

UNDERWATER BRIDGE INSPECTION REPORT

STRUCTURE NO. 69634

CR 312

OVER THE

ST LOUIS RIVER

ST. LOUIS COUNTY



JULY 24, 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. 69634, Pier 1 and Pier 2, were in very good condition with no defects of structural significance. The concrete surfaces of the piers were smooth and sound.

INSPECTION FINDINGS:

- (A) Concrete along the pier faces was generally smooth and sound.
- (B) The channel bottom changed from silty sand near Pier 1 with 6 inches probe rod penetration to firm silty clay near Pier 2 allowing 1 inch of probe rod 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,

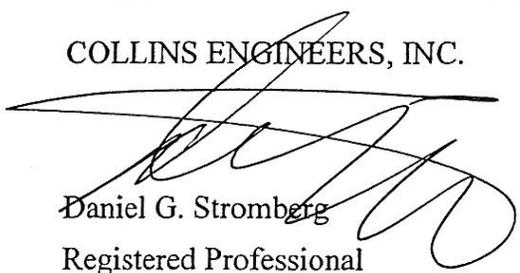
PROFESSIONAL ENGINEER

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: 69634

Feature Crossed: St Louis River

Feature Carried: CR 312

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 24, 2012

Weather Conditions: Sunny, 75° F

Underwater Visibility: 2.0 foot

Waterway Velocity: 1.5 ft/sec

3. SUBSTRUCTURE INSPECTION DATA

Substructure Inspected: Piers 1 and 2

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

Maximum Water Depth at Substructure Inspected: Approximately 5.4 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 20.5 feet below reference.
Waterline Elevation = 1271.07

5. NBIS CODING INFORMATION (Minnesota specific codes are used for 92B and 113)

Item 60: Substructure: Code 8

Item 61: Channel and Channel Protection: Code 7

Item 92B: Underwater Inspection: Code B/07/12

Item 113: Scour Critical Bridges: N/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:

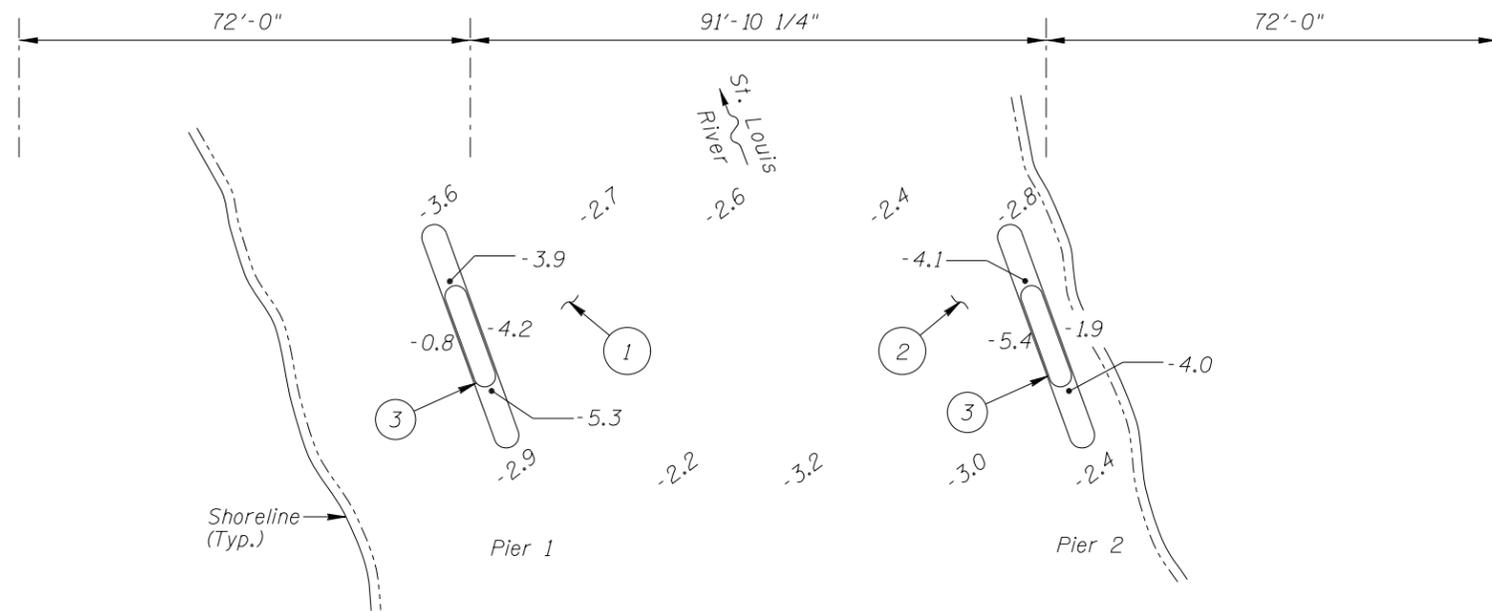
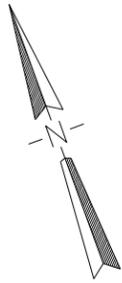
Item #	Element Description	Quantity	Unit	Conditions				
				1	2	3	4	5
210	Concrete Pier Wall	33	LF	33				
985	Slopes	1	EA	1				



Photograph 1. View of Pier 1, Looking East.



Photograph 2. View of Pier 2, Looking East.



SOUNDING PLAN

Legend

-1.2 Sounding Depth from Waterline (7/24/12)

 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 24, 2012, the waterline was located approximately 20.5 feet below the top of the pier cap at the downstream end of Pier 1. This corresponds with a waterline elevation of 1271.07 feet based on bridge design plans dated April, 28, 2001.
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 silty sand allowing up to 6 inches of probe rod penetration.
- ② The channel bottom consisted of firm silty clay allowing up to 1 inches of probe rod penetration.
- ③ The concrete surfaces of both piers were smooth and sound.

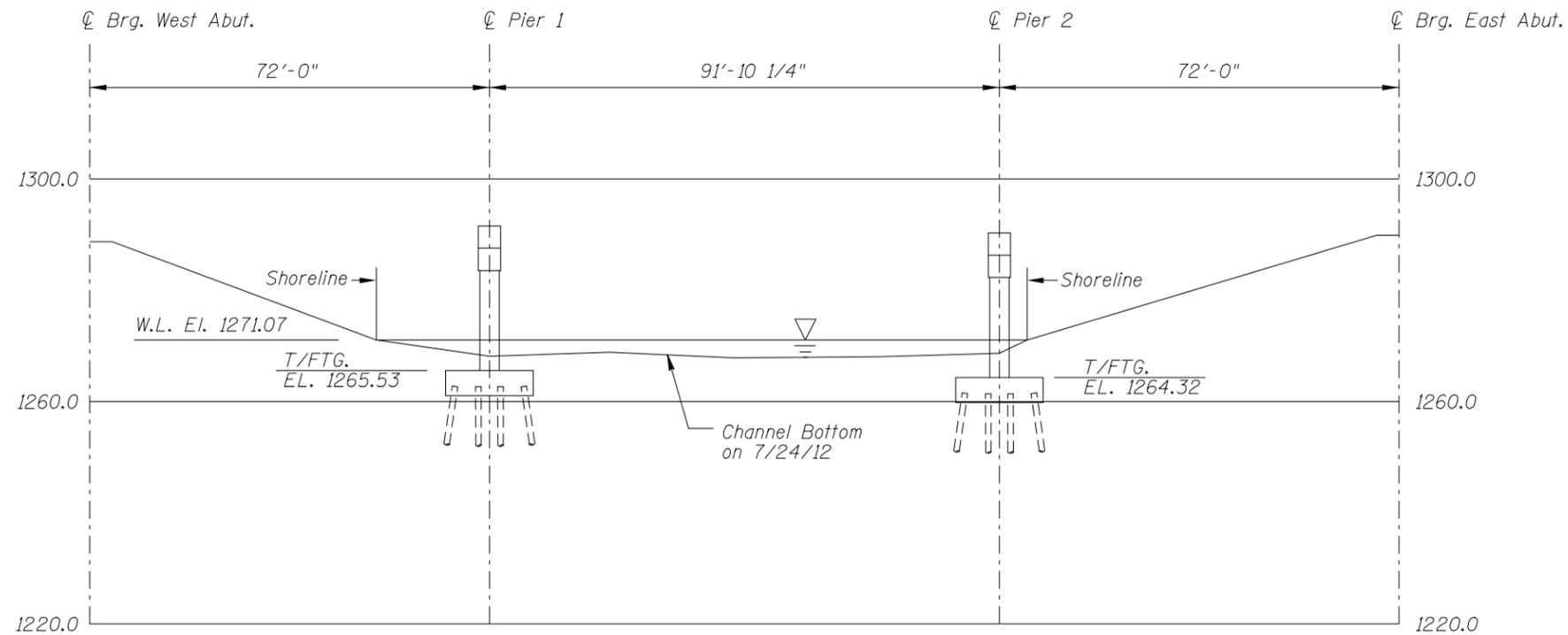
**MINNESOTA
DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION**

STRUCTURE NO. 69634
OVER THE ST. LOUIS RIVER
DISTRICT 1, ST. LOUIS COUNTY

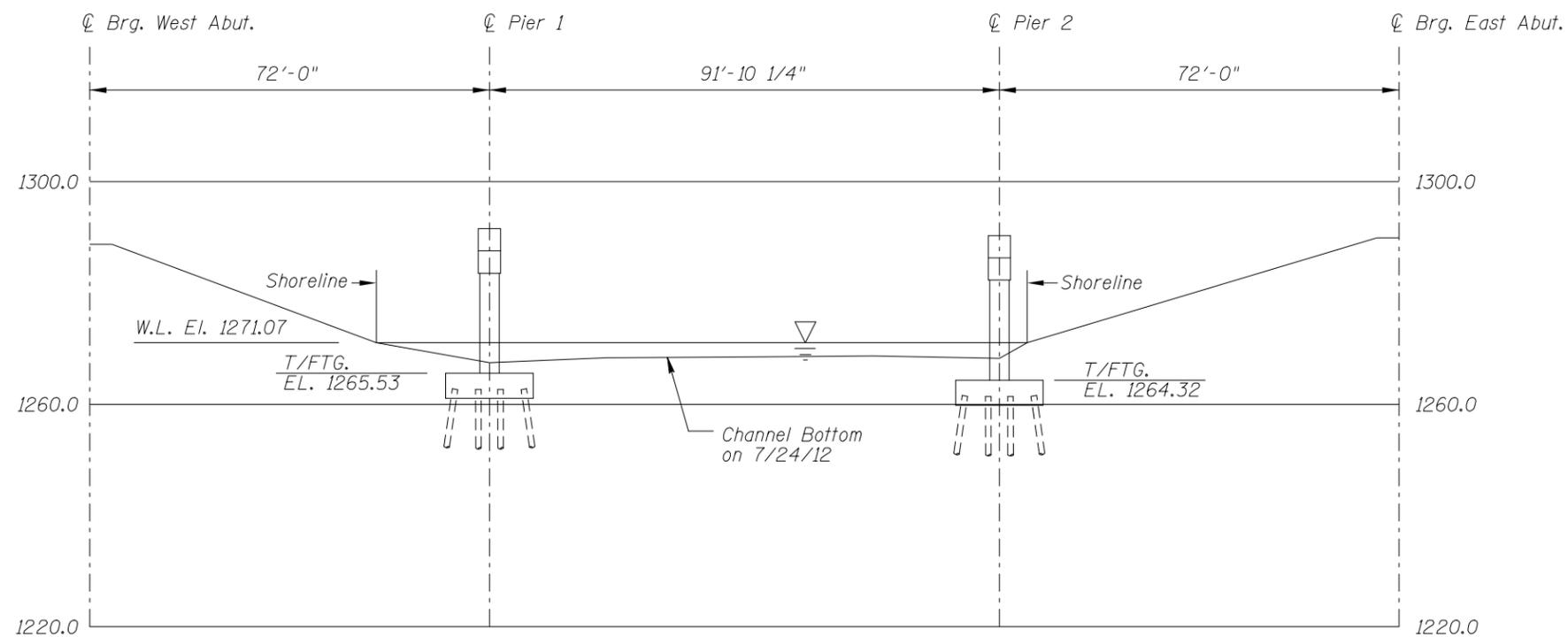
INSPECTION AND SOUNDING PLAN

Drawn By: BJR	 123 North Wacker Drive Suite 300 Chicago, IL 60606 (312) 704-9300 www.collinsengr.com	Date: JULY 2012
Checked By: BRL		Scale: NTS
Code: ---		Figure No.: 1


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UPSTREAM FASCIA PROFILE



DOWNSTREAM FASCIA PROFILE

Note:
Refer to Figure 1 for General Notes.

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MINNESOTA DEPARTMENT OF TRANSPORTATION UNDERWATER BRIDGE INSPECTION		
STRUCTURE NO. 69634 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 24, 2012

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

BRIDGE NO: 69634 WEATHER: Sunny, 75° F

WATERWAY CROSSED: St Louis River

DIVING OPERATION: SCUBA SURFACE SUPPLIED AIR
 OTHER

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

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

TIME IN WATER: 18:15

TIME OUT OF WATER: 18:40

WATERWAY DATA: VELOCITY 1.5 ft/sec.

VISIBILITY 2 feet

DEPTH 5.4 feet maximum

ELEMENTS INSPECTED: Pier 1 and Pier 2

REMARKS: Overall, the concrete surfaces of Piers 1 and 2 were smooth and sound and exhibited no notable deficiencies.

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. 69634
 INSPECTORS WSB & Associates, Inc. and Collins Engineers, Inc.
 ON-SITE TEAM LEADER Barritt Lovelace, P.E.
 WATERWAY CROSSED St Louis River

INSPECTION DATE July, 24, 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	5.3'	N	8	N	8	N	8	8	7	7	N	7	8	N	N	N	N	N
	Pier 2	5.4'	N	8	N	8	N	8	8	7	7	N	7	8	N	N	N	N	N

*UNDERWATER PORTION ONLY

REMARKS: Overall, the concrete surfaces of Piers 1 and 2 were smooth and sound and exhibited no notable deficiencies.

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.