Township of Johnson

Biennial Bridge and Culvert Inspections 2020





2020

Introduction

In spring of 2020, the council of the Township of Johnson (the "Township"), in conjunction with surrounding townships issued a request for proposals to complete biennial bridge and culvert inspections on the following structures:

Bridges:

- 1. Gordon Lake Rd Oikari
- 2. Gordon Lake Rd Sudaby Park Road
- 3. Fisher Road South of Government Rd
- 4. Old Mill Road west of Gordon Lake Rd
- 5. Government Road by School

Culverts over 3 metres:

- 1. Kensington Rd. south of CASS
- 2. Government Road East of Desbarats
- 3. Government Road West of Desbarats by Dump
- 4. Puddingstone Rd
- 5. MacDonald Drive across from CASS
- 6. Government Road east of Fisher Rd.

Biennial inspections are required by Ontario Regulation 104/97 "Standards for Bridges" made under the province's Public Transportation and Highway Improvement Act. The inspections are to be completed in general accordance with the Ontario Structure Inspection Manual ("OSIM").

Scope of Work

The biennial inspections are carried out in keeping with the OSIM's requirements for detailed visual inspections. Specifically, KEC completed a systematic visual inspection of all accessible, unobscured areas of each subject structure. Photographs of the structures were taken to document the appearance, condition and deficiencies.

Discussion

Following the site inspections, appraisal sheets for each structure were completed (copies attached). The following summarizes the findings of the inspections, presented in the order listed in the RFP.

Gordon Lake Rd – Oikari

This structure is an open floor corrugated steel arch culvert. Overall the structure appears in good condition and no specific action items are noted.

Gordon Lake Rd – Sudaby Park Road

This structure is a concrete box culvert constructed in about 2009. Overall the structure appears in good condition. It is noted that the wingwall at the northeast

quadrant appears to have slightly shifted away from the structure; this specifically should be reviewed at the next biennial inspection. If further displacement is noted, a remediation plan should be developed at that time.

Fisher Road – South of Government Rd

The Fisher Road Bridge is a concrete structure dating to about 1950. The structure is in fair to poor condition and is likely near the end of its serviceable life. It is recommended that the Township initiate a replacement/rehabilitation study to develop a plan addressing their needs.

In the interim, it is recommended that sand and gravel accumulations be removed from the deck and that the Township consider installation of approach guide rails.

Old Mill Road – west of Gordon Lake Rd

This bridge, constructed in about 1913 is a concrete structure with a steel pipe guide rail.

The structure is in poor condition and requires replacement or rehabilitation. It is recommended that the Township initiate a replacement/rehabilitation study. Due to the sharp curve in the road at the north bridge approach, the Township may also wish to consider options for road realignment.

Government Road – by School

The bridge on Government Road just west of Gordon Lake Road appears in fair condition; however the inspection was limited due to high water obscuring much of the substructure.

Guide rail repairs are recommended, in addition to routine maintenance of the roadway.

Kensington Rd. – south of CASS

The Kensington Road Culvert appears in fair condition; however much of the culvert was obscured by high water at the time of the inspection. The Township should consider installation of guide rails at the structure.

Government Road – East of Desbarats

This structure consists of two round corrugated steel pipes reportedly installed in about 2014. The installation appears in good condition.

Government Road – West of Desbarats by Dump

This structure is nearing the end of its serviceable life. The Township should anticipate replacement in the next 5 to 7 years.

It is recommended to install guide rails at the structure and monitor for beaver activity – remove beaver dams as required.

Puddingstone Rd

The Puddingstone Road culvert is an open-bottom corrugated steel arch. The installation appears in fair condition. It is recommended to install hazard markers and snow plow signs on the guide rails.

MacDonald Drive – across from CASS

This structure is an open bottom corrugated steel arch and is in fair condition. Installation of guide rails is recommended.

Government Road – east of Fisher Rd.

This 3.6m diameter round CSP has experienced failure in pipe joints. The pipe is also notably out of round, and appears to have suffered loss of embedment material. It is recommended that this culvert be replaced or rehabilitated at the earliest opportunity.

Summary

Continued routine maintenance is recommended for all structures, such as vegetation management, deck cleaning, guide rail maintenance, and road upkeep.

A detailed evaluation of the Old Mill Road Bridge is recommended. The suggested budget for a detailed evaluation and replacement study (Schedule B Municipal Class EA) is \$30,000.

A detailed evaluation of the Fisher Road Bridge is recommended. The suggested budget for a detailed evaluation and replacement study (Schedule B Municipal Class EA) is \$30,000.

Replacement or rehabilitation of the Government Road – east of Fisher Rd. culvert is recommended. A hydrology study should be undertaken to confirm culvert sizing, the suggested budget for the study is \$7,500.

Statement of Qualifications and Limitations

This inspection and report has been completed by KEC at the request of, and for sole use of the Owner, The Township of Johnson. No third party shall rely on this report. This report shall be read in its entirety; portions shall not be taken out of context.

This report is based on observations made at the time of the inspection(s). Portions of this report may be based on information provided to KEC, which has not been independently verified. It is explicitly noted that some conditions may exist which were not observed or apparent to KEC at the time of the inspection(s); should the Owner become aware of such conditions, KEC shall be advised immediately in order to revise the report accordingly.

KEC accepts no liability or responsibility for actions taken as a result of this report.

Any user of this report specifically denies any right to claims against KEC or KEC's sub-consultants, officers, agents or employees in excess of the fee paid for the services rendered.

Closure

We trust that the above and attached fulfills your requirements at this time. If you have any questions about the conclusions and/or recommendations presented, please do not hesitate to contact Kresin Engineering Corporation.

Respectfully submitted, Kresin Engineering Corporation

Michael Kresin, P.Eng.

Consulting Engineer



Appendix A

Structure Appraisal Sheets

IDENTIFICATION					
1. Control Code	ТР	10. Posting			
2. Municipal Name/Code	Township of Johnson	11. Bylaw No.			
3. Culvert Name	Oikari Culvert	12. Bylaw Expiry Date			
4. Road Name	Gordon Lake Road	13. Posting Sign			
5. Location	350m south of Gordon Lake	14. Low Clearance Sign		m	
6. Culvert No.	B1	15. Narrow Structure Sign			
7. Road Section No.		16. Crossing Type	O-WAT		
8. MTO Site No.	385-189	17. Federal Navigable Waterway	U		
9. Roadside Environment	R	18. Culvert Value (\$000)	500		

B. RAILWAY OVERPASS/UNDERPASS

SECTION NOT APPLICABLE

C. JURISDICTION

D EVICTING COND

31. Ownership		35. Boundary Culvert	
А.	O MUN	36. Adjacent Municipality Name/No.	
В.		37. Adjacent Culvert No.	
32. Heritage Status	R	38. Local/Area Municipality (Upper Tier Only)	
33. Special Designation	NSD	А.	
34. Suburban Roads Commission Name		В.	

D. EXISTING CONDITIONS			
GENERAL			_
41. Year Constructed		47. Max. Height	m
А.	2006	48. Culvert Length	11 m
В.		49.Type/Depth of Fill	E 0.3 m
42. Material/Type	CPS ACH	50. Culvert Floor	EA
43. Crossing Skew	0	51. End Treatment Upstream	н
44. Number of Cells/Spans	1	Downstream	н
45. Cell/Span Width/Dia.	6.2 n	n 52. Soil Condition	U
46. Total Width/Dia.	6 n	n 53. Foundation Type	UN
ROAD OVER COLVERT			
55. Existing Road Class	300	60. No. of Lanes	2
56. Operational Status	2W OAT	61. Safety Curb/Sidewalk and Club Barrier	
57. Surface Type	LCB	А.	m
58. Platform Width	10.3 n	n B.	m
59. Surface Width	7.1 n	n 62. Roadside Safety	FB
ROAD THROUGH CULVERT			

SECTION NOT APPLICABLE

91 Logal Canad Limit	20	22 Deute Designations		_
81. Legal Speed Limit	80	82. Route Designations		_
		transit \$chool	L_Truck Bicycle	
TRAFFIC COUNT		10 YEAR TRAFFIC FORECAST		
83. Year		90. Year		
84. AADT		91. AADT		
85. DHV Factor	%	92. DHV Factor		%
86. DHV	vph	93. DHV		vph
87. Trucks	%	94. Trucks		%
88. Peak Directional Split	%	95. Capacity		vph
89. 10 Year Growth Factor		96. 20 Year AADT		

F. APPROVALS

101. Date	August 15, 2020	102. Professional Engineer Name	M. Kresin, P. Eng.
103. Municipality/Company	Kresin Engineering Corporation		

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Johnson

G. CULVERT NEEDS	J. TYPE & TIME OF IMPROVEMENT
RATING	141. Design Class
MCR PCR TIME OF NEED	142. Design Platform Width
111. Barrel 6 ADEO	143. Material/Type
112. Equivalence for a second se	144.Width/Diameter
113 Inlet Component 6 ADEO	145 Maximum Height m
114 Outlet Component	146. Culvert Length
115 Guiderail/Barrier 4 4 1-5	147 No. of Culverts
116 Streams/Waterways 6 6 ADEO	148 Depth of Fill
	146 a b C d e
	Type of Costing Time of
	Improvement Category Quantity Improvement Cost (\$000)
	Improvement Category Quantity Improvement Cost (\$000)
H. FUNCTIONAL NEEDS	В
ROAD OVER Existing Minimum	
Condition Tolerable TIME OF NEED	D
121. Platform Width 7.10 m 6.5 m	
122. Level of Service A E	
123. Roadside Safety m	K. IMPROVEMENT COST
	COST (\$000)
ROAD THROUGH	151. Construction
125. Surface Width m	152. Approaches
126 Level of Service	153 Detours
127 Min Vertical Clearance m m	154 Traffic Control/Protection
128 Sidewalks	155 Litilities
	156 Other
	150. Otter
I. ENGINEERING RECOMMENDATION	157. Contrigencies
	159 Right of Way
131 Culvert Drawings	1551 Agric of Huly
	161 Engineering - Design & Supervision
132 Engineering Investigations	162. Total Project Cost
Tupo Voor Coct (\$000)	162. Fligibility for Subsidy
	105. Englointy für Subsidi
	Agency Cost
	R R
133. Total Cost of Engineering Investigations	D
	F
134. Single Posting (YYYY/MM/DD)	
135. Evaluated Posting	165. Total Non-Subsidizable Cost
Date (YYY/MM/DD)	166. Subsidizable Cost
136. Monitoring	167. Municipal Percent of Subsidizable Cost
137. Closure/Date (YYYY/MM/DD)	168. Municipal Share of Cost
L HISTORY	
CHISTORY	

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

M. REMARKS		
191	INSPECTION NOTES:	
	- Culvert is a structural plate corrugated steel pipe with concrete headwalls on each end.	
	- Flex beam guide rail is installed over culvert complete with eccentric loader barrel terminations.	
	- Surface treated road over culvert appears in good condition.	
	- Road embankments appear in good condition with some minor erosion evident.	
	- The stream appears stable and in good condition.	
	- Some guide rail offset blocks are rotated.	
	 Vegetation is encroaching on shoulders and guide rails. 	
	 Inspection limited due to high water and vegetation obscuring culvert installation. 	
	RECOMMENDATIONS:	
	- Continued routine mainteance is reocmmended, including tightening guide rail bolts, erosion repairs.	
	- Vegetation management is recommended.	

CULVERT PHOTOGRAPHS		20)20 Biennial	Inspection
Structure:	Johnson Township - Oikari Culvert	Structure #:	B1	



CULVERT PHOTOGRAPHS		20)20 Biennial	Inspection
Structure:	Johnson Township - Oikari Culvert	Structure #:	B1	



CULVERT PHOTOGRAPHS		20	020 Biennial Inspection
Structure:	Johnson Township - Oikari Culvert	Structure #:	B1



A. IDENTIFICATION			
1. Control Code	ТР	10. Posting	
2. Municipal Name/Code	Township of Johnson	11. Bylaw No.	
3. Bridge Name	Suddaby Park Bridge	12. Bylaw Expiry Date	
4. Road Name	Gordon Lake Road	13. Posting Sign	
5. Location	80m south of Suddaby Park Road	14. Low Clearance Sign	m
6. Bridge No.	B6	15. Narrow Structure Sign	
7. Road Section No.		16. Crossing Type	O-WAT
8. MTO Site No.	385-152	17. Federal Navigable Waterway	U
9. Roadside Environment	R	18. Bridge Value (\$000)	500

B. RAILWAY OVERPASS/UNDERPASS

SECTION NOT APPLICABLE

C. JURISDICTION

31. Ownership	
А.	O MUN
В.	
32. Heritage Status	R
33. Special Designation	NSD
34. Suburban Roads Commission Name	

N
Johnson
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D. EXISTING CONDITIONS			
GENERAL			_
41. Year Constructed		47. Deck Length	5.3 m
А.	2009	48. Deck Width	13 m
В.		49. Deck Area	68.9 m2
42. Bridge Type	P BC F	50. Longitudinal Joints	0
43. Crossing Skew	0	51. Transverse Joints	0
44. Number of Spans	1	52. Number of Bearings	0
45. Span Length	5.3 m	53. Soil Condition	U
46. Deck Type	CC	54. Abutment and Foundation Type	U
ROAD OVER BRIDGE			
55. Existing Road Class	300	60. Median Type/ Width	m
56. Operational Status	2W-OAT	61. Safety Curb/Sidewalk and Curb Barrier	
57. Wearing Surface	A	А.	0 m
58. Surface Width	7.3 m	В.	0 m
59. No of Lanes	2	62. Barrier Walls/Railings	
		63. Minimum Vertical Clearance	m

E. TRAFFIC DATA				
81. Legal Speed Limit	80	82. Route Designations		
		Transit School	Truck Bicycle	
TRAFFIC COUNT		10 YEAR TRAFFIC FORECAST		
83. Year		90. Year		
84. AADT		91. AADT		
85. DHV Factor	%	92. DHV Factor		%
86. DHV	vpl	93. DHV		vph
87. Trucks	%	94. Trucks		%
88. Peak Directional Split	%	95. Capacity		vph
89. 10 Year Growth Factor		96. 20 Year AADT		

F. A	PPROVALS			
	101. Date	August 6, 2020	102. Professional Engineer Name	Michael Kresin, P. Eng.
	103. Municipality/Company	Kresin Engineering Corporation		



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

M. REMARKS	
191	INSPECTION NOTES:
	 Inspection limited due to high water level.
	Precast concrete box culvert.
	 Steel flex beam guide rail with safety end treatments on all approach quadrants.
	• Guide rail system includes additional upper channels at bridge. No safety end treatments on upper channels.
	Hazard markers are located at all four quadrants.
	Snowplow wing markers are installed on all four quadrants.
	Surface treated roadway is in good condition.
	Minor sand and gravel accumulation at shoulders. Minor shoulder erosion at ends of wing walls.
	Precast concrete wingwalls in good condition; however some displacement is apparent at northwest quadrant.
	Rip-rap slope protection on roadway embankment appears in good condition.
	• Stream is in good condition.
	RECOMMENDATIONS: • Monitor wingwalls for continued movement.

BRIDGE PHOTOGRAPHS		2020 Biennial Inspection
Structure:	Township of Johnson - Sudaby Park Bridge	Structure #: B6



BRIDGE PHOTOGRAPHS

Structure: Township of Johnson - Sudaby Park Bridge

2020 Biennial Inspection

Structure #: B6



BRIDGE PHOTOGRAPHS

Structure: Township of Johnson - Sudaby Park Bridge

2020 Biennial Inspection

Structure #: B6



A. IDENTIFICATION				
1. Control Code	ТР	10. Posting		
2. Municipal Name/Code	Township of Johnson	11. Bylaw No.		
3. Bridge Name	Fisher Road Bridge	12. Bylaw Expiry Date		
4. Road Name	Fisher Road	13. Posting Sign		
5. Location	0.5km S of Government Road	14. Low Clearance Sign	m	
6. Bridge No.	B2	15. Narrow Structure Sign		
7. Road Section No.		16. Crossing Type	O-WAT	
8. MTO Site No.	385-190	17. Federal Navigable Waterway	U	
9. Roadside Environment	R	18. Bridge Value (\$000)	350	

B. RAILWAY OVERPASS/UNDERPASS

SECTION NOT APPLICABLE

C. JURISDICTION

31. Ownership	
А.	O MUN
В.	
32. Heritage Status	R
33. Special Designation	NSD
34. Suburban Roads Commission Name	

N
Johnson

D. EXISTING CONDITIONS			
GENERAL			
41. Year Constructed		47. Deck Length	7 m
А.	1950	48. Deck Width	5.1 m
В.		49. Deck Area	35.7 <mark>m2</mark>
42. Bridge Type	C-TB-F	50. Longitudinal Joints	0
43. Crossing Skew		51. Transverse Joints	0
44. Number of Spans	1	52. Number of Bearings	0
45. Span Length	6.1 <mark>m</mark>	53. Soil Condition	U
46. Deck Type	CC	54. Abutment and Foundation Type	C - SF
ROAD OVER BRIDGE			
55. Existing Road Class	300	60. Median Type/ Width	m
56. Operational Status	2W-OAT	61. Safety Curb/Sidewalk and Curb Barrier	
57. Wearing Surface	A	А.	N m
58. Surface Width	9 <mark>m</mark>	В.	N m
59. No of Lanes	2	62. Barrier Walls/Railings	СВ
		63. Minimum Vertical Clearance	m

81. Legal Speed Limit	80	82. Route Designations		
		Transit School	□Truck □Bicycle	
TRAFFIC COUNT		10 YEAR TRAFFIC FORECAST		
83. Year		90. Year		
84. AADT		91. AADT		
85. DHV Factor	%	92. DHV Factor		%
86. DHV	vph	93. DHV		vpl
87. Trucks	%	94. Trucks		%
88. Peak Directional Split	%	95. Capacity		vpl
89. 10 Year Growth Factor		96. 20 Year AADT		

F. A	PPROVALS					
	101. Date	August 6, 2020	August 6, 2020 102. Professional Engineer Name Michael Kresin,			
	103. Municipality/Company	Kresin Engineering Corpor				



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

A. REMARK	S
191	INSPECTION NOTES:
	 Single span cast in-place concrete bridge with gravel riding surface.
	Concrete balustrade railing has sustained damage from impacts.
	Accumulation of sand/gravel on the deck.
	No guide rails on approaches.
	Hazard markers are located at all four quadrants.
	Snowplow wing markers are not present.
	Gravel surface roadway is generally in good condition.
	Cast in-place concrete wingwalls in fair condition with cracking and efflorescence throughout.
	Cast in-place abutments and ballast walls in fair conditionwith cracking and efflorescence throughout.
	• Concrete soffit and girders are in fair to poor condition with efflorescence and cracking throughout, as well as localized areas
	of exposed reinforcing steel.
	Minor erosion at foundations.
	Stream is in good condition.
	RECOMMENDATIONS:
	Clean accumulation from the deck.
	Install approach guide rails.
	• Structure is likely near the end of its servicable life. Rehabilitation or replacement study is recommended.

Structure: Township of Johnson - Fisher Road Bridge Structure #: B2	BRIDGE PHOTOGRAPHS	2020 Biennial Inspection
	Structure: Township of Johnson - Fisher Road Bridge	Structure #: B2



BRIDGE PHOTOGRAPHS	2020 Biennial Inspection
Structure: Township of Johnson - Fisher Road Bridge	Structure #: B2



BRIDGE PHOTOGRAPHS		20)20 Biennial	Inspection
Structure:	Township of Johnson - Fisher Road Bridge	Structure #:	B2	



A. IDENTIFICATION			
1. Control Code	ТР	10. Posting	10t
2. Municipal Name/Code	Township of Johnson	11. Bylaw No.	
3. Bridge Name	Old Mill Road Bridge	12. Bylaw Expiry Date	
4. Road Name	Old Mill Road	13. Posting Sign	10t
5. Location	200m north of Gordon Lake Road	14. Low Clearance Sign	m
6. Bridge No.	B4	15. Narrow Structure Sign	
7. Road Section No.		16. Crossing Type	O-WAT
8. MTO Site No.	385-151	17. Federal Navigable Waterway	U
9. Roadside Environment	R	18. Bridge Value (\$000)	750

B. RAILWAY OVERPASS/UNDERPASS

SECTION NOT APPLICABLE

C. JURISDICTION

31. Ownership		
	А.	
	В.	
32. Heritage Status33. Special Designation		R
		NSD
34. Suburban Roads Commission	Name	

35. Boundary Bridge	N
36. Adjacent Municipality Name/No.	
37. Adjacent Bridge No.	
38. Local/Area Municipality (Upper Tier Only)	
А.	Johnson
В.	

D. EXISTING CONDITIONS			
GENERAL			_
41. Year Constructed		47. Deck Length	21.3 m
A.	1913	48. Deck Width	5.3 m
В.		49. Deck Area	112.89 m2
42. Bridge Type	C-TB-C	50. Longitudinal Joints	0
43. Crossing Skew	0	51. Transverse Joints	0
44. Number of Spans	3	52. Number of Bearings	0
45. Span Length	6.3 m	53. Soil Condition	U
46. Deck Type	CC	54. Abutment and Foundation Type	C - U
ROAD OVER BRIDGE	_		
55. Existing Road Class	300	60. Median Type/ Width	m
56. Operational Status 2W-OAT		61. Safety Curb/Sidewalk and Curb Barrier	
57. Wearing Surface	С	Α.	0.1 m
58. Surface Width	4.2 m	В.	0.1 m
59. No of Lanes	1	62. Barrier Walls/Railings	ST
		63. Minimum Vertical Clearance	m

81. Legal Speed Limit	80	8	82. Route Designations		
			Transit School	Truck Bicycle	
TRAFFIC COUNT		1	10 YEAR TRAFFIC FORECAST		
83. Year		9	90. Year		
84. AADT		9	91. AADT		
85. DHV Factor	%	9	92. DHV Factor		%
86. DHV	vp	oh 9	93. DHV		v
87. Trucks	%	9	94. Trucks		%
88. Peak Directional Split	%	9	95. Capacity		v
89. 10 Year Growth Factor		9	96. 20 Year AADT		

F. A	- APPROVALS							
	101. Date	August 24, 2020	102. Professional Engineer Name	Michael Kresin, P. Eng.				
	103. Municipality/Company	Kresin Engineering Corporation						



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

M. REMARKS		
191	INSPECTION NOTES:	
	• Triple span concrete bridge with concrete deck.	
	Steel tube railings with concrete posts are in poor condition and require attention.	
	Hazard markers are located at three of four quadrants.	
	No guide rails on approaches.	
	Snowplow wing markers are not installed.	
	Gravel roadway is in fair condition with a sharp curve at the north approach.	
	Concrete wearing surface on bridge deck appears in fair condition. Minor sand accumulation.	
	Road embankments appear stable and in fair condition.	
	• Cast in-place concrete girders are in poor condition with cracking and exposed reinforcing steel.	
	Concrete soffit in poor condition with efflorescence, spalling and cracking throughout.	
	• Stream is in fair condition.	
	Inspection limited due to vegetation growth.	
	RECOMMENDATIONS:	
	Clean sand accumulation from the deck.	
	Carry out guide rail repairs and install guide rails on approaches.	
	 Structure is likely beyond its servicable life and requires rehabilitation or replacement. 	

BRIDGE PHOTOGRAPHS		20	20 Biennial Inspection
Structure: Towr	nship of Johnson - Old Mill Road Bridge	Structure #:	B4



BRIDGE PHOTOGRAPHS		20)20 Biennial	Inspection
Structure:	Township of Johnson - Old Mill Road Bridge	Structure #:	B4	







A. IDENTIFICATION			
1. Control Code	ТР	10. Posting	
2. Municipal Name/Code	Township of Johnson	11. Bylaw No.	
3. Bridge Name	Government Road Bridge	12. Bylaw Expiry Date	
4. Road Name	Government Road	13. Posting Sign	
5. Location	10m west of Gordon Lake Road	14. Low Clearance Sign	m
6. Bridge No.	B3	15. Narrow Structure Sign	
7. Road Section No.		16. Crossing Type	O-WAT
8. MTO Site No.	385-307	17. Federal Navigable Waterway	U
9. Roadside Environment	R	18. Bridge Value (\$000)	450

B. RAILWAY OVERPASS/UNDERPASS

SECTION NOT APPLICABLE

C. JURISDICTION

31. Ownership	
А.	O MUN
В.	
32. Heritage Status	R
33. Special Designation	NSD
34. Suburban Roads Commission Name	
54. Suburban Roads Commission Name	

35. Boundary Bridge	N
36. Adjacent Municipality Name/No.	
37. Adjacent Bridge No.	
38. Local/Area Municipality (Upper Tier Only)	
Α.	Johnson
В.	

D. EXISTING CONDITIONS			
GENERAL			
41. Year Constructed		47. Deck Length	10.1 m
A.	1937	48. Deck Width	5.7 m
В.		49. Deck Area	57.57 <mark>m2</mark>
42. Bridge Type	C-TB-F	50. Longitudinal Joints	0
43. Crossing Skew	0	51. Transverse Joints	0
44. Number of Spans	1	52. Number of Bearings	0
45. Span Length	9.3 <mark>m</mark>	53. Soil Condition	U
46. Deck Type	CC	54. Abutment and Foundation Type	C - PC
ROAD OVER BRIDGE			
55. Existing Road Class	300	60. Median Type/ Width	m
56. Operational Status	2W-OAT	61. Safety Curb/Sidewalk and Curb Barrier	
57. Wearing Surface	A	А.	N m
58. Surface Width	4.8 <mark>m</mark>	В.	N m
59. No of Lanes	1	62. Barrier Walls/Railings	FB
		63. Minimum Vertical Clearance	m

81. Legal Speed Limit	80	82.	Route Designations		
			Transit School	Truck Bicycle	
TRAFFIC COUNT		10	YEAR TRAFFIC FORECAST		
83. Year		90.	Year		
84. AADT		91.	AADT		
85. DHV Factor	%	92.	DHV Factor		
86. DHV	vp	oh 93.	DHV		
87. Trucks	%	94.	Trucks		
88. Peak Directional Split	%	95.	Capacity		
89. 10 Year Growth Factor		96.	20 Year AADT		

F. A	PPROVALS					
	101. Date	August 24, 2020	102. Professional Engineer Name	Michael Kresin, P. Eng.		
	103. Municipality/Company	Kresin Engineering Corporation				



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

M. REMARKS		
191	INSPECTION NOTES:	
	 Single span cast in-place concrete bridge with concrete deck and asphalt pavement wearing surface. Continuous steel flex beam guide rails with steel posts on south side and wood posts with offset blocks on the north side. Steel posts, without offset blocks, extend above flex beam on south side; some impact damage to posts and beams. Some guide rails on approaches. Hazard markers are located on all four quadrants. Snowplow wing markers are not installed. Asphalt paved roadway is in poor condition with potholes and settlement at the approaches. Signs of erosion at abutments. Inspection limited due to high water and vegetation growth. 	
	RECOMMENDATIONS: • Clean sand accumulation and vegetation from bridge deck. • Carry out vegetation management. • Repair asphalt roadway. • Carry out guide rail repairs and install approach guide rails.	

BRIDGE PHOTOGRAPHS		2020 Biennial Inspection
Structure:	Township of Johnson - Government Road Bridge	Structure #: B3







BRIDGE PHOTOGRAPHS	2020 Biennial Inspectio		
Structure: Township of Johnson - Government Road Bridge	Structure #: B3		



1 Control Codo	Тр	10 Posting	
2. Municipal Name/Code	Township of Johnson	11. Pylaw No	
2. Culvert Name	Sucker Creek Near CASS	11. Byldw NO.	
1. Road Name	Sucker Creek Near CASS	12. Bylaw Explity Date	
	400m couth of Hun 17	13. Postilig Sign	
S. Column		14. Low Clearance Sign	
7. Road Section No.		15. Natiow Structure Sign	
P. MTO Site No.		17. Enderel Neuigeble Meterwei	
8. MITO SILE NO.		17. Federal Navigable Waterway	0
3. Roadside Environment	ĸ	18. Culvert Value (\$000)	400
1. Ownership		35. Boundary Culvert	1
A	. O MI	JN 36. Adjacent Municipality Name/No.	1
В		37. Adjacent Culvert No.	1
2. Heritage Status		R 38. Local/Area Municipality (Upper Tier Only)	
33. Special Designation NSD		SD A.	Johnsoi
34. Suburban Roads Commission Name		В.	
GENERAL			
GENERAL 41. Year Constructed		47. Max. Height	2.
SENERAL 11. Year Constructed A	. 19	47. Max. Height 80 48. Culvert Length	223.
SENERAL 11. Year Constructed A B	. 19	47. Max. Height 80 48. Culvert Length 49.Type/Depth of Fill	2.0 23.0 E 0.0
SENERAL 11. Year Constructed A B 12. Material/Type	. 19 	47. Max. Height 48. Culvert Length 49.Type/Depth of Fill PA 50. Culvert Floor	2.: 23. 6 0. 5
SENERAL 11. Year Constructed A B 12. Material/Type 13. Crossing Skew	. 19 	47. Max. Height 48. Culvert Length 49.Type/Depth of Fill PA 50. Culvert Floor 0 51. End Treatment Upstream	2.0 23.0 E 0.0 Si
STING CONDITIONS GENERAL 11. Year Constructed A B 12. Material/Type 13. Crossing Skew 14. Number of Cells/Spans	 	47. Max. Height 48. Culvert Length 49. Type/Depth of Fill PA 50. Culvert Floor 51. End Treatment Downstream	2.0 23.1 E 0.1 Si
STING CONDITIONS GENERAL 11. Year Constructed A B 12. Material/Type 13. Crossing Skew 14. Number of Cells/Spans 15. Cell/Span Width/Dia.	 CPS	47. Max. Height 48. Culvert Length 49. Type/Depth of Fill 50. Culvert Floor 51. End Treatment 52. Soil Condition	2.: 23.: E 0.: St C
STING CONDITIONS GENERAL 11. Year Constructed A B 12. Material/Type 13. Crossing Skew 14. Number of Cells/Spans 15. Cell/Span Width/Dia. 15. Total Width/Dia		47. Max. Height 48. Culvert Length 49. Type/Depth of Fill 50. Culvert Floor 51. End Treatment 52. Soil Condition 53. Enundation Type	2.: 23. E 0. St C C C C C C C C C C C C C C C C C C
STING CONDITIONS GENERAL 11. Year Constructed A B 12. Material/Type 13. Crossing Skew 14. Number of Cells/Spans 15. Cell/Span Width/Dia. 16. Total Width/Dia.	 	47. Max. Height 48. Culvert Length 49. Type/Depth of Fill 50. Culvert Floor 51. End Treatment 52. m 52. Soil Condition 53. Foundation Type	2.: 23. E 0. St C C C C C C C C C C C C C C C C C C
SENERAL 11. Year Constructed 12. Material/Type 13. Crossing Skew 14. Number of Cells/Spans 15. Cell/Span Width/Dia. 16. Total Width/Dia. ROAD OVER CULVERT	 	47. Max. Height 48. Culvert Length 49. Type/Depth of Fill 50. Culvert Floor 51. End Treatment Downstream 52. Soil Condition 52. m 53. Foundation Type	2.: 23: E 0: St P C C BI
SENERAL 11. Year Constructed 14. Year Constructed 15. Crossing Skew 14. Number of Cells/Spans 15. Cell/Span Width/Dia. 16. Total Width/Dia. 16. Total Width/Dia. 16. Statisting Road Class	 	47. Max. Height 48. Culvert Length 49. Type/Depth of Fill 50. Culvert Floor 51. End Treatment 1 52. Soil Condition 52. m 53. Foundation Type 0 60. No. of Lanes	2.: 23: E 0. St N C C C C C C C C C C C C C C C C C C
STINES CONDITIONS GENERAL 41. Year Constructed A 42. Material/Type 43. Crossing Skew 44. Number of Cells/Spans 45. Cell/Span Width/Dia. 45. Cell/Span Width/Dia. 46. Total Width/Dia. ROAD OVER CULVERT 55. Existing Road Class 56. Operational Status	 CPS 	47. Max. Height 48. Culvert Length 49. Type/Depth of Fill 50. Culvert Floor 51. End Treatment 52. Soil Condition 52. Soil Condition 53. Foundation Type 60. No. of Lanes AT 60. Safety Curb/Sidewalk and Club Barrier	2.: 23: E 0. S(N C C C C C C C C C C C C C C C C C C
STING CONDITIONS GENERAL 41. Year Constructed A B 42. Material/Type 43. Crossing Skew 44. Number of Cells/Spans 45. Cell/Span Width/Dia. 46. Total Width/Dia. 46. Total Width/Dia. 46. Total Width/Dia. 47. Surface Type	. 19 . CPS 	47. Max. Height 48. Culvert Length 49. Type/Depth of Fill 50. Culvert Floor 51. End Treatment 52. Soil Condition 53. Foundation Type 60. No. of Lanes 61. Safety Curb/Sidewalk and Club Barrier A.	2.: 23.: E 0.7 SC N N U U BC
GENERAL 41. Year Constructed A 42. Material/Type 43. Crossing Skew 44. Number of Cells/Spans 45. Cell/Span Width/Dia. 46. Total Width/Dia. ROAD OVER CULVERT 55. Existing Road Class 56. Operational Status 57. Surface Type 58. Platform Width	 CPS 	47. Max. Height 48. Culvert Length 49. Type/Depth of Fill 50. Culvert Floor 51. End Treatment 52. Soil Condition 5.2 m 52. Soil Condition 53. Foundation Type 60. No. of Lanes 61. Safety Curb/Sidewalk and Club Barrier CB 5. Bm 61. Safety Curb/Sidewalk and Club Barrier 61. Safety Curb/Sidewalk and Club Barrier 61. Safety Curb/Sidewalk and Club Barrier	2.5 23.5 E 0.7 SC N U U BE

ROAD THROUGH CULVERT

SECTION NOT APPLICABLE

04 Local Consulting	00	02 Deute Designations		_
81. Legai Speed Limit	80	82. Route Designations		_
		Transit	Truck	
		\$chool	Bicycle	
TRAFFIC COUNT		10 YEAR TRAFFIC FORECAST		
83. Year		90. Year		T
84. AADT		91. AADT		
85. DHV Factor	%	92. DHV Factor		%
86. DHV	vpl	93. DHV		vph
87. Trucks	%	94. Trucks		%
88. Peak Directional Split	%	95. Capacity		vph
89. 10 Year Growth Factor		96. 20 Year AADT		1

F. APPROVALS

E

101. Date	August 17, 2020	102. Professional Engineer Name	M. Kresin, P. Eng.
103. Municipality/Company	Kresin Engineering Corporation		

G. CULVERT NEEDS	J. TYPE & TIME OF IMPROVEMENT
RATING	141. Design Class
MCR PCR TIME OF NEED	142. Design Platform Width m
111. Barrel 5 5 1-5 Years	143. Material/Type
112. Foundation 6 ADEO	144.Width/Diameter m
113, Inlet Component 6 ADEO	145. Maximum Height
114. Outlet Component 6 6 ADEO	146. Culvert Length m
115. Guiderail/Barrier 0 0 NOW	147. No. of Culverts
116. Streams/Waterways 6 6 ADEO	148. Depth of Fill
	146 a b c d e
	Type of Costing Time of
	Improvement Category Quantity Improvement Catt (\$900)
	A Category Quantity Improvement Cost (5000)
H. FONCTIONAL NEEDS	
KOAD OVER Existing Minimum	
Condition Tolerable TIME OF NEED	D
121. Platform Width 6.80 m 6.5 m ADEQ	
122. Level of Service A E ADEQ	
123. Roadside Safety 0 m NOW	K. IMPROVEMENT COST
	COST (\$000)
ROAD THROUGH	151. Construction
125. Surface Width m	152. Approaches
126. Level of Service	153. Detours
127. Min. Vertical Clearance m m	154. Traffic Control/Protection 50
128. Sidewalks	155. Utilities
	156. Other
	157. Contingencies 10
I. ENGINEERING RECOMMENDATION	158. Total Construction
	159. Right of Way
131. Culvert Drawings UNK	
	161. Engineering - Design & Supervision 15
132. Engineering Investigations	162. Total Project Cost 75
Type Year Cost (\$000)	163. Eligibility for Subsidy
A	164. Non-subsidizable Costs Contributing Non-Subsidizable
В	Agency Cost
C	A
D	В
	C
133. Total Cost of Engineering Investigations	D
	E
134. Single Posting (YYYY/MM/DD)	
135. Evaluated Posting	165. Total Non-Subsidizable Cost
Date (YYYY/MM/DD)	166. Subsidizable Cost
136. Monitoring	167. Municipal Percent of Subsidizable Cost %
137. Closure/Date (YYYY/MM/DD) –	168. Municipal Share of Cost
L. HISTORY	

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

M. REMARKS		
191	INSPECTION NOTES:	
	- Culvert is a structural plate corrugated steel pipe arch with bevelled ends.	
	- Minor rust staining visible at water line.	
	- Approximately 700mm cover over culvert.	
	- Surface treated road over culvert appears in good condition.	
	- Road embankments appear in good condition.	
	- The stream appears stable and in good condition.	
	- Inspection limited due to high water obscuring culvert installation.	
	RECOMMENDATIONS:	
	- Continued routine mainteance is reocmmended.	
	- Consider installation of guide rails.	

CULVERT PHOTOGRAPHS		2020 Biennial Inspection
Structure:	Johnson Township - Kensington Road Culvert	Structure #: C3



CULVERT PHOTOGRAPHS	2020 Biennial Inspection			
Structure:	Johnson Township - Kensington Road Culvert	Structure #:	C3	



CULVERT PHOTOGRAPHS	2020 Biennial Inspection
Structure: Johnson Township - Kensington Road Culvert	Structure #: C3



IDENTIFICATION					
1. Control Code	ТР	10. Posting			
2. Municipal Name/Code	Township of Johnson	11. Bylaw No.			
3. Culvert Name	Government Road East	12. Bylaw Expiry Date			
4. Road Name	Government Road	13. Posting Sign			
5. Location	220m w of Desbarats Lk Rd	14. Low Clearance Sign		m	
6. Culvert No.	C1	15. Narrow Structure Sign			
7. Road Section No.		16. Crossing Type	O-WAT		
8. MTO Site No.		17. Federal Navigable Waterway	U		
9. Roadside Environment	R	18. Culvert Value (\$000)	400		

B. RAILWAY OVERPASS/UNDERPASS

SECTION NOT APPLICABLE

C. JURISDICTION

VICTING COND

31. Ownership		35. Boundary Culvert	N
А.	O MUN	36. Adjacent Municipality Name/No.	
В.		37. Adjacent Culvert No.	
32. Heritage Status	R	38. Local/Area Municipality (Upper Tier Only)	
33. Special Designation	NSD	A.	Johnson
34. Suburban Roads Commission Name		В.	

41 Year Constructed		47 Max Height	3
A.	2014	48. Culvert Length	15.5
В.		49.Type/Depth of Fill	E 0.7
42. Material/Type	CST PR	50. Culvert Floor	SC
43. Crossing Skew	0	51. End Treatment Upstream	N
44. Number of Cells/Spans	2	Downstream	N
45. Cell/Span Width/Dia.	3.0, 1.2 m	52. Soil Condition	U
46. Total Width/Dia.	4.2 m	53. Foundation Type	BD
BOAD OVER CHIVEPT			
55. Existing Road Class	300	60. No. of Lanes	2
56. Operational Status	2W OAT	61. Safety Curb/Sidewalk and Club Barrier	
57. Surface Type	LCB	А.	
58. Platform Width	8.5 m	В.	
EQ. Conference Mitchele	7.5 m	62 Roadside Safety	FF

SECTION NOT APPLICABLE

E. TRAFFIC DATA 81. Legal Speed Limit 80 82. Route Designations Transit Truck \$chool Bicycle TRAFFIC COUNT **10 YEAR TRAFFIC FORECAST** 83. Year 90. Year 84. AADT 91. AADT 92. DHV Factor 85. DHV Factor 86. DHV vph 93. DHV vph 94. Trucks 87. Trucks 88. Peak Directional Split 95. Capacity vph 89. 10 Year Growth Factor 96. 20 Year AADT

F. APPROVALS M. Kresin, P. Eng. 101. Date August 24, 2020 102. Professional Engineer Name 103. Municipality/Company Kresin Engineering Corporation

G. CULVERT NEEDS	J. TYPE & TIME OF IMPROVEMENT
RATING	141. Design Class
MCR PCR TIME OF NEED	142. Design Platform Width m
111. Barrel 6 ADEQ	143. Material/Type
112. Foundation 6 6 ADEQ	144.Width/Diameter m
113. Inlet Component 6 ADEQ	145. Maximum Height m
114. Outlet Component 6 6 ADEQ	146. Culvert Length m
115. Guiderail/Barrier 5 5 1-5 Years	147. No. of Culverts
116. Streams/Waterways 6 6 ADEQ	148. Depth of Fill m
	146 a b c d e
	Type of Costing Time of
	Improvement Category Quantity Improvement Cost (\$000)
H. FUNCTIONAL NEEDS	B
ROAD OVER Existing Minimum	
121 Platform Width 8 50 m 6 5 m ADEO	
122 Level of Service A F ADEO	
122. Ecvel of Schule A	
	COST (\$000)
	151. Construction
125. Surface Width m m	152. Approaches
	153. Detours
127. Min. Vertical Clearance m m	154. Traffic Control/Protection
128. Sidewalks	155. Utilities
	156. Other
L ENGINEERING RECOMMENDATION	157. Contingencies
I. ENGINEERING RECOMMENDATION	159. Right of Way
131 Culvert Drawings	155. Alghe of Way
	161 Engineering - Design & Supervision
132 Engineering Investigations	162 Total Project Cost
Type Vear Cost (\$000)	163 Eligibility for Subsidy
	164 Non-Subsidizable Costs
	A
D	в
	С
133. Total Cost of Engineering Investigations	D
	E
134. Single Posting (YYYY/MM/DD)	
135. Evaluated Posting	165. Total Non-Subsidizable Cost
Date (YYYY/MM/DD)	166. Subsidizable Cost
136. Monitoring	167. Municipal Percent of Subsidizable Cost %
137. Closure/Date (YYYY/MM/DD) –	168. Municipal Share of Cost
L. HISTORY	

E. 11	ISTORI					
	ENGINEERING INVESTIGATIONS	Туре	Year	CONSTRUCTION IMPROVEMENTS	Туре	Year
	171			181		
	172			182		
	173			183		
	174			184		
	175			185		

M.	REMARKS		
	191	INSPECTION NOTES:	
		- Polymer coated spiral CSPs; main barrel is 3m diameter, relief barrel is 1.2m diameter.	
		- 3m pipe has step bevelled ends.	
		- Flex beam guide rail is installed over culvert complete with eccentric loader barrel terminations.	
		- Guide rail is in fair condition with hazard and snowplow markers at all four quadrants.	
		- Surface treated road over culvert appears in fair to poor condition with potholes and distress.	
		- Road embankments appear in stable condition.	
		- The stream appears stable and in good condition.	
		DECOMMENDATIONS:	
		Continued routing mainteance is recommended including tightening guide rail bolts, erosion renairs	
		- Vegetation management is recommended	

CULVERT PHOTOGRAPHS		2020 Biennial Inspection
Structure:	Johnson Township - Government Road Culvert	Structure #: C1



Structure: Johnson Township - Government Road Culvert Structure #	: C1



CULVERT PHOTOGRAPHS	2020 Biennial Inspection
Structure: Johnson Township - Government Road Culvert	Structure #: C1

IDENTIFICATION					
1. Control Code	ТР	10. Posting			
2. Municipal Name/Code	Township of Johnson	11. Bylaw No.			
3. Culvert Name	Government Rd. by dump	12. Bylaw Expiry Date			
4. Road Name	Government Road	13. Posting Sign			
5. Location	1.9km W of Lk Huron Dr.	14. Low Clearance Sign		m	
6. Culvert No.	C2	15. Narrow Structure Sign			
7. Road Section No.		16. Crossing Type	O-WAT		
8. MTO Site No.		17. Federal Navigable Waterway	U		
9. Roadside Environment	R	18. Culvert Value (\$000)	300		

B. RAILWAY OVERPASS/UNDERPASS

SECTION NOT APPLICABLE

C. JURISDICTION

31. Ownership		35. Boundary Culvert	N
А.	0 MUN	36. Adjacent Municipality Name/No.	
В.		37. Adjacent Culvert No.	
32. Heritage Status	R	38. Local/Area Municipality (Upper Tier Only)	
33. Special Designation	NSD	А.	Johnson
34. Suburban Roads Commission Name		В.	

GENERAL			
41. Year Constructed		47. Max. Height	3 m
А.	1980	48. Culvert Length	20 m
В.		49.Type/Depth of Fill	E 0.3 m
42. Material/Type	CPS PR	50. Culvert Floor	SC
43. Crossing Skew	15	51. End Treatment Upstream	N
44. Number of Cells/Spans	1	Downstream	N
45. Cell/Span Width/Dia.	3 m	52. Soil Condition	U
46. Total Width/Dia.	3 m	53. Foundation Type	UN
BOAD OVER CHIVERT			
ROAD OVER COLVERT			
55. Existing Road Class	300	60. No. of Lanes	2
56. Operational Status	2W OAT	61. Safety Curb/Sidewalk and Club Barrier	
57. Surface Type	LCB	А.	m
58. Platform Width	8 m	В.	m
59. Surface Width	7 m	62. Roadside Safety	N
ROAD THROUGH CULVERT			

SECTION NOT APPLICABLE

E. TRAFFIC DATA 81. Legal Speed Limit 80 82. Route Designations Transit Truck \$chool Bicycle TRAFFIC COUNT **10 YEAR TRAFFIC FORECAST** 90. Year 83. Year 84. AADT 91. AADT 85. DHV Factor 92. DHV Factor 86. DHV vph 93. DHV vph 87. Trucks 94. Trucks 88. Peak Directional Split 95. Capacity vph 89. 10 Year Growth Factor 96. 20 Year AADT

F. APPROVALS	

1111 11370	August 24 2020	102 Professional Engineer Name	M Kresin P Eng
101. Date	August 24, 2020	102. FIOIESSIONALLINGINEELINAINE	IVI. KIESIII, F. LIIg.
103. Municipality/Company Kresin Enginee	ering Corporation		

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

M. REMARKS	
191 INSPECTION NOTES:	
- Culvert is a galvanized structural plate corrugated steel pipe.	
- Moderate to severe corrosion noted throughout the length, below water level.	
- Minor damage to culvert obvert at north end - presumably due to historical beaver dam removal.	
- No guide rails installed.	
- Surface treated road over culvert has been recently excavated.	
- Road embankments appear in stable condition.	
- The stream appears stable and in good condition.	
- Beaver dam at inlet end is impeding flow.	
RECOMMENDATIONS	
- Remove heaver dam.	
- Culvert is likely near the end of its servicable life. Recommended to budget for replacement.	
- Install guide rails.	

CULVERT PHOTOGRAPHS		2020 Biennial Inspection
Structure:	Johnson Township - Government Road Culvert	Structure #: C2

CULVERT PHOTOGRAPHS		20	020 Biennial Insp	ection
Structure:	Johnson Township - Government Road Culvert	Structure #:	C2	

A. IDENTIFICATION					
1. Control Code	ТР	10. Posting			
2. Municipal Name/Code	Township of Johnson	11. Bylaw No.			
3. Culvert Name	Puddingstone Road Culvert	12. Bylaw Expiry Date			
4. Road Name	Puddingstone Road	13. Posting Sign			
5. Location	2.1km N of Government Rd.	14. Low Clearance Sign		m	
6. Culvert No.	C7	15. Narrow Structure Sign			
7. Road Section No.		16. Crossing Type	O-WAT		
8. MTO Site No.		17. Federal Navigable Waterway	U		
9. Roadside Environment	R	18. Culvert Value (\$000)	400		

B. RAILWAY OVERPASS/UNDERPASS

SECTION NOT APPLICABLE

C. JURISDICTION

D. EVICTING COND.

31. Ownership		35. Boundary Culvert	N
Α.	O MUN	36. Adjacent Municipality Name/No.	
В.		37. Adjacent Culvert No.	
32. Heritage Status	R	38. Local/Area Municipality (Upper Tier Only)	
33. Special Designation	NSD	Α.	Johnson
34. Suburban Roads Commission Name		В.	[]

D. EXISTING CONDITIONS			
GENERAL			
41. Year Constructed		47. Max. Height	2 m
Α.	2000	48. Culvert Length	18 m
В.		49.Type/Depth of Fill	E 0.8 m
42. Material/Type	CPS ACH	50. Culvert Floor	EA
43. Crossing Skew	30	51. End Treatment Upstream	н
44. Number of Cells/Spans	1	Downstream	Н
45. Cell/Span Width/Dia.	5 m	52. Soil Condition	U
46. Total Width/Dia.	5 m	53. Foundation Type	UN
ROAD OVER COLVERT			
55. Existing Road Class	300	60. No. of Lanes	2
56. Operational Status	2W OAT	61. Safety Curb/Sidewalk and Club Barrier	
57. Surface Type	G	А.	m
58. Platform Width	8 m	В.	m
59. Surface Width	7 m	62. Roadside Safety	SC
ROAD THROUGH COLVERT			

SECTION NOT APPLICABLE

SECTION NOT APPLICABLE

E. TRAFFIC DATA 81. Legal Speed Limit 80 82. Route Designations Transit Truck \$chool Bicycle TRAFFIC COUNT **10 YEAR TRAFFIC FORECAST** 90. Year 83. Year 84. AADT 91. AADT 85. DHV Factor 92. DHV Factor 86. DHV vph 93. DHV vph 87. Trucks 94. Trucks 88. Peak Directional Split 95. Capacity vph 89. 10 Year Growth Factor 96. 20 Year AADT

F. A	PPROVALS			
	101. Date	August 24, 2020	102. Professional Engineer Name	M. Kresin, P. Eng.
	103. Municipality/Company	Kresin Engineering Corporation		

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

M. REMARKS	
191 INSPECTION NOTES:	
- Culvert is a structural plate corrugated steel arch on concrete foundations with an open bottom.	
- Approximately 800mm fill over obvert.	
- Gravel road surface is in fair condition.	
- Three cable guide rail is installedon wood posts over culvert, including approaches.	
- Hazard and snowplow markers are not present.	
- Road embankments, including rip-rap stabilization appear in stable condition with some minor erosion evident.	
- The stream appears stable and in good condition.	
RECOMMENDATIONS	
- Continued routine mainteance is recommended	
- Install bazard and snownlow markers	

Structure: Johnson Township - Puddingstone Road Culvert Struct	ture #: C7

CULVERT PHOTOGRAPHS	2020 Biennial Inspection	
Structure:	Johnson Township - Puddingstone Road Culvert	Structure #: C7

A. IDENTIFICATION				
		-		· · · · · · · · · · · · · · · · · · ·
1. Control Code	TP	_	10. Posting	<u> </u>
2. Municipal Name/Code	Township of Johnson	_	11. Bylaw No.	
3. Culvert Name	MacDonald Drive Culvert	_	12. Bylaw Expiry Date	<u> </u>
4. Road Name	MacDonald Drive	_	13. Posting Sign	<u> </u>
5. Location	400m N of Hwy 17	_	14. Low Clearance Sign	m
6. Culvert No.	C8	_	15. Narrow Structure Sign	
7. Road Section No.			16. Crossing Type	O-WAT
8. MTO Site No.			17. Federal Navigable Waterway	U
9. Roadside Environment	R		18. Culvert Value (\$000)	350
B. RAILWAY OVERPASS/UNDERPASS SECTION NOT APPLICABLE				
C. JURISDICTION				
		-		
31. Ownership		_	35. Boundary Culvert	N
A.	O MUN	1	36. Adjacent Municipality Name/No.	<u> </u>
В.		_	37. Adjacent Culvert No.	<u> </u>
32. Heritage Status	F	۲	38. Local/Area Municipality (Upper Tier Only)	
33. Special Designation	NSD	þ	Α.	Johnson
34. Suburban Roads Commission Name			В.	
D. EXISTING CONDITIONS				
GENERAL		_		
41. Year Constructed		-	47. Max. Height	2.1 m
A.	2000)	48. Culvert Length	14.3 m
В.			49.Type/Depth of Fill	E 0.7 m
42. Material/Type	CPS ACH	1	50. Culvert Floor	EA
43. Crossing Skew	20)	51. End Treatment Upstream	
44. Number of Cells/Spans	1	L	Downstream	
45. Cell/Span Width/Dia.	5.5	5 m	52. Soil Condition	U
46. Total Width/Dia.	5.5	5 m	53. Foundation Type	UN
· · · · · · · · · · · · · · · · · · ·			<i>//</i>	· · · · · · · · · · · · · · · · · · ·
ROAD OVER CULVERT		_		
55. Existing Road Class	300)	60. No. of Lanes	2
56. Operational Status	2W OAT	Г	61. Safety Curb/Sidewalk and Club Barrier	
57. Surface Type	6	6	А.	m
58. Platform Width	6	5 m	В.	m
59. Surface Width	5	5 m	62. Roadside Safety	
ROAD THROUGH CULVERT SECTION NOT APPLICABLE		_		
E. TRAFFIC DATA				
81 Legal Speed Limit	or	1	82 Route Designations	
or. Legal Speed Limit		<u>'</u>		Truck
		-		Dicycle
P2 Voor				
		-		<u>}</u>
84. AAD1		-	91. AADI	<u> </u>
85. DHV Factor		%	92. DHV Factor	[%]
86. DHV		vph	93. DHV	vph
87. Trucks		%	94. Trucks	%
88. Peak Directional Split		%	95. Capacity	vph
89. 10 Year Growth Factor			96. 20 Year AADT	
		-		
F. APPROVALS				
101 D-1-	August 17, 2020	7	102 Drefessional Engineer Name	M Kreein D Eng

103. Municipality/Company

Kresin Engineering Corporation

							7
ENGINEERING INVESTIGATIONS	Туре	Year	CONSTRUCTION IMPROVEMENTS		Туре	Year	
171			181				
172			182				
173			183				
174			184				
175			185				
				_			2

M. REMARKS		
191	INSPECTION NOTES:	
	- Culvert is a structural plate corrugated steel arch with an open bottom.	
	- No guide rails present.	
	- Gravel surface road over culvert appears in fair condition.	
	- Road embankments appear in stable condition.	
	- Rip rap embankment stabilization appears in good condition.	
	- The stream appears stable and in good condition.	
	- Vegetation is encroaching on the culvert.	
	 Inspection limited due to water level and vegetation obscuring culvert installation. 	
	RECOMMENDATIONS:	
	- continued routine mainteance is reochniendeu, including vegetation management.	
	- Install guide fails and hazard markers.	

CULVERT PHOTOGRAPHS	CULVERT PHOTOGRAPHS		
Structure:	Johnson Township - MacDonald Drive Culvert	Structure #: C8	

CULVERT PHOTOGRAPHS	20	020 Biennial Inspection	
Structure:	Johnson Township - MacDonald Drive Culvert	Structure #:	C8

A. IDENTIFICATION				
1. Control Code	ТР	10. Posting		
2. Municipal Name/Code	Township of Johnson	11. Bylaw No.		
3. Culvert Name	Government Road Culvert	12. Bylaw Expiry Date		
4. Road Name	Government Road	13. Posting Sign		
5. Location	400m E of Fisher Road	14. Low Clearance Sign		m
6. Culvert No.	C5	15. Narrow Structure Sign		
7. Road Section No.		16. Crossing Type	O-WAT	
8. MTO Site No.		17. Federal Navigable Waterway	U	
9. Roadside Environment	R	18. Culvert Value (\$000)	400	

B. RAILWAY OVERPASS/UNDERPASS

SECTION NOT APPLICABLE

C. JURISDICTION

D EVISTING CONDI

31. Ownership	_	35. Boundary Culvert	
А.	O MUN	36. Adjacent Municipality Name/No.	
В.		37. Adjacent Culvert No.	
32. Heritage Status	R	38. Local/Area Municipality (Upper Tier Only)	
33. Special Designation	NSD	Α.	
34. Suburban Roads Commission Name		В.	

D. EXISTING CONDITIONS			
GENERAL			
41. Year Constructed		47. Max. Height	3.6 m
А.	1980	48. Culvert Length	29 m
В.		49.Type/Depth of Fill	E 1.0 m
42. Material/Type	CPS PR	50. Culvert Floor	SC
43. Crossing Skew	0	51. End Treatment Upstream	
44. Number of Cells/Spans	1	Downstream	
45. Cell/Span Width/Dia.	3.6 m	52. Soil Condition	U
46. Total Width/Dia.	3.6 <mark>m</mark>	53. Foundation Type	BD
ROAD OVER CULVERT			
55. Existing Road Class	300	60. No. of Lanes	2
56. Operational Status	2W OAT	61. Safety Curb/Sidewalk and Club Barrier	
57. Surface Type	G	Α.	m
58. Platform Width	8.5 m	В.	m
59. Surface Width	7.5 m	62. Roadside Safety	
			_
ROAD THROUGH CULVERT			

SECTION NOT APPLICABLE

E. TRAFFIC DATA 81. Legal Speed Limit 80 82. Route Designations Transit Truck \$chool Bicycle TRAFFIC COUNT **10 YEAR TRAFFIC FORECAST** 90. Year 83. Year 84. AADT 91. AADT 85. DHV Factor 92. DHV Factor 86. DHV vph 93. DHV vph 87. Trucks 94. Trucks 88. Peak Directional Split 95. Capacity vph 89. 10 Year Growth Factor 96. 20 Year AADT

F. A	PPROVALS			
	101. Date	August 24, 2020	102. Professional Engineer Name	M. Kresin, P. Eng.
	103. Municipality/Company	Kresin Engineering Corporation		

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Johnson

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

191 INSPECTION NOTES: - Culvert is a corrugated steel spiral pipe with light corrosion staining throughout. - Culvert seams have separated and are allowing stream flows into bedding and embedment. - Historical repairs to seams have failed. - Culvert is out of round, potentially due to erosion of embedment material. - Outlet is perched and undermined. - Gravel road appears in fair condition. - No guide rails are installed.
 Culvert is a corrugated steel spiral pipe with light corrosion staining throughout. Culvert seams have separated and are allowing stream flows into bedding and embedment. Historical repairs to seams have failed. Culvert is out of round, potentially due to erosion of embedment material. Outlet is perched and undermined. Gravel road appears in fair condition. No guide rails are installed.
 Culvert seams have separated and are allowing stream flows into bedding and embedment. Historical repairs to seams have failed. Culvert is out of round, potentially due to erosion of embedment material. Outlet is perched and undermined. Gravel road appears in fair condition. No guide rails are installed.
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- Gravel road appears in fair condition. - No guide rails are installed.
- No guide rails are installed.
DECOMMENDATIONS:
- Thistall guide fails.
- Failure of curvert search may make the installation suceptable to sink holes and wash-out. Curvert should be renabilitated.

CULVERT PHOTOGRAPHS		2020 Biennial Inspection	
Structure:	Johnson Township - Government Road Culvert	Structure #: C5	

CULVERT PHOTOGRAPHS	2020 Biennial Inspection		
Structure: Johnson Township - Government Road Culvert	Structure #: C5		

	2020 Biennial Inspection		
Structure: Johnson Township - Government Road Culvert	Structure #:	C5	

