BUSINESS OF THE CITY COUNCIL
CITY OF MERCER ISLAND

AB 6199
January 3, 2023
Study Session

AGENDA BILL INFORMATION

TITLE:	AB 6199: Roadway Pavement Condition Rating Update	☒ Discussion Only ☐ Action Needed: ☐ Motion ☐ Ordinance ☐ Resolution
RECOMMENDED ACTION:	Receive presentation. No action necessary.	

DEPARTMENT:	Public Works
STAFF:	Jason Kintner, Chief of Operations Patrick Yamashita, City Engineer/Deputy Public Works Director Clint Morris, Capital Division Manager Ian Powell, Street Engineer Leah Llamas, GIS Coordinator Matt Ringel, GIS Analyst II
COUNCIL LIAISON:	n/a
EXHIBITS:	1. Map of 2022 Pavement Condition Ratings
CITY COUNCIL PRIORITY:	n/a

AMOUNT OF EXPENDITURE	$ n/a
AMOUNT BUDGETED	$ n/a
APPROPRIATION REQUIRED	$ n/a

EXECUTIVE SUMMARY

The purpose of this agenda bill is to present the City Council with an update on the pavement conditions of the City of Mercer Island's roadway network.

- The City maintains a network of 83.6 miles of arterial and residential roadways, 99% are asphalt pavement.
- A pavement condition rating process is conducted every three years to evaluate the City's road network.
- Roadway segments are rated based on visual pavement distresses and scored between 0 and 100.
- Mercer Island's network average Pavement Condition Index for 2022 is 75, an overall rating of "Satisfactory".

BACKGROUND

The City of Mercer Island maintains a network of 25.3 miles of arterial and 58.3 miles of residential roadways, for a total network of 83.6 centerline miles. These roadways, nearly all of which are asphalt pavement, have

been built, paved, and repaved at various times over the past 60 years and are therefore at different points within their individual life cycles. To effectively manage the roadway network, a method is needed to organize and rank the different segments of pavement to help plan for future resurfacing work.

Roadway pavements wear and deteriorate over time not only due to the accumulation of the traffic loads they carry but also due to distress brought about by weathering and age. To rate the condition of each pavement segment within a given roadway network, a Pavement Condition Index (PCI) rating system is commonly used, in which a numerical PCI score is derived from quantifying various common distress types that are visible on the pavement's surface. The PCI score is an assessment of the overall health of a given pavement segment on a scale of 0 to 100, with 100 being the best possible rating. PCI scores serve as the starting point in developing (or updating) near-term and long-term repair and repaving plans to maintain the pavement network.

In 2009, the City undertook a project to have all City street pavements rated by a visual PCI procedure. Because pavement distresses worsen over time, distress surveys need to be performed periodically to keep the network's PCI information up to date. The City currently conducts PCI ratings every three years.

Staff utilizes the PCI data in the development of the Transportation Improvement Plan (TIP) and utility plans. Collaboration between GIS, engineering, roadway maintenance, and utilities staff allows the City to develop a proactive pavement management plan that identifies pavement rehabilitation needs years in advance and provides time to plan and complete necessary utility improvements before new paving happens.

ISSUE/DISCUSSION

In the spring of 2022, proposals from consultants were received and the City contracted with Infrastructure Management Systems (IMS) from Arizona, a firm that specializes in pavement condition evaluations. IMS has conducted previous pavement condition evaluations for the City in 2013, 2016, and 2019. IMS crews conducted their data collection in September and submitted their preliminary PCI report in November. Data was collected and evaluated using the ASTM D6433 "Standard Practice for Road and Parking Lots Pavement Condition Index Surveys" procedure. This procedure was originally developed by the US Army Corps of Engineers and was standardized by the American Society for Testing and Materials (ASTM).

IMS used their Laser Road Surface Tester to collect the data. This device collects surface distress observations based on the extent and severity of distress encountered along the length of the roadway. Surface distress conditions such as cracking, potholes, raveling, and rutting are indicators of the overall pavement condition.

Three common metrics are used to evaluate the quality of an agency's roadway network:

1. **The network average PCI score**: This is a good global indicator of a network's overall health. Mercer Island's network average PCI score for 2022 is 75, an overall rating of "Satisfactory." In 2019, the network average PCI was essentially the same, with a score of 74. The national condition average currently seen by IMS is between 60 and 65. Mercer Island's network PCI is well above the national average.
2. **The percentage of roads rated as "Good"**: IMS recommends the number of road segments with a rating of "Good" (PCI score between 85 and 100) in a network to be at 15% or above. Mercer Island currently has approximately 25% of its streets rated as "Good."
3. **The percentage of roads in "Backlog"**: This is defined as the road segments rated as "Failed" and "Very Poor" (PCI score between 0 and 40). These represent the portion of the network in need of

extensive rehabilitation, such as full-depth reconstruction. A healthy network will have a backlog of 10% or less. Mercer Island's backlog amount of roughly 4% is well below this threshold.

Public Works Engineering and GIS staff will give a presentation at the study session on January 3, 2023, to explain the City's recent PCI project, including a brief background on the common pavement distresses that affect condition rating, details about the data collection process, and a discussion of the Pavement Condition Ratings map (Exhibit 1).

Additionally, staff will discuss the pavement life cycle and repair strategies for preserving pavement. Life cycles for pavements vary and depend on the traffic loads and volumes the road must carry, the types of construction materials used, the strength of the roadway pavement section, and distresses accumulated over time. Pavement life cycles for Mercer Island streets have historically been planned and designed at 20-25 years for arterial and 30-35 years for residential streets. The City has previously utilized crack sealing, permanent patching, chip sealing, and hot mix overlays to preserve its roadway network.

NEXT STEPS

Staff expects to receive the final report and data set from IMS in January 2023. These new PCI results will be used as staff updates the TIP in spring 2023. Current planning has the next PCI data collection project set for 2025.

RECOMMENDED ACTION

Receive presentation. No action necessary.