



## Summary Action Report

MTO Site Number: Unknown

Structure ID: S-0005

Structure Name: Townline Trail Bridge

Bridge Condition Index (BCI): 36.4

Road Name: Keppel-Sarawak Townline

Location: Lot 34 Conc. 14 Keppel  
Lot 28 Conc. 1 Sarawak

Inspection Date: 06/12/2024

Structure Type: Steel & Concrete  
Girder Bridge

Inspected By: David Debour, E.I.T.

No. of Spans: Single Span

Spans Lengths: 14.55m

Road Width: 2.7m

Overall Structure Width: 3.23m

Year of Construction: Unknown

Current Load Limit: N/A



### Overall Comments:

It appears that a steel girder superstructure was installed over the original structure to allow the bridge to remain open as part of a multi-use trail. There is a concern that the new steel superstructure including the wood deck top and guiderail barrier system do not have the required structural capacity to support full traffic loading. It is recommended that the structure be closed prior to the end of 2024 or a structural load evaluation be completed to establish an appropriate load posting limit. If permitted to remain open, rehabilitation of the deck top and barrier system will be required.

Estimated Costs for Rehabilitation						
Construction Project Type	Urgent, Within 1 Year	1 to 5 Years	6 to 10 Years	Associated Costs	Cont. and Eng. Costs	Total
Rehabilitation	\$60,000			\$25,000	\$27,500	\$112,500
Removal		\$150,000		\$75,000	\$60,000	\$285,000



Inventory Data:					
Structure Name	Townline Trail Bridge				
Main Hwy/Road #		<input type="checkbox"/> On <input type="checkbox"/> Under	Crossing Type:	<input type="checkbox"/> Navig. Water <input checked="" type="checkbox"/> Non-Navig. Water <input type="checkbox"/> Rail <input type="checkbox"/> Road <input type="checkbox"/> Ped. <input type="checkbox"/> Other	
Hwy/Road Name	Keppel-Sarawak Townline				
Structure Location	Lot 34 Conc. 14 Keppel, Lot 28 Conc. 1 Sarawak – 30m north of Conc. Road 14 / Church SDRD W				
Latitude:	44.668398	Longitude:	-80.960931		
Owner(s):	The Township of Georgian Bluffs	Heritage Designation:	<input checked="" type="checkbox"/> Not Cons. <input type="checkbox"/> Cons./not App. <input type="checkbox"/> List/not Desig. <input type="checkbox"/> Desig./not List <input type="checkbox"/> Desig. & List		
MTO Region:	30	Road Class:	<input type="checkbox"/> Freeway <input type="checkbox"/> Arterial <input type="checkbox"/> Collector <input checked="" type="checkbox"/> Local		
MTO District:	33	Posted Speed:	50km/h	No. of Lanes:	1
Old County:	County of Grey	AADT:		% Trucks:	
Geographic Twp.:	Keppel/Sarawak	Inspection Route Sequence:			
Structure Type:	Steel/Conc. Girder	Interchange No.:			
Total Deck Length:	14.55m	Interchange Structure No.:			
Overall Str. Width:	3.23m	Min Vertical Clearance:			
Total Deck Area:	47m <sup>2</sup>	Special Routes:	<input type="checkbox"/> Transit <input type="checkbox"/> Truck <input type="checkbox"/> School <input type="checkbox"/> Bicycle		
Roadway Width:	2.7m	Detour Length Around Bridge:	6.3km		
Skew Angle:	0°	Direction of Structure:	N-S		
No. of Spans:	1	Fill on Structure:	N/A		
Span Lengths:	13.95m				
Historical Data:					
Year Built:	Unknown	Year of Last Major Rehab:	Unknown		
Last OSIM Inspection:	2024	Last Load Evaluation:	N/A		
Last Enhanced OSIM Inspection:	Unknown	Current Load Limit:	N/A		
Enhanced Access Equipment (ladder, boat, lift, etc.):	None	Load Limit By-Law #:	N/A		
Last Underwater Inspection:	N/A	By-Law Expiry Date:	N/A		
Last Condition Survey:	N/A				
Rehab History (Date and Description): No rehabilitation history provided by Township.					



Field Inspection Information:			
Date of Inspection:	06/12/2024	Type of Inspection:	<input checked="" type="checkbox"/> OSIM <input type="checkbox"/> Enhanced OSIM
Inspector:	David Deboer, E.I.T.		
Others in Party:	Tyson Weppler, C. Tech.		
Access Equipment Used:	N/A		
Weather:	18°C		

Additional Investigations Required:	Priority			Estimated Cost
	None	Normal	Urgent	
Material Condition Survey	X			
Detailed Deck Condition Survey:	X			
Non-destructive Delam. 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	\$7,500
Monitoring (deformations, settlements, movements, crack widths)	X			
Load Posting – Estimated Load			Total Cost	\$7,500
Investigation Notes: Investigation Notes: If structure is not closed before the end of 2024, a load evaluation is recommended to verify the appropriate load posting for the structure as maintenance vehicles and snow groomers may still be using the bridge.				

Overall Structure Notes:	
Overall Comments:	It appears that a steel girder superstructure was installed over the original structure to allow the bridge to remain open as part of a multi-use trail. There is a concern that the new steel superstructure including the wood deck top and guiderail barrier system do not have the required structural capacity to support full traffic loading. It is recommended that the structure be closed prior to the end of 2024 or a structural load evaluation be completed to establish an appropriate load posting limit. If permitted to remain open, rehabilitation of the deck top and barrier systems will be required.
Date of Next Inspection:	2026

**Suspected Performance Deficiencies**

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

**Maintenance Needs**

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



**Element Data**

Element Group:		Abutments		Length:		0.87m	
Element Name:		Abutment Walls		Width:		3.6m	
Location:		Each End (Upper Structure)		Height:		0.5m	
Material:		Precast Concrete		Count:		2	
Element Type:		Concrete Block		Total Quantity:		5.34m <sup>2</sup>	
Environment:		Benign / <b>Moderate</b> / Severe		Limited Inspection <input checked="" type="checkbox"/>			
Protection System:							Perform. Deficiencies
Condition	Units		Exc.	Good	Fair	Poor	Perform. Deficiencies
Data:	m <sup>2</sup> / m / each / % / all			3.34	2.0		None
Comments: North end abutment was not visible at time of review. South abutment wall appears to be in overall good to fair condition with extensive light scaling noted at exposed surfaces. North abutment wall assumed to be in a similar condition.							
Recommended Work:				Maintenance Needs:		None	
<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> Urgent <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years <input checked="" type="checkbox"/> None				<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			

Element Group:		Abutments		Length:			
Element Name:		Abutment Walls		Width:		6.80m	
Location:		Each End (Lower Structure)		Height:		1.07m	
Material:		CIP Concrete		Count:		2	
Element Type:		Conventional Closed		Total Quantity:		14.55m <sup>2</sup>	
Environment:		<b>Benign</b> / Moderate / Severe		Limited Inspection <input type="checkbox"/>			
Protection System:							Perform. Deficiencies
Condition	Units		Exc.	Good	Fair	Poor	Perform. Deficiencies
Data:	m <sup>2</sup> / m / each / % / all				11.55	3.0	None
Comments: Abutment walls appear to be in overall fair condition given noted deficiencies and anticipated age. Cracking with efflorescence noted in northeast, southeast and southwest quadrant. 0.1m <sup>2</sup> spall located in northeast quadrant.							
Recommended Work:				Maintenance Needs:		None	
<input checked="" type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> Urgent <input checked="" type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years <input type="checkbox"/> None				<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			
If bridge structure is permanently closed, recommend removing original structure.							

Element Group:		Abutments		Length:			
Element Name:		Ballast Walls		Width:		4.0m	
Location:		Each End (Lower Structure)		Height:		0.41m	
Material:		CIP Concrete		Count:		2	
Element Type:		Reinforced Concrete		Total Quantity:		3.28m <sup>2</sup>	
Environment:		Benign / <b>Moderate</b> / Severe		Limited Inspection <input type="checkbox"/>			
Protection System:							Perform. Deficiencies
Condition	Units		Exc.	Good	Fair	Poor	Perform. Deficiencies
Data:	m <sup>2</sup> / m / each / % / all			1.64	1.64		None
Comments: Ballast walls appear to be in overall good to fair condition.							
Recommended Work:				Maintenance Needs:		None	
<input checked="" type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> Urgent <input checked="" type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years <input type="checkbox"/> None				<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			
If bridge structure is permanently closed, recommend removing original structure.							





**Element Data**

Element Group:	Abutments	Length:	2.8m
Element Name:	Wing Walls	Width:	0.45m
Location:	Each Quadrant (Lower Structure)	Height:	1.6m
Material:	CIP Concrete	Count:	4
Element Type:	Reinforced Concrete	Total Quantity:	22.64m <sup>2</sup>
Environment:	<b>Benign</b> / Moderate / Severe	Limited Inspection	<input type="checkbox"/>
Protection System:			
Condition	Units	Exc.	Good
Data:	m <sup>2</sup> / m / each / % / all		2.9
			Fair
			Poor
			Perform. Deficiencies
			None
Comments: Entire southeast quadrant appears to be broken off. Remaining sections of southeast wingwall are severely delaminated. Northeast quadrant has 2.0m <sup>2</sup> of severe spalling, delaminations and efflorescence throughout. Northwest quadrant has 0.25m <sup>2</sup> of spalling and 1.0m <sup>2</sup> of delaminations. Remaining wingwall portions are in overall fair condition.			
Recommended Work:	<input checked="" type="checkbox"/> Rehab <input type="checkbox"/> Replace	Maintenance Needs:	None
	<input type="checkbox"/> Urgent <input checked="" type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years <input type="checkbox"/> None		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year
If bridge structure is permanently closed, recommend removing original structure.			

Element Group:	Accessories	Length:	
Element Name:	Signs	Width:	
Location:	Each Quadrant	Height:	
Material:	Steel	Count:	7
Element Type:		Total Quantity:	7
Environment:	Benign / <b>Moderate</b> / Severe	Limited Inspection	<input type="checkbox"/>
Protection System:			
Condition	Units	Exc.	Good
Data:	m <sup>2</sup> / m / each / % / all		7
			Fair
			Poor
			Perform. Deficiencies
			None
Comments: All hazard signs have minor damage and coating loss. Additional signage is recommended such as "SLOW DOWN", "NARROW BRIDGE" and/or yield to oncoming traffic signage.			
Recommended Work:	<input type="checkbox"/> Rehab <input type="checkbox"/> Replace	Maintenance Needs:	None
	<input type="checkbox"/> Urgent <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years <input type="checkbox"/> None		<input type="checkbox"/> Urgent <input checked="" type="checkbox"/> 1 year <input type="checkbox"/> 2 year
Consider additional signage if rehabilitation is preferred alternative.			

Element Group:	Approaches	Length:	10m
Element Name:	Wearing Surface	Width:	2.7m
Location:	Each Side	Height:	
Material:	Gravel	Count:	2
Element Type:		Total Quantity:	54.0m <sup>2</sup>
Environment:	Benign / Moderate / <b>Severe</b>	Limited Inspection	<input type="checkbox"/>
Protection System:			
Condition	Units	Exc.	Good
Data:	m <sup>2</sup> / m / each / % / all		27.0
			Fair
			Poor
			Perform. Deficiencies
			08
Comments: Approaches are excessively steep which reduces line of sight for vehicles and may increase the chance of vehicular accidents. Material is in overall good condition with minor tire rutting.			
Recommended Work:	<input checked="" type="checkbox"/> Rehab <input type="checkbox"/> Replace	Maintenance Needs:	None
	<input checked="" type="checkbox"/> Urgent <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years <input type="checkbox"/> None		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year
If rehabilitation is considered as the preferred alternative, consider re-grading approaches.			



**Element Data**

Element Group:	Barriers	Length:	0.2m
Element Name:	Posts	Width:	0.2m
Location:	Each Side (Upper Structure)	Height:	1.1m
Material:	Wood	Count:	20
Element Type:	Wood Post and Continuous Rail	Total Quantity:	20
Environment:	Benign / Moderate / <b>Severe</b>	Limited Inspection	<input type="checkbox"/>
Protection System:			
Condition	Units	Exc.	Good
Data:	m <sup>2</sup> / m / each / % / all		
			Poor
			20
			Perform. Deficiencies
			01
Comments: Material of barrier posts appear to be in overall good condition, but the installation method of the posts does not appear to be structurally adequate to resist traffic loading. Posts are unstable and exhibit movement when laterally loaded. If the bridge structure is to remain open, the design of the barrier system should be evaluated and adjusted for the live loading approved in the future.			
Recommended Work:	<input type="checkbox"/> Rehab <input checked="" type="checkbox"/> Replace		Maintenance Needs:
	<input checked="" type="checkbox"/> Urgent <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years <input type="checkbox"/> None		None
If rehabilitation is considered as the preferred alternative, reconstruct barrier system. Costed Under railing system.		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year	

Element Group:	Barriers	Length:	14.55m
Element Name:	Railing Systems	Width:	0.08m
Location:	Each Side (Upper Structure)	Height:	0.35m
Material:	Steel beam	Count:	2
Element Type:	Flex Beam on Wood Posts	Total Quantity:	29.10m <sup>2</sup>
Environment:	Benign / Moderate / <b>Severe</b>	Limited Inspection	<input type="checkbox"/>
Protection System:	Hot Dip Galvanizing		
Condition	Units	Exc.	Good
Data:	m <sup>2</sup> / m / each / % / all		
			Fair
			Poor
			29.10
			Perform. Deficiencies
			01
Comments: Material of steel beam guiderail barrier appears to be in overall good condition, but the splice connections do not appear to be code compliant at four locations. Due to improper splice connections, barrier does not provide adequate safety for vehicles. Minor surface corrosion noted throughout.			
Recommended Work:	<input type="checkbox"/> Rehab <input checked="" type="checkbox"/> Replace		Maintenance Needs:
	<input checked="" type="checkbox"/> Urgent <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years <input type="checkbox"/> None		None
If rehabilitation is considered as the preferred alternative, reconstruct barrier system.		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year	

Element Group:	Bracing	Length:	14.55m
Element Name:	Bracing	Width:	0.12m
Location:	Exterior (Upper Structure)	Height:	0.22m
Material:	Steel	Count:	2
Element Type:	C-Channel	Total Quantity:	20.37m <sup>2</sup>
Environment:	Benign / <b>Moderate</b> / Severe	Limited Inspection	<input checked="" type="checkbox"/>
Protection System:			
Condition	Units	Exc.	Good
Data:	m <sup>2</sup> / m / each / % / all		
			Fair
			Poor
			15.0
			5.37
			Perform. Deficiencies
			None
Comments: Exterior longitudinal bracing appears to be in overall good to fair condition with extensive light to medium surface corrosion noted throughout.			
Recommended Work:	<input type="checkbox"/> Rehab <input type="checkbox"/> Replace		Maintenance Needs:
	<input type="checkbox"/> Urgent <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years <input checked="" type="checkbox"/> None		None
		<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year	



**Element Data**

Element Group:		Beams/MLE's		Length:		14.55m	
Element Name:		Girders		Width:		0.12m	
Location:		Interior (Upper Structure)		Height:		0.5m	
Material:		Steel		Count:		2	
Element Type:		I-beams		Total Quantity:		39.6m <sup>2</sup>	
Environment:		Benign / <b>Moderate</b> / Severe		Limited Inspection <input checked="" type="checkbox"/>			
Protection System:							Perform. Deficiencies
Condition	Units		Exc.	Good	Fair	Poor	Perform. Deficiencies
Data:	m <sup>2</sup> / m / each / % / all			30	7.6	2.0	None
Comments: Interior beams appear to be in overall good to fair condition. Bottom flange exhibiting moderate corrosion with ± 5% section loss. 0.5m <sup>2</sup> of moderate corrosion at midspan of east girder.							
Recommended Work:				Maintenance Needs:		None	
<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> Urgent <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years <input checked="" type="checkbox"/> None				<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 years			

Element Group:		Beams/MLE's		Length:		0.05m	
Element Name:		Stringers		Width:		2.5m	
Location:		Upper Structure		Height:		0.15m	
Material:		Steel		Count:		42	
Element Type:		C Channels		Total Quantity:		47.25m <sup>2</sup>	
Environment:		Benign / <b>Moderate</b> / Severe		Limited Inspection <input checked="" type="checkbox"/>			
Protection System:							Perform. Deficiencies
Condition	Units		Exc.	Good	Fair	Poor	Perform. Deficiencies
Data:	m <sup>2</sup> / m / each / % / all			35	12.25		None
Comments: Steel stringers appear to be in overall good to fair condition. Minor corrosion noted throughout with webs beginning to flake.							
Recommended Work:				Maintenance Needs:		None	
<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> Urgent <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years <input checked="" type="checkbox"/> None				<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 years			

Element Group:		Bracing		Length:		0.7m	
Element Name:		Bracing		Width:			
Location:		Upper Structure		Height:			
Material:		Steel		Count:		18	
Element Type:		Steel Angles (L52x52x9.5)		Total Quantity:		18	
Environment:		Benign / <b>Moderate</b> / Severe		Limited Inspection <input type="checkbox"/>			
Protection System:							Perform. Deficiencies
Condition	Units		Exc.	Good	Fair	Poor	Perform. Deficiencies
Data:	m <sup>2</sup> / m / each / % / all			12	6		
Comments: Diagonal bracing appears to be in good to fair condition with minor corrosion noted throughout.							
Recommended Work:				Maintenance Needs:			
<input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> Urgent <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years <input checked="" type="checkbox"/> None				<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 years			



**Element Data**

Element Group:	Beams/MLE's			Length:	9.5m	
Element Name:	Girders			Width:	0.41m	
Location:	Exterior (Lower Structure)			Height:	0.41m	
Material:	CIP Concrete			Count:	2	
Element Type:	Rectangular Beam			Total Quantity:	23.37m <sup>2</sup>	
Environment:	Benign / <b>Moderate</b> / Severe			Limited Inspection	<input type="checkbox"/>	
Protection System:						Perform. Deficiencies
Condition	Units	Exc.	Good	Fair	Poor	None
Data:	m <sup>2</sup> / m / each / % / all			11.68	11.69	
Comments: Concrete girders appear to be in overall fair to poor condition. Bottom face of girder is spalled along length of beams with exposed reinforcing.						
Recommended Work: <input checked="" type="checkbox"/> Rehab <input type="checkbox"/> Replace				Maintenance Needs:		None
<input type="checkbox"/> Urgent <input checked="" type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years <input type="checkbox"/> None				<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year		
If bridge structure is permanently closed, recommend removing original structure.						

Element Group:	Beams/MLE's			Length:	9.5m	
Element Name:	Girders			Width:	0.41m	
Location:	Interior (Lower Structure)			Height:	0.41m	
Material:	CIP Concrete			Count:	2	
Element Type:	Rectangular Beam			Total Quantity:	23.37m <sup>2</sup>	
Environment:	Benign / <b>Moderate</b> / Severe			Limited Inspection	<input type="checkbox"/>	
Protection System:						Perform. Deficiencies
Condition	Units	Exc.	Good	Fair	Poor	None
Data:	m <sup>2</sup> / m / each / % / all			11.68	11.69	
Comments: Concrete girders appear to be in overall fair to poor condition. Bottom face of girder is spalled along length of beams with exposed reinforcing. Vertical cracking noted at stirrup locations.						
Recommended Work: <input checked="" type="checkbox"/> Rehab <input type="checkbox"/> Replace				Maintenance Needs:		None
<input type="checkbox"/> Urgent <input checked="" type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years <input type="checkbox"/> None				<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year		
If bridge structure is permanently closed, recommend removing original structure.						

Element Group:	Decks			Length:	10.3m	
Element Name:	Deck Top			Width:	6.2m	
Location:	Lower Structure			Height:		
Material:	CIP Concrete			Count:	1	
Element Type:	Reinforced Concrete			Total Quantity:	63.86m <sup>2</sup>	
Environment:	Benign / <b>Moderate</b> / Severe			Limited Inspection	<input checked="" type="checkbox"/>	
Protection System:						Perform. Deficiencies
Condition	Units	Exc.	Good	Fair	Poor	
Data:	m <sup>2</sup> / m / each / % / all			63.86		
Comments: Limited inspection due to installation of upper steel superstructure. Deck top appears to be in overall fair condition. Minor scaling noted throughout.						
Recommended Work: <input checked="" type="checkbox"/> Rehab <input type="checkbox"/> Replace				Maintenance Needs:		None
<input type="checkbox"/> Urgent <input checked="" type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years <input type="checkbox"/> None				<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year		
If bridge structure is permanently closed, recommend removing original structure.						



**Element Data**

Element Group:	Decks	Length:	9.5m			
Element Name:	Soffit – Thin Slab	Width:	0.25m			
Location:	Exterior (Lower Structure)	Height:	0.22m			
Material:	CIP Concrete	Count:	2			
Element Type:	Reinforced Concrete	Total Quantity:	8.93m <sup>2</sup>			
Environment:	Benign / <b>Moderate</b> / Severe	Limited Inspection	<input type="checkbox"/>			
Protection System:						
Condition	Units	Exc.	Good	Fair	Poor	Perform. Deficiencies
Data:	m <sup>2</sup> / m / each / % / all			4.47	4.47	
Comments: Soffit appears to be in overall fair to poor condition. Three locations of 0.1m <sup>2</sup> spalling with exposed reinforcing noted.						
Recommended Work:	<input checked="" type="checkbox"/> Rehab <input type="checkbox"/> Replace		Maintenance Needs:	None		
	<input type="checkbox"/> Urgent <input checked="" type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years <input type="checkbox"/> None			<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year		
If bridge structure is permanently closed, recommend removing original structure.						

Element Group:	Decks	Length:	9.5m			
Element Name:	Soffit – Thin Slab	Width:	1.0m			
Location:	Interior (Lower Structure)	Height:				
Material:	CIP Concrete	Count:	4			
Element Type:	Reinforced Concrete	Total Quantity:	38m <sup>2</sup>			
Environment:	<b>Benign</b> / Moderate / Severe	Limited Inspection	<input type="checkbox"/>			
Protection System:						
Condition	Units	Exc.	Good	Fair	Poor	Perform. Deficiencies
Data:	m <sup>2</sup> / m / each / % / all				23.37	
Comments: Portions of soffit adjacent to abutment walls are in overall poor condition with spalling and exposed rebar noted throughout. Interior soffit beyond abutment walls appears to be in fair condition with honey combing noted throughout.						
Recommended Work:	<input checked="" type="checkbox"/> Rehab <input type="checkbox"/> Replace		Maintenance Needs:	None		
	<input type="checkbox"/> Urgent <input checked="" type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years <input type="checkbox"/> None			<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year		
If bridge structure is permanently closed, recommend removing original structure.						

Element Group:	Decks	Length:	14.55m			
Element Name:	Wearing Surface	Width:	3.23m			
Location:	Upper Structure	Height:				
Material:	Wood	Count:	1			
Element Type:	Wood Planks	Total Quantity:	47m <sup>2</sup>			
Environment:	Benign / Moderate / <b>Severe</b>	Limited Inspection	<input type="checkbox"/>			
Protection System:						
Condition	Units	Exc.	Good	Fair	Poor	Perform. Deficiencies
Data:	m <sup>2</sup> / m / each / % / all			35.25	11.75	
Comments: Deck wearing surface appears to be in overall fair to poor condition due to rotten boards. Nails popping out from boards throughout deck. Wide gaps between boards noted measuring up to 0.03m.						
Recommended Work:	<input type="checkbox"/> Rehab <input checked="" type="checkbox"/> Replace		Maintenance Needs:	None		
	<input checked="" type="checkbox"/> Urgent <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years <input type="checkbox"/> None			<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year		
If rehabilitation is considered as the preferred alternative, reconstruct bridge deck.						





**Element Data**

Element Group:		Sidewalks/ Curbs		Length:	12.4m	
Element Name:		Curbs		Width:	0.45m	
Location:		Each Side		Height:	0.28m	
Material:		CIP Concrete		Count:	2	
Element Type:				Total Quantity:	25m <sup>2</sup>	
Environment:		Benign / <b>Moderate</b> / Severe		Limited Inspection <input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition	Units	Exc.	Good	Fair	Poor	
Data:	m <sup>2</sup> / m / each / % / all		10	14.85	0.15	
Comments: Curbs appear to be in overall good to fair condition. Moderate scaling noted throughout. Minor spalls at previous barrier post locations. Southeast corner has severe spalling noted. 2.0m medium cracking at southeast corner.						
Recommended Work: <input checked="" type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> Urgent <input checked="" type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years <input type="checkbox"/> None				Maintenance Needs: <input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year		
If bridge structure is permanently closed, recommend removing original structure.						

Element Group:		Embankments and Streams		Length:		
Element Name:		Embankments		Width:		
Location:		Each Quadrant		Height:		
Material:		Soil		Count:	4	
Element Type:				Total Quantity:	4	
Environment:		<b>Benign</b> / Moderate / Severe		Limited Inspection <input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition	Units	Exc.	Good	Fair	Poor	
Data:	m <sup>2</sup> / m / <b>each</b> / % / all		4			None
Comments: Embankments appear to be stable. All quadrants are heavily vegetated.						
Recommended Work: <input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> Urgent <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years <input checked="" type="checkbox"/> None				Maintenance Needs: <input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year None		

Element Group:		Embankments and Streams		Length:		
Element Name:		Streams and Waterways		Width:		
Location:		N/A		Height:		
Material:		Other		Count:	1	
Element Type:		Unknown		Total Quantity:	1	
Environment:		Benign / <b>Moderate</b> / Severe		Limited Inspection <input type="checkbox"/>		
Protection System:						Perform. Deficiencies
Condition	Units	Exc.	Good	Fair	Poor	
Data:	m <sup>2</sup> / m / each / % / <b>all</b>		1			None
Comments: Beaver dam noted approximately 50m down stream of structure.						
Recommended Work: <input type="checkbox"/> Rehab <input type="checkbox"/> Replace <input type="checkbox"/> Urgent <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years <input checked="" type="checkbox"/> None				Maintenance Needs: <input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year None		



**Element Data**

Element Group:		Foundation		Length:			
Element Name:		Foundation (Below Grade)		Width:			
Location:		Each End (Lower Structure)		Height:			
Material:		CIP Concrete		Count:		2	
Element Type:		Reinforced Concrete		Total Quantity:		2	
Environment:		<b>Benign</b> / Moderate / Severe		Limited Inspection <input checked="" type="checkbox"/>			
Protection System:							Perform. Deficiencies
Condition	Units	Exc.	Good	Fair	Poor	Perform. Deficiencies	
Data:	m <sup>2</sup> / m / <b>each</b> / % / all		2			None	
Comments: Foundations not visible at time of inspection. Appear stable and assumed to be in good condition.							
Recommended Work: <input type="checkbox"/> Rehab <input type="checkbox"/> Replace				Maintenance Needs:		None	
<input type="checkbox"/> Urgent <input type="checkbox"/> 1-5 years <input type="checkbox"/> 6-10 years <input checked="" type="checkbox"/> None				<input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year			



Performance Deficiencies				
Element Group	Element Name		Performance Deficiency	
Approach	Wearing Surface		08 (Pedestrian/Vehicle Hazard)	
Barrier	Post		01 (Load Carrying Capacity)	
Barrier	Railing System		01 (Load Carrying Capacity)	
Maintenance Needs				
Element Group	Element Name		Maintenance Needs	
Accessories	Signs		Install Additional Signage	
Permanent Bridge Removal				
			Priority	Cost Estimate
Permanent Removal of Bridge Structure (Upper and Lower)			1-5 Years	\$150,000
Repair/Rehabilitation				
Element Group	Element Name	Repair/Rehabilitation	Priority	Cost Estimate
Approach	Wearing Surface	Re-grade Approaches	Urgent	\$10,000
Barrier	Railing Systems	Replace Damages Barrier	Urgent	\$30,000
Deck	Wearing Surface	Replace Wood Deck Top	Urgent	\$20,000
<b>Total Repair/Rehabilitation Cost:</b>				<b>\$60,000</b>
Associated Work				
		Comments	Rehabilitation	Removal
Site Mob./Demob.			\$10,000	\$20,000
Traffic Control		Full Road Closure with Detour	\$10,000	\$10,000
Approaches		Install Dead End Road Barricades		\$20,000
Utilities				
Right-of-way				
Background Studies		EIS, Excess Soil Management, etc.		\$15,000
Environmental Assessment		Assume Schedule 'A' (Exempt)		
Worksite Isolation and Dewatering				
Environmental Protection			\$5,000	\$10,000
Other				
<u>Contingencies (15%):</u>			\$12,500	\$30,000
<u>Engineering (15%):</u>			\$15,000	\$30,000
<b>Total Associated Work Cost:</b>			<b>\$25,000</b>	<b>\$75,000</b>
<b>Total Cost:</b>			<b>\$112,500</b>	<b>\$285,000</b>

Justification:

Repairs to the approaches, deck top and barriers are recommended to increase the useful service life of the structure, while also increasing public safety. It appears that the bridge structure is utilized as a multi-use trail. However, no signage has been installed limiting traffic access and no load evaluation has been completed on the structure. Township should consider completing a load evaluation to verify load posting requirements for the structure if it is to remain open.

Considering the installation of the steel superstructure, no recommendations for rehabilitation have been provided for the original concrete structure. The original structure should be monitored through the biennial OSIM inspections and when necessary, the structure should be fully removed to avoid impacts to the watercourse below. If the original structure is scheduled for removal, we recommend that the steel superstructure installed above also be removed and the crossing permanently closed to all traffic. The Township may elect to consider the installation of a pedestrian / recreational vehicle bridge structure in the future, but this option has not been included within this inspection report.





Photo 1 - View of Structure Facing North.



Photo 2 - View of Structure Facing East.



Photo 3 - View of Deck Top (Upper Structure) Facing South.



Photo 4 - View of Rotten Deck boards (typ.).

Date of Photos: June 12, 2024

Inspector: David Debour, E.I.T.





Photo 5 - View of Barrier System (typ.).



Photo 6 - View of Improper Barrier Lap Splice (typ.).



Photo 7 - View Upper Structure Abutment Wall.



Photo 8 - View of Exposed Portion of Lower Structure Deck Top and Curb.

Date of Photos: June 12, 2024

Inspector: David Debour, E.I.T.





**Photo 9 - View of Extensive Light to Medium Corrosion of Steel Stringers.**



**Photo 10 - View of Underside of Lower Structure.**



**Photo 11 - View of Exposed Reinforcing Below Exterior Concrete Girder.**



**Photo 12 - View of Broken Section of Southeast Wingwall.**

Date of Photos: June 12, 2024

Inspector: David Debour, E.I.T.





Photo 13 - View of Deteriorated Wingwall at Northeast.



Photo 14 - Evidence of Water Penetration Through Original Deck Top.



Photo 15 - View of Steep Gravel Approach.



Photo 16 - View of Exposed Reinforcing at Interior Soffit.

Date of Photos: June 12, 2024

Inspector: David Debour, E.I.T.