

April 28, 2021

To: Mayor and Members of Council 202001056

From: Paula Boggs Muething, City Manager

Subject: Department of Transportation and Engineering – 2019 Infrastructure Condition Reports

Please find attached the Department of Transportation and Engineering's (DOTE) infrastructure condition reports for 2019. The reports are as follows:

- 2019 Bridge Condition Report Summary (the full report is filed with the Clerk of Council)
- 2019 Pavement Condition Report
- 2019 Traffic Engineering Condition Report
- 2019 Retaining Wall and Landslide Condition Report

DOTE is responsible for the capital maintenance of approximately \$5 billion worth of transportation infrastructure. The attached reports detail the condition of the four major components of that infrastructure – bridges, roadways, traffic engineering equipment, and wall stabilization and landslide correction.

All City transportation infrastructure supported by General Capital resources requires regular inspection to determine the need for maintenance, rehabilitation, or even replacement over time. The DOTE capital needs assessment report, as reported in the FY20-21 budget documents, highlights a widening gap between annual needs and planned capital resources required to merely maintain the current ratings of City infrastructure. This is in part related to rising costs for construction and related materials.

Summary of Reports

Bridges

DOTE bridge engineers inspect and report on the condition of 239 bridges. Seventy-one (71) of those bridges are City-owned and are the direct responsibility of the City Bridge Rehabilitation Program. The number of bridges is up from 67 last year due to the addition of four new bridges constructed as part of the Metropolitan Sewer District of Greater Cincinnati's (MSD) Lick Run Valley Conveyance System Project in South Fairmount. The remaining 168 bridges are maintained by Hamilton County, the Ohio Department of Transportation (ODOT), various railroads, private owners, other City agencies (Parking Facilities, SMU, Parks, etc.), or other programs within DOTE (Bicycle Transportation).

Bridges in the City Bridge Rehabilitation Program are inspected, evaluated, and rated on an annual basis based on their physical condition. The bridges receive a condition rating on a 0-to-9 scale, with 6 being “satisfactory” and 7 being “good.” The goal is to ensure assets included in the City Bridge Rehabilitation Program maintain a weighted average condition rating of 6 (“satisfactory”) and that no less than 95 percent of the bridges are open without load restrictions. The City achieved both program goals in 2019.

Pavements

The City has more than 2,900 lane miles of paved roadways. Since 2015, all City streets (pavements) are inspected and rated on an annual basis using automated data collection, which is collected via GPS-based digital imaging and processing equipment. By utilizing this process, the City’s consultant can assign each segment of roadway a pavement condition index (PCI) rating ranging from 0-100. DOTE uses PCI ratings to make decisions regarding planning for street rehabilitation and roadway priorities. The lowest-rated streets receive top priority.

Due in part to a lack of funding and rising costs, DOTE did not meet the program goal to rehabilitate 100 lane miles a year for 2019. DOTE rehabilitated 64 lane miles in CY19 and performed preventive maintenance surface treatments on an additional 47 lane miles. Overall, the area-weighted PCI remained at “good” status in 2019, but the rating slightly dropped to 68 (70 in 2018).

Traffic Infrastructure

Traffic Signals - DOTE is responsible for maintaining traffic signals, street lighting, pavement markings, and traffic control signage in the public right-of-way. The City has approximately 6,500 intersections, more than 800 of which have a traffic signal. DOTE’s Traffic Engineering Division rebuilds aging infrastructure based on a 25-year life cycle schedule. The average age of the traffic signals in the City’s system is 24 years and are at the end of their service life.

CTCS - The Traffic Engineering Division operates and maintains the Computerized Traffic Control System (CTCS). The CTCS is a network that interconnects traffic signals and pedestrian walk lights across Cincinnati. The system enables DOTE traffic engineers to communicate and diagnose problems with signalized intersections. The CTCS system is divided into 16 geographical zones. Only 3 of the 16 zones have been updated with digital communications equipment. The other zones have obsolete communications equipment that is more than 30 years old, which exceeds its estimated life of service.

Electric Streetlighting - The electric lighting system used across Cincinnati is broken into three categories: City-owned lights (4,500 fixtures), City-owned assessed lights (4,000 fixtures), and Duke Energy-owned lights (21,000 fixtures). Many of the light fixtures in each of the three categories have been converted to LED over the past five years. All City-owned lights were converted to LED in 2014, using a performance contract with Honeywell. Approximately 700 City-owned assessed light fixtures have been converted to LED, as have approximately 600 Duke Energy-owned light fixtures. While the lights have been converted, the lighting equipment itself, regardless of category, has exceeded its serviceable life. All equipment is more than 30 years old.

Gas Streetlighting - The City has approximately 1,100 gas streetlights spread across all Cincinnati neighborhoods. In general, these assets are in poor/failed condition and more than 40 years old, which is well past the suggested service life for this technology.

Signs and Paint - The City has more than 985 miles of paved streets with traffic control signs (i.e. stop signs, yield signs, etc.) and pavement markings. The roadways contain approximately 300,000 traffic control signs, 20,000 street name signs, and about 750 miles of pavement marking lines.

Retaining Walls and Landslides

Retaining walls are funded from the same capital funds used for landslide stabilization projects. Landslide projects are prioritized over retaining wall replacement due to the increased risk of landslides causing road closures, infrastructure damage, and threats to public safety. There have been several active landslides this past year, including the hillside stabilization project along Columbia Parkway, and DOTE staff has been focused on these areas.

Attachment I – Bridge Condition Report Summary

Attachment II – Pavement Condition Report

Attachment III –Traffic Engineering Condition Report

Attachment IV – 2018-2019 Retaining Wall and Landslide Report

cc: John S. Brazina, Director, Transportation and Engineering