

**McMICHAEL ROAD CULVERT**

Site Number 030056

**McMICHAEL ROAD, TOWNSEND**

0.2 km W of County Road 5

**Ontario Structure Inspection Manual - Inspection Form**

**Site Number:**

Inventory Data:			
Structure Name	<input type="text" value="McMichael Road Culvert"/>		
Main Hwy/Road #	<input type="text" value="MCMICHAEL 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="McMICHAEL ROAD, TOWNSEND"/>		
Structure Location	<input type="text" value="0.2km W of County Road 5"/>		
Latitude	<input n"="" type="text" value="42d 57' 35"/>	Longitude	<input type="text" value="80d 15' 40" w"=""/>
Owner(s)	<input type="text" value="Norfolk County"/>	Heritage Designation:	<input checked="" type="checkbox"/> Not Cons. <input type="checkbox"/> Cons./not App. <input type="checkbox"/> List/not Design. <input type="checkbox"/> Design. & List <input type="checkbox"/> Design./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="108"/> % Trucks <input type="text"/>
Geographic Twp.	<input type="text" value="125"/> Townsend	Inspection Route Sequence	<input type="text"/>
Structure Type	<input type="text" value="10"/> Arch Culvert	Interchange Number	<input type="text"/>
Total Deck Length	<input type="text" value="29"/> (m)	Interchange Structure Number	<input type="text"/>
Overall Str. Width	<input type="text" value="6"/> (m)	Min. Vertical Clearance	<input type="text" value="2.1"/> (m)
Total Deck Area	<input type="text" value="174"/> (m <sup>2</sup> )	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="9"/> (m)	Detour Length Around Bridge	<input type="text" value="10"/> (km)
Skew Angle	<input type="text" value="60"/> (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="1"/> (m)
Span Length	<input type="text" value="4."/> (m)		

Historical Data:			
Year Built	<input type="text" value="1970"/>	Year of Last Major Rehab.	<input type="text"/>
Last OSIM Inspection	<input type="text" value="May 22, 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 30, 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:	14 °C	

Additional Investigation Required:	Priority		
	None	Normal	Urgent
Material Condition Survey			
<input checked="" type="checkbox"/> Detailed Deck Condition Survey:	X		
<input checked="" type="checkbox"/> Non-destructive Delamination Survey of Asphalt-Covered Deck:	X		
<input checked="" type="checkbox"/> Concrete Substructure Condition Survey:	X		
<input checked="" type="checkbox"/> Detailed Coating Condition Survey:	X		
<input checked="" type="checkbox"/> Detailed Timber Investigation	X		
<input checked="" type="checkbox"/> Post-Tensioned Strand Investigation	X		
Underwater Investigation:	X		
Fatigue Investigation:	X		
Seismic Investigation:	X		
Structure Evaluation:	X		
Monitoring			
<input checked="" type="checkbox"/> Monitoring of Deformations, Settlements and Movements:	X		
<input checked="" type="checkbox"/> Monitoring Crack Widths:	X		
Investigation Notes: No signs or barriers.			

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

**Suspected Performance Deficiencies**

- |   |  |   |
|---|--|---|
| <ul style="list-style-type: none"> <li>01 Load carrying capacity</li> <li>02 Excessive deformations (deflections &amp; rotations)</li> <li>03 Continuing settlement</li> <li>04 Continuing movements</li> <li>05 Seized bearings</li> </ul> | <ul style="list-style-type: none"> <li>07 Bearing not uniformly loaded/unstable</li> <li>08 Jammed expansion joint</li> <li>09 Pedestrian/vehicular hazard</li> <li>10 Rough riding surface</li> <li>11 Deck drainage</li> </ul> | <ul style="list-style-type: none"> <li>12 Slippery surfaces</li> <li>13 Flooding/channel blockage</li> <li>14 Undermining of foundation</li> <li>15 Unstable embankments</li> <li>16 Other</li> </ul> |
|---|--|---|

**Maintenance Needs**

- |   |  |   |
|---|--|---|
| <ul style="list-style-type: none"> <li>01 Lift and swing bridge maintenance</li> <li>02 Bridge cleaning</li> <li>03 Bridge handrail maintenance</li> <li>04 Painting steel bridge structures</li> <li>05 Bridge deck joint repair</li> <li>06 Bridge bearing maintenance</li> </ul> | <ul style="list-style-type: none"> <li>07 Repair to structural steel</li> <li>08 Repair of bridge concrete</li> <li>09 Repair of bridge timber</li> <li>10 Bailey bridges - maintenance</li> <li>11 Animal/pest control</li> <li>12 Bridge surface repair</li> </ul> | <ul style="list-style-type: none"> <li>13 Erosion control at bridges</li> <li>14 Concrete sealing</li> <li>15 Rout and seal</li> <li>16 Bridge deck drainage</li> <li>17 Scaling (Loose concrete or ACR steel)</li> <li>18 Other</li> </ul> |
|---|--|---|

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Rehabilitation Required:		Element	Priority				Estimated Construction Cost
Rehab	Replace		Urgent	Within 1 yr	1-5 yrs	6-10 yrs	
		Wearing Surface (Approaches)					
		Barrels					
		Foundation (below ground level)					
<b>Total Cost</b>						<b>\$0</b>	

Associated Work:	Comments	Estimated Construction Cost
Additional Investigations		
Traffic Management		
Utilities		
Road Allowance		
Environmental Assessment		
Engineering		
Other		
Contingencies		
<b>Total Cost</b>		<b>\$0</b>

Justification:							
Notes:	<table style="margin-left: auto; margin-right: 0;"> <tr> <td>Construction Cost:</td> <td style="text-align: right;">\$0</td> </tr> <tr> <td>Associated Work Cost:</td> <td style="text-align: right;">\$0</td> </tr> <tr> <td><b>TOTAL Estimated Cost:</b></td> <td style="text-align: right;"><b>\$0</b></td> </tr> </table>	Construction Cost:	\$0	Associated Work Cost:	\$0	<b>TOTAL Estimated Cost:</b>	<b>\$0</b>
Construction Cost:	\$0						
Associated Work Cost:	\$0						
<b>TOTAL Estimated Cost:</b>	<b>\$0</b>						

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**Element Data**

Element Group:		1600 Approaches				Length:		
Element Name:		1601 Wearing Surface (Approaches)				Width:		
Location:		Top of Fill				Height:		
Material:						Count:		1
Element Type:						Total Quantity:		1 Each
Environment:						Limited Inspection:		
Protection System:		Unknown				Perform. Deficiencies		
Condition	Units	Exc.	Good	Fair	Poor			
Data:	Each	0	1	0	0			
Comments: No hazard markers or barriers.								
Recommended Work: Rehab <input type="checkbox"/> Replace <input type="checkbox"/>				Maintenance Needs: Other Maintenance:				
Timing: Urgent <input type="checkbox"/> < 1yr <input type="checkbox"/> 1 - 5 yr <input type="checkbox"/> 6 - 10 yr <input type="checkbox"/>				<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input checked="" type="checkbox"/> 2 year				

Element Group:		1200 Culverts				Length:		29
Element Name:		1203 Barrels				Width:		6
Location:		Inside				Height:		
Material:						Count:		1
Element Type:						Total Quantity:		174 sq.m
Environment:		Moderate				Limited Inspection:		
Protection System:		Unknown				Perform. Deficiencies		
Condition	Units	Exc.	Good	Fair	Poor			
Data:	sq.m	0	172	2	0			
Comments: Includes: Inlet - Outlet (beveled - skewed) Stream - Straight. Limited inspection due to water level - visual inspection from ends. Under/side mining at inlet. Minor corrosion at barrel bottom edges. Minor erosion at inlet and outlet.								
Recommended Work: Rehab <input type="checkbox"/> Replace <input type="checkbox"/>				Maintenance Needs: Erosion Control at Bridge.				
Timing: Urgent <input type="checkbox"/> < 1yr <input type="checkbox"/> 1 - 5 yr <input type="checkbox"/> 6 - 10 yr <input type="checkbox"/>				<input type="checkbox"/> Urgent <input checked="" type="checkbox"/> 1 year <input type="checkbox"/> 2 year				

Element Group:		1300 Foundations				Length:		
Element Name:		1301 Foundation (below ground level)				Width:		
Location:						Height:		
Material:						Count:		1
Element Type:						Total Quantity:		1
Environment:						Limited Inspection:		X
Protection System:		Unknown				Perform. Deficiencies		
Condition	Units	Exc.	Good	Fair	Poor			
Data:								
Comments: Not visible.								
Recommended Work: Rehab <input type="checkbox"/> Replace <input type="checkbox"/>				Maintenance Needs:				
Timing: Urgent <input type="checkbox"/> < 1yr <input type="checkbox"/> 1 - 5 yr <input type="checkbox"/> 6 - 10 yr <input type="checkbox"/>				<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year				



Figure 1 East Approach



Figure 2 West Approach



Figure 3 North Profile, Inlet



Figure 4 South Profile, Outlet



Figure 5 Upstream



Figure 6 Downstream





Figure 7      Barrel