

UNDERWATER BRIDGE INSPECTION REPORT

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STRUCTURE NO. 49528  
CSAH NO. 26  
OVER THE  
MISSISSIPPI RIVER  
DISTRICT 3 - MORRISON COUNTY

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PREPARED FOR THE  
MINNESOTA DEPARTMENT OF TRANSPORTATION  
BY  
COLLINS ENGINEERS, INC.  
JOB NO. 3512 (CEI 79)

MINNESOTA DEPARTMENT OF TRANSPORTATION  
UNDERWATER BRIDGE INSPECTION

REPORT SUMMARY:

The substructure units inspected at Bridge No. 49528, Piers 1 through 3, were found to be in good condition with no structurally significant defects observed. Minor deficiencies were observed and consisted of a poorly formed construction joint, an area of poorly consolidated concrete, and light scaling near the waterline. The channel bottom inspected around the substructure units appeared stable with no evidence of significant scour or appreciable changes since the previous inspection.

INSPECTION FINDINGS:

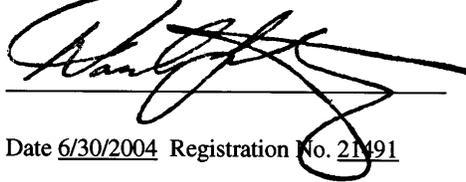
- (A) A poorly formed construction joint was observed at approximately 4 feet above the channel bottom at Pier 2. The upper portion of the joint overlapped the lower portion by 1/2 to 1 inch.
- (B) A random area of poorly consolidated concrete was observed at the downstream end of Pier 3, extending from 2 feet above the waterline to 1 foot below the waterline with a maximum penetration of 1/2 inch.
- (C) Light scaling of the concrete was observed from 2 feet above the waterline to 1 foot below the waterline with 1/8 inch of maximum penetration at each of the piers.
- (D) A 1-foot-diameter log was observed on the channel bottom along the west face of Pier 1.

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 6/30/2004 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: 49528

Feature Crossed: The Mississippi River

Feature Carried: CSAH No. 26

Location: District 3 - Morrison County

Bridge Description: The superstructure consists of four spans of continuous welded plate girders supporting a reinforced concrete deck. The superstructure is supported by three reinforced concrete piers and two reinforced concrete abutments. The piers and abutments are supported by steel H-plies. The piers are numbered 1 through 3 from the west.

2. INSPECTION DATA

Professional Engineer/Team Leader: Shirley M. Walker

Dive Team: Michelle D. Koerbel, Clayton G. Brookins

Date: September 27, 2002

Weather Conditions: Sunny, " 65EF

Underwater Visibility: " 2 Feet

Waterway Velocity: " 2 f.p.s.

3. SUBSTRUCTURE INSPECTION DATA

Substructure Inspected: Piers 1 through 3

General Shape: The piers consist of a reinforced concrete two column hammerhead pier supported by a rectangular footing founded on steel H-piles.

Maximum Water Depth at Substructure Inspected: Approximately 10 Feet.

4. WATERLINE DATUM

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

Water Surface: The waterline was approximately 16.8 feet below reference.  
Waterline Elevation = 1029.7.

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

Item 60: Substructure: Code 7

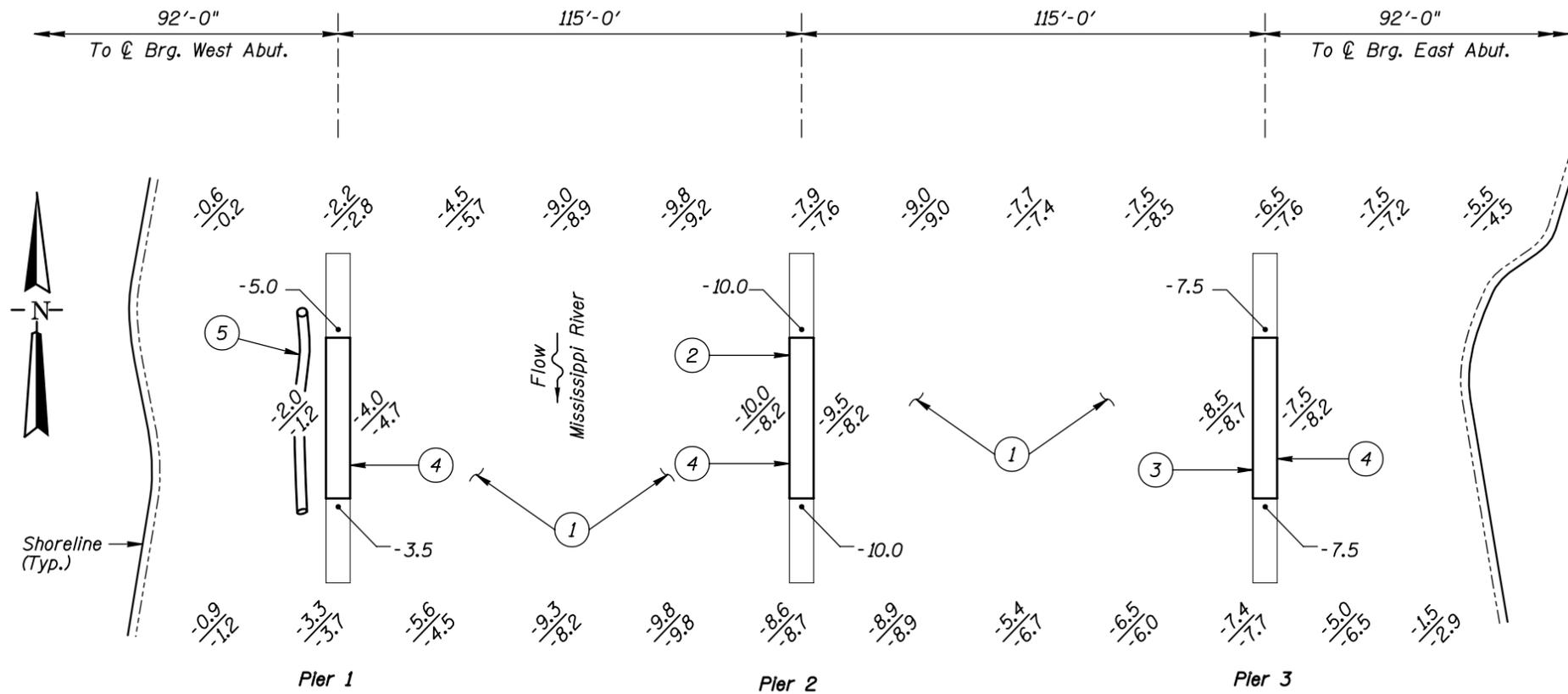
Item 61: Channel and Channel Protection: Code 8

Item 92B: Underwater Inspection: Code B/09/02

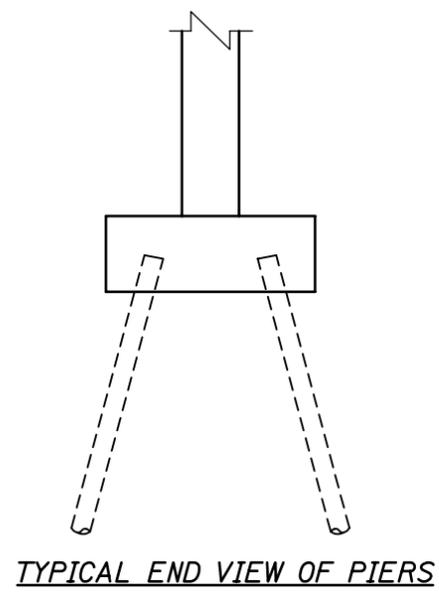
Item 113: Scour Critical Bridges: Code I/91

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

Yes  No



**SOUNDING PLAN**



**GENERAL NOTES:**

1. Piers 1 through 3 were inspected underwater.
2. At the time of inspection on September 27, 2002 the waterline was located approximately 16.8 feet below the top of the pier at the downstream end of Pier 1. This corresponds to a waterline elevation of 1029.7 based on the previous report dated September 4, 1997.
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.

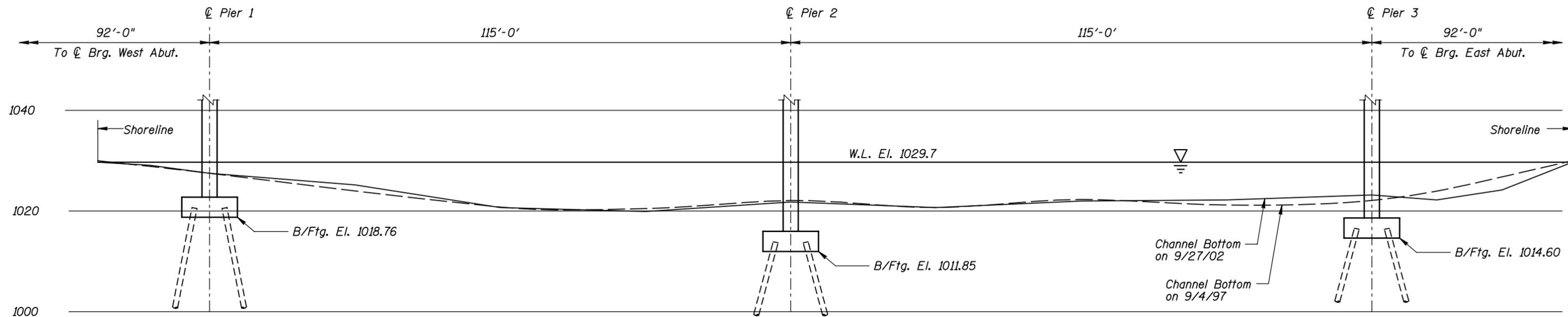
**INSPECTION NOTES:**

- ① The channel bottom material consisted of gravel and up to 12 inch diameter riprap with typically 1 inch of probe rod penetration.
- ② A poorly formed construction joint was observed with the upper portion overlapping the lower portion of the pier by 1/2 to 1 inch at approximately 4 feet above the channel bottom.
- ③ A random area of poorly consolidated concrete was observed from 2 above the waterline to 1 foot below the waterline with a maximum penetration of 1/2 inch.
- ④ Light scaling was observed on all substructure units from 2 feet above the waterline to 1 foot below the waterline with 1/8 inch of maximum penetration.
- ⑤ A 1-foot-diameter log was on the channel bottom along the west face of Pier 1.

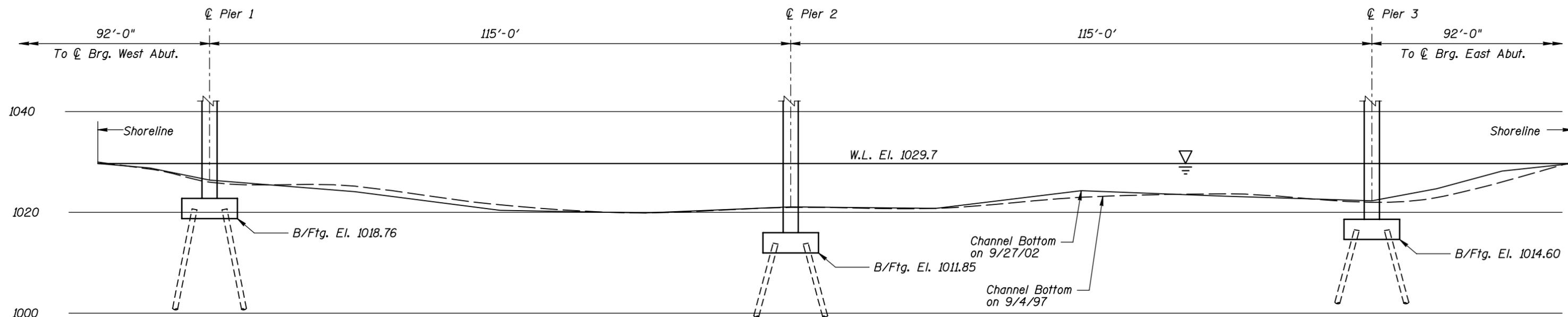
**Legend**

-9.8	Sounding Depth from Waterline (9/27/02)
-9.8	Sounding Depth from Waterline (9/4/97)

<b>MINNESOTA DEPARTMENT OF TRANSPORTATION UNDERWATER BRIDGE INSPECTION</b>		
STRUCTURE NO. 49528 OVER THE MISSISSIPPI RIVER DISTRICT 3, MORRISON COUNTY		
<b>INSPECTION AND SOUNDING PLAN</b>		
Drawn By: PRH	<b>COLLINS ENGINEERS, INC.</b>	Date: SEPT. 2002
Checked By: MDK	300 W. WASHINGTON, STE. 600 CHICAGO, ILLINOIS 60606 (312) 704-9300	Scale: NTS
Code: 35I20079		Figure No.: 1



UPSTREAM FASCIA PROFILE



DOWNSTREAM FASCIA PROFILE

<b>MINNESOTA DEPARTMENT OF TRANSPORTATION UNDERWATER BRIDGE INSPECTION</b>		
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Drawn By: PRH	 <b>COLLINS ENGINEERS, INC.</b> 300 W. WASHINGTON, STE. 600 CHICAGO, ILLINOIS 60606 (312) 704-9300	Date: SEPT. 2002
Checked By: MDK		Scale: 1"=20'
Code: 35120079		Figure No.: 2



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



Photograph 2. View of Pier 1, Looking Northeast.



Photograph 3. View of Pier 2, Looking West.



Photograph 4. View of Pier 3, Looking Northeast.

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

INSPECTORS: Collins Engineers, Inc. DATE: September 27, 2002

ON-SITE TEAM LEADER: Shirley M. Walker, P.E.

BRIDGE NO: 49528

WEATHER: Sunny, " 65EF

WATERWAY CROSSED: The Mississippi River

DIVING OPERATION: X SCUBA SURFACE SUPPLIED AIR

OTHER

PERSONNEL: Michelle D. Koerbel, Clayton G. Brookins.

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

TIME IN WATER: 6:00 p.m.

TIME OUT OF WATER: 6:40 p.m.

WATERWAY DATA: VELOCITY " 2 f.p.s.

VISIBILITY " 2 feet

DEPTH 10.0 feet maximum at Pier 2.

ELEMENTS INSPECTED: Piers 1, 2 and 3

REMARKS: The concrete of the piers was in good condition with no defects of structural significance observed. Random areas of poorly consolidated concrete were observed at the downstream end of Pier 3 near the waterline. Light scaling was observed on all substructure units near the waterline with a maximum penetration of 1/8 inch. A 1-foot-diameter log was observed on the channel bottom along the west face of Pier 1. The channel bottom was firm and stable with no signs of significant scour.

FURTHER ACTION NEEDED: \_\_\_\_\_ YES  X  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. 49528  
INSPECTORS Collins Engineers, Inc.  
ON-SITE TEAM LEADER Shirley M. Walker, P.E.  
WATERWAY CROSSED The Mississippi River

INSPECTION DATE September 27, 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	5.0'	N	7	N	9	N	7	8	N	N	7	7	8	N	N	N	N	N
	Pier 2	10.0'	N	7	N	9	N	7	8	N	N	8	8	8	N	N	N	N	N
	Pier 3	8.5'	N	7	N	9	N	7	8	N	N	8	8	8	N	N	N	N	N

\*UNDERWATER PORTION ONLY

REMARKS: The concrete of the piers was in good condition with no defects of structural significance observed. Random areas of poorly consolidated concrete were observed at the downstream end of Pier 3 near the waterline. Light scaling was observed on all substructure units near the waterline with a maximum penetration of 1/8 inch. A 1-foot-diameter log was observed on the channel bottom along the west face of Pier 1. The channel bottom was firm and stable with no signs of significant scour.

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.