

UNDERWATER BRIDGE INSPECTION REPORT

STRUCTURE NO. 69541

CSAH 52

OVER THE

ST LOUIS RIVER

ST. LOUIS COUNTY



JULY 25, 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 below water at Bridge No. 69541, Piers 1 and 2, were in good condition with no defects of structural significance. Light scaling was observed from 2 feet above the water line to the channel bottom, with a maximum of 1/8 inch penetration. The channel bottom appeared stable and well established.

INSPECTION FINDINGS:

- (A) Light scaling was observed from 2 feet above the water line to the channel bottom, with a maximum of 1/8 inch penetration.
- (B) The channel bottom material consisted of sand and gravel with random 6 to 8 inch riprap, with 3 inches allowable penetration.

RECOMMENDATIONS:

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

Inspection Team Leader:

WSB and Associates



Barritt Lovelace
Registered Professional Engineer
Bridge Safety Inspection Team Leader

Respectfully submitted,

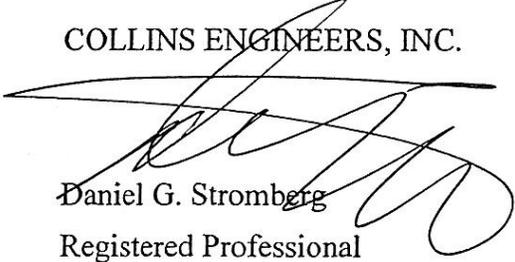
PROFESSIONAL ENGINEER

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: 69541

Feature Crossed: St Louis River

Feature Carried: CSAH 52

Location: St. Louis County

Bridge Description: The superstructure consists of three spans of precast beams supporting a reinforced concrete deck. The bridge is supported by two reinforced concrete abutments and two reinforced concrete piers.

2. INSPECTION DATA

Professional Engineer/Team Leader: Barritt Lovelace, P.E (WSB)

Dive Team: Kasey Yoder (WSB), John Loftus (Collins)

Date: July 25, 2012

Weather Conditions: Cloudy, 70° F

Underwater Visibility: 2.0 foot

Waterway Velocity: 2.0 ft/sec

3. SUBSTRUCTURE INSPECTION DATA

Substructure Inspected: Piers 1 and 2

General Shape: Each pier consisted of a reinforced concrete hammerhead pier cap supported by a reinforced concrete pier wall. At the time of inspection, no plans were available for this structure, therefore the substructure foundation configuration is unknown.

Maximum Water Depth at Substructure Inspected: Approximately 3.8 feet.

4. WATERLINE DATUM

Water Level Reference: The top of the pier cap at the downstream end of Pier 2.

Water Surface: The waterline was approximately 26.7 feet below reference.
Assumed Waterline Elevation = 73.3.

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 A/07/12

Item 113: Scour Critical Bridges: 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

6. STRUCTURAL ELEMENT CONDITION RATING:

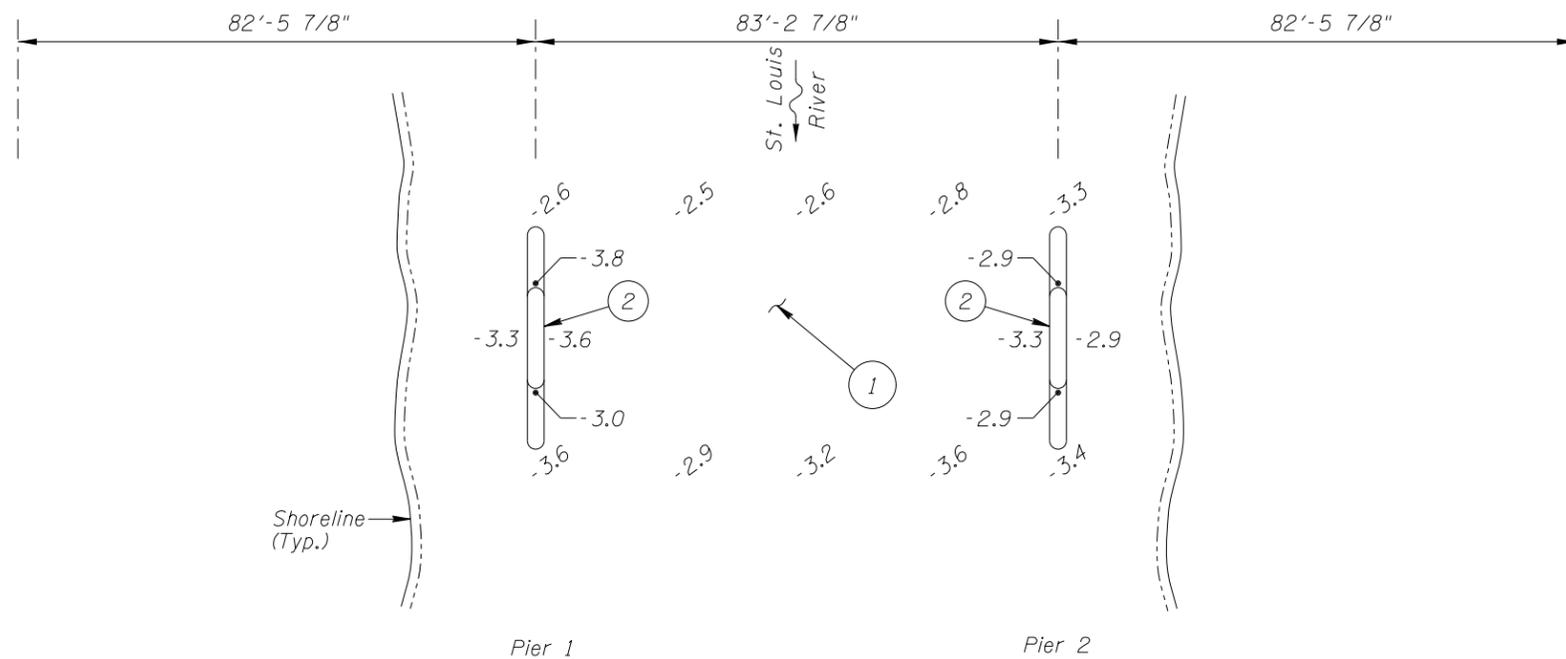
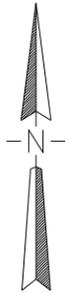
Item #	Element Description	Quantity	Unit	Conditions				
				1	2	3	4	5
210	Reinforced Concrete Pier Wall	36	LF	36				
985	Slopes & Slope Protection	1	EA	1				



Photograph 1. View of Pier 1, Looking Southwest.



Photograph 2. View of Pier 2, Looking West.



SOUNDING PLAN

Legend
 -1.2 Sounding Depth from Waterline (7/25/12)

GENERAL NOTES:

1. Piers 1 and 2 were inspected underwater.
2. At the time of inspection on July 25, 2012, the waterline was located approximately 26.7 feet below the top of the pier cap at the downstream end of Pier 2. Since insufficient bridge elevation information was available a reference elevation of 100.0 was assumed. Based on the assumed reference the waterline elevation was 73.3.
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 material consisted of sand and gravel with random pieces of riprap 6 to 8 inch and smaller, allowing up to 3 inches of probe rod penetration.
- (2) Light concrete scaling, with up to 1/8 inch penetration was observed from 2 feet above waterline to channel bottom.

**MINNESOTA
 DEPARTMENT OF TRANSPORTATION
 UNDERWATER BRIDGE INSPECTION**

STRUCTURE NO. 69541
 OVER THE ST. LOUIS RIVER
 DISTRICT I, ST. LOUIS COUNTY

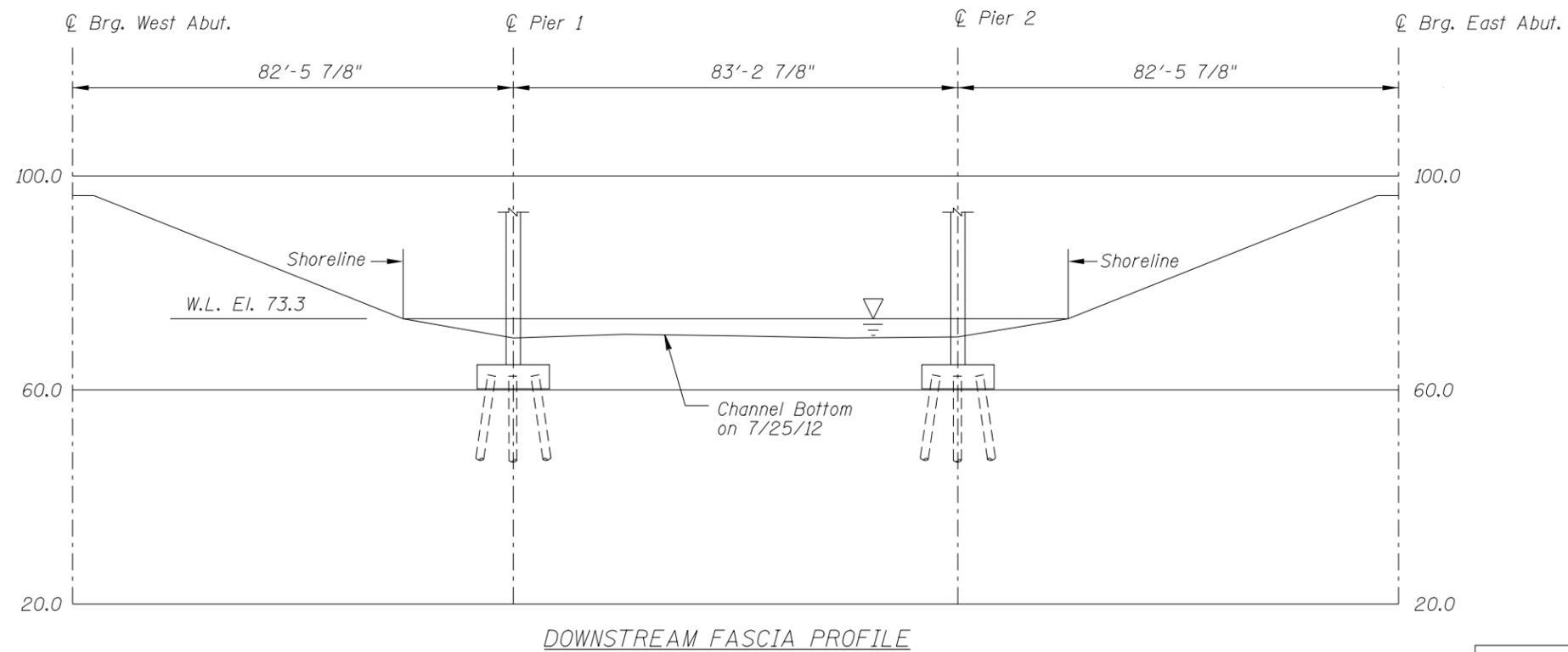
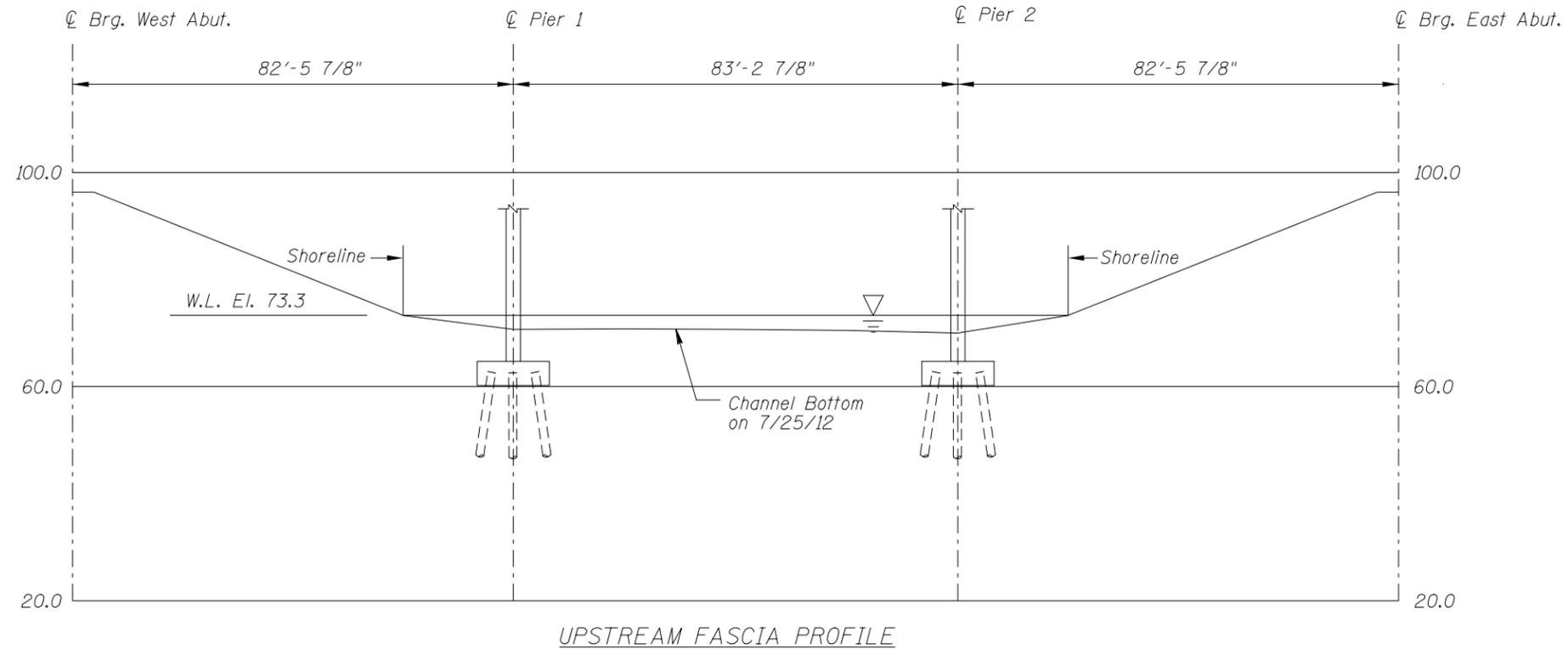
INSPECTION AND SOUNDING PLAN

WSB
 & Associates, Inc.
 701 Xenia Avenue South, Suite 300
 Minneapolis, MN 55416
 www.wsbeng.com
 763-541-800 • Fax 763-541-1700
 INFRASTRUCTURE • ENGINEERING • PLANNING • CONSTRUCTION

Drawn By: BJR
 Checked By: BRL
 Code: ---

**COLLINS
 ENGINEERS**
 123 North Wacker Drive
 Suite 300
 Chicago, IL 60606
 (312) 704-9300
 www.collinsengr.com

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



Note:
Refer to Figure 1 for General Notes.

MINNESOTA DEPARTMENT OF TRANSPORTATION UNDERWATER BRIDGE INSPECTION		
STRUCTURE NO. 69541 OVER THE ST. LOUIS RIVER DISTRICT 1, ST. LOUIS COUNTY		
UPSTREAM AND DOWNSTREAM FASCIA PROFILES		
Drawn By: BJR	COLLINS ENGINEERS	Date: JULY 2012
Checked By: BRL	123 North Wacker Drive Suite 300 Chicago, IL 60606 (312) 704-9300 www.collinsengr.com	Scale: 1"=20'
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WSB & Associates, Inc.	701 Xenia Avenue South, Suite 300 Minneapolis, MN 55416 www.wsbenr.com
INFRASTRUCTURE • ENGINEERING • PLANNING • CONSTRUCTION	

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

INSPECTORS: WSB & Associates and Collins DATE: July 25, 2012

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

BRIDGE NO: 69541 WEATHER: Cloudy, 70° F

WATERWAY CROSSED: St Louis River

DIVING OPERATION: _____ SCUBA _____ SURFACE SUPPLIED AIR
 OTHER Wading

PERSONNEL: Kasey Yoder (WSB), John Loftus (Collins)

EQUIPMENT: Wetsuit, Hammer, Scraper, Sounding Rod, Camera

TIME IN WATER: 10:00 a.m.

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

WATERWAY DATA: VELOCITY 2.0 ft/sec.

VISIBILITY 2.0 feet

DEPTH 3.8 feet maximum at Pier 2

ELEMENTS INSPECTED: Pier 1 and Pier 2

REMARKS: Overall, Piers 1 and 2 were in good condition with no defects of structural significance. Light scaling was observed from 2 feet above the waterline to the channel bottom with 1/8 inch penetration. The channel bottom appeared stable and well established.

FURTHER ACTION NEEDED: _____ YES NO

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. 69541
 INSPECTORS WSB & Associates, Inc. and Collins Engineers, Inc.
 ON-SITE TEAM LEADER Barritt Lovelace, P.E.
 WATERWAY CROSSED St Louis River

INSPECTION DATE July, 25, 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	3.8'	N	7	N	8	N	7	8	6	6	N	6	7	N	N	N	N	N
	Pier 2	3.4'	N	7	N	8	N	7	8	6	6	N	6	7	N	N	N	N	N

*UNDERWATER PORTION ONLY

REMARKS: Overall, Piers 1 and 2 were in good condition with no defects of structural significance. Light scaling was observed from 2 feet above the waterline to the channel bottom with 1/8 inch penetration. The channel bottom appeared stable and well established.

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.