UNDERWATER BRIDGE INSPECTION REPORT

STRUCTURE NO. 73536

CSAH NO. 49

OVER THE

SAUK RIVER

DISTRICT 3 - STEARNS COUNTY

JULY 29, 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 at Bridge No. 73536, Piers 1 and 2, were found to be in good condition with no significant structural defects observed. Minor localized scour has caused partial footing exposure at Pier 1 mostly covered by a 3 inch layer of silt and footing exposure at Pier 2 with less than 1 foot of vertical face exposure; however, the channel bottom appeared stable with no significant changes.

INSPECTION FINDINGS:

(A) There was minor footing exposure encountered at both piers due to localized scour depressions. The footing at Pier 1 was detected at the western corner with no vertical face exposure. The footing at Pier 2 was exposed at the northern corner; with .8 feet of vertical exposure.

RECOMMENDATIONS:

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

(B) Monitor exposed footings during future inspections.

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: 73536

Feature Crossed: Sauk River

Feature Carried: CSAH No. 49

Location: District 3 - Stearns County

Bridge Description: The bridge superstructure consists of three spans of multiple prestressed concrete beams. The superstructure is supported by two reinforced concrete abutments and two reinforced concrete piers. The piers and abutments are supported by footings with steel H-piles. The piers are numbered 1 and 2 starting from the southerly end of the bridge.

2. INSPECTION DATA

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

Dive Team: George Bender (WSB), John Loftus (Collins)

Date: July 29, 2012

Weather Conditions: Sunny, 75° F

Underwater Visibility: 0.5 feet

Waterway Velocity: Negligible/None

3. SUBSTRUCTURE INSPECTION DATA

Substructure Inspected: Piers 1 and 2.

General Shape: The piers consist of cylindrical shafts supporting a hammerhead pier cap and are supported by square footings founded on piles.

Maximum Water Depth at Substructure Inspected: Approximately 12.5 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 14.6 feet below reference. Waterline Elevation = 1086.4.

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 B/07/12

Item 113: Scour Critical Bridges: Code I/95

Bridge is scour critical because abutment or pier foundation is rated as unstable due to observed scour at bridge site.

_____ Yes X No

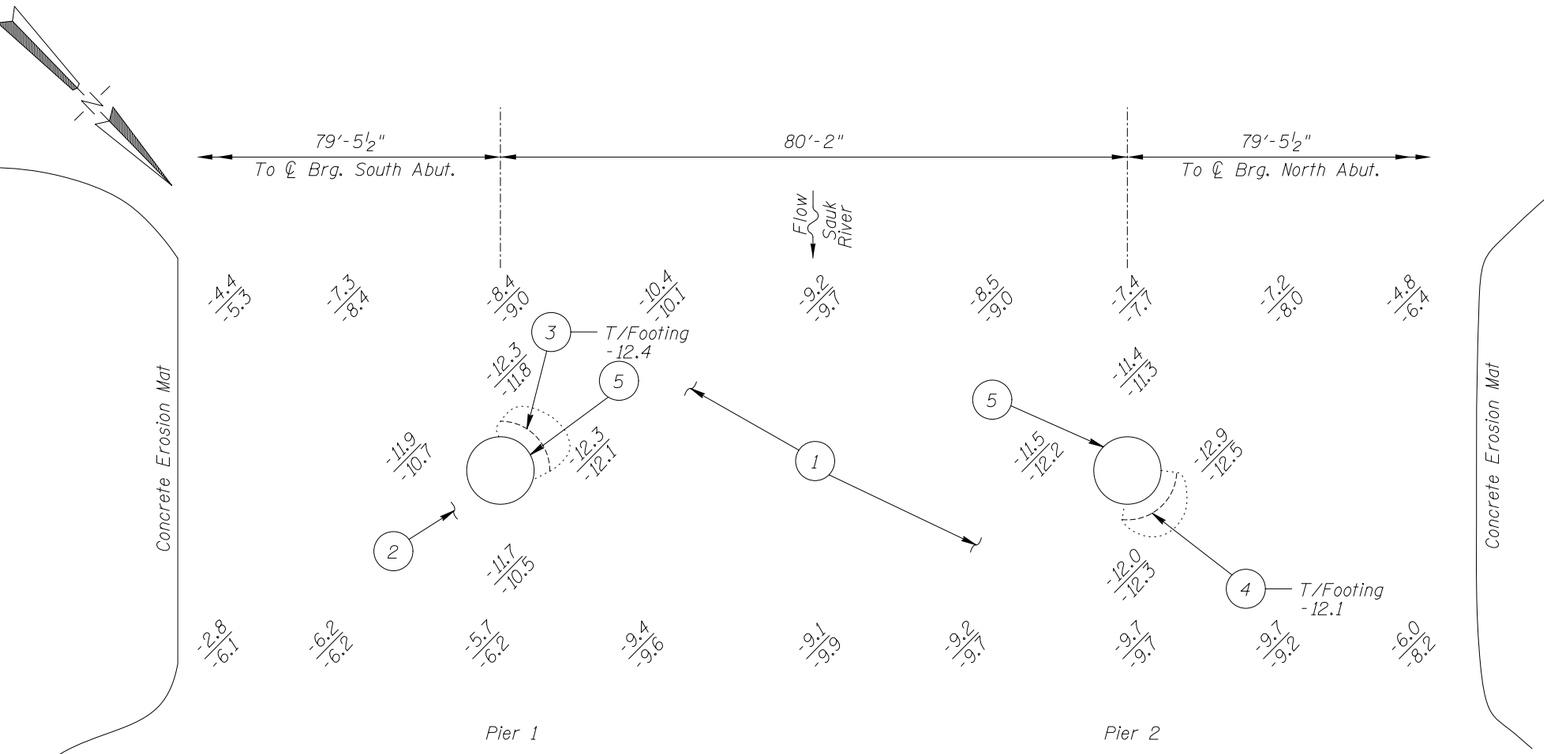
6. STRUCTURAL ELEMENT CONDITION RATING

Item #	Element Description	Quantity	Unit	Conditions				
				1	2	3	4	5
205	Concrete Column	2	EA	2				
202	Scour Smart Flag	1	EA	1				
985	Slopes and Slope Protection	1	EA	1				

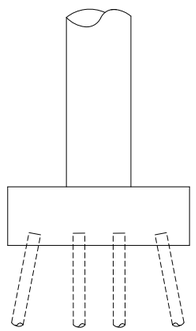
Photograph 1. Overall View of Structure, Looking North.

Photograph 2. View of Pier 1, Looking North.

Photograph 3. View of Pier 2, Looking North.



SOUNDING PLAN



TYPICAL END VIEW OF PIERS

GENERAL NOTES:

1. Piers 1 and 2 were inspected underwater.
2. At the time of inspection on July 29, 2012, the waterline was located approximately 14.6 feet below the top of the pier cap at the downstream end of Pier 2. This corresponds to a waterline elevation of 1086.4.
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 sandy gravel with up to 5 inches of probe rod penetration.

(2) The channel bottom consisted of sand with up to 8 inches of probe rod penetration.

(3) The top of footing was detected under a 3 inch layer of silt at the western side of Pier 1 (a 2 feet wide section) with no vertical face exposed.

(4) The footing was exposed around the column at Pier 2 with 0.8 foot of maximum vertical exposure on the north side of Pier 2.

(5) The submerged concrete was in good, sound condition with a light layer of aquatic growth observed.

Legend

-2.0 / -5.2	Sounding Depth (7/29/12) / Sounding Depth (10/19/07)
⬭	Area of Soft Silt

Note:

All soundings based on 2012 waterline location.

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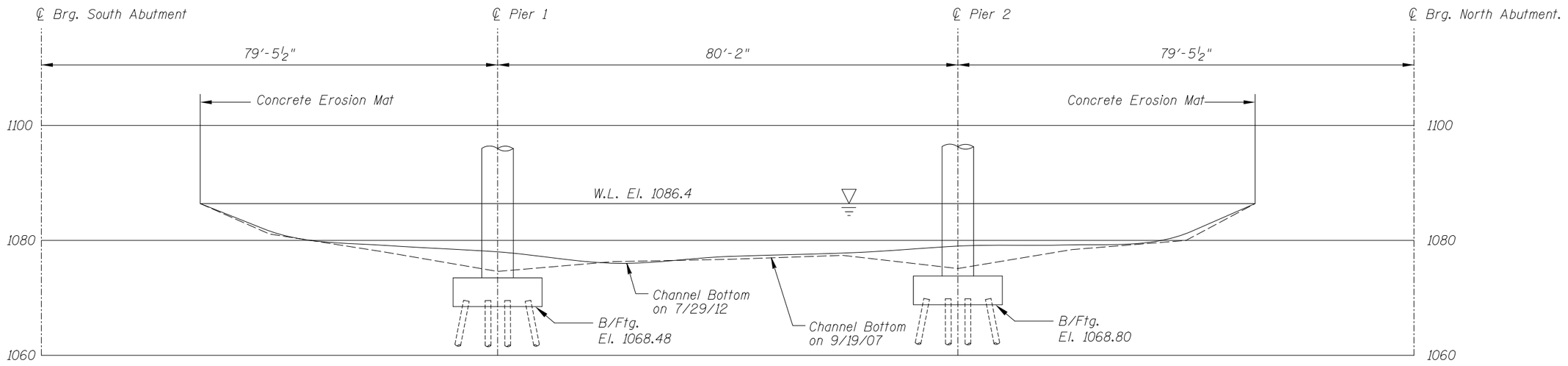
MINNESOTA
DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

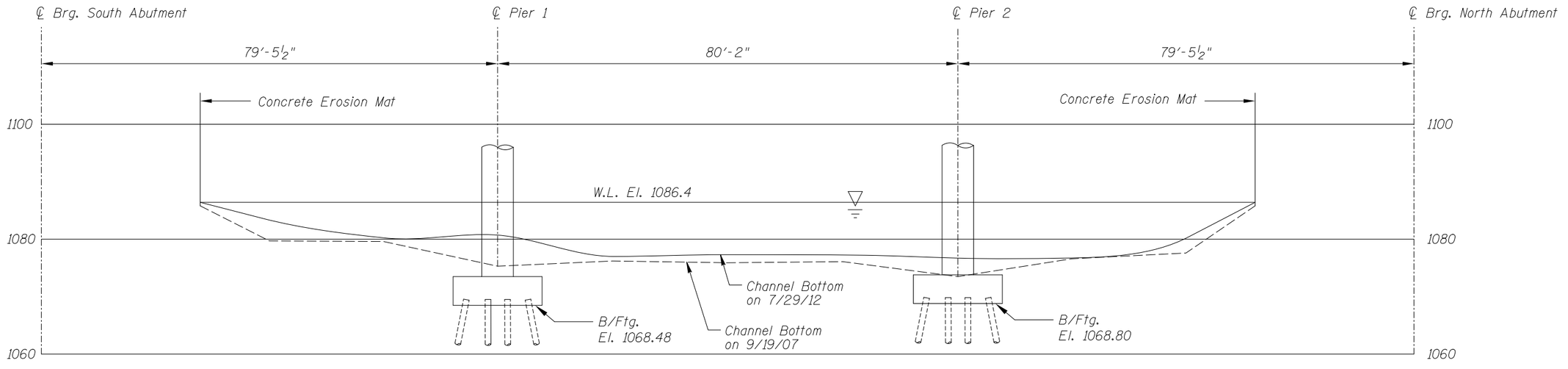
STRUCTURE NO. 73536
OVER THE SAUK RIVER
DISTRICT 3, STEARNS COUNTY

INSPECTION AND SOUNDING PLAN

Drawn By: BJR	COLLINS ENGINEERS INC 123 North Wacker Drive Suite 300 Chicago, Il. 60606 (312) 704-9300 www.collinsengr.com	Date: JULY 2012
Checked By: BRL		Scale: NTS
Code: 52210086		Figure No.: 1



UPSTREAM FASCIA PROFILE



DOWNSTREAM FASCIA PROFILE

Note:

Refer to Figure 1 for General Notes.

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UPSTREAM AND DOWNSTREAM FASCIA PROFILES

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Drawn By: BJR	Date: JULY 2012
Checked By: BRL	Scale: 1"=20'
Code: 52210086	Figure No.: 2

MINNESOTA DEPARTMENT OF TRANSPORTATION
OFFICE OF BRIDGES AND STRUCTURES

DAILY DIVING REPORT

INSPECTORS: WSB & Associates and Collins DATE: July 29, 2012

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

BRIDGE NO: 73536 WEATHER: Sunny, 75°F

WATERWAY CROSSED: Sauk River

DIVING OPERATION: X SCUBA _____ SURFACE SUPPLIED AIR

_____ OTHER

PERSONNEL: George Bender (WSB), John Loftus (Collins)

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

TIME IN WATER: 12:45

TIME OUT OF WATER: 13:15

WATERWAY DATA: VELOCITY Negligible/None

VISIBILITY 0.5 Feet

DEPTH 12.9 feet maximum at Pier 2

ELEMENTS INSPECTED: Piers 1 and 2

REMARKS: Overall, the submerged concrete was in good condition with no structurally significant defects observed. Localized scour pockets, 4 to 5 feet deep, around both piers resulted in partial footing exposure. The top of footing at the western corner of Pier 1 was detected with no vertical face exposure under a layer of 3 inches of silt, and the top of footing at the northern corner of Pier 2 was exposed with .8 feet vertical exposure on the north side of the pier.

FURTHER ACTION NEEDED: _____ YES X NO

Monitor exposed footings during future inspections.

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. 73536
INSPECTORS WSB & Associates, Inc. and Collins Engineers, Inc.
ON-SITE TEAM LEADER Barritt Lovelace, P.E.
WATERWAY CROSSED Sauk River

INSPECTION DATE July 29,2012

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

			SUBSTRUCTURE						CHANNEL					GENERAL					
UNIT REFERENCE NO.	UNIT DESCRIPTION	MAXIMUM DEPTH OF WATER	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
	Pier 1	12.3’	N	7	7	8	N	7	6	8	8	N	6	7	N	N	N	N	N
	Pier 2	12.9’	N	7	7	8	N	7	6	8	8	N	6	7	N	N	N	N	N

*UNDERWATER PORTION ONLY

REMARKS: Overall, the submerged concrete was in good condition with no structurally significant defects observed. Localized scour pockets, 4 to 5 feet deep, around both piers resulted in partial footing exposure. The top of footing at the western corner of Pier 1 was detected with no vertical face exposure under a layer of 3 inches of silt, and the top of footing at the northern corner of Pier 2 was exposed with .8 feet vertical exposure on the north side of the pier.

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.