# Bridge No. L15672000+02001

Big Fork Bridge

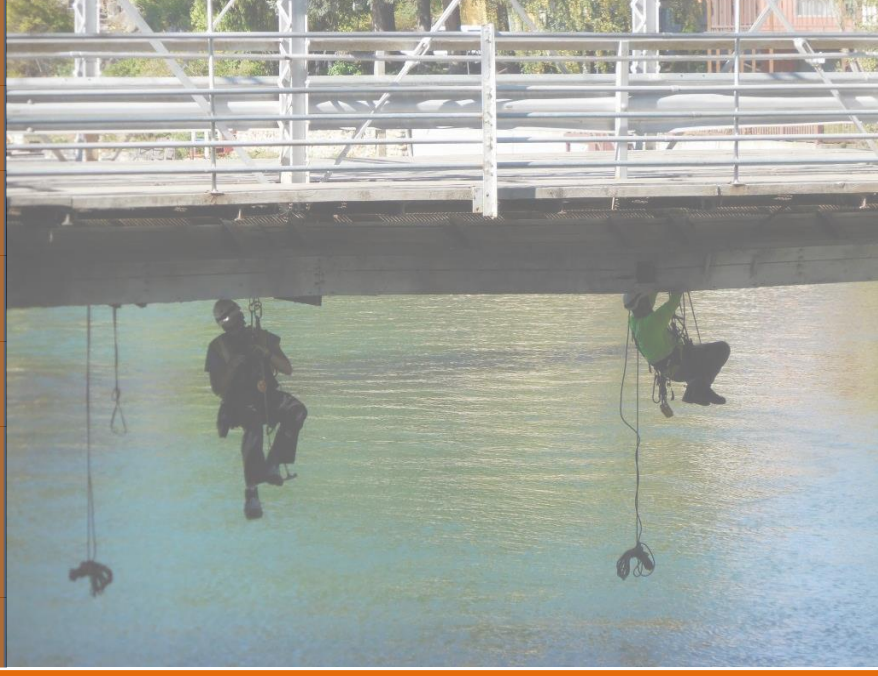
Near Big Fork, MT

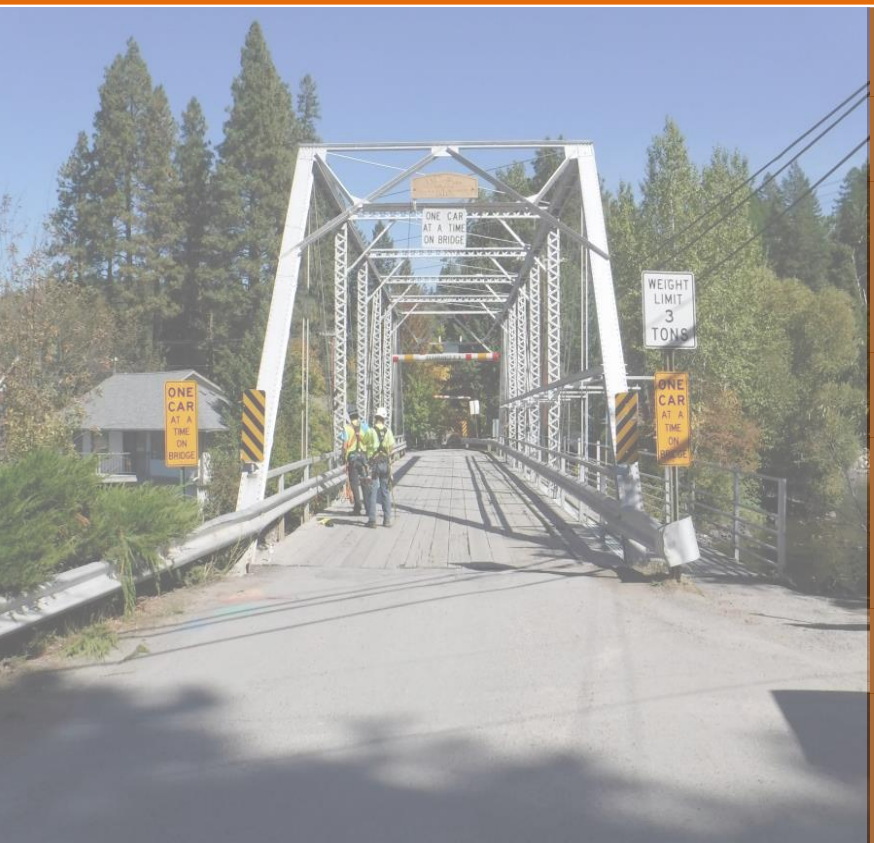
Condition Evaluation Report

Inspection Date: September 11, 2015

Prepared For:

MONTANA MDT DEPARTMENT OF TRANSPORTATION






Prepared By:

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Fish & Associates Inc.

*Partners in Structural Solutions*

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# 1 EXECUTIVE SUMMARY

Overall, the inspected portions of the Big Fork Bridge (Bridge No. L15672000+02001) near Big Fork, MT were in fair to poor condition. The condition of the bridge was based on the above water condition only. During this inspection, a fracture critical inspection of the floor beams was performed, as well as a cursory inspection of the steel stringers, underside of the timber deck, and lower chords. The following summarizes the recommendations for the Big Fork Bridge:

- The floor beams were found to be in fair to poor condition. It is recommended that the paint deterioration and areas of corrosion be monitored during future inspections. The areas of heavier corrosion along the floor beam webs as well as the hole noted in the web of Floor Beam 3' should be monitored during future inspections.
- The steel stringers were in fair to poor condition. It is recommended that the paint deterioration and areas of corrosion be monitored during future inspections. The areas of heavier corrosion on the web, as well as the holes noted on the exterior stringers above the abutments should be monitored during future inspections.
- It is recommended that the debris around the exterior stringers be cleaned during future inspections to prevent accelerated corrosion due to trapped moisture.
- The underside of the timber deck was in fair condition. It is recommended that the deck be monitored for decay and rot.
- The lower chord was found to be in fair to poor condition. It is recommended that the paint deterioration and areas of corrosion be monitored during future inspections.
- It is recommended that the bearing areas and the ends of the lower chords be cleaned during future inspections to prevent accelerated corrosion due to trapped moisture.

## 2 INTRODUCTION

The floor beam inspection of the Big Fork Bridge near Big Fork, MT for the Montana Department of Transportation was performed on September 11, 2015 by Fish & Associates, Inc. The following SPRAT (Society of Professional Rope Access Technicians) certified team members performed the inspection services:

- Fish & Associates, Inc.
  - Todd Demski, PE, CWI
  - Ryan Sievers, PE, CWI
  - Zach Williams, CWI

Prior to arriving on-site, our inspection team converted the plans to an editable PDF format for ease of use during inspection. IPads were used to record and review all inspection notes and photographs. After the inspection was complete, all notes were placed on the Big Fork Bridge Plans in AutoCAD to give MDT a visual representation of deficiencies on the bridge. The bridge was accessed using SPRAT certified techniques. No scaffolding, ladders, lifts, or under bridge inspection vehicles were used to access the underside of the bridge during this inspection cycle. The inspection was performed in accordance with the MDT Bridge Inspection and Rating Manual, May 2013.

During this inspection, Fish was responsible for the inspection and reporting of the floor beams. While under the bridge, Fish also inspected areas on the bridge not easily accessible by inspection personnel, such as the underside of the timber deck, steel stringers, and bottom chords. Fish was not responsible for the inspection of the truss members above the deck, top of deck, or substructure units. The following tasks were performed at the Big Fork Bridge by the inspection engineers from Fish:

- Mobilization from site daily and set up traffic control to warn oncoming motorists that work is being performed on the bridge
- Hands-on inspection of the floor beams using beam clamps to access the floor system
- Cursory inspection of the underside of the deck, bottom chords and steel stringers was be performed while on beam clamps
- Obtained all applicable photographs (perspective and close-up) and noted all deficiencies using iPads
- Performed element level and NBI inspection
- Red-lined existing bridge inspection forms

During our inspection of the bridge, the following tasks were performed:

- The floor beams, stringers, and bottom chords were inspected for steel deficiencies including corrosion, section loss, cracking of welds or base metal, bolting or welding issues, and load induced distortion or damage.
- The underside of the deck was inspected for timber deficiencies including connection issues, decay, section loss, insect damage, checks, shakes, cracks, splits, delaminations, abrasion, wear, and load induced distortion or damage.

# 3 CONDITION FINDINGS

The following sections outline the general conditions for each of the structure components inspected during the 2015 inspection cycle. Specific defects and member specific photographs for each structure component can be found in Section 5 of this report.

## 3.1 FLOOR BEAMS

The floor beams were rolled beams attached to the lower chord by a riveted/bolted connection. Approximately 25 percent of the surface area of the floor beams had a sound painted coating. Approximately 50 percent of the floor beam surface area had paint deterioration with freckle corrosion. The floor beams had a loss of painted coating on approximately 15 percent of the surface area with minor surface corrosion and negligible section loss. The remainder of the floor beam had areas of 1/16 in. deep pitting. Areas of heavier section loss were noted at the following locations:

- North end of Floor Beam 1: 1/8 in. deep section loss on end 2 ft. of the beam. Section loss was 2 in. high at the web to bottom flange interface on the east face (**Photo 5**).
- South end of Floor Beam 1: 1/8 in. deep section loss on end 2 ft. of the beam. Section loss was 2 in. high at the web to bottom flange interface on both faces (**Photo 6**).
- North end of Floor Beam 2: 1/8 in. deep section loss on end 20 in. of the beam. Section loss was 2 in. high at the web to bottom flange interface on both faces (**Photo 7**).
- South end of Floor Beam 2: 1/8 in. deep section loss on end 3 ft. of the beam. Section loss was 2 in. high at the web to bottom flange interface on the west face (**Photo 8**).
- South end of Floor Beam 3: 1/8 in. deep by 2 in. high section loss between 12 and 32 in. from the end of the west face of the beam at the bottom flange to web interface; 1/4 in. deep section loss at the same location on the east face (**Photo 9**).
- South end of Floor Beam 3': 1/8 in. deep section loss on end 3 ft. of the beam. Section loss was 1 in. high at the web to bottom flange interface on the both faces. A 1/2 in. diameter hole was noted in the web 1 in. above the bottom flange and approximately 3

ft. from the end of the floor beam (**Photo 10**).

- South end of Floor Beam 2': East face of beam had an 8 in. long by 1 in. high area and a 5 in. long by 1 in. high area of 1/8 in. deep section loss. Both areas located at the bottom flange to web interface on the end 3 ft. of the beam. West face of the beam had a 5 in. long by 2 in. high area of 1/8 in. deep section loss located 20 in. from the end of the beam at the bottom flange to web interface (**Photo 11**).
- South end of Floor Beam 1': 1/8 in. deep section loss on end 2 ft. of the beam. Section loss was 1 in. high at the web to bottom flange interface on the west face (**Photo 12**).

The paint condition of the horizontal cross bracing under the deck was in a similar condition to the floor beams. The cross bracing connections were secure with minor areas of distortion.

## 3.2 UNDERSIDE OF DECK AND STEEL STRINGERS

During the inspection of the floor beams, a cursory inspection of the steel stringers, and underside of the timber deck was performed. The steel stringers were rolled beams connected to the floor beams by a bolted connection. The steel stringers had a sound painted coating on approximately 50 percent of the surface area. Approximately 25 percent of the stringer surface area had areas of paint deterioration with freckle corrosion. Approximately 15 percent of the surface area had failed/peeling paint with minor surface corrosion with negligible loss of section. The remainder of the stringers had areas of pitting and section loss, primarily at the abutments. Areas of heavier section loss are noted below:

- Stringer 1 at Abutment 1: End of the stringer had a 9 in. long by 1.5 in. high hole in the stringer web adjacent to the bottom flange. The remaining end two ft. of the stringer web had D-meter readings of 0.150 in. to 0.250 in. (0.300 in. typical). The bottom flange was knife edged in this area (**Photo 14**).
- Stringer 8 at Abutment 1: End of the stringer had an 8 in. long by 1.5 in. high hole in the stringer web adjacent to the bottom flange centered 2 ft. from the end of the stringer (**Photo 15**). A 3 in. by 3 in. hole was located at mid height at the end of the web (**Photo 16**).
- Stringer 1 at Abutment 2: End of the stringer had a 14 in. long by 3 in. high hole in the stringer web adjacent to the bottom flange located at the end of the stringer (**Photo 17**).
- Stringer 8 at Abutment 2: End of the stringer had a 6 in. long by 3 in. high hole in the stringer web adjacent to the bottom flange located at the end of the stringer (**Photo 18**).

The underside of the timber deck had no coating noted. The underside of the deck had random areas of checking, splitting and signs of mold due to moisture.

## 3.3 LOWER CHORDS

The lower chords were comprised of two eyebars linked together at the truss panel points. The lower chords had a sound painted coating on approximately 35 percent of the surface area. Approximately 30 percent of the lower chord surface area had areas of paint deterioration with freckle corrosion. Approximately 20 percent of the surface area had a failed painted coating with moderate surface corrosion and negligible section loss. The remaining areas of the lower chord had pitting up to 1/16 in. deep at the truss connection points and up to 1/18 in. deep at the bearing connections. The eyebars at the bearing connections had rust scale up to 1/4 in. thick. The bearings and lower chord ends were buried by debris that had fallen from the deck and through the sidewalk.

## 4 CONCLUSIONS AND RECOMMENDATIONS

The floor beams and under deck components of the Big Fork Bridge were in fair to poor condition. These conditions of the bridge were based on the inspected portions only. The following conclusions and recommendations are suggested to maintain the long term serviceability of these components.

The floor beams were found to be in fair to poor condition. The areas of heavier corrosion along the bottom edge of the floor beam webs and the hole noted in the web of Floor Beam 3' should be monitored during future fracture critical inspections. There were no signs of deflection or crushing of the floor beam webs in the areas of heavier corrosion. Since the bridge is currently posted at 3 tons, it is recommended the floor beams be monitored during future fracture critical inspections.

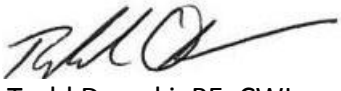
The steel stringers were in fair to poor condition. It is recommended that the paint deterioration and corrosion be monitored during future inspections. Stringers 1 and 8 at each abutment had heavy corrosion and holes in the webs at the bearing areas. The excessive corrosion in these areas is attributed to the debris accumulation that has occurred in the past. It is recommended that these areas be cleaned during future inspections to prevent accelerated corrosion due to trapped moisture.

The underside of the timber deck was in fair condition. It is recommended that the deck be monitored for decay and rot.

The lower chord was found to be in fair to poor condition. It is recommended that the paint deterioration and areas of corrosion be monitored during future inspections. The areas of heavier corrosion that was noted on the lower chord connections at the bearing can be attributed to the debris accumulation that has occurred in the past. It is recommended that the bearing areas and the ends of the lower chord be cleaned during future inspections to prevent accelerated corrosion due to trapped moisture.

The above summarizes our inspection findings on the 2015 Big Fork Bridge inspection services. Per FHWA requirements, the Big Fork Bridge should be inspected at intervals not to exceed 24 months. If you have any questions regarding the report, please do not hesitate to contact me.

Respectfully Submitted,
FISH & ASSOCIATES, INC.



Todd Demski, PE, CWI
Project Manager

# 5 APPENDICES

## 5.1 OVERVIEW PHOTOS

**Photo 1 :** South Elevation looking north at bridge

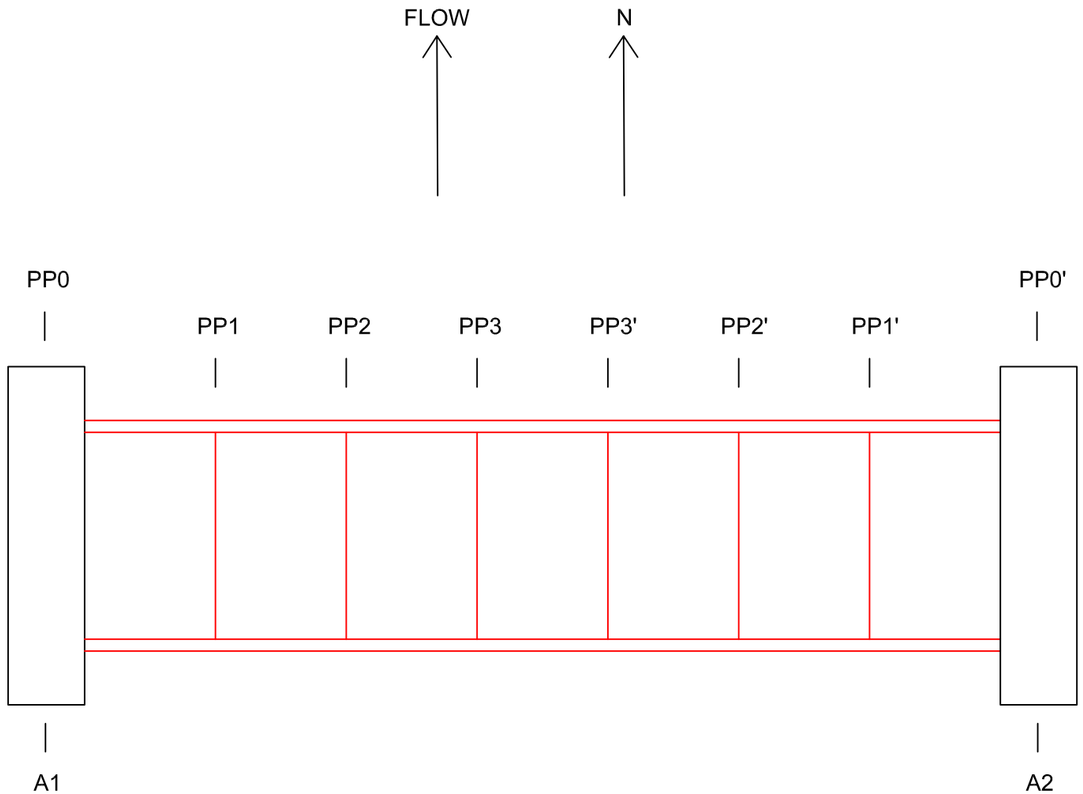

**Photo 2:** West Portal


**Photo 3:** East Portal

## 5.2 FRACTURE CRITICAL INSPECTION PLAN

The following drawing shows the members that were considered fracture critical during inspection. Fracture critical inspection requires visual inspection from no further away than arm's length, which was achieved via rope access methods. During this inspection, only the floor beams were inspected no further than arm's length.

NOTES
1. MEMBERS HIGHLIGHTED IN RED ARE CONSIDERED FRACTURE CRITICAL




FLOOR PLAN VIEW

BIG FORK RIVER BRIDGE

Sheet Number: FLOOR PLAN

Project Title: BIG FORK RIVER BRIDGE INSPECTION
L15672000+02001

Reference:

Fish Project #: 15078

Date: SEPTEMBER 2015

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Drawn: ZW | Checked: TD | Scale: NOT TO SCALE

DRAWING RELEASE NOTES

| No. | Date: | By: | Description: |
|---|---|---|---|
| | | | |

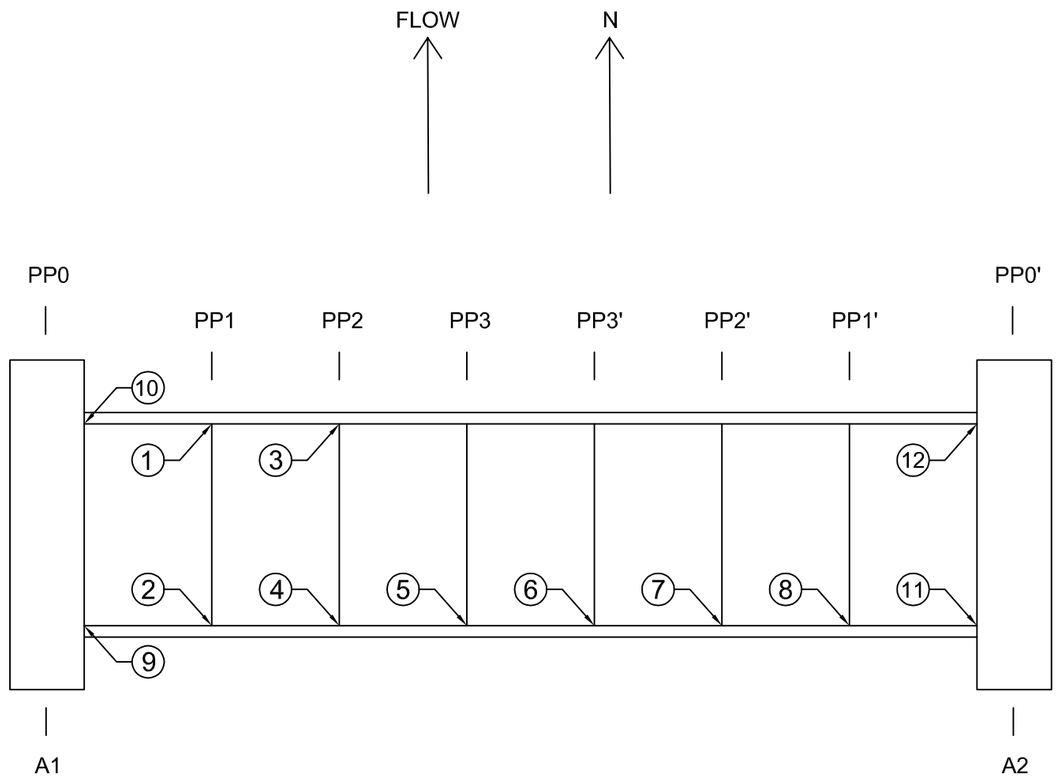
## 5.3 INSPECTION NOTES

The following drawing shows where specific defects were noted during the inspection.

GENERAL NOTES

A. THE FLOOR BEAMS, STRINGERS, AND LOWER CHORDS HAD AREAS OF PAINT DETERIORATION, FRECKLE CORROSION AND MODERATE SURFACE CORROSION WITH NEGLIGIBLE SECTION LOSS THROUGHOUT; AREAS OF HEAVIER CORROSION NOTED IN SPECIFIC INSPECTION NOTES

B. THE TIMBER DECK HAD RANDOM AREAS OF SOFT WOOD AND SIGNS OF MOLD THROUGHOUT




FLOOR PLAN VIEW

INSPECTION NOTES

1. FLOOR BEAM 1: 1/8 IN. DEEP SECTION LOSS ON END 2 FT. OF THE BEAM. SECTION LOSS WAS 2 IN. HIGH AT THE WEB TO BOTTOM FLANGE INTERFACE ON THE EAST FACE.

2. FLOOR BEAM 1: 1/8 IN. DEEP SECTION LOSS ON END 2 FT. OF THE BEAM. SECTION LOSS WAS 2 IN. HIGH AT THE WEB TO BOTTOM FLANGE INTERFACE ON BOTH FACES.

3. FLOOR BEAM 2: 1/8 IN. DEEP SECTION LOSS ON END 20 IN. OF THE BEAM. SECTION LOSS WAS 2 IN. HIGH AT THE WEB TO BOTTOM FLANGE INTERFACE ON BOTH FACES.

4. FLOOR BEAM 2: 1/8 IN. DEEP SECTION LOSS ON END 3 FT. OF THE BEAM. SECTION LOSS WAS 2 IN. HIGH AT THE WEB TO BOTTOM FLANGE INTERFACE ON THE WEST FACE.

5. FLOOR BEAM 3: 1/8 IN. DEEP BY 2 IN. HIGH SECTION LOSS BETWEEN 12 IN. AND 32 IN. FROM THE END OF THE WEST FACE OF THE BEAM AT THE BOTTOM FLANGE TO WEB INTERFACE; 1/4 IN. DEEP SECTION LOSS AT THE SAME LOCATION ON THE EAST FACE.

6. FLOOR BEAM 3': 1/8 IN. DEEP SECTION LOSS ON END 3 FT. OF THE BEAM. SECTION LOSS WAS 1 IN. HIGH AT THE WEB TO BOTTOM FLANGE INTERFACE ON BOTH FACES. A 1/2 IN. DIAMETER HOLE WAS NOTED IN THE WEB OF THE FLOOR BEAM 1 IN. ABOVE THE BOTTOM FLANGE AND APPROXIMATELY 3 FT. FROM THE END OF THE FLOOR BEAM.

7. FLOOR BEAM 2': EAST FACE OF BEAM HAD AN 8 IN. BY 1 IN. AREA AND A 5 IN. BY 1 IN. AREA OF 1/8 IN. DEEP SECTION LOSS. BOTH AREAS LOCATED AT THE BOTTOM FLANGE TO WEB INTERFACE ON THE END 3 FT. OF THE BEAM. WEST FACE OF THE BEAM HAD A 5 IN. BY 2 IN. AREA OF 1/8 IN. DEEP SECTION LOSS LOCATED 20 IN. FROM THE END OF THE BEAM AT THE BOTTOM FLANGE TO WEB INTERFACE.

8. FLOOR BEAM 1': 1/8 IN. DEEP SECTION LOSS ON END 2 FT. OF THE BEAM. SECTION LOSS WAS 1 IN. HIGH AT THE WEB TO BOTTOM FLANGE INTERFACE ON THE WEST FACE.

9. STRINGER 1 AT ABUTMENT 1: END OF THE STRINGER HAD A 9 IN. LONG BY 1.5 IN. HIGH HOLE IN THE STRINGER WEB ADJACENT TO THE BOTTOM FLANGE. THE REMAINING END TWO FT. OF THE STRINGER WEB HAD D-METER READINGS OF 0.150 TO 0.250 (0.300 TYPICAL). THE BOTTOM FLANGE WAS KNIFE EDGED IN THIS AREA.

10. STRINGER 8 AT ABUTMENT 1: END OF THE STRINGER HAD AN 8 IN. LONG BY 1.5 IN. HIGH HOLE IN THE STRINGER WEB ADJACENT TO THE BOTTOM FLANGE CENTERED 2 FT. FROM THE END OF THE STRINGER. A 3 IN. BY 3 IN. HOLE WAS LOCATED AT MID HEIGHT AT THE END OF THE WEB.

11. STRINGER 1 AT ABUTMENT 2: END OF THE STRINGER HAD A 14 IN. LONG BY 3 IN. HIGH HOLE IN THE STRINGER WEB ADJACENT TO THE BOTTOM FLANGE LOCATED AT THE END OF THE STRINGER.

12. STRINGER 8 AT ABUTMENT 2: END OF THE STRINGER HAD A 6 IN. LONG BY 3 IN. HIGH HOLE IN THE STRINGER WEB ADJACENT TO THE BOTTOM FLANGE LOCATED AT THE END OF THE STRINGER.

MILK RIVER BRIDGE

Sheet Number: FLOOR PLAN

Project Title: MILK RIVER BRIDGE INSPECTION
L03325000+04001

Reference:

Fish Project #: 15078

Date: SEPTEMBER 2015

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Drawn: ZW Checked: TD Scale: NOT TO SCALE

DRAWING RELEASE NOTES

| No. | Date: | By: | Description: |
|---|---|---|---|
| | | | |

## 5.4 TYPICAL AND DEFECT PHOTOS

**Photo 4:** Typical floor beam with paint deterioration and moderate surface corrosion


**Photo 5:** North end of Floor Beam 1 east face; web section loss adjacent to the bottom flange

**Photo 6:** South end of Floor Beam 1 east face; web section loss adjacent to the bottom flange


**Photo 7:** North end of Floor Beam 2, east face; web section loss adjacent to the bottom flange


**Photo 8:** South end of Floor Beam 2, west face; web section loss adjacent to the bottom flange

**Photo 9:** South end of Floor Beam 3; web section loss adjacent to the bottom flange

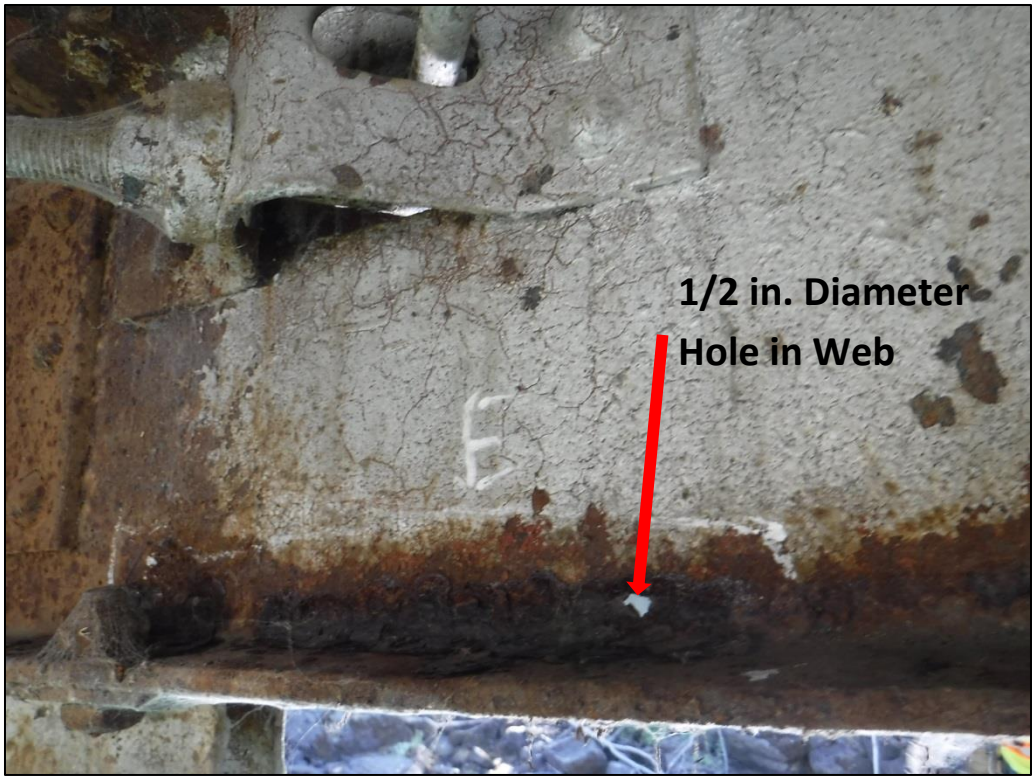



**Photo 10:** South end of Floor Beam 3', east face; web section loss adjacent to the bottom flange with 1/2 in. diameter hole in web

**Photo 11:** South end of Floor Beam 2'; web section loss adjacent to the bottom flange

**Photo 12:** South end of Floor Beam 1', west face; web section loss adjacent to the bottom flange

**Photo 13:** Typical stringer with paint deterioration and moderate surface corrosion


**Photo 14:** View of deterioration on Stringer 1 at Abutment 1

**Photo 15:** View of deterioration on Stringer 8 at Abutment 1


**Photo 16:** View of deterioration on Stringer 8 at Abutment 1

**Photo 17:** View of deterioration on Stringer 1 at Abutment 2

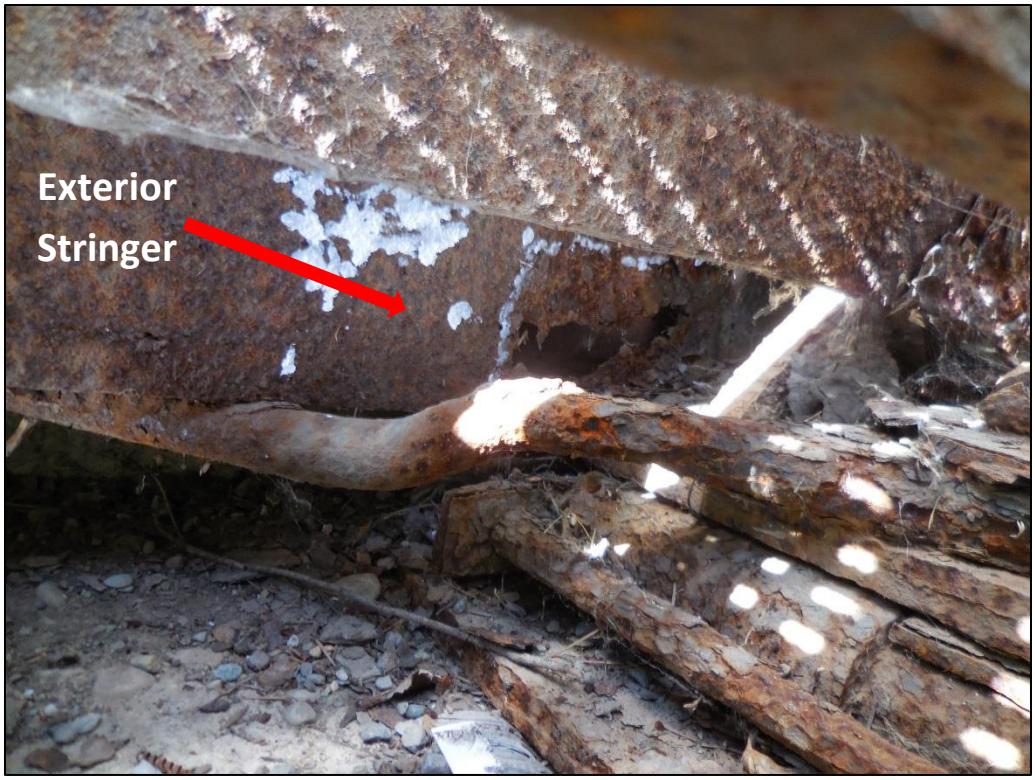



**Photo 18:** View of deterioration on Stringer 8 at Abutment 2

**Photo 19:** View of the typical condition of the underside of the deck

**Photo 20:** Typical lower chord with paint deterioration and moderate surface corrosion

**Photo 21:** View of the pitting on the east lower chord at Abutment 1

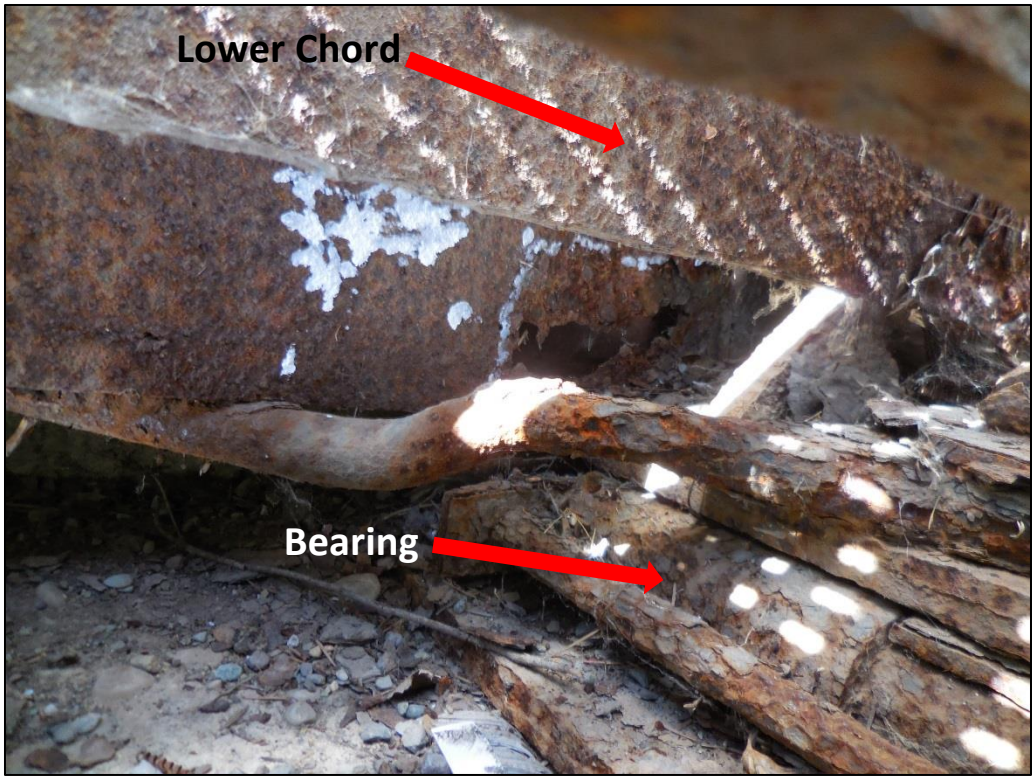



**Photo 22:** View of the pitting on the south lower chord at Abutment 2

## 5.5 BRIDGE ASSESSMENT FORM

Montana Department of Transportation

# INITIAL ASSESSMENT FORM FOR STRUCTURE :

## L15672000+02001

**Location : S END BIG FORK Structure Name: Bigfork Bridge**

## General Location Data

District Code, Number, Location : **01** **Dist 1** **MISSOULA**
County Code, Location : **029** **FLATHEAD**
Kind fo Hwy Code, Description : **4** **4 County Hwy**
Str Owner Code, Description : **2** **County Highway Agency**
Intersecting Feature : **SWAN RIVER** **110**
Structure on the State Highway System : ☐
Structure on the National Highway System : ☐
Str Meet or Exceed NBIS Bridge Length : ☒
Latitude : **48°03'34"**
Longitude : **114°04'22"**

MDT Maintenance Section : **None**
Division Code, Location : **12** **KALISPELL**
City Code, Location : **00000** **RURAL AREA**
Signed Route Number : **15672**
Maintained by Code, Description : **2** **County Highway Agenc**
Kilometer Post, Mile Post : **0.32 km** **0.20**

## Traffic Data

Current ADT : **2,000** ADT Count Year : **2003** Percent Trucks : **3 %**

## Construction Data

Construction Project Number :
Construction Station Number : **0+00.00**
Construction Drawing Number : **ELECTRONIC**
Construction Year : **1911**
Reconstruction Year :

## Structure Loading, Rating and Posting Data

### Loading Data :

| | | |
|---|---|---|
| Design Loading : | | **0 Unknown** |
| Inventory Load, Design : | **3.6 mton** | **2 AS Allowable Stress** |
| Operating Load, Design : | **7.2 mton** | **2 AS Allowable Stress** |
| Posting : | | **0 >39.9% below** |

### Rating Data :

| | Operating | Inventory | Posting |
|---|---|---|---|
| Truck 1 Type 3 : | | **4** | **3** |
| Truck 2 Type 3-S3 : | | **6** | |
| Truck 3 Type 3-3 : | **14** | **7** | |

## Structure, Roadway and Clearance Data

### Structure Deck, Roadway and Span Data :

Structure Length : **36.58 m**
Deck Area : **178.00 m sq**
Deck Roadway Width : **4.70 m**
Approach Roadway Width : **4.88 m**
Median Code, Description : **0 No median**

### Structure Vertical and Horizontal Clearance Data :

Vertical Clearance Over the Structure : **4.95 m**
Reference Feature for Vertical Clearance : **N Feature not hwy or RR**
Vertical Clearance Under the Structure : **0.00 m**
Reference Feature for Lateral Underclearance : **N Feature not hwy or RR**
Minimum Lateral Under Clearance Right : **0.00 m**
Minimum Lateral Under Clearance Left : **0.00 m**

## Span Data

### Main Span

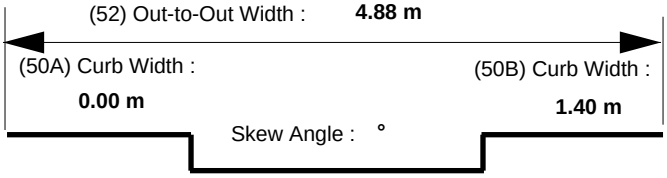
Number Spans : **1**
Material Type Code, Description : **3 Steel**
Span Design Code, Description : **10 Truss - Thru**

### Deck

Deck Structure Type : **8 Wood or Timber**
Deck Surfacing Type : **7 Wood or Timber**
Deck Protection Type : **0 None**
Deck Membrain Type : **0 None**

### Approach Span

Number of Spans : **0**
Material Type Code, Description :
Span Design Code, Description :




### Structure Vertical and Horizontal Clearance Data Inventory Route :

| Over / Under Direction Name | Inventory Route | South, West or Bi-directional Travel | | | North or East Travel | | |
|---|---|---|---|---|---|---|---|
| | | Direction | Vertical | Horizontal | Direction | Vertical | Horizontal |
| Route On Structure | L15672 | Both | 4.95 m | 4.72 m | N/A | | |
| | | | | | | | |

Montana Department of Transportation

# INITIAL ASSESSMENT FORM FOR STRUCTURE :

## L15672000+02001

**Continue**

## Inspection Data

Sufficiency Rating : **25**
Structure Status : **Struc Def - Elg Repl**

**Inspection Due Date : 21 November 2015**
(91) Inspection Frequency (months) : **24**
Next Fracture Critical Due Date : **21 Nov 2015**
Fracture Critical Detail : **Steel trusses**

## NBI Inspection Data

| | | | |
|---|---|---|---|
| (90) Date of Last Inspection : | 21 November 2013 | Last Inspected By : | Darrel Reich - 2051 |
| (90) Inspection Date : | September 11, 2015 | Inspected By : | Todd Demski, Ryan Sievers, Zach Williams |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| (58) Deck Rating : | 6 / 6 | (68) Deck Geometry : | 3 | (36A) Bridge Rail Rating : | 0 / 0 | (62) Culvert Rating : | N / N |
| (59) Superstructure Rating : | 4 / 4 | (67) Structure Rating : | 2 | (36B) Transition Rating : | N / N | (61) Channel Rating : | 8 / 8 |
| (60) Substructure Rating : | 5 / 5 | (69) Under Clearance : | N | (36C) Approach Rail Rating : | N / N | (71) Waterway Adequacy : | 9 / 9 |
| (72) App Rdwy Align : | 6 / 6 | (41) Posting Status : | P / P | (36D) End Rail Rating : | 0 / 0 | (113) Scour Critical : | 5 |

Unrepaired Spalls : 0 m sq

Deck Surfacing Depth : 2.50 in

## Inspection Hours

| | | | | | |
|---|---|---|---|---|---|
| Crew Hours for inspection : | 1 | 0 | Snooper Required : | N | |
| Helper Hours : | -1 | 0 | Snooper Hours for inspection : | -1 | -1 |
| Special Crew Hours : | -1 | 4 | Flagger Hours : | -1 | -1 |
| Special Equipment Hours : | -1 | 0 | | | |

## Inspection Work Candidates

| Candidate ID | Date Requested | Status | Priority | Effected Structure Unit | Scope of Work | Action | Covered Condition States |
|---|---|---|---|---|---|---|---|
| D11-FY2009-000063 | 17 December 2008 | Not Approved | High | M Main | Bridge | Other | |

Clean material accumulations from about all four (4) bearing devices...periodically.

09' ... needs done periodically.... not just once during redecking a few years ago.

Same for 2011 inspection.
Same for 2013 inspection.

Late Reason:
Inspection Date: 11/21/2013

# INITIAL ASSESSMENT FORM FOR STRUCTURE :

## L15672000+02001

**Continue**

## Element Inspection Data

********** Span : **Main-0 - -1** **********

Element Description

| Smart Flag | Scale Factor | Env | Quantity | Units | Insp Each | Pct Stat 1 | Pct Stat 2 | Pct Stat 3 | Pct Stat 4 | Pct Stat 5 |
|---|---|---|---|---|---|---|---|---|---|---|
| Element 31 - Timber Deck | | | | | | | | | | |
| | 1 | 2 | 179 | sq.m. | X | 0 | 100 | 0 | 0 | |
| | | | | | | % | % | % | % | % |

Previous Inspection Notes :

11/21/2013 - The timber planks show some wear with cracking and splits scatter throughout. There is also some areas of rot scattered throughout. No changes noted to the condition state. WVHJ

11/28/2011 - The timber planks have cracks and splits throughout. Some deck planks have minor decay at the ends of the planks. No changes noted from last inspection. CZBZ

11/19/2009 - Approach transitions show some beginning potholes in asphalt. Some rot of bridge ends wear plank. Some section loss of wear plank throughout. Deck plank all show staining and minor fungal growth from moisture. ZZDZ

10/16/2008 - Wear plank show some minor splintering. Approach transitions are somewhat rough. Deck planking shows some staining in soffit. See pics.. QZJZ

07/06/2006 - Timbers show some minor checking and staining. Minor wear. No problems noted. HYIZ

06/16/2004 - Transverse deck planking with full width longitudinal wear planking new this summer. Planks show some minor checking and minor splinters scattered throughout. No problems noted. Posting reduced to 3 tons. (4.88 * 36.58 = 178.51) RZIR

Inspection Notes: The topside of this element was not inspected as part of the scope of services. The underside of the deck had random checking and splitting with signs of mold due to moisture.

Element 113 - Paint Stl Stringer

| Smart Flag | Scale Factor | Env | Quantity | Units | Insp Each | Pct Stat 1 | Pct Stat 2 | Pct Stat 3 | Pct Stat 4 | Pct Stat 5 |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 293 | m. | | 50 | 30 | 10 | 5 | 5 |
| | | | | | | 50 % | 25 % | 15 % | 5 % | 5 % |

Previous Inspection Notes :

11/21/2013 - There is 1 small spot of 100 percent section loss in the web of the left exterior stringer near bent 1. The stringers have paint loss with rust and corrosion scattered throughout. The worst rust and corrosion is near the end bents. Only the stringers near the end bents could be reached to be inspected at arms length. January 16, 2014 The county removed 1 row of wood planks on the right side sidewak so we could inspect the bottom chord at arms length. We inspected the right side of the exterior right row of steel stringers at arms length that were under the sidewalk planks. The stringers have little paint left with lots of rust and corrosion. Most of the stringers have a area of 100 percent section loss on the end of the stringers on the bottom flange/bottom of the web where they sit on the floor beams. WVHJ

11/28/2011 - The steel stringers have paint loss with rusting and may have corrosion at some locations. No changes noted to the condition state from the last QA inspection. CZBZ

11/19/2009 - No significant changes noted. ZZDZ

10/16/2008 - Paint loss and rusting with some corrosion appears unchanged. See pic.. QZJZ

Revised condition states as per April 2008 QA inspection - JSS 2-20-09

07/06/2006 - No significant changes noted. No problems noted. HYIZ

06/16/2004 - Stringers show some minor paint loss, corrosion, and rusting. Some stringers show some minor twisting. Some minor section loss at some floorbeam locations. No problems noted. (8 * 36.58 = 292.64) RZIR

08/06/2003 - All stringers show paint loss, corrosion, and rusting, with probable minor section loss. No significant changes noted. HBHZ

08/22/2001 - All stringers in all spans show paint loss, corrosion and rusting, with some probable minor section loss. NHLS

10/04/1999 - 8 painted steel stringers per floorbeam span. All show paint loss, medium corrosion, and rusting, but no observable section loss. ZJAT

09/15/1997 - _ EEJF

Inspection Notes: Stringers 1 and 8 at the abutments had holes in the webs at each location. The remainder of the stringers had paint deterioration and up to moderate surface corrosion.

# INITIAL ASSESSMENT FORM FOR STRUCTURE :

## L15672000+02001

**Continue**

************** Span : **Main-0 - -1 (cont.)** **************

Element Description

| Smart Flag | Scale Factor | Env | Quantity | Units | Insp Each | Pct Stat 1 | Pct Stat 2 | Pct Stat 3 | Pct Stat 4 | Pct Stat 5 |
|---|---|---|---|---|---|---|---|---|---|---|
| Element 121 - P/Stl Thru Truss/Bot | | | | | | | | | | |
| | 1 | 3 | 73 | m. | | 40 | 35 | 15 | 5 | 5 |
| | | | | | | 35 % | 30 % | 20 % | 10 % | 5 % |

Previous Inspection Notes :

11/21/2013 - No changes noted in the section loss on the inside rail of the bottom chord at bent 2 left at the bearing. Addition section loss found on the inside rail of the bottom chord at bent 1 left at the bearing. There is rust with freckled rust scattered throughout the bottom chord. The bottom chord on the right side under the sidewalk could not be inspected at arms length. January 16, 2014, county employees removed 1 row of timber planks on the right side sidewalk so the bottom chord could be inspected at arms length. The right side bottom chord was inspected at arms length. The bottom chord shows lots of paint loss with rust throughout. There is corrosion and section loss on all the rail ends of the bottom chord at the bents. Section loss of up to 4/32" on the 18/32' rail of the bottom chord at bent 2 on the right side. There is section loss on all four corners of the bottom chord both right and left sides of the bridge. The forge line cracks appear unchanged. The repaired area at L6 on the right side looks ok. WVHJ

11/28/2011 - Lower chord has paint loss rusting with section loss. The inside rail of the bottom chord at bent 2 left at the bearing has 2/32 of section loss. The thickness of the bottom chord is .63 inches. The repaired area appears OK. The forge line cracks appear unchanged. No changes noted in the condition state as per last QA inspection. CZBZ

11/19/2009 - No significant changes noted. ZZDZ

10/16/2008 - Lower chord shows no significant changes. Forge line cracks appear unchanged. Repair ok. Paint loss rusting and corrosion remain.
Revised condition states as per April 2008 QA inspection - JSS 2-20-09 QZJZ

07/06/2006 - Repaired vertical shows no problems. Some others also show cracking of forge line, no problems noted. No changes noted. HYIZ

06/16/2004 - Lower chord members show paint loss. All members cleaned with deck replacement but still show corrosion and rusting. Vertical eye bar connections show "typical" cracking at forge locations. L6 outside shows /- 2" long crack, see pics. L6 inside - entire bar replaced, see pic.. (36.58 * 2 = 73.16) RZIR

08/06/2003 - All lower chord members show paint loss, corrosion, and rusting with heavy accumulations of material and growth about connection points. No obvious problems noted. Connection points need cleaned. HBHZ

08/22/2001 - No visible problems with truss members. All members show paint loss, corrosion and rusting. All connection points show heavy accumulations of dirt and organic material with some live growth. NEEDS CLEANING AT CONNECTION POINTS. NHLS

10/04/1999 - Medium to heavy corrosion on bottom chord throughout. All connections impossible to inspect due to heavy accumulation of material,and organic growth. Should be cleaned and NDTested. ZJAT

09/15/1997 - Medium corrosion on bottom chord members - Eyebar connections covered with dirt EEJF

Inspection Notes: Paint deterioration and moderate surface corrosion was typical throughout. The ends of the lower chords at the bearing connections had heavier corrosion with up to 1/8 in. deep section loss with 1/4 in. thick rust scale.

| Smart Flag | Scale Factor | Env | Quantity | Units | Insp Each | Pct Stat 1 | Pct Stat 2 | Pct Stat 3 | Pct Stat 4 | Pct Stat 5 |
|---|---|---|---|---|---|---|---|---|---|---|
| Element 126 - P/Stl Thru Truss/Top | | | | | | | | | | |
| | 1 | 3 | 73 | m. | | 90 | 10 | 0 | 0 | 0 |
| | | | | | | % | % | % | % | % |

Previous Inspection Notes :

11/21/2013 - The paint system is mostly good. Minor spots of freckled rust seen on the upper truss. The looseness appears to be unchanged. No additional damage seen from past inspections. No changes noted with the condition states. WVHJ

11/28/2011 - The paint system shows some minor fading. The past damage appears unchanged. No changes noted from the last QA inspection. CZBZ

11/19/2009 - No significant changes noted. ZZDZ

10/16/2008 - Past damage appears unchanged. Looseness remains same. Repair paint still mostly good.
Revised condition states as per April 2008 QA inspection - JSS 2-20-09 QZJZ

07/06/2006 - Paint still sound. Some verticals and counters show some looseness. No problems noted. HYIZ

06/16/2004 - All previous comments still hold true except L6-U6 right verticals - inside has been replaced and ouside is cracked, see pics.. All thru chord surfaces have been repainted (old coating was not removed). (36.58 * 2 = 73.16) RZIR

08/06/2003 - All steel shows some paint loss with some corrosion and rusting throughout. All loose members referred to in last inspection remain loose. No changes noted. No problems noted. HBHZ

08/22/2001 - All surfaces show some minor paint loss and corrosion, with minor rusting. Right truss - vertical U1-L1 is slightly out of alignment. Counter U2-L3 is loose and slightly bent toward bottom. Counter U3-L4 is loose. Counter U6-L5 is bent about mid point. Left truss - counter U5-L4 is loose. Counter U3-L4 is (still) bent. Counter U2-L3 is loose. Vertical U1-L1 is loose. No changes from last inspection. NHLS

10/04/1999 - Counter on left truss about mid span is bent due to collosion damage, see pic. Tension counter Rt. L6-U6, inside, loose and flopping, outside, is somewhat tighter, with both slightly out of alignment. ZJAT

09/15/1997 - Counter at center panel of LT truss in Bent EEJF

Inspection Notes: This element was not inspected as part of the scope of services.

# INITIAL ASSESSMENT FORM FOR STRUCTURE :

## L15672000+02001

**Continue**

* * * * * * * * * * Span : **Main-0 - -1 (cont.)** * * * * * * * * * *

Element Description

| Smart Flag | Scale Factor | Env | Quantity | Units | Insp Each | Pct Stat 1 | Pct Stat 2 | Pct Stat 3 | Pct Stat 4 | Pct Stat 5 |
|---|---|---|---|---|---|---|---|---|---|---|
| Element 152 - Paint Stl Floor Beam | | | | | | | | | | |
| | 1 | 2 | 39 | m. | | 25 | 65 | 5 | 5 | 0 |
| | | | | | | 25 % | 50 % | 15 % | 5 % | 5 % |

Previous Inspection Notes :

11/21/2013 - The floor beams have a lot of paint loss with rusting and corrosion scattered throughout. The outside ends of the floor beams have the most rust and corrosion on them. No section loss seen on the floor beams. Only the floor beams near the end bents and left outside edges could be inspected at arms length. WVHJ

11/28/2011 - No changes noted from the last QA inspection. The paint loss, rusting and corrosion appears unchanged. CZBZ

11/19/2009 - No significant changes noted. ZZDZ

10/16/2008 - Paint loss rusting and corrosion appears unchanged. See pic.. QZJZ
Revised condition states as per April 2008 QA inspection - JSS 2-20-09

07/06/2006 - No significant changes noted. HYIZ

06/16/2004 - All floorbeams show some paint loss, corrosion, and rusting, All connection points have been cleaned. RZIR

08/06/2003 - All floorbeams show paint loss, corrosion, and rusting. With accumulations of material about connection points. No changes noted. HBHZ
No problems noted.

08/22/2001 - All floorbeams show paint loss, corrosion and rusting, with probable minor section loss. FB 1 still slightly swisted. No significant changes detected from last inspection. NHLS

10/04/1999 - All 6 floorbeams show paint loss, medium corrosion and rusting but no detectable section loss. ZJAT

09/15/1997 - _ EEJF

Inspection Notes: The end 2 ft. to 3 ft. of the floor beams had heavy corrosion with 1/8 in. deep pitting typical on the web adjacent to the bottom flange. The south end of Floor Beam 3' had a 1/2 in. diameter hole in the web.

| Smart Flag | Scale Factor | Env | Quantity | Units | Insp Each | Pct Stat 1 | Pct Stat 2 | Pct Stat 3 | Pct Stat 4 | Pct Stat 5 |
|---|---|---|---|---|---|---|---|---|---|---|
| Element 181 - Pnt Vrt X-Frame | | | | | | | | | | |
| | 1 | 3 | 29 | m. | | 90 | 10 | 0 | 0 | 0 |
| | | | | | | % | % | % | % | % |

Previous Inspection Notes :

11/21/2013 - Minor paint loss and minor rust seen, no changes noted. WVHJ

11/28/2011 - The x-braces show minor paint fading and minor paint loss with very little rust seen. The paint system appears to be functioning well. CZBZ

11/19/2009 - No changes noted. ZZDZ

10/16/2008 - No significant changes noted. QZJZ

07/06/2006 - No significant changes noted. HYIZ

06/16/2004 - Both portals and all cross members have been repainted. Surfaces were not cleaned prior to painting - due to lead base original coating. (4.88 * 6 = 29.28) RZIR

08/06/2003 - Both portals and all braces show paint loss, corrosion, and rusting. No changes noted. No problems noted. HBHZ

08/22/2001 - Portals and x-braces show paint loss, corrosion and rusting. No changes noted. NHLS

10/04/1999 - Portal openings, truss top connections, and floor beam bracing all show paint loss, corrosion, and rusting, but appear structurally sound. ZJAT

09/15/1997 - _ EEJF

Inspection Notes: This element was not inspected as part of the scope of services.

# INITIAL ASSESSMENT FORM FOR STRUCTURE :

## L15672000+02001

**Continue**

************** Span : **Main-0 - -1 (cont.)** **************

Element Description

| Smart Flag | Scale Factor | Env | Quantity | Units | Insp Each | Pct Stat 1 | Pct Stat 2 | Pct Stat 3 | Pct Stat 4 | Pct Stat 5 |
|---|---|---|---|---|---|---|---|---|---|---|
| Element 215 - R/Conc Abutment | | | | | | | | | | |
| | 1 | 3 | 10 | m. | | 75 | 20 | 5 | 0 | |
| | | | | | | % | % | % | % | % |

Previous Inspection Notes :

11/21/2013 - The bent 2 abutment on the right side has scaling, spalling and delaminations. No exposed rebar seen. Material on the caps and the bearings needs cleaned off. WVHJ
11/28/2011 - The abutments show some cracking and spalling with no exposed rebar. No changes noted. CZBZ
11/19/2009 - No changes noted. ZZDZ
10/16/2008 - Cracking spalling and abrasion appear unchanged. No problems noted. QZJZ
Revised condition states as per April 2008 QA inspection - JSS 2-20-09
07/06/2006 - Cracking and spalling remain unchanged. HYIZ
06/16/2004 - Abutments show some minor cracking and abrasion and minor spalls. No changes noted. No problems noted. RZIR
08/06/2003 - Abutments show some minor cracking with some abrasion and minor spalls. No changes noted. No problems noted. HBHZ
08/22/2001 - Abutments show some minor cracking and abrasion with some minor spalls. No changes noted. NHLS
10/04/1999 - Some minor cracks in abutments with some minor spalling and abraison, no problems noted. ZJAT
09/15/1997 - _ EEJF

Inspection Notes: This element was not inspected as part of the scope of services.

| Smart Flag | Scale Factor | Env | Quantity | Units | Insp Each | Pct Stat 1 | Pct Stat 2 | Pct Stat 3 | Pct Stat 4 | Pct Stat 5 |
|---|---|---|---|---|---|---|---|---|---|---|
| Element 311 - Moveable Bearing | | | | | | | | | | |
| | 1 | 3 | 2 | ea. | | 0 | 100 | 0 | | |
| | | | | | | % | % | % | % | % |

Previous Inspection Notes :

11/21/2013 - Rust and corrosion with some section loss seen on the bearing. The bearing are mostly covered with material. Material accumulations needs cleaned off the bearing. WVHJ
11/28/2011 - Most of the paint system is gone. Rusting with some corrosion and minor pitting. Material accumulations at the devices need cleaned. The alignment appears to be ok. No changes noted from the last QA inspection. CZBZ
11/19/2009 - Material accumulations growing behind shrouds. Need cleaned again. ZZDZ
10/16/2008 - Shrouds about all devices helps some but not completely. Paint loss and rusting with material accumulations. See pic.. QZJZ
Revised condition states as per April 2008 QA inspection - JSS 2-20-09

Inspection Notes: This element was not inspected as part of the scope of services.

| Smart Flag | Scale Factor | Env | Quantity | Units | Insp Each | Pct Stat 1 | Pct Stat 2 | Pct Stat 3 | Pct Stat 4 | Pct Stat 5 |
|---|---|---|---|---|---|---|---|---|---|---|
| Element 313 - Fixed Bearing | | | | | | | | | | |
| | 1 | 3 | 2 | ea. | | 0 | 100 | 0 | | |
| | | | | | | % | % | % | % | % |

Previous Inspection Notes :

11/21/2013 - Rust with corrosion and some section loss seen on the bearing. The bearings are mostly covered with material. The material accumulation needs to be cleaned off. WVHJ
11/28/2011 - The devices are still covered with material accumulations. The paint loss and rusting appears unchanged. The alignment appears ok. No changes noted from the last QA inspection. CZBZ
11/19/2009 - Material accumulations growing behind shrouds. Need cleaned again. ZZDZ
10/16/2008 - Paint loss and rusting with material accumulations. See pic.. QZJZ
Revised condition states as per April 2008 QA inspection - JSS 2-20-09

Inspection Notes: This element was not inspected as part of the scope of services.

# INITIAL ASSESSMENT FORM FOR STRUCTURE :

## L15672000+02001

**Continue**

************** Span : **Main-0 - -1 (cont.)** **************

Element Description

| Smart Flag | Scale Factor | Env | Quantity | Units | Insp Each | Pct Stat 1 | Pct Stat 2 | Pct Stat 3 | Pct Stat 4 | Pct Stat 5 |
|---|---|---|---|---|---|---|---|---|---|---|
| Element 334 - Metal Rail Coated | | | | | | | | | | |
| | 1 | 1 | 37 | m. | | 90 | 5 | 5 | 0 | 0 |
| | | | | | | % | % | % | % | % |

Previous Inspection Notes :

11/21/2013 - Minor rust seen scattered throughout on the rail and the posts. WVHJ

11/28/2011 - The sidewalk rail has some paint loss with minor rusting. The posts shows minor paint loss with minor rust. CZBZ

11/19/2009 - None ZZDZ

10/16/2008 - Revised condition states as per April 2008 QA inspection - JSS 2-20-09 QZJZ

07/06/2006 - Sidewalk handrail, no changes. HYIZ

06/16/2004 - See prior element notes. (THIS IS THE SIDEWALK RAIL) RZIR

08/06/2003 - Hand rail shows some rusting and corrosion. No problems noted. HBHZ

08/22/2001 - Hand rail shows some rusting with paint loss. NHLS

10/04/1999 - Single w beam bridge rail attached to the inside of the truss, not to standards. Transition rail is inadequate. No bridge approach sections, and terminals are "bull nose" type ends, not to standard. Hazzard panels up at all corners, slightly out of alignment. Posted 4T.
09/15/1997 - _ EEJF

Inspection Notes: This element was not inspected as part of the scope of services.

| Smart Flag | Scale Factor | Env | Quantity | Units | Insp Each | Pct Stat 1 | Pct Stat 2 | Pct Stat 3 | Pct Stat 4 | Pct Stat 5 |
|---|---|---|---|---|---|---|---|---|---|---|
| Element 334 - Metal Rail Coated | | | | | | | | | | |
| | 1 | 2 | 73 | m. | | 90 | 5 | 5 | 0 | 0 |
| | | | | | | % | % | % | % | % |

Previous Inspection Notes :

11/21/2013 - No changes noted minor rust seen scattered throughout on the rail and the posts. WVHJ

11/28/2011 - Rail has some scrapes with some coating loss with minor rust on the rail. Minor freckled rust on the posts. No changes noted. CZBZ

11/19/2009 - A couple additional dings to rail. No significant changes. ZZDZ

10/16/2008 - Spot paint loss and minor rusting scattered about. No significant changes noted to rail or handrail.. QZJZ

07/06/2006 - No significant changes noted. HYIZ

06/16/2004 - Single w-beam bridge rail is Ok, Not To Std.. Approach rail is Ok, NTS.. No Bridge Approach Sections. Terminals are full bull nose. Several approach rail posts show moderate to serious rotting on tops. Posting lowered to 3 tons with "One car at a time on bridge" sign added to each portal, see pic.. New sidewalk supports and planking added. Handrail repainted. RZIR

08/06/2003 - Rail is ok. Hazard panel down at B-1 Lt., see pic.. New sidewalk surface. HBHZ

08/22/2001 - Bridge rail is single w-beam steel attached to truss members, not to std.. No BAS. Transitions are Not To Std.. Terminals are semi-bull nose type, NTS. Hazzard panels up. Posted 4T. NHLS

10/04/1999 - None ZJAT

09/15/1997 - _ EEJF

Inspection Notes: This element was not inspected as part of the scope of services.

| Smart Flag | Scale Factor | Env | Quantity | Units | Insp Each | Pct Stat 1 | Pct Stat 2 | Pct Stat 3 | Pct Stat 4 | Pct Stat 5 |
|---|---|---|---|---|---|---|---|---|---|---|
| Element 363 - Sup Sect Loss SmFlag | | | | | | | | | | |
| X | 1 | 3 | 1 | ea. | X | 0 | 0 | 0 | 100 | |
| | | | | | | 0 % | 0 % | 0 % | 100 % | % |

Previous Inspection Notes :

11/21/2013 - There is 2/32 inch section loss on the lower chord inside rail at bent 2 left near the bearing. And 1/32 inch section loss on the inside rail of the lower chord at bent 1 left near the bearing. There is also 1 small spot of 100 percent section loss in the web of the left exterior stringer. WVHJ

Inspection Notes: Floor beams have areas of section loss in the web at the web to bottom flange interface. Exterior stringer webs had holes at each abutment. See fracture critical inspection report for specific details.

# INITIAL ASSESSMENT FORM FOR STRUCTURE :

## L15672000+02001

**Continue**

### General Inspection Notes

| | |
|---|---|
| 11/21/2013 - On January 16, 2014 went out with employees from the Flatehead County as they removed the wood planks from the right side sidewalk so we could inspect the lower chord. The lower chord was not accessible from the top because of the sidewalk planks. The county employees removed 1 row of planks for access to inspect the right side bottom chord at arms length. The bottom chord was inspected at arms length. The county employees replaced the planks that were removed to inspect the lower chord. At some point next summer the county is going to replace the 1 row of planks on the sidewalk over the bottom chord with some type of metal plating that can be removed for future inspections. Darrel Reich!! | WVHJ |
| 11/28/2011 - None | CZBZ |
| 11/19/2009 - None | ZZDZ |
| 10/16/2008 - Revised NBI 59 Superstructure to 6 as per April 2008 QA inspection - JSS 2-20-09 | QZJZ |
| 07/06/2006 - None | HYIZ |
| 06/16/2004 - None | RZIR |
| 08/06/2003 - None | HBHZ |
| 08/22/2001 - None | NHLS |
| 10/04/1999 - All bearings should be cleaned and tested along with all connections. | ZJAT |
| 09/15/1997 - None | EEJF |
| 01/01/1995 - Sufficiency Rating Calculation Accepted by ops$u5963 at 3/10/97 15:00:48<br>Sufficiency Rating Calculation Accepted by OPS$U9004 at 2/19/97 12:28:56 | UOTS |
| 10/01/1992 - Updated with tape 1994 | NB94 |
| 02/01/1990 - Updated with tape 1992 | NB92 |

This was a fracture critical inspection of the floor beams performed by Fish & Associates, Inc. using rope access techniques.