

UNDERWATER BRIDGE INSPECTION REPORT

STRUCTURE NO. 36523
CSAH NO. 18
OVER THE
EAST FORK OF THE RAPID RIVER
DISTRICT 1 - KOOCHICHING COUNTY



PREPARED FOR THE
MINNESOTA DEPARTMENT OF TRANSPORTATION

BY
COLLINS ENGINEERS, INC.

JOB NO. 3512

MINNESOTA DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

REPORT SUMMARY:

The substructure units inspected at Bridge No. 36523, Piers 1 and 2, were found to be in good condition with no defects of structural significance observed. At the time of the inspection, the channel bottom appeared stable with no significant scour.

INSPECTION FINDINGS:

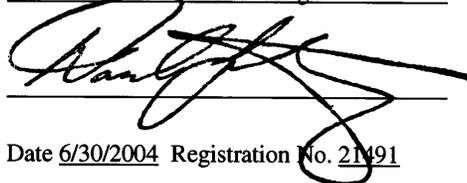
- (A) The outer coating on the steel encased concrete piles exhibited signs of initial breakdown, but no corrosion was observed.
- (B) Two 1.5-foot-diameter tree trunks were observed along the west side of Pier 1 and a light accumulation of 6-inch-diameter timber debris was observed scattered throughout the piles of both Piers 1 and 2.

RECOMMENDATIONS:

- (A) Reinspect all substructure units underwater within the normal maximum (NBIS) interval of five (5) years. Monitor the drift accumulations and if found to be increasing in future, removal may be warranted at that time.

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.

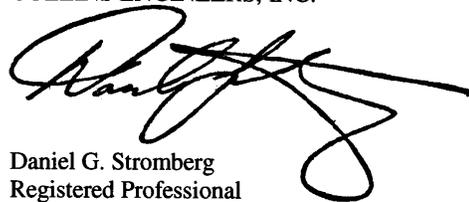
Daniel G. Stromberg



Date 6/30/2004 Registration No. 21491

Respectfully submitted,

COLLINS ENGINEERS, INC.



Daniel G. Stromberg
Registered Professional
Engineer, State of Minnesota

MINNESOTA DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

1. BRIDGE DATA

Bridge Number: 36523

Feature Crossed: The East Fork of the Rapid River

Feature Carried: CSAH No. 18

Location: District 1 - Koochiching County

Bridge Description: The superstructure consists of three spans of multiple prestressed concrete beams. The superstructure is supported by two reinforced concrete abutments founded on piles and two steel encased concrete pile piers. The piers are numbered 1 and 2 starting from the west end of the bridge.

2. INSPECTION DATA

Professional Engineer Diver: Daniel G. Stromberg, P.E.
State of Minnesota, P.E., No. 21491

Dive Team: Michelle D. Koerbel, Matt J. Lengyel

Date: August 25, 2002

Weather Conditions: Sunny, " 65EF

Underwater Visibility: " 2.0 Foot

Waterway Velocity: " 1 f.p.s.

3. SUBSTRUCTURE INSPECTION DATA

Substructure Inspected: Piers 1 and 2.

General Shape: Piers 1 and 2 consist of a single line of seven steel encased concrete piles (concrete filled pipe piles) supporting a reinforced concrete cap.

Maximum Water Depth at Substructure Inspected: Approximately 4.0 Feet.

4. WATERLINE DATUM

Water Level Reference: The top of the pier cap at the downstream end of Pier 1.

Water Surface: The waterline was approximately 9.4 feet below reference.
Assumed Water Elevation = 90.6.

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

Item 60: Substructure: Code 8

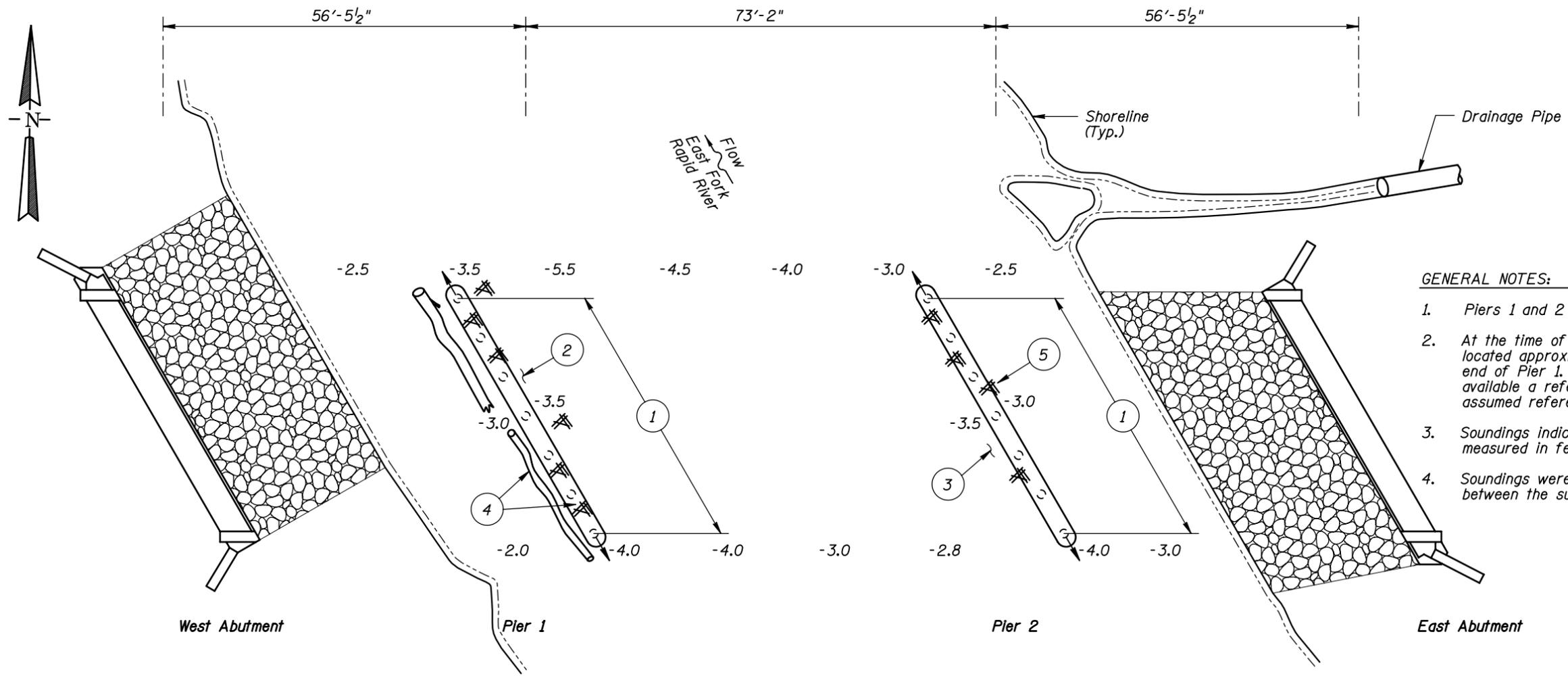
Item 61: Channel and Channel Protection: Code 7

Item 92B: Underwater Inspection: Code B/08/02

Item 113: Scour Critical Bridges: I/02

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

Yes No



GENERAL NOTES:

1. Piers 1 and 2 were inspected underwater.
2. At the time of inspection on August 25, 2002, the waterline was located approximately 9.4 feet below the top of pier cap at downstream end of Pier 1. Since insufficient bridge elevation information was available a reference elevation of 100.0 was assumed. Based on the assumed reference the waterline elevation was 90.6.
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.

SOUNDING PLAN

INSPECTION NOTES:

- 1 The coating on the steel encased concrete piles (concrete filled pipe piles) exhibited initial signs of breakdown but no corrosion was observed.
- 2 The channel bottom at Pier 1 consisted of soft silt with a maximum probe rod penetration of 1 foot and occasional riprap.
- 3 The channel bottom at Pier 2 consisted of soft silt with a maximum probe rod penetration of 6 inches.
- 4 Two 1.5-foot-diameter tree trunks were observed along the west side of the pier and a light accumulation of 6-inch-diameter timber debris was observed scattered throughout the piles.
- 5 A light accumulation of 6-inch-diameter timber debris was observed scattered throughout the piles.

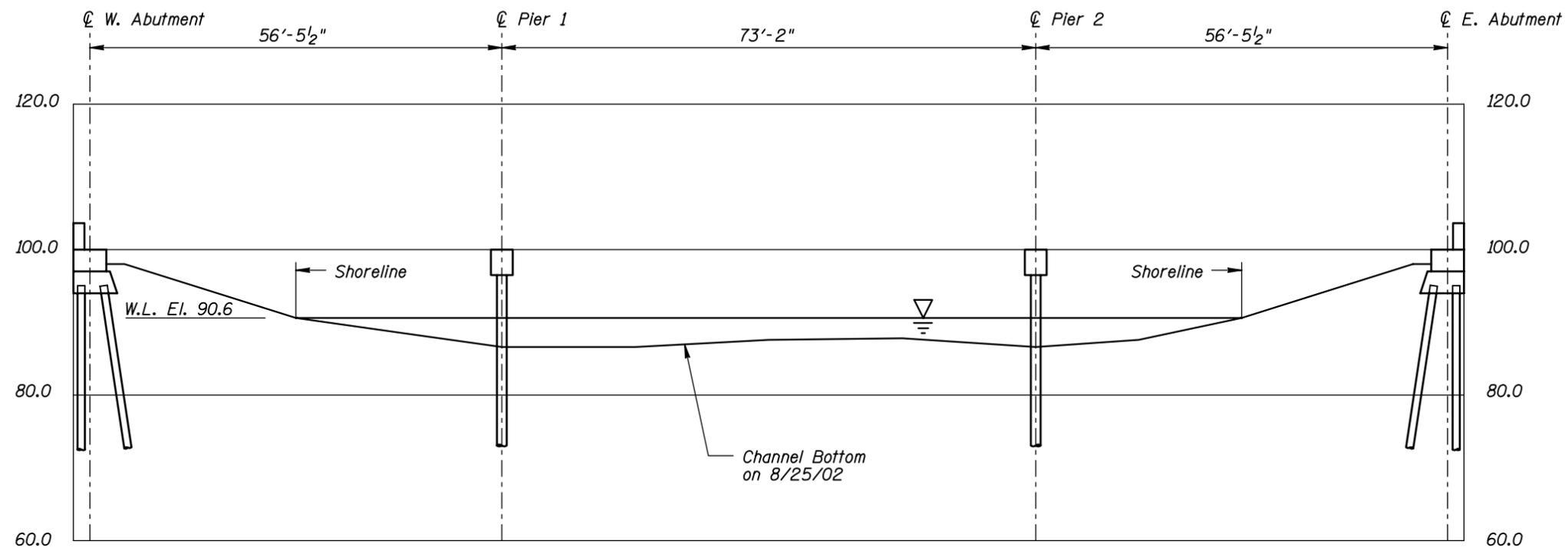


TYPICAL END VIEW OF PIERS

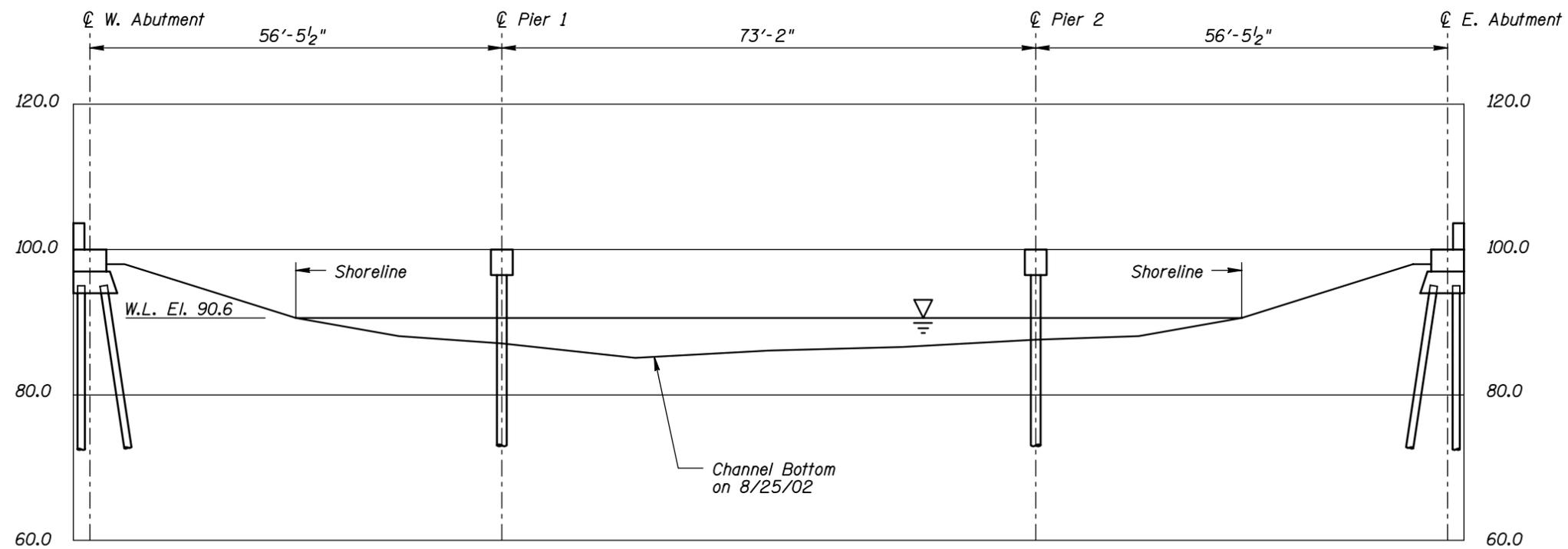
Legend

- 2.0 Sounding Depth from Waterline (8/25/02)
- 16" Diameter Steel Encased Concrete Pile
- 16" Diameter Steel Encased Concrete Pile (with arrow) Battered 16" Diameter Steel Encased Concrete Pile
- Riprap

| | | |
|--|--|-----------------|
| MINNESOTA DEPARTMENT OF TRANSPORTATION UNDERWATER BRIDGE INSPECTION | | |
| STRUCTURE NO. 36523 OVER THE EAST FORK OF THE RAPID RIVER DISTRICT 1, KOOCHICHING COUNTY | | |
| INSPECTION AND SOUNDING PLAN | | |
| Drawn By: PRH | COLLINS ENGINEERS, INC. | Date: AUG. 2002 |
| Checked By: MDK | 300 W. WASHINGTON, STE. 600 CHICAGO, ILLINOIS 60606 (312) 704-9300 | Scale: NTS |
| Code: 351236523 | | 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. 36523 OVER THE EAST FORK OF THE RAPID RIVER DISTRICT 1, KOOSKICHING COUNTY | | |
| UPSTREAM AND DOWNSTREAM FASCIA PROFILES | | |
| Drawn By: PRH |  COLLINS ENGINEERS, INC. 300 W. WASHINGTON, STE. 600 CHICAGO, ILLINOIS 60606 (312) 704-9300 | Date: AUG. 2002 |
| Checked By: MDK | | Scale: 1"=20' |
| Code: 351236523 | | Figure No.: 2 |



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



Photograph 2. View of Pier 1, Looking Southeast.



Photograph 3. View of Pier 2, Looking Southeast.

MINNESOTA DEPARTMENT OF TRANSPORTATION
OFFICE OF BRIDGES AND STRUCTURES

UNDERWATER INSPECTION CONDITION RATING FORM

BRIDGE NO. 36523
INSPECTORS Collins Engineers, Inc.
ON-SITE TEAM LEADER Daniel G. Stromberg, P.E. 21491
WATERWAY CROSSED The East Fork of the Rapid River

INSPECTION DATE August 25, 2002

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 | 3.5' | 8 | N | N | 9 | N | 8 | 8 | N | 8 | 7 | 7 | N | 8 | N | N | N | N |
| | Pier 2 | 3.5' | 8 | N | N | 9 | N | 8 | 8 | N | 8 | 7 | 7 | N | 8 | N | N | N | N |
| | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | |

*UNDERWATER PORTION ONLY

REMARKS: Overall, the steel encased concrete piles were in good condition with no defects of structural significance observed. However, the outer coating on the piles exhibited signs of initial breakdown, but no corrosion was observed. Two 1.5-foot-diameter tree trunks were observed along the west side of Pier 1 and a light accumulation of 6-inch-diameter timber debris was observed scattered throughout the piles of both Piers 1 and 2.

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.