

UNDERWATER BRIDGE INSPECTION REPORT

STRUCTURE NO. 69530
CSAH NO. 139
OVER THE
LITTLE FORK RIVER
DISTRICT 1 - ST. LOUIS COUNTY



PREPARED FOR THE
MINNESOTA DEPARTMENT OF TRANSPORTATION
BY
COLLINS ENGINEERS, INC.
JOB NO. 5221 (CEI 11)

MINNESOTA DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

REPORT SUMMARY:

The substructure units inspected at Bridge No. 69530, Piers 1 and 2, were found to be in good condition with no defects of structural significance observed. No footing exposure was detected, however, the footings along the south side of Pier 2 and along the north side of Pier 1 were located below 1.5 feet of soft silt. The channel bottom around the substructure units appeared well established and stable with no evidence of significant scour and no appreciable changes since the previous inspection.

INSPECTION FINDINGS:

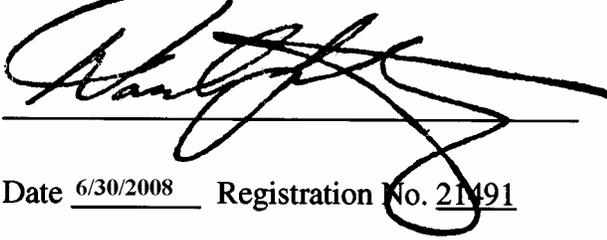
- (A) No defects of structural significance were detected for the concrete of both piers.
- (B) The footings along the south side of Pier 2 and along the north side of Pier 1 were located (could be encountered) below 1.5 feet of soft silt.
- (C) Scaling at Pier 1 was observed 6 inches above the waterline to 1 foot below the waterline with $\frac{1}{4}$ inch maximum penetration along the entire perimeter. At Pier 2, it was observed 1 foot above the waterline to 2 feet below the waterline with $\frac{1}{2}$ inch maximum penetration along the entire perimeter.

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: 69530

Feature Crossed: Little Fork River

Feature Carried: CSAH No. 139

Location: District 1 - St. Louis County

Bridge Description: The bridge consists of a three span precast concrete I-beam superstructure supported by two concrete abutments and two concrete piers. The abutments and piers are founded on concrete piles. The piers are numbered 1 and 2 starting from the south.

2. INSPECTION DATA

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

Dive Team: John J. Loftus, Valerie Rouston

Date: August 25, 2007

Weather Conditions: Sunny, 50°F

Underwater Visibility: 1.0 foot

Waterway Velocity: Negligible/None

3. SUBSTRUCTURE INSPECTION DATA

Substructure Inspected: Piers 1 and 2.

General Shape: The pier shafts are rectangular with rounded noses and sit on rectangular footings founded on piles.

Maximum Water Depth at Substructure Inspected: Approximately 6.7 Feet.

4. WATERLINE DATUM

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

Water Surface: The waterline was approximately 22.8 feet below reference.
Waterline Elevation = 1241.1.

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 7

Item 92B: Underwater Inspection: Code B/08/07

Item 113: Scour Critical Bridges: Code I/92

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

 Yes X No



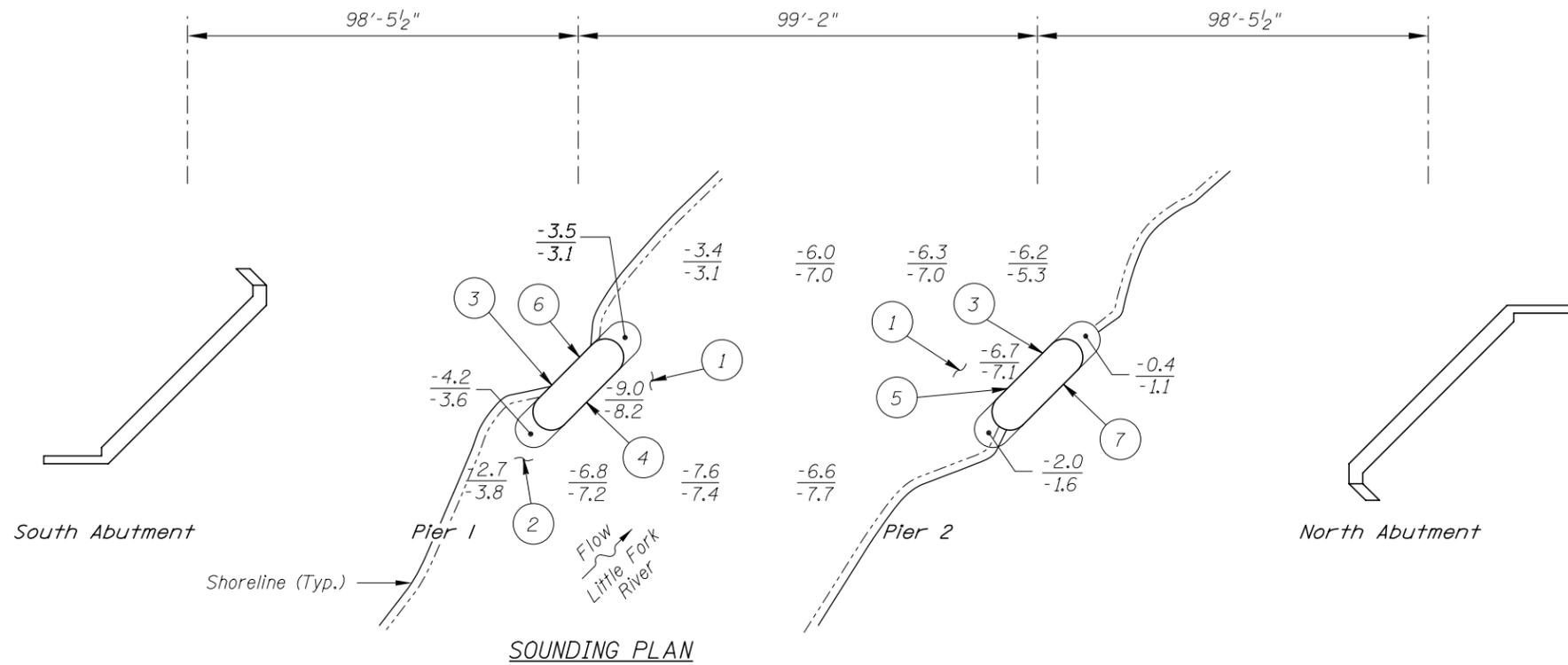
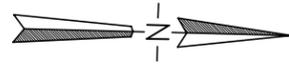
Photograph 1. Overall View of the Structure, Looking Southeast.



Photograph 2. View of Pier 1, Looking Northeast.



Photograph 3. View of Pier 2, Looking Northeast.



GENERAL NOTES:

- Piers 1 and 2 were inspected at this bridge.
- At the time of inspection, on August 25, 2007, the waterline was located approximately 22.8 feet below the top of the cap at the upstream end of Pier 1. This corresponds to a waterline elevation of 1241.1 based on the previous report dated August 28, 2002.
- Soundings indicate the water depth at the time of inspection and are measured in feet.
- Soundings were taken parallel to the bridge at 1/4 point intervals between the substructure units.

INSPECTION NOTES:

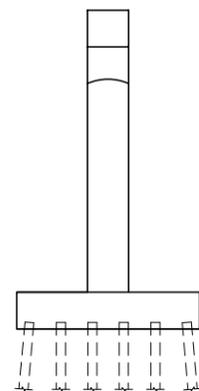
- The channel bottom material consisted of soft silt and scattered riprap with probe rod penetrations up to 1 foot at Pier 2 and up to 1.5 feet at Pier 1.
- The channel bottom material consisted of 6-inch to 1-foot-diameter riprap at the upstream nose of Pier 1 and along the north face of Pier 2.
- The concrete at both piers was smooth and sound.
- The top of the footing along the north face of Pier 1 was located with a probe rod below 1.5 feet of soft silt.
- The top of the footing along the south face of Pier 2 was located with a probe rod below 1.5 foot of soft silt.
- Scaling was observed 6 inches above the waterline to 1 foot below the waterline, with 1/4 inch maximum penetration along the entire perimeter of Pier 1.
- Scaling was observed 1 foot above the waterline to 2 feet below the waterline, with 1/2 inch maximum penetration along the entire perimeter of Pier 2.

Legend

-8.8 Sounding Depth (8/25/07)

Note:

All soundings based on 2007 waterline location.



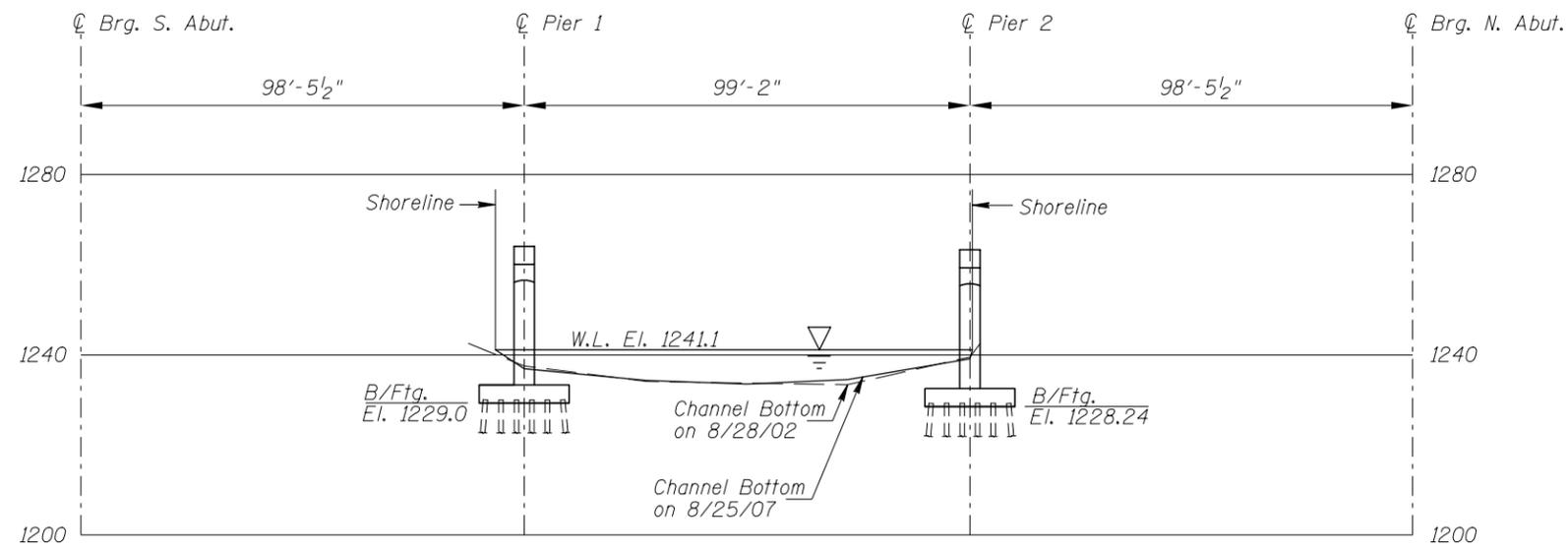
TYPICAL END VIEW OF PIERS

**MINNESOTA
DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION**

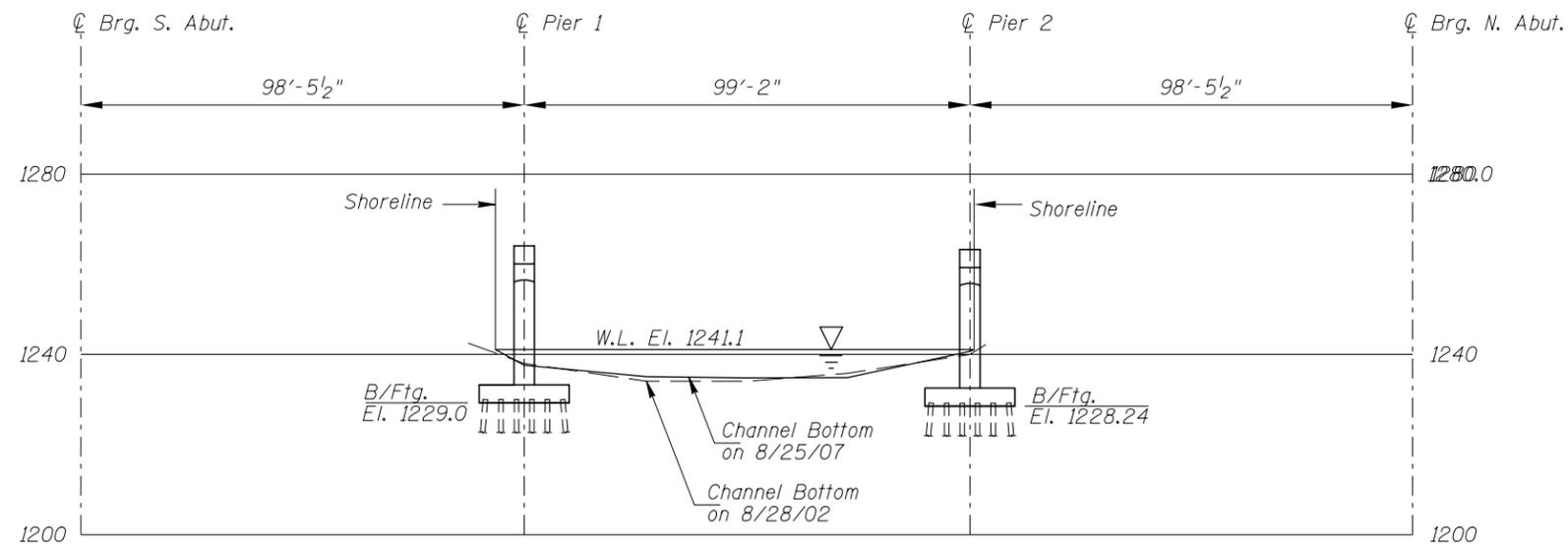
STRUCTURE NO. 69530
OVER THE LITTLE FORK RIVER
DISTRICT I, ST. LOUIS COUNTY

INSPECTION AND SOUNDING PLAN

Drawn By: PRH	COLLINS ENGINEERS 123 North Wacker Drive Suite 300 Chicago, IL 60606 (312) 704-9300 www.collinsengr.com	Date: AUGUST, 2007
Checked By: MDK		Scale: NTS
Code: 52210011		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. 69530 OVER THE LITTLE FORK RIVER DISTRICT I, ST. LOUIS 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: AUGUST, 2007
Checked By: MDK		Scale: 1"=40'
Code: 52210011		Figure No.: 2

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

INSPECTORS: Collins Engineers, Inc. DATE: August 25, 2007

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

BRIDGE NO: 69530 WEATHER: Sunny, 50°F

WATERWAY CROSSED: Little Fork River

DIVING OPERATION: SCUBA SURFACE SUPPLIED AIR
 OTHER

PERSONNEL: John J. Loftus, Valerie Roustan

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

TIME IN WATER: 5:25 p.m.

TIME OUT OF WATER: 5:40 p.m.

WATERWAY DATA: VELOCITY Negligible/None

VISIBILITY 1.0 foot

DEPTH 6.7 Feet maximum at Pier 1

ELEMENTS INSPECTED: Piers 1 and 2

REMARKS: The below water concrete at both piers was smooth and sound with no defects of structural significance observed. The top of the footing along the south side of Pier 2 and along the north side of Pier 1 were located with a probe rod below 1.5 feet of soft silt. Scaling was observed along the entire perimeter of both piers with a maximum penetration of $\frac{1}{2}$ inch.

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. 69530
 INSPECTORS Collins Engineers, Inc.
 ON-SITE TEAM LEADER Daniel G. Stromberg, P.E. 21491
 WATERWAY CROSSED Little Fork River

INSPECTION DATE August 25, 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	6.2'	N	7	N	9	N	7	7	8	8	N	7	7	N	N	N	N	N
	Pier 2	6.7'	N	7	N	9	N	7	7	8	8	N	7	7	N	N	N	N	N

*UNDERWATER PORTION ONLY

REMARKS: The below water concrete at both piers was smooth and sound with no defects of structural significance observed. The top of the footing along the south side of Pier 2 and along the north side of Pier 1 were located with a probe rod below 1.5 feet of soft silt. Scaling was observed along the entire perimeter of both piers with a maximum penetration of 1/2 inch.

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.