# 2016 BIENNIAL MUNICIPAL BRIDGE & CULVERT INSPECTIONS





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16-1055 August 3, 2016

Ruth Kelso Clerk, CAO 1 Johnson Drive Desbarats, Ontario P0R 1E0

Dear Mrs. Kelso:

Regarding: Township of Johnson - 2016 Biennial Bridge & Culvert Inspections

Please find enclosed our 2016 Municipal Bridge Inspection Report outlining the results of our field inspections for the above noted project.

The report includes the results of our field inspections and has updated deficiencies and recommendations for eleven (11) structures within the Township's road system. Two culverts on Township's road system were not inspected during this year's biennial bridge/culvert inspections on Township's instruction. The Desbarats River Culvert on Government Road was not inspected as it was replaced in 2014 and the Desbarats River Culvert on Boyer Drive was not inspected as it is believed by the Township to be part of MTO's jurisdiction. The repairs and maintenance items outlined herein should be budgeted and completed as part of your regular maintenance program in order to keep the township's structures safe and in good repair.

We trust the enclosed is adequate for your needs at this time. If there is anything further we can provide please contact us at your convenience.

Sincerely,

**Tulloch Engineering Inc.** 

Matthew Kirby, P. Eng. Project Manager

MK:mb Encl. (1) cc: file

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| 1                | 1            | Township of Johnson        |
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|                  |              |                            |

## **Revision Log**

| Revision # | Revised By | Date           | Issue / Revision Description |
|------------|------------|----------------|------------------------------|
| 0          | M. Kirby   | August 3, 2016 | Final Report                 |
|            |            |                |                              |
|            |            |                |                              |
|            |            |                |                              |

## **Tulloch Signatures**

**Report Prepared By:** 

Mack Barber

Mach Barler

**Report Reviewed By:** 

Matthew Kirby, P. Eng.

Structural Engineer – Project Manager



#### Statement of Qualifications and Limitations

The attached Report (the "Report") has been prepared by Tulloch Engineering Inc. ("Consultant") for the benefit of the client ("Client") in accordance with the agreement between Consultant and Client, including the scope of work detailed therein (the "Agreement").

The information, data, recommendations and conclusions contained in the Report (collectively, the "Information"):

- is subject to the scope, schedule, and other constraints and limitations in the Agreement and the qualifications contained in the Report (the "Limitations");
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- may be based on information provided to Consultant which has not been independently verified;
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This Statement of Qualifications and Limitations is attached to and forms part of the Report and any use of the Report is subject to the terms hereof.

## **Executive Summary**

The Township of Johnson 2016 Biennial Bridge & Culvert Inspection Report provides a summary of the structure condition ratings identified during the structure inspections conducted by Tulloch Engineering in June of 2016. Bridge inventory for the six (6) bridges and five (5) culverts on the township's road system are included in the report. Two (2) culverts on the township's road system were not inspected at the time of our inspections as was instructed by the Township.

Data collection/updating were completed in accordance with the Municipal Bridge Appraisal and Municipal Culvert Appraisal Manuals and the Ontario Structure Inspection Manual. The scope of the report includes summaries of the collected data with discussion and analysis of the structures needs.

A total of eleven (11) structures were re-appraised in 2016. Key items contained within the inspection report are summarized below;

- Three (3) structures require further engineering investigations to determine the condition of non-visible elements or
  elements which could have internal defects and are accessible. These additional investigations will provide
  condition information which can be incorporated into evaluating the feasibility of rehabilitation vs. replacement of the
  structure and the remaining useful life before repairs or replacement are necessary. The estimated cost for the
  engineering investigations and rehabilitation vs. replacement analyze are \$35,000.
- A summary of the total structure construction and rehabilitation needs resultant from the 2016 Structure Appraisals for the ten year period are estimated to be \$1,775,000 for the existing Township's structures. Of this total cost \$185,000 are NOW needs and \$780,000 are for structure 1-5 year needs with Sucker Creek Road Culvert (on Government Road near the Dump) requiring replacement or a culvert lining. We have \$800,000 estimated for the 6-10 year needs at this time with anticipation that the Black Creek Bridge and Government Road Culvert (0.4km east of Fisher Road) will require replacement. We have recommended further investigation as mentioned above to provide information regarding the condition of non-visible primary elements. Depending on the findings from further engineering investigations some rehabilitation or replacement costs may be added or pushed further into the 6-10 year forecasted expenditures.
- The existing guiderail systems or lack thereof at some of the structures require upgrades or consideration to
  increase vehicular safety when approaching and crossing the bridge or culvert structures. Any existing guiderail
  systems with broken or severely decayed elements need to be changed as part of the townships regular
  maintenance program along with erosion control and bridge cleaning.
- The average age of the six (6) bridge structures appraised were 58+ years as compared to the average age of the
  five (5) culvert structures appraised which were 27+ years.

Major and minor rehabilitation recommendations are provided within this report. The costs associated within these recommendations should be budgeted above and beyond the recommended replacement budget to maximize the service life of the structures.

All total project costs contained within the appraisal forms include engineering and contingencies and are based on 2016 construction dollars.

Completion of the 2016 re-inspection of the eleven (11) structures on the Township's road system has resulted in reliable and current data being available to the Township to implement a maintenance program ensuring the structures are kept safe and in good repair. The maintenance program will require updating of the databases on an on-going annual basis to reflect previous year rehabilitation/replacement projects and updates. It is recommended that the structures be re-appraised by a qualified structural engineer every two (2) years.

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#### 1. Introduction

Amendments have been made to the Highway Traffic Act (Section 123(2)) and the Bridges Act (Section 2). New regulations for municipal structures have also been introduced and came into effect on April 1st, 1997.

The township is responsible for ensuring that their structures are kept safe and in good repair. This has to be done through the performance of regular structure inspections (every 2 years) in accordance with the Ontario Structure Inspection Manual or equivalent.

Also under the new regulations, municipalities are still responsible for passing load limit bylaws. In place of the MTO review, engineering recommendations to support the load limit and the duration for which it is valid, must now be stamped by two (2) professional engineers.

TULLOCH Engineering (TULLOCH) was retained by the Township of Johnson to inspect six (6) bridge and five (5) culvert structures on the township's road system. The structures have been prioritized and recommendations have been provided for each structure in regards to the maintenance, repair and replacement works for each of the structures.

The procedures and inspections used to carry out these 2016 biennial bridge inspections are explained in detail in the following manuals published by the Ministry of Transportation and Municipal Engineers Association.

- 1. Municipal Bridge Appraisal Manual, February 1992
- 2. Municipal Culvert Appraisal Manual, August 1993
- 3. Ontario Structure Inspection Manual, October 2000 (Revised November 2003 and April 2008)

This report documents the visual inspection and recommendations for the maintenance, repair or replacement (MR&R) of the structures.

## 2. Scope of Work

The assignment included an assessment of eleven (11) structures which are currently identified on the township's road system. The work involved the following tasks:

- 1. A visual re-inspection for deficiencies and the recording of any relevant dimensions.
- 2. An updated photographic inventory of the structure appearance and deficiencies.
- An individual assessment of the condition and state of repair/non-repair of each structure, as
  well as the recommendation of improvements and estimated costs to bring the existing structure
  to an acceptable level-of-service.
- 4. Relative rankings of bridge needs have also been provided.
- Identification of specific budget recommendations for detailed condition surveys and bridge rehabilitation/replacement including associated engineering design and supervision and construction estimates.

## 3. Structure Categorization

The following definitions have been used in the preparation of the Bridge and Culvert Appraisal Sheets:

Bridge - In general, transfers all live loads through a superstructure to a substructure and foundations. Bridges that were originally designed as a bridge and have some depth of fill placed over the deck have been appraised as a bridge.

Box or open type structure having less than 600 mm of cover have been appraised as a bridge and those with more than 600 mm of cover have been appraised as a culvert.

Culvert - In general, transfers all live loads through fill.

Note: The structure and road numbers for the bridges and culverts were previously updated to coincide with the structure and road numbers shown in your current Asset Management Plan.

## 4. Structure Appraisals and Identification of Maintenance, Repairs and Replacement Needs

A total of eleven (11) of the Township's structures were re-appraised. The results of our inspection and recommendations are summarized on the Municipal Bridge Appraisal Sheets which have been provided in Appendix A of this report. Based on a review of our inspection findings, recommendations and cost estimates were developed for each of the structures in regards to the required maintenance, repair or replacement as shown in Sections I to K of the appraisal forms. Appendix B of this report summarizes the basic structure data for the structures and the needs identified through the appraisal forms/manuals. The priority ranking of the

structures based on the results of our findings during the inspections are also shown. Of the township's structures that were appraised, the following recommendations are noted:

• Three (3) structures, one (1) bridge and two (2) culverts require further engineering investigations to confirm conditions of non-visible elements or elements with limited accessibility that displayed signs of degrading and further investigation would provide details as to the feasibility between rehabilitation and replacement of the elements/structure. The two (2) culvert structures have been allocated for rehabilitation or replacement within the next 5 years, however these costs may be forecasted into the 6-10 year needs as deemed applicable through the information found through the condition study(s).

|                  | TABLE 1 – Township of Johnson Structure Engineering Investigation Need Summary - 2016 |   |  |  |  |  |  |  |  |  |
|------------------|---|---|--|--|--|--|--|--|--|--|
| Structure<br>No. | Name & Location   | Recommended Engineering Investigation (Proposed Year)                     | Cost for Budget<br>Purposes (\$1000's) |  |  |  |  |  |  |  |
| B4               | Suddaby Creek Bridge<br>Old Mill Road - 0.2km North of Gordon<br>Lake Road            | Deck Condition Survey (2017)<br>Rehab/Replacement Analysis (2017 or 2018) | 10<br>5                                |  |  |  |  |  |  |  |
| C2               | Sucker Creek Culvert Government Road – 1.9km West of Lake Huron Drive                 | Condition Study/Survey (Barrel below water)                               | 10                                     |  |  |  |  |  |  |  |
| C3               | Sucker Creek (Near CASS) Kensington Point Road – 0.4km South of Highway 17            | Condition Study/Survey (Barrel below water)                               | 10                                     |  |  |  |  |  |  |  |

- The Suddaby Creek Bridge which is an old structure (built in 1913) will require some extensive rehabilitation work to maintain and extend the useful life of the existing structure. The structure currently has a 10 tonne load posting and regardless of the rehabilitation to the structure's concrete, without a load evaluation, the structure will require the 10 tonne load limit to remain in effect.
- The majority of the structures do not have any approach guiderails and installing approach guiderails for vehicular safety should be considered in the next 5 years. Any structures with wooden posts or wooden offset blocks should be checked annually and any severely decayed or broken posts should be replaced as part of your regular maintenance program. This item of installing and/or upgrading the approach guiderail/railing systems is identified in the appraisal forms and in the Bridge & Culvert Inventory Table presented in Appendix B.
- No structures require ongoing monitoring to ensure safety and serviceability.
- The structures can continue to operate at their current load postings.

The following abbreviations are used in the Municipal Bridge & Culvert Inventory table in Appendix B:

#### **Crossing Type**

O-WAT Over Water
O-RWY - Over Railway

U-RWY - Under Railway

O-R/R - Over Road and Railway

T-RWY- Through Railway Embankment

#### **Engineering Investigations**

DCS - Deck Condition Survey

LCE - Load Capacity Evaluation

C/S - Condition Study/Survey

RRA - Rehabilitation / Replacement Analysis

#### Type of Improvements

#### i) Capital Improvements

REB - Remove Existing Bridge

RBC - Replace Bridge with Culvert

RSL - Replace Bridge, Same Location

NCE - New Culvert

#### ii) Bridge/Culvert Rehabilitation Improvements

RSP - Rehabilitate Superstructure

RSB - Rehabilitate Substructure

WSS - Widen Superstructure and Substructure

RRW - Rehabilitation/Replace Retaining Walls

BIR - Bearing Improvement/Replacement

RIR - Railing Improvement/Replacement

RIO - Rehabilitate Inlet/Outlet Treatments

#### iii) Deck Rehabilitation Improvements

WSR - Wearing Surface Rehabilitation

PWP - Patch, Waterproof and Asphalt Paving

LMC - Latex Modified Concrete Overlay

OPW - Overlay, Waterproof and Asphalt Paving

CDS - Concrete Deck Soffit Repairs

CDR - Complete Deck Replacement

TJS - Transverse Expansion Joint Seal Replacement

TJR - Transverse Expansion Joint Replacement

RCS - Rehabilitation/Replacement of Safety Curbs/Sidewalks

#### iv) Bridge Coating Improvements

CSS - Coating Structural Steel

CSR - Coating Steel Railings

#### v) Stream/Waterway Improvements

- EIR Embankment Improvements/Rehabilitation
- C/I Channel Improvements
- vi) Safety Improvements
- IAG Installation of Approach Guiderail
- RIR Railing Improvement/Replacement
- vii) Non Standard Improvements
- OTH Other Improvements

#### **Costing Category**

PC - Preliminary Cost Estimate

## 5. Structure Inventory and Construction Need Summary

Table 2 which follows, provides a summary of the total structure construction and rehabilitation needs resultant from the 2016 Structure Appraisals. For the ten year period, the rehabilitation needs are estimated to be \$1,750,000 for the existing township structures. Of this total cost, \$170,000 are for structure Now needs, \$1,180,000 for the 1-5 Year needs as we anticipate the rehabilitation of Suddaby Creek Bridge and the replacement of three (3) large culvert structures (which could be postponed dependent on the details/findings from the condition studies). \$400,000 is proposed to be budgeted for the 6-10 Years as we anticipate the replacement of Black Creek Bridge. Some of the estimated costs for the 1-5 year needs may be forecasted into the 6-10 year range depending on the results of the proposed engineering investigations listed previously in Table 1.

| TABLE 2 – Township of Johnson                        |   |               |                 |           |       |  |  |  |  |  |  |
|--|---|---------------|-----------------|-----------|-------|--|--|--|--|--|--|
| Structure Const                                      | Structure Construction and Rehabilitation Need Summary – 2016<br>(Cost in Thousands of Dollars) |               |                 |           |       |  |  |  |  |  |  |
|  | Now   | 1-5 Year      | Now + 1-5       | 6-10 Year | Total |  |  |  |  |  |  |
| Description  | Needs   | Needs         | Year Needs      | Needs     | Needs |  |  |  |  |  |  |
| B1- Shewfelt Creek Bridge (at<br>Oikari's)           | -   | 10            | 10              | -         | 10    |  |  |  |  |  |  |
| B2 – Shewfelt Creek Bridge (at<br>Grasley's          | -   | 65            | 65              | -         | 65    |  |  |  |  |  |  |
| B3 – Stobie Creek Bridge                             | -   | 60            | 60              | -         | 60    |  |  |  |  |  |  |
| B4 - Suddaby Creek Bridge                            | 25  | 275           | 300             | -         | 300   |  |  |  |  |  |  |
| B5 – Suddaby Park Bridge                             | -   | -             | -               | -         | -     |  |  |  |  |  |  |
| B6 – Black Creek Bridge                              | -   | 80            | 80              | 400       | 480   |  |  |  |  |  |  |
| Total Bridge Rehabilitation Needs                    | 25  | 490           | 515             | 400       | 915   |  |  |  |  |  |  |
| C1 – Desbarats River Culvert<br>(on Government Road) |   | New culvert w | as not inspecte | d         | -     |  |  |  |  |  |  |
| C2 - Sucker Creek Road Culvert (on Government Road)  | 40  | 300           | 340             | •         | 340   |  |  |  |  |  |  |
| C3 – Sucker Creek Culvert<br>(near CASS)             | 40  | -             | 40              | 1         | 40    |  |  |  |  |  |  |
| C4 – Desbarats River Culvert<br>(on Boyer Drive)     |   | New culvert w | as not inspecte | d         | -     |  |  |  |  |  |  |
| C5 – Government Road Culvert                         | 40  | -             | 40              | 400       | 440   |  |  |  |  |  |  |
| C6 – Does Not Exist                                  |   |               |                 |           |       |  |  |  |  |  |  |
| S7 – Sucker Creek Culvert<br>(on Puddingstone Road)  | -   | -             | -               | -         | -     |  |  |  |  |  |  |
| S8 – Sucker Creek Culvert<br>(on MacDonald Drive)    | 40  | -             | 40              | -         | 40    |  |  |  |  |  |  |
| Total Culvert Rehabilitation Needs                   | 160   | 300           | 460             | 400       | 860   |  |  |  |  |  |  |

## 6. Normal Structure Maintenance

The following normal structure maintenance items have not been costed and were identified as a result of the 2016 re-inspections of the structures. It was presumed that the Township would be able to conduct the listed maintenance items with its own forces. If any of these items cannot be completed with Township forces than these items would be an additional cost for the respective structure listed in Table 2.

|            |   |          | ownship of Johnson   |
|------------|---|----------|--|
| Structure  | Structure Mainte                                  | nance    | Requirement Summary – 2016   |
| No         | Location  |          | Maintenance Requirements   |
| NO         | Location  | 1.       | Vegetation obstructing the hazard markers should be trimmed or removed.  |
| B1         | Gordon Lake Road – 0.9km<br>North of Hwy. 17      | 2.       | Loose nuts on the base of the guiderail plates on the east<br>side and the loose bolt in the steel arch culvert could be<br>tightened.                       |
|            |   | 3.       | Settlement of the shouldering behind the gabion baskets in the northwest quadrant should be completed.   |
| B2         | Fisher Road – 3.3km North of                      | 1.       | Excessive gravel build up on bridge deck and at railings should be removed and the deck drains unplugged.  |
| D2         | Hwy. 17   | 2.<br>3. | Beaver dam upstream from structure should be removed.  Any leaning or bent hazard signs should be straightened.  |
|            |   | 1.       | Broken or rotated offset blocks on the north railing should be replaced and/or straightened.   |
|            |   | 2.<br>3. | Cut guiderail in the southwest section should be replaced Minor erosion at the southeast quadrant should be restored and stabilized.                         |
| В3         | Government Road – 10m<br>West of Gordon Lake Road | 4.       | Transverse crack in the east approach should be routed and sealed, and pothole on bridge deck should be repaired   |
|            |   | 5.       | Remove gravel and vegetation build up on the bridge deck wearing surface and under the guiderails.   |
|            |   | 6.       | The gap under the south railing guiderail base plate should have metal shims installed to provide full contact of the baseplate with concrete headwall/curb. |
|            | Old Mill Road – 0.2km North of                    | 1.       | Remove excess gravel/debris built up on bridge deck and curb/railings.   |
| B4         | Gordon Lake Road                                  | 2.       | Remove small trees that are growing under, immediately adjacent to bridge beams or on the abutment embankments.  |
| <b>5</b> - | Gordon Lake Road – 0.5km                          | 1.       | Monitor transverse cracking in surface treated roadway and rout and seal or patch as required.   |
| B5         | North of Suddaby Park Road                        | 2.       | Replace the missing bolts in the guiderail at all four quadrants to connect flex beam to the posts.  |

| В6 | Gordon Lake Road – 80m<br>South of Suddaby Park Road  | <ol> <li>Cracking of and potholes in the surface treated roadway surface should be sealed or patched.</li> <li>Clean deck/railings of excess gravel.</li> <li>Hazard signs should be straightened or replaced</li> <li>Restore and stabilize erosion of roadway embankments at corners of the bridge.</li> <li>Tree in waterway upstream of structure should be removed.</li> </ol>   |
|----|---|---|
| C1 | Government Road – 2.0km<br>West of Gordon Lake Road   | N/A – New culvert was not inspected   |
| C2 | Government Road – 1.9km<br>West of Lake Huron Drive   | <ol> <li>Should seal or patch cracks in surface treatment to prevent further damage to wearing surface at the structure.</li> <li>Depressions on either side of culvert should be patched to provide smooth roadway over structure.</li> <li>Remove beaver dam within the culvert.</li> <li>Erosion on the north embankments and scour under the pipe inlet should be repaired and stabilized/protected</li> </ol>                      |
| C3 | Kensington Point Road –<br>0.4km South of Hwy. 17     | Erosion of roadway embankment appears stable,     however the lost material should be replaced and     stabilized to prevent channelling of surface runoff.   |
| C4 | Boyer Drive – 30m South of<br>Hwy. 17                 | N/A – Culvert is believed to be MTO jurisdiction by Township and was not inspected as per Townships request.  |
| C5 | Government Road – 0.4km<br>East of Fisher Road        | <ol> <li>Roadway should be graded to remove washboard in gravel wearing surface.</li> <li>The missing parging at the opened seams should be repaired.</li> <li>The embankment at and/or under the culvert inlet should be sealed to promote water flow through the culvert and not underneath it.</li> <li>Monitor bulging of culvert barrel at centreline of the roadway and contact Tulloch Engineering if cracks develop.</li> </ol> |
| C6 | Does Not Exist  |   |
| C7 | Puddingstone Road – 2.1km<br>North of Government Road | <ol> <li>Replace broken or decayed guiderail posts.</li> <li>Lost armoring stone at the culvert inlet should be replaced</li> </ol>   |
| C8 | MacDonald Drive – 0.4km<br>North of Hwy. 17           | <ol> <li>Remove any debris present at the culvert inlet or the<br/>fencing immediately downstream or upstream from the<br/>culvert outlet as part of regular maintenance.</li> </ol>  |

### 7. Conclusions

Completion of the 2016 biennial bridge inspections of all bridge structures on the township's road system has resulted in reliable and current data being available for the township to implement a maintenance, rehabilitation and/or replacement program ensuring the township's structures are kept safe and in good repair.

Maintenance of the Bridge Management Program will require updating of databases on an on-going annual basis to reflect previous year rehabilitation/replacement project updates. It is recommended that the structures be reappraised by a qualified structural engineer every two (2) years in accordance with legislated requirements.

We trust that the foregoing will assist you in implementing a cost effective structure maintenance, repair and replacement program.

Tulloch Engineering Inc.

Township of Johnson

2016 Biennial Bridge & Culvert Inspection Report

## Appendix A

## **Municipal Bridge Appraisal Forms**

| A. IDENTIFICATION  |  |   |                     |     | 6. Bridge No. 01  |
|--|--|---|---------------------|-----|---|
| Control Code   | 3-S-TP                                   |   |                     |     | 7. Road Section No. 250   |
| Municipal Name/Code  | Township of Johnson                      |   |                     |     | 8. MTO Site No. 38S-189   |
| Bridge Name  | Shewfelt Creek Bridge a                  | at Oikari's   |                     |     |   |
| 4. Road Name   | Gordon Lake Road                         |   |                     |     |   |
| 5. Location  | 0.90 km North of Highwa                  | av 17   |                     |     |   |
| Roadside Environment   | R  | ay 17   |                     |     | 16. Crossing Type O-WAT   |
| 10. Posting  | t t t                                    | 13. Posting Sign:   | t t                 | +   | 17. Federal Navigable Waterway Unknown  |
| 11. Bylaw No.  |  | 14. Low Clearance S   |                     |     | 18. Bridge Value \$500,000  |
| 12. Bylaw Expiry Date  | y m                                      | 15. Narrow Structure  |                     |     | 19. Latitude  |
| 12. Bylaw Expiry Date  | уш                                       | 15. Namow Structure   | e Sign              |     |   |
|  |  |   |                     |     | 20. Longitude   |
| B. RAILWAY OVERPASS/UND  | DERPASS                                  |   |                     |     |   |
| 21. Railway Level Crossing Num   |  |   |                     | 27  | Original Board Order Number Date y m d  |
| 22. Railway Company  | inder                                    |   |                     | 21. | Original Board Order Number Bate y III d  |
| 23. Railway Subdivision  |  |   |                     | 28. | Current Board Order Number Date y m d   |
|  |  |   |                     | 20. | Current Board Order Number Date y III d   |
| 24. Subdivision Mileage  | NI-                                      |   |                     | 00  | Operation its contract to   |
| <ul><li>25. Transport Canada Crossing</li><li>26. Number of Tracks</li></ul>   | NO.                                      |   |                     | 29. | Seniority   |
| 26. Number of Tracks   |  |   |                     |     |   |
| C ILIDISDICTION  |  |   |                     |     | 20 Local/Area Municipality (University C. L.)   |
| C. JURISDICTION  |  |   |                     |     | 38. Local/Area Municipality (Upper Tier Only)   |
| 31. Ownership O  | A MUN                                    |   |                     |     | A.  |
|  | В  | <ol><li>Boundary Bridge</li></ol>   | N                   | ı   | В.  |
| 32. Heritage Status  | R  |   |                     |     | <ol><li>Maintenance Area</li></ol>  |
| <ol><li>Special Designation</li></ol>  | NSD                                      | <ol><li>36. Adjacent Municipa</li></ol>   |                     |     | 40. Municipal Ward  |
| <ol> <li>Suburban Roads Commission</li> </ol>  | on                                       | <ol><li>Adjacent Bridge N</li></ol>   | lo.                 |     |   |
|  |  |   |                     |     |   |
| D. EXISTING CONDITIONS   |  |   |                     |     |   |
| GENERAL  |  | <ol><li>45. Span Length</li></ol>   | 6.2 m               |     | 50. Longitudinal Joints 0   |
| 41. Year Constructed   | A. 2006                                  | 46. Deck Type   | OT                  |     | 51. Transverse Joints 0   |
|  | B. 2006                                  | 47. Deck Length   | 6.2 m               |     | <ol> <li>Number of Bearings</li> <li>0</li> </ol>   |
| 42. Bridge Type  | S-EA-F                                   | 48. Deck Width  | 10.3 m              |     | 53. Soil Condition U  |
| 43. Crossing Skew  | 0°                                       | 49. Deck Area   | 64.0 m <sup>2</sup> |     | 54. Abutment & Foundation Type Open - UN  |
| 44. Number of Spans  | 1  |   |                     |     | , , ,   |
|  |  |   |                     |     |   |
| ROAD OVER BRIDGE   |  |   |                     |     |   |
|  |  | 59. No. of Lanes  | 2                   |     | 62. Barriers Walls/Railings FB  |
| 55. Existing Road Class  | 300                                      | 60. Median Type/Width   |                     |     | 63. Minimum Vertical  |
| 56. Operational Status   | 2W - OAT                                 | 61. Safety Curb/  | (A) N               |     | Clearance   |
| 57. Wearing Surface  | A  | Sidewalk and  | (B) N               |     | Clourance   |
| 58. Travel Deck Width  | 7.1 m                                    | Curb Barrier  | (D) 14              |     |   |
| 30. Have Deck Width  | 7.1 111                                  | Cuib Barrier  |                     |     |   |
| ROAD UNDER BRIDGE  |  |   |                     |     |   |
| NOAD UNDER BRIDGE  |  | 68. No. of Lanes  |                     |     | 71. Traffic Barrier   |
| 64. Existing Road Class  |  | 69. Median Type/Width   | ,                   |     | 71. Trailic Barrier 72. Minimum Vertical Clearance  |
| 65. Operational Status   |  |   |                     |     | 72. Millimum Vertical Clearance   |
|  |  | 70. Safety Curb/  | A                   |     |   |
| 66. Opening Width  |  | Sidewalk and  | В                   |     |   |
|  |  |   |                     |     |   |
| 67. Surface Width  |  | Curb Barrier  |                     |     |   |
|  |  |   |                     |     |   |
| E. TRAFFIC DATA  |  | TRAFFIC COUNT   |                     |     | 10 YEAR TRAFFIC FORECAST  |
|  |  | TRAFFIC COUNT<br>83. Year   |                     |     | 90. Year  |
| E. TRAFFIC DATA<br>81. Legal Speed Limit   |  | TRAFFIC COUNT<br>83. Year<br>84. AADT   |                     |     | 90. Year<br>91. AADT  |
| E. TRAFFIC DATA  |  | TRAFFIC COUNT<br>83. Year<br>84. AADT<br>85. DHV Factor   |                     |     | 90. Year<br>91. AADT<br>92. DHV Factor  |
| E. TRAFFIC DATA<br>81. Legal Speed Limit   |  | TRAFFIC COUNT<br>83. Year<br>84. AADT   |                     |     | 90. Year<br>91. AADT  |
| E. TRAFFIC DATA<br>81. Legal Speed Limit   |  | TRAFFIC COUNT<br>83. Year<br>84. AADT<br>85. DHV Factor   |                     |     | 90. Year<br>91. AADT<br>92. DHV Factor  |
| E. TRAFFIC DATA 81. Legal Speed Limit 82. Route Designations Transit  Truck  |  | TRAFFIC COUNT<br>83. Year<br>84. AADT<br>85. DHV Factor<br>86. DHV  | Dlit                |     | 90. Year<br>91. AADT<br>92. DHV Factor<br>93. DHV   |
| E. TRAFFIC DATA 81. Legal Speed Limit 82. Route Designations Transit  Truck  |  | TRAFFIC COUNT 83. Year 84. AADT 85. DHV Factor 86. DHV 87. Trucks   |                     |     | 90. Year<br>91. AADT<br>92. DHV Factor<br>93. DHV<br>94. Trucks   |
| E. TRAFFIC DATA 81. Legal Speed Limit 82. Route Designations Transit  Truck  |  | TRAFFIC COUNT 83. Year 84. AADT 85. DHV Factor 86. DHV 87. Trucks 88. Peak Directional Sp                       |                     |     | <ul> <li>90. Year</li> <li>91. AADT</li> <li>92. DHV Factor</li> <li>93. DHV</li> <li>94. Trucks</li> <li>95. Capacity</li> </ul> |
| E. TRAFFIC DATA 81. Legal Speed Limit 82. Route Designations Transit  Truck  | /ALS                                     | TRAFFIC COUNT 83. Year 84. AADT 85. DHV Factor 86. DHV 87. Trucks 88. Peak Directional Sp                       |                     |     | <ul> <li>90. Year</li> <li>91. AADT</li> <li>92. DHV Factor</li> <li>93. DHV</li> <li>94. Trucks</li> <li>95. Capacity</li> </ul> |
| E. TRAFFIC DATA 81. Legal Speed Limit 82. Route Designations  Transit  Truck  Bicycle    F. INSPECTIONS & APPROV                       |  | TRAFFIC COUNT 83. Year 84. AADT 85. DHV Factor 86. DHV 87. Trucks 88. Peak Directional Sp 89. 10 Year Growth Fa | ctor                |     | 90. Year 91. AADT 92. DHV Factor 93. DHV 94. Trucks 95. Capacity 96. 20 Year AADT   |
| E. TRAFFIC DATA 81. Legal Speed Limit 82. Route Designations Transit  Truck School Bicycle   F. INSPECTIONS & APPROV 101. Date: June 2 | / <u>ALS</u><br>2, 2016<br>by & S. Milne | TRAFFIC COUNT 83. Year 84. AADT 85. DHV Factor 86. DHV 87. Trucks 88. Peak Directional Sp                       | ctor<br>neer Name   |     | <ul> <li>90. Year</li> <li>91. AADT</li> <li>92. DHV Factor</li> <li>93. DHV</li> <li>94. Trucks</li> <li>95. Capacity</li> </ul> |

| G. BF           | RIDGE NEEDS                       | RAT                   | ING                  |              | J            | TYPE & TIME OF IMPR                           | ROVEMENT      |                |             |              |
|-----------------|-----------------------------------|-----------------------|----------------------|--------------|--------------|---|---------------|----------------|-------------|--------------|
| <u> </u>        | KIDOL HELDO                       | MCR                   | PCR                  | TIME OF NEED | <u> </u>     | THE WHINE OF HAIT                             | COVEMENT      |                |             |              |
|                 | uperstructure                     | 6                     | 6                    | ADEQ         | 141.         |   |               |                | RSL         |              |
|                 | earing Surface                    | 6                     | 6                    | ADEQ         |              | Operational Status                            |               |                | 2W-OAT      |              |
|                 | eck Condition                     | 6                     | 6                    | ADEQ         | 143.         | Abutment Type                                 |               |                | RSL-O       |              |
|                 | xpansion Joints                   | 0                     | 0                    | ADEQ         | 144.         |   |               |                | 7.1m        |              |
|                 | ailings                           | 5                     | 5                    | 1-5 yrs      | 145.         | Design Deck Length                            |               |                | 6.2m        |              |
|                 | ubstructure                       | 6                     | 6                    | ADEQ         |              |   |               |                |             |              |
|                 | oating                            | 6                     | 6                    | ADEQ         |              |   |               |                |             |              |
|                 | treams/Waterways                  | 6<br>0                | 6<br>0               | ADEQ<br>ADEQ |              |   |               |                |             |              |
|                 | urbs/Sidewalks<br>UNCTIONAL NEEDS |                       |                      | TIME OF NEED | 440          | _   | L             | _              | d           | _            |
| H. FL<br>ROAD O |                                   | Existing<br>Condition | Minimum<br>Tolerable | TIME OF NEED | 146.         | a<br>Type of (                                | b<br>Costing  | С              | Time of     | e<br>Cost    |
|                 | ravel Deck Width                  | 7.1m                  | 6.5m                 | ADEQ         |              |   | Costing       | Quantity       | Improvement | (\$000)      |
|                 | evel of Service                   | 7.1111<br>A           | 6.5III<br>E          | ADEQ         | Α            | IMPROVEMENT                                   | PC            | Quartity<br>1  | 1-5 yrs     | (\$000)      |
| -               | lin. Vert. Clear.                 | ^                     | 4.5                  | ADEQ         | B            | IAO   | 10            | '              | 1-0 y13     | 10           |
| 124. Si         |                                   | N                     | N.                   | ADEQ         | C            |   |               |                |             |              |
| 121. 01         | idowanto                          | .,                    | .,                   | ABEQ         | Ď            |   |               |                |             |              |
|                 |                                   |                       |                      |              | Ē            |   |               |                |             |              |
|                 |                                   |                       |                      |              | F            |   |               |                |             |              |
|                 |                                   |                       |                      |              | K.           | IMPROVEMENT COST                              | Γ             |                |             | Cost (\$000) |
|                 |                                   |                       |                      |              | 151.         | Construction                                  | _'            |                |             | 10           |
|                 |                                   |                       |                      |              | 152.         | Approaches                                    |               |                |             | 0            |
|                 |                                   |                       |                      |              | 153.         | Detours                                       |               |                |             | 0            |
|                 |                                   |                       |                      |              | 154.         | Traffic Control/Protection                    | on            |                |             | 0            |
|                 |                                   |                       |                      |              | 155.         | Utilities                                     |               |                |             | 0            |
|                 | NGINEERING_                       |                       |                      |              | 156.         | Other   |               |                |             | 0            |
| RECOM           | <u>IMENDATIONS</u>                |                       |                      |              | 157.         |   | 10%           |                |             | 1            |
| _               |                                   |                       |                      | UNK          | 158.         | Total Construction                            |               |                |             | 11           |
| 131. Br         | ridge Drawings                    |                       |                      |              | 159.         | Right of Way                                  |               | . (= (4) 0:    |             | 0            |
| 400 5           |                                   |                       |                      |              | 160.         | Engineering Environme                         | ental Assessm | ient (E/A) Stu | dy          | 0            |
| 132. Er         | ngineering Investigations         |                       | V                    | 0+ (0000)    | 404          | Facility and a Davidson 8 C                   |               |                |             | 4.5          |
|                 | ٨                                 | Туре                  | Year                 | Cost (\$000) | 161.         | Engineering Design & S                        | Supervision   |                |             | 1.5          |
|                 | A<br>B                            |                       |                      |              | 162.<br>163. | Total Project cost<br>Eligibility for Subsidy |               |                |             | 12.5<br>EFS  |
|                 | C                                 |                       |                      |              |              | Non-subsidizable Costs                        | •             |                |             | EFS          |
|                 | D                                 |                       |                      |              | 104.         | NOTI-SUDSICIZADIE COSIS                       | 5             |                |             |              |
|                 | D                                 |                       |                      |              |              |   |               | Contr          | ibuting     | Non-         |
| 133 To          | otal Cost of Engineering          | Investigations        |                      |              |              |   |               |                | ency        | Subsid.      |
| 100. 10         | otal cool of Engineering          | mvootigationo         |                      |              |              |   |               | 7.9            | Siloy       | Cost         |
| 134. Si         | ingle Posting                     |                       |                      |              |              |   | Α             |                |             |              |
|                 | valuated Posting                  |                       |                      | t t t        |              |   | В             |                |             |              |
| Date            | Ü                                 |                       |                      |              |              |   | С             |                |             |              |
|                 | lonitoring                        |                       |                      |              |              |   | D             |                |             |              |
| 137. CI         | losure/Date                       |                       |                      |              |              |   |               |                |             |              |
|                 |                                   |                       |                      |              |              | Total Non-Subsidizable                        | Cost          |                |             |              |
|                 |                                   |                       |                      |              | 166.         | Subsidizable Cost                             |               |                |             | 12.5         |
|                 |                                   |                       |                      |              | 167.         | Municipal Percent of Su                       |               | ost            |             | 100%         |
|                 |                                   |                       |                      |              | 168.         | Municipal Share of Cos                        | st            |                |             | 12.5         |
|                 |                                   |                       |                      |              |              |   |               |                |             | 1            |
|                 | HISTORY                           |                       |                      |              |              | OTD. (OTION   1 IDE 5: :-                     |               |                |             |              |
| ENGIN           | NEERING INVESTIGAT                | IONS                  |                      |              | CON          | STRUCTION IMPROVE                             | MENTS         |                |             |              |

|      |      | CONSTRUCTION IMPROVEMENTS |                              |  |
|------|------|---------------------------|------------------------------|--|
| Type | Year |                           | Type                         | Year   |
|      |      | 181.                      | • •                          |  |
|      |      | 182.                      |                              |  |
|      |      | 183.                      |                              |  |
|      |      | 184.                      |                              |  |
|      |      | 185.                      |                              |  |
|      | Туре | Type Year                 | 181.<br>182.<br>183.<br>184. | Type Year Type<br>181.<br>182.<br>183.<br>184. |

#### Inspection Notes

- Bridge No. 01, MTO Site No. 385-189, Shewfelt Creek at Oikari's, Gordon Lake Road 0.90 km North of Hwy. 17, Township of Johnson:
- Structure is not posted with a load limit.
- Single span (±6.2m) structural plate arch culvert with concrete head walls and retaining walls with approximately 0.5 m of gravel fill and a surface treated roadway.
- Steel flex beam with channel and wood posts has been provided over the structure and are in good condition with the guiderail posts exhibiting medium to wide checks and splits. A few nuts were noted to be loose on guide rail post base plates along the east railing.
- Eccentric loader end treatments and approach guiderails have been provided in the northeast, southeast and southwest quadrants. There is no guiderail present in the northwest quadrant. Hazard markers have been provided in all four quadrants. The northwest hazard marker is partially obstructed by vegetation.
- Surface treated roadway is in good condition.
- Structural plate steel arch culvert is in good condition with the tenth and eleventh corrugations from the northeast corner having localized indentations (four in each), the second vertical seam from the southwest corner has a loose bolt and light staining below the waterline throughout the culvert's length was noted.
- Watercourse is generally un-obstructed with no evidence of scouring.
- Concrete headwalls are in good condition with minor honey combing in both headwalls.
- Gabion basket retaining walls and vegetated/rock protected roadway embankments are in good condition. The gabion basket retaining wall at the northwest quadrant is bulging outwards towards the ditch line/creek. This has created some minor to moderate settlement of the shouldering material behind the gabion

#### Recommendations

- Structure does not require posting with a load limit.
- Should install approach guiderail in the northwest quadrant.
- Vegetation obstructing the hazard markers should be trimmed or removed as part of regular maintenance.
- The loose nuts on the guiderail base plates and the loose bolt in steel arch culvert should be tightened.
- Repairs to the settlement of shouldering behind the gabion baskets in the northwest quadrant should be completed.

Township of Johnson Municipality: Bridge No

Township of Johnson Shewfelt Creek at Oikari Gordon Lake Road 0.9 km North of Highway 17

Bridge No. MTO Site No. 6. 8.



LOOKING NORTH ACROSS STRUCTURE



WEST ELEVATION

Township of Johnson Shewfelt Creek at Oikari Gordon Lake Road 0.9 km North of Highway 17

Bridge No. MTO Site No.



LOOKING EAST UPSTREAM FROM STRUCTURE



LOOSE NUTS ON BASEPLATE OF EAST GUIDERAIL POST

Township of Johnson Shewfelt Creek at Oikari Gordon Lake Road 0.9 km North of Highway 17

Bridge No. MTO Site No.



LOOKING WEST THROUGH CULVERT BARREL



LOCALIZED INDENTATIONS IN THE RIBS OF THE CULVERT BARREL

Township of Johnson Shewfelt Creek at Oikari Gordon Lake Road 0.9 km North of Highway 17

Bridge No. MTO Site No. 6. 8.



ROTATED GABION BASKET WINGWALL - NORTHWEST WINGWALL



TYPICAL BARREL END TREATMENT

Township of Johnson Shewfelt Creek at Oikari Gordon Lake Road 0.9 km North of Highway 17

Bridge No. MTO Site No. 6. 8.



SCRAPE DAMAGE TO EAST GUIDERAIL



MEDIUM TO WIDE SPLITS AND CHECKS IN APPROACH POSTS AND OFFSET BLOCKS

| A. IDENTIFICATION                     |                          |   |                          | 6.            | Bridge No.                 | 02                    |                |
|---------------------------------------|--------------------------|---|--------------------------|---------------|----------------------------|-----------------------|----------------|
| Control Code                          | 3-S-TP                   |   |                          | 7.            | Road Section No.           | 265                   |                |
| <ol><li>Municipal Name/Code</li></ol> | Township of Johnson      |   |                          | 8.            | MTO Site No.               | 38S-19                | <del>3</del> 0 |
| Bridge Name                           | Shewfelt Creek Bridge at | : Grasley's                               |                          |               |                            |                       |                |
| 4. Road Name                          | Fisher Road              | •   |                          |               |                            |                       |                |
| 5. Location                           | 3.3 km North of Hwy. 17  |   |                          |               |                            |                       |                |
| Roadside Environment                  | R                        |   |                          | 16.           | Crossing Type              | O-WAT                 | r              |
| 10. Posting                           | t t t                    | <ol><li>Posting Sign:</li></ol>           | t t t                    | 17.           |                            |                       |                |
| 11. Bylaw No.                         |                          | 14. Low Clearance Si                      |                          | 18.           | Bridge Value               | \$350.00              |                |
| 12. Bylaw Expiry Date                 | y m                      | 15. Narrow Structure                      |                          |               | Latitude                   | Ψ000,00               | 00             |
| 12. Bylaw Explity Date                | у III                    | 15. Nariow Structure                      | Oigii                    |               | Longitude                  |                       |                |
|                                       |                          |   |                          | 20.           | Lorigitado                 |                       |                |
| B. RAILWAY OVERPASS/UNDE              | ERPASS                   |   |                          |               |                            |                       |                |
| 21. Railway Level Crossing Numb       | per                      |   | 2                        | 27. Original  | Board Order Number         | Date y m d            |                |
| 22. Railway Company                   |                          |   |                          | •             |                            | •                     |                |
| 23. Railway Subdivision               |                          |   |                          | 28. Current I | Board Order Number         | Date y m d            |                |
| 24. Subdivision Mileage               |                          |   |                          |               |                            | ,                     |                |
| 25. Transport Canada Crossing N       | lo.                      |   |                          | 29. Seniority |                            |                       |                |
| 26. Number of Tracks                  |                          |   | •                        | Lo. Comonty   |                            |                       |                |
|                                       |                          |   |                          |               |                            |                       |                |
| C. JURISDICTION                       |                          |   |                          |               | 38. Local/Area Municipa    | lity (Upper Tier Only | y)             |
| 31. Ownership O                       | A MUN                    |   |                          |               | Α.                         |                       |                |
| '                                     | В                        | 35. Boundary Bridge                       | N                        |               | B.                         |                       |                |
| 32. Heritage Status                   | R                        |   |                          |               | 39. Maintenance Area       |                       |                |
| 33. Special Designation               | NSD                      | 36. Adjacent Municipal                    | ity Name/No              |               | 40. Municipal Ward         |                       |                |
| 34. Suburban Roads Commission         |                          | 37. Adjacent Bridge No                    |                          |               | ioi mamoipai mara          |                       |                |
| on Casarsan Rodae Commission          | '                        | or: Majadoni Bhago Me                     | ··                       |               |                            |                       |                |
| D. EXISTING CONDITIONS                |                          |   |                          |               |                            |                       |                |
| GENERAL                               |                          | 45. Span Length                           | 6.1 m                    | 50. L         | ongitudinal Joints         | 0                     |                |
| 41. Year Constructed                  | A. 1950                  | 46. Deck Type                             | CC - Cast in Place Concr |               | ransverse Joints           | 0                     |                |
|                                       | B. 1950                  | 47. Deck Length                           | 7.0 m                    |               | lumber of Bearings         | 0                     |                |
| 42. Bridge Type                       | C-TB-F                   | 48. Deck Width                            | 5.1 m                    |               | Soil Condition             | Ŭ                     |                |
| 43. Crossing Skew                     | 0°                       | 49. Deck Area                             | 35.7 m <sup>2</sup>      |               | butment & Foundation Ty    | _                     | QE.            |
| 44. Number of Spans                   | 1                        | 49. Deck Alea                             | 55.7 111                 | J4. F         | Southern & Foundation Ty   | pe Cioseu             | - 01           |
| 44. Number of Spans                   | 1                        |   |                          |               |                            |                       |                |
| ROAD OVER BRIDGE                      |                          |   |                          |               |                            |                       |                |
|                                       |                          | 59. No. of Lanes                          | 1                        | 62 B          | arriers Walls/Railings     | СВ                    |                |
| 55. Existing Road Class               | 300                      | 60. Median Type/Width                     | •                        |               | linimum Vertical           | OB                    |                |
| 56. Operational Status                | 2W - OAT                 | 61. Safety Curb/                          | (A) N                    | Cleara        |                            |                       |                |
| 57. Wearing Surface                   | G G                      | Sidewalk and                              | (A) N<br>(B) N           | Cleara        | rice                       |                       |                |
|                                       | =                        | Curb Barrier                              | (B) IN                   |               |                            |                       |                |
| 58. Travel Deck Width                 | 4.30 m                   | Curb Barrier                              |                          |               |                            |                       |                |
| ROAD UNDER BRIDGE                     |                          |   |                          |               |                            |                       |                |
| NO. 10 ONDER DRIDGE                   |                          | 68. No. of Lanes                          |                          | 71 T          | raffic Barrier             |                       |                |
| 64. Existing Road Class               |                          | 69. Median Type/Width                     |                          |               | linimum Vertical Clearance | 2                     |                |
| 65. Operational Status                |                          | 70. Safety Curb/                          | Α                        | 1 Z. IV       |                            | •                     |                |
| 66. Opening Width                     |                          | Sidewalk and                              | В                        |               |                            |                       |                |
|                                       |                          |   | D                        |               |                            |                       |                |
| 67. Surface Width                     |                          | Curb Barrier                              |                          |               |                            |                       |                |
| E. TRAFFIC DATA                       |                          | TRAFFIC COUNT                             |                          | 10 VE         | AR TRAFFIC FORECAST        |                       |                |
| 81. Legal Speed Limit                 |                          | 83. Year                                  |                          | 90. Y         |                            |                       |                |
| 01. Legai Speed Lilliil               |                          |   |                          |               |                            |                       |                |
| 00 Parita Parita di Con               |                          | 84. AADT                                  |                          | 91. A         |                            |                       |                |
| 82. Route Designations                |                          | 85. DHV Factor                            |                          |               | HV Factor                  |                       |                |
|                                       |                          | 86. DHV                                   |                          | 93. D         |                            |                       |                |
| Transit □ Truck □                     |                          | 87. Trucks                                |                          | 94. T         |                            |                       |                |
| School □ Bicycle □                    |                          | <ol><li>Peak Directional Spl</li></ol>    |                          |               | apacity                    |                       |                |
| •                                     |                          | 89. 10 Year Growth Fac                    | tor                      | 96. 2         | O Year AADT                |                       |                |
|                                       |                          |   |                          |               |                            |                       |                |
| F. INSPECTIONS & APPROVA              |                          | 400 B. (                                  | N                        |               | D F.                       |                       |                |
| 101. Date: June 2,                    |                          | 102. Professional Engine                  |                          |               | y, P. Eng.                 |                       |                |
| Inspected By: M. Kirby                | / & S. Milne             | <ol><li>103. Municipality/Compa</li></ol> | any                      | Tulloch       | Engineering Inc.           |                       |                |
| ., ,                                  |                          |   | •                        |               |                            |                       |                |

Municipality: Township of Johnson
Structure Name: Shewfelt Creek Bridge at Grasley's

|           | DDIDOE NIEEDO               | D.4.          | TINIO     |              |      |              | TVDE 0 TIME 0E II                   | ADDOVEMEN      | _             |             |              |
|-----------|-----------------------------|---------------|-----------|--------------|------|--------------|-------------------------------------|----------------|---------------|-------------|--------------|
| <u>G.</u> | BRIDGE NEEDS                |               | TING      | TIME OF I    | IEED | <u>J.</u>    | TYPE & TIME OF IN                   | MPROVEMEN      | <u>1</u>      |             |              |
|           | 0                           | MCR           | PCR       | TIME OF I    |      |              | D                                   |                |               | RSL         |              |
|           | Superstructure              | 4             | 5         | 1-5 yr       |      | 141.         | Design Class                        |                |               |             |              |
|           | Wearing Surface             | 5             | 5         | 6-10 y       |      | 142.         | Operational Status                  |                |               | 2W-OAT      |              |
| -         | Deck Condition              | 4             | 5         | 1-5 yr       |      | 143.         | Abutment Type                       |                |               | RSL-O       |              |
|           | Expansion Joints            | 0             | 0         | ADEC         | -    | 144.         | Design Deck Width                   |                |               | 6.5m        |              |
|           | Railings                    | 4             | 5         | 1-5 yr       |      | 145.         | Design Deck Length                  | า              |               | 7.0m        |              |
|           | Substructure                | 3             | 4         | 1-5 yr       |      |              |                                     |                |               |             |              |
|           | Coating                     | 0             | 0         | ADEC         |      |              |                                     |                |               |             |              |
|           | Streams/Waterways           | 5             | 5         | 6-10 y       |      |              |                                     |                |               |             |              |
|           | Curbs/Sidewalks             | 0             | 0         | ADEC         | -    |              |                                     |                |               |             |              |
| <u>H.</u> | FUNCTIONAL NEEDS            | Existing      | Minimum   | TIME OF N    | FED  | 146.         | a                                   | Ь              | С             | _ d         | е            |
|           | OOVER                       | Condition     | Tolerable | NOW          |      |              | Type of                             | Costing        | 0             | Time of     | Cost         |
|           | Travel Deck Width           | 4.3m          | 6.5m      | NOW          |      | ١.           | Improvement                         | Category       | Quantity      | Improvement | (\$000)      |
|           | Level of Service            | Α             | E         | ADEQ         |      | Α            | RSB                                 | PC             |               | 1-5 yrs     | 15           |
| -         | Min. Vert. Clear.           |               | 4.5       | ADEQ         |      | В            | RSP                                 | PC             |               | 1-5 yrs     | 10           |
| 124.      | Sidewalks                   | N             | N         | ADEQ         |      | С            | IAG                                 | PC             | 4             | 1-5 yrs     | 40           |
|           |                             |               |           |              |      | D            |                                     |                |               |             |              |
|           |                             |               |           |              |      | E            |                                     |                |               |             |              |
|           |                             |               |           |              |      | _            | ILIDD OVELLENE OF                   |                |               |             | 0 (0000)     |
|           |                             |               |           |              |      | <u>K.</u>    | IMPROVEMENT CO                      | <u> </u>       |               |             | Cost (\$000) |
|           |                             |               |           |              |      | 151.         | Construction                        |                |               |             | 25           |
|           |                             |               |           |              |      |              | Approaches                          |                |               |             | 40           |
|           |                             |               |           |              |      | 153.         | Detours                             |                |               |             | 0            |
|           |                             |               |           |              |      | 154.         | Traffic Control/Prote               | ection         |               |             | 0            |
| <b>—</b>  | ENGRIEEDING                 |               |           |              |      | 155.         | Utilities                           |                |               |             | 0            |
| <u>l.</u> | ENGINEERING                 |               |           |              |      | 156.         | Other                               | 400/           |               |             | 0            |
| RECO      | <u>OMMENDATIONS</u>         |               |           | UNK          |      | 157.         | Contingencies                       | 10%            |               |             | 6<br>71      |
| 404       | Daides Descriptor           |               |           | UNK          |      | 158.         | Total Construction                  |                |               |             |              |
| 131.      | Bridge Drawings             |               |           |              |      | 159.         | Right of Way<br>Engineering Enviror | amantal Aaaaa  | omant (E/A) C | ti rahi     | 0<br>0       |
| 122       | Engineering Investigations  |               |           |              |      | 160.         | Engineering Enviror                 | imental Asses  | Sment (E/A) S | ludy        | U            |
| 132.      | Engineering Investigations  | Type          | Year      | Cost (\$000) |      | 161          | Engineering Design                  | 9 Cupordicion  |               |             | 10           |
|           | Δ.                          | туре          | Teal      | Cost (\$000) |      | 161.<br>162. | Total Project cost                  | a Supervision  | 1             |             | 10<br>81     |
|           | A<br>B                      |               |           |              |      | 163.         | Eligibility for Subsid              | .,             |               |             | EFS          |
|           | C                           |               |           |              |      | 164.         | Non-subsidizable C                  |                |               |             | EFS          |
|           | D                           |               |           |              |      | 104.         | Non-Subsidizable C                  | USIS           |               |             |              |
|           | Ь                           |               |           |              |      |              |                                     |                | Con           | tributing   | Non-         |
| 133       | Total Cost of Engineering I | nvestigations |           |              |      |              |                                     |                |               | gency       | Subsid.      |
| 100.      | Total Cost of Engineening I | conganons     |           |              |      |              |                                     |                | Λ,            | gonoy       | Cost         |
| 134       | Single Posting              |               |           |              |      |              |                                     | Α              |               |             | 2031         |
| 135.      |                             |               |           | t t          | t    |              |                                     | В              |               |             |              |
| Date      |                             |               |           | - •          | •    |              |                                     | Č              |               |             |              |
| 136.      | Monitoring                  |               |           |              |      |              |                                     | Ď              |               |             |              |
|           | Closure/Date                |               |           |              |      |              |                                     |                |               |             |              |
|           | 2.22.0, 20.0                |               |           |              |      | 165.         | Total Non-Subsidiza                 | able Cost      |               |             |              |
| 1         |                             |               |           |              |      | 166.         | Subsidizable Cost                   |                |               |             | 81           |
| 1         |                             |               |           |              |      | 167.         | Municipal Percent o                 | f Subsidizable | Cost          |             | 100%         |
| 1         |                             |               |           |              |      | -            |                                     |                |               |             | 81           |
|           |                             |               |           |              |      | 168.         | Municipal Share of                  | Cost           |               |             | 81           |

| L. HISTORY ENGINEERING INVESTIGATIONS | Туре | Year  | CONSTRUCTION IMPROVEMENTS | Туре | Year  |
|---------------------------------------|------|-------|---------------------------|------|-------|
| 171.                                  | туре | i Gai | 181.                      | Туре | i cai |
| 172.                                  |      |       | 182.                      |      |       |
| 173.                                  |      |       | 183.                      |      |       |
| 174.                                  |      |       | 184.                      |      |       |
| 175.                                  |      |       | 185.                      |      |       |

#### M. Inspection Notes

#### 191. Bridge No. 02, MTO Site No. 385-190, Shewfelt Creek (at Grasley's), Fisher Road - 3.30 km North of Hwy 17, Township of Johnson:

- Structure is not posted with a load limit.
- Single span (±6.1m) cast in place concrete T-beam bridge with a concrete deck and gravel wearing surface with cast in place concrete railings.
- Concrete railings on deck are in generally good condition with localized minor collision damage. The height of the railing on the deck does not meet current standards.
- Four (4) hazard signs are present at the structure; the sign in the northeast quadrant is bent.
- Gravel approaches and deck wearing surface are generally in good condition. There is buildup of excess gravel on the deck top and at the concrete railings.
- Four (4) cored holes in concrete deck are present; however the deck drainage holes are covered up by the gravel on the bridge deck.
- Concrete deck soffit is in fair condition with moderate scaling; delamination(s) and localized exposed corroded rebar.
- Concrete girders are in good to fair condition with moderate scaling, narrow stained cracks, delamination(s), localized exposed corroded rebar in the second girder from the east near the south abutment wall and wide cracking at haunches on south end of bridge with cracking in the ballast wall.
- Concrete abutment walls have moderate to wide cracks (horizontal), moderate scaling, narrow to medium map cracking with efflorescent staining and delamination(s) throughout. The north abutment wall has horizontal cracking at the cold joint and at the shear connection. It was noted that the north abutment wall was poured right at the edge of the abutment footing. The south abutment wall has horizontal cracks at the cold joints, the mid span and one at the beam elevation.
- Concrete wingwalls are in fair condition with narrow to medium map cracking with efflorescence staining throughout. The northeast wingwall has wide horizontal cracking and the southwest wingwalls has moderate to wide cracking, stained map cracks, delamination(s) and spalls.
- No approach guiderails have been provided at the structure.
- The south abutment footing erosion protection is functioning satisfactorily.
- Vegetated roadway embankments are very steep but are generally in good condition.
- Beaver dam upstream of structure was observed.

#### Recommendations

- Structure does not require posting with a load limit.
- The excess gravel build up on the bridge deck should be removed and the deck drain holes should be unplugged as part of regular maintenance.
- Should rehabilitate deck soffit, T-beams, abutments and wingwalls.
- Should install traffic protection on the approaches.
- Remove beaver dam as part of regular cleaning/maintenance.
- Any leaning or bent hazard signs should be straightened.

Municipality: Township of Johnson
Structure Name: Shewfelt Creek Bridge at Grasley's

Bridge No. MTO Site No. 6. 8. Township of Johnson Shewfelt Creek Bridge at Grasley's Fisher Road 3.3 km North of Hwy. 17



LOOKING NORTH ACROSS STRUCTURE



WEST ELEVATION

- Bridge Photographs
  2. Municipal Name/Code
  3. Bridge Name
  4. Road Name
  5. Location

Township of Johnson Shewfelt Creek Bridge at Grasley's Fisher Road 3.3 km North of Hwy. 17

Bridge No. MTO Site No.



NORTH ABUTMENT WALL - NARROW TO MEDIUM MAP CRACKING, NARROW TO WIDE HORIZONTAL CRACKING AND DELAMINATIONS



SOUTH ABUTMENT WALL - NARROW TO MEDIUM MAP CRACKING, NARROW TO WIDE HORIZONTAL CRACKING AND DELAMINATIONS

Township of Johnson Shewfelt Creek Bridge at Grasley's Fisher Road 3.3 km North of Hwy. 17

Bridge No. MTO Site No. 6. 8.



**DECK SOFFIT GENERAL ARRANGEMENT** 



EXPOSED CORRODED REBAR IN SOUTHEAST INTERIOR BEAM

Township of Johnson Shewfelt Creek Bridge at Grasley's Fisher Road 3.3 km North of Hwy. 17

Bridge No. MTO Site No.



GRAVEL WEARING SURFACE - BUILDUP OF GRAVEL ON BRIDGE DECK AND LIGHT WASHBOARD



SOUTHEAST WINGWALL - NARROW TO MEDIUM MAP CRACKING AND WIDE HORIZONTAL CRACK

Bridge Photographs
2. Municipal Name/Code
3. Bridge Name
4. Road Name
5. Location Township of Johnson Shewfelt Creek Bridge at Grasley's Fisher Road 3.3 km North of Hwy. 17

Bridge No. MTO Site No.



NORTH ABUTMENT AND NORTHEAST WINGWALL - LOCALIZED SPALL WITH **DELAMINATIONS** 



BEAVER DAM UPSTREAM FROM BRIDGE

| A. IDENTIFICATION  |  |   |                         | 6.                | Bridge No. 38S-307   | 03                   |
|--|--|---|-------------------------|-------------------|--|----------------------|
| <ol> <li>Control Code</li> <li>Municipal Name/Code</li> <li>Bridge Name</li> </ol>   | 3-S-TP Township of Johnson Stobie Creek at Mennoni | a School  |                         | 7.<br>8.          | Road Section No.<br>MTO Site No.                             | 350<br>38S-307       |
| 4. Road Name 5. Location   | Government Road<br>10m West of Gordon Lak          |   |                         |                   |  |                      |
| <ul><li>9. Roadside Environment</li><li>10. Posting</li></ul>  | R<br>t t t   | 13. Posting Sign:   | t t t                   | 16.<br>17.        | Crossing Type<br>Federal Navigable Watery                    |                      |
| <ul><li>11. Bylaw No.</li><li>12. Bylaw Expiry Date</li></ul>  | y m  | <ul><li>14. Low Clearance Sign</li><li>15. Narrow Structure Sign</li></ul>  | า                       | 18.<br>19.<br>20. | Bridge Value<br>Latitude<br>Longitude                        | \$450,000            |
| B. RAILWAY OVERPASS/UNDE<br>21. Railway Level Crossing Numb  |  |   |                         | 27 Original I     | Board Order Number   | Date y m d           |
| <ul><li>21. Railway Level Crossing Numb</li><li>22. Railway Company</li><li>23. Railway Subdivision</li></ul>                | 61   |   |                         | · ·               |  | Date y m d           |
| <ul><li>24. Subdivision Mileage</li><li>25. Transport Canada Crossing N</li><li>26. Number of Tracks</li></ul>               | 0.   |   |                         | 29. Seniority     |  | ,                    |
| C. JURISDICTION  |  |   |                         |                   | 38. Local/Area Municipali                                    | tr (Unner Tier Only) |
| 31. Ownership O  | A MUN<br>B   | 35. Boundary Bridge   | N                       |                   | A. B.  | ty (Opper Her Only)  |
| <ul><li>32. Heritage Status</li><li>33. Special Designation</li><li>34. Suburban Roads Commission</li></ul>                  | R<br>CBL   | <ul><li>36. Adjacent Municipality N</li><li>37. Adjacent Bridge No.</li></ul>   | Name/No                 |                   | <ol> <li>Maintenance Area</li> <li>Municipal Ward</li> </ol> |                      |
| D. EXISTING CONDITIONS   |  | ,   |                         |                   |  |                      |
| GENERAL<br>41. Year Constructed  | A. 1937<br>B. 1937                                 | 71  | - Cast in Place Concret | e 51. T           | ongitudinal Joints<br>ransverse Joints<br>lumber of Bearings | 0<br>0<br>0          |
| <ul><li>42. Bridge Type</li><li>43. Crossing Skew</li></ul>  | B. 1937<br>C-TB-F<br>0°<br>1                       | 48. Deck Width 5.7  |                         | 53. S             | soil Condition  butment & Foundation Typ                     | U                    |
| ROAD OVER BRIDGE   |  |   |                         |                   |  |                      |
| <ul><li>56. Operational Status</li><li>57. Wearing Surface</li></ul>   | 300<br>2W - OAT<br>A<br>4.80 m                     | <ul><li>59. No. of Lanes</li><li>60. Median Type/Width</li><li>61. Safety Curb/<br/>Sidewalk and<br/>Curb Barrier</li></ul> | 1<br>(A) N<br>(B) N     |                   | arriers Walls/Railings<br>inimum Vertical<br>nce             | FB                   |
| ROAD UNDER BRIDGE  |  |   |                         |                   |  |                      |
| <ul><li>64. Existing Road Class</li><li>65. Operational Status</li><li>66. Opening Width</li><li>67. Surface Width</li></ul> |  | 68. No. of Lanes 69. Median Type/Width 70. Safety Curb/ Sidewalk and Curb Barrier   | A<br>B                  |                   | raffic Barrier<br>inimum Vertical Clearance                  |                      |
| E. TRAFFIC DATA<br>81. Legal Speed Limit   |  | TRAFFIC COUNT<br>83. Year   |                         | 10 YEA            | AR TRAFFIC FORECAST  |                      |
| 82. Route Designations   |  | 84. AADT<br>85. DHV Factor  |                         |                   | HV Factor  |                      |
| Transit □ Truck □ School □ Bicycle □   |  | <ul><li>86. DHV</li><li>87. Trucks</li><li>88. Peak Directional Split</li><li>89. 10 Year Growth Factor</li></ul>           |                         |                   | = - = -  |                      |
| F. INSPECTIONS & APPROVA  101. Date: June 2, 2  Inspected By: M. Kirby   |  | <ul><li>102. Professional Engineer I</li><li>103. Municipality/Company</li></ul>  | Name                    |                   | ny, P. Eng.<br>n Engineering Inc.                            |                      |

Municipality: Township of Johnson Structure Name: Stobie Creek at Mennonite School

| G.       | BRIDGE NEEDS               | RA <sup>-</sup>   | ΓING              |          |          |    | J.           | TYPE & TIME OF IN       | <b>IPROVEMEN</b> | Т              |              |              |
|----------|----------------------------|-------------------|-------------------|----------|----------|----|--------------|-------------------------|------------------|----------------|--------------|--------------|
|          |                            | MCR               | PCR               |          | IE OF N  |    | 1            |                         |                  | _              |              |              |
| 111.     | Superstructure             | 5                 | 5                 |          | 6-10 yrs | ;  | 141.         |                         |                  |                | RSL          |              |
|          | Wearing Surface            | 3                 | 4                 |          | 1-5 yrs  |    | 142.         |                         |                  |                | 2W-OAT       |              |
|          | Deck Condition             | 4                 | 5                 |          | 1-5 yrs  |    | 143.         | Abutment Type           |                  |                | RSL-O        |              |
|          | Expansion Joints           | 0                 | 0                 |          | ADEQ     |    | 144.         | Design Deck Width       |                  |                | 6.5m         |              |
|          | Railings                   | 3                 | 4                 |          | 1-5 yrs  |    | 145.         | Design Deck Length      |                  |                | 10.0m        |              |
|          | Substructure               | 3                 | 4                 |          | 1-5 yrs  |    |              |                         |                  |                |              |              |
|          | Coating                    | 0                 | 0                 |          | ADEQ     |    |              |                         |                  |                |              |              |
|          | Streams/Waterways          | 5                 | 5                 |          | 6-10 yrs | ;  |              |                         |                  |                |              |              |
|          | Curbs/Sidewalks            | 0                 | 0                 | T18.47   | ADEQ     |    | 440          |                         |                  | _              | a            | _            |
| H.       | FUNCTIONAL NEEDS<br>O OVER | Existing          | Minimum           | HIMI     | OF NE    | ΕD | 146.         | a<br>Type of            | b<br>Costing     | С              | d<br>Time of | e<br>Cost    |
|          | Travel Deck Width          | Condition<br>4.8m | Tolerable<br>6.5m |          | NOW      |    |              | Improvement             | Category         | Quantity       | Improvement  |              |
|          | Level of Service           | 4.0III<br>A       | E.SIII            |          | ADEQ     |    | Α            | Improvement             | PC               | Quaritity<br>4 | 1-5 yrs      | 30           |
|          | Min. Vert. Clear.          | ^                 | 4.5               |          | ADEQ     |    | В            | RSB                     | PC               | 4              | 1-5 yrs      | 30           |
|          | Sidewalks                  | N                 | 4.5<br>N          |          | ADEQ     |    | C            | NOD                     | 10               |                | 1-0 y13      | 30           |
| 127.     | Oldewalks                  | 11                |                   |          | ADLQ     |    | Ď            |                         |                  |                |              |              |
|          |                            |                   |                   |          |          |    | Ē            |                         |                  |                |              |              |
|          |                            |                   |                   |          |          |    | F            |                         |                  |                |              |              |
|          |                            |                   |                   |          |          |    | K.           | IMPROVEMENT CO          | OST              |                |              | Cost (\$000) |
|          |                            |                   |                   |          |          |    | 151.         | Construction            | <u></u>          |                |              | 30           |
|          |                            |                   |                   |          |          |    | 152.         | Approaches              |                  |                |              | 30           |
|          |                            |                   |                   |          |          |    | 153.         | Detours                 |                  |                |              | 0            |
|          |                            |                   |                   |          |          |    | 154.         | Traffic Control/Prote   | ction            |                |              | 0            |
|          |                            |                   |                   |          |          |    | 155.         | Utilities               |                  |                |              | 0            |
| <u>l</u> | ENGINEERING                |                   |                   |          |          |    | 156.         | Other                   |                  |                |              | 0            |
| RECO     | <u>OMMENDATIONS</u>        |                   |                   |          |          |    | 157.         |                         | 10%              |                |              | 6            |
|          | 5 5                        |                   |                   | UNK      |          |    | 158.         | Total Construction      |                  |                |              | 66           |
| 131.     | Bridge Drawings            |                   |                   |          |          |    | 159.         | Right of Way            |                  |                |              | 0            |
| 400      | Contraction to the second  |                   |                   |          |          |    | 160.         | Engineering Environ     | mental Asses     | sment (E/A) S  | ituay        | 0            |
| 132.     | Engineering Investigations | S<br>Type         | Year              | Cost (\$ | 200)     |    | 161.         | Engineering Design      | 9 Cuponicion     |                |              | 10           |
|          | Α                          | Type              | Teal              | COSt (\$ | 300)     |    | 162.         |                         | & Supervision    | l              |              | 76           |
|          | В                          |                   |                   |          |          |    | 163.         | Eligibility for Subsidy | ,                |                |              | EFS          |
|          | Č                          |                   |                   |          |          |    | 164.         | . ,                     |                  |                |              | Li O         |
|          | D                          |                   |                   |          |          |    |              |                         | 50.0             |                |              |              |
|          | _                          |                   |                   |          |          |    |              |                         |                  | Con            | ntributing   | Non-         |
| 133.     | Total Cost of Engineering  | Investigations    |                   |          |          |    |              |                         |                  |                | gency        | Subsid.      |
|          | - 0                        | -                 |                   |          |          |    |              |                         |                  |                | · ·          | Cost         |
|          | Single Posting             |                   |                   |          |          |    |              |                         | Α                |                |              |              |
| 135.     | Evaluated Posting          |                   |                   | t        | t        | t  |              |                         | В                |                |              |              |
| Date     |                            |                   |                   |          |          |    |              |                         | C                |                |              |              |
|          | Monitoring                 |                   |                   |          |          |    |              |                         | D                |                |              |              |
| 137.     | Closure/Date               |                   |                   |          |          |    | 405          | T. (.   N O .           |                  |                |              |              |
|          |                            |                   |                   |          |          |    | 165.         | Total Non-Subsidiza     | bie Cost         |                |              | <b></b> -    |
|          |                            |                   |                   |          |          |    | 166.         | Subsidizable Cost       | Cubaidinal-I-    | Coot           |              | 76           |
|          |                            |                   |                   |          |          |    | 167.<br>168. | Municipal Percent of    |                  | COST           |              | 100%<br>76   |
| <u> </u> |                            |                   |                   |          |          |    | 108.         | Municipal Share of C    | JUSI             |                |              | 76           |
|          |                            |                   |                   |          |          |    |              |                         |                  |                |              |              |

|      |      | CONSTRUCTION IMPROVEMENTS |  |  |
|------|------|---------------------------|--|--|
| Type | Year |                           | Type                                   | Year   |
|      |      | 181.                      |  |  |
|      |      | 182.                      |  |  |
|      |      | 183.                      |  |  |
|      |      | 184.                      |  |  |
|      |      | 185.                      |  |  |
|      | Туре | Type Year                 | Type Year 181.<br>182.<br>183.<br>184. | Type Year Type<br>181.<br>182.<br>183.<br>184. |

#### M. Inspection Notes

- Bridge No. 03, MTO Site No. 38S-307, Stobie Creek Bridge, Government Road 10m West of Gordon Lake Road, Township of Johnson:
- Structure not posted with a load limit.
- Single span (± 9.3m) cast in place concrete T-beam bridge with a concrete deck and an asphalt wearing surface.
- Asphalt wearing surface is in fair condition with a small pothole on deck wearing surface. Asphalt approaches are in fair condition with settlement, depressions and cracking noted at the bridge ends. The east approach has a medium transverse crack. Gravel and vegetation buildup was noted on the bridge deck under the guiderails and the wearing surface.
- Steel flex beam railings on deck are in generally good condition. No offset blocks are present on south railing, new guide rails on steel posts. Offset blocks provided on the north guiderail, however some of the offset blocks are rotated and/or split. The west end of the south guardrail has a large cut (2.0 m long).
- Terminal end treatments have been provided in all four quadrants. A gap was noted under a guiderail post in the south railing and the anchor bolts appear stripped.
- There are hazard markers at each corner of the bridge.
- Concrete deck soffit is in fair to good condition with wide localized cracking in soffit at the interior soffit at the east abutment (0.6m x 0.6m area)
- Concrete T-beams are in fair to good condition with moderate stained cracking on the exterior beam at the northeast corner and minor cracking on the bottom of the
  east and west ends of the south beam.
- A wide crack from the exterior face of the concrete beam/deck to the curb was noted at the northeast corner. The curb on south side has been repaired and light cracking was noted near the posts.
- Concrete abutment walls are in general good condition with delamination(s).
- Concrete footings are undermined (approximately six inches) with the west footing having severe delamination along the top of footing and the southwest section of the footing having severe spalling and erosion.
- Watercourse is unobstructed with evidence of severe scour and undermining along both abutments.
- No traffic protection is provided on the approaches.
- Vegetated roadway embankments are in good condition with minor erosion (small channelization in the southeast quadrant).

#### Recommendations

- Structure does not require posting with a load limit.
- The undermining of the abutments should be repaired and stabilized/protected.
- Should replace broken/rotated offset blocks at north guiderail; replace cut section of guiderail in the south railing.
- Rout and seal transverse crack in the east approach and repair pothole on the bridge deck wearing surface.
- The minor erosion noted at the southeast quadrant should be repaired and stabilized as part of the regular maintenance program.
- The gravel and vegetation build up on the bridge deck wearing surface and under the guiderails should be removed as part the regular maintenance program.
- Potholes in deck wearing should be repaired.
- The gap under the south railing guiderail base plate should have some metal shims installed to provide full contact of the baseplate with concrete headwall/curb.
- The moderate to severe undermining of the abutment footings should be repaired and protected from further undermining or scour.
- Traffic protection on the approaches should be considered.

Township of Johnson Stobie Creek at Mennonite School Government Road 10m West of Gordon Lake Road

Bridge No.: MTO Site No.



LOOKING EAST ACROSS STRUCTURE



NORTH ELEVATION

Township of Johnson Stobie Creek at Mennonite School Government Road 10m West of Gordon Lake Road

Bridge No.: MTO Site No.



ROTATED AND SPLIT OFFSET BLOCK - NORTH GUARDRAIL



LARGE CUT IN THE SOUTHWEST GUIDERAIL

Township of Johnson Stobie Creek at Mennonite School Government Road 10m West of Gordon Lake Road

Bridge No.: MTO Site No.



MODERATE TO WIDE TRANSVERSE CRACK IN EAST APPROACH



CONCRETE EROSION AND LARGE SPALL IN FOOTING

Bridge Photographs
2. Municipal Name/Code
3. Bridge Name
4. Road Name
5. Location Township of Johnson Stobie Creek at Mennonite School Government Road 10m West of Gordon Lake Road

Bridge No.: MTO Site No.



BEAM AND DECK SOFFIT GENERAL ARRANGEMENT



LOCALIZED MEDIUM TO WIDE CRACKING OF INTERIOR DECK SOFFIT AT THE EAST ABUTMENT

Township of Johnson Stobie Creek at Mennonite School Government Road 10m West of Gordon Lake Road

Bridge No.: MTO Site No.



EAST ABUTMENT WALL AND FOOTING - EROSION **OF CONCRETE FOOTING** 



WEST ABUTMENT WALL AND FOOTING - SEVERE DELAMINATION OF TOP OF FOOTING

Township of Johnson Stobie Creek at Mennonite School Government Road 10m West of Gordon Lake Road

Bridge No.: MTO Site No.



LOOKING NORTH, UPSTREAM OF STRUCTURE

# **MUNICIPAL BRIDGE APPRAISAL**

| A. IDENTIFICATION  |                        |  | 6. Bridge No. 04  |
|--|------------------------|--|---|
| 1. Control Code  | 3-S-TP                 |  | 7. Road Section No. 240   |
| Municipal Name/Code  | Township of Johnson    |  | 8. MTO Site No. 38S-151   |
| Bridge Name  | Suddaby Creek Bridge   |  | 0. WITO Site 140. 303-131   |
| Road Name  | Old Mill Road          |  |   |
| 5. Location  | 0.20 km North of Gordo | n Laka Paad  |   |
| Roadside Environment   | R                      | III Lake Noau  | 16. Crossing Type O-WAT   |
|  |                        | 12 Deating Ciana 10t t t   |   |
| 10. Posting  | 10t t t                | 13. Posting Sign: 10t t t  |   |
| 11. Bylaw No.  |                        | 14. Low Clearance Sign   | 18. Bridge Value \$750,000  |
| <ol><li>Bylaw Expiry Date</li></ol>  | y m                    | <ol><li>Narrow Structure Sign</li></ol>  | 19. Latitude  |
|  |                        |  | 20. Longitude   |
| D. DAILWAY OVEDDACC/UNI  | NEDDA CC               |  |   |
| <ul><li>B. RAILWAY OVERPASS/UNI</li><li>21. Railway Level Crossing Nur</li></ul>   |                        |  | 07 Original Board Order Number Date v. m. d   |
|  | nber                   |  | 27. Original Board Order Number Date y m d  |
| 22. Railway Company  |                        |  |   |
| 23. Railway Subdivision  |                        |  | 28. Current Board Order Number Date y m d   |
| <ol><li>Subdivision Mileage</li></ol>  |                        |  |   |
| <ol><li>Transport Canada Crossing</li></ol>  | No.                    |  | 29. Seniority   |
| 26. Number of Tracks   |                        |  |   |
|  |                        |  |   |
| C. JURISDICTION  |                        |  | <ol><li>Local/Area Municipality (Upper Tier Only)</li></ol>   |
| 31. Ownership O  | A MUN                  |  | A.  |
| ·  | В                      | 35. Boundary Bridge N  | В.  |
| 32. Heritage Status  | R                      | ,,,  | 39. Maintenance Area  |
| 33. Special Designation  | NSD                    | 36. Adjacent Municipality Name/No  | 40. Municipal Ward  |
| 34. Suburban Roads Commissi  |                        | 37. Adjacent Bridge No.  | 40. Mailioipai vvara  |
| 34. Suburban Roads Commissi  | OII .                  | 37. Adjacent Bridge No.  |   |
| D. EXISTING CONDITIONS   |                        |  |   |
| GENERAL  |                        | 45. Span Length 6.3 m  | 50. Longitudinal Joints 0   |
|  | A 4040                 |  |   |
| 41. Year Constructed   | A. 1913                |  |   |
|  | B. 1913                | 47. Deck Length 21.3 m   | 52. Number of Bearings 0  |
| <ol><li>42. Bridge Type</li></ol>  | C-TB-C                 | 48. Deck Width 5.3 m   | 53. Soil Condition U  |
| 43. Crossing Skew  | 0°                     | 49. Deck Area 112.9 m <sup>2</sup>   | <ol> <li>Abutment &amp; Foundation Type Closed -</li> </ol>   |
| 44. Number of Spans  | 3                      |  | UN  |
|  |                        |  |   |
| ROAD OVER BRIDGE   |                        |  |   |
|  |                        | 59. No. of Lanes 1.0   | 62. Barriers Walls/Railings LP  |
| <ol><li>55. Existing Road Class</li></ol>  | 300                    | 60. Median Type/Width  | 63. Minimum Vertical  |
| 56. Operational Status   | 2W - OAT               | 61. Safety Curb/ (A) N / E 0.1 r   | n Clearance   |
| 57. Wearing Surface  | С                      | Sidewalk and (B) N/W 0.1 r   |   |
| 58. Travel Deck Width  | 4.20 m                 | Curb Barrier   | <del>''</del>   |
| Jo. Haver Deck Width   | 7.20 111               | Out Daniel   |   |
|  |                        |  |   |
| ROAD UNDER BRIDGE  |                        |  |   |
| ROAD UNDER BRIDGE  |                        | 68. No. of Lanes   | 71. Traffic Barrier   |
|  |                        | 68. No. of Lanes   | 71. Traffic Barrier   |
| 64. Existing Road Class  |                        | 69. Median Type/Width  | 71. Traffic Barrier<br>72. Minimum Vertical Clearance   |
| <ul><li>64. Existing Road Class</li><li>65. Operational Status</li></ul>   |                        | 69. Median Type/Width<br>70. Safety Curb/ A  |   |
| <ul><li>64. Existing Road Class</li><li>65. Operational Status</li><li>66. Opening Width</li></ul>   |                        | 69. Median Type/Width 70. Safety Curb/ A Sidewalk and B  |   |
| <ul><li>64. Existing Road Class</li><li>65. Operational Status</li></ul>   |                        | 69. Median Type/Width<br>70. Safety Curb/ A  |   |
| <ul><li>64. Existing Road Class</li><li>65. Operational Status</li><li>66. Opening Width</li><li>67. Surface Width</li></ul>   |                        | 69. Median Type/Width 70. Safety Curb/ A Sidewalk and B Curb Barrier   | 72. Minimum Vertical Clearance  |
| 64. Existing Road Class 65. Operational Status 66. Opening Width 67. Surface Width  E. TRAFFIC DATA  |                        | 69. Median Type/Width 70. Safety Curb/ A Sidewalk and B Curb Barrier  TRAFFIC COUNT  | 72. Minimum Vertical Clearance  10 YEAR TRAFFIC FORECAST  |
| <ul><li>64. Existing Road Class</li><li>65. Operational Status</li><li>66. Opening Width</li><li>67. Surface Width</li></ul>   |                        | 69. Median Type/Width 70. Safety Curb/ A Sidewalk and B Curb Barrier  TRAFFIC COUNT 83. Year   | 72. Minimum Vertical Clearance  10 YEAR TRAFFIC FORECAST 90. Year   |
| 64. Existing Road Class 65. Operational Status 66. Opening Width 67. Surface Width  E. TRAFFIC DATA  |                        | 69. Median Type/Width 70. Safety Curb/ A Sidewalk and B Curb Barrier  TRAFFIC COUNT  | 72. Minimum Vertical Clearance  10 YEAR TRAFFIC FORECAST  |
| 64. Existing Road Class 65. Operational Status 66. Opening Width 67. Surface Width  E. TRAFFIC DATA  |                        | 69. Median Type/Width 70. Safety Curb/ A Sidewalk and B Curb Barrier  TRAFFIC COUNT 83. Year   | 72. Minimum Vertical Clearance  10 YEAR TRAFFIC FORECAST 90. Year   |
| 64. Existing Road Class 65. Operational Status 66. Opening Width 67. Surface Width  E. TRAFFIC DATA 81. Legal Speed Limit  |                        | 69. Median Type/Width 70. Safety Curb/ A Sidewalk and B Curb Barrier  TRAFFIC COUNT 83. Year 84. AADT 85. DHV Factor   | 72. Minimum Vertical Clearance  10 YEAR TRAFFIC FORECAST 90. Year 91. AADT 92. DHV Factor   |
| 64. Existing Road Class 65. Operational Status 66. Opening Width 67. Surface Width  E. TRAFFIC DATA 81. Legal Speed Limit 82. Route Designations   |                        | 69. Median Type/Width 70. Safety Curb/ A Sidewalk and B Curb Barrier  TRAFFIC COUNT 83. Year 84. AADT 85. DHV Factor 86. DHV   | 72. Minimum Vertical Clearance  10 YEAR TRAFFIC FORECAST 90. Year 91. AADT 92. DHV Factor 93. DHV   |
| 64. Existing Road Class 65. Operational Status 66. Opening Width 67. Surface Width  E. TRAFFIC DATA 81. Legal Speed Limit 82. Route Designations  Transit   Truck  |                        | 69. Median Type/Width 70. Safety Curb/ A Sidewalk and B Curb Barrier  TRAFFIC COUNT 83. Year 84. AADT 85. DHV Factor 86. DHV 87. Trucks  | 72. Minimum Vertical Clearance  10 YEAR TRAFFIC FORECAST 90. Year 91. AADT 92. DHV Factor 93. DHV 94. Trucks  |
| 64. Existing Road Class 65. Operational Status 66. Opening Width 67. Surface Width  E. TRAFFIC DATA 81. Legal Speed Limit 82. Route Designations   |                        | 69. Median Type/Width 70. Safety Curb/ A Sidewalk and B Curb Barrier  TRAFFIC COUNT 83. Year 84. AADT 85. DHV Factor 86. DHV 87. Trucks 88. Peak Directional Split                           | 72. Minimum Vertical Clearance  10 YEAR TRAFFIC FORECAST 90. Year 91. AADT 92. DHV Factor 93. DHV 94. Trucks 95. Capacity                                     |
| 64. Existing Road Class 65. Operational Status 66. Opening Width 67. Surface Width  E. TRAFFIC DATA 81. Legal Speed Limit 82. Route Designations  Transit   Truck  |                        | 69. Median Type/Width 70. Safety Curb/ A Sidewalk and B Curb Barrier  TRAFFIC COUNT 83. Year 84. AADT 85. DHV Factor 86. DHV 87. Trucks  | 72. Minimum Vertical Clearance  10 YEAR TRAFFIC FORECAST 90. Year 91. AADT 92. DHV Factor 93. DHV 94. Trucks  |
| 64. Existing Road Class 65. Operational Status 66. Opening Width 67. Surface Width  E. TRAFFIC DATA 81. Legal Speed Limit 82. Route Designations  Transit  | VAL S                  | 69. Median Type/Width 70. Safety Curb/ A Sidewalk and B Curb Barrier  TRAFFIC COUNT 83. Year 84. AADT 85. DHV Factor 86. DHV 87. Trucks 88. Peak Directional Split                           | 72. Minimum Vertical Clearance  10 YEAR TRAFFIC FORECAST 90. Year 91. AADT 92. DHV Factor 93. DHV 94. Trucks 95. Capacity                                     |
| 64. Existing Road Class 65. Operational Status 66. Opening Width 67. Surface Width  E. TRAFFIC DATA 81. Legal Speed Limit 82. Route Designations  Transit  |                        | 69. Median Type/Width 70. Safety Curb/ A Sidewalk and B Curb Barrier  TRAFFIC COUNT 83. Year 84. AADT 85. DHV Factor 86. DHV 87. Trucks 88. Peak Directional Split 89. 10 Year Growth Factor | 72. Minimum Vertical Clearance  10 YEAR TRAFFIC FORECAST 90. Year 91. AADT 92. DHV Factor 93. DHV 94. Trucks 95. Capacity 96. 20 Year AADT                    |
| 64. Existing Road Class 65. Operational Status 66. Opening Width 67. Surface Width  E. TRAFFIC DATA 81. Legal Speed Limit 82. Route Designations  Transit  Truck  Bicycle    E. INSPECTIONS & APPROV 101. Date: June 3 | 3, 2016                | 69. Median Type/Width 70. Safety Curb/ A Sidewalk and B Curb Barrier  TRAFFIC COUNT 83. Year 84. AADT 85. DHV Factor 86. DHV 87. Trucks 88. Peak Directional Split 89. 10 Year Growth Factor | 72. Minimum Vertical Clearance  10 YEAR TRAFFIC FORECAST 90. Year 91. AADT 92. DHV Factor 93. DHV 94. Trucks 95. Capacity 96. 20 Year AADT  M. Kirby, P. Eng. |
| 64. Existing Road Class 65. Operational Status 66. Opening Width 67. Surface Width  E. TRAFFIC DATA 81. Legal Speed Limit 82. Route Designations  Transit  |                        | 69. Median Type/Width 70. Safety Curb/ A Sidewalk and B Curb Barrier  TRAFFIC COUNT 83. Year 84. AADT 85. DHV Factor 86. DHV 87. Trucks 88. Peak Directional Split 89. 10 Year Growth Factor | 72. Minimum Vertical Clearance  10 YEAR TRAFFIC FORECAST 90. Year 91. AADT 92. DHV Factor 93. DHV 94. Trucks 95. Capacity 96. 20 Year AADT                    |

Municipality: Structure Name: Township of Johnson Suddaby Creek Bridge

| <u>G.</u> | BRIDGE NEEDS              |                   | TING      | TIME OF MEED | <u>J.</u> | TYPE & TIME OF IN       | <u> MPROVEMEN</u> | <u> </u>         |             |              |
|-----------|---------------------------|-------------------|-----------|--------------|-----------|-------------------------|-------------------|------------------|-------------|--------------|
|           |                           | MCR               | PCR       | TIME OF NEED |           |                         |                   |                  | 501         |              |
|           | Superstructure            | 3                 | 3         | 1-5 yrs      |           | Design Class            |                   |                  | RSL         |              |
|           | Wearing Surface           | 4                 | 4         | 1-5 yrs      |           | Operational Status      |                   |                  | 2W-OAT      |              |
| _         | Deck Condition            | 4                 | 4         | 1-5 yrs      | 143.      | Abutment Type           |                   |                  | RSL-O       |              |
|           | Expansion Joints          | 0                 | 0         | ADEQ         | 144.      | Design Deck Width       |                   |                  | 6.5m        |              |
|           | Railings                  | 2                 | 3         | NOW          | 145.      | Design Deck Length      | 1                 |                  | 21.3m       |              |
|           | Substructure              | 3                 | 4         | 1-5 yrs      |           |                         |                   |                  |             |              |
|           | Coating                   | 0                 | 0         | ADEQ         |           |                         |                   |                  |             |              |
|           | Streams/Waterways         | 3                 | 3         | 1-5 yrs      |           |                         |                   |                  |             |              |
|           | Curbs/Sidewalks           | 4                 | 5         | 1-5 yrs      |           |                         |                   |                  |             |              |
| <u>H.</u> | <b>FUNCTIONAL NEEDS</b>   | Existing          | Minimum   | TIME OF NEED | 146.      | а                       | b                 | С                | d           | е            |
| _         | OOVER                     | Condition         | Tolerable |              |           | Type of                 | Costing           |                  | Time of     | Cost         |
| 121.      | Travel Deck Width         | 4.2m              | 6.5m      | NOW          |           | Improvement             | Category          | Quantity         | Improvement | (\$1000)     |
| 122.      | Level of Service          | Α                 | Е         | ADEQ         | Α         | RIR                     | PC                |                  | NOW         | 25           |
| 123.      | Min. Vert. Clear.         |                   | 4.5       | ADEQ         | В         | IAG                     | PC                | 4                | 1-5 yrs     | 40           |
| 124.      | Sidewalks                 | N                 | N         | ADEQ         | С         | EIR                     | PC                |                  | 1-5 yrs     | 10           |
|           |                           |                   |           |              | D         | RSB/RSP                 | PC                |                  | 1-5 yrs     | 200          |
|           |                           |                   |           |              | E         | OWP                     | PC                |                  | 1-5 yrs     | 25           |
|           |                           |                   |           |              | Or.       |                         |                   |                  |             |              |
|           |                           |                   |           |              | F         | RSL                     | PC                |                  | 1-5 yrs     | 1,000        |
|           |                           |                   |           |              |           |                         |                   |                  |             |              |
|           |                           |                   |           |              | K.        | IMPROVEMENT CO          | <u>DST</u>        |                  |             | Cost (\$000) |
|           |                           |                   |           |              | 151.      |                         | <u>_</u>          |                  |             | 260          |
|           |                           |                   |           |              | 152.      | Approaches              |                   |                  |             | 40           |
|           |                           |                   |           |              | 153.      | Detours                 |                   |                  |             | 0            |
|           |                           |                   |           |              | 154.      | Traffic Control/Prote   | ection            |                  |             | 0            |
|           |                           |                   |           |              | 155.      | Utilities               |                   |                  |             | 0            |
| I.        | ENGINEERING               |                   |           |              | 156.      | Other                   |                   |                  |             | 0            |
| RECO      | OMMENDATIONS              |                   |           |              | 157.      |                         | 10%               |                  |             | 30           |
| 11201     | <u> </u>                  |                   |           | UNK          | 158.      | Total Construction      | .070              |                  |             | 330          |
| 131       | Bridge Drawings           |                   |           | 0            | 159.      | Right of Way            |                   |                  |             | 0            |
| 101.      | Bridge Brawnige           |                   |           |              | 160.      | Engineering Environ     | mental Asses      | sment (F/A) St   | tudv        | 0            |
| 132.      | Engineering Investigation | nns               |           |              | 100.      | Linginiooning Linviron  | imoniai 7 locoo   | ornorit (E//t) O | lady        | Ü            |
| 102.      | Engineering investigation | Туре              | Year      | Cost (\$000) | 161.      | Engineering Design      | & Supervision     |                  |             | 40           |
|           | ,                         |                   | 2017      | 10           | 162.      | Total Project cost      | a capor violori   |                  |             | 370          |
|           | É                         |                   | 2017      | 5            | 163.      | Eligibility for Subsidy | ,                 |                  |             | EFS          |
|           | (                         |                   | 2017      | 9            |           | Non-subsidizable Co     |                   |                  |             | L1 0         |
|           | ]                         |                   |           |              | 104.      | NOT-Substalzable Of     | 3313              |                  |             |              |
|           |                           | •                 |           |              |           |                         |                   | Con              | tributing   | Non-         |
| 133       | Total Cost of Engineeri   | na Investigations |           | 15           |           |                         |                   |                  | gency       | Subsid.      |
| 100.      | Total Oost of Englifeen   | ig investigations |           | 10           |           |                         |                   | Λį               | gonoy       | Cost         |
| 13/       | Single Posting            |                   |           |              |           |                         | Α                 |                  |             | 5031         |
|           | Evaluated Posting         |                   |           | t t t        |           |                         | В                 |                  |             |              |
| Date      | Lvaluateu Posting         |                   |           | ı ı ı        |           |                         | C                 |                  |             |              |
|           | Monitoring                |                   |           |              |           |                         | D                 |                  |             |              |
|           | Closure/Date              |                   |           |              |           |                         | U                 |                  |             |              |
| 137.      | Ciosure/Date              |                   |           |              | 165       | Total Non Cubaidina     | blo Coot          |                  |             |              |
|           |                           |                   |           |              | 165.      |                         | ible Cost         |                  |             | 070          |
|           |                           |                   |           |              | 166.      | Subsidizable Cost       | f Cubal-!         | Coot             |             | 370          |
|           |                           |                   |           |              | 167.      | Municipal Percent of    |                   | Cost             |             | 100%         |
|           |                           |                   |           |              | 168.      | Municipal Share of C    | Jost              |                  |             | 370          |

| L. HISTORY<br>ENGINEERING INVESTIGATIONS | T    | V    | CONSTRUCTION IMPROVEMENTS | Time | V    |
|--|------|------|---------------------------|------|------|
| 171.                                     | Type | Year | 181.                      | Type | Year |
| 172.                                     |      |      | 182.                      |      |      |
| 173.                                     |      |      | 183.                      |      |      |
| 174.                                     |      |      | 184.                      |      |      |
| 175.                                     |      |      | 185.                      |      |      |

#### M. Inspection Notes

- Bridge No. 04, MTO Site No. 38S-151, Suddaby Creek Bridge, Old Mill Road 0.20 km North of Gordon Lake Road, Township of Johnson:
- Structure is posted with a 10 tonne load limit.
- Three span (±6.3m, ±6.3m, ±6.3m) cast in place concrete T-Beam bridge with an exposed concrete deck wearing surface, concrete piers and concrete abutments.
   The bridge has concrete curbs and railing posts with light pipe handrails and gravel approaches.
- The light pipe handrails on the deck are in poor condition with broken concrete posts and missing sections.
- Hazard markers are located in all four quadrants some bent/falling.
- Concrete deck curbs are in fair to poor condition with missing sections in the northeast quadrant.
- Concrete deck wearing surface is in fair condition with localized spalls, moderate abrasions and wear. Gravel and debris is built up on bridge deck at curbs.
- Deck drainage is accommodated by 6-150mm diameter drains and are clean (free of debris).
- Vegetated roadway embankments are in good condition. Trimming is required on the abutment embankments to eliminate any tree growth under the bridge.
- The north abutment embankment is in good condition.
- Concrete deck soffit is in generally in fair to poor condition with delamination(s), narrow to wide cracking with efflorescence throughout.
- Concrete T-beams are in fair to poor condition with the following:
  - Narrow to wide stained cracks, exposed corroded rebar, severe spalling of the northwest corner exterior beam and wet areas at the north side of the north beam.
  - Spalling at underside of east exterior beam with severely corroded and exposed rebar.
  - Efflorescence at sides and soffit of both interior and exterior beams;
  - Wide cracking at south end of both exterior beams (horizontal cracking);
  - Minor scaling at haunches at south side of south pier;
  - · Narrow cracking and delamination(s) at haunch of second beam from east, on the south end, at the north pier;
  - Severe spall, exposed rebar at north span, exterior beams (with moderate flaking and minor section loss of exposed rebar);
  - Moderate scaling and localized spalls at haunches of north abutment wall.
  - Severe spalling on the haunches in the northeast quadrant
- Concrete abutment walls are in fair condition with medium random cracking and light to medium scaling. Concrete ballast walls are in generally fair to poor condition with narrow to wide stained cracks, spalls, delamination(s) and efflorescence.
- Concrete piers are in fair condition with wide traverse cracking at south and north pier footing. Concrete patches at both pier footings. Medium transverse cracking
  at the top of all pier columns at north pier. The exterior portions of the piers have spalls, delamination(s) and the concrete is beginning to disintegrate.
- Watercourse is generally un-obstructed; however there is evidence of moderate scour/erosion to the south abutment and severe undermining of the pier footings.

### Recommendations

- The 10 tonne load limit shall remain in effect.
- Should install traffic protection on the approaches.
- Should clean bridge deck and curbs of excess gravel and remove any small trees growing at the underside of the bridge as part of your regular maintenance program.
- The erosion noted on the south abutment embankment should be repaired and stabilized to prevent the erosion from continuing under heavy rainfalls/ high stream flows. The undermining of the pier footings should also be repaired as soon as possible.
- The bridge railing requires repairs and should be upgraded to meet the current standards.
- Tree growth and vegetation at abutment embankments should be trimmed back to prevent encroachment on/under the bridge.
- A detailed deck condition survey and rehabilitation/replacement analysis is recommended to confirm the rehabilitation vs. replacement recommendation.
- Subject to findings of deck condition survey, repairs to concrete beams, soffit, piers, abutments and curbs/railings should be completed and the deck should be rehabilitated with a waterproofing membrane and wearing surface. The rehabilitation of all the concrete components will not increase the load capacity.
- If this bridge is intended to be subject to higher loads, a load evaluation should be carried out to confirm the rehabilitation/replacement recommendation and any further repair recommendations.

Municipality: Township of Johnson Structure Name: Suddaby Creek Bridge

Township of Johnson Suddaby Creek Bridge Old Mill Road 0.20 km North of Gordon Lake Road

Bridge No. MTO Site No.



LOOKING SOUTH ACROSS STRUCTURE



WEST ELEVATION

Township of Johnson Suddaby Creek Bridge Old Mill Road 0.20 km North of Gordon Lake Road

Bridge No. MTO Site No.



BRIDGE DECK WEARING SURFACE - LIGHT TO MODERATE SCALING AND ABRASIONS



BROKEN SECTION OF CURB AND MISSING SECTION OF RAILING POST IN THE NORTHWEST CORNER

Township of Johnson Suddaby Creek Bridge Old Mill Road 0.20 km North of Gordon Lake Road

Bridge No. MTO Site No.



EXPOSED CORRODED REBAR IN EAST EXTERIOR BEAM'S NORTH SPAN



BROKEN CONCRETE FOOTING WITH MODERATE TO SEVERE UNDERMINING

Township of Johnson Suddaby Creek Bridge Old Mill Road 0.20 km North of Gordon Lake Road

Bridge No. MTO Site No.



CONCRETE SPALL AND DISINTEGRATION OF SOUTH PIER



SOUTH ABUTMENT AND DECK SOFFIT **GENERAL ARRANGEMENT** 

| A. IDENTIFICATION  |                        |  | 6. Bridge No. 05   |
|--|------------------------|--|--|
| Control Code   | 3-S-TP                 |  | 7. Road Section No. 195  |
| <ol><li>Municipal Name/Code</li></ol>  | Township of Johnson    |  | 8. MTO Site No. 38S-152  |
| 3. Bridge Name   | Suddaby Park           |  |  |
| 4. Road Name   | Gordon Lake Road       |  |  |
| 5. Location  | 0.5 km North of Suddal | ov Park Rd.  |  |
| Roadside Environment   | R                      | ,,   | 16. Crossing Type O-WAT  |
| 10. Posting  | t t t                  | 13. Posting Sign: t t t  | 17. Federal Navigable Waterway Unknown   |
| 11. Bylaw No.  |                        | 14. Low Clearance Sign   | 18. Bridge Value \$500,000   |
| 12. Bylaw Expiry Date  | y m                    | 15. Narrow Structure Sign  | 19. Latitude   |
| 12. Bylaw Expiry Bate  | <b>y</b>               | To. Trainer Structure Sign   | 20. Longitude  |
|  |                        |  | 20. Longitudo  |
| B. RAILWAY OVERPASS/UNI  | DERPASS                |  |  |
| 21. Railway Level Crossing Nur   |                        | 27   | . Original Board Order Number  |
| 22. Railway Company  |                        |  | . 3  |
| 23. Railway Subdivision  |                        | 28   | . Current Board Order Number   |
| 24. Subdivision Mileage  |                        |  | . Garrett Board Grade Harrison   |
| 25. Transport Canada Crossing  | No                     | 20   | . Seniority  |
| 26. Number of Tracks   | 140.                   | 23   | . Genionty   |
| 20. Number of Fracks   |                        |  |  |
| C. JURISDICTION  |                        |  | 38. Local/Area Municipality (Upper Tier Only)  |
| 31. Ownership O  | A MUN                  |  | A.   |
| or. Ownership o  | В                      | 35. Boundary Bridge N  | B.   |
| 32. Heritage Status  | R                      | 33. Boundary Bridge  | 39. Maintenance Area   |
| 33. Special Designation  | NSD                    | 36. Adjacent Municipality Name/No  | 40. Municipal Ward   |
| 34. Suburban Roads Commissi  |                        | 37. Adjacent Bridge No.  | 40. Mullicipal Walu  |
| 34. Suburban Roads Commissi  | Un                     | 37. Adjacent Bridge No.  |  |
| D. EXISTING CONDITIONS   |                        |  |  |
| GENERAL  |                        | 45. Span Length 5.3 m  | 50. Longitudinal Joints 0  |
|  | A 0000                 |  |  |
| 41. Year Constructed   | A. 2009<br>B. 2009     | 46. Deck Type CC – Cast in Place Concrete  | 51. Transverse Joints 0 52. Number of Bearings 0   |
| 40 Delder Trees  |                        | 47. Deck Length 5.3 m  |  |
| 42. Bridge Type  | P-BC-F<br>0°           | 48. Deck Width 13.0 m  | -  |
| 43. Crossing Skew  | 1                      | 49. Deck Area 68.9 m <sup>2</sup>  | 54. Abutment & Foundation Type Closed - PC   |
| 44. Number of Spans  | I                      |  | PC PC  |
| ROAD OVER BRIDGE   |                        |  |  |
| ROAD OVER BRIDGE   |                        | 59. No. of Lanes 2.0   | 62. Barriers Walls/Railings FB   |
| FF Frieties Deed Olese   | 200                    |  |  |
| 55. Existing Road Class  | 300                    | 60. Median Type/Width m  | 63. Minimum Vertical   |
| 56. Operational Status   | 2W - OAT               | 61. Safety Curb/ (A) N / E 0.2 m   | Clearance  |
| 57. Wearing Surface  | A                      | Sidewalk and (B) N / W 0.2 m   |  |
| 58. Travel Deck Width  | 7.30 m                 | Curb Barrier   |  |
| DOAD LINDED DOIDOE   |                        |  |  |
| ROAD UNDER BRIDGE  |                        | 69 No of Lance   | 71 Troffic Barrior   |
| 64 Eviating Bood Class   |                        | 68. No. of Lanes   | 71. Traffic Barrier  |
| 64. Existing Road Class  |                        | 69. Median Type/Width  | 72. Minimum Vertical Clearance   |
| 65. Operational Status   |                        | 70. Safety Curb/ A   |  |
| 66. Opening Width  |                        | Sidewalk and B   |  |
|  |                        |  |  |
| 67. Surface Width  |                        | Curb Barrier   |  |
| 67. Surface Width  |                        |  | 40 VEAR TRAFFIC FORFOACT   |
| 67. Surface Width  E. TRAFFIC DATA   |                        | TRAFFIC COUNT  | 10 YEAR TRAFFIC FORECAST   |
| 67. Surface Width  |                        | TRAFFIC COUNT<br>83. Year  | 90. Year   |
| E. TRAFFIC DATA 81. Legal Speed Limit  |                        | TRAFFIC COUNT<br>83. Year<br>84. AADT  | 90. Year<br>91. AADT   |
| 67. Surface Width  E. TRAFFIC DATA   |                        | TRAFFIC COUNT 83. Year 84. AADT 85. DHV Factor   | 90. Year<br>91. AADT<br>92. DHV Factor   |
| 67. Surface Width  E. TRAFFIC DATA 81. Legal Speed Limit   |                        | TRAFFIC COUNT 83. Year 84. AADT 85. DHV Factor 86. DHV   | 90. Year<br>91. AADT<br>92. DHV Factor<br>93. DHV  |
| 67. Surface Width  E. TRAFFIC DATA 81. Legal Speed Limit   |                        | TRAFFIC COUNT 83. Year 84. AADT 85. DHV Factor 86. DHV 87. Trucks  | 90. Year<br>91. AADT<br>92. DHV Factor<br>93. DHV<br>94. Trucks  |
| E. TRAFFIC DATA 81. Legal Speed Limit 82. Route Designations   |                        | TRAFFIC COUNT 83. Year 84. AADT 85. DHV Factor 86. DHV 87. Trucks 88. Peak Directional Split                           | <ul><li>90. Year</li><li>91. AADT</li><li>92. DHV Factor</li><li>93. DHV</li><li>94. Trucks</li><li>95. Capacity</li></ul> |
| 67. Surface Width  E. TRAFFIC DATA 81. Legal Speed Limit 82. Route Designations  Transit  Truck  |                        | TRAFFIC COUNT 83. Year 84. AADT 85. DHV Factor 86. DHV 87. Trucks  | 90. Year<br>91. AADT<br>92. DHV Factor<br>93. DHV<br>94. Trucks  |
| E. TRAFFIC DATA 81. Legal Speed Limit 82. Route Designations  Transit  |                        | TRAFFIC COUNT 83. Year 84. AADT 85. DHV Factor 86. DHV 87. Trucks 88. Peak Directional Split                           | <ul><li>90. Year</li><li>91. AADT</li><li>92. DHV Factor</li><li>93. DHV</li><li>94. Trucks</li><li>95. Capacity</li></ul> |
| 67. Surface Width  E. TRAFFIC DATA 81. Legal Speed Limit 82. Route Designations  Transit  Truck  Bicycle   F. INSPECTIONS & APPROV                   |                        | TRAFFIC COUNT 83. Year 84. AADT 85. DHV Factor 86. DHV 87. Trucks 88. Peak Directional Split 89. 10 Year Growth Factor | 90. Year 91. AADT 92. DHV Factor 93. DHV 94. Trucks 95. Capacity 96. 20 Year AADT  |
| 67. Surface Width  E. TRAFFIC DATA 81. Legal Speed Limit 82. Route Designations  Transit  Truck  Bicycle   F. INSPECTIONS & APPROV 101. Date: June 4 | <del>1</del> , 2016    | TRAFFIC COUNT 83. Year 84. AADT 85. DHV Factor 86. DHV 87. Trucks 88. Peak Directional Split 89. 10 Year Growth Factor | 90. Year 91. AADT 92. DHV Factor 93. DHV 94. Trucks 95. Capacity 96. 20 Year AADT  |
| 67. Surface Width  E. TRAFFIC DATA 81. Legal Speed Limit 82. Route Designations  Transit  Truck  Bicycle   F. INSPECTIONS & APPRO 101. Date: June 4  |                        | TRAFFIC COUNT 83. Year 84. AADT 85. DHV Factor 86. DHV 87. Trucks 88. Peak Directional Split 89. 10 Year Growth Factor | 90. Year 91. AADT 92. DHV Factor 93. DHV 94. Trucks 95. Capacity 96. 20 Year AADT  |

| G.         | BRIDGE NEEDS                         | RAT            | ΓING      |               | 1.1          | TYPE & TIME OF IM                 | PROVEMENT     | •             |             |                 |
|------------|--------------------------------------|----------------|-----------|---------------|--------------|-----------------------------------|---------------|---------------|-------------|-----------------|
| <u> </u>   | DRIDGE NEEDO                         | MCR            | PCR       | TIME OF NEED  | <u> </u>     | THE CHINE OF IN                   | I IOVEINEIVI  | -             |             |                 |
| 111.       | Superstructure                       | 6              | 6         | ADEQ          | 141.         | Design Class                      |               |               |             |                 |
|            | Wearing Surface                      | 5              | 6         | 6-10 yrs      | 142.         |                                   |               |               |             |                 |
| _          | Deck Condition                       | 6              | 6         | ADEQ          | 143.         | Abutment Type                     |               |               |             |                 |
|            | Expansion Joints                     | 0              | 0         | ADEQ          | 144.         | Design Deck Width                 |               |               |             |                 |
|            | Railings                             | 6              | 6         | ADEQ          | 145.         | Design Deck Length                |               |               |             |                 |
| _          | Substructure                         | 6              | 6         | ADEQ          |              |                                   |               |               |             |                 |
|            | Coating                              | 6<br>6         | 6<br>6    | ADEQ<br>ADEQ  |              |                                   |               |               |             |                 |
|            | Streams/Waterways<br>Curbs/Sidewalks | 6              | 6         | ADEQ          |              |                                   |               |               |             |                 |
| H.         | FUNCTIONAL NEEDS                     | Existing       | Minimum   | TIME OF NEED  | 146.         | а                                 | b             | С             | d           | е               |
|            | OVER                                 | Condition      | Tolerable | TIVIL OF NEED | 140.         | Type of                           | Costing       | C             | Time of     | Cost            |
|            | Travel Deck Width                    | 7.3m           | 6.5m      | ADEQ          |              | Improvement                       | Category      | Quantity      | Improvement | (\$000)         |
|            | Level of Service                     | A              | E         | ADEQ          | Α            | improvement                       | Catogory      | Quantity      | improvement | (ψοσσ)          |
|            | Min. Vert. Clear.                    |                | 4.5       | ADEQ          | В            |                                   |               |               |             |                 |
| 124.       | Sidewalks                            | N              | N         | ADEQ          | С            |                                   |               |               |             |                 |
|            |                                      |                |           |               | D            |                                   |               |               |             |                 |
|            |                                      |                |           |               | E            |                                   |               |               |             |                 |
|            |                                      |                |           |               | F            |                                   |               |               |             |                 |
|            |                                      |                |           |               | <u>K.</u>    | IMPROVEMENT CO                    | <u>ST</u>     |               |             | Cost (\$000)    |
|            |                                      |                |           |               | 151.         | Construction                      |               |               |             | 0               |
|            |                                      |                |           |               |              | Approaches                        |               |               |             | 0               |
|            |                                      |                |           |               | 153.         | Detours                           |               |               |             | 0               |
|            |                                      |                |           |               | 154.<br>155. | Traffic Control/Protect Utilities | ction         |               |             | 0               |
| _          | ENGINEERING                          |                |           |               | 156.         |                                   |               |               |             | 0               |
| I.<br>PECO | OMMENDATIONS                         |                |           |               | 150.         | Contingencies                     | 10%           |               |             | 0               |
| ILCC       | DIVINILINDATIONS                     |                |           | UNK           | 157.         | Total Construction                | 1070          |               |             | 0               |
| 131.       | Bridge Drawings                      |                |           | ONIC          | 159.         | Right of Way                      |               |               |             | 0               |
|            | 2ago 2.amgo                          |                |           |               | 160.         | Engineering Environr              | mental Assess | ment (E/A) St | udy         | Ö               |
| 132.       | Engineering Investigation            | S              |           |               |              | 3 - 3                             |               | , , ,         | ,           |                 |
|            |                                      | Type           | Year      | Cost (\$000)  | 161.         | Engineering Design 8              | & Supervision |               |             | 0               |
|            | Α                                    |                |           |               | 162.         | Total Project cost                |               |               |             | 0               |
|            | В                                    |                |           |               | 163.         | Eligibility for Subsidy           |               |               |             | EFS             |
|            | C                                    |                |           |               | 164.         | Non-subsidizable Co               | sts           |               |             |                 |
|            | D                                    |                |           |               |              |                                   |               |               |             |                 |
| 100        | Total Coat of Engineering            | Investigations |           |               |              |                                   |               |               | ributing    | Non-<br>Subsid. |
| 133.       | Total Cost of Engineering            | investigations |           |               |              |                                   |               | Ag            | jency       | Cost            |
| 134        | Single Posting                       |                |           |               |              |                                   | Α             |               |             | CUSI            |
|            | Evaluated Posting                    |                |           | t t t         |              |                                   | В             |               |             |                 |
| Date       | uiou i oomig                         |                |           |               |              |                                   | Č             |               |             |                 |
|            | Monitoring                           |                |           |               |              |                                   | Ď             |               |             |                 |
|            | Closure/Date                         |                |           |               |              |                                   |               |               |             |                 |
|            |                                      |                |           |               | 165.         | Total Non-Subsidizat              | ole Cost      |               |             |                 |
|            |                                      |                |           |               | 166.         | Subsidizable Cost                 |               |               |             | 0               |
|            |                                      |                |           |               | 167.         | Municipal Percent of              |               | Cost          |             | 100%            |
| <u></u>    |                                      |                |           |               | 168.         | Municipal Share of C              | ost           |               |             | 0               |
|            |                                      |                |           |               |              |                                   |               |               |             |                 |
| <u>L.</u>  | HISTORY                              |                |           |               |              |                                   |               |               |             |                 |

| L. HISTORY ENGINEERING INVESTIGATIONS | Typo | Year | CONSTRUCTION IMPROVEMENTS | Type | Year |
|---------------------------------------|------|------|---------------------------|------|------|
| 171.                                  | Туре | rear | 181.                      | туре | Teal |
| 172.                                  |      |      | 182.                      |      |      |
| 173.                                  |      |      | 183.                      |      |      |
| 174.                                  |      |      | 184.                      |      |      |
| 175.                                  |      |      | 185.                      |      |      |

## M. Inspection Notes

## 191. Bridge No. 05, MTO Site No. 38S -152, Suddaby Park Bridge, Gordon Lake Road - 0.50 km North of Suddaby Park Road, Township of Johnson:

- Structure not posted with a load limit.
- Single Span (+/-5.3m) precast concrete box structure with a surface treated roadway.
- Surface treated roadway is in a good condition. Medium transverse cracks in the south approach wearing surface were noted.
- Steel flex beam guiderail on wood posts has been provided over the structure and on the approaches and is in good condition.
- Extruder end treatments have been provided in all four quadrants and are in good condition. Hazard markers have been provided in all four quadrants.
- Rock protected roadway embankments are in good condition
- Concrete retaining walls are in good condition.
- Concrete deck soffit is in good condition. The parging at all of the construction joints between precast sections has separated or is missing along the barrel of the structure.
- Watercourse is generally unobstructed with no evidence of scour.
- No serious evidence of structural distress.
- Structure does not require posting with a load limit.
- Guiderails on the approaches are missing bolts in all four quadrants.

## Recommendations

- The cracking of the surface treated roadway surface should be monitored and rout and sealed or patched to prevent extensive damage to the wearing surface.
- Replace the missing bolts in the guiderail at all four quadrants to connect flex beam to the posts.

Township of Johnson Suddaby Park Gordon Lake Road 0.5km North of Suddaby Park Rd.

Bridge No. MTO Site No.



LOOKING SOUTH ACROSS STRUCTURE



EAST ELEVATION

Bridge Photographs
2. Municipal Name/Code
3. Bridge Name
4. Road Name
5. Location Bridge No. MTO Site No. 05 38S-152 Township of Johnson Suddaby Park Gordon Lake Road 0.5km North of Suddaby Park Rd.



DECK WEARING SURFACE - FACING NORTH



LOOKING EAST THROUGH BARREL

Bridge No. MTO Site No. 05 38S-152 Township of Johnson Suddaby Park Gordon Lake Road 0.5km North of Suddaby Park Rd.

Bridge Photographs
2. Municipal Name/Code
3. Bridge Name
4. Road Name
5. Location



LOSS OF PARGING IN CULVERT BARREL JOINTS



MEDIUM TRANSVERSE CRACK IN SOUTH APPROACH WEARING SURFACE

Bridge No. MTO Site No.

Bridge Photographs
2. Municipal Name/Code
3. Bridge Name
4. Road Name
5. Location

Township of Johnson Suddaby Park Gordon Lake Road 0.5km North of Suddaby Park Rd.



GUIDERAIL POST MISSING BOLT



GABION BASKETS ALONG WEST ROADWAY EMBANKMENTS

Bridge Photographs
2. Municipal Name/Code
3. Bridge Name
4. Road Name
5. Location Bridge No. MTO Site No. 05 38S-152

Township of Johnson Suddaby Park Gordon Lake Road 0.5km North of Suddaby Park Rd.



LOOKING UPSTREAM OF STRUCTURE

| A. IDENTIFICATION   |                         |  |                     |       | 6. Bridge No.  | 06            |
|---|-------------------------|--|---------------------|-------|--|---------------|
| <ol> <li>Control Code</li> </ol>                                      | 3-S-TP                  |  |                     |       | <ol><li>Road Section No.</li></ol>                   | 205           |
| <ol><li>Municipal Name/Code</li></ol>                                 | Township of Johnson     |  |                     |       | <ol><li>MTO Site No.</li></ol>                       | 38S-153       |
| <ol><li>Bridge Name</li></ol>   | Black Creek Bridge      |  |                     |       |  |               |
| 4. Road Name  | Gordon Lake Road        |  |                     |       |  |               |
| <ol><li>Location</li></ol>  | 80m South of Suddaby    | Park Road  |                     |       |  |               |
| Roadside Environment  | R                       |  |                     |       | <ol><li>Crossing Type</li></ol>                      | O-WAT         |
| 10. Posting   | ttt                     | 13. Posting Sign:  | t t t               |       | 17. Federal Navigable Waterway                       | Unknown       |
| 11. Bylaw No.   |                         | 14. Low Clearance Sign   |                     |       | 18. Bridge Value                                     | \$375,000     |
| 12. Bylaw Expiry Date   | y m                     | 15. Narrow Structure Sign  | •                   |       | 19. Latitude   | ψ010,000      |
| 12. Bylaw Expiry Bate   | y !!!                   | 15. Itanow Structure Sign  | •                   |       | 20. Longitude  |               |
|   |                         |  |                     |       | 20. Longitudo  |               |
| B. RAILWAY OVERPASS/UND   |                         |  |                     |       |  |               |
| 21. Railway Level Crossing Nun  | nber                    |  |                     | 27. ( | Original Board Order Number Date y                   | m d           |
| <ul><li>22. Railway Company</li><li>23. Railway Subdivision</li></ul> |                         |  |                     | 28. ( | Current Board Order Number Date v                    | m d           |
| 24. Subdivision Mileage   |                         |  |                     | 20.   | Date y   | III u         |
| 25. Transport Canada Crossing   | No.                     |  |                     | 29.   | Seniority  |               |
| 26. Number of Tracks  |                         |  |                     |       |  |               |
| O HIDIODIOTION  | ·                       |  |                     |       |  |               |
| C. JURISDICTION   |                         |  |                     |       | 38. Local/Area Municipality (Uppe                    | er Fier Only) |
| 31. Ownership O   | A MUN                   |  |                     |       | A.   |               |
|   | В                       | <ol><li>Boundary Bridge</li></ol>  | N                   |       | B.   |               |
| <ol><li>Heritage Status</li></ol>                                     | R                       |  |                     |       | <ol><li>Maintenance Area</li></ol>                   |               |
| <ol><li>Special Designation</li></ol>                                 | NSD                     | <ol><li>Adjacent Municipality N</li></ol>  | ame/No              |       | 40. Municipal Ward                                   |               |
| 34. Suburban Roads Commission   | on                      | <ol><li>Adjacent Bridge No.</li></ol>  |                     |       |  |               |
|   |                         |  |                     |       |  |               |
| D. EXISTING CONDITIONS  |                         | 45 0 0 0 1 0 0 1   | 5.0                 |       | F0 - 1 2 - 1 1 - 1 - 1 - 1 - 1 -                     | •             |
| GENERAL   |                         | 45. Span Length  | 5.8 m               |       | 50. Longitudinal Joints                              | 0             |
| 41. Year Constructed  | A. 1930                 | 46. Deck Type  | CC                  |       | 51. Transverse Joints                                | 0             |
|   | B. 1930                 | 47. Deck Length  | 7.0 m               |       | <ol><li>Number of Bearings</li></ol>                 | 0             |
| 42. Bridge Type   | C-TB-H                  | 48. Deck Width   | 5.5 m               |       | 53. Soil Condition                                   | U             |
| 43. Crossing Skew   | 0°                      | <ol><li>49. Deck Area</li></ol>  | 38.5 m <sup>2</sup> |       | <ol><li>54. Abutment &amp; Foundation Type</li></ol> | Closed -      |
| 44. Number of Spans   | 1                       |  |                     |       |  | UN            |
| 2012 0152 221205  |                         |  |                     |       |  |               |
| ROAD OVER BRIDGE  |                         | EO No of Longo   | 4                   |       | 62 Parriara Walla/Pailings CP                        |               |
| 55  | 000                     | 59. No. of Lanes   | 1                   |       | 62. Barriers Walls/Railings CB                       |               |
| 55. Existing Road Class   | 300                     | 60. Median Type/Width  |                     |       | 63. Minimum Vertical                                 |               |
| <ol><li>Operational Status</li></ol>                                  | 2W - OAT                | 61. Safety Curb/   | (A) N               |       | Clearance  |               |
| 57. Wearing Surface   | A                       | Sidewalk and   | (B) N               |       |  |               |
| 58. Travel Deck Width   | 4.70 m                  | Curb Barrier   |                     |       |  |               |
| DOAD LINDED DDIDOE  |                         |  |                     |       |  |               |
| ROAD UNDER BRIDGE   |                         | 68. No. of Lanes   |                     |       | 71. Traffic Barrier                                  |               |
| 64. Existing Road Class   |                         | 69. Median Type/Width  |                     |       | 72. Minimum Vertical Clearance                       |               |
| 65. Operational Status  |                         |  | Α                   |       | 12. WIIIIIIIIII VEILIGAI GIEAIAIIGE                  |               |
|   |                         | 70. Safety Curb/   | A<br>B              |       |  |               |
| 66. Opening Width   |                         | Sidewalk and   | D                   |       |  |               |
| 67. Surface Width   |                         | Curb Barrier   |                     |       |  |               |
| E. TRAFFIC DATA   |                         | TRAFFIC COUNT  |                     |       | 10 YEAR TRAFFIC FORECAST                             |               |
| 81. Legal Speed Limit   |                         | 83. Year   |                     |       | 90. Year   |               |
| - Logar opood Entitle   |                         | 84. AADT   |                     |       | 91. AADT   |               |
| 82. Route Designations  |                         | 85. DHV Factor   |                     |       | 92. DHV Factor                                       |               |
| oz. Noute Designations  |                         | 86. DHV  |                     |       | 93. DHV  |               |
| Transit - Trusk -   |                         |  |                     |       | ***  |               |
| Transit  Truck  |                         |  |                     |       | 94. Trucks   |               |
| School   Bicycle  |                         | 88. Peak Directional Split   |                     |       | 95. Capacity   |               |
|   |                         | 89. 10 Year Growth Factor  |                     |       | 96. 20 Year AADT                                     |               |
|   |                         |  |                     |       |  |               |
| F INSPECTIONS & ADDDON  | /ΔI S                   |  |                     |       |  |               |
| F. INSPECTIONS & APPROV   | <u>/ALS</u><br>12, 2016 | 102. Professional Engineer N   | Name                |       | M. Kirby, P. Eng.                                    |               |
| 101. Date: June 0   |                         | <ul><li>102. Professional Engineer I</li><li>103. Municipality/Company</li></ul> | Name                |       | M. Kirby, P. Eng. Tulloch Engineering Inc.           |               |

| G. BRIDGE NEEDS                | R/               | TING      |              | J.   | TYPE & TIME OF IMP      | PROVEMENT      | -             |             |              |
|--------------------------------|------------------|-----------|--------------|------|-------------------------|----------------|---------------|-------------|--------------|
|                                | MCR              | PCR       | TIME OF NEED |      |                         |                | -             |             |              |
| 111. Superstructure            | 4                | 5         | 1-5 yrs      | 141. | Design Class            |                |               | RSL         |              |
| 112. Wearing Surface           | 5                | 5         | 6-10 yrs     |      | Operational Status      |                |               | 2W-OAT      |              |
| 113. Deck Condition            | 4                | 5         | 1-5 yrs      |      | Abutment Type           |                |               | RSL-O       |              |
| 114. Expansion Joints          | 0                | 0         | ADEQ         | 144. | Design Deck Width       |                |               | 6.5m        |              |
| 115. Railings                  | 3                | 4         | 1-5 yrs      |      | Design Deck Width       |                |               | 7.0m        |              |
| 116. Substructure              | 5                | 5         | 6-10 yrs     | 140. | Design Deck Length      |                |               | 7.0111      |              |
| 117. Coating                   | 0                | 0         | ADEQ         |      |                         |                |               |             |              |
|                                | 5                | 6         |              |      |                         |                |               |             |              |
| 118. Streams/Waterways         |                  |           | 6-10 yrs     |      |                         |                |               |             |              |
| 119. Curbs/Sidewalks           | 0                | 0         | ADEQ         |      |                         |                |               |             |              |
| H. FUNCTIONAL NEEDS            | Existing         | Minimum   | TIME OF NEED | 146. | _ a                     | b              | С             | _ d         | e            |
| ROAD OVER                      | Condition        | Tolerable |              |      | Type of                 | Costing        |               | Time of     | Cost         |
| 121. Travel Deck Width         | 4.7m             | 6.5m      | NOW          |      |                         | Category       | Quantity      | Improvement | (\$000)      |
| 122. Level of Service          | Α                | E         | ADEQ         | Α    | RIR                     | PC             |               | 1-5 yrs     | 10           |
| 123. Min. Vert. Clear.         |                  | 4.5       | ADEQ         | В    | RSP                     | PC             |               | 1-5 yrs     | 15           |
| 124. Sidewalks                 | N                | N         | ADEQ         | С    | CDS                     | PC             |               | 1-5 yrs     | 15           |
|                                |                  |           |              | D    | IAG                     | PC             |               | 1-5 yrs     | 40           |
|                                |                  |           |              | E    | RSL                     | PC             |               | 6-10 yrs    | 400          |
|                                |                  |           |              | F    |                         |                |               | c .c ,.c    |              |
|                                |                  |           |              | K.   | IMPROVEMENT COS         | T:             |               |             | Cost (\$000) |
|                                |                  |           |              | 151. | Construction            | <u> </u>       |               |             | 80           |
|                                |                  |           |              |      | Approaches              |                |               |             | 0            |
|                                |                  |           |              | 153. | Detours                 |                |               |             | 0            |
|                                |                  |           |              |      |                         |                |               |             |              |
|                                |                  |           |              | 154. | Traffic Control/Protect | ion            |               |             | 0            |
|                                |                  |           |              | 155. | Utilities               |                |               |             | 0            |
| I. ENGINEERING                 |                  |           |              |      | Other                   |                |               |             | 0            |
| RECOMMENDATIONS                |                  |           |              | 157. | Contingencies           | 10%            |               |             | 8            |
|                                |                  |           | UNK          | 158. | Total Construction      |                |               |             | 88           |
| 131. Bridge Drawings           |                  |           |              | 159. | Right of Way            |                |               |             | 0            |
|                                |                  |           |              | 160. | Engineering Environm    | nental Assess  | ment (E/A) St | udy         | 0            |
| 132. Engineering Investigation | ns               |           |              |      | 0 0                     |                | ` '           | •           |              |
| 3 11 3 11 3                    | Type             | Year      | Cost (\$000) | 161. | Engineering Design &    | Supervision    |               |             | 15           |
| A                              | . 7              |           | (4000)       |      | Total Project cost      |                |               |             | 103          |
| В                              |                  |           |              | 163. | Eligibility for Subsidy |                |               |             | EFS          |
| C                              |                  |           |              | 164. | Non-subsidizable Cos    | te             |               |             |              |
| D                              |                  |           |              | 104. | 11011 Subsidizable COS  |                |               |             |              |
|                                |                  |           |              |      |                         |                | Cont          | ributing    | Non-         |
| 133. Total Cost of Engineering | Investigations   |           |              |      |                         |                |               | gency       | Subsid.      |
| 133. Total Cost of Engineering | y investigations | •         |              |      |                         |                | Ą             | успоу       | Cost         |
| 124 Single Posting             |                  |           |              |      |                         | ^              |               |             | Cost         |
| 134. Single Posting            |                  |           |              |      |                         | A              |               |             |              |
| 135. Evaluated Posting         |                  |           | t t t        |      |                         | В              |               |             |              |
| Date                           |                  |           |              |      |                         | С              |               |             |              |
| 136. Monitoring                |                  |           |              |      |                         | D              |               |             |              |
| 137. Closure/Date              |                  |           |              |      |                         |                |               |             |              |
|                                |                  |           |              |      | Total Non-Subsidizabl   | le Cost        |               |             |              |
|                                |                  |           |              | 166. | Subsidizable Cost       |                |               |             | 103          |
|                                |                  |           |              | 167. | Municipal Percent of S  | Subsidizable ( | Cost          |             | 100%         |
|                                |                  |           |              | 168. | Municipal Share of Co   |                |               |             | 103          |
| -                              |                  |           |              |      | -1                      |                |               |             |              |
| I HISTORY                      |                  |           |              |      |                         |                |               |             | 1            |

| L. HISTORY ENGINEERING INVESTIGATIONS | Туре | Year  | CONSTRUCTION IMPROVEMENTS | Type | Year  |
|---------------------------------------|------|-------|---------------------------|------|-------|
| 171.                                  | туре | i Gai | 181.                      | туре | i eai |
| 172.                                  |      |       | 182.                      |      |       |
| 173.                                  |      |       | 183.                      |      |       |
| 174.                                  |      |       | 184.                      |      |       |
| 175.                                  |      |       | 185.                      |      |       |

### Inspection Notes

#### 191. Bridge No. 06, MTO Site No. 38S-153, Black Creek Bridge, Gordon Lake Road - 80m South of Suddaby Park Road, Township of Johnson

- Structure not posted with a load limit.
- Single span (±5.8 m) cast in place concrete T-beam bridge with a concrete deck and surface treated wearing surface with cast in place concrete railings.
- Concrete railing on deck are in generally fair condition with localized spalls and exposed corroded rebar at the balustrades. The base of the railing and the posts in the southwest quadrant has delamination(s). Scrape damage and spall from snowplow was noted in the northwest corner.
- There are four hazard markers, one at each corner of the bridge. The two signs on the south end of the bridge at bent slightly out of place and the northeast hazard sign is twisted towards the ditch. All signs have scrape damage and/or are leaning.
- Surface treated deck wearing surface and approaches are generally in fair to good condition with moderate wear and abrasions, moderate to wide transverse cracks in the south approach, two localized moderate potholes in deck wearing surface and one localized moderate pothole in south approach. Settlement of the south approach is causing an uneven surface at the end of the bridge deck. Excess winter sand and gravel was noted on bridge at edges of the concrete railings.
- No deck drains are provided on bridge deck.
- Concrete deck soffit is in fair condition with exposed corroded rebar and localized delamination(s) specifically soffit in the bridge's west quadrant.
- Concrete T-beams are in fair condition with moderate to severe scaling on the lower half with moderate spalls and isolated exposed rebar. Erosion was noted in lower half of beams due to low clearance from water level. Medium to wide crack in the west beam at the south abutment haunch was noted.
- Concrete abutment walls are in generally good condition with moderate to severe erosion noted at and below the waterline.
- No approach guiderails are present at the structure.
- Watercourse is obstructed upstream of the bridge by a fallen tree. No evidence of scour was noted at the structure.
- Vegetated roadway embankments are in fair to good condition. Localized moderate erosion and loss of material was noted in three quadrants immediately adjacent to the corners of the bridge.

#### Recommendations

- Structure does not require posting with a load limit.
- The cracking of and potholes in the surface treated roadway surface should be sealed or patched.
- The bent and/or leaning signs should be straightened or replaced.
- Moderate potholes in the bridge deck wearing surface should be repaired.
- Should clean deck of gravel buildup and stabilize erosion at the bridge corners as part of regular maintenance.
- Tree in waterway upstream of structure should be removed.
- Should rehabilitate deck barrier, deck soffit, T-beams and install traffic protection on the approaches. Consideration should be given into a total bridge replacement (providing 2 lanes wide on roadway platform) as opposed to rehabilitation of existing due to the age of the structure and that the existing bridge is only a single lane wide.

Township of Johnson Black Creek Bridge

Township of Johnson Black Creek Bridge Gordon Lake Road 80m South of Suddaby Park Road

Bridge No. MTO Site No.



LOOKING SOUTH ACROSS STRUCTURE



DECK WEARING SURFACE WITH LIGHT WEAR, ABRASIONS AND **LOCALIZED POTHOLES** 

Township of Johnson Black Creek Bridge Gordon Lake Road 80m South of Suddaby Park Road

Bridge No. MTO Site No.



UPSTREAM FROM BRIDGE, TREE OBSTRUCTING WATERWAY



TYPICAL RAILING SYSTEM WITH EXPOSED REBAR (SOUTHWEST QUADRANT)

Township of Johnson Black Creek Bridge Gordon Lake Road 80m South of Suddaby Park Road

Bridge No. MTO Site No.



**EAST ELEVATION** 



LOCALIZED DELAMINATION WITH EXPOSED CORRODED REBAR IN WEST DECK SOFFIT

Township of Johnson Black Creek Bridge Gordon Lake Road 80m South of Suddaby Park Road

Bridge No. MTO Site No.



SOUTH ABUTMENT WITH MODERATE TO SEVERE EROSION



MEDIUM TO WIDE CRACK IN SOUTHWEST BEAM HAUNCH

Township of Johnson Black Creek Bridge Gordon Lake Road 80m South of Suddaby Park Road

Bridge No. MTO Site No.



EAST SOFFIT - GENERAL ARRANGEMENT



SETTLEMENT OF SOUTH APPROACH AND CRACKING OF WEAR SURFACE AT END OF BRIDGE DECK

# **MUNICIPAL CULVERT APPRAISAL**

| A. IDENTIFICATION  |   |   |         | 6.                          | Culvert No.             | 02                      |
|--|---|---|---------|-----------------------------|-------------------------|-------------------------|
| Control Code   | 4-S-TP                                  |   |         | 7.                          | Road Section No.        | 375                     |
| Municipal Name/Code  | Township of Johnson                     |   |         | 8.                          | MTO Site No.            |                         |
| 3. Culvert Name  | Sucker Creek Road                       |   |         |                             |                         |                         |
| <ol> <li>Road Name</li> <li>Location</li> </ol>                                  | Government Road  1.9 km West of Lake Hu | uron Drivo                                |         |                             |                         |                         |
| Roadside Environment   | R                                       | iron Drive                                |         | 16                          | Crossing Type           | O-WAT                   |
| 10. Posting  | t t t                                   | 13. Posting Sign                          | t       | 17.                         |                         |                         |
| 11. Bylaw No.  |   | 14. Low Clearance Sign                    |         | 18.                         |                         | \$300,000               |
| 12. Bylaw Expiry Date  | y m                                     | 15. Narrow Structure Sign                 |         |                             | Latitude                | ψ500,000                |
| 12. Bylan Expliy Balo  | <i>y</i>                                | re. Harrow Caractaro Cigir                |         |                             | Longitude               |                         |
| D. DAHAMAY OVERBAGOURN   | 2500400                                 |   |         |                             |                         |                         |
| <ul><li>B. RAILWAY OVERPASS/UNI</li><li>21. Railway Level Crossing Nur</li></ul> |   |   |         | 27. Original                | Board Order Number      | Date y m d              |
| 22. Railway Company  |   |   |         | · ·                         |                         |                         |
| <ol><li>Railway Subdivision</li></ol>  |   |   |         | <ol><li>Current</li></ol>   | Board Order Number      | Date y m d              |
| 24. Subdivision Mileage  |   |   |         |                             |                         |                         |
| 25. Transport Canada Crossing  | No.                                     |   |         | <ol><li>Seniority</li></ol> | /                       |                         |
| 26. Number of Tracks   |   |   |         |                             |                         |                         |
| C. JURISDICTION  |   |   |         |                             | 38. Local/Area Municip  | ality (Upper Tier Only) |
| 31. Ownership O  | A MUN                                   |   |         |                             | Α.                      | •                       |
|  | В                                       | <ol><li>Boundary Bridge/Culvert</li></ol> | N       |                             | B.                      |                         |
| 32. Heritage Status  | R                                       |   |         |                             | 39. Maintenance Area    |                         |
| 33. Special Designation  | CBL                                     | 36. Adjacent Municipality Name            | /No     |                             | 40. Municipal Ward      |                         |
| 34. Suburban Roads Commissi  | on                                      | 37. Adjacent Culvert No.                  |         |                             |                         |                         |
| D. EXISTING CONDITIONS   |   |   |         |                             |                         |                         |
| GENERAL  |   | 45. Cell/Span Width/Dia.                  | 3.0 m   | 51. E                       | nd Treatment            | <u>A B C D</u>          |
| 41. Year Constructed   | A. 1980                                 | <ol><li>46. Total Width/Dia.</li></ol>    | 3.0 m   |                             | Upstream                | N                       |
|  | B.                                      | 47. Max. Height                           | 3.0 m   |                             | Downstream              | N                       |
| <ol><li>42. Material Type</li></ol>  | CPS-PA                                  | <ol><li>Culvert Length</li></ol>          | 20.0 m  |                             | Soil Condition          | U                       |
| 43. Crossing Skew  | 0°                                      |   | E 0.3 m | 53. F                       | oundation Type          | UN – Unknown            |
| 44. Number of Cells/Spans  | 1                                       | 50. Culvert Floor                         | SC      |                             |                         |                         |
| ROAD OVER CULVERT  |   |   |         |                             |                         |                         |
|  |   | 57. Surface Type                          | 0       | 61. S                       | Safety Curb/Sidewalk &  | (A) N                   |
| <ol><li>55. Existing Road Class</li></ol>  | 300                                     | 58. Platform Width                        | 8.0 m   | C                           | Curb Barrier            | (B) N                   |
| 55a. Highway Classification  | -                                       | <ol><li>Surface Width</li></ol>           | 7.0 m   | 62. F                       | Roadside Safety         | (A) N NO                |
| 56. Operational Status   | 2W OAT                                  | 60. No. of Lanes                          | 2.0     |                             |                         | (B) S NO                |
| ROAD THROUGH CULVERT   |   |   |         |                             |                         |                         |
| NO.15 THROUGH COLVERT  |   | 66. Opening Width                         |         | 70. S                       | Safety Curb/Sidewalk &  |                         |
| 64. Existing Road Class  |   | 67. Surface Width                         |         |                             | Curb Barrier            |                         |
| 64a. Highway Classification  |   | 68. No. of Lanes                          |         | 71. T                       | raffic Barrier          |                         |
| 65. Operational Status   |   | 69. Median Type/Width                     |         | 72. N                       | Inimum Vertical Clearan | ce                      |
| E. TRAFFIC DATA  |   | TRAFFIC COUNT                             |         | 10 VF                       | AR TRAFFIC FORECAS      | т                       |
| 81. Legal Speed Limit  |   | 83. Year                                  |         | 90. Y                       |                         | 1                       |
| or. Legal Opeed Lillin   |   | 84. AADT                                  |         | 90. T                       |                         |                         |
| 82. Route Designations   |   | 85. DHV Factor                            |         |                             | OHV Factor              |                         |
|  |   | 86. DHV                                   |         | 93.                         |                         |                         |
| Transit  Truck   |   | 87. Trucks                                |         | 94. T                       | rucks                   |                         |
| School □ Bicycle □   |   | 88. Peak Directional Split                |         |                             | Capacity                |                         |
| ,  |   | 89. 10 Year Growth Factor                 |         | 96. 2                       | 0 Year AADT             |                         |
| F. INSPECTIONS & APPRO   | VALS                                    |   |         |                             |                         |                         |
|  | 2, 2016                                 | 102. Professional Engineer Name           | е       | M. Kirl                     | oy, P. Eng.             |                         |
|  | by & S. Milne                           | 103. Municipality/Company                 |         |                             | h Engineering Inc.      |                         |
|  |   | • • • •                                   |         |                             |                         |                         |

Municipality: Township of Johnson
Structure Name: Sucker Creek Culvert, Government Road

| G.  | CULVERT NEEDS  | RA                               | TING  |  | J.   | TYPE & TIME OF IMPROVEMENT   |  |
|---|--|----------------------------------|---|--|--|--|--|
| 111.<br>112.<br>113.<br>114.<br>115.<br>116.        | Barrel Foundations Inlet Components Outlet Components Guide rail/Barrier Streams/Waterways  FUNCTIONAL NEEDS | MCR 4 6 0 0 6 Existing Condition | PCR<br>5<br>6<br>0<br>0<br>0<br>5<br>Minimum<br>Tolerable | TIME OF NEE  1-5 yrs  ADEQ  ADEQ  ADEQ  NOW  ADEQ  TIME OF NEE | 141<br>142<br>143<br>144<br>145<br>146<br>147<br>148 | Design Class Design Platform Width Material/Type Width/Diameter Maximum Height Culvert Length No. of Culverts Depth of Fill  a b c Type of Costing                   | RSL<br>8.0 m<br>CPS-PR<br>3.0 m<br>3.0 m<br>20 m<br>1<br>0.3 m<br>d e<br>Time of Cost<br>Improvement (\$000) |
|   | ROAD OVER Platform Width Level of Service Roadside Safety  | 8.0 m<br>A<br>-                  | 6.5 m<br>E<br>3   | ADEQ<br>ADEQ<br>NOW  | A B C D E F G H I J                                  | RSL PČ 1<br>IAG PC 4<br>EIR PC   | 1-5 yrs 300′<br>NOW 40<br>NOW 10   |
|   | ENGINEERING RECOMME  | ENDATIONS                        |   |  | <u>K.</u><br>151<br>152<br>153<br>154<br>155         | Approaches     Detours     Traffic Control/Protection     Utilities  | Cost (\$000)<br>300<br>40<br>0<br>0<br>0   |
| 131a.   | Culvert Drawings<br>Structure Drawing No.<br>Road Drawing No.<br>Engineering Investigations                  |                                  |   | UNK  | 157<br>158<br>159<br>160<br>161<br>162               | Contingencies 10%     Total Construction     Right of Way     Engineering Environmental Assessment (E/A) Sturengineering Design & Supervision     Total Project cost | 34<br>374<br>0<br>dy 10<br>50<br>434   |
|   |  | Type A C/S B C D                 | Year<br>2017  | Cost (\$000)<br>10   | 163<br>164   |  |  |
| 135.<br>136.  | Single Posting<br>Evaluated Posting<br>Date<br>Monitoring<br>Closure/Date                                    | у                                | m<br>m  | d -<br>t t<br>y m  | t<br>m   | A<br>B<br>C<br>D   |  |
| 137.  | Ciosule Date   | y                                | ""  | u -  | 165<br>166<br>167<br>168                             | Contributable Cost     Municipal Percent of Contributable Cost   | 434<br>100%<br>434   |
| L.<br>ENGII<br>171.<br>172.<br>173.<br>174.<br>175. | HISTORY<br>NEERING INVESTIGATIONS  | S                                | Туре  | Year   | CON<br>181.<br>182.<br>183.<br>184.<br>185.          | STRUCTION IMPROVEMENTS   | Type Year  |

Culvert No.

02

#### Inspection Notes

### 191. Culvert No. 02, Sucker Creek, Government Road - 1.9 km West of Lake Huron Drive, Township of Johnson:

- Structure not posted with a load limit.
- Single span (±3.0m) corrugated plate steel round pipe with approximately 0.3m of gravel fill and a surface treated roadway.
- Surface treated roadway is in generally fair to good condition with moderate settlement on either side of the structure and narrow to wide transverse cracks in the surface treatment.
- No traffic protection is provided on the approaches or over the structure.
- Vegetated roadway embankments are in fair condition with localized erosion observed in the northeast and northwest corners adjacent to the pipe inlet.
- Corrugated plate steel pipe is in fair condition with light to moderate corrosion and flaking at the waterline (lower 1/3 of the pipe). Significant sag in the culvert along its length and a moderate bulge in the culvert's east wall were noted.
- Bearer dam is present inside the culvert at the north inlet.
- Moderate to severe scour of the inlet embankment under the pipe was observed. Extents were not visible due to high water levels.

### Recommendations

- Structure does not require posting with a load limit.
- Shall install traffic protection on the approaches and over the structure.
- Beaver dam within the culvert should be removed
- Erosion on the north embankments and scour under the pipe inlet should be repaired and stabilized/protected to prevent re-occurrence.
- Should seal cracks in surface treatment to prevent extensive damage to wearing surface at structure. Patching should also be placed to mitigate the depressions on
- Expected replacement of culvert should be budgeted in the next 5 years. Alternative option would be to install a liner in the culvert barrel. A culvert hydraulic study would be required to confirm suitability of installing a liner (this alternative was not costed).

Township of Johnson Municipality:

Culvert No. MTO Site No. 6. 8.

02

Culvert Photographs
2. Municipal Name/Code
3. Culvert Name
4. Road Name
5. Location Township of Johnson Sucker Creek Culvert Government Road 1.9 km West of Lake Huron Drive



LOOKING WEST ACROSS STRUCTURE



NORTH ELEVATION

Culvert No. MTO Site No. 6. 8.

02

Culvert Photographs
2. Municipal Name/Code
3. Culvert Name
4. Road Name
5. Location Township of Johnson Sucker Creek Culvert Government Road 1.9 km West of Lake Huron Drive



LOOKING NORTH UPSTREAM FOR STRUCTURE



LIGHT TO MODERATE CORROSION OF CULVERT BARREL WITH FLAKING AT WATERLINE

Culvert No. MTO Site No.

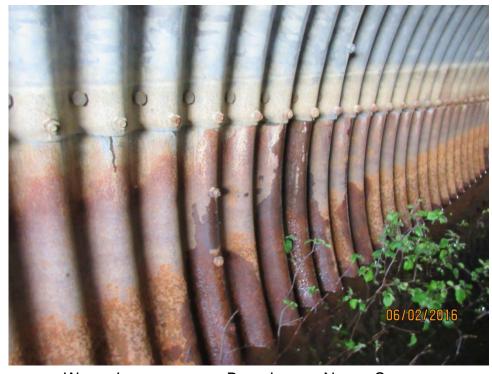
02

Culvert Photographs
2. Municipal Name/Code
3. Culvert Name
4. Road Name
5. Location

Township of Johnson Sucker Creek Culvert Government Road 1.9 km West of Lake Huron Drive



LOOKING NORTH THROUGH CULVERT BARREL



WATER INFILTRATION AT BOLT JOINT IN NORTH SECTION OF WEST WALL

Culvert No. MTO Site No.

02

Culvert Photographs
2. Municipal Name/Code
3. Culvert Name
4. Road Name
5. Location

Township of Johnson Sucker Creek Culvert Government Road 1.9 km West of Lake Huron Drive



SEVERE EROSION AND SCOUR AT CULVERT INLET/NORTHEAST QUADRANT



LOOKING NORTH THROUGH CULVERT BARREL - SIGNIFICANT SAG IN BARREL ALONG ITS LENGTH

# **MUNICIPAL CULVERT APPRAISAL**

| A. IDENTIFICATION  |                        |   |                | 6. Culvert No.                         | 03           |
|--|------------------------|---|----------------|--|--------------|
| 1. Control Code  | 4-S-TP                 |   |                | <ol><li>Road Section No.</li></ol>     |              |
| <ol><li>Municipal Name/Code</li></ol>  | Township Johnson       |   |                | <ol><li>MTO Site No.</li></ol>         |              |
| <ol><li>Culvert Name</li></ol>   | Sucker Creek near CA   |   |                |  |              |
| 4. Road Name   | Kensington Point Road  |   |                |  |              |
| 5. Location  | 0.4 km South of Highwa | ay 17   |                |  |              |
| Roadside Environment   | R                      | 10 8 4 0  | _              | 16. Crossing Type                      | O-WAT        |
| 10. Posting  | t t t                  | 13. Posting Sign  | t              | 17. Federal Navigable Waterway         | Unknown      |
| 11. Bylaw No.  |                        | <ol> <li>Low Clearance Sign</li> <li>Narrow Structure Sign</li> </ol>       |                | 18. Culvert Value                      | \$400,000    |
| 12. Bylaw Expiry Date  |                        | 15. Narrow Structure Sign   |                | 19. Latitude<br>20. Longitude          |              |
|  |                        |   |                | 20. Edilgitado                         |              |
| <ul><li>B. RAILWAY OVERPASS/UNI</li><li>21. Railway Level Crossing Nur</li></ul> |                        |   |                | 27. Original Board Order Number Date y | m d          |
| 22. Railway Company  | ibei                   |   |                | 27. Original Board Order Number Date y | III u        |
| 23. Railway Subdivision  |                        |   |                | 28. Current Board Order Number Date y  | m d          |
| 24. Subdivision Mileage  |                        |   |                |  |              |
| 25. Transport Canada Crossing  | No.                    |   |                | 29. Seniority                          |              |
| 26. Number of Tracks   |                        |   |                |  |              |
| C. JURISDICTION  |                        |   |                | 38. Local/Area Municipality (Uppe      | r Tier Only) |
| 31. Ownership O  | A MUN                  |   |                | A.                                     |              |
|  | В                      | <ol><li>Boundary Bridge/Culvert</li></ol>                                   | N              | В.                                     |              |
| 32. Heritage Status  | R<br>CBL               | OC Adia and Manining lite Man   | - /\           | 39. Maintenance Area                   |              |
| <ul><li>33. Special Designation</li><li>34. Suburban Roads Commissi</li></ul>    |                        | <ol> <li>Adjacent Municipality Nam</li> <li>Adjacent Culvert No.</li> </ol> | ie/No          | 40. Municipal Ward                     |              |
| 54. Suburban Roads Commissi  | Л                      | 37. Adjacent Culvert No.  |                |  |              |
| D. EXISTING CONDITIONS   |                        |   |                |  |              |
| GENERAL  | A 4000                 | <ol> <li>45. Cell/Span Width/Dia.</li> <li>46. Total Width/Dia.</li> </ol>  | 5.2 m          |  | <u>C D</u>   |
| 41. Year Constructed   | A. 1980<br>B.          | 46. Total Width/Dia.<br>47. Max. Height                                     | 5.2 m<br>2.5 m | Upstream N Downstream N                |              |
| 42. Material Type  | CPS-PA                 | 48. Culvert Length  | 23.5 m         | 52. Soil Condition U                   |              |
| 43. Crossing Skew  | 0°                     | 49. Type/Depth of Fill  | E 0.7 m        |  | - Bedding    |
| 44. Number of Cells/Spans  | 1                      | 50. Culvert Floor   | SC             | oc. Touridation Type                   | Dodding      |
| DOAD OVER OUR VERT   |                        |   |                |  |              |
| ROAD OVER CULVERT  |                        | 57. Surface Type  | 0              | 61. Safety Curb/Sidewalk & (A) N       | /            |
| 55. Existing Road Class  | 300                    | 58. Platform Width  | 6.8 m          | Curb Barrier (B) N                     |              |
| 55a. Highway Classification  | -                      | 59. Surface Width   | 5.8 m          | 62. Roadside Safety (A) E              |              |
| 56. Operational Status   | 2W OAT                 | 60. No. of Lanes  | 2.0            | (B) W                                  |              |
|  |                        |   |                |  |              |
| ROAD THROUGH CULVERT   |                        | 66. Opening Width   |                | 70. Safety Curb/Sidewalk &             |              |
| 64. Existing Road Class  |                        | 67. Surface Width   |                | Curb Barrier                           |              |
| 64a. Highway Classification  |                        | 68. No. of Lanes  |                | 71. Traffic Barrier                    |              |
| 65. Operational Status   |                        | 69. Median Type/Width   |                | 72. Minimum Vertical Clearance         |              |
| •  |                        | 7,  |                |  |              |
| E. TRAFFIC DATA  |                        | TRAFFIC COUNT   |                | 10 YEAR TRAFFIC FORECAST               |              |
| 81. Legal Speed Limit  |                        | 83. Year<br>84. AADT  |                | 90. Year<br>91. AADT                   |              |
| 82. Route Designations   |                        | 85. DHV Factor  |                | 91. AADT<br>92. DHV Factor             |              |
| 02. Noute Designations   |                        | 86. DHV   |                | 93. DHV                                |              |
| Transit □ Truck □  |                        | 87. Trucks  |                | 94. Trucks                             |              |
| School Bicycle   |                        | 88. Peak Directional Split  |                | 95. Capacity                           |              |
| Dicycle  |                        | 89. 10 Year Growth Factor   |                | 96. 20 Year AADT                       |              |
| E INCOPERTIONS & APPROX  | /ALC                   |   |                |  |              |
| F. INSPECTIONS & APPROV  | <u>/ALS</u><br>2. 2016 | 102. Professional Engineer Nan  | ne             | M. Kirby, P. Eng.                      |              |
|  | by & S. Milne          | 103. Municipality/Company   |                | Tulloch Engineering Inc.               |              |
| Inspected By: M. Kir   |                        | 103. Municipality/Company   |                |  |              |

Municipality: Township of Johnson Structure Name: Sucker Creek Near CASS

| _          | CHILVEDT NEEDC                           | DA        | TINIC       |              |       | TVDE 8 TIME OF IMPROVEMENT                       |              |
|------------|--|-----------|-------------|--------------|-------|--|--------------|
| G.         | CULVERT NEEDS                            | MCR       | TING<br>PCR | TIME OF NEED | J     | TYPE & TIME OF IMPROVEMENT                       |              |
| 111.       | Barrel                                   | 4         | 5           | 1-5 yrs      | 141.  | Design Class RSL                                 |              |
| 112.       | Foundations                              | 9         | 9           | ADEQ         | 142.  | Design Platform Width 6.8                        | m            |
| 113.       | Inlet Components                         | 0         | 0           | ADEQ         | 143.  | Material/Type CPS-PR                             |              |
| 114.       | Outlet Components                        | Ö         | 0           | ADEQ         | 144.  | Width/Diameter 5.2                               | m            |
| 115.       | Guide rail/Barrier                       | 0         | 0           | NOW          | 145.  | Maximum Height 5.2                               | m            |
| 116.       | Streams/Waterways                        | 6         | 6           | ADEQ         | 146.  | Culvert Length 23.5                              | m            |
| 110.       | Streams/waterways                        | O         | 0           | ADEQ         | 147.  | No. of Culverts 1                                | 111          |
|            |  |           |             |              | 147.  | Depth of Fill 0.7                                | m            |
| H.         | FUNCTIONAL NEEDS                         | Existing  | Minimum     | TIME OF NEED | 146.  | a b c d  | e            |
| 11.        | TONOTIONAL NEEDO                         | Condition | Tolerable   | TIME OF NEED | 140.  | Type of Costing Time of                          | Cost         |
|            | ROAD OVER                                | Condition | Tolorable   |              |       | Improvement Category Quantity Improvement        | (\$000)      |
|            | Platform Width                           | 6.8 m     | 6.5 m       | ADEQ         | Α     | IAG PC 4 NOW                                     | 40           |
| 122.       | Level of Service                         | A A       | E.S.III     | ADEQ         | В     | 10 1 10  | -10          |
| 123.       | Roadside Safety                          | -         | 3           | NOW          | Č     |  |              |
| 120.       | Roadside Galety                          |           | Ü           | 11011        | D     |  |              |
|            |  |           |             |              | E     |  |              |
|            |  |           |             |              | F     |  |              |
|            |  |           |             |              | G     |  |              |
|            |  |           |             |              | Ιμ    |  |              |
|            |  |           |             |              | l i'  |  |              |
|            |  |           |             |              | j     |  |              |
|            |  |           |             |              | K.    | IMPROVEMENT COST                                 | Cost (\$000) |
|            |  |           |             |              | 151.  | Construction                                     | 0            |
|            |  |           |             |              | 152.  | Approaches                                       | 40           |
|            |  |           |             |              | 153.  | Detours  | 0            |
|            |  |           |             |              | 154.  | Traffic Control/Protection                       | 0            |
|            |  |           |             |              | 155.  | Utilities  | 0            |
| 1          | ENGINEERING RECOMME                      | NDATIONS  |             |              | 156.  | Other  | 0            |
|            |  |           |             |              | 157.  | Contingencies 10%                                | 4            |
| 131.       | Culvert Drawings                         |           |             | UNK          | 158.  | Total Construction                               | 44           |
| 131a.      | Structure Drawing No.                    |           |             |              | 159.  | Right of Way                                     | 0            |
|            | Road Drawing No.                         |           |             |              | 160.  | Engineering Environmental Assessment (E/A) Study | 10           |
|            | 3  |           |             |              | 161.  | Engineering Design & Supervision                 | 6            |
| 132.       | Engineering Investigations               |           |             |              | 162.  | Total Project cost                               | 60           |
|            | ggg                                      | Type      | Year        | Cost (\$000) | 163.  | Eligibility for Subsidy                          | EFS          |
|            |  | A C/S     | 2018        | 10           | 164.  | Non-subsidizable Costs                           |              |
|            |  | В         |             |              | -     | Contributing                                     | Non-         |
|            |  | С         |             |              |       | Agency   | Contrib.     |
|            |  | D         |             |              |       | <b>,</b>   | Cost         |
|            |  |           |             |              |       |  |              |
|            |  |           |             |              |       |  |              |
| 134.       | Single Posting                           | у         | m           | d            |       | A  |              |
| 135.       | Evaluated Posting                        | •         |             | t t t        |       | В  |              |
|            | Date                                     |           |             | y m          |       | С  |              |
| 136.       | Monitoring                               |           |             | m            |       | D  |              |
| 137.       | Closure/Date                             | у         | m           | d            |       |  |              |
|            |  |           |             |              | 165.  | Total Non-Subsidizable Cost                      |              |
|            |  |           |             |              | 166.  | Contributable Cost                               | 60           |
|            |  |           |             |              | 167.  | Municipal Percent of Contributable Cost          | 100%         |
|            |  |           |             |              | 168.  | Municipal Share of Cost                          | 60           |
|            |  |           |             |              |       |  |              |
|            | LICTORY                                  |           |             |              |       |  |              |
| L.<br>FNGI | <u>HISTORY</u><br>NEERING INVESTIGATIONS | S         |             |              | CONST | TRUCTION IMPROVEMENTS                            |              |
| ,          |  | -         | Type        | Year         | 23.13 | Type   | Year         |

**MUNICIPAL CULVERT APPRAISAL** 

| L. HISTORY ENGINEERING INVESTIGATIONS | Туре | Year | CONSTRUCTION IMPROVEMENTS | Туре | Year |
|---------------------------------------|------|------|---------------------------|------|------|
| 171.                                  | 71 - |      | 181.                      | 71 - |      |
| 171.<br>172.                          |      |      | 182.                      |      |      |
| 173.                                  |      |      | 183.                      |      |      |
| 174.<br>175.                          |      |      | 184.                      |      |      |
| 175.                                  |      |      | 185.                      |      |      |

#### M. Inspection Notes

#### 191. Culvert No. 03, Sucker Creek Near CASS, Kensington Point Road - 0.40 km South of Highway 17, Township of Johnson:

- Structure not posted with a load limit.
- Single span (±5.2m) corrugated plate steel pipe arch with approximately 0.7m of gravel fill and a surface treated roadway.
- Surface treated roadway is generally in good condition.
- No traffic protection is provided on the approaches or over the structure.
- Vegetated roadway embankments are in fair to good condition.
- Corrugated plate steel pipe is in fair condition with light to moderate corrosion with flaking at the waterline. Two minor bulges in the top of the culvert barrel were noted at the road center line.
- Watercourse is generally un-obstructed with no evidence of scour.

#### Recommendations

- Structure does not require posting with a load limit.
- Should install traffic protection on the approaches and over the structure.
- Northwest embankment slope appears stable however additional material could be placed to eliminate previous erosion in roadway embankment as part of regular maintenance.
- Should inspect the floor and bottom of walls for extensive corrosion and cracks to better determine the remaining life of the culvert and expected time frame for replacement or repairs. (Anticipate that underwater inspection will be carried out with aid of a diver).

Municipality: Township of Johnson
Structure Name: Sucker Creek Near CASS

06/02/2016

03

Culvert Photographs
2. Municipal Name/Code
3. Culvert Name
4. Road Name
5. Location

Township of Johnson Sucker Creek Near CASS Kensington Point Road 0.40 km South of Highway 17



LOOKING NORTH ACROSS STRUCTURE



WEST ELEVATION

03

Culvert Photographs
2. Municipal Name/Code
3. Culvert Name
4. Road Name
5. Location

Township of Johnson Sucker Creek Near CASS Kensington Point Road 0.40 km South of Highway 17

Culvert No. MTO Site No. 6. 8.



LOOKING WEST UPSTREAM FROM STRUCTURE



LOOKING WEST THROUGH CULVERT BARREL

Culvert Photographs
2. Municipal Name/Code
3. Culvert Name
4. Road Name
5. Location

Township of Johnson Sucker Creek Near CASS Kensington Point Road 0.40 km South of Highway 17

Culvert No. MTO Site No. 6. 8.

03



LIGHT TO MODERATE CORROSION OF CULVERT BARREL AT WATERLINE



TYPICAL VEGETATED ROADWAY EMBANKMENT

## **MUNICIPAL CULVERT APPRAISAL**

| A. IDENTIFICATION   |  |   |        | 6.           | Culvert No.                        | 05                       |
|---|--|---|--------|--------------|------------------------------------|--------------------------|
| 1. Control Code   | 4-S-TP                                       |   |        | 7.           |                                    | 260                      |
| <ol> <li>Municipal Name/Code</li> <li>Culvert Name</li> </ol>                     | Township Of Johnson<br>Government Road Culve | - uh  |        | 8.           | MTO Site No.                       |                          |
| Culvert Name     Road Name  | Government Road Culve                        | эп  |        |              |                                    |                          |
| 5. Location   | 0.4 km East of Fisher Ro                     | and   |        |              |                                    |                          |
| Roadside Environment  | R  | Jau   |        | 16           | 6. Crossing Type                   | O-WAT                    |
| 10. Posting   | ttt  | 13. Posting Sign                              |        |              | 7. Federal Navigable Wat           |                          |
| 11. Bylaw No.   |  | 14. Low Clearance Sign                        |        | 18           | o o                                | \$400,000                |
| 12. Bylaw Expiry Date   |  | 15. Narrow Structure Sign                     |        |              | D. Latitude                        | Ψ100,000                 |
| ,,.,  |  |   |        |              | ). Longitude                       |                          |
|   |  |   |        |              |                                    |                          |
| <ul><li>B. RAILWAY OVERPASS/UND</li><li>21. Railway Level Crossing Num</li></ul>  |  |   |        | 27 Origina   | al Board Order Number              | Date y m d               |
| 22. Railway Company   | boi  |   |        | Zr. Oligino  | a board Order (Variber             | Date y III a             |
| 23. Railway Subdivision   |  |   |        | 28. Curren   | t Board Order Number               | Date y m d               |
| <ul><li>24. Subdivision Mileage</li><li>25. Transport Canada Crossing N</li></ul> | Nο   |   |        | 29. Seniori  | itv                                |                          |
| 26. Number of Tracks  |  |   |        |              | - <del>-</del>                     |                          |
| C. JURISDICTION   |  |   |        |              | 38. Local/Area Municip             | pality (Upper Tier Only) |
| 31. Ownership O   | A MUN  |   |        |              | A.                                 | anty (Opper Her Only)    |
| ·   | В  | 35. Boundary Bridge/Culvert                   | N      |              | B.                                 |                          |
| 32. Heritage Status   | R  |   |        |              | <ol><li>Maintenance Area</li></ol> |                          |
| <ol><li>Special Designation</li></ol>   | CBL  | <ol><li>Adjacent Municipality Name/</li></ol> | No     |              | 40. Municipal Ward                 |                          |
| 34. Suburban Roads Commissio  | n  | 37. Adjacent Culvert No.                      |        |              |                                    |                          |
| D. EXISTING CONDITIONS  |  |   |        |              |                                    |                          |
| GENERAL GENERAL   |  | 45. Cell/Span Width/Dia.                      | 3.6 m  | 51.          | End Treatment                      | A B C D                  |
| 41. Year Constructed  | A. 1980                                      | 46. Total Width/Dia.                          | 3.6 m  |              | Upstream                           | <u> </u>                 |
|   | B.   | 47. Max. Height                               | 3.6 m  |              | Downstream                         | N                        |
| 42. Material Type   | CSP-PR                                       | 48. Culvert Length                            | 29.0 m | 52.          | Soil Condition                     | U                        |
| 43. Crossing Skew   | 0°   | 49. Type/Depth of Fill                        |        | 53.          | Foundation Type                    | BD – Bedding             |
| 44. Number of Cells/Spans   | 1  | 50. Culvert Floor                             | SC     |              |                                    |                          |
| ROAD OVER CULVERT   |  |   |        |              |                                    |                          |
| NONE OVER OCCUENT   |  | 57. Surface Type                              | G      | 61.          | Safety Curb/Sidewalk &             | (A) N                    |
| 55. Existing Road Class   | 300  | 58. Platform Width                            | 8.5 m  |              | Curb Barrier                       | ÌΒ) N                    |
| 55a. Highway Classification   | -  | <ol><li>Surface Width</li></ol>               | 7.5 m  | 62.          | Roadside Safety                    | (A) N NO                 |
| 56. Operational Status  | 2W - OAT                                     | 60. No. of Lanes                              | 2.0    |              |                                    | (B) S NO                 |
| ROAD THROUGH CULVERT  |  |   |        |              |                                    |                          |
| NOAD HINOUGH COLVERT  |  | 66. Opening Width                             |        | 70.          | Safety Curb/Sidewalk &             |                          |
| 64. Existing Road Class   |  | 67. Surface Width                             |        |              | Curb Barrier                       |                          |
| 64a. Highway Classification   |  | 68. No. of Lanes                              |        | 71.          | Traffic Barrier                    |                          |
| 65. Operational Status  |  | 69. Median Type/Width                         |        | 72.          | Minimum Vertical Clearan           | се                       |
| E TRAFFIC DATA  |  | TRAFFIC COLINIT                               |        | 40.74        | EAR TRAFFIC FORFOAC                | т                        |
| <ul><li>E. TRAFFIC DATA</li><li>81. Legal Speed Limit</li></ul>                   |  | TRAFFIC COUNT<br>83. Year                     |        | 10 YI<br>90. | EAR TRAFFIC FORECAS                | I                        |
| or. Legai Speed Lillill   |  | 84. AADT                                      |        |              | AADT                               |                          |
| 82. Route Designations  |  | 85. DHV Factor                                |        |              | DHV Factor                         |                          |
|   |  | 86. DHV                                       |        | 93.          |                                    |                          |
| Transit □ Truck □   |  | 87. Trucks                                    |        |              | Trucks                             |                          |
| School   Bicycle  |  | 88. Peak Directional Split                    |        |              | Capacity                           |                          |
|   |  | 89. 10 Year Growth Factor                     |        | 96.          | 20 Year AADT                       |                          |
| F. INSPECTIONS & APPROV   | ΔΙς  |   |        |              |                                    |                          |
| 101. Date: June 2,  |  | 102. Professional Engineer Name               |        | M. Ki        | irby, P. Eng.                      |                          |
| Inspected By: M. Kirb   | y & S. Milne                                 | 103. Municipality/Company                     |        |              | ch Engineering Inc.                |                          |
| *   |  |   |        |              | · -                                |                          |

Municipality: Structure Name: Township of Johnson Government Road Culvert

## **MUNICIPAL CULVERT APPRAISAL**

| G.                   | CULVERT NEEDS   | RAT                                 | ΓING                                    |   | J. TYPE & TIME OF IMPROVEMENT  |  |
|----------------------|---|-------------------------------------|---|---|--|--|
| 113.<br>114.<br>115. | Barrel Foundations Inlet Components Outlet Components Guide rail/Barrier Streams/Waterways  | MCR<br>5<br>9<br>0<br>0<br>0        | PCR<br>6<br>9<br>0<br>0<br>0            | TIME OF NEED<br>6-10 yrs<br>ADEQ<br>ADEQ<br>ADEQ<br>NOW<br>ADEQ | 141. Design Class       RSL         142. Design Platform Width       8.5       r         143. Material/Type       CPS-PR         144. Width/Diameter       3.6       r         145. Maximum Height       3.6       r         146. Culvert Length       29.0       r         147. No. of Culverts       1 | m<br>m<br>m<br>m                         |
|                      | FUNCTIONAL NEEDS  ROAD OVER  Platform Width  Level of Service  Roadside Safety              | Existing<br>Condition<br>8.5 m<br>A | Minimum<br>Tolerable<br>6.5 m<br>E<br>3 | TIME OF NEED  ADEQ ADEQ NOW                                     | 146.   | e<br>Cost<br>(\$000)<br>400<br>40        |
| <u>I.</u>            | ENGINEERING RECOMME   | NDATIONS                            |   |   | -  | ost (\$000)<br>400<br>40<br>0<br>0<br>0  |
| 131a.                | Culvert Drawings<br>Structure Drawing No.<br>Road Drawing No.<br>Engineering Investigations | Туре                                | Year                                    | UNK Cost (\$000)  | 157. Contingencies 10% 158. Total Construction 159. Right of Way 160. Engineering Environmental Assessment (E/A) Study 161. Engineering Design & Supervision 162. Total Project cost 163. Eligibility for Subsidy  | 44<br>484<br>0<br>10<br>60<br>554<br>EFS |
|                      |   | A<br>B<br>C<br>D                    | i cai                                   | COST (\$000)  | 164. Non-subsidizable Costs  Contributing Agency   | Non-<br>Contrib.<br>Cost                 |
| 135.<br>136.         | Single Posting<br>Evaluated Posting<br>Date<br>Monitoring<br>Closure/Date                   | у                                   | m<br>m                                  | d -<br>t t t<br>y m<br>m  | A<br>B<br>C<br>D   |  |
| 137.                 | Giosui di Dale  | У                                   | ***                                     | u -   | <ul> <li>165. Total Non-Subsidizable Cost</li> <li>166. Contributable Cost</li> <li>167. Municipal Percent of Contributable Cost</li> <li>168. Municipal Share of Cost</li> </ul>  | 554<br>100%<br>554                       |
| L.<br>ENGI           | HISTORY<br>NEERING INVESTIGATIONS   | 3                                   |   |   | CONSTRUCTION IMPROVEMENTS  |  |

| L. HISTORY ENGINEERING INVESTIGATIONS | Туре | Year | CONSTRUCTION IMPROVEMENTS | Туре | Year |
|---------------------------------------|------|------|---------------------------|------|------|
| 171.<br>172.                          |      |      | 181.                      |      |      |
| 172.                                  |      |      | 182.                      |      |      |
| 173.                                  |      |      | 183.                      |      |      |
| 174.                                  |      |      | 184.                      |      |      |
| 175.                                  |      |      | 185.                      |      |      |

#### M. Inspection Notes

- Culvert No. 05, Government Road Culvert, Government Road 0.4 km East of Fisher Road, Township of Johnson:
- Structure is not posted with a load limit.
- Single span (±3.6m) corrugated steel round pipe culvert with approximately 1.0 m of gravel fill and a finished gravel roadway.
- Gravel roadway and approaches are in good condition with light washboard over the culvert.
- No traffic protection is provided on the approaches or across the structure.
- Vegetation and rock protected roadway embankments are in good condition.
- Steel culvert is generally in fair to good condition with light to moderate corrosion of the barrel floor, the seams are slightly open and first segment from north at
  the seam has a bent/damaged portion at the floor level and the barrel is slightly out of round. A projection (bulge) was noted on east wall of the culvert barrel
  at approximately the center line of road. Parging of culvert barrel joints has failed and sections missing throughout.
- Culvert inlet is perched and undermined allowing water to pass under/along the outside base of the culvert through the roadway.
- Sag in culvert floor along culvert barrel at 1<sup>st</sup> joint from the outlet with area of polling water.
- Watercourse is un-obstructed with no evidence of scour.

#### Recommendations

- Structure does not require posting with a load limit.
- Should install guiderails on the approaches and across the structure
- Roadway should be graded to remove washboard as part of regular maintenance.
- The missing parging and opened seams should be repaired as part of your regular maintenance program to prevent water from travelling under the culvert.
- Monitor bulging of culvert barrel at centerline of roadway/culvert barrel.
- Expected replacement of culvert should be budgeted in the next 6-10 years. Alternative option would be to install a liner in the culvert barrel. A culvert hydraulic study would be required to confirm suitability of installing a liner (this alternative was not costed).

Municipality: Township of Johnson
Structure Name: Government Road Culvert

05

Culvert Photographs
2. Municipal Name/Code
3. Culvert Name
4. Road Name
5. Location

Township of Johnson Government Road Culvert Government Road 0.4 km East of Fisher Road



LOOKING WEST ACROSS STRUCTURE



LOOKING UPSTREAM FROM CULVERT

Culvert Photographs
2. Municipal Name/Code
3. Culvert Name
4. Road Name
5. Location

Township of Johnson Government Road Culvert Government Road 0.4 km East of Fisher Road



LOOKING NORTH THROUGH BARREL



TYPICAL OVERLAP JOINT MISSING PARGING

05

Culvert Photographs
2. Municipal Name/Code
3. Culvert Name
4. Road Name
5. Location

Township of Johnson Government Road Culvert Government Road 0.4 km East of Fisher Road



LOCALIZED PROJECTION ON EAST WALL



CULVERT INLET WITH MODERATE UNDERMINING

Culvert Photographs
2. Municipal Name/Code
3. Culvert Name
4. Road Name
5. Location Township of Johnson Government Road Culvert Government Road 0.4 km East of Fisher Road



NORTH ELEVATION

05

## **MUNICIPAL CULVERT APPRAISAL**

| A. IDENTIFICATION  |                             |  |   | 6.   | Culvert No.  | 07  |
|--|-----------------------------|--|---|--|--|---|
| Control Code   | 4-S-TP                      |  |   | 7.   | Road Section No.   | 380   |
| <ol><li>Municipal Name/Code</li></ol>  | Township of Johnson         |  |   | 8.   | MTO Site No.   |   |
| <ol><li>Culvert Name</li></ol>   | Sucker Creek Culvert        |  |   |  |  |   |
| Road Name  | Puddingstone Road           |  |   |  |  |   |
| <ol><li>Location</li></ol>   | 2.1 km North of Govern      | ment Road  |   |  |  |   |
| <ol><li>Roadside Environment</li></ol>   | R                           |  |   | 16.  |  | O-WAT   |
| 10. Posting  | t t t                       | <ol><li>Posting Sign</li></ol>   | t   |  | Federal Navigable Water  |   |
| 11. Bylaw No.  |                             | <ol><li>Low Clearance Sign</li></ol>   |   | 18.  | Culvert Value  | \$400,000   |
| 12. Bylaw Expiry Date  | y m                         | <ol><li>Narrow Structure Sign</li></ol>  |   |  | Latitude   |   |
|  |                             |  |   | 20.  | Longitude  |   |
| B. RAILWAY OVERPASS/UN   | NDERPASS                    |  |   |  |  |   |
| 21. Railway Level Crossing No  |                             |  | 2   | 7. Original I  | Board Order Number   | Date y m d  |
| 22. Railway Company  |                             |  | 0   | 0 0  | Daniel Ordan Namelan   | D-4   |
| 23. Railway Subdivision<br>24. Subdivision Mileage   |                             |  | 2   | 8. Current E   | Board Order Number   | Date y m d  |
| 25. Transport Canada Crossin   | a No                        |  | 2:  | 9. Seniority   | ,  |   |
| 26. Number of Tracks   | g 110.                      |  |   | o. Comonty   |  |   |
| C JUDICDICTION   |                             |  |   |  | 20   | olihy (Harris T. C. 1.)   |
| C. JURISDICTION  | A BALINI                    |  |   |  |  | ality (Upper Tier Only)   |
| 31. Ownership O  | A MUN<br>B                  | 25 Pounds  | Yes   |  | A.<br>B.   |   |
| 20 11  |                             | 35. Boundary   | res   |  |  |   |
| 32. Heritage Status  | R                           | Bridge/Culvert   |   |  | 39. Maintenance Area   |   |
| 33. Special Designation  | CBL                         | 2C Adiacont Municipality   | Twp. of Tarbutt 8   | 2. Tarbutt   | 40. Municipal Ward   |   |
| 34. Suburban Roads Commiss   | sion                        | 36. Adjacent Municipality  | Additional  | x raibuii  |  |   |
|  |                             | Name/No  | Additional  |  |  |   |
|  |                             | 37. Adjacent Culvert No.   |   |  |  |   |
|  |                             |  |   |  |  |   |
| D. EXISTING CONDITIONS   |                             |  |   |  |  |   |
|  |                             |  |   |  |  |   |
| GENERAL  |                             | 45. Cell/Span Width/Dia.   | 5.0 m   | 51. E  | nd Treatment   | <u>A B C D</u>  |
| GENERAL<br>41. Year Constructed  | A. 2000                     | 46. Total Width/Dia.   | 5.0 m   | 51. E  | Upstream   | N   |
| 41. Year Constructed   | B.                          | <ul><li>46. Total Width/Dia.</li><li>47. Max. Height</li></ul>   | 5.0 m<br>2.0 m  |  | Upstream<br>Downstream   | N<br>N  |
| 41. Year Constructed 42. Material Type   | B.<br>CPS-PA                | 46. Total Width/Dia.<br>47. Max. Height<br>48. Culvert Length  | 5.0 m<br>2.0 m<br>18.0 m  | 52. S  | Upstream<br>Downstream<br>oil Condition  | N<br>N<br>U   |
| <ul><li>41. Year Constructed</li><li>42. Material Type</li><li>43. Crossing Skew</li></ul>   | B.<br>CPS-PA<br>0°          | <ul><li>46. Total Width/Dia.</li><li>47. Max. Height</li><li>48. Culvert Length</li><li>49. Type/Depth of Fill</li></ul>   | 5.0 m<br>2.0 m<br>18.0 m<br>E 0.8 m                                     | 52. S  | Upstream<br>Downstream   | N<br>N  |
| 41. Year Constructed 42. Material Type   | B.<br>CPS-PA                | 46. Total Width/Dia.<br>47. Max. Height<br>48. Culvert Length  | 5.0 m<br>2.0 m<br>18.0 m  | 52. S  | Upstream<br>Downstream<br>oil Condition  | N<br>N<br>U   |
| <ul><li>41. Year Constructed</li><li>42. Material Type</li><li>43. Crossing Skew</li></ul>   | B.<br>CPS-PA<br>0°          | <ul><li>46. Total Width/Dia.</li><li>47. Max. Height</li><li>48. Culvert Length</li><li>49. Type/Depth of Fill</li></ul>   | 5.0 m<br>2.0 m<br>18.0 m<br>E 0.8 m                                     | 52. S  | Upstream<br>Downstream<br>oil Condition  | N<br>N<br>U   |
| 41. Year Constructed 42. Material Type 43. Crossing Skew 44. Number of Cells/Spans   | B.<br>CPS-PA<br>0°          | <ul><li>46. Total Width/Dia.</li><li>47. Max. Height</li><li>48. Culvert Length</li><li>49. Type/Depth of Fill</li></ul>   | 5.0 m<br>2.0 m<br>18.0 m<br>E 0.8 m                                     | 52. S<br>53. F   | Upstream<br>Downstream<br>oil Condition  | N<br>N<br>U   |
| 41. Year Constructed 42. Material Type 43. Crossing Skew 44. Number of Cells/Spans  ROAD OVER CULVERT  | B.<br>CPS-PA<br>0°          | 46. Total Width/Dia. 47. Max. Height 48. Culvert Length 49. Type/Depth of Fill 50. Culvert Floor   | 5.0 m<br>2.0 m<br>18.0 m<br>E 0.8 m<br>EA                               | 52. S<br>53. F   | Upstream<br>Downstream<br>oil Condition<br>oundation Type  | N<br>N<br>U<br>UN – Unknown   |
| 41. Year Constructed  42. Material Type  43. Crossing Skew  44. Number of Cells/Spans  | B.<br>CPS-PA<br>0°<br>1     | 46. Total Width/Dia. 47. Max. Height 48. Culvert Length 49. Type/Depth of Fill 50. Culvert Floor   | 5.0 m<br>2.0 m<br>18.0 m<br>E 0.8 m<br>EA                               | 52. S<br>53. F<br>61. S  | Upstream Downstream oil Condition oundation Type afety Curb/Sidewalk &   | N<br>N<br>U<br>UN – Unknown<br>(A) N<br>(B) N                       |
| 41. Year Constructed 42. Material Type 43. Crossing Skew 44. Number of Cells/Spans  ROAD OVER CULVERT 55. Existing Road Class  | B.<br>CPS-PA<br>0°<br>1     | 46. Total Width/Dia. 47. Max. Height 48. Culvert Length 49. Type/Depth of Fill 50. Culvert Floor  57. Surface Type 58. Platform Width  | 5.0 m<br>2.0 m<br>18.0 m<br>E 0.8 m<br>EA                               | 52. S<br>53. F<br>61. S  | Upstream Downstream oil Condition oundation Type  afety Curb/Sidewalk & curb Barrier   | N<br>N<br>U<br>UN – Unknown   |
| 41. Year Constructed  42. Material Type  43. Crossing Skew  44. Number of Cells/Spans  ROAD OVER CULVERT  55. Existing Road Class  55a. Highway Classification  56. Operational Status   | B.<br>CPS-PA<br>0°<br>1     | 46. Total Width/Dia. 47. Max. Height 48. Culvert Length 49. Type/Depth of Fill 50. Culvert Floor  57. Surface Type 58. Platform Width 59. Surface Width  | 5.0 m<br>2.0 m<br>18.0 m<br>E 0.8 m<br>EA<br>G<br>8.0 m<br>7.0 m        | 52. S<br>53. F<br>61. S  | Upstream Downstream oil Condition oundation Type  afety Curb/Sidewalk & curb Barrier   | N<br>N<br>U<br>UN – Unknown  (A) N (B) N (A) E SC                   |
| 41. Year Constructed  42. Material Type 43. Crossing Skew 44. Number of Cells/Spans  ROAD OVER CULVERT  55. Existing Road Class 55a. Highway Classification  | B.<br>CPS-PA<br>0°<br>1     | 46. Total Width/Dia. 47. Max. Height 48. Culvert Length 49. Type/Depth of Fill 50. Culvert Floor  57. Surface Type 58. Platform Width 59. Surface Width 60. No. of Lanes   | 5.0 m<br>2.0 m<br>18.0 m<br>E 0.8 m<br>EA<br>G<br>8.0 m<br>7.0 m        | 52. S<br>53. F<br>61. S<br>C<br>62. R  | Upstream Downstream oil Condition oundation Type  afety Curb/Sidewalk & urb Barrier loadside Safety  | N<br>N<br>U<br>UN – Unknown  (A) N (B) N (A) E SC                   |
| 41. Year Constructed  42. Material Type  43. Crossing Skew  44. Number of Cells/Spans  ROAD OVER CULVERT  55. Existing Road Class  55a. Highway Classification  56. Operational Status  ROAD THROUGH CULVERT   | B.<br>CPS-PA<br>0°<br>1     | 46. Total Width/Dia. 47. Max. Height 48. Culvert Length 49. Type/Depth of Fill 50. Culvert Floor  57. Surface Type 58. Platform Width 59. Surface Width 60. No. of Lanes   | 5.0 m<br>2.0 m<br>18.0 m<br>E 0.8 m<br>EA<br>G<br>8.0 m<br>7.0 m        | 52. S<br>53. F<br>61. S<br>C<br>62. R  | Upstream Downstream oil Condition oundation Type  afety Curb/Sidewalk & urb Barrier oadside Safety  afety Curb/Sidewalk &  | N<br>N<br>U<br>UN – Unknown  (A) N (B) N (A) E SC                   |
| 41. Year Constructed  42. Material Type  43. Crossing Skew  44. Number of Cells/Spans  ROAD OVER CULVERT  55. Existing Road Class  55a. Highway Classification  56. Operational Status  ROAD THROUGH CULVERT  64. Existing Road Class  | B.<br>CPS-PA<br>0°<br>1     | 46. Total Width/Dia. 47. Max. Height 48. Culvert Length 49. Type/Depth of Fill 50. Culvert Floor  57. Surface Type 58. Platform Width 59. Surface Width 60. No. of Lanes  66. Opening Width 67. Surface Width  | 5.0 m<br>2.0 m<br>18.0 m<br>E 0.8 m<br>EA<br>G<br>8.0 m<br>7.0 m        | 52. S<br>53. F<br>61. S<br>C<br>62. R  | Upstream Downstream oil Condition oundation Type  afety Curb/Sidewalk & turb Barrier oadside Safety  afety Curb/Sidewalk & turb Barrier  | N<br>N<br>U<br>UN – Unknown  (A) N (B) N (A) E SC                   |
| 41. Year Constructed  42. Material Type  43. Crossing Skew  44. Number of Cells/Spans  ROAD OVER CULVERT  55. Existing Road Class  55a. Highway Classification  56. Operational Status  ROAD THROUGH CULVERT  64. Existing Road Class  64a. Highway Classification   | B.<br>CPS-PA<br>0°<br>1     | 46. Total Width/Dia. 47. Max. Height 48. Culvert Length 49. Type/Depth of Fill 50. Culvert Floor  57. Surface Type 58. Platform Width 59. Surface Width 60. No. of Lanes  66. Opening Width 67. Surface Width 68. No. of Lanes   | 5.0 m<br>2.0 m<br>18.0 m<br>E 0.8 m<br>EA<br>G<br>8.0 m<br>7.0 m        | 52. S<br>53. F<br>61. S<br>C<br>62. R  | Upstream Downstream oil Condition oundation Type  afety Curb/Sidewalk & curb Barrier loadside Safety  afety Curb/Sidewalk & curb Barrier raffic Barrier  | N<br>N<br>U<br>UN – Unknown   |
| 41. Year Constructed  42. Material Type  43. Crossing Skew  44. Number of Cells/Spans  ROAD OVER CULVERT  55. Existing Road Class  55a. Highway Classification  56. Operational Status  ROAD THROUGH CULVERT  64. Existing Road Class  | B.<br>CPS-PA<br>0°<br>1     | 46. Total Width/Dia. 47. Max. Height 48. Culvert Length 49. Type/Depth of Fill 50. Culvert Floor  57. Surface Type 58. Platform Width 59. Surface Width 60. No. of Lanes  66. Opening Width 67. Surface Width  | 5.0 m<br>2.0 m<br>18.0 m<br>E 0.8 m<br>EA<br>G<br>8.0 m<br>7.0 m        | 52. S<br>53. F<br>61. S<br>C<br>62. R  | Upstream Downstream oil Condition oundation Type  afety Curb/Sidewalk & turb Barrier oadside Safety  afety Curb/Sidewalk & turb Barrier  | N<br>N<br>U<br>UN – Unknown   |
| 41. Year Constructed  42. Material Type  43. Crossing Skew  44. Number of Cells/Spans  ROAD OVER CULVERT  55. Existing Road Class  55a. Highway Classification  56. Operational Status  ROAD THROUGH CULVERT  64. Existing Road Class  64a. Highway Classification  65. Operational Status  E. TRAFFIC DATA  | B.<br>CPS-PA<br>0°<br>1     | 46. Total Width/Dia. 47. Max. Height 48. Culvert Length 49. Type/Depth of Fill 50. Culvert Floor  57. Surface Type 58. Platform Width 59. Surface Width 60. No. of Lanes  66. Opening Width 67. Surface Width 68. No. of Lanes 69. Median Type/Width   | 5.0 m<br>2.0 m<br>18.0 m<br>E 0.8 m<br>EA<br>G<br>8.0 m<br>7.0 m        | 52. S<br>53. F<br>61. S<br>C<br>62. R<br>70. S<br>C<br>71. T<br>72. M  | Upstream Downstream oil Condition oundation Type  afety Curb/Sidewalk & urb Barrier loadside Safety  afety Curb/Sidewalk & urb Barrier raffic Barrier raffic Barrier linimum Vertical Clearance  | N<br>N<br>U<br>UN – Unknown  (A) N<br>(B) N<br>(A) E SC<br>(B) W SC |
| 41. Year Constructed  42. Material Type  43. Crossing Skew  44. Number of Cells/Spans  ROAD OVER CULVERT  55. Existing Road Class  55a. Highway Classification  56. Operational Status  ROAD THROUGH CULVERT  64. Existing Road Class  64a. Highway Classification  65. Operational Status   | B.<br>CPS-PA<br>0°<br>1     | 46. Total Width/Dia. 47. Max. Height 48. Culvert Length 49. Type/Depth of Fill 50. Culvert Floor  57. Surface Type 58. Platform Width 59. Surface Width 60. No. of Lanes  66. Opening Width 67. Surface Width 68. No. of Lanes 69. Median Type/Width  TRAFFIC COUNT 83. Year   | 5.0 m<br>2.0 m<br>18.0 m<br>E 0.8 m<br>EA<br>G<br>8.0 m<br>7.0 m        | 52. S<br>53. F<br>61. S<br>C<br>62. R<br>70. S<br>C<br>71. T<br>72. M  | Upstream Downstream oil Condition oundation Type  afety Curb/Sidewalk & turb Barrier oadside Safety  afety Curb/Sidewalk & turb Barrier raffic Barrier linimum Vertical Clearance  AR TRAFFIC FORECAST   | N<br>N<br>U<br>UN – Unknown  (A) N<br>(B) N<br>(A) E SC<br>(B) W SC |
| 41. Year Constructed  42. Material Type  43. Crossing Skew  44. Number of Cells/Spans  ROAD OVER CULVERT  55. Existing Road Class  55a. Highway Classification  56. Operational Status  ROAD THROUGH CULVERT  64. Existing Road Class  64a. Highway Classification  65. Operational Status  E. TRAFFIC DATA  81. Legal Speed Limit   | B.<br>CPS-PA<br>0°<br>1     | 46. Total Width/Dia. 47. Max. Height 48. Culvert Length 49. Type/Depth of Fill 50. Culvert Floor  57. Surface Type 58. Platform Width 59. Surface Width 60. No. of Lanes  66. Opening Width 67. Surface Width 68. No. of Lanes 69. Median Type/Width  TRAFFIC COUNT 83. Year 84. AADT  | 5.0 m<br>2.0 m<br>18.0 m<br>E 0.8 m<br>EA<br>G<br>8.0 m<br>7.0 m        | 52. S<br>53. F<br>61. S<br>C<br>62. R<br>70. S<br>C<br>71. T<br>72. M  | Upstream Downstream oil Condition oundation Type  afety Curb/Sidewalk & curb Barrier coadside Safety  afety Curb/Sidewalk & curb Barrier raffic Barrier finimum Vertical Clearance AR TRAFFIC FORECAST ear ADT   | N<br>N<br>U<br>UN – Unknown  (A) N<br>(B) N<br>(A) E SC<br>(B) W SC |
| 41. Year Constructed  42. Material Type  43. Crossing Skew  44. Number of Cells/Spans  ROAD OVER CULVERT  55. Existing Road Class  55a. Highway Classification  56. Operational Status  ROAD THROUGH CULVERT  64. Existing Road Class  64a. Highway Classification  65. Operational Status  E. TRAFFIC DATA  | B.<br>CPS-PA<br>0°<br>1     | 46. Total Width/Dia. 47. Max. Height 48. Culvert Length 49. Type/Depth of Fill 50. Culvert Floor  57. Surface Type 58. Platform Width 59. Surface Width 60. No. of Lanes  66. Opening Width 67. Surface Width 68. No. of Lanes 69. Median Type/Width  TRAFFIC COUNT 83. Year 84. AADT 85. DHV Factor   | 5.0 m<br>2.0 m<br>18.0 m<br>E 0.8 m<br>EA<br>G<br>8.0 m<br>7.0 m        | 52. S<br>53. F<br>61. S<br>C<br>62. R<br>70. S<br>C<br>71. T<br>72. M<br>90. Y<br>91. A<br>92. D   | Upstream Downstream oil Condition oundation Type  afety Curb/Sidewalk & curb Barrier coadside Safety  afety Curb/Sidewalk & curb Barrier raffic Barrier finimum Vertical Clearance  AR TRAFFIC FORECAST ear ADT OHV Factor                             | N<br>N<br>U<br>UN – Unknown  (A) N<br>(B) N<br>(A) E SC<br>(B) W SC |
| 41. Year Constructed  42. Material Type  43. Crossing Skew  44. Number of Cells/Spans  ROAD OVER CULVERT  55. Existing Road Class 55a. Highway Classification 56. Operational Status  ROAD THROUGH CULVERT  64. Existing Road Class 64a. Highway Classification 65. Operational Status  E. TRAFFIC DATA  81. Legal Speed Limit  82. Route Designations   | B.<br>CPS-PA<br>0°<br>1     | 46. Total Width/Dia. 47. Max. Height 48. Culvert Length 49. Type/Depth of Fill 50. Culvert Floor  57. Surface Type 58. Platform Width 59. Surface Width 60. No. of Lanes  66. Opening Width 67. Surface Width 68. No. of Lanes 69. Median Type/Width  TRAFFIC COUNT 83. Year 84. AADT 85. DHV Factor 86. DHV   | 5.0 m<br>2.0 m<br>18.0 m<br>E 0.8 m<br>EA<br>G<br>8.0 m<br>7.0 m        | 52. S<br>53. Fo<br>61. S<br>C<br>62. R<br>70. S<br>C<br>71. T<br>72. M<br>10 YE/<br>90. Y<br>91. A<br>92. D<br>93. D                       | Upstream Downstream oil Condition oundation Type  afety Curb/Sidewalk & turb Barrier loadside Safety  afety Curb/Sidewalk & turb Barrier raffic Barrier linimum Vertical Clearance  AR TRAFFIC FORECAST ear ADT HV Factor                              | N<br>N<br>U<br>UN – Unknown  (A) N<br>(B) N<br>(A) E SC<br>(B) W SC |
| 41. Year Constructed  42. Material Type  43. Crossing Skew  44. Number of Cells/Spans  ROAD OVER CULVERT  55. Existing Road Class 55a. Highway Classification 56. Operational Status  ROAD THROUGH CULVERT  64. Existing Road Class 64a. Highway Classification 65. Operational Status  E. TRAFFIC DATA  81. Legal Speed Limit  82. Route Designations  Transit   Truck  | B.<br>CPS-PA<br>0°<br>1     | 46. Total Width/Dia. 47. Max. Height 48. Culvert Length 49. Type/Depth of Fill 50. Culvert Floor  57. Surface Type 58. Platform Width 59. Surface Width 60. No. of Lanes  66. Opening Width 67. Surface Width 68. No. of Lanes 69. Median Type/Width  TRAFFIC COUNT 83. Year 84. AADT 85. DHV Factor 86. DHV 87. Trucks  | 5.0 m<br>2.0 m<br>18.0 m<br>E 0.8 m<br>EA<br>G<br>8.0 m<br>7.0 m        | 52. S<br>53. F<br>61. S<br>62. R<br>70. S<br>C<br>71. T<br>72. M<br>10 YE/<br>90. Y<br>91. A<br>92. D<br>93. D<br>94. T                    | Upstream Downstream oil Condition oundation Type  afety Curb/Sidewalk & turb Barrier toadside Safety  afety Curb/Sidewalk & turb Barrier raffic Barrier linimum Vertical Clearance AR TRAFFIC FORECAST tear ADT HV Factor HV rucks                     | N<br>N<br>U<br>UN – Unknown  (A) N<br>(B) N<br>(A) E SC<br>(B) W SC |
| 41. Year Constructed  42. Material Type  43. Crossing Skew  44. Number of Cells/Spans  ROAD OVER CULVERT  55. Existing Road Class 55a. Highway Classification 56. Operational Status  ROAD THROUGH CULVERT  64. Existing Road Class 64a. Highway Classification 65. Operational Status  E. TRAFFIC DATA  81. Legal Speed Limit  82. Route Designations   | B.<br>CPS-PA<br>0°<br>1     | 46. Total Width/Dia. 47. Max. Height 48. Culvert Length 49. Type/Depth of Fill 50. Culvert Floor  57. Surface Type 58. Platform Width 59. Surface Width 60. No. of Lanes  66. Opening Width 67. Surface Width 68. No. of Lanes 69. Median Type/Width  TRAFFIC COUNT 83. Year 84. AADT 85. DHV Factor 86. DHV 87. Trucks 88. Peak Directional Split                           | 5.0 m<br>2.0 m<br>18.0 m<br>E 0.8 m<br>EA<br>G<br>8.0 m<br>7.0 m        | 52. S<br>53. F<br>61. S<br>62. R<br>70. S<br>C<br>71. T<br>72. M<br>10 YE/<br>90. Y<br>91. A<br>92. D<br>93. D<br>94. T<br>95. C           | Upstream Downstream oil Condition oundation Type  afety Curb/Sidewalk & turb Barrier toadside Safety  afety Curb/Sidewalk & turb Barrier raffic Barrier linimum Vertical Clearance AR TRAFFIC FORECAST ear ADT HV Factor HV rucks Lapacity             | N<br>N<br>U<br>UN – Unknown  (A) N<br>(B) N<br>(A) E SC<br>(B) W SC |
| 41. Year Constructed  42. Material Type  43. Crossing Skew  44. Number of Cells/Spans  ROAD OVER CULVERT  55. Existing Road Class 55a. Highway Classification 56. Operational Status  ROAD THROUGH CULVERT  64. Existing Road Class 64a. Highway Classification 65. Operational Status  E. TRAFFIC DATA  81. Legal Speed Limit  82. Route Designations  Transit   Truck  | B.<br>CPS-PA<br>0°<br>1     | 46. Total Width/Dia. 47. Max. Height 48. Culvert Length 49. Type/Depth of Fill 50. Culvert Floor  57. Surface Type 58. Platform Width 59. Surface Width 60. No. of Lanes  66. Opening Width 67. Surface Width 68. No. of Lanes 69. Median Type/Width  TRAFFIC COUNT 83. Year 84. AADT 85. DHV Factor 86. DHV 87. Trucks  | 5.0 m<br>2.0 m<br>18.0 m<br>E 0.8 m<br>EA<br>G<br>8.0 m<br>7.0 m        | 52. S<br>53. F<br>61. S<br>62. R<br>70. S<br>C<br>71. T<br>72. M<br>10 YE/<br>90. Y<br>91. A<br>92. D<br>93. D<br>94. T<br>95. C           | Upstream Downstream oil Condition oundation Type  afety Curb/Sidewalk & turb Barrier toadside Safety  afety Curb/Sidewalk & turb Barrier raffic Barrier linimum Vertical Clearance AR TRAFFIC FORECAST tear ADT HV Factor HV rucks                     | N<br>N<br>U<br>UN – Unknown  (A) N<br>(B) N<br>(A) E SC<br>(B) W SC |
| 41. Year Constructed  42. Material Type  43. Crossing Skew  44. Number of Cells/Spans  ROAD OVER CULVERT  55. Existing Road Class 55a. Highway Classification 56. Operational Status  ROAD THROUGH CULVERT  64. Existing Road Class 64a. Highway Classification 65. Operational Status  E. TRAFFIC DATA  81. Legal Speed Limit  82. Route Designations  Transit   Truck  | B. CPS-PA 0° 1 300 - 2W OAT | 46. Total Width/Dia. 47. Max. Height 48. Culvert Length 49. Type/Depth of Fill 50. Culvert Floor  57. Surface Type 58. Platform Width 59. Surface Width 60. No. of Lanes  66. Opening Width 67. Surface Width 68. No. of Lanes 69. Median Type/Width  TRAFFIC COUNT 83. Year 84. AADT 85. DHV Factor 86. DHV 87. Trucks 88. Peak Directional Split                           | 5.0 m<br>2.0 m<br>18.0 m<br>E 0.8 m<br>EA<br>G<br>8.0 m<br>7.0 m        | 52. S<br>53. F<br>61. S<br>62. R<br>70. S<br>C<br>71. T<br>72. M<br>10 YE/<br>90. Y<br>91. A<br>92. D<br>93. D<br>94. T<br>95. C           | Upstream Downstream oil Condition oundation Type  afety Curb/Sidewalk & turb Barrier toadside Safety  afety Curb/Sidewalk & turb Barrier raffic Barrier linimum Vertical Clearance AR TRAFFIC FORECAST ear ADT HV Factor HV rucks Lapacity             | N<br>N<br>U<br>UN – Unknown  (A) N<br>(B) N<br>(A) E SC<br>(B) W SC |
| 41. Year Constructed  42. Material Type  43. Crossing Skew  44. Number of Cells/Spans  ROAD OVER CULVERT  55. Existing Road Class 55a. Highway Classification 56. Operational Status  ROAD THROUGH CULVERT  64. Existing Road Class 64a. Highway Classification 65. Operational Status  E. TRAFFIC DATA  81. Legal Speed Limit  82. Route Designations  Transit  Truck  Bicycle    E. INSPECTIONS & APPRO                                | B. CPS-PA 0° 1 300 - 2W OAT | 46. Total Width/Dia. 47. Max. Height 48. Culvert Length 49. Type/Depth of Fill 50. Culvert Floor  57. Surface Type 58. Platform Width 59. Surface Width 60. No. of Lanes  66. Opening Width 67. Surface Width 68. No. of Lanes 69. Median Type/Width  TRAFFIC COUNT 83. Year 84. AADT 85. DHV Factor 86. DHV 87. Trucks 88. Peak Directional Split                           | 5.0 m<br>2.0 m<br>18.0 m<br>E 0.8 m<br>EA<br>G<br>8.0 m<br>7.0 m<br>2.0 | 52. S<br>53. F<br>61. S<br>C<br>62. R<br>70. S<br>C<br>71. T<br>72. M<br>90. Y<br>91. Y<br>91. D<br>93. D<br>94. T<br>95. C<br>96. 20      | Upstream Downstream oil Condition oundation Type  afety Curb/Sidewalk & turb Barrier toadside Safety  afety Curb/Sidewalk & turb Barrier raffic Barrier linimum Vertical Clearance AR TRAFFIC FORECAST ear ADT HV Factor HV rucks Lapacity             | N<br>N<br>U<br>UN – Unknown  (A) N<br>(B) N<br>(A) E SC<br>(B) W SC |
| 41. Year Constructed  42. Material Type  43. Crossing Skew  44. Number of Cells/Spans  ROAD OVER CULVERT  55. Existing Road Class 55a. Highway Classification 56. Operational Status  ROAD THROUGH CULVERT  64. Existing Road Class 64a. Highway Classification 65. Operational Status  E. TRAFFIC DATA  81. Legal Speed Limit  82. Route Designations  Transit  Truck  School  Bicycle  Sicycle  F. INSPECTIONS & APPRO 101. Date: June | B. CPS-PA 0° 1 300 - 2W OAT | 46. Total Width/Dia. 47. Max. Height 48. Culvert Length 49. Type/Depth of Fill 50. Culvert Floor  57. Surface Type 58. Platform Width 59. Surface Width 60. No. of Lanes  66. Opening Width 67. Surface Width 68. No. of Lanes 69. Median Type/Width  TRAFFIC COUNT 83. Year 84. AADT 85. DHV Factor 86. DHV 87. Trucks 88. Peak Directional Split 89. 10 Year Growth Factor | 5.0 m<br>2.0 m<br>18.0 m<br>E 0.8 m<br>EA<br>G<br>8.0 m<br>7.0 m<br>2.0 | 52. S<br>53. F<br>61. S<br>62. R<br>70. S<br>C<br>71. T<br>72. M<br>10 YE/<br>90. Y<br>91. A<br>92. D<br>93. D<br>94. T<br>95. C<br>96. 20 | Upstream Downstream oil Condition oundation Type  afety Curb/Sidewalk & turb Barrier toadside Safety  afety Curb/Sidewalk & turb Barrier raffic Barrier linimum Vertical Clearance AR TRAFFIC FORECAST ear ADT HV Factor HV rucks capacity 0 Year AADT | N<br>N<br>U<br>UN – Unknown  (A) N<br>(B) N<br>(A) E SC<br>(B) W SC |

Municipality: Township of Johnson
Structure Name: Sucker Creek Culvert, on Puddingstone Road

|  | VERT NEEDS   | DΛ        | TING         |               | J. TYPE & TIME OF IMPROVEMENT   |                   |
|--|--|-----------|--------------|---------------|---|-------------------|
| G. CUL\  | VEIXT INCLUS                                       | MCR       | PCR          | TIME OF NEED  | J. TYPE & TIME OF IMPROVEMENT   |                   |
| 111. Barre                                     | el   | 6         | 6            | ADEQ          | 141. Design Class   |                   |
|  | ndations   | 9         | 9            | ADEQ          | 142. Design Platform Width  | m                 |
|  | Components   | 0         | 0            | ADEQ          | 143. Material/Type  |                   |
|  | et Components                                      | 0         | 0            | ADEQ          | 144. Width/Diameter   | m                 |
|  | le rail/Barrier                                    | 3         | 4            | 1-5 yrs       | 145. Maximum Height   | m                 |
|  | ams/Waterways                                      | 6         | 6            | ADEQ          | 146. Culvert Length   | m                 |
| 110. Silea                                     | ams/waterways                                      | Ü         | O            | ADEQ          | 147. No. of Culverts  | 111               |
|  |  |           |              |               | 148. Depth of Fill  | m                 |
| II FIIN  | OTIONAL NEEDO                                      | F. Cartan | N.C. Carrier | TIME OF NEED  | ·   | m                 |
| H. FUNC  | CTIONAL NEEDS                                      | Existing  | Minimum      | TIME OF NEED  | 146. a b c d  | е                 |
| 5045   | 0.455  | Condition | Tolerable    |               | Type of Costing Time of   | Cost              |
|  | OVER   | 0.0       | 0.5          | 4050          | Improvement Category Quantity Improvement   | (\$000)           |
| 121. Platfo                                    |  | 8.0 m     | 6.5 m        | ADEQ          | A   |                   |
|  | el of Service                                      | A         | E            | ADEQ          | В   |                   |
| 123. Road                                      | dside Safety                                       | 3         | 3            | 1-5 yrs       | C   |                   |
|  |  |           |              |               | D   |                   |
|  |  |           |              |               | <u>E</u>  |                   |
|  |  |           |              |               | F   |                   |
|  |  |           |              |               | G   |                   |
|  |  |           |              |               | H   |                   |
|  |  |           |              |               |   |                   |
|  |  |           |              |               | J   |                   |
|  |  |           |              |               | K. IMPROVEMENT COST   | Cost (\$000)      |
|  |  |           |              |               | 151. Construction   | 0                 |
|  |  |           |              |               | 152. Approaches   | 0                 |
|  |  |           |              |               | 153. Detours  | 0                 |
|  |  |           |              |               | 154. Traffic Control/Protection   | 0                 |
|  |  |           |              |               | 155. Utilities  | 0                 |
| I. ENGI  | INEERING RECOMMEN                                  | IDATIONS  |              |               | 156. Other  | 0                 |
|  |  |           |              |               | 157. Contingencies 10%  | 0                 |
| 131. Culve                                     | ert Drawings                                       |           |              | UNK           | 158. Total Construction   | 0                 |
| 131a. Struc                                    | cture Drawing No.                                  |           |              |               | 159. Right of Way   | 0                 |
| 131b. Road                                     | d Drawing No.                                      |           |              |               | 160. Engineering Environmental Assessment (E/A) Study   | 0                 |
|  | 9  |           |              |               | 161. Engineering Design & Supervision   | 0                 |
| 132. Engir                                     | neering Investigations                             |           |              |               | 162. Total Project cost   | 0                 |
| 3  | 99   | Type      | Year         | Cost (\$000)  | 163. Eligibility for Subsidy  | EFS               |
|  | A  |           |              | (, ,          | 164. Non-subsidizable Costs   |                   |
|  | Ē  |           |              |               | Contributing  | Non-              |
|  | Č  |           |              |               | Agency  | Contrib.          |
|  |  |           |              |               |   |                   |
|  |  |           |              |               |   |                   |
|  | C  |           |              |               |   | Cost              |
|  |  |           |              |               |   |                   |
| 134. Single                                    | С  | 1         | m            | d -           |   |                   |
|  | E<br>le Posting                                    |           | m            | d -<br>t t t  |   |                   |
| 135. Evalu                                     | E  Ie Posting  uated Posting                       | 1         | m            | t t t         | A<br>B  |                   |
| 135. Evalu<br>Date                             | le Posting<br>uated Posting                        | 1         | m            | t t t<br>y m  | A<br>B<br>C   |                   |
| 135. Evalu<br>Date<br>136. Monit               | le Posting<br>uated Posting<br>itoring             | у         |              | t t t<br>y m  | A<br>B  |                   |
| 135. Evalu<br>Date<br>136. Monit               | le Posting<br>uated Posting                        | 1         | m<br>m       | t t t t y m m | A<br>B<br>C<br>D  |                   |
| 135. Evalu<br>Date<br>136. Monit               | le Posting<br>uated Posting<br>itoring             | у         |              | t t t<br>y m  | A B C D 165. Total Non-Subsidizable Cost  | Cost              |
| 135. Evalu<br>Date<br>136. Monit               | le Posting<br>uated Posting<br>itoring             | у         |              | t t t<br>y m  | A B C D  165. Total Non-Subsidizable Cost 166. Contributable Cost   | Cost 0            |
| 135. Evalu<br>Date<br>136. Monit               | le Posting<br>uated Posting<br>itoring             | у         |              | t t t<br>y m  | A B C D  165. Total Non-Subsidizable Cost 166. Contributable Cost 167. Municipal Percent of Contributable Cost                              | Cost<br>0<br>100% |
| 135. Evalu<br>Date<br>136. Monit               | le Posting<br>uated Posting<br>itoring             | у         |              | t t t<br>y m  | A B C D  165. Total Non-Subsidizable Cost 166. Contributable Cost   | Cost 0            |
| 135. Evalu<br>Date<br>136. Monit               | le Posting<br>uated Posting<br>itoring             | у         |              | t t t<br>y m  | A B C D  165. Total Non-Subsidizable Cost 166. Contributable Cost 167. Municipal Percent of Contributable Cost                              | Cost<br>0<br>100% |
| 135. Evalu<br>Date<br>136. Monit<br>137. Closu | le Posting<br>uated Posting<br>itoring<br>ure/Date | у         |              | t t t<br>y m  | A B C D  165. Total Non-Subsidizable Cost 166. Contributable Cost 167. Municipal Percent of Contributable Cost                              | Cost<br>0<br>100% |
| 135. Evalu<br>Date<br>136. Monit<br>137. Closu | le Posting<br>uated Posting<br>itoring             | у         |              | t t t<br>y m  | A B C D  165. Total Non-Subsidizable Cost 166. Contributable Cost 167. Municipal Percent of Contributable Cost                              | Cost<br>0<br>100% |
| 135. Evalu<br>Date<br>136. Monit<br>137. Closu | le Posting uated Posting itering ure/Date          | у         |              | t t t<br>y m  | A B C D  165. Total Non-Subsidizable Cost 166. Contributable Cost 167. Municipal Percent of Contributable Cost 168. Municipal Share of Cost | Cost<br>0<br>100% |

#### M. Inspection Notes

#### 191. Culvert No. 07, Sucker Culvert, Puddingstone Road - 2.1 km North of Government Road, Township of Johnson:

- Structure not posted with a load limit.
- Single (+/-5.0m) span corrugated plate steel open footing arch with approximately 0.8 m of gravel fill and a gravel roadway.
- Gravel roadway is in good condition with light washboard.
- Steel cable guiderail on timber posts is provided on the approaches and is in generally good condition. The cables were crossed at the southeast quadrant and a number of broken guiderail posts are causing the cables to be loose. The posts generally have wide splits and checks with minor decay. The approach 3 cable guiderail have buried end treatments.
- Rock protection is provided on both roadway embankments and is in good condition with a loss of rock armoring near the inlet of the culvert which has been pushed further into structure.
- Corrugated steel plate culvert is in good condition with light water staining of the culvert barrel at the water level..
- Water course is un-obstructed with no evidence of scour.

#### Recommendations

- Structure does not require posting with a load limit.
- Should repair guiderail cables and replace broken posts as part of regular maintenance. The guiderail posts should be checked seasonally for broken or severely decayed posts.
- Lost armoring stone at the culvert inlet should be replaced to protect the walls of the structure.

07

Culvert Photographs
2. Municipal Name/Code
3. Culvert Name
4. Road Name
5. Location

Township of Johnson Sucker Creek Culvert Puddingstone Road 2.1 km North of Government Road



LOOKING NORTH ACROSS STRUCTURE



WEST ELEVATION

07

Culvert Photographs
2. Municipal Name/Code
3. Culvert Name
4. Road Name
5. Location

Township of Johnson Sucker Creek Culvert Puddingstone Road 2.1 km North of Government Road



TYPICAL ROCK PROTECTION AND EMBANKMENT



LOOKING EAST THROUGH CULVERT BARREL

Culvert Photographs
2. Municipal Name/Code
3. Culvert Name
4. Road Name
5. Location

Township of Johnson Sucker Creek Culvert Puddingstone Road 2.1 km North of Government Road



LIGHT STAINING OF CULVERT BARREL AT WATERLINE AND LOSS OF ARMORING STONE AT INLET



BROKEN GUIDERAIL POST ALONG EAST GUIDERAIL

Culvert Photographs
2. Municipal Name/Code
3. Culvert Name
4. Road Name
5. Location

Township of Johnson Sucker Creek Culvert Puddingstone Road 2.1 km North of Government Road

Culvert No. MTO Site No. 6. 8.

07



LOOKING WEST UPSTREAM FROM STRUCTURE

Page 1 of 6

Culvert No. 08

## **MUNICIPAL CULVERT APPRAISAL**

| A. IDENTIFICATION   |   |                             |                                     |         |        |     | 6.         | Culvert No.                        |             | 08           |
|---|---|-----------------------------|-------------------------------------|---------|--------|-----|------------|------------------------------------|-------------|--------------|
| 1. Control Code   | 4-S-TP                                  |                             |                                     |         |        |     | 7.         | Road Section No.                   |             | 485          |
| 2. Municipal Name/Code  | Township of Johnson                     |                             |                                     |         |        |     | 8.         | MTO Site No.                       |             |              |
| <ol> <li>Culvert Name</li> <li>Road Name</li> </ol>                           | Sucker Creek Culvert<br>MacDonald Drive |                             |                                     |         |        |     |            |                                    |             |              |
| 5. Location   |   | 17                          |                                     |         |        |     |            |                                    |             |              |
|   | 0.4 km North of Highway                 | 17                          |                                     |         |        |     | 10         | Crossing Type                      |             | O-WAT        |
| <ol> <li>Roadside Environment</li> <li>Posting</li> </ol>                     | R<br>t t t                              | 13. Posti                   | na Cian                             | t       |        |     | 16.<br>17. |                                    |             | Unknown      |
| 11. Bylaw No.   |   |                             | Clearance Sign                      | ι       |        |     | 17.        | Culvert Value                      | erway       | \$350,000    |
| 12. Bylaw Expiry Date   | v                                       |                             | ow Structure Sign                   |         |        |     |            | Latitude                           |             | \$350,000    |
| 12. Bylaw Expiry Date   | y m                                     | io. Naii                    | w Structure Sign                    |         |        |     |            | Longitude                          |             |              |
|   |   |                             |                                     |         |        |     | 20.        | Longitude                          |             |              |
| B. RAILWAY OVERPASS/UNDE  |   |                             |                                     |         |        |     |            |                                    |             |              |
| <ol> <li>Railway Level Crossing Numb</li> <li>Railway Company</li> </ol>      | per                                     |                             |                                     |         |        | 27. | Original   | Board Order Number                 | Date y      | m d          |
| 23. Railway Subdivision   |   |                             |                                     |         |        | 28. | Current    | Board Order Number                 | Date y      | m d          |
| 24. Subdivision Mileage   |   |                             |                                     |         |        |     |            |                                    |             |              |
| 25. Transport Canada Crossing N   | lo.                                     |                             |                                     |         |        | 29. | Seniority  | 1                                  |             |              |
| 26. Number of Tracks  |   |                             |                                     |         |        |     |            |                                    |             |              |
| C. JURISDICTION   |   |                             |                                     |         |        |     |            | 38. Local/Area Municip             | ality (Uppe | r Tier Only) |
| 31. Ownership O   | A MUN                                   |                             |                                     |         |        |     |            | A.                                 |             |              |
|   | В                                       | <ol><li>Bound</li></ol>     | ary Bridge/Culve                    | rt      | N      |     |            | B.                                 |             |              |
| <ol><li>Heritage Status</li></ol>   | R                                       |                             |                                     |         |        |     |            | 39. Maintenance Area               |             |              |
| <ol><li>Special Designation</li></ol>   | CBL                                     |                             | ent Municipality N                  | ame/No  |        |     |            | 40. Municipal Ward                 |             |              |
| <ol> <li>Suburban Roads Commission</li> </ol>                                 | 1                                       | 37. Adjace                  | ent Culvert No.                     |         |        |     |            |                                    |             |              |
| D. EXISTING CONDITIONS  |   |                             |                                     |         |        |     |            |                                    |             |              |
| GENERAL   |   | 45. Cell/Spa                | n Width/Dia                         |         | 5.5 m  |     | 51 F       | nd Treatment                       | <u>A</u> E  | 3 <u>C</u> D |
| 41. Year Constructed  | A. 2000                                 | 46. Total W                 |                                     |         | 5.5 m  |     | ٠ =        | Upstream                           | N I         |              |
| Tr. Todi Conditactod  | В.                                      | 47. Max. He                 |                                     |         | 2.1 m  |     |            | Downstream                         | N           |              |
| 42. Material Type   | CPS-PA                                  | 48. Culvert                 |                                     |         | 14.3 m |     | 52 S       | Soil Condition                     | Ü           |              |
| 43. Crossing Skew   | 0°                                      |                             | epth of Fill                        | Е       | 0.7 m  |     |            | oundation Type                     | -           | nown         |
| 44. Number of Cells/Spans   | 1                                       | 50. Culvert                 |                                     | _       | EA     |     |            | oundation Typo                     | 0           |              |
| DOAD OVER OUR VERT  |   |                             |                                     |         |        |     |            |                                    |             |              |
| ROAD OVER CULVERT   |   | 57. Surface                 | Typo                                |         | G      |     | 61 9       | afetv Curb/Sidewalk &              | (A) N       |              |
| 55. Existing Road Class   | 300                                     | 58. Platform                |                                     |         | 6.0 m  |     |            | Curb Barrier                       | (A) N       |              |
| 55a. Highway Classification   | 300                                     | 59. Surface                 |                                     |         | 5.0 m  |     |            | loadside Safety                    | (A) N       | NO           |
| 56. Operational Status  | 2W OAT                                  | 60. No. of L                |                                     |         | 2      |     | 02. K      | toauside Salety                    | (A) N       | NO           |
| 50. Operational Status  | ZW OAT                                  | 00. NO. 01 L                | 11163                               |         |        |     |            |                                    | (b) 0       | 110          |
| ROAD THROUGH CULVERT  |   | 00 0                        | \ \ \ \ : -  \   -                  |         |        |     | 70 0       | -f-t- O /O " 0                     |             |              |
| 64 Eviating Bood Class  |   | 66. Opening 67. Surface     |                                     |         |        |     |            | afety Curb/Sidewalk & Curb Barrier |             |              |
| <ul><li>64. Existing Road Class</li><li>64a. Highway Classification</li></ul> |   | 67. Surface<br>68. No. of L |                                     |         |        |     |            | raffic Barrier                     |             |              |
|   |   |                             |                                     |         |        |     |            |                                    |             |              |
| 65. Operational Status  |   | 69. Median                  | Type/Width                          |         |        |     | 12. IV     | linimum Vertical Clearan           | LE          |              |
| E. TRAFFIC DATA   |   | TRAFFIC CC                  | UNT                                 |         |        |     | 10 YE      | AR TRAFFIC FORECAS                 | Т           |              |
| 81. Legal Speed Limit   |   | 83. Year                    |                                     |         |        |     | 90. Y      | 'ear                               |             |              |
|   |   | 84. AADT                    |                                     |         |        |     | 91. A      | ADT                                |             |              |
| 82. Route Designations  |   | 85. DHV Fa                  | ctor                                |         |        |     | 92. D      | HV Factor                          |             |              |
| -   |   | 86. DHV                     |                                     |         |        |     | 93. D      |                                    |             |              |
| Transit □ Truck □   |   | 87. Trucks                  |                                     |         |        |     | 94. T      | rucks                              |             |              |
| School  Bicycle   |   | 88. Peak Di                 | rectional Split                     |         |        |     | 95. C      | apacity                            |             |              |
|   |   | 89. 10 Year                 | Growth Factor                       |         |        |     | 96. 2      | 0 Year AADT                        |             |              |
| F. INSPECTIONS & APPROVA  | u s                                     |                             |                                     |         |        |     |            |                                    |             |              |
|   |   | 100 Drofoo                  | -:                                  | lomo    |        |     | M Kirk     | oy, P. Eng.                        |             |              |
| 101. Date: .lune 2  | 2010                                    | 102. Profes                 | sional Engineer i                   | vallie. |        |     |            |                                    |             |              |
| <ol> <li>Date: June 2,</li> <li>Inspected By: M. Kirby</li> </ol>             | & S. Milne                              |                             | sional Engineer N<br>pality/Company | varrie  |        |     |            | n Engineering Inc.                 |             |              |

Municipality: Structure Name: Township of Johnson Sucker Creek Culvert, MacDonald Drive

| G.  | CULVERT NEEDS  | RAT                               | TING   |  | J  | J.   | TYPE & TIME OF IMPROVEMENT  |                   |   |  |
|---|--|-----------------------------------|--|--|--|--|---|-------------------|---|--|
| 111.  | Barrel Foundations Inlet Components Outlet Components Guide rail/Barrier Streams/Waterways  FUNCTIONAL NEEDS       | MCR<br>6<br>9<br>0<br>0<br>5<br>5 | PCR<br>6<br>9<br>0<br>0<br>6<br>Minimum<br>Tolerable | TIME OF NEI ADEQ ADEQ ADEQ ADEQ NOW 6-10 yrs | ED 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | 141.<br>142.<br>143.<br>144.<br>145.<br>146. | Design Class Design Platform Width Material/Type Width/Diameter Maximum Height Culvert Length No. of Culverts Depth of Fill  a b        | С                 | RSL<br>9.0<br>CPS-PR<br>2.5<br>2.5<br>22.0<br>1<br>1.5<br>d | m<br>m<br>m<br>m                       |
| 121.  | ROAD OVER Platform Width Level of Service Roadside Safety  | Condition<br>6.0 m<br>A<br>-      | 6.5 m<br>E<br>3                                      | NOW<br>ADEQ<br>ADEQ                          | A<br>E<br>C<br>C<br>E<br>F<br>C<br>C     |  | Type of Costing<br>Improvement Category<br>IAG PC   | Quantity<br>4     | Time of<br>Improvement<br>NOW                               | Cost<br>(\$000)<br>40                  |
|   | ENGINEEDING DEGGLAM  | -NDATIONO                         |  |  | 1<br>1<br>1<br>1                         | 152.<br>153.<br>154.<br>155.                 | IMPROVEMENT COST Construction Approaches Detours Traffic Control/Protection Utilities Other   |                   |   | Cost (\$000)<br>40<br>0<br>0<br>0<br>0 |
| 131a.   | ENGINEERING RECOMME<br>Culvert Drawings<br>Structure Drawing No.<br>Road Drawing No.<br>Engineering Investigations | ENDATIONS                         |  | UNK  | 1<br>1<br>1<br>1<br>1                    | 157.<br>158.<br>159.<br>160.<br>161.         | Contingencies 10% Total Construction Right of Way Engineering Environmental Assessn Engineering Design & Supervision Total Project cost | nent (E/A) Stud   | ly  | 4<br>44<br>0<br>0<br>8<br>52           |
|   |  | Type<br>A<br>B<br>C<br>D          | Year   | Cost (\$000)                                 |  | 163.<br>164.                                 | Eligibility for Subsidy<br>Non-subsidizable Costs   | Contribu<br>Agenc |   | Non-<br>Contrib.<br>Cost               |
| 135.<br>136.  | Single Posting<br>Evaluated Posting<br>Date<br>Monitoring<br>Closure/Date  | у                                 | m<br>m   | d -<br>t t<br>y m                            | t<br>m                                   |  | A<br>B<br>C<br>D  |                   |   |  |
| 137.  | Ciosule/Date   | У                                 | ""   | u -  | 1  | 166.<br>167.                                 | Total Non-Subsidizable Cost<br>Contributable Cost<br>Municipal Percent of Contributable C<br>Municipal Share of Cost                    | Cost              |   | 52<br>100%<br>52                       |
| L.<br>ENGII<br>171.<br>172.<br>173.<br>174.<br>175. | HISTORY<br>NEERING INVESTIGATION:  | S                                 | Туре   | Year   | CC<br>18<br>18<br>18<br>18<br>18         | 31.<br>32.<br>33.                            | RUCTION IMPROVEMENTS  |                   | Туре  | Year                                   |

#### Inspection Notes

#### 191. Culvert No. 08, Sucker Creek Culvert, MacDonald Drive - 0.40 km North of Highway 17, Township of Johnson

- Structure is not posted with a load limit.
- Single span (± 5.5 m) corrugated plate steel plate arch culvert with approximately 0.7 m of gravel fill and a gravel roadway.
- Gravel roadway is in good condition.
- No traffic protection is provided on the approaches or across the structure.
- Vegetated and rock protected roadway embankments are in good condition.
- Corrugated plate steel pipe is in good condition. Light surface corrosion, minor staining and light blistering was noted on the culvert barrel at the water level.
- Water course is generally un-obstructed with no evidence of scour. Some minor wood debris was caught at culvert inlet on the creek bank vegetation and also on the page wire fencing immediately downstream of culvert.

#### Recommendations

- Structure does not require posting with a load limit.
- The minor wood and grass debris obstructing the waterway, both upstream and downstream should be removed as part of regular maintenance.
- Traffic protection should be installed on the approaches and over the structure.

08

Culvert Photographs
2. Municipal Name/Code
3. Culvert Name
4. Road Name
5. Location

Township of Johnson Sucker Creek Culvert MacDonald Drive 0.40 km North of Highway 17



LOOKING WEST ACROSS STRUCTURE



**SOUTH ELEVATION** 

08

Culvert Photographs
2. Municipal Name/Code
3. Culvert Name
4. Road Name
5. Location

Township of Johnson Sucker Creek Culvert MacDonald Drive 0.40 km North of Highway 17



LOOKING NORTH UPSTREAM FROM STRUCTURE



TYPICAL ROCK PROTECTION ON ROADWAY EMBANKMENT

08

Culvert Photographs
2. Municipal Name/Code
3. Culvert Name
4. Road Name
5. Location

Township of Johnson Sucker Creek Culvert MacDonald Drive 0.40 km North of Highway 17

Culvert No. MTO Site No.



LOOKING NORTH THROUGH BARREL



LIGHT STAINING AND BLISTERING OF COATING AT WATERLINE - SOUTHEAST QUADRANT

# Appendix B

## **Municipal Bridge Inventory**

## Appendix B - Township of Johnson 2016 Municipal Bridge & Culvert Inventory

| Bridge<br>No. | Priority<br>Ranking | Bridge Name                               | Bridge Location   | Crossin<br>g Type | Year<br>of<br>Const | Bridge<br>Value<br>(\$1,000's) | Bridge<br>Type | No. of<br>Spans | Deck<br>Length<br>(m) | Deck<br>Width<br>(m) | Eng Invest<br>Type/Year/<br>\$1,000'S | Type of<br>Improv                                | Co<br>st<br>Cat            | Time of<br>Improv                                    | Constrn<br>Cost in<br>\$1,000's      | Total<br>Proj.Cost<br>\$1,000's |
|---------------|---------------------|---|---|-------------------|---------------------|--------------------------------|----------------|-----------------|-----------------------|----------------------|---------------------------------------|--|----------------------------|--|--------------------------------------|---------------------------------|
| 1             | 9                   | Shewfelt Creek<br>Bridge (at<br>Oikari's) | Gordon Lake Road - 0.9km<br>North of Hwy. 17              | O-WAT             | 2006                | 500                            | S-EA-F         | 1               | 6.2                   | 10.3                 | -                                     | IAG  | PC                         | 1-5 yrs  | 10                                   | 12.5                            |
| 2             | 4                   | Shewfelt Creek (at<br>Grasley's)          | Fisher Road – 3.3km North of Hwy. 17                      | O-WAT             | 1950                | 350                            | C-TB-F         | 1               | 7.0                   | 5.1                  | -                                     | RSB<br>RSP<br>IAG                                | PC<br>PC<br>PC             | 1-5 yrs<br>1-5 yrs<br>1-5 yrs                        | 15<br>10<br>40                       | 81                              |
| 3             | 5                   | Stobie Creek<br>Bridge                    | Government Road – 10m<br>West of Gordon Lake Road         | O-WAT             | 1937                | 450                            | C-TB-F         | 1               | 10.1                  | 5.7                  | -                                     | RSB<br>IAG                                       | PC<br>PC                   | 1-5 yrs<br>1-5 yrs                                   | 30<br>30                             | 76                              |
| 4             | 1                   | Suddaby Creek<br>Bridge                   | Old Mill Road - 0.2km North<br>of Gordon Lake Road        | O-WAT             | 1913                | 750                            | С-ТВ-С         | 3               | 21.3                  | 5.3                  | DCS/2017/<br>10<br>RRA/2017/<br>5     | RIR<br>IAG<br>EIR<br>RSB/RSP<br>OWP<br>Or<br>RSL | PC<br>PC<br>PC<br>PC<br>PC | NOW<br>1-5 yrs<br>1-5 yrs<br>1-5 yrs<br>1-5 yrs      | 25<br>40<br>10<br>200<br>25<br>1,000 | 370                             |
| 5             | 10                  | Suddaby Park<br>Bridge                    | Gordon Lake Road - 0.3km<br>North of Suddaby Park<br>Road | O-WAT             | 2009                | 500                            | P-BC-F         | 1               | 5.3                   | 13.0                 | -                                     | -  | -                          | -  | -                                    | -                               |
| 6             | 3                   | Black Creek<br>Bridge                     | Gordon Lake Road – 80m<br>South of Suddaby Park<br>Road   | O-WAT             | 1930                | 375                            | C-TB-F         | 1               | 7.0                   | 5.5                  | -                                     | RIR<br>RSP<br>CDS<br>IAG<br>RSL                  | PC<br>PC<br>PC<br>PC<br>PC | 1-5 yrs<br>1-5 yrs<br>1-5 yrs<br>1-5 yrs<br>6-10 yrs | 10<br>15<br>15<br>40<br>400          | 103**                           |

Note: Total Municipal Bridge Value (\$1,000's) = \$2,925
Total Municipal Bridge Construction Needs (\$1,000's) = \$642.5

\* The engineering investigation(s) recommended will provide more information on the condition of non-visible primary elements and will determine the associated timeframe for repairs and/or replacement.

\*\* This project cost is for the rehabilitation costs. Additional project costs would be required during total replacement of the structure.

| Culvert<br>No. | Priority<br>Ranking | Culvert Name                | Culvert Location  | Crossin<br>g Type | Year<br>of<br>Const | Culvert<br>Value<br>(\$1,000's) | Culvert<br>Type | No. of<br>Spans | Culvert<br>Length<br>(m) | Culvert<br>Width<br>(m) | Eng Invest<br>Type/Year/<br>\$1,000'S | Type of<br>Improv | Cost<br>Cat | Time of<br>Improv | Constrn<br>Cost in<br>\$1,000's | Total<br>Proj.Cost<br>\$1,000's |
|----------------|---------------------|-----------------------------|---|-------------------|---------------------|---------------------------------|-----------------|-----------------|--------------------------|-------------------------|---------------------------------------|-------------------|-------------|-------------------|---------------------------------|---------------------------------|
| 1              | -                   | Desbarats River<br>Culvert  | Government Road – 2.0 km<br>West of Gordon Lake Road      |                   |                     |                                 |                 | New             | Culvert, not             | inspected               | on township's I                       | equest            |             |                   |                                 |                                 |
| 2              | 2                   | Sucker Creek<br>Culvert     | Government Road – 1.9km<br>West of Lake Huron Drive       | O-WAT             | 1980                | 300                             | CPS-<br>PR      | 1               | 20                       | 3.0                     | C/S / 2016<br>/ 10                    | IAG<br>RSL        | PC<br>PC    | NOW<br>1-5 yrs    | 40<br>300                       | 434                             |
| 3              | 7                   | Sucker Creek<br>(Near Cass) | Kensington Point Road -<br>0.4km South of Hwy. 17         | O-WAT             | 1980                | 400                             | CPS-<br>PR      | 1               | 23.5                     | 5.2                     | C/S / 2016<br>/ 10                    | IAG               | PC          | NOW               | 40                              | 60                              |
| 4              | -                   | Desbarats River<br>Culvert  | Boyer Drive – 30m South of<br>Hwy. 17                     | O-WAT             | 2008                | 450                             | PCC-<br>BOX     | 1               | 17.7                     | 5.6                     |                                       | Not inspe         | cted as p   | per township      | s request                       |                                 |
| 5              | 6                   | Government Road<br>Culvert  | Government Road – 0.4km<br>East of Fisher Road            | O-WAT             | 1980                | 400                             | CPS-<br>PR      | 1               | 29.0                     | 3.6                     | -                                     | IAG<br>RSL        | PC<br>PC    | NOW<br>6-10 yrs   | 40<br>400                       | 554                             |
| 6              |                     |                             |   |                   |                     | Does not                        | exist as par    | t of the asset  | managemen                | nt plan                 |                                       |                   |             |                   |                                 |                                 |
| 7              | 11                  | Sucker Creek<br>Culvert     | Puddingstone Road – 2.1<br>km North of Government<br>Road | O-WAT             | 2000                | 400                             | CPS-<br>PA      | 1               | 18.0                     | 5.0                     | -                                     | -                 | -           | -                 | -                               | -                               |
| 8              | 8                   | Sucker Creek<br>Culvert     | MacDonald Drive – 0.4km<br>North of Hwy. 17               | O-WAT             | 2000                | 350                             | CPS-<br>PA      | 1               | 14.3                     | 5.5                     | -                                     | IAG               | PC          | NOW               | 40                              | 52                              |

Note: Total Municipal Culvert Value (\$1,000's) = \$1,850

Total Municipal Culvert Construction Needs (\$1,000's) = \*\*\*\$1,100

\*\*\* The engineering investigation(s) recommended will provide more information on the condition of non-visible primary elements and will determine the associated timeframe for repairs and/or replacement.