

UNDERWATER BRIDGE INSPECTION REPORT

STRUCTURE NO. 30508

CSAH NO. 10

OVER THE

RUM RIVER

DISTRICT 3 - ISANTI COUNTY



JULY 27, 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. 30508, Piers 1 and 2, were found to be in good and sound condition, similar to the findings of the last inspection, with no defects of structural significance. The channel bottom around both piers appeared stable with no significant scour and no exposed footings and with an overall configuration essentially the same as was found during the previous inspection.

INSPECTION FINDINGS:

- (A) Overall, the submerged concrete of Piers 1 and 2 was in good and sound condition with light scaling having 1/8 inch typical penetrations from 2 feet below the waterline to the channel bottom
- (B) A light accumulation of timber debris was observed at the upstream nose of Pier 2 consisting of branches of 6 inches in diameter and smaller. The debris extended 8 feet around the entire nose of the pier and stretched from the channel bottom up 2 feet.

RECOMMENDATIONS:

- (A) Monitor the timber debris accumulation at both piers, in particular at Pier 2, during future inspections, and if found to be increasing to a more detrimental extent, removal operations may become warranted at that time.

- (B) Reinspect all substructure units underwater within the normal maximum (NBIS) interval of sixty (60) months.

WSB and Associates



Barritt Lovelace
Registered Professional Engineer
Bridge Safety Inspection Team Leader

Respectfully submitted,

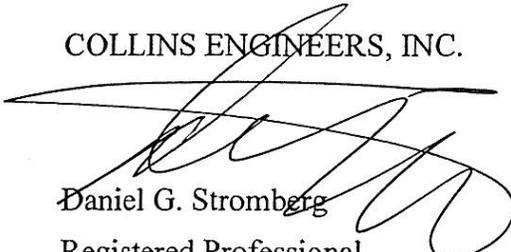
PROFESSIONAL ENGINEER

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: 30508

Feature Crossed: Rum River

Feature Carried: CSAH No. 10

Location: District 1 - Isanti County

Bridge Description: The bridge superstructure consists of three continuous, multiple steel beam spans supported by two concrete piers and two concrete abutments. Both the piers and abutments are founded on timber piles. The piers are numbered 1 and 2 starting from the east end of the bridge.

2. INSPECTION DATA

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

Dive Team: Brad Robinson (WSB), John Loftus (Collins)

Date: July 27, 2012

Weather Conditions: Sunny, 70° F

Underwater Visibility: 1.0 foot

Waterway Velocity: 2.0 ft/sec

3. SUBSTRUCTURE INSPECTION DATA

Substructure Inspected: Piers 1 and 2.

General Shape: Each pier consists of a rectangular shaft with rounded ends which rests upon a rectangular footing supported on timber piles.

Maximum Water Depth at Substructure Inspected: Approximately 8.2 feet.

4. WATERLINE DATUM

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

Water Surface: The waterline was approximately 20.5 feet below reference.
Water Elevation = 894.4.

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/07/12

Item 113: Scour Critical Bridges: Code O/96

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 | Concrete Pier Wall | 36 | LF | 36 | | | | |
| 361 | Scour Smart Flag | 1 | EA | 1 | | | | |
| 985 | Slopes and Slope Protection | 1 | EA | | 1 | | | |



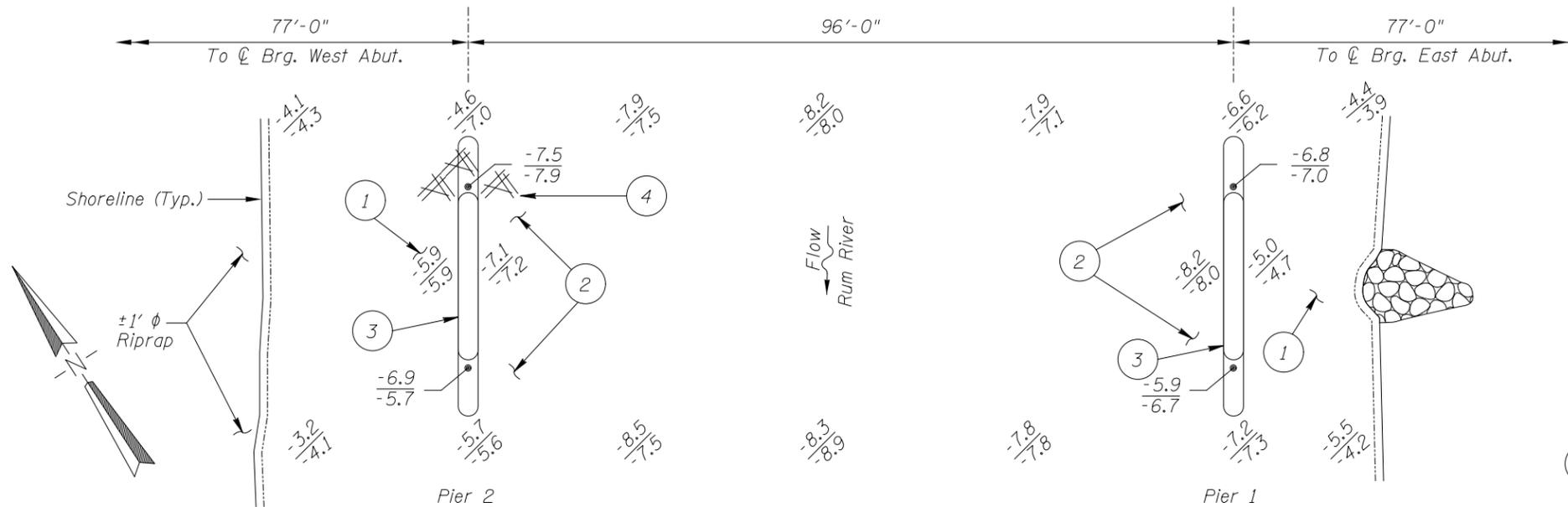
Photograph 1. Overall View of the Structure, Looking South.



Photograph 2. View of Pier 1, Looking East.



Photograph 3. View of Pier 2, Looking West.



SOUNDING PLAN

GENERAL NOTES:

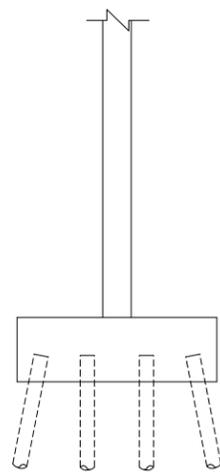
1. Piers 1 and 2 were inspected underwater.
2. At the time of inspection on July 27, 2012, the waterline was located approximately 20.5 feet below the top of pier cap at the upstream end of Pier 2. This corresponds to a waterline elevation of 894.4 based on the previous report on October 17, 2007.
3. 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 consisted of 8- to 12-inch-diameter riprap and sand, with no appreciable probe rod penetration.
- ② The channel bottom consisted of firm sandy gravel with probe rod penetrations of 2 to 3 inches.
- ③ The concrete surface was in smooth and sound condition with light scaling from 2 feet below the waterline to channel bottom with up to 1/8 inch of penetration.
- ④ Light timber debris accumulation, consisting of branches 6 inch diameter and smaller, was located at the upstream nose extending from channel bottom up 2 feet.

Note: _____

All soundings based on 2012 waterline location.



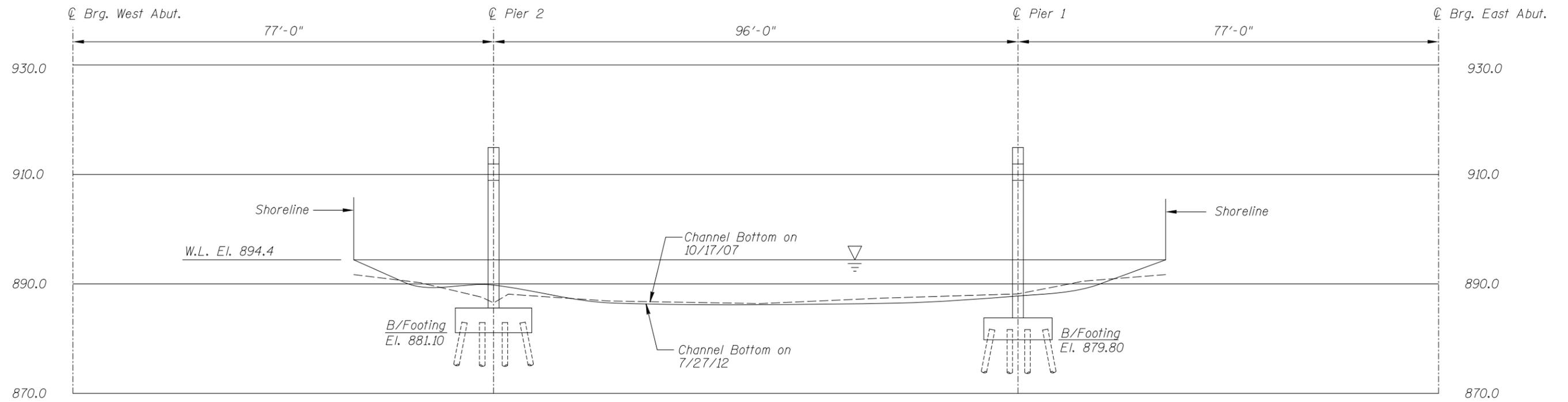
TYPICAL END VIEW OF PIERS

Legend

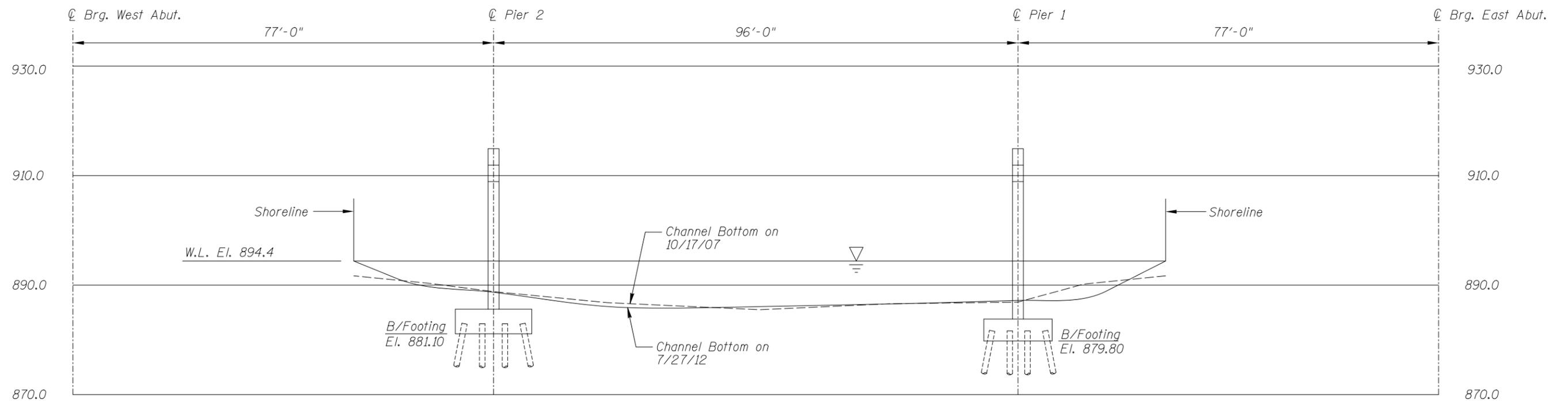
- 7.0 Sounding Depth (7/27/12)
- 6.0 Sounding Depth (10/17/07)
- Timber Debris
- Scour Depression
- ±1' Diameter Riprap

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|--|---|-----------------|
| MINNESOTA DEPARTMENT OF TRANSPORTATION UNDERWATER BRIDGE INSPECTION | | |
| STRUCTURE NO. 30508 OVER THE RUM RIVER DISTRICT 3, ISANTI COUNTY | | |
| INSPECTION AND SOUNDING PLAN | | |
| Drawn By: BJR | COLLINS ENGINEERS 123 North Wacker Drive Suite 300 Chicago, IL 60606 (312) 704-9300 www.collinsengr.com | Date: JULY 2012 |
| Checked By: BRL | | Scale: NTS |
| Code: 52210077 | | Figure No.: I |



UPSTREAM FASCIA PROFILE



DOWNSTREAM FASCIA PROFILE

Note:
Refer to Figure 1 for General Notes.



| | | |
|--|------------------------------|-----------------|
| MINNESOTA DEPARTMENT OF TRANSPORTATION UNDERWATER BRIDGE INSPECTION | | |
| STRUCTURE NO. 30508 OVER THE RUM RIVER DISTRICT 3, ISANTI COUNTY | | |
| UPSTREAM AND DOWNSTREAM FASCIA PROFILES | | |
| Drawn By: BJR | COLLINS ENGINEERS | Date: JULY 2012 |
| Checked By: BRL | | Scale: 1"=20' |
| Code: 52210077 | | Figure No.: 2 |

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

INSPECTORS: WSB & Associates and Collins DATE: July 27, 2012

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

BRIDGE NO: 30508 WEATHER: Sunny, 70°F

WATERWAY CROSSED: Rum River

DIVING OPERATION: SCUBA SURFACE SUPPLIED AIR
OTHER

PERSONNEL: Brad Robinson (WSB), John Loftus (Collins)

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

TIME IN WATER: 14:45

TIME OUT OF WATER: 15:35

WATERWAY DATA: VELOCITY 2 ft/sec.

VISIBILITY 1.0 foot

DEPTH 8.2 feet maximum at Pier 1

ELEMENTS INSPECTED: Piers 1 and 2

REMARKS: Overall, the submerged concrete of Piers 1 and 2 was in good and sound
condition with light scaling 1/8 inch typical penetrations from 2 feet below waterline to
channel bottom. The channel bottom around both piers appeared stable and the overall
configuration was comparable to the last inspection findings.

FURTHER ACTION NEEDED: YES NO

Monitor the timber debris accumulation at both piers, in particular at Pier 2, during future inspections, and if found to be increasing to a more detrimental extent, removal operations may become warranted at that time.

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. 30508
 INSPECTORS WSB & Associates, Inc. and Collins Engineers, Inc.
 ON-SITE TEAM LEADER Barritt Lovelace, P.E.
 WATERWAY CROSSED Rum River

INSPECTION DATE July 27, 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 | 8.2' | N | 7 | N | 8 | N | 7 | 8 | 7 | 7 | N | 7 | 7 | N | N | N | N | N |
| | Pier 2 | 7.5' | N | 7 | N | 8 | N | 7 | 7 | 7 | 7 | N | 7 | 7 | N | N | N | N | N |
| | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | |

*UNDERWATER PORTION ONLY

REMARKS: Overall, the submerged concrete of Piers 1 and 2 was in good and sound condition with light scaling 1/8 inch typical penetrations from 2 feet below waterline to channel bottom. The channel bottom around both piers appeared stable and the overall configuration was comparable to the last inspection findings.

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.