

UNDERWATER BRIDGE INSPECTION REPORT

STRUCTURE NO. 07542

CSAH NO. 9

OVER THE

BLUE EARTH RIVER

DISTRICT 7 - BLUE EARTH COUNTY



SEPTEMBER 11, 2012

PREPARED FOR THE

MINNESOTA DEPARTMENT OF TRANSPORTATION

BY

COLLINS ENGINEERS, INC.

AND

WSB & ASSOCIATES, INC.

JOB NO. 2107

MINNESOTA DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

REPORT SUMMARY:

The substructure units inspected at Bridge No. 07542, Piers 1 through 4, were found to be in good condition with no defects of structural significance observed. Minor defects such as random small areas of poor consolidation and/or minimal section loss were observed on all of the piers. A comparison of water depth soundings with the previous underwater inspection report indicate that an apparent minor streambed degradation has occurred within the channel.

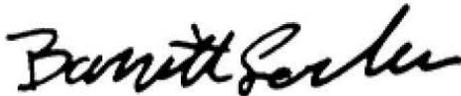
INSPECTION FINDINGS:

- (A) Areas of minor poor consolidation and/or section loss were observed 2 to 3 feet above the waterline at random locations on all of the piers, typically with up to 1 inch of penetration.
- (B) Timber debris consisting of logs and branches was observed at Pier 2 extending from the upstream nose to the midpoint on both faces extending from the channel bottom up 4 feet.

RECOMMENDATIONS:

- (A) Monitor timber debris accumulation during future U/W inspections.
- (B) Reinspect the submerged substructure units at the normal maximum recommended (NBIS) interval of sixty months.

Inspection Team Leader:
WSB and Associates



Barritt Lovelace
Registered Professional Engineer
Bridge Safety Inspection Team Leader

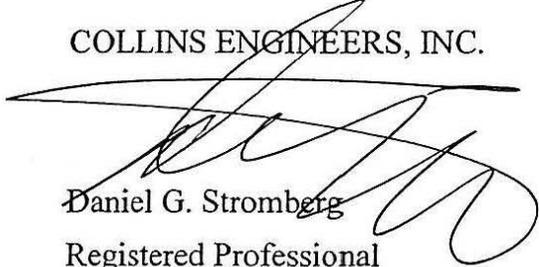
Respectfully submitted,

PROFESSIONAL ENGINEER
I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

Daniel G. Stromberg

Date 6/30/14 License # 21491

COLLINS ENGINEERS, INC.



Daniel G. Stromberg
Registered Professional
Engineer, State of Minnesota

MINNESOTA DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

1. BRIDGE DATA

Bridge Number: 07542

Feature Crossed: Blue Earth River

Feature Carried: CSAH No. 9

Location: District 7 - Blue Earth County

Bridge Description: Bridge No. 07542 consists of a five span steel beam structure supported by two concrete abutments on piles and four concrete piers on piles, with the piers numbered 1 to 4 starting from the west.

2. INSPECTION DATA

Professional Engineer/Team Leader: Barritt Lovelace, P.E.

Dive Team: Kasey Yoder (WSB), Lukas Janulis (Collins)

Date: September 11, 2012

Weather Conditions: Sunny, 98°F

Underwater Visibility: 1.0 foot

Waterway Velocity: 2.0 ft/s

3. SUBSTRUCTURE INSPECTION DATA

Substructure Inspected: Piers 1 through 4.

General Shape: The piers consist of oblong rectangular hammerhead shafts with rounded noses. The piers are supported by rectangular footings founded on piles.

Maximum Water Depth at Substructure Inspected: Approximately 11.6 feet.

4. WATERLINE DATUM

Water Level Reference: The top of the pier at the upstream end of Pier 4.

Water Surface: The waterline was approximately 32.3 feet below reference.
Waterline Elevation = 871.6

5. NBIS CODING INFORMATION (Minnesota specific codes are used for 92B and 113)

Item 60: Substructure: Code 7

Item 61: Channel and Channel Protection: Code 7

Item 92B: Underwater Inspection: Code B/10/12

Item 113: Scour Critical Bridges: Code N/12

Bridge is scour critical because abutment or pier foundation is rated as unstable due to observed scour at bridge site.

 Yes X No

6. STRUCTURAL ELEMENT CONDITION RATING

Item #	Element Description	Quantity	Unit	Conditions				
				1	2	3	4	5
210	Reinforced Concrete Pier Wall	73	LF	73				
985	Slopes & Slope Protection	1	EA	1				



Photograph 1. View of Pier 1, Looking Northeast.



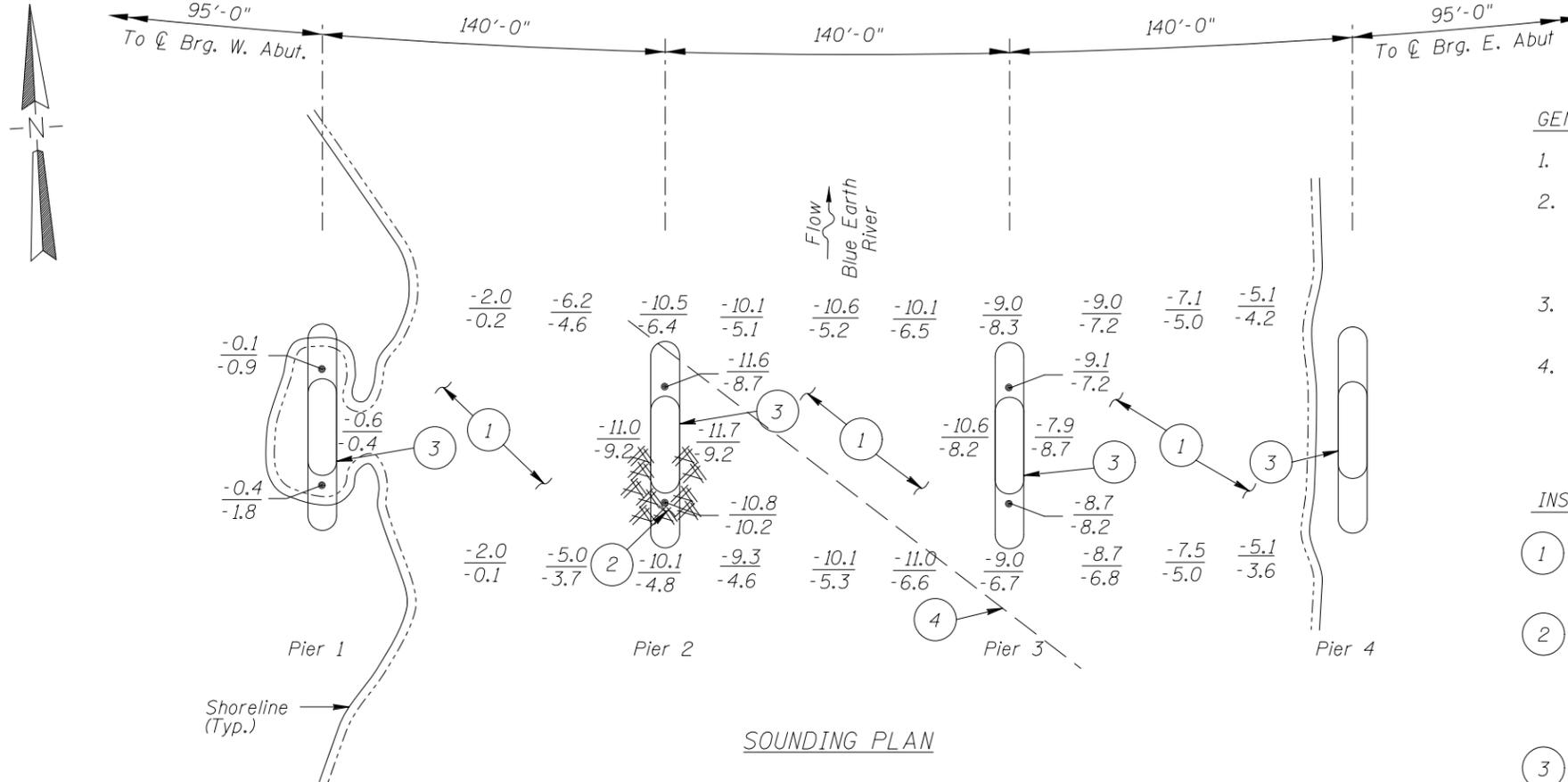
Photograph 2. View of Pier 2, Looking Northeast



Photograph 3. View of Pier 3, Looking Northeast.



Photograph 4. View of Pier 4, Looking East.

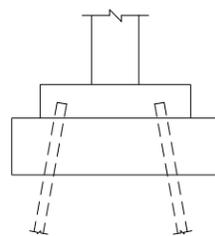


GENERAL NOTES:

1. Piers 1 through 4 were inspected underwater.
2. At the time of inspection on September 11, 2012, the waterline was located approximately 32.3 feet below the top of the pier cap at the upstream end of Pier 4. This corresponds to a waterline elevation of 871.6 based on the previous report dated October 22, 2007.
3. Soundings indicate the water depth at the time of inspection and are measured in feet.
4. Soundings were taken parallel to the bridge at 1/4 point intervals between the substructure units.

INSPECTION NOTES:

- 1 The channel bottom material consisted of soft silt with up to 2 feet of probe rod penetration.
- 2 A moderate accumulation of timber debris, consisting of logs and branches, was observed at Pier 2 and extended from the upstream nose to the midpoint on each face of the pier and from the channel bottom up 4 feet.
- 3 Areas of minor poor consolidation and/or section loss were observed 2 to 3 feet above the waterline at random locations on all of the piers, typically with up to 1 inch of penetration.
- 4 The remains of the sheet pile cofferdam used during original construction were observed 4.0 feet plus or minus below the waterline.



TYPICAL END VIEW OF PIERS

Legend

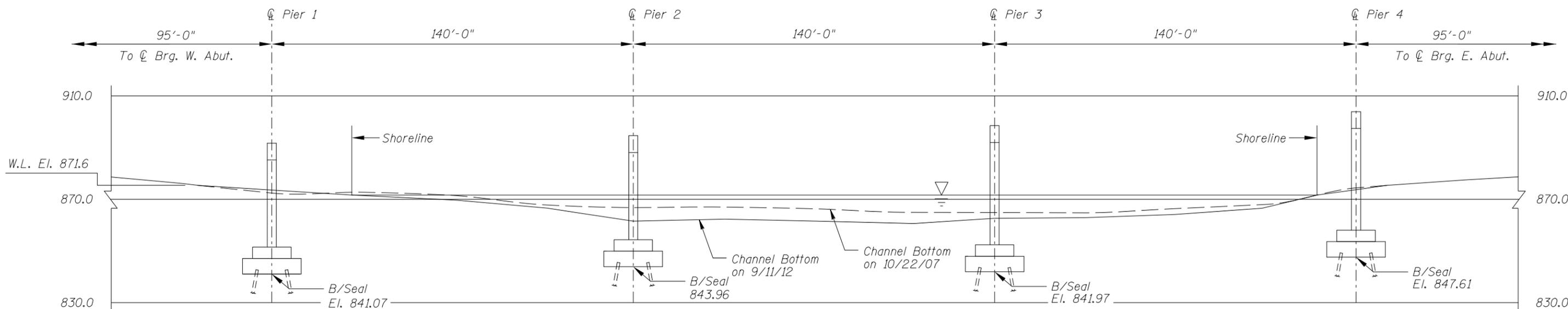
- 0.4 Sounding Depth (9/11/12)
- 0.4 Sounding Depth (10/22/07)
- Timber Debris

Note:

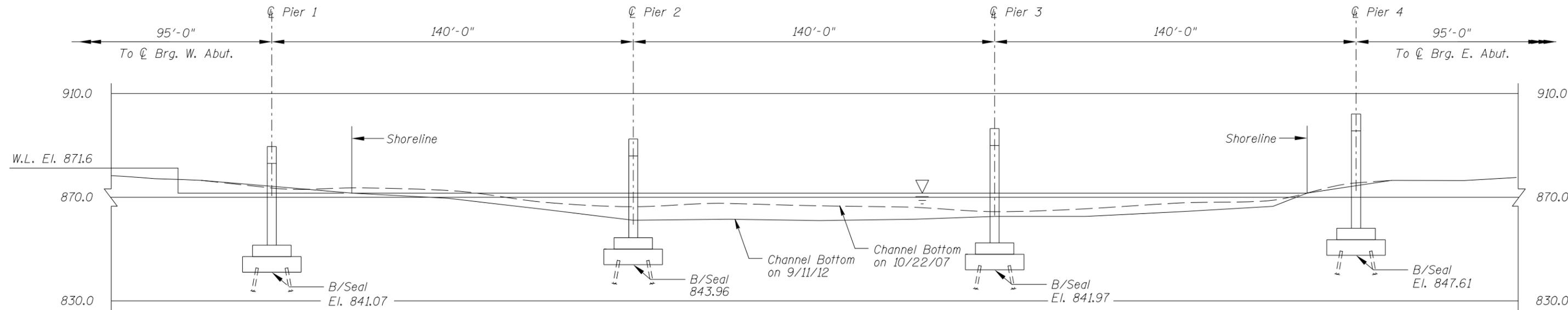
All soundings based on 2012 waterline location.



MINNESOTA DEPARTMENT OF TRANSPORTATION UNDERWATER BRIDGE INSPECTION		
STRUCTURE NO. 07542 OVER THE BLUE EARTH RIVER DISTRICT 7, BLUE EARTH COUNTY		
INSPECTION AND SOUNDING PLAN		
Drawn By: BJR	COLLINS ENGINEERS	Date: SEP. 2012
Checked By: BRL	123 North Wacker Drive Suite 300 Chicago, IL 60606 (312) 704-9300 www.collinsengr.com	Scale: NTS
Code: 52210135		Figure No.: 1



UPSTREAM FASCIA PROFILE



DOWNSTREAM FASCIA PROFILE

Note:
Refer to Figure 1 for General Notes.

MINNESOTA DEPARTMENT OF TRANSPORTATION UNDERWATER BRIDGE INSPECTION		
STRUCTURE NO. 07542 OVER THE BLUE EARTH RIVER DISTRICT 7, BLUE EARTH COUNTY		
UPSTREAM AND DOWNSTREAM FASCIA PROFILES		
Drawn By: BJR	COLLINS ENGINEERS	Date: SEP. 2012
Checked By: BRL		Scale: 1"=40'
Code: 52210135		Figure No.: 2

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MINNESOTA DEPARTMENT OF TRANSPORTATION
OFFICE OF BRIDGES AND STRUCTURES
DAILY DIVING REPORT

INSPECTORS: WSB & Associates and Collins Engineers DATE: September 11, 2012

ON-SITE TEAM LEADER: Barritt Lovelace, P.E.

BRIDGE NO: 07542 WEATHER: Sunny, 98°F

WATERWAY CROSSED: Blue Earth River

DIVING OPERATION: SCUBA SURFACE SUPPLIED AIR
 OTHER

PERSONNEL: Kasey Yoder (WSB), Lukas Janulis (Collins)

EQUIPMENT: Commercial Scuba, U/W Light, Lead Line, Probe Rod, Scraper, Sounding Pole, Camera

TIME IN WATER: 3:00 p.m.

TIME OUT OF WATER: 3:40 p.m.

WATERWAY DATA: VELOCITY 2.0 ft/s

VISIBILITY 1.0 foot

DEPTH 11.7 feet maximum at Pier 2

ELEMENTS INSPECTED: Piers 1 through 4

REMARKS: Overall, the concrete below water was in sound and good condition with no defects of structural significance observed. Areas of minor poor consolidation and/or section loss were observed 2 to 3 feet above the waterline at random locations on all of the piers, typically with up to 1 inch of penetration. Timber debris consisting of logs and branches was observed at Pier 2 extending from the upstream nose to the midpoint on each side of the pier and from the channel bottom up 4 feet.

FURTHER ACTION NEEDED: YES NO

Reinspect the submerged substructure at the normal maximum recommended (NBIS) interval of sixty (60) months.

MINNESOTA DEPARTMENT OF TRANSPORTATION
OFFICE OF BRIDGES AND STRUCTURES

UNDERWATER INSPECTION CONDITION RATING FORM

BRIDGE NO. 07542
 INSPECTORS WSB & Associates and Collins Engineers, Inc.
 ON-SITE TEAM LEADER. Barritt Lovelace, P.E.
 WATERWAY CROSSED Blue Earth River

INSPECTION DATE September 11, 2012

NOTE: USE ALL APPLICABLE CONDITION DEFINITIONS AS DEFINED IN THE MINNESOTA RECORDING AND CODING GUIDE INCLUDING GENERAL, SUBSTRUCTURE, CHANNEL AND PROTECTION, AND CULVERTS AND WALL DEFINITIONS TO COMPLETE THIS FORM.

CONDITION RATING

UNIT REFERENCE NO.	UNIT DESCRIPTION	MAXIMUM DEPTH OF WATER	SUBSTRUCTURE						CHANNEL					GENERAL					
			PILING	COLUMNS, SHAFTS, OR FACES*	FOOTINGS	DISPLACEMENT	OTHER	OVERALL SUBSTRUCTURE CONDITION CODE*	SCOUR	EMBANKMENT EROSION	EMBANKMENT PROTECTION	OTHER (DRIFT/DEBRIS)	OVERALL CHANNEL & PROTECTION CONDITION	CONCRETE	STEEL	TIMBER	LOSS OF SECTION	PREVIOUS REPAIR OR MAINTENANCE	OTHER
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
	Pier 1	0.6'	N	7	N	9	N	7	8	8	8	N	8	7	N	N	N	N	N
	Pier 2	11.7'	N	7	N	9	N	7	8	N	N	7	7	7	N	N	N	N	N
	Pier 3	10.6'	N	7	N	9	N	7	8	N	N	N	8	7	N	N	N	N	N
	Pier 4	N	N	7	N	9	N	7	8	8	8	N	8	7	N	N	N	N	N

*UNDERWATER PORTION ONLY

REMARKS: Overall, the concrete below water was in sound and good condition with no defects of structural significance observed. Areas of minor poor consolidation and/or section loss were observed 2 to 3 feet above the waterline at random locations on all of the piers, typically with up to 1 inch of penetration. Timber debris consisting of logs and branches was observed at Pier 2 extending from the upstream nose to the midpoint on each side of the pier extending from the channel bottom up 4 feet.

NOTES: ATTACH SKETCHES AS NEEDED, IDENTIFY REMARK BY REFERRING TO UNIT REFERENCE NO. AND REMARK NO. USE GENERAL SECTION TO IDENTIFY OVERALL PRESENCE OF SPALLS, CRACKS, CORROSION, ETC.