

REPORT OF

2018 Biennial Bridge and Culvert Inspection

FOR:

Township of Johnson

PREPARED BY:

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DATE:

July 27, 2018

STEM Project No:

18081



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1.0 INTRODUCTION

STEM Engineering Group was retrained by Johnson Township to complete a visual inspection of several structures as part of the township's responsibility to ensure that their structures are kept in a safe condition and in good repair. This is required to be completed under the Highway Traffic Act and the Bridge Act that came into effect April 1st, 1997. The inspection is to be completed every 2 years in accordance to the Ontario Structural Inspection Manual.

The township is also responsible for passing any load limit bylaws required on their structures and requires engineering recommendations and the duration that the limit is valid for. The recommendations must be stamped by two engineers.

The following report prioritizes and recommends required maintenance work, repair work, and or replacement work for each structure.

2.0 SCOPE OF WORK

The visual inspection was conducted on five bridges and six culverts at the request of the township. The inspection included:

- Visual inspection of any deficiencies
- Photographic inventory of the structures, deficiencies and appearance.
- An individual assessment of each structure. This includes recommendations for improvements and estimated costs to maintain the structure's acceptable performance level.
- Ranking of the structure's needs.

3.0 STRUCTURES APPRAISALS FOR MAINTENANCE, REPAIR, AND REPLACEMENT REQUIRMENTS

For the 2018 biennial bridge and culvert inspection a total of five bridges and six culverts were inspected. Refer to Appendix B for the Municipal Bridge Appraisal Sheets for a summary of the inspections completed. They include required maintenance, repairs, and replacement recommendations for each structure.

In general we have found the following:

- Bridges and culverts can remain at current load postings.
- Any structures which do not have guiderails including approach guiderails should installed in the next 5 years.
- Any guiderails with wooden posts should be inspected yearly for decay or damage and replaced regularly.
- Bridge B4, Suddaby Creek Bridge, requires extensive rehabilitation to maintain an acceptable level of performance. The current load limit is 10 tonnes, and cannot be increased until a load evaluation and rehabilitation work is complete.

Of the structures inspected, one bridge and two culverts require further investigation. The purpose is to confirm the condition of elements which are not visible, or have limited accessibilities, but were deemed to show signs of degradation. Further investigations would provide the information required to determine the best course of action between rehabilitation and replacement of the structure.

The following is a list of the required further Engineering Investigations:

| <u>Bridge</u> | Recommendations | Cost (\$1000) |
|--|--|---------------------|
| B4 Suddaby Creek Bridge: | Deck Condition Survey Rehabilitation/Replacement Analysis | 10 5 |
| Culvert C2 Sucker Creek Culvert Government Road | Recommendations Condition survey of Barrel | Cost (\$1000) 10 |
| C3 Sucker Creek Culvert Kensington Point Road | Condition survey of Barrel | 10 |

4.0 Construction Needs Summary

The following Table 1 is a summary of the total construction and rehabilitation requirements based on the 2018 biennial inspections. For the 10-year plan the total estimate is \$1,295,000. Of this total, \$185,000 is required for immediate needs, and an additional \$710,000 for the 1-5 year needs. These estimates are based on the visual inspections completed and some could be moved to the 6-10 year forecast depending on the results of the more detailed studies regarding the Suddaby Creek Bridge deck condition survey and the barrel condition survey of the Sucker Creek Culverts on Government Road and Kensington Point Road. Table 1 does not include additional costs for contingencies and engineering. These additional costs can be found in Appendix C for each structure in this report.



| Table 1: 0 | Construction and | Rehabilitation | n Summary (\$1 | 000) | |
|---|--------------------|-------------------|----------------|--------------------|-------|
| Bridge/Culvert | Immediate Needs | 1-5 Year Needs | Sub Total | 6-10 Year Needs | Total |
| B1 - Shewfelt Creek Bridge Gordon Lake Rd. | - | 10 | 10 | - | 10 |
| B2 - Shewfelt Creek Fisher Side Road | - | 65 | 65 | - | 65 |
| B3 - Stobie Creek Bridge Government Road | - | 60 | 60 | - | 60 |
| B4 Suddaby Creek Bridge Old Mill Road | 25 | 275 | 300 | - | 300 |
| B5 - Suddaby Creek Bridge Gordon Lake Road by park | - | - | - | - | - |
| B6 Black Creek Bridge (New Bridge Summer of 2018) | - | - | - | - | - |
| Total Bridge | 25 | 410 | 435 | 0 | 435 |
| C1 - Desbarats River Culvert Government Road | - | - | - | - | - |
| C2 Sucker Creek Culvert Government Road (Dump) | 40 | 300 | 340 | - | 340 |
| C3 - Sucker Creek Culvert Kensington Point Road | 40 | - | 40 | - | 40 |
| C5 Government Road Culvert East of Fisher Road | 40 | - | 40 | 400 | 440 |
| C7 - Sucker Creek Culver Puddingston Road | - | - | - | - | - |
| C8 Sucker Creek Culvert Macdonald Drive | 40 | - | 40 | - | 40 |
| Total Culvert | 160 | 300 | 460 | 400 | 860 |
| Total Estimate | 185 | 710 | 895 | 400 | 1295 |

5.0 Maintenance of Structures

Normal maintenance of the structures was not included in the cost summarized in Table 1. Items included in maintenance of the structures would be: trimming of vegetation from around hazard markers, tightening nuts and bolts, cleaning of bridge deck, removing obstructions from the stream, repairing and/or replacing any wooden guiderail posts and offset blocks, patching and/or repairing bridge deck. These items were deemed to be work the township can complete with their own forces. See Appendix B for a summary of maintenance work to be completed. Any costs associated with maintenance work the township cannot complete with their own work force should be moved to Table 1 for the respective bridge or culvert.



6.0 Conclusions

The 2018 Biennial Bridge Inspections were completed for all bridges and culverts within the township that required inspections. The results of this report gives reliable and current information which the township can use to implement a maintenance, rehabilitation, and/or replacement program.

The township's Bridge Management Plan will require updating yearly to reflect the previous year's project maintenance, rehabilitation, and replacement costs.

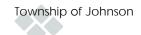
The bridge and culverts should be re-inspected by a qualified engineer every two years in accordance with the legislated Requirements.



Appendix A 2018 MUNICIPAL MAINTENANCE OF STRUCTURES SUMMARY

| | Appendix A Maintenance Requirements - 2018 (Johnson Township) | | | | | | | | | | | | |
|-----------|--|--|--|--|--|--|--|--|--|--|--|--|--|
| Structure | Maintena Location | nce Requirements - 2018 (Johnson Township) Maintenance Requirements | | | | | | | | | | | |
| No. | | 1 1 1 1 1 1 1 1 1 1 1 1 | | | | | | | | | | | |
| | | Vegatation obstructing the hazard markers should be trimmed or removed. | | | | | | | | | | | |
| В1 | Gordon Lake Road - 0.9km North of Hwy. 17 | 2. Loose nuts on the base of the guiderail plates on the east side and the loose bolt in the steel arch culvert must be tightened. | | | | | | | | | | | |
| | | 3. Repairs to the settlement of the shouldering behind the gabion baskets in the northwest quadrant should be completed. | | | | | | | | | | | |
| | Fisher Road - 3.3km | Excessive gravel build up on bridge deck and at railings should be removed and the deck drains unplugged. | | | | | | | | | | | |
| B2 | North of Hwy. 17 | 2. Leaning or bent hazard signs should be straightened. | | | | | | | | | | | |
| | | Broken or rotated offset blocks on the north railing should be replaced and/or straightened. | | | | | | | | | | | |
| | Government Road 10m West of Gordon Lake Road | 2. Cut guiderail in the southwest section should be replaced. | | | | | | | | | | | |
| | | 3. Minor erosion at the southeast quadrant should be restored and stabilized. | | | | | | | | | | | |
| В3 | | 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 guidrails | | | | | | | | | | | |
| | | 6. The gap under the south railing guiderail base plate hould have metal shims installed to provide full contact of the baseplate with concrete headwall/curb. | | | | | | | | | | | |
| B4 | Old Mill Road - 0.2km North of Gordon Lake | Remove excess gravel/debris built up on bridge deck and curb/railings. | | | | | | | | | | | |
| | Road | Remove small trees that are growing under, immediately adjacent to bridge beams or on the abutment embankments. | | | | | | | | | | | |
| B5 | Gordon Lake Road - 0.5km North of | Monitor transverse cracking in surface treated roadway and rout and seal or patch as required. | | | | | | | | | | | |
| 50 | Suddaby Park Road | Replace the missing bolts in the guiderail at all four quadrants to connect flex beam to the posts. | | | | | | | | | | | |
| В6 | Gordon Lake Road - 80km South of Suddaby Park Road | New bridge 2018 not inspected at request of Township | | | | | | | | | | | |
| C1 | Government Road - 2.0km West of Gordon Lake Road | Straighten wooden offset blocks. | | | | | | | | | | | |

| Structure No. | Location | Maintenance Requirements |
|------------------|--|---|
| INO. | | 1. Should soal or patch gracks in surface treatment to provent further |
| | Governemnt Road - 1.9km West of Lake | Should seal or patch cracks in surface treatment to prevent further damage to wearing surface at the structure. |
| C2 | | Depressions on either side of culvert should be patched to provide smooth roadway over structure |
| | Huron Drive | 3. Remove beaver dam within the culvert. |
| | | 4. Erosion on the north embankments and scour under the pipe inlet should be repaired and stabilized/protected |
| C3 | Kensington Point Road - 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 |
| | | Roadway should be graded to remove washboard in gravel wearing surface |
| | Government Roac - | 2. The missing parging at the opened seams should be repaired |
| C5 | 0.4km East of Fisher Road | The embankment at and/or under the culvert inlet should be sealed to promote water flow through the culvert and not underneath it |
| | | 4. Monitor bulging of culvert barrel at the centreline of the roadway and contact STEM Engineering if cracks develop. |
| C7 | Puddingstone Road - 2.1km North of | Replace broken or decayed guiderail posts |
| | Governemtn Road | Lost armoring stone at the culvert inlet should be replaced. |
| C8 | MacDonald Drive - 0.4km North of Hwy. 17 | Remove any debris present upsteam of downstream of the culvert as part of regular maintenance. |



Appendix B 2018 MUNICIPAL BRIDGE APPRAISAL SHEETS

Abbreviations Used

O-WAT Over Waterway
O-RWY Over Railway

DCS Deck Condition Survey
LCE Load Capacity Evaluation
C/S Condition Study/Survey

RRA Rehabilitation / Replacement Analysis

REB Remove Existing Bridge
RBC Replace Bridge with Culvert
RSL Replace Bridge, Same Location

NCE New Culvert

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 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

CSS Coating Structural Steel
CSR Coating Steel Railings

EIR Embankment Improvements/Rehabilitation

C/I Channel Improvements

IAG Installation of Approach Guiderail

OTH Other Improvements
PC Preliminary Cost Estimate

| A. IDENTIFIC | ATION | | | | | | | | | | | | | | | | | | Т | |
|----------------|-------------------------------|---------------|-----------|--------|---------------------|----------------------------|-----|--------------|---------|--------|-----------|------------|-----------------|---------|-------|-----------------|-----------|------------|-----|--------|
| Bridge Name | 2 | Shewfelt Cre | ek Bridge | at Oik | a ri 's | | | | Brid | dge | No.: | | | | | В1 | | | | |
| Road Name: | | Gordon Lake | Road | | | | | | Roa | ad S | e cti | on | .: | | | 250 | | | | |
| Location: | | .90 km North | of Highwa | y 17 | | | | | МТ | O Si | te N | o.: | | | 38 | S-189 | | | Т | |
| Roadside En | ıv.: | R | | Posti | ing Sig | n: | t | t t | | С | rossi | ing | g Type: | | | | O-W | AT | | |
| Posting: | | ttt | | Low | Clearn | c Sign: | | | | F | eder | al | Nav. Wa | terw | /a y: | | Unkr | nown | | |
| Bylaw No.: | | | | Easti | ing: | | | | | В | ridge | e V | alue: | | | | \$ | 500,000.00 |) | |
| Bylaw Exp. D | ate: | y m | | Nortl | hling: | | | | | 0 | ld IE |) : | | | | | | | | |
| B. RAILWAY | OVER | PASS/UNDE | RPASS | | | | | | | | | Г | | | Т | | | | Т | |
| Railway Lev | el Cros | ssing Numbe | r: | | | | | | | Ori | gina | ΙB | oard Or | der | Nun | nber: | | | | |
| Railway Con | npany | | | | | | | | | Dat | | | | | | | | | | |
| Railway Sub | divisi | on: | | | | | | | | Cur | rent | Вс | oard Ord | ler N | um | ber: | | | | |
| Subdivision | Milea | ge: | | | | | | | | Dat | :e: | | | | | | | | | |
| Transport Ca | anada | Crossing No | : | | | | | | | Sen | iori | ty: | | | | | | | | |
| Number of T | Γra cks | | | | | | | | | | | İ | | | | | | | | |
| C. JURISDICTI | ION | | - | | | - | | | | | | | | | | | | | | |
| Owner: | | O A. MUN | | Speci | al Des | ignatio | on | NSD | | | | Mı | unicA: | | | | | | | |
| Owner Share | : | | | - | gnatio | _ | | | | \top | | | unicB: | | | | | | | |
| Shared: | | | | | | idge No | o.: | | | | | Pa | trol: | | | | | | | |
| Shared With | : | | | | | | | | | | | | | | | | | | | |
| Heritage Sta | tus: | R | | | | | | | | | | | | | | | | | | |
| D. EXISTING | CONDI | TIONS | | | | | | | | | | T | | | | | | | | |
| Substructure | Year: | 2006 | | Span | Lengt | h.: | | 6.2m | | | | Lo | ongitudi | an Jo | oint | s: | | | 0 | |
| Supers truct \ | rear: | | | Deck | Туре | | | ОТ | | | | Tr | ra ns ve rs | e Joi | nts | : | | | 0 | |
| Bridge Type: | | S-EA-F | | Deck | Lengt | h | | 6.2m | | | | N | umbero | f Bea | arin | gs: | | | 0 | |
| Cossing Skev | w: | 0 | | Deck | Width | 1 | | 10.3m | | | | Sc | oil Cond | ition | : | | | | U | |
| No. of Spans | : | 1 | | Deck | Area | | | 64.0m2 | | | | A | butment | /Fdn | Тур | oe: | | Open - L | JΝ | |
| | | 0.45.07.55.00 | NDCE. | | | | | | | | | | | | | | | | | |
| Existing Roa | | OAD OVER BE | RIDGE | Trave | ol Doc | « Width | | 7.1m | 3,0,0,0 | | | | a fe ty Cur | rh : | | | 3,0,0,0,0 | (A) | NI | |
| Operational | | | | _ | of Lane | | ١. | 2 | | | | | dewalk | | Cur | h· | | (A) | | |
| Wearing Sur | | A | | | | oe/Wid | lth | | ads | ide | Safe | | Barrie | | | | ngs | | FB | |
| ~~~~~~ | | DAD UNDER B | RIDGE | ~~~~ | ~~~~ | ~~~~ | ~~ | ~~~~~~~ | ~~~ | ~~~ | ~~~~ | ~~ | ~~~~~ | ~~~ | ~~~ | ~~~~ | ~~~~ | ~~~~~ | ~~~ | ~~~~~~ |
| Existing Roa | d Class | s: | | No. c | of Lane | s: | | | | | | Tr | raffic Ba | rri e r | | | | | | |
| Operation St | atus: | | | Med | ian Ty _l | oe/Wid | lth | : | | | | M | lin Verti | cal C | lea | rance | | | | |
| Opening Wid | dth: | | | Safe | ty Curb | : | | Α | | | | | | | Ш | | | | | |
| Surface Widt | th: | | | Side | walk a | nd Cur | b: | В | | | | | - | | Н | | | | _ | |
| | | | 1 | | | | | | | _ | | _ | | | | | | | | |
| E. TRAFFIC D | | | | | | | | | | _ | _ | | | | | | | | _ | |
| Legal Speed | | | | | | Count | | | + | | | | <u>Year Tra</u> | ffic | For | <u>e ca s t</u> | | | H | |
| Route Desig | | | | | Year: | | | | + | | | e a | | | | | - | | H | |
| Bus | | uck Route | | | AADT: | | | | + | | | | DT: | | | | | | H | |
| School | Ві | cycle | | | DHV F DHV: | actor: | | | + | | | ЭΗ | V Factoi | r: | | | | | H | |
| | | | | | | | | | + | | | | | + | | | - | | H | |
| Source: | ource: Trucks: Peak Direction | | | าท | al Snlit: | | | | | cks: | \forall | | | + | | | | | | |
| 10 Year Grow | | | | | • | Capacity: 20 Year AADT: | | | | | | | | | | | | | | |
| F. INSPECTIO | NIS | | - | | | | 1 | | _ | 寸 | | | | - | | | | | + | |
| Date: | | -Jun-18 | | Insne | cted B | iv. | + | Reg McKinnon | | + | | Δn | proved | Bv. | - | | | | + | |
| | 19 | 10 | | s pe | . c.c u b | ,. | _ | P Eng | | + | | ۰ ۱۲ | . p. 5 ve u | - 1. | + | | | | + | |

Municipality: Township of Johnson Shewfelt Creek Bridge at Oikari's

| G. BRIDGE NEEDS | s | | | | | | | | | | | | | | | | | | | |
|------------------|---------|-----------|----------|-----|-------------|-------|----------|-----|--------|------|-----|-----------|------------|----------|-------|---------|---|-----------|--|----------|
| Field | | | М | CR | PCR | 1OT | V | Con | nments | | | | | | | | | | | |
| Superstructure | | | | | 6 | 6 ADE | Q | | | | | | | | | | | | | |
| Wearing Surface | | | | | 6 | 6 ADE | Q | | | | | | | | | | | | | |
| Deck Condition | | | | | 6 | 6 ADE | Q | | | | | | | | | | | | | |
| Expansion Joints | s | | | | 0 | 0 ADE | Q | | | | | | | | | | | | | |
| Railings | | | | | 5 | 5 1-5 | Yrs | | | | | | | | | | | | | |
| Substructure | | | | | 6 | 6 ADE | Q | | | | | | | | | | | | | |
| Coating | | | | | 6 | 6 ADE | Q | | | | | | | | | | | | | |
| Streams/Waterv | va ys | | | | 6 | 6 ADE | Q | | | | | | | | | | | | | |
| Curbs/Sidewalk | s | | | | 0 | 0 ADE | Q | | | | | | | | | | | | | |
| H. FUNCTIONA | L NEED | S | | | | | | | | | | | | | | | | | | |
| Field | | | Existing | М | in. Toler | able | Time of | Nee | d | С | om | ments | | | | | | | | |
| Road over Culv | ert/ | | | | | | | | | | | | | | | | | | | |
| Travel Deck Wi | idth | | 7 | .1m | | 6.5m | ADEQ | | | | | | | | | | | | | |
| RO-Level of Se | rvi ce | | | Α | | Е | ADEQ | | | | | | | | | | | | | |
| Min. Vert. Clea | r | | | | | 4.5 | ADEQ | | | | | | | | | | | | | |
| Sidewalks | | | | N | | N | ADEQ | | | | + | | | | | | | | | |
| RECOMMENDE | D NEED | S | | | | | | | | | | | | | | | | | | |
| Impr. Class | | Improveme | ent | Des | cription | | | | Time | of N | lee | Year | | Base/Co | nst. | | | | | |
| I. ENGINEERIN | G RECO | DMMENDA | ATIONS | | J. DESIG | SN PA | ARAMETI | ERS | | | | K. IMPRO | VE | MENT C | OSTS | | | | | |
| Bridge Drawin | ıgs: | | | | Design | Clas | s: | | RSL | | | Total Cor | nstr | uction/F | Rehab | \$ | - | 10,000.00 | | |
| Engineering Ir | nvestig | | | | Operat | iona | Status | | 2W-C | АТ | | Continge | n ci | es | | \$ | | 1,000.00 | | |
| Total Cost of E | ng. Inv | estig. | | | Abutm | ent T | ype | | RSL-C |) | | Engineer | ngineering | | | \$ 1,50 | | \$ | | 1,500.00 |
| Single Posting | 5 | | | | Design | Decl | k Width | | 7.1m | | | Total: | | | | \$ | - | 12,500.00 | | |
| Evaluated Pos | ting | | | | Design Deck | | k Length | | 6.2m | | | | | | | | | | | |
| Monitoring | | | | | | | | | | | | | | | | | | | | |
| Closure Date | | | | | | | | | | | | | | | | | | | | |

INSPECTION NOTES:

- No Posted Load Limit.
- Hazard markers are present in all four corners.
- No guardrail present at the northwest corner of the bridge.
- Guardrail posts have medium to wide checks and splits.
- Nuts for the guardrail posts baseplates were loose along the east railing.
- Surface treatment in good condition.
- Watercourse was unobstructed and no sign of scouring.
- Concrete headwalls in good condition with minor honeycombing.
- Gabion retaining walls in good condition. Gabion retaining wall along the northwest bank is budging outwards toward the creek causing minor settlement of the shoulder behind it.
- Plate steel arch culvert in good condition, tenth and eleventh rib from the northeast corner has localized indentations. Second Vertical seam had a loose bolt.

RECOMMENDATIONS:

- Guard should be installed along the northwest approach
- All hazard markers should be cleared of vegetation and implemented as part of the regular maintenance.
- Repair to the settled shoulder of the road along the northwest gabion should be complete

Municipality: Township of Johnson Shewfelt Creek Bridge at Oikari's



South Approach



East Elevation



Downstream of Bridge



East through the Culvert



Gabion along the northwest approach



Hazard marker obstructed by vegetation



Scraped Guiderail along east side



Splits and checks on posts

Bridge No.: 02

| A. IDENTIFICA | ATION | | | | | | | | | | | | Т | | | | | |
|---------------|---------|-------------|--------------|-----------|----------|---------|-----|------------------|------------|---------|-----|--|-------|----------|--------------|--------|-----------|--------|
| Bridge Name | | Shewfelt Cr | eek Bridge a | at Gras | lev's | | | В | 3 ri d | lge No | .: | | В2 | | | | | |
| Road Name: | | Fisher Road | | | , . | | | | | d Sect | | n.: | 26 | | | | | |
| Location: | | 3.3 km Nort | | | | | | | | Site | | | | S-19 | 90 | | | |
| Roadside En | v.: | R | , | Postin | ıg Sigr | ۱: | t | t t | | Cros | sin | g Type: | | | 0- | -WA | AT | |
| Posting: | | ttt | | Low Cl | earno | : Sign: | | | F | | era | l Nav. Wa | te rv | vay: | U | nkn | iown | |
| Bylaw No.: | | | | Eastin | g: | | | | Bridge Val | | | | \$ | | 350,000.00 | | | |
| Bylaw Exp. D | ate: | y m | | Northl | ing: | | | | | Old | ID: | | | | | | | |
| B. RAILWAY | OVER | PASS/UNDE | RPASS | | | | | | Т | | Т | | | T | | Т | | |
| Railway Lev | el Cros | sing Numbe | er: | | | | | | C | Drigin | al | Board Ord | der | Nun | nber: | | | |
| Railway Con | npany: | | | | | | | | C | Date: | | | | | | | | |
| Railway Sub | divisi | on: | | | | | | | C | Curren | t B | oard Orde | erN | lum | ber: | | | |
| Subdivision | Milea | ge: | | | | | | | 0 | Date: | | | | | | \top | | |
| Transport Ca | | _ |).: | | | | | | | Senior | itv | • | | | | | | |
| Number of T | | | | | | | | | | | 109 | • | | | | | | |
| C. JURISDICTI | ON | | | | | | T | | | | T | | | | | | | |
| Owner: | | O A MUN | | Specia | l Desi | ignatio | on | NSD | | | N | ······································ | | | | | | |
| Owner Share | : | | | Design | | _ | | | | | N | 1unicB: | | | | | | |
| Shared: | | | | Adjace | nt Bri | dge N | o.: | | | | P | atrol: | | | | | | |
| Shared With | : | | | | | _ | | | | | T | | | | | | | |
| Heritage Sta | tus: | R | | | | | | | | | | | | | | | | |
| D. EXISTING | | TIONS | | | | | | | | | T | | | П | | | | |
| Substructure | Year: | 1950 | | Span I | Length | ۱.: | | 6.1m | | | L | ongitudia. | n Jo | oint | s: | | С | |
| Superstruct Y | 'ear: | | | Deck 1 | Гуре | | | CC (Cast in Plac | ce) | | 1 | 「rans ve rs ∈ | e Joi | ints | : | | C | |
| Bridge Type: | | C-TB-F | | Deck L | Length | 1 | | 7.0m | | | ı | Number of | f Be | arin | ıgs: | | C | |
| Cossing Skev | v: | 0 | | Deck \ | Width | | | 5.1m | | | S | Soil Condi | tion | ı: | | | U | |
| No. of Spans | : | 1 | | Deck A | Area | | | 35.7m2 | | | 1 | Abutment/ | /Fdr | n Typ | oe: | | Closed SF | |
| | | | | | | | | | | | | | | | | | | |
| ~~~~~~ | R | OAD OVER B | RIDGE | ~~~~ | ~~~~ | ~~~~ | ~~ | ~~~~~~~ | ~~~ | ~~~~ | ~~ | ~~~~~~ | ~~~ | ~~~ | ~~~~~ | ~~~ | ~~~~~~ | ~~~~~~ |
| Existing Road | d Class | ;: | 300 | Travel | Deck | Width | ı: | 4.30m | | | S | Safety Curk | b: | | | | (A) N | |
| Operational | Status | : | 2W-OAT | No. of | Lane | s: | | 1 | | | S | Sidewalka | and | Cur | b: | | (B) N | |
| Wearing Sur | fa ce | | G | Media | an Typ | e/Wid | lth | : Roa | dsi | ide Sa | fet | y: Barriers | s W | alls | /Railing | gs | СВ | |
| ~~~~~~ | RO | DAD UNDER E | BRIDGE | ~~~~ | ~~~~ | ~~~~ | ~~ | ~~~~~~~ | ~~~ | ~~~~ | ~~ | ~~~~~~ | ~~~ | ~~~ | ~~~~~ | ~~~ | ~~~~~~ | ~~~~~~ |
| Existing Road | d Class | ;: | | No. of | Lane | s: | | | | | 7 | raffic Bar | rier | | | | | |
| Operation St | atus: | | | Media | n Typ | e/Wic | lth | : | | | ı | Min Vertic | al C | lea | rance: | | | |
| Opening Wid | lth: | | | Safety | / Curb: | | | Α | | | | | | | | | | |
| Surface Widt | :h: | | | Sidew | alk aı | nd Cur | b: | В | | | | | | | | | | |
| E. TRAFFIC D | ATA | | | | | | | | | | | | | | | | | |
| Legal Speed | Limit | : | | <u>Tr</u> | ra ffi c | Count | | | | | 10 | Year Traf | ffic | Fore | <u>ecast</u> | | | |
| Route Desig | gnatio | ns: | | Ye | ear: | | | | | | Ye | ar: | Ш | | | | | |
| Bus | Tr | uck Route | | A | ADT: | | | | | | AΑ | DT: | Щ | | | | | |
| School | Bi | cycle | | D | HV Fa | ctor: | | | | \perp | DF | IV Factor: | | | | | | |
| | | | | D | HV: | | | | | | DH | IV: | Ш | | | 1 | | |
| | _ | | | | rucks: | | | | | - | | ucks: | Ш | | | | | |
| Source: | | | | | | | | al Split: | | + | | pacity: | Щ | | | - | | |
| | | | | 10 | y Year | r Grov | ∕th | : | | | 20 | Year AAD | T: | | | | | |
| F. INSPECTIO | | | | | | | | | | | + | | | \vdash | | | | |
| Date: | 19 | -Jun-18 | | Inspec | ted By | y: | - | Reg McKinnon | | - | Α | pproved B | By: | \vdash | | | | |

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

| MCR 4 | | CR T | ON | | _ | | | | | | | | | |
|----------|------------------|---|--|--|---|---|-------|----|-----------|-------|--|----|------------|-----------|
| 4 | | | OIV | | Com | ments | | | | | | | | |
| | 5 | 1 | -5 yrs | | | | | | | | | | | |
| 5 | 5 | 6 | -10 yrs | | | | | | | | | | | |
| 4 | 5 | 1 | -5 yrs | | | | | | | | | | | |
| 0 | 0 | Α | DEQ | | | | | | | | | | | |
| 4 | 5 | 1 | -5 yrs | | | | | | | | | | | |
| 3 | 4 | 1 | -5 yrs | | | | | | | | | | | |
| 0 | 0 |) А | DEQ | | | | | | | | | | | |
| 5 | 5 | 6 | -10 yrs | | | | | | | | | | | |
| 0 | 0 | Α Α | DEQ | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| Existing | Min. | Tolerabl | e Tir | me of | Nee | d | Co | mı | ments | | | | | |
| | | | | | | | | | | | | | | |
| 4.3m | 6.5m | | NC | w | | | | | | | | | | |
| A | E | | AD | EQ | | | | | | | | | | |
| | 4.5 | | | | | | | | | | | | | |
| N | N | | AD | EQ | | | | H | | | | | _ | |
| | | | | | | | | | | | | | | |
| t | Descrip | ption | | | | Time o | of Ne | ee | Year | E | Base/Const. | | | |
| IONS | J. | DESIGN | PARA | AMETE | RS | | | | K. IMPRO | VEN | MENT COSTS | | | |
| | D | esign Cl | ass: | | | RSL | | - | Total Con | s tru | ıcti on/Re ha b | \$ | ϵ | 55,000.00 |
| | O | peration | nal St | atus | | 2W-OAT | | ١, | Continger | ncie | S | \$ | | 6,000.00 |
| | Al | butment | t Type | | | RSL-O | | | Engineeri | ng | | \$ | 1 | .0,000.00 |
| | D | esign De | eck W | /idth | | 6.5m | | - | Total: | | | | | 31,000.00 |
| | D | esign De | eck Le | ngth | | 7.0m | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | T | | | | | | |
| | 4 3 0 5 | 4 5 3 4 0 0 0 5 5 5 0 0 0 Existing Min. 4.3m 6.5m A E 4.5 N N Descri | 0 0 A 4 5 1 3 4 1 0 0 A 5 5 6 0 0 A Existing Min. Tolerable 4.3m 6.5m A E 4.5 N N Description Design Cl Operation Abutment Design | 0 0 ADEQ 4 5 1-5 yrs 0 0 ADEQ 5 5 5 6-10 yrs 0 0 ADEQ Existing Min. Tolerable Tin 4.3m 6.5m NC A E AC 4.5 AC N N AC Description Description Design Class: Operational St Abutment Type Design Deck W | 0 0 ADEQ 4 5 1-5 yrs 0 0 ADEQ 5 5 6-10 yrs 0 0 ADEQ 5 0 ADEQ 5 5 6-10 yrs 0 0 ADEQ Existing Min. Tolerable Time of 4.3m 6.5m NOW A E ADEQ 4.5 ADEQ N N ADEQ Description J. DESIGN PARAMETE | 0 0 ADEQ 4 5 1-5 yrs 0 0 ADEQ 5 5 6-10 yrs 0 0 ADEQ Existing Min. Tolerable Time of Nee 4.3m 6.5m NOW A E ADEQ 4.5 ADEQ N N ADEQ N Description Description Description J. DESIGN PARAMETERS Design Class: Operational Status Abutment Type Design Deck Width | 0 | 0 | 0 | 0 | 0 0 ADEQ 4 5 1-5 yrs 3 4 1-5 yrs 0 0 ADEQ 5 5 6-10 yrs 0 0 ADEQ Existing Min. Tolerable Time of Need Comments ADEQ ADEQ ADEQ N N N ADEQ N Description Time of Need Year ENDONS Design Class: Design Class: Operational Status Abutment Type RSL-O Engineering Design Deck Width G.5m Total: | 0 | 0 | 0 |

INSPECTION NOTES:

- Cast in place concrete T-beam bridge with a concrete deck and gravel wearing surface with cast in place concrete railings.
- Concrete railings are in generally good condition with minor damage due to collisions.
- The railing height on the deck does not meet current standards.
- Four hazard signs are present at the structure; the southeast corner sign is bent.
- No approach guiderails have been provided at the structure.
- Gravel approaches and deck wearing surface are generally in good condition.
- Buildup of gravel under the concrete railings along the bridge deck.
- Four cored holes in concrete deck are present for drainage but are covered by the buildup of gravel on the bridge deck.
- Concrete deck soffit was in fair condition with moderate scaling; delamination and localized exposed corroded rebar and staining.
- Concrete girders were in good to fair condition with moderate scaling, narrow stained cracks, and delamination. Localized exposed corroded rebar on the second girder from the east near the south abutment wall and wide cracking at the haunches on south end of bridge with cracking in the ballast wall.
- Concrete abutment walls have moderate to wide horizontal cracks, scaling, and narrow to medium map cracking with efflorescent staining and delamination 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 and efflorescence staining throughout. The northeast wingwall has wide horizontal cracking and the southwest wingwalls have moderate to wide cracking, stained map cracks, delamination and spalls.

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

- The south abutment footing erosion protection is functioning satisfactorily.
- Vegetated roadway embankments are very steep but are generally in good condition.
- Both upstream and downstream channels were unobstructed and no signs of scouring or erosion.

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.
- Any leaning or bent hazard signs should be straightened.

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

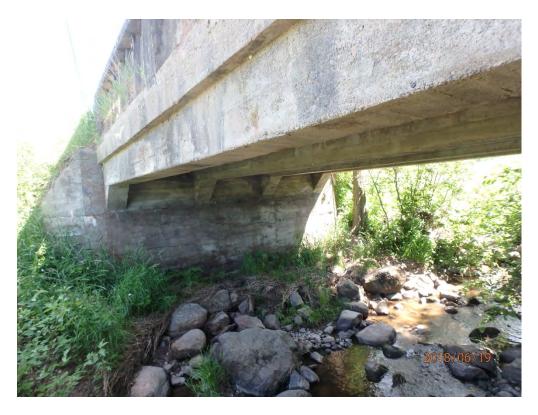


South across the bridge



West Elevation

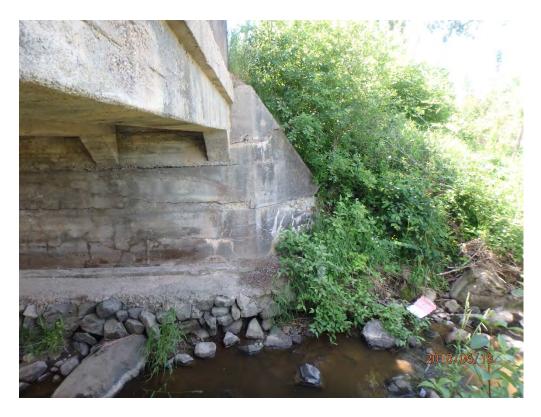
Municipality: Township of Johnson Shewfelt Creek Bridge at Grasley's



North abutment wall with narrow to wide horizontal cracks, map cracking and delamination.



South abutment wall with narrow to wide horizontal cracks, map cracking and delamination.



Southeast wingwall with narrow to medium cracking, wide horizontal cracks and delamination



Southeast interior beam with exposed and corroded rebar.



Damage to guard due to impact and buildup of gravel below guard



Unobstructed flow upstream

| A. IDENTIFICATION | J _ | | | | | | | | | | |
|---------------------|--------------|---------------|--------------|---|------------------|---------------|--------|----------------|---------------|-----------|------------|
| Bridge Name | Stobie Cree | k at Mennoni | ite Schoc | ار | | Bridg | ge No | o.: | В3 | | |
| Road Name: | Governmen | ıt Road | | | | Roac | d Sec | tion.: | 350 | | |
| Location: | 10m West o | of Gordon Lak | e Road | | | МТО | Site | No.: | 38S-307 | | |
| Roadside Env.: | R | Г | Posting Si | ign: | ttt | | Cros | sing Type: | | O-WAT | |
| Posting: | ttt | 1 | Low Clear | rnc Sign: | | | | eral Nav. Wa | aterway: | Unknown | |
| Bylaw No.: | | | Easting: | | | ļ! | | ge Value: | | \$ | 450,000.00 |
| Bylaw Exp. Date: | y m | 1 | Northling | <u>;: </u> | | | Old | ID: | | | |
| B. RAILWAY OVER | RPASS/UNDER | (PASS | | | | | | | | | |
| Railway Level Cro | ssing Number | r: | | | | Origi | nal | Board Order | Number: | | |
| Railway Company | r: | | | | | Date | : | | | | |
| Railway Subdivisi | on: | | | | | Curre | ent B | oard Order N | Number: | | |
| Subdivision Milea | age: | | | | | Date | : | | | | |
| Transport Canada | _ | .: | | | | Seni | ority | : | | | |
| Number of Tracks | | | | _ | | | ÌÌ | | | | |
| C. JURISDICTION | | | | | | $\overline{}$ | \top | 1 | | | |
| | O A MILINI | Cn | : =! = I Doo | · ti o n | 651 | + | | • -:-^, | | | |
| Owner: | O A MUN | | ecial Desi | _ | CBL | - | - 11 | lunicA: | | | |
| Owner Share: | - | | esignation | | | + | | lunicB: | | | |
| Shared: | | Ad | lja cent Bri | dge No.: | | + | P | atrol: | | | |
| Shared With: | - | | | | | _ | | | | | |
| Heritage Status: | R | | | | - | | _ | | | | |
| D. EXISTING COND | TIONS | | | | | | | | | | |
| Substructure Year: | 1937 | Sp | pan Length | h.: | 9.3m | | L | ongitudian J | oints: | 0 | |
| Superstruct Year: | | De | eck Type | | CC (Castin Place | :) | 1 | ransverse Jo | ints: | 0 | |
| Bridge Type: | C-TB-F | De | eck Length | n | 10.1m | | 1 | Number of Be | arings: | 0 | |
| Cossing Skew: | 0 | De | Deck Width | | 5.7m | | 5 | oil Condition | n: | U | |
| No. of Spans: | 1 | De | eck Area | | 57.6m2 | | F | Abutment/Fdi | n Type: | Closed SF | |
| | | | | | | | | | | | |
| ~~~~~~ | ROAD OVER BR | IDGE ~~ | J~~~~~~ | ~~~~~ | ,~~~~~~~~~ | ~~~~ | ~~~~ | | | ·~~~~~ | ~~~~~~ |
| Existing Road Class | s 300 | Tr | ravel Deck | Width: | 4.80m | | 5 | Safety Curb: | | (A) N | |
| Operational Status | s 2W- OAT | No | o. of Lane | s: | 1 | | 5 | idewalk and | Curb: | (B) N | |
| Wearing Surface | А | M | ledian Typ | e/Width | : Road | side S | Safet | y: Barriers W | alls/Railings | FB | |
| ~~~~~~ R | OAD UNDER BE | RIDGE ~~ | J~~~~~~ | ~~~~~ | ,~~~~~~~ | ~~~~ | ~~~~ | | | ~~~~~ | ~~~~~~~ |
| Existing Road Clas | s: | No | o. of Lane | s: | | | 1 | raffic Barrier | r: | | |
| Operation Status: | | M | ledian Typ | e/Width | 1: | | N | Min Vertical (| Clearance: | | |
| Opening Width: | | Sa | a fety Curb | : | А | | | | | | |
| Surface Width: | | Si | dewalkaı | nd Curb: | В | | | | | | |
| E. TRAFFIC DATA | | | | $\overline{}$ | | | | | | | |
| Legal Speed Limi | t: | | Traffic | Count | | | 10 | Year Traffic | Forecast | | |
| Route Designatio | | | Year: | | | | | ar: | | | |
| Bus Tr | ruck Route | | AADT: | | | | АА | DT: | | | |
| School Bi | icycle | | DHV Fa | actor: | | | DH | IV Factor: | | | |
| | | | DHV: | | | | DH | IV: | | | |
| | | | Trucks: | : | | | Tru | ucks: | | | |
| Source: | | | | | al Split: | _ | | pacity: | | | |
| | | | 10 Yea | r Growth | r: | _ | 20 | Year AADT: | | <u> </u> | |
| F. INSPECTIONS | | | | | <u> </u> | _ | | | | | |
| Date: 19 | 9-Jun-18 | Ins | spected B | | Reg McKinnon | - | Α | pproved By: | | | |

Municipality: Township of Johnson Stobie Creek at Mennonite School

| G. BRIDGE NEEDS | | | | | | | | | | | | | |
|---------------------|------|-------|------------|--------------------|----------|--------|----|----|---------|--|--|--|---|
| Field | | MCR | PCR | TON | | Commen | ts | | | | | | |
| Superstructure | | 5 | 5 | 6-10 | Yrs | | | | | | | | |
| Wearing Surface | | 3 | 4 | 1-5 Y | rs | | | | | | | | |
| Deck Condition | | 4 | 5 | 1-5 Y | rs | | | | | | | | |
| Expansion Joints | | 0 | 0 | ADEC | Į | | | | | | | | |
| Railings | | 3 | 4 | 1-5 Y | rs | | | | | | | | |
| Substructure | | 3 | 4 | 1-5 Y | rs | | | | | | | | |
| Coating | | 0 | 0 | ADEC | Į | | | | | | | | |
| Streams/Waterways | | 5 | 5 | 6-10 | Yrs | | | | | | | | |
| Curbs/Sidewalks | | 0 | 0 | ADEC | 1 | | | | | | | | |
| H. FUNCTIONAL NEEDS | | | | | | | T | | | | | | |
| Field | Exis | sting | Min. Toler | rable ⁻ | Time of | Need | | Co | omments | | | |] |
| Road over Culvert | | | | | | | | | | | | | |
| Travel Deck Width | 4.8 | m | 6.5m | 1 | NOW | | | | | | | | |
| RO-Level of Service | Α | | E | | ADEQ | | | | | | | | |
| Min. Vert. Clear | | | 4.5 | | ADEQ | | | | | | | | |
| Sidewalks | N | | N | | ADEQ | | | | | | | | |
| | | | | | | | | | | | | | |

| RECOMMENDED | NEEDS | | | | | | | | | | | |
|----------------|------------|--------|-------------|------------|--------|------|-------|-----------|-------------|----------|----------|--|
| Impr. Class | Improve me | ent | Description | | Time o | f Ne | e (Y | ear | Base/Const | | | |
| I. ENGINEERING | RECOMMENDA | ATIONS | J. DESIGN | PARAMETERS | | | K. IN | //PROVEM | ENT COSTS | | | |
| Bridge Drawing | s: | | Design Cl | ass: | RSL | | Tota | I Constru | ction/Rehab | \$ 60 | 0,000.00 | |

| I. ENGINEERING RECOMMENDATIONS | J. DESIGN PARAIVIETER | 3 | K. IIVIPROVEIVIEN I COSTS | |
|--------------------------------|-----------------------|--------|---------------------------|-----------------|
| Bridge Drawings: | Design Class: | RSL | Total Construction/Rehab | \$ 60,000.00 |
| Engineering Investig. | Operational Status | 2W-OAT | Contingencies | \$ 6,000.00 |
| Total Cost of Eng. Investig. | Abutment Type | RSL-O | Engineering | \$ 10,000.00 |
| Single Posting | Design Deck Width | 6.5M | Total: | \$ 76,000.00 |
| Evaluated Posting | Design Deck Length | 10.0M | | |
| Monitoring | | | | |
| Closure Date | | | | |
| | | | | |
| | | | | |

INSPECTION NOTES:

G BRIDGE NEEDS

- Single span cast in place concrete T-beam bridge with concrete deck and asphalt wear surface
- Asphalt wearing surface is in fair condition.
- 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 along the bridge deck under the guiderails.
- Steel flex beam railings on deck are in generally good condition. No offset blocks were present on south guiderails. Offset blocks on the north guiderail, with some rotated and/or broken in half. The west end of the south guardrail has a large cut approximately 2.0 m long.
- Under a guiderail post along the south rail there was a gap and the anchor bolts appear stripped.
- Terminal end treatments were been provided in all four corners.
- Hazard markers were located at each corner of the bridge. Vegetation starting to obstruct view of hazard signs.
- Concrete deck soffit was 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.
- Concrete footings were not visible due to the high water level.

Municipality: Township of Johnson Stobie Creek at Mennonite School

- Watercourse is unobstructed.
- No traffic protection is provided on the approaches.
- Vegetated roadway embankments are in good condition with minor erosion with minor channelization in the southeast corner.

RECOMMENDATIONS:

- Previous report stated that undermining of abutments was present. Due to the high water level at time of inspection, abutments and footings were not inspected. If not already completed, repairs should be completed.
- Repair offset blocks along north guiderail.
- Replace section of cut guiderail along south side.
- Seal Transverse crack on the east approach.
- Repair minor erosion at the southeast corner of the bridge
- Remove gravel and vegetation from under the guiderails along the bridge deck and around hazard signs.
- Repair guiderail baseplate, including new anchor bolts and shims.

Municipality: Township of Johnson Stobie Creek at Mennonite School



East across the bridge



South Elevation of bridge



Damaged Guiderail along south side



Broken and rotated offset block



Gap under guiderail baseplate



Typical T-beam arrangement



Medium to wide cracking of deck soffit at the east abutment



Downstream of bridge

| A. IDENTIFICAT | ION | | | | | | | | | | |
|----------------------------------|---------------|--------------|-----------------------|------------------|------------------|-------|-------|-----------------|---------------|--------------|--|
| Bridge Name | Suddaby | Creek Bridge | : | | | Brid | ge 1 | No.: | B4 | | |
| Road Name: | Old Mill F | Road | | | | Roa | d Se | ection.: | 240 | | |
| Location: | .20 km No | rth of Gordo | n Lake Ro | a d | | MTC | Sit | e No.: | 38S-151 | | |
| Roadside Env.: | R | | Posting | Sign: | 10t t t | | Cro | ossing Type: | | O-Wat | |
| Posting: | 10t t t | | Low Cle | arnc Sign: | | | Fe | deral Nav. Wa | terway: | Unknown | |
| Bylaw No.: | | | Easting | : | | | Bri | dge Value: | | \$ 750,000 | 0.00 |
| Bylaw Exp. Date | e: y m | | Northlii | ng: | | | Ole | d ID: | | | |
| B. RAILWAY O | /ERPASS/UND | ERPASS | | | | | | | | | |
| Railway Level (| Crossing Numb | er: | | | | Orig | gina | l Board Order | Number: | | |
| Railway Compa | any: | | | | | Date | e: | | | | |
| Railway Subdiv | vision: | | | | | Curr | ent | Board Order N | lumber: | | |
| Subdivision Mi | leage: | | | | | Date | e: | | | | |
| Transport Cana | da Crossing N | 0.: | | | | Sen | iorit | ty: | | | |
| Number of Trac | cks | | | | | | | | | | |
| C. JURISDICTION | I | | | | | | | | | | Ī |
| Owner: | O A MUN | | Special De | esignation | NSD | | | MunicA: | | | |
| Owner Share: | | | Designati | on 2: | | | | MunicB: | | | |
| Shared: | | | Adjacent E | Bridge No.: | | | | Patrol: | | | |
| Shared With: | | | | | | | | | | | |
| Heritage Status | : R | | | | | | | | | | |
| D. EXISTING COI | NDITIONS | | | | | | | | | | |
| Substructure Ye | ar: 191 | 3 | Span Len | gth.: | 6.3m | | | Longitudian Jo | oints: | (| D |
| Superstruct Yea | r: | | Deck Type | : | CC (Cast in Plac | e) | | Transverse Joi | ints: | (| |
| Bridge Type: | C-TB- | | Deck Leng | gth | 21.3m | | | Number of Be | arings: | (|) |
| Cossing Skew: | - |) | Deck Wid | th | 5.3m | | | Soil Condition | 1: | ι | J |
| No. of Spans: | | 3 | Deck Area | 1 | 112.9m2 | | | Abutment/Fdr | туре: | Closed -UN | J |
| ~~~~~~ | ROAD OVER E | RIDGE | ~~~~~ | ~~~~~ | | ~~~~ | ~~~ | ~~~~~~~ | ~~~~~~ | ~~~~~~ | ~~~~~~ |
| Existing Road Cl | lass: | 300 | Travel De | ck Width: | 4 | .20m | | Safety Curb: | | (A) N / E 0. | 1 m |
| Operational Sta | itus: | 2W-OAT | No. of Lar | nes: | | 1 | | Sidewalkand | Curb: | (B) N / W C |).1m |
| Wearing Surface | e | С | Median T | ype/Width | n: Roa | dside | Safe | ety: Barriers W | alls/Railings | | |
| ~~~~~ | ROAD UNDER | BRIDGE | ~~~~~ | ~~~~~ | ~~~~~~~~ | ~~~~ | ~~~ | ~~~~~~ | ~~~~~~~ | ~~~~~~ | ~~~~~~ |
| Existing Road Cl | | | No. of Lar | | | | | Traffic Barrier | | | |
| Operation Statu | | | | ype/Width | 1: | | | Min Vertical C | learance: | | |
| Opening Width: Surface Width: | : | | Safety Cu Sidewalk | rb: and Curb: | | В | | | | | |
| E. TRAFFIC DATA | Δ | | | | | | Т | | | | |
| Legal Speed Li | | | Traff | ic Count | | | 1 | O Year Traffic | Forecast | | |
| Route Designa | | | Year | | | | | ear: | | | |
| Bus | Truck Route | | AADI | | | | | ADT: | | | |
| School | Bicycle | | | Factor: | | | | HV Factor: | | | |
| | | | DHV: | | | | | DHV: | | | |
| | | | Truck | | | | | rucks: | | | |
| Source: | | | | Direction | nal Split: | | | Capacity: | | | |
| | | | | ar Growtl | | | _ | 0 Year AADT: | | | |
| F. INSPECTIONS | . | | | | | | | <u>.</u> | | | |
| Date: | 19-Jun-18 | | Inspected | By: | Reg McKinnon | | | Approved By: | | | |
| Date. | 13-3011-10 | | maperieu | Б y. | D. Fra | | | Approved by. | | + | - |

Municipality: Township of Johnson

Suddaby Creek Bridge

| G. BRIDGE N | EEDS | | | | | | | | | | | | | |
|--------------|----------------|------|------|------------|-------|--------|-------|-----|---|----------|--|--|--|--|
| Field | | | MCR | PCR | 1OT | ١ | Comme | nts | | | | | | |
| Superstructu | ıre | | 3 | 3 | 1-5 \ | ⁄rs | | | | | | | | |
| Wearing Sur | rfa ce | | 4 | 4 | 1-5 | rs | | | Т | | | | | |
| Deck Condit | ion | | 4 | 4 | 1-5 \ | rs | | | | | | | | |
| Expansion J | oints | | 0 | 0 | ADE | Q | | | | | | | | |
| Railings | | | 2 | 3 | NOV | V | | | | | | | | |
| Substructure | 9 | | 3 | 4 | 1-5 \ | rs | | | | | | | | |
| Coating | | | 0 | 0 | ADE | Q | | | | | | | | |
| Streams/Wa | eams/Waterways | | 3 | 3 1-5 | | rs | | | | | | | | |
| Curbs/Sidev | valks | | 4 | 5 | 1-5 \ | rs | | | | | | | | |
| H. FUNCTIO | DNAL NEEDS | | | | | | | | Ī | | | | | |
| Field | | Exis | ting | Min. Toler | able | Time o | fNeed | | (| Comments | | | | |
| Road over | Culvert | | | | | | | | | | | | | |
| Travel Decl | k Width | 4.2n | n | 6.5m | | NOW | | | | | | | | |
| RO-Level o | f Service | А | | E | | ADEQ | | | | | | | | |
| Min. Vert. 0 | Clear | | | 4.5 | | ADEQ | | | | | | | | |
| Sidewalks | | N | | N | | ADEQ | | | | | | | | |

| Impr. Class | Improve | ment | Desc | ription | | Time of N | ۱e | ecYear | Base/Const. | | | |
|------------------|-------------------------------------|---------|------|-------------------|--------------|-----------|-------------|--------------|--------------|--------------|----|----------|
| I. ENGINEERING | RECOMMEN | DATIONS | | J. DESIGI | N PARAMETERS | | | K. IMPROVE | MENT COSTS | | | |
| Bridge Drawing | 5: | | | Design (| Class: | RSL | | Total Consti | uction/Rehab | \$ | 30 | 0,000.00 |
| Engineering Inv | estig. | | | Operation | onal Status | 2W-OAT | | Contingenci | es | \$ | 3 | 0,000.00 |
| Total Cost of En | Cost of Eng. Investig. \$ 15,000.00 | | 00 | Abutme | RSL-O | | Engineering | | | \$ 40,000.00 | | |
| Single Posting | | | | Design Deck Width | | 6.5m | | Total: | | \$ | 37 | 0,000.00 |
| Evaluated Posti | ng | | | Design I | Deck Length | 21.3m | | | | | | |
| Monitoring | | | | | | | | | | | | |
| Closure Date | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |

INSPECTION NOTES:

RECOMMENDED NEEDS

- Three span (±6.3m, ±6.3m) cast in place concrete T-Beam bridge with an exposed concrete deck wearing surface, piers and 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 through six 150mm diameter drains and are clear.
- 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, narrow to wide cracking and 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.
 - O 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 horizontal cracking at south end of both exterior beams;

Municipality: Township of Johnson Suddaby Creek Bridge

- Moderate scaling at haunches at south side of south pier;
- o Narrow cracking and delamination at haunch of second beam from east, on the south end, at the north pier;
- Severe spalling, 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 should remain in effect.
- Traffic protection on the approaches should be installed
- Bridge deck and curbs should be cleaned of excess gravel and remove any small trees growing at the underside of the bridge as part of regular maintenance.
- 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 (see below).
- 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

Suddaby Creek Bridge Bridge No.: 04



South across bridge



West Elevation



Concrete wear surface with light to moderate scaling. Broken railing post.



Broken missing railing post. Damaged pipe rails



General arrangement of underside of bridge.



Exposed corroded rebar on east exterior beam.



Exposed Rebar on east beam at abutment



| A. IDENTIFICAT | ΓΙΟΝ | | | | | | | | | | | | |
|------------------|--------|------------|-----------|-------|------------------|----------|------------------|---------|----------|--------------------------|-----------------|---------------|-----|
| Bridge Name | _ | Suddaby Pa | ark | | | | | Bridg | e N | No.: | B5 | | |
| Road Name: | | Gordon Lal | | | | | | | | ection.: | 195 | | |
| Location: | | .5km North | of Suddab | y Par | k Rod | | | мто | Sit | e No.: | 38S-152 | | |
| Roadside Env.: | : | R | | | sting S | ign: | ttt | | Cro | ossing Type: | | O- WAT | |
| Posting: | | ttt | | Lov | w Clea | rnc Sign | : | | Fe | deral Nav. Wa | aterway: | Unknown | |
| Bylaw No.: | | | | Eas | sting: | | | | Bri | dge Value: | | \$ 500,000 | .00 |
| Bylaw Exp. Dat | te: | y m | | No | rthling | : | | | Ole | d ID: | | | |
| B. RAILWAY O | VERP | ASS/UNDEI | RPASS | | | | | | | | | | |
| Railway Level | | | | | | | | Origi | nal | Board Order | Number: | | |
| Railway Comp | any: | | | | | | | Date | : | | | | |
| Railway Subdi | visio | n: | | | | | | Curre | nt | Board Order N | lumber: | | |
| Subdivision M | | | | | | | | Date | : | | | | |
| Transport Cana | | | .: | | | | | Senio | orit | v: | | | |
| Number of Tra | | | | | | | | | | | | | |
| C. JURISDICTION | | | | | | - | | | | | | | |
| Owner: | |) A MUN | | Speci | ial Des | ignation | NSD | | | MunicA: | | | |
| Owner Share: | | | | | gnation | _ | | | | MunicB: | | | |
| Shared: | | | | | _ | dge No.: | | | | Patrol: | | | |
| Shared With: | | | | ., | | . 0 | | | | | | | |
| Heritage Status | s: R | | | | | | | | | | | | |
| D. EXISTING CO | | ONS | | | | | 1 | | | | | | |
| Substructure Ye | ear: | 2009 | | Spar | n Lengt | h.: | 5.3m | | | Longitudian J | oints: | 0 | |
| Supers truct Yea | ar: | | | Deck | k Type | | CC (Cast In Pla | ce) | | Transverse Jo | ints: | 0 | |
| Bridge Type: | | P-BC-F | | | k Lengtl | 1 | 5.3m | | | Number of Be | arings: | 0 | |
| Cossing Skew: | | 0 | | | k Width | | 13.0m | | | Soil Condition | | U | |
| No. of Spans: | | 1 | | Deck | k Area | | 68.9m2 | | | Abutment/Fd | n Type: | Closed - PC | |
| | | | | | | | | | | | | | |
| ~~~~~ | RO | AD OVER BE | RIDGE | ~~~~ | ~~~~ | ~~~~~ | ~~~~~~~ | ~~~~~ | ~~ | ~~~~~~ | ~~~~~~ | ~~~~~~ | I |
| Existing Road C | Class: | | 300 | Trav | el Deck | Width: | 7.30m | | | Safety Curb: | | (A) N / E 0.2 | m |
| Operational Sta | atus: | | 2w-OAT | No. | of Lane | s: | 2 | | | Sidewalkand | Curb: | (B) N / W 0. | 2m |
| Wearing Surfac | ce | | A | Med | lian Typ | e/Width | n: Roa | dside S | afe | ety: Barriers W | 'alls/Railings | | |
| ~~~~~ | ROA | AD UNDER B | RIDGE | ~~~ | ~~~~ | ~~~~~ | ~~~~~~~ | ~~~~~ | ~~ | ~~~~~~ | ~~~~~~ | ~~~~~~ | |
| Existing Road C | Class: | | | No. | of Lane | s: | | | | Traffic Barrie | -: | | |
| Operation Statu | us: | | | Med | lian Typ | e/Width | n: | | | Min Vertical (| Clearance: | | |
| Opening Width | ı: | | | Safe | ty Curb | : | Α | | | | | | |
| Surface Width: | | | | Side | walk a | nd Curb: | В | | | | | | |
| E. TRAFFIC DAT | ГА | | | | | | | | | | | | |
| Legal Speed Li | imit: | | | | <u>Tra ffi c</u> | Count | | | 1 | <u> 0 Year Traffic</u> | <u>Forecast</u> | | |
| Route Designa | ations | s: | | | Year: | | | | Υ | ear: | | | |
| Bus | | ck Route | | | AADT: | | | | _ | ADT: | | | |
| School | Bicy | /cle | | | DHV F | ctor: | | | _ | HV Factor: | | | |
| | - | | | | DHV: | | | | _ | HV: | | | |
| C | | | | | Trucks | | I C I : r | | | rucks: | | | |
| Source: | | | | | | r Growtl | nal Split: | | _ | apacity: 0 Year AADT: | | | |
| | | | | | 10 16g | . GIOWII | | | <u> </u> | O TEAT MADT: | | | |
| F. INSPECTIONS | | 10 | | lma: | o ota -l C | | Dog Making a | | - | Amman = 1 B: | | | |
| Date: | 19-J | un-18 | | ınspe | ected B | y: | Reg McKinnon | | - | Approved By: | | | |

Municipality: Township of Johnson Suddaby Park – Gordon Lake Road

| G. BRIDGE NI | EEDS | | | | | | | | | | | | | | | | | | | |
|-------------------------------------|------------|-----------|----------|-----|-------|--------------------------|-----------|-------|-----|--------|------|--------|--------|------|------|-------|------|----|---|---|
| Field | | | | MCR | | PCR TO | N | Co | mme | nts | | | | | | | | | | |
| Superstructu | re | | | 6 | | 6 AD | EQ | | | | | | | | | | | | | |
| Wearing Sur | face | | | 5 | | 6 6-1 | 0 Yrs | | | | | | | | | | | | | |
| Deck Conditi | on | | | 6 | | 6 AD | EQ | | | | | | | | | | | | | |
| Expansion Jo | oints | | | 0 | | 0 AD | EQ | | | | | | | | | | | | | |
| Railings | | | | 6 | | 6 AD | EQ | | | | | | | | | | | | | |
| Substructure | | | | 6 | | 6 AD | EQ | | | | | | | | | | | | | |
| Coating | | | | 6 | | 6 AD | EQ | | | | | | | | | | | | | |
| Streams/Wa | terways | | | 6 | | 6 AD | EQ | | | | | | | | | | | | | |
| Curbs/Sidew | alks | | | 6 | | 6 AD | EQ | | | | | | | | | | | | | |
| H. FUNCTIO | NAL NEE | DS | | | | | | | | | | | | | | | | | | |
| Field | | | Existi | ng | Min | . Tolerable | Time o | of Ne | e d | | Co | mmeı | nts | | | | | | | |
| Road over 0 | Culvert | | | | | | | | | | | | | | | | | | | |
| Travel Deck | Width | | 7.3m | | 6.5n | n | ADEQ | | | | | | | | | | | | | |
| RO-Level of | Service | | Α | | Е | | ADEQ | | | | | | | | | | | | | |
| Min. Vert. C | lear | | | | 4.5 | | ADEQ | | | | | | | | | | | | | |
| Sidewalks | | | N | | N | | ADEQ | - | | | | | | | | | - | | | |
| RECOMMEN | IDED NEE | DS | <u> </u> | | | | | | | | П | | | | | | | | | |
| Impr. Class | | Improveme | nt | ī | Descr | ription | | | | Time o | f Ne | ec Ye | ar | | Base | e/Co | nst. | | | |
| I. ENGINEEI | RING REC | OMMENDA | TIONS | | | J. DESIGN P | ARAME | TERS | ; | | | K. IIV | IPRO\ | /EM | IENT | cos | TS | | | T |
| Bridge Drav | wings: | | | | | Design Cla | ss: | | | | | Tota | Cons | tru | ctio | n/Reh | nab | \$ | - | |
| Engineerin | g Investi | g. | | | | Operationa | ıl Status | ; | | | | Cont | ingen | cies | 5 | | | \$ | - | |
| | of Eng. In | | | | | Abutment 1 | Гуре | | | | | | neerii | | | | | \$ | _ | T |
| Total Cost | | | | | | | | | | | | | | | | | | | | |
| | ting | | | | | Design Dec | k Width | 1 | | | | Tota | l: | Ť | | | | \$ | - | |
| Single Post | | | | | | Design Ded Design Ded | | | | | | Tota | l: | | | | | \$ | _ | |
| Single Post Evaluated Monitoring | Posting | | | | | | | | | | | Tota | l: | | | | | \$ | - | |

- Precast Concrete box culvert with surface road treatment.
- Medium transvers cracks in the south approach.
- Steel guiderails on wood posts over the structure as well as the approaches are in good condition. Guiderails at all four corners were missing bolts.
- Hazard markers were present at all four corners and visible.
- Extrurder end treatments were located at all four corners and in good condition.
- Embankments were in good condition.
- Concrete retaining walls were in good condition.
- Concrete deck soffit in good condition. Parging was missing at all of the construction joints between the precast sections along the length of the structure.

RECOMMENDATIONS:

- Transverse cracks in the roadway should be monitored. Cracks should be sealed or patched to prevent further damage to wearing surface.
- Install bolts where missing in the guiderail to connect the flex beam to the post.

Municipality: Township of Johnson Suddaby Park – Gordon Lake Road



North across length of bridge



East Elevation



Transverse crack in the wearing surface



Looking west through barrel



Missing parging at construction joints, typical at all joints.



Gabions along west side of road



Looking downstream of the structure



Guiderail support beam missing bolt to connect it to post

Culvert No.: 01

| | | | | | | | | _ | | | _ | | | | | | |
|---------------------|-------------|------------|--------|----------|----------|--------------|------|-------|------|------------|--------|------------|----------|-------|----------|---------------|--------|
| A. IDENTIFICATION | ı | | | | | | | | | | Ш | | | | | | |
| Culvert Name | Desbarat | s River Cu | ılvert | t | | | Culv | ert I | No. | : | C1 | | | | | | |
| Road Name: | Governm | ent Road | | | | | Roa | d Se | ecti | on.: | 26 | 0 | | | | | |
| Location: | West of D | esbarats | | | | | MTC | Sit | e N | 0.: | | | | | | | |
| Roadside Env.: | R | | Ро | sting S | gn: | | | Cro | ossi | ing Type | : | | | O-WA | 4T | | |
| Posting: | ttt | | Lov | w Clear | nc Sign: | : | | Fe | der | al Nav. \ | Wate | e rwa | y: | | NOM | _ | |
| Bylaw No.: | | | Eas | sting: | | | | Cu | lve | rt Value: | : | | | \$400 | 0,000.0 | 00 | |
| Bylaw Exp. Date: | | | No | rthling | : | | | Ole | d II |): | Ш | | | | | | |
| B. RAILWAY OVER | PASS/UNDE | RPASS | | | | | | | | | | | | | | | |
| Railway Level Cros | ssing Numbe | r: | | | | | Orig | inal | l Bo | ard Ord | er N | umb | er: | | | | |
| Railway Company: | | | | | | | Date | e: | | | | | | | | | |
| Railway Subdivisi | on: | | | | | | Curr | ent | Воа | rd Orde | r Nu | mbe | r: | | | | |
| Subdivision Milea | ge: | | | | | | Date | e: | | | | | | | | | |
| Transport Canada | _ | | | | | | Seni | orit | tv: | | | | | | | | |
| Number of Tracks | | | | | | | | | .,. | | \Box | | | | | | |
| | | - | | | _ | | | | _ | | | | | | | $\overline{}$ | |
| C. JURISDICTION | O A BALINI | | | | | CDI | | | + | | | + | | | | +- | |
| Owner: | O A MUN | | | | ignation | : CBL | | | | /lunicA: | | + | | | | - | |
| Owner Share: | | | | gnation | | | | | _ | /lunicB: | | + | | | | - | |
| Shared: | | | Adjac | cent Cu | vert No. | : | | | P | a trol : | | + | | | | | |
| Shared With: | _ | | | | | | | | - | | | \square | | | | | |
| Heritage Status: | R | | | | | | | | | | | Щ | | | | | |
| D. EXISTING CONDI | TIONS | | | | | | | | | | | | | | | | |
| Substructure Year: | A. 2014 | | Cell | /Span V | Vidth/Di | a 3 | 3.1m | | En | d Tratme | nt: | Α | B C D | | | | |
| Superstruct Year: | | | Tota | l Width | /Dia.: | 3 | 3.1m | | En | d Upstre | am: | N | | | | | |
| Material/Type: | CSP-PR | | Max | Height | : | 3 | 3.1m | | En | d Downs | tre a | m N | | | | | |
| Cossing Skew: | 0 | | Leng | gth: | | ~15 | 5.5m | | So | il Condit | ion: | U | | | | | |
| No. of Cells/Spans: | 1 | | Туре | /Depth | of Fill: | | E .7 | | Fo | undatior | 1 Тур | e: Bi |) Beddii | ng | | | |
| | | | Culv | ert Floo | r | | sc | | | | | | | | | | |
| ~~~~~~ R | OAD OVER CL | JLVERT | ~~~~ | ~~~~ | ~~~~~ | ~~~~~~~~ | ~~~~ | ~~~ | ~~~ | ~~~~~ | ~~~ | ~~~ | ~~~~~ | ~~~~ | ·~~~~ | ·~~~ | ,~~~~ |
| Existing Road Class | 300 | | Plati | form W | idth: | 8 | 3.5m | | Sa | fe ty Curb | : | (<i>A</i> | .) N | | | | |
| Operational Status | 2W-OAT | | Surfa | ace Wid | dth: | - | 7.5m | | Sic | lewalk a | nd C | ur (E |) N | | | | |
| Surface Type: | G | | No. | of Lane | s: | | 2.0 | | Ro | adside S | afet | y: (A |) N NO | | | | |
| ~~~~~~ ROA | D THROUGH | CULVERT | ~~~~ | ~~~~ | ~~~~~ | ·~~~~~~~ | ~~~~ | ~~~ | ~~~ | ~~~~~ | ~~~ | ~~ (E |) S NO | | | | |
| Existing Road Class | S: | | No. | of Lane | s: | | | | Tra | ffic Barr | ier: | Ť | | | | | |
| Operation Status: | | | Med | lian Typ | e/Width | 1: | | | Mi | n Vertica | ıl Cle | eara | nce: | | | | |
| Opening Width: | | | | ty Curb | | | | | | | | | | | | | |
| Surface Width: | | | Side | walka | nd Curb: | | | | | | | | | | | | |
| E. TRAFFIC DATA | | | | | | · | | Т | | | T | | | | \equiv | | 一 |
| Legal Speed Limit | | | | Traffic | Count | - | | 1 | 0.40 | ear Traff | fic F | orec | ast | | _ | | \neg |
| Route Designatio | | | | Year: | | _ | | _ | 'ear | | | | | | | | |
| Bus Tr | uck Route | | | AADT | : | | | А | AAD | T: | | | | | | | |
| School Bi | cycle | | | DHV F | actor: | | | D | ЭHV | Factor: | | | | | | | |
| | | | | DHV: | | | | D | ЭHV | : | | | | | | | |
| | | | | Trucks | s: | | | Т | ruc | ks: | | | | | | | |
| Source: | | | | Peak I | Directio | onal Split: | | С | Сара | a ci ty: | | | | | | | |
| | | | | 10 Yea | ar Grow | /th: | | 2 | 0 Y | ear AAD | T: | | | | | | |
| F. INSPECTIONS | | | | | | | | | | | | | | | | | |
| Date: 19 | -Jun-18 | | Inspe | ected B | y: | Reg McKinnon | | | App | roved By | y: | | | | | | |
| | | | | | | 5 5 | | | | | | | | 1 | | | |

Municipality: Township of Johnson

Desbarats River Culvert

| G. CULVERT NEEDS | | | | | | | | | |
|----------------------------|----------|-------------|-----------|------------|--------------|-----|------------|----------------|---------|
| Field | M | CR PO | CR TO | N c | omments | | | | |
| Barrel | 9 | 9 | AD | EQ | | | | | |
| Foundations | 9 | 9 | AD | EQ | | | | | |
| Guiderail/Barrier | 6 | 6 | 1-5 | years | | | | | |
| Inlet Component | 0 | 0 | AD | EQ | | | | | |
| Outlet Component | 0 | 0 | AD | EQ | | | | | |
| Streams/Waterways | 6 | 6 | AD | EQ | | | | | |
| H. FUNCTIONAL NEEDS | | | | | | | | | |
| Field | Existing | g Min. T | olerable | Time of No | eed | Со | mments | | |
| Road over Culvert | | | | | | | | | |
| RO-Platform Width | 8.5m | 6.5m | | ADEQ | | | | | |
| RO-Level of Service | Α | E | | ADEQ | | | | | |
| RO-Roadside Safety | | 3 | | NOW | | | | | |
| RECOMMENDED NEEDS | | | | | | | | | |
| Impr. Class Improv | ement | Description | | | Time of Need | Yea | r Base | /Const. | |
| I. ENGINEERING RECOMM | | | | I PARAME | ΓERS | T | | EMENT COSTS | |
| Culvert Drawings: | UNK | | Design C | lass: | RS | | Total Cons | truction/Rehab | \$ - |
| Engineering Investig. | | | Design P | latform Wi | dth 8.5n | 1 | Contingen | cies | \$ - |
| Total Cost of Eng. Investi | g. | | Material | /Type: | CPS-PI | ₹ | Engineerin | g | \$ - |
| Evaluated Posting: | | | Width/D | iameter: | 3.6n | n | Total: | | \$ - |
| Closure Date/Type | | | Maximur | n Height: | 3.6n | , | | | |
| Closure Type: | | | Culvert L | | 29.0n | Ţ | | | |

1.0m

INSPECTION NOTES:

Monitoring Component:

Monitoring:

G. CULVERT NEEDS

• Plastic coated corrugated steel round pipe culvert with approximately 0.7m of gravel fill and a surface treated roadway.

No. of Culverts:

Depth of Fill:

- Surface treated roadway and approaches are in good condition.
- Hazard markers located at all four corners.
- Approaches and culvert protected by guiderail with wooden posts and offset blocks on the approaches and metal posts over the culvert. Wooden posts and offset blocks have minor cracking and splitting, some offset blocks are rotated.
- Roadway embankments are in good condition and protected with armour rock.
- Steel culvert is generally in good condition
- Watercourse is un-obstructed with no evidence of scour.

RECOMMENDATIONS

• Structure does not require posting with a load limit.

Municipality: Township of Johnson

Desbarats River Culvert Culvert Culvert No.: 01



East Across culvert



West across culvert

Desbarats River Culvert Culvert No.: 01



Typical Guiderail



Rotated offset block

Desbarats River Culvert Culvert No.: 01



North side of Culvert, inlet. Banks protected by rock



South outlet



Looking north through the culvert.

| A. IDENTIFIC | CATION | | | T | | | | | | | | | | | | | | | | |
|--------------|---------|--------------|----------|---------------|----------|-----------|-----------|--------------|------|----------|------|------------|--------|-------------|------------|----------|----------|-----------|-----------|-------|
| Culvert Nam | | Sucker Cree | k Road | $\overline{}$ | | +- | \vdash | | Culv | vert No | | | C | , | | | | | \forall | |
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| F. INSPECTIO | ONS | | | Ī | _ | | Ī | | | | | | - | | | | T | | Ī | |
| Date: | | Jun-18 | | Inspe | ected B | y: | I | Reg McKinnon | 1 | | Αp | proved B | By: | | | | | | I | |
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Sucker Creek Culvert No.: 02

| G. CULVERI N | NEED2 | | | | | | | | | | | | | | | |
|---|-------------|----------|---------|------------|-----------|----------------------|----------|--------|--------|----------|-----|----------|---------|----------|------|------------------|
| Field | | | M | CR | PCR | TON | | Con | nments | | | | | | | |
| Barrel | | | | | 4 | 5 1-5 yr | s. | | | | | | | | | |
| Foundations | | | | (| 6 | 6 ADEQ | | | | | | | | | | |
| Guiderail/Ba | rrier | | | (| 0 | NOW 0 | | | | | | | | | | |
| Inlet Compon | nent | | | (| 0 | 0 ADEQ | | | | | | | | | | |
| Outlet Compo | onent | | | (| 0 | 0 ADEQ | | | | | | | | | | |
| Streams/Wat | erways | | | (| 6 | 5 ADEQ | | | | | | | | | | |
| H. FUNCTIO | NAL NEEL | os | | | | | | | | | | | | | | |
| Field | | | Existi | ng N | Min. Tol | erable | Time of | Need | | Com | ıme | ents | | | | |
| Road over 0 | Culvert | | | | | | | | | | | | | | | |
| RO-Platforn | n Width | | 8.0m | ϵ | 5.5m | | ADEQ | | | | | | | | | |
| RO-Level of | Service | | Α | E | Ξ | | ADEQ | | | | | | | | | |
| RO-Roadsio | de Safety | | | 3 | 3 | | NOW | | | | | | | | | |
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| | | | | | | | | | | | | | | | | |
| RECOMMEN | IDED NEED | os | | | | | | | | | | | | | | |
| Impr. Class | | Improver | nent | De | escriptio | n | | | Time | of Nee | Y | 'ear | Base | /Const. | | |
| I. ENGINEEI | RING REC | OMMEN | DATIONS | | J. | DESIGI | N PARAN | /IETER | s | | | K. IMPR | OVEM | ENT CO | STS | |
| Culvert Dra | wings: | | UNK | | С | esign (| Class: | | | RSL | П | Total Co | onstruc | ction/Re | hab: | \$ 340,000.00 |
| Engineerin | g Investig | ζ. | C/S | | С | esign F | Platform | Width | 1: | 8.0m | | Conting | encies | 5 | | \$ 34,000.00 |
| Total Cost | of Eng. Inv | vestig. | \$10,00 | 00.00 | N | 1a te ri a | I/Type: | | | cps-pr | - | Engine | ering | | | \$ 60,000.00 |
| Evaluated I | Posting: | | | | v | /idth/D | iameter | : | | 3.0m | | Total: | | | | \$ 434,000.00 |
| | +- /T | | | | N | 1a xi mu | m Height | t: | | 3.0m | | | | | | |
| Closure Da | te/Type | | | | | | | | | | - | | | | | |
| Closure Da Closure Tyr | | | | | c | ulvert L | ength: | | | 20m | | | | | | |
| Closure Da Closure Typ Monitoring | oe: | | | | | ulvert L o. of Cu | ength: | | | 20m 1 | | | | | | |

G. CULVERT NEEDS

- 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. Bump signs were located in both directions.
- 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. Water was infiltrating the pipe through rust perforations and at plate joints.
- Significant sag in the culvert along its length and a moderate bulge in the culvert's east wall were noted.
- Beaver dam was present at inlet into the culvert.
- Inlet was no visible due to the beaver dam and high watertable

Recommendations

- Structure does not require posting with a load limit.
- Traffic protection should be installed on the approaches and over the structure.
- Beaver dam located at the culvert inlet should be removed
- Erosion on the north embankments and scour under the pipe inlet should be repaired and stabilized/protected to prevent reoccurrence.
- Cracks in surface treatment should be repaired to prevent damage to wearing surface at structure. Patching should also be placed on either side of the culvert to mitigate the depressions.

Municipality: Township of Johnson

Sucker Creek Culvert Culvert No.: 02

• 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).

Municipality: Township of Johnson

Sucker Creek Culvert No.: 02



East across culvert



North upstream of culvert

Sucker Creek Culvert No.: 02



Beaver Dam at the inlet of the culvert



Culvert is rusting and flaking off. Water infiltrating through perforations in metal culvert.



Joint in culvert leaking.



North through the culvert, sag along its length.

Municipality: Township of Johnson Sucker Creek Culvert



North through the culvert, sag along its length.

| Owner Share: Designation 2: Adjacent Culvert No.: Shared With: Heritage Status: R Substructure Year: A 1980 Cell/Span Width/Dia: Total Width/Dia: | A IDEA:=:-: | A T: 0 - | | | | | | | | | | | | | | | | | |
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| Location: A km South of Highway 17 | | | | | | | | | | | | | C3 | • | | - | | - | |
| Posting Sign: L Crossing Type: O-WAT | | : | | | | | | | | | | | + | | | | | -+ | |
| Posting E T T Low Glearmo Sign: Pederal Nav. Waterway: Unknown Pederal Nav. Waterway: S 400,000.00 | | ov. | | ltirorriigi | | | ign: | + | IVITO | | | | | | | 0- | -\Λ/ΔT | | |
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| Bylaw Exp. Date: Northling: Old ID: | | | | | | | Jacoba | | | | | | | | , u y. | _ | | .00 | |
| B. RAILWAY OVERPASS/UNDERPASS RAIlWay Level Crossing Number: RAIlway Subdivision: Subdivision Mileage: Transport Canada Crossing No.: Number of Tracks C. JURISDICTION Owner: O A MUN Owner: O Designation 2: Shared: Shared: Shared: Shared: Shared: Shared: Heritage Status: R Substructure Year: A 1980 Cell/Span Width/Dia: Superstruct/Yape: Cossing Skew: O Length: Existing Road Class: OOOP ROAD OVER CULVERT Existing Road Class: OOOP ROAD OVER CULVERT Existing Road Class: OOOP ROAD THROUGH CULVERT OOOP ROAD THROUGH CULVERT Existing Road Class: OOOP ROAD THROUGH CULVERT | | Date: | | | | | : | | | | | | | | | Ė | , | | |
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| Shared With: Heritage Status: R Substructure Year: Substruct Year: Material/Type: CPS-PA Max Height: 2.5m End Dustream: N Material/Type: CPS-PA Max Height: 2.5m End Downstream N Cossing Skew: 0 Length: 23.5m Soil Condition: U No. of Cells/Spans: 1 Type/Depth of Fill: E 0.7m Coller Floor SC ROAD OVER CULVERT Existing Road Class: 300 Platform Width: 5.8m Sidewalk and Curb: (B) N / Surface Type: 0 No. of Lanes: 2.0 Roadside Safety: (A) E NO ROAD THROUGH CULVERT Existing Road Class: No. of Lanes: Traffic Barrier: Operation Status: Median Type/Width: Min Vertical Clearance: Operation Status: Median Type/Width: Min Vertical Clearance: Surface Width: Sidewalk and Curb: 10 Year Traffic Forecast Route Designations: Year: Year: Year: Bus Truck Route AADT: AADT: AADT: School Bicycle DHV Factor: DHV Factor: DHV Factor: DHV Factor: DHV Factor: DHV Factor: DHV: Capacity: 20 Year AADT: AADT: Source: Peak Directional Split: Capacity: 20 Year AADT: Source: Peak Directional Split: Capacity: 20 Year AADT: Source Peak Directional Split: Capacity: 20 Year AADT: Source: 19-Jun-18 Inspected By: Reg McKinnon Approved By: | Owner Share | :: | | | Desi | gnation | 2: | | | | N | MunicB: | | | | | | | |
| Heritage Status: R Cell/Span Width/Diz S.2m End Tratment: A B C D | Shared: | | | | Adja | cent Cu | lvert No.: | | | | F | Patrol: | | | | | | | |
| Substructure Year: A 1980 Cell/Span Width/Dia: 5.2m End Tratment: A B C D Superstruct Year: Total Width/Dia: 5.2m End Upstream: N Material/Type: CPS-PA Max Height: 2.5m End Downstream: N Mosof Cells/Spans: 1 Type/Depth of Fill: E 0.7m Foundation: U No. of Cells/Spans: 1 Type/Depth of Fill: E 0.7m Foundation: Type BD - Bedding Culvert Floor SC ROAD OVER CULVERT Existing Road Class: 300 Platform Width: 6.8m Safety Curb: Existing Road Class: 300 Platform Width: 5.8m Sidewalk and Curb: (B) N / Surface Type: 0 No. of Lanes: 2.0 Roadside Safety: (A) E NO ROAD THROUGH CULVERT (B) W NO Existing Road Class: No. of Lanes: Traffic Barrier: Operation Status: Median Type/Width: Min Vertical Clearance: Operation Status: Median Type/Width: Min Vertical Clearance: Operation Status: Safety Curb: Sidewalk and Curb: E. TRAFFIC DATA | Shared With | : | | | | | | | | | | | | | | | | | |
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| Max Height: 2.5m End Downstream N Cossing Skew: 0 Length: 23.5m Soil Condition: U No. of Cells/Spans: 1 Type/Depth of Fill: E 0.7m Foundation Type: BD - Bedding Culvert Floor SC ROAD OVER CULVERT Existing Road Class: 300 Platform Width: 6.8m Safety Curb: (A) N / Operational Status: 2W OAT Surface Width: 5.8m Sidewalk and Curb: (B) N / Surface Type: 0 No. of Lanes: 2.0 Roadside Safety: (A) E NO Existing Road Class: No. of Lanes: Department of the company of th | Substructure | Year: | A 1980 |) | Cel | II/Span | Width/D | ia | 5.2m | | ı | End Tratm | ent: | | А В С | D | | | |
| Cossing Skew: 0 Length: 23.5m Soil Condition: U No. of Cells/Spans: 1 Type/Depth of Fill: E 0.7m Foundation Type: BD - Bedding Culvert Floor SC ROAD OVER CULVERT Existing Road Class: 300 Platform Width: 6.8m Safety Curb: (A) N / Operational Status: 2W OAT Surface Width: 5.8m Sidewalk and curb: (B) N / Surface Type: 0 No. of Lanes: 2.0 Roadside Safety: (A) E NO ROAD THROUGH CULVERT Existing Road Class: No. of Lanes: 2.0 Roadside Safety: (A) E NO ROAD THROUGH CULVERT Existing Road Class: No. of Lanes: Traffic Barrier: (B) W NO Existing Road Class: No. of Lanes: Traffic Barrier: (B) W NO Existing Road Class: No. of Lanes: Traffic Barrier: (B) W NO Existing Road Class: No. of Lanes: No. | Supers truct \ | Year: | | | Tot | tal Wid | th/Dia.: | | 5.2m | | ı | End Upstro | eam | : | N | | | | |
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| Surface Type: 0 No. of Lanes: 2.0 Roadside Safety: (A) E NO ROAD THROUGH CULVERT Existing Road Class: No. of Lanes: Traffic Barrier: Median Type/Width: Min Vertical Clearance: Opening Width: Safety Curb: Surface Width: Sidewalk and Curb: E. TRAFFIC DATA Legal Speed Limit: Traffic Count Year: Vear: Vear: AADT: AADT: School Bicycle DHV: DHV: DHV: Trucks: Source: Peak Directional Split: Capacity: Source: Peak Directional Split: Capacity: Trucks: Source: Peak Directional Split: Capacity: Source: 19-Jun-18 Inspected By: Reg McKinnon Approved By: | Existing Roa | d Clas | s: 300 |) | Pla | tform V | Vidth: | 6.8m | | | 9 | Safety Cur | b: | | | | (A) N / | | |
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| ROAD THROUGH CULVERT No. of Lanes: No. of Lanes: Operation Status: Opening Width: Safety Curb: Surface Width: Sidewalk and Curb: E. TRAFFIC DATA Legal Speed Limit: Route Designations: Bus Truck Route AADT: School Bicycle DHV Factor: DHV: DHV: Trucks: F. ITNAFECTIONS Date: 19-Jun-18 Inspected By: Reg McKinnon Approved By: Traffic Barrier: Itraffic Barrier: Meit No. Traffic Barrier: Itraffic Barrier: Meit No. Itraffic Barrier: Meit No. Itraffic Barrier: Meit No. Min Vertical Clearance: Min Vertical Clearan | Surface Type | : | (|) | No | . of Lan | es: | 2.0 | | | _ | | | | | | | 0 | |
| Existing Road Class: Operation Status: Operation Status: Opening Width: Safety Curb: Surface Width: Sidewalk and Curb: E. TRAFFIC DATA Legal Speed Limit: Route Designations: Bus Truck Route AADT: School Bicycle DHV Factor: DHV: Trucks: Source: Peak Directional Split: Capacity: 10 Year AADT: Capacity: 10 Year AADT: Date: 19 Jun-18 Inspected By: Reg McKinnon Approved By: | ~~~~~~ | RO | AD THROUGH | CULVERT | ~~ | ~~~~~ | ~~~~~ | ~~~~~~~ | ~~~~ | ~~~ | ~~ | ~~~~~ | ~~~ | .~~ | ~~~~~ | ~~~ | · · | | |
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| Surface Width: Sidewalk and Curb: E. TRAFFIC DATA Legal Speed Limit: Route Designations: Bus Truck Route AADT: School Bicycle DHV Factor: DHV: Trucks: Trucks: Source: Peak Directional Split: Capacity: 10 Year Traffic Forecast Year: AADT: DHV Factor: DHV: Trucks: Trucks: Source: Peak Directional Split: Capacity: 10 Year AADT: F. INSPECTIONS Date: 19-Jun-18 Inspected By: Reg McKinnon Approved By: | | | | | Me | dian Ty | pe/Widt | h: | | | ı | Min Vertic | al C | lea | rance: | | | | |
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| Traffic Count 10 Year Traffic Forecast Year: Y | | | | | | | | | | | T | | | | | | | | |
| Traffic Count 10 Year Traffic Forecast Year: Y | E. TRAFFIC D | DATA | | | | | | | | T | | <u> </u> | | | | | | | |
| Route Designations: Bus Truck Route AADT: School Bicycle DHV Factor: DHV: DHV: DHV: Trucks: Trucks: Trucks: Source: Peak Directional Split: Capacity: 10 Year Growth: DHV: AADT: DHV Factor: DHV Factor: DHV: Capacity: Capacity: APPROVED ADDED F. INSPECTIONS Date: 19-Jun-18 Inspected By: Reg McKinnon Approved By: | Legal Speed | d Limit | t: | | | Traffic | Count | | | 1 | ٥٠. | Year Traff | fic F | ore | cast | | | | |
| DHV Factor: DHV Factor: DHV Factor: DHV: | Route Desig | gnatio | ns: | | | | | | | | | | | | | | | | |
| DHV: | Bus | Tı | ruck Route | | | AADT | | | | Α | AΓ | DT: | | | | | | | |
| Trucks: Trucks: Source: Peak Directional Split: Capacity: 10 Year Growth: 20 Year AADT: F. INSPECTIONS Date: 19-Jun-18 Inspected By: Reg McKinnon Approved By: | School | Ві | icycle | | | DHV F | actor: | | | D | Ή | V Factor: | | | | | | | |
| Peak Directional Split: Capacity: 10 Year Growth: 20 Year AADT: F. INSPECTIONS Date: 19-Jun-18 Inspected By: Reg McKinnon Approved By: | | | | | | DHV: | | | | D | Ή | V: | | | | | | | |
| To Year Growth: 20 Year AADT: F. INSPECTIONS Date: 19-Jun-18 Inspected By: Reg McKinnon Approved By: | | | | | | Trucks | s: | | | Т | ru | cks: | | | | | | | |
| F. INSPECTIONS Date: 19-Jun-18 Inspected By: Reg McKinnon Approved By: | Source: | | | | | | | · | | С | a p | oa ci ty: | | | | | | | |
| Date: 19-Jun-18 Inspected By: Reg McKinnon Approved By: | | | | | | 10 Yea | ar Grow | th: | | 2 | 0. | Year AAD | T: | | | | | | |
| | F. INSPECTIO | NS | | | | | | | | | | | | | | | | | |
| | Date: | 19 |)-Jun-18 | | Insp | ected B | | | | | Αp | proved By | y: | + | | + | | - | |

Sucker Creek Near CASS

| G. CULVERT NEEDS | | | | | | | | | | | | | | | | |
|-----------------------|----------|-------------|-------|----------|----------|----------|----------|---------|-----|------|-----------|-------|------------|----|------------|-------|
| Field | | MCR | | PCR | TO | N | Comme | nts | | | | | | | | |
| Barrel | | | 4 | ŗ | 5 1-5 | years | | | | | | | | | | |
| Foundations | | | 9 | g | 9 AD | EQ | | | | | | | | | | |
| Guiderail/Barrier | | | 0 | (| ON | W | | | | | | | | | | |
| Inlet Component | | | 0 | |) AD | - | | | | | | | | | | |
| Outlet Component | | | 0 | |) AD | | | | | | | | | | | |
| Streams/Waterways | | | 6 | (| 6 AD | EQ | | | | | | | | | | |
| H. FUNCTIONAL NEE | DS | | | | | | | | | | | | | | | |
| Field | | Existing | Min | . Tolera | able | Time o | of Need | | Com | nme | ents | | | | | |
| Road over Culvert | | | | | | | | | | | | | | | | |
| RO-Platform Width | | 6.8m | 6.5m | า | | ADEQ | | | | | | | | | | |
| RO-Level of Service | | Α | E | | | ADEQ | | | | | | | | | | |
| RO-Roadside Safety | | | 3 | | | NOW | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| RECOMMENDED NEE | DS | | | | | | | | | | | | | | | |
| Impr. Class | Improvem | ent | Descr | iption | | | | Time of | Nee | e (Y | 'ear | Ва | se/Const. | | | |
| I. ENGINEERING REC | OMMEND | ATIONS | | J. DE | ESIGN | N PARA | METERS | | | | K. IMPRO | VEI | MENT COST | TS | | |
| Culvert Drawings: | | UNK | | Des | ign C | Class: | | RSL | | | Total Cor | nstri | uction/Reh | ab | \$ 40,0 | 00.00 |
| Engineering Investi | g. | C/S | | Des | ign F | Platform | n Width: | 6.8m | | | Continge | ncie | es | | \$ 4,0 | 00.00 |
| Total Cost of Eng. Ir | vestig. | \$10,000.00 | | Mat | e ri a l | I/Type: | | CPS-P | R | | Engineer | ing | | | \$ 16,0 | 00.00 |
| Evaluated Posting: | | | | Wid | th/D | iamete | r: | 5.2m | | | Total: | | | | \$ 60,0 | 00.00 |
| Closure Date/Type | | | | Max | imuı | m Heigh | nt: | 5.2m | | | | | | | | |
| Closure Type: | | | | Culv | ert L | ength: | | 23.5m | 1 | | | | | | | |
| Monitoring: | | | | | | ulverts: | | 1 | | | | | | | | |
| Monitoring Compor | nent: | | | Dep | th of | f Fill: | | .7m | | | | | | | | |
| <u>-</u> | | | • | _ | | | | | _ | _ | | _ | | _ | | |

- Corrugated plate steel pipe arch with approximately 0.7m of gravel fill and a surface treated roadway.
- Roadway is generally in good condition.
- No traffic protection is provided on the approaches or over the structure.
- 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

Sucker Creek Near CASS Culvert No.: 03



South across the culvert



Looking west upstream of culvert



West elevation of culvert



Looking upstream though the culvert



Light to moderate corrosion at waterline

| A. IDENTIFICATION | ı | | | | | | | | | | | | | | | |
|---------------------------------------|--------------|----------|-------|------------------------|----------|--------------|-------|------|-------|------------|---------------|----------|------------|-------|--------|--------|
| Culvert Name | Governm | ent Road | Culv | ert | | | Culv | ert/ | No. | : | C5 | 5 | | | | |
| Road Name: | Governm | ent Road | | | | | Roa | d Se | e cti | on.: | 26 | 0 | | | | |
| Location: | .4km East | of Fishe | r Roa | d | | | MTC | Sit | te N | lo.: | | | | | | |
| Roadside Env.: | R | | Po | sting S | gn: | | | Cr | oss | ing Type | : | | | O-WA | .T | |
| Posting: | ttt | | Lov | w Clear | nc Sign: | | | Fe | de | ral Nav. ' | Wat | e rw a | y: | UNKN | | |
| Bylaw No.: | | | Eas | sting: | | | | Cu | ılve | rt Value | : | | | \$400 | ,000.0 | 0 |
| Bylaw Exp. Date: | | | No | rthling | : | | | OI | d II | D: | Ш | | | | | |
| B. RAILWAY OVER | PASS/UNDE | RPASS | | | | | | | | | | | | | | |
| Railway Level Cros | ssing Numbe | r: | | | | | Orig | ina | l Bo | oard Ord | erN | umb | er: | | | |
| Railway Company | : | | | | | | Date | e: | | | | | | | | |
| Railway Subdivisi | on: | | | | | | Curr | ent | Во | ard Orde | r Nu | ımbe | r: | | | |
| Subdivision Milea | | | | | | | Date | e : | T | | | | | | | |
| Transport Canada | _ | | | | | | Seni | | tv. | | \Box | | | | | |
| Number of Tracks | Crossing ito | ·· | | | | | 30111 | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| C. JURISDICTION | | | | | | | | - | _ | | | - | | | | |
| Owner: | O A MUN | | | | ignation | : CBL | | - | | MunicA: | | \vdash | | | | |
| Owner Share: | | | Desig | gnation | 2: | | | | ı | MunicB: | | ш | | | | |
| Shared: | | | Adjac | ent Cu | vert No. | : | | | F | Patrol: | | | | | | |
| Shared With: | | | | | | | | | | | | | | | | |
| Heritage Status: | R | | | | | | | | | | | | | | | |
| D. EXISTING CONDI | TIONS | | | | | | | | | | | | | | | |
| Substructure Year: | A. 1980 | | Cell | /Span V | Vidth/Di | ā | 3.6m | | En | d Tratme | nt: | Α | ВСД | | | |
| Superstruct Year: | | | Tota | l Width | n/Dia.: | | 3.6m | | En | d Upstre | am: | N | | | | |
| Material/Type: | CSP-PR | | | Height | | | 3.6m | | En | d Downs | trea | m N | | | | |
| Cossing Skew: | 0 | | Leng | | | 2 | 9.0m | | So | il Condit | ion: | U | | | | |
| No. of Cells/Spans: | : 1 | | _ | | of Fill: | E | 1.0m | | Fo | undatio | n Typ | e: BI |) Beddi | ng | | |
| | | | | ert Floc | | | sc | | | | Ï | | | | | |
| ~~~~~~ R | OAD OVER CU | JLVERT | ~~~~ | ~~~~ | ~~~~~ | .~~~~~~~ | ~~~~ | ~~~ | ~~~ | ~~~~~ | ~~~ | ~~~ | ~~~~~ | ~~~~~ | ~~~~~ | ~~~~~~ |
| Existing Road Class | 300 | | Platf | form W | idth: | | 8.5m | | Sa | fety Curb |): | (A | .) N | | | |
| Operational Status | | | Surfa | ace Wid | ith: | | 7.5m | | | dewalk a | | Ť | • | | | |
| Surface Type: | G | | | of Lane | | | 2.0 | | | adside S | | Ť | • | | | |
| | D THROUGH | CULVERT | | ~~~~~ | ~~~~~ | ~~~~~~~~~ | ~~~~ | ~~~ | | ~~~~~ | | | | | | |
| Existing Road Class | | | No. o | of Lane | ۲. | | | | Т | affic Barr | | | , | | | |
| Operation Status: | | | | | e/Width | : | | | | n Vertica | | eara | nce: | | | |
| Opening Width: | | | | ty Curb | | | | | | | | | | | | |
| Surface Width: | | | | | nd Curb: | | | | | | | | | | | |
| | | | 0.00 | | 14 54.51 | | | | | | $\overline{}$ | | | _ | | |
| E. TRAFFIC DATA | | | | Traffi | Count | | | 1 | 10.1/ | T f | £: - F | | | | _ | |
| Legal Speed Limit Route Designatio | | | - | <u>rrarri</u> Year: | Count | | | | rea | ear Traf | IIC F | orec | <u>ast</u> | | | |
| | uck Route | | | AADT | | | | | ٩AD | | | | | | _ | |
| | cycle | | _ | | actor: | | | _ | | / Factor: | + | | | | | |
| 56.1001 | 3,0.0 | | | DHV: | | | | | ЭΗν | | | | | | | |
| | | | _ | Trucks | 5: | | | _ | | ks: | | | | | | |
| Source: | | | | | | onal Split: | | | | a ci ty: | | | | | | |
| | | | | | ar Grow | | | _ | | ear AAD | T: | | | | | |
| F. INSPECTIONS | | | | | | | | | | | | | | | | |
| | -Jun-18 | | Inspe | ected B | y: | Reg McKinnon | | | Ар | proved B | y: | | | | | |
| | | | T . | | | | | | | | | | | | | |

Government Road Culvert

| G. CULVERT NEEDS | | | | | | | | | | | | | | | | |
|-----------------------|-----------|---------|--------|-----------|------------|-----------|--------|----------|-----|-------|-------|-------|------|---------|----------|----------|
| Field | | N | ИCR | PCR | тоі | N | Comme | nts | | | | | | | | |
| Barrel | | 5 | ; | 6 | 6-1 | 0 yrs | | | | | | | | | | |
| Foundations | | 9 |) | 9 | AD | EQ | | | | | | | | | | |
| Guiderail/Barrier | | C |) | 0 | NO | W | | | | | | | | | | |
| Inlet Component | | C |) | 0 | AD | EQ | | | | | | | | | | |
| Outlet Component | | C |) | 0 | AD | EQ | | | | | | | | | | |
| Streams/Waterways | | 6 | i | 6 | AD | EQ | | | | | | | | | | |
| H. FUNCTIONAL NEE | DS | | | | | | | | | | | | | | | |
| Field | | Existir | ng N | ∕lin. Tol | erable | Time of | Need | | Com | ment | s | | | | | |
| Road over Culvert | | | | | | | | | | | | | | | | |
| RO-Platform Width | | 8.5m | 6 | 5.5m | | ADEQ | | | | | | | | | | |
| RO-Level of Service | | Α | E | | | ADEQ | | | | | | | | | | |
| RO-Roadside Safety | | | 3 | 3 | | NOW | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| RECOMMENDED NEEDS | S | | | | | | | | | | | | | | | |
| Impr. Class | mprovemen | it | Descri | ption | | | Time o | of Nee(Y | ear | | Base | /Con | st. | | | |
| I. ENGINEERING REC | OMMEND | ATIONS | | 1. | J. DESIG | N PARAI | METERS | | | K. IN | 1PRO | VEIV | IENT | r costs | | |
| Culvert Drawings: | | UNK | | | Design | Class: | | RS | L | Tota | I Con | stru | ctio | n/Rehab | \$ 44 | 0,000.00 |
| Engineering Investi | g. | | | | Design | Platform | Width | 8.5n | า | Cont | inge | ncies | 5 | | \$ 4 | 4,000.00 |
| Total Cost of Eng. In | vestig. | | | | Ma te ri a | al/Type: | | CPS-PI | 3 | Engi | neer | ing | П | | \$ 7 | 0,000.00 |
| Evaluated Posting: | | | | | Width/ | Diamete | r: | 3.6n | n | Tota | 1: | | | | \$ 55 | 4,000.00 |
| Closure Date/Type | | | | | Ma xi m u | ım Heigh | it: | 3.6n | า | | | | | | | |
| Closure Type: | | | | | Culvert | Length: | | 29.0n | า | | | | | | | |
| Monitoring: | | | | | No. of C | Culverts: | | | 1 | | | | | | | |
| Monitoring Compon | ent: | | | | Depth o | of Fill: | | 1.0n | า | | | | | | | |

- Corrugated steel round pipe culvert with approximately 1.0 m of gravel fill and a gravel roadway.
- Gravel roadway and approaches are in good condition.
- No traffic protection is provided on the approaches or across the structure.
- Roadway embankments are in good condition and protected with vegetation and rock.
- 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 damaged portion at the floor level. The barrel is slightly out of round. An
 indentation was noted on east wall of the culvert at approximately the center line of road. Parging of culvert joints has failed and
 sections missing throughout.
- Culvert inlet is undermined allowing water to pass around the outside base of the culvert through the roadway.
- Sag in culvert floor along culvert barrel at 1st joint from the outlet with pooling water.
- Watercourse is un-obstructed with no evidence of scour.

RECOMMENDATIONS

- Structure does not require posting with a load limit.
- Traffic protection should be installed at the approaches and across the structure
- The missing parging and opened seams should be repaired and maintaned to prevent water from travelling under the culvert, including repairs at each end of the culvert.
- Monitor indentation of culvert barrel at centerline of roadway/culvert barrel.
- Expected replacement of culvert should be budgeted for 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.

Municipality: Township of Johnson Government Road Culvert



East Across culvert



South end of culvert looking at the outlet

Municipality: Township of Johnson Government Road Culvert



Parging missing at joint, typical.



Indentation on the east wall of culvert



Inlet of culvert, moderate undermining.



Outlet of culver, looking south downstream.

| | | | | _ | | | | _ | _ | | | | | |
|---------------|--------|------------------|-------------|--------|----------|-----------|--------------|----------|-----|---------------------------|-----------|-----------|-------------|---------|
| A. IDENTIFIC | CATIO | N | | | | | | | | | | | | |
| Culvert Nam | ie | Sucker Cre | ek Culvert | | | | | Culv | ert | No.: | | C7 | | |
| Road Name | : | Puddingsto | one Road | | | | | Road | d S | ection.: | | 380 | | |
| Location: | | 2.1 km Nor | th of Gover | nme | nt Rd. | | | мто | Si | te No.: | | | | |
| Roadside Ei | nv.: | R | | Ро | sting S | ign: | t | | Cr | ossing Ty | /pe: | | O-WAT | |
| Posting: | | ttt | | Lo | w Clear | rnc Sign: | | | Fe | deral Na | v. Wa | te rwa y: | U | |
| Bylaw No.: | | | | Ea | sting: | | | | Cu | ılvert Val | ue: | | \$400,000. | .00 |
| Bylaw Exp. D | Date: | y m | | No | orthling | : | | | OI | d ID: | | | | |
| B. RAILWAY | OVE | RPASS/UNDE | RPASS | | | | | | | | | | | |
| Railway Lev | el Cro | ssing Numbe | r: | | | | | Origi | ina | l Board C | Order N | Number: | | |
| Railway Cor | npany | <i>y</i> : | | | | | | Date | e: | | | | | |
| Railway Sub | divis | ion: | | | | | | Curre | ent | Board O | rder N | umber: | | |
| Subdivision | Mile | age: | | | | | | Date | 2: | | | | | |
| | | Crossing No | | | | | | Seni | | tv | | | | |
| Number of 1 | | | | | | | | Jem | Ü., | | | | | |
| | | | | | | | | | | | | | | |
| C. JURISDICT | ION | 0 0 0 0 0 1 10 1 | | _ | | | | ·D1 | | | | | | |
| Owner: | | O A MUN | | | | ignation | | BL | | MunicA: | | | | |
| Owner Share | e: | | | | gnation | | | - | | MunicB: | | | | |
| Shared: | | | | Adja | cent Cu | lvert No. | : | | | Patrol: | | | | |
| Shared With | : | | | | | | | | | | | | | |
| Heritage Sta | tus: | R | | | | | | | | | | | | |
| D. EXISTING | COND | ITIONS | | | | | | | | | | | | |
| Substructure | Year: | | A. 2000 | Cell | /Span V | Vidth/Di | a 5 | .0m | | End Trat | ment: | | ABCD | |
| Superstruct | Year: | | | Tota | al Width | n/Dia.: | 5 | .0m | | End Ups | tream | : | N | |
| Material/Typ | oe: | | CPS-PA | Max | Height | : | 2 | .0m | | End Dov | vnstrea | am: | N | |
| Cossing Skev | w: | | 0 | Leng | gth: | | 18 | .0m | | Soil Con | dition | : | U | |
| No. of Cells/ | 'Spans | : | 1 | Туре | e/Depth | of Fill: | E | .8m | | Foundat | tion Ty | pe: | UN- UNKNO | OWN |
| | | | | Culv | ert Floc | or | | EA | | | | | | |
| ~~~~~~ | F | ROAD OVER CL | JLVERT | ~~~ | ~~~~~ | ~~~~~ | | ~~~~ | ~~~ | ~~~~~ | ~~~~ | .~~~~~~ | ~~~~~~ | .~~~~~~ |
| Existing Roa | d Clas | s: | 300 | Plat | form W | idth: | 8 | .0m | | Safety C | urb: | | (A) N | |
| Operational | | | 2W OAT | Surf | ace Wid | dth: | 7 | .0m | | Sidewal | | Curb: | (B) N | |
| Surface Type | | | G | | of Lane | | | 2.0 | | Roadsid | | | (A) E SC | |
| ~~~~~~ | | AD THROUGH | - | | ~~~~~ | ~~~~~ | | ~~~~ | ~~~ | ~~~~~ | ~~~~ | ~~~~~~~~ | ~~ (B) W SC | |
| Existing Roa | | | COLVERT | No | of Lane | c · | | | | Traffic B | a rri a r | | (5) 11 30 | |
| Operation St | | J. | | _ | | e/Width | \· | | | | | learance: | | |
| Opening Wid | | | | | ety Curb | | | | | IVIIII VEI | licai C | learance. | | |
| | | | | | | | | - | | | | | | |
| Surface Wid | | | | Side | Walka | nd Curb: | | - | | | | | | |
| E. TRAFFIC D | | | | | T CC: | | _ | - | + | | | | | |
| Legal Speed | | | | | Year: | Count | <u>L</u> | | _ | <u>10 Year T</u> ⁄ear: | rattici | -orecast | | |
| Route Desig | | ruck Route | | | AADT | | | | | AADT: | | | | |
| School | | icycle | | | | actor: | | | _ | OHV Fact | or: | | | |
| 3011001 | | reyere | | | DHV: | detor. | | | | DHV: | 01. | | | |
| | | | | | Trucks | s: | | | _ | Γrucks: | + | | | |
| Source: | | | | | | | onal Split: | \dashv | _ | Capacity: | \dashv | | | |
| Source. | | | | | | ar Grow | | | _ | 20 Year A | ADT: | | | |
| F. INSPECTIO | NIS | | <u> </u> | | | | | | | | | | | |
| Date: | | 9-Jun-18 | | Insn | ected B | v. | Reg McKinnon | | | Approve | d By: | | | |
| Date. | 13 | , Jun-10 | | .113 p | ceteu B | , - | P. Eng. | | | ppiove(| . Бу. | | | |

Sucker Creek Culvert No.: 07

| G. CULVERT | NEEDS | | | | | | | | | | | | | | | | | | | |
|--------------|------------|------------|---------|-----|-------------|----------|-------|--------|-----|------|-------|------|----|-------|------|-------|---------|--|----|---|
| Field | | | N | 1CR | Р | CR TO | ON | | Cor | nmen | ts | | | | | | | | | |
| Barrel | | | 6 | | 6 | ΑI | DEQ | | | | | | | | | | | | | |
| Foundations | ; | | 9 | | 9 | Αſ | DEQ | | | | | | | | | | | | | |
| Guiderail/Ba | arrier | | 3 | | 4 | 1- | 5 YRS | S | | | | | | | | | | | | |
| Inlet Compo | nent | | 0 | | 0 | ΑI | DEQ | | | | | | | | | | | | | |
| Outlet Comp | onent | | 0 | | 0 | ΑI | DEQ | | | | | _ | | | | | | | | |
| Streams/Wa | terways | | 6 | | 6 | ΑI | DEQ | | | | | | | | | | | | | |
| H. FUNCTIO | NAL NEE | os | | | | | | | | | | | | | | | | | | |
| Field | | | Existin | g | Min. 7 | olerable | e Ti | me of | Nee | e d | | Co | mm | ents | | | | | | |
| Road over (| Culvert | | | | | | | | | | | | | | | | | | | |
| RO-Platforn | n Width | | 8.0m | | 6.5m | | Al | DEQ | | | | | | | | | | | | |
| RO-Level of | Service | | Α | | E | | Al | DEQ | | | | | | | | | | | | |
| RO-Roadsio | de Safety | | 3 | | 3 | | 1- | 5 YRS | | | | Ш | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | Ш | | | | | | | | |
| RECOMMEN | NDED NEED | os | | | | | | | | | | | | | | | | | | |
| Impr. Class | | Improvemen | nt | D |) e s cri p | tion | | | | Т | ime o | f Ne | e۲ | Year | | Base | /Const | <u>. </u> | | |
| I. ENGINEE | RING REC | OMMENDA | rions | | | J. DESI | IGN | PARA | MET | ERS | | | Т | K. IM | PRO | VEM | ENT CO | STS | | |
| Culvert Dra | wings: | | | | | Desig | n Cla | ass: | | | | | 1 | Total | Con | struc | tion/Re | hab | \$ | - |
| Engineerin | g Investig | g. | | | | Desig | n Pla | atform | Wi | dth: | | М | Т | Conti | ngei | ncies | | | \$ | - |
| Total Cost | of Eng. In | vestig. | | | | Mater | ial/ | Туре: | | | | | | Engir | eeri | ng | | | \$ | - |
| Evaluated | Posting: | | | | | Width | /Dia | mete | r: | | | М | | Total | : | | | | \$ | - |
| | | | | | | Maxim | num | Heigh | ıt: | | | М | | | | | | | | |
| Closure Da | te/Type | | | | | | | | | | | | | | | | | | | |
| | - 11 | | | | | Culver | t Le | ngth: | | | | M | | | | | | | | |
| Closure Da | oe: | | | | | | | | | | | М | | | | | | | | |

- Corrugated plate steel open footing arch with approximately 0.8 m of gravel fill and a gravel roadway.
- Gravel roadway is in good condition.
- 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 posts are causing slack in the cables. 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 at 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.
- Guiderail cables and posts must be repaired and maintained. The guiderail posts should be checked seasonally for broken or decayed posts.
- Lost armoring stone at the culvert inlet should be replaced to protect the walls of the structure.

Municipality: Township of Johnson

Sucker Creek Culvert Culvert No.: 07



North across the culvert



West end of the culvert, inlet

Municipality: Township of Johnson Sucker Creek Culvert



Broken post and slack in the steel guild cables



Protected embankment

Sucker Creek Culvert No.: 07



East through the culvert



Loss of rock armor at inlet



Light staining at waterline

Culvert No.: 08

| A IDENTIFIC | ~ A T! ~ · | | | | | | | | | | | _ | | | |
|------------------------|------------------------------|-------------|------------|---------------------|------------------|--------------|--------------|--------|----------|--------|------------|----------|----------------|-------------|----|
| A. IDENTIFIC | | | | _ | | | | | | | | | | | |
| Culvert Nam | | Sucker Cre | | - | | | | | | No.: | | _ | C8 | | |
| Road Name | : | MacDonal | | | _ | | | | | ectio | | | 485 | | |
| Location: | | | h of Highw | | | | | MIO | | te No | | _ | | 0.1444.T | |
| Roadside E | nv.: | R | | | osting Si | | t | | | | ng Type: | | | O-WAT | |
| Posting: | | ttt | | _ | w Clear | nc Sign: | | | | | l Nav. W | at | erway: | unknown | 00 |
| Bylaw No.: | . | | | | asting: | | | | | | Value: | _ | | \$ 350,000. | 00 |
| Bylaw Exp. [| Jate: | y m | | INC | orthling | : | | | OI | ld ID: | | _ | | | |
| B. RAILWAY | OVE | RPASS/UNDE | RPASS | | | | | | | | | | | | |
| Railway Lev | el Cro | ssing Numbe | er: | | | | | Origi | ina | l Boa | rd Orde | r N | lumber: | | |
| Railway Cor | mpany | <i>r</i> : | | | | | | Date | e: | | | | | | |
| Railway Sub | odivisi | ion: | | | | | | Curre | ent | Boar | d Order | Νι | ımber: | | |
| Subdivision | Mile | age: | | | | | | Date | : | | | | | | |
| | Insport Canada Crossing No.: | | | | | | | Seni | | tv. | | | | | |
| Number of ⁻ | | | /·· | | | | | 30111 | <u> </u> | | | | | | |
| Number of | Hacks | | | | | | | | | | | 7 | | | |
| C. JURISDICT | ION | | | | | | | | | | | \perp | | | |
| Owner: | | O A MUN | | Spec | cial Desi | gnation | CBL | | | Muni | icA: | | | | |
| Owner Share | e: | | | Desi | ignation | 2: | | | | Muni | icB: | | | | |
| Shared: | | | | Adja | cent Cul | vert No.: | 1 | | | Patro | ol: | | | | |
| Shared With | n: | | | | | | | | | | | Т | | | |
| Heritage Sta | tus: | R | | | | | | | | | | Т | | | |
| D. EXISTING | | ITIONS | | | | | | | | | | i | | | |
| Substructure | | | A. 2000 | Cell | I/Span V | /idth/Di | : 5 | .5m | | End | Tratmen | . | | ABCD | |
| Superstruct ' | | | A. 2000 | _ | al Width | | | .5m | | | Upstrea | | | N | |
| | | | CPS-PA | | | | | .1m | | | Downstr | | | N | |
| Material/Typ | | | | | x Height | • | | | | _ | | | | | |
| Cossing Ske | | | 0 | | gth: | 6 = 111 | | .3m | | _ | Conditio | | | U | |
| No. of Cells/ | spans | : | 1 | Type/Depth of Fill: | | | E U | E 0.7m | | Foui | ndation | ıyr | be: | UNKNOWN | |
| | | | | Curv | vert Floo | r | | EA | | | | _ | | | |
| ~~~~~~ | | OAD OVER C | | ~~~ | ~~~~~ | ~~~~~ | | ~~~~ | ~~~ | | ~~~~~ | ~~ | ~~~~~~~ | ~~~~~~~~ | |
| Existing Roa | d Clas | S: | 300 | Plat | tform Wi | dth: | 6 | .0m | | Safe | ty Curb: | _ | | (A) N | |
| Operational | Statu | S: | 2W OAT | Surf | face Wic | lth: | 5 | .0m | | Side | walkan | d (| Curb: | (B) N | |
| Surface Type | e: | | G | No. | of Lane | s: | | 2 | | Roa | dside Sa | fe | ty: | (A) N NO | |
| ~~~~~~ | RO | AD THROUGH | CULVERT | ~~~ | ~~~~~ | ~~~~~ | | ~~~~ | ~~~ | ~~~~ | ~~~~~ | ~~ | ~~~~~~ | ~~ (B) S NO | |
| Existing Roa | d Clas | s: | | No. | of Lane | s: | | | | Traf | fic Barrie | r: | | | |
| Operation St | tatus: | | | Med | dian Typ | e/Width | : | | | Min | Vertical | Cl | earance: | | |
| Opening Wi | dth: | | | Safe | ety Curb | | | | | | | | | | |
| Surface Wid | th: | | | Side | ewalk a | nd Curb: | | | | | | | | | |
| E. TRAFFIC I | DATA | | | | | | | | | | | Т | | | |
| Legal Speed | d Limi | t: | | | <u>Tra ffi c</u> | <u>Count</u> | | | | 10 Ye | ar Traffi | c F | <u>orecast</u> | | |
| Route Desi | gnatio | ons: | | | Year: | | | | \ | Year: | | L | | | |
| Bus | T | ruck Route | | | AADT: | | | | / | AADT: | : | | | | |
| School | В | icycle | | | DHV Fa | ctor: | | | [| DHV F | actor: | L | | | |
| | | | | | DHV: | | | | [| DHV: | | | | | |
| | | | | | Trucks: | | | | _ | Trucks | s: | \perp | | | |
| Source: | | | | | Peak D | irection | al Split: | | (| Capad | city: | 1 | | | |
| | | | | | 10 Yea | r Growth | n: | | | 20 Ye | ar AADT | <u>:</u> | | | |
| F. INSPECTIO | NS | | | | | | | | | | | | | | |
| Date: | 19 | 9-Jun-18 | | Insp | ected B | y: | Reg McKinnon | | | Appr | oved By: | | | | |
| | | | | | | | P. Eng. | | | | | | | | |

Municipality: Township of Johnson

Sucker Creek Culvert

| G. CULVERT NEEDS | | | | |
|---------------------|-----|-----|----------|----------|
| Field | MCR | PCR | TON | Comments |
| Barrel | 6 | 6 | ADEQ | |
| Foundations | 9 | 9 | ADEQ | |
| Guiderail/Barrier | 0 | 0 | NOW | |
| Inlet Component | 0 | 0 | ADEQ | |
| Outlet Component | 0 | 0 | ADEQ | |
| Streams/Waterways | 5 | 6 | 6-10 YRS | |
| H. FUNCTIONAL NEEDS | | | | |

| H. FUNCTIO | NAL NEEDS | S | | | | | | | | | |
|-------------------|-----------|----------|----------------|--------------|--|--|----|--------|--|--|--|
| Field | | Existing | Min. Tolerable | Time of Need | | | Со | mments | | | |
| Road over Culvert | | | | | | | | | | | |
| RO-Platform | n Width | 6.0m | 6.5m | NOW | | | | | | | |
| RO-Level of | Se rvi ce | Α | E | ADEQ | | | | | | | |
| RO-Roadsid | le Safety | | 3 | ADEQ | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

| RECOMMENDED | NEEDS | | | | | | | |
|----------------|-----------------|-------------|---------------|-------------|----------|--------------|---|--|
| Impr. Class | Improvement | Description | | Time of Nee | Year | Base/Const. | | |
| I. ENGINEERING | RECOMMENDATIONS | J. DESI | GN PARAMETERS | | K. IMPRO | VEMENT COSTS | s | |
| | | | | | | | | |

| I. ENGINEERING RECOMMEN | IDATIONS | J. DESIGN PARAMETERS | | K. IMPROVEMENT COSTS | |
|------------------------------|----------|------------------------|--------|--------------------------|-----------------|
| Culvert Drawings: | UNK | Design Class: | RSL | Total Construction/Rehab | \$ 40,000.00 |
| Engineering Investig. | | Design Platform Width: | 9.0m | Contingencies | \$ 4,000.00 |
| Total Cost of Eng. Investig. | | Material/Type: | CPS-PR | Engineering | \$ 8,000.00 |
| Evaluated Posting: | | Width/Diameter: | 2.5m | Total: | \$ 52,000.00 |
| Closure Date/Type | | Maximum Height: | 2.5m | | |
| Closure Type: | | Culvert Length: | 22.0m | | |
| Monitoring: | | No. of Culverts: | 1 | | |
| Monitoring Component: | | Depth of Fill: | 1.5m | | |
| | | | | | |

- 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.
- 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.
- Minor debris was caught on page wire fencing that was immediately downstream.

Recommendations

- Structure does not require posting with a load limit.
- Regularly remove any debris caught on page wire fencing
- Provide traffic protection at approaches and across culvert

Municipality: Township of Johnson Sucker Creek Culvert



East across the culvert



Downstream of culvert. Page wire fence across the creak.



Upstream thought the culvert. Minor staining and surface corrosion at just above waterline.

Appendix C 2018 Municipal Bridge and Culvert Inventory

| Appendix C - | Township of | Johnson | 2018 Munici | pal Bridge 8 | & Culvert Inventory |
|--------------|-------------|---------|-------------|--------------|---------------------|
| | | | | | |

| Bridge No. | Danking | Bridge Name | Bridge Location | Crossing Type | Year of Const | Bridge Value (\$1,000's) | Bridge Type | No. of Spans | Deck Length (m) | Width (m) | Eng Invest Type/Year/ \$1,000'S | Type of Improv | Co st Cat | Time of Improv | Constrn Cost in \$1,000's | Total Proj.Cost \$1,000's |
|------------|---------|-------------------------------------|--|------------------|------------------|-----------------------------|----------------|-----------------|--------------------|-----------|---------------------------------------|-----------------------|-------------------|--|--------------------------------------|------------------------------|
| B1 | 9 | Shewfelt Creek Bridge (at Oikari's) | Gordon Lake Road - 0.9km North of Hwy. 17 | O-WAT | 2006 | 500 | S-EA-F | 1 | 6.2 | 10.3 | - | IAG | PC | 1-5 yrs | 10 | 12.5 |
| B2 | 4 | Shewfelt Creek (at Grasley's) | Fisher Road – 3.3km North of Hwy. 17 | O-WAT | 1950 | 350 | C-TB-F | 1 | 7.0 | 5.1 | - | | PC | 1-5 yrs 1-5 yrs 1-5 yrs | 15 10 40 | 81 |
| В3 | 5 | Stobie Creek Bridge | Government Road – 10m West of Gordon Lake Road | O-WAT | 1937 | 450 | C-TB-F | 1 | 10.1 | 5.7 | - | RSB IAG | | 1-5 yrs 1-5 yrs | 30 30 | 76 |
| В4 | 1 | Suddaby Creek Bridge | Old Mill Road - 0.2km North of Gordon Lake Road | O-WAT | 1913 | 750 | C-TB-C | 3 | 21.3 | 5.3 | | RSB/RSP OWP Or RSL | PC PC PC PC | NOW 1-5 yrs 1-5 yrs 1-5 yrs 1-5 yrs 1-5 yrs | 25 40 10 200 25 1,000 | 370 |
| B5 | 10 | Suddaby Park Bridge | Gordon Lake Road - 0.3km North of Suddaby Park Road | O-WAT | 2009 | 500 | P-BC-F | 1 | 5.3 | 13.0 | - | - | - | - | - | - |
| | | Black Creek Bridge | Gordon Lake Road – 80m South of Suddaby Park Road | | | • | | • | | | | | 3 | | • | |

New Structure - 2018 - Not inspected at the Township Request

Note: Total Municipal Bridge Value (\$1,000's) = \$2,550

3

B6

Total Municipal Bridge Construction Needs (\$1,000's) = \$539.50

* 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 republication costs. Additional project costs would be required during total replacement of the structure.

| Culvert No. | | | dditional project costs would be re | Crossing | Year of | Culvert | Culvert | No. of Spans | Culvert | Culvert | Eng Invest | Type of | Cost Cat | Time of | Constrn | Total Proj.Cos |
|-------------|---------|-----------------------------|--|----------|---------|----------------------|----------------|------------------|------------|-----------|---|---------|----------|-----------------|----------------------|----------------|
| | Ranking | Culvert Name | | Туре | Const | Value (\$1,000's) | Туре | | Length (m) | Width (m) | | Improv | | Improv | Cost in \$1,000's | \$1,000's |
| C1 | - | Desbarats River Culvert | Government Road – 2.0 km West of Gordon Lake Road | O-WAT | 2017 | 400 | CPS | 1 | 15.5 | 3.1 | - | - | - | ADEQ | - | - |
| C2 | 2 | Sucker Creek Culvert | Government Road – 1.9km West of Lake Huron Drive | O-WAT | 1980 | 300 | CPS- PR | 1 | 20 | 3.0 | C/S / 2016 / 10 | IAG RSL | | NOW 1-5 yrs | 40 300 | 434 |
| C3 | 7 | Sucker Creek (Near Cass) | Kensington Point Road - 0.4km South of Hwy. 17 | O-WAT | 1980 | 400 | CPS- PR | 1 | 23.5 | 5.2 | C/S / 2016 / 10 | IAG | PC | NOW | 40 | 60 |
| C4 | - | Desbarats River Culvert | Boyer Drive – 30m South of Hwy. 17 | O-WAT | 2008 | 450 | PCC- BOX | 1 | 17.7 | 5.6 | Not inspected as per township's request | | | | | |
| C5 | 6 | Government Road Culvert | Government Road – 0.4km East of Fisher Road | O-WAT | 1980 | 400 | CPS- PR | 1 | 29.0 | 3.6 | - | IAG RSL | | NOW 6-10 yrs | 40 400 | 554 |
| C6 | | | | | | Does | not exist as p | art of the asset | managemen | t plan | | | | | | |
| C7 | 11 | Sucker Creek Culvert | Puddingstone Road – 2.1 km North of Government Road | O-WAT | 2000 | 400 | CPS- PA | 1 | 18.0 | 5.0 | - | - | - | - | - | - |
| C8 | 8 | Sucker Creek Culvert | MacDonald Drive – 0.4km North of Hwy. 17 | O-WAT | 2000 | 350 | CPS- PA | 1 | 14.3 | 5.5 | - | IAG | PC | NOW | 40 | 52 |

Note: Total Municipal Culvert Value (\$1,000's) = \$2,250
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.

Appendix D STATEMENT OF QUALIFICATIONS AND LIMITATIONS



STATEMENT OF QUALIFICATIONS AND LIMITATIONS

This report has been prepared by STEM Engineering Group Inc. (STEM) and is intended solely for the Client named.

The material contained in the report:

- reflects our best judgment in light of the information reviewed by STEM at the time of preparation
- represent STEM's professional judgement in light of these Limitations and industry standards for the preparation of similar reports
- may be based on information provided to STEM which has not been independently verified
- shall not be used to express or imply warranties as to the fitness of the property for a particular purpose, unless otherwise agreed in writing by STEM
- is not a certification of compliance with past or present regulations
- must be read in its entirety and sections thereof should not be read out of such context
- has not been updated since the date of issuance of the report and its accuracy is limited to the time period and circumstances in which it was collected, processed, made or issued

Unless expressly stated to the contrary in the report:

- This assessment does not wholly eliminate uncertainty regarding the potential for existing or future costs, hazards or losses in connection with a property
- No physical or destructive testing, no intrusive exploration, and no design calculations have been performed unless specifically recorded
- Conditions existing but not recorded were not apparent given the level of study undertaken; further investigation can be performed on items of concern if so required
- Any time frame given for deterioration represents an educated guess based on apparent condition. Failure of the item, or the optimum repair/replacement process, may vary from our estimate
- Responsibility for detection of or advice about pollutants, contaminants or hazardous material is not included in our mandate
- Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of such third parties.

We accept no responsibility for any decisions made or actions taken as a result of this report unless we are specifically advised of and participate in such action, in which case our responsibility will be as agreed to at that time. Any user of this report specifically denies any right to claims against the Consultant, Sub-Consultants, their officers, agents and employees in excess of the fee paid for professional services

This Statement of Qualifications and Limitations is attached to and forms part of the report.