

UNDERWATER BRIDGE INSPECTION REPORT

STRUCTURE NO. 69508

CR 230

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. 69508, Piers 1 and 2, were in good condition with no defects of structural significance. Light scaling was observed from 3 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 on both piers from 3 feet above the water line to the channel bottom, with a maximum of 1/8 inch penetration.
- (B) The channel bottom material consisted of 6 to 8 inch diameter riprap, with no 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,

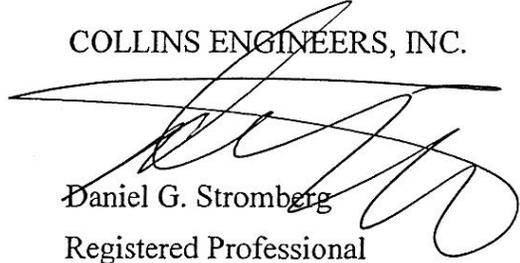
PROFESSIONAL ENGINEER

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: 69508

Feature Crossed: St Louis River

Feature Carried: CR 230

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: 1.0 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 pier cap supported by a reinforced concrete pier wall. At the time of inspection, no plans were available for this structure, therefore the substructure configuration was unknown.

Maximum Water Depth at Substructure Inspected: Approximately 3.2 feet.

4. WATERLINE DATUM

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

Water Surface: The waterline was approximately 26.9 feet below reference.
Assumed Waterline Elevation = 73.1.

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 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:

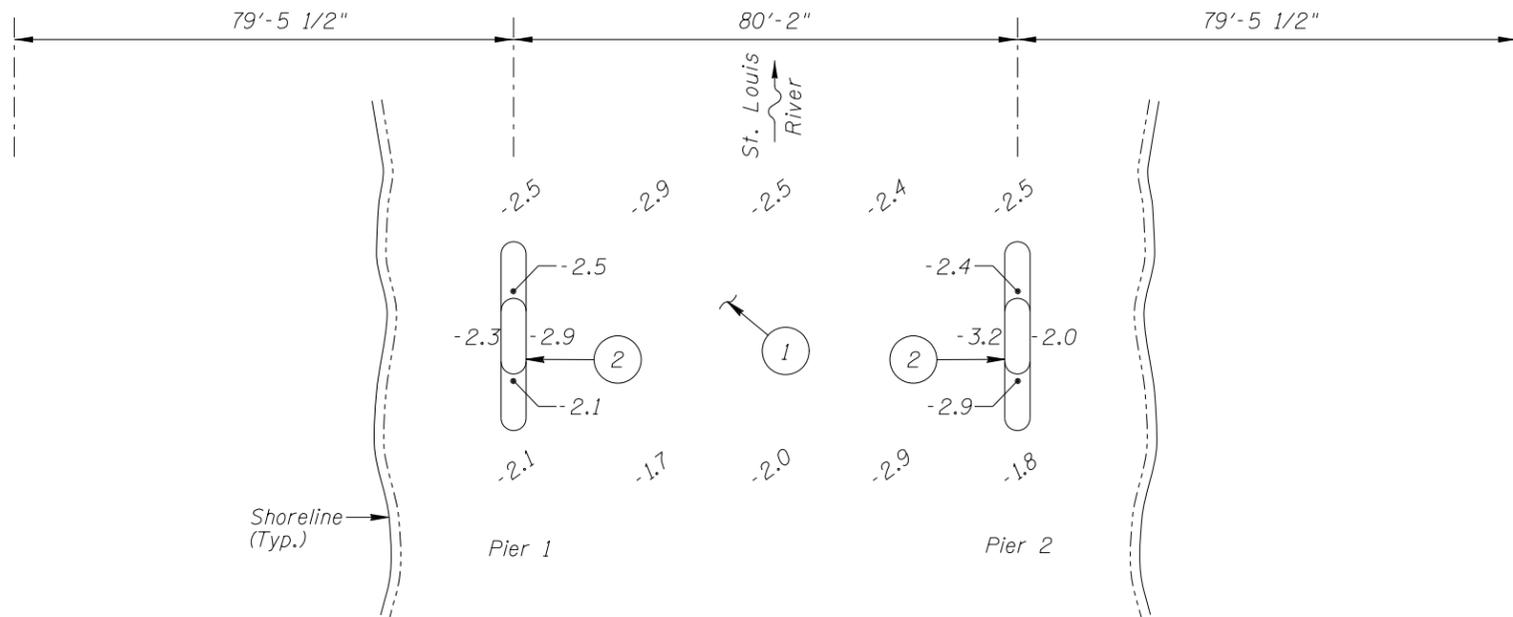
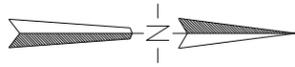
Item #	Element Description	Quantity	Unit	Conditions				
				1	2	3	4	5
210	Concrete Pier Wall	66	LF	66				
985	Slopes	1	EA		1			



Photograph 1. View of Pier 1, Looking South.



Photograph 2. View of Pier 2, Looking North.



SOUNDING PLAN

Legend

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

Timber Debris

Note:

All soundings are based on 2012 waterline location.

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 26.9 feet below the top of the pier cap at the downstream end of Pier 1. Since insufficient bridge elevation information was available a reference elevation of 100.0 was assumed. Based on the assumed reference the waterline elevation was 73.1.
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 riprap of 6 to 8 inch dia. allowing no probe rod penetration.
- ② Light concrete scaling, with 1/8 inch penetration was observed from 3 feet above waterline to channel bottom.

**MINNESOTA
DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION**

STRUCTURE NO. 69508
OVER THE ST. LOUIS RIVER
DISTRICT 1, ST. LOUIS COUNTY

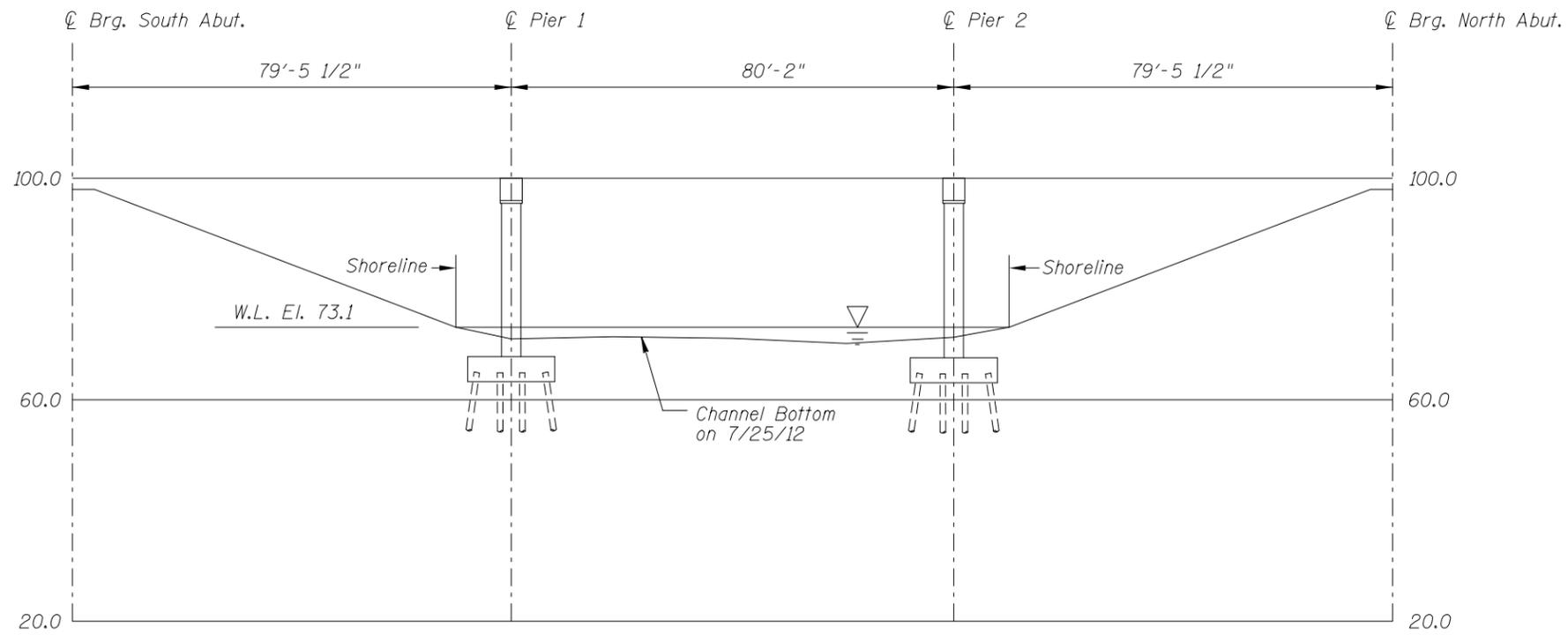
INSPECTION AND SOUNDING PLAN



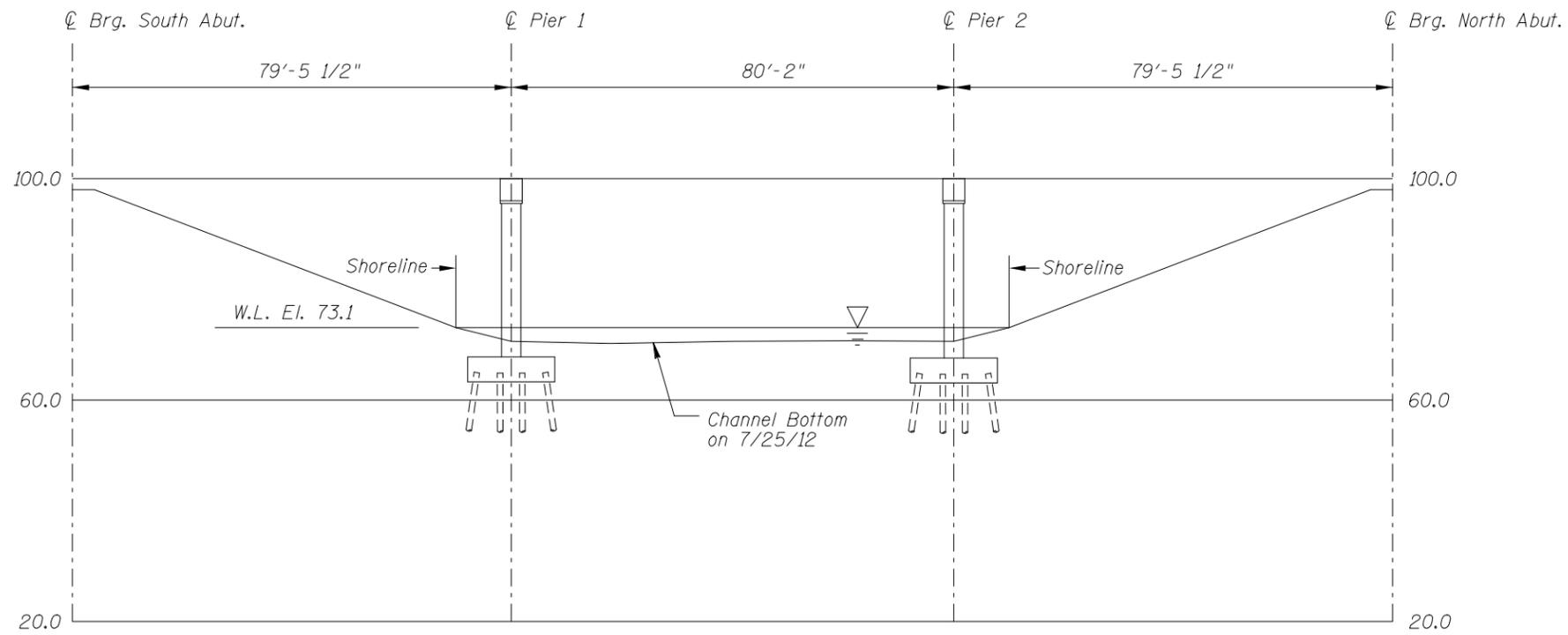
Drawn By: BJR
Checked By: BRL
Code: ---

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



UPSTREAM FASCIA PROFILE



DOWNSTREAM FASCIA PROFILE

Note:

Refer to Figure 1 for General Notes.



MINNESOTA DEPARTMENT OF TRANSPORTATION UNDERWATER BRIDGE INSPECTION		
STRUCTURE NO. 69508 OVER THE ST. LOUIS RIVER DISTRICT I, ST. LOUIS COUNTY		
UPSTREAM AND DOWNSTREAM FASCIA PROFILES		
Drawn By: BJR	COLLINS ENGINEERS	Date: JULY 2012
Checked By: BRL		Scale: 1"=20'
---	123 North Wacker Drive Suite 300 Chicago, IL 60606 (312) 704-9300 www.collinsengr.com	Figure No.: 2

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: 69508 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: 18:15

TIME OUT OF WATER: 18:40

WATERWAY DATA: VELOCITY 2.0 ft/sec.

VISIBILITY 1.0 feet

DEPTH 3.2 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 3 feet above the waterline to the channel bottom with 1/8 inch penetration. The channel bottom appeared stable and in good condition.

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. 69508
 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	2.9'	N	7	N	8	N	7	7	6	6	N	6	7	N	N	N	N	N
	Pier 2	3.2'	N	7	N	8	N	7	7	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 3 feet above the waterline to the channel bottom with 1/8 inch penetration. The channel bottom appeared stable and in good condition.

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.