

UNDERWATER BRIDGE INSPECTION REPORT

STRUCTURE NO. 73551

CSAH NO. 32

OVER THE

SAUK RIVER

DISTRICT 3 - STEARNS COUNTY



JULY 11, 2012

PREPARED FOR THE

MINNESOTA DEPARTMENT OF TRANSPORTATION

BY

AYRES ASSOCIATES & COLLINS ENGINEERS, INC.

JOB NO. 7423

MINNESOTA DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

REPORT SUMMARY:

The substructure units inspected below water at Bridge No. 73551, Piers 1, 2, 3, and 4, were found to be in good condition with no defects of structural significance at this time. The piles had coating failure and minor corrosion from 1 foot above the waterline to the channel bottom with light layer of aquatic growth below the waterline. The channel bottom around the substructure units appeared stable with no significant scour.

INSPECTION FINDINGS:

- (A) All of the piles for Piers 1 through 4 had coating loss from 1 foot above the waterline to the channel bottom with light aquatic growth below the waterline. Minor surface corrosion with small rust nodules 1/8 inch in diameter was observed below water on less than 10 percent of the surface area with no related section loss. There was minimal overall deterioration present on the piles in the regions of the coating loss.

RECOMMENDATIONS:

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

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.

Brian K. Schroeder

Name



Signature

Date 08/11/12

Registration No. 43576

Ayres Associates, Inc.



Brian K. Schroeder
Registered Professional Engineer
State of Minnesota

MINNESOTA DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

1. BRIDGE DATA

Bridge Number: 73551

Feature Crossed: Sauk River

Feature Carried: CSAH No. 32

Location: District 3 – Stearns County

Bridge Description: The superstructure consists of a five span reinforced concrete slab. The superstructure is supported by two reinforced concrete abutments and four steel pipe pile piers. The piers are numbered 1 through 4 starting from the north end of the bridge.

2. INSPECTION DATA

Professional Engineer/Team Leader: Brian K. Schroeder, P.E. / Ricardo S. Narvaez

Dive Team: Ricardo Narvaez, Jason Cook, Adam Enderby

Date: July 11, 2012

Weather Conditions: Clear/Sunny 80°F

Underwater Visibility: 1.0 feet

Waterway Velocity: Negligible / None

3. SUBSTRUCTURE INSPECTION DATA

Substructure Inspected: Piers 1 through 4.

General Shape: Piers 1 through 4 consist of a single line of nine steel pipe piles supporting a reinforced concrete cap. Each abutment is an open abutment with a grouted riprap slopewall.

Maximum Water Depth at Substructure Inspected: Approximately 11.4 feet.

4. WATERLINE DATUM

Water Level Reference: The top of the parapet wall at the east end of Pier 3.

Water Surface: The waterline was approximately 13.5 feet below reference.
Assumed Waterline Elevation = 86.5.

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 B/07/12

Item 113: Scour Critical Bridges: Code L/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
382	Cast-in-Place (CIP) Piling	36	EA	36				
985	Slopes and Slope Protection	1	EA	1				



Photograph 1. View of Pier 1, Looking Northwest.



Photograph 2. View of the Pier 2, Looking Northwest.



Photograph 3. View of Pier 3, Looking Northwest.



Photograph 4. View of Pier 4, Looking Northwest.

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

INSPECTORS: Ayres Associates DATE: July 11, 2012

ON-SITE TEAM LEADER: Ricardo S. Narvaez

BRIDGE NO: 73551 WEATHER: Clear/Sunny, 80° F

WATERWAY CROSSED: Sauk River

DIVING OPERATION: _____ SCUBA SURFACE SUPPLIED AIR
_____ OTHER _____

PERSONNEL: Jason Cook, Adam Enderby

EQUIPMENT: SSA, Kirby Morgan SuperLite, Sounding Rod, Camera, Hammer, 20-foot Boat w/Jet, Underwater Lights

TIME IN WATER: 7:45 a.m.

TIME OUT OF WATER: 8:15 a.m.

WATERWAY DATA: VELOCITY Negligible / None

VISIBILITY 1.0 feet

DEPTH 11.4 feet maximum at Pier 2

ELEMENTS INSPECTED: Piers 1 through 4

REMARKS: Overall, the submerged steel of the piles was in good condition having coating failure from 1 foot above the waterline to the channel bottom with light aquatic growth below the waterline. Minor surface corrosion with small rust nodules 1/8 inch in diameter was observed below water on less than 10 percent of the surface area with no related section loss. There was minimal overall deterioration of the steel throughout the regions where the protective coating has failed or was failing. No channel bottom deficiencies were encountered.

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. 73551
 INSPECTORS Ayres Associates
 ON-SITE TEAM LEADER Ricardo S. Narvaez
 WATERWAY CROSSED Sauk River

INSPECTION DATE July 11, 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.

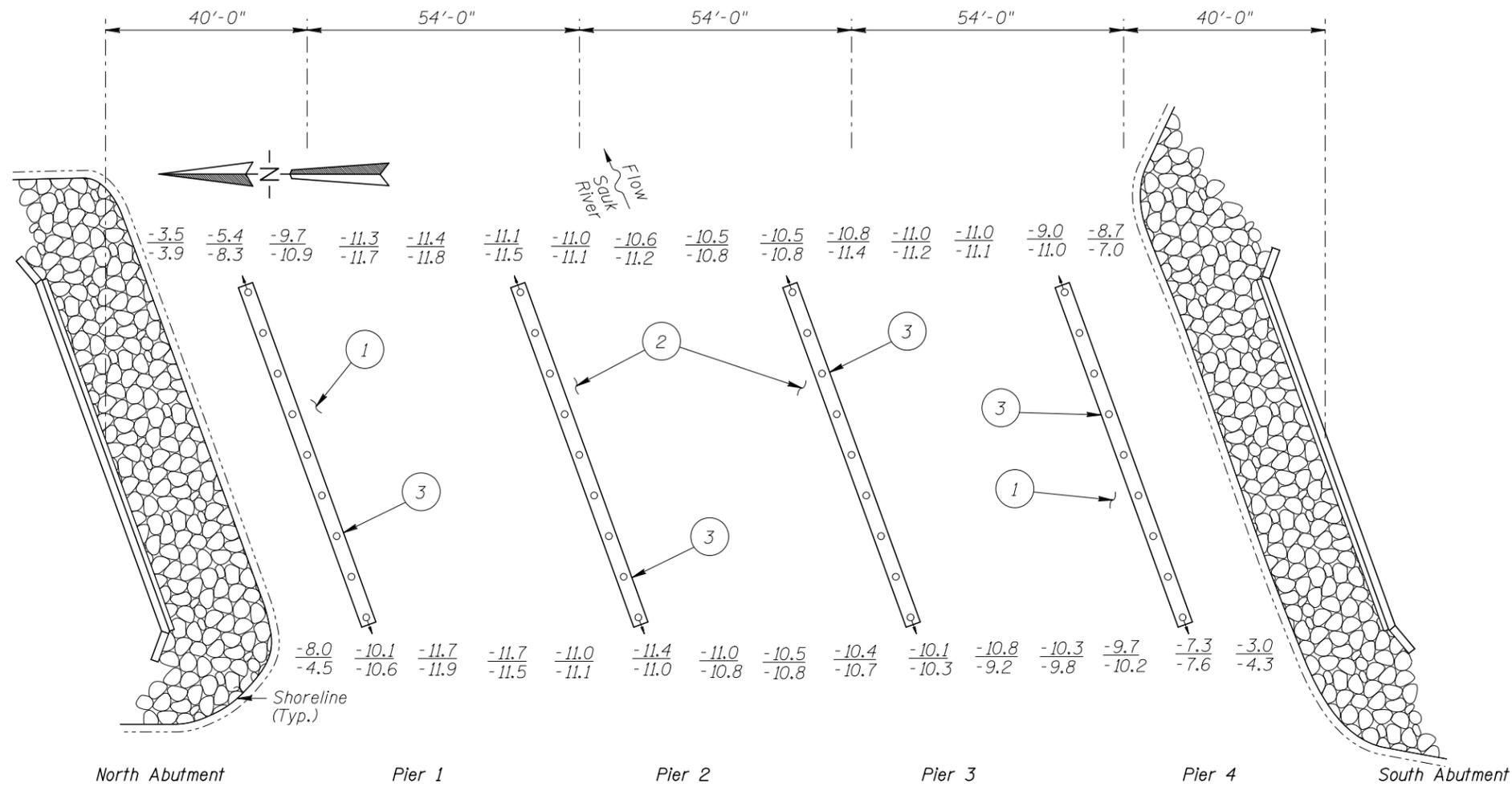
CONDITION RATING

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
	Pier 1	10.2'	7	N	N	9	N	7	8	8	8	N	8	N	7	N	7	N	N
	Pier 2	11.4'	7	N	N	9	N	7	8	N	N	N	8	N	7	N	7	N	N
	Pier 3	10.7'	7	N	N	9	N	7	8	N	N	N	8	N	7	N	7	N	N
	Pier 4	10.0'	7	N	N	9	N	7	8	8	8	N	8	N	7	N	7	N	N

*UNDERWATER PORTION ONLY

REMARKS: Overall, the submerged steel of the piles is in good condition having coating failure from 1 foot above the waterline to the channel bottom with light aquatic growth below the waterline. Minor surface corrosion with small rust nodules 1/8 inch in diameter were observed below water on less than 10 percent of the surface area with no related section loss. There was minimal overall deterioration of the steel throughout the regions where the protective coating has failed or was failing. No channel bottom deficiencies were encountered.

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.

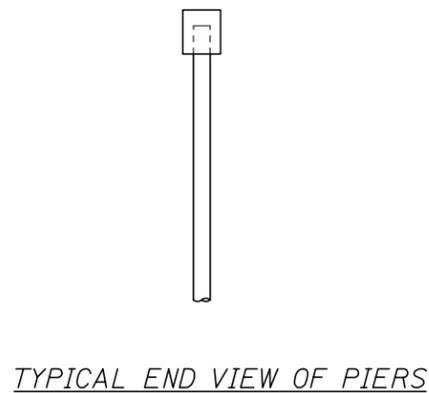


GENERAL NOTES:

1. Piers 1 through 4 were inspected underwater.
2. At the time of inspection on July 11, 2012, the waterline was located approximately 13.5 feet below the top of the parapet at the downstream end of Pier 3. Since insufficient bridge elevation information was available a reference elevation of 100.0 was assumed. Based on the assumed reference the waterline elevation was 86.5.
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 around Piers 1 and 4 consisted of up to 1 foot diameter riprap and sand.
- ② The channel bottom material around Piers 2 and 3 consisted of sand and some stones with up to 4 inches of probe rod penetration.
- ③ All of the piles for Piers 1 through 4 had coating loss from 1 foot above the waterline to the channel bottom with minimal overall steel deterioration and with light aquatic growth on the surfaces below the waterline. Minor surface corrosion with small rust nodules, 1/8 inch in diameter, were observed below water on less than 10 percent of surface area with no related section loss.

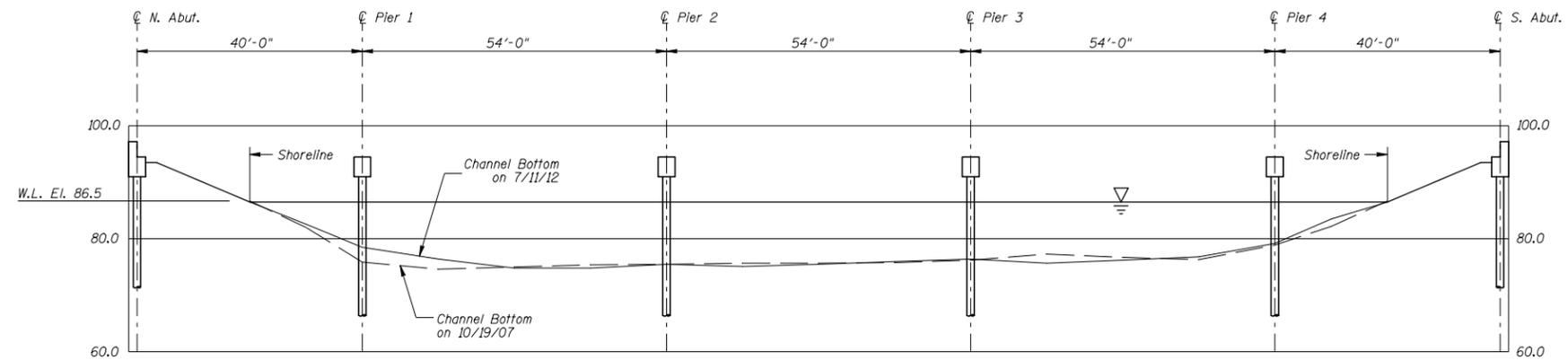


Legend

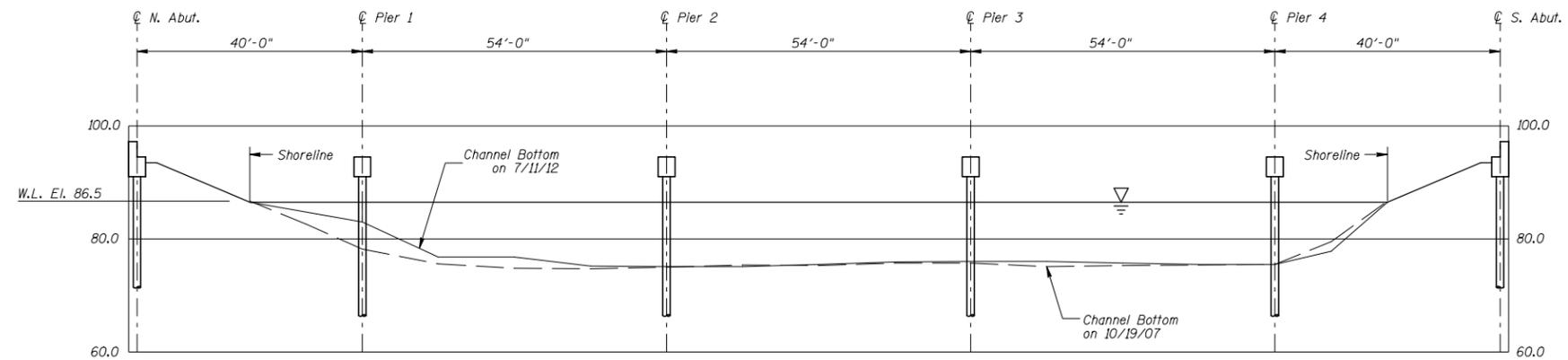
- 5.5 Sounding Depth from Waterline (7/11/12)
- 5.2 Sounding Depth from Waterline (10/19/07)
- 16" Diameter Steel Encased, Cast-in-place Concrete Pile
- ⊕ Battered 16" Diameter Steel Encased, Cast-in-place Concrete Pile
- ▒ Grouted Riprap

MINNESOTA DEPARTMENT OF TRANSPORTATION UNDERWATER BRIDGE INSPECTION	
STRUCTURE NO. 73551 OVER THE SAUK RIVER DISTRICT 3, STEARNS COUNTY	
INSPECTION AND SOUNDING PLAN	
Drawn By: JAC Checked By: BKS Code: 522173551	 Date: JULY 2012 Scale: NTS Figure No.: 1

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UPSTREAM FASCIA PROFILE



DOWNSTREAM FASCIA PROFILE

Note:
Refer to Figure 1 for General Notes.

MINNESOTA DEPARTMENT OF TRANSPORTATION UNDERWATER BRIDGE INSPECTION							
STRUCTURE NO. 73551 OVER THE SAUK RIVER DISTRICT 3, STEARNS COUNTY							
UPSTREAM AND DOWNSTREAM FASCIA PROFILES							
COLLINS ENGINEERS	AYRES ASSOCIATES						
121 North Wacker Drive Suite 100 Chicago, IL 60606 (312) 764-0310 www.collinsgr.com	<table border="1"> <tr> <td>Drawn By: JAC</td> <td>Date: JULY 2012</td> </tr> <tr> <td>Checked By: BKS</td> <td>Scale: 1"=20'</td> </tr> <tr> <td>Code: 522173551</td> <td>Figure No.: 2</td> </tr> </table>	Drawn By: JAC	Date: JULY 2012	Checked By: BKS	Scale: 1"=20'	Code: 522173551	Figure No.: 2
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