



Latitude:46.92144, Longitude:-103.50919

Route:00094 Log:26.416

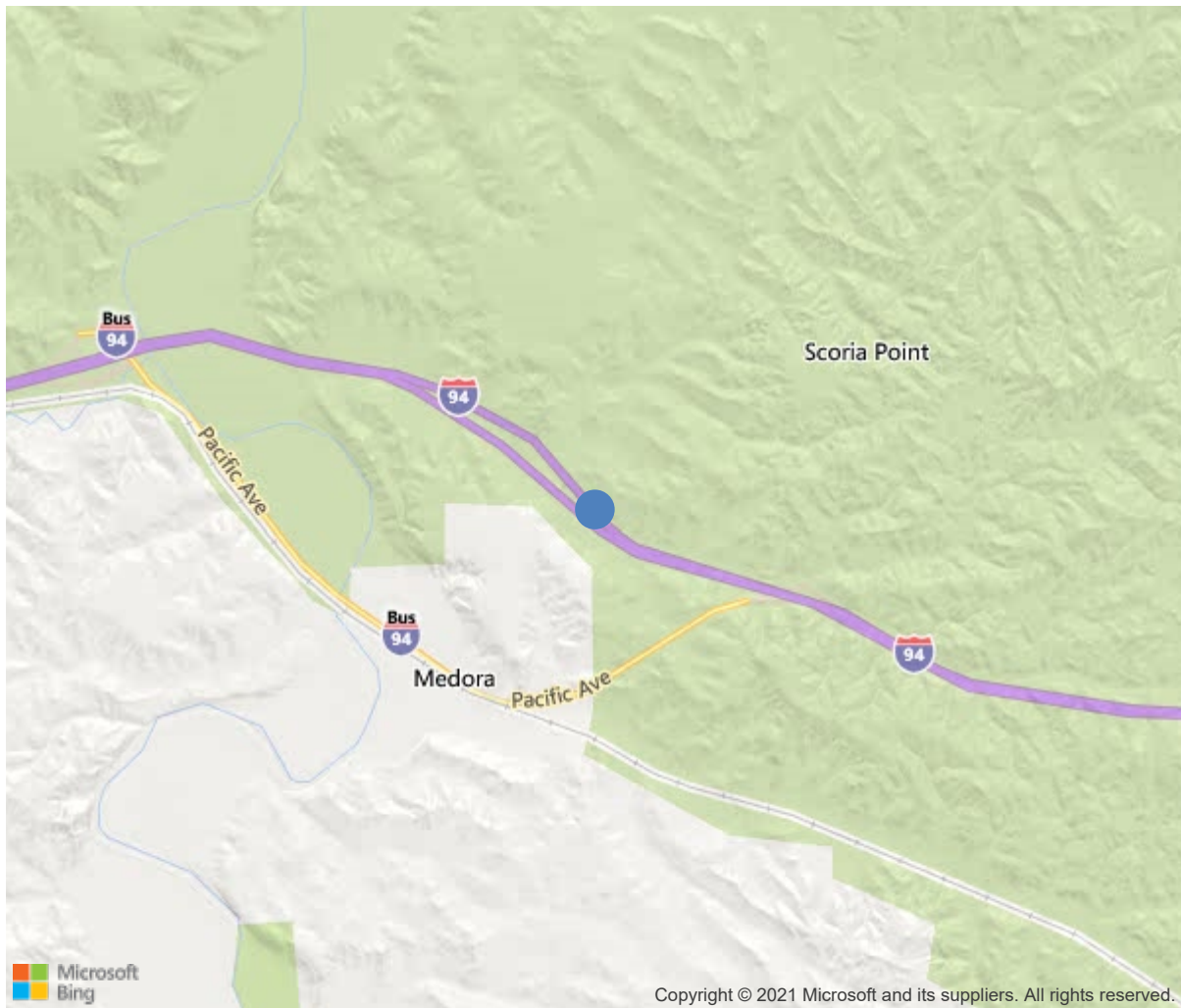
District 65, Billings County

Owner: 1-State Highway Agency

Team Leader: Jake Mertz

Approved By: Travis McCloud

16 WEST OF JCT. US 85



46.92144, -103.50919

IDENTIFICATION		
(1) State Names	North Dakota	
(8) Structure Number	0094-026.422 L	
(5) Inventory Route	00094	
(2) Highway Agency District	65	
(3) County Code	Billings, North Dakota	
(4) Place Code	0	
(6) Features Intersected	SHEEP CREEK	
(7) Facility Carried	INTERSTATE 94	
(9) Location	16 WEST OF JCT. US 85	
(11) Mile Point	26.416 mi	
(12) Base Highway Network	Yes	
(13) LRS Inventory Rte	0000000000	
(16) Latitude	46.92144	
(17) Longitude	-103.50919	
GPS X	156707.6	
GPS Y	5206311.5	
(98) Border Bridge State Code	-1	
(99) Border Bridge Struct. No.	—	
STRUCTURE TYPE AND MATERIAL		
(43) Main Structure Type	119	
Material	1-Concrete	
Type	19-Culvert	
(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	
Culvert	TRIPLE, 9 X 11 X 164' RCB	
(107) Deck Structure Type	N-Not applicable	
(108) Wearing Surface/Protective System		
Type of Wearing Surface	N-Not applicable (applies only to structur	
Type of Membrane	N-Not applicable (applies only to structur	
Type of Deck Protection	N-Not applicable (applies only to structur	
Deck overburden	N	
AGE AND SERVICE		
(27) Year Built	1964	
(106) Year Reconstructed		
(42) Type of Service	15	
On	1-Highway	
Under	5-Waterway	
(28) Lane		
On	2	
Under	0	
(29) Average Daily Traffic	1300	
(30) Year of ADT	2019	
(109) Truck ADT	28 %	
(19) Bypass, Detour Length	8 mi	
(114) Future ADT	1300	
(115) Year of Future ADT	2039	
GEOMETRIC DATA		
(48) Length of Maximum Span	8.9 ft	
(49) Structure Length	40 ft	
(50) Curb or Sidewalk Width		
	Left	0 ft
	Right	0 ft
(51) Bridge Roadway Width Curb to Curb	0 ft	
(52) Deck Width Out to Out	0 ft	
(32) Approach Roadway Width (W/Shoulders)	37.1 ft	
(33) Bridge Median	0-No median	
(34) Skew	45 Deg	
(35) Structure Flared	No flare	
(10) Inventory Route Min Vert Clear	99.99 ft	
(47) Inventory Route Total Horiz Clear	36.7 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	

CLASSIFICATION			
(A-7) Agency Admin Area	1		
(112) NBIS Bridge Length	Y		
(104) Highway System	NHS		
(26) Functional Class	1-Rural Principal Arterial - Int		
(100) Defense Highway	1-The inventory route is on a In		
(A16) TE Route			
(101) Parallel Structure	N-No parallel structure exists.		
(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 part of the		
(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	3-Bridge is possibly eligible for the		
CONDITION			
(58) Deck	N		
(59) Superstructure	N		
(60) Substructure	N		
(61) Channel & Channel Protection	6		
(62) Culverts	4		
LOAD RATING AND POSTING			
(31) Design Load	5-MS 18 / HS 20		
(63) Operating Rating Method	1		
(64) Operating Rating	59.5		
(65) Inventory Rating Method	1-Load Factor(LF)		
(66) Inventory Rating	35.7		
(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	N		
(69) Clearances, Vertical/Horizontal	N		
(71) Waterway Adequacy	8		
(72) Approach Roadway Alignment	8		
(36) Traffic Safety Features	NN11		
A) Bridge Railings	N-Not applicable or a safety feature		
B) Transitions	N-Not applicable or a safety feature		
C) Approach Guardrail	1-Inspected feature meets currently a		
D) Approach Guardrail Ends	1-Inspected feature meets currently a		
(113) Scour Critical Bridges	8-Bridge foundations determined to be		
APPROVED INSPECTIONS			
(90) Inspection Date	05/2021		
(91) Frequency	12 Months		
(92) Critical Feature Inspection	Req	Freq. (Mon)	Date
A: Fracture Critical Detail	No		
B: Underwater Inspection	No		
C: Other Special Inspection	No		
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.	I-5-094(08)025		
(A-14) Chaining Date			
(A-15) Delamination Pct			
(A-2) Rating Date	1/1/1901 12:00:00 AM		
Bridge Health Index		84.64	

Inspection Team Lead: Jake Mertz

ELEM	DESCRIPTION	UNITS	TOTAL	CS1	CS2	CS3	CS4
241	Reinforced Concrete Culvert	LF	492	362	50	60	20
1080	Delamination/Spall/Patched Area	LF	25	0	10	0	15
1090	Exposed Rebar	LF	5	0	0	0	5
1130	Cracking (RC and Other)	LF	100	0	40	60	0
(241)	const joint open 1/4-1/2". - 11/21/2019						
(241-1080)	spalling on construction joints and on floor exposing rebar - 11/21/2019						
	There is a spall on the Southwest wing/parapet joint with exposed rebar approximately 1 foot in length. The inside walls on the South end at the bottom of the walls are spalled with exposed rebar. No change to this defect. 18May2021						
(241-1090)	inner wall has exposed rebar s end, exposed rebar on sw wing/ parapet on top - 11/21/2019						
	No change to this defect. 18May2021						
(241-1130)	parapet cracked, drop inlet and walls have major cracking, vertical cracking on walls and horizontal crack running through structure - 11/21/2019						
	No change to this defect. 18May2021						
8401	Wings	EA	4	0	2	0	2
1130	Cracking (RC and Other)	EA	3	0	2	0	1
1900	Distortion	EA	1	0	0	0	1
(8401)	The top of the Northwest, Northeast wings and drop inlet wall are heavily deteriorated. 18May2021						
(8401-1130)	sw wing and parapet cracking, ne-nw wing walls have full length longitudinal cracking . nw wing wall is bowed inward from outside pressure, has large split along top extruding down through mid point of wall inside face crumbling - 11/21/2019						
	The Northeast wing wall has approximately 6 foot in length split on the top and has spalling and cracking. This wing is also beginning to bow inward.						
	No change to this defect. 18May2021						
(8401-1900)	nw wing - 11/21/2019						
	The Northwest wing is bowed inward due to cracking and pressure. 18May2021						
8402	Headwalls	EA	68	64	2	2	0

Team Lead: Jake Mertz, **Inspection Date:** May 18, 2021

ELEM	DESCRIPTION	UNITS	TOTAL	CS1	CS2	CS3	CS4
1080	Delamination/Spall/Patched Area	EA	2	0	0	2	0
1130	Cracking (RC and Other)	EA	2	0	2	0	0
(8402-1080)							
The South headwall has a 2 foot by 1 foot spall in the Southwest corner next to the wing. 18May2021							
(8402-1130)							
There are 2 cracks in the North headwall. 1 is in the Northeast corner next to the wing. The other is over the center barrel. 18May2021							
8403	Drop Inlet	EA	1	0	0	0	1
1130	Cracking (RC and Other)	EA	1	0	0	0	1
(8403-1130)							
drop inlet and walls on the north end have major cracking - 11/21/2019							
The wall for the drop inlet has heavy cracking and deterioration. No change to this defect. 18May2021							

Inspection Comments

NBI Remarks: Vertical walls adjacent to the drop inlet are pushing in towards stream 3" and have .10" cracks and staining. SW wing and parapet cracked and spalled exposing re-bar. Construction joints open 1/4" to 1/2" and have minor spalls and staining. Concrete is deteriorating at the water line at the middle barrel south end. Horizontal cracks measuring 1.00" on the east wall north end. NE & NW wingwall have full length longitudinal cracking. 11/20/2013 - East and west barrel have 1-2 ft. of silt in them. - 11/21/2019

The East barrel has approximately 2 feet of silt material throughout the entire length of the barrel. The Center barrel has approximately 1 - 1.5 feet of silt material throughout the entire length of the barrel. The West barrel has approximately 1 foot of silt material throughout the entire length of the barrel.

Alert code 2 - 11/22/2011 - Drop Inlet and walls on the north end have major cracking. Water seepage on west wall. Also staining and delamination.

11/22/2011 - Inner wall has exposed rebar, spalling and delamination at the south end.

11-21-19 - exposed rebar on sw wing/ parapet on the top - 11/21/2019

Significant Findings

12/16/2015 - NW wing wall is bowed inward from outside pressure. Has large split along top. Extruding down through mid point of wall. Inside face crumbling. - 11/21/2019

Drop Inlet and walls on the north end have major cracking. This note has been moved from alert code 2 to alert code 3.

1June2020



East barrel east wall cracking



North end center barrel east wall spall
1' x 8"

North end center barrel east wall spall 1'x8"



North end center barrel east wall spill 1'x8"



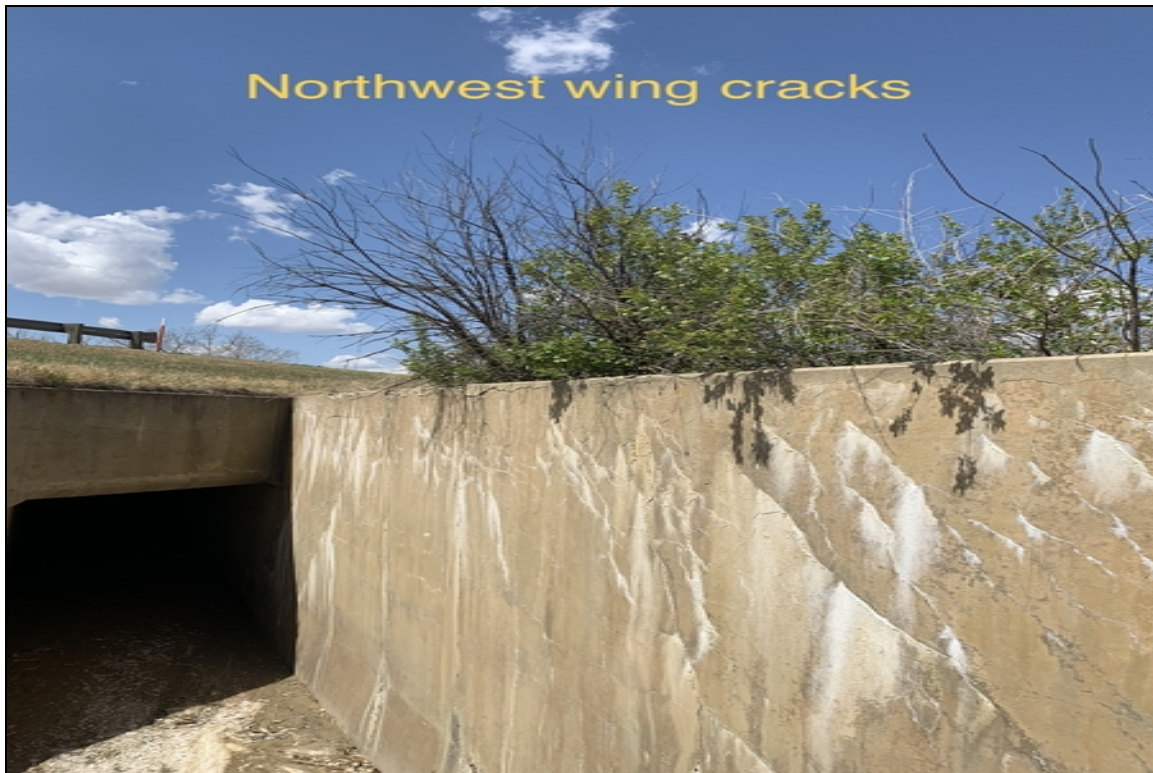
Center of drop inlet wall



Center barrel west wall crack .020



Center barrel west wall crack .012



NW wing crack



NW wing cracks and deterioration



North headwall cracks



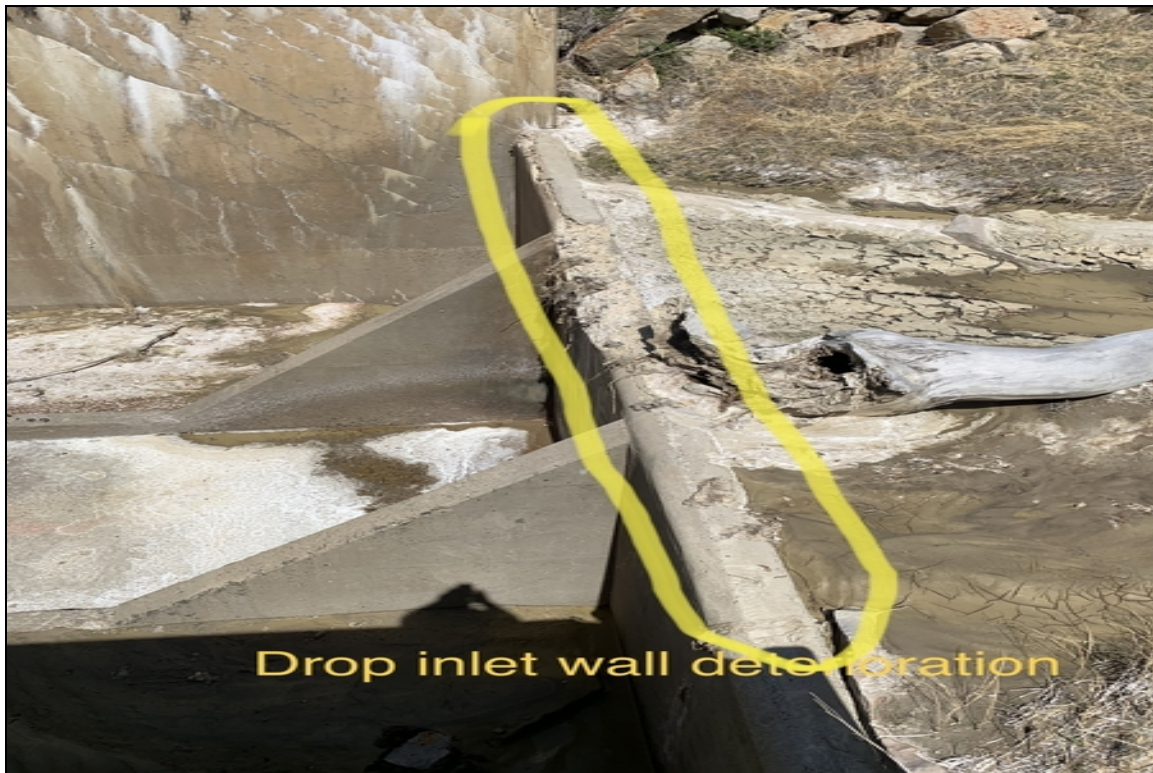
NE wing cracks



Nw wing cracks



NE wing cracks



Drop inlet wall deterioration



NE wing cracks



NE wing cracks



Looking east



Looking south



SW wing cracksnot NW



Looking west



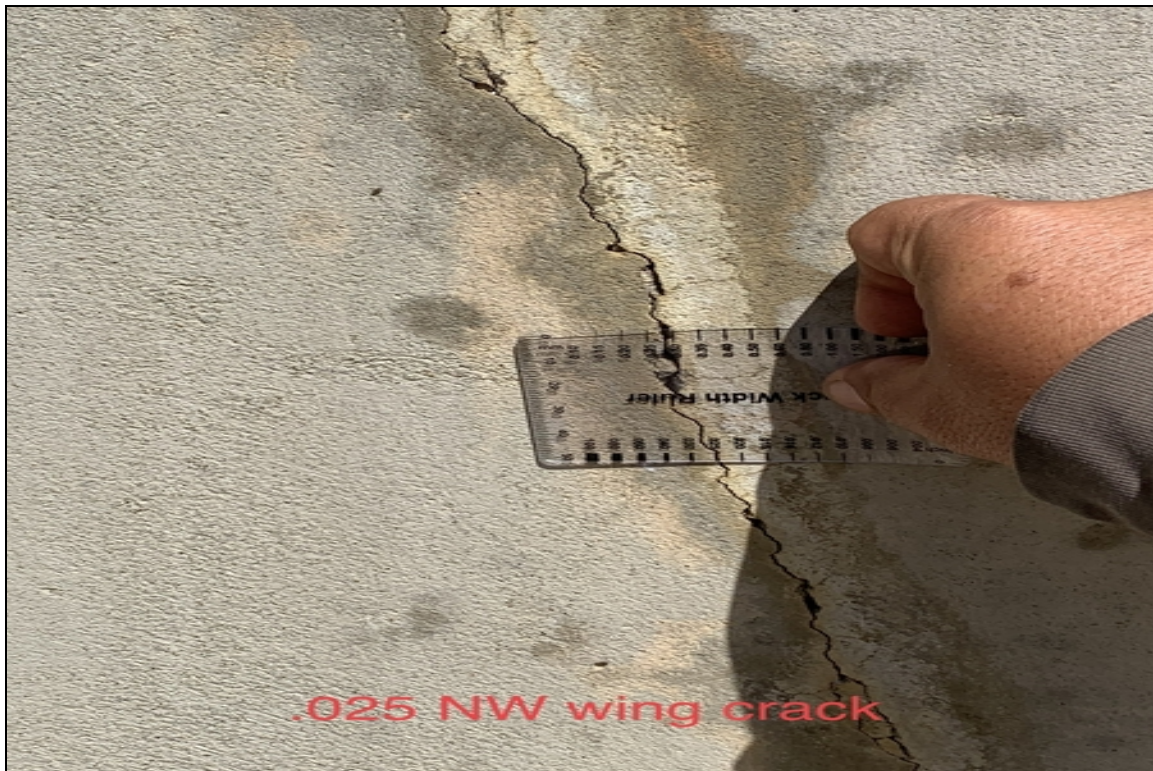
Looking north



South end barrel ends spalled exposed rebar ..not west



South end barrel ends spalled exposed rebar ...not west



.025 Sw wing crack ..not NW



South headwall spall exposed rebar 2'x1'



North barrel north wall horizontal crack
.012

West barrel north wall horizontal crack .012
Not north barrel



North barrel north wall cracks

West barrel north wall cracks
Not north barrel



West barrel north wall crack .100
Not north



NW wing distortion at top
Not NE



NW wing distortion at top
Not NW



.025 west barrel south wall crack
Not north



North barrel mud on floor

West barrel mud on floor
Not west

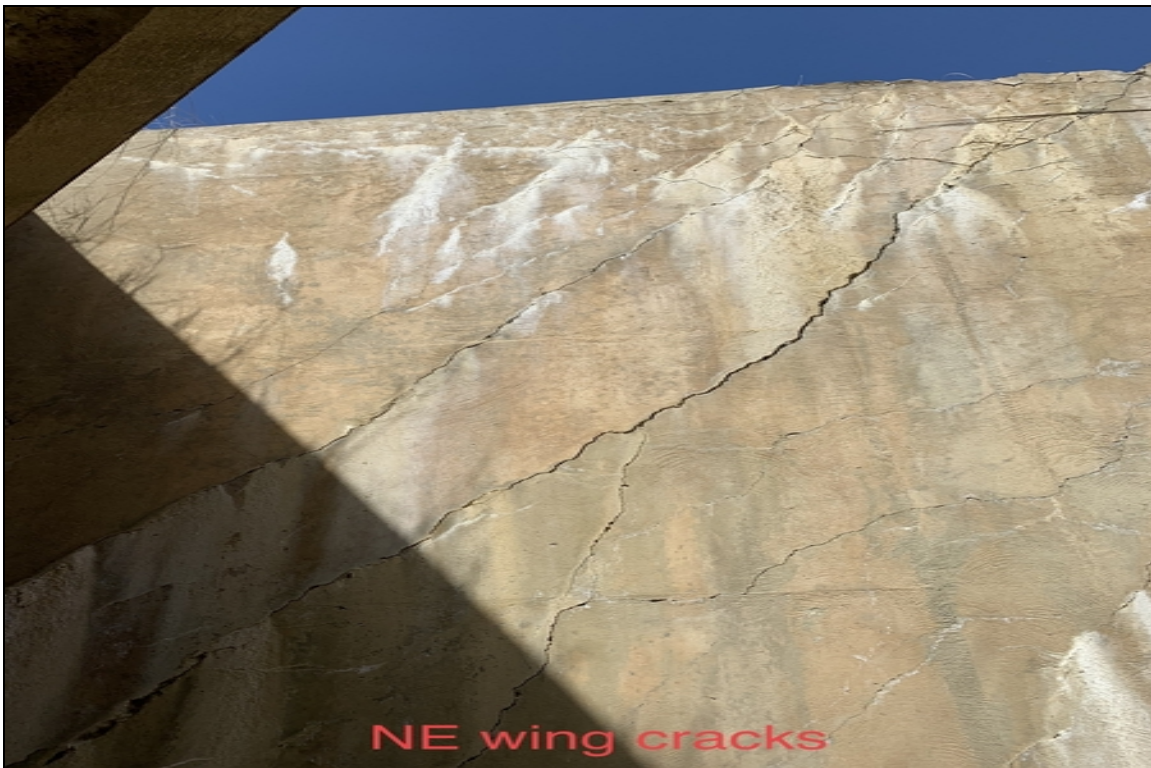


South barrel south wall horizontal
crack .100

East barrel south wall crack horizontal.100
Not south



Drop inlet north end
Not east



NW wing cracks



NW wing bow



NW wing bow



NW wing bowing inward



Drop inlet



NW wing spall



Drop inlet lip spalling



Drop inlet cracking



NW wing cracks



.125 NW wing crack



.125 east barrel outside wall crack north end



Upstream



Looking east



Looking west



Downstream



North headwall crack



East barrel inner wall honeycomb



East barrel joint seepage roof



East barrel outside wall seepage



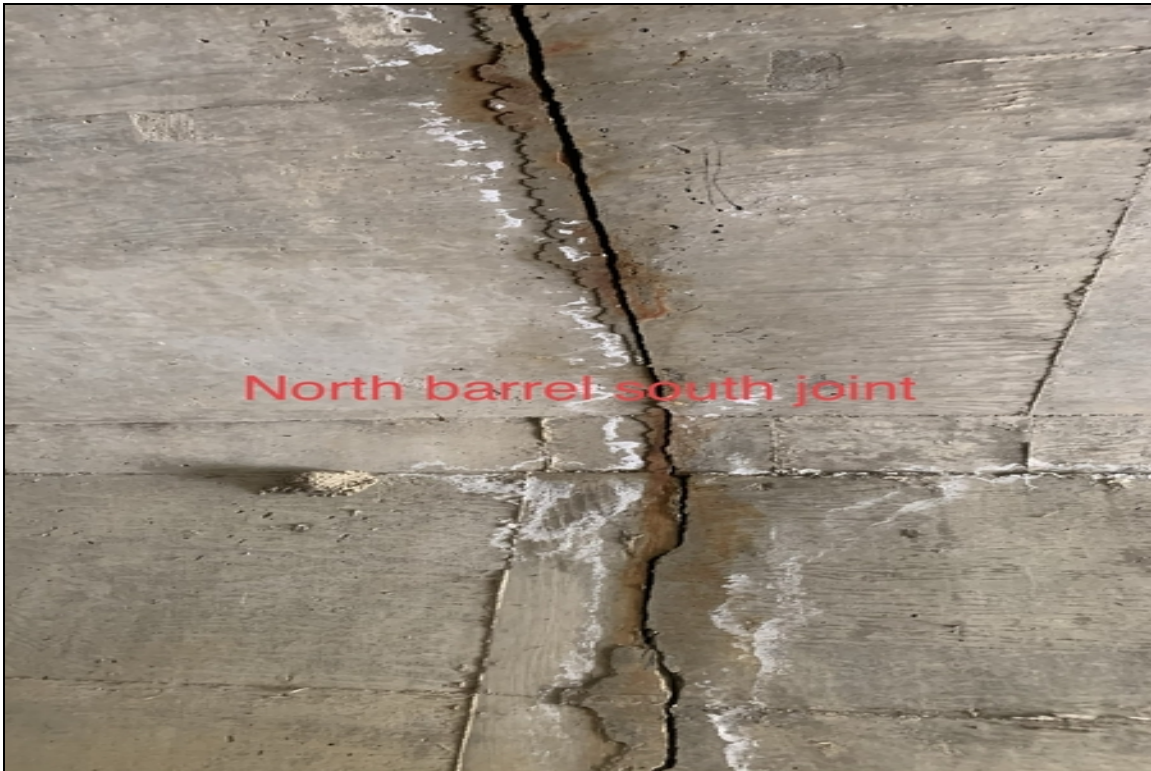
East barrel north end looking south
east wall bowing approx 20'

East barrel north end looking south wall bowing approx 20"



Middle barrel segregation

Middle barrel segregation under east headwall exposed rebar



North barrel south joint seepage



Barrel wall end south spall exposed rebar



North end east barrel inner wall spall and exposed rebar



West barrel south end outside wall cracks



West barrel south end outside wall cracks 1/4"



.125 east barrel outside wall crack north end



East barrel inner wall crack



.031 inner wall crack east barrel north end



Middle barrel crack



Horizontal cracks west outside wall south end



.018 horizontal crack west barrel outside wall



West barrel inner wall crack



Barrel end south end spall exposed rebar



North end east barrel inner wall spall and exposed rebar



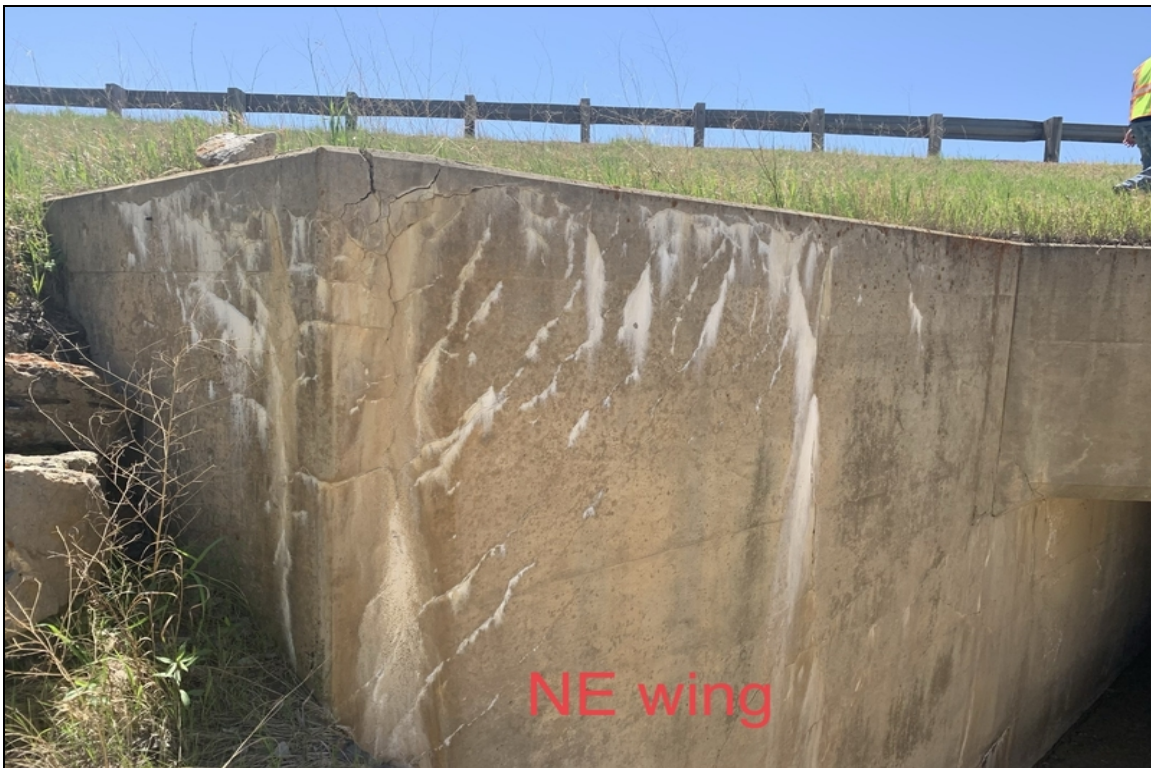
Bagel wall end south spill exposed rebar



NW wing cracks



NW wing spall



NE wing cracks



NE wing and parapet cracks



SW wing and parapet spall exposed rebar



SW wing cracks



SW wing



SE wing cracks



SW wing crack .025



NW wing cracks



.125 NW wing crack



NW wing bowing inward



NW wing bow



Drop inlet



Drop inlet lip spalling



Drop inlet cracking

Maintenance Needs

Date Reported: 07/07/2020
Priority: Normal
Type of Work: ----- Other -----
Status: Unknown
Component: Culverts

Deficiency Description

The East barrel has approximately 2 feet of silt material throughout the entire length of the barrel. The Center barrel has approximately 1 - 1.5 feet of silt material throughout the entire length of the barrel. The West barrel has approximately 1 foot of silt material throughout the entire length of the barrel.

Remarks



Middle barrel mud



West barrel mud



North barrel mud on floor

West barrel mud on floor
Not north



East barrel 1' of sediment

East barrel 1' sediment

Date Reported: 05/18/2021
Priority: Normal
Type of Work: Remove Sediment
Status: Unknown
Component: 241 - Reinforced Concrete Culvert

Deficiency Description

All 3 barrels have between 6 inches to 1.5 feet of sediment.

Remarks

Recommend removing the sediment from the barrels with a skid steer. 18May2021



East barrel 1' sediment



West barrel mud on floor
Not west