



BIENNIAL BRIDGE INSPECTIONS

FINAL INSPECTION REPORT Municipality of Dysart et al

October 2016



TABLE OF CONTENTS

2		IN	NTRODUCTION NSPECTION PROCEDURES NSPECTION SUMMARIES		2 2 2
	3.1		Paddy's Pond (Bay) Bridge		3
	3.2		Kennisis Lake Narrows Bridge		3
	3.3		Barry's Bridge		4
	3.4		Redstone Brook Bridge		4
	3.5		Guilford Pine Lake Bridge		5
	3.6		Guilford Cranberry Lake Bridge		5
	3.7		Oblong Lake Narrows Bridge		6
	3.8		South Bay Bridge		6
	3.9		Koshlong Lake Bridge		7
	3.10)	Kelly Lake Bridge		8
	3.11	1	Burnt River Bridge		8
	3.12	2	Coleman Lake Bridge		8
	3.13	3	Eagle Lake Bridge		9
	3.14	ŀ	Pelaw River Bridge		10
	3.15	5	Drag River Bridge		10
	3.16	6	Highland Street Culvert		11
	3.17	,	West Shore Kennisis Lake Culvert	man data data san	11
		5	UMMARY OF CAPITAL IMPROVEMENTS -YEAR CAPITAL PLAN CONCLUSIONS AND RECOMMENDATIONS		12 14 15



1. INTRODUCTION

Tulloch Engineering Inc. was retained by the Township of Dysart et al to undertake detailed visual inspections of the municipally owned bridges and structural culverts within their Municipal jurisdiction. In accordance with Ontario Regulation 104/97 — Standards for Bridges, the structural integrity, safety and condition of every bridge shall be determined through the performance of at least one inspection in every second calendar year under the direction of a professional engineer (O. Reg. 472/10, s. 2). The Township's requirement was that the inspections be in accordance with the Ontario Structure Inspection Manual (OSIM).

The goal of the inspections is to ensure that an acceptable standard is being maintained for each bridge in terms of public safety, comfort, and convenience. The objectives of the inspections are as follows:

- To identify critical maintenance, rehabilitation, and/or replacement needs of the structures;
- To protect and prolong the useful life of the structures; and,
- To provide a basis for scheduling and funding of the maintenance, rehabilitation repairs, or replacement of the structures.

This report contains completed OSIM inspection forms, relevant photographs, suggested maintenance and capital repairs, and estimated capital costs for major repairs at each site.

The structures inspected as part of this assignment are shown on the key map provided in Figure 1.

2. INSPECTION PROCEDURES

Detailed visual inspections were completed in accordance with OSIM and involved a review of each primary structural element. The structural elements are identified by primary groupings and sub-groupings of each element. The condition of each element is quantified and assessed with a rating of 'excellent', 'good', 'fair', or 'poor'. The condition ratings are quantified for either a portion of the total structural element, or the entirety of the structural element. A glossary of definitions is given in Appendix A.

3. INSPECTION SUMMARIES

The results of the detailed visual inspections are recorded using standard Ontario Structure Inspection Manual (OSIM) forms. The forms provide a report of existing data and conditions at the time of the inspection for each bridge. Results of the previous inspections completed in 2014 were used as a starting-point template for this current round of inspections. Updated OSIM forms are located in Appendix B.



The reports identify additional recommended inspections, recommended maintenance work and recommended capital repair or rehabilitation work to address deficiencies along with estimated costs and schedule for such repairs. Each set of OSIM forms in preceded by a summary with key pictures to describe the observed conditions and results from each structure inspection. A brief summary for each structure follows.

3.1 Paddy's Pond (Bay) Bridge

Capital Improvements:

- A design remedy should be provided to repair or replace the damaged girder(s) and deck. Rehabilitation work as a minimum is required to repair damaged girder.
 Depending on the outcome of the structural evaluation it may be required to replace all girders.
- The deck and approach wearing surfaces, and the wing wall /retaining walls, are in poor to fair condition and should be replaced within 1-5 years or at time of girder replacement.

Guiderail Improvements:

• Installation of approach guiderails and end treatments in accordance with the Ontario Provincial Standards for bridge and highway design at all four quadrants.

Maintenance:

None.

Additional Investigations:

• It is recommended that a structural evaluation be conducted and appropriate load ratings enforced, lane restrictions enforced and/or temporary structure installed (completed in September 2016).

3.2 Kennisis Lake Narrows Bridge

Capital Improvements:

The wearing surface should be replaced within 1-5 years.

Guiderail Improvements:

 Installation of approach guiderails and end treatments in accordance with the Ontario Provincial Standards for bridge and highway design at all four quadrants.

Maintenance:

- Maintenance should be undertaken to repair the loose railing / guiderail.
- Bridge cleaning of the deck and deck drains under the curb should be conducted immediately to alleviate surface ponding issues.



Additional Investigations:

• It is recommended that the main longitudinal beam and soffit areas undergo an enhanced visual inspection with boat or barge due to limited access and detailed structural analysis be performed for potential load posting.

3.3 Barry's Bridge

Capital Improvements:

 It is recommended the structure undergo a minor rehabilitation in 1 - 5 years to repair the ballast walls, damaged beam, rebuild the approaches and replace the deck wearing surface.

Guiderail Improvements:

 Installation of approach guiderails and end treatments in accordance with the Ontario Provincial Standards for bridge and highway design at all four quadrants.

Maintenance:

- Repair ballast wall timbers.
- Repair / replace damaged guiderail post.
- Clean the bridge deck and deck drains under the curb.
- Debris should be cleaned from stream in northwest quadrant.

Additional Investigations:

None

3.4 Redstone Brook Bridge

Capital Improvements:

- It is recommended that the structure undergo a minor rehabilitation in 1-5 years to repair the ballast walls, embankments, pad and resurface the approaches, deck wearing surface and replace the railing over the structure.
- The undermined east approach wearing surface should be investigated further and repaired immediately as a matter of safety (this could be capital or maintenance depending on root cause).

Guiderail Improvements:

 Installation of approach guiderails and end treatments in accordance with the Ontario Provincial Standards for bridge and highway design at all four quadrants.



Maintenance:

- The undermined east approach wearing surface should be investigated further and repaired immediately as a matter of safety.
- Maintenance should be undertaken to repair the loose guiderail posts.
- Clean the bridge deck and deck drains.
- The tree and other debris should be removed from under the structure to prevent damage to the structure and to allow for unimpeded flow under the structure.

Additional Investigations:

 It is highly recommended that the root cause of the hole at the east approach be investigated.

3.5 Guilford Pine Lake Bridge

Capital Improvements:

None.

Guiderail Improvements:

None.

Maintenance:

- Repair the damaged guiderail.
- Minor concrete repairs to the parapet walls.
- The deck should be swept to remove debris and sand to promote positive drainage.
- Install hazard signage.

Additional Investigations:

None.

3.6 Guilford Cranberry Lake Bridge

Capital Improvements:

None.

Guiderail Improvements:

None.



Maintenance:

- Address erosion of shoulders near deck ends.
- Route and seal transverse cracks.
- Install hazard signage.

Additional Investigations:

None.

3.7 Oblong Lake Narrows Bridge

Capital Improvements:

The substructure; excluding piles and capping beams, and superstructure; excluding
possibly wood soffit, require major rehabilitation. The structure requires major rehabilitation
including repair / replacement of abutments, deck, soffit, wearing surface and guiderails. This
work should be undertaken in 1-5 years.

Guiderail Improvements:

• Installation of approach guiderails and end treatments in accordance with the Ontario Provincial Standards for bridge and highway design at all four quadrants.

Maintenance:

- Repair guiderail in SE corner.
- Erosion control and slope protection.

Additional Investigations:

- A detailed deck condition survey should be conducted prior to major rehabilitation work to establish actual deck conditions between composite materials.
- It is also recommended that an enhanced visual inspection of center bents be conducted at that time to ensure the integrity of major structural pier components.

3.8 South Bay Bridge

Capital Improvements:

 The structure requires a minor rehabilitation including installation of erosion protection on the approach embankments, rebuilding and resurfacing of the approaches and repairs to the deck. This work should be completed in the 6-10 year period.



Guiderail Improvements:

• Installation of approach guiderails and end treatments in accordance with the Ontario Provincial Standards for bridge and highway design at all four quadrants.

Maintenance:

- Repair (patch) abutment ballast wall boards.
- Tighten capping beam nuts.
- Patch potholes.
- Route and seal longitudinal cracks.

Additional Investigations:

None.

3.9 Koshlong Lake Bridge

Capital Improvements:

The structure requires a minor rehabilitation within a 1-5 year period including: rebuilding
of eroded embankments and installation of erosion protection on approach side slopes,
stabilization of embankments at deck ends with gabion baskets, replacement of the
surface treated wearing surface and address guiderail height.

Guiderail Improvements:

• Installation of approach guiderails and end treatments in accordance with the Ontario Provincial Standards for bridge and highway design at all four quadrants.

Maintenance:

- Repairs to bridge driving surface if not replaced.
- Replace the missing guiderail post and tighten loose connections.
- Clean the bridge deck to promote proper drainage.
- Erosion control at abutments.

Additional Investigations:

None



3.10 Kelly Lake Bridge

Capital Improvements:

• The structure requires rip-rap erosion protection around both abutments to prevent further scour of the foundations and to provide embankment protection.

Guiderail Improvements:

 Installation of approach guiderails and end treatments in accordance with the Ontario Provincial Standards for bridge and highway design at all four quadrants.

Maintenance:

- The build-up of debris on the deck should be removed.
- Vegetation removal.
- Clear waterway of debris.

Additional Investigations:

None.

3.11 Burnt River Bridge

Capital Improvements:

None.

Guiderail Improvements:

None.

Maintenance:

- Re-install missing bolts in baseplates of railing system.
- Replace damaged south expansion joint seal.

Additional Investigations:

None.

3.12 Coleman Lake Bridge

Capital Improvements:

- The structure requires a minor rehabilitation to repair undermined abutments and wing walls, especially at the Northeast quadrant.
- Installation of erosion protection at the abutment faces.



- Repair of concrete abutments.
- Replacement of surface treated wearing surface.
- This work should be completed in 1-5 years.

Guiderail Improvements:

None.

Maintenance:

- Maintenance is required to repair the damaged guiderail and posts.
- Fill potholes.
- Clear vegetation and sand build-up on approaches to improve drainage.
- Clear vegetation around signs.

Additional Investigations:

None.

3.13 Eagle Lake Bridge

Capital Improvements:

- The bridge should have major rehabilitation, be replaced or be closed.
- Work will have to be coordinated with the Trent Severn waterway as the bridge and dam are connected.
- Consideration should be given to closing the structure to vehicular traffic as it has reached the end of its service life, as opposed to replacing or rehabilitating the structure. If the structure were closed, the detour is approximately 400 m.

Guiderail Improvements:

None.

Maintenance:

Remove vegetation and granular build-up at railings.

Additional Investigations:

- The structure requires a detailed structural evaluation. The structural investigation should include a load rating or closure.
- Detailed deck condition survey and underwater inspection of foundations if bridge is not closed and/or as part of major rehabilitation.



Should it be decided to keep the bridge, a cost-benefit analysis should be undertaken
after structural investigation to evaluate if rehabilitation or replacement will provide the
lowest life-cycle cost to the Municipality.

3.14 Pelaw River Bridge

Capital Improvements:

• The structure requires a minor rehabilitation to repair the abutment faces and wing walls, and stabilize the piles with wood blocking. This should be undertaken in 1-5 years.

Guiderail Improvements:

None.

Maintenance:

- Repair the loose/damaged guiderail posts.
- Clear vegetation at wing walls, along shoulder of approaches and guiderails.

Additional Investigations:

None.

3.15 Drag River Bridge

Capital Improvements:

- The structure requires minor rehabilitation to repair concrete soffit, sidewalk, curb and end posts.
- Full depth crack repair should be completed at the deck ends to prevent water penetration.
- For aesthetics reasons, the steel railing system could be re-coated.

Guiderail Improvements:

None.

Maintenance:

- Place erosion protection at the retaining wall in the NE quadrant to prevent erosion.
- Hazard signage to Provincial Standards should be installed at the terminations of the guiderail.

Additional Investigations:

None.



3.16 Highland Street Culvert

Capital Improvements:

- The structure requires minor rehabilitation to the roadway curbs to address the
 deterioration of the concrete. This should be undertaken within a year to prevent further
 deterioration of sidewalk and to promote water flow to catch basins.
- Deck surface area requires routing and sealing of transverse cracks.

Guiderail Improvements:

None.

Maintenance:

- Repair / replace damaged guiderail posts and blocks.
- Route and seal cracks and patch potholes.
- Clear debris and vegetation at railing to promote drainage.
- Install caps on railing posts.

Additional Investigations:

 Enhanced investigation of the condition of the culvert barrel is required to confirm condition. Due to high water levels and flows (downstream dam) this area could not be inspected during the OSIM inspection and will require as a minimum an enhanced investigation with small boat or possibly underwater investigation.

3.17 West Shore Kennisis Lake Culvert

Capital Improvements:

None.

Guiderail Improvements:

• Installation of approach guiderails and end treatments in accordance with the Ontario Provincial Standards for bridge and highway design at all four guadrants.

Maintenance:

None.

Additional Investigations:

None.



4. SUMMARY OF CAPITAL IMPROVEMENTS

The table below summarizes the estimated capital cost of repair or rehabilitation to address the deficiencies identified through the inspection process. Cost estimates for the repairs and rehabilitation are outlined in the OSIM forms in Appendix B. For the purpose of this report, capital improvements are any significant work that will preserve or extend the life of the structure. This work is typically beyond the normal maintenance activities performed by the Municipality. This information along with the BCI and BSI is used to prioritize the improvements and develop a capital plan.

ID	Structure Name	Urgent	<1 Yr	1-5 Yr	6-10 Yr	BCI	BSI	RSL
DY-1	Paddy's Pond Bridge	\$135,000*				58	47	20 Years
DY-2	Kennisis Lake Narrows Bridge			\$32,500*		66	62	20 Years (age unknown)
DY-3	Barry's Bridge	\$2,000	\$10,000	\$105,000*		64	61	14 Years
DY-4	Redstone Brook Bridge		\$85,000	\$60,000*		61	58	14 Years
DY-5	Pine Lake Bridge			\$2,000		90	87	62 Years
DY-6	Cranberry Lake Bridge					99	97	67 Years
DY-7	Oblong Lake Narrows Bridge			\$726,000*		42	33	18 Years
DY-8	South Bay Bridge			\$25,000	\$70,000*	68	65	14 Years
DY-9	Koshlong Lake Bridge			\$25,000	\$140,000 *	68	66	14 Years
DY-10	Kelly Lake Bridge			\$35,000*		71	68	24 Years
DY-11	Burnt River Bridge		\$2,500			76	74	62 Years
DY-12	Coleman		\$15,000	\$20,000	\$20,000	73	70	60 Years





TOTAL		\$137,000	\$117,500	\$1,268,500	\$240,000	Avg.70	Avg.66	Avg. 37
DY-17	West Shore Kennisis Lake Culvert				\$10,000*	96	93	70 Years (age unknown)
DY-16	Highland Street Culvert			\$20,000		72	69	10 Years (age unknown)
DY-15	Drag River Bridge		\$5,000	\$58,000		70	66	23 Years
DY-14	Pelaw River Bridge			\$110,000		67	53	33 Years
DY-13	Eagle Lake Bridge		14 11	\$50,000** (\$700,000)		53	49	0 Years (age unknown)
	Lake Bridge							

BCI: Bridge Condition Index BSI: Bridge Sufficiency Index RSL: Remaining Service Life

^{*} Includes guiderail installation.

^{**} It is recommended that the Eagle Lake Bridge be closed and removed unless passed following a detailed structural analysis.



5. 5-YEAR CAPITAL PLAN

The table below summarizes a proposed 5-year capital plan.

Name	2017	2018	2019	2020	2021
Paddy's Pond Bridge	\$135,000				
Oblong Lake Narrows Bridge	\$726,000				
Eagle Lake Narrow Bridge	\$50,000*				
Barry's Bridge	\$2,000		\$115,000		
Burnt River Bridge	\$2,500				
Coleman Lake Bridge	\$15,000				\$40,000
Redstone Brook Bridge		\$145,000			
Pine Lake Bridge		\$2,000			
Kennisis Lake Narrows Bridge			\$32,500		
Pelaw River Bridge					\$110,000
South Bay Bridge				\$95,000	
Drag River Bridge		·	\$63,000		
Kelly Lake Bridge				\$35,000	
Highland Street Culvert					\$20,000
TOTAL	\$930,500	\$147,000	\$210,500	\$130,000	\$170,000

^{*} It is recommended that the Eagle Lake Bridge be closed and removed unless passed following a detailed structural analysis.



6. CONCLUSIONS AND RECOMMENDATIONS

Upon completion of the biennial structure inspections, a number of recommendations have been identified for maintenance and capital improvement for both short and long term replacement and/or rehabilitation planning with municipal structures. The recommendations are summarized in the report along with cost estimates and schedule for planning purposes.

The municipal bridges and structural culverts in the Municipality of Dysart et al are in overall fair condition with an average BCl of 70. There are 7 of 17 structures rated as good. However, there are 7 of 17 structures rated as fair and 3 of 17 rated as poor indicating that about 60% of the structures should be scheduled for major rehabilitation or replacement within the next 1 to 5 years.

We trust that the contents of this report sufficiently outline the requirements for bridge and structural culvert maintenance, repair and replacement. Should you have any questions or comments on the contents of this report, please do not hesitate to contact the undersigned.

Respectfully submitted, TULLOCH ENGINEERING INC.

Chris Stilwell, P. Eng. Project Manager chris.stilwell@tulloch.ca

APPENDIX A

Glossary of Definitions

Abutment - A substructure unit which supports the end of the structure and retains the approach fill.

Auxiliary Components - Any component which does not share in the load carrying capacity of the structure.

Biennial Structure Inspection - An inspection performed in every second calendar year to assess the condition of the structure, in accordance with the methodology described in OSIM.

Bridge - A structure which provides a roadway or walkway for the passage of vehicles, pedestrians or cyclists across an obstruction, gap or facility and is greater than or equal to 3 m in span.

Bridge Condition Index (BCI) - The BCI rating is a planning tool developed by the Ontario Ministry of Transportation that helps schedule maintenance and rehabilitation work. The BCI is not used to rate or indicate the safety of a bridge. The BCI result is organized into ranges from 0 to 100. To calculate the BCI rating, the current dollar value of the bridge is divided by the replacement cost of the bridge. The replacement value is based on the cost to reconstruct a new bridge. Using this formula enables the Owner to make an informed decision about the amount of work a bridge requires and whether or not to pursue replacement over repair in the near future.

Rating	Maintenance Schedule
Good: BCI Range 70 -100	Maintenance is not usually required within the next five years
Fair: BCI Range 60 -70	Maintenance work is usually scheduled within the next five years. This is the ideal time to schedule major bridge repairs to get the most out of bridge spending.
Poor: BCI Less than 60	Maintenance work is usually scheduled within one year.

Bridge Sufficiency Index (BSI) – The BSI rating is a planning tool developed by the Ontario Ministry of Transportation. The BSI is calculated using the BCI rating less ratings for Importance Factors including Traffic, Economic Implications, Bridge Width and Bridge Profile or Alignment. It is a planning tool with a range of 0 to 100 and helps prioritize maintenance and rehabilitation work, and replacement, with bridges of equal BCI but lower BSI having importance over bridges with higher BSI.

Chord - The upper and lower main longitudinal component in trusses or arches extending the full length of the structure.

Coating - The generic term for paint, lacquer, enamel, sealers, galvanizing, metallizing, etc.

Concrete Deck Condition Survey - A detailed inspection of a concrete deck in accordance with The Structure Rehabilitation Manual.

Culvert (Structural) - A Structure that forms an opening through soil and has a span of 3 metres or more

Defect - An identifiable, unwanted condition that was not part of the original intent of design.

- Scaling Scaling is the local flaking, or loss of the surface portion of concrete or mortar
 as a result of the freeze-thaw deterioration of concrete. Scaling is common in non airentrained concrete, but can also occur in air-entrained concrete in the fully saturated
 condition. Scaling is prone to occur in poorly finished or overworked concrete where too
 many fines and not enough entrained air is found near the surface.
- Disintegration Disintegration is the physical deterioration or breaking down of the
 concrete into small fragments or particles. The deterioration usually starts in the form of
 scaling and, if allowed to progress beyond the level of very severe scaling is considered
 as disintegration. Disintegration may be caused by de-icing chemicals, sulphates,
 chlorides or by frost action.
- Erosion Erosion is the deterioration of concrete brought about by water-borne sand and gravel particles scrubbing against concrete surfaces. Similar, damage may be caused by flowing ice. Erosion is sometimes combined with the chemical action of air and water-borne pollutants which accelerate the breakdown of the concrete. Erosion is generally an indication that the concrete is not durable enough for the environment in which it has been placed.
- Corrosion of Reinforcement Corrosion is the deterioration of reinforcement by
 electrolysis. The alkali content in concrete protects the reinforcement from corrosion.
 However, when chloride ions above a certain concentration are dissolved in water and
 penetrate through the concrete to the reinforcement this protection breaks down and
 corrosion starts. In the initial stages, corrosion may appear as a rust-stain on the
 concrete surface. In the advanced stages, the surface concrete above the reinforcement
 cracks, delaminates and spalls off exposing heavily rusted reinforcement.
- Delamination Delamination is defined as a discontinuity of the surface concrete which is substantially separated but not completely detached from concrete below or above it. Visibly, it may appear as a solid surface but can be identified as a hollow sound by tapping or chain dragging. Delamination begins with the corrosion of reinforcement and subsequent cracking of the concrete. Delamination or debonding may also occur in concrete that has been patched or overlaid due to the continued deterioration of the older concrete. This may happen even in the absence of any rusting of reinforcing steel.
- Spalling A spall is a fragment, which has been detached from a larger concrete mass.
 Spalling 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.

- Cracking A crack is a linear fracture in concrete which extends partly or completely
 through the member. Cracks in concrete occur as a result of tensile stresses introduced
 in the concrete. Tensile stresses are initially carried by the concrete and reinforcement
 until the level of the tensile stresses exceeds the tensile capacity of the concrete. After
 this point the concrete cracks and the tensile force is transferred completely to the steel
 reinforcement. The crack widths and distribution is controlled by the reinforcement in
 reinforced and prestressed concrete, whereas in plain concrete there is no such control.
- Alkali-Aggregate Reaction In Ontario, there exists several sources of aggregates that react adversely with the alkalis in cement to produce a highly expansive gel. Currently, these sources of reactive aggregates are generally avoided, but they do exist in many existing structures and still may occur in newer structures. The two general types of reactions in Ontario are alkali-carbonate and alkali-silica reaction. The expansion of the gel and aggregates occurs due to hydroxyl ions in the concrete pore solution, which under moist conditions, leads to cracking and deterioration of the concrete.
- Surface Defects Surface defects are not necessarily serious in themselves; however, they are indicative of a potential weakness in the concrete, and their presence should be noted but not classified as to severity, except for honeycombing and pop-outs.
 - STRATIFICATION is the separation of the concrete components into horizontal layers in over-wetted or over vibrated concrete. Water, laitance, mortar and coarse aggregates occupy successively lower positions. A layered structure in concrete will also result from the placing of successive batches that differ in appearance.
 - SEGREGATION is the differential concentration of the components of mixed concrete resulting in nonuniform proportions in the mass. Segregation is caused by concrete falling from a height, with the coarse aggregates settling to the bottom and the fines on top. Another form of segregation occurs where reinforcing bars prevent the uniform flow of concrete between them.
 - COLD JOINTS are produced if there is a delay between the placement of successive pours of concrete, and if an incomplete bond develops at the joint due to the partial setting of the concrete in the first pour.
 - DEPOSITS are often left behind where water percolates through the concrete and dissolves or leaches chemicals from it and deposits them on the surface.
 - HONEYCOMBING is produced due to the 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.
 - POP-OUTS are shallow, typically conical depressions, resulting from the breaking away of small portions of the concrete surface, due to the expansion of some aggregates or due to frost action. The shattered aggregate particle may be found at the bottom of the depression, with a part of the aggregate still adhering to the popout cone.
 - ABRASION is the deterioration of concrete brought about by vehicles or snowplough blades scraping against concrete surfaces, such as, decks, curbs, barrier walls or piers.

- WEAR is usually the result of dynamic and/or frictional forces generated by vehicular traffic, coupled with the abrasive influx of sand, dirt and debris. It can also result from the friction of ice or water-borne particles against partly or completely submerged members. The surface of the concrete appears polished.
- SLIPPERY CONCRETE SURFACES may result from the polishing of the concrete deck surface by the action of repetitive vehicular traffic.

Detailed Visual Inspection - An element by element visual assessment of material defects, performance deficiencies and maintenance needs of a structure.

Deterioration - A defect that has occurred over a period of time.

Distress - A defect produced by loading.

Elements - The individual parts of a structure defined for inspection purposes. Several bridge components may be grouped together to form one bridge element for inspection purposes

Environment - An element's exposure to salt spray:

- Benign Not exposed (e.g. River Pier)
- Moderate Exposed but element protected (e.g. Asphalt covered and waterproofed deck)
- Severe Exposed and element not protected (e.g. Exposed concrete deck, Barrier Wall)

Evaluation - The determination of the load carrying capacity of structures in accordance with the requirements of the Canadian Highway Bridge Design Code.

Maintenance - Any action which is aimed at preventing the development of defects or preventing deterioration of a structure or its components.

Primary Components - The main load carrying components of the structure.

Rehabilitation - Any modification, alteration, retrofitting or improvement to a structure subsystem or to the structure which is aimed at correcting existing defects or deficiencies.

Remaining Service Life - Remaining Service Life is an estimate of the useful remaining life of the structure and is based on the year of construction or major rehabilitation and a service life of 50 years for culverts that are not plastic, polymer coated or concrete and a service life of 70 years for other structures.

Repair - Any modification, alteration, retrofitting or improvement to a component of the structure which is aimed at correcting existing defects or deficiencies.

Retaining Wall - Any structure that holds back fill and is not connected to a bridge.

Secondary Components - Any component which helps to distribute loads to primary components, or carries wind loads, or stabilizes primary components.

Sign Support - A metal, concrete or timber structure, including supporting brackets, service walks and mechanical devices where present, which support a luminaire, sign or traffic signal and which span or extend over a highway.

Span - The horizontal distance between adjacent supports of the superstructure of a bridge, or the longest horizontal dimension of the cross-section of a culvert or tunnel taken perpendicular to the walls.

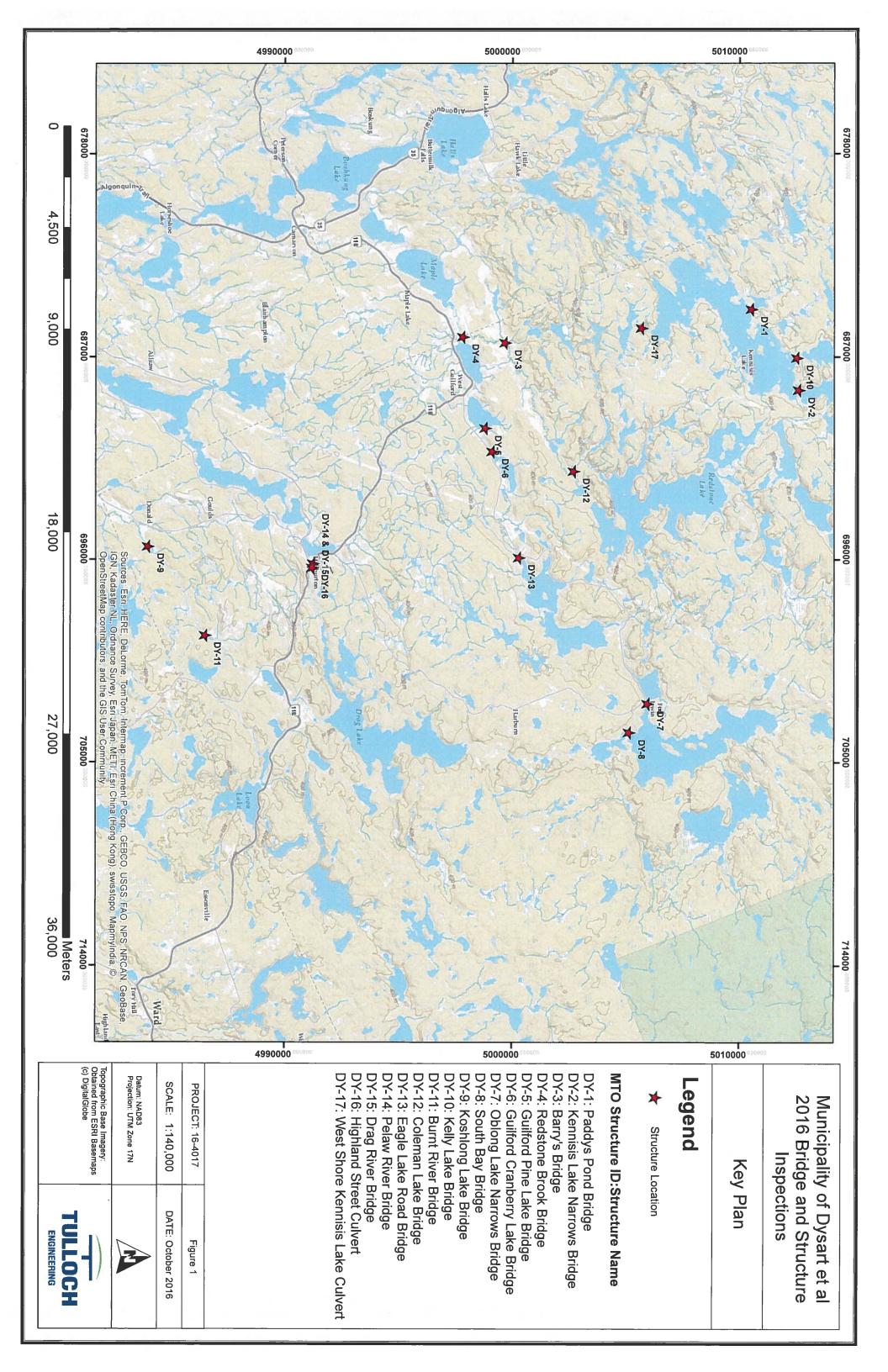
Stringers - Stringers span between floor beams and provide the support for the deck above.

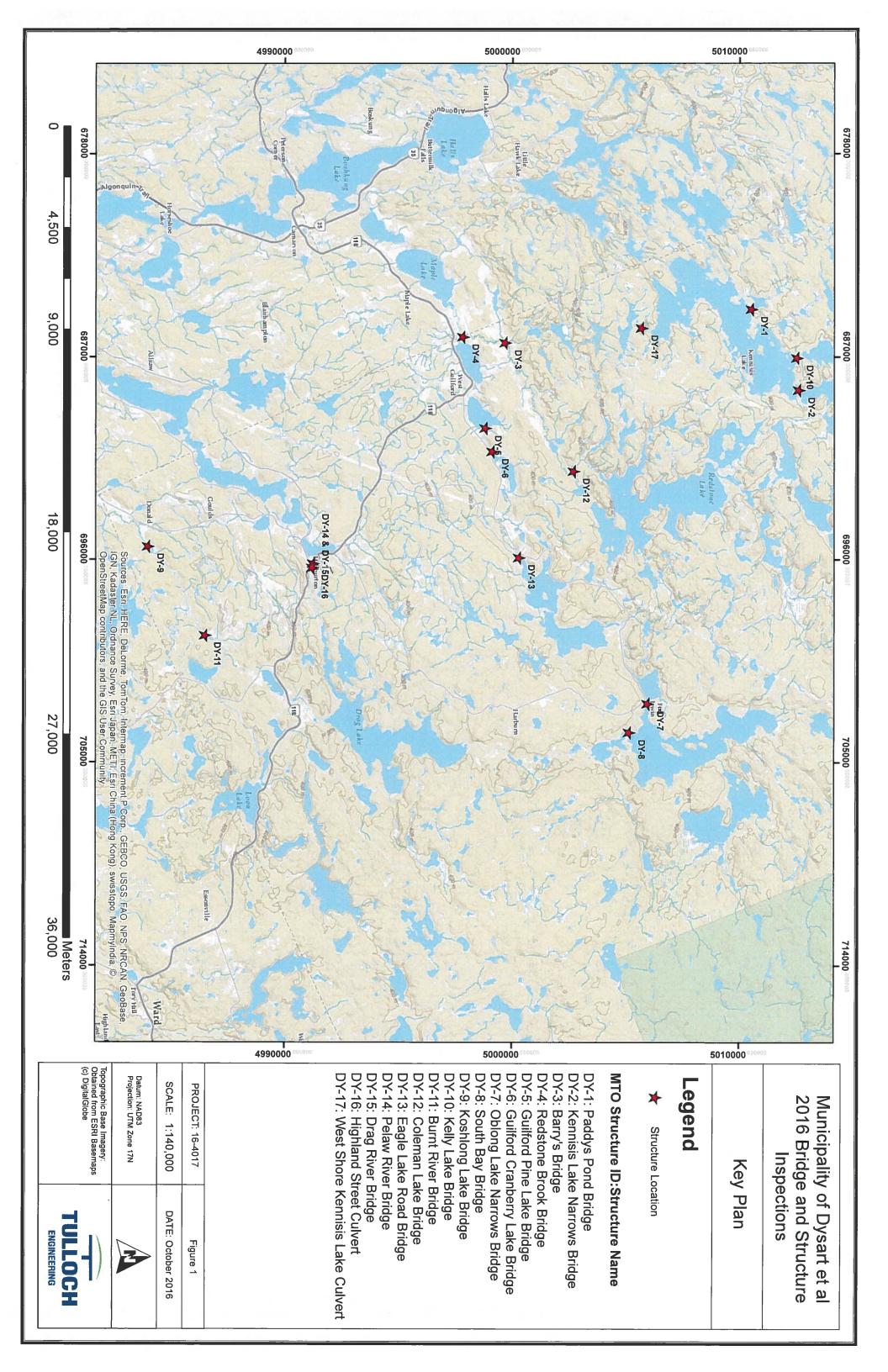
Structure - Bridge, culvert, tunnel, retaining wall or sign support.

Suspected Performance Deficiency - A Suspected Performance Deficiency should be recorded during an inspection, if an element's ability to perform its intended function is in question, and one or more performance defects exist.

APPENDIX B

OSIM Forms







Structure No: DY-1
Paddy's Pond Bridge

Structure Description

Paddy's Pond Bridge is located on North Kennisis Lake Road, approximately 5 km west of Kennisis Lake Narrows. The bridge was constructed in 1966 and is a 6.1 m single span, two-lane structure with a deck supported by timber piers and abutments. The bridge has an overall deck width of 6.7 m and 6.2 m wide surface treated wearing surface with timber curbs. There is steel beam guiderail across the structure but no guiderail on the approaches.

Structure Condition

The structure is in poor overall condition with a BCI of 58 and BSI of 47. The abutments are in fair condition with isolated locations of minor splitting of the ballast wall. The wing walls are in fair condition with considerable displacement noted; the northeast wing wall continues to fail. As noted from previous inspections, the northeast wing wall should be repaired to prevent further washout of backfill on approaches. The deck wearing surface is in fair to poor condition showing potholing and alligator cracking; the wearing surface should be replaced to protect the wooden deck. One of the wood girders and deck above has failed due to overloading - severe cracking and splitting of the 4th beam from the north face. Significant amount of deflection was also observed under loading of tandem axle dump truck.

The guiderail does not comply with the bridge code; the post spacing over the structure is insufficient and there are no guiderail or end treatments on the approaches.

Recommendation

It is recommended that a structural evaluation be conducted and appropriate load ratings enforced, lane restrictions enforced and/or temporary structure installed. A design remedy should be provided to repair or replace the damaged girder(s) and deck. Rehabilitation work as a minimum is required to repair damaged girder. Depending on the outcome of the structural evaluation it may be required to replace all girders. The deck and approach wearing surfaces, and the wing wall /retaining walls are in poor to fair condition and should be replaced within 1-5 years or at time of girder replacement. Guiderail extension on the approaches should be installed at time of rehabilitation.

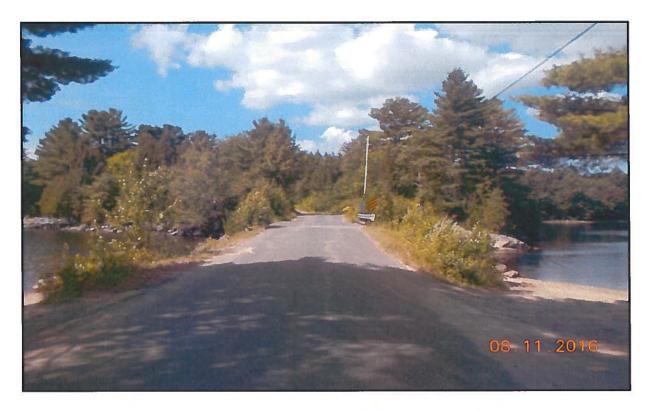


Photo 1: General Arrangement – Looking West



Photo 2: General Arrangement – Looking East

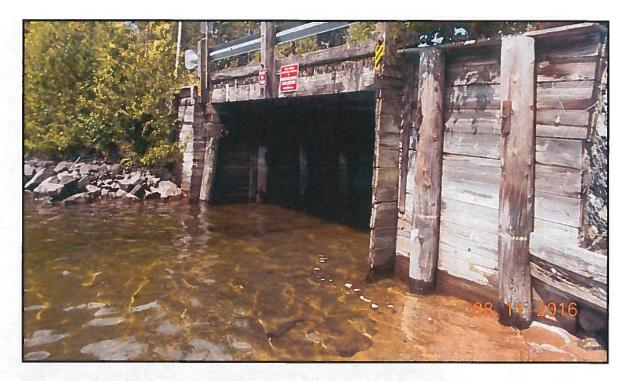


Photo 3: General Arrangement – Southeast Elevation

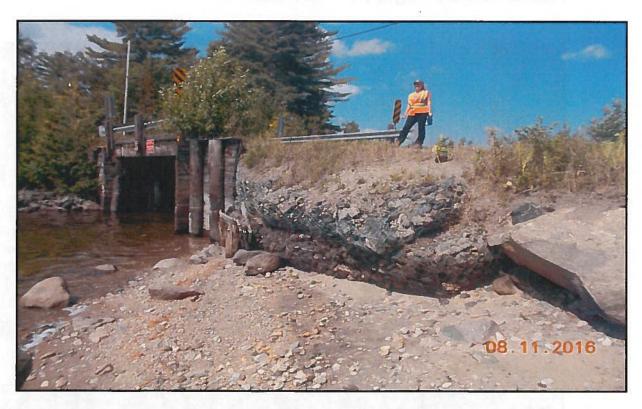


Photo 4: General Arrangement – Southeast Embankment

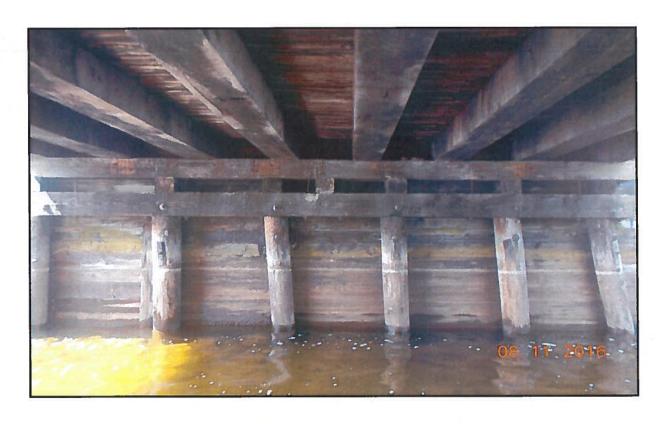


Photo 5: General Arrangement – West Abutment



Photo 6: Splintering of Wood Beam (4th from North face) – Looking West



Photo 7: Splintering of Wood Beam (4th from North face) – Close Up View



Photo 8: Longitudinal Cracking of Wood Beam (4th from North face) – Close Up View



Photo 9: Northeast Abutment Wing Wall – Looking Southwest

Municipal Structure Inspection Form					MTO Site Number: DY - 1					
Inventory Data										
Structure Name	Paddy	's Bay (Pon	d) Bridg	e						
Main Hwy/Road #			On 🗵	Under		Navig. Wate Rail R	er⊠ Non-Nav Road Ped.	ig. Water Other		
Road Name	North	Kennisis La	ike Road							
Structure Location	0.3 km	n West of Pa	addy's Co	ourt						
Latitude	45.22	4000			Longitude -78.64	4800				
Owner(s)	Munic	cipality of D	ysart et a	ıl	Heritage Not C Designation:	Cons. ⊠ (Desig./N	Cons./not App. Not List Des	List/not Desig. ig. & List		
MTO Region *					Road Class: Fre	eeway Ar	terial Collect	or Local ⊠		
MTO District *					Posted Speed 50		No. of Lanes	2		
Old County *					AADT		% Trucks			
Geographic Twp. *					Special Routes:	Transit	Truck School	l Bicycle		
Structure Type *	Bridge)			Detour Length Around	d Bridge		(km)		
Total Deck Length	7.0			(m)	Fill on Structure		0	(m)		
Overall Str. Width	6.7			(m)	Skew Angle		0	(degrees)		
Total Deck Area	46.9			sq.m)	Direction of Structure		N to S			
Roadway Width	6.2			(m)	No. of Spans					
Span Lengths	6.1							(m)		
Historical Data:										
Year Built		1966			Last Biennial Inspecti	ion	2014			
Current Load Limit	1	N/A/ /	(tonn	es)	Last BridgeMaster Ins	spection	N/A			
Load Limit Bylaw #	<u> </u>	N/A			Last Evaluation	==	N/A			
Bylaw Expiry Date		N/A			Last Underwater Inspection N/A					
Min. Vertical Clears	ince	-	(m)		Last Condition Survey	у	N/A			
Rehab. History: (Da	ate/desci	ription)								

Field Inspection Inf	formation:		
Date of Inspection:	August 11, 2016		
Inspector:	Robert Brooks – Tulloch I	Engineering	
Others in Party:	Elizabeth Perry – Tulloch	Engineering	
Equipment Used:	Camera, Hammer, Tape M	leasure	_
Weather:	Sun		
Temperature:	+29°C		

MTO Site Number: DY - 1

Additional Investigations Require		Priority		Estimated	
		None	Normal	Urgent	Cost
Detailed Deck Condition Survey:	X				
DART Survey:		X			
Detailed Coating Condition Survey:		X			
Underwater Investigation:		X			
Fatigue Investigation:		X			
Seismic Investigation:		X			
Structure Evaluation:				X	10,000.00
Load Posting – Estimated Load	No Limit		7	Total Cost	\$10,000
Special Notes: Laminated wood dec	k to be included as	part of structu	re evaluation	on.	
Next Detailed Inspection:			2018		

00	None	06	Bearing not uniformly loaded/unstable	12	Slippery surfaces
01	Load carrying capacity	07	Jammed expansion joint	13	Flooding/channel blockage
02	Excessive deformations (deflections & rotations)	08	Pedestrian/vehicular hazard	14	Undermining of foundation
03	Continuing settlement	09	Rough riding surface	15	Unstable embankments
04	Continuing movements	10	Surface ponding	16	Other
05	Seized bearings	11	Deck drainage		
Main	tenance Needs				
01	Lift and Swing Bridge Maintenance	07	Repair to Structural Steel	13	Erosion Control at Bridges
02	Bridge Cleaning	08	Repair of Bridge Concrete	14	Concrete Sealing
03	Bridge Handrail Maintenance	09	Repair of Bridge Timber	15	Rout and Seal
04	Painting Steel Bridge Structures	10	Bailey Bridges - Maintenance	16	Bridge Deck Drainage
05	Bridge Deck Joint Repair	11	Animal/Pest Control	17	Other
06	Bridge Bearing Maintenance	12	Bridge Surface Repair		

MTO Site Number:

DY - 1

Element Data

Element Group:	Abutments			Length:			(m)
Element Name: Ballast Walls					dth:	7.2	(m)
Location:				Hei	ght:	2.8	(m)
Material:	Wood	*		Co	unt:	- 2	(items)
Element Type:				Total Q	uantity:	40.3	(m²)
Environment:	Benign Mod	lerate / Se	evere	Limited	Insp'n:		
Protection System:	Creosote					P	erformance
Condition	Units	Exc.	Good	Fair	Poor	r	Deficiencies
Data: m ² /	m / each / % / all		25.3	15.0			00
Comments:							
Performance Deficiencie	s: None						
Recommended Work: Minor Rehab			☐ Major Re	hab	Mair	ntenance Ne	eds:
	☐ Replace		✓ None		☐ Urgent	☐ 1 Yea	7 2 Year
Timeframe:	☐ 1 - 5 Years		☐ 6 - 10 Ye	ears			
Comments:							
Comments.							
Elamont Craves	Abutments			T am	-dl-	3.0	()
Element Group: Element Name:					gth:	3.0	(m)
	Wingwalls				dth:	2.0	(m)
Location:	NE/SW/NW/SE				ght:	2.8	(m)
Material:	Wood				unt:	4	(items)
Element Type:	Wood Piles and Laggi				uantity:	33.6	(m²)
Environment:	Benign Mod	lerate / So	evere	Limited	l Insp'n:		
Protection System:	Creosote			Fair			erformance
Condition		Units Exc. Good			Poor	Ι	Deficiencies
Data: m3/	m / each / % / all		10.2	15	8.4	01	
Comments: Wingwall at	Northwest quadrant has		to severe ro			rt for wing w	
	Northwest quadrant has		to severe ro			rt for wing w	
Comments: Wingwall at	Northwest quadrant has d carrying capacity for vs: Load carrying capacit	ving wall at	to severe ro	and decay.		rt for wing w	
Comments: Wingwall at and offers no structural loa	Northwest quadrant has d carrying capacity for vs: Load carrying capacit	ving wall at	to severe rout this area. Major Re	and decay.	Pile suppo	rt for wing w	vall has also rotted
Comments: Wingwall at and offers no structural loa Performance Deficiencies	Northwest quadrant has d carrying capacity for vs: Load carrying capacit	ving wall at	to severe ro	and decay.	Pile suppo		vall has also rotted
Comments: Wingwall at and offers no structural loa Performance Deficiencies	Northwest quadrant has d carrying capacity for vs: Load carrying capacit	ving wall at	to severe rout this area. Major Re	t and decay.	Pile suppo	atenance Ne	vall has also rotted
Comments: Wingwall at and offers no structural loa Performance Deficiencie Recommended Work:	Northwest quadrant has d carrying capacity for vest Load carrying capacity Minor Rehab Replace 1 - 5 Years	ving wall at y.	to severe rot this area. Major Re	t and decay.	Pile suppo	atenance Ne	vall has also rotted
Comments: Wingwall at and offers no structural loa Performance Deficiencie Recommended Work: Timeframe:	Northwest quadrant has d carrying capacity for vest Load carrying capacity Minor Rehab Replace 1 - 5 Years	ving wall at y.	to severe rot this area. Major Re	t and decay.	Pile suppo	atenance Ne	vall has also rotted
Comments: Wingwall at and offers no structural loa Performance Deficiencie Recommended Work: Timeframe: Comments: Replace and/	Northwest quadrant has d carrying capacity for vest Load carrying capacity Minor Rehab Replace 1 - 5 Years	ving wall at y.	to severe rot this area. Major Re	t and decay.	Pile suppo Maii	atenance Ne	vall has also rotted veds:
Comments: Wingwall at and offers no structural loa Performance Deficiencie Recommended Work: Timeframe: Comments: Replace and/	Northwest quadrant has d carrying capacity for vs: Load carrying capacit	ving wall at y.	to severe rot this area. Major Re	t and decay.	Pile suppo Maii Urgent	atenance Ne □ 1 Yea	vall has also rotted veds: r
Comments: Wingwall at and offers no structural loa Performance Deficiencie Recommended Work: Timeframe: Comments: Replace and/ Element Group: Element Name:	Northwest quadrant has d carrying capacity for v s: Load carrying capacit	ving wall at y.	to severe rot this area. Major Re	t and decay. thab ears Len Wie	Pile suppo Main Urgent gth:	atenance Ne ☐ 1 Yea	vall has also rotted veds: (m) (m)
Comments: Wingwall at and offers no structural load Performance Deficiencie Recommended Work: Timeframe: Comments: Replace and/ Element Group: Element Name: Location:	Northwest quadrant has d carrying capacity for versity in the capacity of the	ving wall at y.	to severe rot this area. Major Re	t and decay. hab ears Len Wi	Main Urgent gth: dth: ght:	8.0 0.5	vall has also rotted veds: (m) (m) (m) (m)
Comments: Wingwall at and offers no structural loa Performance Deficiencie Recommended Work: Timeframe: Comments: Replace and/ Element Group: Element Name: Location: Material:	Northwest quadrant has d carrying capacity for vest: Load carrying capacity Minor Rehab Replace 1 - 5 Years or major rehab. ballast w Barriers Railing Systems Steel	ving wall at	to severe rot this area. Major Re	t and decay. hab ears Len Wii Hei Coi	Main Urgent gth: dth: ght: unt:	8.0 0.5 2	vall has also rotted eeds: (m) (m) (m) (items)
Comments: Wingwall at and offers no structural loa Performance Deficiencie Recommended Work: Timeframe: Comments: Replace and/ Element Group: Element Name: Location: Material: Element Type:	Northwest quadrant has d carrying capacity for vest. Load carrying capacity Minor Rehab Replace 1 - 5 Years In the state of the state o	ving wall at y. ving walls.	to severe root this area. Major Re None 6 - 10 Ye	Len Wi Hei Co Total Q	Pile suppo Main Urgent gth: dth: ght: unt: uantity:	8.0 0.5 2 16.0	vall has also rotted veds: (m) (m) (m) (m)
Comments: Wingwall at and offers no structural loa Performance Deficiencie Recommended Work: Timeframe: Comments: Replace and/ Element Group: Element Name: Location: Material: Element Type: Environment:	Northwest quadrant has d carrying capacity for visits: Load carrying capacity for Replace Minor Rehab Replace I - 5 Years 1 - 5 Years I - 5 Years Barriers Railing Systems Steel Flex Beam on Wood P Benign / Mood P Replace	ving wall at y. ving walls.	to severe root this area. Major Re None 6 - 10 Ye	Len Wi Hei Co Total Q	Main Urgent gth: dth: ght: unt:	8.0 0.5 2 16.0	yall has also rotted yeds: (m) (m) (m) (items) (m)
Comments: Wingwall at and offers no structural loa Performance Deficiencie Recommended Work: Timeframe: Comments: Replace and/ Element Group: Element Name: Location: Material: Element Type: Environment: Protection System:	Northwest quadrant has d carrying capacity for vs: Load carrying capacity Minor Rehab Replace 1 - 5 Years or major rehab. ballast w Barriers Railing Systems Steel Flex Beam on Wood P Benign / Mood Galvanizing / Ceosote	ving wall at y. ving walls.	to severe root this area. Major Red None 6 - 10 Ye	t and decay. thab ears Len With Hei Con Total Q Limited	Main Urgent gth: dth: ght: unt: uantity: Insp'n:	8.0 0.5 2 16.0	wall has also rotted reds: (m) (m) (m) (items) (m)
Comments: Wingwall at and offers no structural loa Performance Deficiencie Recommended Work: Timeframe: Comments: Replace and/ Element Group: Element Name: Location: Material: Element Type: Environment: Protection System: Condition	Northwest quadrant has d carrying capacity for vs: Load carrying capacity Minor Rehab Replace 1 - 5 Years or major rehab. ballast w Barriers Railing Systems Steel Flex Beam on Wood P Benign / Mood Galvanizing / Ceosote Units	ving wall at y. ving walls.	to severe root this area. Major Re None 6 - 10 Ye	Len Wi Hei Co Total Q	Pile suppo Main Urgent gth: dth: ght: unt: uantity:	8.0 0.5 2 16.0	(m) (m) (items) (m)
Comments: Wingwall at and offers no structural load Performance Deficiencie Recommended Work: Timeframe: Comments: Replace and/ Element Group: Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data:	Northwest quadrant has d carrying capacity for vest. Load carrying	ving walls. ving walls. cost lerate Se (or Pressure Exc.	to severe root this area. Major Re None 6 - 10 Ye evere 1 Teat) Good 16.0	Len Wi Hei Co Total Q Limited	Main Urgent gth: dth: ght: unt: uantity: Insp'n:	8.0 0.5 2 16.0	(m) (m) (items) (m) erformance Deficiencies 08
Comments: Wingwall at and offers no structural load Performance Deficiencie Recommended Work: Timeframe: Comments: Replace and/ Element Group: Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: Comments: Guiderail in general condition and comments: Guiderail in general comments.	Northwest quadrant has d carrying capacity for vest. Load capacity fo	ving walls. Ving walls. Cost Herate Se (or Pressure Exc.	to severe root this area. Major Re None 6 - 10 Ye evere 1 Teat) Good 16.0 calized area:	Len Wi Hei Co Total Q Limited Fair	Main Urgent gth: dth: ght: unt: uantity: Insp'n: Poor system doe	8.0 0.5 2 16.0 P E	(m) (m) (items) (m) erformance Deficiencies 08 / with bridge code;
Comments: Wingwall at and offers no structural load Performance Deficiencie Recommended Work: Timeframe: Comments: Replace and/ Element Group: Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: Comments: Guiderail in guiderail should be extended	Northwest quadrant has d carrying capacity for vest. Load capacity fo	ving walls. Ving walls. Cost Herate Se (or Pressure Exc.	to severe root this area. Major Re None 6 - 10 Ye evere 1 Teat) Good 16.0 calized area:	Len Wi Hei Co Total Q Limited Fair	Main Urgent gth: dth: ght: unt: uantity: Insp'n: Poor system doe	8.0 0.5 2 16.0 P E	(m) (m) (items) (m) erformance Deficiencies 08 / with bridge code;
Comments: Wingwall at and offers no structural load Performance Deficiencie Recommended Work: Timeframe: Comments: Replace and/ Element Group: Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: Comments: Guiderail in guiderail should be extend throughout.	Northwest quadrant has d carrying capacity for vest. Load carrying rehab. Dallast west. Load capacity for major rehab. Dallast west. Load capacity for vest. Load capaci	ving wall at y. ving walls. ving walls. vost lerate Se (or Pressure Exc. or rust in loc with proper	to severe root this area. Major Re None 6 - 10 Ye evere 1 Teat) Good 16.0 calized area:	Len Wi Hei Co Total Q Limited Fair	Main Urgent gth: dth: ght: unt: uantity: Insp'n: Poor system doe	8.0 0.5 2 16.0 P E	(m) (m) (items) (m) erformance Deficiencies 08 / with bridge code;
Comments: Wingwall at and offers no structural load Performance Deficiencie Recommended Work: Timeframe: Comments: Replace and/ Element Group: Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: Comments: Guiderail in guiderail should be extend throughout. Performance Deficiencie	Northwest quadrant has d carrying capacity for vest Load carrying for vest Load capacity for vest Load cap	ving wall at y. ving walls. ving walls. vost lerate Se (or Pressure Exc. or rust in loc with proper	to severe root this area. Major Re None 6 - 10 Ye The Treat of the T	Len Wi Hei Coo Total Q Limited Fair s. Guiderail	Main Greent Main Greent Gr	8.0 0.5 2 16.0 P Es not comply light to med	(m) (m) (m) (items) (m) erformance Deficiencies 08 v with bridge code; ium splits and checks
Comments: Wingwall at and offers no structural load Performance Deficiencie Recommended Work: Timeframe: Comments: Replace and/ Element Group: Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: Comments: Guiderail in guiderail should be extend throughout.	Northwest quadrant has d carrying capacity for vest Load carrying systems Barriers	ving wall at y. ving walls. ving walls. vost lerate Se (or Pressure Exc. or rust in loc with proper	to severe root this area. Major Re None 6 - 10 Ye The Treat of the T	Len Wi Hei Coo Total Q Limited Fair s. Guiderail	Main Grant Main Grant Gran	8.0 0.5 2 16.0 P Es not comply light to med	(m) (m) (items) (m) erformance Deficiencies 08 with bridge code; ium splits and checks
Comments: Wingwall at and offers no structural loa Performance Deficiencie Recommended Work: Timeframe: Comments: Replace and/ Element Group: Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: Comments: Guiderail in guiderail should be extend throughout. Performance Deficiencie Recommended Work:	Northwest quadrant has d carrying capacity for vest. Load carrying systems Barriers	ving wall at y. ving walls. ving walls. vost lerate Se (or Pressure Exc. or rust in loc with proper	to severe root this area. Major Re None 6 - 10 Ye Teat) Good 16.0 calized area: end treatme	Len Wi Hei Coo Total Q Limited Fair s. Guiderail ents. Wood	Main Greent Main Greent Gr	8.0 0.5 2 16.0 P Es not comply light to med	(m) (m) (m) (items) (m) erformance Deficiencies 08 v with bridge code; ium splits and checks
Comments: Wingwall at and offers no structural load Performance Deficiencie Recommended Work: Timeframe: Comments: Replace and/ Element Group: Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: Comments: Guiderail in guiderail should be extend throughout. Performance Deficiencie	Northwest quadrant has d carrying capacity for vest. Load carrying systems Barriers	ving wall at y. ving walls. ost lerate Se (or Pressure Exc. or rust in loc with proper	to severe root this area. Major Re None 6 - 10 Ye Pevere Good 16.0 calized area: end treatme	Len Wi Hei Coo Total Q Limited Fair s. Guiderail ents. Wood	Main Grant Main Grant Gran	8.0 0.5 2 16.0 P Es not comply light to med	(m) (m) (items) (m) erformance Deficiencies 08 with bridge code; ium splits and checks

Timeframe:

Comments:

☐ 1 - 5 Years

MTO Site Number:

DY - 1

Element Data											
Element Group: Beam/ MLE						gth:	8.8	(m)			
Element Name:		Girders			Wie	dth:	0.31	(m)			
Location:		N/S			Hei	ght:	0.31	(m)			
Material:		Wood			Count:		8	(items)			
Element Type:		Rectangular-solid			Total Quantity:		65.5	(m²)			
Environment: Benign Moderate Severe				evere	Limited Insp'n:						
Protection System: Creosote							Performance				
Condition		Units Exc. Good			Fair	Poor]	Deficiencies			
Data:	m ² / m	/ each / % / all		17.5	32	16 01					
Comments: Minor			al cracking	throughout a	Il members.	The 4th and	5th beam gi	rders, from the North			
Comments: Minor checking and moderate longitudinal cracking throughout all members. The 4th and 5th beam girders, from the North elevation, have severe long, cracking migrating to bearing support location on East abutment. Visible deflection in 4th and 5th beam girder											
was observed under l	oading of	f tandem axle dump truck	. Severe dela	amination an	d lateral crac	king observ	ed in 4th bea	m from North			
elevation.											
Performance Defi	iciencies	: Load carrying capacit	y								
Recommended W		☐ Minor Rehab	<u>, </u>		hab	Mair	ntenance N	oods.			
Recommended **	OIK.	☑ Replace		□ None		Urgent					
Timeframe:				☐ 6 - 10 Ye	ars			. 0 2 700			
	hural avai	luation recommended.	Load rate b	_							
girder(s) and deck.	iurai eva	idation recommended.	Luau rate u	nuge, Kepi	ace failed						
girder(s) and deck.											
Element Group:		Deck			Len	orth :	7.0	(m)			
Element Name:		Wearing Surface				gtn. dth:	6.2	(m) (m)			
Location:		Deck Top					0.04				
Material:					Height:			(m)			
		Asphalt			Count: Total Quantity:		1 12.4	(items)			
Element Type:		Benign / Moderate Severe			Limited Insp'n:		43.4	(m²)			
Environment:		Benigh / Mou	erate 5	evere	Lillinec			DC			
Protection System:		Units	Exc. Good			Fair Poor		Performance Deficiencies			
Condition Data:	- / m	n / each / % / all	EXC.	Good	18.0	25.4		09			
							. C				
		d wearing surface has mootholes throughout the									
		: Rough riding surface	surface is c	reating a ro	ugn munig s	urrace and	anowing wa	itei uirougii.			
Recommended W		☐ Minor Rehab		☐ Major Re	hah	Mai	ntononoo N	ands:			
Recommended w	UIK.	☑ Replace				Urgent		intenance Needs: t ☐ 1 Year ☐ 2 Year			
Timeframe:		☑ 1 - 5 Years		☐ 6 - 10 Ye	ars						
	do nous a	sphalt wearing surface	as now of h	_							
Comments: Flovi	ue new a	spirate wearing surface	as part of o	riuge renab.							
FI . G		ln:			T (1	()	1 0.00				
Element Group:		Pier				ı (avg):	0.30	(m)			
Element Name:		Pier Bearings				dth:	0.30	(m)			
Location: NE/SW					ght:	0.21	(m)				
Material: Wood					unt:	16	(items)				
Element Type: Creosote					uantity:	16.0	(ea)				
Environment:		Benign Mod	lerate S	evere	Limited	l Insp'n:					
Protection System:						-	4	Performance			
Condition	2 '	Units	Exc.	Good	Fair	Poor		Deficiencies			
Data:	m² / n	n /each/ % / all		16.0				00			
Comments:											
Performance Def	iciencies										
				☐ Major Re	hab		ntenance N				
		☐ Replace		None		Urgent	☐ 1 Ye	ar □ 2 Year			

☐ 6 - 10 Years

DY - 1

Element Group:		Pier			Length:		7.0	(m)	
Element Name:		Caps			Width:		0.30	(m)	
Location:		N/S			Height:		0.30	(m)	
Material:		Wood			Co	unt:	3	(items)	
Element Type:					Total Q	uantity:	18.9	(m²)	
Environment:		Benign Mod	erate / Se	evere	Limited	Insp'n:	Ø.		
Protection System:		Creosote					Р	erformance	
Condition		Units	Exc.	Good	Fair	Poor	1	Deficiencies	
Data:	m²/ m	ı / each / % / all		18.9			Land Tol	00	
		ood condition; light to n	nedium spli	tting and ch	ecking at er	ıds.	<u></u>		
		, 5	•		•				
Performance Defi	ciencies	: None					anii e ua		
Recommended Wo	ork:	Minor Rehab		☐ Major Re	hab	Mai	ntenance Ne	eds: -	
		☐ Replace		✓ None		☐ Urgent	☐ 1 Year	r 2 Year	
Timeframe:		☐ 1 - 5 Years		☐ 6 - 10 Ye	ears				
Comments:									
1									
Element Group:		Pier			Len	gth:	Wan-	(m)	
Element Name:		Pile Bents				dth:	0.30	(m)	
Location:		N/S			Hei	ght:	2.0	(m)	
Material:		Wood				unt:	12	(items)	
Element Type:		Timber Piles with Cap	ping Beam		Total Q	uantity:	22.6	(m²)	
Environment:				evere		Limited Insp'n:			
Protection System:		Creosote				Performance			
Condition		Units	Exc.	Good	Fair	Poor Deficiencies			
Data:	m²)/ m	/ each / % / all		13.6	9.0		00		
		g above waterline. No	lisplacemer				11 -15 1	t - Yarman in a	
		6							
Performance Defi	ciencies	: None				īm pina	Low	fring security 5	
Recommended Wo	ork:	Minor Rehab		☐ Major Re	hab	Mai	ntenance Ne	eds:	
		☐ Replace		✓ None		☐ Urgent	☐ 1 Year	r 2 Year	
Timeframe:		☐ 1 - 5 Years		☐ 6 - 10 Ye	ears				
Comments:									
Element Group:		Retaining Wall			I.en	gth:	8	(m)	
Element Name:		Walls			Wi		2	(m)	
Location:		East Quadrant				ght:	0.5	(m)	
Material:		Gabion Basket			Cor	-	4	(items)	
Element Type:						uantity:	4	(each)	
Environment:		Benign / Mod	erate Se	evere		Insp'n:		(2)	
Protection System:		Galvanized					P	erformance	
Condition		Units	Exc.	Good	Fair	Poor	1	Deficiencies	
Data:	m² / m	each % / all	Ditte.	3002	1.0	3.0			
		due to settlment and gr	ound move	ment	1.0	5.0		03,01	
Comments: Toppin	ing over	due to settiment and gi	ound move	iliciit.					
Performance Defic	ciencies	: Continuing settlement	and moven	nent				35	
Recommended We		☐ Minor Rehab	and move	☐ Major Re	hab	Mai	ntenance Ne	eds	
11100mmended W	OI IL	☑ Replace		□ None		Urgent	1 Year		
Timeframe:				☐ 6 - 10 Ye	ars				
	ization r	equired for toppling ga	hion hasket						

DY - 1

Element Group:	Sidewalks/Curbs			Len	gth:	8.0	(m)	
Element Name:	Curbs			Width:		0.20	(m)	
Location:	NW/SE			Height:		0.20	(m)	
Material:	Wood			Cou	ınt:	2	(items)	
Element Type:	Creosote			Total Q	uantity:	9.6	(m²)	
Environment:	Benign / Mod	lerate / Se	evere	Limited	Insp'n:			
Protection System:						F	Performance	
Condition	Units	Exc.	Good	Fair	Poor	I	Deficiencies	
Data: m ² /m	/ each / % / all			9.6			00	
Comments: Minor splits	and checks, curbs show	ıld be repla	ced as part of	of bridge rel	nab.			
		-	_					
Performance Deficienci	es: None							
Recommended Work:	☐ Minor Rehab		☐ Major Re	hab	Mai	itenance N	eeds: -	
	☐ Replace		✓ None	1	☐ Urgent	☐ 1 Yea	r 2 Year	
Timeframe:	☐ 1 - 5 Years		☐ 6 - 10 Ye	ars	_			
Comments:								
				1			_	
Element Group:	Approaches			Len	gth:	6	(m)	
Element Name:	Approach Wearing Su	rface		Wie	dth:	6.2	(m)	
Location:	N/S			Hei	ght:	0.04	(m)	
Material:	Asphalt			Cor	unt:	2	(items)	
Element Type:				Total Q	uantity:	74.4	(m²)	
Environment:	Benign / Mod	lerate (S	evere	Limited Insp'n:				
Protection System:					Performance			
Condition	Units	Exc.	Good	Fair	Poor Deficiencies			
Data: m / m	/ each / % / all		32	28.0	14.0 03, 09			
Comments: Light to me	dium wheel rutting and	uneven sur	face. Conti	nuing settler	ment causin	g uneaven r	iding surface in West	
quadrant.								
Performance Deficienci	ies: Settlement and roug	gh riding su	rface					
Recommended Work:	☐ Minor Rehab		✓ Major Re	Maintenance Needs: -			eeds: -	
	☐ Replace		■ None		☐ Urgent ☐ 1 Year ☐ 2 Year			
Timeframe:			☐ 6 - 10 Ye	ears				
Comments: Remove over	ergrown vegetation. Pro	vide proper	drainage at	all four				
quadrants as part of rehab	work.							
_								
Element Group:	Deck			Len	gth:	7.0	(m)	
Element Name:	Soffit - Thin Slab				dth:	6.7	(m)	
Location:				Hei	ght:		(m)	
Material:	Laminated Wood Dec	k		Co	unt:	1	(items)	
Element Type:				Total Q	uantity:	48.0	(m²)	
Environment:	Benign Mod	derate / S	evere	Limited	l Insp'n:			
Protection System:	Creosote, Surface Trea	atment] 1	Performance	
Condition	Units	Exc.	Good	Fair	Poor		Deficiencies	
Data: p ² / m	/ each / % / all		48.0				01	
Comments: Medium to	severe water staining th	roughout.						
Performance Deficienc	ies: Load carrying can:	acity						
Recommended Work:	☐ Minor Rehab	5-	☐ Major Re	hab	Mai	ntenance N	eeds:	
			□ None			Urgent 1 Year 2 Year		
Timeframe:			☐ 6 - 10 Ye	ears				
7	iled where beam / girde	r has failed						
Comments: Deck has failed where beam / girder has failed								

DY - 1

Elamana Casa									
Element Grou	up:	Embankments & Streams			Length:		112 (12.1	(m)	
Element Nam	ne:	Embankments			Width:			(m)	
Location:		NE/NW/SE/SW			Height:			(m)	
Material:					Co	unt:	4	(items)	
Element Type	e:				Total Q	uantity:	4	(ea)	
Environment	:	Benign Mod	lerate / S	evere	Limited	d Insp'n:			
Protection Sy	/stem:	- y					1	Performance	
Condition		Units	Exc.	Good	Fair	Poor	1	Deficiencies	
Data:	m² / m	/each)% / all			2.0	2.0		15	
Comments:		1 -11			1		4		
Performance	e Deficiencio	es: Unstable embankme	ents				100		
Recommend	led Work:	☐ Minor Rehab		☐ Major Re	hab	Mai	ntenance N	eeds: -	
		Replace		☐ None		☐ Urgent	☐ 1 Yea	r 2 Year	
Timeframe:		☑ 1 - 5 Years		☐ 6 - 10 Ye	ars				
Comments:	Repair unsta	ble embankments							
	•								
Element Grou	up:	Embankments & Strea	ms		Len	igth:		(m)	
Element Nam	•	Slope Protection				dth:		(m)	
Location:		NE/NW/SE/SW		- 1	Hei	ight:		(m)	
Material:		Rip Rap				unt:	4	(items)	
Element Type	e:				Total Quantity:		4.0	(ea)	
Environment:	:	Benign Mod	lerate / S	evere	Limited Insp'n:				
Protection Sy	stem:				****	Performance			
Condition		Units	Exc.	Good	Fair	Poor	Poor Deficiencies		
Data:	m²/m	/ each /) % / all			1.0	3.0		15	
Comments:	m²/m	/each % / all			1.0	3.0		15	
	m²/m	/ each) % / all			1.0	3.0		15	
Comments:		/ each % / all	nt	NRAP	1.0	3.0		15	
Comments:	e Deficiencie		nt	☐ Major Re		10	ntenance N		
Comments:	e Deficiencie	es: Unstable embankme	nt	☐ Major Re.☐ None		10	ntenance N	eeds: -	
Comments:	e Deficiencie	es: Unstable embankme	nt		hab	Mai		eeds: -	
Comments: Performance Recommend Timeframe:	e Deficiencio led Work:	es: Unstable embankme Minor Rehab Replace 1 - 5 Years		☐ None ☐ 6 - 10 Ye	hab	Mai		eeds: -	
Comments: Performance Recommend Timeframe:	e Deficiencio led Work:	es: Unstable embankme Minor Rehab Replace		☐ None ☐ 6 - 10 Ye	hab	Mai		eeds: -	
Comments: Performance Recommend Timeframe:	e Deficiencio led Work:	es: Unstable embankme Minor Rehab Replace 1 - 5 Years		☐ None ☐ 6 - 10 Ye	hab	Mai		eeds: -	
Performance Recommend Timeframe: Comments:	e Deficiencio led Work: Provide slop	es: Unstable embankme Minor Rehab Replace 1 - 5 Years e protection to all quadi	rants after e	☐ None ☐ 6 - 10 Ye	hab ars rehab.	Mai □ Urgent		eeds: - r	
Performance Recommend Timeframe: Comments:	e Deficienci e led Work: Provide slop up:	es: Unstable embankme Minor Rehab Replace 1 - 5 Years e protection to all quadi	rants after e	☐ None ☐ 6 - 10 Ye	hab ars rehab. Len	Mai □ Urgent		eeds: - IT	
Performance Recommend Timeframe: Comments:	e Deficienci e led Work: Provide slop up:	es: Unstable embankme Minor Rehab Replace 1 - 5 Years e protection to all quadi	rants after e	☐ None ☐ 6 - 10 Ye	hab ars rehab. Len Wi	Mai □ Urgent □ Urgent agth:		eeds: - r	
Performance Recommend Timeframe: Comments: Element Grou Element Nam Location:	e Deficienci e led Work: Provide slop up:	es: Unstable embankme Minor Rehab Replace 1 - 5 Years e protection to all quadi	rants after e	☐ None ☐ 6 - 10 Ye	hab ars rehab. Len Wi Hei	Mai □ Urgent ugth: dth:	1 Yea	eeds: - IT	
Performance Recommend Timeframe: Comments: Element Grov Element Nam Location: Material:	e Deficiencio led Work: Provide slop up:	es: Unstable embankme Minor Rehab Replace 1 - 5 Years e protection to all quadi	rants after e	☐ None ☐ 6 - 10 Ye	hab ars rehab. Len Wi Hei	Main Urgent Urge	☐ 1 Yea	(m) (m) (m) (items)	
Performance Recommend Timeframe: Comments: 1 Element Grout Element Nam Location: Material: Element Type	e Deficiencie led Work: Provide slop up: ne:	es: Unstable embankme Minor Rehab Replace 1 - 5 Years e protection to all quadr Embankments & Strea Streams & Waterways	rants after e	☐ None ☐ 6 - 10 Ye	hab rehab. Len Wi Hei Co Total Q	Mai ☐ Urgent gth: dth: ight: unt: buantity:	1 Yea	eeds: - IT	
Performance Recommend Timeframe: Comments: 1 Element Grov Element Nam Location: Material: Element Type Environment:	e Deficiencie led Work: Provide slop up: ne:	es: Unstable embankme Minor Rehab Replace 1 - 5 Years e protection to all quadr Embankments & Streat Streams & Waterways	rants after e	□ None □ 6 - 10 Ye mbankment	hab rehab. Len Wi Hei Co Total Q	Main Urgent Urge	1 Yea	(m) (m) (m) (items) (ea)	
Performance Recommend Timeframe: Comments: 1 Element Grov Element Nam Location: Material: Element Type Environment: Protection Sy	e Deficiencie led Work: Provide slop up: ne:	es: Unstable embankme Minor Rehab Replace 1 - 5 Years e protection to all quadi Embankments & Strea Streams & Waterways Benign / Mod	ms	□ None □ 6 - 10 Ye mbankment	hab rehab. Len Wi Hei Co Total Q Limited	Mais Urgent □ Urgent ugth: dth: ight: unt: puantity: l Insp'n:	1 Yea	(m) (m) (m) (items) (ea)	
Performance Recommend Timeframe: Comments: Element Grov Element Nam Location: Material: Element Type Environment: Protection Sy Condition	e Deficiencio led Work: Provide slop up: ne: e:	es: Unstable embankme Minor Rehab Replace 1 - 5 Years e protection to all quadr Embankments & Strea Streams & Waterways Benign / Mod	rants after e	□ None □ 6 - 10 Ye mbankment evere	hab rehab. Len Wi Hei Co Total Q	Mai ☐ Urgent gth: dth: ight: unt: buantity:	1 Yea	(m) (m) (m) (items) (ea) Performance Deficiencies	
Performance Recommend Timeframe: Comments: Element Grou Element Nam Location: Material: Element Type Environment: Protection Sy Condition Data:	e Deficiencio led Work: Provide slop up: ne: e:	es: Unstable embankme Minor Rehab Replace 1 - 5 Years e protection to all quadi Embankments & Strea Streams & Waterways Benign / Mod	ms	□ None □ 6 - 10 Ye mbankment	hab rehab. Len Wi Hei Co Total Q Limited	Mais Urgent □ Urgent ugth: dth: ight: unt: puantity: l Insp'n:	1 Yea	(m) (m) (m) (items) (ea)	
Performance Recommend Timeframe: Comments: Element Grov Element Nam Location: Material: Element Type Environment: Protection Sy Condition	e Deficiencio led Work: Provide slop up: ne: e:	es: Unstable embankme Minor Rehab Replace 1 - 5 Years e protection to all quadr Embankments & Strea Streams & Waterways Benign / Mod	ms	□ None □ 6 - 10 Ye mbankment evere	hab rehab. Len Wi Hei Co Total Q Limited	Mais Urgent □ Urgent ugth: dth: ight: unt: puantity: l Insp'n:	1 Yea	(m) (m) (m) (items) (ea) Performance Deficiencies	
Performance Recommend Timeframe: Comments: Element Grou Element Nam Location: Material: Element Type Environment: Protection Sy Condition Data: Comments:	Provide slop up: ne: e: m² / m	es: Unstable embankme Minor Rehab Replace 1 - 5 Years e protection to all quadr Embankments & Strea Streams & Waterways Benign / Moc Units / each % / all	ms	□ None □ 6 - 10 Ye mbankment evere	hab rehab. Len Wi Hei Co Total Q Limited	Mais Urgent □ Urgent ugth: dth: ight: unt: puantity: l Insp'n:	1 Yea	(m) (m) (m) (items) (ea) Performance Deficiencies	
Performance Recommend Timeframe: Comments: Element Grow Element Nam Location: Material: Element Type Environment: Protection Sy Condition Data: Comments:	Provide slop up: ee: m² / m e Deficiencie	es: Unstable embankme Minor Rehab Replace 1 - 5 Years e protection to all quadr Embankments & Strea Streams & Waterways Benign / Moc Units / each % / all	ms	□ None □ 6 - 10 Ye mbankment evere	Len Wi Hei Co Total Q Limited	Main Urgent Output O	1 1 Yea	(m) (m) (m) (items) (ea) Deficiencies 00	
Performance Recommend Timeframe: Comments: Element Grou Element Nam Location: Material: Element Type Environment: Protection Sy Condition Data: Comments:	Provide slop up: ee: m² / m e Deficiencie	es: Unstable embankme Minor Rehab Replace 1 - 5 Years e protection to all quadr Embankments & Strea Streams & Waterways Benign / Moc Units / each % / all	ms	one of the state o	Len Wi Hei Co Total Q Limited	Main Urgent Output O	1 1.0	(m) (m) (m) (items) (ea) Performance Deficiencies 00	
Performance Recommend Timeframe: Comments: Element Grov Element Nam Location: Material: Element Type Environment: Protection Sy Condition Data: Comments:	Provide slop up: ee: m² / m e Deficiencie	Es: Unstable embankme Minor Rehab Replace 1 - 5 Years e protection to all quadr Embankments & Streat Streams & Waterways Benign / Mod Units / each % / all es: None Minor Rehab	ms	one of the state o	hab ars rehab. Len Wi Hei Co Total Q Limited Fair	Main Urgent Urge	1 1.0	(m) (m) (m) (items) (ea) Performance Deficiencies 00	
Performance Recommend Timeframe: Comments: Element Grow Element Nam Location: Material: Element Type Environment: Protection Sy Condition Data: Comments:	Provide slop up: ee: m² / m e Deficiencie	es: Unstable embankme Minor Rehab Replace 1 - 5 Years e protection to all quadr Embankments & Streat Streams & Waterways Benign / Mod Units / each % / all es: None Minor Rehab Replace	ms	evere Good 1.0 Major Re	hab ars rehab. Len Wi Hei Co Total Q Limited Fair	Main Urgent Urge	1 1.0	(m) (m) (m) (items) (ea) Performance Deficiencies 00	

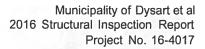
Municipal Structure Inspection Form

MTO Site Number:

Repair and Rehal		Priority					
Element	Repair and Rehabilitation Required	6 to 10 years	1 to 5 years	Within 1 year	Urgent	Construction Cost	
Bridge	Replace MLE (Wood Beams)				Х	\$26,500	
Wingwalls	Replace Wingwall / Retaining Walls				Х	\$55,000	
Wearing Surface (Decks)	Replace deck wearing surface.				х	\$7,250	
Wearing Surface (Approaches)	Replace approach wearing surfaces.				х	\$2,250	
Sidewalk/Curbs	Replace curbs as part of bridge rehab				х	\$2,000	
_							
		•					
	1	1		1	Total Cost	\$93,000	

Associated Work:	ated Work: Comments			
Approaches:	\$25,000			
Detours:				
Traffic Control:		·		
Utilities:				
Right of Way:		× -		
Environmental Study:				
Other:	Engineering	\$7,500		
Contingencies:		\$9,500		
	Total Cost	\$42,000		

Justification:			
			"
	8		N. Control of the con





Structure No: DY-2

Kennisis Lake Narrows Bridge

Structure Description

Kennisis Lake Narrows Bridge is located on North Kennisis Lake Road, at Kennisis Lake Narrows, approximately 400 m west of Watts Road. The bridge was constructed in 1966 and is a 7 m single span, two lane structure with a timber deck, timber beams and timber abutments. The bridge has an overall 6.8 m deck width with 6.2 m wide surface treated wearing surface with timber curbs. There is steel beam guiderail with hazard markers across the structure but no guiderail on the approaches.

Structure Condition

The structure is in fair overall condition with a BCI of 66 and a BSI of 62. The abutments are in good condition with no deficiencies noted above the waterline. The timber beams and deck appear to be in good condition with minor cracking and checking observed. It should be noted that moderate deflection was observed under loading by a tandem axle dump truck. The surface treated wearing surface is in fair condition exhibiting slippage cracking and sections of the wooden deck are visible through the surface treatment. The approaches are in good condition; however, there is evidence of erosion on the approach embankments. There was a large amount of sand and debris on the bridge deck and blocking the deck drains at the time of inspection.

The guiderail over the structure is in good condition with localized corrosion and minor collision damage. The guiderail should be extended on all approaches with proper end treatments.

Recommendation

It is recommended that the main longitudinal beam and soffit areas undergo an enhanced visual inspection with boat or barge due to limited access and detailed structural analysis be performed for potential load posting. The wearing surface should be replaced within 1-5 years and maintenance should be undertaken to repair the loose guiderail. Bridge cleaning of the deck and deck drains under the curb should be conducted immediately to alleviate surface ponding issues. It is recommended that the guiderail extensions with end treatments be addressed in the future when the structure undergoes a major rehabilitation.



Photo 1: General View - Looking West

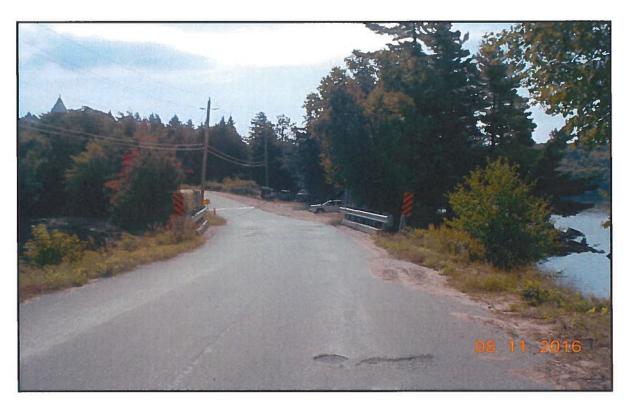


Photo 2: General View – Looking East

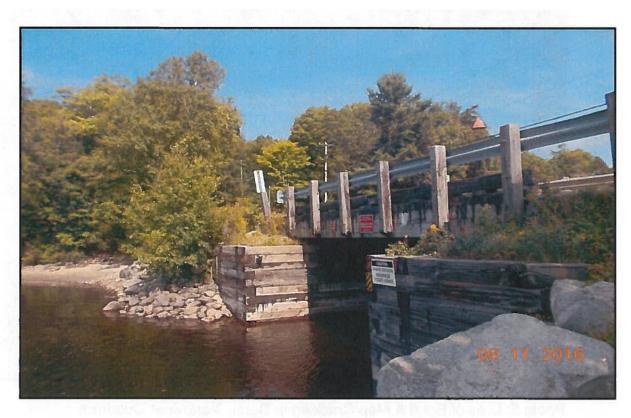


Photo 3: General View - Southeast Elevation



Photo 4: Deck Wearing Surface - Looking West



Photo 5: Loss of Bond & Map Cracking in Deck- Northwest Quadrant

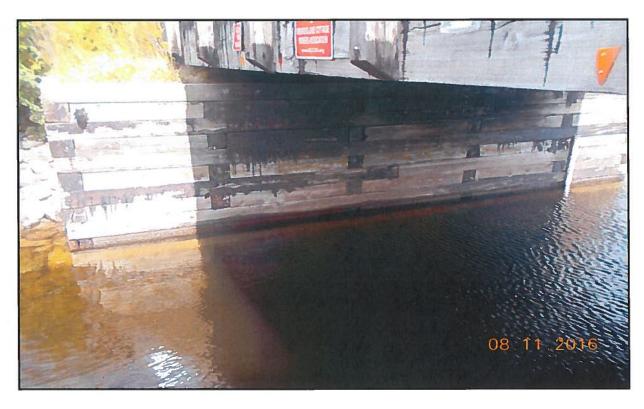


Photo 6: General View – West Abutment

MTO	Site	Number:	DY -	2

Inventory Data:				
Structure Name	Kennisis Lake Narrows Br	ridge		
Main Hwy/Road #	On 🗵	Under	_	ter 🗵 Non-Navig. Water Road Ped. Other
Road Name	Kennisis Lake Road			
Structure Location	0.4 km West of Watts Roa	d		
Latitude	45.241800		Longitude -78.598200	
Owner(s)	Municipality of Dysart et a	al	_	Cons./not App. List/not Desig. Not List Desig. & List
MTO Region *			Road Class: Freeway A	rterial Collector Local 🗵
MTO District *			Posted Speed 50	No. of Lanes 2
Old County *			AADT	% Trucks
Geographic Twp. *			Special Routes: Transit	Truck School Bicycle
Structure Type *	Bridge		Detour Length Around Bridge	(km)
Total Deck Length	13.8	(m)	Fill on Structure	0 (m)
Overall Str. Width	6.8	(m)	Skew Angle	0 (degrees)
Total Deck Area	94.0	(sq.m)	Direction of Structure	E to W
Roadway Width	6.2] (m)	No. of Spans	1
Span Lengths	7.0			(m)
Historical Data:				
Year Built			Last Biennial Inspection	2014
Current Load Limit	N/A/ / (tonn	ies)	Last BridgeMaster Inspection	N/A
Load Limit Bylaw #	N/A		Last Evaluation	N/A
Bylaw Expiry Date	N/A		Last Underwater Inspection	N/A
Min. Vertical Cleara	ance - (m)		Last Condition Survey	N/A
Rehab. History: (Da	ate/description)			
			20	!

Field Inspection Inf	formation:
Date of Inspection:	August 11, 2016
Inspector:	Robert Brooks – Tulloch Engineering
Others in Party:	Elizabeth Perry – Tulloch Engineering
Equipment Used:	Camera, Hammer, Tape Measure
Weather:	Sun
Temperature:	+28°C

Additional Investigations Required:		Estimated		
	None	Normal	Urgent	Cost
Detailed Deck Condition Survey:	X			
DART Survey:	X			
Detailed Coating Condition Survey:	X			
Underwater Investigation:	X	-		
Fatigue Investigation:	X			٠
Seismic Investigation:	X			
Structure Evaluation:		X		\$10,000
Load Posting – Estimated Load		Г	otal Cost	\$10,000

Special Notes: Enhanced visual inspection of main longitudinal elements with boat or barge is recommended and Structural Evaluation for Possible Load Posting given evidence of deflection during loading by tandem truck.

Next Detailed Inspection:	2018

Suspected Performance Deficiencies

00	None	06	Bearing not uniformly loaded/unstable	12	Slippery surfaces
01	Load carrying capacity	07	Jammed expansion joint	13	Flooding/channel blockage
02	Excessive deformations (deflections & rotations)	08	Pedestrian/vehicular hazard	14	Undermining of foundation
03	Continuing settlement	09	Rough riding surface	15	Unstable embankments
04	Continuing movements	10	Surface ponding	16	Other
05	Seized bearings	11	Deck drainage		
Main	tenance Needs				
01	Lift and Swing Bridge Maintenance	07	Repair to Structural Steel	13	Erosion Control at Bridges
02	Bridge Cleaning	08	Repair of Bridge Concrete	14	Concrete Sealing
03	Bridge Handrail Maintenance	09	Repair of Bridge Timber	15	Rout and Seal
04	Painting Steel Bridge Structures	10	Bailey Bridges - Maintenance	16	Bridge Deck Drainage
05	Bridge Deck Joint Repair	11	Animal/Pest Control	17	Other
06	Bridge Bearing Maintenance	12	Bridge Surface Repair		

DY - 2

Element Group:	Abutments				ngth:		(m)
Element Name:	Abutment Walls			Wi	dth:	9.8	(m)
Location:	East / West			Hei	ight:	2.5	(m)
Material:	Wood			Co	unt:	2	(items)
Element Type:					uantity:	49.0	(m²)
Environment:	Benign Mod	derate / Se	evere	Limited	d Insp'n:		
Protection System:	Creosote]	Performance
Condition	Units	Exc.	Good	Fair	Poor]	Deficiencies
Data: m ² /	m / each / % / all	1	49.0				00
Comments:		- I = I					- t t
Performance Deficiencie					n edit		
Recommended Work:	☐ Minor Rehab		☐ Major Re	hab	Mai	ntenance N	eeds:
	☐ Replace		✓ None	I	☐ Urgent	☐ 1 Yea	ar 2 Year
Timeframe:	☐ 1 - 5 Years		☐ 6 - 10 Ye	ears			
Comments:							
Element Group:	Abutments			Len	ngth:	TO THE	(m)
Element Name:	Wingwalls				dth:	2.5	(m)
Location:	NE/NW/SE/SW				ight:	2.50	(m)
Material:	Wood				unt:	4	(items)
Element Type:	Wood Crib				Total Quantity:		(m²)
Environment:	Benign Mod	evere		i Insp'n:	25.0	(/	
Protection System:	Creosote						Performance
Condition	Units				Poor		Deficiencies
	m / each / % / all	Ditt.	19	Fair 4	2		00
Comments: Minor checki		king splint				<u> </u>	00
Commence in the contract	ing in wood ocums. C.a.	wing, opini	.orms one p	Jac at Di 11 -	luaniani.		
Performance Deficiencie	·s· None		•				
Recommended Work:	☐ Minor Rehab		☐ Major Re	hab	Mai	ntenance N	ands.
Accommended o	Replace		✓ None		☐ Urgent ☐ 1 Year ☐ 2 Year		
Timeframe:	☐ 1 - 5 Years		☐ 6 - 10 Ye	ears			
Comments:			_				
Comments.							
Element Group:	Barriers			Lon	-4L.	140	()
Element Group:					ngth: dth:	16.0	(m)
	Railing Systems						(m)
Location:	Across structure only				ight:	2	(m)
Material:	Steel Flow Room on W	Deat			unt:	2	(items)
Element Type:	Steel Flex Beam on W				uantity:	32	(m)
Environment:	Benign / Mod			Limited	l Insp'n:		2 0
Protection System:	Galvanized / Creosote	7		F.5.	D		Performance
Condition	Units	Exc.	Good	Fair	Poor	1	Deficiencies
Data: m/r				32	1 -1 27		00
Comments: Existing guide							udrants. Guiderail
should be extended with pr		ccordance v	with Ontario) Provinciai	Standards.		
Performance Deficiencie			C 11-/- D-				STATE OF R. CO.
Recommended Work:	☐ Minor Rehab		☐ Major Rel	nab		ntenance N	
	Replace		☑ None		Urgent		
Timeframe:	☐ 1 - 5 Years		☐ 6 - 10 Ye	ars	Bridge and	Handrail M	faintanence.
Comments:							
				,	1		

DY - 2

							MANAGE TO SERVICE THE PARTY OF	
Element Group:	:	Beam / MLE			Len	gth:	8.8	(m)
Element Name:		Girders			Wie	ith:	0.250	(m)
Location:		E/W	grange to work-		Hei	ght:	0.60	(m)
Material:		Wood			Cot		9	(items)
Element Type:		Rectangular-solid			Total Q	uantity:	114.8	(m²)
Environment:		Benign Mod	erate / Se	evere	Limited		I	
Protection Syste	em:	Creosote					1	Performance
Condition		Units	Exc.	Good	Fair	Poor Deficiencies		
Data:	m ² / m	n / each / % / all		92.8	20	2	<u> </u>	02
		evere checking along N	orth girder.				er span, was	
		ixel dump truck. Limite				, 20 22110		
		: Excessive deformation						
Recommended		☐ Minor Rehab	((☐ Major Re	hab	Mair	itenance N	eeds: -
	· ··········	Replace		☑ None		Urgent		
Timeframe:		☐ 1 - 5 Years		6 - 10 Ye	ars	0.gon		1001
	thanced view	ual and structural inspec	etion is reco	_				
Comments: En	manceu vist	iai anu suucturai iiispet	LIOII IS FECO	minenaea.				
Element Crave		Deck		1	Ť	oth:	13.8	(m)
Element Name					Len			(m)
Element Name:		Deck Top				dth:	6.8	(m)
Location:		Wood			Hei		1	(m)
Material:			.i		Col		1	(items)
Element Type:		Laminated Wood Decl				uantity:	94.0	(m²)
Environment:		Benign Moderate Severe			Limited	I Insp'n:		D. C
Protection System	em:		Creosote / Surface Treatment				1	Performance
Condition	20	Units	Exc.	Good	Fair	Poor		Deficiencies
Data:	m)/n	50 00 00 000		94.0	L			00
Comments: Go	ood overall	condition; no loose or re	otten deck b	oards obser	rved.			
Performance I	Deficiencies	: None						
Recommended	l Work:	☐ Minor Rehab		☐ Major Re	hab	Maii	ntenance N	eeds: 02
		☑ Replace		✓ None		☐ Urgent ☑ 1 Year ☐ 2 Year		
Timeframe:		☐ 1 - 5 Years		☐ 6 - 10 Ye	ears	Renove sar	nd build-up.	
Comments:								
Element Group):	Deck			Len	gth:	13.8	(m)
Element Name:		Wearing Surface (Dec	ks)			dth:	6.20	(m)
Location:		5	,			ght:		(m)
Material:		Surface Treatment				unt:		(items)
Element Type:						uantity:	85.6	(m²)
Environment:	·	Benign / Mod	lerate S	evere		Insp'n:		1 (
Protection Syst	em:							Performance
Condition								
		Units	Exc	Good	Fair	Poor	1	Deficiencies
		Units	Exc.	Good 10.4	Fair	Poor 37.6		Deficiencies 10
Data:	m² / n	n / each 🤲 all		10.4	37.6	37.6		10
Data: Comments: A	m² / n	n / each % all cracking with localized	d potholes o	10.4 bserved. D	37.6 Deck require	37.6 s cleaning/s		10
Data: Comments: All preserve wood o	m² / n lligator map deck and cu	n / each % all cracking with localized rbs. Ashpalt deterioration	d potholes o	10.4 bserved. D	37.6 Deck require	37.6 s cleaning/s		10
Data: Comments: Alpreserve wood of Performance I	m² / n Illigator map deck and cur Deficiencies	n / each % all cracking with localized	d potholes o	10.4 bserved. E of bond in S	37.6 Deck require SE quadrant	37.6 s cleaning/s	sweeping to	10 promote drainage and
Data: Comments: All preserve wood o	m² / n Illigator map deck and cur Deficiencies	n / each % all cracking with localized rbs. Ashpalt deteriorations: Surface ponding	d potholes o	10.4 bserved. D	37.6 Deck require SE quadrant	37.6 s cleaning/s	sweeping to	promote drainage and eeds: 02,12
Data: Comments: Alpreserve wood of Performance I	m² / n Illigator map deck and cur Deficiencies	n / each % all cracking with localized rbs. Ashpalt deterioration Surface ponding Minor Rehab Replace	d potholes o	10.4 bbserved. E of bond in S Major Re	37.6 Deck require SE quadrant	37.6 s cleaning/s Mai	sweeping to	10 promote drainage and eeds: 02,12 ar
Data: Comments: Al preserve wood of Performance I Recommender	m² / n Illigator map deck and cur Deficiencies	n / each % all cracking with localized rbs. Ashpalt deterioration Surface ponding Minor Rehab	d potholes o	10.4 bserved. E of bond in S	37.6 Deck require SE quadrant	37.6 s cleaning/s Mai	sweeping to	promote drainage and eeds: 02,12
Data: Comments: Alpreserve wood of Performance I	m² / n Illigator map deck and cur Deficiencies	n / each % all cracking with localized rbs. Ashpalt deterioration Surface ponding Minor Rehab Replace	d potholes o	10.4 bbserved. E of bond in S Major Re	37.6 Deck require SE quadrant	37.6 s cleaning/s Mai	sweeping to	10 promote drainage and eeds: 02,12 ar

DY - 2

Element Group:		Retaining Walls				igth:	3.0	(m)	
Element Name:		Walls			Wi	dth:	2.0	(m)	
Location:	170	NW Quadrant			Hei	ight:	0.5	(m)	
Material:		Other				unt:	2	(items)	
Element Type:		Gabions			Total C	uantity:	3	(m²)	
Environment:	4	Benign / Mod	lerate Se	evere	Limited	l Insp'n:		, ,	
Protection System:	11	Galvanized					F	Performance	
Condition		Units	Exc.	Good	Fair	Poor	1	Deficiencies	
Data:	m) / m	/ each / % / all			3.0	of Life		00	
		ls show signs of previous	us settlemer	nt, no signs o		d settlement	ohserved		
		is one wording or provide		,					
Performance Defi	iciencies	: None							
Recommended W		☐ Minor Rehab		☐ Major Rel	hab	Maintenance Needs: -			
		Replace		✓ None		☐ Urgent			
Timeframe:		☐ 1 - 5 Years	☐ 1 - 5 Years ☐ 6 - 10 Ye					- 11	
Comments:									
Element Group:	-	Sidewalks / Curbs			I en	ngth:	13.0	(m)	
Element Name:		Curbs				dth:	0.30	(m)	
Location:		N/S				ight:	0.30	(m)	
Material:		Wood				unt:	2	(items)	
Element Type:		77 GOG		uantity:	15.6	(m²)			
Environment:		Benign / Mod		Insp'n:		(111)			
Protection System:		Creosote	Dimitot	a mop m		Performance			
Condition		Units	Exc.	Good	Fair	Poor	-	Deficiencies	
Data:	m² / m	/ each / % / all	LAC.	1.6	10.0	5.0		00	
		chicle damage to curbs;	some rot/s				nd/sedimen		
		to promote drainage an						t against cuto	
Performance Defi			a prevent re	or. Dongitud	mur spins u	inoughout i	nemocrs.		
Recommended W		Minor Rehab		☐ Major Rel	hab	Mair	ntenance No	eeds: 02	
recommended w	ork.	Replace		☑ None		☐ Urgent ☑ 1 Year ☐ 2 Year			
Timeframe:		☐ 1 - 5 Years		☐ 6 - 10 Ye	ars	Bridge clea			
Comments:						Di luge cic	aning		
Comments.									
						l			
Element Group:	-	Approaches			Lon	igth:	6	(m)	
Element Name:		Wearing Surface				dth:	6.2	(m) (m)	
Location:		East and West				ight:	0.2	(m)	
Material:		Asphalt				unt:	2	(items)	
Element Type:		Aspilait				unt. Duantity:	74.4	(m²)	
Environment:		Benign / Mod	lerate / Se	avere		I Insp'n:	/ 4.4	(111-)	
		Deffigit / Moc	iciale / Si	evele	Lillinet	ı msp n.) C	
Protection System:									
		T Iian	E	C4	E-i-	D	1	Performance	
Condition		Units	Exc.	Good	Fair	Poor	1	Deficiencies	
Data:	m ² / m	/ each / % / all		68	Fair 4	Poor 2	1		
Data:	m ² / m			68			1	Deficiencies	
Data:	m)/ m	/ each / % / all ate means for drainage		68			1	Deficiencies	
Data: Comments: Provide	m²/ m de adequ iciencies	ate means for drainage None Minor Rehab		68	4	2	1	Deficiencies 00	
Data: Comments: Provide Performance Defi	m²/ m de adequ iciencies	/ each / % / all ate means for drainage: None		68 Juadrants.	4	2	ntenance N	Deficiencies 00 eeds: 02	
Data: Comments: Provide Performance Defi	m²/ m de adequ iciencies	ate means for drainage None Minor Rehab		68 quadrants.	4	2 Mai	ntenance No	Deficiencies 00 eeds: 02	
Data: Comments: Provide Performance Define Recommended W	m²/ m² de adequ iciencies ork:	a / each / % / all ate means for drainage : None Minor Rehab Replace	at all four q	68 juadrants. Major Rel	4	2 Mai	ntenance No	Deficiencies 00 eeds: 02	

Municipal Structure Inspection Form

MTO Site Number:

Repair and Rehab	ilitation Re	quired:		Pri	ority		Estimated
Element	Repair and	d Rehabilitation Required	6 to 10 years	1 to 5 years	Within 1 year	Urgent	Construction Cost
Wearing Surface	D C	'd. 1. 11					
(Decks)		with double surface o protect wooden deck		X			\$7,500
1 DOCKS		7-2-2-2					
	3.						
	-		 		ļ	ļ	
	-		-				
	+		+	-			
	 						
			1			Total Cost	\$7,500
							47,500
Associated Work:			Comme	ents			Estimated Cost
Approaches:		Extend guiderail on appro	aches andad	d end treatr	nents.		\$25,000
Detours:							
Traffic Control:							
Utilities:							
Right of Way:		No.					
Environmental Stu	dy:						
Other:							
Contingencies:						Total Cost	£25,000
						Total Cost	\$25,000
Justification:							
Justification:							
1							
ĺ							



Structure No: DY-3

Barry's Bridge

Structure Description

Barry's Bridge is located on Barry Line Road, 1 km west of Kennisis Lake Road. The bridge was constructed in 1960 and is an 18.7 m three-span, two-lane structure with a timber deck, timber piers and timber abutments. The bridge crosses a non-navigable watercourse on an east/west tangential alignment. The bridge has a 7.4 m overall deck width with a 6.8 m wide surface treated wearing surface with timber curbs. There is steel beam guiderail across the structure but no guiderail on the approaches.

Structure Condition

The structure is in fair overall condition with a BCI of 64 and a BSI of 61. The wooden ballast walls are in fair condition with some loose and cracked boards; there is evidence of material loss from behind the abutments. There is evidence of backfill material washing out from behind the ballast walls and scour at the base. The timber piles and caps are in good condition with minor checking observed. The timber deck is in good condition with minor cracking and no evidence of water penetration. The wearing surface is in poor to fair condition exhibiting severe potholing, alligator cracking with sections of the deck visible. There was a large amount of sand and debris on the bridge deck and blocking the deck drains at the time in inspection and of previous inspections.

The guiderail over the structure is in good condition with localized corrosion and minor collision damage. The post in the north east corner has been damaged and is loose. The guiderail should be extended on all approaches with proper end treatments.

Recommendations

It is recommended the structure undergo a minor rehabilitation in 1-5 years to repair the ballast walls, damaged beam, rebuild the approaches, install guiderail with end treatments and replace the deck wearing surface. Maintenance should be undertaken to repair/replace the damaged guiderail post and clean the bridge deck and deck drains under the curb. Guiderail extension on the approaches should be undertaken in the future when the structure undergoes a major rehabilitation. Debris should be cleaned from stream in northwest quadrant at time of bridge cleaning.



Photo 1: General Arrangement – Looking North

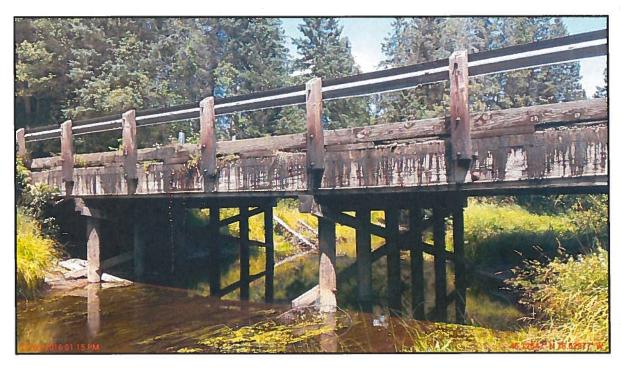


Photo 2: General Arrangement – West Elevation



Photo 3: General Arrangement – South Ballast Wall



Photo 4: General Arrangement – North Ballast Wall

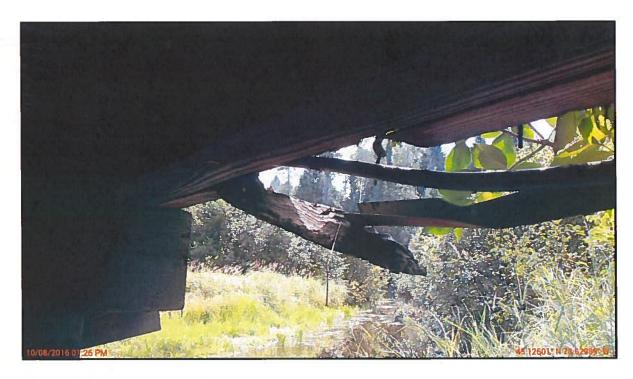


Photo 5: Damaged Exterior Wood Beam – Northwest Quadrant

Inventory Data:

Structure Name	Barry's Bridge			
Main Hwy/Road #		On ⊠ Under	Crossing Navig. Wa Type: Rail	tter Non-Navig. Water ⊠ Road Ped. Other
Road Name	Barry Line Road			
Structure Location	0.05 km East of I	Binscrath Trail		
Latitude	45.126200		Longitude -78.630000	
Owner(s)	Municipality of I	Dysart et al		Cons./not App. List/not Desig. Not List Desig. & List
MTO Region *			Road Class: Freeway A	rterial Collector Local 🗵
MTO District *			Posted Speed 50	No. of Lanes 2
Old County *			AADT	% Trucks
Geographic Twp. *			Special Routes: Transit	Truck School Bicycle
Structure Type *	Bridge		Detour Length Around Bridge	(km)
Total Deck Length	18.7	(m)	Fill on Structure	0 (m)
Overall Str. Width	7.3	(m)	Skew Angle	0 (degrees)
Total Deck Area	137.0	(sq.m)	Direction of Structure	N to S
Roadway Width	6.8	(m)	No. of Spans	3
Span Lengths	6.2			(m)
	· · · · · · · · · · · · · · · · · · ·			
Historical Data				
Historical Data:	1960		Last Biennial Inspection	2014
		(tonnes)	Last Biennial Inspection Last BridgeMaster Inspection	2014 N/A
Year Built	1960 N/A/	/ (tonnes)	-	- I - I - I - I - I - I - I - I - I - I
Year Built Current Load Limit	1960 N/A/	/ (tonnes)	Last BridgeMaster Inspection	N/A
Year Built Current Load Limit Load Limit Bylaw #	1960 N/A/ N/A N/A	(tonnes)	Last BridgeMaster Inspection Last Evaluation	N/A N/A
Year Built Current Load Limit Load Limit Bylaw # Bylaw Expiry Date	1960 N/A/ N/A N/A -		Last BridgeMaster Inspection Last Evaluation Last Underwater Inspection	N/A N/A
Year Built Current Load Limit Load Limit Bylaw # Bylaw Expiry Date Min. Vertical Cleara	1960 N/A/ N/A N/A -		Last BridgeMaster Inspection Last Evaluation Last Underwater Inspection	N/A N/A
Year Built Current Load Limit Load Limit Bylaw # Bylaw Expiry Date Min. Vertical Cleara	1960 N/A/ N/A N/A -		Last BridgeMaster Inspection Last Evaluation Last Underwater Inspection	N/A N/A
Year Built Current Load Limit Load Limit Bylaw # Bylaw Expiry Date Min. Vertical Cleara	1960 N/A/ N/A N/A -		Last BridgeMaster Inspection Last Evaluation Last Underwater Inspection	N/A N/A
Year Built Current Load Limit Load Limit Bylaw # Bylaw Expiry Date Min. Vertical Cleara	1960 N/A/ N/A N/A -		Last BridgeMaster Inspection Last Evaluation Last Underwater Inspection	N/A N/A
Year Built Current Load Limit Load Limit Bylaw # Bylaw Expiry Date Min. Vertical Cleara	1960 N/A/ N/A N/A -		Last BridgeMaster Inspection Last Evaluation Last Underwater Inspection	N/A N/A
Year Built Current Load Limit Load Limit Bylaw # Bylaw Expiry Date Min. Vertical Cleara	1960 N/A/ N/A N/A -		Last BridgeMaster Inspection Last Evaluation Last Underwater Inspection	N/A N/A
Year Built Current Load Limit Load Limit Bylaw # Bylaw Expiry Date Min. Vertical Cleara	1960 N/A/ N/A N/A -		Last BridgeMaster Inspection Last Evaluation Last Underwater Inspection	N/A N/A

Sun

+29°C

Camera, Hammer, Tape Measure

Field Inspection Information:

Date of Inspection:

Others in Party:

Equipment Used:

Inspector:

Weather:

Temperature:

nation:	
August 10, 2016	
Robert Brooks – Tulloch Engineering	
Elizabeth Perry – Tulloch Engineering	

MTO Site Number: DY - 3

Additional Investigations Required:		Priority		Estimated	
	None	Normal	Urgent	Cost	
Detailed Deck Condition Survey:	X				
DART Survey:	X				
Detailed Coating Condition Survey:	X				
Underwater Investigation:	X				
Fatigue Investigation:	X				
Seismic Investigation:	X				
Structure Evaluation:	X				
Load Posting – Estimated Load		Total Cost			
Special Notes:		-	·····		
Next Detailed Inspection:		2018			

	ected Performance Deficiencies	0.0	D	13	C1:
00	None	06	Bearing not uniformly loaded/unstable	12	Slippery surfaces
01	Load carrying capacity	07	Jammed expansion joint	13	Flooding/channel blockage
02	Excessive deformations (deflections & rotations)	08	Pedestrian/vehicular hazard	14	Undermining of foundation
03	Continuing settlement	09	Rough riding surface	15	Unstable embankments
04	Continuing movements	10	Surface ponding	16	Other
05	Seized bearings	11	Deck drainage		
Main	tenance Needs				
01	Lift and Swing Bridge Maintenance	07	Repair to Structural Steel	13	Erosion Control at Bridges
02	Bridge Cleaning	08	Repair of Bridge Concrete	14	Concrete Sealing
03	Bridge Handrail Maintenance	09	Repair of Bridge Timber	15	Rout and Seal
04	Painting Steel Bridge Structures	10	Bailey Bridges - Maintenance	16	Bridge Deck Drainage
05	Bridge Deck Joint Repair	11	Animal/Pest Control	17	Other

DY - 3

Element Group:		Abutments			Len	igth:		(m)
Element Name:		Ballast Walls			Wi	dth:	7.0	(m)
Location:		N/S			Hei	ight:	2.0	(m)
Material:		Timber			Co	unt:	2	(items)
Element Type:					Total Q	uantity:	28.0	(m²)
Environment:		Benign Mod	lerate / So	evere	Limited	l Insp'n:		
Protection System	n:	Creosote						Performance
Condition		Units	Exc.	Good	Fair	Poor Deficiencies		
Data:	m²/ n	ı / each / % / all		22	4	2		00
Comments: Balla	ast walls in	good to fair condition	with locali:	zed deforma	tions of sev	eral segme	nts of timbe	r causing material
washout.								
Performance De	ficiencies	: None						
Recommended \	Work:	☐ Minor Rehab		☐ Major Re	Maintenance Needs: 09			
		☐ Replace		✓ None		☐ Urgent	☑ 1 Yea	ar 🔲 2 Year
Timeframe:		☐ 1 - 5 Years	☐ 1 - 5 Years ☐ 6 - 10 Year			repair balla	ast wall timb	pers
Comments:						j .		
Element Group:		Approaches			Len	igth:	6.0	(m)
Element Name:		Wearing Surface				dth:	7.5	(m)
Location:		N/S				ight:	7.10	(m)
Material:		Asphalt				unt:	2	(items)
Element Type:						Total Quantity:		(m²)
Environment:		Benign / Mod		Insp'n:	90.0	<u></u>		
Protection System	n.		2,,,,,,,	p		Performance		
Condition		Units	Exc.	Good	Fair	Poor	-	Deficiencies
Data:	m²)/ m				22.5	67.5		09
		tching observed at appr	naches as i	vell as noth			ng and rinni	
Comments. O.g.	iiiiouiii pu	toning observed at appr	outiles, us v	ven us pour	ores una era	ioking, ratti	ng una mpp	6.
Performance De	ficiencies	• None						
Recommended V		☐ Minor Rehab		☐ Major Re	hab	Mai	ntenance N	eeds:
recommended (· · · · · · · · · · · · · · · · · · ·	☑ Replace		☐ None		☐ Urgent ☐ 1 Year ☐ 2 Year		
Timeframe:				☐ 6 - 10 Ye	ars	a organic a literal a literal		
	lace asnha	lt wearing surface.						
Comments. Rep	iace aspiia	it wearing surface.						
Element Group:		Barriers			T en	igth:	19.0	(m)
Element Name:		Railing Systems				dth:	17.0	(m)
Location:		E/W				ght:		(m)
Material:		Steel Flex Beam on We	nod Post			unt:	2	(items)
Element Type:		Steel Flex Boain on W	ocu i ost			uantity:	38.0	(m)
Environment:		Benign / Mod	erate Se	evere		l Insp'n:	0	(111)
Protection System	n.	Galvanized / Creosote			Zimitot	mop iii		Performance
Condition		Units	Exc.	Good	Fair	Poor	1	Deficiencies
Data:	m/ I m	each / % / all	LAC.	15.0	18.0	5.0		00
		derail and end post in N	/E comer:				No guiderai	
Comments. Dame	age to gui	ucian and end post in N	/L come,	illilloi collis	ion damage	illiu-spaii.	INO guiderai	i on approaches.
Performance De	ficionaice	None						
Recommended V		Minor Rehab		☐ Major Re	hab	Mai	ntenance N	ooder
Recommended V	VV UI K.	Replace		□ None		Urgent		
Timeframer				☐ 6 - 10 Ye	ars	Orgenic		
Timeframe:		© 1 3 (cals		_ 0 - 10 te				
Comments:								

DY - 3

Element Group:		Beam /MLE				gth:	18.7	(m)
Element Name:		Girders			Wid	dth:	0.250	(m)
Location:		N/S			Hei	ght:	0.60	(m)
Material:		Wood			Cou	ınt:	9	(items)
Element Type:		Rectangular-solid			Total Q		328.0	(m²)
Environment:		Benign Mod	lerate / Se	evere	Limited	Insp'n:		
Protection System	n:	Creosote					I	Performance
Condition		Units	Exc.	Good	Fair	Poor	1	Deficiencies
Data:	m ² / m	/ each / % / all		200.0	127	1		01
Comments: Bear	ms in gene	ral good condition with	minor che	cking and sp	plits. A seve	re longitud	inal split w	as observed at the
Northwest quadra	ınt; this are	ea should be monitored.						
Performance De	ormance Deficiencies: Load carrying capacity							
Recommended '	Work:	☐ Minor Rehab		☐ Major Re	hab		atenance N	eeds: -
		Replace	☑ Replace ☐ None			☐ Urgent	☐ 1 Yea	ar 🔲 2 Year
Timeframe:		1 - 5 Years		☐ 6 - 10 Ye	ears			
Comments: Rep	lace dama	ged girder at Northwest	ed girder at Northwest quadrant as part of l					
rehabilitation.								
Element Group:		Deck	Deck			gth:	18.7	(m)
Element Name:		Deck Top	Deck Top			dth:	7.3	(m)
Location:		Under Asphalt			Hei	ght:		(m)
Material:		Wood			Cor		1	(items)
Element Type:		Laminated Wood Decking - transverse				uantity: Insp'n:	137.0	(m²)
Environment:			Benign Moderate Severe				•	
Protection System	m:	Creosote				1	Performance	
Condition		Units	Exc.	Good	Fair	Poor	1	Deficiencies
Data:	m)/n	n / each / % / all		137.0				00
Comments: Deck appears to be in good condition with light to moderate signs of water penetration on underside.								
Performance De	eficiencies	: None						
Recommended '	Work:	☐ Minor Rehab		☐ Major Re	hab	Mai	ntenance N	eeds:
		☐ Replace		☐ None		☐ Urgent ☐ 1 Year		
Timeframe:		☐ 1 - 5 Years		☐ 6 - 10 Ye	ears			
Comments:								
				li-				
Element Group:		Deck			Length	ı (avg):	18.7	(m)
Element Name:		Wearing Surface				dth:	6.80	(m)
Location:		Deck Top			Hei	ght:		(m)
Material:	· 	Asphalt				unt:	1	(items)
Element Type:						uantity:	127.2	(m²)
Environment:		Benign / Mod	lerate S	evere	Limited	l Insp'n:		
Protection System	m:						4	Performance
Condition		Units	Exc.	Good	Fair	Poor		Deficiencies
Data:		n / each / % / all			31.3	95.9		09
		condition. Extensive pa					long edges	with severe transverse
		no drains; therefore, w		trating into	the wood de	eck below.		
		: Rough riding surface						47
Recommended '	Work:	☐ Minor Rehab		☐ Major Re	ehab .		ntenance N	
_		☑ Replace		None		☐ Urgent	☐ 1 Ye	ar 🗍 2 Year
Timeframe:				☐ 6 - 10 Y	ears			
Comments: Rep	olace aspha	alt wearing surface						
						I		

DY - 3

Element Group:	Pier			Ler	igth:	2.0	(m)
Element Name:	Shaft / Columns / Pile	Bents		Wi	dth:	0.30	(m)
Location:	4 Bents			He	ight:	2.00	(m)
Material:	Wood			Co	unt:	24	(items)
Element Type:	Timber Piles with Car	ping Beam		Total C	Quantity:	45.2	(m²)
Environment:	Benign Mod	derate / S	evere	Limited	d Insp'n:		· · · · ·
Protection System:	Creosote			_		I	Performance
Condition	Units	Exc.	Good	Fair	air Poor Deficiencies		
Data: m²	/ m / each / % / all	1		45.2			00
Comments:							
Performance Deficie	ncies: None						
Recommended Work	. Minor Rehah		☐ Major Re	hab	Maii	atenance N	eeds: -
	☐ Replace		✓ None		Urgent	. —	
Timeframe:	☐ 1 - 5 Years		☐ 6 - 10 Ye	ears			
Comments:							
Element Group:	Sidewalk / Curbs			Ler	ıgth:	18.7	(m)
Element Name:	Curbs				dth:	0.30	(m)
Location:	East / West	East / West			ight:	0.30	(m)
Material:	Wood				unt:	2	(items)
Element Type:	-				Quantity: 22.4		(m²)
Environment:	Benign / Moo	Benign / Moderate / Severe					(***)
Protection System:	Creosote				i Insp'n:	ī	Performance
Condition	Units	Exc.	Good	Fair	Poor	1	Deficiencies
	m / each / % / all		8.4	10.0	4.0		00
Comments: Minor da	mage to curbs. Significant	accumulatio	n of sand a	nd debris at	and under	curbs, obstr	ucting drainage. Splits
	signs of light insect infest					,	
Performance Deficie							
Recommended Work	Minor Rehab		☐ Major Re	hab	Mair	tenance N	eeds: -02
	☑ Replace		☐ None	✓ Urgent		1 Yea	r 2 Year
Timeframe:			☐ 6 - 10 Ye	ears	Bridge clea	ning	
Comments: Replace t	imber curbs					Ü	
•							
Element Group:	Stream & Embankmer	nts		Ler	igth:		(m)
Element Name:	Embankments			Wi	dth:		(m)
Location:	NE/NW/SE/SW			Hei	ight:		(m)
Material:				Со	unt:		(items)
Element Type:					uantity:	4.0	(ea)
Environment:	Benign Moo	ierate / Se	evere	Limited	Insp'n:		
Protection System:						F	Performance
Condition	Units	Exc.	Good	Fair	Poor	1	Deficiencies
Data: m ²	/ m (each) % / all		4.0				00
Comments:							
Performance Deficies	ncies: None						
Recommended Work			☐ Major Rei	hab	Mair	itenance N	eeds: 02
	☐ Replace		☐ None		Urgent	☑ 1 Yea	r 🔲 2 Year
Timeframe:	1 - 5 Years		☐ 6 - 10 Ye	ars	Remove gr	anular mate	rial from stream
Comments:						,	

Page 3-3

DY - 3

Element Group:	treams & Embankments			Length:			(m)		
Element Name:	Slope Protection			Wi	idth:		(m)		
Location:	NE/SW/SE/SW			He	ight:		(m)		
Material:				Co	unt:	4	(items)		
Element Type:				Total (Quantity:	4	(ea)		
Environment:	Benign Mod	erate / S	evere	Limite	d Insp'n:				
Protection System:						1	Performance		
Condition	Units	Exc.	Good	Fair	Poor	-1	Deficiencies		
	eacD / % / all			4.0		00			
Comments: No slope prot			L			<u> </u>			
Performance Deficiencies	s: None	···				-			
Recommended Work:	Minor Rehab		☐ Major Re	hab	Maintenance Needs: -				
Accommended work.	Replace		☑ None		Urgent				
Timeframe:	☐ 1 - 5 Years ☐ 6 - 10 Ye			ears					
Comments:	_								
Comments.									
F1	la								
Element Group:	Streams & Embankme			ngth:		(m)			
Element Name:	Streams & Waterways		dth:		(m)				
Location:	Upstream /Downstream		ight:	1	(m)				
Material:			unt:	2	(items)				
Element Type:					2.0	(ea)			
Environment:	Benign Mod	erate / S	evere	Limited	d Insp'n:				
Protection System:	4					I	Performance		
Condition	Units	Exc.	Good	Fair	Poor	Deficiencies			
Data: m ² / m	each/ % / all		1.0	1.0		00			
Comments: Vegetation pa	rtialy obstructing water	way at Nor	thwest quad	drant.					
Performance Deficiencies	s: None								
Recommended Work:	Minor Rehab		☐ Major Re	hab	Mai	ntenance N	eeds: 17		
	Replace		✓ None		☐ Urgent	√ 1 Yea	r 2 Year		
Timeframe:	☐ 1 - 5 Years		☐ 6 - 10 Ye	ears	ars Clear debris.				
Comments:									
Element Group:	Pier			Ler	ngth:	7.3	(m)		
Element Name:	Caps				dth:	0.3	(m)		
Location:	Capping Beams			1111	ight:	0.3	(m)		
Material:	Wood				unt:	4	(items)		
Element Type:	11004				Quantity:	26.3	(m²)		
Environment:	Benign Mod	erate / Sc	evere		Insp'n:	20.3	(m ⁻)		
Protection System:	Creosote	ciate / Bt	LVCIC	Limited	ı msp m.		\C		
		Ena	C1	r.i.	D	-{	Performance		
Condition	Units	Exc.	Good	Fair	Poor	1	Deficiencies		
	/ each / % / all		26.3			<u> </u>	00		
Comments:									
									
Performance Deficiencies				hab.					
Recommended Work:	☐ Minor Rehab		Major Rel	naD		ntenance No			
	Replace		☑ None		☐ Urgent	1 Yea	r 2 Year		
Timeframe:	☐ 1 - 5 Years		☐ 6 - 10 Ye	ars					
Comments:									
				*					

Municipal Structure Inspection Form

MTO Site Number:

Repair and Rehal	Priority				Estimated	
Element	Repair and Rehabilitation Required	6 to 10 years	1 to 5 years	Within 1 year	Urgent	Construction Cost
MLE	Replace damaged girder			X		\$10,000
Curbs	Replace		Х			\$5,000
Ballast Walls	Rebuild abutment walls to prevent washout of backfill.		х			\$60,000
Wearing Surface (Approaches)	Rebuild and resurface approaches		х			\$5,000
Railing System	Repair guiderail and end post				x	\$2,000
Wearing Surface (Decks)	Resurface deck with double surface treatment		х			\$5,000
					Total Cost	\$87,000

Associated Work:	Comments		Estimated Cost
Approaches:	Extend guiderail on approaches and add end treatments.		\$25,000
Detours:	*		
Traffic Control:			\$5,000
Utilities:			
Right of Way:			
Environmental Study:			
Other:			
Contingencies:			
		Total Cost	\$30,000

Justification:		
•		



Structure No: DY-4

Redstone Brook Bridge

Structure Description

The Redstone Brook Bridge is located on Green Lake Road, 2 km west of Kennisis Lake Road. The bridge was constructed in 1960 and is a 16.3 m three-span, two-lane structure with a timber and concrete composite deck, timber piers and timber abutments. The bridge crosses a non-navigable watercourse on an east/west tangential alignment. The bridge has an 8.5 m overall deck width with a 7.4 m wide surface treated wearing surface with concrete curbs. There is steel beam guiderail across the structure but no guiderail on the approaches.

Structure Condition

The structure is in fair overall condition with a BCI of 61 and a BSI of 58. The wooden ballast walls are in fair to poor condition with severe erosion / scour at the southwest ballast wingwall causing continued settlement and movement causing the embankment to become unstable. There is significant evidence of backfill material washing out from behind the southeast ballast wall, which has undermined the approach. There is a sinkhole in the east approach and there is evidence of undermining of the east approach. The approaches show evidence of settlement with significant asphalt padding. The timber piles and caps are in good condition with minor checking observed. The timber deck is in good condition with minor cracking and evidence of water penetration at localized areas. The wearing surface is in fair condition exhibiting moderate potholing, and edge breaks. The concrete curbs are in good condition with minor spalls and snowplow / vehicle damage.

The guiderail over the structure is in fair condition with localized corrosion and minor collision damage. The spacing between support posts for the guiderail is excessive and may not provide adequate protect in the event of a collision. Several supports posts were observed to be deteriorated and/or loose. The guiderail should be extended on all approaches with proper end treatments.

Recommendations

It is recommended that the structure undergo a minor rehabilitation in 1-5 years to repair the ballast walls, embankments, pad and resurface the approaches, deck wearing surface and replace the guiderail over the structure. It is highly recommended that the root cause of the hole at the east approach be investigated. The undermined east approach wearing surface should be investigated further and repaired immediately as a matter of safety. Maintenance should be undertaken to repair the loose guiderail posts and clean the bridge deck and deck drains. The tree and other debris should be removed from under the structure to prevent damage to the structure and to allow for proper flow under the structure. Guiderail extension on the approaches should be undertaken in the future when the structure undergoes a major rehabilitation.



Photo 1 : General Arrangement – Looking East



Photo 2 : General Arrangement – Looking West



Photo 3: General Arrangement – North Elevation



Photo 4: Deck Wearing Surface - Looking West



Photo 5: East Approach Wearing Surface – Undermined Asphalt Zone (Sinkhole)



Photo 6: Undermined Ballast Wing Wall – Southwest Quadrant

мто	Site	Number:	DY - 4

Inventory Data				
Structure Name	Redstone Brook	Bridge		
Main Hwy/Road #		On ⊠ Under	Crossing Navig. Wa Type: Rail	nter Non-Navig. Water ⊠ Road Ped. Other
Road Name	Green Lake Roa	d	T 20 II II II II II	
Structure Location	1.0 km East of S	tanhope Airport Road		- TATE
Latitude	45.109500		Longitude -78.634000	The Miles
Owner(s)	Municipality of	Dysart et al	9	Cons./not App. List/not Desig. Not List Desig. & List
MTO Region *			Road Class: Freeway A	arterial Collector Local
MTO District *	ICI		Posted Speed 50	No. of Lanes 2
Old County *		1 1	AADT	% Trucks
Geographic Twp. *			Special Routes: Transit	Truck School Bicycle
Structure Type *	Bridge		Detour Length Around Bridge	(km)
Total Deck Length	16.3	(m)	Fill on Structure	(m)
Overall Str. Width	8.5	(m)	Skew Angle	0 (degrees)
Total Deck Area	139.0	(sq.m)	Direction of Structure	E to W
Roadway Width	7.4	(m)	No. of Spans	3
Span Lengths	5.4			(m)
Historical Data				
Year Built	1960		Last Biennial Inspection	2014
Current Load Limit	N/A/	/ (tonnes)	Last BridgeMaster Inspection	N/A
Load Limit Bylaw #	# N/A		Last Evaluation	N/A
Bylaw Expiry Date	N/A		Last Underwater Inspection	N/A
Min. Vertical Cleara	ance -	(m)	Last Condition Survey	N/A
Rehab. History: (D	ate/description)			
	2			
2				

Field Inspection Inf	formation:
Date of Inspection:	August 10, 2016
Inspector:	Robert Brooks – Tulloch Engineering
Others in Party:	Elizabeth Perry – Tulloch Engineering
Equipment Used:	Camera, Hammer, Tape Measure
Weather:	Sun
Temperature:	+29°C

Additional Investigations Required:		Priority		Estimated
	None	Normal	Urgent	Cost
Detailed Deck Condition Survey:	X			
DART Survey:	X			
Detailed Coating Condition Survey:	X			
Underwater Investigation:	X			
Fatigue Investigation:	X			
Seismic Investigation:	X			·
Structure Evaluation:	X			
Load Posting – Estimated Load		Total Cost \$0		
Special Notes:			37	
,				
Next Detailed Inspection:			2018	

01 Load			Bearing not uniformly loaded/unstable	12	Slippery surfaces
VI LOGG	carrying capacity	07	Jammed expansion joint	13	Flooding/channel blockage
02 Exce	ssive deformations (deflections & rotations)	08	Pedestrian/vehicular hazard	14	Undermining of foundation
03 Cont	inuing settlement	09	Rough riding surface	15	Unstable embankments
04 Cont	inuing movements	10	Surface ponding	16	Other
05 Seize	ed bearings	11	Deck drainage		

Maint	tenance Needs				
01	Lift and Swing Bridge Maintenance	07	Repair to Structural Steel	13	Erosion Control at Bridges
02	Bridge Cleaning	08	Repair of Bridge Concrete	14	Concrete Sealing
03	Bridge Handrail Maintenance	09	Repair of Bridge Timber	15	Rout and Seal
04	Painting Steel Bridge Structures	10	Bailey Bridges - Maintenance	16	Bridge Deck Drainage
05	Bridge Deck Joint Repair	11	Animal/Pest Control	17	Other
06	Bridge Bearing Maintenance	12	Bridge Surface Repair		

DY - 4

Element Group:	Abutments	**		Len	igth:	7	(m)
Element Name:	Ballast Walls			Wi	dth:		(m)
Location:	East / West			Hei	ght:	1.5	(m)
Material:	Wood Timber			Co	unt:	2	(items)
Element Type:				Total Q	uantity:	21	(m²)
Environment:	Benign Mod	derate / Se	evere	Limited	l Insp'n:		
Protection System:	Creosote / Pressure Tr	eat		•		1	Performance
Condition	Units	Exc.	Good	Fair	Poor	1	Deficiencies
Data:	n3/ m / each / % / all		11	10			14
Comments: Evidence	e of material loss from behind	l east abutm	ent ballast v	wall reusltin	g in large c	avity below	asphalt wearing
surface - repair requir	ed to prevent subsidence and	further eros	sion.				
Performance Defici	encies: Undermining of foun	dation					
Recommended Wor	k: Minor Rehab		☑ Major Re	hab	Maii	ntenance N	eeds: 13
	☐ Replace		■ None		✓ Urgent	☐ 1 Yea	ar 🔲 2 Year
Timeframe:	meframe:		☐ 6 - 10 Ye	ears	Repair eroo	ded cavity b	ehind East abutment
Comments: Repair	undermining of east ballast v	vall.			wall.		
Element Group:	Abutments			Len	gth:	2.0	(m)
Element Name:	Wing Wall			Wi	dth:		(m)
Location:	NE/NW/SE/SW			Hei	ght:	1.50	(m)
Material:	Wood Timber			Co	unt:	4	(items)
Element Type:				Total Q	uantity:	12.0	(m²)
Environment:	Benign Mod		evere	Limited	l Insp'n:		
Protection System:	Creosote / pressure tre	at				I	Performance
Condition	Units	Exc.	Good	Fair	Poor		Deficiencies
Data: n	m / each / % / all		4.5	5	2.5	-	03,04,15
Comments: Southw	est wing wall has severe erro	sion with co	ontinuing se	ttlement and	d movemen	t.	
D.C. D.C.		4		.1 1 1	1	. 1	1
	encies: Continuing settlemen	t, movemen	☐ Major Re			ome unstab	
Recommended Wor	Replace		☐ None	3,415	☐ Urgent	☐ 1 Yea	
Timeframe:	☑ 1 - 5 Years		☐ 6 - 10 Ye	arc			
	_		_ 0 10 10	.013			
Comments: Replace	Southwest wing wall.						
Element Group:	Barriers			Lan	gth:	15.0	(m)
Element Name:	Railing Systems				dth:	15.0	(m) (m)
Location:	Ranning Systems				ght:		(m)
Material:	Steel	<u> </u>			unt:	2	(items)
Element Type:	Steel Flex Beam over	Other Railin	10		uantity:	30.0	(m)
Environment:		derate Se			l Insp'n:	0	(111)
Protection System:	Benigh / Woo	acrate Di	overe	Linitee	i msp ii.		Performance
Condition	Units	Exc.	Good	Fair	Poor	1	Deficiencies
	m each / % / all	Exc.	0000	20.0	10.0		00
	l in fair condition with slight	corrosion I	Post spacine			chors loose	The second secon
guiderail on approach		corrosion. I	ost spacing	, is insurince	ent. I ost an	chors roose	in places. 140
Performance Defici							
Recommended Wor		· · · · · · · · · · · · · · · · · · ·	☐ Major Re	hab	Mair	tenance N	eeds:
	☑ Replace		☐ None		Urgent	☐ 1 Yea	
Timeframe:			☐ 6 - 10 Ye	ears			
	new guardrail system at time	of rehabilit	ation				
	.,						

DY - 4

Element Group:		Deck			Len	gth:		(m)
Element Name:		Drainage (Decks)			Wio	ith:		(m)
Location:		North / South			Hei	ght:		(m)
Material:		Steel			Cou	ınt:	6	(items)
Element Type:		Metal Drain Pipes			Total Q	uantity:	6	(each)
Environment:		Benign / Mod	lerate Se	evere	Limited	Insp'n:		
Protection Syste	em:						F	Performance
Condition		Units	Exc.	Good	Fair	Poor	I	Deficiencies
Data:	m² / m	each/%/all		6				
Comments:								
Performance D)eficiencies	: None						
Recommended		☐ Minor Rehab		☐ Major Re	hab	Mair	itenance N	eeds:
		☐ Replace		✓ None		☐ Urgent	☐ 1 Yea	r 2 Year
Timeframe:		☐ 1 - 5 Years		☐ 6 - 10 Ye	ars	_	_	
Comments:								
Element Group:	:	Deck			Len	gth:	16.3	(m)
Element Name:		Deck Top			Wie		8.5	(m)
Location:					Hei	ght:		(m)
Material:		Wood			Cor	-	1	(items)
Element Type:		Laminated Wood Decl	king - Long	itudinal		uantity:	139.0	(m²)
Environment:		Benign Mod		evere		Insp'n:	7	(/
Protection Syste	em:							Performance
Condition	<u> </u>	Units	Exc.	Good	Fair	Poor		Deficiencies
Data:	70 / 5	1 / each / % / all						
	k 1117 <i>1 </i> 11	1 / each / % / all		1 139.0	l		1	00
		AU	of water lea	139.0 akage throug	h deck.			00
		on noted with evidence	of water lea		gh deck.			00
Comments: So	me deflection	on noted with evidence	of water lea		gh deck.			00
Comments: So Performance I	me deflection	on noted with evidence	of water lea			Mair	ntenance N	
Comments: So	me deflection	on noted with evidence	of water lea	akage throug		Main	ntenance N	eeds:
Comments: So Performance I	me deflection	on noted with evidence : None Minor Rehab	of water lea	akage throug	hab			eeds:
Comments: So Performance E Recommended	me deflection	on noted with evidence : None	of water lea	Major Re ☑ None	hab			eeds:
Comments: So Performance I Recommended Timeframe:	me deflection	on noted with evidence : None	of water lea	Major Re ☑ None	hab			eeds:
Comments: So Performance I Recommended Timeframe:	me deflection	on noted with evidence : None	of water lea	Major Re ☑ None	hab			eeds:
Comments: So Performance I Recommended Timeframe: Comments:	me deflection deficiencies Work:	on noted with evidence : None	of water lea	Major Re ☑ None	hab	☐ Urgent		eeds: er
Comments: So Performance I Recommended Timeframe:	me deflection deficiencies Work:	n noted with evidence None Minor Rebab Replace 1 - 5 Years		Major Re ☑ None	hab ears Len	□ Urgent	☐ 1 Yea	eeds: ar
Comments: So Performance E Recommended Timeframe: Comments: Element Group: Element Name:	me deflection deficiencies Work:	on noted with evidence : None		Major Re ☑ None	hab ears Len Wi	Urgent gth: dth:	☐ 1 Yes	eeds: ar
Comments: So Performance E Recommended Timeframe: Comments: Element Group:	me deflection deficiencies Work:	n noted with evidence None Minor Rehab Replace 1 - 5 Years Deck Wearing Surface (Dec		Major Re ☑ None	Len Wi	Urgent Urgent gth: gth: gth:	☐ 1 Yes	eeds: ar
Comments: So Performance E Recommended Timeframe: Comments: Element Group: Element Name: Location: Material:	me deflection deficiencies Work:	n noted with evidence None Minor Rebab Replace 1 - 5 Years		Major Re ☑ None	Len Wii Hei	Urgent gth: dth: ght: unt:	16.3 7.4	eeds: Compare
Comments: So Performance E Recommended Timeframe: Comments: Element Group: Element Name: Location: Material: Element Type:	me deflection deficiencies Work:	n noted with evidence None Minor Rehab Replace 1 - 5 Years Deck Wearing Surface (Dec	ks)	Major Re ☑ None	Len Wi Hei Co Total Q	Urgent gth: dth: ght: unt: buantity:	16.3 7.4	eeds: ar
Comments: So Performance E Recommended Timeframe: Comments: Element Group: Element Name: Location: Material: Element Type: Environment:	me deflection deficiencies Work:	on noted with evidence : None Minor Rehab Replace 1 - 5 Years Deck Wearing Surface (Dec	ks)	Major Re ☑ None ☐ 6 - 10 Ye	Len Wi Hei Co Total Q	Urgent gth: dth: ght: unt:	16.3 7.4 1 121.0	eeds: (m) (m) (m) (items) (m²)
Comments: So Performance E Recommended Timeframe: Comments: Element Group: Element Name: Location: Material: Element Type: Environment: Protection Systematics	me deflection deficiencies Work:	on noted with evidence : None Minor Rebab Replace 1 - 5 Years Deck Wearing Surface (December 1) Asphalt Benign Model	ks)	Major Re Major Re None 6 - 10 Ye	Len Wi Hei Coo Total Q Limited	Urgent gth: dth: ght: unt: buantity:	16.3 7.4 1 121.0	eeds: Compare
Comments: So Performance E Recommended Timeframe: Comments: Element Group: Element Name: Location: Material: Element Type: Environment: Protection Syste Condition	me deflection deficiencies Work:	Deck Wearing Surface (Dec Asphalt Benign Mod	ks)	Major Re Major Re None 6 - 10 Ye	Len Wie Hei Co Total Q Limited	gth: dth: ght: unt: puantity: i Insp'n:	16.3 7.4 1 121.0	eeds: (m) (m) (m) (items) (m²)
Comments: So Performance E Recommended Timeframe: Comments: Element Group: Element Name: Location: Material: Element Type: Environment: Protection Syste Condition Data:	me deflection Deficiencies Work:	Deck Wearing Surface (Dec Asphalt Benign Mod Units 1 / each / % / all	ks) lerate / S Exc.	Major Re None 6 - 10 Ye evere Good 73.7	Len Wi Hei Co Total Q Limited Fair 31.0	gth: dth: ght: unt: buantity: Insp'n: Poor 16.3	16.3 7.4 1 121.0	eeds: (m) (m) (m) (items) (m²) Performance Deficiencies 00
Comments: So Performance E Recommended Timeframe: Comments: Element Group: Element Name: Location: Material: Element Type: Environment: Protection Syste Condition Data: Comments: We	me deflection Deficiencies Work: : em: earing surfa	Deck Wearing Surface (Dec Units Asphalt Benign Mod	ks) lerate / S Exc.	Major Re None 6 - 10 Ye evere Good 73.7	Len Wi Hei Co Total Q Limited Fair 31.0	gth: dth: ght: unt: buantity: Insp'n: Poor 16.3	16.3 7.4 1 121.0	eeds: (m) (m) (m) (items) (m²) Performance Deficiencies 00
Comments: So Performance E Recommended Timeframe: Comments: Element Group: Element Name: Location: Material: Element Type: Environment: Protection Syste Condition Data:	em: earing surfarate at Sout	Deck Wearing Surface (Dec Asphalt Benign Mod Units 1 / each / % / all ice in fair condition; softwest quadrant.	ks) lerate / S Exc.	Major Re None 6 - 10 Ye evere Good 73.7	Len Wi Hei Co Total Q Limited Fair 31.0	gth: dth: ght: unt: buantity: Insp'n: Poor 16.3	16.3 7.4 1 121.0	eeds: (m) (m) (m) (items) (m²) Performance Deficiencies 00
Comments: So Performance E Recommended Timeframe: Comments: Element Group: Element Name: Location: Material: Element Type: Environment: Protection Syste Condition Data: Comments: We raveling of conce	em: em: em: caring surfacte at Sout	Deck Wearing Surface (Dec Asphalt Benign Mod Units 1 / each / % / all ice in fair condition; softwest quadrant.	ks) lerate / S Exc.	Major Re None 6 - 10 Ye evere Good 73.7	Len Wi Hei Co Total Q Limited Fair 31.0 ng. Missing	gth: dth: ght: unt: uantity: i Insp'n: Poor 16.3 ashpalt on	16.3 7.4 1 121.0	(m) (m) (m) (items) (m²) Performance Deficiencies 00 poor bondage and
Comments: So Performance E Recommended Timeframe: Comments: Element Group: Element Name: Location: Material: Element Type: Environment: Protection Syste Condition Data: Comments: Waraveling of concerns:	em: em: em: caring surfacte at Sout	Deck Wearing Surface (Dec Asphalt Benign Mod Units 1 / each / % / all ice in fair condition; softwest quadrant.	ks) lerate / S Exc.	Major Re ☑ None ☐ 6 - 10 Ye evere Good 73.7 and cracking	Len Wi Hei Co Total Q Limited Fair 31.0 ng. Missing	gth: dth: ght: unt: uantity: i Insp'n: Poor 16.3 ashpalt on	16.3 7.4 1 121.0 □ edges with p	(m) (m) (m) (items) (m²) Performance Deficiencies 00 poor bondage and
Comments: So Performance E Recommended Timeframe: Comments: Element Group: Element Name: Location: Material: Element Type: Environment: Protection Syste Condition Data: Comments: We raveling of conce	em: em: em: caring surfacte at Sout	Deck Wearing Surface (Dec Asphalt Benign Mod Units 1 / each / % / all ice in fair condition; son hwest quadrant. None Minor Rehab	ks) lerate / S Exc.	evere Good 73.7 and crackin	Len Wie Hei Co Total Q Limited Fair 31.0 ng. Missing	gth: dth: ght: unt: uantity: i Insp'n: Poor 16.3 ashpalt on	16.3 7.4 1 121.0 □ edges with p	(m) (m) (m) (items) (m²) Performance Deficiencies 00 poor bondage and
Comments: So Performance E Recommended Timeframe: Comments: Element Group: Element Name: Location: Material: Element Type: Environment: Protection Syste Condition Data: Comments: Wraveling of conce Performance I Recommended	em: em: em: caring surfacte at Sout	Deck Wearing Surface (Dec Asphalt Benign Mod Units 1 / each / % / all ice in fair condition; son hwest quadrant. None Minor Rehab Replace	ks) lerate / S Exc.	evere Good 73.7 s and crackin	Len Wie Hei Co Total Q Limited Fair 31.0 ng. Missing	gth: dth: ght: unt: uantity: i Insp'n: Poor 16.3 ashpalt on	16.3 7.4 1 121.0 □ edges with p	(m) (m) (m) (items) (m²) Performance Deficiencies 00 poor bondage and

Element Data								
Element Group:	Approaches			Ler	igth:	10.0	(m)	
Element Name:	Wearing Surface (Approaches)		Wi	dth:	7.5	(m)		
Location:			He	ight:		(m)		
Material:	Surface Treatment		Co	unt:	2	(items)		
Element Type:				Total C	uantity:	150.0	(m²)	
Environment:	Benign / Mod	derate (S	evere	Limited	l Insp'n:			
Protection System:						F	Performance	
Condition	Units	Exc.	Good	Fair Poor		Deficiencies		
Data: m ³ /1	m / each / % / all		116.0	30.0	4		00	
Comments: East approact treatment. Severe raveling Performance Deficiencie	with loose surface bona				oximately 60	00mm deep)	undermining surface	
Recommended Work:	Minor Rehab		☐ Major Re	hab	Mai	ntenance No	eeds: 12	
Accommended Work.	✓ Replace		✓ Ungent					
Timeframe:			☐ 6 - 10 Ye	ears			approach and replace	
Comments: Resurface wearing surface at time of rehabilitation.						approudit and replace		
	In							
Element Group:	Pier	**			igth:		(m)	
Element Name:	Shaft / Columns / Pile	Bents			dth:	0.30 1.75	(m)	
Location:	1117				Height:		(m)	
Material:	Wood			Count:		28 46.2	(items)	
Element Type:	Timber Piles with Cap				Total Quantity:		(m²)	
Environment:	Benign Mod	derate / S	evere	Limited	imited Insp'n:			
Protection System:				Performance				
Condition	Units	Exc.	Good	Fair	Poor	I	Deficiencies	
	m / each / % / all		26	20		00		
Comments:	X == =							
Performance Deficiencie			2.2					
Recommended Work:	☐ Minor Rehab ☐ Major Re		hab	Maintenance Needs: -				
	☐ Replace		✓ None	☐ Urgent ☐ 1 Year ☐ 2 Year			r 🔲 2 Year	
Timeframe:	☐ 1 - 5 Years		☐ 6 - 10 Ye	ears				
Comments:								

Element Group:	lement Group: Sidewalk / Curbs			Ler	igth:	16.0	(m)		
Element Name:		Curbs			Wi	dth:		(m)	
Location:					He	ight:		(m)	
Material:		Cast-in-place Concrete			Co	unt:	2	(items)	
Element Type:					Total C	Quantity:	32	(m)	
Environment:		Benign / Moderate Severe			Limited	d Insp'n:			
Protection System: Creosote						F	Performance		
Condition		Units	Exc.	Good	Fair	Poor	Deficiencies		
Data:	m² (n	(m)/ each / % / all		22	10		00		
Comments: Some scaling and isolated minor spalling and abrasion.									
Performance Deficiencies: None									
Recommended Work:		☐ Minor Rehab ☐ Major Rel		ehab Mair		ntenance Needs: -			
		☐ Replace ☑ Nor		✓ None	None Urgent		☐ 1 Yea	r 🔲 2 Year	
Timeframe:		☐ 1 - 5 Years ☐ 6 - 10 Ye		ars					
Comments:									

EI	em	en	t	Пя	ts

					,			
Element Group:		Embankments & Streams			Length:			(m)
Element Name:		Embankments			Width:			(m)
Location:		NE/NW/SE/SW			He	ght:		(m)
Material:					Co	unt:	4	(items)
Element Type:					Total C	uantity:	4.0	(ea)
Environment:		Benign Moderate / Severe Limited Insp'n:						
Protection System	m:	Performance					Performance	
Condition		Units	Exc.	Good	Fair	Poor] 1	Deficiencies
Data:	m² / m	each/ % / all		3.0	0	1		15
Comments: Sou	~~~~	bankment is severely er	roded.	102				
					·		·	
		: Unstable embankmen	t	- Madau Da	hb.			
Recommended	Work:	☐ Minor Rehab ☐ Major Reh					ntenance Needs:	
		☑ Replace		None		Ungent	1 Yea	ar 2 Year
Timeframe:				☐ 6 - 10 Ye				
		embankment with new	retaining /	wingwall s	ystem as			
part of rehabilitat	tion of Sou	thwest embankment.						
Element Group:		Embankments & Strea	ms		Ler	gth:		(m)
Element Name:		Slope Protection			Wi	dth:		(m)
Location:		NE/NW/SE/SW			Hei	ght:		(m)
Material:					Co	unt:		(items)
Element Type:					Total C	uantity:		(ea)
Environment:		Benign Mod	lerate / So	evere		ed Insp'n:		
Protection System	m:					•	1	Performance
Condition		Units	Exc.	Good	Fair	Poor Deficiencies		
Data:	m² / m		LAU.	0000	1 411	1 001		00
Comments: No slope protection present.								
Comments. No	stope prote	etion present.						
Performance D	eficiencies	: None						
Recommended	Work:	✓ Minor Rehab	☐ Major Rehab Maintenance Need			eeds:		
		☐ Replace		□ None		☐ Urgent ☐ 1 Year ☐ 2 Year		
Timeframe:		☑ 1 - 5 Years ☐ 6 - 10 Years						
Comments: Provide slope protection to Southwest and Northwest quadrants as part								
of rehabilitation work.								
Element Group:		Embankments & Stream	ms		T.er	gth:		(m)
Element Name:				Width:			(m)	
Location:			Height:			(m)		
Material:			Count:		2	(items)		
Element Type:			Total Quantity:		2	(ea)		
		erate / S	evere	Limited Insp'n:			(ca)	
Environment: Benign Moderate / Severe Lim Protection System:				Limited	Performance			
	111.	Units Exc. Good			Enim	Fair Poor Deficiencies		
Condition Data:	m2 / m							
	m² / m	each / % / all	<u> </u>	2	<u> </u>			00
Comments:								
Performance Deficiencies: None								
			☐ Major Re	hab	Maintenance Needs: 17			
Replace			☑ None		☐ Urgent ☑ 1 Year ☐ 2 Year			
Timeframe:		☐ 1 - 5 Years ☐ 6 - 10 Y			ears	Remove debris		
Comments:	_							

Municipal Structure Inspection Form

MTO Site Number:

DY - 4

Repair and Rehabilitation Required:				Estimated		
Element	Repair and Rehabilitation Required	6 to 10 years	l to 5 years	Within 1 year	Urgent	Construction Cost
Ballast Wingwall	Repair/rebuild abutment wing wall			Х		\$5,000
Ballast Walls	Rebuild ballast walls to prevent washout of material			Х		\$80,000
Railing System	Replace guiderail on structure		х			\$15,000
Wearing Surface (Decks)	Resurface deck with double surface treatment		Х			\$5,000
		7				
				<u> </u>	Total Cost	\$105,000

Associated Work:	Comments	Estimated
713500lated Work.	Comments	Cost
Approaches:	Resurface approaches and extend guiderail with end treatments	\$35,000
Detours:		\$5,000
Traffic Control:		
Utilities:		
Right of Way:		
Environmental Study:		
Other:	•	
Contingencies:		-
	Total Cost	\$40,000

Justification:		
	 <u> </u>	



Structure No: DY-5
Guilford Pine Lake

Structure Description

Guilford Pine Lake Bridge is located on Pine Lake Road, 0.5 km north of Eagle Lake Road. The bridge was constructed in 2008 and is an 18 m single span, two-lane structure with a concrete deck supported by steel girders on concrete abutments. The structure has a combination of sheet pile and armour stone wing walls. The bridge crosses a navigable waterway on a north/south alignment. The bridge has an overall 9.0 m wide concrete deck and 7.0 m wide driving surface with concrete parapet walls and steel railing. There is steel beam guiderail on the approaches with proper end treatments.

Structure Condition

The structure is in good condition with a BCI of 90 and BSI of 87. The concrete abutments and soffit are in excellent condition with no signs of distress. The exposed concrete deck is in good condition with minor spalling and loss of aggregate. The concrete parapet walls are in good condition with minor localized damage and vertical shrinkage cracking. The wing walls and erosion protection at the waterline are in excellent condition. The approaches appear to be in good condition.

The barrier over the structure and the guiderail on the approaches is in good condition with minor collision damage to the guiderail in the northwest corner.

Recommendations

The structure does not require any improvements at this time. Maintenance is required to repair the damaged guiderail and minor concrete repairs to the parapet walls could be undertaken at the same time. The deck should be swept to remove debris and sand to promote positive drainage.



Photo 1 : General Arrangement – Looking South



Photo 2 : General Arrangement – Looking North



Photo 3 : General Arrangement – Upstream View

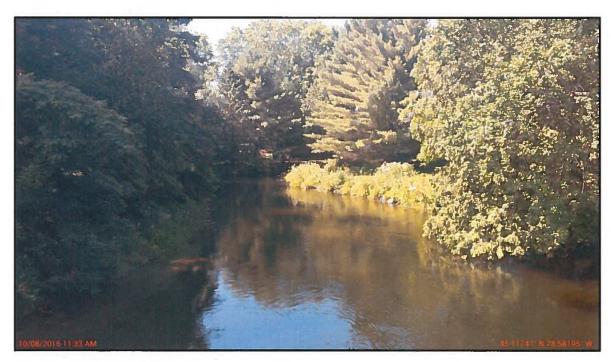


Photo 4 : General Arrangement – Downstream View

Inventory Data:

Structure Name	Guilford Pine La	ake Bridge		
Main Hwy/Road #		On ⊠ Under		ater ⊠ Non-Navig. Water Road Ped. Other
Road Name	Pine Lake Road			
Structure Location	0.45 km North o	f Eagle Lake Road		all all the second
Latitude	45.117300		Longitude -78.582000	- 4
Owner(s)	Municipality of	Dysart et al	_	Cons./not App. List/not Desig. Not List Desig. & List
MTO Region *			Road Class: Freeway A	rterial Collector Local
MTO District *			Posted Speed 50	No. of Lanes 2
Old County *			AADT	% Trucks
Geographic Twp. *			Special Routes: Transit	Truck School Bicycle
Structure Type *	Concrete Deck	on Steel Girder	Detour Length Around Bridge	(km)
Total Deck Length	20.0	(m)	Fill on Structure	0 (m)
Overall Str. Width	9.0	(m)	Skew Angle	0 (degrees)
Total Deck Area	180.0	(sq.m)	Direction of Structure	N to S
Roadway Width	7.0	(m)	No. of Spans	1
Span Lengths	18.0		-	(m)
Historical Data				
Year Built	2008		Last Biennial Inspection	2014
Current Load Limit	N/A/	/ (tonnes)	Last BridgeMaster Inspection	N/A
Load Limit Bylaw #	# N/A		Last Evaluation	N/A
Bylaw Expiry Date	N/A		Last Underwater Inspection	N/A
Min. Vertical Clear		(m)	Last Condition Survey	N/A
	ance -			
Min. Vertical Clear	ance -		Last Condition Survey	
Min. Vertical Clear Rehab. History: (D	ance - ate/description)		Last Condition Survey	
Min. Vertical Clear Rehab. History: (D	ance -		Last Condition Survey	
Min. Vertical Clear Rehab. History: (D	ance - ate/description)		Last Condition Survey	N/A
Min. Vertical Clear Rehab. History: (D	ance - ate/description)		Last Condition Survey	N/A
Min. Vertical Clear Rehab. History: (D	ance - ate/description)		Last Condition Survey	N/A
Min. Vertical Clear Rehab. History: (D	ance - ate/description)		Last Condition Survey	N/A

MTO Sit	e N	umber:	DY	- 5
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Field Inspection Inf	formation:
Date of Inspection:	August 10, 2016
Inspector:	Robert Brooks – Tulloch Engineering
Others in Party:	Elizabeth Perry – Tulloch Engineering
Equipment Used:	Camera, Hammer, Tape Measure
Weather:	Sun
Temperature:	+28°C

Additional Investigations Required:		Estimated			
	None	Normal	Urgent	Cost	
Detailed Deck Condition Survey:	X				
DART Survey:	X				
Detailed Coating Condition Survey:	X				
Underwater Investigation:	X				
Fatigue Investigation:	X				
Seismic Investigation:	X				
Structure Evaluation:	X				
Load Posting – Estimated Load		1	Total Cost	\$0	
Special Notes:		-			
19					
Next Detailed Inspection:		2018			

_	ected Performance Deficiencies				mat
00	None	06	Bearing not uniformly loaded/unstable	12	Slippery surfaces
01	Load carrying capacity	07	Jammed expansion joint	13	Flooding/channel blockage
02	Excessive deformations (deflections & rotations)	08	Pedestrian/vehicular hazard	14	Undermining of foundation
03	Continuing settlement	09	Rough riding surface	15	Unstable embankments
04	Continuing movements	10	Surface ponding	16	Other
05	Seized bearings	11	Deck drainage		
Main	tenance Needs				
01	Lift and Swing Bridge Maintenance	07	Repair to Structural Steel	13	Erosion Control at Bridges
02	Bridge Cleaning	08	Repair of Bridge Concrete	14	Concrete Sealing
03	Bridge Handrail Maintenance	09	Repair of Bridge Timber	15	Rout and Seal
04	Painting Steel Bridge Structures	10	Bailey Bridges - Maintenance	16	Bridge Deck Drainage
05	Bridge Deck Joint Repair	11	Animal/Pest Control	17	Other
06	Bridge Bearing Maintenance	12	Bridge Surface Repair		

DY - 5

Element Group:	Abutments			Length:		(m)		
Element Name:	Ballast Walls			Width:		9.0	(m)	
Location:				Hei	ght:	1.5	(m)	
Material:	Corrugated Steel			Co	ant:	2	(items)	
Element Type:	Steel Sheet Pile			Total Q	uantity:	27.0	(m²)	
Environment:	Benign Mod	lerate / Se	evere	Limited	Insp'n:			
Protection System:						I	Performance	
Condition	Units	Exc.	Good	Fair	Poor] 1	Deficiencies	
Data: m ² / n	n / each / % / all	27					00	
Comments:					1 1			
Performance Deficiencies	: None						1911	
Recommended Work:	☐ Minor Rehab		☐ Major Re	hab	Mai	ntenance N	eeds:	
	☐ Replace		✓ None		☐ Urgent	☐ 1 Yea	r 🔲 2 Year	
Timeframe:	☐ 1 - 5 Years		☐ 6 - 10 Ye	ears	50.77			
Comments:								
Element Group:	Abutments			Len	gth:	6.0	(m)	
Element Name:	Wingwalls				dth:		(m)	
Location:				Hei	ght:	1.5	(m)	
Material:	Corrugated Steel			Cor		4	(items)	
Element Type:	Steel Sheet Piles			Total Quantity:		36.0	(m²)	
Environment:	Benign Mod	lerate / Se	evere	Limited Insp'n:				
Protection System:					Performanc		Performance	
Condition	Units	Exc.	Good	Fair	Poor	i i	Deficiencies	
Data: m2/n	n / each / % / all	36				00		
Comments: Light corrosio		light weath	ering.					
	0.							
Performance Deficiencies	: None						U U - H	
Recommended Work:	☐ Minor Rehab		☐ Major Re	hab	Mai	ntenance N	eeds:	
	☐ Replace		✓ None	5	☐ Urgent	☐ 1 Yea	r 🔲 2 Year	
Timeframe:	☐ 1 - 5 Years		☐ 6 - 10 Ye	ars				
Comments:								
				·				
Element Group:								
Diement Group.	Barriers		_	Len	gth:	18.0	(m)	
Element Name:	Barriers Barrier / Parapet Wall				gth:	18.0 0.20	(m) (m)	
				Wie	dth:		(m)	
Element Name:				Wie Hei	dth:	0.20		
Element Name: Location: Material:	Barrier / Parapet Wall			Wie Hei Cor	dth: ght:	0.20 1.2	(m) (m)	
Element Name: Location:	Barrier / Parapet Wall Cast-in-place Concrete	o Rails	evere	Wie Hei Cor	dth: ght: unt: uantity:	0.20 1.2 2	(m) (m) (items)	
Element Name: Location: Material: Element Type: Environment:	Barrier / Parapet Wall Cast-in-place Concrete Parapet Wall with Two	o Rails	evere	Wie Hei Con Total Q	dth: ght: unt: uantity:	0.20 1.2 2 43.0	(m) (m) (items)	
Element Name: Location: Material: Element Type:	Barrier / Parapet Wall Cast-in-place Concrete Parapet Wall with Two	o Rails	evere	Wie Hei Con Total Q	dth: ght: unt: uantity:	0.20 1.2 2 43.0	(m) (m) (items) (m ²)	
Element Name: Location: Material: Element Type: Environment: Protection System: Condition	Barrier / Parapet Wall Cast-in-place Concrete Parapet Wall with Two Benign / Mod	o Rails lerate Se		Wid Hei Con Total Q Limited	dth: ght: unt: uantity: Insp'n:	0.20 1.2 2 43.0	(m) (m) (items) (m²)	
Element Name: Location: Material: Element Type: Environment: Protection System: Condition	Barrier / Parapet Wall Cast-in-place Concrete Parapet Wall with Two Benign / Mod Units 1 / each / % / all	Pails lerate So	Good 43	Wie Hei Con Total Q Limited Fair	dth: ght: unt: uantity: Insp'n: Poor	0.20 1.2 2 43.0	(m) (items) (m²) Performance Deficiencies	
Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: Comments: Minor shrinka	Barrier / Parapet Wall Cast-in-place Concrete Parapet Wall with Two Benign / Mod Units 1 / each / % / all ge cracking; isolated spe	Pails lerate So	Good 43	Wie Hei Con Total Q Limited Fair	dth: ght: unt: uantity: Insp'n: Poor	0.20 1.2 2 43.0	(m) (items) (m²) Performance Deficiencies	
Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: Comments: Minor shrinka	Barrier / Parapet Wall Cast-in-place Concrete Parapet Wall with Two Benign / Mod Units 1 / each / % / all ge cracking; isolated spe	Pails lerate So	Good 43	Wie Hei Con Total Q Limited Fair	dth: ght: unt: uantity: Insp'n: Poor	0.20 1.2 2 43.0	(m) (items) (m²) Performance Deficiencies 00	
Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: Comments: Minor shrinka	Barrier / Parapet Wall Cast-in-place Concrete Parapet Wall with Two Benign / Mod Units 1 / each / % / all ge cracking; isolated space: None	Pails lerate So	Good 43 n damage to	Wie Hei Con Total Q Limited Fair	dth: ght: unt: uantity: Insp'n: Poor	0.20 1.2 2 43.0	(m) (items) (m²) Performance Deficiencies 00	
Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: m/n Comments: Minor shrinka Performance Deficiencies Recommended Work:	Barrier / Parapet Wall Cast-in-place Concrete Parapet Wall with Two Benign / Mod Units 1 / each / % / all 2 ge cracking; isolated spans None Minor Rehab	Pails lerate So	Good 43 on damage to	Win Hei Con Total Q Limited Fair parapet was bab	dth: ght: unt: uantity: Insp'n: Poor all.	0.20 1.2 2 43.0	(m) (items) (m²) Performance Deficiencies 00	
Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: Comments: Minor shrinka	Barrier / Parapet Wall Cast-in-place Concrete Parapet Wall with Two Benign / Mod Units n / each / % / all ge cracking; isolated species: None Minor Rehab Replace	Pails lerate So	Good 43 n damage to Major Re None	Wie Hei Con Total Q Limited Fair parapet was bab	dth: ght: unt: uantity: Insp'n: Poor all.	0.20 1.2 2 43.0	(m) (items) (m²) Performance Deficiencies 00	

DY - 5

Element Group:		Approaches			Length:		75	(m)	
Element Name:		Guiderail			Width:			(m)	
Location:					Height:			(m)	
Material:		Steel			Cou	ınt:	2	(items)	
Element Type:		Steel Flex Beam on Ste	el Post		Total Q	uantity:	150.0	(m)	
Environment:		Benign / Mod	Limited						
Protection Syste	em:	Galvanized				•	1	Performance	
Condition		Units	Exc.	Good	Fair	Poor		Deficiencies	
Data:	m³/ m	each / % / all	Dito.	145.0	5	1 001		00	
		age to guiderail on NW	corner	143.0					
Comments. Co	ilision dam	age to guideran on 14 W	corner.						
Performance D) - Ci - i i	. Nana							
Recommended		Minor Rehab		☐ Major Re	hah	Mai	itenance N		
Kecommended	work:	☐ Replace		☐ None	,,,,,,	☐ Urgent			
m. e		☑ 1 - 5 Years		☐ 6 - 10 Ye		☐ urgent		ar 2 Year	
Timeframe:		☑ 1 - 5 Tears		□ 0 - 10 te	drs				
Comments:									
Element Group:		Beam / MLE			Len		19.0	(m)	
Element Name:		Girders			Wie	dth:	0.20	(m)	
Location:		N/S			Hei	ght:	0.50	(m)	
Material:		Steel			Cor	unt:	4	(items)	
Element Type:		I-type			Total Quantity:		91.2	(m²)	
Environment:		Benign / Mod	lerate / Se	evere	Limited Insp'n:				
Protection Syste	em:							Performance	
Condition		Units	Exc.	Good	Fair	Poor		Deficiencies	
Data:	m) / n	n / each / % / all	91.2				00		
Comments:				ı	76				
O O MINITED S									
Performance D)eficiencies	: None							
Performance D		: None		☐ Major Re	hab	Mai	ntenance N	eeds:	
Performance D				☐ Major Re	hab		ntenance N		
Recommended		☐ Minor Rehab☐ Replace		☑ None		Mai □ Urgent	ntenance N		
Recommended Timeframe:		☐ Minor Rehab							
Recommended		☐ Minor Rehab☐ Replace		☑ None					
Recommended Timeframe:		☐ Minor Rehab☐ Replace		☑ None					
Recommended Timeframe: Comments:	Work:	☐ Minor Rehab☐ Replace☐ 1 - 5 Years		☑ None	ears	Urgent	☐ 1 Yea	ar 2 Year	
Recommended Timeframe: Comments:	Work:	☐ Minor Rehab ☐ Replace ☐ 1 - 5 Years Deck		☑ None	ears Len	□ Urgent	□ 1 Yes	ar □ 2 Year □ (m)	
Recommended Timeframe: Comments: Element Group: Element Name:	Work:	☐ Minor Rehab☐ Replace☐ 1 - 5 Years		☑ None	Len Wie	Urgent gth:	☐ 1 Yea	(m) (m)	
Recommended Timeframe: Comments: Element Group: Element Name: Location:	Work:	☐ Minor Rehab ☐ Replace ☐ 1 - 5 Years Deck Deck Top		☑ None	Len Wi Hei	Urgent gth: dth: ght:	20 9.0	(m) (m) (m) (m)	
Recommended Timeframe: Comments: Element Group: Element Name: Location: Material:	Work:	☐ Minor Rehab ☐ Replace ☐ 1 - 5 Years Deck Deck Top Cast-in-place Concrete		☑ None ☐ 6 - 10 Ye	Len Wid Hei	Urgent gth: dth: ght: unt:	20 9.0	(m) (m) (m) (m) (items)	
Recommended Timeframe: Comments: Element Group: Element Name: Location: Material: Element Type:	Work:	☐ Minor Rehab ☐ Replace ☐ 1 - 5 Years Deck Deck Top Cast-in-place Concrete Cast-in-place Concrete	on Suppor	☑ None ☐ 6 - 10 Ye	Len Wid Hei Coo Total Q	gth: dth: ght: unt:	20 9.0 1 180.0	(m) (m) (m) (m)	
Recommended Timeframe: Comments: Element Group: Element Name: Location: Material: Element Type: Environment:	Work:	☐ Minor Rehab ☐ Replace ☐ 1 - 5 Years Deck Deck Top Cast-in-place Concrete Cast-in-place Concrete		☑ None ☐ 6 - 10 Ye	Len Wid Hei Coo Total Q	Urgent gth: dth: ght: unt:	20 9.0 1 180.0	(m) (m) (m) (m) (items) (m²)	
Recommended Timeframe: Comments: Element Group: Element Name: Location: Material: Element Type:	Work:	☐ Minor Rehab ☐ Replace ☐ 1 - 5 Years Deck Deck Top Cast-in-place Concrete Benign / Mod	e on Suppor lerate (S	None 6 - 10 Ye	Len Wi Hei Coo Total Q Limited	gth: dth: ght: unt: uantity:	20 9.0 1 180.0	(m) (m) (m) (items) (m²)	
Recommended Timeframe: Comments: Element Group: Element Name: Location: Material: Element Type: Environment:	Work:	☐ Minor Rehab ☐ Replace ☐ 1 - 5 Years Deck Deck Top Cast-in-place Concrete Benign / Mod Units	on Suppor	✓ None ☐ 6 - 10 Ye tts evere Good	Len Wid Hei Coo Total Q	gth: dth: ght: unt:	20 9.0 1 180.0	(m) (m) (m) (items) (m²) Performance Deficiencies	
Recommended Timeframe: Comments: Element Group: Element Name: Location: Material: Element Type: Environment: Protection Syste Condition Data:	em:	☐ Minor Rehab ☐ Replace ☐ 1 - 5 Years Deck Deck Top Cast-in-place Concrete Benign / Mod Units n / each / % / all	e on Suppor lerate (S	None 6 - 10 Ye	Len Wi Hei Coo Total Q Limited	gth: dth: ght: unt: uantity:	20 9.0 1 180.0	(m) (m) (m) (items) (m²)	
Recommended Timeframe: Comments: Element Group: Element Name: Location: Material: Element Type: Environment: Protection Syste Condition Data:	em:	☐ Minor Rehab ☐ Replace ☐ 1 - 5 Years Deck Deck Top Cast-in-place Concrete Benign / Mod Units	e on Suppor lerate (S	✓ None ☐ 6 - 10 Ye tts evere Good	Len Wi Hei Coo Total Q Limited	gth: dth: ght: unt: uantity:	20 9.0 1 180.0	(m) (m) (m) (items) (m²) Performance Deficiencies	
Recommended Timeframe: Comments: Element Group: Element Name: Location: Material: Element Type: Environment: Protection Syste Condition Data:	em:	☐ Minor Rehab ☐ Replace ☐ 1 - 5 Years Deck Deck Top Cast-in-place Concrete Benign / Mod Units n / each / % / all g of concrete deck.	e on Suppor lerate (S	✓ None ☐ 6 - 10 Ye tts evere Good	Len Wi Hei Coo Total Q Limited	gth: dth: ght: unt: uantity:	20 9.0 1 180.0	(m) (m) (m) (items) (m²) Performance Deficiencies	
Recommended Timeframe: Comments: Element Group: Element Name: Location: Material: Element Type: Environment: Protection Syste Condition Data: Comments: Mi	em:	☐ Minor Rehab ☐ Replace ☐ 1 - 5 Years Deck Deck Top Cast-in-place Concrete Benign / Mod Units n / each / % / all g of concrete deck.	e on Suppor lerate (S	✓ None ☐ 6 - 10 Ye tts evere Good	Len Wide Hei Coo Total Q Limited	gth: dth: ght: unt: uantity: Insp'n:	20 9.0 1 180.0	(m) (m) (m) (items) (m²) Performance Deficiencies 00	
Recommended Timeframe: Comments: Element Group: Element Name: Location: Material: Element Type: Environment: Protection Syste Condition Data: Comments: Mi	em:	☐ Minor Rehab ☐ Replace ☐ 1 - 5 Years Deck Deck Top Cast-in-place Concrete Benign / Mod Units n / each / % / all g of concrete deck.	e on Suppor lerate (S	None 6 - 10 Ye description de	Len Wide Hei Coo Total Q Limited	gth: dth: ght: unt: uantity: Insp'n:	20 9.0 1 180.0	(m) (m) (m) (items) (m²) Performance Deficiencies 00	
Recommended Timeframe: Comments: Element Group: Element Name: Location: Material: Element Type: Environment: Protection Syste Condition Data: Comments: Mi Performance D Recommended	em:	☐ Minor Rehab ☐ Replace ☐ 1 - 5 Years Deck Deck Top Cast-in-place Concrete ☐ Benign / Mod Units ☐ / each / % / all g of concrete deck.	e on Suppor lerate (S	Major Re	Len Wie Hei Coo Total Q Limited Fair	gth: dth: ght: unt: uantity: Insp'n: Poor	20 9.0 1 180.0	(m) (m) (m) (items) (m²) Performance Deficiencies 00	
Recommended Timeframe: Comments: Element Group: Element Name: Location: Material: Element Type: Environment: Protection Syste Condition Data: Comments: Mi	em:	☐ Minor Rehab ☐ Replace ☐ 1 - 5 Years Deck Deck Top Cast-in-place Concrete ☐ Benign / Mod Units ☐ / each / % / all ☐ of concrete deck. None ☐ Minor Rehab ☐ Replace	e on Suppor lerate (S	Sood Good 180.0 Major Re None	Len Wie Hei Coo Total Q Limited Fair	gth: dth: ght: unt: uantity: Insp'n: Poor	20 9.0 1 180.0	(m) (m) (m) (items) (m²) Performance Deficiencies 00	

DY - 5

Element Group:		Embankments & Streams			Ler	igth:		(m)	
Element Name:		Slope Protection			Width:		= =	(m)	
Location:					Hei	ght:	-	(m)	
Material:		Other				unt:	4	(items)	
Element Type:		Rip Rap			Total C	uantity:	4	(each)	
Environment:		Benign Mod	evere		l Insp'n:				
Protection System:	:							Performance	
Condition		Units	Exc.	Good	Fair	Poor	1	Deficiencies	
Data:	m² / m	each/%/all	4					00	
Comments: Rip ra		tion in good condition.							
		6							
Performance Def	iciencies	: None							
Recommended W	Vork:	☐ Minor Rehab		☐ Major Re	hab	Mai	ntenance N	eeds: -	
		☐ Replace		✓ None		☐ Urgent			
Timeframe:		☐ 1 - 5 Years		☐ 6 - 10 Ye	ears				
Comments:									
				,					
Element Group:		Approaches			Len	gth:	6.0	(m)	
Element Name:		Wearing Surface				dth:	7.00	(m)	
Location:						ght:	7.00	(m)	
Material:		Aspahalt				unt:	2	(items)	
Element Type:		· iopanari				uantity:	84	(m²)	
Environment:		Benign / Mod	erate / Se	evere				(111)	
Protection System:		246 /	S. C. C.		Dimite	· mop n.		Performance	
Condition	•	Units	Exc.	Good	Fair	Poor	Deficiencies		
Data:	m ² / m	/ each / % / all	Exc.	72	12.0	FUUI	00 Deficiencies		
		oncrete along edges with	loss of ho		12.0			00	
Comments. Nave	ing of co	merete along edges with	1 1055 01 001	iiu.					
Performance Def	iciencies	· None							
Recommended W		Minor Rehab		☐ Major Re	hab	Mair	ntenance N	eeds.	
		☐ Replace		✓ None		Urgent	☐ 1 Yea		
Timeframe:		☐ 1 - 5 Years		☐ 6 - 10 Ye	ears				
Comments:									
Comments									
		·							
Element Group:		Accessories			Ler	gth:		(m)	
Element Name:	_	Signs				dth:		(m)	
Location:		NE/NW/SE/SW				ght:		(m)	
Material:		Steel				unt:	2	(items)	
Element Type:		Steel				uantity:	2	(each)	
Environment:		Benign / Mod	erate (Se	evere		Insp'n:		(cacii)	
Protection System:		Dellight / Mod	orate St		Dillitoc	inspin.		Performance	
Condition	•	Units	Exc.	Good	Fair	Poor	1	Deficiencies	
Data:	m² / m	each/% / all	Exc.	2	I all	F 001	· '	00	
		d signs at end of guardr	nile on NE/		nta (2 missi				
Comments: Missi	ing nazare	a signs at end of guardr	ans on NE/	iv w quadra	ints (2 miss)	ng).			
Performance Def	inionnies	• None							
Recommended W		□ Minor Rehab		☐ Major Re	hah	NAC:	atenance N	eeds: 17	
vecommenaea M	UIKi	☐ Replace		☑ None		Urgent	✓ 1 Yea		
Timeframe:		☐ 1 - 5 Years		☐ 6 - 10 Ye	ears	Install haza		- L Z ICOI	
Comments:				0 10 10		mstail liaZi	na signs		
Comments:									

Municipal	Structure 1	Inspection	Form
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DY - 5

Element Gro	up:	Beam / MLE Length:						(m)	
Element Nan	ne:	Stringers Width:						(m)	
Location:	-	E/W		ght:		(m)			
Material:		Steel				unt:	4	(items)	
Element Typ	e:				Total C	uantity:	4	(each)	
Environment	ic -	Benign Mod	erate / S	evere	Limited	d Insp'n:			
Protection S	ystem:	- 4					1	Performance	
Condition		Units	Exc.	Good	Fair	Poor	Deficiencies		
Data:	m² / m	/each/ % / all	4					00	
Comments:									
Performanc	e Deficienc	ies: None							
Recommend	led Work:	☐ Minor Rehab		☐ Major Re	hab	Mai	ntenance N	eeds:	
		☐ Replace		✓ None		☐ Urgent	. □ 1 Ye	ar 🗌 2 Year	
Timeframe:		☐ 1 - 5 Years		☐ 6 - 10 Ye	ears				
Comments:									

Municipal Structure Inspection Form

MTO Site Number:	DY - 5

Repair and Rehabilitation Required:			Pri	ority		Estimated
Element	Repair and Rehabilitation Required	d 6 to 10 years	l to 5 years	Within 1 year	Urgent	Construction Cost
Railing System	Minor repair to guidrail		X			\$2,000
			ļ			
	-			ļ		
			 			
			ļ			
						··
				<u> </u>		
			† · · · · · · · ·			
				1	Total Cost	\$2,000
Associated Work:		Comme	ents			Estimated
						Cost
Approaches: Detours:					_	
Traffic Control:		-				
Utilities:						
Right of Way:						<u> </u>
Environmental Stu	ıdy:	72.				
Other:		·-				
Contingencies:		-				
					Total Cost	\$0
Justification:		Middle than the		680 al 4 (10)	iksel/man	
		·				



Structure No: DY-6

Guilford Cranberry Lake Bridge

Structure Description

Guilford Cranberry Lake Bridge is located on Cranberry Lake Drive, 0.5 km north of Eagle Lake Road. The bridge was constructed in 2013 and is a 26 m single span, two-lane structure with a steel deck supported by steel girders on concrete bearing slabs with corrugated steel ballast walls. The structure crosses a navigable waterway on an east/west alignment. The structure has a deck width of 5.3 m with an asphalt wearing surface and no curbs; drainage is by sheet flow over the deck edge. There is steel beam guiderail across the structure and on the approaches.

Structure Condition

The structure and all individual elements are in good condition with a BCI of 99 and BSI of 97. The bridge wearing surface and approaches have recently been upgraded with hot mix asphalt wearing surfaces. The only deficiency noted was erosion and wash-out of the shoulders and wearing surface near the deck ends.

Recommendations

The structure does not require any improvements at this time. Maintenance should be undertaken to address erosion of shoulders near deck ends.



Photo 1 : General Arrangement - Looking North

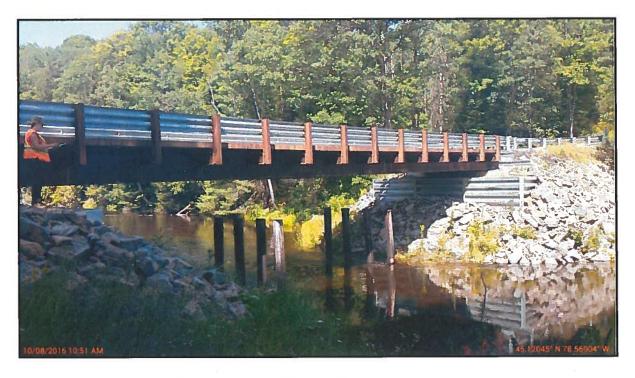


Photo 2 : General Arrangement – West Elevation



Photo 3: South Approach Wearing Surface



Photo 4 : Asphalt Wearing Surface Edge of Pavement – Southwest Quadrant



Photo 5 : Guiderail Impact Damage - Southeast Quadrant



Photo 6 : General Arrangement – North Abutment Wall

Inventory Data:

Structure Name	Guilford Cranbe	rry Lake I	Bridge		
Main Hwy/Road #		On ⊠	Under	Crossing Navig. W Type: Rail	ater 🗵 Non-Navig. Water Road Ped. Other
Road Name	Cranberry Lake	Road			
Structure Location	0.08 km North o	f Eagle La	ake Road		
Latitude	45.119800			Longitude -78.568700	
Owner(s)	Municipality of	Dysart et a	al		Cons./not App. List/not Desig. /Not List Desig. & List
MTO Region *	41			Road Class: Freeway	Arterial Collector Local ⊠
MTO District *			11	Posted Speed 50	No. of Lanes 1
Old County *				AADT	% Trucks
Geographic Twp. *				Special Routes: Transit	Truck School Bicycle
Structure Type *	Bridge			Detour Length Around Bridge	(km)
Total Deck Length	26.0] (m)	Fill on Structure	0 (m)
Overall Str. Width	5.3] (m)	Skew Angle	0 (degrees)
Total Deck Area	138.0] (sq.m)	Direction of Structure	N to S
Roadway Width	5.2] (m)	No. of Spans	1
Span Lengths	26.0				(m)
	4-24				
Historical Data					
Year Built	2013			Last Biennial Inspection	2014
Current Load Limit	N/A/	/ (tonn	ies)	Last BridgeMaster Inspection	N/A
Load Limit Bylaw	# N/A			Last Evaluation	N/A
Bylaw Expiry Date	N/A			Last Underwater Inspection	N/A
Min. Vertical Clear	ance -	(m)		Last Condition Survey	N/A
Rehab. History: (D	ate/description)				
	,#i				

Field Inspection Inf	formation:
Date of Inspection:	August 10, 2016
Inspector:	Robert Brooks – Tulloch Engineering
Others in Party:	Elizabeth Perry – Tulloch Engineering
Equipment Used:	Camera, Hammer, Tape Measure
Weather:	Sun
Temperature:	+27°C

Additional Investigations Required:		Priority				
	None	Normal	Urgent	Cost		
Detailed Deck Condition Survey:	X					
DART Survey:	X					
Detailed Coating Condition Survey:	X					
Underwater Investigation:	X					
Fatigue Investigation:	X					
Seismic Investigation:	X					
Structure Evaluation:	X					
Load Posting – Estimated Load		7	Cotal Cost	\$0		
Special Notes:						
Next Detailed Inspection:	9		2018			

00	ected Performance Deficiencies None	06	Bearing not uniformly loaded/unstable	12	Slippery surfaces
01	Load carrying capacity	07	Jammed expansion joint	13	Flooding/channel blockage
02	, , ,		Pedestrian/vehicular hazard		
	Excessive deformations (deflections & rotations)	08		14	Undermining of foundation
03	Continuing settlement	09	Rough riding surface	15	Unstable embankments
04	Continuing movements	10	Surface ponding	16	Other
05	Seized bearings	11	Deck drainage		
Main	tenance Needs				
01	Lift and Swing Bridge Maintenance	07	Repair to Structural Steel	13	Erosion Control at Bridges
02	Bridge Cleaning	08	Repair of Bridge Concrete	14	Concrete Sealing
03	Bridge Handrail Maintenance	09	Repair of Bridge Timber	15	Rout and Seal
04	Painting Steel Bridge Structures	10	Bailey Bridges - Maintenance	16	Bridge Deck Drainage
05	Bridge Deck Joint Repair	11	Animal/Pest Control	17	Other
06	Bridge Bearing Maintenance	12	Bridge Surface Repair		

DY - 6

Element Group:	Abutments		Length:			(m)	
Element Name:	Abutment Walls			Wi	dth:	9.0	(m)
Location:	N/S			Не	ight:	2.0	(m)
Material:	Corrugated Steel			Co	unt:	2	(items)
Element Type:	Retained Soil Systems			Total Q	uantity:	36.0	(m²)
Environment:	Benign Mod	lerate / So	evere	Limited	l Insp'n:		
Protection System:	Galvanized					1	Performance
Condition	Units	Exc.	Good	Fair	Poor Deficiencies		Deficiencies
Data: m ² /	m / each / % / all	36			00		
Comments:							
Performance Deficienci	es: None						
Recommended Work:	☐ Minor Rehab		☐ Major Re	hab	Mai	ntenance N	eeds:
	☐ Replace		✓ None		☐ Urgent	☐ 1 Yea	ar 🔲 2 Year
Timeframe:	☐ 1 - 5 Years		☐ 6 - 10 Ye	ears			- instant
Comments:							
						The state of the s	
Element Group:	Approaches			Len	igth:	6.0	(m)
Element Name:	Wearing Surface (App	roaches)			dth:	7.0	(m)
Location:	N/S			Hei	ght:		(m)
Material:	Asphalt				unt:	2	(items)
Element Type:				Total Q	uantity:	84.0	(m²)
Environment:	Benign / Mod	lerate Se	evere		Insp'n:		
Protection System:					Performance		Performance
Condition	Units	Exc.	Good	Fair	Poor	1	Deficiencies
Data: m ² /	m / each / % / all		80	4			00
Comments: SW quadrar	nt has minor surface erosion	on.					
Performance Deficienci	an Nama						
	es: None						A CONTRACTOR
Recommended Work:	Minor Rehab		☐ Major Re	hab	Mair	ntenance N	eeds: 17
Recommended Work:			☐ Major Re	hab	Mair □ Urgent		
Recommended Work: Timeframe:	☐ Minor Rehab		_		Urgent	☑ 1 Yea	
	☐ Minor Rehab ☐ Replace		✓ None		Urgent Provide dra	☑ 1 Yea	or 2 Year s on SW quadrant to
Timeframe:	☐ Minor Rehab ☐ Replace		✓ None		Urgent Provide dra properly ch	☑ 1 Yea ain locations nannel water	or 2 Year s on SW quadrant to
Timeframe:	☐ Minor Rehab ☐ Replace		✓ None		Urgent Provide dra properly ch	☑ 1 Yea ain locations nannel water	or 2 Year s on SW quadrant to
Timeframe:	☐ Minor Rehab ☐ Replace		✓ None	ars	Urgent Provide dra properly ch	☑ 1 Yea ain locations nannel water	or 2 Year s on SW quadrant to
Timeframe: Comments:	☐ Minor Rehab☐ Replace☐ 1 - 5 Years		✓ None	ars Len	Urgent Provide dra properly ch embankme		or 2 Year s on SW quadrant to r and offer n from erosion.
Timeframe: Comments: Element Group:	☐ Minor Rehab ☐ Replace ☐ 1 - 5 Years Barriers		✓ None	Len Wi	Urgent Provide dra properly chembankme		or 2 Year s on SW quadrant to r and offer n from erosion.
Timeframe: Comments: Element Group: Element Name:	☐ Minor Rehab ☐ Replace ☐ 1 - 5 Years Barriers Railing Systems		✓ None	Len Wi Hei	□ Urgent Provide dra properly chembankme gth: dth:		or 2 Year on SW quadrant to or and offer on from erosion. (m) (m)
Timeframe: Comments: Element Group: Element Name: Location:	☐ Minor Rehab☐ Replace☐ 1 - 5 Years☐ Barriers☐ Railing Systems☐ E/W	eel Post	✓ None	Len Wi Hei	Urgent Provide dra properly cl embankme gth: dth: ght:	☐ 1 Year ain locations nannel water nt protection 58.0	or 2 Year s on SW quadrant to r and offer n from erosion. (m) (m) (m)
Timeframe: Comments: Element Group: Element Name: Location: Material:	☐ Minor Rehab☐ Replace☐ 1 - 5 Years☐ Searriers☐ Railing Systems☐ E/W☐ Steel☐ Steel Flex Beam on Steel☐ Steel Flex Beam on Steel☐ Steel	eel Post	☑ None ☐ 6 - 10 Ye	Len Wi Hei Co Total Q	Urgent Provide dra properly cl embankme gth: dth: ight: unt:	☐ 1 Yes ain locations nannel water nt protection 58.0	or 2 Year s on SW quadrant to r and offer n from erosion. (m) (m) (m) (items)
Timeframe: Comments: Element Group: Element Name: Location: Material: Element Type:	☐ Minor Rehab ☐ Replace ☐ 1 - 5 Years Barriers Railing Systems E/W Steel Steel Flex Beam on Ste		☑ None ☐ 6 - 10 Ye	Len Wi Hei Co Total Q	Urgent Provide dra properly cl embankme gth: dth: ight: unt: uantity:	☐ 1 Yes ain locations nannel water nt protection 58.0 2 116	or 2 Year s on SW quadrant to r and offer n from erosion. (m) (m) (m) (items)
Timeframe: Comments: Element Group: Element Name: Location: Material: Element Type: Environment:	☐ Minor Rehab ☐ Replace ☐ 1 - 5 Years Barriers Railing Systems E/W Steel Steel Flex Beam on Steel Benign / Mod		☑ None ☐ 6 - 10 Ye	Len Wi Hei Co Total Q	Urgent Provide dra properly cl embankme gth: dth: ight: unt: uantity:	□ 1 Yes ain locations nannel water nt protection 58.0 2 116 □	or 2 Year s on SW quadrant to r and offer n from erosion. (m) (m) (m) (items) (m)
Timeframe: Comments: Element Group: Element Name: Location: Material: Element Type: Environment: Protection System: Condition	☐ Minor Rehab ☐ Replace ☐ 1 - 5 Years Barriers Railing Systems E/W Steel Steel Flex Beam on Ste Benign / Mod Galvanized	lerate Se	☑ None ☐ 6 - 10 Ye	Ler Wi Hei Co Total Q Limited	Urgent Provide dra properly cl embankme gth: dth: ght: unt: duantity: i Insp'n:	□ 1 Yes ain locations nannel water nt protection 58.0 2 116 □	or 2 Year s on SW quadrant to r and offer n from erosion. (m) (m) (m) (items) (m)
Timeframe: Comments: Element Group: Element Name: Location: Material: Element Type: Environment: Protection System: Condition	☐ Minor Rehab ☐ Replace ☐ 1 - 5 Years Barriers Railing Systems E/W Steel Steel Flex Beam on Ste Benign / Mod Galvanized Units m each / % / all	Exc.	□ None □ 6 - 10 Ye evere Good 3	Len Wi Hei Co Total Q Limited	Urgent Provide dra properly cl embankme gth: dth: ght: unt: duantity: i Insp'n:	□ 1 Yes ain locations nannel water nt protection 58.0 2 116 □	or 2 Year s on SW quadrant to r and offer n from erosion. (m) (m) (m) (items) (m) Performance Deficiencies
Timeframe: Comments: Element Group: Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: Comments: Appears to h	Minor Rehab Replace 1 - 5 Years 1 - 5 Years	Exc.	□ None □ 6 - 10 Ye evere Good 3	Len Wi Hei Co Total Q Limited	Urgent Provide dra properly cl embankme gth: dth: ght: unt: duantity: i Insp'n:	□ 1 Yes ain locations nannel water nt protection 58.0 2 116 □	or 2 Year s on SW quadrant to r and offer n from erosion. (m) (m) (m) (items) (m) Performance Deficiencies
Timeframe: Comments: Element Group: Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: Comments: Appears to h	Minor Rehab Replace 1 - 5 Years 1 - 5 Years	Exc.	□ None □ 6 - 10 Ye evere Good 3	Len Wi Hei Co Total Q Limited Fair	Urgent Provide dra properly cl embankme gth: dth: ght: unt: uantity: Insp'n:	2 116	or 2 Year on SW quadrant to or and offer on from erosion. (m) (m) (m) (items) (m) Performance Deficiencies
Timeframe: Comments: Element Group: Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: Comments: Appears to h	Minor Rehab Replace 1 - 5 Years 1 - 5 Years 1 - 5	Exc.	evere Good 3 passing vel	Len Wi Hei Co Total Q Limited Fair	Urgent Provide dra properly cl embankme gth: dth: ght: unt: uantity: Insp'n: Poor	2 116	or 2 Year s on SW quadrant to r and offer n from erosion. (m) (m) (m) (items) (m) Performance Deficiencies 00
Timeframe: Comments: Element Group: Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: Comments: Appears to h Performance Deficienci Recommended Work:	☐ Minor Rehab ☐ Replace ☐ 1 - 5 Years Barriers Railing Systems E/W Steel Steel Flex Beam on Ste Benign / Mod Galvanized Units m each / % / all ave longitudinal scrape deses: None ☐ Minor Rehab	Exc.	evere Good 3 passing vel	Ler Wi Hei Co Total Q Limited Fair	Urgent Provide dra properly cl embankme gth: dth: ght: unt: uantity: Insp'n:	2 116	or 2 Year s on SW quadrant to r and offer n from erosion. (m) (m) (m) (items) (m) Performance Deficiencies 00
Timeframe: Comments: Element Group: Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: Comments: Appears to h	Minor Rehab Replace 1 - 5 Years 1 - 5 Years 1 - 5 Years Railing Systems E/W Steel Steel Flex Beam on Steel Benign / Mod Galvanized Units m each / % / all ave longitudinal scrape des: None Minor Rehab Replace Replace	Exc.	✓ None ☐ 6 - 10 Ye evere Good 3 passing vel ☐ Major Rei ✓ None	Ler Wi Hei Co Total Q Limited Fair	Urgent Provide dra properly cl embankme gth: dth: ght: unt: uantity: Insp'n: Poor	2 116	or 2 Year s on SW quadrant to r and offer n from erosion. (m) (m) (m) (items) (m) Performance Deficiencies 00

DY - 6

Element Group:		Beam / MLE			Length:		26.0	(m)
Element Name:		Girders			Width:		0.30	(m)
Location:		N/S			Hei	ght:	1.0	(m)
Material:		Steel			Cou	ınt:	4	(items)
Element Type:		I-type			Total Q		166.4	(m ²)
Environment:		Benign Mod	lerate / Se	evere	Limited	Insp'n:		
Protection Syste	em:						F	Performance
Condition		Units Exc. Good			Fair	Poor Deficiencies		
Data:	m^2/m	m / each / % / all 166.4						00
Comments: Ne	w in 2013.	Light to modereate con	rosion, petir	na flaking, n	o section lo	SS.		
			•					
Performance I	Deficiencies	: None						
Recommended	l Work:	☐ Minor Rehab		☐ Major Re	hab	Mair	itenance N	eeds: -
_		☐ Replace		✓ None		☐ Urgent	☐ 1 Yea	or 2 Year
Timeframe:		☐ 1 - 5 Years		☐ 6 - 10 Ye	ars			
Comments:								
Element Group	:	Deck			Len	gth:	26.0	(m)
Element Name:		Deck Top			Wie		5.3	(m)
Location:		•			Hei	ght:		(m)
Material:		Corrugated Steel			Co		1	(items)
Element Type:					Total Quantity:		138.0	(m²)
Environment:		Benign Mod	lerate / S	evere	Limited			,
Protection Syste	em:					Performance		
Condition		Units	Exc.	Good	Fair	Poor Deficiencies		Deficiencies
Data:	m) / m	r / each / % / all	131.1		6.9			00
Comments:		WC WC C. 113		72				
-								
Performance I	Deficiencies	: None						
Recommended	l Work:	☐ Minor Rehab		☐ Major Re	ehab Mai		intenance Needs:	
		☐ Replace		None		Urgent	1 Year 2 Year	
Timeframe:		☐ 1 - 5 Years		☐ 6 - 10 Ye	ears			
Comments:								
Element Group	:	D1-						,
		Deck			Length	(avg):	26.0	(m)
Element Name:		Wearing Surface (Dec	ks)		Length Wi	(avg): dth:	26.0 5.30	(m) (m)
			ks)		Wi	dth:		(m)
Element Name:			ks)		Wi Hei	dth:		` ′
Element Name: Location:		Wearing Surface (Dec	ks)		Wi- Hei Co	dth: ght:	5.30	(m) (m)
Element Name: Location: Material:		Wearing Surface (Dec Asphalt		evere	Wi- Hei Co- Total Q	dth: ght: unt:	5.30	(m) (m) (items)
Element Name: Location: Material: Element Type:		Wearing Surface (Dec Asphalt		evere	Wi- Hei Co- Total Q	dth: ght: unt: uantity:	5.30 1 138.0	(m) (m) (items)
Element Name: Location: Material: Element Type: Environment:		Wearing Surface (Dec Asphalt		evere	Wi- Hei Co- Total Q	dth: ght: unt: uantity:	5.30 1 138.0	(m) (m) (items) (m²)
Element Name: Location: Material: Element Type: Environment: Protection Syst		Wearing Surface (Dec Asphalt Benign / Mod Units	lerate (S		Wi- Hei Co- Total Q Limited	dth: ght: unt: uantity: I Insp'n:	5.30 1 138.0	(m) (m) (items) (m²) Performance
Element Name: Location: Material: Element Type: Environment: Protection Syst Condition Data:	em:	Wearing Surface (Dec Asphalt Benign / Mod Units	Exc.	Good	Wi Hei Co Total Q Limited	dth: ght: unt: uantity: I Insp'n: Poor	5.30 1 138.0	(m) (items) (m²) Performance Deficiencies
Element Name: Location: Material: Element Type: Environment: Protection Syst Condition Data: Comments: M	em:	Wearing Surface (Dec Asphalt Benign / Mod Units 1 / each / % / all transverse cracks through	Exc.	Good	Wi Hei Co Total Q Limited	dth: ght: unt: uantity: I Insp'n: Poor	5.30 1 138.0	(m) (items) (m²) Performance Deficiencies
Element Name: Location: Material: Element Type: Environment: Protection Syst Condition Data: Comments: M	em: m/ n inor rutting.	Wearing Surface (Dec Asphalt Benign / Mod Units 1 / each / % / all transverse cracks through	Exc.	Good	Wi Hei Co Total Q Limited Fair 6.9	dth: ght: unt: uantity: I Insp'n: Poor and South a	5.30 1 138.0 D butments.	(m) (m) (items) (m²) Performance Deficiencies 00
Element Name: Location: Material: Element Type: Environment: Protection Syst Condition Data: Comments: M	em: m/ n inor rutting.	Wearing Surface (Dec Asphalt Benign / Mod Units 1 / each / % / all 1 transverse cracks through	Exc.	Good h of roadwa	Wi Hei Co Total Q Limited Fair 6.9	dth: ght: unt: uantity: I Insp'n: Poor and South a	5.30 1 138.0	(m) (items) (m²) Performance Deficiencies 00
Element Name: Location: Material: Element Type: Environment: Protection Syst Condition Data: Comments: M Performance I Recommended	em: m/ n inor rutting.	Wearing Surface (Dec Asphalt Benign / Mod Units 1 / each / % / all 1 transverse cracks through the second of the	Exc.	Good h of roadwa	Wi Hei Co Total Q Limited Fair 6.9 ay at North a	dth: ght: unt: uantity: Insp'n: Poor and South a	5.30 1 138.0 butments.	(m) (items) (m²) Performance Deficiencies 00 eeds: 15 ar 2 Year
Element Name: Location: Material: Element Type: Environment: Protection Syst Condition Data: Comments: M	em: m/ n inor rutting.	Asphalt Benign / Mod Units 1 / each / % / all transverse cracks through the second of the second	Exc.	Good h of roadwa	Wi Hei Co Total Q Limited Fair 6.9 ay at North a	dth: ght: unt: uantity: Insp'n: Poor and South a	5.30 1 138.0 butments.	(m) (items) (m²) Performance Deficiencies 00 eeds: 15 ar 2 Year

DY - 6

Element Group:		Embankments & Strea		Length:			(m)		
Element Name:		Embankments			Wi	Vidth: (m)			
Location:		NE/NW/SE/SW			Hei	ght:		(m)	
Material:		Rock/Boulder			Co	unt:	4	(items)	
Element Type:		Rip Rap				uantity:	4	(each)	
Environment:		Benign Mod	lerate / Se	evere	Limited	l Insp'n:			
Protection Syste	m:						I	Performance	
Condition		Units	Exc.	Good	Fair	Poor	Poor Deficiencies		
Data:	m² / n	n each/ % / all	4			00			
Comments:	12								
Performance D	eficiencies	. None							
Recommended		☐ Minor Rehab		☐ Major Re	hab	Mair	ntenance N	eeds	
Kecommended	WOIK.	☐ Replace		✓ None		Urgent			
Timeframe:		☐ 1 - 5 Years		☐ 6 - 10 Ye	ears				
Comments:									
Comments.									

Element Group:		Accessories			Len	gth:		(m)	
Element Name:		Signs			+	dth:		(m)	
Location:	······	NE/NW/SE/SW				ght:		(m)	
Material:		Steel				unt:	2	(items)	
Element Type:		Steel				tal Quantity: 2.0 (ea)			
Environment:		Benign / Mod	lerate Se	evere		ed Insp'n:			
Protection Syste	m.	Dellight / 14100	iciate Di	Overe	Limited	тизри.		Performance	
Condition	411.	Units	Exc.	Good	Fair	Poor	1	Deficiencies	
Data:	m² / n	n each / % / all	LAC.	Good		00			
			1 .		1 70	l			
			icture signa	ge and one	2.0	hen used h	l v narrow tru		
		signs. Install narrow stru	acture signa	ge and one		hen used by	narrow tru		
Comments: Ra	ise hazard s	signs. Install narrow strus: None	acture signa		lane only w			cks signage.	
Comments: Ra	ise hazard s	signs. Install narrow strus: None Minor Rehab	ucture signa	☐ Major Re	lane only w	Mair	atenance N	cks signage.	
Comments: Ra Performance D Recommended	ise hazard s	signs. Install narrow strus: None Minor Rehab Replace	ucture signa	☐ Major Re ☑ None	lane only w	Maiı ☑ Urgent	ntenance N	eeds: - 2 Year	
Comments: Ra	ise hazard s	signs. Install narrow strus: None Minor Rehab	ucture signa	☐ Major Re	lane only w	Maiı ☑ Urgent	atenance N	eeds: - 2 Year	
Comments: Ra Performance D Recommended	ise hazard s	signs. Install narrow strus: None Minor Rehab Replace	ucture signa	☐ Major Re ☑ None	lane only w	Maiı ☑ Urgent	ntenance N	eeds: - 2 Year	
Comments: Ra Performance D Recommended Timeframe:	ise hazard s	signs. Install narrow strus: None Minor Rehab Replace	ucture signa	☐ Major Re ☑ None	lane only w	Maiı ☑ Urgent	ntenance N	eeds: - 2 Year	
Performance D Recommended Timeframe: Comments:	ise hazard s eficiencies Work:	signs. Install narrow strus: None Minor Rehab Replace 1 - 5 Years	ucture signa	☐ Major Re ☑ None	lane only w	Mair ☑ Urgent Install form	ntenance N	eeds: - 2 Year	
Comments: Ra Performance D Recommended Timeframe: Comments:	ise hazard s eficiencies Work:	signs. Install narrow structures: None Minor Rehab Replace 1 - 5 Years MLE's	ucture signa	☐ Major Re ☑ None	lane only w	Mair ☑ Urgent Install form	ntenance N 1 Year	eeds: - ar	
Comments: Ra Performance D Recommended Timeframe: Comments: Element Group: Element Name:	ise hazard s eficiencies Work:	signs. Install narrow structures: None Minor Rehab Replace 1 - 5 Years MLE's Diaphrams	ucture signa	☐ Major Re ☑ None	lane only w	Mair ☑ Urgent Install form gth:	ntenance N 1 Yea nentioned si	eeds: - ar	
Comments: Ra Performance D Recommended Timeframe: Comments: Element Group: Element Name: Location:	ise hazard s eficiencies Work:	signs. Install narrow structures: None Minor Rehab Replace 1 - 5 Years MLE's Diaphrams E/W	ucture signa	☐ Major Re ☑ None	lane only what hab	Main ✓ Urgent Install form gth: dth: ght:	1 Year nentioned si 0.975 0.165	cks signage. eeds: - ar	
Comments: Ra Performance D Recommended Timeframe: Comments: Element Group: Element Name: Location: Material:	ise hazard s eficiencies Work:	signs. Install narrow structures: None Minor Rehab Replace 1 - 5 Years MLE's Diaphrams	ucture signa	☐ Major Re ☑ None	lane only what hab	Main ✓ Urgent Install form gth: dth: ght: unt:	0.975 0.165 0.425	eeds: - ar	
Performance D Recommended Timeframe: Comments: Element Group: Element Name: Location: Material: Element Type:	ise hazard s eficiencies Work:	Signs. Install narrow structures: None Minor Rehab Replace 1 - 5 Years MLE's Diaphrams E/W Steel		☐ Major Re ☑ None ☐ 6 - 10 Ye	lane only w thab Len Wi Hei Co Total Q	Main Urgent Install form gth: dth: ght: unt: uantity:	0.975 0.165 0.425 18	cks signage. eeds: - ar	
Performance D Recommended Timeframe: Comments: Element Group: Element Name: Location: Material: Element Type: Environment:	se hazard s	Signs. Install narrow structures: None Minor Rehab Replace 1 - 5 Years MLE's Diaphrams E/W Steel		☐ Major Re ☑ None	lane only w thab Len Wi Hei Co Total Q	Main ✓ Urgent Install form gth: dth: ght: unt:	0.975 0.165 0.425 18 17.8	eeds: - or	
Comments: Rai Performance D Recommended Timeframe: Comments: Element Group: Element Name: Location: Material: Element Type: Environment: Protection Syste	se hazard s	signs. Install narrow structs: None Minor Rehab Replace 1 - 5 Years MLE's Diaphrams E/W Steel Benign Mod	lerate / So	☐ Major Re ☑ None ☐ 6 - 10 Ye	Len Wi Hei Co Total Q Limited	Main ☐ Urgent Install form gth: dth: ght: unt: unantity: I Insp'n:	0.975 0.165 0.425 18 17.8	cks signage. eeds: - or	
Comments: Rai Performance D Recommended Timeframe: Comments: Element Group: Element Name: Location: Material: Element Type: Environment: Protection Syste Condition	se hazard seficiencies Work:	signs. Install narrow structs: None Minor Rehab Replace 1 - 5 Years MLE's Diaphrams E/W Steel Benign Mod Units	lerate / Se	☐ Major Re ☑ None ☐ 6 - 10 Ye	lane only w thab Len Wi Hei Co Total Q	Main Urgent Install form gth: dth: ght: unt: uantity:	0.975 0.165 0.425 18 17.8	cks signage. eeds: - ar	
Performance D Recommended Timeframe: Comments: Element Group: Element Name: Location: Material: Element Type: Environment: Protection Syste Condition Data:	em:	signs. Install narrow structs: None Minor Rehab Replace 1 - 5 Years MLE's Diaphrams E/W Steel Benign Mod Units 1 / each / % / all	lerate / Se Exc. 17.8	☐ Major Re ☑ None ☐ 6 - 10 Yes evere ☐ Good	lane only websats Len Wi Hei Co Total Q Limited	Main ☐ Urgent Install form gth: dth: ght: unt: unantity: I Insp'n:	0.975 0.165 0.425 18 17.8	cks signage. eeds: - or	
Performance D Recommended Timeframe: Comments: Element Group: Element Name: Location: Material: Element Type: Environment: Protection Syste Condition Data:	em:	signs. Install narrow structs: None Minor Rehab Replace 1 - 5 Years MLE's Diaphrams E/W Steel Benign Mod Units	lerate / Se Exc. 17.8	☐ Major Re ☑ None ☐ 6 - 10 Yes evere ☐ Good	lane only websats Len Wi Hei Co Total Q Limited	Main ☐ Urgent Install form gth: dth: ght: unt: unantity: I Insp'n:	0.975 0.165 0.425 18 17.8	cks signage. eeds: - ar	
Performance D Recommended Timeframe: Comments: Element Group: Element Name: Location: Material: Element Type: Environment: Protection Syste Condition Data:	em:	Signs. Install narrow structs: None Minor Rehab Replace 1 - 5 Years MLE's Diaphrams E/W Steel Benign Mod Units A / each / % / all Trate corrosion and patin	lerate / Se Exc. 17.8	☐ Major Re ☑ None ☐ 6 - 10 Yes evere ☐ Good	lane only websats Len Wi Hei Co Total Q Limited	Main ☐ Urgent Install form gth: dth: ght: unt: unantity: I Insp'n:	0.975 0.165 0.425 18 17.8	cks signage. eeds: - ar	
Comments: Ra Performance D Recommended Timeframe: Comments: Element Group: Element Name: Location: Material: Element Type: Environment: Protection Syste Condition Data: Comments: Lig	em: my/ m cht to mode	Signs. Install narrow structs: None Minor Rehab Replace 1 - 5 Years MLE's Diaphrams E/W Steel Benign Mod Units A / each / % / all Trate corrosion and patin	lerate / Se Exc. 17.8	☐ Major Re ☑ None ☐ 6 - 10 Yes evere ☐ Good	Len Wi Hei Co Total Q Limited Fair	Main Urgent Install forn gth: dth: ght: unt: untity: Insp'n:	0.975 0.165 0.425 18 17.8	cks signage. eeds: - ar	
Comments: Ra Performance D Recommended Timeframe: Comments: Element Group: Element Name: Location: Material: Element Type: Environment: Protection Syste Condition Data: Comments: Lig	em: my/ m cht to mode	Signs. Install narrow structs: None Minor Rehab Replace 1 - 5 Years MLE's Diaphrams E/W Steel Benign Mod Units A / each / % / all Trate corrosion and patin	lerate / Se Exc. 17.8	☐ Major Re ☑ None ☐ 6 - 10 Ye ☐ evere ☐ Good ☐ o section lo	Len Wi Hei Co Total Q Limited Fair	Main Urgent Install forn gth: dth: ght: unt: untity: Insp'n:	0.975 0.165 0.425 18	cks signage. eeds: - or	
Comments: Ra Performance D Recommended Timeframe: Comments: Element Group: Element Name: Location: Material: Element Type: Environment: Protection Syste Condition Data: Comments: Lig	em: my/ m cht to mode	Signs. Install narrow structs: None Minor Rehab Replace 1 - 5 Years MLE's Diaphrams E/W Steel Benign Mod Units A / each / % / all Trate corrosion and patings: None Minor Rehab	lerate / Se Exc. 17.8	☐ Major Re ☐ None ☐ 6 - 10 Ye evere Good ☐ Major Re	Len Wi Hei Co Total Q Limited Fair	Main Urgent Install form gth: dth: ght: unt: untity: Insp'n: Poor	0.975 0.165 0.425 18 17.8	cks signage. eeds: - or	
Comments: Rai Performance D Recommended Timeframe: Comments: Element Group: Element Name: Location: Material: Element Type: Environment: Protection Syste Condition Data: Comments: Lig Performance D Recommended	em: my/ m cht to mode	Signs. Install narrow structs: None Minor Rehab Replace 1 - 5 Years MLE's Diaphrams E/W Steel Benign Mod Units A / each / % / all rate corrosion and patin Signs: None Minor Rehab Replace	lerate / Se Exc. 17.8	□ Major Re ☑ None □ 6 - 10 Ye evere Good □ Major Re ☑ None	Len Wi Hei Co Total Q Limited Fair	Main Urgent Install form gth: dth: ght: unt: untity: Insp'n: Poor	0.975 0.165 0.425 18 17.8	cks signage. eeds: - or	

Municipal	Structure	Inspection	Form
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DY - 6

Piers	4.6 MI		Len	gth:		(m)
Bearings		Width:			(m)	
Abutments	Height:			(m)		
Elastomeric Rubber			Cor	unt:	8	(items)
			Total Q	uantity:	8	(each)
Benign Mod	erate / S	evere	Limited	l Insp'n:		
					1	Performance
Units Exc. Good			Fair	Poor	1	Deficiencies
each / % / all	8					00
encies: None	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,					
☐ Minor Rehab		☐ Major Re	hab	Maii	ntenance N	eeds: -
☐ Replace	✓ None			Urgent	☐ 1 Ye	ar 2 Year
☐ 1 - 5 Years ☐ 6 - 10 Years			ears			
	Bearings Abutments Elastomeric Rubber Benign Mod Units Ceach / % / all Procies: None Minor Rehab Replace	Bearings Abutments Elastomeric Rubber Benign Moderate / S Units Exc. each / % / all 8 encies: None Minor Rehab Replace	Bearings Abutments Elastomeric Rubber Benign Moderate / Severe Units Exc. Good each / % / all 8 encies: None Minor Rehab Major Re Replace None	Bearings Wi Abutments Hei Elastomeric Rubber Co Total Q Benign Moderate / Severe Limited Units Exc. Good Fair each / % / all 8 encies: None Minor Rehab Major Rehab Replace	Bearings Width: Abutments Height: Elastomeric Rubber Count: Total Quantity: Benign Moderate / Severe Limited Insp'n: Units Exc. Good Fair Poor each / % / all 8 Major Rehab Replace None	Bearings Width: Abutments Height: Elastomeric Rubber Count: 8 Total Quantity: 8 Benign Moderate / Severe Limited Insp'n: Units Exc. Good Fair Poor each / % / all 8 Indicate

Municipal Structure Inspection Form

·	
MTO Site Number:	DY - 6

	ilitation Requi	red:		Pri	ority		Estimated
Element	Repair and Re	ehabilitation Required	6 to 10 years	1 to 5 years	Within 1 year	Urgent	Construction Cost
			!				
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			1	<u> </u>	 		
	 		 		 		
	-		 		+	+	
	 		 	 	+	+	
	+				 	 	
					+	 	
			+		+	+	
					1		
						Total Cost	·
Associated Work:			Comme	ents			Estimated Cost
Approaches:							
Detours:							
Traffic Control:	\longrightarrow			D.			
Utilities:	\longrightarrow						
Right of Way:							
Environmental Stud	<u>y:</u>					\longrightarrow	
Other: Contingencies:	+						
Contingencies:						Total Cost	60
						Total Cost	\$0
	Acres Aura Aura Aura Aura Aura Aura Aura Aura						
Justification:							



Structure No: DY-7

Oblong Lake Narrows Bridge

Structure Description

The Oblong Lake Narrows Bridge is located on Haliburton Lake Road, immediately North of the intersection of Haliburton Lake Road and Harburn Road, in the hamlet of Fort Irwin. The bridge was constructed in 1964 and is an 18.6 m triple span, two lane structure with a composite wood/concrete deck, supported by timber piles and pile caps with timber ballast wall abutments. The structure crosses a navigable watercourse (Oblong Lake) on a North/South tangential alignment. The bridge has an 8.5 m wide concrete deck with an asphaltic wearing surface and concrete curbs. There is a steel barrier over the structure with concrete end posts and one steel beam guiderail on the Southeast approach. The bridge is currently load posted / limited to 20 / 32 / 40 tonnes.

Structure Condition

The overall structure is in poor condition with a BCI of 42 and BSI of 33. The substructure is in good to fair condition given its age; however, the superstructure including deck, curbs, sidewalk and railings are in poor condition and require replacement. The timber piles and pile caps are in good condition with minor checking and cracking noted at end bent locations. It should be noted the two center bents have limited inspection due to accessibility. The timber abutments are in fair condition; however, the gabion wing walls have been displaced and require replacement and stabilization with proper slope protection in all four quadrants. The concrete deck, curbs and sidewalk are in poor condition with extensive spalling of the soffit and curb areas revealing localized exposed rebar. The longitudinal wooden deck shows signs of water penetration. The wearing surface is in good to poor condition with extensive potholes and patching evident. The steel barrier over the structure is in fair to poor condition with severe corrosion, isolated collision damage and severe deterioration of the concrete end posts. The barrier does not comply with the bridge code and likely would not provide sufficient protection in the event of a collision. The steel beam guiderail on the Southeast approach is in poor condition with visible impact damage and is not connected to the structure. The other three approach quadrants have no steel beam guiderail system.

Recommendations

The substructure; excluding piles and capping beams, and superstructure; excluding possible wood soffit, require major rehabilitation. The structure requires major rehabilitation including repair/replacement of abutments, deck, soffit, wearing surface and guiderails. A detailed deck condition survey should be conducted prior to major rehabilitation work to establish actual deck conditions between composite materials. It is also recommended that an enhanced visual inspection of center bents be conducted at that time to ensure the integrity of major structural pier components. This work should be undertaken in 1-5 years.



Photo 1 : General Arrangement - Looking North

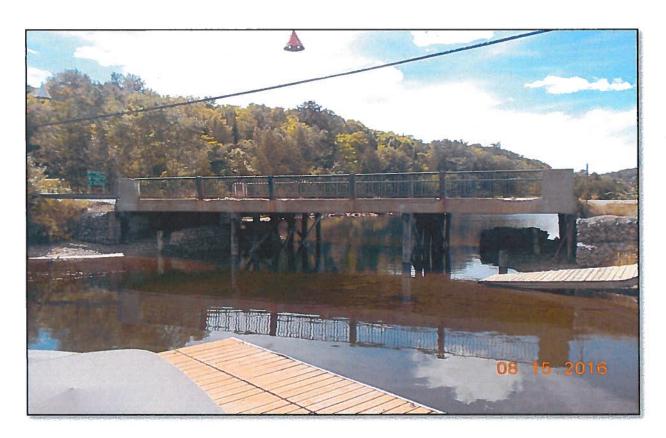


Photo 2 : General Arrangement - Looking West



Structure No: DY-1
Paddy's Pond Bridge

Structure Description

Paddy's Pond Bridge is located on North Kennisis Lake Road, approximately 5 km west of Kennisis Lake Narrows. The bridge was constructed in 1966 and is a 6.1 m single span, two-lane structure with a deck supported by timber piers and abutments. The bridge has an overall deck width of 6.7 m and 6.2 m wide surface treated wearing surface with timber curbs. There is steel beam guiderail across the structure but no guiderail on the approaches.

Structure Condition

The structure is in poor overall condition with a BCI of 58 and BSI of 47. The abutments are in fair condition with isolated locations of minor splitting of the ballast wall. The wing walls are in fair condition with considerable displacement noted; the northeast wing wall continues to fail. As noted from previous inspections, the northeast wing wall should be repaired to prevent further washout of backfill on approaches. The deck wearing surface is in fair to poor condition showing potholing and alligator cracking; the wearing surface should be replaced to protect the wooden deck. One of the wood girders and deck above has failed due to overloading - severe cracking and splitting of the 4th beam from the north face. Significant amount of deflection was also observed under loading of tandem axle dump truck.

The guiderail does not comply with the bridge code; the post spacing over the structure is insufficient and there are no guiderail or end treatments on the approaches.

Recommendation

It is recommended that a structural evaluation be conducted and appropriate load ratings enforced, lane restrictions enforced and/or temporary structure installed. A design remedy should be provided to repair or replace the damaged girder(s) and deck. Rehabilitation work as a minimum is required to repair damaged girder. Depending on the outcome of the structural evaluation it may be required to replace all girders. The deck and approach wearing surfaces, and the wing wall /retaining walls are in poor to fair condition and should be replaced within 1-5 years or at time of girder replacement. Guiderail extension on the approaches should be installed at time of rehabilitation.

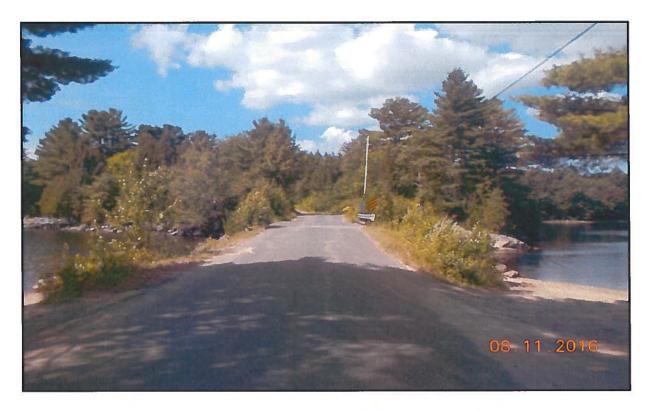


Photo 1: General Arrangement – Looking West



Photo 2: General Arrangement – Looking East

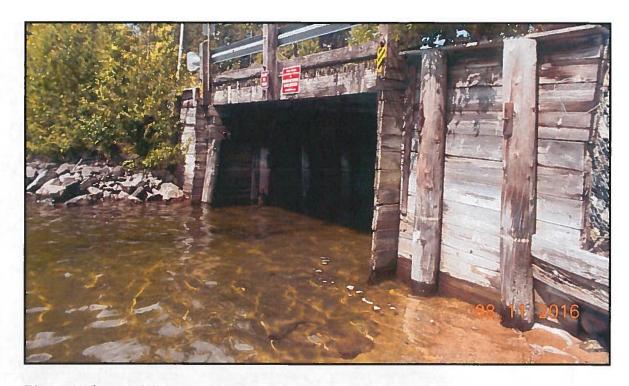


Photo 3: General Arrangement – Southeast Elevation

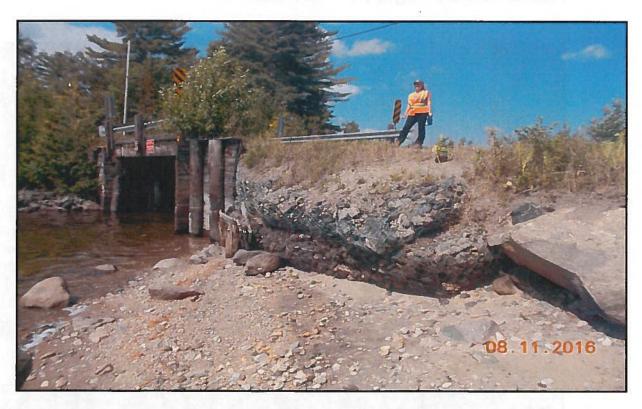


Photo 4: General Arrangement – Southeast Embankment

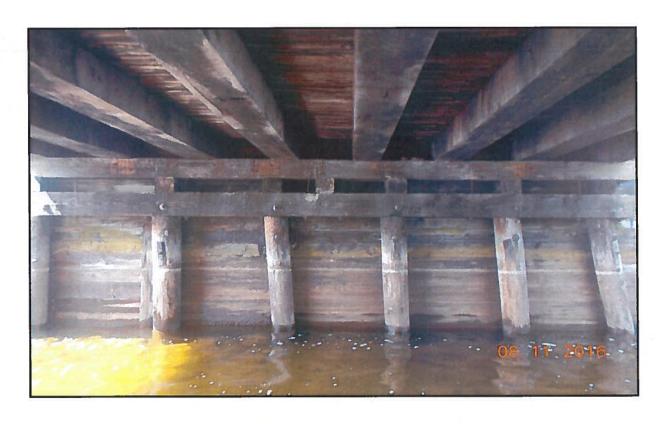


Photo 5: General Arrangement – West Abutment



Photo 6: Splintering of Wood Beam (4th from North face) – Looking West



Photo 7: Splintering of Wood Beam (4th from North face) – Close Up View



Photo 8: Longitudinal Cracking of Wood Beam (4th from North face) – Close Up View



Photo 9: Northeast Abutment Wing Wall – Looking Southwest

Municipal Struct	ure Inspection I	Form	MTO Site Number: DY - 1					
Inventory Data:								
Structure Name	Paddy's Bay (Po	nd) Bridge						
Main Hwy/Road #		On 🗵 Under	Crossing Navig. Wa Type: Rail	tter⊠ Non-Navig. Water Road Ped. Other				
Road Name	North Kennisis L	ake Road						
Structure Location	0.3 km West of F	'addy's Court						
Latitude	45.224000		Longitude -78.644800					
Owner(s)	Municipality of I	Dysart et al	-	Cons./not App. List/not Desig. Not List Desig. & List				
MTO Region *			Road Class: Freeway A	arterial Collector Local ⊠				
MTO District *			Posted Speed 50	No. of Lanes 2				
Old County *			AADT	% Trucks				
Geographic Twp. *			Special Routes: Transit	Truck School Bicycle				
Structure Type *	Bridge		Detour Length Around Bridge	(km)				
Total Deck Length	7.0	(m)	Fill on Structure	0 (m)				
Overall Str. Width	6.7	(m)	Skew Angle	0 (degrees)				
Total Deck Area	46.9	(sq.m)	Direction of Structure N to S					
Roadway Width	6.2	(m)	No. of Spans					
Span Lengths	6.1			(m)				
Historical Data:								
Year Built	1966		Last Biennial Inspection	2014				
Current Load Limit	N/A/	(tonnes)	Last BridgeMaster Inspection	N/A				
Load Limit Bylaw #	N/A		Last Evaluation	N/A				
Bylaw Expiry Date	N/A		Last Underwater Inspection	N/A				
Min. Vertical Cleara	ince -	(m)	Last Condition Survey	N/A				
Rehab. History: (Da	ate/description)							

Field Inspection Inf	formation:			
Date of Inspection:	August 11, 2016			
Inspector:	Robert Brooks – Tulloch Engineering			
Others in Party:	Elizabeth Perry – Tulloch	Engineering		
Equipment Used:	Camera, Hammer, Tape M	leasure	_	
Weather:	Sun			
Temperature:	+29°C			

MTO Site Number: DY - 1

Additional Investigations Require		Priority			
	None Normal Urgent				Cost
Detailed Deck Condition Survey:	X				
DART Survey:		X			
Detailed Coating Condition Survey:		X			
Underwater Investigation:					
Fatigue Investigation:	X				
Seismic Investigation:		X			
Structure Evaluation:				X	10,000.00
Load Posting – Estimated Load	No Limit		7	Total Cost	\$10,000
Special Notes: Laminated wood dec	k to be included as	part of structu	re evaluation	on.	
Next Detailed Inspection:				2018	

00	None	06	Bearing not uniformly loaded/unstable	12	Slippery surfaces
01	Load carrying capacity	07	Jammed expansion joint	13	Flooding/channel blockage
02	Excessive deformations (deflections & rotations)	08	Pedestrian/vehicular hazard	14	Undermining of foundation
03	Continuing settlement	09	Rough riding surface	15	Unstable embankments
04	Continuing movements	10	Surface ponding	16	Other
05	Seized bearings	11	Deck drainage		
Main	tenance Needs				
01	Lift and Swing Bridge Maintenance	07	Repair to Structural Steel	13	Erosion Control at Bridges
02	Bridge Cleaning	08	Repair of Bridge Concrete	14	Concrete Sealing
03	Bridge Handrail Maintenance	09	Repair of Bridge Timber	15	Rout and Seal
04	Painting Steel Bridge Structures	10	Bailey Bridges - Maintenance	16	Bridge Deck Drainage
05	Bridge Deck Joint Repair	11	Animal/Pest Control	17	Other
06	Bridge Bearing Maintenance	12	Bridge Surface Repair		

DY - 1

Element Group:	Abutments			Lor	igth:		(m)
Element Name:	Ballast Walls		-		dth:	7.2	(m)
Location:	Dallast Walls			Height:		2.8	(m)
Material:	Wood	e-M			unt:	2.8	(items)
Element Type:	Wood				unt. Quantity:	40.3	(m²)
Environment:	Benign Mod	lerate / S	evere		Insp'n:	40.3	(111-)
Protection System:	Creosote	iciale // S	CVCIC	Lillite	ı msp n.)C
	Units	Exc.	Good	Fair	Performance		
Condition Data: m ² / r		EXC.	25.3	15.0	Poor Deficiencies		
	n / each / % / all		25.5	13.0	L		00
Comments: Performance Deficiencie	- Name						
Recommended Work:	Minor Rehab		☐ Major Re	hah	B.#.•	.4 N	
Recommended work:	☐ Replace ☑ None			,,,,,,	Urgent	ntenance Ne	
T'	☐ 1 - 5 Years		☐ 6 - 10 Ye	arc	Orgeni	. 1164	r 2 Year
Timeframe:			□ 0 - 10 te	:013			
Comments:							
					1.5		
Element Group:	Abutments				igth:	3.0	(m)
Element Name:	Wingwalls				dth:	3 1 2	(m)
Location:	NE/SW/NW/SE				ight:	2.8	(m)
Material:	Wood				unt:	4	(items)
Element Type:	Wood Piles and Lagging			Total Quantity:		33.6	(m²)
Environment:	Benign Mod	lerate / S	evere	Limited	l Insp'n:		
Protection System:	Creosote	T 12				P	Performance
Condition	Units	Exc.	Good	Fair	Poor	Γ	Deficiencies
	n / each / % / all		10.2	15	8.4		01
Comments: Wingwall at	Northwest quadrant has	failed due	to severe rot	and decay	. Pile suppo	rt for wing w	vall has also rotted
and offers no structural loa	d carrying capacity for v	ving wall a	t this area.				
Performance Deficiencie		y.					
Recommended Work:	☐ Minor Rehab		✓ Major Re	hab	Mai	ntenance Ne	eds:
	☑ Replace		□ None	☐ Urgent ☐ 1 Year ☐ 2 Year			
Timeframe:			☐ 6 - 10 Ye	ars			
Comments: Replace and/o	or major rehab, ballast w	ving walls.					
•							
Element Group:	Barriers			Ler	igth:	8.0	(m)
Element Name:	Railing Systems				dth:	0.0	(m)
Location:	Truming Dystems				ght:	0.5	(m)
Material:	Steel				unt:	2	(items)
Element Type:	Flex Beam on Wood P	ost			uantity:	16.0	(m)
Environment:	Benign / Mod		evere		I Insp'n:		(III)
Protection System:	Galvanizing / Ceosote			Limited	ı məp m.		erformance
	Units			Esia	Door	4	Deficiencies
Condition		Exc.	Good	Fair	Poor	L	
	n each / % / all		16.0	0 :1 :1			08
Comments: Guiderail in go							
guiderail should be extende	ed on all four quadrants	with proper	r end treatme	ents. Wood	l posts have	light to med	ium splits and checks
throughout.	B 1						
Performance Deficiencies	s: Pedestrian / vehicle ha	azard	☐ Maie- P-	hah		,	
Recommended Work:	☐ Minor Renab		☐ Major Re	nau		ntenance Ne	
	El vehiace		☐ 140HE		Urgent	☐ 1 Year	r 🔲 2 Year
	1 1 EV		TI 6 101				
Timeframe: Comments: Provide new p	☑ 1 - 5 Years		☐ 6 - 10 Ye	ars			

DY - 1

Element Data								
Element Group:	Beam/ MLE			Len	gth:	8.8	(m)	
Element Name:	Girders			Wie	dth:	0.31	(m)	
Location:	N/S			Hei	ght:	0.31	(m)	
Material:	Wood			Cor	unt:	8	(items)	
Element Type:	Rectangular-solid			Total Q	uantity:	65.5	(m²)	
Environment:	Benign Mod	lerate / S	evere	Limited	l Insp'n:			
Protection System:	Creosote					I	Performance	
Condition	Units	Exc.	Good	Fair	Poor]	Deficiencies	
Data: m ³ /	m / each / % / all		17.5	32	16		01	
Comments: Minor checking	ng and moderate longitudin	nal cracking	throughout a	Il members.	The 4th and	5th beam gir	rders, from the North	
elevation, have severe long.								
was observed under loading	of tandem axle dump truck	c. Severe del	amination an	d lateral crac	cking observ	ed in 4th bea	m from North	
elevation.								
Performance Deficiencie		ty						
Recommended Work:	☐ Minor Rehab		☐ Major Re	nab		ntenance N		
	☑ Replace		☐ None		☐ Urgent	☐ 1 Yea	r 2 Year	
Timeframe:	✓ 1 - 5 Years		☐ 6 - 10 Ye	ars				
Comments: Structural ev	aluation recommended.	Load rate b	ridge. Repl	ace failed				
girder(s) and deck.								
Element Group:	Deck		1200000		gth:	7.0	(m)	
Element Name:	Wearing Surface			Width:		6.2	(m)	
Location:	Deck Top			Height:		0.04	(m)	
Material:	Asphalt			Count:		1	(items)	
Element Type:					uantity:	43.4	(m²)	
Environment:	Benign / Mod	derate S	evere	Limited	l Insp'n:			
Protection System:						1	Performance	
Condition	Units	Exc.	Good	Fair	Poor	1	Deficiencies	
	m / each / % / all			18.0	25.4		09	
Comments: Surface treat	_		_	,	-			
done. Severe cracking and			reating a ro	ugh riding s	surface and	allowing wa	iter through.	
Performance Deficiencie								
Recommended Work:	☐ Minor Rehab		☐ Major Re	hab		ntenance N		
	☑ Replace		☐ None		☐ Urgent	☐ 1 Yea	ar 2 Year	
Timeframe:			☐ 6 - 10 Ye					
Comments: Provide new	asphalt wearing surface	as part of b	ridge rehab.					
	1			20, 200 0	-0.65%			
Element Group:	Pier				ı (avg):	0.30	(m)	
Element Group: Element Name: Location:	Pier Pier Bearings NE/SW			Wi	n (avg): dth:	0.30 0.30 0.21	(m) (m) (m)	

Element Group: Pier				Length (avg):		0.30	(m)		
Element Name:	nt Name: Pier Bearings			Wi	dth:	0.30	(m)		
Location:	· · · · · · · · · · · · · · · · · · ·	NE/SW			He	ight:	0.21	(m)	
Material:		Wood				unt:	16	(items)	
Element Type:	Creosote Total Quantity:			16.0	(ea)				
Environment:		Benign Mo	derate S	evere	Limite	d Insp'n:		, .	
Protection System:						Po	erformance		
Condition		Units	Exc. Good Fair Poor		Poor	Deficiencies			
Data:	m² / 1	n /each/ % / all		16.0			00		
Comments:			· · · · · · · · · · · · · · · · · · ·			,		.00	
Performance D	eficiencie	s: None							
Recommended	Work:	☐ Minor Rehab		☐ Major Re	hab	Mai	ntenance Ne	eds: -	
		☐ Replace	*	None		☐ Urgent	☐ 1 Year	☐ 2 Year	
Timeframe:		☐ 1 - 5 Years		🔲 6 - 10 Ye	ars				
Comments:									

DY - 1

Element Group:		Pier			Len	gth:	7.0	(m)	
Element Name:		Caps			Wi	dth:	0.30	(m)	
Location:		N/S			Hei	ght:	0.30	(m)	
Material:		Wood			Co	unt:	3	(items)	
Element Type:					Total Q	uantity:	18.9	(m²)	
Environment:		Benign Mod	evere	Limited	Insp'n:	Ø.			
Protection System	n:	Creosote					Р	erformance	
Condition		Units	Exc.	Good	Fair	Poor	1	Deficiencies	
Data:	m²/ m	n / each / % / all		18.9			Land Tol	00	
Comments: Pile		ood condition; light to n	nedium spli	tting and ch	ecking at er	ıds.	<u></u>		
		, 5	•	3	•				
Performance De	eficiencies	: None					anii e ua	1111-111	
Recommended \	Work:	Minor Rehab		☐ Major Re	hab	Mai	ntenance Ne	eds: -	
		☐ Replace		✓ None		☐ Urgent	☐ 1 Year	r 2 Year	
Timeframe:		☐ 1 - 5 Years		☐ 6 - 10 Ye	ears				
Comments:									
Element Group:		Pier			Len	gth:	Wan-	(m)	
Element Name:		Pile Bents				dth:	0.30	(m)	
Location:		N/S			Hei	ght:	2.0	(m)	
Material:		Wood				unt:	12	(items)	
Element Type:		Timber Piles with Capping Beam			Total Q	uantity:	22.6	(m²)	
Environment:		Benign Mod		Insp'n:					
Protection System	n:	Creosote				•	P	erformance	
Condition		Units	Exc.	Good	Fair	Poor	Poor Deficiencies		
Data:	m²/ m	n / each / % / all		13.6	9.0		00		
Comments: Lig		g above waterline. No	lisplacemer				11 -15 1	t - Turner in a	
	,								
Performance De	eficiencies	: None				īm pina	Low	fring security 5	
Recommended V	Work:	Minor Rehab		☐ Major Re	Maintenance Needs: -			eds:	
		☐ Replace		✓ None		☐ Urgent ☐ 1 Year ☐ 2 Year			
Timeframe:		☐ 1 - 5 Years		☐ 6 - 10 Ye	ears	-			
Comments:									
Element Group:		Retaining Wall			I.en	gth:	8	(m)	
Element Name:		Walls			Wi		2	(m)	
Location:		East Quadrant				ght:	0.5	(m)	
Material:		Gabion Basket			Cor	-	4	(items)	
Element Type:						uantity:	4	(each)	
Environment:		Benign / Mod	erate Se	evere		Insp'n:		(2)	
Protection System	n:	Galvanized					P	erformance	
Condition		Units	Exc.	Good	Fair	Poor	1	Deficiencies	
Data:	m²/m	each % / all	Ditte.	0000	1.0	3.0		03,04	
		due to settlment and gr	ound move	ment	1.0	5.0		05,01	
Comments. Top	phing over	due to settiment and gi	ound move	mont.					
Performance De	eficiencies	: Continuing settlement	and moven	nent		3 1		195 / 1	
Recommended \		☐ Minor Rehab		☐ Major Re	hab	Mai	ntenance Ne	eds: -	
		☑ Replace		□ None		Urgent	1 Year		
Timeframe:		☑ 1 - 5 Years		☐ 6 - 10 Ye	ars				
	alization r	required for toppling ga	bion basket	retaining u	/all				
		-1							

DY - 1

Element Group:	Sidewalks/Curbs			Len	gth:	8.0	(m)
Element Name:	Curbs			Wie	dth:	0.20	(m)
Location:	NW/SE			Hei	ght:	0.20	(m)
Material:	Wood			Cou	ınt:	2	(items)
Element Type:	Creosote	Total Q	uantity:	9.6	(m²)		
Environment:	Benign / Mod	lerate / Se	evere	Limited	Insp'n:		
Protection System:						F	Performance
Condition	Units	Exc.	Good	Fair	Poor	I	Deficiencies
Data: m²/m	/ each / % / all			9.6			00
Comments: Minor splits	and checks, curbs show	ıld be repla	ced as part of	of bridge rel	nab.		
Performance Deficienci	es: None						
Recommended Work:	☐ Minor Rehab		☐ Major Re	hab	Mai	tenance N	eeds: -
	☐ Replace		✓ None	1	☐ Urgent	☐ 1 Yea	ır 🔲 2 Year
Timeframe:	☐ 1 - 5 Years		☐ 6 - 10 Ye	ars	_		
Comments:							
Element Group:	Approaches			Len	gth:	6	(m)
Element Name:	Approach Wearing Su	rface			dth:	6.2	(m)
Location:	N/S			Hei	ght:	0.04	(m)
Material:	Asphalt	Cor		2	(items)		
Element Type:		Total Q	uantity:	74.4	(m²)		
Environment:	Benign / Mod	lerate (S	evere		Insp'n:		
Protection System:						1	Performance
Condition	Units	Exc.	Good	Fair	Poor]	Deficiencies
Data: m)/m	/ each / % / all		32	28.0	14.0		03, 09
Comments: Light to me		uneven sur	face. Contin	nuing settler	ment causin	g uneaven r	iding surface in West
quadrant.				Ü			
Performance Deficienci	ies: Settlement and roug	gh riding su	rface				
Recommended Work:	☐ Minor Rehab		✓ Major Re	ehab Maintenance Needs: -			
	☐ Replace		□ None		☐ Urgent ☐ 1 Year ☐ 2 Year		
Timeframe:			☐ 6 - 10 Ye	ears			
Comments: Remove ove	ergrown vegetation. Pro	vide proper	drainage at	all four			
quadrants as part of rehab	work.			•			
<u></u>							
Element Group:	Deck			Len	gth:	7.0	(m)
Element Name:	Soffit - Thin Slab			Wi	dth:	6.7	(m)
Location:				Hei	ght:		(m)
Material:	Laminated Wood Dec	k		Co	unt:	1	(items)
Element Type:				Total Q	uantity:	48.0	(m²)
Environment:	Benign Mod	derate / S	evere	Limited	l Insp'n:		
Protection System:	Creosote, Surface Trea	atment					Performance
Condition	Units	Exc.	Good	Fair	Poor		Deficiencies
Data: p ² / m	/ each / % / all		48.0				01
Comments: Medium to	severe water staining th	roughout.					
Performance Deficienc	ies: Load carrying can	acity					
Recommended Work:	Minor Rehab	<u>-</u>	☐ Major Re	hab	Mai	ntenance N	eeds:
	Replace		☐ None		Urgent		
Timeframe:	1 - 5 Years		☐ 6 - 10 Ye	ears	<u> </u>		
7					I		
Comments: Deck has failed where beam / girder has failed					l		

DY - 1

Elamana Casa								
Element Group:		Embankments & Streams			Ler	Length:		(m)
Element Nam	ne:	Embankments			Width:			(m)
Location:		NE/NW/SE/SW			Height:			(m)
Material:					Count:		4	(items)
Element Type	e:				Total Q	uantity:	4	(ea)
Environment	:	Benign Mod	lerate / S	evere	Limited	d Insp'n:		
Protection Sy	/stem:	- y					1	Performance
Condition		Units	Exc.	Good	Fair	Poor	1	Deficiencies
Data:	m² / m	/each)% / all			2.0	2.0		15
Comments:		1 -			1		4	
Performance	e Deficiencio	es: Unstable embankme	ents				100	
Recommend	led Work:	☐ Minor Rehab		☐ Major Re	hab	Mai	ntenance N	eeds: -
		Replace		☐ None		☐ Urgent	☐ 1 Yea	r 2 Year
Timeframe:		☑ 1 - 5 Years		☐ 6 - 10 Ye	ars			
Comments:	Repair unsta	ble embankments						
	•							
Element Grou	up:	Embankments & Strea	ms	-	Len	igth:		(m)
Element Nam	•	Slope Protection				dth:		(m)
Location:		NE/NW/SE/SW		- 1	Hei	ight:		(m)
Material:		Rip Rap				unt:	4	(items)
Element Type	e:			T		uantity:	4.0	(ea)
Environment:	:	Benign Mod	lerate / S	evere	Limited Insp'n:			
Protection Sy	stem:				****			Performance
Condition		Units	Exc.	Good	Fair	Poor	Deficiencies	
Data:	m²/m	/ each /) % / all			1.0	3.0		15
Comments:	m²/m	/each % / all			1.0	3.0		15
	m²/m	/ each) % / all			1.0	3.0		15
Comments:		/ each % / all	nt	NRAP	1.0	3.0		15
Comments:	e Deficiencie		nt	☐ Major Re		10	ntenance N	
Comments:	e Deficiencie	es: Unstable embankme	nt	☐ Major Re.☐ None		10	ntenance N	eeds: -
Comments:	e Deficiencie	es: Unstable embankme	nt		hab	Mai		eeds: -
Comments: Performance Recommend Timeframe:	e Deficiencio led Work:	es: Unstable embankme Minor Rehab Replace 1 - 5 Years		☐ None ☐ 6 - 10 Ye	hab	Mai		eeds: -
Comments: Performance Recommend Timeframe:	e Deficiencio led Work:	es: Unstable embankme Minor Rehab Replace		☐ None ☐ 6 - 10 Ye	hab	Mai		eeds: -
Comments: Performance Recommend Timeframe:	e Deficiencio led Work:	es: Unstable embankme Minor Rehab Replace 1 - 5 Years		☐ None ☐ 6 - 10 Ye	hab	Mai		eeds: -
Performance Recommend Timeframe: Comments:	e Deficiencio led Work: Provide slop	es: Unstable embankme Minor Rehab Replace 1 - 5 Years e protection to all quadi	rants after e	☐ None ☐ 6 - 10 Ye	hab ars rehab.	Mai □ Urgent		eeds: - ir
Performance Recommend Timeframe: Comments:	e Deficienci e led Work: Provide slop up:	es: Unstable embankme Minor Rehab Replace 1 - 5 Years e protection to all quadi	rants after e	☐ None ☐ 6 - 10 Ye	hab ars rehab. Len	Mai □ Urgent		eeds: - IT
Performance Recommend Timeframe: Comments:	e Deficienci e led Work: Provide slop up:	es: Unstable embankme Minor Rehab Replace 1 - 5 Years e protection to all quadi	rants after e	☐ None ☐ 6 - 10 Ye	hab ars rehab. Len Wi	Mai □ Urgent □ Urgent agth:		eeds: - r
Performance Recommend Timeframe: Comments: Element Grou Element Nam Location:	e Deficienci e led Work: Provide slop up:	es: Unstable embankme Minor Rehab Replace 1 - 5 Years e protection to all quadi	rants after e	☐ None ☐ 6 - 10 Ye	hab ars rehab. Len Wi Hei	Mai □ Urgent ugth: dth:	1 Yea	eeds: - IT
Performance Recommend Timeframe: Comments: Element Grov Element Nam Location: Material:	e Deficiencio led Work: Provide slop up:	es: Unstable embankme Minor Rehab Replace 1 - 5 Years e protection to all quadi	rants after e	☐ None ☐ 6 - 10 Ye	hab ars rehab. Len Wi Hei	Main Urgent Urge	☐ 1 Yea	(m) (m) (m) (items)
Performance Recommend Timeframe: Comments: 1 Element Grout Element Nam Location: Material: Element Type	e Deficiencie led Work: Provide slop up: ne:	es: Unstable embankme Minor Rehab Replace 1 - 5 Years e protection to all quadr Embankments & Strea Streams & Waterways	rants after e	☐ None ☐ 6 - 10 Ye	hab rehab. Len Wi Hei Co Total Q	Mai ☐ Urgent gth: dth: ight: unt: buantity:	1 Yea	eeds: - IT
Performance Recommend Timeframe: Comments: 1 Element Grov Element Nam Location: Material: Element Type Environment:	e Deficiencie led Work: Provide slop up: ne:	es: Unstable embankme Minor Rehab Replace 1 - 5 Years e protection to all quadr Embankments & Streat Streams & Waterways	rants after e	□ None □ 6 - 10 Ye mbankment	hab rehab. Len Wi Hei Co Total Q	Main Urgent Urge	1 Yea	(m) (m) (m) (items) (ea)
Performance Recommend Timeframe: Comments: 1 Element Grov Element Nam Location: Material: Element Type Environment: Protection Sy	e Deficiencie led Work: Provide slop up: ne:	es: Unstable embankme Minor Rehab Replace 1 - 5 Years e protection to all quadi Embankments & Strea Streams & Waterways Benign / Mod	ms	□ None □ 6 - 10 Ye mbankment	hab rehab. Len Wi Hei Co Total Q Limited	Mais Urgent □ Urgent ugth: dth: ight: unt: puantity: l Insp'n:	1 Yea	(m) (m) (m) (items) (ea)
Performance Recommend Timeframe: Comments: Element Grov Element Nam Location: Material: Element Type Environment: Protection Sy Condition	e Deficiencio led Work: Provide slop up: ne: e:	es: Unstable embankme Minor Rehab Replace 1 - 5 Years e protection to all quadr Embankments & Strea Streams & Waterways Benign / Mod	rants after e	□ None □ 6 - 10 Ye mbankment evere	hab rehab. Len Wi Hei Co Total Q	Mai ☐ Urgent gth: dth: ight: unt: buantity:	1 Yea	(m) (m) (m) (items) (ea) Performance Deficiencies
Performance Recommend Timeframe: Comments: Element Grou Element Nam Location: Material: Element Type Environment: Protection Sy Condition Data:	e Deficiencio led Work: Provide slop up: ne: e:	es: Unstable embankme Minor Rehab Replace 1 - 5 Years e protection to all quadi Embankments & Strea Streams & Waterways Benign / Mod	ms	□ None □ 6 - 10 Ye mbankment	hab rehab. Len Wi Hei Co Total Q Limited	Mais Urgent □ Urgent ugth: dth: ight: unt: puantity: l Insp'n:	1 Yea	(m) (m) (m) (items) (ea)
Performance Recommend Timeframe: Comments: Element Grov Element Nam Location: Material: Element Type Environment: Protection Sy Condition	e Deficiencio led Work: Provide slop up: ne: e:	es: Unstable embankme Minor Rehab Replace 1 - 5 Years e protection to all quadr Embankments & Strea Streams & Waterways Benign / Mod	ms	□ None □ 6 - 10 Ye mbankment evere	hab rehab. Len Wi Hei Co Total Q Limited	Mais Urgent □ Urgent ugth: dth: ight: unt: puantity: l Insp'n:	1 Yea	(m) (m) (m) (items) (ea) Performance Deficiencies
Performance Recommend Timeframe: Comments: Element Grou Element Nam Location: Material: Element Type Environment: Protection Sy Condition Data: Comments:	Provide slop up: ee: e: rstem: m² / m	es: Unstable embankme Minor Rehab Replace 1 - 5 Years e protection to all quadr Embankments & Strea Streams & Waterways Benign / Moc Units / each % / all	ms	□ None □ 6 - 10 Ye mbankment evere Good	hab rehab. Len Wi Hei Co Total Q Limited	Mais Urgent □ Urgent ugth: dth: ight: unt: puantity: l Insp'n:	1 Yea	(m) (m) (m) (items) (ea) Performance Deficiencies
Performance Recommend Timeframe: Comments: Element Grow Element Nam Location: Material: Element Type Environment: Protection Sy Condition Data: Comments:	Provide slop up: ee: m² / m e Deficiencie	es: Unstable embankme Minor Rehab Replace 1 - 5 Years e protection to all quadr Embankments & Strea Streams & Waterways Benign / Moc Units / each % / all	ms	□ None □ 6 - 10 Ye mbankment evere Good	Len Wi Hei Co Total Q Limited	Main Urgent Orgent O	1 1.0 I	(m) (m) (m) (items) (ea) Deficiencies 00
Performance Recommend Timeframe: Comments: Element Grou Element Nam Location: Material: Element Type Environment: Protection Sy Condition Data: Comments:	Provide slop up: ee: m² / m e Deficiencie	es: Unstable embankme Minor Rehab Replace 1 - 5 Years e protection to all quadr Embankments & Strea Streams & Waterways Benign / Moc Units / each % / all	ms	one of the state o	Len Wi Hei Co Total Q Limited	Main Urgent Orgent O	1 1.0	(m) (m) (m) (items) (ea) Performance Deficiencies 00
Performance Recommend Timeframe: Comments: Element Grov Element Nam Location: Material: Element Type Environment: Protection Sy Condition Data: Comments:	Provide slop up: ee: m² / m e Deficiencie	Es: Unstable embankme Minor Rehab Replace 1 - 5 Years e protection to all quadr Embankments & Streat Streams & Waterways Benign / Mod Units / each % / all es: None Minor Rehab	ms	one of the state o	hab ars rehab. Len Wi Hei Co Total Q Limited Fair	Main Urgent Urge	1 1.0	(m) (m) (m) (items) (ea) Performance Deficiencies 00
Performance Recommend Timeframe: Comments: Element Grow Element Nam Location: Material: Element Type Environment: Protection Sy Condition Data: Comments:	Provide slop up: ee: m² / m e Deficiencie	es: Unstable embankme Minor Rehab Replace 1 - 5 Years e protection to all quadr Embankments & Streat Streams & Waterways Benign / Mod Units / each % / all es: None Minor Rehab Replace	ms	evere Good 1.0 Major Re	hab ars rehab. Len Wi Hei Co Total Q Limited Fair	Main Urgent Urge	1 1.0	(m) (m) (m) (items) (ea) Performance Deficiencies 00

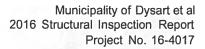
Municipal Structure Inspection Form

MTO Site Number:

Repair and Rehabilitation Required:			Pric	ority		Estimated
Element	Repair and Rehabilitation Required	6 to 10 years	1 to 5 years	Within 1 year	Urgent	Construction Cost
Bridge	Replace MLE (Wood Beams)				Х	\$26,500
Wingwalls	Replace Wingwall / Retaining Walls				Х	\$55,000
Wearing Surface (Decks)	Replace deck wearing surface.				х	\$7,250
Wearing Surface (Approaches)	Replace approach wearing surfaces.				х	\$2,250
Sidewalk/Curbs	Replace curbs as part of bridge rehab				х	\$2,000
_						
		•				
	1	1		1	Total Cost	\$93,000

Associated Work:	Comments	Estimated Cost
Approaches:	\$25,000	
Detours:		
Traffic Control:		·
Utilities:		
Right of Way:		× -
Environmental Study:		
Other:	Engineering	\$7,500
Contingencies:		\$9,500
	Total Cost	\$42,000

Justification:			
			"
	8		N. Control of the Con





Structure No: DY-2

Kennisis Lake Narrows Bridge

Structure Description

Kennisis Lake Narrows Bridge is located on North Kennisis Lake Road, at Kennisis Lake Narrows, approximately 400 m west of Watts Road. The bridge was constructed in 1966 and is a 7 m single span, two lane structure with a timber deck, timber beams and timber abutments. The bridge has an overall 6.8 m deck width with 6.2 m wide surface treated wearing surface with timber curbs. There is steel beam guiderail with hazard markers across the structure but no guiderail on the approaches.

Structure Condition

The structure is in fair overall condition with a BCI of 66 and a BSI of 62. The abutments are in good condition with no deficiencies noted above the waterline. The timber beams and deck appear to be in good condition with minor cracking and checking observed. It should be noted that moderate deflection was observed under loading by a tandem axle dump truck. The surface treated wearing surface is in fair condition exhibiting slippage cracking and sections of the wooden deck are visible through the surface treatment. The approaches are in good condition; however, there is evidence of erosion on the approach embankments. There was a large amount of sand and debris on the bridge deck and blocking the deck drains at the time of inspection.

The guiderail over the structure is in good condition with localized corrosion and minor collision damage. The guiderail should be extended on all approaches with proper end treatments.

Recommendation

It is recommended that the main longitudinal beam and soffit areas undergo an enhanced visual inspection with boat or barge due to limited access and detailed structural analysis be performed for potential load posting. The wearing surface should be replaced within 1-5 years and maintenance should be undertaken to repair the loose guiderail. Bridge cleaning of the deck and deck drains under the curb should be conducted immediately to alleviate surface ponding issues. It is recommended that the guiderail extensions with end treatments be addressed in the future when the structure undergoes a major rehabilitation.



Photo 1: General View - Looking West

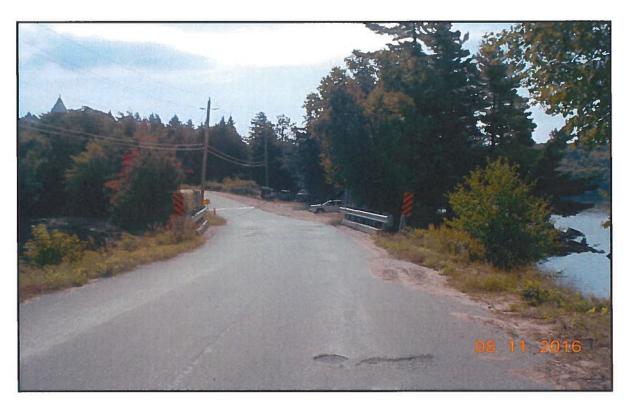


Photo 2: General View – Looking East

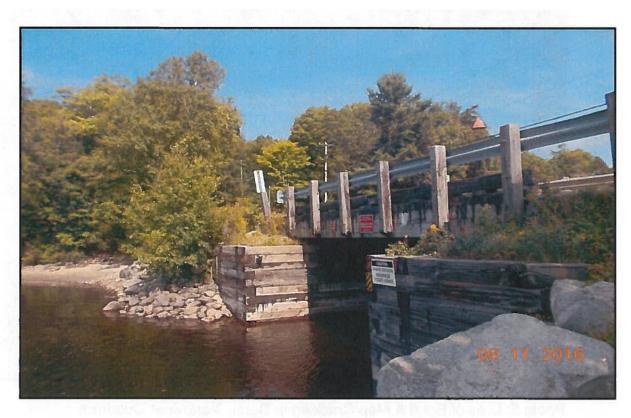


Photo 3: General View - Southeast Elevation



Photo 4: Deck Wearing Surface - Looking West



Photo 5: Loss of Bond & Map Cracking in Deck- Northwest Quadrant

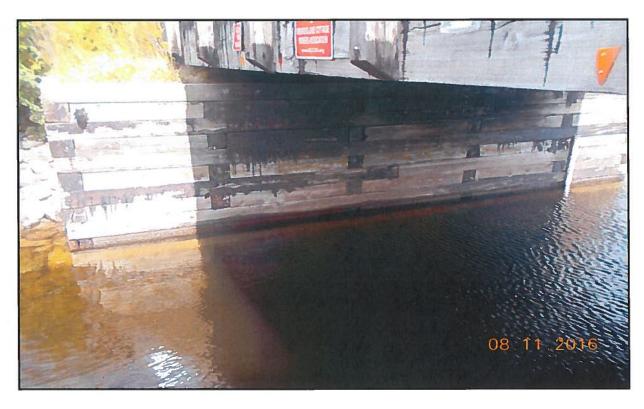


Photo 6: General View – West Abutment

MTO	Site	Number:	DY -	2

Inventory Data:				
Structure Name	Kennisis Lake Narrows Br	ridge		
Main Hwy/Road #	On 🗵	Under	_	ter 🗵 Non-Navig. Water Road Ped. Other
Road Name	Kennisis Lake Road			
Structure Location	0.4 km West of Watts Roa	d		
Latitude	45.241800		Longitude -78.598200	
Owner(s)	Municipality of Dysart et a	al	_	Cons./not App. List/not Desig. Not List Desig. & List
MTO Region *			Road Class: Freeway A	rterial Collector Local 🗵
MTO District *			Posted Speed 50	No. of Lanes 2
Old County *			AADT	% Trucks
Geographic Twp. *			Special Routes: Transit	Truck School Bicycle
Structure Type *	Bridge		Detour Length Around Bridge	(km)
Total Deck Length	13.8	(m)	Fill on Structure	0 (m)
Overall Str. Width	6.8	(m)	Skew Angle	0 (degrees)
Total Deck Area	94.0	(sq.m)	Direction of Structure	E to W
Roadway Width	6.2] (m)	No. of Spans	1
Span Lengths	7.0			(m)
Historical Data:				
Year Built			Last Biennial Inspection	2014
Current Load Limit	N/A/ / (tonn	ies)	Last BridgeMaster Inspection	N/A
Load Limit Bylaw #	N/A		Last Evaluation	N/A
Bylaw Expiry Date	N/A		Last Underwater Inspection	N/A
Min. Vertical Cleara	ance - (m)		Last Condition Survey	N/A
Rehab. History: (Da	ate/description)			
			20	!

Field Inspection Inf	formation:
Date of Inspection:	August 11, 2016
Inspector:	Robert Brooks – Tulloch Engineering
Others in Party:	Elizabeth Perry – Tulloch Engineering
Equipment Used:	Camera, Hammer, Tape Measure
Weather:	Sun
Temperature:	+28°C

Additional Investigations Required:		Estimated		
	None	Normal	Urgent	Cost
Detailed Deck Condition Survey:	X			
DART Survey:	X			
Detailed Coating Condition Survey:	X			
Underwater Investigation:	X	-		
Fatigue Investigation:	X			٠
Seismic Investigation:	X			
Structure Evaluation:		X		\$10,000
Load Posting – Estimated Load		Total Cost		\$10,000

Special Notes: Enhanced visual inspection of main longitudinal elements with boat or barge is recommended and Structural Evaluation for Possible Load Posting given evidence of deflection during loading by tandem truck.

Next Detailed Inspection:	2018

Suspected Performance Deficiencies

00	None	06	Bearing not uniformly loaded/unstable	12	Slippery surfaces
01	Load carrying capacity	07	Jammed expansion joint	13	Flooding/channel blockage
02	Excessive deformations (deflections & rotations)	08	Pedestrian/vehicular hazard	14	Undermining of foundation
03	Continuing settlement	09	Rough riding surface	15	Unstable embankments
04	Continuing movements	10	Surface ponding	16	Other
05	Seized bearings	11	Deck drainage		
Main	tenance Needs				
01	Lift and Swing Bridge Maintenance	07	Repair to Structural Steel	13	Erosion Control at Bridges
02	Bridge Cleaning	08	Repair of Bridge Concrete	14	Concrete Sealing
03	Bridge Handrail Maintenance	09	Repair of Bridge Timber	15	Rout and Seal
04	Painting Steel Bridge Structures	10	Bailey Bridges - Maintenance	16	Bridge Deck Drainage
05	Bridge Deck Joint Repair	11	Animal/Pest Control	17	Other
06	Bridge Bearing Maintenance	12	Bridge Surface Repair		

DY - 2

Element Group:	Abutments	Abutments		Length:			(m)
Element Name:	Abutment Walls			Width:		9.8	(m)
Location:	East / West	East / West			Height:		(m)
Material:	Wood			Co	unt:	2	(items)
Element Type:					uantity:	49.0	(m²)
Environment:	Benign Mod	derate / Se	evere	Limited	d Insp'n:		
Protection System:	Creosote]	Performance
Condition	Units	Exc.	Good	Fair	Poor]	Deficiencies
Data: m ² /	m / each / % / all	1	49.0				00
Comments:		- I = I					
Performance Deficiencie					n edit	- 11	
Recommended Work:	☐ Minor Rehab		☐ Major Re	hab	Mai	ntenance N	eeds:
	☐ Replace		✓ None	I	☐ Urgent	☐ 1 Yea	ar 2 Year
Timeframe:	☐ 1 - 5 Years		☐ 6 - 10 Ye	ears			
Comments:							
Element Group:	Abutments			Len	ngth:	TO THE	(m)
Element Name:	Wingwalls			}	dth:	2.5	(m)
Location:	NE/NW/SE/SW				ight:	2.50	(m)
Material:	Wood				unt:	4	(items)
Element Type:	Wood Crib				Duantity:	25.0	(m²)
Environment:	Benign Mod	derate / So	evere	Limited Insp'n:			(/
Protection System:	Creosote				Performance		
Condition	Units	Exc.	Good	Fair	Poor Deficiencies		
	m / each / % / all	Ditt.	19	4	2	00	
Comments: Minor checki		king splint				<u> </u>	00
Commence in the control	ing in wood ocums. C.a.	wing, opini	.orms one p.	Jac at Di 11 -	luaniani.		
Performance Deficiencie	·s· None		•				
Recommended Work:	☐ Minor Rehab		☐ Major Re	hab	Mai	ntenance N	ands.
Accommended o	Replace		✓ None				
Timeframe:	☐ 1 - 5 Years		☐ 6 - 10 Ye	ears			. Н - 1
Comments:							
Comments.							
Element Group:	Barriers			Lon	-4L.	140	()
Element Group:				Length: Width:		16.0	(m)
	Railing Systems						(m)
Location:	Across structure only				ight:	2	(m)
Material:	Steel Flow Room on W	Deat			unt:	2	(items)
Element Type:	Steel Flex Beam on W			Total Quantity:		32	(m)
Environment:	Benign / Mod			Limited Insp'n:			2 0
Protection System:	Galvanized / Creosote	7		F.5.	D		Performance
Condition	Units	Exc.	Good	Fair	Poor	Deficiencies	
Data: m/r				32	1 -1 27		00
Comments: Existing guide							udrants. Guiderail
should be extended with pr		ccordance v	with Ontario) Provinciai	Standards.		
Performance Deficiencie			C 11-/- D-				STATE OF R. CO.
Recommended Work:	☐ Minor Rehab		☐ Major Rel	nab		ntenance N	
	Replace		☑ None		Urgent		
Timeframe:	☐ 1 - 5 Years		☐ 6 - 10 Ye	ars	Bridge and	Handrail M	faintanence.
Comments:							
				,	1		

DY - 2

							MANAGE TO SERVICE THE PARTY OF		
Element Group:	:	Beam / MLE			Length:		8.8	(m)	
Element Name:		Girders			Width:		0.250	(m)	
Location:		E/W	grange to work-		Height:		0.60	(m)	
Material:		Wood			Cot		9	(items)	
Element Type:		Rectangular-solid			Total Q	uantity:	114.8	(m²)	
Environment:		Benign Mod	erate / Se	evere	Limited		I		
Protection Syste	em:	Creosote					1	Performance	
Condition		Units	Exc.	Good	Fair	Poor		Deficiencies	
Data:	m ² / m	n / each / % / all		92.8	20	2	<u> </u>	02	
		evere checking along N	orth girder.				er span, was		
		ixel dump truck. Limite				, 20 2000			
		: Excessive deformation							
Recommended		☐ Minor Rehab	((☐ Major Re	hab	Mair	itenance N	eeds: -	
	· ··········	Replace		☑ None		Urgent			
Timeframe:		☐ 1 - 5 Years		6 - 10 Ye	ars	0.gon		1001	
	thanced view	ual and structural inspec	etion is reco						
Comments: En	manceu vist	iai anu suucturai iiispet	LIOII IS FECO	minenaea.					
Element Crave		Deck		1	Ť	oth:	13.8	(m)	
Element Name					Len			(m)	
Element Name:		Deck Top				dth:	6.8	(m)	
	Location:			Hei		1	(m)		
	Material: Wood				Count:		(items)		
Element Type: Laminated Wood Decking - transverse				Total Quantity: Limited Insp'n:		94.0	(m²)		
Environment:				evere	Limited	insp n:		D. C	
Protection System	em:	Creosote / Surface Tre			F :	Performance			
Condition	20	Units	Exc.	Good	Fair	Poor			
Data:	m)/n	50 00 00 000		94.0	L			00	
Comments: Go	ood overall	condition; no loose or re	otten deck b	oards obser	rved.				
Performance I	Deficiencies	: None							
Recommended	l Work:	☐ Minor Rehab ☐ Major Re		hab	Maii	ntenance N	eeds: 02		
		☑ Replace		✓ None	☐ Urgent		☑ 1 Ye	ar 2 Year	
Timeframe:		☐ 1 - 5 Years		☐ 6 - 10 Ye	ears	Renove sar	nd build-up.		
Comments:									
Element Group):	Deck			Len	gth:	13.8	(m)	
Element Name:		Wearing Surface (Dec	ks)			dth:	6.20	(m)	
Location:		5	,			ght:		(m)	
Material:		Surface Treatment				unt:		(items)	
Element Type:						uantity:	85.6	(m²)	
Environment:	·	Benign / Mod	lerate S	evere		Insp'n:		1 (
Protection Syst							Performance		
Condition		Units Eva Cand		Fair Poor					
		Units	Exc	Good	Fair	Poor	1	Deficiencies	
		Units	Exc.	Good 10.4	Fair	Poor 37.6		Deficiencies 10	
Data:	m² / n	n / each 🤲 all		10.4	37.6	37.6		10	
Data: Comments: A	m² / n	n / each % all cracking with localized	d potholes o	10.4 bserved. D	37.6 Deck require	37.6 s cleaning/s		10	
Data: Comments: All preserve wood o	m ² / n lligator map deck and cu	n / each % all cracking with localized rbs. Ashpalt deterioration	d potholes o	10.4 bserved. D	37.6 Deck require	37.6 s cleaning/s		10	
Data: Comments: Alpreserve wood of Performance I	m² / n Illigator map deck and cur Deficiencies	n / each % all cracking with localized	d potholes o	10.4 bserved. E of bond in S	37.6 Deck require SE quadrant	37.6 s cleaning/s	sweeping to	10 promote drainage and	
Data: Comments: All preserve wood o	m² / n Illigator map deck and cur Deficiencies	n / each % all cracking with localized rbs. Ashpalt deteriorations: Surface ponding	d potholes o	10.4 bserved. D	37.6 Deck require SE quadrant	37.6 s cleaning/s	sweeping to	promote drainage and eeds: 02,12	
Data: Comments: Alpreserve wood of Performance I	m² / n Illigator map deck and cur Deficiencies	n / each % all cracking with localized rbs. Ashpalt deterioration Surface ponding Minor Rehab Replace	d potholes o	10.4 bbserved. E of bond in S Major Re	37.6 Deck require SE quadrant	37.6 s cleaning/s Mai	sweeping to	10 promote drainage and eeds: 02,12 ar	
Data: Comments: Al preserve wood of Performance I Recommender	m² / n Illigator map deck and cur Deficiencies	n / each % all cracking with localized rbs. Ashpalt deterioration Surface ponding Minor Rehab	d potholes o	10.4 bserved. E of bond in S	37.6 Deck require SE quadrant	37.6 s cleaning/s Mai	sweeping to	promote drainage and eeds: 02,12	
Data: Comments: Alpreserve wood of Performance I	m² / n Illigator map deck and cur Deficiencies	n / each % all cracking with localized rbs. Ashpalt deterioration Surface ponding Minor Rehab Replace	d potholes o	10.4 bbserved. E of bond in S Major Re	37.6 Deck require SE quadrant	37.6 s cleaning/s Mai	sweeping to	10 promote drainage and eeds: 02,12 ar	

DY - 2

Element Group:		Retaining Walls			Len	igth:	3.0	(m)
Element Name:		Walls			Wi	dth:	2.0	(m)
Location:	1700	NW Quadrant			Hei	ight:	0.5	(m)
Material:		Other				unt:	2	(items)
Element Type:		Gabions			Total C	uantity:	3	(m²)
Environment:	4	Benign / Mod	lerate Se	evere	Limited	l Insp'n:		, ,
Protection System:	Ш	Galvanized					F	Performance
Condition		Units	Exc.	Good	Fair	Poor	1	Deficiencies
Data:	m) / m	/ each / % / all			3.0	of Life		00
		ls show signs of previous	us settlemer	nt, no signs o		d settlement	ohserved	
		is one wording or provide		,				
Performance Defi	iciencies	: None						
Recommended W		☐ Minor Rehab		☐ Major Rel	hab	Mai	ntenance No	eeds: -
		Replace		✓ None		☐ Urgent		
Cimeframe:			ars			- 11		
Comments:								
Element Group:	-,-	Sidewalks / Curbs			I en	ngth:	13.0	(m)
	Element Name: Curbs				dth:	0.30	(m)	
Location:	N/S				ight:	0.30	(m)	
Material:		Wood				unt:	2	(items)
Element Type:		77 GOG				uantity:	15.6	(m²)
Environment:		Benign / Mod	lerate / S	evere		Insp'n:		(111)
Protection System:		Creosote	iciate 7 B	overe	Dimitot	a mop m		Performance
Condition		Units	Exc.	Good	Fair	Poor	-	Deficiencies
Data:	m² / m	/ each / % / all	LAC.	1.6	10.0	5.0		00
		chicle damage to curbs;	some rot/s				nd/sedimen	
	-	to promote drainage an						t against cuto
Performance Defi			a prevent re	or. Dongitud	mur spins u	inoughout i	nemocrs.	
Recommended W		Minor Rehab		☐ Major Rel	hab	Mair	ntenance No	eeds: 02
Recommended W	ork.	Replace		☑ None		☐ Urgent ☑ 1 Ye		
Timeframe:		☐ 1 - 5 Years		☐ 6 - 10 Ye	ars			
Comments:						Di luge cic	aning	
Comments.								
						l		
Element Group:	-	Approaches			Lon	oth:	6	(m)
Element Name:		Wearing Surface			Length: Width:		6.2	(m) (m)
Location:		East and West			Height:		0.2	(m)
Material:		Asphalt			Count:		2	(items)
Element Type:		Aspilait				unt. Duantity:	74.4	(m²)
Environment:		Benign / Mod	lerate / Se	avere		I Insp'n:	/ 4.4	(111-)
		Deffigit / Moc	iciale / Si	evele	Lillinet	ı msp n.) C
Protection System:							Performance	
		T Iian	E	C4	E-i-	D	1	
Condition		Units	Exc.	Good	Fair	Poor	1	Deficiencies
Data:	m ² / m	/ each / % / all		68	Fair 4	Poor 2	1	
Data:	m ² / m			68			1	Deficiencies
Data:	m)/ m	/ each / % / all ate means for drainage		68			1	Deficiencies
Data: Comments: Provide	m²/ m de adequ iciencies	ate means for drainage None Minor Rehab		68	4	2	1	Deficiencies 00
Data: Comments: Provide Performance Defi	m²/ m de adequ iciencies	/ each / % / all ate means for drainage: None		68 Juadrants.	4	2	ntenance N	Deficiencies 00 eeds: 02
Data: Comments: Provide Performance Defi	m²/ m de adequ iciencies	ate means for drainage None Minor Rehab		68 quadrants.	4	2 Mai	ntenance No	Deficiencies 00 eeds: 02
Data: Comments: Provide Performance Define Recommended W	m²/ m² de adequ iciencies ork:	a / each / % / all ate means for drainage : None Minor Rehab Replace	at all four q	68 juadrants. Major Rel	4	2 Mai	ntenance No	Deficiencies 00 eeds: 02

Municipal Structure Inspection Form

MTO Site Number:

Element Repair and Rehabilitation Required years years lyear Urgent Cost Wearing Surface (Decks) Resurface with double surface treatment to protect wooden deck Total Cost Associated Work: Associated Work: Comments Comments Comments Cost Cost	Element Repair and Rehabilitation Required years years years 1 year Urgent Cost Wearing Surface (Decks) Resurface with double surface (Decks) X \$7,500 Wearing Surface (Decks) X \$7,500	Repair and Rehab	ilitation Re	quired:		Pri	ority		Estimated
(Decks) treatment to protect wooden deck A	(Decks) treatment to protect wooden deck	Element	Repair and	l Rehabilitation Required			1	Urgent	Construction Cost
Associated Work: Comments Cos Approaches: Extend guiderail on approaches andadd end treatments. \$25,0 Detours: Traffic Control: Utilities: Right of Way: Environmental Study: Other: Contingencies:	Associated Work: Comments Estimat Cost Approaches: Extend guiderail on approaches andadd end treatments. Detours: Traffic Control: Utilities: Right of Way: Environmental Study: Other: Contingencies: Total Cost \$25,00		1			v			\$7.500
Associated Work: Comments Estima Cos Approaches: Extend guiderail on approaches andadd end treatments. \$25,0 Detours: Traffic Control: Utilities: Right of Way: Environmental Study: Other: Contingencies:	Associated Work: Comments Cost Approaches: Extend guiderail on approaches and add end treatments. \$25,00 Detours: Traffic Control: Utilities: Right of Way: Environmental Study: Other: Contingencies: Total Cost \$25,00	(Decks)	treatment to	protect wooden deck					47,500
Associated Work: Comments Estima Cos Approaches: Extend guiderail on approaches andadd end treatments. \$25,0 Detours: Traffic Control: Utilities: Right of Way: Environmental Study: Other: Contingencies:	Associated Work: Comments Cost Approaches: Extend guiderail on approaches and add end treatments. \$25,00 Detours: Traffic Control: Utilities: Right of Way: Environmental Study: Other: Contingencies: Total Cost \$25,00								
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Associated work: Comments Cos Approaches: Extend guiderail on approaches andadd end treatments. \$25,0 Detours: Traffic Control: Utilities: Right of Way: Environmental Study: Other: Contingencies:	Associated work: Approaches: Extend guiderail on approaches and add end treatments. \$25,00 Detours: Traffic Control: Utilities: Right of Way: Environmental Study: Other: Contingencies: Total Cost \$25,00							Total Cost	\$7,500
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Detours: Traffic Control: Utilities: Right of Way: Environmental Study: Other: Contingencies:	Detours: Traffic Control: Utilities: Right of Way: Environmental Study: Other: Contingencies: Total Cost \$25,00	Approaches:		Extend guiderail on approa	ches andade	d end treatn	nents.		\$25,000
Utilities: Right of Way: Environmental Study: Other: Contingencies:	Utilities: Right of Way: Environmental Study: Other: Contingencies: Total Cost \$25,00	Detours:							
Right of Way: Environmental Study: Other: Contingencies:	Right of Way: Environmental Study: Other: Contingencies: Total Cost \$25,00								
Environmental Study: Other: Contingencies:	Environmental Study: Other: Contingencies: Total Cost \$25,00								····
Other: Contingencies:	Other: Contingencies: Total Cost \$25,00	Right of Way:		l.					
Contingencies:	Contingencies: Total Cost \$25,00		dy:						***
	Total Cost \$25,00								
1 otal Cost \$25,0		Contingencies:						Total Cost	¢25 000
	Instification:							I Otal Cost	\$23,000
Justification:		Instification:						5112,631,111	
Justification.	Justification.	Justification.	and the same of						



Structure No: DY-3

Barry's Bridge

Structure Description

Barry's Bridge is located on Barry Line Road, 1 km west of Kennisis Lake Road. The bridge was constructed in 1960 and is an 18.7 m three-span, two-lane structure with a timber deck, timber piers and timber abutments. The bridge crosses a non-navigable watercourse on an east/west tangential alignment. The bridge has a 7.4 m overall deck width with a 6.8 m wide surface treated wearing surface with timber curbs. There is steel beam guiderail across the structure but no guiderail on the approaches.

Structure Condition

The structure is in fair overall condition with a BCI of 64 and a BSI of 61. The wooden ballast walls are in fair condition with some loose and cracked boards; there is evidence of material loss from behind the abutments. There is evidence of backfill material washing out from behind the ballast walls and scour at the base. The timber piles and caps are in good condition with minor checking observed. The timber deck is in good condition with minor cracking and no evidence of water penetration. The wearing surface is in poor to fair condition exhibiting severe potholing, alligator cracking with sections of the deck visible. There was a large amount of sand and debris on the bridge deck and blocking the deck drains at the time in inspection and of previous inspections.

The guiderail over the structure is in good condition with localized corrosion and minor collision damage. The post in the north east corner has been damaged and is loose. The guiderail should be extended on all approaches with proper end treatments.

Recommendations

It is recommended the structure undergo a minor rehabilitation in 1-5 years to repair the ballast walls, damaged beam, rebuild the approaches, install guiderail with end treatments and replace the deck wearing surface. Maintenance should be undertaken to repair/replace the damaged guiderail post and clean the bridge deck and deck drains under the curb. Guiderail extension on the approaches should be undertaken in the future when the structure undergoes a major rehabilitation. Debris should be cleaned from stream in northwest quadrant at time of bridge cleaning.



Photo 1: General Arrangement – Looking North

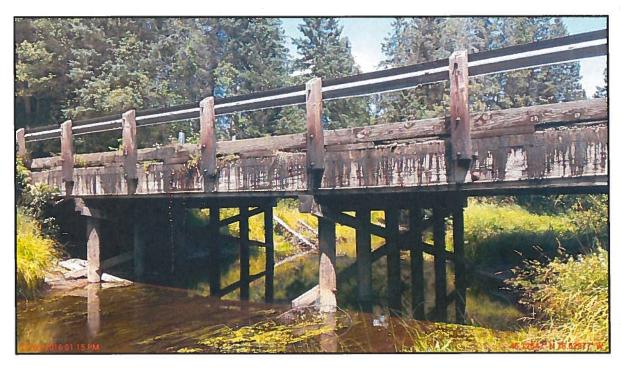


Photo 2: General Arrangement – West Elevation



Photo 3: General Arrangement – South Ballast Wall



Photo 4: General Arrangement – North Ballast Wall

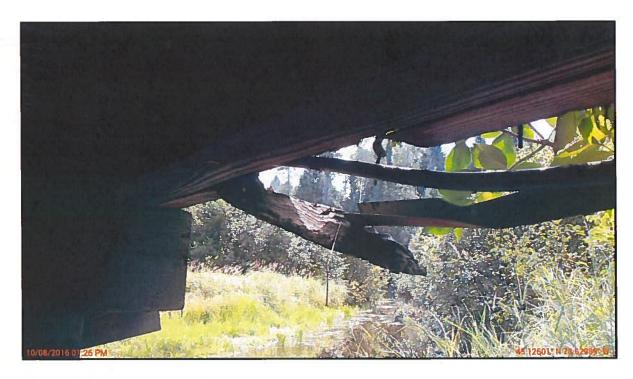


Photo 5: Damaged Exterior Wood Beam – Northwest Quadrant

Inventory Data:

Structure Name	Barry's Bridge			
Main Hwy/Road #		On ⊠ Under	Crossing Navig. Wa Type: Rail	tter Non-Navig. Water ⊠ Road Ped. Other
Road Name	Barry Line Road			
Structure Location	0.05 km East of I	Binscrath Trail		
Latitude	45.126200		Longitude -78.630000	
Owner(s)	Municipality of I	Dysart et al		Cons./not App. List/not Desig. Not List Desig. & List
MTO Region *			Road Class: Freeway A	rterial Collector Local 🗵
MTO District *			Posted Speed 50	No. of Lanes 2
Old County *			AADT	% Trucks
Geographic Twp. *			Special Routes: Transit	Truck School Bicycle
Structure Type *	Bridge		Detour Length Around Bridge	(km)
Total Deck Length	18.7	(m)	Fill on Structure	0 (m)
Overall Str. Width	7.3	(m)	Skew Angle	0 (degrees)
Total Deck Area	137.0	(sq.m)	Direction of Structure	N to S
Roadway Width	6.8	(m)	No. of Spans	3
Span Lengths	6.2			(m)
	· · · · · · · · · · · · · · · · · · ·			
Historical Data				
Historical Data:	1960		Last Biennial Inspection	2014
		(tonnes)	Last Biennial Inspection Last BridgeMaster Inspection	2014 N/A
Year Built	1960 N/A/	/ (tonnes)	-	- I - I - I - I - I - I - I - I - I - I
Year Built Current Load Limit	1960 N/A/	/ (tonnes)	Last BridgeMaster Inspection	N/A
Year Built Current Load Limit Load Limit Bylaw #	1960 N/A/ N/A N/A	(tonnes)	Last BridgeMaster Inspection Last Evaluation	N/A N/A
Year Built Current Load Limit Load Limit Bylaw # Bylaw Expiry Date	1960 N/A/ N/A N/A -		Last BridgeMaster Inspection Last Evaluation Last Underwater Inspection	N/A N/A
Year Built Current Load Limit Load Limit Bylaw # Bylaw Expiry Date Min. Vertical Cleara	1960 N/A/ N/A N/A -		Last BridgeMaster Inspection Last Evaluation Last Underwater Inspection	N/A N/A
Year Built Current Load Limit Load Limit Bylaw # Bylaw Expiry Date Min. Vertical Cleara	1960 N/A/ N/A N/A -		Last BridgeMaster Inspection Last Evaluation Last Underwater Inspection	N/A N/A
Year Built Current Load Limit Load Limit Bylaw # Bylaw Expiry Date Min. Vertical Cleara	1960 N/A/ N/A N/A -		Last BridgeMaster Inspection Last Evaluation Last Underwater Inspection	N/A N/A
Year Built Current Load Limit Load Limit Bylaw # Bylaw Expiry Date Min. Vertical Cleara	1960 N/A/ N/A N/A -		Last BridgeMaster Inspection Last Evaluation Last Underwater Inspection	N/A N/A
Year Built Current Load Limit Load Limit Bylaw # Bylaw Expiry Date Min. Vertical Cleara	1960 N/A/ N/A N/A -		Last BridgeMaster Inspection Last Evaluation Last Underwater Inspection	N/A N/A
Year Built Current Load Limit Load Limit Bylaw # Bylaw Expiry Date Min. Vertical Cleara	1960 N/A/ N/A N/A -		Last BridgeMaster Inspection Last Evaluation Last Underwater Inspection	N/A N/A
Year Built Current Load Limit Load Limit Bylaw # Bylaw Expiry Date Min. Vertical Cleara	1960 N/A/ N/A N/A -		Last BridgeMaster Inspection Last Evaluation Last Underwater Inspection	N/A N/A

Sun

+29°C

Camera, Hammer, Tape Measure

Field Inspection Information:

Date of Inspection:

Others in Party:

Equipment Used:

Inspector:

Weather:

Temperature:

nation:	
August 10, 2016	
Robert Brooks – Tulloch Engineering	
Elizabeth Perry – Tulloch Engineering	

MTO Site Number: DY - 3

Additional Investigations Required:		Priority		
	None	Normal	Urgent	Cost
Detailed Deck Condition Survey:	X			
DART Survey:	X			
Detailed Coating Condition Survey:	X			
Underwater Investigation:	X			
Fatigue Investigation:	X			
Seismic Investigation:	X			
Structure Evaluation:	X			
Load Posting – Estimated Load		Т	otal Cost	\$0
Special Notes:		-	·····	···
Next Detailed Inspection:		-	2018	

	ected Performance Deficiencies	0.0	D	13	C1:
00	None	06	Bearing not uniformly loaded/unstable	12	Slippery surfaces
01	Load carrying capacity	07	Jammed expansion joint	13	Flooding/channel blockage
02	Excessive deformations (deflections & rotations)	08	Pedestrian/vehicular hazard	14	Undermining of foundation
03	Continuing settlement	09	Rough riding surface	15	Unstable embankments
04	Continuing movements	10	Surface ponding	16	Other
05	Seized bearings	11	Deck drainage		
Main	tenance Needs				
01	Lift and Swing Bridge Maintenance	07	Repair to Structural Steel	13	Erosion Control at Bridges
02	Bridge Cleaning	08	Repair of Bridge Concrete	14	Concrete Sealing
03	Bridge Handrail Maintenance	09	Repair of Bridge Timber	15	Rout and Seal
04	Painting Steel Bridge Structures	10	Bailey Bridges - Maintenance	16	Bridge Deck Drainage
05	Bridge Deck Joint Repair	11	Animal/Pest Control	17	Other

DY - 3

Element Group:		Abutments		·	Len	igth:		(m)
Element Name:		Ballast Walls			Wi	dth:	7.0	(m)
Location:		N/S			Hei	ight:	2.0	(m)
Material:		Timber			Co	unt:	2	(items)
Element Type:					Total Q	uantity:	28.0	(m²)
Environment:		Benign Mod	lerate / So	evere	Limited	l Insp'n:		
Protection System	n:	Creosote						Performance
Condition		Units	Exc.	Good	Fair	Poor		Deficiencies
Data:	m²/ n	ı / each / % / all		22	4	2		00
Comments: Balla	ast walls in	good to fair condition	with locali:	zed deforma	tions of sev	eral segme	nts of timbe	r causing material
washout.								
Performance De	ficiencies	: None						
Recommended \	Work:	☐ Minor Rehab		☐ Major Re	hab	Mai	ntenance N	eeds: 09
	☐ Replace		✓ None		☐ Urgent	☑ 1 Yea	ar 🔲 2 Year	
l'imeframe:			ars	repair balla	ast wall timb	pers		
Comments:					j .			
Element Group:		Approaches			Len	igth:	6.0	(m)
Element Name: Wearing Surface				dth:	7.5	(m)		
Location:		N/S				ight:	7.10	(m)
Material:		Asphalt				unt:	2	(items)
Element Type:						uantity:	90.0	(m²)
Environment:		Benign / Mod	erate Se	evere		Insp'n:		<u></u>
Protection System	n.				2,,,,,,,	p		Performance
Condition		Units	Exc.	Good	Fair	Poor	-	Deficiencies
Data:	m²)/ m	/ each / % / all	Eno.	0000	22.5	67.5		09
		tching observed at appr	naches as i	vell as noth			ng and rinni	
Comments. O.g.	iiiiouiii pu	toning observed at appr	outiles, us v	ven us pour	ores una era	ioking, ratti	ng una mpp	6.
Performance De	ficiencies	• None						
Recommended V		☐ Minor Rehab		☐ Major Re	hab	Mai	ntenance N	eeds:
recommended (· · · · · · · · · · · · · · · · · · ·	☑ Replace		☐ None	☐ Urgent ☐ 1 Year ☐ 2 Year			
Timeframe:				☐ 6 - 10 Ye	ars			
	lace asnha	lt wearing surface.						
Comments. Rep	iace aspiia	it wearing surface.						
Element Group:		Barriers			T en	igth:	19.0	(m)
Element Name:		Railing Systems				dth:	17.0	(m)
Location:		E/W			Height:			(m)
Material:		Steel Flex Beam on We	nod Post		Count:		2	(items)
Element Type:		Steel Flex Boain on W	ocu i ost				38.0	(m)
Environment:		Benign / Mod	erate Se	evere	Total Quantity: Limited Insp'n:		0	(111)
Protection System	n.	Galvanized / Creosote			Zimitot	mop iii_		Performance
Condition		Units	Exc.	Good	Fair	Poor	1	Deficiencies
Data:	m/ I m	each / % / all	LAC.	15.0	18.0	5.0		00
		derail and end post in N	/E comer:				No guiderai	
Comments. Dame	age to gui	ucian and end post in N	/L come,	illilloi collis	ion damage	illiu-spaii.	INO guiderai	i on approaches.
Performance De	ficionaice	None						
Recommended V		Minor Rehab		☐ Major Re	hab	Mai	ntenance N	ooder
Recommended V	VV UI K.	Replace		□ None		Urgent		
Timeframer				☐ 6 - 10 Ye	ars	Orgenic		
Timeframe:		E 1 5 (CO13		_ 0 - 10 te				
Comments:								

DY - 3

Element Group:		Beam /MLE			Len	gth:	18.7	(m)
Element Name:		Girders			Wid	dth:	0.250	(m)
Location:		N/S			Hei	ght:	0.60	(m)
Material:		Wood			Cou	ınt:	9	(items)
Element Type:		Rectangular-solid			Total Q		328.0	(m²)
Environment:		Benign Mod	lerate / Se	evere	Limited	Insp'n:		
Protection System	n:	Creosote					I	Performance
Condition		Units	Exc.	Good	Fair	Poor	1	Deficiencies
Data:	m ² / m	/ each / % / all		200.0	127	1		01
Comments: Bear	ms in gene	ral good condition with	minor che	cking and sp	plits. A seve	re longitud	inal split w	as observed at the
Northwest quadra	ınt; this are	ea should be monitored.						
Performance De	eficiencies	: Load carrying capacit	у					
Recommended '	Work:	☐ Minor Rehab		☐ Major Re	TVAMILICATION OF THE COURT			eeds: -
		Replace		☐ None		☐ Urgent	☐ 1 Yea	ar 🔲 2 Year
Timeframe:		☑ 1 - 5 Years ☐ 6 - 10 Y			ears			
Comments: Rep	Comments: Replace damaged girder at Northwest quadrant as part of bri			dge				
rehabilitation.								
Element Group:		Deck			Len	gth:	18.7	(m)
Element Name:		Deck Top			Wie	dth:	7.3	(m)
Location:		Under Asphalt			Height:			(m)
Material:		Wood			Cor		1	(items)
Element Type:		Laminated Wood Decl	king - transv	verse		uantity:	137.0	(m²)
Environment:		Benign Mod	lerate S	evere	Limited	l Insp'n:	•	
Protection System	m:	Creosote					1	Performance
Condition		Units	Exc.	Good	Fair	Poor	1	Deficiencies
Data:	m)/n	n / each / % / all		137.0				00
Comments: Dec	k appears	to be in good condition	with light t	to moderate	signs of wa	ter penetrat	ion on unde	rside.
Performance De	eficiencies	: None						
Recommended '	Work:	☐ Minor Rehab		☐ Major Re	hab	Mai	ntenance N	eeds:
		☐ Replace		☐ None	(S-10) (S-10)		☐ 1 Yea	ar 2 Year
Timeframe:		☐ 1 - 5 Years		☐ 6 - 10 Ye	ears			
Comments:								
				li-				
Element Group:		Deck			Length (avg):		18.7	(m)
Element Name:		Wearing Surface			Width:		6.80	(m)
Location:		Deck Top			Height:			(m)
Material:	· 	Asphalt			Count:		1	(items)
Element Type:					Total Quantity:		127.2	(m²)
Environment:		Benign / Mod	lerate S	evere	Limited	l Insp'n:		
Protection System	m:						4	Performance
Condition		Units	Exc.	Good	Fair	Poor		Deficiencies
Data:		n / each / % / all			31.3	95.9		09
		condition. Extensive pa					long edges	with severe transverse
		no drains; therefore, w		trating into	the wood de	eck below.		
		: Rough riding surface						47
Recommended '	Work:	☐ Minor Rehab		☐ Major Re	ehab .		ntenance N	
_		☑ Replace		None		☐ Urgent	☐ 1 Ye	ar 🗍 2 Year
Timeframe:				☐ 6 - 10 Y	ears			
Comments: Rep	olace aspha	alt wearing surface						
						I		

DY - 3

Element Group:	Pier			Ler	igth:	2.0	(m)
Element Name:	Shaft / Columns / Pile	Bents		Wi	dth:	0.30	(m)
Location:	4 Bents			He	ight:	2.00	(m)
Material:	Wood			Co	unt:	24	(items)
Element Type:	Timber Piles with Car	ping Beam		Total C	Quantity:	45.2	(m²)
Environment:	Benign Mod	derate / S	evere	Limited	d Insp'n:		· · · · ·
Protection System:	Creosote			_		I	Performance
Condition	Units	Exc.	Good	Fair	Poor] 1	Deficiencies
Data: m²	/ m / each / % / all	1		45.2			00
Comments:							
Performance Deficie	ncies: None						
Recommended Work	. Minor Rehah		☐ Major Re	hab	Maii	atenance N	eeds: -
	☐ Replace		✓ None		Urgent	. —	
Timeframe:	☐ 1 - 5 Years		☐ 6 - 10 Ye	ears			
Comments:							
Element Group:	Sidewalk / Curbs			Ler	ıgth:	18.7	(m)
Element Name: Curbs				dth:	0.30	(m)	
Location:	ocation: East / West			He	ight:	0.30	(m)
Material:	Wood				unt:	2	(items)
Element Type:					Duantity:	22.4	(m²)
Environment:	Benign / Moo	derate / S	evere		i Insp'n:		(***)
Protection System:	Creosote					ī	Performance
Condition	Units	Exc.	Good	Fair	Poor	1	Deficiencies
	m / each / % / all		8.4	10.0	4.0		00
Comments: Minor da	mage to curbs. Significant	accumulatio	n of sand a	nd debris at	and under	curbs, obstr	ucting drainage. Splits
	signs of light insect infest					,	
Performance Deficie							
Recommended Work	Minor Rehab		☐ Major Re	hab	Mair	tenance N	eeds: -02
	☑ Replace		□ None		✓ Urgent	1 Yea	r 2 Year
Timeframe:			☐ 6 - 10 Ye	ears	Bridge clea	ning	
Comments: Replace t	imber curbs					Ü	
•							
Element Group:	Stream & Embankmer	nts		Ler	igth:		(m)
Element Name:	Embankments			Width:			(m)
Location:	NE/NW/SE/SW			Height:			(m)
Material:				Со	unt:		(items)
Element Type:				Total Quantity:		4.0	(ea)
Environment:	Benign Moo	ierate / Se	evere	Limited	Insp'n:		
Protection System:						F	Performance
Condition	Units	Exc.	Good	Fair	Poor	1	Deficiencies
Data: m ²	/ m (each) % / all		4.0				00
Comments:							
Performance Deficies	ncies: None						
Recommended Work			☐ Major Rei	hab	Mair	itenance N	eeds: 02
	☐ Replace		☐ None		Urgent	☑ 1 Yea	r 🔲 2 Year
Timeframe:	1 - 5 Years		☐ 6 - 10 Ye	ars	Remove gr	anular mate	rial from stream
Comments:						,	

DY - 3

Element Group:	Streams & Embankme	nts		Lei	Length:		(m)
Element Name:	Slope Protection			Wi	idth:		(m)
Location:	NE/SW/SE/SW			He	ight:		(m)
Material:				Co	unt:	4	(items)
Element Type:				Total (Quantity:	4	(ea)
Environment:	Benign Mod	erate / S	evere	Limite	d Insp'n:		
Protection System:						1	Performance
Condition	Units	Exc.	Good	Fair	Poor	-1	Deficiencies
	eacD / % / all			4.0			00
Comments: No slope prot			L			<u> </u>	
Performance Deficiencies	s: None	···				-	
Recommended Work:	Minor Rehab		☐ Major Re	hab	Mai	ntenance N	oods.
Accommended work.	Replace		☑ None		Urgent		
Timeframe:	☐ 1 - 5 Years		☐ 6 - 10 Ye	ears			
Comments:	_						
Comments.							
F1	la						
Element Group:	Streams & Embankme				ngth:		(m)
Element Name:					dth:		(m)
Location:				_	1	(m)	
Material:					unt:	2	(items)
Element Type:					Quantity:	2.0	(ea)
Environment:	Benign Mod	erate / S	evere	Limited	d Insp'n:		
Protection System:	4					I	Performance
Condition	Units	Exc.	Good	Fair	Poor	1	Deficiencies
Data: m ² / m	each/ % / all		1.0	1.0			00
Comments: Vegetation pa	rtialy obstructing water	way at Nor	thwest quad	drant.			
Performance Deficiencies	s: None						
Recommended Work:	Minor Rehab		☐ Major Re	hab	Mai	ntenance N	eeds: 17
	☐ Replace ☑ None				☐ Urgent	√ 1 Yea	r 2 Year
Timeframe:	☐ 1 - 5 Years ☐ 6 - 10 Ye		ears	Clear debr	is.		
Comments:							
Element Group:	Pier			Ler	ngth:	7.3	(m)
Element Name:	Caps			Width:		0.3	(m)
Location:	Capping Beams			Height:		0.3	(m)
Material:	Wood			Count:		4	(items)
Element Type:	11004			Total Quantity:		26.3	(m²)
Environment:	Benign Mod	erate / Sc	evere		Insp'n:	20.3	(m ⁻)
Protection System:	Creosote	ciate / Bt	LVCIC	Limited	ı msp m.		\C
		Ene	C1	r.i.	D	-{	Performance
Condition	Units	Exc.	Good	Fair	Poor	1	Deficiencies
	/ each / % / all		26.3			<u> </u>	00
Comments:							
							
Performance Deficiencies				hab.			
Recommended Work:	☐ Minor Rehab		Major Rel	naD		ntenance No	
	Replace		☑ None		☐ Urgent	1 Yea	r 2 Year
Timeframe:	☐ 1 - 5 Years		☐ 6 - 10 Ye	ars			
Comments:							
				*			

Municipal Structure Inspection Form

MTO Site Number:

Repair and Rehal	oilitation Required:		Pri	ority		Estimated
Element	Repair and Rehabilitation Required	6 to 10 years	1 to 5 years	Within 1 year	Urgent	Construction Cost
MLE	Replace damaged girder			X		\$10,000
Curbs	Replace		Х			\$5,000
Ballast Walls	Rebuild abutment walls to prevent washout of backfill.		х			\$60,000
Wearing Surface (Approaches)	Rebuild and resurface approaches		х			\$5,000
Railing System	Repair guiderail and end post				x	\$2,000
Wearing Surface (Decks)	Resurface deck with double surface treatment		х			\$5,000
					Total Cost	\$87,000

Associated Work:	Comments		Estimated Cost
Approaches:	Extend guiderail on approaches and add end treatments.		\$25,000
Detours:	*		
Traffic Control:			\$5,000
Utilities:			
Right of Way:			
Environmental Study:			
Other:			
Contingencies:			
		Total Cost	\$30,000

Justification:		
•		



Structure No: DY-4

Redstone Brook Bridge

Structure Description

The Redstone Brook Bridge is located on Green Lake Road, 2 km west of Kennisis Lake Road. The bridge was constructed in 1960 and is a 16.3 m three-span, two-lane structure with a timber and concrete composite deck, timber piers and timber abutments. The bridge crosses a non-navigable watercourse on an east/west tangential alignment. The bridge has an 8.5 m overall deck width with a 7.4 m wide surface treated wearing surface with concrete curbs. There is steel beam guiderail across the structure but no guiderail on the approaches.

Structure Condition

The structure is in fair overall condition with a BCI of 61 and a BSI of 58. The wooden ballast walls are in fair to poor condition with severe erosion / scour at the southwest ballast wingwall causing continued settlement and movement causing the embankment to become unstable. There is significant evidence of backfill material washing out from behind the southeast ballast wall, which has undermined the approach. There is a sinkhole in the east approach and there is evidence of undermining of the east approach. The approaches show evidence of settlement with significant asphalt padding. The timber piles and caps are in good condition with minor checking observed. The timber deck is in good condition with minor cracking and evidence of water penetration at localized areas. The wearing surface is in fair condition exhibiting moderate potholing, and edge breaks. The concrete curbs are in good condition with minor spalls and snowplow / vehicle damage.

The guiderail over the structure is in fair condition with localized corrosion and minor collision damage. The spacing between support posts for the guiderail is excessive and may not provide adequate protect in the event of a collision. Several supports posts were observed to be deteriorated and/or loose. The guiderail should be extended on all approaches with proper end treatments.

Recommendations

It is recommended that the structure undergo a minor rehabilitation in 1-5 years to repair the ballast walls, embankments, pad and resurface the approaches, deck wearing surface and replace the guiderail over the structure. It is highly recommended that the root cause of the hole at the east approach be investigated. The undermined east approach wearing surface should be investigated further and repaired immediately as a matter of safety. Maintenance should be undertaken to repair the loose guiderail posts and clean the bridge deck and deck drains. The tree and other debris should be removed from under the structure to prevent damage to the structure and to allow for proper flow under the structure. Guiderail extension on the approaches should be undertaken in the future when the structure undergoes a major rehabilitation.



Photo 1 : General Arrangement – Looking East



Photo 2 : General Arrangement – Looking West



Photo 3: General Arrangement – North Elevation



Photo 4: Deck Wearing Surface - Looking West



Photo 5: East Approach Wearing Surface – Undermined Asphalt Zone (Sinkhole)



Photo 6: Undermined Ballast Wing Wall – Southwest Quadrant

мто	Site	Number:	DY - 4

Inventory Data				
Structure Name	Redstone Brook	Bridge		
Main Hwy/Road #		On ⊠ Under	Crossing Navig. Wa Type: Rail	nter Non-Navig. Water ⊠ Road Ped. Other
Road Name	Green Lake Roa	d	T 20 11 11 10 10 10 10 10 10 10 10 10 10 10	
Structure Location	1.0 km East of S	tanhope Airport Road		- TATE
Latitude	45.109500		Longitude -78.634000	The Miles
Owner(s)	Municipality of	Dysart et al	9	Cons./not App. List/not Desig. Not List Desig. & List
MTO Region *			Road Class: Freeway A	arterial Collector Local
MTO District *	IEI		Posted Speed 50	No. of Lanes 2
Old County *		1 1	AADT	% Trucks
Geographic Twp. *			Special Routes: Transit	Truck School Bicycle
Structure Type *	Bridge		Detour Length Around Bridge	(km)
Total Deck Length	16.3	(m)	Fill on Structure	(m)
Overall Str. Width	8.5	(m)	Skew Angle	0 (degrees)
Total Deck Area	139.0	(sq.m)	Direction of Structure	E to W
Roadway Width	7.4	(m)	No. of Spans	3
Span Lengths	5.4			(m)
Historical Data				
Year Built	1960		Last Biennial Inspection	2014
Current Load Limit	N/A/	/ (tonnes)	Last BridgeMaster Inspection	N/A
Load Limit Bylaw #	# N/A		Last Evaluation	N/A
Bylaw Expiry Date	N/A		Last Underwater Inspection	N/A
Min. Vertical Cleara	ance -	(m)	Last Condition Survey	N/A
Rehab. History: (D	ate/description)			
	2			
2				

Field Inspection Inf	formation:
Date of Inspection:	August 10, 2016
Inspector:	Robert Brooks – Tulloch Engineering
Others in Party:	Elizabeth Perry – Tulloch Engineering
Equipment Used:	Camera, Hammer, Tape Measure
Weather:	Sun
Temperature:	+29°C

Additional Investigations Required:		Priority	Estimated	
	None	Normal	Urgent	Cost
Detailed Deck Condition Survey:	X			
DART Survey:	X			
Detailed Coating Condition Survey:	X			
Underwater Investigation:	X			
Fatigue Investigation:	X			
Seismic Investigation:	X			·
Structure Evaluation:	X			
Load Posting – Estimated Load		7	Total Cost	\$0
Special Notes:			37	
,				
Next Detailed Inspection:			2018	

01 Load			Bearing not uniformly loaded/unstable	12	Slippery surfaces
VI LOGG	carrying capacity	07	Jammed expansion joint	13	Flooding/channel blockage
02 Exce	ssive deformations (deflections & rotations)	08	Pedestrian/vehicular hazard	14	Undermining of foundation
03 Cont	inuing settlement	09	Rough riding surface	15	Unstable embankments
04 Cont	inuing movements	10	Surface ponding	16	Other
05 Seize	ed bearings	11	Deck drainage		

Maint	tenance Needs				
01	Lift and Swing Bridge Maintenance	07	Repair to Structural Steel	13	Erosion Control at Bridges
02	Bridge Cleaning	08	Repair of Bridge Concrete	14	Concrete Sealing
03	Bridge Handrail Maintenance	09	Repair of Bridge Timber	15	Rout and Seal
04	Painting Steel Bridge Structures	10	Bailey Bridges - Maintenance	16	Bridge Deck Drainage
05	Bridge Deck Joint Repair	11	Animal/Pest Control	17	Other
06	Bridge Bearing Maintenance	12	Bridge Surface Repair		

DY - 4

Element Group:	Abutments	Abutments				7	(m)
Element Name:	Ballast Walls			Wi	dth:		(m)
Location:	East / West			Hei	ght:	1.5	(m)
Material:	Wood Timber			Co	unt:	2	(items)
Element Type:						21	(m²)
Environment:	Benign Mod	Benign Moderate / Severe					
Protection System:	Creosote / Pressure Tr	Creosote / Pressure Treat				1	Performance
Condition	Units	Exc.	Good	Fair	Poor	1	Deficiencies
Data:	n3/ m / each / % / all		11	10			14
Comments: Evidence	e of material loss from behind	l east abutm	ent ballast v	wall reusltin	g in large c	avity below	asphalt wearing
surface - repair requir	ed to prevent subsidence and	further eros	sion.				
Performance Defici	encies: Undermining of foun	dation					
Recommended Wor	k: Minor Rehab		☑ Major Re	hab	Maii	ntenance N	eeds: 13
	☐ Replace		■ None		✓ Urgent	☐ 1 Yea	ar 🔲 2 Year
Timeframe:			☐ 6 - 10 Ye	ears	Repair eroo	ded cavity b	ehind East abutment
Comments: Repair	undermining of east ballast v	vall.			wall.		
Element Group:	Abutments			Len	gth:	2.0	(m)
Element Name:	Wing Wall			Wi	dth:		(m)
Location:	NE/NW/SE/SW			Hei	ght:	1.50	(m)
Material:	Wood Timber			Co	unt:	4	(items)
Element Type:				Total Quantity:		12.0	(m²)
Environment:	Benign Mod		evere	Limited	l Insp'n:		
Protection System:	Creosote / pressure tre	at				I	Performance
Condition	Units	Exc.	Good	Fair	Poor		Deficiencies
Data: n	m / each / % / all		4.5	5	2.5	-	03,04,15
Comments: Southw	est wing wall has severe erro	sion with co	ontinuing se	ttlement and	d movemen	t.	
D.C. D.C.		4		.1 1 1	1	. 1	1
	encies: Continuing settlemen	t, movemen	☐ Major Re			ome unstab	
Recommended Wor	Replace		☐ None	3,415	☐ Urgent	☐ 1 Yea	
Timeframe:	☑ 1 - 5 Years		☐ 6 - 10 Ye	arc			
	_		_ 0 10 10	.013			
Comments: Replace	Southwest wing wall.						
Element Group:	Barriers			Lan	gth:	15.0	(m)
Element Name:	Railing Systems				dth:	15.0	(m) (m)
Location:	Ranning Systems				ght:		(m)
Material:	Steel	<u> </u>			unt:	2	(items)
Element Type:	Steel Flex Beam over	Other Railin	10		uantity:	30.0	(m)
Environment:		derate Se			l Insp'n:	0	(111)
Protection System:	Benigh / Woo	acrate Di	overe	Linitee	i msp ii.		Performance
Condition	Units	Exc.	Good	Fair	Poor	1	Deficiencies
	m each / % / all	Exc.	0000	20.0	10.0		00
	l in fair condition with slight	corrosion I	Post spacine			chors loose	The second secon
guiderail on approach		corrosion. I	ost spacing	, is insurince	ent. I ost an	chors roose	in places. 140
Performance Defici							
Recommended Wor		· · · · · · · · · · · · · · · · · · ·	☐ Major Re	hab	Mair	tenance N	eeds:
	☑ Replace		☐ None		Urgent	☐ 1 Yea	
Timeframe:			☐ 6 - 10 Ye	ears			
	new guardrail system at time	of rehabilit	ation				
	.,						

DY - 4

Element Group:		Deck			Length:			(m)
Element Name:		Drainage (Decks)			Width:			(m)
Location:		North / South			Height:			(m)
Material:		Steel			Cou	ınt:	6	(items)
Element Type:		Metal Drain Pipes			Total Q	uantity:	6	(each)
Environment:		Benign / Mod	Limited	Insp'n:				
Protection Syste	em:						F	Performance
Condition		Units	Exc.	Good	Fair	Poor	I	Deficiencies
Data:	m² / m	each/%/all		6				
Comments:								
Performance D)eficiencies	: None						
Recommended		☐ Minor Rehab		☐ Major Re	hab	Mair	itenance N	eeds:
		Replace		✓ None		☐ Urgent	☐ 1 Yea	r 2 Year
Timeframe:		☐ 1 - 5 Years		☐ 6 - 10 Ye	ars	_	_	
Comments:								
Element Group:	:	Deck			Len	gth:	16.3	(m)
Element Name:		Deck Top			Wie		8.5	(m)
Location:					Hei	ght:		(m)
Material:		Wood			Cor	-	1	(items)
Element Type:		Laminated Wood Decl	king - Long	itudinal	Total Quantity:		139.0	(m²)
Environment:		Benign Mod		evere	Limited Insp'n:		7	(/
Protection Syste	em:							Performance
Condition	<u> </u>	Units	Exc.	Good	Fair	Fair Poor Deficiencies		
Data:	70 / 5							
Comments: Some deflection noted with evidence of water leakage through deck.							1	00
		AU	of water lea	139.0 akage throug	h deck.			00
		AU	of water lea		gh deck.			00
Comments: So	me deflection	on noted with evidence	of water lea		gh deck.			00
Comments: So Performance I	me deflection	on noted with evidence	of water lea			Mair	ntenance N	
Comments: So	me deflection	on noted with evidence	of water lea	akage throug		Main	ntenance N	eeds:
Comments: So Performance I	me deflection	on noted with evidence : None Minor Rehab	of water lea	akage throug	hab			eeds:
Comments: So Performance E Recommended	me deflection	on noted with evidence : None	of water lea	Major Re ☑ None	hab			eeds:
Comments: So Performance I Recommended Timeframe:	me deflection	on noted with evidence : None	of water lea	Major Re ☑ None	hab			eeds:
Comments: So Performance I Recommended Timeframe:	me deflection	on noted with evidence : None	of water lea	Major Re ☑ None	hab			eeds:
Comments: So Performance I Recommended Timeframe: Comments:	me deflection deficiencies Work:	on noted with evidence : None	of water lea	Major Re ☑ None	hab	☐ Urgent		eeds: er
Comments: So Performance I Recommended Timeframe:	me deflection deficiencies Work:	n noted with evidence None Minor Rebab Replace 1 - 5 Years		Major Re ☑ None	hab ears Len	□ Urgent	☐ 1 Yea	eeds: ar
Comments: So Performance E Recommended Timeframe: Comments: Element Group: Element Name:	me deflection deficiencies Work:	on noted with evidence : None		Major Re ☑ None	hab ears Len Wi	Urgent gth: dth:	☐ 1 Yes	eeds: ar
Comments: So Performance E Recommended Timeframe: Comments: Element Group:	me deflection deficiencies Work:	n noted with evidence None Minor Rehab Replace 1 - 5 Years Deck Wearing Surface (Dec		Major Re ☑ None	Len Wi	Urgent Urgent gth: gth: gth:	☐ 1 Yes	eeds: ar
Comments: So Performance E Recommended Timeframe: Comments: Element Group: Element Name: Location: Material:	me deflection deficiencies Work:	n noted with evidence None Minor Rebab Replace 1 - 5 Years		Major Re ☑ None	Len Wii Hei	Urgent gth: dth: ght: unt:	16.3 7.4	eeds: Compare
Comments: So Performance E Recommended Timeframe: Comments: Element Group: Element Name: Location: Material: Element Type:	me deflection deficiencies Work:	n noted with evidence None Minor Rehab Replace 1 - 5 Years Deck Wearing Surface (Dec	ks)	Major Re ☑ None	Len Wi Hei Co Total Q	Urgent gth: dth: ght: unt: buantity:	16.3 7.4	eeds: ar
Comments: So Performance E Recommended Timeframe: Comments: Element Group: Element Name: Location: Material: Element Type: Environment:	me deflection deficiencies Work:	on noted with evidence : None Minor Rehab Replace 1 - 5 Years Deck Wearing Surface (Dec	ks)	Major Re ☑ None ☐ 6 - 10 Ye	Len Wi Hei Co Total Q	Urgent gth: dth: ght: unt:	16.3 7.4 1 121.0	eeds: (m) (m) (m) (items) (m²)
Comments: So Performance E Recommended Timeframe: Comments: Element Group: Element Name: Location: Material: Element Type: Environment: Protection Systematics	me deflection deficiencies Work:	on noted with evidence : None Minor Rebab Replace 1 - 5 Years Deck Wearing Surface (December 1) Asphalt Benign Model	ks)	Major Re Major Re None 6 - 10 Ye	Len Wi Hei Coo Total Q Limited	Urgent gth: dth: ght: unt: buantity:	16.3 7.4 1 121.0	eeds: Compare
Comments: So Performance E Recommended Timeframe: Comments: Element Group: Element Name: Location: Material: Element Type: Environment: Protection Syste Condition	me deflection deficiencies Work:	Deck Wearing Surface (Dec Asphalt Benign Mod	ks)	Major Re Major Re None 6 - 10 Ye	Len Wie Hei Co Total Q Limited	gth: dth: ght: unt: puantity: i Insp'n:	16.3 7.4 1 121.0	eeds: (m) (m) (m) (items) (m²)
Comments: So Performance E Recommended Timeframe: Comments: Element Group: Element Name: Location: Material: Element Type: Environment: Protection Syste Condition Data:	me deflection Deficiencies Work:	Deck Wearing Surface (Dec Asphalt Benign Mod Units 1 / each / % / all	ks) lerate / S Exc.	Major Re None 6 - 10 Ye evere Good 73.7	Len Wi Hei Co Total Q Limited Fair 31.0	gth: dth: ght: unt: buantity: Insp'n: Poor 16.3	16.3 7.4 1 121.0	eeds: (m) (m) (m) (items) (m²) Performance Deficiencies 00
Comments: So Performance E Recommended Timeframe: Comments: Element Group: Element Name: Location: Material: Element Type: Environment: Protection Syste Condition Data: Comments: We	me deflection Deficiencies Work: : em: earing surfa	Deck Wearing Surface (Dec Units Asphalt Benign Mod	ks) lerate / S Exc.	Major Re None 6 - 10 Ye evere Good 73.7	Len Wi Hei Co Total Q Limited Fair 31.0	gth: dth: ght: unt: buantity: Insp'n: Poor 16.3	16.3 7.4 1 121.0	eeds: (m) (m) (m) (items) (m²) Performance Deficiencies 00
Comments: So Performance E Recommended Timeframe: Comments: Element Group: Element Name: Location: Material: Element Type: Environment: Protection Syste Condition Data:	em: earing surfarate at Sout	Deck Wearing Surface (Dec Asphalt Benign Mod Units 1 / each / % / all ice in fair condition; softwest quadrant.	ks) lerate / S Exc.	Major Re None 6 - 10 Ye evere Good 73.7	Len Wi Hei Co Total Q Limited Fair 31.0	gth: dth: ght: unt: buantity: Insp'n: Poor 16.3	16.3 7.4 1 121.0	eeds: (m) (m) (m) (items) (m²) Performance Deficiencies 00
Comments: So Performance E Recommended Timeframe: Comments: Element Group: Element Name: Location: Material: Element Type: Environment: Protection Syste Condition Data: Comments: We raveling of conce	em: em: em: caring surfacte at Sout	Deck Wearing Surface (Dec Asphalt Benign Mod Units 1 / each / % / all ice in fair condition; softwest quadrant.	ks) lerate / S Exc.	Major Re None 6 - 10 Ye evere Good 73.7	Len Wi Hei Co Total Q Limited Fair 31.0 ng. Missing	gth: dth: ght: unt: uantity: i Insp'n: Poor 16.3 ashpalt on	16.3 7.4 1 121.0	(m) (m) (m) (items) (m²) Performance Deficiencies 00 poor bondage and
Comments: So Performance E Recommended Timeframe: Comments: Element Group: Element Name: Location: Material: Element Type: Environment: Protection Syste Condition Data: Comments: We raveling of concerns:	em: em: em: caring surfacte at Sout	Deck Wearing Surface (Dec Asphalt Benign Mod Units 1 / each / % / all ice in fair condition; softwest quadrant.	ks) lerate / S Exc.	Major Re ☑ None ☐ 6 - 10 Ye evere Good 73.7 and cracking	Len Wi Hei Co Total Q Limited Fair 31.0 ng. Missing	gth: dth: ght: unt: uantity: i Insp'n: Poor 16.3 ashpalt on	16.3 7.4 1 121.0 □ edges with p	(m) (m) (m) (items) (m²) Performance Deficiencies 00 poor bondage and
Comments: So Performance E Recommended Timeframe: Comments: Element Group: Element Name: Location: Material: Element Type: Environment: Protection Syste Condition Data: Comments: We raveling of conce	em: em: em: caring surfacte at Sout	Deck Wearing Surface (Dec Asphalt Benign Mod Units 1 / each / % / all ice in fair condition; son hwest quadrant. None Minor Rehab	ks) lerate / S Exc.	evere Good 73.7 and crackin	Len Wie Hei Co Total Q Limited Fair 31.0 ng. Missing	gth: dth: ght: unt: uantity: i Insp'n: Poor 16.3 ashpalt on	16.3 7.4 1 121.0 □ edges with p	(m) (m) (m) (items) (m²) Performance Deficiencies 00 poor bondage and
Comments: So Performance E Recommended Timeframe: Comments: Element Group: Element Name: Location: Material: Element Type: Environment: Protection Syste Condition Data: Comments: Wraveling of conce Performance I Recommended	em: em: em: caring surfacte at Sout	Deck Wearing Surface (Dec Asphalt Benign Mod Units 1 / each / % / all ice in fair condition; son hwest quadrant. None Minor Rehab Replace	ks) lerate / S Exc.	evere Good 73.7 s and crackin	Len Wie Hei Co Total Q Limited Fair 31.0 ng. Missing	gth: dth: ght: unt: uantity: i Insp'n: Poor 16.3 ashpalt on	16.3 7.4 1 121.0 □ edges with p	(m) (m) (m) (items) (m²) Performance Deficiencies 00 poor bondage and

Element Data							
Element Group:	Approaches			Length:		10.0	(m)
Element Name:	Wearing Surface (App	roaches)		Wi	dth:	7.5	(m)
Location:					ight:		(m)
Material:	Surface Treatment			Co	unt:	2	(items)
Element Type:				Total C	uantity:	150.0	(m²)
Environment:	Benign / Mod	Benign / Moderate Severe					
Protection System:						F	Performance
Condition	Units	Exc.	Good	Fair	Poor] 1	Deficiencies
Data: m ³ /1	m / each / % / all		116.0	30.0	4		00
Comments: East approact treatment. Severe raveling Performance Deficiencie	with loose surface bona				oximately 60	00mm deep)	undermining surface
Recommended Work:	Minor Rehab		☐ Major Re	hab	Mai	ntenance No	eeds: 12
Accommended Work.	☑ Replace		☐ None		☑ Wagent		
Timeframe:			☐ 6 - 10 Ye	ears			approach and replace
Comments: Resurface wearing surface at time of rehabilitation.						approuent and reprace	
	In						
Element Group:	Pier	**			igth:		(m)
Element Name:	Shaft / Columns / Pile	Bents			dth:	0.30	(m)
Location:	1117				ight:	1.75	(m)
Material:	Wood				unt:	28	(items)
Element Type:	Timber Piles with Cap				uantity:	46.2	(m²)
Environment:	Benign Mod	derate / S	evere	Limited	l Insp'n:		
Protection System:						-i -	Performance
Condition	Units	Exc.	Good	Fair	Poor	I	Deficiencies
	m / each / % / all		26	20			00
Comments:	X == =						
Performance Deficiencie			7.55				
Recommended Work:	☐ Minor Rehab		☐ Major Re	hab		ntenance No	
	☐ Replace		✓ None		☐ Urgent	☐ 1 Yea	r 🔲 2 Year
Timeframe:	☐ 1 - 5 Years		☐ 6 - 10 Ye	ears			
Comments:							

Element Group:		Sidewalk / Curbs				Length:		(m)	
Element Name:		Curbs			Width:			(m)	
Location:			He	ight:		(m)			
Material:		Cast-in-place Concrete	1		Co	unt:	2	(items)	
Element Type:					Total C	uantity:	32	(m)	
Environment:		Benign / Moderate (Severe			Limited	d Insp'n:			
Protection Syste	ection System: Creosote						I	Performance	
Condition		Units	Exc.	Good	Fair	Poor] 1	Deficiencies	
Data:	m² (n	each / % / all		22	10		00		
Comments: So	me scaling	and isolated minor spall	ing and ab	rasion.					
Performance D	eficiencies	: None						·	
Recommended	Work:	☐ Minor Rehab		☐ Major Rel	hab	Maintenance Needs: -			
		☐ Replace		✓ None		☐ Urgent	☐ 1 Yea	r 🔲 2 Year	
Timeframe:		☐ 1 - 5 Years		☐ 6 - 10 Ye	ars		_		
Comments:									

EI	em	en	t	Пя	ts

					,			
Element Group:		Embankments & Streams		Length:			(m)	
		Embankments			Width:			(m)
Location:		NE/NW/SE/SW		He	Height:		(m)	
Material:					Count:		4	(items)
Element Type:		Total C	uantity:	4.0	(ea)			
Environment:		Benign Mod	lerate / Se	evere	Limited	l Insp'n:		
Protection System	m:	Performance					Performance	
Condition		Units	Exc.	Good	Fair	Poor Deficiencies		
Data:	m² / m	each/ % / all		3.0	0	1		15
Comments: Sou	~~~~	bankment is severely er	roded.	102				
					·		·	
		: Unstable embankmen	t	- Madau Da	hb.			
Recommended	Work:	_		☐ Major Re			tenance N	
		☑ Replace		None	- Ungent		1 Yea	ar 2 Year
Timeframe:				☐ 6 - 10 Ye				
		embankment with new	retaining /	wingwall s	ystem as			
part of rehabilitat	tion of Sou	thwest embankment.						
Element Group:		Embankments & Strea	ms		Ler	gth:		(m)
Element Name:		Slope Protection			Wi	dth:		(m)
Location:		NE/NW/SE/SW			Hei	ght:		(m)
Material:					Co	unt:		(items)
Element Type:					Total C	uantity:		(ea)
Environment:		Benign Mod	lerate / So	evere		l Insp'n:		, ,
Protection System	m:					•	1	Performance
Condition		Units	Exc.	Good	Fair	Poor		Deficiencies
Data:	m² / m		LAU.	0000	1 411	1 001	00	
Comments: No								
Comments. No	stope prote	etion present.						
Performance D	eficiencies	: None						
Recommended	Work:	✓ Minor Rehab	linor Rehab 🔲 Major Re		hab Mai		ntenance Needs:	
		☐ Replace		□ None		☐ Urgent	1 Year 2 Year	
Timeframe:				☐ 6 - 10 Ye	ears			
Comments: Pro	vide slope	protection to Southwest	t and North	west quadra	ants as part			
of rehabilitation v	-			•	•			
Element Group:		Embankments & Stream	ms		T.er	gth:		(m)
		Streams & Waterways			Width:			(m)
Location:		Upstream / Downstream		Height:			(m)	
Material:		opoureant Bownstream			 	unt:	2	(items)
Element Type:							2	(ea)
Environment:		Benign Moderate / Severe		Total Quantity: Limited Insp'n:		<u> </u>	(ca)	
) curformen as				
	111.	Units Exc. Good Fair Poor Deficiencies						
Condition Data:	m2 / m		EXC.		Fall	FUUI	00	
	m² / m	each / % / all	<u> </u>	2	<u> </u>			00
Comments:								
Performance Deficiencies: None								
Recommended Work: Minor Rehab Major Re		hab	Maintenance Needs: 17		eeds: 17			
	☐ Replace ☑ None		☐ Urgent		☑ 1 Year ☐ 2 Year			
Timeframe:		☐ 1 - 5 Years ☐ 6 - 10 Y						
Comments:								

Municipal Structure Inspection Form

MTO Site Number:

Repair and Rehabilitation Required:		Priority				Estimated
Element	Repair and Rehabilitation Required	6 to 10 years	1 to 5 years	Within 1 year	Urgent	Construction Cost
Ballast Wingwall	Repair/rebuild abutment wing wall			Х		\$5,000
Ballast Walls	Rebuild ballast walls to prevent washout of material			Х		\$80,000
Railing System	Replace guiderail on structure		х			\$15,000
Wearing Surface (Decks)	Resurface deck with double surface treatment		Х			\$5,000
		7				
				<u> </u>	Total Cost	\$105,000

Associated Work:	Comments	Estimated	
rissociated work.	Comments	Cost	
Approaches:	Resurface approaches and extend guiderail with end treatments	\$35,000	
Detours:		\$5,000	
Traffic Control:			
Utilities:			
Right of Way:			
Environmental Study:			
Other:	•		
Contingencies:		-	
	Total Cost	\$40,000	

Justification:		



Structure No: DY-5
Guilford Pine Lake

Structure Description

Guilford Pine Lake Bridge is located on Pine Lake Road, 0.5 km north of Eagle Lake Road. The bridge was constructed in 2008 and is an 18 m single span, two-lane structure with a concrete deck supported by steel girders on concrete abutments. The structure has a combination of sheet pile and armour stone wing walls. The bridge crosses a navigable waterway on a north/south alignment. The bridge has an overall 9.0 m wide concrete deck and 7.0 m wide driving surface with concrete parapet walls and steel railing. There is steel beam guiderail on the approaches with proper end treatments.

Structure Condition

The structure is in good condition with a BCI of 90 and BSI of 87. The concrete abutments and soffit are in excellent condition with no signs of distress. The exposed concrete deck is in good condition with minor spalling and loss of aggregate. The concrete parapet walls are in good condition with minor localized damage and vertical shrinkage cracking. The wing walls and erosion protection at the waterline are in excellent condition. The approaches appear to be in good condition.

The barrier over the structure and the guiderail on the approaches is in good condition with minor collision damage to the guiderail in the northwest corner.

Recommendations

The structure does not require any improvements at this time. Maintenance is required to repair the damaged guiderail and minor concrete repairs to the parapet walls could be undertaken at the same time. The deck should be swept to remove debris and sand to promote positive drainage.



Photo 1 : General Arrangement – Looking South



Photo 2 : General Arrangement – Looking North



Photo 3 : General Arrangement – Upstream View

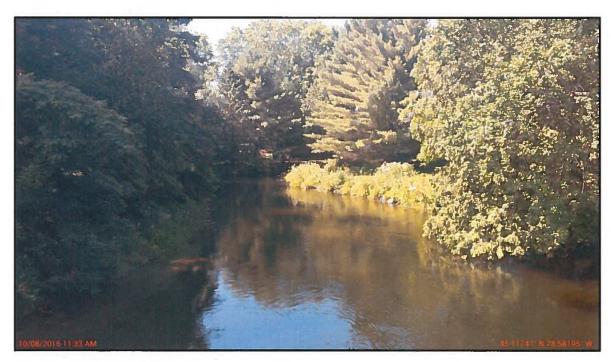


Photo 4 : General Arrangement – Downstream View

Inventory Data:

Structure Name	Guilford Pine La	ake Bridge		
Main Hwy/Road #		On ⊠ Under		ater ⊠ Non-Navig. Water Road Ped. Other
Road Name	Pine Lake Road			
Structure Location	0.45 km North o	f Eagle Lake Road		all and the second
Latitude	45.117300		Longitude -78.582000	- 4
Owner(s)	Municipality of	Dysart et al	_	Cons./not App. List/not Desig. Not List Desig. & List
MTO Region *			Road Class: Freeway A	rterial Collector Local
MTO District *			Posted Speed 50	No. of Lanes 2
Old County *			AADT	% Trucks
Geographic Twp. *			Special Routes: Transit	Truck School Bicycle
Structure Type *	Concrete Deck	on Steel Girder	Detour Length Around Bridge	(km)
Total Deck Length	20.0	(m)	Fill on Structure	0 (m)
Overall Str. Width	9.0	(m)	Skew Angle	0 (degrees)
Total Deck Area	180.0	(sq.m)	Direction of Structure	N to S
Roadway Width	7.0	(m)	No. of Spans	1
Span Lengths	18.0		-	(m)
Historical Data				
Year Built	2008		Last Biennial Inspection	2014
Current Load Limit	N/A/	/ (tonnes)	Last BridgeMaster Inspection	N/A
Load Limit Bylaw #	# N/A		Last Evaluation	N/A
Bylaw Expiry Date	N/A		Last Underwater Inspection	N/A
Min. Vertical Clear		(m)	Last Condition Survey	N/A
	ance -			
Min. Vertical Clear	ance -		Last Condition Survey	
Min. Vertical Clear Rehab. History: (D	ance - ate/description)		Last Condition Survey	
Min. Vertical Clear Rehab. History: (D	ance -		Last Condition Survey	
Min. Vertical Clear Rehab. History: (D	ance - ate/description)		Last Condition Survey	N/A
Min. Vertical Clear Rehab. History: (D	ance - ate/description)		Last Condition Survey	N/A
Min. Vertical Clear Rehab. History: (D	ance - ate/description)		Last Condition Survey	N/A
Min. Vertical Clear Rehab. History: (D	ance - ate/description)		Last Condition Survey	N/A

MTO Sit	e N	umber:	DY	- 5
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Field Inspection Inf	formation:
Date of Inspection:	August 10, 2016
Inspector:	Robert Brooks – Tulloch Engineering
Others in Party:	Elizabeth Perry – Tulloch Engineering
Equipment Used:	Camera, Hammer, Tape Measure
Weather:	Sun
Temperature:	+28°C

Additional Investigations Required:		Estimated		
	None	Normal	Urgent	Cost
Detailed Deck Condition Survey:	X			
DART Survey:	X			
Detailed Coating Condition Survey:	X			
Underwater Investigation:	X			
Fatigue Investigation:	X			
Seismic Investigation:	X			
Structure Evaluation:	X		-	
Load Posting – Estimated Load		Total Cost \$0		
Special Notes:		-		
19				
Next Detailed Inspection:			2018	

_	ected Performance Deficiencies				mat
00	None	06	Bearing not uniformly loaded/unstable	12	Slippery surfaces
01	Load carrying capacity	07	Jammed expansion joint	13	Flooding/channel blockage
02	Excessive deformations (deflections & rotations)	08	Pedestrian/vehicular hazard	14	Undermining of foundation
03	Continuing settlement	09	Rough riding surface	15	Unstable embankments
04	Continuing movements	10	Surface ponding	16	Other
05	Seized bearings	11	Deck drainage		
Main	tenance Needs				
01	Lift and Swing Bridge Maintenance	07	Repair to Structural Steel	13	Erosion Control at Bridges
02	Bridge Cleaning	08	Repair of Bridge Concrete	14	Concrete Sealing
03	Bridge Handrail Maintenance	09	Repair of Bridge Timber	15	Rout and Seal
04	Painting Steel Bridge Structures	10	Bailey Bridges - Maintenance	16	Bridge Deck Drainage
05	Bridge Deck Joint Repair	11	Animal/Pest Control	17	Other
06	Bridge Bearing Maintenance	12	Bridge Surface Repair		

DY - 5

Element Group:	Abutments			Length:			(m)	
Element Name:	Ballast Walls			Width:		9.0	(m)	
Location:				Height:		1.5	(m)	
Material:	Corrugated Steel			Co	ant:	2	(items)	
Element Type:	Steel Sheet Pile			Total Q	uantity:	27.0	(m²)	
Environment:	Benign Mod	Limited	Insp'n:					
Protection System:				I	Performance			
Condition	Units	Exc.	Good	Fair	Poor] 1	Deficiencies	
Data: m ² / n	n / each / % / all					00		
Comments:					1 1			
Performance Deficiencies	: None						1911	
Recommended Work:	☐ Minor Rehab		☐ Major Re	hab	Mai	ntenance N	eeds:	
	☐ Replace		✓ None		☐ Urgent	☐ 1 Yea	r 🔲 2 Year	
Timeframe:	☐ 1 - 5 Years		☐ 6 - 10 Ye	ears	50.77			
Comments:								
Element Group:	Abutments			Len	gth:	6.0	(m)	
Element Name:	Wingwalls				dth:		(m)	
Location:				Hei	ght:	1.5	(m)	
Material:	Corrugated Steel			Cor		4	(items)	
Element Type:	Steel Sheet Piles			Total Quantity:		36.0	(m²)	
Environment:	Benign Mod	lerate / Se	evere	Limited Insp'n:				
Protection System:					Performance		Performance	
Condition	Units	Exc.	Good	Fair	Poor Deficiencies		Deficiencies	
Data: m2/n	n / each / % / all	36				00		
Comments: Light corrosio		light weath	ering.					
	0.							
Performance Deficiencies	: None						U U - N	
Recommended Work:	☐ Minor Rehab		☐ Major Re	Maintenance Needs:			eeds:	
	☐ Replace		✓ None	5	☐ Urgent	☐ 1 Yea	r 🔲 2 Year	
Timeframe:	☐ 1 - 5 Years		☐ 6 - 10 Ye	ars				
Comments:								
				·				
Element Group:								
Diement Group.	Barriers		_	Len	gth:	18.0	(m)	
Element Name:	Barriers Barrier / Parapet Wall				gth:	18.0 0.20	(m) (m)	
				Wie	dth:		(m)	
Element Name:				Wie Hei	dth:	0.20		
Element Name: Location: Material:	Barrier / Parapet Wall			Wie Hei Cor	dth: ght:	0.20 1.2	(m) (m)	
Element Name: Location:	Barrier / Parapet Wall Cast-in-place Concrete	o Rails	evere	Wie Hei Cor	dth: ght: unt: uantity:	0.20 1.2 2	(m) (m) (items)	
Element Name: Location: Material: Element Type: Environment:	Barrier / Parapet Wall Cast-in-place Concrete Parapet Wall with Two	o Rails	evere	Wie Hei Con Total Q	dth: ght: unt: uantity:	0.20 1.2 2 43.0	(m) (m) (items)	
Element Name: Location: Material: Element Type:	Barrier / Parapet Wall Cast-in-place Concrete Parapet Wall with Two	o Rails	evere	Wie Hei Con Total Q	dth: ght: unt: uantity:	0.20 1.2 2 43.0	(m) (m) (items) (m ²)	
Element Name: Location: Material: Element Type: Environment: Protection System: Condition	Barrier / Parapet Wall Cast-in-place Concrete Parapet Wall with Two Benign / Mod	o Rails lerate Se		Wid Hei Con Total Q Limited	dth: ght: unt: uantity: Insp'n:	0.20 1.2 2 43.0	(m) (m) (items) (m²)	
Element Name: Location: Material: Element Type: Environment: Protection System: Condition	Barrier / Parapet Wall Cast-in-place Concrete Parapet Wall with Two Benign / Mod Units 1 / each / % / all	Pails lerate So	Good 43	Wie Hei Con Total Q Limited Fair	dth: ght: unt: uantity: Insp'n:	0.20 1.2 2 43.0	(m) (items) (m²) Performance Deficiencies	
Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: Comments: Minor shrinka	Barrier / Parapet Wall Cast-in-place Concrete Parapet Wall with Two Benign / Mod Units 1 / each / % / all ge cracking; isolated spe	Pails lerate So	Good 43	Wie Hei Con Total Q Limited Fair	dth: ght: unt: uantity: Insp'n:	0.20 1.2 2 43.0	(m) (items) (m²) Performance Deficiencies	
Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: Comments: Minor shrinka	Barrier / Parapet Wall Cast-in-place Concrete Parapet Wall with Two Benign / Mod Units 1 / each / % / all ge cracking; isolated spe	Pails lerate So	Good 43	Wie Hei Con Total Q Limited Fair	dth: ght: unt: uantity: Insp'n: Poor	0.20 1.2 2 43.0	(m) (items) (m²) Performance Deficiencies 00	
Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: Comments: Minor shrinka	Barrier / Parapet Wall Cast-in-place Concrete Parapet Wall with Two Benign / Mod Units 1 / each / % / all ge cracking; isolated space: None	Pails lerate So	Good 43 n damage to	Wie Hei Con Total Q Limited Fair	dth: ght: unt: uantity: Insp'n: Poor	0.20 1.2 2 43.0	(m) (items) (m²) Performance Deficiencies 00	
Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: m / n Comments: Minor shrinka Performance Deficiencies Recommended Work:	Barrier / Parapet Wall Cast-in-place Concrete Parapet Wall with Two Benign / Mod Units 1 / each / % / all 2 ge cracking; isolated spans None Minor Rehab	Pails lerate So	Good 43 on damage to	Win Hei Con Total Q Limited Fair parapet was bab	dth: ght: unt: uantity: Insp'n: Poor all.	0.20 1.2 2 43.0	(m) (items) (m²) Performance Deficiencies 00	
Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: Comments: Minor shrinka	Barrier / Parapet Wall Cast-in-place Concrete Parapet Wall with Two Benign / Mod Units n / each / % / all ge cracking; isolated species: None Minor Rehab Replace	Pails lerate So	Good 43 n damage to Major Re None	Win Hei Con Total Q Limited Fair parapet was bab	dth: ght: unt: uantity: Insp'n: Poor all.	0.20 1.2 2 43.0	(m) (items) (m²) Performance Deficiencies 00	

DY - 5

Element Group:		Approaches			Length:		75	(m)
Element Name:		Guiderail			Width:			(m)
Location:					Height:			(m)
Material:		Steel			Cou	ınt:	2	(items)
Element Type:		Steel Flex Beam on Steel Post			Total Q	uantity:	150.0	(m)
Environment:		Benign / Moderate / Severe			Limited			
Protection Syste	em:	Galvanized		•	1	Performance		
Condition		Units	Exc.	Good	Fair	Poor		Deficiencies
Data:	m³/ m	each / % / all	Dito.	145.0	5	1 001		00
		age to guiderail on NW	corner	143.0				
Comments. Co	ilision dam	age to guideran on 14 W	corner.					
Performance D) - Ci - i i	. Nana						
Recommended		Minor Rehab		☐ Major Re	hah	Mai	itenance N	
Kecommended	work:	☐ Replace		☐ None	,,,,,,	☐ Urgent		
m. e		☑ 1 - 5 Years		☐ 6 - 10 Ye		☐ urgent		ar 2 Year
Timeframe:		☑ 1 - 5 Tears		□ 0 - 10 te	drs			
Comments:								
Element Group:		Beam / MLE			Len		19.0	(m)
Element Name:		Girders			Wie	dth:	0.20	(m)
Location:		N/S			Hei	ght:	0.50	(m)
Material:		Steel			Cor	unt:	4	(items)
Element Type:		I-type			Total Quantity:		91.2	(m²)
Environment:		Benign / Mod	lerate / Se	evere	Limited Insp'n:		I	
Protection Syste	em:							Performance
Condition		Units	Exc.	Good	Fair	Poor Deficiencies		
Data:	m) / n	n / each / % / all	91.2			00		
Comments:				ı	76			
O O MINITED S								
Performance D)eficiencies	: None						
Performance D		: None		☐ Major Re	hab	Mai	ntenance N	eeds:
Performance D				☐ Major Re	hab		ntenance N	
Recommended		☐ Minor Rehab☐ Replace		☑ None		Mai □ Urgent	ntenance N	
Recommended Timeframe:		☐ Minor Rehab						
Recommended		☐ Minor Rehab☐ Replace		☑ None				
Recommended Timeframe:		☐ Minor Rehab☐ Replace		☑ None				
Recommended Timeframe: Comments:	Work:	☐ Minor Rehab☐ Replace☐ 1 - 5 Years		☑ None	ears	Urgent	☐ 1 Yea	ar 2 Year
Recommended Timeframe: Comments:	Work:	☐ Minor Rehab ☐ Replace ☐ 1 - 5 Years Deck		☑ None	ears Len	□ Urgent	□ 1 Yes	ar □ 2 Year □ (m)
Recommended Timeframe: Comments: Element Group: Element Name:	Work:	☐ Minor Rehab☐ Replace☐ 1 - 5 Years		☑ None	Len Wie	Urgent gth:	☐ 1 Yea	(m) (m)
Recommended Timeframe: Comments: Element Group: Element Name: Location:	Work:	☐ Minor Rehab ☐ Replace ☐ 1 - 5 Years Deck Deck Top		☑ None	Len Wi Hei	Urgent gth: dth: ght:	20 9.0	(m) (m) (m) (m)
Recommended Timeframe: Comments: Element Group: Element Name: Location: Material:	Work:	☐ Minor Rehab ☐ Replace ☐ 1 - 5 Years Deck Deck Top Cast-in-place Concrete		☑ None ☐ 6 - 10 Ye	Len Wid Hei	Urgent gth: dth: ght: unt:	20 9.0	(m) (m) (m) (m) (items)
Recommended Timeframe: Comments: Element Group: Element Name: Location: Material: Element Type:	Work:	☐ Minor Rehab ☐ Replace ☐ 1 - 5 Years Deck Deck Top Cast-in-place Concrete Cast-in-place Concrete	on Suppor	☑ None ☐ 6 - 10 Ye	Len Wid Hei Coo Total Q	gth: dth: ght: unt:	20 9.0 1 180.0	(m) (m) (m) (m)
Recommended Timeframe: Comments: Element Group: Element Name: Location: Material: Element Type: Environment:	Work:	☐ Minor Rehab ☐ Replace ☐ 1 - 5 Years Deck Deck Top Cast-in-place Concrete Cast-in-place Concrete		☑ None ☐ 6 - 10 Ye	Len Wid Hei Coo Total Q	Urgent gth: dth: ght: unt:	20 9.0 1 180.0	(m) (m) (m) (m) (items) (m²)
Recommended Timeframe: Comments: Element Group: Element Name: Location: Material: Element Type:	Work:	☐ Minor Rehab ☐ Replace ☐ 1 - 5 Years Deck Deck Top Cast-in-place Concrete Benign / Mod	e on Suppor lerate (S	None 6 - 10 Ye	Len Wi Hei Coo Total Q Limited	gth: dth: ght: unt: uantity:	20 9.0 1 180.0	(m) (m) (m) (items) (m²)
Recommended Timeframe: Comments: Element Group: Element Name: Location: Material: Element Type: Environment:	Work:	☐ Minor Rehab ☐ Replace ☐ 1 - 5 Years Deck Deck Top Cast-in-place Concrete Benign / Mod Units	on Suppor	✓ None ☐ 6 - 10 Ye tts evere Good	Len Wid Hei Coo Total Q	gth: dth: ght: unt:	20 9.0 1 180.0	(m) (m) (m) (items) (m²) Performance Deficiencies
Recommended Timeframe: Comments: Element Group: Element Name: Location: Material: Element Type: Environment: Protection Syste Condition Data:	em:	☐ Minor Rehab ☐ Replace ☐ 1 - 5 Years Deck Deck Top Cast-in-place Concrete ☐ Benign / Mod Units ☐ / each / % / all	e on Suppor lerate (S	None 6 - 10 Ye	Len Wi Hei Coo Total Q Limited	gth: dth: ght: unt: uantity:	20 9.0 1 180.0	(m) (m) (m) (items) (m²)
Recommended Timeframe: Comments: Element Group: Element Name: Location: Material: Element Type: Environment: Protection Syste Condition Data:	em:	☐ Minor Rehab ☐ Replace ☐ 1 - 5 Years Deck Deck Top Cast-in-place Concrete Benign / Mod Units	e on Suppor lerate (S	✓ None ☐ 6 - 10 Ye tts evere Good	Len Wi Hei Coo Total Q Limited	gth: dth: ght: unt: uantity:	20 9.0 1 180.0	(m) (m) (m) (items) (m²) Performance Deficiencies
Recommended Timeframe: Comments: Element Group: Element Name: Location: Material: Element Type: Environment: Protection Syste Condition Data:	em:	☐ Minor Rehab ☐ Replace ☐ 1 - 5 Years Deck Deck Top Cast-in-place Concrete Benign / Mod Units n / each / % / all g of concrete deck.	e on Suppor lerate (S	✓ None ☐ 6 - 10 Ye tts evere Good	Len Wi Hei Coo Total Q Limited	gth: dth: ght: unt: uantity:	20 9.0 1 180.0	(m) (m) (m) (items) (m²) Performance Deficiencies
Recommended Timeframe: Comments: Element Group: Element Name: Location: Material: Element Type: Environment: Protection Syste Condition Data: Comments: Mi	em:	☐ Minor Rehab ☐ Replace ☐ 1 - 5 Years Deck Deck Top Cast-in-place Concrete Benign / Mod Units n / each / % / all g of concrete deck.	e on Suppor lerate (S	✓ None ☐ 6 - 10 Ye tts evere Good	Len Wide Hei Coo Total Q Limited	gth: dth: ght: unt: uantity: Insp'n:	20 9.0 1 180.0	(m) (m) (m) (items) (m²) Performance Deficiencies 00
Recommended Timeframe: Comments: Element Group: Element Name: Location: Material: Element Type: Environment: Protection Syste Condition Data: Comments: Mi	em:	☐ Minor Rehab ☐ Replace ☐ 1 - 5 Years Deck Deck Top Cast-in-place Concrete Benign / Mod Units n / each / % / all g of concrete deck.	e on Suppor lerate (S	None 6 - 10 Ye description de	Len Wide Hei Coo Total Q Limited	gth: dth: ght: unt: uantity: Insp'n:	20 9.0 1 180.0	(m) (m) (m) (items) (m²) Performance Deficiencies 00
Recommended Timeframe: Comments: Element Group: Element Name: Location: Material: Element Type: Environment: Protection Syste Condition Data: Comments: Mi Performance D Recommended	em:	☐ Minor Rehab ☐ Replace ☐ 1 - 5 Years Deck Deck Top Cast-in-place Concrete ☐ Benign / Mod Units ☐ / each / % / all g of concrete deck.	e on Suppor lerate (S	Major Re	Len Wie Hei Coo Total Q Limited Fair	gth: dth: ght: unt: uantity: Insp'n: Poor	20 9.0 1 180.0	(m) (m) (m) (items) (m²) Performance Deficiencies 00
Recommended Timeframe: Comments: Element Group: Element Name: Location: Material: Element Type: Environment: Protection Syste Condition Data: Comments: Mi	em:	☐ Minor Rehab ☐ Replace ☐ 1 - 5 Years Deck Deck Top Cast-in-place Concrete ☐ Benign / Mod Units ☐ / each / % / all ☐ of concrete deck. None ☐ Minor Rehab ☐ Replace	e on Suppor lerate (S	Sood Good 180.0 Major Re None	Len Wie Hei Coo Total Q Limited Fair	gth: dth: ght: unt: uantity: Insp'n: Poor	20 9.0 1 180.0	(m) (m) (m) (items) (m²) Performance Deficiencies 00

DY - 5

Element Group:		Embankments & Strea	ms		Length:			(m)
Element Name:		Slope Protection			Width:		= =	(m)
Location:					Height:		-	(m)
Material:		Other				unt:	4	(items)
Element Type:		Rip Rap			Total C	uantity:	4	(each)
Environment:		Benign Moderate / Severe				l Insp'n:		
Protection System:	:							Performance
Condition		Units	Exc.	Good	Fair	Poor	1	Deficiencies
Data:	m² / m	each/%/all	4					00
Comments: Rip ra		tion in good condition.						
		6						
Performance Def	iciencies	: None						
Recommended W	Vork:	☐ Minor Rehab		☐ Major Re	hab	Mai	ntenance N	eeds: -
		☐ Replace		✓ None		☐ Urgent		
Timeframe:		☐ 1 - 5 Years		☐ 6 - 10 Ye	ears			
Comments:								
				,				
Element Group:		Approaches			Len	gth:	6.0	(m)
Element Name:		Wearing Surface				dth:	7.00	(m)
Location:						ght:	7.00	(m)
Material:		Aspahalt				unt:	2	(items)
Element Type:		· iopanari				uantity:	84	(m²)
Environment:		Benign / Mod	erate / Se	evere				(111)
Protection System:		246 /	S. C. C.		Dimited	· mop m		Performance
Condition	•	Units	Exc.	Good	Fair	Poor	1	Deficiencies
Data:	m ² / m	/ each / % / all	Exc.	72	12.0	00		
		oncrete along edges with	loss of ho		12.0			00
Comments. Nave	ing of co	merete along edges with	1 1055 01 001	iiu.				
Performance Def	iciencies	· None						
Recommended W		Minor Rehab		☐ Major Re	ahab Mai		ntenance Needs: -	
		☐ Replace		✓ None		Wattitellance Iveeds.		
Timeframe:		☐ 1 - 5 Years		☐ 6 - 10 Ye	ears			
Comments:								
Comments								
		·						
Element Group:		Accessories			Ler	gth:		(m)
Element Name:	_	Signs				dth:		(m)
Location:		NE/NW/SE/SW				ght:		(m)
Material:		Steel				unt:	2	(items)
Element Type:		Steel				uantity:	2	(each)
Environment:		Benign / Mod	erate (Se	evere		Insp'n:		(cacii)
Protection System:		Dellight / Mod	orate St		Dillitoc	inspin.		Performance
Condition	•	Units	Exc.	Good	Fair	Poor	1	Deficiencies
Data:	m² / m	each/% / all	Exc.	2	I all	F 001	· '	00
		d signs at end of guardr	nile on NE/		nta (2 missi			
Comments: Missi	ing nazare	a signs at end of guardr	ans on NE/	iv w quadra	ints (2 miss)	ng).		
Performance Def	inionnies	• None						
Recommended W		□ Minor Rehab		☐ Major Re	hah	NAC:	atenance N	eeds: 17
vecommenaea M	UIKi	☐ Replace		☑ None		Urgent	✓ 1 Yea	
Timeframe:		☐ 1 - 5 Years		☐ 6 - 10 Ye	ears	Install haza		- L Z ICOI
Comments:				0 10 10		mstail liaZi	na signs	
Comments:								

Municipal	Structure 1	Inspection	Form
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DY - 5

Element Gro	up:	Beam / MLE	Length:			(m)			
Element Nan	ne:	Stringers	Width:			(m)			
Location:	-	E/W	Hei	ght:		(m)			
Material:		Steel			Со	unt:	4	(items)	
Element Typ	e:				Total C	uantity:	4	(each)	
Environment	ic -	Benign Mod	erate / S	evere	Limited	d Insp'n:			
Protection S	ystem:	- 4					1	Performance	
Condition		Units	Exc.	Good	Fair	Poor	Deficiencies		
Data:	m² / m	/each/ % / all	4					00	
Comments:									
Performanc	e Deficienc	ies: None							
Recommend	led Work:	☐ Minor Rehab		☐ Major Re	hab	Mai	ntenance N	eeds:	
		☐ Replace		✓ None		☐ Urgent	. □ 1 Ye	ar 🗌 2 Year	
Timeframe:		☐ 1 - 5 Years		☐ 6 - 10 Ye	ears				
Comments:									

Municipal Structure Inspection Form

MTO Site Number:	DY - 5

Repair and Rehabilitation Required:			Pri	Estimated		
Element	Repair and Rehabilitation Required	d 6 to 10 years	l to 5 years	Within 1 year	Urgent	Construction Cost
Railing System	Minor repair to guidrail		X			\$2,000
			ļ			
	-					
			 			
			ļ			
						··
				<u> </u>		
			† · · · · · · ·			
				1	Total Cost	\$2,000
Associated Work:		Comme	ents			Estimated
						Cost
Approaches: Detours:					_	
Traffic Control:		-				
Utilities:						
Right of Way:						<u> </u>
Environmental Stu	ıdy:	72.				
Other:		·-				
Contingencies:		-				
					Total Cost	\$0
Justification:		Middle than the		680 al 4 (10)	iksel/man	
		·				



Structure No: DY-6

Guilford Cranberry Lake Bridge

Structure Description

Guilford Cranberry Lake Bridge is located on Cranberry Lake Drive, 0.5 km north of Eagle Lake Road. The bridge was constructed in 2013 and is a 26 m single span, two-lane structure with a steel deck supported by steel girders on concrete bearing slabs with corrugated steel ballast walls. The structure crosses a navigable waterway on an east/west alignment. The structure has a deck width of 5.3 m with an asphalt wearing surface and no curbs; drainage is by sheet flow over the deck edge. There is steel beam guiderail across the structure and on the approaches.

Structure Condition

The structure and all individual elements are in good condition with a BCI of 99 and BSI of 97. The bridge wearing surface and approaches have recently been upgraded with hot mix asphalt wearing surfaces. The only deficiency noted was erosion and wash-out of the shoulders and wearing surface near the deck ends.

Recommendations

The structure does not require any improvements at this time. Maintenance should be undertaken to address erosion of shoulders near deck ends.



Photo 1 : General Arrangement - Looking North

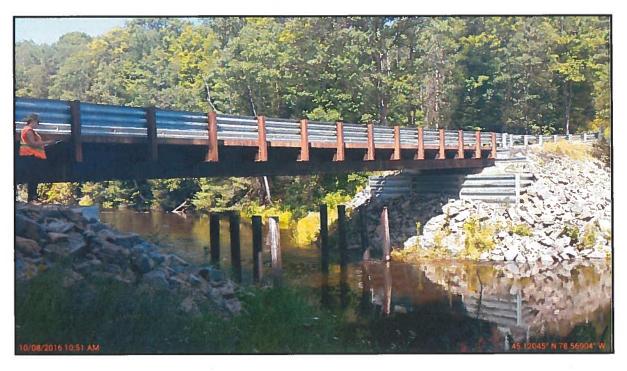


Photo 2 : General Arrangement – West Elevation



Photo 3: South Approach Wearing Surface



Photo 4 : Asphalt Wearing Surface Edge of Pavement – Southwest Quadrant



Photo 5 : Guiderail Impact Damage - Southeast Quadrant



Photo 6 : General Arrangement – North Abutment Wall

Inventory Data:

Structure Name	Guilford Cranbe	rry Lake I	Bridge		
Main Hwy/Road #		On ⊠	Under	Crossing Navig. W Type: Rail	ater 🗵 Non-Navig. Water Road Ped. Other
Road Name	Cranberry Lake	Road			
Structure Location	0.08 km North o	f Eagle La	ake Road		
Latitude	45.119800			Longitude -78.568700	
Owner(s)	Municipality of	Dysart et a	al		Cons./not App. List/not Desig. /Not List Desig. & List
MTO Region *	41			Road Class: Freeway	Arterial Collector Local ⊠
MTO District *			11	Posted Speed 50	No. of Lanes 1
Old County *				AADT	% Trucks
Geographic Twp. *				Special Routes: Transit	Truck School Bicycle
Structure Type *	Bridge			Detour Length Around Bridge	(km)
Total Deck Length	26.0] (m)	Fill on Structure	0 (m)
Overall Str. Width	5.3] (m)	Skew Angle	0 (degrees)
Total Deck Area	138.0] (sq.m)	Direction of Structure	N to S
Roadway Width	5.2] (m)	No. of Spans	1
Span Lengths	26.0				(m)
	4-24				
Historical Data					
Year Built	2013			Last Biennial Inspection	2014
Current Load Limit	N/A/	/ (tonn	ies)	Last BridgeMaster Inspection	N/A
Load Limit Bylaw	# N/A			Last Evaluation	N/A
Bylaw Expiry Date	N/A			Last Underwater Inspection	N/A
Min. Vertical Clear	ance -	(m)		Last Condition Survey	N/A
Rehab. History: (D	ate/description)				
	,#i				

Field Inspection Inf	formation:
Date of Inspection:	August 10, 2016
Inspector:	Robert Brooks – Tulloch Engineering
Others in Party:	Elizabeth Perry – Tulloch Engineering
Equipment Used:	Camera, Hammer, Tape Measure
Weather:	Sun
Temperature:	+27°C

Additional Investigations Required:		Estimated		
	None	Normal	Urgent	Cost
Detailed Deck Condition Survey:	X			
DART Survey:	X			
Detailed Coating Condition Survey:	X			
Underwater Investigation:	X			
Fatigue Investigation:	X			
Seismic Investigation:	X			
Structure Evaluation:	X			
Load Posting – Estimated Load		7	Cotal Cost	\$0
Special Notes:				
Next Detailed Inspection:	9		2018	

00	ected Performance Deficiencies None	06	Bearing not uniformly loaded/unstable	12	Slippery surfaces
01	Load carrying capacity	07	Jammed expansion joint	13	Flooding/channel blockage
02	, , ,		Pedestrian/vehicular hazard		
	Excessive deformations (deflections & rotations)	08		14	Undermining of foundation
03	Continuing settlement	09	Rough riding surface	15	Unstable embankments
04	Continuing movements	10	Surface ponding	16	Other
05	Seized bearings	11	Deck drainage		
Main	tenance Needs				
01	Lift and Swing Bridge Maintenance	07	Repair to Structural Steel	13	Erosion Control at Bridges
02	Bridge Cleaning	08	Repair of Bridge Concrete	14	Concrete Sealing
03	Bridge Handrail Maintenance	09	Repair of Bridge Timber	15	Rout and Seal
04	Painting Steel Bridge Structures	10	Bailey Bridges - Maintenance	16	Bridge Deck Drainage
05	Bridge Deck Joint Repair	11	Animal/Pest Control	17	Other
06	Bridge Bearing Maintenance	12	Bridge Surface Repair		

DY - 6

Element Group:	Abutments			Ler	igth:		(m)	
Element Name:	Abutment Walls			Width:		9.0	(m)	
Location:	N/S			Height:		2.0	(m)	
Material:	Corrugated Steel			Co	unt:	2	(items)	
Element Type:	Retained Soil Systems			Total Quantity:		36.0	(m²)	
Environment:	Benign Mod	lerate / So	evere	Limited	l Insp'n:			
Protection System:	Galvanized					1	Performance	
Condition	Units	Exc.	Good	Fair	Poor] 1	Deficiencies	
Data: m ² /	m / each / % / all	36					00	
Comments:								
Performance Deficienci	es: None							
Recommended Work:	☐ Minor Rehab		☐ Major Re	hab	Mai	ntenance N	eeds:	
	☐ Replace		✓ None		☐ Urgent	☐ 1 Yea	ar 🔲 2 Year	
Timeframe:	☐ 1 - 5 Years		☐ 6 - 10 Ye	ears			- instant	
Comments:								
						The state of the s		
Element Group:	Approaches			Len	igth:	6.0	(m)	
Element Name:	Wearing Surface (App	roaches)			dth:	7.0	(m)	
Location:	N/S			Hei	ght:		(m)	
Material:	Asphalt				unt:	2	(items)	
Element Type:				Total Q	uantity:	84.0	(m²)	
Environment:	Benign / Mod	lerate Se	evere	Limited Insp'n:				
Protection System:					Performance			
Condition	Units	Exc.	Good	Fair	Poor Deficiencies			
Data: m ² /	m / each / % / all		80	4		00		
Comments: SW quadrar	nt has minor surface erosion	on.						
Performance Deficienci	an Nama							
	es: None						A CONTRACTOR OF THE PARTY OF TH	
Recommended Work:	Minor Rehab		☐ Major Re	hab	Mair	ntenance N	eeds: 17	
Recommended Work:			☐ Major Re	hab	Main Urgent			
Recommended Work: Timeframe:	☐ Minor Rehab		_		Urgent	☑ 1 Yea		
	☐ Minor Rehab ☐ Replace		✓ None		Urgent Provide dra	☑ 1 Yea	or 2 Year s on SW quadrant to	
Timeframe:	☐ Minor Rehab ☐ Replace		✓ None		Urgent Provide dra properly ch	☑ 1 Yea ain locations nannel water	or 2 Year s on SW quadrant to	
Timeframe:	☐ Minor Rehab ☐ Replace		✓ None		Urgent Provide dra properly ch	☑ 1 Yea ain locations nannel water	or 2 Year s on SW quadrant to	
Timeframe:	☐ Minor Rehab ☐ Replace		✓ None	ars	Urgent Provide dra properly ch	☑ 1 Yea ain locations nannel water	or 2 Year s on SW quadrant to	
Timeframe: Comments:	☐ Minor Rehab☐ Replace☐ 1 - 5 Years		✓ None	ars Len	Urgent Provide dra properly ch embankme		or 2 Year s on SW quadrant to r and offer n from erosion.	
Timeframe: Comments: Element Group:	☐ Minor Rehab ☐ Replace ☐ 1 - 5 Years Barriers		✓ None	Len Wi	Urgent Provide dra properly chembankme		or 2 Year s on SW quadrant to r and offer n from erosion.	
Timeframe: Comments: Element Group: Element Name:	☐ Minor Rehab ☐ Replace ☐ 1 - 5 Years Barriers Railing Systems		✓ None	Len Wi Hei	□ Urgent Provide dra properly chembankme gth: dth:		or 2 Year on SW quadrant to or and offer on from erosion. (m) (m)	
Timeframe: Comments: Element Group: Element Name: Location:	☐ Minor Rehab☐ Replace☐ 1 - 5 Years☐ Barriers☐ Railing Systems☐ E/W	eel Post	✓ None	Len Wi Hei	Urgent Provide dra properly cl embankme gth: dth: ght:	☐ 1 Year ain locations nannel water nt protection 58.0	or 2 Year s on SW quadrant to r and offer n from erosion. (m) (m) (m)	
Timeframe: Comments: Element Group: Element Name: Location: Material:	☐ Minor Rehab ☐ Replace ☐ 1 - 5 Years Barriers Railing Systems E/W Steel Steel Flex Beam on Ste	eel Post	☑ None ☐ 6 - 10 Ye	Len Wi Hei Co Total Q	Urgent Provide dra properly cl embankme gth: dth: ight: unt:	☐ 1 Yea ain locations nannel water nt protection 58.0	or 2 Year s on SW quadrant to r and offer n from erosion. (m) (m) (m) (items)	
Timeframe: Comments: Element Group: Element Name: Location: Material: Element Type:	☐ Minor Rehab ☐ Replace ☐ 1 - 5 Years Barriers Railing Systems E/W Steel Steel Flex Beam on Ste		☑ None ☐ 6 - 10 Ye	Len Wi Hei Co Total Q	Urgent Provide dra properly cl embankme gth: dth: ight: unt: uantity:	☐ 1 Yes ain locations nannel water nt protection 58.0 2 116	or 2 Year s on SW quadrant to r and offer n from erosion. (m) (m) (m) (items)	
Timeframe: Comments: Element Group: Element Name: Location: Material: Element Type: Environment:	☐ Minor Rehab ☐ Replace ☐ 1 - 5 Years Barriers Railing Systems E/W Steel Steel Flex Beam on Steel Benign / Mod		☑ None ☐ 6 - 10 Ye	Len Wi Hei Co Total Q	Urgent Provide dra properly cl embankme gth: dth: ight: unt: uantity:	□ 1 Yes ain locations nannel water nt protection 58.0 2 116 □	or 2 Year s on SW quadrant to r and offer n from erosion. (m) (m) (m) (items) (m)	
Timeframe: Comments: Element Group: Element Name: Location: Material: Element Type: Environment: Protection System: Condition	☐ Minor Rehab ☐ Replace ☐ 1 - 5 Years Barriers Railing Systems E/W Steel Steel Flex Beam on Ste Benign / Mod Galvanized	lerate Se	☑ None ☐ 6 - 10 Ye	Ler Wi Hei Co Total Q Limited	Urgent Provide dra properly cl embankme gth: dth: ght: unt: duantity: i Insp'n:	□ 1 Yes ain locations nannel water nt protection 58.0 2 116 □	or 2 Year s on SW quadrant to r and offer n from erosion. (m) (m) (m) (items) (m)	
Timeframe: Comments: Element Group: Element Name: Location: Material: Element Type: Environment: Protection System: Condition	☐ Minor Rehab ☐ Replace ☐ 1 - 5 Years Barriers Railing Systems E/W Steel Steel Flex Beam on Ste Benign / Mod Galvanized Units m each / % / all	Exc.	□ None □ 6 - 10 Ye evere Good 3	Len Wi Hei Co Total Q Limited	Urgent Provide dra properly cl embankme gth: dth: ght: unt: duantity: i Insp'n:	□ 1 Yes ain locations nannel water nt protection 58.0 2 116 □	or 2 Year s on SW quadrant to r and offer n from erosion. (m) (m) (m) (items) (m) Performance Deficiencies	
Timeframe: Comments: Element Group: Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: Comments: Appears to h	Minor Rehab Replace 1 - 5 Years 1 - 5 Years	Exc.	□ None □ 6 - 10 Ye evere Good 3	Len Wi Hei Co Total Q Limited	Urgent Provide dra properly cl embankme gth: dth: ght: unt: duantity: i Insp'n:	□ 1 Yes ain locations nannel water nt protection 58.0 2 116 □	or 2 Year s on SW quadrant to r and offer n from erosion. (m) (m) (m) (items) (m) Performance Deficiencies	
Timeframe: Comments: Element Group: Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: Comments: Appears to h	Minor Rehab Replace 1 - 5 Years 1 - 5 Years	Exc.	□ None □ 6 - 10 Ye evere Good 3	Len Wi Hei Co Total Q Limited Fair	Urgent Provide dra properly cl embankme gth: dth: ght: unt: uantity: Insp'n:	2 116	or 2 Year s on SW quadrant to r and offer n from erosion. (m) (m) (m) (items) (m) Performance Deficiencies	
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DY - 6

Element Group:		Beam / MLE			Length:		26.0	(m)	
Element Name:		Girders			Width:		0.30	(m)	
Location:		N/S			Height:		1.0	(m)	
Material:		Steel			Cou	ınt:	4	(items)	
Element Type:		I-type			Total Quantity:		166.4	(m ²)	
Environment:		Benign Mod	lerate / Se	evere	Limited	Insp'n:			
Protection Syste	em:						F	Performance	
Condition		Units	Exc.	Good	Fair	Poor	I	Deficiencies	
Data:	m^2/m	/ each / % / all	166.4					00	
Comments: Ne	w in 2013.	Light to modereate con	rosion, petir	na flaking, n	o section lo	SS.			
			•						
Performance I	Deficiencies	: None							
Recommended	l Work:	☐ Minor Rehab		☐ Major Re	hab	Mair	itenance N	eeds: -	
_		☐ Replace		✓ None		☐ Urgent	☐ 1 Yea	or 2 Year	
Timeframe:		☐ 1 - 5 Years		☐ 6 - 10 Ye	ars				
Comments:									
Element Group	:	Deck			Len	gth:	26.0	(m)	
Element Name:		Deck Top			Wie		5.3	(m)	
Location:		•			Hei	ght:		(m)	
Material:		Corrugated Steel			Co		1	(items)	
Element Type:					Total Q	uantity:	138.0	(m²)	
Environment:		Benign Mod	lerate / S	evere	Limited			,	
Protection Syste	em:					•	1	Performance	
Condition		Units	Exc.	Good	Fair	Poor Deficiencies			
Data:	m) / m	r / each / % / all	131.1		6.9		00		
Comments:		WC WC C. 113		72					
-									
Performance I	Deficiencies	: None							
Recommended	l Work:	☐ Minor Rehab		☐ Major Re	hab	Mair	itenance N	eeds:	
		☐ Replace		None		Urgent	☐ 1 Yea	ar 2 Year	
Timeframe:		☐ 1 - 5 Years		☐ 6 - 10 Ye	ears				
Comments:									
Element Group	:	D1-						,	
		Deck			Length	(avg):	26.0	(m)	
Element Name:		Wearing Surface (Dec	ks)		Length Wi	(avg): dth:	26.0 5.30	(m) (m)	
			ks)		Wi	dth:		(m)	
Element Name:			ks)		Wi Hei	dth:		` ′	
Element Name: Location:		Wearing Surface (Dec	ks)		Wi- Hei Co	dth: ght:	5.30	(m) (m)	
Element Name: Location: Material:		Wearing Surface (Dec Asphalt		evere	Wi- Hei Co- Total Q	dth: ght: unt:	5.30	(m) (m) (items)	
Element Name: Location: Material: Element Type:		Wearing Surface (Dec Asphalt		evere	Wi- Hei Co- Total Q	dth: ght: unt: uantity:	5.30 1 138.0	(m) (m) (items)	
Element Name: Location: Material: Element Type: Environment:		Wearing Surface (Dec Asphalt		evere	Wi- Hei Co- Total Q	dth: ght: unt: uantity:	5.30 1 138.0	(m) (m) (items) (m²)	
Element Name: Location: Material: Element Type: Environment: Protection Syst		Wearing Surface (Dec Asphalt Benign / Mod Units	lerate (S		Willer Hei Cor Total Q Limited	dth: ght: unt: uantity: I Insp'n:	5.30 1 138.0	(m) (m) (items) (m²) Performance	
Element Name: Location: Material: Element Type: Environment: Protection Syst Condition Data:	em:	Wearing Surface (Dec Asphalt Benign / Mod Units	Exc.	Good	Wi Hei Co Total Q Limited	dth: ght: unt: uantity: I Insp'n: Poor	5.30 1 138.0	(m) (items) (m²) Performance Deficiencies	
Element Name: Location: Material: Element Type: Environment: Protection Syst Condition Data: Comments: M	em:	Wearing Surface (Dec Asphalt Benign / Mod Units 1 / each / % / all transverse cracks through	Exc.	Good	Wi Hei Co Total Q Limited	dth: ght: unt: uantity: I Insp'n: Poor	5.30 1 138.0	(m) (items) (m²) Performance Deficiencies	
Element Name: Location: Material: Element Type: Environment: Protection Syst Condition Data: Comments: M	em: m/ n inor rutting.	Wearing Surface (Dec Asphalt Benign / Mod Units 1 / each / % / all transverse cracks through	Exc.	Good	Wi Hei Co Total Q Limited Fair 6.9	dth: ght: unt: uantity: I Insp'n: Poor and South a	5.30 1 138.0 D butments.	(m) (m) (items) (m²) Performance Deficiencies 00	
Element Name: Location: Material: Element Type: Environment: Protection Syst Condition Data: Comments: M	em: m/ n inor rutting.	Wearing Surface (Dec Asphalt Benign / Mod Units 1 / each / % / all 1 transverse cracks through	Exc.	Good h of roadwa	Wi Hei Co Total Q Limited Fair 6.9	dth: ght: unt: uantity: I Insp'n: Poor and South a	5.30 1 138.0	(m) (items) (m²) Performance Deficiencies 00	
Element Name: Location: Material: Element Type: Environment: Protection Syst Condition Data: Comments: M Performance I Recommended	em: m/ n inor rutting.	Wearing Surface (Dec Asphalt Benign / Mod Units 1 / each / % / all 1 transverse cracks through the second of the	Exc.	Good h of roadwa	Wi Hei Co Total Q Limited Fair 6.9 ay at North a	dth: ght: unt: uantity: Insp'n: Poor and South a	5.30 1 138.0 butments.	(m) (items) (m²) Performance Deficiencies 00 eeds: 15 ar 2 Year	
Element Name: Location: Material: Element Type: Environment: Protection Syst Condition Data: Comments: M	em: m/ n inor rutting.	Asphalt Benign / Mod Units 1 / each / % / all transverse cracks through the second of the second	Exc.	Good h of roadwa	Wi Hei Co Total Q Limited Fair 6.9 ay at North a	dth: ght: unt: uantity: Insp'n: Poor and South a	5.30 1 138.0 butments.	(m) (items) (m²) Performance Deficiencies 00 eeds: 15 ar 2 Year	

DY - 6

Element Group:		Embankments & Strea	Length:			(m)			
Element Name:		Embankments	Width:			(m)			
Location:		NE/NW/SE/SW			Height:			(m)	
Material:		Rock/Boulder			Co	unt:	4	(items)	
Element Type:		Rip Rap				uantity:	4	(each)	
Environment:		Benign Mod	lerate / Se	evere	Limited	l Insp'n:			
Protection Syste	m:						I	Performance	
Condition		Units	Exc.	Good	Fair	Poor] 1	Deficiencies	
Data:	m² / n	n each/% / all				00			
Comments:	12								
Performance D	eficiencies	. None							
Recommended		☐ Minor Rehab		☐ Major Re	hab	Mair	ntenance N	eeds	
Kecommended	WOIK.	☐ Replace		✓ None		☐ Urgent			
Timeframe:		☐ 1 - 5 Years		☐ 6 - 10 Ye	ears				
Comments:									
Comments.									

Element Group:		Accessories			Len	gth:		(m)	
Element Name:		Signs			+	dth:		(m)	
Location:	······	NE/NW/SE/SW				ght:		(m)	
Material:		Steel				unt:	2	(items)	
Element Type:		Steel					2.0	(ea)	
Environment:		Benign / Mod	lerate Se	evere	Total Quantity: Limited Insp'n:			(ca)	
Protection Syste	m.	Dellight / 14100	iciate Di	Overe	Limited	тизри.		Performance	
Condition	411.	Units	Exc.	Good	Fair	Poor Deficiencies			
Data:	m² / n	n each / % / all	LAC.	Good		1 001	00		
			1 .		1 70	l			
			icture signa	ge and one	2.0	hen used h	l v narrow tru		
		signs. Install narrow stru	acture signa	ge and one		hen used by	narrow tru		
Comments: Ra	ise hazard s	signs. Install narrow strus: None	acture signa		lane only w			cks signage.	
Comments: Ra	ise hazard s	signs. Install narrow strus: None Minor Rehab	ucture signa	☐ Major Re	lane only w	Mair	atenance N	cks signage.	
Comments: Ra Performance D Recommended	ise hazard s	signs. Install narrow strus: None Minor Rehab Replace	ucture signa	☐ Major Re ☑ None	lane only w	Maiı ☑ Urgent	ntenance N	eeds: - 2 Year	
Comments: Ra	ise hazard s	signs. Install narrow strus: None Minor Rehab	ucture signa	☐ Major Re	lane only w	Maiı ☑ Urgent	atenance N	eeds: - 2 Year	
Comments: Ra Performance D Recommended	ise hazard s	signs. Install narrow strus: None Minor Rehab Replace	ucture signa	☐ Major Re ☑ None	lane only w	Maiı ☑ Urgent	ntenance N	eeds: - 2 Year	
Comments: Ra Performance D Recommended Timeframe:	ise hazard s	signs. Install narrow strus: None Minor Rehab Replace	ucture signa	☐ Major Re ☑ None	lane only w	Maiı ☑ Urgent	ntenance N	eeds: - 2 Year	
Performance D Recommended Timeframe: Comments:	ise hazard s Deficiencies Work:	signs. Install narrow strus: None Minor Rehab Replace 1 - 5 Years	ucture signa	☐ Major Re ☑ None	lane only w	Mair ☑ Urgent Install form	ntenance N	eeds: - 2 Year	
Comments: Ra Performance D Recommended Timeframe: Comments:	ise hazard s Deficiencies Work:	signs. Install narrow structures: None Minor Rehab Replace 1 - 5 Years MLE's	ucture signa	☐ Major Re ☑ None	lane only w	Mair ☑ Urgent Install form	ntenance N 1 Year	eeds: - ar	
Comments: Ra Performance D Recommended Timeframe: Comments: Element Group: Element Name:	ise hazard s Deficiencies Work:	signs. Install narrow structures: None Minor Rehab Replace 1 - 5 Years MLE's Diaphrams	ucture signa	☐ Major Re ☑ None	lane only w	Mair ☑ Urgent Install form gth:	ntenance N 1 Yea nentioned si	eeds: - ar	
Comments: Ra Performance D Recommended Timeframe: Comments: Element Group: Element Name: Location:	ise hazard s Deficiencies Work:	signs. Install narrow structures: None Minor Rehab Replace 1 - 5 Years MLE's Diaphrams E/W	ucture signa	☐ Major Re ☑ None	lane only what hab	Main ✓ Urgent Install form gth: dth: ght:	1 Year nentioned si 0.975 0.165	cks signage. eeds: - ar	
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Municipal	Structure	Inspection	Form
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DY - 6

Piers	4.6 MI		Len	gth:		(m)
Bearings		Width:			(m)	
Abutments	Hei	ght:		(m)		
Elastomeric Rubber	Cor	unt:	8	(items)		
			Total Q	uantity:	8	(each)
Benign Mod	erate / S	evere	Limited	l Insp'n:		
					1	Performance
Units Exc. Good			Fair	Poor	1	Deficiencies
each / % / all	8					00
encies: None	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,					
☐ Minor Rehab		☐ Major Re	hab	Maii	intenance Needs:	
☐ Replace		✓ None		Urgent	☐ 1 Ye	ar 2 Year
☐ 1 - 5 Years		☐ 6 - 10 Ye	ears			
	Bearings Abutments Elastomeric Rubber Benign Mod Units Ceach / % / all Procies: None Minor Rehab Replace	Bearings Abutments Elastomeric Rubber Benign Moderate / S Units Exc. each / % / all 8 encies: None Minor Rehab Replace	Bearings Abutments Elastomeric Rubber Benign Moderate / Severe Units Exc. Good each / % / all 8 encies: None Minor Rehab Major Re Replace None	Bearings Wi Abutments Hei Elastomeric Rubber Co Total Q Benign Moderate / Severe Limited Units Exc. Good Fair each / % / all 8 encies: None Minor Rehab Major Rehab Replace	Bearings Width: Abutments Height: Elastomeric Rubber Count: Total Quantity: Benign Moderate / Severe Limited Insp'n: Units Exc. Good Fair Poor each / % / all 8 Major Rehab Replace None	Bearings Width: Abutments Height: Elastomeric Rubber Count: 8 Total Quantity: 8 Benign Moderate / Severe Limited Insp'n: Units Exc. Good Fair Poor each / % / all 8 Indicate

Municipal Structure Inspection Form

·	
MTO Site Number:	DY - 6

Repair and Rehabilitation Required:				Pri		Estimated	
Element	Repair and R	ehabilitation Required	6 to 10 years	1 to 5 years	Within 1 year	Urgent	Construction Cost
	<u> </u>						
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_						Total Cost	
						-	
Associated Work:			Comme	ents			Estimated Cost
Approaches:							
Detours:							
Traffic Control:				11			
Utilities:	\longrightarrow						
Right of Way:						\longrightarrow	
Environmental Stud	.y:					\longrightarrow	1
Other:							15.00
Contingencies:						T 4-1 C4	60
		<u></u>				Total Cost	\$0
Justification:							



Structure No: DY-7

Oblong Lake Narrows Bridge

Structure Description

The Oblong Lake Narrows Bridge is located on Haliburton Lake Road, immediately North of the intersection of Haliburton Lake Road and Harburn Road, in the hamlet of Fort Irwin. The bridge was constructed in 1964 and is an 18.6 m triple span, two lane structure with a composite wood/concrete deck, supported by timber piles and pile caps with timber ballast wall abutments. The structure crosses a navigable watercourse (Oblong Lake) on a North/South tangential alignment. The bridge has an 8.5 m wide concrete deck with an asphaltic wearing surface and concrete curbs. There is a steel barrier over the structure with concrete end posts and one steel beam guiderail on the Southeast approach. The bridge is currently load posted / limited to 20 / 32 / 40 tonnes.

Structure Condition

The overall structure is in poor condition with a BCI of 42 and BSI of 33. The substructure is in good to fair condition given its age; however, the superstructure including deck, curbs, sidewalk and railings are in poor condition and require replacement. The timber piles and pile caps are in good condition with minor checking and cracking noted at end bent locations. It should be noted the two center bents have limited inspection due to accessibility. The timber abutments are in fair condition; however, the gabion wing walls have been displaced and require replacement and stabilization with proper slope protection in all four quadrants. The concrete deck, curbs and sidewalk are in poor condition with extensive spalling of the soffit and curb areas revealing localized exposed rebar. The longitudinal wooden deck shows signs of water penetration. The wearing surface is in good to poor condition with extensive potholes and patching evident. The steel barrier over the structure is in fair to poor condition with severe corrosion, isolated collision damage and severe deterioration of the concrete end posts. The barrier does not comply with the bridge code and likely would not provide sufficient protection in the event of a collision. The steel beam guiderail on the Southeast approach is in poor condition with visible impact damage and is not connected to the structure. The other three approach quadrants have no steel beam guiderail system.

Recommendations

The substructure; excluding piles and capping beams, and superstructure; excluding possible wood soffit, require major rehabilitation. The structure requires major rehabilitation including repair/replacement of abutments, deck, soffit, wearing surface and guiderails. A detailed deck condition survey should be conducted prior to major rehabilitation work to establish actual deck conditions between composite materials. It is also recommended that an enhanced visual inspection of center bents be conducted at that time to ensure the integrity of major structural pier components. This work should be undertaken in 1-5 years.



Photo 1 : General Arrangement - Looking North

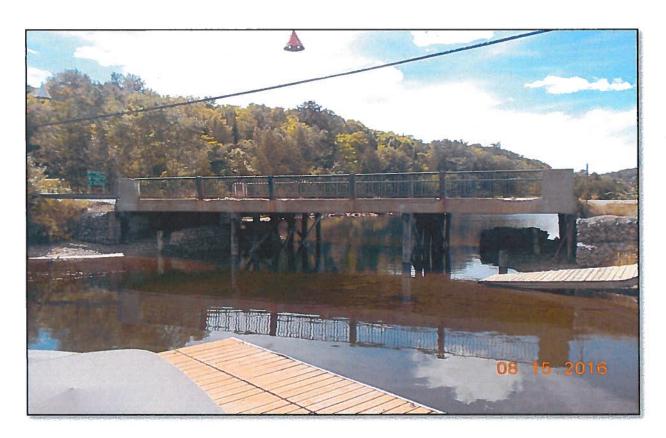


Photo 2 : General Arrangement - Looking West



Photo 3 : Asphalt Wearing Surface and Curb Deterioration - East Lane Looking North



Photo 4 : Deformed Guiderail System Missing Supports - Southeast Quadrant



Photo 5 : Detached Guiderail System - Southeast Quadrant

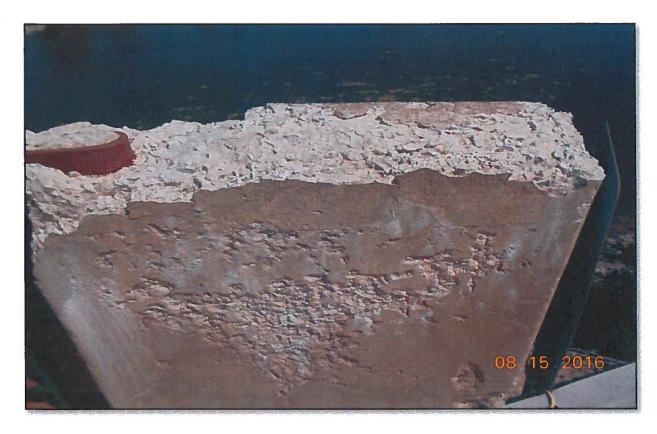


Photo 6: Typical Concrete End Post of Handrail System - Southeast Quadrant



Photo 7: Inadequate Load Carrying Capacity at Handrail Posts - Typical View



Photo 8: Erosion at Gabion Basket Retaining Wall - Southwest Quadrant

Inventory Data:

MTO	Site	Number	:	DY	_	7
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Structure Name	Oblong Lake Na	ırrows Bri	dge		
Main Hwy/Road #		On ⊠	Under	Crossing Navig. W Type: Rail	ater ⊠ Non-Navig. Water Road ⊠ Ped. Other
Road Name	Haliburton Lake	Road			in [1 0]
Structure Location	0.07 km North o	f CR 14 &	cR 19 Inte	ersection in Fort Irwin	
Latitude	45.178200			Longitude -78.423800	
Owner(s)	Municipality of	Dysart et	al		Cons./not App. List/not Desig. /Not List Desig. & List
MTO Region *				Road Class: Freeway	Arterial Collector Local ⊠
MTO District *				Posted Speed 50	No. of Lanes 2
Old County *				AADT	% Trucks
Geographic Twp. *				Special Routes: Transit	Truck School Bicycle
Structure Type *	Bridge			Detour Length Around Bridge	None (km)
Total Deck Length	18.6] (m)	Fill on Structure	0 (m)
Overall Str. Width	9.4] (m)	Skew Angle	(degrees)
Total Deck Area	175.0] (sq.m)	Direction of Structure	N to S
Roadway Width	7.4] (m)	No. of Spans	3
Span Lengths	6.2	•			(m)
Historical Data					
Year Built	1964			Last Biennial Inspection	2014
Current Load Limit	20/32/4	0 (tonn	ies)	Last BridgeMaster Inspection	N/A
Load Limit Bylaw	# 2011-96			Last Evaluation	N/A
Bylaw Expiry Date	N/A			Last Underwater Inspection	N/A
Min. Vertical Clear	ance -	(m)		Last Condition Survey	N/A
Rehab. History: (D	ate/description)				

Field Inspection Infor	mation:			
Date of Inspection:	August 15, 2016			
Inspector:	Robert Brooks – Tulloch Engineering			
Others in Party:	Elizabeth Perry – Tulloch Engineering			
Equipment Used:	Camera, Hammer, Tape Measure			
Weather:	Sun			
Temperature:	+18°C			

Additional Investigations Required:		Priority				
	None	Normal	Urgent	Cost		
Detailed Deck Condition Survey:	X					
DART Survey:	X			٠		
Detailed Coating Condition Survey:	X					
Underwater Investigation:	X					
Fatigue Investigation:	X					
Seismic Investigation:	X					
Structure Evaluation:		X		\$10,000.00		
Load Posting – Estimated Load		7	Total Cost	\$10,000.00		
Special Notes: 1. Recommend structure evaluation to determine c including any other structural elements prior to			l capping be	eam system		

Next Detailed Inspection:

2018

MTO Site Number: DY - 7

Suspe	cted Performance Deficiencies				
00	None	06	Bearing not uniformly loaded/unstable	12	Slippery surfaces
01	Load carrying capacity	07	Jammed expansion joint	13	Flooding/channel blockage
02	Excessive deformations (deflections & rotations)	08	Pedestrian/vehicular hazard	14	Undermining of foundation
03	Continuing settlement	09	Rough riding surface	15	Unstable embankments
04	Continuing movements	10	Surface ponding	16	Other
05	Seized bearings	11	Deck drainage		
Maint 01 02 03	enance Needs Lift and Swing Bridge Maintenance Bridge Cleaning Bridge Handrail Maintenance	07 08 09	Repair to Structural Steel Repair of Bridge Concrete Repair of Bridge Timber	13 14 15	Erosion Control at Bridges Concrete Sealing Rout and Seal
03 04	Painting Steel Bridge Structures	10	Bailey Bridges - Maintenance	16	Bridge Deck Drainage
05 06	Bridge Deck Joint Repair Bridge Bearing Maintenance	11 12	Animal/Pest Control Bridge Surface Repair	17	Other Other

DY - 7

Element Group	:	Abutments			Len	gth:		(m)
Element Name:		Ballast Walls			Width:		10.0	(m)
Location:		Under deck			Height:		2.0	(m)
Material:		Wood			Count:		2	(items)
Element Type:					Total Q	uantity:	40.0	(m²)
Environment:		Benign Moo	lerate / S	evere	Limited	l Insp'n:		
Protection Syste	em:						Pe	rformance
Condition		Units	Exc.	Good	Fair	air Poor Deficienci		
Data:	m ² / r	n / each / % / all			40			00
Comments: Lig	ht to medi	um water stains.				4		
Performance I	Deficiencie	s: None						
Recommended	Work:	☐ Minor Rehab		☐ Major Rel	nab	Mai	ntenance Nec	ds:
		Replace		✓ None		☐ Urgent	1 Year	2 Year
Timeframe:		☐ 1 - 5 Years		☐ 6 - 10 Ye	ars			
Comments: R	eplace whe	n major overall bridge i	rehabilitatio	n work to b	e			
completed.	-					a la la la la		
Element Group	:	Barriers			Len	gth:	17.00	(m)
Element Name:		Hand Railings				dth:	- And	(m)
Location:		Both sides of bridge				ght:	1.20	(m)
Material:		Steel		- 44		unt:	2	(items)
Element Type:		Double Railing			Total O	uantity:	34.0	(m)
Environment:		Benign / Mod	lerate (S	evere		Insp'n:		
Protection Syste	em:						Pe	rformance
Condition		Units	Exc.	Good	Fair	Poor	-	eficiencies
Data:	m\(\frac{1}{r}\)	n each / % / all			19	15		08
Commente: Si		orrosion; railing not con	anliant with	Bridge Cod	la Dailing	hould be r	enlaced or nor	t of atmosture
Performance I		s: None		☐ Major Rel	nah	24.	A	
Recommended	work:	☑ Replace		☐ None	NJD	☐ Urgent	ntenance Nee	2 Year
Timeframe:		☑ 1 - 5 Years		☐ 6 - 10 Ye	ars			□ z rear
		_	-1-1-11:4-4:-					
		n major overall bridge re itation work be postpon				is a family with		
-	ulu lenaon	nation work be posipon	ed, comple	te major rem	au. III 1-3	di ili		
years.								
Flores Consum		In			*	.4.	0.75	(-)
Element Group: Element Name:		Barriers			Len	gtn: dth:	0.75	(m)
		Posts					0.20	(m)
Location:		All 4 corners of bridge				ght:	1.3	(m)
Material:		Cast-in-place Concrete	3			unt:	4	(items)
Element Type:		Danian / Mad	laurata C			uantity:	4	(each)
Environment:		Benign / Mod	ierate S	evere	Limited	Insp'n:		
Protection Syste	em:	TT '4	-		gm ·	D		rformance
Condition	1.7	Units	Exc.	Good	Fair	Poor	De	eficiencies
Data:		n each/ % / all			2	2		00
Comments: Tw	o of four p	osts are badly spalled as	nd deteriora	ated with exp	osed rebar.	. Handrail a	anchor is expo	sed.
							di alla	
Performance I					-1-			
Recommended	Work:	☐ Minor Rehab		☐ Major Ref	ab		ntenance Nee	
m		☑ Replace		☐ None		Urgent	1 Year	2 Year
Timeframe:		☑ 1 - 5 Years		☐ 6 - 10 Yes				
		n major overall bridge re						
-		bridge rehabilitation wo	ork be post	poned, comp	lete major			
rehab. in 1-5 yea	ars.							

DY - 7

E1	1.			-		0.0	, ,			
Element Group:	Approach			Length:		8.0	(m)			
Element Name:	Barriers (Guiderail)			Width:			(m)			
Location:	Southeast quadrant only			Hei			(m)			
Material:	Steel			Coı		1	(items)			
Element Type:	Steel Flex Beam on Wood Post				uantity:	8.0	(m)			
Environment:	Benign / Mod	lerate S	evere	Limited	Insp'n:					
Protection System:		Performance			Performance					
Condition	Units	Exc.	Good	Fair	Poor	1	Deficiencies			
	m / each / % / all				8		08			
Comments: Guiderail on southeast approach only and it is damaged, not at proper elevation and not connected to bridge. Impact										
damage in SE quadrant. There are no guiderails on any of the other 3 approaches.										
Performance Deficiencie	_									
Recommended Work:	Minor Rehab		☐ Major Re	hab	Mair	atenance N	eeds: -			
	☑ Replace		☐ None	•	✓ Urgent					
Timeframe:	☑ 1 - 5 Years		☐ 6 - 10 Ye	ears			SE quadrant.			
Comments: Replace one	_	stall 3 new				Saraeran at	· ~ = quaditatio			
Comments, Replace one	emoning guideran and m	JICW	Suracian S	Julia.						
Floment Groups	Deck			T	oth:	10.6	(m)			
Element Group: Element Name:	Soffit - Thick Slab				gth: dth:	18.6	(m)			
		Hade-sid-		_		1.5	(m)			
Location:	Exterior Face and 1 m				ght:	1.5	(m)			
Material:	Cast-In-Place Concret	е апо W оос	i i		unt:	2	(items)			
Element Type:	P				uantity:	55.8	(m²)			
Environment:	Benign Mod	lerate / S	evere	Limited	l Insp'n:					
Protection System:		-	_ ·	- ·	-	1	Performance			
Condition	Units	Exc.	Good	Fair	Poor		Deficiencies			
	m / each / % / all			27.9	27.9		00			
Comments: Exterior soff	it has light stained map	cracking wi	ith localized	l delaminati	ons.					
Performance Deficiencie	es: None									
Recommended Work:	☐ Minor Rehab		☐ Major Re	hab		ntenance N	eeds:			
	☑ Replace		□ None		☐ Urgent	☐ 1 Yes	ar 2 Year			
Timeframe:	1 - 5 Years	17	☐ 6 - 10 Ye	ears						
Comments: Replace whe	n major overall bridge r	ehabilitatio	n work to b	e						
completed. Should overall										
rehab. in 1-5 years.	-	•		. <u>-</u>						
-										
Element Group:	Deck			Len	igth:	18.6	(m)			
Element Name:	Deck Top				dth:	8.50	(m)			
Location:	~ *** * * OP				ight:	3,30	(m)			
Material:	Concrete and Wood C	omnosite		-	unt:	1	(items)			
Element Type:	Laminated Wood Dec		ritudinal		unt. Juantity:	158.0	(m²)			
Environment:			evere		Insp'n:	138.0	(111)			
Protection System:	Denigii Wio	iciaic // S	07010	Limited	ı məp ii.	1.77	Performance			
	Units	Exc.	Good	Fair	Poor	4	Performance Deficiencies			
Condition		EXC.				-				
	m / each / % / all		57.6	63.2	37.2	<u> </u>	00			
Comments: Wooden dec	k snowing signs of wate	T penetratio	on and dama	ige.						
Performance Deficiencie	es: None									
Recommended Work:	☐ Minor Rehab	30	☐ Major Re	ehab	Mai	ntenance N	leeds: -			
	☑ Replace		☑ None		☐ Urgent					
Timeframe:	1 - 5 Years		☐ 6 - 10 Y	ears						
Comments: Replace whe	n major overall bridge r	ehabilitatio	n work to b	е	1					
completed.					<u></u> _					

DY - 7

Element Group:	Deck			Len	Length:		(m)
Element Name:	Wearing Surface	Wearing Surface			Width:		(m)
Location:				Hei	ight:		(m)
Material:	Asphalt	Asphalt			unt:	1	(items)
Element Type:					Quantity:	158.0	(m²)
Environment:	Benign / Mod	derate Se	evere	Limited	d Insp'n:		
Protection System:						,	Performance
Condition	Units	Exc.	Good	Fair	Poor	1	Deficiencies
	/ m / each / % / all		24.16	60.4	37.2		10, 11
	surface in poor condition w			and patchin	g and ravel	ing along E	ast and West crossfall.
	and/or ponding may be resu	ılting in pot	holes.				
Performance Deficien							
Recommended Work			☐ Major Rel	hab	Mair	ntenance N	eeds: -
	☑ Replace		☐ None		☐ Urgent	☐ 1 Yea	ar 🗌 2 Year
Timeframe:			☐ 6 - 10 Ye	ars			- 9-1
	vhen major overall bridge r						
=	rall bridge rehabilitation w	ork be post	poned comp	olete major			
rehab. in 1-5 years.						= 407 X 13	
Element Group:	Abutment			Len	ngth:	2.0	(m)
Element Name:	Wingwalls				dth:	1.0	(m)
Location:				Hei	ght:	1.5	(m)
Material:	Metal Gabion Basket a	and Rock			unt:	4	(items)
Element Type:				Total Q	Total Quantity:		(m²)
Environment:	Benign / Mod	lerate / S	evere		Limited Insp'n:		
Protection System:				LUIS CITY	Performance		
Condition	Units	Exc.	Good	Fair	Poor	Deficiencies	
Data: m ²	m / each / % / all		3.0	6.0	3.0	10	15
Comments: Gabions in	n fair to poor condition; so	me displace	ement and e	rosion.			
	•						
Performance Deficien	cies: None						
Recommended Work	Minor Rehab		☐ Major Rel	hab	Mair	ntenance N	eeds: -
The state of the s	☑ Replace		□ None		Urgent	☐ 1 Yea	ar 🗌 2 Year
Timeframe:	☐ 1 - 5 Years		☐ 6 - 10 Ye	ars			
Comments: Replace w	vhen major overall bridge r	ehabilitatio	n work to b	e			
	rall bridge rehabilitation w						
rehab. in 1-5 years inclu	uding slope protection to su	apport gabic	ons.				
Element Group:	Sidewalk / Curbs			Len	gth:	18.0	(m)
Element Name:	Sidewalk and Curb			Wie	dth:	1.00	(m)
Location:	East (S/W) West (Curl	b)		Hei	ight:	0.20	(m)
Material:	Cast-In-Place Concrete				unt:	2	(items)
Element Type:				Total Q	uantity:	43.2	(m²)
Environment:	Benign / Mod	derate Se	evere		l Insp'n:		
Protection System:						J	Performance
Condition	Units	Exc.	Good	Fair	Poor	1	Deficiencies
Data: m²	/ m / each / % / all		7.2	21.6	14.4		00
Comments: Significan	nt spalling and deterioration	of sidewal	k and curb	with expose	d rebar, ab	rassion and	impact damage
throughout.	•			-			
Performance Deficien	cies: None						
Recommended Work	☐ Minor Rehab		☐ Major Rel	ḥab	Mair	ntenance N	eeds: -
	Replace		□ None	1	☐ Urgent	☐ 1 Yea	ar 2 Year
Timeframe:	1 - 5 Years		☐ 6 - 10 Ye	ars			
Comments: Replace w	hen major overall bridge re	ehabilitatio ₁	n work to b	e			
completed.							

DY - 7

Element Group:	g.	Approaches			Length:		6	(m)
Element Name:		Wearing Surface			Width:		7.4	(m)
Location:		North and South			Height:			(m)
Material:		Asphalt			Cou		2	(items)
Element Type:					Total Q	uantity:	88.8	(m²)
Environment:		Benign / Mod	evere	Limited				
Protection Syste	em:						Performance	
Condition		Units Exc. Good			Fair	Poor	1	Deficiencies
Data:	(m ²)/ m	/ each / % / all		73.8	10	5		00
Comments: Severe erosion at south approach. Medium to Severe longitudinal transverse cracks and wheel rutting. Errosion								
Performance I	Deficiencies	s: None						
Recommended		☐ Minor Rehab		☐ Major Re	hab	Maii	ntenance N	eeds: -
Recommended		☑ Replace		☐ None		Urgent		
Timeframe:				☐ 6 - 10 Ye	ears	13 - Erosio		
	ovide prope	er drainage. Clear over	orown vece	tation Prov	ide proper	I BIOSIC	ni comitor	
		or overall bridge rehab						
		oilitation work be postp						
5 years.	riage remac	munon work oc postp	onea comp	ioto inajor i	ciido. iii i			
- y o.						<u> </u>		
Flore and Con-		Diam / Dil			Υ.	ath.	Ι	()
Element Group Element Name:		Piers / Piles				gth: dth:	-	(m)
		Pile Bents	1					(m)
Location:		4 Locations equally sp	paced			ght:	24	(m)
Material:		Wood				unt:	24	(items)
Element Type:		Pile			Total Quantity:		24.0	(each)
Environment:		Benign Mod	lerate / S	evere	Limited	Zimited map in		
Protection Syst	em:	L		r	Toin Dari		Performance	
Condition		Units	Exc.	Good	Fair	Poor	-	Deficiencies
Data:		1 /each/ % / all		24.0				00
Comments: Li	ght to Medi	ium splits throughout p	iles.					
Performance I	Deficiencie:	s: None		11				
Recommended	l Work:	☐ Minor Rehab		☐ Major Re	hab	Mai	ntenance N	leeds: -
		☐ Replace		■ None		☐ Urgent	☐ 1 Ye	ar 🔲 2 Year
Timeframe:		☐ 1 - 5 Years		☐ 6 - 10 Ye	ears			
Comments: P	erform deta	iled structural condition	n survey pr	ior to under	taking			
major overall br	idge rehab.							
V ₂			- 71 - 717 (3:0					
Element Group	:	Embankments & Stream	ams		Len	igth:		(m)
Element Name:		Embankments				dth:		(m)
Location:		4 Quadrants				ight:		(m)
Material:			D. Dásta V. AV			unt:	4	(items)
Element Type:						Quantity:		(m²)
Environment:		Benign Moo	derate / S	evere		l Insp'n:	0	/
Protection Syst	em:							Performance
Condition	<u> </u>	Units	Exc.	Good	Fair	Poor	1	Deficiencies
Data:	m² / n	n / (each) / % / all	2		1	4.0		15
		ion required to stabilize	e embankm	ents and gal	bion baskets			
Performance !	Deficiencia	s: None						
Recommended		Minor Rehab		☐ Major Re	ehab	Mei	ntenance N	leeds· -
- recommended	A WOLK:	Replace		☐ None		Urgent		<u> </u>
Timeframe:		☐ 1 - 5 Years		☐ 6 - 10 Ye	ears		ection requ	
	ouido el-e-	_		_ 0 10 10		Stope prot	ection requ	neu.
Comments: Pr	ovide stope	protection.						

DY - 7

Element Group:	•	Accessories			Length:			(m)
Element Name:		Signs			Width:			(m)
Location:					Height:			(m)
Material:					Co	unt:	4	(items)
Element Type:					Total (Quantity:	4.0	(each)
Environment:		Benign / Mod	lerate S	evere	Limite	d Insp'n:		
Protection Syste	em:							Performance
Condition		Units	Exc.	Good	Fair	Poor	1	Deficiencies
Data:	m² / m	each/% / all			1	3		08
Comments:			<u> </u>	1.				
Performance D	eficiencies	: Replace signs						
Recommended		☐ Minor Rehab		☐ Major Re	hab	Mai	ntenance N	leeds: -
		☐ Replace		■ None		☑ Urgent		
Timeframe:		☐ 1 - 5 Years		☐ 6 - 10 Ye	ears			
Comments: M	issing and b	ent sions						
		, on t 315113						
Element Group:		Piers / Piles			l l er	ngth:	1	(m)
Element Name:		Pile Cap Beam		···		dth:		(m)
Location:		4 Locations equally sp	nood			ight:		(m)
Material:		Wood	accu			unt:	4	· / · · · ·
Element Type:		Pile					4.0	(items)
Environment:			lerate / S	evere		Quantity:	4.0	(each)
		Benign Mod	ierate / S	evere	Limited	ı insp n:		D 6
Protection Syste	m:	T I 14 -	Е		г.	l p	-1	Performance
Condition	2 /	Units	Exc.	Good	Fair	Poor	Deficiencies	
Data:	m² / m	/each/ % / all	1	4.0	1	1	1	00
							<u> </u>	00
Comments: 4 c	apping bear	ms 0.300 x 0.300 mm i	n good con					00
			n good con					00
Performance D	eficiencies	: None	n good con	dition.				
	eficiencies	: None	n good con	dition.	hab		ntenance N	eeds: -
Performance D Recommended	eficiencies	: None Minor Rehab Replace	n good con	dition. Major Re		Main □ Urgent	ntenance N	eeds: -
Performance D Recommended Timeframe:	Deficiencies Work:	: None Minor Rehab Replace 1 - 5 Years		Major Re None	ears			eeds: -
Performance D Recommended Timeframe: Comments: Pe	Deficiencies Work:	: None Minor Rehab Replace		Major Re None	ears			eeds: -
Performance D Recommended Timeframe:	Deficiencies Work:	: None Minor Rehab Replace 1 - 5 Years		Major Re None	ears			eeds: -
Performance D Recommended Timeframe: Comments: Pe	Deficiencies Work: rform detaidge rehab.	: None Minor Rehab Replace 1 - 5 Years		Major Re None	ears			eeds: -
Performance D Recommended Timeframe: Comments: Pe	Deficiencies Work: rform detaidge rehab.	: None Minor Rehab Replace 1 - 5 Years		Major Re None	ears aking			eeds: -
Performance D Recommended Timeframe: Comments: Pe major overall bri Element Group: Element Name:	Deficiencies Work: rform detaidge rehab.	: None Minor Rehab Replace 1 - 5 Years		Major Re None	ears aking Ler	Urgent ugth:		eeds: - ar
Performance D Recommended Timeframe: Comments: Pe major overall bri Element Group:	Deficiencies Work: rform detaidge rehab.	: None Minor Rehab Replace 1 - 5 Years		Major Re None	ears aking Ler	☐ Urgent		eeds: - ar
Performance D Recommended Timeframe: Comments: Pe major overall bri Element Group: Element Name:	Deficiencies Work: rform detaidge rehab.	: None Minor Rehab Replace 1 - 5 Years		Major Re None	ears aking Ler Wi	Urgent ugth:		eeds: - ar
Performance D Recommended Timeframe: Comments: Pe major overall bri Element Group: Element Name: Location:	Deficiencies Work: rform detaidge rehab.	: None Minor Rehab Replace 1 - 5 Years		Major Re None	Ler Wi He	Urgent ugth: dth: ight:		eeds: - ar
Performance D Recommended Timeframe: Comments: Pe major overall bri Element Group: Element Name: Location: Material:	Deficiencies Work: rform detaidge rehab.	: None Minor Rehab Replace 1 - 5 Years led structural condition	survey prid	Major Re None	Ler Wi He Co	Urgent ugth: dth: ight: unt:		eeds: - ar
Performance D Recommended Timeframe: Comments: Pe major overall bri Element Group: Element Name: Location: Material: Element Type:	Work: rform detai dge rehab.	: None Minor Rehab Replace 1 - 5 Years led structural condition	survey prid	☐ Major Re ☐ None ☐ 6 - 10 Ye or to underta	Ler Wi He Co	Urgent ogth: dth: ight: unt: Duantity:	☐ 1 Yes	eeds: - ar
Performance D Recommended Timeframe: Comments: Pe major overall bri Element Group: Element Name: Location: Material: Element Type: Environment:	Work: rform detai dge rehab.	: None Minor Rehab Replace 1 - 5 Years led structural condition	survey prid	dition. Major Re None 6 - 10 Ye or to underta	Ler Wi Hei Co Total Q Limited	Urgent ogth: dth: ight: unt: Duantity:	☐ 1 Yes	(m) (m) (m) (items) (m²)
Performance D Recommended Timeframe: Comments: Pe major overall bri Element Group: Element Name: Location: Material: Element Type: Environment: Protection Syste	Deficiencies Work: rrform detai dge rehab.	: None Minor Rehab Replace 1 - 5 Years Indeed structural condition Benign / Model	survey prid	☐ Major Re ☐ None ☐ 6 - 10 Ye or to underta	Ler Wi He Co	Urgent Ogth: dth: ight: unt: Duantity: d Insp'n:	☐ 1 Yes	(m)
Performance D Recommended Timeframe: Comments: Pe major overall bri Element Group: Element Name: Location: Material: Element Type: Environment: Protection Syste Condition	Deficiencies Work: rrform detai dge rehab.	: None Minor Rehab Replace 1 - 5 Years led structural condition Benign / Mod	survey prid	dition. Major Re None 6 - 10 Ye or to underta	Ler Wi Hei Co Total Q Limited	Urgent Ogth: dth: ight: unt: Duantity: d Insp'n:	☐ 1 Yes	(m)
Performance D Recommended Timeframe: Comments: Pe major overall bri Element Group: Element Name: Location: Material: Element Type: Environment: Protection Syste Condition Data:	Deficiencies Work: rrform detai dge rehab.	: None Minor Rehab Replace 1 - 5 Years led structural condition Benign / Mod	survey prid	dition. Major Re None 6 - 10 Ye or to underta	Ler Wi Hei Co Total Q Limited	Urgent Ogth: dth: ight: unt: Duantity: d Insp'n:	☐ 1 Yes	(m)
Performance D Recommended Timeframe: Comments: Pe major overall bri Element Group: Element Name: Location: Material: Element Type: Environment: Protection Syste Condition Data: Comments:	Deficiencies Work: rform detai dge rehab. m:	: None Minor Rehab Replace 1 - 5 Years Independent of the structural condition	survey prid	dition. Major Re None 6 - 10 Ye or to underta	Ler Wi Hei Co Total Q Limited	Urgent Ogth: dth: ight: unt: Duantity: d Insp'n:	☐ 1 Yes	(m)
Performance D Recommended Timeframe: Comments: Pe major overall bri Element Group: Element Name: Location: Material: Element Type: Environment: Protection Syste Condition Data: Comments:	eficiencies Work: erform detaidge rehab. m: m² / m	: None Minor Rehab Replace 1 - 5 Years Independent of the structural condition	survey prid	dition. Major Re None 6 - 10 Ye or to underta	Ler Wi He Co Total Q Limited	unt: Duantity: Insp'n:	☐ 1 Yes	eeds: (m) (m) (m) (items) (m²) Performance Deficiencies
Performance D Recommended Timeframe: Comments: Pe major overall bri Element Group: Element Name: Location: Material: Element Type: Environment: Protection Syste Condition Data: Comments:	eficiencies Work: erform detaidge rehab. m: m² / m	: None Minor Rehab Replace 1 - 5 Years Item to be a structural condition	survey prid	Major Re None 6 - 10 Ye or to underta	Ler Wi He Co Total Q Limited	gth: dth: ight: unt: uantity: i Insp'n: Poor	1 Yes	eeds: (m) (m) (m) (items) (m²) Performance Deficiencies
Performance D Recommended Timeframe: Comments: Pe major overall bri Element Group: Element Name: Location: Material: Element Type: Environment: Protection Syste Condition Data: Comments: Performance D Recommended	eficiencies Work: erform detaidge rehab. m: m² / m	: None Minor Rehab Replace 1 - 5 Years In the structural condition	survey prid	dition. Major Re None 6 - 10 Ye or to underta	Ler Wi Hei Co Total Q Limited	gth: dth: ight: unt: unantity: i Insp'n: Poor Main	□ 1 Yes	eeds: (m) (m) (m) (items) (m²) Performance Deficiencies
Performance D Recommended Timeframe: Comments: Pe major overall bri Element Group: Element Name: Location: Material: Element Type: Environment: Protection Syste Condition Data: Comments: Performance D Recommended Timeframe:	eficiencies Work: erform detaidge rehab. m: m² / m	Benign / Mod Units / each / % / all	survey prid	dition. Major Re None 6 - 10 Ye or to underta	Ler Wi Hei Co Total Q Limited	gth: dth: ight: unt: unantity: i Insp'n: Poor Main	1 Yes	eeds: (m) (m) (m) (items) (m²) Performance Deficiencies
Performance D Recommended Timeframe: Comments: Pe major overall bri Element Group: Element Name: Location: Material: Element Type: Environment: Protection Syste Condition Data: Comments: Performance D Recommended	eficiencies Work: erform detaidge rehab. m: m² / m	Benign / Mod Units / each / % / all	survey prid	dition. Major Re None 6 - 10 Ye or to underta	Ler Wi Hei Co Total Q Limited	gth: dth: ight: unt: unantity: i Insp'n: Poor Main	□ 1 Yes	eeds: (m) (m) (m) (items) (m²) Performance Deficiencies

Municipal Structure Inspection Form

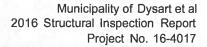
MTO Site Number:

DY - 7

Repair and Rehabilitation Required:			Priority				
Element	Repair and Rehabilitation Required	6 to 10 years	l to 5 years	Within 1 year	Urgent	Construction Cost	
Wearing Surface	Replace with asphalt wearing surface		X			\$10,000	
Approaches	Replace with concrete and asphalt approach slab			:		\$100,000	
Deck	Replace with composite concrete and asphalt deck		х			\$230,000	
Barriers	Replace barriers (railings) with current OPS barrier		х			\$35,000	
Abutment Ballast Walls	Replace with wood ballast walls		х			\$28,000	
Retaining Walls	Replace with steel sheet piles		Х			\$60,000	
			1	<u> </u>	Total Cost	\$463,000	

Associated Work:	Comments	Estimated
Associated Work.	Comments	Cost
Approaches:	Guiderail	\$13,000
Detours:		
Traffic Control:	Traffic Control, Temporary Signals, Signage	\$80,000
Utilities:		
Eng. Design & Supervision:	Design and Contract Administration / Construction Inspection	\$65,000
Environmental Study:		
Other:	Environmental Controls	\$5,000
Other:		
Contingencies:		\$100,000
	Total Cost	\$263,000

Justification: Major bridge rehabilitation design with cost estimate completed by DM Wills in January 2013. Cost estimate from Wills increased here at inflationary levels.





Structure No: DY-8
South Bay Bridge

Structure Description

The South Bay Bridge is located on Hodgson Road, 1.1 km east of Harburn Road. The bridge was constructed in 1960 and is a 20.1 m single span, two-lane structure with a concrete deck supported by timber piles and timber abutments. The structure crosses a navigable waterway on an east/west tangential alignment. The structure has an overall width of 7.8 m and 7.3 m wide surface treatment driving surface with concrete curbs. There is a steel barrier over the structure with concrete end posts. There is no guiderail on the approaches.

Structure Condition

The structure is in fair overall condition with a BCI of 68 and a BSI of 65. The substructure including timber piles, pile caps and abutments are in good condition with localized checking and cracking. There is some evidence of backfill material washing out near the abutment face. Erosion of backfill embankments, along the approaches, is causing progressive deterioration of edge of asphalt and undermining of deck components. There are no wing walls or erosion protection on the approaches which is allowing erosion of the embankments and may cause loss of backfill behind abutments. The concrete deck is in fair condition with frequent spalling, loss of aggregate and asphalt patching. The barrier over the structure is in good condition with minor corrosion and splitting of the posts.

Recommendations

The structure requires a minor rehabilitation including installation of erosion protection on the approach embankments, rebuilding and resurfacing of the approaches and repairs to the deck. This work should be completed in the 6-10 year period. Guiderail extension on the approaches should be undertaken in the future when the structure undergoes a major rehabilitation.



Photo 1 : General Arrangement - Looking West



Photo 2 : General Arrangement - Looking East

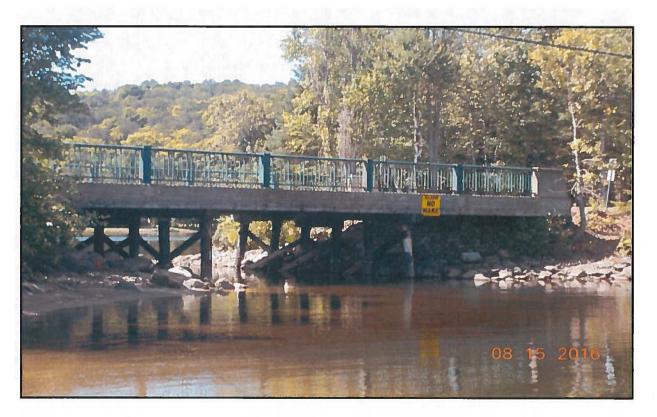


Photo 3 : General View – North Elevation

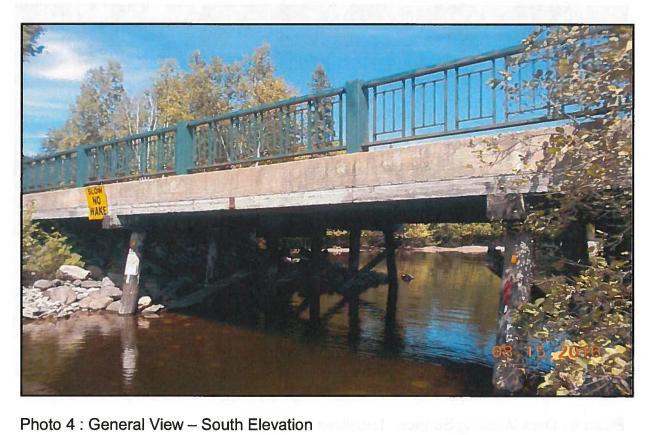




Photo 5 : Deck Wearing Surface – Looking West



Photo 6 : Deck Wearing Surface - Localized Potholes



Photo 7: Erosion of Embankment - Northwest Quadrant

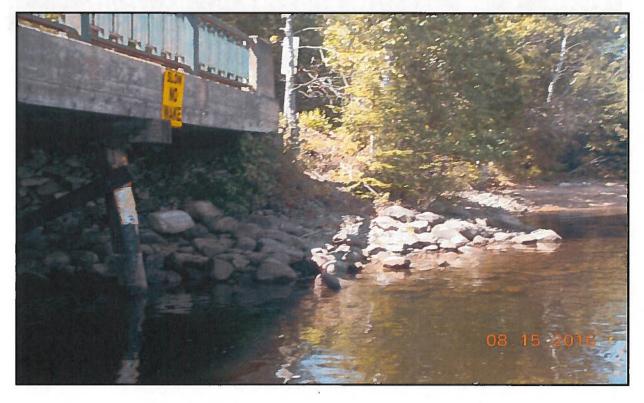


Photo 8 : Erosion of Embankment - Northwest Quadrant Looking West



Photo 9 : Erosion of Embankment - Northeast Quadrant

Inventory Data:

Structure Name	South Bay Bridge		
Main Hwy/Road #	County Rd 19 On 🗵 U	Under Crossing Type:	Navig. Water ⊠ Non-Navig. Water Rail Road Ped. Other
Road Name	Hodgson Road		10
Structure Location	0.35 km East of Dunn Road		7 3 7 X
Latitude	45.170500	Longitude	-78.408000
Owner(s)	Municipality of Dysart et al	Heritage Designation:	Not Cons. Cons./not App. List/not Desig. Desig./Not List Desig. & List
MTO Region *		Road Class:	Freeway Arterial Collector Local
MTO District *		Posted Speed	60 No. of Lanes 2
Old County *		AADT	% Trucks
Geographic Twp. *		Special Route	es: Transit Truck School Bicycle
Structure Type *	Bridge	Detour Lengt	h Around Bridge (km)
Total Deck Length	20.7	(m) Fill on Struct	ure 0 (m)
Overall Str. Width	7.8	(m) Skew Angle	0 (degrees)
Total Deck Area	186.0	(sq.m) Direction of S	Structure E to W
Roadway Width	7.5	(m) No. of Spans	3
Span Lengths	20.1		(m)
Historical Data	:		
Historical Data	1960	Last Biennia	1 Inspection 2014
	1960		I Inspection 2014 Master Inspection N/A
Year Built	1960 N/A (tonnes		Master Inspection N/A
Year Built Current Load Limit	1960 N/A (tonnes	Last Bridge Last Evaluat	Master Inspection N/A
Year Built Current Load Limit Load Limit Bylaw #	1960 N/A (tonnes N/A N/A	Last Bridge Last Evaluat	Master Inspection N/A ion N/A rater Inspection N/A
Year Built Current Load Limit Load Limit Bylaw # Bylaw Expiry Date	1960	Last Bridge Last Evaluat Last Underw	Master Inspection N/A ion N/A rater Inspection N/A
Year Built Current Load Limit Load Limit Bylaw # Bylaw Expiry Date Min. Vertical Clear	1960	Last Bridgen Last Evaluat Last Underw Last Condition	Master Inspection N/A ion N/A rater Inspection N/A
Year Built Current Load Limit Load Limit Bylaw # Bylaw Expiry Date Min. Vertical Clear Rehab. History: (D	1960 N/A (tonnes N/A N/A N/A ance - (m) ate/description)	Last Bridgen Last Evaluat Last Underw Last Condition	Master Inspection N/A ion N/A rater Inspection N/A
Year Built Current Load Limit Load Limit Bylaw # Bylaw Expiry Date Min. Vertical Clear Rehab. History: (D	1960	Last Bridgen Last Evaluat Last Underw Last Condition	Master Inspection N/A ion N/A rater Inspection N/A
Year Built Current Load Limit Load Limit Bylaw # Bylaw Expiry Date Min. Vertical Clear Rehab. History: (D	1960 N/A (tonnes N/A N/A N/A ance - (m) ate/description)	Last Bridgen Last Evaluat Last Underw Last Condition	Master Inspection N/A ion N/A rater Inspection N/A
Year Built Current Load Limit Load Limit Bylaw # Bylaw Expiry Date Min. Vertical Clear Rehab. History: (D	1960 N/A (tonnes N/A N/A N/A ance - (m) ate/description)	Last Bridgen Last Evaluat Last Underw Last Condition	Master Inspection N/A ion N/A rater Inspection N/A
Year Built Current Load Limit Load Limit Bylaw # Bylaw Expiry Date Min. Vertical Clear Rehab. History: (D	1960 N/A (tonnes N/A N/A N/A ance - (m) ate/description)	Last Bridgen Last Evaluat Last Underw Last Condition	Master Inspection N/A ion N/A rater Inspection N/A
Year Built Current Load Limit Load Limit Bylaw # Bylaw Expiry Date Min. Vertical Clear Rehab. History: (D	1960 N/A (tonnes N/A N/A N/A ance - (m) ate/description)	Last Bridgen Last Evaluat Last Underw Last Condition	Master Inspection N/A ion N/A rater Inspection N/A

MTO	Site	Number:	DY - 8	

Field Inspection Inf	ormation:
Date of Inspection:	August 15, 2016
Inspector:	Robert Brooks – Tulloch Engineering
Others in Party:	Elizabeth Perry – Tulloch Engineering
Equipment Used:	Camera, Hammer, Tape Measure
Weather:	Sun
Temperature:	+19 ^o C

Additional Investigations Required:		Priority		Estimated
	None	Normal	Urgent	Cost
Detailed Deck Condition Survey:	X			
DART Survey:	X			
Detailed Coating Condition Survey:	X			
Underwater Investigation:	X			
Fatigue Investigation:	X			
Seismic Investigation:	X			
Structure Evaluation:	X			
Load Posting – Estimated Load		Т	Total Cost	\$0
Special Notes:				
Next Detailed Inspection:			2018	

Suspe	ected Performance Deficiencies				
00	None	06	Bearing not uniformly loaded/unstable	12	Slippery surfaces
01	Load carrying capacity	07	Jammed expansion joint	13	Flooding/channel blockage
02	Excessive deformations (deflections & rotations)	08	Pedestrian/vehicular hazard	14	Undermining of foundation
03	Continuing settlement	09	Rough riding surface	15	Unstable embankments
04	Continuing movements	10	Surface ponding	16	Other
05	Seized bearings	11	Deck drainage		
Main	tenance Needs				
01	Lift and Swing Bridge Maintenance	07	Repair to Structural Steel	13	Erosion Control at Bridges
02	Bridge Cleaning	08	Repair of Bridge Concrete	14	Concrete Sealing
03	Bridge Handrail Maintenance	09	Repair of Bridge Timber	15	Rout and Seal
04	Painting Steel Bridge Structures	10	Bailey Bridges - Maintenance	16	Bridge Deck Drainage
05	Bridge Deck Joint Repair	11	Animal/Pest Control	17	Other
06	Bridge Bearing Maintenance	12	Bridge Surface Repair		

DY - 8

Element Group:	Abutments			Length:		IHS =	(m)	
Element Name:	Abutment Walls			Width:		9.0	(m)	
Location:	E/W			Height:		1.0	(m)	
Material:	Wood			Co	unt:	2	(items)	
Element Type:	THE RESERVE			Total C	uantity:	18.0	(m²)	
Environment:	Benign Mod	Benign Moderate / Severe				Ø.		
Protection System:	Creosote				QL L L	P	erformance	
Condition	Units	Exc.	Good	Fair	Poor		Deficiencies	
Data: m ² /	m / each / % / all		15.0	3.0		325	00	
Comments: Abutments in	good condition; minor of	cracking and	d warping of	f boards. So	me evidenc	e of material	washout from	
behind abutments.		Ü						
Performance Deficiencie	es: None						ar mand 5	
Recommended Work:	☐ Minor Rehab		☐ Major Re	hab	Mai	ntenance Ne	eds: 09	
	Replace		✓ None		☐ Urgent	☑ 1 Year	2 Year	
Timeframe:	☐ 1 - 5 Years		☐ 6 - 10 Ye	ears	Fix / patch	boards	THE STATE OF THE S	
Comments:								
Element Group:	Approaches			I.er	igth:		(m)	
Element Name:	Drainage (Approaches	3			dth:		(m)	
Location:	NE/NW/SE/SW	·)			ight:		(m)	
Material:	Gravel				unt:	4	(items)	
Element Type:	014.01				Quantity:	4.0	(each)	
Environment:	Benign Mod	lerate / S	evere		d Insp'n:	0	(outil)	
Protection System:	2 4 1 1				- 1110p 111	p	erformance	
Condition	Units	Exc.	Good	Fair	Poor	Poor Deficiencies		
	m (each)/ % / all	Exc.	0000	2	2			
Comments: Erosion pres		ovide mean	s for water					
Comments: Erosion pres	ent on an approaches, pr	Ovide illean	is for water (mannenng.				
Performance Deficiencie	s. None							
Recommended Work:	Minor Rehab		☐ Major Re	hab	Mai	ntenance Ne	ede.	
Trecommended Works	☐ Replace		☐ None	With the state of				
Timeframe:			☐ 6 - 10 Ye	ars				
Comments:								
Comments.								
Element Group:	Approaches			I er	ngth:	6	(m)	
Element Name:	Wearing Surface (App	roaches)		-	dth:	7.5	(m)	
Location:	E/W	roaciics)			ight:	7.5	(m)	
Material:	Surface Treatment				unt:	2	(items)	
Element Type:	Surface Treatment				uantity:	90.0	(m²)	
Environment:	Benign Mod	lerate S	evere		d Insp'n:	70.0	(111)	
Protection System:	Doings Artos		0,010	2to	a mop m		erformance	
Condition	Units	Exc.	Good	Fair	Poor	-	Deficiencies	
	m / each / % / all	LAC.	45	45.0	1 001		00	
Comments: Surface treatm		ir to poor o			notholing (nd patching		
raveling was also observed		ii to poor c	onunion wit	ii extensive	pouloiling a	mu pateming.	Light to medium	
Performance Deficiencie								
Recommended Work:	Minor Rehab		☐ Major Re	hab	Mai	ntenance Ne	ods:	
Necommended work:	☑ Replace		☐ None	··- 	Urgent			
Timeframe:	☐ 1 - 5 Years		☑ 6 - 10 Ye	ars			L 2 1501	
Comments:								

DY - 8

Element Group:	:	Barriers				Length:		(m)	
Element Name:		Hand Railings			Width:			(m)	
Location:		N/S			Height:		1.2	(m)	
Material:		Steel	Cou	int:	2	(items)			
Element Type:		Double Railing			Total Q	uantity:	40.0	(m)	
Environment:			lerate / Se	evere	Limited			, ,	
Protection Syste	em:	Galvanized (Paint)				•	1	Performance	
Condition	1152	Units	Exc.	Good	Fair	Poor		Deficiencies	
Data:	m²/ m	each / % / all		35.0	5.0	1 001		00	
		condition; light corrosic	n and crack		<u> </u>		l		
	oran good v	Jonation, ngin contosi	m una craci	ting on post					
Performance I)oficioncies	· None							
Recommended		Minor Rehab		☐ Major Re	hab	Mair	itenance N	eeds.	
recommended	WOIK.	Replace		✓ None		Urgent			
Timeframe:		☐ 1 - 5 Years		☐ 6 - 10 Ye	ears			<u></u>	
Comments:									
Comments.									
								:	
El		D			1	-41	1 5	()	
Element Group:		Barriers	D4		Len		1.5	(m)	
Location:		Railing Systems - End NE/NW/SE/SW	Post			dth:	0.4	(m)	
Material:		31000 00			Hei Co	_	1.0	(m)	
Element Type:		Concrete					17.6	(items)	
Environment:		Benign / Mod	lerate S	evere	Total Quantity: Limited Insp'n:		17.0	(m²)	
		Dellight / Mod	iciale Si	evere	Lilline	msp n.		D . C	
Protection Syste	em:	Units	F	C1	F-:-	D		Performance	
Condition		n / each / % / all	Exc.	Good 15.4	Fair	Poor			
Data:		10 10 10	1: . 11 .		2.2	1		00	
Comments: No	guideraii o	on approaches; recomm	end installa	tion of guid	eraii and en	a treatments	5.	-	
Performance I	Deficiencies	: None							
Recommended	Work:	Minor Rehab		☐ Major Re	hab	Maintenance Needs:			
		☐ Replace		✓ None		☐ Urgent	1 Yea	ar 🔲 2 Year	
Timeframe:		☐ 1 - 5 Years		☐ 6 - 10 Ye	ears				
Comments:									
								*	
Element Group	:	Deck			Len	gth:	20.7	(m)	
Element Name:		Deck Top			Wi	dth:	7.80	(m)	
Location:					Hei	ght:		(m)	
Material:		Cast-In-Place Concret	e / Laminate	ed Wood	Co	unt:	1	(items)	
Element Type:					Total Q	uantity:	161.5	(m²)	
Environment:		Benign Mod	derate S	evere	Limited	l Insp'n:	2		
Protection Syste	em:	Surface treatment						Performance	
Condition		Units	Exc.	Good	Fair	Poor]	Deficiencies	
Data:	m ² / n	n / each / % / all		81.0	64.0	16.5		00	
Comments:									
Performance I	Deficiencies	: None							
Recommended	Work:	☑ Minor Rehab		☐ Major Re	ehab	Mair	ntenance N	eeds: -	
l		☐ Replace		☐ None		☐ Urgent	☐ 1 Ye	ar 2 Year	
Timeframe:		1 - 5 Years		☑ 6 - 10 Ye	ears				
Timeframe: Comments:				☑ 6 - 10 Ye	ears	-			

DY - 8

Element Group:	Pier			Length:			(m)
Element Name:	Shaft / Columns / Pile Bents			Width:		0.30	(m)
Location:				Height:		3.0	(m)
Material:	Wood					24	(items)
Element Type:	Timber Piles with Car	Timber Piles with Capping Beam				67.8	(m²)
Environment:	Benign Mod	derate / So	evere	Limite	d Insp'n:		
Protection System:	Creosote					P	erformance
Condition	Units	Exc.	Good	Fair	Poor		Deficiencies
Data: m	/ m / each / % / all		67.8				00
Comments: Capping be	eam nuts loose.				الرحوسات		
Performance Deficien	cies: None					No. learn	
Recommended Work:	☐ Minor Rehab		☐ Major Re	hab	Ma	intenance Ne	eds: 09 (17)
	☐ Replace		☑ None		☐ Urgen	t 🛛 1 Year	
Timeframe:	☐ 1 - 5 Years		☐ 6 - 10 Ye	ears	Tighen ca	pping beam n	uts
Comments:							
					1		
Element Group:	Sidewalk / Curbs			Lei	ngth:	20.7	(m)
Element Name:	Curbs				idth:	0.9	(m)
Location:	N/S				ight:	0.3	(m)
Material:	Cast-in-place Concrete	2			unt:	2	(items)
Element Type:	Just in place concier				Quantity:	24.8	(m²)
Environment:	Benign / Mod	lerate S	evere		d Insp'n:		(111)
Protection System:	- Danigh / Mark	Jointo D		2	a mop m		erformance
Condition	Units	Exc.	Good	Fair	Poor	⊣ `	Deficiencies
	/ m / each / % / all	Exc.	17.8	7.0	1001	00	
	ling of curbs, with some e	vidence of s			g .		00
Comments: Willion Span	ing or curos, with some c	videlice of 5		ioi orackiii	6.		
Performance Deficient	ries: None					and the same	
Recommended Work:	Minor Rehab	11 (70	☐ Major Re	hab	Ma	intenance Ne	eds: -
	☐ Replace		☑ None		Urgeni		
Timeframe:	☐ 1 - 5 Years		☐ 6 - 10 Ye	ars			S - 1 1
Comments:					p IDO-y		
Element Group:	Deck			Lei	ngth:	20.7	(m)
Element Name:	Soffit				idth:	7.80	(m)
Location:	Interior				ight:	0.25	(m)
Material:	Wood				unt:	1	(items)
Element Type:	111000				uantity:	161.5	(m²)
Environment:	Benign / Moo	derate / Se	evere		d Insp'n:	101.5 T	(111)
Protection System:	Creosote (Concrete / S			Limite	и шэр п.		erformance
Condition	Units	Exc.	Good	Fair	Poor		Deficiencies
	/ m / each / % / all	LAC.	106.5	50	5		00
	olits and checks throughou		100.5	50			00
Comments: Medium sp	onts and checks throughou	ι.					
Performance Deficient	ina. Nana						
	cies: Ivone						
Decemmended Wester	Minor Rebab		Maior Rel	nan	N/II ~ :	intangnaa Na	ode.
Recommended Work:	☐ Minor Rehab ☐ Replace		☐ Major Rel ☑ None	nao		intenance Ne	
	☐ Replace .		☑ None		Urgeni		
Timeframe:							
	☐ Replace .		☑ None				

DY - 8

Element Group:	8	Deck			Length:		20.7	(m)
Element Name:		Soffit - Thin Slab			Width:		0.55	(m)
Location:		Exterior			Hei	ght:		(m)
Material:		Cast-In-Place Concrete	:		Cou	ınt:	2	(items)
Element Type:					Total Q		22.7	(m²)
Environment:		Benign Mod	lerate / Se	evere	Limited	Insp'n:		
Protection Syste	m:							Performance
Condition		Units	Exc.	Good	Fair	Poor	1	Deficiencies
Data:	m ² / n	n / each / % / all		19.3	2.27	1.1		00
Comments: Lig	ght stained of	cracking of concrete, lig	t to mediu	m cracking	of wood. L	ight to med	ium splits o	n South face.
Performance D	eficiencies	: None						
Recommended	Work:	☐ Minor Rehab		☐ Major Re	hab	Mair	tenance N	eeds: -
		☐ Replace		✓ None		☐ Urgent	☐ 1 Yea	ar 2 Year
Timeframe:		☐ 1 - 5 Years		☐ 6 - 10 Ye	ars			
Comments:								
			· · · · · · · · · · · · · · · · · · ·					
Element Group	ij	Embankments & Strea	ms		Len	gth:		(m)
Element Name:		Embankments			Wie			(m)
Location:		NE/NW/SE/SW			Hei	ght:		(m)
Material:					Cor		4	(items)
Element Type:					Total Q		4.0	(ea)
Environment:		Benign Mod	lerate / Se	evere	Limited			
Protection Syste	em:	, in the second				Performance		
Condition		Units	Exc.	Good	Fair			
Data:	m² / n	n /each/ % / all	27.51	2.0	2.0	13		
		wearing surface has det	eroriated th			nd NW qua	drants.	
		3						
Performance I	Deficiencies	:: None						
Recommended	Work:	☑ Minor Rehab		☐ Major Re	hab	Maintenance Needs: -		
		☐ Replace		☐ None		☐ Urgent	1 Yes	er 2 Year
Timeframe:				☐ 6 - 10 Ye	ears			
Comments: Pro	ovide erosio	on control at NE and N	W quadrant	S.				
			-					
								
Element Group	:	Embankments & Strea	ms		Len	gth:		(m)
Element Name:		Slope Protection				dth:		(m)
Location:		NE/NW/SE/SW			Hei	ght:		(m)
Material:						unt:	4	(items)
Element Type:					Total Q	uantity:	4.0	(ea)
Environment:		Benign Mod	derate / S	evere		l Insp'n:		
Protection Syst	em:							Performance
Condition		Units	Exc.	Good	Fair	Poor	1	Deficiencies
Data:	m² / n	n /(each)/ % / all		2.0	2.0			13
Comments: No		ection at NE and NW q	uadrants.				•	
		•						
Performance I	Deficiencies	s: None						······································
Recommended	l Work:	☑ Minor Rehab		☐ Major Re	ehab	Mai	ntenance N	leeds: -
ľ		☐ Replace		□ None	•	☐ Urgent		
Timeframe:		1 - 5 Years		☐ 6 - 10 Y	ears			1
Comments:Pro	ovide slope	protection to NE and N	W quadran	ts.				
	-							

Municipal Structure Inspection Form

MTO Site Number:

DY-	8
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Element Group:	Decks			Lei	ngth:	20.70	(m)
Element Name:	Wearing Surface			Width:		7.50	(m)
Location:	Тор			He	ight:		(m)
Material:	Surface Treatment			Co	unt:		(items)
Element Type:	To				Quantity:	155	(m²)
Environment:	Benign / Moderate Severe Limited Insp'n:						
Protection System:	<u> </u>					P	erformance
Condition	Units	Exc.	Good	Fair	Poor	ם	eficiencies
Data: m3/1	m / each / % / all		149	4	2		00
Comments: Longitudinal	cracks and light to medi	um rutting	throughout	with localiz	zed pothole		
Performance Deficiencie	s: None	-					
Recommended Work:	Minor Rehab		☐ Major Rel	hab	= Mai	ntenance Ne	eds: 12/15
	Replace		☐ None		☐ Urgent	☑ 1 Year	☐ 2 Year
Timeframe:	☐ 1 - 5 Years		☑ 6 - 10 Ye	ars	Patch poth	ole and rout	and seal longitudinal
Comments:					crack		

Municipal Structure Inspection Form

within cipal Structi	ne mspeen	on Form		Number:	DY - 8		
Repair and Rehal	oilitation Re	equired:		Pri	ority		Estimated
Element	Repair and	d Rehabilitation Required	6 to 10 years	l to 5 years	Within 1 year	Urgent	Construction Cost
Drainage (Approaches)	Place rip ra	ap erosion protection at all		Х			\$25,000
Wearing Surface (Approaches)		Resurface approaches and quate means for drainage	х				\$20,000
Deck Top	Repair and surface trea	l overlay deck with double atment	х				\$25,000
			<u>. </u>	<u> </u>	<u> </u>	Total Cost	\$70,000
							Estimated
Associated Work:			Commo		Cost		
Approaches: Install guiderail and end to			eatments				\$25,000
Detours:							
Traffic Control: Utilities:							
Eng Design & Sup	ervision:						

Associated Work:	Comments	Estimated Cost
Approaches:	Install guiderail and end treatments	\$25,000
Detours:		
Traffic Control:		
Utilities:		
Eng Design & Supervision:		
Environmental Study:		
Other:		
Contingencies:		
	Total Cost	\$25,000

Justification:	





Structure No: DY-9

Koshlong Lake Bridge

Structure Description

Koshlong Lake Bridge is located on Koshlong Lake Road, 1.5 km east of County Road 1. The bridge was constructed in 1960 and is a 15.6 m three span, two-lane structure with a transverse timber deck on timber beams, piles and abutments. The bridge crosses a non-navigable watercourse on a north/south tangential alignment. The bridge has an overall width of 6.6 m and 6.1 m wide driving surface with timber curbs and a surface treated wearing surface. There is steel beam guiderail across the structure however it is not at the correct elevation; there is no guiderail on the approaches.

Structure Condition

The structure is in fair overall condition with a BCI of 68 and BSI of 66. The timber abutments are in good condition, however there is evidence of material loss from the sides of the abutments and they require stabilization. The timber piles and pile caps are in good condition with moderate checking and cracking. The wooden deck is in good condition with minor cracking; there is no evidence of water penetration. The wearing surface is in poor condition with extensive potholes, patching and cracking. The approaches are in fair condition with minor potholes. The approach side slopes require erosion protection to prevent further erosion near the deck ends. The wooden curbs are in fair condition with severe cracking and minor vehicle damage. There is excessive material build-up against the curbs which should be cleaned to promote deck drainage.

The steel beam guiderail over the structure is in fair condition but is not installed at the correct elevation and one post is missing. The guiderail should be replaced over the structure and extended on the approaches when the next major rehabilitation takes place.

Recommendations

The structure requires a minor rehabilitation within a 1-5 year period including: rebuilding of eroded embankments and installation of proper erosion protection on approach side slopes, stabilization of embankments at deck ends with gabion baskets, replacement of the surface treated wearing surface and address guiderail height. Maintenance should be undertaken to replace the missing guiderail post and clean the bridge deck to promote proper drainage.



Photo 1 : General Arrangement - Looking North

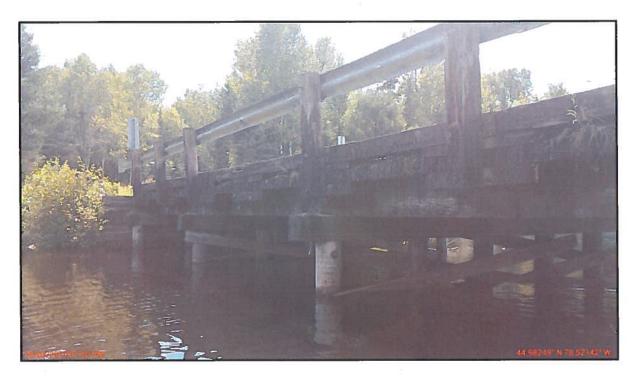


Photo 2 : General Arrangement - Northeast Elevation

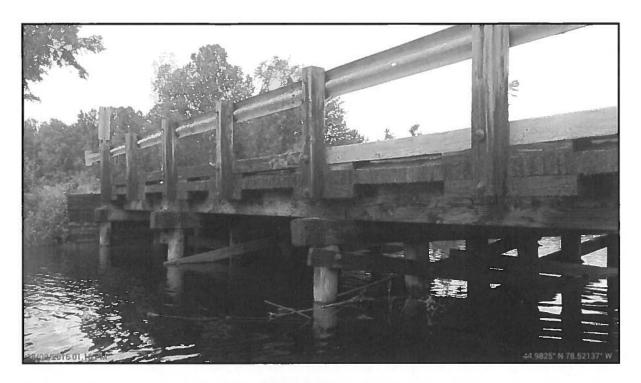


Photo 3 : General Arrangement - Southwest Elevation



Photo 4 : General Arrangement - Deck Wearing Surface Looking South

Municipal Structure Inspection Form				MTO Site Number: DY - 9				
Inventory Data								
Structure Name	Koshlong Lake I	3ridge						
Main Hwy/Road #		On ⊠	Under	Crossing Navig. Type: Rail	Water ⊠ Non-Navig. Water Road Ped. Other			
Road Name	Koshlong Lake I	Road		a successive and the second				
Structure Location	0.15 km North o	f Tippys 7	[rail		Page 1			
Latitude	44.982500			Longitude -78.521200				
Owner(s)	Municipality of	Dysart et a	al		☑ Cons./not App. List/not Desig. ig./Not List Desig. & List			
MTO Region *		PIL		Road Class: Freeway	Arterial Collector Local			
MTO District *			ur e	Posted Speed 60	No. of Lanes 2			
Old County *				AADT	% Trucks			
Geographic Twp. *				Special Routes: Trans	sit Truck School Bicycle			
Structure Type *	Bridge			Detour Length Around Bridg	ge (km)			
Total Deck Length	15.9] (m)	Fill on Structure	0 (m)			
Overall Str. Width	6.6] (m)	Skew Angle	0 (degrees)			
Total Deck Area	105.0	- 11-] (sq.m)	Direction of Structure	E to W			
Roadway Width	6.1] (m)	No. of Spans	3			
Span Lengths	5.2				(m)			
Historical Data:								
Year Built	1960			Last Biennial Inspection	2014			
Current Load Limit	N/A/	/ (tonn	ies)	Last BridgeMaster Inspectio	n N/A			
Load Limit Bylaw #	N/A			Last Evaluation	N/A			
Bylaw Expiry Date	N/A			Last Underwater Inspection	N/A			
Min Vertical Clears	ance -	(m)		Last Condition Survey	N/A			

Year Built 1960 Last Biennial Inspection 2014

Current Load Limit N/A/ / (tonnes) Last BridgeMaster Inspection N/A

Load Limit Bylaw # N/A Last Evaluation N/A

Bylaw Expiry Date N/A Last Underwater Inspection N/A

Min. Vertical Clearance - (m) Last Condition Survey N/A

Rehab. History: (Date/description)

TILL O DICC LIGHT DOLL DI	MTO	Site	Number:	DY - 9
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Field Inspection Inf	formation:				
Date of Inspection:	August 18, 2016				
Inspector:	Robert Brooks – Tulloch Engineering				
Others in Party:	Elizabeth Perry – Tulloch Engineering				
Equipment Used:	Camera, Hammer, Tape Measure				
Weather:	Sun				
Temperature:	+25°C				

Additional Investigations Required:	Additional Investigations Required:			Priority				
		None	Normal	Urgent	Cost			
Detailed Deck Condition Survey:		X						
DART Survey:	X							
Detailed Coating Condition Survey:	X							
Underwater Investigation:		X						
Fatigue Investigation:		X						
Seismic Investigation:		X						
Structure Evaluation:		X						
Load Posting – Estimated Load			Total Cost					
Special Notes:								
Next Detailed Inspection:			2018					

Suspe	cted Performance Deficiencies				
00	None	06	Bearing not uniformly loaded/unstable	12	Slippery surfaces
01	Load carrying capacity	07	Jammed expansion joint	13	Flooding/channel blockage
02	Excessive deformations (deflections & rotations)	08	Pedestrian/vehicular hazard	14	Undermining of foundation
03	Continuing settlement	09	Rough riding surface	15	Unstable embankments
04	Continuing movements	10	Surface ponding	16	Other
05	Seized bearings	11	Deck drainage		
Maint	tenance Needs				
01	Lift and Swing Bridge Maintenance	07	Repair to Structural Steel	13	Erosion Control at Bridges
02	Bridge Cleaning	08	Repair of Bridge Concrete	14	Concrete Sealing
03	Bridge Handrail Maintenance	09	Repair of Bridge Timber	15	Rout and Seal
04	Painting Steel Bridge Structures	10	Bailey Bridges - Maintenance	16	Bridge Deck Drainage
05	Bridge Deck Joint Repair	11	Animal/Pest Control	17	Other
06	Bridge Bearing Maintenance	12	Bridge Surface Repair		

DY - 9

Element Group: Element Name:								
Element Name:		Approaches			Length:		6.0	(m)
		Wearing Surface (App	roaches)	··	Width:		7.5	(m)
Location:		E/W			Hei	ght:		(m)
Material:		Asphalt			Co	unt:	2	(items)
Element Type:		L ABIT	ur u		Total Q	uantity:	90.0	(m²)
Environment:		Benign / Mod	lerate S	evere	Limited Insp'n:			i i i a
Protection System	:						Performance	
Condition	4.2	Units	Exc.	Good	Fair	Poor Deficiencies		
Data:	m²)/ m	/ each / % / all		60.0	20.0	10.0		00
Comments: Light	cracking	, edge of pavement is d	eteriorating	with localiz	ed pothole.	Erosion of	sideslopes c	ontributing to
detrioration of edge					•			
Performance Def	iciencies	: None						
Recommended W	ork:	☐ Minor Rehab		☐ Major Re	hab	Mai	ntenance Ne	eeds:
		☑ Replace		■ None		☐ Urgent	1 Yea	r 2 Year
Timeframe:		☐ 1 - 5 Years		☑ 6 - 10 Ye	ears	117.1		
Comments:								
Element Group:		Barriers			Len	gth:	16.00	(m)
Element Name:		Railing Systems				dth:	NCTO I	(m)
Location: N/S			ght:		(m)			
Material: Steel & Wood			unt:	2	(items)			
Element Type: Steel Flex Beam on Wood Post			Total C	Total Quantity:		(m)		
Environment:		Benign / Mod	lerate S	evere	Limited Insp'n:			
Protection System	:	Creosote / Galvanized					F	Performance
Condition		Units	Exc.	Good	Fair	Poor	-	Deficiencies
Data:	m / n	each / % / all		1 7	32			01
Comments: Guid		ation too high; post mis	ssing along	East side. L	ight to med	ium corrosi	on througho	ut the steel flex beam.
		oolts, moderate splits ar						
Quiucian system ii		Jons, mouciaic spins ai	id checks o	i wooden po	osts. Extend	guidrails to	o end of appi	roacnes.
					osts. Extend	guidrails t	o end of appr	roaches.
	iciencies	: Load carrying capacit Minor Rehab			1 - 1 - 1		ntenance Ne	14.
Performance Def	iciencies	: Load carrying capacit		ail	1 - 1 - 1		ntenance Ne	eeds: 03
Performance Def	iciencies	: Load carrying capacit ☑ Minor Rehab		ail Major Re	hab	Mai □ Urgent	ntenance Ne ☑ 1 Yea	eeds: 03
Performance Def Recommended W	iciencies /ork:	: Load carrying capacit ☑ Minor Rehab ☐ Replace ☑ 1 - 5 Years		ail Major Re None	hab	Mai □ Urgent Replace m	ntenance Ne ☑ 1 Yea	eeds: 03 r
Performance Def Recommended W Timeframe:	iciencies /ork:	: Load carrying capacit ☑ Minor Rehab ☐ Replace ☑ 1 - 5 Years		ail Major Re None	hab	Mai □ Urgent Replace m	ntenance Ne 1 Yea issing woode	eeds: 03 r
Performance Def Recommended W Timeframe:	iciencies /ork:	: Load carrying capacit ☑ Minor Rehab ☐ Replace ☑ 1 - 5 Years		ail Major Re None	hab	Mai □ Urgent Replace m	ntenance Ne 1 Yea issing woode	eeds: 03 r
Performance Def Recommended W Timeframe:	iciencies /ork:	: Load carrying capacit ☑ Minor Rehab ☐ Replace ☑ 1 - 5 Years		ail Major Re None	hab ears	Mai □ Urgent Replace m	ntenance Ne 1 Yea issing woode	eeds: 03 r
Performance Def Recommended W Timeframe: Comments: Insta	iciencies /ork:	: Load carrying capacit ☑ Minor Rehab ☐ Replace ☑ 1 - 5 Years dard height		ail Major Re None	hab Pars Len	Mai ☐ Urgent Replace m tighten loo	ntenance Ne 1 Yea issing woode se connectio	eeds: 03 r
Performance Def Recommended W Timeframe: Comments: Insta	iciencies /ork:	: Load carrying capacit ☑ Minor Rehab ☐ Replace ☑ 1 - 5 Years dard height Sidewalks/Curb		ail Major Re None	hab ears Len Wi	Mai ☐ Urgent Replace m tighten loo	ntenance Ne 1 Yea issing woode se connection	eeds: 03 r
Performance Def Recommended W Timeframe: Comments: Insta	iciencies /ork:	: Load carrying capacit ☑ Minor Rehab ☐ Replace ☑ 1 - 5 Years dard height Sidewalks/Curb Curb		ail Major Re None	Len Wi	Mai ☐ Urgent Replace m tighten loo gth:	ntenance Ne 1 Yea issing woode see connection 15.6 0.25	eeds: 03 r
Performance Def Recommended W Timeframe: Comments: Insta	iciencies /ork:	: Load carrying capacit ☑ Minor Rehab ☐ Replace ☑ 1 - 5 Years dard height Sidewalks/Curb Curb N /S		ail Major Re None	Len Wi Hei	Mai ☐ Urgent Replace m tighten loo gth: dth: ght:	ntenance No 1 Yea issing woode se connection 15.6 0.25 0.3	eeds: 03 r
Performance Def Recommended W Timeframe: Comments: Insta	iciencies /ork:	: Load carrying capacit Minor Rehab Replace 1 - 5 Years dard height Sidewalks/Curb Curb N /S Wood	y of guider	ail Major Re None	Len Wi Hei Co Total Q	Mai ☐ Urgent Replace m tighten loo gth: dth: ght: unt:	ntenance No 1 Yea issing woode se connection 15.6 0.25 0.3 2	eeds: 03 r
Performance Def Recommended W Timeframe: Comments: Insta	iciencies Vork: all at stan	: Load carrying capacit Minor Rehab Replace 1 - 5 Years dard height Sidewalks/Curb Curb N /S Wood	y of guider	ail Major Re None 6 - 10 Ye	Len Wi Hei Co Total Q	Mai ☐ Urgent Replace m tighten loo gth: dth: ght: unt: vuantity:	ntenance No.	eeds: 03 r
Performance Def Recommended W Timeframe: Comments: Insta Element Group: Element Name: Location: Material: Element Type: Environment:	iciencies Vork: all at stan	: Load carrying capacit Minor Rehab Replace 1 - 5 Years dard height Sidewalks/Curb Curb N /S Wood Benign / Moo	y of guider	ail Major Re None 6 - 10 Ye	Len Wi Hei Co Total Q	Mai ☐ Urgent Replace m tighten loo gth: dth: ght: unt: vuantity:	ntenance No ☐ 1 Yea issing woode se connectio ☐ 15.6 ☐ 0.25 ☐ 0.3 ☐ 2 ☐ 17.2 ☐ □ ☐ F	eeds: 03 r
Performance Def Recommended W Timeframe: Comments: Insta Element Group: Element Name: Location: Material: Element Type: Environment: Protection System	iciencies Vork: all at stan	: Load carrying capacit Minor Rebab Replace 1 - 5 Years dard height Sidewalks/Curb Curb N /S Wood Benign / Mood Creosote	ey of guider	ail Major Re None 6 - 10 Ye	Len Wi Hei Co Total Q Limited	Mai ☐ Urgent Replace m tighten loo gth: dth: ght: unt: uantity: l Insp'n:	ntenance No ☐ 1 Yea issing woode se connectio ☐ 15.6 ☐ 0.25 ☐ 0.3 ☐ 2 ☐ 17.2 ☐ □ ☐ F	eeds: 03 r
Performance Def Recommended W Timeframe: Comments: Instance Element Group: Element Name: Location: Material: Element Type: Environment: Protection System Condition Data:	iciencies Vork: all at stan	: Load carrying capacit Minor Rebab Replace 1 - 5 Years dard height Sidewalks/Curb Curb N /S Wood Benign / Mod Creosote Units	derate S	ail Major Re None 6 - 10 Ye evere Good 17.2	Len Wi Hei Co Total Q Limited	Mai ☐ Urgent Replace m tighten loo gth: dth: ght: unt: uantity: l Insp'n:	ntenance No ☐ 1 Yea issing woode se connectio ☐ 15.6 ☐ 0.25 ☐ 0.3 ☐ 2 ☐ 17.2 ☐ □ ☐ F	eeds: 03 r
Performance Def Recommended W Timeframe: Comments: Insta Element Group: Element Name: Location: Material: Element Type: Environment: Protection System Condition Data: Comments: Media	iciencies Vork: all at stan m / n m weath	: Load carrying capacit Minor Rehab Replace 1 - 5 Years dard height Sidewalks/Curb Curb N /S Wood Benign / Moo Creosote Units 1 / each / % / all ering, light splits and c	derate S	ail Major Re None 6 - 10 Ye evere Good 17.2	Len Wi Hei Co Total Q Limited	Mai ☐ Urgent Replace m tighten loo gth: dth: ght: unt: uantity: l Insp'n:	ntenance No ☐ 1 Yea issing woode se connectio ☐ 15.6 ☐ 0.25 ☐ 0.3 ☐ 2 ☐ 17.2 ☐ □ ☐ F	eeds: 03 r
Performance Def Recommended W Timeframe: Comments: Insta Element Group: Element Name: Location: Material: Element Type: Environment: Protection System Condition Data: Comments: Mediu	iciencies Vork: all at stan my/ m mm weath	: Load carrying capacit Minor Rehab Replace 1 - 5 Years dard height Sidewalks/Curb Curb N /S Wood Benign / Moo Creosote Units 1 / each / % / all ering, light splits and c	derate S	ail Major Re None 6 - 10 Ye evere Good 17.2	Len Wi Hei Co Total Q Limited	Mai Urgent Replace m tighten loo gth: dth: ght: unt: uantity: Insp'n:	ntenance No 1 Yea issing woode se connection 15.6 0.25 0.3 2 17.2	eeds: 03 r
Performance Def Recommended W Timeframe: Comments: Insta Element Group: Element Name: Location: Material: Element Type: Environment: Protection System Condition Data: Comments: Media	iciencies Vork: all at stan my/ m mm weath	: Load carrying capacit Minor Rehab Replace 1 - 5 Years dard height Sidewalks/Curb Curb N /S Wood Benign / Moo Creosote Units 1 / each / % / all ering, light splits and c	derate S	evere Good 17.2 ghout.	Len Wi Hei Co Total Q Limited	Mai Urgent Replace m tighten loo gth: dth: ght: unt: uantity: Insp'n: Poor	ntenance No 1 Yea issing woode se connection 15.6 0.25 0.3 2 17.2	eeds: 03 r
Performance Def Recommended W Timeframe: Comments: Insta Element Group: Element Name: Location: Material: Element Type: Environment: Protection System Condition Data: Comments: Media Performance Def Recommended W	iciencies Vork: all at stan my/ m mm weath	: Load carrying capacit Minor Rehab Replace 1-5 Years dard height Sidewalks/Curb Curb N/S Wood Benign / Moo Creosote Units 1 / each / % / all ering, light splits and colored Minor Rehab	derate S	evere Good 17.2 ghout.	Len Wi Hei Co Total Q Limited Fair	Mai □ Urgent Replace m tighten loo gth: dth: ght: unt: uantity: l Insp'n: Poor Mai □ Urgent	ntenance Ne	eeds: 03 r
Performance Def Recommended W Timeframe: Comments: Insta Element Group: Element Name: Location: Material: Element Type: Environment: Protection System Condition Data: Comments: Mediu	iciencies Vork: all at stan my/ m mm weath	: Load carrying capacit Minor Rehab Replace 1-5 Years dard height Sidewalks/Curb Curb N/S Wood Benign / Moo Creosote Units A / each / % / all ering, light splits and color in the color	derate S	evere Good 17.2 ghout. Major Re	Len Wi Hei Co Total Q Limited Fair	Mai □ Urgent Replace m tighten loo gth: dth: ght: unt: uantity: l Insp'n: Poor Mai □ Urgent	ntenance Ne	eeds: 03 r

DY - 9

Element Group:	Deck			Length: 15.9 (m)		(m)		
Element Name:	Deck Top			Width:		6.6	(m)	
Location:				Height:			(m)	
Material:	Wood			Cou		1	(items)	
Element Type:	Laminated Wood Deck	ing - Trans	verse	Total Quantity:		105.0	(m²)	
Environment:	Benign Mod		evere	Limited		2	` ′	
Protection System:	Creosote / Surface Trea			•	-	I	Performance	
Condition	Units	Exc.	Good	Fair	Poor	1	Deficiencies	
	n / each / % / all		95.0	10			00	
	2774 270 270 300	ith light to		ining on un	derside of d	leck.		
Comments: Minor displacement of deck boards with light to medium staining on underside of deck.								
Performance Deficiencie	s: None							
Recommended Work: Minor Rehab Maintenance Needs:								
	Replace		✓ None		☐ Urgent	☐ 1 Yea	ar 🔲 2 Year	
Timeframe:	☐ 1 - 5 Years ☐ 6 - 10 Y			ears				
Comments:								
Element Group:	ent Group: Deck			Len	gth:	15.9	(m)	
Element Name:	Wearing Surface (Deck	cs)			dth:	6.1	(m)	
Location:	Deck Top			Hei	ght:		(m)	
Material:	Asphalt Surface Treatment				unt:	1	(items)	
Element Type:					uantity:	97.0	(m²)	
Environment:	Benign / Mod	erate S	evere	Limited Insp'n:				
Protection System:	- S	U 18			Performance			
Condition	Units	Exc.	Good	Fair	Poor	Deficiencies		
Data: m ² /1	n / each / % / all		16	54	27		09, 10	
Comments: Moderate poth	oles observed with trans	sverse cracl	king through	hout wearing	g surface. S	urface pond	ling is causing	
progressive deterioration of	f existing asphalt wearing	g surface.						
Performance Deficiencie		and surface						
Recommended Work:	Minor Rehab		☐ Major Re	hab		ntenance N	eeds: 12	
	Replace		✓ None		☐ Urgent			
Timeframe:			☐ 6 - 10 Ye	ears	Provide bridge surface repairs as a			
Comments: Replace asph	alt wearing surface.							
esta escar								
Element Group:	Pier				igth:	8	(m)	
Element Name:	Caps				dth:	0.30	(m)	
Location:	4 Bents				ight:	0.30	(m)	
Material:	Wood				unt:	4	(items)	
Element Type:					uantity:	28.8	(m²)	
Environment:		lerate / S	evere	Limited	i Insp'n:	Image: section of the content of the		
Protection System:	Creosote					-	Performance	
Condition	Units	Exc.	Good	Fair	Poor	Poor Deficiencies		
	m / each / % / all		27.8	<u></u>	1	<u></u>	00	
Comments: Pier cap at So	outh abutment has moder	rate to seve	re longitudi	nal cracks.				
Performance Deficiencie	s: None							
Recommended Work:	☐ Minor Rehab		☐ Major Re	ehab	Mai	ntenance N	eeds: -	
	☐ Replace		☑ None		☐ Urgent	☐ 1 Ye	ar 🔲 2 Year	
Timeframe:	☐ 1 - 5 Years		☐ 6 - 10 Y	ears				
Comments:								

Municipal	Structure	Inspection	Form
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Element Group:		Abutments			Ler	ngth:	8.5	(m)	
Element Name:		Ballast Wall				idth:	Γ	(m)	
Location:		E/W			He	ight:	1.60	(m)	
Material:		Wood			Co	unt:	2	(items)	
Element Type:						Quantity:	13.6	(m²)	
Environment:		Benign Mod	derate S	Severe	Limited	d Insp'n:			
Protection Syste	em:	Creosote					Pe	erformance	
Condition		Units	Exc.	Good	Fair	Poor	Poor Deficiencies		
Data:	m)/n	n / each / % / all		13.6			1 4	00	
Comments: Lig		ong the base of ballast	wall. Scour	behind ball	ast walls du	e to contin	ued erosion of	embankments.	
	,								
Performance D	eficiencies	: None							
Recommended	Work:	☐ Minor Rehab		☐ Major Rel	hab	Mai	intenance Nee	eds: 13	
	*******	Replace		☑ None		Urgent			
Timeframe:		☐ 1 - 5 Years		☐ 6 - 10 Ye	ears	Erosion co			
Comments:					2.00.0	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,			
Comments.									
								-	
Element Group:		Beams/MLE's			Ter	igth:	5.5	(m)	
Element Name:		Girders			+	dth:	1 3.5		
Location:						-	(m)		
Material:						ight:	27	(m)	
		Wood				unt:	27	(items)	
Element Type:		Domican / Mac	1t / C	1	Total Quantity: Limited Insp'n:		27.0	(each)	
Environment:			derate / S	Severe	Limited	lnsp'n:			
Protection Syste	em:	Creosote			T	T .	Performance		
Condition		Units	Exc.	Good	Fair	Poor	D	eficiencies	
Data:		n each/ % / all		26.0	1.0	<u> </u>		00	
Comments: Lig	ght to medii	um splits and cracks thr	oughout. M	1edium crack	ks along the	South Eas	t quadrant.		
Performance D	eficiencies								
Recommended	Work:	Minor Rehab		☐ Major Rel	hab	Mai	intenance Nee	eds: -	
		☐ Replace		✓ None	☐ Urgent ☐ 1 Year ☐ 2 Year				
Timeframe:		☐ 1 - 5 Years		☐ 6 - 10 Ye	ears			5 7 5 7	
Comments:									
-									
100									
Element Group:		Embankments & Strea	ims		Ler	igth:		(m)	
Element Name:		Embankments				dth:		(m)	
Location:		NE/NW/SE/SW				ight:	1	(m)	
Material:						unt:	4	(items)	
Element Type:						uantity:	4.0	(ea)	
Environment:		Benign / Mod	derate / S	evere		d Insp'n:	<u> </u>	(***)	
Protection Syste	·m:			• • • • • • • • • • • • • • • • • • • •		- 1p	Pe	erformance	
Condition		Units	Exc.	Good	Fair	Poor	⊣	eficiencies	
Data:	m² / m		201.01	1 1	4	100.		15	
		sion of embankments a	t hallast wa	all locations			<u></u>		
				III IOCATIONS.					
Performance D	eficiencies	: Unstable embankmen	ts						
Recommended	Work:	☑ Minor Rehab		☐ Major Rel	Maintenance Needs:			eds:	
l		☐ Replace		☐ None	·	☐ Urgent	☐ 1 Year	☐ 2 Year	
		☐ 1 - 5 Years		✓ 6 - 10 Ye	2255	12.7			
Timeframe:				■ 0 - 10 tE	tar5				
	pair eroded	sections of embankmer	ıts & provi	_					

Municipal Structure Inspection Form

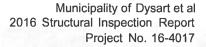
MTO Site Number:

DY - 9

Repair and Rehabi	litation Required:		Priority				
Element	Repair and Rehabilitation Required	6 to 10 years	1 to 5 years	Within 1 year	Urgent	Construction Cost	
Abutments	Stabilize sideslopes and provide lateral support for embankments at deck ends with gabion baskets & erosion protection.	х				\$65,000	
Approach (Wearing Surface)	Replace asphalt wearing surfaces	х				\$25,000	
Railing System	Replace guiderail over structure.	х				\$25,000	
Deck (Wearing Surface)	Repair and resurface deck.		Х			\$25,000	
	•	•	•		Total Cost	\$140,000	

Associated Work:	Comments	Estimated Cost
Approaches:	Guiderail and end treatment on approaches	\$25,000
Detours:		
Traffic Control:		
Utilities:		
Right of Way:		
Environmental Study:		
Other:		
Contingencies:		
	Total Cost	\$25,000

Justification:		
	9	





Structure No: DY-10
Kelly Lake Bridge

Structure Description

Kelly Lake Bridge is located on Kennisis Lake Road, 1.0 km west of Watts Road. The bridge was constructed in 1970 and is a 5.4 m single-span, two-lane structure with a transverse timber deck supported by timber beams on timber cribs. The structure crosses a navigable watercourse on an east/west tangential alignment. The bridge has an overall width of 6.7 m and 6.1 m wide driving surface with a surface treated wearing surface and timber curbs. There is steel beam guiderail across the structure but no guiderail on the approaches.

Structure Condition

The structure in in good overall condition with a BCI of 71 and BSI of 68. The wooden abutment cribs are in good condition. The concrete foundations under the cribbing exhibit minor spalling and scour at the waterline. Erosion protection should be placed along the abutments at the waterline to prevent further scour. The wooden deck is in good condition with no signs of water penetration or displacement of the boards. The surface treated wearing surface is in good condition with minor transverse cracking. The timber curbs are in fair condition with cracking and minor vehicle damage. There is excessive material build-up along the curbs which should be cleaned to improve deck drainage. The guiderail over the structure is in good condition with minor corrosion and cracking/checking of timber support posts.

Recommendations

The structure requires rip-rap erosion protection around both abutments to prevent further scour of the foundations and to provide embankment protection. Guiderail extension on the approaches should be undertaken in the future when the structure undergoes a major rehabilitation. The build-up of debris on the deck should be removed as part of maintenance.

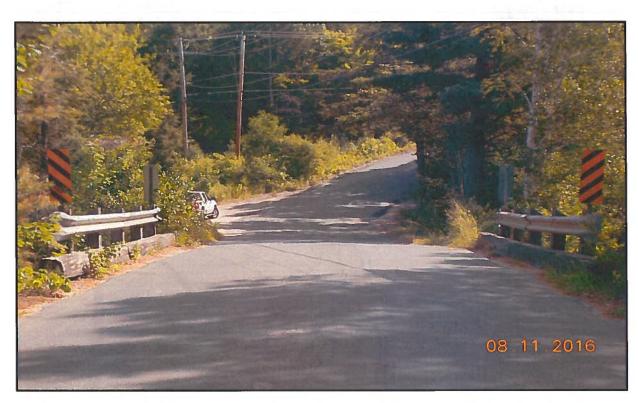


Photo 1 : General Arrangement - Looking North

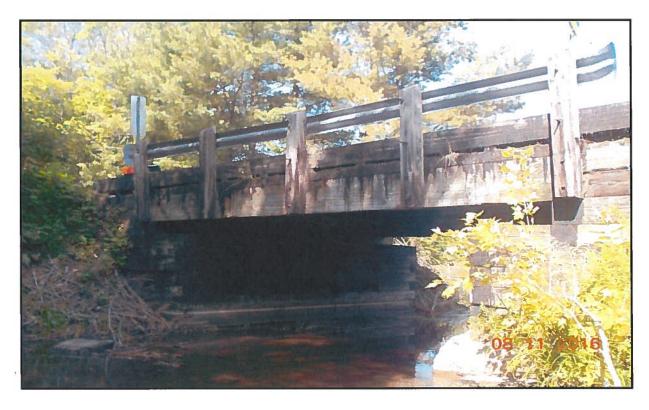


Photo 2 : General Arrangement - East Elevation

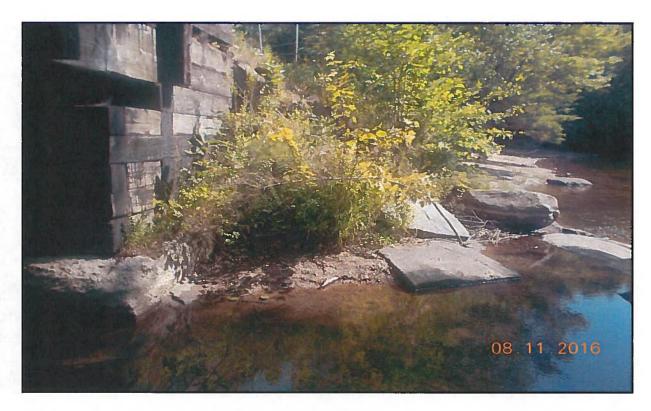


Photo 3 : Northeast Embankment - Looking North



Photo 4 : Northwest Embankment - Looking North



Photo 5 : Southwest Embankment - Looking South



Photo 6 : North Abutment - Looking North

Inventory Data							
Structure Name	Kelly Lake Bridge						
Main Hwy/Road #	County Road 7 On ⊠	Under		tter ⊠ Non-Navig. Water Road Ped. Other			
Road Name	Kennisis Lake Road						
Structure Location	North of North Kennisis La	ake Road					
Latitude	45.241500		Longitude -78.616500				
Owner(s)	Municipality of Dysart et a	ıl	Heritage Not Cons. Cons./not App. List/not Designation: Desig./Not List Desig. & List				
MTO Region *			Road Class: Freeway A	rterial Collector Local			
MTO District *			Posted Speed 50	No. of Lanes 2			
Old County *			AADT	% Trucks			
Geographic Twp. *			Special Routes: Transit	Truck School Bicycle			
Structure Type *	Bridge		Detour Length Around Bridge	(km)			
Total Deck Length	7.7	(m)	Fill on Structure	0 (m)			
Overall Str. Width	6.7	(m)	Skew Angle	0 (degrees)			
Total Deck Area	79.0	sq.m)	Direction of Structure	N to S			
Roadway Width	6.1	(m)	No. of Spans	1			
Span Lengths	5.4			(m)			
Historical Data							
Year Built	1970		Last Biennial Inspection	2014			
Current Load Limit	N/A/ / (tonn	es)	Last BridgeMaster Inspection	N/A			
Load Limit Bylaw #	N/A		Last Evaluation	N/A			
Bylaw Expiry Date	N/A		Last Underwater Inspection	N/A			
Min. Vertical Clear	ance - (m)		Last Condition Survey	N/A			
Rehab. History: (D	ate/description)						

MTO Site Number: DY - 10

Field Inspection Info	ormation:			
Date of Inspection:	August 11, 2016			
Inspector:	Robert Brooks – Tulloch Engineering			
Others in Party:	Elizabeth Perry – Tulloch Engineering			
Equipment Used:	Camera, Hammer, Tape Measure			
Weather:	Sun			
Temperature:	+26 ^o C			

MTO Site Number: DY - 10

Additional Investigations Required:		Priority		
	None	Normal	Urgent	Cost
Detailed Deck Condition Survey:	X			
DART Survey:	X			
Detailed Coating Condition Survey:	X			
Underwater Investigation:	X			
Fatigue Investigation:	. X			
Seismic Investigation:	X			
Structure Evaluation:	X			
Load Posting – Estimated Load		Т	Total Cost	\$0
Special Notes:				
Next Detailed Inspection:			2018	

Susne	ected Performance Deficiencies				
00	None	06	Bearing not uniformly loaded/unstable	12	Slippery surfaces
01	Load carrying capacity	07	Jammed expansion joint	13	Flooding/channel blockage
02	Excessive deformations (deflections & rotations)	08	Pedestrian/vehicular hazard	14	Undermining of foundation
03	Continuing settlement	09	Rough riding surface	15	Unstable embankments
04	Continuing movements	10	Surface ponding	16	Other
05	Seized bearings	11	Deck drainage		
Main	tenance Needs				
01	Lift and Swing Bridge Maintenance	07	Repair to Structural Steel	13	Erosion Control at Bridges
02	Bridge Cleaning	08	Repair of Bridge Concrete	14	Concrete Sealing
03	Bridge Handrail Maintenance	09	Repair of Bridge Timber	15	Rout and Seal
04	Painting Steel Bridge Structures	10	Bailey Bridges - Maintenance	16	Bridge Deck Drainage
05	Bridge Deck Joint Repair	11	Animal/Pest Control	17	Other
06	Bridge Bearing Maintenance	12	Bridge Surface Repair		

DY - 10

- 0							
Element Group:	Abutments			Length:			(m)
Element Name:	Abutment Walls		-	Wi	Width:		(m)
Location:				Hei	ght:	2.0	(m)
Material:	Wood Timber		j.	Co	unt:	2	(items)
Element Type:	Crib or Gabion			Total Quantity:		28.0	(m²)
Environment:	Benign Mod	lerate / Se	evere		l Insp'n:		. , ,
Protection System:	Creosote			Performance			
Condition	Units	Exc.	Good	Fair	Poor	1	Deficiencies
	n / each / % / all		28				00
Comments: Cribs in good		and checks					
Comments. Cribs in good	condition, inmor spins t	and oncers.					
Performance Deficiencie	s. None			·	-		
Recommended Work:	Minor Rehab Major Reh			hab	hab Maintenance Needs:		
Accommended Work.	☐ Replace		☑ None		☐ Urgent		
Timeframe:	☐ 1 - 5 Years		6 - 10 Ye	ars			
Comments:	<u> </u>		_ 0 10	.015			
Comments:							
Et . C	In .						
Element Group:	Barriers				gth:	8.00	(m)
Element Name:	Railing Systems				dth:	licite.	(m)
Location:	E/W				ght:		(m)
Material:	Steel				unt:	2	(items)
Element Type:	of 1 allows			Total Quantity:		16.0	(m)
Environment:		lerate S	evere	Limited	l Insp'n:		
Protection System:	Galvanized Creosote] 1	Performance
Condition	Units	Exc.	Good	Fair	Poor Deficiencies		
	n each / % / all		16				00
Comments: Guiderail in g	good condition with min-	or corrosion		Jaffanian.	Doote house		
			i and illinoi	deffection.	rosis nave	minor crack	ing, splits and checks.
N/E quadrant end connecti			i and illinoi	deffection.	rosis nave	minor crack	ing, splits and checks.
N/E quadrant end connecti Performance Deficiencie	on bolt requires refasten		i and illinoi	deflection.	rosis nave	minor crack	ing, splits and checks.
	on bolt requires refasten s: None Minor Rehab		☐ Major Re			ntenance N	
Performance Deficiencie	on bolt requires refasten s: None						eeds:
Performance Deficiencie	on bolt requires refasten s: None Minor Rehab		☐ Major Re	hab	Mair	atenance N	eeds:
Performance Deficiencie Recommended Work:	on bolt requires refasten s: None		☐ Major Re ☑ None	hab	Mair	atenance N	eeds:
Performance Deficiencie Recommended Work: Timeframe:	on bolt requires refasten s: None		☐ Major Re ☑ None	hab	Mair	atenance N	eeds:
Performance Deficiencie Recommended Work: Timeframe:	on bolt requires refasten s: None		☐ Major Re ☑ None	hab	Mair	atenance N	eeds:
Performance Deficiencie Recommended Work: Timeframe: Comments:	on bolt requires refasten s: None		☐ Major Re ☑ None	hab	Mai i □ Urgent	ntenance N	eeds: ar
Performance Deficiencie Recommended Work: Timeframe:	on bolt requires refasten s: None		☐ Major Re ☑ None	hab ears Len	Mair	ntenance N	eeds: ar
Performance Deficiencie Recommended Work: Timeframe: Comments: Element Group: Element Name:	on bolt requires refasten s: None		☐ Major Re ☑ None	hab Pars Len Wid	Main ☐ Urgent gth:	11.7 0.20	eeds: ar
Performance Deficiencie Recommended Work: Timeframe: Comments: Element Group: Element Name: Location:	on bolt requires refasten s: None		☐ Major Re ☑ None	hab ears Len Wid Hei	Main Urgent gth: dth: ght:	11.7 0.20 0.55	eeds: or
Performance Deficiencie Recommended Work: Timeframe: Comments: Element Group: Element Name: Location: Material:	on bolt requires refasten S: None Minor Rehab Replace 1 - 5 Years Beam/ MLE Girders N/S Wood		☐ Major Re ☑ None	Len Wie Hei	Main Urgent gth: dth: ght: unt:	11.7 0.20 0.55	eeds: or
Performance Deficiencie Recommended Work: Timeframe: Comments: Element Group: Element Name: Location: Material: Element Type:	on bolt requires refasten S: None Minor Rehab Replace 1 - 5 Years Beam/ MLE Girders N/S Wood Rectangular-solid	ing.	☐ Major Re ☑ None ☐ 6 - 10 Ye	Len Wie Hei Cou	Main Urgent gth: dth: ght: unt: uantity:	11.7 0.20 0.55 10	eeds: or
Performance Deficiencie Recommended Work: Timeframe: Comments: Element Group: Element Name: Location: Material: Element Type: Environment:	on bolt requires refasten S: None Minor Rehab Replace 1 - 5 Years Beam/ MLE Girders N/S Wood Rectangular-solid Benign/ Mod	ing.	☐ Major Re ☑ None	Len Wie Hei Cou	Main Urgent gth: dth: ght: unt:	11.7 0.20 0.55 10 152.1	(m) (m) (m) (m) (items) (m²)
Performance Deficiencie Recommended Work: Timeframe: Comments: Element Group: Element Name: Location: Material: Element Type: Environment: Protection System:	on bolt requires refasten s: None	lerate / Se	☐ Major Re ☑ None ☐ 6 - 10 Ye	Len Wid Hei Coo Total Q Limited	Main ☐ Urgent gth: dth: ght: unt: uantity: Insp'n:	11.7 0.20 0.55 10 152.1	(m) (m) (m) (items) (m²)
Performance Deficiencie Recommended Work: Timeframe: Comments: Element Group: Element Name: Location: Material: Element Type: Environment: Protection System: Condition	on bolt requires refasten s: None Minor Rehab Replace 1 - 5 Years Beam/ MLE Girders N/S Wood Rectangular-solid Benign / Mod Creosote Units	ing.	☐ Major Re ☑ None ☐ 6 - 10 Ye	Len Wie Hei Cou	Main Urgent gth: dth: ght: unt: uantity:	11.7 0.20 0.55 10 152.1	(m) (m) (m) (items) (m²) Performance Deficiencies
Performance Deficiencie Recommended Work: Timeframe: Comments: Element Group: Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: Macerial:	on bolt requires refasten s: None	lerate / Se	☐ Major Re ☑ None ☐ 6 - 10 Yes evere Good 152.1	Len Wic Hei Coo Total Q Limited	Main Urgent gth: dth: ght: unt: uantity: Insp'n:	11.7 0.20 0.55 10	(m) (m) (m) (items) (m²) Performance Deficiencies 00
Performance Deficiencie Recommended Work: Timeframe: Comments: Element Group: Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: Comments: Minor cracking	on bolt requires refasten s: None	lerate / Se	☐ Major Re ☑ None ☐ 6 - 10 Yes evere Good 152.1	Len Wic Hei Coo Total Q Limited	Main Urgent gth: dth: ght: unt: uantity: Insp'n:	11.7 0.20 0.55 10	(m) (m) (m) (items) (m²) Performance Deficiencies 00
Performance Deficiencie Recommended Work: Timeframe: Comments: Element Group: Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: Comments: Minor crackin observed.	on bolt requires refasten s: None	lerate / Se	☐ Major Re ☑ None ☐ 6 - 10 Yes evere Good 152.1	Len Wic Hei Coo Total Q Limited	Main Urgent gth: dth: ght: unt: uantity: Insp'n:	11.7 0.20 0.55 10	(m) (m) (m) (items) (m²) Performance Deficiencies 00
Performance Deficiencie Recommended Work: Timeframe: Comments: Element Group: Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: Comments: Minor crackin observed. Performance Deficiencie	on bolt requires refasten S: None Minor Rehab Replace 1 - 5 Years Beam/ MLE Girders N/S Wood Rectangular-solid Benign / Mod Creosote Units n / each / % / all g and checking. Modera	lerate / Se	□ Major Re □ None □ 6 - 10 Ye evere Good 152.1 flection obse	Len Wic Hei Con Total Q Limited Fair	Main Urgent gth: dth: ght: unt: uantity: Insp'n: Poor loading of	11.7 0.20 0.55 10 152.1	(m) (m) (m) (items) (m²) Performance Deficiencies 00 e dump truck was
Performance Deficiencie Recommended Work: Timeframe: Comments: Element Group: Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: Comments: Minor crackin observed.	on bolt requires refasten S: None Minor Rehab Replace 1 - 5 Years Beam/ MLE Girders N/S Wood Rectangular-solid Benign / Mod Creosote Units n / each / % / all g and checking. Modera S: None Minor Rehab	lerate / Se	□ Major Re □ None □ 6 - 10 Ye evere Good 152.1 flection obse	Len Wic Hei Con Total Q Limited Fair	Main Urgent Urgent gth: dth: ght: unt: uantity: Insp'n: Poor loading of	11.7 0.20 0.55 10 152.1	(m) (m) (m) (items) (m²) Performance Deficiencies 00 e dump truck was
Performance Deficiencie Recommended Work: Timeframe: Comments: Element Group: Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: Comments: Minor crackin observed. Performance Deficiencie Recommended Work:	on bolt requires refasten s: None	lerate / Se	□ Major Re □ None □ 6 - 10 Ye evere Good 152.1 flection obse	Len Wid Hei Con Total Q Limited Fair erved while	Main Urgent gth: dth: ght: unt: uantity: Insp'n: Poor loading of	11.7 0.20 0.55 10 152.1	(m) (m) (m) (items) (m²) Performance Deficiencies 00 e dump truck was
Performance Deficiencie Recommended Work: Timeframe: Comments: Element Group: Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: Comments: Minor crackin observed. Performance Deficiencie Recommended Work: Timeframe:	on bolt requires refasten S: None Minor Rehab Replace 1 - 5 Years Beam/ MLE Girders N/S Wood Rectangular-solid Benign / Mod Creosote Units n / each / % / all g and checking. Modera S: None Minor Rehab	lerate / Se	□ Major Re □ None □ 6 - 10 Ye evere Good 152.1 flection obse	Len Wid Hei Con Total Q Limited Fair erved while	Main Urgent Urgent gth: dth: ght: unt: uantity: Insp'n: Poor loading of	11.7 0.20 0.55 10 152.1	(m) (m) (m) (items) (m²) Performance Deficiencies 00 e dump truck was
Performance Deficiencie Recommended Work: Timeframe: Comments: Element Group: Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: Comments: Minor crackin observed. Performance Deficiencie Recommended Work:	on bolt requires refasten s: None	lerate / Se	□ Major Re □ None □ 6 - 10 Ye evere Good 152.1 flection obse	Len Wid Hei Con Total Q Limited Fair erved while	Main Urgent Urgent gth: dth: ght: unt: uantity: Insp'n: Poor loading of	11.7 0.20 0.55 10 152.1	(m) (m) (m) (items) (m²) Performance Deficiencies 00 e dump truck was

DY - 10

Element Group:		Deck			Length:		7.7	(m)	
Element Name:		Deck Top			Width:		6.7	(m)	
Location:			Hei			(m)			
Material:		Wood			Cor		1	(items)	
Element Type:		Laminated Wood Decl			Total Q		51.6	(m²)	
Environment:		Benign Mod		evere	Limited	l Insp'n:			
Protection Syste	em:	Creosote / Surface Tre	Performance						
Condition		Units	Exc.	Good	Fair	Poor	Deficiencies		
Data:	m / m	/ each / % / all		39	13			00	
Comments:									
Performance D	eficiencies								
Recommended	Work:	☐ Minor Rehab		☐ Major Re	hab	Mair	itenance N	eeds: -	
		☐ Replace		✓ None		☐ Urgent	☐ 1 Yea	r 🔲 2 Year	
Timeframe:		☐ 1 - 5 Years		☐ 6 - 10 Ye	ears				
Comments:									
Element Group:		Deck			-	gth:	7.7	(m)	
Element Name:		Wearing Surface (Dec	ks)			dth:	6.7	(m)	
Location:						ght:		(m)	
Material:		Surface Treatment				unt:	1 51.6	(items)	
Element Type:								(m²)	
Environment:		Benign / Mod	lerate (S	evere	Limited	l Insp'n:			
Protection Syste	em:			_			1	Performance	
Condition		Units	Exc.	Good	Fair	Poor		Deficiencies	
Data:		1 / each / % / all		40.6	10	1.0		00	
Comments: Mi	inor transve	rse cracking.							
Performance D									
Recommended	Work:	Minor Rehab		☐ Major Re	hab	100135577	ntenance N		
		Replace		☐ None		☑ Urgent ☐ 1 Year ☐ 2 Year			
Timeframe:		☐ 1 - 5 Years		☐ 6 - 10 Ye	ears	_		curbs to alleviate	
Comments:					surface ponding.				
		<u> </u>			1				
Element Group:		Foundations	1.7	15		1 (avg):	7	(m)	
Element Name:		Foundation (Below G	round Leve	1)		dth:	2.50	(m)	
Location:		Coat in alsee Coa				ight:	0.5	(m)	
Material:		Cast-in-place Concrete	<u> </u>			unt:	2	(items)	
Element Type:		Benign / Moo	derate / S	evere		Quantity:	7.0	(m²)	
Environment:		Benight Wood	derate / S	evere	Limited	ı msp n.		Df	
Protection Syste	l I	Units	Exc.	Good	Fair	Poor	-1	Performance Deficiencies	
Condition Data:	m² / m	n /each/ % / all	EXC.	Good	7	FOOI		00	
		osed concrete foundation	n: rooniroo	orogion prof	<u> </u>	ificant date	rioration of		
foundation bear			n, requires	erosion broi	ection. Sign	micant uete	a iorauon or	L avuniiciit	
Performance I									
Recommended		✓ Minor Rehab		☐ Major Re	ehab	Mai	ntenance N	eeds: -	
	· ·····	Replace		☐ None		Urgent			
Timeframe:				☐ 6 - 10 Y	ears		10.77		
	ean and pro	ovide stable bearing sur	face.						
Comments: Clean and provide stable bearing surface.									

DY- 10

Element Group:	Approaches			Length:		6.0	(m)	
Element Name:	Wearing Surface			Wi	Width:		(m)	
Location:	N/S			Hei	ight:		(m)	
Material:	Asphalt			Co	unt:	2	(items)	
Element Type:				Total C	uantity:	73.2	(m²)	
Environment:	Benign / Mod		l Insp'n:					
Protection System:							Performance	
Condition	Units	Exc.	Good	Fair	Poor	1	Deficiencies	
	n / each / % / all		73.2			00		
Comments: Light wear and rutting.								
	- · · · · · · · · · · · · · · ·							
Performance Deficiencies	: None							
Recommended Work:	☐ Minor Rehab		☐ Major Re	hab	Mair	atenance N	eeds: -	
	☐ Replace		✓ None		☐ Urgent	☑ 1 Year	ar 2 Year	
Timeframe:	☐ 1 - 5 Years		☐ 6 - 10 Ye	ars	Remove ov	ergrown ve	getation along	
Comments:					appraoch s	-	5	
					l			
Element Group:	Sidewalks/Curbs			Len	gth:	24	(m)	
Element Name:	Curbs				dth:	0.27	(m)	
Location:	N/S				ght:	0.35	(m)	
Material:	Wood				unt:	2	(items)	
Element Type:					Total Quantity:		(m²)	
Environment:	Benign / Mod	lerate / S	evere		Limited Insp'n:			
Protection System:							Performance	
Condition	Units	Exc.	Good	Fair	Poor	Deficiencies		
	ı / each / % / all		14.9	14.9			00	
Comments: Longitudnal c					Yi .			
Performance Deficiencies	: None							
Recommended Work:	☐ Minor Rehab		☐ Major Re	hab	Mair	itenance N	eeds: -	
	☐ Replace		None	☐ Urgent		1 Year 2 Year		
Timeframe:	☐ 1 - 5 Years		☐ 6 - 10 Ye	ars				
Comments:								
			-					
Element Group:	Streams and Embankm	ents		Len	gth:		(m)	
Element Name:	Embankments			Width:			(m)	
Location:	NE/NW/SE/SW				ght:	-	(m)	
Material:					unt:	4	(items)	
Element Type:					uantity:	4	(ea)	
Environment:	Benign Mod	erate / Se	evere		l Insp'n:			
Protection System:							Performance	
Condition	Units	Exc.	Good	Fair	Poor		Deficiencies	
Data: m ² / m	n /each) % / all			4			00	
Comments: Build up of w		kments, ina	dequate slo	pe protection	on.		1	
·	J	,						
Performance Deficiencies	: None							
Recommended Work:	☑ Minor Rehab		☐ Major Rel	hab	Mair	itenance N	eeds: 13,17	
	Replace	•	□ None		Urgent	☑ 1 Yea		
Timeframe:	✓ 1 - 5 Years		☐ 6 - 10 Ye	ars	Clean build	l up of woo		
Comments: Provide rip rap	slope protection.							

Municipal Structure Inspection Form

MTO Site Number:

DY - 10

Repair and Rehab	ilitation Re	quired:		Estimated			
Element	Repair and	Rehabilitation Required	6 to 10 years	1 to 5 years	Within 1 year	Urgent	Construction Cost
Foundation (Below	Rip rap pro	tectipn required on		v			£10,000
Ground Level)	foundation	to prevent scour		X			\$10,000
	ļ		ļ				
			-				
	-				 		
	-			 			
	-						
				-			
						Total Cost	\$10,000
· ···						Total Cost	\$10,000
		1	-	,			Estimated
Associated Work:			Commo	ents			Cost
Approaches:		Guiderail on approaches w	ith end trea	\$25,000			
Detours:							
Traffic Control:							
Jtilities:				11.1.1			
Right of Way:							
Environmental Stud	ly:						
Other:							
Contingencies:							
						Total Cost	\$25,000



Structure No: DY-11
Burnt River Bridge

Structure Description

The Burnt River Bridge is located on Unicorn Road, 1.7 km south of Hutchings Road. The bridge was constructed in 2008 and is a 15.4 m single span, two lane structure with corrugated steel deck supported by steel girders on concrete bearing slabs with steel ballast walls. The bridge crosses a non-navigable watercourse on a north/south tangential alignment. The bridge has a 6.0 m wide deck with an asphalt covered wearing surface and gravel approaches. There is steel beam guiderail over the structure and on the approaches.

Structure Condition

The structure is in good overall condition with a BCI of 76 and BSI of 74. The concrete abutments and bearing slabs are in good condition. The bearing pads are in good condition. The steel deck and girders are in good condition; the girder ends have minor corrosion and loss of coating. The asphalt wearing surface is in good condition. The expansion joint seal has failed at the south end of the deck and requires replacement to prevent water infiltration.

Recommendations

The structure requires no major improvements at this time. Maintenance is required to replace the damaged expansion joint seal.



Photo 1 : General Arrangement - Looking North



Photo 2 : General Arrangement - Looking South

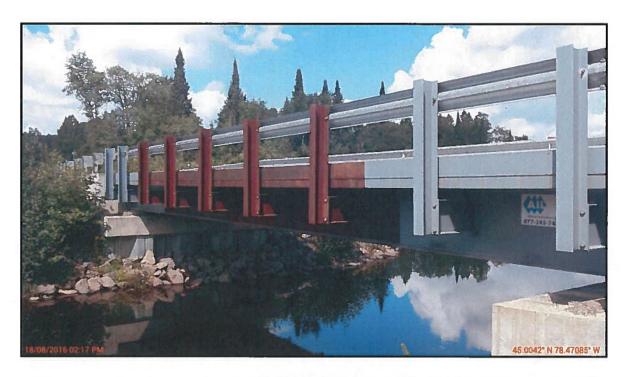


Photo 3 : General Arrangement - Southwest Elevation

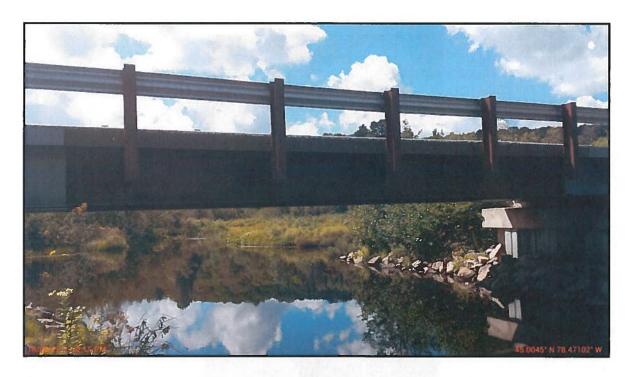


Photo 4 : General Arrangement - Southeast Elevation

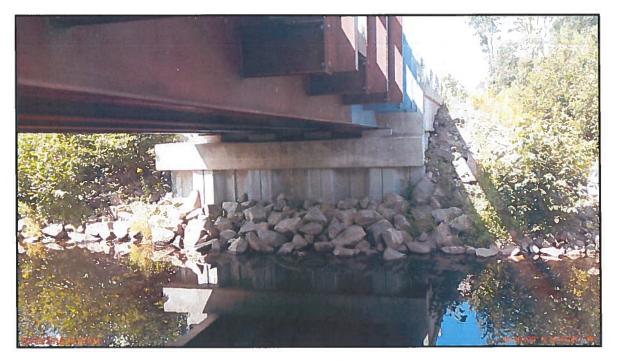


Photo 5 : General Arrangement - North Abutment



Photo 6 : South Expansion Joint at Deck / Approach Intersection

Inventory Data				
Structure Name	Burnt River Bridge			
Main Hwy/Road #	On ⊠	Under	_	ater ⊠ Non-Navig. Water Road Ped. Other
Road Name	Unicorn Road			
Structure Location	1.7 km South of Hutchin	gs Road		
Latitude	45.004000		Longitude -78.470200	
Owner(s)	County of Haliburton		<u> </u>	Cons./not App. List/not Desig. Not List Desig. & List
MTO Region *			Road Class: Freeway A	arterial Collector Local
MTO District *			Posted Speed 50	No. of Lanes 2
Old County *			AADT	% Trucks
Geographic Twp. *			Special Routes: Transit	Truck School Bicycle
Structure Type *	Bridge		Detour Length Around Bridge	(km)
Total Deck Length	23.2	(m)	Fill on Structure	0 (m)
Overall Str. Width	6.0	(m)	Skew Angle	0 (degrees)
Total Deck Area	139.0	sq.m)	Direction of Structure	N to S
Roadway Width	6.0	(m)	No. of Spans	1
Span Lengths	15.4			(m)
Historical Data				
Year Built	2008		Last Biennial Inspection	2014
Current Load Limit	N/A/ / (ton	nes)	Last BridgeMaster Inspection	N/A
Load Limit Bylaw #	# N/A		Last Evaluation	N/A
Bylaw Expiry Date	N/A		Last Underwater Inspection	N/A
Min. Vertical Cleara			Last Condition Survey	N/A
Rehab. History: (D	ate/description)			
).				
aī .		_		
		270		*)

MTO Site Number: DY -

Field Inspection Inf	formation:			
Date of Inspection:	August 18, 2016			
Inspector:	Robert Brooks – Tulloch Engineering			
Others in Party:	Elizabeth Perry – Tulloch Engineering			
Equipment Used:	Camera, Hammer, Tape Measure			
Weather:	Sun			
Temperature:	+27 ⁰ C			

Additional Investigations Required:		Estimated		
	None	Normal	Urgent	Cost
Detailed Deck Condition Survey:	X			
DART Survey:	X			
Detailed Coating Condition Survey:	X			
Underwater Investigation:	X			
Fatigue Investigation:	X			
Seismic Investigation:	X			
Structure Evaluation:	X			
Load Posting – Estimated Load		Total Cost \$		\$0
Special Notes:				
Next Detailed Inspection:		2018		

06 Bearing not uniformly loaded/unstable 12 Slippery surfaces 00 None Flooding/channel blockage Undermining of foundation 01 Load carrying capacity 07 Jammed expansion joint 13 02 Excessive deformations (deflections & rotations) 08 Pedestrian/vehicular hazard 14 03 Continuing settlement 09 Rough riding surface 15 Unstable embankments 04 Surface ponding 16 Other

Continuing movements 10 05 Seized bearings 11 Deck drainage

Suspected Performance Deficiencies

Maint	tenance Needs				
01	Lift and Swing Bridge Maintenance	07	Repair to Structural Steel	13	Erosion Control at Bridges
02	Bridge Cleaning	08	Repair of Bridge Concrete	14	Concrete Sealing
03	Bridge Handrail Maintenance	09	Repair of Bridge Timber	15	Rout and Seal
04	Painting Steel Bridge Structures	10	Bailey Bridges - Maintenance	16	Bridge Deck Drainage
05	Bridge Deck Joint Repair	11	Animal/Pest Control	17	Other
06	Bridge Bearing Maintenance	12	Bridge Surface Repair		

DY - 11

Element Group	ement Group: Abutments			Length:		7	(m)			
Element Name: Abutmer		butment Wall			Width:		1	(m)		
Location: Bearing Surface			Height:		0.5	(m)				
Material:		Cast-In-Place Concrete	3		Co	unt:	_ 2	(items)		
Element Type:			MI.			uantity:	2	(each)		
Environment:		Benign Mod	lerate / Se	evere	Limited	d Insp'n:				
Protection Syste	em:						-	Performance		
Condition		Units	Exc.	Good	Fair	Poor] 1	Deficiencies		
Data:	m² / m	n (each) % / all		2				00		
Comments:						= =				
Performance I	Deficiencies						1 171	1		
Recommended	l Work:	Minor Rehab		☐ Major Re	ehab Mai		ntenance Needs:			
		☐ Replace		✓ None	!	ar 2 Year				
Timeframe:		☐ 1 - 5 Years		☐ 6 - 10 Ye	ars !					
Comments:										
Element Group:	:	Approaches			Len	ngth:	3.0	(m)		
Element Name:		Wearing Surface (App	roaches)		Wi	dth:	7.0	(m)		
Location:					Hei	ight:		(m)		
Material:	li li	Gravel			Cor	unt:	2	(items)		
Element Type:					Total Q	uantity:	42.0	(m²)		
Environment:	Environment: Benign / Moderate Severe		evere	Limited Insp'n:						
Protection Syste	em:							Performance		
Condition		Units	Exc.	Good	Fair Poor		Deficiencies			
Data:	m)/m	/ m / each / % / all 42.0		42.0		00				
Comments:				35						
Performance I	-Calanaian	Mana								
		∷ None ☐ Minor Rehab		☐ Major Rei	hah	Mai				
Kecommenaeu	Recommended Work: ☐ Minor Rehab ☐ Major Re ☐ Replace ☑ None		nau	Maintenance Needs: ☐ Urgent ☐ 1 Year ☐ 2 Yea						
Timeframe: ☐ 1 - 5 Years ☐ 6 - 10 Ye			aarc			II LI Z Tear				
Comments:		_ 1 3 .cm3		□ 0 10.0	:013					
Comments:					!	1				
Elamant Craum		Barriers			T	-41.	100	()		
		Railing Systems				igth:	100	(m)		
-		I = 1 = 1			Width:			(m)		
Location:		E / W Steel		Height:		2	(m)			
Material: Element Type:			and Doct		Count:			(items)		
Environment:		Steel Flex Beam on Steel Post Benign / Moderate Severe			Total Quantity: Limited Insp'n:		200	(m)		
Protection Syste	~~~·	Galvanized	erate V 50	SVEIC	Limited	msp n.		Performance		
Condition	T	Units	Exc.	Good	Fair	Poor	-	Deficiencies		
Data:	m2 / m	each / % / all	EXC.	200	Ган	FUUL	00			
				200				UU		
Comments: Missing 4 bolts on approach base plates.										
						Performance Deficiencies: None				
Performance D)eficiencies	: None								
Performance I		☐ Minor Rehab		☐ Major Rel	hab	Mair	ntenance N	eeds:		
		☐ Minor Rehab ☐ Replace		✓ None		Mair	ntenance No			
		☐ Minor Rehab		_		Urgent	☑ 1 Yea			
Recommended		☐ Minor Rehab ☐ Replace		✓ None		Urgent	☑ 1 Yea	ar 🗌 2 Year		

DY - 11

Element Group:	Beam/ MLE			Length:		23	(m)	
Element Name:	Girders			Width:		0.25	(m)	
Location:	N/S			Height:		0.75	(m)	
Material:	Steel			Count:		4	(items)	
Element Type:					uantity:	161.0	(m²)	
Environment:	Benign / Mod	lerate / Se	evere	Limited	Insp'n:			
Protection System:	Paint						Performance	
Condition	Units	Exc.	Good	Fair	Poor		Deficiencies	
Data: m ² / n		D.K.O.	161.0	1 4	1 001		00	
Comments: Minor corrosi	10 20 85% 17	ective coati		t ends				
Comments. Willion Corross	on at find sections, prot	conve coan	ng apprica a	it citus.				
Performance Deficiencies	: None		-					
Recommended Work:	Minor Rehab		☐ Major Re	hab	Mair	tenance N	eeds: -	
	Replace		✓ None		☐ Urgent	☐ 1 Yea	ar 2 Year	
Timeframe:	☐ 1 - 5 Years		☐ 6 - 10 Ye	ears				
Comments:								
Comments								
Element Group:	Deck			Len	gth:	23.0	(m)	
Element Name:	Wearing Surface (Dec	ks)			dth:	6.0	(m)	
Location:	Deck Top				ght:		(m)	
Material:	Asphalt				unt:	1	(items)	
Element Type:				Total Quantity:		139.2	(m²)	
Environment:	Benign / Mod	derate S	evere	Limited Insp'n:			()	
Protection System:	Deingh Wille	acrate 5	010.0	Limited	- 1110p 111		Performance	
Condition	Units	Exc.	Good	Fair	Poor	1	Deficiencies	
Data: m / n		LAC.	139.2	1 411	1 001	<u> </u>	00	
Comments:	ii / Cacii / /b / aii	<u> </u>	139.2					
Comments:								
Performance Deficiencies	s: None							
Recommended Work:	☐ Minor Rehab		☐ Major Re	hab	Mai	ntenance N	eeds:	
	☐ Replace		✓ None		☐ Urgent	☐ 1 Yea	ar 🔲 2 Year	
Timeframe:	☐ 1 - 5 Years		☐ 6 - 10 Ye	ears				
Comments:								
Comments								
Element Group:	Abutments			Lengtl	n (avg):	7	(m)	
Element Name:	Ballast Wall			 	dth:	0.50	(m)	
Location:	N/S	10			ight:	1	(m)	
Material:	Cast in Place Concrete	e / Sheet Pil	e	 	unt:	2	(items)	
Element Type:					Duantity:	14.0	(m²)	
Environment:	Benign Mo	derate / S	evere		d Insp'n:			
Protection System:					Performance			
Condition	Units	Exc.	Good	Fair	Poor	-	Deficiencies	
Data: m)/r		14		1	1 001		00	
Comments:				1	1	<u></u>		
Performance Deficiencie	s: None							
Recommended Work:	☐ Minor Rehab		☐ Major Re	ehab Ma		Maintenance Needs:		
	☐ Replace		None	•	☐ Urgent	☐ 1 Ye	ar 🔲 2 Year	
Timeframe:	☐ 1 - 5 Years		☐ 6 - 10 Y	ears		_		
Comments:								

DY-11

Element Group:		Joints			Len	gth:	6.0	(m)
Element Name:		Seals			Width:			(m)
Location:		N/S			Height:			(m)
Material:		Pre Fabricated Rubber			Co	unt:	2	(items)
Element Type:					Total Q	uantity:	2	(ea)
Environment:		Benign / Mod	lerate S	evere	Limited	l Insp'n:		
Protection Syste	em:	None					j	Performance
Condition		Units	Exc.	Good	Fair	Poor		Deficiencies
Data:	m² / m	each % / all		1.0		1.0		00
Comments:	- 10							
Performance D	eficiencies	: None						
Recommended	Work:	☐ Minor Rehab		☐ Major Re	hab	Mair	ntenance N	eeds: 05
		☐ Replace		✓ None		☐ Urgent	☑ 1 Yea	ar 🔲 2 Year
Timeframe:		☐ 1 - 5 Years		☐ 6 - 10 Ye	ars	Replace br	oken expans	sion joint seal (South
Comments:						expansion	-	(
						*	,	
Element Group:		Abutments			Len	gth:	7	(m)
Element Name:		Abutment Walls	····			dth:		(m)
Location:	7.00	N/S			Hei	ght:	1.5	(m)
Material:		Corrugated Galvanized	<u>1</u>			unt:	2	(items)
Element Type:		Sheet Pile			Total Quantity:		21.0	(m²)
Environment:		Benign Mod	lerate / So	evere		Insp'n:		
Protection Syste	m:					•	1	Performance
Condition		Units	Exc.	Good	Fair	Poor	1	Deficiencies
Data:	m²/ m	n / each / % / all		21.0				00
Comments:								
Performance D	eficiencies	: None						
Recommended	Work:	☐ Minor Rehab						
		☐ MINO! Kenab		☐ Major Re	hab	Maiı	atenance N	eeds: -
		Replace		☐ Major Re	hab	Maiı □ Urgent	tenance N ☐ 1 Yea	
Timeframe:		_						
Timeframe: Comments:		Replace		✓ None				
		Replace		✓ None				
		Replace		✓ None				
		Replace	ms	✓ None	ars			
Comments:		Replace 1 - 5 Years	ms	✓ None	Len	Urgent		ar 🗌 2 Year
Comments: Element Group:		Replace 1 - 5 Years Embankments & Strea	ms	✓ None	Len Wi	☐ Urgent		ar □ 2 Year □ (m)
Comments: Element Group: Element Name:		Replace 1 - 5 Years Embankments & Strea Embankments	ms	✓ None	Len Wi Hei	☐ Urgent gth:		(m) (m)
Element Group: Element Name: Location:		Replace 1 - 5 Years Embankments & Strea Embankments	ms	✓ None	Len Wi Hei	☐ Urgent gth: dth: ght:	☐ 1 Yea	(m) (m) (m)
Element Group: Element Name: Location: Material:		Replace 1 - 5 Years Embankments & Strea Embankments NE/NW/SE/SW		✓ None	Len Wi Hei Co Total Q	Urgent gth: dth: ght: unt:	☐ 1 Yez	(m) (m) (m) (m) (items)
Element Group: Element Name: Location: Material: Element Type:		Replace 1 - 5 Years Embankments & Strea Embankments NE/NW/SE/SW		☑ None ☐ 6 - 10 Ye	Len Wi Hei Co Total Q	gth: dth: ght: unt: uantity:	4 4.0	(m) (m) (m) (m) (items)
Element Group: Element Name: Location: Material: Element Type: Environment:		Replace 1 - 5 Years Embankments & Strea Embankments NE/NW/SE/SW		☑ None ☐ 6 - 10 Ye	Len Wi Hei Co Total Q	gth: dth: ght: unt: uantity:	4 4.0	(m) (m) (m) (m) (items)
Element Group: Element Name: Location: Material: Element Type: Environment: Protection Syste		Replace 1 - 5 Years Embankments & Streatembankments NE/NW/SE/SW Benign / Mod	lerate / So	☑ None ☐ 6 - 10 Ye	Len Wi Hei Coo Total Q Limited	gth: dth: ght: unt: uantity:	4 4.0	(m) (m) (m) (items) (ea)
Element Group: Element Name: Location: Material: Element Type: Environment: Protection Syste Condition	em:	Replace 1 - 5 Years Embankments & Streat Embankments NE/NW/SE/SW Benign / Mod	lerate / So	☑ None ☐ 6 - 10 Ye	Len Wi Hei Coo Total Q Limited	gth: dth: ght: unt: uantity:	4 4.0	(m) (m) (m) (items) (ea) Performance Deficiencies
Element Group: Element Name: Location: Material: Element Type: Environment: Protection Syste Condition Data:	em:	Replace 1 - 5 Years Embankments & Streat Embankments NE/NW/SE/SW Benign / Mod	lerate / So	☑ None ☐ 6 - 10 Ye	Len Wi Hei Coo Total Q Limited	gth: dth: ght: unt: uantity:	4 4.0	(m) (m) (m) (items) (ea) Performance Deficiencies
Element Group: Element Name: Location: Material: Element Type: Environment: Protection Syste Condition Data: Comments:	em: m² / m	Replace 1 - 5 Years Embankments & Strea Embankments NE/NW/SE/SW Benign / Mod Units 1 (each) % / all	lerate / So	☑ None ☐ 6 - 10 Ye evere Good 4.0	Len Wi- Hei Co- Total Q Limited	gth: dth: ght: unt: uantity:	4 4.0	(m) (m) (m) (items) (ea) Performance Deficiencies
Element Group: Element Name: Location: Material: Element Type: Environment: Protection Syste Condition Data: Comments:	em: m² / m	Replace 1 - 5 Years Embankments & Streat Embankments NE/NW/SE/SW Benign / Mod Units cach / % / all None Minor Rehab	lerate / So	✓ None ☐ 6 - 10 Ye evere Good 4.0	Len Wi- Hei Co- Total Q Limited	gth: dth: ght: unt: uantity: Insp'n: Poor	4 4.0	(m) (m) (m) (items) (ea) Performance Deficiencies 00
Element Group: Element Name: Location: Material: Element Type: Environment: Protection Syste Condition Data: Comments: Performance D Recommended	em: m² / m	Replace 1 - 5 Years Embankments & Streat Embankments NE/NW/SE/SW Benign / Mod Units Cach / % / all None Minor Rebab Replace	lerate / So	evere Good 4.0 Major Rei	Len Wi Hei Co Total Q Limited Fair	gth: dth: ght: unt: uantity: Insp'n:	4 4.0	(m) (m) (m) (items) (ea) Performance Deficiencies 00
Element Group: Element Name: Location: Material: Element Type: Environment: Protection Syste Condition Data: Comments:	em: m² / m	Replace 1 - 5 Years Embankments & Streat Embankments NE/NW/SE/SW Benign / Mod Units cach / % / all None Minor Rehab	lerate / So	✓ None ☐ 6 - 10 Ye evere Good 4.0	Len Wi Hei Co Total Q Limited Fair	gth: dth: ght: unt: uantity: Insp'n: Poor	4 4.0	(m) (m) (m) (items) (ea) Performance Deficiencies 00
Element Group: Element Name: Location: Material: Element Type: Environment: Protection Syste Condition Data: Comments: Performance D Recommended	em: m² / m	Replace 1 - 5 Years Embankments & Streat Embankments NE/NW/SE/SW Benign / Mod Units Cach / % / all None Minor Rebab Replace	lerate / So	evere Good 4.0 Major Rei	Len Wi Hei Co Total Q Limited Fair	gth: dth: ght: unt: uantity: Insp'n: Poor	4 4.0	(m) (m) (m) (items) (ea) Performance Deficiencies 00

MTO Site Number:

DY-11

Element Group:		Abutments			Len	gth:		(m)		
Element Name:		Bearings			Width:			(m)		
Location:		N/S			Hei	ight:		(m)		
Material:		Elastomeric Rubber			Co	unt:	8	(items)		
Element Type:					Total Q	uantity:	8.0	(ea)		
Environment:		Benign Mo	oderate / Se	evere	Limited	d Insp'n:				
Protection Syste	m:	Creosote					F	Performance		
Condition		Units	Exc.	Good	Fair	Poor] 1	Deficiencies		
Data:	m² / n	n each % / all	8					00		
Comments:										
Performance D	eficiencies	s: None								
Recommended	Work:	☐ Minor Rehab		☐ Major Re	hab	Mai	ntenance No	nance Needs: -		
		☐ Replace		✓ None		☐ Urgent		r 🔲 2 Year		
Timeframe:		☐ 1 - 5 Years		☐ 6 - 10 Ye	ars					
Comments:										

MTO Site Number:	DY - 11
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Repair and Rehabilitation Required:			Pri	ority		Estimated
Element	Repair and Rehabilitation Required	6 to 10 years	1 to 5 years	Within 1 year	Urgent	Construction Cost
Wearing Surface (Decks)	Replace joint seal at deck end			Х		\$2,500
<u>.</u>						
	,	-		<u> </u>		
					 	
**				-		<u>-</u>
				-		
					-	
		1				T*1.
	-					
			1	<u> </u>	Total Cost	\$2,500
					<u> </u>	
Associated Work:		Commo	ents			Estimated
		Comm				Cost
Approaches:						
Detours:						
Traffic Control:						
Utilities:						
Right of Way: Environmental Stu	de ii					
Other:	dy:					
Contingencies:	-					
Contingencies.					Total Cost	\$0
					Total Cost	.JU
Justification:						
Justification.						
				·		



Structure No: DY-12
Coleman Lake Bridge

Structure Description

The Coleman Lake Bridge is located on Coleman Lake Road, 0.5 km east of Kennisis Lake Road. The bridge was constructed in 2006 and is a 7.0 m single span, two lane structure with a transverse timber deck on steel girders and concrete abutments. The structure crosses a non-navigable watercourse on a north/south alignment. The bridge has a 7.0 m wide deck with a surface treated wearing surface. There is steel beam guiderail across the structure and on the approaches.

Structure Condition

The structure is in good overall condition with a SCI of 73 and BSI of 70. The concrete abutments are in fair condition with spalling and scouring on the abutment faces and embankments at waterline. Additional erosion protection is required at the abutment faces. The abutment has severe deterioration/spalling at the foundation. The steel girders are in good condition with minor corrosion. The wooden deck is in good condition however the surface treated wearing surface is badly deteriorated with moderate potholes and recent patching. The guiderail is in good condition with minor corrosion and collision damage to railing and posts.

Recommendations

The structure requires a minor rehabilitation to repair undermined abutments and wing walls, especially at the northeast quadrant. Also including installation of erosion protection at the abutment faces, repair of concrete abutments and replacement of surface treated wearing surface. This work should be completed in 1-5 years. Maintenance is required to repair the damage guiderail and posts.



Photo 1 : General Arrangement – Looking North



Photo 2 : General Arrangement – Looking South

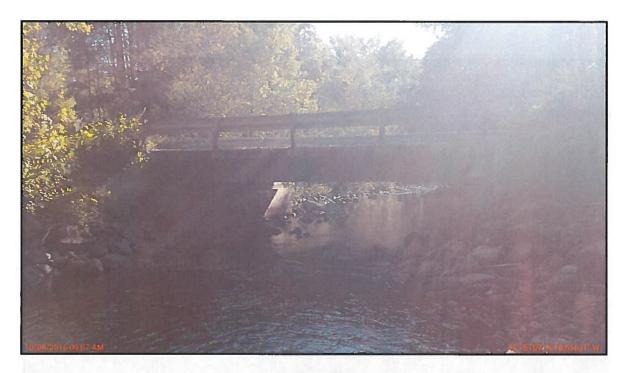


Photo 3 : General Arrangement – West Elevation

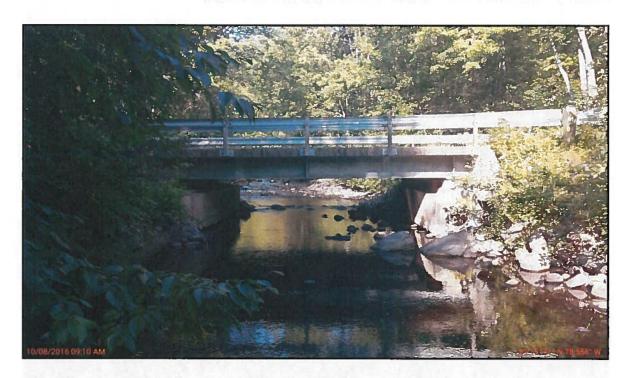


Photo 4 : General Arrangement – East Elevation

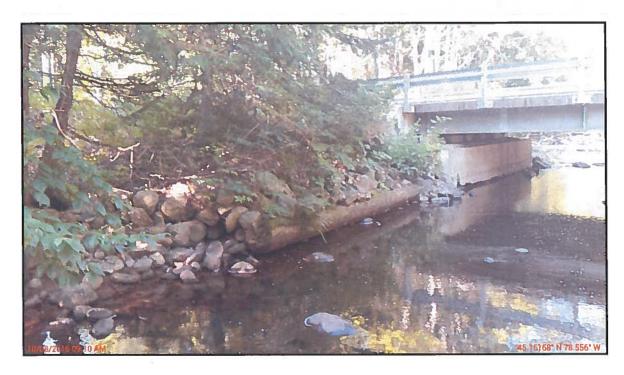


Photo 5 : General Arrangement – Southeast Embankment



Photo 6 : General Arrangement – Southeast Embankment at Abutment



Photo 7 : General Arrangement – Northeast Embankment at Abutment

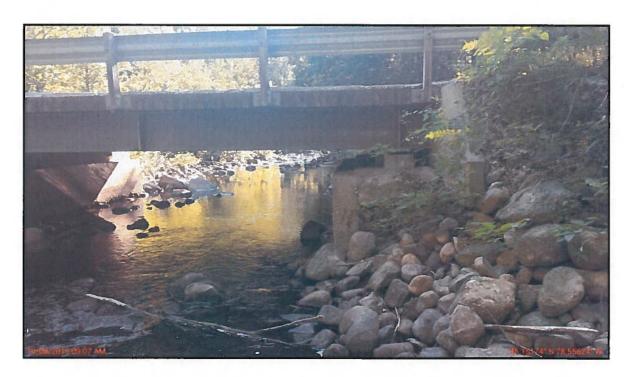


Photo 8 : General Arrangement – Southwest Embankment Looking East



Photo 9 : General Arrangement – Northwest Embankment Looking Northeast



Photo 10 : General Arrangement – North Abutment



Photo 11 : South Approach Wearing Surface - Looking South



Photo 12 : South Approach Wearing Surface - Looking South



Photo 13: North Approach Wearing Surface - Looking North



Photo 14 : Approach Guiderail - Northeast Quadrant

I-Beam or Girder

54.0

7.0

7.0

(m)

(m)

(m)

(sq.m)

Geographic Twp. *

Structure Type *

Total Deck Area

Roadway Width

Span Lengths

Total Deck Length 7.7

Overall Str. Width 7.0

Municipal Struct	rure Inspection Form	MTO Site Number: DY - 12
Inventory Data		
Structure Name	Coleman Lake Bridge	
Main Hwy/Road #	On ⊠ Under	Crossing Navig. Water Non-Navig. Water ⊠ Type: Rail Road ☐ Ped. Other
Road Name	Coleman Lake Road	701 F 01 00 00 00 F 0 0 0 0 0 0 0 0 0 0 0
Structure Location	0.5 km East of Kennisis Lake Road (C	County Road 7)
Latitude	45.151700	Longitude -78.556200
Owner(s)	Municipality of Dysart et al	Heritage Not Cons. Cons./not App. List/not Desig. Designation: Desig./Not List Desig. & List
MTO Region *		Road Class: Freeway Arterial Collector Local
MTO District *	Angle de la companya	Posted Speed 50 No. of Lanes 2
Old County *		AADT % Trucks

Truck

0

0

1

N to S

School

Bicycle

(km)

(m)

(m)

(degrees)

Transit

Historical Data:					
Year Built	2006] — — —	Last Biennial Inspection	2014	1
Current Load Limit	N/A/ /	(tonnes)	Last BridgeMaster Inspection	N/A	
Load Limit Bylaw #	N/A]	Last Evaluation	N/A	
Bylaw Expiry Date	N/A		Last Underwater Inspection	N/A	
Min. Vertical Clearance	_	(m)	Last Condition Survey	N/A	
Rehab. History: (Date/des	scription)				
				į.	

Special Routes:

Fill on Structure

Direction of Structure

Skew Angle

No. of Spans

Detour Length Around Bridge

MTO Site I	Number:	DY - 12
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Field Inspection Inf	formation:					
Date of Inspection:	August 10, 2016					
Inspector:	Robert Brooks – Tulloch Engineering					
Others in Party:	Elizabeth Perry – Tulloch Engineering					
Equipment Used:	Camera, Hammer, Tape Measure					
Weather:	Sun					
Temperature:	+19 ^o C					

Additional Investigations Required:		Priority	Estimated	
	None	Normal	Urgent	Cost
Detailed Deck Condition Survey:	X			
DART Survey:	X			-
Detailed Coating Condition Survey:	X			
Underwater Investigation:	X			
Fatigue Investigation:	X			
Seismic Investigation:	X			
Structure Evaluation:	X	,		
Load Posting – Estimated Load		Total Cost \$0		
Special Notes:	*			
*	129			
Next Detailed Inspection:			2018	

Suspect 00 01 02 03 04 05	None Load carrying capacity Excessive deformations (deflections & rotations) Continuing settlement Continuing movements Seized bearings	06 07 08 09 10	Bearing not uniformly loaded/unstable Jammed expansion joint Pedestrian/vehicular hazard Rough riding surface Surface ponding Deck drainage	12 13 14 15 16	Slippery surfaces Flooding/channel blockage Undermining of foundation Unstable embankments Other
Maint	enance Needs				
01	Lift and Swing Bridge Maintenance	07	Repair to Structural Steel	13	Erosion Control at Bridges
02	Bridge Cleaning	08	Repair of Bridge Concrete	14	Concrete Sealing
03	Bridge Handrail Maintenance	09	Repair of Bridge Timber	15	Rout and Seal
04	Painting Steel Bridge Structures	10	Bailey Bridges - Maintenance	16	Bridge Deck Drainage
05	Bridge Deck Joint Repair	11	Animal/Pest Control	17	Other
06	Bridge Bearing Maintenance	12	Bridge Surface Repair		

DY - 12

Element Group:	Abutments			Length:		7	(m)
Element Name:	Abutment Walls			Width:		=1	(m)
Location:	N/S			Height:		1.5	(m)
Material:	Cast-in-place Concrete			Со	unt:	2	(items)
Element Type:	Integral			Total C	uantity:	21.0	(m²)
Environment:		lerate / Se	evere		l Insp'n:		
Protection System:					·	F	Performance
Condition	Units	Exc.	Good	Fair	Poor	-	Deficiencies
Data: m ² /n	n / each / % / all		16.0	5.0		100	14
Comments: Severe scouring		North and S	South abutn				
	.8						
Performance Deficiencies	: None						
Recommended Work:	☑ Minor Rehab		☐ Major Re	hab	Mai	ntenance No	eds:
	☐ Replace		✓ None		Urgent		
Timeframe:			☐ 6 - 10 Ye	ars			
Comments: Rebibilitate un	ndermined section of ah	utment wal	le				
Comments. Regionitate an	ndermined section of ab	dunciit wai	13.				
Element Group:	Barriers			1 or	gth:	70.0	(m)
Element Name:	Railing Systems				dth:	70.0	(m)
Location:	E/W				ght:		(m)
Material:	Steel				-	2	(items)
Element Type:	Sicci			Count: Total Quantity:		140.0	• • •
Environment:	Benign / Mod	lerate Se	evere		Insp'n:	140.0	(m)
Protection System:	Galvanized	iciate St	vele	Limited	i inspii.		Performance
		Г.,,	Cond	E-i-	Poor Deficiencies		
Condition	Units	Exc.	Good	Fair			
	each / % / all	. N	128.0	10.0	2		00
Comments: Collision dam	age to railing and posts	at Northeas	st quadrant.				
D C D C 1 1	- N						
Performance Deficiencies	S: None Minor Rehab		☐ Major Re	hah	24.		The French of
Recommended Work:	☐ Replace		☑ Major Re	Dau		ntenance No	
			_		☐ Urgent	☐ 1 Yea	r 2 Year
Timeframe:	☐ 1 - 5 Years		☐ 6 - 10 Ye	ars			
Comments:							
-	1					1 1	
Element Group:	Beam / MLE				gth:	7.7	(m)
Element Name:	Girders			Width:		0.20	(m)
Location:	North/South Direction				ght:	0.50	(m)
Material:	Steel				unt:	6	(items)
Element Type:	I - Type				uantity:	55.4	(m²)
Environment:	Benign Mod	lerate Se	evere	Limited Insp'n:			
Protection System:						-	erformance
Condition	Units	Exc.	Good	Fair	Poor Deficiencies		
Data: m ² /n	n / each / % / all	411 (4	55.4		1 .	14	00
Comments:							
Performance Deficiencies							
Recommended Work:	☐ Minor Rehab		☐ Major Re	hab		ntenance No	
	Replace		☑ None	☐ Urgent		☐ 1 Yea	r 🗌 2 Year
Timeframe:	☐ 1 - 5 Years		☐ 6 - 10 Ye	ars			
Comments:							

DY - 12

Element Group	:	Deck			Length:		7.7	(m)
Element Name:		Deck Top			Width:		7.0	(m)
Location:					Height:			(m)
Material:		Wood			Count:		1	(items)
Element Type:		Laminated Wood Deck		verse	Total Q	uantity:	54.0	(m²)
Environment:		Benign Mod	erate S	evere	Limited	l Insp'n:	7	
Protection Syste	em:	Asphalt					I	Performance
Condition		Units	Exc.	Good	Fair	Poor	1	Deficiencies
Data:	m ² / m	1 / each / % / all	54.0					00
Comments:		W W						
Performance I	Deficiencies	: None	···-				·	
Recommended		☐ Minor Rehab		☐ Major Re	hab	Mair	tenance N	eeds: -
1000111111011110		Replace		✓ None		Urgent		
Timeframe:		☐ 1 - 5 Years		☐ 6 - 10 Ye	ears			
Comments:		_		-				
Comments.								
L	-							
Element Group	•	Deck			Lon	gth:	7.7	(m)
Element Name:		Wearing Surface (Decl	(n)			dth:	7.7	(m)
		wearing Surface (Deci	KS)				7.0	(m)
Location:		A114				ght:	1	(m)
Material:		Asphalt				unt:	1	(items)
Element Type:		D : /)// 1				Total Quantity: 54.0 (m²) Limited Insp'n: □		
Environment:		Benign / Mod	lerate S	evere	Limited	l Insp'n:		
Protection Syst	em:		_					Performance
	Condition Units Exc. Good				Fair	Poor		Deficiencies
Data: m / m / each / % / all 42.0 8.0 4.0 00					00			
Comments: Po	thole patch	ing has been conducted;	; light med	raveling alo	ng wheel pa	iths.		74
Performance I	Deficiencies	: None						7
Recommended		☐ Minor Rehab		☐ Major Re	hab	Mair	tenance N	eeds:
		☑ Replace		□ None	☐ Urgent ☐ 1			
Timeframe:		☐ 1 - 5 Years		☑ 6 - 10 Ye	ears			
Comments:						1		
Comments.								!
						l		
Element Group	•	Approaches			Length	ı (avg):	6	(m)
Element Name:		Wearing Surface				dth:	7.00	(m)
Location:		l l		· · · · · · · · · · · · · · · · · · ·		ight:		(m)
Material:		Asphalt				unt:	2	(items)
Element Type:		ropitale				uantity:	84.0	(m²)
Environment:		Benign / Mod	lerate S	evere		Insp'n:	U	(1117)
Protection Syst	em·	Dellight 14100	orate 5	Ovore	Diffice	a mop m		Performance
Condition	I I	Units	Exc.	Good	I point B		ł	
Data:	(m) / m	n / each / % / all	Exc.	21.0	Good Fair Poor Deficiencies			09, 10
					42.0	21		09, 10
Comments: M	eaium to se	vere pitting, rutting and	potnoies in	i both appro	acnes.			
Performance l	Deficiencies	s: None						
Recommended	Work:	☑ Minor Rehab		☐ Major Re	ehab	Mai	ntenance N	eeds: -02
]	1.5	Replace		□ None		☐ Urgent	✓ 1 Yes	ar 🔲 2 Year
Timeframe:		1 - 5 Years		☐ 6 - 10 Ye	ears	Repair pot	holes. Clear	vegetation and
Comments:								ers to reduce surface
Comments:					ponding.			

DY-12

Element Group:	Element Group: Abutments			Length:		7.7	(m)	
Element Name:		Bearing				Width:		(m)
Location:		Under Steel Girders			Hei	ght:		(m)
Material:		Elastomeric Pads				unt:	12	(items)
Element Type:						uantity:	12	(ea)
Environment:		Benign Mod	lerate / S	evere		l Insp'n:		
Protection Syste	m:		_					Performance
Condition		Units	Exc.	Good	Fair	Poor	-{	Deficiencies
Data:	m² / m	each/%/all	12			1001		00
Comments:				1			1	
Performance D	eficiencies	: None				-		
Recommended		Minor Rehab		☐ Major Re	hab	Mai	ntenance N	eeds: -
		☐ Replace		✓ None		☐ Urgent		
Timeframe:		☐ 1 - 5 Years		☐ 6 - 10 Ye	ears	- 1		Benefit - I
Comments:								
Commence								
	•							
Element Group:		Abutment			Ī en	gth:		(m)
Element Name:		Wing Walls				dth:		(m)
Location:		NE/NW/SE/SW				ght:		(m)
Material:		Cast-In-Place Concrete				unt:	4	(items)
Element Type:		Cust III I luce Concrete					4.0	(ea)
Environment:		Benign Mod	lerate / S	evere	Total Quantity: Limited Insp'n:		T.0	(ca)
Protection Syste	m·	Denign Woo	iciate / D	CVCIC	Dillittee	msp n.		Performance
Condition		Units	Units Exc. Good			Poor		Deficiencies
Data:	m² / m		LAC.	2.0	Fair 1.0	1.0	14,15	
		nining of wing wall fou	ndation at l				ankment	14,15
Comments. Bev	rere undern	inning of wing wan tou	iluation at	ve quadram	causing un	istable cilib	ankincii.	
Performance D	eficiencies	: Undermining of found	lation une	table embani	cment			ACTIVITIES AND ADDRESS OF AN
Recommended		Minor Rehab	iation, uns	☐ Major Re		Mai	ntenance N	eeds: -
recommended	***************************************	Replace		☐ None		☐ Urgent ☐ 1 Year ☐ 2 Year		
Timeframe:		☑ 1 - 5 Years		☐ 6 - 10 Ye	ars			
	nair undern	nined section of wing w	all at NF o	uadrant Pro	wide			
errosion control		inica section of wing w	an at ME q	uadrant. 110	, vide			
on control i								
Element Group:		Embankments & Strea	ms		I en	oth:		(m)
Element Name:		Embankments	1115		Length: Width:			(m)
Location:		NE/NW/SE/SW				ght:		(m)
Material:						unt:	4	(items)
Element Type:						uantity:	4.0	(ea)
Environment:		Benign / Mod	erate / S	evere		I Insp'n:		(eu)
Protection Syste	m·	2 4.1.5.				р		Performance
Condition		Units	Fxc	Good	Fair	Poor	4	Deficiencies
Data:	m² / m				2	2		
		bankments have severe	scour SF	embankmen			etaining wa	
		se and unstable. NE em						ii causing the
Performance D			Dull Kill Cit 1	3 diistable d	o to undern	illica willg	waii.	
Recommended		☑ Minor Rehab		☐ Major Rel	hab	Maintenance Needs: -		
	TOLK.	☐ Replace		☐ None		☐ Urgent		
Timeframe:				☐ 6 - 10 Ye	ars			<u></u>
	nair scoure	d and undermined emba	nkments					

DY-12

Element Group:		Embankments & Streams			Length:			(m)	
Element Name:		Slope Protection			Width:			(m)	
Location:		NE/NW/SE/SW			Height:			(m)	
Material:					Count:		4	(items)	
Element Type:					Total Q		4.0	(ea)	
Environment:		Benign / Mod	erate / Se	evere	Limited	Insp'n:			
Protection Syste	m:							Performance	
Condition		Units	Exc.	Good	Fair	Poor	1	Deficiencies	
Data:		each % / all			2	2			
Comments: Ad	equate slop	e protection required.							
Performance D	eficiencies	: None	Î						
Recommended	Work:	Minor Rehab		☐ Major Re	hab		tenance No		
		☐ Replace		☐ None		Urgent	☐ 1 Yea	r 2 Year	
Timeframe:		☑ 1 - 5 Years		☐ 6 - 10 Ye	ears				
Comments: Pro	ovide rip rap	p slope protection in all	four quadra	ants.					
Element Group:		Embankments & Strea			Len			(m)	
Element Name:		Streams and Waterway	/S			dth:		(m)	
Location:		Center			Hei			(m)	
Material:					Co		1	(items)	
Element Type:					Total Quantity:		1.0	(each)	
Environment:		Benign / Mod	lerate / Se	evere	Limited Insp'n:				
Protection Syste	m:						1	Performance	
Condition		Units	Exc.	Good	Fair	Poor	1	Deficiencies	
Data:	m²/n	each / % / all		1.0				00	
Comments:		S .					9		
Performance D									
Recommended	Work:	☐ Minor Rehab		☐ Major Re	172421111111111111111111111111111111111				
		Replace		☑ None	Urgent 1 Year 2 Year				
Timeframe:		☐ 1 - 5 Years		☐ 6 - 10 Ye	ears	ars			
Comments:									
Element Group		Accessories			Len	igth:	1	(m)	
Element Name:	(Signs				Width: (m)			
Location:	(End of Approach Guid	drails			ght:	-	(m)	
Material:		Steel			1	unt:	4	(items)	
Element Type:						uantity:	4.0	(ea)	
Environment:		Benign / Mod	lerate (S	evere		l Insp'n:		· /	
Protection Syste	em:				I	<u> </u>		Performance	
Condition		Units	Exc.	Good	Fair	Poor	-1	Deficiencies	
Data:	m² / n	n (each) % / all		4.0		00			
Comments:				•	•				
T. 6									
Performance I		s: None Minor Rehab		☐ Major Re	hah			1 00	
Recommended	Work:	Replace		☐ Major Re	Mair Urgent		ntenance Needs: 02		
T:		☐ 1 - 5 Years		☐ 6 - 10 Y	narc				
Timeframe:		☐ 1-2 (cal2		O 0 - 10 1	Cuid	Clean vege	etation arous	iu signs	
Comments:						1			
						1			

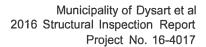
MTO Site Number:

DY - 12

Repair and Rehabilitation Required:			Pri	ority		Estimated
Element	Repair and Rehabilitation Required	6 to 10 years	1 to 5 years	Within 1 year	Urgent	Construction Cost
Abutment Walls	Erosion protection required around abutment walls			Х		\$10,000
Abutment Walls	Concrete repairs to undermined sections of abutments faces		Х			\$20,000
Abutment Wing Walls	Repair undermined abutment wing wall at NE quadrant			х		\$5,000
Deck (Wearing Surface)	Replace wearing surface	х				\$15,000
<u>-</u>						
					Total Cost	\$50,000

Associated Work:	Comments	Estimated	
		Cost	
Approaches:	Wearing surface replacement	\$5,000	
Detours:			
Traffic Control:			
Utilities:		*	
Right of Way:	**		
Environmental Study:			
Other:			
Contingencies:			
	Total Cost	\$5,000	

Justification:	
t e e e e e e e e e e e e e e e e e e e	
s ·	





Structure No: DY-13

Eagle Lake Bridge

Structure Description

Eagle Lake Bridge is located on Eagle Lake Road, 100 m east of Haliburton Lake Road. The bridge is a 6.1 m single span, single lane structure with concrete deck, concrete girders and concrete abutments and wingwalls. The age of the structure is unknown. The bridge has a 4.5 m wide driving surface with a surface treated wearing surface and concrete curbs. There is steel beam guiderail across the structure and on some of the approaches. The structure is situated immediately upstream of a dam owned by Trent Severn Waterway and for all intents and purposes is directly connected to the dam.

Structure Condition

The structure is in poor overall condition with a BCI of 53 and BSI of 49. The concrete abutments and wing walls exhibit significant scour on the upstream side of the structure. There is moderate to severe spalling and transverse cracking on both the wing walls and the abutments. The concrete girders are in poor condition with extensive delamination. The concrete deck soffit was observed to have severe delaminations with exposed and hanging rebar throughout. Previous concrete repairs to the girders have delaminated. The concrete curbs are in fair condition with extensive cracking and vehicle damage. The surface treated wearing surface is in fair condition with moderate potholes, cracking and minor settlement at the approaches. The guiderail over the structure is in poor condition; it is not adequately secured to the support posts and further the concrete support posts are in poor condition. The guiderail exhibits minor corrosion and vehicle damage.

Recommendations

The structure requires a detailed structural evaluation. The structural investigation should include a load rating. A cost-benefit analysis should be undertaken after structural investigation to evaluate which alternative will provide the lowest life-cycle cost to the Municipality at the time of detailed structural evaluation. Any major rehabilitation or replacement will have to be coordinated with the Trent Severn waterway as the bridge and dam are connected. Consideration should be given to closing the structure to vehicular traffic when it reaches the end of its service life, as opposed to replacing the structure. If the structure were closed, the detour is approximately 400 m, which would have a negligible impact on the travelling public.



Photo 1 : General Arrangement – Looking East



Photo 2 : General Arrangement – Looking West

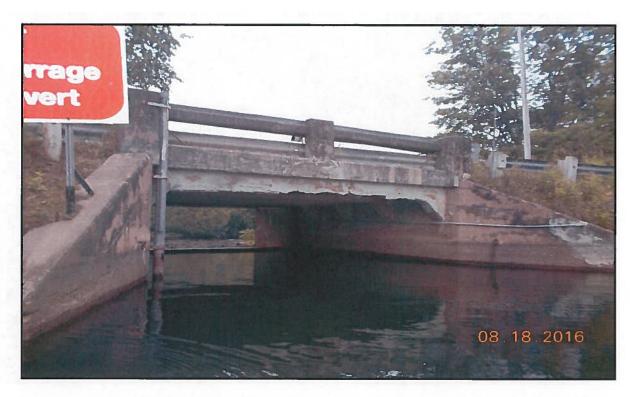


Photo 3: General View - North Elevation



Photo 4 : General View - North Elevation Exterior Girder



Photo 5 : General View - N. Elevation Exterior Girder at East Abutment

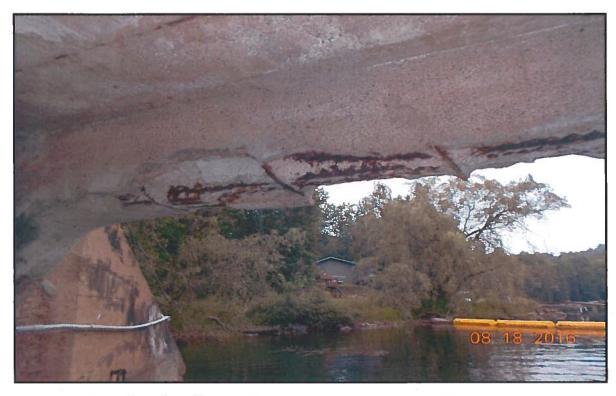


Photo 6: North Exterior Girder at West Abutment - Looking North

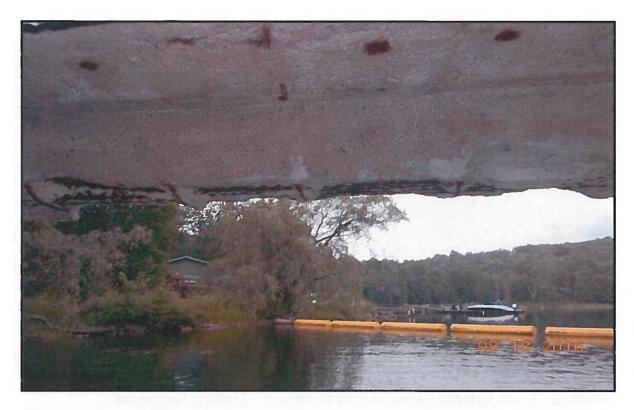


Photo 7: North Exterior Girder at Mid Span - Looking North

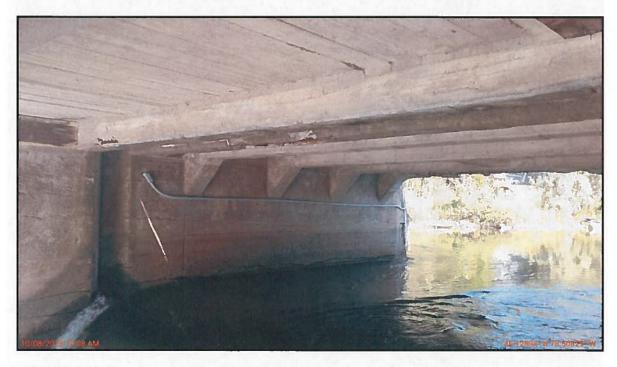


Photo 8 : General Girder Arrangement - Looking Northwest



Photo 9 : South Exterior Girder at East Abutment – Looking Northwest

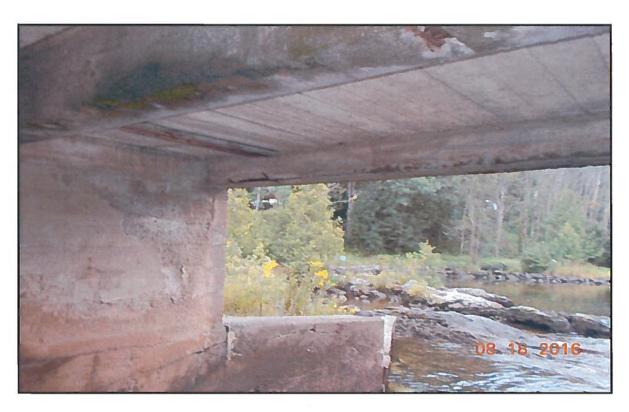


Photo 10 : South Exterior Girder at East Abutment – Looking Southeast



Photo 11 : South Interior Girder (2nd from End) Mid-Span - Looking South



Photo 12 : South Interior Girder (2nd from End) Mid-Span — Looking Southeast



Photo 13 : Interior Soffit (2^{nd} Bay From North Face) - Looking East



Photo 14 : Interior Soffit (2^{nd} Bay From North Face) - Looking West



Photo 15: Int. Soffit at W. Abutment (2nd Bay From North Face) – Looking North



Photo 16 : Damaged Guiderail System - Southwest Quadrant



Photo 17: Typ. Rotted Post – Southwest Quadrant

Inventory Data							
Structure Name	Eagle Lake Road	Bridge		_			
Main Hwy/Road #		On ⊠	Under	Crossing Type:	Navig. Wat Rail I	ter Non-Navig Road Ped.	g. Water ⊠ Other
Road Name	Eagle Lake Road						
Structure Location	1.0 km East of H	aliburton	Lake Road (Cou	inty Road 14)			
Latitude	45.129000			Longitude -	78.508500		
Owner(s)	Municipality of I	Dysart et a	al	Heritage Designation:	Not Cons. O Desig./N	Cons./not App. Not List Desi	List/not Desig. g. & List
MTO Region *				Road Class:	Freeway Ar	rterial Collecto	or Local ⊠
MTO District *				Posted Speed	50	No. of Lanes [1
Old County *				AADT		% Trucks [
Geographic Twp. *				Special Routes:	Transit	Truck Schoo	l Bicycle
Structure Type *	Rigid Frame			Detour Length A	round Bridge		(km)
Total Deck Length	6.9] (m)	Fill on Structure		0	(m)
Overall Str. Width	5.1] (m)	Skew Angle		0	(degrees)
Total Deck Area	35.2] (sq.m)	Direction of Stru	cture	E to W	1.0
Roadway Width	4.5] (m)	No. of Spans		1	
Span Lengths	6.1						(m)
Historical Data							
Year Built				Last Biennial Ins	spection	2014	
Current Load Limit	N/A/	(tonn	es)	Last BridgeMast	ter Inspection	N/A	
Load Limit Bylaw #	N/A			Last Evaluation		N/A	
Bylaw Expiry Date	N/A			Last Underwater	r Inspection	N/A	
Min. Vertical Cleara	ance -	(m)		Last Condition S	Survey	N/A	
Rehab. History: (Da	ate/description)						

MTO	Site	Number:	DY-	13
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Field Inspection Inf	formation:				
Date of Inspection:	August 10, 2016				
Inspector:	Robert Brooks – Tulloch Engineering				
Others in Party:	Elizabeth Perry – Tulloch Engineering				
Equipment Used:	Camera, Hammer, Tape Measure, Boat				
Weather:	Sun				
Temperature:	+26°C				

Additional Investigations Required:		Priority			
	None	Normal	Urgent	Cost	
Detailed Deck Condition Survey:		X		\$5,000.00	
DART Survey:	X				
Detailed Coating Condition Survey:	X				
Underwater Investigation:		X		\$5,000.00	
Fatigue Investigation:	X				
Seismic Investigation:	X				
Structure Evaluation:			X	\$5,000.00	
Load Posting – Estimated Load		Total Cost \$1			

Special Notes:

Structural evaluation required to load rate structure for temporary use.

Detailed deck condition survey required to assess integrity of deck concrete.

Underwater investigation required to assess existing abutment wall conditions prior to rehabilitation work.

Next Detailed Inspection:	2018
	45 C 4 1 A 2

Suspected Performance Deficiencies 00 None Bearing not uniformly loaded/unstable Slippery surfaces 01 Load carrying capacity **07** Jammed expansion joint Flooding/channel blockage 13 02 Excessive deformations (deflections & rotations) 08 Pedestrian/vehicular hazard 14 Undermining of foundation 03 Continuing settlement 09 Rough riding surface 15 Unstable embankments 04 Continuing movements 10 Surface ponding 16 Other Seized bearings 05 11 Deck drainage **Maintenance Needs** Lift and Swing Bridge Maintenance 07 13 **Erosion Control at Bridges** Repair to Structural Steel Bridge Cleaning 08 Concrete Sealing 02 Repair of Bridge Concrete 14 03 Bridge Handrail Maintenance 09 Repair of Bridge Timber 15 Rout and Seal Bailey Bridges - Maintenance Painting Steel Bridge Structures 10 04 16 Bridge Deck Drainage Animal/Pest Control 05 Other Bridge Deck Joint Repair 11 17 Bridge Bearing Maintenance Bridge Surface Repair

DY - 13

Element Group:	Abutments	Abutments			Length:		(m)	
Element Name:	Abutment Walls			Width:		6.0	(m)	
Location:				Height:		2.0	(m)	
Material:	Cast-In-Place Concret				(items)			
Element Type:	Integral			Total C	uantity:	24.0	(m²)	
Environment:	Benign / Mod	derate / Se	evere		d Insp'n:			
Protection System:						р	erformance	
Condition	Units	Exc.	Good	Fair	Poor	-	Deficiencies	
	/ m / each / % / all		18.0	4.0	2		00	
	scour at upstream end; spall	ling along w				king .		
Comments. Moderate	scour at apstream end, span	ing atong w	aterine, in	oderate train	Sverse crae	Kilig.		
Performance Deficien	reies: None							
Recommended Work			☐ Major Re	hah	Mos	ntenance Ne	anda.	
Recommended work	Replace		☐ None		Urgent			
Timeframe:			☐ 6 - 10 Ye	narc	U Orgen		Z Tear	
	C 1-3 (cais		□ 0 - 10 IV	5a15	4			
Comments:								
Element Group:	Abutments			Len	igth:	3.0	(m)	
Element Name:	Wingwalls			Wi	dth:		(m)	
Location:	SE/SW			Hei	ight:	1.5	(m)	
Material:	Cast-In-Place Concret	e		Co	unt:	2	(items)	
Element Type:				Total Q	uantity:	9.0	(m²)	
Environment:	Benign (Moo	derate / Se	evere	Limited	d Insp'n:			
Protection System:	31 L					P	erformance	
Condition	Units	Exc.	Good	Fair	Poor	1 [Deficiencies	
Data: m ²	/ m / each / % / all		5.0	3.0	1	1 00		
	to severe scour; moderate s	nalling and	transverse o		No.			
	raid le remonde							
Performance Deficien	icies: None							
Recommended Work			☐ Major Re	hab	Mai	ntenance Ne	eds:	
1 1114	☐ Replace		☐ None		☐ Urgent ☐ 1 Year ☐ 2 Year			
Timeframe:			☐ 6 - 10 Ye	ears				
Comments:			114		100 4 1			
Comments.								
El-mant Cassas	[D:-	III Water Market				1 70 1	()	
Element Group: Element Name:	Barriers			Length:		7.0	(m)	
	Barrier / Parapet Wall			Width:			(m)	
Location:					ight:	1.0	(m)	
Material:	Cast-In-Place Concrete	e			unt:	2	(items)	
Element Type:	Concrete Balustrade				uantity:	14.0	(m²)	
Environment:	Benign / Mod	lerate Se	evere	Limited	i Insp'n:			
Protection System:						P	erformance	
Condition	Units	Exc.	Good	Fair	Poor		Deficiencies	
Data: m²	/ m / each / % / all			14		00		
Comments: Concrete p	oosts in fair condition with r	noderate to	severe spall	ling in local	ized areas.		State Consult	
D.C. D.C.	A N							
Performance Deficien			☑ Major Re	hah				
Recommended Work	Replace	t	□ None	Mantenance 1 vecus.				
T	- ·				☐ Urgent	☐ 1 Year	2 Year	
Timeframe:			☐ 6 - 10 Ye	ears				
Comments:								

DY - 13

Element Group:		Barriers			Length:		55.0	(m)	
		Railing Systems			Width:			(m)	
Location:		Double guiderail across structure			Hei	Height:		(m)	
Material: Steel					Cou	unt:	2	(items)	
Element Type:		Steel Flex Beam			Total Q	uantity:	110.0	(m)	
Environment:		Benign / Mod	lerate S	evere	Limited	l Insp'n:			
Protection Syste	em:	Galvanized					I	Performance	
Condition		Units	Exc.	Good	Fair	Poor	Deficiencies		
Data:	m 7 m	each / % / all		60.0	40.0	10.0		02	
Comments: Gu		structure has minor corro	sion with col	lision damag	e at SW qua	drant. Guide	rails are loos	e and not adequately	
		l has significant tilting on							
approaches.									
Performance I	Deficiencies	s: None				7			
Recommended	l Work:	☑ Minor Rehab		Major Rel	Maintenance Needs: 02			eeds: 02	
		☐ Replace		■ None	☐ Urgent		☑ 1 Yea	ır 🔲 2 Year	
Timeframe:		1 - 5 Years		☐ 6 - 10 Ye	ars	Remove vege	tation and gra	nular material	
Comments: Re	epair damag	ed sections of guiderai	l and replac	e rotten pos	sts on				
approaches.	· F	,		· · · · · · · · · · · · · · · ·					
Element Group		Beam / MLE			Len	gth:	6.9	(m)	
Element Name:		Girders				dth:			
Location:	<u> </u>	E/W Direction				ght:	0.50	(m)	
Material:		Cast-In-Place Concret	e			Count: 5 (items)			
Element Type:		Rectangular-Solid						(m²)	
Environment:		Benign Mod	lerate / S	evere	Limited Insp'n:		()		
Protection Syst	em:	30				Performance			
Condition	1	Units	Exc.	Good	Fair	Poor Deficiencies			
	m-/ m	The second secon				30.0 01			
Comments: Severe cracking, spalling, delaminations with exposed rebar and general disintegration of girder on South face. Severe spalling with exposed rebar, 2nd girder from North face, also observed. Previouse parged areas are delamniating. Light to medium transverse cracking									
		g, spalling, delaminations			general disin	tegration of		th face. Severe spalling	
	ar, 2nd girde	g, spalling, delaminations			general disin	tegration of		th face. Severe spalling	
with exposed reba at bearing location	ar, 2nd girdens.	g, spalling, delaminations	bserved. Pre		general disin	tegration of		th face. Severe spalling	
with exposed reba at bearing location	ar, 2nd girdens. Deficiencies	g, spalling, delaminations r from North face, also of	bserved. Pre		general disin d areas are de	tegration of pelamniating.		ath face. Severe spalling lium transverse cracking	
with exposed reba at bearing location Performance l	ar, 2nd girdens. Deficiencies	g, spalling, delaminations r from North face, also of s: Load carrying capac	bserved. Pre	viouse pargeo	general disin d areas are de	tegration of pelamniating.	Light to med	th face. Severe spalling lium transverse cracking eeds:	
with exposed reba at bearing location Performance l	ar, 2nd girdens. Deficiencies	g, spalling, delaminations r from North face, also of s: Load carrying capac Minor Rehab	bserved. Pre	viouse pargeo	general dising d areas are do	tegration of pelamniating.	Light to med	th face. Severe spalling lium transverse cracking eeds:	
with exposed rebat bearing location Performance l Recommended Timeframe:	ar, 2nd girden ns. Deficiencien d Work:	g, spalling, delaminations r from North face, also of s: Load carrying capac	bserved. Pre	✓ Major Re None 6 - 10 Ye	general dising d areas are do	tegration of pelamniating.	Light to med	th face. Severe spalling lium transverse cracking eeds:	
with exposed rebat bearing location Performance l Recommended Timeframe:	ar, 2nd girden ns. Deficiencien d Work:	g, spalling, delaminations r from North face, also of s: Load carrying capac	bserved. Pre	✓ Major Re None 6 - 10 Ye	general dising d areas are do	tegration of pelamniating.	Light to med	th face. Severe spalling lium transverse cracking eeds:	
with exposed rebat bearing location Performance l Recommended Timeframe:	ar, 2nd girden ns. Deficiencien d Work:	g, spalling, delaminations r from North face, also of s: Load carrying capac	bserved. Pre	✓ Major Re None 6 - 10 Ye	general dising d areas are do	tegration of pelamniating.	Light to med	th face. Severe spalling lium transverse cracking eeds:	
with exposed rebat bearing location Performance l Recommended Timeframe:	ar, 2nd girdens. Deficiencie: d Work:	g, spalling, delaminations r from North face, also of s: Load carrying capac	bserved. Pre	✓ Major Re None 6 - 10 Ye	general disin d areas are de hab	tegration of gelamniating. Mai	Light to med	th face. Severe spalling lium transverse cracking eeds:	
with exposed rebat bearing location Performance I Recommended Timeframe: Comments: M	ar, 2nd girdens. Deficiencies d Work: ajor rehabil	g, spalling, delaminations r from North face, also of s: Load carrying capac	bserved. Pre	✓ Major Re None 6 - 10 Ye	general disin d areas are do hab	tegration of pelamniating.	Light to med	th face. Severe spalling lium transverse cracking eeds:	
with exposed rebat bearing location Performance I Recommended Timeframe: Comments: M	ar, 2nd girdens. Deficiencies d Work: ajor rehabil	g, spalling, delaminations r from North face, also of s: Load carrying capac Minor Rehab Replace 1 - 5 Years Litation or complete rep	bserved. Pre	✓ Major Re None 6 - 10 Ye	general dising d areas are de hab	elamniating. Main Urgent Ogth:	ntenance N 1 Yes	th face. Severe spalling lium transverse cracking eeds:	
with exposed rebat bearing location Performance I Recommended Timeframe: Comments: M Element Group Element Name	ar, 2nd girdens. Deficiencies d Work: ajor rehabil	g, spalling, delaminations r from North face, also of s: Load carrying capac	ity	✓ Major Re None 6 - 10 Ye	peneral disinul areas are de hab	Main Urgent Urgent dth:	ntenance N 1 Yes	th face. Severe spalling lium transverse cracking eeds: ar	
Performance I Recommendec Timeframe: Comments: M Element Group Element Name: Location: Material:	ar, 2nd girdens. Deficiencies d Work: ajor rehabil	g, spalling, delaminations r from North face, also of s: Load carrying capac	ity lacement re	✓ Major Re ☐ None ☐ 6 - 10 Ye	peneral disinul dareas are de hab hab Ler Wi Hei	Main Urgent Urgent dth:	ntenance N 1 Yes	th face. Severe spalling lium transverse cracking lium transverse cracking eeds: ar	
Performance I Recommendee Timeframe: Comments: M Element Group Element Name: Location: Material: Element Type:	ar, 2nd girdens. Deficiencies d Work: ajor rehabil	g, spalling, delaminations r from North face, also of s: Load carrying capac Minor Rehab Replace 1 - 5 Years Litation or complete rep Deck Deck Cast-in-place Concret	ity lacement re	✓ Major Re ☐ None ☐ 6 - 10 Ye	peneral disinular di areas are de la companya di areas are de la companya di areas areas di a	Main Urgent Urgent dth:	ntenance N 1 Yes	th face. Severe spalling lium transverse cracking lium transverse lium lium transverse cracking lium transverse lium lium transverse lium lium transverse lium lium transverse lium transverse lium transverse lium lium l	
Performance I Recommended Timeframe: Comments: M Element Group Element Name: Location: Material: Element Type: Environment:	ar, 2nd girdens. Deficiencies I Work: Deficiencies I work:	g, spalling, delaminations r from North face, also of s: Load carrying capac Minor Rehab Replace 1 - 5 Years Sitation or complete rep Deck Deck Deck Top Cast-in-place Concret Cast-in-place Concret Benign Mod	ity lacement re	✓ Major Re ☐ None ☐ 6 - 10 Ye quired.	peneral disinular di areas are de la companya di areas are de la companya di areas areas di a	Main Urgent Urgent Uther	1 Yes	th face. Severe spalling lium transverse cracking lium transverse lium lium transverse cracking lium transverse lium lium transverse lium lium transverse lium lium transverse lium transverse lium transverse lium lium l	
Performance I Recommendee Timeframe: Comments: M Element Group Element Name: Location: Material: Element Type:	ar, 2nd girdens. Deficiencies I Work: Deficiencies I work:	g, spalling, delaminations r from North face, also of s: Load carrying capac	ity lacement re	✓ Major Re ☐ None ☐ 6 - 10 Ye quired.	peneral disinular di areas are de la companya di areas are de la companya di areas areas di a	Main Urgent Urgent Uther	1 Yes	th face. Severe spalling lium transverse cracking lium lium lium lium lium lium lium lium	
Performance I Recommended Timeframe: Comments: M Element Group Element Name: Location: Material: Element Type: Environment: Protection Syst	ar, 2nd girdens. Deficiencies I Work: ajor rehabil	g, spalling, delaminations r from North face, also of s: Load carrying capac Minor Rehab Replace 1 - 5 Years Station or complete rep Deck Deck Deck Top Cast-in-place Concret Cast-in-place Concret Benign Mod Asphalt	ity lacement re	✓ Major Re ☐ None ☐ 6 - 10 Ye cquired.	peneral disinular areas are de la	Main Grant G	1 Yes	th face. Severe spalling lium transverse cracking lium lium lium lium lium lium lium lium	
Performance I Recommended Timeframe: Comments: M Element Group Element Name: Location: Material: Element Type: Environment: Protection Syst Condition Data:	ar, 2nd girdens. Deficiencies d Work: ajor rehabil	g, spalling, delaminations r from North face, also of s: Load carrying capac Minor Rehab Replace 1 - 5 Years Station or complete rep Deck Deck Deck Top Cast-in-place Concret Benign Mod Asphalt Units	ity lacement re	✓ Major Re ☐ None ☐ 6 - 10 Ye cquired.	ears Ler Wi Hei Co Total C Limites	Main Grant G	1 Yes	th face. Severe spalling lium transverse cracking lium transverse cracking lium transverse cracking lium transverse cracking (eeds: ar	
responsed rebate bearing location Performance I Recommended Timeframe: Comments: M Element Group Element Name: Location: Material: Element Type: Environment: Protection Syst Condition Data: Comments: M	ar, 2nd girdens. Deficiencies id Work: dajor rehabil	g, spalling, delaminations r from North face, also of s: Load carrying capac Minor Rehab Replace 1 - 5 Years litation or complete rep Deck Deck Top Cast-in-place Concret	ity lacement re	✓ Major Re ☐ None ☐ 6 - 10 Ye cquired.	ears Ler Wi Hei Co Total C Limites	Main Grant G	1 Yes	th face. Severe spalling lium transverse cracking lium transverse cracking lium transverse cracking lium transverse cracking (eeds: ar	
responsed rebate bearing location Performance I Recommended Timeframe: Comments: M Element Group Element Name: Location: Material: Element Type: Environment: Protection Syst Condition Data: Comments: M	ar, 2nd girdens. Deficiencie d Work: dajor rehabil	g, spalling, delaminations r from North face, also of s: Load carrying capac Minor Rehab Replace 1 - 5 Years litation or complete rep Deck Deck Top Cast-in-place Concret	ity lacement re	✓ Major Re ☐ None ☐ 6 - 10 Ye cquired.	Ler Wi Hel Co Total C Limited Fair 10.0	Main Main Main Main Main Main Main Main	6.1 5.1 1 31.1	th face. Severe spalling lium transverse cracking ceds: (m) (m) (m) (items) (m²) Performance Deficiencies 00	
responsed rebate bearing location Performance I Recommended Timeframe: Comments: M Element Group Element Name: Location: Material: Element Type: Environment: Protection Syst Condition Data: Comments: M	ar, 2nd girdens. Deficiencie d Work: dajor rehabil	g, spalling, delaminations r from North face, also of s: Load carrying capac Minor Rehab Replace 1 - 5 Years litation or complete rep Deck Deck Top Cast-in-place Concret Cast-in-place Concret Cast-in-place Concret Asphalt Units n / each / % / all ng and spalling. s: None	ity lacement re	✓ Major Re ☐ None ☐ 6 - 10 Ye equired. rts evere ☐ Good ☐ 21.1	Ler Wi Hel Co Total C Limited Fair 10.0	Main Main Main Main Main Main Main Main	1 Yes	th face. Severe spalling lium transverse cracking ceds: (m) (m) (m) (items) (m²) Performance Deficiencies 00	
responsed rebate bearing location Performance I Recommended Timeframe: Comments: M Element Group Element Name: Location: Material: Element Type: Environment: Protection Syst Condition Data: Comments: M Performance I Recommended	ar, 2nd girdens. Deficiencie d Work: dajor rehabil	g, spalling, delaminations r from North face, also of s: Load carrying capac Minor Rehab Replace 1 - 5 Years litation or complete rep Deck Deck Top Cast-in-place Concret Benign Mod Asphalt Units n / each / % / all ng and spalling. S: None Minor Rehab	ity lacement re	Major Re None 6 - 10 Ye equired. rts evere Good 21.1	Ler Wi Hei Co Total C Limited Fair 10.0	Main Main Main Main Main Main Main Main	1 Yes	th face. Severe spalling lium transverse cracking lium transverse crack	
responsed rebate bearing location Performance I Recommended Timeframe: Comments: M Element Group Element Name: Location: Material: Element Type: Environment: Protection Syst Condition Data: Comments: M	ar, 2nd girdens. Deficiencie d Work: dajor rehabil	g, spalling, delaminations r from North face, also of s: Load carrying capac Minor Rehab Replace 1 - 5 Years litation or complete rep Deck Deck Top Cast-in-place Concret Benign Moo Asphalt Units a / each / % / all ang and spalling. S: None Replace	ity lacement re	Wajor Re □ None □ 6 - 10 Ye equired. rts evere □ Good □ 21.1 □ Major Re □ None	Ler Wi Hei Co Total C Limited Fair 10.0	Main Main Main Main Main Main Main Main	1 Yes	th face. Severe spalling lium transverse cracking lium transverse crack	

DY - 13

Element Group:	Deck		Ler	Length:		(m)		
Element Name: Wearing Surface (Decks)				dth:	4.50	(m)		
Location:				Height:			(m)	
Material:	erial: Asphalt				unt:	1	(items)	
Element Type:				Total C	uantity:	27.45	(m²)	
Environment:	Benign / Mod	Benign / Moderate Severe			l Insp'n:			
Protection System:						F	Performance	
Condition	Units	Exc.	Good	Fair	Poor	1	Deficiencies	
	m / each / % / all		13.45	12.0	2.0		00	
Comments: Potholes pre		medium lo				throughout		
Commencer Follows pro	riously pateriou. Eight to	, incarant ic	ingitudunui (and transve	or or dokung	, unougnous.	. Digiti wheel rutting.	
Performance Deficienci	es: None							
Recommended Work:	☐ Minor Rehab		☐ Major Re	hab	Maintenance Needs: -			
	☑ Replace		□ None		☐ Urgent ☐ 1 Year ☐ 2 Year			
Timeframe:			☐ 6 - 10 Ye	ears	111111111111111111111111111111111111111			
Comments: Replace at ti	me of nevt major rehabil	itation						
Comments. Replace at ti	me of next major renaon.	itation.						
			 .					
Element Group:	Approaches			Ler	gth:	6	(m)	
Element Name:	Wearing Surface				dth:	4.5	(m)	
Location:	- V caring Surrace				ght:	1	(m)	
Material:	Asphalt				unt:	2	(items)	
Element Type:	rispitate	Aspilate			uantity:	54.0	(m²)	
Environment:	Benign / Mod	lerate S	evere		Insp'n:	34.0	(111)	
Protection System:	Deingii / Moc	icrate A	or or o	Diffice	Performance			
Condition	Units	Exc.	Good	Fair				
	m / each / % / all	LAC.	44.0	5.0	2.5 00			
Comments: Potholes pre		madium la				throughout		
Comments. Folloies pre	viously pateried. Light to	inculum 10	nigitudaliai i	and transver	Se cracking	unougnout.	Light wheel futthig.	
Performance Deficienci	es: None							
Recommended Work:	Minor Rehab		☐ Major Re	hab	Mair	ntenance No	eds	
recommended work.	☑ Replace		☐ None		Urgent	☐ 1 Yea		
Timeframe:			☐ 6 - 10 Ye	ars				
	ne of next major rehabilitation.							
oommonto replace at the	in or new major remove.							
			-					
Element Group:	Decks			Len	gth:	6.1	(m)	
Element Name:	Soffit - Thick Slab			Width:		5.1	(m)	
Location:	Interior and Exterior			Height:		0.3	(m)	
Material:	Cast-In Place Concrete			Count:		2	(items)	
Element Type:				Total Quantity:		30.5	(m²)	
Environment:	Benign / Mod	lerate / So	evere		Insp'n:		()	
Protection System:				<u> </u>		P	erformance	
Condition	Units	Exc.	Good	Fair	Poor	Deficiencies		
	m / each / % / all		7.6	15.25	7.6	01		
Comments: Exposed reb		cover and o				. Localized	areas have exposed	
Performance Deficiencie	rebar which has seperated from the soffit structure and are currently hanging loosely. Performance Deficiencies: Load carrying capacity							
	es: Load carrying capacit	Ty .						
Recommended Work:	☐ Minor Rehab	.y	☑ Major Re	hab	Maiı	ntenance Ne	eds: -	
Recommended Work:		T y	☑ Major Re	hab	Main □ Urgent	ntenance Ne		
Recommended Work: Timeframe:	☐ Minor Rehab	īy .						
	☐ Minor Rehab☐ Replace☐ 1 - 5 Years		☐ None					

DY - 13

Element Group:	Embankments & Stream	Embankments & Streams			Length:		(m)
Element Name:	Embankments				Width:		(m)
Location:	NE/NW/SE/SW	NE/NW/SE/SW			Height:		(m)
Material:	terial:				Count:		(items)
Element Type:		Т	otal Quantit	y:	4.0	(ea)	
Environment: Beni	gn / Moderate / Severe		L	imited Insp'	n:		
Protection System:				_		ce	
Data: Ur	nits	Exc.	Good	Fair	Poor		
m² / m ea	o / % / all		4.0			00	
Comments:							
Performance Deficie	encies: None						
Recommended Wor			☐ Major Re	hab Mair	itenance N	eeds:	-
1100011111011404 1101	☐ Replace		☑ None		☐ Ungent		ar 2 Year
Timeframe:	☐ 1 - 5 Years		☐ 6 - 10 Ye	ears			
Comments:							
Comments.							
Element Consum	Embankments & Stre			Lon	-th.		(m)
Element Group:				Len	gtn: dth:		(m)
	Streams & Waterways	S					(m)
Location:	Center			Hei			(m)
Material:				Cor		1	(items)
Element Type:		1 0			uantity:	1.0	(ea)
Environment:	Benign / Mo	derate / S	evere	Limited	l Insp'n:		
Protection System:				Performance			
Condition	Units	Exc.	Good	Fair	Poor		Deficiencies
Data: n	n² / m (each) % / all		1.0				00
Comments:							
Performance Defici							
Recommended Wor			☐ Major Re	ehab	Maintenance Needs: -		
	☐ Replace		☑ None		☐ Urgent	☐ 1 Ye	ar 🗌 2 Year
Timeframe:	☐ 1 - 5 Years		☐ 6 - 10 Ye	ears			
Comments:							
Element Group:				Len	gth:		(m)
Element Name:					dth:		(m)
Location:				Hei	ght:		(m)
Material:				T	unt:		(items)
Element Type:				Total C	al Quantity: (ea		(ea)
		derate / S	evere				, ,
Protection System:				Performance			Performance
Condition	Units	Units Exc. Good			Fair Poor		Deficiencies
	n² / m / each / % / all	DAG.	0000	1	100.		2011010101
Comments:	1 / III / Cacii / /0 / aii		1		<u> </u>	!	
Comments:							
Daufaumanaa Dafiai							
Performance Defici Recommended Wor			☐ Major Re	ehah	N.E2-	ntomanaa N	Joodes
Recommended Wol	Replace		☐ None		Urgent	ntenance N	
T:	☐ 1 - 5 Years		☐ 6 - 10 Y	earc	orgent		LI Z TEdf
Timeframe:	□ 1-2 teqt2		□ 0-101	cul 3			
Comments:							'
l .					I		

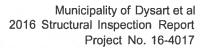
MTO Site Number:

DY - 13

Repair and Rehabilitation Required:			Priority			
Element	Repair and Rehabilitation Required	6 to 10 years	1 to 5 years	Within 1 year	Urgent	Construction Cost
MLE's/Girders	Replace or repair concrete girders		Х			\$160,000
Deck - Thick Slab	Replace or repair concrete deck		X			\$100,000
Deck - Wearing Surface	Replace or repair wearing surface		х			\$15,000
Railing System	Replace guidrail system on structure		х			\$45,000
Abutment Walls	Replace or repair		Х			\$125,000
Wingwalls	Replace or repair		Х			\$75,000
	, man					
						·
		<u>I</u>	l	l	Total Cost	\$520,000

Associated Work:	Comments	Estimated Cost	
Approaches:	Rebuild and resurface approaches during rehabilitation. Replace guiderail.	\$45,000	
Detours:			
Traffic Control:	Traffic control during construction staging	\$60,000	
Utilities:			
Eng Design & Supervision:	Rehabilitation Design and inspection	\$75,000	
Environmental Study:			
Other:			
Contingencies:			
	Total Cost	\$180,000	

Justification:		
		Y





Structure No: DY-14
Pelaw River Bridge

Structure Description

The Pelaw River Bridge is located on Redkenn Drive, 5.6 km south of Kennisis Lake Road. The bridge was constructed in 1979 and is an 18.4 m three span, two lane structure with a composite concrete/timber deck, supported by timber piles and pile caps. The bridge crosses a navigable watercourse on a north/south tangential alignment. The bridge has an overall deck width of 8.5 m and 7.3 m wide exposed concrete driving surface (it appears to have previously had a surface treated wearing course in the southeast quadrant). There is steel beam guiderail across the structure and on the approaches. The bridge is currently load limited / posted at 20 / 32 / 40 tonnes.

Structure Condition

The structure is in fair overall condition with a BCI of 67 and a BSI of 53. The wooden abutments and wing walls are in fair condition, with some cracking and displacement of abutment boards. There is localized failure of one wingwall; the pile at this location appears to have shifted, causing the wingwall to fail. The piles, bracing and pile caps are in good condition with minor cracking and checking. Several piles on the north approach have sunk, creating a gap between the pile and pile cap. The exposed concrete deck is in good condition with minor spalling and loss of aggregate. The guiderail over the structure and on the approaches is in good condition with several damaged/loose posts and blocks.

Recommendations

The structure requires a minor rehabilitation to repair the abutment faces and wingwalls, stabilize the piles with wood blocking. This should be undertaken in 1-5 years. Maintenance is required to repair the loose/damaged guiderail posts and to clear vegetation along shoulder of approaches and guiderails.



Photo 1: General Arrangement – Looking North



Photo 2 : General Arrangement – Looking South

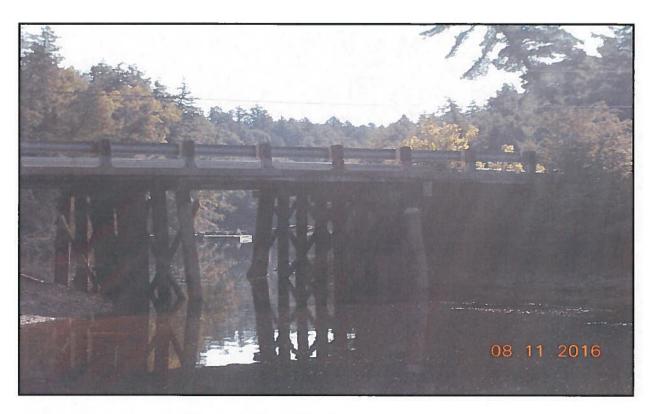


Photo 3 : General Arrangement – East Elevation



Photo 4 : Deck Wearing Surface - Asphalt Patching



Photo 5 : Gaps Between Piles and Capping Beam - Northeast Quadrant



Photo 6 : Typ. Approach Barrier Post with Severe Splits - Southeast Quadrant

Pelaw River Bridge	;		
C	n⊠ Under	Crossing Navig. Wa Type: Rail	ater ⊠ Non-Navig. Water Road Ped. Other
Redkenn Drive			
0.05 km South of P	elaw Trail		
45.047500		Longitude -78.508700	
Municipality of Dy	sart et al	Heritage Not Cons. Designation: Desig.	Cons./not App. List/not Desig. /Not List Desig. & List
114		Road Class: Freeway A	arterial Collector Local
		Posted Speed 50	No. of Lanes 2
		AADT	% Trucks
		Special Routes: Transit	Truck School Bicycle
Bridge		Detour Length Around Bridge	N/A (km)
18.8	(m)	Fill on Structure	0 (m)
8.5	(m)	Skew Angle	0 (degrees)
160.0	(sq.m)	Direction of Structure	N to S
7.3	(m)	No. of Spans	3
6.1			(m)
1979]	Last Biennial Inspection	2014
20 32 / 40	(tonnes)	Last BridgeMaster Inspection	N/A
2011-96]	Last Evaluation	N/A
N/A		Last Underwater Inspection	N/A
ance -	(m)	Last Condition Survey	N/A
ate/description)			
			August 1
			_ 1 1
			¥2
	Pelaw River Bridge	Pelaw River Bridge On ☑ Under Redkenn Drive 0.05 km South of Pelaw Trail 45.047500 Municipality of Dysart et al Bridge 18.8 (m) 8.5 (m) 7.3 (m) 6.1 1979 20 32 / 40 (tonnes) 2011-96 N/A nnce (m)	Pelaw River Bridge On I Under Crossing Type: Rail Redkenn Drive 0.05 km South of Pelaw Trail 45.047500 Longitude -78.508700 Municipality of Dysart et al Designation: Des

MTO S	Site	Num	ber:	DY .	- 14
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Field Inspection Inf	formation:			
Date of Inspection:	August 11, 2016			
Inspector:	Robert Brooks – Tulloch Engineering			
Others in Party:	Elizabeth Perry – Tulloch Engineering			
Equipment Used:	Camera, Hammer, Tape Measure			
Weather:	Sun			
Temperature:	+22°C			

Additional Investigations Required:		Priority			
	None	Normal	Urgent	Cost	
Detailed Deck Condition Survey:	X				
DART Survey:	X				
Detailed Coating Condition Survey:	X				
Underwater Investigation:	X				
Fatigue Investigation:	X				
Seismic Investigation:	X				
Structure Evaluation:	X				
Load Posting – Estimated Load		7	Total Cost	\$0	
Special Notes:					
	17				
Next Detailed Inspection:		2018			

00	None	06	Bearing not uniformly loaded/unstable	12	Slippery surfaces
01	Load carrying capacity	07	Jammed expansion joint	13	Flooding/channel blockage
02	Excessive deformations (deflections & rotations)	08	Pedestrian/vehicular hazard	14	Undermining of foundation
03	Continuing settlement	09	Rough riding surface	15	Unstable embankments
04	Continuing movements	10	Surface ponding	16	Other
05	Seized bearings	11	Deck drainage		
Main	tenance Needs				
01	Lift and Swing Bridge Maintenance	07	Repair to Structural Steel	13	Erosion Control at Bridges
02	Bridge Cleaning	08	Repair of Bridge Concrete	14	Concrete Sealing
03	Bridge Handrail Maintenance	09	Repair of Bridge Timber	15	Rout and Seal
04	Painting Steel Bridge Structures	10	Bailey Bridges - Maintenance	16	Bridge Deck Drainage
05	Bridge Deck Joint Repair	11	Animal/Pest Control	17	Other
06	Bridge Bearing Maintenance	12	Bridge Surface Repair		

DY - 14

Element Group:		Abutments			Ler	igth:	- 5	(m)
Element Name:	1	Ballast Walls				Width:		(m)
Location:		N/S				ight:	1.0	(m)
Material:		Wood			Co	unt:	2	(items)
Element Type:					Total Ç	uantity:	18.0	(m²)
Environment:		Benign / Mod	erate / Se	evere	Limited	l Insp'n:		
Protection System:		Creosote					1	Performance
Condition		Units	Exc.	Good	Fair	Poor] 1	Deficiencies
Data: n	n 3 / m	/ each / % / all		15	3			00
Comments: Minor cr	acking	g and displacement of b	oards.					10. 5 %
Performance Defici	encies							englikalingasan egisti
Recommended Wor	k:	☐ Minor Rehab ☐ Major Reh			hab	Mai	ntenance N	eeds:
		Replace		✓ None		☐ Urgent	☐ 1 Yea	ar 2 Year
Timeframe:		☐ 1 - 5 Years		☐ 6 - 10 Ye	ears	417		
Comments:								146
Element Group:		Abutments				igth:		(m)
Element Name:		Wingwalls			Wi	dth:	3.0	(m)
Location:		NE/NW/SE/SW			He	ight:	2.00	(m)
Material:		Wood				unt:	4	(items)
Element Type:	100	Wood Piles and Laggin				uantity:	24.0	(m²)
Environment:		Benign Mod	erate / Se	evere	Limited	i Insp'n:		
Protection System:		Creosote						Performance
Condition		Units	Exc.	Good	Fair	Poor	Deficiencies	
Data: n	n ² / m	/ each / % / all		12.0	8.0	4.0	2.14	00
Comments: Some se	ettleme	nt, displacement of win	gwall.					
Performance Deficie	encies	· None						
Recommended Wor		☐ Minor Rehab		☐ Major Re	hab	Mair	ntenance N	eeds: 02
itteommenaea *** oi		Replace		✓ None		Maintenance Needs: 02 ☐ Urgent ☑ 1 Year ☐ 2 Year		
Timeframe:		☐ 1 - 5 Years		☐ 6 - 10 Ye	ears			
Comments:				_	Clean vegetation around wing wans			
Comments.								
Element Group:	1111	Barriers			Ler	igth:	100.0	(m)
Element Name:		Railing Systems				dth:		(m)
Location:		E/W				ight:		(m)
Material:		Wood				unt:	2	(items)
Element Type:		Steel Flex Beam on Wo	ood Post		Total C	uantity:	200	(m)
Environment:		Benign / Mod	erate Se	evere		Insp'n:		· /
Protection System:		Galvanized / Creosote					1	Performance
Condition		Units	Exc.	Good	Fair	Poor	1	Deficiencies
Data: n	n \sqrt{m}	each / % / all		150.0	49.0	1		00
Comments: Guiderail i	in gener	al good condition. Wooden	posts have be	come loose du	e to deteriora	tion. Moderate	e to severe spli	its and checks throughout
posts with severe detoriati	on of w	ood posts on approaches. A	pproach guid	erails are not o	compliant wit	h bridge code.		
Performance Defici	encies							
Recommended Wor	k:	☑ Minor Rehab		☐ Major Re	hab	Mair	tenance N	eeds: 02
,		☐ Replace		□ None	,	Urgent	☑ 1 Yea	ır 🔲 2 Year
Timeframe:		1 - 5 Years		☐ 6 - 10 Ye	ears	Clean vege	tation aroun	d railing system and
Comments: Replace	rotten	and deteriorated wood	en posts at t	ime of next	:	hazard sigr	ıs.	
rehabilitation of guide	erail sy	stem.				l		

DY - 14

	Deck				ngth:	18.4	(m)	
Element Name:	Deck Top		W	idth: 8.5		(m)		
Location:			ight:		(m)			
Material:	Other		Co	ount:	1	(items)		
Element Type:	Cast-In-Place Concrete	on Lamina	ted Wood	Total (Quantity:	156.4	(m²)	
Environment:	Benign / Mo	derate (S	evere	d Insp'n: 🗵				
Protection System:							Performance	
Condition	Units	Good	Fair	Poor	Ι	Deficiencies		
Data: m2/ m	/ each / % / all	Exc.	156.4				00	
Comments:								
Comments.								
Performance Deficiencies	· None							
Recommended Work:	Minor Rehab	☐ Major Reha	h	Maint	enance Ne	nds.		
Recommended work:	Replace		☐ None		Urgent	1 Year		
T' C	☐ 1 - 5 Years		☐ 6 - 10 Year	_	Orgenic	L I real		
Timeframe:	☐ 1-2 (Edi2		□ 0 - 10 1ea:	•				
Comments:								
Element Group:	Deck			Le	ngth:	18.4	(m)	
Element Name:	Wearing Surface (Decl	ks)		W	idth:	8.5	(m)	
Location:				He	eight:		(m)	
Material:	Concrete			Co	ount:	1	(items)	
Element Type:				Total (Quantity:	156.4	(m²)	
Environment:	Benign / Mo	derate (S	evere		d Insp'n: 🗆			
Protection System:	Asphalt					F	Performance	
Condition	Units				Poor		Deficiencies	
	1 / each / % / all		116.4	40.0	00			
Comments: Light to medium transveres cracking and general wearing of surface. Asphalt patch remains in the Southeast quadrant								
Comments: Light to media	ım transveres cracking :	and general	wearing of su	rface Asph	alt natch rema	ins in the S	outheast quadrant	
		and general	wearing of su	rface. Asph	alt patch rema	ins in the S	outheast quadrant	
with light to medium raveling	ng around edge.	and general	wearing of su	rface. Asph	alt patch rema	ins in the S	outheast quadrant	
with light to medium raveling Performance Deficiencies	ng around edge. : None	and general					-	
with light to medium raveling	ng around edge.	and general	Wearing of su ☐ Major Reha ☑ None		Main	tenance Ne	eds:	
with light to medium raveling Performance Deficiencies Recommended Work:	ng around edge. : None Minor Rehab Replace	and general	☐ Major Reha	b			eds:	
with light to medium raveling Performance Deficiencies Recommended Work: Timeframe:	ng around edge. : None Minor Rehab	and general	☐ Major Reha	b	Main	tenance Ne	eds:	
with light to medium raveling Performance Deficiencies Recommended Work:	ng around edge. : None Minor Rehab Replace	and general	☐ Major Reha	b	Main	tenance Ne	eds:	
with light to medium raveling Performance Deficiencies Recommended Work: Timeframe:	ng around edge. : None Minor Rehab Replace	and general	☐ Major Reha	b	Main	tenance Ne	eds:	
with light to medium raveling Performance Deficiencies Recommended Work: Timeframe: Comments:	ng around edge. : None Minor Rehab Replace 1 - 5 Years	and general	☐ Major Reha	b s	Main(tenance Ne	eds: r	
with light to medium raveling Performance Deficiencies Recommended Work: Timeframe: Comments: Element Group:	ng around edge. : None Minor Rehab Replace 1 - 5 Years		☐ Major Reha	s Le	Maint ☐ Urgent ngth:	tenance Ne □ 1 Yea	eds: r □ 2 Year (m)	
with light to medium raveling Performance Deficiencies Recommended Work: Timeframe: Comments: Element Group: Element Name:	ng around edge. : None Minor Rehab Replace 1 - 5 Years Pier Shaft / Columns / Pile		☐ Major Reha	s Le	Maint □ Urgent ngth: idth:	tenance Ne	eds: r	
with light to medium raveling Performance Deficiencies Recommended Work: Timeframe: Comments: Element Group:	ng around edge. : None Minor Rehab Replace 1 - 5 Years Pier Shaft / Columns / Pile 4 Bents		☐ Major Reha	s Le	Maint ☐ Urgent ngth:	tenance Ne □ 1 Yea	eds: r □ 2 Year (m)	
with light to medium raveling Performance Deficiencies Recommended Work: Timeframe: Comments: Element Group: Element Name:	ng around edge. : None Minor Rehab Replace 1 - 5 Years Pier Shaft / Columns / Pile		☐ Major Reha	b s Le W	Maint □ Urgent ngth: idth:	tenance Ne	eds: r	
with light to medium ravelin Performance Deficiencies Recommended Work: Timeframe: Comments: Element Group: Element Name: Location:	ng around edge. : None Minor Rehab Replace 1 - 5 Years Pier Shaft / Columns / Pile 4 Bents	Bents	☐ Major Reha	Le W He	Main (□ Urgent ngth: idth:	enance Ne □ 1 Year	eds: r	
with light to medium raveling Performance Deficiencies Recommended Work: Timeframe: Comments: Element Group: Element Name: Location: Material:	ng around edge. : None Minor Rehab Replace 1 - 5 Years Pier Shaft / Columns / Pile 4 Bents Wood	Bents	☐ Major Reha	Le W He	Main of the second of the sec	0.30 5.0	eds: r	
with light to medium raveling Performance Deficiencies Recommended Work: Timeframe: Comments: Element Group: Element Name: Location: Material: Element Type:	rig around edge. None Minor Rehab Replace 1 - 5 Years Pier Shaft / Columns / Pile 4 Bents Wood Timber Piles with Cap	Bents	☐ Major Reha ☑ None ☐ 6 - 10 Year	Le W He	Main Urgent Ingth: idth: eight: bunt: Quantity:	0.30 5.0 52 245.0	eds: r	
with light to medium raveling Performance Deficiencies Recommended Work: Timeframe: Comments: Element Group: Element Name: Location: Material: Element Type: Environment: Protection System:	rig around edge. None Minor Rehab Replace 1 - 5 Years Pier Shaft / Columns / Pile 4 Bents Wood Timber Piles with Cap	Bents	☐ Major Reha ☑ None ☐ 6 - 10 Year	Lee W He Co	Main Urgent Ingth: idth: eight: bunt: Quantity:	0.30 5.0 52 245.0	(m) (m) (m) (m) (items) (m²)	
with light to medium raveling Performance Deficiencies Recommended Work: Timeframe: Comments: Element Group: Element Name: Location: Material: Element Type: Environment: Protection System: Condition	rig around edge. : None Minor Rehab Replace 1 - 5 Years Pier Shaft / Columns / Pile 4 Bents Wood Timber Piles with Cap Benign	Bents ping Beam pderate / S	☐ Major Reha ☑ None ☐ 6 - 10 Year Severe	Le W He	Maint Urgent ngth: idth: eight: ount: Quantity: ed Insp'n:	0.30 5.0 52 245.0	eds: (m) (m) (m) (items) (m²)	
with light to medium raveling Performance Deficiencies Recommended Work: Timeframe: Comments: Element Group: Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: Material: Data: Data:	rig around edge. : None Minor Rehab Replace 1 - 5 Years Pier Shaft / Columns / Pile 4 Bents Wood Timber Piles with Cap Benign	Bents ping Beam derate / S Exc.	☐ Major Reha ☑ None ☐ 6 - 10 Year Severe Good 196	Le W He Co Total (Limite	Maint Urgent ngth: idth: sight: ount: Quantity: d Insp'n: Poor 24.5	0.30 5.0 52 245.0	eds: r	
with light to medium raveling Performance Deficiencies Recommended Work: Timeframe: Comments: Element Group: Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: Comments: Piles in NE questions	rig around edge. : None Minor Rehab Replace 1 - 5 Years Pier Shaft / Columns / Pile 4 Bents Wood Timber Piles with Cap Benign	Bents ping Beam derate / S Exc.	☐ Major Reha ☑ None ☐ 6 - 10 Year Severe Good 196	Le W He Co Total (Limite	Maint Urgent ngth: idth: sight: ount: Quantity: d Insp'n: Poor 24.5	0.30 5.0 52 245.0	eds: r	
with light to medium raveling Performance Deficiencies Recommended Work: Timeframe: Comments: Element Group: Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: Comments: Piles in NE quightening.	rig around edge. None Minor Rehab Replace 1 - 5 Years Pier Shaft / Columns / Pile 4 Bents Wood Timber Piles with Cap Benign Units 1 / each / % / all addrant have sunk 50-16	Bents ping Beam oderate / S Exc.	Major Reha None 6 - 10 Year Gevere Good 196 separated fron	Le W He Co Total (Limite Fair 24.5	Maint Urgent Ingth: idth: eight: ount: Quantity: ed Insp'n: Poor 24.5 Capping beam	0.30 5.0 52 245.0	eds: r	
with light to medium raveling Performance Deficiencies Recommended Work: Timeframe: Comments: Element Group: Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: Comments: Piles in NE quightening. Performance Deficiencies	Pier Shaft / Columns / Pile 4 Bents Wood Timber Piles with Cap Benign Units 1 / each / % / all addrant have sunk 50-16	Bents ping Beam oderate / S Exc.	Major Reha None 6 - 10 Year Gevere Good 196 separated from	Le W He Co Total (Limite Fair 24.5 n pile cap. Co	Maint Urgent Ingth: idth: eight: Dunt: Quantity: d Insp'n: Poor 24.5 Capping beam	0.30 5.0 52 245.0 bolts are lo	(m) (m) (m) (items) (m²) Performance Deficiencies 01 ose and require	
with light to medium raveling Performance Deficiencies Recommended Work: Timeframe: Comments: Element Group: Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: Comments: Piles in NE quightening.	rig around edge. None Minor Rehab Replace 1 - 5 Years Pier Shaft / Columns / Pile 4 Bents Wood Timber Piles with Cap Benign Units 1 / each / % / all addrant have sunk 50-16	Bents ping Beam oderate / S Exc.	Major Reha None 6 - 10 Year Gevere Good 196 separated fron	Le W He Co Total (Limite Fair 24.5 n pile cap. Co	Maint Urgent Ingth: idth: eight: punt: Quantity: d Insp'n: Poor 24.5 Capping beam It NE quadran Main	0.30 5.0 52 245.0 bolts are lo	(m) (m) (m) (items) (m²) Performance Deficiencies 01 ose and require	
with light to medium raveling Performance Deficiencies Recommended Work: Timeframe: Comments: Element Group: Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: Comments: Piles in NE quantity of the performance Deficiencies Recommended Work:	rig around edge. : None Minor Rehab Replace 1 - 5 Years Pier Shaft / Columns / Pile 4 Bents Wood Timber Piles with Cap Benign	Bents ping Beam oderate / S Exc.	☐ Major Reha ☐ None ☐ 6 - 10 Year ☐ 6 - 10 Year ☐ 6 - 10 Year ☐ 196 Separated from ☐ Major Reha ☐ None	Le W He Co Total (Limite Fair 24.5 1 pile cap. Co king piles a	Maint Urgent Ingth: idth: eight: Dunt: Quantity: d Insp'n: Poor 24.5 Capping beam	0.30 5.0 52 245.0 bolts are lo	(m) (m) (m) (items) (m²) Performance Deficiencies 01 ose and require	
with light to medium ravelin Performance Deficiencies Recommended Work: Timeframe: Comments: Element Group: Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: Comments: Piles in NE quightening. Performance Deficiencies Recommended Work: Timeframe:	rig around edge. : None Minor Rehab Replace 1 - 5 Years Pier Shaft / Columns / Pile 4 Bents Wood Timber Piles with Cap Benign Mood Units Mood Units Mood All Indicate Mood Mood Imper Piles with Cap Benign Mood Units Mood Mood Indicate Mood Mood Indicate Mood Mood Indicate Mood Mood Indicate Mood Replace Indicate Indi	Bents Ding Beam oderate / S Exc. O0 mm and ty comprom	Gevere Good 196 separated from Major Reha Good 196 separated from Major Reha None Good 196	Le W He Co Total (Limite Fair 24.5 pile cap. Co king piles a	Maint Urgent Ingth: idth: eight: punt: Quantity: d Insp'n: Poor 24.5 Capping beam It NE quadran Main	0.30 5.0 52 245.0 bolts are lo	(m) (m) (m) (items) (m²) Performance Deficiencies 01 ose and require	
with light to medium raveling Performance Deficiencies Recommended Work: Timeframe: Comments: Element Group: Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: Comments: Piles in NE quightening. Performance Deficiencies Recommended Work:	rig around edge. : None Minor Rehab Replace 1 - 5 Years Pier Shaft / Columns / Pile 4 Bents Wood Timber Piles with Cap Benign Mood Units Mood Mode Units Mode Mode Units Mode Mode Units Mode Mode Units Mode Mode 1 - 5 Years bolts require tightenin	Bents Ding Beam oderate / S Exc. O0 mm and ty comprom	Gevere Good 196 separated from Major Reha Good 196 separated from Major Reha None Good 196	Le W He Co Total (Limite Fair 24.5 pile cap. Co king piles a	Maint Urgent Ingth: idth: eight: punt: Quantity: d Insp'n: Poor 24.5 Capping beam It NE quadran Main	0.30 5.0 52 245.0 bolts are lo	(m) (m) (m) (items) (m²) Performance Deficiencies 01 ose and require	

DY - 14

Element Group:		Embankments & Strea	ms	·	Ler	gth:	14	(m)
Element Name:		Embankments			Wi	dth:		(m)
Location:		NE/NW/SE/SW			Hei	ght:		(m)
Material:					Co	unt:	4	(items)
Element Type:					Total Q	uantity:	4	(each)
Environment:		Benign / Mod	Benign / Moderate / Severe					1
Protection Syste	m:							Performance
Condition		Units	Exc.	Good	Fair	Poor Deficiencies		
Data:	m² / n	each / % / all				00		
Comments: Mi		lebris on NE and SW qu	iadrants.	<u> </u>	l		I	
		ioonio on the and o th q	addiding.					
Performance D	eficiencies	: None						
Recommended		☐ Minor Rehab		☐ Major Re	hab	Mair	atenance N	eeds:
Recommended	***************************************	☐ Replace		✓ None		☐ Urgent		
Timeframe:		☐ 1 - 5 Years		☐ 6 - 10 Ye	ears			
Comments:								
Comments.								
	-							
Element Group:		Approaches			Lon	oth.	6	()
Element Name:		Wearing Surface				gth: dth:	5.4	(m)
		-					3.4	(m)
Location: Material:		Top			+	ght:	2	(m)
		Asphalt				unt:	2	(items)
Element Type:		Danian / Mad	C			uantity:	64.8	(m²)
Environment:		Benign / Mod	erate S	evere	Limited	l Insp'n:		
Protection Syste	:m:						1	Performance
Condition		Units	Exc.	Good	Fair	Poor		Deficiencies
Data:		n / each / % / all		46.8	12.0	6.0		00
Comments: Asl	hpalt debor	nded with medium to se	vere ravelin	g along edg	ge of pavem	ent.		
Performance D	eficiencies	: None						
Recommended	Work:	Minor Rehab		☐ Major Re	174tthtenance 1 (ceasi			eeds: -
		☑ Replace		□ None	☐ Urgent ☑ 1 Year ☐ 2 Year			ar 🔲 2 Year
Timeframe:		1 - 5 Years		☐ 6 - 10 Ye	ears	Remove ve	getation and	d debris along edge of
Comments:						pavement.	_	
								'
Element Group:		Embankments			Len	gth:		(m)
Element Group: Element Name:		Embankments Streams			_	gth: dth:		(m) (m)
					Wi	dth:		` '
Element Name:		Streams			Wi Hei	dth: ght:	1	(m) (m)
Element Name: Location: Material:		Streams			Wi Hei Co	dth: ght: unt:	_	(m) (m) (items)
Element Name: Location:		Streams Center	erate / Se	evere	Wi Hei Co Total Q	dth: ght:	1 1.0	(m) (m)
Element Name: Location: Material: Element Type: Environment:		Streams Center	erate / Se	evere	Wi Hei Co Total Q	dth: ght: unt: uantity:	1.0	(m) (m) (items) (ea)
Element Name: Location: Material: Element Type: Environment: Protection Syste		Streams Center Benign Mod		evere	Wi Hei Co Total Q	dth: ght: unt: uantity:	1.0	(m) (m) (items) (ea)
Element Name: Location: Material: Element Type: Environment: Protection Syste Condition		Streams Center Benign Mod	erate / Se	Good	Wi Hei Co Total Q Limited	dth: ght: unt: uantity: I Insp'n:	1.0	(m) (items) (ea) Performance Deficiencies
Element Name: Location: Material: Element Type: Environment: Protection Syste Condition Data:	m:	Streams Center Benign Mod			Wi Hei Co Total Q Limited	dth: ght: unt: uantity: I Insp'n:	1.0	(m) (m) (items) (ea)
Element Name: Location: Material: Element Type: Environment: Protection Syste Condition Data: Comments:	m: m² / m	Streams Center Benign Mod Units n each % / all		Good	Wi Hei Co Total Q Limited	dth: ght: unt: uantity: I Insp'n:	1.0	(m) (items) (ea) Performance Deficiencies
Element Name: Location: Material: Element Type: Environment: Protection Syste Condition Data: Comments:	m: m²/ m	Streams Center Benign / Mod Units n (each) % / all : None		Good 1.0	Wi Hei Co Total Q Limited	dth: ght: unt: uantity: I Insp'n:	1.0	(m) (items) (ea) Performance Deficiencies
Element Name: Location: Material: Element Type: Environment: Protection Syste Condition Data: Comments:	m: m²/ m	Streams Center Benign Mod Units n (each) % / all : None Minor Rehab		Good 1.0 Major Re	Wi Hei Co Total Q Limited	dth: ght: unt: uantity: Insp'n: Poor	1.0	(m) (items) (ea) Performance Deficiencies 00
Element Name: Location: Material: Element Type: Environment: Protection Syste Condition Data: Comments:	m: m²/ m	Streams Center Benign Mod Units Leach % / all None Replace		Good 1.0 Major Re None	Wi Hei Co Total Q Limited Fair	dth: ght: unt: uantity: I Insp'n: Poor	1.0	(m) (m) (items) (ea) Performance Deficiencies 00
Element Name: Location: Material: Element Type: Environment: Protection Syste Condition Data: Comments:	m: m²/ m	Streams Center Benign Mod Units n (each) % / all : None Minor Rehab		Good 1.0 Major Re	Wi Hei Co Total Q Limited Fair	dth: ght: unt: uantity: Insp'n: Poor	1.0	(m) (m) (items) (ea) Performance Deficiencies 00
Element Name: Location: Material: Element Type: Environment: Protection Syste Condition Data: Comments: Performance D Recommended	m: m²/ m	Streams Center Benign Mod Units Leach % / all None Replace		Good 1.0 Major Re None	Wi Hei Co Total Q Limited Fair	dth: ght: unt: uantity: Insp'n: Poor	1.0	(m) (m) (items) (ea) Performance Deficiencies 00

MTO Site Number:

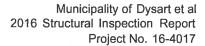
DY-14

Element Group:		Decks Length:					18.40	(m)
Element Name:		Soffit - Thin Slab Width:					8.50	(m)
Location:		Soffit	ght:		(m)			
Material:		Wood			Co	unt:	1	(items)
Element Type:		Laminated Wood Deck	ing		Total Q	uantity:	156.4	(m²)
Environment:		Benign / Mod	erate / Se	evere	Limited	l Insp'n:		
Protection Syste	em:	Creosote					1	Performance
Condition		Units	Exc.	Good	Fair	Poor] :	Deficiencies
Data:	m^2/n	n / each / % / all		156.4				00
Comments:								
Performance I	eficiencie:	s: None						
Recommended	Work:	Minor Rehab		☐ Major Re	hab	Mai	ntenance N	eeds:
		☐ Replace		✓ None		☐ Urgent	☐ 1 Yea	ar 🔲 2 Year
Timeframe:		☐ 1 - 5 Years		☐ 6 - 10 Ye	ears			
Comments:								

···	-				MTO Site	e Number:	DY - 14	
Repair and Rehal	oilitation Re	quired:			Estimated			
Element	Repair and	l Rehabilitation Required	6 to 10 years	1 to 5 years	Within 1 year	Urgent	Construction Cost	
Ballast Walls	Minor repairs to abutment boards			X	-		\$10,000	
Wingwalls	Repairs to			X		 	\$45,000	
Railing System		ocking and posts		-X		1	\$10,000	
Shaft / Columns / Pile Bents Jack and add blocking to sunken piles			Х			\$30,000		
	!					Total Cost	\$95,000	
Associated Work:		Comme	nts			Estimated Cost		
Approaches:		Guiderail and end treatment	t on approa	ches			\$15,000	
Detours:		<u> </u>						
Traffic Control: Utilities:								
Junues:		1						

Associated Work:	Comments	Estimated
	Comments	Cost
Approaches:	Guiderail and end treatment on approaches	\$15,000
Detours:		
Traffic Control:		
Utilities:		
Right of Way:		
Environmental Study:		
Other:		
Contingencies:		
	Total C	Cost \$15,000

Justification:		





Structure No: DY-15
Drag River Bridge

Structure Description

The Drag River Bridge is located on Maple Avenue in the Community of Haliburton, 0.2 km north of Highland Street. The bridge was constructed in 1969 and is a 15.4 m single span, two lane concrete rigid frame structure. The bridge crosses the Drag River on a north/south tangential alignment. The bridge has a 12.0 m wide deck with a 9.4 m wide asphalt wearing surface and sidewalks on both sides. There is a galvanized steel railing over the structure with concrete end posts; there is no guiderail on the approaches.

Structure Condition

The structure is in good to fair overall condition with a BCI of 70 and BSI of 66. The concrete abutments are in good condition with minor vertical cracking. There is a small concrete retaining wall in the NE quadrant exhibiting minor erosion and washout; erosion protection should be placed to prevent further loss of material. The soffits exhibit localized severe spalling and scaling at the mid-span center zone; also, localized areas of staining indicating water penetration. The concrete curb and sidewalks are in fair condition, with spalling, vehicle damage and exposed rebar. The steel railing over the structure is in good condition with minor corrosion; the concrete end posts have moderate spalling and scaling and require repair. The asphalt wearing surface is in good condition, with some recent patching. There are no hazard signs at the terminations of the guiderails.

Recommendations

The structure requires minor rehabilitation to repair concrete soffit, sidewalk, curb and end posts. Full depth crack repair should be completed at the deck ends to prevent water penetration. Maintenance is required to place erosion protection at the retaining wall in the NE quadrant to prevent erosion. Hazard signage to Provincial Standards should be installed at the terminations of the guiderail. For aesthetics reasons, the steel railing system could be re-coated.



Photo 1 : General Arrangement - Looking South



Photo 2 : General Arrangement - Looking North

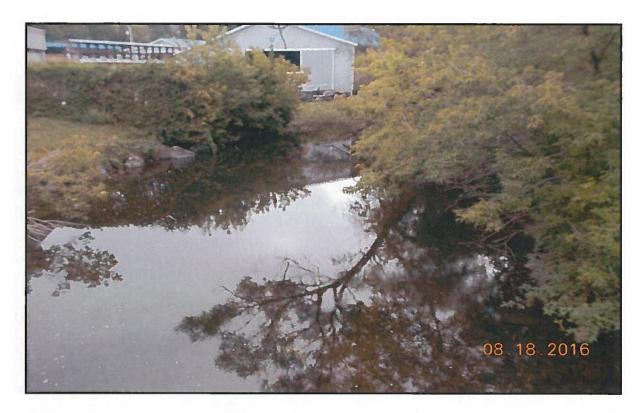


Photo 3 : General View - Looking Upstream



Photo 4 : General View - Looking Downstream



Photo 5 : General View of Handrail System-Looking East



Photo 6 : Curb / Sidewalk and Railing System / End Post – Northeast Quadrant



Photo 7 : Curb Deterioration – Southwest Quadrant



Photo 8 : Spalling Concrete - Mid Span of Soffit Looking East

Inventory Data							
Structure Name	Drag River Bridg	ge					
Main Hwy/Road #		On 1	Under ⊠	Crossing Type:	Navig. Wa Rail	ter Non-Navig Road 🗵 Ped.	g. Water ⊠ Other
Road Name	Maple Avenue						
Structure Location	0.08 km South o	f Victoria	Street				
Latitude	45.047500			Longitude -78	8.508700		1115-11
Owner(s)	Municipality of l	Dysart et a	1 -	Heritage N Designation:			List/not Desig. g. & List
MTO Region *				Road Class:	Freeway A	arterial X Collect	or Local
MTO District *				Posted Speed 5	0	No. of Lanes [2
Old County *				AADT		% Trucks [
Geographic Twp. *				Special Routes:	Transit	Truck ⊠ Schoo	l⊠ Bicycle
Structure Type *	Rigid Frame	4		Detour Length Arc	ound Bridge		(km)
Total Deck Length	17.0		(m)	Fill on Structure		0	(m)
Overall Str. Width	12.0		(m)	Skew Angle		0	(degrees)
Total Deck Area	204.0		(sq.m)	Direction of Struct	ture	N to S	3 3 6 1
Roadway Width	9.4		(m)	No. of Spans		1	d mal
Span Lengths	15.4						(m)
Historical Data							
Year Built	1969			Last Biennial Insp	ection	2014	
Current Load Limit	N/A/	(tonn	es)	Last BridgeMaste	r Inspection	N/A	
Load Limit Bylaw #	# N/A			Last Evaluation		N/A	
Bylaw Expiry Date	N/A			Last Underwater l	Inspection	N/A	
Min. Vertical Clear	ance -	(m)		Last Condition Su	ırvey	N/A	. 1 1
Rehab. History: (D	ate/description)						4 5
							7 9
							3 11
60			10				¥i

Field Inspection Info	ormation.			
ricia inspection inic	niation.			
Date of Inspection:	August 18, 2016			
Inspector:	Robert Brooks – Tulloch En	Robert Brooks – Tulloch Engineering		
Others in Party:	Elizabeth Perry – Tulloch Er	gineering		
Equipment Used:	Camera, Hammer, Tape Mea	sure		
Weather:	Cloudy			
Temperature:	+19 ⁰ C			

MTO Site Number: DY - 15

Additional Investigations Required:		Priority			
	None	Normal	Urgent	Cost	
Detailed Deck Condition Survey:	X				
DART Survey:	X				
Detailed Coating Condition Survey:	X				
Underwater Investigation:	X				
Fatigue Investigation:	X				
Seismic Investigation:	X				
Structure Evaluation:	X				
Load Posting – Estimated Load		Total Cost			
Special Notes:	·				
Next Detailed Inspection:			2018		

Suspe	ected Performance Deficiencies				
00	None	06	Bearing not uniformly loaded/unstable	12	Slippery surfaces
01	Load carrying capacity	07	Jammed expansion joint	13	Flooding/channel blockage
02	Excessive deformations (deflections & rotations)	08	Pedestrian/vehicular hazard	14	Undermining of foundation
03	Continuing settlement	09	Rough riding surface	15	Unstable embankments
04	Continuing movements	10	Surface ponding	16	Other
05	Seized bearings	11	Deck drainage		
Main	tenance Needs				
01	Lift and Swing Bridge Maintenance	07	Repair to Structural Steel	13	Erosion Control at Bridges
02	Bridge Cleaning	08	Repair of Bridge Concrete	14	Concrete Sealing
03	Bridge Handrail Maintenance	09	Repair of Bridge Timber	15	Rout and Seal
04	Painting Steel Bridge Structures	10	Bailey Bridges - Maintenance	16	Bridge Deck Drainage
05	Bridge Deck Joint Repair	11	Animal/Pest Control	17	Other
06	Bridge Bearing Maintenance	12	Bridge Surface Repair		

DY - 15

Element Group		Abutments			Length:			(m)
Element Name:		Abutment Walls			Wi	dth:	12.0	(m)
Location:		Ends Under Bridge			He	ight:	1.5	(m)
Material:		Cast-In-Place Concrete	е		Со	unt:	2	(items)
Element Type:		Conventional Closed				uantity:	36.0	(m²)
Environment:		Benign Mod	lerate / S	evere	Limited	l Insp'n:		
Protection Syste	em:						Ī	Performance
Condition	1,000	Units	Exc.	Good	Fair	Poor	Poor Deficiencies	
Data:	m^2/n	n / each / % / all		36				00
Comments: Mi	nor vertical	cracking at abutments.	Light erosi	on of retaini	ing wall in l	NE quadran	t. Light abra	sion at waterline on
North abutment.								
Performance I	Deficiencies	: None						
Recommended	Work:	☐ Minor Rehab		☐ Major Re	hab	Mai	ntenance N	eeds: 13
		☐ Replace ☑ None			☐ Urgent	☑ 1 Yea	r 🗌 2 Year	
Timeframe:		☐ 1 - 5 Years		☐ 6 - 10 Ye	ears	Erosion co	ontrol along	abutment walls
Comments:								
Element Group	:	Abutments			Len	igth:	6.0	(m)
Element Name:		Wing Wall				dth:		(m)
Location:		Northwest Quadrant			Hei	ght:	0.5	(m)
Material:		Cast-In-Place Concrete				unt:	1	(items)
Element Type:						Total Quantity:		(m²)
Environment:		Benign (Mod	lerate / So	evere	Limited Insp'n:		3.0	(+)
Protection Syste	em:						ı	Performance
Condition		Units	Exc.	Good	Fair	Fair Poor		Deficiencies
Data:	m²/ n	n / each / % / all		1.0	1	1 00		
		ving wall at Northeast of	uadrant.	110				
Performance I)eficiencies	: None						
Recommended		✓ Minor Rehab		☐ Major Re	hab	Mair	ntenance N	eds: -
		☐ Replace		■ None		Urgent		
Timeframe:				☐ 6 - 10 Ye	ars			
	ahilize wing	wall and provide erros	ion protect	ion				
		, wan and provide erros	ion protect					
Element Group		Approaches			Len	gth:	6.0	(m)
Element Name:		Wearing Surface				dth:	9.40	(m)
Location:		Wearing Surface				ght:	2.40	(m)
Material:		Asphalt				unt:	2	(items)
Element Type:		rispitati				uantity:	112.8	(m²)
Environment:		Benign / Mod	lerate S	evere		I Insp'n:	112.0	(111)
Protection Syste	em.	Demgii / Mod	icrate 5	STORE		inopii.		Performance
Condition		Units	Exc.	Good	Fair	Poor		Deficiencies
Data:	(m) / m	n / each / % / all	LAC.	108.8	4	1 001		00
		ım wheel rutting observ	od Datahin		L	na racantlu k	oon done	00
Comments: Li	gni to meun	in wheel fulling observ	eu. Patenin	g to tranver	se cracks na	is recently t	een done.	
Performance I) oficion sico	. None						
	<i>Jeniciencies</i>			☐ Major Po	hab	Mair	-4 NT	anda.
Recommended	Work	☑ Minor Rehab ☐ Major Reh		Titalification of the day				
Recommended	Work:	✓ Minor Rehab☐ Replace		☐ None	Hau			
	Work:	Replace		☐ None		Urgent	1 1 Yea	
Timeframe:		☐ Replace ☑ 1 - 5 Years						
Timeframe:		Replace		☐ None				

DY - 15

Element Group:		Barriers			Length:			(m)
Element Name:		Posts			Wic			(m)
Location:		End posts of railing			Hei		1.20	(m)
Material:		Cast-In-Place Concrete	;		Cou		4	(items)
Element Type:					Total Q		4.0	(ea)
Environment:		Benign / Mod	erate Se	evere	Limited			` '
Protection Syste	m:	Ü				•	ı	Performance
Condition	···	Units	Exc.	Good	Fair Poor			Deficiencies
Data:	m²/ n	each % / all			2	2		00
		g and exposed reinforce	ment at So	utheast and				
		p						
Performance D	eficiencies	: None						
Recommended		✓ Minor Rehab		☐ Major Re	hab	Maiı	ntenance N	eeds:
		☐ Replace		□ None		☐ Uhyjenit	☐ 1 Yea	r 2 Year
Timeframe:		1 - 5 Years		☐ 6 - 10 Ye	ears	*		
Comments:Ren	oair damage	ed sections of concrete.						
,	8							
							-/4	
Element Group:	:	Barriers	-		Len	gth:	18.0	(m)
Element Name:		Railing System			Wie	-		(m)
Location:		E/W			Hei		1.2	(m)
Material:		Galvanized Steel			Cou	-	2	(items)
Element Type:		Double Railing			Total Q		36.0	(m)
Environment:			lerate S	evere		Limited Insp'n:		· · · · · · · · · · · · · · · · · · ·
Protection Syste	em:	Galvanizing						Performance
Condition		Units	Exc.	Good	Fair	Poor	1	Deficiencies
Data:	mC/ n	each / % / all		32.0	4.0	- 344	00	
		on on railings and posts.						
		9- m k-our						
Performance D	Deficiencies	: None						
Recommended		☐ Minor Rehab		☐ Major Re	hab	Mai	ntenance N	eeds: 03
		☐ Replace		✓ None	☐ Urgent		☐ 1 Year ☑ 2 Year	
Timeframe:		☐ 1 - 5 Years		☐ 6 - 10 Ye			l Handrail Maintenance	
Comments: Re	e-coat for a	esthetics						
	W.	7	7/-1/5/19					
Element Group:		Deck			Len	gth:	17	(m)
Element Name:		Wearing Surface				dth:	9.4	(m)
Location:					Hei	ght:		(m)
Material:		Asphalt				unt:	1	(items)
Element Type:					Total Q	uantity:	159.8	(m²)
Environment:		Benign / Mod	lerate S	evere	Limited			
Protection Syste	em:							Performance
		Units Exc. Good		Fair			Deficiencies	
Condition		Units	EXC.		1 411			
Condition Data:	m ² / n	n / each / % / all	EXC	132.2	27.6	- 1 001		00
Data:				132.2	27.6			00
Data:		n / each / % / all		132.2	27.6			00
Data:	sphalt gener	n / each / % / all ally in good condition v		132.2	27.6			00
Data: Comments: As	phalt gener	n / each / % / all ally in good condition v		132.2 ge sealed cr	27.6 racks at deck	c ends.	ntenance N	
Data: Comments: As Performance D	phalt gener	n / each / % / all ally in good condition v s: None		132.2 ge sealed ci	27.6 racks at deck	c ends.	1770	eeds:
Data: Comments: As Performance D	phalt gener	n / each / % / all ally in good condition v s: None Minor Rehab		132.2 ge sealed cr	27.6 racks at deck	c ends.	1770	eeds:
Data: Comments: As Performance D Recommended	phalt gener	n / each / % / all ally in good condition v s: None		132.2 ge sealed co ☐ Major Re ☑ None	27.6 racks at deck	c ends.	1770	eeds:

DY - 15

Element Group:		Deck			Length:		17.0	(m)
Element Name:		Deck Top			Wi	dth:	12.0	(m)
Location:					Hei	ght:	0.5	(m)
Material:		Cast-In-Place Concrete	2		Co	unt:	1	(items)
Element Type:				,		uantity:	204.0	(m²)
Environment:		Benign Mod	lerate Se	evere	Limited	l Insp'n:	4	
Protection Syste	em:	Asphalt					Po	erformance
Condition		Units	Exc.	Good	Fair	Poor	D	eficiencies
Data:	m^2/m	n / each / % / all		167.0	33.0	4		00
Comments:								
Performance D	eficiencies	: None						
Recommended	Work:	☐ Minor Rehab		☐ Major Re	hab	Mai	ntenance Ne	eds:
		☑ Replace		■ None		☐ Uhgenit	☐ 1 Year	2 Year
Timeframe:		☐ 1 - 5 Years		☐ 6 - 10 Ye	ears			
Comments:								
Element Group:		Deck			Len	gth:	15.4	(m)
Element Name:	-	Soffit - Thick Slab			Wi	dth:		(m)
Location:		Exterior	11		Hei	ght:	1.50	(m)
Material:		Cast-In-Place Concrete		Co	unt:	2	(items)	
Element Type:				Total Quantity:		46.2	(m²)	
Environment:		Benign Mod	erate / Se	evere	Limited	Insp'n:		
Protection Syste	em:						Po	erformance
Condition		Units	Exc.	Good	Fair	Poor	D	eficiencies
Data:	m³/m	ı / each / % / all		46.2			00	
Comments: Mi	nor cracks	and staining.						
Performance D	eficiencies	: None						1
Recommended	Work:	☐ Minor Rehab		☐ Major Re	hab	Maiı	ntenance Ne	eds: -
		☐ Replace		None		☐ Urgent	☐ 1 Year	2 Year
Timeframe:		☐ 1 - 5 Years		☐ 6 - 10 Ye	ears			
Comments:								
Element Group:		Deck			Len	gth:	15.4	(m)
Element Name:		Soffit - Thick Slab			Wie	dth:	10	(m)
Location:		Interior			Hei	ght:		(m)
Material:		Cast-In-Place Concrete			Cor	ınt:	_ 1	(items)
Element Type:					Total Q	uantity:	154.0	(m²)
Environment:		Benign / Mod	erate / Se	evere	Limited	Insp'n:		
Protection Syste	em:						Pe	erformance
Condition		Units	Exc.	Good	Fair	Poor	D	eficiencies
Data:	m / m	/ each / % / all		136.5	16.5	1.0		00
Comments: M	edium secti	on of delaminated conc	rete is spall	ing away fr	om soffit at	the midspa	n zone.	
Performance D	eficiencies	: None						- 42.14
Recommended	Work:	☑ Minor Rehab		☐ Major Re	hab	Mair	tenance Ne	eds:
		☐ Replace		□ None		☐ Urgent	1 Year	
Timeframe:		1 - 5 Years		☐ 6 - 10 Ye	ars			
Comments: Re	pair spalled	sections of concrete.						

DY-15

Element Group:	:	Embankments & Stream	ms		Len	gth:		(m)	
Element Name:		Embankments	·		Wie	dth:		(m)	
Location:		NE/NW/SE/SW			Hei	ght:		(m)	
Material:					Cor	ınt:	4	(items)	
Element Type:					Total Q	uantity:	4	(ea)	
Environment:		Benign / Mod	erate / Se	evere	Limited	Insp'n:			
Protection Syste	em:						Performance		
Condition		Units	Exc.	Good	Fair	Poor	1	Deficiencies	
Data:	m² / m	each) % / all		2	1	1		15	
Comments: No	ortheast qua	drant is showing signs o	of errosion.						
Performance I	Deficiencies	•						<u> </u>	
Recommended	l Work:	✓ Minor Rehab		☐ Major Re	hab	Maiı	atenance N	eeds: 13	
		☐ Replace		■ None		☐ Urgent	☐ 1 Yea	ar 🕝 2 Year	
Timeframe:		☑ 1 - 5 Years		☐ 6 = 10 Ye	ears	Provide ero	osion protec	tion before or as part	
Comments: A	ddress erosi	on when wingwall reha	b. complete	ed.		of rehab of	wing wall.		
					-				
Element Group		Embankments & Strea	me		T	oth:		(m)	
Element Name:		Streams & Waterways				gth: dth:		(m) (m)	
Location:		Center			ght:		(m)		
Material:		Center				1	(items)		
Element Type:					Count: Total Quantity:		1.0	(ea)	
Environment:	;	Benigp / Moderate / Severe		Limited Insp'n:			(ca)		
Protection Syst	em '	Beings & Moderate / Bevere		Limited	тыр п.		Performance		
Condition	1	Units	Exc.	Good	Fair	Poor	1	Deficiencies	
Data:	m²/n	each) % / all	LXC.	1.0	1 411	1 001	00		
Comments:	III / II	Cacil 70 7 all		1.0				00	
Comments.									
Performance I	Deficiencies	: None						:	
Performance I		☐ Minor Rehab		☐ Major Re	hab	Mai	ntenance N	eeds: -	
				☐ Major Re	hab	Mai □ Urgent			
		☐ Minor Rehab		-					
Recommended		☐ Minor Rehab ☐ Replace		☑ None					
Recommended		☐ Minor Rehab ☐ Replace		☑ None					
Recommended Timeframe: Comments:	d Work:	☐ Minor Rehab ☐ Replace ☐ 1 - 5 Years		☑ None	ears	☐ Urgent	☐ 1 Yea	ar 🗌 2 Year	
Recommended Timeframe: Comments:	d Work:	☐ Minor Rehab ☐ Replace ☐ 1 - 5 Years Sidewalk / Curbs		☑ None	ears Ler	□ Urgent	☐ 1 Yea	ar 2 Year (m)	
Recommended Timeframe: Comments: Element Group Element Name:	d Work:	☐ Minor Rehab ☐ Replace ☐ 1 - 5 Years Sidewalk / Curbs Sidewalk		☑ None	Ler Wi	Urgent Digth:	18.0 1.75	(m) (m)	
Recommended Timeframe: Comments: Element Group Element Name: Location:	d Work:	☐ Minor Rehab ☐ Replace ☐ 1 - 5 Years Sidewalk / Curbs Sidewalk West		☑ None	Ler Wi	Urgent Other O	18.0 1.75 0.15	(m) (m) (m) (m)	
Recommended Timeframe: Comments: Element Group Element Name: Location: Material:	d Work:	☐ Minor Rehab ☐ Replace ☐ 1 - 5 Years Sidewalk / Curbs Sidewalk	e	☑ None	Ler Wi He	Urgent Other O	18.0 1.75 0.15	(m) (m) (m) (m) (items)	
Recommended Timeframe: Comments: Element Group Element Name: Location: Material: Element Type:	d Work:	☐ Minor Rehab ☐ Replace ☐ 1 - 5 Years Sidewalk / Curbs Sidewalk West Cast-In-Place Concrete		☑ None ☐ 6 - 10 Yo	Ler Wi He Co	Urgent Ogth: dth: ght: unt: Duantity:	18.0 1.75 0.15 1 34.2	(m) (m) (m) (m)	
Recommended Timeframe: Comments: Element Group Element Name: Location: Material: Element Type: Environment:	l Work:	☐ Minor Rehab ☐ Replace ☐ 1 - 5 Years Sidewalk / Curbs Sidewalk West Cast-In-Place Concrete		☑ None	Ler Wi He Co	Urgent Other O	18.0 1.75 0.15 1 34.2	(m) (m) (m) (m) (items) (m²)	
Recommended Timeframe: Comments: Element Group Element Name: Location: Material: Element Type: Environment: Protection Syst	l Work:	☐ Minor Rehab ☐ Replace ☐ 1 - 5 Years Sidewalk / Curbs Sidewalk West Cast-In-Place Concrete Benign / Moo	lerate (S	☑ None ☐ 6 - 10 Yo	Ler Wi He Co Total Q Limited	Urgent Ogth: dth: ight: unt: Duantity: 1 Insp'n:	18.0 1.75 0.15 1 34.2	(m) (m) (m) (items) (m²)	
Recommended Timeframe: Comments: Element Group Element Name: Location: Material: Element Type: Environment: Protection Syst Condition	d Work:	☐ Minor Rehab ☐ Replace ☐ 1 - 5 Years Sidewalk / Curbs Sidewalk West Cast-In-Place Concrete Benign / Moc		☑ None ☐ 6 - 10 Yo	Ler Wi He: Co Total Q Limited	gth: dth: ight: unt: puantity: l Insp'n:	18.0 1.75 0.15 1 34.2	(m) (m) (m) (items) (m²) Performance Deficiencies	
Recommended Timeframe: Comments: Element Group Element Name: Location: Material: Element Type: Environment: Protection Syst Condition Data:	d Work:	☐ Minor Rehab ☐ Replace ☐ 1 - 5 Years Sidewalk / Curbs Sidewalk West Cast-In-Place Concrete Benign / Moo Units 1 / each / % / all	lerate S	evere Good 28.2	Ler Wi He: Co Total C Limited	gth: dth: ight: unt: puantity: I Insp'n: Poor 2.0	18.0 1.75 0.15 1 34.2	(m) (m) (m) (items) (m²)	
Recommended Timeframe: Comments: Element Group Element Name: Location: Material: Element Type: Environment: Protection Syst Condition Data:	d Work:	☐ Minor Rehab ☐ Replace ☐ 1 - 5 Years Sidewalk / Curbs Sidewalk West Cast-In-Place Concrete Benign / Moc	lerate S	evere Good 28.2	Ler Wi He: Co Total C Limited	gth: dth: ight: unt: puantity: I Insp'n: Poor 2.0	18.0 1.75 0.15 1 34.2	(m) (m) (m) (items) (m²) Performance Deficiencies	
Recommended Timeframe: Comments: Element Group Element Name: Location: Material: Element Type: Environment: Protection Syst Condition Data:	eem:	☐ Minor Rehab ☐ Replace ☐ 1 - 5 Years Sidewalk / Curbs Sidewalk West Cast-In-Place Concrete Benign / Moo Units n / each / % / all and spalling concrete w	lerate S	evere Good 28.2	Ler Wi He: Co Total C Limited	gth: dth: ight: unt: puantity: I Insp'n: Poor 2.0	18.0 1.75 0.15 1 34.2	(m) (m) (m) (items) (m²) Performance Deficiencies	
Recommended Timeframe: Comments: Element Group Element Name: Location: Material: Element Type: Environment: Protection Syst Condition Data: Comments: Pl	em: Deficiencies	☐ Minor Rehab ☐ Replace ☐ 1 - 5 Years Sidewalk / Curbs Sidewalk West Cast-In-Place Concrete ☐ Benign / Mod ☐ Units ☐ / each / % / all ☐ and spalling concrete with the spalling concr	lerate S	evere Good 28.2	Ler Wi He Co Total C Limited Fair 4.0 nent, particu	gth: dth: light: unt: luantity: i Insp'n: Poor 2.0 llarly in SW	18.0 1.75 0.15 1 34.2	(m) (m) (m) (items) (m²) Performance Deficiencies 00	
Recommended Timeframe: Comments: Element Group Element Name: Location: Material: Element Type: Environment: Protection Syst Condition Data: Comments: Pl	em: Deficiencies	☐ Minor Rehab ☐ Replace ☐ 1 - 5 Years Sidewalk / Curbs Sidewalk West Cast-In-Place Concrete ☐ Benign / Mod ☐ Units ☐ / each / % / all ☐ and spalling concrete were	lerate S	evere Good 28.2 d reinforcen	Ler Wi He Co Total C Limited Fair 4.0 nent, particu	gth: dth: light: unt: luantity: i Insp'n: Poor 2.0 llarly in SW	18.0 1.75 0.15 1 34.2 	(m) (m) (m) (items) (m²) Performance Deficiencies 00	
Recommended Timeframe: Comments: Element Group Element Name: Location: Material: Element Type: Environment: Protection Syst Condition Data: Comments: Pl	em: Deficiencies	☐ Minor Rehab ☐ Replace ☐ 1 - 5 Years Sidewalk / Curbs Sidewalk West Cast-In-Place Concrete ☐ Benign / Mod ☐ Units ☐ / each / % / all ☐ and spalling concrete with the spalling concr	lerate S	evere Good 28.2 d reinforcen Major Re	Ler Wi Hei Co Total C Limited Fair 4.0 nent, particu	gth: dth: ight: unt: vantity: l Insp'n: Poor 2.0 llarly in SW	18.0 1.75 0.15 1 34.2 	(m) (m) (m) (items) (m²) Performance Deficiencies 00	
Recommended Timeframe: Comments: Element Group Element Name: Location: Material: Element Type: Environment: Protection Syst Condition Data: Comments: Pl Performance I Recommended Timeframe:	em: ow damage Deficiencies d Work:	☐ Minor Rehab ☐ Replace ☐ 1 - 5 Years Sidewalk / Curbs Sidewalk West Cast-In-Place Concrete ☐ Benign / Moo Units ☐ / each / % / all and spalling concrete w None ☐ Minor Rehab ☐ Replace	lerate S	evere Good 28.2 d reinforcen Major Re	Ler Wi Hei Co Total C Limited Fair 4.0 nent, particu	gth: dth: ight: unt: vantity: l Insp'n: Poor 2.0 llarly in SW	18.0 1.75 0.15 1 34.2 	(m) (m) (m) (items) (m²) Performance Deficiencies 00	

MTO Site Number:

DY - 15

Element Group:	Sidewalk / Curbs	Sidewalk / Curbs			igth:	18.0	(m)
Element Name:	Curbs			Width:		0.85	(m)
Location:	East			He	ght:	0.15	(m)
Material:	Cast-In-Place Concrete			Co	unt:	- 1 -	(items)
Element Type:				Total Q	uantity:	18	(m²)
Environment:	Benign / Mod	erate Se	evere	Limited	l Insp'n:		
Protection System:						Po	erformance
Condition	Units	Exc.	Good	Fair	Poor	D	eficiencies
Data: m / n	n / each / % / all		12	4	2		00
Comments: Plow damage	and spalling concrete w	ith exposed	l reinforcem	ent, particu	larly in NE	corner.	
Performance Deficiencies	n. Mono						
Recommended Work:	Minor Rehab		☐ Major Re	hab	Maiı	ntenance Ne	eds:
	☐ Replace		☐ None		☐ Urgent	☐ 1 Year	☐ 2 Year
Timeframe:			☐ 6 - 10 Ye	ars			
Comments: Repair damag	ed concrete curbs.						

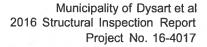
MTO Site Number:

DY - 15

Repair and Rehabi	litation Required:			Estimated		
Element	Repair and Rehabilitation Required	6 to 10 years	1 to 5 years	Within 1 year	Urgent	Construction Cost
Railing System End Posts	Concrete repairs to end posts		X			\$10,000
Soffit - Thick Slab - Interior	Repair spalled concrete at midspan of soffit		Х			\$20,000
Curbs	Repair spalled / damaged curbs		X			\$20,000
Abutment Wing Wall	Stabilize wing wall at Northeast quadrant			х		\$5,000
				1	Total Cost	\$55,000

Associated Work:	Comments		Estimated Cost
Approaches:			
Detours:			
Traffic Control:			
Utilities:			
Right of Way:			
Environmental Study:			
Other:			
Contingencies:	Contingency including engineering		\$8,000
		Total Cost	\$8,000

Justification:	





Structure No: DY-16

Highland Street Culvert

Structure Description

The Highland Street Culvert is located in the Community of Haliburton on Highland Street, 50 m west of Pine Avenue. The culvert is a 5.5 m span corrugated steel multi-plate pipe arch (open bottom) under a two-lane road. The culvert is approximately 25m long and extends under Highland Street which has a 9.0 m width with 1.2 m wide sidewalks and 3:1 embankments. The culvert crosses a non-navigable waterway at an approximate 30 degree skew. There is a steel railing system / barrier with concrete end posts on the south side of the structure and a steel beam guiderail on the north side, extending over the structure and the approaches.

Structure Condition

The structure is in good condition with a BCI of 72 and BSI of 69. There is moderate corrosion and pitting of the barrel of the culvert below the high water mark and around the waterline. The wearing surface is in fair to good condition with medium transverse cracks in the southbound lane. The roadway embankments are heavily vegetated and stable with no signs of erosion. Sections of concrete curb exhibit severe spalling, scaling and vehicle damage and will require replacement. The east curb is in severe condition with severe deterioration to curb and gutter system migrating towards the sidewalk. The guiderail on the North side over the structure and on the approaches is in good condition with minor corrosion and some loose/damaged and rotted posts. The guiderail posts should be replaced to maintain the integrity of the guiderail. The railing on the South side is in good condition with minor cosmetic damage and minor corrosion. Several of the south handrail system posts have lost their caps and should be replaced to prevent water damage.

Recommendations

The structure requires minor rehabilitation to the roadway curbs to address the deterioration of the concrete. This should be undertaken within a year to prevent further deterioration of sidewalk and to promote water flow to catch basins. Deck surface area requires routing and sealing of transverse cracks. Maintenance is required to repair/replace damaged guiderail posts and blocks. Investigation of the condition of the culvert invert is required to confirm condition. Due to high water levels and flows (downstream dam) this area could not be inspected during the OSIM inspection and will require an enhanced investigation with small boat.

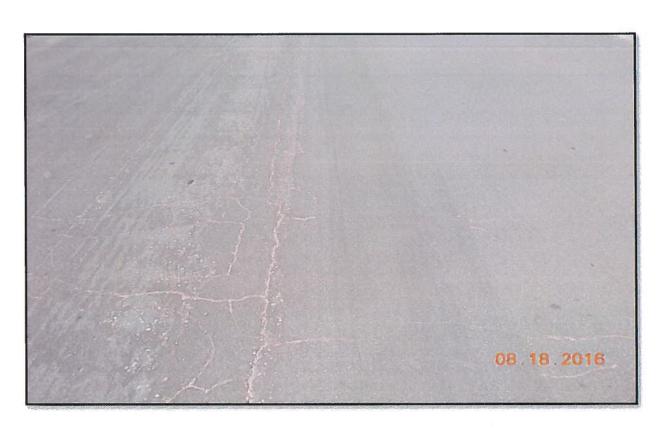


Photo 1 : Deck Wearing Surface - Looking South



Photo 2 : Edge of Concrete Deck & Curb System - Looking South

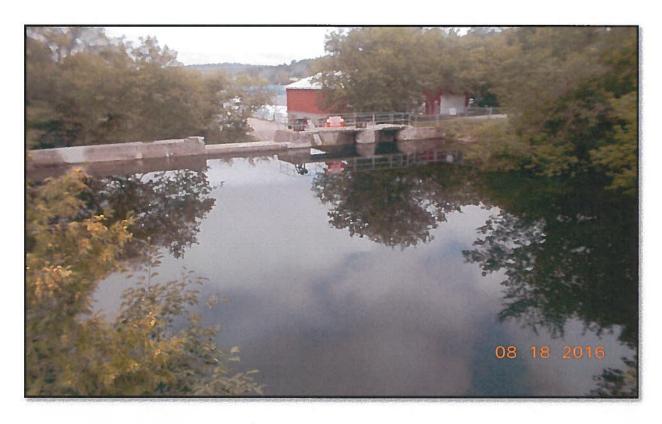


Photo 3 : General Upstream View- Looking East



Photo 4 : General Downstream View - Looking West

Highland Street Culvert

Municipality of Dysart et al

Highland Street

Structure Location 0.05 km West of Pine Avenue

45.047200

On

Under ⊠

(m)

(m)

(m)

(sq.m)

Inventory Data:

Structure Name

Road Name

Latitude

Owner(s)

MTO Region *
MTO District *
Old County *

Geographic Twp. *
Structure Type *

Total Deck Area

Roadway Width

Span Lengths

Total Deck Length 5.5

Overall Str. Width 25.8

9.0

5.5

Main Hwy/Road #

MTO Site Nu	ımber: DY – :	16
_	ter⊠ Non-Nav Road Ped.	ig. Water Other
Longitude -78.506300		
_	Cons./not App. Not List Des	List/not Desig. ig. & List
Road Class: Freeway Ar	terial Collect	or Local ⊠
Posted Speed 50	No. of Lanes	2
AADT	% Trucks	
Special Routes: Transit	Truck School	ol Bicycle
Detour Length Around Bridge		(km)
Fill on Structure	1.5	(m)
Skew Angle		(degrees)
Direction of Structure	E to W	
No. of Spans	1	
		(m)
Last Biennial Inspection	2014	
Last BridgeMaster Inspection	N/A	
Last Evaluation	N/A	
Last Underwater Inspection	N/A	

Historical Data:					
Year Built			Last Biennial Inspection	2014	
Current Load Limit	N/A/ /	(tonnes)	Last BridgeMaster Inspection	N/A	
Load Limit Bylaw #	N/A		Last Evaluation	N/A	
Sylaw Expiry Date	N/A]	Last Underwater Inspection	N/A	
Min. Vertical Clearance	-	(m)	Last Condition Survey	N/A	
Rehab. History: (Date/des	cription)				
		e.			7

Field Inspection Info	rmation:				
Date of Inspection:	August 18, 2016				
Inspector:	Robert Brooks – Tulloch E	Robert Brooks – Tulloch Engineering			
Others in Party:	Elizabeth Perry – Tulloch I	Engineering			
Equipment Used:	Camera, Hammer, Tape M	easure			
Weather:	Cloudy				
Temperature:	+20°C				

MTO Site Number: DY – 16

Additional Investigations Required:		Priority			
	None	Normal	Urgent	Cost	
Detailed Deck Condition Survey:	X				
DART Survey:	X				
Detailed Coating Condition Survey:	X				
Underwater Investigation:	X				
Fatigue Investigation:	X				
Seismic Investigation:	X				
Structure Evaluation:		X		\$2,000.00	
Load Posting – Estimated Load		Т	otal Cost	\$2,000.00	
Special Notes: Inspect inside of culvert from a bo	at	18			
Next Detailed Inspection:		35.05	2018		

Sucno	cted Performance Deficiencies				
00	None	06	Bearing not uniformly loaded/unstable	12	Slippery surfaces
01	Load carrying capacity	07	Jammed expansion joint	13	Flooding/channel blockage
02	Excessive deformations (deflections & rotations)	08	Pedestrian/vehicular hazard	14	Undermining of foundation
03	Continuing settlement	09	Rough riding surface	15	Unstable embankments
04	Continuing movements	10	Surface ponding	16	Other
05	Seized bearings	11	Deck drainage		
Maint	tenance Needs				
01	Lift and Swing Bridge Maintenance	07	Repair to Structural Steel	13	Erosion Control at Bridges
02	Bridge Cleaning	08	Repair of Bridge Concrete	14	Concrete Sealing
03	Bridge Handrail Maintenance	09	Repair of Bridge Timber	15	Rout and Seal
04	Painting Steel Bridge Structures	10	Bailey Bridges - Maintenance	16	Bridge Deck Drainage
05	Bridge Deck Joint Repair	11	Animal/Pest Control	17	Other
06	Bridge Bearing Maintenance	12	Bridge Surface Repair		

DY - 16

Element Group:		Approaches				igth:	6.0	(m)
Element Name:		Wearing Surface			Width:		7.0	(m)
Location:		E/W			He	Height:		(m)
Material:		Asphalt			Co	unt:	2	(items)
Element Type:	.i.				Total C	uantity:	84.0	(m²)
Environment:		Benign / Mod	erate Se	evere	Limited	l Insp'n:		
Protection Syste	m: 📊						1	Performance
Condition		Units	Exc.	Good	Fair	Poor	1	Deficiencies
Data:	m ² / n	ı / each / % / all		78	4	2		00
Comments: Lig	to mediu	ım transverse cracks wi	th light rave	eling along	edge of asp	halt. Mediu	m to severe	longitudinal crack on
South approach v	wtih small 1	potholes.						
Performance D	eficiencies	: None						
Recommended	Work:	☐ Minor Rehab		☐ Major Re	hab	Mair	ntenance N	eeds: 15
		☐ Replace		✓ None		☐ Urgent	☑ 1 Year	ar 🗌 2 Year
Timeframe:		☐ 1 - 5 Years		☐ 6 - 10 Ye	ears	Rout and s	eal transver	se cracks and patch
Comments:						potholes		
Element Group:		Barriers			Ler	igth:	16.0	(m)
Element Name:		Hand Railings			Wi	dth:		(m)
Location:		South	П		He	ght:		(m)
Material:		Aluminum			Co	unt:	1 1 1	(items)
Element Type:						uantity:	16.0	(m)
Environment:		Benign / Mod	erate Se	evere	Limited	l Insp'n:		
Protection Syste	m:						1	Performance
Condition		Units	Exc.	Good	Fair	Poor]	Deficiencies
Data:	m / n	each / % / all		12.0	4.0			00
Comments: Min	nor damage	e to hand railing. Missin	g top caps	on posts (7	each; south	side)		
Performance D	eficiencies	: None						
Recommended	Work:	☐ Minor Rehab		☐ Major Re	hab	Maiı	ntenance N	eeds: 02, 03
		☐ Replace		✓ None		☐ Urgent	☑ 1 Yea	ır 🔲 2 Year
Timeframe:		☐ 1 - 5 Years		☐ 6 - 10 Ye	Clean debris and vegetation around handrai			
Comments:					to promote proper surface water drainage.			
						Install top	cpas.	
200								
Element Group:		Barriers			Len	gth:		(m)
Element Name:		Posts			Wi	dth:		(m)
Location:		North			Hei	ght:		(m)
Material:		Wood				unt:	30	(items)
Element Type:						uantity:	30	(ea)
Environment:		Benign / Mod	erate Se	evere	Limited	l Insp'n:		
Protection Syste	m:							Performance
Condition		Units	Exc.	Good	Fair	Poor	1	Deficiencies
Data:	m² / m			16	7	7		00
		ail posts and blocks loos	se and deter	iorated with	h rotten sect	ion at cente	r of post. Li	ght to medium splits
and checks throu								
Performance D								
Recommended	Work:	Minor Rehab		☐ Major Re	nab		tenance N	
		☑ Replace		□ None	22	☐ Urgent	☐ 1 Yea	r 2 Year
Timeframe:				☐ 6 - 10 Ye	ears			- 1
Comments: Rep	olace rotten	wood posts						

DY - 16

Element Group:		Decks			Length:		5.5	(m)	
Element Name:		Wearing Surface			Wie	dth:	7.0	(m)	
Location:		Тор			Hei	ght:		(m)	
Material:		Asphalt			Coı	ınt:	1	(items)	
Element Type:						uantity:	38.5	(m ²)	
Environment:		Benign / Mod	lerate Se	evere	Limited	Insp'n:			
Protection Syste	em:						1	Performance	
Condition		Units	Exc.	Good	Fair	Poor] 1	Deficiencies	
Data:	m ² / n	n / each / % / all		38.0		0.5		00	
Comments: Me	edium to se	vere transverse cracks in	n South lane	Э.					
Performance I	Deficiencies	: None							
Recommended		☐ Minor Rehab		☐ Major Re	hab	Maii	ntenance N	eeds: 15	
		☐ Replace		✓ None		☐ Urgent	☑ 1 Yea	ar 2 Year	
Timeframe:		☐ 1 - 5 Years		☐ 6 - 10 Ye	ears	Rout and s	eal transver	se cracks	
Comments:									
Element Group	:	Sidewalk / Curbs			Len	gth:	100.0	(m)	
Element Name:		Curbs				dth:	0.15	(m)	
Location:		E/W			Hei	ght:	0.15	(m)	
Material:		Cast-in-place Concrete	2		Co	unt:	2	(items)	
Element Type:		•	_		Total Q	uantity:	60.0	(m²)	
Environment:		Benign / Mod	derate S	evere	Limited	Limited Insp'n: □			
Protection Syste	em:	_					1	Performance	
Condition		Units	Exc.	Good	Fair	Poor	Deficiencies		
		A					00		
Data:	(m ²)/ n	n / each / % / all			30	30		00	
			 d gutter syst	tem is propi			k.	00	
		n / each / % / all oration of East curbs and	d gutter syst	tem is propi			k.	00	
	vere deterio	oration of East curbs and	d gutter syst	em is propi			k.	00	
Comments: Se	vere deterio	oration of East curbs and	d gutter syst	tem is propi	gating towa	rds sidewal	k. ntenance N		
Comments: Se	vere deterio	oration of East curbs and	d gutter syst		gating towa	rds sidewal	ntenance N	eeds: -	
Comments: Se	vere deterio	ration of East curbs and s: None Minor Rehab	d gutter syst	☐ Major Re	gating towa	rds sidewal	ntenance N	eeds: -	
Comments: Se Performance I Recommended Timeframe:	vere deterio	ration of East curbs and None Minor Rehab Replace		☐ Major Re☐ None	gating towa	rds sidewal	ntenance N	eeds: -	
Comments: Se Performance I Recommended Timeframe:	vere deterio	ration of East curbs and None Minor Rehab Replace 1 1 - 5 Years		☐ Major Re☐ None	gating towa	rds sidewal	ntenance N	eeds: -	
Comments: Se Performance I Recommended Timeframe:	vere deterio	eration of East curbs and S: None ☐ Minor Rehab ☐ Replace ☐ 1 - 5 Years		☐ Major Re☐ None	gating towa	rds sidewal	ntenance N	eeds: -	
Comments: Se Performance I Recommended Timeframe:	Deficiencies I Work:	eration of East curbs and S: None ☐ Minor Rehab ☐ Replace ☐ 1 - 5 Years		☐ Major Re☐ None	gating towa	rds sidewal	ntenance N	eeds: -	
Performance I Recommended Timeframe: Comments: Pr	Deficiencies I Work: ovide new o	s: None Minor Rehab Replace 1 - 5 Years curb and gutter system t		☐ Major Re☐ None	gating towa	Main Urgent	ntenance N □ 1 Ye	eeds: - ar	
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Performance I Recommended Timeframe: Comments: Pr Element Group Element Name: Location: Material:	Deficiencies I Work: ovide new o	Barriers Railing Systems North Steel Steel Flex Beam on W	o East sidev	☐ Major Re☐ None☐ 6 - 10 Ye	gating towa hab ears Ler Wi He Co Total C	Main Urgent Urgent dth:	80.0	eeds: - ar	
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Performance I Recommended Timeframe: Comments: Pr Element Group Element Name: Location: Material: Element Type: Environment:	Deficiencies I Work: ovide new o	Barriers Railing Systems North Steel Steel Flex Beam on W Beriation of East curbs and	o East sides	☐ Major Re☐ None☐ 6 - 10 Ye	gating towa hab ears Ler Wi He Co Total C	Main Urgent Urge	80.0 1.1 80.0	eeds: - ar	
Performance I Recommended Timeframe: Comments: Pr Element Group Element Name: Location: Material: Element Type: Environment: Protection Syst	Deficiencies I Work: ovide new o	Barriers Railing Systems North Steel Steel Flex Beam on W Galvanized Units	o East sides	☐ Major Re☐ None☐ 6 - 10 Yewalk.	gating towa thab ears Ler Wi He Co Total Q Limited	Main Urgent Urge	80.0 1.1 80.0	eeds: - ar	
Performance I Recommended Timeframe: Comments: Pr Element Group Element Name: Location: Material: Element Type: Environment: Protection Syst Condition Data:	Deficiencies I Work: ovide new of the control of t	Barriers Railing Systems North Steel Steel Flex Beam on W Benign / Mod Galvanized Units	o East sidev	□ Major Re □ None □ 6 - 10 Ye walk. evere □ Good 75.0	gating towa hab ears Ler Wi Hei Co Total Q Limited Fair 5.0	Main Urgent Urge	80.0 1.1 80.0	eeds: - ar	
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Performance I Recommended Timeframe: Comments: Pr Element Group Element Name: Location: Material: Element Type: Environment: Protection Syst Condition Data: Comments: M	Deficiencies Novide new of the management of th	Barriers Railing Systems North Steel Steel Flex Beam on W Benign / Mod Galvanized Units On damage to guiderail; S: None Minor Rehab	o East sidev	Major Re None 6 - 10 Ye walk.	gating towa chab cars Ler Wi Hei Co Total C Limited Fair 5.0 n.	Main Urgent Urge	80.0 1.1 80.0	eeds: - ar	
Performance I Recommended Timeframe: Comments: Pr Element Group Element Name: Location: Material: Element Type: Environment: Protection Syst Condition Data: Comments: M Performance I Recommended	Deficiencies Novide new of the management of th	Barriers Railing Systems North Steel Steel Flex Beam on W Benign / Mod Galvanized Units Dand damage to guiderail; St. None Minor Rehab Replace	o East sidev	□ Major Re □ None □ 6 - 10 Ye walk. evere □ Good □ 75.0 □ Major Re □ None	gating towa chab cars Ler Wi Hei Co Total C Limited Fair 5.0 n.	Main Urgent Urge	80.0 1.1 80.0	eeds: - ar	

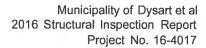
DY - 16

Element Group:	Culverts	Culverts			Length:		(m)
Element Name:	Barrels	Barrels			Width:		(m)
Location:	East / West	East / West			Height:		(m)
Material:	Corrugated Steel	Corrugated Steel			unt:	1	(items)
Element Type:	Pipe Arch			Total C	uantity:	225	(m²)
Environment:	Benign Mod	lerate / Se	evere	Limite	l Insp'n:		
Protection System:							Performance
Condition	Units	Exc.	Good	Fair	Роог		Deficiencies
Data: m ²	m / each / % / all		225				00
Comments: Culvert b	arrel in good condition; min	or surficial	corrosion a	nd pitting a	t waterline.	4	
Performance Deficier							
Recommended Work			☐ Major Re	hab	Mai	ntenance N	eeds: -
	☐ Replace		✓ None		☐ Urgent	☐ 1 Yea	ar 2 Year
Timeframe:	☐ 1 - 5 Years		☐ 6 - 10 Ye	ears			
Comments:							
Element Group:	Embankments & Strea	ms		Ler	igth:		(m)
Element Name:	Embankments			Wi	dth:		(m)
Location:	NE/NW/SE/SW			He	ght:		(m)
Material:				Co	unt:	4	(items)
Element Type:				Total C	uantity:	4.0	(ea)
Environment:	Benign Mod	lerate / Se	evere	Limited	Limited Insp'n:		,
Protection System:						1	Performance
Condition	Units	Exc.	Good	Fair	Poor		Deficiencies
Data: m ²	/ m (each) % / all		4	=-			00
Comments:		= =			2.		1
Performance Deficier			227				
Recommended Work			☐ Major Re	hab		ntenance N	
	Replace		✓ None		☐ Urgent	5.00	
Timeframe:	☐ 1 - 5 Years		☐ 6 - 10 Ye	ears	Remove ve	egetation gro	owth as part of regular
Comments:					maintenance		
Element Group:	Embankments & Strea				gth:		(m)
Element Name:	Streams & Waterways		***		dth:		(m)
Location:	Upstream / Downstrea	m		Hei	ght:		(m)
Material:					unt:	2	(items)
Element Type:					uantity:	2.0	(ea)
Environment:	Benign / Mod	lerate / Se	ечете	Limited	l Insp'n:		
Protection System:] 1	Performance
Condition	Units	Exc.	Good	Fair	Роог] 1	Deficiencies
Data: m ²	/ m (each) % / all		2.0				00
Comments:	_						
Performance Deficier							
Recommended Work	•		☐ Major Re	hab	Maiı	ntenance N	eeds: -
	☐ Replace		☑ None		☐ Urgent	☐ 1 Yea	ar 2 Year
Timeframe:	☐ 1 - 5 Years		☐ 6 - 10 Ye	ears			
Comments:							

MTO Site Number:

DY - 16

Repair and Rehabilitation Required:			Pri		Estimated	
Element	Repair and Rehabilitation Required	6 to 10 years	l to 5 years	Within 1 year	Urgent	Construction Cost
Posts	Replace damaged/deteriorated guiderail posts		Х			\$10,000
Curbs	Replace concrete curb and gutter on E sidewalk	ast	Х			\$10,000
					Total Cost	\$20,000
Associated Wo	rk:	Commo	ents			Estimated Cost
Approaches:						
Detours:	9					
Traffic Control	:					
Utilities:						
Right of Way:						
Environmental	Study:					
Other:						
Contingencies:					Total Cost	
L					Total Cost	
Justification:			Control of the Control			
Justification.						





Structure No: DY-17

West Shore Kennisis Lake Culvert

Structure Description

The West Shore Kennisis Lake Culvert is located on West Shore Lake Road, 200 m West of Lipsy Lake Drive. The culvert is a 4.27 m span modular concrete box culvert under a two-lane road. The culvert is approximately 29.8m long and extends under West Shore Road on an East / West alignment with approximately 4m of fill on top of the structure. The culvert crosses a non-navigable waterway. There is no barrier system on the structure or on the approaches.

Structure Condition

The structure is in good condition with a BCI of 96 and BSI of 93. The structure appears to be newly constructed; however, the exact installation date is unknown. Both the deck and approach wearing surfaces are in good condition. The roadway embankments are lightly vegetated and stable with no signs of erosion. There is no guiderail over the structure or on the approaches with some loose/damaged posts remaining from a previous installation.

Recommendations

The structure requires no rehabilitation work itself. A guiderail system should be installed on either side of the structure and to extend past the approaches in accordance with provincial highway standards.



Photo 1: Culvert Inlet - Looking West



Photo 2: Culvert Outlet - Looking East

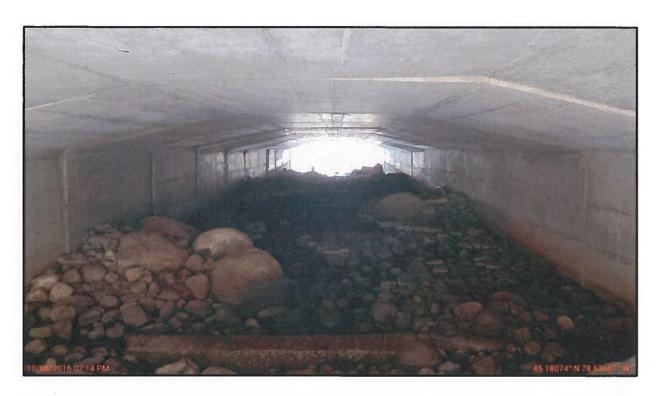


Photo 3: General View Culvert Barrel – Looking West

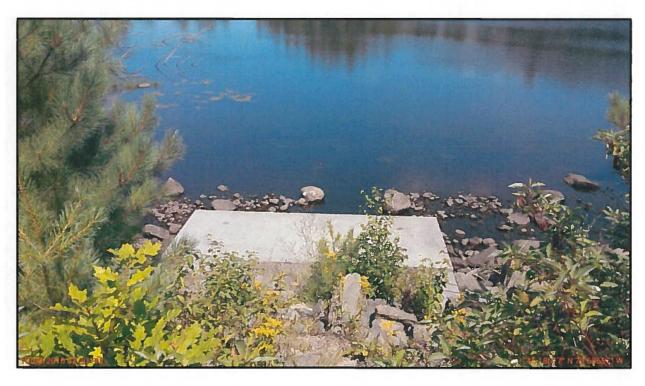


Photo 4: General View Culvert Inlet – Looking East

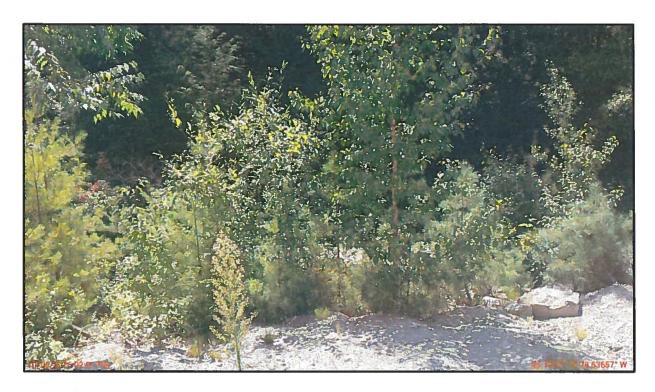


Photo 5: General View Culvert Outlet – Looking West



Photo 6: Typical Guide Rail System & Wearing Surface – Looking Southwest

Inventory Data				
Structure Name	West Shore Ken	nisis Lake Culvert		
Main Hwy/Road #		On Under	Crossing Navig. W Type: Rail	ater Non-Navig. Water Road Ped. Other
Road Name	West Shore Roa	d		
Structure Location	0.2 km West of	Lipsy Lake Drive		
Latitude	45.18074		Longitude -78.63687	
Owner(s)	Municipality of	Dysart et al	Heritage Not Cons. Designation: Desig./No	Cons./not App. List/not Desig. ot List Desig. & List
MTO Region *			Road Class: Freeway	Arterial Collector Local
MTO District *			Posted Speed	No. of Lanes
Old County *			AADT	% Trucks
Geographic Twp. *			Special Routes: Transit	Truck School Bicycle
Structure Type *	Box Culvert	=	Detour Length Around Bridge	(km)
Total Deck Length	4.87	(m)	Fill on Structure	4 (m)
Overall Str. Width	29.8 (length)	(m)	Skew Angle	(degrees)
Total Deck Area		(sq.m)	Direction of Structure	E to W
Roadway Width	6.8	(m)	No. of Spans	1
Span Lengths	4.27			(m)
Historical Data				
Year Built	N/A		Last Biennial Inspection	
Current Load Limit	N/A/	/ (tonnes)	Last BridgeMaster Inspection	N/A
Load Limit Bylaw #	# N/A		Last Evaluation	N/A
Bylaw Expiry Date	N/A		Last Underwater Inspection	N/A
Min. Vertical Cleara	ance -	(m)	Last Condition Survey	N/A
Rehab. History: (Da	ate/description)			

MTO	Site	Num	her	DV -	.17
TATE	DILL	114111	DUL .	ν_{\perp}	

Field Inspection Inf	ormation:			
Date of Inspection:	August 10, 2016			
Inspector:	Robert Brooks – Tulloch Engineering			
Others in Party:	Elizabeth Perry – Tulloch Engineering			
Equipment Used:	Camera, Hammer, Tape Measure			
Weather:	Sun			
Temperature:	+30°C			

Additional Investigations Required:		Estimated		
	None	Normal	Urgent	Cost
Detailed Deck Condition Survey:	X			
DART Survey:	X			
Detailed Coating Condition Survey:	X			
Underwater Investigation:	X			
Fatigue Investigation:	X			
Seismic Investigation:	X			
Structure Evaluation:	X			
Load Posting – Estimated Load		П	Cotal Cost	\$0
Special Notes:	•			- A
	20			
Next Detailed Inspection:			2018	

Suspe	cted Performance Deficiencies				
00	None	06	Bearing not uniformly loaded/unstable	12	Slippery surfaces
01	Load carrying capacity	07	Jammed expansion joint	13	Flooding/channel blockage
02	Excessive deformations (deflections & rotations)	08	Pedestrian/vehicular hazard	14	Undermining of foundation
03	Continuing settlement	09	Rough riding surface	15	Unstable embankments
04	Continuing movements	10	Surface ponding	16	Other
05	Seized bearings	11	Deck drainage		
Maint	enance Needs				
01	Lift and Swing Bridge Maintenance	07	Repair to Structural Steel	13	Erosion Control at Bridges
02	Bridge Cleaning	08	Repair of Bridge Concrete	14	Concrete Sealing
03	Bridge Handrail Maintenance	09	Repair of Bridge Timber	15	Rout and Seal
04	Painting Steel Bridge Structures	10	Bailey Bridges - Maintenance	16	Bridge Deck Drainage
05	Bridge Deck Joint Repair	11	Animal/Pest Control	17	Other
06	Bridge Bearing Maintenance	12	Bridge Surface Repair		

DY - 17

Element Group:		Decks			Length:		4.87	(m)	
Element Name:	<u> </u>	Wearing Surface			Width:		6.8	(m)	
Location:		Top					0.0		
			Height: Count:		,	(m)			
Material:		Asphalt					1	(items)	
Element Type:			Total Quantity:		33.1	(m²)			
Environment: Benign / Moderate Severe Limited Insp'n:									
	Protection System:					Performance			
Condition		Units	Exc.	Good	Fair	Poor	Deficiencies		
Data:		n / each / % / all		33.1	0	0 00			
Comments: Light	ht to mediu	m wheel rutting and ra	veling along	g edges.					
Performance D	eficiencies	: None							
Recommended	Work:	☐ Minor Rehab ☐ Major Reh			nab Mair		atenance Needs:		
		Replace		☑ None		☐ Urgent ☐ 1 Year ☐ 2 Year			
Timeframe:		☐ 1 - 5 Years		☐ 6 - 10 Ye	ars				
Comments:									
Comments									
F1 C		A			7	-41	6.00	()	
Element Group:		Approach			Len	-	6.00	(m)	
Element Name:		Wearing Surface				dth:	6.8	(m)	
Location:		N/S				ght:	_	(m)	
Material:		Asphalt			Count:		2	(items)	
Element Type:					Total Quantity:		81.6	(m²)	
Environment:		Benign / Mod	lerate Se	evere	Limited Insp'n:				
Protection Syste	em:					Fair Poor		Performance	
Condition	(4.5-1	Units	Units Exc. Good			Poor Deficiencies			
Data: m / m									
Data:	m)/m	n / each / % / all		81.6				00	
			weling alon					00	
		n / each / % / all um wheel rutting and ra	weling alon					00	
Comments: Lig	ght to mediu	um wheel rutting and ra	weling alon					00	
Comments: Lig	ght to medic	um wheel rutting and ra	aveling alon		hab	Mair	ntenance N		
Comments: Lig	ght to medic	um wheel rutting and ra	aveling alon	g edges.	hab		atenance N	eeds:	
Comments: Lig Performance D Recommended	ght to medic	um wheel rutting and ra :: None Minor Rehab Replace	aveling alon	g edges. Major Re None		Mai □ Urgent	ntenance N □ 1 Yea	eeds:	
Comments: Lig Performance D Recommended Timeframe:	ght to medic	um wheel rutting and rase: None	aveling alon	g edges.				eeds:	
Comments: Lig Performance D Recommended	ght to medic	um wheel rutting and ra :: None Minor Rehab Replace	aveling alon	g edges. Major Re None				eeds:	
Comments: Lig Performance D Recommended Timeframe:	ght to medic	um wheel rutting and ra :: None Minor Rehab Replace	aveling alon	g edges. Major Re None				eeds:	
Comments: Lig Performance D Recommended Timeframe: Comments:	ght to medit Deficiencies Work:	um wheel rutting and ra :: None Minor Rehab Replace 1 - 5 Years	aveling alon	g edges. Major Re None	ears	☐ Urgent	☐ 1 Yea	eeds: or	
Performance D Recommended Timeframe: Comments:	ght to medit Deficiencies Work:	um wheel rutting and ra :: None Minor Rehab Replace 1 - 5 Years	aveling alon	g edges. Major Re None	ears Length	☐ Urgent	□ 1 Yea	eeds: ar	
Comments: Lig Performance D Recommended Timeframe: Comments:	ght to medit Deficiencies Work:	um wheel rutting and ra :: None Minor Rehab Replace 1 - 5 Years	aveling alon	g edges. Major Re None	Length Wio	□ Urgent (avg):	□ 1 Yea	eeds: or	
Comments: Lig Performance D Recommended Timeframe: Comments: Element Group: Element Name: Location:	ght to medit Deficiencies Work:	wheel rutting and rates: None Minor Rehab Replace 1 - 5 Years Culverts Barrels	aveling alon	g edges. Major Re None	Length Wid Hei	☐ Urgent I (avg): dth: ght:	□ 1 Yea	eeds: ar	
Performance D Recommended Timeframe: Comments: Element Group: Element Name:	ght to medit Deficiencies Work:	um wheel rutting and ra :: None Minor Rehab Replace 1 - 5 Years	aveling alon	g edges. Major Re None	Length Wio	☐ Urgent I (avg): dth: ght:	□ 1 Yea	eeds: ar	
Comments: Lig Performance D Recommended Timeframe: Comments: Element Group: Element Name: Location:	ght to medit Deficiencies Work:	wheel rutting and rates: None Minor Rehab Replace 1 - 5 Years Culverts Barrels	aveling alon	g edges. Major Re None	Length Wid Hei Cou	☐ Urgent I (avg): dth: ght:	□ 1 Yea	eeds: ar	
Performance D Recommended Timeframe: Comments: Element Group: Element Name: Location: Material:	ght to medit Deficiencies Work:	wheel rutting and rate: None Minor Rehab Replace 1 - 5 Years Culverts Barrels Pre-Cast Concrete		g edges. Major Re None	Length Wid Hei Cou Total Q	Urgent (avg): dth: ght: unt:	29.84 4.87	eeds: (m) (m) (m) (m) (items)	
Performance D Recommended Timeframe: Comments: Element Group: Element Name: Location: Material: Element Type:	ght to mediu	wheel rutting and rates: None Minor Rehab Replace 1 - 5 Years Culverts Barrels Pre-Cast Concrete		g edges. Major Re None 6 - 10 Ye	Length Wid Hei Cou Total Q	Urgent (avg): dth: ght: unt: uantity:	29.84 4.87 1.8	eeds: (m) (m) (m) (m) (items)	
Performance D Recommended Timeframe: Comments: Element Group: Element Name: Location: Material: Element Type: Environment:	ght to mediu	wheel rutting and rates: None Minor Rehab Replace 1 - 5 Years Culverts Barrels Pre-Cast Concrete		g edges. Major Re None 6 - 10 Ye	Length Wid Hei Cou Total Q	Urgent (avg): dth: ght: unt: uantity:	29.84 4.87 1.8	(m) (m) (m) (items) (m²)	
Performance D Recommended Timeframe: Comments: Element Group: Element Name: Location: Material: Element Type: Environment: Protection Syste	ght to mediu	wheel rutting and rates: None Minor Rehab Replace 1 - 5 Years Culverts Barrels Pre-Cast Concrete Benign Mod	erate / Se	g edges. ☐ Major Re ☑ None ☐ 6 - 10 Ye	Length Wid Hei Coo Total Q Limited	Urgent (avg): dth: ght: unt: uantity:	29.84 4.87 1.8	(m) (m) (m) (m) (items) (m²)	
Performance D Recommended Timeframe: Comments: Element Group: Element Name: Location: Material: Element Type: Environment: Protection Syste Condition Data:	ght to mediu Deficiencies Work:	wheel rutting and rates: None Minor Rehab Replace 1 - 5 Years Culverts Barrels Pre-Cast Concrete Benign Mod	lerate / Se Exc. 220	g edges. ☐ Major Re ☑ None ☐ 6 - 10 Ye	Length Wid Hei Coo Total Q Limited	Urgent (avg): dth: ght: unt: uantity:	29.84 4.87 1.8	(m) (m) (m) (items) (m²) Performance Deficiencies	
Performance D Recommended Timeframe: Comments: Element Group: Element Name: Location: Material: Element Type: Environment: Protection Syste Condition Data:	ght to mediu Deficiencies Work:	wheel rutting and rates: None Minor Rehab Replace 1 - 5 Years Culverts Barrels Pre-Cast Concrete Benign Mod Units 1 - 6ach / % / all	lerate / Se Exc. 220	g edges. ☐ Major Re ☑ None ☐ 6 - 10 Ye	Length Wid Hei Coo Total Q Limited	Urgent (avg): dth: ght: unt: uantity:	29.84 4.87 1.8	(m) (m) (m) (items) (m²) Performance Deficiencies	
Performance D Recommended Timeframe: Comments: Element Group: Element Name: Location: Material: Element Type: Environment: Protection Syste Condition Data:	em:	wheel rutting and ra None Minor Rehab Replace 1 - 5 Years Culverts Barrels Pre-Cast Concrete Benign Mod Units 1 / each / % / all aces bettween segments	lerate / Se Exc. 220	g edges. ☐ Major Re ☑ None ☐ 6 - 10 Ye	Length Wid Hei Coo Total Q Limited	Urgent (avg): dth: ght: unt: uantity:	29.84 4.87 1.8	(m) (m) (m) (items) (m²) Performance Deficiencies	
Performance D Recommended Timeframe: Comments: Element Group: Element Name: Location: Material: Element Type: Environment: Protection Syste Condition Data: Comments: Fev	em: m / m w minor spa	wheel rutting and ra None Minor Rehab Replace 1 - 5 Years Culverts Barrels Pre-Cast Concrete Benign Mod Units 1 / each / % / all aces bettween segments None Minor Rehab	lerate / Se Exc. 220	g edges. ☐ Major Re ☑ None ☐ 6 - 10 Ye	Length Wid Hei Cou Total Q Limited	Urgent (avg): dth: ght: unt: uantity: Insp'n:	29.84 4.87 1.8	(m) (m) (m) (items) (m²) Performance Deficiencies 00	
Performance D Recommended Timeframe: Comments: Element Group: Element Name: Location: Material: Element Type: Environment: Protection Syste Condition Data: Comments: Fev	em: m / m w minor spa	wheel rutting and ra None Minor Rehab Replace 1 - 5 Years Culverts Barrels Pre-Cast Concrete Benign Mod Units 1 / each / % / all aces bettween segments	lerate / Se Exc. 220	g edges. Major Re None 6 - 10 Ye	Length Wid Hei Cou Total Q Limited	Urgent (avg): dth: ght: unt: uantity: Insp'n:	29.84 4.87 1.8 220.0	(m) (m) (m) (items) (m²) Performance Deficiencies 00	
Performance D Recommended Timeframe: Comments: Element Group: Element Name: Location: Material: Element Type: Environment: Protection Syste Condition Data: Comments: Fev	em: m / m w minor spa	wheel rutting and ra None Minor Rehab Replace 1 - 5 Years Culverts Barrels Pre-Cast Concrete Benign Mod Units 1 / each / % / all aces bettween segments None Minor Rehab	lerate / Se Exc. 220	g edges. Major Re None 6 - 10 Ye	Length Wid Hei Cou Total Q Limited Fair	unt: Urgent (avg): dth: ght: unt: uantity: Insp'n: Poor	29.84 4.87 1.8 220.0	(m) (m) (m) (items) (m²) Performance Deficiencies 00	
Performance D Recommended Timeframe: Comments: Element Group: Element Name: Location: Material: Element Type: Environment: Protection Syste Condition Data: Comments: Feveral	em: m / m w minor spa	Culverts Barrels Pre-Cast Concrete Benign Mod Units 1 / each / % / all aces bettween segments None Minor Rehab Pre-Cast Concrete	lerate / Se Exc. 220	g edges. Major Re None 6 - 10 Ye Good Major Re Vere	Length Wid Hei Cou Total Q Limited Fair	unt: Urgent (avg): dth: ght: unt: uantity: Insp'n: Poor	29.84 4.87 1.8 220.0	(m) (m) (m) (items) (m²) Performance Deficiencies 00	

DY - 17

Element Group:	8	Emankments & Streams			Length:			(m)	
Element Name:		Embankments			Width:			(m)	
Location:		NE/NW/SE/SW	Height:			(m)			
Material:					Cou	ant:	4	(items)	
Element Type:					Total Q		4.0	(ea)	
Environment:		Benign / Mod	evere	Limited	Insp'n:				
Protection System: Performance								Performance	
Condition		Units	Exc.	Good	Fair	Poor] 1	Deficiencies	
Data:	m² / m	each % / all		4.0				00	
Comments:									
Performance D									
Recommended	Work:	☐ Minor Rehab ☐ Major Re			hab		ntenance N		
		☐ Replace ☑ I		✓ None	L		☐ Urgent ☐ 1 Year ☐ 2 Year		
Timeframe:		☐ 1 - 5 Years		☐ 6 - 10 Ye	ears				
Comments:									
Element Group:	:	Emankments & Stream			·	gth:		(m)	
Element Name:		Streams & Waterways				dth:		(m)	
Location:		Upstream / Downstrea	m		Hei			(m)	
Material:						unt:	2	(items)	
Element Type:				Total Quantity:		2.0	(ea)		
Environment:		Benign Mod	lerate / Se	evere	Limited	Limited Insp'n:			
Protection Syste	em:					Perform			
Condition					Fair			Deficiencies	
		each % / all		2.0			00		
Comments:									
Performance I									
Recommended	Work:	☐ Minor Rehab		☐ Major Re	ehab		ntenance N		
		☐ Replace ☑ None		☐ Urgent		☐ 1 Year ☐ 2 Year			
Timeframe:		☐ 1 - 5 Years ☐ 6 - 10 Ye		ears					
Comments:									
Element Group		Embankments			Length (avg):			(m)	
Element Name:		Slope Protection			Width:			(m)	
Location:		NE/NW/SE/SW			Height:			(m)	
Material:					Count:		4	(items)	
Element Type:					Total Quantity:		4.0	(ea)	
Environment: Benign Moderate / Severe			evere	Limited	Limited Insp'n:				
Protection Syste	em:						4	Performance	
Condition	97237 177			Good	Fair	Poor			
Data:			4.0				00		
Comments:									
1									
Performance I	Deficiencies	:: None		·					
		☐ Minor Rehab		☐ Major Re	≥hab	Mai	ntenance N	eeds: -	
Performance I				☐ Major Re ☑ None	ehab	Mai			
Performance I		☐ Minor Rehab		_	•				
Performance I		☐ Minor Rehab☐ Replace		✓ None	•				

MTO Site Number:

DY-17

Repair and Re		Prie		Estimated			
Element	Repair an	nd Rehabilitation Required	6 to 10 years	l to 5 years	Within I year	Urgent	Construction Cost
			<u> </u>		1		
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			<u> </u>	<u></u>		L	
						Total Cost	
							Estimated
Associated Wo	rk:		Comme	ents			Estimated
Approaches:		Provide guiderail system (:	± 80m) as p	er provincia	ıl higway st	andards	\$10,000
Detours:		8	536				
Traffic Control	:						
Utilities:							
Right of Way:							
Environmental	Study:						
Other:							
Contingencies:						Total Cost	#10,000
						Total Cost	\$10,000
Justification:	S. L. C. S.		(A) (A) (A) (A)	111525,1451	3/03/24		
V 40 111. V		No. of Contrast of		Salar Columbia			