



Latitude:35.86480, Longitude:-84.25882

Region 01, 53 - Loudon County

Team Leader: Aaron Blake

Inspectors: Roger Carico, Alfred Sautner



I-75 Crossing HOPE CREEK

35.86480, -84.25882

90 - LAST INSPECTION DATE 09/16/2024

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

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

36 - TRAFFIC SAFETY FEATURES

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

41 - STRC OPEN/CLOSED/POSTED A

58 - DECK N

59 - SUPERSTRUCTURE N

60 - SUBSTRUCTURE N

61 - CHANL/CHANL PROTECTION 7

62 - CULVERT AND RETAIN WALL 6

71 - WATERWAY ADEQUACY 7

72 - APPROACH RDWY ALIGNMENT 8

521 - OVERALL CONDITION 2 - Fair

16 - LATITUDE	17 - LONGITUDE
35.864804	-84.258820

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: 2024.10.07 17:42:23
-04'00'

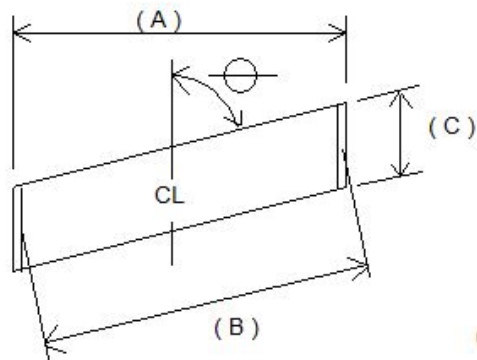
TEAM LEADER SIGNATURE

IDENTIFICATION	
(1) State Names	47 - Tennessee
(8) Structure Number	53100750041
(5) Inventory Route	1
(2) Highway Agency District	Region 1
(3) County Code	53 - Loudon
(4) Place Code	00000
(6) Features Intersected	HOPE CREEK
(7) Facility Carried	175
(9) Location	SOUTH OF I-40
(11) Mile Point	17.780 mi
(12) Base Highway Network	Yes
(13) LRS Inventory Rte & Subrte	5310075001
(16) Latitude	35.864804
(17) Longitude	-84.258820
(98) Border Bridge State Code	
(99) Border Bridge Structure No.	
STRUCTURE TYPE AND MATERIAL	
(43) Main Structure Type	219
Material	2 - Concrete continuous
Type	19 - Culvert
(44) Approach Structure Type	00
Material	0 - Other / None
Type	0 - Other / None
(45) No. of Spans in Main Unit	2
(46) No. of Approach Spans	0
(107) Deck Structure Type	N - Not applicable
(108) Wearing Surface/Protective System	
Type of Wearing Surface	N - Not applicable (applies only to stru
Type of Membrane	N - Not applicable (applies only to stru
Type of Deck Protection	N - Not applicable (applies only to stru
AGE AND SERVICE	
(27) Year Built	1972
(106) Year Reconstructed	0
(42) Type of Service	15
On	1 - Highway
Under	5 - Waterway
(28) Lane	
On	6
Under	0
(29) Average Daily Traffic	58302
(30) Year of ADT	2021
(109) Truck ADT	6 %
(19) Bypass, Detour Length	25 mi
GEOMETRIC DATA	
(48) Length of Maximum Span	10.2 ft
(49) Structure Length	22.0 ft
(50) Curb or Sidewalk Width	
Left	0.0 ft
Right	0.0 ft
(51) Bridge Roadway Width Curb to Curb	0.0 ft
(52) Deck Width Out to Out	0.0 ft
(32) Approach Roadway Width (W/Shoulders)	99.0 ft
(33) Bridge Median	0 - No 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	40.0 ft
(53) Min Vert Clear Over Bridge Rdwy	99.99 ft
(54) Min Vert Underclear	0.00 ft
Ref:	
(55) Min Lat Underclear RT	0.0 ft
Ref:	
(56) Min Lat Underclear LT	0.0 ft
NAVIGATION DATA	
(38) Navigation Control	0 - No navigation control on w
(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

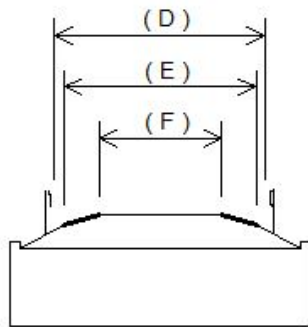
CLASSIFICATION	
(112) NBIS Bridge Length	Y
(104) Highway System	1
(26) Functional Class	11 - Urban Principal Arterial
(100) Defense Highway	1 - The inventory route is on
(101) Parallel Structure	N - No parallel structure exis
(102) Direction of Traffic	2 - way traffic
(103) Temporary Structure	
(105) Federal Lands Highways	0 - N/A
(110) Designated National Network	1 - The inventory route is par
(20) Toll	3 - On 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	N
(59) Superstructure	N
(60) Substructure	N
(61) Channel & Channel Protection	7
(62) Culverts	6
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	89.10
(65) Inventory Rating Method	1 - Load Factor(LF)
(66) Inventory Rating	
Type	
Rating	32.40
(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	7
(72) Approach Roadway Alignment	8
(36A) Bridge Railings	N - Not applicable or a safety feat
(36B) Transitions	N - Not applicable or a safety feat
(36C) Approach Guardrail	0 - Inspected feature does not meet
(36D) Approach Guardrail Ends	0 - Inspected feature does not meet
(113) Scour Critical Bridges	8 - Bridge foundations determined t
PROPOSED IMPROVEMENTS	
(75) Type of Work	35 - Bridge rehabilitation bec
(76) Length of Structure Improvement	22.0 ft
(94) Bridge Improvement Cost	\$ 285
(95) Roadway Improvement Cost	\$ 29
(96) Total Project Cost	\$ 428
(97) Year of Improvement Cost Estimate	2022
(114) Future ADT	93283
(115) Year of Future ADT	2042

INSPECTIONS *			
(90) Inspection Date	09/16/2024		
(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.			

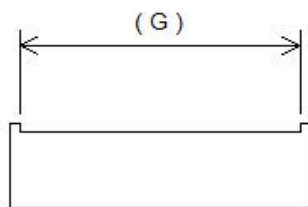
CULVERT DIMENSIONS



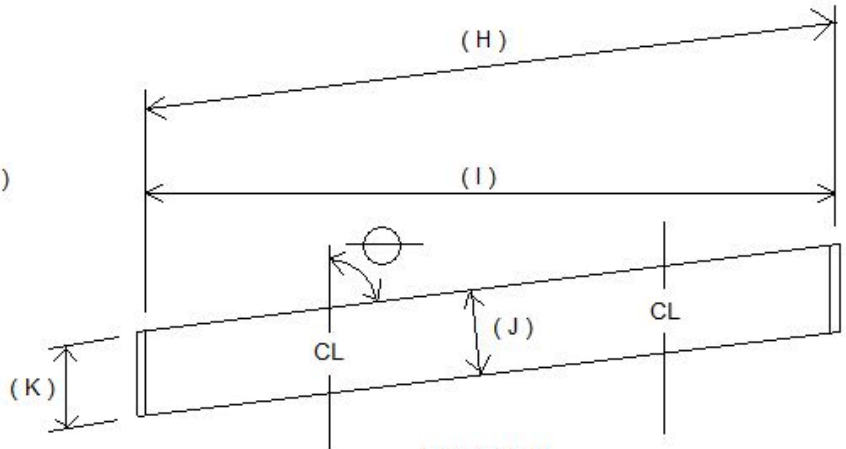
PLAN VIEW



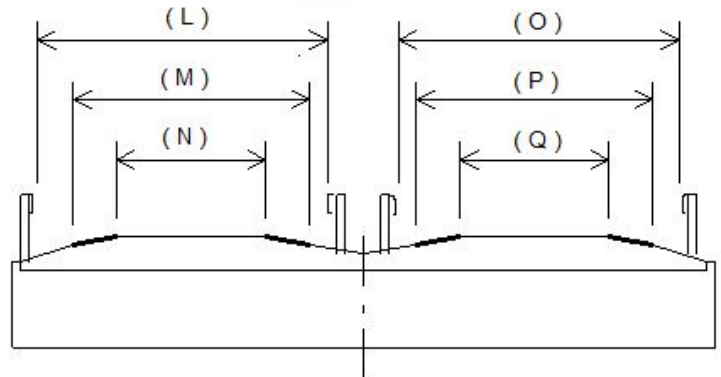
CROSS SECTION VIEW
(WITH FILL)



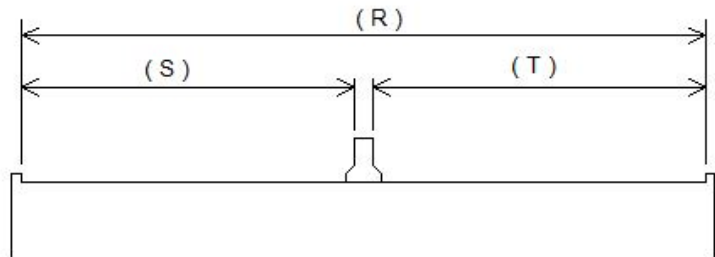
CROSS SECTION VIEW
(WITHOUT FILL)



PLAN VIEW



CROSS SECTION VIEW (WITH FILL)



CROSS SECTION (WITHOUT FILL)

**. * ft.

A	_____	B	_____	C	_____	D	_____	E	_____
F	_____	G	_____	H	439	I	_____	J	_____
K	22	L	_____	M	_____	N	40	O	_____
P	_____	Q	40	R	_____	S	_____	T	_____

TRAFFIC SAFETY FEATURES

Bridge Railing Rating	(NA)	
Transitions Rating	(NA)	
Guardrail Rating	(Good)	Substandard
Guardrail Terminal Rating	(Good)	Substandard

CULVERT & RETAINING WALLS

Barrel Type	Concrete Box	Barrel Count	2	Span Size	10
Fill Depth	25	Barrel Height	8		
Barrel Material	(Concrete)				
Barrel Condition	(Fair)	Cracks up to 1/8" w/ leaching; Barrel 1 - Popout top at inlet; Barrel 1 wall 2 - 1/16" crack near top; Barrel 2 left - Spall w/ exposed rebar/in place spall (3'Hx3"Wx2"D) w/ crack up to 3/8"; Hairline cracks w/ leaching			
Headwall/Curbs	(Good)	Inlet headwall - 1/8" crack; Outlet headwall - crack 3/8" w/ minor spalls, patch			
Cutoff Wall	(Good)				
Wingwall	(Good)	Wing 2 left - patch and spall in place 14" x 3", hairline cracks			
Adequacy	(Good)				
Sediment	(Good)	Sediment up to 1'			
Vegetation	(Good)				
Channel Scour	(Good)				

APPROACH

Alignment	(Good)	
Pavement	(Good)	Asphalt overlay
Embankment	(Good)	

SIGNS POSTED ON ROUTE

Paddleboards	Yes	Weight Limit Posted	Not Needed
Vertical Clearance (<14'-6")		Gross	Tons
Posted Height		Single-unit Vehicle	Tons
Narrow Bridge Signs		Multi-unit Vehicle	Tons
One Lane Bridge Signs		564 Assigned Bridge Name	
Other Signs or Plaques			

Inspection Team's Summary

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

Approach roadway alignment is good. Approach and culvert wearing surface is good, asphalt overlay. Approach rails are good, substandard, and minor collision damage on right. Paddleboard decals are in place at rail terminals.

Barrels are fair, hairline cracks with leaching, a 1/16" crack 3" from top along barrel 1 wall 2, and spalls with rebar. Headwalls are good, hairline cracks, and a 3/8" crack. Wings are good, hairline cracks, and spalls, and patches.

The channel is in good condition. There is up to 1' sediment in barrels. There is a fallen trees on outlet and inlet channels, and on wing 1 right.

A. Blake

General Inspection Comment

Access from Hickory creek road (golf course), as no parking along interstate without attenuator, ward street now with gate with no access.

HQ notes to TL

ELEMENTS	DESCRIPTION	UNITS	TOTAL	CS1	CS2	CS3	CS4
241	Re Conc Culvert	LF	878	575	300	3	0
1080	Delamination/Spall/Patched Area	LF	3	0	0	3	0
1130	Cracking (RC and Other)	LF	300	0	300	0	0
(241) Element record added 2015-02-13.							
(1130-241) Element record added 2016-07-28.							

STREAM CHANNEL DATA AND CONDITIONS

Stream Crossing	Hope Creek		
Type of bed material	Gravel		
Has channel shifted?	No		
Condition of rip-rap		Est. % failed	%
Overall condition of channel	Good		
Underwater Inspection Req?	No		
Why UW required?			

Channel and bank stability conditions

Steep bank cond - Failure US		Moderate Bank Erosion	
Steep bank cond - Failure DS		Sediment or Gravel Accumulation	Yes
Bank Vegetation:		Channel Altered or Straightened	No
Low Growth	Yes	Stable Conditions:	
Large Timber	Yes	Live Growth	Yes
Clear Banks		Bedrock	
Dead Trees - US	Yes	Boulders	
Dead Trees - DS	Yes	Flat Slopes (<=2:1)	

Waterway adequacy and debris characteristics

Bridge deck elevations:		Large Scour Under Bridge	
Level with Approach Roadway		Indications Flood Overtop Bridge	No
Higher than Approach Roadway		Debris / Drift - Present	No
Road Appr >2' Above Natural Ground	Yes	Debris / Drift - Likely to Accumulate	No
Abutment Encroaches into Channel			

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



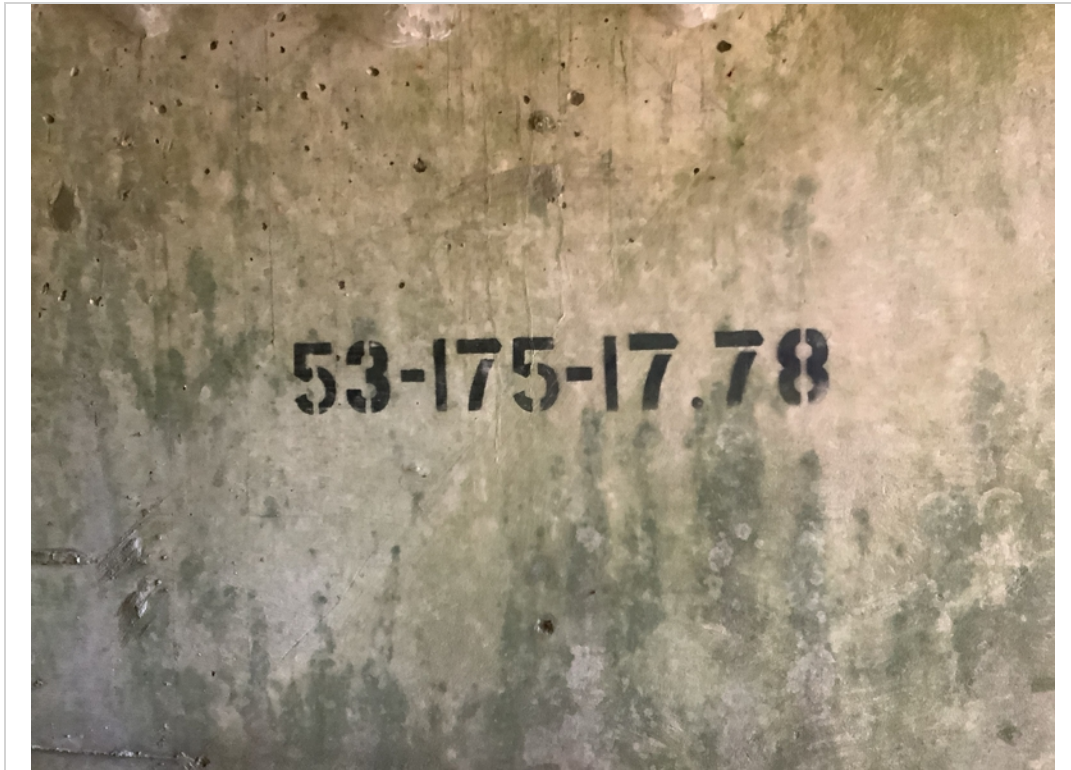
Forward on log



Elevation left (note fallen tree)



Downstream left



Barrel 1 left - bridge number



Upstream right



Elevation right (note fallen tree)



View across culvert wearing surface - northbound lanes



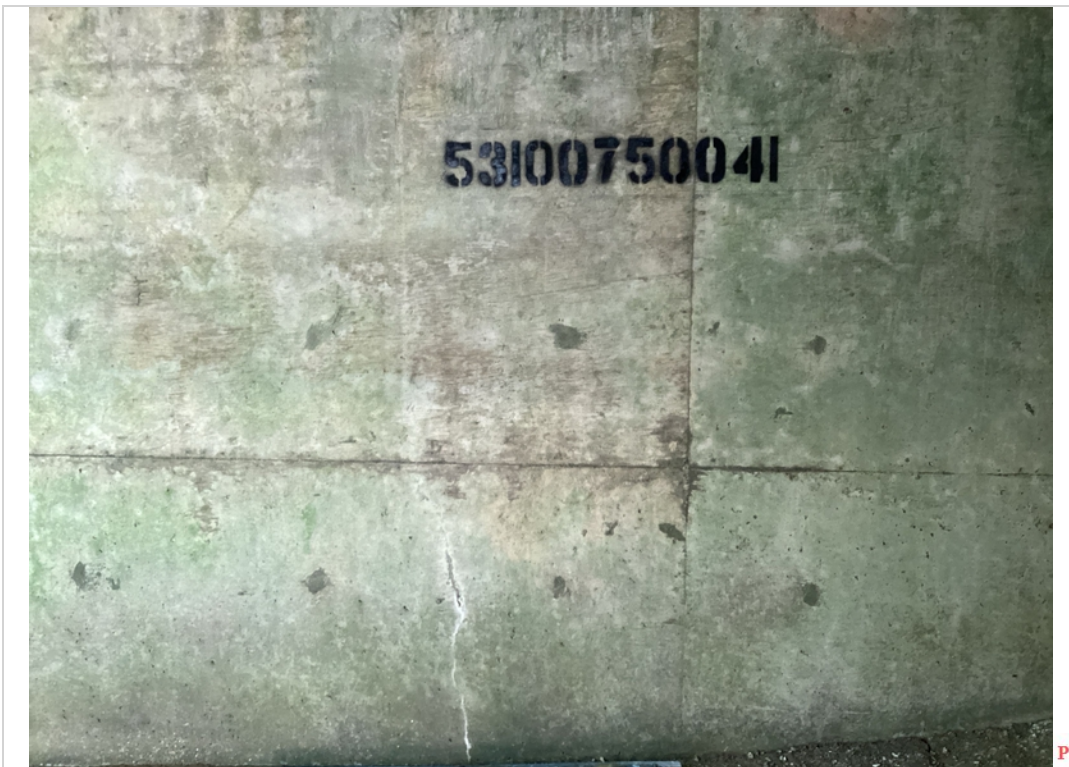
Back on log - northbound lanes



Right bridge rail - minor collision damage



Approach on log - northbound lanes



Barrel 1 wall 1 right (inlet) - Bridge Number



Wing 2 left abutment joint - cracks to 3/8", patch, minor spall



Inlet headwall at barrel 1 - cracks to 1/8"



Wing 2 left - patch and spall in place (14" x 3")



Wing 2 right - hairline cracks



Barrel 2 - Sediment up to 1' (Typical barrel 1)



Barrel 2 - Hairline cracks w/ leaching (Typical barrel 1



Barrel 2 left - Spall w/ exposed rebar, in place spall (3'Hx3"Wx2"D) w/ crack up to 3/8"



Barrel 1 wall 2 - 1/16" crack about 3" from top

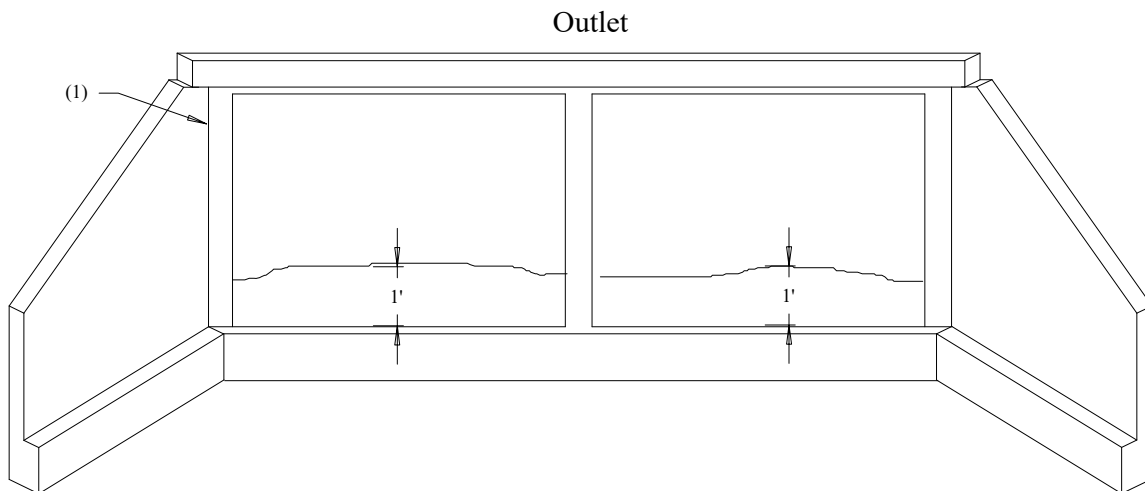
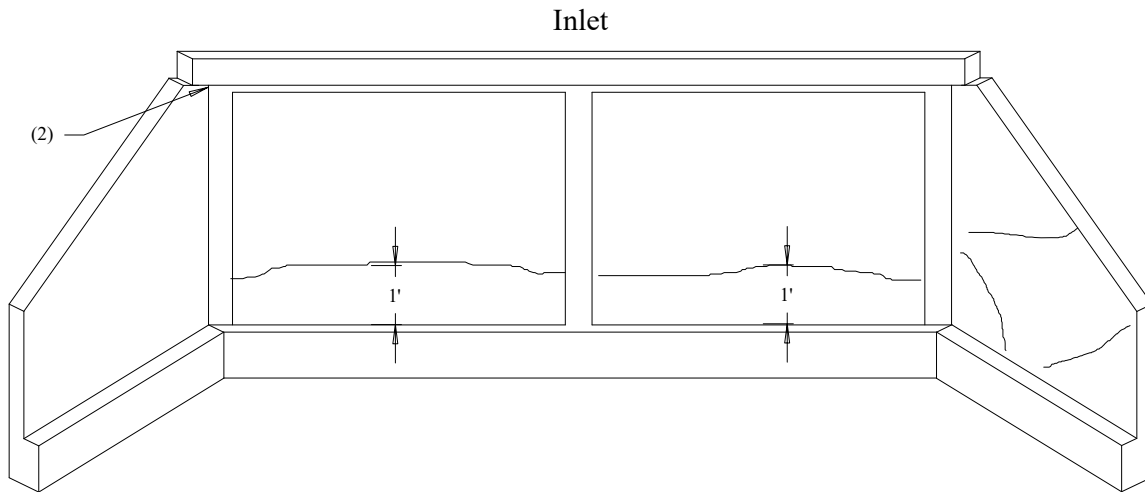
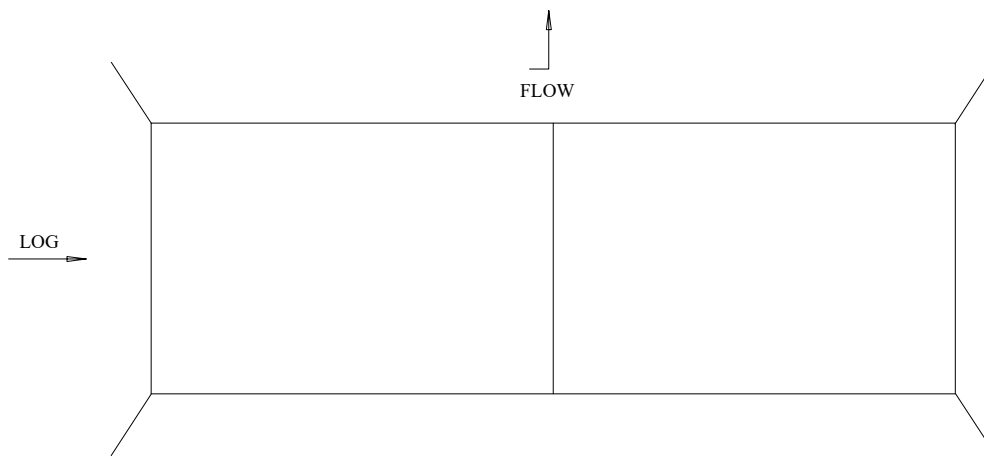


Barrel 1 - Popout top at inlet

Maintenance Recommendations

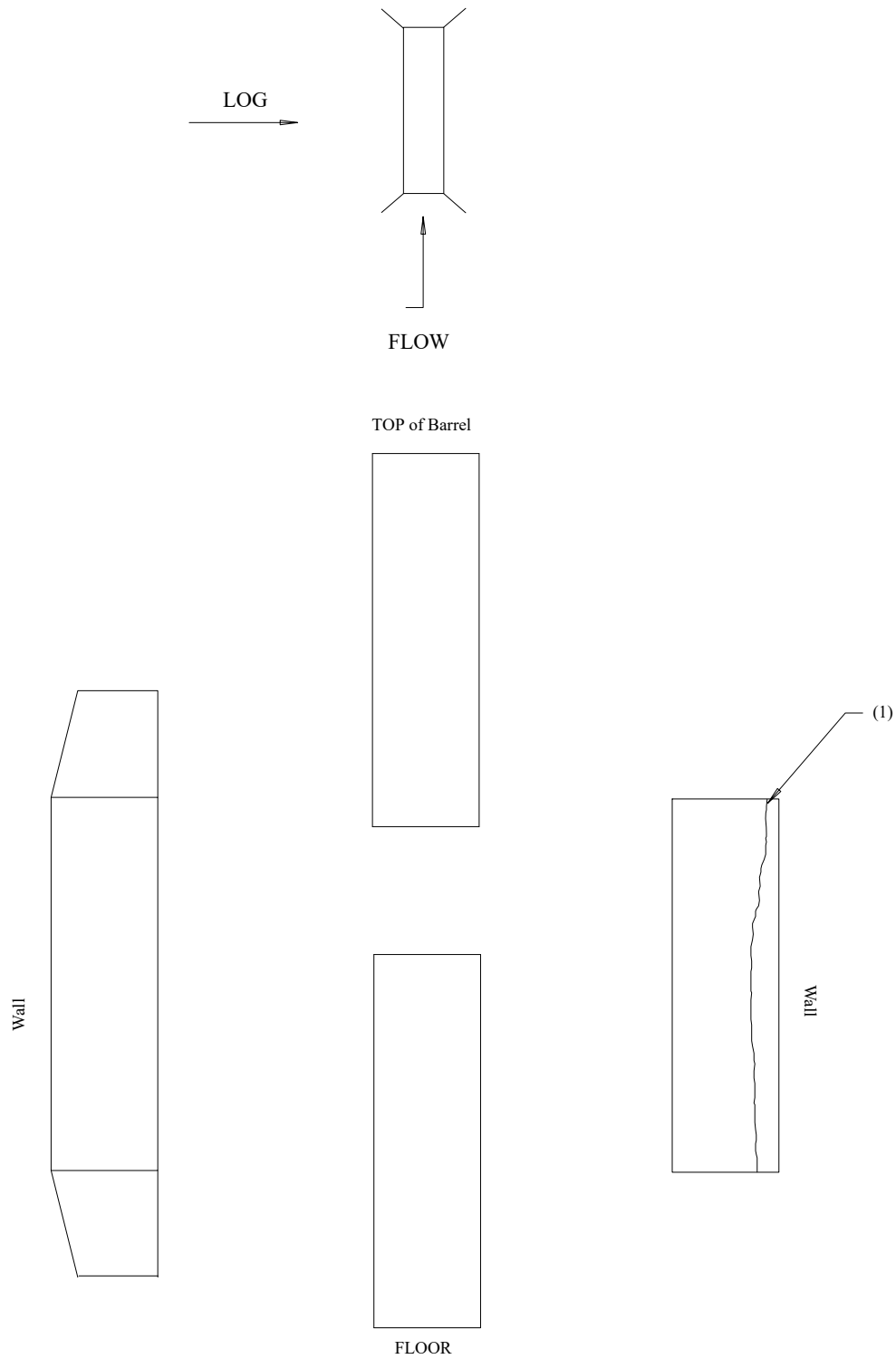
525 - Repair List # N 523 - Repair List Add Date 524 - Repair List Revise Date 9/23/2022

Date Added	Recommendation	Priority
11/06/2008	GUARDRAILS ARE SUBSTANDARD	



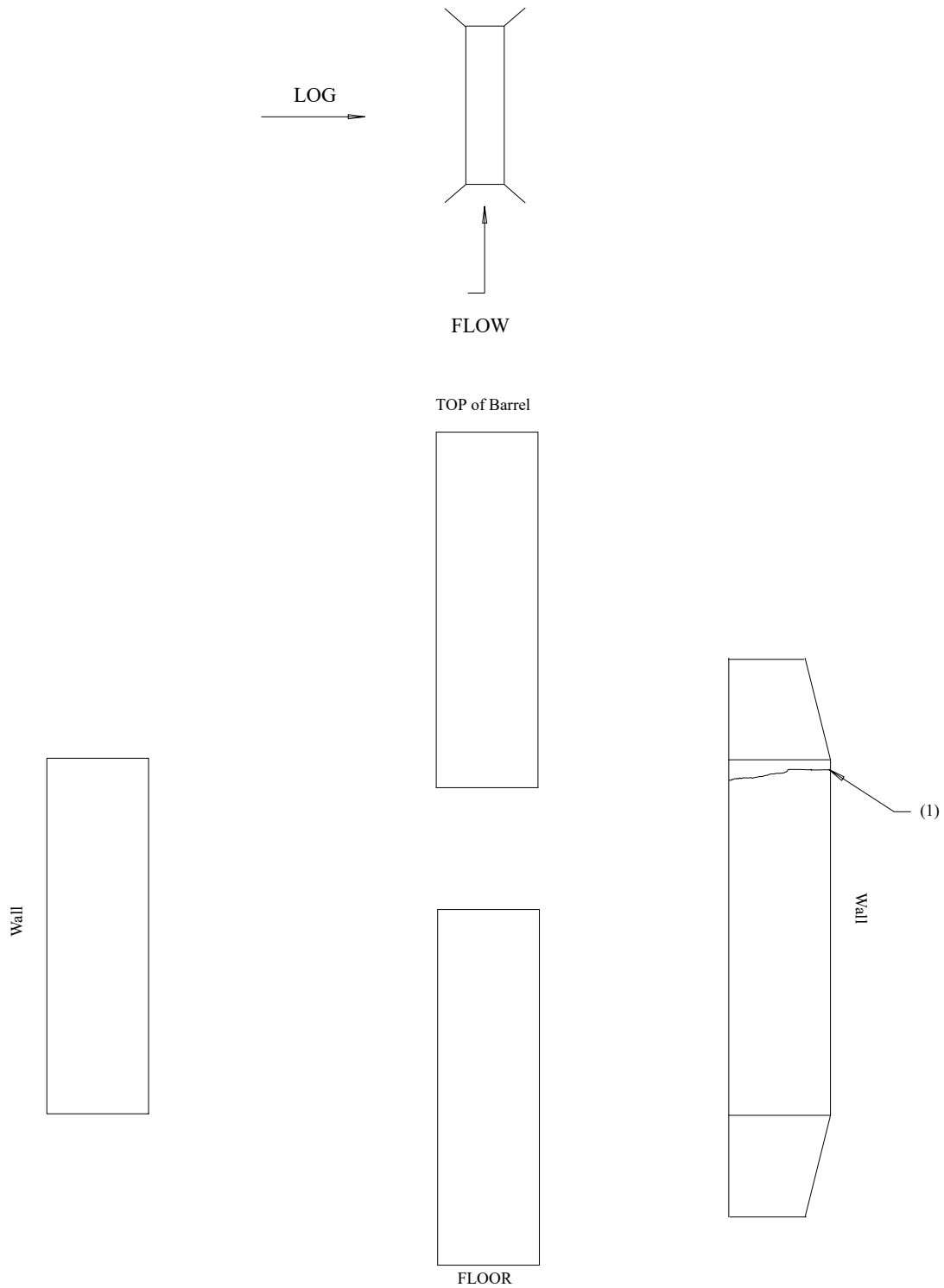
LOC. 53-I-75-17.78		09-16-24 RC	HEADWALLS
INLET HDWALL	G	(2) 1/8" CRACK	
WINGS	G	WING 2 RIGHT - HAIRLINE CRACKS	
OUTLET HDWALL	G		
WINGS	G	(1) CRACK IN PATCH UP TO 3/8" WITH MINOR SPALLS	

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LOC. 53-I-75-17.78		09-16-24 AS	BARREL 1
BARREL:	F	HAIRLINE CRACKS WITH LEACHING	
		(1) 1/16" CRACK EXTENDS ENTIRE LENGTH OF WALL 2 ABOUT 3' FROM TOP	
		INLET - POPOUT IN TOP	
		SEDIMENT UP TO 1'	

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LOC. 53-I-75-17.78		09-16-24 AS	BARREL 2
BARREL:	F	HAIRLINE CRACKS WITH LEACHING	
		(1) BARREL 2 LEFT - SPALL WITH EXPOSED REBAR	
		SPALL IN PLACE (3'H x 3"W x 2"D WITH CRACK UP TO 3/8"	
		SEDIMENT UP TO 1'	

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