STRUCTURE INSPECTION REPORT

Structure # 03719
BITTERROOT RIVER 010 - W MISSOULA

Bridge Inventory Information

Bridge Inspection Date: 06/15/2019

General Location Data	
(22) Owner	02 County Hwy Agency
(6A) Feature Intersected	BITTERROOT RIVER 010
(8) NBI Structure Number	L32101000+01001
(9) Location	W MISSOULA
(MDT058) FHWA Bridge Condition	2 Fair
(MDT076) Deck Condition	2 Candidate for Resurfacing
(MDT077) Structure Condition	2 Candidate for Repair
(SR) Sufficiency Rating	23.4

A- Location Data	
(MDT001) Agency structure name	LB-01 MACLAY BRIDGE
(1) State Code	308
(MDT027) On|Off System	0 Off System
(2) MDT Inspection District	01 MISSOULA
(MDT115) MDT Administrative District	1 Missoula
(MDT116) MDT Financial District	1 Missoula
(MDT020) MDT Maintenance Division	11 MISSOULA
(MDT078) MDT Maintenance Section	none Not a State Maintained Bridge
(3) County Code	063 MISSOULA
(MDT117) Border Bridge - Neighboring County Code	000 NONE
(4) Place Code	00000 Rural Area
(7) Facility Carried by Structure	NORTH AVE W
(21) Maintenance Responsibility	02 County Hwy Agency
(MDT031) Railroad Over/Underpass	0 Not Applicable
(MDT032) Railroad Owner	NA Not Applicable
(MDT014) Interchange Indicator	0 Not an Interchange
(MDT015) Interstate Ramp Indicator	0 Not a Ramp
(MDT114) MPO	Missoula MPO Planning
(112) Nbis Bridge Length	Y Long Enough
(MDT120) Environment	
Bridge within a Reservation Boundary	

STRUCTURE INSPECTION REPORT

Structure # 03719
BITTERROOT RIVER 010 - W MISSOULA

B- Construction Data	
(27) Year Built	1935
(106) Year Reconstructed	1964
(MDT102) Years Rehabilitated	
(MDT019) MDT Original Drawing Number	RECORDSE
(MDT103) MDT Rehab Drawing Numbers	
(MDT097) Plans in SMS?	Y Yes
(MDT098) Shop Drawings in SMS	
(MDT017) MDT Original Construction Project Number	-1
(MDT099) MDT Rehab Project Numbers	
(MDT018) MDT Original Construction Station	+0
(MDT100) MDT Rehab Stations	
(MDT021) MDT UPN	
(MDT101) MDT Rehab UPNs	
(MDT119) Date Bridge Opened|Re-Opened to Traffic	

C- Improvement Cost Data	
(75A) Type of Work Proposed	31 31 Repl-Load Capacity
(75B) Work to be Completed by	1 1 Contract
(76) Length Of Structure Improvement	377.2 ft
(94) Bridge Improvement Cost	481000
(95) Roadway Improvement Cost	240500
(96) Total Project Cost	721500
(97) Year Of Improvement Cost Estimate	2009

D- Border State Data	
(98A-1) Border Bridge-Neighboring State Code	
(98A-2) Border Bridge - Neighboring FHWA Region Code	
(98B) Border Bridge-Percent Responsibility	
(99) Border Bridge Structure Number	

E- Historical Structure Data	
(37) Historical Significance	4 4 Hist sign not determin

F - Bridge Location	
(16) Latitude (DMS)	465111.28

(17) Longitude (DMS)	1140552.44

G - Span and Dimensional Data	
(33) Bridge Median	0 0 No median
(34) Skew (degrees)	0
(35) Structure Flared	0 0 No flare
(42A) Type of Service on Bridge	1 Highway
(48) Length Of Maximum Span	180 ft
(49) Structure Length	345.9 ft
(53) Min Vert Clear Over Bridge Roadway	14.16 ft
(101) Parallel Structure Designation	N No parallel structure exists
(103) Temporary Structure Designation	
(38) Navigation Control	0 No navigation control on waterway (bridge permit not required)
(39) Navigation Vertical Clearance	000 ft
(40) Navigation Horizontal Clearance	0000 ft
(116) Minimum Navigation Vertical Clearance	ft

H - Main Span	
(43A) Main Span Material	3 Steel
(43B) Main Span Design Type	10 Truss - Thru
(45) Number Of Spans In Main Unit	2

I - Approach Span	
(44A) Approach Span Material	5 Prestressed Concrete
(44B) Approach Span Design Type	04 Tee Beam
(46) Number Of Approach Spans	2

J - Deck Data	
(50A) Left Curb|Sidewalk Width	0 ft
(50B) Right Curb|Sidewalk Width	0 ft
(52) Out-to-Out Deck Width	16 ft
(MDT006) Deck Area	5534 Area
(107) Deck Structure Type	6 Corrugated Steel
(108A) Type of Wearing Surface	6 Bituminous
(108B) Type of Membrane	0 None
(108C) Deck Protection	0 None
(MDT104) Bridge Deck Seal	

(MDT105) Polymer Overlay	
(MDT106) Mill and Overlay	
(MDT107) New Bridge Deck	
(MDT108) Experimental Deck	

K - Under Bridge Service	
(42B) Type of Service under	5 Waterway
(54A) Minimum Vertical Underclearance-Reference Feature	N Feature not a highway or railroad
(54B) Minimum Vertical Underclearance	0 ft
(55A) Min Lateral Underclear On Right-Reference Feature	N Feature not a highway or railroad
(55B) Minimum Lateral Underclearance on Right	0 ft
(56) Min Lateral Underclear On Left	0 ft
(111) Pier|abutment Protection	1 Navigation protection not required
(113) Scour Critical Status	7 Countermeasures installed to correct a previously existing probm. with scour. No longer scour crtcl
(69) Underclear, Vertical and Horizontal	N Not applicable

L - Load and Rating Data	
(MDT016) Load Rating Date	01/20/2012
(MDT022) Name of Load Rater	AKJ
(31) Design load - Live load for which the structure was designed	0 Unknown
(66) Inventory Rating	14 ton
(65) Method Used To Determine Inventory Rating	1 Load Factor (LF) reported in tons
(64) Operating Rating	23 ton
(63) Method Used to Determine Operating Rating	1 Load Factor (LF) reported in tons
(70) Legal Load Status	4 0.1-9.9% below
(MDT110) Bridge being Rated by Consultant	Removed from Contract - Internal Follow-up Needed
(MDT112) Completed Rating Model?	
(MDT065) Type 3 Truck Inventory Rating	11 ton
(MDT071) Type 3S2 Truck Inventory Rating	17 ton
(MDT068) Type 3-3 Truck Inventory Rating	22 ton
(MDT036) SU4 Truck Inventory Rating	ton
(MDT039) SU5 Truck Inventory Rating	ton
(MDT045) SU7 Truck Inventory Rating	ton
(MDT042) SU6 Truck Inventory Rating	ton
(MDT091) EV2 Truck Inventory Rating	ton

(MDT092) EV3 Truck Inventory Rating	ton
(MDT066) Type 3 Truck Operating Rating	19 ton
(MDT072) Type 3S2 Truck Operating Rating	29 ton
(MDT069) Type 3-3 Truck Operating Rating	37 ton
(MDT037) SU4 Truck Operating Rating	ton
(MDT040) SU5 Truck Operating Rating	ton
(MDT043) SU6 Truck Operating Rating	ton
(MDT046) SU7 Truck Operating Rating	ton
(MDT093) EV2 Truck Operating Rating	ton
(MDT094) EV3 Truck Operating Rating	ton
(MDT079) Truck Type 3 LRFR Rating	ton
(MDT081) Truck Type 3S2 LRFR Rating	ton
(MDT080) Truck Type 3-3 LRFR Rating	ton
(MDT082) Truck Type SU4 LRFR Rating	ton
(MDT083) Truck Type SU5 LRFR Rating	ton
(MDT084) Truck Type SU6 LRFR Rating	ton
(MDT085) Truck Type SU7 LRFR Rating	ton
(MDT095) Truck Type EV2 LRFR Rating	ton
(MDT096) Truck Type EV3 LRFR Rating	ton
(MDT124) Truck Type 3 Safe Posting Load (tons)	
(MDT125) Truck Type 3S2 Safe Posting Load (tons)	
(MDT126) Truck Type 3-3 Safe Posting Load	
(MDT127) SU4 Safe Posting Load	
(MDT128) SU5 Safe Posting Load	
(MDT129) SU6 Safe Posting Load	
(MDT130) SU7 Safe Posting Load	
(MDT133) Bridge Within Reasonable Access of Interstate	
(MDT131) EV2 Safe Posting Load (ton)	
(MDT132) EV3 Safe Posting Load	

M - General Facility Data	
(5A) Inventory Route-Record Type	1 Route carried `on` the structure
(5C) Designated Level of Service	1 Mainline
(5B) Route Signing Prefix	4 County highway
(5D) Route Number	32101

(5E) Directional Suffix	3 South
(12) Base Highway Network	0 Not on Base Network
(13A) LRS Number	C032101N
(13B) Inventory Route, Subroute Number-Subroute Number	00
(19) Bypass|Detour Length	11 mi
(MDT009) Detour Speed	-1 mi/hr
(104) NHS Indicator	0 Not on the NHS
(MDT030) Posted speed limit (MPH)	35 mi/hr
(MDT035) Road Name	NORTH AVE WEST
(11) Accumulated Miles	0 mi
(MDT087) Decimal Mile Post	.099
(MDT113) Mile Post	0+0.099 mi
(MDT075) Roadway System	
General Roadway Notes	

N - Base Network Data	
(28B) Lanes Under the Structure	0
(32) Approach Roadway Width	20 ft
(51) Bridge Roadway Width Curb-To-Curb	14 ft
(72) Approach Roadway Alignment	3 Intolerable - Correct
(28A) Lanes on the Structure	1

O - Other NetWork Data	
(20) Toll	3 On Free Road
(100) STRAHNET Highway Designation	0 Not a STRAHNET route
(105) Federal Lands Highways	0 Not applicable
(110) National Truck Network	0 Not part of National Truck Network
(MDT048) School Bus Route	1 On School Bus Route

P - Roadway Size and Clearance Data	
(10) Minimum Vertical Clearance	14.16 ft
(47) Total Horizontal Clearance	14 ft
(102) Direction of Traffic	3 One lane bridge for 2-way traffic
(MDT007) Departmental Route	L32101
(MDT002) Both|South|West Direction	0 Both Directions
(MDT003) Both|South|West Vertical Distance	14.167 ft
(MDT051) South|West Horizontal Distance	14.009

(MDT024) North|East Direction	
(MDT026) North|East Vertical Distance	ft
(MDT025) North|East Horizontal Distance	ft

Q - Traffic Data	
(26) Functional Classification	08 Rural, Minor Collector
(MDT060) Traffic Volume Class	04
(29) Average Daily Traffic	3543
(30) Year of Average Daily Traffic	2018
(109) Average Daily Truck Traffic (%)	
(114) Future Average Daily Traffic	3720
(115) Year Of Future Avg Daily Traffic	2038

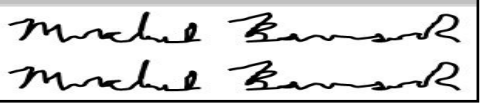
General Bridge Notes

-1type 1\cross section done because (113 is a 7) no other reason- should consider having consultant complete in future when doing there climbing\inspection.

STRUCTURE INSPECTION REPORT

Structure # 03719
W MISSOULA - BITTERROOT RIVER 010

Inspection Information

Responsible Person	Name	Signature
Inspector	Michael Banasiak	
QC	Michael Banasiak	

User	Begin	End	Comments
Michael Banasiak	06-14-2019 09:00 am	06-14-2019 05:00 pm	On-site.

Day	Weather	Temperature	Comments
06-14-2019 09:00 - 05:00	Sunny	90	

R- Inspection	Current Value	Previous Value
(36A) Traffic Safety Features - Bridge Railings	0	0
(36B) Traffic Safety Features - Transitions	0	N
(36C) Traffic Safety Features - Approach guardrail	N	0
(36D) Traffic Safety Features - Approach guardrail Ends	0	0
(41) Structure Open, Posted, or Closed to Traffic	P	P
(58) Deck Rating	5	6
(59) Superstructure	5	6
(60) Substructure	5	5
(MDT061) Type 1 Underwater Inspection Required	Y	
(61) Channel	7	7
(62) Culvert	N	N
(67) Structural Evaluation	4	4
(68) Deck Geometry	2	2
(69) Underclear, Vertical and Horizontal	N	N
(71) Waterway Adequacy	8	8
(MDT076) Deck Condition	2	
(MDT077) Structure Condition	2	
(MDT090) Climbing Inspection Required	Group C	Group B
(MDT118) Type 2 Underwater Consultant		
(MDT121) Functional Needs		
(MDT134) UBIV Frequency (months)		

STRUCTURE INSPECTION REPORT

Structure # 03719
W MISSOULA - BITTERROOT RIVER 010

Inspection Hours and Dates	Current Value	Previous Values
(MDT005) Date Last QA	2000-01-01	
(MDT010) FC Inspection Details	D	
(MDT011) FC Next Inspection Date	2019-6-15	2019-08-08
(MDT016) Load Rating Date	2012-01-20	
(MDT023) Next Inspection Date	2019-6-15	2019-08-08
(MDT028) Other Inspection Details	none	
Other Inspection Next Date		
(MDT034) Request Review of Load rating	1	
(MDT050) UBIV Required	N	
Special Inspection Next Date		
(MDT058) FHWA Bridge Condition	2	2
(MDT061) Type 1 Underwater Inspection Required	Y	
(MDT062) Type 1 Underwater Inspection Date	2019-1-29	
(MDT063) Type 1 Underwater Inspection Frequency (months)	48	
(MDT064) Type 1 Underwater Inspection Next Date	2023-1-29	
(MDT074) Underwater Inspection Details	1	N
Type 2 Underwater Next Inspection Date		
(90) Inspection Date	2019-6-15	2017-08-08
(91) Regular Inspection Frequency (Months)	24	24.00
(92A-1) FC Inspection Required	Y	Y24
(92A-2) FC Inspection Frequency (Months)	24	
(92B-1) Type 2 Underwater Inspection Required	N	N
Type 2 Underwater Inspection Frequency (Months)		
(92C-1a) Other Inspection Required	N	N
Other Inspection Frequency (Months)		
Special Inspection Frequency (months)		
Special Inspection Required		
(93A) FC Inspection Date	2019-6-15	2017-08-08
Special Inspection Date		

General Inspection Notes
Inspection Team: Michael Banasiak, P.E. (TL), Chuck Euwema, P.E., Russel Richard, EIT, Jake Green EIT- Bridge inventoried west to east L0 - L4 - L0' in SPan 1 and L0-L3-L0' in Span 2, Abutment 1, Bent 2, Bent 3, Bent 4, Abutment 5. Stringers labeled north to south 1 - 8.Rope Access Climbing inspection performed by Collins Engineers, Inc. utilizing SPRAT certified climbers.

Rope Access Climbing Bridge Inspection Report

Asset #: 03719

Bridge #: L32101000+01001

District: Missoula

Location: Maclay Truss Bridge over Bitteroot River

Inspected: June 14th, 2019

Prepared for:

MONTANA MDT DEPARTMENT OF TRANSPORTATION

Prepared by:

COLLINS ENGINEERS INC.

455 Sherman St. Ste 160
Denver CO, 80203
303.447.0090 • www.collinseng.com

Table of Contents

1.0 INTRODUCTION

The Maclay Truss Bridge, Asset No. 03719, was inspected June 14th, 2019 by Collins Engineers, Inc. for the Montana Department of Transportation. The point of contact for this inspection at the Maclay Truss Bridge in Missoula County was Charles Horinek at 406-444-6470. This 377 ft long 4 span bridge was originally constructed in 1935 and includes a 180 ft. through truss, a 39 ft. pony truss, and two concrete girder spans. The bridge was stationed from west to east. The main truss panel points were labeled L0 – L4 – L0' and the pony truss panel points were labeled L0 – L3 – L0' both from west to east. The substructure units were labeled Abutment 1, Bents 2-4, and Abutment 5, from west to east. Refer to Photographs in SMS for overall views of the bridge and approaches, and all defects.

The purpose of this fracture critical climbing inspection was to identify the condition and structural deficiencies of the bridge with emphasis on the fracture critical members. Refer to Appendix A for a diagram identifying the fracture critical members on this bridge, as well as bridge nomenclature used for documentation purposes. The inspection consisted of an above water inspection using various rope access climbing techniques to obtain a visual examination of all the structural components of the bridge at a distance no greater than arm's length. Refer to Appendix C for detailed fracture critical inspection procedures.

The inspection team consisted of four members led by an MDT approved fracture critical inspection Team Leader. All team members were certified by the Society of Professional Rope Access Technicians (SPRAT) to safely perform rope access work. The engineer climbers used a two-rope system in accordance with SPRAT guidelines.

2.0 INSPECTION FINDINGS

2.1 Deck

The concrete deck was in fair condition. The one lane bridge carried both eastbound and westbound North Ave W. traffic. Both edges of the bridge deck were lined with guardrails and pedestrian rails.

The asphalt wearing surface covered the deck and exhibited minor wear throughout. Refer to the following table for the location and description of specific wearing surface deficiencies:

Location	Description
Span 1	The end 6 ft. by full bridge width adjacent to the West Approach had a cold patch with minor wear and hairline map cracking.
Span 1	Transverse cracking up to 1/8 in. wide by full width spaced approximately 20 ft. apart at floor beam locations with delamination in asphalt patches.
Span 1	Approximately 1 percent of the wearing surface had been repaired with cold patches that had map cracking up to 1/8 in. wide.
Span 1 at FB3'	Area of longitudinal and transverse cracking above Stringer 3 at FB3' with 90–100 percent section loss and multiple holes in an area measuring 18 in. long by 12 in. wide and associated cracking in the corrugated forms in the area surrounding the holes measuring 30 in. long by 24 in. wide.
Span 1 at FB2'	Area of longitudinal and transverse cracking above Stringer 6 at FB2' with a hole measuring 2 in. in diameter and associated cracking in the corrugated forms extending 1 ft. to the east and west of the hole.
Span 3	Transverse crack up to 1/2 in. wide located above Bent 4.
Span 4	Transverse crack up to 3/4 in. wide located above Abutment 5.

Table 1: Deck and Wearing Surface Specific *Defects*

The underside of the deck was in fair condition. The underside of Spans 1 and 2 consisted of galvanized, corrugated stay-in-place formwork that had welding burn through holes throughout with minor surface corrosion and negligible section loss to the burn hole edges. The welding burn through holes allowed debris to fall through the stay-in-place formwork onto the floor beams. The underside of the deck in Spans 3 and 4 consisted of top flanges of tee beams with isolated areas of efflorescence seeping through the construction joints and superficial cracking, but no notable deficiencies.

Roadway joints were located at Abutment 1 and Bents 2 and 3. The joint over Abutment 1 consisted of 11 ft. long by 30 in. wide metal plate bolted to the bridge deck on the east side of the joint. The joint over Bent 2 was an open joint. The joint over Bent 3 was a compression joint. Refer to the following table for the location and description of specific joint deficiencies:

Location	Description
Bent 2	Joint edge had (2) 3/4 in. bends over a 1 ft. section in the south wheel path.
Bent 3	The rubber seal had failed in 90 percent of its length.
Bent 3	Joint had separated from Span 2 header over a 4 ft. length.
Bent 3	Joint edge had a 1/2 in. bend over a 6 in. length in the south wheel path.

Table 2: Bridge Joint Specific Defects

Expansion joint measurements were taken on the south edges of the deck. All measurements were taken at 85° F. See *Table 3* below for the measurements.

Location	Measurement
Bent 2, South Rail	7/16 in.
Bent 3, South Rail	Fully Compressed

Table 3: Deck Expansion Joint Measurements

2.2 Superstructure

2.2.1 Floor Beams

The painted steel floor beams were in good condition. The floor beams in Spans 1 and 2 were numbered corresponding with the truss panel points. The floor beams were steel rolled beam sections connected to the lower chord by a pinned connection. The floor beams typically exhibited a loss of protective coating on approximately 40 percent of their surface area with minor surface corrosion and no loss of section on the exposed areas, 40 percent of the surface protective coating had failed with exposed primer underneath, and the remaining painted coating was bubbling and peeling. The bottom west flange of Floor Beam 1' on Span 1 exhibited an upwards deflection of 1/2 in. over a 6 in. length approximately 16 in. from the north end.

2.2.2 Stringers

The stringers were typically in poor condition. For documentation purposes, the stringers were numbered 1 through 8 from the north to the south. Approximately 90 percent of the stringers were painted, while other 10 percent were replaced with unpainted steel stringers. Approximately 30 percent of the painted coating on the stringers had failed with moderate corrosion with up to 1/16 in. thick rust scale, 15 percent had failed with exposed primer underneath, and the remaining painted coating was bubbling and peeling. 20 percent of the stringers that were left unpainted and had minor to moderate corrosion with negligible section loss. The stringer ends at Abutment 1, Bent 2, and Bent 3 had debris accumulation on top of the abutment seat and bent caps, and around the ends of the stringer webs and bottom flanges. The inspectors cleaned the debris from around the stringer ends for inspection. Refer to the following table for the locations and descriptions of specific stringer defects.

Span	Bent/FB	Stringer	Defect Description
1	1	2	The stringer web exhibited heavy corrosion and section loss over a 14 in. long by 2 in. high area with a 2.5 in. long by ¾ in. high hole 2 in. from the stringer end.
1	1	5	The stringer web exhibited heavy corrosion and up to 50 percent section loss over a 10 in. long by 1 in. high section adjacent to the stringer end.
1	1	7	The stringer web exhibited heavy corrosion and section loss over a 17 in. long by 2 in. high area with a 1 in. high by 10 in. long hole 10 in. from the stringer end.
1	FB3	5	(2) of 2 bolts were loose at the stringer to floor beam connection.
1	FB3’	1	(2) of 2 bolts were loose at the stringer to floor beam connection.
1	FB1’	8	Stringer 8 from FB2’ to FB1’ was rotated to the north approximately 1 in. at FB1’.
2	2	2	The stringer web exhibited heavy corrosion and section loss with (2) holes; 10 in. long by 1.5 in. high and 6 in. long by 1 in. high centered 16 in. from the stringer end.
2	2	5	The stringer web exhibited a 16 in. long by 2 in. high area of delamination up to ¼ in. thick on the bottom of the on the south face located 12 in. from the end of the stringer.
2	3	All	The hollow pipe on which the stringers were bearing moved up to ¼ in. when vehicles passed over. The south anchor rod for the south pipe was broken and this edge of the pipe exhibited vertical movement up to ½ in.
2	3	2	The stringer web exhibited heavy corrosion with up to 1/8 in. thick rust scale on both sides of the stringer web at the web to lower flange interface adjacent to the stringer end.
2	3	5	The stringer web exhibited heavy corrosion and section loss with a 6 in. long by 1 in. high through hole near the stringer end. The bottom flange was knife edged in this area.

2	3	4,5,7	A gap was noted between the bottom flange and the hollow bearing pipe at Bent 3. Movement of the stringers was observed when traffic passed over this area (gap closed).
2	3	7	The stringer web had heavy corrosion with up to 50 percent section loss over a 10 in. long by 2 in. high area adjacent to the stringer end that had a 1/2 in. diameter hole 6 in. from the stringer end at the web to lower flange interface.
2	3	8	The stringer web exhibited heavy corrosion and section loss with three through holes ranging in size from 1/4 in. to 1/2 in. diameter located at the web to lower flange interface at the stringer end.

Table 4: Stringer Specific Defects

2.2.3 Precast Concrete T-Beams

The concrete T-beams of Spans 3 and 4 were in good condition. The joints between beams in Span 3 exhibited efflorescence with light build up and some light rust staining. No other significant defects were noted.

2.2.4 Bearings

The bearings and bearing assemblies were in fair condition. Roller bearings were located at Abutment 1. Fixed bearings were located at Bent 2. Sliding bearings were located at Bent 3. At the time of the inspection the temperature was 85° F.

The North and South Truss roller bearings at Abutment 1 exhibited a failed painted coating on approximately 25 percent of the surface area with moderate corrosion and pitting up to 1/16 in. to the steel underneath, 10 percent had failed with exposed primer underneath, and the remaining paint was chalking. There was heavy corrosion under the rollers and roller keepers. The roller keepers had split due to heavy corrosion and the nested roller assemblies had failed.

The North Truss roller bearing at Abutment 1 had two rollers along with a portion of the keeper that had worked out from underneath the truss to the west of the bearing and one roller was sticking out from underneath the bearing to the east of the bearing. The anchor rods exhibited up to 25 percent section loss at the concrete interface due to heavy corrosion. The top plate was displaced 1-3/4 in. to the west (in expansion) in relation to the bottom plate.

The South Truss roller bearing keeper at Abutment 1 had broken away from the bearing due to heavy corrosion and was pushed against the abutment backwall. Half of the rollers were still within the bearing but were not fully in contact with the bearing plates. The top plate was displaced 1-1/2 in. to the west (in expansion) in relation to the bottom plate.

The North and South Truss fixed bearings at Bent 2 of both Spans 1 and 2 exhibited a failed painted coating on approximately 5 percent of the surface area with minor surface corrosion and negligible section loss, 10 percent had failed with exposed primer underneath, and the remaining painted coating was chalking.

The North and South Truss sliding bearings at Bent 3 were unpainted and had moderate corrosion with pitting up to 1/16 in. deep. The top plates were displaced 1-1/2 in. at the north bearing and 1-⅞ in. at the south bearing to the east (in expansion) in relation to the upper flanges of the bearings.

2.2.5 Truss

The lower chord typically exhibited approximately 15 percent loss of coating with moderate corrosion and negligible loss of section on the exposed areas, 25 percent had failed with exposed primer underneath, and the remaining painted coating was bubbling and peeling.

The remaining truss members were in fair condition. Approximately 5 percent of the painted coating on truss members had failed with minor surface corrosion and negligible section loss, 5 percent had failed with exposed primer underneath, 5 percent was chalking, and the remaining painted coating was in good condition.

Refer to the following table for locations and descriptions of specific truss member deficiencies:

Member/ Location	Span	Truss	Defect Description
L1-U1	1	North	Exterior flange of vertical was bent 1 in. to the north due to impact damage approximately 5 ft. above the bridge deck.
U2	1	South	(1) loose bolt at upper horizontal strut to top chord connection plate.
U4	1	South	(1) loose and (1) sheared off bolt on horizontal strut to top chord connection plate.
U3’	1	North/South	Lower horizontal sway brace member was bent 2 in. to the east and upward and downward 1 in. due to impact damage.

U2’	1	North	(2) loose bolts at upper horizontal strut connection.
L2’-U2’	2	North	Vertical interior flange bent 1 in. over 6 in. height due to impact damage.
L2’-U1’	2	North	Interior flange bent 1-3/8 in. over 24 in. length due to impact damage.
L2’-U1’	2	South	Diagonal bent 3/4 in. over 12 in. at L4.
U1’	2	North	Exterior gusset plate had (2) misdrilled 3/4 in. diameter holes.
U1’-L0’	2	North	(7) areas of impact damage up to 3/4 in. long and 1/4 in. deflection spaced over 15 in. length.

Table 5: Truss Member Specific Defects

2.3 Substructure

The abutments were in satisfactory condition and constructed of reinforced concrete. Abutment 1 exhibited one full height vertical crack up to 1/8 in. wide in the middle of the abutment. Abutment 1 exhibited rust staining under the truss due to corrosion from the steel members above. Abutment 2 had no notable deficiencies.

Bent 2 exhibited random hairline temperature and shrinkage cracking over its entire surface area. The west elevation had seven areas of delamination up to 60 in. wide by 12 in. high. The east elevation had five areas of delamination up to 15 in. high by 30 in. wide. The edges of the delaminations exhibited spalling up to 1 in. penetration with no exposed reinforcing.

Bent 3 exhibited random hairline map cracking throughout its surface area with minor efflorescence build-up in random, isolated areas. The top, southeast corner of the bent had a 12 in. wide by 10 in. high area of delamination. The northeast corner of the bent exhibited a 5 ft. long horizontal crack up to 1/16 in. wide located near the bottom.

Bent 4 exhibited a 3 ft. wide by 2 ft. high spall with exposed reinforcing steel on the west face of the bent cap. The exposed reinforcing steel had moderate corrosion with negligible section loss.

2.4 Concrete Approach Slabs

The asphalt paved approach roadways were in satisfactory condition. No settlement was noted between either approach and the bridge deck. Refer to the following table for the location and description of approach deficiencies.

Location	Defect Description
West Approach	Sound cold patch measuring 5 ft. long by bridge width with no noted cracking.
West Transition	Full width transverse cracks up to 1/4 in. wide approximately 18 ft. from west transition.

Table 6: Concrete Approach Specific Defects

2.5 Miscellaneous

A 5-1/2 in. high by 8 in. wide reinforced concrete curb lines both sides of Spans 3 and 4. The curb was in poor condition. The north concrete curb on Span 4 exhibited section loss up to 1-1/2 in. on the top and interior faces with no exposed reinforcing steel. The north curb exhibited an area of spalling over Bent 4 measuring 4 ft. long by full width and height with exposed longitudinal and stirrup reinforcing steel. The utility pipe on the north side of the bridge was broken for a 1 ft. length at Floor Beam 4.

The bridge railings in Spans 1 and 2 were 14 in. high and constructed of a 6 in by 6 in. galvanized steel tube. There was a 42 in. high pedestrian rail behind each bridge rail constructed of three steel angles which were attached to the truss verticals with plates. The pedestrian railing exhibited failure of approximately 50 percent of the painted coating with minor surface corrosion and negligible section loss, 20 percent had failed with exposed primer, 10 percent was bubbling and peeling, and the remaining coating was in good condition. The vertical angle on the south rail in Span 1 between Panel Points 4' and 3' was bent 1-1/2 in. over a 2 ft. length due to impact damage. The bottom angle on the north rail in Span 1 at Panel Point 1' was bent 3/4 in. upwards.

The bridge rails in Spans 3 and 4 were constructed of a 6 in. diameter top rail, a 12 in. tall W-beam mid rail and a 5 in. vertical steel plate at the bridge deck. All parts of the railing had a painted coating. Approximately 5 percent of the painted coating exhibited failure with minor surface corrosion and negligible section loss primarily on the vertical steel plate at the bridge deck, 5 percent had failed with exposed primer,

and the remaining painted coating was in good condition. Three vertical members had impact damage that bent the interior flange 3/4 in. over a 6 in. length with gouging on the north rail near the east approach. The top rail was bent downward 1-1/2 in. over a 5 ft. length on the east end of the south rail.

3.0 CONCLUSION

3.1 NBI Ratings

Overall, the Maclay Truss Bridge was in fair condition. This rating is based on the above water condition of the bridge only. The Deck rating changed from 6 to 5 due to full penetration holes in Span 1. Refer to the following table for the NBI ratings based on the completed climbing/routine inspection:

NBI Item	NBI Description	NBI Rating Previous	NBI Rating New
58	Deck	6	5
59	Superstructure	5	5
60	Substructure	5	5
61	Channel	7	7

Table 7: NBI Ratings

This structure was posted for a 11-ton load. For this bridge, SMS list the Type 3 Truck Inventory Rating at 11-ton. As such, NBI Item (41) Structure Open, Posted, or Closed to Traffic should remain coded "P – Posted for Load".

3.2 Recommendations

Based on the current inspection findings, Collins does not recommend review of the load rating.

3.3 Underwater Inspection Recommendations

The NBI rating for substructure is based on the above water condition of the bridge. At the time of inspection, the water depth and current prohibited safe access to Bent 4 due to the spring runoff. Therefore, Collins recommends an underwater Type I inspection be performed, MDT061 Type I Underwater Inspection Required was confirmed as "Y." and item 92B-1 was confirmed as "N".

3.4 Maintenance Recommendations

Maintenance recommendations are detailed in SMS.

The above report summarizes our inspection findings for Bridge 03719 over the Bitteroot River. Per FHWA regulations, fracture critical bridges are to be inspected at intervals not to exceed 24 months. If you have any questions or concerns regarding the content of this report, please do not hesitate to contact me.

Respectfully Submitted,

COLLINS ENGINEERS, INC.

Drew Garceau, P.E., CWI
Project Manager

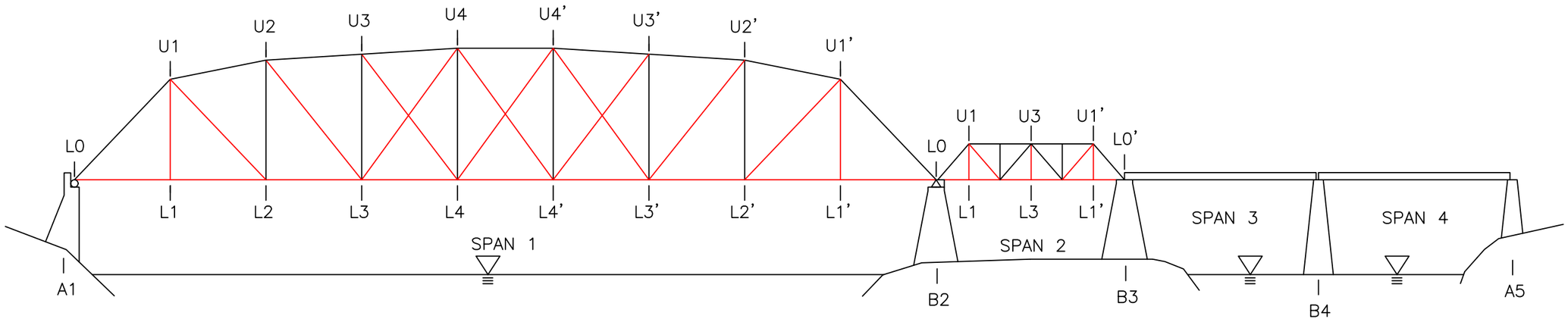
COLLINS ENGINEERS, INC.

Michael Banasiak, P.E., CWI
Team Leader

APPENDIX A – Fracture Critical Member Diagram and Defect Sketches

△ — FIXED BEARING
○ — MOVEABLE BEARING

MEMBERS HIGHLIGHTED IN RED ARE FRACTURE CRITICAL
ALL (10) FLOOR BEAMS ARE ALSO FRACTURE CRITICAL



1 ELEVATION LOOKING NORTH

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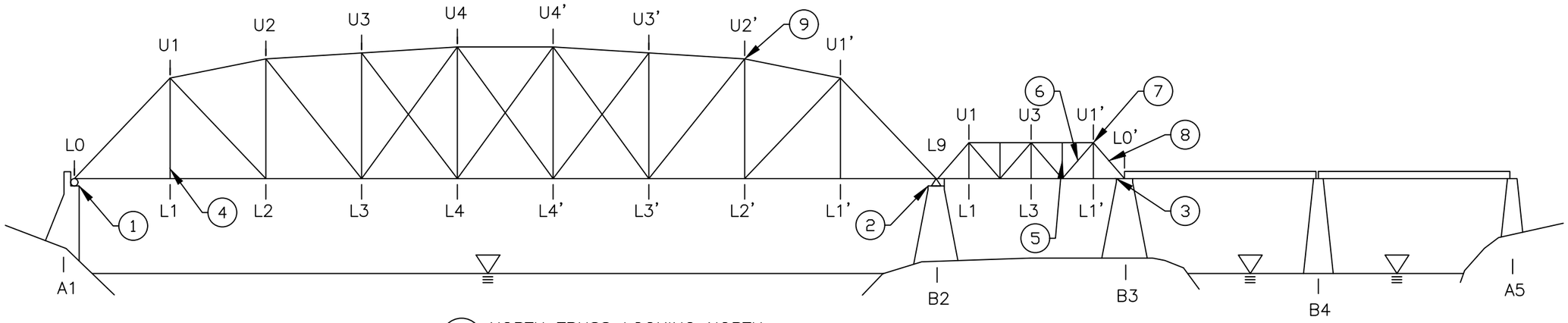
MDT

Fracture Critical Member Diagram
Maclay Bridge
Asset # 03719, Bridge # L32101000+01001
Missoula, MT

CEI PROJECT	11696-25
INSPECTED BY:	MJB
DRAWN BY:	NWW
CHECKED BY:	DRG
DATE:	6-14-2019
SHEET NO:	A-1



2 NORTH TRUSS LOOKING NORTH

GENERAL NOTES:

a. APPROXIMATELY 5 PERCENT OF THE PAINTED COATING HAD FAILED ON THE VERTICALS, UPPER CHORD, AND DIAGONAL MEMBERS WITH MINOR SURFACE CORROSION AND NEGLIGIBLE SECTION LOSS, 5 PERCENT HAD FAILED WITH EXPOSED PRIMER UNDERNEATH, 5 PERCENT WAS CHALKING, AND THE REMAINING PAINTED COATING WAS IN GOOD CONDITION.

b. APPROXIMATELY 15 PERCENT OF THE PAINTED COATING HAD FAILED ON THE LOWER CHORD WITH MODERATE CORROSION WITH NEGLIGIBLE SECTION LOSS, 25 PERCENT HAD FAILED WITH EXPOSED PRIMER UNDERNEATH, AND THE REMAINING PAINTED COATING WAS BUBBLING AND PEELING.

c. APPROXIMATELY 40 PERFECT OF THE PAINTED COATING ON THE BRACING HAD FAILED WITH MINOR SURFACE CORROSION AND NEGLIGIBLE SECTION LOSS, 40 PERCENT HAD FAILED WITH EXPOSED PRIMER UNDERNEATH, AND THE REMAINING PAINTED COATING WAS BUBBLING AND PEELING.

SPECIFIC NOTES:

1. ROLLER BEARING AT ABUTMENT 1 HAD FAILED PAINTED COATING ON APPROXIMATELY 25 PERCENT OF THE SURFACE AREA WITH MODERATE CORROSION AND PITTING UP TO $\frac{1}{16}$ IN. TO THE STEEL UNDERNEATH, 10 PERCENT HAD FAILED WITH EXPOSED PRIMER UNDERNEATH, AND THE REMAINING PAINT WAS CHALKING. HEAVY CORROSION UNDER THE ROLLERS AND ROLLER KEEPER RESULTING IN THE ROLLER KEEPER SPLITTING. THE NESTED ROLLER KEEPER HAD FAILED. TWO OF THE ROLLERS ALONG WITH A PORTION OF THE KEEPER WERE OUT FROM UNDERNEATH THE TRUSS TO THE WEST OF THE BEARING AND ONE ROLLER WAS STICKING OUT FROM UNDERNEATH THE BEARING TO THE EAST. THE ANCHOR RODS HAD UP TO 25 PERCENT SECTION LOSS AT THE CONCRETE INTERFACE DUE TO HEAVY CORROSION. THE TOP PLATE WAS DISPLACED 1.75 IN. TO THE WEST (IN EXPANSION) IN RELATION TO THE BOTTOM PLATE.

SPECIFIC NOTES (CONTINUED)

2. THE NORTH SPAN FIXED BEARINGS HAD A FAILED PAINTED COATING ON APPROXIMATELY 5 PERCENT OF THE SURFACE AREA WITH MINOR SURFACE CORROSION AND NEGLIGIBLE SECTION LOSS, 10 PERCENT HAD FAILED WITH EXPOSED PRIMER UNDERNEATH, AND THE REMAINING PAINTED COATING WAS CHALKING.

3. THE SLIDING BEARINGS AT BENT 3 OF THE NORTH TRUSS WAS UNPAINTED AND HAD MODERATE CORROSION WITH PITTING UP TO $\frac{1}{16}$ IN. DEEP. THE TOP PLATE WAS DISPLACED $1-\frac{1}{2}$ IN. TO THE EAST (IN EXPANSION) IN RELATION TO THE UPPER FLANGE OF THE BEARING.

4. THE EXTERIOR FLANGE OF VERTICAL L1–U1 WAS BENT 1 IN. TO THE NORTH DUE TO IMPACT DAMAGE APPROXIMATELY 5 FT. ABOVE THE BRIDGE DECK.

5. THE INTERIOR FLANGE OF VERTICAL L2'–U2' WAS BENT 1 IN. OVER A 6 IN. HEIGHT DUE TO IMPACT DAMAGE.

6. THE INTERIOR FLANGE OF DIAGONAL L2'–U1' WAS BENT $1-\frac{3}{8}$ IN. OVER A 24 IN. LENGTH DUE TO IMPACT DAMAGE.

7. THE EXTERIOR GUSSET PLATE AT U1'N HAD TWO MISDRILLED $\frac{3}{4}$ IN. DIAMETER HOLES.

8. DIAGONAL U1'–L0' HAD (7) AREAS OF IMPACT DAMAGE UP TO $\frac{3}{4}$ IN. LONG AND $\frac{1}{4}$ IN. OF DEFLECTION SPACED OVER A 15 IN. LENGTH.

9. 2 LOOSE BOLTS AT UPPER HORIZONTAL STRUT CONNECTION U2'N.

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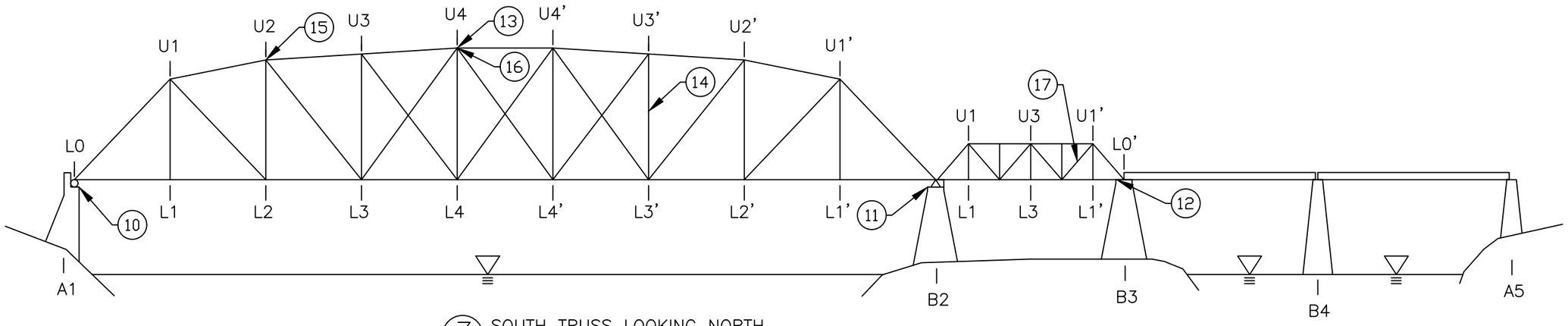
MDT

Defect Sketch
Maclay Bridge
Asset # 03719, Bridge # L3210001000+01001
Missoula, MT

CEI PROJECT 11696-25
INSPECTED BY: MJB
DRAWN BY: NWW
CHECKED BY: DRG
DATE: 6-14-2019
SHEET NO: A-2



3 SOUTH TRUSS LOOKING NORTH

GENERAL NOTES:

a. APPROXIMATELY 5 PERCENT OF THE PAINTED COATING HAD FAILED ON THE VERTICALS, UPPER CHORD, AND DIAGONAL MEMBERS WITH MINOR SURFACE CORROSION AND NEGLIGIBLE SECTION LOSS, 5 PERCENT HAD FAILED WITH EXPOSED PRIMER UNDERNEATH, 5 PERCENT WAS CHALKING, AND THE REMAINING PAINTED COATING WAS IN GOOD CONDITION.

b. APPROXIMATELY 15 PERCENT OF THE PAINTED COATING HAD FAILED ON THE LOWER CHORD WITH MODERATE CORROSION WITH NEGLIGIBLE SECTION LOSS, 25 PERCENT HAD FAILED WITH EXPOSED PRIMER UNDERNEATH, AND THE REMAINING PAINTED COATING WAS BUBBLING AND PEELING.

c. APPROXIMATELY 40 PERFECT OF THE PAINTED COATING ON THE BRACING HAD FAILED WITH MINOR SURFACE CORROSION AND NEGLIGIBLE SECTION LOSS, 40 PERCENT HAD FAILED WITH EXPOSED PRIMER UNDERNEATH, AND THE REMAINING PAINTED COATING WAS BUBBLING AND PEELING.

SPECIFIC NOTES:

10. ROLLER BEARING AT ABUTMENT 1 HAD FAILED PAINTED COATING ON APPROXIMATELY 25 PERCENT OF THE SURFACE AREA WITH MODERATE CORROSION AND PITTING UP TO $\frac{1}{16}$ IN. IN THE STEEL UNDERNEATH, 10 PERCENT HAD FAILED WITH EXPOSED PRIMER UNDERNEATH, AND THE REMAINING PAINT WAS CHALKING. HEAVY CORROSION UNDER THE ROLLERS AND ROLLER KEEPER RESULTING IN THE ROLLER KEEPER SPLITTING. THE NESTED ROLLER KEEPER HAD FAILED. THE ROLLER KEEPER HAD BROKEN AWAY FROM THE BEARING DUE TO HEAVY CORROSION AND WAS PUSHED AGAINST THE ABUTMENT BACKWALL. ONLY HALF OF THE ROLLERS WERE STILL WITHIN THE BEARING BUT NOT FULLY IN CONTACT WITH THE BEARING PLATES. THE TOP PLATE WAS DISPLACED $1-\frac{1}{2}$ IN. TO THE WEST (IN EXPANSION) IN RELATION TO THE BOTTOM PLATE.

SPECIFIC NOTES (CONTINUED)

11. THE SOUTH SPAN FIXED BEARINGS HAD A FAILED PAINTED COATING ON APPROXIMATELY 5 PERCENT OF THE SURFACE AREA WITH MINOR SURFACE CORROSION AND NEGLIGIBLE SECTION LOSS, 10 PERCENT HAD FAILED WITH EXPOSED PRIMER UNDERNEATH, AND THE REMAINING PAINTED COATING WAS CHALKING.

12. THE SLIDING BEARINGS AT BENT 3 OF THE SOUTH TRUSS WAS UNPAINTED WITH MODERATE CORROSION AND PITTING UP TO $\frac{1}{16}$ IN. DEEP. THE TOP PLATE WAS DISPLACED $1-\frac{3}{4}$ IN. TO THE EAST (IN EXPANSION) IN RELATION TO THE UPPER FLANGE OF THE BEARING.

13. ONE BOLT WAS SHEARED OFF AT UPPER HORIZONTAL STRUT TO TOP CHORD U4S CONNECTION PLATE.

14. THE LOWER HORIZONTAL SWAY BRACING AT U3' WAS BENT 2 IN. TO THE EAST, AND UPWARD AND DOWNWARD 1 IN. DUE TO IMPACT DAMAGE.

15. ONE BOLT WAS LOOSE AT UPPER HORIZONTAL STRUT TO TOP CHORD U2S CONNECTION PLATE.

16. ONE BOLT WAS LOOSE AT UPPER HORIZONTAL STRUT TO TOP CHORD U4S CONNECTION PLATE.

17. DIAGONAL L2'–U1' WAS BENT $\frac{3}{4}$ IN. OVER 12 IN. AT L2'.

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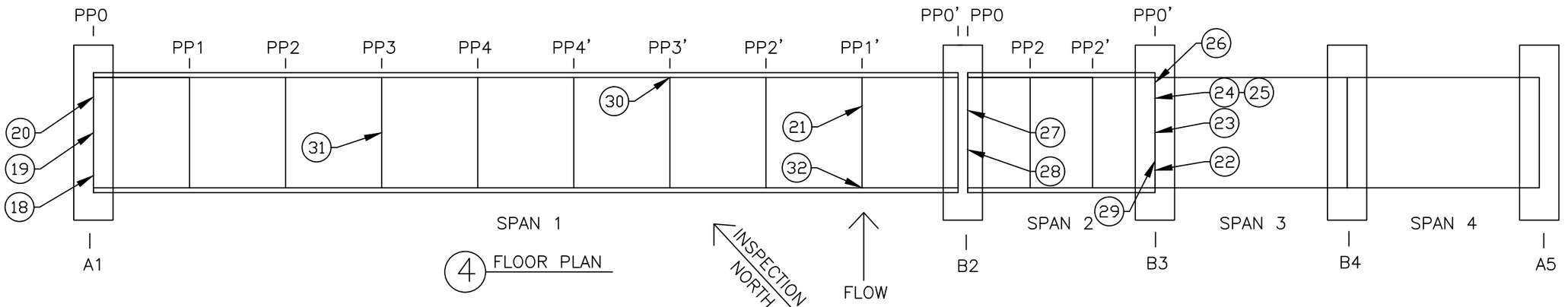
Defect Sketch
Maclay Bridge
Asset # 03719, Bridge # L3210100001000+01001
Missoula, MT

CEI PROJECT	11696-25
INSPECTED BY:	MJB
DRAWN BY:	NWW
CHECKED BY:	DRG
DATE:	6-14-2019
SHEET NO:	A-3



4 FLOOR PLAN

GENERAL NOTES:

a. FLOOR BEAMS EXHIBITED FAILURE OF APPROXIMATELY 40 PERCENT OF THE PAINTED COATING WITH MINOR SURFACE CORROSION AND NEGLIGIBLE SECTION LOSS, 40 PERCENT HAD FAILED WITH EXPOSED PRIMER UNDERNEATH, AND THE REMAINING PAINTED COATING WAS BUBBLING AND PEELING.

b. PAINTED STRINGERS EXHIBITED FAILURE OF APPROXIMATELY 30 PERCENT OF THE PAINTED COATING WITH MODERATE CORROSION WITH UP TO $\frac{1}{16}$ IN. THICK RUST SCALE, 15 PERCENT HAD FAILED WITH EXPOSED PRIMER UNDERNEATH, AND THE REAMING PAINTED COATING WAS BUBBLING AND PEELING. THE 20 PERCENT OF STRINGERS THAT WERE UNPAINTED HAD MINOR TO MODERATE CORROSION WITH NEGLIGIBLE SECTION LOSS.

SPECIFIC NOTES:

(18) STRINGER 7, ABUTMENT 1, HEAVY CORROSION AND SECTION LOSS IN THE WEB 17 IN. LONG BY 2 IN. HIGH WITH A 1 IN. HIGH BY 10 IN. LONG HOLE CENTERED 10 IN. FROM THE STRINGER END.

(19) STRINGER 5, ABUTMENT 1, HEAVY CORROSION AND UP TO 50 PERCENT SECTION LOSS 10 IN. LONG BY 1 IN. HIGH ADJACENT TO TO STRINGER END.

(20) STRINGER 2, ABUTMENT 1, HEAVY CORROSION AND SECTION LOSS IN THE WEB 14 IN. LONG BY 2 IN. HIGH WITH A 2.5 IN. LONG BY $\frac{3}{4}$ IN. HIGH HOLE CENTERED 2 IN. FROM THE STRINGER END.

(21) FB8, SPAN 1, BOTTOM WEST FLANGE BENT UPWARDS $\frac{1}{2}$ IN. OVER A 6 IN. LENGTH APPROXIMATELY 16 IN. FROM THE NORTH END.

(22) STRINGER 8, BENT 3, HEAVY CORROSION AND SECTION LOSS IN THE WEB WITH (3) HOLES RANGING IN SIZE FROM $\frac{1}{4}$ – $\frac{1}{2}$ IN. IN DIAMETER LOCATED AT WEB TO LOWER FLANGE INTERFACE AT THE STRINGER END.

SPECIFIC NOTES:

(23) STRINGER 7, BENT 3, HEAVY CORROSION AND UP TO 50 PERCENT SECTION LOSS 10 IN. LONG BY 2 IN. HIGH ADJACENT TO THE STRINGER END AND HAD A $\frac{1}{2}$ IN. DIAMETER HOLE LOCATED 6 IN. FROM THE STRINGER END.

(24) STRINGER 5, BENT 3, HEAVY CORROSION AND SECTION LOSS IN THE WEB WITH A 6 IN. LONG BY 1 IN. HIGH HOLE NEAR STRINGER END. BOTTOM FLANGE WAS KNIFE–EDGED IN THIS AREA.

(25) STRINGERS 4, 5, AND 7, BENT 3, GAP BETWEEN THE BOTTOM FLANGE AND THE SUPPORTING BEARING SEAT OF THE BENT. MOVEMENT OBSERVED WHEN TRAFFIC PASSED OVER (GAP CLOSED).

(26) STRINGER 2, BENT 3, HEAVY CORROSION AND UP TO $\frac{1}{8}$ IN. THICK RUST SCALE ON BOTH SIDES OF WEB AT WEB TO BOTTOM FLANGE INTERFACE ADJACENT TO STRINGER END.

(27) STRINGER 2, BENT 2 (PONY TRUSS), HEAVY CORROSION AND SECTION LOSS IN WEB WITH (2) HOLES: 10 IN. LONG BY 1.5 IN. HIGH HOLE AND A 6 IN. LONG BY 1 IN. HIGH HOLE CENTERED 16 IN. FROM THE STRINGER END.

(28) STRINGER 5, BENT 2 (PONY TRUSS), 16 IN. LONG BY 2 IN. HIGH AREA OF DELAMINATION UP TO $\frac{1}{4}$ IN. THICK ON BOTTOM OF WEB LOCATED 12 IN. FROM END OF STRINGER ON SOUTH FACE.

(29) BENT 3, SPAN 2, THE HOLLOW STRINGER BEARING PIPE TYPICALLY MOVED UP TO $\frac{1}{4}$ IN. WHEN VEHICLES PASSED OVER. THE SOUTH ANCHOR ROD WAS BROKEN AND THIS END MOVED UP TO $\frac{1}{2}$ IN.

(30) 2 OF 2 BOLTS LOOSE AT STRINGER 1 TO FB6 CONNECTION.

(31) 2 OF 2 BOLTS LOOSE AT STRINGER 5 TO FB3 CONNECTION.

(32) STRINGER 8 FROM FB2' TO FB1' WAS ROTATED APPROXIMATELY 1 IN. TO THE

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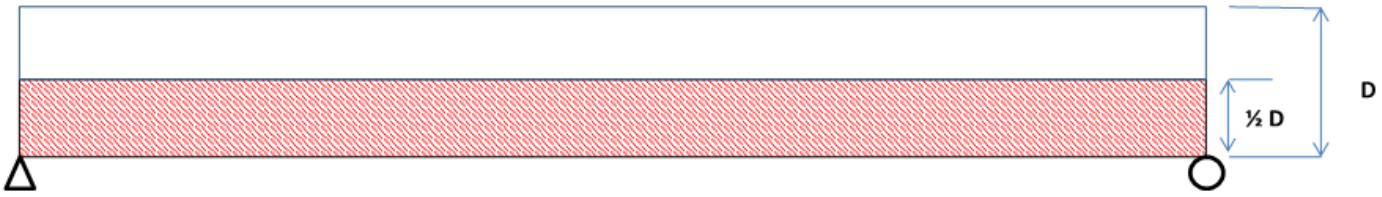
MDT

Defect Sketch
Maclay Bridge
Asset # 03719, Bridge # L32101000+01001
Missoula, MT

CEI PROJECT	11696-25
INSPECTED BY:	MJB
DRAWN BY:	NWW
CHECKED BY:	DRG
DATE:	6-14-2019
SHEET NO:	A-4

Fracture Critical Floor Beam Inspection Plan and Reporting Form

Asset #: **03719** Bridge #: **L32101000+01001**
Feature Intersected: **Bitterroot River** **Inspection Date:** **June 14th, 2019**



Consider the fracture critical portion of the floor beam as the lower half of the beam depth, the portion below the neutral axis that is in tension. Note any defects and label the defect accordingly. Make sure and note that a defect is Near Face (NF), Far Face (FF) or Both Faces (BF). All notations will be recorded looking ahead on line. Use this drawing for trusses or two girders system bridges with solid rolled or built up section floor beams.

Typical Floor Beam Comments: Approximately 40 percent of the painted coating on the floor beams had failed with minor surface corrosion and negligible section loss, 40 percent had failed with exposed primer underneath, and the remaining painted coating was bubbling and peeling.

Span	Panel Point	Inspection Comment	Photos
1	1	Typical Condition	N/A
1	2	Typical Condition	N/A
1	3	Typical Condition	N/A
1	4	Typical Condition	N/A
1	4’	Typical Condition	N/A
1	3’	Typical Condition	N/A
1	2’	Typical Condition	N/A
1	1’	The bottom west flange of FB1’ had bent upwards ½ in. over a 6 in. length approximately 16 in. from the north end.	SMS
2	1	Typical Condition	N/A
2	2	Typical Condition	N/A
2	3	Typical Condition	N/A
2	3’	Typical Condition	N/A
2	2’	Typical Condition	N/A
2	1’	Typical Condition	N/A

APPENDIX B – Photographs

Please refer to SMS Report for all photographs.

APPENDIX C – Fracture Critical Inspection Procedures

FRACTURE CRITICAL (FC) INSPECTION PROCEDURES

1. Fracture Critical (FC) Inspection Procedure
    I. Review the following documents in SMS and discuss any questions with MDT:
        a) FC inspection Procedure
        b) Previous inspection report
        c) Most recent underwater inspection report (if applicable)
        d) Any other Special inspections or Repair items occurring since the most recent fracture critical inspection
    II. Team leader holds a pre-inspection meeting to review procedure with team
    III. Notify MDT contract manager of anticipated inspection schedule
    IV. Once team arrives onsite, team leader reviews safety risks and precautions with team before beginning inspection work
    V. Team members preform inspection roles as directed by team leader and according to FC inspection sequence
    VI. Once inspection of all elements is complete, onsite QC review preformed
    VII. Immediately notify MDT contact of any critical findings

2. Onsite Safety Risks and Precautions
    I. One-lane bridge with decent amount of traffic.

3. Traffic Control Measures Needed
    I. Traffic Control: “Bridge Inspection Crew Ahead” signs to be posted at both approaches.

4. Equipment Needed for Arm’s Length Inspection of FC Members
    I. SPRAT rope access climbing gear including ropes, anchors, ascenders, descenders
    II. Beam clamps to slide floor beams

5. Manpower Needed for Arm’s Length Inspection of FC members
    I. SPRAT certified rope access climbers required (SPRAT II or III on-site Supervisor)
    II. A team of 4 climbers is recommended

6. Staging Areas and Access Locations

   I. Park on the shoulder at the west approach.

7. Notification Required for Any Local Agencies

   I. None required.

8. Fracture Critical Risk Factors to Consider

- ☒ Fatigue and fracture prone details
  - -Forged eye bar heads
- ☐ Problematic materials
- ☐ Poor welding techniques
- ☒ Potential out-of-plane distortion details
  - -Distortion of verticals and sway braces
- ☐ Previous cracking or repairs - retrofits
  - ☐ *Source of Cracking*
- ☐ Cold service temperatures
- ☐ Superstructure condition code of 4 or less
- ☒ Load posted
  - ☐ *Missing or damaged posting signs*
- ☐ Substructure condition code of 4 or less
- ☐ Subject to overloads or impact damage
- ☒ Older service life
- ☐ Debris
- ☐ High ADTT

9. General Inspection Procedure Comments

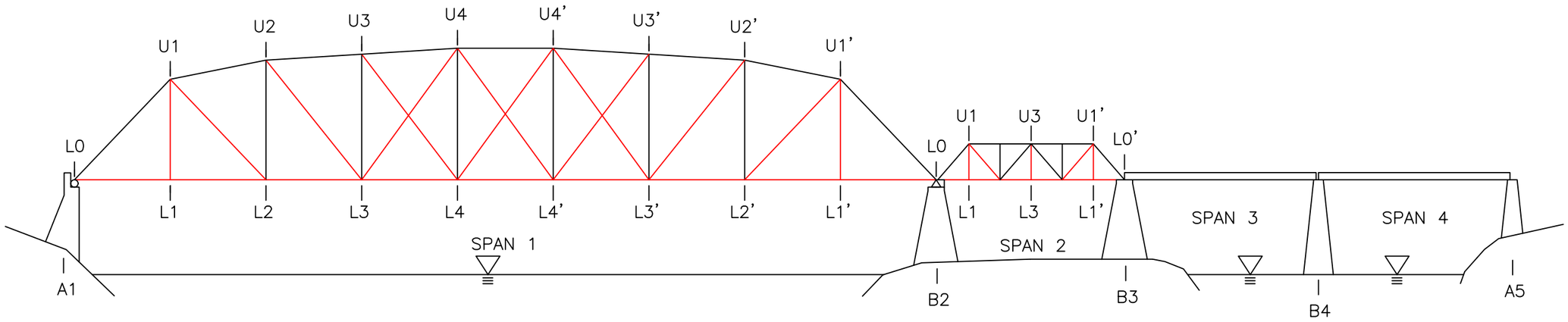
   I. Truss panel points labeled West to East, L0 – L4 – L0' and L0 – L3 – L0'. In order to perform an arm's length inspection, the engineer climbers used a combination of rope access techniques. The engineer climbers used a two rope system in accordance with SPRAT guidelines. Anchors for the ropes were rigged off the upper chord. All of the vertical truss members were either descended or ascended using rope access equipment. An arm's length inspection of the lower chord panel points was obtained by descending below the lower chord connections to examine the underside of the truss and by walking the lower chord with fall protection. The diagonals were inspected using rope-to-rope transfers from one upper panel point to the adjacent lower panel point. The floor beams and stringers were inspected utilizing beam clamps.

10. Sketch of Bridge with Fracture Critical Members Identified in Red
    I. See sketch on the following page

11. MDT Bridge Bureau Contact Info:
    I. Amanda Jackson, P.E. – Bridge Management Engineer – 406-444-9219
    II. Charles Horinek, P.E. – QA Engineer – 406-444-6470
    III. Andy Cullison, P.E. – QA Engineer – 406-444-6264
    IV. Mary Smith, P.E. – QA Engineer – 406-444-7641

△ — FIXED BEARING
○ — MOVEABLE BEARING

MEMBERS HIGHLIGHTED IN RED ARE FRACTURE CRITICAL
ALL (10) FLOOR BEAMS ARE ALSO FRACTURE CRITICAL



1 ELEVATION LOOKING NORTH

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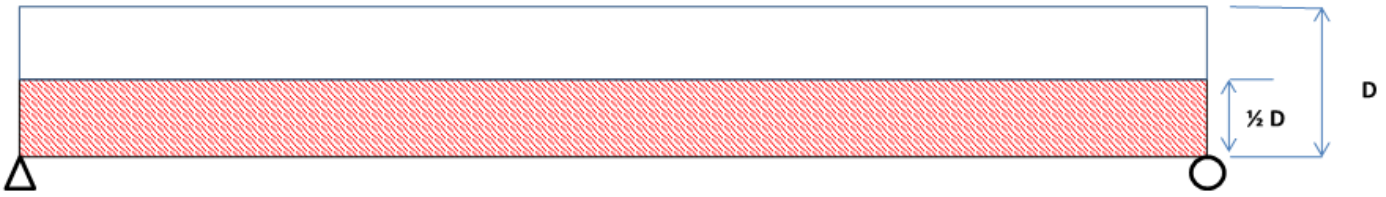
MDT

Fracture Critical Member Diagram
Maclay Bridge
Asset # 03719, Bridge # L32101000+01001
Missoula, MT

CEI PROJECT	11696-25
INSPECTED BY:	MJB
DRAWN BY:	NWW
CHECKED BY:	DRG
DATE:	6-14-2019
SHEET NO:	C-4

Fracture Critical Floor Beam Inspection Plan and Reporting Form

Asset #: **03719** Bridge #: **L32101000+01001**
Feature Intersected: **Bitterroot River** **Inspection Date:** **June 14th, 2019**



Consider the fracture critical portion of the floor beam as the lower half of the beam depth, the portion below the neutral axis that is in tension. Note any defects and label the defect accordingly. Make sure and note that a defect is Near Face (NF), Far Face (FF) or Both Faces (BF). All notations will be recorded looking ahead on line. Use this drawing for trusses or two girders system bridges with solid rolled or built up section floor beams.

Typical Floor Beam Comments:

Span	Panel Point	Inspection Comment	Photos
1	1		
1	2		
1	3		
1	4		
1	4’		
1	3’		
1	2’		
1	1’		
2	1		
2	2		
2	3		
2	3’		
2	2’		
2	1’		

Repair Suggestions:

Repair ID	Date Requested	Type	Status	Priority	Comments
#Error	06-27-2019	Repair suggestion	Open	Low	Repair the delaminated and cracking asphalt patches concentrated above the floor beams.
#Error	06-28-2019	Repair suggestion	Open	High	Both moveable bearings at Abutment 1 should be replaced/reset (see Main Span Moveable Bearing Defects for photos).
#Error	06-27-2019	Repair suggestion	Open	High	Repair the areas of 100% section loss in the asphalt above FB3' and FB2' in the main truss span.
#Error	06-27-2019	Repair suggestion	Open	High	Shim the stringers/bearing tube at Bent 3 to reduce movement when loads pass above (see Span 2 Stringer Settlement Defect for photos).
#Error	06-27-2019	Repair suggestion	Open	High	Replace the seal in the Bent 3 compression joint. (see damage defect for photo)

#Error	06-27-2019	Repair suggestion	Open	High	Replace the broken stringer bearing tube anchor rod at the south end of Bent 3 (see Span 2 Stringer Connection Defect for photo).

General Bridge Photos

Photo #: Elevation, Looking NE Location: , Comments:

Photo #: Upstream Channel, Looking S Location: , Comments:

STRUCTURE INSPECTION REPORT

Structure # 03719
W MISSOULA - BITTERROOT RIVER 010

Photo #: Typical Underside Span 2, Looking E Location: , Comments:	
Photo #: West Approach, Looking E Location: , Comments:	

STRUCTURE INSPECTION REPORT

Structure # 03719
W MISSOULA - BITTERROOT RIVER 010

Photo #: Elevation, Looking S Location: , Comments:	
Photo #: Typical Underside, Looking E Location: , Comments:	

STRUCTURE INSPECTION REPORT

Structure # 03719
W MISSOULA - BITTERROOT RIVER 010

Photo #: East Approach, Looking W Location: , Comments:	
Photo #: Typical Underside of Span 4, Looking W Location: , Comments:	

STRUCTURE INSPECTION REPORT

Structure # 03719
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Photo #: Span 2 Looking N Location: , Comments:	
Photo #: Downstream Channel, Looking N Location: , Comments:	

Element Inspection Data

Element #	Parent Element	Name	Unit	Quantity	%CS 1	%CS 2	%CS 3	%CS 4
16		Reinforced Concrete Top Flange (SF)	Area	1959	100.0	0.0	0.0	0.0
Previous Inspection Notes:								
The concrete tee beam top flange had no notable deficiencies. Condition State 1 : 100								
Current Inspection Notes:								

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STRUCTURE INSPECTION REPORT

Structure # 03719
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Element #	Parent Element	Name	Unit	Quantity	%CS 1	%CS 2	%CS 3	%CS 4
The concrete tee beam top flange had no notable deficiencies.								

STRUCTURE INSPECTION REPORT

Structure # 03719
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Element #	Parent Element	Name	Unit	Quantity	%CS 1	%CS 2	%CS 3	%CS 4
30		Steel Corrugated or Orthotropic Deck (SF) Pony Truss	Area	624	98.0	1.0	1.0	0.0
30		7000 - Damage	Area	2885	0.0	0.0	1.2	0.0
30		1010 - Cracking	Area	2885	0.0	0.0	0.0	0.3
30		1000 - Corrosion	Area	2885	0.0	1.2	0.0	0.0
30		Steel Corrugated or Orthotropic Deck (SF) Thru-Truss	Area	2885	97.7	1.0	1.0	0.3

Previous Inspection Notes:

Approximately 1 percent of the corrugated stay-in-place forms had welding burn through with minor surface corrosion and negligible section loss. Condition State 2 : 1
Approximately 5 percent of the corrugated stay-in-place forms had welding burn through allowing debris to fall through the formwork. Condition State 3 : 1

Previous Inspection Notes:

Approximately 1 percent of the corrugated stay-in-place forms had welding burn through with minor surface corrosion and negligible section loss. Condition State 2 : 1
Approximately 5 percent of the corrugated stay-in-place forms had welding burn through allowing debris to fall through the formwork. Condition State 3 : 1

Current Inspection Notes:

Approximately 5 percent of the corrugated stay-in-place forms had welding burn through allowing debris to fall through the formwork. See photo in Main Span 1 Deck defect for typical view of burn through areas.
Approximately 1 percent of the corrugated stay-in-place forms had welding burn through with minor surface corrosion and negligible section loss.

Current Inspection Notes:

The corrugated deck exhibited an area of longitudinal and transverse cracking above Stringer 3 at FB3' with 90-100% section loss and multiple holes in an area measuring 18 in. long by 12 in. wide and associated cracking in the corrugated forms in the area surrounding the holes measuring 30 in. long by 24 in. wide. (6 SF)
The corrugated deck exhibited an area of longitudinal and transverse cracking above Stringer 6 at FB2' with a hole measuring 2 in. in diameter and associated cracking in the corrugated forms extending 1 ft. to the east and west of the hole. (2 SF)
Approximately 1 percent of the corrugated stay-in-place forms had welding burn through with minor surface corrosion and negligible section loss.
Approximately 5 percent of the corrugated stay-in-place forms had welding burn through allowing debris to fall through the formwork.

STRUCTURE INSPECTION REPORT

Structure # 03719
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Element #	Parent Element	Name	Unit	Quantity	%CS 1	%CS 2	%CS 3	%CS 4

Photo #:Span 1 Hole and cracking in deck west of FB3' above S3

Location:

Comments:

Element:30 - Steel Corrugated or Orthotropic Deck (SF) Thru-Truss

Photo #:Span 1 Hole and cracking in deck west of FB3' above S3

Location:

Comments:

Element:30 - Steel Corrugated or Orthotropic Deck (SF) Thru-Truss

Photo #:Areas of welding burn-through in corrugated deck, Looking Up

Location:

Comments:

Element:30 - Steel Corrugated or Orthotropic Deck (SF) Pony Truss

Photo #:Span 1 Hole and cracking in corrugated steel deck above S6 at FB 2'

Location:

Comments:

Element:30 - Steel Corrugated or Orthotropic Deck (SF) Thru-Truss

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STRUCTURE INSPECTION REPORT

Structure # 03719
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Element #	Parent Element	Name	Unit	Quantity	%CS 1	%CS 2	%CS 3	%CS 4

Photo #:Span 1 Hole and cracking in deck west of FB3' above S3

Location:

Comments:

Element:30 - Steel Corrugated or Orthotropic Deck (SF) Pony Truss

Photo #:Span 1 Hole and cracking in corrugated steel deck above S6 at FB 2'

Location:

Comments:

Element:30 - Steel Corrugated or Orthotropic Deck (SF) Pony Truss

Photo #:Areas of welding burn-through in corrugated deck, Looking Up

Location:

Comments:

Element:30 - Steel Corrugated or Orthotropic Deck (SF) Thru-Truss

STRUCTURE INSPECTION REPORT

Structure # 03719
W MISSOULA - BITTERROOT RIVER 010

Element #	Parent Element	Name	Unit	Quantity	%CS 1	%CS 2	%CS 3	%CS 4
Photo #:Span 1 Hole and cracking in deck west of FB3' above S3 Location: Comments: Element:30 - Steel Corrugated or Orthotropic Deck (SF) Pony Truss								

STRUCTURE INSPECTION REPORT

Structure # 03719
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Element #	Parent Element	Name	Unit	Quantity	%CS 1	%CS 2	%CS 3	%CS 4
110		Reinforced Concrete Open Girder|Beam (LF) Tee Beams - Spans 3 and 4	Length	489	89.8	10.2	0.0	0.0
110		1120 - Efflorescence/Rust Staining	Length	489	0.0	10.2	0.0	0.0

Current Inspection Notes:

The tee beams in Spans 3 and 4 exhibited light efflorescence seeping through the construction joints.

Photo #:Efflorescence leaking through Span 3 Beam joints

Location:

Comments:

Element:110 - Reinforced Concrete Open Girder|Beam (LF) Tee Beams - Spans 3 and 4

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STRUCTURE INSPECTION REPORT

Structure # 03719
W MISSOULA - BITTERROOT RIVER 010

Element #	Parent Element	Name	Unit	Quantity	%CS 1	%CS 2	%CS 3	%CS 4
113		Steel Stringer (LF) Pony Truss	Length	314	0.0	94.6	3.5	1.9
113		4000 - Settlement	Length	1440	0.0	0.0	0.1	0.0
113		1020 - Connection	Length	1440	0.0	0.0	0.1	0.0
113		1000 - Corrosion	Length	1440	0.0	148.9	0.8	0.6
113		Steel Stringer (LF) Thru-Truss	Length	1440	0.0	99.6	0.3	0.1

Previous Inspection Notes:

Unpainted steel stringers had minor to moderate corrosion with negligible section loss. Condition State 2 : 100

Previous Inspection Notes:

Stringers 2, 5, and 7 over Abutment 1 heavy corrosion over the end 2 ft. with areas of through corrosion. See 2017 FC Inspection Report for table of defects. Condition State 3 : .42
The stringers had failed paint along their entire length with minor surface corrosion and negligible section loss. Condition State 2 : 99.58

Previous Inspection Notes:

Stringers 2 and 5 over Bent 2 and Stringers 2, 4, 7, and 8 over Bent 3 had heavy corrosion with areas of through corrosion. See 2017 FC Inspection Report for table of defects. Condition State 3 : 4.46
The unpainted stringer had minor to moderate corrosion with negligible section loss. Condition State 2 : 100
The stringers had failed paint along their entire length with minor surface corrosion and negligible section loss. Condition State 2 : 95.54

Current Inspection Notes:

Unpainted steel stringers had minor to moderate corrosion with negligible section loss.

Current Inspection Notes:

2 of 2 bolts were loose at the Stringer 1 to FB3' connection.
2 of 2 bolts were loose at the Stringer 5 to FB3 connection.
The stringers had failed paint along their entire length with minor surface corrosion and negligible section loss.
CS3/CS4 Stringers 2, 5, and 7 over Abutment 1 heavy corrosion over the end 2 ft. with areas of through corrosion. See 2019 FC Inspection Report for table of measurements. (CS3 - 4 LF, CS4 - 2 LF)

Current Inspection Notes:

The stringers had failed paint along their entire length with minor surface corrosion and negligible section loss.
CS3/CS4 Stringers 2 and 5 over Bent 2 and Stringers 2, 5, 7, and 8 over Bent 3 had heavy corrosion with areas of through corrosion. See 2019 FC Inspection Report for table of measurements. (CS3 - 8 LF, CS4 - 6 LF)
The stringer bearing tube at Bent 3 had a broken anchor rod at the south end.
The unpainted stringer had minor to moderate corrosion with negligible section loss.
Stringers 4, 5, and 7 had gaps between the bottom flange and the stringer bearing tube at Bent 3. When vehicles drove over the bridge, the bearing tube was observed typically moving up to 1/4 in. and up to 1/2 in. at the south end.

STRUCTURE INSPECTION REPORT

Structure # 03719
W MISSOULA - BITTERROOT RIVER 010

Element #	Parent Element	Name	Unit	Quantity	%CS 1	%CS 2	%CS 3	%CS 4

Photo #:Span 2 Stringer 5 Bent 3 corrosion hole

Location:

Comments:

Element:113 - Steel Stringer (LF) Pony Truss

Photo #:Span 2 Stringer 7 Bent 3 gap at bearing tube

Location:

Comments:

Element:113 - Steel Stringer (LF) Thru-Truss

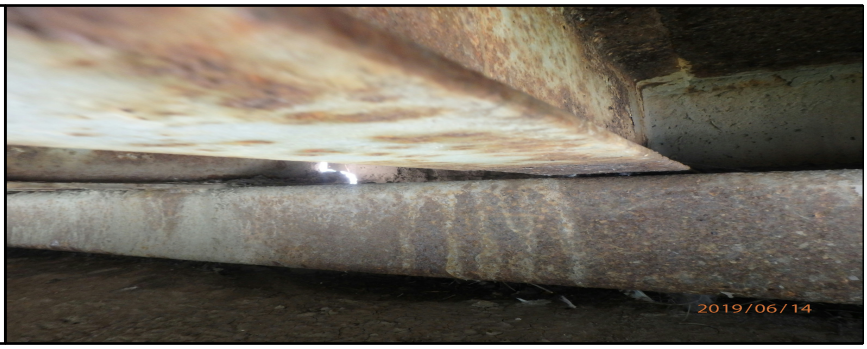

Photo #:Span 2 Stringer 7 Bent 3 delamination and corrosion hole

Location:

Comments:

Element:113 - Steel Stringer (LF) Thru-Truss

Photo #:Span 1 Stringer 7 Abut 1 corrosion hole

Location:

Comments:

Element:113 - Steel Stringer (LF) Thru-Truss

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STRUCTURE INSPECTION REPORT

Structure # 03719
W MISSOULA - BITTERROOT RIVER 010

Element #	Parent Element	Name	Unit	Quantity	%CS 1	%CS 2	%CS 3	%CS 4

Photo #:Span 2 Stringer 7 Bent 3 gap at bearing tube

Location:

Comments:

Element:113 - Steel Stringer (LF) Pony Truss

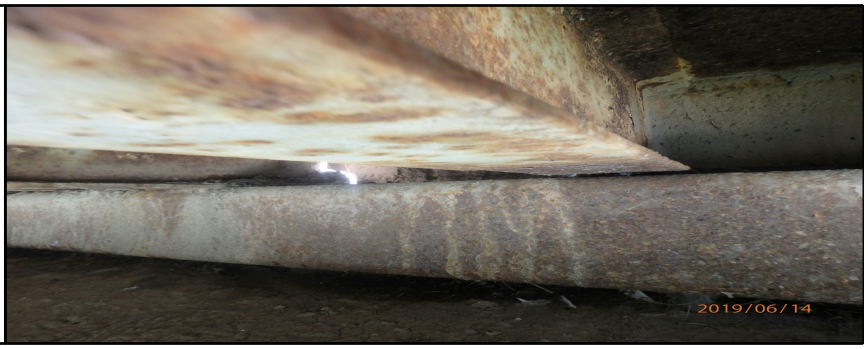

Photo #:Span 2 Stringer 2 Bent 2 hole

Location:

Comments:

Element:113 - Steel Stringer (LF) Pony Truss

Photo #:Span 1 Stringer 2 Abut 1 corrosion hole

Location:

Comments:

Element:113 - Steel Stringer (LF) Pony Truss

STRUCTURE INSPECTION REPORT

Structure # 03719
W MISSOULA - BITTERROOT RIVER 010

Element #	Parent Element	Name	Unit	Quantity	%CS 1	%CS 2	%CS 3	%CS 4

Photo #:Bent 3 stringer bearing tube broken anchor rod

Location:

Comments:

Element:113 - Steel Stringer (LF) Pony Truss

Photo #:Span 1 Stringer 7 Abut 1 corrosion hole

Location:

Comments:

Element:113 - Steel Stringer (LF) Pony Truss

Photo #:Span 1 Loose bolt at S1 to FB3' other loose bolt opposite

Location:

Comments:

Element:113 - Steel Stringer (LF) Thru-Truss

Photo #:Span 2 Stringer 2 Bent 2 hole

Location:

Comments:

Element:113 - Steel Stringer (LF) Thru-Truss

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STRUCTURE INSPECTION REPORT

Structure # 03719
W MISSOULA - BITTERROOT RIVER 010

Element #	Parent Element	Name	Unit	Quantity	%CS 1	%CS 2	%CS 3	%CS 4

Photo #:Span 1 Two loose bolts S5 to FB3 Location: Comments: Element:113 - Steel Stringer (LF) Pony Truss	

Photo #:Span 1 Two loose bolts S5 to FB3 Location: Comments: Element:113 - Steel Stringer (LF) Thru-Truss	

Photo #:Span 2 Stringer 5 Bent 2 corrosion and delamination Location: Comments: Element:113 - Steel Stringer (LF) Thru-Truss	

Element #	Parent Element	Name	Unit	Quantity	%CS 1	%CS 2	%CS 3	%CS 4

Photo #:Bent 3 stringer bearing tube broken anchor rod

Location:

Comments:

Element:113 - Steel Stringer (LF) Thru-Truss

Photo #:Span 1 Stringer 2 Abut 1 corrosion hole

Location:

Comments:

Element:113 - Steel Stringer (LF) Thru-Truss

Photo #:Span 2 Stringer bearing tube, Bent 3

Location:

Comments:

Element:113 - Steel Stringer (LF) Pony Truss

Photo #:Span 1 Stringer 5 Abut 1 delamination

Location:

Comments:

Element:113 - Steel Stringer (LF) Thru-Truss

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STRUCTURE INSPECTION REPORT

Structure # 03719
W MISSOULA - BITTERROOT RIVER 010

Element #	Parent Element	Name	Unit	Quantity	%CS 1	%CS 2	%CS 3	%CS 4

Photo #:Span 2 Stringer 5 Bent 2 corrosion and delamination Location: Comments: Element:113 - Steel Stringer (LF) Thru-Truss	

Photo #:Span 2 Stringer 5 Bent 2 corrosion and delamination Location: Comments: Element:113 - Steel Stringer (LF) Pony Truss	

Photo #:Span 1 Loose bolt at S1 to FB3' other loose bolt opposite Location: Comments: Element:113 - Steel Stringer (LF) Pony Truss	

STRUCTURE INSPECTION REPORT

Structure # 03719
W MISSOULA - BITTERROOT RIVER 010

Element #	Parent Element	Name	Unit	Quantity	%CS 1	%CS 2	%CS 3	%CS 4

Photo #:Span 2 Stringer 5 Bent 3 gap at bearing tube

Location:

Comments:

Element:113 - Steel Stringer (LF) Pony Truss

Photo #:Span 2 Stringer bearing tube, Bent 3

Location:

Comments:

Element:113 - Steel Stringer (LF) Thru-Truss

Photo #:Span 2 Stringer 5 Bent 3 corrosion hole

Location:

Comments:

Element:113 - Steel Stringer (LF) Thru-Truss

Photo #:Span 1 Stringer 5 Abut 1 delamination

Location:

Comments:

Element:113 - Steel Stringer (LF) Pony Truss

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STRUCTURE INSPECTION REPORT

Structure # 03719
W MISSOULA - BITTERROOT RIVER 010

Element #	Parent Element	Name	Unit	Quantity	%CS 1	%CS 2	%CS 3	%CS 4

Photo #:Span 2 Stringer 7 Bent 3 delamination and corrosion hole

Location:

Comments:

Element:113 - Steel Stringer (LF) Pony Truss

Photo #:Span 2 Stringer 5 Bent 3 gap at bearing tube

Location:

Comments:

Element:113 - Steel Stringer (LF) Thru-Truss

Photo #:Span 2 Stringer 5 Bent 2 corrosion and delamination

Location:

Comments:

Element:113 - Steel Stringer (LF) Pony Truss

STRUCTURE INSPECTION REPORT

Structure # 03719
W MISSOULA - BITTERROOT RIVER 010

Element #	Parent Element	Name	Unit	Quantity	%CS 1	%CS 2	%CS 3	%CS 4
120		Steel Truss (LF) Pony Truss	Length	79	0.0	100.0	0.0	0.0
120		7000 - Damage	Length	361	0.0	1.1	0.0	0.0
120		1900 - Distortion	Length	361	0.0	0.8	0.0	0.0
120		1020 - Connection	Length	361	0.0	1.1	0.3	0.0
120		1000 - Corrosion	Length	361	0.0	121.9	0.0	0.0
120		Steel Truss (LF) Thru-Truss	Length	361	0.0	99.7	0.3	0.0

Previous Inspection Notes:

Span 2, North Truss, Gusset Plate U1': the exterior gusset plate had two misdrilled 3/4 in. diameter holes. Condition State 2 : 1.27
The truss members had minor to moderate surface corrosion throught. Condition State 2 : 100
The north truss had three members with minor impact damage on L2'-U2', L2'-U1', L0'-U1'. Condition State 2 : 3.8

Previous Inspection Notes:

Span 1, North Truss, Vertical L1-U1: the exterior flange of the vertical was bent 1 in. to the north due to impact damage approximately 5 ft. above the bridge deck. Condition State 2 : .28
The truss members had minor to moderate surface corrosion throught. Condition State 2 : 100
Span 1, South Truss, Top Chord at U4: one bolt was sheared off on the horizontal brace to top chord connection plate. Condition State 3 : .28

Current Inspection Notes:

Span 2, North Truss, Gusset Plate U1': the exterior gusset plate had two misdrilled 3/4 in. diameter holes.
The north truss had three members with minor impact damage at L2'-U2', L2'-U1', L0'-U1'.
The truss members had minor to moderate surface corrosion throught.
Span 2, South Truss, Lower Chord L1'-L0' was bent 1 in. out of plane at L0'S.
Span 2, South Truss, Diagonal L2'-U1 was bent 3/4 in. out of plane over a 12 in. length at L2'S.

Current Inspection Notes:

(1) bolt was loose at the upper horizontal strut to top connection plate at both U2S and U4S.
(2) bolts were loose at the upper horizontal strut to top connection plate at U2'N.
Span 1, South Truss, Top Chord at U4: one bolt was sheared off on the horizontal brace to top chord connection plate.
Span 1, North Truss, Vertical L1-U1: the exterior flange of the vertical was bent 1 in. to the north due to impact damage approximately 5 ft. above the bridge deck.
The truss members exhibited light surface corrosion throughout.
Span 1, North Truss, Vertical L1-U1: the exterior flange of the vertical was bent 1 in. to the north due to impact damage approximately 5 ft. above the bridge deck.
Span 1, North and South Trusses, Diagonals L4'-U4S and L4-U4'S exhibited an area of wear at their midpoints where they made contact with negligible loss of section.

STRUCTURE INSPECTION REPORT

Structure # 03719
W MISSOULA - BITTERROOT RIVER 010

Element #	Parent Element	Name	Unit	Quantity	%CS 1	%CS 2	%CS 3	%CS 4

Photo #:Wear at intersection of diagonals L4'S-U4S and L4S-U4'S

Location:

Comments:

Element:120 - Steel Truss (LF) Thru-Truss

Photo #:Imp Dam to Diag L2'-U1' N truss Span 2

Location:

Comments:

Element:120 - Steel Truss (LF) Thru-Truss

Photo #:Imp Dam to Diag L2'-U1' N truss Span 2

Location:

Comments:

Element:120 - Steel Truss (LF) Pony Truss

Photo #:Span 2 Misdrilled holes in ext plate at U1'N

Location:

Comments:

Element:120 - Steel Truss (LF) Pony Truss

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STRUCTURE INSPECTION REPORT

Structure # 03719
W MISSOULA - BITTERROOT RIVER 010

Element #	Parent Element	Name	Unit	Quantity	%CS 1	%CS 2	%CS 3	%CS 4

Photo #:Span 1 Distortion to NE Flange of Vert L1-U1N

Location:

Comments:

Element:120 - Steel Truss (LF) Thru-Truss

Photo #:Span 2 Misdrilled holes in ext plate at U1'N

Location:

Comments:

Element:120 - Steel Truss (LF) Thru-Truss

Photo #:Span 1 Sheared Bolt U4S upper horizontal strut

Location:

Comments:

Element:120 - Steel Truss (LF) Pony Truss

Photo #:Span 1 Sheared Bolt U4S upper horizontal strut

Location:

Comments:

Element:120 - Steel Truss (LF) Thru-Truss

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STRUCTURE INSPECTION REPORT

Structure # 03719

W MISSOULA - BITTERROOT RIVER 010

Element #	Parent Element	Name	Unit	Quantity	%CS 1	%CS 2	%CS 3	%CS 4

Photo #:Imp to Int Flange L2'-U2' N Truss Span 2

Location:

Comments:

Element:120 - Steel Truss (LF) Thru-Truss

Photo #:Diagonal L2'-U1' S Truss distortion at U1'S

Location:

Comments:

Element:120 - Steel Truss (LF) Pony Truss

Photo #:Lower Chord L1'-L0'S Span 2 Distortion at L0'S

Location:

Comments:

Element:120 - Steel Truss (LF) Thru-Truss

STRUCTURE INSPECTION REPORT

Structure # 03719
W MISSOULA - BITTERROOT RIVER 010

Element #	Parent Element	Name	Unit	Quantity	%CS 1	%CS 2	%CS 3	%CS 4

Photo #:Imp Dam to End Post U1'-L0' N Truss Span 2

Location:

Comments:

Element:120 - Steel Truss (LF) Pony Truss

Photo #:Wear at intersection of diagonals L4'S-U4S and L4S-U4'S

Location:

Comments:

Element:120 - Steel Truss (LF) Pony Truss

Photo #:Lower Chord L1'-L0'S Span 2 Distortion at L0'S

Location:

Comments:

Element:120 - Steel Truss (LF) Pony Truss

Photo #:Imp to Int Flange L2'-U2' N Truss Span 2

Location:

Comments:

Element:120 - Steel Truss (LF) Pony Truss

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STRUCTURE INSPECTION REPORT

Structure # 03719
W MISSOULA - BITTERROOT RIVER 010

Element #	Parent Element	Name	Unit	Quantity	%CS 1	%CS 2	%CS 3	%CS 4

Photo #:Span 1 Distortion to NE Flange of Vert L1-U1N Location: Comments: Element:120 - Steel Truss (LF) Pony Truss	

Photo #:Diagonal L2'-U1' S Truss distortion at U1'S Location: Comments: Element:120 - Steel Truss (LF) Thru-Truss	

Photo #:Imp Dam to End Post U1'-L0' N Truss Span 2 Location: Comments: Element:120 - Steel Truss (LF) Thru-Truss	

STRUCTURE INSPECTION REPORT

Structure # 03719
W MISSOULA - BITTERROOT RIVER 010

Element #	Parent Element	Name	Unit	Quantity	%CS 1	%CS 2	%CS 3	%CS 4
152		Steel Floor Beam (LF) Pony Truss	Length	33	0.0	100.0	0.0	0.0
152		7000 - Damage	Length	161	0.0	0.6	0.0	0.0
152		1900 - Distortion	Length	161	0.0	0.6	0.0	0.0
152		1000 - Corrosion	Length	161	0.0	120.5	0.0	0.0
152		Steel Floor Beam (LF) Thru-Truss	Length	161	0.0	100.0	0.0	0.0

Previous Inspection Notes:

The floor beams had minor surface corrosion and negligible section loss throughout. Condition State 2 : 100

Previous Inspection Notes:

The bottom west flange of Floor Beam 1’ on Span 1 had bent upwards 1/2 in. over a 6 in. length approximately 16 in. from the north end. Condition State 2 : .62
The floor beams had minor surface corrosion and negligible section loss throughout. Condition State 2 : 100

Current Inspection Notes:

The floor beams had minor surface corrosion and negligible section loss throughout.

Current Inspection Notes:

The floor beams had minor surface corrosion and negligible section loss throughout.
The bottom west flange of Floor Beam 1’ on Span 1 had bent upwards 1/2 in. over a 6 in. length approximately 16 in. from the north end.
The bottom west flange of Floor Beam 1’ on Span 1 had bent upwards 1/2 in. over a 6 in. length approximately 16 in. from the north end.

Photo #:Bottom West Flange FB 1' bent Upward half inch for a length of 6 inches at 16 inches from N. end (SE - Note 4)

Location:

Comments:

Element:152 - Steel Floor Beam (LF) Pony Truss

STRUCTURE INSPECTION REPORT

Structure # 03719
W MISSOULA - BITTERROOT RIVER 010

Element #	Parent Element	Name	Unit	Quantity	%CS 1	%CS 2	%CS 3	%CS 4

Photo #:Typ FB Span 2

Location:

Comments:

Element:152 - Steel Floor Beam (LF)
Pony Truss

Photo #:Bottom West Flange FB 1' bent Upward half inch for a length of 6 inches at 16 inches from N. end (SE - Note 4)

Location:

Comments:

Element:152 - Steel Floor Beam (LF)
Thru-Truss

Photo #:Typ FB Span 2

Location:

Comments:

Element:152 - Steel Floor Beam (LF)
Thru-Truss

STRUCTURE INSPECTION REPORT

Structure # 03719
W MISSOULA - BITTERROOT RIVER 010

Element #	Parent Element	Name	Unit	Quantity	%CS 1	%CS 2	%CS 3	%CS 4
205		Reinforced Concrete Column (EA)	Each	3	100.0	0.0	0.0	0.0

Previous Inspection Notes:

The concrete columns on Bent 4 had no notable deficiencies. Condition State 1 : 100

Current Inspection Notes:

The concrete columns on Bent 4 had no notable deficiencies.

STRUCTURE INSPECTION REPORT

Structure # 03719
W MISSOULA - BITTERROOT RIVER 010

Element #	Parent Element	Name	Unit	Quantity	%CS 1	%CS 2	%CS 3	%CS 4
210		Reinforced Concrete Pier Wall (LF) Bent 2	Length	22	40.9	59.1	0.0	0.0
210		1130 - Cracking (RC and Other)	Length	22	100.0	22.7	0.0	0.0
210		1120 - Efflorescence/Rust Staining	Length	22	0.0	27.3	0.0	0.0
210		1080 - Delamination/Spall/Patched Area	Length	22	0.0	63.6	0.0	0.0
210		Reinforced Concrete Pier Wall (LF) Bent 3	Length	22	45.5	54.5	0.0	0.0

Previous Inspection Notes:

The entire surface of the pier wall had hairline temperature and shrinkage cracks. Condition State 1 : 59.09
The west elevation had seven areas of delaminations up to 60 in. wide by 12 in. high, edges had minor spalling up to 1 in. deep.
The east elevation had five areas of delaminations up to 15 in. wide by 30 in. wide, edges had minor spalling up to 1 in. deep. Condition State 2 : 59.09

Previous Inspection Notes:

A 5 ft. long horizontal crack up to 1/16 in. wide was located near the bottom, northeast corner. Condition State 2 : 22.73
Minor efflorescence build up on noses o fthe pier. Condition State 2 : 27.27
Bent 3 had a 12 in. wide by 10 in. high area of delamination on the top, southeast corner of the bent. Condition State 2 : 4.55

Current Inspection Notes:

The west elevation of Bent 2 had seven areas of delaminations up to 60 in. wide by 12 in. high, edges had minor spalling up to 1 in. deep.
The east elevation of Bent 2 had five areas of delaminations up to 15 in. wide by 30 in. wide, edges had minor spalling up to 1 in. deep.
The entire surface of the pier wall had hairline temperature and shrinkage cracks.

Current Inspection Notes:

Bent 3 had a 5 ft. long horizontal crack up to 1/16 in. wide located near the bottom, northeast corner.
Bent 3 had a 12 in. wide by 10 in. high area of delamination on the top, southeast corner of the bent.
The noses of the pier exhibited light efflorescence.

STRUCTURE INSPECTION REPORT

Structure # 03719
W MISSOULA - BITTERROOT RIVER 010

Element #	Parent Element	Name	Unit	Quantity	%CS 1	%CS 2	%CS 3	%CS 4

Photo #:Bent 2 Delamination on east face

Location:

Comments:

Element:210 - Reinforced Concrete Pier Wall (LF) Bent 2

Photo #:Bent 3 Cracking and efflorescence upstream nose

Location:

Comments:

Element:210 - Reinforced Concrete Pier Wall (LF) Bent 2

Photo #:Bent 2 Delamination on east face

Location:

Comments:

Element:210 - Reinforced Concrete Pier Wall (LF) Bent 3

Photo #:Bent 3 Cracking and efflorescence upstream nose

Location:

Comments:

Element:210 - Reinforced Concrete Pier Wall (LF) Bent 3

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STRUCTURE INSPECTION REPORT

Structure # 03719
W MISSOULA - BITTERROOT RIVER 010

Element #	Parent Element	Name	Unit	Quantity	%CS 1	%CS 2	%CS 3	%CS 4
215		Reinforced Concrete Abutment (LF) A1	Length	66	98.5	1.5	0.0	0.0
215		1130 - Cracking (RC and Other)	Length	66	0.0	1.5	0.0	0.0
215		Reinforced Concrete Abutment (LF) A5	Length	66	100.0	0.0	0.0	0.0

Previous Inspection Notes:

Abutment 1 had one full height, vertical crack up to 1/8 in. wide in the middle of the abutment. Condition State 2 : 1.52

Previous Inspection Notes:

Abutment 5 had no notable deficiencies. Condition State 1 : 34.85

Current Inspection Notes:

Abutment 1 had one full height, vertical crack up to 1/8 in. wide at the midpoint.

Current Inspection Notes:

Abutment 5 had no notable deficiencies.

STRUCTURE INSPECTION REPORT

Structure # 03719
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Element #	Parent Element	Name	Unit	Quantity	%CS 1	%CS 2	%CS 3	%CS 4
234		Reinforced Concrete Cap (LF)	Length	22	86.4	0.0	13.6	0.0
234		1090 - Exposed Rebar	Length	22	0.0	0.0	13.6	0.0
234		1080 - Delamination/Spall/Patched Area	Length	22	0.0	0.0	13.6	0.0
234		Reinforced Concrete Cap (LF) Bent 2	Length	22	100.0	0.0	0.0	0.0

Previous Inspection Notes:

Bent 4 had a 3 ft. wide by 2 ft. high spall with exposed reinforcing steel on the west face of the bent cap. Condition State 3 : 13.64
The exposed reinforcing steel in the spall had moderate corrosion with negligible section loss. Condition State 3 : 13.64

Previous Inspection Notes:

The concrete pier cap on Bent 2 had no notable deficiencies. Condition State 1 : 59.09

Current Inspection Notes:

Bent 4 had a 3 ft. wide by 2 ft. high spall with exposed reinforcing steel on the west face of the bent cap.
The exposed reinforcing steel in the spall had moderate corrosion with negligible section loss.

Current Inspection Notes:

The concrete pier cap on Bent 2 had no notable deficiencies.

Photo #:Bent 4 Spall on west face of cap

Location:

Comments:

Element:234 - Reinforced Concrete Cap (LF)

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STRUCTURE INSPECTION REPORT

Structure # 03719
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Element #	Parent Element	Name	Unit	Quantity	%CS 1	%CS 2	%CS 3	%CS 4
Photo #:Bent 4 Spall on west face of cap Location: Comments: Element:234 - Reinforced Concrete Cap (LF) Bent 2								

STRUCTURE INSPECTION REPORT

Structure # 03719
W MISSOULA - BITTERROOT RIVER 010

Element #	Parent Element	Name	Unit	Quantity	%CS 1	%CS 2	%CS 3	%CS 4
302		Compression Joint (LF)	Length	16	0.0	0.0	100.0	0.0
302		2370 - Metal Deterioration or Damage	Length	16	0.0	0.0	31.3	0.0
302		2330 - Seal Damage	Length	16	0.0	0.0	90.0	0.0

Previous Inspection Notes:

The joint had separated from the Span 2 deck up to 3/4 in. over a 4 ft. length.
The joint had a 1/2 in. bend over a 6 in. length in the south wheel path. Condition State 3 : 31.25
The rubber seal had failed over 90 percent of its length. Condition State 3 : 90

Current Inspection Notes:

The rubber seal had failed over 90 percent of its length.
The joint had separated from the Span 2 deck up to 3/4 in. over a 4 ft. length.
The joint had a 1/2 in. bend over a 6 in. length in the south wheel path.

Photo #:Joint 3 compression joint separation, end bend

Location:

Comments:

Element:302 - Compression Joint (LF)

STRUCTURE INSPECTION REPORT

Structure # 03719
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Element #	Parent Element	Name	Unit	Quantity	%CS 1	%CS 2	%CS 3	%CS 4
311		Movable Bearing (roller, sliding, etc.) (EA)	Each	2	0.0	0.0	100.0	0.0
311		2240 - Loss of Bearing Area	Each	2	0.0	0.0	0.0	100.0
311		1000 - Corrosion	Each	2	0.0	0.0	100.0	100.0
311		Movable Bearing (roller, sliding, etc.) (EA) A1	Each	2	0.0	0.0	0.0	100.0

Previous Inspection Notes:

The Bent 3, Span 2 slider bearings were left unpainted and had moderate corrosion with pitting up to 1/16 in. deep. Condition State 3 : 100

Previous Inspection Notes:

Both bearings on Abutment 1 had heavy corrosion with up to 25 percent section loss to the anchor rods and complete failure of the roller keepers. Condition State 4 : 100
Both movable bearings on Abutment 1 had total loss of bearing due to heavy corrosion which had severed the roller keeps which allowed more than 50 percent of the rollers to displace from underneath the bearing. Condition State 4 : 100

Current Inspection Notes:

The Bent 3, Span 2 slider bearings were left unpainted and had moderate corrosion with pitting up to 1/16 in. deep.

Current Inspection Notes:

Both bearings on Abutment 1 had heavy corrosion with up to 25 percent section loss to the anchor rods and complete failure of the roller keepers.
Both movable bearings on Abutment 1 had total loss of bearing due to heavy corrosion which had severed the roller keeps which allowed more than 50 percent of the rollers to displace from underneath the bearing.

Photo #:Span 1 South moveable bearing rollers slid out

Location:

Comments:

Element:311 - Movable Bearing (roller, sliding, etc.) (EA)

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Element #	Parent Element	Name	Unit	Quantity	%CS 1	%CS 2	%CS 3	%CS 4

Photo #:Span 2 South Truss slider bearing corrosion and minor pitting

Location:

Comments:

Element:311 - Movable Bearing (roller, sliding, etc.) (EA)

Photo #:Span 1 North moveable bearing rollers slid to west

Location:

Comments:

Element:311 - Movable Bearing (roller, sliding, etc.) (EA)

Photo #:Span 2 South Truss slider bearing corrosion and minor pitting

Location:

Comments:

Element:311 - Movable Bearing (roller, sliding, etc.) (EA) A1

Photo #:Span 1 North moveable bearing anchor rod section loss

Location:

Comments:

Element:311 - Movable Bearing (roller, sliding, etc.) (EA) A1

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STRUCTURE INSPECTION REPORT

Structure # 03719
W MISSOULA - BITTERROOT RIVER 010

Element #	Parent Element	Name	Unit	Quantity	%CS 1	%CS 2	%CS 3	%CS 4

Photo #:Span 1 North moveable bearing anchor rod section loss Location: Comments: Element:311 - Movable Bearing (roller, sliding, etc.) (EA)	

Photo #:Span 1 South moveable bearing rollers slid out Location: Comments: Element:311 - Movable Bearing (roller, sliding, etc.) (EA) A1	

Photo #:Span 1 North moveable bearing rollers slid to west Location: Comments: Element:311 - Movable Bearing (roller, sliding, etc.) (EA) A1	

STRUCTURE INSPECTION REPORT

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Element #	Parent Element	Name	Unit	Quantity	%CS 1	%CS 2	%CS 3	%CS 4
313		Fixed Bearing (EA)	Each	2	0.0	100.0	0.0	0.0
313		1000 - Corrosion	Each	2	0.0	200.0	0.0	0.0
313		Fixed Bearing (EA) B2	Each	2	0.0	100.0	0.0	0.0

Previous Inspection Notes:

The Bent 2, Span 1 bearings had failed painted coating and minor surface corrosion with negligible section loss. Condition State 2 : 100

Previous Inspection Notes:

The Bent 2, Span 2 bearings had failed painted coating and minor surface corrosion with negligible section loss. Condition State 2 : 100

Current Inspection Notes:

The Bent 2, Span 2 bearings had failed painted coating and minor surface corrosion with negligible section loss.

Current Inspection Notes:

The Bent 2, Span 2 bearings had failed painted coating and minor surface corrosion with negligible section loss.

STRUCTURE INSPECTION REPORT

Structure # 03719

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Element #	Parent Element	Name	Unit	Quantity	%CS 1	%CS 2	%CS 3	%CS 4
330		Steel Bridge Rail (LF)	Length	79	0.0	100.0	0.0	0.0
330		7000 - Damage	Length	246	0.0	5.7	0.0	0.0
330		1000 - Corrosion	Length	246	0.0	278.9	0.0	0.0

Previous Inspection Notes:

Approximately 5 percent of the painted coating had failed with minor surface corrosion and negligible section loss along the rail length, primarily on the vertical steel plate at the bridge deck. Condition State 2 : 100
Three vertical members had impact damage that bent the interior flange 3/4 in. over a 6 in. length on the North Rail near the East Approach in Span 4.
The top rail was bent downward 1-1/2 in. over a 5 ft. length on the South Rail at the East End of the bridge deck.
The North Curb on Span 4 had section loss up to 1-1/2 in. on the top and interior faces with no exposed reinforcing stee.
The North Curb had section loss up to 5 in. with exposed longitudinal and stirrup reinforcing steel for 4 ft. over Bent 4 Condition State 2 : 4.88
The vertical angle on the South Rail between Panel Point 4' and 3' was bent 1-1/2 in. over a 2 ft. length due to impact damage on Span 1.
The bottom angle on the North Rail at Panel Point 1' was bent 3/4 in. upwards on Span 2. Condition State 2 : .55
The steel rail had failed painted coating with minor surface corrosion and negligible section loss along its entire length. Condition State 2 : 100
The steel rail had failed painted coating with minor surface corrosion and negligible section loss along its entire length, primarily on the vertical steel plate at the bridge deck. Condition State 2 : 100

Current Inspection Notes:

The steel rail had failed painted coating with minor surface corrosion and negligible section loss along its entire length.
Approximately 5 percent of the painted coating had failed with minor surface corrosion and negligible section loss along the rail length, primarily on the vertical steel plate at the bridge deck.
The steel rail had failed painted coating with minor surface corrosion and negligible section loss along its entire length, primarily on the vertical steel plate at the bridge deck.
The vertical angle on the South Rail between Panel Point 4' and 3' was bent 1-1/2 in. over a 2 ft. length due to impact damage.
The bottom angle on the North Rail at Panel Point 1' was bent 3/4 in. upwards.
Three vertical members had impact damage that bent the interior flange 3/4 in. over a 6 in. length on the North Rail near the East Approach in Span 4.
The top rail was bent downward 1-1/2 in. over a 5 ft. length on the South Rail at the East End of the bridge deck.
The North Curb on Span 4 had section loss up to 1-1/2 in. on the top and interior faces with no exposed reinforcing stee.
The North Curb had section loss up to 5 in. with exposed longitudinal and stirrup reinforcing steel for 4 ft. over Bent 4

STRUCTURE INSPECTION REPORT

Structure # 03719
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Element #	Parent Element	Name	Unit	Quantity	%CS 1	%CS 2	%CS 3	%CS 4

Photo #:Span 4 spall north curb near Bent 4

Location:

Comments:

Element:330 - Steel Bridge Rail (LF)

Photo #:Span 4 typical spalling in south curb

Location:

Comments:

Element:330 - Steel Bridge Rail (LF)

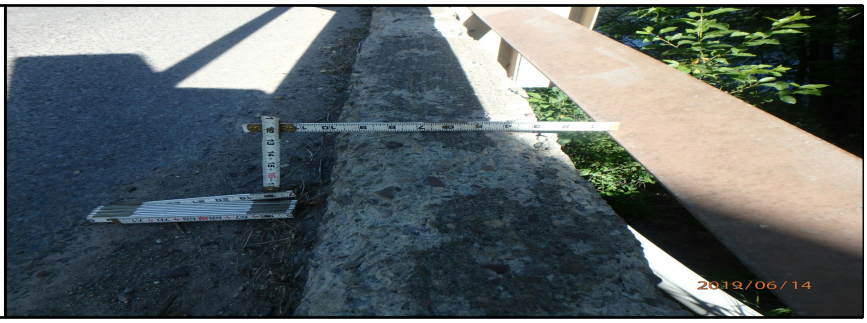

Photo #:Span 1 south rail vertical angle distortion L4'-L3'

Location:

Comments:

Element:330 - Steel Bridge Rail (LF)

Photo #:Span 1 north rail bent angle at L1'

Location:

Comments:

Element:330 - Steel Bridge Rail (LF)

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STRUCTURE INSPECTION REPORT

Structure # 03719
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Element #	Parent Element	Name	Unit	Quantity	%CS 1	%CS 2	%CS 3	%CS 4
510	16	Wearing Surfaces (SF)	Area	1959	0.0	98.4	1.6	0.0
510	30	3220 - Crack (Wearing Surface)	Area	2885	0.0	5.0	0.0	0.0
510	30	3210 - Delamination/Patched Area/Pothole (Wearing Surfaces)	Area	2885	0.0	1.0	1.2	0.1
510	30	1190 - Abrasion/Wear (PSC|RC)	Area	2885	0.0	121.5	0.0	0.0
510	16	3220 - Crack (Wearing Surface)	Area	1959	0.0	0.0	1.6	0.0
510	16	1190 - Abrasion/Wear (PSC|RC)	Area	1959	0.0	98.4	0.0	0.0
510	30	Wearing Surfaces (SF)	Area	624	-362.4	456.1	5.8	0.5

Previous Inspection Notes:

An 18 in. long by 6 in. wide area of the overlay had spalled with penetration up to 1 in. located 6 ft. from the west end of the deck in the south wheel path. Condition State 3 : .07
Transverse cracks up to 1/2 in. wide were located directly over Bent 3 and 4. Condition State 3 : .82
Transverse cracking up to 1/8 in. wide that spanned the entire width of the bridge deck that were spaced approximately 20 ft. at the floor beam locations. Condition State 2 : 5
The bituminous overlay that had minor wear over the entire surface area of the wearing surface. Condition State 2 : 100
The bituminous overlay had minor wear over the entire surface area of the wearing surface. Condition State 2 : 100
Approximately 1 percent of the wearing surface had been repaired with cold patch that was had map cracking up to 1/8 in. wide. Condition State 2 : 1

Current Inspection Notes:

The wearing surface exhibited transverse cracking up to 1/8 in. wide that spanned the entire width of the bridge deck that were spaced approximately 20 ft. at the floor beam locations.
Asphalt patches above the floor beams typically were unsound with mapcracking up to 1/4 in. wide throughout.
The asphalt wearing surface exhibited minor wearing concentrated in the wheel paths.
The asphalt wearing surface exhibited minor wear over its entire surface area.
There were two full penetration holes in the wearing surface above FB3' and FB2' measuring 18 in. x 14 in. and 2 in. in diameter, respectively.
Transverse cracks up to 1/2 in. and 3/4 in. wide were located directly over Bent 4 and Abutment 5, respectively.
Approximately 1 percent of the wearing surface had been repaired with cold patch that exhibited mapcracking up to 1/8 in. wide.
The wearing surface exhibited minor wear over its entire surface area in Spans 3 and 4.

STRUCTURE INSPECTION REPORT

Structure # 03719
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Element #	Parent Element	Name	Unit	Quantity	%CS 1	%CS 2	%CS 3	%CS 4

Photo #:Cracking in Asphalt Patch at W End

Location:

Comments:

Element:510 - Wearing Surfaces (SF)

Photo #:Transverse crack in asphalt above Abut 5

Location:

Comments:

Element:510 - Wearing Surfaces (SF)

Photo #:Cracking in Asphalt patch at FB4

Location:

Comments:

Element:510 - Wearing Surfaces (SF)

Photo #:Transverse crack in asphalt above Bent 4

Location:

Comments:

Element:510 - Wearing Surfaces (SF)

STRUCTURE INSPECTION REPORT

Structure # 03719

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Element #	Parent Element	Name	Unit	Quantity	%CS 1	%CS 2	%CS 3	%CS 4
515	113	Steel Protective Coating (SF)	Area	720	-163.2	55.0	69.4	138.8
515	820	3440 - Effectiveness (Steel Protective Coatings)	Area	500	0.0	0.0	40.0	40.0
515	820	3420 - Peeling/Bubbling/ Cracking (Steel Protective Coatings)	Area	500	0.0	20.0	0.0	0.0
515	330	3440 - Effectiveness (Steel Protective Coatings)	Area	160	0.0	0.0	129.4	300.0
515	330	3420 - Peeling/Bubbling/ Cracking (Steel Protective Coatings)	Area	160	0.0	56.9	0.0	0.0
515	313	3440 - Effectiveness (Steel Protective Coatings)	Area	2	0.0	0.0	20.0	20.0
515	313	3410 - Chalking (Steel Protective Coatings)	Area	2	0.0	160.0	0.0	0.0
515	311	3440 - Effectiveness (Steel Protective Coatings)	Area	2	0.0	0.0	10.0	125.0
515	311	3410 - Chalking (Steel Protective Coatings)	Area	2	0.0	65.0	0.0	0.0
515	30	3440 - Effectiveness (Steel Protective Coatings)	Area	2885	0.0	0.0	0.0	2.1
515	152	3440 - Effectiveness (Steel Protective Coatings)	Area	115	0.0	0.0	269.6	269.6
515	152	3420 - Peeling/Bubbling/ Cracking (Steel Protective Coatings)	Area	115	0.0	134.8	0.0	0.0

STRUCTURE INSPECTION REPORT

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Element #	Parent Element	Name	Unit	Quantity	%CS 1	%CS 2	%CS 3	%CS 4
515	120	3440 - Effectiveness (Steel Protective Coatings)	Area	400	0.0	0.0	352.5	235.0
515	120	3410 - Chalking (Steel Protective Coatings)	Area	400	0.0	1175.0	0.0	0.0
515	113	3440 - Effectiveness (Steel Protective Coatings)	Area	120	0.0	0.0	506.3	1112.5
515	113	3420 - Peeling/Bubbling/ Cracking (Steel Protective Coatings)	Area	120	0.0	1856.3	0.0	0.0
515	120	Steel Protective Coating (SF)	Area	9000	39.3	50.0	0.7	10.0
515	152	Steel Protective Coating (SF)	Area	660	82.5	3.5	7.0	7.0
515	30	Steel Protective Coating (SF)	Area	624	95.0	0.0	0.0	5.0
515	311	Steel Protective Coating (SF)	Area	2	0.0	65.0	10.0	25.0
515	313	Steel Protective Coating (SF)	Area	2	0.0	80.0	10.0	10.0
515	330	Steel Protective Coating (SF)	Area	750	75.0	10.0	4.3	10.7
515	820	Steel Protective Coating (SF)	Area	500	0.0	20.0	40.0	40.0
Previous Inspection Notes:								

STRUCTURE INSPECTION REPORT

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Element #	Parent Element	Name	Unit	Quantity	%CS 1	%CS 2	%CS 3	%CS 4
Element 113 - Steel Stringers: Approximately 30 percent of the painted coating on the stringers had failed with moderate corrosion with up to 1/16 in. thick rust scale. Condition State 4 : 30 The pony truss movable bearings had no protective coating. Condition State 4 : 100 Element 820 - Vertical Cross-Frame: The remaining painted coating was bubbling and peeling. Condition State 2 : 20 Element 820 - Vertical Cross-Frame: Approximately 40 percent of the painted coating had failed with minor surface corrosion and negligible section loss. Condition State 4 : 40 Element 820 - Vertical Cross-Frame: Approximately 40 percent of the painted coating had failed with exposed primer. Condition State 3 : 40 Element 330 - Steel Bridge Rail - Approximately 50 percent of the painted coating had failed on the steel rail with minor surface corrosion and negligible section loss. Condition State 4 : 50 Element 330 - Steel Bridge Rail - Approximately 5 percent of the painted coating had failed on the steel rail with minor surface corrosion and negligible section loss. Condition State 4 : 5 Element 330 - Steel Bridge Rail - Approximately 5 percent of the painted coating had failed on the steel rail with exposed primer underneath. Condition State 3 : 5 Element 330 - Steel Bridge Rail - Approximately 20 percent of the painted coating had failed on the steel rail with exposed primer underneath. Condition State 3 : 20 Element 330 - Steel Bridge Rail - Approximately 10 percent of the painted coating was bubbling and peeling. Condition State 2 : 10 Element 313 - Fixed Bearings: The remaining painted coating was chalking. Condition State 2 : 80 Element 313 - Fixed Bearings: Approximately 10 percent of the painted coating on the fixed bearings had failed with minor surface corrosion and negligible section loss to the steel underneath. Condition State 4 : 10 Element 313 - Fixed Bearings: Approximately 10 percent of the painted coating on the fixed bearings had failed with exposed primer underneath. Condition State 3 : 10 Element 311 - Movable Bearing - The remaining painted coating was chalking. Condition State 2 : 65 Element 311 - Movable Bearing - Approximately 25 percent of the painted coating had failed with moderate to heavy corrosion with advance section loss. Condition State 4 : 25 Element 311 - Movable Bearing - Approximately 10 percent of the painted coating had failed with exposed primer underneath. Condition State 3 : 10 Element 30 - Steel Corrugated Deck - Approximately 5 percent of the corrugated deck had weld burn through with minor surface corrosion and negligible section loss. Condition State 4 : 5 Element 30 - Steel Corrugated Deck - Approximately 1 percent of the corrugated deck had weld burn through with minor surface corrosion and negligible section loss. Condition State 4 : 1 Element 152 - Steel Floor Beams: The remaining painted coating was bubbling and peeling. Condition State 2 : 20 Element 152 - Steel Floor Beams: Approximately 40 percent of the painted coating on the floor beams had failed with minor surface corrosion and negligible section loss. Condition State 4 : 40 Element 152 - Steel Floor Beams: Approximately 40 percent of the painted coating on the floor beams had failed with exposed primer underneath. Condition State 3 : 40 Element 120 - Steel Truss: Approximately 50 percent of the painted coating was chalking. Condition State 2 : 50 Element 120 - Steel Truss: Approximately 15 percent of the painted coating had failed with exposed primer underneath. Condition State 3 : 15 Element 120 - Steel Truss: Approximately 10 percent of the painted coating had failed on the truss members with minor surface corrosion and negligible section loss. Condition State 4 : 10 Element 113 - Steel Stringers: The unpainted steel stringers had no protective coating. Condition State 4 : 100 Element 113 - Steel Stringers: The remaining painted coating was bubbling and peeling on the steel stringers. Condition State 2 : 55 Element 113 - Steel Stringers: Approximately 30 percent of the painted coating on the stringers that were painted had failed with moderate corrosion with up to 1/16 in. thick rust scale. Condition State 4 : 30 Element 113 - Steel Stringers: Approximately 15 percent of the painted coating on the stringers that were painted had failed with exposed primer underneath. Condition State 3 : 15 Element 113 - Steel Stringers: Approximately 15 percent of the painted coating on the stringers had failed with exposed primer underneath. Condition State 3 : 15								

Current Inspection Notes:

Element #	Parent Element	Name	Unit	Quantity	%CS 1	%CS 2	%CS 3	%CS 4

Element 120 - Steel Truss: Approximately 50 percent of the painted coating was chalking.
Element 113 - Steel Stringers: Approximately 15 percent of the painted coating on the stringers that were painted had failed with exposed primer underneath.
Element 820 - Vertical Cross-Frame: The remaining painted coating was bubbling and peeling.
Element 152 - Steel Floor Beams: The remaining painted coating was bubbling and peeling.
Element 113 - Steel Stringers: The unpainted steel stringers had no protective coating.
Element 30 - Steel Corrugated Deck - Approximately 1 percent of the corrugated deck had weld burn through with minor surface corrosion and negligible section loss.
Element 311 - Movable Bearing - Approximately 25 percent of the painted coating had failed with moderate to heavy corrosion with advance section loss.
Element 313 - Fixed Bearings: Approximately 10 percent of the painted coating on the fixed bearings had failed with minor surface corrosion and negligible section loss to the steel underneath.
Element 152 - Steel Floor Beams: Approximately 40 percent of the painted coating on the floor beams had failed with minor surface corrosion and negligible section loss.
Element 113 - Steel Stringers: Approximately 15 percent of the painted coating on the stringers had failed with exposed primer underneath.
Element 330 - Steel Bridge Rail - Approximately 10 percent of the painted coating was bubbling and peeling.
Element 820 - Vertical Cross-Frame: Approximately 40 percent of the painted coating had failed with minor surface corrosion and negligible section loss.
Element 120 - Steel Truss: Approximately 15 percent of the painted coating had failed with exposed primer underneath.
Element 152 - Steel Floor Beams: Approximately 40 percent of the painted coating on the floor beams had failed with exposed primer underneath.
Element 313 - Fixed Bearings: The remaining painted coating was chalking.
Element 113 - Steel Stringers: The remaining painted coating was bubbling and peeling on the steel stringers.
Element 113 - Steel Stringers: Approximately 30 percent of the painted coating on the stringers had failed with moderate corrosion with up to 1/16 in. thick rust scale.
Element 311 - Movable Bearing - Approximately 10 percent of the painted coating had failed with exposed primer underneath.
The pony truss movable bearings had no protective coating.
Element 330 - Steel Bridge Rail - Approximately 5 percent of the painted coating had failed on the steel rail with minor surface corrosion and negligible section loss.
Element 113 - Steel Stringers: Approximately 30 percent of the painted coating on the stringers that were painted had failed with moderate corrosion with up to 1/16 in. thick rust scale.
Element 330 - Steel Bridge Rail - Approximately 50 percent of the painted coating had failed on the steel rail with minor surface corrosion and negligible section loss.
Element 120 - Steel Truss: Approximately 10 percent of the painted coating had failed on the truss members with minor surface corrosion and negligible section loss.
Element 30 - Steel Corrugated Deck - Approximately 5 percent of the corrugated deck had weld burn through with minor surface corrosion and negligible section loss.
Element 330 - Steel Bridge Rail - Approximately 5 percent of the painted coating had failed on the steel rail with exposed primer underneath.
Element 313 - Fixed Bearings: Approximately 10 percent of the painted coating on the fixed bearings had failed with exposed primer underneath.
Element 330 - Steel Bridge Rail - Approximately 20 percent of the painted coating had failed on the steel rail with exposed primer underneath.
Element 820 - Vertical Cross-Frame: Approximately 40 percent of the painted coating had failed with exposed primer.
Element 311 - Movable Bearing - The remaining painted coating was chalking.

STRUCTURE INSPECTION REPORT

Structure # 03719
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Element #	Parent Element	Name	Unit	Quantity	%CS 1	%CS 2	%CS 3	%CS 4
820		Steel Truss Vertical Cross-Frame (LF) Thru-Truss	Length	272	0.0	100.0	0.0	0.0
820		7000 - Damage	Length	272	0.0	0.7	0.0	0.0
820		1900 - Distortion	Length	272	0.0	0.7	0.0	0.0
820		1000 - Corrosion	Length	272	0.0	100.0	0.0	0.0

Previous Inspection Notes:

Panel Point 3': the lower, horizontal bracing member was bent 2 in. to the east and upward and downward 1 in. due to impact damage. Condition State 2 : .74
The vertical cross-frame had failed paint with minor surface corrosion along its entire length. Condition State 2 : 100

Current Inspection Notes:

The vertical cross-frames had failed paint with minor surface corrosion along their entire length.
The lower, horizontal bracing member at U3' was bent 2 in. to the east and upward and downward 1 in. due to impact damage.
The lower, horizontal bracing member at U3' was bent 2 in. to the east and upward and downward 1 in. due to impact damage.

Photo #:Imp Damage to U3' Sway Brace Bottom Member

Location:

Comments:

Element:820 - Steel Truss Vertical Cross-Frame (LF) Thru-Truss

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STRUCTURE INSPECTION REPORT

Structure # 03719
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Element #	Parent Element	Name	Unit	Quantity	%CS 1	%CS 2	%CS 3	%CS 4
950		Steel Approach Guardrail - East Approach	Length	60	0.0	0.0	0.0	0.0

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Element #	Parent Element	Name	Unit	Quantity	%CS 1	%CS 2	%CS 3	%CS 4
960		Steel Approach Guardrail Ends - East Approach	Each	2	0.0	0.0	0.0	0.0

General Inspection Notes	
Previous Inspection Notes	
Current Inspection Notes	