



Corporation of the Township of Brock

Staff Report to the Members of Council

From: Ben Kester, CET, CRS-s

Position: Interim Director of Public Works

Title / Subject: Bridge and Culvert Deficiencies

Date of Meeting: September 22, 2025

Report No: 2025-OP-015

1.0 Issue / Origin

The Township is required to conduct biennial inspections of all bridges and culverts, as mandated by provincial regulation. The most recent inspection was completed in 2023 and provided an assessment of the condition of 51 bridge and culvert structures throughout the Township.

2.0 Background

In 2025, the Township retained Chisholm, Fleming and Associates to conduct detailed visual inspections of all 51 bridge and culvert structures. The resulting report outlined the condition of each structure and identified any deficiencies.

Several of the Township's structures are over 80 years old and require repair or replacement. Of particular concern is **Bridge 39**, located on Concession Road 11, which currently has a weight restriction due to structural deficiencies. There is a bylaw in place for the weight restriction of the bridge that needs to be renewed as the bylaws are only in effect for 5 years. This bridge should be prioritized during upcoming budget planning along with the **MacLeod Pedestrian Bridge**.

3.0 Analysis

The engineer's report includes tables summarizing deficiencies in a clear and accessible format. Each structure is assigned a **Bridge Condition Index (BCI)**, and a **Bridge Structural Index (BSI)** with scores ranging from 1 (very poor condition) to 100 (new or excellent condition). Lower BCI values indicate deteriorating infrastructure.

Per regulatory requirements, all structures with a span greater than 3.0 metres must be inspected every two years.

The following tables outline the consultant's findings:

- **Table 1 – Additional Investigations Required**

Structure No. – Name	Investigation Required	Priority	Description
02 – Fair Bridge	Timber Investigation	Urgent	Splitting, checking, and rot noted of abutment and pier piles. Piles should be investigated to determine extent of deterioration.
03 – Sunderland Bridge	Timber Investigation	Urgent	Splitting, checking, and possible centre rot noted in two abutment piles. Piles should be investigated to determine extent of deterioration.
32 – Concession 9 Bridge	Timber Investigation	Urgent	Wide splits, checking, and rot noted in two abutment piles. Piles should be investigated to determine extent of deterioration.
07 – Purvis Bridge	Timber Investigation	Normal	Splitting, checking, and rot noted in abutment piles. Piles should be investigated to determine extent of deterioration.
11 – McLaughlin Bridge	Deck Condition Survey	Normal	Extensive deterioration of the south end of the concrete deck top and efflorescence leaching from the wide cracks in the soffit below the deck top deterioration. Condition survey should be completed to determine extent of repairs required. Condition survey may be postponed until the detail design is to be completed.

- **Table 2 – Load Limit Requirements**

Structure No. – Name	Load Posting	By-law Expiry	Comments
39- Concession Road 11 Bridge (Concession 11 Thorah – West of RR 50)	9t 17t 19t	Oct. 2023	Structural evaluation completed in 2015 and the bridge's condition was reviewed in 2021, 2023, and 2025.

- **Table 3 – Structures Requiring Rehabilitation or Replacement (≥ 3.0 m span)**

Structure No. – Name	BCI	BSI	Recommended Works
45 - Macleod Park Pedestrian Bridge	18.2	18.2	Full replacement.
39 - Concession Road 11 Bridge	25.64	21.64	Replace bridge. Install guide rail and end treatments
21 - Francis Bridge	42.7	32.7	Replace or remove the bridge.
319 - Brock Road Culvert	39.16	34.16	Replace culverts.
41 - Concession 3 Bridge	65.11	60.11	Concrete repairs to abutments and soffit.
15 - Concession 13 Bridge	67.08	65.08	Concrete repairs to curbs, wingwalls, abutments, and soffit. Replace end treatment in northeast quadrant.
11 - McLaughlin Bridge	69.9	66.9	Repair concrete on the deck, wingwalls, and abutments, including overlay of the deck. Remove and repair disintegrated road base and install rock protection at the roadway edge. Repair loose base plate nuts and bolts. Replace damaged northeast post and railing system.
323 - Concession Road 1 Culvert	67.5	66.5	Install hazard markers on each quadrant.
201 - Concession Road 11 Culvert	66.66	66.66	Replace guide rail posts and offset blocks.
08 - Bicks Bridge	69.9	66.9	Concrete repairs to soffit.
32 - Concession 9 Bridge	71.25	67.25	Repair abutment piles and close gaps between planks. Upgrade barrier over structure to three beam guide rail. Install guide rail and end treatments.
10 - Peace Street Bridge	70.48	67.48	Concrete repairs to girders, railing, and soffit. Install additional railing to top of current barrier. Install guide rails with end treatments on approaches.
25 - Swamp School - Galloway Bridge	73.87	67.87	Repair undermining of approach slab. Restore embankments around guide rail posts at corners of bridge. Concrete repairs to abutments and implement bearings.
29 - Smith Bridge	71.07	68.07	Concrete repairs to deck top. Concrete crack repairs to soffit.
07 - Purvis Bridge	70.11	68.11	Concrete repairs to exterior soffit and curbs. Repair abutment and wingwall piles and close gaps between planks. Resurface approach wearing surfaces. Replace railings. Install guide rails with end treatments on approaches.

Structure No. – Name	BCI	BSI	Recommended Works
202 - Concession Road 13 Culvert	70.53	68.53	Install guide rails with end treatments over structure and on approaches.
42 - Sideroad No. 18 Bridge	73.76	68.76	Concrete repairs to wingwalls and soffit.
26 - Howard Bridge	71.82	68.82	Install guide rails with end treatments on approaches. Concrete repairs to curbs, railing posts, wingwalls, abutments, and soffit.
33 - Concession Road 10 Bridge	70.09	69.09	Close gaps between abutment planks. Concrete repair. Upgrade barrier over structure to thrie beam guide rail. Install guide rail and end treatments.
03 - Sunderland Bridge	73.09	69.09	Repair the deteriorated abutment piles, close the gaps between the abutment planks, and carry out concrete repair, waterproofing, and paving on the deck top. Replace the deck drains and the existing railing with a thrie beam guide rail, and extend the approach guide rails with end treatments.
12 - Sackville Bridge	72.26	69.26	Concrete repairs to wingwalls and soffit. Replace drain pipes. Replace railing system and install guide rails with end treatments on approaches.
27 - Concession 6 Bridge	71.53	69.53	Concrete repairs to curbs, soffit, girders, and abutments.
14 - Sproule Bridge	73.04	70.04	Concrete repairs to abutments. Replace joint seals. Patch potholes and disintegration of wearing surface on deck and approaches. Extend approach guide rails and install end treatments.
31 - Concession 1 Bridge	73.04	70.04	Concrete repairs to abutments and wingwalls. Install thrie beam guide rails over structure. Install guide rails with end treatments on approaches.
40 - Sideroad 17A Bridge	72.75	70.75	Concrete repairs to soffit, abutments, and wingwalls.
34 - Concession Road 2 Bridge	75.06	71.06	Concrete repairs to soffit. Crack repairs to abutments and southwest wingwall.
38 - Concession Road 7 Bridge	72.22	71.22	Replace guide rails.
04 - Beaver Bridge	72.27	71.27	Patch, waterproof, and pave deck. Replace rotted wingwall planks and place fill in front of wingwalls. Replace railings. Install guide rails with end treatments on approaches.
02 - Fair Bridge	75.42	71.42	Repair abutment and pier piles. Replace severely rotted section of pier cap. Replace steel collars on pier piles. Recoat girders.
09 - John Street Bridge	73.59	71.59	Concrete repairs to soffit and abutments.

Structure No. – Name	BCI	BSI	Recommended Works
19 - McRae – Vrooman Creek Bridge	73.62	71.62	Concrete repairs to soffit. Extend approach guide rails and install end treatments.
05 - Vroomanton Bridge	74.4	72.4	Concrete repairs to abutments and wingwalls and interior soffit.
24 - McKay Bridge	74.57	72.57	Repair concrete in abutments. Upgrade guiderail. Repair damaged hazard marker and install them on the other quadrants as needed.
22 - Riverview Bridge	73.42	73.42	Concrete repairs to abutments, wingwalls, girders, interior soffit, and diaphragms.
23 - Cockburn Bridge	73.86	73.86	Concrete crack repairs to abutments and wingwalls and soffit. Extend approach guide rails. Upgrade guide rail end treatments and structure connections.
30 - McQorquodale Bridge	79.98	74.98	Concrete repairs to exterior soffit. Remove sediment buildup under bridge.
18 - Gibbs #2 Bridge	77.2	75.2	Concrete repairs to soffit. Concrete crack repairs to curbs and exposed deck top. Repair joint seal hanging from soffit.
37 - Thorah Sideroad Bridge	78.46	75.46	Concrete repairs to wingwalls, abutments, and soffit. Repave approaches.
16 - Argue Bridge	76.6	75.6	Repair concrete cracks on the exposed deck top. Remove and repair disintegrated road base and install rock protection at the roadway edge. Repair loose base plate nuts and bolts. Repair damaged post and railing system.
28 - McHattie Bridge	79.57	77.57	Concrete crack repairs to soffit.
20 - Gibbs # 1 Bridge	93.69	84.69	Concrete repairs to the wingwalls. Extend guide rail channel in southeast quadrant.
310 - Concession Road 6 Culvert	91.67	89.67	Replace damaged guide rail sections.

In addition to the above major repairs there were 7 pages of minor repairs, to all the other bridges and culverts, that mainly comprise of concrete and asphalt repairs and sign repairs.

4.0 Related Policies / Procedures

Public Transportation and Improvement Act, specifically Ontario Regulation 104/97 “Standards for Bridges”.

5.0 Financial / Budget Assessment

The findings and recommendations of this report will be considered during the 2026 budget deliberations.

5.1 Asset Management

Ongoing repair and replacement of bridge and culvert infrastructure is critical to maintaining the Township's asset base in a state of good repair.

6.0 Climate Change Impacts

Closure of bridges or culverts due to unsafe conditions can lead to detours and increased travel distances for residents, resulting in higher greenhouse gas emissions and fuel consumption.

7.0 Communications

N/A

8.0 Conclusion

Council should consider the condition and importance of the Township's bridge and culvert assets when making budget allocation decisions. Proper funding is necessary to ensure continued public safety and infrastructure reliability.

9.0 Recommendation

That report 2025-OP-15 be received for information and that proposed culvert and bridge work for 2026 be referred to budget discussions.