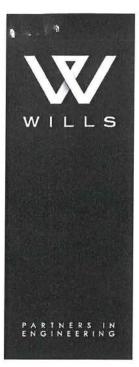
Ontario Structure Inspection Manual (OSIM) Bridge Inspection Report Township of South Frontenac

Prepared by: D. M. Wills Associates Limited

For: Cataraqui Conservation

Dated November 21, 2019



November 21, 2019

Cataraqui Region Conservation Authority 1641 Perth Road, P.O. Box 160 Glenburnie, ON KOH 1SO

C.R.C.A
Date Rec'd 100 25/19
Original to: 10M
Other:
File #;

Attention:

Mr. Tom Beaubiah - Manager, Conservations Lands

Dear Tom:

Re: 2019 OSIM Bridge Inspection Report

D.M. Wills Associates Project No. 16-9206

Find attached the completed OSIM Bridges Inspection Reports for the following bridge structures owned and maintained by CRCA (all bridges are located on the Cataraqui Trail within the Township of South Frontenac):

CRCA1

Harrowsmith Road Overpass

• CRCA2

1st Boyce Island Bridge

• CRCA3

2nd Boyce Island Bridge

D.M. Wills Associates Limited ("Wills") was retained to complete detailed visual inspections of the above noted bridges in accordance with the Public Transportation and Improvement Act. Specifically, Ontario Regulation 104/97 'Standards for Bridges' made under the Act requires that:

"The structural integrity, safety and condition of every bridge shall be determined through the performance of at least one inspection in every second calendar year under the direction of a professional engineer and in accordance with the Ontario Structure Inspection Manual ..."

Routine Bridge Maintenance Requirements

CRCA should clean all bridge decks and components on an annual basis preferably each spring after the winter season.





Consulting
Engineers of
Ontario



*, \(\)



Mr. Tom Beaubiah Page 2 of 2 November 21, 2019

Capital Budget - Bridge Needs (\$2019)

Each of the CRCA Bridges require some form of repair or rehabilitation over the next five years. We would recommend that this work be budgeted and completed as follows (more details of the work can be found in the OSIM Reports):

<u>Timing</u>	<u>Structure</u>	<u>Budget</u>	Description of Work
Urgent (2020)	CRCA2 / CRCA3	\$26,000	Install barrier along deck edge.
2021	CRCA1 / CRCA2 / CRCA3	\$161,500	Various repairs to concrete, bearings and deck timbers.

Closure

D.M. Wills Associates Ltd. completed the CRCA 2019 OSIM Bridge Inspection program under the supervision of David Bonsall, P.Eng.

The recommended Capital Budget – Bridge Needs must be completed to ensure that the CRCA maintains a safe and minimum maintenance standard for all structures.

The contents of this letter shall be read in conjunction with the detailed OSIM Inspection Report for each structure. This letter is intended to be a summary of the individual OSIM Reports; however, the detailed (individual) OSIM Reports must be consulted to verify the accuracy of any information contained within.

All reports are based upon the visual condition observed on the date of inspection.

Should you require anything further or clarification of the material provided, please contact the undersigned.

Thank you,

David Bonsall, P.Eng.

Manager, Structural Engineering

Structure Name	2nd Boyce Island Bridge			····					
Main Hwy/Road #	On	✓	Jnder 🗌	Crossing	g Type	Ped			
Road Name	Cataraqui Trail								
Structure Location	1.0km East of Sills Bay	Road							
Latitude	44.42775			Longitude -79	6.55490				
Owner(s)	Cataraqui Region CA								
Heritage Designation	Cons/not App								
Road Class:	Local								
MTO Region	Eastern								
MTO District	Kingston			Posted Speed			No of Lanes	1	
Old County	Frontenac			AADT			% Trucks		
Geographic Twp	Loughborough			Special Routes:	Transit	t 🗌 1	Truck 🗌 Scho	ool 🗌 Bicycle	V
Structure Type	Girders (steel)			Detour Length Aro	und Brid	ge		(km)	
Total Deck Length		14.	8 (m)	Fill on Structure			0	(m)	
Overall Str Width		5.	7 (m)	Skew Angle		0)	(Degrees)	
Total Deck Area		84.3	6 (sq. m)	Direction of Structu	ıre	E	East/West		
Roadway Width		3.	3 (m)	No of Spans		1	1		
Span Lengths	14.2							(m)	

Historical Data			
Year Built:	1958	Last Biennial Inspection:	2017-09-28
Current Load Limit:	(tonnes)	Last BridgeMaster Inspection:	
Load Limit By-Law#:		Last Evaluation:	
By-Law Expiry Date:		Last Underwater Inspection:	
Min Vertical Clearance:	0.9 (m)	Last Condition Survey:	
Rehab History: (Date/des	scription)		



Structure Number: CRCA3

Field Inspection Information

Date of Inspection: 2019-10-10

Temperature:

Estimated Cost

15° C

0

0

0

0

0

0

0

Inspected By:

D.M. Wills Associates Ltd.

Inspector:

Zach Staples, P.Eng

Others in Party: Equipment Used:

Tim Rosborough

Weather:

Camera and Hand Tools

Sunny

Additional	Invest	tigations	Required

Detailed Deck Condition Survey: **DART Survey Detailed Coating Condition Survey:**

Priority

0

2021-10-11

Underwater Investigation: Fatigue Investigation:

Seismic Investigation: Structure Evaluation:

Load Posting:Estimated Load

Next Date Inspection:

BCI 61.42

Special Notes:

Suspected Performance Deficiencies

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

Bearing not uniformly loaded/unstable

Total Cost

- 07 Jammed expansion joint 08 Pedestrian/vehicular hazard
- 09 Rough riding surface
- 10 Surface ponding
- 11 Deck drainage

- Slippery surfaces
- Flooding/channel blockage Undermining of foundation
- Unstable embankments
- 16 Other

Maintenance Needs

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

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

- Erosion Control at Bridges
- Concrete Sealing
- 15 Rout and Seal
- Bridge deck Drainage
- 17 Other



Element Data	a									
Element Group:		Signs					Length:			
Element Name:		Signs				-	Width:			
Location:		Four quadrants				1	Height:			
Material:		, , , , , , , , , , , , , , , , , , , ,					Count:			4
Element Type:							Total Qu	antity:		4
Environment:		Benign	TO STREET HE	RECEIVANT TO	n secui		Limited I		on 🗆	
Protection System										
Condition Data:		Exc	Good	Fair	Poor	•		Maint.	Needs	
	Sq. m		4					Perfor	m. Deficiencies	
Comments										
Four hazard signs								Estima	ited Construction Cos	st: \$0.00
									Prior	
Recommended W	ork/	· · ·		<u>.</u>						6-10 yrs
										1-5 yrs
										Within 1 yr
										Urgent
Element Group:		Decks				}	Length:			15
Element Name:	Ì	Railing Systems					Width:			
Location:		Both sides		1		1	Height:			
Material:							Count:			2
Element Type:			·				Total Qua	antity:		30
Environment:		Benigin	TAN TO SEE	TWIFE			Limited Ir	- 1	n 🗇	
Protection System								Maint	Na - d-	
Condition Data: \	Units [']	Exc	Good	Fair	Poor	ls .		Maint.	iveeus	[-
	m į					30		Porfor	n. Deficiencies	
Comments	-	L. J.						renon	n. Deliciencies	
								Fetima	ted Construction Cos	t: \$9,500.00
								Latima		
							-		Priori	
Recommended Wo										6-10 yrs 1-5 yrs
Add railing betwee	n gap	of deck and truss	for safety.				1			Within 1 yr
										Urgent
	_			- "-						X
Element Group:	ſ	Beams/MLE's					Length:			4.9
Element Name:	L	Floor Beams					Width:	Ī		0.34
Location:	[Fransverse Beam	ns				Height:	Ī		0.65
Material:	1	Veathering steel					Count:	ſ	***************************************	6
Element Type:		-type					Total Qua	antity:		68.2
Environment:		Benigh	har British	green have			Limited In	rspectio	n 📋	
Protection System:	: [Maint.	Needs	
		Exc	Good	Fair	Poor					
Condition Data:		rparame,						Domform	D 6	
8	Jnits Sq. m	rparame,	68.2					Periorn	n. Deficiencies	
200		rparame,	68.2					Penom	n. Deticiencies	
8		rparame,	68.2						ted Construction Cost	t: \$0.00
8		rparame,	68.2							
8	6q. m ∫	rparame,	68.2						ted Construction Cost	ty None 6-10 yrs
Comments	6q. m ∫	rparame,	68.2						ted Construction Cost	ty None 6-10 yrs 1-5 yrs
Comments	6q. m ∫	rparame,	68.2						ted Construction Cost	ty None 6-10 yrs



Element Group: Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: Units Comments Steel Angles Recommended Work	Beams/MLE's Floor Beams Plan Cross Bracin Weathering steel Other Benign Exc	Good 35.75	Fair	Poor		uantity: Inspection Maint. Perfore		n Cost: Priority	\$0.00 \$0.00 None 6-10 yrs 1-5 yrs Within 1 yr Urgent
Element Group: Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: Units Sq. III Comments Transverse - beam to b Recommended Work		Good 38.88	Fair	Poor		Maint. I	Needs n. Deficiencies ded Construction	n Cost: Priority	2.7 0.18 0.45 10 38.88 \$0.00 None 6-10 yrs 1-5 yrs Within 1 yr Urgent
Element Group: Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: Units Sq. mi Comments North-East - poor condit West abutment exposed bearing seat.NE corner Recommended Work Repair concrete. Costed	ion. West bearing s I. South-East half re 1m2 delam/spall, SI	Good Geat in fair coeconstructed	. Delamina	covered	3.5 with debris.	Maint. N	Needs Deficiencies ed Construction	Cost:	7.1 1 2 14.2 14.2 \$0.00 None 6-10 yrs 1-5 yrs Within 1 yr Urgent



Conventional closed Moderate Exc and Swap and	Good East half re	Fair 15.44 placed. Expo	Poor 5		Maint. Perforr	Needs m. Deficiencies	1.7 7.3 1.4 2 20.44 \$5,000.00 None 6-10 yrs 1-5 yrs Within 1 yr
							Urgent
Abutments Ballast walls Cast-in-place concre Benign Exc	ete	Fair 6.6	Poor		Maint.	Needs n. Deficiencies	0.6 6 0.55 2 6.6 \$0.00 None 6-10 yrs 1-5 yrs
							Within 1 yr Urgent
Abutments Bearings Weathering steel Plate Benigh	Good	Fair	Poor		nspection		0.5 0.7 0.13 4 4
in fair condition.	300U	4	1 001				\$5,000.00 None 6-10 yrs 1-5 yrs Within 1 yr Urgent
	Abutments Ballast wall. Abutments Bearings Exc Abutments Bearings Exc In a butments Bearings Abutments Bearings Abutments Bearings Exc In a butments Bearings Abutments Bearings Abutments Bearings	Abutments Ballast wall. Abutments Bearings Exc Good Abutments Bearings Exc Good Exc Good Abutments Exc Good Exc Good	Abutments Benigh Exc Good Fair Exc Good Fair Exc Good Fair 15.44 Abutments Ballast walls Cast-in-place concrete Exc Good Fair Abutments Benigh Exc Good Fair 6.6 Ilast wall.	Abutment walls both sides Cast-in-place concrete Conventional closed Moderate Exc Good Fair Poor 15.44 5 Ing of SW quadrant. East half replaced. Exposed tion at South end of West abutment. Abutments Ballast walls Cast-in-place concrete Benigh Exc Good Fair Poor (a.6) Abutments Bearings Weathering steel Plate Benigh Exc Good Fair Poor in fair condition.	Abutment walls both sides Cast-in-place concrete Conventional closed Exc Good Fair Poor 15.44 5 Abutments Ballast walls Exc Good Fair Poor 6.6 Abutments Bearings Abutments Abutments Bearings Abutments	Abutments Ballast walls Exc Good Fair Poor Abutments Ballast walls Exc Good Fair Poor Abutments Ballast walls Exc Good Fair Poor Abutments Benigh Abutments Bearings Bearings Abutments Bearings Bearings Abutments Bearings Bea	Abutment walls both sides Cast-in-place concrete Conventional closed Moderate Count Cou



Comments 2x6 longitudinal boards Centre third worn from Recommended Work Repair wearing surface	s. snowmobiles.	Good 32.56	Fair	Poor 16.2	_	uantity: Inspection Maint. Perform		\$6,000.00 None 6-10 yrs 1-5 yrs Within 1 yr Urgent
Element Group: Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: Units Sq. n Comments Recommended Work	Sidewalks/curbs Curbs Wood Rectangular-solid Moderate None Exc	Good	Fair 29.6	Poor	Length: Width: Height: Count: Total Qu Limited I	Maint. N	_	14.8 0.2 0.1 2 29.6 \$0.00 None 6-10 yrs 1-5 yrs Within 1 yr Urgent
Element Group: Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: Units Sq. m Comments Recommended Work	Beams/MLE's Girders two sides of struct Weathering steel I-type Benigh Exc	Good 121.55	Fair	Poor	Length: Width: Height: Count: Total Qua Limited In	Maint. No	eeds Deficiencies d Construction Cost: Priority	14.2 0.36 1.6 2 121.55 \$0.00 None 6-10 yrs 1-5 yrs Within 1 yr Urgent



Element Group: Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: Units Sq. n			Fair 1.87	Poor 5.61	Length: Width: Height: Count: Total Qu Limited I	Inspection Maint. Needs Perform. Deficiencies Estimated Construction Cost:	1.7 1.1 4 7.48
Recommended Work Repair concrete at Sour	thwest quadrant.					Priority	
Element Group: Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: Units Sq. ri Comments Transverse timbers und Recommended Work		Good 37	Fair	Poor	Length: Width: Height: Count: Total Qua Limited In	antity: Inspection Maint. Needs Perform. Deficiencies Estimated Construction Cost: Priority	\$0.00 None 6-10 yrs 1-5 yrs Within 1 yr Urgent
Element Group: Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: Units Each Comments Recommended Work	Embankments & St Embankments All Quadrants Benigh Exc	Good	Fair 4	Poor		· L_	\$0.00 None 6-10 yrs 1-5 yrs Within 1 yr Urgent

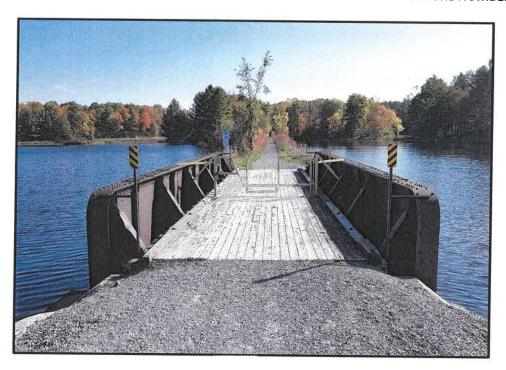


Element Group	Element Name	Comments Repair/Rehabilitation	Priority (Years)	Estimated Cost
Abutments	Wingwalls	Repair concrete at Southwest quadrant.	1-5 yrs	\$5,000.00
Decks	Wearing surface	Repair wearing surface.	1-5 yrs	\$6,000.00
Abutments	Bearings	Repair concrete in Bearing Seats.	1-5 yrs	\$5,000.00
Abutments	Abutment walls	Repair concrete.	1-5 yrs	\$5,000.00
Decks	Railing Systems	Add railing between gap of deck and truss for safety.	Urgent	\$9,500.00
			Total	\$30,500.00

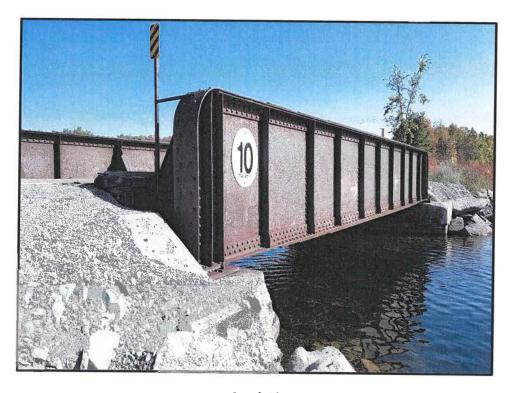
	Comments	Estimated Cost
Approaches		\$0.00
Detours		\$0.00
Traffic Control		\$0.00
Utilities		\$0.00
Right of Way		\$0.00
Environmental Study		\$0.00
Other	Engineering Design & Construction Review	\$3,000.00
Contingencies	Contingency Allowance	\$3,000.00

Justification			
		MILE SE E LEIGHS IN	
-			





Looking East along Trail over Bridge



South Elevation



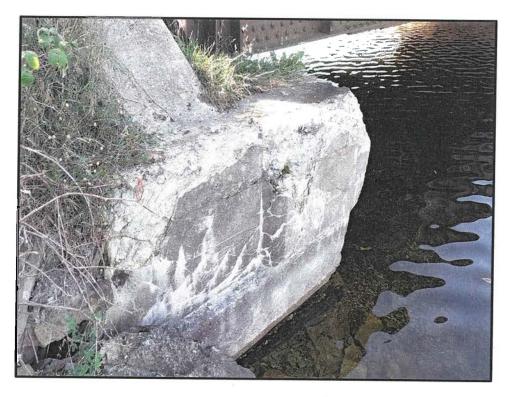
Deck to Truss Gap (To Be Filled or Guarded with Rail)



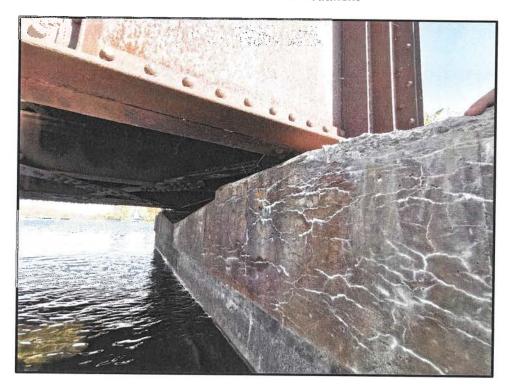
Severe Cracking and Spall at SW Abutment Wall

3

SITE PHOTOGRAPHS



Deterioration of Abutment



Map Cracking and Efflorescence of Abutment

Structure Name	1st Boyce Island Bridge		
Main Hwy/Road#	On 🗸 Ui	nder 🗌	Crossing Type Ped
Road Name	Cataraqui Trail		
Structure Location	0.5km East of Sills Bay Road		
atitude	44.426966		Longitude -76.56075
Owner(s)	Cataraqui Region CA		
Heritage Designation			
Road Class:			
ITO Region	Eastern		
MTO District	Kingston		Posted Speed No of Lanes 1
Old County	Frontenac		AADT % Trucks
Seographic Twp	Loughborough		Special Routes: Transit Truck School Bicycle
Structure Type	Girders (steel)		Detour Length Around Bridge (km)
otal Deck Length	28.1	(m)	Fill on Structure 0 (m)
overall Str Width	5.9	(m)	Skew Angle (Degrees)
otal Deck Area	165.79	(sq. m)	Direction of Structure East/West
loadway Width	3.3	(m)	No of Spans
pan Lengths	26.7		(m)

Historical Data			The Edition 1882
Year Built:	1958	Last Biennial Inspection:	2017-09-28
Current Load Limit:	(tonnes)	Last BridgeMaster Inspection:	
Load Limit By-Law #:		Last Evaluation:	
By-Law Expiry Date:		Last Underwater Inspection:	
Min Vertical Clearance:	1.65 (m)	Last Condition Survey:	
Rehab History: (Date/des	scription)		
			14



Structure Number: CRCA2

Field Inspection Information

Date of Inspection: 2019-10-10

Temperature:

14° C

Inspected By:

D.M. Wills Associates Ltd.

Inspector:

Zach Staples, P.Eng Tim Rosborough

Others in Party: Equipment Used:

Camera and Hand Tools

Weather:

Sunny

tailed Deck Condition Survey: RT Survey tailed Coating Condition Survey: derwater Investigation: tigue Investigation: ucture Evaluation: ad Posting:Estimated Load Total Cost Deck Deck	0 Total Cost 0		0 0
tailed Coating Condition Survey: derwater Investigation: tigue Investigation: ucture Evaluation:			0
derwater Investigation: tigue Investigation: ismic Investigation: ucture Evaluation:			0
igue Investigation: ismic Investigation: ucture Evaluation:	0 Total Cost 0		-
smic Investigation: ucture Evaluation:	0 Total Cost 0		0
ucture Evaluation:	0 Total Cost 0		0
	0 Total Cost 0		0
od Posting: Estimated Load	0 Total Cost 0		0
to rosting. Estimated Load		Total Cost 0	
xt Date Inspection: 2021-10-10	2021-10-10	10	
CI 71.8			

Suspected Performance Deficiencies

- 00 None
- Load carrying capacity
- Excessive deformations (deflections rotations)
- Continuing settlement
- Continuing movements
- Seized bearings

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

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

Maintenance Needs

- Lift and Swing Bridge Maintenance
- Bridge Cleaning
 Bridge Handrail Maintenance
- Painting Steel Bridge Structures Bridge Deck Joint Repair
- Bridge Bearing Maintenance

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

- 13 Erosion Control at Bridges
- Concrete Sealing
- 15 Rout and Seal
- 16 Bridge deck Drainage
- 17 Other



Element Data	а						
Element Group:	Signs				Length:		
Element Name:	Signs				Width:		
Location:	each quadra	ant			Height:		
Material:	•				Count:		4
Element Type:					Total Qua	intity:	4
Environment:	Benign	THE STATE OF THE STATE OF			Limited In	· L	
Protection System							
Condition Data:	<u> </u>	Good	Fair Po	oor		Maint. Needs	
I	Each	4	1		11	Perform. Deficiencies	
Comments						T OHOLIN DONOICI.S.CC	
Four hazard signs	;					Estimated Construction Cost:	\$0.00
						Priority	Non e
Recommended W	Jork					· · · · · · · · · · · · · · · · · · ·	6-10 yrs
							1-5 yrs
							Within 1 yr
							Urgent
Element Group:	Barriers			-	Length:		28
Element Group:	Railing Syste				Length: Width:		20
Location:	Both side	ems					
Material:	Dour side				Height: Count:		2
Element Type:					Count: Total Qua	m416	56
Environment:	Benign		521,000,000		Limited In:	-	30
Protection System		Mary Millians		•			
Condition Data: \		Good	Fair Po		[Maint. Needs	
-	m Exc	G000	rall 10	56 56	į		
Comments	<u> </u>			30	[Perform, Deficiencies	
Commence					i	T. War at a d. O a material time Cont.	240 500 00
						Estimated Construction Cost:	\$16,500.00
						Priority	None
Recommended W							6-10 yrs 1-5 yrs
Add railing betwee	en gap of deck and	truss for safety					Within 1 yr
							Urgen t
Element Group:	Decks				Length:		4
Element Name:	Deck top				Width:		0.25
Location:				- I	Height:		0.25
Material:	Wood				Count:		48
Element Type:	Rectangular-	-solid			Total Quai	ntity:	144
Environment:	Benign	NA MATERIAL NEW YORK	LATAS E SAULTA		Limited Ins		
Protection System						Maint. Needs	
Condition Data: \(\begin{align*} \text{U} \\ \text{Condition} \\ \text{Data} \\ \text{U} \	Units Exc	Good	Fair Po	or	[Matric Meeus	
	Sq.m	144			L	Perform. Deficiencies	
Comments							
Transverse Timber	r Beams					Estimated Construction Cost:	\$0.00
li ·						Priority	None
Recommended We	f = ¬[,					i tioney	6-10 yrs
Recommended vv	OFK						1-5 yrs
							Within 1 yr
							Urgent



Element Group:	Abutments	Length:			6.4
Element Name:	Abutment walls	Width:			1.35
Location:	Bearing Seat	Height:			
Material:	Cast-in-place concrete	Count:			2
Element Type:	Conventional closed	Total Qu	antity:		17.3
Environment:	Benigh	Limited I	nspection		
Protection System:			Maint. Ne	>>da	
Condition Data: Units	Exc Good Fair Poor		Mairit. INC	eus	
Sq. n		1.2	Porform	Deficiencies	
Comments		J	renom.	Deliciencies	
Delamination and crack	ring of concrete at SW bearing seat.		Estimato	d Construction Cost:	\$6,000.00
	ů .	1	Laumate		
		İ		Priority	None
Recommended Work					6-10 yrs 1-5 yr s
Repair concrete					Within 1 yr
					Urgent
Element Group:	Abutments	Length:			
Element Name:	Abutment walls	Width:			6.4
Location:	Abutment Wall	Height:			1.8
Material:	Cast-in-place concrete	Count:			2
Element Type:	Cast-III-place concrete	Total Qu	antity:		23.03
Environment:	Moderate		nspection		23.03
Protection System:	Moderate	Limito C	•		
Condition Data: Units	Exc Good Fair Poor		Maint. Ne	eds	*
p	00-0000mg	7.7			
Sq. m	15.55	7.7	Perform.	Deficiencies	
I	abutment wall at waterline.				040 -00 00
	poor condition. Wall ends are rotating out. Wide cr	acking on SW	Estimated	d Construction Cost:	\$16,500.00
corner abutment.				Priority	None
Recommended Work					6-10 yrs
Reface abutment wall.					1-5 yr s Within 1 yr
					Urgent
Element Group:	Abutments	Length:			
Element Name:	Ballast walls	Width:			6.4
Location:	Datest Walls	Height:			1.2
Material:	Cast-in-place concrete	Count:			2
Element Type:	Satura pinas sorial sta	Total Qua	antity:		15.36
Environment:	Benigh		nspection		10.00
Protection System:			-		
Condition Data: Units	Exc Good Fair Poor		Maint. Ne	eds	
Sq. m		0.2		D 6 : .	
Comments	5.10		Pеrrorm.	Deficiencies	
	ete at N/W and S/W face of ballast wall.		Fatimatas	I Construction Cont	00,000
			⊏surnated	! Construction Cost:	\$6,000.00
				Priority	None
Recommended Work					6-10 yrs 1-5 yrs
Repair concrete.					Within 1 yr
					Urgent
III					1



Element Group:	Abutments				Length:			3.2	
Element Name:	Wingwalls				Width:				
Location:					Height:			3.2	
Material:	Cast-in-place cor	ncrete			Count:			4	
Element Type:					Total Q	•		40.96	
Environment:	Moderate				Limited	Inspection	on 🗌		
Protection System:						Maint.	Needs		
Condition Data: Unit		Good	Fair	Poor					
· —	m	40.96]		Perfor	m. Deficiencies		
Comments						, [
Height: 3.2m - 1.25m	(Triangular). Delam	ination and so	aling on e	ntire face of	of NW.	Estima	ated Construction Cost:	\$0	.00
							Priority	None	
Recommended Work						J	·	6-10 yrs	
]		1-5 yrs	l
								Within 1 yr	
								Urgent	
				,		1			_
Element Group:	Abutments				Length:		· · · · · · · · · · · · · · · · · · ·		
Element Name:	Bearings				Width:				
Location:	West Side of Stru	cture			Height:		· · · · · ·	_	
Material:	Weathering steel				Count:			2	
Element Type: Environment:	Plate Benigh		CHARLES LINE		Total Qu			2	
Protection System:	Вепідп				Limited	inspectio	П		
		04	F * .			Maint.	Needs		
Condition Data: Unit		Good 1	Fair	Poor	1]
Comments					1	Perforr	n. Deficiencies		
Wood poor, consider i	renlacing					L			_
livoda poor, doribidor i	epidonig.					Estima	ted Construction Cost:	\$6,000.	.00
							Priority	None	
Recommended Work								6-10 yrs 1-5 yrs	100
Reset bearing at Sout	nwest							Within 1 yr	
								Urgent	5
Element Group:	Embankments &	Streams			Length:				
Element Name:	Embankments				Width:	1	·		
Location:	All Quadrants				Height:				
Material:					Count:			4	
Element Type:					Total Qu	antity:		4	
Environment:	Benign		ar francis	NO STROM	Limited I	nspectio	n 📄		- 1
Protection System:	None					Maint, I	Needs		
Condition Data: Units	Mindred Committee Committe	Good	Fair	Poor					
Eac		4				Perform	n. Deficiencies		_
Comments	X-90								
						Estima	ted Construction Cost:		_
							Priority	None	(F) (S) (S)
Recommended Work		-						6-10 yrs	
The state of the s								1-5 yrs	
								Within 1 yr	
								Urgent	



Element Group: Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: Un Comments Flange deterioration Recommended Work	on West side.	Good 354.57	Fair	Poor	Length: Width: Height: Count: Total Qu Limited	Maint. Perform	26.7 0.46 2.63 2 354.57 \$0.00 None 6-10 yrs 1-5 yrs Within 1 yr Urgent
Element Group: Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: Uni Sq. Comments Recommended Work	m [Good 112.32	Fair	Poor	Length: Width: Height: Count: Total Qu Limited I	Maint. Perform	5.4 0.3 0.85 8 112.32 \$0.00 None 6-10 yrs 1-5 yrs Within 1 yr Urgent
Element Group: Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: Unit Eac Comments I-beams; 4 per 7 bays	h	Good 28	Fair	Poor	Length: Width: Height: Count: Total Qui	Maint. I	3.8 0.165 0.5 28 28 28 \$0.00 Nons 6-10 yrs 1-5 yrs Within 1 yr Urgent



Element Group: Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: Units Comments Steel Angles. Recommended Work	Beams/MLE's Floor Beams Plan Cross Bracin Weathering steel Other Benigh None Exc	Good 51.86	Fair	Poor	Length: Width: Height: Count: Total Qu Limited	Maint. Perfore	Needs m. Deficiencies sted Construction Cost: Priority	\$0.00 \$0.00 \$0.00 \$0.00 None 6-10 yrs 1-5 yrs Within 1 yr
	Abutments				Length:			Urgent 0.77
1	Bearings East Side of Struct	ure			Width: Height:			0.77
1	Weathering steel				Count:			2
Element Type:	Plate				Total Qu	antity:		2
1	Benigր	ing) Phres		(E) (SA)	Limited I	nspectio	n 📋	<u> </u>
Protection System:			1/= =- N	- S- 4.276927		Maint.	Needs	
Condition Data: Units	Exc	Good	Fair	Poor	7			
Each Comments			2			Perforn	n. Deficiencies	
Continionts						Cotimo	ted Construction Cost:	60.00
						Esuma		\$0.00
Recommended Work							Priority	None 6-10 yrs
Trecommended Work								1-5 yrs Within 1 yr Urgent
Element Group:	Decks				Length:			28.1
l -	Wearing surface				Width:			3.3
Location:					Height:	-		
l .	Wood Wood Planks				Count:	antituu		1
	Moderate		1650 K (F)	- W 0	Total Qua Limited I		7 🗆	92.73
Protection System:								
Condition Data: Units	Exc	Good	Fair	Poor		Maint. I	Needs	
Sq. m		58.03	30.7	4		Perform	n. Deficiencies	
Comments								
Centre third worn from sr Deck damaged at four co					ļ	Estimat	ted Construction Cost:	\$6,000.00
250K damaged at lour of	on or decor.						Priority	None
Recommended Work	*							6-10 yrs
Repair four corners of de	eck							1-5 yrs Within 1 yr Urgent



Element Group:	Sidewalks/curbs	Length:		28.1
Element Name:	Curbs	Width:		0.2
Location:	-	Height:		0.1
Material:	Wood	Count:		2
Element Type:		Total Quantity:		56.2
Environment:	Moderate	Limited Inspection	n 🗌	
Protection System:		Maint.	Needs	
Condition Data: Units	Exc Good Fair Poor	The state of the s		
m	51.2	5 Perform	n. Deficiencies	
Comments				
Exposed bolt and section	on loss at North-East corner.	Estima	ted Construction Cost:	\$500.00
			Priority	None
Recommended Work			Thomy	6-10 yrs
Replace 5m section of f	NE corner.			1-5 yrs
				Within 1 yr Urgent
				Orgenit

Repair and Ref	nabilitation Require	d		
Element Group	Element Name	Comments Repair/Rehabilitation	Priority (Years)	Estimated Cost
Sidewalks/curbs	Curbs	Replace 5m section of NE corner.	1-5 yrs	\$500.00
Decks	Wearing surface	Repair four corners of deck	1-5 yrs	\$6,000.00
Abutments	Bearings	Reset bearing at Southwest	1-5 yrs	\$6,000.00
Abutments	Ballast walls	Repair concrete.	1-5 yrs	\$6,000.00
Abutments	Abutment walls	Reface abutment wall.	1-5 yrs	\$16,500.00
Abutments	Abutment walls	Repair concrete	1-5 yrs	\$6,000.00
Barriers	Railing Systems	Add railing between gap of deck and truss for safety	Urgent	\$16,500.00
			Total	\$57,500.00

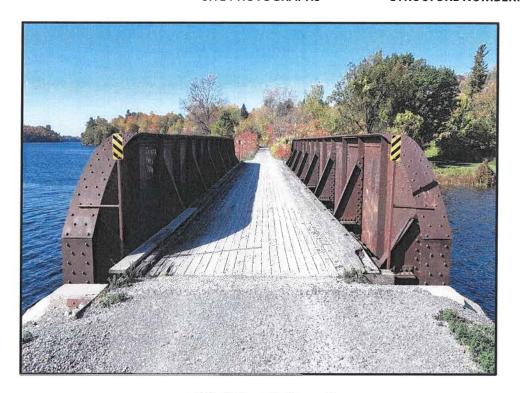


	Comments	Estimated Cost
Approaches		\$0.00
Detours		\$0.00
Traffic Control		\$0.00
Utilities		\$0.00
Right of Way		\$0.00
Environmental Study		\$0.00
Other	Engineering Design & Construction Review	\$7,500.00
Contingencies	Contingency Allowance	\$10,000.00

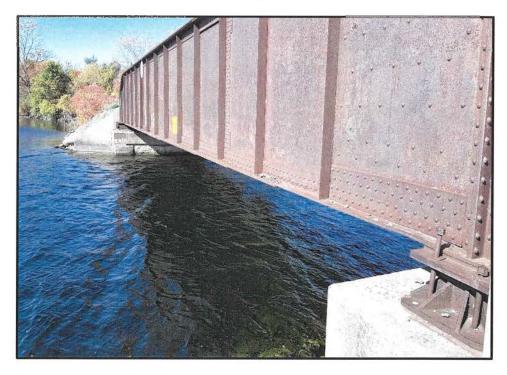
Justification	
Î	



STRUCTURE NUMBER: CRCA2



Looking West along Trail over Bridge



South Elevation

D.M. Wills Associates Ltd.

STRUCTURE NUMBER: CRCA2



Damaged NE Corner of Timber Curb

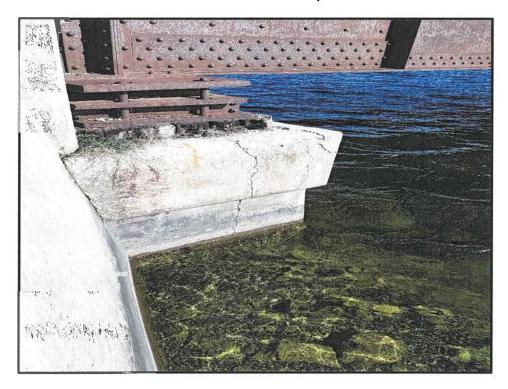


Deteriorating Wood of SE Deck Corner

D.M. Wills Associates Ltd.



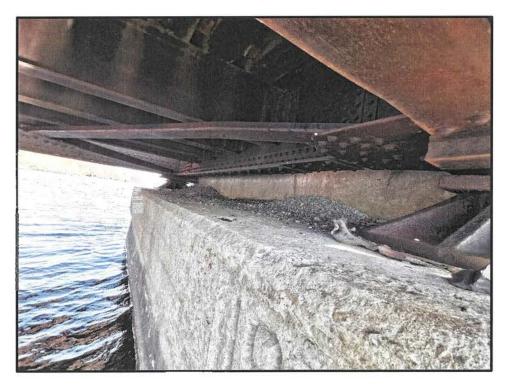
Worn Deck Top



SW Bearing in Poor Condition



Severe Cracking on SW Bearing Seat



Abutment Wall

Main Hwy/Road # On V Under Crossing Type Ped Road Name Cataraqui Trail over Harrowsmith Road Structure Location	Structure Name	Harrowsmith Road Overpass	
Structure Location Latitude La	Main Hwy/Road#	On ✓ Under	Crossing Type Ped
Latituide 44.405483	Road Name	Cataraqui Trail over Harrowsmith Road	
Owner(s) Cataraqui Region CA Heritage Designation Road Class: MTO Region Eastern MTO District Kingston AADT AADT % Trucks Special Routes: Transit Truck School Bicycle Fortal Deck Length Overall Str Width Special Routes: Transit Truck School Bicycle (km) Fill on Structure O.3 (m) Skew Angle 45 (Degrees) Fortal Deck Area 186.56 (sq. m) Direction of Structure North/South No of Spans The special Str Width Span Lengths Special Routes: Transit Truck School Bicycle (km) Skew Angle 45 (Degrees) Fill on Structure North/South No of Spans The special Structure North/South No of Spans The special Structure North/South Span Lengths Span Lengths Span Lengths The special Structure North/South Span Lengths The special Structure North/South Span Lengths The special Structure North/South No of Spans The special Structure North/South North/South Span Lengths The special Structure North/South North/South North/South Span Lengths The special Structure North/South North/South Span Lengths The special Structure North/South Span Lengths The special Structure North/South North/South North/South Span Lengths The special Structure North/South North/South North/South Span Length Special Routes Transit Truck Special Routes Transit North Trucks Special Routes Transit North Trucks North Trucks North Trucks Truck Special Routes Truck Special Routes Truck Special Routes Truck Special Routes Truck North Trucks N	Structure Location	0.4km East of Wilson Road	
Heritage Designation Road Class: MTO Region Eastern MTO District Kingston Posted Speed No of Lanes 1 ADDT % Trucks Seographic Twp Portland Special Routes: Transit Truck School Bicycle Fisturuture Type Libeam or Girders Detour Length Around Bridge (km) Fill on Structure 0.3 (m) Overall Str Width 5.3 (m) Skew Angle 45 (Degrees) Fotal Deck Area 186.56 (sq. m) Direction of Structure North/South Span Lengths 30 Historical Data Year Built: 1965 Last Biennial Inspection: 2017-09-28 Current Load Limit: Load Limit By-Law #: Last Underwater Inspection: Min Vertical Clearance: AADT % Truck % Trucks % School Bicycle V No of Lanes 1 % Truck School Bicycle V School Bicycle No School Bicycle V School Bicycle School Bicycl	Latitude	44.405483	Longitude -76.63543
Road Class: MTO Region	Owner(s)	Cataraqui Region CA	
MTO Region Eastern MTO District Kingston Posted Speed No of Lanes 1 Did County Frontenac AADT % Trucks Geographic Twp Portland Special Routes: Transit Truck School Bicycle V Structure Type -beam or Girders Detour Length Around Bridge (km) Total Deck Length 5.3 (m) Skew Angle 45 (Degrees) For Deck Area 186.56 (sq. m) Direction of Structure North/South Grandway Width 3.9 (m) No of Spans 1 (m) Historical Data Wear Built: 1965 Last Biennial Inspection: 2017-09-28 Current Load Limit: (tonnes) Last BridgeMaster Inspection: By-Law Expiry Date: Last Underwater Inspection: Min Vertical Clearance: 4.6 (m) Last Condition Survey:	Heritage Designatio	n	
MTO District Kingston	Road Class:		
Old County Frontenac AADT	MTO Region	Eastern	
Geographic Twp Portland Special Routes: Transit Truck School Bicycle Structure Type I-beam or Girders Detour Length Around Bridge (km) Fotal Deck Length 35.2 (m) Fill on Structure 0.3 (m) Overall Str Width 5.3 (m) Skew Angle 45 (Degrees) Fotal Deck Area 186.56 (sq. m) Direction of Structure North/South Roadway Width 3.9 (m) No of Spans 1 Whistorical Data Year Built: 1965 Last Biennial Inspection: 2017-09-28 Current Load Limit: (tonnes) Last BridgeMaster Inspection: Load Limit By-Law #: By-Law Expiry Date: Last Underwater Inspection: Min Vertical Clearance: 4.6 (m) Last Condition Survey:	MTO District	Kingston	Posted Speed No of Lanes 1
Structure Type	Old County	Frontenac	AADT % Trucks
Total Deck Length	Geographic Twp	Portland	Special Routes: Transit ☐ Truck ☐ School ☐ Bicycle ☑
Decreal Str Width 5.3 (m) Skew Angle 45 (Degrees) Total Deck Area 186.56 (sq. m) Direction of Structure North/South Roadway Width 3.9 (m) No of Spans 1 (m) Historical Data Year Built: 1965 Last Biennial Inspection: 2017-09-28 Current Load Limit: (tonnes) Last BridgeMaster Inspection: Load Limit By-Law #: Last Evaluation: Last Underwater Inspection: Min Vertical Clearance: 4.6 (m) Last Condition Survey:	Structure Type	I-beam or Girders	Detour Length Around Bridge (km)
Total Deck Area 186.56 (sq. m) Direction of Structure North/South Roadway Width 3.9 (m) No of Spans 1 Historical Data Year Built: 1965 Last Biennial Inspection: 2017-09-28 Current Load Limit: (tonnes) Last BridgeMaster Inspection: Load Limit By-Law #: Last Evaluation: By-Law Expiry Date: Last Underwater Inspection: Min Vertical Clearance: 4.6 (m) Last Condition Survey:	Total Deck Length	35.2 (m)	Fill on Structure 0.3 (m)
Roadway Width 3.9 (m) No of Spans 1 Wear Built: 1965 Last Biennial Inspection: 2017-09-28 Current Load Limit: (tonnes) Last BridgeMaster Inspection: Last Evaluation: Load Limit By-Law #: Last Underwater Inspection: Min Vertical Clearance: 4.6 (m) Last Condition Survey:	Overall Str Width	5.3 (m)	Skew Angle 45 (Degrees)
Historical Data	Total Deck Area	186.56 (sq.	m) Direction of Structure North/South
Year Built: 1965 Last Biennial Inspection: 2017-09-28 Current Load Limit: (tonnes) Last BridgeMaster Inspection: Load Limit By-Law #: Last Evaluation: By-Law Expiry Date: Last Underwater Inspection: Min Vertical Clearance: 4.6 (m) Last Condition Survey:	Roadway Width	3.9 (m)	No of Spans
Year Built: 1965 Last Biennial Inspection: 2017-09-28 Current Load Limit: (tonnes) Last BridgeMaster Inspection: Load Limit By-Law #: Last Evaluation: By-Law Expiry Date: Last Underwater Inspection: Min Vertical Clearance: 4.6 (m) Last Condition Survey:	Span Lengths	30	(m)
Current Load Limit: (tonnes) Last BridgeMaster Inspection: Load Limit By-Law #: Last Evaluation: By-Law Expiry Date: Last Underwater Inspection: Min Vertical Clearance: 4.6 (m) Last Condition Survey:	Historical Da	ta	
Load Limit By-Law #: By-Law Expiry Date: Last Underwater Inspection: Min Vertical Clearance: 4.6 (m) Last Condition Survey:	Year Built:	1965	Last Biennial Inspection: 2017-09-28
By-Law Expiry Date: Last Underwater Inspection: Min Vertical Clearance: 4.6 (m) Last Condition Survey:	Current Load Limit	: (tonnes)	Last BridgeMaster Inspection:
Min Vertical Clearance: 4.6 (m) Last Condition Survey:	Load Limit By-Law	#:	Last Evaluation:
	By-Law Expiry Dat	e:	Last Underwater Inspection:
Rehab History: (Date/description)	Min Vertical Clears	ance: 4.6 (m)	Last Condition Survey:
	Rehab History: (Da	ate/description)	



Structure Number: CRCA1

Field Inspection Information

Date of Inspection: 2019-10-10

Temperature:

15° C

Inspected By:

D.M. Wills Associates Ltd.

Inspector:

David Bonsall, P.Eng

Camera and Hand Tools

Others in Party:

Alex Payette

Equipment Used:

Weather:

Sunny

	Priority	Estimated Cost
Detailed Deck Condition Survey:		0
DART Survey		0
Detailed Coating Condition Survey:		0
Underwater Investigation:		0
Fatigue Investigation:		0
Seismic Investigation:		0
Structure Evaluation:		0
Load Posting:Estimated Load	Total Cost	0
Next Date Inspection:	2021-10-10	
BCI 69.51		
Special Notes:		

Suspected Performance Deficiencies

- Load carrying capacity
- Excessive deformations (deflections rotations)
- 03 Continuing settlement
- Continuing movements
- Seized bearings

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

- Slippery surfaces
- Flooding/channel blockage
- Undermining of foundation
- Unstable embankments

Maintenance Needs

- Lift and Swing Bridge Maintenance
- Bridge Cleaning
- Bridge Handrail Maintenance
- Painting Steel Bridge Structures 05 Bridge Deck Joint Repair
- Bridge Bearing Maintenance

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

- Erosion Control at Bridges
- Concrete Sealing
- Rout and Seal
- Bridge deck Drainage
- Other



Element Da	ta									
Element Group:		Barriers				Length:	:		33.3	
Element Name:		Railing Systems				Width:				
Location:		Both sides				Height:			0.95	
Material:		Wood				Count:			2	
Element Type:						Total Q	uantity:		66.59	
Environment:		Benigh				Limited	Inspecti	on		
Protection Syste		None					Maint.	Needs		
Condition Data:	,		Good	Fair	Poor	_	1			
	Sq. n	1 6	66.59				Perfor	m. Deficiencies		
Comments							, [
4 2x10 laminated	d timbe	r for each side.					Estima	ated Construction Cost:		\$0.00
								Priority	None	****
Recommended \	Nork						j	, , , , , , , , , , , , , , , , , , , ,	6-10 yrs	SHUMBOOKS (SE
							7		1-5 yrs	
									Within 1 y	yr
									Urgent	
Flamant Course		A								
Element Group: Element Name:		Approaches		-		Length:				
Location:		Railing Systems Each Quadrant				Width:			1.5	
Material:		Each Quadrant				Height:				
Element Type:						Count:	.antitus		4	
Environment:		Benign	THE RESERVE TO	7.10. 7 10	ESTABLISHED IN	Total Qu	lanuty: Inspectio		4	
Protection System	m·	Denigh	A SECTION OF THE SECT			Limited	mspecuc	011		i
Condition Data:		Exc	Good	Fair	Poor		Maint.	Needs		
	Each		4	raii	P00I	7				
Comments	Laci		4			J	Perform	m. Deficiencies		
Chain link fence.										
							Estima	ited Construction Cost:		\$0.00
								Priority	None	
Recommended V	Vork								6-10 yrs 1-5 yrs	ļ
									Within 1 y	r
									Urgent	
Element Group:		Decks				Length:			35.4	
Element Name:		Deck top				Width:	ĺ		3.9	
Location:						Height:				
Material:		Weathering steel				Count:	ļ		1	
Element Type:		Steel Plate - non-	composite			Total Qu	antity:		138.06	
Environment:		Benigh				Limited I	nspectio	n 🗸		
Protection Syster	n:						Maint.	_		
Condition Data:	Units	Exc	Good	Fair	Poor		Widirit.	110003		
	Sq. m		138.1				Perform	n. Deficiencies		
Comments										
Steel deck covere	ed with	approximately 0.3	m of granular	material.			Estima	ted Construction Cost:		
								Priority	None	
Recommended W	/ork							Thomy	6-10 yrs	
				· -					1-5 yrs	
									Within 1 yı	r
									Urgent	



Element Group: Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: Units Sq. m Recommented Work	Beams/MLE's Girders Weathering steel I-type Benign Exc	Good 402.86	Fair	Poor	Length: Width: Height: Count: Total Qu Limited I	Maint. Perforr		30.8 0.46 2.58 2 402.86 \$0.00 None 6-10 yrs 1-5 yrs Within 1 yr Urgent
Element Group: Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: Units Sq. rtt Comments End Transverse Floor Bare		Good 33.11	Fair	Poor	Length: Width: Height: Count: Total Qu Limited I	Maint. Maint. Perform	_	11.5 0.18 0.45 2 33.11 \$0.00 None 6-10 yrs 1-5 yrs Within 1 yr Urgent
Element Name: Location: Material:	Beams/MLE's Floor Beams Weathering steel I-type Benign Exc	Good 403.06	Fair	Poor	Length: Width: Height: Count: Total Qua Limited In	Maint. N		5.3 0.21 0.53 45 403.06 \$0.00 None 6-10 yrs 1-5 yrs Within 1 yr Urgent



Element Group: Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: Units Each		Length: Width: Height: Count: Total Qua Limited In		0.5 0.3 6 6 6
Recommended Work			,	6-10 yrs 1-5 yrs Within 1 yr Urgent
Element Group: Element Name: Location: Material: Element Type: Environment: Protection System: Condition Data: Units Sq. 17 Comments Recommended Work	Abutments Bearings Bearing Seat Cast-in-place concrete Benigh None Exc Good Fair Poor 45.5]	·	17.5 1.3 2 45.5 \$0.00 None 6-10 yrs 1-5 yrs Within 1 yr Urgent
Severe delamination of Recommended Work	Abutments Abutment walls each side Cast-in-place concrete Conventional closed Benigh None Exc Good Fair Poor 34.64 29 ble near the top of the north abutment wall. south and north abutment walls. (S - 45 Sq.m, N - 6 Sq ated concrete on abutment faces.) [•	\$50,000.00 None 6-10 yrs 1-5 yrs Within 1 yr Urgent



Element Group:	Abutments				Length:			0.46
Element Name:	Ballast walls				Width:			17.5
Location:	Each side		·		Height:			1.2
Material:	Cast-in-place co	ncrete			Count:			2
Element Type:					Total Q	uantity:		42
Environment:	Benign	DOWN NEWS OF		10 15 1	Limited	Inspection	П	
Protection System:	None							
Condition Data: Units	Exc	Good	Fair	Poor		Maint. Nee	as	
Sq. m	n i	42				Perform D	eficiencies	
Comments						r enom. D	circiencies	
	· · ·					Estimated	Construction Cost:	\$0.00
							Priority	
Recommended Work		 .	-				Filolity	None 6-10 yrs
Trecommended Work)		1-5 yrs
								Within 1 yr
								Urgent
Element Group:	Abutments				Length:			5.7
Element Name:	Wingwalls				Width:			
Location:	North-East Quad				Height:			6.7
Material:	Cast-in-place cor	crete			Count:			1
Element Type:					Total Qu	antity:		38.18
Environment:	Moderate			# 18 han	Limited I	nspection [
Protection System:						Maint. Nee	ds	
Condition Data: Units	Exc	Good	Fair	Poor		Other		
Sq. mi		38.18				Perform. D	eficiencies	
Comments								
Section of wall undermin						Estimated (Construction Cost:	\$6,000.00
Deterioration along top s	section.						Priority	None
Recommended Work		**					1 Honey	6-10 yrs
Underpin and repair con	crete.	***************************************						1-5 yrs
								Within 1 yr
					29			Urgent
	Abutments	· · · · · · · · · · · · · · · · · · ·			Length:			13.3
	Wingwalls				Width:			
	South-West Quad				Height:			5.3
	Cast-in-place con	crete	,		Count:	<u> </u>		1
Element Type:		-			Total Qui		·	70.49
	Moderate	AND THE REAL PROPERTY.	THE VI	Charle	Limited I	nspection [
Protection System:						Maint. Need	İs	
Condition Data: Units	Exc	Good	Fair	Poor	\neg			
Sq. m		70.49				Perform. De	eficiencies	
Comments								
						Estimated C	Construction Cost:	\$0.00
							Priority	None
Recommended Work	**		-				,	6-10 yrs
			_					1-5 yrs
								Within 1 yr
					2			Urgent



Element Group:	Abutments				Length:		· .	3.5
Element Name:	Wingwalls				Width:			
Location:	North-West Quad	rant			Height:			7
Material:	Cast-in-place con	crete			Count:			1
Element Type:					Total Qu	uantity:		24.5
Environment:	Moderate				Limited	Inspection		
Protection System:	None					Maint, Needs		
Condition Data: Units	Exc	Good	Fair	Poor		Mairit. Needs		-
Sq. n		24.5				Perform. Deficie	ncies	
Comments				J (r enom. Denois	ricies	
						Estimated Cons	truction Cost	\$0.00
						Estimated Cons		
Do commonde d Made							Priority	None 6-10 yrs
Recommended Work		.						1-5 yrs
								Within 1 yr
								Urgent
Element Group:	Abutments							
	, wante				Length:	i		4.7
Element Name:	Wingwalls				Length: Width:			4.7 0.45
Element Name: Location:		ant			_			
	Wingwalls				Width:			
Location: Material: Element Type:	Wingwalls South-East Quadro Cast-in-place cond				Width: Height:	antity:		
Location: Material:	Wingwalls South-East Quadra		MINITES.		Width: Height: Count: Total Qu	antity:		0.45 8 1
Location: Material: Element Type:	Wingwalls South-East Quadro Cast-in-place cond		MI VICES		Width: Height: Count: Total Qu	nspection		0.45 8 1
Location: Material: Element Type: Environment:	Wingwalls South-East Quadr Cast-in-place cond		Fair	Poor	Width: Height: Count: Total Qu			0.45 8 1
Location: Material: Element Type: Environment: Protection System:	Wingwalls South-East Quadra Cast-in-place cond Moderate None Exc	crete	Fair	1	Width: Height: Count: Total Qu	nspection Maint. Needs	nciae	0.45 8 1
Location: Material: Element Type: Environment: Protection System: Condition Data: Units	Wingwalls South-East Quadra Cast-in-place cond Moderate None Exc	Good	Fair	1	Width: Height: Count: Total Qu Limited I	nspection	ncies	0.45 8 1
Location: Material: Element Type: Environment: Protection System: Condition Data: Units Sq. m	Wingwalls South-East Quadra Cast-in-place cond Moderate None Exc	Good	Fair	1	Width: Height: Count: Total Qu Limited I	Maint. Needs Perform. Deficie		0.45 8 1
Location: Material: Element Type: Environment: Protection System: Condition Data: Units Sq. m	Wingwalls South-East Quadra Cast-in-place cond Moderate None Exc	Good	Fair	1	Width: Height: Count: Total Qu Limited I	nspection Maint. Needs	truction Cost:	0.45 8 1 37.59
Location: Material: Element Type: Environment: Protection System: Condition Data: Units Sq. m Comments	Wingwalls South-East Quadra Cast-in-place cond Moderate None Exc	Good	Fair	1	Width: Height: Count: Total Qu Limited I	Maint. Needs Perform. Deficie		0.45 8 1 37.59
Location: Material: Element Type: Environment: Protection System: Condition Data: Units Sq. m	Wingwalls South-East Quadra Cast-in-place cond Moderate None Exc	Good	Fair	1	Width: Height: Count: Total Qu Limited I	Maint. Needs Perform. Deficie	truction Cost:	0.45 8 1 37.59
Location: Material: Element Type: Environment: Protection System: Condition Data: Units Sq. m Comments	Wingwalls South-East Quadra Cast-in-place cond Moderate None Exc	Good	Fair	1	Width: Height: Count: Total Qu Limited I	Maint. Needs Perform. Deficie	truction Cost:	0.45 8 1 37.59
Location: Material: Element Type: Environment: Protection System: Condition Data: Units Sq. m	Wingwalls South-East Quadra Cast-in-place cond Moderate None Exc	Good	Fair	1	Width: Height: Count: Total Qu Limited I	Maint. Needs Perform. Deficie	truction Cost:	0.45 8 1 37.59

Repair and Rehabilitation Required						
Element Group	Element Name	Comments Repair/Rehabilitation	Priority (Years)	Estimated Cost		
Abutments	Wingwalls	Underpin and repair concrete.	1-5 yrs	\$6,000.00		
Abutments	Abutment walls	Chip and Patch delaminated concrete on abutment faces.	1-5 yrs	\$50,000.00		
			Total	\$56,000.00		



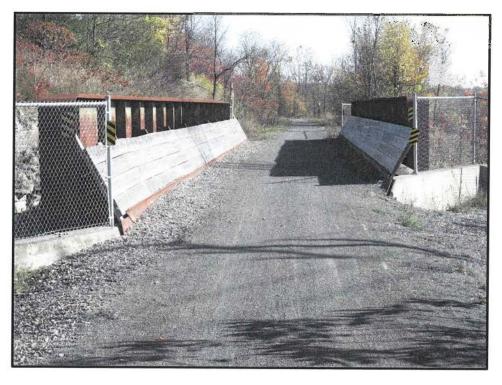
	Comments	Estimated Cost
Approaches		\$0.00
Detours		\$0.00
Traffic Control		\$0.00
Utilities		\$0.00
Right of Way		\$0.00
Environmental Study		\$0.00
Other	Engineering Allowance	\$10,000.00
Contingencies	Contingency Allowance	\$10,000.00
	Total Estimated Const. Cost	\$76,000.00

Justification	



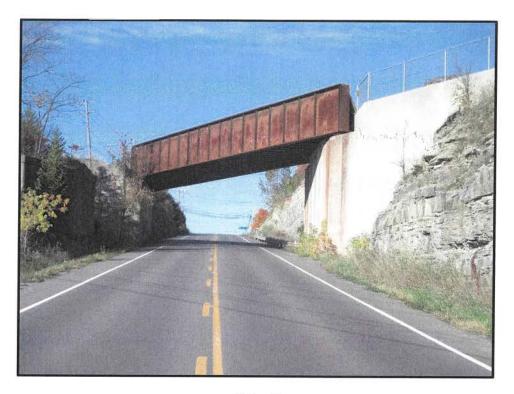


Looking South along Trail



Looking North along Trail

STRUCTURE NUMBER: CRCA1



East Elevation

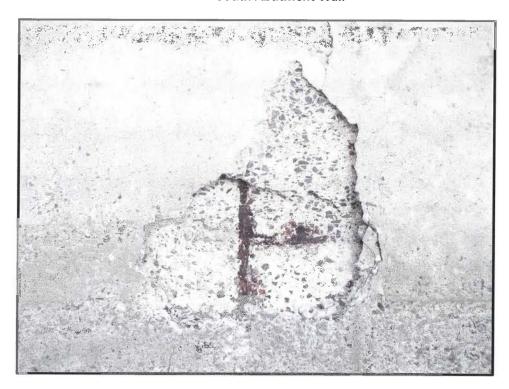


Scaling on Expose Top Section of NE Wingwall

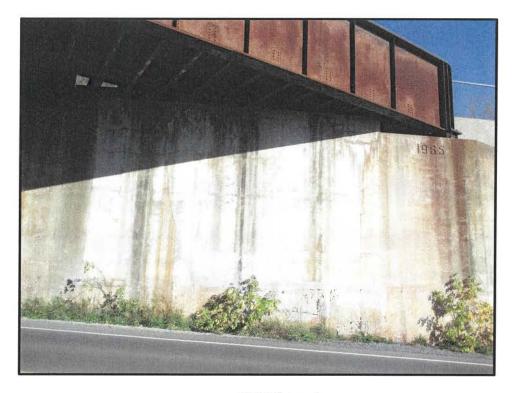
D.M. Wills Associates Ltd.



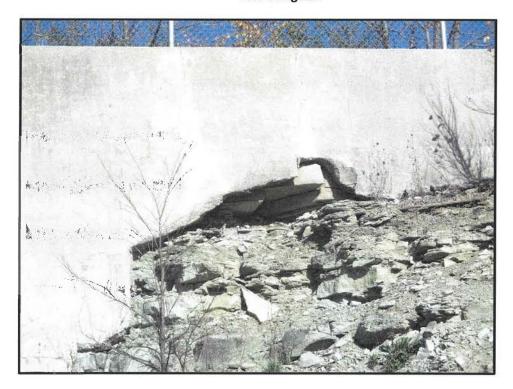
South Abutment Wall



Severe Delamination on South Abutment Wall



NW Wingwall



Section of NE Wingwall Undermining



Floor Beams