

Report to Council

Report Title: Brockton Overall Bridge and Culvert Review

Prepared By: Gregg Furtney, Director of Operations

Department: Operations

Date: February 9, 2021

Report Number: PW2021-03 **File Number:** C11PW, T11

Attachments: Brockton Bridge Map – November 3, 2020

Recommendation:

That the Council of the Municipality of Brockton hereby receives Report Number PW2021-03 – Brockton Overall Bridge and Culvert Review, prepared by Gregg Furtney, Director of Operations, for information.

Report:

Background:

The Municipality of Brockton owns and maintains thirty-seven (37) bridge and culvert structures within its rural area, the former Township of Brant and the former Township of Greenock. There are eight (8) culverts, two (2) of which will require significant repairs or replacement within five (5) years. There are twenty-nine (29) bridges, of various lengths, five (5) of which will require significant repairs or replacement within five (5) years. There are currently two (2) bridges that are closed.

Table A: Bridge and Culvert Review

Bridge and Culvert Review		
	Total	Deficient
Culverts	8	2
Bridges		
Less than 10 m long	9	1
10 to 20 m long	10	0
20 to 30 m long	3	1
30 to 50 m long	3	2
50 to 70 m long	3	1
Greater than 70 m long	1	0
Removed	2	0
Total:	39	7

For the 2021 Capital Budget, there are three (3) bridge/ culvert structures on the books for rehabilitation or replacement, not including the Riversdale Bridge. The total estimated value of that work is \$2,395,000. The Chepstow Culvert and the D.S. Weis Memorial Bridge were both projects that were carried over from the 2020 Capital Project Budget. Staff anticipate further work to be identified throughout 2021.

The information on the following two (2) tables (Table B and Table C) are extrapolated from the 2020 Bridge and Culvert reviews, prepared every other year by GM BluePlan Engineering. Aside from the description of each bridge or culvert structure, staff have also identified the existing Load Posting, Condition Rating, and the Estimated Years Left. The **yellow highlighted bridges and culverts** in the charts below are in the deficient column within Table A. The **green highlighted structures** in the Table B and Table C are culverts.

Condition and Estimated Years Left will certainly change with each inspection. New deficiencies may arise or become more apparent, traffic volumes may increase, vehicle or equipment weights may increase, vehicle accidents may have occurred, storms and erosion could become more prevalent, municipal staff may see something that catches their attention while they are crossing the structure doing their inspections and seasonal maintenance, etc. A good condition rating may change drastically during each subsequent Engineering Inspection. Because these structures are exposed to the natural elements, deterioration is expected.

Table B: Former Township of Greenock Bridges and Culverts

Greenock Bridge Reviews (2020)						
Structure	Map		Structure	Existing Load		Estimated
No.	Reference	Location	Type	Posting	Condition	Years Left
0001	G01	Concession 1N	Precast I-Girder	Not Posted	Excellent to Good	20
0002	G02	Concession 1N	Steel Through Truss	Currently Closed	Closed - No Condition	0
0003	G03	Concession 2/3	Permanently Removed	N/A	Removed	0
0004	G04	Concession 6/7	Rigid Frame	Not Posted	Good to Fair	14
0005	G05	Concession 7	Precast I-Girder	Not Posted	Good Condition	20
0006	G06	Concession 8/9	Steel Through Truss	6,12, and 19 tonnes	Closed - No Condition	0
0007	G07	Concession "A"	Precast I-Girder	Not Posted	Good Condition	46
0008	G08	Concession 16	Double Box Culvert	Not Posted	Good Condition	24
0009	G09	Concession 16/17	Rigid Frame	Not Posted	Good Condition	14
0010	G10	Concession 17	Rigid Frame	Not Posted	Good Condition	12
0011	G11	Concession "A"	Permanently Removed	N/A	Removed	0
0012	G12	Concession 1N	Rigid Frame	Not Posted	Good Condition	10
0013	G13	Concession 6/7	Concrete Arch Culvert	Not Posted	To be replaced in 2021	0
0014	G14	Concession 17/18	Rigid Frame	Not Posted	Fair to Poor	1 to 5
0015	G15	Concession 17	Rigid Frame - Culvert	Not Posted	Good Condition	10
0016	G16	Concession 15/ "A"	SPCSP - Culvert	Not Posted	Good Condition	10
0017	G17	Concession 6/7	Rigid Frame - Culvert	Not Posted	Poor Condition	1 to 5
0018	G18	Concession 6/7	SPCSP - Culvert	Not Posted	Poor Condition	1 to 5
0019	G19	Concession 2/3	Rigid Frame - Culvert	Not Posted	Good Condition	10

Table C: Former Township of Brant Bridges and Culverts

Brant Bridge Reviews (2020)						
Structure	Map		Structure	Existing Load		Estimated
No.	Reference	Location	Type	Posting	Condition	Years Left
0001	B01	Concession 8/9	Precast I-Girder	Not Posted	Rehabilitation 2021	N/A
0002	B02	Concession 14/15	Rigid Frame	Not Posted	Good Condition	19
0003	B03	Concession 12/13	Rigid Frame	Not Posted	Good Condition	20
0004	B04	Concession 12/13	Double Cell Rigid Frame	Not Posted	Good Condition	39
0005	B05	Concession 12	Double Cell Rigid Frame	Not Posted	Good Condition	39
0006	B06	Concession 12/13	Double Cell Rigid Frame	Not Posted	Good Condition	39
0007	B07	Concession 11	Rigid Frame	Not Posted	Good Condition	10
0008	B08	Concession 11	SPCSP Culvert	Not Posted	Good Condition	15
0009	B09	Concession 2/3	Precast I-Girder	Not Posted	Good Condition	36
0010	B10	Concession 1	Precast I-Girder	Not Posted	Good Condition	32
0011	B11	Concession 2/3	Precast I-Girder	Not Posted	Good Condition	41
0012	B12	Concession 10	Rigid Frame	Not Posted	Excellent Condition	69
0013	B13	Concession 14/15	Steel Girder	7 tonnes	Good to Fair Condition	10
0014	B14	Concession 10/11	Rigid Frame	Not Posted	Good Condition	25
0015	B15	Concession A	Double Cell Rigid Frame	Not Posted	Good Condition	10
0016	B16	Concession 15	Rigid Frame	Not Posted	Fair Condition	10
0017	B17	Concession 11	SPCSP	Not Posted	Good Condition	10
0018	B18	Concession 9/10	SPCSP	Not Posted	Good to Fair Condition	10
0019	B19	Concession 10	Twin CSP	Not Posted	Good Condition	10
0020	B20	Concession 3	SPCSP	Not Posted	Good Condition	10

Please see the attached map to identify the locations of the above bridge and culvert structures. Many of these structures are hidden within the natural landscape and Members of Council, Staff, and Residents have likely driven over them without knowing.

Analysis:

The purpose of this report is to give provide a snapshot of the bigger picture as it relates to bridge and culvert structures within rural Brockton. As mentioned above, the 2021 capital work, excluding the Riversdale Bridge project, is approximately \$2,395,000. The Chepstow Culvert project will be partially funded through the ICIP Rural and Northern Communities Funding Grant that staff were successful in accessing. The remaining four (4) deficient bridge or culvert projects will need to be addressed in 2022. Twelve (12) bridge or culvert replacements or rehabilitations will need to be addressed in the next five (5) to ten (10) years. Some of these structures are more important to the broader road network than others within Brockton. Projects will be addressed based on priority road network needs.

Future cost estimates are difficult to determine because each project is very different. Some structures will need to be replaced and others can be rehabilitated. Some will require full Environmental Assessments and Engineering and others won't. The refined cost estimates will depend greatly on the length of the bridge or culvert and the type of deficient superstructure components and how they relate to the overall structure and broader road network. For instance, the replacement options for the Riversdale Bridge, if it was a single lane structure like is what is currently there, ranges between \$1.5 Million and \$2 Million. The Chepstow project is approximately \$1,395,000. Rehabilitation of the D.S. Weis Memorial Bridge is estimated to be approximately

\$750,000. Not including the work that has been identified in the 2021 Capital Budget, staff estimate that the Municipality will need to spend between \$12 Million and \$20 Million in maintenance work, rehabilitation work, and replacement work on bridge and culvert structures, within Brockton, in the next 10 years.

Staff will remain diligent in maintaining the existing structures and identifying projects as they arise. The health and safety of residents and visitors of Brockton remains Council and staff’s number one (1) priority.

Sustainability Checklist:

What aspect of the Brockton Sustainable Strategic Plan does the content/recommendations in this report help advance?

- Do the recommendations help move the Municipality closer to its Vision? Yes
- Do the recommendations contribute to achieving Cultural Vibrancy? N/A
- Do the recommendations contribute to achieving Economic Prosperity? N/A
- Do the recommendations contribute to Environmental Integrity? Yes
- Do the recommendations contribute to the Social Equity? Yes

Financial Impacts/Source of Funding:

- Do the recommendations represent a sound financial investment from a sustainability perspective?
N/A

There are no financial impacts associated with this report.

Reviewed By:



Trish Serratore, Chief Financial Officer

Respectfully Submitted by:



Gregg Furtney, Director of Operations

Reviewed By:



Sonya Watson, Chief Administrative Officer