

UNDERWATER BRIDGE INSPECTION REPORT

STRUCTURE NO. 55517
EAST CENTER STREET (MSAS 105)
OVER THE
ZUMBRO RIVER
CITY OF ROCHESTER



OCTOBER 2, 2012
PREPARED FOR THE
MINNESOTA DEPARTMENT OF TRANSPORTATION
BY
COLLINS ENGINEERS, INC.
JOB NO.7423

MINNESOTA DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

REPORT SUMMARY:

The substructure units inspected below water at Bridge No. 55517, East and West Abutments and Piers 1 and 2, were found to be in good condition with no defects of structural significance observed. The channel bottom appeared to be stable, and the scour protection system in-place around the substructure units was in good condition. There was, however, a light accumulation of timber debris observed at the upstream end of Pier 1.

INSPECTION FINDINGS:

- (A) An area of poor consolidation was located 1 foot above the waterline along a joint at the upstream end of the West Abutment that measured 1 foot in diameter with up to 6 inches of penetration.
- (B) The concrete was typically smooth and sound with random minor areas of poor consolidation with up to 1 inch of penetration. A sloped concrete scour protection encased both piers from 1 foot below the waterline to the channel bottom, and was typically in good condition.
- (C) Three steel beams spaced at 6-foot centers were embedded in the concrete pier shafts near the waterline at both the upstream and downstream ends of Piers 1 and 2.
- (D) The channel bottom material consisted of sandy silt with up to 6 inches of probe rod penetration.
- (E) A light accumulation of 6-inch-diameter and smaller timber debris was observed at the upstream end of Pier 1 extending from the channel bottom to 2 feet above the waterline.

- (F) A vertical hairline crack extended from the bottom of the pier cap to the channel bottom at the downstream west quarter-point of Pier 2.

RECOMMENDATIONS:

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

Inspection Team Leader



Roy A. Forsyth, PE

Date 6/30/2014 License# 49270

Respectfully submitted,

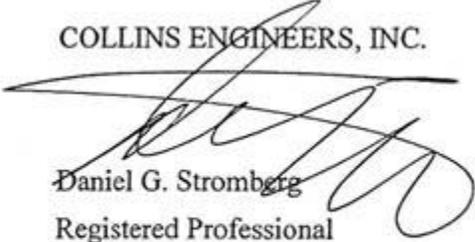
PROFESSIONAL ENGINEER

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: 55517

Feature Crossed: Zumbro River

Feature Carried: East Center Street

Location: City of Rochester

Bridge Description: The superstructure consists of three spans of multiple steel stringers supporting a reinforced concrete deck. The bridge is supported by two reinforced concrete abutments and two reinforced concrete piers, which are founded on steel piles. The piers are numbered 1 and 2 from the west to east.

2. INSPECTION DATA

Professional Engineer Diver: Roy A. Forsyth, P.E.

Dive Team: Charles R. Euwema, Jordan T. Furlan

Date: October 2, 2012

Weather Conditions: Sunny, 65° F

Underwater Visibility: 1.0 foot

Waterway Velocity: Negligible / None

3. SUBSTRUCTURE INSPECTION DATA

Substructure Inspected: East and West Abutments and Piers 1 and 2.

General Shape: The piers consist of oblong rectangular shafts with a pointed upstream end and a rounded downstream end that are supported by rectangular footings that are founded on steel H-piles. The abutments consist of solid vertical walls with perpendicular wingwalls. A sloped concrete scour-protection apron surrounds each of the piers and extends along both abutments.

Maximum Water Depth at Substructure Inspected: Approximately 4.4 feet at Pier 2.

4. WATERLINE DATUM

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

Water Surface: The waterline was approximately 14.2 feet below reference.
Waterline Elevation = 974.2.

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/10/12

Item 113: Scour Critical Bridges: Code P

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	100	LF	100				
215	Reinforced Concrete Abutment	144	LF	143	1			
361	Scour	1	EA	1				
985	Slopes and Slope Protection	1	EA	1				



Photograph 1. Overall View of the Bridge, Looking South



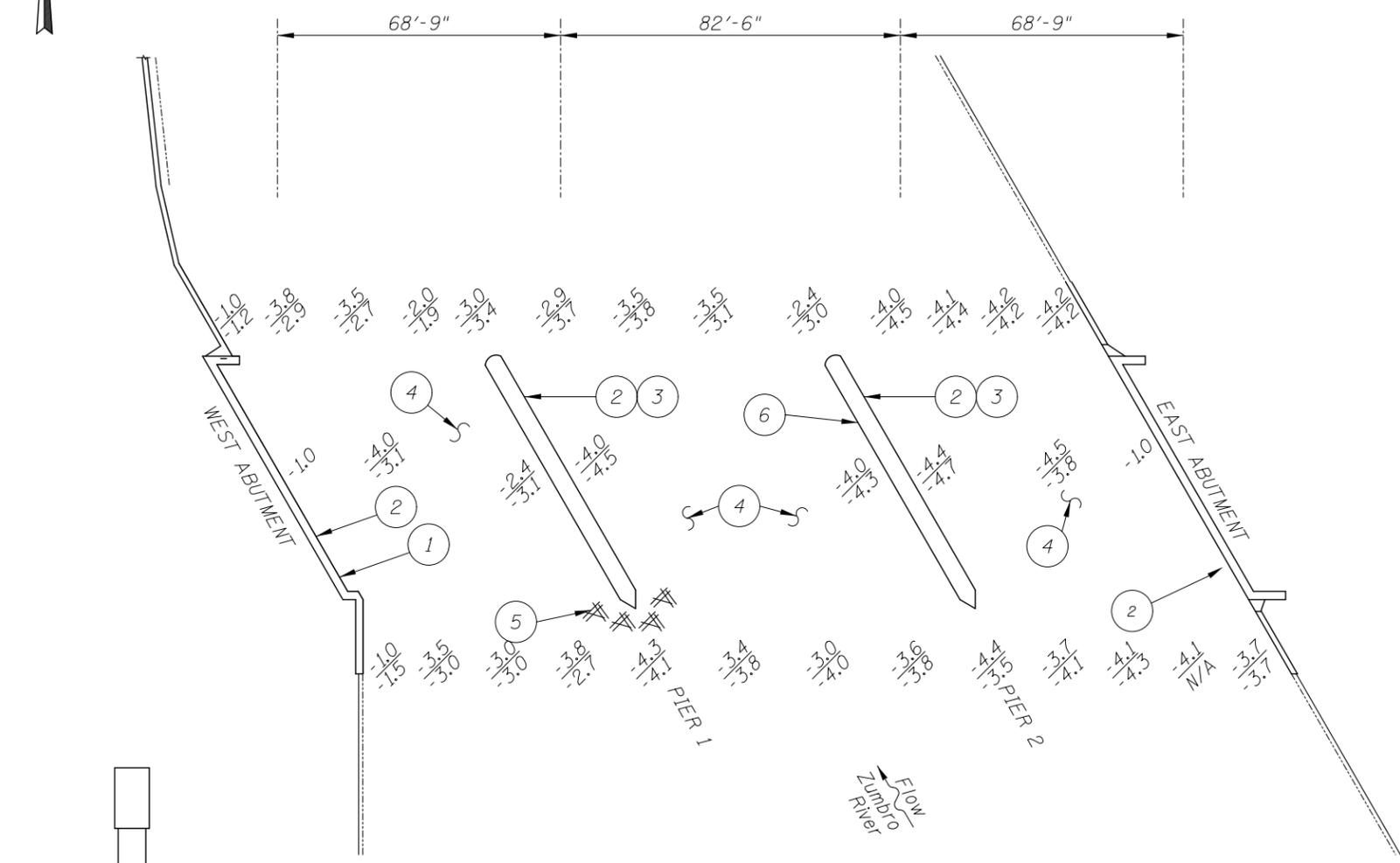
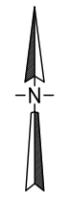
Photograph 2. View of Pier 1, Looking Southwest.



Photograph 3. View of Pier 2, Looking West.



Photograph 4. View of the West Abutment, Looking Southwest.



SOUNDING PLAN

TYPICAL END VIEW OF EACH PIER SECTION

INSPECTION NOTES:

- 1 An area of poor consolidation was located 1 foot above the waterline along a joint at the upstream end of the West Abutment that measured 1 foot in diameter with up to 6 inches of penetration.
- 2 The concrete was typically smooth and sound with random minor areas of poor consolidation with up to 1 inch of penetration. A sloped concrete scour protection encased both piers from 1 ft below the waterline to the channel bottom, and was typically in good condition.
- 3 Three steel beams on 6-foot centers were embedded in the concrete pier shafts near the waterline at both the upstream and downstream ends of Piers 1 and 2.
- 4 The channel bottom consisted of sandy silt with up to 6 inches of probe rod penetration.
- 5 A light accumulation of 6-inch-diameter and smaller timber debris was observed at the upstream end of Pier 1 extending from channel bottom to 2 feet above the waterline.
- 6 A vertical hairline crack extended from the bottom of the pier cap to the channel bottom at the downstream west 1/4-point of Pier 2.

GENERAL NOTES:

1. Piers 1 and 2 and East and West Abutments were inspected underwater.
2. At the time of inspection, on October 2, 2012, the waterline was located approximately 14.2 feet below the top of Pier 1 on the downstream end. This corresponds to a waterline elevation of 974.2.
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 pier structures.

Legend

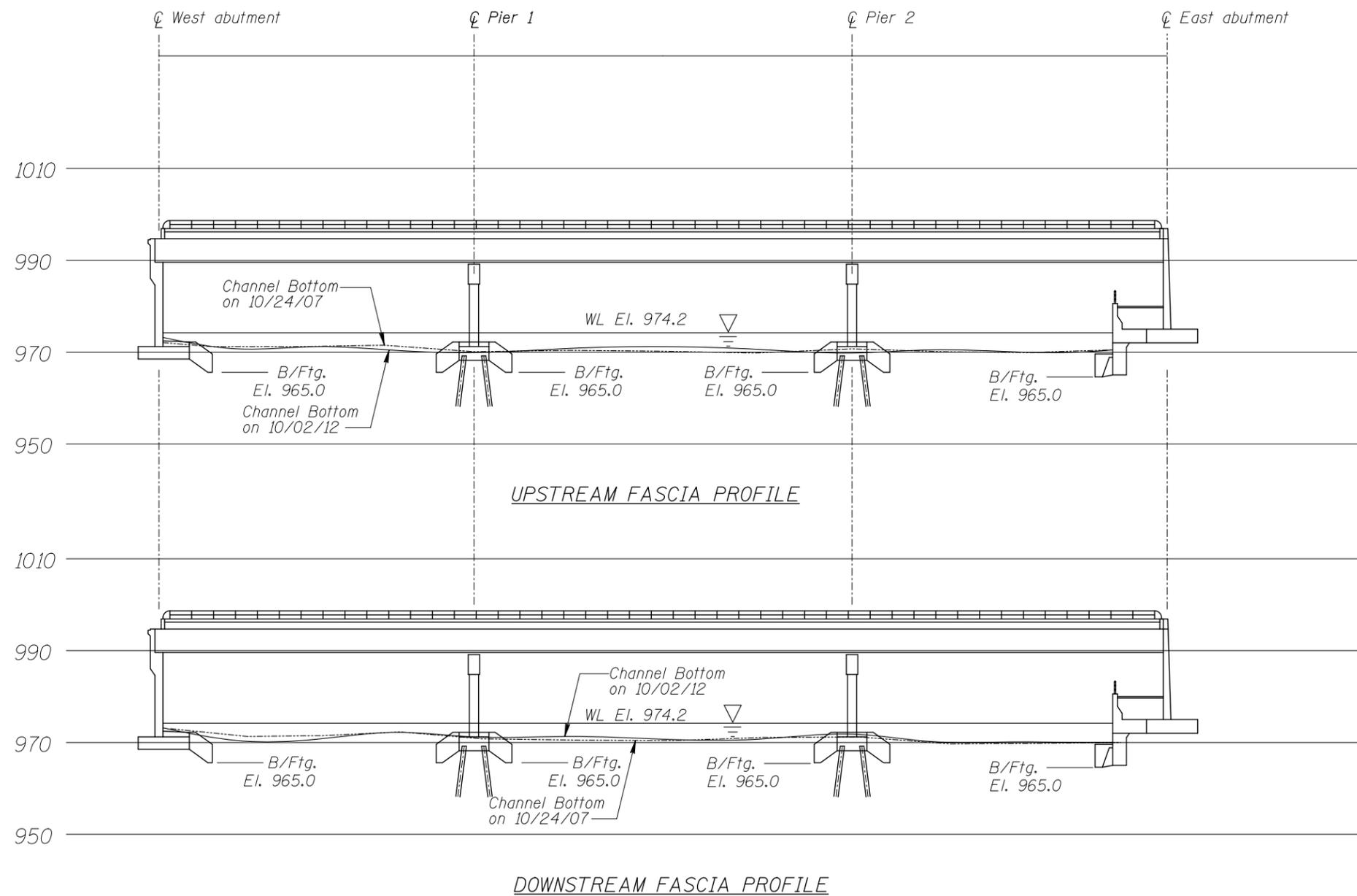
-0.4 Sounding Depth (10/02/12)
 -0.4 Sounding Depth (10/24/07)

Timber Debris

Note:

All soundings based on 2012 waterline location.

MINNESOTA DEPARTMENT OF TRANSPORTATION UNDERWATER BRIDGE INSPECTION		
STRUCTURE NO. 55517 OVER THE ZUMBRO RIVER CITY OF ROCHESTER		
INSPECTION AND SOUNDING PLAN		
Drawn By: DW	COLLINS ENGINEERS	Date: OCT. 2012
Checked By: LJ	123 North Wacker Drive Suite 900 Chicago, IL 60606 (312) 704-9300 www.collinsengr.com	Scale: NTS
Code: 74235517		Figure No.: 1



Note:
Refer to Figure 1 for General Notes.

MINNESOTA DEPARTMENT OF TRANSPORTATION UNDERWATER BRIDGE INSPECTION		
STRUCTURE NO. 55517 OVER THE ZUMBRO RIVER CITY OF ROCHESTER		
UPSTREAM AND DOWNSTREAM FASCIA PROFILES		
Drawn By: DW	COLLINS ENGINEERS <small>123 North Wacker Drive Suite 900 Chicago, IL 60606 (312) 704-9300 www.collinsengr.com</small>	Date: OCT. 2012
Checked By: LJ		Scale: 1"=30'
Code: 74235517		Figure No.: 2

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

INSPECTORS: Collins Engineers, Inc. DATE: October 2, 2012

ON-SITE TEAM LEADER: Roy A. Forsyth, P.E.

BRIDGE NO: 55517 WEATHER: Sunny, 65° F

WATERWAY CROSSED: Zumbro River

DIVING OPERATION: SCUBA SURFACE SUPPLIED AIR
 OTHER

PERSONNEL: Charles R. Euwema, Jordan T. Furlan, P.E.

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

TIME IN WATER: 10:50 A.M.

TIME OUT OF WATER: 11:20 A.M.

WATERWAY DATA: VELOCITY Negligible

VISIBILITY 1.0 feet

DEPTH 4.4 feet maximum at Pier 2.

ELEMENTS INSPECTED: East and West Abutments and Piers 1 and 2

REMARKS: The concrete was typically in smooth and sound condition with random minor areas of poor consolidation with up to 1 inch of penetration. There was a 1-foot-diameter area of poor consolidation with up to 6 inches of penetration noted along the West Abutment. A vertical hairline crack extended from the bottom of the pier cap to the channel bottom along the west side of Pier 2. Light accumulation of timber debris was noted at the upstream end of Pier 1.

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. 55517
 INSPECTORS Collins Engineers, Inc.
 ON-SITE TEAM LEADER Roy Forsyth, P.E.
 WATERWAY CROSSED Zumbro River

INSPECTION DATE October 2, 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	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
	West Abutment	1.0'	N	7	N	8	N	7	N	N	N	N	8	7	N	N	N	N	N
	Pier 1	4.3'	N	7	N	8	N	7	N	N	N	7	7	7	N	N	N	N	N
	Pier 2	4.4'	N	7	N	8	N	7	N	N	N	N	8	7	N	N	N	N	N
	East Abutment	1.0'	N	7	N	8	N	7	N	N	N	N	8	7	N	N	N	N	N

*UNDERWATER PORTION ONLY

REMARKS: The concrete was typically in smooth and sound condition with random minor areas of poor consolidation with up to 1 inch of penetration. There was a 1-foot-diameter area of poor consolidation with up to 6 inches of penetration noted along the West Abutment. A vertical hairline crack extended from the bottom of the pier cap to the channel bottom along the west side of Pier 2. Light accumulation of timber debris was noted at the upstream end of Pier 1.

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.