

UNDERWATER BRIDGE INSPECTION REPORT

STRUCTURE NO. 05525
CSAH NO. 29
OVER THE
MISSISSIPPI RIVER
DISTRICT 3 - BENTON COUNTY



PREPARED FOR THE
MINNESOTA DEPARTMENT OF TRANSPORTATION

BY
COLLINS ENGINEERS, INC.

JOB NO.5221 (CEI 82)

MINNESOTA DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

REPORT SUMMARY:

The substructure units inspected at Bridge No. 05525, Piers 3 through 7, were found to be generally in good condition below water with no defects of structural significance observed. Partial footing exposure was observed at Piers 3, 4, 5, and 7. The channel bottom appears to be in stable condition with no evidence of significant scour or appreciable changes since the previous inspection.

INSPECTION FINDINGS:

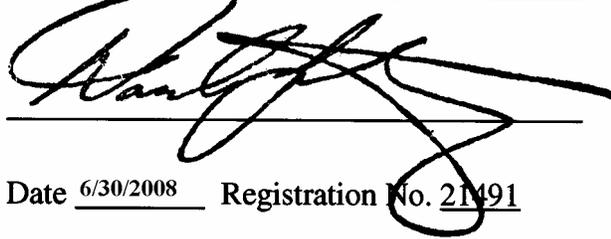
- (A) A band of light scaling was observed around the entire perimeter of all the piers with a maximum penetration of 1/8 inch, extending from 1.5 feet below to 1.5 feet above the waterline.
- (B) Piers 3 through 7 exhibited random hairline cracks on each face extending from the top of the shaft to the channel bottom.
- (C) The footing at Pier 3 was exposed at the upstream nose and along the entire east face with up to 2.2 feet of vertical face exposed at the northeast corner.
- (D) The footing at Pier 4 was exposed along the entire east face, around the upstream nose, and up to the upstream quarter point along the west face with up to 2 inches of vertical face exposed.
- (E) The footing at Pier 5 was exposed along the entire east face and around the upstream nose with up to 10 inches of vertical face exposed at the southeast corner.
- (F) The top of footing at Pier 7 was exposed at the northwest corners for approximately 5 feet with up to 10.5 inches of vertical face exposed.

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



A large, stylized handwritten signature in black ink, appearing to read 'Dan G. Stromberg', is written over two horizontal lines.

Date 6/30/2008 Registration No. 21491

Respectfully submitted,

COLLINS ENGINEERS, INC.



A large, stylized handwritten signature in black ink, appearing to read 'Dan G. Stromberg', is written over two horizontal lines.

Daniel G. Stromberg
Registered Professional
Engineer, State of Minnesota

MINNESOTA DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

1. BRIDGE DATA

Bridge Number: 05525

Feature Crossed: Mississippi River

Feature Carried: CSAH No. 29

Location: District 3 - Benton County

Bridge Description: The superstructure consists of eleven spans of multiple precast concrete girders supporting a reinforced concrete deck. The superstructure is supported by ten reinforced concrete piers and two reinforced concrete abutments, all of which are founded on piling. The piers are numbered 1 through 10 starting from the west end of the bridge.

2. INSPECTION DATA

Professional Engineer/Team Leader: Bradley A. Syler, P.E., S.E

Dive Team: John J. Loftus, Valerie Roustan

Date: August 15, 2007

Weather Conditions: Partly Cloudy, 69°F

Underwater Visibility: 2.0 Feet

Waterway Velocity: 0.5 f.p.s.

3. SUBSTRUCTURE INSPECTION DATA

Substructure Inspected: Piers 3 through 7.

General Shape: The piers each consist of three columns resting on a oblong rectangular concrete lower shaft with rounded noses supported by a rectangular footing founded on piles.

Maximum Water Depth at Substructure Inspected: Approximately 5.6 feet.

4. WATERLINE DATUM

Water Level Reference: The top of the shaft at the north end of Pier 3.

Water Surface: The waterline was approximately 13.8 feet below reference.
Waterline Elevation = 992.3.

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/08/07

Item 113: Scour Critical Bridges: Code J/91

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 Structure, Looking South.



Photograph 2. View of Pier 3, Looking West.



Photograph 3. View of Pier 4, Looking West.



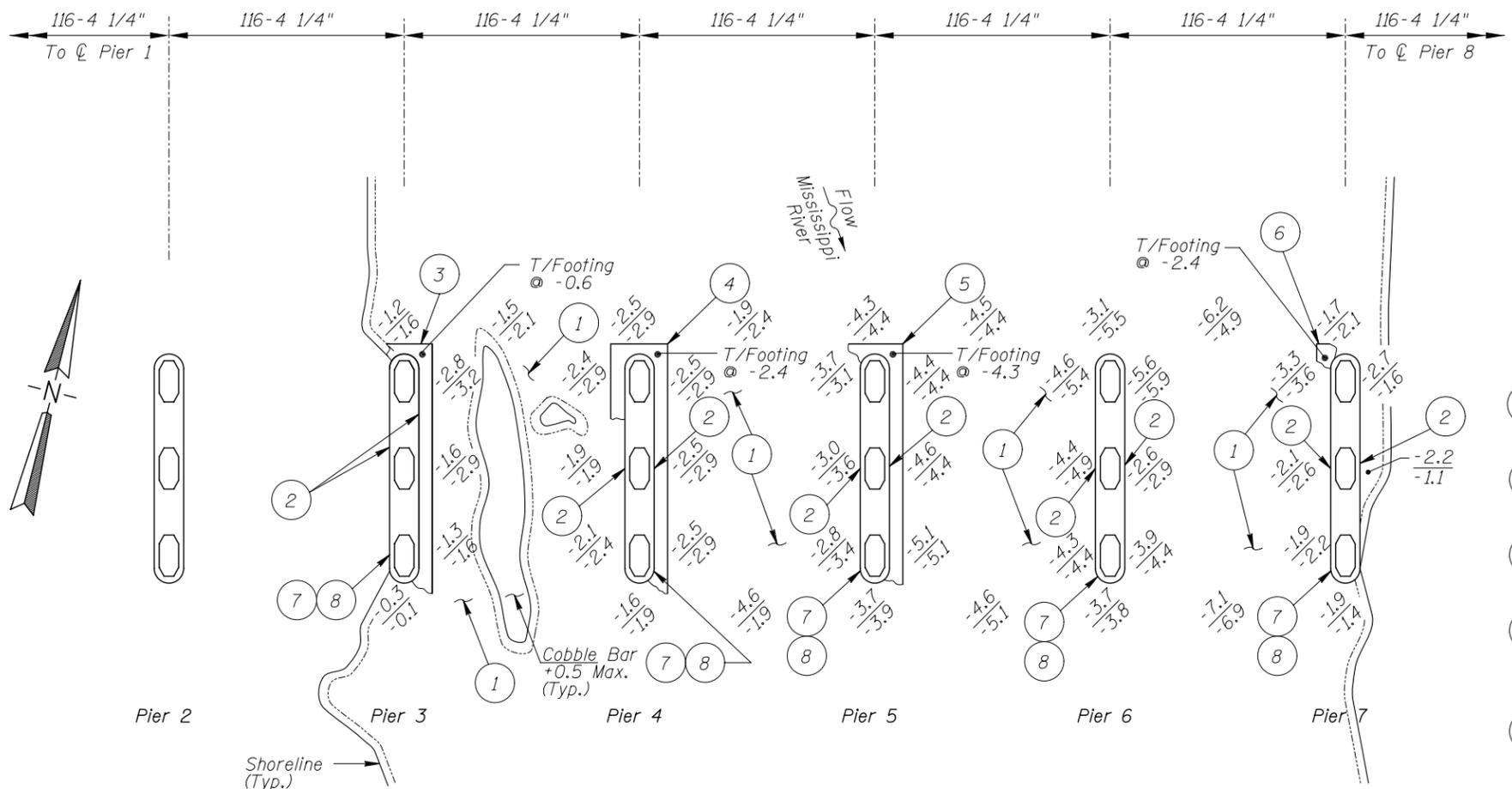
Photograph 4. View of Pier 5, Looking East.



Photograph 5. View of Pier 6, Looking East.



Photograph 6. View of Pier 7, Looking East.



SOUNDING PLAN

GENERAL NOTES:

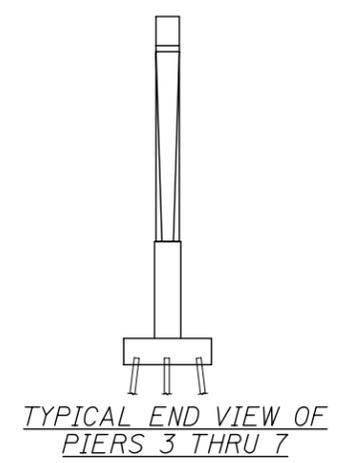
1. Piers 3 through 7 were inspected underwater.
2. At the time of inspection on August 15, 2007, the waterline was located approximately 13.8 feet below the top of the shaft at the upstream end of Pier 3. This corresponds to a waterline elevation of 992.3.
3. Soundings indicate the water depth at the time of inspection and are measured in feet.
4. Soundings were taken parallel to the bridge at the mid points between the substructure units.

INSPECTION NOTES:

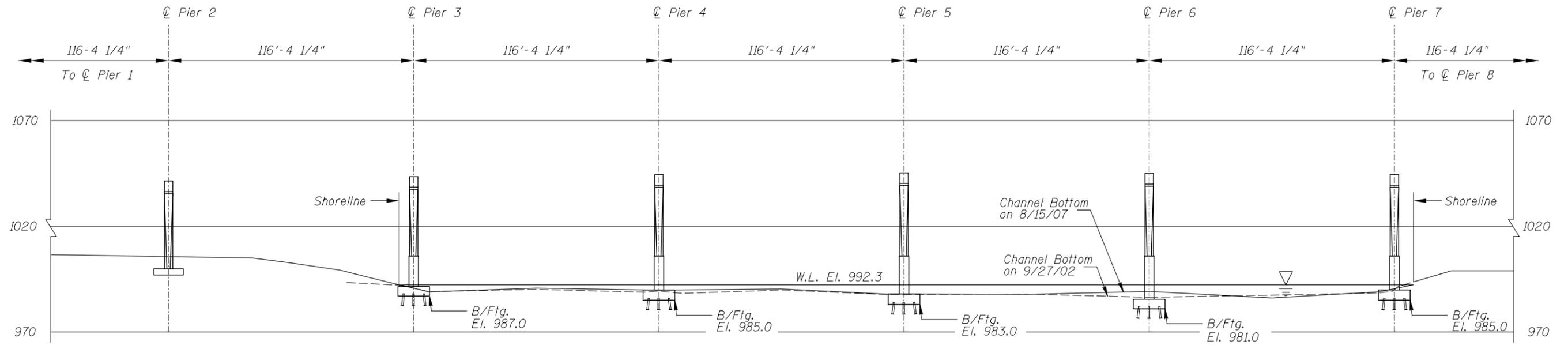
- 1 The channel bottom consisted of 6-inch to 1-foot-diameter cobbles with sand and with up to 3 inches of probe rod penetration.
- 2 Piers 3 through 7 exhibited random hairline cracks on each face extending from the top of the shaft to the channel bottom.
- 3 The footing at Pier 3 was exposed at the upstream nose and along the entire east face with up to 2.2 feet of vertical face exposed at the northeast corner.
- 4 The footing at Pier 4 was exposed along the entire east face, around the upstream nose, and up to the upstream quarter along the west face with up to 2 inches of vertical face exposed.
- 5 The footing at Pier 5 was exposed along the entire east face and around the upstream nose with up to 10 inches of vertical face exposed at the southeast corner.
- 6 The top of footing at Pier 7 was exposed at the northwest corner for approximately 5 feet with up to 10.5 inches of vertical face exposed.
- 7 A band of light scaling was observed around the entire perimeter of all the piers with a maximum penetration of 1/8 inch, extending 1.5 feet below to 1.5 feet above the waterline.
- 8 The concrete surfaces of pier shafts and footings (where exposed) were typically smooth and sound with no deficiencies.

Legend
 -3.0 Sounding Depth (8/15/07)
 -3.2 Sounding Depth (9/27/02)

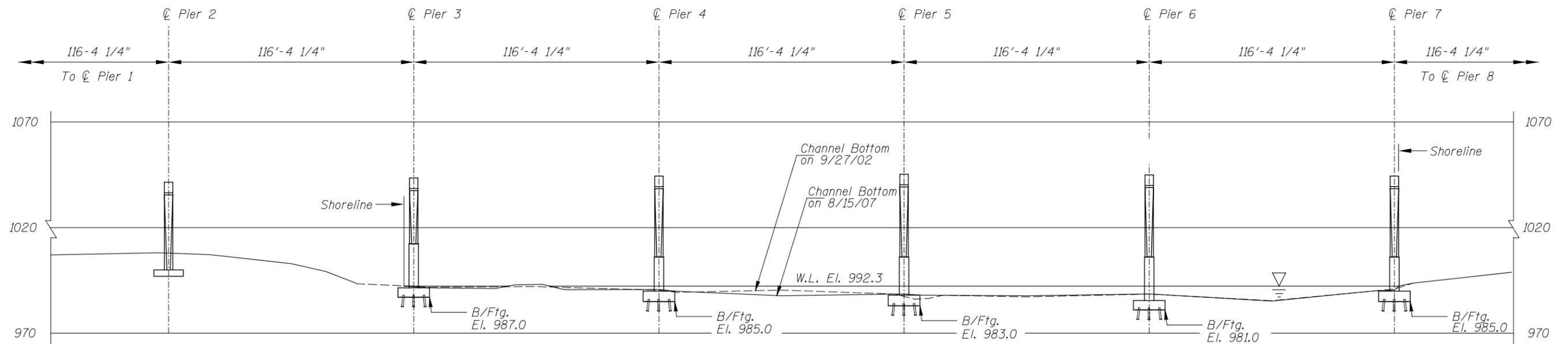
Note:
 All soundings based on 2007 waterline location.



MINNESOTA DEPARTMENT OF TRANSPORTATION UNDERWATER BRIDGE INSPECTION		
STRUCTURE NO. 05525 OVER THE MISSISSIPPI RIVER DISTRICT 3, BENTON COUNTY		
INSPECTION AND SOUNDING PLAN		
Drawn By: PRH	COLLINS ENGINEERS	Date: AUGUST, 2007
Checked By: MDK	<small>123 North Wacker Drive Suite 300 Chicago, IL 60606 (312) 704-9300 www.collinsengr.com</small>	Scale: NTS
Code: 52210082		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. 05525 OVER THE MISSISSIPPI RIVER DISTRICT 3, BENTON COUNTY		
UPSTREAM AND DOWNSTREAM FASCIA PROFILES		
Drawn By: PRH	COLLINS ENGINEERS	Date: AUGUST, 2007
Checked By: MDK		Scale: 1"=50'
Code: 52210082		Figure No.: 2

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

INSPECTORS: Collins Engineers, Inc. DATE: August 15, 2007

ON-SITE TEAM LEADER: Bradley A. Syler, P.E., S.E.

BRIDGE NO: 05525 WEATHER: Partly Cloudy, 69°F

WATERWAY CROSSED: Mississippi River

DIVING OPERATION: SCUBA SURFACE SUPPLIED AIR
 OTHER

PERSONNEL: John J. Loftus, Valerie Roustan

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

TIME IN WATER: 3:15 P.M.

TIME OUT OF WATER: 4:00 P.M.

WATERWAY DATA: VELOCITY 0.5 f.p.s.

VISIBILITY 2.0 feet

DEPTH 5.6 feet maximum at Pier 6

ELEMENTS INSPECTED: Piers 3 through 7

REMARKS: Overall, the concrete surfaces of pier shafts and footings (where exposed) were typically smooth and sound with no deficiencies. Partial footing exposure was observed at Piers 3, 4, 5, and 7 with vertical face exposures ranging between 2 inches and 2.2 feet. Piers 3 through 7 exhibited random hairline cracks on each face of the pier. The channel bottom appears to be in stable condition with no evidence of significant scour or appreciable changes since the previous 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. 05525
 INSPECTORS Collins Engineers, Inc.
 ON-SITE TEAM LEADER Bradley A. Syler, P.E, S.E.
 WATERWAY CROSSED Mississippi River

INSPECTION DATE August 15, 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 3	1.6'	N	7	7	9	N	7	6	8	8	N	6	7	N	N	N	N	N
	Pier 4	2.5'	N	7	7	9	N	7	6	N	N	N	6	7	N	N	N	N	N
	Pier 5	5.1'	N	7	7	9	N	7	6	N	N	N	6	7	N	N	N	N	N
	Pier 6	5.6'	N	7	N	9	N	7	7	N	N	N	7	7	N	N	N	N	N
	Pier 7	3.3'	N	7	7	9	N	7	6	7	7	N	6	7	N	N	N	N	N

*UNDERWATER PORTION ONLY

REMARKS: Overall, the concrete surfaces of pier shafts and footings (where exposed) were typically smooth and sound with no deficiencies. Partial footing exposure was observed at Piers 3, 4, 5, and 7 with vertical face exposures ranging between 2 inches and 2.2 feet. Piers 3 through 7 exhibited random hairline cracks on each face of the pier. The channel bottom appears to be in stable condition with no evidence of significant scour or appreciable changes since the previous 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.