Ontario Structure Inspection Manual – Inspection Form

MTO Site Number 011-0000-

Inventory Data:

Structure Name	#49 Joe Trudeau Bridge							
Main Hwy/Road#		On **X**	Under	Crossing Type	Navig. Water Rail	Road	Non-Navig. Water Ped.	Other
Hwy/Road Name	Courneya Road							
Structure Location	0.5km west of Allore Road							
Latitude	44.483208°N		Longitude	77.227504°W				
Owner(s)	Municipality of Tweed		Heritage Designation:	Not Cons. **X**	Cons./not App.	List/not Desig.	Desig./not List	Desig. & List
MTO Region	Eastern		Road Class:	Freeway	Arterial	Collector	Local **X**	
MTO District	Kingston		Posted Speed	80 km/h	No. of Lanes	1		
Old County			AADT		% Trucks			
Geographic Twp.			Inspection Route Sequence					
Structure Type	Half-Through Truss		Interchange Number					
Total Deck Length	19.5m	(m)	Interchange Structure Number					
Overall Str. Width	5.5m	(m)	Min. Vertical Clearance	2.3	(m)			
Total Deck Area	107	(sq.m)	Special Routes	Transit	Truck	School	Bicycle	
Roadway Width	5	(m)	Detour Length Around Bridge	8	(km)			
Skew Angle	0	(Deg.)	Direction of Structure	East-West				
No. of Spans	1		Fill on Structure	0	(m)			
Span Lengths	18.5	(m)						

Historical Data:

Year Built		Last Evaluation		
Last Biennial Inspection	2020-10-01	Current Load Limit	10	(tonnes)
Last Bridge Master Inspection		Load Limit By-Law#	2020-76	
Last Condition Survey		By-Law Expiry Date		
Last Underwater Inspection				

MTO Site Number 011-0000-

Rehab History: (Date/description)

1. 2008 – Replacement of interior steel stringers with wood and steel stringers

Scheduled Improvements:			
Regional Priority Number		Programmed Work Year	
Nature of Program Work:			

Appraisal Indices:		Comments
Fatigue		
Seismic		
Scour		
Flood		
Geometrics		
Barrier		
Curb		
Load Capacity		

MTO Site Number 011-0000-

Field Inspection Information:	
Date of Inspection:	June 2, 2022
Inspector:	Abdul Rahman Stott
Others in Party:	Cody Chambers
Equipment Used:	Camera and hand tools
Weather:	Overcast
Temperature:	16°C

Additional Investigations Required:	Priority		
	None	Normal	Urgent
Detailed Deck Condition Survey:	X		
Non-destructive Delamination Survey of Asphalt-Covered Deck:	X		
Substructure Condition Survey:	X		
Detailed Coating Condition Survey:	X		
Underwater Investigation:	X		
Fatigue Investigation:	X		
Seismic Investigation:	X		
Structure Evaluation:		X	
Monitoring of Deformations, Settlements and Movements:	X		

The structure is generally in fair condition.

Recommended actions:

- Replace structure to improve level-of-service (1-5 yrs.)
- Repair localized deck failure (NOW)
- Remove overgrowth at abutments as part of structure maintenance

BCI (2020): 49.75
BCI (2022): 47.70

Next Detailed Visual Inspection:	2024

Suspected Performance Deficiencies

00	None	06	Bearing not uniformly loaded/unstable	12	Slippery surfaces
01	Load carrying capacity	07	Jammed expansion joint	13	Flooding/channel blockage
02	Excessive deformations (deflections & rotations)	08	Pedestrian/vehicular hazard	14	Undermining of foundation
03	Continuing settlement	09	Rough riding surface	15	Unstable embankments
04	Continuing movements	10	Surface ponding	16	Other
05	Seized bearings	11	Deck drainage		

Maintenance Needs

01	Lift and Swing Bridge Maintenance	07	Repair of Structural Steel	13	Erosion Control at Bridges
02	Bridge Cleaning	08	Repair of Bridge Concrete	14	Concrete Sealing
03	Bridge Handrail Maintenance	09	Repair of Bridge Timber	15	Rout and Seal
04	Painting Steel Bridge Structures	10	Bailey bridges – Maintenance	16	Bridge Deck Drainage
05	Bridge Deck Joint Repair	11	Animal/Pest Control	17	Other
06	Bridge Bearing Maintenance	12	Bridge Surface Repair		

Element Data

Element Group:	Abutments			Length	N/A		
Element Name:	Abutment Walls			Width	6m		
Location:	Either end of structure			Height	2.5m		
Material:	Cast-in-place Concrete			Count	2		
Element Type:	Conventional Closed			Total Quantity:	$30m^2$		
Environment:	Moderate			Limited Inspection	☐		
Protection System:	None					Perform. Deficiencies	Maint. Needs
Condition Data:	Units	Exc.	Good	Fair	Poor*		
	m^2	0	10	8	12	00	
Comments: Medium to vertical wide crack, horizontal cracks with efflorescence, and severe scaling and erosion at corners and waterline of east abutment. West abutment recently refaced and exhibits light AAR and narrow cracks. Wood diaphragm blocking transfers load to east abutment.							
Recommended Work: None [X] 6-10 years [ ] 1-5 years [ ] <1 year [ ] Urgent [ ]							

Element Group:	Abutments			Length			
Element Name:	Bearings			Width			
Location:	on abutment walls			Height			
Material:	Steel			Count	4		
Element Type:	Plate			Total Quantity:	4		
Environment:	Moderate			Limited Inspection	☐		
Protection System:	None					Perform. Deficiencies	Maint. Needs
Condition Data:	Units	Exc.	Good	Fair	Poor*		
	Each	0	0	3	1	00	02
Comments: Medium to severe corrosion. Loss of concrete abutment at southeast limiting bearing area. Overgrown with vegetation at southeast.							
Recommended Work: Remove overgrown vegetation as part of structure maintenance None [ ] 6-10 years [ ] 1-5 years [ ] <1 year [ ] Urgent [ ]							

Element Group:	Abutments			Length	6m		
Element Name:	Wingwalls			Width			
Location:	Four quadrants			Height	3.2m		
Material:	Cast-in-place Concrete			Count	4		
Element Type:				Total Quantity:	$76.8m^2$		
Environment:	Moderate			Limited Inspection	☐		
Protection System:	None					Perform. Deficiencies	Maint. Needs
Condition Data:	Units	Exc.	Good	Fair	Poor*		
	m^2	0	35	26.4	15.4	00	
Comments: Medium to severe scaling and medium to wide horizontal cracks on eastern wingwalls. Large spall at southeast wingwall bearing area. Light honeycombing at southwest wingwall.							
Recommended Work: None [X] 6-10 years [ ] 1-5 years [ ] <1 year [ ] Urgent [ ]							

Element Group:	Approaches	Length	6m
Element Name:	Wearing Surface	Width	5m
Location:	Either end of deck	Height	
Material:	Gravel	Count	2
Element Type:		Total Quantity:	$60m^2$
Environment:	Severe	Limited Inspection	☐

Protection System:	None					Perform. Deficiencies	Maint. Needs
Condition Data:	Units	Exc.	Good	Fair	Poor*		
	m^2	0	60	0	1	00	

Comments: Light wheel track rutting and pothole formation

Recommended Work: None [X] 6-10 years [ ] 1-5 years [ ] <1 year [ ] Urgent [ ]

Element Group:	Approaches	Length	24m
Element Name:	Barriers	Width	
Location:	Along approach edges	Height	0.5m
Material:	Steel	Count	4
Element Type:	Steel flex beam on wood posts	Total Quantity:	96m
Environment:	Severe	Limited Inspection	☐

Protection System:	None					Perform. Deficiencies	Maint. Needs
Condition Data:	Units	Exc.	Good	Fair	Poor*		
	m	0	47	24	25	00	

Comments: Northern approach guiderail exhibits deformation. Damaged and split posts. Localized abrasions and light corrosion. Reflective safety marker at end posts at all quadrants is deteriorating

Recommended Work: None [X] 6-10 years [ ] 1-5 years [ ] <1 year [ ] Urgent [ ]

Element Group:	Barriers	Length	19m
Element Name:	Railing Systems	Width	
Location:	Deck edges	Height	
Material:	Steel	Count	2
Element Type:	Steel tube railing	Total Quantity:	38
Environment:	Severe	Limited Inspection	☐

Protection System:	None					Perform. Deficiencies	Maint. Needs
Condition Data:	Units	Exc.	Good	Fair	Poor*		
	m	0	0	0	38	00	

Comments: Barrier system is not code complaint. Tube railing exhibits deformations, missing sections, corrosion staining, and looseness.

Recommended Work: None [X] 6-10 years [ ] 1-5 years [ ] <1 year [ ] Urgent [ ]

Element Group:	Decks	Length	19.5m
Element Name:	Deck Top - Thin Slab	Width	5.5m
Location:	Spanning between abutments	Height	
Material:	Wood	Count	1
Element Type:	Laminated Wood Decking	Total Quantity:	107m²
Environment:	Severe	Limited Inspection	
Protection System:	None		

Condition Data:	Units	Exc.	Good	Fair	Poor*	Perform. Deficiencies	Maint. Needs
	m²	0	47	55	5	00	

Comments: Decking exhibits splits. Extensive accumulation of gravel debris. Running boards are in good condition with some splitting at the edges.

Recommended Work: None [X] 6-10 years [ ] 1-5 years [ ] <1 year [ ] Urgent [ ]

Element Group:	Decks	Length	19.5m
Element Name:	Soffit – Thin Slab	Width	5.5m
Location:	Underside of deck	Height	
Material:	Wood	Count	1
Element Type:		Total Quantity:	107m²
Environment:	Benign	Limited Inspection	☐
Protection System:	None		

Condition Data:	Units	Exc.	Good	Fair	Poor*	Perform. Deficiencies	Maint. Needs
	m²	0	94	12	1	00	

Splitting and checking. Localized deck failure at midspan.

Recommended Work: Locally remove and replace split deck board None [ ] 6-10 years [ ] 1-5 years [ ] <1 year [ ] Urgent [X]

Element Group:	Joints	Length	5.5m
Element Name:	Seals/Sealants	Width	N/A
Location:	Either end of deck	Height	N/A
Material:	Other	Count	2
Element Type:	Strip Seal	Total Quantity:	2
Environment:	Severe	Limited Inspection	☐
Protection System:	None		

Condition Data:	Units	Exc.	Good	Fair	Poor*	Perform. Deficiencies	Maint. Needs
	Each	0	0	0	2	00	

Debris accumulation at joint area at both ends of the deck. No seal is visible at either end.

Recommended Work: None [X] 6-10 years [ ] 1-5 years [ ] <1 year [ ] Urgent [ ]

Element Group:	Joints	Length	5.5m
Element Name:	Armouring/Retaining Devices	Width	N/A
Location:	Either end of deck	Height	N/A
Material:	Steel	Count	2
Element Type:		Total Quantity:	11m
Environment:	Severe	Limited Inspection	☐
Protection System:	None		

Condition Data:	Units	Exc.	Good	Fair	Poor*	Perform. Deficiencies	Maint. Needs
	m	0	0	0	11	00	

Comments: Armouring is missing at east end and severely corroded and perforated at west end. Accumulation of debris partially covering existing armouring.

Recommended Work: None [X] 6-10 years [ ] 1-5 years [ ] <1 year [ ] Urgent [ ]

Element Group:	Beams/MLEs	Length	5.5m
Element Name:	Floor Beams	Width	0.2m
Location:	Spanning transversely under deck	Height	0.5m
Material:	Steel	Count	5
Element Type:	I-Type	Total Quantity:	44m^2
Environment:	Moderate	Limited Inspection	☐
Protection System:	None		

Condition Data:	Units	Exc.	Good	Fair	Poor*	Perform. Deficiencies	Maint. Needs
	m^2		9.5	27.5	7	00	

Comments: Light to medium corrosion and severe corrosion at ends. Medium corrosion on flanges.

Recommended Work: None [X] 6-10 years [ ] 1-5 years [ ] <1 year [ ] Urgent [ ]

Element Group:	Beams/MLEs	Length	4.8m
Element Name:	Stringers	Width	0.3m
Location:	Spanning longitudinally under deck	Height	0.25m
Material:	Wood	Count	8
Element Type:		Total Quantity:	8
Environment:	Benign	Limited Inspection	☐
Protection System:	None		

Condition Data:	Units	Exc.	Good	Fair	Poor*	Perform. Deficiencies	Maint. Needs
	Each	0	8	0	0	00	

Comments: Reinforcing existing steel stringers at ends.

Recommended Work: None [X] 6-10 years [ ] 1-5 years [ ] <1 year [ ] Urgent [ ]

Element Group:	Beams/MLEs	Length	19.5m
Element Name:	Stringers	Width	0.125m
Location:	Spanning longitudinally under deck	Height	0.5m
Material:	Steel	Count	24
Element Type:	I-Type	Total Quantity:	24
Environment:	Benign	Limited Inspection	☐
Protection System:	None		

Condition Data:	Units	Exc.	Good	Fair	Poor*	Perform. Deficiencies	Maint. Needs
	Each	0	0	20	4	00	

Comments: Light to medium corrosion, localized deformation, and severe section loss at west end. Ends reinforced with timber sections.

Recommended Work: None [X] 6-10 years [ ] 1-5 years [ ] <1 year [ ] Urgent [ ]

Element Group:	Trusses/Arches	Length	15.1m
Element Name:	Top Chords	Width	0.1m
Location:	Either edge of deck	Height	0.15m
Material:	Steel	Count	2
Element Type:	Chanel	Total Quantity:	21.1
Environment:	Benign	Limited Inspection	☐
Protection System:	None		

Condition Data:	Units	Exc.	Good	Fair	Poor*	Perform. Deficiencies	Maint. Needs
	m^2	0	19	2.1	0	00	

Comments: Light to medium corrosion and coating loss

Recommended Work: None [X] 6-10 years [ ] 1-5 years [ ] <1 year [ ] Urgent [ ]

Element Group:	Trusses/Arches	Length	19.5m
Element Name:	Bottom Chords	Width	0.1m
Location:	Either edge of deck	Height	0.15m
Material:	Steel	Count	2
Element Type:	Chanel	Total Quantity:	27.3
Environment:	Severe	Limited Inspection	☐
Protection System:	None		

Condition Data:	Units	Exc.	Good	Fair	Poor*	Perform. Deficiencies	Maint. Needs
	m^2	0	17.8	9	0.5	00	

Comments: Light to medium corrosion, worsening at connections. Deformation at southeast.

Recommended Work: None [X] 6-10 years [ ] 1-5 years [ ] <1 year [ ] Urgent [ ]

Element Group:	Trusses/Arches	Length	3m
Element Name:	Verticals/Diagonals	Width	0.09m
Location:	Either edge of deck	Height	0.12m
Material:	Steel	Count	10
Element Type:	Chanel	Total Quantity:	28.8
Environment:	Severe	Limited Inspection	☐
Protection System:	None		

Condition Data:	Units	Exc.	Good	Fair	Poor*	Perform. Deficiencies	Maint. Needs
	m^2	0	24.8	4	0	00	

Comments: Light to medium corrosion.

Recommended Work: None [X] 6-10 years [ ] 1-5 years [ ] <1 year [ ] Urgent [ ]

Element Group:	Bracing	Length	7.5m
Element Name:	Bracing	Width	
Location:	Underside of deck	Height	
Material:	Steel	Count	8
Element Type:		Total Quantity:	8
Environment:	Benign	Limited Inspection	☐
Protection System:	None		

Condition Data:	Units	Exc.	Good	Fair	Poor*	Perform. Deficiencies	Maint. Needs
	Each	0	6	1	1	00	

Comments: Light to medium corrosion. Deformed brace at east.

Recommended Work: None [X] 6-10 years [ ] 1-5 years [ ] <1 year [ ] Urgent [ ]

Element Group:	Embankments & Streams	Length	N/A
Element Name:	Embankments	Width	N/A
Location:	Side slopes of abutments	Height	N/A
Material:		Count	4
Element Type:		Total Quantity:	4
Environment:		Limited Inspection	☐
Protection System:	None		

Condition Data:	Units	Exc.	Good	Fair	Poor*	Perform. Deficiencies	Maint. Needs
	Each	0	3	1	0	00	

Comments: Southeast embankment exhibits moderate erosion.

Recommended Work: None [X] 6-10 years [ ] 1-5 years [ ] <1 year [ ] Urgent [ ]

Element Group:	Embankments & Streams	Length	N/A
Element Name:	Streams and Waterways	Width	N/A
Location:	Below structure	Height	N/A
Material:		Count	N/A
Element Type:		Total Quantity:	All
Environment:		Limited Inspection	☐
Protection System:			

Condition Data:	Units	Exc.	Good	Fair	Poor*	Perform. Deficiencies	Maint. Needs
	All	0	All	0	0	00	

Comments: Stream flows north

Recommended Work: None [X] 6-10 years [ ] 1-5 years [ ] <1 year [ ] Urgent [ ]

Element Group:	Foundations	Length	N/A
Element Name:	Foundation (below grnd lvl)	Width	N/A
Location:	Buried Substructure	Height	N/A
Material:	Cast-in-place Concrete	Count	N/A
Element Type:		Total Quantity:	N/A
Environment:		Limited Inspection	☒
Protection System:	None		

Condition Data:	Units	Exc.	Good	Fair	Poor*	Perform. Deficiencies	Maint. Needs
	All	0	0	0	0	00	

Comments:

Recommended Work: None [X] 6-10 years [ ] 1-5 years [ ] <1 year [ ] Urgent [ ]

Element Group:	Accessories	Length	N/A
Element Name:	Signs	Width	N/A
Location:	four quadrants	Height	N/A
Material:	Steel	Count	6
Element Type:	Hazard Marker and Maximum Tonnes signs	Total Quantity:	6
Environment:	Severe	Limited Inspection	☐
Protection System:			

Condition Data:	Units	Exc.	Good	Fair	Poor*	Perform. Deficiencies	Maint. Needs
	Each	0	6	0	0	00	

Comments: All signs exhibit light abrasions and deformation

Recommended Work: None [X] 6-10 years [ ] 1-5 years [ ] <1 year [ ] Urgent [ ]

BRIDGE PHOTOGRAPHS

Owner: Municipality Of Tweed
Hwy/Road Name: Courneya Road

Structure Name: Joe Trudeau Bridge
Location: 0.50 km west of Allore Road

Photo 1: Deck Top Looking East

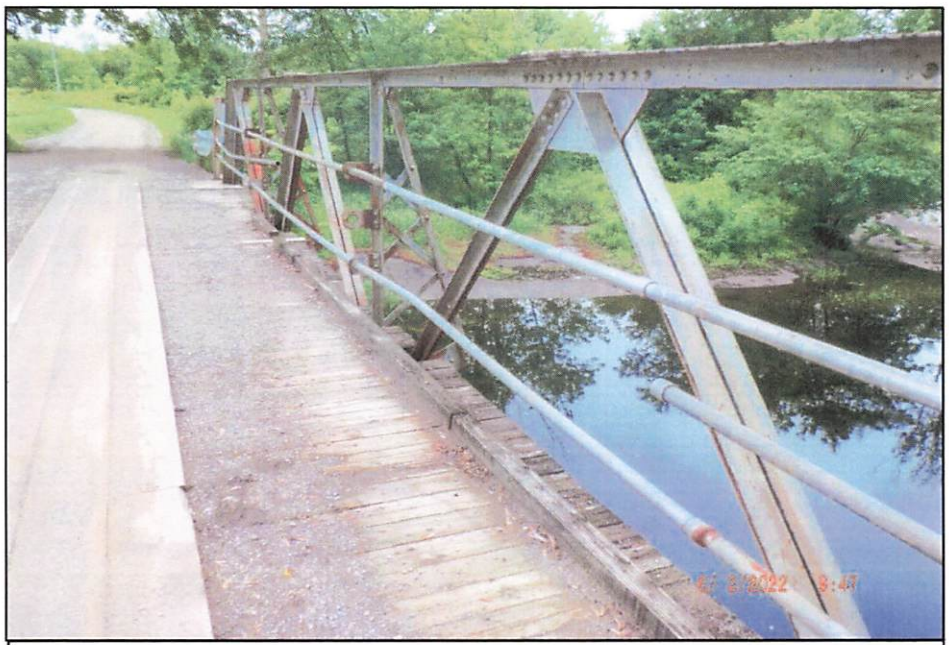


Photo 2: South Tuss and Barrier with Missing Tube Railing

BRIDGE PHOTOGRAPHS

Owner: Municipality Of Tweed
Hwy/Road Name: Courneya Road

Structure Name: Joe Trudeau Bridge
Location: 0.50 km west of Allore Road

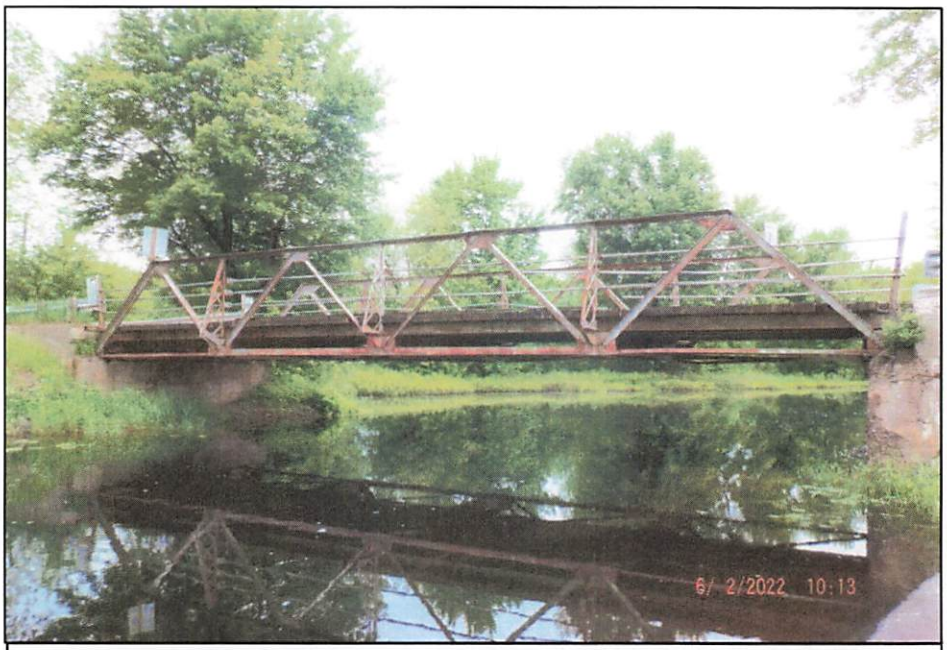


Photo 3: South Elevation

Photo 4: East Abutment Wall

BRIDGE PHOTOGRAPHS

Owner: Municipality Of Tweed
Hwy/Road Name: Courneya Road

Structure Name: Joe Trudeau Bridge
Location: 0.50 km west of Allore Road

Photo 5: Interior Soffit, Stringers, and Floor Beams Looking West

Photo 6: Loss of Truss Bearing at Southeast Abutment Wall

BRIDGE PHOTOGRAPHS

Owner: Municipality Of Tweed
Hwy/Road Name: Courneya Road
Structure Name: Joe Trudeau Bridge
Location: 0.50 km west of Allore Road

Photo 7: West Abutment Wall

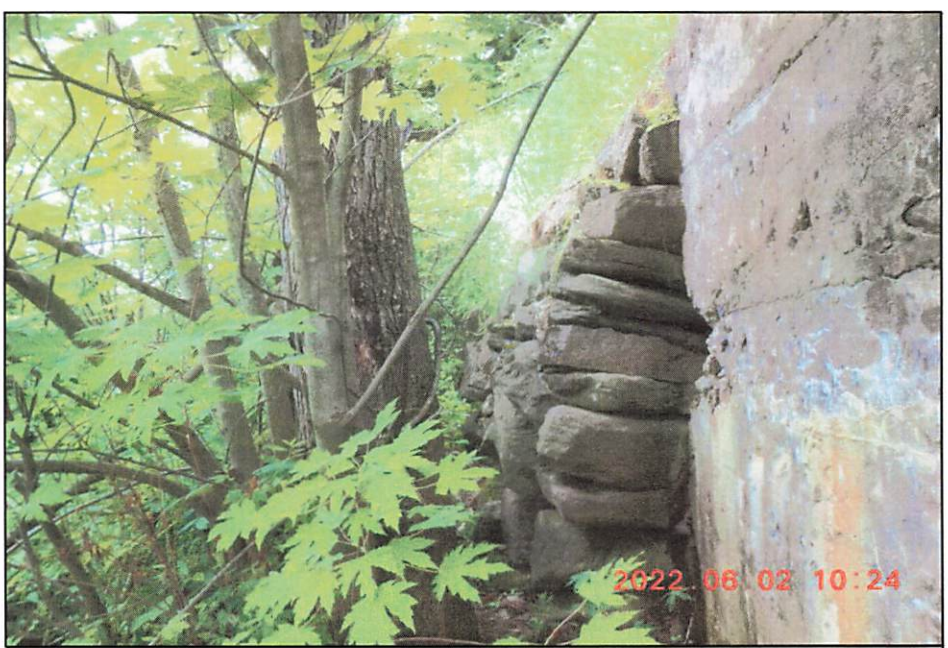


Photo 8: Bulging of Southwest Retaining Wall

BRIDGE PHOTOGRAPHS

Owner: Municipality Of Tweed
Hwy/Road Name: Courneya Road

Structure Name: Joe Trudeau Bridge
Location: 0.50 km west of Allore Road

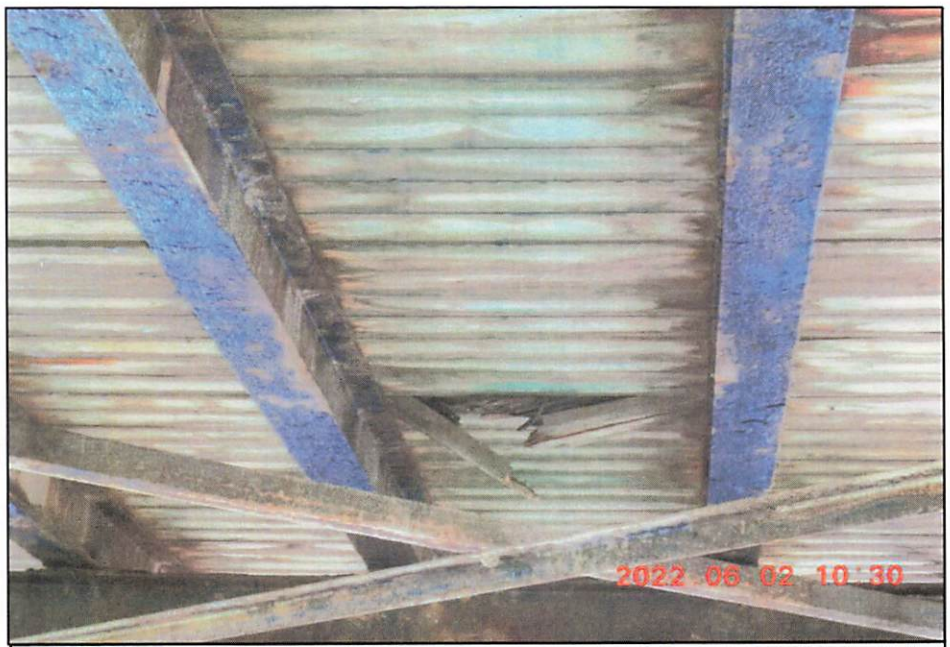


Photo 9: Localized Deck Failure

Photo 10: Typical Bottom Chord Floor Beam Connection

Joe Trudeau Bridge Location

2/8/2023, 4:15:55 PM

Civic Addresses

Property Information

1:4,514

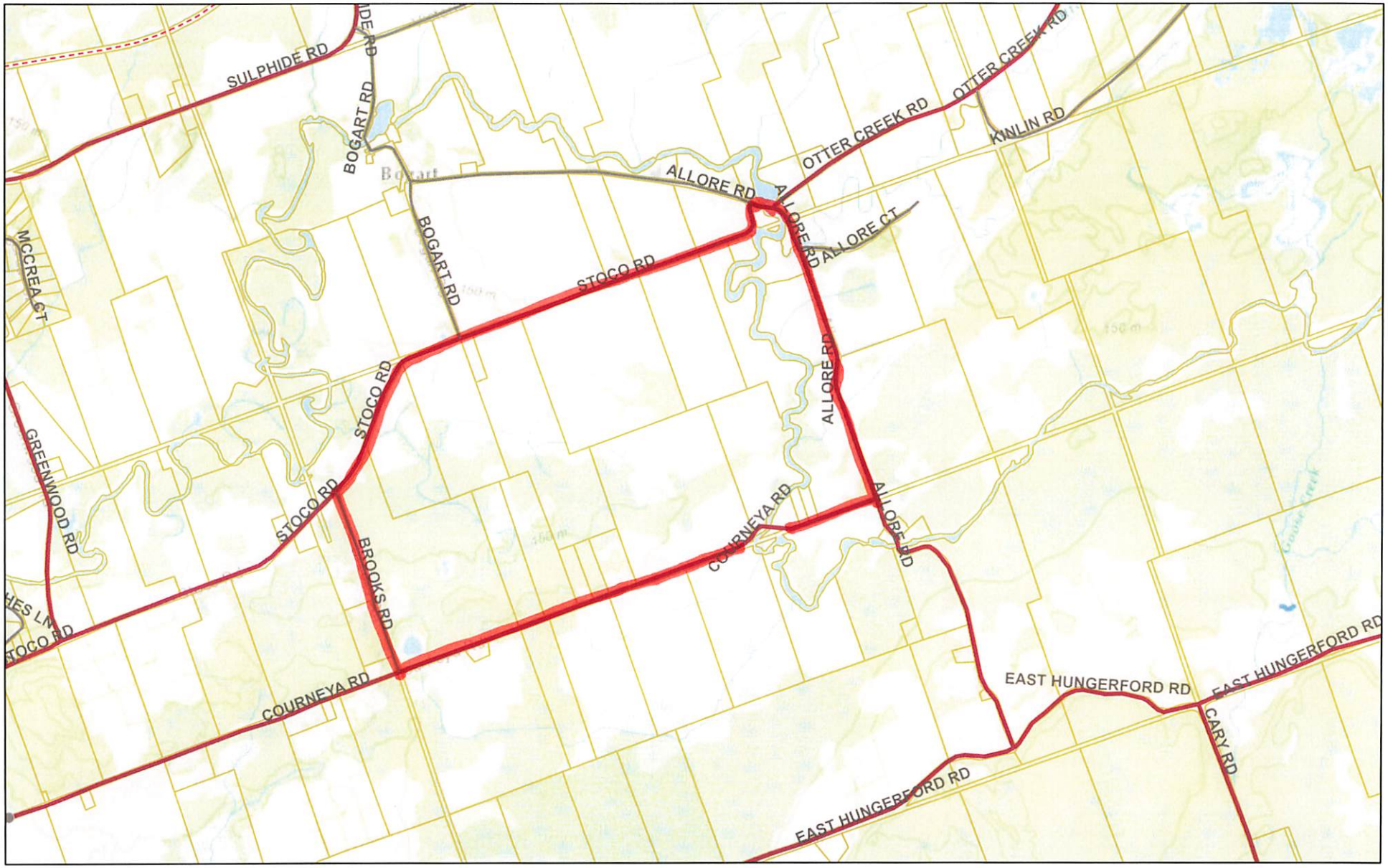
0 0.03 0.06 0.11 mi

0 0.04 0.09 0.17 km

Hastings County, Province of Ontario, Ontario MNR, Esri Canada, Esri, HERE, Garmin, INCREMENT P, USGS, EPA, USDA, AAFC, NRCan

Hastings County GIS

Joe Trudeau Bridge Detour



8/29/2023, 2:27:20 PM

Trans Canada Trail

Property Information

1:36,112

0 0.2 0.4 0.8 mi

0 0.35 0.7 1.4 km

Hastings County, Province of Ontario, Ontario MNR, Esri Canada, Esri, HERE, Garmin, INCREMENT P, USGS, METI/NASA, EPA, USDA, AAFC,

Hastings County GIS