UNDERWATER BRIDGE INSPECTION REPORT

STRUCTURE NO. 30505

CSAH NO. 14

OVER THE

RUM RIVER

DISTRICT 3 - ISANTI COUNTY

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 No. 30505, Piers 1 and 2, were found to be in good condition with no significant structural defects observed. The channel bottom around the piers appeared to be stable with no evidence of significant scour.

INSPECTION FINDINGS:

(A) A band of light scaling was observed around the entire perimeters of Piers 1 and 2 from 2 feet below the waterline to 2 feet above the waterline with typical penetrations of 1/8 inch and a maximum penetration of ¼ inch at the upstream nose.

(B) The previously noted undermining at the north end of West Abutment has been repaired with the placing of riprap up to 4 feet in diameter.

(C) A light accumulation of timber debris consisting of logs and branches up to 6 inches in diameter was observed along the entire west face of Pier 1 extending from the channel bottom to the waterline and up to 3 feet off the entire pier face.

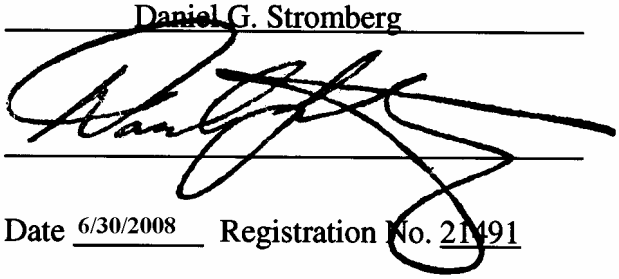
RECOMMENDATIONS:

(A) Monitor timber drift accumulation at Pier 1, and if found to be progressing (to an excessive extent), removal may be warranted at that time.

(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.

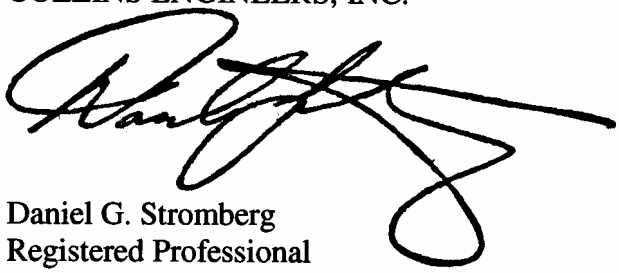
Daniel G. Stromberg



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: 30505

Feature Crossed: Rum River

Feature Carried: CSAH No. 14

Location: District 3 - Isanti County

Bridge Description: The bridge superstructure consists of three spans of multiple steel girders supported by two concrete hammerhead type piers and two concrete abutments. The piers are numbered 1 and 2 starting from the east end of the bridge.

2. INSPECTION DATA

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

Dive Team: Clayton G. Brookins, Valerie Roustan

Date: October 16, 2007

Weather Conditions: Rain, 50^{o} F

Underwater Visibility: 1.0 foot

Waterway Velocity: 1.0 f.p.s

3. SUBSTRUCTURE INSPECTION DATA

Substructure Inspected: Piers 1 and 2.

General Shape: Each pier consists of an oblong rectangular shaft with rounded noses, and rests upon a rectangular concrete footing founded on timber piles.

Maximum Water Depth at Substructure Inspected: Approximately 4.8 feet.

4. WATERLINE DATUM

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

Water Surface: The waterline was approximately 17.2 feet below reference. Assumed Waterline Elevation = 82.8.

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/10/07

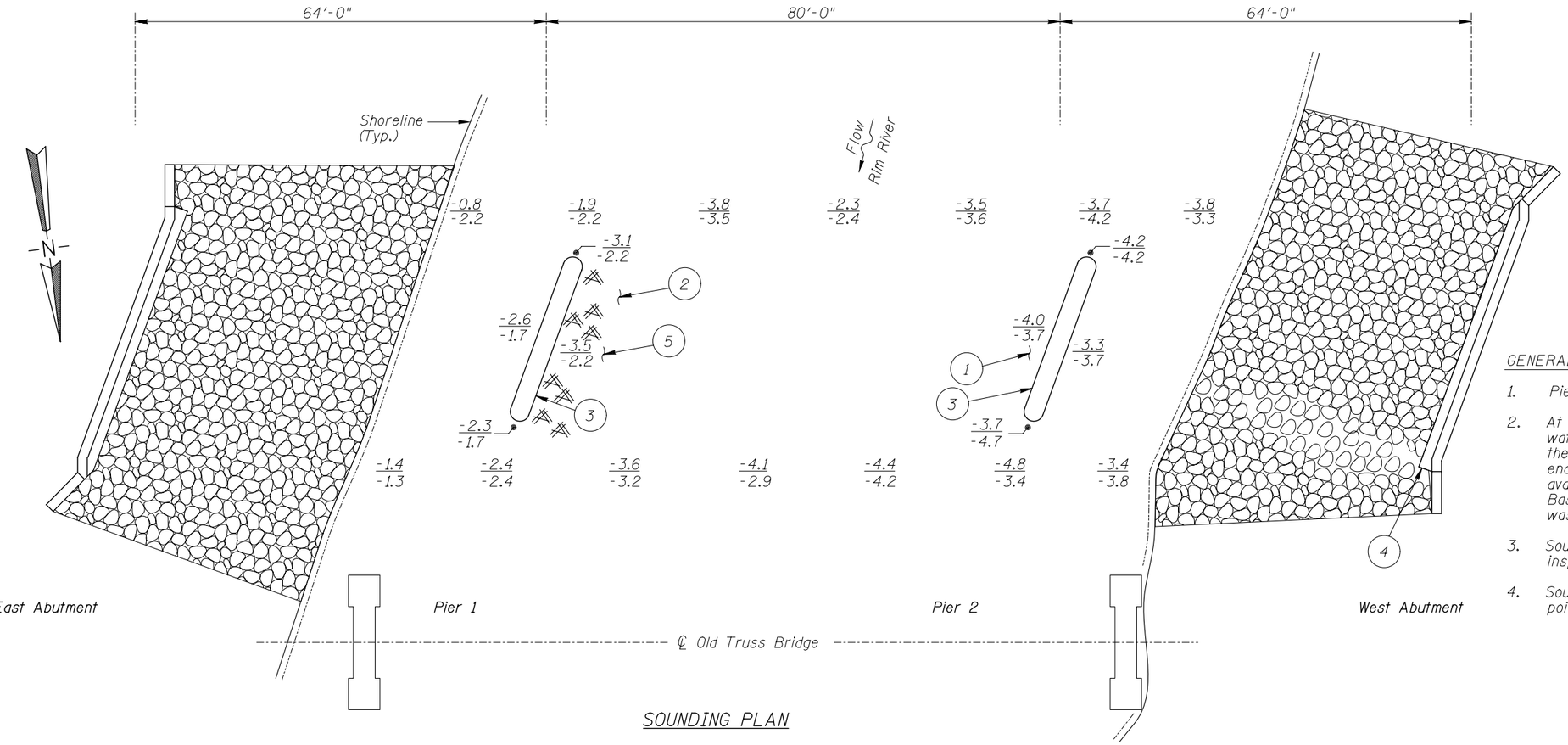
Item 113: Scour Critical Bridges: Code O/02

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 Southwest.

Photograph 2. View of Pier 2, Looking Southwest.



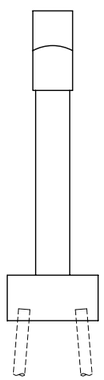
SOUNDING PLAN

GENERAL NOTES:

1. Piers 1 and 2 were inspected underwater.
2. At the time of inspection on October 16, 2007, the waterline was located approximately 17.2 feet below the top of the pier cap of Pier 1 at the downstream end. Since insufficient bridge elevation information was available a reference elevation of 100.0 was assumed. Based on the assumed reference the waterline elevation was 82.8.
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 sand, gravel, and 4-inch-diameter cobbles with up to 1 inch of probe rod penetration.
2. The channel bottom consisted of silty sand with up to 3 inches of probe rod penetration.
3. A band of light scaling was observed around the entire perimeter of Piers 1 and 2 from 2 feet above to 2 feet below the waterline with typical penetrations of 1/18 inch deep and maximum penetrations up to 1/4 inch deep at the upstream noses.
4. The previously noted undermining along the north end of the West Abutment has been repaired with the placement of 4-foot-diameter riprap.
5. A light accumulation of timber debris consisting of 6-inch-diameter and smaller logs and branches was observed along the west face of Pier 1 and extended from the channel bottom to the waterline and up to 3 feet off the face of the pier.



TYPICAL END VIEW OF PIERS

Notes:

All soundings based on 2007 waterline location.

Legend

-6.0	Sounding Depth (10/16/07)
-6.0	Sounding Depth (9/25/02)
	Timber Debris
	Riprap

MINNESOTA
DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

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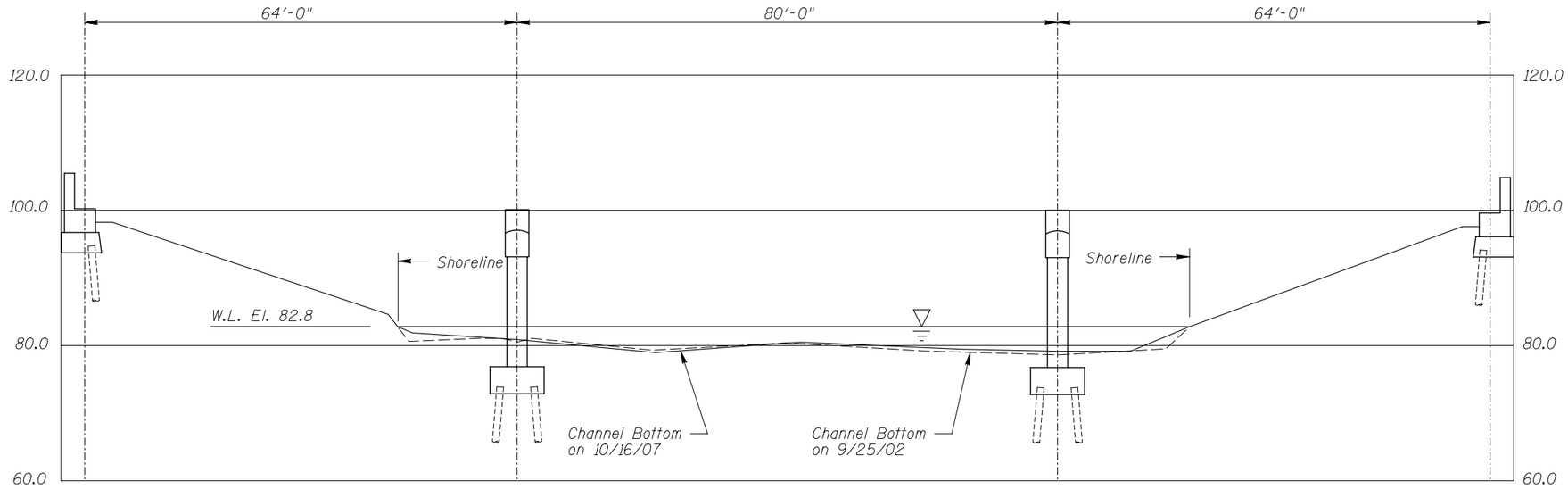
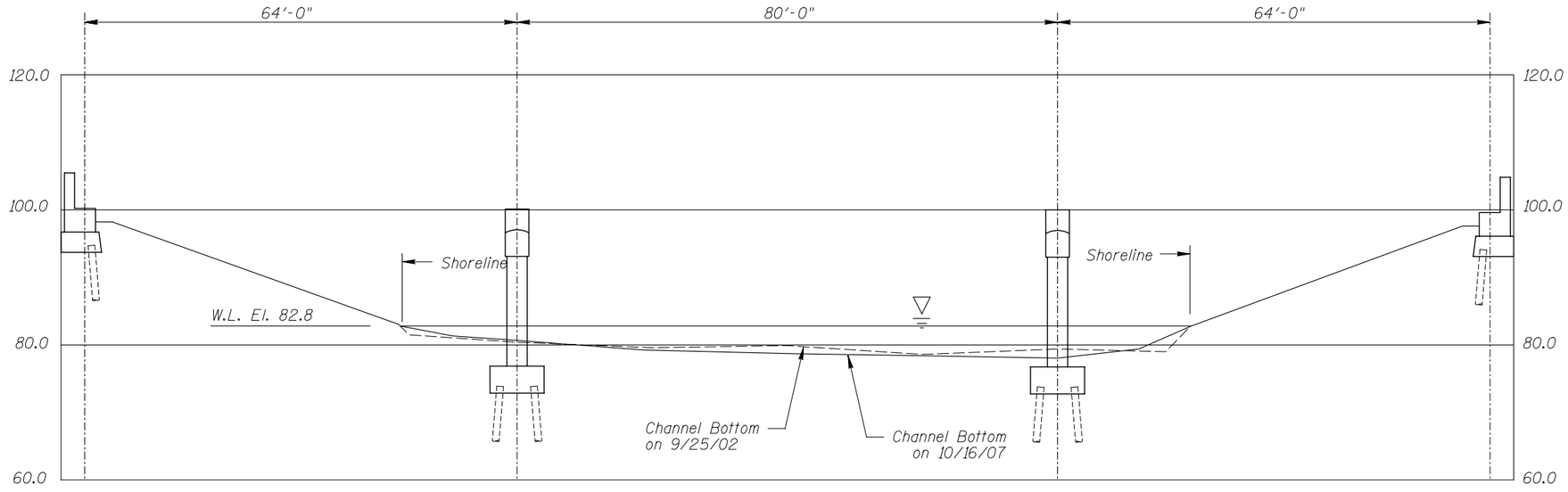
OVER THE RUM RIVER
DISTRICT 3, ISANTI COUNTY

INSPECTION AND SOUNDING PLAN

Drawn By: MDK	COLLINS ENGINEERS 123 North Wacker Drive Suite 300 Chicago, IL 60606 (312) 704-9300 www.collinsengr.com	Date: OCT. 2007
Checked By: DGS		Scale: NTS
Code: 522130305		Figure No.: 1



UPSTREAM FASCIA PROFILE



DOWNSTREAM FASCIA PROFILE

Notes:

Refer to Figure 1 for General Notes.

MINNESOTA
DEPARTMENT OF TRANSPORTATION
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UPSTREAM AND DOWNSTREAM
FASCIA PROFILES

Drawn By: MDK	COLLINS ENGINEERS 123 North Wacker Drive Suite 300 Chicago, IL 60606 (312) 704-9300 www.collinsengr.com	Date: OCT. 2007
Checked By: DGS		Scale: 1"=20'
Code: 522130305		Figure No.: 2

MINNESOTA DEPARTMENT OF TRANSPORTATION
OFFICE OF BRIDGES AND STRUCTURES

DAILY DIVING REPORT

INSPECTORS: Collins Engineers, Inc. DATE: October 16, 2007

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

BRIDGE NO: 30505 WEATHER: Rain, 50° F

WATERWAY CROSSED: Rum River

DIVING OPERATION: X SCUBA _____ SURFACE SUPPLIED AIR

_____ OTHER _____

PERSONNEL: Clayton G. Brookins, Valerie Roustan

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

TIME IN WATER: 4:10 p.m.

TIME OUT OF WATER: 4:40 p.m.

WATERWAY DATA: VELOCITY 1.0 f.p.s

VISIBILITY 1.0 foot

DEPTH 4.8 feet maximum at Pier 2

ELEMENTS INSPECTED: Piers 1 and 2

REMARKS: Overall, the concrete of the piers was in good condition. A band of light scaling was observed around the entire perimeter of Piers 1 and 2 from 2 feet below the waterline to 2 feet above the waterline. The previous noted undermining at the north end of West Abutment has been repaired with the placing of riprap up to 4 feet in diameter. A light accumulation of timber debris consisting of logs and branches up to 6 inch diameter was observed along the entire west face of Pier 1 extending from the channel bottom to the waterline and up to 3 feet off the entire pier face.

FURTHER ACTION NEEDED: _____ YES X NO

Monitor timber drift accumulation, and if found to be progressing (to an excessive extent), removal may be warranted at that time.

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. 30505
INSPECTORS Collins Engineers, Inc.
ON-SITE TEAM LEADER Bradley A. Syler, P.E., S.E.
WATERWAY CROSSED Rum River

INSPECTION DATE October 16, 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

			SUBSTRUCTURE						CHANNEL					GENERAL					
UNIT REFERENCE NO.		MAXIMUM DEPTH OF WATER	PILING	COLUMNS, SHAFTS, OR FACES*	FOOTINGS	DISPLACEMENT	OTHER (BRACING)	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
	UNIT DESCRIPTION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
	Pier 1	3.5’	N	7	N	9	N	7	8	7	7	7	7	7	N	N	N	N	N
	Pier 2	4.8’	N	7	N	9	N	7	8	7	7	N	7	7	N	N	N	N	N

*UNDERWATER PORTION ONLY

REMARKS: Overall, the concrete of the piers was in good condition. A band of light scaling was observed around the entire perimeter of Piers 1 and 2 from 2 feet below the waterline to 2 feet above the waterline. The previous noted undermining at the north end of West Abutment has been repaired with the placing of riprap up to 4 feet in diameter. A light accumulation of timber debris consisting of logs and branches up to 6 inch diameter was observed along the entire west face of Pier 1 extending from the channel bottom to the waterline and up to 3 feet off the entire pier face.

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.