2016 BIENNIAL MUNICIPAL BRIDGE & CULVERT INSPECTIONS





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16-1055 August 3, 2016

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

Dear Mrs. Kelso:

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

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

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

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

Sincerely,

Tulloch Engineering Inc.

Matthew Kirby, P. Eng. Project Manager

MK:mb Encl. (1) cc: file

Distribution List

# of Hard Copies	PDF Required	Association / Company Name
1	1	Township of Johnson

Revision Log

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

Tulloch Signatures

Report Prepared By:

Mack Barber

Mach Barler

Report Reviewed By:

Matthew Kirby, P. Eng.

Structural Engineer – Project Manager



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

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- may be based on information provided to Consultant which has not been independently verified;
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This Statement of Qualifications and Limitations is attached to and forms part of the Report and any use of the Report is subject to the terms hereof.

Executive Summary

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

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

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

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

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

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

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

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1. Introduction

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

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

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

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

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

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

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

2. Scope of Work

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

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

3. Structure Categorization

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

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

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

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

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

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

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

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

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

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

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

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

Crossing Type

O-WAT Over Water
O-RWY - Over Railway

U-RWY - Under Railway

O-R/R - Over Road and Railway

T-RWY- Through Railway Embankment

Engineering Investigations

DCS - Deck Condition Survey

LCE - Load Capacity Evaluation

C/S - Condition Study/Survey

RRA - Rehabilitation / Replacement Analysis

Type of Improvements

i) Capital Improvements

REB - Remove Existing Bridge

RBC - Replace Bridge with Culvert

RSL - Replace Bridge, Same Location

NCE - New Culvert

ii) Bridge/Culvert Rehabilitation Improvements

RSP - Rehabilitate Superstructure

RSB - Rehabilitate Substructure

WSS - Widen Superstructure and Substructure

RRW - Rehabilitation/Replace Retaining Walls

BIR - Bearing Improvement/Replacement

RIR - Railing Improvement/Replacement

RIO - Rehabilitate Inlet/Outlet Treatments

iii) Deck Rehabilitation Improvements

WSR - Wearing Surface Rehabilitation

PWP - Patch, Waterproof and Asphalt Paving

LMC - Latex Modified Concrete Overlay

OPW - Overlay, Waterproof and Asphalt Paving

CDS - Concrete Deck Soffit Repairs

CDR - Complete Deck Replacement

TJS - Transverse Expansion Joint Seal Replacement

TJR - Transverse Expansion Joint Replacement

RCS - Rehabilitation/Replacement of Safety Curbs/Sidewalks

iv) Bridge Coating Improvements

CSS - Coating Structural Steel

CSR - Coating Steel Railings

v) Stream/Waterway Improvements

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

Costing Category

PC - Preliminary Cost Estimate

5. Structure Inventory and Construction Need Summary

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

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

6. Normal Structure Maintenance

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

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

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

7. Conclusions

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

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

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

Tulloch Engineering Inc.

Township of Johnson

2016 Biennial Bridge & Culvert Inspection Report

Appendix A

Municipal Bridge Appraisal Forms

A. IDENTIFICATION					6. Bridge No. 01
Control Code	3-S-TP				7. Road Section No. 250
Municipal Name/Code	Township of Johnson				8. MTO Site No. 38S-189
Bridge Name	Shewfelt Creek Bridge a	at Oikari's			
4. Road Name	Gordon Lake Road				
5. Location	0.90 km North of Highwa	av 17			
Roadside Environment	R	ay 17			16. Crossing Type O-WAT
10. Posting	t t t	13. Posting Sign:	t t	+	17. Federal Navigable Waterway Unknown
11. Bylaw No.		14. Low Clearance S			18. Bridge Value \$500,000
12. Bylaw Expiry Date	y m	15. Narrow Structure			19. Latitude
12. Bylaw Expiry Date	уш	15. Namow Structure	e Sign		
					20. Longitude
B. RAILWAY OVERPASS/UND	DERPASS				
21. Railway Level Crossing Num				27	Original Board Order Number Date y m d
22. Railway Company	inder			21.	Original Board Order Number Bate y III d
23. Railway Subdivision				28.	Current Board Order Number Date y m d
				20.	Current Board Order Number Date y III d
24. Subdivision Mileage	NI-			00	Operation its contract to
25. Transport Canada Crossing26. Number of Tracks	NO.			29.	Seniority
26. Number of Tracks					
C ILIDISDICTION					20 Local/Area Municipality (University C. L.)
C. JURISDICTION					38. Local/Area Municipality (Upper Tier Only)
31. Ownership O	A MUN				A.
	В	Boundary Bridge	N	ı	В.
32. Heritage Status	R				Maintenance Area
Special Designation	NSD	36. Adjacent Municipa			40. Municipal Ward
 Suburban Roads Commission 	on	Adjacent Bridge N	lo.		
D. EXISTING CONDITIONS					
GENERAL		45. Span Length	6.2 m		50. Longitudinal Joints 0
41. Year Constructed	A. 2006	46. Deck Type	OT		51. Transverse Joints 0
	B. 2006	47. Deck Length	6.2 m		 Number of Bearings 0
42. Bridge Type	S-EA-F	48. Deck Width	10.3 m		53. Soil Condition U
43. Crossing Skew	0°	49. Deck Area	64.0 m ²		54. Abutment & Foundation Type Open - UN
44. Number of Spans	1				, , ,
ROAD OVER BRIDGE					
		59. No. of Lanes	2		62. Barriers Walls/Railings FB
55. Existing Road Class	300	60. Median Type/Width			63. Minimum Vertical
56. Operational Status	2W - OAT	61. Safety Curb/	(A) N		Clearance
57. Wearing Surface	A	Sidewalk and	(B) N		Clourance
58. Travel Deck Width	7.1 m	Curb Barrier	(D) 14		
30. Have Deck Width	7.1 111	Cuib Barrier			
ROAD UNDER BRIDGE					
NOAD UNDER BRIDGE		68. No. of Lanes			71. Traffic Barrier
64. Existing Road Class		69. Median Type/Width	,		71. Trailic Barrier 72. Minimum Vertical Clearance
65. Operational Status					72. Millimum Vertical Clearance
		70. Safety Curb/	A		
66. Opening Width		Sidewalk and	В		
67. Surface Width		Curb Barrier			
E. TRAFFIC DATA		TRAFFIC COUNT			10 YEAR TRAFFIC FORECAST
		TRAFFIC COUNT 83. Year			90. Year
E. TRAFFIC DATA 81. Legal Speed Limit		TRAFFIC COUNT 83. Year 84. AADT			90. Year 91. AADT
E. TRAFFIC DATA		TRAFFIC COUNT 83. Year 84. AADT 85. DHV Factor			90. Year 91. AADT 92. DHV Factor
E. TRAFFIC DATA 81. Legal Speed Limit		TRAFFIC COUNT 83. Year 84. AADT			90. Year 91. AADT
E. TRAFFIC DATA 81. Legal Speed Limit		TRAFFIC COUNT 83. Year 84. AADT 85. DHV Factor			90. Year 91. AADT 92. DHV Factor
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E. TRAFFIC DATA 81. Legal Speed Limit 82. Route Designations Transit Truck School Bicycle F. INSPECTIONS & APPROV 101. Date: June 2	/ <u>ALS</u> 2, 2016 by & S. Milne	TRAFFIC COUNT 83. Year 84. AADT 85. DHV Factor 86. DHV 87. Trucks 88. Peak Directional Sp	ctor neer Name		 90. Year 91. AADT 92. DHV Factor 93. DHV 94. Trucks 95. Capacity

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

		CONSTRUCTION IMPROVEMENTS		
Type	Year		Type	Year
		181.	• •	
		182.		
		183.		
		184.		
		185.		
	Туре	Type Year	181. 182. 183. 184.	Type Year Type 181. 182. 183. 184.

Inspection Notes

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

Recommendations

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

Township of Johnson Municipality: Bridge No

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

Bridge No. MTO Site No. 6. 8.



LOOKING NORTH ACROSS STRUCTURE



WEST ELEVATION

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

Bridge No. MTO Site No.



LOOKING EAST UPSTREAM FROM STRUCTURE



LOOSE NUTS ON BASEPLATE OF EAST GUIDERAIL POST

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

Bridge No. MTO Site No.



LOOKING WEST THROUGH CULVERT BARREL



LOCALIZED INDENTATIONS IN THE RIBS OF THE CULVERT BARREL

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

Bridge No. MTO Site No. 6. 8.



ROTATED GABION BASKET WINGWALL - NORTHWEST WINGWALL



TYPICAL BARREL END TREATMENT

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

Bridge No. MTO Site No. 6. 8.



SCRAPE DAMAGE TO EAST GUIDERAIL



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

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

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

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

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

M. Inspection Notes

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

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

Recommendations

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

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

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



LOOKING NORTH ACROSS STRUCTURE



WEST ELEVATION

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

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

Bridge No. MTO Site No.



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



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

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

Bridge No. MTO Site No. 6. 8.



DECK SOFFIT GENERAL ARRANGEMENT



EXPOSED CORRODED REBAR IN SOUTHEAST INTERIOR BEAM

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

Bridge No. MTO Site No.



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



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

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

Bridge No. MTO Site No.



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



BEAVER DAM UPSTREAM FROM BRIDGE

A. IDENTIFICATION				6.	Bridge No. 38S-307	03
 Control Code Municipal Name/Code Bridge Name 	3-S-TP Township of Johnson Stobie Creek at Mennoni	a School		7. 8.	Road Section No. MTO Site No.	350 38S-307
4. Road Name 5. Location	Government Road 10m West of Gordon Lak					
9. Roadside Environment10. Posting	R t t t	13. Posting Sign:	t t t	16. 17.	Crossing Type Federal Navigable Watery	
11. Bylaw No.12. Bylaw Expiry Date	y m	14. Low Clearance Sign15. Narrow Structure Sign	า	18. 19. 20.	Bridge Value Latitude Longitude	\$450,000
B. RAILWAY OVERPASS/UNDE 21. Railway Level Crossing Numb				27 Original I	Board Order Number	Date y m d
21. Railway Level Crossing Numb22. Railway Company23. Railway Subdivision	61			· ·		Date y m d
24. Subdivision Mileage25. Transport Canada Crossing N26. Number of Tracks	0.			29. Seniority		,
C. JURISDICTION					38. Local/Area Municipali	tr (Unner Tier Only)
31. Ownership O	A MUN B	35. Boundary Bridge	N		A. B.	ty (Opper Her Only)
32. Heritage Status33. Special Designation34. Suburban Roads Commission	R CBL	36. Adjacent Municipality N37. Adjacent Bridge No.	Name/No		 Maintenance Area Municipal Ward 	
D. EXISTING CONDITIONS		,				
GENERAL 41. Year Constructed	A. 1937 B. 1937	71	- Cast in Place Concret	e 51. T	ongitudinal Joints ransverse Joints lumber of Bearings	0 0 0
42. Bridge Type43. Crossing Skew	B. 1937 C-TB-F 0° 1	48. Deck Width 5.7		53. S	soil Condition butment & Foundation Typ	U
ROAD OVER BRIDGE						
56. Operational Status57. Wearing Surface	300 2W - OAT A 4.80 m	59. No. of Lanes60. Median Type/Width61. Safety Curb/ Sidewalk and Curb Barrier	1 (A) N (B) N		arriers Walls/Railings inimum Vertical nce	FB
ROAD UNDER BRIDGE						
64. Existing Road Class65. Operational Status66. Opening Width67. Surface Width		68. No. of Lanes 69. Median Type/Width 70. Safety Curb/ Sidewalk and Curb Barrier	A B		raffic Barrier inimum Vertical Clearance	
E. TRAFFIC DATA 81. Legal Speed Limit		TRAFFIC COUNT 83. Year		10 YEA	AR TRAFFIC FORECAST	
82. Route Designations		84. AADT 85. DHV Factor			HV Factor	
Transit □ Truck □ School □ Bicycle □		86. DHV87. Trucks88. Peak Directional Split89. 10 Year Growth Factor			= - = -	
F. INSPECTIONS & APPROVA 101. Date: June 2, 2 Inspected By: M. Kirby		102. Professional Engineer I103. Municipality/Company	Name		ny, P. Eng. n Engineering Inc.	

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

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

		CONSTRUCTION IMPROVEMENTS		
Type	Year		Type	Year
		181.		
		182.		
		183.		
		184.		
		185.		
	Туре	Type Year	Type Year 181. 182. 183. 184.	Type Year Type 181. 182. 183. 184.

M. Inspection Notes

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

Recommendations

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

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

Bridge No.: MTO Site No.



LOOKING EAST ACROSS STRUCTURE



NORTH ELEVATION

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

Bridge No.: MTO Site No.



ROTATED AND SPLIT OFFSET BLOCK - NORTH GUARDRAIL



LARGE CUT IN THE SOUTHWEST GUIDERAIL

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

Bridge No.: MTO Site No.



MODERATE TO WIDE TRANSVERSE CRACK IN EAST APPROACH



CONCRETE EROSION AND LARGE SPALL IN FOOTING

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

Bridge No.: MTO Site No.



BEAM AND DECK SOFFIT GENERAL ARRANGEMENT



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

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

Bridge No.: MTO Site No.



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



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

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

Bridge No.: MTO Site No.



LOOKING NORTH, UPSTREAM OF STRUCTURE

MUNICIPAL BRIDGE APPRAISAL

A. IDENTIFICATION			6. Bridge No. 04
1. Control Code	3-S-TP		7. Road Section No. 240
Municipal Name/Code	Township of Johnson		8. MTO Site No. 38S-151
Bridge Name	Suddaby Creek Bridge		0. WITO Site 140. 303-131
Road Name	Old Mill Road		
5. Location	0.20 km North of Gordo	n Laka Paad	
Roadside Environment	R	III Lake Noau	16. Crossing Type O-WAT
		12 Deating Ciana 10t t t	
10. Posting	10t t t	13. Posting Sign: 10t t t	
11. Bylaw No.		14. Low Clearance Sign	18. Bridge Value \$750,000
Bylaw Expiry Date	y m	Narrow Structure Sign	19. Latitude
			20. Longitude
D. DAILWAY OVEDDACC/UNI	NEDDA CC		
B. RAILWAY OVERPASS/UNI21. Railway Level Crossing Nur			07 Original Board Order Number Date v. m. d
	nber		27. Original Board Order Number Date y m d
22. Railway Company			
23. Railway Subdivision			28. Current Board Order Number Date y m d
Subdivision Mileage			
Transport Canada Crossing	No.		29. Seniority
26. Number of Tracks			
C. JURISDICTION			Local/Area Municipality (Upper Tier Only)
31. Ownership O	A MUN		A.
·	В	35. Boundary Bridge N	В.
32. Heritage Status	R	,,,	39. Maintenance Area
33. Special Designation	NSD	36. Adjacent Municipality Name/No	40. Municipal Ward
34. Suburban Roads Commissi		37. Adjacent Bridge No.	40. Mailioipai vvara
34. Suburban Roads Commissi	OII .	37. Adjacent Bridge No.	
D. EXISTING CONDITIONS			
GENERAL		45. Span Length 6.3 m	50. Longitudinal Joints 0
	A 4040		
41. Year Constructed	A. 1913		
	B. 1913	47. Deck Length 21.3 m	52. Number of Bearings 0
42. Bridge Type	C-TB-C	48. Deck Width 5.3 m	53. Soil Condition U
43. Crossing Skew	0°	49. Deck Area 112.9 m ²	 Abutment & Foundation Type Closed -
44. Number of Spans	3		UN
ROAD OVER BRIDGE			
		59. No. of Lanes 1.0	62. Barriers Walls/Railings LP
55. Existing Road Class	300	60. Median Type/Width	63. Minimum Vertical
56. Operational Status	2W - OAT	61. Safety Curb/ (A) N / E 0.1 r	n Clearance
57. Wearing Surface	С	Sidewalk and (B) N/W 0.1 r	
58. Travel Deck Width	4.20 m	Curb Barrier	''
Jo. Haver Deck Width	7.20 111	Out Daniel	
ROAD UNDER BRIDGE			
ROAD UNDER BRIDGE		68. No. of Lanes	71. Traffic Barrier
		68. No. of Lanes	71. Traffic Barrier
64. Existing Road Class		69. Median Type/Width	71. Traffic Barrier 72. Minimum Vertical Clearance
64. Existing Road Class65. Operational Status		69. Median Type/Width 70. Safety Curb/ A	
64. Existing Road Class65. Operational Status66. Opening Width		69. Median Type/Width 70. Safety Curb/ A Sidewalk and B	
64. Existing Road Class65. Operational Status		69. Median Type/Width 70. Safety Curb/ A	
64. Existing Road Class65. Operational Status66. Opening Width67. Surface Width		69. Median Type/Width 70. Safety Curb/ A Sidewalk and B Curb Barrier	72. Minimum Vertical Clearance
64. Existing Road Class 65. Operational Status 66. Opening Width 67. Surface Width E. TRAFFIC DATA		69. Median Type/Width 70. Safety Curb/ A Sidewalk and B Curb Barrier TRAFFIC COUNT	72. Minimum Vertical Clearance 10 YEAR TRAFFIC FORECAST
64. Existing Road Class65. Operational Status66. Opening Width67. Surface Width		69. Median Type/Width 70. Safety Curb/ A Sidewalk and B Curb Barrier TRAFFIC COUNT 83. Year	72. Minimum Vertical Clearance 10 YEAR TRAFFIC FORECAST 90. Year
64. Existing Road Class 65. Operational Status 66. Opening Width 67. Surface Width E. TRAFFIC DATA		69. Median Type/Width 70. Safety Curb/ A Sidewalk and B Curb Barrier TRAFFIC COUNT	72. Minimum Vertical Clearance 10 YEAR TRAFFIC FORECAST
64. Existing Road Class 65. Operational Status 66. Opening Width 67. Surface Width E. TRAFFIC DATA		69. Median Type/Width 70. Safety Curb/ A Sidewalk and B Curb Barrier TRAFFIC COUNT 83. Year	72. Minimum Vertical Clearance 10 YEAR TRAFFIC FORECAST 90. Year
64. Existing Road Class 65. Operational Status 66. Opening Width 67. Surface Width E. TRAFFIC DATA 81. Legal Speed Limit		69. Median Type/Width 70. Safety Curb/ A Sidewalk and B Curb Barrier TRAFFIC COUNT 83. Year 84. AADT 85. DHV Factor	72. Minimum Vertical Clearance 10 YEAR TRAFFIC FORECAST 90. Year 91. AADT 92. DHV Factor
64. Existing Road Class 65. Operational Status 66. Opening Width 67. Surface Width E. TRAFFIC DATA 81. Legal Speed Limit 82. Route Designations		69. Median Type/Width 70. Safety Curb/ A Sidewalk and B Curb Barrier TRAFFIC COUNT 83. Year 84. AADT 85. DHV Factor 86. DHV	72. Minimum Vertical Clearance 10 YEAR TRAFFIC FORECAST 90. Year 91. AADT 92. DHV Factor 93. DHV
64. Existing Road Class 65. Operational Status 66. Opening Width 67. Surface Width E. TRAFFIC DATA 81. Legal Speed Limit 82. Route Designations Transit Truck		69. Median Type/Width 70. Safety Curb/ A Sidewalk and B Curb Barrier TRAFFIC COUNT 83. Year 84. AADT 85. DHV Factor 86. DHV 87. Trucks	72. Minimum Vertical Clearance 10 YEAR TRAFFIC FORECAST 90. Year 91. AADT 92. DHV Factor 93. DHV 94. Trucks
64. Existing Road Class 65. Operational Status 66. Opening Width 67. Surface Width E. TRAFFIC DATA 81. Legal Speed Limit 82. Route Designations		69. Median Type/Width 70. Safety Curb/ A Sidewalk and B Curb Barrier TRAFFIC COUNT 83. Year 84. AADT 85. DHV Factor 86. DHV 87. Trucks 88. Peak Directional Split	72. Minimum Vertical Clearance 10 YEAR TRAFFIC FORECAST 90. Year 91. AADT 92. DHV Factor 93. DHV 94. Trucks 95. Capacity
64. Existing Road Class 65. Operational Status 66. Opening Width 67. Surface Width E. TRAFFIC DATA 81. Legal Speed Limit 82. Route Designations Transit Truck		69. Median Type/Width 70. Safety Curb/ A Sidewalk and B Curb Barrier TRAFFIC COUNT 83. Year 84. AADT 85. DHV Factor 86. DHV 87. Trucks	72. Minimum Vertical Clearance 10 YEAR TRAFFIC FORECAST 90. Year 91. AADT 92. DHV Factor 93. DHV 94. Trucks
64. Existing Road Class 65. Operational Status 66. Opening Width 67. Surface Width E. TRAFFIC DATA 81. Legal Speed Limit 82. Route Designations Transit	VAL S	69. Median Type/Width 70. Safety Curb/ A Sidewalk and B Curb Barrier TRAFFIC COUNT 83. Year 84. AADT 85. DHV Factor 86. DHV 87. Trucks 88. Peak Directional Split	72. Minimum Vertical Clearance 10 YEAR TRAFFIC FORECAST 90. Year 91. AADT 92. DHV Factor 93. DHV 94. Trucks 95. Capacity
64. Existing Road Class 65. Operational Status 66. Opening Width 67. Surface Width E. TRAFFIC DATA 81. Legal Speed Limit 82. Route Designations Transit		69. Median Type/Width 70. Safety Curb/ A Sidewalk and B Curb Barrier TRAFFIC COUNT 83. Year 84. AADT 85. DHV Factor 86. DHV 87. Trucks 88. Peak Directional Split 89. 10 Year Growth Factor	72. Minimum Vertical Clearance 10 YEAR TRAFFIC FORECAST 90. Year 91. AADT 92. DHV Factor 93. DHV 94. Trucks 95. Capacity 96. 20 Year AADT
64. Existing Road Class 65. Operational Status 66. Opening Width 67. Surface Width E. TRAFFIC DATA 81. Legal Speed Limit 82. Route Designations Transit Truck Bicycle E. INSPECTIONS & APPROV 101. Date: June 3	3, 2016	69. Median Type/Width 70. Safety Curb/ A Sidewalk and B Curb Barrier TRAFFIC COUNT 83. Year 84. AADT 85. DHV Factor 86. DHV 87. Trucks 88. Peak Directional Split 89. 10 Year Growth Factor	72. Minimum Vertical Clearance 10 YEAR TRAFFIC FORECAST 90. Year 91. AADT 92. DHV Factor 93. DHV 94. Trucks 95. Capacity 96. 20 Year AADT M. Kirby, P. Eng.
64. Existing Road Class 65. Operational Status 66. Opening Width 67. Surface Width E. TRAFFIC DATA 81. Legal Speed Limit 82. Route Designations Transit		69. Median Type/Width 70. Safety Curb/ A Sidewalk and B Curb Barrier TRAFFIC COUNT 83. Year 84. AADT 85. DHV Factor 86. DHV 87. Trucks 88. Peak Directional Split 89. 10 Year Growth Factor	72. Minimum Vertical Clearance 10 YEAR TRAFFIC FORECAST 90. Year 91. AADT 92. DHV Factor 93. DHV 94. Trucks 95. Capacity 96. 20 Year AADT

Municipality: Structure Name: Township of Johnson Suddaby Creek Bridge

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

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

M. Inspection Notes

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

Recommendations

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

Municipality: Township of Johnson Structure Name: Suddaby Creek Bridge

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

Bridge No. MTO Site No.



LOOKING SOUTH ACROSS STRUCTURE



WEST ELEVATION

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

Bridge No. MTO Site No.



BRIDGE DECK WEARING SURFACE - LIGHT TO MODERATE SCALING AND ABRASIONS



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

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

Bridge No. MTO Site No.



EXPOSED CORRODED REBAR IN EAST EXTERIOR BEAM'S NORTH SPAN



BROKEN CONCRETE FOOTING WITH MODERATE TO SEVERE UNDERMINING

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

Bridge No. MTO Site No.



CONCRETE SPALL AND DISINTEGRATION OF SOUTH PIER



SOUTH ABUTMENT AND DECK SOFFIT **GENERAL ARRANGEMENT**

A. IDENTIFICATION			6. Bridge No. 05
Control Code	3-S-TP		7. Road Section No. 195
Municipal Name/Code	Township of Johnson		8. MTO Site No. 38S-152
3. Bridge Name	Suddaby Park		
4. Road Name	Gordon Lake Road		
5. Location	0.5 km North of Suddal	ov Park Rd.	
Roadside Environment	R	,, , , , , , , , , , , , , , , , , , , ,	16. Crossing Type O-WAT
10. Posting	t t t	13. Posting Sign: t t t	17. Federal Navigable Waterway Unknown
11. Bylaw No.		14. Low Clearance Sign	18. Bridge Value \$500,000
12. Bylaw Expiry Date	y m	15. Narrow Structure Sign	19. Latitude
12. Bylaw Expiry Bate	y	To. Trainer Structure Sign	20. Longitude
			20. Longitudo
B. RAILWAY OVERPASS/UNI	DERPASS		
21. Railway Level Crossing Nur		27	. Original Board Order Number
22. Railway Company			. 3
23. Railway Subdivision		28	. Current Board Order Number
24. Subdivision Mileage			. Garrett Board Grade Harrison
25. Transport Canada Crossing	No	20	. Seniority
26. Number of Tracks	140.	23	. Genionty
20. Number of Fracks			
C. JURISDICTION			38. Local/Area Municipality (Upper Tier Only)
31. Ownership O	A MUN		A.
or. Ownership o	В	35. Boundary Bridge N	B.
32. Heritage Status	R	33. Boundary Bridge	39. Maintenance Area
33. Special Designation	NSD	36. Adjacent Municipality Name/No	40. Municipal Ward
34. Suburban Roads Commissi		37. Adjacent Bridge No.	40. Mullicipal Walu
34. Suburban Roads Commissi	Un	37. Adjacent Bridge No.	
D. EXISTING CONDITIONS			
GENERAL		45. Span Length 5.3 m	50. Longitudinal Joints 0
	A 0000		
41. Year Constructed	A. 2009 B. 2009	46. Deck Type CC – Cast in Place Concrete	51. Transverse Joints 0 52. Number of Bearings 0
40 Delder Trees		47. Deck Length 5.3 m	
42. Bridge Type	P-BC-F 0°	48. Deck Width 13.0 m	-
43. Crossing Skew	1	49. Deck Area 68.9 m ²	54. Abutment & Foundation Type Closed - PC
44. Number of Spans	I		PC PC
ROAD OVER BRIDGE			
ROAD OVER BRIDGE		59. No. of Lanes 2.0	62. Barriers Walls/Railings FB
FF Frieties Deed Olese	200		
55. Existing Road Class	300	60. Median Type/Width m	63. Minimum Vertical
56. Operational Status	2W - OAT	61. Safety Curb/ (A) N / E 0.2 m	Clearance
57. Wearing Surface	A	Sidewalk and (B) N / W 0.2 m	
58. Travel Deck Width	7.30 m	Curb Barrier	
DOAD LINDED DOIDOE			
ROAD UNDER BRIDGE		69 No of Lance	71 Troffic Barrior
64 Eviating Bood Class		68. No. of Lanes	71. Traffic Barrier
64. Existing Road Class		69. Median Type/Width	72. Minimum Vertical Clearance
65. Operational Status		70. Safety Curb/ A	
66. Opening Width		Sidewalk and B	
67. Surface Width		Curb Barrier	
67. Surface Width			40 VEAR TRAFFIC FORFOACT
67. Surface Width E. TRAFFIC DATA		TRAFFIC COUNT	10 YEAR TRAFFIC FORECAST
67. Surface Width		TRAFFIC COUNT 83. Year	90. Year
E. TRAFFIC DATA 81. Legal Speed Limit		TRAFFIC COUNT 83. Year 84. AADT	90. Year 91. AADT
67. Surface Width E. TRAFFIC DATA		TRAFFIC COUNT 83. Year 84. AADT 85. DHV Factor	90. Year 91. AADT 92. DHV Factor
67. Surface Width E. TRAFFIC DATA 81. Legal Speed Limit		TRAFFIC COUNT 83. Year 84. AADT 85. DHV Factor 86. DHV	90. Year 91. AADT 92. DHV Factor 93. DHV
67. Surface Width E. TRAFFIC DATA 81. Legal Speed Limit		TRAFFIC COUNT 83. Year 84. AADT 85. DHV Factor 86. DHV 87. Trucks	90. Year 91. AADT 92. DHV Factor 93. DHV 94. Trucks
E. TRAFFIC DATA 81. Legal Speed Limit 82. Route Designations		TRAFFIC COUNT 83. Year 84. AADT 85. DHV Factor 86. DHV 87. Trucks 88. Peak Directional Split	90. Year91. AADT92. DHV Factor93. DHV94. Trucks95. Capacity
67. Surface Width E. TRAFFIC DATA 81. Legal Speed Limit 82. Route Designations Transit Truck		TRAFFIC COUNT 83. Year 84. AADT 85. DHV Factor 86. DHV 87. Trucks	90. Year 91. AADT 92. DHV Factor 93. DHV 94. Trucks
E. TRAFFIC DATA 81. Legal Speed Limit 82. Route Designations Transit		TRAFFIC COUNT 83. Year 84. AADT 85. DHV Factor 86. DHV 87. Trucks 88. Peak Directional Split	90. Year91. AADT92. DHV Factor93. DHV94. Trucks95. Capacity
67. Surface Width E. TRAFFIC DATA 81. Legal Speed Limit 82. Route Designations Transit Truck Bicycle F. INSPECTIONS & APPROV		TRAFFIC COUNT 83. Year 84. AADT 85. DHV Factor 86. DHV 87. Trucks 88. Peak Directional Split 89. 10 Year Growth Factor	90. Year 91. AADT 92. DHV Factor 93. DHV 94. Trucks 95. Capacity 96. 20 Year AADT
67. Surface Width E. TRAFFIC DATA 81. Legal Speed Limit 82. Route Designations Transit Truck Bicycle F. INSPECTIONS & APPROV 101. Date: June 4	1 , 2016	TRAFFIC COUNT 83. Year 84. AADT 85. DHV Factor 86. DHV 87. Trucks 88. Peak Directional Split 89. 10 Year Growth Factor	90. Year 91. AADT 92. DHV Factor 93. DHV 94. Trucks 95. Capacity 96. 20 Year AADT
67. Surface Width E. TRAFFIC DATA 81. Legal Speed Limit 82. Route Designations Transit Truck Bicycle F. INSPECTIONS & APPRO 101. Date: June 4		TRAFFIC COUNT 83. Year 84. AADT 85. DHV Factor 86. DHV 87. Trucks 88. Peak Directional Split 89. 10 Year Growth Factor	90. Year 91. AADT 92. DHV Factor 93. DHV 94. Trucks 95. Capacity 96. 20 Year AADT

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

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

M. Inspection Notes

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

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

Recommendations

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

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

Bridge No. MTO Site No.



LOOKING SOUTH ACROSS STRUCTURE



EAST ELEVATION

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



DECK WEARING SURFACE - FACING NORTH



LOOKING EAST THROUGH BARREL

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

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



LOSS OF PARGING IN CULVERT BARREL JOINTS



MEDIUM TRANSVERSE CRACK IN SOUTH APPROACH WEARING SURFACE

Bridge No. MTO Site No.

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

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



GUIDERAIL POST MISSING BOLT



GABION BASKETS ALONG WEST ROADWAY EMBANKMENTS

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

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



LOOKING UPSTREAM OF STRUCTURE

A. IDENTIFICATION					6. Bridge No.	06
 Control Code 	3-S-TP				Road Section No.	205
Municipal Name/Code	Township of Johnson				MTO Site No.	38S-153
Bridge Name	Black Creek Bridge					
4. Road Name	Gordon Lake Road					
Location	80m South of Suddaby	Park Road				
Roadside Environment	R				Crossing Type	O-WAT
10. Posting	ttt	13. Posting Sign:	t t t		17. Federal Navigable Waterway	Unknown
11. Bylaw No.		14. Low Clearance Sign			18. Bridge Value	\$375,000
12. Bylaw Expiry Date	y m	15. Narrow Structure Sign	•		19. Latitude	ψ010,000
12. Bylaw Expiry Bate	y !!!	15. Itanow Structure Sign	•		20. Longitude	
					20. Longitudo	
B. RAILWAY OVERPASS/UND						
21. Railway Level Crossing Nun	nber			27. (Original Board Order Number Date y	m d
22. Railway Company23. Railway Subdivision				28. (Current Board Order Number Date v	m d
24. Subdivision Mileage				20.	Date y	III u
25. Transport Canada Crossing	No.			29.	Seniority	
26. Number of Tracks						
O HIDIODIOTION	·					
C. JURISDICTION					38. Local/Area Municipality (Uppe	er Fier Only)
31. Ownership O	A MUN				A.	
	В	Boundary Bridge	N		B.	
Heritage Status	R				Maintenance Area	
Special Designation	NSD	Adjacent Municipality N	ame/No		40. Municipal Ward	
34. Suburban Roads Commission	on	Adjacent Bridge No.				
D. EXISTING CONDITIONS		45 0 0 0 1 0 0 1	5.0		F0 - 1 2 - 1 1 - 1 - 1 - 1 - 1 -	•
GENERAL		45. Span Length	5.8 m		50. Longitudinal Joints	0
41. Year Constructed	A. 1930	46. Deck Type	CC		51. Transverse Joints	0
	B. 1930	47. Deck Length	7.0 m		Number of Bearings	0
42. Bridge Type	C-TB-H	48. Deck Width	5.5 m		53. Soil Condition	U
43. Crossing Skew	0°	49. Deck Area	38.5 m ²		54. Abutment & Foundation Type	Closed -
44. Number of Spans	1					UN
2012 0152 221205						
ROAD OVER BRIDGE		EO No of Longo	4		62 Parriara Walla/Pailings CP	
55	000	59. No. of Lanes	1		62. Barriers Walls/Railings CB	
55. Existing Road Class	300	60. Median Type/Width			63. Minimum Vertical	
Operational Status	2W - OAT	61. Safety Curb/	(A) N		Clearance	
57. Wearing Surface	A	Sidewalk and	(B) N			
58. Travel Deck Width	4.70 m	Curb Barrier				
DOAD LINDED DDIDOE						
ROAD UNDER BRIDGE		68. No. of Lanes			71. Traffic Barrier	
64. Existing Road Class		69. Median Type/Width			72. Minimum Vertical Clearance	
65. Operational Status			Α		12. WIIIIIIIIII VEILIGAI GIEAIAIIGE	
		70. Safety Curb/	A B			
66. Opening Width		Sidewalk and	D			
67. Surface Width		Curb Barrier				
E. TRAFFIC DATA		TRAFFIC COUNT			10 YEAR TRAFFIC FORECAST	
81. Legal Speed Limit		83. Year			90. Year	
- Logar opood Entitle		84. AADT			91. AADT	
82. Route Designations		85. DHV Factor			92. DHV Factor	
oz. Noute Designations		86. DHV			93. DHV	
Transit - Trusk -					***	
Transit Truck					94. Trucks	
School Bicycle		88. Peak Directional Split			95. Capacity	
		89. 10 Year Growth Factor			96. 20 Year AADT	
F INSPECTIONS & ADDDON	/ΔI S					
F. INSPECTIONS & APPROV	<u>/ALS</u> 12, 2016	102. Professional Engineer N	Name		M. Kirby, P. Eng.	
101. Date: June 0		102. Professional Engineer I103. Municipality/Company	Name		M. Kirby, P. Eng. Tulloch Engineering Inc.	

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

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

Inspection Notes

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

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

Recommendations

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

Township of Johnson Black Creek Bridge

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

Bridge No. MTO Site No.



LOOKING SOUTH ACROSS STRUCTURE



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

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

Bridge No. MTO Site No.



UPSTREAM FROM BRIDGE, TREE OBSTRUCTING WATERWAY



TYPICAL RAILING SYSTEM WITH EXPOSED REBAR (SOUTHWEST QUADRANT)

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

Bridge No. MTO Site No.



EAST ELEVATION



LOCALIZED DELAMINATION WITH EXPOSED CORRODED REBAR IN WEST DECK SOFFIT

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

Bridge No. MTO Site No.



SOUTH ABUTMENT WITH MODERATE TO SEVERE EROSION



MEDIUM TO WIDE CRACK IN SOUTHWEST BEAM HAUNCH

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

Bridge No. MTO Site No.



EAST SOFFIT - GENERAL ARRANGEMENT



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

MUNICIPAL CULVERT APPRAISAL

A. IDENTIFICATION				6.	Culvert No.	02
Control Code	4-S-TP			7.	Road Section No.	375
Municipal Name/Code	Township of Johnson			8.	MTO Site No.	
3. Culvert Name	Sucker Creek Road					
 Road Name Location 	Government Road 1.9 km West of Lake Hu	uron Drivo				
Roadside Environment	R	iron Drive		16	Crossing Type	O-WAT
10. Posting	t t t	13. Posting Sign	t	17.		
11. Bylaw No.		14. Low Clearance Sign		18.		\$300,000
12. Bylaw Expiry Date	y m	15. Narrow Structure Sign			Latitude	ψ500,000
12. Bylan Expliy Balo	<i>y</i>	re. Harrow Caractaro Cigir			Longitude	
D. DAHAMAY OVERBAGOURN	2500400					
B. RAILWAY OVERPASS/UNI21. Railway Level Crossing Nur				27. Original	Board Order Number	Date y m d
22. Railway Company				· ·		
Railway Subdivision				Current	Board Order Number	Date y m d
24. Subdivision Mileage						
25. Transport Canada Crossing	No.			Seniority	/	
26. Number of Tracks						
C. JURISDICTION					38. Local/Area Municip	ality (Upper Tier Only)
31. Ownership O	A MUN				Α.	•
	В	Boundary Bridge/Culvert	N		B.	
32. Heritage Status	R				39. Maintenance Area	
33. Special Designation	CBL	36. Adjacent Municipality Name	/No		40. Municipal Ward	
34. Suburban Roads Commissi	on	37. Adjacent Culvert No.				
D. EXISTING CONDITIONS						
GENERAL		45. Cell/Span Width/Dia.	3.0 m	51. E	nd Treatment	<u>A B C D</u>
41. Year Constructed	A. 1980	46. Total Width/Dia.	3.0 m		Upstream	N
	B.	47. Max. Height	3.0 m		Downstream	N
42. Material Type	CPS-PA	Culvert Length	20.0 m		Soil Condition	U
43. Crossing Skew	0°		E 0.3 m	53. F	oundation Type	UN – Unknown
44. Number of Cells/Spans	1	50. Culvert Floor	SC			
ROAD OVER CULVERT						
		57. Surface Type	0	61. S	Safety Curb/Sidewalk &	(A) N
55. Existing Road Class	300	58. Platform Width	8.0 m	C	Curb Barrier	(B) N
55a. Highway Classification	-	Surface Width	7.0 m	62. F	Roadside Safety	(A) N NO
56. Operational Status	2W OAT	60. No. of Lanes	2.0			(B) S NO
ROAD THROUGH CULVERT						
NO.15 THROUGH COLVERT		66. Opening Width		70. S	Safety Curb/Sidewalk &	
64. Existing Road Class		67. Surface Width			Curb Barrier	
64a. Highway Classification		68. No. of Lanes		71. T	raffic Barrier	
65. Operational Status		69. Median Type/Width		72. N	Inimum Vertical Clearan	ce
E. TRAFFIC DATA		TRAFFIC COUNT		10 VF	AR TRAFFIC FORECAS	т
81. Legal Speed Limit		83. Year		90. Y		1
or. Legal Opeed Lillin		84. AADT		90. T		
82. Route Designations		85. DHV Factor			OHV Factor	
		86. DHV		93.		
Transit Truck		87. Trucks		94. T	rucks	
School □ Bicycle □		88. Peak Directional Split			Capacity	
,		89. 10 Year Growth Factor		96. 2	0 Year AADT	
F. INSPECTIONS & APPRO	VALS					
	2, 2016	102. Professional Engineer Name	е	M. Kirl	oy, P. Eng.	
	by & S. Milne	103. Municipality/Company			h Engineering Inc.	
		• • • •				

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

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

Culvert No.

02

Inspection Notes

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

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

Recommendations

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

Township of Johnson Municipality:

Culvert No. MTO Site No. 6. 8.

02

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



LOOKING WEST ACROSS STRUCTURE



NORTH ELEVATION

Culvert No. MTO Site No. 6. 8.

02

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



LOOKING NORTH UPSTREAM FOR STRUCTURE



LIGHT TO MODERATE CORROSION OF CULVERT BARREL WITH FLAKING AT WATERLINE

Culvert No. MTO Site No.

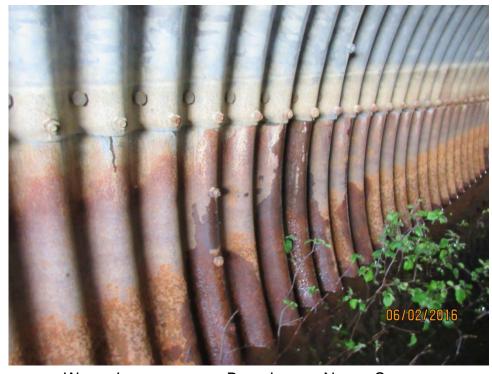
02

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

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



LOOKING NORTH THROUGH CULVERT BARREL



WATER INFILTRATION AT BOLT JOINT IN NORTH SECTION OF WEST WALL

Culvert No. MTO Site No.

02

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

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



SEVERE EROSION AND SCOUR AT CULVERT INLET/NORTHEAST QUADRANT



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

MUNICIPAL CULVERT APPRAISAL

A. IDENTIFICATION				6. Culvert No.	03
1. Control Code	4-S-TP			Road Section No.	
Municipal Name/Code	Township Johnson			MTO Site No.	
Culvert Name	Sucker Creek near CA				
4. Road Name	Kensington Point Road				
5. Location	0.4 km South of Highwa	ay 17			
Roadside Environment	R	10 8 4 0	_	16. Crossing Type	O-WAT
10. Posting	t t t	13. Posting Sign	t	17. Federal Navigable Waterway	Unknown
11. Bylaw No.		 Low Clearance Sign Narrow Structure Sign 		18. Culvert Value	\$400,000
12. Bylaw Expiry Date		15. Narrow Structure Sign		19. Latitude 20. Longitude	
				20. Edilgitado	
B. RAILWAY OVERPASS/UNI21. Railway Level Crossing Nur				27. Original Board Order Number Date y	m d
22. Railway Company	ibei			27. Original Board Order Number Date y	III u
23. Railway Subdivision				28. Current Board Order Number Date y	m d
24. Subdivision Mileage					
25. Transport Canada Crossing	No.			29. Seniority	
26. Number of Tracks					
C. JURISDICTION				38. Local/Area Municipality (Uppe	r Tier Only)
31. Ownership O	A MUN			A.	
	В	Boundary Bridge/Culvert	N	В.	
32. Heritage Status	R CBL	OC Adia and Manining lite Man	- /\	39. Maintenance Area	
33. Special Designation34. Suburban Roads Commissi		 Adjacent Municipality Nam Adjacent Culvert No. 	ie/No	40. Municipal Ward	
54. Suburban Roads Commissi	Л	37. Adjacent Culvert No.			
D. EXISTING CONDITIONS					
GENERAL	A 4000	 45. Cell/Span Width/Dia. 46. Total Width/Dia. 	5.2 m		<u>C D</u>
41. Year Constructed	A. 1980 B.	46. Total Width/Dia. 47. Max. Height	5.2 m 2.5 m	Upstream N Downstream N	
42. Material Type	CPS-PA	48. Culvert Length	23.5 m	52. Soil Condition U	
43. Crossing Skew	0°	49. Type/Depth of Fill	E 0.7 m		- Bedding
44. Number of Cells/Spans	1	50. Culvert Floor	SC	oc. Touridation Type	Dodding
DOAD OVER OUR VERT					
ROAD OVER CULVERT		57. Surface Type	0	61. Safety Curb/Sidewalk & (A) N	/
55. Existing Road Class	300	58. Platform Width	6.8 m	Curb Barrier (B) N	
55a. Highway Classification	-	59. Surface Width	5.8 m	62. Roadside Safety (A) E	
56. Operational Status	2W OAT	60. No. of Lanes	2.0	(B) W	
ROAD THROUGH CULVERT		66. Opening Width		70. Safety Curb/Sidewalk &	
64. Existing Road Class		67. Surface Width		Curb Barrier	
64a. Highway Classification		68. No. of Lanes		71. Traffic Barrier	
65. Operational Status		69. Median Type/Width		72. Minimum Vertical Clearance	
•		7,			
E. TRAFFIC DATA		TRAFFIC COUNT		10 YEAR TRAFFIC FORECAST	
81. Legal Speed Limit		83. Year 84. AADT		90. Year 91. AADT	
82. Route Designations		85. DHV Factor		91. AADT 92. DHV Factor	
02. Noute Designations		86. DHV		93. DHV	
Transit □ Truck □		87. Trucks		94. Trucks	
School Bicycle		88. Peak Directional Split		95. Capacity	
Dicycle		89. 10 Year Growth Factor		96. 20 Year AADT	
E INCOPERTIONS & APPROX	/ALC				
F. INSPECTIONS & APPROV	<u>/ALS</u> 2. 2016	102. Professional Engineer Nan	ne	M. Kirby, P. Eng.	
	by & S. Milne	103. Municipality/Company		Tulloch Engineering Inc.	
Inspected By: M. Kir		103. Municipality/Company			

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

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

MUNICIPAL CULVERT APPRAISAL

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

M. Inspection Notes

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

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

Recommendations

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

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

06/02/2016

03

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

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



LOOKING NORTH ACROSS STRUCTURE



WEST ELEVATION

03

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

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

Culvert No. MTO Site No. 6. 8.



LOOKING WEST UPSTREAM FROM STRUCTURE



LOOKING WEST THROUGH CULVERT BARREL

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

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

Culvert No. MTO Site No. 6. 8.

03



LIGHT TO MODERATE CORROSION OF CULVERT BARREL AT WATERLINE



TYPICAL VEGETATED ROADWAY EMBANKMENT

MUNICIPAL CULVERT APPRAISAL

A. IDENTIFICATION				6.	Culvert No.	05
1. Control Code	4-S-TP			7.		260
 Municipal Name/Code Culvert Name 	Township Of Johnson Government Road Culve	- uh		8.	MTO Site No.	
Culvert Name Road Name	Government Road Culve	эп				
5. Location	0.4 km East of Fisher Ro	and				
Roadside Environment	R	Jau		16	6. Crossing Type	O-WAT
10. Posting	ttt	13. Posting Sign			7. Federal Navigable Wat	
11. Bylaw No.		14. Low Clearance Sign		18	o o	\$400,000
12. Bylaw Expiry Date		15. Narrow Structure Sign			D. Latitude	Ψ100,000
,,.,). Longitude	
B. RAILWAY OVERPASS/UND21. Railway Level Crossing Num				27 Origina	al Board Order Number	Date y m d
22. Railway Company	boi			Zr. Oligino	a board Order (Variber	Date y III a
23. Railway Subdivision				28. Curren	t Board Order Number	Date y m d
24. Subdivision Mileage25. Transport Canada Crossing N	Nο			29. Seniori	itv	
26. Number of Tracks					- -	
C. JURISDICTION					38. Local/Area Municip	pality (Upper Tier Only)
31. Ownership O	A MUN				A.	anty (Opper Her Only)
·	В	35. Boundary Bridge/Culvert	N		B.	
32. Heritage Status	R				Maintenance Area	
Special Designation	CBL	Adjacent Municipality Name/	No		40. Municipal Ward	
34. Suburban Roads Commissio	n	37. Adjacent Culvert No.				
D. EXISTING CONDITIONS						
GENERAL GENERAL		45. Cell/Span Width/Dia.	3.6 m	51.	End Treatment	A B C D
41. Year Constructed	A. 1980	46. Total Width/Dia.	3.6 m		Upstream	<u> </u>
	B.	47. Max. Height	3.6 m		Downstream	N
42. Material Type	CSP-PR	48. Culvert Length	29.0 m	52.	Soil Condition	U
43. Crossing Skew	0°	49. Type/Depth of Fill		53.	Foundation Type	BD – Bedding
44. Number of Cells/Spans	1	50. Culvert Floor	SC			
ROAD OVER CULVERT						
NONE OVER OCCUENT		57. Surface Type	G	61.	Safety Curb/Sidewalk &	(A) N
55. Existing Road Class	300	58. Platform Width	8.5 m		Curb Barrier	ÌΒ) N
55a. Highway Classification	-	Surface Width	7.5 m	62.	Roadside Safety	(A) N NO
56. Operational Status	2W - OAT	60. No. of Lanes	2.0			(B) S NO
ROAD THROUGH CULVERT						
NOAD HINOUGH COLVERT		66. Opening Width		70.	Safety Curb/Sidewalk &	
64. Existing Road Class		67. Surface Width			Curb Barrier	
64a. Highway Classification		68. No. of Lanes		71.	Traffic Barrier	
65. Operational Status		69. Median Type/Width		72.	Minimum Vertical Clearan	се
E TRAFFIC DATA		TRAFFIC COLINIT		40.74	EAR TRAFFIC FORFOAC	т
E. TRAFFIC DATA81. Legal Speed Limit		TRAFFIC COUNT 83. Year		10 YI 90.	EAR TRAFFIC FORECAS	I
or. Legai Speed Lillill		84. AADT			AADT	
82. Route Designations		85. DHV Factor			DHV Factor	
		86. DHV		93.		
Transit □ Truck □		87. Trucks			Trucks	
School Bicycle		88. Peak Directional Split			Capacity	
		89. 10 Year Growth Factor		96.	20 Year AADT	
F. INSPECTIONS & APPROV	ΔΙς					
101. Date: June 2,		102. Professional Engineer Name		M. Ki	irby, P. Eng.	
Inspected By: M. Kirb	y & S. Milne	103. Municipality/Company			ch Engineering Inc.	
*					· -	

Municipality: Structure Name: Township of Johnson Government Road Culvert

MUNICIPAL CULVERT APPRAISAL

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

L. HISTORY ENGINEERING INVESTIGATIONS	Туре	Year	CONSTRUCTION IMPROVEMENTS	Туре	Year
171. 172.			181.		
172.			182.		
173.			183.		
174.			184.		
175.			185.		

M. Inspection Notes

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

Recommendations

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

Municipality: Township of Johnson
Structure Name: Government Road Culvert

05

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

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



LOOKING WEST ACROSS STRUCTURE



LOOKING UPSTREAM FROM CULVERT

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

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



LOOKING NORTH THROUGH BARREL



TYPICAL OVERLAP JOINT MISSING PARGING

05

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

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



LOCALIZED PROJECTION ON EAST WALL



CULVERT INLET WITH MODERATE UNDERMINING

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



NORTH ELEVATION

05

MUNICIPAL CULVERT APPRAISAL

A. IDENTIFICATION				6.	Culvert No.	07
Control Code	4-S-TP			7.	Road Section No.	380
Municipal Name/Code	Township of Johnson			8.	MTO Site No.	
Culvert Name	Sucker Creek Culvert					
Road Name	Puddingstone Road					
Location	2.1 km North of Govern	ment Road				
Roadside Environment	R			16.		O-WAT
10. Posting	t t t	Posting Sign	t		Federal Navigable Water	
11. Bylaw No.		Low Clearance Sign		18.	Culvert Value	\$400,000
12. Bylaw Expiry Date	y m	Narrow Structure Sign			Latitude	
				20.	Longitude	
B. RAILWAY OVERPASS/UN	NDERPASS					
21. Railway Level Crossing No			2	7. Original I	Board Order Number	Date y m d
22. Railway Company			0	0 0	Daniel Ordan Namelan	D-4
23. Railway Subdivision 24. Subdivision Mileage			2	8. Current E	Board Order Number	Date y m d
25. Transport Canada Crossin	a No		2:	9. Seniority	,	
26. Number of Tracks	g 110.			o. Comonty		
C JUDICDICTION					20	olihy (Harris T. C. 1.)
C. JURISDICTION	A BALINI					ality (Upper Tier Only)
31. Ownership O	A MUN B	25 Pounds	Yes		A. B.	
20 11		35. Boundary	res			
32. Heritage Status	R	Bridge/Culvert			39. Maintenance Area	
33. Special Designation	CBL	2C Adiacont Municipality	Twp. of Tarbutt 8	2. Tarbutt	40. Municipal Ward	
34. Suburban Roads Commiss	sion	36. Adjacent Municipality	Additional	x raibuii		
		Name/No	Additional			
		37. Adjacent Culvert No.				
D. EXISTING CONDITIONS						
GENERAL		45. Cell/Span Width/Dia.	5.0 m	51. E	nd Treatment	<u>A B C D</u>
GENERAL 41. Year Constructed	A. 2000	46. Total Width/Dia.	5.0 m	51. E	Upstream	N
41. Year Constructed	B.	46. Total Width/Dia.47. Max. Height	5.0 m 2.0 m		Upstream Downstream	N N
41. Year Constructed 42. Material Type	B. CPS-PA	46. Total Width/Dia. 47. Max. Height 48. Culvert Length	5.0 m 2.0 m 18.0 m	52. S	Upstream Downstream oil Condition	N N U
41. Year Constructed42. Material Type43. Crossing Skew	B. CPS-PA 0°	46. Total Width/Dia.47. Max. Height48. Culvert Length49. Type/Depth of Fill	5.0 m 2.0 m 18.0 m E 0.8 m	52. S	Upstream Downstream	N N
41. Year Constructed 42. Material Type	B. CPS-PA	46. Total Width/Dia. 47. Max. Height 48. Culvert Length	5.0 m 2.0 m 18.0 m	52. S	Upstream Downstream oil Condition	N N U
41. Year Constructed42. Material Type43. Crossing Skew	B. CPS-PA 0°	46. Total Width/Dia.47. Max. Height48. Culvert Length49. Type/Depth of Fill	5.0 m 2.0 m 18.0 m E 0.8 m	52. S	Upstream Downstream oil Condition	N N U
41. Year Constructed 42. Material Type 43. Crossing Skew 44. Number of Cells/Spans	B. CPS-PA 0°	46. Total Width/Dia.47. Max. Height48. Culvert Length49. Type/Depth of Fill	5.0 m 2.0 m 18.0 m E 0.8 m	52. S 53. F	Upstream Downstream oil Condition	N N U
41. Year Constructed 42. Material Type 43. Crossing Skew 44. Number of Cells/Spans ROAD OVER CULVERT	B. CPS-PA 0°	46. Total Width/Dia. 47. Max. Height 48. Culvert Length 49. Type/Depth of Fill 50. Culvert Floor	5.0 m 2.0 m 18.0 m E 0.8 m EA	52. S 53. F	Upstream Downstream oil Condition oundation Type	N N U UN – Unknown
41. Year Constructed 42. Material Type 43. Crossing Skew 44. Number of Cells/Spans	B. CPS-PA 0° 1	46. Total Width/Dia. 47. Max. Height 48. Culvert Length 49. Type/Depth of Fill 50. Culvert Floor	5.0 m 2.0 m 18.0 m E 0.8 m EA	52. S 53. F 61. S	Upstream Downstream oil Condition oundation Type afety Curb/Sidewalk &	N N U UN – Unknown (A) N (B) N
41. Year Constructed 42. Material Type 43. Crossing Skew 44. Number of Cells/Spans ROAD OVER CULVERT 55. Existing Road Class	B. CPS-PA 0° 1	46. Total Width/Dia. 47. Max. Height 48. Culvert Length 49. Type/Depth of Fill 50. Culvert Floor 57. Surface Type 58. Platform Width	5.0 m 2.0 m 18.0 m E 0.8 m EA	52. S 53. F 61. S	Upstream Downstream oil Condition oundation Type afety Curb/Sidewalk & curb Barrier	N N U UN – Unknown
41. Year Constructed 42. Material Type 43. Crossing Skew 44. Number of Cells/Spans ROAD OVER CULVERT 55. Existing Road Class 55a. Highway Classification 56. Operational Status	B. CPS-PA 0° 1	46. Total Width/Dia. 47. Max. Height 48. Culvert Length 49. Type/Depth of Fill 50. Culvert Floor 57. Surface Type 58. Platform Width 59. Surface Width	5.0 m 2.0 m 18.0 m E 0.8 m EA G 8.0 m 7.0 m	52. S 53. F 61. S	Upstream Downstream oil Condition oundation Type afety Curb/Sidewalk & curb Barrier	N N U UN – Unknown (A) N (B) N (A) E SC
41. Year Constructed 42. Material Type 43. Crossing Skew 44. Number of Cells/Spans ROAD OVER CULVERT 55. Existing Road Class 55a. Highway Classification	B. CPS-PA 0° 1	46. Total Width/Dia. 47. Max. Height 48. Culvert Length 49. Type/Depth of Fill 50. Culvert Floor 57. Surface Type 58. Platform Width 59. Surface Width 60. No. of Lanes	5.0 m 2.0 m 18.0 m E 0.8 m EA G 8.0 m 7.0 m	52. S 53. F 61. S C 62. R	Upstream Downstream oil Condition oundation Type afety Curb/Sidewalk & urb Barrier loadside Safety	N N U UN – Unknown (A) N (B) N (A) E SC
41. Year Constructed 42. Material Type 43. Crossing Skew 44. Number of Cells/Spans ROAD OVER CULVERT 55. Existing Road Class 55a. Highway Classification 56. Operational Status ROAD THROUGH CULVERT	B. CPS-PA 0° 1	46. Total Width/Dia. 47. Max. Height 48. Culvert Length 49. Type/Depth of Fill 50. Culvert Floor 57. Surface Type 58. Platform Width 59. Surface Width 60. No. of Lanes	5.0 m 2.0 m 18.0 m E 0.8 m EA G 8.0 m 7.0 m	52. S 53. F 61. S C 62. R	Upstream Downstream oil Condition oundation Type afety Curb/Sidewalk & urb Barrier oadside Safety afety Curb/Sidewalk &	N N U UN – Unknown (A) N (B) N (A) E SC
41. Year Constructed 42. Material Type 43. Crossing Skew 44. Number of Cells/Spans ROAD OVER CULVERT 55. Existing Road Class 55a. Highway Classification 56. Operational Status ROAD THROUGH CULVERT 64. Existing Road Class	B. CPS-PA 0° 1	46. Total Width/Dia. 47. Max. Height 48. Culvert Length 49. Type/Depth of Fill 50. Culvert Floor 57. Surface Type 58. Platform Width 59. Surface Width 60. No. of Lanes 66. Opening Width 67. Surface Width	5.0 m 2.0 m 18.0 m E 0.8 m EA G 8.0 m 7.0 m	52. S 53. F 61. S C 62. R	Upstream Downstream oil Condition oundation Type afety Curb/Sidewalk & turb Barrier oadside Safety afety Curb/Sidewalk & turb Barrier	N N U UN – Unknown (A) N (B) N (A) E SC
41. Year Constructed 42. Material Type 43. Crossing Skew 44. Number of Cells/Spans ROAD OVER CULVERT 55. Existing Road Class 55a. Highway Classification 56. Operational Status ROAD THROUGH CULVERT 64. Existing Road Class 64a. Highway Classification	B. CPS-PA 0° 1	46. Total Width/Dia. 47. Max. Height 48. Culvert Length 49. Type/Depth of Fill 50. Culvert Floor 57. Surface Type 58. Platform Width 59. Surface Width 60. No. of Lanes 66. Opening Width 67. Surface Width 68. No. of Lanes	5.0 m 2.0 m 18.0 m E 0.8 m EA G 8.0 m 7.0 m	52. S 53. F 61. S C 62. R	Upstream Downstream oil Condition oundation Type afety Curb/Sidewalk & curb Barrier loadside Safety afety Curb/Sidewalk & curb Barrier raffic Barrier	N N U UN – Unknown
41. Year Constructed 42. Material Type 43. Crossing Skew 44. Number of Cells/Spans ROAD OVER CULVERT 55. Existing Road Class 55a. Highway Classification 56. Operational Status ROAD THROUGH CULVERT 64. Existing Road Class	B. CPS-PA 0° 1	46. Total Width/Dia. 47. Max. Height 48. Culvert Length 49. Type/Depth of Fill 50. Culvert Floor 57. Surface Type 58. Platform Width 59. Surface Width 60. No. of Lanes 66. Opening Width 67. Surface Width	5.0 m 2.0 m 18.0 m E 0.8 m EA G 8.0 m 7.0 m	52. S 53. F 61. S C 62. R	Upstream Downstream oil Condition oundation Type afety Curb/Sidewalk & turb Barrier oadside Safety afety Curb/Sidewalk & turb Barrier	N N U UN – Unknown
41. Year Constructed 42. Material Type 43. Crossing Skew 44. Number of Cells/Spans ROAD OVER CULVERT 55. Existing Road Class 55a. Highway Classification 56. Operational Status ROAD THROUGH CULVERT 64. Existing Road Class 64a. Highway Classification 65. Operational Status E. TRAFFIC DATA	B. CPS-PA 0° 1	46. Total Width/Dia. 47. Max. Height 48. Culvert Length 49. Type/Depth of Fill 50. Culvert Floor 57. Surface Type 58. Platform Width 59. Surface Width 60. No. of Lanes 66. Opening Width 67. Surface Width 68. No. of Lanes 69. Median Type/Width	5.0 m 2.0 m 18.0 m E 0.8 m EA G 8.0 m 7.0 m	52. S 53. F 61. S C 62. R 70. S C 71. T 72. M	Upstream Downstream oil Condition oundation Type afety Curb/Sidewalk & urb Barrier loadside Safety afety Curb/Sidewalk & urb Barrier raffic Barrier raffic Barrier linimum Vertical Clearance	N N U UN – Unknown (A) N (B) N (A) E SC (B) W SC
41. Year Constructed 42. Material Type 43. Crossing Skew 44. Number of Cells/Spans ROAD OVER CULVERT 55. Existing Road Class 55a. Highway Classification 56. Operational Status ROAD THROUGH CULVERT 64. Existing Road Class 64a. Highway Classification 65. Operational Status	B. CPS-PA 0° 1	46. Total Width/Dia. 47. Max. Height 48. Culvert Length 49. Type/Depth of Fill 50. Culvert Floor 57. Surface Type 58. Platform Width 59. Surface Width 60. No. of Lanes 66. Opening Width 67. Surface Width 68. No. of Lanes 69. Median Type/Width TRAFFIC COUNT 83. Year	5.0 m 2.0 m 18.0 m E 0.8 m EA G 8.0 m 7.0 m	52. S 53. F 61. S C 62. R 70. S C 71. T 72. M	Upstream Downstream oil Condition oundation Type afety Curb/Sidewalk & turb Barrier oadside Safety afety Curb/Sidewalk & turb Barrier raffic Barrier linimum Vertical Clearance AR TRAFFIC FORECAST	N N U UN – Unknown (A) N (B) N (A) E SC (B) W SC
41. Year Constructed 42. Material Type 43. Crossing Skew 44. Number of Cells/Spans ROAD OVER CULVERT 55. Existing Road Class 55a. Highway Classification 56. Operational Status ROAD THROUGH CULVERT 64. Existing Road Class 64a. Highway Classification 65. Operational Status E. TRAFFIC DATA 81. Legal Speed Limit	B. CPS-PA 0° 1	46. Total Width/Dia. 47. Max. Height 48. Culvert Length 49. Type/Depth of Fill 50. Culvert Floor 57. Surface Type 58. Platform Width 59. Surface Width 60. No. of Lanes 66. Opening Width 67. Surface Width 68. No. of Lanes 69. Median Type/Width TRAFFIC COUNT 83. Year 84. AADT	5.0 m 2.0 m 18.0 m E 0.8 m EA G 8.0 m 7.0 m	52. S 53. F 61. S C 62. R 70. S C 71. T 72. M	Upstream Downstream oil Condition oundation Type afety Curb/Sidewalk & curb Barrier coadside Safety afety Curb/Sidewalk & curb Barrier raffic Barrier finimum Vertical Clearance AR TRAFFIC FORECAST ear ADT	N N U UN – Unknown (A) N (B) N (A) E SC (B) W SC
41. Year Constructed 42. Material Type 43. Crossing Skew 44. Number of Cells/Spans ROAD OVER CULVERT 55. Existing Road Class 55a. Highway Classification 56. Operational Status ROAD THROUGH CULVERT 64. Existing Road Class 64a. Highway Classification 65. Operational Status E. TRAFFIC DATA	B. CPS-PA 0° 1	46. Total Width/Dia. 47. Max. Height 48. Culvert Length 49. Type/Depth of Fill 50. Culvert Floor 57. Surface Type 58. Platform Width 59. Surface Width 60. No. of Lanes 66. Opening Width 67. Surface Width 68. No. of Lanes 69. Median Type/Width TRAFFIC COUNT 83. Year 84. AADT 85. DHV Factor	5.0 m 2.0 m 18.0 m E 0.8 m EA G 8.0 m 7.0 m	52. S 53. F 61. S C 62. R 70. S C 71. T 72. M 90. Y 91. A 92. D	Upstream Downstream oil Condition oundation Type afety Curb/Sidewalk & curb Barrier coadside Safety afety Curb/Sidewalk & curb Barrier raffic Barrier finimum Vertical Clearance AR TRAFFIC FORECAST ear ADT OHV Factor	N N U UN – Unknown (A) N (B) N (A) E SC (B) W SC
41. Year Constructed 42. Material Type 43. Crossing Skew 44. Number of Cells/Spans ROAD OVER CULVERT 55. Existing Road Class 55a. Highway Classification 56. Operational Status ROAD THROUGH CULVERT 64. Existing Road Class 64a. Highway Classification 65. Operational Status E. TRAFFIC DATA 81. Legal Speed Limit 82. Route Designations	B. CPS-PA 0° 1	46. Total Width/Dia. 47. Max. Height 48. Culvert Length 49. Type/Depth of Fill 50. Culvert Floor 57. Surface Type 58. Platform Width 59. Surface Width 60. No. of Lanes 66. Opening Width 67. Surface Width 68. No. of Lanes 69. Median Type/Width TRAFFIC COUNT 83. Year 84. AADT 85. DHV Factor 86. DHV	5.0 m 2.0 m 18.0 m E 0.8 m EA G 8.0 m 7.0 m	52. S 53. Fo 61. S C 62. R 70. S C 71. T 72. M 10 YE/ 90. Y 91. A 92. D 93. D	Upstream Downstream oil Condition oundation Type afety Curb/Sidewalk & turb Barrier loadside Safety afety Curb/Sidewalk & turb Barrier raffic Barrier linimum Vertical Clearance AR TRAFFIC FORECAST ear ADT HV Factor	N N U UN – Unknown (A) N (B) N (A) E SC (B) W SC
41. Year Constructed 42. Material Type 43. Crossing Skew 44. Number of Cells/Spans ROAD OVER CULVERT 55. Existing Road Class 55a. Highway Classification 56. Operational Status ROAD THROUGH CULVERT 64. Existing Road Class 64a. Highway Classification 65. Operational Status E. TRAFFIC DATA 81. Legal Speed Limit 82. Route Designations Transit Truck	B. CPS-PA 0° 1	46. Total Width/Dia. 47. Max. Height 48. Culvert Length 49. Type/Depth of Fill 50. Culvert Floor 57. Surface Type 58. Platform Width 59. Surface Width 60. No. of Lanes 66. Opening Width 67. Surface Width 68. No. of Lanes 69. Median Type/Width TRAFFIC COUNT 83. Year 84. AADT 85. DHV Factor 86. DHV 87. Trucks	5.0 m 2.0 m 18.0 m E 0.8 m EA G 8.0 m 7.0 m	52. S 53. F 61. S 62. R 70. S C 71. T 72. M 10 YE/ 90. Y 91. A 92. D 93. D 94. T	Upstream Downstream oil Condition oundation Type afety Curb/Sidewalk & turb Barrier toadside Safety afety Curb/Sidewalk & turb Barrier raffic Barrier linimum Vertical Clearance AR TRAFFIC FORECAST tear ADT HV Factor HV rucks	N N U UN – Unknown (A) N (B) N (A) E SC (B) W SC
41. Year Constructed 42. Material Type 43. Crossing Skew 44. Number of Cells/Spans ROAD OVER CULVERT 55. Existing Road Class 55a. Highway Classification 56. Operational Status ROAD THROUGH CULVERT 64. Existing Road Class 64a. Highway Classification 65. Operational Status E. TRAFFIC DATA 81. Legal Speed Limit 82. Route Designations	B. CPS-PA 0° 1	46. Total Width/Dia. 47. Max. Height 48. Culvert Length 49. Type/Depth of Fill 50. Culvert Floor 57. Surface Type 58. Platform Width 59. Surface Width 60. No. of Lanes 66. Opening Width 67. Surface Width 68. No. of Lanes 69. Median Type/Width TRAFFIC COUNT 83. Year 84. AADT 85. DHV Factor 86. DHV 87. Trucks 88. Peak Directional Split	5.0 m 2.0 m 18.0 m E 0.8 m EA G 8.0 m 7.0 m	52. S 53. F 61. S 62. R 70. S C 71. T 72. M 10 YE/ 90. Y 91. A 92. D 93. D 94. T 95. C	Upstream Downstream oil Condition oundation Type afety Curb/Sidewalk & turb Barrier toadside Safety afety Curb/Sidewalk & turb Barrier raffic Barrier linimum Vertical Clearance AR TRAFFIC FORECAST ear ADT HV Factor HV rucks Lapacity	N N U UN – Unknown (A) N (B) N (A) E SC (B) W SC
41. Year Constructed 42. Material Type 43. Crossing Skew 44. Number of Cells/Spans ROAD OVER CULVERT 55. Existing Road Class 55a. Highway Classification 56. Operational Status ROAD THROUGH CULVERT 64. Existing Road Class 64a. Highway Classification 65. Operational Status E. TRAFFIC DATA 81. Legal Speed Limit 82. Route Designations Transit Truck	B. CPS-PA 0° 1	46. Total Width/Dia. 47. Max. Height 48. Culvert Length 49. Type/Depth of Fill 50. Culvert Floor 57. Surface Type 58. Platform Width 59. Surface Width 60. No. of Lanes 66. Opening Width 67. Surface Width 68. No. of Lanes 69. Median Type/Width TRAFFIC COUNT 83. Year 84. AADT 85. DHV Factor 86. DHV 87. Trucks	5.0 m 2.0 m 18.0 m E 0.8 m EA G 8.0 m 7.0 m	52. S 53. F 61. S 62. R 70. S C 71. T 72. M 10 YE/ 90. Y 91. A 92. D 93. D 94. T 95. C	Upstream Downstream oil Condition oundation Type afety Curb/Sidewalk & turb Barrier toadside Safety afety Curb/Sidewalk & turb Barrier raffic Barrier linimum Vertical Clearance AR TRAFFIC FORECAST tear ADT HV Factor HV rucks	N N U UN – Unknown (A) N (B) N (A) E SC (B) W SC
41. Year Constructed 42. Material Type 43. Crossing Skew 44. Number of Cells/Spans ROAD OVER CULVERT 55. Existing Road Class 55a. Highway Classification 56. Operational Status ROAD THROUGH CULVERT 64. Existing Road Class 64a. Highway Classification 65. Operational Status E. TRAFFIC DATA 81. Legal Speed Limit 82. Route Designations Transit Truck	B. CPS-PA 0° 1 300 - 2W OAT	46. Total Width/Dia. 47. Max. Height 48. Culvert Length 49. Type/Depth of Fill 50. Culvert Floor 57. Surface Type 58. Platform Width 59. Surface Width 60. No. of Lanes 66. Opening Width 67. Surface Width 68. No. of Lanes 69. Median Type/Width TRAFFIC COUNT 83. Year 84. AADT 85. DHV Factor 86. DHV 87. Trucks 88. Peak Directional Split	5.0 m 2.0 m 18.0 m E 0.8 m EA G 8.0 m 7.0 m	52. S 53. F 61. S 62. R 70. S C 71. T 72. M 10 YE/ 90. Y 91. A 92. D 93. D 94. T 95. C	Upstream Downstream oil Condition oundation Type afety Curb/Sidewalk & turb Barrier toadside Safety afety Curb/Sidewalk & turb Barrier raffic Barrier linimum Vertical Clearance AR TRAFFIC FORECAST ear ADT HV Factor HV rucks Lapacity	N N U UN – Unknown (A) N (B) N (A) E SC (B) W SC
41. Year Constructed 42. Material Type 43. Crossing Skew 44. Number of Cells/Spans ROAD OVER CULVERT 55. Existing Road Class 55a. Highway Classification 56. Operational Status ROAD THROUGH CULVERT 64. Existing Road Class 64a. Highway Classification 65. Operational Status E. TRAFFIC DATA 81. Legal Speed Limit 82. Route Designations Transit Truck Bicycle E. INSPECTIONS & APPRO	B. CPS-PA 0° 1 300 - 2W OAT	46. Total Width/Dia. 47. Max. Height 48. Culvert Length 49. Type/Depth of Fill 50. Culvert Floor 57. Surface Type 58. Platform Width 59. Surface Width 60. No. of Lanes 66. Opening Width 67. Surface Width 68. No. of Lanes 69. Median Type/Width TRAFFIC COUNT 83. Year 84. AADT 85. DHV Factor 86. DHV 87. Trucks 88. Peak Directional Split	5.0 m 2.0 m 18.0 m E 0.8 m EA G 8.0 m 7.0 m 2.0	52. S 53. F 61. S C 62. R 70. S C 71. T 72. M 90. Y 91. Y 91. D 93. D 94. T 95. C 96. 20	Upstream Downstream oil Condition oundation Type afety Curb/Sidewalk & turb Barrier toadside Safety afety Curb/Sidewalk & turb Barrier raffic Barrier linimum Vertical Clearance AR TRAFFIC FORECAST ear ADT HV Factor HV rucks Lapacity	N N U UN – Unknown (A) N (B) N (A) E SC (B) W SC
41. Year Constructed 42. Material Type 43. Crossing Skew 44. Number of Cells/Spans ROAD OVER CULVERT 55. Existing Road Class 55a. Highway Classification 56. Operational Status ROAD THROUGH CULVERT 64. Existing Road Class 64a. Highway Classification 65. Operational Status E. TRAFFIC DATA 81. Legal Speed Limit 82. Route Designations Transit Truck School Bicycle Sicycle F. INSPECTIONS & APPRO 101. Date: June	B. CPS-PA 0° 1 300 - 2W OAT	46. Total Width/Dia. 47. Max. Height 48. Culvert Length 49. Type/Depth of Fill 50. Culvert Floor 57. Surface Type 58. Platform Width 59. Surface Width 60. No. of Lanes 66. Opening Width 67. Surface Width 68. No. of Lanes 69. Median Type/Width TRAFFIC COUNT 83. Year 84. AADT 85. DHV Factor 86. DHV 87. Trucks 88. Peak Directional Split 89. 10 Year Growth Factor	5.0 m 2.0 m 18.0 m E 0.8 m EA G 8.0 m 7.0 m 2.0	52. S 53. F 61. S 62. R 70. S C 71. T 72. M 10 YE/ 90. Y 91. A 92. D 93. D 94. T 95. C 96. 20	Upstream Downstream oil Condition oundation Type afety Curb/Sidewalk & turb Barrier toadside Safety afety Curb/Sidewalk & turb Barrier raffic Barrier linimum Vertical Clearance AR TRAFFIC FORECAST ear ADT HV Factor HV rucks capacity 0 Year AADT	N N U UN – Unknown (A) N (B) N (A) E SC (B) W SC

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

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

M. Inspection Notes

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

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

Recommendations

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

07

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

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



LOOKING NORTH ACROSS STRUCTURE



WEST ELEVATION

07

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

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



TYPICAL ROCK PROTECTION AND EMBANKMENT



LOOKING EAST THROUGH CULVERT BARREL

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

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



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



BROKEN GUIDERAIL POST ALONG EAST GUIDERAIL

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

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

Culvert No. MTO Site No. 6. 8.

07



LOOKING WEST UPSTREAM FROM STRUCTURE

Page 1 of 6

Culvert No. 08

MUNICIPAL CULVERT APPRAISAL

A. IDENTIFICATION							6.	Culvert No.		08
1. Control Code	4-S-TP						7.	Road Section No.		485
2. Municipal Name/Code	Township of Johnson						8.	MTO Site No.		
 Culvert Name Road Name 	Sucker Creek Culvert MacDonald Drive									
5. Location		17								
	0.4 km North of Highway	17					10	Crossing Type		O-WAT
 Roadside Environment Posting 	R t t t	13. Posti	na Cian	t			16. 17.			Unknown
11. Bylaw No.			Clearance Sign	ι			17.	Culvert Value	erway	\$350,000
12. Bylaw Expiry Date	v		ow Structure Sign					Latitude		\$350,000
12. Bylaw Expiry Date	y m	io. Naii	w Structure Sign					Longitude		
							20.	Longitude		
B. RAILWAY OVERPASS/UNDE										
 Railway Level Crossing Numb Railway Company 	per					27.	Original	Board Order Number	Date y	m d
23. Railway Subdivision						28.	Current	Board Order Number	Date y	m d
24. Subdivision Mileage										
25. Transport Canada Crossing N	lo.					29.	Seniority	1		
26. Number of Tracks										
C. JURISDICTION								38. Local/Area Municip	ality (Uppe	r Tier Only)
31. Ownership O	A MUN							A.		
	В	Bound	ary Bridge/Culve	rt	N			B.		
Heritage Status	R							39. Maintenance Area		
Special Designation	CBL		ent Municipality N	ame/No				40. Municipal Ward		
 Suburban Roads Commission 	1	37. Adjace	ent Culvert No.							
D. EXISTING CONDITIONS										
GENERAL		45. Cell/Spa	n Width/Dia		5.5 m		51 F	nd Treatment	<u>A</u> E	3 <u>C</u> D
41. Year Constructed	A. 2000	46. Total W			5.5 m		٠ =	Upstream	N I	
Tr. Todi Conditactod	В.	47. Max. He			2.1 m			Downstream	N	
42. Material Type	CPS-PA	48. Culvert			14.3 m		52 S	Soil Condition	Ü	
43. Crossing Skew	0°		epth of Fill	Е	0.7 m			oundation Type	-	nown
44. Number of Cells/Spans	1	50. Culvert		_	EA			oundation Typo	0	
DOAD OVER OUR VERT										
ROAD OVER CULVERT		57. Surface	Typo		G		61 9	afetv Curb/Sidewalk &	(A) N	
55. Existing Road Class	300	58. Platform			6.0 m			Curb Barrier	(A) N	
55a. Highway Classification	300	59. Surface			5.0 m			loadside Safety	(A) N	NO
56. Operational Status	2W OAT	60. No. of L			2		02. K	toauside Salety	(A) N	NO
50. Operational Status	ZW OAT	00. NO. 01 L	11163						(b) 0	110
ROAD THROUGH CULVERT		00 0	\ \ \ \ : - \ -				70 0	-f-t- O /O " 0		
64 Eviating Bood Class		66. Opening 67. Surface						afety Curb/Sidewalk & Curb Barrier		
64. Existing Road Class64a. Highway Classification		67. Surface 68. No. of L						raffic Barrier		
65. Operational Status		69. Median	Type/Width				12. IV	linimum Vertical Clearan	LE	
E. TRAFFIC DATA		TRAFFIC CC	UNT				10 YE	AR TRAFFIC FORECAS	Т	
81. Legal Speed Limit		83. Year					90. Y	'ear		
		84. AADT					91. A	ADT		
82. Route Designations		85. DHV Fa	ctor				92. D	HV Factor		
-		86. DHV					93. D			
Transit □ Truck □		87. Trucks					94. T	rucks		
School Bicycle		88. Peak Di	rectional Split				95. C	apacity		
		89. 10 Year	Growth Factor				96. 2	0 Year AADT		
F. INSPECTIONS & APPROVA	u s									
		100 Drofoo	-:	lomo			M Kirk	oy, P. Eng.		
101. Date: .lune 2	2010	102. Profes	sional Engineer i	vallie.						
 Date: June 2, Inspected By: M. Kirby 	& S. Milne		sional Engineer N pality/Company	varrie				n Engineering Inc.		

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

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

Inspection Notes

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

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

Recommendations

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

08

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

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



LOOKING WEST ACROSS STRUCTURE



SOUTH ELEVATION

08

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

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



LOOKING NORTH UPSTREAM FROM STRUCTURE



TYPICAL ROCK PROTECTION ON ROADWAY EMBANKMENT

08

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

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

Culvert No. MTO Site No.



LOOKING NORTH THROUGH BARREL



LIGHT STAINING AND BLISTERING OF COATING AT WATERLINE - SOUTHEAST QUADRANT

Appendix B

Municipal Bridge Inventory

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

Bridge No.	Priority Ranking	Bridge Name	Bridge Location	Crossin g Type	Year of Const	Bridge Value (\$1,000's)	Bridge Type	No. of Spans	Deck Length (m)	Deck 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
1	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
2	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	-	RSB RSP IAG	PC PC PC	1-5 yrs 1-5 yrs 1-5 yrs	15 10 40	81
3	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	PC PC	1-5 yrs 1-5 yrs	30 30	76
4	1	Suddaby Creek Bridge	Old Mill Road - 0.2km North of Gordon Lake Road	O-WAT	1913	750	С-ТВ-С	3	21.3	5.3	DCS/2017/ 10 RRA/2017/ 5	RIR IAG EIR RSB/RSP OWP Or RSL	PC PC PC PC PC	NOW 1-5 yrs 1-5 yrs 1-5 yrs 1-5 yrs	25 40 10 200 25 1,000	370
5	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	-	-	-	-	-	-
6	3	Black Creek Bridge	Gordon Lake Road – 80m South of Suddaby Park Road	O-WAT	1930	375	C-TB-F	1	7.0	5.5	-	RIR RSP CDS IAG RSL	PC PC PC PC PC	1-5 yrs 1-5 yrs 1-5 yrs 1-5 yrs 6-10 yrs	10 15 15 40 400	103**

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

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

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

Culvert No.	Priority Ranking	Culvert Name	Culvert Location	Crossin g Type	Year of Const	Culvert Value (\$1,000's)	Culvert Type	No. of Spans	Culvert Length (m)	Culvert Width (m)	Eng Invest Type/Year/ \$1,000'S	Type of Improv	Cost Cat	Time of Improv	Constrn Cost in \$1,000's	Total Proj.Cost \$1,000's
1	-	Desbarats River Culvert	Government Road – 2.0 km West of Gordon Lake Road					New	Culvert, not	inspected	on township's I	equest				
2	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	PC PC	NOW 1-5 yrs	40 300	434
3	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
4	-	Desbarats River Culvert	Boyer Drive – 30m South of Hwy. 17	O-WAT	2008	450	PCC- BOX	1	17.7	5.6		Not inspe	cted as p	per township	s request	
5	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	PC PC	NOW 6-10 yrs	40 400	554
6						Does not	exist as par	t of the asset	managemen	nt plan						
7	11	Sucker Creek Culvert	Puddingstone Road – 2.1 km North of Government Road	O-WAT	2000	400	CPS- PA	1	18.0	5.0	-	-	-	-	-	-
8	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) = \$1,850

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

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