

Memorandum  
City of Lawrence  
Public Works Department

**TO: Dave Corliss, City Manager**  
**FROM: Dena Mezger, Assistant Public Works Director**  
**CC: Cynthia Boeker, Asst. City Manager; Diane Stoddard, Asst. City Manager; Charles Soules, Public Works Director; Steve Lashley, Project Engineer – Infrastructure Management**  
**Date: December 5, 2007**  
**RE: 2007 Pavement Maintenance Program Summary Report**

The 2007 Pavement Maintenance Program consisted of four contracts: Cracksealing, Microsurfacing, Phase 1 Mill & Overlay, and Phase 2 Mill & Overlay. Work is now complete on all projects. Final accounting and paperwork is underway for the Phase 2 Mill & Overlay project. Budget amounts and final contract amounts are indicated below. Bid prices were better than expected so all of the budgeted funds were not expended. Additional funding allocated to pavement maintenance was not budgeted for the contracted work in order to allow for construction contingencies and minimize use of the city's reserve fund accounts.

In addition to these contracts, funds from the pavement maintenance program were used to reconstruct 4<sup>th</sup> Street between Maine and Michigan in association with the LMH expansion project, surface seal the taxiway at the airport in cooperation with work by KU near its hangar, and pay for materials utilized by Street Division crews in repairing sections of concrete pavement not addressed in the contracted maintenance program. Other savings for this year's program were realized due to delays in development projects involving city participation such as the Miracon Plaza project at Clinton Pkwy. and Wakarusa. Funding for those projects will be needed in 2008, however, assuming the development projects move ahead.

Contract	Contractor	Budget Amount (\$)	Actual Amount (\$)
Cracksealing	Mo. Pavt. Maint.	\$ 300,000	\$ 279,216
Microsurfacing	Vance Bros.	\$ 600,000	\$ 534,804
KLINK (Iowa)	LRM	\$ 650,000	\$ 457,383
Phase 1 Mill & Overlay	Ks. Heavy Const	\$1,000,000	\$ 882,251
Phase 2 Mill & Overlay	LRM	\$1,250,000	\$ 1,193,955
	<b>TOTAL</b>	<b>\$3,800,000</b>	<b>\$ 3,347,609</b>

Work performed through the 2007 contracted maintenance program included:

Crackseal material installed	269,000 lbs. over approx. 104 miles
Lane miles of microsurface streets	25.8
Lane miles of mill & overlay streets	15.8
Miles of curb & gutter replaced	6.6

By utilizing microsurfacing as another maintenance technique the total length of resurfaced streets was increased while staying within the desired budget. In 2006, using

only mill and overlay for resurfacing, approximately 25.6 total lanes miles were completed. In 2007 a total of 41.6 lane miles were resurfaced by using a combination of microsurfacing and mill and overlay.

### **Project Status**

The work is essentially complete but there are still portions of the project areas that require some correction. Although materials were acceptable, workmanship in several areas was not satisfactory and some of the new curb and gutter was damaged by the contractor's equipment. Some of the problems are aesthetic in nature and, although not the highest quality, do not affect the life of the facility or improvement. However, most of the unacceptable workmanship identified by staff has the potential to negatively impact the life of the new pavement or curb and gutter and result in maintenance by the city much earlier than should be expected. Staff does not believe it is in the best interest of the city to accept and pay for unsatisfactory workmanship that can affect the long-term performance of the improvements.

Photographs of some of the problems areas are attached along with photos of properly installed materials. The corrective work will have to be completed next spring when temperatures are more conducive to asphalt paving. Until then, staff will retain funds adequate to cover the cost of the corrections until all work that could affect the life of the improvements is satisfactorily completed.

### **Impact of Pavement Maintenance Program**

In order to assess the success of the contract maintenance program, the Pavement Condition Index (PCI) was evaluated for an area where a considerable amount of maintenance has been completed. The southeast portion of the city, generally south of 23<sup>rd</sup> Street and east of Iowa, has had maintenance performed on a number of streets. The majority of streets in the area are asphalt pavements that are candidates for the preventative maintenance measures provided by the contract maintenance program. This allows a relatively accurate picture of the impact of the preventative maintenance program when applied appropriately. The average PCIs for the area are shown below at various milestones in the maintenance program.

Milestone	Program Year(s)	Primary Maintenance Performed	Maint Cost	Avg. PCI
Rating Cycle 1				67.97
	2005-2006	Cracksealing; some M&O	\$ 801,468	
Rating Cycle 2				67.57
	2007	Microsurface; M&O	\$1,359,979	
End of 2007				82.67

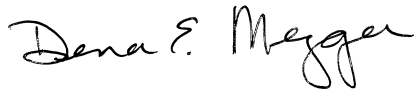
Based on citywide averages, without preventive maintenance, PCIs for residential streets generally decline at a rate of 3.2/year, collectors at a rate of 6.3/yr, and arterials at a rate of 5.6/yr. The very small decline in average PCI between Cycle 1 and Cycle 2 appears to indicate the maintenance activities helped slow the deterioration rate of the streets in this area. The 22% increase in average PCI from Cycle 2 to 2007 indicates the value of microsurfacing and mill and overlay in improving and maintaining the condition of the streets.

**2008 Program Planning**

Staff is currently developing the plan for the 2008 contract maintenance program. Considerations in developing the list include coordination with other projects underway in the city. In conjunction with the 19<sup>th</sup> & Louisiana project, sections of 19<sup>th</sup> Street between Massachusetts and Naismith will be included, along with Louisiana between 17<sup>th</sup> & 19<sup>th</sup> for mill and overlay. Also anticipated for 2008 mill and overlay are Massachusetts - 6<sup>th</sup> to 11<sup>th</sup>, and 14<sup>th</sup> to 23<sup>rd</sup>; 7<sup>th</sup> Street from Vermont to New York; and the residential area southeast of 23<sup>rd</sup> and Louisiana. Cracksealing efforts will generally be focused in the northern parts of the city (including north Lawrence). Microsurfacing will continue primarily south of 23<sup>rd</sup> St. and west of Iowa with limited areas farther east.

Staff members will be glad to answer any questions about this information.

Respectfully Submitted,

A handwritten signature in black ink that reads "Dena E. Mezger". The signature is written in a cursive, flowing style.

Dena E. Mezger, P.E.  
Assistant Public Works Director

Attachment – Photos of project areas

## Examples of Acceptable Workmanship



Properly finished pavement edges should abut tightly against the gutter and be level with the top of the concrete. No ragged edges or loose material should be left along the joint.



Pavement surface should be relatively "tight" without areas of large aggregate on the surface or very porous appearance.



Surface should appear smooth. Seams and roller marks should be generally unnoticeable.



## Examples of Unacceptable Workmanship



Edges that are raised above the adjacent gutter, and have ragged edges with loose material exposed are vulnerable to raveling and damage resulting in potholes and loss of pavement along the edges of the roadway.







Noticeable roller marks and joints with loose material and porous surface.



Gaps between the edge of the asphalt and the gutter allow water to infiltrate into the subgrade creating a greater potential for future base failures which require major patching. (This joint was sealed but that is not considered the best long-term solution.)





Very porous surface can result in the large aggregate pieces popping out. The holes can fill with water and freeze-thaw cycles can result in larger potholes.

Inadequate rolling and compaction, loose aggregate and porous surface result in rough surface areas like this which will deteriorate faster and can be easily damaged by snow plows.





Edge of new curb & gutter damaged by milling machine is vulnerable to more rapid deterioration.



Area marked in pink is excess concrete ("slobbers") that prevent adequate depth of overlay at the edge of the pavement.



Back of curb and front edge of gutter do not align on each side of joint.



Concrete slab around manhole has imprints of creases in plastic sheeting used for protection from weather. (Example of aesthetic rather than functional issue.)