

Summary Action Report Boulter Road Bridge

Inspection Date October 19, 2023

Condition Index Value (BCI) 29.6

Next Biennial Inspection 2025

Current Replacement Value \$1,088,500

Additional Investigations

Investigation	Priority	Cost

Performance Deficiencies

Element Group	Element	Performance Deficiency

Maintenance Needs

Element Group	Element	Maintenance Required	Priority	Comment
Accessories	Signs	Other Maintenance	1 year	Replace SW and NW hazard signs

Repair/ Rehabilitation

Element Group	Element	Repair/Rehabilitation	Priority	Cost



Total Repair/Rehabilitation Cost \$0

Total Associated Work Cost \$0

Total Cost \$0

Overall Comments

The structure is generally in poor condition, exhibiting sporadic delamination and spalling with exposed corroded reinforcement in the deck soffit as well as girders, wide horizontal and vertical cracks in both north and south abutment walls and all four wingwalls. Medium erosion was observed at SE and SW embankments. The current railing system does not meet the standards and needs to be replaced. Due to the age of the structure and the BCI (37.9), it is recommended to replace the structure in 1 to 5 years.

Inventory Data:

Structure Name	<input type="text" value="Boulter Road Bridge"/>	Hwy No.	<input type="text" value="N/A"/>
Cross. Type Over:	<input checked="" type="checkbox"/> Road	<input type="checkbox"/> Rail	<input type="checkbox"/> Ped.
	<input type="checkbox"/> Navig. Water	<input type="checkbox"/> Non-Navig.	<input type="checkbox"/> Other
Cross.Type Under:	<input type="checkbox"/> Road	<input type="checkbox"/> Rail	<input type="checkbox"/> Ped.
	<input type="checkbox"/> Navig. Water	<input checked="" type="checkbox"/> Non-Navig.	<input type="checkbox"/> Other
Hwy/Road Name	<input type="text" value="Boulter Road"/>		
Structure Location	<input type="text" value="0.4km South of Hwy 62"/>		
Latitude	<input type="text" value="45.286040"/>	Longitude	<input type="text" value="-77.815130"/>
		Cur. Rep. Value**	<input type="text" value="\$1,088,500"/>
Owners	<input type="text" value="Municipality of Hastings Highlands"/>	Heritage Status	<input type="text" value="Not Considered"/>
MTO Region	<input type="text"/>	Road Class	<input type="text" value="Local"/>
MTO District	<input type="text"/>	Lane Type	<input type="text"/>
Old County	<input type="text"/>	Posted Speed	<input type="text"/>
Ward	<input type="text"/>	No. Lanes	<input type="text" value="1"/>
		AADT	<input type="text" value="est. <400"/>
		Truck %	<input type="text"/>
Structure Type	<input type="text" value="Concrete T-Beam / Concrete Slab"/>	Inspection Route Sequence	<input type="text"/>
Total Deck Length	<input type="text" value="19.8"/> m	Interchange Number	<input type="text"/>
Overall Str. Width	<input type="text" value="5.5"/> m	Interchange Structure Number	<input type="text"/>
Total Deck Area	<input type="text" value="108.9"/> m ²	Detour Length Around Bridge	<input type="text" value="4.6"/> km
Roadway Width	<input type="text" value="4.6"/> m	Fill on Structure	<input type="text"/> m
Skew Angle	<input type="text" value="0"/> Degrees	Direction of Structure	<input type="text" value="North and South"/>
No. of Spans	<input type="text" value="1"/>	Special Routes:	School <input type="checkbox"/>
			Transit <input type="checkbox"/>
			Bicycle <input type="checkbox"/>
			Truck <input type="checkbox"/>
Span Lengths	<input type="text" value="12.8"/> m	**Current Replacement Value is based on in kind replacement of the existing structure and calculated using benchmark costs. Capital planning should be consider site specific cost factors and requirements for widening or lengthing of the structure.	

Historical Data:

Year Built	<input type="text" value="Est. 1940"/>	Year of Last Major Rehab.	<input type="text"/>
Last OSIM Inspection	<input type="text" value="2021"/>	Last Evaluation	<input type="text"/>
Last Enhanced OSIM	<input type="text"/>	Current Load Limit	<input type="text"/>
Last Underwater Inspec.	<input type="text"/>	Load Limit By-Law #	<input type="text"/>
Last Condition Survey	<input type="text"/>	By-Law Expiry Date	<input type="text"/>

Rehab History: (Date / Description)

2016 - Emergency repairs to prevent continuing settlement. A steel restraint bracket was installed around the South abutment and the void below the abutment was filled with concrete.

Field Inspection Information:					
Date of Inspection:	October 19, 2023	Type of Inspection:	<input checked="" type="checkbox"/> X	<input type="checkbox"/> OSIM	<input type="checkbox"/> Enhanced OSIM
Inspector:	Matthew Fingland, C.E.T., rcji				
Others in Party:	Sushant Neupane, EIT.				
Equipment Used:	Digital camera, chipping hammer, chain, measuring tape, caliper, chalk, marker, flashlight, chest waders, and other equipment as required.				
Weather:	Partly Cloudy				
Temperature:	12° C				
Additional Investigations Required:				Priority	
				None	Normal
Material Condition Survey					
	Detailed Deck Condition Survey:		X		
	Non-Destructive Delamination Survey of Asphalt-Covered Deck:		X		
	Concrete Substructure Condition Survey:		X		
	Detailed Coating Condition Survey:		X		
	Detailed Timber Investigation:		X		
	Post-Tensioned Strand Investigation:		X		
Underwater Investigation:					
			X		
Fatigue Investigation:					
			X		
Seismic Investigation:					
			X		
Structure Evaluation:					
			X		
Monitoring					
	Monitoring of Deformations, Settlements and Movements:		X		
	Monitoring Crack Widths:		X		
Investigation Notes:					
Overall Structure Notes:					
Recommended Work on Structure:	<input type="checkbox"/> None	<input type="checkbox"/> Minor Rehab.	<input type="checkbox"/> Major Rehab.	<input checked="" type="checkbox"/> X	<input type="checkbox"/> Replace
Timing of Recommended Work:	<input type="checkbox"/>	<input checked="" type="checkbox"/> X	<input type="checkbox"/> 1 to 5 years	<input type="checkbox"/>	<input type="checkbox"/> 6 to 10 years
Overall Comments:	The structure is generally in poor condition, exhibiting sporadic delamination and spalling with exposed corroded reinforcement in the deck soffit as well as girders, wide horizontal and vertical cracks in both north and south abutment walls and all four wingwalls. Medium erosion was observed at SE and SW embankments. The current railing system does not meet the standards and needs to be replaced. Due to the age of the structure and the BCI (37.9), it is recommended to replace the structure in 1 to 5 years.				
Date of Next Inspection:	2025				

Suspected Performance Deficiencies

- | | | |
|---|--------------------------------|------------------------------|
| 01 Load carrying capacity | 07 Jammed expansion joint | 13 Flooding/channel blockage |
| 02 Excessive deformations (deflections & rotations) | 08 Pedestrian/vehicular hazard | 14 Undermining of foundation |
| 03 Continuing settlement | 09 Rough riding surface | 15 Unstable embankments |
| 04 Continuing movements | 10 Surface ponding | 16 Other |
| 05 Seized bearings | 11 Deck drainage | |
| 06 Bearing not uniformly loaded/unstable | 12 Slippery surfaces | |

Maintenance Needs

- | | | |
|--|---------------------------------|--|
| 01 Lift and Swing Bridge Maintenance | 07 Repair to Structural Steel | 13 Erosion Control at Bridges |
| 02 Bridge Cleaning | 08 Repair of Bridge Concrete | 14 Concrete Sealing |
| 03 Bridge Handrail Maintenance | 09 Repair of Bridge Timber | 15 Rout and Seal |
| 04 Painting Steel Bridge Structures | 10 Bailey bridges - Maintenance | 16 Bridge Deck Drainage |
| 05 Rehab History: (Date / Description) | 11 Animal/Pest Control | 17 Scaling (Loose Concrete or ACR Steel) |
| 06 Bridge Bearing Maintenance | 12 Bridge Surface Repair | 18 Other |

Element Data	Boulter Road Bridge
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Element Group:	Approaches	Length:	6.0			
Element Name:	Wearing Surface	Width:	4.58			
Location:	North and South	Height:	N/A			
Material:	Asphalt	Count (items):	2			
Element Type:		Total Quantity:	54.96	m ²		
Environment:	Severe	Limited Inspection				
Protection System:	None					
Condition Data:	Units	Exc.	Good	Fair	Poor*	Perform. Deficiencies
	m ²		45.9	7.7	1.4	
Comments:	Medium ravelling throughout both north and south approaches (5.5m ² fair) , patched potholes at both approaches, Localized severe transverse and longitudinal cracks at north approach (1.4m ² poor, 1.4m ² fair), light to medium isolated cracks at south approach (0.75m ² fair). South approach has been partially resurfaced.					
Recommended Work:	Rehab	X	Replace		Maintenance Needs:	
	X	1-5 years	6-10 years			
Repave the approaches.						

Element Group:	Approaches	Length:	22.5			
Element Name:	Barriers	Width:	N/A			
Location:	East Sides of Approaches	Height:	N/A			
Material:	Steel	Count (items):	1			
Element Type:	SBGR on Wooden Posts	Total Quantity:	22.5	m		
Environment:	Severe	Limited Inspection				
Protection System:	Hop dip galvanizing					
Condition Data:	Units	Exc.	Good	Fair	Poor*	Perform. Deficiencies
	m		16.5	5.0	1.0	
Comments:	Sporadic light to medium corrosion and snow plow damage at SE and NE (4 m fair, 16.5 m good). Localized collision damage at SE (1m poor).No guiderail was observed at SW and NW. Light to medium checks, shakes and splits in wooden posts.					
Recommended Work:	Rehab	X	Replace		Maintenance Needs:	
	X	1-5 years	6-10 years			
Install new approach barriers at both east and west sides of the bridge.						

Element Group:	Barriers	Length:	20.0			
Element Name:	Railing System	Width:				
Location:	East and West	Height:				
Material:	Steel	Count (items):	2			
Element Type:	Steel Handrails on Steel Posts and SBGR	Total Quantity:	40.0	m		
Environment:	Severe	Limited Inspection				
Protection System:						
Condition Data:	Units	Exc.	Good	Fair	Poor*	Perform. Deficiencies
	m			37.0	3.0	
Comments:	Light corrosion throughout handrails and posts, Sporadic light to medium corrosion and collision damage (3m, poor) on SBGR at both sides. The railing system doesn't meet current design standards and need to be replaced					
Recommended Work:	Rehab	X	Replace		Maintenance Needs:	
	X	1-5 years	6-10 years			
Install new railing system that meet the standards.						

Element Group:	Sidewalks/curbs	Length:	19.8
Element Name:	Curbs	Width:	0.46
Location:	East and West	Height:	0.09
Material:	Cast-in-Place Concrete	Count (items):	2
Element Type:	Safety Curbs	Total Quantity:	21.78 m ²
Environment:	Severe	Limited Inspection	
Protection System:	None		
Condition Data:	Units	Exc.	Good
	m ²		8.7
			Fair
			10.9
			Poor*
			2.2
	Perform. Deficiencies		
Comments:	Light to medium scaling and abrasion throughout both curbs (8m ² fair), sporadic light to medium spalling at both curbs (2 m ² poor), narrow to medium cracks (0.45 m ² fair) at east curb and medium to wide cracks (0.3 m ² fair, 0.15m ² poor) at west curb.		
Recommended Work:		Rehab	X
		1-5 years	
	X		Replace
			6-10 years
Maintenance Needs:		Urgent	
			1 year
			2 years
Replace the curbs at the time of bridge replacement.			

Element Group:	Decks	Length:	19.8
Element Name:	Wearing Surface	Width:	4.58
Location:	Deck	Height:	
Material:	Asphalt	Count (items):	1
Element Type:	Asphalt	Total Quantity:	90.68 m ²
Environment:	Severe	Limited Inspection	
Protection System:	None		
Condition Data:	Units	Exc.	Good
	m ²		73.3
			Fair
			16.25
			Poor*
			1.15
	Perform. Deficiencies		
Comments:	The deck wearing surface is partially resurfaced (south end). Medium ravelling throughout (15.1m ² fair), localized light potholes along the west curb and also in the center of the deck (1m ² good), localized severe transverse crack near the north end (1.15m ² poor)		
Recommended Work:		Rehab	X
		1-5 years	
	X		Replace
			6-10 years
Maintenance Needs:		Urgent	
			1 year
			2 years
Replace the deck wearing surface.			

Element Group:	Decks	Length:	N/A
Element Name:	Drainage	Width:	N/A
Location:	Top of Deck	Height:	N/A
Material:		Count (items):	10
Element Type:		Total Quantity:	10.00 Each
Environment:	Severe	Limited Inspection	
Protection System:	None		
Condition Data:	Units	Exc.	Good
	Each		
			Fair
			Poor*
			10.00
	Perform. Deficiencies		
Comments:	Drains were all paved over but visible from deck soffit.		
Recommended Work:		Rehab	X
		1-5 years	
	X		Replace
			6-10 years
Maintenance Needs:		Urgent	
			1 year
			2 years

Element Group:	Deck	Length:	19.8
Element Name:	Deck Top	Width:	4.6
Location:	Deck	Height:	0.2
Material:	Cast-in-Place Concrete	Count (items):	1
Element Type:		Total Quantity:	91.08 m ²
Environment:	Benign	Limited Inspection	X
Protection System:	None		
Condition Data:	Units	Exc.	Good
	m ²		
Comments:	Limited inspection due to the being paved over with the asphalt wearing surface.		
Recommended Work:	Rehab	X	Replace
	X	1-5 years	6-10 years
Maintenance Needs:	Urgent	1 year	2 years

Element Group:	Deck	Length:	12.8
Element Name:	Soffit	Width:	4.3
Location:	Underside of Deck	Height:	
Material:	Cast-in-Place Concrete	Count (items):	1
Element Type:		Total Quantity:	55.04 m ²
Environment:	Benign	Limited Inspection	
Protection System:	None		
Condition Data:	Units	Exc.	Good
	m ²		8.0
Comments:	Sporadic light to medium scaling (8m ² good, 8m ² fair), narrow to medium cracks with efflorescence and moisture staining (15m ² fair), delamination (8.5m ² poor), light to medium spalling with exposed corroded reinforcement (3.5m ² poor).		
Recommended Work:	Rehab	X	Replace
	X	1-5 years	6-10 years
Maintenance Needs:	Urgent	1 year	2 years

Element Group:	Beams/ML'E's	Length:	12.9
Element Name:	Girders	Width:	0.3
Location:	Underside of Deck	Height:	1.0
Material:	Cast-in-Place Concrete	Count (items):	4
Element Type:	Cast-in-Place Concrete T-Beam Girders	Total Quantity:	120.28 m ²
Environment:	Benign	Limited Inspection	
Protection System:	None		
Condition Data:	Units	Exc.	Good
	m ²		76.3
Comments:	Sporadic medium to severe scaling (12m ² fair, 24m ² poor), delamination (18m ² poor), narrow to medium cracks with efflorescence and moisture staining (48m ² fair) in all four girders. Localized medium spalling with exposed corroded rebar at interior face of west girder (0.5m ² poor) and interior face of east girder (1m ² poor), wide crack along south abutment wall and 1m of interior face of east and west girders (0.5m ² poor).		
Recommended Work:	Rehab	X	Replace
	X	1-5 years	6-10 years
Maintenance Needs:	Urgent	1 year	2 years

Element Group:	Abutments	Length:	N/A			
Element Name:	Abutment Walls	Width:	5.5			
Location:	North and South	Height:	2.0			
Material:	Cast-in-Place Concrete	Count (items):	2			
Element Type:		Total Quantity:	22.0		m ²	
Environment:	Benign	Limited Inspection				
Protection System:	None					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ²			18.00	4.00	
Comments:	Medium scaling with moisture staining throughout both walls (11m ² fair). Wide horizontal crack along the width of south abutment wall (1.5 m ² poor). Rust staining at the bottom of south abutment wall (3 m ² fair) . Sporadic wide vertical and horizontal cracks in both walls (2.5 m ² poor).					
Recommended Work:		Rehab	X	Replace	Maintenance Needs:	
	X	1-5 years		6-10 years	Urgent	1 year 2 years

Element Group:	Abutments	Length:	3.6			
Element Name:	Wingwalls	Width:				
Location:	NE, NW, SE and SW of Structure	Height:	2.0			
Material:	Cast-in-Place Concrete	Count (items):	4			
Element Type:		Total Quantity:	14.4		m ²	
Environment:	Benign	Limited Inspection				
Protection System:	None					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
	m ²			8.5	5.9	
Comments:	Hairline to narrow cracks, moisture and rust staining, cold joint and sporadic light to medium scaling and honeycombing in all four wingwalls. NW: localized light spalling (0.1m ² poor) 2m wide vertical crack(0.5m ² poor) NE: 1m wide vertical crack (0.25m ² poor) SE: 2 wide vertical cracks (3.6m, 0.5m) (1m ² poor) and one 0.5m wide horizontal crack (0.12m ² poor) SW: pattern cracking (1m ² poor), medium spalling (0.5m ² poor), 3.6 m wide vertical cracks (0.9m ² poor) and 6m wide horizontal cracks (1.5m ² poor)					
Recommended Work:		Rehab	X	Replace	Maintenance Needs:	
	X	1-5 years		6-10 years	Urgent	1 year 2 years

Element Group:	Foundations	Length:	N/A			
Element Name:	Foundation (below ground level)	Width:	N/A			
Location:	North and South	Height:	N/A			
Material:	Cast-In-Place Concrete	Count (items):				
Element Type:		Total Quantity:				
Environment:	Benign	Limited Inspection	X			
Protection System:	None					Perform. Deficiencies
Condition Data:	Units	Exc.	Good	Fair	Poor*	
Comments:	Scouring along exposed footing at north.					
Recommended Work:		Rehab	X	Replace	Maintenance Needs:	
	X	1-5 years		6-10 years	Urgent	1 year 2 years

Element Group:	Embankments & Streams			Length:	N/A		
Element Name:	Embankments			Width:	N/A		
Location:	NE, NW, SE and SW of Structure			Height:	N/A		
Material:				Count (items):	4		
Element Type:				Total Quantity:	4 each		
Environment:	Benign		Limited Inspection				
Protection System:	Vegetation						Perform. Deficiencies
Condition Data:	Units each	Exc.	Good	Fair	Poor*		
Comments:	Medium erosion at SE and SW embankments and undermining of the south approach asphalt.						
Recommended Work:	<input checked="" type="checkbox"/>	Rehab	<input type="checkbox"/>	Replace	Maintenance Needs:		
	<input checked="" type="checkbox"/>	1-5 years	<input type="checkbox"/>	6-10 years	<input type="checkbox"/>	Urgent	<input type="checkbox"/>
					<input type="checkbox"/>	1 year	<input type="checkbox"/>
					<input type="checkbox"/>	2 years	<input type="checkbox"/>
Control erosion at SE and SW quadrants during bridg replacement.							

Element Group:	Embankments & Streams			Length:	NA		
Element Name:	Slope Protection			Width:	N/A		
Location:	NE, NW, SE and SW of Structure			Height:	N/A		
Material:	Rip-rap			Count (items):	4		
Element Type:				Total Quantity:	4 each		
Environment:	Benign		Limited Inspection				
Protection System:	None						Perform. Deficiencies
Condition Data:	Units each	Exc.	Good	Fair	Poor*	4	
Comments:	Loss of slope protection material (more than 60%) in all four quadrants.						
Recommended Work:	<input type="checkbox"/>	Rehab	<input checked="" type="checkbox"/>	Replace	Maintenance Needs:		
	<input checked="" type="checkbox"/>	1-5 years	<input type="checkbox"/>	6-10 years	<input type="checkbox"/>	Urgent	<input type="checkbox"/>
					<input type="checkbox"/>	1 year	<input type="checkbox"/>
					<input type="checkbox"/>	2 years	<input type="checkbox"/>
Provide slope protection material at the time of bridge replacement.							

Element Group:	Embankments & Streams			Length:	N/A		
Element Name:	Streams and Waterways			Width:	N/A		
Location:				Height:	N/A		
Material:				Count (items):			
Element Type:				Total Quantity:	0 each		
Environment:	Benign		Limited Inspection:				
Protection System:							Perform. Deficiencies
Condition Data:	Units each	Exc.	Good	Fair	Poor*	1	
Comments:	The stream flows from east to west. Beaver dam was observed at downstream not obstructing the flow.						
Recommended Work:	<input type="checkbox"/>	Rehab	<input type="checkbox"/>	Replace	Maintenance Needs:		
	<input type="checkbox"/>	1-5 years	<input type="checkbox"/>	6-10 years	<input type="checkbox"/>	Urgent	<input type="checkbox"/>
					<input type="checkbox"/>	1 year	<input type="checkbox"/>
					<input type="checkbox"/>	2 years	<input type="checkbox"/>

Element Group:	Accessories	Length:	N/A			
Element Name:	Signs	Width:	N/A			
Location:	All Four Quadrants	Height:	N/A			
Material:	Steel	Count (items):	8			
Element Type:		Total Quantity:	8		each	
Environment:	Benign	Limited Inspection				
Protection System:						Perform. Deficiencies
Condition Data:	Units each	Exc.	Good 7	Fair	Poor* 1	
Comments:	SW hazard sign is missing, NW hazard sign is damaged. SE, NE hazard signs, 2 narrow bridge signs, 2 load restriction signs and 1 yield to oncoming traffic sign are all in good condition.					
Recommended Work:		Rehab 1-5 years		Replace 6-10 years	Maintenance Needs:	
					Urgent	X 1 year
						2 years
					Other Maintenance	

Repair/Rehabilitation Required

Element Group	Element	Rehabilitation/Replace	Priority	Cost
Total Repair/Rehabilitation Cost				\$0

Associated Work

	Comments		Estimated Cost
Approaches	<input type="text"/>		<input type="text"/>
Detours	<input type="text"/>		<input type="text"/>
Traffic Control	<input type="text"/>		<input type="text"/>
Utilities	<input type="text"/>		<input type="text"/>
Right-of-Way	<input type="text"/>		<input type="text"/>
Dewatering	<input type="text"/>		<input type="text"/>
Environmental Study	<input type="text"/>		<input type="text"/>
Other	<input type="text"/>		<input type="text"/>
Contingencies	<input type="text"/>	10%	** <input type="text" value="\$0"/>
Engineering	<input type="text"/>	15%	** <input type="text" value="\$0"/>
Total Associated Work Cost			<input type="text" value="\$0"/>
Total Repair/Rehabilitation Cost			<input type="text" value="\$0"/>
Total Cost			<input type="text" value="\$0"/>

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

Justification

REPRESENTATIVE PHOTOGRAPHS

Owner: Municipality of Hastings Highlands
Hwy/Road Name: Boulter Road

Structure Name: Boulter Road Bridge
Location: 0.4 km South of Highway 62



Photo 1: East Elevation



Photo 2: West Elevation

REPRESENTATIVE PHOTOGRAPHS

Owner: Municipality of Hastings Highlands
Hwy/Road Name: Boulter Road

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Photo 3: North Approach Looking at Structure – Medium Ravelling, Patched Potholes, Localized Severe Longitudinal and Transverse Cracks



Photo 4: South Approach Looking at Structure – Medium Ravelling, Patched Potholes, Light to Medium Cracks Throughout

REPRESENTATIVE PHOTOGRAPHS

Owner: Municipality of Hastings Highlands
Hwy/Road Name: Boulter Road

Structure Name: Boulter Road Bridge
Location: 0.4 km South of Highway 62



Photo 5: Deck Wearing Surface – Partially Resurfaced, Medium Ravelling and Localized Light Pothole



Photo 6: East Railing System – Light Corrosion Throughout Handrail and Posts, Sporadic Light Corrosion and Localized Collision Damage in SGBR

REPRESENTATIVE PHOTOGRAPHS

Owner: Municipality of Hastings Highlands
Hwy/Road Name: Boulter Road

Structure Name: Boulter Road Bridge
Location: 0.4 km South of Highway 62



Photo 7: West Railing System – Light Corrosion Throughout Handrail and Posts, Sporadic Light Corrosion in SGBR



Photo 8: East Curb – Light Scaling Throughout, Localized Light Spalls and Light to Medium Cracks

REPRESENTATIVE PHOTOGRAPHS

Owner: Municipality of Hastings Highlands
Hwy/Road Name: Boulter Road

Structure Name: Boulter Road Bridge
Location: 0.4 km South of Highway 62



Photo 9: West Curb – Light Scaling Throughout, Localized Medium Spalls and Medium to Wide Cracks



Photo 10: East Exterior Girder – Light Scaling and Wide Horizontal Crack in Interior Face of the Girder

REPRESENTATIVE PHOTOGRAPHS

Owner: Municipality of Hastings Highlands
Hwy/Road Name: Boulter Road

Structure Name: Boulter Road Bridge
Location: 0.4 km South of Highway 62



Photo 11: Deck Soffit Looking South – Efflorescence and Moisture Stains, Localized Light Scaling



Photo 12: Deck Soffit Looking South – Delamination and Spalling with Exposed Corroded Rebar

REPRESENTATIVE PHOTOGRAPHS

Owner: Municipality of Hastings Highlands
Hwy/Road Name: Boulter Road

Structure Name: Boulter Road Bridge
Location: 0.4 km South of Highway 62



Photo 13: North Abutment Wall – Light Scaling Throughout, Localized Efflorescence and Moisture Staining



Photo 14: South Abutment Wall – Light Scaling Throughout, Moisture Staining and Localized Wide Crack Throughout the Length of the Wall

REPRESENTATIVE PHOTOGRAPHS

Owner: Municipality of Hastings Highlands
Hwy/Road Name: Boulter Road

Structure Name: Boulter Road Bridge
Location: 0.4 km South of Highway 62



Photo 15: East End of T Beam at South Abutment



Photo 16: Northwest Wingwall – Localized Medium Spalling, Cold Joint, Moisture and Rust Staining

REPRESENTATIVE PHOTOGRAPHS

Owner: Municipality of Hastings Highlands
Hwy/Road Name: Boulter Road

Structure Name: Boulter Road Bridge
Location: 0.4 km South of Highway 62



Photo 17: Southwest Wingwall – Localized Medium Spalls, Scaling and Honeycombing, Wide Horizontal and Vertical Cracks with Efflorescence and Moisture Staining Throughout



Photo 18: Southeast Wingwall – Wide Horizontal and Vertical Cracks with Moisture Staining Throughout, Cold Joint

REPRESENTATIVE PHOTOGRAPHS

Owner: Municipality of Hastings Highlands
Hwy/Road Name: Boulter Road

Structure Name: Boulter Road Bridge
Location: 0.4 km South of Highway 62



Photo 19: Southwest Embankment – Medium Erosion



Photo 20: Southeast Embankment – Medium Erosion

REPRESENTATIVE PHOTOGRAPHS

Owner: Municipality of Hastings Highlands
Hwy/Road Name: Boulter Road

Structure Name: Boulter Road Bridge
Location: 0.4 km South of Highway 62



Photo 21: Stream Looking East



Photo 22: Stream Looking West