



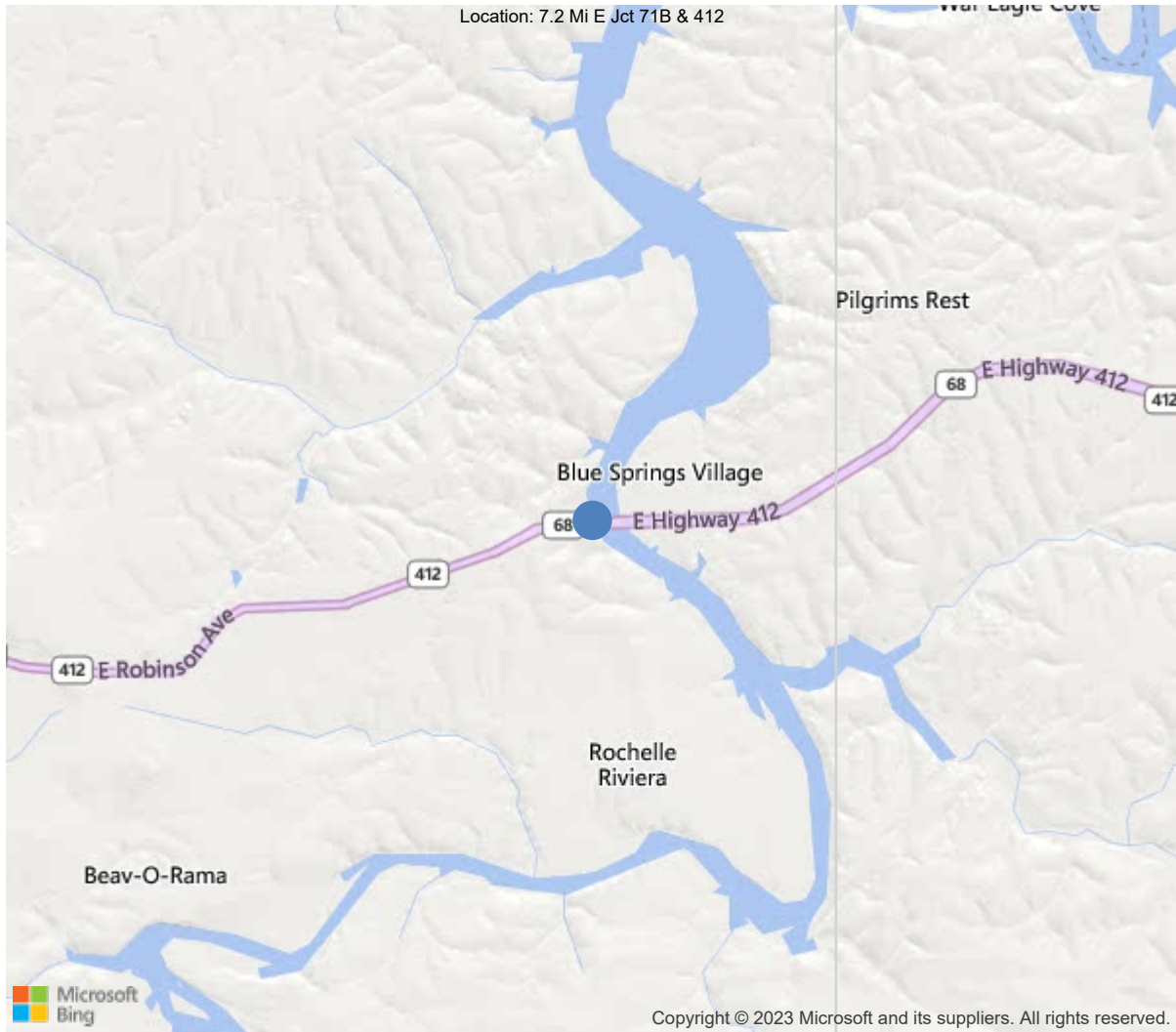
Latitude:36.17139, Longitude:-94.02141

Route:412 Section:02 Log:18.196

Arnold Road ID:72x412x2xB, Arnold Log mile:6.549

District 04, 143 - Washington County

Owner: 1 - State Highway Agency



36.17139, -94.02141



Asset #A6686(Routine)

US 412 WB Lanes over Beaver Lake

Location: 7.2 Mi E Jct 71B & 412

Team Lead: Bob McEntyre, Inspection Date: 10/28/2021

IDENTIFICATION	
(1) State Names	5 - Arkansas
(8) Structure Number	A6686
(5) Inventory Route	1
(2) Highway Agency District	04 - District 04
(3) County Code	143 - Washington County
(4) Place Code	0
(6) Features Intersected	Beaver Lake
(7) Facility Carried	US 412 WB Lanes
(9) Location	7.2 Mi E Jct 71B & 412
(11) Mile Point	18.196 mi
(12) Base Highway Network	Yes
(13) LRS Inventory Rte & Subrte	0000041200
(16) Latitude	36.17139
(17) Longitude	-94.02141
(98) Border Bridge State Code	
(99) Border Bridge Structure No.	
STRUCTURE TYPE AND MATERIAL	
(43) Main Structure Type	42
Material	4 - Steel continuous
Type	2 - Stringer/Multi-beam or girder
(44) Approach Structure Type	00
Material	0 - Other
Type	0 - Other
(45) No. of Spans in Main Unit	5
(46) No. of Approach Spans	0
(107) Deck Structure Type	1 - Concrete Cast-in-Place
(108) Wearing Surface/Protective System	
Type of Wearing Surface	1 - Monolithic Concrete (concurrently pl
Type of Membrane	0 - None
Type of Deck Protection	1 - Epoxy Coated Reinforcing
AGE AND SERVICE	
(27) Year Built	1999
(106) Year Reconstructed	0
(42) Type of Service	15
On	1 - Highway
Under	5 - Waterway
(28) Lane	
On	2
Under	0
(29) Average Daily Traffic	7513
(30) Year of ADT	2018
(109) Truck ADT	9 %
(19) Bypass, Detour Length	1 mi
GEOMETRIC DATA	
(48) Length of Maximum Span	190 ft
(49) Structure Length	890 ft
(50) Curb or Sidewalk Width	
Left	0 ft
Right	0 ft
(51) Bridge Roadway Width Curb to Curb	38.1 ft
(52) Deck Width Out to Out	40.5 ft
(32) Approach Roadway Width (W/Shoulders)	37.1 ft
(33) Bridge Median	0 - No median
(34) Skew	10 Deg
(35) Structure Flared	0 - No flare
(10) Inventory Route Min Vert Clear	99.99 ft
(47) Inventory Route Total Horiz Clear	38.4 ft
(53) Min Vert Clear Over Bridge Rdwy	99.99 ft
(54) Min Vert Underclear	0 ft
Ref:	
(55) Min Lat Underclear RT	99.9 ft
Ref:	
(56) Min Lat Underclear LT	0 ft
NAVIGATION DATA	
(38) Navigation Control	0 - No navigation control on w
(111) Pier Protection	1 - Navigation protection not
(39) Navigation Vertical Clearance	0 ft
(116) Vert-Lift Bridge Nav Min Vert Clear	0 ft
(40) Navigation Horizontal Clearance	0 ft

CLASSIFICATION	
(112) NBIS Bridge Length	Y
(104) Highway System	1
(26) Functional Class	2 - Rural Principal Arterial -
(100) Defense Highway	0 - The inventory route is not
(101) Parallel Structure	L - The left structure of para
(102) Direction of Traffic	1 - way traffic
(103) Temporary Structure	
(105) Federal Lands Highways	0 - N/A
(110) Designated National Network	0 - The inventory route is not
(20) Toll	3 - On free road. The structu
(21) Maintain	1 - State Highway Agency
(22) Owner	1 - State Highway Agency
(37) Historical Significance	5 - Bridge is not eligible for
CONDITION	
(58) Deck	6
(59) Superstructure	7
(60) Substructure	5
(61) Channel & Channel Protection	9
(62) Culverts	N
LOAD RATING AND POSTING	
(31) Design Load	5 - MS 18 / HS 20
(63) Operating Rating Method	1
(64) Operating Rating	
Type	1 - Load Factor(LF)
Rating	60
(65) Inventory Rating Method	1 - Load Factor(LF)
(66) Inventory Rating	
Type	
Rating	36
(70) Bridge Posting	5 - Equal to or above legal loads
(41) Structure Open/Posted/Closed	A - Open, no restriction
APPRAISAL	
(67) Structural Evaluation	6
(68) Deck Geometry	7
(69) Clearances, Vertical/Horizontal	N
(71) Waterway Adequacy	9
(72) Approach Roadway Alignment	8
(36A) Bridge Railings	1 - Inspected feature meets current
(36B) Transitions	1 - Inspected feature meets current
(36C) Approach Guardrail	1 - Inspected feature meets current
(36D) Approach Guardrail Ends	1 - Inspected feature meets current
(113) Scour Critical Bridges	8 - Bridge foundations determined t
PROPOSED IMPROVEMENTS	
(75) Type of Work	
(76) Length of Structure Improvement	0 ft
(94) Bridge Improvement Cost	\$ 0
(95) Roadway Improvement Cost	\$ 0
(96) Total Project Cost	\$ 0
(97) Year of Improvement Cost Estimate	
(114) Future ADT	7736
(115) Year of Future ADT	2028

INSPECTIONS *			
(90) Inspection Date	10/28/2021		
(91) Frequency	24		
(92) Critical Feature Inspection	Done	Freq. (Mon)	Date
A: Fracture Critical Detail	No		
B: Underwater Inspection	Yes	60	09/30/2019
C: Other Special Inspection			
* The inspection date and frequency information in this box contains the current NBI date and frequency information. Please refer to the report header for the date this inspection was conducted.			



General Observation

10/28, 11/01 & 11/2/2021 - RSM, JCJ, EJW, SPC, TJL & JPW: Routine inspection conducted these dates. NBIS Condition Rating for item "60" lowered from "6" to "5" due to wide excessive cracking in base of columns and ends of intermediate bent caps. Aspen 40 snooper truck was utilized for inspection access. A boat was used to inspect the lower portion of the substructure.

09/30/2019 - JCJ, RSM, SPC, & TJL - Routine Inspection with Aspen 40 Snooper Truck was conducted on this date.

10/01/2019 - JCJ & TJL - A boat was used to inspect the columns at the water elevation this date. The Type 2 Underwater Inspection is replaced by an Underwater Dive Inspection. Underwater Dive Inspection was last conducted on 07/23/2018.

60 - Substructure (5 - FAIR CONDITION - all primary structural elements are sound but may have minor section loss, cracking, spalling or scour.)

Added bridge to dive contract to get a better look at the cracks in the drilled shafts see the report in files- ADN 10/2018

A-15 - Late Reason (N/A)

10/28/2021 - RSM - Inspection performed 1 month late due to inspection software scheduling glitch. Software failed to schedule structure for inspection.

A-46 - Asset Files

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Asset #A6686(Routine)

US 412 WB Lanes over Beaver Lake

Location: 7.2 Mi E Jct 71B & 412

Team Lead: Bob McEntyre, Inspection Date: 10/28/2021

ELEMENTS	DESCRIPTION	UNITS	TOTAL	CS1	CS2	CS3	CS4
12	Reinforced Concrete Deck	SF	35897	20349	12170	3378	0
1080	Delamination/Spall/Patched Area	SF	1	0	1	0	0
1120	Efflorescence/Rust Staining	SF	66	0	66	0	0
1130	Cracking (RC and Other)	SF	14595	0	11217	3378	0
1190	Abrasion/Wear (PSC/RC)	SF	886	0	886	0	0
(12) -The driving surface of the deck has numerous sealable longitudinal, transverse, and map cracks. -There is light wear in the wheel paths. -The metal SIP forms have areas of active corrosion that appear to correspond with the longitudinal cracks and deteriorated transverse saw joint material. -There are transverse hairline cracks with light efflorescence visible from the undersurface of the deck overhang.							
107	Steel Open Girder/Beam	LF	3544	3539	5	0	0
1000	Corrosion	LF	5	0	5	0	0
515	Steel Protective Coating	SF	68827	67850	225	676	76
3430	Oxide Film Degradation Color/Texture Adherence(Steel Protective Coatings)	LF	977	0	225	676	76
(107) -No visible cracks apparent in the beams during this inspection. -The undersurface of the bottom flanges of exterior girders have abnormal weathering with flaking rust to the weathering steel protective coating. -The beams have a light rust coating. -Span # 3, splice # 1, bay # 3, beam # 3 top flange has abnormal weathering with flaking rust due to leaking transverse saw joint. -Span # 4, girder # 4 @ splice # 1 has a 3/8" misalignment, (Constructed in this manner). -Span # 5, bay # 3, diaphragm # 2 from abutment # 2 has out of plane bending that appears to be the as-built condition.							
205	Reinforced Concrete Column	EA	8	0	2	5	1
1080	Delamination/Spall/Patched Area	EA	3	0	2	1	0
1130	Cracking (RC and Other)	EA	5	0	0	4	1



Asset #A6686(Routine)

US 412 WB Lanes over Beaver Lake

Location: 7.2 Mi E Jct 71B & 412

Team Lead: Bob McEntyre, Inspection Date: 10/28/2021

ELEMENTS	DESCRIPTION	UNITS	TOTAL	CS1	CS2	CS3	CS4
<p>(205) The section of columns / top of the drilled shafts in proximity of the average / normal lake elevation have wide vertical, transverse, and map cracking along with concrete deterioration that exposes the reinforcing steel in areas. Exposed reinforcing steel has very little concrete cover from the construction process.</p> <p>Some columns have vertical cracking that propagates from the top of the drilled shaft concrete into the base of the columns above the water elevation.</p> <p>Bent # 2 -</p> <p>Bent # 2 - Left column has three 8" pieces of vertical reinforcing steel visible in the North face of the column. Exposed reinforcing steel appears to be epoxy coated # 4 bar located approximately 4' below the top of the drilled shaft concrete.</p> <p>Bent # 2 - Right column has an 8" piece of vertical reinforcing steel visible in the West face of the column. Exposed reinforcing steel appears to be epoxy coated # 4 bar.</p> <p>There are areas with concrete deterioration up to 3/4" deep during this inspection. Located approximately 5' below the top of the drilled shaft concrete..</p> <p>Bent # 3 -</p> <p>-Bent # 3 right drilled shaft has light mapcracking at base with random areas of honeycombing and concrete deterioration with up to approximately 1-1/2 concrete section loss. The drilled shaft has several moderate width vertical cracks.</p> <p>Bent # 3 - Left column has concrete deterioration, numerous moderate width vertical cracks, areas of honeycombing.with up to approximately 1-1/2 concrete section loss in some locations.</p> <p>Bent # 4 -</p> <p>Most extreme case is Bent # 4, Column # 1 that has a vertical crack approximately 3/4" wide on the face and top of the drilled shaft concrete. The area surrounding the crack and the upper portion of the drilled shaft is delaminated. The column has a shallow 10" spall located at the top of the drilled shaft portion of column.</p> <p>Bent # 4 - Right column has numerous vertical cracks up to approximately 1/8" wide with concrete deterioration. The upper portion of the drilled shaft has wide horizontal cracking. The drilled shaft has one 4" long area of exposed reinforcing steel in the North face that appears to be from insufficient concrete coverage during the construction process.</p> <p>Bent # 5 -</p> <p>Bent # 5 - Column # 1 has vertical cracks approximately 1/4" wide on the face and top of the drilled shaft concrete.</p> <p>Bent # 5 - Column # 2 has vertical cracks up to approximately 1/16" wide at the water elevation in the top of the drilled shaft concrete. The top of the drilled shaft has a wide crack approximately 1/4" wide adjacent to the column.</p>							
210	Reinforced Concrete Pier Wall	LF	64	58	6	0	0
1010	Cracking	LF	6	0	6	0	0
<p>(210) -This elements is being used in accordance with the latest ARDOT Bridge Inspection Manuel to monitor the horizontal struts.</p> <p>-Bent # 3 strut has an area of mapcracking in the top of the strut in an area approximately 6' in length.</p>							
215	Reinforced Concrete Abutment	LF	146	97	49	0	0
1080	Delamination/Spall/Patched Area	LF	11	0	11	0	0
1120	Efflorescence/Rust Staining	LF	4	0	4	0	0
1130	Cracking (RC and Other)	LF	31	0	31	0	0
1190	Abrasion/Wear (PSC/RC)	LF	3	0	3	0	0
<p>(215) -Minor vertical cracks in the back walls.</p> <p>-There are transverse cracks in the top of the back walls visible from the driving surface of the deck.</p> <p>-Minor dirt accumulation adjacent to the exterior beams on the abutments.</p> <p>-There are shallow spalls on the driving surface of the back wall adjacent to the asphalt.</p>							
234	Reinforced Concrete Pier Cap	LF	160	33	120	7	0
1080	Delamination/Spall/Patched Area	LF	1	0	1	0	0

US 412 WB Lanes over Beaver Lake

Location: 7.2 Mi E Jct 71B & 412

Team Lead: Bob McEntyre, **Inspection Date:** 10/28/2021

ELEMENTS	DESCRIPTION	UNITS	TOTAL	CS1	CS2	CS3	CS4
1090	Exposed Rebar	LF	1	0	1	0	0
1120	Efflorescence/Rust Staining	LF	0	0	0	0	0
1130	Cracking (RC and Other)	LF	125	0	118	7	0
<p>(234) -Bent # 2 has a horizontal crack near mid cap. -One shallow spall near centerline of bent # 2 cap that does not expose reinforcing steel. -Bent # 2 has map cracking on the left end of bent # 2 cap with cracking up to approximately 1/16" in a couple of locations.</p> <p>-Bent # 3 cap has map cracking up to approximately 1/8" wide on the ends of the cap. Hairline horizontal crack running approximately 3/4 of the length of bent # 3 cap. -Bent # 3 cap has several short duration vertical cracks propagating from the horizontal hairline crack.</p> <p>-Bent # 4 cap has a horizontal crack at mid cap. -Map cracking at both ends of bent # 4 cap. Cracks are up to 1/8" in width during this inspection. -Span # 3 side of bent # 4 cap has an area of efflorescence at the top of the cap. -Bent # 4 cap has a large amount of pigeon droppings on top of the cap.</p> <p>-Bent # 5 Right end of cap has map cracking. The left end of cap has a 3" spall in the undersurface with exposed reinforcing steel. -Bent # 5 cap has a horizontal hairline crack for the full width of the cap.</p>							
305	Assembly Joint without Seal	LF	80	80	0	0	0
<p>(305) -The assembly joint anchorage appears to be solid with no apparent noteworthy deficiencies during this inspection. -The right end of the expansion joint drainage trough at abutments # 1 and # 2 have debris accumulation that restricts drainage.</p>							
310	Elastomeric Bearing	EA	24	24	0	0	0
515	Steel Protective Coating	SF	48	48	0	0	0
<p>(310) -There are no apparent noteworthy deficiencies during this inspection. -Abutment # 1 has dirt and debris accumulated against exterior bearings.</p>							
331	Reinforced Concrete Bridge Railing	LF	1772	0	787	985	0
1120	Efflorescence/Rust Staining	LF	984	0	0	984	0
1130	Cracking (RC and Other)	LF	788	0	787	1	0
<p>(331) -The bridge rails have superficial map cracking and vertical cracks typical throughout. Some areas of cracking have efflorescence. -The right side of parapet in span # 1 at abutment # 1 has wide vertical and mapcracking on the exterior side.</p> <p>Approach Railing: -Collision damage to the Southwest approach railing has destroyed approximately 15' of the railing and two railing posts. The collision damage has created a "pocket" in the railing.</p>							

Deck

ELEMENTS	DESCRIPTION	UNITS	TOTAL	CS1	CS2	CS3	CS4
12	Reinforced Concrete Deck	SF	35897	20349	12170	3378	0
1080	Delamination/Spall/Patched Area	SF	1	0	1	0	0
1120	Efflorescence/Rust Staining	SF	66	0	66	0	0
1130	Cracking (RC and Other)	SF	14595	0	11217	3378	0
1190	Abrasion/Wear (PSC/RC)	SF	886	0	886	0	0
(12) -The driving surface of the deck has numerous sealable longitudinal, transverse, and map cracks.							
-There is light wear in the wheel paths.							
-The metal SIP forms have areas of active corrosion that appear to correspond with the longitudinal cracks and deteriorated transverse saw joint material.							
-There are transverse hairline cracks with light efflorescence visible from the undersurface of the deck overhang.							

Superstructure

ELEMENTS	DESCRIPTION	UNITS	TOTAL	CS1	CS2	CS3	CS4
107	Steel Open Girder/Beam	LF	3544	3539	5	0	0
1000	Corrosion	LF	5	0	5	0	0
515	Steel Protective Coating	SF	68827	67850	225	676	76
3430	Oxide Film Degradation Color/Texture Adherence(Steel Protective Coatings)	LF	977	0	225	676	76
<p>(107) -No visible cracks apparent in the beams during this inspection.</p> <p>-The undersurface of the bottom flanges of exterior girders have abnormal weathering with flaking rust to the weathering steel protective coating.</p> <p>-The beams have a light rust coating.</p> <p>-Span # 3, splice # 1, bay # 3, beam # 3 top flange has abnormal weathering with flaking rust due to leaking transverse saw joint.</p> <p>-Span # 4, girder # 4 @ splice # 1 has a 3/8" misalignment, (Constructed in this manner).</p> <p>-Span # 5, bay # 3, diaphragm # 2 from abutment # 2 has out of plane bending that appears to be the as-built condition.</p>							

Substructure

ELEMENTS	DESCRIPTION	UNITS	TOTAL	CS1	CS2	CS3	CS4
205	Reinforced Concrete Column	EA	8	0	2	5	1
1080	Delamination/Spall/Patched Area	EA	3	0	2	1	0
1130	Cracking (RC and Other)	EA	5	0	0	4	1
<p>(205) The section of columns / top of the drilled shafts in proximity of the average / normal lake elevation have wide vertical, transverse, and map cracking along with concrete deterioration that exposes the reinforcing steel in areas. Exposed reinforcing steel has very little concrete cover from the construction process.</p> <p>Some columns have vertical cracking that propagates from the top of the drilled shaft concrete into the base of the columns above the water elevation.</p> <p>Bent # 2 -</p> <p>Bent # 2 - Left column has three 8" pieces of vertical reinforcing steel visible in the North face of the column. Exposed reinforcing steel appears to be epoxy coated # 4 bar located approximately 4' below the top of the drilled shaft concrete.</p> <p>Bent # 2 - Right column has an 8" piece of vertical reinforcing steel visible in the West face of the column. Exposed reinforcing steel appears to be epoxy coated # 4 bar.</p> <p>There are areas with concrete deterioration up to 3/4" deep during this inspection. Located approximately 5' below the top of the drilled shaft concrete..</p> <p>Bent # 3 -</p> <p>-Bent # 3 right drilled shaft has light mapcracking at base with random areas of honeycombing and concrete deterioration with up to approximately 1-1/2 concrete section loss. The drilled shaft has several moderate width vertical cracks.</p> <p>Bent # 3 - Left column has concrete deterioration, numerous moderate width vertical cracks, areas of honeycombing.with up to approximately 1-1/2 concrete section loss in some locations.</p> <p>Bent # 4 -</p> <p>Most extreme case is Bent # 4, Column # 1 that has a vertical crack approximately 3/4" wide on the face and top of the drilled shaft concrete. The area surrounding the crack and the upper portion of the drilled shaft is delaminated. The column has a shallow 10" spall located at the top of the drilled shaft portion of column.</p> <p>Bent # 4 - Right column has numerous vertical cracks up to approximately 1/8" wide with concrete deterioration. The upper portion of the drilled shaft has wide horizontal cracking. The drilled shaft has one 4" long area of exposed reinforcing steel in the North face that appears to be from insufficient concrete coverage during the construction process.</p> <p>Bent # 5 -</p> <p>Bent # 5 - Column # 1 has vertical cracks approximately 1/4" wide on the face and top of the drilled shaft concrete.</p> <p>Bent # 5 - Column # 2 has vertical cracks up to approximately 1/16" wide at the water elevation in the top of the drilled shaft concrete. The top of the drilled shaft has a wide crack approximately 1/4" wide adjacent to the column.</p>							
210	Reinforced Concrete Pier Wall	LF	64	58	6	0	0
1010	Cracking	LF	6	0	6	0	0
<p>(210) -This elements is being used in accordance with the latest ARDOT Bridge Inspection Manual to monitor the horizontal struts.</p> <p>-Bent # 3 strut has an area of mapcracking in the top of the strut in an area approximately 6' in length.</p>							
215	Reinforced Concrete Abutment	LF	146	97	49	0	0
1080	Delamination/Spall/Patched Area	LF	11	0	11	0	0
1120	Efflorescence/Rust Staining	LF	4	0	4	0	0
1130	Cracking (RC and Other)	LF	31	0	31	0	0
1190	Abrasion/Wear (PSC/RC)	LF	3	0	3	0	0
<p>(215) -Minor vertical cracks in the back walls.</p> <p>-There are transverse cracks in the top of the back walls visible from the driving surface of the deck.</p> <p>-Minor dirt accumulation adjacent to the exterior beams on the abutments.</p> <p>-There are shallow spalls on the driving surface of the back wall adjacent to the asphalt.</p>							



ELEMENTS	DESCRIPTION	UNITS	TOTAL	CS1	CS2	CS3	CS4
234	Reinforced Concrete Pier Cap	LF	160	33	120	7	0
1080	Delamination/Spall/Patched Area	LF	1	0	1	0	0
1090	Exposed Rebar	LF	1	0	1	0	0
1120	Efflorescence/Rust Staining	LF	0	0	0	0	0
1130	Cracking (RC and Other)	LF	125	0	118	7	0
<p>(234) -Bent # 2 has a horizontal crack near mid cap. -One shallow spall near centerline of bent # 2 cap that does not expose reinforcing steel. -Bent # 2 has map cracking on the left end of bent # 2 cap with cracking up to approximately 1/16" in a couple of locations.</p> <p>-Bent # 3 cap has map cracking up to approximately 1/8" wide on the ends of the cap. Hairline horizontal crack running approximately 3/4 of the length of bent # 3 cap. -Bent # 3 cap has several short duration vertical cracks propagating from the horizontal hairline crack.</p> <p>-Bent # 4 cap has a horizontal crack at mid cap. -Map cracking at both ends of bent # 4 cap. Cracks are up to 1/8" in width during this inspection. -Span # 3 side of bent # 4 cap has an area of efflorescence at the top of the cap. -Bent # 4 cap has a large amount of pigeon droppings on top of the cap.</p> <p>-Bent # 5 Right end of cap has map cracking. The left end of cap has a 3" spall in the undersurface with exposed reinforcing steel. -Bent # 5 cap has a horizontal hairline crack for the full width of the cap.</p>							

60 - Substructure (5 - FAIR CONDITION - all primary structural elements are sound but may have minor section loss, cracking, spalling or scour.)

Comment: Added bridge to dive contract to get a better look at the cracks in the drilled shafts see the report in files- ADN 10/2018



Asset #A6686(Routine)

US 412 WB Lanes over Beaver Lake

Location: 7.2 Mi E Jct 71B & 412

Team Lead: Bob McEntyre, Inspection Date: 10/28/2021

Culvert

ELEMENTS	DESCRIPTION	UNITS	TOTAL				
				CS1	CS2	CS3	CS4



Elevation looking South.



Inventory 1 looking East.



Plowable pavement markers removed.



Saw joint material missing.



Span 4, left lane-Transverse deck cracking.



Cracking in right parapet.



Span 3-Plowable pavement markers removed.



Span 2, left lane-Longitudinal cracking.



Span 2, left lane-Transverse cracking.



Span 1, left lane-Longitudinal cracking.



Abutment # 1.



Bent 2 cap, left end-Mapcracking.



Bent 2 bearing area.



Bent 2 cap-Shallow 6" spall near centerline of cap.



Typical of span 2 splice connections.



Span 2, bay 3-Corrosion in SIP forms.



Bent 2.



Bent 3 cap, Left end-1/8" wide mapcracking.



Bent 3 cap, left end-@Mapcracking.



Bent 4 cap, left end-1/8" wide mapcracking.



Live action.



Bent 4 cap-Horizontal cracking.



Pigeon droppings.



Bent 4 cap, right side-Horizontal cracking.



Submerged drift at bent 4.



Span 4, girder 3-splice connection.



Bent 4.



The left end of cap has a 3" spall in the undersurface with exposed reinforcing steel.



Bent # 5, column # 1-Wide cracking in top of drilled shaft.



Span 5, girder 1-Abnormal weathering.



Bent 5 cap-Hairline horizontal crack.



Bent 5 bearing area.



Span 5, bay 3-Corrosion to SIP forms.



Typical of span 5 splice connections.



Span 5 superstructure.



Utility attached to left side of deck.



The exterior edges of the deck have mapcracking.



Mapcracking in parapets.



Span 5, left lane-Longitudinal cracking.



Span 5, left lane-Longitudinal cracking.



Span 5, left lane-Longitudinal and transverse cracking.



Span 5, left lane-Transverse cracking.



Bent 3, right end of cap has mapcracking.



Bent 5 cap.



Bent 5 strut.



Bent 5, column 1-Vertical cracking.



Bent 5, column 1-Concrete deterioration.



Bent 5, column 1-Vertical cracking.



Bent # 5, column # 1-Wide vertical cracking.



Bent # 5, column # 1-Wide vertical cracking.



Bent 4, column 2-Concrete deterioration.



Bent 4, column 1-Wide vertical cracking shallow 10" spall.



Bent 4, column 1-Concrete deterioration.



Bent 4, column 1-Wide vertical cracking with delaminated areas.



Bent 4, column 1-Wide vertical cracking with delaminated areas.



Bent 4, column 1-Wide vertical cracking with delaminated areas.



Bent 3, column 1-Honeycombing / concrete deterioration.



Honeycombing / concrete deterioration in drilled shaft.



Bent 3, column 2-Honeycombing / concrete deterioration.



Bent 3 drilled shafts.



Bent 2, column 2-scaling



Bent 2, column 2-Exposed reinforcing steel.



Span 1 undersurface.



Bent 2, column 1-Concrete deterioration.



Bent 2, column 1-Exposed steel.



Bents 3, 4 and 5.



Abutment 2-Bearings at neutral position with ambient temperature approximately 55 Degrees Fahrenheit at time of inspection.



Abutment 2 bearing area.



The right end of the expansion joint drainage trough at abutment # 2 has debris accumulation that restricts drainage.



Bent 5.



Abutment # 2.



Abutment # 1 has dirt and debris accumulated against exterior bearings.



Exterior side of span # 1, girder # 1.



Utility on left side.



Abutment # 1 bearing area.



Span 1, bay 3.



Bent 2.



The right side of parapet in span # 1 at abutment # 1 has wide vertical and mapcracking on the exterior side.



Elevation.



The expansion joint trough at abutment # 1 has debris accumulation on the right side.



Span 1, right side-Mapcracking in right parapet.



Abutment 1 finger joint assembly.



Span 1 driving surface.



Collision damage to the Southwest approach railing has destroyed approximately 15' of the railing and two railing posts. The collision damage has created a "pocket" in the railing.



Maintenance Needs

Date Reported: 08/28/2013
Priority: C - Important
Type of Work: Repair (General)
Status: Monitor
Component: Substructure

Deficiency Description

Substructure Columns -

The section of columns / top of the drilled shafts in proximity of the average / normal lake elevation have vertical, transverse, and map cracking along with concrete deterioration that exposes the reinforcing steel in areas. Exposed reinforcing steel has very little concrete cover from the construction process.

Bent # 2 -

Bent # 2 - Left column has an 8" piece of vertical reinforcing steel visible in the North face of the column. Exposed reinforcing steel appears to be epoxy coated # 4 bar located approximately 4' below the top of the drilled shaft concrete.
Bent # 2 - Right column has an 8" piece of vertical reinforcing steel visible in the West face of the column. Exposed reinforcing steel appears to be epoxy coated # 4 bar.

There are areas with concrete deterioration up to 3/4" deep during this inspection. Located approximately 5' below the top of the drilled shaft concrete.

Bent # 3 -

Bent # 3 - Left column has concrete deterioration at the water elevation with a 3' area with exposed reinforcing steel (Hoop) located approximately 1' below the top of the drilled shaft concrete.

Bent # 4 -

Most extreme case is Bent # 4, Column # 1 that has a vertical crack approximately 3/4" wide on the face and top of the drilled shaft concrete with the upper portion of the drilled shaft delaminated adjacent to the crack.

Bent # 4 - Right column has up to approximately 1/8" wide vertical cracks along with concrete deterioration that exposes reinforcing steel in the drilled shaft concrete.

Bent # 5 -

Bent # 5 - Column # 1 has vertical cracks approximately 3/16" wide on the face and top of the drilled shaft concrete.

Bent # 5 - Column # 2 has vertical cracks up to approximately 1/16" wide at the water elevation in the top of the drilled shaft concrete.

Remarks



Bent # 5, column # 1-Wide cracking in top of drilled shaft.



Bent # 4, column # 1-Wide vertical cracking shallow 10" spall.



Bent 4, column 1-Wide vertical cracking with delaminated areas.



Bent # 4, column # 1-Wide vertical cracking with delaminated areas.



Bent # 4, column # 1-Wide vertical cracking with delaminated areas.



Left column of Bent # 3.



Left column of Bent # 4.



Exposed reinforcing steel in the Right column of Bent # 4.



Bent # 2. Left column.



Left column of Bent # 4.



Bent # 2 Left column. North face of Column.

Date Reported: 09/07/2011
Priority: D- Routine
Type of Work: Repair (General)
Status: Monitor
Component: Element

Deficiency Description

Deck -
The driving surface of the deck has sealable cracking in all spans.

Remarks



Span 4, left lane-Transverse deck cracking.



Span 2, left lane-Longitudinal cracking.



Longitudinal deck cracks.



Sealable deck cracks.



Transverse cracking in the deck.



Deck. Typical.



Longitudinal deck cracks.



Sealable transverse cracks.



Longitudinal and Transverse cracks.

Date Reported: 09/07/2011
Priority: (Inactive) (Inactive) G - General/ Preventive maintenance
Type of Work: (Inactive) (Inactive) 1 - Clean
Status: Monitor
Component: Substructure

Deficiency Description

Bent caps -
Pigeon droppings have accumulated on the steel superstructure and bent caps. Bent # 4 is worst case.

Remarks



Pigeon droppings-Bent # 4 cap.



Pigeon droppings. Bent # 4 cap.

Date Reported: 08/28/2013
Priority: C - Important
Type of Work: Repair (General)
Status: Monitor
Component: Element

Deficiency Description

Intermediate Bent Caps -

The ends of the intermediate bent caps have map cracking with cracks up to an 1/8" wide in some locations.

Remarks



Bent # 2 cap, left end-Mapcracking.



Bent # 3 cap-Left end-1/8" wide mapcracking.



Bent # 4 cap, left end-1/8" wide mapcracking.



Left end of Bent # 3 cap. Typical.



Span # 2 side. Left end of Bent # 3 cap.



Left end of Bent # 4 cap sounds delaminated in areas.



Bent # 4 cap, left side map cracking.



Left end of Bent # 4.



Left end of a Bent # 2 cap.



Asset #A6686(Routine)

US 412 WB Lanes over Beaver Lake

Location: 7.2 Mi E Jct 71B & 412

Team Lead: Bob McEntyre, Inspection Date: 10/28/2021

Date Reported: 08/28/2013
Priority: D- Routine
Type of Work: Repair (General)
Status: Monitor
Component: Miscellaneous

Deficiency Description

Deck -

The saw joint sealant is deteriorated and missing in locations and appears to leak water onto the superstructure and metal stay in place forms.

Remarks



Saw joint material missing.



Span # 3. Girder # 3. Splice # 1. Corrosion.



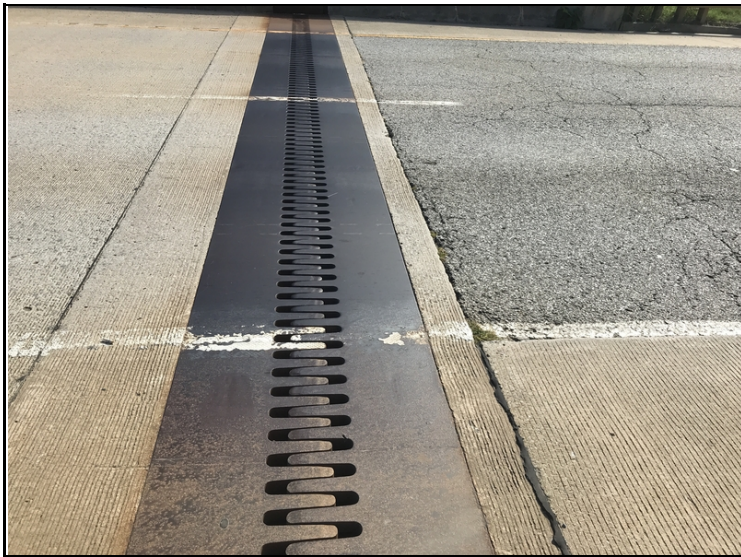
Transverse saw joint sealant.

Date Reported: 08/28/2013
Priority: D- Routine
Type of Work: Repair (General)
Status: Monitor
Component: Approach

Deficiency Description

Approach Roadways -
The asphalt at the approaches is beginning to settle.

Remarks



The asphalt at the approaches is beginning to settle.



Asphalt settlement at the East bridge end.

Date Reported: 10/29/2021
Priority: B - Pressing
Type of Work: Repair (General)
Status: Open
Component: Miscellaneous

Deficiency Description

Southwest approach railing -

Collision damage to the Southwest approach railing has destroyed approximately 15' of the railing and two railing posts. The collision damage has created a "pocket" in the railing.

Remarks



Collision damage to the Southwest approach railing has destroyed approximately 15' of the railing and two railing posts. The collision damage has created a "pocket" in the railing.

Date Reported: 11/03/2021
Priority: C - Important
Type of Work: (Inactive) (Inactive) 1 - Clean
Status: Open
Component: Channel

Deficiency Description

Channel -
The channel has an undetermined amount of submerged drift at the intermediate bents.

Remarks



Submerged drift at bent # 4.

Date Reported: 11/03/2021
Priority: D- Routine
Type of Work: (Inactive) (Inactive) 1 - Clean
Status: Open
Component: Miscellaneous

Deficiency Description

Expansion Joint Drainage Troughs -

The right end of the expansion joint drainage troughs at abutments # 1 and # 2 have debris accumulation that restricts drainage.

Remarks



The right end of the expansion joint drainage troughs at abutments # 1 and # 2 have debris accumulation that restricts drainage. Abutment # 2 pictured.



The right end of the expansion joint drainage troughs at abutments # 1 and # 2 have debris accumulation that restricts drainage. Abutment # 1 pictured.



Asset #A6686(Routine)

US 412 WB Lanes over Beaver Lake

Location: 7.2 Mi E Jct 71B & 412

Team Lead: Bob McEntyre, Inspection Date: 10/28/2021

Routine Maintenance

Check Box Maintenance Items

Type of Maintenance	Is recommended?
A-54 - Sealable Deck Cracks	
A-55 - Deck Washing Needed	
A-56 - Joint Cleaning/Flushing Needed	
A-57 - Beam End and Bearing Paint Needed	
A-58 - Cap Cleaning/Flushing Needed	
A-59 - Joint Repair Needed	
A-60 - Full Beam Painting Needed	
A-61 - Polymer Overlay Advised	
A-62 - Hydro and LMC Advised	



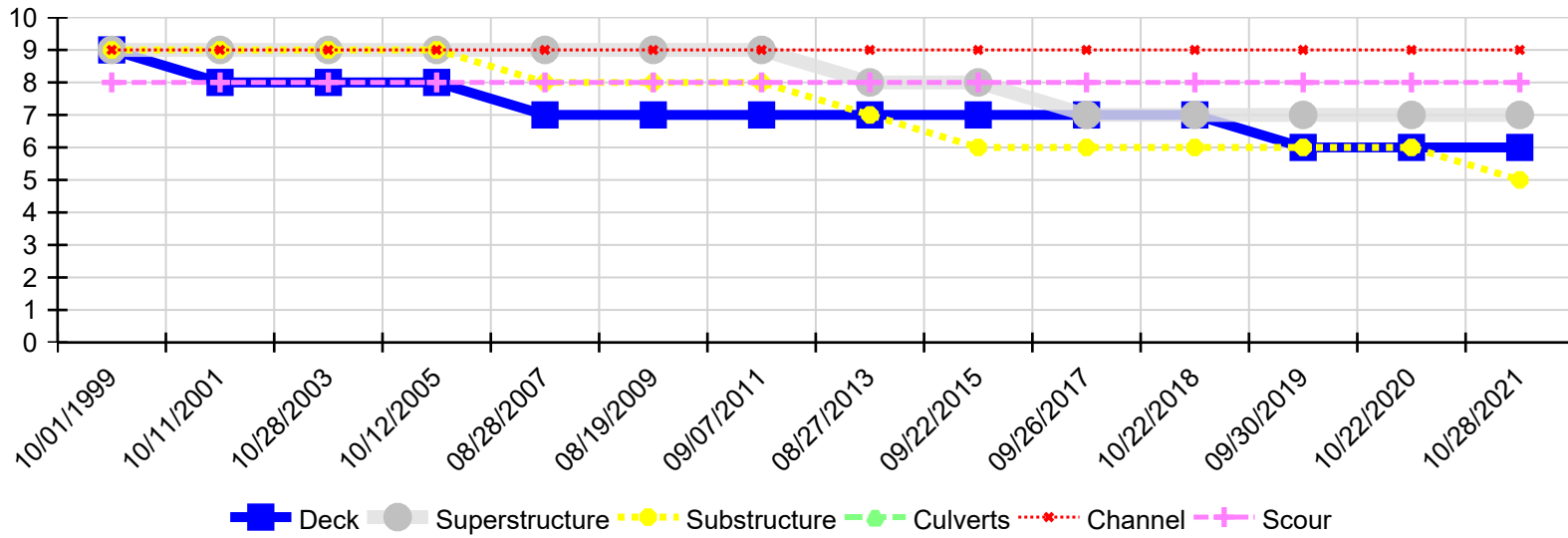
Asset #A6686(Routine)

US 412 WB Lanes over Beaver Lake

Location: 7.2 Mi E Jct 71B & 412

Team Lead: Bob McEntyre, Inspection Date: 10/28/2021

Condition History



Inspection Date	Deck	Superstructure	Substructure	Culverts	Channel	Scour
10/28/2021	6	7	5	N	9	8
10/22/2020	6	7	6	N	9	8
09/30/2019	6	7	6	N	9	8
10/22/2018	7	7	6	N	9	8
09/26/2017	7	7	6	N	9	8
09/22/2015	7	8	6	N	9	8
08/27/2013	7	8	7	N	9	8
09/07/2011	7	9	8	N	9	8
08/19/2009	7	9	8	N	9	8
08/28/2007	7	9	8	N	9	8
10/12/2005	8	9	9	N	9	8
10/28/2003	8	9	9	N	9	8
10/11/2001	8	9	9	N	9	8
10/01/1999	9	9	9	N	9	8