

# STRUCTURE INSPECTION REPORT

Structure # 03719  
BITTERROOT RIVER 010 - W MISSOULA

## Bridge Inventory Information



## Bridge Inspection Date: 06/21/2021

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	1 Candidate for Repair or Replacement
(SR) Sufficiency Rating	27.1

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	
(MDT145) Bridge Inventory Direction	

## STRUCTURE INSPECTION REPORT

Structure # 03719  
BITTERROOT RIVER 010 - W MISSOULA

(MDT146) Bridge within a Reservation Boundary	
---	--

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

# STRUCTURE INSPECTION REPORT

Structure # 03719  
BITTERROOT RIVER 010 - W MISSOULA

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

# STRUCTURE INSPECTION REPORT

Structure # 03719  
BITTERROOT RIVER 010 - W MISSOULA

(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	12/27/2019
(MDT022) Name of Load Rater	Brett Canimore
(31) Design load - Live load for which the structure was designed	0 Unknown
(66) Inventory Rating	15 ton
(65) Method Used To Determine Inventory Rating	1 Load Factor (LF) reported in tons
(64) Operating Rating	25 ton
(63) Method Used to Determine Operating Rating	1 Load Factor (LF) reported in tons
(70) Legal Load Status	0 >39.9% below
(MDT110) Bridge being Rated by Consultant	2018-2021 Term Contract, AECOM, TA #2
(MDT112) Completed Rating Model?	1 BrR
(MDT065) Type 3 Truck Inventory Rating	13 ton
(MDT071) Type 3S2 Truck Inventory Rating	19 ton
(MDT068) Type 3-3 Truck Inventory Rating	24 ton
(MDT036) SU4 Truck Inventory Rating	11 ton
(MDT039) SU5 Truck Inventory Rating	12 ton
(MDT045) SU7 Truck Inventory Rating	14 ton

# STRUCTURE INSPECTION REPORT

Structure # 03719  
BITTERROOT RIVER 010 - W MISSOULA

(MDT042) SU6 Truck Inventory Rating	12 ton
(MDT091) EV2 Truck Inventory Rating	11 ton
(MDT092) EV3 Truck Inventory Rating	12 ton
(MDT066) Type 3 Truck Operating Rating	21 ton
(MDT072) Type 3S2 Truck Operating Rating	31 ton
(MDT069) Type 3-3 Truck Operating Rating	41 ton
(MDT037) SU4 Truck Operating Rating	19 ton
(MDT040) SU5 Truck Operating Rating	20 ton
(MDT043) SU6 Truck Operating Rating	21 ton
(MDT046) SU7 Truck Operating Rating	23 ton
(MDT093) EV2 Truck Operating Rating	19 ton
(MDT094) EV3 Truck Operating Rating	20 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
(MDT148) Load Posting Basis	Unassigned
(MDT133) Bridge Within Reasonable Access of Interstate	N Outside Reasonable Access

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	C032101A
(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

## STRUCTURE INSPECTION REPORT

Structure # 03719  
BITTERROOT RIVER 010 - W MISSOULA

(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

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

Q - Traffic Data	
(26) Functional Classification	08 Rural, Minor Collector
(MDT060) Traffic Volume Class	04
(29) Average Daily Traffic	3315
(30) Year of Average Daily Traffic	2020
(109) Average Daily Truck Traffic (%)	
(114) Future Average Daily Traffic	3481
(115) Year Of Future Avg Daily Traffic	2040

## **STRUCTURE INSPECTION REPORT**

**Structure # 03719**  
**BITTERROOT RIVER 010 - W MISSOULA**

### **General Bridge Notes**

Bridge labeled west to east, Abutment 1, Bents 2-5, and Abutment 5. Truss panel points labeled L0-L4-L0' (Span 1) and L0-L3-L0' (Span 2). Stringers labeled north to south, 1-8.10-19-2021: after phone conversation with County about concerns at bent 1 in the stringer section loss, data updated: stingers 2, 4 (new) and 7 have 100% section loss for between 8-12 inches from the end of the stringer aol, between 4-6 inches of solid stringer rest on the cap ahead of the section loss. will increase cs 4 in for defect 1000-element 113. New total quantity 6lf, no other stinger section loss was seen during data update inspection Kurt Maart mdt.

# STRUCTURE INSPECTION REPORT

Structure # 03719  
W MISSOULA - BITTERROOT RIVER 010

## Inspection Information

Responsible Person	Name	Signature
Inspector	Michael Banasiak	
QC	Drew Garceau	

User	Begin	End	Comments
Brandon Willis	06-21-2021 08:30 am	06-21-2021 05:00 pm	On-site. Bri Sievenpiper also on-site.
Samantha Marks	06-21-2021 08:30 am	06-21-2021 05:00 pm	On-site.
Michael Banasiak	06-21-2021 08:30 am	06-21-2021 05:00 pm	On-site.

Day	Weather	Temperature	Comments
06-21-2021 08:30 - 05:00	Sunny	80	

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	4
(59) Superstructure	5	5
(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	1	
(MDT090) Climbing Inspection Required	Group B	Group C
(MDT118) Type 2 Underwater Consultant		
(MDT121) Functional Needs		

# STRUCTURE INSPECTION REPORT

Structure # 03719  
W MISSOULA - BITTERROOT RIVER 010

(MDT134) UBIV Frequency (months)		
(MDT135) Posting Sign Type	Single Weight Limit (R12-1)	
(MDT136) Line 1 Number of Axles Posting		
(MDT137) Line 1 GVW Posting		
(MDT138) Line 2 Number of Axles Posting		
(MDT139) Line 2 GVW Posting		
(MDT140) Line 3 Number of Axles Posting		
(MDT141) Line 3 GVW Posting		
(MDT142) EV Single Axle Posting		
(MDT143) EV Tandem Axle Posting		
(MDT144) EV Gross Weight Posting		

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	2021-06-14	2019-08-08
(MDT016) Load Rating Date	2019-12-27	2012-01-20
(MDT023) Next Inspection Date	2021-6-14	2021-06-14
(MDT028) Other Inspection Details	none	
Other Inspection Next Date		
(MDT034) Request Review of Load rating	5	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	2021-6-21	2019-06-14
(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

## STRUCTURE INSPECTION REPORT

Structure # 03719

W MISSOULA - BITTERROOT RIVER 010

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	2021-6-21	2019-06-14
Special Inspection Date		

### General Inspection Notes

Inspection Team: Michael Banasiak, P.E. (TL), Brandon Willis, P.E., Samantha Marks, E.I.T., and Bri Sievenpiper, E.I.T. No NBI Ratings changed. Rope access inspection performed by Collins Engineers, Inc. Unable to acquire accurate sounding data due to high flow, cross-sections to be taken during next Type-1 underwater inspection. 10-19-2021: after phone conversation with County about concerns at bent 1 in the stringer section loss, data updated: stringers 2, 4 (new) and 7 have 100% section loss for between 8-12 inches from the end of the stringer aol, between 4-6 inches of solid stringer rest on the cap ahead of the section loss. Will increase cs 4 in for defect 1000-element 113. Kurt Maart Mdt

# STRUCTURE INSPECTION REPORT

Structure # 03719

W MISSOULA - BITTERROOT RIVER 010

Repair Suggestions:					
Repair ID	Date Requested	Type	Status	Priority	Comments
#Error	08-09-2021	Repair suggestion	Open	High	Replace the broken stringer bearing tube and anchor rod at the south end of Bent 3 (see Span 2 Stringer Connection Defect for photos).
#Error	08-09-2021	Repair suggestion	Open	Low	Replace the seal in the Bent 3 compression joint (see Compression Joint Seal Damage Defect for photos).
#Error	08-09-2021	Repair suggestion	Open	Low	Both moveable bearings at Abutment 1 should be replaced/reset (see Main Span Moveable Bearing Defects for photos).
#Error	08-09-2021	Repair suggestion	Open	High	Shim the stringers/bearing tube at Abutment 1 and Bent 3 to reduce movement when loads pass above (see Span 2 Stringer Settlement Defect for photos).

# STRUCTURE INSPECTION REPORT

Structure # 03719

W MISSOULA - BITTERROOT RIVER 010

#Error	09-03-2021	Repair suggestion	Open	High	Shim the end of Stringer 5 at Abutment 1 to reduce vertical movement under load. See video uploaded to Inspection Documents.
--------	------------	-------------------	------	------	--

## General Bridge Photos

**Photo #:**Underside of Spans 3 and 4, Looking NW Location: ,  
Comments:



**Photo #:**Underside of Span 1, Looking E Location: ,  
Comments:



## STRUCTURE INSPECTION REPORT

Structure # 03719

W MISSOULA - BITTERROOT RIVER 010

**Photo #:** Span 3 Typical  
Underside, Looking West  
Location: , Comments:



**Photo #:** Typ. Underside Span 4,  
Looking West Location: ,  
Comments:



## STRUCTURE INSPECTION REPORT

Structure # 03719

W MISSOULA - BITTERROOT RIVER 010

**Photo #:** Roadway, Looking W  
**Location:** , **Comments:**



**Photo #:** West Load Posting,  
Looking E **Location:** , **Comments:**



## STRUCTURE INSPECTION REPORT

Structure # 03719

W MISSOULA - BITTERROOT RIVER 010

**Photo #:**Downstream Channel,  
Looking N Location: ,  
Comments:



**Photo #:**Elevation, Looking S  
Location: , Comments:



## STRUCTURE INSPECTION REPORT

Structure # 03719

W MISSOULA - BITTERROOT RIVER 010

**Photo #:** Typical Underside Span  
2, Looking W Location: ,  
Comments:



**Photo #:** Roadway, Looking E  
Location: , Comments:



## STRUCTURE INSPECTION REPORT

Structure # 03719

W MISSOULA - BITTERROOT RIVER 010

**Photo #:**East Load Posting,  
Looking W Location: ,  
Comments:



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



# STRUCTURE INSPECTION REPORT

Structure # 03719

W MISSOULA - BITTERROOT RIVER 010

**Photo #:**Upstream Channel,  
**Looking S 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:

Spans 3 and 4: The concrete tee beam top flange 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
30		Steel Corrugated or Orthotropic Deck (SF)	Area	624	95.0	0.0	5.0	0.0
30		7000 - Damage	Area	2885	0.0	0.0	6.1	0.0
30		1010 - Cracking	Area	2885	0.3	0.0	0.0	0.0
30		1000 - Corrosion	Area	2885	0.0	6.1	0.0	0.0

## 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  
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) Condition State 4 : .28  
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  
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. Condition State 3 : 1

## Current Inspection Notes:

Span 2: There were areas of surface corrosion on the underside of the deck, concentrated at the welding burn through holes. (Overlaps with CS3 Damage defect.)  
Span 1: There were areas of surface corrosion on the underside of the deck, concentrated at the welding burn through holes. (Overlaps with CS3 Damage defect.)  
Span 2: Approximately 5% of the underside of the corrugated metal deck exhibited welding burn holes.  
Span 1: Previously noted areas of cracking and through holes in the corrugated deck located at Floor Beam 2' and Floor Beam 3' have been patched.  
Span 1: Approximately 5 percent of the underside of the corrugated metal deck exhibited welding burn holes. See Span 2 - Pony Truss - CS3 Damage defect for typical photo.

Photo #:Span 1 Corrugated Deck Repair at FB3', Looking SE

Location:

Comments:


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



# STRUCTURE INSPECTION REPORT

Structure # 03719

W MISSOULA - BITTERROOT RIVER 010

Element #	Parent Element	Name	Unit	Quantity	%CS 1	%CS 2	%CS 3	%CS 4
<p>Photo #:Span 2 Typical Perforations in Corrugated Deck, Looking E</p> <p>Location:</p> <p>Comments:</p> <p>Element:30 - Steel Corrugated or Orthotropic Deck (SF)</p>								

<p>Photo #:Underside of Span 1, Looking E</p> <p>Location:</p> <p>Comments:</p> <p>Element:30 - Steel Corrugated or Orthotropic Deck (SF)</p>								
---	--	--	---	--	--	--	--	--

## STRUCTURE INSPECTION REPORT

Structure # 03719

W MISSOULA - BITTERROOT RIVER 010

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

### Previous Inspection Notes:

The tee beams in Spans 3 and 4 exhibited light efflorescence seeping through the construction joints. Condition State 2 : 10.22

### Current Inspection Notes:

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

Photo #:Span 3 Efflorescence through Joints of Tee Beams, Looking N

Location:

Comments:

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



# 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	75.8	16.6	5.1	2.5
113		1020 - Connection	Length	1440	0.0	0.0	0.8	0.0
113		1000 - Corrosion	Length	1440	0.0	147.0	2.6	0.8
113		Steel Stringer (LF) Thru-Truss	Length	1440	0.0	97.3	2.3	0.4

## Previous Inspection Notes:

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

## Previous 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. Condition State 3 :  
The stringers had failed paint along their entire length with minor surface corrosion and negligible section loss.  
Condition State 2 : 99.58  
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) Condition State 4 : .14  
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) Condition State 3 : .28

## Previous Inspection Notes:

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) Condition State 3 : 2.55  
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 : 94.59  
The stringer bearing tube at Bent 3 had a broken anchor rod at the south end. Condition State 3 : .32  
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. Condition State 3 : .64  
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) Condition State 4 : 1.91

## Current Inspection Notes:

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

## Current Inspection Notes:

# STRUCTURE INSPECTION REPORT

Structure # 03719

W MISSOULA - BITTERROOT RIVER 010

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

Span 1: (2) of 2 loose bolts at Floor Beam 3' to Stringer 1 and Floor Beam 3 to Stringer 6 connections. (2 LF CS3)  
 Span 1: There was a 1/4 in. gap at Stringer 5 between its bottom flange and the Abutment 1 beam seat, and the stringer deflected under live load. See video of movement uploaded to Inspection Documents. (1 LF CS3)  
 Span 1: Stringers 4, 5, and 6 over Abutment 1 exhibited delamination up to 1/8 in. thick on the webs and flanges extending from the west end for up to 1/2 the span length. (30 LF CS3)  
 Span 1: The stringers had failed paint along their entire length with minor surface corrosion.  
 Span 1: Stringers 2 and 7 at Abutment 1 exhibited heavy corrosion in the webs with through holes at the bearing locations. See 2021 Fracture Critical Inspection Report, Table 3, for specific locations and extents. (4 LF CS4)  
 10-19-2021: after phone conversation with County about concerns at bent 1 in the stringer section loss, data updated: stingers 2, 4 (new) and 7 have 100% section loss for between 8-12 inches from the end of the stringer aol, between 4-6 inches of solid stringer rest on the cap ahead of the section loss. will increase cs 4 in for defect 1000-element 113. New total quantity 6lf, no other stinger section loss was seen durring data update inspection Kurt Maart mdt.

## Current Inspection Notes:

Span 2: The stringers had failed paint along their entire length with minor surface corrosion.  
 Span 2: The east anchor rod at Stringer 4 at the west anchor rod at Stringer 8, which secure the hollow bearing tube to Bent 3, were sheared. The west anchor rod at Stringer 3 exhibited up to 50% loss of section. The hollow tube moved up to 1/2 in. under live load. Stringers 4, 5, 7 and 8 had gaps between the bottom flange and the stringer bearing tube at Bent 3. See video of movement uploaded to Inspection Documents. (8 LF CS3)  
 Span 2: Stringer 2 at Bent 2 and Stringers 5, 7, and 8 at Bent 3 exhibited heavy corrosion in the webs with through holes at the bearing locations. See 2021 Fracture Critical Inspection Report, Table 3, for specific locations and extents. (8 LF CS4)  
 Span 2 Stringers 2, 4, and 5 at Bent 2 and Stringer 3 at Bent 3 exhibited delamination up to 1/4 in. thick on the webs at the bearing locations. See 2021 Fracture Critical Inspection Report, Table 3, for specific locations and extents. (8 LF CS3)  
 The unpainted stringers exhibited minor to moderate corrosion with negligible section loss.

Photo #:Span 2 Bent 3 Broken Bearing Tube Anchor Rod at Stringer 8, Looking SE

Location:

Comments:

Element:113 - Steel Stringer (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 #:Span 1 Stringer 7 at Abutment 1 Corrosion, Looking SW  Location:  Comments:  Element:113 - Steel Stringer (LF) Pony Truss								

Photo #:Span 2 Stringer 2 at Bent 2 Corrosion, Looking SW  Location:  Comments:  Element:113 - Steel Stringer (LF) Pony Truss								
--	--	--	---	--	--	--	--	--


Photo #:Span 2 Stringer 5 at Bent 4 Section Loss, Looking NE  Location:  Comments:  Element:113 - Steel Stringer (LF) Pony Truss								
---	--	--	--	--	--	--	--	--

Photo #:Span 1 Floorbeam 3 Stringer 6 Loose Bolts, Looking W  Location:  Comments:  Element:113 - Steel Stringer (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 #:Span 2 Stringer 3 at Bent 3  
Corrosion, Looking SE

Location:

Comments:

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



Photo #:Span 1 Floorbeam 3 Stringer 6  
Loose Bolts, Looking W

Location:

Comments:

Element:113 - Steel Stringer (LF) Pony  
Truss



Photo #:Span 2 Stringer 7 at Bent 3  
Section Loss, Looking SE

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
<p>Photo #:Span 2 Bent 3 Broken Bearing Tube Anchor Rod Near Stringer 4, Looking NE</p> <p>Location:</p> <p>Comments:</p> <p>Element:113 - Steel Stringer (LF) Thru-Truss</p>								

<p>Photo #:Span 2 Stringer 2 at Bent 2 Corrosion, Looking SW</p> <p>Location:</p> <p>Comments:</p> <p>Element:113 - Steel Stringer (LF) Thru-Truss</p>								
--	--	--	---	--	--	--	--	--

<p>Photo #:Span 2 Stringer 4 at Bent 2 Corrosion, Looking SW</p> <p>Location:</p> <p>Comments:</p> <p>Element:113 - Steel Stringer (LF) Thru-Truss</p>								
--	--	--	--	--	--	--	--	--

# STRUCTURE INSPECTION REPORT

Structure # 03719  
W MISSOULA - BITTERROOT RIVER 010


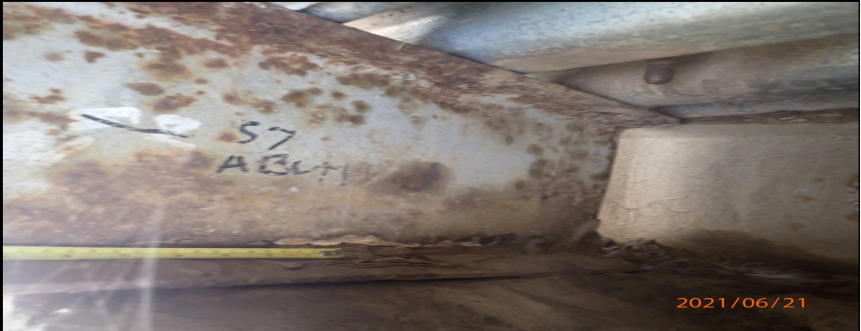
Element #	Parent Element	Name	Unit	Quantity	%CS 1	%CS 2	%CS 3	%CS 4
Photo #:Span 2 Stringer 5 at Bent 2 Corrosion, Looking NW  Location:  Comments:  Element:113 - Steel Stringer (LF) Thru-Truss								

Photo #:Span 2 Stringer 2 at Bent 2 Corrosion, Looking NW  Location:  Comments:  Element:113 - Steel Stringer (LF) Thru-Truss								
--	--	--	---	--	--	--	--	--

Photo #:Span 1 Stringer 2 at Abutment 1 Corrosion, Looking SW (2)  Location:  Comments:  Element:113 - Steel Stringer (LF) Thru-Truss								
--	--	--	--	--	--	--	--	--

Photo #:Span 1 Stringer 7 at Abutment 1 Corrosion, Looking SW  Location:  Comments:  Element:113 - Steel Stringer (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 #:Span 2 Bent 3 Broken Bearing Tube Anchor Rod at Stringer 8, Looking SE

Location:

Comments:

Element:113 - Steel Stringer (LF) Pony Truss



Photo #:Span 2 Stringer 3 at Bent 3 Corrosion, Looking SE

Location:

Comments:

Element:113 - Steel Stringer (LF) Pony Truss



Photo #:Span 1 Stringer 2 at Abutment 1 Corrosion, Looking SW (2)

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 1 Stringer 6 at Abutment 1 Corrosion, Looking SE  Location:  Comments:  Element:113 - Steel Stringer (LF) Thru-Truss								

Photo #:Span 1 Stringer 5 at Abutment 1 Corrosion, Looking NE  Location:  Comments:  Element:113 - Steel Stringer (LF) Thru-Truss								
--	--	--	---	--	--	--	--	--

Photo #:Span 2 Stringer 2 at Bent 2 Corrosion, Looking NW  Location:  Comments:  Element:113 - Steel Stringer (LF) Pony Truss								
--	--	--	--	--	--	--	--	--

Photo #:#03719_Data_Up_ (5)  Location: Bent 1 stringer #4  Comments: 100% section loss from end of stringer to 4-6 inches of the cap face.  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 7 at Bent 3  
Section Loss, Looking SE

Location:

Comments:

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



Photo #:#03719\_Data\_Up\_ (5)

Location: Bent 1 stringer #4

Comments: 100% section loss from end of  
dstringer to 4-6 inches of the cap face.

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



Photo #:Span 1 Stringer 6 at Abutment 1  
Corrosion, Looking SE

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
<p>Photo #:Span 2 Bent 3 Broken Bearing Tube Anchor Rod Near Stringer 4, Looking NE</p> <p>Location:</p> <p>Comments:</p> <p>Element:113 - Steel Stringer (LF) Pony Truss</p>								

<p>Photo #:Span 1 Stringer 4 at Abutment 1 Corrosion, Looking NE</p> <p>Location:</p> <p>Comments:</p> <p>Element:113 - Steel Stringer (LF) Thru-Truss</p>								
--	--	--	---	--	--	--	--	--

<p>Photo #:Span 1 Stringer 5 at Abutment 1 Corrosion, Looking NE</p> <p>Location:</p> <p>Comments:</p> <p>Element:113 - Steel Stringer (LF) Pony Truss</p>								
--	--	--	--	--	--	--	--	--

# 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 4 at Bent 2 Corrosion, Looking SW  Location:  Comments:  Element:113 - Steel Stringer (LF) Pony Truss								

Photo #:Span 2 Stringer 8 at Bent 3 Section Loss, Looking SE  Location:  Comments:  Element:113 - Steel Stringer (LF) Pony Truss								
---	--	--	---	--	--	--	--	--

Photo #:Span 2 Stringer 8 at Bent 3 Section Loss, Looking SE  Location:  Comments:  Element:113 - Steel Stringer (LF) Thru-Truss								
---	--	--	--	--	--	--	--	--

Photo #:Span 2 Stringer 5 at Bent 4 Section Loss, Looking NE  Location:  Comments:  Element:113 - Steel Stringer (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 #:Span 2 Stringer 5 at Bent 2  
Corrosion, Looking NW

Location:

Comments:

Element:113 - Steel Stringer (LF) Pony  
Truss



Photo #:Span 1 Stringer 4 at Abutment 1  
Corrosion, Looking NE

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	69.6	30.4	0.0
120		7000 - Damage	Length	361	0.0	2.5	0.0	0.0
120		1900 - Distortion	Length	361	0.0	1.9	0.0	0.0
120		1020 - Connection	Length	361	0.0	1.1	0.3	0.0
120		1000 - Corrosion	Length	361	0.0	121.1	7.2	0.0
120		Steel Truss (LF) Thru-Truss	Length	361	0.0	99.2	0.8	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 through. Condition State 2 : 100

The north truss had three members with minor impact damage at L2'-U2', L2'-U1', L0'-U1'. Condition State 2 : 3.8

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. Condition State 2 : 2.53

## Previous 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. Condition State 2 : .83

The truss members exhibited light surface corrosion throughout. 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

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

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. Condition State 2 : .28

## Current Inspection Notes:

Span 2: Panel Points L2N, L2'N, L2S, and L2'S exhibited pack rust up to 3/4 in. thick between the lower strut angles of the outboard sway brace frames and pack rust up to 1/4 in. thick between the lower chord and both the inboard and outboard gusset plates. (16 LF CS3)

Span 2: Both the north and south trusses exhibited random areas of delamination up to 1/8 in. deep along the inboard channel of the lower chord. (8 LF CS3)

Span 2: The truss had four members with minor impact damage at U1'-L0'N, L2'U1'N, L2'-U2'N, and L2'-U1'S.

Span 2: The truss members had minor to moderate surface corrosion through.

Span 2: Gusset Plate U1' N exterior gusset plate had two misdrilled 3/4 in. diameter holes. (1 LF CS2)

Span 2: Diagonal U1'-L0' N had 7 areas of impact damage up to 1/4 in. out of plane and 3/4 in. long over a 15 in. length. (2 LF CS2)

Span 2: Diagonal L2'-U1' N interior flange was bent 1-3/8 in. out of plane over a 24 in. length. (2 LF CS2)

Span 2: Vertical L2'-U2' N interior flange was bent 1 in. out of plane over a 6 in. height. (1 LF CS2 - Overlaps with CS3 Corrosion.)

Span 2: Diagonal L2'-U1' S was bent 3/4 in. out of plane over a 12 in. length at L2'S. (1 LF CS2 - Overlaps with CS3 Corrosion.)

## Current Inspection Notes:

# STRUCTURE INSPECTION REPORT

Structure # 03719

W MISSOULA - BITTERROOT RIVER 010

Element #	Parent Element	Name	Unit	Quantity	%CS 1	%CS 2	%CS 3	%CS 4
<p>Span 1: Panel Point U4S had (1) loose and (1) sheared off bolt at the horizontal strut to top chord connection plate.</p> <p>Span 1: The truss members exhibited light surface corrosion throughout.</p> <p>Span 1: Vertical L1-U1N east interior and exterior flanges were bent 1 in. out of plane to the north due to impact damage approximately 5 ft. above the bridge deck. (1 LF CS2)</p> <p>Span 1: Panel Point U2'N had (2) loose bolts at the upper horizontal strut to top connection plate. (2 LF CS2)</p> <p>Span 1: Panel Point U2S had (1) loose bolt at the upper horizontal strut to top connection plate. (1 LF CS2)</p> <p>Span 1: The truss had one member with minor impact damage at L1U1N. See CS2 Distortion defect for photo.</p> <p>Span 1: North and south Trusses, Diagonals L4'-U4 and L4-U4' exhibited an area of wear at their midpoints where they made contact with negligible loss of section. (2 LF CS2)</p> <p>Span 1: The pins at L0N and L0S exhibited pack rust up to 2.25 in. and 1 in. thick, respectively. (2 LF CS3)</p>								

Photo #:Span 2 L2'U2'N Impact Damage, Looking E

Location:

Comments:

Element:120 - Steel Truss (LF) Pony Truss



Photo #:Span 1 Pin L0N Pack Rust, Looking W

Location:


Comments:

Element:120 - Steel Truss (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
<p>Photo #:Span 2 L2'S Typical Pack Rust at Sway Brace Frame Lower Strut, Looking N</p> <p>Location:</p> <p>Comments:</p> <p>Element:120 - Steel Truss (LF) Pony Truss</p>								

<p>Photo #:Span 1 U2S Loose Bolt at Upper Sway Brace Connection, Looking S</p> <p>Location:</p> <p>Comments:</p> <p>Element:120 - Steel Truss (LF) Pony Truss</p>								
---	--	--	---	--	--	--	--	--

<p>Photo #:Span 1 Vertical L1U1N Damage, Looking W</p> <p>Location:</p> <p>Comments:</p> <p>Element:120 - Steel Truss (LF) Pony Truss</p>								
---	--	--	--	--	--	--	--	--

# STRUCTURE INSPECTION REPORT

Structure # 03719  
W MISSOULA - BITTERROOT RIVER 010

Element #	Parent Element	Name	Unit	Quantity	%CS 1	%CS 2	%CS 3	%CS 4
<p>Photo #:Span 1 Upper Strut U2'N Loose Bolts, Looking E</p> <p>Location:</p> <p>Comments:</p> <p>Element:120 - Steel Truss (LF) Pony Truss</p>								

<p>Photo #:Span 2 L2'S Typical Pack Rust at Sway Brace Frame Lower Strut, Looking N</p> <p>Location:</p> <p>Comments:</p> <p>Element:120 - Steel Truss (LF) Thru-Truss</p>								
--	--	--	---	--	--	--	--	--

<p>Photo #:Span 2 Lower Chord L2'S Typical Pack Rust at Outboard Lower Gusset, Looking NW</p> <p>Location:</p> <p>Comments:</p> <p>Element:120 - Steel Truss (LF) Pony Truss</p>								
--	--	--	--	--	--	--	--	--

# 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 Lower Chord L2'S Typical Pack Rust at Inboard Lower Gusset, Looking W  Location:  Comments:  Element:120 - Steel Truss (LF) Thru-Truss								

Photo #:Span 1 Pin LOS Pack Rust, Looking W  Location:  Comments:  Element:120 - Steel Truss (LF) Pony Truss								
--	--	--	---	--	--	--	--	--

Photo #:Span 2 Diagonal L2'U1'S Distortion, Looking W  Location:  Comments:  Element:120 - Steel Truss (LF) Pony Truss								
--	--	--	--	--	--	--	--	--

Photo #:Span 1 Diagonals U4L4' and L4U4' Abrasion at Intersection, Looking W  Location:  Comments:  Element:120 - Steel Truss (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 1 Pin L0N Pack Rust, Looking W

Location:

Comments:

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



Photo #:Span 1 Pin L0S Pack Rust, Looking W

Location:

Comments:

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



Photo #:Span 1 U4S Sheared bolt at Upper Sway Brace Connection, Looking E

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
<p>Photo #:Span 1 U4S Loose Bolt at Upper Sway Brace Underside Connection, Looking S</p> <p>Location:</p> <p>Comments:</p> <p>Element:120 - Steel Truss (LF) Thru-Truss</p>								

<p>Photo #:Span 1 U4S Loose Bolt at Upper Sway Brace Underside Connection, Looking S</p> <p>Location:</p> <p>Comments:</p> <p>Element:120 - Steel Truss (LF) Pony Truss</p>								
---	--	--	---	--	--	--	--	--

<p>Photo #:Span 2 L2'U2'N Impact Damage, Looking E</p> <p>Location:</p> <p>Comments:</p> <p>Element:120 - Steel Truss (LF) Thru-Truss</p>								
---	--	--	--	--	--	--	--	--

<p>Photo #:Span 2 U1'L0'N Impact Damage, Looking W</p> <p>Location:</p> <p>Comments:</p> <p>Element:120 - Steel Truss (LF) Thru-Truss</p>								
---	--	--	--	--	--	--	--	--

# 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 Diagonal L2'U1'S  
Distortion, Looking W

Location:

Comments:

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



Photo #:Span 2 Lower Chord Typical  
Delamination on Inboard Channel,  
Looking NE

Location:

Comments:

Element:120 - Steel Truss (LF) Pony  
Truss



Photo #:Span 1 U4S Sheared bolt at  
Upper Sway Brace Connection, Looking E

Location:

Comments:

Element:120 - Steel Truss (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 U1'L0'N Impact Damage, Looking W  Location:  Comments:  Element:120 - Steel Truss (LF) Pony Truss								

Photo #:Span 2 Lower Chord L2'S Typical Pack Rust at Outboard Lower Gusset, Looking NW  Location:  Comments:  Element:120 - Steel Truss (LF) Thru-Truss								
---	--	--	---	--	--	--	--	--

Photo #:Span 2 U1'N Misdrilled Holes, Looking SW  Location:  Comments:  Element:120 - Steel Truss (LF) Thru-Truss								
---	--	--	--	--	--	--	--	--

Photo #:Span 1 Upper Strut U2'N Loose Bolts, Looking E  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 #:Span 1 U2S Loose Bolt at Upper Sway Brace Connection, Looking S

Location:

Comments:

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



Photo #:Span 2 Lower Chord Typical Delamination on Inboard Channel, Looking NE

Location:

Comments:

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



Photo #:Span 2 L2'U1'N Impact Damage, Looking E

Location:

Comments:

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



Photo #:Span 1 Vertical L1U1N Damage, Looking W

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 #:Span 1 Diagonals U4L4' and L4U4' Abrasion at Intersection, Looking W

Location:

Comments:

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



Photo #:Span 2 L2'U1'N Impact Damage, Looking E

Location:

Comments:

Element:120 - Steel Truss (LF) Pony Truss



Photo #:Span 2 U1'N Misdrilled Holes, Looking SW

Location:

Comments:


Element:120 - Steel Truss (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
<p>Photo #:Span 2 Lower Chord L2'S Typical Pack Rust at Inboard Lower Gusset, Looking W</p> <p>Location:</p> <p>Comments:</p> <p>Element:120 - Steel Truss (LF) Pony Truss</p>								

## 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		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

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

### Current Inspection Notes:

Span 2: The floor beams had minor surface corrosion and negligible section loss throughout.

### Current Inspection Notes:

Span 1: The bottom west flange of Floor Beam 1' had bent upwards 1/2 in. over a 6 in. length approximately 16 in. from the north end. (1 LF CS2)

Span 1: The floor beams had minor surface corrosion and negligible section loss throughout.

Photo #:Span 1 Floorbeam 1' Damage, Looking S

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
Photo #:Span 1 Floorbeam 1' Damage, Looking S  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
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	100.0	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	0.0	100.0	0.0	0.0

## Previous Inspection Notes:

The entire surface of the pier wall had hairline temperature and shrinkage cracks. Condition State 1 : 100  
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. Condition State 2 : 59.09

## Previous Inspection Notes:

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  
The noses of the pier exhibited light efflorescence. Condition State 2 : 27.27  
Bent 3 had a 5 ft. long horizontal crack up to 1/16 in. wide located near the bottom, northeast corner. Condition State 2 : 22.73

## Current Inspection Notes:

Bent 2: The entire surface of the pier wall had hairline temperature and shrinkage cracks.  
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.


## Current Inspection Notes:

Bent 3 had a 12 in. wide by 10 in. high area of delamination on the top, southeast corner of the bent.  
Bent 3 had random hairline map cracking throughout and a 5 ft. long horizontal crack up to 1/16 in. wide located near the bottom, northeast corner.  
Bent 3: 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
<p>Photo #:Bent 2 West Face, Looking E</p> <p>Location:</p> <p>Comments:</p> <p>Element:210 - Reinforced Concrete Pier Wall (LF) Bent 3</p>								

<p>Photo #:Bent 2 East Face Delamination at Top of Pier Wall, Looking W</p> <p>Location:</p> <p>Comments:</p> <p>Element:210 - Reinforced Concrete Pier Wall (LF) Bent 3</p>								
--	--	--	---	--	--	--	--	--

<p>Photo #:Bent 3 Efflorescence on West Face, Looking E</p> <p>Location:</p> <p>Comments:</p> <p>Element:210 - Reinforced Concrete Pier Wall (LF) Bent 2</p>								
--	--	--	--	--	--	--	--	--

<p>Photo #:Bent 3 Efflorescence at Downstream Nose, Looking S</p> <p>Location:</p> <p>Comments:</p> <p>Element:210 - Reinforced Concrete Pier Wall (LF) Bent 2</p>								
--	--	--	--	--	--	--	--	--

# 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 Efflorescence at Downstream Nose, Looking S

Location:

Comments:

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



Photo #:Bent 3 Cracking with Efflorescence on Upstream Nose, Looking N

Location:

Comments:

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



Photo #:Bent 2 East Face Delamination at Top of Pier Wall, Looking W

Location:

Comments:


Element:210 - Reinforced Concrete Pier Wall (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
<p>Photo #:Bent 3 Cracking with Efflorescence on Upstream Nose, Looking N</p> <p>Location:</p> <p>Comments:</p> <p>Element:210 - Reinforced Concrete Pier Wall (LF) Bent 2</p>								

<p>Photo #:Bent 3 Efflorescence on West Face, Looking E</p> <p>Location:</p> <p>Comments:</p> <p>Element:210 - Reinforced Concrete Pier Wall (LF) Bent 3</p>								
--	--	--	---	--	--	--	--	--

<p>Photo #:Bent 2 Delamination on East Face, Looking NW</p> <p>Location:</p> <p>Comments:</p> <p>Element:210 - Reinforced Concrete Pier Wall (LF) Bent 2</p>								
--	--	--	--	--	--	--	--	--

<p>Photo #:Bent 2 West Face, Looking E</p> <p>Location:</p> <p>Comments:</p> <p>Element:210 - Reinforced Concrete Pier Wall (LF) Bent 2</p>								
---	--	--	--	--	--	--	--	--

# 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, Looking NW

Location:

Comments:

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



## 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 at the midpoint. Condition State 2 : 1.52

### Previous Inspection Notes:

Abutment 5 had no notable deficiencies. Condition State 1 : 100

### 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.

Photo #: Abutment 1 Vertical Crack Near Midpoint, Looking W

Location:

Comments:

Element: 215 - Reinforced Concrete Abutment (LF) A1



Photo #: Abutment 1 Vertical Crack Near Midpoint, Looking W

Location:

Comments:

Element: 215 - Reinforced Concrete Abutment (LF) A5



# STRUCTURE INSPECTION REPORT

Structure # 03719

W MISSOULA - BITTERROOT RIVER 010

Element #	Parent Element	Name	Unit	Quantity	%CS 1	%CS 2	%CS 3	%CS 4
234		Reinforced Concrete Cap (LF)	Length	22	81.8	0.0	18.2	0.0
234		1090 - Exposed Rebar	Length	22	0.0	0.0	9.1	0.0
234		1080 - Delamination/Spall/Patched Area	Length	22	0.0	0.0	18.2	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 : 100

## Current Inspection Notes:

The west face of the Bent 4 cap had a 3 ft wide by 2 ft high by 3.5 in. deep spall with exposed reinforcing steel. (3 LF CS3)

The northeast corner of the Bent 4 cap had a 12 in. high by 3 in. wide by 1/2 in. deep spall with exposed reinforcing steel. (1 LF CS3)

The exposed reinforcing steel in the spalls on the Bent 4 cap had corrosion with up to 5% section loss. See photos in CS3 Spall defect. (2 LF CS3 qty overlaps with CS3 Spall Defect)

## Current Inspection Notes:

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

Photo #:Bent 4 Spall on West Face of Cap, Looking NE

Location:

Comments:


Element:234 - Reinforced Concrete Cap (LF)



# STRUCTURE INSPECTION REPORT

Structure # 03719

W MISSOULA - BITTERROOT RIVER 010

Element #	Parent Element	Name	Unit	Quantity	%CS 1	%CS 2	%CS 3	%CS 4
<p>Photo #:Bent 4 Spall with Exposed Reinforcing Steel on Northeast Corner of Cap, Looking SW</p> <p>Location:</p> <p>Comments:</p> <p>Element:234 - Reinforced Concrete Cap (LF)</p>								

<p>Photo #:Bent 4 Spall with Exposed Reinforcing Steel on Northeast Corner of Cap, Looking SW</p> <p>Location:</p> <p>Comments:</p> <p>Element:234 - Reinforced Concrete Cap (LF) Bent 2</p>								
--	--	--	---	--	--	--	--	--

<p>Photo #:Bent 4 Spall on West Face of Cap, Looking NE</p> <p>Location:</p> <p>Comments:</p> <p>Element:234 - Reinforced Concrete Cap (LF) Bent 2</p>								
--	--	--	--	--	--	--	--	--

# 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. The joint was moving under live load See CS3 Seal Damage defect for photos and see video of Movement in Inspection Documents.  
Compression joint located at Bent 3.

Photo #:Bent 3 Compression Joint Failed Seal and Distortion, Looking N

Location:

Comments:

Element:302 - Compression Joint (LF)



Photo #:Bent 3 Failed Joint, Looking E

Location:

Comments:

Element:302 - Compression Joint (LF)



# STRUCTURE INSPECTION REPORT

Structure # 03719

W MISSOULA - BITTERROOT RIVER 010

Element #	Parent Element	Name	Unit	Quantity	%CS 1	%CS 2	%CS 3	%CS 4
311		Movable Bearing (roller, sliding, etc.) (EA)	Each	2	-100.0	0.0	100.0	100.0
311		7000 - Damage	Each	2	0.0	50.0	0.0	0.0
311		2240 - Loss of Bearing Area	Each	2	0.0	0.0	0.0	100.0
311		2220 - Alignment	Each	2	0.0	0.0	100.0	0.0
311		1000 - Corrosion	Each	2	0.0	0.0	100.0	100.0

## 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  
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  
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:

Span 1: Both moveable bearings at Abutment 1 were misaligned with components working out from underneath. The north truss bearing had two rollers with a portion of the keeper that had worked out to the west with one roller sticking out to the east. The south bearing was pushed against the backwall with two of the original rollers within the bearing. (2 EA CS4, overlaps with CS4 Corrosion)  
Span 1: Both bearings on Abutment 1 had heavy corrosion with up to 50 percent section loss to the anchor rods. (2 EA CS4)  
Span 1 North Bearing at Abutment 1: The top plate was displaced 2.25 in. to the west (in expansion) in relation to the bottom plate, an increase of 0.5 in. since 2019. (1 EA CS3 - Overlaps with CS4 Loss of Bearing Area and CS4 Corrosion)  
Span 1 South Bearing at Abutment 1: The top plate was displaced 1 in. to the west (in expansion) in relation to the bottom plate, a decrease of 0.5 in. since the 2019. (1 EA CS3 - Overlaps with CS4 Loss of Bearing Area and CS4 Corrosion)  
Span 2: The north moveable bearing at Bent 3 had cracks/tears in the elastomeric pad. (1 EA CS2 - Overlaps with CS3 Corrosion.)  
The Bent 3, Span 2 slider bearings were left unpainted and had moderate corrosion with pitting up to 1/16 in. deep.

Photo #:Span 2 South Moveable Bearing at Bent 3, Looking N

Location:

Comments:

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



# 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 South Moveable Bearing at Abutment 1 Rollers Walked Out, Looking N

Location:

Comments:

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



Photo #:Span 1 North Moveable Bearing at Abutment 1 Anchor Rod Section Loss, Looking S

Location:

Comments:

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



Photo #:Span 2 North Moveable Bearing at Bent 3, Looking S

Location:

Comments:


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




# STRUCTURE INSPECTION REPORT

Structure # 03719

W MISSOULA - BITTERROOT RIVER 010

Element #	Parent Element	Name	Unit	Quantity	%CS 1	%CS 2	%CS 3	%CS 4
<p>Photo #:Span 1 North Moveable Bearing at Abutment 1 Rollers Walked Out, Looking SW</p> <p>Location:</p> <p>Comments:</p> <p>Element:311 - Movable Bearing (roller, sliding, etc.) (EA)</p>								


<p>Photo #:Span 2 North Bearing at Bent 3 Elastomeric Pad Tear, Looking E</p> <p>Location:</p> <p>Comments:</p> <p>Element:311 - Movable Bearing (roller, sliding, etc.) (EA)</p>								
---	--	--	---	--	--	--	--	--

<p>Photo #:Span 1 South Moveable Bearing at Abutment 1 Rollers Walked Out, Looking W</p> <p>Location:</p> <p>Comments:</p> <p>Element:311 - Movable Bearing (roller, sliding, etc.) (EA)</p>								
--	--	--	--	--	--	--	--	--

# STRUCTURE INSPECTION REPORT

Structure # 03719

W MISSOULA - BITTERROOT RIVER 010

Element #	Parent Element	Name	Unit	Quantity	%CS 1	%CS 2	%CS 3	%CS 4
<p>Photo #:Span 1 North Moveable Bearing at Abutment 1 Rollers Walked Out, Looking S</p> <p>Location:</p> <p>Comments:</p> <p>Element:311 - Movable Bearing (roller, sliding, etc.) (EA)</p>								

<p>Photo #:Span 1 South Moveable Bearing at Abutment 1 Anchor Rod Section Loss, Looking N</p> <p>Location:</p> <p>Comments:</p> <p>Element:311 - Movable Bearing (roller, sliding, etc.) (EA)</p>								
---	--	--	---	--	--	--	--	--

# STRUCTURE INSPECTION REPORT

Structure # 03719

W MISSOULA - BITTERROOT RIVER 010

Element #	Parent Element	Name	Unit	Quantity	%CS 1	%CS 2	%CS 3	%CS 4
313		Fixed Bearing (EA)	Each	2	-50.0	100.0	50.0	0.0
313		1000 - Corrosion	Each	2	0.0	200.0	0.0	0.0

## 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:

Span 2: The fixed bearings at Bent 2 had failed painted coating and minor surface corrosion.  
Span 1: The bearings at Bent 2 had failed painted coating and minor surface corrosion with negligible section loss.

Photo #:Span 1 North Fixed Bearing at Bent 2, Looking SE

Location:

Comments:

Element:313 - Fixed Bearing (EA)



Photo #:Spans 1 and 2 South Fixed Bearings at Bent 2, Looking N

Location:

Comments:

Element:313 - Fixed Bearing (EA)



Photo #:Span 2 Northwest Fixed Bearing, Looking SE

Location:

Comments:

Element:313 - Fixed Bearing (EA)



# STRUCTURE INSPECTION REPORT

Structure # 03719

W MISSOULA - BITTERROOT RIVER 010

Element #	Parent Element	Name	Unit	Quantity	%CS 1	%CS 2	%CS 3	%CS 4
330		Steel Bridge Rail (LF)	Length	79	-31.6	100.0	31.6	0.0
330		7000 - Damage	Length	246	0.0	4.5	10.2	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 steel.  
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.  
The bottom angle on the North Rail at Panel Point 1' was bent 3/4 in. upwards. 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:

Span 4: The north curb had an area of spalling over Bent 4 measuring 5 ft long by full width and height with exposed reinforcing steel. (5 LF CS3)  
Span 4: The north curb had section loss up to 2 in. deep on the top and interior faces with areas of exposed reinforcing steel (20 LF CS3)  
Span 1: The steel rail had failed painted coating with minor surface corrosion along its entire length.  
Span 4: Three consecutive vertical members had impact damage that bent the interior flange 3/4 in. out of plane over a 6 in. height on the North Rail near the East Approach in Span 4. (3 LF CS2)  
The top rail was bent downward 1-1/2 in. over a 5 ft. length on the South Rail at the far east end of the bridge deck. (5 LF CS2)  
Spans 3 and 4: Approximately 5 percent of the painted coating had failed with minor surface corrosion along the rail length, primarily on the vertical steel plate at the bridge deck.  
Span 1: 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. (2 LF CS2)  
Span 1: The bottom angle on the north rail at Panel Point 1' was bent 3/4 in. upwards. (1 LF CS2)  
Span 2: The steel rail had failed painted coating with minor surface corrosion along its entire length, primarily on the vertical steel plate at the bridge deck.

# 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 4 North Curb Spalls with Exposed Reinforcing, Looking West  Location:  Comments:  Element:330 - Steel Bridge Rail (LF)								

Photo #:North Rail Near East Approach Impact Damage to 3 Posts, Looking West  Location:  Comments:  Element:330 - Steel Bridge Rail (LF)								
--	--	--	--	--	--	--	--	--

Photo #:North Curb at Bent 4 Spalling, Looking W  Location:  Comments:  Element:330 - Steel Bridge Rail (LF)								
--	--	--	--	--	--	--	--	--

Photo #:Span 1 PP 1' Bottom Rail Angle Bent Up, Looking North  Location:  Comments:  Element:330 - Steel Bridge Rail (LF)								
---	--	--	--	--	--	--	--	--

## STRUCTURE INSPECTION REPORT

Structure # 03719

W MISSOULA - BITTERROOT RIVER 010

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	5.0	0.2	0.0
510	30	1190 - Abrasion/Wear (PSC RC)	Area	2885	0.0	121.6	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	-0.8	100.0	0.8	0.0

### Previous Inspection Notes:

Approximately 1 percent of the wearing surface had been repaired with cold patch that exhibited mapcracking up to 1/8 in. wide. Condition State 2 : 1  
 Transverse cracks up to 1/2 in. and 3/4 in. wide were located directly over Bent 4 and Abutment 5, respectively. Condition State 3 : 1.63  
 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. Condition State 4 : .1  
 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. Condition State 2 : 5  
 The wearing surface exhibited minor wear over its entire surface area in Spans 3 and 4. Condition State 2 : 98.37  
 The asphalt wearing surface exhibited minor wearing concentrated in the wheel paths. Condition State 2 : 99.83  
 The asphalt wearing surface exhibited minor wear over its entire surface area. Condition State 2 : 100  
 Asphalt patches above the floor beams typically were unsound with mapcracking up to 1/4 in. wide throughout. Condition State 3 : 1.25

### Current Inspection Notes:

## STRUCTURE INSPECTION REPORT

Structure # 03719

W MISSOULA - BITTERROOT RIVER 010

Element #	Parent Element	Name	Unit	Quantity	%CS 1	%CS 2	%CS 3	%CS 4
<p>Span 1: Approximately 5% of the wearing surface had been repaired with cold patches that were mostly sound, with map cracking up to 1/8 in. wide and random areas of delamination. (144 SF CS2 - Overlaps with CS2 Abrasion)</p> <p>Span 1: The wearing surface at the west end of the deck exhibited spalling adjacent to the joint plate measuring 1 ft. long by 4.5 ft. wide by 1.5 in. deep, resulting in the plate deflecting approximately 1 in. under load. (5 SF CS3)</p> <p>Span 1: The wearing surface exhibited full width transverse cracking up to 1/8 in. wide spaced approximately 20 ft. at the floor beam locations. (144 SF CS2 - Overlaps with CS2 Abrasion)</p> <p>Span 1: The asphalt wearing surface exhibited minor wearing concentrated in the wheel paths up to 1/2 in. deep throughout.</p> <p>Span 2: The asphalt wearing surface exhibited minor wearing concentrated in the wheel paths up to 1/2 in. deep throughout.</p> <p>Spans 3 and 4: The asphalt wearing surface exhibited minor wearing concentrated in the wheel paths up to 1/2 in. deep throughout.</p> <p>Spans 3 and 4: The wearing surface exhibited transverse cracks up to 3/4 in. wide above Bent 4 and Abutment 5. (32 SF CS3)</p>								

Photo #:Span 1 West End Cold Patch with Map Cracking, Looking E

Location:

Comments:

Element:510 - Wearing Surfaces (SF)



Photo #:Span 1 Wearing Surface Spall at West Joint, Looking N

Location:

Comments:

Element:510 - Wearing Surfaces (SF)



# 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 Wearing Surface Cold Patch with Map Cracking at FB2', Looking S  Location:  Comments:  Element:510 - Wearing Surfaces (SF)								

Photo #:Transverse Crack in Wearing Surface Above Bent 4, Looking N  Location:  Comments:  Element:510 - Wearing Surfaces (SF)								
--	--	--	---	--	--	--	--	--

Photo #:Transverse Crack in Wearing Surface Above Abutment 5, Looking N  Location:  Comments:  Element:510 - Wearing Surfaces (SF)								
--	--	--	--	--	--	--	--	--

Photo #:Span 1 Typical Transverse Crack with Delamination in Patches at Floor Beams, Looking S  Location:  Comments:  Element:510 - Wearing Surfaces (SF)								
---	--	--	--	--	--	--	--	--

# STRUCTURE INSPECTION REPORT

Structure # 03719  
W MISSOULA - BITTERROOT RIVER 010

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

<p>Photo #:Span 1 Wearing Surface Cold Patch at FB3', Looking S</p> <p>Location:</p> <p>Comments:</p> <p>Element:510 - Wearing Surfaces (SF)</p>	
--	--

# STRUCTURE INSPECTION REPORT

Structure # 03719

W MISSOULA - BITTERROOT RIVER 010

Element #	Parent Element	Name	Unit	Quantity	%CS 1	%CS 2	%CS 3	%CS 4
515	330	Steel Protective Coating (SF)	Area	750	75.0	10.0	4.3	10.7
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

Structure # 03719

W MISSOULA - BITTERROOT RIVER 010

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	313	Steel Protective Coating (SF)	Area	2	0.0	80.0	10.0	10.0
515	311	Steel Protective Coating (SF)	Area	2	0.0	65.0	10.0	25.0
515	30	Steel Protective Coating (SF)	Area	624	95.0	0.0	0.0	5.0
515	152	Steel Protective Coating (SF)	Area	660	82.5	3.5	7.0	7.0
515	120	Steel Protective Coating (SF)	Area	9000	39.3	50.0	0.7	10.0
515	113	Steel Protective Coating (SF)	Area	720	-163.2	55.0	69.4	138.8
515	820	Steel Protective Coating (SF)	Area	500	0.0	20.0	40.0	40.0

**Previous Inspection Notes:**

# STRUCTURE INSPECTION REPORT

Structure # 03719

W MISSOULA - BITTERROOT RIVER 010

Element #	Parent Element	Name	Unit	Quantity	%CS 1	%CS 2	%CS 3	%CS 4
<p>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</p> <p>The pony truss movable bearings had no protective coating. Condition State 4 : 100</p> <p>Element 820 - Vertical Cross-Frame: The remaining painted coating was bubbling and peeling. Condition State 2 : 20</p> <p>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</p> <p>Element 820 - Vertical Cross-Frame: Approximately 40 percent of the painted coating had failed with exposed primer. Condition State 3 : 40</p> <p>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</p> <p>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</p> <p>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</p> <p>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</p> <p>Element 330 - Steel Bridge Rail - Approximately 10 percent of the painted coating was bubbling and peeling. Condition State 2 : 10</p> <p>Element 313 - Fixed Bearings: The remaining painted coating was chalking. Condition State 2 : 80</p> <p>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</p> <p>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</p> <p>Element 311 - Movable Bearing - The remaining painted coating was chalking. Condition State 2 : 65</p> <p>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</p> <p>Element 311 - Movable Bearing - Approximately 10 percent of the painted coating had failed with exposed primer underneath. Condition State 3 : 10</p> <p>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</p> <p>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</p> <p>Element 152 - Steel Floor Beams: The remaining painted coating was bubbling and peeling. Condition State 2 : 20</p> <p>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</p> <p>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</p> <p>Element 120 - Steel Truss: Approximately 50 percent of the painted coating was chalking. Condition State 2 : 50</p> <p>Element 120 - Steel Truss: Approximately 15 percent of the painted coating had failed with exposed primer underneath. Condition State 3 : 15</p> <p>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</p> <p>Element 113 - Steel Stringers: The unpainted steel stringers had no protective coating. Condition State 4 : 100</p> <p>Element 113 - Steel Stringers: The remaining painted coating was bubbling and peeling on the steel stringers. Condition State 2 : 55</p> <p>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</p> <p>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</p> <p>Element 113 - Steel Stringers: Approximately 15 percent of the painted coating on the stringers had failed with exposed primer underneath. Condition State 3 : 15</p>								
<b>Current Inspection Notes:</b>								

# STRUCTURE INSPECTION REPORT

Structure # 03719

W MISSOULA - BITTERROOT RIVER 010

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

# STRUCTURE INSPECTION REPORT

Structure # 03719

W MISSOULA - BITTERROOT RIVER 010

Element #	Parent Element	Name	Unit	Quantity	%CS 1	%CS 2	%CS 3	%CS 4
820		Steel Truss Vertical Cross-Frame	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:

The lower, horizontal bracing member at U3' was bent 2 in. to the east and upward and downward 1 in. due to impact damage. Condition State 2 : .74  
The vertical cross-frames had failed paint with minor surface corrosion along their entire length. Condition State 2 : 100  
The lower, horizontal bracing member at U3' was bent 2 in. to the east and upward and downward 1 in. due to impact damage. Condition State 2 : .74

## Current Inspection Notes:

Span 1: The vertical cross-frames had failed paint with minor surface corrosion along their entire length.  
Span 1: The lower horizontal bracing member at U3' was bent 2 in. to the east and upward and downward 1 in. due to impact damage. (2 LF CS2)  
Span 1: The lower horizontal bracing member at U3' exhibited minor impact damage. See photo in CS2 Distortion defect.

Photo #:Span 1 Lower Strut U3' Damage, Looking S

Location:

Comments:

Element:820 - Steel Truss Vertical Cross-Frame



## STRUCTURE INSPECTION REPORT

Structure # 03719  
W MISSOULA - BITTERROOT RIVER 010

Element #	Parent Element	Name	Unit	Quantity	%CS 1	%CS 2	%CS 3	%CS 4
950		Steel Approach Guardrail	Length	60	100.0	0.0	0.0	0.0

### Previous Inspection Notes:

The east approach gaurdrails were in good condition. Condition State 1 :

### Current Inspection Notes:

The east approach gaurdrails were in good condition.

# STRUCTURE INSPECTION REPORT

Structure # 03719  
W MISSOULA - BITTERROOT RIVER 010

Element #	Parent Element	Name	Unit	Quantity	%CS 1	%CS 2	%CS 3	%CS 4
960		Steel Approach Guardrail Ends	Each	2	100.0	0.0	0.0	0.0

## Previous Inspection Notes:

The east approach guardrail ends were in good condition. Condition State 1 :

## Current Inspection Notes:

The east approach guardrail ends were in good condition.

## General Inspection Notes

### Previous Inspection Notes

### Current Inspection Notes



## Rope Access Climbing Bridge Inspection Report

**Asset #:** 03719

**Bridge #:** L32101000+01001

**District:** Missoula

**Location:** Maclay Truss Bridge over Bitterroot River

**Inspected:** June 21<sup>st</sup>, 2021

*Prepared for:*



*Prepared by:*

**COLLINS**  
**ENGINEERS** INC.

455 Sherman St. Ste 160

Denver CO, 80203

303.447.0090 • [www.collinsengr.com](http://www.collinsengr.com)

page 76 of 95

## Table of Contents

1.0	INTRODUCTION .....	1
2.0	INSPECTION FINDINGS .....	2
2.1	Deck.....	2
2.2	Superstructure .....	3
2.2.1	Floor Beams .....	3
2.2.2	Stringers .....	4
2.2.3	Precast Concrete T-Beams .....	5
2.2.4	Bearings.....	5
2.2.5	Truss .....	6
2.3	Substructure.....	7
2.4	Concrete Approach Slabs .....	8
2.5	Miscellaneous .....	9
3.0	CONCLUSION .....	10
3.1	NBI Ratings .....	10
3.2	Load Rating Recommendations .....	10
3.3	Underwater Inspection Recommendations .....	11
3.4	Fracture Critical Inspection Procedures Update .....	11
3.5	Maintenance Recommendations.....	11

APPENDIX A – FRACTURE CRITICAL MEMBER DIAGRAM, DEFECT SKETCHES, AND FLOOR BEAM

SUMMARY SHEET

APPENDIX B – PHOTOGRAPHS

## 1.0 INTRODUCTION

The Maclay Truss Bridge, Asset No. 03719, was inspected June 21<sup>st</sup>, 2021 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 Henry Henning at 406-781-6929. 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 with panel points in the main truss span labeled L0 - L4 - L0' and panel points in the Span 2 pony truss labeled L0 - L3 - L0'. 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.

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 in wheel paths up to ½ in. deep throughout. Several areas of deterioration including 100% section loss in the wearing surface were patched, and areas of 100% loss of section in the corrugated deck (at FB2' and FB3') were replaced since the 2019 inspection. The asphalt patches were in good condition with random minor cracking. Refer to the following table for the location and description of specific wearing surface deficiencies:

<u>Location</u>	<u>Description</u>
Span 1	The end 6 ft. by full bridge width adjacent to the West Approach had a cold patch with spalling adjacent to the joint plate measuring 1 ft long by 4.5 ft wide by 1.5 in. deep.
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 3	Transverse crack up to 3/4 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 sheets that exhibited typical burn holes throughout and minor surface corrosion. The welding burn through holes allowed debris to fall through the corrugated deck onto the top and bottom flanges of 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, and the joint over Bent 3 was a compression joint. Refer to the following table for the location and description of specific joint deficiencies:

<u>Location</u>	<u>Description</u>
Abut. 1	Asphalt spalled along east edge and underside of the plate resulted in void under plate and approximate 1 in. vertical deflection under load accompanied by loud banging noise.
Bent 2	Joint edge had (2) 3/4 in. bends over a 1 ft. section in the south wheel path. (covered with asphalt, not observed 2021)
Bent 3	The rubber seal had failed along 90 percent of its length.
Bent 3	Joint had separated from Span 2 header over a 4 ft. length and was moving under live load.
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*

## 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 the verticals with a bolted/riveted connection and the lower chords with a pin connection. The floor beams typically exhibited a loss of protective coating over 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 north to 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	Location	Stringer	Defect Description
1	A1	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	A1	5	Stringer 5 had a ¼ in. gap between its bottom flange and Abutment 1 beam seat and deflected under load See video of movement uploaded to Inspection Documents in SMS.
1	A1	4, 5, 6	The stringer web and both flanges exhibited delamination up to 1/8 in. thick from the west end for up to ½ the span length.
1	A1	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	6	(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.
2	B2	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	B2	4	The stringer web exhibited an area of delamination on the bottom of the north face at the west end measuring 18 in. long by 2 in. high and up to ¼ in. thick.
2	B2	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 south face located 12 in. from the end of the stringer.
2	B3	4, 8	The east anchor rod of the bearing tube at Stringer 4 and the west anchor rod of the bearing pipe at Stringer 8 were sheared off. The west anchor rod at Stringer 4 exhibited up to 50% loss of section. The bearing tube moved up to ½ in. vertically under live load. See video of movement uploaded to Inspection Documents in SMS.

2	B3	3	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	B3	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	B3	4,5,7,8	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 (video uploaded to SMS).
2	B3	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	B3	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 3: 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 80° 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 50 percent section loss at the concrete interface due to heavy corrosion. The top plate was displaced 2.25 in. to the west (in expansion) in relation to the bottom plate, an increase of 0.5 in. since the 2019 inspection.

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. Two of the original rollers were still within the bearing. The top plate was displaced 1 in. to the west (in expansion) in relation to the bottom plate, a decrease of 0.5 in. since the 2019 inspection. The anchor rods had up to 50% loss of section.

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 1-7/8 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:

<u>Member/ Location</u>	<u>Span</u>	<u>Truss</u>	<u>Defect Description</u>
L1-U1	1	North	East interior and exterior flanges of vertical were 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, L2'	2	North/South	Up to ¼ in. thick pack rust between lower chord and both interior and exterior gusset plates.
L2, L2'	2	North	Up to ¾ in. thick pack rust between lower strut angles of exterior sway brace frames.
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 ¾ in. over 12 in. at L2'.
U1'	2	North	Exterior gusset plate had (2) misdrilled ¾ in. diameter holes.
U1'-L0'	2	North	(7) areas of impact damage up to ¾ in. long and ¼ in. deflection spaced over 15 in. length.
Lower Chord	2	North/South	Random areas of delamination up to 1/8 in. deep along interior channel of lower chord.

*Table 4: 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 5 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 by 3.5 in. deep spall with exposed reinforcing steel on the west face of the bent cap. The exposed reinforcing steel had moderate corrosion with 5% loss of section. The northeast corner exhibited a spall measuring 1 ft high by 3 in. wide by ½ in. deep with exposed reinforcing steel with 10% loss of section.

## 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.

<u>Location</u>	<u>Defect Description</u>
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.
East Approach	Transverse crack ½ in. wide, 5 ft east of Abutment 5.

*Table 5: 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 2 in. on the top and interior faces with areas of exposed reinforcing steel. The north curb exhibited an area of spalling over Bent 4 measuring 5 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 consecutive vertical members had impact damage that bent the interior flange 3/4 in. over a 6 in. height 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 far 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. Refer to the following table for the NBI ratings based on the completed climbing/routine inspection:

<u>NBI Item</u>	<u>NBI Description</u>	<u>NBI Rating Previous</u>	<u>NBI Rating New</u>
58	Deck	5	5
59	Superstructure	5	5
60	Substructure	5	5
61	Channel	7	7

*Table 6: NBI Ratings*

#### 3.2 Load Rating Recommendations

Load postings were present at both approaches, were visible, and were in good condition:

<u>Truck</u>	<u>Posting (tons)</u>
Type 3	11
Type 3S2	-
Type 3-3	-

*Table 7: Load Postings*

Load Posting Form in SMS?	No
Load Rating Document in SMS?	Yes 12/27/2019
Criteria met for review of load rating?	No

*Table 8: Load Ratings/Recommendations*

SMS lists 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".

### 3.3 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 high water. Therefore, Collins recommends an underwater Type I inspection be performed, MDT061 Type I Underwater Inspection Required was confirmed as "Y." with the next inspection date as 1/29/2023.

### 3.4 Fracture Critical Inspection Procedures Update

Fracture critical inspection procedures were updated to the new comprehensive format and uploaded to the Inventory tab of SMS. Specific fatigue prone details, such as forged eye bar heads at pin connections, were added as risk factors to consider. Traffic volume and narrow bridge width were added as on-site safety risks.


### 3.5 Maintenance Recommendations

Maintenance recommendations are detailed in SMS.

The above report summarizes our inspection findings for Bridge 03719 over the Bitterroot 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 us.

Respectfully Submitted,

COLLINS ENGINEERS, INC.



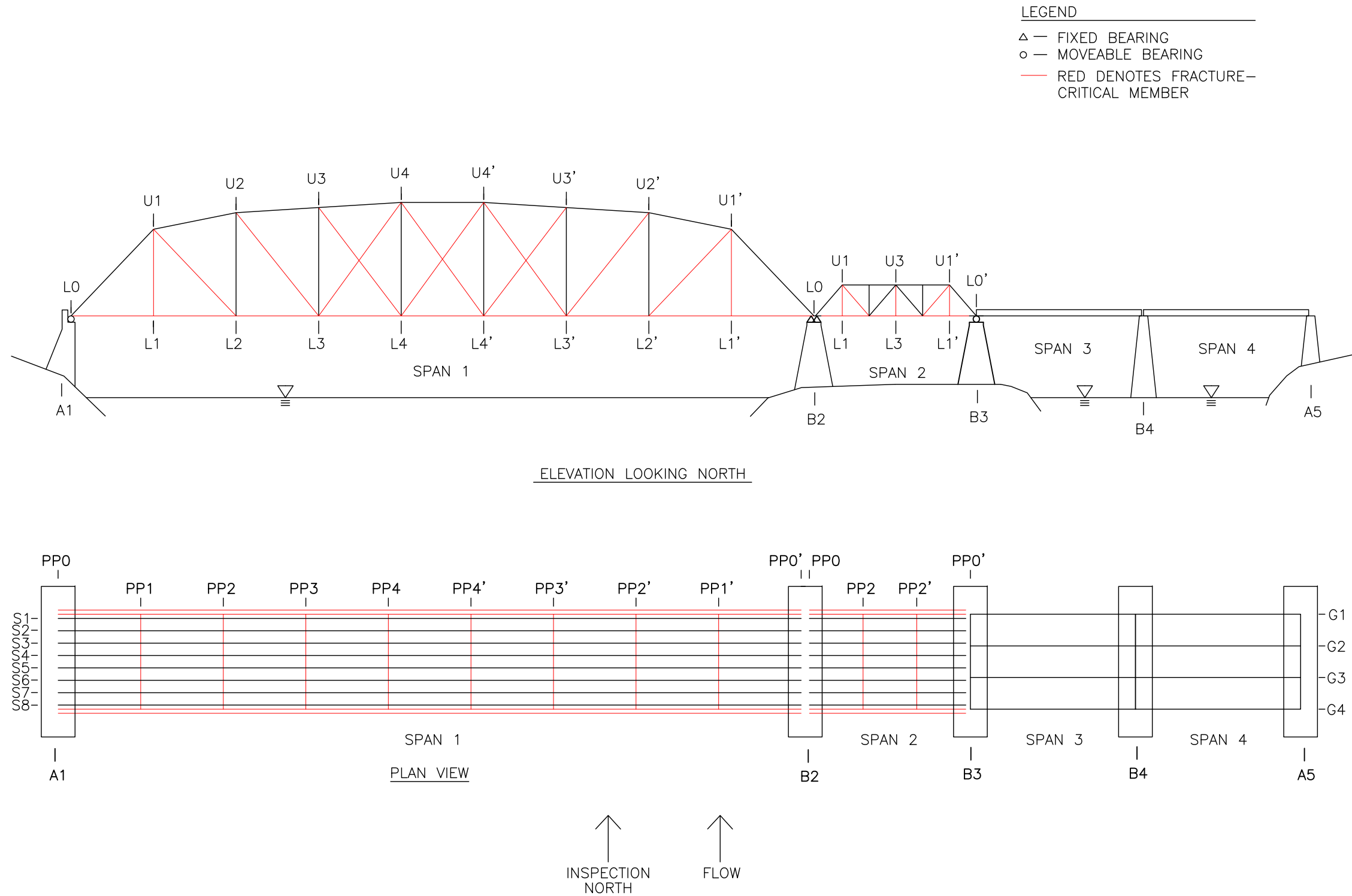
Mike Banasiak, P.E., CWI  
Project Manager

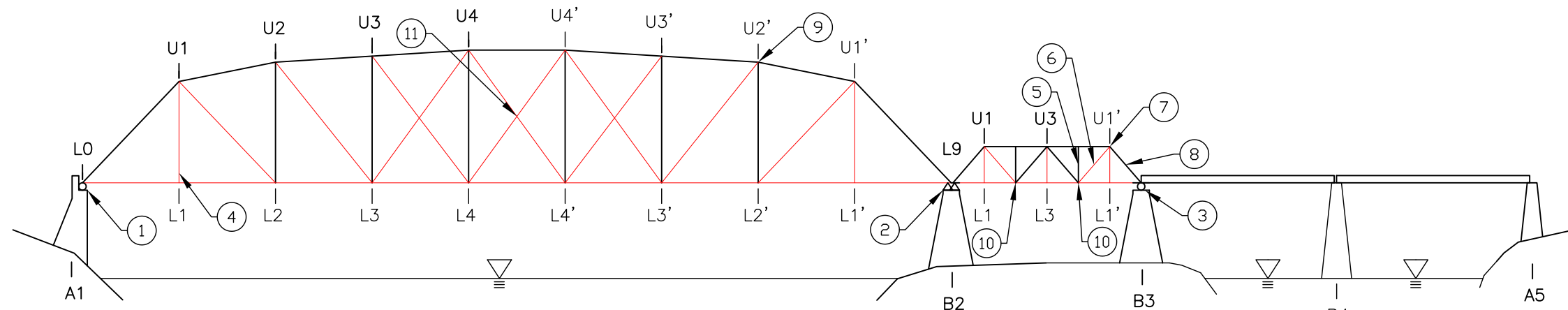
COLLINS ENGINEERS, INC.



Drew Garceau, P.E., CWI  
QA Manager

## APPENDIX A – Fracture Critical Member Diagram, Defect Sketches, and Floor Beam Summary Sheet





NORTH TRUSS LOOKING NORTH

GENERAL NOTES:

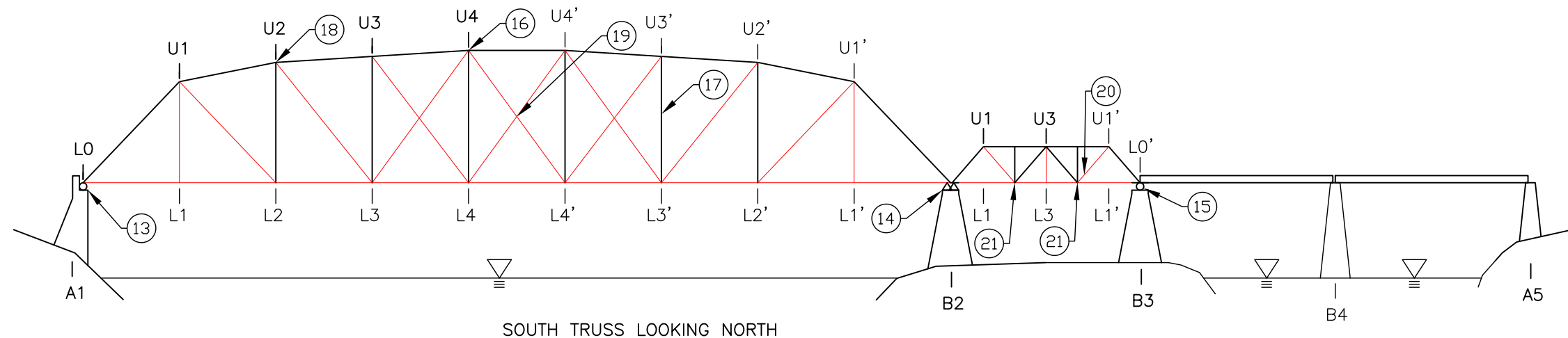
- APPROXIMATELY 5 PERCENT OF THE PAINTED COATING HAD FAILED ON THE VERTICALS, UPPER CHORD, AND DIAGONAL MEMBERS WITH MINOR SURFACE CORROSION, 5 PERCENT HAD FAILED WITH EXPOSED PRIMER, 5 PERCENT WAS CHALKING, AND THE REMAINING PAINTED COATING WAS IN GOOD CONDITION.
- APPROXIMATELY 15 PERCENT OF THE PAINTED COATING HAD FAILED ON THE LOWER CHORD WITH MODERATE SURFACE CORROSION. THERE WAS DELAMINATION UP TO  $\frac{1}{8}$  IN. DEEP ALONG 10% OF THE INTERIOR CHANNEL OF THE LOWER CHORD IN SPAN 2.
- APPROXIMATELY 40 PERCENT OF THE PAINTED COATING ON THE BRACING HAD FAILED WITH MINOR SURFACE CORROSION, 40 PERCENT HAD FAILED WITH EXPOSED PRIMER, AND THE REMAINING PAINTED COATING WAS BUBBLING AND PEELING.

SPECIFIC NOTES:

- 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. HEAVY CORROSION UNDER THE ROLLERS AND ROLLER KEEPER RESULTED IN THE ROLLER KEEPER SPLITTING. THE NESTED ROLLER KEEPER HAD FAILED. TWO OF THE ROLLERS WENT OUT FROM UNDERNEATH THE TRUSS. THE ANCHOR RODS HAD UP TO 50 PERCENT SECTION LOSS AT THE CONCRETE INTERFACE DUE TO HEAVY CORROSION. THE PIN AND PIN SLEEVE WERE SEPARATED BY 2.25 IN. DUE TO PACK RUST.
- THE SPAN 1 FIXED BEARINGS HAD A FAILED PAINTED COATING ON APPROXIMATELY 5 PERCENT OF THE SURFACE AREA WITH MINOR SURFACE CORROSION.

SPECIFIC NOTES (CONTINUED)

- THE SPAN 2 SLIDING BEARINGS AT BENT 3 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. THE ELASTOMERIC BEARING PAD WAS CRACKED/TORN.
- THE EAST INTERIOR AND EXTERIOR FLANGES OF VERTICAL L1-U1 WERE BENT 1 IN. TO THE NORTH DUE TO IMPACT DAMAGE APPROXIMATELY 5 FT. ABOVE THE BRIDGE DECK.
- THE INTERIOR FLANGE OF VERTICAL L2'-U2' WAS BENT 1 IN. OVER A 6 IN. HEIGHT DUE TO IMPACT DAMAGE.
- THE INTERIOR FLANGE OF DIAGONAL L2'-U1' WAS BENT  $1\frac{3}{8}$  IN. OVER A 24 IN. LENGTH DUE TO IMPACT DAMAGE.
- THE EXTERIOR GUSSET PLATE AT U1'N HAD TWO MISDRILLED  $\frac{3}{4}$  IN. DIAMETER HOLES.
- END POST 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.
- 2 LOOSE BOLTS AT UPPER HORIZONTAL STRUT CONNECTION U2'N.
- UP TO  $\frac{1}{4}$  IN. THICK PACK RUST BETWEEN LOWER CHORD AND BOTH INTERIOR AND EXTERIOR GUSSET PLATES AT L2 AND L2'. PACK RUST UP TO  $\frac{3}{4}$  IN. THICK BETWEEN LOWER STRUT ANGLES OF EXTERIOR SWAY BRACE FRAMES AT L2 AND L2'.
- THERE WAS MINOR ABRASION AT THE INTERSECTION BETWEEN L4-U4' AND U4-L4' WITH NEGLIGIBLE LOSS OF SECTION



SOUTH TRUSS LOOKING NORTH

GENERAL NOTES:

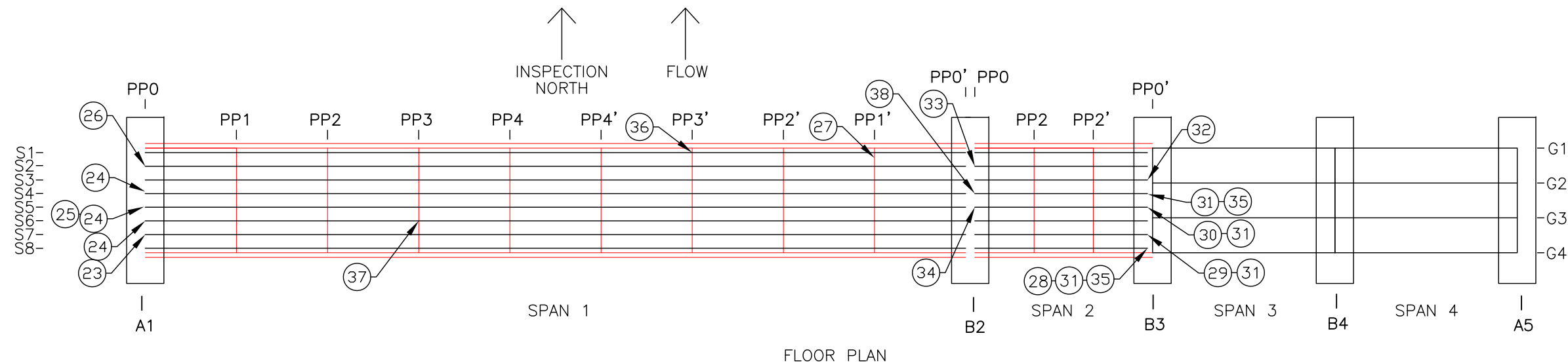
- a. APPROXIMATELY 5 PERCENT OF THE PAINTED COATING HAD FAILED ON THE VERTICALS, UPPER CHORD, AND DIAGONAL MEMBERS WITH MINOR SURFACE CORROSION, 5 PERCENT HAD FAILED WITH EXPOSED PRIMER, 5 PERCENT WAS CHALKING, AND THE REMAINING PAINTED COATING WAS IN GOOD CONDITION.
- b. APPROXIMATELY 15 PERCENT OF THE PAINTED COATING HAD FAILED ON THE LOWER CHORD WITH MODERATE SURFACE CORROSION. THERE WAS DELAMINATION UP TO  $\frac{1}{8}$  IN. DEEP ALONG 10% OF THE INTERIOR CHANNEL OF THE LOWER CHORD IN SPAN 2.
- c. APPROXIMATELY 40 PERCENT OF THE PAINTED COATING ON THE BRACING HAD FAILED WITH MINOR SURFACE CORROSION, 40 PERCENT HAD FAILED WITH EXPOSED PRIMER, AND THE REMAINING PAINTED COATING WAS BUBBLING AND PEELING.

SPECIFIC NOTES:

13. 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. HEAVY CORROSION UNDER THE ROLLERS AND ROLLER KEEPER RESULTED IN THE ROLL TWO OF THE ORIGINAL SOUTH ROLLERS WERE STILL IN BEARING. THE ANCHOR RODS HAD UP TO 50 PERCENT SECTION LOSS AT THE CONCRETE INTERFACE DUE TO HEAVY CORROSION. THE PIN AND PIN SLEEVE WERE SEPARATED BY 1 IN. DUE TO PACK RUST.

SPECIFIC NOTES (CONTINUED)

14. THE SPAN 1 FIXED BEARINGS HAD A FAILED PAINTED COATING ON APPROXIMATELY 5 PERCENT OF THE SURFACE AREA WITH MINOR SURFACE CORROSION.
15. THE SPAN 2 SLIDING BEARINGS AT BENT 3 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.
16. ONE BOLT WAS SHEARED OFF AND ONE BOLT WAS LOOSE AT UPPER HORIZONTAL STRUT TO TOP CHORD U4S CONNECTION PLATE.
17. THE LOWER HORIZONTAL SWAY BRACING AT U3' WAS BENT 2 IN. TO THE EAST, AND UPWARD AND DOWNWARD 1 IN. DUE TO IMPACT DAMAGE.
18. ONE BOLT WAS LOOSE AT UPPER HORIZONTAL STRUT TO TOP CHORD U2S CONNECTION PLATE.
19. THERE WAS MINOR ABRASION AT THE INTERSECTION BETWEEN L4-U4' and U4-L4' WITH NEGLIGIBLE LOSS OF SECTION
20. DIAGONAL L2'-U1' WAS BENT  $\frac{3}{4}$  IN. OVER 12 IN. AT L2'.
21. UP TO  $\frac{1}{4}$  IN. THICK PACK RUST BETWEEN LOWER CHORD AND BOTH INTERIOR AND EXTERIOR GUSSET PLATES AT L2 AND L2'. PACK RUST UP TO  $\frac{3}{4}$  IN. THICK BETWEEN LOWER STRUT ANGLES OF EXTERIOR SWAY BRACE FRAMES AT L2 AND L2'.



#### 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:

23. 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.
24. STRINGERS 4, 5, AND 6, ABUTMENT 1, HEAVY CORROSION AND DELAMINATION ON WEB AND FLANGES UP TO  $\frac{1}{8}$  IN. DEEP FROM WEST END UP TO  $\frac{1}{2}$  LENGTH OF SPAN.
25. STRINGER 5, ABUTMENT 1,  $\frac{1}{4}$  IN. GAP BETWEEN BOTTOM FLANGE AND ABUTMENT BEAM SEAT WHICH DEFLECTED UNDER LOAD.
26. 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.
27. FB1', SPAN 1, BOTTOM WEST FLANGE BENT UPWARDS  $\frac{1}{2}$  IN. OVER A 6 IN. LENGTH APPROXIMATELY 16 IN. FROM THE NORTH END.
28. 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:

29. STRINGER 7, BENT 3, HEAVY CORROSION AND UP TO 50 PERCENT SECTION LOSS IN WEB 10 IN. LONG BY 2 IN. HIGH ADJACENT TO THE STRINGER END AND  $\frac{1}{2}$  IN. DIAMETER HOLE LOCATED 6 IN. FROM THE STRINGER END.
30. 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.
31. STRINGERS 4, 5, 7, AND 8, BENT 3, GAP BETWEEN THE BOTTOM FLANGE AND THE SUPPORTING BEARING SEAT OF THE BENT. MOVEMENT OBSERVED WHEN TRAFFIC PASSED OVER (GAP CLOSED).
32. STRINGER 3, 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.
33. 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.
34. 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.
35. SPAN 2 BEARING PIPE AT BENT 3: EAST ANCHOR ROD OF BEARING PIPE AT STRINGER 4 AND WEST ANCHOR ROD OF BEARING PIPE AT STRINGER 8 BROKEN. WEST ANCHOR ROD AT STRINGER 4 HAD 50% LOSS OF SECTION. EDGE OF PIPE TYPICALLY MOVED UP TO  $\frac{1}{2}$  IN. UNDER LIVE LOAD.
36. 2 OF 2 BOLTS LOOSE AT STRINGER 1 TO FB3' CONNECTION.
37. 2 OF 2 BOLTS LOOSE AT STRINGER 6 TO FB3 CONNECTION.
38. STRINGER 4, BENT 2, 18 IN. LONG BY 2 IN. HIGH BY UP TO  $\frac{1}{4}$  IN. THICK AREA OF DELAMINATION ON THE BOTTOM OF THE NORTH FACE AT THE WEST END.

# Fracture Critical Floor Beam Inspection Plan and Reporting Form



Asset #: 03719 Bridge #: L32101000+01001

Feature Intersected: Bitterroot River

Inspection Date: June 21<sup>st</sup>, 2021



*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.