

UNDERWATER BRIDGE INSPECTION REPORT

STRUCTURE NO. 73536

CSAH NO. 49

OVER THE

SAUK RIVER

DISTRICT 3 - STEARNS COUNTY



PREPARED FOR THE
MINNESOTA DEPARTMENT OF TRANSPORTATION

BY
COLLINS ENGINEERS, INC.

JOB NO. 5221 (CEI 86)

MINNESOTA DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

REPORT SUMMARY:

The substructure units inspected at Bridge No. 73536, Piers 1 and 2, were found to be in good condition with no significant structural defects observed. Minor localized scour has caused partial footing exposure at both Piers 1 and 2; however, the channel bottom appeared stable with no significant changes and slightly less footing exposure than observed since the previous inspection.

INSPECTION FINDINGS:

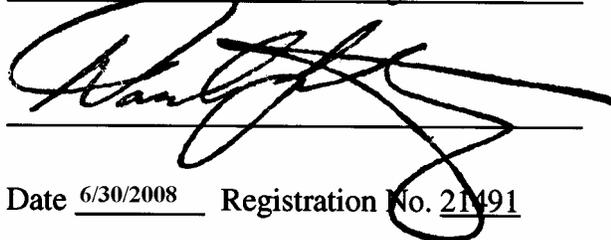
- (A) There was minor footing exposure encountered at both piers due to localized scour depressions. The footing at Pier 1 was detected at the western corner with no vertical face exposure. The footing at Pier 2 was detected at the northern corner; again with no vertical exposure (edge could be detected). Both footings exposures were encountered through 3 inches of soft silt.

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: 73536

Feature Crossed: Sauk River

Feature Carried: CSAH No. 49

Location: District 3 - Stearns County

Bridge Description: The bridge superstructure consists of three spans of multiple prestressed concrete beams. The superstructure is supported by two reinforced concrete abutments and two reinforced concrete piers. The piers and abutments are supported by footings with steel H-piles. The piers are numbered 1 and 2 starting from the southerly 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: 0.5 feet

Waterway Velocity: Negligible/None

3. SUBSTRUCTURE INSPECTION DATA

Substructure Inspected: Piers 1 and 2.

General Shape: The piers consist of cylindrical shafts supporting a hammerhead pier cap and are supported by square footings founded on piles.

Maximum Water Depth at Substructure Inspected: Approximately 12.5 feet.

4. WATERLINE DATUM

Water Level Reference: The top of the pier cap at the downstream end of Pier 2.

Water Surface: The waterline was approximately 14.6 feet below reference.
Waterline Elevation = 1086.4.

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 6

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.

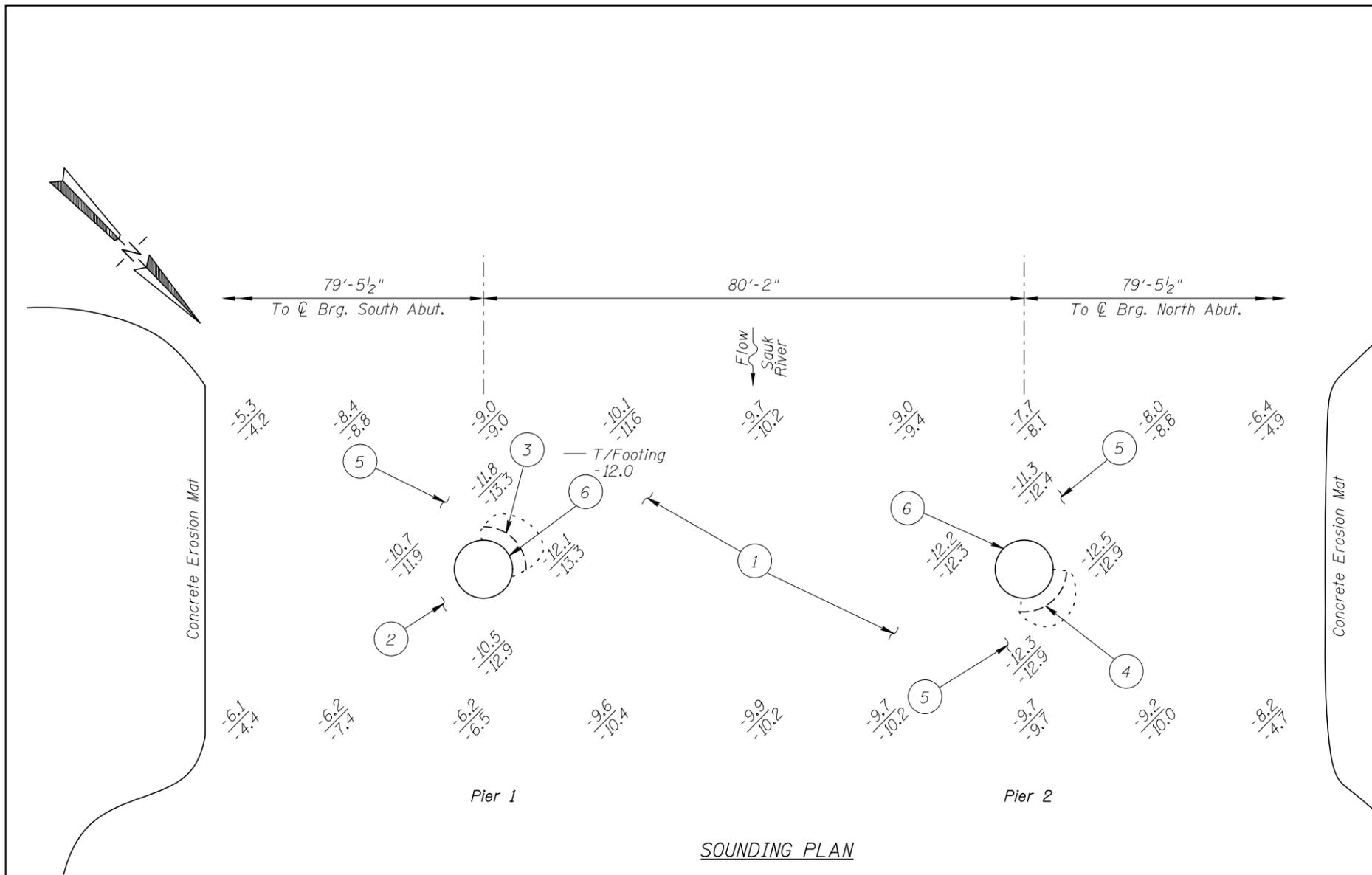
 Yes X No



Photograph 1. View of Pier 1, Looking West.



Photograph 2. View of Pier 2, Looking West.



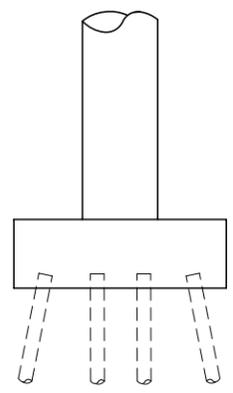
SOUNDING PLAN

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 14.6 feet below the top of the pier cap at the downstream end of Pier 2. This corresponds to a waterline elevation of 1086.4.
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 consisted of sandy gravel with up to 5 inches of probe rod penetration.
- ② The channel bottom consisted of sand with up to 8 inches of probe rod penetration.
- ③ The top of footing was detected at the western corner of Pier 1 (a 2 feet wide section) with no vertical face exposed under a 3 inch layer of silt.
- ④ The top of footing was detected around the column (a 2 feet wide section) and at the northern corner of Pier 2. The footing corner was located under a 3 inch layer of silt.
- ⑤ Localized scour pockets, 4 to 5 feet deep, were observed around the pier columns.
- ⑥ The submerged concrete was in good, sound condition with a light layer of aquatic growth observed.



TYPICAL END VIEW OF PIERS

Legend

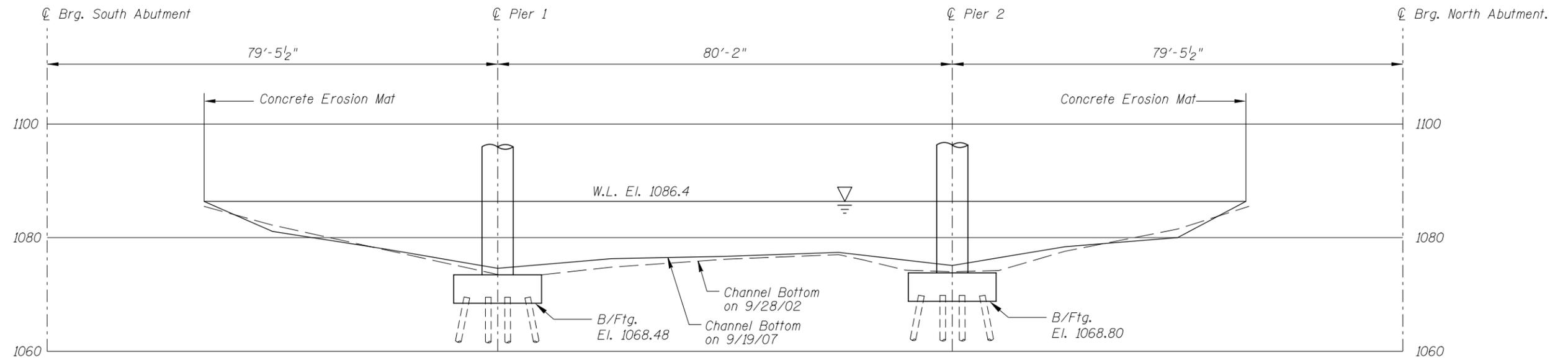
- 2.0 Sounding Depth (10/19/07)
- 5.2 Sounding Depth (9/28/02)

⊘ Area of Soft Silt

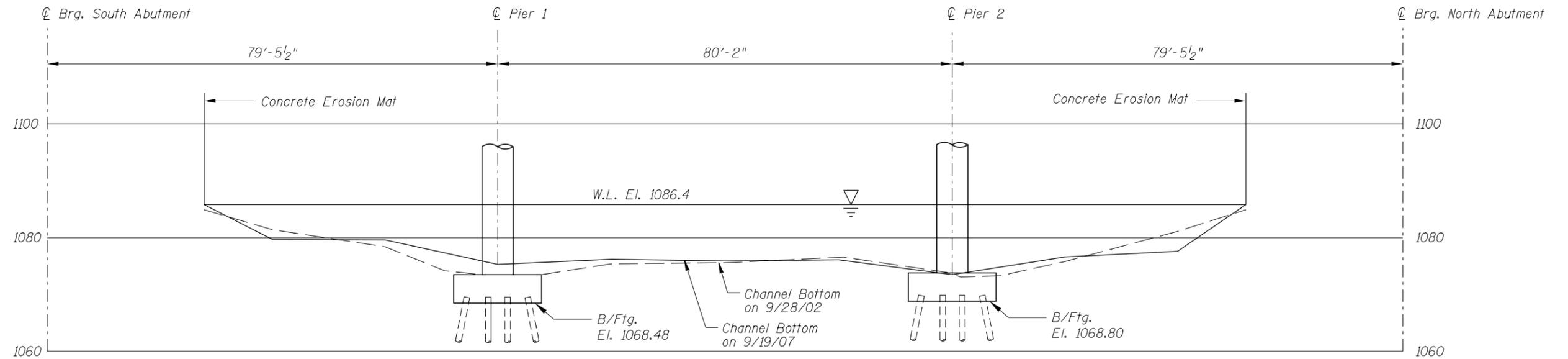
Note:

All soundings based on 2007 waterline location.

MINNESOTA DEPARTMENT OF TRANSPORTATION UNDERWATER BRIDGE INSPECTION		
STRUCTURE NO. 73536 OVER THE SAUK RIVER DISTRICT 3, STEARNS COUNTY		
INSPECTION AND SOUNDING PLAN		
Drawn By: PRH	COLLINS ENGINEERS	Date: SEPT. 2007
Checked By: MDK	<small>133 North Wacker Drive Suite 300 Chicago, IL 60606 (312) 704-9300 www.collinsengr.com</small>	Scale: NTS
Code: 52210086		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. 73536 OVER THE SAUK RIVER DISTRICT 3, STEARNS COUNTY		
UPSTREAM AND DOWNSTREAM FASCIA PROFILES		
Drawn By: PRH	COLLINS ENGINEERS <small>123 North Wacker Drive Suite 300 Chicago, IL 60606 (312) 704-9300 www.collinsengr.com</small>	Date: SEPT. 2007
Checked By: MDK		Scale: 1"=20'
Code: 52210086		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: 73536 WEATHER: Partly 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, Sounding Pole, Camera, U/W Light, Probe Rod

TIME IN WATER: 12:50 p.m.

TIME OUT OF WATER: 1:20 p.m.

WATERWAY DATA: VELOCITY Negligible/None

VISIBILITY 0.5 Feet

DEPTH 12.5 feet maximum at Pier 2

ELEMENTS INSPECTED: Piers 1 and 2

REMARKS: Overall, the submerged concrete was in good condition with no structurally significant defects observed. Localized scour pockets, 4 to 5 feet deep, around both piers resulted in partial footing exposure (detected through soft bottom material). The top of footing at the western corner of Pier 1 was detected with no vertical face exposure under a layer of 3 inches of silt, and the top of footing at the northern corner of Pier 2 was also detected under a layer of 3 inches of silt.

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. 73536
 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 (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	12.1'	N	7	7	9	N	7	6	8	8	N	6	7	N	N	N	N	N
	Pier 2	12.5'	N	7	7	9	N	7	6	8	8	N	6	7	N	N	N	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.