NORTH Dakota | Transportation
Be Legendary.

Asset #0094-152.329 R(Routine)
INTERSTATE 94 over SUNSET DR/NW MANDAN INT.
Location: 5 EAST OF ND 25
Inspection Date: 04/26/2023

Latitude:46.84494, Longitude:-100.90731

Route:00094 Log:152.296

District 61, 30 - Morton

Owner: 1 - State Highway Agency

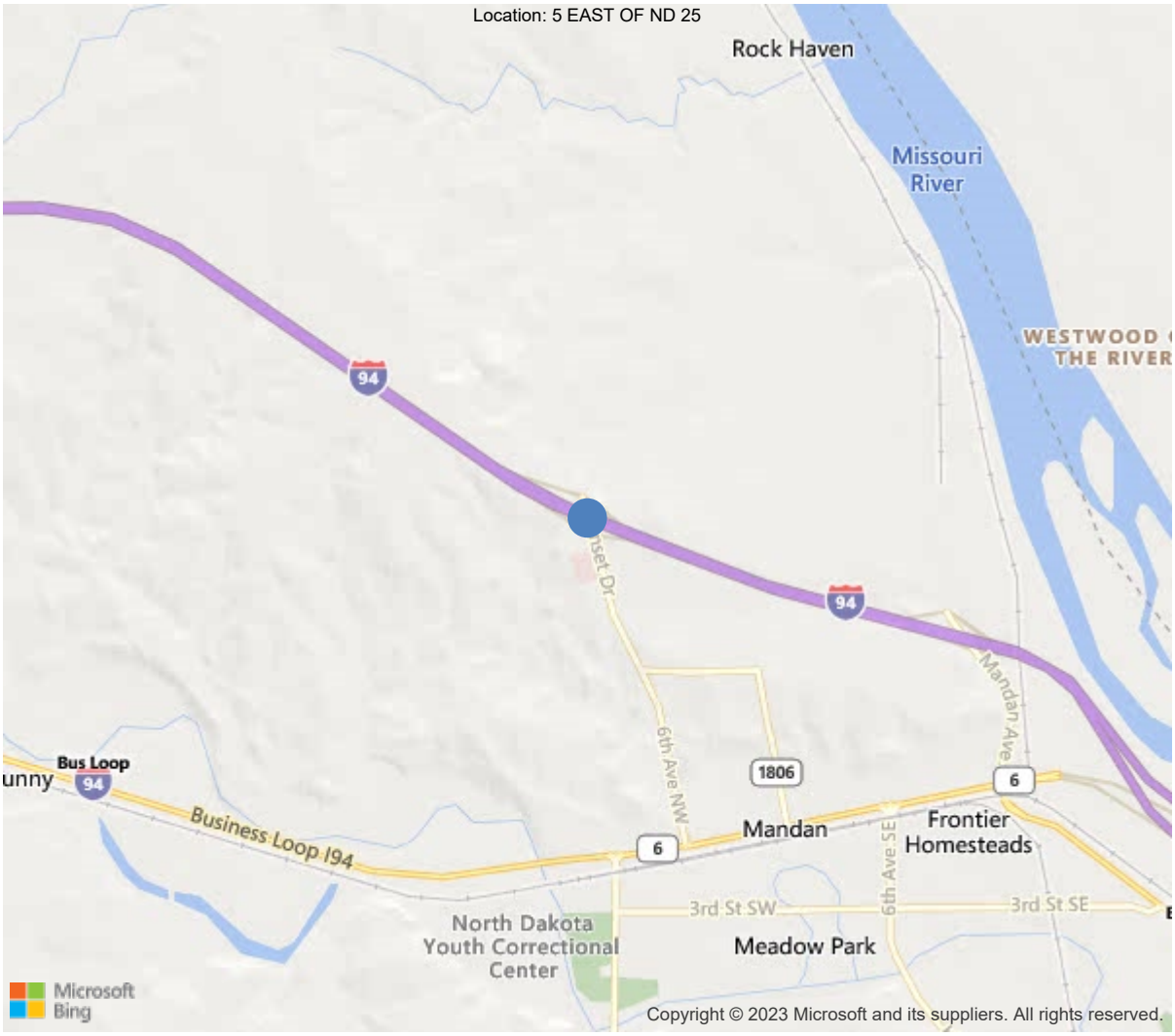
Place Code: 49900

Team Leader: Jake Mertz

Approved By: Travis McCloud

NORTH Dakota | Transportation
Be Legendary.

Asset **#0094-152.329 R**(Routine)
District: 61, **County:** 30 - Morton
Inspection Date: 04/26/2023



46.84494, -100.90731

NORTH Dakota | Transportation
Be Legendary.

Asset #0094-152.329 R(Routine)

INTERSTATE 94 over SUNSET DR/NW MANDAN INT.

Location: 5 EAST OF ND 25

Inspection Date: 04/26/2023

IDENTIFICATION	
(1) State Names	38 - North Dakota
(8) Structure Number	0094-152.329 R
(5) Inventory Route	1
(2) Highway Agency District	1 - Bismarck
(3) County Code	30 - Morton
(4) Place Code	49900
(6) Features Intersected	SUNSET DR/NW MANDAN INT.
(7) Facility Carried	INTERSTATE 94
(9) Location	5 EAST OF ND 25
(11) Mile Point	152.296 mi
(12) Base Highway Network	Yes
(13) LRS Inventory Rte & Subrte	0000000000
(16) Latitude	46.8449377328579
(17) Longitude	-100.90731039683
(98) Border Bridge State Code	-1
(99) Border Bridge Structure No.	

STRUCTURE TYPE AND MATERIAL	
(43) Main Structure Type	42
Material	4 - Steel continuous
Type	2 - Stringer/Multi-beam or girder
(44) Approach Structure Type	00
Material	0 - Other
Type	0 - Other
(45) No. of Spans in Main Unit	3
(46) No. of Approach Spans	0
(107) Deck Structure Type	1 - Concrete Cast-in-Place
(108) Wearing Surface/Protective System	
Type of Wearing Surface	4 - Low slump Concrete
Type of Membrane	0 - None
Type of Deck Protection	0 - None

AGE AND SERVICE	
(27) Year Built	1964
(106) Year Reconstructed	1985
(42) Type of Service	61
On	6 - Overpass structure at an interchange or s
Under	1 - Highway, with or without pedestrian
(28) Lane	
On	2
Under	4
(29) Average Daily Traffic	6350
(30) Year of ADT	2019
(109) Truck ADT	10 %
(19) Bypass, Detour Length	66 mi

GEOMETRIC DATA	
(48) Length of Maximum Span	60 ft
(49) Structure Length	166 ft
(50) Curb or Sidewalk Width	
Left	0 ft
Right	0 ft
(51) Bridge Roadway Width Curb to Curb	37.1 ft
(52) Deck Width Out to Out	43 ft
(32) Approach Roadway Width (W/Shoulders)	38.1 ft
(33) Bridge Median	0 - No median
(34) Skew	36 Deg
(35) Structure Flared	0 - No flare
(10) Inventory Route Min Vert Clear	99.99 ft
(47) Inventory Route Total Horiz Clear	37.1 ft
(53) Min Vert Clear Over Bridge Rdwy	99.99 ft
(54) Min Vert Underclear	14.41 ft
Ref:	
(55) Min Lat Underclear RT	1.6 ft
Ref:	
(56) Min Lat Underclear LT	0 ft

NAVIGATION DATA	
(38) Navigation Control	N - Not applicable, no waterwa
(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	1
(26) Functional Class	11 - Urban Principal Arterial
(100) Defense Highway	1 - The inventory route is on
(101) Parallel Structure	R - The right structure of par
(102) Direction of Traffic	1 - 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 free road. The structu
(21) Maintain	1 - State Highway Agency
(22) Owner	1 - State Highway Agency
(37) Historical Significance	5 - Bridge is not eligible for

CONDITION	
(58) Deck	7
(59) Superstructure	7
(60) Substructure	7
(61) Channel & Channel Protection	N
(62) Culverts	N

LOAD RATING AND POSTING	
(31) Design Load	5 - MS 18 / HS 20
(63) Operating Rating Method	1
(64) Operating Rating	
Type	1 - Load Factor(LF)
Rating	64.2
(65) Inventory Rating Method	1 - Load Factor(LF)
(66) Inventory Rating	
Type	
Rating	38.4
(70) Bridge Posting	5 - Equal to or above legal loads
(41) Structure Open/Posted/Closed	A - Open, no restriction

APPRAISAL	
(67) Structural Evaluation	7
(68) Deck Geometry	5
(69) Clearances, Vertical/Horizontal	3
(71) Waterway Adequacy	N
(72) Approach Roadway Alignment	8
(36A) Bridge Railings	1 - Inspected feature meets current
(36B) Transitions	1 - Inspected feature meets current
(36C) Approach Guardrail	1 - Inspected feature meets current
(36D) Approach Guardrail Ends	1 - Inspected feature meets current
(113) Scour Critical Bridges	N - Bridge not over waterway.

PROPOSED IMPROVEMENTS	
(75) Type of Work	38 - Other structural work, in
(76) Length of Structure Improvement	166 ft
(94) Bridge Improvement Cost	$ 86000
(95) Roadway Improvement Cost	$ 9000
(96) Total Project Cost	$ 129000
(97) Year of Improvement Cost Estimate	2010
(114) Future ADT	6350
(115) Year of Future ADT	2039

INSPECTIONS *

(90) Inspection Date			04/26/2023
(91) Frequency			24
(92) Critical Feature Inspection	Done	Freq. (Mon)	Date
A: Fracture Critical Detail	No		
B: Underwater Inspection	No		
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.

NORTH Dakota | Transportation
Be Legendary.

Asset #0094-152.329 R(Routine)
INTERSTATE 94 over SUNSET DR/NW MANDAN INT.
Location: 5 EAST OF ND 25
Inspection Date: 04/26/2023

ELEMENTS	DESCRIPTION	UNITS	TOTAL	CS1	CS2	CS3	CS4
12	Reinforced Concrete Deck	SF	7138	7134	0	4	0
1080	Delamination/Spall/Patched Area	SF	4	0	0	4	0
1130	Cracking (RC and Other)	SF	356	356	0	0	0
(1080-12) 1September2022 - The underside of the deck next to the top flange of Beam 5 is cracked and beginning to spall. Beam 5 was damaged on the bottom flange from an over height impact. 30May2023 - There is no change to this defect. (1130-12) 30May2023 - There are scattered sealed cracks throughout the deck.							
107	Steel Open Girder/Beam	LF	830	775	0	55	0
1000	Corrosion	LF	43	0	0	43	0
7000	Damage	LF	12	0	0	12	0
515	Steel Protective Coating	SF	6291	0	0	6248	43
3410	Chalking (Steel Protective Coatings)	LF	6248	0	0	6248	0
3420	Peeling/Bubbling/Cracking	LF	43	0	0	0	43
(1000-107) The bottom flange of the N1 and S1 beams have corrosion. 15April2021 26April2023 - There is no change to this defect. (7000-107) 1September2022 - The structure was impacted by an over height vehicle in the Northbound lane. Beam 2 was bent out of plane at the lower flange. The upper flange remained in place and no deck concrete was broken. Beams 5, 4 and 3 were impacted with only minor damage to the lower flanges and to a diaphragm stiffener on Beam 4. 26April2023 - There is no change to this defect. (3410-515-107) Paint and primer are bubbling and peeling which is limiting the effectiveness. - 4/1/2019 All the steel beam have chalked. 15April2021 26April2023 - There is no change to this defect. (3420-515-107) Paint is peeling and bubbling to include the primer - 4/1/2019 26April2023 - There is no change to this defect.,							
205	Reinforced Concrete Column	EA	10	10	0	0	0
(205) All columns are showing normal wear and abrasion. - 4/1/2019							
215	Reinforced Concrete Abutment	LF	95	60	34	1	0
1080	Delamination/Spall/Patched Area	LF	1	0	0	1	0
1130	Cracking (RC and Other)	LF	34	0	34	0	0
(215) Hairline cracks on both abutments - 4/1/2019 (1080-215) Small spalls on both abutments - 4/1/2019 There is a 6 inch by 6 inch spall on abutment 4 at the S1 beam. 15April2021 26April2023 - There is no change to this defect.							

ELEMENTS	DESCRIPTION	UNITS	TOTAL	CS1	CS2	CS3	CS4
(1130-215) Hairline cracks on west abutment between the two south beams and between the two north beams on the east abutment. - 4/1/2019 Abutment 1 has approximately 9 feet of cracks on and between the pedestals. These cracks range from approximately 0.008 to 0.016 in width. Abutment 4 has approximately 25 feet of cracks on and between the pedestals and at both ends of the abutment. These cracks range from approximately 0.008 to 0.040 in width. 15April2021 26April2023 - There is little to no change to this defect.							
234	Reinforced Concrete Pier Cap	LF	95	94	1	0	0
1130	Cracking (RC and Other)	LF	1	0	1	0	0
(1130-234) The pier 2 pier cap has 1 crack located above the S2 column. 15April2021 26April2023 - There is no change to this defect.							
311	Movable Bearing	EA	15	0	5	10	0
1000	Corrosion	EA	15	0	5	10	0
515	Steel Protective Coating	SF	75	0	25	0	50
3440	Effectiveness (Steel Protective Coatings)	EA	75	0	25	0	50
(311) Bearings show rust has started, no section loss. - 4/1/2019 (1000-311) Rust has started on bearings - 4/1/2019 All the bearings at both abutments are corroded with measurable section loss. The pier 3 bearings have freckled rust initiated. 15Aprill2021 26April2023 - There is no change to this defect. (515-311) protective coating on bearings is mostly ineffective. - 4/1/2019 (3440-515-311) Protective coating has limited effectiveness - 4/1/2019 The bearings coating at both abutments has failed. Thee pier 3 bearings coating has freckled rust initiated. 15April2021 26April2023 - There is no change to this defect.							
313	Fixed Bearing	EA	5	0	5	0	0
1000	Corrosion	EA	5	0	5	0	0
515	Steel Protective Coating	SF	25	0	25	0	0
3440	Effectiveness (Steel Protective Coatings)	EA	25	0	25	0	0
(313) rust and corrosion has started on bearings - 4/1/2019 (1000-313) Freckled rust has initiated on the pier 2 bearings. 15April2021 26April2023 - There is no change to this defect. (515-313) protective coating is mostly ineffective. - 4/1/2019 (3440-515-313) The coating on the pier 2 bearings is substantially effective. 15April2021 26April2023 - There is no change to this defect.							
321	Reinforced Concrete Approach Slab	SF	3280	3247	5	28	0
1080	Delamination/Spall/Patched Area	SF	28	0	0	28	0
1130	Cracking (RC and Other)	SF	5	0	5	0	0
(321) Approach slab has several small spalls throughout - 4/1/2019							

ELEMENTS	DESCRIPTION	UNITS	TOTAL	CS1	CS2	CS3	CS4
(1080-321) several small spalls and delaminated areas - 4/1/2019 There is a spall on the East approach slab that is approximately 1 foot by 27 feet in size. There is also a 1 foot by 1 foot spall on this slab. 22April2021 26April2023 - There is no change to this defect. (1130-321) There is a crack on the East approach slab that is approximately 5 feet in length and measured 0.020 in width. 22April2021 26April2023 - There is little to no change to this defect.							
330	Metal Bridge Railing	LF	331	331	0	0	0
331	Reinforced Concrete Bridge Railing	LF	331	327	0	4	0
1080	Delamination/Spall/Patched Area	LF	4	0	0	4	0
1130	Cracking (RC and Other)	LF	40	40	0	0	0
(331) Bridge rail has hairline cracks and small spalls. Traffic impact damaged the retrofit rail and broke off a post and loosed another, causing a large spall at one post location and a delaminated area at a second location. - 4/1/2019 (1080-331) south barrier has a 4'x1' spall 50ft from east end 4/15/2021 26April2023 - There is no change to this defect. (1130-331) railing has numerous hairline cracks throughout - 4/1/2019 The concrete barriers have approximately 20 cracks in each. That range from approximately 0.014 to 0.016 in width.22April2021 26April2023 - The cracks have been sealed.							
815	Re Conc Backwall	LF	95	84	10	1	0
1080	Delamination/Spall/Patched Area	LF	1	0	0	1	0
1130	Cracking (RC and Other)	LF	10	0	10	0	0
(1080-815) 26April2023 - There is a 1 foot by 6 inch spall on the East abutment at the end of beam 5. (1130-815) 26April2023 - All the pedestals have cracks.							
8399	Slope Protection, RC	EA	2	0	1	1	0
4000	Settlement	EA	2	0	1	1	0
(8399) both slope protections show some movement due to settlement. - 4/1/2019 (4000-8399) Both slope protections have settled causing minor movement. - 4/1/2019 The West slope protection has an area (approximately 3 panels) at the North end that has shifted and undermined. The East slope protection has shifted and has panels that have warped. 15April2021 26April2023 - There is no change to this defect.							
8401	Wings	EA	4	2	1	1	0
1080	Delamination/Spall/Patched Area	EA	1	0	0	1	0
1130	Cracking (RC and Other)	EA	1	0	1	0	0
(8401) All wings have minor cracking - 4/1/2019 (1080-8401) 26April2023 - The Southwest wing has a spall on the end of the wing that is approximately 8 inches by 6 inches in size.							

ELEMENTS	DESCRIPTION	UNITS	TOTAL	CS1	CS2	CS3	CS4
(1130-8401) All wings have minor cracking - 4/1/2019 Thee Northwest wing has a crack that. Measured approximately 0.012 in width where the wing meets the abutment. 15April2021 26April2023 - There is no change to this defect.							

General Observation

04/19/2017 : NBI Remarks: Bolts in bearing bent. Pedestals all have been repaired. Slope protections at top has been repaired. Bearing pads rusted. Bottom plate on all beams pushed against backwall of east abutment. Hairline cracks on west abutment between two south beams and east abutment between north beams. Hairline cracks visible from under curb. Damaged beams show rust forming on painted repair areas.04/19/2017: 9/2016 Bridge was hit & straightened & repainted, slope protection is buckling in some areas. Pack rust on all bearings. Guradrail is intact but missing some blocks

04/01/2019: North concrete bridge rail has 4’ long crack at a retrofit post that has delaminated. - 4/1/2019
Alert code 1 - 04/19/2017 Eastbound passing lane has a spall 2'x12, new overlay delaminated. - 4/1/2019

1September2022 - The structure was impacted by an over height vehicle in the Northbound lane. Beam 2 was bent out of plane at the lower flange. The upper flange remained in place and no deck concrete was broken. Beams 5, 4 and 3 were impacted with only minor damage to the lower flanges and to a diaphragm stiffener on Beam 4. The underside of the deck next to the top flange of Beam 5 is cracked and beginning to spall. Beam 5 was damaged on the bottom flange from an over height impact.
26April2023 - weather: 56 degrees F, cloudy/light rain, WSW 9. The piers are designated (from this date forward) from West to East and the beams are designated from North to South.

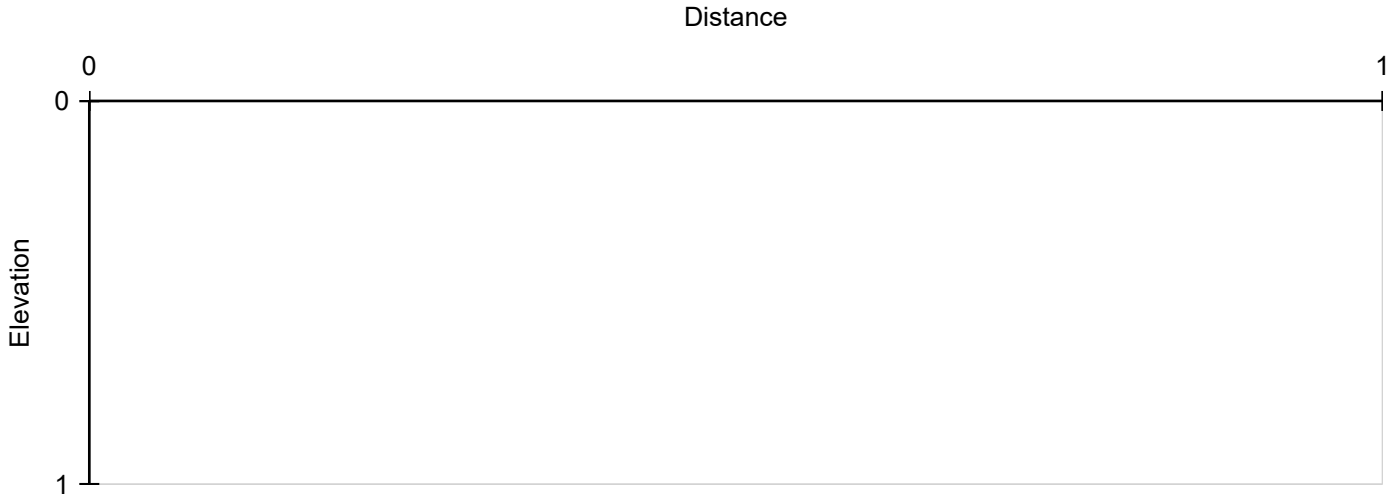
Significant Findings

Critical Finding

Channel Profile

Station	Distance	Upstream	Downstream

Upstream Elevation



Downstream Elevation

South curb spall 4’x1’ span 3

Deck view looking west

Deck cracks span 3 drive lane

Beam 1 west abutment 3”

Beam 3 west abutment 3”

Beam 2 west abutment 2”

Beam 4 west abutment 2 3/4”

Beam 5 west abutment 2 7/8”

Pier 3 beam 1

Span 2 beam5 distortion

Span 2 beam 4 distortion

Span2 beam 2 distortion

Span2 lookingwest

Span2 lookingwest

West slope protection settlement

NW wing crack

Ped 1 west abutment crack

Ped 3 west abutment crack

Ped 2 west abutment

West abutment backwall crack .006

Ped 4 west abutment crack

Ped 5 west abutment crack .008

West abutment

SW wing spall

West half looking SW

East half looking south

Span2 looking NW

Span 2 beam 5 paint peel

Pier 3 cap cracks

South side looking north

South end east slope protection broke and erosion

Pier 3

Span 3 beam 5 flange corrosion

Span 3 beam 5 flange corrosion

South side looking west

SE slope protection settlement

SE corner east abutment cracks efflorescence (25)

East abutment ped 5 bearing 5

East abutment ped 5 bearing 5

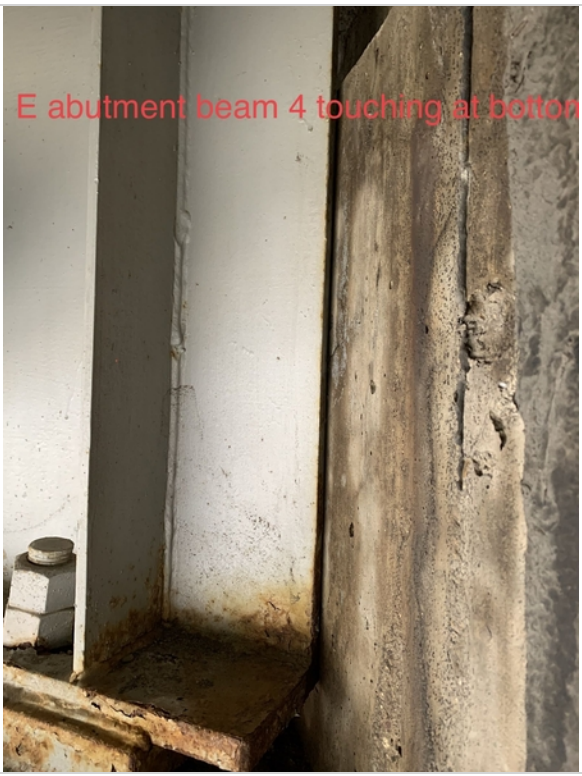
Beam 5 east abutment ,backwall spall, beam touching

Beam 5 east abutment ,backwall spall, beam touching

Beam 5 east abutment ,backwall spall, beam touching

Beam 5 east abutment ,backwall spall, beam touching

East abutment ped 4 bearing 4



East abutment beam 4 touching abutment

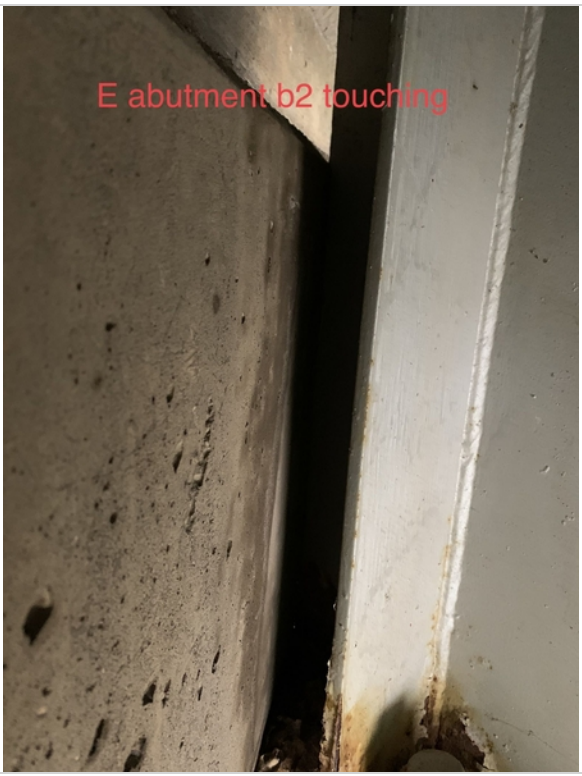
East abutment ped 3 bearing 3

East abutment beam 3 touching

East abutment crack

East abutment backwall crack .010

East abutment bearing 2



East abutment beam 2 touching abutment

East abutment ped 1 crack .008

NE corner slope protection settlement

Span3 beam 1 bottom flange corrosion

Span3 beam 1 bottom flange corrosion

East abutment bearing 1

East abutment beam 1 touching abutment

NE east corner east abutment cracks

North side looking west

Looking west

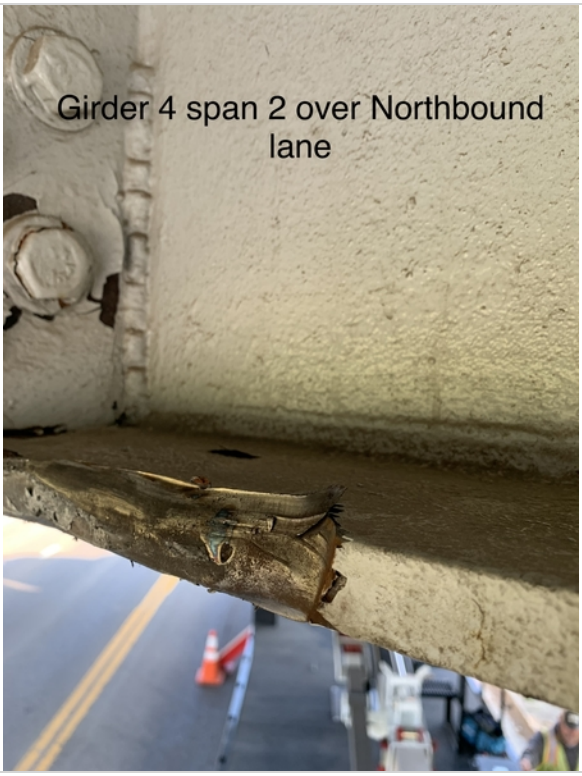
Looking south

Looking east

Looking north

Damage

Damage



Damage

Damage

Damage

Damage

Damage

NORTH Dakota | Transportation
Be Legendary.

Asset #0094-152.329 R(Routine)
INTERSTATE 94 over SUNSET DR/NW MANDAN INT.
Location: 5 EAST OF ND 25
Inspection Date: 04/26/2023

Maintenance Needs

Date Reported: 04/15/2021

Priority: Medium
Status: Unknown
Type of Work: Repair Concrete Slope Protection
Component: Element

Deficiency Description

The West slope protection has an area (approximately 3 panels) at the North end that has shifted and undermined. The East slope protection has shifted and has panels that have warped.

Remarks

Recommend filling any voids and repairing or resetting panels and sealing joints. 15April2021, 26April2023

South end east slope protection broke and erosion

SE slope protection settlement

NE corner slope protection settlement