Inspector: Schmitz,Joseph **Structure Number:** 5765145

Inspection Date: 06/27/2024 **Facility Carried:** S CASSEL ROAD

Ohio Bridge Inspection Summary Report

MOT-T0067-0060 (5765145)

2: District	District 07	79492 - VANDALIA (MOT county)	
5A: Inventory Route	1	T0067	
21: Major Maint A/B	04 - City or Municipal Highway Agency	/	
7: Facility On	S CASSEL ROAD		
225 Routine Main A/B	04 - City or Municipal Highway Agency	/	
6: Feature Ints	POPLAR CREEK		
221 Inspection A/B	04 - City or Municipal Highway Agency	/	
9: Location	.6 MI N OF LITTLE YORK RD		
220: Inv. Location	CITY OF VANDALIA		
Lat, Lon	39.864499448	,-84.171168738	

Condition

58: Deck	**6 - Satisfactory Condition**
58.01 Wearing Surface	6 - Satisfactory (1-10% distress)
58.02 Joint	N- Not Applicable
59: Superstructure	**4 - Poor Condition**
59.01 Paint & PCS	3 - Serious PCS (20-30% corr.)
60: Substructure	**3 - Serious Condition**
61: Channel	**5**
61.01 Scour	**5 - Fair or problems noted but they are stable or unchanged scour (Spread: no undermining, Deep: A couple piles may be visible)**
62: Culverts	**N - Not Applicable**
67.01 GA	**3**

Appraisal

Sufficiency Rating	22.8	SD/FO	1 - SD	
36: Rail, Tr, Gd, Term Std	0	N	0	0
72: Approach Alignment	6 - Equal to present minimum criteria			
113: Scour Critical	4 - Action is required to protect exposed foundations			
71: Waterway Adequacy	6 - Occasional Overtopping of Approaches			

Geometric

48: Max Span Length (ft)	42.3
49: Structure Length (ft)	45.5
52: Deck Width, Out-To-Out (ft)	22.0
424: Deck Area (sf)	1001
32: Appr Roadway Width (ft)	18.0
51: Road Width, Curb-Curb (ft)	22.0
50A: Curb/SW Width: Left (ft)	0
50A: Curb/SW Width: Right (ft)	0
34: Skew (deg)	0
33: Bridge Median	0 - No median
54B: Min Vert Underclearance (ft)	0
336A: Min Vert Clrnce IR Cardinal (ft)	99
336B: Min V Clr IR Non-Cardinal (ft)	0
578: Culvert Length (ft)	0

Load Posting

41: Op/Post/Closed	A - Open
70: Posting	5 - Equal to or above legal loads
70.01: Date	
70.02: Sign Type	
734: Percent Legal (%)	118

Structure Type

43: Bridge Type	3 - Steel 02 - Stringer/Multi-beam or Girder N- Not Applicable
45: Spans Main / Approach	1 / 0
107: Deck Type	1 - Concrete Cast-in-Place
408: Composite Deck	N - Non-composite Construction
414A Joint Type 1	N - None
414B: Joint Type 2	N - None
108A: Wearing Surface	1 - Monolithic Concrete (concurrently placed with structural deck) N- Not Applicable
422: WS Date	07/01/1979
423: WS Thick (in)	2.50
482: Protective Coating	5 - Paint System OZEU
483: PCS Date	08/01/2000
453: Bearing Type 1	3 - Sliding (Bronze)
455: Bearing Type 2	N - None
528: Foundn: Abut Fwd	U - Unknown
533: Foundn: Abut Rear	U - Unknown
536: Foundn: Pier 1	N - None (Such as most Culverts)
539: Foundn: Pier 2	N - None (Such as most Culverts)

Age and Service

27: Year Built/ 106 Rehab	1915 / 1979
42A: Service On	1 - Highway
42B: Service Under	5 - Waterway
28A: Lanes on	02
28B: Lanes Under	00
19: Bypass Length	99
29: ADT	452
109: % Trucks (%)	5

Inspections

		Months	
90: Routine Insp.		12	06/27/2024
92A: FCM Insp.	N	0	
92B: Dive Insp.	N	0	
92C: Special Insp.	N	0	
92D: UBIT Insp.	N	0	
92E: Drone Insp.	N	0	

Inspector:	Schmitz,Joseph	**Structure Number:**	5765145
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704: Analysis Date	05/26/2023	Inspector	Schmitz,Joseph
63: Analysis Method	8 - Load and Resistance Factor Rating (LRFR) rating report by rating factor (RF) method using HL-93 loadings.		

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MOT-T0067-0060 _(5765145)

ODOT District:	District 07					Date Built:	07/01/1915
Major Maint:	04 - City or Municipal Highway Agency	Facility Carried:	S CASSEL ROAD	Traffic On:	1 - Highway	Rehab Date:	01/01/1979
Routine Maint:	04 - City or Municipal Highway Agency	Feature Inters:	POPLAR CREEK	Traffic Under:	5 - Waterway	Insp. Resp A:	04 - City or Municipal Highway Agency
FIPS Code:	79492 - VANDALIA (MOT county)	Location:	CITY OF VANDALIA .6 MI N OF LITTLE YORK RD			Insp Resp B:	

Inspector Schmitz,Joseph Inspection Date 06/27/2024 Reviewer Schmitz,Joseph

Inspector Comments - Deck and Approach

Deck

Floor/Slab

Spalling along the haunches typical with exposed rebar at Beams 3 and 4. Heavy saturation on underside of beams at bays 1 and 3, isolated locations in bay 2.

Edge of Floor/Slab

Spalling along both fascias, up to 2 reinforcement bars exposed. Spalling along the haunches (typ) partially exposing the top flange in some areas. Top flange laminar corrosion along fascias.

Bridge Wearing Surface

Hairline transverse cracks; hairline longitudinal and diagonal cracks at the South; Spalls along East and West edges with previous asphalt patches. Patch along West edge failed and spall for half of bridge length. Full-length spall on East edge.

Deck Drainage

Drip strip heavily damaged on both sides throughout. Drip strip failed in northwest and southwest corner. Drainage from deck is infiltrating along drip strips down the fascia accelerating the deterioration of flanges and other bridge components.

Railing

Detached rail post at southeast and southwest corners. Multiple posts along both fascias have section loss at top of web and connection I-beam extension.

Approach

Approach Wearing Surface

Wide map cracking in the wearing surface throughout both approaches. Most severe at north approach. Voids and previous patches have failed at the North approach, potholes forming.

Approach Embankment

Vegetation from the embankment is encompassing the West fascia. Steep embankments and erosion at southeast and southwest corner of structure.

Approach Guardrail

Missing post and impact damage at the Southeast. Posts not tall enough and disconnected from rail at Northeast. I beam at southwest termination does not meet requirements.

Signs

Bridge end markers. Vegetation obstructing the view of the southwest marker. Southeast marker is twisted away from roadway.

Inspector Comments - General Appraisal

Superstructure

Beams/Girders

Fascia girders have laminar corrosion with section loss to the bottom flange and the top flange, severe bottom flange section loss near beam ends. Bottom plate of built-up exterior girders near midspan note section loss; 1/8" painted over pitting to the webs. 75-100% loss to numerous rivet heads, most severe at exterior girder fascias. Half the length of G4 up to 30% section loss to bottom flange.

Webs have holes and section loss at locations:

- Girder 1, north end , 3.75" corrosion hole in web
- Girder 1, 18" from centerline of bearing, 2" diameter hole surrounded by 1/8" loss (2" x 18").
- Girder 4, near midspan, (3) 2" corrosion holes in the web

Transverse stiffeners have 100% section loss to the bottom 4" at locations:

- Girder 1, 10 stiffeners at exterior
- Girder 4, all stiffeners at exterior face
- Girder 4, 5 stiffeners at interior face

Beam condition at bearings:

- Girder 1: bottom 6-8" of stiffener and 2-4" of top flange and bottom flange at interior face with 100% section loss. Hole (3" x 3") in web near north abutment bearing.
- Girder 4: 3' length from each abutment knife edge corrosion at bottom flange, both sides up to 50% section loss. Missing 3" x 9" portion of bottom flange, interior side. Bearing stiffeners at south abutment 100% loss. 2-4" of top flange and bottom flange at interior face with 100% section loss.

Bearing Devices

Bearings appear to be frozen. Heavy laminar corrosion to masonry plates with section loss.

Protective Coating System

Paint failure along the girder ends and along the top and bottom flanges of the exterior Girders 1 & 4.

Substructure

Abutment Walls

There is progressive disintegration of concrete exposing aggregate along the face of abutments, at abutment caps, and beam seats. Severe spalling and cracking under Girder 4 beam seat. Spalling under Girder 1 beam seat at North abutment (negligible loss of bearing, avg 3 ft wide and 4.75 ft tall). Full height spall under Girder 1 on North abutment face, with scaling and unsound concrete surround. Spalling under Girder 4 beam seat on North abutment. Spalling below beam seats in abutment wall typical.

Abutment condition at bearings:

Loss of bearing under the masonry plate at both ends of G1, ~25% at South end (14" x 20.5"), ~20% at North end with cracking and spalling extending to lower ledge of abut) of Girder 4. Spalling under North end of Girder 1 up to masonry plate. Concrete at bearings is disintegrating, exposing aggregate.

Backwalls

Minor voids/spalls at the top of the backwalls. Full height vertical crack between interior girders at both abutments.

Wingwalls

Spalling and cracking typical. Footing exposed at Southwest and Northeast corners. Heavy spalling on backside of southwest wingwall at erosion area.

Substructure Scour

See Scour Critical portion of this report for detailed scour information.

Culvert

Inspector Comments - Waterway

Waterway Adequacy

Channel

Channel Alignment

For the purposes of this report it is assumed that S Cassel Rd. runs north/south and Poplar Creek flows West to East.

Channel poorly aligned with bridge, water flows into the southwest wingwall.

Channel Protection

Sparse/minimal channel protection upstream and downstream. Some protection near bridge at base of wingwalls.

Scour Critical

Northeast wingwall is abraded and undermined 20" for a length of about 18' along the north abutment face. Flow impacts southwest wingwall with 2' scour hole adjacent and up to 30" of undermining at footing. South footing exposed over 12' length.

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Inspector Schmitz,Joseph Inspection Date 06/27/2024 Reviewer Schmitz,Joseph

Summary Recommendations

Following parameters incorporated into 2017 load rating analysis:

Girder 1:

-10% LOS to bottom cover plate width full length, 0' to 42.33'

-50% LOS to bottom cover plate width and thickness, 0' to 5'

-15% LOS to bottom cover plate width and 50% LOS to bottom cover plate thickness, 12' to 15'

-15% LOS to bottom cover plate width and 50% LOS to bottom cover plate thickness, 27.33' to 30.33'

-40% LOS to bottom cover plate width and thickness, 39.33' to 42.33'

Girder 4:

-10% LOS to bottom cover plate width full length, 0' to 42.33'

-10% LOS to bottom cover plate width and 25% LOS to bottom cover plate thickness, 0' to 7'

-25% LOS to bottom cover plate width and thickness, 38.33' to 42.33'

No deterioration on interior girders included in analysis

2021 Inspection: Due to steady corrosion to fascia Girders G1 & G4 and continue disintegration of concrete around the area of the bearing seats, it is advised to make repairs to the deck pavement, abutment seat/cap areas or determine if the legal loading need revising.

2023 Inspection and Load Rating Review: LOS incorporated in load rating is still reasonable, along with the additional factor for poor condition. Corrosion is progressing, but not at an accelerated rate. Biggest concern is the loss of bearing area at the seats.

2024: Immediate recommendation: Restore bearing below G1 and G4. Protect abutments and wingwalls with large diameter rock channel protection. It is recommended to program structure for replacement. Replace/repair compromised rail connections.

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Bridge Inspection Report

Pictures

PHOTO 1

Description Upstream elevation

PHOTO 2

Description Downstream elevation

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Bridge Inspection Report

Pictures

PHOTO 3

Description End view looking north

PHOTO 4

Description South bridge limit

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Inspection Date: 06/27/2024 **Facility Carried:** S CASSEL ROAD

Bridge Inspection Report

Pictures

PHOTO 5

Description North bridge limit

PHOTO 6

Description Wearing surface

Pictures

PHOTO 7

Description West deck edge and railing

PHOTO 8

Description Impact damage at southeast

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Bridge Inspection Report

Pictures

PHOTO 9

Description East rail at north detached post

PHOTO 10

Description Rail extension, I beam connection section loss at northeast

Pictures

PHOTO 11

Description Typical underside

PHOTO 12

Description South abutment

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Bridge Inspection Report

Pictures

PHOTO 13

Description North abutment

PHOTO 14

Description First post from south abutment, west fascia, note compromised rail post attachment

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Bridge Inspection Report

Pictures

PHOTO 15

Description G1 at south abutment, 2" diameter hole in bottom of web, 18" from centerline of bearing

PHOTO 16

Description G1, section loss at bottom of transverse stiffeners

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Bridge Inspection Report

Pictures

PHOTO 17

Description G4 at south abutment, note 100% section loss of bottom flange and bearing stiffener

PHOTO 18

Description Undermined bearings at G4, south abutment

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Bridge Inspection Report

Pictures

PHOTO 19

Description Undermined bearings at G4, south abutment

PHOTO 20

Description Undermined bearings at G4, south abutment

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Bridge Inspection Report

Pictures

PHOTO 21

Description G4 at south abutment, bottom flange deterioration of end 4', up to 50% loss

PHOTO 22

Description G4,loss of bearing

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Bridge Inspection Report

Pictures

PHOTO 23

Description G1, section loss at midspan

PHOTO 24

Description G1 near north abutment, 3" diameter hole in web

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Bridge Inspection Report

Pictures

PHOTO 25

Description North abutment, spall under G1

PHOTO 26

Description Upstream channel

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Bridge Inspection Report

Pictures

PHOTO 27

Description Southwest embankment erosion

PHOTO 28

Description Downstream channel

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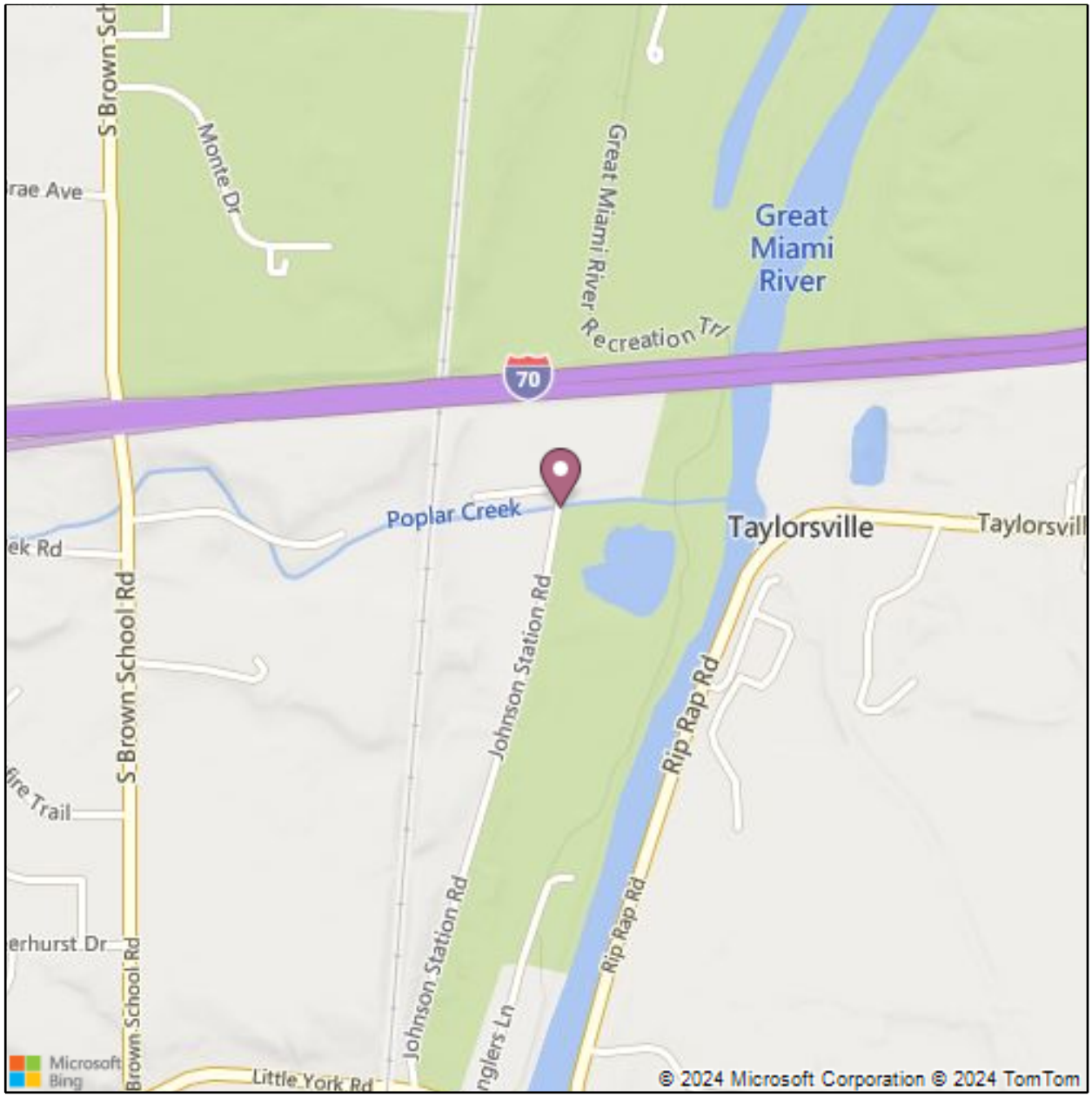

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Longitude: -84.17117