



Latitude:36.24612, Longitude:-92.83580

Route:62 Section:08 Log:3.22

Arnold Road ID:45x62x8xA, Arnold Log mile:3.209

District 09, Marion County

Owner: 1-State Highway Agency



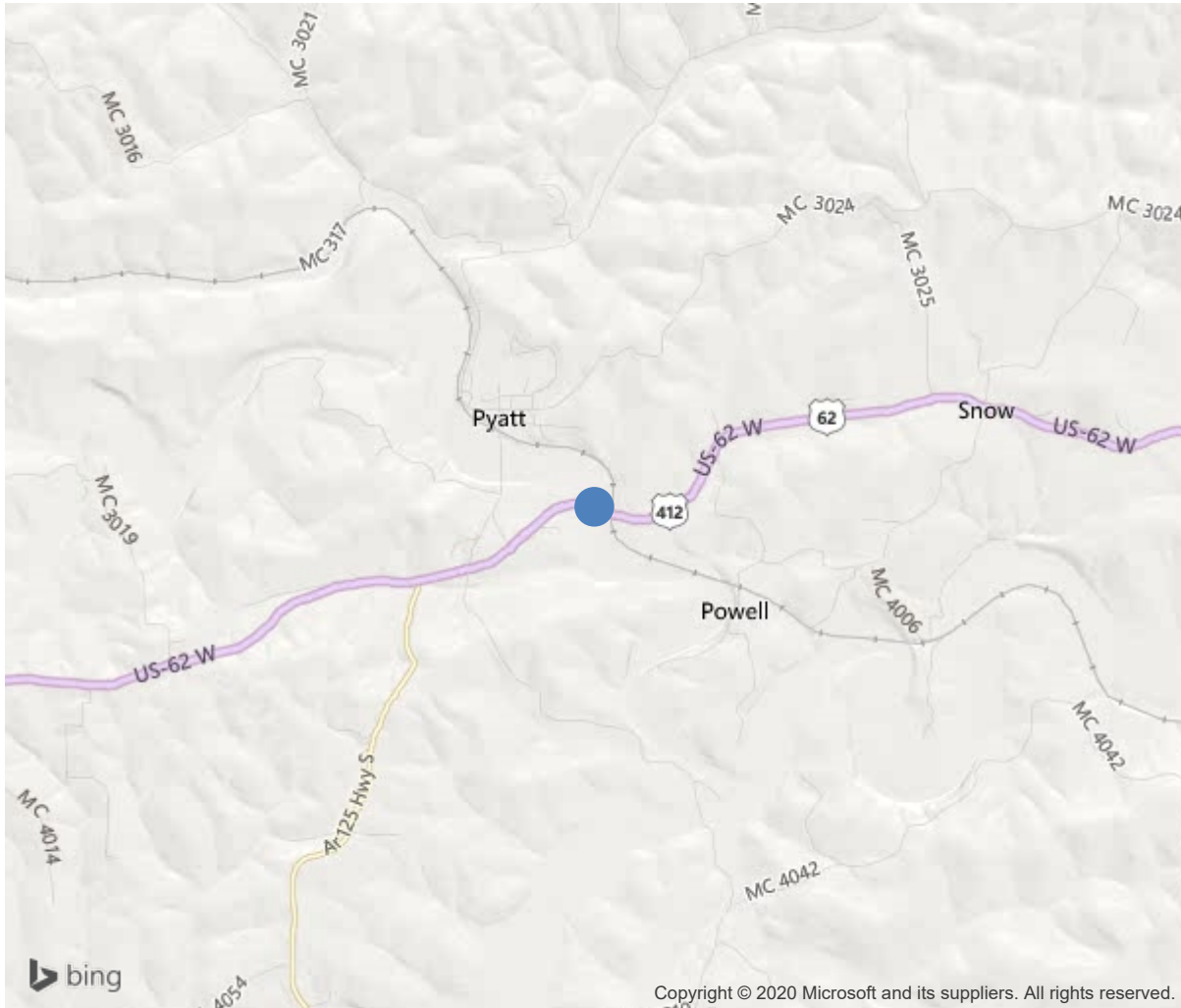
Bridge #02469(Routine, Fracture Critical)

US 62/412 Marion over CROOKED CR & MO NA RR

Location: 1.00 MI E of JCT SH 125

Team Lead: Benjamin Smith **Inspection Date:** July 17, 2018

1.00 MI E of JCT SH 125



36.24612, -92.83580



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Location: 1.00 MI E of JCT SH 125

Team Lead: Benjamin Smith Inspection Date: July 17, 2018

IDENTIFICATION	
(1) State Names	Arkansas
(8) Structure Number	02469
(5) Inventory Route	62
(2) Highway Agency District	09
(3) County Code	89-Marion County, Arkansas
(4) Place Code	0
(6) Features Intersected	CROOKED CR & MO NA RR
(7) Facility Carried	US 62/412 Marion
(9) Location	1.00 MI E of JCT SH 125
(11) Mile Point	3.22 mi
(12) Base Highway Network	Yes
(13) LRS Inventory Rte & Subrte	0000062080
(16) Latitude	36.24612
(17) Longitude	-92.83580
(98) Border Bridge State Code	
(99) Border Bridge Structure No.	
STRUCTURE TYPE AND MATERIAL	
(43) Main Structure Type	39
Material	3-Steel
Type	9-Truss - Deck
(44) Approach Structure Type	32
Material	3-Steel
Type	2-Stringer/Multi-beam or girder
(45) No. of Spans in Main Unit	3
(46) No. of Approach Spans	3
(107) Deck Structure Type	1-Concrete Cast-in-Place
(108) Wearing Surface/Protective System	
Type of Wearing Surface	1-Monolithic Concrete (concurrently placed
Type of Membrane	0-None
Type of Deck Protection	0-None
AGE AND SERVICE	
(27) Year Built	1948
(106) Year Reconstructed	0
(42) Type of Service	17
On	1-Highway
Under	7-Railroad-waterway
(28) Lane	
On	2
Under	0
(29) Average Daily Traffic	4500
(30) Year of ADT	2018
(109) Truck ADT	1 %
(19) Bypass, Detour Length	9 mi
GEOMETRIC DATA	
(48) Length of Maximum Span	136 ft
(49) Structure Length	471 ft
(50) Curb or Sidewalk Width	
Left	1.5 ft
Right	1.5 ft
(51) Bridge Roadway Width Curb to Curb	25.9 ft
(52) Deck Width Out to Out	32 ft
(32) Approach Roadway Width (W/Shoulders)	22 ft
(33) Bridge Median	0-No median
(34) Skew	0 Deg
(35) Structure Flared	No flare
(10) Inventory Route Min Vert Clear	99.99 ft
(47) Inventory Route Total Horiz Clear	26.6 ft
(53) Min Vert Clear Over Bridge Rdwy	99.99 ft
(54) Min Vert Underclear	23 ft
Ref:	
(55) Min Lat Underclear RT	9 ft
Ref:	
(56) Min Lat Underclear LT	0 ft
NAVIGATION DATA	
(38) Navigation Control	0-No navigation control on water
(111) Pier Protection	1-Navigation protection not requ
(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 - Oth
(100) Defense Highway	0-The inventory route is not a S
(101) Parallel Structure	N-No parallel structure exists.
(102) Direction of Traffic	2 - way traffic
(103) Temporary Structure	
(105) Federal Lands Highways	0-N/A
(110) Designated National Network	1-The inventory route is part of the
(20) Toll	3-On free road. The structure is toll-
(21) Maintain	1-State Highway Agency
(22) Owner	1-State Highway Agency
(37) Historical Significance	1-Bridge is on the National Register
CONDITION	
(58) Deck	5
(59) Superstructure	5
(60) Substructure	7
(61) Channel & Channel Protection	7
(62) Culverts	N
LOAD RATING AND POSTING	
(31) Design Load	4-M 18 / H 20
(63) Operating Rating Method	1
(64) Operating Rating	
Type	1-Load Factor(LF)
Rating	35
(65) Inventory Rating Method	1-Load Factor(LF)
(66) Inventory Rating	
Type	3
Rating	21
(70) Bridge Posting	5-Equal to or above legal loads
(41) Structure Open/Posted/Closed	A-Open, no restriction
APPRAISAL	
(67) Structural Evaluation	5
(68) Deck Geometry	3
(69) Clearances, Vertical/Horizontal	4
(71) Waterway Adequacy	8
(72) Approach Roadway Alignment	7
(36) Traffic Safety Features	0000
A) Bridge Railings	0-Inspected feature does not meet cur
B) Transitions	0-Inspected feature does not meet cur
C) Approach Guardrail	0-Inspected feature does not meet cur
D) Approach Guardrail Ends	0-Inspected feature does not meet cur
(113) Scour Critical Bridges	8-Bridge foundations determined to be
PROPOSED IMPROVEMENTS	
(75) Type of Work	Replacement of bridge or other
(76) Length of Structure Improvement	510 ft
(94) Bridge Improvement Cost	\$ 0
(95) Roadway Improvement Cost	\$ 400
(96) Total Project Cost	\$ 2225
(97) Year of Improvement Cost Estimate	2003
(114) Future ADT	5945
(115) Year of Future ADT	2028
INSPECTIONS	
(90) Inspection Date	201807
(91) Frequency	24 Months
(92) Critical Feature Inspection	Done Freq. (Mon) Date
A: Fracture Critical Detail	Yes 12 201907
B: Underwater Inspection	No 0
C: Other Special Inspection	No 0

SUFFICIENCY RATING	43.3
STATUS (SD/FO/None)	Functionally Obsolete

Location: 1.00 MI E of JCT SH 125

Team Lead: Benjamin Smith, **Inspection Date:** July 17, 2018

ELEM	DESCRIPTION	UNITS	TOTAL	CS1	CS2	CS3	CS4
12	Reinforced Concrete Deck	SF	14130	3451	8600	2079	0
1080	Delamination/Spall/Patched Area	SF	1952	0	0	1952	0
1090	Exposed Rebar	SF	103	0	0	103	0
1120	Efflorescence/Rust Staining	SF	24	0	0	24	0
1130	Cracking (RC and Other)	SF	8600	0	8600	0	0
(12)							
Deck driving surface- is bare concrete and has numerous areas of spalls and delaminated areas located in the gutter lines and driving lanes. Transverse cracking was also noted in the driving surface.							
Left lane- has 1005' of delaminated or patched areas mostly in the gutter line and at the joint areas							
Right lane- has 947' of delaminated or patched areas mostly in the gutter lines and joint areas.							
The vertical face of the curb has 31' of shallow exposed rebar on the left and right sides.							
Undersurface- the left and right deck edges have spalling with rebar exposed and large delaminations at all drain areas on the left and right sides.							
Transverse and longitudinal hairline cracking was noted in the undersurface of all spans, very little efflorescence was noted in the cracks.							
Span #1- bay #4 has a large area of efflorescence map cracking at the end of the span that sounds dead under hammer blows.							
107	Steel Open Girder/Beam	LF	580	564	16	0	0
1000	Corrosion	LF	16	0	16	0	0
515	Steel Protective Coating	SF	4395	4369	16	0	10
3440	Effectiveness (Steel Protective Coatings)	SF	16	0	16	0	0
3420	Peeling/Bubbling/Cracking	SF	10	0	0	0	10
(107)							
Paintable beam surface is 26" tall by 10" flange x 5 beams. The protective coating includes the diaphragms.							
Span #1 beams- all beams have a new paint system since 4/2016. Beams #1,2,4,5 have corrosion on the top flange for the last 4' of the span due to a contaminated deck.							
Span # 5 beams- no deficiencies noted.							
Span #6 beams- The paint has lost adhesion in a 1' x 1' area on both sides of the web in span #6 on all 5 beams in the same location near mid span. No corrosion was noted beneath the flaking paint.							
120	Steel Truss	LF	714	390	149	175	0
1000	Corrosion	LF	128	0	53	75	0
1900	Distortion	LF	196	0	96	100	0
515	Steel Protective Coating	SF	30443	30291	0	107	45
3440	Effectiveness (Steel Protective Coatings)	SF	107	0	0	107	0
3420	Peeling/Bubbling/Cracking	SF	45	0	0	0	45
(120)							

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ELEM	DESCRIPTION	UNITS	TOTAL	CS1	CS2	CS3	CS4
<p>Top chord: RIGHT truss -U-16 has a hole rusted through the web section for 2 3/4" long x 1/2" wide near the pin connection on the exterior side, the interior side also has rust holes at the same location, this area of corrosion has been arrested with sand blasting and new paint system. This is a zero load location.</p> <p>U26 has a 3" long rust hole in the web of the interior top chord connection on the right truss.</p> <p>U42 right top chord pin connection at the approach span has distortion at the connection due to pack rust with up to 1/8" section loss.</p> <p>Top Chord LEFT truss- U-16 has a hole rusted through the web section near the pin connection on the exterior side, the interior side also has rust holes at the same location, this area of corrosion has been arrested with sand blasting and paint system, but the rust holes that appear to be cracking. This area is also bulging due to pack rust behind the web. This area is next to the upper pin location, this is a zero load location.</p> <p>U26 left truss has a 2 " long rust hole at the top of the web of the top chord on the interior connection.</p> <p>U42 left top chord pin connection at the approach span has distortion at the connection due to pack rust with up to 1/8" section loss.</p> <p>Bottom chord connections - Left truss- measurable section loss up to 1/2" (worst case condition) with distortion at LO, 1-9, 13-21.</p> <p>Bottom chord connections -Right truss - has a 8" long vertical crack in the batten plate weld at the L8 vertical tension member, the crack is not yet affecting the base metal, but this crack could extend into the vertical member. The area was tested with dye penetrant, the crack is not larger than was previously visible.</p> <p>Measurable section loss with distortion up to 1/2" (worst case condition) at L 21-19,15,13,12,10,8,7,6,3. mostly on the exterior connections. L17,16,14,5,4, 1 have cracked tack welds that are not affecting the base metal with very little pack rust at these locations.</p> <p>U42 right and left upper chord pin connection to approach span has distortion at the connections due to pack rust with up to 1/8" section loss.</p> <p>(120-515-3440)</p> <p>(120-515-3420)</p>							
152	Steel Floor Beam	LF	1500	1080	0	420	0
1000	Corrosion	LF	420	0	0	420	0
<p>(152)</p> <p>The floor beams have light surface pitting, most of the corrosion has been arrested with the new paint system.</p> <p>The floor beams under the assembly joint areas have active corrosion on the top flanges due to leaking seals.</p>							
205	Reinforced Concrete Column	EA	10	7	3	0	0
1080	Delamination/Spall/Patched Area	EA	2	0	2	0	0
1130	Cracking (RC and Other)	EA	1	0	1	0	0
<p>(205)</p>							



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ELEM	DESCRIPTION	UNITS	TOTAL	CS1	CS2	CS3	CS4
<p>Pier #1 columns-</p> <p>Left- The ends of the snap ties are exposed and are rusting, causing small pop outs. The column has been painted over to cover graffiti.</p> <p>Right- The ends of the snap ties are exposed and are rusting, causing small pop outs. The column has been painted over to cover graffiti.</p> <p>Pier #2 columns-</p> <p>Left- The ends of the snap ties are exposed and are rusting, causing small pop outs. The column has been painted over to cover graffiti.</p> <p>Right- The ends of the snap ties are exposed and are rusting, causing small pop outs. The column has been painted over to cover graffiti.</p> <p>Pier #3 columns-</p> <p>Left- has shallow delaminations on the span #4 side with no rebar exposed. The footing is exposed on the left column. The plans indicate that the footing is cast in solid rock.</p> <p>Right- The ends of the snap ties are exposed and are rusting, causing small pop outs. The column has been painted over to cover graffiti.</p> <p>Pier #4 columns-</p> <p>Left- The ends of the snap ties are exposed and are rusting, causing small pop outs. The column has been painted over to cover graffiti.</p> <p>Right- The ends of the snap ties are exposed and are rusting, causing small pop outs. The column has been painted over to cover graffiti.</p> <p>Pier #5 columns-</p> <p>Left- has horizontal hairline cracking.</p> <p>Right- has vertical delaminations on the interior face and the span #6 side.</p>							
210	Reinforced Concrete Pier Wall	LF	56	42	14	0	0
1190	Abrasion/Wear (PSC/RC)	LF	14	0	14	0	0
<p>(210)</p> <p>The pier walls consist of 14' of web wall between the columns.</p> <p>Pier wall #1- no deficiencies noted.</p> <p>Pier wall #2- no deficiencies noted.</p> <p>Pier wall #3- has light abrasion on the lower portion for the width of the wall.</p> <p>Pier wall #4- no deficiencies noted.</p> <p>Pier wall #5- has an open horizontal concrete diaphragm. No deficiencies noted. This item is not included in the quantity.</p>							
215	Reinforced Concrete Abutment	LF	92	88	4	0	0
1080	Delamination/Spall/Patched Area	LF	1	0	1	0	0
1130	Cracking (RC and Other)	LF	3	0	3	0	0
<p>(215)</p> <p>Abutment #1- has 1 vertical hairline crack with the ends of the snap ties exposed and rusting. The abutment embankment has erosion beneath the web wall for most of the length of the abutment and has cut a ditch down the slope.</p> <p>Abutment #2- has 2 vertical hairline cracks in the bridge seat and 1' of cs2 delamination in the bridge seat under beam #4. The abutment #2 embankment has a large area of erosion that has cut a ditch.</p>							
234	Reinforced Concrete Pier Cap	LF	132	104	27	1	0

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1080	Delamination/Spall/Patched Area	LF	1	0	1	0	0
1090	Exposed Rebar	LF	1	0	0	1	0
1130	Cracking (RC and Other)	LF	26	0	26	0	0
(234)							
Pier cap #1- has 11' of vertical hairline cracks.							
Pier cap #2- has 1' of spalling with exposed rebar and 9' of vertical hairline cracks.							
Pier cap #3- has 4' of vertical hairline cracks, with the ends of the snap ties exposed causing pop outs.							
Pier cap #4- has 2' of hairline map cracking at the left end on the span #5 side.							
Pier cap #5- has a delaminated area on the span #6 side.							
301	Pourable Joint Seal	LF	320	80	105	125	10
2310	Leakage	LF	135	0	0	125	10
2320	Seal Adhesion	LF	105	0	105	0	0
(301)							
All pourable joint seal locations have lost adhesion. Some areas have portions of the seals missing. The joint seals have been replaced in some areas with black fiber board due to deck repairs that affected the joint edges.							
305	Assembly Joint without Seal	LF	224	224	0	0	0
(305)							
Water leaks on to the truss members and floor beams at the road iron locations. Active corrosion is present in all joints between floor beams.							
The joints do not appear to have been constructed with a neoprene catch trough.							
311	Movable Bearing	EA	23	8	0	15	0
1000	Corrosion	EA	11	0	0	11	0
2220	Alignment	EA	4	0	0	4	0
(311)							
Abutment #1 moveable bearings- bearings #1,3,4,5 are tilted excessively toward the back wall. Bearing #2 is not tilted at all. All 5 bearings have corrosion with pitting and flaking rust in the rocker areas.							
The outside temp at the 2018 inspection was 87 deg. F.							
Pier #1 moveable bearings- Both bearings have very minor small areas of corrosion on the masonry plate and rocker area.							
Pier #4 moveable bearings- Both bearings have very minor small areas of corrosion on the masonry plate and rocker area. The anchor bolts have section loss, but have been sand blasted and repainted.							
Pier #5 moveable bearings- All 10 at this location have corrosion with pack rust in the rocker areas.							
313	Fixed Bearing	EA	13	4	9	0	0
1000	Corrosion	EA	9	0	9	0	0
(313)							
The upper truss pin locations at the end of span #1 (fixed bearings)- both have minor corrosion.							
Pier #2 fixed bearings- both have minor corrosion at the bottom of the masonry plate.							
Pier #3 fixed bearings- both have minor corrosion at the bottom of the masonry plate.							
The upper truss pin locations at the beginning of span #5 (fixed bearings)- both have minor corrosion.							
Abutment #2 fixed bearings- all 5 have corrosion on the masonry plate.							

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ELEM	DESCRIPTION	UNITS	TOTAL	CS1	CS2	CS3	CS4
330	Metal Bridge Railing	LF	942	0	0	942	0
1000	Corrosion	LF	942	0	0	942	0
515	Steel Protective Coating	SF	4333	4333	0	0	0
(330)							
The metal railing was hand painted in 2016, but the corrosion is bleeding back through on the front and back for the entire length of the railing.							
The railing surface including both rails is 4.6' per foot.							
331	Reinforced Concrete Bridge Railing	LF	942	859	70	13	0
1090	Exposed Rebar	LF	13	0	0	13	0
1130	Cracking (RC and Other)	LF	70	0	70	0	0
(331)							
The RC railing consists of the 1' deck over hang on the left and right sides and the concrete posts. This area has been subtracted from the deck area.							
Left side- has 32' of cracking in random locations, and 7' of exposed rebar in random locations.							
Right side - has 38' of cracking in random locations, and 6' of exposed rebar in random locations.							



1/2" of distortion on the bottom flange of the exterior top chord connection at U26 right truss.



The abutment #2 embankment has erosion.



Crack location L8 right truss.



Lower pin area condition at L8 left truss.



Lower pin connection area at L 13 right truss.



Interior connection at U16 on the right truss. Showing rust holes in the upper web.



Pack rust with 1/2" of distortion on the interior lower chord connection at L8 It truss.



Driving surface showing patched areas in the gutter lines.



U16 left truss interior top chord connection has rust holes that appear to be cracking. This area is next to the upper pin location.



Excessive tilt of bearing #1 at abutment #1. One anchor bolt is missing.



U16 connection on the interior left truss is distorted and bulging due to pack rust. The web has rust holes at this location on the interior and exterior top chord connection.



Approach view in the direction of log mile.



Brown bats in the joint area at the beginning of span #3.



Rust holes in the web of the top chord at U16 right truss. 1/2" x 3" exterior connection. This is typical also of the interior connection at the same location.



Bolt missing at beam #4 connection at the end of span #1. Typical of beams 2,3,4 at the same location.



Plug welds at the upper pin location of both trusses at the beginning of the trusses.



Exterior top chord connection at U 25 left truss showing pack rust with distortion on the bottom flange of the top chord.



3" long rust hole on the web of the interior upper chord connection at U26 right truss.



Cracked tack weld on the top of the bottom chord at L3 left truss.



Bearing condition at abutment #2. Typical of all 5 at this location.



General view of abutment #2.



Spalls with exposed rebar at the drain areas. Typical.



Downstream channel view.



Driving surface showing patched areas at the joints.



Laminar separation between a single plate just in front of L1 right truss bottom chord.



2 " long rust hole at the top of the web of the top chord on the interior connection at U26 left truss.



Deck undersurface condition showing cracking. Typical.



Lower pin area condition at L8 right truss.



Paint has lost adhesion in span #6 on all 5 beams in the same location near mid span.



Brown bat at L9 left truss.



View of the paint condition of the truss spans. Typical.



General view of abutment #1.



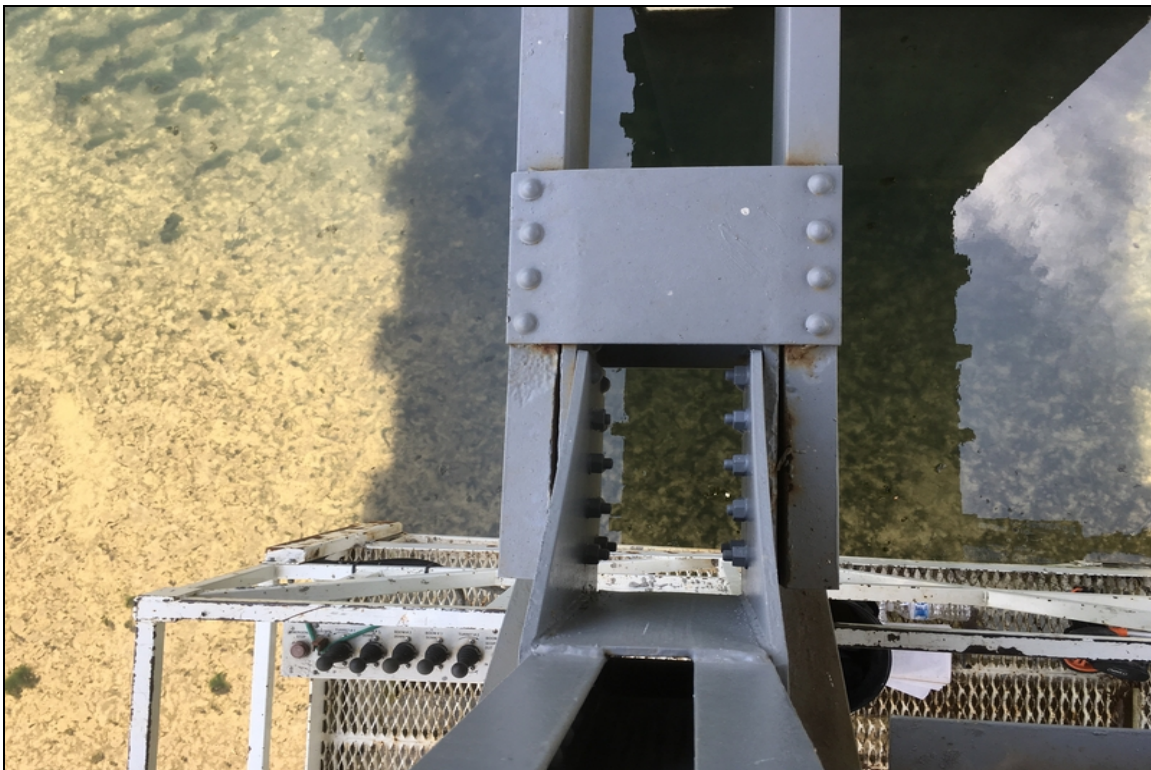
View of the fracture critical elements.



Upstream channel view.



Paint stencil at abutment #1 beam #5.



Pack rust with distortion on the bottom chord at L13 left truss.



Right truss upper beginning pin condition.



Typical paint condition of the multi beam spans.



Embankment erosion at abutment #1 that extends under the web wall of the abutment.



Metal rail condition. Typical



Bridge plate.



Pier #1 bearing condition typical of both at this location.



Lower pin area condition at L13 left truss.



Efflorescence map cracking in bay #4 at the end of span #1. This area sounds dead under hammer blows.



Bearing condition at pier #4. Typical of both at this location.



Bearing condition at pier #5. Typical of all 10 at this location.



Left upper beginning pin condition.



Elevation view. Log mile from left to right.



Pack rust with 1" of distortion on the bottom chord at L8 left truss on the exterior connection. This condition is also typical of the right bottom chord at the same location.



Sheared rivet at U6 left truss. The floor beam has an 1/8 gap between the bottom flange and top left chord.



Bearing condition at pier #2. Typical of both at this location.



Bearing condition at pier #3 typical of both at this location.



Truss end connection at L 21 left truss showing distortion. Typical of all 4 lower locations at the beginning and end of the trusses.



Numerous Tack welds on the splice plate at L1. Typical of the left and right sides.



Emergency number for the RR underpass at span #5.



Typical joint seal condition.



8" long vertical crack in the weld at the L 8 vertical member in the batten plate. This crack could extend into the vertical member.



Driving surface showing delamination and cracking.



Undersurface condition in the truss spans.



Approach log mile.



Rust holes on the interior top chord connection at U16 left truss.



Smoke plate over the RR tracks in span #5.



Sliding plate condition at abutment #1.



Corrosion with 3/16" distortion on the bottom batten plate of the right truss at L3 right truss.



The upper connection of the exterior diagonal member at the beginning of the right truss.
Showing pack rust with 1/2" of distortion.



Typical floor beam condition.



Cracked tack weld at the upper end of the beginning diagonal of the left truss. Typical of the left and right side of the left truss. This is typical is several locations throughout the structure, the cracking is not affecting the base metal.



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Maintenance Needs



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Inspection Comments

Structure is logged from West to East. Snooper and/or climbing harness is needed to access fracture critical elements. Bat activity was noted in the joint area of span #3. Structure was sand blasted and repainted under contract in April 2016. The emergency number for the Missouri and North Ark RR is 1-800-800-3490. The underpass location # for this structure is 434980L.
