

Culvert Inspection Report

Mill Creek Scratch Wigle Drain Culvert

Road Name: *McCallum Drive*
 Site ID: *503*
 Structure Type: *Soil-Steel Structure*
 Owner: *Town of Kingsville*
 Built: *1980*
 Length: *21.6 m*
 Width: *3.7 m*
 Spans: *1*
 Spans Arrange: *1 - 3.8*
 Feature Through *Water*
 Crossing: *Wigle Drain*
 Location: *0.1km East of Sumac Drive*

Inspection Date: *August-22-17*
 Inspector: *Steve Reid, C.E.T.*
 Assistant: *Brad Lair, Eng Student*

Comments:
Culvert walls are perforated and backfill material is spilling in through perforated areas. If the water levels rise above the perforation line, loss of fill material will increase. Culvert needs immediate replacement as it is at risk of failure under the westbound lane. Regular monitoring of this structure and the pavement in the WBL should be maintained until time of culvert replacement.

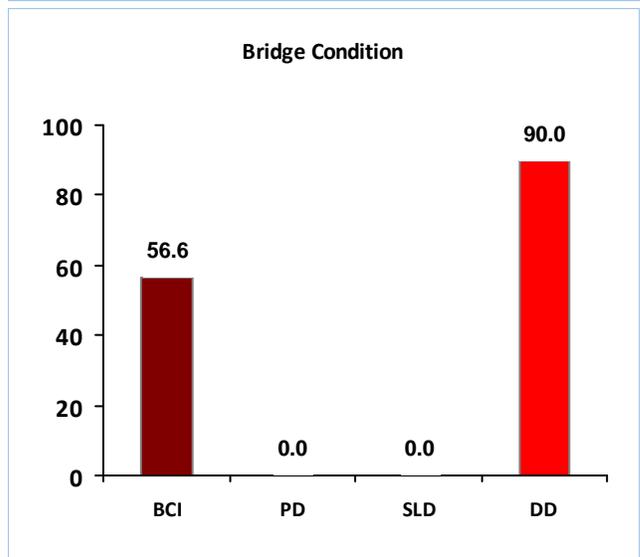
Recommended Investigations:
No special investigations have been recommended

Recommended Capital Works:
New Conc culvert

Estimated Replacement Value: *\$262,000*
Estimated replacement value is based on replacement in kind
Estimated Remaining Service Life: *0 Years*
Year of Replacement and Cost: *2018 \$359,000*



AADT: *900* **Latitude:** *42.04520000*
Lanes: *2* **Longitude:** *-82.73335800*
Skew: *0 °* **Orientation:** *N-S*
Speed: *80 km/h* **Road Width:** *8 m*
Trucks **Load Posting** *No Posting*
Fill: *0.6 m* **H2O Depth:** *0.5 m*



BCI = Bridge Condition Index MTO Calculation

PD = Parabolic Depreciation
 % of remaining life expectancy

SLD = Straight Line Depreciation
 % of remaining life expectancy

DD = % of Defects and Damage



Component Inspection Information

CS Plate Pipe Arch (1)		Defects 30.0%	Major Corrosion, Critical Corrosion	
Conduit		Damage 15.0%	Critical Perforation, Critical Crimping	
Length:	21.6 m	Maintenance	None	
Width:	3.7 m	Capital Rec.	Replace in 1 year	Perf Def: Load Carrying Capacity
Height:	2.2 m	<i>Culvert has perforated along east wall at north end for a length of approximately 5.0m, backfill is spilling into culvert through perforated wall. West wall in similar condition at north end however not as severe. Culvert is in danger of failure under WBL.</i>		
Asphalt Wear Surf (1)		Defects 0.0%		
Wear Surface		Damage 10.0%	Moderate Cracking, Major Potholing	
Length:	20 m	Maintenance	None	
Width:	6.5 m	Capital Rec.	None	
Height:		<i>Pothole in WBL due to loss of fill through perforated culvert wall. Numerous cracks in surface.</i>		
Water Channel (1)		Defects 0.0%		
Conduit Channel		Damage 0.0%		
		Maintenance	None	
		Capital Rec.	None	
<i>Debris partially blocking inlet north end. Culvert holding up to 500mm water inside.</i>				
Embankment (2)		Defects 0.0%		
Embankment		Damage 0.0%		
		Maintenance	None	
		Capital Rec.	None	
<i>Mass concrete at north end. Heavy vegetation growth at culvert ends.</i>				

Recommended Investigations

X denotes not required

Deck Condon Survey	Enhanced Inspection	Underwater Investigation	Ice Inspection	Boat Inspection	Structure Evaluation	Load Posting	Planning Study
X	X	X	X	X	X	X	X



Capital Needs Cost Estimate Break-Down

<i>Cost of asphalt removal:</i>	\$3,200	<i>Cost of waterproofing:</i>	\$4,000
<i>Cost of dewatering:</i>	\$44,000	<i>Cost of road replace:</i>	\$21,200
<i>Cost erosion control:</i>	\$15,000	<i>Cost of SBGR:</i>	\$30,000
<i>Cost of excavation:</i>	\$12,000	<i>Cost for seeding:</i>	\$2,100
<i>Cost of existing structure removal:</i>	\$8,000		
<i>Installation Cost for Similar Size Concrete:</i>	\$102,000		

New Concrete Culvert



Structural Items Subtotal	\$242,000
Mobilization General Sitework 10%	\$27,000
Estimated Traffic Management & Civil Items	\$30,000
Contract Admin & Contingencies 20%	\$60,000
Total Rehabilitation Cost Estimate	<i>\$359,000</i>

Recommended Capital Work Summary

Recommended Capital Year **2018**

New Conc culvert

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Image 108



South elevation

Image 97



East approach

Image 98



West approach

Image 99



Downstream channel south

Image 100



Upstream channel north

Image 101



Pothole over culvert loss of fill



Image 102



North elevation inlet

Image 103



Perforations east wall fill spilling in

Image 104



East wall perforations along wall

Image 105



West wall perforations

Image 106



East wall total separation along wall

Image 107



Typ through from south

