

UNDERWATER BRIDGE INSPECTION REPORT

STRUCTURE NO. 7202

CSAH NO. 11

OVER THE

MINNESOTA RIVER

DISTRICT 8 - REDWOOD COUNTY



PREPARED FOR THE
MINNESOTA DEPARTMENT OF TRANSPORTATION

BY

COLLINS ENGINEERS, INC.

JOB NO. 5221 (CEI 100)

MINNESOTA DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

REPORT SUMMARY:

The concrete of the substructure unit inspected at Bridge No. 7202, Pier 2, was found to be in good condition below water with no defects of structural significance observed. A light accumulation of timber debris was observed at the upstream nose of Pier 2. Since the previous inspection, the footing at Pier 2 has become no longer exposed. Overall, the channel bottom at the bridge appeared stable with no significant scour.

INSPECTION FINDINGS:

- (A) A 1.5-foot-diameter log and some smaller timber debris were observed off the upstream nose of Pier 2.
- (B) Two areas of section loss on the shaft of Pier 2 were observed 6 feet above the waterline measuring 3 to 6 inches in diameter with up to 1/2 inch of penetration.

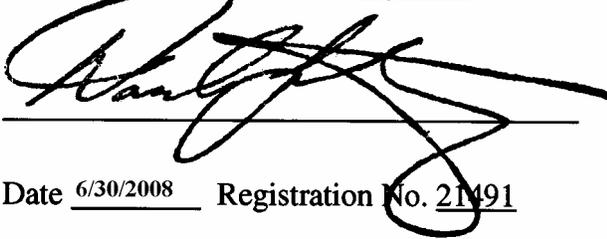
RECOMMENDATIONS:

- (A) Monitor the timber debris at Pier 2, and if found to be increasing in the future, removal operations may become warranted.
- (B) Since the bridge is rated scour critical, monitor for a re-occurrence of footing exposure in future inspections and especially during or soon after any flood flows.

- (C) Reinspect the submerged substructure units at the normal maximum recommended (NBIS) interval of five (5) years.

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



A large, stylized handwritten signature in black ink, appearing to read 'Daniel G. Stromberg', is written over a horizontal line.

Date 6/30/2008 Registration No. 21491

Respectfully submitted,

COLLINS ENGINEERS, INC.



A large, stylized handwritten signature in black ink, appearing to read 'Daniel G. Stromberg', is written over a horizontal line.

Daniel G. Stromberg
Registered Professional
Engineer, State of Minnesota

MINNESOTA DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

1. BRIDGE DATA

Bridge Number: 7202

Feature Crossed: Minnesota River

Feature Carried: CSAH No. 11

Location: District 8 - Redwood County

Bridge Description: The superstructure is a three span, multiple steel girder bridge. The superstructure is supported by two reinforced concrete abutments and two reinforced concrete piers. The pier and abutment footings are supported on steel H-piles. The piers are numbered 1 and 2, starting from the north end of the bridge.

2. INSPECTION DATA

Professional Engineer/Team Leader: Daniel G. Stromberg, P.E., S.E.

Dive Team: Clayton G. Brookins, Valerie Rouston

Date: October 21, 2007

Weather Conditions: Cloudy, 55°F

Underwater Visibility: 1.0 foot

Waterway Velocity: 1.0 f.p.s

3. SUBSTRUCTURE INSPECTION DATA

Substructure Inspected: Pier 2

General Shape: Oblong rectangular pier shaft, with a pointed upstream nose and a rounded downstream nose, which comes to rest on a rectangular footing supported on piles.

Maximum Water Depth at Substructure Inspected: Approximately 11.0 feet.

4. WATERLINE DATUM

Water Level Reference: The top of the downstream end of the Pier 2 cap.

Water Surface: The waterline was approximately 12.6 feet below reference.
Waterline Elevation = 812.0

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/10/07

Item 113: Scour Critical Bridges: Code R/94

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

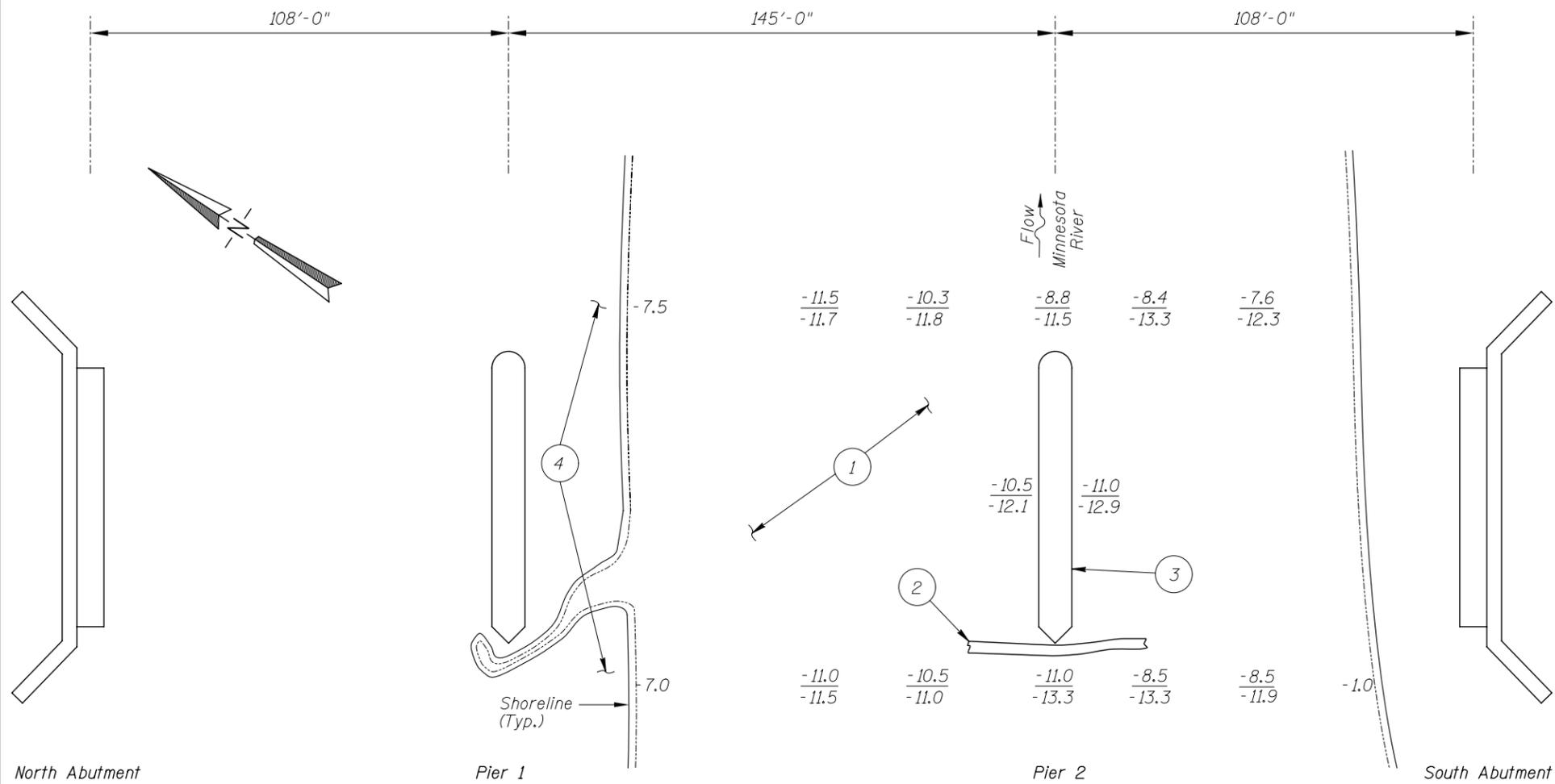
X Yes _____ No



Photograph 1. Overall View of the Structure, Looking South.



Photograph 2. View of Pier 2, Looking Southeast.



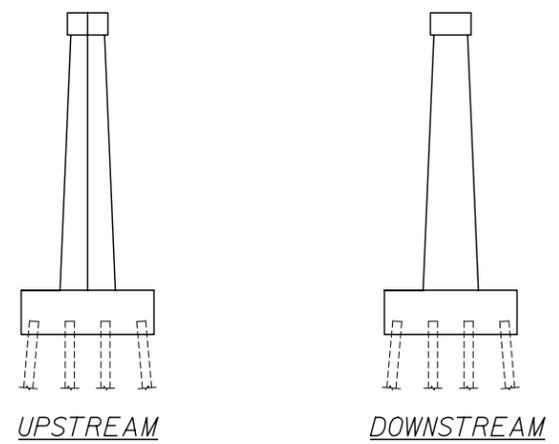
SOUNDING PLAN

GENERAL NOTES:

1. Pier 2 was inspected underwater.
2. At the time of inspection on October 21, 2007, the waterline was located approximately 12.6 feet below the top of the pier cap at the downstream end of Pier 2. This corresponds with a waterline elevation of 821.0.
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 around Pier 2 consisted of sandy infilling with up to 1 foot of probe rod penetration.
- 2 A 1.5 feet in diameter log and other scattered smaller timber drift were observed at the upstream end of Pier 2.
- 3 Two areas of section loss were observed 1 feet above the waterline measuring from 6 inches to 3 inches in diameter with up to 1/2 inch of penetration.
- 4 The north embankment exhibited steep vertical slopes due to significant bank erosion.



TYPICAL END VIEW OF PIERS

Legend

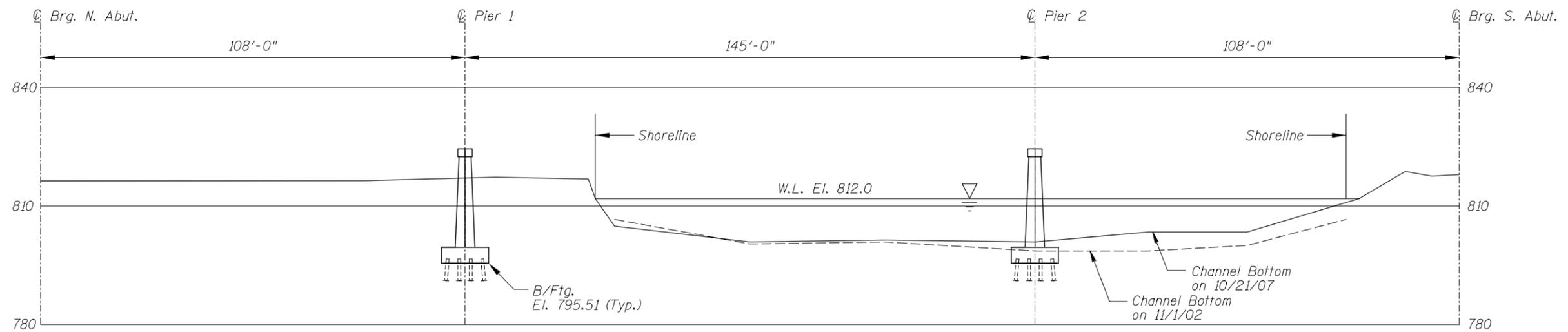
-2.0 Sounding Depth (10/21/07)

-5.2 Sounding Depth (11/1/02)

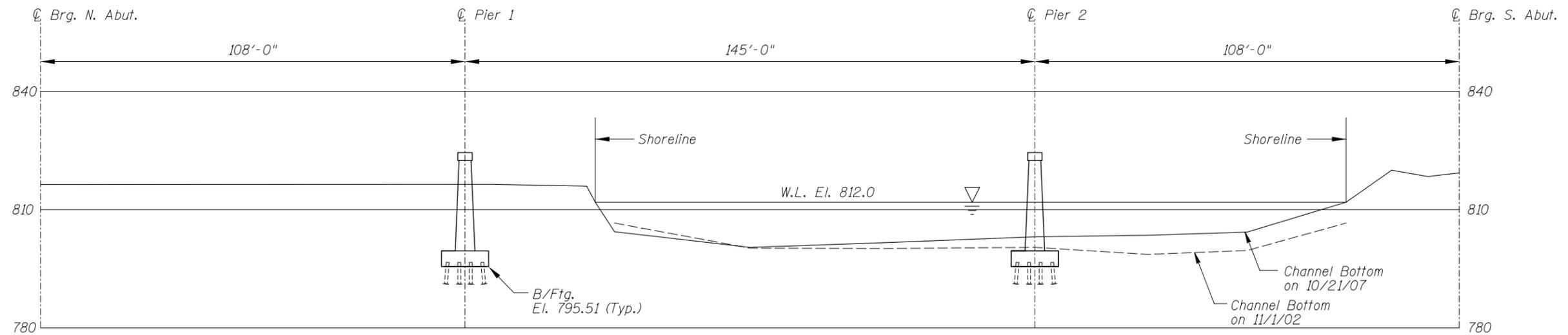
Note:

All soundings based on 2007 waterline location.

MINNESOTA DEPARTMENT OF TRANSPORTATION UNDERWATER BRIDGE INSPECTION		
STRUCTURE NO. 7202 OVER THE MINNESOTA RIVER DISTRICT 8, REDWOOD COUNTY		
INSPECTION AND SOUNDING PLAN		
Drawn By: PRH	COLLINS ENGINEERS <small>123 North Wacker Drive Suite 300 Chicago, IL 60606 (312) 704-9300 www.collinsengr.com</small>	Date: OCT., 2007
Checked By: MDK		Scale: NTS
Code: 52210100		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. 7202 OVER THE MINNESOTA RIVER DISTRICT 8, REDWOOD COUNTY		
UPSTREAM AND DOWNSTREAM FASCIA PROFILES		
Drawn By: PRH	COLLINS ENGINEERS <small>123 North Wacker Drive Suite 300 Chicago, IL 60606 (312) 704-9300 www.collinsengr.com</small>	Date: OCT., 2007
Checked By: MDK		Scale: 1"=30'
Code: 52210100		Figure No.: 2

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

INSPECTORS: Collins Engineers, Inc. DATE: October 21, 2007

ON-SITE TEAM LEADER: Daniel G. Stromberg, P.E., S.E.

BRIDGE NO: 7202 WEATHER: Cloudy, 55 °F

WATERWAY CROSSED: Minnesota River

DIVING OPERATION: SCUBA SURFACE SUPPLIED AIR
 OTHER

PERSONNEL: Clayton G. Brookins, Valerie Roustan

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

TIME IN WATER: 2:20 P.M.

TIME OUT OF WATER: 2:50 P.M.

WATERWAY DATA: VELOCITY 1 f.p.s.

VISIBILITY 1 foot

DEPTH 11 feet maximum at Pier 2

ELEMENTS INSPECTED: Pier 2

REMARKS: Overall, the concrete of Pier 2 was in good condition with no defects of structural significance observed. Since the last inspection, the footing along the upstream half of the pier has become no longer exposed. Two areas of section loss were observed 1 foot above the waterline measuring from 6 inches to 3 inches in diameter with up to 1/2 inch of penetration. There was a light accumulation of timber drift at the upstream nose of the pier. Overall, channel bottom appeared stable with no significant scour.

FURTHER ACTION NEEDED: YES NO

Monitor the timber debris at Pier 2, and if found to be increasing in the future, removal operations may become warranted.

Since the bridge is rated scour critical, monitor for a re-occurrence of footing exposure in future inspections and especially during or soon after any flood flows.

Reinspect the submerged substructure units at the normal maximum recommended (NBIS) interval of five (5) years.

MINNESOTA DEPARTMENT OF TRANSPORTATION
OFFICE OF BRIDGES AND STRUCTURES

UNDERWATER INSPECTION CONDITION RATING FORM

BRIDGE NO. 7202
 INSPECTORS Collins Engineers, Inc.
 ON-SITE TEAM LEADER Daniel G. Stromberg, P.E., S.E.
 WATERWAY CROSSED The Minnesota River

INSPECTION DATE October 21, 2007

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 2	11.0'	N	7	N	9	N	7	8	8	8	7	7	7	N	N	N	N	N

*UNDERWATER PORTION ONLY

REMARKS: Overall, the concrete of Pier 2 was in good condition with no defects of structural significance observed. Since the last inspection, the footing along the upstream half of the pier has become no longer exposed. Two areas of section loss were observed 1 foot above the waterline measuring from 6 inches to 3 inches in diameter with up to 1/2 inch of penetration. There was a light accumulation of timber drift at the upstream nose of the pier. Overall, channel bottom appeared stable with no significant scour.

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.