

UNDERWATER BRIDGE INSPECTION REPORT

STRUCTURE NO. 30505

CSAH NO. 14

OVER THE

RUM RIVER

DISTRICT 3 - ISANTI COUNTY



JULY 27, 2012

PREPARED FOR THE

MINNESOTA DEPARTMENT OF TRANSPORTATION

BY

COLLINS ENGINEERS, INC.

AND

WSB & ASSOCIATES, INC.

JOB NO. 2107

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. The concrete of both piers exhibited light scaling below the waterline with up to 1/4 inch maximum penetrations.

INSPECTION FINDINGS:

- (A) A band of light scaling was observed around the entire perimeters of Piers 1 and 2 from 7 feet below the waterline to 3 feet above the waterline with typical penetrations of 1/8 inch and a maximum penetration of 1/4 inch at the upstream nose.
- (B) Moderate accumulation of timber debris consisting of logs and branches up to 8 inches in diameter was observed along the upstream nose and the entire west face of Pier 2 extending from the channel bottom to the waterline and up to 3 feet off the pier face.

RECOMMENDATIONS:

- (A) Monitor the timber debris accumulation at Pier 2, during future inspections, and if found to be increasing to a more detrimental extent, removal operations may become warranted at that time.

- (B) Reinspect the submerged substructure units at the normal maximum recommended (NBIS) interval of sixty (60) months.

WSB and Associates



Barritt Lovelace
Registered Professional Engineer
Bridge Safety Inspection Team Leader

Respectfully submitted,

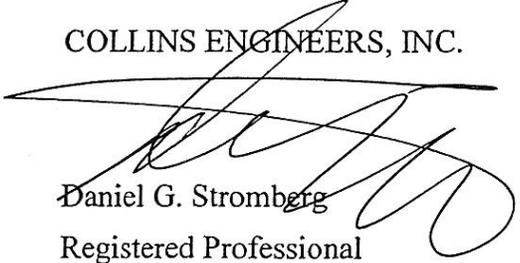
PROFESSIONAL ENGINEER

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 6/30/14 License # 21491

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: Barritt Lovelace, P.E (WSB)

Dive Team: Brad Robinson (WSB), John Loftus (Collins)

Date: July 27, 2012

Weather Conditions: Sunny, 70° F

Underwater Visibility: 1.0 foot

Waterway Velocity: 1 ft/sec

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 9.8 feet.

4. WATERLINE DATUM

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

Water Surface: The waterline was approximately 12 feet below reference.
Assumed Waterline Elevation = 88.

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/07/12

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

6. STRUCTURAL ELEMENT CONDITION RATING

Item #	Element Description	Quantity	Unit	Conditions				
				1	2	3	4	5
210	Concrete Pier Wall	39	LF	39				
361	Scour Smart Flag	1	EA	1				
985	Slopes and Slope Protection	1	EA	1				



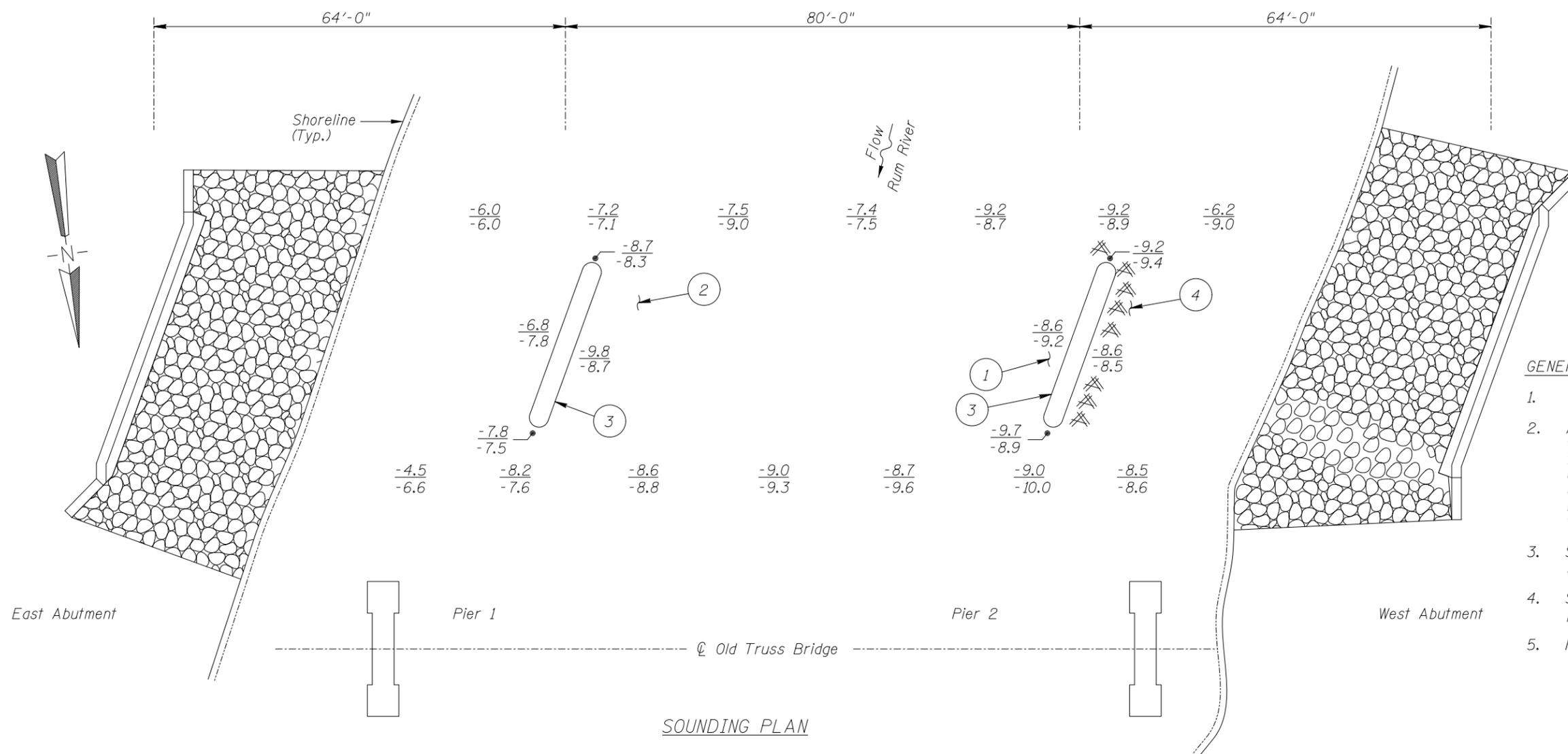
Photograph 1. Overall View of Structure , Looking Northwest.



Photograph 2. View of Pier 1, Looking West.



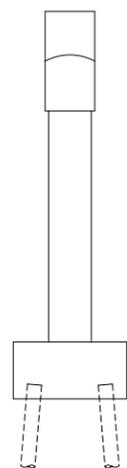
Photograph 3. View of Pier 2, Looking East.



SOUNDING PLAN

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 3 feet below the waterline with typical penetrations of 1/8 inch deep and maximum penetrations of up to 1/4 inch deep at the upstream noses.
- ④ A moderate accumulation of timber debris, consisting of 8-inch-diameter and smaller logs and branches, was observed along the upstream nose and west face of Pier 2 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

GENERAL NOTES:

1. Piers 1 and 2 were inspected underwater.
2. At the time of inspection on July 27, 2012, the waterline was located approximately 12.0 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 88.0.
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.
5. Most of scattered rip rap has been washed out.

Legend

- 6.0 Sounding Depth (7/27/12)
- 6.0 Sounding Depth (10/16/07)
- Timber Debris
- Riprap

Notes:

All soundings based on 2012 waterline location.

**MINNESOTA
DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION**

STRUCTURE NO. 30505
OVER THE RUM RIVER
DISTRICT 3, ISANTI COUNTY

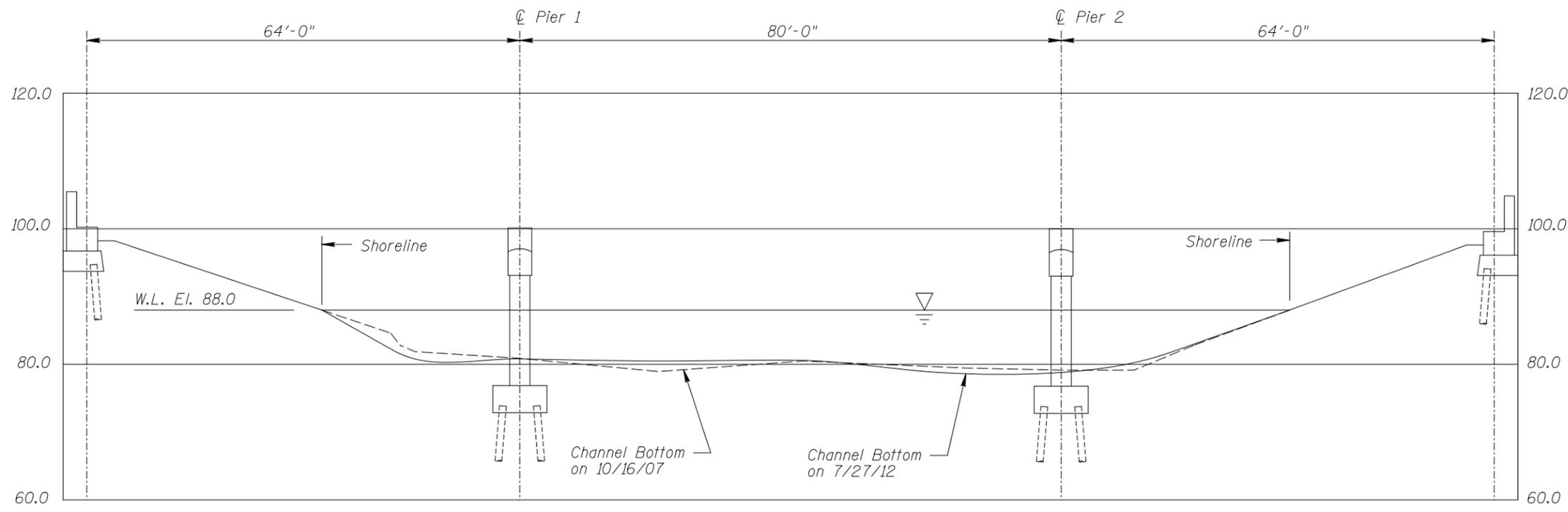
INSPECTION AND SOUNDING PLAN



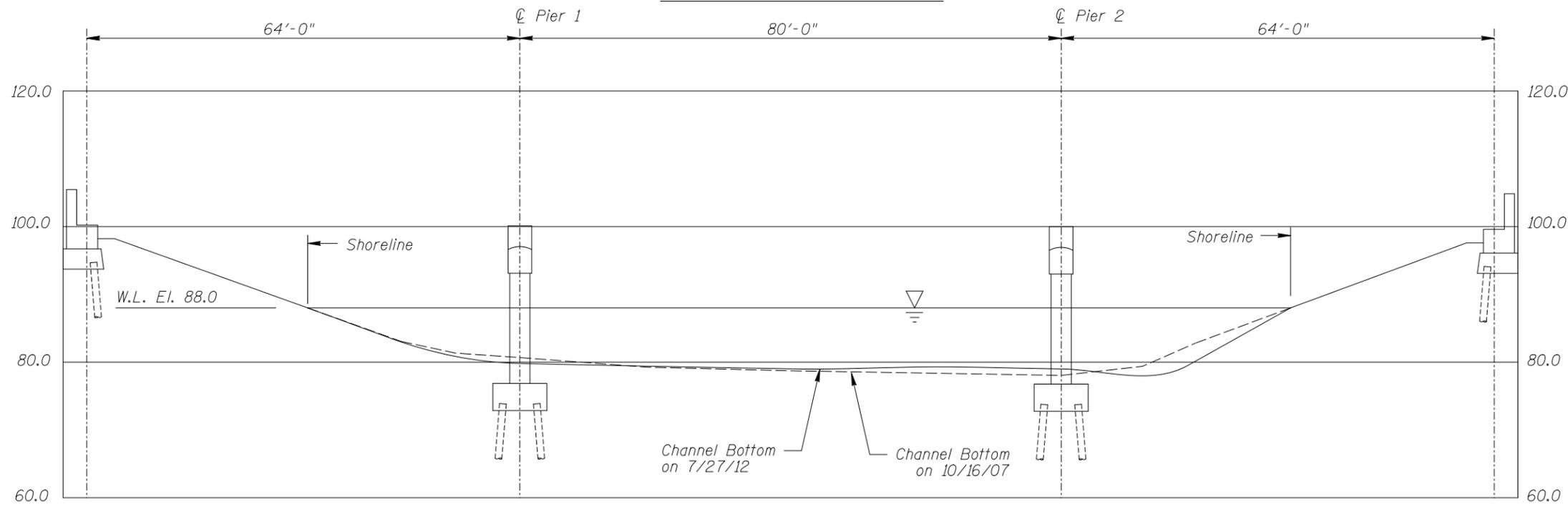
Drawn By: BJR
Checked By: BRL
Code: 522130305



Date: JULY 2012
Scale: NTS
Figure No.: 1



UPSTREAM FASCIA PROFILE



DOWNSTREAM FASCIA PROFILE

Notes:
Refer to Figure 1 for General Notes.

MINNESOTA DEPARTMENT OF TRANSPORTATION UNDERWATER BRIDGE INSPECTION		
STRUCTURE NO. 30505 OVER THE RUM RIVER DISTRICT 3, ISANTI COUNTY		
UPSTREAM AND DOWNSTREAM FASCIA PROFILES		
Drawn By: MDK	COLLINS ENGINEERS <small>123 North Wacker Drive Suite 300 Chicago, IL 60606 (312) 704-9300 www.collinsengr.com</small>	Date: JULY 2012
Checked By: DGS		Scale: 1"=20'
Code: 522130305		Figure No.: 2

WSB
& Associates, Inc.
701 Xenia Avenue South, Suite 300
Minneapolis, MN 55416
www.wsbeng.com
703-511-800 • Fax 703-511-1700
INFRASTRUCTURE • ENGINEERING • PLANNING • CONSTRUCTION

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

INSPECTORS: WSB & Associates and Collins DATE: July 27, 2012

ON-SITE TEAM LEADER: Barritt Lovelace, P.E.

BRIDGE NO: 30505 WEATHER: Sunny, 70° F

WATERWAY CROSSED: Rum River

DIVING OPERATION: SCUBA SURFACE SUPPLIED AIR
 OTHER

PERSONNEL: Brad Robinson (WSB), John Loftus (Collins)

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

TIME IN WATER: 11:45 a.m.

TIME OUT OF WATER: 12:15 p.m.

WATERWAY DATA: VELOCITY 1.0 ft/sec

VISIBILITY 1.0 foot

DEPTH 9.2 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 3 feet below the waterline to 7 feet below the waterline. Moderate accumulation of timber debris consisting of logs and branches up to 8 inch diameter was observed along the upstream nose and entire west face of Pier 2 extending from the channel bottom to the waterline and up to 3 feet off the pier face.

FURTHER ACTION NEEDED: YES NO

Monitor the timber debris accumulation at Pier 2 during future inspections, and if found to be increasing to a more detrimental extent, removal operations may become warranted at that time.

Reinspect the submerged substructure units at the normal maximum recommended (NBIS) interval of sixty (60) months.

MINNESOTA DEPARTMENT OF TRANSPORTATION
OFFICE OF BRIDGES AND STRUCTURES

UNDERWATER INSPECTION CONDITION RATING FORM

BRIDGE NO. 30505
 INSPECTORS WSB & Associates, Inc. and Collins Engineers, Inc.
 ON-SITE TEAM LEADER Barritt Lovelace, P.E.
 WATERWAY CROSSED Rum River

INSPECTION DATE July 27, 2012

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
	Pier 1	9.8'	N	7	N	8	N	7	8	7	7	N	7	7	N	N	N	N	N
	Pier 2	9.2'	N	7	N	8	N	7	8	7	7	6	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 3 feet below the waterline to 7 feet below the waterline. Moderate accumulation of timber debris consisting of logs and branches up to 8 inch diameter was observed along the upstream nose and entire west face of Pier 2 extending from the channel bottom to the waterline and up to 3 feet off the 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.