

UNDERWATER BRIDGE INSPECTION REPORT

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STRUCTURE NO. 73510

CSAH NO. 64

OVER THE

SAUK RIVER

DISTRICT 3 - STEARNS COUNTY

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PREPARED FOR THE  
MINNESOTA DEPARTMENT OF TRANSPORTATION

BY  
COLLINS ENGINEERS, INC.

JOB NO. 5221 (CEI 88)

MINNESOTA DEPARTMENT OF TRANSPORTATION  
UNDERWATER BRIDGE INSPECTION

REPORT SUMMARY:

The substructure units inspected at Bridge No. 73510, Piers 1 and 2, were generally in good condition. The steel H-piles, as noted in the previous inspection, exhibited light surface corrosion and pitting, but no significant section loss or defects of structural significance were observed. The channel bottom appeared stable with no evidence of significant scour or appreciable changes since the previous inspection.

INSPECTION FINDINGS:

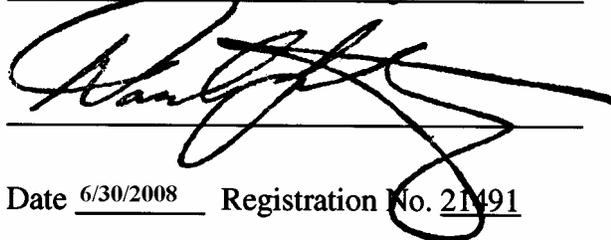
- (A) All steel H-piles of both piers exhibited light surface corrosion and pitting on 100 percent of the surface area from 1.5 feet above the waterline to the channel bottom, with rust nodules 1/2 inch in diameter and 1/32 inch deep pitting on 25 to 50 percent of the surface area from the waterline to 1.5 feet above the waterline. This corrosion was related to the coating failure on the steel H-piles.

RECOMMENDATIONS:

- (A) 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.

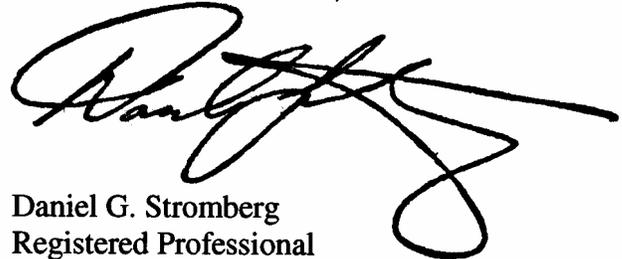
Daniel G. Stromberg



Date 6/30/2008 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: 73510

Feature Crossed: Sauk River

Feature Carried: CSAH No. 64 (Third Avenue West)

Location: District 3 - Stearns County

Bridge Description: The superstructure consists of three spans of multiple steel beams supporting a reinforced concrete deck. The superstructure is supported by two reinforced concrete abutments founded on steel H-piles and two steel H-pile bent piers. The piers are numbered 1 and 2 starting from the south end of the bridge.

2. INSPECTION DATA

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

Dive Team: Clayton G. Brookins, Valerie Roustan

Date: October 19, 2007

Weather Conditions: Partly Cloudy, 50 °F

Underwater Visibility: 1.5 feet

Waterway Velocity: 0.5 f.p.s

3. SUBSTRUCTURE INSPECTION DATA

Substructure Inspected: Piers 1 and 2.

General Shape: The piers consist of a single line of seven steel H-piles supporting a concrete pile cap.

Maximum Water Depth at Substructure Inspected: Approximately 8.6 feet.

4. WATERLINE DATUM

Water Level Reference: The top of the pier cap on the west end of Pier 1.

Water Surface: The waterline was approximately 6.2 feet below reference.  
Waterline Elevation = 1198.8.

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/10/07

Item 113: Scour Critical Bridges: Code I/95

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

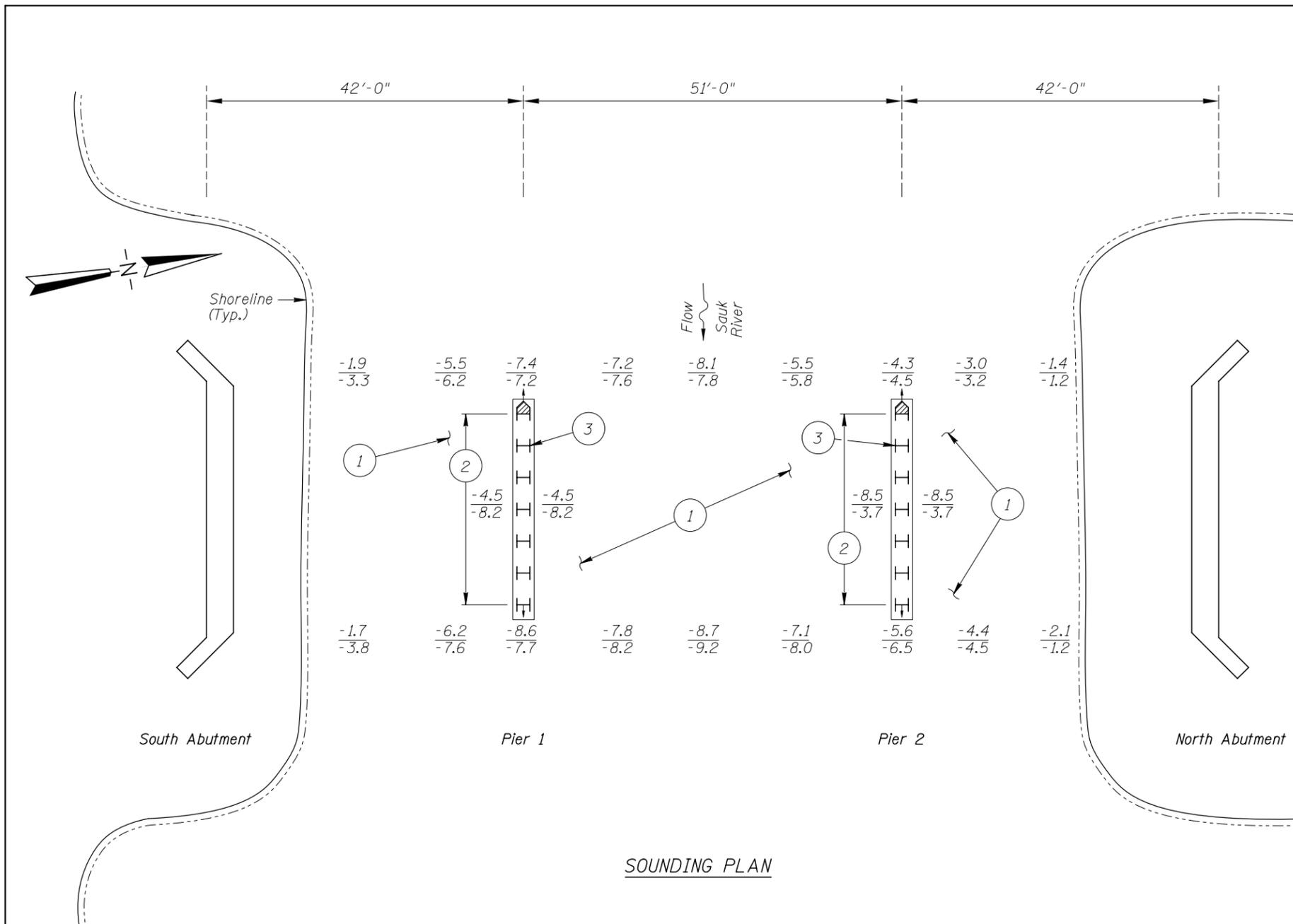
       Yes   X   No



Photograph 1. View of Pier 2, Looking Southeast.



Photograph 2. View of Pier 1, Looking Northeast.

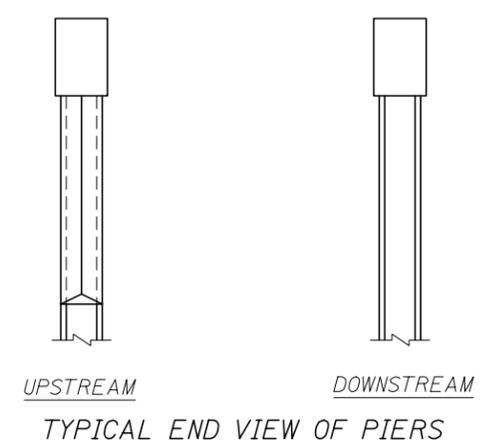


**GENERAL NOTES:**

1. Piers 1 and 2 were inspected underwater.
2. At the time of inspection on October 19, 2007, the waterline was located approximately 6.2 feet below the top of the pier cap at the upstream end of Pier 1. This corresponds with a waterline elevation of 1198.8.
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 sand and 1 to 1.5 foot diameter rock with minimal probe rod penetration.
- ② Minor surface corrosion and light pitting in conjunction with coating failure/absence was observed on 100 percent of the surface area of the piles from 1.5 foot above to the channel bottom, with nodules 1/2 inch in diameter and 1/32 inch deep pitting on 25 to 50 percent of the surface area from the waterline to 1.5 feet above. No appreciable section loss was associated with the deterioration.
- ③ Light aquatic growth was observed on all piles below the waterline.



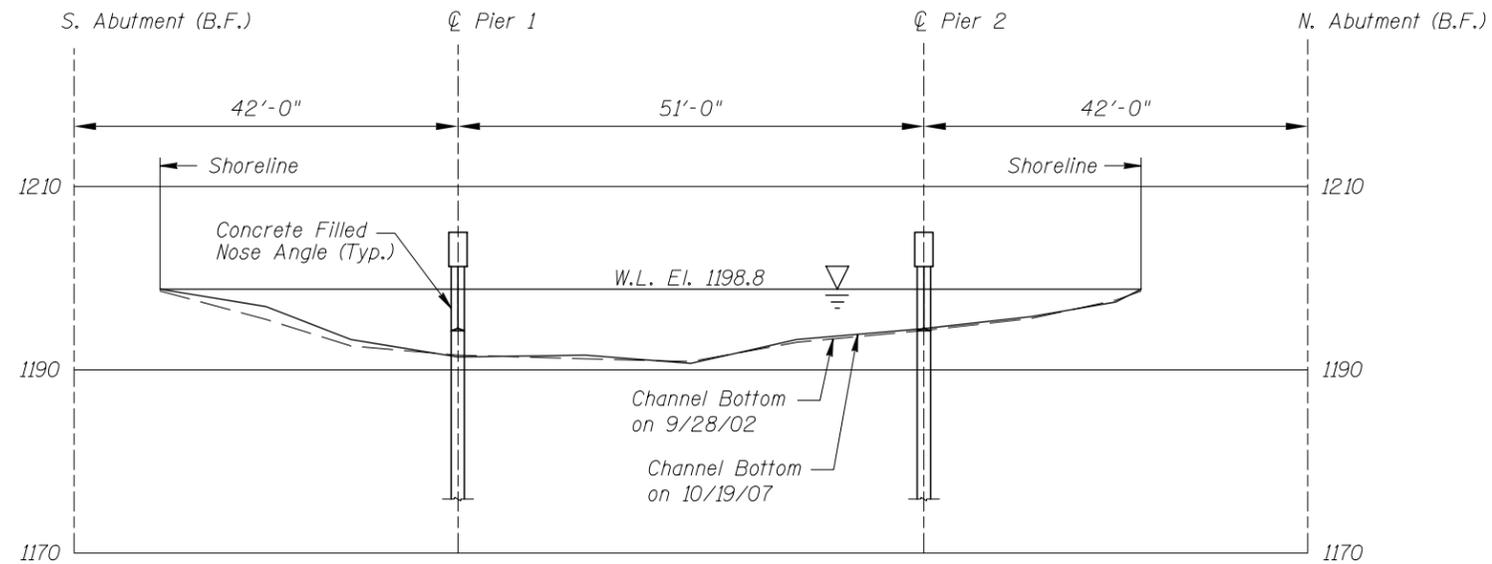
**Legend**

- 2.0 Sounding Depth (10/10/07)
- 5.2 Sounding Depth (9/28/02)
- H Steel H-Pile
- H Battered Steel H-Pile
- H Battered Steel H-Pile with Concrete Filled Nose Angle

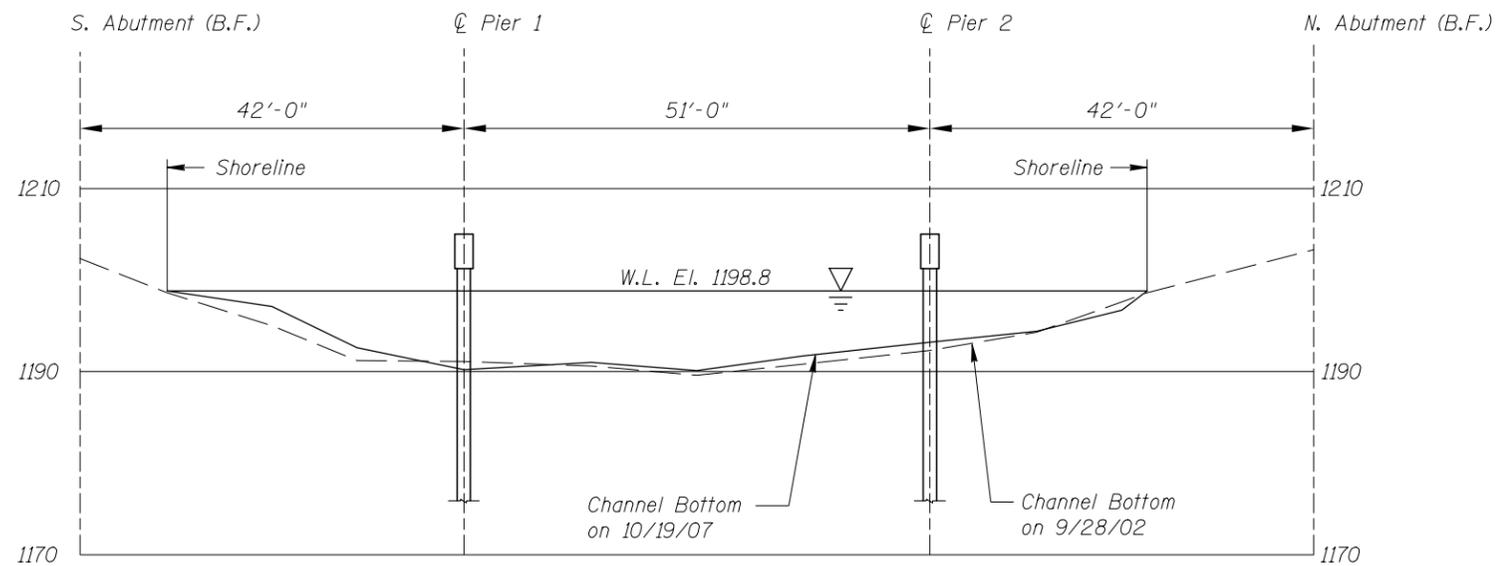
**Note:**

All soundings based on 2007 waterline location.

<b>MINNESOTA DEPARTMENT OF TRANSPORTATION UNDERWATER BRIDGE INSPECTION</b>		
STRUCTURE NO. 73510 OVER THE SAUK RIVER DISTRICT 3, STEARNS COUNTY		
<b>INSPECTION AND SOUNDING PLAN</b>		
Drawn By: PRH	<b>COLLINS ENGINEERS</b>	Date: OCT., 2007
Checked By: MDK	<small>133 North Wacker Drive Suite 300 Chicago, IL 60606 (312) 704-9300 www.collinsengr.com</small>	Scale: NTS
Code: 52210088		Figure No.: 1



UPSTREAM FASCIA PROFILE



DOWNSTREAM FASCIA PROFILE

Note:  
Refer to Figure 1 for General Notes.

<b>MINNESOTA DEPARTMENT OF TRANSPORTATION UNDERWATER BRIDGE INSPECTION</b>		
STRUCTURE NO. 73510 OVER THE SAUK RIVER DISTRICT 3, STEARNS COUNTY UPSTREAM AND DOWNSTREAM FASCIA PROFILES		
Drawn By: PRH	<b>COLLINS ENGINEERS</b> <small>133 North Wacker Drive Suite 300 Chicago, IL 60606 (312) 704-9300 www.collinsengr.com</small>	Date: OCT., 2007
Checked By: MDK		Scale: 1"=20'
Code: 52210088		Figure No.: 2

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

INSPECTORS: Collins Engineers, Inc. DATE: October 19, 2007

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

BRIDGE NO: 73510 WEATHER: Cloudy, 50 °F

WATERWAY CROSSED: Sauk River

DIVING OPERATION:  SCUBA  SURFACE SUPPLIED AIR  
 OTHER

PERSONNEL: Clayton G. Brookins, Valerie Roustan

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

TIME IN WATER: 5:45 P.M.

TIME OUT OF WATER: 6:15 P.M.

WATERWAY DATA: VELOCITY 0.5 fps

VISIBILITY 1.5 feet

DEPTH 8.6 feet maximum at Pier 1.

ELEMENTS INSPECTED: Piers 1 and 2

REMARKS: The steel H-piles were generally in good condition with light pitting and surface corrosion due to coating failure on 100 percent of the surface area from 1.5 feet above the waterline to the channel bottom, with nodules 1/2 inch in diameter and 1/32 inch deep pitting on 25 to 50 percent of the surface area from the waterline to 1.5 feet above the waterline. No appreciable section loss was associated with corrosion on the steel H-piles. The channel bottom appeared stable with no evidence of significant scour or appreciable changes since the last inspection.

FURTHER ACTION NEEDED:  YES  NO

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. 73510  
 INSPECTORS Collins Engineers, Inc.  
 ON-SITE TEAM LEADER Daniel G. Stromberg, P.E., S.E.  
 WATERWAY CROSSED Sauk River

INSPECTION DATE October 19, 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 (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	8.6'	7	N	N	9	N	7	8	8	8	N	8	N	7	N	7	N	N
	Pier 2	8.5'	7	N	N	9	N	7	8	8	8	N	8	N	7	N	7	N	N

\*UNDERWATER PORTION ONLY

REMARKS: The steel H-piles were generally in good condition with light pitting and surface corrosion due to coating failure on 100 percent of the surface area from 1.5 feet above the waterline to the channel bottom, with nodules 1/2 inch in diameter and 1/32 inch deep pitting on 25 to 50 percent of the surface area from the waterline to 1.5 feet above the waterline. No appreciable section loss was associated with corrosion on the steel H-piles. The channel bottom appeared stable with no evidence of significant scour or appreciable changes since the last inspection.

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.