



## The Corporation of the Town of Tecumseh

Public Works & Engineering Services

**To:** Mayor and Members of Council

**From:** Phil Bartnik, Director Public Works & Engineering Services

**Date to Council:** Tuesday, February 25, 2025

**Report Number:** PWES-2025-11

**Subject:** 2024 Bridge and Culvert Needs Study  
Structures with Spans Greater than 3.0m

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### Recommendations

It is recommended:

**That** Report PWES-2025-11 2024 Bridge and Culvert Needs Study, Structures with Spans Greater than 3.0m, **be received**.

### Background

In accordance with Ontario Regulation 104/97 and related amendments passed pursuant to the *Public Transportation and Highway Improvement Act*, the Town of Tecumseh is required to undertake an inspection, under the direction of a Professional Engineer, for every bridge and culvert (with spans greater than 3.0 m) at least once every two years.

Council, at its regular meeting held on February 13, 2024, gave approval to Report [PWES-2024-07](#) that authorized Administration to proceed with the Public Works & Engineering Services 2024 Capital Works Projects, including the 2024 Bridge and Culvert Needs Study (Motion: RCM-21/24). Dillon Consulting Ltd. (Dillon) was retained to provide engineering services on this project based on their past completion of the 2003, 2008, 2014, 2016, 2018, 2020 and 2022 Bridge and Culvert Needs Studies. Continuity of the consultant for this study is important to maintain a consistent approach and framework in assessing the on-going changes to the Town's bridge infrastructure.

## Comments

Dillon carried out a Bridge and Culvert Needs Study in 2024 (the Study) for 16 bridge and culvert structures with spans greater than 3.0 m, including two pedestrian bridges, located within the Town of Tecumseh. The Study Executive Summary is provided as Attachment 1 of this report.

An inventory of bridges and culverts, including location, structure type, year of construction and the year of last major rehabilitation, is provided in Attachment 2 of this report. A map showing the location of all bridges and culverts is also provided in Attachment 3 of this report.

During site inspections of each structure, data was collected, and inspection reports were completed that detail the structural condition, including defects, deficiencies and maintenance needs.

The Bridge Condition Index (BCI) provides an indication of the change in condition state of an individual bridge over a period of time. The BCI, combined with site observations of each structure, is used as a planning tool to assist with prioritizing structure improvements.

The BCI ratings range from 0 to 100, where 100 would represent a newly constructed structure. Bridge conditions are estimated based on the following ranges:

- i. 70 to 100 is in 'good' condition.
- ii. 60 to 70 is in 'fair' condition.
- iii. less than 60 is in 'poor' condition.

The BCI was completed for all 16 bridge and culvert structures and a comparison to previous studies from 2003 to 2022 was included in the Study (refer to the table provided in Attachment 4).

## Key Findings and Recommendations

Key findings and recommendations contained within the 2024 Bridge and Culvert Needs Study are as follows:

- 1 of the 16 structures was identified with deficiencies and capital needs that should be addressed in the 1-to-5-year time frame.
- 2 of the 16 structures were identified with deficiencies and capital needs that should be addressed in the 6-to-10-year time frame. Yearly monitoring was recommended for one of these structures with specific monitoring being recommended for the other structure during the biennial inspections.

- The average BCI value calculated for 2024 is 76.6 which is slightly lower than the BCI value of 77.7 that was calculated in the 2022 study. The average BCI of 76.6 indicates that the Town is maintaining its infrastructure in an overall good condition. The decrease in BCI can be attributed to the standard decline in structure condition over time.
- There is one potential roadside safety deficiency identified for immediate need at structures 1005. The recommendation remains the same as from the 2022 study since the roadside safety report (2019) was not updated by Dillon in 2024. Current standards should be reviewed when determining the required improvements.
  - Structure 1005 is a concrete slab on steel girder (bridge) located over Pike Creek at Baseline Road. It is recommended to extend the steel beam guide rail at the eastbound approach to relocate the steel beam energy attenuating terminal.

## Recommended Rehabilitation

Key rehabilitation works recommended within the 2024 Bridge and Culvert Needs Study include:

- Structure 2001 over Colchester Townline Drain at Eighth Concession Road – The BCI of this structure has decreased since the 2022 inspection due to the progression of the headwall deterioration. Severe spalling and cracking of grout, and mortar with loss of stone was observed above the CSP pipe inlet and outlet. Maintenance is recommended to take place to prevent further deterioration that will lead to earlier rehabilitation or replacement. The maintenance strategy recommended includes filling the voids between the headwalls and CSP pipe and repairing the headwalls within 1 to 5 years. Other recommended maintenance includes clearing of vegetation as required and the installation of object marker signs. Approximate cost estimate is \$100,000.
- Pedestrian Bridge No. 1, Lakewood Park – The BCI for this structure has decreased since the 2022 inspection. Deterioration consisting of loss of coating and corrosion of the floor system has progressed since the last inspection. Based on consultation with the bridge fabricator in 2022, it was determined that the cost to replace the structure is similar to that of a rehabilitation. Therefore, replacement is recommended within 6 to 10 years. Approximate cost estimate to replace the bridge is \$220,000. Annual inspections are recommended until the structure is replaced.
- Structure 1016, Collins Drain at Outer Drive – It does not appear that a waterproofing membrane was placed on the original culvert deck top during the 2005 rehabilitation work. Medium to wide cracks, with active efflorescence, are

present on portions of the culvert soffit and footing scour was observed throughout the culvert. Rehabilitation including installation of new or replacement waterproofing along the top slab, concrete patch repairs, and crack repairs to the original culvert structure is recommended within 6 to 10 years. Additional maintenance includes barrier post repair; routine maintenance on the north embankments and waterway; and add missing signs. Approximate cost estimate to complete rehabilitation is \$275,000. Monitoring of the crack widths at the deck soffit for further degradation is also recommended until rehabilitation is completed.

## **Conclusion**

The Town is maintaining its structures (with spans greater than 3.0 m) in overall good condition, with an average BCI value of 76.6 for 2024.

A full copy of the 2024 Bridge and Culvert Needs Study will be posted on the Town's [website](#).

## **Consultations**

Dillon Consulting Ltd.

## **Financial Implications**

The estimated capital needs allocation over the ten-year study period (up to 2034) is approximately \$595,000 (excluding HST but including construction contingencies and engineering). The final estimated costs for structure rehabilitation or replacement will vary on the results of the detailed investigations, and/or changes to the proposed scope of work during detailed design.

The recommendations contained within the 2024 Bridge and Culvert Needs Study will form the basis for prioritizing bridge projects in the Public Works & Engineering Services Five Year Capital Works Plan.

Administration will consider the needs of the road network when determining priorities for the structures. By combining road and structures works, there may be opportunity for additional cost savings and a reduction in traffic disruptions.

## Link to Strategic Priorities

Applicable	<a href="#">2023-2026 Strategic Priorities</a>
<input checked="" type="checkbox"/>	Sustainable Growth: Achieve prosperity and a livable community through sustainable growth.
<input checked="" type="checkbox"/>	Community Health and Inclusion: Integrate community health and inclusion into our places and spaces and everything we do.
<input type="checkbox"/>	Service Experience: Enhance the experience of Team Tecumseh and our citizens through responsive and respectful service.

## Communications

Not applicable

Website

Social Media

News Release

Local Newspaper

This report has been reviewed by Senior Administration as indicated below and recommended for submission by the Chief Administrative Officer.

Prepared by:

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Reviewed by:

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Manager Engineering Services

Reviewed by:

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Director Public Works & Engineering Services

Recommended by:

Margaret Misek-Evans, MCIP, RPP  
Chief Administrative Officer

<b>Attachment Number</b>	<b>Attachment Name</b>
1	Bridge Needs Study Executive Summary
2	Town of Tecumseh Bridge and Culvert Inventory
3	Location Map of Bridge and Culverts
4	Bridge Condition Index 2003 to 2024