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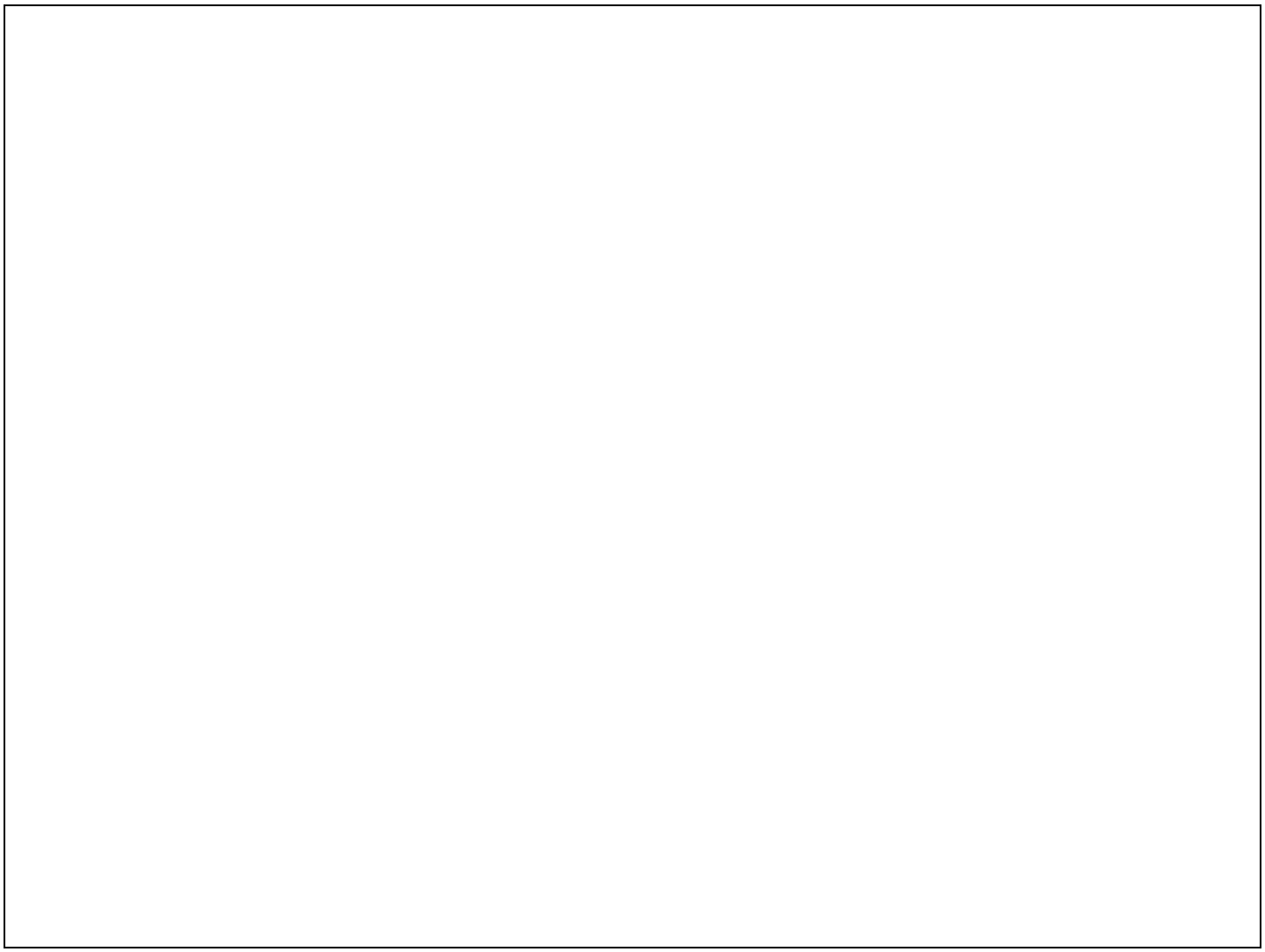
Asset #0002-911.409(Routine)
US 2 BUSINESS LOOP over RED RIVER OF THE NORTH
Location: GRAND FORKS
Inspection Date: 11/22/2022



Latitude:47.92667, Longitude:-97.03000

Route:00002 Log:911.134

District 66, 18 - Gr. Forks

Owner: 1 - State Highway Agency

Place Code: 32060

Team Leader: Mn DOT

Approved By: Matthew Kurle

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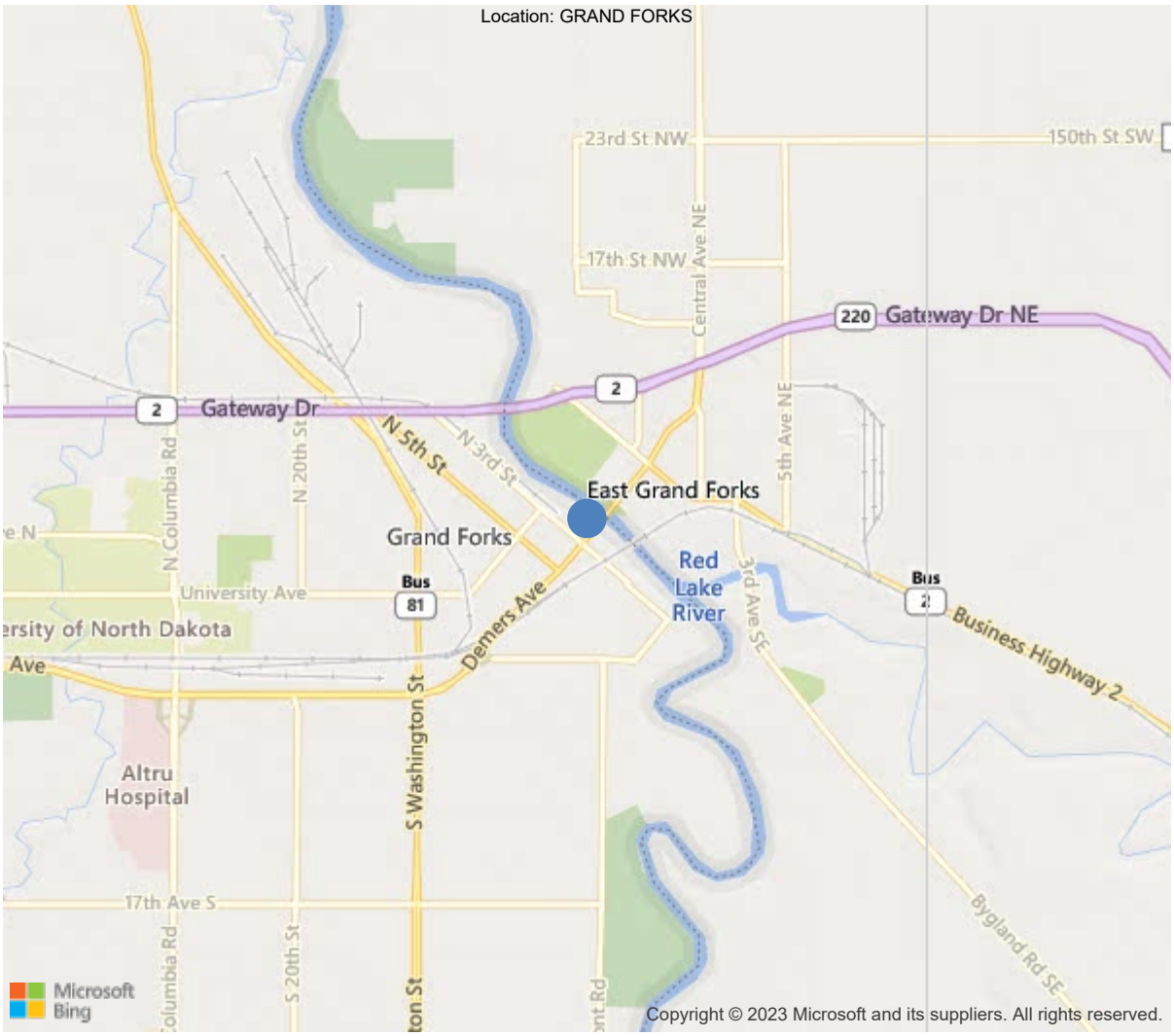
District: 66, **County:** 18 - Gr. Forks
Inspection Date: 11/22/2022



47.92667, -97.03000

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Asset #0002-911.409(Routine)

US 2 BUSINESS LOOP over RED RIVER OF THE NORTH

Location: GRAND FORKS

Inspection Date: 11/22/2022

IDENTIFICATION	
(1) State Names	38 - North Dakota
(8) Structure Number	0002-911.409
(5) Inventory Route	
(2) Highway Agency District	6 - Grand Forks
(3) County Code	18 - Gr. Forks
(4) Place Code	32060
(6) Features Intersected	RED RIVER OF THE NORTH
(7) Facility Carried	US 2 BUSINESS LOOP
(9) Location	GRAND FORKS
(11) Mile Point	911.134 mi
(12) Base Highway Network	No
(13) LRS Inventory Rte & Subrte	0000000000
(16) Latitude	47.9266666666667
(17) Longitude	-97.03
(98) Border Bridge State Code	27
(99) Border Bridge Structure No.	4700
STRUCTURE TYPE AND MATERIAL	
(43) Main Structure Type	310
Material	3 - Steel
Type	10 - Truss - Thru
(44) Approach Structure Type	32
Material	3 - Steel
Type	2 - Stringer/Multi-beam or girder
(45) No. of Spans in Main Unit	2
(46) No. of Approach Spans	2
(107) Deck Structure Type	1 - Concrete Cast-in-Place
(108) Wearing Surface/Protective System	
Type of Wearing Surface	1 - Monolithic Concrete (concurrently pl
Type of Membrane	0 - None
Type of Deck Protection	0 - None
AGE AND SERVICE	
(27) Year Built	1929
(106) Year Reconstructed	1986
(42) Type of Service	15
On	1 - Highway
Under	5 - Waterway
(28) Lane	
On	2
Under	0
(29) Average Daily Traffic	12600
(30) Year of ADT	2019
(109) Truck ADT	2 %
(19) Bypass, Detour Length	2 mi
GEOMETRIC DATA	
(48) Length of Maximum Span	262.1 ft
(49) Structure Length	605 ft
(50) Curb or Sidewalk Width	
Left	7.2 ft
Right	7.2 ft
(51) Bridge Roadway Width Curb to Curb	40 ft
(52) Deck Width Out to Out	41.3 ft
(32) Approach Roadway Width (W/Shoulders)	50 ft
(33) Bridge Median	0 - No median
(34) Skew	0 Deg
(35) Structure Flared	0 - No flare
(10) Inventory Route Min Vert Clear	16.69 ft
(47) Inventory Route Total Horiz Clear	41 ft
(53) Min Vert Clear Over Bridge Rdwy	13.16 ft
(54) Min Vert Underclear	0 ft
Ref:	
(55) Min Lat Underclear RT	99.9 ft
Ref:	
(56) Min Lat Underclear LT	0 ft
NAVIGATION DATA	
(38) Navigation Control	0 - No navigation control on w
(111) Pier Protection	
(39) Navigation Vertical Clearance	0 ft
(116) Vert-Lift Bridge Nav Min Vert Clear	ft
(40) Navigation Horizontal Clearance	0 ft

CLASSIFICATION	
(112) NBIS Bridge Length	Y
(104) Highway System	0
(26) Functional Class	14 - Urban Other Principal Art
(100) Defense Highway	0 - Not a STRAHNET route
(101) Parallel Structure	N - No parallel structure exis
(102) Direction of Traffic	2 - way traffic
(103) Temporary Structure	
(105) Federal Lands Highways	0 - N/A
(110) Designated National Network	1 - The inventory route is par
(20) Toll	3 - On toll free road
(21) Maintain	1 - State Highway Agency
(22) Owner	1 - State Highway Agency
(37) Historical Significance	1 - Bridge is on the National
CONDITION	
(58) Deck	7
(59) Superstructure	5
(60) Substructure	6
(61) Channel & Channel Protection	6
(62) Culverts	N
LOAD RATING AND POSTING	
(31) Design Load	3 - MS 13.5 / HS 15
(63) Operating Rating Method	2
(64) Operating Rating	
Type	2 - Allowable Stress(AS)
Rating	41.7
(65) Inventory Rating Method	2 - Allowable Stress(AS)
(66) Inventory Rating	
Type	
Rating	22.3
(70) Bridge Posting	5 - Equal to or above legal loads
(41) Structure Open/Posted/Closed	A - Open, no restriction
APPRAISAL	
(67) Structural Evaluation	
(68) Deck Geometry	
(69) Clearances, Vertical/Horizontal	N
(71) Waterway Adequacy	3
(72) Approach Roadway Alignment	6
(36A) Bridge Railings	0 - Does not meet currently accepta
(36B) Transitions	N - Not applicable or a safety feat
(36C) Approach Guardrail	N - Not applicable or a safety feat
(36D) Approach Guardrail Ends	N - Not applicable or a safety feat
(113) Scour Critical Bridges	5 - Bridge foundations determined t
PROPOSED IMPROVEMENTS	
(75) Type of Work	36 - Bridge deck rehabilitatio
(76) Length of Structure Improvement	605 ft
(94) Bridge Improvement Cost	$ 545000
(95) Roadway Improvement Cost	$ 55000
(96) Total Project Cost	$ 818000
(97) Year of Improvement Cost Estimate	2010
(114) Future ADT	12600
(115) Year of Future ADT	2039

INSPECTIONS *

(90) Inspection Date			06/07/2022
(91) Frequency			12
(92) Critical Feature Inspection	Done	Freq. (Mon)	Date
A: Fracture Critical Detail	Yes	24	06/16/2021
B: Underwater Inspection	Yes	60	08/01/2020
C: Other Special Inspection			

* The inspection date and frequency information in this box contains the current NBI date and frequency information. Please refer to the report header for the date this inspection was conducted.

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ELEMENTS	DESCRIPTION	UNITS	TOTAL	CS1	CS2	CS3	CS4
12	Reinforced Concrete Deck	SF	24887	24682	204	1	0
1080	Delamination/Spall/Patched Area	SF	2	0	1	1	0
1120	Efflorescence/Rust Staining	SF	203	0	203	0	0
1130	Cracking (RC and Other)	SF	1000	1000	0	0	0
510	Wearing Surfaces	SF	24100	23943	157	0	0
3220	Crack (Wearing Surface)	SF	205	48	157	0	0

(12) [2018] Minor cracks present in various areas. (CS 1).
Minor cracks with light leaching (little or no buildup). 600 LF (length of structure) / 3 LF (approximate spacing of cracks) = 200 locations x 40 LF
(approximate length of crack) = 8000 LF x 0.1 = 800 SF. (CS 2).
Loose delamination between floor beams 7 and 8 of east truss. 1 SF. (CS 3).RJA
[2019 FC] No change.
[2020] No significant changes. RJA*
[2021] The is a 1 SF deck delamination at L0`N on the west truss on Floorbeam L0`N
[2022 D2] Minor cracks with light leaching (little or no build-up) in various areas. 2028 LF x 0.1 = 203 SF. (CS 2).

(1080-12) 6/8/20: Loose delam between floor beams 7 and 8 of east truss. 1 SF in CS3.

(1120-12) 12/12/19: Various transverse cracking with seepage and efflorescence to underside of Bridge Deck throughout both Truss Spans. See photo.
6/8/20: Minor cracks with light leaching (no buildup). 800 SF in CS2.

(1130-12) 12/12/19: Various cracking to underside of Bridge Deck. Cracking to top of Deck.

(510-12) [2017 FC] There are transverse cracks throughout and exposed aggregate in the wheel paths.
[2018] Scale, abrasion and/or wear less than 1/4 inch deep present. (CS 1).
Sealed cracks less than 1/8 inch wide. 3150 LF x 0.1 = 315 SF. (CS 2). RJA
[2019 FC] 104 transverse cracks, 90% sealed. 4160 LF x 0.1 = 416 SF CS 2.
[2020] Scale, abrasion and/or wear less than 1/4 inch deep present. (CS 1).
Unsealed cracks less than 0.012 inches wide. 478 LF x 0.1 = 48 SF. (CS 1).
Sealed cracks less than 1/8 inch wide. 4302 LF x 0.1 = 431 SF. (CS 2). RJA*
[2021] No change.
[2022 D2] Unsealed minor cracks less than 0.012 inches wide. 1560 LF x 0.1 = 156 SF. (CS 1).
Sealed cracks less than 1/8 inch wide. 1570 LF x 0.1 = 157 SF. (CS 2). MAG

113	Steel Stringer	LF	8287	8286	1	0	0
1010	Cracking	LF	1	0	1	0	0
515	Steel Protective Coating	SF	47650	47650	0	0	0

(113) [Previous Notes] 1/2 inch crack in web of south stringer at coping connection to floor beam at center pier, east span.
[2018] No corrosion present. (CS 1).
Crack as described above in previous notes has been arrested - drilled out. 1 LF. (CS 2). RJA
[2019 FC] No change.
[2020] No significant changes. RJA
[2021] No change.
[2022 D2] No significant change. MAG

ELEMENTS	DESCRIPTION	UNITS	TOTAL	CS1	CS2	CS3	CS4
(515-113) 5.75 SF / LF [2017 FC] No change, paint system is in good condition. [2018] Little or no paint deterioration. (CS 1). RJA [2019 FC] No change. [2020] No significant changes. RJA [2021] No change. [2022 D2] No significant change. MAG							
120	Steel Truss	LF	1124	1068	0	56	0
7357	Pack Rust	LF	56	0	0	56	0
515	Steel Protective Coating	SF	50355	50335	0	20	0
3440	Effectiveness (Steel Protective Coatings)	LF	20	0	0	20	0

(120) Notes: BOTTOM CHORD NOTES
[Previous Notes] East span at L2 50% section loss at connection plate north side of truss. Lower chord north side of truss upper flange 25%
section loss. South side at the L3 connection plate at the bottom flange is bent up 1-1/2 inch from pack rust. 3/8 inch plate has 1/4 inch section
loss. Some deformation of lower chord built-up members on U/stream side from debris hits. Bottom flange of the bottom chord is bent up in 2
places between Lo-L1 on the south side. Suggest putting cover plates on diagonal penetrations thru sidewalks-possible safety hazard.
[2003 FC] There is pack rust forming under the batten plates and at the floor beam and cross bracing connections. It is worst at the batten
plates on the bottom flanges of the chords. Ultrasonic Thickness measurements taken at the worst batten plate showed a maximum loss
of .100" on the bottom flange of one chord angle. That is less that a 5% cross sectional loss of the chord. There is also minor pitting and minor
section loss inside the lower panel points and on the bottom flanges. The most significant section loss was at panel point L4 of the east truss.
There minor impact damage to the lower chords on the upstream side due to flood debris. There are also several areas where the bottom chord
was bent on the top and bottom flange, probably during the original erection or debris removal.
[2009 FC] Areas of significant corrosion along bottom chord and at gusset plate connections. Bridge Maintenance will complete the 3 stage spot
painting (1. Clean & Prime 2. 2nd coat 3. Caulk) of the gusset plates on the lower cords the wk. of 7/6/09.
[2013 - 2015] An upward bend of the bottom flange in the lower chord, east truss span, south truss between L1 - L2. All connections are sound,
but pack rust continues to cause bending of the batten plates.
TOP CHORD NOTES
[Previous Notes] Minor damage to 1st & 4th lateral braces from the West on the West truss, EBL. Diagonal brace on the North side at the West
end of the East truss, is bent. There is minor pack rust at the intersection of the truss diagonals on the southwest truss at U4-L4 connection
point.
[2003 FC] No significant pack rust or loss of section.
[2007 FC] No significant pitting or section loss.
[2009 FC]Vertical L3-U3 on the north truss of the west span is bent out of alignment just below the deck---bowing inward on the east side (CS4).
Out of alignment approx. 2 inches east side and 1 1/2 inches on the west side of the member. This appears to have been impacted prior to a
galvanized rub rail installed along truss
PACK RUST NOTES
[2011 FC] Pack Rust is formed at connections. Scalloping due to pack rust (up to ¾ inch spreading) is present at some truss bottom chord

ELEMENTS	DESCRIPTION	UNITS	TOTAL	CS1	CS2	CS3	CS4

connections.
[2013 - 2015] Pack rust up to 2 1/4" thick on some of the bottom horizontal connection plates.
[2016] Pack rust was arrested with 2015 paint project but still exists, along with section loss, most areas are at Floor Beam connections to lower
chord. Bent vertical members L3 north side west truss.
[2017 FC] No change.
[2019 FC] No significant change. All pitting previously noted has been arrested by repainting, with a few small areas of active corrosion starting
to appear. East truss lower chord L0S-L1S has a number of dents due to flood debris impact.
DISTRICT 2 INSPECTION NOTES;
[2018] No corrosion present. Approximately 95% x 1124 LF = 1068 LF. (CS 1).
Horizontal batten plate areas exhibit mitigated distortion (new paint). Members slightly out of position or alignment above the deck due to impact
damage from over height loads and on lower chord due to flood debris. Section loss with mitigated pack rust distortion present in various areas -
most prevalent in below deck areas. Approximately 5% x 1124 LF = 56 LF. (CS 3). RJA
[2020] No significant changes. RJA
[2021] No change.
[2022 D2] No significant change. MAG

(7357-120) Pack Rust to bottom horizontal connection plates to Bottom Chord, Floor Beams and Lower Lateral Wind Bracing. - 12/12/2019

(515-120) 44.8 SF / LF
[2016] Little to no paint deterioration, few minor rust stains at connections.
[2017 FC] There is rust staining coming from the connection interfaces on several of the lower chord, sidewalk, and floor beam connections,
but the paint in those areas is intact.
[2018] Some graffiti present on lower chord in NE quadrant. Agree with 2017 FC note - there is little or no paint deterioration. (CS 1). RJA
[2019 FC] A few areas on the lower chord are starting to show minor active corrosion, mostly at the connection points to the lower bracing shelf
plates (20 SF in CS3).
[2020] No significant changes. RJA
[2021] Bleed through rust staining is starting to occur in areas where pack rust could not be removed during the repair contract.
[2022 D2] No significant change. MAG

(3440-515-120) 6/8/20: A few areas on the lower chord are starting to show minor active corrosion, mostly at the connection points to the lower bracing shelf plates (20 SF in CS3).

152	Steel Floor Beam	LF	800	760	0	40	0
7357	Pack Rust	LF	40	0	0	40	0
515	Steel Protective Coating	SF	9600	9590	0	10	0
3440	Effectiveness (Steel Protective Coatings)	LF	10	0	0	10	0

ELEMENTS	DESCRIPTION	UNITS	TOTAL	CS1	CS2	CS3	CS4

(152) [2003 FC] There is section loss on the bottom flange of some of the floor beams at the cross bracing gusset plate. Ultrasonic thickness
readings were taken on 2 of the worst areas. Floor beam 3 on the east span had an average loss of 0.12 inches on the bottom flange, with a
maximum loss of 0.15 inches. Floor beam 4 on the east span had a maximum loss of .06 inches with an average loss of .05 inches on the
bottom flange. None of the floor beams had a total cross sectional loss in excess of 5%.
[2012] Pack rust with minor section loss at bottom of floor beams at gusset plate/wind bracing connections.
[2013 - 2015] The section loss on the bottom flange at all floor beams at horizontal bracing connection plates is about 15 to 20 percent for
about 1 LF.
[2016] New paint in 2015 removed or arrested all rusting steel, but pack rust and section loss still in place at various locations documented in
FC reports.
[2017 FC] No change.
[2018] Section loss was arrested with 2015 paint project, but still exists. There is rust staining coming from the connection interfaces, but the
paint in those areas is intact. No corrosion present. Approximately 95% x 800 LF = 760 LF. (CS 1).
Section loss with mitigated pack rust distortion present in various areas. Approximately 5% x 800 LF = 40 LF. (CS 3). RJA
[2019 FC] Minor areas of active corrosion. Previously noted pitting has been arrested.
[2020] No significant changes. RJA
[2022 D2] No significant change. MAG

(7357-152) Section loss to bottom portions of Floor Beams at Connections with Pack Rust mitigating. - 12/12/2019

(515-152) 12 SF / LF
[Previous Notes] Minor rust bleeding thru pack rust at the Floor Beam connections.
[2016] Paint system looks nice with no corrosion observed
[2017 FC] There is rust staining on several of the floor beam connections but the paint is intact.
[2018] Agree with 2017 FC note - there is little or no paint deterioration. (CS 1). RJA
[2019 FC] A few minor areas of active corrosion, mostly on the webs above the lower flange angles (10 SF in CS3).
[2020] No significant changes. RJA
[2021] Bleed through rust staining is starting to occur in areas where pack rust could not be removed during the repair contract.
[2022 D2] No significant change. MAG

162	Steel Gusset Plate	EA	76	44	0	32	0
7357	Pack Rust	EA	32	0	0	32	0
515	Steel Protective Coating	SF	304	294	0	10	0
3440	Effectiveness (Steel Protective Coatings)	EA	10	0	0	10	0

ELEMENTS	DESCRIPTION	UNITS	TOTAL	CS1	CS2	CS3	CS4
(162) [2009 FC] The lower panel point gusset plates have areas of surface corrosion, flaking rust and section loss. A three stage spot painting of gussets was completed in July 2009 by Bridge Maintenance. Spot painting and caulking was performed on the bottom chord gusset plates. [2011 FC] Some truss connection gusset plates have bowing along the free edge up to 1/8 inch - this appears to be due to pack rust (bottom chord connections) or initial fit up. [2014] All the gusset plates were look at by MN DOT and consultants KLJ/EIC Group with UT being performed in critical areas. Some areas have measurable section loss. [2016] Lower panel point gusset plates pack rust is present but arrested with 2015 paint project. [2017 FC] No change. 32 of the gusset plates are in CS3 due to pack rust and section loss. [2018] All gusset plates checked for distortion and measured 1/8 inch or less. No other changes. 32 EA. (CS 3). RJA [2019 FC] Pack rust with some active corrosion on the lower panel point shelf plates. [2020] No significant changes. RJA [2021] No change. [2022 D2] No significant change. MAG						
(7357-162) Pack Rust and Section loss to Lower Plates to Bottom Chord. - 12/12/2019						
(515-162) 4 SF Each [2018] Little or no paint deterioration. (CS 1). RJA [2019 FC] Minor active corrosion on lower shelf plates (5 SF CS3). [2020] No significant changes. RJA [2021] Bleed through rust staining is starting to occur in areas where pack rust could not be removed during the repair contract. [2022 D2] No significant change. MAG						
210	Reinforced Concrete Pier Wall	LF	46	44	2	0	0
1130	Cracking (RC and Other)	LF	2	0	2	0	0
(210) [2013-2015] Vertical moderate crack in center of pier west wall extends from top to bottom with minor spalling along. [2016] Vertical moderate crack with spalls along side in center west pier wall was patched, with repair in sound condition. Minor cracks exist. [2016 UW] No defects of structural significance observed. BKS [2017 FC] No change. [2018] Minor cracks present in various areas. (CS 1). Existing repair (moderate crack described above) in sound condition. 2 LF. (CS 2). RJA [2019 FC] No change. [2020] No significant changes. RJA [2020] Underwater Inspection: Minor vertical cracking (CS1) [2021] No change. [2022 D2] No significant change. MAG						
215	Reinforced Concrete Abutment	LF	165	145	20	0	0
1080	Delamination/Spall/Patched Area	LF	20	0	20	0	0

ELEMENTS	DESCRIPTION	UNITS	TOTAL	CS1	CS2	CS3	CS4
(215) [Previous Notes] Roller Foundation is cracked at SE corner There is a horizontal shear crack in South 1/2 of East abutment backwall. [2009 FC] There is a horizontal crack on the east abutment wall approximately 8 feet long by 6 inches wide (CS2). [2010] A 1ft. x 1ft. spall has developed at the east abutment bridge seat. [2011 FC] We recommend the same ratings as the 2009 FC report (105 LF in condition 1 and 20 LF in condition 2). [2013 - 2015] 4 inch core holes were drilled in both abutment backwalls and filled with grout in 2014, [2016] Abutments had some repair patches in 2015, remain sound and some moderate cracks exists at wing to abutment connections. [2017 FC] No change. [2018] Minor cracks present in various areas. (CS 1). Existing repairs in sound condition. Approximately 20 LF. (CS 2). RJA [2019 FC] No change. [2020] No significant changes. RJA [2021] No change. [2022 D2] No significant change. MAG (1080-215) 6/8/20: Some repaired patches in 2015. Remains in sound condition . 20 LF in CS2.						
220 Reinforced Concrete Pile Cap/Footing		LF	64	0	64	0	0
6000 Scour		LF	64	0	64	0	0
(220) [2004 UW] P1 - The downstream footing was exposed up to 8 inches vertically. [2013] The underwater inspection report states - The east side of the footing at the downstream column was partially exposed with a maximum vertical exposure of 15 inches. In addition, the top of footing was partially exposed along both sides of the upstream column with no vertical face exposure present. Moderate to heavy accumulation of timber debris consisting of logs and branches of 1 1/2 foot in diameter and smaller was observed at the upstream nose and on both sides of the pier extending from channel bottom up 4 feet. [2016 UW] P1 - The east side of the footing at the downstream column was partially exposed with a maximum vertical exposure of 15 inches. In addition, the top of footing was partially exposed along both sides of the upstream column with no vertical face exposure present. The concrete was in good condition with no defects of structural significance observed. [2017 FC] No change. [2018] Unable to inspect. Underwater. According to previous inspection reports, scour is within tolerable limits. 64 LF. (CS 2). RJA [2019 FC] No change. [2020] No significant changes. RJA [2020] Underwater Inspection: The east side of the footing was exposed along the downstream half with a maximum vertical exposure of 15 inches. The west upstream side of the footing was exposed with no vertical exposure. No significant change from the previous underwater inspection report (64lf CS2). [2021] No change. [2022 D2] Underwater inspection performed by Collins Engineers on 8/25/20. MAG (6000-220) Per MNDOT Inspections. Scour present to River Pier Footing. Refer to MNDOT Inspection Reports for remarks. - 12/12/2019, 6/8/2020						
234 Reinforced Concrete Pier Cap		LF	47	42	5	0	0
1080 Delamination/Spall/Patched Area		LF	5	0	5	0	0

ELEMENTS	DESCRIPTION	UNITS	TOTAL	CS1	CS2	CS3	CS4
(234) [2013-2015] Sounded for delaminations along with some core drilling. Found area to be confined 2 to 3 inches deep under north P1 bearing. [2016] Pier cap delaminated concrete was repaired in 2015 and repairs are sound, cracks with leaching still exists. [2017 FC] No change. [2018] Minor cracks present in various areas. (CS 1). Existing repairs in sound condition. Moderate map cracking with leaching with light build up - most prevalent on north end. Approximately 5 LF. (CS 2). RJA [2019 FC] Repair at north end under bearing is sound but has several cracks with efflorescence. Not sufficient to lower to CS3. [2020] No significant changes. RJA [2021] No change. [2022 D2] Snap tie pop-outs in various areas, no other significant change. MAG (1080-234) Spall/Patched area to NE Corner of Pier Cap. See Photo. - 12/12/2019, 6/8/2020							
300	Strip Seal Expansion Joint	LF	123	40	1	82	0
2320	Seal Adhesion	LF	82	0	0	82	0
7000	Damage	LF	1	0	1	0	0
(300) [2010] Bridge maintenance installed a new strip seal on the east end and re-tucked approximately 5 LF of gland that had come out of the extrusion. [2018] West strip seal expansion joint is at or near design limits - closed tight. 41 LF. (CS 3). Center strip seal expansion joint is functioning as intended. Damage to steel extrusion over P1 - east bound lane - has been repaired and is sound and does not affect joint function. 1 LF. (CS 2). East strip seal expansion joint is at or near design limits - closed tight. 41 LF. (CS 3). RJA [2019 FC] East abutment strip seal is closed tight (CS3). A 3-LF section of the cover plate over the center joint, on the south sidewalk, has broken away. (CS4). [2020] No significant changes. RJA (3/3/2021) 3LF of cover plate has been repaired pictures are attached.(CS4 - CS1) KAM [2021] The strip seal cover plate is broken at the south sidewalk. [2022 D2] Cover plate mentioned in previous notes has been repaired. Center strip seal joint is functioning as intended (1 1/2 inch gap at 70 degrees) - movement is not restricted. 40 LF. (CS 1). West and east end strip seal joint gaps are at or near design limits (closed tight). 82 LF. (CS 3). MAG							
301	Pourable Joint Seal	LF	164	164	0	0	0
(301) [2018] Poured joints show little or no deterioration. (CS 1). RJA [2019 FC] No change. [2020] No significant changes. RJA [2021] No change. [2022 D2] Little or no deterioration. (CS 1). MAG							
311	Movable Bearing	EA	4	4	0	0	0

ELEMENTS	DESCRIPTION	UNITS	TOTAL	CS1	CS2	CS3	CS4
(311) [2010] Greased bearings on 6/15/2010. [2014] The roller bearings with greased and rotated approximately 1/4 turn. [2017 FC] Bearing measurement are as follows; Southwest bearing displacement is 3" (2015 2 1/4"), northwest displacement is 1-1/4" (2015 1- 1/2"), southeast displacement 4" (2015 6-3/4"), northeast displacement 8"" (2015 6-3/4"). [2018] These 4 movable bearings are located in the 4 corners of this structure. They are the large "roller skate" wheels. These bearings were greased and rotated approximately 1/4 turn in 2017. No issues, functioning as intended. 4 EA. (CS 1). RJA [2019] Bearings are in good condition and show some evidence of movement. See table in FC report for bearing measurement. [2020] These bearings were greased and spun again in 2019 and 2020 after flood events. No significant changes. RJA* [2021] No change. [2022 D2] No restriction of movement - bearings are functioning as intended. 4 EA. (CS 1). MAG						
313	Fixed Bearing	EA	4	4	0	0	0
(313) [Previous Notes] Pack rust on bearings. Mortar is breaking up under bearing plates. [2012] Mortar continues to deteriorate with corrosion. [2016] Bearings were painted in 2016 but moderate deterioration exists on bolts. [2017 FC] No change. [2018] These four fixed bearings are located on P1. Bearings are functioning as intended. 4 EA. (CS 1). RJA [2019 FC] No change. [2020] No significant changes. RJA* [2021] No change. [2022 D2] Bearings are functioning as intended. 4 EA. (CS 1). MAG						
321	Reinforced Concrete Approach Slab	SF	1950	1934	16	0	0
1130	Cracking (RC and Other)	SF	16	0	16	0	0
(321) [2011 FC] During the 2011 inspection, a contractor performed mud jacking to fill in undermining of the east approach (undermining was observed after flooding in spring of 2011). There is evidence of slight settlement on the east approach. [2018] Scale, abrasion or wear less than 1/4 inch deep. (CS 1). West abutment exhibits 40 LF of sealed cracks. 40 LF x 0.1 = 4 SF. (CS 2). East abutment exhibits slight settlement as noted above and 100 LF of sealed cracks. 975 SF. (CS 2). 4 SF + 975 SF = 979 SF. (CS 2). RJA [2019 FC] No change. [2020] East abutment exhibits sealed cracks. 110 LF x 0.1 = 11 SF. (CS 2). RJA [2021] No change. [2022 D2] WEST APPROACH SLAB - Sealed cracks. 50 LF x 0.1 = 5 SF. EAST APPROACH SLAB - Sealed cracks. 110 LF x 0.1 = 11 SF. (CS 2). 5 SF + 11 SF = 16 SF. (CS 2). MAG						
330	Metal Bridge Railing	LF	2408	2406	0	0	2
1010	Cracking	LF	2	0	0	0	2
515	Steel Protective Coating	SF	4816	4816	0	0	0
(330) [2016] Rails were painted and broken / missing hardware was replaced, rail looked good in 2016/GK [2017 FC] The element quantity was doubled to include both the original ornamental sidewalk railings and the galvanized steel tube roadway railing (installed with the new deck in 1986). [2018] No issues. Both the ornamental sidewalk railing and the galvanized steel tubing roadway railing are functioning as intended. (CS 1). RJA [2019 FC] No change. [2020] No significant changes. RJA [2021] The bottom angle in one location on both the north and south rail has cracked completely through the member. [2022 D2] No significant change. MAG						

ELEMENTS	DESCRIPTION	UNITS	TOTAL	CS1	CS2	CS3	CS4
(515-330) 2 SF \ LF [2018] Both the painted steel surface on the ornamental sidewalk railing and the galvanized surface of the steel tubing roadway railing exhibit little or no deterioration. (CS 1). RJA [2019 FC] No change. [2020] No significant changes. RJA [2021] No change. [2022 D2] No significant change. MAG							
331	Reinforced Concrete Bridge Railing	LF	1211	1002	209	0	0
1080	Delamination/Spall/Patched Area	LF	9	0	9	0	0
1130	Cracking (RC and Other)	LF	900	700	200	0	0
(1080-331) Patched areas to North face of curb in the East Truss Section. - 12/12/2019 (1130-331) Various cracking throughout both Curbs and Sidewalks. See Photo. All cracks sealed by MNDOT Forces. See Photo. - 12/12/2019							
8398	Slope Protection	EA	2	1	1	0	0
1220	Deterioration (Other)	EA	1	0	1	0	0
(8398) [2018] Minor to moderate erosion at channel banks. (CS 2). RJA [2019 FC] Both abutments are well protected with riprap. [2020] No significant changes. RJA* [2021] The northeast slope concrete paving is starting to crack. [2022 D2] Minor to moderate erosion or settlement under east abutment - possible scour from flood waters. (CS 2). MAG							
8401	Wings	EA	4	4	0	0	0

General Observation

Vertical cracks in center pier wall. Slide plate bearings added under girders of first and last spans at truss by MnDot in 1997. Horizontal crack lower portion east abutment. Load rating revised to match MnDot due to gusset plates. West end bearing wheels approximately 15" from bearing beam end @ 75 degrees.
11/2015 - In 2015 bridge repainted,repaired north end at center pier cap,epoxy repair of vertical cracks in center pier wall,spall repair of one area of curb north side. See PCN 18759 for rivet replacement locations - U-4 to U-4' and gusset plates E-E members.
11/2017 - MnDot sealed cracks on deck and approach slabs. Cleaned joints.
3/2018 - Bridge Division modified Ratings to match MnDOT per FHWA directive and modified element 210 and added element 220 because of UW inspection by MnDOT
12/2019 - Under Contract, West Approach Panel Repaired. See Photo.
Minor rusting to ends of various Gusset and Connection to Bottom Chord. Fracture Critical Inspection Completed in 2019 by MNDOT Forces. 6/2019. Portions of East and West Spans near both Abutments looked at with Telescoping Ladder. - 12/12/2019
3/6/2020: Bridge Division modified NBI ratings (058, 059, 060, 061, 062, 071, 072) to match MnDOT NBI ratings from 6-24 -2019 inspection KAL.
6/8/2020: Routine inspection by MnDOT.
8/1/2020: Underwater inspection by MnDOT.
6/16/2021: Routine & Fracture Critical inspection by MnDOT
[2020-2022] Bridge was accessed for inspection using the A-62T and the A-62 snoopers

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58 - Deck (7 - GOOD CONDITION - some minor problems.)

[2018] Deck NBI rating raised from a 6 to a 7 due to minor (or isolated) deterioration - minor cracking, leaching and isolated
delaminations present. RJA
[2019 FC] No change.
[2020] No significant changes. RJA
[2021] No change.
[2022 D2] No significant change. MAG

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59 - Superstructure (5 - FAIR CONDITION - all primary structural elements are sound but may have minor section loss, cracking, spalling or scour.)
[2018] Superstructure NBI rated at a 5 due to moderate deterioration - some bent members and initial section loss in critical
stress areas present. Cracks have been arrested. RJA
[2019 FC] Some areas of active corrosion are starting to appear in areas with prior pack rust.
[2020] No significant changes. RJA
[2021] No change.
[2022 D2] No significant change. MAG

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60 - Substructure (6 - SATISFACTORY CONDITION - structural elements show some minor deterioration.)

[2018] Substructure NBI rated at a 6 due to minor to moderate deterioration - moderate cracking and leaching along with minor spalling present. Scour is minor and isolated. RJA
[2019 FC] No change.
[2020] No significant changes. RJA
[2020] Underwater Inspection: NBI has been reviewed and confirmed with the underwater portion of bridge inspected. Minor
footing exposure and cracking of the web-wall.
[2021] No change.
[2022 D2] No significant change. MAG

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61 - Channel/Channel Protection (6 - Bank is beginning to slump. River control devices and embankment protection have widespread minor damage. There is minor stream bed movement evident. Debris is restricting the channel slightly.)
[2018] Channel NBI rated at a 6 due to the channel banks having moderate erosion. RJA
[2019 FC] No change.
[2020] No significant changes. RJA
[2020] Underwater Inspection: A general accumulation of 2 to 3 feet was observed around the pier, except where the footing
was exposed, and throughout the channel as compared to the previous 2016 underwater inspection. Minor footing exposure.
[2021] No change.
[2022 D2] No significant change. MAG

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71 - Waterway Adequacy (3 - Basically intolerable requiring high priority of corrrective action)
[2018] Waterway Adequacy NBI rated at a 3 due to occasional overtopping of bridge deck and roadway approaches with significant traffic delays. RJA
[2020] No significant changes. RJA
[2022 D2] No significant change. MAG

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72 - Approach Roadway Alignment (6 - Equal to present minimum criteria)
[2018] Approach Roadway Alignment NBI rated at a 6 due to very minor speed reduction required (less than 5 MPH for a typical vehicle using the roadway). RJA
[2020] No significant changes. RJA.
[2022 D2] No significant change. MAG

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113 - Scour Critical Bridges (5 - Bridge foundations determined to be stable for assessed or calculated scour condition. Scour is determined to be within the limits of footing or piles (Example B) by assessment (i.e.,bridge foundations are on rock formations that have been determined to resist scour within the service life of the bridge), by calculations or by installation of properly designed countermeasures (see HEC 23).)
08/2020 (UW): The east side of the footing was exposed along the downstream half with a maximum vertical exposure of 15 inches. The west upstream west side of the footing was exposed with no vertical exposure. No significant change from the previous underwater inspection report.

Significant Findings

Critical Finding

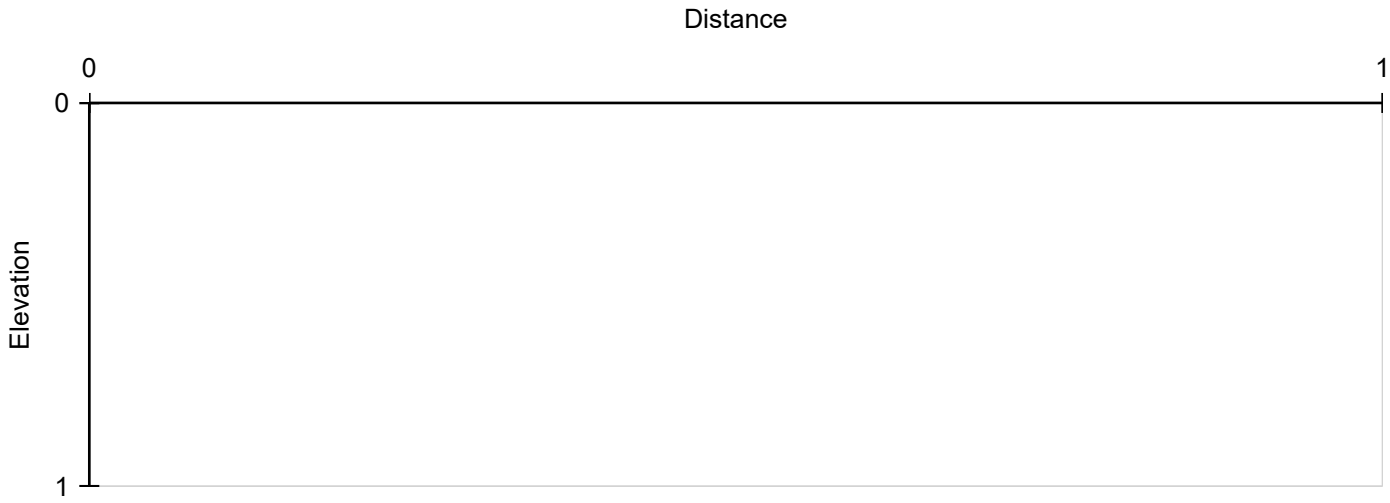
NORTH Dakota | Transportation
Be Legendary.

Asset **#0002-911.409**(Routine)
District: 66, **County:** 18 - Gr. Forks
Inspection Date: 11/22/2022

Channel Profile

Station	Distance	Upstream	Downstream

Upstream Elevation



Downstream Elevation