

UNDERWATER BRIDGE INSPECTION REPORT

STRUCTURE NO. 36517
CSAH NO. 75
OVER THE
LITTLE FORK RIVER
KOOCHICHING COUNTY



SEPTEMBER 17, 2012
PREPARED FOR THE
MINNESOTA DEPARTMENT OF TRANSPORTATION
BY
COLLINS ENGINEERS, INC.
JOB NO. 7423

MINNESOTA DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

REPORT SUMMARY:

The substructure unit inspected at Bridge No. 36517, Pier 2, was found to be in good condition below water with no defects of structural significance. The channel bottom around Pier 2 was firm and appeared stable with no significant changes since the last inspection. The top of the footing was exposed at both the upstream and downstream noses of the pier with no observed vertical exposure.

INSPECTION FINDINGS:

- (A) The channel bottom material consisted of firm sand with gravel and rocks 1 foot and smaller in diameter.
- (B) A band of minor concrete scaling, 1 foot high, was located at the waterline with 1/4 inch maximum penetration.
- (C) There was minor top of footing exposure around upstream and downstream noses of Pier 2, with no vertical face exposure.

RECOMMENDATIONS:

- (A) The footing exposure at Pier 2 should be monitored during future inspections.
- (B) Reinspect the submerged substructure units at the normal maximum recommended (NBIS) interval of sixty (60) months.

Inspection Team Leader:



Nicholas R. Triandafilou, P.E.

Respectfully submitted,

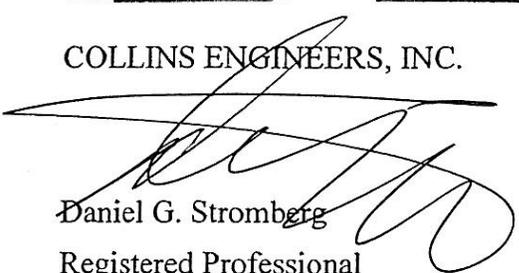
PROFESSIONAL ENGINEER

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: 36517

Feature Crossed: Little Fork River

Feature Carried: CSAH No. 75

Location: Koochiching County

Bridge Description: The superstructure is four spans of multiple steel stringers supporting a reinforced concrete deck. The superstructure is supported by two reinforced concrete abutments and three reinforced concrete piers. The pier and abutment footings are supported by steel H-piles. The piers are numbered 1 through 3 starting from the south end of the bridge.

2. INSPECTION DATA

Professional Engineer Diver: Nicholas R. Triandafilou, P.E.

Dive Team: Marc B. Parker, Clayton G. Brookins

Date: September 17, 2012

Weather Conditions: Cloudy, 50°F

Underwater Visibility: 2.0 feet

Waterway Velocity: < 0.5 ft/sec

3. SUBSTRUCTURE INSPECTION DATA

Substructure Inspected: Pier 2

General Shape: Pier 2 consists of a rectangular pier cap with rounded ends supported by two circular shafts connected with a slender diaphragm wall. The pier shaft is supported on a continuous rectangular footing founded on piles.

Maximum Water Depth at Substructure Inspected: Approximately 3.5 feet.

4. WATERLINE DATUM

Water Level Reference: The top of the pier cap at the east end of Pier 2.

Water Surface: The waterline was approximately 24.9 feet below reference.

Water Elevation = 1191.9.

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/09/12

Item 113: Scour Critical Bridges: Code I/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

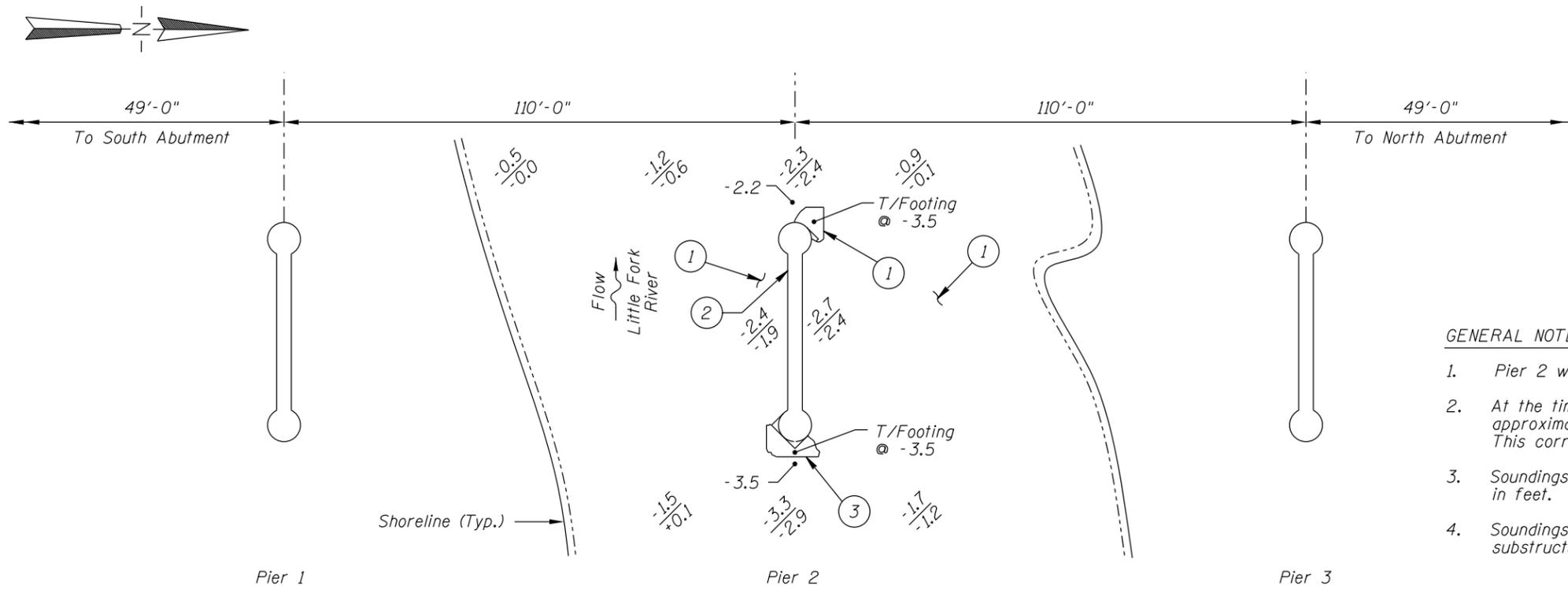
Item #	Element Description	Quantity	Unit	Conditions				
				1	2	3	4	5
205	Reinforced Concrete Column	2	EA	2	0	0	0	n/a
220	Concrete Footing	2	EA	2	0	0	0	n/a
985	Slopes & Slope Protection	1	EA	1	0	0	n/a	n/a



Photograph 1. Overall View, Looking Southeast.



Photograph 2. Pier 2, Looking Southeast.



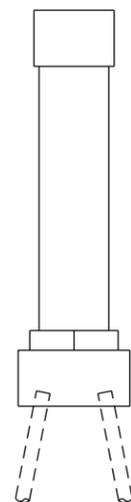
SOUNDING PLAN

GENERAL NOTES:

1. Pier 2 was inspected underwater at this bridge.
2. At the time of inspection on September 17, 2012, the waterline was located approximately 24.9 feet below the top of cap on the upstream end of Pier 2. This corresponds to a waterline elevation of 1191.9.
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 a firm, sandy gravel and riprap up to 1 foot in diameter with up to 1 inch probe rod penetration.
- ② A band of minor scaling 1 foot high was located at waterline with 1/4 inch maximum penetration.
- ③ The footing was exposed at both noses of the pier approximately as shown. The exposure was primarily only the top of the footing with no vertical exposure.



TYPICAL END VIEW OF PIERS

Legend

- 2.0 Sounding Depth (9/17/12)
- 1.0 Sounding Depth (8/25/07)

Note:

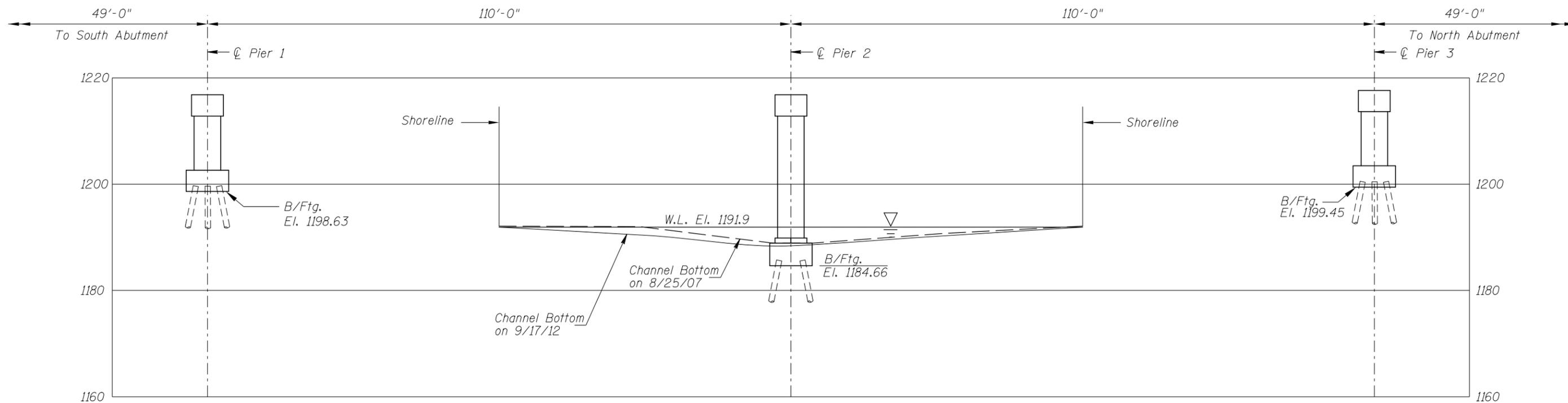
All soundings based on 2012 waterline location.

**MINNESOTA
DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION**

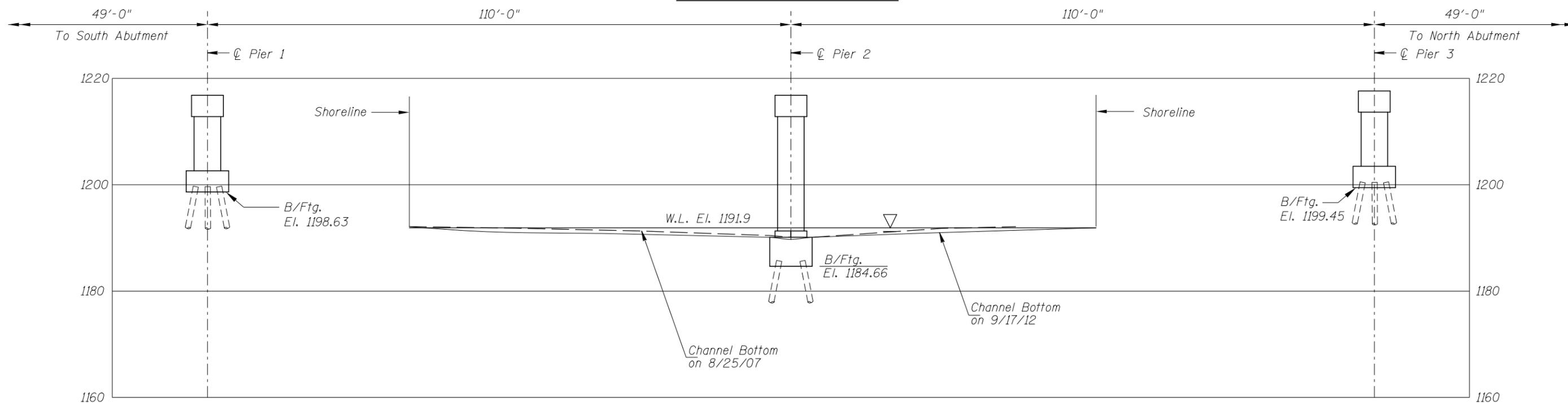
STRUCTURE NO. 36517
CSAH 75 OVER THE LITTLE FORK RIVER
KOOCHICHING COUNTY

INSPECTION AND SOUNDING PLAN

Drawn By: MBP	COLLINS ENGINEERS <small>123 North Wacker Drive Suite 900 Chicago, IL 60606 (312) 704-9300 www.collinsengr.com</small>	Date: OCTOBER, 2012
Checked By: LJ		Scale: NTS
Code: 742336517		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. 36517 CSAH 75 OVER THE LITTLE FORK RIVER KOOCHICHING COUNTY		
UPSTREAM AND DOWNSTREAM FASCIA PROFILES		
Drawn By: MBP	COLLINS ENGINEERS	Date: OCTOBER, 2012
Checked By: LJ		Scale: 1"=20'
Code: 742336517		Figure No.: 2

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

INSPECTORS: Collins Engineers, Inc. DATE: September 17, 2012

ON-SITE TEAM LEADER: Nicholas R. Triandafilou, P.E.

BRIDGE NO: 36517 WEATHER: Sunny, 50°F

WATERWAY CROSSED: Little Fork River

DIVING OPERATION: SCUBA SURFACE SUPPLIED AIR
OTHER

PERSONNEL: Marc B. Parker, Clayton G. Brookins

EQUIPMENT: Commercial Scuba, Hand Tools, Probe Rod, Camera

TIME IN WATER: 1:00 P.M.

TIME OUT OF WATER: 1:30 P.M.

WATERWAY DATA: VELOCITY < 0.5 f.p.s

VISIBILITY 2.0 feet

DEPTH 3.5 feet maximum at Pier 2

ELEMENTS INSPECTED: Pier 2

REMARKS: Overall, Pier 2, was found to be in good condition below water with no defects of structural significance. The channel bottom around Pier 2 was firm and appeared stable with no significant changes since the last inspection. The top of the footing was exposed at both the upstream and downstream noses of the pier with no observed vertical exposure.

FURTHER ACTION NEEDED: YES NO

Footing exposures at Pier 2 should be monitored during future inspections.

Reinspect the submerged substructure units 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. 36517
 INSPECTORS Collins Engineers, Inc.
 ON-SITE TEAM LEADER Nicholas R. Triandafilou, P.E.
 WATERWAY CROSSED Little Fork River

INSPECTION DATE September 17, 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 2	3.5'	N	7	7	8	N	7	7	8	8	N	7	7	N	N	N	N	N

*UNDERWATER PORTION ONLY

REMARKS: Overall, Pier 2, was found to be in good condition below water with no defects of structural significance. The channel bottom around Pier 2 was firm and appeared stable with no significant changes since the last inspection. The top of the footing was exposed at both the upstream and downstream noses of the pier with no observed vertical exposure.

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.