ATTACHMENT 2

OSIM INSPECTION REPORTS & BCI FORMS

CULVERTS

Structure Condition Summary Form

Structure Name	Forest Lake Road Culvert
Structure Number	BR2
Date of Inspection	August 04, 2020
Project No.	20032
Consultant	HP Engineering Inc.

Element Group	Element Name	Unit (Qty.)	Unit Price (MTO)	Total Element Quantity	Element Qty. in Excellent Condition (1.00)	Element Quantity in Good Condition (0.75)	Element Quantity in Fair Condition (0.4)	Element Quantity in Poor Condition (0)	Total Replacement Value (TRV)	Current Element Value (CEV)	Element Condition Index	Performance Deficiency	Maintenance Need
Approaches	Wearing Surface	Sq.m	6.00	81.60	0.00	69.60	12.00	0.00	490	342	70	00	18
Barriers	Barrier/ Parapet Walls	Sq.m	100.00	9.34	0.00	2.67	5.67	1.00	934	427	46	00	00
Decks	Wearing Surface	Sq.m	25.00	24.47	0.00	12.47	12.00	0.00	612	354	58	00	18
	Inlet Components	Sq.m	350.00	3.40	0.00	2.40	0.50	0.50	1190	700	59	00	00
Culvert	Outlet Components	Sq.m	350.00	3.40	0.00	2.40	0.50	0.50	1190	700	59	00	00
	Barrel	Sq.m	350.00	73.16	0.00	63.16	5.00	5.00	25606	17280	67	14	00
									30021	19802			

RIDGE						STRUC	CTURE NUMBER.: BI
INVENTORY DAT	'A:						
Structure Name	Forest Lake Road C	Culvert					
			U nder	Navigable	e Water 🔲	Non- Navigat	ole Water 🛛
Main Hwy/Road #		S	Structure:	Rail 🗌	Road 🗵	Pedestrian [Other
Road Name:	Forest Lake Road		On Structure:	Rail 🗌	Road 🛛 Ped	lestrian 🗌 Other	
Structure Location	Forest Lake Road, v	west of Bernard	Crescent				
Latitude	45°46'3	39.6"N	Long	gitude		79°22'19.6"	
Owner(s)	Township of Strong	<u>;</u>		tage ignation	Not Cons. 🗵 Desig./not Li		☐ List/Not Desig. □ . & List □
MTO Region	Northern		Roa	d Class:	Freeway 🗌	Arterial 🗌 Colle	ctor 🗌 Local 🖂
MTO District	Huntsville		Post	ed Speed	80	No. of Lanes	2
Old County	Parry Sound		AAI	ЭТ	0	% Trucks	0
Geographic Twp.	Township of Strong	r	Spec	cial Routes	Transit 🛛	Truck 🗌 Scho	ool 🗌 Bicycle 🗌
Structure Type	Frame, Inclined Leg	<u>zs</u>		our Length cture	Around	-	_(km)
Total Deck Length	3.6	(m)	Fill	on Structur	re	0.3	(m)
Overall Str. Width	12.4	(m)	Skev	w Angle		0	(Degrees)
Total Deck Area	44.64	(m ²)	Dire	ection of St	ructure	East/West	
Roadway Width	6.8	(m)	No.	of Spans		1	
Span Lengths	3.0	(m)					
HISTORICAL DAT	ГА						
Year Built				Last OS	IM Inspection		June 26, 2020
Year of Last Major R	Rehab.	-		Last Enl	hanced OSIM In	1spection	-
Current Load Limit		-	_(tonnes)	Last Bri	dge Master Insp	pection	-
Load Limit By-Law	#	-		Last Eva	aluation		-
By-Law Expiry Date	;	-		Last Un	derwater Inspec	tion	_
Min. Vertical Cleara	nce	-	(m)	Last Co	ndition Survey		-

2017: New curbs, New bridge railing and posts. New guide rail and signs, Concrete repairs.

BRIDGE

FIELD INSPECTION INFORMATION								
Date of Inspection:	August 4, 2020	Type of Inspection: 🛛 OSIM 🔲 Enhanced OSIM						
Inspector:	Sarah Vandergeest, P.Eng., HP Engineering							
Others in Party:	Sagar Chhayani, HP Engineering							
Access Equipment Used:	Measuring tape, Hip waders, Camera and Hammer							
Weather:	Sunny							
Temperature:	18°C							

ADDITIONAL INVECTICATION DECLIDED		Priority		Estimated Cost	
ADDITIONAL INVESTIGATION REQUIRED	None	Normal	Urgent	Estii	nated Cost
Rehabilitation/Replacement Study: Approach Barrier				\$	5,000.00
Material Condition Survey					
Detailed Deck Condition Survey:				\$	
Non-destructive Delamination Survey of Asphalt- Covered Deck:				\$	
Concrete Substructure Condition Survey:				\$	-
Detailed Coating Condition Survey:				\$	
Detailed Timber Investigation:				\$	
Underwater Investigation:				\$	
Fatigue Investigation:				\$	-
Seismic Investigation:				\$	-
Structure Evaluation:				\$	-
Monitoring					
Monitoring of Deformations, Settlement and Movements:				\$	-
Monitoring Crack Widths:				\$	-
Load Posting – Estimated Load Limit		7	Fotal Cost	\$	5,000.00
Investigation Notes:					

OVERALL STRUCTURAL NOTES:									
Recommended Work on Structure:	□ None	🛛 Minor Rehab. 🗌	Major Rehab.		Replace				
Timing of Recommended Work:	Timing of Recommended Work: \square 1 to 5 years \square 6 to 10 years								
Overall structure is generally in fair	Overall structure is generally in fair condition. Parapet walls are substandard and should be replaced with code compliant								
barrier. No approach guiderail present and should be installed. Severe scaling with localized spalls noted on inlet and outlet components. Severe erosion and undermining on west barrel wall. Concrete disintegration on east wall. Spall and exposed reinforcement on soffit. Wide vertical crack and large mass of concrete deteriorated at the centre of east wall.									
Date of Next Inspection:	August 20	022							
Suspected Performance Deficiencies									
00 None	06	Bearing not uniformly loaded/unsta		12	Slippery surfaces				
01 Load carrying capacity	07	Jammed expansion joint		13	Flooding/channel blockage				
02 Excessive deformations (deflections & rotation)		Pedestrian/vehicular hazard		14	Undermining of foundation				
03 Continuing settlement	09	Rough riding surface		15	Unstable embankments				
04 Continuing movements 05 Seized bearings	10 11	Surface ponding Deck drainage		16	Other				
Maintenance Needs	11	Deck dramage							
01 Lift and swing bridge maintenance	07	Repair of structural steel		13	Erosion control at bridges				
02 Bridge cleaning	08	Repair of bridge concrete		14	Concrete sealing				
03 Bridge handrail maintenance	09	Repair of bridge timber		15	Rout and seal				
04 Painting steel bridge structures	10	Bailey bridges maintenance		16	Bridge deck drainage				
05 Bridge deck joint repair	11	Animal/pest control		17	Scaling (loose Concrete or ACR Steel)				
06 Bridge bearing maintenance	12	Bridge surface repair		18	Other				

BRIDGE

ELEMENT DATA								
Element Group:	Approaches		Length:					
Element Name:	Barrier	Barrier						
Location:	NE, NW, SE & SW Corners of Structure		Height:					
Material:	Steel		Count:					
Element Type:	Steel Flex Beam on stee	el post	Total Quantity:					
Environment:	Severe		Limited Inspection:					
Protection System	None							
Condition Data:	Units	Excellent	Good	Fair		Poor		
Condition Data:	m	-	-	-		-		
Comments: Approach should be installed.	Comments: Approach barriers were not present at the time of the inspection. A code compliant approach barrier system with end treatments should be installed.							
Performance Deficie	encies: 08		Maintenance Need	s: 00				
Recommended Wor		☐ Replace] 6 – 10 Years	Maintenance Need	s: 🗌 Urgent	□ 1 Ye	ear 🗌 2 Years		

Element Group:	Approaches		Length:		6.0			
Element Name:	Wearing Surface		Width:		6.8			
Location:	North and South of Strue	cture	Height:		0.08			
Material:	Sand		Count:		2			
Element Type:			Total Quantity:		81.6			
Environment:	Severe		Limited Inspection:	:				
Protection System	None							
Carliffic Data	Units	Excellent	Good	Fair	Poor			
Condition Data:	m ²		69.6	12				
	l transverse and longitudina vas observed throughout.	al cracks at the approach	es, with several alligator o	cracks noted throu	ighout the centerline. Light			
Performance Deficie	encies: 00		Maintenance Need	Maintenance Needs: 18 – Asphalt Surface Repair				
Recommended Wor	k: ☐ Rehab. ☐ 1 – 5 Years	☐ Replace ☐ 6 – 10 Years	Maintenance Need	ls: 🗌 Urgent	⊠ 1 Year □ 2 Years			

BRIDGE				STRU	CTURE N	UMBER.: BR2	
Element Group:	Barriers		Length:		3.6		
Element Name:	Barrier/Parapet Walls		Width:		-		
Location:	North and South of Strue	cture	Height:		1.3		
Material:	Cast-in-place concrete	e	Count:		2		
Element Type:	Parapet Wall without	railing	Total Quantity:		9.34		
Environment:	Moderate		Limited Inspection:				
Protection System	None				•		
	Units	Excellent	Good	Fair		Poor	
Condition Data:	m	-	2.67	5.67	1		
Comments: Medium barrier.	to severe scaling noted on p	parapet walls. Barrier is si	ubstandard and should be re	eplaced with a o	code comp	liant deck	
Performance Defici	encies: 08		Maintenance Needs: 00				
Recommended Wor	•k: ⊠ Rehab. ⊠ 1 – 5 Years	☐ Replace ☐ 6 – 10 Years	Maintenance Needs:	Urgent	🗌 1 Year	2 Years	

ELEMENT DATA								
Element Group:	Decks		Length:	Length:				
Element Name:	Wearing Surface		Width:		6.8			
Location:	NA		Height:		0.09			
Material:	Asphalt		Count:		1			
Element Type:	NA		Total Quantity:		24.47			
Environment:	Severe		Limited Inspection:					
Protection System	None		•		•			
Canditian Datas	Units	Excellent	Good	Fair		Poor		
Condition Data:	m ²	-	12.47	12				
Comments: Light to r	Comments: Light to moderate raveling and medium cracks observed on the wearing surface.							
Performance Deficie	encies: 00		Maintenance Need	s: 18 – Asphalt S	urface R	lepair		
Recommended Wor		☐ Replace ☐ 6 – 10 Years	Maintenance Need	s: 🗌 Urgent	⊠ 1 Ye	ear 2 Years		

BRIDGE				STRUC	TURE NUMBER.: BR2
Element Group:	Culverts		Length:		12.4
Element Name:	Barrel		Width:		3.1
Location:	Below Roadway H		Height:		1.4
Material:	Cast-in-place concrete C		Count:		1
Element Type:	Frames - Articulated T		Total Quantity:		73.16
Environment:	Benign		Limited Inspection:		
Protection System	None			·	
	Units	Excellent	Good	Fair	Poor
Condition Data:	m ²	-	63.16	5.00	5.00
	e disintegration on east wall wall. Wide vertical crack an encies: 14			east wall.	
Recommended Wor	r k: ⊠ Rehab. ⊠ 1 – 5 Years	☐ Replace ☐ 6 – 10 Years	Maintenance Needs	s: 🗌 Urgent 🛛] 1 Year 🔲 2 Years

ELEMENT DATA						
Element Group:	Culverts		Length:		1.7	
Element Name:	Inlet Components		Width:		-	
Location:	East		Height:		1	
Material:	Cast-in-place concrete		Count:		2	
Element Type:	Retaining Wall		Total Quantity:		3.4	
Environment:	Benign		Limited Inspection:			
Protection System	None					
	Units	Excellent	Good	Fair		Poor
Condition Data:	m ²	-	2.4	0.5		0.5
Comments: Severe so	caling and localized spalls of	bserved.				
Performance Defici	encies: 00		Maintenance Need	s: 00		
Recommended Wor		□ Replace □ 6 – 10 Years	Maintenance Need	s: 🗌 Urgent	🗌 l Year	2 Years

BRIDGE

Element Group:	Culverts		Length:	Length:			
Element Name:	Outlet Components		Width:		-		
Location:	West		Height:	Height:			
Material:	Cast-in-place concrete		Count:	Count:			
Element Type:	Retaining Wall		Total Quantity:	Total Quantity:			
Environment:	Benign		Limited Inspection:	Limited Inspection:			
Protection System	None		·		•		
	Units	Excellent	Good	Fair		Poor	
Condition Data:	m ²	-	2.4	0.5		0.5	

Performance Deficiencies	s: 00		Maintenance Needs: 00						
Recommended Work:	⊠ Rehab. ⊠ 1 – 5 Years	☐ Replace ☐ 6 – 10 Years	Maintenance Needs:	Urgent	☐ 1 Year	2 Years			

ELEMENT DATA	ELEMENT DATA									
Element Group:	Embankments and Stream	IS	Length:							
Element Name:	Embankments		Width:	Width:						
Location:	NE, NW, SE & SW of Str	ucture	Height:							
Material:	Native Soil	Count:		4						
Element Type:	Embankments	Total Quantity:		4						
Environment:	Benign		Limited Inspection:	:						
Protection System	Unknown									
Condition Data:	Units	Excellent	Good Fair			Poor				
Condition Data:	All	-	3 1			-				
Comments: Embankm	ents are generally in good c	ondition with washout n	oted at NW corner.							
Performance Deficie	ncies: 00		Maintenance Need	ls: 00						
Recommended Work: \Box Rehab. \Box Replace \Box 1 – 5 Years \Box 6 – 10 Years			Maintenance Need	ls: 🗌 Urgent	□ 1 Ye	ear 🗌 2 Years				

BRIDGE

Element Group:	Embankments & Streams		Length:	Length:			
Element Name:	Streams and Waterways		Width:	Width:			
Location:	Under Bridge		Height:				
Material:	NA	Count:		1			
Element Type:	NA	Total Quantity:		1			
Environment:	Benign		Limited Inspection	:			
Protection System	None						
Condition Data:	Units	Excellent	Good	Fair		Poor	
Condition Data:	Each	-	1	-	-		
Comments: Low volu	ime, fast flow and some deb	ris observed in the strear	n.				
Performance Defici	encies: 00		Maintenance Need	s: 18- Remove de	ebris		
Recommended Wor	Work: \square Rehab. \square Replace \square 1 – 5 Years \square 6 – 10 Years		Maintenance Need	s: 🗌 Urgent	⊠ 1 Y	ear 🗌 2 Years	

BRIDGE

STRUCTURE NUMBER.: BR2

REPAIR AND REHABIL	ITATION REQUIRED		Priority				
Element	Repair and Rehabilitation Required	6 - 10 Years	6 - 10 Years 1 - 5 Years		Estimated Cost		
Culvert – Barrel, Inlet and Outlet Components	Concrete repairs		Х		\$	60,000.00	
Approach- Barrier	Install code complaint approach barrier		Х		\$	48,000.00	
Barrier	Railing Systems – Deck Barrier		Х		\$	30,000.00	
					\$	-	
					\$	-	
					\$	-	
					\$	-	
					\$	-	
					\$	-	
				Total Cost	\$	138,000.00	

ASSOCIATED WORK	Comments	Estimated Cost
Approaches		\$ -
Detours		\$ -
Traffic Control		\$ -
Utilities		\$ -
Right of Way		\$ -
Environmental Study		\$ -
Other		\$ -
Contingencies		\$ -
	Total Cost	\$-

JUSTIFICATION



Photo 1 Structure from east approach



Photo 2 Structure from west approach



Photo 3 East approach from centre of structure



Photo 4 West approach from centre of structure

BRIDGE



Photo 5 North elevation



Photo 6 South elevation



Photo 7 Horizontal and vertical cracks with tire rutting noted on wearing surface throughout



Photo 8 Moderate scaling noted on substandard traffic barrier

BRIDGE



Photo 9 Spall noted on soffit at north end



Photo 10 South underside of structure



Photo 11 Full length crack and undermining noted on west abutment wall



Photo 12 Large spalls with exposed corroded reinforcement noted on soffit at mid span



Photo 13 Large spall with portion coming out at construction joint on east abutment wall



Photo 14 Delamination and spalls with exposed corroded reinforcement noted on soffit at south end

BRIDGE



Photo 15 Moderate honeycombing, and undermining noted on southwest retaining wall



Photo 16 Large spalls with exposed corroded reinforcement noted on south fascia

Structure Condition Summary Form

Structure Name	Black Creek Road Culvert
Structure Number	BR8
Date of Inspection	August 04, 2020
Project No.	20032
Consultant	HP Engineering Inc.

Element Group	Element Name	Unit (Qty.)	Unit Price (MTO)	Total Element Quantity	Element Qty. in Excellent Condition (1.00)	Element Quantity in Good Condition (0.75)	Element Quantity in Fair Condition (0.4)	Element Quantity in Poor Condition (0)	Total Replacement Value (TRV)	Current Element Value (CEV)	Element Condition Index	Performance Deficiency	Maintenance Need
Approaches	Wearing Surface	Sq.m	6.00	225.00		225.00	0.00	0.00	1350	1013	75	00	00
Culvert	Barrel	Sq.m	350.00	694.65	0.00	694.65	0.00	0.00	243128	182346	75	00	00
									244478	183358			

Bridge Condition Index (BCI)	75
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BRIDGE						ST	RUCTURE	NUMBER.: BR
INVENTORY DAT	ſA:							
Structure Name	Black Creek Road Culv	/ert						
		Und	uci	Navigable	e Water 🔲	Non- Na	wigable Wate	er 🖂
Main Hwy/Road #		Stru	ucture:	Rail 🗌	Road 🗌	Pedestr	rian 🗌	Other
		On		Rail 🗌	Road 🗌 Ped	lestrian □ 0'	ther 🗖	
Road Name:	Black Creek Road	Stru	ucture:					
Structure Location	500 m west of HWY 11	l						
Latitude	45°42'17.6	5"N	Long	itude		79°27'0)3.8"W	
Owner(s)	Township of Strong				Not Cons. 🛛	Cons./Not Ap	pp. 🗌 List	/Not Desig. 🗌
			Desig	gnation	Desig./not Li	ist 🔲 🛛 🛛 🖸	Desig. & List	
MTO Region	Northern		Road	l Class:	Freeway 🗌	Arterial 🗌 0	Collector 🗌	Local 🛛
MTO District	Huntsville		Poste	ed Speed	80	No. of La	anes <u>2</u>	
Old County	Parry Sound		AAD	νT	0	% Trucks	s <u>0</u>	
Geographic Twp.	Township of Strong		Speci	ial Routes	Transit 🛛	Truck 🔲	School	Bicycle
Structure Type	Rectangular Culvert		- Deto	ur Length A	Around			
			Struct	-	Arounu			(km)
Total Deck Length	6.2	(m)	Fill o	on Structure	e	06	5	(m)
Overall Str. Width	42.1	(m)	Skew	v Angle		30)	(Degrees)
Total Deck Area	261.02	(m ²)	Direc	ction of Str	ructure	North -	South	_
Roadway Width	7.5	(m)	No. c	of Spans		1		-
Span Lengths	6.2	(m)						
HISTORICAL DAT	ТА							
Year Built				Last OS	IM Inspection		June	26, 2020
Year of Last Major F	Rehab			Last Enł	hanced OSIM In	nspection		-
Current Load Limit		(1	tonnes)	Last Bri	dge Master Insp	pection		-
Load Limit By-Law	#			Last Eva	aluation			-
By-Law Expiry Date	e			Last Un	derwater Inspec	tion		-

Last Condition Survey

(m)

-

Rehabilitation History: (Date / Description)

Min. Vertical Clearance

BRIDGE

STRUCTURE NUMBER.: BR8

FIELD INSPECTION INF	FIELD INSPECTION INFORMATION									
Date of Inspection:	August 4, 2020	Type of Inspection: 🛛 OSIM 🔲 Enhanced OSIM								
Inspector:	Sarah Vandergeest, P.Eng., HP Engineering									
Others in Party:	Sagar Chhayani, HP Engineering									
Access Equipment Used:	Measuring tape, Hip waders, Camera and Hammer									
Weather:	Sunny									
Temperature:	18°C									

ADDITIONAL INVESTIGATION D	DDITIONAL INVESTIGATION REQUIRED						Estimated Cost	
ADDITIONAL INVESTIGATION K	EQUIKED			None	Normal	Urgent	ESUI	nated Cost
Rehabilitation/Replacement Study: App	roach Barrier	r					\$	5,000.00
Material Condition Survey								
Detailed Deck Condition Survey:							\$	-
Non-destructive Delamination Surve					\$			
Concrete Substructure Condition Su	rvey:						\$	-
Detailed Coating Condition Survey:							\$	
Detailed Timber Investigation:							\$	
Underwater Investigation:							\$	
Fatigue Investigation:							\$	-
Seismic Investigation:							\$	-
Structure Evaluation:							\$	-
Monitoring								
Monitoring of Deformations, Settler	ment and Mov	vements:					\$	-
Monitoring Crack Widths:							\$	-
Load Posting – Estimated Load Limit	t]	Fotal Cost	\$	5,000.00
Investigation Notes:								
OVERALL STRUCTURAL NOTES:								
Recommended Work on Structure:	□ None	Minor Rehab.	🗌 Major Re	hab.	□ Replace			
Timing of Recommended Work:	⊠ 1 to 5 ye	ears \Box 6 to 10 ye	ars					

Overall, structure is generally in good condition with erosion at northwest embankment. A code compliant barrier should be installed on south side of structure. Existing three-cable railing on north side should be replaced with code compliant barrier.

Date of Next Inspection:				
Suspected Performance Deficiencies				
00 None				

Bridge bearing maintenance

05

06

August 2022

Suspe	ected Performance Deficiencies
00	None
01	Load carrying capacity
02	Excessive deformations (deflections & rotation)
03	Continuing settlement
04	Continuing movements
05	Seized bearings
Main	tenance Needs
01	Lift and swing bridge maintenance
02	Bridge cleaning
03	Bridge handrail maintenance
04	Painting steel bridge structures
05	Bridge deck joint repair

- - 06 Bearing not uniformly loaded/unstable 07 Jammed expansion joint
 - 08 Pedestrian/vehicular hazard
 - 09 Rough riding surface
 - 10 Surface ponding 11
 - Deck drainage
 - 07 Repair of structural steel
 - 08 Repair of bridge concrete
 - 09 Repair of bridge timber
 - 10 Bailey bridges maintenance
 - Animal/pest control 11 Bridge surface repair 12

- 12 Slippery surfaces
- 13 Flooding/channel blockage
- 14 Undermining of foundation Unstable embankments
- 15 16 Other
- 13 Erosion control at bridges
- 14 Concrete sealing
- 15 Rout and seal 16
 - Bridge deck drainage
- 17 Scaling (loose Concrete or ACR Steel)
- 18 Other

BRIDGE

ELEMENT DATA						
Element Group:	Approaches		Length:			
Element Name:	Barrier		Width:			
Location:	NE, NW, SE & SW Corne	ers of Structure	Height:			
Material:	Steel		Count:			
Element Type:	Steel Flex Beam on wo	od post	Total Quantity:		100	
Environment:	Severe		Limited Inspection:			
Protection System	None					
Condition Data:	Units	Excellent	Good	Fair		Poor
Condition Data:	m	-	100	-		-
Comments: Approach barrier and end treatments should be installed on the south side of the structure. North approach barrier is substandard and should be replaced with a code compliant barrier and end treatments.						
Performance Deficie	ncies: 08		Maintenance Needs: 00			
Recommended Work		⊠ Replace] 6 – 10 Years	Maintenance Need	s: 🗌 Urgent	□ 1 Ye	ear □ 2 Years

Element Group:	Approaches		Length:		30	
Element Name:	Wearing Surface		Width:		7.5	
Location:	North and South of Str	ucture	Height:		-	
Material:	Gravel		Count:		-	
Element Type:	NA		Total Quantity:		225	
Environment:	Severe		Limited Inspection	:		
Protection System	None					
Condition Data	Units	Excellent	Good	Fair	Poor	
Condition Data:	m ²	-	225	-	-	
Comments: Generally in good condition.						
Performance Deficie	encies: 00		Maintenance Need	ls: 00		
Recommended Wor		□ Replace □ 6 – 10 Years	Maintenance Need	ls: 🗌 Urgent 🗌] 1 Year 🔲 2 Years	

BRIDGE

ELEMENT DATA						
Element Group:	Accessories		Length:			
Element Name:	Signs		Width:			
Location:	North and South of Struc	ture	Height:			
Material:	Steel		Count:			
Element Type:	Hazard Signs		Total Quantity:			
Environment:	Severe		Limited Inspection:			
Protection System	None					
Condition Data:	Units Excellent		Good	Fair		Poor
Condition Data:	Each	-	-	-		-
Comments: No hazards signs noted at the time of the inspection.						
Performance Deficie	ncies: 00		Maintenance Needs: 18 - Install Hazard signs			
Recommended Worl	k: 🗌 Rehab.	Replace	Maintenance Need	s: 🛛 Urgent	🗌 1 Year	□ 2 Years
	\Box 1 – 5 Years	□ 6 – 10 Years				
			1			

Element Group:	Culverts		Length:		5.5	
Element Name:	Barrel	Barrel			42.1	
Location:	NA		Height:		3	
Material:	Precast concrete		Count:		1	
Element Type:	Box		Total Quantity:		694.6	55
Environment:	Benign		Limited Inspection:			
Protection System	None					
Canditian Datas	Units	Excellent	Good	Fair		Poor
Condition Data:	m ²	m ² 694.65 -			-	
 						
Comments: Limited	inspection due to high water	r level. Rating based on v	isible portion of barrel e	nds and previous i	inspecti	ion report.
Comments: Limited i Performance Deficie		r level. Rating based on v	isible portion of barrel en	-	inspecti	ion report.

BRIDGE				STRUCT	URE NUMBER.: BR8	
ELEMENT DATA						
Element Group:	Embankments & Streams		Length:	-	-	
Element Name:	Embankments		Width:	-		
Location:	All		Height:	-		
Material:	NA		Count:	4	-	
Element Type:	NA		Total Quantity:	4	ŀ	
Environment:	Benign		Limited Inspection	E		
Protection System	Hot dip galvanized					
	Units	Excellent	Good	Fair	Poor	
Condition Data:	Each	-	4	-	-	
Comments: Generally in good condition.						
Performance Deficie	encies: 00		Maintenance Needs: 00			
Recommended Wor		☐ Replace ☐ 6 – 10 Years	Maintenance Need	s: 🗌 Urgent 🗌	1 Year 2 Years	

Element Group:	Embankments & Stream	S	Length:		-	
Element Name:	Streams and Waterways		Width:		-	
Location:	Under Bridge		Height:		-	
Material:	NA		Count:		1	
Element Type:	NA		Total Quantity:		1	
Environment:	Benign		Limited Inspection:			
Protection System	Hot dip galvanized		·			
	Units	Excellent	Good	Fair		Poor
Condition Data:	All	-	1	-		-
Comments: High vol	ume, low flow in the directio	n of north to south.				
Performance Defici	encies: 00		Maintenance Need	s: 00		

BRIDGE

REPAIR AND REHAE		Priority		E-4		
Element	Repair and Rehabilitation Required	6 - 10 Years	1 - 5 Years	< 1 year Estimated C		
Approach Barrier	Install / Replace Barrier and End Treatments			Х	\$	48,000.00
					\$	-
					\$	-
					\$	-
					\$	-
					\$	-
					\$	-
					\$	-
					\$	-
				Total Cost	\$	48,000.00

ASSOCIATED WORK	Comments	Estimated Cost
Approaches		\$-
Detours		\$ -
Traffic Control		\$ -
Utilities		\$ -
Right of Way		\$-
Environmental Study		\$ -
Other		\$-
Contingencies		\$ -
	Total Cost	\$-

JUSTIFICATION			



Photo 1 Structure from east approach



Photo 2 Structure from west approach



Photo 3 East approach from centre of structure



Photo 4 West approach from centre of structure

BRIDGE

SITE PHOTOGRAPHS

Site No.: BR8



Photo 5 North elevation



Photo 6 No end treatment present at the time of inspection

BRIDGE

SITE PHOTOGRAPHS

Site No.: BR8



Photo 7 Barrier posts leaning at northeast approach



Photo 8 Potholes and previous repairs noted on west approach wearing surface

BRIDGE



Photo 9 Spall noted on exterior interface of vertical leg and soffit



Photo 10 Visible portion of interior barrel

Structure Condition Summary Form

Structure Name	Rodeo Road Culvert
Structure Number	BR11
Date of Inspection	August 04, 2020
Project No.	20032
Consultant	HP Engineering Inc.

Element Group	Element Name	Unit (Qty.)	Unit Price (MTO)	Total Element Quantity	Element Qty. in Excellent Condition (1.00)	Element Quantity in Good Condition (0.75)	Element Quantity in Fair Condition (0.4)	Element Quantity in Poor Condition (0)	Total Replacement Value (TRV)	Current Element Value (CEV)	Element Condition Index	Performance Deficiency	Maintenance Need
Approaches	Wearing Surface	Sq.m	6.00	306.00	0.00	300.00	6.00	0.00	1836	1364	74	00	18
Culvert	Barrel	Sq.m	350.00	189.42	0.00	189.42	0.00	0.00	66297	49723	75	00	00
									68133	51087			

Bridge Condition Index (BCI)	75
Bridge Condition Index (BCI)	75

RIDGE						S	FRUCTURE	NUMBER.: BR
INVENTORY DAT	A:							
Structure Name	Rodeo Road Culvert							
		Und	ici	vigable W	Vater	Non-	Navigable Wat	ter 🛛
Main Hwy/Road #		Stru	icture: Rai	il 🗌	Road 🗌] Pede	estrian 🗌	Other
		On	Rai	il □ R	load 🗌 Pede	ectrian 🗌	Other 🔲	
Road Name:	Rodeo Road	Stru	icture: Rai	ш ц т.				
Structure Location	South of HWY 124							
Latitude	45°44'19.8"N		Longitud	de _		79°2	8'11.9"W	
Owner(s)	Township of Strong			-	Not Cons. 🛛	Cons./Not	App. 🗌 Lis	st/Not Desig. 🗌
			Designat	tion	Desig./not Lis	st 🗌	Desig. & List	t 🔲
MTO Region	Northern		Road Cla	ass:	Freeway 🗌	Arterial 🗌	Collector] Local 🛛
MTO District	Huntsville		Posted S	speed	80	No. of	Lanes 2	
Old County	Parry Sound		AADT	-	0	% Tru	cks <u>0</u>	
Geographic Twp.	Township of Strong		Special F	Routes	Transit 🛛	Truck 🗌	School	Bicycle 🗌
Structure Type	Arch Culvert		- Detour I	Length Ar	d			
			Structure	-	ouna -		-	_(km)
Total Deck Length	3.3	_(m)	Fill on S	tructure	-		0.6	_(m)
Overall Str. Width	22	_(m)	Skew Ar	ngle	-		0	(Degrees)
Total Deck Area	72.6	_(m ²)	Direction	n of Struc	ture _	East	t - West	_
Roadway Width	7	_(m)	No. of Sj	pans	-		1	_
Span Lengths	3.3	_(m)						
HISTORICAL DAT	`A							
Year Built	2015		L	ast OSIM.	I Inspection		June	e 26, 2020
Year of Last Major R	ehab		L	ast Enhan	nced OSIM In	spection		_
Current Load Limit		(t	tonnes) La	ast Bridge	e Master Insp	ection		-
Load Limit By-Law #			L	ast Evalu	ation			-
By-Law Expiry Date			L	ast Under	rwater Inspect	ion		-
Min. Vertical Clearan	nce -	(1	m) La	ast Condi	ition Survey			-

BRIDGE

FIELD INSPECTION INF	FORMATION	
Date of Inspection:	August 4, 2020	Type of Inspection: ⊠ OSIM □ Enhanced OSIM
Inspector:	Sarah Vandergeest, P.Eng., HP Engineering	
Others in Party:	Sagar Chhayani, HP Engineering	
Access Equipment Used:	Measuring tape, Hip waders, Camera and Hammer	
Weather:	Sunny	
Temperature:	_18°C	

lone	Normal	Urgent	\$ \$ \$	nated Cost 5,000.00 - -
			\$ \$	5,000.00
			\$	-
			\$	-
			•	-
			\$	-
			\$	-
			\$	-
			\$	-
			\$	-
			\$	-
			\$	-
			\$	-
			\$	-
]	Fotal Cost	\$	5,000.00
-			Total Cost	

0	VERALL STRUCTURAL NOTES:				
Re	ecommended Work on Structure:	□ None	🛛 Minor Rehab. 🛛 🗌 Ma	jor Rehab. 🛛 🛛	Replace
Ti	ming of Recommended Work:	$\boxtimes 1$ to 5	years \Box 6 to 10 years		
	verall, structure is generally in good	d condition	n. A code complaint barrier sl	hould be install	ed over structure and on
al	proaches.				
Da	ate of Next Inspection:	August 20)22		
Susp	ected Performance Deficiencies				
00	None	06	Bearing not uniformly loaded/unstable	12	Slippery surfaces
01	Load carrying capacity	07	Jammed expansion joint	13	Flooding/channel blockage
02	Excessive deformations (deflections & rotation)	08	Pedestrian/vehicular hazard	14	Undermining of foundation
03	Continuing settlement	09	Rough riding surface	15	Unstable embankments
04	Continuing movements	10	Surface ponding	16	Other
05	Seized bearings	11	Deck drainage		
Mai	ntenance Needs				
01	Lift and swing bridge maintenance	07	Repair of structural steel	13	Erosion control at bridges
02	Bridge cleaning	08	Repair of bridge concrete	14	Concrete sealing
03	Bridge handrail maintenance	09	Repair of bridge timber	15	Rout and seal
04	Painting steel bridge structures	10	Bailey bridges maintenance	16	Bridge deck drainage
05	Bridge deck joint repair	11	Animal/pest control	17	Scaling (loose Concrete or ACR Steel)
06	Bridge bearing maintenance	12	Bridge surface repair	18	Other

BRIDGE				STRUC	TURE	NUMBER.: BR11	
ELEMENT DATA							
Element Group:	Approaches		Length:				
Element Name:	Barrier		Width:				
Location:	NE, NW, SE & SW Corn	ers of Structure	Height:				
Material:	Steel		Count:				
Element Type:	Steel Flex Beam on wo	od post	Total Quantity:				
Environment:	Severe		Limited Inspection:				
Protection System	None				•		
	Units	Excellent	Good	Fair		Poor	
Condition Data:	m	-	-	-		-	
Comments: No appro installed.	oach barriers observed at the	time of the inspection.	It is recommended that c	code compliant ba	arriers a	nd end treatments be	
Performance Defici	encies: 08		Maintenance Need	s: 00			
Recommended Wor		⊠ Replace] 6 – 10 Years	Maintenance Need	s: 🗌 Urgent	□ 1 Ye	ear 🗌 2 Years	

Element Group:	Approaches		Length:		15.3	
Element Name:	Wearing Surface		Width:		10	
Location:	North and South of Stru	icture	Height:		-	
Material:	Gravel		Count:		2	
Element Type:	NA		Total Quantity:		306	
Environment:	Severe		Limited Inspection:			
Protection System	None		-			
Canditian Datas	Units	Excellent	Good	Fair		Poor
Condition Data:	m ²	-	300	6		-
Comments: Minor er	osion at southeast. Small pot	holes forming and erosic	n observed at edges of r	oadway.		
Performance Deficio	encies: 00		Maintenance Need	s: 18 – Regrade A	Approach	es
Recommended Wor		☐ Replace ☐ 6 – 10 Years	Maintenance Need	s: 🗌 Urgent	🗌 1 Yea	ur 🛛 2 Years

BRIDGE

ELEMENT DATA						
Element Group:	Accessories		Length:			
Element Name:	Signs		Width:			
Location:	North and South of Struct	ure	Height:			
Material:	Steel		Count:			
Element Type:	Hazard Signs		Total Quantity:			
Environment:	Severe		Limited Inspection:			
Protection System	None					
Condition Data:	Units	Excellent	Good	Fair		Poor
Condition Data:	Each	-	-	-		-
Comments: Hazard si	gns are missing and should t	be installed.				
Performance Deficie	encies: 00		Maintenance Need	s: 18 - Install Haz	zard signs	
Recommended Wor		☐ Replace ☐ 6 – 10 Years	Maintenance Need	s: 🛛 Urgent	□ 1 Year	2 Years

Element Group:	Culverts		Length:		22	
Element Name:	Barrel		Width:		3.3	
Location:	NA		Height:		2.08	
Material:	Steel		Count:		1	
Element Type:	Pipe Arch		Total Quantity:		189.4	12
Environment:	Benign		Limited Inspection	:		
Protection System	None					
Condition Dates	Units	Excellent	Good	Fair		Poor
Condition Data:	m ²	-	189.42	-		-
Comments: Generally performance related is	y in good condition. Small ssues.	gaps found at some joints	, which appeared to be in	stallation related l	but no	evidence of
Performance Defici	encies: 00		Maintenance Need	ls: 00		
Recommended Wor	r k: 🗌 Rehab.	□ Replace	Materia No. 1	ls: 🗌 Urgent	1 Y	ear 2 Years

BRIDGE				STRUC	TURE N	NUMBER.: BR11
ELEMENT DATA						
Element Group:	Embankments & Stream	ns	Length:		-	
Element Name:	Embankments		Width:		-	
Location:	All		Height:		-	
Material:	NA		Count:		4	
Element Type:	NA		Total Quantity:		4	
Environment:	Benign		Limited Inspection:	:		
Protection System	Hot dip galvanized					
Condition Data:	Units	Excellent	Good	Fair		Poor
Condition Data:	Each	-	2	2		-
Comments: Moderate	ely sloped, well vegetated an	d stable embankments. I	Minor erosion observed a	at southeast and so	outh wes	t side of the
Performance Defici	encies: 00		Maintenance Need	s: 13		
Recommended Wor		☐ Replace ☐ 6 – 10 Years	Maintenance Need	s: Urgent	□ 1 Yea	ar 🛛 2 Years

Element Group:	Embankments & Stream	ms	Length:		-	
Element Name:	Streams and Waterway	'S	Width:		-	
Location:	Under Bridge		Height:		-	
Material:	NA		Count:		1	
Element Type:	NA		Total Quantity:		1	
Environment:	Benign		Limited Inspection:			
Protection System	Hot dip galvanized		·		•	
	Units	Excellent	Good	Fair		Poor
			1	_		-
Condition Data:	Each	-	1	-		
	Each ame and low flow from west			-		
	ume and low flow from west		Maintenance Needs			

BRIDGE

REPAIR AND REHABILITATION REQUIRED		Priority				
Element	Repair and Rehabilitation Required	6 - 10 Years	1 - 5 Years	<1 year	Estimated Cost	
Approach Barrier	Install Code Compliant Approach Barrier and End Treatments		Х		\$	48,000.00
					\$	-
					\$	-
					\$	-
					\$	-
					\$	-
					\$	-
					\$	-
					\$	-
					\$	48,000.00

ASSOCIATED WORK	Comments	Estimated Cost	
Approaches		\$ -	
Detours		\$ -	
Traffic Control		\$-	
Utilities		\$ -	
Right of Way		\$ -	
Environmental Study		\$ -	
Other		\$ -	
Contingencies		\$ -	
Total Cost			

JUSTIFICATION		

BRIDGE



Photo 1 Structure from north approach



Photo 2 Structure from south approach

BRIDGE



Photo 3 North approach from centre of structure



Photo 4 South approach from centre of structure



Photo 5 East elevation



Photo 6 West elevation



Photo 7 Potholes and loose gravel noted on wearing surface



Photo 8 Interior of barrel



Photo 9 Light corrosion noted inside barrel at joint