

UNDERWATER BRIDGE INSPECTION REPORT

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STRUCTURE NO. 24506

MSAS NO. 107 (BRIDGE AVE.)

OVER THE

FOUNTAIN LAKE

DISTRICT 6 - FREEBORN COUNTY, CITY OF ALBERT LEA

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SEPTEMBER 30, 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 at Bridge No. 24506, Piers 1 and 2, were found to be in good condition with no defects of structural significance observed. Random light scaling was observed on the faces of both piers. The channel bottom between the substructure units consisted of a concrete apron extending from the base of a dam located just upstream of the bridge to the downstream end of the piers. The apron was in typically good condition with no undermining or scour observed at the toe.

INSPECTION FINDINGS:

- (A) The channel bottom material along the south face of Pier 1 consisted of sand and gravel with random riprap up to 1 foot in diameter.
- (B) The channel bottom material along the downstream fascia consisted of silty gravel with scattered cobbles along the edge of the concrete apron.
- (C) The channel bottom under the bridge consisted of a concrete apron. The apron was in good condition with no undermining observed.
- (D) Random light scaling was observed near the waterline on both piers.
- (E) The concrete apron exhibited a 3 to 4 feet long area of poorly formed concrete and section loss with exposed reinforcing steel and up to 6 inches of penetration near the downstream end 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 Forsyth*

**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*  
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\_\_\_\_\_  
Date 6/30/14 License # 21491

**COLLINS ENGINEERS, INC.**

*Daniel G. Stromberg*  
\_\_\_\_\_  
Daniel G. Stromberg  
Registered Professional  
Engineer, State of Minnesota

MINNESOTA DEPARTMENT OF TRANSPORTATION  
UNDERWATER BRIDGE INSPECTION

1. BRIDGE DATA

Bridge Number: 24506

Feature Crossed: Fountain Lake

Feature Carried: MSAS No. 107

Location: District 6 - Freeborn County, City of Albert Lea

Bridge Description: The superstructure consists of a three span multiconcrete girder bridge. The structure is supported by two reinforced concrete abutments and two reinforced concrete piers. The piers and abutments are supported by cast-in-place concrete piles. The piers are numbered 1 and 2 beginning at the south end of the bridge.

2. INSPECTION DATA

Professional Engineer/Team Leader: Roy A. Forsyth, P.E.

Dive Team: Jordan Furlan, P.E., Charles Euwema

Date: September 30, 2012

Weather Conditions: Sunny, 70°F

Underwater Visibility: 0.5 ft

Waterway Velocity: Negligible

3. SUBSTRUCTURE INSPECTION DATA

Substructure Inspected: Piers 1 and 2.

General Shape: The piers consist of concrete rectangular shafts with rounded noses and are founded on cast-in place concrete piles.

Maximum Water Depth at Substructure Inspected: Approximately 1.7 feet.

4. WATERLINE DATUM

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

Water Surface: The waterline was approximately 8.9 feet below reference.  
Waterline Elevation = 61.1

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 8

Item 92B: Underwater Inspection: Code A/09/12

Item 113: Scour Critical Bridges: Code 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

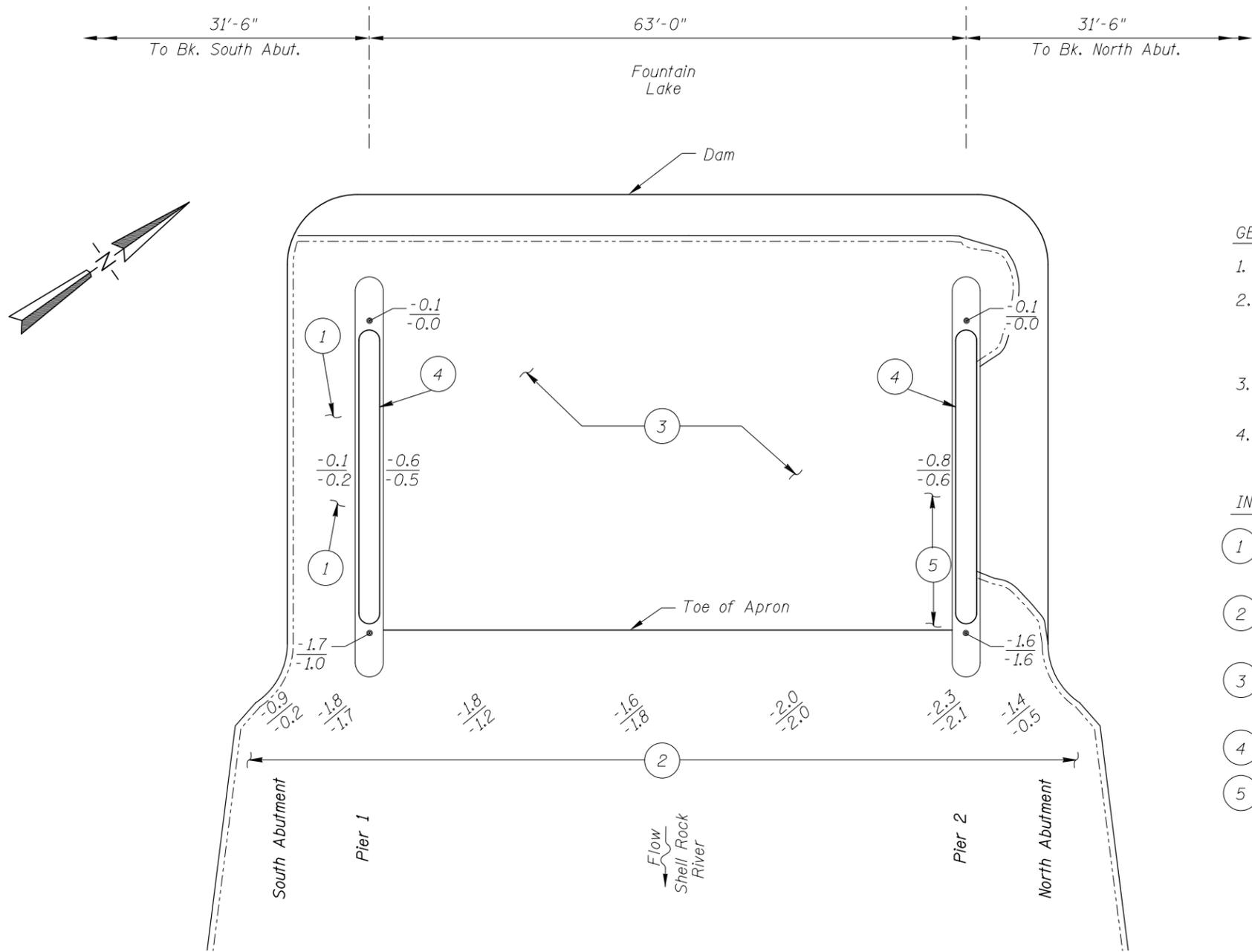
Item #	Element Description	Quantity	Unit	Conditions				
				1	2	3	4	5
210	Reinforced Concrete Pier Wall	70	LF	70				



Photograph 1. View of Pier 1, Looking West.



Photograph 2. View of Pier 2, Looking North.



**SOUNDING PLAN**

**GENERAL NOTES:**

1. Piers 1 and 2 were inspected underwater.
2. At the time of inspection on September 30, 2012 the waterline was located approximately 8.9 feet below the top of the pier cap at the downstream end of Pier 1. This corresponds to a waterline elevation of 61.1, City Datum, based on the previous report dated November 2, 2002.
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:**

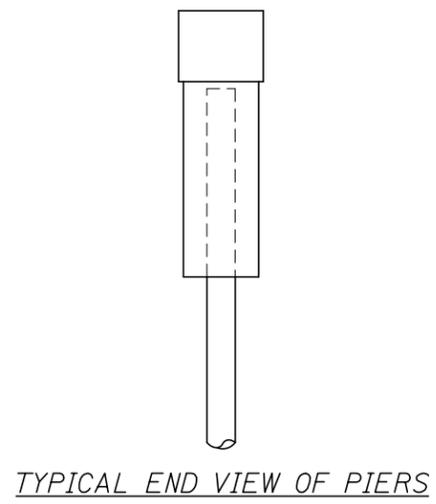
- 1 The channel bottom material consisted of sand and gravel with random riprap up to 1 foot in diameter.
- 2 The channel bottom material along the downstream fascia consisted of silty gravel with scattered cobbles at the end of the concrete apron.
- 3 The channel bottom consisted of a concrete apron. The apron was in good condition with no undermining observed.
- 4 Random light scaling was observed near the waterline on both piers.
- 5 The concrete apron exhibited a 3 to 4 feet long area of poorly formed concrete and section loss with 6 inches of penetration and exposed reinforcing steel near the downstream end of Pier 2.

**Legend**

- 2.0 Sounding Depth (9/30/12)
- 5.2 Sounding Depth (10/22/07)

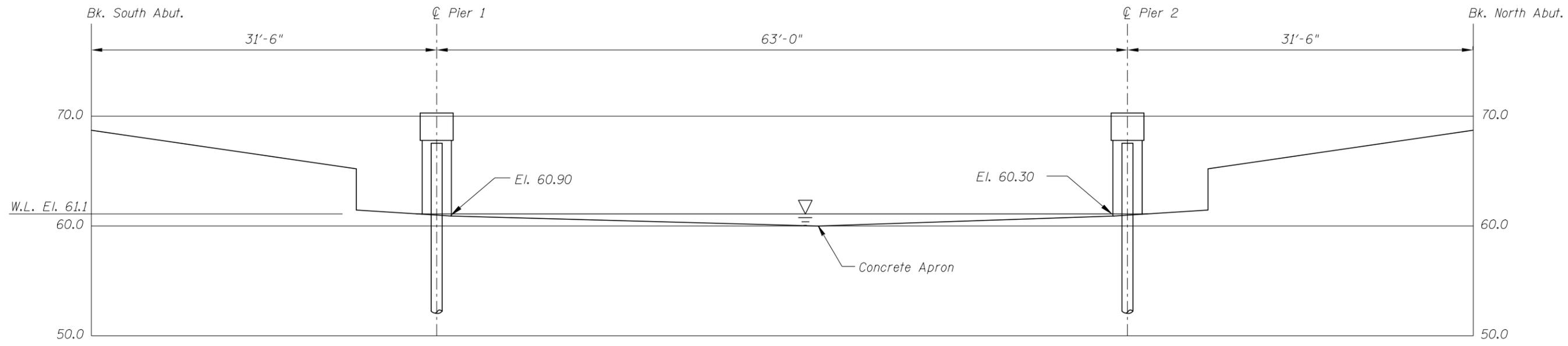
**Note:**

All soundings based on 2012 waterline location.

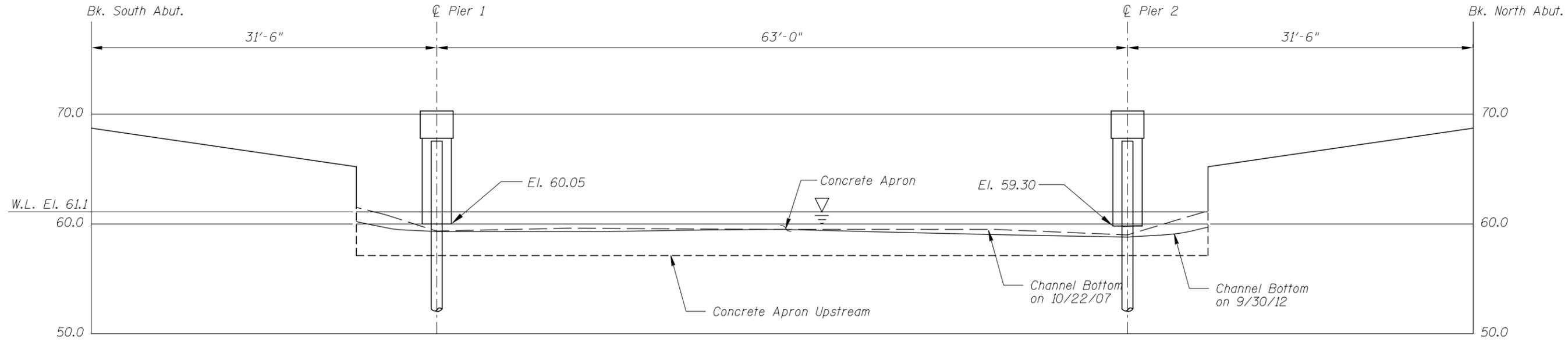


**TYPICAL END VIEW OF PIERS**

<b>MINNESOTA DEPARTMENT OF TRANSPORTATION UNDERWATER BRIDGE INSPECTION</b>		
STRUCTURE NO. 24506 MSAS NO. 107 OVER THE FOUNTAIN LAKE FREEBORN COUNTY, CITY OF ALBERT LEA		
<b>INSPECTION AND SOUNDING PLAN</b>		
Drawn By: JTF	<b>COLLINS ENGINEERS</b>	Date: Sept. 2012
Checked By: DGS	123 North Wacker Drive Suite 900 Chicago, IL 60606 (312) 704-9300 www.collinsengr.com	Scale: NTS
Code: 742324506		Figure No.: 1



UPSTREAM FASCIA PROFILE



DOWNSTREAM FASCIA PROFILE

Note:  
Refer to Figure 1 for General Notes.

<b>MINNESOTA DEPARTMENT OF TRANSPORTATION UNDERWATER BRIDGE INSPECTION</b>		
STRUCTURE NO. 24506 MSAS NO. 107 OVER THE FOUNTAIN LAKE FREEBORN COUNTY, CITY OF ALBERT LEA		
<b>UPSTREAM AND DOWNSTREAM FASCIA PROFILES</b>		
Drawn By: JTF	<b>COLLINS ENGINEERS</b> <small>123 North Wacker Drive Suite 900 Chicago, IL 60606 (312) 704-9300 www.collinsengr.com</small>	Date: Sept. 2012
Checked By: DGS		Scale: 1"=10'
Code: 742324506		Figure No.: 2

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

INSPECTORS: Collins Engineers, Inc. DATE: September 30, 2012

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

BRIDGE NO: 24506 WEATHER: Sunny, 70°F

WATERWAY CROSSED: Shell Rock River/Fountain Lake

DIVING OPERATION: \_\_\_\_\_ SCUBA \_\_\_\_\_ SURFACE SUPPLIED AIR  
 OTHER Inspection by Wading

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

EQUIPMENT: Waders, Sounding Pole, Camera, Scraper

TIME IN WATER: 10:05 A.M.

TIME OUT OF WATER: 10:20 A.M.

WATERWAY DATA: VELOCITY 0 ft/s

VISIBILITY 0.5 foot

DEPTH 1.7 feet maximum at Pier 1

ELEMENTS INSPECTED: Piers 1 and 2

REMARKS: The concrete of the piers was in good condition with random areas of light scaling observed at the waterline. An area of poorly formed concrete and section loss with exposed reinforcing steel was observed on the concrete apron near the downstream end of Pier 2. Otherwise, the concrete apron was in good condition with no notable defects or undermining observed.

FURTHER ACTION NEEDED: \_\_\_\_\_ YES  NO

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

MINNESOTA DEPARTMENT OF TRANSPORTATION  
OFFICE OF BRIDGES AND STRUCTURES

UNDERWATER INSPECTION CONDITION RATING FORM

BRIDGE NO. 24506  
INSPECTORS Collins Engineers, Inc.  
ON-SITE TEAM LEADER Roy A. Forsyth, P.E.  
WATERWAY CROSSED Shell Rock River/Fountain Lake

INSPECTION DATE September 30, 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 (APRON)	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
	Pier 1	1.7'	N	7	7	9	N	7	8	N	N	N	8	7	N	N	N	N	N
	Pier 2	1.6'	N	7	6	9	N	7	8	N	N	N	8	7	N	N	N	N	N

\*UNDERWATER PORTION ONLY

REMARKS: The concrete of the piers was in good condition with random areas of light scaling observed at the waterline. An area of poorly formed concrete and section loss with exposed reinforcing steel was observed on the concrete apron near the downstream end of Pier 2. Otherwise, the concrete apron was in good condition with no notable defects or undermining observed.

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.