



Latitude:36.22244, Longitude:-93.53007

Route:21 Section:05 Log:6.32

Arnold Road ID:8x21x5xA, Arnold Log mile:6.302

District 09, Carroll County

Owner: 1-State Highway Agency

S OUTSKIRTS METALTON



36.22244, -93.53007



Bridge #03309(Routine)

SH 21 Carroll over PINEY CREEK

Location: S OUTSKIRTS METALTON

Team Lead: Nathan Rowland Inspection Date: July 15, 2019

IDENTIFICATION	
(1) State Names	Arkansas
(8) Structure Number	03309
(5) Inventory Route	21
(2) Highway Agency District	09
(3) County Code	15-Carroll County, Arkansas
(4) Place Code	0
(6) Features Intersected	PINEY CREEK
(7) Facility Carried	SH 21 Carroll
(9) Location	S OUTSKIRTS METALTON
(11) Mile Point	6.32 mi
(12) Base Highway Network	No
(13) LRS Inventory Rte & Subrte	0000000000
(16) Latitude	36.22244
(17) Longitude	-93.53007
(98) Border Bridge State Code	
(99) Border Bridge Structure No.	
STRUCTURE TYPE AND MATERIAL	
(43) Main Structure Type	32
Material	3-Steel
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	4
(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 placed
Type of Membrane	0-None
Type of Deck Protection	0-None
AGE AND SERVICE	
(27) Year Built	1960
(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	2200
(30) Year of ADT	2014
(109) Truck ADT	1 %
(19) Bypass, Detour Length	15 mi
GEOMETRIC DATA	
(48) Length of Maximum Span	40 ft
(49) Structure Length	162 ft
(50) Curb or Sidewalk Width	
Left	0.1 ft
Right	0.2 ft
(51) Bridge Roadway Width Curb to Curb	24 ft
(52) Deck Width Out to Out	28.7 ft
(32) Approach Roadway Width (W/Shoulders)	24 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	24.3 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 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	0
(26) Functional Class	7-Rural Major Collector
(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	0-The inventory route is not part of
(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	5-Bridge is not eligible for the NRHP
CONDITION	
(58) Deck	4
(59) Superstructure	5
(60) Substructure	6
(61) Channel & Channel Protection	6
(62) Culverts	N
LOAD RATING AND POSTING	
(31) Design Load	2-M 13.5 / H 15
(63) Operating Rating Method	1
(64) Operating Rating	
Type	1-Load Factor(LF)
Rating	54
(65) Inventory Rating Method	1-Load Factor(LF)
(66) Inventory Rating	
Type	4
Rating	33
(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	2
(69) Clearances, Vertical/Horizontal	N
(71) Waterway Adequacy	8
(72) Approach Roadway Alignment	7
(36) Traffic Safety Features	0111
A) Bridge Railings	0-Inspected feature does not meet cur
B) Transitions	1-Inspected feature meets currently a
C) Approach Guardrail	1-Inspected feature meets currently a
D) Approach Guardrail Ends	1-Inspected feature meets currently a
(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	192 ft
(94) Bridge Improvement Cost	\$ 0
(95) Roadway Improvement Cost	\$ 125
(96) Total Project Cost	\$ 471
(97) Year of Improvement Cost Estimate	2003
(114) Future ADT	3405
(115) Year of Future ADT	2028
INSPECTIONS	
(90) Inspection Date	
(91) Frequency	24 Months
(92) Critical Feature Inspection	Done Freq. (Mon) Date
A: Fracture Critical Detail	No 24
B: Underwater Inspection	No 0
C: Other Special Inspection	Yes 24 202007



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ELEM	DESCRIPTION	UNITS	TOTAL	CS1	CS2	CS3	CS4
12	Reinforced Concrete Deck	SF	4374	201	2808	1365	0
1080	Delamination/Spall/Patched Area	SF	3395	0	2160	1235	0
1090	Exposed Rebar	SF	16	0	0	16	0
1120	Efflorescence/Rust Staining	SF	322	0	208	114	0
1130	Cracking (RC and Other)	SF	440	0	440	0	0
(12)	<p>Driving surface-</p> <p>The driving surface of the deck in span #1 has patched areas in the right gutter line, the rest of span #1 has map cracking. Spans #2,3,4 have patched or delaminated areas for their entirety in the driving surface, some areas have pot holes with exposed rebar. The deck driving surface is 88.4% delaminated or patched area.</p> <p>Undersurface-</p> <p>Span #1- the undersurface of the span has transverse and longitudinal hairline cracks with no efflorescence leaching in bays #1,2,3. The right side of bay #4 has full depth contamination under the right gutter line. Bay #4 has an area of exposed rebar due to punching through with a pavement breaker.</p> <p>Span #2- the undersurface of span #2 has map cracking with full depth contamination with efflorescence leaching at the end of bays #1,2, the full length of bay #3 and almost the full length of bay #4 have contamination with efflorescence leaching. Full depth failures are possible. Transverse hairline cracking exists in all bays. The undersurface has two areas of spalling with exposed rebar. Span #2 bay #4 basketball size spall with steel exposed.</p> <p>Span #3- the undersurface of span #3 has map cracking with full depth contamination and efflorescence leaching in all bays for the full length of the span. Full depth failures are possible.</p> <p>Span #4- the undersurface of bays #1,2,4 all have map cracking with full depth contamination and efflorescence leaching. Bay #3 has map cracking with full depth contamination and efflorescence leaching from mid span to abutment #2. Full depth failures are possible.</p> <p>Deck overhangs have small amounts of spalling some with rebar exposed at all drain areas. Total deck area has 32% patched or delaminated area.</p> <p>The deck step up on the left and right overhangs was subtracted from the deck area and added as r/c railing.</p>						
107	Steel Open Girder/Beam	LF	800	150	425	225	0
1000	Corrosion	LF	650	0	425	225	0
515	Steel Protective Coating	SF	4861	2441	2195	225	0
3440	Effectiveness (Steel Protective Coatings)	SF	2420	0	2195	225	0
(107)	<p>Steel protective coating includes the diaphragms. the web area of the beams at most locations still has an effective paint system. The top and bottom of the bottom flange of all beams have varying degrees of corrosion for the full length of the structure, the top flange is corroded beneath the areas of contamination in the deck. The beam ends over pier #1 have corrosion for 3' on the bottom flange and lower web due to leaking joint seals. The beam ends have corrosion on the bottom flange and lower web area for 2' at piers #2,3.</p>						
205	Reinforced Concrete Column	EA	6	2	3	1	0
1090	Exposed Rebar	EA	1	0	0	1	0



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1130	Cracking (RC and Other)	EA	3	0	3	0	0
(205)	<p>Pier #1 Left Column- has vertical hairline cracking on the downstream face. Right Column- has minor insignificant spalling in the upstream side with a minor delamination near the top on the span #2 side. The right column at pier #1 has an 18" deep local scour pocket.</p> <p>Pier #2 Left Column- No deficiencies noted. Right Column- has vertical hairline cracking on the span #2 side.</p> <p>Pier #3 Left Column- has small areas of exposed rebar with vertical hairline cracking on the downstream face. The footing is exposed at the left column of pier #3, but is cast on solid rock. Right Column- has vertical hairline cracking on the span #3 side. The web wall at pier #3 has a full height vertical hairline crack that extends into the pier cap.</p>						
210	Reinforced Concrete Pier Wall	LF	51	44	7	0	0
1130	Cracking (RC and Other)	LF	7	0	7	0	0
(210)	<p>The pier wall consists of 10' of web wall between the columns. Pier wall #1- no deficiencies noted.</p> <p>Pier wall #2- no deficiencies noted.</p> <p>Pier wall #3- has 7' of hairline vertical and diagonal cracking.</p>						
215	Reinforced Concrete Abutment	LF	66	51	15	0	0
1130	Cracking (RC and Other)	LF	15	0	15	0	0
(215)	<p>Abutment #1- has a 3' horizontal hairline crack in the abutment face in bay #3 and a vertical hairline crack beneath beam #3, with minor insignificant spalling at the top edge.</p> <p>Abutment #2- has 11' of vertical hairline cracking in the back wall and vertical face of the abutment. Abutment #2 has build up on the bridge seat.</p>						
234	Reinforced Concrete Pier Cap	LF	78	17	29	32	0
1080	Delamination/Spall/Patched Area	LF	32	0	0	32	0
1130	Cracking (RC and Other)	LF	29	0	29	0	0
(234)	<p>Pier cap #1 has 14' of horizontal and vertical hairline cracking at the top edge of the cap.</p> <p>Pier cap #2 has a horizontal delamination at the top edge that extends the length of the cap. The cap has build up due to leaking joint seals.</p> <p>Pier cap #3 has 15' of horizontal cracking on the span #4 side. The right side of the cap has map cracking on the underside with patched areas. The left cap end has a large area of honeycombing with a patched area at the extreme left end.</p>						
303	Assembly Joint with Seal	LF	120	0	70	50	0

ELEM	DESCRIPTION	UNITS	TOTAL	CS1	CS2	CS3	CS4
2310 (303)	Leakage	LF	120	0	70	50	0
The assembly joints are leaking at all locations allowing minor build up on the caps and corrosion at the bearings.							
311	Movable Bearing	EA	20	20	0	0	0
515 (311)	Steel Protective Coating	SF	20	20	0	0	0
The moveable bearings at piers #1,2,3 have heavy corrosion with section loss due to leaking joint seals.							
313	Fixed Bearing	EA	20	20	0	0	0
515 (313)	Steel Protective Coating	SF	20	20	0	0	0
The fixed bearings at abutment #1 and #2 have corrosion with section The fixed bearings at piers #1,3 have heavy corrosion with section loss.							
330	Metal Bridge Railing	LF	320	0	320	0	0
1000	Corrosion	LF	320	0	320	0	0
515	Steel Protective Coating	SF	960	0	960	0	0
3440 (330)	Effectiveness (Steel Protective Coatings)	SF	960	0	960	0	0
Right side railing- The metal bridge railing has pin point rusting throughout, with areas of light corrosion on the front side. The entire back side of the railing has a light rust coating.							
Left side railing- The metal bridge railing has pin point rusting throughout, with areas of light corrosion on the front side. The entire back side of the railing has a light rust coating.							
331	Reinforced Concrete Bridge Railing	LF	324	319	3	2	0
1080	Delamination/Spall/Patched Area	LF	2	0	2	0	0
1090	Exposed Rebar	LF	2	0	0	2	0
1130 (331)	Cracking (RC and Other)	LF	1	0	1	0	0
The r/c railing consists of 1' 7" of deck step up on the left and right deck overhangs.							
The underside of the concrete railing has 1' of exposed rebar at the left end of span #3 and the left beginning of span #4. The 4th concrete rail post in span #2 has a spall with no rebar exposed.							
Concrete post #12 on the right side of the structure has a spall with rebar exposed.							
The rail posts along the right side have hairline vertical cracking at random locations.							



Span #4



Abutment #2 joint.



Abutment #1 joint.



Span #3



Bent #1 joint



Span #3 girder #5 typical end of girder corrosion



Bent #3 joint



Bent #3 cap left behind side spalling and delaminated areas.



Bent #2 joint



Span #3 typical spalled patched areas.



Bent #2 column #1 near footing minor drift is causing localized scour.



Span #2 bay #4 basketball size spall with steel exposed.



Upstream



View of span #3 efflorescence.



Span #3 deck undersurface adjacent to girder #1 steel exposed.



Inventory looking North



Deck Span #1



Typical condition state of flaking rust to bearings due to leakage through joints.



Span #2 undersurface.



Deck span #2



Downstream



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Team Lead: Nathan Rowland **Inspection Date:** July 15, 2019

Maintenance Needs



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Team Lead: Nathan Rowland **Inspection Date:** July 15, 2019

Inspection Comments

Structure is logged from South to North, A large extension ladder is needed to access pier caps.

Load posting removed after load rating analysis 8/12/15. per Dennis Vire.

Sufficiency Rating Calculation Accepted by dlw at 2010-07-20 12:48:28 Changed field postings at both ends from, N, N , & 32 T to N, N, & 35 T based on monthly posting verification report dated 2/1/10. DRB, 3/12/10.