

UNDERWATER BRIDGE INSPECTION REPORT

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STRUCTURE NO. 70532  
CSAH NO. 9  
OVER THE  
MINNESOTA RIVER  
DISTRICT M – SCOTT COUNTY

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PREPARED FOR THE  
MINNESOTA DEPARTMENT OF TRANSPORTATION  
BY  
COLLINS ENGINEERS, INC.  
JOB NO. 5221

MINNESOTA DEPARTMENT OF TRANSPORTATION  
UNDERWATER BRIDGE INSPECTION

REPORT SUMMARY:

The substructure units inspected at Bridge 70532, Piers 1 and 2, were in good condition with no defects of structural significance observed. A heavy accumulation of timber debris was observed at the upstream end of both piers. The channel bottom appeared to be in stable condition with no evidence of significant scour.

INSPECTION FINDINGS:

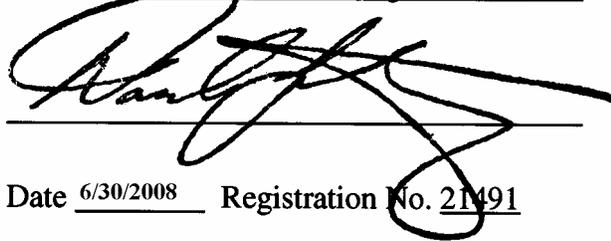
- (A) A heavy accumulation of timber debris consisting of logs and branches 2 feet in diameter and smaller was observed at the upstream end of Pier 1, as well as all along the south face and to the upstream quarter point at the north face. The debris was also observed at the channel bottom on the north face. The accumulation extended 10 feet off the nose and faces and from the channel bottom up to 3 feet above the waterline.
- (B) A heavy accumulation of timber debris consisting of logs and branches 18 inches in diameter and smaller was observed at the upstream end of Pier 2, extending to the midpoint along both sides. The debris extended 10 feet off the upstream nose and from the channel bottom up 2 feet.

RECOMMENDATIONS:

- (A) Remove the timber debris during future maintenance operations.
- (B) 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

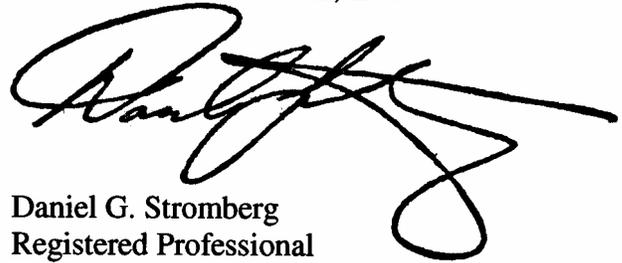


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Date 6/30/2008 Registration No. 21491

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: 70532

Feature Crossed: Minnesota River

Feature Carried: CSAH No. 9

Location: District M – Scott County

Bridge Description: The superstructure consists of four spans of multiple concrete beams supporting a reinforced concrete deck. The superstructure is supported by two concrete abutments and three concrete piers. The piers are numbered 1 through 3 from south to north.

2. INSPECTION DATA

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

Dive Team: Clayton Brookins, Valerie Rouston

Date: November 19, 2007

Weather Conditions: Cloudy, 50°F

Underwater Visibility: 1.0 foot

Waterway Velocity: 0.5 f.p.s.

3. SUBSTRUCTURE INSPECTION DATA

Substructure Inspected: Piers 1 and 2

General Shape: The piers each consist of an oblong rectangular concrete shaft supporting a hammerhead pier cap on top of a rectangular footing founded on piles.

Maximum Water Depth at Substructure Inspected: Approximately 12.9 feet.

4. WATERLINE DATUM

Water Level Reference: The bottom of the pier cap on the downstream end of Pier 1.

Water Surface: The waterline was approximately 16.9 feet below reference.  
Waterline Elevation = 698.7.

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 5

Item 92B: Underwater Inspection: Code B/11/07

Item 113: Scour Critical Bridges: Code F/07

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

       Yes   X   No



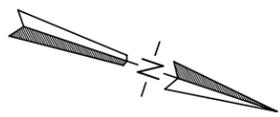
Photograph 1. Overall View of the Structure, Looking East.



Photograph 2. View of Pier 1 and Timber Debris, Looking Southeast.

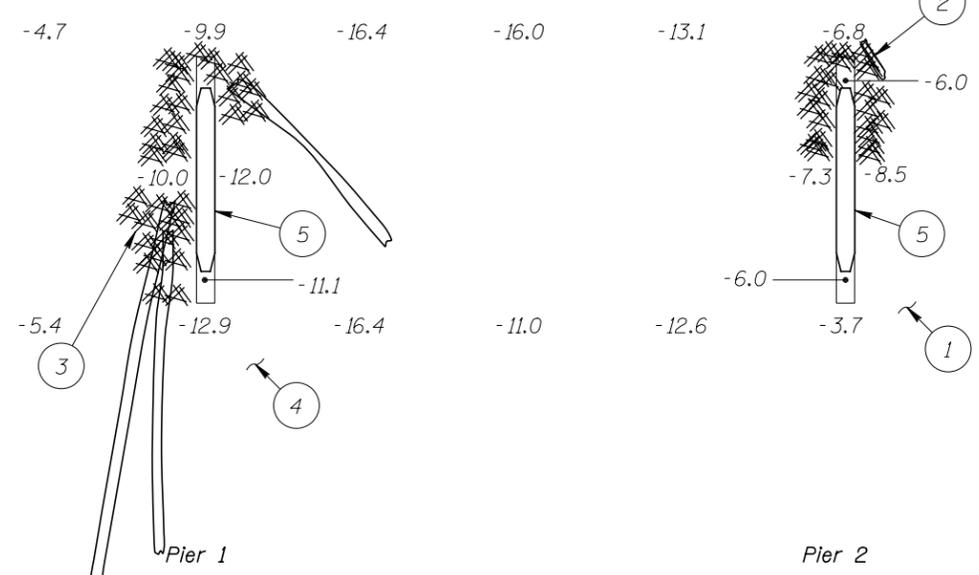


Photograph 3. View of Pier 2, Looking North.



Shoreline (Typ.)

Flow  
Minnesota River



SOUNDING PLAN

INSPECTION NOTES:

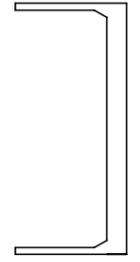
- 1 The channel bottom consists of firm silty clay with a maximum probe rod penetration of 3 inches. The channel bottom on the north face was finer. Soft infilling was observed at the downstream end of Pier 2.
- 2 A heavy accumulation of timber debris consisting of logs and branches 18 inches in diameter and smaller was observed at the upstream end of Pier 2 extending to the midpoint on both sides. The debris extended 10 feet off the upstream nose and from the channel bottom up 2 feet.
- 3 A heavy accumulation of timber debris consisting of logs and branches 2 feet in diameter and smaller was observed at the upstream end of Pier 1, all along the south face, and to the upstream 1/4 point at the north face. Debris was also observed at the channel bottom on the north face, extending 10 feet off the nose. Also, logs were sticking out at 10 feet from the downstream end and 40 feet off the north face. Debris extended from the channel bottom up to 3 feet above the waterline.
- 4 The channel bottom consisted of silty clay with 3 inches of probe rod penetration off the south face and soft infilling at the downstream end. At the north face the channel bottom consisted of firm silty clay and debris was found on the channel bottom.
- 5 The concrete was smooth and sound with no notable defects or deterioration.

Legend

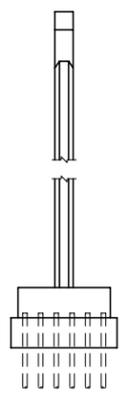
- 7.0 Sounding Depth (11/19/07)
- Timber Debris
- (42475) Indicates Metric Equivalent per Design Plans (In millimeters, U.N.O.)

GENERAL NOTES:

1. Piers 1 and 2 were inspected underwater.
2. At the time of inspection on November 19, 2007, the waterline was located approximately 16.9 feet below bottom of hammerhead pier cap at the downstream end of Pier 1. This corresponds with a waterline elevation of 698.7 feet based on design drawings.
3. Soundings indicate the water depth at the time of the inspection and are measured in feet.
4. Soundings were taken parallel to the bridge at 1/4 point intervals between the substructure units.

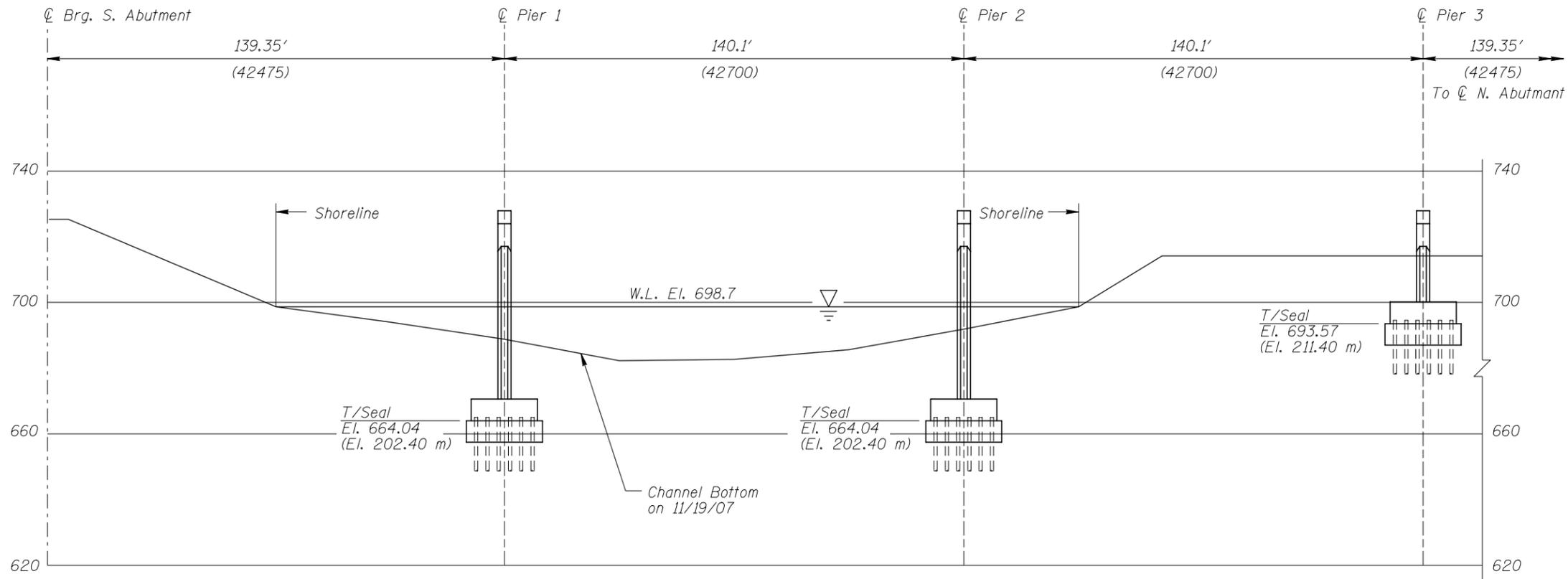


South Abutment

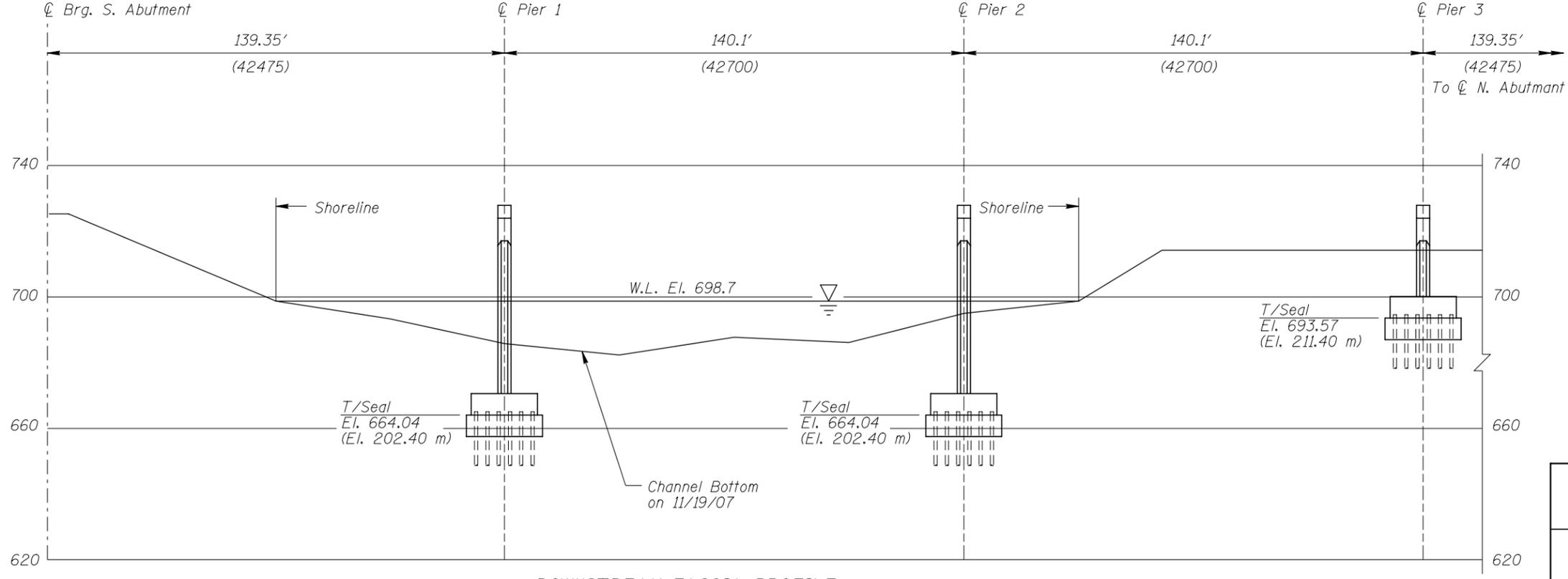


TYPICAL END VIEW OF PIERS 1 AND 2

<b>MINNESOTA DEPARTMENT OF TRANSPORTATION UNDERWATER BRIDGE INSPECTION</b>		
STRUCTURE NO. 70532 OVER THE MINNESOTA RIVER DISTRICT M, SCOTT COUNTY		
<b>INSPECTION AND SOUNDING PLAN</b>		
Drawn By: PRH	<b>COLLINS ENGINEERS</b>	Date: NOV., 2007
Checked By: MDK	<small>123 North Wacker Drive Suite 300 Chicago, IL 60606 (312) 704-9300 www.collinsengr.com</small>	Scale: NTS
Code: 522170532		Figure No.: I



**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. 70532 OVER THE MINNESOTA RIVER DISTRICT M, SCOTT COUNTY		
<b>UPSTREAM AND DOWNSTREAM FASCIA PROFILES</b>		
Drawn By: PRH	<b>COLLINS ENGINEERS</b> <small>123 North Wacker Drive Suite 300 Chicago, IL 60606 (312) 704-9300 www.collinsengr.com</small>	Date: NOV., 2007
Checked By: MDK		Scale: 1"=40'
Code: 522170532		Figure No.: 2

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

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

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

BRIDGE NO: 70532 WEATHER: Cloudy, 50°F

WATERWAY CROSSED: Minnesota River

DIVING OPERATION:  SCUBA  SURFACE SUPPLIED AIR  
 OTHER

PERSONNEL: Clayton G. Brookins, Valerie Roustan

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

TIME IN WATER: 10:00 a.m.

TIME OUT OF WATER: 10:30 a.m.

WATERWAY DATA: VELOCITY 0.5 f.p.s.

VISIBILITY 1.0 foot

DEPTH 12.9 feet maximum at Pier 1

ELEMENTS INSPECTED: Piers 1 and 2

REMARKS: Overall, the concrete was smooth and sound with no significant structural defects. Heavy accumulations of timber debris consisting of logs and branches were observed at the upstream ends of Piers 1 and 2 with pieces of drift of up to 2 feet in diameter. The channel bottom at both piers consisted of silty clay with some infilling located at the downstream end of the piers.

FURTHER ACTION NEEDED:  YES  NO

Remove the timber debris during future maintenance operations.

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. 70532  
 INSPECTORS Collins Engineers, Inc.  
 ON-SITE TEAM LEADER Daniel G. Stromberg, P.E., S.E.  
 WATERWAY CROSSED Minnesota River

INSPECTION DATE November 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 (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	12.9'	N	7	N	9	N	7	8	7	8	5	5	7	N	N	N	N	N
	Pier 2	8.5'	N	7	N	9	N	7	8	7	8	6	6	7	N	N	N	N	N

\*UNDERWATER PORTION ONLY

REMARKS: Overall, the concrete was smooth and sound with no significant structural defects. Heavy accumulations of timber debris consisting of logs and branches were observed at the upstream ends of Piers 1 and 2 with pieces of drift of up to 2 feet in diameter. The channel bottom at both piers consisted of silty clay with some infilling located at the downstream end of the piers.

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.