

Memorandum

City of Lawrence

Public Works

TO: Mark Thiel
Assistant Director of Public Works

FROM: Steven M. Lashley, P.E.
Project Engineer – Infrastructure Management

Date: January 6, 2011

RE: 2010 Pavement Maintenance Program Summary Report

Maintenance Program & Budget

The city's annual pavement maintenance program was reviewed and approved by City Commission on December 1, 2009 with an approximate budget of \$5.1 million. The program projects map has had several revisions. The greatest impact to our program revisions this year was due the more extreme 2009/2010 winter months that caused several high traffic volume streets to deteriorate at a higher rate. It became necessary to reallocate the bulk of the funding (\$850,000) programmed for the Infrastructure Sales Tax Project - Kasold Dr from 5th Ter to Peterson Rd and to also request a program budget increase (\$511,000) for the inclusion of additional streets for emergency repair and rehabilitation so that other approved project locations did not have to be eliminated from the 2010 maintenance plan. The City Commission approved these requests for changes at the March 9, 2010 and May 25, 2010 agenda meetings.

The As-Built 2010 Comprehensive Street Maintenance Program map is attached.

The following table displays the various contracted maintenance projects awarded and completed in 2010 (see attached photographs for examples of maintenance work performed).

| Program Project | Award Date | Award Amount | Final Contract Amount |
|--|-------------------|---------------------|------------------------------|
| 2010 Crack Seal Program | February 9, 2010 | \$248,000 | \$247,766.40 |
| 2010 Microsurfacing Program (w/ Emergency Repair & Patching Locations) | February 9, 2010 | \$422,957 | \$1,338,136.80 |
| 2010 Overlay Program Phase 1 | March 23, 2010 | \$581,616.05 | \$950,551.28 |
| 2010 Overlay Program Phase 2 | June 22, 2010 | \$1,369,099.80 | \$1,478,776.86 |
| KLINK - Overlay of E 23 rd St | May 4, 2010 | \$570,420.05 | \$729,742.25 |
| 2010 Concrete Rehabilitation Program | July 13, 2010 | \$273,520.00 | \$349,880.71 |

Contracted maintenance work performed throughout the 2010 program year included:

| | |
|----------------------------------|--|
| Crack Sealing | 198,080 lbs crack seal & 21,150 lbs wide crack fill (on 114.1 lane miles of streets) |
| Microsurfacing (w/ Patching) | 19.1 lane miles |
| Milling & Overlaying | 27.4 lane miles |
| Curb & Gutter | 5.67 miles |
| Concrete Street Rehab - Patching | 4,185 square yards |

Status of Projects & Highlights

Work began on the **2010 Crack Seal Program** (Project No. PW1003) in late April and the project was completed at the end of July. Due to weather impacts, contractor equipment issues, and contractor personnel turnover, there were delays in progression throughout the course of the contract. Staff continuously worked with the contractor to take corrective actions to keep the project on track and within specifications. The contract period was extended to the end of July based mainly on the significant number of rain days that inhibited crack seal placement. At the end of June, Public Works approved the contractor's hiring of a subcontractor (at no additional cost to the City) to provide more crews and equipment to increase their application rate capabilities. Significant progress was made after the additional crews became active.

This crack and joint sealing project included a number of residential, collector, and arterial streets. Streets to receive crack sealing are determined to be in generally good condition. Crack sealing is applied to cracks and joints to prevent the intrusion of moisture into the subgrade and to slow pavement deterioration. Over time, water infiltration through cracks and joints will lead to subgrade destabilization and additional pavement distresses. We will plan to continue utilizing this maintenance method in future maintenance years since it is a standard preventative and effective maintenance technique.

The **2010 Microsurfacing Program** (Project No. PW1004) began in early April and the microsurfacing portion of the project was completed at the end of July. This contract included partial and full depth asphalt pavement repairs in preparation for the microsurface seal application. Microsurfacing, in conjunction with patchwork, has shown to be an effective preventative maintenance technique to improve pavement condition.

A significant amount of the microsurfacing project locations were in the North Lawrence vicinity and generally north of the rail road tracks. The areas generally south of the rail road tracks are included with the 2011 Microsurfacing Program. A portion of the 2nd and Locust detour route was repaired in conjunction with the area microsurfacing work which also included significant

work at 3rd and Perry, Lyon from 2nd to 3rd, and N 2nd south of Lincoln to the underpass. The coordination and overall impact of the multiple projects to this vicinity has produced very positive feedback.

On May 25, 2010 the City Commission approved a program budget increase of \$511,000 to address other area patching repairs needed of which \$100,000 was added under this contract to perform work in "Additional Area Patching Locations" as shown on the attached program map. Patching was performed on additional street locations which included Mississippi from 9th to 13th, Connecticut from 7th to 15th, and then later in the year on E 19th from Massachusetts to Barker with other funding reallocations. Also, \$11,000 of the program increase was included to microsurface and stripe two City parking lots which are located at 6th and New Hampshire and in the 700 block of New Hampshire. The emergency repair work on several arterial streets, from the previously described budget reallocations, was also performed through this project.

The **2010 Overlay Program Phase 1** (Project No. PW1005) project began in early May. This milling and overlay project included a number of City residential streets and the project was completed in mid August. The street mill and overlay sections to be worked on were determined to be in generally fair to poor condition and had deteriorated beyond the point at which cost-effective preventative maintenance techniques could be performed. This type of minor rehabilitation work is utilized when some structural deficiencies exist along with other signs of progressed deterioration that lead to poor drainage and diminished ride quality. An effective milling and overlay program re-establishes desired drainage, structural, and rideability characteristics to a street and reduces other long-term maintenance and rehabilitation costs.

As part of Overlay Phase 1, Missouri St from 9th to 11th, Emery from 9th to High Dr, and 17th from Indiana St to Illinois St were added to the contract as a portion (\$325,000) of the May 25, 2010 City Commission approved program \$511,000 budget increase for additional streets.

The **2010 Overlay Program Phase 2** (Project No. PW1006) project began in late June and completed in mid October. This milling and overlay project also included some curb and gutter removal and replacement on City residential and collector streets. Similar to Overlay Phase 1, these streets were generally in fair to poor condition and the maintenance work has improved drainage characteristics and structural capacity. In addition, Public Works staff coordinated with the Bicycle Advisory Committee to incorporate the installment of bicycle lane pavement markings on E 15th St from Connecticut St to Haskell Ave.

The **KLINK Overlay of E 23rd St from Haskell Ave to east City Limits** (Project No. PW1001) project began in early July and was completed in mid October. KLINK was partially funded by the Kansas Department of Transportation (KDOT), \$200,000. This milling and overlay project also included significant full depth concrete patching repairs to address the extensive pavement failures throughout the street segment. As part of this project, a portion of the concrete intersection on the south side of the intersection at Haskell Ave was reconstructed of which \$50,000 was added to the project to cover these costs out of the \$511,000 program increase. In addition, the traffic loop detection system at the intersection of 23rd and Haskell was converted to a video detection system. A traffic video detection system has several

advantages over a loop detection system. One key advantage to video detection is that they do not have to be physically placed into the existing pavement through partial depth saw-cutting. The saw-cutting for each loop installed increases the deterioration of the pavement structure due to the repeated replacements with each overlay.

The **2010 Concrete Rehabilitation Program** (Project No. PW1014) began in late July and was completed in late September. The project included a significant amount of full depth concrete patching and curb and gutter removal and replacement on Inverness Dr from Bob Billings Pkwy to Clinton Pkwy. A significant portion of the funding for this project came from the reallocation of \$250,000 from the Kasold Dr Sales Tax Project budget and \$25,000 was funded from the CC approved program increase on May 25, 2010.

In summary, we have made significant progress towards improving roadways in Lawrence with the contracted street maintenance program (see attached photographs of some of the various project locations). Internal street maintenance crews have also played a key role in making this maintenance year a success. Some of the work locations include West Hills Pkwy & Ter near Stratford and West Campus Rd where curb and gutter was removed and replaced in conjunction with sidewalk replacement, concrete pavement patching, and asphalt overlay (see program map for internal street maintenance major work locations). In addition to the in-house street projects, street maintenance crews have provided localized curb and gutter replacement, concrete valley gutter intersection improvements, and area patchwork in coordination with the contracted maintenance projects that have enhanced the overall impact of work on several City streets. An example of this type of work includes the installation of concrete valley gutters on both sides of the intersection of W 30th St and Harrison Ave.

Public Works staff completed the first phase of Cycle 3 street ratings in 2010. Findings with the new data were reported to City Commission on December 14, 2010 along with the 2011 maintenance program. General results indicated that deterioration rates are slowing, the PCI is increasing, and the percentages of streets in fair to poor condition are dwindling. The 2011 Comprehensive Pavement Maintenance Program was approved as presented. We have also been working with the existing street pavement rating data to produce projected maintenance plans for future street maintenance years in anticipation of developing a five year plan. Having a projected maintenance plan will increase our effectiveness in programming street sections for upcoming maintenance years and will continue to be an ongoing project from one maintenance year to the next. We believe that the maintenance program is working and the continued support from City Commission has given us the ability to make progress.

Attachments: 2010 As-Built Maintenance Map, Project Photographs