

# Summary Action Report

Structure Name: North Perth Road 154 - Bridge between Line 81 and Lin  
 Structure No: E-9  
 MTO Site No: E-9

Inspection Date: 11/20/2013 mm/dd/yyyy Condition Index Value (BCI) 28.01  
 Next Biennial Inspection: 11/20/2015 mm/dd/yyyy

## Performance Deficiencies

Element Group	Element	Subtype	Performance Deficiency
Culverts	Barrels		Load carrying capacity

## Maintenance Needs

Element Group	Element	Subtype	Maintenance Need
No Maintenance Needs			0

## Repair/Rehabilitation

Element Group	Element	Repair/Rehabilitation	Priority	Const Cost
Culverts	Barrels	Replace culvert	1-5	\$275,000
Total Repair/Rehabilitation Cost				<b>\$275,000.00</b>
Total Associated Work Cost				<b>\$95,000.00</b>
Total Cost				<b>\$370,000.00</b>

## Overall Comments

Structure is in overall poor condition; Replacement recommended in the next 5 years.

# Municipal Structure Inspection Form

Structure Name: North Perth Road 154 - Bridge between Line 81 and Lin

Structure No: E-9

MTO Site No: E-9

Inventory Data									
Structure Name:	North Perth Road 154 - Bridge betwee	Hwy No.				Key Photo			
Crossing Over:	Non-navigable Water	Crossing Under:							
Road Name:	North Perth Road 154								
Location:	260m north of Line 78								
Latitude/Northing:	43d40'22"	Longitude/Easting:	80d57'26"						
Owner:	North Perth	100.00%							
MTO Region:	30-Southwestern								
MTO District:	33-Owen Sound								
Old County:	25-Perth								
Geo Twp.:	Elma								
Structure Type:	BO - Box, Open Footing								
Material:	C - CIP Concrete								
Articulation:									
Deck Length:	4.3 m								
Deck Width:	12.2 m								
Deck Area:	51.9 m2								
Trav Deck Wdt	4.6 m								
Heritage Status:	N								
Road Class:	Local								
Lane Type:									
Posted Speed:	80	Lanes:	2						
AADT:		Trucks:	0		%				
Min Vert. Clear.:	m								
No. of Spans:	1								
Special Routes:	<input type="checkbox"/> Transit <input checked="" type="checkbox"/> Truck <input checked="" type="checkbox"/> School <input type="checkbox"/> Bicycle								
Detour Length:	0.00 km			Skew Angle:		0 degrees			
	m			Structure Dir.:		North/South			

Bridge Span BS-00047 3.66 m

## Historical Data

Year Built:	Superstruct. Year:	Year of Last Major Rehab:
Last OSIM Inspection:		Contract No. When Built:
Last Enhanced OSIM:		Last Evaluation:
Last Enhanced Access:		Current Load Limit:            t    t    t
Last Underwater Insp.		Bylaw No.:
Last Condition Survey.:		Bylaw Exp. Date:

# Municipal Structure Inspection Form

Structure Name: North Perth Road 154 - Bridge between Line 81 and Lin  
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## Field Inspection Information

Structure No.: E-9

Inspection Date: 11/20/2013      Inspection Type:  OSIM  Enhanced OSIM    BCI: 28.0  
 Inspector: Brad Walt, C.E.T.      Eng. Responsible:  
 Others in Party:  
 Access Equip:  Lift  Ladder  Boat  Bridge Master Other:  
 Other Equipment: Measuring tape, hammer, camera  
 Weather: Sunny      Temperature: 5 °

## Additional Investigations Required

Investigation	----- Priority -----			Estimated Cost
	None	Normal	Urgent	
Detailed Deck Condition Survey	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0.00
Delamination Survey of Asphalt-Covered Deck	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0.00
Concrete Substructure Condition Survey	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0.00
Detailed Coating Condition Survey	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0.00
Detailed Timber Investigation	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0.00
Post-Tension Strand Investigation	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0.00
Underwater Investigation	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0.00
Fatigue Investigation	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0.00
Seismic Investigation	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0.00
Structure Evaluation	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0.00
Monitoring of Deformations, Movements and Settlements	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0.00
Monitoring of Crack Widths	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0.00
Total Cost:				0.00

## Overall Structure Notes

Recommended Work On Structure:   
 Timing of Recommended Work:   
 Next Inspection Date:     Estimated Load Limit:  t  t  t

Overall      Structure is in overall poor condition; Replacement recommended in the next 5 years.

### Comments

BCI Change      Replace culvert due to deteriorating condition of existing structure.  
 Justification

# Municipal Structure Inspection Form

Structure Name: North Perth Road 154 - Bridge between Line 81 and Lin  
 Structure No: E-9  
 MTO Site No: E-9

## Element Data

### Culverts - Inlet Components

Element Group:	Culverts	Length:	Width:
Element Name:	Inlet Components		
Location:	East exterior face	Height:	Count:
Material:	Cast-in-place concrete	Total Quantity: 3.40	
Element Type:	Inlet Components	Subtype:	Environment: Benign
Prot. System:	None	<input type="checkbox"/> Limited Inspected	
Condition Data:	Units	Poor	Fair
	m2	3.40	
			Good
			Excellent

Comments:

Severe delamination and spalling; Severe disintegration with loss of section; Exposed corroded rebar; Wide cracks with efflorescence.

Perform Deficiencies	Maintenance Needs	Priority	Maintenance Comments
None	None	None	
Rehab/Repair Recommendations	Priority	Total Cost	Comments
None			

### Culverts - Barrels

Element Group:	Culverts	Length:	Width:
Element Name:	Barrels		
Location:	Legs only	Height:	Count:
Material:	Cast-in-place concrete	Total Quantity: 78.08	
Element Type:	Open Footing Barrel	Subtype:	Environment: Benign
Prot. System:	None	<input type="checkbox"/> Limited Inspected	
Condition Data:	Units	Poor	Fair
	m2	27.00	51.08
			Good
			Excellent

Comments:

Severe erosion and loss of section with wide cracks and severe delamination along top of footings throughout; Severe scaling and disintegration with severe delamination and spalling at ends; Wide vertical stained cracks; Rodent hole burrowed under legs.

Perform Deficiencies	Maintenance Needs	Priority	Maintenance Comments
Load carrying capacity	None	None	
Rehab/Repair Recommendations	Priority	Total Cost	Comments
	1-5 yrs	275,000.00	Replace culvert

# Municipal Structure Inspection Form

Structure Name: North Perth Road 154 - Bridge between Line 81 and Lin

Structure No: E-9

MTO Site No: E-9

## Culverts - Barrels

Element Group:	Culverts	Length: 12.20	Width: 3.66
Element Name:	Barrels		
Location:	Soffit only	Height:	Count: 1
Material:	Cast-in-place concrete	Total Quantity: 44.65	
Element Type:	Open Footing Barrel	Subtype:	Environment: Benign
Prot. System:	None	<input type="checkbox"/> Limited Inspected	
Condition Data:	Units	Poor	Fair
	m2	6.70	37.95
		Good	Excellent

Comments:

Severe disintegration with wide cracks, efflorescence, severe delamination and spalling and exposed corroded rebar at each end; Light to medium scaling; Medium to wide wet pattern cracking with efflorescence; Random severe popouts and spalls.

Perform Deficiencies	Maintenance Needs	Priority	Maintenance Comments
None	None	None	
Rehab/Repair Recommendations	Priority	Total Cost	Comments
	1-5 yrs	275,000.00	Replace culvert

## Culverts - Outlet Componentets

Element Group:	Culverts	Length:	Width:
Element Name:	Outlet Componentets		
Location:	West exterior face	Height:	Count:
Material:	Cast-in-place concrete	Total Quantity: 3.40	
Element Type:	Outlet Components	Subtype:	Environment: Benign
Prot. System:	None	<input type="checkbox"/> Limited Inspected	
Condition Data:	Units	Poor	Fair
	m2	3.40	
		Good	Excellent

Comments:

Severe delamination and spalling; Severe disintegration with loss of section; Exposed corroded rebar; Wide cracks with efflorescence.

Perform Deficiencies	Maintenance Needs	Priority	Maintenance Comments
None	None	None	
Rehab/Repair Recommendations	Priority	Total Cost	Comments
None			

# Municipal Structure Inspection Form

Structure Name: North Perth Road 154 - Bridge between Line 81 and Lin  
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## Decks - Wearing surface

Element Group:	Decks		Length:	4.30	Width:	4.60
Element Name:	Wearing surface		Height:		Count:	1
Location:	Over culvert		Total Quantity: 19.78			
Material:	Gravel					
Element Type:	Wearing surface	Subtype:			Environment:	Severe
Prot. System:	None		<input type="checkbox"/> Limited Inspected			
Condition Data:	Units	Poor	Fair	Good	Excellent	
	m <sup>2</sup>			19.78		

Comments:

Perform Deficiencies	Maintenance Needs	Priority	Maintenance Comments
None	None	None	
Rehab/Repair Recommendations	Priority	Total Cost	Comments
None			

## Embankments & Streams - Embankments

Element Group:	Embankments & Streams		Length:		Width:	
Element Name:	Embankments		Height:		Count:	4
Location:	Each quadrant		Total Quantity: 4.00			
Material:	Vegetation					
Element Type:	Embankments	Subtype:			Environment:	Benign
Prot. System:	None		<input type="checkbox"/> Limited Inspected			
Condition Data:	Units	Poor	Fair	Good	Excellent	
	Each	2.00	2.00			

Comments:

Embankments are steep and have medium to severe erosion.

Perform Deficiencies	Maintenance Needs	Priority	Maintenance Comments
None	None	None	
Rehab/Repair Recommendations	Priority	Total Cost	Comments
None			

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## Embankments & Streams - Streams and Waterways

Element Group:	Embankments & Streams		Length:	Width:	
Element Name:	Streams and Waterways		Height:	Count:	1
Location:	Through culvert		Total Quantity: 1.00		
Material:					
Element Type:	Streams and Waterways	Subtype:	Environment:	Benign	
Prot. System:			<input type="checkbox"/> Limited Inspected		
Condition Data:	Units	Poor	Fair	Good	Excellent
	All	1.00			

**Comments:**

Debris located in stream at outlet and approximately 30m downstream preventing proper flow through culvert, leading to sediment build up throughout culvert and severe scouring of embankments downstream.

Perform Deficiencies	Maintenance Needs	Priority	Maintenance Comments
None	None	None	
Rehab/Repair Recommendations	Priority	Total Cost	Comments
None			

## Foundations - Foundation (below grade level)

Element Group:	Foundations		Length:	Width:	
Element Name:	Foundation (below grade level)		Height:	Count:	1
Location:	Below culvert legs		Total Quantity: 1.00		
Material:	Cast-in-place concrete				
Element Type:	Foundation (below grade level)	Subtype:	Environment:	Benign	
Prot. System:	None		<input checked="" type="checkbox"/> Limited Inspected		
Condition Data:	Units	Poor	Fair	Good	Excellent
	All	1.00			

**Comments:**

Exposed portion of footings appear to have been refaced; Medium to severe disintegration throughout.

Perform Deficiencies	Maintenance Needs	Priority	Maintenance Comments
None	None	None	
Rehab/Repair Recommendations	Priority	Total Cost	Comments
None			

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MTO Site No: E-9

## Repair/Rehabilitation Required

### Repair/Rehabilitation

Element Group	Element	Repair/Rehabilitation	Priority	Const Cost
Culverts	Barrels	Replace culvert	1-5	\$275,000
Total Repair/Rehabilitation Cost				<b>\$275,000.00</b>

## Associated Work

	Comments	Estimated Cost
Approaches		0.00
Detours	Road closed during construction	5,000.00
Traffic Control		0.00
Utilities		0.00
Right-of-Way		0.00
Environmental Study		0.00
Other	Mobilization, removals, dewater	25,000.00
Contingencies	10%	20,000.00
Engineering		45,000.00
Total Associated Work Cost		<b>95,000.00</b>
Total Repair/Rehabilitation Cost		<b>275,000.00</b>
Total Cost		<b>370,000.00</b>





Photo 1: Plan view, looking south



Photo 2: West face



Photo 3: Northwest leg



Photo 4: Southwest leg



Photo 5: East face



Photo 6: Northeast leg



Photo 7: Southeast leg



Photo 8: North leg, interior



Photo 9: North leg, interior



Photo 10: South leg, interior



Photo 11: Soffit, west end



Photo 12: Soffit, east end



Photo 13: Soffit, interior