MANAGER'S MEMORANDUM / COUNCIL WORK REQUEST REPORT

Prepared for: **Naperville City Council**
By: City Manager's Office
11/03/2016

A. MANAGER'S MEMORANDUM

1.	Source: TED	Subject: Information on the City of Naperville's Street Maintenance Improvement Program	Action: FYI

B. COUNCIL WORK REQUEST REPORT

CITY OF NAPERVILLE
MEMORANDUM

DATE: November 3, 2016

TO: Doug Krieger, City Manager

THROUGH: William Novack, Director of TED
FROM: Bob Kozurek, Engineering Services Manager
Michael Pearce, Project Engineer

SUBJECT: CY 2017-22 Street Maintenance Improvement Program

PURPOSE:
The purpose of this memorandum is to provide information regarding the Street Maintenance Improvement Program.

BACKGROUND:
The Transportation, Engineering, and Development (TED) Business Group has the responsibility of evaluating the performance of the City's street network and programming repairs and maintenance to keep the pavements in acceptable condition. The annual work program which accomplishes the street maintenance is included in the Capital Improvement Program as MP009 and referred to as the MIP.

In 2007 and 2008, staff and the City Council undertook a comprehensive look at the street network performance data, citizen acceptance data, and financial revenue sources. City Council conducted a workshop to discuss the information and subsequent follow-up involved a consultant evaluation of the street maintenance strategies and programming.

The evaluation sought to address two issues: 1) review of MIP work program strategies and objectives to assure that the work program was right sized to match citizen street quality expectations and economically preserve the streets; and 2) evaluate funding scenarios and revenue alternatives to match the annual maintenance plan budget. Based on the results of these efforts, the MIP budget was set at an annual maximum of $11.6 million which would hold the service level.

To accomplish the revenue balance an additional 3 cents per gallon was added to the local city gasoline tax through ordinance # 10-026. The plan also sought to obtain outside funding, as possible, from other road maintenance sources such as the Federal Surface Transportation Program (STP) and to fund the balance from operating funds rather than through capital borrowing.

SUMMARY OF THE STREET MAINTENANCE PROGRAM:
The city's system of streets is vital to the community as it provides transportation options and opportunities for citizens to travel to work places, shopping, educational institutions, recreation, medical care, and other locations critical to their quality of life. The City network of streets covers

a land area of over 39.4 square miles and comprises nearly 1,250 lane-miles of streets with an asset replacement cost of over $900 million.

More specifically, the street system includes an array of street types which range from highly traveled arterials to less traveled local streets and cul-de-sacs. Because streets come in different widths and shapes, street maintenance is frequently measured in lane miles. A lane mile is one mile long and 12 feet wide. Lane miles offer a basis of comparison of different street designs on a common platform. The city street inventory consists of approximately 175 lane-miles of arterial streets, 275 miles of collector streets, and nearly 800 lane-miles of local streets. Major streets also see more vehicles and a greater percentage of heavier vehicles and therefore are initially designed stronger and wear heavier than locally based streets.

Annually, the staff inspects the street system to evaluate the condition of each street. Based on the 2016 inspection, the overall street system remains in good condition. This is important because it is most cost effective to upkeep pavements in good or fair condition as opposed to expensive repairs for pavements in poor condition.

The strategies of the pavement maintenance program are to identify the streets that need repair and apply the most effective maintenance technique to minimize emergency road repairs such as pothole patching and to maximize the time between resurfacing. The street condition is annually monitored to make sure the desired level of service is provided. Based on the principle that it costs less to maintain roads in good condition than bad condition, the staff strives to develop a maintenance strategy that will sustain the overall condition of the network. The City's current MIP Program identified in the CIP as MP009 consists of the following categories of maintenance treatments:

- Crack Sealing Program (preventive maintenance program)
- Bituminous Patching Program (preventive maintenance program)
- Micro-Surfacing Program (preventive maintenance program)
- Pavement Resurfacing Program (resurfacing and reconstruction program)

Crack Sealing and Bituminous Patching Programs

The TED Business Group has a pavement maintenance strategy which starts when a new street surface is built. Preventive maintenance such as crack sealing and patching are performed throughout this maintenance cycle. Crack sealing is a very cost effective measure and is performed routinely to keep water from getting into the pavement. It helps keep the pavement in good condition and interrupts the propagation of cracking. The patching program provides various size and depths of finish patches on selected streets. Performing preventive maintenance not only helps to provide a smoother ride and safer road condition but also extends the street service life compared to a "do nothing" or minimal reactive approach.

Based on the city's current preventive maintenance strategy, the anticipated resurfacing cycle for a street is approximately 15 to 20 years for major streets and 20 to 25 years for local streets. The timeframe for reconstruction varies depending on the condition of existing base, traffic volumes, and extent of pavement failures.

Micro-Surfacing, Resurfacing and Pavement Reconstruction Program

Typically, the surface condition between 15 to 20 years life cycle dictates which new surface treatment will be appropriate for that particular street section. If the pavement is suitable, it may be sealed with micro-surfacing which can extend the pavement life 5 to 8 years. Micro-Surfacing involves the installation of a thin, latex modified, asphalt wearing course. This product provides greater flexibility toward addressing pavement defects on streets where conventional overlays would not be cost effective at that time. The staff has successfully applied micro-surfacing 2 to 3 times on arterial and collector streets getting a 10 to15 year life extension. As a result, a full cycle of resurfacing cost was saved. Some of the real benefits of micro-surfacing are: 1) it costs a fraction of the resurfacing program; 2) It covers the crackfill which is done prior to micro-surfacing application; 3) It is a brisk maintenance program, hence it impacts the traffic less compared to resurfacing and 4) Pavement markings are refreshed with each micro-surfacing cycle.

When a pavement surface has deteriorated either beyond the point of preventive maintenance or is not suitable for micro-surfacing, the surface will then need to be replaced either by resurfacing or reconstruction, beginning a new pavement life-cycle. Reconstruction is an inevitable consequence of pavement service life as the road base finally deteriorates beyond repair. Typical resurfacing and reconstruction programs include redesign, disruption of traffic, and high cost.

STREET MAINTENANCE IMPROVEMENT MODELING:

In 2010, a pavement maintenance engineering firm was hired to assess the future programming needs of the MIP. In 2016 a new detailed analysis is underway. Within the next several months the consultant and staff will be providing a report that will outline how the pavement inventory has increased and changed, and how new maintenance strategies can be applied to more cost effectively balance the maintenance budget.

Based on the preliminary data it appears as though street maintenance funding needs will increase. When the new report is complete, staff recommends that future longer range funding needs be assessed. These kinds of revenue discussions are not at all unique to Naperville. Within the State of Illinois and nationally, these kind of street and highway asset preservation needs are a critical topic.

Staff will provide additional information once the consultant's report is completed. In addition, should any members of the City Council desire fresh copies of the prior reports and analysis from 2008-10, please contact Bill Novack.

CONCLUSION:

Please share this information with the Mayor and City Council through the Manager's Memorandum of November 3, 2016.