the cracks in the street. The City also cracksealed 6 additional miles of streets in preparation for the 2006 SOS Program.
- Phase 2 Patching** – The patching phase involved removing and replacing areas of badly damaged pavement. The City also patched an additional 1/3 mile in preparation for the 2006 SOS Program.
- Phase 3 Thin Overlay** – The thin overlay phase involved resurfacing the street with a thin layer of asphalt pavement.

The Department carried out each phase as a separate project. More information about each of these phases is given in following sections of this report.

EXPENDITURES SUMMARY

Figure 5 shows a breakdown of the Local Street Fund for 2005. Since the 2005 construction bids were better than expected, even with the additional construction work moved forward from 2006, the City did not expend all the funds available for 2005. The remaining funds will be carried over to the 2006 SOS Program.

This year, the City also set aside \$75,000 from the Local Street Fund to fund a portion of the M St SE (29th St SE to 37th St SE) Improvement Project, scheduled for construction in the summer of 2006. More details on the other expenditures are given in the following sections.

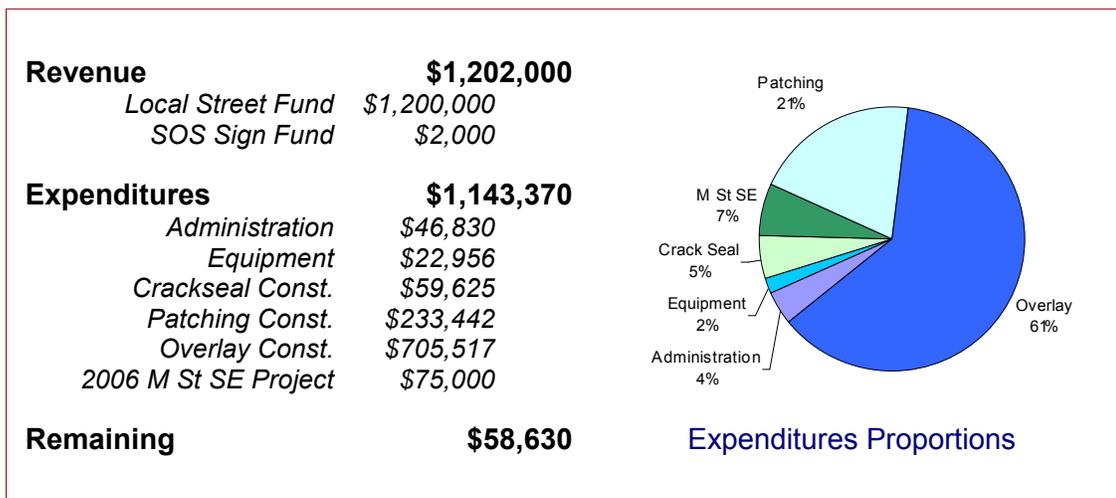


Figure 5: Local Street Fund Breakdown for 2005

ADMINISTRATIVE AND EQUIPMENT EXPENDITURES

A breakdown of the administrative and equipment expenditures is given in Figure 6. The breakdown will change in following years since the City will not have to repeat the purchase of a vehicle and construction signs.

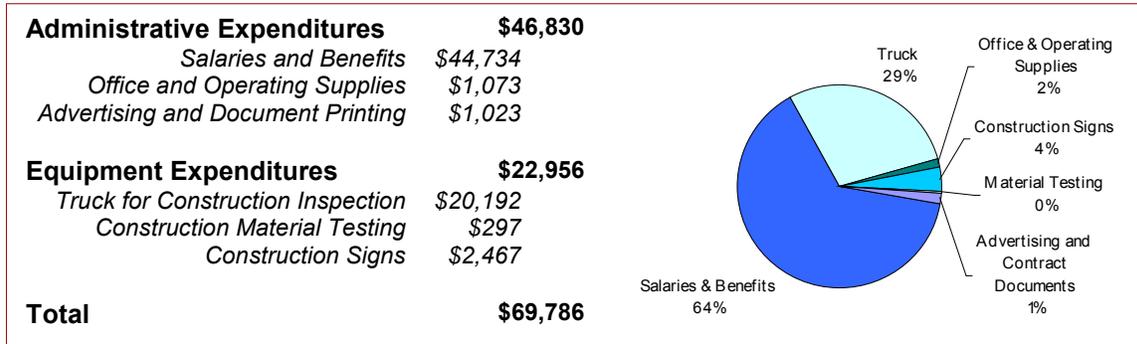


Figure 6: Administrative and Equipment Expenditure Breakdown

CRACKSEAL PHASE

The purpose of the crackseal phase is to prolong the life of an overlay by **preventing water from infiltrating** the street and weakening the foundation. Although an overlay will also prevent water infiltration, cracksealing is still necessary since it provides an additional layer of protection against existing cracks that may reflect up through the overlay, or reappear. Figure 7 gives some additional information about the crackseal phase, as well as a breakdown of the expenditures.



20th St NE after crackseal

As noted earlier, the City cracksealed additional streets to save money on patching in 2006. For a map of streets that were cracksealed this year, refer to Map 1 in the Appendix of this document.

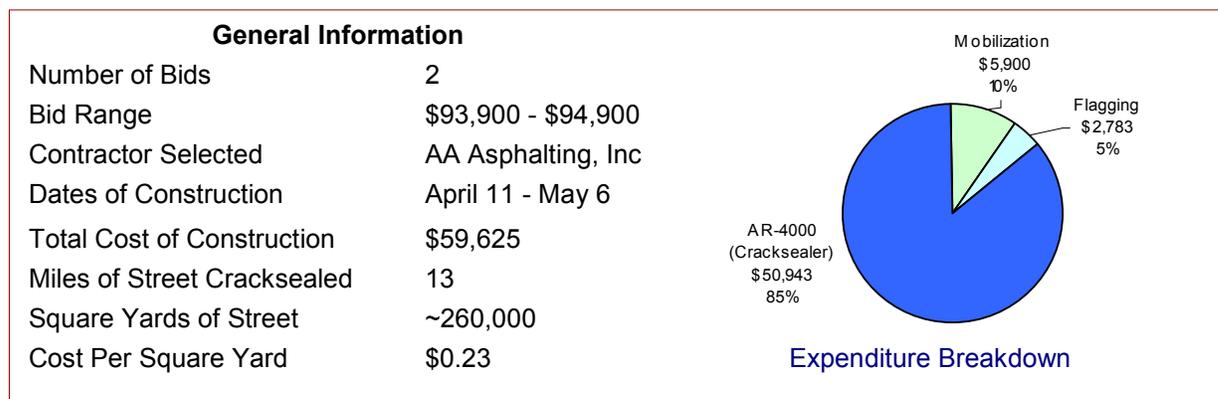


Figure 7: Crackseal Information and Expenditure Breakdown

PATCHING PHASE

The purpose of the patching phase is to prolong the life of an overlay by **increasing the structural capacity** of the existing road. During this phase areas of badly broken pavement are replaced because the broken pavement has lost most of its structural integrity.

Additionally, drainage improvements were made to streets by replacing severely sunken curb and gutters. Figure 8 provides additional information about the patching phase, as well as a breakdown of expenditures.

The City overlaid all patched streets, except for Hi-Crest Drive and SE 325th Street. These streets were only patched and cracksealed this year in preparation for the 2006 SOS Program.



112th PI SE after patching

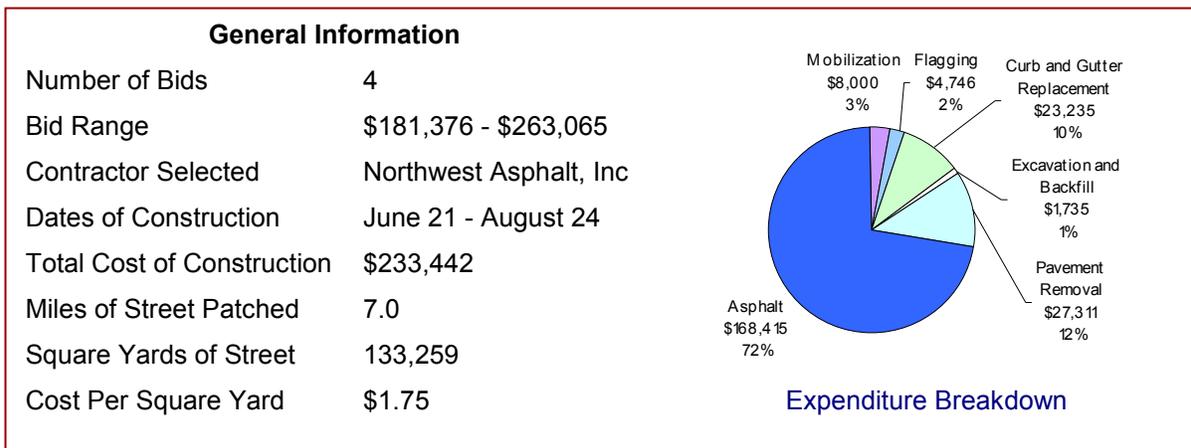


Figure 8: Patching Information and Expenditure Breakdown

OVERLAY PHASE

The main purpose of the overlays was to **reduce further deterioration** of the existing pavement and prevent the need for reconstruction. Additionally, the overlays improved ride quality, improved drainage, enhanced appearance and reduced road-tire noise. Figure 9 provides some additional information about the overlay phase as well as a breakdown of expenditures.



24th St NW after overlay

On average, the City applied an overlay thickness of 1½-inches deep along the centerline of the street and ¾ of an inch along the edges, leaving a small “lip” along the gutter. The City raised utilities (manholes, water valves, and survey monuments) to match the new surface level of the road.

A thin overlay raises a street's PCI value to 100, so every street that was overlaid this year is now in "Very Good" condition.

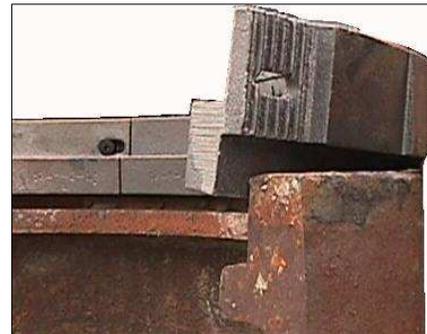


Figure 9: Thin Overlay Information and Expenditure Breakdown

LESSONS LEARNED

In the first year of the SOS Program, the City implemented an extensive thin overlay project and "learned" a few lessons to improve the Program in future years.

1. The material used to seal cracks (AR-4000) became sticky on very hot days during the summer. In following years, the City will use a different material that is less susceptible to melting in extreme heat.
2. The City used riser rings for the first time during the overlay project (see picture on right). Since these riser rings worked very well and saved about \$55,000, they will be used as the standard for future SOS Programs.
3. This year the City rebuilt over 50 surface monuments to match the new surface level of the street (see picture on right). This was an expensive and time consuming task. For the 2006 SOS Program the City is investigating alternative methods to preserve these monuments during future overlay work, which are less expensive and time consuming.



Utility adjustment ring



New surface monument constructed after overlay

IMPROVEMENT TO LOCAL STREET SYSTEM

Figure 10 shows statistics for the local street system before and after this year's SOS Program. As shown, the average local street system PCI increased from 66 to 68. This demonstrates the 2005 SOS Program **has been effective** in improving the City's local streets.

	2003 Prior To Treatment	2005 After Treatment
Average Local-Street-System PCI	66	68

Figure 10: Improvement to Local Street System

FUTURE SAVE OUR STREETS PROGRAMS

In the following two years...

The City will continue to devote SOS Programs to ***maintaining "good" streets***. Hence, the results of the 2006 and 2007 SOS Programs will be very similar to this year's results. A map of streets selected for 2006 and 2007 are in the Appendix (Map 2). The City may change the selected streets slightly as cost estimates are refined, construction bids come in, or other issues arise.

Additionally, the City plans to include ***sidewalk improvements*** in future SOS Programs. These improvements will consist of fixing tripping hazards and badly damaged areas of sidewalks on SOS Program streets. Since these improvements will not be funded by Local Street Fund, they will not impact the budget of future SOS Programs. These improvements will only involve existing sidewalks; they will not relive property owners of their obligation for half street improvements.



Pike St SE Included in 2006 SOS Program



22nd St SE in Need of Reconstruction

Beginning in 2008...

The City will continue to maintain "good" streets but also begin to ***reconstruct "poor" and "very poor" streets***. The City will also begin repairing concrete streets.

Since reconstruction is expensive, the City will include fewer streets in these SOS Programs than in prior years. Streets for these Programs have not yet been selected.

APPENDIX – MAPS

- Map 1 – 2005 SOS Program:** This map shows what the City accomplished in the 2005 SOS Program.
- Map 2 – Past and Future Local Street Treatments:** This map shows all maintenance treatments the City applied on local streets between 2003 and 2005 as well as those planned for 2006 and 2007.
- Map 3 – Pavement Condition of SOS Candidate Streets:** This map shows the pavement conditions of local streets as well as streets deemed local in nature by the Council as measured in 2002. This map has been updated to reflect work done as part of the 2005 SOS Program.