




# INFORMATION REPORT

<b>TO:</b>	Chair and Members Public Works Committee
<b>COMMITTEE DATE:</b>	February 14, 2022
<b>SUBJECT/REPORT NO:</b>	Lincoln M. Alexander Parkway Overhead Sign Support Structures (PW22008) (City Wide)
<b>WARD(S) AFFECTED:</b>	City Wide
<b>PREPARED BY:</b>	Mike Field (905) 546-2424 Ext. 4576
<b>SUBMITTED BY:</b>	Mike Field Acting Director, Transportation Operations & Maintenance Public Works Department
<b>SIGNATURE:</b>	

## COUNCIL DIRECTION

N/A

## INFORMATION

There are nine overhead sign support structures (OHSSS) on the Lincoln M. Alexander Parkway (LINC) located in advance of all interchanges which are used to mount roadway identification signage. The signage includes exit turn-off signs and interchange sequence signage (signage that advises of approaching exits and distances to them). The LINC structures are aluminium rectangular leg (ARL) type structures and are 25 years old, manufactured and installed in 1997. There are 46 OHSSS's City-wide; however, ARL type structures only exist on the LINC.

The Ontario Ministry of Transportation (MTO) Sign Support Inspection Guidelines (SSIG) requires that the LINC ARL structures be inspected every two years to ensure that they are maintained to an acceptable standard to protect public safety and convenience. The inspections involve detailed examination of each element to assess material, performance, maintenance and rehabilitation requirements.

The LINC originally included 11 OHSSS's and two (east-bound Golf Links Road / Mohawk Road and the east-bound Upper Wentworth Road) were removed in July of

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2019 due to irreparable structural deficiencies identified through SSIG inspections conducted in 2017. Ground-mounted signage was installed at the time of removal to give staff time to determine the best course forward and to date these two structures have not been replaced with updated OHSSS.

Further to the removal of the structures, catwalks were also removed at the same time from all remaining nine structures as well as the replacement of various c-clamps (used to mount the signs) and other minor repairs. The c-clamps are constructed of a brittle casting that is susceptible to premature failure due to a variety of factors such as the quality of castings, over tightening during installation, and structure movements/vibrations. Like the signs, the catwalks were affixed to the structures using c-clamps, and the catwalks were removed to mitigate issues found during inspection and in recognition that the catwalks are redundant elements as they are not used for sign maintenance access as intended.

In Q4 of 2019 another round of SSIG inspections were conducted that identified additional c-clamps failures as well as a structural truss deficiency on the west-bound Garth Street OHSSS. The failed c-clamps were subsequently replaced in spring 2020, using spare c-clamps provided by MTO as the City did not have spare c-clamps and they are not readily available due to the obsolescence of the ARL type structures. The Garth Street structural truss deficiency is not easily repairable and was not addressed at the time of the c-clamp replacements. Per SSIG, the structures are due to be inspected again in 2022.

The estimated capital cost to replace the Golf Links Road / Mohawk Road and Upper Wentworth Road OHSSS's is approximately \$350,000. Based on the results of the 2019 SSIG inspections, it is reasonable to expect that the Garth Street OHSSS will need to be removed and replaced approximately within the next five year at an estimated capital cost of \$200,000. Additional on-going maintenance costs for all the structures is projected to be \$35,000-\$40,000 annually, however these costs will increase because spare parts are increasingly difficult to source and as the structures age and it is likely that more will have to be removed and replaced.

ARL type structures are an obsolete design and are no longer used. Other jurisdictions have found that they experience a variety of maintenance issues which increase with age and are replacing them with more modern designs, such as Tri-Chord structures (similar to what is used on the Red Hill Valley Parkway). MTO have replaced most of their ARL type structures due to the challenges associated with premature element failures, maintenance needs and total cost of ownership demands.

Due to the anticipated high capital costs for replacing the missing OHSSS's on the LINC, Transportation Operations & Maintenance Division contracted CIMA+ through the Consultant Roster to examine signage requirements for the LINC and determine if

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signage mounted to OHSSSS's are needed or if they could be replaced with ground mounted signage. CIMA+ reviewed the relevant existing LINC signage configuration including advance signs, turn-off signs, and interchange sequence signs and provided recommendations based on the Ontario Traffic Manual (OTM) Book 8 and the Manual of Uniform Traffic Control Devices of Canada (MUTCD).

CIMA+ determined that overhead signage on the LINC is not required and could be safely replaced with ground-mounted signage with the exception at east bound Golf Links / Mohawk Road, which would require a small cantilevered overhead sign. Further, the interchange sequence signage could be eliminated, and this would reduce driver workload (cognitive demands and tasks that drivers need to perform when driving) near exit ramps and more clearly delineate the LINC from 400 series highways. Modification of the signing environment from one that focuses on overhead (that drivers are used to seeing on 400 series highways) to one that primarily uses ground mounted signs, may further enhance driver safety and promote lower operating speeds.

The estimated cost to remove the 9 OHSSSS's and replace them with ground mounted signage is approximately \$425,000. Conversely the capital cost to replace the two missing OHSSSS's and to remove and replace the Garth Street structure in the future is estimated to be \$550,000. The annual maintenance costs for ground mounted signs would be less than the annual maintenance costs of the OHSSSS's.

Maintaining safe, consistent and predictable signage on the LINC is important and since there are considerable cost advantages and roadway safety enhancements that can be achieved from removal of the OHSSSS' and replacement with ground mounted signs, Transportation Operations & Maintenance is planning on undertaking this work (through a Request for Tender) in 2022. Removals will require partial closures of the LINC and work will be conducted at night to limit the disruption to vehicular traffic. Prior to beginning any work, adequate communications will be provided to Council and the public including detour routing as required. There is sufficient funding in Capital Account 4662120722 – Overhead Sign Structures 2021 to support this work and therefore no additional funding is required.

**APPENDICES AND SCHEDULES ATTACHED**

N/A