

UNDERWATER BRIDGE INSPECTION REPORT

STRUCTURE NO. 66508
RAVN STREET (MSAS NO. 108)
OVER THE
STRAIGHT RIVER
DISTRICT 6 - RICE 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. 66508, Center Pier and West Abutment, were sound and in good condition with no structurally significant defects observed. A moderate accumulation of timber debris was observed at the upstream end of the Center Pier. A scour depression was also observed at the upstream end of the pier. The channel bottom appeared stable with only the minor scour at the pier.

INSPECTION FINDINGS:

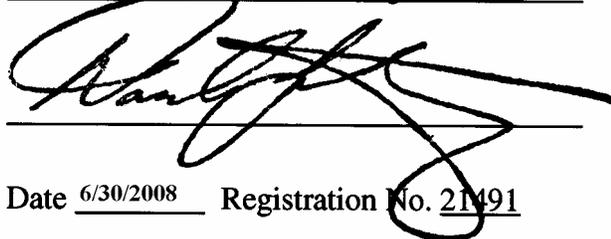
- (A) A moderate accumulation of timber debris consisting of logs and branches 1 foot in diameter and smaller was observed at the upstream nose and along the sides to the midpoint on the west face and to 10 feet downstream on the east face, extending from the channel bottom to 1 foot below the waterline.
- (B) A scour depression 5 feet in radius by 1 foot deep was observed at the upstream end of Center Pier.

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.

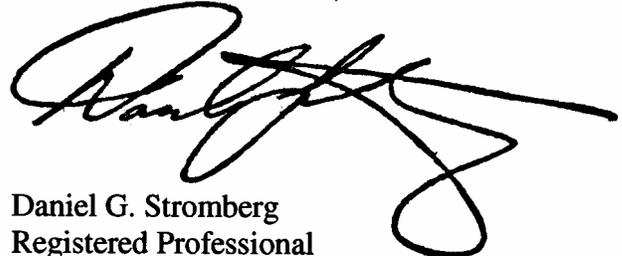
Daniel G. Stromberg



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: 66508

Feature Crossed: Straight River

Feature Carried: Ravn Street (MSAS No. 108)

Location: District 6 - Rice County

Bridge Description: The bridge consists of a continuous two span multiple steel girder superstructure supporting a reinforced concrete deck. The superstructure is supported by two reinforced concrete abutments and one reinforced concrete pier. No design drawings with foundation details were provided.

2. INSPECTION DATA

Professional Engineer/Team Leader: Daniel G. Stromberg, P.E., S.E.

Dive Team: Clayton G. Brookins, Valerie Roustan.

Date: October 23, 2007

Weather Conditions: Sunny, 56° F

Underwater Visibility: 1.0 foot

Waterway Velocity: 2.0 f.p.s

3. SUBSTRUCTURE INSPECTION DATA

Substructure Inspected: Center Pier and West Abutment.

General Shape: The pier is single stem hammerhead with oblong rectangular shaft and rounded ends. No foundation was available.

Maximum Water Depth at Substructure Inspected: Approximately 5.0 feet.

4. WATERLINE DATUM

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

Water Surface: The waterline was approximately 12.5 feet below reference.
Assumed Waterline Elevation = 87.5.

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 I/07

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

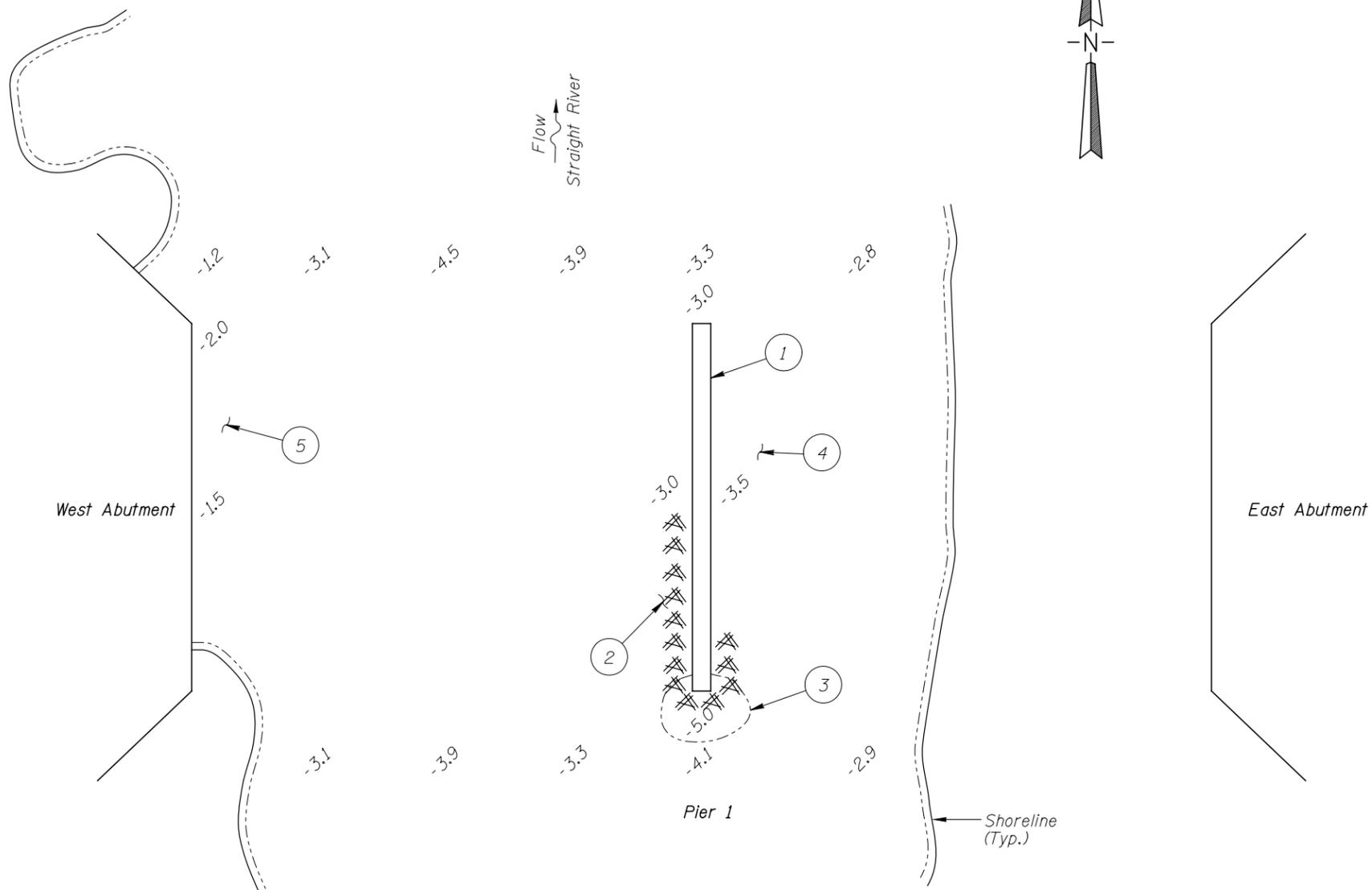
 Yes X No



Photograph 1. View of Center Pier, Looking Southeast.



Photograph 2. View of West Abutment, Looking South.



SOUNDINGS PLAN

INSPECTION NOTES:

- ① Concrete was in smooth and sound condition.
- ② A moderate accumulation of timber debris consisting of 1-foot-diameter and smaller logs and branches was observed at the upstream nose and extended along the west face to the midpoint, along the east face for 10 feet, and from the channel bottom up to 1 foot below the waterline.
- ③ A scour depression measuring 5 feet in radius by 1 foot deep was observed at the upstream nose of Pier 1.
- ④ The channel bottom consisted of rocks and gravel with a probe rod penetration up to 2 inches at the upstream and downstream noses and rocks and gravel with no probe rod penetration at the midpoints.
- ⑤ The channel bottom consisted of sand with up to 6 inches of probe rod penetration along most of the West Abutment with rocks and no probe rod penetration at the downstream end.

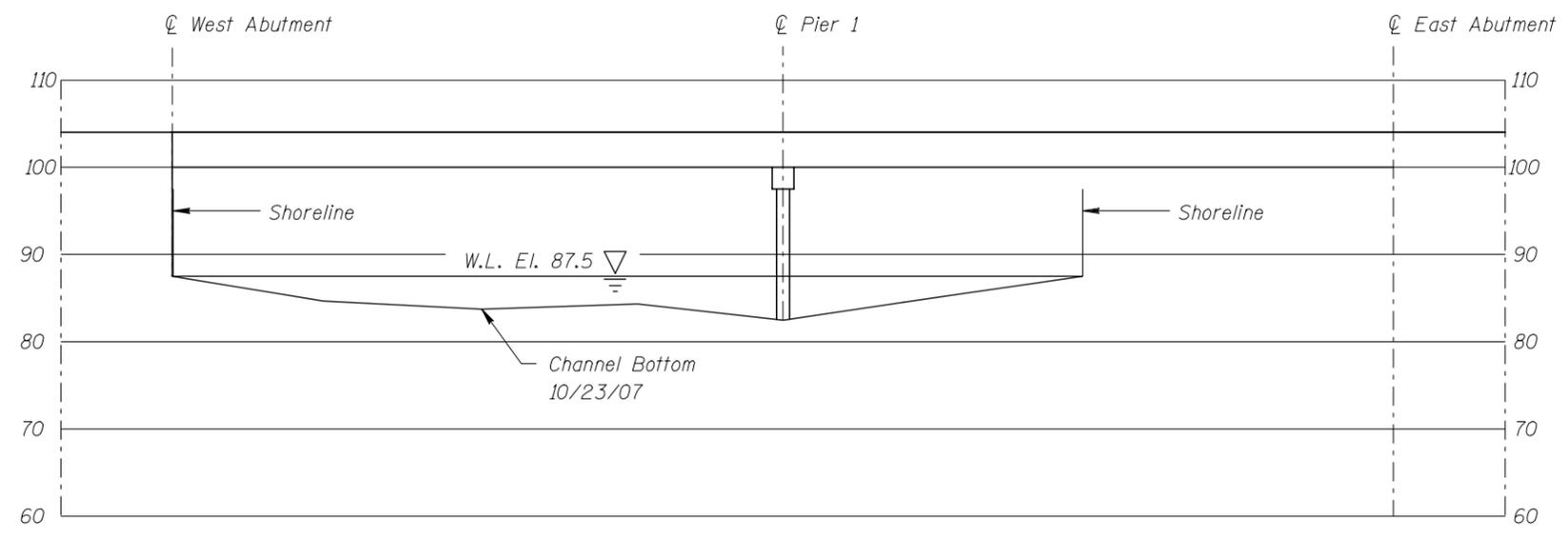
GENERAL NOTES:

- 1. The West Abutment and Pier 1 were inspected underwater.
- 2. At the time of inspection, on October 23, 2007, the waterline was located approximately 12.5 feet below the top of the pier cap on the downstream end of Pier 1. Since insufficient reference elevation information was available, an elevation of 100.0 was assumed. This corresponds to a waterline elevation of 87.5.
- 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 as well as around the substructure units.

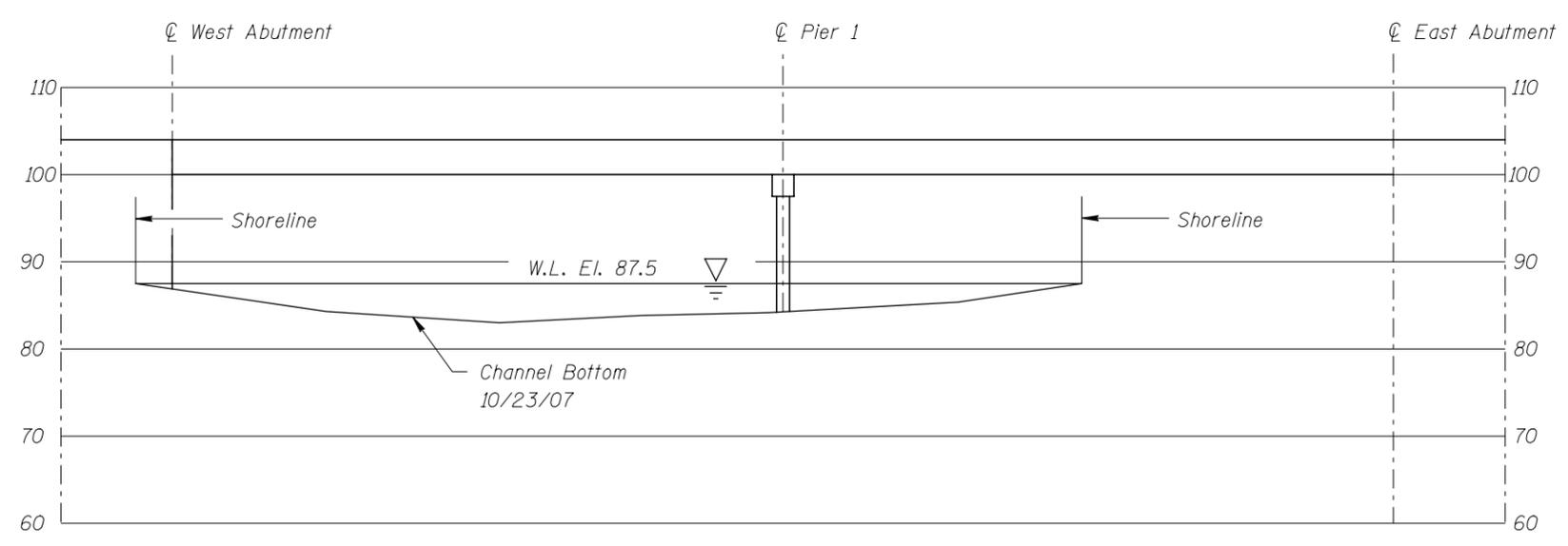
Legend

- 0.4 Sounding Depth (10/23/07)
- Timber Debris

MINNESOTA DEPARTMENT OF TRANSPORTATION UNDERWATER BRIDGE INSPECTION		
STRUCTURE NO. 66508 OVER THE STRAIGHT RIVER DISTRICT 6, RICE COUNTY		
INSPECTION AND SOUNDING PLAN		
Drawn By: CAI	COLLINS ENGINEERS	Date: OCT. 2007
Checked By: DGS	<small>133 North Wacker Drive Suite 300 Chicago, IL 60606 (312) 704-9300 www.collinsengr.com</small>	Scale: NTS
Code: 522166508		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. 66508 OVER THE STRAIGHT RIVER DISTRICT 6, RICE COUNTY		
UPSTREAM AND DOWNSTREAM FASCIA PROFILES		
Drawn By: CAI	COLLINS ENGINEERS <small>133 North Wacker Drive Suite 300 Chicago, IL 60606 (312) 704-9300 www.collinsengr.com</small>	Date: OCT. 2007
Checked By: DGS		Scale: 1"=20'
Code: 522166508		Figure No.: 2

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

INSPECTORS: Collins Engineers, Inc. DATE: October 23, 2007

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

BRIDGE NO: 66508 WEATHER: Sunny, 56° F

WATERWAY CROSSED: Straight River

DIVING OPERATION: SCUBA SURFACE SUPPLIED AIR
 OTHER

PERSONNEL: Clayton G. Brookins, Valerie Roustan

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

TIME IN WATER: 10:00 a.m.

TIME OUT OF WATER: 10:30 a.m.

WATERWAY DATA: VELOCITY 2.0 f.p.s

VISIBILITY 1.0 foot

DEPTH 5.0 feet maximum at Center Pier

ELEMENTS INSPECTED: Center Pier and West Abutment

REMARKS: Overall, the concrete of the pier and abutment was smooth and sound. A moderate accumulation of timber debris consisting of logs and branches 1 foot in diameter and smaller was observed at the upstream nose and along the sides to the midpoint on the west face and to 10 feet downstream on the east face, extending from the channel bottom to 1 foot below the waterline. A scour depression 5 feet in radius by 1 foot deep was observed at the upstream end of Center Pier. The channel bottom at the pier consisted of rocks and gravel with probe rod penetrations of up to 2 inches at the upstream and downstream ends of the pier, and the channel bottom consisted of rocks and gravel with no probe rod penetration at the midpoints of the pier. The channel bottom at the West Abutment consisted of sandy silt with up to 6 inches of probe rod penetration and rocks with no penetration at the downstream end.

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. 66508
 INSPECTORS Collins Engineers, Inc.
 ON-SITE TEAM LEADER Daniel G. Stromberg, P.E., S.E.
 WATERWAY CROSSED Straight River

INSPECTION DATE October 23, 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 (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
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
	Center Pier	5.0'	N	7	N	9	N	7	7	7	7	7	7	7	N	N	N	N	N
	West Abutment	2.0	N	7	N	9	N	7	8	N	N	N	8	7	N	N	N	N	N

*UNDERWATER PORTION ONLY

REMARKS: Overall, the concrete of the pier and abutment was smooth and sound. A moderate accumulation of timber debris consisting of logs and branches 1 foot in diameter and smaller was observed at the upstream nose and along the sides to the midpoint on the west face and to 10 feet downstream on the east face, extending from the channel bottom to 1 foot below the waterline. A scour depression 5 feet in radius by 1 foot deep was observed at the upstream end of Center Pier. The channel bottom at the pier consisted of rocks and gravel with probe rod penetrations of up to 2 inches at the upstream and downstream ends of the pier, and the channel bottom consisted of rocks and gravel with no probe rod penetration at the midpoints of the pier. The channel bottom at the West Abutment consisted of sandy silt with up to 6 inches of probe rod penetration and rocks with no penetration at the downstream end.

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.