

CEMETERY ROAD BRIDGE

Site Number 010105

CEMETERY ROAD, TOWNSEND

1 .1 km S of County Road 20

Ontario Structure Inspection Manual - Inspection Form

Site Number:

Inventory Data:			
Structure Name	<input type="text" value="Cemetery Road Bridge"/>		
Main Hwy/Road #	<input type="text" value="CEMETARY RD"/>	<input checked="" type="checkbox"/> On <input type="checkbox"/> Under	Crossing Type: <input type="checkbox"/> Rail <input type="checkbox"/> Road <input type="checkbox"/> Navig. Water <input type="checkbox"/> Ped. <input type="checkbox"/> Other <input checked="" type="checkbox"/> Non-Navig. Water
Hwy/Road Name	<input type="text" value="CEMETERY ROAD, TOWNSEND"/>		
Structure Location	<input type="text" value="1.1 km S of County Road 20"/>		
Latitude	<input n"="" type="text" value="43d 00' 28"/>	Longitude	<input type="text" value="80d 11' 58.5" w"=""/>
Owner(s)	<input type="text" value="Norfolk County"/>	Heritage Designation:	<input checked="" type="checkbox"/> Not Cons. <input type="checkbox"/> List/not Design. <input type="checkbox"/> Desig. & List <input type="checkbox"/> Cons./not App. <input type="checkbox"/> Desig./not List
MTO Region	<input type="text" value="30"/> Southwestern	Road Class:	<input type="checkbox"/> Freeway <input type="checkbox"/> Arterial <input type="checkbox"/> Collector <input checked="" type="checkbox"/> Local
MTO District	<input type="text" value="31"/> London / Stratford	Posted Speed	<input type="text" value="80"/> No. of Lanes <input type="text" value="2"/>
Old County	<input type="text" value="20"/> Norfolk	AADT	<input type="text" value="101"/> % Trucks <input type="text"/>
Geographic Twp.	<input type="text" value="125"/> Townsend	Inspection Route Sequence	<input type="text"/>
Structure Type	<input type="text" value="15"/> Rigid Frame, Vertical Legs	Interchange Number	<input type="text"/>
Total Deck Length	<input type="text" value="5"/> (m)	Interchange Structure Number	<input type="text"/>
Overall Str. Width	<input type="text" value="6.4"/> (m)	Min. Vertical Clearance	<input type="text" value="2"/> (m)
Total Deck Area	<input type="text" value="32"/> (m ²)	Special Route	<input type="checkbox"/> Truck <input type="checkbox"/> Emergency <input checked="" type="checkbox"/> School <input type="checkbox"/> Bicycle
Roadway Width	<input type="text" value="5.8"/> (m)	Detour Length Around Bridge	<input type="text" value="8"/> (km)
Skew Angle	<input type="text"/> (Degrees)	Direction of Structure	<input type="text" value="North / South"/>
No. of Spans	<input type="text" value="1"/>	Fill on Structure	<input type="text" value="0"/> (m)
Span Length	<input type="text" value="4.4"/> (m)		

Historical Data:			
Year Built	<input type="text" value="1940"/>	Year of Last Major Rehab.	<input type="text"/>
Last OSIM Inspection	<input type="text" value="May 26, 2014"/>	Last Evaluation	<input type="text"/>
Last Enhanced OSIM Inspection	<input type="text"/>	Current Load Limit	<input type="text" value="/ /"/> (tonnes)
Enhanced Access Equipment (ladder, boat, lift, etc.)	<input type="text"/>	Load Limit By-Law #	<input type="text"/>
Last Underwater Inspection	<input type="text"/>	By-Law Expiry Date	<input type="text"/>
Last Condition Survey	<input type="text"/>		
Rehab History:	(Date/description)		

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Field Inspection Information:		
Date of Inspection:	June 29, 2016	Type of Inspection: <input checked="" type="checkbox"/> OSIM <input type="checkbox"/> Enhanced OSIM
Inspector:	Ben Buchwald M.Eng., EIT, G. Douglas Vallee Ltd.	
Others in Party:	John McMorrow	
Access Equipment Used:	Hammer, Binoculars, Measuring Tape, Camera, etc.	
Weather:	Sunny	
Temperature:	23 °C	

Additional Investigation Required:	Priority		
	None	Normal	Urgent
Material Condition Survey			
<input checked="" type="checkbox"/> Detailed Deck Condition Survey:	<input checked="" type="checkbox"/>		
<input checked="" type="checkbox"/> Non-destructive Delamination Survey of Asphalt-Covered Deck:	<input checked="" type="checkbox"/>		
<input checked="" type="checkbox"/> Concrete Substructure Condition Survey:	<input checked="" type="checkbox"/>		
<input checked="" type="checkbox"/> Detailed Coating Condition Survey:	<input checked="" type="checkbox"/>		
<input checked="" type="checkbox"/> Detailed Timber Investigation	<input checked="" type="checkbox"/>		
<input checked="" type="checkbox"/> Post-Tensioned Strand Investigation	<input checked="" type="checkbox"/>		
Underwater Investigation:	<input checked="" type="checkbox"/>		
Fatigue Investigation:	<input checked="" type="checkbox"/>		
Seismic Investigation:	<input checked="" type="checkbox"/>		
Structure Evaluation:		<input checked="" type="checkbox"/>	
Monitoring			
<input checked="" type="checkbox"/> Monitoring of Deformations, Settlements and Movements:	<input checked="" type="checkbox"/>		
<input checked="" type="checkbox"/> Monitoring Crack Widths:	<input checked="" type="checkbox"/>		
Investigation Notes: DCS recently completed: Consider replacement.			

Overall Structure Notes:			
Recommended Work on Structure:	<input type="checkbox"/> None	<input type="checkbox"/> Minor Rehab.	<input checked="" type="checkbox"/> Replace
	<input type="checkbox"/> Maintenance	<input type="checkbox"/> Major Rehab.	
Timing of Recommended Work:	<input checked="" type="checkbox"/> 1 to 5 years	<input type="checkbox"/> 6 to 10 years	
Overall Comments:	Scheduled for replacement.		
Date of next Inspection:	June 1, 2018		

Suspected Performance Deficiencies

- | | | |
|---|--|------------------------------|
| 01 Load carrying capacity | 07 Bearing not uniformly loaded/unstable | 12 Slippery surfaces |
| 02 Excessive deformations (deflections & rotations) | 08 Jammed expansion joint | 13 Flooding/channel blockage |
| 03 Continuing settlement | 09 Pedestrian/vehicular hazard | 14 Undermining of foundation |
| 04 Continuing movements | 10 Rough riding surface | 15 Unstable embankments |
| 05 Seized bearings | 11 Deck drainage | 16 Other |

Maintenance 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 Scaling (Loose concrete or ACR steel) |
| 06 Bridge bearing maintenance | 12 Bridge surface repair | 18 Other |

Rehabilitation Required:		Element	Priority				Estimated Construction Cost
Rehab	Replace		Urgent	Within 1 yr	1-5 yrs	6-10 yrs	
		Approach Slabs (Approaches)					
	X	Barrier/Parapet Walls		X			
X		Soffit Thick slab			X		
		Wearing Surface					
X		Streams and Waterways			X		
X		Foundation (below ground level)			X		
		Structure					\$415,000
							Total Cost \$415,000

Associated Work:	Comments	Estimated Construction Cost
Additional Investigations	Geotechnical	\$10,000
Traffic Management	Detour	\$10,000
Utilities	Allowance	\$10,000
Road Allowance		
Environmental Assessment		
Engineering		\$45,000
Other		
Contingencies		\$15,000
		Total Cost \$90,000

Justification:							
Notes:	<table style="width: 100%; border-collapse: collapse;"> <tr> <td>Construction Cost:</td> <td style="text-align: right;">\$415,000</td> </tr> <tr> <td>Associated Work Cost:</td> <td style="text-align: right;">\$90,000</td> </tr> <tr> <td>TOTAL Estimated Cost:</td> <td style="text-align: right; border-top: 1px solid black;">\$505,000</td> </tr> </table>	Construction Cost:	\$415,000	Associated Work Cost:	\$90,000	TOTAL Estimated Cost:	\$505,000
Construction Cost:	\$415,000						
Associated Work Cost:	\$90,000						
TOTAL Estimated Cost:	\$505,000						

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Site Number: 010105

Element Data

Element Group:		1600 Approaches				Length:		
Element Name:		1602 Approach Slabs (Approaches)				Width:		
Location:						Height:		
Material:		14 Steel				Count:		1
Element Type:						Total Quantity:		1 Each
Environment:		Severe				Limited Inspection:		
Protection System:		None				Perform. Deficiencies		
Condition	Units	Exc.	Good	Fair	Poor			
Data:	Each	0	1	0	0			
Comments:								
One lane sign. No approach barriers. Tar and Chip.								
Recommended Work:				Rehab <input type="checkbox"/>		Replace <input type="checkbox"/>		
Timing:				Urgent <input type="checkbox"/>		< 1yr <input type="checkbox"/>		
				1 - 5 yr <input type="checkbox"/>		6 - 10 yr <input type="checkbox"/>		
Maintenance Needs:				<input type="checkbox"/>		Urgent <input type="checkbox"/>		
				<input type="checkbox"/>		1 year <input type="checkbox"/>		
				<input type="checkbox"/>		2 year <input type="checkbox"/>		

Element Group:		400 Barriers				Length:		2.7
Element Name:		401 Barrier/Parapet Walls				Width:		3
Location:						Height:		
Material:		4 Cast-in-place Concrete				Count:		2
Element Type:						Total Quantity:		16.2 m
Environment:		Severe				Limited Inspection:		
Protection System:		None				Perform. Deficiencies		
Condition	Units	Exc.	Good	Fair	Poor			
Data:	m	0	0	0	16.2			
Comments:								
West rails are severely cracked and deteriorated - should be replaced with new barrier. South East rail has been demolished and replaced with 4x4. Tied to concrete rail with metal wire and screwed to 6x6 wooden post on the other end.								
Recommended Work:				Rehab <input type="checkbox"/>		Replace <input checked="" type="checkbox"/>		
Timing:				Urgent <input type="checkbox"/>		< 1yr <input checked="" type="checkbox"/>		
				1 - 5 yr <input type="checkbox"/>		6 - 10 yr <input type="checkbox"/>		
Maintenance Needs:				<input type="checkbox"/>		Urgent <input type="checkbox"/>		
				<input type="checkbox"/>		1 year <input type="checkbox"/>		
				<input type="checkbox"/>		2 year <input type="checkbox"/>		

Element Group:		100 Decks				Length:		6.4
Element Name:		104 Soffit Thick slab				Width:		8.4
Location:						Height:		
Material:						Count:		1
Element Type:						Total Quantity:		53.8 m
Environment:		Moderate				Limited Inspection:		
Protection System:		None				Perform. Deficiencies		
Condition	Units	Exc.	Good	Fair	Poor			
Data:	m	0	33.8	0	20			
Comments:								
Some efflorescence and surface cracks on SW wall. All wingwalls show cracking, efflorescence and delamination. Spalling on West fascia and large spalls and delamination on Southeast Fascia.								
Recommended Work:				Rehab <input checked="" type="checkbox"/>		Replace <input type="checkbox"/>		
Timing:				Urgent <input type="checkbox"/>		< 1yr <input type="checkbox"/>		
				1 - 5 yr <input checked="" type="checkbox"/>		6 - 10 yr <input type="checkbox"/>		
Maintenance Needs:				<input type="checkbox"/>		Urgent <input type="checkbox"/>		
				<input type="checkbox"/>		1 year <input type="checkbox"/>		
				<input type="checkbox"/>		2 year <input type="checkbox"/>		

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Element Data

Element Group:		100 Decks				Length:		
Element Name:		101 Wearing Surface				Width:		
Location:		Top of Deck				Height:		
Material:		Gravel or Stone				Count:		1
Element Type:						Total Quantity:		1 Each
Environment:		Severe				Limited Inspection:		
Protection System:		None				Perform. Deficiencies		
Condition	Units	Exc.	Good	Fair	Poor			
Data:	Each	0	0	1	0			
Comments:								
Deck is thick slab reinforced concrete. Single lane.								
Recommended Work:				Rehab <input type="checkbox"/>		Replace <input type="checkbox"/>		
Timing:				Urgent <input type="checkbox"/>		< 1yr <input type="checkbox"/>		
				1 - 5 yr <input type="checkbox"/>		6 - 10 yr <input type="checkbox"/>		
Maintenance Needs:				<input type="checkbox"/>		Urgent <input type="checkbox"/>		
				<input type="checkbox"/>		1 year <input type="checkbox"/>		
				<input type="checkbox"/>		2 year <input type="checkbox"/>		

Element Group:		1400 Embankments & Streams				Length:		
Element Name:		1401 Streams and Waterways				Width:		
Location:						Height:		
Material:						Count:		1
Element Type:						Total Quantity:		1 Each
Environment:						Limited Inspection:		
Protection System:		None				Perform. Deficiencies		
Condition	Units	Exc.	Good	Fair	Poor			
Data:	Each	0	0	0	1			
Comments:								
Stream hits South West wingwalls and South footing causing damage.								
Recommended Work:				Rehab <input checked="" type="checkbox"/>		Replace <input type="checkbox"/>		
Timing:				Urgent <input type="checkbox"/>		< 1yr <input type="checkbox"/>		
				1 - 5 yr <input checked="" type="checkbox"/>		6 - 10 yr <input type="checkbox"/>		
Maintenance Needs:				<input type="checkbox"/>		Urgent <input type="checkbox"/>		
				<input type="checkbox"/>		1 year <input type="checkbox"/>		
				<input type="checkbox"/>		2 year <input type="checkbox"/>		

Element Group:		1300 Foundations				Length:		6.4
Element Name:		1301 Foundation (below ground level)				Width:		
Location:						Height:		
Material:		4 Cast-in-place Concrete				Count:		2
Element Type:						Total Quantity:		12.8 m
Environment:		Severe				Limited Inspection:		
Protection System:		None				Perform. Deficiencies		
Condition	Units	Exc.	Good	Fair	Poor			
Data:	m	0	0	12.8	0			
Comments:								
Stream bed badly scoured at South footing. Should be protected to prevent undermining and erosion of foundation. Scaling on foundation.								
Recommended Work:				Rehab <input checked="" type="checkbox"/>		Replace <input type="checkbox"/>		
Timing:				Urgent <input type="checkbox"/>		< 1yr <input type="checkbox"/>		
				1 - 5 yr <input checked="" type="checkbox"/>		6 - 10 yr <input type="checkbox"/>		
Maintenance Needs:				<input type="checkbox"/>		Erosion Control		
				<input type="checkbox"/>		Urgent <input type="checkbox"/>		
				<input type="checkbox"/>		1 year <input type="checkbox"/>		
				<input type="checkbox"/>		2 year <input checked="" type="checkbox"/>		



Figure 1 North Approach



Figure 2 South Approach



Figure 3 East Profile



Figure 4 West Profile



Figure 5 Upstream



Figure 6 Downstream