

Appendix B

Existing Data

2017 OSIM Structural Inspection

Inventory Data

Structure Number:	B 100018	MTO Site Number	100018
Structure Name	Mill Pond Bridge, Lot 7, Conc III		
Main Hwy/Rd #	<input type="checkbox"/> On <input checked="" type="checkbox"/> Under <input type="checkbox"/>	Crossing Type	Non Navig. Water
Road Name	Mary Street East		
Structure Location	0.35 km East of Sturgeon Road South		
Latitude	44.29927	Longitude	-78.55544
Owners	City of Kawartha Lakes	Heritage Status	Not Cons.
MTO Region	Eastern	Road Class	Local
MTO District	Bancroft	Posted Speed	50
Old County	Victoria	No of Lanes	1
Geographic Twp	Emily	AADT	150
Structure Type	Half-Through Truss	% Trucks	2
Total Deck Length	54.90 (m)	Special Routes	
Overall Struct. Width	4.30 (m)	Detour Length Around Bridge	(km)
Total Deck Area	236.07 (m ²)	Fill on Structure	(m)
Roadway Width	3.80 (m)	Skew Angle	(Degrees)
Span Lengths	9.60, 9.60, 9.60, 2 (m)	Direction of Structure	East / West
		Number of Spans	4

Historical Data

Year Built	1952	Last Biennial Inspection	2014
Current Load Limit	11 / 14 /23 (tonnes)	Last BridgeMaster Inspection	
Load Limit By Law #		Last Evaluation	1990
By Law Expiry Date		Last Underwater Inspection	
Min Vertical Clearance	(m)	Last Condition Survey	
Rehabilitation History			

Field Inspection Information

Date of Inspection	09/09/2017
Inspector	Marek Stutz, P.Eng.; AUE Structural Inc.
Others in Party	Mohamed El-Sarji, P.Eng.; AUE Structural Inc.
Equipment Used	Chest Waders, Measuring Tape and Hammer
Weather	Sunny
Temperature	15 (°C)

Additional Investigation Required

	Priority	Estimated Cost
Rehabilitation / Replacement Study	Normal	\$20,000.00
Detailed Deck Condition Survey	None	\$0.00
Structure Evaluation	None	\$0.00
Underwater Investigation	None	\$0.00
Structure Monitoring	None	\$0.00
Load Posting - Estimated Load		
Total Cost		\$20,000.00

Investigation Notes:

Next Detailed Inspection 09/09/2019

Element Data

Bridge Number	100018	Length	
Element Group	Abutments	Width	5.70
Element Name	Abutment Walls	Height	1.90
Location	East & West Underside of Structure	Count	2
Material	Concrete	Total Quantity	21.66
Element Type	Reinforced Concrete Walls	Limited Inspection	<input type="checkbox"/>
Environment	Benign	Performance Deficiency	00
Protection System	None	Maintenance Needs	00

Condition Data	Units	Excellent	Good	Fair	Poor
	square metre	0.00	19.16	1.50	1.00

Comments

- Medium spall and wide vertical crack at west abutment
- Cracks with efflorescence at west abutment

Recommended Work Replace: < 1 year

Bridge Number	100018	Length	
Element Group	Abutments	Width	5.70
Element Name	Ballast Walls	Height	0.90
Location	East & West Underside of Structure	Count	2
Material	Concrete	Total Quantity	10.26
Element Type	Reinforced Concrete Walls	Limited Inspection	<input type="checkbox"/>
Environment	Moderate	Performance Deficiency	00
Protection System	None	Maintenance Needs	00

Condition Data	Units	Excellent	Good	Fair	Poor
	square metre	0.00	9.76	0.00	0.50

Comments

Wide vertical cracks noted at west ballast wall.

Recommended Work Replace: < 1 year

Bridge Number	100018	Length	
Element Group	Abutments	Width	
Element Name	Bearings	Height	
Location	On West Abutment Walls	Count	4
Material	Steel	Total Quantity	4
Element Type	Abutment Wall Bearing	Limited Inspection	<input type="checkbox"/>
Environment	Moderate	Performance Deficiencie	00
Protection System	None	Maintenance Needs	00

Condition Data	Units	Excellent	Good	Fair	Poor
	each	0	4	0	0

Comments

Generally in good condition with light corrosion.

Recommended Work Replace: < 1 year

Bridge Number	100018	Length	2.50
Element Group	Abutments	Width	
Element Name	Wingwalls	Height	1.00
Location	NE, NW, SE & SW of Structure	Count	4
Material	Concrete	Total Quantity	10.00
Element Type	Reinforced Concrete Walls	Limited Inspection	<input type="checkbox"/>
Environment	Moderate	Performance Deficiencie	00
Protection System	None	Maintenance Needs	00

Condition Data	Units	Excellent	Good	Fair	Poor
	square metre	0.00	7.00	1.50	1.50

Comments

Wide cracks and disintegration at southwest wingwall.

Recommended Work Replace: < 1 year

Bridge Number	100018	Length	
Element Group	Accessories	Width	
Element Name	Signs	Height	
Location	NE, NW, SE & SW of Structure	Count	8
Material	Steel	Total Quantity	8

Element Type	Hazard Signs and Load Posting Signs	Limited Inspection	<input type="checkbox"/>
Environment	Severe	Performance Deficiencie	00
Protection System	None	Maintenance Needs	00

Condition Data	Units	Excellent	Good	Fair	Poor
	each	0	7	1	0

Comments

- 6 Hazard Signs and 2 Load Posting Signs
- Hazard sign at northwest is bent

Recommended Work None

Bridge Number	100018	Length	6.00
Element Group	Approaches	Width	3.80
Element Name	Wearing Surface	Height	
Location	East & West of Structure	Count	2
Material	Asphalt	Total Quantity	45.60
Element Type	Asphalt Wearing Surface	Limited Inspection	<input type="checkbox"/>
Environment	Severe	Performance Deficiencie	00
Protection System	None	Maintenance Needs	00

Condition Data	Units	Excellent	Good	Fair	Poor
	square metre	0.00	33.60	6.00	6.00

Comments

- Severe cracks
- Potholes
- Settlement
- Patched potholes

Recommended Work Replace: < 1 year

Bridge Number	100018	Length	
Element Group	Barriers	Width	
Element Name	Posts	Height	
Location	North & South Sides of Structure	Count	26
Material	Steel	Total Quantity	26
Element Type	Steel Post	Limited Inspection	<input type="checkbox"/>
Environment	Severe	Performance Deficiencie	08
Protection System	None	Maintenance Needs	00

Condition Data	Units	Excellent	Good	Fair	Poor
	each	0	24	0	2

Comments

- Existing barrier is substandard and should be replaced with a code compliant barrier
- Light corrosion
- Damaged posts at northwest and southeast

Recommended Work Replace: < 1 year

Bridge Number	100018	Length	54.00
Element Group	Barriers	Width	
Element Name	Railing Systems	Height	0.93
Location	North & South Sides of Structure	Count	2
Material	Steel	Total Quantity	108.00
Element Type	Steel Lattice	Limited Inspection	<input type="checkbox"/>
Environment	Severe	Performance Deficiencie	08
Protection System	None	Maintenance Needs	00

Condition Data	Units	Excellent	Good	Fair	Poor
	metre	0.00	95.00	0.00	13.00

Comments

- Existing barrier is substandard and should be replaced with a code compliant barrier
- Light corrosion throughout
- Several areas with damaged or bent railing system

Recommended Work Replace: < 1 year

Bridge Number	100018	Length	20.00
Element Group	Barriers	Width	
Element Name	Railing Systems	Height	
Location	NE, NW, SE & SW of Structure	Count	4
Material	Steel	Total Quantity	80.00
Element Type	Steel Flex Beam on Steel Posts	Limited Inspection	<input type="checkbox"/>
Environment	Severe	Performance Deficiencie	08
Protection System	Hot Dip Galvanized	Maintenance Needs	00

Condition Data	Units	Excellent	Good	Fair	Poor
	metre	0.00	80.00	0.00	0.00

Comments

- Substandard end treatments
- Generally in good condition

Recommended Work Replace: < 1 year

Bridge Number	100018	Length	5.00
Element Group	Beams/Main Longitudinal Elements	Width	0.20
Element Name	Floor Beams	Height	0.46
Location	Underside of Structure, West Span	Count	4
Material	Steel	Total Quantity	30.40
Element Type	Steel Floor Beam	Limited Inspection	<input type="checkbox"/>
Environment	Benign	Performance Deficiencie	00
Protection System	Coating / Paint	Maintenance Needs	00

Condition Data	Units	Excellent	Good	Fair	Poor
	square metre	0.00	25.40	5.00	0.00

Comments

Light to medium corrosion at top and bottom flanges of floor beams.

Recommended Work Replace: < 1 year

Bridge Number	100018	Length	30.00
Element Group	Beams/Main Longitudinal Elements	Width	0.19
Element Name	Girders	Height	0.46
Location	Underside of Structure, East Spans	Count	4
Material	Steel	Total Quantity	178.80
Element Type	Steel Girder	Limited Inspection	<input type="checkbox"/>
Environment	Benign	Performance Deficiencie	01
Protection System	Coating / Paint	Maintenance Needs	00

Condition Data	Units	Excellent	Good	Fair	Poor
	square metre	0.00	148.80	15.00	15.00

Comments

- Perforations at girder webs at northwest and southeast
- Section loss at web of north and south girders at east pier
- Severe corrosion at girder ends

Recommended Work Replace: < 1 year

Bridge Number	100018	Length	1.35
Element Group	Beams/Main Longitudinal Elements	Width	0.06
Element Name	Girders	Height	0.21
Location	Underside of Structure, East Spans	Count	27
Material	Steel	Total Quantity	27
Element Type	Steel Diaphragm	Limited Inspection	<input type="checkbox"/>
Environment	Benign	Performance Deficiencie	00
Protection System	Coating / Paint	Maintenance Needs	00

Condition Data	Units	Excellent	Good	Fair	Poor
	each	0	27	0	0

Comments

Light corrosion noted throughout.

Recommended Work Replace: < 1 year

Bridge Number	100018	Length	25.00
Element Group	Beams/Main Longitudinal Elements	Width	0.12
Element Name	Stringer	Height	0.26
Location	Underside of Structure, West Span	Count	5
Material	Steel	Total Quantity	5

Element Type	Steel Stringer	Limited Inspection	<input type="checkbox"/>
Environment	Benign	Performance Deficiencie	00
Protection System	Coating / Paint	Maintenance Needs	00

Condition Data	Units	Excellent	Good	Fair	Poor
	each	0	3	2	0

Comments

- Additional stringers were previously installed
- Light to medium corrosion noted

Recommended Work Replace: < 1 year

Bridge Number	100018	Length	7.07
Element Group	Bracing	Width	0.02
Element Name	Bracing	Height	0.02
Location	Underside of Structure, West Span	Count	10
Material	Steel	Total Quantity	10
Element Type	Steel Bracing	Limited Inspection	<input type="checkbox"/>
Environment	Benign	Performance Deficiencie	00
Protection System	Coating / Paint	Maintenance Needs	00

Condition Data	Units	Excellent	Good	Fair	Poor
	each	0	10	0	0

Comments

Light corrosion was noted throughout.

Recommended Work Replace: < 1 year

Bridge Number	100018	Length	
Element Group	Coatings	Width	
Element Name	Structural Steel	Height	
Location	North & South Sides and Underside of Structur	Count	
Material	Paint	Total Quantity	463.57
Element Type	Structural Steel Coating	Limited Inspection	<input type="checkbox"/>
Environment	Benign / Severe	Performance Deficiencie	00
Protection System	None	Maintenance Needs	00

Condition Data	Units	Excellent	Good	Fair	Poor
	square metre	0.00	143.57	160.00	160.00

Comments

Deterioration of coating noted throughout structural steel members.

Recommended Work Replace: < 1 year

Bridge Number	100018	Length	54.90
Element Group	Decks	Width	3.80
Element Name	Deck Top	Height	
Location	Below Wearing Surface	Count	
Material	Concrete	Total Quantity	208.62
Element Type	Reinforced Concrete Deck	Limited Inspection	<input checked="" type="checkbox"/>
Environment	Moderate	Performance Deficiencie	00
Protection System	Wearing Surface	Maintenance Needs	00

Condition Data	Units	Excellent	Good	Fair	Poor
	square metre	0.00	200.62	8.00	0.00

Comments

Deck top is estimated to be generally in good condition based on the condition of the wearing surface.

Recommended Work Replace: < 1 year

Bridge Number	100018	Length	
Element Group	Decks	Width	
Element Name	Drainage System	Height	
Location	North & South Sides of Structure	Count	14
Material	Steel	Total Quantity	14
Element Type	Steel Drains	Limited Inspection	<input type="checkbox"/>
Environment	Severe	Performance Deficiencie	00
Protection System	None	Maintenance Needs	00

Condition Data	Units	Excellent	Good	Fair	Poor
	each	0	0	0	14

Comments

Severe corrosion at deck drains.

Recommended Work Replace: < 1 year

Bridge Number	100018	Length	54.00
Element Group	Decks	Width	3.72
Element Name	Soffit - Thin Slab	Height	
Location	Underside of Structure	Count	
Material	Concrete	Total Quantity	200.88
Element Type	Soffit Interior	Limited Inspection	<input type="checkbox"/>
Environment	Benign	Performance Deficiencie	00
Protection System	None	Maintenance Needs	00

Condition Data	Units	Excellent	Good	Fair	Poor
	square metre	0.00	135.88	35.00	30.00

Comments

- Narrow to wide cracks, some with efflorescence
- Light to severe spalls and delaminations
- Efflorescence

Recommended Work Replace: < 1 year

Bridge Number	100018	Length	54.90
Element Group	Decks	Width	3.80
Element Name	Wearing Surface	Height	
Location	Top of Deck	Count	
Material	Asphalt	Total Quantity	208.62
Element Type	Asphalt Wearing Surface	Limited Inspection	<input type="checkbox"/>
Environment	Severe	Performance Deficiencie	00
Protection System	None	Maintenance Needs	00

Condition Data	Units	Excellent	Good	Fair	Poor
	square metre	0.00	192.62	8.00	8.00

Comments

- Light ravelling
- Medium to severe cracks

Recommended Work Replace: < 1 year

Bridge Number	100018	Length	
Element Group	Embankments and Streams	Width	
Element Name	Embankments	Height	
Location	NE, NW, SE & SW of Structure	Count	4
Material	Native	Total Quantity	4
Element Type	Embankment	Limited Inspection	<input type="checkbox"/>
Environment	Moderate	Performance Deficiencie	00
Protection System	Vegetation	Maintenance Needs	00

Condition Data	Units	Excellent	Good	Fair	Poor
	each	0	4	0	0

Comments

Generally in good condition.

Recommended Work None

Bridge Number	100018	Length	
Element Group	Embankments and Streams	Width	
Element Name	Slope Protection	Height	
Location	NE, NW, SE & SW of Structure	Count	4
Material	Vegetation	Total Quantity	4

Element Type	Slope Protection	Limited Inspection	<input type="checkbox"/>
Environment	Moderate	Performance Deficiencie	00
Protection System	None	Maintenance Needs	00
Condition Data	Units	Excellent	Good
	each	0	4
			0
			0

Comments
 Generally in good condition.

Recommended Work	None		
Bridge Number	100018	Length	
Element Group	Embankments and Streams	Width	
Element Name	Streams and Waterways	Height	
Location	Under Structure	Count	
Material	Native	Total Quantity	All
Element Type	Stream	Limited Inspection	<input type="checkbox"/>
Environment	Benign	Performance Deficiencie	00
Protection System	None	Maintenance Needs	00
Condition Data	Units	Excellent	Good
	all		All

Comments
 Generally in good condition with dam structure noted upstream.

Recommended Work	None		
Bridge Number	100018	Length	
Element Group	Foundations	Width	
Element Name	Foundation (below ground level)	Height	
Location	Below Abutment Walls, Wingwalls and Piers	Count	
Material	Unknown	Total Quantity	
Element Type	Unknown	Limited Inspection	<input checked="" type="checkbox"/>
Environment	Benign	Performance Deficiencie	00
Protection System	Unknown	Maintenance Needs	00
Condition Data	Units	Excellent	Good
	N/A		

Comments
 No visible evidence of foundation instability was noted during the inspection.

Recommended Work	Replace: < 1 year
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Bridge Number	100018	Length	4.30
Element Group	Joints	Width	
Element Name	Armouring/Retaining Devices	Height	
Location	East & West Ends of Structure and at Piers	Count	10
Material	Steel	Total Quantity	43.00
Element Type	Steel Armouring	Limited Inspection	<input type="checkbox"/>
Environment	Severe	Performance Deficiencie	00
Protection System	None	Maintenance Needs	00

Condition Data	Units	Excellent	Good	Fair	Poor
	metre	0.00	23.00	10.00	10.00

Comments

Steel armouring is broken in several locations.

Recommended Work Replace: < 1 year

Bridge Number	100018	Length	4.30
Element Group	Joints	Width	
Element Name	Seals/Sealants	Height	
Location	East & West Ends of Structure and at Piers	Count	5
Material	Neoprene	Total Quantity	5
Element Type	Compression Seal	Limited Inspection	<input type="checkbox"/>
Environment	Severe	Performance Deficiencie	00
Protection System	None	Maintenance Needs	00

Condition Data	Units	Excellent	Good	Fair	Poor
	each	0	0	0	5

Comments

- Leakage, tears and displacement
- Seals are jammed

Recommended Work Replace: < 1 year

Bridge Number	100018	Length	1.05
Element Group	Piers	Width	5.70
Element Name	Shafts/Columns/Pile Bents	Height	1.65
Location	Underside of Structure	Count	3
Material	Concrete	Total Quantity	66.83
Element Type	Reinforced Concrete Pier Shaft	Limited Inspection	<input type="checkbox"/>
Environment	Benign	Performance Deficiencie	00
Protection System	None	Maintenance Needs	00

Condition Data	Units	Excellent	Good	Fair	Poor
	square metre	0.00	46.83	10.00	10.00

Comments

- Light to medium scaling
- Wide cracks with efflorescence at upstream
- Localized spalls at each pier and at west pier below stringers

Recommended Work Replace: < 1 year

Bridge Number	100018	Length	54.90
Element Group	Sidewalks/Curbs	Width	0.15
Element Name	Curbs	Height	0.08
Location	North & South Sides of Structure	Count	2
Material	Concrete	Total Quantity	25.25
Element Type	Reinforced Concrete Curb	Limited Inspection	<input type="checkbox"/>
Environment	Severe	Performance Deficiencie	08
Protection System	None	Maintenance Needs	00

Condition Data	Units	Excellent	Good	Fair	Poor
	square metre	0.00	17.25	4.00	4.00

Comments

- Narrow to wide cracks
- Light to severe spalls and disintegration

Recommended Work Replace: < 1 year

Bridge Number	100018	Length	5.00 (E), 15.00 (M)
Element Group	Trusses/Arches	Width	0.13 (E), 0.20 (M)
Element Name	Bottom Chords	Height	0.09 (E), 0.15 (M)
Location	North & South Sides of Structure	Count	4 (E), 2 (M)
Material	Steel	Total Quantity	29.80
Element Type	Steel Bottom Chord	Limited Inspection	<input type="checkbox"/>
Environment	Severe	Performance Deficiencie	00
Protection System	Coating / Paint	Maintenance Needs	00

Condition Data	Units	Excellent	Good	Fair	Poor
	square metre	0.00	27.30	0.00	2.50

Comments

- Northeast section has deflected horizontally by 20 mm
- Light corrosion throughout

Recommended Work Replace: < 1 year

Bridge Number	100018	Length	20.00
Element Group	Trusses/Arches	Width	0.32
Element Name	Top Chords	Height	0.16
Location	North & South Sides of Structure	Count	2
Material	Steel	Total Quantity	38.40

Element Type	Steel Top Chord	Limited Inspection	<input type="checkbox"/>
Environment	Severe	Performance Deficiencie	00
Protection System	Coating / Paint	Maintenance Needs	00

Condition Data	Units	Excellent	Good	Fair	Poor
	square metre	0.00	33.40	0.00	5.00

Comments

Rotation due to impact damage at top chord at northwest.

Recommended Work Replace: < 1 year

Bridge Number	100018	Length	2.30
Element Group	Trusses/Arches	Width	0.18
Element Name	Vertical/Diagonals	Height	0.13
Location	North & South Sides of Structure	Count	8
Material	Steel	Total Quantity	11.41
Element Type	Steel Vertical	Limited Inspection	<input type="checkbox"/>
Environment	Severe	Performance Deficiencie	00
Protection System	Coating / Paint	Maintenance Needs	00

Condition Data	Units	Excellent	Good	Fair	Poor
	square metre	0.00	11.41	0.00	0.00

Comments

Light corrosion noted throughout.

Recommended Work Replace: < 1 year

Bridge Number	100018	Length	3.40 (E), 3.00 (M)
Element Group	Trusses/Arches	Width	0.32 (E), 0.18 (M)
Element Name	Vertical/Diagonals	Height	0.16 (E), 0.13 (M)
Location	North & South Sides of Structure	Count	4 (E), 16 (M)
Material	Steel	Total Quantity	42.82
Element Type	Steel Diagonal	Limited Inspection	<input type="checkbox"/>
Environment	Severe	Performance Deficiencie	00
Protection System	Coating / Paint	Maintenance Needs	00

Condition Data	Units	Excellent	Good	Fair	Poor
	square metre	0.00	42.82	0.00	0.00

Comments

Light corrosion noted throughout.

Recommended Work Replace: < 1 year

Repairs and Rehabilitation Required

Element	Repair and Rehabilitation Required	Priority	Estimated Cost
Barriers	Install Code Compliant End Treatments	< 1 year	\$16,000.00
	Replace Structure	< 1 year	\$1,062,315.00
			\$0.00
			\$0.00
			\$0.00
			\$0.00
			\$0.00
			\$0.00
			\$0.00
			\$0.00
Total Cost			\$1,078,315.00

Associated Work

	Comments	Estimated Cost
Approaches		\$0.00
Detours		\$50,000.00
Traffic Control		\$30,000.00
Utilities		\$0.00
Right of Way		\$0.00
Environmental Study		\$7,000.00
Other		\$0.00
Contingencies		\$0.00
Total Cost		\$87,000.00

Justification

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Photo 1: Structure from east approach



Photo 2: Structure from west approach



Photo 3: East approach from structure



Photo 4: West approach from structure



Photo 5: North elevation



Photo 6: South elevation



Photo 7: Severe deterioration at expansion joint assembly



Photo 8: Severe spall at curb



Photo 9: Impact damage at northwest



Photo 10: Medium to severe cracks at deck wearing surface



Photo 11: Underside of east spans



Photo 12: Underside of west span



Photo 13: Severe spalls at soffit interior



Photo 14: Severe spalls and delaminations at soffit interior

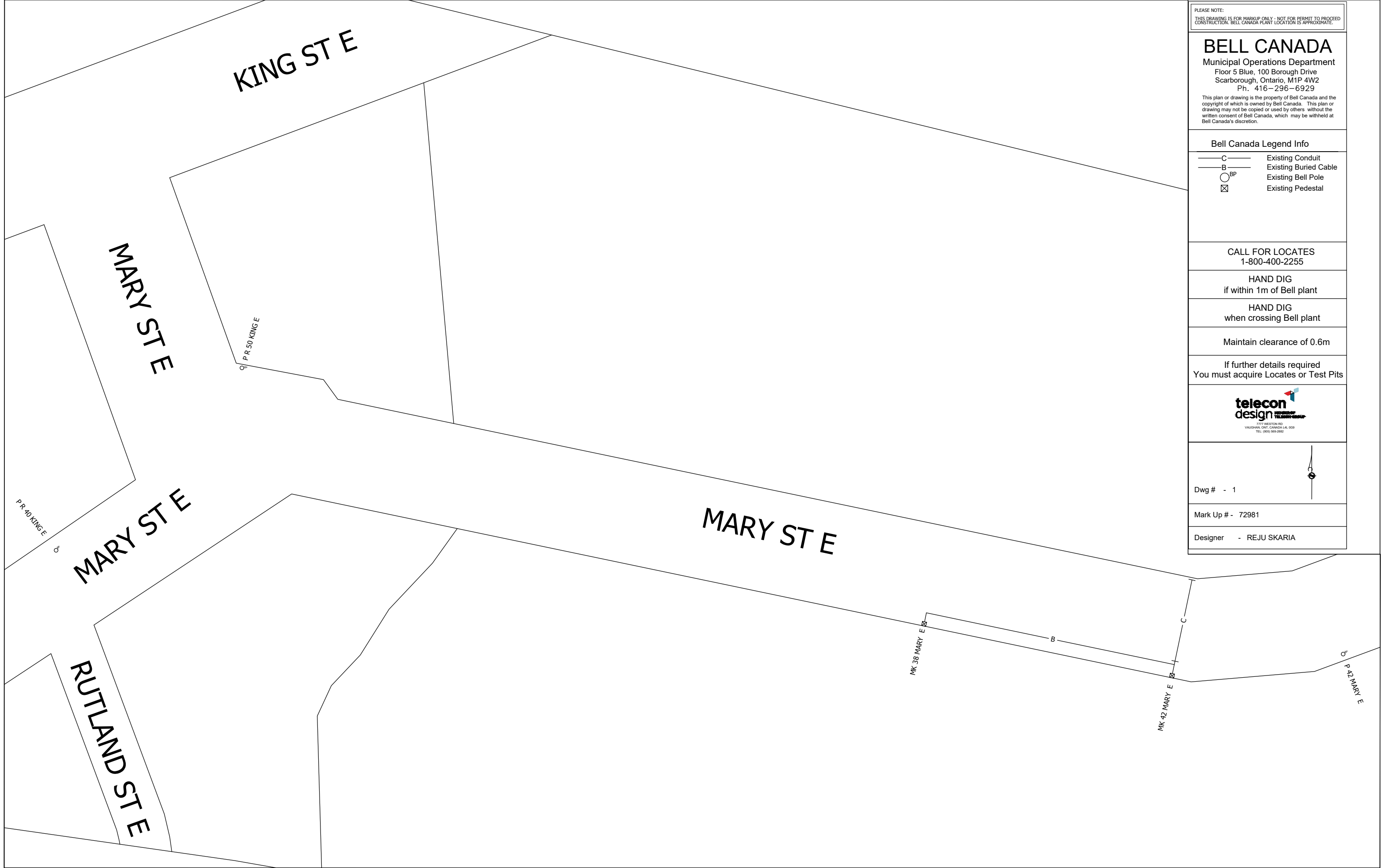


Photo 15: Severe corrosion and perforation at girder



Photo 16: Severe corrosion and perforation at stringer

Existing Utility Location Drawings



PLEASE NOTE:
THIS DRAWING IS FOR MARKUP ONLY - NOT FOR PERMIT TO PROCEED
CONSTRUCTION. BELL CANADA PLANT LOCATION IS APPROXIMATE.

BELL CANADA
Municipal Operations Department
Floor 5 Blue, 100 Borough Drive
Scarborough, Ontario, M1P 4W2
Ph. 416-296-6929

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Bell Canada Legend Info

C

Existing Conduit

B

Existing Buried Cable

BP

Existing Bell Pole

⊠

Existing Pedestal


CALL FOR LOCATES
1-800-400-2255

HAND DIG
if within 1m of Bell plant

HAND DIG
when crossing Bell plant

Maintain clearance of 0.6m

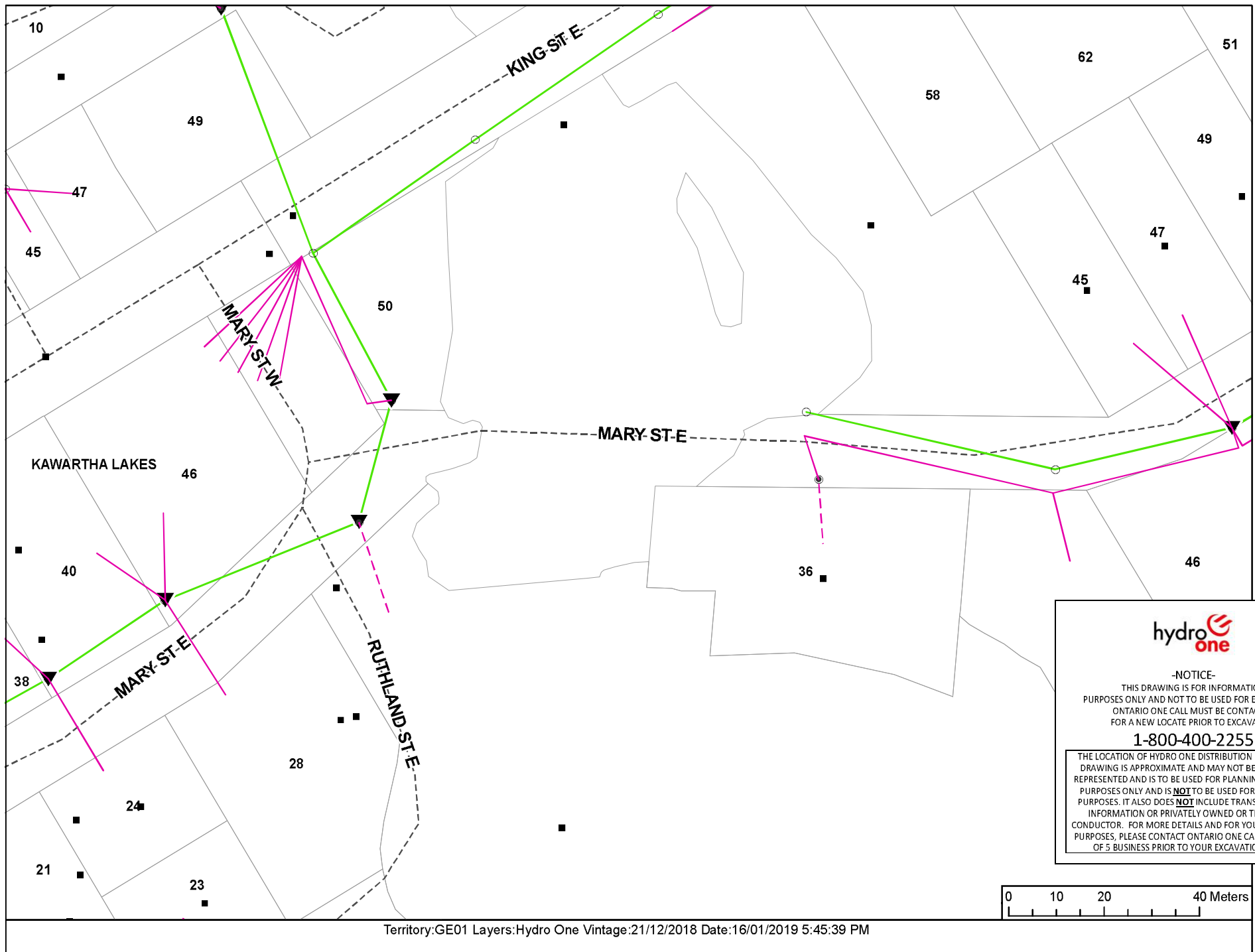
If further details required
You must acquire Locates or Test Pits


7777 WESTON RD
VAUGHAN, ONT. CANADA L4L 0G9
TEL: (905) 669-2882

Dwg # - 1

Mark Up # - 72981

Designer - REJU SKARIA



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Eastlink Utilities

