



**PUBLIC WORKS AND
ENGINEERING**
Staff Report

REPORT NO: PWE 2022-08
TO: Council
SUBMITTED BY: Jeff Molenhuis, P.Eng., Director of Public Works & Engineering
PREPARED BY: Mark Jeffery, C.E.T., Senior Engineering Technologist
REVIEWED BY: Sharon Chambers, CAO
DATE: March 14, 2022
SUBJECT: Bridge Street Structure 34B-T9 – Vehicle Collision Damage Report

RECOMMENDATION:

THAT Report No. PWE 2022-08 be received for information; and further,

THAT Bridge Street Structure 34B-T9 and Oxford-Waterloo Road Structure 37B-OXF be closed to traffic until such time the Council endorsed Multi Span Slab-On-Girder Bridge as detailed in Report PWE 2022-02, is constructed and operational.

SUMMARY:

This report provides background information on the impacts to Bridge Street Structure 34B-T9 and area roadways due to a two-vehicle accident, vehicle fire and closure that occurred on the bridge structure. The report also reviews the post-accident condition assessment completed by the Township's structural consultant, and follow-up actions for both structures, including anticipated timelines and financial implications to undertake the necessary repairs to maintain safe operating conditions and re-open the structures.

BACKGROUND:

The Bridge Street Bridge – Structure No. 34/B-T9 is an older structure in the Township’s Bridge Inventory. In recent years, it has been subject to extended closures from vehicle strikes and flood damage. A long-term solution for this structure was identified in past Ontario Structure Inspections (OSIM), where the Township’s position has been to defer major capital costs until such time as higher levels of government would provide funding support.

As part of the Investing in Canada Infrastructure Program (ICIP), funding from the Provincial and Federal governments was confirmed in Q2 2020 for the EA, design, contract administration and construction to support the project, estimated at approximately \$3,537,500. Funding allows for an extended project window, with the project to be completed by October 2026.

On January 17th, 2022, Council endorsed the preliminary design for construction of the preferred alternative identified in the Project File, being a Multi Span Slab-On-Girder Bridge. Council also directed staff to publish the Notice of Study Completion to initiate the 45- day public review period which expired on March 4th.

On the morning of February 2nd, 2022, a collision involving two vehicles occurred on the Bridge Street structure. As a result of the motor vehicle accident, the Bridge Street structure was immediately closed under emergency order to all vehicle and pedestrian traffic until such time a structural assessment and report by the Township’s structural engineer could be completed. The Township’s structural engineer was contacted and attended the bridge site that day to undertake their assessment.

The vehicle impact caused significant damage to a main load carrying member of the bridge and the barrier / railing system at several locations. The damage inflicted to the diagonal members at the third bay from the east on the south side severely reduces the structural capacity of the structure. The areas of severe railing damage also make the bridge unsafe for public use. As such, immediately following the inspection, it was confirmed, via e-mail and telephone conversation from the Township’s consultant that the bridge structure was to remain closed and that significant repairs would be required in order to re-open the existing structure.

As a result of the closure to through traffic on Bridge Street, and as observed in the past with structure closures in this area, it is anticipated a substantial amount of traffic will attempt to re-route to Oxford-Waterloo Road as this becomes the fastest route to travel east-west across the Township and connect to north-south roads on Tye Road and Puddicombe Road to get back to Bridge Street. Oxford-Waterloo Bridge 37B-OXF structure is a similar structure to the Bridge Street bridge, with reduced height and load restrictions. It was closed at the same as Bridge Street due to deficiencies that require repair for safe operating conditions. Minor repairs were planned for this structure in 2022; however, the advanced schedule of closure for Bridge Street requires revisiting the works planned.

REPORT:

As it has been recommended that the Bridge Street structure is to remain closed to vehicles and pedestrian traffic until the necessary repairs have been completed or the bridge structure is replaced with the preferred alternative from the recently completed EA, the Township requested the consultant provide a cost estimate to make the necessary repairs to the bridge structure and in addition, a comparison of the timelines for the two suggested solutions to re-open the bridge. The comparison is to include the design, contract preparation, tendering and council award of the repair process and the full bridge replacement. A comparison of the anticipated timelines is shown below.

Action	Necessary Repairs	Full Bridge Replacement
Finalized Class EA	n/a	March 4 2022
Council Direction	March 14 2022	n/a
Prepare Drawings & Contract Documents	3 weeks	8 weeks
Tendering Process	3 weeks	4 weeks
Review Tenders and Recommend Award	1 week	1 week
Prepare and Submit Report to Council	3 weeks	3 weeks
Award Date (approx.)	May 17 2022	June 27 2022

As the projected timelines between the two solutions have a Council award date that is somewhat similar, anticipated construction schedules may vary and are dependent on the successful contractor’s schedule and materials being readily available to complete the work. As such, the monies expended to make the necessary repairs and re-open the bridge structure may only result in bridge structure re-opening for a short period of time, prior to being closed for an extended period for the replacement of the bridge. Based on the foregoing, it is recommended that the Bridge Street structure remain closed until replacement can occur in accordance with the Environmental Assessment endorsed by Council in January.

Minor repairs were anticipated for Oxford-Waterloo Bridge 37B-OXF this year, as approved in the 2022 capital budget. This structure was closed to traffic at the same time as Bridge Street due to structural deficiencies that required a repair to extend the service life for a 2-3 year window. It was anticipated by staff that the Bridge Street bridge reconstruction would not proceed until 2023/24, and as such the goal was to repair Oxford-Waterloo to allow for normal operating conditions while Bridge Street bridge design was finalized and construction commenced sometime in the next 2 years. It was not anticipated that Bridge Street would be closed until later in 2023, and that detour routing would not need to be considered until that time.

Extended detouring onto Oxford-Waterloo would significantly impact the bridge and road structure further, and would need substantial repairs in order to support the window and volume of detouring, and may also require mitigating measures to control vehicle-type access to the area. As a result, it is also recommended that the Oxford-Waterloo Bridge 37B-OXF remain closed until such time as the Bridge Street bridge is replaced.

The local detour routing with both closures will rely on Tye Road, Huron Road and Puddicombe Road to re-route local traffic to the north as shown in the attached. These roads have a collector road function, and are suitable for detouring local traffic. Staff are looking at options to provide re-routing of through-traffic from Bridge Street and Oxford-Waterloo further to the north and south to arterial and collector roads. This is anticipated to provided advanced notice signage to through travellers further to the east and west along Bridge Street and Oxford-Waterloo Road, and allow for earlier re-routing.

ALIGNMENT WITH THE TOWNSHIP OF WILMOT STRATEGIC PLAN:

This initiative supports the goals and strategies of enhancing:

- Responsible Governance through Fiscal Responsibility, and Infrastructure Investments.
- Quality of Life through Accessibility and Inclusivity, Active Transportation and Transit.

ACTIONS TOWARDS UNITED NATIONS SUSTAINABLE DEVELOPMENT GOALS:

Goal 9: Industry, Innovation, and Infrastructure
Goal 11: Sustainable Cities and Communities

FINANCIAL CONSIDERATIONS:

The estimated costs to undertake the necessary repairs and re-open the Bridge Street bridge structure for vehicle and pedestrian use due to the damage sustained as a result of the two-vehicle accident are estimated to be approximately \$45,000 to \$65,000, with design and construction. The variances are due to the very preliminary nature of the scope of work at this time and are also subject to further fluctuations because of contractor availability and material pricing at time of tendering. The repairs required to the Oxford Waterloo Bridge 37B-OXF to support detouring of Bridge Street traffic are expected to be in the same order of magnitude for costs and timing.

With the recommendation for both structures to remain closed at this time, the anticipated capital spending of \$25,000 for Oxford-Waterloo 37B-OXF will be saved until such time as the replacement of Bridge Street bridge is completed.

ATTACHMENTS:

Appendix 1 – Proposed Local Detour Route
Appendix 2 – K. Smart Associates Assessment Memo