

Appendix N.1 – Structural Inspection Report

*Kennedy Road Environmental Assessment between
Steeles Avenue and Major Mackenzie Drive*



Structural Inspection Report

Class Environmental Assessment for Kennedy
Road from Steeles Avenue to Major Mackenzie
Drive

August 30, 2017

DRAFT



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1. Introduction

York Region is reviewing opportunities for improvements to Kennedy Road from Steeles Avenue to Major Mackenzie Drive. HDR has been retained to carry out a Municipal Class Environmental Assessment (Schedule 'C') study. The scope of the Environmental Assessment (EA) study includes Structural Assessment based on a visual inspection of all the structures included in the Kennedy Road study corridor. Site visits were conducted by HDR Structural staff on June 8, 2017. The preliminary structure assessment presented in this report is based on review of the available materials and visual observation of these bridges and may be modified as design progresses or when additional information becomes available.

2. Existing Structures

The structures included in the study corridor are located along Kennedy Road between Steeles Avenue and Major Mackenzie Drive and include the following bridges:

- CN Rail Underpass
- 407ETR Overpass
- Rouge River Bridge

These site visits were conducted under the supervision of Sardar Nabi, P.Eng., during day time without traffic interruption. Weather at time of inspection was as follows:

- Sunny, +22 C degrees, June 8, 2017

The photographs of each structure are included in **Appendix A** to this Report.

2.1 CN Rail Underpass

The existing bridge, Structure No. 03-03 B0380, is owned by York Region.

2.1.1 Location

The CN York Subdivision Bridge over Kennedy Road is located approximately 380m north of 14th Avenue, in the City of Markham. It currently carries two rail tracks over two northbound and two southbound lanes of traffic.

2.1.2 Existing Structure

Constructed in 1963, the CN Rail Underpass is simply supported, one span bridge with a steel ballast tray deck on transverse floor beams and two steel through plates. The structure has a span length of 22.1m and a width of 9.3m. The bridge deck is covered with railway ballast and carries two railway tracks.

The bridge spans over four traffic lanes (13.7m total), two sidewalks/boulevards (8.4m total), and has a vertical clearance of 4.57m (derived from existing drawings).

The substructure consists of reinforced concrete abutments and wingwalls supported on concrete footings.

The Ontario Structure Inspection Manual (OSIM) report, found in **Appendix B**, which was carried out on October 3, 2016, showed that the bridge was in good condition, but needed minor repairs for the following:

- Wide, stained, and map cracks on abutments
- Minor impact damage on Southeast girder's bottom flange
- Light to moderate corrosion of soffit

The site visual inspection carried out on June 8, 2017, verified that the 2016 OSIM report findings and recommendations are consistent with the current site conditions, with the addition of missing sections of the South trainmen's walk and wet areas on the soffit.

2.2 407ETR Overpass

The existing bridge is located at Site No. 37-1485.

2.2.1 Location

The 407ETR Overpass at Kennedy Road is located in the City of Markham. It currently carries three northbound and three southbound lanes of Kennedy Road over five eastbound and five westbound lanes of 407ETR.

2.2.2 Existing Structure

The 407ETR Overpass is a continuous, two span, cast-in-place concrete slab deck on 26 PCG 1900 girders (13 girders per span), bridge that was constructed in 1997. The structure has spans of 41.0m and 41.0m, with total length of 82.4m and a width of 30.46m.

The bridge deck is 0.225m deep and carries four 3.5m (inner) traffic lanes, two 3.75m (outer) lanes, two 1.5m shoulders, two 1.5m sidewalks, two 0.48m barrier walls, and one 2.0m median, and has a vertical clearance of 5.05m.

The substructure consists of reinforced concrete abutments and piers supported on steel piles, and wingwalls.

The OSIM reports for this bridge are not available at this time to verify. The site visual inspection carried out on June 8, 2017, found that the bridge is in good condition, but with the following defects:

- Impact damage on all guiderails
- Asphalt cracks and deterioration on newly paved transverse strip at both approach slabs
- Cracking on all sidewalks
- Cracking and spalling on all barrier walls
- Long vertical cracks on North abutment
- Concrete segregation at top of both abutments
- Concrete curb spalling by Northeast catch basin
- Northeast guiderail missing
- Partially filled pothole on Southeast road surface

- Impact damage on Southeast guiderail/barrier wall connection
- Delamination and cracks on South abutment

2.3 Rouge River Bridge

The existing bridge, Structure No. 03-06 B0400, is owned by York Region.

2.3.1 Location

Rouge River Bridge is located approximately 0.4km north of Regional Road 7 (Hwy 7), in the City of Markham. It currently carries two northbound and two southbound lanes of Kennedy Road over the Rouge River.

2.3.2 Existing Structure

The Rouge River Bridge is a simply supported, single span, cast-in-place concrete topping slab on fourteen precast concrete side by side boxgirders, bridge that was constructed in 1981. The structure has a span length of 30.5m and a width of 17m.

The box beams are 1.07m deep, and the topping slab is 0.127m deep and carries four traffic lanes (15.2m total) and two 1.83 m sidewalks (including railings).

The substructure consists of reinforced concrete abutments supported on steel tube piles, and wingwalls.

The OSIM report, found in **Appendix B**, which was carried out on September 15, 2016, showed that the bridge was in good condition, but needed minor repairs, including:

- Wide cracks and delamination on North abutment
- Spalls, stained, and wet areas on Northwest abutment
- Wide cracks, medium raveling, sealed cracks, and pot holes on asphalt road surface
- Spalls and delamination on North concrete end post
- Abrasion damage, unsecured, and missing end caps on railings
- Spalling at girder ends, exposed rebars
- Delamination on soffit, exposed rebar
- Missing blocks on abutment slope protection
- Spalls, cracks, and asphalt patches at top of expansions joints
- Cracking and spalling on sidewalks
- Local rail separation at railing post

The site visual inspection carried out on June 8, 2017, verified that the 2016 OSIM report findings and recommendations are consistent with the current site conditions, with the additions/exceptions of:

- Cracks on abutments and wingwalls not visible due to paint
- Paint peeling off and graffiti
- Spalling of Northwest bearing seat
- Missing cover of Northeast electrical box with spalling

- Dents on Northeast, Northwest, and Southwest guiderails
- Loss of concrete at underside of Northeast expansion joint
- Spalling of guiderail connections at Southwest, Northwest, and Northeast concrete end posts
- Exposed tie rod anchor at Southeast girder end
- Recommendation to replace existing handrails with new PL2 concrete barrier walls with railings
- Bridge found to be in moderate condition

2.4 Structural Evaluation

As part of this study an evaluation of the structures has not been carried out in accordance with the CHBDC CAN/CSA-S6-06 (CHBDC) and MTO Structural Manual.

3. Conclusion

Recommendations for the rehabilitation/modification/strengthening, or replacement of existing structures will be updated as the study progresses and alternative designs for Kennedy Road are developed. The preliminary design of each structure shall include, but is not limited to, consideration of structural bearing capacity, remaining service life, and constructability.

Inspected by Matthew Zalecki, Bridge EIT.

Checked by Vladimir Rogachyov, P.Eng., Structural Project Manager.

July 17, 2017.

Appendix A – 2017 Site Visit Photos

*Kennedy Road Environmental Assessment between
Steeles Avenue and Major Mackenzie Drive*





Exhibit 01 – Kennedy Rd – CN Rail Underpass
North Elevation with Overhead Cable (view from North)



Exhibit 02 – Kennedy Rd – CN Rail Underpass
East Abutment (view from West)



Exhibit 03 – Kennedy Rd – CN Rail Underpass
Wide Crack on East Abutment, Base of Middle Portion (view from West)



Exhibit 04 – Kennedy Rd – CN Rail Underpass
Wide & Map Cracking on East Abutment, Top of Middle Portion (view from West)



Exhibit 05 – Kennedy Rd – CN Rail Underpass
Stained Map Cracks on Southeast Wingwall (view from Southwest)



Exhibit 06 – Kennedy Rd – CN Rail Underpass
Northeast Girder End with Utilities (view from North)



Exhibit 07 – Kennedy Rd – CN Rail Underpass
Map Cracks and Efflorescence on Southwest Bearing Seat (view from South)



Exhibit 08 – Kennedy Rd – CN Rail Underpass
South Exterior Girder & Trainmen's Walk, Missing Sections (view from West)



Exhibit 09 – Kennedy Rd – CN Rail Underpass
Soffit (view from West)

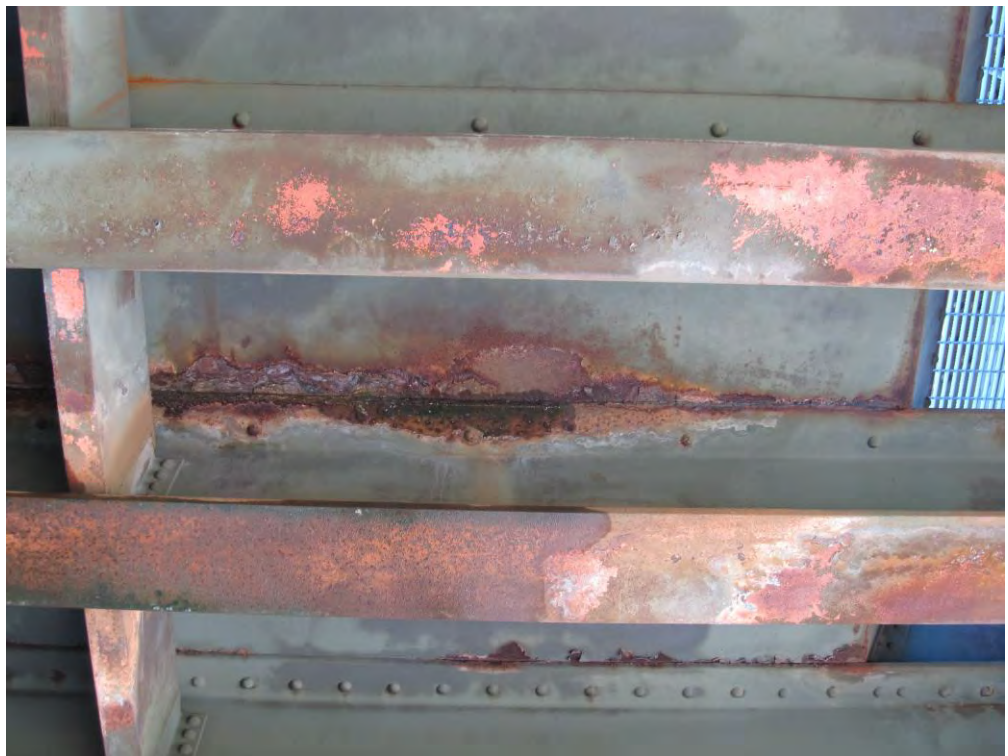


Exhibit 10 – Kennedy Rd – CN Rail Underpass
Corrosion & Wet Areas on Southwest Soffit (view from West)



Exhibit 11 – Kennedy Rd – CN Rail Underpass
Impact Damage on Bottom Flange of Southeast Girder (view from Southeast)



Exhibit 12 – Kennedy Rd – CN Rail Underpass
Top of Deck (view from West)



Exhibit 13 – Kennedy Rd – 407ETR Overpass
West Elevation (view from West)



Exhibit 14 – Kennedy Rd – 407ETR Overpass
North Abutment (view from West)



Exhibit 15 – Kennedy Rd – 407ETR Overpass
Delamination on Southeast Abutment (view from North)



Exhibit 16 – Kennedy Rd – 407ETR Overpass
Concrete Segregation on North Abutment, Top of Middle Portion (view from South)



Exhibit 17 – Kennedy Rd – 407ETR Overpass
Southeast Wingwall (view from Northeast)



Exhibit 18 – Kennedy Rd – 407ETR Overpass
Soffit & Piers (view from North)



Exhibit 19 – Kennedy Rd – 407ETR Overpass
Road Surface on Deck (view from Northeast)



Exhibit 20 – Kennedy Rd – 407ETR Overpass
Cracks and Deterioration on North Approach (view from West)



Exhibit 21 – Kennedy Rd – 407ETR Overpass
Pot Hole on Southeast Road Surface (view from East)



Exhibit 22 – Kennedy Rd – 407ETR Overpass
Missing Guiderail at Southeast Barrier Wall & Sidewalk (view from North)



Exhibit 23 – Kennedy Rd – 407ETR Overpass
Wide Crack on Southeast Sidewalk (view from North)



Exhibit 24 – Kennedy Rd – 407ETR Overpass
Cracks & Spalls on East Barrier Wall at Middle Light Pole (view from West)



Exhibit 25 – Kennedy Rd – 407ETR Overpass
Impact Damage at Southeast Barrier Wall/Guiderail Connection (view from North)



Exhibit 26 – Kennedy Rd – 407ETR Overpass
Damage on Southwest Guiderail (view from East)



Exhibit 27 – Kennedy Rd – Rouge River Bridge
East Elevation (view from Southeast)



Exhibit 28 – Kennedy Rd – Rouge River Bridge
North Abutment, Graffiti & Missing Slope Protection Blocks (view from Southeast)



Exhibit 29 – Kennedy Rd – Rouge River Bridge
Soffit (view from North)



Exhibit 30 – Kennedy Rd – Rouge River Bridge
Delamination & Exposed Rebar on North End of Soffit (view from South)



Exhibit 31 – Kennedy Rd – Rouge River Bridge
Spalling on Northwest Bearing Seat (view from West)



Exhibit 32 – Kennedy Rd – Rouge River Bridge
Exposed Rebar on Southwest Girder End (view from West)



Exhibit 33 – Kennedy Rd – Rouge River Bridge
Loss of Concrete under Northeast Expansion Joint (view from East)



Exhibit 34 – Kennedy Rd – Rouge River Bridge
Southeast Wingwall (view from Northeast)



Exhibit 35 – Kennedy Rd – Rouge River Bridge
Road Surface on Deck (view from North)



Exhibit 36 – Kennedy Rd – Rouge River Bridge
South Expansion Joint, Cracks/Deterioration/Patches (view from West)



Exhibit 37 – Kennedy Rd – Rouge River Bridge
West Sidewalk & Railing, Cracks & Spalling (view from North)



Exhibit 38 – Kennedy Rd – Rouge River Bridge
Spall & Missing Cover from Northeast Electrical Box (view from West)



Exhibit 39 – Kennedy Rd – Rouge River Bridge
Spalling & Loose End Caps on Southeast Railing (view from West)



Exhibit 40 – Kennedy Rd – Rouge River Bridge
Dent & Missing Bolt on Northeast Guiderail (view from West)

Appendix B– 2014 and 2016 Ontario Structure Inspection Manual Reports (by others)

*Kennedy Road Environmental Assessment between
Steeles Avenue and Major Mackenzie Drive*



Summary Action Report
Structure 03-03 B0380 (MTO Site No. 037-0671)
Kennedy CNR Underpass

Inspection Date 09/18/2014 mm/dd/yyyy

Condition Index Value (BCI) 73.6

Next Biennial Inspection 09/18/2016 mm/dd/yyyy

Current Rep. Value \$3,017,495

Additional Investigations

Investigation	Priority	Cost	Investigation	Priority	Cost
No additional investigations required.					

Performance Deficiencies

No Performance Deficiencies

Maintenance Needs

Element Group	Element	Maintenance Required	Priority	Comment
Sidewalks/curbs	Sidewalks/Medians	Other	2 yr	Reweld trainmen's walk to bracket

Repair/Rehabilitation

Element Group	Element	Repair/Rehabilitation		Priority	Cost
Abutments	Abutment Walls	Rehab	Seal cracks	1-5 yrs	\$5,000
Total Repair/Rehabilitation Cost					\$5,000

Region of York	100%	\$19,000.00	Total Associated Work Cost	\$14,000
	0%	\$0.00	Total Cost	\$19,000

Overall Comments

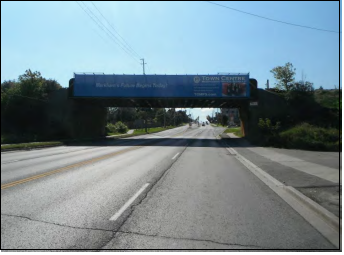
Seal cracks in abutment.

Municipal Structure Inspection Form

Structure Number:

03-03 B0380

Inventory Data

Structure Name	Kennedy CNR Underpass		Hwy No.	3	Key Photo		
Cross. Type Over	<input type="checkbox"/> Road	<input checked="" type="checkbox"/> Rail	<input type="checkbox"/> Ped	<input type="checkbox"/> Nav. Water	<input type="checkbox"/> Non-Nav. Wat		<input type="checkbox"/> Other
Cross. Type Under	<input checked="" type="checkbox"/> Road	<input type="checkbox"/> Rail	<input type="checkbox"/> Ped	<input type="checkbox"/> Nav. Water	<input type="checkbox"/> Non-Nav. Wat		<input type="checkbox"/> Other
Road Name	Kennedy Road						
Structure Location	0.38km North of 71 - 14th Avenue						
Latitude	43.84695	Longitude	-79.30592	Cur. Rep.Value	\$3,017,495		
Owner(s)/ % Share	Region of York		100 %				
			0 %	Heritage Status	Not Considered for Designation		
MTO Region	Central		Road Side Env.	Urban			
MTO District	Central		Road Class	Arterial			
Old County	York		Lane Type				
Geographic Twp.			Posted Speed	60	No. of Lanes	4	
Structure Type	I-Beam or Girders		AADT	37825	Pct. Trucks	6	
Structure Material	Structural Steel		Inspection Route Sequence				
Articulation	Simply Supported		Interchange Number				
Total Deck Length	23.1 m	Road Width	13.7 m	Interchange Structure Number			
Overall Width	9.3 m	Vert. Clear.	0 m	Detour Length	0 km		
Total Deck Area	214.83 m ²	No. of Spans	1	Fill on Structure	0 m		
Special Routes	<input checked="" type="checkbox"/> Transit	<input checked="" type="checkbox"/> School	<input type="checkbox"/> Truck	<input type="checkbox"/> Bicycle	Insp. Duration	2 hr	

** Current Replacement Value is based on in kind replacement of the existing structure and calculated using benchmark costs. Capital planning should consider site specific cost factors and requirements for widening or lengthening of the structure.

Spans

Span Name	Span Length	Span Name	Span Length
Span 1	22.1 m		

Historical Data

Year Built	1963	yyyy	Year of Last Major Rehab		yyyy
Last OSIM Inspection	08/09/2012	mm/dd/yyyy	Contract No. When Built		
Last Enhanced OSIM		mm/dd/yyyy	Last Evaluation		mm/dd/yyyy
Last Enhanced Access		mm/dd/yyyy	Current Load Limit	<input type="checkbox"/> t	<input type="checkbox"/> t
Last Underwater Insp.		mm/dd/yyyy	Load Limit By-Law No.		mm/dd/yyyy
Last Condition Survey		mm/dd/yyyy	By-Law Expiry Date		mm/dd/yyyy

Rehab History

Municipal Structure Inspection Form**Structure Number:****03-03 B0380****Field Inspection Information:**

Inspection Date	09/18/2014 mm/dd/yyyy	<input type="checkbox"/> Multi Day Inspection	<input checked="" type="checkbox"/> OSIM	<input type="checkbox"/> Enhanced OSIM	BCI	73.6
Inspector	T. Fediw		Eng. Responsible D. L. Baxter, P. Eng.			
Others in Party	P. Adams					
Access Equip.	<input type="checkbox"/> Lift <input type="checkbox"/> Ladder <input type="checkbox"/> Boat <input type="checkbox"/> Bridge Master Other <input type="text"/>					
Other Equip.	Camera, Hammer, Other Hand Tools					
Weather	Rain		Temperature	18 °C		

Additional Investigations Required:

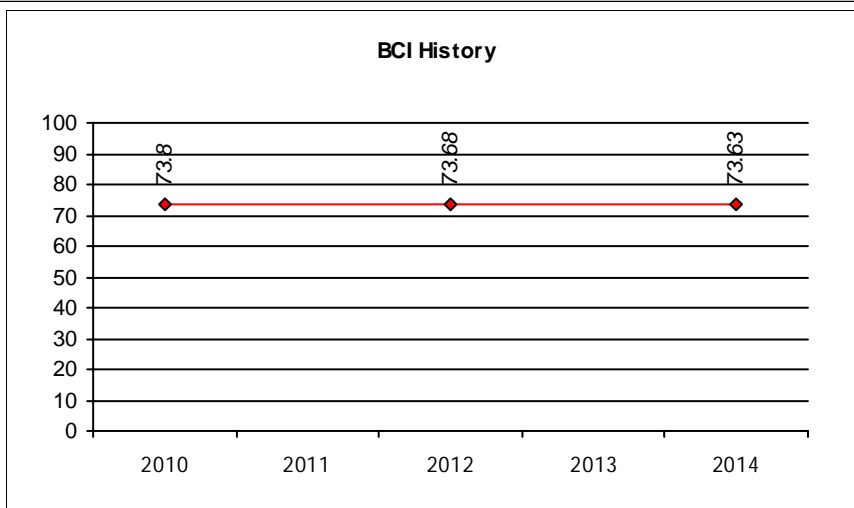
Investigation	Priority			Estimated Cost
	None	Normal	Urgent	
Detailed Deck Condition Survey	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	\$0
Delamination Survey of Asphalt-Covered Deck	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	\$0
Concrete Substructure Condition Survey	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	\$0
Detailed Coating Condition Survey	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	\$0
Detailed Timber Investigation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	\$0
Post-Tensioned Strand Investigation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	\$0
Underwater Investigation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	\$0
Fatigue Investigation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	\$0
Seismic Investigation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	\$0
Structure Evaluation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	\$0
Monitoring of Deformations, Movements and Settlements	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	\$0
Monitoring of Crack Widths	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	\$0
Investigation Notes				Total Cost \$0

Overall Structure Notes:

Recommended Work on Structure	<input type="checkbox"/> None	<input checked="" type="checkbox"/> Rehab	<input type="checkbox"/> Replace	<input type="checkbox"/> Remove
Timing of Recommended Work	<input type="checkbox"/> None	<input type="checkbox"/> Now	<input checked="" type="checkbox"/> 1 to 5 years	<input type="checkbox"/> 6 to 10 years
Overall Comments	Seal cracks in abutment.			
BCI Change Justification				
Next Inspection	09/18/2016 mm/dd/yyyy		Estimated Load Limit	<input type="text"/> t <input type="text"/> t <input type="text"/> t

BCI History

Insp. Date	BCI	Inspector
11-Nov-10	73.8	J.M. Youk
09-Aug-12	73.68	D. Kelly
18-Sep-14	73.63	T. Fediw



All BCI values are based on the MTO BCI methodology published in April 2008. As a result, BCI values for 2007 and earlier are approximate only, with potential discrepancies resulting from changes (over time) in the way quantities for certain elements are calculated.

Standard Codes

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	

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

Municipal Structure Inspection Form

Structure Number:

03-03 B0380

Element Data

Beams/MLE's - Girders

Element Group	Beams/MLE's				Length	23.00	Width	0.45
Element Name	Girders				Height	2.50	Count	2.00
Location	All				Total Quantity 292.10			
Material	Steel				<input type="checkbox"/> Limited Inspection			
Element Type	I-type				Environment			
Protection System	Red lead primer/alkyd				<input checked="" type="checkbox"/> Benign			
Condition Data	Units	Excell.	Good	Fair	Poor	<input type="checkbox"/> Moderate		
	sq. m	0.00	292.10	0.00	0.00	<input type="checkbox"/> Severe		

Comments

Light corrosion.

Performance Deficiencies

None

Maintenance Needs

Priority Comments

Rehab/Repair Recommendations

Priority

Cost

Comments

Beams/MLE's - Floor Beams

Element Group	Beams/MLE's				Length	9.30	Width	0.25
Element Name	Floor Beams				Height	0.60	Count	25.00
Location	Between Girders				Total Quantity 453.38			
Material	Steel				<input type="checkbox"/> Limited Inspection			
Element Type					Environment			
Protection System	Red lead primer/alkyd				<input checked="" type="checkbox"/> Benign			
Condition Data	Units	Excell.	Good	Fair	Poor	<input type="checkbox"/> Moderate		
	sq. m	0.00	453.38	0.00	0.00	<input type="checkbox"/> Severe		

Comments

Light corrosion.

Performance Deficiencies

None

Maintenance Needs

Priority Comments

Rehab/Repair Recommendations

Priority

Cost

Comments

Municipal Structure Inspection Form

Structure Number:

03-03 B0380

Abutments - Abutment Walls

Element Group	Abutments				Length	11.00	Width	0.00
Element Name	Abutment Walls				Height	4.40	Count	2.00
Location	East Side and West Side				Total Quantity		96.80	
Material	Cast-in-place concrete				<input type="checkbox"/> Limited Inspection			
Element Type	Conventional Closed				Environment			
Protection System	None				<input type="checkbox"/> Benign			
Condition Data	Units	Excell.	Good	Fair	Poor	<input type="checkbox"/> Moderate		
	sq. m	0.00	94.80	1.00	1.00	<input checked="" type="checkbox"/> Severe		

Comments

Narrow stained crack, wet area, wide cracks.

Performance Deficiencies

None

Maintenance Needs

Priority Comments

Rehab/Repair Recommendations

Priority

Cost

Comments

Rehab	1-5 yrs	\$5,000	Seal cracks
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Abutments - Bearings

Element Group	Abutments				Length	0.00	Width	0.00
Element Name	Bearings				Height	0.00	Count	4.00
Location	Top of Abutments				Total Quantity		4.00	
Material	Steel				<input type="checkbox"/> Limited Inspection			
Element Type	Other				Environment			
Protection System	Red lead primer/alkyd				<input checked="" type="checkbox"/> Benign			
Condition Data	Units	Excell.	Good	Fair	Poor	<input type="checkbox"/> Moderate		
	Each	0.00	4.00	0.00	0.00	<input type="checkbox"/> Severe		

Comments

Performance Deficiencies

None

Maintenance Needs

Priority Comments

Rehab/Repair Recommendations

Priority

Cost

Comments

Municipal Structure Inspection Form

Structure Number:

03-03 B0380

Abutments - Ballast Walls

Element Group	Abutments				Length	11.00	Width	0.00
Element Name	Ballast Walls				Height	1.40	Count	2.00
Location	East Side and West Side				Total Quantity		30.80	
Material	Cast-in-place concrete				<input type="checkbox"/> Limited Inspection			
Element Type					Environment			
Protection System	None				<input checked="" type="checkbox"/> Benign			
Condition Data	Units	Excell.	Good	Fair	Poor	<input type="checkbox"/> Moderate		
	sq. m	0.00	30.80	0.00	0.00	<input type="checkbox"/> Severe		

Comments

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Performance Deficiencies

None

Maintenance Needs

Priority Comments

Rehab/Repair Recommendations

Priority

Cost

Comments

Abutments - Wingwalls

Element Group	Abutments				Length	5.60	Width	0.00
Element Name	Wingwalls				Height	4.00	Count	4.00
Location	All Quadrants				Total Quantity		89.60	
Material	Cast-in-place concrete				<input type="checkbox"/> Limited Inspection			
Element Type					Environment			
Protection System	None				<input type="checkbox"/> Benign			
Condition Data	Units	Excell.	Good	Fair	Poor	<input checked="" type="checkbox"/> Moderate		
	sq. m	0.00	89.60	0.00	0.00	<input type="checkbox"/> Severe		

Comments

Narrow map cracking.

Performance Deficiencies

None

Maintenance Needs

Priority Comments

Rehab/Repair Recommendations

Priority

Cost

Comments

Municipal Structure Inspection Form

Structure Number:

03-03 B0380

Embankments & Streams - Embankments

Element Group	Embankments & Streams				Length	0.00	Width	0.00
Element Name	Embankments				Height	0.00	Count	4.00
Location	All Quadrants				Total Quantity		4.00	
Material	Other				<input type="checkbox"/> Limited Inspection			
Element Type					Environment			
Protection System	Vegetation				<input type="checkbox"/> Benign			
Condition Data	Units	Excell.	Good	Fair	Poor	<input type="checkbox"/> Moderate		
	Each	0.00	4.00	0.00	0.00	<input type="checkbox"/> Severe		
Comments								

Performance Deficiencies	Maintenance Needs	Priority	Comments
None			
Rehab/Repair Recommendations	Priority	Cost	Comments

Embankments & Streams - Slope Protection

Element Group	Embankments & Streams				Length	0.00	Width	0.00
Element Name	Slope Protection				Height	0.00	Count	4.00
Location	All Quadrants				Total Quantity		4.00	
Material	Vegetation				<input type="checkbox"/> Limited Inspection			
Element Type	Vegetation				Environment			
Protection System	None				<input type="checkbox"/> Benign			
Condition Data	Units	Excell.	Good	Fair	Poor	<input type="checkbox"/> Moderate		
	Each	0.00	4.00	0.00	0.00	<input type="checkbox"/> Severe		
Comments								

Performance Deficiencies	Maintenance Needs	Priority	Comments
None			
Rehab/Repair Recommendations	Priority	Cost	Comments

Municipal Structure Inspection Form

Structure Number:

03-03 B0380

Foundations - Foundations (below ground level)

Element Group	Foundations				Length	0.00	Width	0.00
Element Name	Foundations (below ground level)				Height	0.00	Count	0.00
Location	Below Abutments				Total Quantity		0.00	
Material					<input checked="" type="checkbox"/> Limited Inspection			
Element Type					Environment			
Protection System					<input type="checkbox"/> Benign			
Condition Data	Units	Excell.	Good	Fair	Poor	<input type="checkbox"/> Moderate		
						<input type="checkbox"/> Severe		

Comments

Limited inspection.

Performance Deficiencies

None

Maintenance Needs

Priority Comments

Rehab/Repair Recommendations

Priority

Cost

Comments

Coatings - Structural Steel

Element Group	Coatings				Length	0.00	Width	0.00
Element Name	Structural Steel				Height	0.00	Count	0.00
Location	Girders				Total Quantity		760.00	
Material	Other				<input type="checkbox"/> Limited Inspection			
Element Type	Red lead primer/alkyd				Environment			
Protection System	None				<input type="checkbox"/> Benign			
Condition Data	Units	Excell.	Good	Fair	Poor	<input type="checkbox"/> Moderate		
	sq. m	0.00	490.00	270.00	0.00	<input checked="" type="checkbox"/> Severe		

Comments

Breakdown of coating noted.

Performance Deficiencies

None

Maintenance Needs

Priority Comments

Rehab/Repair Recommendations

Priority

Cost

Comments

Municipal Structure Inspection Form

Structure Number:

03-03 B0380

Decks - Soffit - Thick Slab

Element Group	Decks				Length	23.10	Width	9.30
Element Name	Soffit - Thick Slab				Height	0.00	Count	1.00
Location	Underside of Deck				Total Quantity		214.83	
Material	Steel				<input type="checkbox"/> Limited Inspection			
Element Type					Environment			
Protection System	Red lead primer/alkyd				<input checked="" type="checkbox"/> Benign			
Condition Data	Units	Excell.	Good	Fair	Poor	<input type="checkbox"/> Moderate		
	sq. m	0.00	214.83	0.00	0.00	<input type="checkbox"/> Severe		

Comments

Light to moderate corrosion.

Performance Deficiencies

None

Maintenance Needs

Priority Comments

Rehab/Repair Recommendations

Priority

Cost

Comments

Beams/MLE's - Stringers

Element Group	Beams/MLE's				Length	0.60	Width	0.10
Element Name	Stringers				Height	0.50	Count	48.00
Location	On Floor Beams				Total Quantity		48.00	
Material	Steel				<input type="checkbox"/> Limited Inspection			
Element Type	I-type				Environment			
Protection System	Red lead primer/alkyd				<input checked="" type="checkbox"/> Benign			
Condition Data	Units	Excell.	Good	Fair	Poor	<input type="checkbox"/> Moderate		
	Each	0.00	48.00	0.00	0.00	<input type="checkbox"/> Severe		

Comments

Light corrosion.

Performance Deficiencies

None

Maintenance Needs

Priority Comments

Rehab/Repair Recommendations

Priority

Cost

Comments

Municipal Structure Inspection Form

Structure Number:

03-03 B0380

Sidewalks/curbs - Sidewalks/Medians

Element Group	Sidewalks/curbs				Length	21.30	Width	0.78
Element Name	Sidewalks/Medians				Height	0.00	Count	2.00
Location	North Side and South Side				Total Quantity		33.23	
Material	Steel				<input type="checkbox"/> Limited Inspection			
Element Type					Environment			
Protection System	None				<input checked="" type="checkbox"/> Benign			
Condition Data	Units	Excell.	Good	Fair	Poor	<input type="checkbox"/> Moderate		
	sq. m	0.00	31.23	1.00	1.00	<input type="checkbox"/> Severe		

Comments

Trainmen's walk in Northeast quadrant is not welded to the support bracket.

Performance Deficiencies	Maintenance Needs	Priority	Comments
None	Other	2 yr	Reweld trainmen's walk to bracket
Rehab/Repair Recommendations	Priority	Cost	Comments

Accessories - Utilities

Element Group	Accessories				Length	0.00	Width	0.00
Element Name	Utilities				Height	0.00	Count	1.00
Location	North Side				Total Quantity		1.00	
Material	Steel				<input type="checkbox"/> Limited Inspection			
Element Type					Environment			
Protection System	Hot dip galvanizing				<input checked="" type="checkbox"/> Benign			
Condition Data	Units	Excell.	Good	Fair	Poor	<input type="checkbox"/> Moderate		
	Each	0.00	1.00	0.00	0.00	<input type="checkbox"/> Severe		

Comments

Light corrosion.

Performance Deficiencies	Maintenance Needs	Priority	Comments
None			
Rehab/Repair Recommendations	Priority	Cost	Comments

Municipal Structure Inspection Form

Structure Number:

03-03 B0380

Accessories - Signs

Element Group	Accessories				Length	0.00	Width	0.00
Element Name	Signs				Height	0.00	Count	2.00
Location	North and South Sides				Total Quantity		2.00	
Material					<input type="checkbox"/> Limited Inspection			
Element Type					Environment			
Protection System					<input type="checkbox"/> Benign			
Condition Data	Units	Excell.	Good	Fair	Poor	<input checked="" type="checkbox"/> Moderate		
	Each	0.00	2.00	0.00	0.00	<input type="checkbox"/> Severe		

Comments

Minor collision damage to sign walkway noted.

Performance Deficiencies

None

Maintenance Needs

Priority Comments

Rehab/Repair Recommendations

Priority

Cost

Comments

Municipal Structure Inspection Form**Structure Number:****03-03 B0380****Repair/Rehabilitation Required**

Element Group	Element	Repair/Rehabilitation	Priority	Cost
Abutments	Abutment Walls	Rehab	1-5 yrs	\$5,000
Total Repair/Rehabilitation Cost				\$5,000

Associated Work

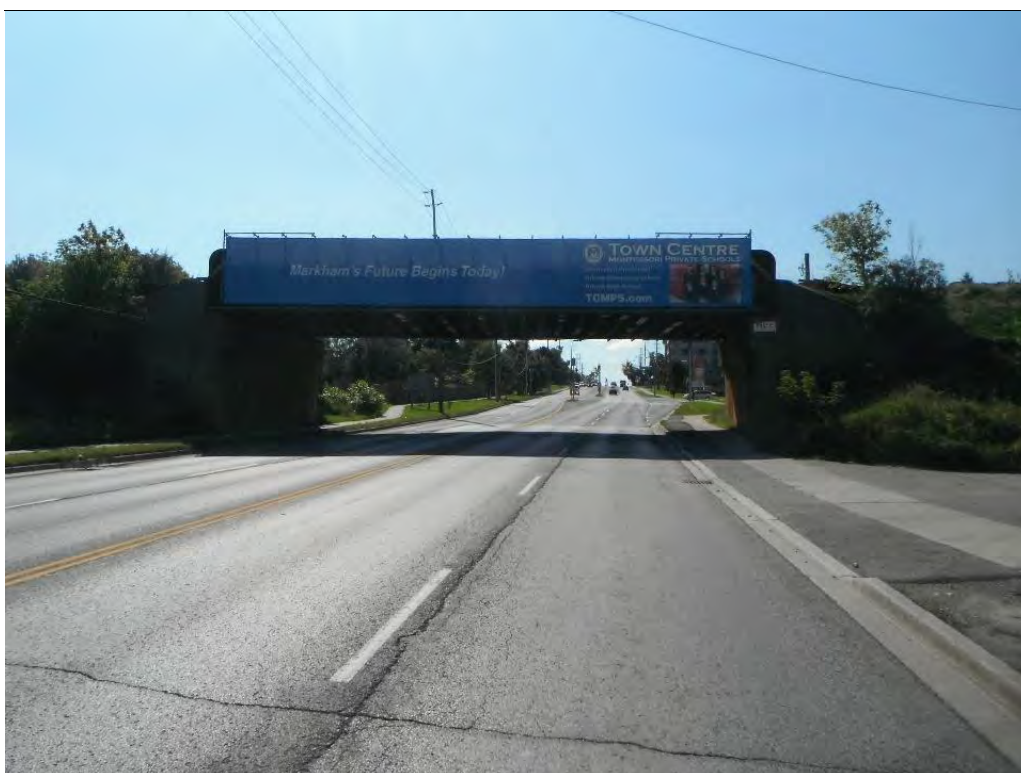
	Comments		Estimated Cost
Approaches			\$0
Detours			\$0
Traffic Control			\$5,000
Utilities			\$0
Right-of-Way			\$0
Environmental Study			\$0
Other			\$0
Contingencies		10%	** \$1,000
Engineering			** \$8,000
Total Associated Work Cost			\$14,000
Total Repair/Rehabilitation Cost			\$5,000
Total Cost			\$19,000
Region of York Share @ 100%			\$19,000

** If based on a percentage calculated values rounded-up to the nearest thousand dollars.

Justification



Looking East Over Bridge



North Elevation



South Elevation



Trainmans Walk not Welded Down



Typical Soffit



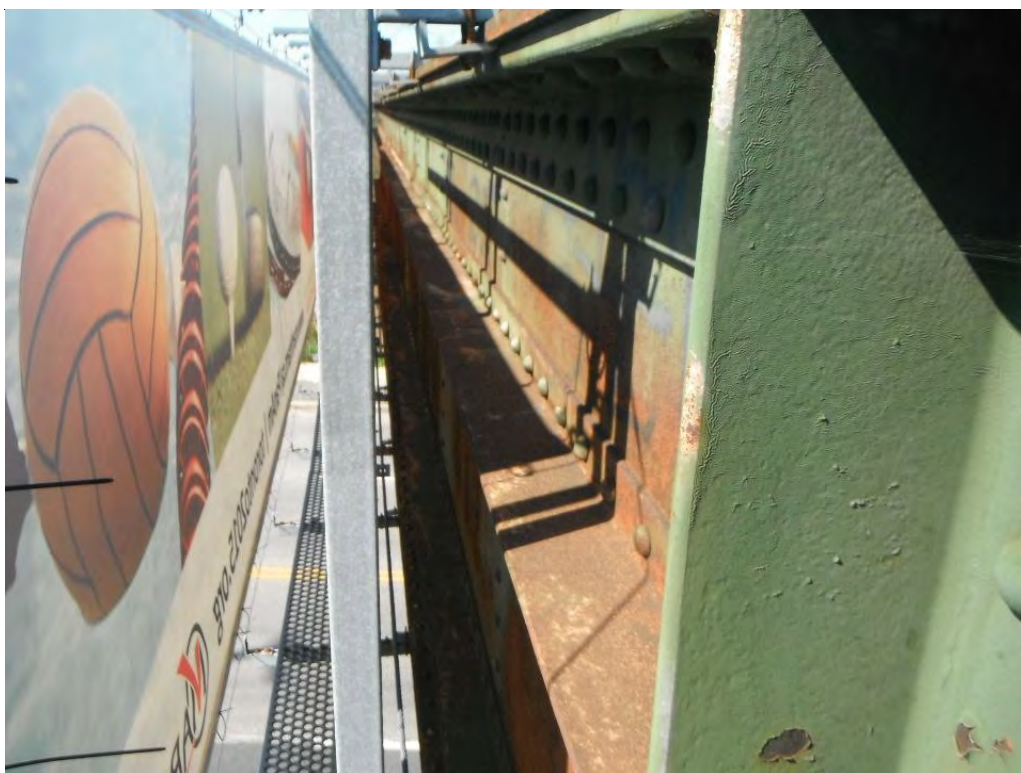
Typical Soffit



Vehicle Strike Damage on Exterior Sign



Vehicle Strike Damage on Sign



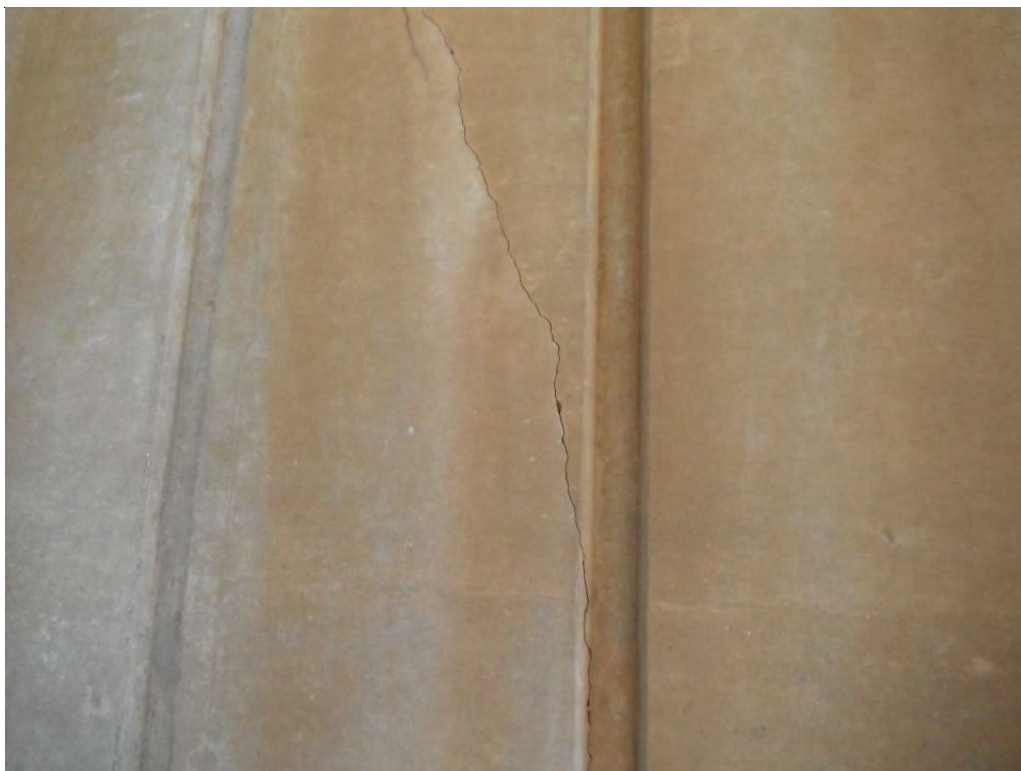
Fascia



Corrosion on Girder



Corrosion on Girder



Crack on Abutment



Crack on Abutment



West Abutment



Bearing



Typical Wingwall



Map Cracking on Wingwall



Southeast Wingwall



Northeast Wingwall




Top of Retaining Wall

York Region Bridge Inspection Form

Struct. ID 03-03 B0380

Inventory Data

Structure Name	Kennedy CNR Underpass			
Structure Location	0.38km North of 71 - 14th Avenue			
Road Number	3	On <input type="checkbox"/>	Under <input checked="" type="checkbox"/>	
Road Name	Kennedy Road			
Watercourse Name				
Crossing Type:	Road <input checked="" type="checkbox"/>	Rail <input type="checkbox"/>	Water <input type="checkbox"/> Navigable waterway <input type="checkbox"/>	
	River <input type="checkbox"/>	Other <input type="checkbox"/>	Creek <input type="checkbox"/> Pedestrian <input type="checkbox"/>	
Hwy Direction	2-EAST/WEST			
Owner Category				
Maint.Resp.		Northing	43.84695	
Region	York Region	Easting	-79.30592	
District	Southeast	National Highway System		
Municipality	Markham	Highway Designation		
Township		Hwy Functional Classification		
Structure Category	Bridge	AADT	No. of Lanes 4	
Main Struct. Subcateg.	Beam/Girder	Trucks (%) 6	Posted Speed 60	
Main Struct. Type	Half-through Beams / Girders	District Bridge Engineer		
Deck Length (Total)	23.10 (m)	Road Authority		
Overall Structure Width	9.30 (m)	Bridge Plan #		
Deck Area (Total)	214.83 (Sq.m)	Min. Vertical Clearance (m)		
Width (Traffic)	13.70 (m)	Detour Distance (km)		
Skew Angle	0.00	Speed on Detour (kph)		
Number of spans	1	Fill Height (m)		
Total Length / Spans (m)	Total = 22.10; (1) = 22.1			

Historical Data

Year Built	1963	Evaluation Year	
Last Biennial Inspection	October 03, 2016	Current Load Limit	
Last Bridge Master Inspection		Current BCI	73.44
Last Condition Survey		Current BCU	43.00
Last Underwater Inspection		Current SI	13.04
Rehab. History			

York Region

Bridge Inspection Form

Struct. ID	03-03 B0380
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Scheduled Improvements

Regional Priority Number		Programmed Work Year	
Nature of Programmed Work			

Appraisal Indices

Comments

Load Capacity Index		
Flood Index		
Barrier Index		
Curb Index		
Seismic Index		
Fatigue Index		
Scour Index		
Structure Index		

Suspected Performance Deficiencies

- | | | |
|--|---|--|
| <ul style="list-style-type: none"> 00 None 01 Load carrying capacity 02 Excessive deformations (deflections and rotations) 03 Continuing settlement 04 Continuing movements 05 Seized bearings | <ul style="list-style-type: none"> 06 Bearings not uniformly loaded/unstable 07 Jammed expansion joint 08 Pedestrian/vehicular hazard 09 Rough riding surface 10 Surface ponding 11 Deck drainage | <ul style="list-style-type: none"> 12 Slippery surface 13 Flooding/channel blockage 14 Undermining of foundation 15 Unstable embankments 16 Other |
|--|---|--|

Maintenance Needs

- | | | |
|---|---|---|
| <ul style="list-style-type: none"> 01 Lift and Swing Bridge Maintenance 02 Bridge Cleaning 03 Bridge Handrail Maintenance 04 Painting Steel Bridge Structures 05 Bridge Deck Joint Repair 06 Bridge Bearing Maintenance | <ul style="list-style-type: none"> 07 Repairs to Structural Steel 08 Repair of Bridge Concrete 09 Repair of Bridge Timber 10 Bailey bridges - Maintenance 11 Animal/Pest Control 12 Bridge Surface Repair | <ul style="list-style-type: none"> 13 Erosion Control at Bridges 14 Concrete Sealing 15 Rout and Seal 16 Bridge Deck Drainage 17 Other |
|---|---|---|

Bridge Inspection Form

Struct. ID 03-03 B0380

Field Inspection Information

Inspection Date	October 03, 2016	Weather	Cloudy
Inspector		Temperature	16
Others in Party	Shane McDade, Ritesh Patel, Jigish Naik		
Equipment Used	Camera, Hammer, Other Hand Tools		
Access Equipment Used	Ladder <input type="checkbox"/> Boat <input type="checkbox"/> Bucket Truck <input type="checkbox"/> Hip Waders <input type="checkbox"/> Access Key <input type="checkbox"/> Climbing Inspection <input type="checkbox"/> Under Bridge Inspection Unit <input type="checkbox"/>		

Special Notes

Overall in good condition. Maintenance needs identified on the abutment wall. Some elements were not accessible due to unavailability of rail flagging.

Upcoming Inspections and Investigations

Inspection Type	Due Date	Priority	Comment

Recommended Inspections and Investigations

Recommended Inspection Type	Due Date	Priority			Estimated Cost (\$)	Comments
		None	Normal	Urgent		
Material Condition Survey:						
Detailed Deck Condition Survey		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Non-destructive Delamination Survey of Asphalt-Covered Deck		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Concrete Substructure Condition Survey		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Detailed Coating Condition Survey		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Detailed Timber Investigation		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Post-Tensioned Strand Investigation		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Underwater Investigation		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Fatigue Investigation		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Seismic Investigation		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Structure Evaluation		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Monitoring						
Monitoring of Deformations, Settlements and Movements		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Monitoring Crack Widths		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		

Overall Structure Recommendations:

Work Category	None <input checked="" type="checkbox"/>	Minor Rehab <input type="checkbox"/>	Major Rehab <input type="checkbox"/>	Replacement <input type="checkbox"/>	
Timing	None <input checked="" type="checkbox"/>	Urgent <input type="checkbox"/>	< 1 year <input type="checkbox"/>	1 - 5 year <input type="checkbox"/>	6 - 10 year <input type="checkbox"/>
Est. Total Cost					
Comments					

Bridge Inspection Form

Struct. ID 03-03 B0380

Element Data

Group	Abutments						3	Length	N/A	11.00 (m)
Element	Abutment walls							Width	0.00 (m)	
Span Num								Height	4.40 (m)	
Material	Cast-in-place concrete							Count	2.00	
Type	Conventional closed							Quantity	96.800 (Sq.m)	
Env't	Benign <input type="checkbox"/> Moderate <input type="checkbox"/> Severe <input checked="" type="checkbox"/>							Not Inspected	<input type="checkbox"/>	
Location	East Side and West Side						Description			
Condition Data	Unit	Excellent	Good	Fair	Poor	V. Poor	Perform. Deficiencies	Maintenance Needs		
	Sq.m	0.000	93.800	2.000	1.000					

Comments CR = 5

Narrow stained crack, wet area, wide cracks.

Maintenance Needs **Need Timing**

8-Repair of Bridge Concrete 2 Years

Performance Deficiencies

0-None

Recommended Work	Category	Timing	Quantity	Unit Cost	Total Cost (\$)
Minor Rehab		1 - 5 year	0.000		5000

1

Group	Abutments						5	Length	N/A	11.00 (m)
Element	Ballast walls							Width	0.00 (m)	
Span Num								Height	1.40 (m)	
Material	Cast-in-place concrete							Count	2.00	
Type	N/A							Quantity	30.800 (Sq.m)	
Env't	Benign <input checked="" type="checkbox"/> Moderate <input type="checkbox"/> Severe <input type="checkbox"/>							Not Inspected	<input type="checkbox"/>	
Location	East Side and West Side						Description			
Condition Data	Unit	Excellent	Good	Fair	Poor	V. Poor	Perform. Deficiencies	Maintenance Needs		
	Sq.m	0.000	30.800	0.000	0.000					

Comments CR = 1

Performance Deficiencies

0-None

2

Bridge Inspection Form

Struct. ID 03-03 B0380

Element Data

Group	Abutments						4	Length	N/A	0.00 (m)
Element	Bearings							Width	N/A	0.00 (m)
Span Num								Height	N/A	0.00 (m)
Material	N/A							Count	4.00	
Type	Other							Quantity	4.000 (Each)	
Env't	Benign <input checked="" type="checkbox"/> Moderate <input type="checkbox"/> Severe <input type="checkbox"/>							Not Inspected	<input type="checkbox"/>	
Location	Top of Abutments						Description			
Condition Data	Unit	Excellent	Good	Fair	Poor	V. Poor	Perform. Deficiencies	Maintenance Needs		
	Each	0.000	4.000	0.000	0.000					

Comments

CR = 1

Performance Deficiencies

0-None

3

Group	Abutments						6	Length	5.60 (m)	
Element	Wingwalls							Width	N/A	0.00 (m)
Span Num								Height	4.00 (m)	
Material	Cast-in-place concrete							Count	4.00	
Type	Reinforced concrete							Quantity	89.600 (Sq.m)	
Env't	Benign <input type="checkbox"/> Moderate <input checked="" type="checkbox"/> Severe <input type="checkbox"/>							Not Inspected	<input type="checkbox"/>	
Location	All Quadrants						Description			
Condition Data	Unit	Excellent	Good	Fair	Poor	V. Poor	Perform. Deficiencies	Maintenance Needs		
	Sq.m	0.000	89.600	0.000	0.000					

Comments

CR = 1

Narrow map cracking.

Performance Deficiencies

0-None

4

Bridge Inspection Form

Struct. ID 03-03 B0380

Element Data

Group	Attachments, Signs, and Utilities						15	Length	N/A	0.00 (m)
Element	Signs							Width	N/A	0.00 (m)
Span Num								Height	N/A	0.00 (m)
Material	N/A							Count	N/A	2.00
Type	N/A							Quantity	2.000 (Each)	
Env't	Benign <input type="checkbox"/> Moderate <input type="checkbox"/> Severe <input type="checkbox"/>							Not Inspected	<input type="checkbox"/>	
Location	North and South Sides						Description			
Condition Data	Unit	Excellent	Good	Fair	Poor	V. Poor	Perform. Deficiencies	Maintenance Needs		
	Each	0.000	2.000	0.000	0.000					

Comments

CR = 1

Minor collision damage to sign walkway noted.

Performance Deficiencies

0-None

5

Group	Attachments, Signs, and Utilities						14	Length	N/A	0.00 (m)
Element	Utilities							Width	N/A	0.00 (m)
Span Num								Height	N/A	0.00 (m)
Material	N/A							Count	N/A	1.00
Type	N/A							Quantity	1.000 (Each)	
Env't	Benign <input type="checkbox"/> Moderate <input type="checkbox"/> Severe <input type="checkbox"/>							Not Inspected	<input type="checkbox"/>	
Location	North Side						Description			
Condition Data	Unit	Excellent	Good	Fair	Poor	V. Poor	Perform. Deficiencies	Maintenance Needs		
	Each	0.000	1.000	0.000	0.000					

Comments

CR = 1

Light corrosion.

Performance Deficiencies

0-None

6

Bridge Inspection Form

Struct. ID 03-03 B0380

Element Data

Group	Beams/MLE's						2	Length	9.30 (m)
Element	Floor Beams							Width	0.25 (m)
Span Num								Height	0.60 (m)
Material	Steel							Count	25.00
Type	I type							Quantity	453.375 (Sq.m)
Env't	Benign <input checked="" type="checkbox"/> Moderate <input type="checkbox"/> Severe <input type="checkbox"/>							Not Inspected	<input type="checkbox"/>
Location	Between Girders						Description		
Condition Data	Unit	Excellent	Good	Fair	Poor	V. Poor	Perform. Deficiencies	Maintenance Needs	
	Sq.m	0.000	453.375	0.000	0.000				

Comments

CR = 1

Light corrosion.

Performance Deficiencies

0-None

7

Group	Beams/MLE's						1	Length	23.00 (m)
Element	Girders							Width	0.45 (m)
Span Num								Height	2.50 (m)
Material	Steel							Count	2.00
Type	I type							Quantity	292.100 (Sq.m)
Env't	Benign <input checked="" type="checkbox"/> Moderate <input type="checkbox"/> Severe <input type="checkbox"/>							Not Inspected	<input type="checkbox"/>
Location	All						Description		
Condition Data	Unit	Excellent	Good	Fair	Poor	V. Poor	Perform. Deficiencies	Maintenance Needs	
	Sq.m	0.000	291.100	1.000	0.000				

Comments

CR = 1

Light corrosion, minor impact damage on bottom flange over NBL.

Performance Deficiencies

0-None

8

Bridge Inspection Form

Struct. ID 03-03 B0380

Element Data

Group	Beams/MLE's						12	Length	0.60 (m)
Element	Stringers							Width	0.10 (m)
Span Num								Height	0.50 (m)
Material	Steel							Count	48.00
Type	I type							Quantity	48.000 (Each)
Env't	Benign <input checked="" type="checkbox"/> Moderate <input type="checkbox"/> Severe <input type="checkbox"/>							Not Inspected	<input type="checkbox"/>
Location	On Floor Beams						Description		
Condition Data	Unit	Excellent	Good	Fair	Poor	V. Poor	Perform. Deficiencies	Maintenance Needs	
	Each	0.000	48.000	0.000	0.000				

Comments

CR = 1

Light corrosion.

Performance Deficiencies

0-None

9

Group	Coatings						10	Length	N/A 0.00 (m)
Element	Structural Steel							Width	N/A 0.00 (m)
Span Num								Height	N/A 0.00 (m)
Material	N/A							Count	N/A 0.00
Type	Red lead primer/alkyd							Quantity	760.000 (Sq.m)
Env't	Benign <input type="checkbox"/> Moderate <input type="checkbox"/> Severe <input checked="" type="checkbox"/>							Not Inspected	<input type="checkbox"/>
Location	Girders						Description		
Condition Data	Unit	Excellent	Good	Fair	Poor	V. Poor	Perform. Deficiencies	Maintenance Needs	
	Sq.m	0.000	490.002	269.998	0.000				

Comments

CR = 1

Breakdown of coating noted.

Performance Deficiencies

0-None

10

Bridge Inspection Form

Struct. ID 03-03 B0380

Element Data

Group	Decks						11	Length	23.10 (m)
Element	Soffit - Thick Slab							Width	9.30 (m)
Span Num								Height	N/A 0.00 (m)
Material	Cast-in-place concrete							Count	N/A 1.00
Type	N/A							Quantity	214.830 (Sq.m)
Env't	Benign <input checked="" type="checkbox"/> Moderate <input type="checkbox"/> Severe <input type="checkbox"/>							Not Inspected	<input type="checkbox"/>
Location	Underside of Deck						Description		
Condition Data	Unit	Excellent	Good	Fair	Poor	V. Poor	Perform. Deficiencies	Maintenance Needs	
	Sq.m	0.000	209.830	5.000	0.000				

Comments

CR = 1

Light to moderate corrosion.

Performance Deficiencies

0-None

11

Group	Embankments & Streams						7	Length	N/A 0.00 (m)
Element	Embankments							Width	N/A 0.00 (m)
Span Num								Height	N/A 0.00 (m)
Material	N/A							Count	N/A 4.00
Type	N/A							Quantity	4.000 (Each)
Env't	Benign <input type="checkbox"/> Moderate <input type="checkbox"/> Severe <input type="checkbox"/>							Not Inspected	<input type="checkbox"/>
Location	All Quadrants						Description		
Condition Data	Unit	Excellent	Good	Fair	Poor	V. Poor	Perform. Deficiencies	Maintenance Needs	
	Each	0.000	4.000	0.000	0.000				

Comments

CR = 1

Performance Deficiencies

0-None

12

Bridge Inspection Form

Struct. ID 03-03 B0380

Element Data

Group	Embankments & Streams						8	Length	N/A	0.00 (m)
Element	Slope protection							Width	N/A	0.00 (m)
Span Num								Height	N/A	0.00 (m)
Material	N/A							Count	N/A	4.00
Type	Vegetation							Quantity	4.000 (Each)	
Env't	Benign <input type="checkbox"/> Moderate <input type="checkbox"/> Severe <input type="checkbox"/>							Not Inspected	<input type="checkbox"/>	
Location	All Quadrants						Description			
Condition Data	Unit	Excellent	Good	Fair	Poor	V. Poor	Perform. Deficiencies	Maintenance Needs		
	Each	0.000	4.000	0.000	0.000					

Comments

CR = 1

Performance Deficiencies

0-None

13

Group	Foundations						9	Length	N/A	0.00 (m)
Element	Foundation (below ground level)							Width	N/A	0.00 (m)
Span Num								Height	N/A	0.00 (m)
Material	Unknown							Count	N/A	0.00
Type	Unknown							Quantity	1.000 (Sq.m)	
Env't	Benign <input type="checkbox"/> Moderate <input type="checkbox"/> Severe <input type="checkbox"/>							Not Inspected	<input type="checkbox"/>	
Location	Below Abutments						Description			
Condition Data	Unit	Excellent	Good	Fair	Poor	V. Poor	Perform. Deficiencies	Maintenance Needs		
	Sq.m	0.000	1.000	0.000	0.000					

Comments

CR = 1

Limited inspection.

Performance Deficiencies

0-None

14

Bridge Inspection Form

Struct. ID 03-03 B0380

Element Data

Group	Sidewalks/curbs					13	Length	21.30 (m)
Element	Sidewalk and medians						Width	0.78 (m)
Span Num							Height	0.00 (m)
Material	Cast-in-place concrete						Count	2.00
Type	N/A						Quantity	33.228 (Sq.m)
Env't	Benign <input checked="" type="checkbox"/> Moderate <input type="checkbox"/> Severe <input type="checkbox"/>						Not Inspected	<input checked="" type="checkbox"/>
Location	North Side and South Side					Description		
Condition Data	Unit	Excellent	Good	Fair	Poor	V. Poor	Perform. Deficiencies	Maintenance Needs
	Sq.m	0.000	31.228	1.000	1.000			

Comments

CR = 5

Trainmen's walk in Northeast quadrant is not welded to the support bracket. Condition quantities and comments carried forward from previous inspection.

Maintenance Needs

17-Other

Need Timing

2 Years

Performance Deficiencies

0-None

Bridge Inspection Form

Struct. ID 03-03 B0380

Recommended Work (Element Level)

Element	Repair / Rehabilitation	Time					Estimated Cost (\$)
		None	Urgent	< 1 year	1 - 5 year	6 - 10 year	
Abutments / Abutment walls / Conventional closed					X		5,000
Total Cost							5,000

Recommended Work (Structure Level)

Associated Work	Comments	Estimated Cost (\$)
Approaches		
Detours		
Other		
Traffic Control		
Utilities		
Total Cost		
Grand Total Cost:		\$5,000

York Region

Bridge Inspection Form

Struct. ID	03-03 B0380
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Description

South elevation, general photo

Elem Grp/Class

Elem Type

Sub Element

Material Type

Locator

Defect Descript1

Defect Descript2

Defect

Other

File Name	DSCN7303.JPG
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Description

Southeast wingwall

Elem Grp/Class

Elem Type

Sub Element

Material Type

Locator

Defect Descript1

Defect Descript2

Defect

Other

Abutments/Abutment walls

Conventional closed

Cast-in-place concrete

South

File Name	DSCN7304.JPG
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Bridge Inspection Form

Struct. ID 03-03 B0380



Description

West abutment, narrow map crack/stained crack

Elem Grp/Class	Abutments/Abutment walls
Elem Type	Conventional closed
Sub Element	
Material Type	Cast-in-place concrete
Locator	West
Defect Descript1	
Defect Descript2	
Defect	
Other	

File Name DSCN7306.JPG



Description

West abutment, narrow crack

Elem Grp/Class	Abutments/Abutment walls
Elem Type	Conventional closed
Sub Element	
Material Type	Cast-in-place concrete
Locator	West
Defect Descript1	
Defect Descript2	
Defect	
Other	

File Name DSCN7308.JPG

York Region

Bridge Inspection Form

Struct. ID 03-03 B0380



Description

General photo

Elem Grp/Class

Beams/MLE's/Girders

Elem Type

I type

Sub Element

Material Type

Steel

Locator

Defect Descript1

Defect Descript2

Defect

Other

File Name DSCN7310.JPG



Description

West abutment, general photo

Elem Grp/Class

Abutments/Abutment walls

Elem Type

Conventional closed

Sub Element

Material Type

Cast-in-place concrete

Locator

West

Defect Descript1

Defect Descript2

Defect

Other

File Name DSCN7318.JPG

Bridge Inspection Form

Struct. ID 03-03 B0380



Description

East abutment, wide crack

Elem Grp/Class	Abutments/Abutment walls
Elem Type	Conventional closed
Sub Element	
Material Type	Cast-in-place concrete
Locator	East
Defect Descript1	Poor condition
Defect Descript2	
Defect	Crack
Other	

File Name DSCN7322.JPG



Description

South girder impact damage, northbound lane

Elem Grp/Class	Beams/MLE's/Girders
Elem Type	I type
Sub Element	
Material Type	Steel
Locator	South
Defect Descript1	
Defect Descript2	
Defect	
Other	

File Name DSCN7327.JPG

Bridge Inspection Form

Struct. ID	03-03 B0380
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Summary Action Report
Structure 03-06 B0400 (MTO Site No. 037-1103-)
Rouge River Bridge

Inspection Date 09/18/2014 mm/dd/yyyy

Condition Index Value (BCI) **73.3**

Next Biennial Inspection 09/18/2016 mm/dd/yyyy

Current Rep. Value **\$3,193,950**

Additional Investigations

Investigation	Priority	Cost	Investigation	Priority	Cost
No additional investigations required.					

Performance Deficiencies

No Performance Deficiencies

Maintenance Needs

Element Group	Element	Maintenance Required	Priority	Comment
Decks	Wearing Surface	Bridge Surface Repair	Urgent	Patch pot hole
Approaches	Wearing Surface	Bridge Surface Repair	Urgent	Fill pothole
Barriers	Railing Systems	Bridge Handrail Maintenance	2 yr	Secure end-caps

Repair/Rehabilitation

Element Group	Element		Repair/Rehabilitation	Priority	Cost
Decks	Wearing Surface		Rehab Seal cracks and patch pot hole	1-5 yrs	\$5,000
Approaches	Wearing Surface		Rehab Seal cracks	1-5 yrs	\$5,000
Sidewalks/curbs	Sidewalks/Medians		Rehab Patch repair	6-10 yrs	\$5,000
Barriers	Barrier/Parapet Walls	Interior	Rehab Patch repair	6-10 yrs	\$5,000
Joints	Concrete End Dams		Rehab Patch repair	1-5 yrs	\$5,000
Joints	Seals/Sealants		Rehab Replace expansion joint seals	1-5 yrs	\$30,000
Abutments	Wingwalls		Rehab Patch repair	6-10 yrs	\$2,000
Abutments	Abutment Walls		Rehab Seal cracks and patch repair	6-10 yrs	\$2,000
Abutments	Ballast Walls		Rehab Patch repair	6-10 yrs	\$1,000
Beams/MLC's	Girders	End	Rehab Patch repair	1-5 yrs	\$35,000
Beams/MLC's	Girders	Middle	Rehab Patch repair	1-5 yrs	\$5,000
Embankments & Streams	Slope Protection		Rehab Restore slope protection	1-5 yrs	\$5,000
Approaches	Approach Guiderail	Buried En	Rehab Upgrade guiderail end treatments	1-5 yrs	\$30,000
Approaches	Approach Guiderail	Terminal	Rehab Upgrade end treatments	1-5 yrs	\$30,000
Total Repair/Rehabilitation Cost					\$165,000

Region of York	100%	\$228,000.00	Total Associated Work Cost	\$63,000
	0%	\$0.00	Total Cost	\$228,000

Overall Comments

1 - 5 years: Seal cracks in asphalt concrete end dams, girders, replace expansion joint seals, upgrade guiderail end treatments.

6 - 10 years: Repair sidewalk, concrete end post, wingwalls, abutment and ballast wall.

Municipal Structure Inspection Form

Structure Number:

03-06 B0400

Inventory Data

Structure Name	Rouge River Bridge		Hwy No.	3	Key Photo		
Cross. Type Over	<input checked="" type="checkbox"/> Road <input type="checkbox"/> Rail <input type="checkbox"/> Ped <input type="checkbox"/> Nav. Water <input type="checkbox"/> Non-Nav. Wat <input type="checkbox"/> Other						
Cross. Type Under	<input type="checkbox"/> Road <input type="checkbox"/> Rail <input type="checkbox"/> Ped <input type="checkbox"/> Nav. Water <input type="checkbox"/> Non-Nav. Wat <input checked="" type="checkbox"/> Other						
Road Name	Kennedy Road						
Structure Location	0.4 km North of 7-Regional Road 7						
Latitude	43.86523	Longitude	-79.30437	Cur. Rep. Value	\$3,193,950		
Owner(s)/ % Share	Region of York		100 %	**			
			0 %	Heritage Status	Not Considered for Designation		
MTO Region	Central		Road Side Env.	Urban			
MTO District	Central		Road Class	Arterial			
Old County	York		Lane Type				
Geographic Twp.			Posted Speed	60	No. of Lanes	4	
Structure Type	Box Beams or Girders		AADT	49660	Pct. Trucks	4	
Structure Material	Prestressed Precast Concrete		Inspection Route Sequence				
Articulation	Simply Supported		Interchange Number				
Total Deck Length	31.7 m	Road Width	17.3 m	Interchange Structure Number			
Overall Width	21 m	Vert. Clear.	0 m	Detour Length	0 km	Skew Angle	0 °
Total Deck Area	665.70 m ²	No. of Spans	1	Fill on Structure	0 m	Struct. Dir.	North/South
Special Routes	<input type="checkbox"/> Transit <input checked="" type="checkbox"/> School <input type="checkbox"/> Truck <input type="checkbox"/> Bicycle		Insp. Duration	2 hr			

** Current Replacement Value is based on in kind replacement of the existing structure and calculated using benchmark costs. Capital planning should consider site specific cost factors and requirements for widening or lengthening of the structure.

Spans

Span Name	Span Length	Span Name	Span Length
Span 1	30.0 m		

Historical Data

Year Built	1981	yyyy	Year of Last Major Rehab		yyyy
Last OSIM Inspection	09/24/2012	mm/dd/yyyy	Contract No. When Built		
Last Enhanced OSIM		mm/dd/yyyy	Last Evaluation		mm/dd/yyyy
Last Enhanced Access		mm/dd/yyyy	Current Load Limit	<input type="checkbox"/> t	<input type="checkbox"/> t
Last Underwater Insp.		mm/dd/yyyy	Load Limit By-Law No.		mm/dd/yyyy
Last Condition Survey		mm/dd/yyyy	By-Law Expiry Date		mm/dd/yyyy

Rehab History

Municipal Structure Inspection Form**Structure Number:****03-06 B0400****Field Inspection Information:**

Inspection Date	<input type="text" value="09/18/2014"/> mm/dd/yyyy	<input type="checkbox"/> Multi Day Inspection	<input checked="" type="checkbox"/> OSIM	<input type="checkbox"/> Enhanced OSIM	BCI	<input type="text" value="73.3"/>
Inspector	<input type="text" value="T. Fediw"/>		Eng. Responsible <input type="text" value="D. L. Baxter, P. Eng."/>			
Others in Party	<input type="text" value="P. Adams"/> <input type="text"/> <input type="text"/>					
Access Equip.	<input type="checkbox"/> Lift <input type="checkbox"/> Ladder <input type="checkbox"/> Boat <input type="checkbox"/> Bridge Master Other <input type="text"/>					
Other Equip.	<input type="text" value="Camera, Hammer, Other Hand Tools"/>					
Weather	<input type="text" value="Clear"/>		Temperature	<input type="text" value="10"/> °C		

Additional Investigations Required:

Investigation	Priority			Estimated Cost
	None	Normal	Urgent	
Detailed Deck Condition Survey	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text" value="\$0"/>
Delamination Survey of Asphalt-Covered Deck	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text" value="\$0"/>
Concrete Substructure Condition Survey	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text" value="\$0"/>
Detailed Coating Condition Survey	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text" value="\$0"/>
Detailed Timber Investigation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text" value="\$0"/>
Post-Tensioned Strand Investigation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text" value="\$0"/>
Underwater Investigation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text" value="\$0"/>
Fatigue Investigation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text" value="\$0"/>
Seismic Investigation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text" value="\$0"/>
Structure Evaluation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text" value="\$0"/>
Monitoring of Deformations, Movements and Settlements	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text" value="\$0"/>
Monitoring of Crack Widths	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text" value="\$0"/>
Investigation Notes				Total Cost <input type="text" value="\$0"/>

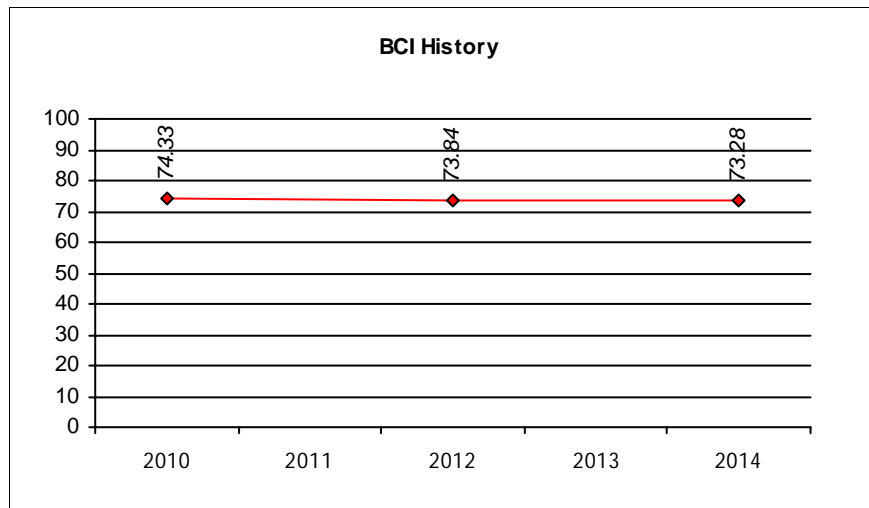
Detailed deck condition survey in 2012.

Overall Structure Notes:

Recommended Work on Structure	<input type="checkbox"/> None	<input checked="" type="checkbox"/> Rehab	<input type="checkbox"/> Replace	<input type="checkbox"/> Remove
Timing of Recommended Work	<input type="checkbox"/> None	<input type="checkbox"/> Now	<input checked="" type="checkbox"/> 1 to 5 years	<input type="checkbox"/> 6 to 10 years
Overall Comments	1 - 5 years: Seal cracks in asphalt concrete end dams, girders, replace expansion joint seals, upgrade guiderail end treatments. 6 - 10 years: Repair sidewalk, concrete end post, wingwalls, abutment and ballast wall.			
BCI Change Justification	<input type="text"/>			
Next Inspection	<input type="text" value="09/18/2016"/> mm/dd/yyyy		Estimated Load Limit	<input type="text"/> t <input type="text"/> t <input type="text"/> t

Municipal Structure Inspection Form**Structure Number:****03-06 B0400****BCI History**

Insp. Date	BCI	Inspector
11-Nov-10	74.33	J.M. Youk
24-Sep-12	73.84	D. Kelly
18-Sep-14	73.28	T. Fediw



All BCI values are based on the MTO BCI methodology published in April 2008. As a result, BCI values for 2007 and earlier are approximate only, with potential discrepancies resulting from changes (over time) in the way quantities for certain elements are calculated.

Standard Codes**Suspected Performance Deficiencies**

- 00 None
- 01 Load carrying capacity
- 02 Excessive deformations (deflections/rotations)
- 03 Continuing settlement
- 04 Continuing movements
- 05 Seized bearings

- 06 Bearing not uniformly loaded/unstable
- 07 Jammed expansion joint
- 08 Pedestrian/vehicular hazard
- 09 Rough riding surface
- 10 Surface ponding
- 11 Deck drainage

- 12 Slippery surfaces
- 13 Flooding/channel blockage
- 14 Undermining of foundation
- 15 Unstable embankments
- 16 Other

Maintenance Needs

- 01 Lift and Swing Bridge Maintenance
- 02 Bridge Cleaning
- 03 Bridge Handrail Maintenance
- 04 Painting Steel Bridge Structures
- 05 Bridge Deck Joint Repair
- 06 Bridge Bearing Maintenance

- 07 Repair to Structural Steel
- 08 Repair of Bridge Concrete
- 09 Repair of Bridge Timber
- 10 Bailey Bridges - Maintenance
- 11 Animal/Pest Control
- 12 Bridge Surface Repair

- 13 Erosion Control at Bridges
- 14 Concrete Sealing
- 15 Rout and Seal
- 16 Bridge deck Drainage
- 17 Scaling (Loose Concrete or ACR Steel)
- 18 Other

Municipal Structure Inspection Form

Structure Number:

03-06 B0400

Element Data

Decks - Wearing Surface

Element Group	Decks				Length	31.70	Width	17.30
Element Name	Wearing Surface				Height	0.00	Count	0.00
Location	Above Deck				Total Quantity		548.41	
Material	Asphalt				<input type="checkbox"/> Limited Inspection			
Element Type					Environment			
Protection System	None				<input type="checkbox"/> Benign			
Condition Data	Units	Excell.	Good	Fair	Poor	<input type="checkbox"/> Moderate		
	sq. m	0.00	538.41	6.00	4.00	<input checked="" type="checkbox"/> Severe		

Comments

Pothole, narrow to wide cracks, sealed cracks, light to medium ravelling.

Performance Deficiencies

None

Maintenance Needs

Bridge Surface Repair

Priority

Urgent

Comments

Patch pot hole

Rehab/Repair Recommendations

Priority

1-5 yrs

Cost

\$5,000

Comments

Seal cracks and patch pot hole

Decks - Deck Top

Element Group	Decks				Length	31.70	Width	21.00
Element Name	Deck Top				Height	0.00	Count	0.00
Location	Below Roadway				Total Quantity		665.70	
Material	Cast-in-place concrete				<input type="checkbox"/> Limited Inspection			
Element Type					Environment			
Protection System	None				<input type="checkbox"/> Benign			
Condition Data	Units	Excell.	Good	Fair	Poor	<input checked="" type="checkbox"/> Moderate		
	sq. m	0.00	653.70	11.00	1.00	<input type="checkbox"/> Severe		

Comments

Performance Deficiencies

None

Maintenance Needs

Priority

Comments

Rehab/Repair Recommendations

Priority

Cost

Comments

Municipal Structure Inspection Form

Structure Number:

03-06 B0400

Approaches - Wearing Surface

Element Group	Approaches				Length	6.00	Width	17.30
Element Name	Wearing Surface				Height	0.00	Count	2.00
Location	North and South				Total Quantity		208.00	
Material	Asphalt				<input type="checkbox"/> Limited Inspection			
Element Type					Environment			
Protection System	None				<input type="checkbox"/> Benign			
Condition Data	Units	Excell.	Good	Fair	Poor	<input type="checkbox"/> Moderate		
	sq. m	0.00	204.00	2.00	2.00	<input checked="" type="checkbox"/> Severe		

Comments

Narrow to wide cracks, pothole, narrow random crack.

Performance Deficiencies	Maintenance Needs	Priority	Comments
None	Bridge Surface Repair	Urgent	Fill pothole

Rehab/Repair Recommendations	Priority	Cost	Comments
Rehab	1-5 yrs	\$5,000	Seal cracks

Approaches - Approach Slabs

Element Group	Approaches				Length	6.00	Width	17.30
Element Name	Approach Slabs				Height	0.00	Count	2.00
Location	North and South				Total Quantity		207.60	
Material	Cast-in-place concrete				<input type="checkbox"/> Limited Inspection			
Element Type					Environment			
Protection System	None				<input type="checkbox"/> Benign			
Condition Data	Units	Excell.	Good	Fair	Poor	<input checked="" type="checkbox"/> Moderate		
	sq. m	0.00	204.60	2.00	1.00	<input type="checkbox"/> Severe		

Comments

Performance Deficiencies	Maintenance Needs	Priority	Comments
None			

Rehab/Repair Recommendations	Priority	Cost	Comments

Municipal Structure Inspection Form

Structure Number:

03-06 B0400

Sidewalks/curbs - Sidewalks/Medians

Element Group	Sidewalks/curbs				Length	43.70	Width	1.85
Element Name	Sidewalks/Medians				Height	0.00	Count	2.00
Location	East and West				Total Quantity 161.69			
Material	Cast-in-place concrete				<input type="checkbox"/> Limited Inspection			
Element Type					Environment			
Protection System	None				<input type="checkbox"/> Benign			
Condition Data	Units	Excell.	Good	Fair	Poor	<input type="checkbox"/> Moderate		
	sq. m	0.00	157.69	3.00	1.00	<input checked="" type="checkbox"/> Severe		

Comments

Abrasions, severe spall, asphalt patches, narrow to medium cracks.

Performance Deficiencies

None

Maintenance Needs

Priority Comments

Rehab/Repair Recommendations

Priority

Cost

Comments

Rehab	6-10 yrs	\$5,000	Patch repair
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Barriers - Railing Systems

Element Group	Barriers				Length	36.80	Width	0.00
Element Name	Railing Systems				Height	0.00	Count	2.00
Location	East and West				Total Quantity 73.60			
Material	Aluminum				<input type="checkbox"/> Limited Inspection			
Element Type	4 Rail Metal Railing - Aluminum				Environment			
Protection System	None				<input type="checkbox"/> Benign			
Condition Data	Units	Excell.	Good	Fair	Poor	<input type="checkbox"/> Moderate		
	sq. m	0.00	67.60	5.00	1.00	<input checked="" type="checkbox"/> Severe		

Comments

Abrasion, unsecured and missing end-caps.

Performance Deficiencies

None

Maintenance Needs

Priority

Comments

Bridge Handrail Maintenance	2 yr	Secure end-caps
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Rehab/Repair Recommendations

Priority

Cost

Comments

Municipal Structure Inspection Form

Structure Number:

03-06 B0400

Barriers - Posts

Element Group	Barriers				Length	0.00	Width	0.00
Element Name	Posts				Height	0.00	Count	34.00
Location	East and West				Total Quantity		34.00	
Material	Aluminum				<input type="checkbox"/> Limited Inspection			
Element Type					Environment			
Protection System	None				<input type="checkbox"/> Benign			
Condition Data	Units	Excell.	Good	Fair	Poor	<input type="checkbox"/> Moderate		
	Each	0.00	34.00	0.00	0.00	<input checked="" type="checkbox"/> Severe		

Comments

Performance Deficiencies	Maintenance Needs	Priority	Comments
None			

Rehab/Repair Recommendations	Priority	Cost	Comments

Barriers - Barrier/Parapet Walls

Element Group	Barriers				Length	1.20	Width	0.00
Element Name	Barrier/Parapet Walls		Interior		Height	1.50	Count	4.00
Location	End Posts				Total Quantity		7.20	
Material	Cast-in-place concrete				<input type="checkbox"/> Limited Inspection			
Element Type					Environment			
Protection System	None				<input type="checkbox"/> Benign			
Condition Data	Units	Excell.	Good	Fair	Poor	<input type="checkbox"/> Moderate		
	sq. m	0.00	5.20	1.00	1.00	<input checked="" type="checkbox"/> Severe		

Comments

Spall and delamination at North end posts.

Performance Deficiencies	Maintenance Needs	Priority	Comments
None			

Rehab/Repair Recommendations	Priority	Cost	Comments
Rehab	6-10 yrs	\$5,000	Patch repair

Municipal Structure Inspection Form

Structure Number:

03-06 B0400

Barriers - Barrier/Parapet Walls

Element Group	Barriers				Length	1.20	Width	0.00
Element Name	Barrier/Parapet Walls		Exterior		Height	1.15	Count	4.00
Location	End Posts				Total Quantity		5.52	
Material	Cast-in-place concrete				<input type="checkbox"/> Limited Inspection			
Element Type					Environment			
Protection System	None				<input type="checkbox"/> Benign			
Condition Data	Units	Excell.	Good	Fair	Poor	<input checked="" type="checkbox"/> Moderate		
	sq. m	0.00	5.52	0.00	0.00	<input type="checkbox"/> Severe		

Comments

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Performance Deficiencies

None

Maintenance Needs

Priority Comments

Rehab/Repair Recommendations

Priority

Cost

Comments

Joints - Concrete End Dams

Element Group	Joints				Length	17.30	Width	0.36
Element Name	Concrete End Dams				Height	0.00	Count	4.00
Location	North and South				Total Quantity		24.91	
Material	Cast-in-place concrete				<input type="checkbox"/> Limited Inspection			
Element Type					Environment			
Protection System	None				<input type="checkbox"/> Benign			
Condition Data	Units	Excell.	Good	Fair	Poor	<input type="checkbox"/> Moderate		
	sq. m	0.00	19.91	3.00	2.00	<input checked="" type="checkbox"/> Severe		

Comments

Severe spall, medium to wide cracks, delaminations, asphalt patches.

Performance Deficiencies

None

Maintenance Needs

Priority Comments

Rehab/Repair Recommendations

Priority

Cost

Comments

Rehab

1-5 yrs

\$5,000

Patch repair

Municipal Structure Inspection Form

Structure Number:

03-06 B0400

Joints - Armouring/Retaining Devices

Element Group	Joints				Length	17.30	Width	0.09
Element Name	Armouring/Retaining Devices				Height	0.00	Count	4.00
Location	North and South				Total Quantity		69.20	
Material	Steel				<input type="checkbox"/> Limited Inspection			
Element Type					Environment			
Protection System	None				<input type="checkbox"/> Benign			
Condition Data	Units	Excell.	Good	Fair	Poor	<input type="checkbox"/> Moderate		
	m	0.00	69.20	0.00	0.00	<input checked="" type="checkbox"/> Severe		

Comments

Scrapes.

Performance Deficiencies

None

Maintenance Needs

Priority Comments

Rehab/Repair Recommendations

Priority

Cost

Comments

Joints - Seals/Sealants

Element Group	Joints				Length	17.30	Width	0.00
Element Name	Seals/Sealants				Height	0.00	Count	2.00
Location	North and South				Total Quantity		2.00	
Material	Other				<input type="checkbox"/> Limited Inspection			
Element Type	Compression Seal				Environment			
Protection System	None				<input type="checkbox"/> Benign			
Condition Data	Units	Excell.	Good	Fair	Poor	<input type="checkbox"/> Moderate		
	Each	0.00	0.00	0.00	2.00	<input checked="" type="checkbox"/> Severe		

Comments

Gaps: North = 38mm; South = 15mm. Both seals are cracked and leaking.

Performance Deficiencies

None

Maintenance Needs

Priority Comments

Rehab/Repair Recommendations

Priority

Cost

Comments

Rehab

1-5 yrs

\$30,000

Replace expansion joint seals

Municipal Structure Inspection Form

Structure Number:

03-06 B0400

Abutments - Wingwalls

Element Group	Abutments				Length	4.60	Width	0.00
Element Name	Wingwalls				Height	1.40	Count	4.00
Location	All Quadrants				Total Quantity		25.76	
Material	Cast-in-place concrete				<input type="checkbox"/> Limited Inspection			
Element Type					Environment			
Protection System	None				<input type="checkbox"/> Benign			
Condition Data	Units	Excell.	Good	Fair	Poor	<input checked="" type="checkbox"/> Moderate		
	sq. m	0.00	22.76	2.00	1.00	<input type="checkbox"/> Severe		

Comments

Narrow stained crack, wet areas, efflorescence deposits, spall in Northwest quadrant.

Performance Deficiencies

None

Maintenance Needs

Priority Comments

Rehab/Repair Recommendations

Priority

Cost

Comments

Rehab

6-10 yrs

\$2,000

Patch repair

Abutments - Abutment Walls

Element Group	Abutments				Length	18.00	Width	0.00
Element Name	Abutment Walls				Height	2.00	Count	2.00
Location	North and South				Total Quantity		72.00	
Material	Cast-in-place concrete				<input type="checkbox"/> Limited Inspection			
Element Type	Conventional Closed				Environment			
Protection System	None				<input checked="" type="checkbox"/> Benign			
Condition Data	Units	Excell.	Good	Fair	Poor	<input type="checkbox"/> Moderate		
	sq. m	0.00	70.00	1.00	1.00	<input type="checkbox"/> Severe		

Comments

Wide crack, and delamination on the North abutment.

Performance Deficiencies

None

Maintenance Needs

Priority Comments

Rehab/Repair Recommendations

Priority

Cost

Comments

Rehab

6-10 yrs

\$2,000

Seal cracks and patch repair

Municipal Structure Inspection Form

Structure Number:

03-06 B0400

Abutments - Bearings

Element Group	Abutments				Length	0.00	Width	0.00
Element Name	Bearings		Height	0.00	Count	28.00		
Location	North Abutment				Total Quantity		28.00	
Material	Elastomeric				<input type="checkbox"/> Limited Inspection			
Element Type	Elastomeric pad				Environment			
Protection System	None				<input type="checkbox"/> Benign			
Condition Data	Units	Excell.	Good	Fair	Poor	<input checked="" type="checkbox"/> Moderate		
	Each	0.00	28.00	0.00	0.00	<input type="checkbox"/> Severe		

Comments

Performance Deficiencies

None

Maintenance Needs

Priority Comments

Rehab/Repair Recommendations

Priority

Cost

Comments

Abutments - Ballast Walls

Element Group	Abutments				Length	18.00	Width	0.00
Element Name	Ballast Walls		Height	1.00	Count	2.00		
Location	North and South				Total Quantity		36.00	
Material	Cast-in-place concrete				<input type="checkbox"/> Limited Inspection			
Element Type					Environment			
Protection System	None				<input type="checkbox"/> Benign			
Condition Data	Units	Excell.	Good	Fair	Poor	<input checked="" type="checkbox"/> Moderate		
	sq. m	0.00	33.00	2.00	1.00	<input type="checkbox"/> Severe		

Comments

Stained areas, wet areas, spall in Northwest quadrant.

Performance Deficiencies

None

Maintenance Needs

Priority Comments

Rehab/Repair Recommendations

Priority

Cost

Comments

Rehab

6-10 yrs

\$1,000

Patch repair

Municipal Structure Inspection Form

Structure Number:

03-06 B0400

Beams/MLE's - Girders

Element Group	Beams/MLE's				Length	2.00	Width	1.22
Element Name	Girders	End			Height	1.00	Count	28.00
Location	Below Deck				Total Quantity		180.32	
Material	Precast concrete				<input type="checkbox"/> Limited Inspection			
Element Type	Box/Trapezoidal				Environment			
Protection System	None				<input type="checkbox"/> Benign			
Condition Data	Units	Excell.	Good	Fair	Poor	<input checked="" type="checkbox"/> Moderate		
	sq. m	0.00	166.32	7.00	7.00	<input type="checkbox"/> Severe		

Comments

Spall of the North girders at the exterior, delamination of the bottom flanges, exposed corroded rebars.

Performance Deficiencies

None

Maintenance Needs

Priority Comments

Rehab/Repair Recommendations

Priority

Cost

Comments

Rehab	1-5 yrs	\$35,000	Patch repair
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Beams/MLE's - Girders

Element Group	Beams/MLE's				Length	26.00	Width	1.27
Element Name	Girders	Middle			Height	1.00	Count	14.00
Location	Below Deck				Total Quantity		1190.28	
Material	Precast concrete				<input type="checkbox"/> Limited Inspection			
Element Type	Box/Trapezoidal				Environment			
Protection System	None				<input checked="" type="checkbox"/> Benign			
Condition Data	Units	Excell.	Good	Fair	Poor	<input type="checkbox"/> Moderate		
	sq. m	0.00	1188.28	1.00	1.00	<input type="checkbox"/> Severe		

Comments

Small spall near South end.

Performance Deficiencies

None

Maintenance Needs

Priority Comments

Rehab/Repair Recommendations

Priority

Cost

Comments

Rehab	1-5 yrs	\$5,000	Patch repair
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Municipal Structure Inspection Form

Structure Number:

03-06 B0400

Embankments & Streams - Embankments

Element Group	Embankments & Streams				Length	0.00	Width	0.00
Element Name	Embankments				Height	0.00	Count	6.00
Location	All Quadrants, In Front of Abutments				Total Quantity		6.00	
Material	Other				<input type="checkbox"/> Limited Inspection			
Element Type					Environment			
Protection System					<input type="checkbox"/> Benign			
Condition Data	Units	Excell.	Good	Fair	Poor	<input type="checkbox"/> Moderate		
	Each	0.00	6.00	0.00	0.00	<input type="checkbox"/> Severe		

Comments

Performance Deficiencies	Maintenance Needs	Priority	Comments
None			

Rehab/Repair Recommendations	Priority	Cost	Comments

Embankments & Streams - Slope Protection

Element Group	Embankments & Streams				Length	0.00	Width	0.00
Element Name	Slope Protection				Height	0.00	Count	4.00
Location	All Quadrants				Total Quantity		4.00	
Material	Vegetation				<input type="checkbox"/> Limited Inspection			
Element Type					Environment			
Protection System	None				<input type="checkbox"/> Benign			
Condition Data	Units	Excell.	Good	Fair	Poor	<input type="checkbox"/> Moderate		
	Each	0.00	4.00	0.00	0.00	<input type="checkbox"/> Severe		

Comments

Performance Deficiencies	Maintenance Needs	Priority	Comments
None			

Rehab/Repair Recommendations	Priority	Cost	Comments

Municipal Structure Inspection Form

Structure Number:

03-06 B0400

Embankments & Streams - Slope Protection

Element Group	Embankments & Streams					Length	0.00	Width	0.00
Element Name	Slope Protection					Height	0.00	Count	2.00
Location	In Front of Abutments					Total Quantity 2.00			
Material	Precast concrete					<input type="checkbox"/> Limited Inspection			
Element Type	Precast units					Environment			
Protection System	None					<input type="checkbox"/> Benign			
Condition Data	Units	Excell.	Good	Fair	Poor	<input type="checkbox"/> Moderate			
	Each	0.00	2.00	0.00	0.00	<input type="checkbox"/> Severe			

Comments

Missing blocks noted, gap between abutment and slope protection.

Performance Deficiencies

None

Maintenance Needs

Priority Comments

Rehab/Repair Recommendations

Priority

Cost

Comments

Rehab	1-5 yrs	\$5,000	Restore slope protection
-------	---------	---------	--------------------------

Abutments - Bearings

Element Group	Abutments					Length	0.00	Width	0.00
Element Name	Bearings					Height	0.00	Count	28.00
Location	South Abutment					Total Quantity 28.00			
Material	Elastomeric					<input type="checkbox"/> Limited Inspection			
Element Type	Elastomeric pad					Environment			
Protection System	None					<input type="checkbox"/> Benign			
Condition Data	Units	Excell.	Good	Fair	Poor	<input checked="" type="checkbox"/> Moderate			
	Each	0.00	28.00	0.00	0.00	<input type="checkbox"/> Severe			

Comments

Performance Deficiencies

None

Maintenance Needs

Priority Comments

Rehab/Repair Recommendations

Priority

Cost

Comments

Municipal Structure Inspection Form

Structure Number:

03-06 B0400

Foundations - Foundations (below ground level)

Element Group	Foundations				Length	0.00	Width	0.00
Element Name	Foundations (below ground level)				Height	0.00	Count	0.00
Location	At Abutments				Total Quantity 0.00			
Material	Unknown				<input checked="" type="checkbox"/> Limited Inspection			
Element Type					Environment			
Protection System					<input type="checkbox"/> Benign			
Condition Data	<i>Units</i>	<i>Excell.</i>	<i>Good</i>	<i>Fair</i>	<i>Poor</i>	<input type="checkbox"/> Moderate		
						<input type="checkbox"/> Severe		

Comments

Limited inspection.

Performance Deficiencies

None

Maintenance Needs

Priority Comments

Rehab/Repair Recommendations

Priority

Cost

Comments

Approaches - Approach Guiderail

Element Group	Approaches				Length	0.00	Width	0.00
Element Name	Approach Guiderail		Buried End		Height	0.00	Count	2.00
Location	Northeast and Southwest Quadrants				Total Quantity 2.00			
Material	Steel				<input type="checkbox"/> Limited Inspection			
Element Type	Steel Beam on Wood Posts				Environment			
Protection System	Hot dip galvanizing				<input type="checkbox"/> Benign			
Condition Data	<i>Units</i>	<i>Excell.</i>	<i>Good</i>	<i>Fair</i>	<i>Poor</i>	<input type="checkbox"/> Moderate		
	Each	0.00	2.00	0.00	0.00	<input checked="" type="checkbox"/> Severe		

Comments

Performance Deficiencies

None

Maintenance Needs

Priority Comments

Rehab/Repair Recommendations

Priority

Cost

Comments

Rehab

1-5 yrs

\$30,000

Upgrade guiderail end treatments

Municipal Structure Inspection Form

Structure Number:

03-06 B0400

Approaches - Approach Guiderail

Element Group	Approaches				Length	0.00	Width	0.00
Element Name	Approach Guiderail	Terminal End			Height	0.00	Count	2.00
Location	Northwest and Southeast Quadrants				Total Quantity		2.00	
Material	Steel				<input type="checkbox"/> Limited Inspection			
Element Type	Steel Beam on Wood Posts				Environment			
Protection System	Hot dip galvanizing				<input type="checkbox"/> Benign			
Condition Data	Units	Excell.	Good	Fair	Poor	<input type="checkbox"/> Moderate		
	Each	0.00	2.00	0.00	0.00	<input checked="" type="checkbox"/> Severe		
Comments								

Performance Deficiencies

None

Maintenance Needs

Priority Comments

Rehab/Repair Recommendations

Priority

Cost

Comments

Rehab

1-5 yrs

\$30,000

Upgrade end treatments

Municipal Structure Inspection Form**Structure Number:****03-06 B0400****Repair/Rehabilitation Required**

Element Group	Element		Repair/Rehabilitation	Priority	Cost
Abutments	Abutment Walls		Rehab	6-10 yrs	\$2,000
Approaches	Approach Guiderail	Terminal	Rehab	1-5 yrs	\$30,000
Approaches	Approach Guiderail	Buried E	Rehab	1-5 yrs	\$30,000
Abutments	Ballast Walls		Rehab	6-10 yrs	\$1,000
Barriers	Barrier/Parapet Walls	Interior	Rehab	6-10 yrs	\$5,000
Joints	Concrete End Dams		Rehab	1-5 yrs	\$5,000
Beams/MLE's	Girders	Middle	Rehab	1-5 yrs	\$5,000
Beams/MLE's	Girders	End	Rehab	1-5 yrs	\$35,000
Joints	Seals/Sealants		Rehab	1-5 yrs	\$30,000
Sidewalks/curbs	Sidewalks/Medians		Rehab	6-10 yrs	\$5,000
Embankments & Streams	Slope Protection		Rehab	1-5 yrs	\$5,000
Approaches	Wearing Surface		Rehab	1-5 yrs	\$5,000
Decks	Wearing Surface		Rehab	1-5 yrs	\$5,000
Abutments	Wingwalls		Rehab	6-10 yrs	\$2,000
Total Repair/Rehabilitation Cost					\$165,000

Associated Work

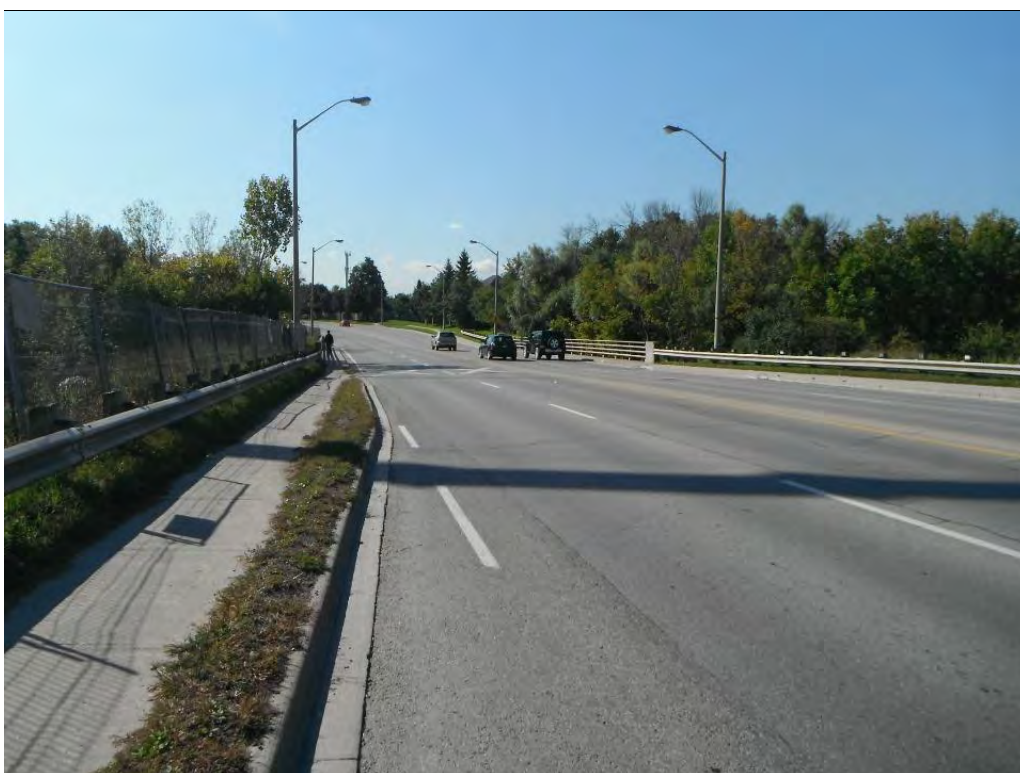
	Comments		Estimated Cost
Approaches			\$0
Detours			\$0
Traffic Control			\$10,000
Utilities			\$0
Right-of-Way			\$0
Environmental Study			\$0
Other			\$0
Contingencies		10 %	** \$18,000
Engineering		20 %	** \$35,000
Total Associated Work Cost			\$63,000
Total Repair/Rehabilitation Cost			\$165,000
Total Cost			\$228,000
Region of York Share @ 100%			\$228,000

** If based on a percentage calculated values rounded-up to the nearest thousand dollars.

Justification



Looking North at Bridge



Looking South at Bridge



East Elevation



West Elevation



Bent and Broken End Caps



Bent Hand Rail



Missing End Caps



Northeast End of Barrier Wall



Spall on Interior Barrier Wall



Severe Spall on Curb



Sealed and Unsealed Cracks on Surface



Sealed Crack on Deck Surface



Medium Crack on Concrete End Dam



North Expansion Joint



North Expansion Joint



Asphalt Adjacent to Expansion Joint



Pot Hole Adjacent to North Expansion Joint



Pot Holes at South Expansion Joint



Spall and Exposed Rebar at Expansion Joint



Typical Soffit



Delamination on Girder End



Spall on Girder End



Exterior Soffit



East Fascia



Spall on Abutment and Ballast Wall



Typical Bearing



Typical Bearing



Southeast Wingwall



Crack on Northeast Wingwall



Looking East at Dam



Spall on Sidewalk



Medium Cracks on Sidewalk



Spall on Sidewalk



Northwest End of Barrier Rail



Southeast End of Barrier Rail




Southwest End of Barrier Rail

York Region Bridge Inspection Form

Struct. ID 03-06 B0400

Inventory Data

Structure Name	Rouge River Bridge				
Structure Location	0.4 km North of 7-Regional Road 7				
Road Number	3	On <input checked="" type="checkbox"/>	Under <input type="checkbox"/>		
Road Name	Kennedy Road				
Watercourse Name					
Crossing Type:	Road <input type="checkbox"/>	Rail <input type="checkbox"/>	Water <input checked="" type="checkbox"/> Navigable waterway <input type="checkbox"/>		
	River <input type="checkbox"/>	Other <input type="checkbox"/>	Creek <input type="checkbox"/> Pedestrian <input type="checkbox"/>		
Hwy Direction	1-NORTH/SOUTH				
Owner Category					
Maint.Resp.		Northing	43.86523		
Region	York Region	Easting	-79.30437		
District	Southeast	National Highway System			
Municipality	Markham	Highway Designation			
Township		Hwy Functional Classification			
Structure Category	Bridge	AADT	49,660	No. of Lanes	4
Main Struct. Subcateg.	Beam/Girder	Trucks (%)	4	Posted Speed	60
Main Struct. Type	Box Beams / Girders	District Bridge Engineer			
Deck Length (Total)	31.70 (m)	Road Authority			
Overall Structure Width	21.00 (m)	Bridge Plan #			
Deck Area (Total)	665.70 (Sq.m)	Min. Vertical Clearance		(m)	
Width (Traffic)	17.30 (m)	Detour Distance		(km)	
Skew Angle	0.00	Speed on Detour		(kph)	
Number of spans		Fill Height		(m)	
Total Length / Spans (m)					

Historical Data

Year Built	1981	Evaluation Year	
Last Biennial Inspection	September 15, 2016	Current Load Limit	
Last Bridge Master Inspection		Current BCI	73.39
Last Condition Survey		Current BCU	38.75
Last Underwater Inspection		Current SI	13.46
Rehab. History			

York Region

Bridge Inspection Form

Struct. ID	03-06 B0400
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Scheduled Improvements

Regional Priority Number		Programmed Work Year	
Nature of Programmed Work			

Appraisal Indices

Comments

Load Capacity Index		
Flood Index		
Barrier Index		
Curb Index		
Seismic Index		
Fatigue Index		
Scour Index		
Structure Index		

Suspected Performance Deficiencies

- | | | |
|---|---|------------------------------|
| 00 None | 06 Bearings not uniformly loaded/unstable | 12 Slippery surface |
| 01 Load carrying capacity | 07 Jammed expansion joint | 13 Flooding/channel blockage |
| 02 Excessive deformations (deflections and 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 | |

Maintenance Needs

- | | | |
|--------------------------------------|---------------------------------|-------------------------------|
| 01 Lift and Swing Bridge Maintenance | 07 Repairs 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 | |

Bridge Inspection Form

Struct. ID 03-06 B0400

Field Inspection Information

Inspection Date	September 15, 2016	Weather	Clear / Sunny
Inspector		Temperature	21
Others in Party	S. McaDade, R. Patel, J. Naik, P. Eng., Supervising Eng.		
Equipment Used	Camera, Hammer, Other Hand Tools		
Access Equipment Used	Ladder <input type="checkbox"/> Boat <input type="checkbox"/> Bucket Truck <input type="checkbox"/> Hip Waders <input type="checkbox"/> Access Key <input type="checkbox"/> Climbing Inspection <input type="checkbox"/> Under Bridge Inspection Unit <input type="checkbox"/>		

Special Notes

Overall in good condition. Maintenance needs identified on the wearing surface, sidewalks, joints, abutment wall, wingwall, ballast wall and girders.

Upcoming Inspections and Investigations

Inspection Type	Due Date	Priority	Comment

Recommended Inspections and Investigations

Recommended Inspection Type	Due Date	Priority			Estimated Cost (\$)	Comments
		None	Normal	Urgent		
Material Condition Survey:						
Detailed Deck Condition Survey		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Non-destructive Delamination Survey of Asphalt-Covered Deck		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Concrete Substructure Condition Survey		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Detailed Coating Condition Survey		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Detailed Timber Investigation		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Post-Tensioned Strand Investigation		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Underwater Investigation		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Fatigue Investigation		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Seismic Investigation		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Structure Evaluation		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Monitoring						
Monitoring of Deformations, Settlements and Movements		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Monitoring Crack Widths		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		

Overall Structure Recommendations:

Work Category	None <input type="checkbox"/>	Minor Rehab <input checked="" type="checkbox"/>	Major Rehab <input type="checkbox"/>	Replacement <input type="checkbox"/>	
Timing	None <input type="checkbox"/>	Urgent <input type="checkbox"/>	< 1 year <input type="checkbox"/>	1 - 5 year <input checked="" type="checkbox"/>	6 - 10 year <input type="checkbox"/>
Est. Total Cost	\$67,600				
Comments	Seal replacement and upgrading the guide rail end treatment is recommended				

York Region Bridge Inspection Form

Struct. ID 03-06 B0400

Element Data

Group	Abutments	14	Length	N/A 18.00 (m)				
Element	Abutment walls		Width	0.00 (m)				
Span Num			Height	2.00 (m)				
Material	Cast-in-place concrete		Count	2.00				
Type	Conventional closed		Quantity	72.000 (Sq.m)				
Env't	Benign <input checked="" type="checkbox"/> Moderate <input type="checkbox"/> Severe <input type="checkbox"/>		Not Inspected	<input type="checkbox"/>				
Location	North and South	Description						
Condition Data	Unit	Excellent	Good	Fair	Poor	V. Poor	Perform. Deficiencies	Maintenance Needs
	Sq.m	0.000	70.000	1.000	1.000			

Comments CR = 5

Wide crack, and delamination on the North abutment.

Maintenance Needs **Need Timing**

8-Repair of Bridge Concrete 2 Years

Performance Deficiencies

0-None

1

Group	Abutments	16	Length	N/A 18.00 (m)				
Element	Ballast walls		Width	0.00 (m)				
Span Num			Height	1.00 (m)				
Material	Cast-in-place concrete		Count	2.00				
Type	N/A		Quantity	36.000 (Sq.m)				
Env't	Benign <input type="checkbox"/> Moderate <input checked="" type="checkbox"/> Severe <input type="checkbox"/>		Not Inspected	<input type="checkbox"/>				
Location	North and South	Description						
Condition Data	Unit	Excellent	Good	Fair	Poor	V. Poor	Perform. Deficiencies	Maintenance Needs
	Sq.m	0.000	33.000	2.000	1.000			

Comments CR = 5

Stained areas, wet areas, spall in Northwest quadrant.

Maintenance Needs **Need Timing**

8-Repair of Bridge Concrete 2 Years

Performance Deficiencies

0-None

2

Bridge Inspection Form

Struct. ID 03-06 B0400

Element Data

Group	Abutments						22	Length	N/A	0.00 (m)
Element	Bearings							Width	N/A	0.00 (m)
Span Num								Height	N/A	0.00 (m)
Material	N/A							Count	28.00	
Type	Elastomeric pad							Quantity	28.000 (Each)	
Env't	Benign <input type="checkbox"/> Moderate <input checked="" type="checkbox"/> Severe <input type="checkbox"/>							Not Inspected	<input type="checkbox"/>	
Location	South Abutment						Description			
Condition Data	Unit	Excellent	Good	Fair	Poor	V. Poor	Perform. Deficiencies	Maintenance Needs		
	Each	0.000	28.000	0.000	0.000					

Comments

CR = 1

Performance Deficiencies

0-None

3

Group	Abutments						15	Length	N/A	0.00 (m)
Element	Bearings							Width	N/A	0.00 (m)
Span Num								Height	N/A	0.00 (m)
Material	N/A							Count	28.00	
Type	Elastomeric pad							Quantity	28.000 (Each)	
Env't	Benign <input type="checkbox"/> Moderate <input checked="" type="checkbox"/> Severe <input type="checkbox"/>							Not Inspected	<input type="checkbox"/>	
Location	North Abutment						Description			
Condition Data	Unit	Excellent	Good	Fair	Poor	V. Poor	Perform. Deficiencies	Maintenance Needs		
	Each	0.000	28.000	0.000	0.000					

Comments

CR = 1

Performance Deficiencies

0-None

4

Bridge Inspection Form

Struct. ID 03-06 B0400

Element Data

Group	Abutments						13	Length	4.60 (m)		
	Wingwalls							Width	N/A 0.00 (m)		
Element								Height	1.40 (m)		
Span Num								Count	4.00		
Material	Cast-in-place concrete							Quantity	25.760 (Sq.m)		
Type	Reinforced concrete							Not Inspected	<input type="checkbox"/>		
Env't	Benign <input type="checkbox"/>		Moderate <input checked="" type="checkbox"/>		Severe <input type="checkbox"/>						
Location	All Quadrants					Description					
Condition Data	Unit	Excellent	Good	Fair	Poor	V. Poor	Perform. Deficiencies	Maintenance Needs			
	Sq.m	0.000	22.760	2.000	1.000						

Comments

CR = 5

Narrow stained crack, wet areas, efflorescence deposits, spall in Northwest quadrant.

Maintenance Needs

Need Timing

8-Repair of Bridge Concrete

2 Years

Performance Deficiencies

0-None

5

Group	Approaches						24	Length	N/A	0.00	(m)
Element	Approach Guiderail (York)							Width	N/A	0.00	(m)
Span Num								Height	N/A	0.00	(m)
Material	N/A							Count	N/A	2.00	
Type	N/A							Quantity	2.000 (m)		
Env't	Benign <input type="checkbox"/> Moderate <input type="checkbox"/> Severe <input type="checkbox"/>							Not Inspected	<input type="checkbox"/>		
Location	Northeast and Southwest Quadrants					Description					
Condition Data	Unit	Excellent	Good	Fair	Poor	V. Poor	Perform. Deficiencies	Maintenance Needs			
	m	0.000	2.000	0.000	0.000						

Comments

CR = 1

Performance Deficiencies

0-None

Recommended Work

Category

Timing

Quantity

Unit Cost

Total Cost (\$)

Replacement

1 - 5 year

0.000

30000

6

Bridge Inspection Form

Struct. ID 03-06 B0400

Element Data

Group	Approaches						25	Length	N/A	0.00 (m)
Element	Approach Guiderail (York)							Width	N/A	0.00 (m)
Span Num								Height	N/A	0.00 (m)
Material	N/A							Count	N/A	2.00
Type	N/A							Quantity	2.000 (m)	
Env't	Benign <input type="checkbox"/> Moderate <input type="checkbox"/> Severe <input type="checkbox"/>							Not Inspected	<input type="checkbox"/>	
Location	Northwest and Southeast Quadrants						Description			
Condition Data	Unit	Excellent	Good	Fair	Poor	V. Poor	Perform. Deficiencies	Maintenance Needs		
	m	0.000	2.000	0.000	0.000					

Comments

CR = 1

Performance Deficiencies

0-None

Recommended Work

Category	Timing	Quantity	Unit Cost	Total Cost (\$)
Replacement	1 - 5 year			30000

7

Group	Approaches						4	Length	6.00 (m)	
Element	Approach slabs							Width	17.30 (m)	
Span Num								Height	0.00 (m)	
Material	Cast-in-place concrete							Count	2.00	
Type	N/A							Quantity	207.600 (Sq.m)	
Env't	Benign <input type="checkbox"/> Moderate <input checked="" type="checkbox"/> Severe <input type="checkbox"/>							Not Inspected	<input type="checkbox"/>	
Location	North and South						Description			
Condition Data	Unit	Excellent	Good	Fair	Poor	V. Poor	Perform. Deficiencies	Maintenance Needs		
	Sq.m	0.000	204.600	2.000	1.000					

Comments

CR = 1

Wide cracks, pot holes in asphalt above.

Performance Deficiencies

0-None

8

Bridge Inspection Form

Struct. ID 03-06 B0400

Element Data

Group	Approaches					3	Length	6.00 (m)
Element	Wearing surface						Width	17.30 (m)
Span Num							Height	0.00 (m)
Material	Asphalt						Count	2.00
Type	N/A						Quantity	208.000 (Sq.m)
Env't	Benign <input type="checkbox"/> Moderate <input type="checkbox"/> Severe <input checked="" type="checkbox"/>						Not Inspected	<input type="checkbox"/>
Location	North and South					Description		
Condition Data	Unit	Excellent	Good	Fair	Poor	V. Poor	Perform. Deficiencies	Maintenance Needs
	Sq.m	0.000	198.000	8.000	2.000			

Comments

CR = 5

Narrow to wide cracks, pothole, narrow random crack.

Maintenance Needs

12-Bridge Surface Repair
15-Rout and Seal

Need Timing

1 Year
1 Year

Performance Deficiencies

0-None

9

Group	Barriers					8	Length	1.20 (m)
Element	Barrier/Parapet Walls					Interior	Width	N/A 0.00 (m)
Span Num							Height	1.50 (m)
Material	Cast-in-place concrete						Count	4.00
Type	Other						Quantity	7.200 (Sq.m)
Env't	Benign <input type="checkbox"/> Moderate <input type="checkbox"/> Severe <input checked="" type="checkbox"/>						Not Inspected	<input type="checkbox"/>
Location	End Posts					Description		
Condition Data	Unit	Excellent	Good	Fair	Poor	V. Poor	Perform. Deficiencies	Maintenance Needs
	Sq.m	0.000	5.200	1.000	1.000			

Comments

CR = 5

Spall and delamination at North end posts.

Maintenance Needs

8-Repair of Bridge Concrete

Need Timing

2 Years

Performance Deficiencies

0-None

10

Bridge Inspection Form

Struct. ID 03-06 B0400

Element Data

Group	Barriers						9	Length	1.20 (m)
Element	Barrier/Parapet Walls						Exterior	Width	N/A 0.00 (m)
Span Num							Height	1.15 (m)	
Material	Cast-in-place concrete						Count	4.00	
Type	Other						Quantity	5.520 (Sq.m)	
Env't	Benign <input type="checkbox"/> Moderate <input checked="" type="checkbox"/> Severe <input type="checkbox"/>						Not Inspected	<input type="checkbox"/>	
Location	End Posts						Description		
Condition Data	Unit	Excellent	Good	Fair	Poor	V. Poor	Perform. Deficiencies	Maintenance Needs	
	Sq.m	0.000	5.520	0.000	0.000				

Comments

CR = 1

Performance Deficiencies

0-None

11

Group	Barriers						7	Length	0.00 (m)
Element	Posts							Width	0.00 (m)
Span Num							Height	0.00 (m)	
Material	Aluminium						Count	34.00	
Type	N/A						Quantity	34.000 (Each)	
Env't	Benign <input type="checkbox"/> Moderate <input type="checkbox"/> Severe <input checked="" type="checkbox"/>						Not Inspected	<input type="checkbox"/>	
Location	East and West						Description		
Condition Data	Unit	Excellent	Good	Fair	Poor	V. Poor	Perform. Deficiencies	Maintenance Needs	
	Each	0.000	34.000	0.000	0.000				

Comments

CR = 1

Performance Deficiencies

0-None

12

Bridge Inspection Form

Struct. ID 03-06 B0400

Element Data

Group Element	Barriers						6	Length	36.80 (m)		
	Railing Systems							Width	N/A 0.00 (m)		
Span Num								Height	0.00 (m)		
Material	Aluminium							Count	2.00		
Type	4 Rail Metal Railing - Aluminum							Quantity	73.600 (Sq.m)		
Env't	Benign <input type="checkbox"/>		Moderate <input type="checkbox"/>		Severe <input checked="" type="checkbox"/>			Not Inspected	<input type="checkbox"/>		
Location	East and West					Description					
Condition Data	Unit	Excellent	Good	Fair	Poor	V. Poor	Perform. Deficiencies		Maintenance Needs		
	Sq.m	0.000	67.600	5.000	1.000						

Comments

CR = 5

Abrasion, unsecured and missing end-caps.

Maintenance Needs

Need Timing

3-Bridge Handrail Maintenance

2 Years

Performance Deficiencies

0-None

13

Group	Beams/MLE's						17	Length	2.00 (m)
	Element	Girders						End	Width
Span Num								Height	1.00 (m)
Material	Precast concrete							Count	28.00
Type	Box/trapezoidal							Quantity	180.320 (Sq.m)
Env't	Benign <input type="checkbox"/> Moderate <input checked="" type="checkbox"/> Severe <input type="checkbox"/>							Not Inspected	<input type="checkbox"/>
Location	Below Deck					Description			
Condition Data	Unit	Excellent	Good	Fair	Poor	V. Poor	Perform. Deficiencies	Maintenance Needs	
	Sq.m	0.000	166.320	7.000	7.000				

Comments

CR = 5

Spall of the North girders at the exterior, delamination of the bottom flanges, exposed corroded rebars.

Maintenance Needs

Need Timing

8-Repair of Bridge Concrete

2 Years

Performance Deficiencies

0-None

14

York Region Bridge Inspection Form

Struct. ID 03-06 B0400

Element Data

Group	Beams/MLE's	18	Length	26.00 (m)				
Element	Girders	Middle	Width	1.27 (m)				
Span Num			Height	1.00 (m)				
Material	Precast concrete		Count	14.00				
Type	Box/trapezoidal		Quantity	1,190.280 (Sq.m)				
Env't	Benign <input checked="" type="checkbox"/> Moderate <input type="checkbox"/> Severe <input type="checkbox"/>		Not Inspected	<input type="checkbox"/>				
Location	Below Deck		Description					
Condition Data	Unit	Excellent	Good	Fair	Poor	V. Poor	Perform. Deficiencies	Maintenance Needs
	Sq.m	0.000	1,188.280	1.000	1.000			

Comments

CR = 5

Small spill near South end.

Maintenance Needs

Need Timing

8-Repair of Bridge Concrete

2 Years

Performance Deficiencies

0-None

15

Group	Decks	2	Length	31.70 (m)				
Element	Deck top		Width	21.00 (m)				
Span Num			Height	0.00 (m)				
Material	Cast-in-place concrete		Count	N/A 0.00				
Type	Solid or voided slab		Quantity	665.700 (Sq.m)				
Env't	Benign <input type="checkbox"/> Moderate <input checked="" type="checkbox"/> Severe <input type="checkbox"/>		Not Inspected	<input type="checkbox"/>				
Location	Below Roadway		Description					
Condition Data	Unit	Excellent	Good	Fair	Poor	V. Poor	Perform. Deficiencies	Maintenance Needs
	Sq.m	0.000	653.700	11.000	1.000			

Comments

CR = 1

Asphalt patches in wearing surface.

Performance Deficiencies

0-None

16

Bridge Inspection Form

Struct. ID 03-06 B0400

Element Data

Group	Decks						1	Length	31.70 (m)
Element	Wearing surface							Width	17.30 (m)
Span Num								Height	0.00 (m)
Material	Asphalt							Count	N/A 0.00
Type	N/A							Quantity	548.410 (Sq.m)
Env't	Benign <input type="checkbox"/> Moderate <input type="checkbox"/> Severe <input checked="" type="checkbox"/>							Not Inspected	<input type="checkbox"/>
Location	Above Deck						Description		
Condition Data	Unit	Excellent	Good	Fair	Poor	V. Poor	Perform. Deficiencies	Maintenance Needs	
	Sq.m	0.010	536.400	12.000	0.000				

Comments

CR = 1

Narrow to medium crack, sealed cracks, light to medium raveling, patched areas.

Performance Deficiencies

0-None

17

Group	Embankments & Streams						19	Length	N/A 0.00 (m)
Element	Embankments							Width	N/A 0.00 (m)
Span Num								Height	N/A 0.00 (m)
Material	N/A							Count	N/A 6.00
Type	N/A							Quantity	6.000 (Each)
Env't	Benign <input type="checkbox"/> Moderate <input type="checkbox"/> Severe <input type="checkbox"/>							Not Inspected	<input type="checkbox"/>
Location	All Quadrants, In Front of Abutments						Description		
Condition Data	Unit	Excellent	Good	Fair	Poor	V. Poor	Perform. Deficiencies	Maintenance Needs	
	Each	0.000	6.000	0.000	0.000				

Comments

CR = 1

Performance Deficiencies

0-None

18

Bridge Inspection Form

Struct. ID 03-06 B0400

Element Data

Group	Embankments & Streams						21	Length	N/A	0.00 (m)
Element	Slope protection							Width	N/A	0.00 (m)
Span Num								Height	N/A	0.00 (m)
Material	N/A							Count	N/A	2.00
Type	Precast units							Quantity	2.000 (Each)	
Env't	Benign <input type="checkbox"/> Moderate <input type="checkbox"/> Severe <input type="checkbox"/>							Not Inspected	<input type="checkbox"/>	
Location	In Front of Abutments						Description			
Condition Data	Unit	Excellent	Good	Fair	Poor	V. Poor	Perform. Deficiencies	Maintenance Needs		
	Each	0.000	2.000	0.000	0.000					

Comments

CR = 1

Missing blocks noted, gap between abutment and slope protection.

Performance Deficiencies

0-None

Recommended Work

Category	Timing	Quantity	Unit Cost	Total Cost (\$)
Minor Rehab	1 - 5 year	0.000		5000

19

Group	Embankments & Streams						20	Length	N/A	0.00 (m)
Element	Slope protection							Width	N/A	0.00 (m)
Span Num								Height	N/A	0.00 (m)
Material	N/A							Count	N/A	4.00
Type	Vegetation							Quantity	4.000 (Each)	
Env't	Benign <input type="checkbox"/> Moderate <input type="checkbox"/> Severe <input type="checkbox"/>							Not Inspected	<input type="checkbox"/>	
Location	All Quadrants						Description			
Condition Data	Unit	Excellent	Good	Fair	Poor	V. Poor	Perform. Deficiencies	Maintenance Needs		
	Each	0.000	4.000	0.000	0.000					

Comments

CR = 1

Performance Deficiencies

0-None

20

Bridge Inspection Form

Struct. ID 03-06 B0400

Element Data

Group	Foundations						23	Length	N/A	0.00 (m)
Element	Foundation (below ground level)							Width	N/A	0.00 (m)
Span Num								Height	N/A	0.00 (m)
Material	Unknown							Count	N/A	0.00
Type	Unknown							Quantity	1.000 (Sq.m)	
Env't	Benign <input type="checkbox"/> Moderate <input type="checkbox"/> Severe <input type="checkbox"/>							Not Inspected	<input type="checkbox"/>	
Location	At Abutments						Description			
Condition Data	Unit	Excellent	Good	Fair	Poor	V. Poor	Perform. Deficiencies	Maintenance Needs		
	Sq.m	0.000	1.000	0.000	0.000					

Comments

CR = 1

Limited inspection.

Performance Deficiencies

0-None

21

Group	Joints						11	Length	17.30 (m)	
Element	Armoring/retaining devices							Width	N/A	0.09 (m)
Span Num								Height	N/A	0.00 (m)
Material	Steel							Count	4.00	
Type	N/A							Quantity	69.200 (m)	
Env't	Benign <input type="checkbox"/> Moderate <input type="checkbox"/> Severe <input checked="" type="checkbox"/>							Not Inspected	<input type="checkbox"/>	
Location	North and South						Description			
Condition Data	Unit	Excellent	Good	Fair	Poor	V. Poor	Perform. Deficiencies	Maintenance Needs		
	m	0.000	69.200	0.000	0.000					

Comments

CR = 1

Scrapes.

Performance Deficiencies

0-None

22

Bridge Inspection Form

Struct. ID 03-06 B0400

Element Data

Group	Joints 10						Length	17.30 (m)
Element	Concrete end dams						Width	0.36 (m)
Span Num							Height	N/A 0.00 (m)
Material	Cast-in-place concrete						Count	4.00
Type	N/A						Quantity	24.912 (Sq.m)
Env't	Benign <input type="checkbox"/> Moderate <input type="checkbox"/> Severe <input checked="" type="checkbox"/>						Not Inspected	<input type="checkbox"/>
Location	North and South					Description		
Condition Data	Unit	Excellent	Good	Fair	Poor	V. Poor	Perform. Deficiencies	Maintenance Needs
	Sq.m	0.002	19.910	3.000	2.000			

Comments

CR = 6

Severe spall, medium to wide cracks, delaminations, asphalt patches.

Maintenance Needs

Need Timing

8-Repair of Bridge Concrete

2 Years

Performance Deficiencies

0-None

23

Group	Joints 12						Length	17.30 (m)
Element	Seals/sealants						Width	N/A 0.00 (m)
Span Num							Height	N/A 0.00 (m)
Material	N/A						Count	2.00
Type	Compression seal						Quantity	2.000 (m)
Env't	Benign <input type="checkbox"/> Moderate <input type="checkbox"/> Severe <input checked="" type="checkbox"/>						Not Inspected	<input type="checkbox"/>
Location	North and South					Description		
Condition Data	Unit	Excellent	Good	Fair	Poor	V. Poor	Perform. Deficiencies	Maintenance Needs
	m	0.000	0.000	0.000	2.000			

Comments

CR = 6

Both seals are cracked and leaking.

Performance Deficiencies

0-None

Recommended Work

Category

Timing

Quantity

Unit Cost

Total Cost (\$)

JS400 Replace Default Joint Seal (m.)

Replacement

1 - 5 year

2.000

1300

2600

24

Bridge Inspection Form

Struct. ID 03-06 B0400

Element Data

Group	Sidewalks/curbs					5	Length	43.70 (m)
Element	Sidewalk and medians						Width	1.85 (m)
Span Num							Height	0.00 (m)
Material	Cast-in-place concrete						Count	2.00
Type	N/A						Quantity	161.690 (Sq.m)
Env't	Benign <input type="checkbox"/> Moderate <input type="checkbox"/> Severe <input checked="" type="checkbox"/>						Not Inspected	<input type="checkbox"/>
Location	East and West					Description		
Condition Data	Unit	Excellent	Good	Fair	Poor	V. Poor	Perform. Deficiencies	Maintenance Needs
	Sq.m	0.000	157.690	3.000	1.000			

Comments

CR = 5

Abrasions, spalls, asphalt patches, narrow to medium cracks.

Maintenance Needs

8-Repair of Bridge Concrete

Need Timing

2 Years

Performance Deficiencies

0-None

Bridge Inspection Form

Struct. ID 03-06 B0400

Recommended Work (Element Level)

Element	Repair / Rehabilitation	Time					Estimated Cost (\$)
		None	Urgent	< 1 year	1 - 5 year	6 - 10 year	
Joints / Seals/sealants / Compression seal	JS400 Replace Default Joint Seal (m.)				X		2,600
Embankments & Streams / Slope protection / Precast units					X		5,000
Approaches / Approach Guiderail (York)					X		30,000
Approaches / Approach Guiderail (York)					X		30,000
Total Cost							67,600

Recommended Work (Structure Level)

Associated Work	Comments	Estimated Cost (\$)
Approaches		
Detours		
Other	Contingencies & Engineering	53,000
Traffic Control		10,000
Utilities		
Total Cost		63,000
Grand Total Cost:		\$130,600

York Region Bridge Inspection Form

Struct. ID 03-06 B0400



Description

East barrier, general photo

Elem Grp/Class	Barriers/Barrier/Parapet Walls
Elem Type	Other
Sub Element	Interior
Material Type	Cast-in-place concrete
Locator	East
Defect Descript1	
Defect Descript2	
Defect	
Other	

File Name DSCN4156.JPG



Description

East sidewalk, spall

Elem Grp/Class	Sidewalks/curbs/Sidewalk and me
Elem Type	
Sub Element	
Material Type	Cast-in-place concrete
Locator	East
Defect Descript1	Fair condition
Defect Descript2	
Defect	Spalling
Other	

File Name DSCN4157.JPG

York Region

Bridge Inspection Form

Struct. ID 03-06 B0400



Description

South expansion joint, spalls, asphalt patch, cracking

Elem Grp/Class	Joints/Concrete end dams
Elem Type	
Sub Element	
Material Type	Cast-in-place concrete
Locator	South
Defect Descript1	Poor condition
Defect Descript2	
Defect	Cracking
Other	

File Name DSCN4158.JPG



Description

South approach, pot holes, map cracking

Elem Grp/Class	Approaches/Wearing surface
Elem Type	
Sub Element	
Material Type	Asphalt
Locator	South
Defect Descript1	Poor condition
Defect Descript2	
Defect	Potholes
Other	

File Name DSCN4159.JPG

York Region

Bridge Inspection Form

Struct. ID 03-06 B0400



Description

Pot holes filled, sealed cracks

Elem Grp/Class	Decks/Wearing surface
Elem Type	
Sub Element	
Material Type	Asphalt
Locator	Middle
Defect Descript1	Fair condition
Defect Descript2	
Defect	Cracking
Other	

File Name DSCN4160.JPG



Description

North expansion joint, spall

Elem Grp/Class	Joints/Concrete end dams
Elem Type	
Sub Element	
Material Type	Cast-in-place concrete
Locator	North
Defect Descript1	Fair condition
Defect Descript2	
Defect	Spalling
Other	

File Name DSCN4164.JPG