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Area Bridge Needs Study

TOWN OF GRAVENHURST

Inspection Summary Report

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Issue	Date	Description
1	Oct. 4, 2019	Draft Report
2	March 18, 2020	Final Report

Table Contents

Tables

Appendices

1 Introduction

The purpose of the *Bridge Needs Study* is to provide a current inventory of bridge structures, and a benchmark cost analysis for construction needs/improvements.

Inventories were conducted for all structures exceeding 3 metres in span within the Town boundaries as illustrated in Figure 1. To ensure compliance with Ministry of Transportation guidelines and consistency with the previous studies, the inventories were completed in accordance with the Ontario Structure Inspection Manual[1].

The completed inventories and corresponding assessments will allow the Town of Gravenhurst to:

- protect and prolong the useful life of its bridge structures;
- identify maintenance, repair and rehabilitation needs; and
- provide a basis for a management system for the planning and funding of the necessary maintenance and rehabilitation of each system.

1.1 DEFINITIONS

In order to convey the results of the visual inspections, certain terms are used to identify particular deficiencies with respect to steel or concrete condition. These terms are used in accordance with the OSIM guidelines and are defined below for clarification.

Corrosion: The deterioration of steel by chemical or electro-chemical reaction resulting from exposure to air, moisture, de-icing salts, industrial fumes and other chemicals and contaminants in the environment in which it is placed.

Delamination: The discontinuity of the surface concrete which is substantially separated but not completely detached from concrete below or above it.

Efflorescence: A deposit of salts, usually white and powdery, on the surface of concrete, left behind where water percolates through the concrete and dissolves or leaches chemicals from it.

[1] *Ontario Structure Inspection Manual (OSIM)*. Ministry of Transportation, May 2018.

Honeycombing: This is the result of improper or incomplete vibration of the concrete which results in voids being left in the concrete where the mortar failed to completely fill the spaces between the coarse aggregate particles.

Patina: A relatively smooth rust layer, formed on weathering steel, which protects the underlying metal from further corrosion.

Scour: The removal of material from the stream bed or bank due to the erosive action of moving water in the stream. Scour can also cause removal of material supporting foundations.

Scaling: The local flaking, or loss of the surface portion of concrete or mortar as a result of the freeze-thaw deterioration of concrete. It is common in non air-entrained concrete but can also occur in air-entrained concrete in the fully saturated condition. It is prone to occur in poorly finished or overworked concrete where too many fines and not enough entrained air is found near the surface.

Spalling: This is a continuation of the delamination process whereby the actions of external loads, pressure exerted by the corrosion of reinforcement or by the formation of ice in the delaminated area results in the breaking off of the delaminated concrete. Spalling may also be caused by overloading of the concrete in compression.

2 Structure Investigation

All road structures with a span of 3 metres or greater, were investigated and inventoried. This chapter details the results of the inventory and identifies corresponding deficiencies.

2.1 INVENTORY & APPRAISAL GUIDELINES

The structure inventory was conducted according to the procedures set forth in the *Ontario Structure Inspection Manual* (OSIM). The OSIM sets standards for detailed visual inspection and condition rating of structures and their components. It provides a uniform inspection approach for all structures in Ontario. A detailed visual inspection as defined in the OSIM is as follows:

> *An element-by-element "close-up" visual assessment of material defects, performance deficiencies and maintenance needs of a structure. Close-up is defined as "a distance close enough to determine the condition of the element".*

For each structure, a detailed visual inspection was completed including an element-by-element visual assessment of material defects, performance deficiencies and maintenance. Inspection forms, as provided in the *Ontario Structure Inspection Manual*, were completed for each structure, documenting the inspection results.

In particular, the following were observed and recorded:

- field inspection information (date, inspector, weather, etc.);
- structure information (name, location, type and crossing type);
- structure geometry (span, length, width, area and skew);
- approach road characteristics; and
- element data (for each individual structure element - abutment, deck, embankment, etc.).

Several structures were identified as requiring an enhanced OSIM inspection such as the Beau Creek bridge, Lot 31 Concession 4/5 bridge on Pinetree Road, the Lot 10/11 Concession 10 bridge on Hopkins Road, the Fire Route A1 bridge and the Lots 15/16 Concession 10 culvert. In addition to the regular element by element inspection, the enhanced OSIM includes:

- tapping all areas of concrete with a hammer to determine the limits of delamination and spalling;
- tapping all areas of wood with a hammer to determine limits of rot, as well as selective wood coring to correlate tapping with the presence of inner rot or other damage; and
- cleaning and wire brushing all areas of steel, including connections, to ascertain section loss.

As per the *Ontario Structure Inspection Manual*, bridges and culverts are defined as follows:

Bridge

A structure which provides a roadway or walkway for the passage of vehicles across an obstruction, gap or facility and which is greater than 3 metres in span.

Culvert

Any bridge that is embedded in fill and is used to convey water, pedestrians or animals through it.

2.2 BRIDGE & CULVERT INVENTORY

In total, 13 structures were inventoried - 8 bridges and 5 culverts. Reviews were undertaken in late summer 2019 when water levels were lowest (thus permitting improved access). Notwithstanding, at several structures, a full review was not possible due to the high water levels. The bridge inspection forms are included in Appendix A.

2.3 BRIDGE & CULVERT ASSESSMENT

2.3.1 Identification of Needs & Improvements

For each individual bridge or culvert element, suspected performance deficiencies and maintenance needs along with recommended improvements have been identified based on the visual assessment. A summary of the assessment, as it pertains to the identified needs and deficiencies, is presented in Table 1 for the bridges and Table 2 for the culverts. In total, there are 49 deficiencies noted including 26 suspected performance deficiencies and 23 maintenance needs.

Table 1: Bridge Deficiencies

BRIDGE	ELEMENT	PERFORMANCE /MAINTENANCE ISSUE	TIMELINE FOR CORRECTION	DETAILS OF DEFICIENCY OR NEED AND RECOMMENDED STRATEGY TO ADDRESS
1 – Robinson Bridge 2.34 km west of Highway 11	Deck	Performance	1-5 Years	▪ Patch soffit concrete
		Performance	6-10 Years	▪ Patch waterproof & pave
		Maintenance	1 Year	▪ Bridge cleaning
	Joints	Maintenance	1 Year	▪ Clean out seals
	Drains	Maintenance	1 year	▪ Clean out wall drains
	Approaches	Maintenance	1 Year	▪ Pothole repair
	Barriers	Maintenance	1 Year	▪ Clean barriers
	Retaining wall	Performance	1-5 Years	▪ Replace wall
4 – Beau Creek Bridge	Deck	Performance	6-10 Years	▪ Repave surface
		Maintenance	1 Year	▪ Bridge and sign cleaning
		Maintenance	1 Year	▪ Rout and seal cracks

BRIDGE	ELEMENT	PERFORMANCE /MAINTENANCE ISSUE	TIMELINE FOR CORRECTION	DETAILS OF DEFICIENCY OR NEED AND RECOMMENDED STRATEGY TO ADDRESS
1.5 km east of District Road 17	Drains	Performance	6-10 Years	▪ Extend deck drains
	Approaches	Maintenance	1 Year	▪ Surface cleaning
	Barrier	Maintenance	1 Year	▪ Clean barriers
	Embankment	Performance	1-5 Years	▪ Install rock protection
5 – Kahshe River Bridge 1.22 km east of Highway 11	Deck	Maintenance	1 Year	▪ Bridge cleaning
	Wingwalls	Performance	1-5 Years	▪ Concrete crack repair
6 – Lot 31, Conc 4/5 2.44 km north of North Muldrew Lake Road	Abutments & Wingwalls	Performance	6-10 Years	▪ Repair timber cribs
	Approaches	Performance	1-5 Years	▪ Install approach barrier
	Bridge	Maintenance	1 Year	▪ Bridge cleaning
7 – Narrows Road Bridge 0.22 km east of Highway 169	Deck	Maintenance	1 Year	▪ Bridge cleaning
	Signs	Maintenance	1 Year	▪ Install object warning marker signs
8 – Sniders Bay Bridge 0.5 km west of District Road 169	Embankment	Performance	1-5 Years	▪ Repair washouts
	Approach guide rail	Performance	1-5 Years	▪ Install approach barrier
	Approaches	Maintenance	1 Year	▪ Repair potholes
	Deck	Maintenance	1 Year	▪ Bridge cleaning
		Performance	1-5 Years	▪ Replace
	Barrier	Performance	1-5 Years	▪ Replace barrier
	Signs	Maintenance	1 Year	▪ Add one lane tab to sign
	Abutments	Performance	1-5 Years	▪ Concrete repairs
	Girders	Performance	1-5 Years	▪ Replace
9 – Lot 10/11 Conc 10 0.57 km south of Merkley Road	Deck	Performance	1-5 Years	▪ Replace running boards
		Maintenance	1 Year	▪ Bridge cleaning
	Approach	Performance	1-5 Years	▪ Install approach barrier
	Curb	Performance	1-5 Years	▪ Replace
	Signs	Maintenance	1 Year	▪ Install 4th object warning marker sign
	Abutments	Performance	1-5 Years	▪ Replace cribs
	Embankment	Performance	1-5 Years	▪ Repair washout

BRIDGE	ELEMENT	PERFORMANCE /MAINTENANCE ISSUE	TIMELINE FOR CORRECTION	DETAILS OF DEFICIENCY OR NEED AND RECOMMENDED STRATEGY TO ADDRESS
	Watercourse	Maintenance	1 Year	▪ Clear debris
	Bearings	Maintenance	1 Year	▪ Clean bearing seats
11 – Fire Route A1 Bridge 1.0 km south of Merkley Road	Deck	Performance	1-5 Years	▪ Replace
	Abutment	Performance	1-5 Years	▪ Replace
	Embankment	Performance	1-5 Years	▪ Repair washouts
	Approaches	Performance	1-5 Years	▪ Install approach barrier

Table 2: Culvert Deficiencies

CULVERT	ELEMENT	PERFORMANCE /MAINTENANCE ISSUE	TIMELINE FOR CORRECTION	DETAILS OF DEFICIENCY OR NEED AND RECOMMENDED STRATEGY TO ADDRESS
201 - Lots 15/16, Conc 10 1.5 km south of Merkley Road	Deck	Performance	1-5 Years	▪ Rout & seal cracks
		Maintenance	1 Year	▪ Bridge cleaning
	Embankment	Performance	1-5 Years	▪ Install slope protection
	Signs	Maintenance	1 Year	▪ Install object warning marker signs
202 – Lot 6, Conc 10/11 4.1 km east of Barkway Road	Culvert	Maintenance	1 Year	▪ Remove debris from overflow culvert

A summary of the 26 performance deficiencies and 23 maintenance needs by time of need is provided in Table 3.

Table 3: Summary of Performance Deficiencies & Maintenance Needs

PERFORMANCE DEFICIENCY TIME OF NEED				MAINTENANCE NEED TIME OF NEED			
URGENT	1-5 YRS	6-10 YRS	TOTAL	URGENT	<1 YEAR	1-2 YRS	TOTAL
0	22	4	26	0	0	23	23

In conjunction with the identified deficiencies, the following are also noted:

- Given the condition assessment and estimated costs to repair the existing structures, complete replacement is recommended for the Fire Route A1 (11), Sniders Bay Bridge (8) and the Lot 10/11 Concession 10 bridge (9).
- Some of the existing structures' railing systems on the approach and over the structure do not meet the Bridge Code. Therefore, it is recommended that whenever major rehabilitation is planned on a bridge, the Town confirm the railing adequacy and conformance to the Bridge Code. This will be especially important when installing or replacing approach guiderail. It should be noted that the Bridge Code for railings/guiderail directly corresponds to the posted speed limit and traffic volumes. As such, the wood railings in place at some bridges can be replaced with a similar system if the traffic volumes allow it and the posted speed limit is reduced to 40 km/h (and motorists adhere to the posted speed limit).

2.3.2 Improvement Costs

Cost estimates to address the noted deficiencies are provided in Table 4 and Table 5 for bridges and culverts respectively. Where necessary, the need for additional investigations has also been identified and appropriately included in the cost estimate. Furthermore, the estimated replacement value for a number of the structures has been provided. It is recommended that the Town consider the replacement cost in addition to the required improvement costs to determine which program (ie. repair or replace) is the most cost effective. In total, the bridge improvements equate to $2.07M whereas the culvert improvements total $6,000.

Table 4: Bridge Improvement Costs

NO.	LOCATION	RECOMMENDED IMPROVEMENT			REPLACEMENT VALUE
		DESCRIPTION	TIME OF NEED	ESTIMATE	
1	Robinson Bridge 2.34 km west of Highway 11	▪ Replace retaining wall	1-5 Years	$50,000	
		▪ Patch soffit concrete	1-5 Years	$10,000	
		▪ Bridge cleaning	1 Year	$1,500	
		▪ Repave Approaches	6-10 Year	$15,000	
		▪ Patch waterproof and pave	6-10 Year	$115,000	
		▪ Traffic control	1-5 Years	$10,000	
		▪ Contingency	1-5 Years	$25,000	
		▪ Mobilization and demobilization; general; insurance	1-5 Years	$50,000	

NO.	LOCATION	RECOMMENDED IMPROVEMENT			REPLACEMENT VALUE
		DESCRIPTION	TIME OF NEED	ESTIMATE	
4	Beau Creek Bridge 1.5 km east of District Road 17	▪ Repave surface ▪ Bridge cleaning ▪ Extend deck drains ▪ Install rock protection ▪ Traffic control ▪ Contingency ▪ Mobilization and demobilization; general; insurance	6-10 Year 1 Year 6-10 Year 1-5 Years 1-5 Years 1-5 Years 1-5 Years	$40,000 $2,000 $3,000 $10,000 $15,000 $30,000 $40,000	
5	Kahshe River Bridge 1.22 km east of Highway 11	▪ Concrete crack repair ▪ Bridge cleaning ▪ Rout and seal ▪ Sidewalk concrete repairs	1-5 Years 1 Year 1-5 Years 1 Year	$5,000 $2,000 $2,000 $1,000	
6	Lot 31, Conc 4/5 2.44 km north of North Muldrew Lake Road	▪ Install approach barrier ▪ Bridge cleaning ▪ Contingency ▪ Mobilization & Demobilization ▪ Detour and signage	6-10 Year 1 Year 6-10 Year 6-10 Year 6-10 Year	$30,000 $1,500 $10,000 $40,000 $5,000	
7	Narrows Road Bridge 0.22 km east of Highway 169	▪ Bridge cleaning ▪ Install 3 object warning marker signs	1 Year 1 Year	$1,500 $900	
8	Sniders Bay Bridge 0.5 km west of District Road 169	▪ Demolition and replacement ▪ Install approach rail ▪ Contingency ▪ Traffic control ▪ Mobilization and demobilization; general; insurance	1-5 Years 1-5 Years 1-5 Years 1-5 Years 1-5 Years	 $30,000 $70,000 $15,000 $75,000	$610,000
9	Lot 10/11, Conc 10 0.57 km south of Merkley Road	▪ Demolition and replacement ▪ Traffic control ▪ Contingency ▪ Mobilization and demobilization; general, insurance	1-5 Years 1-5 Years 1-5 Years 1-5 Years	 $5,000 $50,000 $75,000	$225,000
11	Fire Route A1 1.0 km south of Merkley Road	▪ Demolition and replacement ▪ Detour signage and traffic control ▪ Contingency ▪ Mobilization and demobilization; general, insurance	1-5 Years 1-5 Years 1-5 Years 1-5 Years	 $5,000 $50,000 $75,000	$270,000

NO.	LOCATION	RECOMMENDED IMPROVEMENT			REPLACEMENT VALUE
		DESCRIPTION	TIME OF NEED	ESTIMATE	
			TOTALS	**$515,400**	**$1,555,000**

Table 5: Culvert Improvement Costs

NO.	LOCATION	RECOMMENDED IMPROVEMENT			REPLACEMENT VALUE
		DESCRIPTION	TIME OF NEED	ESTIMATE	
201	Lots 15/16, Conc 10 1.5 km south of Merkley Road	▪ Rout & seal cracks ▪ Repair embankments ▪ Install object warning marker signs ▪ Bridge cleaning	1-5 Years 1-5 Years 1 Year 1 Year	$1,500 $1,500 $1,000 $1,500	
202	Lot 6, Conc 10/11 4.1 km east of Barkway Road	▪ Remove debris from overflow culvert	1 Year	$500	
			TOTALS	**$6,000**	**N/A**

A summary of the costs by performance deficiency or maintenance need and time of need is provided in Table 6. Where the recommended solution is complete replacement those costs have been included under the appropriate timeline and necessary repair costs have been excluded.

Table 6: Summary of Performance Deficiencies & Maintenance Needs Costs

STRUCTURE PERFORMANCE DEFICIENCY COSTS ($1000S) TIME OF NEED				MAINTENANCE NEED COSTS ($1000S) TIME OF NEED			
URGENT	1-5 YRS	6-10 YRS	TOTAL	URGENT	<1 YEAR	1-2 YRS	TOTAL
$0	$1,805	$258	$2,063	$0	$0	$13.4	$13.4

2.3.3 Additional Investigation

We recommend that additional detailed investigations be completed to monitor the condition of some of the elements over time to confirm if the condition is continuing to worsen or has stabilized.

- Bridge 6 – Lot 31, Conc 4/5
  - Monitor deteriorated timber and movements
- Bridge 9 – Lots 10/11, Conc 10

    - Monitor deteriorated timber and movements
- Bridge 11 – Fire Route A1 Bridge
    - Monitor deformations and movements

The above noted additional investigations may lead to additional investigations such as load capacity assessments in the case of an underwater investigation encountering poor supporting members or it may lead to additional repairs being necessary. These investigations will also confirm the extent of necessary repairs and timing to complete the repairs allowing the Town of Gravenhurst to more accurately predict schedules and budgets.

3 Recommendations & Prioritization

All of the recommended maintenance and rehabilitation works for each of the bridges are listed in the structure summaries in Section 2. The estimated costs for the work at each of the structures is summarized in Table 4 and includes recommended time frames. As mentioned in Section 2 of this report, 'maintenance' work refers to those works that could be completed by the Town's works department, and 'rehabilitation' work refers to repair work that may require higher costs or specialized design. The costing information is preliminary and is for budgeting purposes only. Further breakdown of the estimated costs are included in Appendix A

3.1 RECOMMENDED IMPROVEMENTS

A significant amount of work is required in order to address all deficiencies noted within the Town's bridges infrastructure system, $2.07M over 10 years, as summarized below.

- $2.07M in bridge and culvert repairs, investigations and maintenance needs over the next 10 years were identified. Of which $1.8M for repairs in 1 to 5 years and $258,000 for repairs in 6 to 10 years. Additionally, $13,500 should be budgeted for maintenance items over the next two years.

3.2 PRIORITIZATION OF WORK

It is understood that the Town will not have the funding to complete all of the works immediately. The Town will therefore need to prioritize the structures to ensure that more urgently needed repairs are completed first.

In accordance with the 2009 Bridge Condition Index (BCI): An Overall Measure of Bridge Condition published by the Ministry of Transportation Ontario Engineering Standards Branch. A BCI, BCIp and BSI value was calculated for each structure. Essentially the BCI is a weighted average of the bridge elements and condition states. The BCIp is limited to only the percentage of poor condition of four main areas of the structure: deck, beams, substructure, and barrier. The BSI is the bridge sufficiency index which applies additional factors to the BCI based on sufficiency of the structure for the use such as reduced load posting, length of detour, geometry, and alignment.

Table 7 lists the BCI, BCIp and BSI for each of the bridges and culverts. It is recommended that prioritization of rehabilitation occur based on the bridge sufficiency index. However, structures that have urgent action items should be addressed first.

3.3 STUDY UPDATES

Conditions can change based on the effect of the spring thaw, use, maintenance and other unforeseeable circumstances. The condition of the bridge system should be reviewed on a regular basis (bi-annual) to measure the effectiveness of strategies, sufficiency of funding levels, gauge the extent to which identified needs are being addressed (and if not, to what extent the element sections are deteriorating further) and to ensure the most accurate information is used to determine improvement needs and implementation timing. The condition of the structures must also be reviewed every 2 years to remain compliant with applicable regulations.

Table 7: Structure Priority List

PRIORITY	STRUCTURE NAME	BCIP	BCI	BSI
High Priority (BSI < 40)	9 – Lots 10/11, Conc 10	79.45	26.21	11.21
	11 – Fire Route A1 Bridge	32.40	26.09	14.09
	8 – Sniders Bay Bridge	66.15	32.10	19.10
Medium Priority (40 < BSI < 70)	6 – Lot 31, Conc 4/5	100.0	69.93	57.93
	1 – Robinson Bridge	99.3	72.70	59.70
	201 – Lots 15/16, Conc 10	91.50	63.37	60.37
	4 – Beau Creek Bridge, Lots 15/16, Conc 6	100	74.54	61.54
	5 – Kahshe River Bridge	100	78.04	67.04
Low Priority (BSI > 70)	7 – Narrows Road Bridge, Lot 28, Conc 8	100	89.38	81.38
	C10 – Seehaver Road, Lot 14, Conc 12/13	100	95.06	86.06
	202 – Lot 6, Conc 10/11	100	98.20	94.20
	203 – Lots 15/16, Conc 12	100	100	95
	204 – Riley Lake Road Culvert	100	100	95

4 Summary

Overall most the structures within the Town are in good condition with no detailed investigations recommended in the short term and minimal rehabilitation work recommended however there are 3 structures that are recommended to be replaced. There are various maintenance activities recommended within Section 2 which we recommend be completed at all structures within the timelines noted.

We trust the above is sufficient for your purposes. If you have any questions or comments regarding the above, please do not hesitate to contact our office.

Appendix A: OSIM Forms

MTO Site Number:

Inventory Data:

Structure Name	1 - Robinson Bridge, Lot 2, Conc 6				
Main Highway #	Sparrow Lake Route "D"	On [X] or Under [ ] Structure	Service on Structure	[ ] Navig. Water [ ] Non-Navig. Water [ ] Rail [X] Road [ ] Ped. [ ] Other	
Location Description	2.34 km west of Highway 11		Service under:	[ ] Navig. Water [X] Non-Navig. Water [ ] Rail [ ] Road [ ] Ped. [ ] Other	
Owner/Custodian	Gravenhurst				
MTO Region	Northeastern	Latitude	44° 49' 12" N	Longitude	79° 20' 24" W
Regional Engineer		Heritage Designation:	[X] Not Cons. [ ] Cons./Not App. [ ] List/Not Desig. Desig. [ ] Desig./Not List [ ] Desig. & List		
MTO Area	Gravenhurst	Hwy Class:	Freeway [ ] Arterial [ ] Collector [ ] Local [X]		
Old County		Posted Speed	50	No. of Lanes	1
Township	Gravenhurst	AADT	200	% Truck	0
Structure Type 1	Box beam of girders				
Structure Material 1	Concrete	Traffic Directional Bound	W-E		
Structure Type 2	Concrete deck				
Structure Material 2	Concrete	Inspection Frequency	2	(years)	
Total Deck Length	24.8 (m)	Inspection Year	2019		
Overall Str. Width	8.5 (m)	Inspection Duration	2	(hrs)	
Culvert Length	0 (m)				
Total Deck Area	210.8 (sq.m)				
Roadway Width	8 (m)	Min. Vertical Clearance		(m)	
Skew Angle	30 (Degree)	Detour Distance	N/A	(km)	
No. of Spans	1	Fill on Structure	0	(m)	
Span Lengths	18.4			(m)	
For retaining wall:					
Total Wall Length	6 (m)	Max. Wall Height	2.8	(m)	
Total Wall Area	16.8 (sq.m)	Ave. Wall Height	2.8	(m)	
		Angle of Backfill		(Degrees)	

Historical Data

Year Built	1982	Year of superstruct. Constructed	N/A	
Last Reg. OSIM Inspection	2016	Year of Last Minor Rehab.	N/A	
Last Enh. OSIM Inspection		Year of Last Major Rehab	N/A	
		Current Load Limit	/ /	(tonnes)

Work History: (Date/description)	Investigation History: (Date/description)

MTO Site Number:

Field Inspection Information:

Date of Inspection:	**August 22, 2019**	Type of Inspection:	[X] Reg. OSIM [ ] Enh. OSIM
Inspected By	**Kieran Ferguson**		
Others in Party:	**None**		
Eng. Access Equipment:	**None**		
Special Access Equipment	**Clear**		
Weather	**Clear**	Temperature	**20** °C

Additional Investigations Required:

	Priority			Estimated Cost
	None	Normal	Urgent	
Material Condition Survey				
Detailed Deck Condition Survey:	X			
Non-destructive Delamination Survey of Asphalt-Covered Deck:	X			
Concrete Substructure Condition Survey:	X			
Detailed Coating Condition Survey:	X			
Detailed Timber Investigation:	X			
Post-Tensioned Strand Investigation:	X			
Underwater Investigation	X			
Fatigue Investigation	X			
Seismic Investigation	X			
Structure Evaluation:	X			
Monitoring	X			
Deformations, Settlements and Movements:	X			
Crack Widths:	X			
RSS Horizontal movements of face:	X			
RSS Vertical movements of overall structure:	X			
RSS Local movements or deterioration of face elements:	X			
RSS Horizontal movements within overall structure:	X			
RSS Vertical movements within overall structure	X			
RSS Lateral earth pressure at the back of facing elements	X			
Investigation Notes:		**Total Cost**		**$0.00**

Overall Structure Notes:

Recommended Work on Structure	[ ] None [X] Minor Rehab. [ ] Major Rehab. [ ] Replace
Timing of Recommended Work	[ ] Urgent [X] 1 to 5 years [ ] 6 to 10 years
Overall Comments:	**Structure is in a good condition overall. Could benefit from some minor concrete repairs and regular bridge cleaning.**
Date of Next inspection:	**August 2021**

Overall Bridge Condition

% Poor in Deck	% Poor in Beams	% Poor in Substructure	% Poor in Barrier	Bridge Condition Index (BCI or BCIp)	
				BCIp	BCI
0%	2%	0%	0%	99.30	72.70

Overal Bridge Sufficiency

Traffic	Economic	Width	Alignment	Bridge Sufficiency Index (BSI)
0	3	5	5	59.70

Element Data:

Element Group:	**Approaches**	Length:	**6.0 m**
Element Name:	**Wearing Surface**	Width:	**8.0 m**
Location:	**East and West**	Height:	
Material:	**Surface Treatment**	Count:	**2**
Element Type:		Total Quantity:	**96 sq. m**
Environment:	**Benign**	Limited Inspection:	
Protection System:	**None**		

Condition Data:	Units	Excellent	Good	Fair	Poor*	Performance Deficiencies
	sq.m			**95**	**1**	

Comments: **Rough approaches overall. Many previously patched areas of asphalt. 1-600mm x 600mm pothole on east approach. 1-300mm x 300mm pothole on west approach.**

Recommended Work:	Rehab: ☐	Replace: ☐	Maintenance Needs:	**12 - Bridge Surface Repair**
Urgent: ☐	1-5 Years: ☐	6-10 Years: ☐	None: **X**	Urgent: ☐ 1 Year: **X** 2 Year: ☐
			Pothole repair.	

Element Photo:

Description of Photo: Photo 1 - Approach Wearing Surface.jpg

Element Photo:

Description of Photo: Photo 2 - Approach Wearing Surface.jpg

Element Photo:

Description of Photo: Photo 3 - Approach Wearing Surface.jpg

Element Data:

Element Group:	**Approaches**	Length:	**18.4 m, 33 m, 55 m, 18.4 m**
Element Name:	**Barriers**	Width:	
Location:	**All Quadrants**	Height:	
Material:	**Steel**	Count:	**4**
Element Type:		Total Quantity:	**124.8 m**
Environment:	**Benign**	Limited Inspection:	
Protection System:	**Galvanized Coating**		

Condition Data:	Units	Excellent	Good	Fair	Poor*	Performance Deficiencies
	m	**124.8**				

Comments: **Approach barriers have been recently replaced and are in excellent condition. No damage. Some dirt on rails.**

Recommended Work:	Rehab: ☐	Replace: ☐	Maintenance Needs:	**2 - Bridge Cleaning**
Urgent: ☐	1-5 Years: ☐	6-10 Years: ☐	None: **X**	Urgent: ☐	1 Year: **X**	2 Year: ☐
			Clean dirt from approach barriers.	

Element Photo:

Description of Photo: Photo 5 - Approach Barrier.jpg

Element Photo:

Description of Photo: Photo 6 - Approach Barrier.jpg

Element Photo:

Description of Photo: Photo 7 - Approach Barrier.jpg

Element Data:

Element Group:	**Accessories**	Length:	
Element Name:	**Signs**	Width:	
Location:	**All**	Height:	
Material:	**Steel**	Count:	**4**
Element Type:		Total Quantity:	**4**
Environment:	**Benign**	Limited Inspection:	
Protection System:	**None**		

Condition Data:	Units	Excellent	Good	Fair	Poor*	Performance Deficiencies
	each	**4**				

Comments: **4 Object warning signs are in very good condition.**

Recommended Work:	Rehab: ☐	Replace: ☐	Maintenance Needs:	
Urgent: ☐	1-5 Years: ☐	6-10 Years: ☐	None: **X**	Urgent: ☐	1 Year: ☐	2 Year: ☐

Element Photo:

Description of Photo: Photo 8 - Sign.jpg

Element Photo:

Description of Photo: Photo 9 - Sign.jpg

Element Photo:

Description of Photo: Photo 10 - Sign.jpg

Element Photo:

Description of Photo: Photo 11 - Sign.jpg

Element Photo:

Description of Photo:

Element Data:

Element Group:	**Deck**	Length:	**24.8 m**
Element Name:	**Top / Wearing Surface**	Width:	**8.5 m**
Location:	**All**	Height:	
Material:	**Broom-finished concrete**	Count:	**1**
Element Type:		Total Quantity:	**210.8 sq. m**
Environment:	**Severe**	Limited Inspection:	
Protection System:	**None**		

Condition Data:	Units	Excellent	Good	Fair	Poor*	Performance Deficiencies
	sq.m		**210.8**			

Comments: **Rough, scaled surface throughout. Minor longitudinal cracks. Minor crack along centerline. No potholes or damage.**

Recommended Work:	Rehab: ☐	Replace: ☐	Maintenance Needs:	
Urgent: ☐	1-5 Years: ☐	6-10 Years: ☐	None: ☒	Urgent: ☐ 1 Year: ☐ 2 Year: ☐

Element Photo:

Description of Photo: Photo 12 - Bridge Wearing Surface.jpg

Element Photo:

Description of Photo: Photo 13 - Bridge Wearing Surface.jpg

Element Photo:

Description of Photo: Photo 14 - Bridge Wearing Surface.jpg

Element Data:

Element Group:	**Barrier**	Length:	**24.8 m**
Element Name:	**Hand Rail / Railing System**	Width:	
Location:	**North and South Side**	Height:	
Material:	**Steel**	Count:	**2**
Element Type:		Total Quantity:	**49.6 m**
Environment:	**Benign**	Limited Inspection:	
Protection System:	**Galvanized**		

Condition Data:	Units	Excellent	Good	Fair	Poor*	Performance Deficiencies
	m	**49.6**				

Comments: **Bridge barriers have been recently replaced and are in excellent condition. No damage. Some dirt on rails.**

Recommended Work:	Rehab: ☐	Replace: ☐	Maintenance Needs:	**2 - Bridge Cleaning**
Urgent: ☐	1-5 Years: ☐	6-10 Years: ☐	None: **X**	Urgent: ☐ 1 Year: **X** 2 Year: ☐
			Clean dirt from bridge barriers.	

Element Photo:

Description of Photo: Photo 15 - Bridge Barrier.jpg

Element Photo:

Description of Photo: Photo 16 - Bridge Barrier.jpg

Element Photo:

Description of Photo: Photo 17 - Bridge Barrier.jpg

Element Data:

Element Group:	**Joints**	Length:	**8.5 m**
Element Name:	**Seals/Sealants**	Width:	
Location:	**West/East**	Height:	
Material:	**Rubber Gasket**	Count:	**2**
Element Type:		Total Quantity:	**17 m**
Environment:	**Benign**	Limited Inspection:	
Protection System:	**None**		

Condition Data:	Units	Excellent	Good	Fair	Poor*	Performance Deficiencies
	m	**17**				

Comments: **Recently replaced seals. Some dirt and debris inside.**

Recommended Work:	Rehab: ☐	Replace: ☐	Maintenance Needs:	**2 - Bridge Cleaning**
Urgent: ☐	1-5 Years: ☐	6-10 Years: ☐	None: **X**	Urgent: ☐ 1 Year: **X** 2 Year: ☐
			Clean sand and debris from seals.	

Element Photo:

Description of Photo: Photo 18 - Seal.jpg

Element Photo:

Description of Photo: Photo 19 - Seal.jpg

Element Photo:

Description of Photo: Photo 20 - Seal.jpg

Element Data:

Element Group:	**Drainage**	Length:	
Element Name:	**Drains**	Width:	**75mm**
Location:	**North/South**	Height:	
Material:		Count:	**6**
Element Type:		Total Quantity:	**6**
Environment:	**Benign**	Limited Inspection:	
Protection System:	**None**		

Condition Data:	Units	Excellent	Good	Fair	Poor*	Performance Deficiencies
	each			**5**	**1**	

Comments: **1 drain is blocked. No damage otherwise. Drains empty onto foundations.**

Recommended Work:	Rehab: ☐	Replace: ☐	Maintenance Needs:	**2 - Bridge Cleaning**
Urgent: ☐	1-5 Years: ☐	6-10 Years: ☐	None: **X**	Urgent: ☐	1 Year: **X**	2 Year: ☐
			Clean out wall drain.	

Element Photo:

Description of Photo: Photo 21 - Drain.jpg

Element Data:

Element Group:	**Abutments**	Length:	**8.5 m**
Element Name:	**Walls**	Width:	
Location:	**East-West**	Height:	**3.0 m (W), 1.6 m (E)**
Material:	**Concrete**	Count:	**2**
Element Type:		Total Quantity:	**39.1 sq. m**
Environment:	**Benign**	Limited Inspection:	
Protection System:	**None**		

Condition Data:	Units	Excellent	Good	Fair	Poor*	Performance Deficiencies
	sq.m		**39.1**			

Comments: **Slightly spalled concrete surface throughout. 2 narrow vertical cracks on east abutment wall.**

Recommended Work:	Rehab: ☐	Replace: ☐	Maintenance Needs:	
Urgent: ☐	1-5 Years: ☐	6-10 Years: ☐	None: ☒	Urgent: ☐	1 Year: ☐	2 Year: ☐

Element Photo:

Description of Photo: Photo 22 - Abutment Wall.jpg

Element Photo:

Description of Photo: Photo 23 - Abutment Wall.jpg

Element Photo:

Description of Photo: Photo 24 - Abutment Wall.jpg

Element Data:

Element Group:	**Abutments**	Length:	**9.5 m**
Element Name:	**Foundation**	Width:	**0.5 m**
Location:	**East-West**	Height:	**0.5 m (W), 1.2 m (E)**
Material:	**Concrete**	Count:	**2**
Element Type:		Total Quantity:	**25.7 sq. m**
Environment:	**Benign**	Limited Inspection:	
Protection System:	**None**		

Condition Data:	Units	Excellent	Good	Fair	Poor*	Performance Deficiencies
	sq.m		**24**	**1.7**		

Comments: **Moderate scaling and honeycombing of concrete surface throughout. Reinforcing extending from top on west side. 1 medium vertical crack (0.5 m). East side has a medium 9.5 m long horizontal crack.**

Recommended Work:	Rehab: ☐	Replace: ☐	Maintenance Needs:	
Urgent: ☐	1-5 Years: ☐	6-10 Years: ☐	None: ☒	Urgent: ☐ 1 Year: ☐ 2 Year: ☐

Element Photo:

Description of Photo: Photo 25 - Foundation.jpg

Element Photo:

Description of Photo: Photo 26 - Foundation.jpg

Element Photo:

Description of Photo: Photo 27 - Foundation.jpg

Element Data:

Element Group:	**Deck**	Length:	**18.4 m**
Element Name:	**Soffit**	Width:	**8.5 m**
Location:	**All**	Height:	
Material:	**Concrete**	Count:	**1**
Element Type:		Total Quantity:	**156.4 sq. m**
Environment:	**Benign**	Limited Inspection:	
Protection System:	**None**		

Condition Data:	Units	Excellent	Good	Fair	Poor*	Performance Deficiencies
	sq.m		**153**		**3.4**	

Comments: **Some light moisture staining throughout. 8 small 200mm x 100mm delaminations exposing reinforcing steel.**

Recommended Work:	Rehab: [X]	Replace: [ ]	Maintenance Needs:	
Urgent: [ ]	1-5 Years: [X]	6-10 Years: [ ]	None: [ ]	Urgent: [ ] 1 Year: [ ] 2 Year: [ ]
Patch concrete.				

Element Photo:

Description of Photo: Photo 28 - Soffit.jpg

Element Photo:

Description of Photo: Photo 29 - Soffit.jpg

Element Photo:

Description of Photo: Photo 30 - Soffit.jpg

Element Data:

Element Group:	**Abutments**	Length:	**3.2 m**
Element Name:	**Wing Walls**	Width:	
Location:	**All Quadrants**	Height:	**3.0 m**
Material:	**Concrete**	Count:	**4**
Element Type:		Total Quantity:	**38.4 sq. m**
Environment:	**Benign**	Limited Inspection:	
Protection System:	**None**		

Condition Data:	Units	Excellent	Good	Fair	Poor*	Performance Deficiencies
	sq.m			**38.4**		

Comments: **Steel ties sticking out of southwest and northwest wingwalls. Concrete has a scaled surface and is in fair condition overall.**

Recommended Work:	Rehab: ☐	Replace: ☐	Maintenance Needs:	
Urgent: ☐	1-5 Years: ☐	6-10 Years: ☐	None: **X**	Urgent: ☐	1 Year: ☐	2 Year: ☐

Element Photo:

Description of Photo: Photo 31 - Wingwall.jpg

Element Photo:

Description of Photo: Photo 32 - Wingwall.jpg

Element Photo:

Description of Photo:

Element Data:

Element Group:	**Abutments**	Length:	**2.4 m**
Element Name:	**Gabion Baskets**	Width:	
Location:	**Northeast and southeast quadrants**	Height:	**1.2 m**
Material:	**Rock and steel cage**	Count:	**2**
Element Type:		Total Quantity:	**5.76 sq. m**
Environment:	**Benign**	Limited Inspection:	
Protection System:	**None**		

Condition Data:	Units	Excellent	Good	Fair	Poor*	Performance Deficiencies
	sq.m		**5.76**			

Comments: **Gabion walls on northeast and southeast sides are in good condition, some warping of steel baskets throughout.**

Recommended Work:	Rehab: ☐	Replace: ☐	Maintenance Needs:	
Urgent: ☐	1-5 Years: ☐	6-10 Years: ☐	None: **X**	Urgent: ☐	1 Year: ☐	2 Year: ☐

Element Photo:

Description of Photo: Photo 33 - Gabion Baskets.jpg

Element Photo:

Description of Photo: Photo 34 - Gabion Baskets.jpg

Element Photo:

Description of Photo: Photo 35 - Gabion Baskets.jpg

Element Data:

Element Group:	**Abutments**	Length:	**6.0 m**
Element Name:	**Retaining Wall**	Width:	
Location:	**Northeast quadrant**	Height:	**2.8 m**
Material:	**Stone Masonry/Concrete**	Count:	**1**
Element Type:		Total Quantity:	**16.8 sq. m**
Environment:	**Benign**	Limited Inspection:	
Protection System:	**None**		

Condition Data:	Units	Excellent	Good	Fair	Poor*	Performance Deficiencies
	sq.m			**12**	**4.8**	

Comments: **Wide 2.8 m vertical crack. Retaining wall should be replaced.**

Recommended Work:	Rehab: [ ]	Replace: [X]	Maintenance Needs:	
Urgent: [ ]	1-5 Years: [X]	6-10 Years: [ ]	None: [ ]	Urgent: [ ] 1 Year: [ ] 2 Year: [ ]
Replace retaining wall.				

Element Photo:

Description of Photo: Photo 36 - Stone Retaining Wall.jpg

Element Data:

Element Group:	**Embankments**	Length:	
Element Name:	**Embankments**	Width:	
Location:	**All**	Height:	
Material:	**Soil/Rock/Grass**	Count:	
Element Type:		Total Quantity:	**4**
Environment:	**Benign**	Limited Inspection:	
Protection System:	**None**		

Condition Data:	Units	Excellent	Good	Fair	Poor*	Performance Deficiencies
	each			**4**		

Comments: **Very steep embankments on west side. Southeast embankment is a rock face.**

Recommended Work:	Rehab: ☐	Replace: ☐	Maintenance Needs:	
Urgent: ☐	1-5 Years: ☐	6-10 Years: ☐	None: ☒	Urgent: ☐ 1 Year: ☐ 2 Year: ☐

Element Photo:

Description of Photo: Photo 37 - Embankment.jpg

Element Photo:

Description of Photo: Photo 38 - Embankment.jpg

Element Photo:

Description of Photo: Photo 39 - North Side.jpg

Element Photo:

Description of Photo: Photo 40 - Rock Protection.jpg

Element Photo:

Description of Photo: Photo 41 - Rock Protection.jpg

Element Data:

Element Group:	**Watercourse**	Length:	
Element Name:	**Watercourse**	Width:	
Location:	**Under Bridge**	Height:	
Material:		Count:	
Element Type:		Total Quantity:	**1**
Environment:	**Benign**	Limited Inspection:	
Protection System:	**None**		

Condition Data:	Units	Excellent	Good	Fair	Poor*	Performance Deficiencies
	all		**1**			

Comments: **Flow is unobstructed.**

Recommended Work:	Rehab: ☐	Replace: ☐	Maintenance Needs:	
Urgent: ☐	1-5 Years: ☐	6-10 Years: ☐	None: **X**	Urgent: ☐	1 Year: ☐	2 Year: ☐

Element Photo:

Description of Photo: Photo 42 - Watercourse.jpg

Element Photo:

Description of Photo: Photo 43 - Watercourse.jpg

Element Photo:

Description of Photo:

Repair and Rehabilitation Required:		Priority				Estimated Structural Cost
Element[1]	Repair and Rehabilitation Required[2]	6 to 10 Years	1 to 5 Years	Within 1 Year	Urgent	
Structure	Demolition					
Structure	Replacement					
OR						
Deck	Rehab. = Patch waterproof and pave	**X**				**$115,000.00**
Sidewalk/Curb	Rehab. =					
Barrier	Replace = Retaining wall replacement		**X**			**$50,000.00**
Joints	Replace =					
Beams	Rehab. = Patch soffit concrete		**X**			**$10,000.00**
Abutment	Rehab. =					
Pier	Rehab. =					
Other						
Estimated Rehabilitated or Replacement Structure Dimensions[3]						
Total Deck Length (m)	Overall Str. Width (m)				Total Structural Cost	**$175,000.00**

1 - Indicate specific costs for structure replacement OR for rehabilitation under the given headings.
2 - Give a very brief description of the rehabilitation work required.
3 - Estimated structure dimensions after completion of the proposed work - if it is expected to change.

Associated Work	Comments	Estimated Associated Work Cost
Approaches	**Repave**	**$15,000.00**
Detours	**Detour Signage and Traffic Control**	**$10,000.00**
Traffic Control		
Utilities		
Other	**Bridge Cleaning**	**$1,500.00**
	Contingencies	**$25,000.00**
	Mobilization and Demobilization; General; Insurance	**$50,000.00**
	Total Associated Work Cost	**$101,500.00**

Total Construction Cost	**$276,500.00**

Justification:

Newly installed approach and bridge barriers and expansion joints are in excellent condition but need regular cleaning. Some concrete patch repairs needed for soffit. Old masonry retaining wall is deteriorating and should be replaced.

MTO Site Number:

Inventory Data:

Structure Name	4 - Beau Creek Bridge, Lot 15/16, Conc 6 South							
Main Highway #	Jones Road	On Structure [X]	or Under [ ]	Service on Structure	[ ] Navig. Water	[ ] Non-Navig. Water		
					[ ] Rail	[X] Road	[ ] Ped.	[ ] Other
Location Description	1.5 km east of District Road 17			Service under:	[ ] Navig. Water	[X] Non-Navig. Water		
					[ ] Rail	[ ] Road	[ ] Ped.	[ ] Other
Owner/Custodian	Gravenhurst							
MTO Region	Northeastern	Latitude	44° 56' 24" N	Longitude	79° 20' 60" W			
Regional Engineer		Heritage Designation:	[X] Not Cons.	[ ] Cons./Not App.	[ ] List/Not Desig.			
			Desig.	[ ] Desig./Not List	[ ] Desig. & List			
MTO Area	Gravenhurst	Hwy Class:	Freeway [ ]	Arterial [ ]	Collector [ ]	Local [X]		
Old County		Posted Speed	50	No. of Lanes	1			
Township	Gravenhurst	AADT	150	% Truck	0			
Structure Type 1	Rigid frame							
Structure Material 1	Concrete	Traffic Directional Bound	E-W					
Structure Type 2	Concrete deck							
Structure Material 2	Concrete	Inspection Frequency	2	(years)				
Total Deck Length	7.2 (m)	Inspection Year	2019					
Overall Str. Width	9.2 (m)	Inspection Duration	2	(hrs)				
Culvert Length	0 (m)							
Total Deck Area	66.24 (sq.m)							
Roadway Width	8.4 (m)	Min. Vertical Clearance		(m)				
Skew Angle	0 (Degree)	Detour Distance	N/A	(km)				
No. of Spans	1	Fill on Structure	0	(m)				
Span Lengths	6.5 (m)							
For retaining wall:								
Total Wall Length	(m)	Max. Wall Height	(m)					
Total Wall Area	(sq.m)	Ave. Wall Height	(m)					
		Angle of Backfill	(Degrees)					

Historical Data

Year Built	1976	Year of superstruct. Constructed	N/A	
Last Reg. OSIM Inspection	2016	Year of Last Minor Rehab.	N/A	
Last Enh. OSIM Inspection		Year of Last Major Rehab	N/A	
		Current Load Limit	/ /	(tonnes)

Work History: (Date/description)	Investigation History: (Date/description)

MTO Site Number:

Field Inspection Information:

Date of Inspection:	**August 22, 2019**	Type of Inspection:	[ ] Reg. OSIM [X] Enh. OSIM
Inspected By	**Kieran Ferguson**		
Others in Party:	**None**		
Eng. Access Equipment:	**None**		
Special Access Equipment	**Clear**		
Weather	**Clear**	Temperature	**20** °C

Additional Investigations Required:

	Priority			Estimated Cost
	None	Normal	Urgent	
Material Condition Survey				
Detailed Deck Condition Survey:	X			
Non-destructive Delamination Survey of Asphalt-Covered Deck:	X			
Concrete Substructure Condition Survey:	X			
Detailed Coating Condition Survey:	X			
Detailed Timber Investigation:	X			
Post-Tensioned Strand Investigation:	X			
Underwater Investigation	X			
Fatigue Investigation	X			
Seismic Investigation	X			
Structure Evaluation:	X			
Monitoring	X			
Deformations, Settlements and Movements:	X			
Crack Widths:	X			
RSS Horizontal movements of face:	X			
RSS Vertical movements of overall structure:	X			
RSS Local movements or deterioration of face elements:	X			
RSS Horizontal movements within overall structure:	X			
RSS Vertical movements within overall structure	X			
RSS Lateral earth pressure at the back of facing elements	X			
Investigation Notes:		**Total Cost**		**$0.00**

Overall Structure Notes:

Recommended Work on Structure	[X] None [ ] Minor Rehab. [ ] Major Rehab. [ ] Replace
Timing of Recommended Work	[ ] Urgent [ ] 1 to 5 years [ ] 6 to 10 years
Overall Comments:	**Structure is in good condition overall, but would benefit from regular bridge cleaning and a newly paved and waterproofed wearing surface.**
Date of Next inspection:	**August 2021**

Overall Bridge Condition

% Poor in Deck	% Poor in Beams	% Poor in Substructure	% Poor in Barrier	Bridge Condition Index (BCI or BCIp)	
				BCIp	BCI
0%	0%	0%	0%	100.00	74.54

Overal Bridge Sufficiency

Traffic	Economic	Width	Alignment	Bridge Sufficiency Index (BSI)
0	3	5	5	61.54

Element Data:

Element Group:	**Approaches**	Length:	**6.0 m**
Element Name:	**Wearing Surface**	Width:	**8.4 m**
Location:	**West and east**	Height:	
Material:	**Surface Treatment**	Count:	**2**
Element Type:		Total Quantity:	**100.8 sq, m**
Environment:	**Severe**	Limited Inspection:	
Protection System:	**None**		

Condition Data:	Units	Excellent	Good	Fair	Poor*	Performance Deficiencies
	sq.m			**95**	**5.8**	

Comments: **Large 1.0 m x 1.0 m x 50mm deep pothole on west side. Fair condition otherwise. Many existing patches in fair condition. Some dirt accumulation at sides of road.**

Recommended Work:	Rehab: [X]	Replace: [ ]	Maintenance Needs:	**2 - Bridge Cleaning**
Urgent: [ ]	1-5 Years: [ ]	6-10 Years: [X]	None: [X]	Urgent: [ ] 1 Year: [X] 2 Year: [ ]
Repave surface.			**Clean dirt and sand from road.**	

Element Photo:

Description of Photo: Photo 1 - Approach Wearing Surface.jpg

Element Photo:

Description of Photo: Photo 2 - Approach Wearing Surface.jpg

Element Photo:

Description of Photo: Photo 3 - Approach Wearing Surface.jpg

Element Data:

Element Group:	**Approaches**	Length:	**28.4 m, 23 m, 64 m, 19.2 m**
Element Name:	**Barriers**	Width:	
Location:	**All Quadrants**	Height:	
Material:	**Steel / Wood**	Count:	**4**
Element Type:		Total Quantity:	**134.6 m**
Environment:	**Moderate**	Limited Inspection:	
Protection System:	**Galvanized Coating**		

Condition Data:	Units	Excellent	Good	Fair	Poor*	Performance Deficiencies
	m	**134.3**	**0.3**			

Comments: **Newly installed approach barriers. 1-300mm long large deformation on northwest approach. Some dirt accumulation.**

Recommended Work:	Rehab: ☐ Replace: ☐	Maintenance Needs:	**2 - Bridge Cleaning**
Urgent: ☐ 1-5 Years: ☐ 6-10 Years: ☐ None: **X**		Urgent: ☐ 1 Year: **X** 2 Year: ☐	
		Clean dirt from barrier.	

Element Photo:

Description of Photo: Photo 4 - Approach Barrier.jpg

Element Photo:

Description of Photo: Photo 5 - Approach Barrier.jpg

Element Photo:

Description of Photo: Photo 6 - Approach Barrier.jpg

Element Data:

Element Group:	**Accessories**	Length:	
Element Name:	**Signs**	Width:	
Location:	**All**	Height:	
Material:	**Steel**	Count:	**4**
Element Type:		Total Quantity:	**4**
Environment:	**Benign**	Limited Inspection:	
Protection System:	**None**		

Condition Data:	Units	Excellent	Good	Fair	Poor*	Performance Deficiencies
	each	**4**				

Comments: **4 object warning signs appear new and are in excellent condition.**

Recommended Work:	Rehab:	Replace:	Maintenance Needs:	**2 - Bridge Cleaning**
Urgent:	1-5 Years:	6-10 Years:	None: **X**	Urgent: 1 Year: **X** 2 Year:
			Clean off signs	

Element Photo:

Description of Photo: Photo 7 - Sign.jpg

Element Photo:

Description of Photo: Photo 8 - Sign.jpg

Element Photo:

Description of Photo: Photo 9 - Sign.jpg

Element Photo:

Description of Photo: Photo 10 - Sign.jpg

Element Photo:

Description of Photo:

Element Data:

Element Group:	**Deck**	Length:	**7.2 m**
Element Name:	**Top / Wearing Surface**	Width:	**9.2 m**
Location:	**All**	Height:	
Material:	**Asphalt**	Count:	**1**
Element Type:		Total Quantity:	**66.24 sq. m**
Environment:	**Severe**	Limited Inspection:	
Protection System:	**None**		

Condition Data:	Units	Excellent	Good	Fair	Poor*	Performance Deficiencies
	sq.m			**64**	**2.24**	

Comments: **Several light (up to 5mm wide) longitudinal cracks. No potholes or missing asphalt. Heavy accumulation of dirt at curbs.**

Recommended Work:	Rehab: [X]	Replace: [ ]	Maintenance Needs:	**15 - Rout and Seal**
Urgent: [ ]	1-5 Years: [ ]	6-10 Years: [X]	None: [ ]	Urgent: [ ] 1 Year: [X] 2 Year: [ ]
Repave surface.			**Clean dirt and sand from surface. Rout and seal cracks**	

Element Photo:

Description of Photo: Photo 11 - Bridge Wearing Surface.jpg

Element Photo:

Description of Photo: Photo 12 - Bridge Wearing Surface.jpg

Element Photo:

Description of Photo:

Element Data:

Element Group:	**Barrier**	Length:	**7.2 m**
Element Name:	**Hand Rail / Railing System**	Width:	
Location:	**North and south side**	Height:	
Material:	**Steel**	Count:	**2**
Element Type:		Total Quantity:	**14.4 m**
Environment:	**Moderate**	Limited Inspection:	
Protection System:	**Galvanized**		

Condition Data:	Units	Excellent	Good	Fair	Poor*	Performance Deficiencies
	m	**14.4**				

Comments: **Newly installed approach barriers. Some dirt accumulation.**

Recommended Work:	Rehab: ☐	Replace: ☐	Maintenance Needs:	**2 - Bridge Cleaning**
Urgent: ☐	1-5 Years: ☐	6-10 Years: ☐	None: **X**	Urgent: ☐ 1 Year: **X** 2 Year: ☐
			Clean dirt from barrier.	

Element Photo:

Description of Photo: Photo 13 - Bridge Barrier.jpg

Element Photo:

Description of Photo: Photo 14 - Bridge Barrier.jpg

Element Photo:

Description of Photo: Photo 15 - Bridge Barrier.jpg

Element Data:

Element Group:	**Drainage**	Length:	
Element Name:	**Drains**	Width:	**0.15 m**
Location:	**West/East**	Height:	
Material:		Count:	**2**
Element Type:		Total Quantity:	**2**
Environment:	**Benign**	Limited Inspection:	
Protection System:	**None**		

Condition Data:	Units	Excellent	Good	Fair	Poor*	Performance Deficiencies
	each			**2**		

Comments: **Dirt accumulating around drain but not blocked. Drains do not extend 150mm beyond soffit which is less than standard.**

Recommended Work:	Rehab: [X]	Replace: [ ]	Maintenance Needs:	**2 - Bridge Cleaning**
Urgent: [ ]	1-5 Years: [ ]	6-10 Years: [X]	None: [ ]	Urgent: [ ] 1 Year: [X] 2 Year: [ ]
Consider extending drains at time of next major rehabilitation.			**Clean bridge surface.**	

Element Photo:

Description of Photo: Photo 16 - Drain.jpg

Element Photo:

Description of Photo: Photo 17 - Drain.jpg

Element Photo:

Description of Photo:

Element Data:

Element Group:	**Abutments**	Length:	**9.2 m**
Element Name:	**Walls**	Width:	
Location:	**East-West**	Height:	**2.0 m**
Material:	**Concrete**	Count:	**2**
Element Type:		Total Quantity:	**36.8 sq. m**
Environment:	**Benign**	Limited Inspection:	
Protection System:	**None**		

Condition Data:	Units	Excellent	Good	Fair	Poor*	Performance Deficiencies
	sq.m		**36.8**			

Comments: **Walls have a moderate scaled surface throughout. No damage.**

Recommended Work:	Rehab:	Replace:	Maintenance Needs:	
Urgent:	1-5 Years:	6-10 Years:	None: **X**	Urgent: 1 Year: 2 Year:

Element Photo:

Description of Photo: Photo 18 - Abutment Wall.jpg

Element Photo:

Description of Photo: Photo 19 - Abutment Wall.jpg

Element Photo:

Description of Photo: Photo 20 - Abutment Wall.jpg

Element Data:

Element Group:	**Deck**	Length:	**9.2 m**
Element Name:	**Soffit**	Width:	**6.5 m**
Location:	**All**	Height:	
Material:	**Concrete**	Count:	**1**
Element Type:		Total Quantity:	**59.8 sq. m**
Environment:	**Benign**	Limited Inspection:	
Protection System:	**None**		

Condition Data:	Units	Excellent	Good	Fair	Poor*	Performance Deficiencies
	sq.m		**59.8**			

Comments: **Soffit has a lightly scaled surface throughout. No cracks or other damage. Exterior edges of soffit are wet.**

Recommended Work:	Rehab: ☐	Replace: ☐	Maintenance Needs:	
Urgent: ☐	1-5 Years: ☐	6-10 Years: ☐	None: **X**	Urgent: ☐	1 Year: ☐	2 Year: ☐

Element Photo:

Description of Photo: Photo 21 - Soffit.jpg

Element Photo:

Description of Photo: Photo 23 - Soffit.jpg

Element Photo:

Description of Photo: Photo 24 - Soffit.jpg

Element Data:

Element Group:	**Embankments**	Length:	
Element Name:	**Embankments**	Width:	
Location:	**All**	Height:	
Material:	**Soil/Rock/Grass**	Count:	**4**
Element Type:		Total Quantity:	**4**
Environment:	**Benign**	Limited Inspection:	
Protection System:	**None**		

Condition Data:	Units	Excellent	Good	Fair	Poor*	Performance Deficiencies
	each			**4**		

Comments: **Steep with large rock boulders, peices of concrete and heavy vegetation. Some loss of material beneath rocks/concrete.**

Recommended Work:	Rehab: [X]	Replace: [ ]	Maintenance Needs:	
Urgent: [ ]	1-5 Years: [X]	6-10 Years: [ ]	None: [ ]	Urgent: [ ] 1 Year: [ ] 2 Year: [ ]
Install rock protection around abutments.				

Element Photo:

Description of Photo: Photo 25 - Embankment.jpg

Element Photo:

Description of Photo: Photo 26 - Embankment.jpg

Element Photo:

Description of Photo: Photo 27 - Embankment.jpg

Element Data:

Element Group:	**Watercourse**	Length:	
Element Name:	**Watercourse**	Width:	
Location:	**Under Bridge**	Height:	
Material:		Count:	
Element Type:		Total Quantity:	**1**
Environment:	**Benign**	Limited Inspection:	
Protection System:	**None**		

Condition Data:	Units	Excellent	Good	Fair	Poor*	Performance Deficiencies
	all		**1**			

Comments: **Flow is unobstructed.**

Recommended Work:	Rehab: ☐	Replace: ☐	Maintenance Needs:	
Urgent: ☐	1-5 Years: ☐	6-10 Years: ☐	None: **X**	Urgent: ☐	1 Year: ☐	2 Year: ☐

Element Photo:

Description of Photo: Photo 28 - Waterway.jpg

Element Photo:

Description of Photo: Photo 29 - Waterway.jpg

Element Photo:

Description of Photo:

Repair and Rehabilitation Required:		Priority				Estimated Structural Cost
Element[1]	Repair and Rehabilitation Required[2]	6 to 10 Years	1 to 5 Years	Within 1 Year	Urgent	
Structure	Demolition					
Structure	Replacement					
OR						
Deck	Rehab. = Repave surface	X				**$40,000.00**
Sidewalk/Curb	Rehab. =					
Barrier	Replace =					
Joints	Replace =					
Beams	Rehab. =					
Abutment	Rehab. =					
Pier	Rehab. =					
Drainage	Rehab. = Extend deck drains	X				**$3,000.00**
Other	Rehab. = Install rock protection		X			**$10,000.00**
Estimated Rehabilitated or Replacement Structure Dimensions[3]						
Total Deck Length (m)	Overall Str. Width (m)				Total Structural Cost	**$53,000.00**

1 - Indicate specific costs for structure replacement OR for rehabilitation under the given headings.
2 - Give a very brief description of the rehabilitation work required.
3 - Estimated structure dimensions after completion of the proposed work - if it is expected to change.

Associated Work	Comments	Estimated Associated Work Cost
Approaches		
Detours		
Traffic Control		**$15,000.00**
Utilities		
Other	**Bridge cleaning**	**$2,000.00**
	Contingencies	**$30,000.00**
	Mobilization and Demobilization; General; Insurance	**$40,000.00**
	Total Associated Work Cost	**$87,000.00**

Total Construction Cost	**$140,000.00**

Justification:

Newly installed guide rail system in excellent condition but will benefit from regular bridge cleaning. Bridge condition rating would improve with a newly paved and waterproofed wearing surface.

MTO Site Number:

Inventory Data:

Structure Name	5 - Kahshe River Bridge, Lot 15, Conc 6				
Main Highway #	South Kahshe Lake Road	On [X] or Under [ ] Structure	Service on Structure	[ ] Navig. Water [ ] Non-Navig. Water [ ] Rail [X] Road [ ] Ped. [ ] Other	
Location Description	1.22 km east of Highway 11		Service under:	[ ] Navig. Water [X] Non-Navig. Water [ ] Rail [ ] Road [ ] Ped. [ ] Other	
Owner/Custodian	Gravenhurst				
MTO Region	Northeastern	Latitude	44° 50' 24" N	Longitude	79° 17' 60" W
Regional Engineer		Heritage Designation:	[ ] Not Cons. [X] Cons./Not App. [ ] List/Not Desig. Desig. [ ] Desig./Not List [ ] Desig. & List		
MTO Area	Gravenhurst	Hwy Class:	Freeway [ ] Arterial [ ] Collector [ ] Local [X]		
Old County		Posted Speed	40	No. of Lanes	1
Township	Gravenhurst	AADT	200	% Truck	0
Structure Type 1	I-Beam or Girders				
Structure Material 1	Steel	Traffic Directional Bound	N-S		
Structure Type 2	Concrete deck				
Structure Material 2	Concrete	Inspection Frequency	2	(years)	
Total Deck Length	41.6 (m)	Inspection Year	2019		
Overall Str. Width	8.2 (m)	Inspection Duration	2	(hrs)	
Culvert Length	0 (m)				
Total Deck Area	341.12 (sq.m)				
Roadway Width	5.5 (m)	Min. Vertical Clearance		(m)	
Skew Angle	0 (Degree)	Detour Distance	N/A	(km)	
No. of Spans	2	Fill on Structure	0	(m)	
Span Lengths	15, 15			(m)	
For retaining wall:					
Total Wall Length	(m)	Max. Wall Height		(m)	
Total Wall Area	(sq.m)	Ave. Wall Height		(m)	
		Angle of Backfill		(Degrees)	

Historical Data

Year Built	2004	Year of superstruct. Constructed	N/A	
Last Reg. OSIM Inspection	None	Year of Last Minor Rehab.	N/A	
Last Enh. OSIM Inspection		Year of Last Major Rehab	N/A	
		Current Load Limit	/ /	(tonnes)

Work History: (Date/description)	Investigation History: (Date/description)

MTO Site Number:

Field Inspection Information:

Date of Inspection:	**August 22, 2019**	Type of Inspection:	[X] Reg. OSIM [ ] Enh. OSIM
Inspected By	**Kieran Ferguson**		
Others in Party:	**None**		
Eng. Access Equipment:	**None**		
Special Access Equipment	**Clear**		
Weather	**Clear**	Temperature	**20** °C

Additional Investigations Required:

	Priority			Estimated Cost
	None	Normal	Urgent	
Material Condition Survey				
Detailed Deck Condition Survey:	X			
Non-destructive Delamination Survey of Asphalt-Covered Deck:	X			
Concrete Substructure Condition Survey:	X			
Detailed Coating Condition Survey:	X			
Detailed Timber Investigation:	X			
Post-Tensioned Strand Investigation:	X			
Underwater Investigation	X			
Fatigue Investigation	X			
Seismic Investigation	X			
Structure Evaluation:	X			
Monitoring	X			
Deformations, Settlements and Movements:	X			
Crack Widths:	X			
RSS Horizontal movements of face:	X			
RSS Vertical movements of overall structure:	X			
RSS Local movements or deterioration of face elements:	X			
RSS Horizontal movements within overall structure:	X			
RSS Vertical movements within overall structure	X			
RSS Lateral earth pressure at the back of facing elements	X			
Investigation Notes:		**Total Cost**		**$0.00**

Overall Structure Notes:

Recommended Work on Structure	[X] None [ ] Minor Rehab. [ ] Major Rehab. [ ] Replace
Timing of Recommended Work	[ ] Urgent [ ] 1 to 5 years [ ] 6 to 10 years
Overall Comments:	**Structure is generally in a good condition overall. Bridge would benefit from regular cleaning.**
Date of Next inspection:	**August 2021**

Overall Bridge Condition

% Poor in Deck	% Poor in Beams	% Poor in Substructure	% Poor in Barrier	Bridge Condition Index (BCI or BCIp)	
				BCIp	BCI
0%	0%	0%	0%	100.00	78.04

Overal Bridge Sufficiency

Traffic	Economic	Width	Alignment	Bridge Sufficiency Index (BSI)
0	1	5	5	67.04

Element Data:

Element Group:	**Approaches**	Length:	**6.0 m**
Element Name:	**Wearing Surface**	Width:	**5.5 m**
Location:	**North and south**	Height:	
Material:	**Surface Treatment**	Count:	**2**
Element Type:		Total Quantity:	**66 sq. m**
Environment:	**Benign**	Limited Inspection:	
Protection System:	**None**		

Condition Data:	Units	Excellent	Good	Fair	Poor*	Performance Deficiencies
	sq.m		**66**			

Comments: **No cracks or potholes. Asphalt is in good condition. Some dirt accumulation at sides of road.**

Recommended Work:	Rehab: ☐	Replace: ☐	Maintenance Needs:	**2 - Bridge Cleaning**
Urgent: ☐	1-5 Years: ☐	6-10 Years: ☐	None: **X**	Urgent: ☐	1 Year: **X**	2 Year: ☐
			Clean dirt from surface.	

Element Photo:

Description of Photo: Photo 1 - Approach Wearing Surface.jpg

Element Photo:

Description of Photo: Photo 2 - Approach Wearing Surface.jpg

Element Photo:

Description of Photo:

Element Data:

Element Group:	**Approaches**	Length:	**25 m, 78 m, 32 m, 32 m**
Element Name:	**Barriers**	Width:	
Location:	**All Quadrants**	Height:	
Material:	**Steel**	Count:	**4**
Element Type:		Total Quantity:	**167 sq. m**
Environment:	**Benign**	Limited Inspection:	
Protection System:	**Galvanized Coating**		

Condition Data:	Units	Excellent	Good	Fair	Poor*	Performance Deficiencies
	m	**167**				

Comments: **Newly installed end treatments and bolted connections are in excellent condition. Steel has no damage and minimal scrapes.**

Recommended Work:	Rehab: ☐	Replace: ☐	Maintenance Needs:	
Urgent: ☐	1-5 Years: ☐	6-10 Years: ☐	None: ☒	Urgent: ☐	1 Year: ☐	2 Year: ☐

Element Photo:

Description of Photo: Photo 3 - Approach Barrier.jpg

Element Photo:

Description of Photo: Photo 4 - Approach Barrier.jpg

Element Photo:

Description of Photo: Photo 5 - Approach Barrier.jpg

Element Data:

Element Group:	**Accessories**	Length:	
Element Name:	**Signs**	Width:	
Location:	**All**	Height:	
Material:	**Steel**	Count:	**4**
Element Type:		Total Quantity:	**4**
Environment:	**Benign**	Limited Inspection:	
Protection System:	**None**		

Condition Data:	Units	Excellent	Good	Fair	Poor*	Performance Deficiencies
	each	**4**				

Comments: **4 object warning signs are in great condtion.**

Recommended Work:	Rehab: ☐	Replace: ☐	Maintenance Needs:	
Urgent: ☐	1-5 Years: ☐	6-10 Years: ☐	None: **X**	Urgent: ☐	1 Year: ☐	2 Year: ☐

Element Photo:

Description of Photo: Photo 6 - Sign.jpg

Element Photo:

Description of Photo: Photo 7 - Sign.jpg

Element Photo:

Description of Photo: Photo 8 - Sign.jpg

Element Photo:

Description of Photo: Photo 9 - Sign.jpg

Element Photo:

Description of Photo:

Element Data:

Element Group:	**Deck**	Length:	**41.6 m**
Element Name:	**Top / Wearing Surface**	Width:	**5.5 m**
Location:	**All**	Height:	
Material:	**Asphalt**	Count:	**1**
Element Type:		Total Quantity:	**228.8 sq. m**
Environment:	**Benign**	Limited Inspection:	
Protection System:	**None**		

Condition Data:	Units	Excellent	Good	Fair	Poor*	Performance Deficiencies
	sq.m		**228.8**			

Comments: **No cracks or potholes. Asphalt is in good condition. Some dirt accumulation at edges.**

Recommended Work:	Rehab: ☐	Replace: ☐	Maintenance Needs:	**2 - Bridge Cleaning**
Urgent: ☐	1-5 Years: ☐	6-10 Years: ☐	None: **X**	Urgent: ☐ 1 Year: ☐ 2 Year: **X**
			Surface should be cleaned.	

Element Photo:

Description of Photo: Photo 10 - Bridge Wearing Surface.jpg

Element Data:

Element Group:	**Barrier**	Length:	**36.6 m**
Element Name:	**Hand Rail / Railing System**	Width:	
Location:	**West and east side**	Height:	
Material:	**Steel**	Count:	**2**
Element Type:		Total Quantity:	**73.2 m**
Environment:	**Benign**	Limited Inspection:	
Protection System:	**Galvanized**		

Condition Data:	Units	Excellent	Good	Fair	Poor*	Performance Deficiencies
	m	**72**	**1.2**			

Comments: **Steel barrier is in very good condition overall. Minor scrapes and scratches throughout steel surface.**

Recommended Work:	Rehab: ☐	Replace: ☐	Maintenance Needs:	
Urgent: ☐	1-5 Years: ☐	6-10 Years: ☐	None: **X**	Urgent: ☐	1 Year: ☐	2 Year: ☐

Element Photo:

Description of Photo: Photo 11 - Bridge Barrier.jpg

Element Photo:

Description of Photo: Photo 12 - Bridge Barrier.jpg

Element Photo:

Description of Photo: Photo 13 - Bridge Barrier.jpg

Element Data:

Element Group:	**Barrier**	Length:	**2.4 m**
Element Name:	**Hand Rail / Railing System**	Width:	**0.3 m**
Location:	**Each quadrant**	Height:	**1.05 m**
Material:	**Concrete**	Count:	**4**
Element Type:		Total Quantity:	**10.1 sq. m**
Environment:	**Benign**	Limited Inspection:	
Protection System:	**Galvanized**		

Condition Data:	Units	Excellent	Good	Fair	Poor*	Performance Deficiencies
	sq.m		**9.5**	**0.6**		

Comments: **Concrete is generally in good condition overall. Some spalls on concrete edges.**

Recommended Work:	Rehab: ☐	Replace: ☐	Maintenance Needs:	
Urgent: ☐	1-5 Years: ☐	6-10 Years: ☐	None: ☒	Urgent: ☐	1 Year: ☐	2 Year: ☐

Element Photo:

Description of Photo: Photo 14 - Concrete Barrier.jpg

Element Photo:

Description of Photo: Photo 15 - Concrete Barrier.jpg

Element Photo:

Description of Photo: Photo 16 - Concrete Barrier.jpg

Element Data:

Element Group:	**Joints**	Length:	**8.2 m**
Element Name:	**Seals/Sealants**	Width:	
Location:	**North/South**	Height:	
Material:	**Rubber**	Count:	**4**
Element Type:		Total Quantity:	**32.8 m**
Environment:	**Benign**	Limited Inspection:	
Protection System:	**None**		

Condition Data:	Units	Excellent	Good	Fair	Poor*	Performance Deficiencies
	m		**32.8**			

Comments: **Seals are in good condition overall.**

Recommended Work:	Rehab: ☐	Replace: ☐	Maintenance Needs:	
Urgent: ☐	1-5 Years: ☐	6-10 Years: ☐	None: ☒	Urgent: ☐ 1 Year: ☐ 2 Year: ☐

Element Photo:

Description of Photo: Photo 17 - Seal.jpg

Element Photo:

Description of Photo: Photo 18 - Seal.jpg

Element Photo:

Description of Photo: Photo 19 - Seal.jpg

Element Data:

Element Group:	**Sidewalks and curbs**	Length:	**41.6 m**
Element Name:	**Sidewalks and Curbs**	Width:	**0.7 m (S), 2.0 m (N)**
Location:	**West and east**	Height:	**0.1 m**
Material:	**Concrete**	Count:	**2**
Element Type:		Total Quantity:	**120.6 sq. m**
Environment:	**Benign**	Limited Inspection:	
Protection System:	**None**		

Condition Data:	Units	Excellent	Good	Fair	Poor*	Performance Deficiencies
	sq.m		**115**	**5.6**		

Comments: **Minor spalling along edges throughout. 1-300 mm x 100 mm spall on southwest corner. Sidewalks are very dirty.**

Recommended Work:	Rehab: ☐	Replace: ☐	Maintenance Needs:	**2 - Bridge Cleaning**
Urgent: ☐	1-5 Years: ☐	6-10 Years: ☐	None: **X**	Urgent: ☐	1 Year: **X**	2 Year: ☐
			Clean dirt from sidewalks.	

Element Photo:

Description of Photo: Photo 20 - Curb.jpg

Element Photo:

Description of Photo: Photo 21 - Curb.jpg

Element Photo:

Description of Photo: Photo 22 - Curb.jpg

Element Photo:

Description of Photo: Photo 23 - Sidewalk.jpg

Element Photo:

Description of Photo: Photo 24 - Sidewalk.jpg

Element Photo:

Description of Photo: Photo 25 - Sidewalk.jpg

Element Photo:

Description of Photo:

Element Data:

Element Group:	**Beam**	Length:	**30 m**
Element Name:	**Girders**	Width:	
Location:	**Under Deck**	Height:	
Material:	**Steel**	Count:	**4**
Element Type:		Total Quantity:	**120 m**
Environment:	**Benign**	Limited Inspection:	
Protection System:			

Condition Data:	Units	Excellent	Good	Fair	Poor*	Performance Deficiencies
	m		**120**			

Comments: **Moderate corrosion on flanges throughout. No section loss observed.**

Recommended Work:	Rehab: ☐	Replace: ☐	Maintenance Needs:	
Urgent: ☐	1-5 Years: ☐	6-10 Years: ☐	None: ☒	Urgent: ☐ 1 Year: ☐ 2 Year: ☐

Element Photo:

Description of Photo: Photo 26 - Girder.jpg

Element Photo:

Description of Photo: Photo 27 - Girder.jpg

Element Photo:

Description of Photo:

Element Data:

Element Group:	**Beam**	Length:	**2.6 m**
Element Name:	**Diaphragms**	Width:	**0.05 m**
Location:	**Between girders**	Height:	**0.2 m**
Material:	**Steel**	Count:	**20**
Element Type:		Total Quantity:	**52**
Environment:	**Benign**	Limited Inspection:	
Protection System:			

Condition Data:	Units	Excellent	Good	Fair	Poor*	Performance Deficiencies
	m		**52**			

Comments: **Moderate corrostion across surface throughout. No section loss observed.**

Recommended Work:	Rehab: ☐	Replace: ☐	Maintenance Needs:	
Urgent: ☐	1-5 Years: ☐	6-10 Years: ☐	None: **X**	Urgent: ☐	1 Year: ☐	2 Year: ☐

Element Photo:

Description of Photo: Photo 28 - Diaphragm.jpg

Element Data:

Element Group:	**Beam**	Length:	
Element Name:	**Bearings**	Width:	
Location:	**Under Girders**	Height:	
Material:	**Elastomeric**	Count:	**8**
Element Type:		Total Quantity:	**8**
Environment:	**Benign**	Limited Inspection:	
Protection System:			

Condition Data:	Units	Excellent	Good	Fair	Poor*	Performance Deficiencies
	each	**8**				

Comments: **Bearings are in excellent condition. No damage.**

Recommended Work:	Rehab: ☐	Replace: ☐	Maintenance Needs:	
Urgent: ☐	1-5 Years: ☐	6-10 Years: ☐	None: **X**	Urgent: ☐	1 Year: ☐	2 Year: ☐

Element Photo:

Description of Photo: Photo 29 - Bearing.jpg

Element Data:

Element Group:	**Deck**	Length:	**30 m**
Element Name:	**Soffit**	Width:	**8.2 m**
Location:	**All**	Height:	
Material:	**Concrete**	Count:	**1**
Element Type:		Total Quantity:	**246 sq. m**
Environment:	**Benign**	Limited Inspection:	
Protection System:	**None**		

Condition Data:	Units	Excellent	Good	Fair	Poor*	Performance Deficiencies
	sq.m		**246**			

Comments: **Concrete is in good condition overall. No damage or cracks.**

Recommended Work:	Rehab: ☐	Replace: ☐	Maintenance Needs:	
Urgent: ☐	1-5 Years: ☐	6-10 Years: ☐	None: **X**	Urgent: ☐	1 Year: ☐	2 Year: ☐

Element Photo:

Description of Photo: Photo 30 - Soffit.jpg

Element Data:

Element Group:	**Abutments**	Length:	**8.2 m**
Element Name:	**Walls**	Width:	
Location:	**North and south**	Height:	**1.2 m**
Material:	**Concrete**	Count:	**2**
Element Type:		Total Quantity:	**19.68 sq. m**
Environment:	**Benign**	Limited Inspection:	
Protection System:	**None**		

Condition Data:	Units	Excellent	Good	Fair	Poor*	Performance Deficiencies
	sq.m		**18**	**1.68**		

Comments: **2 narrow 1.2 m vertical cracks. Light scaling of concrete around base of walls.**

Recommended Work:	Rehab: ☐	Replace: ☐	Maintenance Needs:	
Urgent: ☐	1-5 Years: ☐	6-10 Years: ☐	None: ☒	Urgent: ☐ 1 Year: ☐ 2 Year: ☐

Element Photo:

Description of Photo: Photo 31 - Abutment Wall.jpg

Element Data:

Element Group:	**Piers**	Length:	**8.2 m**
Element Name:	**Column**	Width:	
Location:	**Middle**	Height:	**1.2 m**
Material:	**Concrete**	Count:	**2 (faces of pier)**
Element Type:		Total Quantity:	**19.68 sq. m**
Environment:	**Benign**	Limited Inspection:	
Protection System:	**None**		

Condition Data:	Units	Excellent	Good	Fair	Poor*	Performance Deficiencies
	sq.m		**19.68**			

Comments: **Light scaling of concrete around base of pier wall. No cracks or delaminations.**

Recommended Work:	Rehab: ☐	Replace: ☐	Maintenance Needs:	
Urgent: ☐	1-5 Years: ☐	6-10 Years: ☐	None: **X**	Urgent: ☐	1 Year: ☐	2 Year: ☐

Element Photo:

Description of Photo: Photo 32 - Pier.jpg

Element Data:

Element Group:	**Abutments**	Length:	**8.6 m**
Element Name:	**Foundation**	Width:	**0.6 m**
Location:	**East-West**	Height:	**0.6 m**
Material:	**Concrete**	Count:	**2**
Element Type:		Total Quantity:	**20.64 sq. m**
Environment:	**Benign**	Limited Inspection:	
Protection System:	**None**		

Condition Data:	Units	Excellent	Good	Fair	Poor*	Performance Deficiencies
	sq.m		**20**	**0.64**		

Comments: **Heavily honeycombed surface. No large cracks.**

Recommended Work:	Rehab: ☐	Replace: ☐	Maintenance Needs:	
Urgent: ☐	1-5 Years: ☐	6-10 Years: ☐	None: ☒	Urgent: ☐ 1 Year: ☐ 2 Year: ☐

Element Photo:

Description of Photo: Photo 33 - Foundations.jpg

Element Data:

Element Group:	**Pier**	Length:	**8.6 m**
Element Name:	**Foundation**	Width:	**0.6 m**
Location:	**Center Pier**	Height:	**0.6 m**
Material:	**Concrete**	Count:	**2**
Element Type:		Total Quantity:	**20.64 sq. m**
Environment:	**Benign**	Limited Inspection:	
Protection System:	**None**		

Condition Data:	Units	Excellent	Good	Fair	Poor*	Performance Deficiencies
	sq.m		**20**	**0.64**		

Comments: **Similar to abutment foundations, concrete has heavily honeycombed surface. No large cracks.**

Recommended Work:	Rehab: ☐	Replace: ☐	Maintenance Needs:	
Urgent: ☐	1-5 Years: ☐	6-10 Years: ☐	None: ☒	Urgent: ☐	1 Year: ☐	2 Year: ☐

Element Photo:

Description of Photo: Photo 34 - Pier Foundations.jpg

Element Data:

Element Group:	**Abutments**	Length:	**5.0 m**
Element Name:	**Wingwalls**	Width:	
Location:	**All Quadrants**	Height:	**1.2 m**
Material:	**Concrete**	Count:	**4**
Element Type:		Total Quantity:	**12.0 sq. m**
Environment:	**Benign**	Limited Inspection:	
Protection System:	**None**		

Condition Data:	Units	Excellent	Good	Fair	Poor*	Performance Deficiencies
	sq.m		**10.8**	**1.2**		

Comments: **Light scaling of concrete around base of walls. Wide vertical crack on southwest wingwall.**

Recommended Work:	Rehab: [X]	Replace: [ ]	Maintenance Needs:	
Urgent: [ ]	1-5 Years: [X]	6-10 Years: [ ]	None: [ ]	Urgent: [ ] 1 Year: [ ] 2 Year: [ ]
Concrete crack repair.				

Element Photo:

Description of Photo: Photo 35 - Wingwall.jpg

Element Data:

Element Group:	**Embankments**	Length:	
Element Name:	**Embankments**	Width:	
Location:	**All**	Height:	
Material:	**Soil/Rock/Grass**	Count:	
Element Type:		Total Quantity:	**4**
Environment:	**Benign**	Limited Inspection:	
Protection System:	**Rock**		

Condition Data:	Units	Excellent	Good	Fair	Poor*	Performance Deficiencies
	each		**4**			

Comments: **Rip rap providing stable slopes.**

Recommended Work:	Rehab: ☐	Replace: ☐	Maintenance Needs:	
Urgent: ☐	1-5 Years: ☐	6-10 Years: ☐	None: ☒	Urgent: ☐	1 Year: ☐	2 Year: ☐

Element Photo:

Description of Photo: Photo 36 - Embankment.jpg

Element Photo:

Description of Photo: Photo 37 - Embankment.jpg

Element Photo:

Description of Photo: Photo 38 - Embankment.jpg

Element Data:

Element Group:	**Watercourse**	Length:	
Element Name:	**Watercourse**	Width:	
Location:	**Under Bridge**	Height:	
Material:		Count:	
Element Type:		Total Quantity:	**1**
Environment:	**Benign**	Limited Inspection:	
Protection System:	**None**		

Condition Data:	Units	Excellent	Good	Fair	Poor*	Performance Deficiencies
	all		**1**			

Comments: **Flow is unobstructed.**

Recommended Work:	Rehab: ☐	Replace: ☐	Maintenance Needs:	
Urgent: ☐	1-5 Years: ☐	6-10 Years: ☐	None: **X**	Urgent: ☐	1 Year: ☐	2 Year: ☐

Element Photo:

Description of Photo: Photo 39 - Watercourse.jpg

Repair and Rehabilitation Required:		Priority				Estimated Structural Cost
Element[1]	Repair and Rehabilitation Required[2]	6 to 10 Years	1 to 5 Years	Within 1 Year	Urgent	
Structure	Demolition					
Structure	Replacement					
OR						
Deck	Replace =					
Sidewalk/Curb	Rehab. =					
Barrier	Replace =					
Joints	Replace =					
Beams	Rehab. =					
Abutment	Rehab. =					
Pier	Rehab. =					
Wingwall	Rehab. = Concrete crack repair		X			**$5,000.00**
Other						
Estimated Rehabilitated or Replacement Structure Dimensions[3]						
Total Deck Length (m)	Overall Str. Width (m)				Total Structural Cost	**$5,000.00**

1 - Indicate specific costs for structure replacement OR for rehabilitation under the given headings.
2 - Give a very brief description of the rehabilitation work required.
3 - Estimated structure dimensions after completion of the proposed work - if it is expected to change.

Associated Work	Comments	Estimated Associated Work Cost
Approaches	**Rout and seal**	**$2,000.00**
Detours		
Traffic Control		
Utilities		
Other	**Bridge Cleaning**	**$2,000.00**
	Sidewalk concrete repair	**$1,000.00**
	Total Associated Work Cost	**$5,000.00**

Total Construction Cost	**$10,000.00**

Justification:
Bridge would benefit from regular cleaning.

MTO Site Number:

Inventory Data:

Structure Name	6 - Lot 31, Conc 4/5				
Main Highway #	Pinetree Road	On Structure [X]	or Under [ ]	Service on Structure	[ ] Navig. Water [ ] Non-Navig. Water [ ] Rail [X] Road [ ] Ped. [ ] Other
Location Description	2.44 km north of North Muldrew Lake Road			Service under:	[ ] Navig. Water [X] Non-Navig. Water [ ] Rail [ ] Road [ ] Ped. [ ] Other
Owner/Custodian	Gravenhurst				
MTO Region	Northeastern	Latitude	44° 55' 12" N	Longitude	79° 25' 48" W
Regional Engineer		Heritage Designation:	[ ] Not Cons. [X] Cons./Not App. [ ] List/Not Desig. Desig. [ ] Desig./Not List [ ] Desig. & List		
MTO Area	Gravenhurst	Hwy Class:	Freeway [ ] Arterial [ ] Collector [ ] Local [X]		
Old County		Posted Speed	60	No. of Lanes	1
Township	Gravenhurst	AADT	20	% Truck	0
Structure Type 1	I-Beam or Girders				
Structure Material 1	Steel	Traffic Directional Bound	W-E		
Structure Type 2	Concrete deck				
Structure Material 2	Concrete	Inspection Frequency	2	(years)	
Total Deck Length	12.6 (m)	Inspection Year	2019		
Overall Str. Width	4.7 (m)	Inspection Duration	2	(hrs)	
Culvert Length	0 (m)				
Total Deck Area	59.22 (sq.m)				
Roadway Width	4.2 (m)	Min. Vertical Clearance		(m)	
Skew Angle	0 (Degree)	Detour Distance	N/A	(km)	
No. of Spans	1	Fill on Structure	0	(m)	
Span Lengths	4.3			(m)	
For retaining wall:					
Total Wall Length	(m)	Max. Wall Height		(m)	
Total Wall Area	(sq.m)	Ave. Wall Height		(m)	
		Angle of Backfill		(Degrees)	

Historical Data

Year Built	Unknown	Year of superstruct. Constructed	N/A	
Last Reg. OSIM Inspection	2016	Year of Last Minor Rehab.	N/A	
Last Enh. OSIM Inspection		Year of Last Major Rehab	N/A	
		Current Load Limit	/ /	(tonnes)

Work History: (Date/description)

2010 - Lessard bridge installed on granular pads with timber sleepers beyond existing cribs.

Investigation History: (Date/description)

MTO Site Number:

Field Inspection Information:

Date of Inspection:	**September 4, 2019**	Type of Inspection:	[ ] Reg. OSIM [X] Enh. OSIM
Inspected By	**Kieran Ferguson**		
Others in Party:	**None**		
Eng. Access Equipment:	**None**		
Special Access Equipment	**None**		
Weather	**Overcast**	Temperature	**18** °C

Additional Investigations Required:

	Priority			Estimated Cost
	None	Normal	Urgent	
Material Condition Survey				
Detailed Deck Condition Survey:	X			
Non-destructive Delamination Survey of Asphalt-Covered Deck:	X			
Concrete Substructure Condition Survey:	X			
Detailed Coating Condition Survey:	X			
Detailed Timber Investigation:	X			
Post-Tensioned Strand Investigation:	X			
Underwater Investigation	X			
Fatigue Investigation	X			
Seismic Investigation	X			
Structure Evaluation:	X			
Monitoring				
Deformations, Settlements and Movements:		X		**$5,000.00**
Crack Widths:	X			
RSS Horizontal movements of face:	X			
RSS Vertical movements of overall structure:	X			
RSS Local movements or deterioration of face elements:	X			
RSS Horizontal movements within overall structure:	X			
RSS Vertical movements within overall structure	X			
RSS Lateral earth pressure at the back of facing elements	X			
Investigation Notes: Timber cribs should be monitored for movement.	**Total Cost**			**$0.00**

Overall Structure Notes:

Recommended Work on Structure	[X] None [ ] Minor Rehab. [ ] Major Rehab. [ ] Replace
Timing of Recommended Work	[ ] Urgent [ ] 1 to 5 years [ ] 6 to 10 years
Overall Comments:	**Steel is generally in good condition overall. However, cribs continue to display ongoing deterioration and should be monitored to ensure support of bridge supports beyond.**
Date of Next inspection:	**August 2021**

Overall Bridge Condition

% Poor in Deck	% Poor in Beams	% Poor in Substructure	% Poor in Barrier	Bridge Condition Index (BCI or BCIp)	
				BCIp	BCI
0%	0%	0%	0%	100.00	69.93

Overal Bridge Sufficiency

Traffic	Economic	Width	Alignment	Bridge Sufficiency Index (BSI)
0	2	5	5	57.93

Element Data:

Element Group:	**Approaches**	Length:	**6.0 m**
Element Name:	**Wearing Surface**	Width:	**4.2 m**
Location:	**North and south**	Height:	
Material:	**Surface Treatment**	Count:	**2**
Element Type:		Total Quantity:	**50.4 sq. m**
Environment:	**Benign**	Limited Inspection:	
Protection System:	**None**		

Condition Data:	Units	Excellent	Good	Fair	Poor*	Performance Deficiencies
	sq.m		**50.4**			

Comments: **Minor grooves under wheel tracks. No potholes in gravel. Finer granules pushed to sides. Steep approach on south.**

Recommended Work:	Rehab: ☐	Replace: ☐	Maintenance Needs:	
Urgent: ☐	1-5 Years: ☐	6-10 Years: ☐	None: **X**	Urgent: ☐ 1 Year: ☐ 2 Year: ☐

Element Photo:

Description of Photo: Photo 1 - Approach Wearing Surface.jpg

Element Photo:

Description of Photo: Photo 2 - Approach Wearing Surface.jpg

Element Photo:

Description of Photo:

Element Data:

Element Group:	**Accessories**	Length:	
Element Name:	**Signs**	Width:	
Location:	**All**	Height:	
Material:	**Steel**	Count:	**4**
Element Type:		Total Quantity:	**4**
Environment:	**Benign**	Limited Inspection:	
Protection System:	**None**		

Condition Data:	Units	Excellent	Good	Fair	Poor*	Performance Deficiencies
	each		**4**			

Comments: **Object warning signs are in good condtion overall.**

Recommended Work:	Rehab: ☐	Replace: ☐	Maintenance Needs:	
Urgent: ☐	1-5 Years: ☐	6-10 Years: ☐	None: **X**	Urgent: ☐	1 Year: ☐	2 Year: ☐

Element Photo:

Description of Photo: Photo 3 - Sign.jpg

Element Photo:

Description of Photo: Photo 4 - Sign.jpg

Element Photo:

Description of Photo:

Element Data:

Element Group:	**Deck**	Length:	**12.6 m**
Element Name:	**Top / Wearing Surface**	Width:	**4.7 m**
Location:	**All**	Height:	**59.2 sq. m**
Material:	**Steel**	Count:	**1**
Element Type:		Total Quantity:	
Environment:	**Benign**	Limited Inspection:	
Protection System:	**None**		

Condition Data:	Units	Excellent	Good	Fair	Poor*	Performance Deficiencies
	sq.m		**59.2**			

Comments: **Steel deck has no cracks or dents. Dirt and sand is pushed to sides and center.**

Recommended Work:	Rehab: ☐ Replace: ☐	Maintenance Needs:	**2 - Bridge Cleaning**
Urgent: ☐ 1-5 Years: ☐ 6-10 Years: ☐ None: **X**		Urgent: ☐ 1 Year: **X** 2 Year: ☐	
		Clean dirt from surface.	

Element Photo:

Description of Photo: Photo 5 - Bridge Wearing Surface.jpg

Element Photo:

Description of Photo: Photo 6 - Bridge Wearing Surface.jpg

Element Photo:

Description of Photo: Photo 7 - Bridge Wearing Surface.jpg

Element Photo:

Description of Photo: Photo 8 - Bridge Wearing Surface.jpg

Element Photo:

Description of Photo:

Element Data:

Element Group:	**Barrier**	Length:	**12.6 m**
Element Name:	**Railing System**	Width:	
Location:	**West and East**	Height:	
Material:	**Steel**	Count:	**2**
Element Type:		Total Quantity:	**25.2 m**
Environment:	**Benign**	Limited Inspection:	
Protection System:	**Galvanized**		

Condition Data:	Units	Excellent	Good	Fair	Poor*	Performance Deficiencies
	m		**20**	**5.2**		

Comments: **Barrier rails have minor warping at ends. 2.0 m long scrape. 3 minor dents. 14 timber posts are in good condition. 2 posts have impact damage.**

Recommended Work:	Rehab: ☐	Replace: ☐	Maintenance Needs:	
Urgent: ☐	1-5 Years: ☐	6-10 Years: ☐	None: **X**	Urgent: ☐	1 Year: ☐	2 Year: ☐

Element Photo:

Description of Photo: Photo 9 - Bridge Barrier Rail.jpg

Element Photo:

Description of Photo: Photo 10 - Bridge Barrier Rail.jpg

Element Photo:

Description of Photo: Photo 11 - Bridge Barrier Rail.jpg

Element Photo:

Description of Photo: Photo 12 - Barrier Post.jpg

Element Photo:

Description of Photo: Photo 13 - Barrier Post.jpg

Element Photo:

Description of Photo: Photo 14 - Barrier Post.jpg

Element Photo:

Description of Photo:

Element Data:

Element Group:	**Beam**	Length:	**12.6 m**
Element Name:	**Girders**	Width:	**0.15 m**
Location:	**Under Deck**	Height:	**0.45 m**
Material:	**Steel**	Count:	**8**
Element Type:		Total Quantity:	**100.8 m**
Environment:	**Benign**	Limited Inspection:	
Protection System:			

Condition Data:	Units	Excellent	Good	Fair	Poor*	Performance Deficiencies
	m		**100.8**			

Comments: **Minor corrosion along bottom flange throughout. No dents or section loss.**

Recommended Work:	Rehab: ☐	Replace: ☐	Maintenance Needs:	
Urgent: ☐	1-5 Years: ☐	6-10 Years: ☐	None: ☒	Urgent: ☐ 1 Year: ☐ 2 Year: ☐

Element Photo:

Description of Photo: Photo 15 - Girders.jpg

Element Photo:

Description of Photo: Photo 16 - Girders.jpg

Element Photo:

Description of Photo: Photo 17 - Girders.jpg

Element Data:

Element Group:	**Beam**	Length:	**0.4 m**
Element Name:	**Diaphragms**	Width:	**0.075 m**
Location:	**Under Deck**	Height:	**0.075 m**
Material:	**Steel**	Count:	**12**
Element Type:		Total Quantity:	**4.8 m**
Environment:	**Benign**	Limited Inspection:	
Protection System:	**Galvanized**		

Condition Data:	Units	Excellent	Good	Fair	Poor*	Performance Deficiencies
	m		**4.8**			

Comments: **2-75 mm x 75 mm angles. Minor corrosion along steel throughout. No dents or section loss.**

Recommended Work:	Rehab: ☐	Replace: ☐	Maintenance Needs:	
Urgent: ☐	1-5 Years: ☐	6-10 Years: ☐	None: **X**	Urgent: ☐	1 Year: ☐	2 Year: ☐

Element Photo:

Description of Photo: Photo 18 - Diaphragms.jpg

Element Photo:

Description of Photo: Photo 19 - Diaphragms.jpg

Element Photo:

Description of Photo:

Element Data:

Element Group:	**Deck**	Length:	**12.6 m**
Element Name:	**Soffit**	Width:	**4.7 m**
Location:	**All**	Height:	
Material:	**Steel**	Count:	**1**
Element Type:		Total Quantity:	**59.2 sq. m**
Environment:	**Benign**	Limited Inspection:	
Protection System:	**None**		

Condition Data:	Units	Excellent	Good	Fair	Poor*	Performance Deficiencies
	sq.m		**59.2**			

Comments: **Steel deck has no cracks or dents.**

Recommended Work:	Rehab: ☐	Replace: ☐	Maintenance Needs:	
Urgent: ☐	1-5 Years: ☐	6-10 Years: ☐	None: **X**	Urgent: ☐	1 Year: ☐	2 Year: ☐

Element Photo:

Description of Photo: Photo 20 - Soffit.jpg

Element Photo:

Description of Photo: Photo 21 - Soffit.jpg

Element Photo:

Description of Photo: Photo 22 - Soffit.jpg

Element Data:

Element Group:	**Abutments**	Length:	**4.7 m**
Element Name:	**Cribs**	Width:	**2.0 m**
Location:	**North and South**	Height:	**2.2 m**
Material:	**Timber and Stone**	Count:	**2**
Element Type:		Total Quantity:	**38.3 sq. m**
Environment:	**Benign**	Limited Inspection:	
Protection System:	**None**		

Condition Data:	Units	Excellent	Good	Fair	Poor*	Performance Deficiencies
	sq.m			**28**	**10.3**	

Comments: **Cribs made of 200 mm x 200 mm timber beams have heavy decay on the bottom and top members. Horizontal members in the center of the crib height have less deterioration. All timber was very soft when gouge tested. Bridge supported on timber sleepers beyond cribs.**

Recommended Work:	Rehab: [X]	Replace: [ ]	Maintenance Needs:	
Urgent: [ ]	1-5 Years: [ ]	6-10 Years: [X]	None: [ ]	Urgent: [ ] 1 Year: [ ] 2 Year: [ ]
Timber crib repairs.				

Element Photo:

Description of Photo: Photo 23 - Crib.jpg

Element Photo:

Description of Photo: Photo 24 - Crib.jpg

Element Photo:

Description of Photo: Photo 25 - Crib.jpg

Element Photo:

Description of Photo: Photo 26 - Crib.jpg

Element Photo:

Description of Photo:

Element Data:

Element Group:	**Embankments**	Length:	
Element Name:	**Embankments**	Width:	
Location:	**All**	Height:	
Material:	**Soil/Rock/Grass**	Count:	
Element Type:		Total Quantity:	**4**
Environment:	**Benign**	Limited Inspection:	
Protection System:	**None**		

Condition Data:	Units	Excellent	Good	Fair	Poor*	Performance Deficiencies
	each		**4**			

Comments: **Large boulders appear to be solid.**

Recommended Work:	Rehab: ☐	Replace: ☐	Maintenance Needs:	
Urgent: ☐	1-5 Years: ☐	6-10 Years: ☐	None: **X**	Urgent: ☐	1 Year: ☐	2 Year: ☐

Element Photo:

Description of Photo: Photo 27 - Embankment.jpg

Element Photo:

Description of Photo: Photo 28 - Embankment.jpg

Element Photo:

Description of Photo: Photo 29 - Embankment.jpg

Element Data:

Element Group:	**Watercourse**	Length:	
Element Name:	**Watercourse**	Width:	
Location:	**Under Bridge**	Height:	
Material:		Count:	
Element Type:		Total Quantity:	**1**
Environment:	**Benign**	Limited Inspection:	
Protection System:	**None**		

Condition Data:	Units	Excellent	Good	Fair	Poor*	Performance Deficiencies
	all		**1**			

Comments: **Flow is unobstructed. Moderate vegetation and branches along bottom.**

Recommended Work:	Rehab: ☐	Replace: ☐	Maintenance Needs:	
Urgent: ☐	1-5 Years: ☐	6-10 Years: ☐	None: **X**	Urgent: ☐	1 Year: ☐	2 Year: ☐

Element Photo:

Description of Photo: Photo 30 - Watercourse.jpg

Element Photo:

Description of Photo: Photo 31 - Watercourse.jpg

Element Photo:

Description of Photo: Photo 32 - Watercourse.jpg

Repair and Rehabilitation Required:		Priority				Estimated Structural Cost
Element[1]	Repair and Rehabilitation Required[2]	6 to 10 Years	1 to 5 Years	Within 1 Year	Urgent	
Structure	Demolition					
Structure	Replacement					
OR						
Deck	Replace =					
Sidewalk/Curb	Rehab. =					
Barrier	Replace =					
Joints	Replace =					
Beams	Rehab. =					
Abutment	Rehab. =					
Pier	Rehab. =					
Other	Timber crib repairs	X				**$10,000.00**
Estimated Rehabilitated or Replacement Structure Dimensions[3]						
Total Deck Length (m)	Overall Str. Width (m)				Total Structural Cost	**$10,000.00**

1 - Indicate specific costs for structure replacement OR for rehabilitation under the given headings.
2 - Give a very brief description of the rehabilitation work required.
3 - Estimated structure dimensions after completion of the proposed work - if it is expected to change.

Associated Work	Comments	Estimated Associated Work Cost
Approaches	**Install Approach Barrier System**	**$30,000.00**
Detours	**Detour Signage and Traffic Control**	**$5,000.00**
Traffic Control		
Utilities		
Other	**Bridge Cleaning**	**$1,500.00**
	Contingencies	**$10,000.00**
	Mobilization and Demobilization; General; Insurance	**$40,000.00**
	Total Associated Work Cost	**$86,500.00**

Total Construction Cost	**$96,500.00**

Justification:

Timber cribs have heavy decay on the bottom and top members. Horizontal members in the center of the crib height have less deterioration. All timber was very soft when gouge tested. Until crib replacement is an option, it is recommended that this bridge to be monitored for continued movement. Approach guide rail should be installed.

MTO Site Number:

Inventory Data:

Structure Name	7. Narrows Road Bridge, Lot 28, Conc 8 South						
Main Highway #	Narrows Road	On [X] or Under [ ] Structure	Service on Structure	[ ] Navig. Water	[ ] Non-Navig. Water		
				[ ] Rail	[X] Road	[ ] Ped.	[ ] Other
Location Description	0.22 km east of Highway 169		Service under:	[ ] Navig. Water	[X] Non-Navig. Water		
				[ ] Rail	[ ] Road	[ ] Ped.	[ ] Other
Owner/Custodian	Gravenhurst						
MTO Region	Northeastern	Latitude	44° 57' 0" N	Longitude	79° 25' 12" W		
Regional Engineer		Heritage Designation:	[X] Not Cons.	[ ] Cons./Not App.	[ ] List/Not Desig.		
			Desig.	[ ] Desig./Not List	[ ] Desig. & List		
MTO Area	Gravenhurst	Hwy Class:	Freeway [ ]	Arterial [ ]	Collector [ ]	Local [X]	
Old County		Posted Speed	50	No. of Lanes	1		
Township	Gravenhurst	AADT	40	% Truck	0		
Structure Type 1	I-Beam or Girders						
Structure Material 1	Steel	Traffic Directional Bound	W-E				
Structure Type 2	Concrete deck						
Structure Material 2	Concrete	Inspection Frequency	2	(years)			
Total Deck Length	5.8 (m)	Inspection Year	2019				
Overall Str. Width	7.2 (m)	Inspection Duration	2	(hrs)			
Culvert Length	0 (m)						
Total Deck Area	41.76 (sq.m)						
Roadway Width	6.7 (m)	Min. Vertical Clearance		(m)			
Skew Angle	0 (Degree)	Detour Distance	N/A	(km)			
No. of Spans	1	Fill on Structure	0	(m)			
Span Lengths	3			(m)			
For retaining wall:							
Total Wall Length	(m)	Max. Wall Height		(m)			
Total Wall Area	(sq.m)	Ave. Wall Height		(m)			
		Angle of Backfill		(Degrees)			

Historical Data

Year Built	2014	Year of superstruct. Constructed	N/A	
Last Reg. OSIM Inspection	2016	Year of Last Minor Rehab.	N/A	
Last Enh. OSIM Inspection		Year of Last Major Rehab	2014	
		Current Load Limit	/ /	(tonnes)

Work History: (Date/description)

2014 - Superstructure replacement and abutment refacing.

Investigation History: (Date/description)

MTO Site Number:

Field Inspection Information:

Date of Inspection:	**September 2, 2019**	Type of Inspection:	[X] Reg. OSIM [ ] Enh. OSIM
Inspected By	**Kieran Ferguson**		
Others in Party:	**None**		
Eng. Access Equipment:	**None**		
Special Access Equipment	**None**		
Weather	**Overcast**	Temperature	**20** °C

Additional Investigations Required:

	Priority			Estimated Cost
	None	Normal	Urgent	
Material Condition Survey				
Detailed Deck Condition Survey:	X			
Non-destructive Delamination Survey of Asphalt-Covered Deck:	X			
Concrete Substructure Condition Survey:	X			
Detailed Coating Condition Survey:	X			
Detailed Timber Investigation:	X			
Post-Tensioned Strand Investigation:	X			
Underwater Investigation	X			
Fatigue Investigation	X			
Seismic Investigation	X			
Structure Evaluation:	X			
Monitoring	X			
Deformations, Settlements and Movements:	X			
Crack Widths:	X			
RSS Horizontal movements of face:	X			
RSS Vertical movements of overall structure:	X			
RSS Local movements or deterioration of face elements:	X			
RSS Horizontal movements within overall structure:	X			
RSS Vertical movements within overall structure	X			
RSS Lateral earth pressure at the back of facing elements	X			
Investigation Notes:		**Total Cost**		**$0.00**

Overall Structure Notes:

Recommended Work on Structure	[X] None [ ] Minor Rehab. [ ] Major Rehab. [ ] Replace
Timing of Recommended Work	[ ] Urgent [ ] 1 to 5 years [ ] 6 to 10 years
Overall Comments:	**Structure is generally in good condition overall.**
Date of Next inspection:	**August 2021**

Overall Bridge Condition

% Poor in Deck	% Poor in Beams	% Poor in Substructure	% Poor in Barrier	Bridge Condition Index (BCI or BCIp)	
				BCIp	BCI
0%	0%	0%	0%	100.00	89.38

Overal Bridge Sufficiency

Traffic	Economic	Width	Alignment	Bridge Sufficiency Index (BSI)
0	3	3	2	81.38

Element Data:

Element Group:	**Approaches**	Length:	**6.0 m**
Element Name:	**Wearing Surface**	Width:	**6.7 m**
Location:	**East and West**	Height:	
Material:	**Surface Treatment**	Count:	**2**
Element Type:		Total Quantity:	**80.4 sq. m**
Environment:	**Benign**	Limited Inspection:	
Protection System:	**None**		

Condition Data:	Units	Excellent	Good	Fair	Poor*	Performance Deficiencies
	sq.m		**80.4**			

Comments: **Small cracks at connection to bridge. Slightly rough surface throughout. No potholes.**

Recommended Work:	Rehab: ☐	Replace: ☐	Maintenance Needs:	
Urgent: ☐	1-5 Years: ☐	6-10 Years: ☐	None: **X**	Urgent: ☐	1 Year: ☐	2 Year: ☐

Element Photo:

Description of Photo: Photo 1 - Approach Wearing Surface.jpg

Element Photo:

Description of Photo: Photo 2 - Approach Wearing Surface.jpg

Element Photo:

Description of Photo:

Element Data:

Element Group:	**Approaches**	Length:	**49 m, 24 m, 25m, 25m**
Element Name:	**Barriers**	Width:	
Location:	**All Quadrants**	Height:	
Material:	**Steel / Wood**	Count:	**4**
Element Type:		Total Quantity:	**123 m**
Environment:	**Benign**	Limited Inspection:	
Protection System:	**Galvanized**		

Condition Data:	Units	Excellent	Good	Fair	Poor*	Performance Deficiencies
	m	**123**				

Comments: **Very minor scrapes throughout. No damage.**

Recommended Work:	Rehab: ☐	Replace: ☐	Maintenance Needs:	
Urgent: ☐	1-5 Years: ☐	6-10 Years: ☐	None: **X**	Urgent: ☐	1 Year: ☐	2 Year: ☐

Element Photo:

Description of Photo: Photo 3 - Approach Rail.jpg

Element Photo:

Description of Photo: Photo 4 - Approach Rail.jpg

Element Photo:

Description of Photo: Photo 5 - Approach Rail.jpg

Element Data:

Element Group:	**Accessories**	Length:	
Element Name:	**Signs**	Width:	
Location:	**All**	Height:	
Material:	**Steel**	Count:	**1**
Element Type:		Total Quantity:	**1**
Environment:	**Benign**	Limited Inspection:	
Protection System:	**None**		

Condition Data:	Units	Excellent	Good	Fair	Poor*	Performance Deficiencies
	each		**1**			

Comments: **Only 1 object warning sign at northeast approach.**

Recommended Work:	Rehab: ☐	Replace: ☐	Maintenance Needs:	**18 - Other**
Urgent: ☐	1-5 Years: ☐	6-10 Years: ☐	None: **X**	Urgent: ☐	1 Year: **X**	2 Year: ☐
			Add 3 more object warning signs.	

Element Photo:

Description of Photo: Photo 6 - Sign.jpg

Element Data:

Element Group:	**Deck**	Length:	**5.8 m**
Element Name:	**Top / Wearing Surface**	Width:	**6.7 m**
Location:	**All**	Height:	
Material:	**Asphalt**	Count:	**1**
Element Type:		Total Quantity:	**38.9 sq. m**
Environment:	**Benign**	Limited Inspection:	
Protection System:	**None**		

Condition Data:	Units	Excellent	Good	Fair	Poor*	Performance Deficiencies
	sq.m		**38.9**			

Comments: **Small cracks at connection to approaches. Slightly rough surface throughout. No potholes. Minor centerline crack. Dirt and sand pushed to side of roadway.**

Recommended Work:	Rehab: ☐	Replace: ☐	Maintenance Needs:	
Urgent: ☐	1-5 Years: ☐	6-10 Years: ☐	None: ☒	Urgent: ☐ 1 Year: ☐ 2 Year: ☐

Element Photo:

Description of Photo: Photo 7 - Bridge Wearing Surface.jpg

Element Photo:

Description of Photo: Photo 8 - Bridge Wearing Surface.jpg

Element Photo:

Description of Photo: Photo 9 - Bridge Wearing Surface.jpg

Element Data:

Element Group:	**Barrier**	Length:	**5.8 m**
Element Name:	**Hand Rail / Railing System**	Width:	
Location:	**North and South Side**	Height:	
Material:	**Steel / Wood**	Count:	**2**
Element Type:		Total Quantity:	**11.6 m**
Environment:	**Benign**	Limited Inspection:	
Protection System:	**Galvanized**		

Condition Data:	Units	Excellent	Good	Fair	Poor*	Performance Deficiencies
	m	**11.6**				

Comments: **Very minor scrapes throughout. No damage.**

Recommended Work:	Rehab: ☐	Replace: ☐	Maintenance Needs:	
Urgent: ☐	1-5 Years: ☐	6-10 Years: ☐	None: **X**	Urgent: ☐ 1 Year: ☐ 2 Year: ☐

Element Photo:

Description of Photo: Photo 10 - Bridge Barrier.jpg

Element Photo:

Description of Photo: Photo 11 - Bridge Barrier.jpg

Element Photo:

Description of Photo: Photo 12 - Bridge Barrier.jpg

Element Data:

Element Group:	**Deck**	Length:	**5.8 m**
Element Name:	**Soffit**	Width:	**7.2 m**
Location:	**All**	Height:	
Material:	**Steel**	Count:	**1**
Element Type:		Total Quantity:	**41.8 sq. m**
Environment:	**Benign**	Limited Inspection:	
Protection System:	**None**		

Condition Data:	Units	Excellent	Good	Fair	Poor*	Performance Deficiencies
	sq.m	**41.8**				

Comments: **Minor leakage from above. No damage in steel.**

Recommended Work:	Rehab: ☐	Replace: ☐	Maintenance Needs:	
Urgent: ☐	1-5 Years: ☐	6-10 Years: ☐	None: ☒	Urgent: ☐	1 Year: ☐	2 Year: ☐

Element Photo:

Description of Photo: Photo 13 - Metal Soffit.jpg

Element Photo:

Description of Photo: Photo 14 - Metal Soffit.jpg

Element Photo:

Description of Photo: Photo 15 - Metal Soffit.jpg

Element Data:

Element Group:	**Beam**	Length:	**4.6 m**
Element Name:	**Girders**	Width:	**0.2 m**
Location:	**Under Deck**	Height:	**0.3 m**
Material:	**Steel**	Count:	**5**
Element Type:		Total Quantity:	**23 m**
Environment:	**Benign**	Limited Inspection:	
Protection System:	**Galvanized**		

Condition Data:	Units	Excellent	Good	Fair	Poor*	Performance Deficiencies
	m	**23**				

Comments: **No damage to steel. Minor staining along ballast walls.**

Recommended Work:	Rehab: ☐	Replace: ☐	Maintenance Needs:	
Urgent: ☐	1-5 Years: ☐	6-10 Years: ☐	None: **X**	Urgent: ☐	1 Year: ☐	2 Year: ☐

Element Photo:

Description of Photo: Photo 16 - Girder.jpg

Element Photo:

Description of Photo: Photo 17 - Girder.jpg

Element Photo:

Description of Photo: Photo 18 - Girder.jpg

Element Data:

Element Group:	**Beam**	Length:	**1.7 m**
Element Name:	**Diaphragms**	Width:	**0.065 m**
Location:	**Between Girders**	Height:	**0.2 m**
Material:	**Steel**	Count:	**4**
Element Type:		Total Quantity:	**6.8 m**
Environment:	**Benign**	Limited Inspection:	
Protection System:	**Galvanized**		

Condition Data:	Units	Excellent	Good	Fair	Poor*	Performance Deficiencies
	m		**6.8**			

Comments: **No damage to steel.**

Recommended Work:	Rehab: ☐	Replace: ☐	Maintenance Needs:	
Urgent: ☐	1-5 Years: ☐	6-10 Years: ☐	None: **X**	Urgent: ☐	1 Year: ☐	2 Year: ☐

Element Photo:

Description of Photo: Photo 19 - Diaphragm.jpg

Element Photo:

Description of Photo: Photo 20 - Diaphragm.jpg

Element Photo:

Description of Photo:

Element Data:

Element Group:	**Abutments**	Length:	**7.2 m**
Element Name:	**Walls**	Width:	
Location:	**East-West**	Height:	**1.2 m**
Material:	**Concrete**	Count:	**2**
Element Type:		Total Quantity:	**8.64 sq. m**
Environment:	**Benign**	Limited Inspection:	
Protection System:	**None**		

Condition Data:	Units	Excellent	Good	Fair	Poor*	Performance Deficiencies
	sq.m		**8.2**	**0.44**		

Comments: **Several 200 mm x 200 mm spalls along outer edges. Otherwise concrete is in good condition.**

Recommended Work:	Rehab: ☐	Replace: ☐	Maintenance Needs:	
Urgent: ☐	1-5 Years: ☐	6-10 Years: ☐	None: **X**	Urgent: ☐	1 Year: ☐	2 Year: ☐

Element Photo:

Description of Photo: Photo 21 - Abutment Wall.jpg

Element Photo:

Description of Photo: Photo 22 - Abutment Wall.jpg

Element Photo:

Description of Photo: Photo 23 - Abutment Wall.jpg

Element Data:

Element Group:	**Abutments**	Length:	**7.2 m**
Element Name:	**Foundation**	Width:	**3.0 m**
Location:	**Beneath Bridge**	Height:	
Material:	**Concrete**	Count:	**1**
Element Type:		Total Quantity:	**21.6 sq. m**
Environment:	**Benign**	Limited Inspection:	
Protection System:	**None**		

Condition Data:	Units	Excellent	Good	Fair	Poor*	Performance Deficiencies
	sq.m			**21.6**		

Comments: **Very rough surface due to erosion but still intact.**

Recommended Work:	Rehab:	Replace:	Maintenance Needs:	
Urgent:	1-5 Years:	6-10 Years:	None: **X**	Urgent: 1 Year: 2 Year:

Element Photo:

Description of Photo: Photo 24 - Foundation.jpg

Element Photo:

Description of Photo: Photo 25 - Foundation.jpg

Element Photo:

Description of Photo: Photo 26 - Foundation.jpg

Element Data:

Element Group:	**Abutments**	Length:	**1.4 m**
Element Name:	**Wingwalls**	Width:	
Location:	**All Quadrants**	Height:	**1.2 m**
Material:	**Concrete**	Count:	**4**
Element Type:		Total Quantity:	**3.36 sq. m**
Environment:	**Benign**	Limited Inspection:	
Protection System:	**None**		

Condition Data:	Units	Excellent	Good	Fair	Poor*	Performance Deficiencies
	sq.m		**3.36**			

Comments: **Concrete is in good condition.**

Recommended Work:	Rehab: ☐	Replace: ☐	Maintenance Needs:	
Urgent: ☐	1-5 Years: ☐	6-10 Years: ☐	None: **X**	Urgent: ☐	1 Year: ☐	2 Year: ☐

Element Photo:

Description of Photo: Photo 27 - Wingwall.jpg

Element Photo:

Description of Photo: Photo 28 - Wingwall.jpg

Element Photo:

Description of Photo: Photo 29 - Wingwall.jpg

Element Data:

Element Group:	**Embankments**	Length:	
Element Name:	**Embankments**	Width:	
Location:	**All**	Height:	
Material:	**Soil/Rock/Grass**	Count:	
Element Type:		Total Quantity:	**4**
Environment:	**Benign**	Limited Inspection:	
Protection System:	**None**		

Condition Data:	Units	Excellent	Good	Fair	Poor*	Performance Deficiencies
	each		**4**			

Comments: **Rock embankments are stable and intact.**

Recommended Work:	Rehab: ☐	Replace: ☐	Maintenance Needs:	
Urgent: ☐	1-5 Years: ☐	6-10 Years: ☐	None: **X**	Urgent: ☐	1 Year: ☐	2 Year: ☐

Element Photo:

Description of Photo: Photo 30 - Embankments.jpg

Element Data:

Element Group:	**Watercourse**	Length:	
Element Name:	**Watercourse**	Width:	
Location:	**Under Bridge**	Height:	
Material:		Count:	
Element Type:		Total Quantity:	**1**
Environment:	**Benign**	Limited Inspection:	
Protection System:	**None**		

Condition Data:	Units	Excellent	Good	Fair	Poor*	Performance Deficiencies
	all		**1**			

Comments: **Flow is unobstructed. Heavy vegetation at north end.**

Recommended Work:	Rehab: ☐	Replace: ☐	Maintenance Needs:	
Urgent: ☐	1-5 Years: ☐	6-10 Years: ☐	None: **X**	Urgent: ☐ 1 Year: ☐ 2 Year: ☐

Element Photo:

Description of Photo: Photo 31 - Watercourse.jpg

Repair and Rehabilitation Required:		Priority				Estimated Structural Cost
Element[1]	Repair and Rehabilitation Required[2]	6 to 10 Years	1 to 5 Years	Within 1 Year	Urgent	
Structure	Demolition					
Structure	Replacement					
OR						
Deck	Replace =					
Sidewalk/Curb	Rehab. =					
Barrier	Replace =					
Joints	Replace =					
Beams	Rehab. =					
Abutment	Rehab. =					
Pier	Rehab. =					
Other						
Estimated Rehabilitated or Replacement Structure Dimensions[3]						
Total Deck Length (m)	Overall Str. Width (m)				Total Structural Cost	**$0.00**

1 - Indicate specific costs for structure replacement OR for rehabilitation under the given headings.
2 - Give a very brief description of the rehabilitation work required.
3 - Estimated structure dimensions after completion of the proposed work - if it is expected to change.

Associated Work	Comments	Estimated Associated Work Cost
Approaches		
Detours		
Traffic Control		
Utilities		
Other	**Bridge Cleaning**	**$1,500.00**
	Install 3 Object Warning Marker Signs	**$900.00**
	Total Associated Work Cost	**$2,400.00**

Total Construction Cost	**$2,400.00**

Justification:
Bridge is in a generally good condition.

MTO Site Number:

Inventory Data:

Structure Name	8 - Sniders Bay Bridge, Lot 31, Conc 7 South				
Main Highway #	Sniders Bay Road	On [X] or Under [ ] Structure	Service on Structure	[ ] Navig. Water [ ] Non-Navig. Water [ ] Rail [X] Road [ ] Ped. [ ] Other	
Location Description	0.5 km west of District Road 169		Service under:	[ ] Navig. Water [X] Non-Navig. Water [ ] Rail [ ] Road [ ] Ped. [ ] Other	
Owner/Custodian	Gravenhurst				
MTO Region	Northeastern	Latitude	44° 57' 0" N	Longitude	79° 27' 0" W
Regional Engineer		Heritage Designation:	[ ] Not Cons. [X] Cons./Not App. [ ] List/Not Desig. Desig. [ ] Desig./Not List [ ] Desig. & List		
MTO Area	Gravenhurst	Hwy Class:	Freeway [ ] Arterial [ ] Collector [ ] Local [X]		
Old County		Posted Speed	50	No. of Lanes	1
Township	Gravenhurst	AADT	140	% Truck	0
Structure Type 1	T-Beam				
Structure Material 1	Concrete	Traffic Directional Bound	W-E		
Structure Type 2	Concrete deck				
Structure Material 2	Concrete	Inspection Frequency	2	(years)	
Total Deck Length	7.2 (m)	Inspection Year	2019		
Overall Str. Width	5.7 (m)	Inspection Duration	2	(hrs)	
Culvert Length	0 (m)				
Total Deck Area	41.04 (sq.m)				
Roadway Width	4.4 (m)	Min. Vertical Clearance		(m)	
Skew Angle	0 (Degree)	Detour Distance	N/A	(km)	
No. of Spans	1	Fill on Structure	0	(m)	
Span Lengths	5.8			(m)	
For retaining wall:					
Total Wall Length	(m)	Max. Wall Height		(m)	
Total Wall Area	(sq.m)	Ave. Wall Height		(m)	
		Angle of Backfill		(Degrees)	

Historical Data

Year Built	1930	Year of superstruct. Constructed	N/A	
Last Reg. OSIM Inspection	2016	Year of Last Minor Rehab.	N/A	
Last Enh. OSIM Inspection		Year of Last Major Rehab	N/A	
		Current Load Limit	/ /	(tonnes)

Work History: (Date/description)	Investigation History: (Date/description)

MTO Site Number:

Field Inspection Information:

Date of Inspection:	**September 2, 2019**	Type of Inspection:	[X] Reg. OSIM [ ] Enh. OSIM
Inspected By	**Kieran Ferguson**		
Others in Party:	**None**		
Eng. Access Equipment:	**None**		
Special Access Equipment	**None**		
Weather	**Overcast**	Temperature	**20** °C

Additional Investigations Required:

	Priority			Estimated Cost
	None	Normal	Urgent	
Material Condition Survey				
Detailed Deck Condition Survey:	X			
Non-destructive Delamination Survey of Asphalt-Covered Deck:	X			
Concrete Substructure Condition Survey:	X			
Detailed Coating Condition Survey:	X			
Detailed Timber Investigation:	X			
Post-Tensioned Strand Investigation:	X			
Underwater Investigation	X			
Fatigue Investigation	X			
Seismic Investigation	X			
Structure Evaluation:	X			
Monitoring	X			
Deformations, Settlements and Movements:	X			
Crack Widths:	X			
RSS Horizontal movements of face:	X			
RSS Vertical movements of overall structure:	X			
RSS Local movements or deterioration of face elements:	X			
RSS Horizontal movements within overall structure:	X			
RSS Vertical movements within overall structure	X			
RSS Lateral earth pressure at the back of facing elements	X			
Investigation Notes:		**Total Cost**		**$0.00**

Overall Structure Notes:

Recommended Work on Structure	[ ] None [ ] Minor Rehab. [ ] Major Rehab. [X] Replace
Timing of Recommended Work	[ ] Urgent [X] 1 to 5 years [ ] 6 to 10 years
Overall Comments:	**Structure is general in poor condition overall. The bridge should be replaced.**
Date of Next inspection:	**August 2021**

Overall Bridge Condition

% Poor in Deck	% Poor in Beams	% Poor in Substructure	% Poor in Barrier	Bridge Condition Index (BCI or BCIp)	
				BCIp	BCI
60%	17%	15%	31%	66.15	32.10

Overal Bridge Sufficiency

Traffic	Economic	Width	Alignment	Bridge Sufficiency Index (BSI)
0	3	5	5	19.10

Element Data:

Element Group:	**Approaches**	Length:	**6.0 m**
Element Name:	**Wearing Surface**	Width:	**4.4 m**
Location:	**East and West**	Height:	
Material:	**Surface Treatment**	Count:	**2**
Element Type:		Total Quantity:	**52.8 sq. m**
Environment:	**Benign**	Limited Inspection:	
Protection System:	**None**		

Condition Data:	Units	Excellent	Good	Fair	Poor*	Performance Deficiencies
	sq.m		**47.8**	**5**		

Comments: **Moderately pronounced lip at bridge connection. Moderate cracks throughout. Heavy wheel rutting in asphalt. 400 mm x 400 mm pothole on west approach. 300 mm x 300 mm pothole on east approach.**

Recommended Work:	Rehab: ☐	Replace: ☐	Maintenance Needs:	
Urgent: ☐	1-5 Years: ☐	6-10 Years: ☐	None: **X**	Urgent: ☐	1 Year: **X**	2 Year: ☐
			Repair potholes.	

Element Photo:

Description of Photo: Photo 1 - Approach Wearing Surface.jpg

Element Photo:

Description of Photo: Photo 2 - Approach Wearing Surface.jpg

Element Photo:

Description of Photo: Photo 3 - Approach Wearing Surface.jpg

Element Data:

Element Group:	**Deck**	Length:	**7.2 m**
Element Name:	**Top / Wearing Surface**	Width:	**4.4 m**
Location:	**All**	Height:	
Material:	**Asphalt**	Count:	**1**
Element Type:		Total Quantity:	**31.7 sq. m**
Environment:	**Benign**	Limited Inspection:	
Protection System:	**None**		

Condition Data:	Units	Excellent	Good	Fair	Poor*	Performance Deficiencies
	sq.m		**23.7**	**8**		

Comments: **Heavy wheel treading leading to loss of asphalt. Rough, scaled surface throughout. Heavy dirt buildup at edges.**

Recommended Work:	Rehab: ☐	Replace: ☐	Maintenance Needs:	**2 - Bridge Cleaning**
Urgent: ☐	1-5 Years: ☐	6-10 Years: ☐	None: **X**	Urgent: ☐ 1 Year: **X** 2 Year: ☐
			Surface should be cleaned.	

Element Photo:

Description of Photo: Photo 4 - Bridge Wearing Surface.jpg

Element Photo:

Description of Photo: Photo 5 - Bridge Wearing Surface.jpg

Element Photo:

Description of Photo: Photo 6 - Bridge Wearing Surface.jpg

Element Data:

Element Group:	**Barrier**	Length:	**7.2 m**
Element Name:	**Railing System**	Width:	**0.46 m**
Location:	**North and South Side**	Height:	**0.9 m**
Material:	**Concrete**	Count:	**2**
Element Type:		Total Quantity:	**14.4 m**
Environment:	**Benign**	Limited Inspection:	
Protection System:			

Condition Data:	Units	Excellent	Good	Fair	Poor*	Performance Deficiencies
	m			**11**	**3.4**	

Comments: **Northeast corner struck by vehicle and is heavily damaged. 5x 300 mm x 300 mm spalls on south side. 3x 300 mm x 300 mm spalls on north side. Some cracks in posts.**

Recommended Work:	Rehab: ☐	Replace: X	Maintenance Needs:
Urgent: ☐	1-5 Years: X	6-10 Years: ☐	None: ☐
Replace barrier system.			

Urgent: ☐	1 Year: ☐	2 Year: ☐

Element Photo:

Description of Photo: Photo 7 - Bridge Barrier.jpg

Element Photo:

Description of Photo: Photo 8 - Bridge Barrier.jpg

Element Photo:

Description of Photo: Photo 9 - Bridge Barrier.jpg

Element Data:

Element Group:	**Accessories**	Length:	
Element Name:	**Signs**	Width:	
Location:	**All**	Height:	
Material:	**Steel**	Count:	**5**
Element Type:		Total Quantity:	**5**
Environment:	**Benign**	Limited Inspection:	
Protection System:	**None**		

Condition Data:	Units	Excellent	Good	Fair	Poor*	Performance Deficiencies
	each		**3**	**2**		

Comments: **4 object warning signs; 1 is cracked and bent, one has minor bends. 1 One Lane Bridge sign in good condition.**

Recommended Work:	Rehab: ☐	Replace: ☐	Maintenance Needs:	**18 - Other**
Urgent: ☐	1-5 Years: ☐	6-10 Years: ☐	None: **X**	Urgent: ☐ 1 Year: **X** 2 Year: ☐
			Add one lane tab to narrow structure sign	

Element Photo:

Description of Photo: Photo 10 - Sign.jpg

Element Photo:

Description of Photo: Photo 11 - Signs.jpg

Element Photo:

Description of Photo: Photo 12 - Signs.jpg

Element Data:

Element Group:	**Deck**	Length:	**5.8 m**
Element Name:	**Soffit**	Width:	**5.7 m**
Location:	**All**	Height:	
Material:	**Concrete**	Count:	**1**
Element Type:		Total Quantity:	**33.1 sq. m**
Environment:	**Benign**	Limited Inspection:	
Protection System:	**None**		

Condition Data:	Units	Excellent	Good	Fair	Poor*	Performance Deficiencies
	sq.m			**13.1**	**20**	

Comments: **Large 400 mm x 400 mm spalls occur approximately every 2.0 m. Delaminations throughout. Exposed corroded reinforcing steel.**

Recommended Work:	Rehab: [ ]	Replace: [X]	Maintenance Needs:	
Urgent: [ ]	1-5 Years: [X]	6-10 Years: [ ]	None: [ ]	Urgent: [ ] 1 Year: [ ] 2 Year: [ ]
Replace.				

Element Photo:

Description of Photo: Photo 13 - Soffit.jpg

Element Photo:

Description of Photo: Photo 14 - Soffit.jpg

Element Photo:

Description of Photo: Photo 15 - Soffit.jpg

Element Data:

Element Group:	**Beam**	Length:	**5.8 m**
Element Name:	**Girders**	Width:	**0.3 m**
Location:	**Under Deck**	Height:	**0.4 m**
Material:	**Concrete**	Count:	**4**
Element Type:		Total Quantity:	**23.2 m**
Environment:	**Benign**	Limited Inspection:	
Protection System:			

Condition Data:	Units	Excellent	Good	Fair	Poor*	Performance Deficiencies
	m			**19.2**	**4**	

Comments: **Each girder has approximately 3x 300 mm x 300 mm spalls exposing rebar, especially along soffit connections. Delaminated concrete throughout.**

Recommended Work:	Rehab: [ ]	Replace: [X]	Maintenance Needs:	
Urgent: [ ]	1-5 Years: [X]	6-10 Years: [ ]	None: [ ]	Urgent: [ ] 1 Year: [ ] 2 Year: [ ]
Replace				

Element Photo:

Description of Photo: Photo 16 - Girder.jpg

Element Photo:

Description of Photo: Photo 17 - Girder.jpg

Element Photo:

Description of Photo: Photo 18 - Girder.jpg

Element Data:

Element Group:	**Abutments**	Length:	**5.7 m**
Element Name:	**Walls**	Width:	
Location:	**East-West**	Height:	**1.2 m**
Material:	**Concrete**	Count:	**2**
Element Type:		Total Quantity:	**13.7 sq. m**
Environment:	**Benign**	Limited Inspection:	
Protection System:	**None**		

Condition Data:	Units	Excellent	Good	Fair	Poor*	Performance Deficiencies
	sq.m			**11.7**	**2**	

Comments: **Bottom 200 mm of wall is heavily eroded. Scaled concrete surface throughout.**

Recommended Work:	Rehab: [X]	Replace: [ ]	Maintenance Needs:	
Urgent: [ ]	1-5 Years: [X]	6-10 Years: [ ]	None: [ ]	Urgent: [ ] 1 Year: [ ] 2 Year: [ ]
Concrete repairs.				

Element Photo:

Description of Photo: Photo 19 - Abutment Wall.jpg

Element Photo:

Description of Photo: Photo 20 - Abutment Wall.jpg

Element Photo:

Description of Photo: Photo 21 - Abutment Wall.jpg

Element Data:

Element Group:	**Embankments**	Length:	
Element Name:	**Embankments**	Width:	
Location:	**All**	Height:	
Material:	**Soil/Rock/Grass**	Count:	
Element Type:		Total Quantity:	**4**
Environment:	**Benign**	Limited Inspection:	
Protection System:	**None**		

Condition Data:	Units	Excellent	Good	Fair	Poor*	Performance Deficiencies
	each				**4**	

Comments: **Steep embankments with heavy vegetation. Edges of roadway starting to erode near bridge.**

Recommended Work:	Rehab: [X]	Replace: [ ]	Maintenance Needs:	
Urgent: [ ]	1-5 Years: [X]	6-10 Years: [ ]	None: [ ]	Urgent: [ ] 1 Year: [ ] 2 Year: [ ]
Repair washout.				

Element Photo:

Description of Photo: Photo 22 - Embankment.jpg

Element Photo:

Description of Photo: Photo 23 - Embankment.jpg

Element Photo:

Description of Photo: Photo 24 - Embankment.jpg

Element Data:

Element Group:	**Watercourse**	Length:	
Element Name:	**Watercourse**	Width:	
Location:	**Under Bridge**	Height:	
Material:		Count:	
Element Type:		Total Quantity:	**1**
Environment:	**Benign**	Limited Inspection:	
Protection System:	**None**		

Condition Data:	Units	Excellent	Good	Fair	Poor*	Performance Deficiencies
	all			**1**		

Comments: **Flow is unobstructed. Heavy vegetation at north and south ends.**

Recommended Work:	Rehab: ☐	Replace: ☐	Maintenance Needs:	
Urgent: ☐	1-5 Years: ☐	6-10 Years: ☐	None: **X**	Urgent: ☐	1 Year: ☐	2 Year: ☐

Element Photo:

Description of Photo: Photo 25 - Watercourse.jpg

Repair and Rehabilitation Required:		Priority				Estimated Structural Cost
Element[1]	Repair and Rehabilitation Required[2]	6 to 10 Years	1 to 5 Years	Within 1 Year	Urgent	
Structure	Demolition					
Structure	Replacement		**X**			**$610,000.00**
OR						
Deck	Rehab. = Waterproof and Pave					
Deck	Rehab. = Concrete Repairs					
Barrier	Replace = Replace Barrier					
Joints	Replace =					
Beams	Rehab. = Concrete Repairs					
Abutment	Rehab. = Concrete Repairs					
Embankments	Rehab. = Repair washout					
Other						
Estimated Rehabilitated or Replacement Structure Dimensions[3]						
Total Deck Length (m)	Overall Str. Width (m)				Total Structural Cost	**$610,000.00**

1 - Indicate specific costs for structure replacement OR for rehabilitation under the given headings.
2 - Give a very brief description of the rehabilitation work required.
3 - Estimated structure dimensions after completion of the proposed work - if it is expected to change.

Associated Work	Comments	Estimated Associated Work Cost
Approaches	**Install approach guide rail system**	**$30,000.00**
Detours		
Traffic Control		**$15,000.00**
Utilities		
Other	**Contingencies**	**$70,000.00**
	Mobilization and Demobilization; General; Insurance	**$75,000.00**
	Total Associated Work Cost	**$190,000.00**

Total Construction Cost	**$800,000.00**

Justification:

Due to extensive concrete repairs to barriers, deck, soffit, girders and abutment walls; we recommend the structure to be replaced.

MTO Site Number:

Inventory Data:

Structure Name	9 - Lot 10/11, Conc 10				
Main Highway #	Hopkins Road	On [X] or Under [ ] Structure	Service on Structure	[ ] Navig. Water [ ] Non-Navig. Water [ ] Rail [X] Road [ ] Ped. [ ] Other	
Location Description	0.57 km south of Merkley Road		Service under:	[ ] Navig. Water [X] Non-Navig. Water [ ] Rail [ ] Road [ ] Ped. [ ] Other	
Owner/Custodian	Gravenhurst				
MTO Region	Northeastern	Latitude	44° 54' 36" N	Longitude	79° 9' 0" W
Regional Engineer		Heritage Designation:	[X] Not Cons. [ ] Cons./Not App. [ ] List/Not Desig. Desig. [ ] Desig./Not List [ ] Desig. & List		
MTO Area	Gravenhurst	Hwy Class:	Freeway [ ] Arterial [ ] Collector [ ] Local [X]		
Old County		Posted Speed	60	No. of Lanes	1
Township	Gravenhurst	AADT	10	% Truck	0
Structure Type 1	I-Beam or Girders				
Structure Material 1	Steel	Traffic Directional Bound	N-S		
Structure Type 2	Concrete deck				
Structure Material 2	Concrete	Inspection Frequency	2	(years)	
Total Deck Length	10.8 (m)	Inspection Year	2019		
Overall Str. Width	4.3 (m)	Inspection Duration	2	(hrs)	
Culvert Length	0 (m)				
Total Deck Area	46.44 (sq.m)				
Roadway Width	3.5 (m)	Min. Vertical Clearance		(m)	
Skew Angle	0 (Degree)	Detour Distance	N/A	(km)	
No. of Spans	1	Fill on Structure	0	(m)	
Span Lengths	5.6			(m)	
For retaining wall:					
Total Wall Length	(m)	Max. Wall Height		(m)	
Total Wall Area	(sq.m)	Ave. Wall Height		(m)	
		Angle of Backfill		(Degrees)	

Historical Data

Year Built	1920	Year of superstruct. Constructed	N/A	
Last Reg. OSIM Inspection	2016	Year of Last Minor Rehab.	N/A	
Last Enh. OSIM Inspection		Year of Last Major Rehab	N/A	
		Current Load Limit	/ / 5	(tonnes)

Work History: (Date/description)

2017 - Deck replacement

Investigation History: (Date/description)

MTO Site Number:

Field Inspection Information:

Date of Inspection:	**September 4, 2019**	Type of Inspection:	[ ] Reg. OSIM [X] Enh. OSIM
Inspected By	**Kieran Ferguson**		
Others in Party:	**None**		
Eng. Access Equipment:	**None**		
Special Access Equipment	**None**		
Weather	**Overcast**	Temperature	**18** °C

Additional Investigations Required:

	Priority			Estimated Cost
	None	Normal	Urgent	
Material Condition Survey				
Detailed Deck Condition Survey:	X			
Non-destructive Delamination Survey of Asphalt-Covered Deck:	X			
Concrete Substructure Condition Survey:	X			
Detailed Coating Condition Survey:	X			
Detailed Timber Investigation:	X			
Post-Tensioned Strand Investigation:	X			
Underwater Investigation	X			
Fatigue Investigation	X			
Seismic Investigation	X			
Structure Evaluation:	X			
Monitoring	X			
Deformations, Settlements and Movements:		X		**$5,000.00**
Crack Widths:	X			
RSS Horizontal movements of face:	X			
RSS Vertical movements of overall structure:	X			
RSS Local movements or deterioration of face elements:	X			
RSS Horizontal movements within overall structure:	X			
RSS Vertical movements within overall structure	X			
RSS Lateral earth pressure at the back of facing elements	X			
Investigation Notes:		**Total Cost**		**$5,000.00**

Overall Structure Notes:

Recommended Work on Structure	[ ] None [ ] Minor Rehab. [ ] Major Rehab. [X] Replace
Timing of Recommended Work	[ ] Urgent [X] 1 to 5 years [ ] 6 to 10 years
Overall Comments:	**The timber cribs supporting this bridge are in very poor condition and need to be replaced. Until replacement we recommend that the bridge to be monitored for continued movement. Other timber elements should also be replaced to extend the life of this bridge. An approach barrier system would improve safety.**
Date of Next inspection:	**August 2021**

Overall Bridge Condition

% Poor in Deck	% Poor in Beams	% Poor in Substructure	% Poor in Barrier	Bridge Condition Index (BCI or BCIp)	
				BCIp	BCI
7%	5%	100%	9%	79.45	26.21

Overal Bridge Sufficiency

Traffic	Economic	Width	Alignment	Bridge Sufficiency Index (BSI)
4	2	5	4	11.21

Element Data:

Element Group:	**Approaches**	Length:	**6.0 m**
Element Name:	**Wearing Surface**	Width:	**3.5 m**
Location:	**North and south**	Height:	
Material:	**Surface Treatment**	Count:	**2**
Element Type:		Total Quantity:	**42 sq. m**
Environment:	**Benign**	Limited Inspection:	
Protection System:	**None**		

Condition Data:	Units	Excellent	Good	Fair	Poor*	Performance Deficiencies
	sq.m		**38**	**4**		

Comments: **Earth and gravel surface. 300 mm x 300 mm depression on west approach. Some of path eroding into watercourse on the east side.**

Recommended Work:	Rehab: ☐	Replace: ☐	Maintenance Needs:	
Urgent: ☐	1-5 Years: ☐	6-10 Years: ☐	None: ☒	Urgent: ☐ 1 Year: ☐ 2 Year: ☐

Element Photo:

Description of Photo: Photo 1 - Approach Wearing Surface.jpg

Element Photo:

Description of Photo: Photo 2 - Approach Wearing Surface.jpg

Element Photo:

Description of Photo: Photo 3 - Approach Wearing Surface.jpg

Element Photo:

Description of Photo: Photo 4 - Approach Wearing Surface.jpg

Element Photo:

Description of Photo:

Element Data:

Element Group:	**Accessories**	Length:	
Element Name:	**Signs**	Width:	
Location:	**All**	Height:	
Material:	**Steel**	Count:	**3**
Element Type:		Total Quantity:	**3**
Environment:	**Benign**	Limited Inspection:	
Protection System:	**None**		

Condition Data:	Units	Excellent	Good	Fair	Poor*	Performance Deficiencies
	each		**3**			

Comments: **3 object warning signs in good condition.**

Recommended Work:	Rehab: ☐	Replace: ☐	Maintenance Needs:	**18 - Other**
Urgent: ☐	1-5 Years: ☐	6-10 Years: ☐	None: **X**	Urgent: ☐ 1 Year: **X** 2 Year: ☐
			4th object warning sign should be installed.	

Element Photo:

Description of Photo: Photo 5 - Sign.jpg

Element Photo:

Description of Photo: Photo 6 - Sign.jpg

Element Photo:

Description of Photo: Photo 7 - Sign.jpg

Element Data:

Element Group:	**Deck**	Length:	**10.8 m**
Element Name:	**Top / Wearing Surface**	Width:	**4.3 m**
Location:	**All**	Height:	
Material:	**Wood**	Count:	**1**
Element Type:		Total Quantity:	**46.4 sq. m**
Environment:	**Benign**	Limited Inspection:	
Protection System:	**None**		

Condition Data:	Units	Excellent	Good	Fair	Poor*	Performance Deficiencies
	sq.m		**44**	**2.4**		

Comments: **Damaged wood at ends due to machinery. Dirt and debris built up between running boards. Large sag in surface 2.0 m from north approach. Running boards have numerous splits. Roadway granulars are accumulating on deck.**

Recommended Work:	Rehab: [ ]	Replace: [X]	Maintenance Needs:	**2 - Bridge Cleaning**
Urgent: [ ]	1-5 Years: [X]	6-10 Years: [ ]	None: [ ]	Urgent: [ ] 1 Year: [X] 2 Year: [ ]
Replace timber running boards.			**Surface should be cleaned.**	

Element Photo:

Description of Photo: Photo 8 - Bridge Surface.jpg

Element Photo:

Description of Photo: Photo 9 - Bridge Surface.jpg

Element Photo:

Description of Photo: Photo 10 - Bridge Surface.jpg

Element Photo:

Description of Photo: Photo 11 - Bridge Surface.jpg

Element Photo:

Description of Photo:

Element Data:

Element Group:	**Sidewalks and Curbs**	Length:	**12.0 m**
Element Name:	**Curbs**	Width:	**0.15 m**
Location:	**North and South Side**	Height:	**0.15 m**
Material:	**Timber**	Count:	**2**
Element Type:		Total Quantity:	**24 m**
Environment:	**Benign**	Limited Inspection:	
Protection System:	**None**		

Condition Data:	Units	Excellent	Good	Fair	Poor*	Performance Deficiencies
	m			**22**	**2**	

Comments: **Curb has minor splits throughout but is in fair condition otherwise. Wood is soft when gouge tested.**

Recommended Work:	Rehab: [ ]	Replace: [X]	Maintenance Needs:	
Urgent: [ ]	1-5 Years: [X]	6-10 Years: [ ]	None: [ ]	Urgent: [ ] 1 Year: [ ] 2 Year: [ ]
Replace curb.				

Element Photo:

Description of Photo: Photo 12 - Curb.jpg

Element Photo:

Description of Photo: Photo 13 - Curb.jpg

Element Photo:

Description of Photo:

Element Data:

Element Group:	**Beam**	Length:	**10.8 m**
Element Name:	**Girders**	Width:	**0.15 m**
Location:	**Under Deck**	Height:	**0.6 m**
Material:	**Steel**	Count:	**2**
Element Type:		Total Quantity:	**21.4 m**
Environment:	**Benign**	Limited Inspection:	
Protection System:			

Condition Data:	Units	Excellent	Good	Fair	Poor*	Performance Deficiencies
	m			**21.4**		

Comments: **Steel has a weathered surface throughout but no significant damage or section loss. Some staining along bottom flange.**

Recommended Work:	Rehab: ☐	Replace: ☐	Maintenance Needs:	**2 - Bridge Cleaning**
Urgent: ☐	1-5 Years: ☐	6-10 Years: ☐	None: **X**	Urgent: ☐	1 Year: **X**	2 Year: ☐
			Clean bearing seats.	

Element Photo:

Description of Photo: Photo 14 - Girder.jpg

Element Photo:

Description of Photo: Photo 15 - Girder.jpg

Element Photo:

Description of Photo: Photo 16 - Girder.jpg

Element Data:

Element Group:	**Beam**	Length:	**2.7 m**
Element Name:	**Ballast Beam**	Width:	
Location:	**Behind Cribs Under Deck**	Height:	**0.6 m**
Material:	**Steel**	Count:	**2**
Element Type:		Total Quantity:	**5.4 m**
Environment:	**Benign**	Limited Inspection:	
Protection System:			

Condition Data:	Units	Excellent	Good	Fair	Poor*	Performance Deficiencies
	m			**5.4**		

Comments: **Steel has a weathered surface throughout but no significant damage or section loss. Some staining along bottom flange.**

Recommended Work:	Rehab: ☐	Replace: ☐	Maintenance Needs:	
Urgent: ☐	1-5 Years: ☐	6-10 Years: ☐	None: ☒	Urgent: ☐ 1 Year: ☐ 2 Year: ☐

Element Photo:

Description of Photo: Photo 17 - Ballast Beam.jpg

Element Photo:

Description of Photo: Photo 18 - Ballast Beam.jpg

Element Photo:

Description of Photo: Photo 19 - Ballast Beam.jpg

Element Data:

Element Group:	**Beam**	Length:	**10.8 m**
Element Name:	**Bottom Girders**	Width:	**0.6 m**
Location:	**Under Deck**	Height:	**0.15 m**
Material:	**Steel**	Count:	**2**
Element Type:		Total Quantity:	**21.4 m**
Environment:	**Benign**	Limited Inspection:	
Protection System:			

Condition Data:	Units	Excellent	Good	Fair	Poor*	Performance Deficiencies
	m			**21.4**		

Comments: **Base for girders above. Steel has a weathered surface throughout but no significant damage or section loss. Some staining along bottom flange.**

Recommended Work:	Rehab: ☐	Replace: ☐	Maintenance Needs:	
Urgent: ☐	1-5 Years: ☐	6-10 Years: ☐	None: **X**	Urgent: ☐	1 Year: ☐	2 Year: ☐

Element Photo:

Description of Photo: Photo 20 - Bottom Beam.jpg

Element Photo:

Description of Photo: Photo 21 - Bottom Beam.jpg

Element Photo:

Description of Photo: Photo 22 - Bottom Beam.jpg

Element Data:

Element Group:	**Deck**	Length:	**10.8 m**
Element Name:	**Soffit**	Width:	**4.3 m**
Location:	**All**	Height:	
Material:	**Wood**	Count:	**1**
Element Type:		Total Quantity:	**46.4 sq. m**
Environment:	**Benign**	Limited Inspection:	
Protection System:	**None**		

Condition Data:	Units	Excellent	Good	Fair	Poor*	Performance Deficiencies
	sq.m			**43.4**	**3**	

Comments: **Some staining from deck above. Edges have knicks and splits.**

Recommended Work:	Rehab: ☐	Replace: ☐	Maintenance Needs:	
Urgent: ☐	1-5 Years: ☐	6-10 Years: ☐	None: **X**	Urgent: ☐	1 Year: ☐	2 Year: ☐

Element Photo:

Description of Photo: Photo 23 - Soffit.jpg

Element Photo:

Description of Photo: Photo 24 - Soffit.jpg

Element Photo:

Description of Photo: Photo 25 - Soffit.jpg

Element Data:

Element Group:	**Abutments**	Length:	**2.1 m**
Element Name:	**Cribs**	Width:	**2.1 m**
Location:	**East-West**	Height:	**1.3 m**
Material:	**Timber with Stone**	Count:	**2**
Element Type:		Total Quantity:	**16.4 sq. m**
Environment:	**Benign**	Limited Inspection:	
Protection System:	**None**		

Condition Data:	Units	Excellent	Good	Fair	Poor*	Performance Deficiencies
	sq.m				**16.4**	

Comments: **Wood is very soft when gouge tested. Some members have moved out of position.**

Recommended Work:	Rehab: [ ]	Replace: [X]	Maintenance Needs:	
Urgent: [ ]	1-5 Years: [X]	6-10 Years: [ ]	None: [ ]	Urgent: [ ] 1 Year: [ ] 2 Year: [ ]
Replace cribs.				

Element Photo:

Description of Photo: Photo 26 - Crib.jpg

Element Photo:

Description of Photo: Photo 27 - Crib.jpg

Element Photo:

Description of Photo: Photo 28 - Crib.jpg

Element Photo:

Description of Photo: Photo 29 - Crib.jpg

Element Photo:

Description of Photo:

Element Data:

Element Group:	**Embankments**	Length:	
Element Name:	**Embankments**	Width:	
Location:	**All**	Height:	
Material:	**Soil/Rock/Grass**	Count:	
Element Type:		Total Quantity:	**4**
Environment:	**Benign**	Limited Inspection:	
Protection System:	**None**		

Condition Data:	Units	Excellent	Good	Fair	Poor*	Performance Deficiencies
	each			**3**	**1**	

Comments: **Steep embankments with heavy vegetation. Edges of roadway starting to erode into slope.**

Recommended Work:	Rehab: [X]	Replace: [ ]	Maintenance Needs:	
Urgent: [ ]	1-5 Years: [X]	6-10 Years: [ ]	None: [ ]	Urgent: [ ] 1 Year: [ ] 2 Year: [ ]
Repair washout.				

Element Photo:

Description of Photo: Photo 30 - Embankment.jpg

Element Photo:

Description of Photo: Photo 31 - Embankment.jpg

Element Photo:

Description of Photo:

Element Data:

Element Group:	**Watercourse**	Length:	
Element Name:	**Watercourse**	Width:	
Location:	**Under Bridge**	Height:	
Material:		Count:	
Element Type:		Total Quantity:	**1**
Environment:	**Benign**	Limited Inspection:	
Protection System:	**None**		

Condition Data:	Units	Excellent	Good	Fair	Poor*	Performance Deficiencies
	all			**1**		

Comments: **Flow is unobstructed. Branch is stuck under bridge.**

Recommended Work:	Rehab: ☐	Replace: ☐	Maintenance Needs:	**18 - Other**
Urgent: ☐	1-5 Years: ☐	6-10 Years: ☐	None: **X**	Urgent: ☐	1 Year: **X**	2 Year: ☐
			Clear debris from watercourse	

Element Photo:

Description of Photo: Photo 32 - Waterway.jpg

Repair and Rehabilitation Required:		Priority				Estimated Structural Cost
Element[1]	Repair and Rehabilitation Required[2]	6 to 10 Years	1 to 5 Years	Within 1 Year	Urgent	
Structure	Demolition		**X**			**$50,000.00**
Structure	Replacement					**$175,000.00**
OR						
Deck	Replace =					
Sidewalk/Curb	Rehab. =					
Barrier	Replace =					
Joints	Replace =					
Beams	Rehab. =					
Abutment	Replace =					
Pier	Rehab. =					
Other						
Estimated Rehabilitated or Replacement Structure Dimensions[3]						
Total Deck Length (m)	Overall Str. Width (m)				Total Structural Cost	**$225,000.00**

1 - Indicate specific costs for structure replacement OR for rehabilitation under the given headings.
2 - Give a very brief description of the rehabilitation work required.
3 - Estimated structure dimensions after completion of the proposed work - if it is expected to change.

Associated Work	Comments	Estimated Associated Work Cost
Approaches		
Detours	**Detour Signage and Traffic Control**	**$5,000.00**
Traffic Control		
Utilities		
Other		
	Contingencies	**$50,000.00**
	Mobilization and Demobilization; General; Insurance	**$75,000.00**
	Total Associated Work Cost	**$130,000.00**

Total Construction Cost	**$355,000.00**

Justification:

The timber cribs supporting this bridge are in very poor condition and need to be replaced. Until replacement we recommend that the bridge be monitored for continued movement. Timber running boards and curbs are in a poor condition and should also be replaced. An approach barrier system would improve roadside safety.

MTO Site Number:

Inventory Data:

Structure Name	11 - Fire Route A1 Bridge				
Main Highway #	Fire Route A1	On Structure [X] or Under [ ]	Service on Structure	[ ] Navig. Water [ ] Non-Navig. Water [ ] Rail [X] Road [ ] Ped. [ ] Other	
Location Description	1.0 km south of Merkley Road		Service under:	[ ] Navig. Water [X] Non-Navig. Water [ ] Rail [ ] Road [ ] Ped. [ ] Other	
Owner/Custodian	Gravenhurst				
MTO Region	Northeastern	Latitude	44° 53' 60" N	Longitude	79° 9' 36" W
Regional Engineer		Heritage Designation:	[ ] Not Cons. [X] Cons./Not App. [ ] List/Not Desig. Desig. [ ] Desig./Not List [ ] Desig. & List		
MTO Area	Gravenhurst	Hwy Class:	Freeway [ ] Arterial [ ] Collector [ ] Local [X]		
Old County		Posted Speed	50	No. of Lanes	1
Township	Gravenhurst	AADT	10	% Truck	0
Structure Type 1	Solid slab				
Structure Material 1	Concrete	Traffic Directional Bound	W-E		
Structure Type 2					
Structure Material 2		Inspection Frequency	2	(years)	
Total Deck Length	11.4 (m)	Inspection Year	2019		
Overall Str. Width	2.9 (m)	Inspection Duration	2	(hrs)	
Culvert Length	0 (m)				
Total Deck Area	33.06 (sq.m)				
Roadway Width	2.9 (m)	Min. Vertical Clearance		(m)	
Skew Angle	0 (Degree)	Detour Distance	N/A	(km)	
No. of Spans	1	Fill on Structure	0	(m)	
Span Lengths	7.1			(m)	
For retaining wall:					
Total Wall Length	(m)	Max. Wall Height		(m)	
Total Wall Area	(sq.m)	Ave. Wall Height		(m)	
		Angle of Backfill		(Degrees)	

Historical Data

Year Built	Unknown	Year of superstruct. Constructed	N/A	
Last Reg. OSIM Inspection	2016	Year of Last Minor Rehab.	N/A	
Last Enh. OSIM Inspection		Year of Last Major Rehab	N/A	
		Current Load Limit	/ / 3	(tonnes)

Work History: (Date/description)	Investigation History: (Date/description)

MTO Site Number:

Field Inspection Information:

Date of Inspection:	**September 4, 2019**	Type of Inspection:	[ ] Reg. OSIM [X] Enh. OSIM
Inspected By	**Kieran Ferguson**		
Others in Party:	**None**		
Eng. Access Equipment:	**None**		
Special Access Equipment	**None**		
Weather	**Overcast**	Temperature	**18** °C

Additional Investigations Required:

	Priority			Estimated Cost
	None	Normal	Urgent	
Material Condition Survey				
Detailed Deck Condition Survey:	X			
Non-destructive Delamination Survey of Asphalt-Covered Deck:	X			
Concrete Substructure Condition Survey:	X			
Detailed Coating Condition Survey:	X			
Detailed Timber Investigation:	X			
Post-Tensioned Strand Investigation:	X			
Underwater Investigation	X			
Fatigue Investigation	X			
Seismic Investigation	X			
Structure Evaluation:	X			
Monitoring				
Deformations, Settlements and Movements:		X		**$5,000.00**
Crack Widths:	X			
RSS Horizontal movements of face:	X			
RSS Vertical movements of overall structure:	X			
RSS Local movements or deterioration of face elements:	X			
RSS Horizontal movements within overall structure:	X			
RSS Vertical movements within overall structure	X			
RSS Lateral earth pressure at the back of facing elements	X			
Investigation Notes: Monitor for signs of movement at abutments until bridge is replaced.	**Total Cost**			**$0.00**

Overall Structure Notes:

Recommended Work on Structure	[ ] None [ ] Minor Rehab. [ ] Major Rehab. [X] Replace
Timing of Recommended Work	[ ] Urgent [X] 1 to 5 years [ ] 6 to 10 years
Overall Comments:	**This bridge is no longer in a stable condition and it is recommended that it be replaced. Until replacement it is recommended that this bridge be monitored for continued movement.**
Date of Next inspection:	**August 2021**

Overall Bridge Condition

% Poor in Deck	% Poor in Beams	% Poor in Substructure	% Poor in Barrier	Bridge Condition Index (BCI or BCIp)	
				BCIp	BCI
91%	91%	26%	0%	32.40	26.09

Overal Bridge Sufficiency

Traffic	Economic	Width	Alignment	Bridge Sufficiency Index (BSI)
4	2	5	1	14.09

Element Data:

Element Group:	**Approaches**	Length:	**6.0 m**
Element Name:	**Wearing Surface**	Width:	**2.9 m**
Location:	**East and West**	Height:	
Material:	**Surface Treatment**	Count:	**2**
Element Type:		Total Quantity:	**34.8 sq. m**
Environment:	**Benign**	Limited Inspection:	
Protection System:	**None**		

Condition Data:	Units	Excellent	Good	Fair	Poor*	Performance Deficiencies
	sq.m			**33**	**1.8**	

Comments: **Earth and gravel approaches. Minor to moderate washouts on 2 corners. Minor settlement at bridge connection.**

Recommended Work:	Rehab: ☐	Replace: ☐	Maintenance Needs:	
Urgent: ☐	1-5 Years: ☐	6-10 Years: ☐	None: **X**	Urgent: ☐	1 Year: ☐	2 Year: ☐

Element Photo:

Description of Photo: Photo 1 - Approach Wearing Surface.jpg

Element Photo:

Description of Photo: Photo 2 - Approach Wearing Surface.jpg

Element Photo:

Description of Photo:

Element Data:

Element Group:	**Deck**	Length:	**11.4 m**
Element Name:	**Top / Wearing Surface**	Width:	**2.9 m**
Location:	**All**	Height:	
Material:	**Concrete**	Count:	**1**
Element Type:		Total Quantity:	**33.1 sq. m**
Environment:	**Benign**	Limited Inspection:	
Protection System:	**None**		

Condition Data:	Units	Excellent	Good	Fair	Poor*	Performance Deficiencies
	sq.m			**28.1**	**5**	

Comments: **Concrete has a rough, spalled surface throughout. 3x 300 mm x 300 mm spalls. Full width crack at abutment connection. Crack continues around sides of deck.**

Recommended Work:	Rehab: ☐	Replace: [X]	Maintenance Needs:	
Urgent: ☐	1-5 Years: [X]	6-10 Years: ☐	None: ☐	Urgent: ☐	1 Year: ☐	2 Year: ☐

Element Photo:

Description of Photo: Photo 3 - Bridge Wearing Surface.jpg

Element Photo:

Description of Photo: Photo 4 - Bridge Wearing Surface.jpg

Element Photo:

Description of Photo: Photo 5 - Bridge Wearing Surface.jpg

Element Photo:

Description of Photo: Photo 6 - Bridge Wearing Surface.jpg

Element Photo:

Description of Photo: Photo 7 - Bridge Wearing Surface.jpg

Element Data:

Element Group:	**Deck**	Length:	**7.1 m**
Element Name:	**Soffit**	Width:	**2.9 m**
Location:	**All**	Height:	
Material:	**Concrete**	Count:	**1**
Element Type:		Total Quantity:	**20.6 sq. m**
Environment:	**Benign**	Limited Inspection:	
Protection System:	**None**		

Condition Data:	Units	Excellent	Good	Fair	Poor*	Performance Deficiencies
	sq.m			**5**	**15.6**	

Comments: **Concrete is heavily delaminated, with honeycombing and a spalled surface throughout.**

Recommended Work:	Rehab: [ ]	Replace: [X]	Maintenance Needs:	
Urgent: [ ]	1-5 Years: [X]	6-10 Years: [ ]	None: [ ]	Urgent: [ ] 1 Year: [ ] 2 Year: [ ]

Element Photo:

Description of Photo: Photo 8 - Soffit.jpg

Element Photo:

Description of Photo: Photo 9 - Soffit.jpg

Element Photo:

Description of Photo: Photo 10 - Soffit.jpg

Element Data:

Element Group:	**Abutments**	Length:	**2.9 m**
Element Name:	**Walls**	Width:	**1.3 m**
Location:	**East-West**	Height:	**0.7 m**
Material:	**Concrete**	Count:	**2**
Element Type:		Total Quantity:	**7.7 sq. m**
Environment:	**Benign**	Limited Inspection:	
Protection System:	**None**		

Condition Data:	Units	Excellent	Good	Fair	Poor*	Performance Deficiencies
	sq.m			**5.7**	**2**	

Comments: **Large 600 mm x 600 mm x 600 mm spall in north abutment. Concrete has a very spalled surface throughout. Erosion has significantly worn away at the sides of abutments.**

Recommended Work:	Rehab: [ ]	Replace: [X]	Maintenance Needs:	
Urgent: [ ]	1-5 Years: [X]	6-10 Years: [ ]	None: [ ]	Urgent: [ ] 1 Year: [ ] 2 Year: [ ]

Element Photo:

Description of Photo: Photo 11 - Abutment.jpg

Element Photo:

Description of Photo: Photo 12 - Abutment.jpg

Element Photo:

Description of Photo: Photo 13 - Abutment.jpg

Element Photo:

Description of Photo: Photo 14 - Abutment.jpg

Element Photo:

Description of Photo:

Element Data:

Element Group:	**Embankments**	Length:	
Element Name:	**Embankments**	Width:	
Location:	**All**	Height:	
Material:	**Soil/Rock/Grass**	Count:	**4**
Element Type:		Total Quantity:	**4**
Environment:	**Benign**	Limited Inspection:	
Protection System:	**None**		

Condition Data:	Units	Excellent	Good	Fair	Poor*	Performance Deficiencies
	each				**4**	

Comments: **Very steep and heavily vegetated. Minor washouts near bridge.**

Recommended Work:	Rehab: [X]	Replace: [ ]	Maintenance Needs:	
Urgent: [ ]	1-5 Years: [X]	6-10 Years: [ ]	None: [ ]	Urgent: [ ] 1 Year: [ ] 2 Year: [ ]
Repair washouts.				

Element Photo:

Description of Photo: Photo 15 - Embankment.jpg

Element Photo:

Description of Photo: Photo 16 - Embankment.jpg

Element Photo:

Description of Photo: Photo 17 - Embankment.jpg

Element Data:

Element Group:	**Watercourse**	Length:	
Element Name:	**Watercourse**	Width:	
Location:	**Under Bridge**	Height:	
Material:		Count:	
Element Type:		Total Quantity:	**1**
Environment:	**Benign**	Limited Inspection:	
Protection System:	**None**		

Condition Data:	Units	Excellent	Good	Fair	Poor*	Performance Deficiencies
	all		**1**			

Comments: **Flow is unobstructed.**

Recommended Work:	Rehab: ☐	Replace: ☐	Maintenance Needs:	
Urgent: ☐	1-5 Years: ☐	6-10 Years: ☐	None: **X**	Urgent: ☐	1 Year: ☐	2 Year: ☐

Element Photo:

Description of Photo: Photo 18 - Watercourse.jpg

Element Photo:

Description of Photo: Photo 19 - Watercourse.jpg

Element Photo:

Description of Photo:

Repair and Rehabilitation Required:		Priority				Estimated Structural Cost
Element[1]	Repair and Rehabilitation Required[2]	6 to 10 Years	1 to 5 Years	Within 1 Year	Urgent	
Structure	Demolition					
Structure	Replacement		**X**			**$270,000.00**
OR						
Deck	Replace =					
Sidewalk/Curb	Rehab. =					
Barrier	Replace =					
Joints	Replace =					
Beams	Rehab. =					
Abutment	Rehab. =					
Embankments	Rehab. =					
Other						
Estimated Rehabilitated or Replacement Structure Dimensions[3]						
Total Deck Length (m)	Overall Str. Width (m)				Total Structural Cost	**$270,000.00**

1 - Indicate specific costs for structure replacement OR for rehabilitation under the given headings.
2 - Give a very brief description of the rehabilitation work required.
3 - Estimated structure dimensions after completion of the proposed work - if it is expected to change.

Associated Work	Comments	Estimated Associated Work Cost
Approaches		
Detours	**Detour Signage and Traffic Control**	**$5,000.00**
Traffic Control		
Utilities		
Other		
	Contingencies	**$50,000.00**
	Mobilization and Demobilization; General; Insurance	**$75,000.00**
	Total Associated Work Cost	**$130,000.00**

Total Construction Cost	**$400,000.00**

Justification:

This bridge is no longer in a stable condition and it is recommended that it be replaced. The estimated replacement cost of $400,000 is based on a single lane structure width of 5 m with a new substructure, deck and curb and barrier system. An approach barrier system should also be constructed to impose safety.

MTO Site Number:

Inventory Data:

Structure Name	201 - Lots 15/16, Conc 10						
Main Highway #	Barkway Road	On Structure [X]	or Under [ ]	Service on Structure	[ ] Navig. Water	[ ] Non-Navig. Water	
					[ ] Rail	[X] Road	[ ] Ped. [ ] Other
Location Description	1.5 km south of Merkley Road			Service under:	[ ] Navig. Water	[X] Non-Navig. Water	
					[ ] Rail	[ ] Road	[ ] Ped. [ ] Other
Owner/Custodian	Gravenhurst						
MTO Region	Northeastern	Latitude	44° 53' 60" N	Longitude	79° 10' 48" W		
Regional Engineer		Heritage Designation:	[X] Not Cons.	[ ] Cons./Not App.	[ ] List/Not Desig.		
			Desig.	[ ] Desig./Not List	[ ] Desig. & List		
MTO Area	Gravenhurst	Hwy Class:	Freeway [ ]	Arterial [ ]	Collector [ ]	Local [X]	
Old County		Posted Speed	50	No. of Lanes	1		
Township	Gravenhurst	AADT	180	% Truck	0		
Structure Type 1	Multi-Plate Arch CSP Culvert						
Structure Material 1	Steel	Traffic Directional Bound	N-S				
Structure Type 2							
Structure Material 2		Inspection Frequency	2	(years)			
Total Deck Length	6.4 (m)	Inspection Year	2019				
Overall Str. Width	0 (m)	Inspection Duration	2	(hrs)			
Culvert Length	24.4 (m)						
Total Deck Area	156.2 (sq.m)						
Roadway Width	6.2 (m)	Min. Vertical Clearance		(m)			
Skew Angle	0 (Degree)	Detour Distance	N/A	(km)			
No. of Spans	1	Fill on Structure	0	(m)			
Span Lengths	6.4 (m)						
For retaining wall:							
Total Wall Length	(m)	Max. Wall Height	(m)				
Total Wall Area	(sq.m)	Ave. Wall Height	(m)				
		Angle of Backfill	(Degrees)				

Historical Data

Year Built	1960	Year of superstruct. Constructed	N/A	
Last Reg. OSIM Inspection	2016	Year of Last Minor Rehab.	N/A	
Last Enh. OSIM Inspection		Year of Last Major Rehab	N/A	
		Current Load Limit	/ / 3	(tonnes)

Work History: (Date/description)	Investigation History: (Date/description)

MTO Site Number:

Field Inspection Information:

Date of Inspection:	**September 4, 2019**	Type of Inspection:	[ ] Reg. OSIM [X] Enh. OSIM
Inspected By	**Kieran Ferguson**		
Others in Party:	**None**		
Eng. Access Equipment:	**None**		
Special Access Equipment	**None**		
Weather	**Overcast**	Temperature	**18** °C

Additional Investigations Required:

	Priority			Estimated Cost
	None	Normal	Urgent	
Material Condition Survey				
Detailed Deck Condition Survey:	X			
Non-destructive Delamination Survey of Asphalt-Covered Deck:	X			
Concrete Substructure Condition Survey:	X			
Detailed Coating Condition Survey:	X			
Detailed Timber Investigation:	X			
Post-Tensioned Strand Investigation:	X			
Underwater Investigation	X			
Fatigue Investigation	X			
Seismic Investigation	X			
Structure Evaluation:	X			
Monitoring	X			
Deformations, Settlements and Movements:	X			
Crack Widths:	X			
RSS Horizontal movements of face:	X			
RSS Vertical movements of overall structure:	X			
RSS Local movements or deterioration of face elements:	X			
RSS Horizontal movements within overall structure:	X			
RSS Vertical movements within overall structure	X			
RSS Lateral earth pressure at the back of facing elements	X			
Investigation Notes:		**Total Cost**		**$0.00**

Overall Structure Notes:

Recommended Work on Structure	[ ] None [X] Minor Rehab. [ ] Major Rehab. [ ] Replace
Timing of Recommended Work	[ ] Urgent [X] 1 to 5 years [ ] 6 to 10 years
Overall Comments:	**This steel CSP culvert has moderate corrosion deterioration at its base, but is otherwise in fairly good condition. We recommend that the erosion of steel at the base of this culvert to be monitored for continued corrosion.**
Date of Next inspection:	**August 2021**

Overall Bridge Condition

% Poor in Deck	% Poor in Beams	% Poor in Substructure	% Poor in Barrier	Bridge Condition Index (BCI or BCIp)	
				BCIp	BCI
10%	10%	10%	0%	91.50	63.37

Overal Bridge Sufficiency

Traffic	Economic	Width	Alignment	Bridge Sufficiency Index (BSI)
0	0	2	1	60.37

Element Data:

Element Group:	**Approaches**	Length:	**6.0 m (Each Approach)**
Element Name:	**Wearing Surface**	Width:	**6.2 m**
Location:	**Both Sides**	Height:	
Material:	**Asphalt**	Count:	**2**
Element Type:		Total Quantity:	**37.2 sq. m**
Environment:	**Moderate**	Limited Inspection:	
Protection System:			

Condition Data:	Units	Excellent	Good	Fair	Poor*	Performance Deficiencies
	sq.m		**36.2**	**1**		

Comments: **1 moderate 6.2 m long crack. 5.0 m long minor crack. 1 minor 6.2 m long crack. No potholes.**

Recommended Work:	Rehab: [X]	Replace: [ ]	Maintenance Needs:	
Urgent: [ ]	1-5 Years: [X]	6-10 Years: [ ]	None: [X]	Urgent: [ ] 1 Year: [ ] 2 Year: [ ]
Rout and seal cracks.				

Element Photo:

Description of Photo: Photo 1 - Approach Wearing Surface.jpg

Element Photo:

Description of Photo: Photo 2 - Approach Wearing Surface.jpg

Element Photo:

Description of Photo: Photo 3 - Approach Wearing Surface.jpg

Element Data:

Element Group:	**Approach**	Length:	**86 m**
Element Name:	**Railing System**	Width:	
Location:	**Each side of road**	Height:	
Material:	**3 Cable and Wood Post**	Count:	**2**
Element Type:		Total Quantity:	**86 m**
Environment:	**Moderate**	Limited Inspection:	
Protection System:	**None**		

Condition Data:	Units	Excellent	Good	Fair	Poor*	Performance Deficiencies
	m		**81**	**5**		

Comments: **Some slightly loose cables. No damage to steel. 48 wood posts have minor knicks in post and minor splitting.**

Recommended Work:	Rehab: ☐	Replace: ☐	Maintenance Needs:	
Urgent: ☐	1-5 Years: ☐	6-10 Years: ☐	None: **X**	Urgent: ☐	1 Year: ☐	2 Year: ☐

Element Photo:

Description of Photo: Photo 4 - Approach Barrier.jpg

Element Photo:

Description of Photo: Photo 5 - Approach Barrier.jpg

Element Photo:

Description of Photo: Photo 6 - Approach Barrier.jpg

Element Photo:

Description of Photo: Photo 7 - Approach Barrier Post.jpg

Element Photo:

Description of Photo: Photo 8 - Approach Barrier Post.jpg

Element Photo:

Description of Photo: Photo 9 - Approach Barrier Post.jpg

Element Photo:

Description of Photo:

Element Data:

Element Group:	**Culvert**	Length:	**24.4 m**
Element Name:	**CSP Culvert**	Width:	**6.4 m**
Location:	**Beneath roadway**	Height:	**4.0 m**
Material:	**Corrugated Steel**	Count:	**1**
Element Type:		Total Quantity:	**24.4 m**
Environment:	**Moderate**	Limited Inspection:	
Protection System:	**Galvanized**		

Condition Data:	Units	Excellent	Good	Fair	Poor*	Performance Deficiencies
	m		**18.4**	**3.5**	**2.5**	

Comments: **Heavy corrosion 200 mm above water line for full length of culvert. Moderate corrosion from 200 mm to 800 mm above water line for full length of culvert. Steel is in good condition above 800 mm above the water line. Several perforations exist due to corrosion at culvert ends, especially at culvert inlet.**

Recommended Work:	Rehab: ☐	Replace: ☐	Maintenance Needs:	
Urgent: ☐	1-5 Years: ☐	6-10 Years: ☐	None: ☐	Urgent: ☐ 1 Year: ☐ 2 Year: ☐

Element Photo:

Description of Photo: Photo 10 - Culvert.jpg

Element Photo:

Description of Photo: Photo 11 - Culvert.jpg

Element Photo:

Description of Photo: Photo 12 - Culvert.jpg

Element Photo:

Description of Photo: Photo 13 - Culvert.jpg

Element Photo:

Description of Photo: Photo 14 - Culvert.jpg

Element Data:

Element Group:	**Streams & Waterways**	Length:	
Element Name:	**Embankments**	Width:	
Location:	**All quadrants**	Height:	
Material:		Count:	**4**
Element Type:		Total Quantity:	**4**
Environment:	**Benign**	Limited Inspection:	
Protection System:			

Condition Data:	Units	Excellent	Good	Fair	Poor*	Performance Deficiencies
	each			**4**		

Comments: **Steep with heavy vegetation. Some erosion of slopes has occurred.**

Recommended Work:	Rehab: [X]	Replace: [ ]	Maintenance Needs:	
Urgent: [ ]	1-5 Years: [X]	6-10 Years: [ ]	None: [ ]	Urgent: [ ] 1 Year: [ ] 2 Year: [ ]
Install slope protection.				

Element Photo:

Description of Photo: Photo 15 - Embankment.jpg

Element Photo:

Description of Photo: Photo 16 - Embankment.jpg

Element Photo:

Description of Photo: Photo 17 - Embankment.jpg

Element Data:

Element Group:	**Streams & Waterways**	Length:	
Element Name:	**Waterway**	Width:	
Location:	**Both sides of roadway**	Height:	
Material:		Count:	**1**
Element Type:		Total Quantity:	**1**
Environment:	**Benign**	Limited Inspection:	
Protection System:			

Condition Data:	Units	Excellent	Good	Fair	Poor*	Performance Deficiencies
	all				**x**	

Comments: **1 fallen tree is in culvert inlet. Moderate vegetation and branches in culvert inlet.**

Recommended Work:	Rehab: ☐	Replace: ☐	Maintenance Needs:	
Urgent: ☐	1-5 Years: ☐	6-10 Years: ☐	None: **X**	Urgent: ☐	1 Year: ☐	2 Year: ☐

Element Photo:

Description of Photo: Photo 18 - Watercourse.jpg

Element Photo:

Description of Photo: Photo 19 - Watercourse.jpg

Element Photo:

Description of Photo: Photo 20 - Watercourse.jpg

Element Photo:

Description of Photo: Photo 21 - Watercourse.jpg

Element Photo:

Description of Photo:

Repair and Rehabilitation Required:		Priority				Estimated Structural Cost
Element[1]	Repair and Rehabilitation Required[2]	6 to 10 Years	1 to 5 Years	Within 1 Year	Urgent	
Structure	Demolition					
Structure	Replacement					
OR						
Deck	Rehab. = Rout and seal cracks		**X**			**$1,500.00**
Sidewalk/Curb	Rehab. =					
Barrier	Rehab. =					
Joints	Rehab. =					
Beams	Rehab. =					
Abutment	Rehab. =					
Embankment	Rehab. = Repair embankments		**X**			**$1,500.00**
Other						
Estimated Rehabilitated or Replacement Structure Dimensions[3]						
Total Deck Length (m)	Overall Str. Width (m)				Total Structural Cost	**$3,000.00**

1 - Indicate specific costs for structure replacement OR for rehabilitation under the given headings.
2 - Give a very brief description of the rehabilitation work required.
3 - Estimated structure dimensions after completion of the proposed work - if it is expected to change.

Associated Work	Comments	Estimated Associated Work Cost
Approaches	**Install hazard signs**	**$1,000.00**
Detours		
Traffic Control		
Utilities		
Other	**Bridge Cleaning**	**$1,500.00**
	Total Associated Work Cost	**$2,500.00**

Total Construction Cost	**$5,500.00**

Justification:

This steel CSP culvert has moderate corrosion deterioration at its base, but is otherwise in fairly good condition. We recommend hazard signs to be installed, minor embankment repairs and asphalt crack repairs on the wearing surface. We recommend that the erosion of steel at the base of this culvert to be monitored for continued corrosion.

MTO Site Number:

Inventory Data:

Structure Name	202 - Lot 6, Conc 10/11				
Main Highway #	Merkley Road	On Structure [X]	or Under [ ]	Service on Structure	[ ] Navig. Water [ ] Non-Navig. Water [ ] Rail [X] Road [ ] Ped. [ ] Other
Location Description	4.1 km east of Barkway Road			Service under:	[ ] Navig. Water [X] Non-Navig. Water [ ] Rail [ ] Road [ ] Ped. [ ] Other
Owner/Custodian	Gravenhurst				
MTO Region	Northeastern	Latitude	44° 54' 36" N	Longitude	79° 9' 0" W
Regional Engineer		Heritage Designation:	[ ] Not Cons. [X] Cons./Not App. [ ] List/Not Desig. Desig. [ ] Desig./Not List [ ] Desig. & List		
MTO Area	Gravenhurst	Hwy Class:	Freeway [ ] Arterial [ ] Collector [ ] Local [X]		
Old County		Posted Speed	50	No. of Lanes	1
Township	Gravenhurst	AADT	50	% Truck	0
Structure Type 1	CSP Culvert				
Structure Material 1	Steel	Traffic Directional Bound	N-S		
Structure Type 2					
Structure Material 2		Inspection Frequency	2	(years)	
Total Deck Length	5.8 (m)	Inspection Year	2019		
Overall Str. Width	0 (m)	Inspection Duration	2	(hrs)	
Culvert Length	20 (m)				
Total Deck Area	106.1 (sq.m)				
Roadway Width	7.5 (m)	Min. Vertical Clearance		(m)	
Skew Angle	0 (Degree)	Detour Distance	N/A	(km)	
No. of Spans	1	Fill on Structure	3	(m)	
Span Lengths	3.6			(m)	
For retaining wall:					
Total Wall Length	(m)	Max. Wall Height		(m)	
Total Wall Area	(sq.m)	Ave. Wall Height		(m)	
		Angle of Backfill		(Degrees)	

Historical Data

Year Built	1980	Year of superstruct. Constructed	N/A	
Last Reg. OSIM Inspection	2016	Year of Last Minor Rehab.	2018	
Last Enh. OSIM Inspection		Year of Last Major Rehab	N/A	
		Current Load Limit	/ /	(tonnes)

Work History: (Date/description)

2018 - Structure replaced.

Investigation History: (Date/description)

MTO Site Number:

Field Inspection Information:

Date of Inspection:	**September 2, 2019**	Type of Inspection:	[X] Reg. OSIM [ ] Enh. OSIM
Inspected By	**Kieran Ferguson**		
Others in Party:	**None**		
Eng. Access Equipment:	**None**		
Special Access Equipment	**None**		
Weather	**Overcast**	Temperature	**18** °C

Additional Investigations Required:

	Priority			Estimated Cost
	None	Normal	Urgent	
Material Condition Survey				
Detailed Deck Condition Survey:	X			
Non-destructive Delamination Survey of Asphalt-Covered Deck:	X			
Concrete Substructure Condition Survey:	X			
Detailed Coating Condition Survey:	X			
Detailed Timber Investigation:	X			
Post-Tensioned Strand Investigation:	X			
Underwater Investigation	X			
Fatigue Investigation	X			
Seismic Investigation	X			
Structure Evaluation:	X			
Monitoring	X			
Deformations, Settlements and Movements:	X			
Crack Widths:	X			
RSS Horizontal movements of face:	X			
RSS Vertical movements of overall structure:	X			
RSS Local movements or deterioration of face elements:	X			
RSS Horizontal movements within overall structure:	X			
RSS Vertical movements within overall structure	X			
RSS Lateral earth pressure at the back of facing elements	X			
Investigation Notes:		**Total Cost**		**$0.00**

Overall Structure Notes:

Recommended Work on Structure	[X] None [ ] Minor Rehab. [ ] Major Rehab. [ ] Replace
Timing of Recommended Work	[ ] Urgent [ ] 1 to 5 years [ ] 6 to 10 years
Overall Comments:	**Culvert has been recently replaced and is in an excellent condition overall.**
Date of Next inspection:	**August 2021**

Overall Bridge Condition

% Poor in Deck	% Poor in Beams	% Poor in Substructure	% Poor in Barrier	Bridge Condition Index (BCI or BCIp)	
				BCIp	BCI
0%	0%	0%	0%	100.00	98.20

Overal Bridge Sufficiency

Traffic	Economic	Width	Alignment	Bridge Sufficiency Index (BSI)
0	2	1	1	94.20

Element Data:

Element Group:	**Approaches**	Length:	**6.0 m**
Element Name:	**Wearing Surface**	Width:	**6.7 m**
Location:	**Both Sides**	Height:	
Material:	**Gravel**	Count:	**2**
Element Type:		Total Quantity:	**40.2 sq. m**
Environment:	**Moderate**	Limited Inspection:	
Protection System:			

Condition Data:	Units	Excellent	Good	Fair	Poor*	Performance Deficiencies
	sq.m		**40.2**			

Comments: **Some separation of granules under wheel tracks. Gravel surface. No potholes.**

Recommended Work:	Rehab: ☐	Replace: ☐	Maintenance Needs:	
Urgent: ☐	1-5 Years: ☐	6-10 Years: ☐	None: **X**	Urgent: ☐	1 Year: ☐	2 Year: ☐

Element Photo:

Description of Photo: Photo 1 - Approach Wearing Surface.jpg

Element Photo:

Description of Photo: Photo 3 - Approach Wearing Surface.jpg

Element Photo:

Description of Photo: Photo 4 - Wearing Surface.jpg

Element Photo:

Description of Photo: Photo 5 - Wearing Surface.jpg

Element Photo:

Description of Photo:

Element Data:

Element Group:	**Approach**	Length:	**71.2 m**
Element Name:	**Railing System**	Width:	
Location:	**Each side of road**	Height:	
Material:	**3 Cable and Wood Post**	Count:	**2**
Element Type:		Total Quantity:	**142.4 m**
Environment:	**Moderate**	Limited Inspection:	
Protection System:	**None**		

Condition Data:	Units	Excellent	Good	Fair	Poor*	Performance Deficiencies
	m	**135**	**7.4**			

Comments: **Some loose cables throughout. All posts are in good condition. Recently installed.**

Recommended Work:	Rehab: ☐	Replace: ☐	Maintenance Needs:	
Urgent: ☐	1-5 Years: ☐	6-10 Years: ☐	None: **X**	Urgent: ☐	1 Year: ☐	2 Year: ☐

Element Photo:

Description of Photo: Photo 6 - Barrier.jpg

Element Photo:

Description of Photo: Photo 7 - Barrier.jpg

Element Photo:

Description of Photo: Photo 8 - Barrier.jpg

Element Data:

Element Group:	**Culvert**	Length:	**20.0 m**
Element Name:	**Culvert Barrel**	Width:	**3.6 m diameter**
Location:	**Beneath roadway**	Height:	
Material:	**CSP**	Count:	**1**
Element Type:		Total Quantity:	**20.0 m**
Environment:	**Moderate**	Limited Inspection:	
Protection System:	**Polymer Coated**		

Condition Data:	Units	Excellent	Good	Fair	Poor*	Performance Deficiencies
	m	**20**				

Comments: **Recently installed. In excellent condition.**

Recommended Work:	Rehab:	Replace:		Maintenance Needs:		
Urgent:	1-5 Years:	6-10 Years:	None: **X**	Urgent:	1 Year:	2 Year:

Element Photo:

Description of Photo: Photo 9 - Culvert.jpg

Element Photo:

Description of Photo: Photo 10 - Culvert.jpg

Element Photo:

Description of Photo: Photo 11 - Culvert.jpg

Element Photo:

Description of Photo: Photo 12 - Culvert.jpg

Element Photo:

Description of Photo: Photo 13 - Culvert.jpg

Element Data:

Element Group:	**Culvert**	Length:	**22.0 m**
Element Name:	**Overflow Culverts**	Width:	**1.5 m diameter**
Location:	**Beneath roadway**	Height:	
Material:	**CSP**	Count:	**2**
Element Type:		Total Quantity:	**44.0 m**
Environment:	**Moderate**	Limited Inspection:	
Protection System:			

Condition Data:	Units	Excellent	Good	Fair	Poor*	Performance Deficiencies
	m	**33**	**7**	**4**		

Comments: **Recently installed. Some light damage on north ends. Log is stuck in northernmost overflow culvert. Some very minor sag and deflection in center of span.**

Recommended Work:	Rehab: ☐	Replace: ☐	Maintenance Needs:	**18 - Other**
Urgent: ☐	1-5 Years: ☐	6-10 Years: ☐	None: **X**	Urgent: ☐ 1 Year: **X** 2 Year: ☐
			Remove debris from overflow culvert	

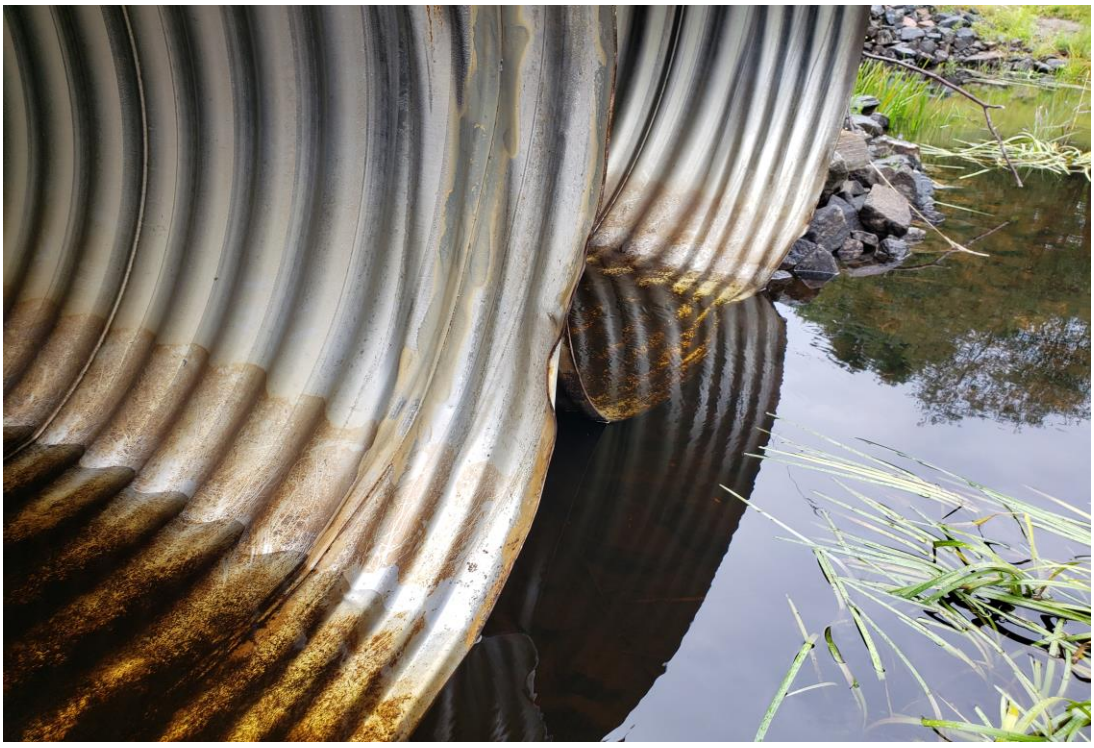
Element Photo:

Description of Photo: Photo 14 - Overflow Culvert.jpg

Element Photo:

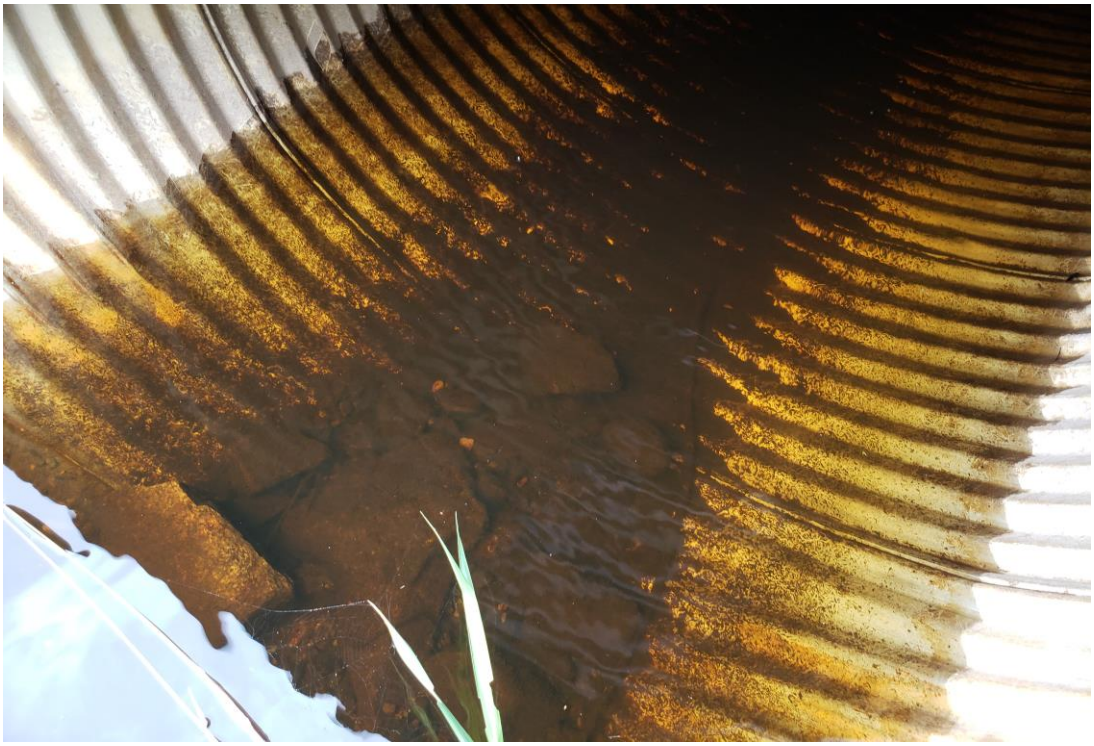
Description of Photo: Photo 15 - Overflow Culvert with minor sag.jpg

Element Photo:



Description of Photo: Photo 16 - Overflow Culvert.jpg

Element Photo:



Description of Photo: Photo 17 - Overflow Culvert.jpg

Element Photo:

Description of Photo: Photo 18 - Overflow Culvert.jpg

Element Data:

Element Group:	**Streams & Waterways**	Length:	
Element Name:	**Embankments**	Width:	
Location:	**All quadrants**	Height:	
Material:		Count:	**4**
Element Type:		Total Quantity:	**4**
Environment:	**Benign**	Limited Inspection:	
Protection System:			

Condition Data:	Units	Excellent	Good	Fair	Poor*	Performance Deficiencies
	each	**4**				

Comments: **Rip rap embankments appear to be stable and in good condition.**

Recommended Work:	Rehab: ☐ Replace: ☐	Maintenance Needs:	
Urgent: ☐ 1-5 Years: ☐ 6-10 Years: ☐ None: ☒		Urgent: ☐ 1 Year: ☐ 2 Year: ☐	

Element Photo:

Description of Photo: Photo 19 - Embankment.jpg

Element Photo:

Description of Photo: Photo 20 - Embankment.jpg

Element Photo:

Description of Photo: Photo 21 - Embankment.jpg

Element Data:

Element Group:	**Streams & Waterways**	Length:	
Element Name:	**Waterway**	Width:	
Location:	**Both sides of roadway**	Height:	
Material:		Count:	**1**
Element Type:		Total Quantity:	**1**
Environment:	**Benign**	Limited Inspection:	
Protection System:			

Condition Data:	Units	Excellent	Good	Fair	Poor*	Performance Deficiencies
	all		**x**			

Comments: **No obstruction in flow.**

Recommended Work:	Rehab: ☐	Replace: ☐	Maintenance Needs:	
Urgent: ☐	1-5 Years: ☐	6-10 Years: ☐	None: **X**	Urgent: ☐	1 Year: ☐	2 Year: ☐

Element Photo:

Description of Photo: Photo 22 - Watercourse.jpg

Repair and Rehabilitation Required:		Priority				Estimated Structural Cost
Element[1]	Repair and Rehabilitation Required[2]	6 to 10 Years	1 to 5 Years	Within 1 Year	Urgent	
Structure	Demolition					
Structure	Replacement					
OR						
Deck	Rehab. =					
Sidewalk/Curb	Rehab. =					
Barrier	Rehab. =					
Joints	Rehab. =					
Beams	Rehab. =					
Abutment	Rehab. =					
Pier	Rehab. =					
Other						
Estimated Rehabilitated or Replacement Structure Dimensions[3]						
Total Deck Length (m)	Overall Str. Width (m)				Total Structural Cost	**$0.00**

1 - Indicate specific costs for structure replacement OR for rehabilitation under the given headings.
2 - Give a very brief description of the rehabilitation work required.
3 - Estimated structure dimensions after completion of the proposed work - if it is expected to change.

Associated Work	Comments	Estimated Associated Work Cost
Approaches		
Detours		
Traffic Control		
Utilities		
Other		
	Total Associated Work Cost	**$0.00**

Total Construction Cost	**$0.00**

Justification:
Culvert has been recently replaced and is in a good condition overall.

MTO Site Number:

Inventory Data:

Structure Name	203 - Lots 15/16, Conc 12							
Main Highway #	Barkway Road	On Structure [X]	or Under [ ]	Service on Structure	[ ] Navig. Water	[ ] Non-Navig. Water		
					[ ] Rail	[X] Road	[ ] Ped.	[ ] Other
Location Description	0.33 km south of Seehaver Road			Service under:	[ ] Navig. Water	[X] Non-Navig. Water		
					[ ] Rail	[ ] Road	[ ] Ped.	[ ] Other
Owner/Custodian	Gravenhurst							
MTO Region	Northeastern	Latitude	44° 53' 60" N	Longitude	79° 10' 48" W			
Regional Engineer		Heritage Designation:	[ ] Not Cons.	[X] Cons./Not App.	[ ] List/Not Desig.			
			Desig. [ ]	Desig./Not List [ ]	Desig. & List			
MTO Area	Gravenhurst	Hwy Class:	Freeway [ ]	Arterial [ ]	Collector [ ]	Local [X]		
Old County		Posted Speed	50	No. of Lanes	1			
Township	Gravenhurst	AADT	92	% Truck	0			
Structure Type 1	CSP Arch Culvert							
Structure Material 1	Steel	Traffic Directional Bound	N-S					
Structure Type 2								
Structure Material 2		Inspection Frequency	2	(years)				
Total Deck Length	8.8 (m)	Inspection Year	2019					
Overall Str. Width	0 (m)	Inspection Duration	2	(hrs)				
Culvert Length	18.6 (m)							
Total Deck Area	163.7 (sq.m)							
Roadway Width	6.75 (m)	Min. Vertical Clearance		(m)				
Skew Angle	0 (Degree)	Detour Distance	18	(km)				
No. of Spans	2	Fill on Structure	0.75	(m)				
Span Lengths	4.4, 4.4			(m)				
For retaining wall:								
Total Wall Length	(m)	Max. Wall Height		(m)				
Total Wall Area	(sq.m)	Ave. Wall Height		(m)				
		Angle of Backfill		(Degrees)				

Historical Data

Year Built	2014	Year of superstruct. Constructed	N/A	
Last Reg. OSIM Inspection	2016	Year of Last Minor Rehab.	N/A	
Last Enh. OSIM Inspection		Year of Last Major Rehab	N/A	
		Current Load Limit	/ /	(tonnes)

Work History: (Date/description)	Investigation History: (Date/description)

MTO Site Number:

Field Inspection Information:

Date of Inspection:	**September 2, 2019**	Type of Inspection:	[X] Reg. OSIM [ ] Enh. OSIM
Inspected By	**Kieran Ferguson**		
Others in Party:	**None**		
Eng. Access Equipment:	**None**		
Special Access Equipment	**None**		
Weather	**Overcast**	Temperature	**18** °C

Additional Investigations Required:

	Priority			Estimated Cost
	None	Normal	Urgent	
Material Condition Survey				
Detailed Deck Condition Survey:	X			
Non-destructive Delamination Survey of Asphalt-Covered Deck:	X			
Concrete Substructure Condition Survey:	X			
Detailed Coating Condition Survey:	X			
Detailed Timber Investigation:	X			
Post-Tensioned Strand Investigation:	X			
Underwater Investigation	X			
Fatigue Investigation	X			
Seismic Investigation	X			
Structure Evaluation:	X			
Monitoring	X			
Deformations, Settlements and Movements:	X			
Crack Widths:	X			
RSS Horizontal movements of face:	X			
RSS Vertical movements of overall structure:	X			
RSS Local movements or deterioration of face elements:	X			
RSS Horizontal movements within overall structure:	X			
RSS Vertical movements within overall structure	X			
RSS Lateral earth pressure at the back of facing elements	X			
Investigation Notes:		**Total Cost**		**$0.00**

Overall Structure Notes:

Recommended Work on Structure	[X] None [ ] Minor Rehab. [ ] Major Rehab. [ ] Replace
Timing of Recommended Work	[ ] Urgent [ ] 1 to 5 years [ ] 6 to 10 years
Overall Comments:	**Culvert was replaced in 2014 and is generally in excellent condition overall.**
Date of Next inspection:	**August 2021**

Overall Bridge Condition

% Poor in Deck	% Poor in Beams	% Poor in Substructure	% Poor in Barrier	Bridge Condition Index (BCI or BCIp)	
				BCIp	BCI
0%	0%	0%	0%	100.00	100.00

Overal Bridge Sufficiency

Traffic	Economic	Width	Alignment	Bridge Sufficiency Index (BSI)
0	2	2	1	95.00

Element Data:

Element Group:	**Approaches**	Length:	**6.0 m**
Element Name:	**Wearing Surface**	Width:	**6.75 m**
Location:	**North and south**	Height:	
Material:	**Asphalt**	Count:	**2**
Element Type:		Total Quantity:	**81.0 sq. m**
Environment:	**Moderate**	Limited Inspection:	
Protection System:			

Condition Data:	Units	Excellent	Good	Fair	Poor*	Performance Deficiencies
	sq.m	**81**				

Comments: **Fairly recently repaved. Asphalt is in good condition overall. No cracks or potholes. Smooth surface.**

Recommended Work:	Rehab: ☐	Replace: ☐	Maintenance Needs:	
Urgent: ☐	1-5 Years: ☐	6-10 Years: ☐	None: **X**	Urgent: ☐	1 Year: ☐	2 Year: ☐

Element Photo:

Description of Photo: Photo 1 - Approach Wearing Surface.jpg

Element Photo:

Description of Photo: Photo 2 - Approach Wearing Surface.jpg

Element Photo:

Description of Photo: Photo 3 - Approach Wearing Surface.jpg

Element Data:

Element Group:	**Approach**	Length:	**85 .0 m, 70.0 m**
Element Name:	**Railing System**	Width:	
Location:	**Each side of road**	Height:	
Material:	**Steel**	Count:	**2**
Element Type:		Total Quantity:	**155.0 m**
Environment:	**Moderate**	Limited Inspection:	
Protection System:	**None**		

Condition Data:	Units	Excellent	Good	Fair	Poor*	Performance Deficiencies
	m	**155**				

Comments: **No defects in steel. No scrapes or dents.**

Recommended Work:	Rehab: ☐ Replace: ☐	Maintenance Needs:	
Urgent: ☐ 1-5 Years: ☐ 6-10 Years: ☐ None: **X**		Urgent: ☐ 1 Year: ☐ 2 Year: ☐	

Element Photo:

Description of Photo: Photo 4 - Approach Barrier.jpg

Element Photo:

Description of Photo: Photo 5 - Approach Barrier.jpg

Element Photo:

Description of Photo: Photo 6 - Approach Barrier.jpg

Element Data:

Element Group:	**Accessories**	Length:	
Element Name:	**Signs**	Width:	
Location:	**All Four Corners**	Height:	
Material:		Count:	**3**
Element Type:		Total Quantity:	
Environment:	**Benign**	Limited Inspection:	
Protection System:			

Condition Data:	Units	Excellent	Good	Fair	Poor*	Performance Deficiencies
	each		**1**	**1**	**1**	

Comments: **1 object warning sign is missing. 1 object warning sign is heavily scraped. 1 object warning sign is in good condition.**

Recommended Work:	Rehab: ☐	Replace: ☐	Maintenance Needs:	
Urgent: ☐	1-5 Years: ☐	6-10 Years: ☐	None: ☐	Urgent: ☐ 1 Year: ☐ 2 Year: ☐

Element Photo:

Description of Photo: Photo 7 - Sign.jpg

Element Photo:

Description of Photo: Photo 8 - Sign.jpg

Element Photo:

Description of Photo: Photo 9 - Sign.jpg

Element Data:

Element Group:	**Culvert**	Length:	**18.5 m**
Element Name:	**CSP Culvert**	Width:	**4.4 m**
Location:	**Beneath roadway**	Height:	**2.9 m**
Material:	**Corrugated Steel**	Count:	**1**
Element Type:		Total Quantity:	**18.5 m**
Environment:	**Moderate**	Limited Inspection:	
Protection System:	**Ploymer Coated**		

Condition Data:	Units	Excellent	Good	Fair	Poor*	Performance Deficiencies
	m	**18.5**				

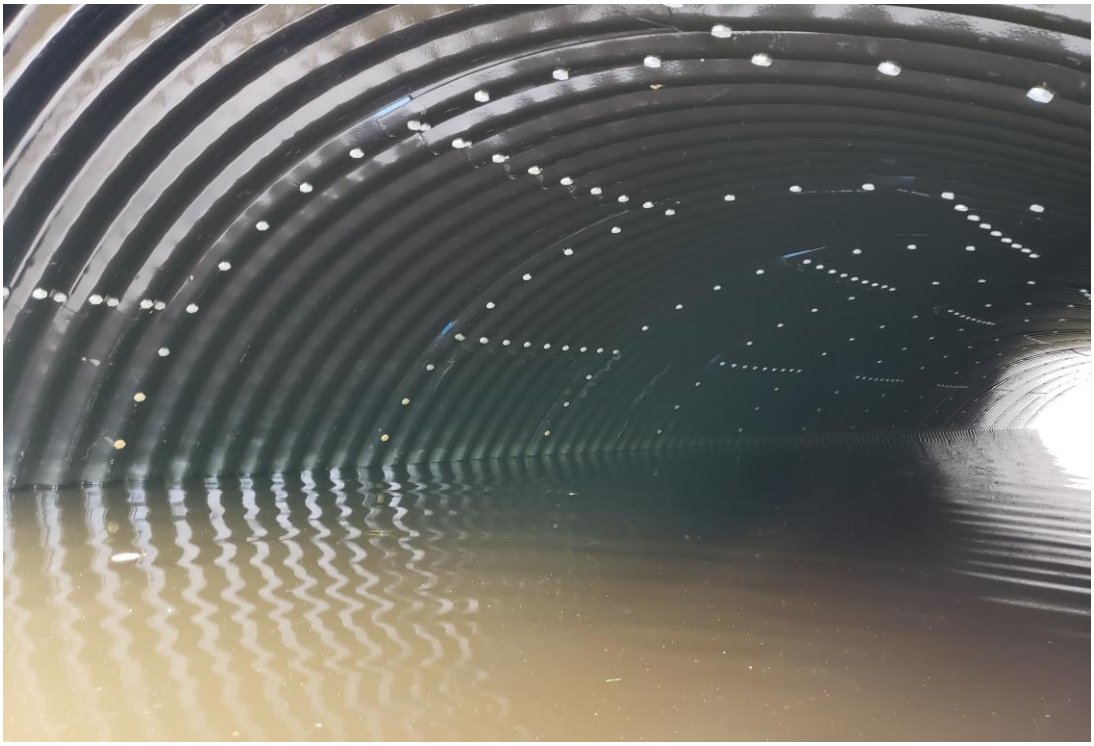
Comments: **Culvert is in good condition overall. No damage.**

Recommended Work:	Rehab: ☐	Replace: ☐	Maintenance Needs:	
Urgent: ☐	1-5 Years: ☐	6-10 Years: ☐	None: ☐	Urgent: ☐ 1 Year: ☐ 2 Year: ☐

Element Photo:

Description of Photo: Photo 10 - Culverts.jpg

Element Photo:



Description of Photo: Photo 11 - Culvert.jpg

Element Photo:

Description of Photo: Photo 12 - Culverts.jpg

Element Data:

Element Group:	**Streams & Waterways**	Length:	
Element Name:	**Embankments**	Width:	
Location:	**All quadrants**	Height:	
Material:		Count:	**4**
Element Type:		Total Quantity:	**4**
Environment:	**Benign**	Limited Inspection:	
Protection System:			

Condition Data:	Units	Excellent	Good	Fair	Poor*	Performance Deficiencies
	each	**4**				

Comments: **Rip rap embankments are stable and in great condition.**

Recommended Work:	Rehab: ☐	Replace: ☐	Maintenance Needs:	
Urgent: ☐	1-5 Years: ☐	6-10 Years: ☐	None: ☒	Urgent: ☐ 1 Year: ☐ 2 Year: ☐

Element Photo:

Description of Photo: Photo 13 - Embankment.jpg

Element Photo:

Description of Photo: Photo 14 - Embankment.jpg

Element Photo:

Description of Photo:

Element Data:

Element Group:	**Streams & Waterways**	Length:	
Element Name:	**Waterway**	Width:	
Location:	**Both sides of roadway**	Height:	
Material:		Count:	**1**
Element Type:		Total Quantity:	**1**
Environment:	**Benign**	Limited Inspection:	
Protection System:			

Condition Data:	Units	Excellent	Good	Fair	Poor*	Performance Deficiencies
	all		**x**			

Comments: **Flow is ubobstructed.**

Recommended Work:	Rehab: ☐	Replace: ☐	Maintenance Needs:	
Urgent: ☐	1-5 Years: ☐	6-10 Years: ☐	None: **X**	Urgent: ☐	1 Year: ☐	2 Year: ☐

Element Photo:

Description of Photo: Photo 15 - Watercourse.jpg

Element Photo:

Description of Photo: Photo 16 - Watercourse.jpg

Element Photo:

Description of Photo:

Repair and Rehabilitation Required:		Priority				Estimated Structural Cost
Element[1]	Repair and Rehabilitation Required[2]	6 to 10 Years	1 to 5 Years	Within 1 Year	Urgent	
Structure	Demolition					
Structure	Replacement					
OR						
Deck	Rehab. =					
Sidewalk/Curb	Rehab. =					
Barrier	Rehab. =					
Joints	Rehab. =					
Beams	Rehab. =					
Abutment	Rehab. =					
Pier	Rehab. =					
Other						
Estimated Rehabilitated or Replacement Structure Dimensions[3]						
Total Deck Length (m)	Overall Str. Width (m)				Total Structural Cost	**$0.00**

1 - Indicate specific costs for structure replacement OR for rehabilitation under the given headings.
2 - Give a very brief description of the rehabilitation work required.
3 - Estimated structure dimensions after completion of the proposed work - if it is expected to change.

Associated Work	Comments	Estimated Associated Work Cost
Approaches		
Detours		
Traffic Control		
Utilities		
Other		
	Total Associated Work Cost	**$0.00**

Total Construction Cost	**$0.00**

Justification:

MTO Site Number:

Inventory Data:

Structure Name	**204 - Riley Lake Road Culvert**				
Main Highway #	**Riley Lake Road**	On Structure [X] or Under [ ]	Service on Structure	[ ] Navig. Water [ ] Non-Navig. Water [ ] Rail [X] Road [ ] Ped. [ ] Other	
Location Description	1.7 km east of Housey's Rapids Road		Service under:	[ ] Navig. Water [X] Non-Navig. Water [ ] Rail [ ] Road [ ] Ped. [ ] Other	
Owner/Custodian	Gravenhurst				
MTO Region	Northeastern	Latitude	44° 50' 24" N	Longitude	79° 12' 0" W
Regional Engineer		Heritage Designation:	[X] Not Cons. [ ] Cons./Not App. [ ] List/Not Desig. Desig. [ ] Desig./Not List [ ] Desig. & List		
MTO Area	**Gravenhurst**	Hwy Class:	Freeway [ ] Arterial [ ] Collector [ ] Local [X]		
Old County		Posted Speed	**50**	No. of Lanes	**1**
Township	**Gravenhurst**	AADT	**168**	% Truck	**0**
Structure Type 1	**CSP Arch Culvert**				
Structure Material 1	**Steel**	Traffic Directional Bound	**W-E**		
Structure Type 2					
Structure Material 2		Inspection Frequency	**2** (years)		
Total Deck Length	**4** (m)	Inspection Year	**2019**		
Overall Str. Width	**0** (m)	Inspection Duration	**2** (hrs)		
Culvert Length	**23.1** (m)				
Total Deck Area	**92.4** (sq.m)				
Roadway Width	**6.2** (m)	Min. Vertical Clearance	(m)		
Skew Angle	**0** (Degree)	Detour Distance	**N/A** (km)		
No. of Spans	**2**	Fill on Structure	**0.6** (m)		
Span Lengths	**2.2, 2.2** (m)				
For retaining wall:					
Total Wall Length	(m)	Max. Wall Height	(m)		
Total Wall Area	(sq.m)	Ave. Wall Height	(m)		
		Angle of Backfill	(Degrees)		

Historical Data

Year Built	**2015**	Year of superstruct. Constructed	**N/A**	
Last Reg. OSIM Inspection	**2016**	Year of Last Minor Rehab.	**N/A**	
Last Enh. OSIM Inspection		Year of Last Major Rehab	**N/A**	
		Current Load Limit	/ /	(tonnes)

Work History: (Date/description)	Investigation History: (Date/description)

MTO Site Number:

Field Inspection Information:

Date of Inspection:	**September 2, 2019**	Type of Inspection:	[X] Reg. OSIM [ ] Enh. OSIM
Inspected By	**Kieran Ferguson**		
Others in Party:	**None**		
Eng. Access Equipment:	**None**		
Special Access Equipment	**None**		
Weather	**Overcast**	Temperature	**18** °C

Additional Investigations Required:

	Priority			Estimated Cost
	None	Normal	Urgent	
Material Condition Survey				
Detailed Deck Condition Survey:	X			
Non-destructive Delamination Survey of Asphalt-Covered Deck:	X			
Concrete Substructure Condition Survey:	X			
Detailed Coating Condition Survey:	X			
Detailed Timber Investigation:	X			
Post-Tensioned Strand Investigation:	X			
Underwater Investigation	X			
Fatigue Investigation	X			
Seismic Investigation	X			
Structure Evaluation:	X			
Monitoring	X			
Deformations, Settlements and Movements:	X			
Crack Widths:	X			
RSS Horizontal movements of face:	X			
RSS Vertical movements of overall structure:	X			
RSS Local movements or deterioration of face elements:	X			
RSS Horizontal movements within overall structure:	X			
RSS Vertical movements within overall structure	X			
RSS Lateral earth pressure at the back of facing elements	X			
Investigation Notes:		**Total Cost**		**$0.00**

Overall Structure Notes:

Recommended Work on Structure	[X] None [ ] Minor Rehab. [ ] Major Rehab. [ ] Replace
Timing of Recommended Work	[ ] Urgent [ ] 1 to 5 years [ ] 6 to 10 years
Overall Comments:	**Culvert was replaced in 2015 and is currently in excellent condition.**
Date of Next inspection:	**August 2021**

Overall Bridge Condition

% Poor in Deck	% Poor in Beams	% Poor in Substructure	% Poor in Barrier	Bridge Condition Index (BCI or BCIp)	
				BCIp	BCI
0%	0%	0%	0%	100.00	100.00

Overal Bridge Sufficiency

Traffic	Economic	Width	Alignment	Bridge Sufficiency Index (BSI)
0	2	2	1	95.00

Element Data:

Element Group:	**Approaches**	Length:	**6.0 m**
Element Name:	**Wearing Surface**	Width:	**6.2 m**
Location:	**East and west**	Height:	
Material:	**Asphalt**	Count:	**2**
Element Type:		Total Quantity:	**74.4 sq. m**
Environment:	**Moderate**	Limited Inspection:	
Protection System:			

Condition Data:	Units	Excellent	Good	Fair	Poor*	Performance Deficiencies
	sq.m	**74.4**				

Comments: **Smooth asphalt surface. No potholes or cracks.**

Recommended Work:	Rehab: ☐	Replace: ☐	Maintenance Needs:	
Urgent: ☐	1-5 Years: ☐	6-10 Years: ☐	None: ☒	Urgent: ☐ 1 Year: ☐ 2 Year: ☐

Element Photo:

Description of Photo: Photo 1 - Approach Wearing Surface.jpg

Element Photo:

Description of Photo: Photo 2 - Approach Wearing Surface.jpg

Element Photo:

Description of Photo: Photo 3 - Approach Wearing Surface.jpg

Element Data:

Element Group:	**Culvert**	Length:	**23.1 m**
Element Name:	**CSP Culvert**	Width:	**2.0 m diameter**
Location:	**Beneath roadway**	Height:	
Material:	**Corrugated Steel**	Count:	**2**
Element Type:		Total Quantity:	**46.2 m**
Environment:	**Moderate**	Limited Inspection:	
Protection System:	**Ploymer Coated**		

Condition Data:	Units	Excellent	Good	Fair	Poor*	Performance Deficiencies
	m	**46.2**				

Comments: **Some vegetation in culvert. No damage - is in good condition overall. Culvert was recently replaced.**

Recommended Work:	Rehab: ☐	Replace: ☐	Maintenance Needs:	
Urgent: ☐	1-5 Years: ☐	6-10 Years: ☐	None: ☒	Urgent: ☐ 1 Year: ☐ 2 Year: ☐

Element Photo:

Description of Photo: Photo 4 - Culverts.jpg

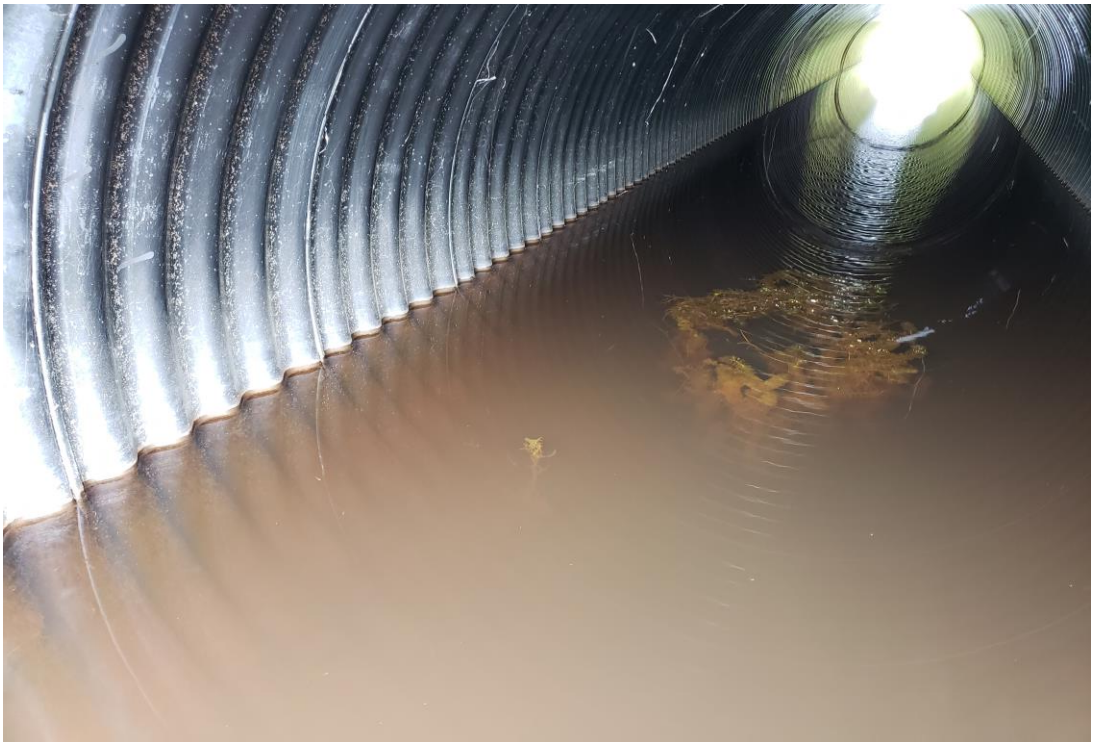
Element Photo:

Description of Photo: Photo 5 - Culvert.jpg

Element Photo:

Description of Photo: Photo 6 - Culvert.jpg

Element Photo:



Description of Photo: Photo 7 - Culvert.jpg

Element Photo:

Description of Photo:

Element Data:

Element Group:	**Streams & Waterways**	Length:	
Element Name:	**Embankments**	Width:	
Location:	**All quadrants**	Height:	
Material:		Count:	**4**
Element Type:		Total Quantity:	**4**
Environment:	**Benign**	Limited Inspection:	
Protection System:			

Condition Data:	Units	Excellent	Good	Fair	Poor*	Performance Deficiencies
	each	**4**				

Comments: **Rip rap embankments are stable and in very good condition.**

Recommended Work:	Rehab: ☐	Replace: ☐	Maintenance Needs:	
Urgent: ☐	1-5 Years: ☐	6-10 Years: ☐	None: **X**	Urgent: ☐	1 Year: ☐	2 Year: ☐

Element Photo:

Description of Photo: Photo 8 - Embankment.jpg

Element Photo:

Description of Photo: Photo 9 - Embankment.jpg

Element Photo:

Description of Photo:

Element Data:

Element Group:	**Streams & Waterways**	Length:	
Element Name:	**Waterway**	Width:	
Location:	**Both sides of roadway**	Height:	
Material:		Count:	**1**
Element Type:		Total Quantity:	**1**
Environment:	**Benign**	Limited Inspection:	
Protection System:			

Condition Data:	Units	Excellent	Good	Fair	Poor*	Performance Deficiencies
	all		**x**			

Comments: **No obstruction to flow. Waterway is heavily vegetated.**

Recommended Work:	Rehab: ☐	Replace: ☐	Maintenance Needs:	
Urgent: ☐	1-5 Years: ☐	6-10 Years: ☐	None: **X**	Urgent: ☐	1 Year: ☐	2 Year: ☐

Element Photo:

Description of Photo: Photo 10 - Watercourse.jpg

Element Photo:

Description of Photo: Photo 11 - Watercourse.jpg

Element Photo:

Description of Photo:

Repair and Rehabilitation Required:		Priority				Estimated Structural Cost
Element[1]	Repair and Rehabilitation Required[2]	6 to 10 Years	1 to 5 Years	Within 1 Year	Urgent	
Structure	Demolition					
Structure	Replacement					
OR						
Deck	Rehab. =					
Sidewalk/Curb	Rehab. =					
Barrier	Rehab. =					
Joints	Rehab. =					
Beams	Rehab. =					
Abutment	Rehab. =					
Pier	Rehab. =					
Other						
Estimated Rehabilitated or Replacement Structure Dimensions[3]						
Total Deck Length (m)	Overall Str. Width (m)				Total Structural Cost	**$0.00**

1 - Indicate specific costs for structure replacement OR for rehabilitation under the given headings.
2 - Give a very brief description of the rehabilitation work required.
3 - Estimated structure dimensions after completion of the proposed work - if it is expected to change.

Associated Work	Comments	Estimated Associated Work Cost
Approaches		
Detours		
Traffic Control		
Utilities		
Other		
	Total Associated Work Cost	**$0.00**

Total Construction Cost	**$0.00**

Justification:
Culvert was replaced in 2015 and is currently in excellent condition.

MTO Site Number:

Inventory Data:

Structure Name	C10 - Seehaver Road, Lot 14, Conc 12-13 New				
Main Highway #	Seehaver Road	On [X] or Under [ ] Structure	Service on Structure	[ ] Navig. Water [ ] Non-Navig. Water [ ] Rail [X] Road [ ] Ped. [ ] Other	
Location Description	0.35 km east of Barkway Road		Service under:	[ ] Navig. Water [X] Non-Navig. Water [ ] Rail [ ] Road [ ] Ped. [ ] Other	
Owner/Custodian	Gravenhurst				
MTO Region	Northeastern	Latitude	44° 55' 48" N	Longitude	79° 9' 36" W
Regional Engineer		Heritage Designation:	[X] Not Cons. [ ] Cons./Not App. [ ] List/Not Desig. Desig. [ ] Desig./Not List [ ] Desig. & List		
MTO Area	Gravenhurst	Hwy Class:	Freeway [ ] Arterial [ ] Collector [ ] Local [X]		
Old County		Posted Speed	50	No. of Lanes	1
Township	Gravenhurst	AADT	55	% Truck	0
Structure Type 1	CSP Arch Culvert				
Structure Material 1	Steel	Traffic Directional Bound	W-E		
Structure Type 2					
Structure Material 2		Inspection Frequency	2	(years)	
Total Deck Length	7.6 (m)	Inspection Year	2019		
Overall Str. Width	0 (m)	Inspection Duration	2	(hrs)	
Culvert Length	18.7 (m)				
Total Deck Area	142.1 (sq.m)				
Roadway Width	5.8 (m)	Min. Vertical Clearance		(m)	
Skew Angle	0 (Degree)	Detour Distance	N/A	(km)	
No. of Spans	2	Fill on Structure	0.6	(m)	
Span Lengths	3.8, 3.8			(m)	
For retaining wall:					
Total Wall Length	(m)	Max. Wall Height		(m)	
Total Wall Area	(sq.m)	Ave. Wall Height		(m)	
		Angle of Backfill		(Degrees)	

Historical Data

Year Built	2012	Year of superstruct. Constructed	N/A	
Last Reg. OSIM Inspection	2016	Year of Last Minor Rehab.	N/A	
Last Enh. OSIM Inspection		Year of Last Major Rehab	N/A	
		Current Load Limit	/ /	(tonnes)

Work History: (Date/description)	Investigation History: (Date/description)

MTO Site Number:

Field Inspection Information:

Date of Inspection:	**September 2, 2019**	Type of Inspection:	[X] Reg. OSIM [ ] Enh. OSIM
Inspected By	**Kieran Ferguson**		
Others in Party:	**None**		
Eng. Access Equipment:	**None**		
Special Access Equipment	**None**		
Weather	**Overcast**	Temperature	**20** °C

Additional Investigations Required:

	Priority			Estimated Cost
	None	Normal	Urgent	
Material Condition Survey				
Detailed Deck Condition Survey:	X			
Non-destructive Delamination Survey of Asphalt-Covered Deck:	X			
Concrete Substructure Condition Survey:	X			
Detailed Coating Condition Survey:	X			
Detailed Timber Investigation:	X			
Post-Tensioned Strand Investigation:	X			
Underwater Investigation	X			
Fatigue Investigation	X			
Seismic Investigation	X			
Structure Evaluation:	X			
Monitoring	X			
Deformations, Settlements and Movements:	X			
Crack Widths:	X			
RSS Horizontal movements of face:	X			
RSS Vertical movements of overall structure:	X			
RSS Local movements or deterioration of face elements:	X			
RSS Horizontal movements within overall structure:	X			
RSS Vertical movements within overall structure	X			
RSS Lateral earth pressure at the back of facing elements	X			
Investigation Notes:		**Total Cost**		**$0.00**

Overall Structure Notes:

Recommended Work on Structure	[X] None [ ] Minor Rehab. [ ] Major Rehab. [ ] Replace
Timing of Recommended Work	[ ] Urgent [ ] 1 to 5 years [ ] 6 to 10 years
Overall Comments:	**Culvert was replaced in 2012 and is currently in very good condition overall.**
Date of Next inspection:	**August 2021**

Overall Bridge Condition

% Poor in Deck	% Poor in Beams	% Poor in Substructure	% Poor in Barrier	Bridge Condition Index (BCI or BCIp)	
				BCIp	BCI
0%	0%	0%	0%	100.00	95.06

Overal Bridge Sufficiency

Traffic	Economic	Width	Alignment	Bridge Sufficiency Index (BSI)
0	2	5	2	86.06

Element Data:

Element Group:	**Approaches**	Length:	**6.0 m (Each Approach)**
Element Name:	**Wearing Surface**	Width:	**5.8 m**
Location:	**Both Sides**	Height:	
Material:	**Asphalt**	Count:	**2**
Element Type:		Total Quantity:	**69.6 sq. m**
Environment:	**Moderate**	Limited Inspection:	
Protection System:			

Condition Data:	Units	Excellent	Good	Fair	Poor*	Performance Deficiencies
	sq.m	**69.6**				

Comments: **Asphalt surface is smooth. No potholes or cracks.**

Recommended Work:	Rehab: ☐	Replace: ☐	Maintenance Needs:	
Urgent: ☐	1-5 Years: ☐	6-10 Years: ☐	None: ☒	Urgent: ☐ 1 Year: ☐ 2 Year: ☐

Element Photo:

Description of Photo: Photo 1 - Approach Wearing Surface.jpg

Element Photo:

Description of Photo: Photo 2 - Approach Wearing Surface.jpg

Element Photo:

Description of Photo:

Element Data:

Element Group:	**Approach**	Length:	**86.0 m**
Element Name:	**Railing System**	Width:	
Location:	**Each side of road**	Height:	
Material:	**3 Cable and Wood Post**	Count:	**2**
Element Type:		Total Quantity:	**172.0 m**
Environment:	**Moderate**	Limited Inspection:	
Protection System:	**None**		

Condition Data:	Units	Excellent	Good	Fair	Poor*	Performance Deficiencies
	m	**167**	**5**			

Comments: **Some knicks in tops of posts. Cables and posts are otherwise in great condition overall.**

Recommended Work:	Rehab: ☐	Replace: ☐	Maintenance Needs:	
Urgent: ☐	1-5 Years: ☐	6-10 Years: ☐	None: **X**	Urgent: ☐	1 Year: ☐	2 Year: ☐

Element Photo:

Description of Photo: Photo 3 - Approach Barrier.jpg

Element Photo:

Description of Photo: Photo 4 - Approach Barrier.jpg

Element Photo:

Description of Photo: Photo 5 - Approach Barrier.jpg

Element Data:

Element Group:	**Culvert**	Length:	**18.7 m**
Element Name:	**CSP Culvert**	Width:	**3.8 m**
Location:	**Beneath roadway**	Height:	**2.7 m**
Material:	**Corrugated Steel**	Count:	**2**
Element Type:		Total Quantity:	**37.4 m**
Environment:	**Moderate**	Limited Inspection:	
Protection System:	**Ploymer Coated**		

Condition Data:	Units	Excellent	Good	Fair	Poor*	Performance Deficiencies
	m	**37**	**0.4**			

Comments: **Dirt on culvert exterior. Some bolts have minor corrosion. Culverts have no damage and are in excellent condition overall.**

Recommended Work:	Rehab: ☐	Replace: ☐	Maintenance Needs:	
Urgent: ☐	1-5 Years: ☐	6-10 Years: ☐	None: ☒	Urgent: ☐	1 Year: ☐	2 Year: ☐

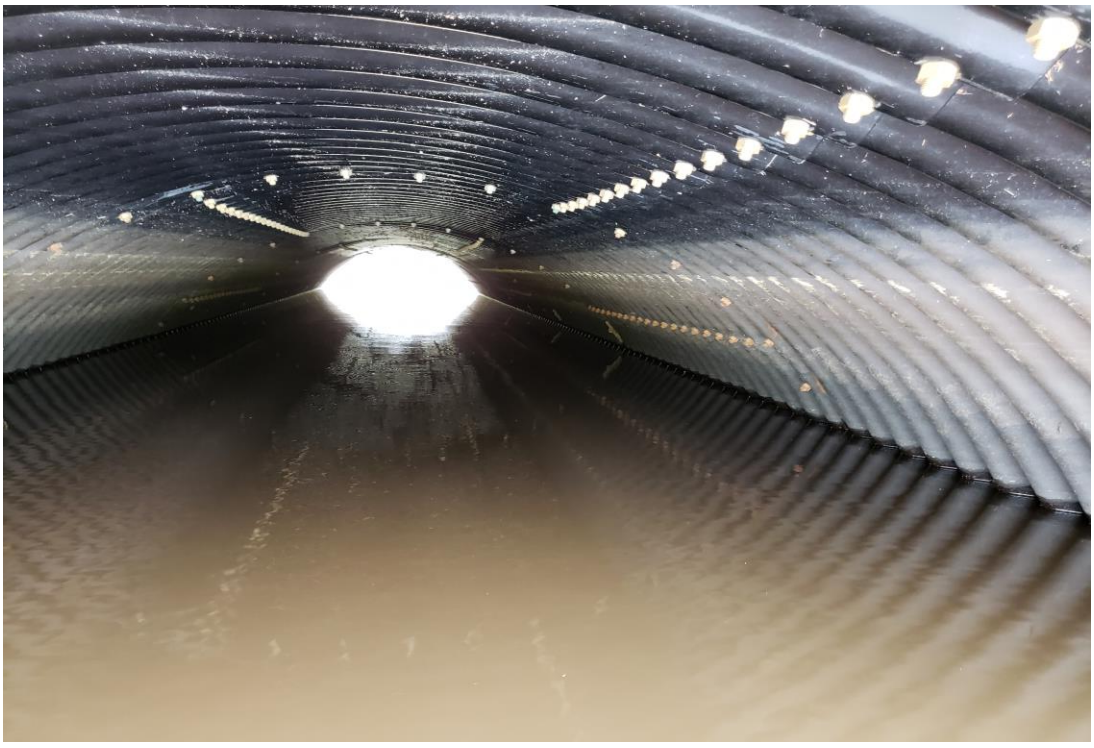
Element Photo:

Description of Photo: Photo 6 - Culvert.jpg

Element Photo:

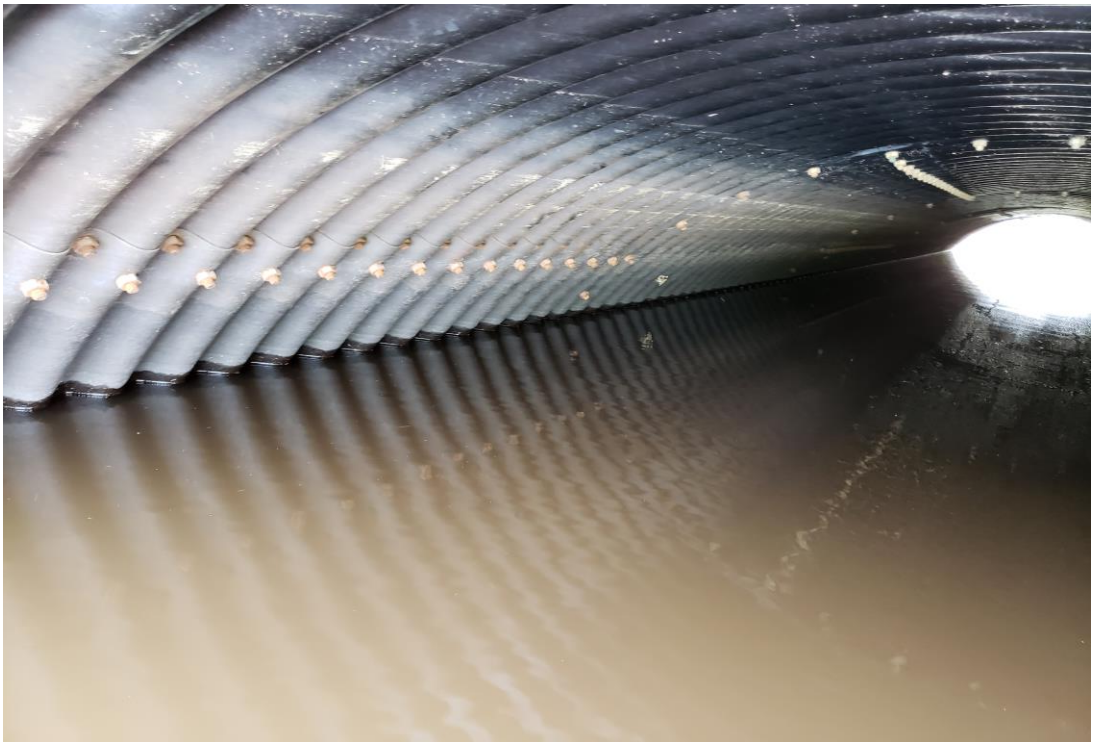
Description of Photo: Photo 7 - Culvert.jpg

Element Photo:



Description of Photo: Photo 8 - Culvert.jpg

Element Photo:



Description of Photo: Photo 9 - Culvert.jpg

Element Photo:

Description of Photo: Photo 10 - Culvert.jpg

Element Data:

Element Group:	**Streams & Waterways**	Length:	
Element Name:	**Embankments**	Width:	
Location:	**All quadrants**	Height:	
Material:		Count:	**4**
Element Type:		Total Quantity:	**4**
Environment:	**Benign**	Limited Inspection:	
Protection System:			

Condition Data:	Units	Excellent	Good	Fair	Poor*	Performance Deficiencies
	each	**4**				

Comments: **Rip rap embankments are stable and are in excellent condition overall.**

Recommended Work:	Rehab: ☐	Replace: ☐	Maintenance Needs:	
Urgent: ☐	1-5 Years: ☐	6-10 Years: ☐	None: ☒	Urgent: ☐ 1 Year: ☐ 2 Year: ☐

Element Photo:

Description of Photo: Photo 11 - Embankment.jpg

Element Photo:

Description of Photo: Photo 12 - Embankment.jpg

Element Photo:

Description of Photo: Photo 13 - Embankment.jpg

Element Data:

Element Group:	**Streams & Waterways**	Length:	
Element Name:	**Waterway**	Width:	
Location:	**Both sides of roadway**	Height:	
Material:		Count:	**1**
Element Type:		Total Quantity:	**1**
Environment:	**Benign**	Limited Inspection:	
Protection System:			

Condition Data:	Units	Excellent	Good	Fair	Poor*	Performance Deficiencies
	all		**x**			

Comments: **No obstruction to flow.**

Recommended Work:	Rehab:	Replace:	Maintenance Needs:
Urgent:	1-5 Years:	6-10 Years:	None: **X**
Urgent:	1 Year:	2 Year:	

Element Photo:

Description of Photo: Photo 14 - Watercourse.jpg

Element Photo:

Description of Photo: Photo 15 - Watercourse.jpg

Element Photo:

Description of Photo:

Repair and Rehabilitation Required:		Priority				Estimated Structural Cost
Element[1]	Repair and Rehabilitation Required[2]	6 to 10 Years	1 to 5 Years	Within 1 Year	Urgent	
Structure	Demolition					
Structure	Replacement					
OR						
Deck	Rehab. =					
Sidewalk/Curb	Rehab. =					
Barrier	Rehab. =					
Joints	Rehab. =					
Beams	Rehab. =					
Abutment	Rehab. =					
Pier	Rehab. =					
Other						
Estimated Rehabilitated or Replacement Structure Dimensions[3]						
Total Deck Length (m)	Overall Str. Width (m)				Total Structural Cost	**$0.00**

1 - Indicate specific costs for structure replacement OR for rehabilitation under the given headings.
2 - Give a very brief description of the rehabilitation work required.
3 - Estimated structure dimensions after completion of the proposed work - if it is expected to change.

Associated Work	Comments	Estimated Associated Work Cost
Approaches		
Detours		
Traffic Control		
Utilities		
Other		
	Total Associated Work Cost	**$0.00**

Total Construction Cost	**$0.00**

Justification:
Culvert was replaced in 2012 and is currently in very good condition overall.