

BRIDGE REVIEW REPORT

<u>Structure No.:</u>	0013
<u>MTO Site No.:</u>	N/A
<u>Location:</u>	Lot 23A, Concession 8, Greenock Survey
<u>Date of Review:</u>	May 29, 2018
<u>Inspector:</u>	Jesse Borges, EIT
<u>Estimated Safe Loading:</u>	No posting required.

Structure Description:

Structure:	Cast-in-place concrete arch culvert	Year Constructed:	unknown
No. Spans:	1	Width:	±16.5m
Approaches:	Asphalt	Length:	±6.5m
Wearing Surface:	Asphalt		

Remarks:

- Asphalt wearing surface is in fair to poor condition with longitudinal and transverse cracks. Asphalt at north has been patched.
- There is a steel beam guiderail on the structure and off the approaches.
- Several guiderail posts and bearing blocks are damaged in the southwest and northeast approaches.
- The southeast retaining wall is not part of the structure but does have severe deterioration and water leaking. Failure of the following wall could cause problems for the culvert.
- There is no headwall on either side of the culvert. It appears that part of the ground behind the southwest corner has slumped in and the grade is eroding due to water runoff on the steep slope.
- There is a large stone wingwall in the southwest corner. There is no mortar between the stones.
- There is no drip edge cast into the soffit.
- There is a medium horizontal crack along the width of the structure at each construction joint. There is also light honeycombing along the length of the construction joints.
- There are numerous hairline to medium longitudinal and transverse cracks throughout the structure with efflorescence indicating water is leaking through the entire structure.
- There is some spalling at the south soffit and the northwest wall exposing reinforcing steel.
- South embankment is failing, causing the guiderail to be pulled down and away from the roadway.
- The large vegetation growing beside and on top of the barrel will allow roots to damage the structure.

Conclusions:

Generally the structure appears in fair to poor condition. There is excessive cracking throughout the structure covered with efflorescence indicating water is leaking through the structure. However, the structure does appear to be stable. Waterproofing the top of the arch and refacing the interior surface of the barrel may extend the life span of the structure. However, performing major repairs to the structure would only delay the structures replacement and would not be financially beneficial to the Township. The structure has been recommended for replacement since 2010 when it was introduced into the Brockton Review Program indicating construction by 2020. An intrusive investigation in 2012 exposed a portion of the exterior surface of the barrel which exhibited sound concrete in fair condition.

The rate of deterioration from 2010 to 2018 has been slower than expected allowing the Municipality to delay the replacement of the structure. The Municipality should prepare for replacement of this structure within 5 -8 years.

Recommendations:

1. Continue to monitor condition of soffit with reviews every two years.
2. Budget for replacement in 5 to 8 years.

GM BLUEPLAN ENGINEERING LIMITED

Per:

A handwritten signature in black ink, appearing to read 'Jesse Borges', is written over a horizontal line.

Jesse Borges, E.I.T.

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GREENOCK SURVEY**

Structure No. 0013



Photo 1 - View of structure from east.



Photo 2 - View of structure from northwest.

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Photo 3 - View of cracks and patch in asphalt.



Photo 4 - View of southeast retaining wall.

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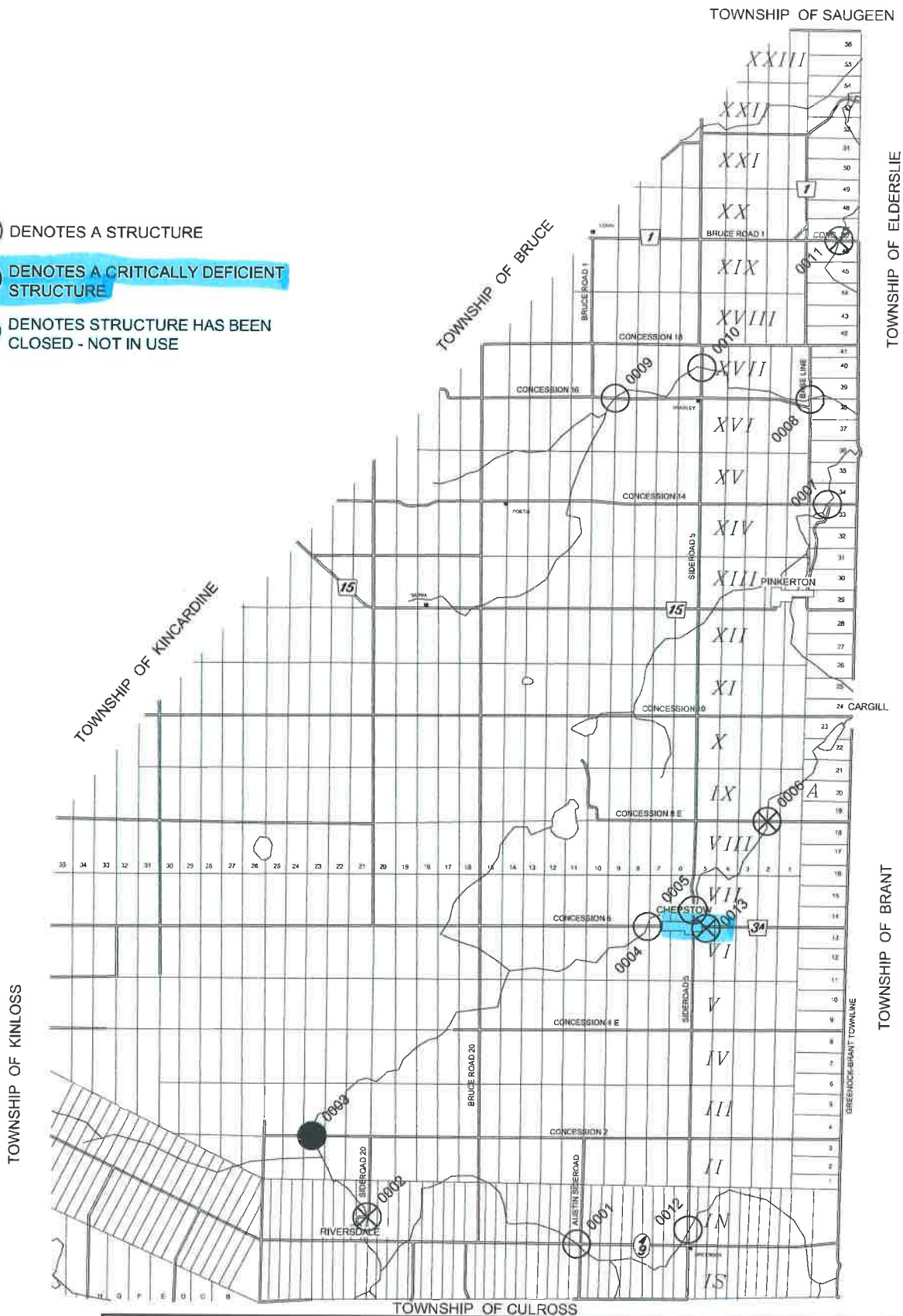


Photo 5 - View of typical staining and leaking in barrel wall.



Photo 6 - View of typical efflorescence and exposed rebar in barrel wall.

- DENOTES A STRUCTURE
- ⊗ DENOTES A CRITICALLY DEFICIENT STRUCTURE
- DENOTES STRUCTURE HAS BEEN CLOSED - NOT IN USE



MUNICIPALITY OF BROCKTON

FORMER TWP. OF GREENOCK

BRIDGE LOCATIONS

