



BRIDGE NO. 116022

63480 – REDDING
BROOKSIDE ROAD
over
GILBERT BENNETT BROOK

In-Depth Inspection
03/14/2025
Inspected by: Tighe & Bond



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Executive Summary

Inspection Type: In-Depth
Inspection Date: 03/14/2025
Inspected by: Tighe & Bond

Bridge No. 116022

Town: REDDING
Carried: BROOKSIDE ROAD
Crossed: GILBERT BENNETT BROOK
Inventory Route: Non-NHS

EXECUTIVE SUMMARY

Bridge No. 116022 carries Brookside Road over Gilbert Bennett Brook in the Town of Redding. The structure is located approximately 100 feet west of Redding Road. The ADT of Brookside Road is not available on the CTDOT Open Data website. Based on development along the road, the ADT is estimated at 200 vehicles per day.

The May 1991 Inspection and Appraisal Report by HNTB notes that the bridge was constructed in 1948. The structure is comprised of a cast-in-place reinforced concrete slab supported on dry-laid stone masonry abutments and wingwalls with surficial pointing. The slab is flared and has vertical cast-in-place concrete parapets. Galvanized steel w-beam guiderails at the east approach are connected to the parapets with substandard transitions and anchorages. At the west approach, there is no approach guiderail, leaving the blunt ends of the parapets exposed to traffic. The roadway is about 7'-6" above the streambed, the as-constructed hydraulic opening is about 8'-6" wide by 6' tall, and the structure crosses the watercourse at an average skew angle of about 5 degrees. The west approach roadway width is 16' to 18', the width between parapets over the structure is 14'-2" to 15'-11", and the east approach roadway width is flared.

During the August 18, 2024 record rainfall and flooding event, the southern 80% of the west abutment and southwest wingwall collapsed and washed downstream. Several yards of backfill washed away with the abutment, causing partial collapse of the approach pavement and leaving a gaping hole at the end of the deck slab. The middle of the eastern abutment also collapsed, and daylight is visible from the eastern abutment through the southeast wingwall. While the deck slab was not damaged, its support has been compromised beyond repair.

Bridge condition ratings are summarized below:

Deck, Superstructure

The deck slab superstructure is in fair condition. Since the substructure cannot be repaired beneath it, further elaboration on its condition is irrelevant.

Substructure

The dry laid stone masonry abutments are in failed condition. Most of the west abutment has washed downstream, leaving the southwest corner of the deck slab unsupported. The center section of the east abutment has also collapsed.

Channel and Channel Protection

The channel and channel protection are in failed condition, with the west abutment washed away and the adjacent roadway collapsing, necessitating closure of the road at the bridge. Future flood events may cause additional collapse and displacement of the deck slab into the channel.

(continued next page)

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Recommendations

Based on the conditions noted above, repair is infeasible and complete replacement with a scour-resistant structure is recommended. The most logical structure type is a two-cell precast concrete box culvert. The approximate construction cost of a structure of this type and size is \$1.5 million. Concept plans and a detailed estimate are provided in the Town's funding application to the State Local Bridge Program.

The crossing should remain closed until the structure is replaced.

PE Stamp and Signature

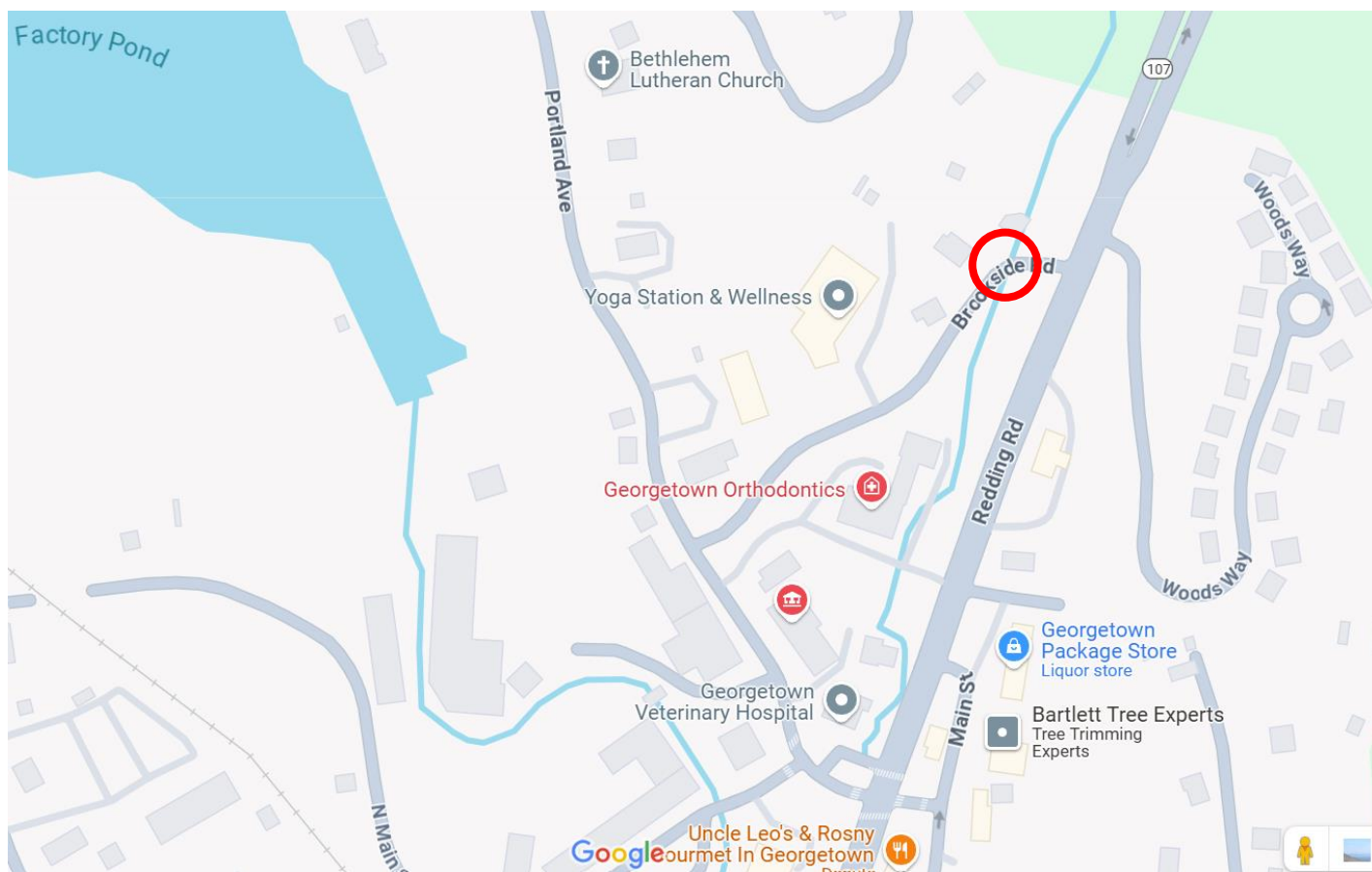


Location Map

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Location Map

Image credit: Google Maps

Form: BRI-19 (U-20 Muni)
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STRUCTURE INVENTORY & APPRAISAL

INSPECTION

Structurally Deficient	Y	Functionally Obsolete	Y
Sufficiency Rating	16.8%		
(90) Inspection Date	03/14/2025	(91) Frequency	
In-Depth Insp	Yes	Next In-Depth Year	9999
Deck Survey Date	1/1/1900	Class	01
Access	0 - None	Flagman	0
	Frequency	Date	Type
Fracture			
Underwater			
Special			

IDENTIFICATION

Bridge Name	116022		
Town Code - Name	63480 - REDDING		
(5) Inventory Route			
(A) Record Type	<input on"="" structure"="" the="" type="text" value="1: Route carried "/>		
(B) Signing Prefix	5 - CITY STREET		
(C) Level of Service	0 - NONE OF THE BELOW		
(D) Route Number	00000		
(E) Dir Suffix	0 - NOT APPLICABLE		
(6A) Feature Intersected	GILBERT BENNETT BROOK		
(6B) Critical Facility Indicator			
(7) Facility Carried	BROOKSIDE ROAD		
(9) Location	100 FT WEST OF REDDING ROAD		
(11) Mile Post	0	Miles	
(16) Latitude	41	Deg	15 Min 39.55 Sec
(17) Longitude	-73	Deg	25 Min 36.82 Sec
(98) Border Bridge			
(A) State Code		(B) Percent Responsibility	%
(B) Border Town Name			
(99) Border Bridge Structure No.			

STRUCTURE TYPE & MATERIALS

(43) Structure Type, Main	
A) Material	1 - Concrete
B) Design Type	01 - Slab
(44) Structure Type, Approach	
A) Material	0 - Other
B) Design Type	00 - Other
(45) Number of Spans, Main Unit	001
(46) Number of Approach Spans	0000
(107) Deck Structure Type	1 - Concrete Cast-in-Place
(108) Wearing Surface/Protection Systems	
A) Type of Wearing Surface	6 - Bituminous
B) Type of Membrane	0 - None
C) Type of Deck Protection	0 - None
Substructure	
A) Material	1 - STONE
B) Design Type	1 - FULL HEIGHT STEM
Paint	
Type	
Year	
Comment	

GEOMETRIC DATA

(48) Length of Maximum Span	8.5	ft
(49) Structure Length	10.5	ft
(50) Curb or Sidewalk Widths		
A) Left	0 ft 0 in	B) Right 0 ft 0 in
(51) Bridge Roadway Width, Curb to Curb	14 ft 2 in	
(52) Deck Width, Out to Out	16 ft 2 in	
(32) Approach Roadway Width	16 ft	

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(33) Bridge Median

Deck Area sq ft

(34) Skew Angle deg

(35) Structure Flared

(10) Inv. Rte. Min. Vert. Clearance ft in

(47) Inv. Rte. Total Horiz. Clr. ft in

Log Inv. Rte. Total Horiz. Clr. ft in

RLog Inv. Rte. Total Horiz. Clr. ft in

(53) Min. Vert. Clearance Over Bridge ft in

(54) Log-Min. Vert. Underclearance ref ft in

(55) Min. Lat Underclearance on Rt. ref ft in

(56) Min. Lat Underclearance on Left. ft in

CONDITION

(58) Deck

(59) Superstructure

(60) Substructure

(61) Channel & Channel Protections

(62) Culverts

(36) Traffic Safety Features

A) Bridge Railings

B) Transitions

C) Approach Guardrail

D) Approach Guardrail Ends

WATERWAY

Drainage Basin Waterway

(38) Navigation Control

(39) Navigation Vertical Clearance ft

(40) Navigation Horiz. Clr. ft

(111) Pier/Abutment Navigation

(116) Vert-Lift Brg Nav Min ft in

AGE AND SERVICE

Year Built (106) Year Reconstructed

(42) Type of Service

A) On

B) Under

(28) Number of Lanes

A) On B) Under

(29) Average Daily Traffic

Is Above Half ADT?

(109) Percent Truck %

(30) Year of ADT

(19) Bypass Detour Length Miles

APPRAISALS

(67) Structural Evaluation

(68) Deck Geometry

(69) Underclearances, Ver. & Horiz.

(71) Waterway Adequacy

(72) Approach Roadway Alignment

(113) Scour Critical

COMMENTS

Item 29 estimated based on development along road.

CLASSIFICATION

(112) NBIS Bridge Length

(114) Highway System

(26) Functional Class

(100) Defense Highway

(101) Parallel Structure

(102) Direction of Traffic

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(103) Temporary Structure	
(110) Designated National Network	0 - Inventory route not on network
(20) Toll	3 - On Free Road
(21) Maintain	03 - Town or Township Highway Agency
(22) Owner	03 - Town or Township Highway Agency
Report Class	L - LOCAL
(37) Historical Significance	5 - Not Eligible for National Register

POSTED SIGNS

Other Posted Sign 1	0 - Blank
Other Posted Sign 2	0 - Blank

	Actual	Recommended
Posted Load Single Unit Truck		tons
Posted Load Semi-Trailer Truck		tons
Posted Load 4 Axle Truck		tons
Posted Load 3S2 Truck		tons
All Vehicles		tons
Posted Vert. Clearance on Bridge	ft	in
Posted Vert. Underclearance	ft	in
Posted Speed Limit on Bridge	mph	

OTHER FEATURES

Fence Required	No
Fence Present	No
Fence Type	Blank
Fence Height	
Fence Material	Blank
Fence Top Type	Blank
Barrel Ladders	No
Standpipes	No
Catwalks	No
Moveable Inspection System	No
Haunches Present over Roadway	NO
Utilities	N No Utilities present

PROPOSED IMPROVEMENTS

(75A) Type of Work Proposed	
(75B) Work Done By	
(76) Length of Structure Improvement	ft
(94) Bridge Improvement Cost	\$
(95) Roadway Improvement Cost	\$
(96) Total Project Cost	\$
(97) Year of Improvement Estimate	
(114) Future ADT	
(115) Year of Future ADT	
DOT Bridge Program List No	
Project No	
Advertised Date	

LOAD RATING & POSTING

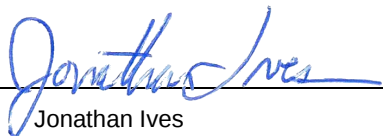
(31) Design Load	0 - Unknown
(63) Operating Rating Type	5 - No rating analysis performed
(64) Operating Rating	000
(65) Inventory Rating Type	5 - No rating analysis performed
(66) Inventory Rating	000
Evaluation Code	J - Judgement Rating
Year of Evaluation	2025
(70) Bridge Posting	
(41) Structure Status	K - Closed

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Inventory Route: Non-NHS

LEAD INSPECTOR AND PE SIGNATURE:



Jonathan Ives
CT PE No. 24592

Date: 05/09/2025

Form: BRI-18 (U-20 Muni)
Inspection Type: In-Depth
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Bridge No. 116022

Town: REDDING
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Inventory Route: Non-NHS

FIELD INSPECTION REPORT

Location:	100 ft west of Redding Road	Year Built:	1948	Snooper Required:	☐
Main Material:	1 - Concrete	Year Rebuilt:	N/A	Snooper Used:	☐
Main Design:	01 - Slab				

Inspectors:

Lead Inspector:	Jonathan Ives
Inspector:	Task:
Ives, Jonathan	BSE - Inspector
Hinsch, Kenneth	BSE - Inspector

Visits:

Visit Date:	Temp:	Start Time:	End Time:
03/14/2025	50	8:45 AM	9:45 AM

58. DECK:

Reinforced concrete slab with bituminous overlay.	Overall Rating:	5
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Rating

Overlay:	4	Bituminous concrete: - Rough, with 100% of the area covered with patches.
Deck - Str Condition:	5	Reinforced concrete slab: - The underside is in satisfactory condition. - The top of deck was not visible; however, the extent of bituminous patching indicates that it is deteriorated for the entire surface. The rating for the deck was reduced to "fair" based on this assumption. - Sides of the slab show honeycombing and long horizontal cracks with efflorescence, which may be located at construction joints. - The southern (downstream) 80% of the west abutment was washed out and completely lost. The center of the east abutment was also washed out. The net result of these washouts is that the concrete slab is supported at three points: the north end of the west abutment and both ends of the east abutment. While the deck and superstructure ratings were not reduced due to this loss of support, the slab is effectively rendered useless by this condition.
Curbs:	N	
Median:	N	
Sidewalks:	N	
Parapet:	6	Reinforced concrete: - Vertical face parapets exhibit heavy discoloration and light scaling throughout. - Inside corners exhibit small shallow surface spalls/chips. - Inside faces exhibit light traffic scrapes throughout. - Outside faces exhibit exposed, corroded steel form ties throughout.
Railing:	N	
Paint:	N	
Fence:	N	
Drains:	N	
Lighting Standard:	N	
Overall Utility Condition Rating:	N	No utilities on the bridge.

Utility Type/Size	N None	No utilities on the bridge.
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Construction Joints:	N
Expansion Joints:	N

Haunches present over travel way? ☐ NO

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APPROACH CONDITION:

Bituminous pavement with substandard timber guiderail. Overall Rating: 0

Rating

Approach Slab:	N	
Relief Joints:	N	
Approach Guide Rail:	5	This rating reflects the guiderail at the east approach only. There is no guiderail at the west approach. The metal beam rail at the east approach is in satisfactory condition, with minor dents and misalignment. The bridge attachment at the east approach is substandard.
Approach Pavement:	0	There is a large hole in the approach pavement adjacent to the southern end of the west abutment, which was lost in a severe washout. The pavement adjacent to the hole is unsupported, and additional collapse is possible. The approach pavement at the east approach is heavily cracked. Some undermining is visible from the southeast corner of the bridge, extending to the middle of the east abutment.
Approach Embankment:	0	The approach embankment at the southwest corner of the bridge was washed out along with the majority of the abutment. The approach embankment at the southeast corner of the bridge is eroded, exposing collapsed backfill behind the east abutment.

Traffic Safety Features

Bridge Railings:	0	Vertical face reinforced concrete parapets are substandard in height (2'-7" at roadway face).
Transitions:	0	No guiderail at west approach. East approach has substandard bridge attachment.
Approach Guardrails:	0	No guiderail at west approach. East approach has an appropriate guiderail.
Approach Guardrail Ends:	0	No guiderail at west approach. East approach guiderail ties into guiderail along Redding Road.

59. SUPERSTRUCTURE:

Reinforced concrete slab. Overall Rating: 5

Rating

Bearing Devices:	N	
Stringers:	N	
Girders:	5	Reinforced concrete slab: - The underside is in satisfactory condition. - The top of deck was not visible; however, the extent of bituminous patching indicates that it is deteriorated for the entire surface. The rating for the deck was reduced to "fair" based on this assumption. - Sides of the slab show honeycombing and long horizontal cracks with efflorescence, which may be located at construction joints. - The southern (downstream) 80% of the west abutment was washed out and completely lost. The center of the east abutment was also washed out. The net result of these washouts is that the concrete slab is supported at three points: the north end of the west abutment and both ends of the east abutment. While the deck and superstructure ratings were not reduced due to this loss of support, the slab is effectively rendered useless by this condition.
Floor Beams:	N	
Trusses - General:	N	
Trusses - Portals:	N	
Trusses - Bracing:	N	
Paint:	N	
Rust:	N	

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Machinery Movable Span:	N	
Rivets & Bolts:	N	
Welds - Cracks:	N	
Timber Decay:	N	
Concrete Cracking:	5	See "Girders" above.
Collision Damage:	8	
Member Alignment:	8	
Deflection Under Load:	N	N (Normal); E (Excessive). The bridge is closed and deflection under load cannot be determined.
Vibration Under Load:	N	N (Normal); E (Excessive). The bridge is closed and vibration under load cannot be determined.
Standpipes:	N	
Catwalks:	N	
Movable Inspection System:	N	
Barrel Ladders:	N	

Are Barrel Ladders OSHA Compliant?

60. SUBSTRUCTURE:

Overall Rating:

Rating

Abutments - Stem:	0	Stone masonry: - The southern (downstream) 80% of the west abutment was washed out and completely lost. Stones that appear to have been part of the abutment stem are strewn along the streambed downstream. - The center of the east abutment was also washed out. - Both abutments are in a failed condition, leaving little support for the concrete slab superstructure. Additional erosion/washout may result in the superstructure falling into the channel.
Abutments - Backwall:	N	
Abutments - Footings:	N	Not visible.
Abutments - Settlement:	0	See "Stem" above.
Abutments - Wingwalls:	0	Stone masonry: - The southwest wingwall was washed away along with the abutment. - The remaining three wingwalls appear in satisfactory condition.
Piers/Bents - Caps:	N	
Piers/Bents - Pile Bent:	N	
Piers/Bents - Footings:	N	
Piers/Bents - Settlement:	N	
Erosion - Scour:	0	See "Stem" above.
Concrete Crack - Spall:	N	
Steel Corrosion:	N	
Paint:	N	
Timber Decay:	N	
Collision Damage:	8	
Debris:	5	A large tree trunk is lodged between the east abutment/deck interface and the streambed. Some of the debris from the washed-out abutments is in the channel below the deck; however, most of the debris has washed downstream.

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61. CHANNEL AND CHANNEL PROTECTION:

Gilbert Bennett Brook

Overall Rating: 0

Rating

Channel - Scour:	0	Misalignment of the channel at the inlet of the structure, inadequacy of the hydraulic opening, and shallow embedment of the abutments are all thought to have contributed to the collapse of the existing substructures, which necessitated closure of the bridge.
Embankment - Erosion:	5	The upstream channel banks are lined with boulders/stone walls. The downstream channel banks are wooded with tall trees, wetland shrubs, and forest duff. At isolated locations, the upstream and downstream banks are undercut with exposed tree roots.
Debris:	5	A large tree trunk is lodged between the east abutment/deck interface and the streambed. Some of the debris from the washed-out abutments is in the channel below the deck; however, most of the debris has washed downstream. There are a few trees lying across the channel downstream of the bridge. No debris was noted upstream.
Vegetation:	6	Aside from the residential lawn at the northeast corner, the channel runs through a wooded area in the vicinity of the bridge. The tree roots are effectively protecting the channel banks from erosion. Tree roots are exposed adjacent to the stream at a few isolated locations.
Channel Change:	0	See "Channel - Scour" above.
Fender - System:	N	
Spur Dikes and Jetties:	N	
Riprap:	N	

62. CULVERTS AND RETAINING WALLS:

Overall Rating: N

Rating

Barrel:	N	
Concrete:	N	
Steel:	N	
Timber:	N	
Headwall:	N	
Cutoff Wall:	N	
Debris:	N	
Retaining Wall System:	N	
Footing:	N	

LOAD POSTING:

Rating

Single Unit (Tons):		
Semi Trailer (Tons):		
4 Axle (Tons):		
3S2 (Tons):		
All Vehicles:		
Advanced Warning:		
Warning at Bridge:		
Legibility:		
Visibility:		

VERTICAL CLEARANCE POSTING:

Min. Vert. Underclearance:		ft		in	
Posted Clearance Under Bridge:		ft		in	
Posted Clearance On Bridge:		ft		in	
Advanced Warning:					
Warning at Bridge:					
Legibility:					

NOTES / COMMENTS:

Character of Traffic:

Road is closed.

Additional Notes:

1. Gilbert Bennett Brook flows from north to south.

2. Inspected using waders.

Additional Comments:

- The Town has closed the road, with concrete blocks placed across both roadway approaches.

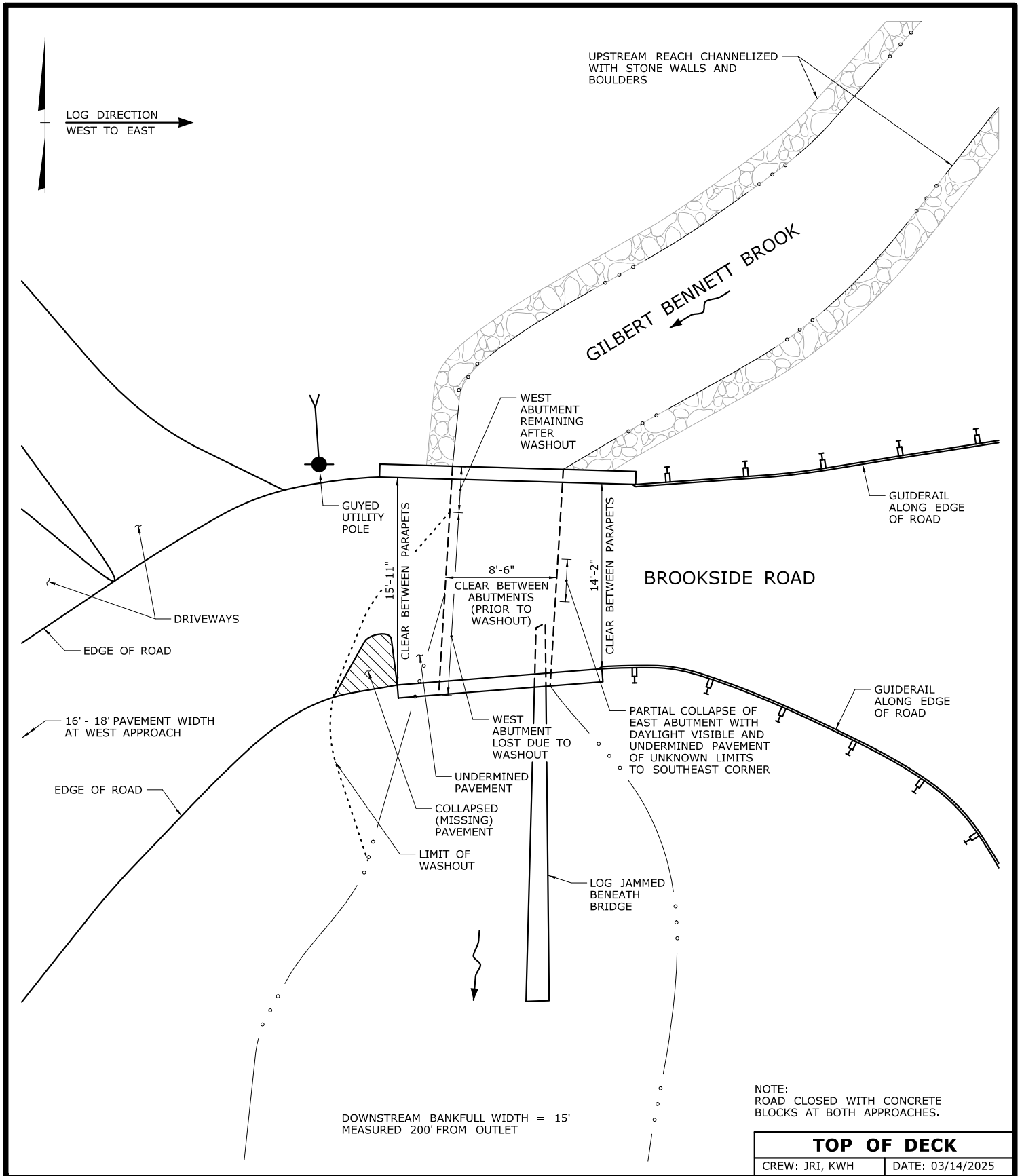
- Additional collapse of the stone masonry abutments and reinforced concrete slab superstructure is possible.

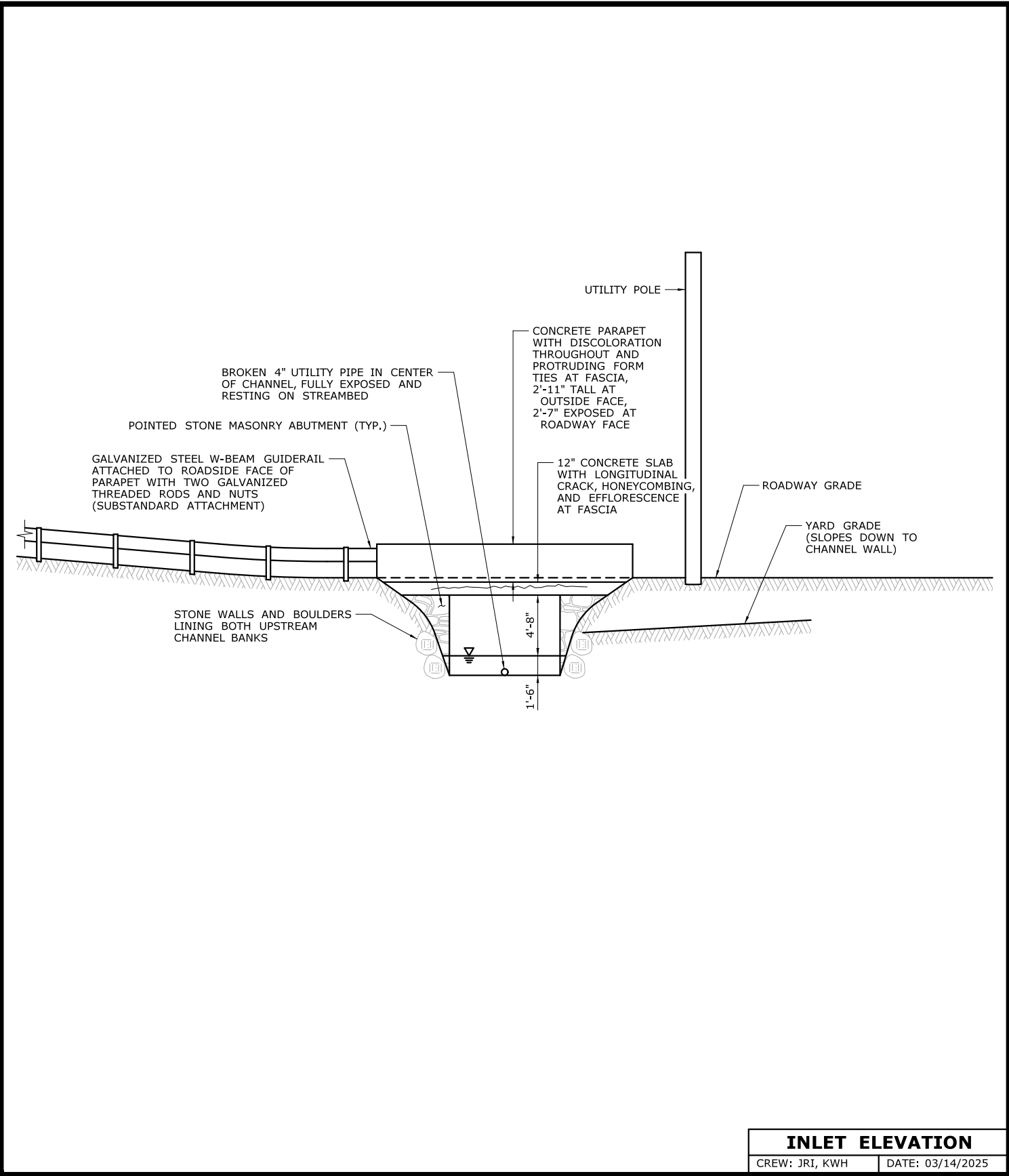
Sketches

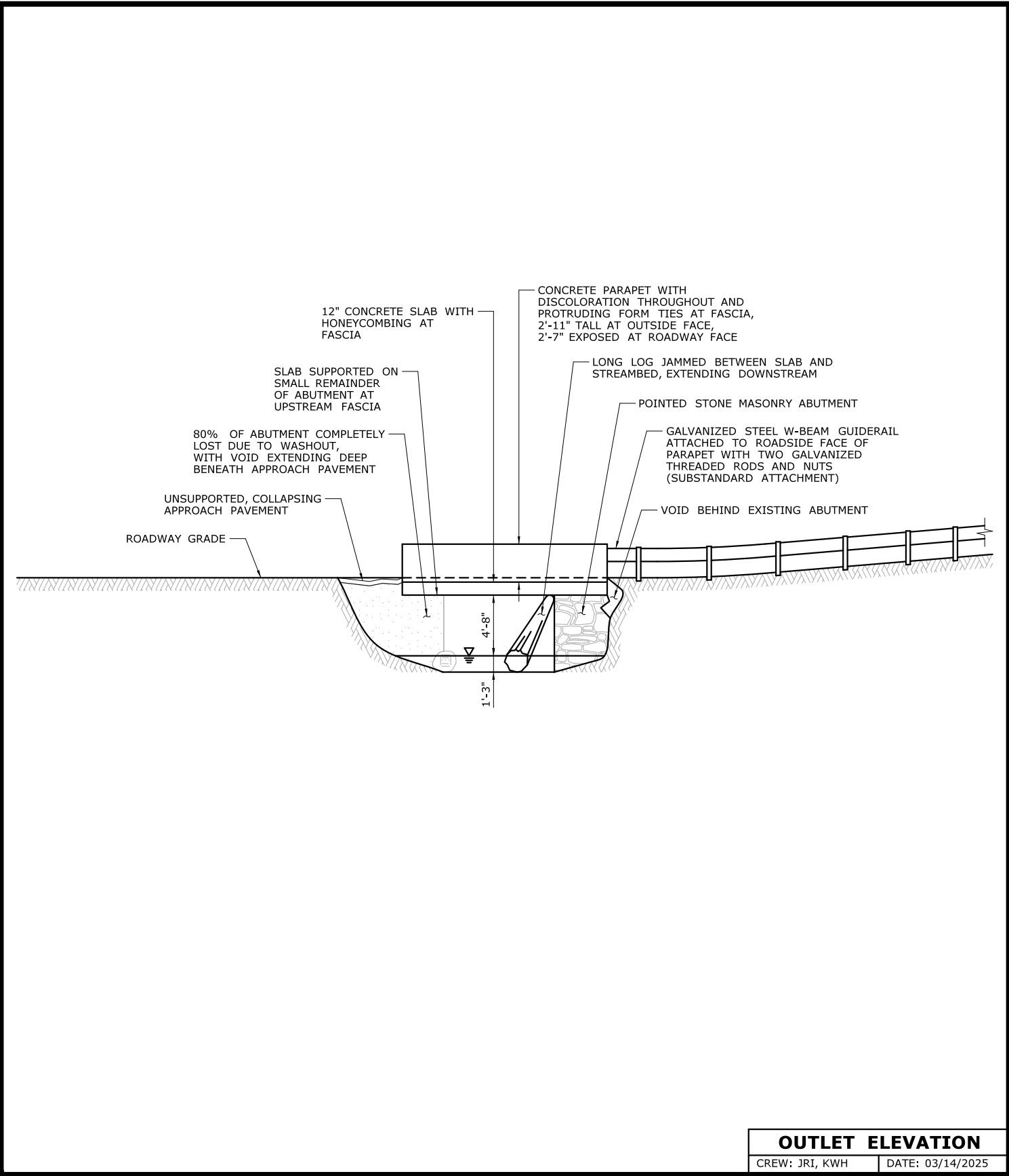
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Form: Asset Photos
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Photo Number: 1 Bridge from east approach. Photo Taken: 03/14/2025



Photo Number: 2 East approach from bridge. Photo Taken: 03/14/2025



Photo Number: 3

Bridge from west approach.
Note collapsed pavement and
missing abutment.

Photo Taken: 03/14/2024



Photo Number: 4

West approach from bridge.

Photo Taken: 03/14/2025

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Photo Number: 5 North (upstream) elevation. Photo Taken: 03/14/2025



Photo Number: 6 South (downstream) elevation.
Note missing abutment, wingwall, and backfill at southwest corner. Photo Taken: 03/14/2025

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Photo Number: 7 Upstream from bridge. Photo Taken: 03/14/2025



Photo Number: 8 Downstream from bridge. Photo Taken: 03/14/2025



Photo Number: 9

East abutment. Note collapse with daylight visible through southeast wingwall.

Photo Taken: 03/14/2025



Photo Number: 10

West abutment. Note southern 80% of abutment collapsed/washed downstream.

Photo Taken: 03/14/2025

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Photo Number: 11 Abandoned utility pipe resting on streambed Photo Taken: 03/14/2025
(looking downstream).



Photo Number: 12 Abandoned utility pipe, with break in pipe Photo Taken: 03/14/2025
clearly visible beneath bridge.