

## Executive Summary

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A Bridge and Culvert Needs Study was carried out in 2024 by Dillon Consulting Limited (Dillon) for 16 bridge and culvert structures with spans greater than 3.0 metres (m), including two pedestrian bridges, located in the Town of Tecumseh (the Town). This report summarizes the findings of the study and identifies the required improvements to structures which are currently deficient or are likely to become deficient within a ten year period from the time of this report.

Three of the 16 structures investigated were identified to have deficiencies where rehabilitation of the structures is recommended. The structures are listed below and this information is also summarized in Appendices B and C.

- Rehabilitation within one to five years
  - Structure 2001 – Colchester Townline Drain at Eighth Concession Road
- Replacement within six to ten years
  - Pedestrian Bridge No.1 – Lakewood Park Pedestrian Bridge
- Rehabilitation within six to ten years
  - Structure 1016 – Collins Drain at Outer Drive.

Structure 2001 was generally in fair condition with very severe spalling of grout, loss of stone and voids observed above the CSP inlet and outlet. The deterioration at the headwalls has progressed since the last inspection and a minor rehabilitation to address these concerns is recommended within one to two years.

The coating system on Pedestrian Bridge No. 1's floor system was observed to have failed and has advanced significantly since the last inspection. The progression of the coating failure confirmed that the previously noted severe corrosion and section loss of the floor system was coating failure. Light corrosion was observed throughout with areas of medium corrosion observed on the stringers. While the corrosion of the floor beams, stringers, and wind bracing has progressed since the last inspection it is not a significant issue at the moment. A steel condition survey in order to quantify the extent of the deterioration and confirm presence of section loss is not considered required at this time but could be considered in the future dependant on the findings from future inspections. Annual inspections are recommended until the structure is replaced. During the 2022 needs study, consultation with the bridge fabricator determined the cost to replace the structure is similar to that of a rehabilitation and therefore a replacement is recommended within six to ten years.

Rehabilitation of structure 1016 may be required in six to ten years in order to address the potential lack of waterproofing on the top of deck and the leaking wide crack observed on the culvert soffit.

No additional investigations are warranted for the 16 structures investigated. However, a steel condition survey and/or detailed coating condition survey may be considered in the future for Pedestrian Bridge No. 1 and should be confirmed during the next inspection.

As part of a previous assignment, Dillon completed a detailed roadside safety review for the bridges and culverts located in the Town of Tecumseh. The outstanding previously recommended roadside safety improvements are summarized below and this information is also summarized in Appendix B.

- Structure 1005 – Pike Creek at Baseline Road
  - Extend the steel beam guide rail at the eastbound approach to relocate the steel beam energy attenuating terminal away from utility poles.

The total estimated capital needs allocation over the ten year study period (to 2034) is \$595,000. This cost estimate excludes H.S.T. and routine maintenance items and includes allowances for construction contingencies and engineering. The Town should consider the needs of the road network when determining priorities for the structures.

By combining road and structure works, there may be opportunities for additional cost savings and a reduction in public traffic disruptions. These estimated costs are in 2024 Canadian dollars without allowance for inflation and are based on visual observations during the study. The recommendations may not necessarily include every improvement possible for each structure. The final estimated costs for structure rehabilitation or replacement will vary on the results of detailed investigations, and/or changes to the proposed scope of work during detailed design.

In this study, the Bridge Condition Index (BCI) was calculated for each structure and compared to the BCI of the previous studies (2003 to 2022). This comparison is provided in Appendix D. The average BCI value calculated for 2024 is 76.6 which is slightly lower than the BCI value of 77.7 that was calculated for the 2022 study. The decrease in BCI can be attributed to the standard decline in structure condition over time.