Appendix O
Structural Memo

- Inspection Reports
- 407 ETR and Culvert General Arrangements

Region of Halton

OSIM Inspection Forms

For the Bridge on Winston Churchill Blvd
Located 2.70 km North of Steeles Avenue
Structure No. 19-1196390 BR01

Prepared by:

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T: 905 403 4455 F: 905 855 2607
Project Number: 336921

	Name, Title	Signature	Date
Prepared By	J.Hallett, E.I.T.		MAY 27/15
Reviewed By	J.Luckai, P.Eng		May 27/15
Approved By	C.Pasqualino, P.Eng		MAY 28/15

Region of Halton

Municipal Structure Inspection Form **Structure Number:** 19-1196390 BR01

Inventory Data

Structure Name	Winston Churchill Blvd, Lot 5, Conc XI	**Hwy No.**	19		
Cross. Type Over	☑ Road ☐ Rail ☐ Ped ☐ Nav. ☐ Non-Nav. ☐ Other				
Cross. Type Under	☐ Road ☐ Rail ☐ Ped ☐ Nav. ☑ Non-Nav. ☐ Other				
Road Name	Winston Churchill Blvd				
Structure Location	2.70 km North of Steeles Avenue				
Northing	595206.0	**Easting**	4830795.0	**Cur.Rep.Value**	*
Owner(s) / % Shared	Region of Halton 50%				
	Regional Municipality of Peel 50%			**Heritage Status**	Not Considered for Designation
MTO Region	Central			**Road Side Env.**	Rural
MTO District	Central			**Road Class**	Arterial
County	Halton			**Lane Type**	
Geographic Twp.				**Posted Speed**	80
Structure Category	Bridge			**AADT**	12,625
Struct.SubCategory	Frame				
Structure Type	Rigid Frame, Vertical Legs			**Interchange Number**	
Structure Material	Reinforced Precast Concrete			**Design Load Code**	CHBDC
Total Deck Length	11.90 m	**Road Width**	17.70 m	**Interchange Structure Number**	
Overall Width	25.0 m	**Vert. Clear**	0.00 m	**Detour Length**	0 km
Total Deck Area	297.50 m^2	**No. of Spans**	1	**Fill on Structure**	0 m
Special Routes	☐ Transit ☑ School ☐ Truck ☐ Bicycle			**Insp. Duration**	1 hr

Key Photo

No. of Lanes	2
Pct. Trucks	0
Skew Angle	0 °
Struct. Dir.	North/South

*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 Lengths	Span Name	Span Lengths
Span 1	11.0 m		

Historical Data

Year Built	2011 yyyy	**Year of Last Major Rehab**	yyyy
Last OSIM Inspection	10/09/2012 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**	t t 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

Rehab Date	Rehab Description
2011	Replacement of structure.

Region of Halton

Municipal Structure Inspection Form **Structure Number:** 19-1196390 BR01

Field Inspection Information

Inspection Date	05/06/2015 mm/dd/yyyy ☐ Multi Day Inspection ☑ OSIM ☐ Enhanced OSIM	**BCI**	99.2
Inspector	C.Chan, E.I.T.	**Eng. Responsible**	J.Luckai, P.Eng
Others in Party	J.Hallett, E.I.T.		
Access Equip.	☐ Lift ☐ Ladder ☐ Boat ☐ Bridge Master	Other	
Other Equip.	Hammer, Camera, Measuring Tape		
Weather	Sunny	**Temperature**	20 °C

Additional Investigation Required:

Investigation	**Priority** None	Normal	Urgent	**Estimated Cost**
Detailed Deck Condition Survey	☑	☐	☐	$0
Delamination Survey of Asphalt-Covered Deck	☑	☐	☐	$0
Concrete Substructure Condition Survey	☑	☐	☐	$0
Detailed Coating Condition Survey	☑	☐	☐	$0
Post-Tensioned Strand Investigation	☑	☐	☐	$0
Underwater Investigation	☑	☐	☐	$0
Fatigue Investigation	☑	☐	☐	$0
Seismic Investigation	☑	☐	☐	$0
Structure Evaluation	☑	☐	☐	$0
Monitoring of Deformation, Movements and Settlements	☑	☐	☐	$0
Monitoring of Crack Widths				$0
Total Cost				**$0**

Investigation Notes

Overall Structure Notes:

Recommended Work on Structure ☐ None ☑ Minor Rehab ☐ Major Rehab ☐ Replace ☐ Remove

Timing of Recommended Work ☑ 1 to 5 years ☑ 6 to 10 years

Overall Comments
- Seal wide cracks in barrier wall
- Patch repair concrete on soffit

BCI Change Justification

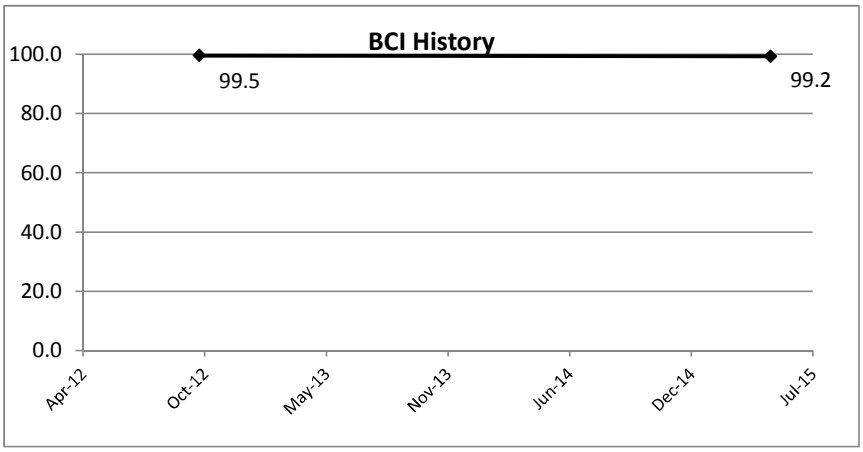
Next Inspection 05/06/2017 mm/dd/yyyy **Estimated Load Limit** t t t

Region of Halton

Municipal Structure Inspection Form **Structure Number: 19-1196390 BR01**

BCI History

Inspection Date	BCI	Inspector
9-Oct-12	99.5	D.Kelly
6-May-15	99.2	J.Luckai



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

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)

Approaches - Wearing Surface (Approach)

Element Group	Approaches	**Length**	6.00	**Width**	17.70
Element Name	Wearing Surface (Approach)	**Height**	0.00	**Count**	2.00
Location	Above structure			**Total Quantity**	212.40
Material	Asphalt	☑ Limited Inspection			
Element Type		**Environment**			
Protection System	None	☐ Benign			
		☐ Moderate			

Condition Data	**Units**	**Excell.**	**Good**	**Fair**	**Poor**
	sq.m	166.40	45.00	1.00	0.00

☑ Severe

Comments

- Crack along both approach joints

Performance Deficiencies	Maintenance Needs	Priority	Comments
None	None		

Rehab/Rehabilitation Recommendations	Priority		Cost	Comments
None		yrs.	$0	

Barriers - Barrier/Parapet Wall

Element Group	Barriers	**Length**	23.90	**Width**	0.00
Element Name	Barrier/Parapet Wall / Interior	**Height**	0.95	**Count**	2.00
Location	Both Sides			**Total Quantity**	45.41
Material	Cast-in-place Concrete	☐ Limited Inspection			
Element Type	Safety Shape without railing	**Environment**			
Protection System	None	☐ Benign			
		☐ Moderate			

Condition Data	**Units**	**Excell.**	**Good**	**Fair**	**Poor**
	sq.m	26.41	15.00	3.00	1.00

☑ Severe

Comments

- Wide crack on west barrier - 10.5m and 16.7m from South end of barrier
- Wide crack on east barrier - 10.5m and 16.5m from south end of barrier
- Light/medium scaling, more concentrated on bottom leg of barrer

Performance Deficiencies	Maintenance Needs	Priority	Comments
None	None		

Rehab/Rehabilitation Recommendations	Priority		Cost	Comments
Minor Rehabilitation	6-10	yrs.	$2,500	Seal cracks

Barriers - Barrier/Parapet Wall

Element Group	Barriers		**Length**	23.90 **Width**	0.00
Element Name	Barrier/Parapet Wall	Exterior	**Height**	0.80 **Count**	2.00
Location	Both Ends			**Total Quantity**	38.24
Material	Cast-in-place Concrete		☐ Limited Inspection		
Element Type	Safety Shape without railing		**Environment**		
Protection System	None		☐ Benign		

☑ Moderate
☐ Severe

Condition Data	**Units**	**Excell.**	**Good**	**Fair**	**Poor**
	sq.m	31.24	5.00	1.00	1.00

Comments

- Wide crack on west barrier - 10.5m and 16.7m from South end of barrier
- Wide crack on east barrier East - 10.5m and 16.5m from south end of barrier
- Light scaling

Performance Deficiencies	**Maintenance Needs**	**Priority**	**Comments**
None	None		

Rehab/Rehabilitation Recommendations	**Priority**		**Cost**	**Comments**
Minor Rehabilitation	6-10	yrs.	$2,500	Seal cracks.

Abutments - Abutment Walls

Element Group	Abutments		**Length**	**Width**	25.00
Element Name	Abutment Walls		**Height**	1.45 **Count**	2.00
Location	North and South sides			**Total Quantity**	72.50
Material	Precast Concrete		☐ Limited Inspection		
Element Type	Legs of rigid frame		**Environment**		
Protection System	None		☑ Benign		

☐ Moderate
☐ Severe

Condition Data	**Units**	**Excell.**	**Good**	**Fair**	**Poor**
	sq.m	72.50	0.00	0.00	0.00

Comments

Performance Deficiencies	**Maintenance Needs**	**Priority**	**Comments**
None	None		

Rehab/Rehabilitation Recommendations	**Priority**		**Cost**	**Comments**
None		yrs.	$0	

Foundation - Foundation (below ground level)

Element Group	Foundation	**Length**	**Width**
Element Name	Foundation (below ground level)	**Height**	**Count**
Location	Below Structure	**Total Quantity**	0.00
Material		☑ Limited Inspection	
Element Type		**Environment**	
Protection System	None	☐ Benign	
		☐ Moderate	
		☐ Severe	

Condition Data	**Units**	**Excell.**	**Good**	**Fair**	**Poor**
		0.00	0.00	0.00	0.00

Comments

Limit Inspection.

Performance Deficiencies	Maintenance Needs	Priority	Comments
None	None		

Rehab/Rehabilitation Recommendations	Priority	Cost	Comments

Approaches - Approach Slab

Element Group	Approaches	**Length**	6.00 **Width** 17.70
Element Name	Approach Slab	**Height**	0.00 **Count** 2.00
Location	Both Ends	**Total Quantity**	212.40
Material	Cast-in-place Concrete	☐ Limited Inspection	
Element Type		**Environment**	
Protection System	Hot rubberized asphalt membrane	☐ Benign	
		☑ Moderate	
		☐ Severe	

Condition Data	**Units**	**Excell.**	**Good**	**Fair**	**Poor**
	sq.m	212.40	0.00	0.00	0.00

Comments

Performance Deficiencies	Maintenance Needs	Priority	Comments

Rehab/Rehabilitation Recommendations	Priority	Cost	Comments

Decks - Deck Top (with Thick Slab)

Element Group	Decks		**Length**	11.90	**Width** 25.00
Element Name	Deck Top (with Thick Slab)		**Height**	0.00	**Count**
Location	Above structure				**Total Quantity** 297.50
Material	Precast Concrete		☐ Limited Inspection		
Element Type	Precast solid or void without concrete topping		**Environment**		
Protection System	Hot Rubberized asphalt membrane		☐ Benign		
			☑ Moderate		
			☐ Severe		

Condition Data	**Units**	**Excell.**	**Good**	**Fair**	**Poor**
	sq.m	297.50	0.00	0.00	0.00

Comments

Performance Deficiencies	**Maintenance Needs**	**Priority**	**Comments**
None	None		

Rehab/Rehabilitation Recommendations	**Priority**	**Cost**	**Comments**

Decks - Soffit - Thick Slab

Element Group	Decks		**Length**	11.00	**Width** 3.70
Element Name	Soffit - Thick Slab	Exterior	**Height**		**Count**
Location	Underside of deck				**Total Quantity** 40.70
Material	Precast Concrete		☐ Limited Inspection		
Element Type			**Environment**		
Protection System	None		☐ Benign		
			☑ Moderate		
			☐ Severe		

Condition Data	**Units**	**Excell.**	**Good**	**Fair**	**Poor**
	sq.m	38.70	1.00	1.00	0.00

Comments

Medium scaling along edge (west side)

Performance Deficiencies	**Maintenance Needs**	**Priority**	**Comments**

Rehab/Rehabilitation Recommendations	**Priority**	**Cost**	**Comments**

Decks - Soffit - Thick Slab

Element Group	Decks		**Length**	11.00	**Width** 23.00
Element Name	Soffit - Thick Slab	Interior	**Height**		**Count**
Location	Underside of deck				**Total Quantity** 253.00
Material	Precast Concrete		☐ Limited Inspection		
Element Type			**Environment**		
Protection System	None		☑ Benign		

Condition Data	**Units**	**Excell.**	**Good**	**Fair**	**Poor**
	sq.m	248.00	3.00	1.00	1.00

☐ Moderate
☐ Severe

Comments

- 3rd box from West End, 2.5 m from South Abutment Wall: 300mmx500mm delaminated piece of concrete
- Some joints have light spalling and light scaling
- foam has been forced out from between some joints (East Side)

Performance Deficiencies	**Maintenance Needs**	**Priority**	**Comments**
None	None		

Rehab/Rehabilitation Recommendations	**Priority**		**Cost**	**Comments**
Minor Rehabilitation	1-5	yrs	$3,500	Removal and patch repair concrete

Decks - Wearing Surface

Element Group	Decks		**Length**	11.90	**Width** 17.70
Element Name	Wearing Surface		**Height**	0.00	**Count**
Location	Above structure				**Total Quantity** 210.63
Material	Asphalt		☐ Limited Inspection		
Element Type			**Environment**		
Protection System	None		☐ Benign		

Condition Data	**Units**	**Excell.**	**Good**	**Fair**	**Poor**
	sq.m	160.63	50.00	0.00	0.00

☐ Moderate
☑ Severe

Comments

Performance Deficiencies	**Maintenance Needs**	**Priority**	**Comments**

Rehab/Rehabilitation Recommendations	**Priority**	**Cost**	**Comments**

Embankments & Streams - Embankments

Element Group	Embankments & Streams	**Length**		**Width**	
Element Name	Embankments	**Height**		**Count**	4.00
Location	All Quadrants			**Total Quantity**	4.00
Material	Other	☐ Limited Inspection			
Element Type		**Environment**			
Protection System	None	☐ Benign			
		☐ Moderate			
		☐ Severe			

Condition Data	**Units**	**Excell.**	**Good**	**Fair**	**Poor**
	Each	0.00	4.00	0.00	0.00

Comments

Performance Deficiencies	**Maintenance Needs**	**Priority**	**Comments**
None	None		

Rehab/Rehabilitation Recommendations	**Priority**	**Cost**	**Comments**

Embankments & Streams - Slope Protection

Element Group	Embankments & Streams	**Length**		**Width**	
Element Name	Slope Protection	**Height**		**Count**	4.00
Location	All Quadrants			**Total Quantity**	4.00
Material	Vegetation	☐ Limited Inspection			
Element Type		**Environment**			
Protection System	None	☐ Benign			
		☐ Moderate			
		☐ Severe			

Condition Data	**Units**	**Excell.**	**Good**	**Fair**	**Poor**
	Each	0.00	4.00	0.00	0.00

Comments

Performance Deficiencies	**Maintenance Needs**	**Priority**	**Comments**

Rehab/Rehabilitation Recommendations	**Priority**	**Cost**	**Comments**

Sidewalks/Curbs - Curbs

Element Group	Sidewalks/Curbs	**Length**	11.90	**Width** 0.55
Element Name	Curbs / Headwalls	**Height**	0.20	**Count** 2.00
Location	East and West Sides			**Total Quantity** 17.85
Material	Cast-in-place Concrete	☐ Limited Inspection		
Element Type		**Environment**		
Protection System	None	☐ Benign		
		☐ Moderate		

Condition Data	**Units**	**Excell.**	**Good**	**Fair**	**Poor**	☑ Severe
	sq.m	17.85	0.00	0.00	0.00	

Comments

Performance Deficiencies	**Maintenance Needs**	**Priority**	**Comments**
None	None		

Rehab/Rehabilitation Recommendations	**Priority**	**Cost**	**Comments**

Embankments & Streams - Streams & Waterways

Element Group	Embankments & Streams	**Length**		**Width**
Element Name	Streams & Waterways	**Height**		**Count** 1.00
Location	Through structure			**Total Quantity** 1.00
Material		☐ Limited Inspection		
Element Type		**Environment**		
Protection System	None	☐ Benign		
		☐ Moderate		

Condition Data	**Units**	**Excell.**	**Good**	**Fair**	**Poor**	☐ Severe
	All	0.00	1.00	0.00	0.00	

Comments

-Ponding at east corners of structure - Regrade to provide positive drainage

Performance Deficiencies	**Maintenance Needs**	**Priority**	**Comments**
	Bridge Deck Drainage	1-5 years	Drainage **through** structure needs to be regraded

Rehab/Rehabilitation Recommendations	**Priority**	**Cost**	**Comments**

Abutments - Wingwalls

Element Group	Abutments	**Length**	1.15	**Width**	
Element Name	Wingwalls	**Height**	1.78	**Count**	2.00
Location	East Side			**Total Quantity**	4.09
Material	Cast-in-place Concrete	☐ Limited Inspection			
Element Type	Reinforced Concrete	**Environment**			
Protection System	None	☐ Benign			
		☑ Moderate			
		☐ Severe			

Condition Data	**Units**	**Excell.**	**Good**	**Fair**	**Poor**
	sq.m	4.09	0.00	0.00	0.00

Comments

Performance Deficiencies	**Maintenance Needs**	**Priority**	**Comments**
None	None		

Rehab/Rehabilitation Recommendations	**Priority**	**Cost**	**Comments**

Retaining Walls - Walls

Element Group	Retaining Walls	**Length**	6.00	**Width**	
Element Name	Walls	**Height**	1.00	**Count**	2.00
Location	East Side			**Total Quantity**	12.00
Material	Precast Concrete	☐ Limited Inspection			
Element Type	Retained soil systems	**Environment**			
Protection System	None	☐ Benign			
		☑ Moderate			
		☐ Severe			

Condition Data	**Units**	**Excell.**	**Good**	**Fair**	**Poor**
	sq.m	12.00	0.00	0.00	0.00

Comments

Performance Deficiencies	**Maintenance Needs**	**Priority**	**Comments**

Rehab/Rehabilitation Recommendations	**Priority**	**Cost**	**Comments**

Approaches - Approach Guiderail

Element Group	Approaches		**Length**	**Width**
Element Name	Approach Guiderail	Extruder End	**Height**	**Count** 4.00
Location	All Quadrants			**Total Quantity** 4.00
Material	Steel		☐ Limited Inspection	
Element Type			**Environment**	
Protection System	Hot dip galvanized		☐ Benign	
			☐ Moderate	

Condition Data

Units	Excell.	Good	Fair	Poor
Each	0.00	4.00	0.00	0.00

☑ Severe

Comments

Performance Deficiencies	Maintenance Needs	Priority	Comments
None	None		

Rehab/Rehabilitation Recommendations	Priority	Cost	Comments

East Elevation

West Elevation

Looking East (Note Scaling on Exterior Soffit)

Typical Joint

Form at Joint (several joints near East End)

Spall at Second Joint from East End

Delamination in third panel from West End

Wide Crack and Scaling on Barrier Wall (typical both sides)

Typical Wingwall / Retaining Wall

Typical RSS

Extension and Header Wall on West Side

Crack on Approach Wearing Surface

Looking North at Bridge

Looking South at Bridge

Region of Halton

OSIM Inspection Forms

For the Bridge on Winston Churchill Blvd
Located 1.7 km North of Steeles Avenue
Structure No. 19-1196390 BR03

Prepared by:

Hatch Mott MacDonald
2800 Speakman Drive
Mississauga, ON, Canada L5K 2R7
T: 905 403 4455 F: 905 855 2607
Project Number: 336921

	Name, Title	Signature	Date
Prepared By	J.Hallett, E.I.T.		MAY 27/15
Reviewed By	J.Luckai, P.Eng		MAY 27/15
Approved By	C.Pasqualino, P.Eng		MAY 28/15

Region of Halton

Municipal Structure Inspection Form **Structure Number:** 19-1196390 BR03

Inventory Data

Structure Name	Winston Churchill Blvd, Lot 3, Conc XI	**Hwy No.**	19	**Key Photo**	
Cross. Type Over	☑ Road ☐ Rail ☐ Ped ☐ Nav. Water ☐ Non-Nav. Water ☐ Other				
Cross. Type Under	☐ Road ☐ Rail ☐ Ped ☐ Nav. Water ☑ Non-Nav. Water ☐ Other				
Road Name	Winston Churchill Blvd				
Structure Location	1.7 km North of Steeles Avenue				
Northing	595918.0 **Easting** 4830092.0 **Cur.Rep.Value**		*		
Owner(s) / % Shared	Region of Halton 50%				
	Regional Municipality of Peel 50%	**Heritage Status**	Not Considered for Designation		
MTO Region	Central	**Road Side Env.**	Rural		
MTO District	Central	**Road Class**	Arterial		
County	Halton	**Lane Type**			
Geographic Twp.		**Posted Speed**	80	**No. of Lanes**	2
Structure Category	Bridge	**AADT**	12,625	**Pct. Trucks**	2
Struct.SubCategory	Frame				
Structure Type	Rigid Frame, Vertical Legs	**Interchange Number**			
Structure Material	Reinforced Precast Concrete	**Design Load Code**			CHBDC
Total Deck Length	6.11 m **Road Width** 16.57 m	**Interchange Structure Number**			
Overall Width	25.0 m **Vert. Clear** 0.00 m	**Detour Length**	0 km	**Skew Angle**	0 °
Total Deck Area	152.75 m^2 **No. of Spans** 1	**Fill on Structure**	0.4 m	**Struct. Dir.**	North/South
Special Routes	☐ Transit ☑ School ☐ Truck ☐ Bicycle	**Insp. Duration**	1 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 Lengths	Span Name	Span Lengths
Span 1	5.2 m		

Historical Data

Year Built	2011 yyyy	**Year of Last Major Rehab**	yyyy
Last OSIM Inspection	10/09/2012 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**	t t 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

Region of Halton

Municipal Structure Inspection Form **Structure Number:** 19-1196390 BR03

Field Inspection Information

Inspection Date	05/06/2015 mm/dd/yyyy ☐ Multi Day Inspection ☑ OSIM ☐ Enhanced OSIM	**BCI**	99.6
Inspector	C.Chan, E.I.T.	**Eng. Responsible**	J.Luckai, P.Eng
Others in Party	J.Hallett, E.I.T.		
Access Equip.	☐ Lift ☐ Ladder ☐ Boat ☐ Bridge Master Other		
Other Equip.	Hammer, Camera, Measuring Tape		
Weather	Sunny	**Temperature**	20 °C

Additional Investigation Required:

Investigation	**Priority** None	Normal	Urgent	**Estimated Cost**
Detailed Deck Condition Survey	☑	☐	☐	$0
Delamination Survey of Asphalt-Covered Deck	☑	☐	☐	$0
Concrete Substructure Condition Survey	☑	☐	☐	$0
Detailed Coating Condition Survey	☑	☐	☐	$0
Post-Tensioned Strand Investigation	☑	☐	☐	$0
Underwater Investigation	☑	☐	☐	$0
Fatigue Investigation	☑	☐	☐	$0
Seismic Investigation	☑	☐	☐	$0
Structure Evaluation	☑	☐	☐	$0
Monitoring of Deformation, Movements and Settlements	☑	☐	☐	$0
Monitoring of Crack Widths	☑	☐	☐	$0

Investigation Notes **Total Cost** **$0**

Overall Structure Notes:

Recommended Work on Structure ☑ None ☐ Minor Rehab ☐ Major Rehab ☐ Replace ☐ Remove

Timing of Recommended Work ☑ 1 to 5 years ☐ 6 to 10 years

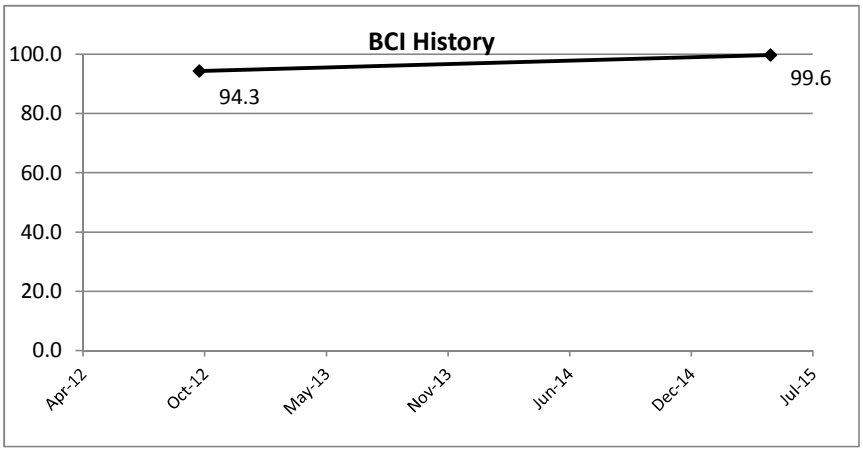
Overall Comments

BCI Change Justification Erroneous input on 9-Oct-12 Inspection Report

Next Inspection 05/06/2017 mm/dd/yyyy **Estimated Load Limit** t t t

BCI History

Inspection Date	BCI	Inspector
9-Oct-12	94.3	D.Kelly
6-May-15	99.6	J.Luckai



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Suspected Performance Deficiencies

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)

Approaches - Wearing Surface (Approach)

Element Group	Approaches	**Length**	6.00	**Width**	16.57
Element Name	Wearing Surface (Approach)	**Height**	0.00	**Count**	2.00
Location	Both Ends			**Total Quantity**	198.84
Material	Cast-in-place Concrete	☐ Limited Inspection			
Element Type		**Environment**			
Protection System	Hot rubberized asphalt membrane	☐ Benign			

Condition Data	**Units**	**Excell.**	**Good**	**Fair**	**Poor**
	sq.m	198.84	0.00	0.00	0.00

☐ Moderate
☑ Severe

Comments

Performance Deficiencies	**Maintenance Needs**	**Priority**	**Comments**
None	None		

Rehab/Rehabilitation Recommendations	**Priority**	**Cost**	**Comments**
None	yrs.	$0	

Barriers - Barrier/Parapet Wall

Element Group	Barriers	**Length**	18.11	**Width**	0.00
Element Name	Barrier/Parapet Wall / Interior	**Height**	0.95	**Count**	2.00
Location	Both Sides			**Total Quantity**	34.41
Material	Cast-in-place Concrete	☐ Limited Inspection			
Element Type	Safety Shape without railing	**Environment**			
Protection System	None	☐ Benign			

Condition Data	**Units**	**Excell.**	**Good**	**Fair**	**Poor**
	sq.m	24.41	9.00	1.00	0.00

☐ Moderate
☑ Severe

Comments

- Light scaling

Performance Deficiencies	**Maintenance Needs**	**Priority**	**Comments**
None	None		

Rehab/Rehabilitation Recommendations	**Priority**	**Cost**	**Comments**
None	yrs.	$0	

Barriers - Barrier/Parapet Wall

Element Group	Barriers		**Length**	18.11 **Width**	0.00
Element Name	Barrier/Parapet Wall	Exterior	**Height**	0.80 **Count**	2.00
Location	Both Ends			**Total Quantity**	28.98
Material	Cast-in-place Concrete		☐ Limited Inspection		
Element Type	Safety Shape without railing		**Environment**		
Protection System	None		☐ Benign		

Condition Data	**Units**	**Excell.**	**Good**	**Fair**	**Poor**
	sq.m	25.98	2.00	1.00	0.00

☐ Moderate
☑ Severe

Comments

- Light scaling

Performance Deficiencies	**Maintenance Needs**	**Priority**	**Comments**
None	None		

Rehab/Rehabilitation Recommendations	**Priority**	**Cost**	**Comments**
None	yrs.	$0	

Abutments - Abutment Walls

Element Group	Abutments		**Length**	**Width**	25.00
Element Name	Abutment Walls		**Height**	1.50 **Count**	2.00
Location	North and South Sides			**Total Quantity**	75.00
Material	Precast Concrete		☐ Limited Inspection		
Element Type	Legs of rigid frame		**Environment**		
Protection System	None		☑ Benign		

Condition Data	**Units**	**Excell.**	**Good**	**Fair**	**Poor**
	sq.m	75.00	0.00	0.00	0.00

☐ Moderate
☐ Severe

Comments

Performance Deficiencies	**Maintenance Needs**	**Priority**	**Comments**
None	None		

Rehab/Rehabilitation Recommendations	**Priority**	**Cost**	**Comments**
None	yrs.	$0	

Foundation - Foundation (below ground level)

Element Group	Foundation	**Length**	**Width**
Element Name	Foundation (below ground level)	**Height**	**Count**
Location	Below Structure	**Total Quantity**	0.00
Material		☑ Limited Inspection	
Element Type		**Environment**	
Protection System	None	☐ Benign	

Condition Data	**Units**	**Excell.**	**Good**	**Fair**	**Poor**
		0.00	0.00	0.00	0.00

☐ Moderate ☐ Severe

Comments

Limited Inspection

Performance Deficiencies	Maintenance Needs	Priority	Comments
None	None		

Rehab/Rehabilitation Recommendations	Priority	Cost	Comments
None			

Approaches - Approach Slab

Element Group	Approaches	**Length**	6.00 **Width** 16.57
Element Name	Approach Slab	**Height**	0.95 **Count** 2.00
Location	Both Ends	**Total Quantity**	198.84
Material	Cast-in-place Concrete	☐ Limited Inspection	
Element Type		**Environment**	
Protection System	Hot Rubberized asphalt membrane	☐ Benign	

Condition Data	**Units**	**Excell.**	**Good**	**Fair**	**Poor**
	sq.m	198.84	0.00	0.00	0.00

☑ Moderate ☐ Severe

Comments

Performance Deficiencies	Maintenance Needs	Priority	Comments
None	None		

Rehab/Rehabilitation Recommendations	Priority	Cost	Comments
None			

Decks - Deck Top (with Thick Slab)

Element Group	Decks				**Length**	6.11 **Width**	25.00
Element Name	Deck Top (with Thick Slab)				**Height**	0.00 **Count**	
Location	Above structure					**Total Quantity**	152.75
Material	Precast Concrete				☐ Limited Inspection		
Element Type	Precast solid or void without concrete topping				**Environment**		
Protection System	Hot Rubberized asphalt membrane				☐ Benign		
Condition Data	**Units**	**Excell.**	**Good**	**Fair**	**Poor**	☑ Moderate	
	sq.m	152.75	0.00	0.00	0.00	☐ Severe	

Comments

Performance Deficiencies	Maintenance Needs	Priority	Comments
None	None		

Rehab/Rehabilitation Recommendations	Priority	Cost	Comments

Decks - Soffit - Thick Slab

Element Group	Decks				**Length**	5.20 **Width**	3.80
Element Name	Soffit - Thick Slab	Exterior			**Height**	**Count**	
Location	Underside of Deck					**Total Quantity**	19.76
Material	Precast Concrete				☐ Limited Inspection		
Element Type					**Environment**		
Protection System	None				☐ Benign		
Condition Data	**Units**	**Excell.**	**Good**	**Fair**	**Poor**	☑ Moderate	
	sq.m	19.76	0.00	0.00	0.00	☐ Severe	

Comments

Performance Deficiencies	Maintenance Needs	Priority	Comments

Rehab/Rehabilitation Recommendations	Priority	Cost	Comments

Decks - Soffit - Thick Slab

Element Group	Decks	**Length**	5.20	**Width** 23.00
Element Name	Soffit - Thick Slab / Interior	**Height**		**Count**
Location	Underside of deck			**Total Quantity** 119.60
Material	Precast Concrete	☐ Limited Inspection		
Element Type		**Environment**		
Protection System	None	☑ Benign		

Condition Data	**Units**	**Excell.**	**Good**	**Fair**	**Poor**
	sq.m	119.60	0.00	0.00	0.00

☐ Moderate ☐ Severe

Comments

Performance Deficiencies	**Maintenance Needs**	**Priority**	**Comments**
None	None		

Rehab/Rehabilitation Recommendations	**Priority**	**Cost**	**Comments**
None			

Decks - Wearing Surface

Element Group	Decks	**Length**	18.10	**Width** 16.57
Element Name	Wearing Surface	**Height**	0.00	**Count**
Location	Above structure			**Total Quantity** 299.92
Material	Asphalt	☐ Limited Inspection		
Element Type		**Environment**		
Protection System	None	☐ Benign		

Condition Data	**Units**	**Excell.**	**Good**	**Fair**	**Poor**
	sq.m	274.92	25.00	0.00	0.00

☐ Moderate ☑ Severe

Comments

Performance Deficiencies	**Maintenance Needs**	**Priority**	**Comments**

Rehab/Rehabilitation Recommendations	**Priority**	**Cost**	**Comments**

Embankments & Streams - Embankments

Element Group	Embankments & Streams	**Length**		**Width**	
Element Name	Embankments	**Height**		**Count**	4.00
Location	All Quadrants			**Total Quantity**	4.00
Material	Vegetation	☐ Limited Inspection			
Element Type		**Environment**			
Protection System	None	☐ Benign			

Condition Data	**Units**	**Excell.**	**Good**	**Fair**	**Poor**
	Each	0.00	4.00	0.00	0.00

☐ Moderate
☐ Severe

Comments

Performance Deficiencies	**Maintenance Needs**	**Priority**	**Comments**
None	None		

Rehab/Rehabilitation Recommendations	**Priority**	**Cost**	**Comments**

Embankments & Streams - Slope Protection

Element Group	Embankments & Streams	**Length**		**Width**	
Element Name	Slope Protection	**Height**		**Count**	4.00
Location	All Quadrants			**Total Quantity**	4.00
Material	Vegetation	☐ Limited Inspection			
Element Type		**Environment**			
Protection System	None	☐ Benign			

Condition Data	**Units**	**Excell.**	**Good**	**Fair**	**Poor**
	Each	0.00	4.00	0.00	0.00

☐ Moderate
☐ Severe

Comments

Performance Deficiencies	**Maintenance Needs**	**Priority**	**Comments**

Rehab/Rehabilitation Recommendations	**Priority**	**Cost**	**Comments**

Sidewalks/Curbs - Curbs

Element Group	Sidewalks/Curbs		**Length**	18.10	**Width**	0.55
Element Name	Curbs	Headwalls	**Height**	0.20	**Count**	1.00
Location	East and West sides				**Total Quantity**	13.58
Material	Cast-in-place Concrete		☐ Limited Inspection			
Element Type			**Environment**			
Protection System	None		☐ Benign			

Condition Data	**Units**	**Excell.**	**Good**	**Fair**	**Poor**
	sq.m	0.00	13.58	0.00	0.00

☐ Moderate ☐ Severe

Comments

- Light abrasions

Performance Deficiencies	Maintenance Needs	Priority	Comments
None	None		

Rehab/Rehabilitation Recommendations	Priority	Cost	Comments

Embankments & Streams - Streams & Waterways

Element Group	Embankments & Streams		**Length**		**Width**	
Element Name	Streams & Waterways		**Height**		**Count**	1.00
Location	Through Structure				**Total Quantity**	1.00
Material			☐ Limited Inspection			
Element Type			**Environment**			
Protection System	None		☐ Benign			

Condition Data	**Units**	**Excell.**	**Good**	**Fair**	**Poor**
	All	0.00	1.00	0.00	0.00

☐ Moderate ☐ Severe

Comments

-Ponding at east corners of structure - Regrade to provide positive drainage

Performance Deficiencies	Maintenance Needs	Priority	Comments
	Bridge Deck Drainage	1-5 years	Drainage **through** structure needs to be regraded

Rehab/Rehabilitation Recommendations	Priority	Cost	Comments

Abutments - Wingwalls

Element Group	Abutments			**Length**	1.10	**Width**	
Element Name	Wingwalls			**Height**	2.30	**Count**	2.00
Location	East Side					**Total Quantity**	5.06
Material	Cast-in-place Concrete			☐ Limited Inspection			
Element Type				**Environment**			
Protection System	None			☐ Benign			

Condition Data	**Units**	**Excell.**	**Good**	**Fair**	**Poor**
	sq.m	5.06	0.00	0.00	0.00

☑ Moderate ☐ Severe

Comments

Performance Deficiencies	**Maintenance Needs**	**Priority**	**Comments**
None	None		

Rehab/Rehabilitation Recommendations	**Priority**	**Cost**	**Comments**

Retaining Walls - Walls

Element Group	Retaining Walls			**Length**	6.20	**Width**	
Element Name	Walls			**Height**	1.40	**Count**	2.00
Location	East Side					**Total Quantity**	17.40
Material	Precast Concrete			☐ Limited Inspection			
Element Type	Retained soil systems			**Environment**			
Protection System	None			☐ Benign			

Condition Data	**Units**	**Excell.**	**Good**	**Fair**	**Poor**
	sq.m	17.40	0.00	0.00	0.00

☑ Moderate ☐ Severe

Comments

Performance Deficiencies	**Maintenance Needs**	**Priority**	**Comments**

Rehab/Rehabilitation Recommendations	**Priority**	**Cost**	**Comments**

Approaches - Approach Guiderail

Element Group	Approaches		**Length**	**Width**
Element Name	Approach Guiderail	Extruder End	**Height**	**Count** 4.00
Location	All Quadrants			**Total Quantity** 4.00
Material	Steel		☐ Limited Inspection	
Element Type			**Environment**	
Protection System	Hot dip galvanized		☐ Benign	

Condition Data	**Units**	**Excell.**	**Good**	**Fair**	**Poor**
	Each	0.00	4.00	0.00	0.00

☐ Moderate
☑ Severe

Comments

Performance Deficiencies	**Maintenance Needs**	**Priority**	**Comments**
None	None		

Rehab/Rehabilitation Recommendations	**Priority**	**Cost**	**Comments**

East Elevation

West Elevation

Looking North at Bridge

Looking South

South East Abutment

North East Abutment

Typical Soffit

Typical Joint and South Abutment Wall

Pounding (Typical on East Side)

Looking East Through the Structure

Deck Slab Joint (Typical)

Extension on West Side

Disintegrated Concrete at RSS Connection

Looking Downstream

Typical Joint on Barrier Wall

Typical Scaling on Barrier Wall

Region of Halton

OSIM Inspection Forms

For the Bridge on Winston Churchill Blvd
Located 0.5 km North of Steeles Avenue
Structure No. 19-1196390 BR05

Prepared by:

Hatch Mott MacDonald
2800 Speakman Drive
Mississauga, ON, Canada L5K 2R7
T: 905 403 4455 F: 905 855 2607
Project Number: 336921

	Name, Title	Signature	Date
Prepared By	J.Hallett, E.I.T.		MAY 27/15
Reviewed By	J.Luckai, P.Eng		May 27/15
Approved By	C.Pasqualino, P.Eng		MAY 28/15

Region of Halton

Municipal Structure Inspection Form **Structure Number:** 19-1196390 BR05

Inventory Data

Structure Name	Winston Churchill Blvd, Lot 1, Conc XI	**Hwy No.**	19	**Key Photo**	
Cross. Type Over	☑ Road ☐ Rail ☐ Ped ☐ Nav. Water ☐ Non-Nav. Water ☐ Other				
Cross. Type Under	☐ Road ☐ Rail ☐ Ped ☐ Nav. Water ☑ Non-Nav. Water ☐ Other				
Road Name	Winston Churchill Blvd				
Structure Location	0.5 km North of Steeles Avenue				
Northing	596708.0 **Easting** 4829286.0 **Cur.Rep.Value**		*		
Owner(s) / % Shared	Region of Halton 50%				
	Regional Municipality of Peel 50%	**Heritage Status**	Not Considered for Designation		
MTO Region	Central	**Road Side Env.**	Rural		
MTO District	Central	**Road Class**	Arterial		
County	Halton	**Lane Type**			
Geographic Twp.		**Posted Speed**	60	**No. of Lanes**	4
Structure Category	Bridge	**AADT**	12,625	**Pct. Trucks**	2
Struct.SubCategory	Frame				
Structure Type	Rigid Frame, Vertical Legs	**Interchange Number**			
Structure Material	Reinforced Precast Concrete	**Design Load Code**			CHBDC
Total Deck Length	11.30 m **Road Width** 17.80 m	**Interchange Structure Number**			
Overall Width	25.14 m **Vert. Clear** 0.00 m	**Detour Length**	0 km	**Skew Angle**	0 °
Total Deck Area	284.08 m^2 **No. of Spans** 1	**Fill on Structure**	0 m	**Struct. Dir.**	North/South
Special Routes	☐ Transit ☑ School ☐ Truck ☐ Bicycle	**Insp. Duration**	1 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 Lengths	Span Name	Span Lengths
Span 1	10.4 m		

Historical Data

Year Built	2011 yyyy	**Year of Last Major Rehab**		yyyy	
Last OSIM Inspection	10/09/2012 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**	t	t	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

Region of Halton

Municipal Structure Inspection Form **Structure Number:** 19-1196390 BR05

Field Inspection Information

Inspection Date	05/06/2015 mm/dd/yyyy ☐ Multi Day Inspection ☑ OSIM ☐ Enhanced OSIM	**BCI**	98.9
Inspector	C.Chan, E.I.T.	**Eng. Responsible**	J.Luckai, P.Eng
Others in Party	J.Hallett, E.I.T.		
Access Equip.	☐ Lift ☐ Ladder ☐ Boat ☐ Bridge Master Other		
Other Equip.	Hammer, Camera, Measuring Tape		
Weather	Sunny	**Temperature**	20 °C

Additional Investigation Required:

Investigation	**Priority**			**Estimated Cost**
	None	**Normal**	**Urgent**	
Detailed Deck Condition Survey	☑	☐	☐	$0
Delamination Survey of Asphalt-Covered Deck	☑	☐	☐	$0
Concrete Substructure Condition Survey	☑	☐	☐	$0
Detailed Coating Condition Survey	☑	☐	☐	$0
Post-Tensioned Strand Investigation	☑	☐	☐	$0
Underwater Investigation	☑	☐	☐	$0
Fatigue Investigation	☑	☐	☐	$0
Seismic Investigation	☑	☐	☐	$0
Structure Evaluation	☑	☐	☐	$0
Monitoring of Deformation, Movements and Settlements	☑	☐	☐	$0
Monitoring of Crack Widths	☑	☐	☐	$0

Investigation Notes **Total Cost** **$0**

Overall Structure Notes:

Recommended Work on Structure ☐ None ☑ Minor Rehab ☐ Major Rehab ☐ Replace ☐ Remove

Timing of Recommended Work ☑ 1 to 5 years ☐ 6 to 10 years

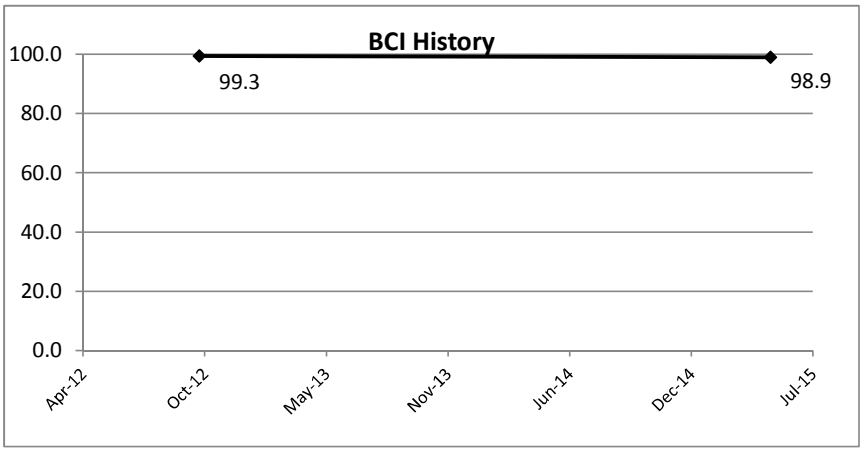
Overall Comments - Patch repair at PVC outlet

BCI Change Justification

Next Inspection 05/06/2017 mm/dd/yyyy **Estimated Load Limit** t t t

BCI History

Inspection Date	BCI	Inspector
9-Oct-12	99.3	D.Kelly
6-May-15	98.9	J.Luckai



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

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)

Approaches - Wearing Surface (Approach)

Element Group	Approaches	**Length**	6.00	**Width**	17.80
Element Name	Wearing Surface (Approach)	**Height**	0.00	**Count**	2.00
Location	Both Sides			**Total Quantity**	213.60
Material	Asphalt	☐ Limited Inspection			
Element Type		**Environment**			
Protection System	None	☐ Benign			

Condition Data	**Units**	**Excell.**	**Good**	**Fair**	**Poor**
	sq.m	174.60	39.00	0.00	0.00

☐ Moderate
☑ Severe

Comments

Performance Deficiencies	**Maintenance Needs**	**Priority**	**Comments**
None	None		

Rehab/Rehabilitation Recommendations	**Priority**		**Cost**	**Comments**
Minor Rehabilitation	1-5	yrs.	$1,000	Patch repair at round PVC outlet

Barriers - Barrier/Parapet Wall

Element Group	Barriers	**Length**	23.24	**Width**	0.00
Element Name	Barrier/Parapet Wall — Interior	**Height**	1.10	**Count**	2.00
Location	Both sides			**Total Quantity**	51.13
Material	Cast-in-place Concrete	☐ Limited Inspection			
Element Type	Parapet Wall with single railing	**Environment**			
Protection System	None	☐ Benign			

Condition Data	**Units**	**Excell.**	**Good**	**Fair**	**Poor**
	sq.m	33.13	17.00	1.00	0.00

☐ Moderate
☑ Severe

Comments

- Medium spall on North side --> 75mm dia., 30.7 m from NE corner of barrier
- Light scaling elsewhere
- Light hairline cracking

Performance Deficiencies	**Maintenance Needs**	**Priority**	**Comments**
None	None		

Rehab/Rehabilitation Recommendations	**Priority**		**Cost**	**Comments**
None		yrs.	$0	

Barriers - Barrier/Parapet Wall

Element Group	Barriers	**Length**	23.24	**Width**	0.00
Element Name	Barrier/Parapet Wall — Exterior	**Height**	0.83	**Count**	2.00
Location	Both Sides			**Total Quantity**	38.58
Material	Cast-in-place Concrete	☐ Limited Inspection			
Element Type	Parapet Wall with single railing	**Environment**			
Protection System	None	☐ Benign			

Condition Data	**Units**	**Excell.**	**Good**	**Fair**	**Poor**
	sq.m	36.58	2.00	0.00	0.00

☐ Moderate ☑ Severe

Comments

- Some light scaling

Performance Deficiencies	Maintenance Needs	Priority	Comments
None	None		

Rehab/Rehabilitation Recommendations	Priority		Cost	Comments
None		yrs.	$0	

Abutments - Abutment Walls

Element Group	Abutments	**Length**	6.00	**Width**	25.14
Element Name	Abutment Walls	**Height**	1.50	**Count**	2.00
Location	North and south sides			**Total Quantity**	75.42
Material	Precast Concrete	☐ Limited Inspection			
Element Type	Legs of rigid frame	**Environment**			
Protection System	None	☑ Benign			

Condition Data	**Units**	**Excell.**	**Good**	**Fair**	**Poor**
	sq.m	73.42	2.00	0.00	0.00

☐ Moderate ☐ Severe

Comments

- Spalling around PVC outlet on South Wall
- Staining on some joints

Performance Deficiencies	Maintenance Needs	Priority	Comments
None	None		

Rehab/Rehabilitation Recommendations	Priority		Cost	Comments
Minor Rehabilitation	1-5	yrs.	$1,000	Patch repair at round PVC outlet

Foundation - Foundation (below ground level)

Element Group	Foundation	**Length**	0.00 **Width** 0.00
Element Name	Foundation (below ground level)	**Height**	0.00 **Count** 0.00
Location	Below structure		**Total Quantity** 0.00
Material		☑ Limited Inspection	
Element Type		**Environment**	
Protection System	None	☐ Benign	

Condition Data	**Units**	**Excell.**	**Good**	**Fair**	**Poor**
	0	0.00	0.00	0.00	0.00

☐ Moderate
☐ Severe

Comments

Limited inspection.

Performance Deficiencies	Maintenance Needs	Priority	Comments
None	None		

Rehab/Rehabilitation Recommendations	Priority	Cost	Comments
None	yrs.	$0	

Approaches - Approach Slab

Element Group	Approaches	**Length**	6.00 **Width** 17.80
Element Name	Approach Slab	**Height**	0.00 **Count** 2.00
Location	Both ends		**Total Quantity** 213.60
Material	Cast-in-place Concrete	☐ Limited Inspection	
Element Type		**Environment**	
Protection System	Hot rubberized aphalt membrane	☐ Benign	

Condition Data	**Units**	**Excell.**	**Good**	**Fair**	**Poor**
	sq.m	213.60	0.00	0.00	0.00

☑ Moderate
☐ Severe

Comments

Performance Deficiencies	Maintenance Needs	Priority	Comments
None	None		

Rehab/Rehabilitation Recommendations	Priority	Cost	Comments
None	yrs.	$0	

Decks - Deck Top (with Thick Slab)

Element Group	Decks		**Length**	11.30	**Width** 25.14
Element Name	Deck Top (with Thick Slab)		**Height**	0.00	**Count** 2.00
Location	Above structure				**Total Quantity** 284.08
Material	Precast Concrete		☐ Limited Inspection		
Element Type	Precast solid or void without concrete topping		**Environment**		
Protection System	Hot rubberized asphalt membrane		☐ Benign		

Condition Data	**Units**	**Excell.**	**Good**	**Fair**	**Poor**
	sq.m	284.08	0.00	0.00	0.00

☑ Moderate ☐ Severe

Comments

Performance Deficiencies	**Maintenance Needs**	**Priority**	**Comments**
None	None		

Rehab/Rehabilitation Recommendations	**Priority**	**Cost**	**Comments**
None	yrs.	$0	

Decks - Soffit - Thick Slab

Element Group	Decks		**Length**	10.40	**Width** 3.80
Element Name	Soffit - Thick Slab	Exterior	**Height**	0.00	**Count** 0.00
Location	Underside of Deck				**Total Quantity** 39.52
Material	Precast Concrete		☐ Limited Inspection		
Element Type			**Environment**		
Protection System	None		☐ Benign		

Condition Data	**Units**	**Excell.**	**Good**	**Fair**	**Poor**
	sq.m	37.02	2.50	0.00	0.00

☑ Moderate ☐ Severe

Comments

- Honeycombing along edge
- Hairline cracks on vertical face
- Lighr scaling on vertical face

Performance Deficiencies	**Maintenance Needs**	**Priority**	**Comments**
None	None		

Rehab/Rehabilitation Recommendations	**Priority**	**Cost**	**Comments**
None	yrs.	$0	

Decks - Soffit - Thick Slab

Element Group	Decks		**Length**	11.30	**Width** 23.14
Element Name	Soffit - Thick Slab	Interior	**Height**	0.00	**Count** 0.00
Location	Underside of deck				**Total Quantity** 261.48
Material	Precast Concrete		☐ Limited Inspection		
Element Type			**Environment**		
Protection System	None		☑ Benign		

Condition Data	**Units**	**Excell.**	**Good**	**Fair**	**Poor**
	sq.m	256.48	3.00	1.00	1.00

☐ Moderate ☐ Severe

Comments

- Some joints with light honeycombing, scalling, spalling, and/or staining

Performance Deficiencies	**Maintenance Needs**	**Priority**	**Comments**
None	None		

Rehab/Rehabilitation Recommendations	**Priority**	**Cost**	**Comments**
None	yrs.	$0	

Decks - Wearing Surface

Element Group	Decks		**Length**	11.30	**Width** 17.80
Element Name	Wearing Surface		**Height**	0.00	**Count** 1.00
Location	Above structure				**Total Quantity** 201.14
Material	Asphalt		☐ Limited Inspection		
Element Type			**Environment**		
Protection System	None		☐ Benign		

Condition Data	**Units**	**Excell.**	**Good**	**Fair**	**Poor**
	sq.m	161.14	40.00	0.00	0.00

☐ Moderate ☑ Severe

Comments

Performance Deficiencies	**Maintenance Needs**	**Priority**	**Comments**
None	None		

Rehab/Rehabilitation Recommendations	**Priority**	**Cost**	**Comments**
None	yrs.	$0	

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	Vegetation		☐ Limited Inspection		
Element Type			**Environment**		
Protection System	Vegetation		☐ Benign		

Condition Data	**Units**	**Excell.**	**Good**	**Fair**	**Poor**
	Each	0.00	4.00	0.00	0.00

☐ Moderate ☐ Severe

Comments

Performance Deficiencies	**Maintenance Needs**	**Priority**	**Comments**
None	None		

Rehab/Rehabilitation Recommendations	**Priority**	**Cost**	**Comments**
None	yrs.	$0	

Embankments & Streams - Slope Protection

Element Group	Embankments & Streams		**Length**	23.24	**Width** 0.00
Element Name	Slope Protection		**Height**	1.16	**Count** 4.00
Location	All Quadrants				**Total Quantity** 4.00
Material	Vegetation		☐ Limited Inspection		
Element Type			**Environment**		
Protection System	None		☐ Benign		

Condition Data	**Units**	**Excell.**	**Good**	**Fair**	**Poor**
	Each	0.00	4.00	0.00	0.00

☐ Moderate ☐ Severe

Comments

Performance Deficiencies	**Maintenance Needs**	**Priority**	**Comments**
None	None		

Rehab/Rehabilitation Recommendations	**Priority**	**Cost**	**Comments**
None	yrs.	$0	

Sidewalks/Curbs - Curbs

Element Group	Sidewalks/Curbs	**Length**	6.00	**Width**	0.15
Element Name	Curbs	**Height**	0.15	**Count**	2.00
Location	Both Sides			**Total Quantity**	3.60
Material	Cast-in-place Concrete	☐ Limited Inspection			
Element Type		**Environment**			
Protection System	None	☐ Benign			

Condition Data	**Units**	**Excell.**	**Good**	**Fair**	**Poor**	
	sq.m	2.60	1.00	0.00	0.00	☑ Severe

Comments

Performance Deficiencies	**Maintenance Needs**	**Priority**	**Comments**
None	None		

Rehab/Rehabilitation Recommendations	**Priority**	**Cost**	**Comments**
None	yrs.	$0	

Embankments & Streams - Streams & Waterways

Element Group	Embankments & Streams	**Length**	0.00	**Width**	0.00
Element Name	Streams & Waterways	**Height**	0.00	**Count**	1.00
Location	Through Structure			**Total Quantity**	1.00
Material		☐ Limited Inspection			
Element Type		**Environment**			
Protection System	None	☐ Benign			

Condition Data	**Units**	**Excell.**	**Good**	**Fair**	**Poor**	
	All	0.00	1.00	0.00	0.00	☐ Severe

Comments

- Ponding at east corners of structure - regrade to provide positive drainage

Performance Deficiencies	**Maintenance Needs**	**Priority**	**Comments**
None	Bridge Deck Drainage	1- 5 yrs	Drainage **through** structure needs to be regraded

Rehab/Rehabilitation Recommendations	**Priority**	**Cost**	**Comments**
None	yrs.	$0	

Abutments - Wingwalls

Element Group	Abutments	**Length**	1.60	**Width**	3.80
Element Name	Wingwalls	**Height**	3.10	**Count**	4.00
Location	All Quadrants			**Total Quantity**	19.84
Material	Cast-in-place Concrete	☐ Limited Inspection			
Element Type	Reinforced Concrete	**Environment**			
Protection System	None	☐ Benign			

Condition Data	**Units**	**Excell.**	**Good**	**Fair**	**Poor**
	sq.m	17.84	1.00	1.00	0.00

☐ Moderate ☑ Severe

Comments

- Hairline cracks
- Medium / Light scaling

Performance Deficiencies	**Maintenance Needs**	**Priority**	**Comments**
None	None		

Rehab/Rehabilitation Recommendations	**Priority**	**Cost**	**Comments**
None	yrs.	$0	

Retaining Walls - Walls

Element Group	Retaining Walls	**Length**	6.00	**Width**	23.14
Element Name	Walls	**Height**	0.83	**Count**	4.00
Location	All Quadrants			**Total Quantity**	19.92
Material	Precast Concrete	☐ Limited Inspection			
Element Type	Retained soil systems	**Environment**			
Protection System	None	☐ Benign			

Condition Data	**Units**	**Excell.**	**Good**	**Fair**	**Poor**
	sq.m	19.92	0.00	0.00	0.00

☐ Moderate ☐ Severe

Comments

Performance Deficiencies	**Maintenance Needs**	**Priority**	**Comments**
None	None		

Rehab/Rehabilitation Recommendations	**Priority**	**Cost**	**Comments**
None	yrs.	$0	

Approaches - Approach Guiderail

Element Group	Approaches		**Length**	6.00	**Width** 0.00
Element Name	Approach Guiderail	Extruder End	**Height**	0.83	**Count** 1.00
Location	South East Quadrant				**Total Quantity** 1.00
Material	Steel		☐ Limited Inspection		
Element Type			**Environment**		
Protection System	Hot dip Galvanized		☐ Benign		

Condition Data	**Units**	**Excell.**	**Good**	**Fair**	**Poor**
	Each	0.00	1.00	0.00	0.00

☐ Moderate
☑ Severe

Comments

Performance Deficiencies	**Maintenance Needs**	**Priority**	**Comments**
None	None		

Rehab/Rehabilitation Recommendations	**Priority**	**Cost**	**Comments**
None	yrs.	$0	

Sidewalks/Curbs - Sidewalk and medians

Element Group	Sidewalks/Curbs		**Length**	11.24	**Width** 3.20
Element Name	Sidewalk and medians	Sidewalk	**Height**	0.15	**Count** 2.00
Location	Both sides				**Total Quantity** 75.31
Material	Cast-in-place Concrete		☐ Limited Inspection		
Element Type			**Environment**		
Protection System	None		☐ Benign		

Condition Data	**Units**	**Excell.**	**Good**	**Fair**	**Poor**
	sq.m	60.31	15.00	0.00	0.00

☐ Moderate
☑ Severe

Comments

Performance Deficiencies	**Maintenance Needs**	**Priority**	**Comments**
None	None		

Rehab/Rehabilitation Recommendations	**Priority**	**Cost**	**Comments**
None	yrs.	$0	

Retaining Walls - Barrier Systems on Walls

Element Group	Retaining Walls		**Length**	6.00	**Width** 0.15
Element Name	Barrier Systems on Walls	Exterior	**Height**	0.83	**Count** 4.00
Location	All Quadrants				**Total Quantity** 19.92
Material	Cast-in-place Concrete		☐ Limited Inspection		
Element Type	Parapet Wall with single railing		**Environment**		
Protection System	None		☐ Benign		

Condition Data	**Units**	**Excell.**	**Good**	**Fair**	**Poor**
	sq.m	19.92	0.00	0.00	0.00

☑ Moderate ☐ Severe

Comments

Performance Deficiencies	**Maintenance Needs**	**Priority**	**Comments**
None	None		

Rehab/Rehabilitation Recommendations	**Priority**	**Cost**	**Comments**
None	yrs.	$0	

Retaining Walls - Barrier Systems on Walls

Element Group	Retaining Walls		**Length**	6.00	**Width** 3.20
Element Name	Barrier Systems on Walls	Interior	**Height**	1.10	**Count** 4.00
Location	All Quadrants				**Total Quantity** 26.40
Material	Cast-in-place Concrete		☐ Limited Inspection		
Element Type	Parapet Wall with single railing		**Environment**		
Protection System	None		☐ Benign		

Condition Data	**Units**	**Excell.**	**Good**	**Fair**	**Poor**
	sq.m	21.40	5.00	0.00	0.00

☐ Moderate ☑ Severe

Comments

Performance Deficiencies	**Maintenance Needs**	**Priority**	**Comments**
None	None		

Rehab/Rehabilitation Recommendations	**Priority**	**Cost**	**Comments**
None	yrs.	$0	

Barriers - Hand Railings

Element Group	Barriers				**Length**	23.24	**Width** 0.00
Element Name	Hand Railings				**Height** 0.00		**Count** 2.00
Location	Both Sides						**Total Quantity** 46.48
Material	Steel				☐ Limited Inspection		
Element Type					**Environment**		
Protection System	Hot dip galvanized				☐ Benign		
Condition Data	**Units**	**Excell.**	**Good**	**Fair**	**Poor**	☐ Moderate	
	m	37.28	9.20	0.00	0.00	☑ Severe	

Comments

Performance Deficiencies	Maintenance Needs	Priority	Comments
None	None		

Rehab/Rehabilitation Recommendations	Priority	Cost	Comments
None	yrs.	$0	

Coatings - Barrier Systems / Hand Railings

Element Group	Coatings				**Length** 6.00		**Width** 0.00
Element Name	Barrier Systems / Hand Railings				**Height** 1.10		**Count** 1.00
Location	Both sides						**Total Quantity** 14.60
Material					☐ Limited Inspection		
Element Type	Hot dip galvanized				**Environment**		
Protection System	None				☐ Benign		
Condition Data	**Units**	**Excell.**	**Good**	**Fair**	**Poor**	☐ Moderate	
	m	11.60	3.00	0.00	0.00	☑ Severe	

Comments

Performance Deficiencies	Maintenance Needs	Priority	Comments
None	None		

Rehab/Rehabilitation Recommendations	Priority	Cost	Comments
None	yrs.	$0	

Approaches - Curbs and gutters

Element Group	Approaches	**Length**	6.00	**Width**	3.20
Element Name	Curbs and gutters	**Height**	0.15	**Count**	4.00
Location	All Quadrants			**Total Quantity**	24.00
Material	Cast-in-place Concrete	☐ Limited Inspection			
Element Type		**Environment**			
Protection System	None	☐ Benign			

Condition Data	**Units**	**Excell.**	**Good**	**Fair**	**Poor**
	m	17.50	6.50	0.00	0.00

☐ Moderate
☑ Severe

Comments

Performance Deficiencies	**Maintenance Needs**	**Priority**	**Comments**
None	None		

Rehab/Rehabilitation Recommendations	**Priority**	**Cost**	**Comments**
None	yrs.	$0	

East Elevation

West Elevation

Looking South at Bridge

Looking North at Bridge

Looking West Under Structure

Typical Ponding at Abutment Corners

Typical Soffit

Typical Soffit Edge

Honeycombing at Soffit

Typical Wingwall

Typical Joint

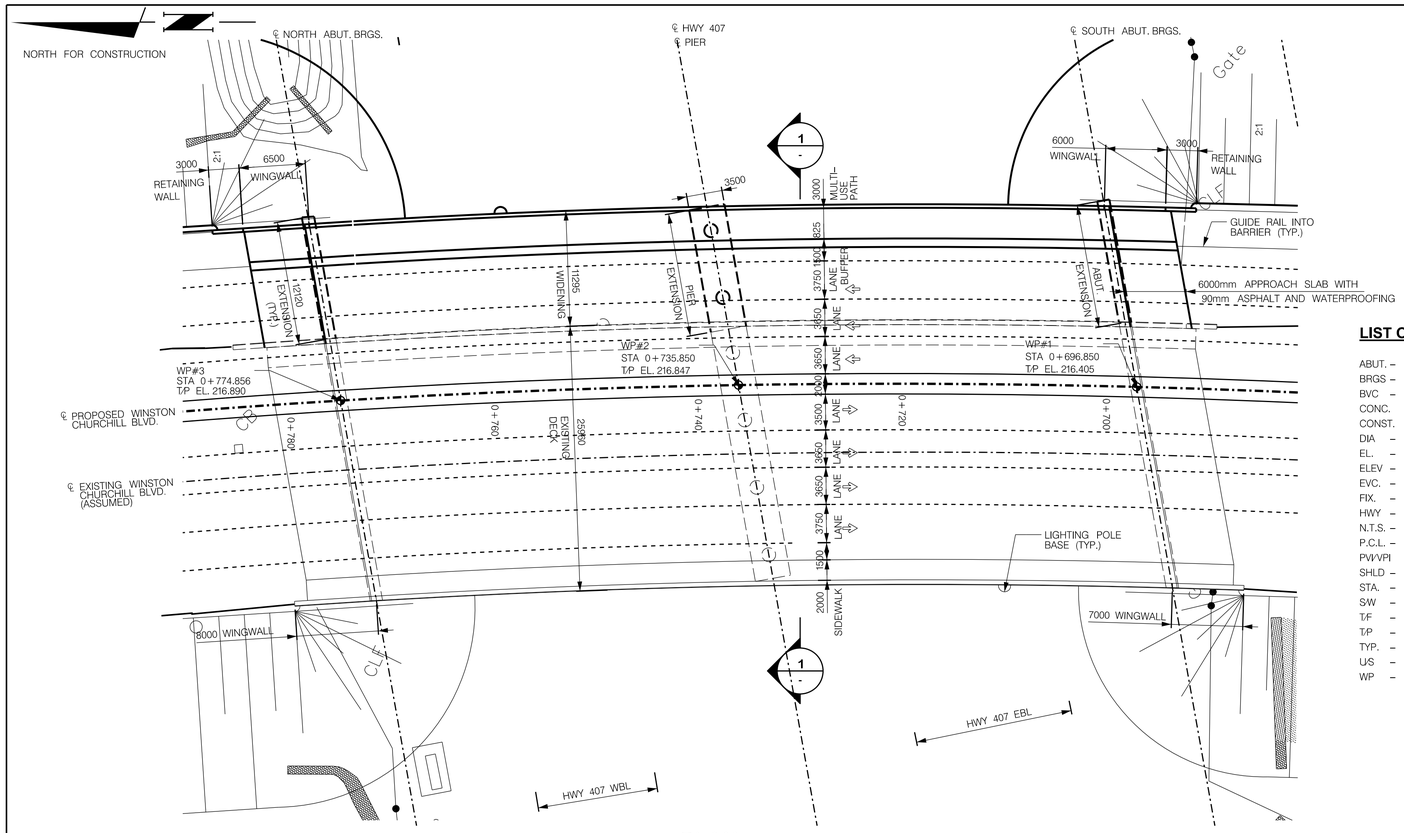
Joint with Staining and Scaling

Spall at Soffit Joint

Spalling around PVC Inlet

Narrow Crack on Interior Parapet Wall

Spall on Interior Parapet Wall



PLAN
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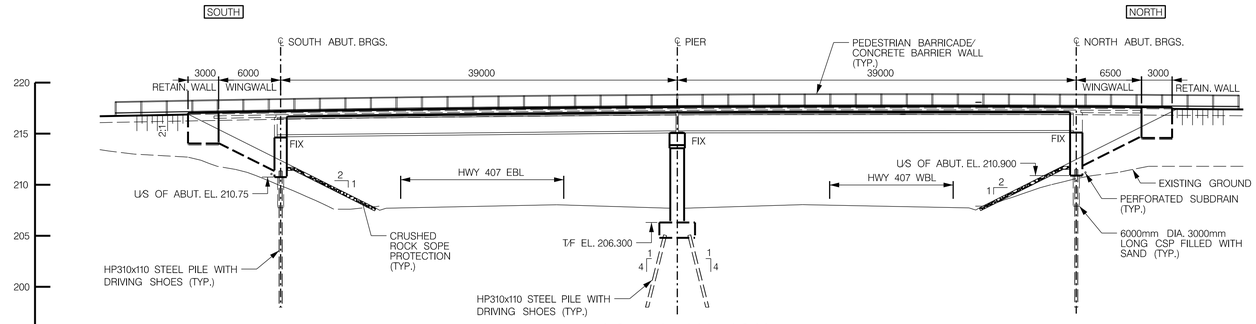
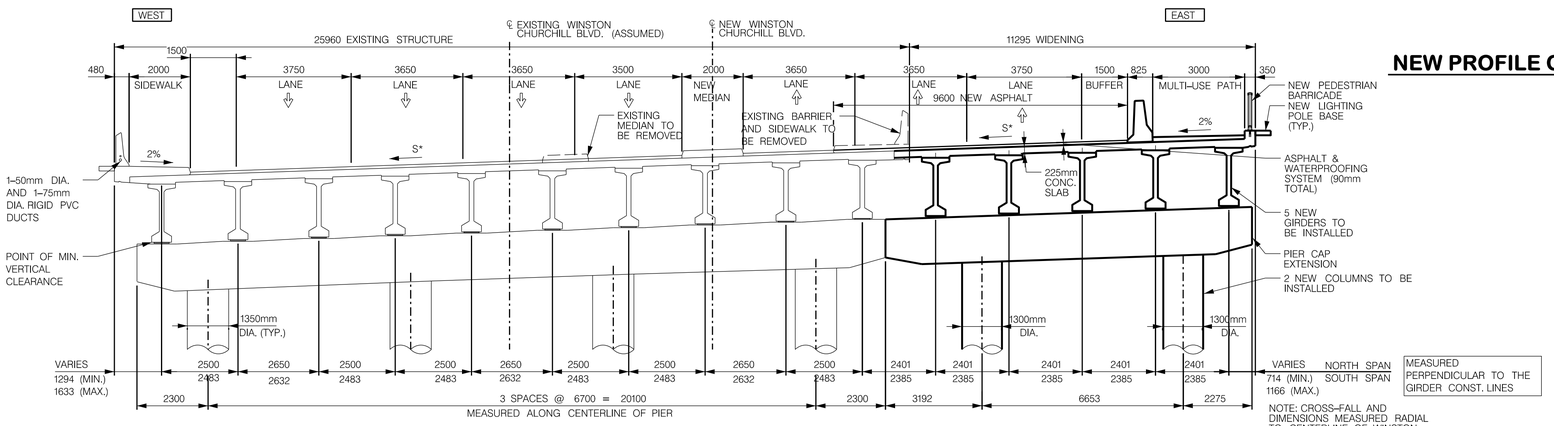


EAST ELEVATION
SCALE 1:300

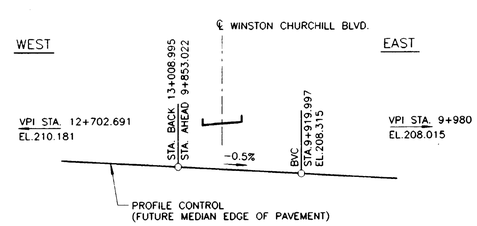


NOTE: CROSS–FALL AND DIMENSIONS MEASURED RADIAL TO CENTERLINE OF WINSTON CHURCHILL BLVD. UNLESS NOTED OTHERWISE.

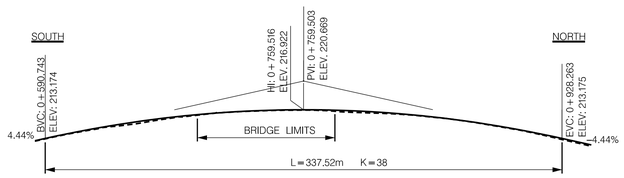
SECTION
SCALE 1:100

1

* FOR CROSS FALL SEE TABLE.



EXISTING PROFILE OF HWY 407
N.T.S



NEW PROFILE OF WINSTON CHURCHILL BLVD.
N.T.S

METRIC DIMENSIONS ARE IN METERS AND/OR MILLIMETERS UNLESS OTHERWISE SHOWN

CROSS–FALL AT WINSTON CHURCHILL BLVD.		
STATION CL WINSTON CHURCHAILL BOULEVARD	NORTH BOUND LANE	SOUTH BOUND LANE
0+679.370	+2%	–2.4%
0+701.945	+3.4%	–3.4%
0+870.000	+3.4%	–3.4%

LIST OF ABBREVIATIONS:

ABUT.	–	DENOTES ABUTMENT
BRGS	–	DENOTES BEARINGS
BVC	–	DENOTES BEGINNING VERTICAL CURVE
CONC.	–	DENOTES CONCRETE
CONST.	–	DENOTES CONSTRUCTION
DIA	–	DENOTES DIAMETER
EL.	–	DENOTES ELEVATION
ELEV	–	DENOTES ELEVATION
EVC.	–	DENOTES END VERTICAL CURVE
FIX.	–	DENOTES FIXED
HWY	–	DENOTES HIGHWAY
N.T.S.	–	DENOTES NOT TO SCALE
P.C.L.	–	DENOTES PROFILE CONTROL LINE
PVI/VPI		DENOTES POINT OF VERTICAL INTERSECTION
SHLD	–	DENOTES SHOULDER
STA.	–	DENOTES STATION
S/W	–	DENOTES SIDEWALK
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T/P	–	DENOTES TOP OF PAVEMENT
TYP.	–	DENOTES TYPICAL
U/S	–	DENOTES UNDERSIDE
WP	–	DENOTES WORKING POINT

APPLICABLE STANDARD DRAWINGS:

OPSD 3101.150	– WALLS ABUTMENT BACKFILL MINIMUM GRANULAR REQUIREMENT
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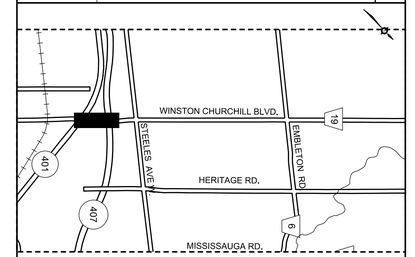
SS116–1	– 6000mm APPROACH SLAB
SS116–21	– ROCK SLOPE PROTECTION WITHOUT BEAM

SERVICE DATA					
SERVICE	DATE	INIT.	SERVICE	DATE	INIT.
SAN. SEWERS			GAS MAINS		
STORM SEWERS			BELL U/G CABLE		
WATERMAINS			HYDRO U/G CABLE		
TRANSIT			HYDRO ONE		
PARKS & REC.			CTV		
ONT. CLEAN WATER			COMMUNIC. CABLES		

REVISIONS		
DATE	DETAILS	INIT.



KEY PLAN (N.T.S.)

GENERAL NOTES:

LOCATION OF EXISTING CENTERLINES OF WINSTON CHURCHILL BLVD. AND HWY 407 DRAWN ARE ESTIMATED FROM RECORD DRAWINGS. LOCATION OF HWY 407 LANES ESTIMATED FROM RECORD DRAWINGS

CLASS OF CONCRETE:

PRESTRESSED GIRDERS ——— 45MPa
REMAINDER ——— 30MPa

CLEAR COVER TO REINFORCING STEEL:

FOOTINGS ——— 100±25mm
DECK ——— TOP ——— 70±20mm
BOTTOM ——— 40±10mm
REMAINDER UNLESS OTHERWISE NOTED ——— 70±20mm

REINFORCING STEEL:

1. REINFORCING STEEL SHALL BE GRADE 400 UNLESS OTHERWISE SPECIFIED.
2. BAR MARKS WITH PREFIX 'C' DENOTE COATED BARS.

CONSTRUCTION NOTES:

1. THE CONTRACTOR SHALL ESTABLISH THE BEARING SEAT ELEVATIONS BY DEDUCTING THE ACTUAL BEARING THICKNESS FROM THE TOP OF BEARING ELEVATIONS. IF THE ACTUAL BEARING THICKNESS ARE DIFFERENT FROM THOSE GIVEN WITH THE BEARING DESIGN DATA, THE CONTRACTOR SHALL ADJUST THE REINFORCING STEEL TO SUIT.
2. CONSTRUCT ABUTMENT AND WINGWALL TO THE BEARING SEAT ELEVATIONS. THE CONTRACTOR SHALL SUPPLY TEMPORARY LATERAL BEARING FOR THE ABUTMENTS. FORMWORK AND LATERAL BRACING SHALL NOT BE REMOVED UNTILL THE CONCRETE DECK HAS REACHED 70% OF ITS SPECIFIED 28–DAY STRENGTH.
3. COMPACTED FILL MAXIMUM GRAIN SIZE 75mm SHALL BE PLACED UP TO THE BOTTOM OF FOOTING ELEVATION PRIOR TO DRIVING PILES.
4. NO BACKFILL SHALL BE PLACED BEHIND ABUTMENTS UNTIL DECK CONCRETE HAS REACHED 70% OF ITS SPECIFIED 28–DAY STRENGTH.
5. BACKFILL SHALL BE PLACED SIMULTANEOUSLY BEHIND BOTH ABUTMENTS KEEPING THE HEIGHT OF THE BACKFILL APPROXIMATELY THE SAME. AT NO TIME SHALL THE DIFFERENCE IN ELEVATION BE GREATER THAN 0.5m.

10m 0 10 20 30m
HORIZONTAL SCALE

HATCH

Designed by | Chkd. | Approved by

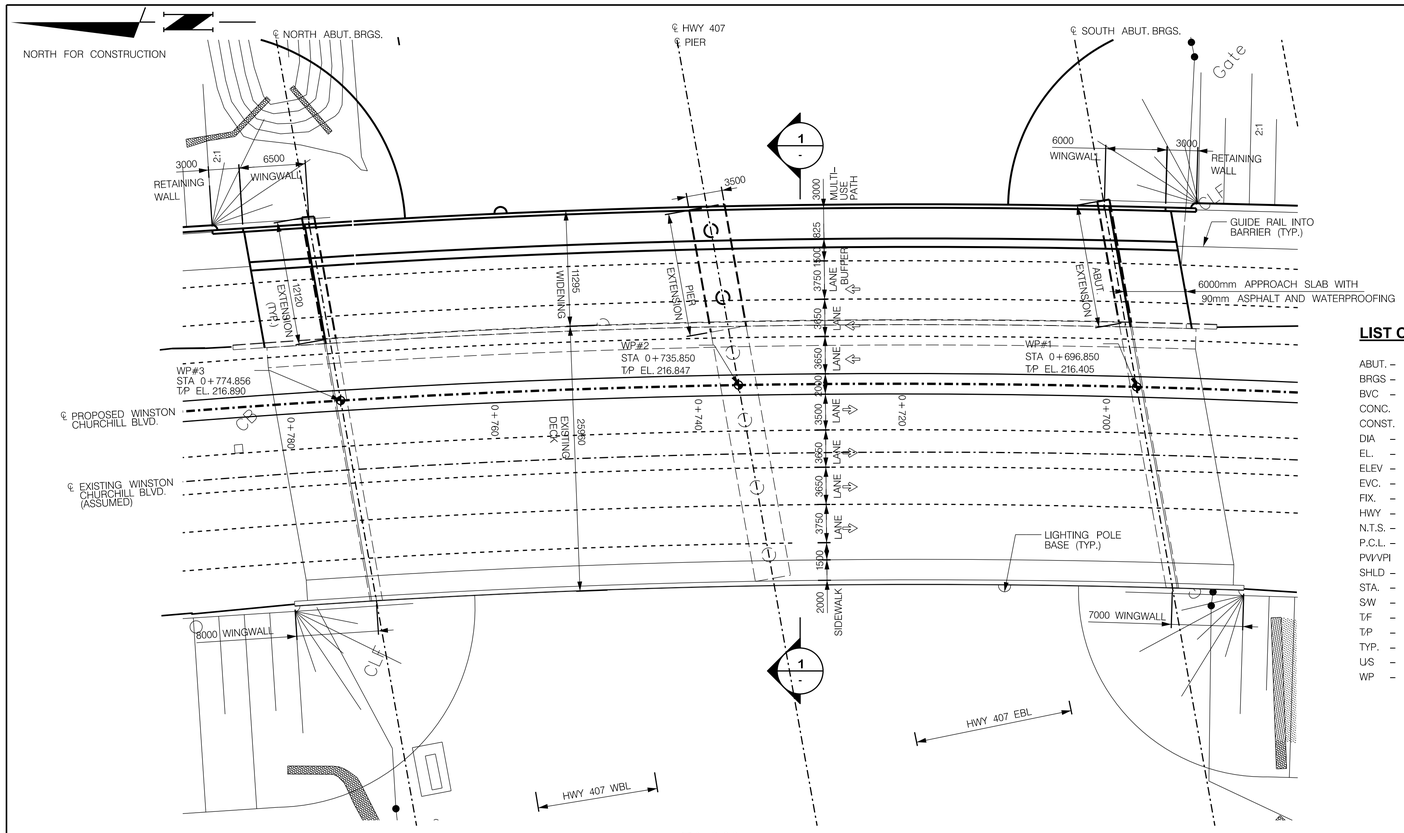
Region of Peel
Working for you

WINSTON CHURCHILL BLVD.
(FROM HIGHWAY 401 TO EMBLETON ROAD)

STRUCTURE No. B10

GENERAL ARRANGEMENT

CAD Area -	Area -	Project No.	XX-XXXX
Checked by	Drawn by	Plan No.	14-4380
Date	Sheet of		



PLAN
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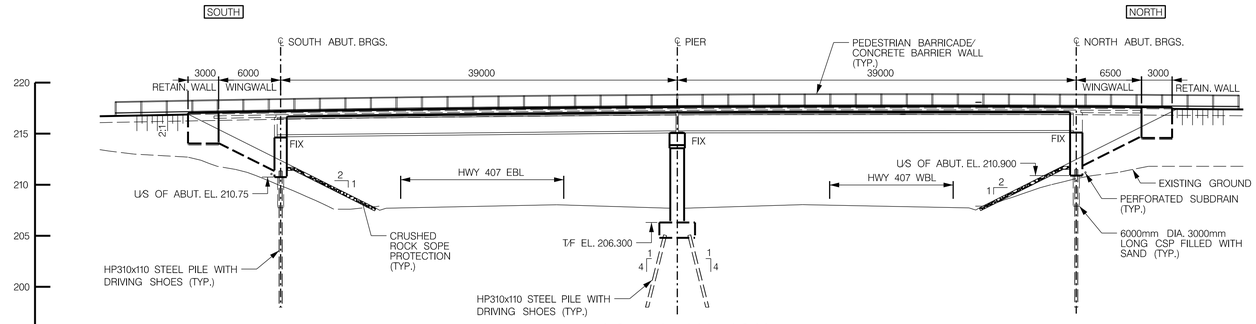
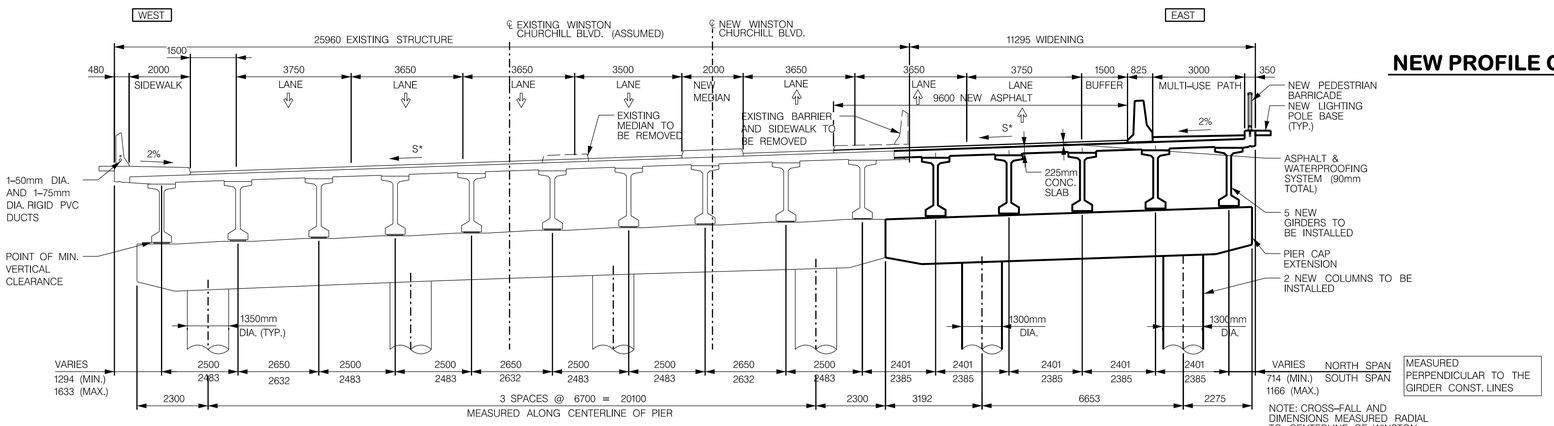


EAST ELEVATION
SCALE 1:300



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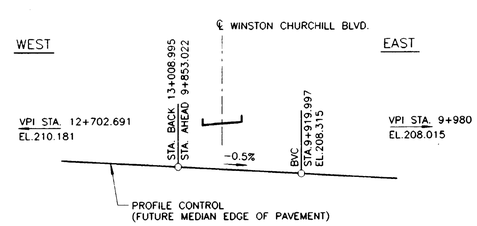
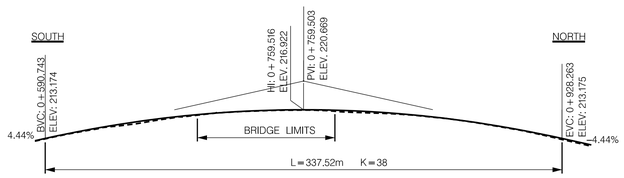
SECTION
SCALE 1:100

1

* FOR CROSS FALL SEE TABLE.



EXISTING PROFILE OF HWY 407
N.T.S



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SERVICE DATA					
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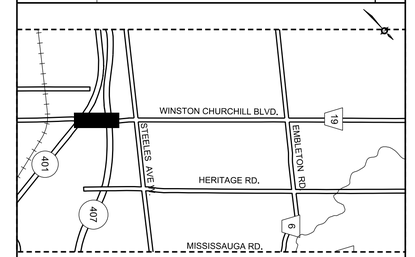
STORM SEWERS			BELL U/G CABLE		
WATERMAINS			HYDRO U/G CABLE		
TRANSIT			HYDRO ONE		
PARKS & REC.			CTV		
ONT. CLEAN WATER			COMMUNIC. CABLES		

REVISIONS		
DATE	DETAILS	INIT.



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2. BAR MARKS WITH PREFIX 'C' DENOTE COATED BARS.

CONSTRUCTION NOTES:

1. THE CONTRACTOR SHALL ESTABLISH THE BEARING SEAT ELEVATIONS BY DEDUCTING THE ACTUAL BEARING THICKNESS FROM THE TOP OF BEARING ELEVATIONS. IF THE ACTUAL BEARING THICKNESS ARE DIFFERENT FROM THOSE GIVEN WITH THE BEARING DESIGN DATA, THE CONTRACTOR SHALL ADJUST THE REINFORCING STEEL TO SUIT.
2. CONSTRUCT ABUTMENT AND WINGWALL TO THE BEARING SEAT ELEVATIONS. THE CONTRACTOR SHALL SUPPLY TEMPORARY LATERAL BEARING FOR THE ABUTMENTS. FORMWORK AND LATERAL BRACING SHALL NOT BE REMOVED UNTILL THE CONCRETE DECK HAS REACHED 70% OF ITS SPECIFIED 28–DAY STRENGTH.
3. COMPACTED FILL MAXIMUM GRAIN SIZE 75mm SHALL BE PLACED UP TO THE BOTTOM OF FOOTING ELEVATION PRIOR TO DRIVING PILES.
4. NO BACKFILL SHALL BE PLACED BEHIND ABUTMENTS UNTIL DECK CONCRETE HAS REACHED 70% OF ITS SPECIFIED 28–DAY STRENGTH.
5. BACKFILL SHALL BE PLACED SIMULTANEOUSLY BEHIND BOTH ABUTMENTS KEEPING THE HEIGHT OF THE BACKFILL APPROXIMATELY THE SAME. AT NO TIME SHALL THE DIFFERENCE IN ELEVATION BE GREATER THAN 0.5m.

10m 0 10 20 30m
HORIZONTAL SCALE

HATCH

Designed by | Chkd. | Approved by

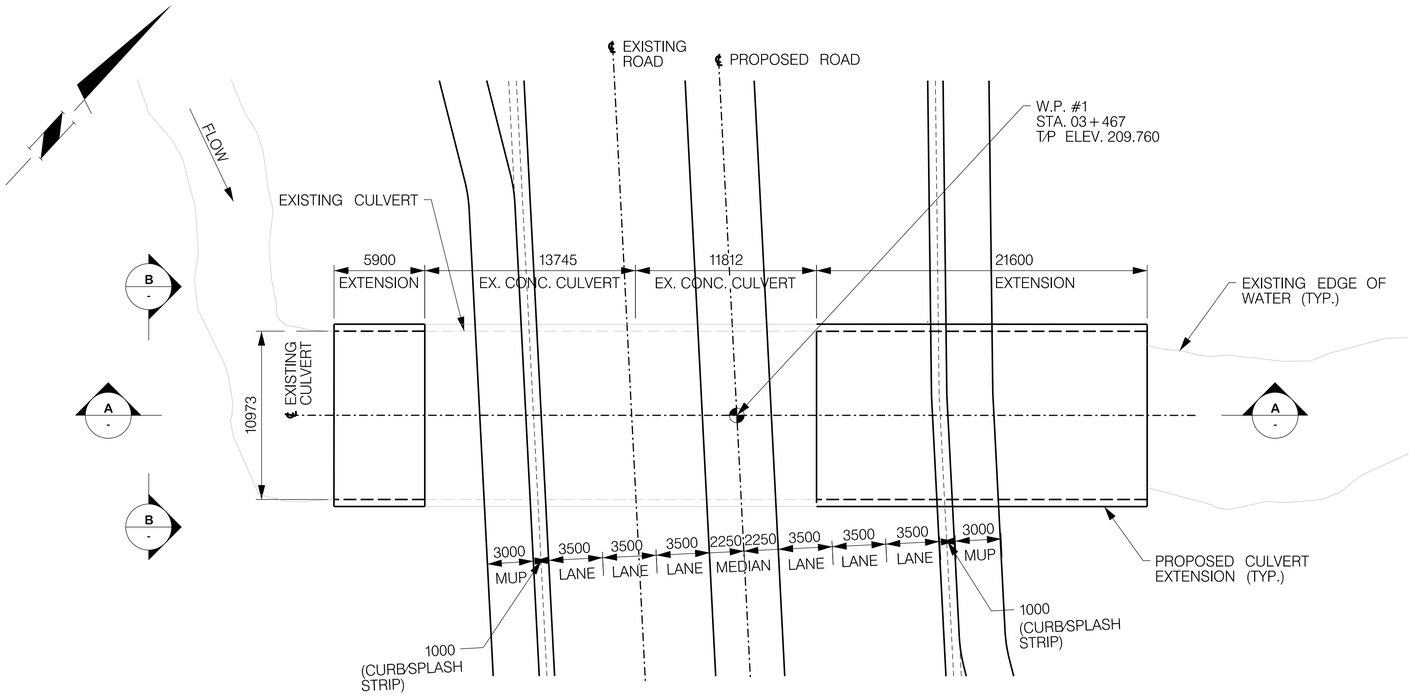
Region of Peel
Working for you

WINSTON CHURCHILL BLVD.
(FROM HIGHWAY 401 TO EMBLETON ROAD)

STRUCTURE No. B10

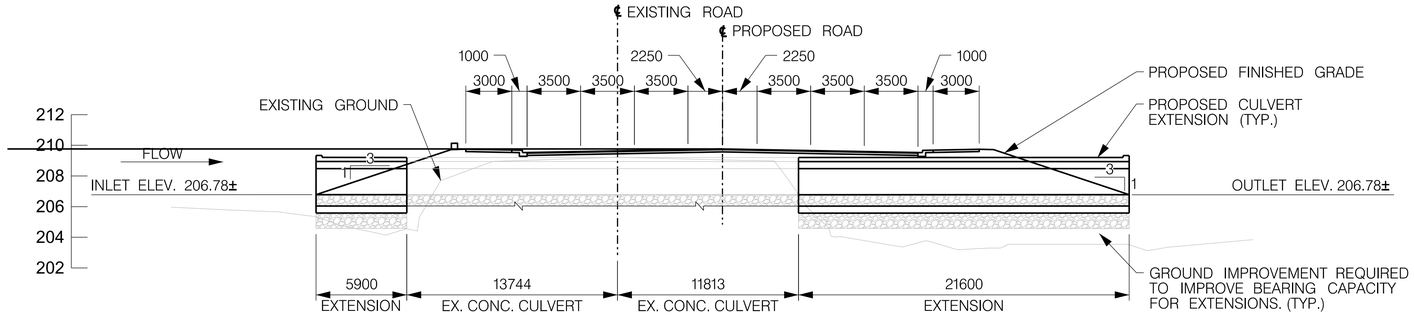
GENERAL ARRANGEMENT

CAD Area -	Area -	Project No.	XX-XXXX
Checked by	Drawn by	Plan No.	14-4380
Date	Sheet of		



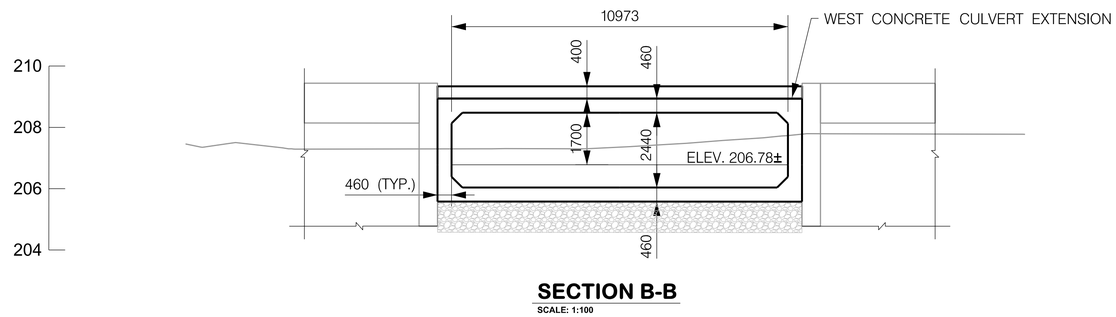
PLAN VIEW - CULVERT C3

SCALE: 1:200



SECTION A-A

SCALE: 1:200



SECTION B-B

SCALE: 1:100

GENERAL NOTES

1. REFERENCE GEOTECHNICAL AXIAL RESISTANCE AT ULS: 225 kPa GEOTECHNICAL REACTION AT SLS FOR 25 MM OF SETTLEMENT: 150 kPa. SITE GEOTECHNICAL CONDITIONS TO BE CONFIRMED BY A QUALIFIED GEO–TECHNICAL ENGINEER, INCLUDING REQUIRED GROUND IMPROVEMENT MEASURES, IF APPLICABLE.

CLASS OF CONCRETE

CAST–IN–PLACE CONCRETE.....35 MPa

CLEAR COVER TO REINFORCEMENT

CLEAR COVER TO REINFORCING STEEL SHALL BE 60 ± 10 mm UNLESS OTHERWISE NOTED.

REINFORCEMENT

1. REINFORCING STEEL TO BE GRADE 400W UNLESS OTHERWISE SPECIFIED.

2. LAPS NOT INDICATED ON DRAWING SHALL BE CLASS B.

3. BAR HOOKS, WHERE REQUIRED, SHALL BE MINIMUM LENGTH AND STIRRUPS SHALL HAVE MINIMUM HOOKS AS PER MANUFACTURER?S SPECIFICATIONS.

CONSTRUCTION NOTES

1. THE CONTRACTOR IS ADVISED NOT TO RELY ON THE WATER LEVEL SHOWN ON THE DRAWINGS. THE WATER LEVEL IS SUBJECT TO VARIATIONS.

2. CULVERT GEOMETRY SHOWN IS PRELININARY AND SUBJECT TO CHANGE. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS OF THE PROPOSED WORK AND ALL DETAILS ON SITE AND REPORT AND DISCREPANCIES TO THE CONTRACT ADMINISTRATOR BEFORE PROCEEDING WITH THE WORK. THE CONTRACTOR SHALL ALSO CONFIRM UTILITY LOCATIONS IN THE FIELD BEFORE PROCEEDING WITH THE WORK. PROTECTION AND TEMPORARY RELOCATION OF UTILITIES, IF REQUIRED IS THE RESPONSIBILITY OF THE CONTRACTOR.

3. ALL DISTURBED EARTH SLOPES SHALL BE TREATED WITH TOP SOIL, COVER, AND SEED, IN ACCORDANCE WITH OPSS MUNI 802 AND OPSS MUNI 804.

4. THE CONTRACTOR IS FULLY RESPONSIBLE FOR THE DESIGN, CONSTRUCTION METHODS AND PERFORMANCE OF THE TEMPORARY SLOPES, PROTECTION SYSTEM, AND WORKS.

5. BACKFILL SHALL BE PLACED SIMULTANEOUSLY BEHIND BOTH SIDES OF CULVERT, KEEPING THE HEIGHT OF BACKFILL APPROXIMATELY THE SAME. AT NO TIME SHALL THE DIFFERENCE IN ELEVATION BE GREATER THAN 500 MM.

6. BEDDING MATERIAL SHALL NOT BE PLACED ON A DISTURBED OR FROZEN EARTH GRADE.

7. CULVERT SUBGRADE TO BE INSPECTED BY CONTRACT ADMINISTRATOR FOLLOWING SUB–EXCAVATION TO ENSURE THAT ALL ORGANICS AND OTHER UNSUITABLE MATERIALS HAVE BEEN REMOVED.

8. THE CONTRACTOR IS TO DETERMINE THE SIZE OF THE TEMPORARY DIVERSION CHANNEL/PIPE BASED ON 2 YEAR STORM EVENT.

9. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING THE STABILITY OF THE EXISTING STRUCTURES AT ALL TIMES INCLUDING EXCAVATION, BACKFILL, REMOVALS, INSTALLATIONS, ETC. CONTRACTOR TO DESIGN AND PROVIDE ANY TEMPORARY SUPPORT SYSTEMS FOR EXISTING AND NEW STRUCTURES AS REQUIRED TO SUIT THEIR METHOD OF CONSTRUCTION.

10. THE CONTRACTOR HAS THE OPTION TO ALTER EXCAVATION LIMITS BY PROVIDING TEMPORARY EXCAVATION SUPPORT. HOWEVER, MINIMUM DIMENSIONS AND LIMIT OF FROST TAPERS MUST BE MAINTAINED.

11. CULVERT CONNECTIONS TO BE SEALED WITH SELF–ADHESIVE WATERPROOFING MEMBRANE.

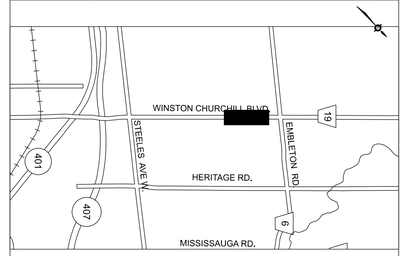
12. TEMPORARY DIVERSION CHANNEL ROUTE TO BE CONFIRMED IN FIELD. TEMPORARY ENCROACHMENT BEYOND CONSTRUCTION LIMIT MAY BE REQUIRED.

SERVICE DATA

SERVICE	DATE	INIT.	SERVICE	DATE	INIT.
SAN SEWERS			GAS MAINS		
STORM SEWERS			BELL U/G CABLE		
WATERMAINS			HYDRO U/G CABLE		
TRANSIT			HYDRO ONE		
PARKS & REC.			CTV		
ONT. CLEAN. WATER			COMMUNIC. CABLES		

REVISIONS

DATE	DETAILS	INIT.



KEY PLAN (N.T.S.)

NOT FOR CONSTRUCTION

10m 0 10 20 30m HORIZONTAL SCALE

HATCH

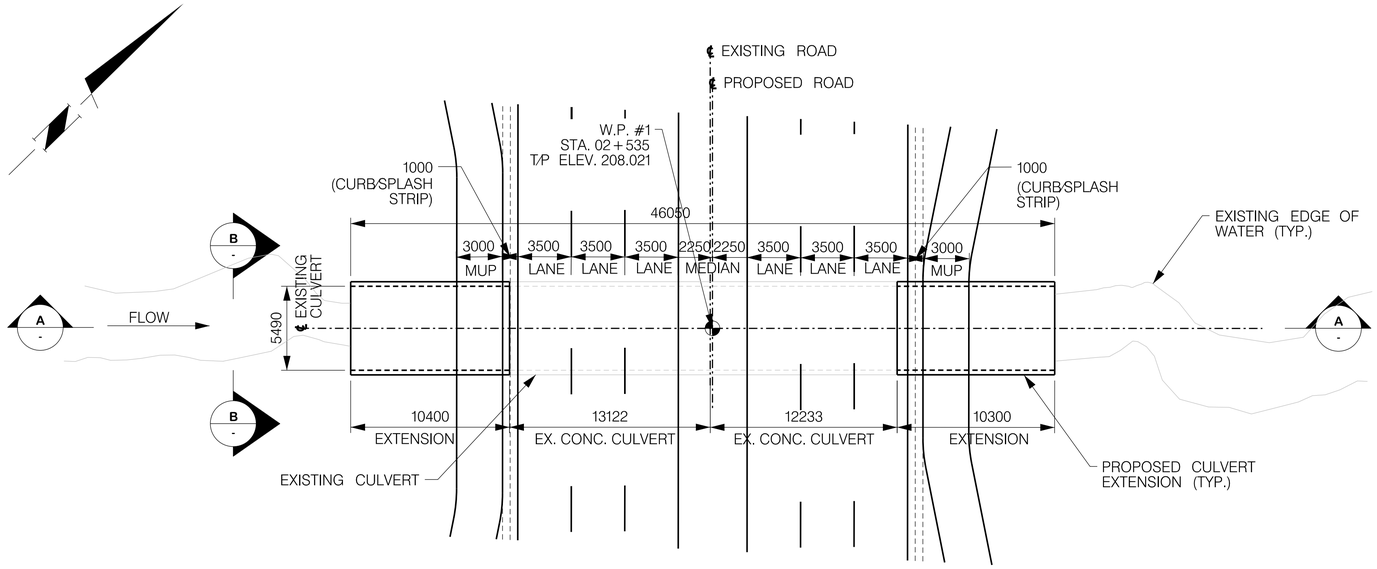
Designed by J. GILHAM Chkd. R.S.

Approved by R. SHORT

Region of Peel
Working for you

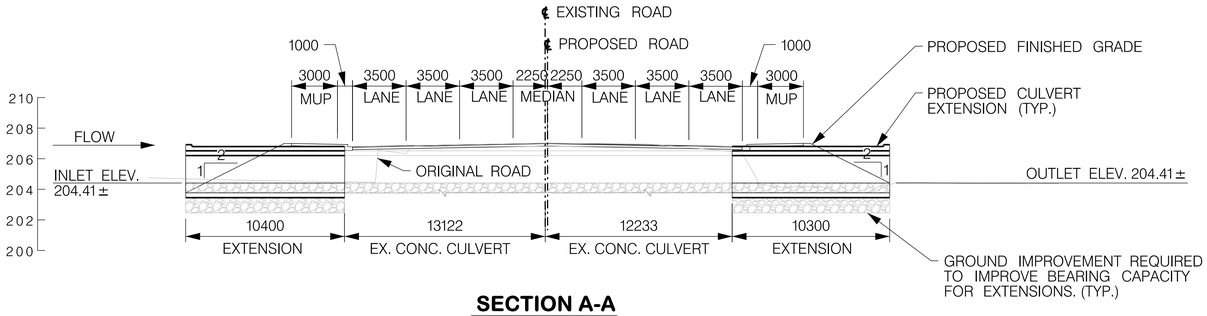
WINSTON CHURCHILL BLVD.
(FROM HIGHWAY 401 TO EMBLETON ROAD)
PROPOSED CULVERT EXTENSION
CULVERT C3
PLAN, PROFILE & SECTION

CAD Area	-	Area	-	Project No.	XX-XXXX
Checked by	J.G.	Drawn by	T.B.	Plan No.	4
Date	2022-08-25	Sheet	of		



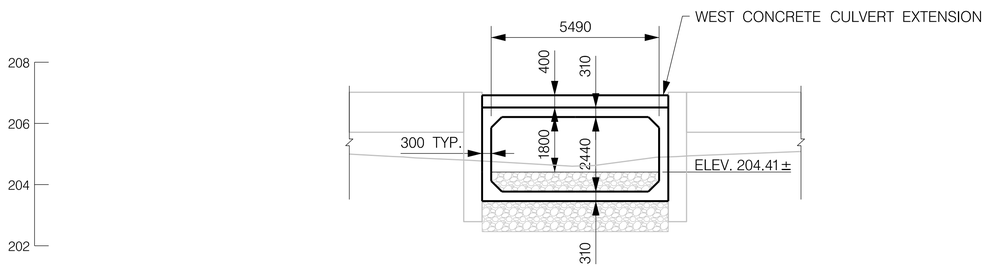
PLAN VIEW - CULVERT C8

SCALE: 1:200



SECTION A-A

SCALE: 1:200



SECTION B-B

SCALE: 1:100

GENERAL NOTES

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TRANSIT			HYDRO ONE		
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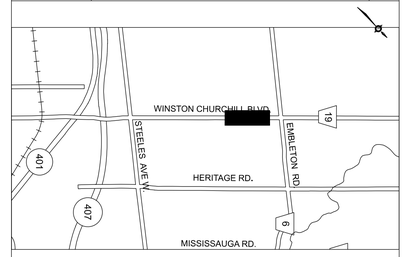
ONT. CLEAN WATER			COMMUNIC. CABLES		

REVISIONS

DATE	DETAILS	INIT.



KEY PLAN (N.T.S.)

NOT FOR CONSTRUCTION

10m 0 10 20 30m
HORIZONTAL SCALE

HATCH

Designed by J. GILHAM Chkd. R.S.

Approved by R. SHORT

Region of Peel
Working for you

WINSTON CHURCHILL BLVD.

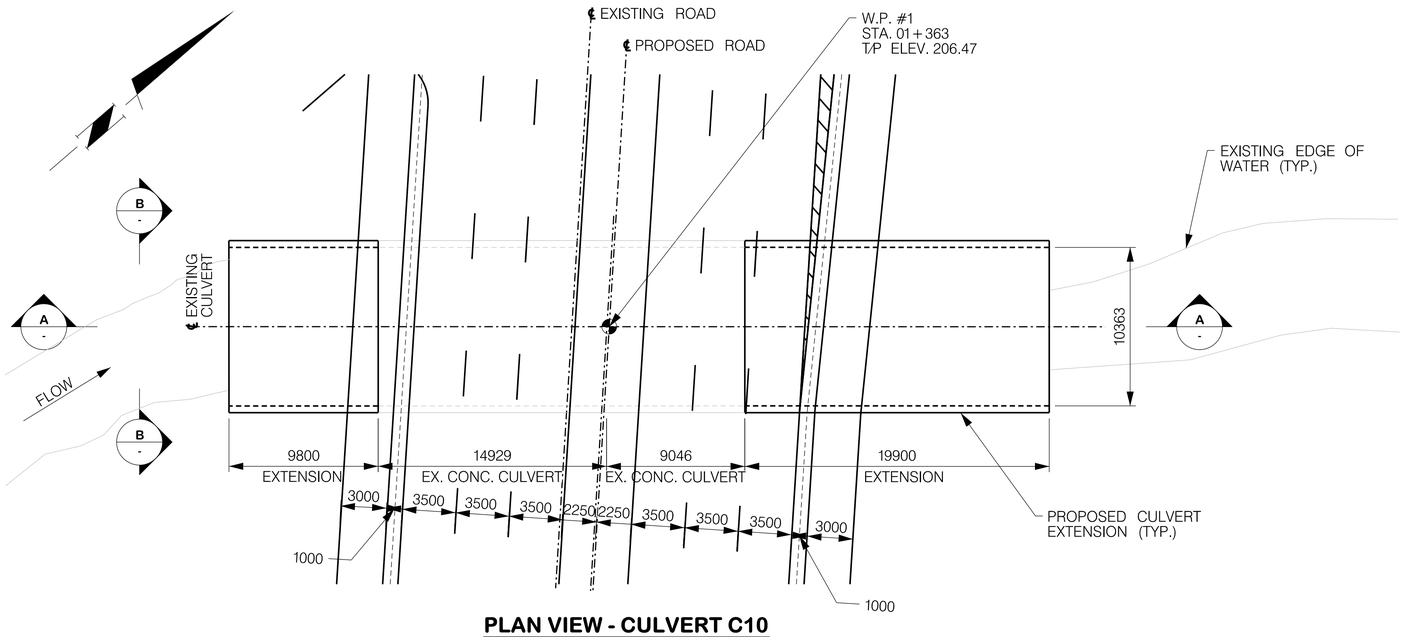
(FROM HIGHWAY 401 TO EMBLETON ROAD)

PROPOSED CULVERT EXTENSION

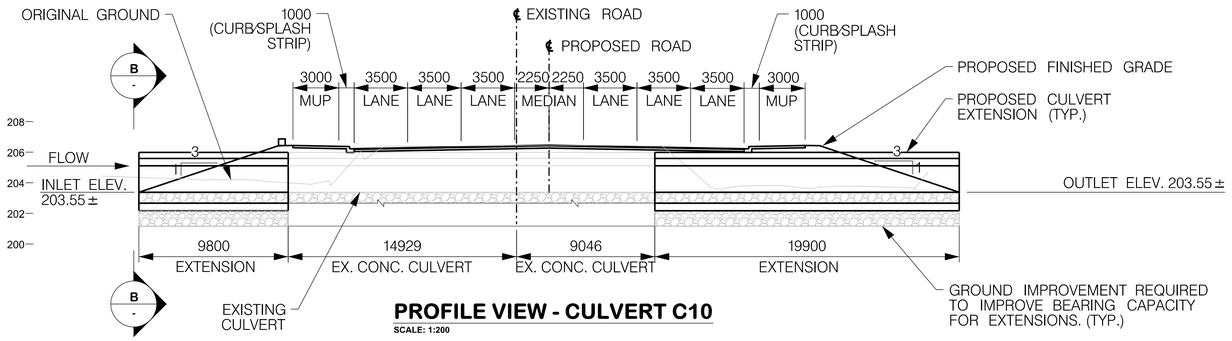
CULVERT C8

PLAN, PROFILE & SECTION

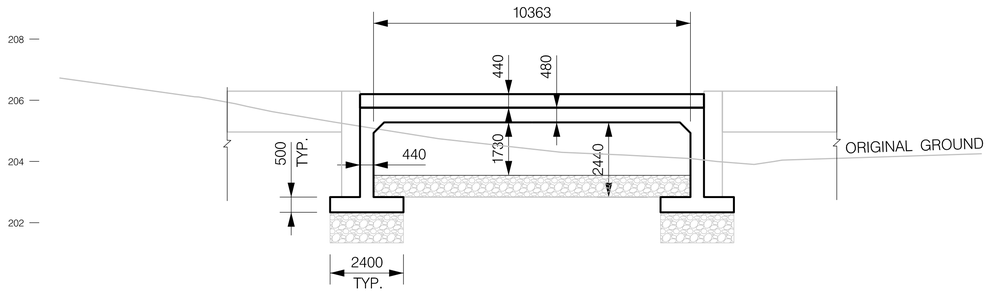
CAD Area	-	Area	-	Project No.	XX-XXXX
Checked by	J.G.	Drawn by	T.B.	Plan No.	4
Date	2022-08-25	Sheet	of		



PLAN VIEW - CULVERT C10
SCALE: 1:200



PROFILE VIEW - CULVERT C10
SCALE: 1:200



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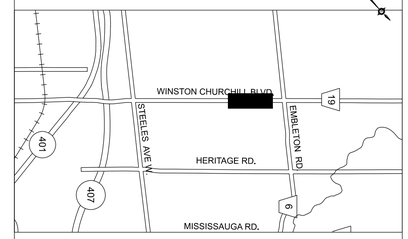

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NOT FOR CONSTRUCTION

10m 0 10 20 30m
HORIZONTAL SCALE

HATCH

Designed by J. GILHAM Chkd R.S.
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(FROM HIGHWAY 401 TO EMBLETON ROAD)
PROPOSED CULVERT EXTENSION
CULVERT C10
PLAN, PROFILE & SECTION

CAD Area	-	Area	-
Checked by	J.G.	Drawn by	R. SHORT
Date	2022-08-25	Sheet	of
Project No.	XX-XXXX		
Plan No.	4		