

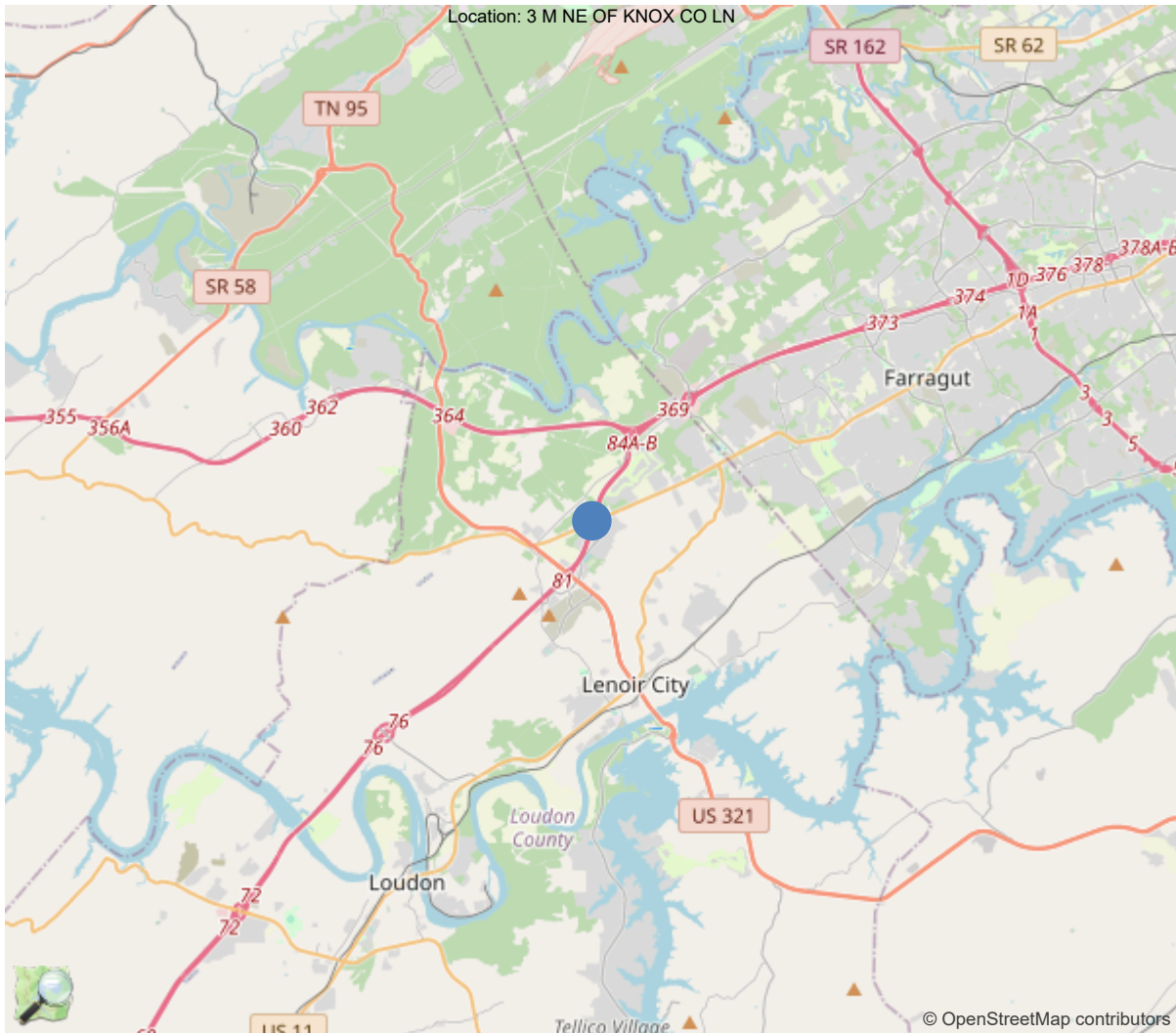


Latitude:35.84328, Longitude:-84.27067

Region 01, 53 - Loudon County

Team Leader: Aaron Blake

Inspectors: Brian Rader, Roger Carico, Alfred Sautner



I-75 Crossing SR 1

35.84328, -84.27067

90 - LAST INSPECTION DATE 09/12/2024

10 - MIN. V.C. OVER DECK 99.99 FT.
(ROADWAY + SHOULDERS)

520 - MIN. V.C. OVER DECK 99.99 FT.
(EXCLUDES SHOULDERS)

36 - TRAFFIC SAFETY FEATURES

Br. Rail	Trans.	Appr. Rail	Terminal	SPEED LIM.
1	0	0	0	70

41 - STRC OPEN/CLOSED/POSTED A

58 - DECK 7

59 - SUPERSTRUCTURE 7

60 - SUBSTRUCTURE 7

61 - CHANL/CHANL PROTECTION N

62 - CULVERT AND RETAIN WALL N

71 - WATERWAY ADEQUACY N

72 - APPROACH RDWY ALIGNMENT 8

521 - OVERALL CONDITION 1 - Good

16 - LATITUDE	17 - LONGITUDE
35.843283	-84.270667

N NOT APPLICABLE

9 EXCELLENT CONDITION

8 VERY GOOD CONDITION - NO PROBLEMS NOTED.

7 GOOD CONDITION - SOME MINOR PROBLEMS.

6 SATISFACTORY CONDITION - MINOR DETERIORATION OF STRUCTURAL ELEMENTS.

5 FAIR CONDITION - ALL PRIMARY STRUCTURAL ELEMENTS ARE SOUND BUT MAY HAVE MINOR SECTION LOSS, CRACKING, SPALLING OR SCOUR.

4 POOR CONDITION - ADVANCED SECTION LOSS, DETERIORATION, SPALLING OR SCOUR.

3 SERIOUS CONDITION - LOSS OF SECTION, DETERIORATION, SPALLING OR SCOUR HAVE SERIOUSLY AFFECTED PRIMARY STRUCTURAL COMPONENTS. LOCAL FAILURES ARE POSSIBLE. FATIGUE CRACKS IN STEEL OR SHEAR CRACKS IN CONCRETE MAY BE PRESENT.

2 CRITICAL CONDITION - ADVANCED DETERIORATION OF PRIMARY STRUCTURAL ELEMENTS. FATIGUE CRACKS IN STEEL OR SHEAR CRACKS IN CONCRETE MAY BE PRESENT OR SCOUR MAY HAVE REMOVED SUBSTRUCTURE SUPPORT. UNLESS CLOSELY MONITORED IT MAY BE NECESSARY TO CLOSE THE BRIDGE UNTIL CORRECTIVE ACTION IS TAKEN.

1 "IMMINENT" FAILURE CONDITION - MAJOR DETERIORATION OR SECTION LOSS PRESENT IN CRITICAL STRUCTURAL COMPONENTS OR OBVIOUS VERTICAL OR HORIZONTAL MOVEMENT AFFECTING STRUCTURAL STABILITY. BRIDGE IS CLOSED TO TRAFFIC BUT CORRECTIVE ACTION MAY PUT IT BACK IN LIGHT SERVICE.

0 FAILED CONDITION - OUT OF SERVICE AND BEYOND CORREC

Aaron Blake Digitally signed by Aaron Blake
Date: 2024.10.17 06:34:10 -04'00'

TEAM LEADER SIGNATURE

IDENTIFICATION	
(1) State Names	47 - Tennessee
(8) Structure Number	53100750039
(5) Inventory Route	1
(2) Highway Agency District	Region 1
(3) County Code	53 - Loudon
(4) Place Code	00000
(6) Features Intersected	SR 1
(7) Facility Carried	I75
(9) Location	3 M NE OF KNOX CO LN
(11) Mile Point	16.120 mi
(12) Base Highway Network	Yes
(13) LRS Inventory Rte & Subrte	5310075001
(16) Latitude	35.843283
(17) Longitude	-84.270667
(98) Border Bridge State Code	
(99) Border Bridge Structure No.	
STRUCTURE TYPE AND MATERIAL	
(43) Main Structure Type	24
Material	2 - Concrete continuous
Type	4 - Tee beam
(44) Approach Structure Type	00
Material	0 - Other / None
Type	0 - Other / None
(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	1 - Monolithic Concrete (concurrently pl
Type of Membrane	0 - None
Type of Deck Protection	0 - None
AGE AND SERVICE	
(27) Year Built	1964
(106) Year Reconstructed	1979
(42) Type of Service	11
On	1 - Highway
Under	1 - Highway, with or without pedestrian
(28) Lane	
On	2
Under	2
(29) Average Daily Traffic	58302
(30) Year of ADT	2021
(109) Truck ADT	6 %
(19) Bypass, Detour Length	1 mi
GEOMETRIC DATA	
(48) Length of Maximum Span	62.0 ft
(49) Structure Length	154.9 ft
(50) Curb or Sidewalk Width	
Left	0.0 ft
Right	0.0 ft
(51) Bridge Roadway Width Curb to Curb	40.0 ft
(52) Deck Width Out to Out	44.0 ft
(32) Approach Roadway Width (W/Shoulders)	39.0 ft
(33) Bridge Median	1 - Open median
(34) Skew	45 Deg
(35) Structure Flared	0 - No flare
(10) Inventory Route Min Vert Clear	99.99 ft
(47) Inventory Route Total Horiz Clear	39.7 ft
(53) Min Vert Clear Over Bridge Rdwy	99.99 ft
(54) Min Vert Underclear	18.93 ft
Ref:	
(55) Min Lat Underclear RT	11.2 ft
Ref:	
(56) Min Lat Underclear LT	0.0 ft
NAVIGATION DATA	
(38) Navigation Control	N - Not applicable, no waterwa
(111) Pier Protection	
(39) Navigation Vertical Clearance	0.0 ft
(116) Vert-Lift Bridge Nav Min Vert Clear	ft
(40) Navigation Horizontal Clearance	0.0 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	4 - Historical significance is
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	8
(64) Operating Rating	
Type	8 - Load and Resistance Factor Rating (LRF
Rating	32.40
(65) Inventory Rating Method	8 - Load and Resistance Factor
(66) Inventory Rating	
Type	
Rating	23.33
(70) Bridge Posting	5 - Equal to or above legal loads
(41) Structure Open/Posted/Closed	A - Open, no restriction
APPRAISAL	
(67) Structural Evaluation	5
(68) Deck Geometry	7
(69) Clearances, Vertical/Horizontal	7
(71) Waterway Adequacy	N
(72) Approach Roadway Alignment	8
(36A) Bridge Railings	1 - Inspected feature meets current
(36B) Transitions	0 - Inspected feature does not meet
(36C) Approach Guardrail	0 - Inspected feature does not meet
(36D) Approach Guardrail Ends	0 - Inspected feature does not meet
(113) Scour Critical Bridges	N - Bridge not over waterway.
PROPOSED IMPROVEMENTS	
(75) Type of Work	
(76) Length of Structure Improvement	ft
(94) Bridge Improvement Cost	\$
(95) Roadway Improvement Cost	\$
(96) Total Project Cost	\$
(97) Year of Improvement Cost Estimate	
(114) Future ADT	93283
(115) Year of Future ADT	2042

INSPECTIONS *			
(90) Inspection Date	09/12/2024		
(91) Frequency	24		
(92) Critical Feature Inspection	Done	Freq. (Mon)	Date
A: Fracture Critical Detail	No		
B: Underwater Inspection	No		
C: Other Special Inspection	No		
* 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.			

PERFORMANCE EVALUATION

Time of Day Inspected 7:50 am

Weather Conditions 60, cloudy

Vehicles Observed ALL TYPES

LIVE LOAD BEHAVIOR

Sub Horiz./ Vert. Defl (No)

Sub Vibration (No)

Super Horiz./ Vert. Defl (No)

Super Vibration (No)

APPROACH

Alignment (Good)

Joints (Not visible)

Pavement (Good)

Asphalt overlay

Embankment (Poor)

Steep with erosion rills, severe erosion at approach 1 right behind wing

Approach Drains (Critical)

Approach 1 right drain pipe broken, eroding behind wing 1 right

TRAFFIC SAFETY FEATURES

Bridge Railing Rating (Good)

STANDARD

Transitions Rating (Good)

SUBSTANDARD

Guardrail Rating (Good)

SUBSTANDARD

Guardrail Terminal Rating (Good)

SUBSTANDARD

SIGNS POSTED ON ROUTE

Paddleboards Yes

Vertical Clearance (<14'-6") No

Posted Height

Narrow Bridge Signs No

One Lane Bridge Signs No

Other Signs or Plaques Fiber optic, copper wire

Weight Limit Posted Not Needed

Gross Tons

Single-unit Vehicle Tons

Multi-unit Vehicle Tons

564 Assigned Bridge Name

ATTACHED SIGNS

Sign No	Location	Text on Sign	Noted Defects
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DECK

Wearing Surface Type		Asphalt	Wearing Surface Depth	6
Wearing Surface	(Good)	Asphalt overlay		
Deck - Structural Condition	(Good)	Hairline cracks, bottom deck at abutment 1 - spall with exposed rebar 1' w x 6" l x 3" deep, diagonal hairline cracks with leaching, both overhangs - hairline cracks		
Parapet	(Good)	Texture coat scaling, popouts		
Utilities	(Good)	Between beams A and B and across abutment 2		

SUPERSTRUCTURE

Bearing Devices	(Fair)	Abutment 1 bearings A-D - moderate corrosion		
Beams	(Good)	SPAN 1 BEHIND BEARINGS A - spall in place (1' x 1')and B - spall (1' x 1' x 1'), hairline cracks; span 3 beam D behind bearing - hairline cracks		
Diaphragms	(Good)	MAP CRACKING OVER ABUTMENTS		
Superstructure Paint	(Good)			
Alignment of Members	(Good)			

TEXTURE COAT

ABUTMENTS

Abutment Caps	(Good)	Hairline cracks w/ leaching
Abutment Wings	(Fair)	Wing 1 right - Undermining 8' long; Behind wing 1 right - Heavy erosion (15'Lx4'Wx4'H); Wing 2 right - Minor spall
Abutment Backwall	(Good)	Hairline cracks w/ leaching
Abutment Plumb	(Good)	
Abutment Footing	(Not visible)	
Abutment Piles	(Not Visible)	
Abutment Embankment	(Good)	Embankment right - Erosion channel (10'Lx18"Wx3'D)
Abutment Bearing Surface	(Good)	
Abutment Slope Paving	(Good)	

PIERS

BENTS

Bent Caps	(Good)	
Bent Columns	(Good)	
Bent Plumb	(Good)	
Bent Footing	(Not Visible)	
Bent Piles	(Not Visible)	
Bent Bearing Surface	(Good)	

Inspection Team's Summary

The subject bridge was inspected on the above date and found to be in GOOD condition.

Approach roadway alignment is good. Approach wearing surface is good, asphalt overlay. Approach rails are good, substandard. Paddleboard decals on approach 1 terminals. Approach drain is critical, approach 1 right drain pipe broken, and eroding behind wing 1 right.

Deck wearing surface is good, asphalt overlay. Bridgerails are good, standard, hairline cracks, texture coat scaling, and popouts.

The bottom of the deck is good, a minor spall with rebar. The beams are good; 2 beams with hairline cracks, spalls (up to 3" deep)and spalls in place behind the abutment bearing area. Bearings are fair, moderate corrosion at abutments. Diaphragms are good, area hairline to 1/8" crack, and map cracking.

Abutments are good, hairline cracks with leaching. Wings are fair, minor spall, heavy erosion at approach 1 right void under wing 1 right.
Bents are good.

The underpass pier protection is good, standard.

A. Blake

General Inspection Comment

HQ notes to TL

ELEMENTS	DESCRIPTION	UNITS	TOTAL	CS1	CS2	CS3	CS4
16	Re Conc Top Flange	SF	6767	6767	0	0	0
510	Wearing Surfaces	SF	6460	6460	0	0	0
(16) Element record added 2016-07-28.							
(510-16) Element record added 2016-07-28.							
110	Re Conc Opn Girder/Beam	LF	922	914	0	8	0
1080	Delamination/Spall/Patched Area	LF	8	0	0	8	0
(110) Element record added 2015-02-13.							
(1080-110) Element record added 2016-07-28.							
205	Re Conc Column	EA	8	8	0	0	0
(205) Element record added 2015-02-13.							
215	Re Conc Abutment	LF	121	121	0	0	0
1130	Cracking (RC and Other)	LF	40	40	0	0	0
(215) Element record added 2015-02-13.							
234	Re Conc Pier Cap	LF	92	92	0	0	0
(234) Element record added 2015-02-13.							
310	Elastomeric Bearing	EA	4	4	0	0	0
(310) Element record added 2016-07-28.							
313	Fixed Bearing	EA	16	0	16	0	0
1000	Corrosion	EA	16	0	16	0	0
(313) Element record added 2016-07-28.							
331	Re Conc Bridge Railing	LF	308	308	0	0	0
1130	Cracking (RC and Other)	LF	30	30	0	0	0
(331) Element record added 2015-02-13.							

Equipment List

General Inspection

- ☐ Pocket knife
- ☐ Sounding/chipping hammer
- ☐ Chain drag
- ☐ Range pole
- ☒ 25' rod - depth and clearance

Visual Aid

- ☐ Binoculars
- ☐ Flashlight
- ☐ Magnifying glass
- ☐ Hand mirror

Cleaning

- ☐ Wisk broom
- ☐ Wire brush
- ☐ Flat bladed screwdriver
- ☐ Hand shovel
- ☐ Penetrating oil (WD-40, etc.)

Tools For Access

- ☐ Ladders
- ☐ Rope
- ☐ Waders
- ☐ Machete or bush axe

Comment

Tools For Measuring

- ☐ Masonry/Wood Ruler
- ☐ 6' Pocket Tape
- ☒ 25' and 100' Tape
- ☐ Calipers
- ☐ Thermometer
- ☐ Carpenter's Level
- ☐ String and Weighted line (plumb bob)

Special Purpose Equipment

- ☐ Reach All
- ☐ Bucket Truck
- ☐ Traffic control
- ☐ Boat
- ☐ Sonar depth finder
- ☐ Increment borer
- ☐ Survey equipment
- ☐ Safety Harness
- ☐ Climbing equipment
- ☐ Dye penetrant
- ☐ Drone
- ☐ Air Meter

Special Purpose Equipment

Reach-All Approval and Comments



Back on log (traffic slowed at inspection)



Approach 2 right terminal - minor collision damage



Approach 2 right - sign, TMC camera



Deck 2 right rail - texture coat scaling (typical all)



View across deck



Approach on log



Approach 1 right rail - scrapes



Approach 1 right embankment and drain pipe - erosion



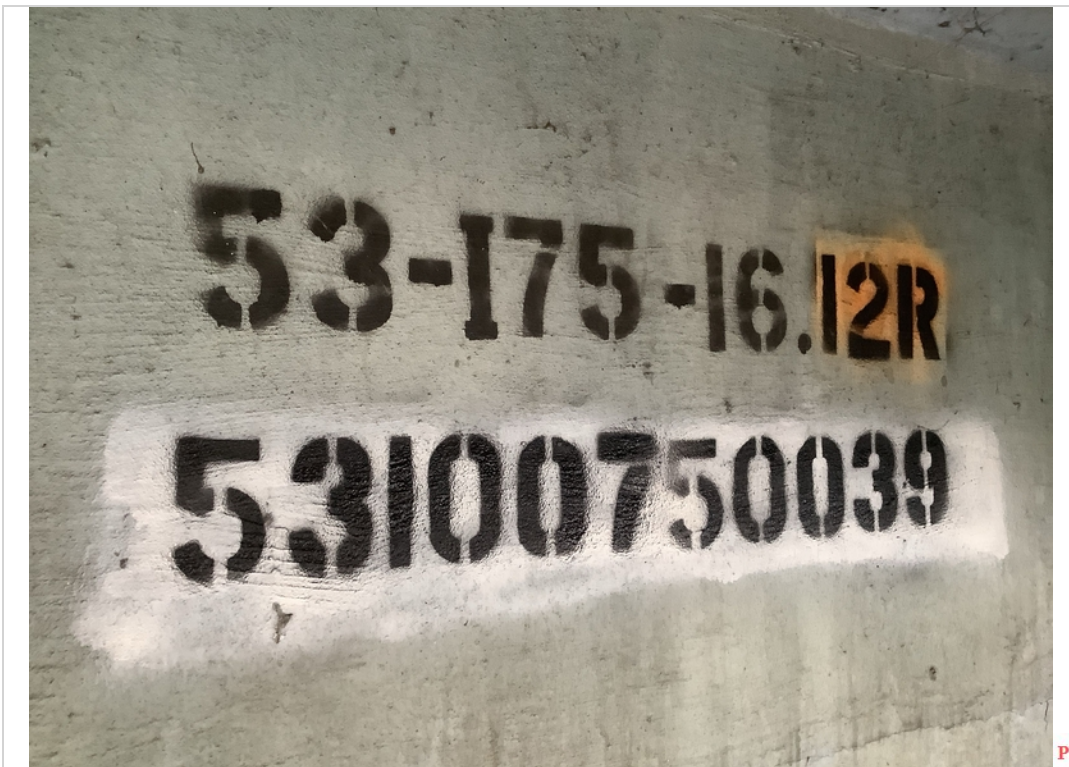
Approach 1 right embankment - erosion



Underpass approach 2 right - Sign



Elevation left



Abutment 1 right - bridge number



Elevation right and underpass forward



From bent 1 - view underneath



Underpass back



Abutment 2 - Utility



Diaphragm between beams B/C abutment 2 - Hairline map cracks (Typical abutment 1) & cracks up to 1/8"



Abutment cap 1 Hairline cracks w/ leaching (Typical abutment 2)



Behind wing 1 right - Heavy erosion (15'Lx4'Wx4'H)



Wing 1 right - Undermining 8' long



Backwall abutment 1 - Hairline cracks w/ leaching ((Typical abutment 2)



Embankment right - Erosion channel (10'Lx18"Wx3'D)



Embankment right - Erosion channel (10'Lx18"Wx3'D)



Wing 2 left - spall (4"diameter x 2"D)



Abutment 2 backwall at Beam D right - cracks up to 1/8" with leaching



Span 3 Beam D behind bearing area - Hairline crack



Abutment 2 concrete slope - Cracking up to 1/8"



Span 2 Right bridge rail - Hairline cracks with leaching



Span 2 Right bridge rail - Hairline cracks with leaching



Span 1 left overhang - Hairline cracks



Span 1 Beam A - Spall in place behind bearing area (1'L x 1'H x 1"D)



Span 1 Beam B - Spall behind bearing area (1'L x 1'H x 1"D)



Span 1 between beams A & B - utility



Span 1 Bearing D left - moderate corrosion (Typical A - D)



Span 1 Backwall at Beam D right - Hairline cracks with leaching



Span 1 Beam E - Hairline cracks (Typical)

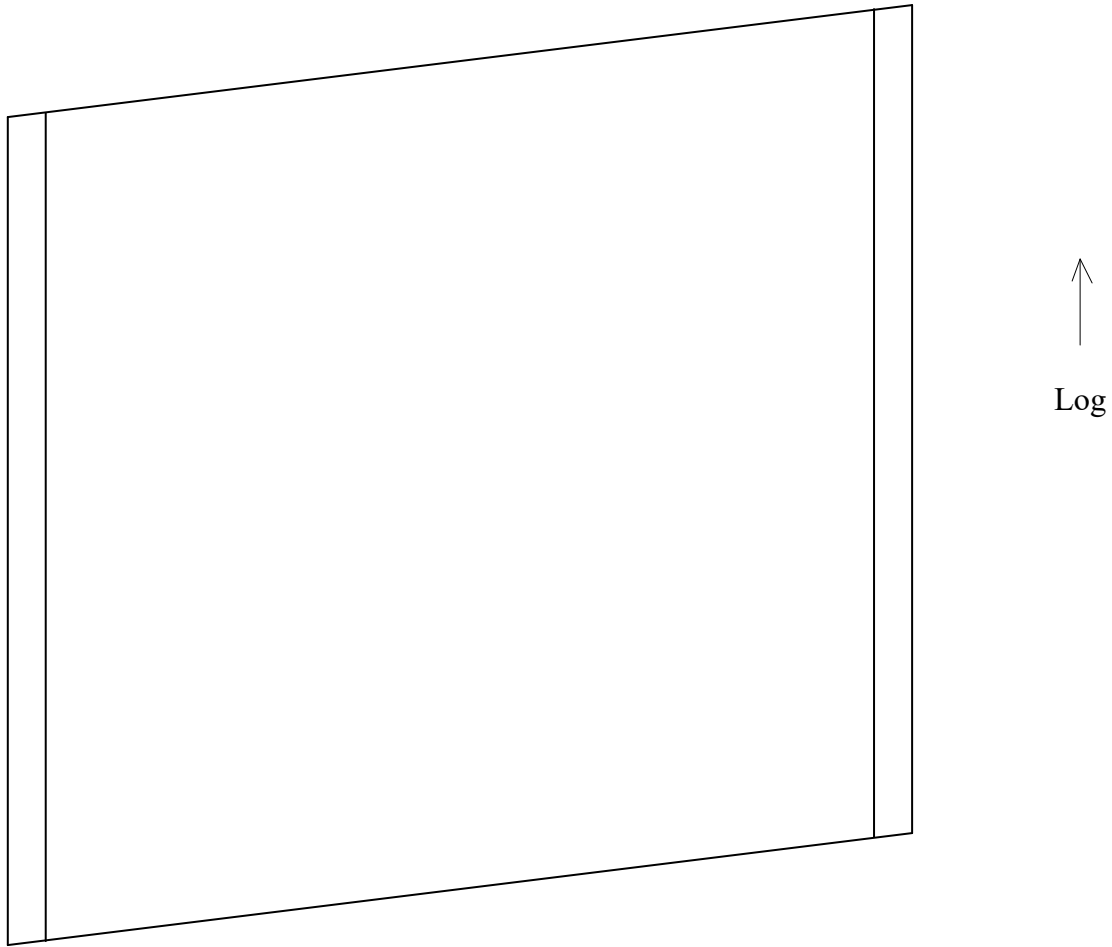


Span 1 Bottom deck at Beam D right - Spall with exposed rebar (1'W x 6"L x 3"Dp)

Maintenance Recommendations

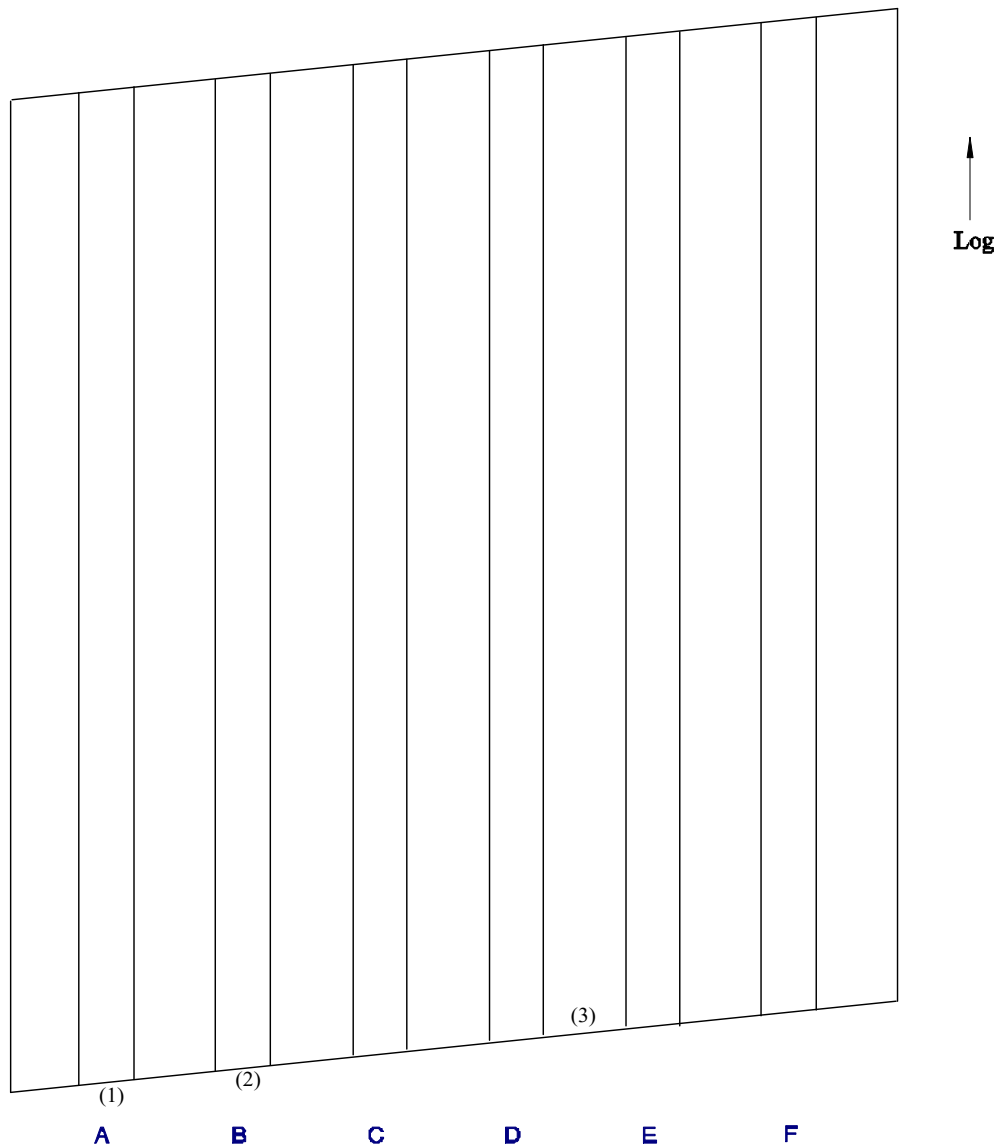
525 - Repair List # N 523 - Repair List Add Date 524 - Repair List Revise Date 9/23/2022

Date Added	Recommendation	Priority
10/15/2008	GUARDRAIL TRANSITIONS ARE SUBSTANDARD	
10/15/2008	APPROACH GUARDRAILS ARE SUBSTANDARD	
10/15/2008	REPAIR ALL BEAMS BEHIND ABUTMENT BEARING AREAS	
09/23/2022	REPAIR EROSION AT APROACH 1 RIGHT EMBANKMENT	1
09/12/2024	REPAIR APPROACH 1 RIGHT DRAIN AND PIPE	



Bridge No. 53-I-75-16.12 RIGHT 09-12-24 AB Span No. 1-3

DECK	G	ASPHALT OVERLAY
PARAPET	G	STANDARD; TEXTURE COAT SCALING; POPOUTS



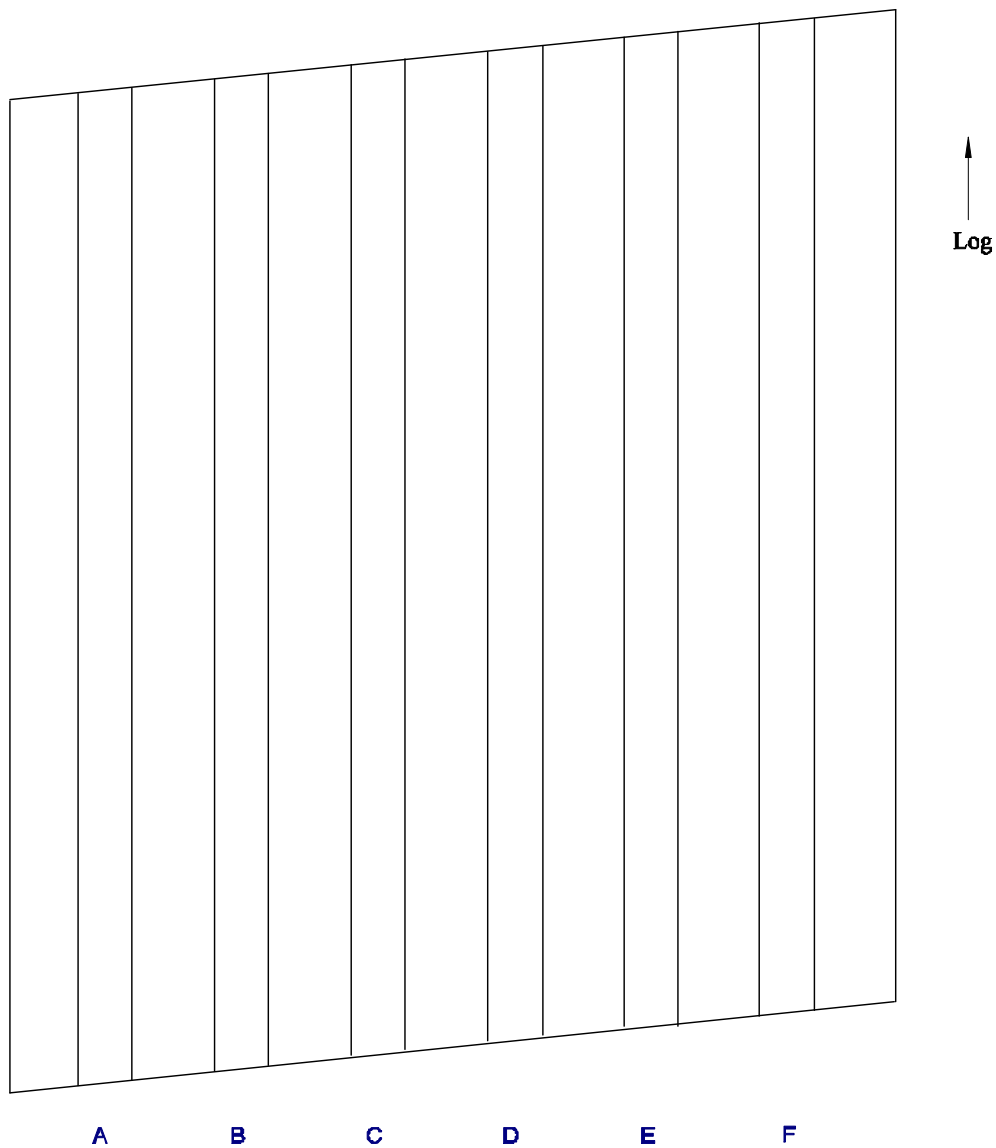
Bridge No. 53-I-75-16.12 RIGHT

09-12-24 BR

Span No. 1

DECK	G	DIAGONAL HAIRLINE CRACKS W/ LEACHING AT BACKWALLS
		(3) SPALL W/ EXPOSED REBAR 1'Wx6"Lx3"D; HAIRLINE CRACKS OVERHANG
BEAMS	F	(1) BEAM A BEHIND BEARING AREA - SPALL IN PLACE 1L'x1H"x1"D
		HAIRLINE CRACKS
		(2) BEAM B BEHIND BEARING AREA - SPALL 1'Lx1'Hx1"D
DIAPHRAGMS	F	AREAS MAP CRACKS
BEARINGS	F	MODERATE CORROSION A-D ABUTMENT 1

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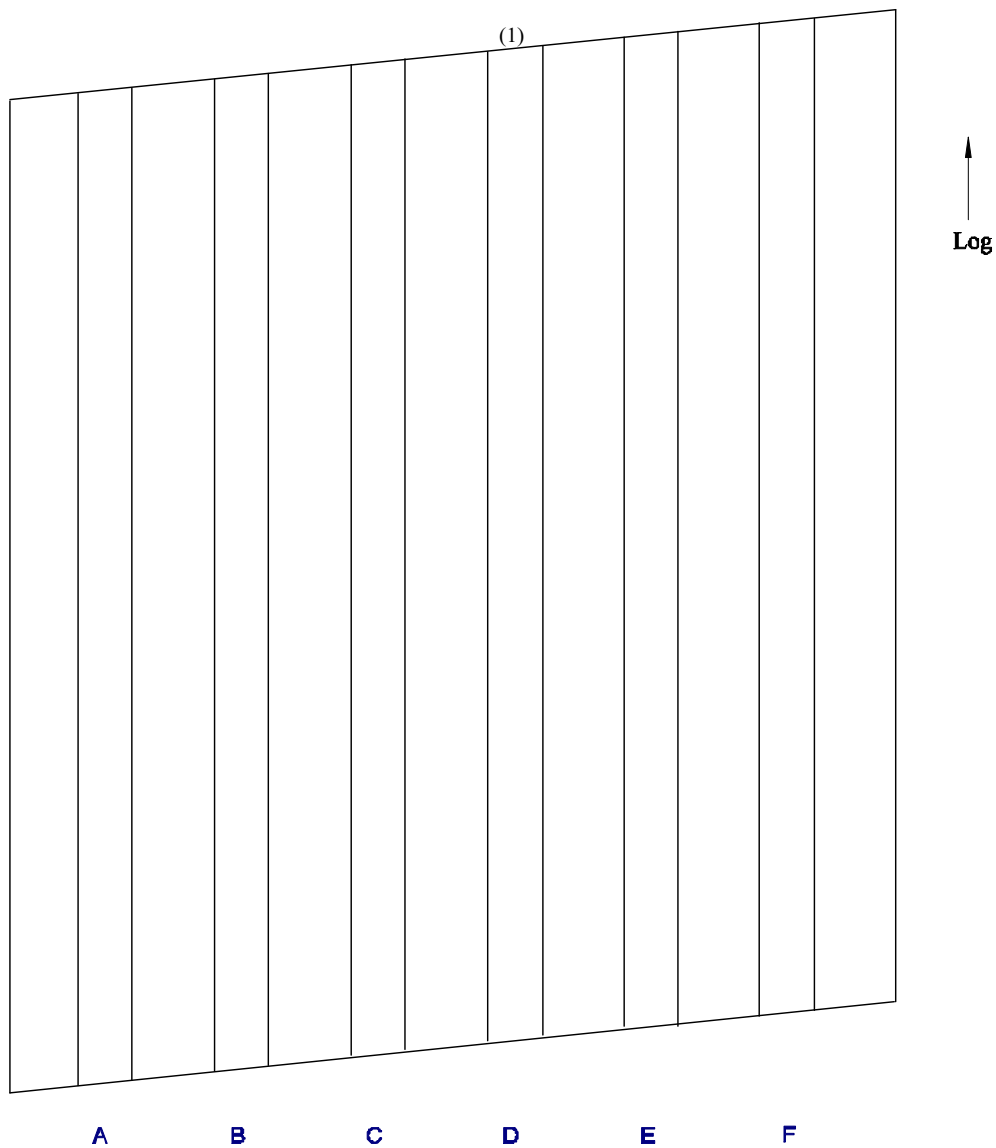
Bridge No. 53-I-75-16.12 RIGHT

09-12-24 BR

Span No. 2

DECK	G	HAIRLINE CRACKS OVERHANG
BEAMS	F	HAIRLINE CRACKS
DIAPHRAGMS	F	AREAS MAP CRACKS
BEARINGS	F	

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Bridge No. 53-I-75-16.12 RIGHT

09-12-24 BR

Span No. 3

DECK	G	DIAGONAL HAIRLINE CRACKS W/ LEACHING AT BACKWALLS
		HAIRLINE CRACKS OVERHANG
BEAMS	F	(1) BEAM D BEHIND BEARING AREA - HAIRLINE CRACK
		HAIRLINE CRACKS
DIAPHRAGMS	F	AREAS MAP CRACKS
BEARINGS	F	MODERATE CORROSION A-D ABUTMENT 2

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Bridge No. 53-I-75-16.12 RIGHT 09-12-24 ACSIII Abut. No. 1

CAP	G	HAIRLINE CRACKS W/ LEACHING
BACKWALL	G	HAIRLINE CRACKS W/ LEACHING
BEARING AREA	G	
WINGS	F	HEAVY EROSION BEHIND WING 1 RIGHT 15'Lx4'Wx4'H; UNDERMINING 8' LONG WING 1 RIGHT
EMBANKMENT	G	EROSION CHANNEL RIGHT 10'Lx18"Wx3'D

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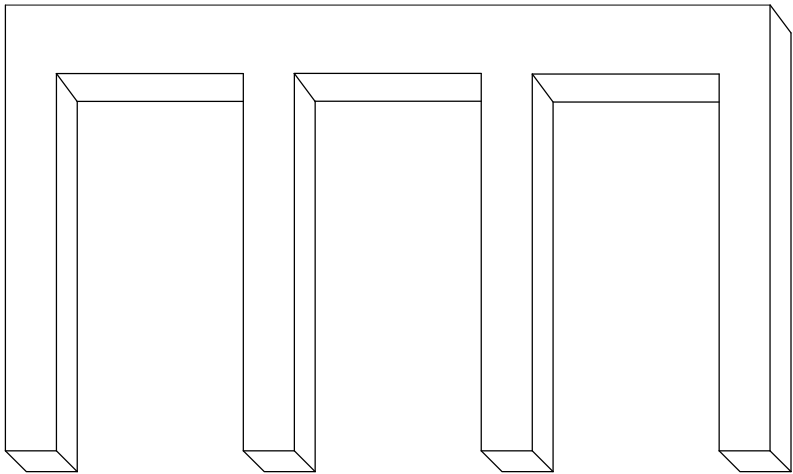


Bridge No. 53-I-75-16.12 RIGHT 09-12-24 ACSIII Abut. No. 2

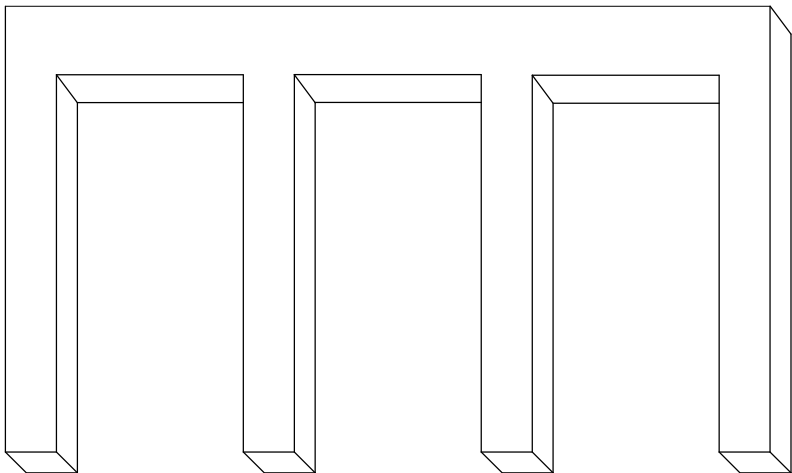
CAP	G	HAIRLINE CRACKS W/ LEACHING
BACKWALL	G	HAIRLINE CRACKS W/ LEACHING
BEARING AREA	G	
WINGS	F	MINOR SPALL WING 2 RIGHT
EMBANKMENT	G	

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Front



Rear



Bridge No. 53-I-75-16.12R

09-12-24 ACSIII

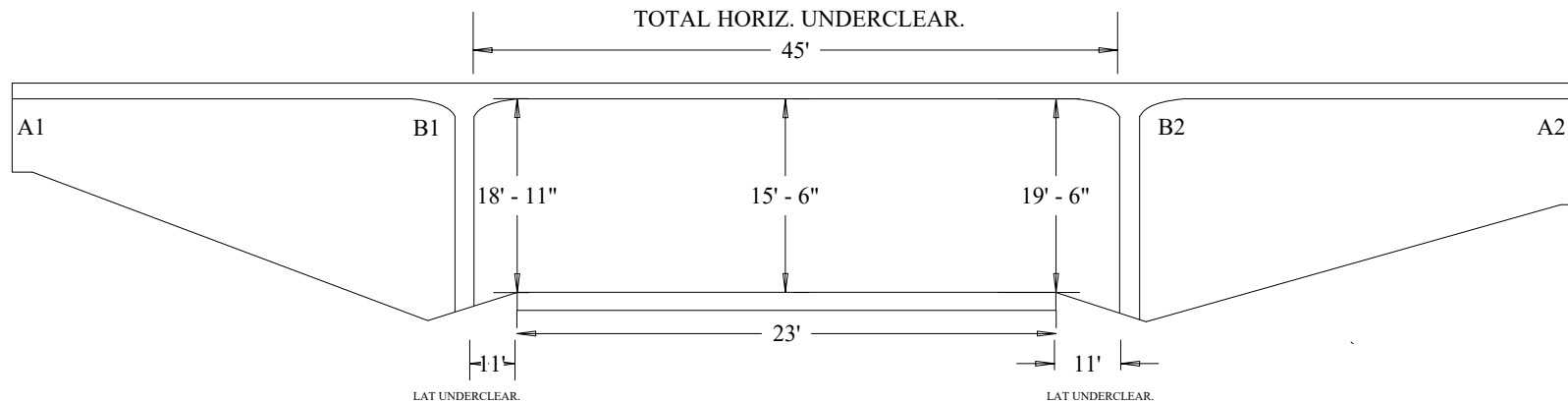
Bent No. 1 & 2

Cap	G	
Columns	G	

OVERHEAD ROAD NAME = NB I-75
LOCATION NO. 53-I0075-16.12R

NB I-75
LOG & TRAFFIC →

09-12-24 BR



LOOKING BACK (WEST) ON SR001

NO TRAFFIC SAFETY FEATURES PRESENT

UNDERPASS ROAD NAME = SR001/U. S. 70
LOCATION NO. 53-SR001-04.29

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