

UNDERWATER BRIDGE INSPECTION REPORT

STRUCTURE NO. 87513

CSAH NO. 22

OVER THE

MINNESOTA RIVER

DISTRICT 8 - YELLOW MEDICINE COUNTY



PREPARED FOR THE
MINNESOTA DEPARTMENT OF TRANSPORTATION

BY
COLLINS ENGINEERS, INC.

JOB NO. 3512 (CEI 96)

MINNESOTA DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

REPORT SUMMARY:

The substructure units inspected at Bridge No. 87513, Piers 1 and 2, were found to be in good condition below water with no defects of structural significance observed. The channel bottom appeared stable with no appreciable changes observed since the previous inspection. A light accumulation of timber debris was observed along the east face of Pier 2.

INSPECTION FINDINGS:

- (A) The footing was exposed along the west face, around the upstream nose, and along the east face of Pier 2 with up to 2.5 feet of vertical face exposure at the upstream nose. The footings of the substructure were keyed into rock according to design plans. The footing/rock joint was snug with little or no gaps between the surfaces.
- (B) Two 12-inch-diameter legs were on the channel bottom around Pier 2.
- (C) The concrete surfaces of the piers were smooth and sound with no significant defects.

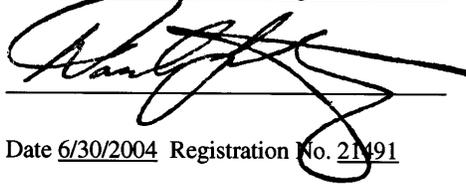
RECOMMENDATIONS:

- (A) Monitor the footing/bedrock interface at Pier 2 during future inspections for any detrimental erosion and/or gaps along the interface.

- (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

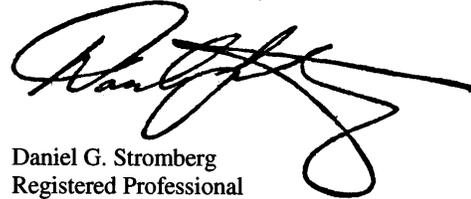


Daniel G. Stromberg

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: 87513

Feature Crossed: Minnesota River

Feature Carried: CSAH No. 22

Location: District 8 - Yellow Medicine County

Bridge Description: The bridge superstructure consists of three multiple steel girder spans. The superstructure is supported by two reinforced concrete piers and two reinforced concrete abutments. The piers are numbered 1 and 2 starting from the west end of the bridge.

2. INSPECTION DATA

Professional Engineer/Team Leader: Shirley M. Walker, P.E.

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

Date: October 31, 2002

Weather Conditions: Sunny " 30EF

Underwater Visibility: " 1 foot

Waterway Velocity: Negligible/None

3. SUBSTRUCTURE INSPECTION DATA

Substructure Inspected: Piers 1 and 2

General Shape: Each pier consists of an oblong rectangular shaft with rounded ends that rests upon a rectangular spread footing keyed into bedrock.

Maximum Water Depth at Substructure Inspected: Approximately 21.5 Feet.

4. WATERLINE DATUM

Water Level Reference: The top of the upstream end of the Pier 2.

Water Surface: The waterline was approximately 7.0 feet below reference.
Waterline Elevation = 903.2.

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

Item 60: Substructure: Code 7

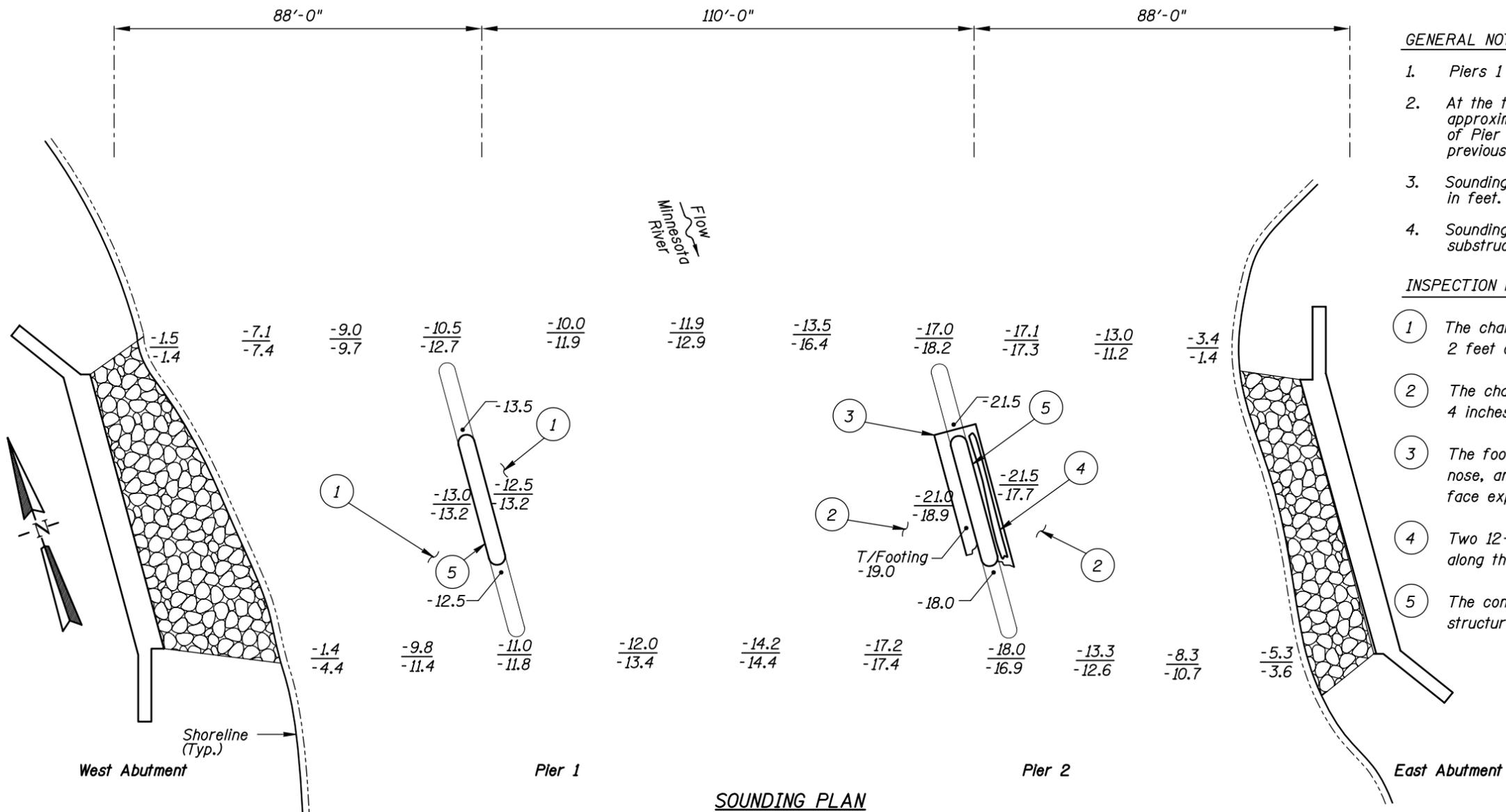
Item 61: Channel and Channel Protection: Code 6

Item 92B: Underwater Inspection: Code B/10/02

Item 113: Scour Critical Bridges: Code L/92

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

Yes No

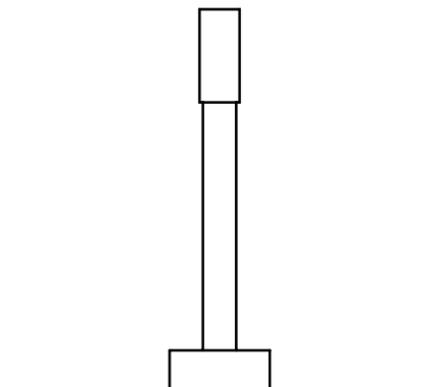


GENERAL NOTES:

1. Piers 1 and 2 were inspected underwater.
2. At the time of inspection on October 31, 2002, the waterline was located approximately 7.0 feet below the top of the pier cap at the upstream end of Pier 2. This corresponds to a waterline elevation of 903.2 based on the previous report dated September 25, 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 inspected.

INSPECTION NOTES

- ① The channel bottom consisted of soft silt over gravel with up to 2 feet of probe rod penetration.
- ② The channel bottom consisted of bedrock overlaid with up to 4 inches of silt.
- ③ The footing was exposed along the west face, around the upstream nose, and along the east face of Pier 2 with up to 2.5 feet of vertical face exposure at the upstream nose.
- ④ Two 12-inch-diameter logs were observed on the channel bottom along the east face of Pier 2.
- ⑤ The concrete surfaces were in good and sound condition with no structurally significant defects.

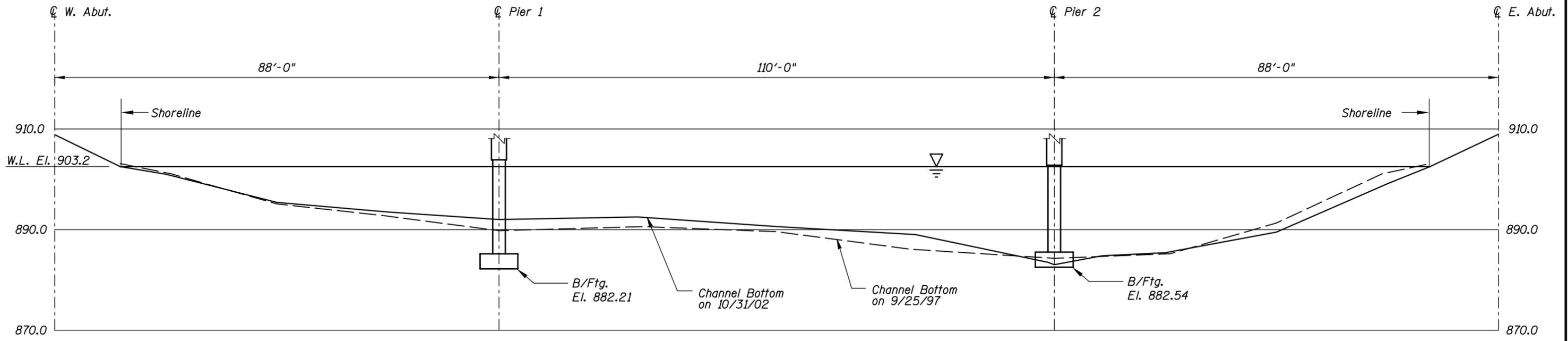


TYPICAL END VIEW OF PIERS

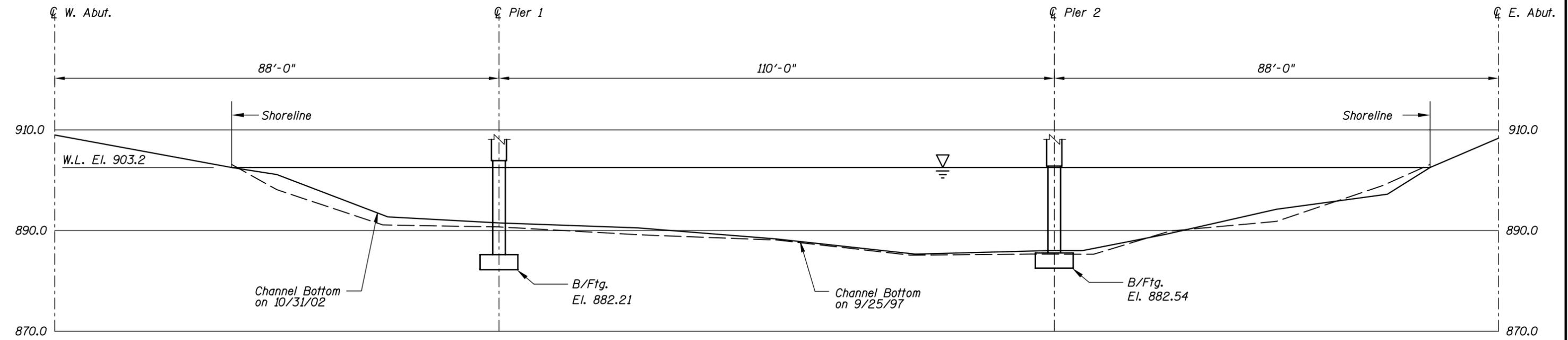
Legend

- 2.0 Sounding Depth from Waterline (10/31/02)
- 5.2 Sounding Depth from Waterline (9/25/97)
- Riprap

MINNESOTA DEPARTMENT OF TRANSPORTATION UNDERWATER BRIDGE INSPECTION		
STRUCTURE NO. 87513 OVER THE MINNESOTA RIVER DISTRICT 8, YELLOW MEDICINE COUNTY		
INSPECTION AND SOUNDING PLAN		
Drawn By: PRH	COLLINS ENGINEERS, INC.	Date: OCT. 2002
Checked By: MDK	300 W. WASHINGTON, STE. 600 CHICAGO, ILLINOIS 60606 (312) 704-9300	Scale: NTS
Code: 35120096		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. 87513 OVER THE MINNESOTA RIVER DISTRICT 8, YELLOW MEDICINE COUNTY		
UPSTREAM AND DOWNSTREAM FASCIA PROFILES		
Drawn By: PRH	 COLLINS ENGINEERS, INC. 300 W. WASHINGTON, STE. 600 CHICAGO, ILLINOIS 60606 (312) 704-9300	Date: OCT. 2002
Checked By: MDK		Scale: 1"=20'
Code: 35120096		Figure No.: 2



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



Photograph 2. View of Pier 1, Looking Northeast.



Photograph 3. View of Pier 2, Looking Northwest.

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

INSPECTORS: Collins Engineers, Inc. DATE: October 31, 2002
ON-SITE TEAM LEADER: Shirley M. Walker, P.E.
BRIDGE NO: 87513 WEATHER: Sunny, " 30EF
WATERWAY CROSSED: Minnesota River
DIVING OPERATION: X SCUBA SURFACE SUPPLIED AIR
OTHER

PERSONNEL: Michelle D. Koerbel, Clayton G. Brookins
EQUIPMENT: Scuba, Sounding Pole, U/W Light, Lead Line, Probe Rod, Scraper, Camera
TIME IN WATER: 1:15 p.m.
TIME OUT OF WATER: 1:50 p.m.
WATERWAY DATA: VELOCITY Negligible/None
VISIBILITY " 1 foot
DEPTH 21.5 feet maximum at Pier 2

ELEMENTS INSPECTED: Piers 1 to 2

REMARKS: Overall, the concrete surfaces were in good and sound condition with no structurally significant defects observed. The footing was exposed along the east face, around the upstream nose, and along the west face of Pier 2 with up to 2.5 feet of vertical face exposure at the upstream nose. The Pier 2 footing was keyed into the surrounding bedrock and the joint between the edge of the footing and bedrock was very tight with no gaps observed. Two 12-inch-diameter logs were observed on the channel bottom along the east face of Pier 2. A hydroelectric dam was located about 150 feet downstream.

FURTHER ACTION NEEDED: _____ YES _____ X _____ NO

Monitor the footing/bedrock interface at Pier 2 during future inspections for any detrimental erosion.

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. 87513
INSPECTORS Collins Engineers, Inc.
ON-SITE TEAM LEADER Shirley M. Walker, P.E.
WATERWAY CROSSED The Minnesota River

INSPECTION DATE October 31, 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	13.5'	N	8	N	9	N	8	8	9	9	N	8	8	N	N	N	N	N
	Pier 2	21.5'	N	8	7	9	N	7	5	9	9	7	5	8	N	N	N	N	N

*UNDERWATER PORTION ONLY

REMARKS: Overall, the concrete surfaces were in good and sound condition with no structurally significant defects observed. The footing was exposed along the east face, around the upstream nose, and along the west face of Pier 2 with up to 2.5 feet of vertical face exposure at the upstream nose. The Pier 2 footing was keyed into the surrounding bedrock and the joint between the edge of the footing and bedrock was very tight with no gaps observed. Two 12-inch-diameter logs were observed on the channel bottom along the east face of Pier 2. A hydroelectric dam was located about 150 feet downstream.

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.