

UNDERWATER BRIDGE INSPECTION REPORT

STRUCTURE NO. 69594

CSAH 48

OVER

FISH LAKE

ST. LOUIS COUNTY



JUNE 18, 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 units inspected at Bridge No. 69594, Bents 1 and 2, were found to be in good condition with minimal deterioration. Coating loss on 50 percent of the steel surface was noted on all piles extending from the channel bottom to 1 foot below the waterline. A band of nodular corrosion was observed 3 feet below the waterline on approximately 20 percent of the steel surface. The channel bottom appeared to be stable with no evidence of significant scour.

INSPECTION FINDINGS:

- (A) The channel bottom material as well as the shorelines consisted of up to 2 foot diameter riprap.
- (B) Rust nodules, typically 1/4 inch in diameter and minimal pitting, were observed on 20 percent of the steel surface extending from 1 to 3 feet below the waterline.
- (C) Coating loss was observed on approximately 50 percent of the surface area of all piles extending from the channel bottom to 1 foot below the waterline.

RECOMMENDATIONS:

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

Inspection Team Leader:
Daniel G. Stromberg, P.E.

Respectfully submitted,

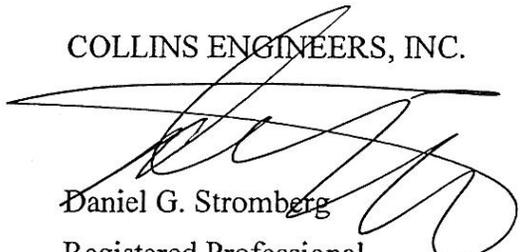
PROFESSIONAL ENGINEER

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: 69594

Feature Crossed: Fish Lake

Feature Carried: CSAH 48

Location: District 1 – St. Louis County

Bridge Description: The superstructure consists of a three span concrete slab. The superstructure is supported by two concrete abutments and two bents consisting of a concrete bent cap and eight 16 inch diameter steel pipe piles.

2. INSPECTION DATA

Professional Engineer Diver: Daniel G. Stromberg, P.E.

Dive Team: Clayton Brookins, Breanne Stromberg

Date: June 18, 2012

Weather Conditions: Sunny, 80° F

Underwater Visibility: 3 feet

Waterway Velocity: None / Negligible

3. SUBSTRUCTURE INSPECTION DATA

Substructure Inspected: Bents 1 and 2

General Shape: Bents 1 and 2 consist of a single line of eight 16-inch-diameter steel pipe piles supporting a concrete cap.

Maximum Water Depth at Substructure Inspected: Approximately 7.6 feet.

4. WATERLINE DATUM

Water Level Reference: Top of bent cap at the west end of Bent 1.

Water Surface: The waterline was approximately 6.4 feet below the reference.
Waterline 93.6.

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 8

Item 92B: Underwater Inspection: Code B/06/12

Item 113: Scour Critical Bridges: Code I

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
419	Painted Steel Piles	16	EA		16			
985	Slope and Slope Protection	2	EA	2				



Photograph 1. View of West Fascia, Looking Northeast.



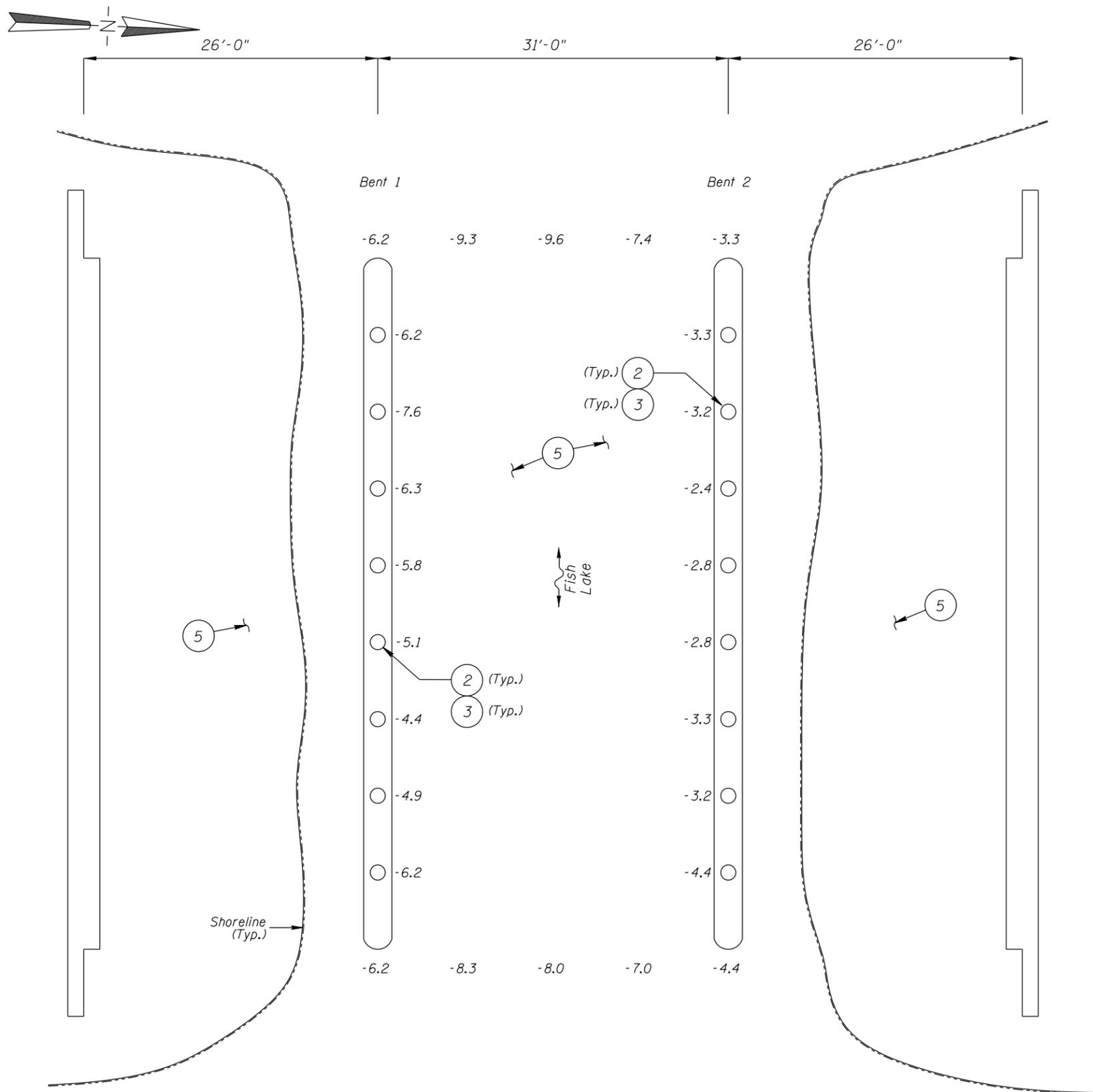
Photograph 2. View of East Fascia, Looking Northwest.



Photograph 3. View of Bent 1, Looking Northeast.



Photograph 4. View of Bent 2, Looking Southeast.



INSPECTION NOTES:

- ① Channel material as well as the shorelines consisted of up to 2 foot diameter riprap.
- ② All piles typically exhibited minor corrosion, consisting of 1/4 inch diameter rust nodules with minimal pitting, extending from 1 to 3 feet below the waterline. Nodular corrosion was present on approximately 20 percent of the surface within the specified location.
- ③ Coating loss was observed on approximately 50 percent of the surface area from 1 foot below the waterline to the channel bottom.

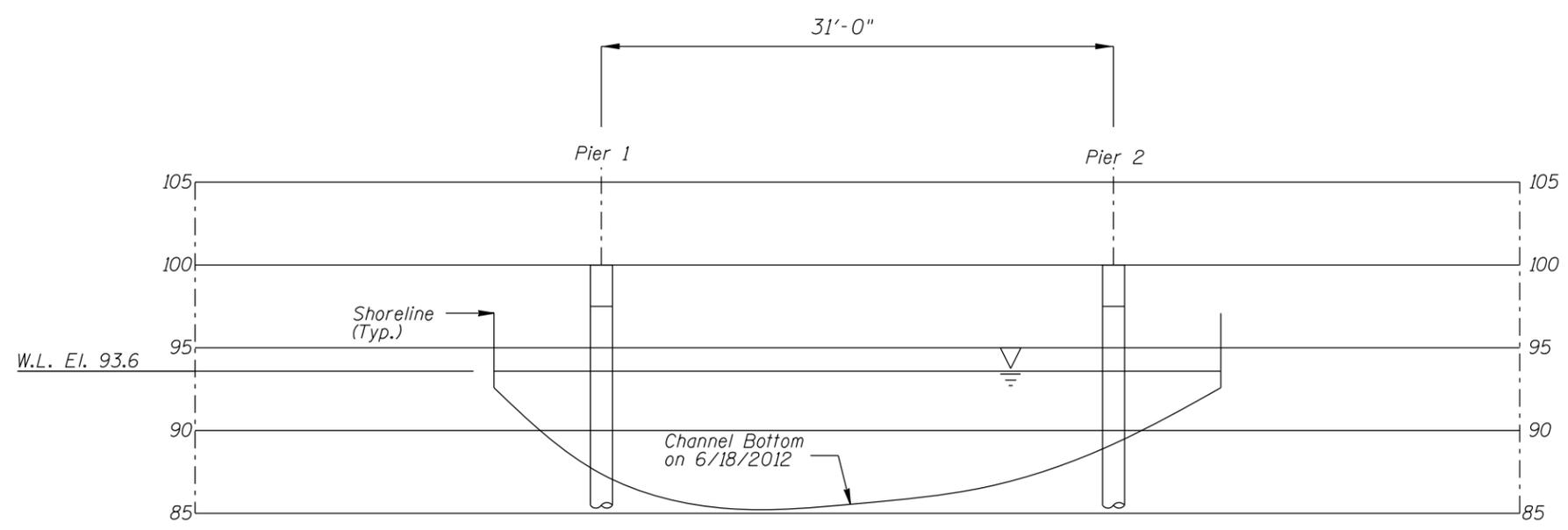
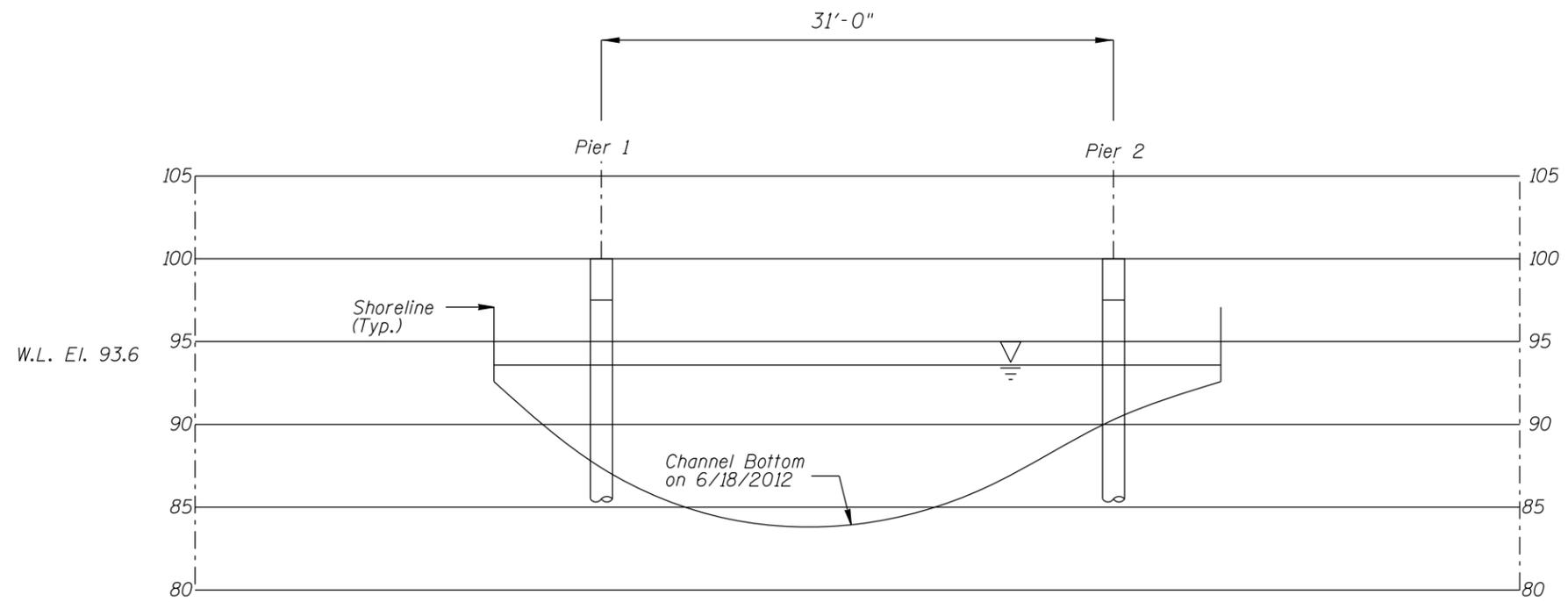
GENERAL NOTES:

1. The Bent 1 and Bent 2 were inspected underwater.
2. At the time of inspection, on June 18, 2012, the waterline was located approximately 6.4 feet below the top of the bent cap at the west end of Bent 1. Due to lack of design plan information, the reference elevation was assumed to be 100.0 feet. This corresponds to waterline elevation of 93.6 feet.
3. Soundings indicate the water depth at the time of inspection and are measured in feet.
4. Soundings were taken parallel to north and south fascias at 1/4 point intervals.

Legend

-0.4 Sounding Depth (6/18/12)

MINNESOTA DEPARTMENT OF TRANSPORTATION UNDERWATER BRIDGE INSPECTION		
STRUCTURE NO. 69594 CSAH 48 OVER FISH LAKE ST LOUIS COUNTY		
INSPECTION AND SOUNDING PLAN		
Drawn By: BMS	COLLINS ENGINEERS <small>123 North Wacker Drive Suite 900 Chicago, IL 60606 (312) 704-9300 www.collinsengr.com</small>	Date: JULY 2012
Checked By: LJ		Scale: NTS
Code: 742369594		Figure No.: I



Note:
 Refer to Figure 1 for General Notes.

MINNESOTA DEPARTMENT OF TRANSPORTATION UNDERWATER BRIDGE INSPECTION		
STRUCTURE NO. 69594 CSAH 48 OVER FISH LAKE ST LOUIS COUNTY		
UPSTREAM AND DOWNSTREAM FASCIA PROFILES		
Drawn By: BMS	COLLINS ENGINEERS <small>123 North Wacker Drive Suite 900 Chicago, IL 60606 (312) 704-9300 www.collinsengr.com</small>	Date: JULY 2012
Checked By: LJ		Scale: NTS
Code: 742369594		Figure No.: 2

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

INSPECTORS: Collins Engineers, Inc. DATE: June 18, 2012

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

BRIDGE NO: 69594 WEATHER: Sunny, 80° F

WATERWAY CROSSED: Fish Lake

DIVING OPERATION: SCUBA SURFACE SUPPLIED AIR
 OTHER

PERSONNEL: Clayton Brookins, Breanne Stromberg

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

TIME IN WATER: 5:45 p.m.

TIME OUT OF WATER: 7:00 p.m.

WATERWAY DATA: VELOCITY None / Negligible

VISIBILITY 3 feet

DEPTH 7.6 feet maximum at Bent 1

ELEMENTS INSPECTED: Bents 1 and 2

REMARKS: Overall, Bents 1 and 2 were found to be in good condition with minimal deterioration. Coating loss on 50 percent of the steel surface was noted on all piles extending from the channel bottom to 1 foot below the waterline. A band of nodular corrosion was observed from 1 to 3 feet below the waterline on approximately 20 percent of the steel surface. The channel bottom appeared to be stable as well as armored with no evidence of significant scour.

FURTHER ACTION NEEDED: YES NO

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. 69594
 INSPECTORS Collins Engineers, Inc.
 ON-SITE TEAM LEADER Daniel G. Stromberg, P.E.
 WATERWAY CROSSED Fish Lake

INSPECTION DATE June 18, 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 (BRACING)	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
	Bent 1	7.6'	7	N	N	N	N	7	N	8	8	N	8	N	7	N	8	N	N
	Bent 2	4.4'	7	N	N	N	N	7	N	8	8	N	8	N	7	N	8	N	N

*UNDERWATER PORTION ONLY

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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.