Latitude:46.35666, Longitude:-101.29901

Route:00031 Log:29.208

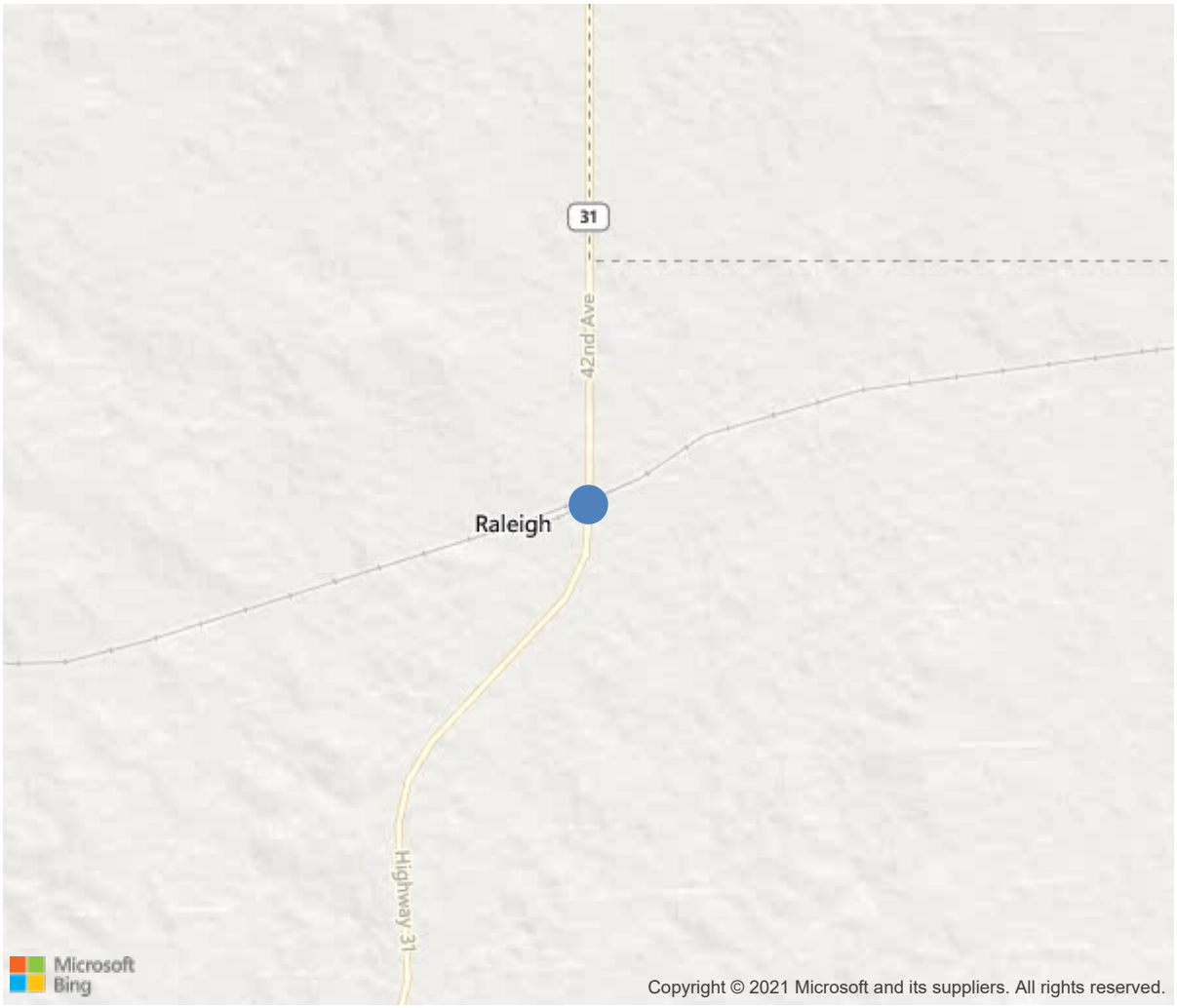
District 61, Grant County

Owner: 1-State Highway Agency

Team Leader: Jake Mertz

Approved By: Jake Mertz

RALEIGH



46.35666, -101.29901

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Bridge #0031-029.214(Other)
ND HIGHWAY 31 over DOG TOOTH CREEK
Location: RALEIGH
Inspection Date: September 28, 2021

IDENTIFICATION	
(1) State Names	North Dakota
(8) Structure Number	0031-029.214
(5) Inventory Route	00031
(2) Highway Agency District	61
(3) County Code	Grant, North Dakota
(4) Place Code	0
(6) Features Intersected	DOG TOOTH CREEK
(7) Facility Carried	ND HIGHWAY 31
(9) Location	RALEIGH
(11) Mile Point	29.208 mi
(12) Base Highway Network	Yes
(13) LRS Inventory Rte	0000000000
(16) Latitude	46.35666
(17) Longitude	-101.29901
GPS X	323131.3
GPS Y	5136244.5
(98) Border Bridge State Code	-1
(99) Border Bridge Struct. No.	_
STRUCTURE TYPE AND MATERIAL	
(43) Main Structure Type	21
Material	2-Concrete continuous
Type	1-Slab
(44) Approach Structure Type	00
Material	0-Other
Type	0-Other
(45) No. of Spans in Main Unit	2
(46) No. of Approach Spans	0
Culvert	
(107) Deck Structure Type	1-Concrete Cast-in-Place
(108) Wearing Surface/Protective System	
Type of Wearing Surface	6-Bituminous
Type of Membrane	0-None
Type of Deck Protection	0-None
Deck overburden	32
AGE AND SERVICE	
(27) Year Built	1957
(106) Year Reconstructed	
(42) Type of Service	15
On	1-Highway
Under	5-Waterway
(28) Lane	
On	2
Under	0
(29) Average Daily Traffic	390
(30) Year of ADT	2019
(109) Truck ADT	15 %
(19) Bypass, Detour Length	45 mi
(114) Future ADT	300
(115) Year of Future ADT	2039
GEOMETRIC DATA	
(48) Length of Maximum Span	20 ft
(49) Structure Length	42 ft
(50) Curb or Sidewalk Width	
Left	0 ft
Right	0 ft
(51) Bridge Roadway Width Curb to Curb	27.9 ft
(52) Deck Width Out to Out	33.1 ft
(32) Approach Roadway Width (W/Shoulders)	34.1 ft
(33) Bridge Median	0-No median
(34) Skew	0 Deg
(35) Structure Flared	No flare
(10) Inventory Route Min Vert Clear	99.99 ft
(47) Inventory Route Total Horiz Clear	27.2 ft
(53) Min Vert Clear Over Bridge Rdwy	99.99 ft
(54) Min Vert Underclear	0 ft
Ref:	
(55) Min Lat Underclear RT	99.9 ft
Ref:	
(56) Min Lat Underclear LT	0 ft

CLASSIFICATION	
(A-7) Agency Admin Area	1
(112) NBIS Bridge Length	Y
(104) Highway System	Non-NHS
(26) Functional Class	6-Rural Minor Arterial
(100) Defense Highway	0-The inventory route is not a S
(A16) TE Route	
(101) Parallel Structure	N-No parallel structure exists.
(102) Direction of Traffic	2 - way traffic
(103) Temporary Structure	
(105) Federal Lands Highways	0-N/A
(110) Designated National Network	0-The inventory route is not part of
(20) Toll	3-On free road. The structure is toll-
(21) Maintain	1-State Highway Agency
(22) Owner	1-State Highway Agency
(37) Historical Significance	5-Bridge is not eligible for the NRHP
CONDITION	
(58) Deck	4
(59) Superstructure	5
(60) Substructure	7
(61) Channel & Channel Protection	5
(62) Culverts	N
LOAD RATING AND POSTING	
(31) Design Load	5-MS 18 / HS 20
(63) Operating Rating Method	1
(64) Operating Rating	47.4
(65) Inventory Rating Method	1-Load Factor(LF)
(66) Inventory Rating	25.6
(70) Bridge Posting	5-Equal to or above legal loads
(41) Structure Open/Posted/Closed	A-Open, no restriction
APPRAISAL	
(67) Structural Evaluation	6
(68) Deck Geometry	6
(69) Clearances, Vertical/Horizontal	N
(71) Waterway Adequacy	6
(72) Approach Roadway Alignment	7
(36) Traffic Safety Features	1111
A) Bridge Railings	1-Inspected feature meets currently a
B) Transitions	1-Inspected feature meets currently a
C) Approach Guardrail	1-Inspected feature meets currently a
D) Approach Guardrail Ends	1-Inspected feature meets currently a
(113) Scour Critical Bridges	5-Bridge foundations determined to be

APPROVED INSPECTIONS			
(90) Inspection Date			05/2021
(91) Frequency			24 Months
(92) Critical Feature Inspection	Req	Freq. (Mon)	Date
A: Fracture Critical Detail	No		
B: Underwater Inspection	No		
C: Other Special Inspection	Yes	0	09/2021

NAVIGATION DATA	
(38) Navigation Control	0-No navigation control on water
(111) Pier Protection	-
(39) Navigation Vertical Clearance	0 ft
(116) Vert-Lift Bridge Nav Min Vert Clr	ft
(40) Navigation Horizontal Clearance	0 ft
AGENCY ITEMS	
(A-21) Fedaid Project no.	S-1-031(00)029
(A-14) Chaining Date	
(A-15) Delamination Pct	
(A-2) Rating Date	4/24/2017 12:00:00 AM

Bridge Health Index	43.03

Inspection Team Lead: Jake Mertz

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Bridge #0031-029.214(Other)
ND HIGHWAY 31 over DOG TOOTH CREEK
Location: RALEIGH
Team Lead: Jake Mertz, **Inspection Date:** September 28, 2021

ELEM	DESCRIPTION	UNITS	TOTAL	CS1	CS2	CS3	CS4
38	RC Slab	SF	1173	0	0	1173	0
1130	Cracking (RC and Other)	SF	1173	0	0	1173	0
510	Wearing Surfaces	SF	1173	460	500	213	0
3210	Delam/Spall/Patched Area/Pothole	SF	213	0	0	213	0
3220	Crack (Wearing Surface)	SF	500	0	500	0	0

(38-1130)

The entire underside of the deck on both spans is map cracked with efflorescence. 4May2021

(38-510-3210)

patching on deck - 4/23/2019

There is a 3 foot by 60 foot area along the east curb and a 11 foot by 3 foot area at the north end in the South bound lane that is spalled. 4May2021

(38-510-3220)

There is cracking of the asphalt wearing surface throughout the deck. 4May2021

210	Reinforced Concrete Pier Wall	LF	56	38	18	0	0
1120	Efflorescence/Rust Staining	LF	15	0	15	0	0
1130	Cracking (RC and Other)	LF	3	0	3	0	0

(210-1120)

The outer areas of the pier 2 pier wall have efflorescence. 4May2021

(210-1130)

some efflorescence - 4/23/2019

There are 3 cracks in the pier 2 pier wall. 4May2021

215	Reinforced Concrete Abutment	LF	66	61	5	0	0
1130	Cracking (RC and Other)	LF	5	0	5	0	0

(215-1130)

diagnol cracking - 4/23/2019

The abutments have a total of 5 cracks that range from approximately 0.010 to 0.012 in width. 4May2021

331	Reinforced Concrete Bridge Railing	LF	85	0	80	5	0
1130	Cracking (RC and Other)	LF	25	0	20	5	0
1190	Abrasion/Wear (PSC/RC)	LF	60	0	60	0	0

(331-1130)

East curb has horizontal cracking and spalling - 4/23/2019

ELEM	DESCRIPTION	UNITS	TOTAL	CS1	CS2	CS3	CS4
There are also approximately 20 cracks in total for both curbs. These cracks average 0.010 in width. 4May2021							
(331-1190)							
Both curbs have abrasion without loose aggregate. 4May2021							
333	Other Bridge Railing	LF	85	85	0	0	0
8401	Wings	EA	4	3	1	0	0
1130	Cracking (RC and Other)	EA	1	0	1	0	0
(8401-1130)							
The Northwest wing has a crack that measured approximately 0.006 in width. 4May2021							

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Bridge #0031-029.214(Other)
ND HIGHWAY 31 over DOG TOOTH CREEK
Location: RALEIGH
Inspection Date: September 28, 2021

Inspection Comments

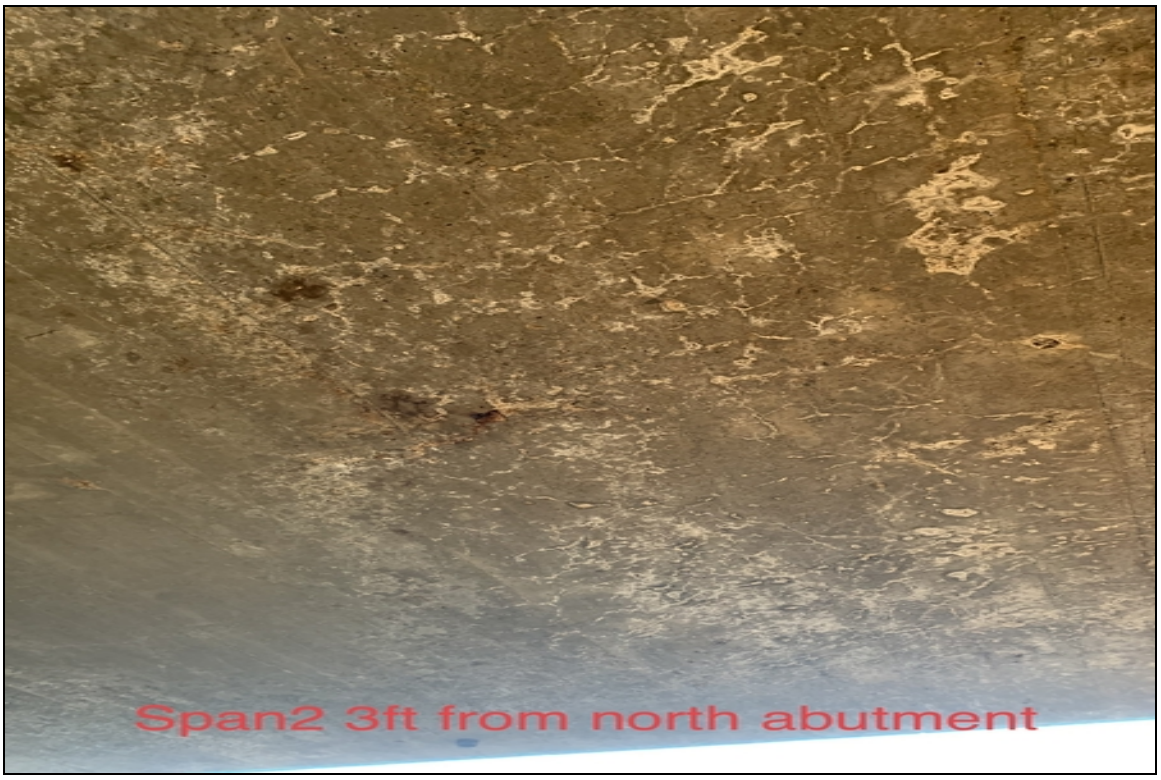
4/23/19- ALL CURBS HAVE MINOR CRACKS. 3 HAIRLINE VERTICAL CRACK ON PIER 2, CURBS HAVE SOME DAMAGE FROM WHAT LOOKS LIKE SNOW REMOVAL EQUIPMENT.2 LONGITUDINAL HAIRLINE CRACKS UNDERSIDE OF DECK CONTINIOUS THRU PIER. 50% of the underside of the deck has map cracking with efflourescence. Deck has a 2" asphalt overlay on it. - 4/23/2019

Significant Findings

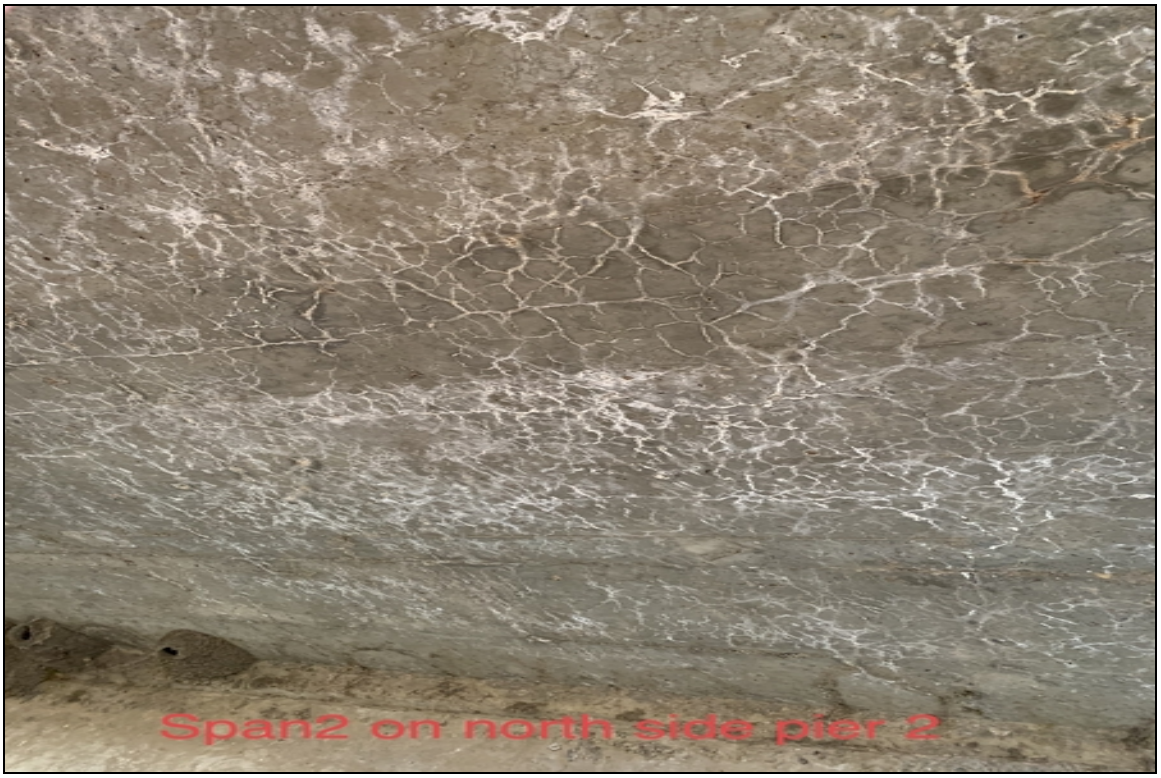
There are large spalls on the slab in the wearing surface and the underside of the deck is map cracked with efflorescence. There are large horizontal cracks on the outside faces of the slab. The largest measuring approximately 0.060 in width. 4May2021

Span 2 next to North Abutment looking West

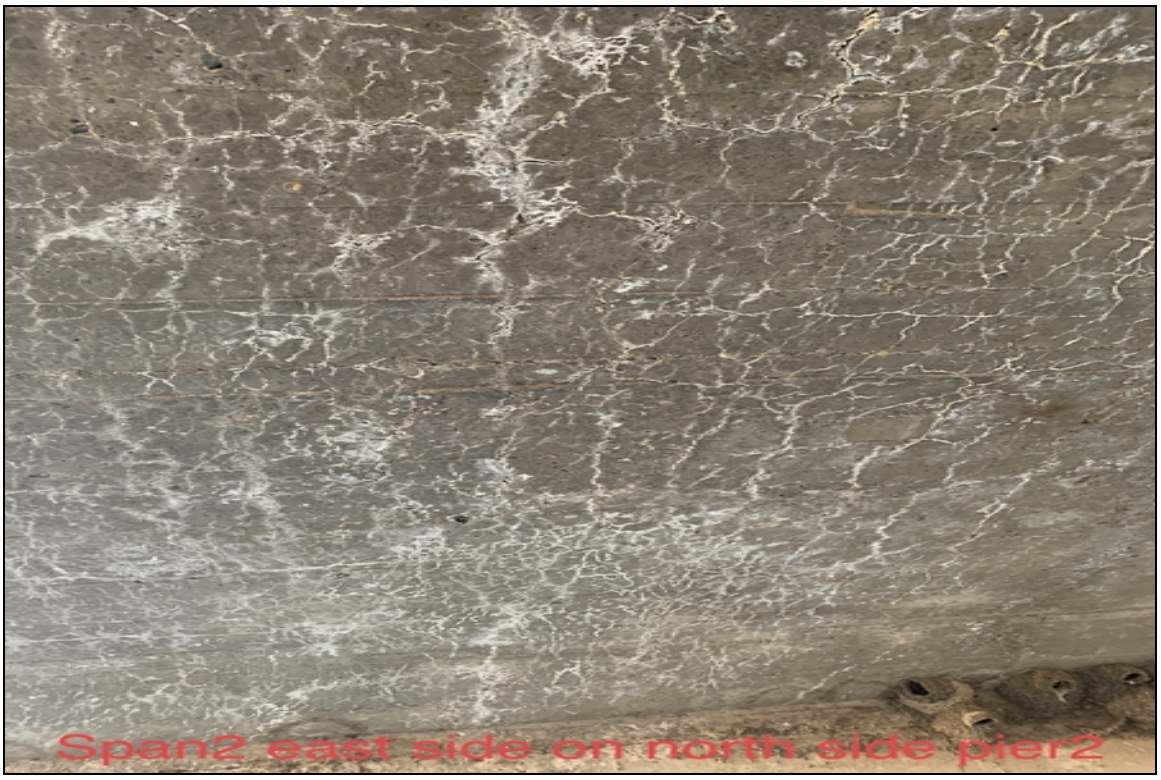
Span 2 West side looking towards Pier 2



Span 2, 3 feet from North. Abutment



Span 2 on North side of Pier 2



Span 2 East side on North side of Pier 2

East side looking South

Southbound lane North end

Span 1 East side looking North

Span 1 Middle looking North

Span 1 West side looking North

Span 1 looking North West side

Span 1 East side Close view

Span 1 looking West

Span 1 looking South East side

Span 1 looking South West side

Deck wearing surface

NB lane wearing surface spalls

West face slab crack about pier .060

East face slab cracks horizontal

West face slab cracks

Looking SE

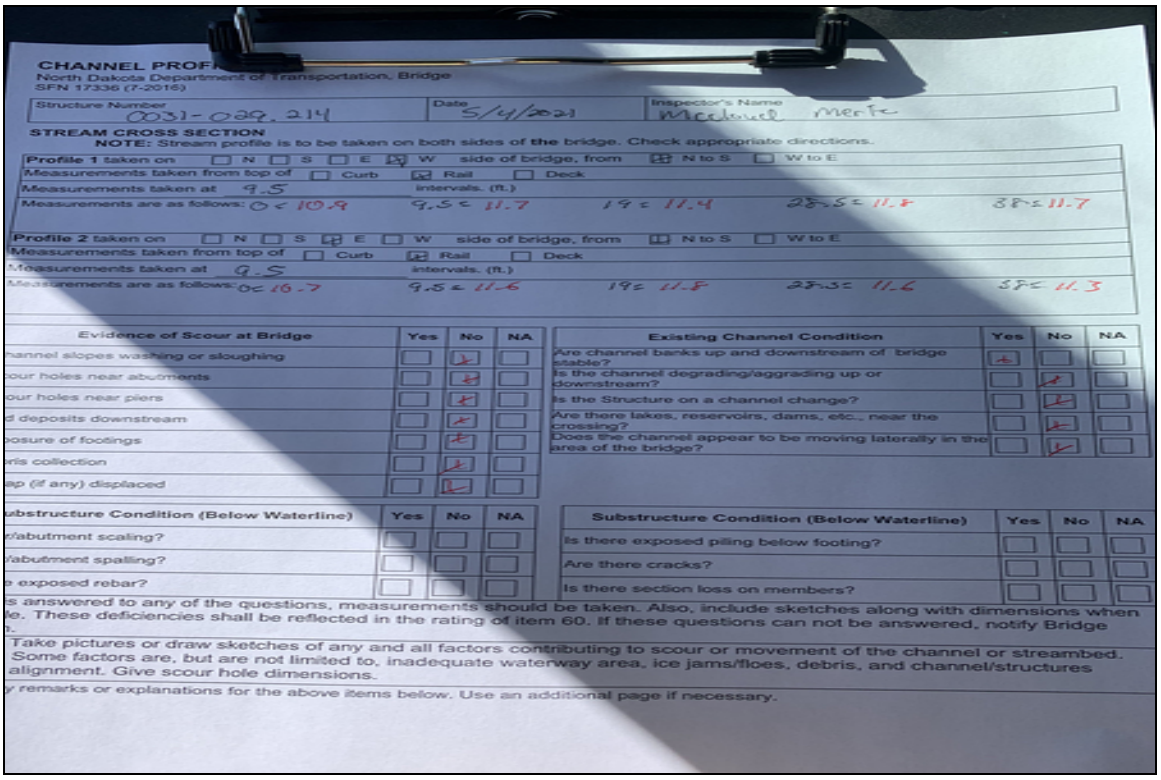
Looking north

Looking west

Looking south

Looking east

West face



CHANNEL PROFI
North Dakota Department of Transportation, Bridge
SFN 17336 (7-2016)

Structure Number: 0031-029.214 | Date: 5/4/2021 | Inspector's Name: Medaard Meeks

STREAM CROSS SECTION
NOTE: Stream profile is to be taken on both sides of the bridge. Check appropriate directions.

Profile 1 taken on ☐ N ☐ S ☐ E ☒ W side of bridge, from ☒ N to S ☐ W to E
Measurements taken from top of ☐ Curb ☒ Rail ☐ Deck
Measurements taken at 9.5 intervals. (ft.)
Measurements are as follows: 0 < 10.9 | 9.5 < 11.7 | 19 < 11.4 | 28.5 < 11.8 | 38 < 11.7

Profile 2 taken on ☐ N ☐ S ☒ E ☐ W side of bridge, from ☒ N to S ☐ W to E
Measurements taken from top of ☐ Curb ☒ Rail ☐ Deck
Measurements taken at 9.5 intervals. (ft.)
Measurements are as follows: 0 < 10.7 | 9.5 < 11.6 | 19 < 11.8 | 28.5 < 11.6 | 38 < 11.3

Evidence of Scour at Bridge	Yes	No	NA
hannel slopes washing or sloughing	☐	☒	☐
our holes near abutments	☐	☒	☐
our holes near piers	☐	☒	☐
d deposits downstream	☐	☒	☐
osure of footings	☐	☒	☐
ris collection	☐	☒	☐
ap (if any) displaced	☐	☒	☐

Existing Channel Condition	Yes	No	NA
Are channel banks up and downstream of bridge stable?	☒	☐	☐
Is the channel degrading/aggrading up or downstream?	☐	☒	☐
Is the Structure on a channel change?	☐	☒	☐
Are there lakes, reservoirs, dams, etc., near the crossing?	☐	☒	☐
Does the channel appear to be moving laterally in the area of the bridge?	☐	☒	☐

bstructure Condition (Below Waterline)	Yes	No	NA
/abutment scaling?	☐	☐	☐
/abutment spalling?	☐	☐	☐
exposed rebar?	☐	☐	☐

Substructure Condition (Below Waterline)	Yes	No	NA
Is there exposed piling below footing?	☐	☐	☐
Are there cracks?	☐	☐	☐
Is there section loss on members?	☐	☐	☐

s answered to any of the questions, measurements should be taken. Also, include sketches along with dimensions when le. These deficiencies shall be reflected in the rating of item 60. If these questions can not be answered, notify Bridge

Take pictures or draw sketches of any and all factors contributing to scour or movement of the channel or streambed. Some factors are, but are not limited to, inadequate waterway area, ice jams/floes, debris, and channel/structures alignment. Give scour hole dimensions.

y remarks or explanations for the above items below. Use an additional page if necessary.

Channel profile

West face slab crack about pier .060

East face slab cracks horizontal

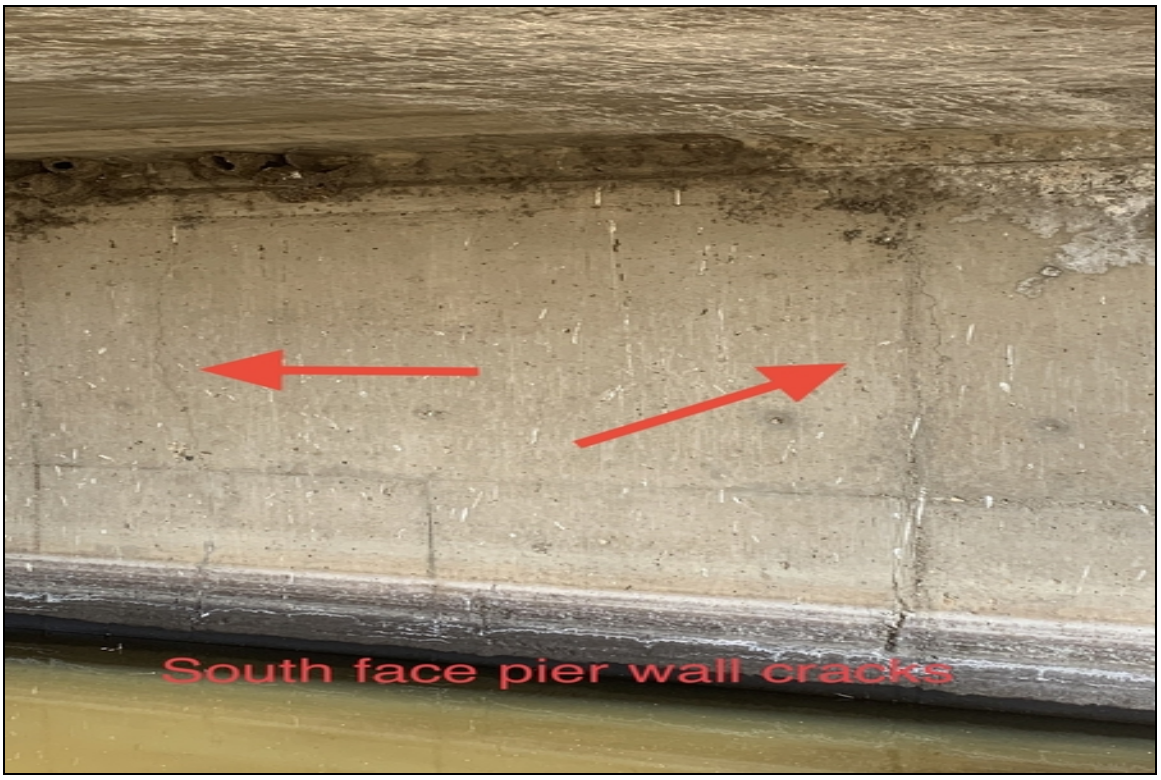
West face slab cracks

NB lane wearing surface spalls

Deck wearing surface

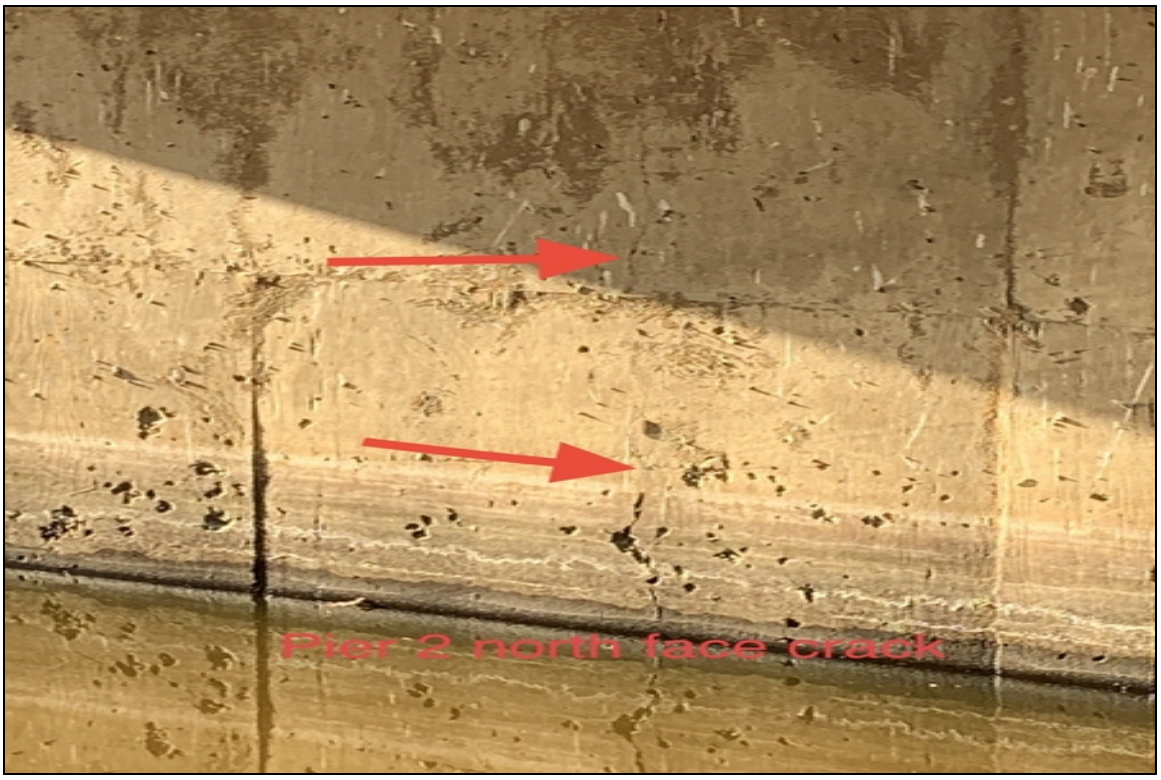
Deck wearing surface

NB lane wearing surface spalls



South face pier wall cracks

Pier 2 north face crack



Pier 2 north face crack

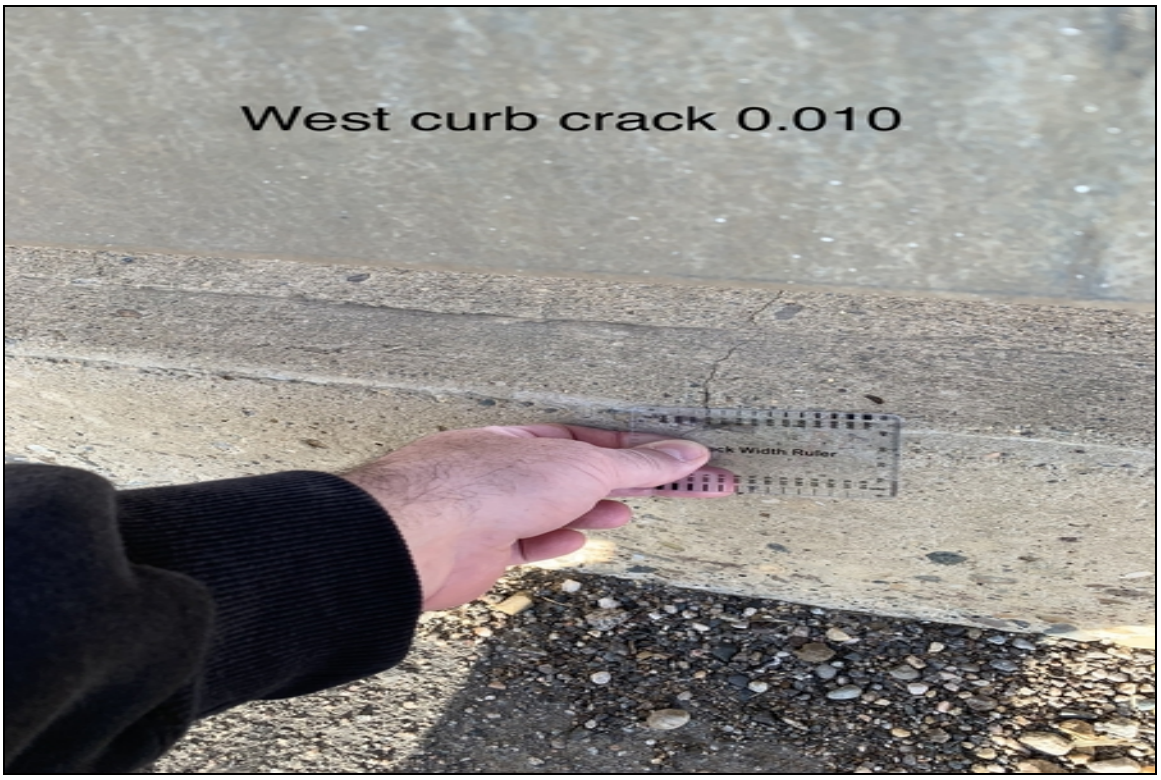
East face slab cracks horizontal

.012 south abutment crack

Abutment 3 crack .010

East conc rail crack bigger then .100

East conc rail cracks



West curb crack .010

East curb abrasion

NW wing cracks .006

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Bridge #0031-029.214(Other)
ND HIGHWAY 31 over DOG TOOTH CREEK
Location: RALEIGH
Inspection Date: September 28, 2021

Maintenance Needs

Date Reported:	05/18/2021
Priority:	Normal
Type of Work:	-------- Other --------
Status:	Unknown
Component:	331 - Reinforced Concrete Bridge Railing

Deficiency Description

There are cracks on the curb that need to be sealed.

Remarks

Recommend sealing the curb cracks. 4May2021

East conc rail crack bigger then .100

East conc rail cracks

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Bridge #0031-029.214(Other)
ND HIGHWAY 31 over DOG TOOTH CREEK
Location: RALEIGH
Inspection Date: September 28, 2021

Date Reported: 05/18/2021
Priority: Normal
Type of Work: Maintain General Safety Features
Status: Unknown
Component: Approach

Deficiency Description

The southeast guardrail has impact damage with broken posts.

Remarks

Recommend replacing the guardrail and broken posts. 4may2021

SE guardrail damage 3 post broke