

UNDERWATER BRIDGE INSPECTION REPORT

---

STRUCTURE NO. 63516  
CSAH NO. 13  
OVER THE  
RED LAKE RIVER  
DISTRICT 2 - RED LAKE COUNTY

---



---

AUGUST 17, 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 at Bridge 63516, Piers 1 and 2, were in good condition with no defects of structural significance observed. The channel bottom appeared to be in stable condition with no evidence scour around the substructure units.

INSPECTION FINDINGS:

- (A) Heavy timber debris accumulation observed at Pier 1 during previous underwater inspection was no longer present.
- (B) The concrete of Piers 1 and 2 appeared sound and exhibited no notable deficiencies.

RECOMMENDATIONS:

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

Inspection Team Leader

Ayres Associates, Inc.



Brian K. Schroeder  
Registered Professional Engineer  
State of Minnesota

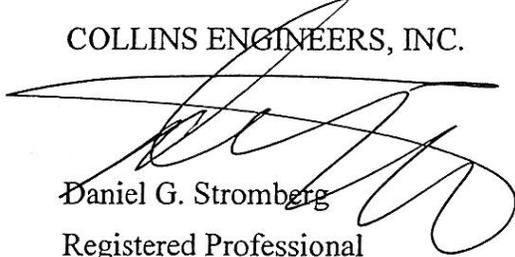
Respectfully submitted,

**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: 63516

Feature Crossed: Red Lake River

Feature Carried: CSAH No. 13

Location: District 2 - Red Lake County

Bridge Description: The bridge superstructure consists of three spans of continuous multiple prestressed concrete beams supporting a reinforced concrete deck. The superstructure is supported by two concrete abutments and two concrete piers. The piers are numbered 1 and 2 starting from the north end of the bridge.

2. INSPECTION DATA

Professional Engineer Diver: Brian K. Schroeder, P.E.

Dive Team: Jason A. Cook, James A. Hitchman

Date: August 17, 2012

Weather Conditions: Cloudy, 65°F

Underwater Visibility: 1.0 foot

Waterway Velocity: 0.5 ft/sec

3. SUBSTRUCTURE INSPECTION DATA

Substructure Inspected: Piers 1 and 2.

General Shape: Each pier consists of a rectangular shaft with round noses, which rests upon a rectangular footing founded on steel H-piles.

Maximum Water Depth at Substructure Inspected: Approximately 8.9 feet.

4. WATERLINE DATUM

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

Water Surface: The waterline was approximately 14.3 feet below reference.  
Waterline Elevation = 949.8.

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 8

Item 92B: Underwater Inspection: Code B/08/12

Item 113: Scour Critical Bridges: Code N

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	Reinforced Concrete Column	2	EA	2				
985	Slopes and Slope Protection	1	EA	1				



Photograph 1. View of Structure, Looking West.



Photograph 2. View of Pier 1, Looking South.



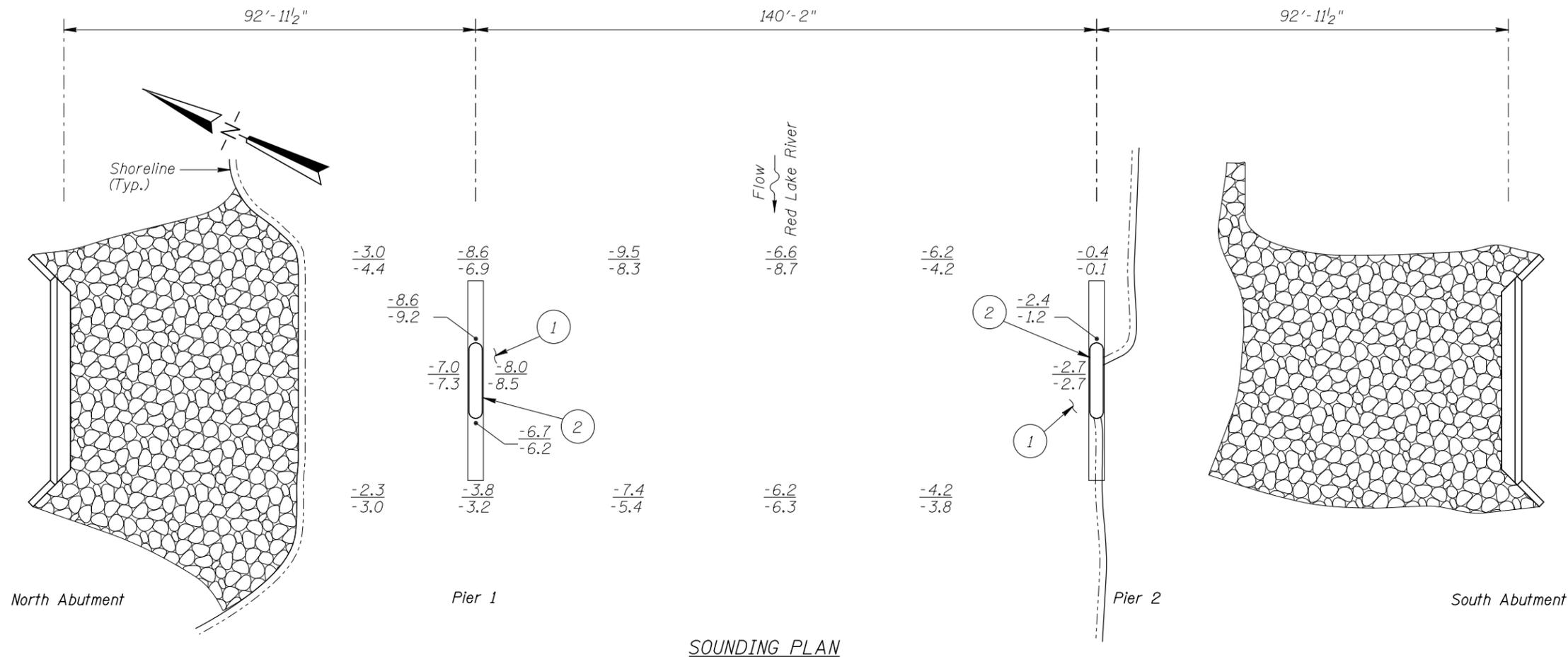
Photograph 3. View of Pier 2, Looking Southeast.



Photograph 4. View of South Abutment, Looking South.



Photograph 5. North Abutment, Looking North.



SOUNDING PLAN

INSPECTION NOTES:

- ① The channel bottom consisted of sandy silt and scattered riprap with 1 foot of probe rod penetration around the entire perimeter of both piers.
- ② The concrete above and below the waterline was typically smooth and sound with no defects of structural significance observed.

GENERAL NOTES:

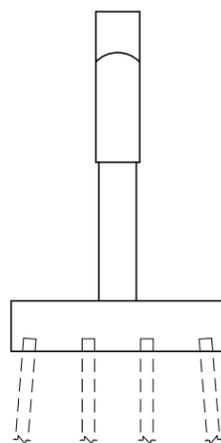
1. Piers 1 and 2 were inspected underwater.
2. At the time of inspection on August 17, 2012 the waterline was located approximately 14.3 feet below the top of the cap at the upstream end of Pier 1. This corresponds to a waterline elevation of 949.8 based on design drawings.
3. Soundings indicate the 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.

Legend

- 4.0 Sounding Depth (8/17/12)
- 5.2 Sounding Depth (8/19/07)
- Timber Debris
- 1 to 3 Foot Diameter Riprap

Note:

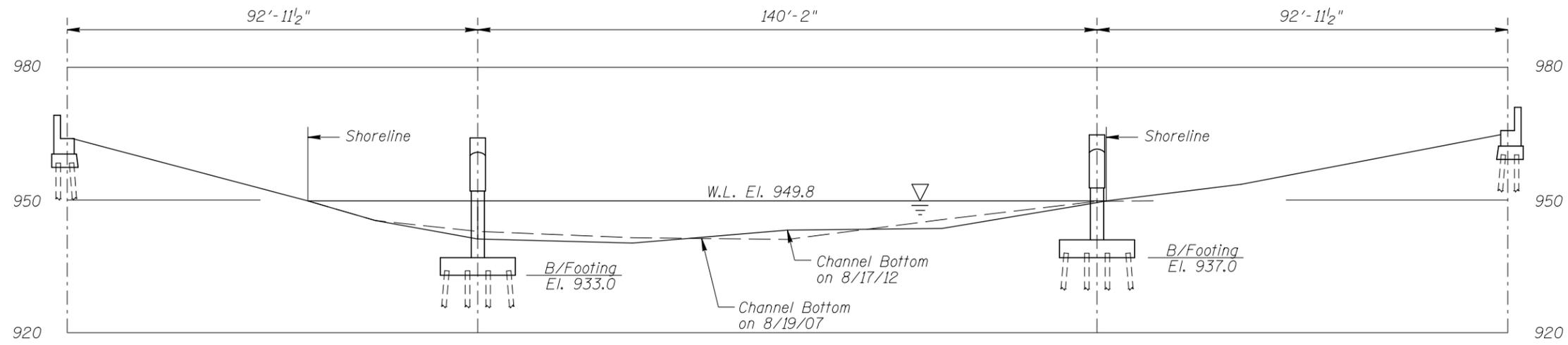
All soundings based on 2012 waterline location.



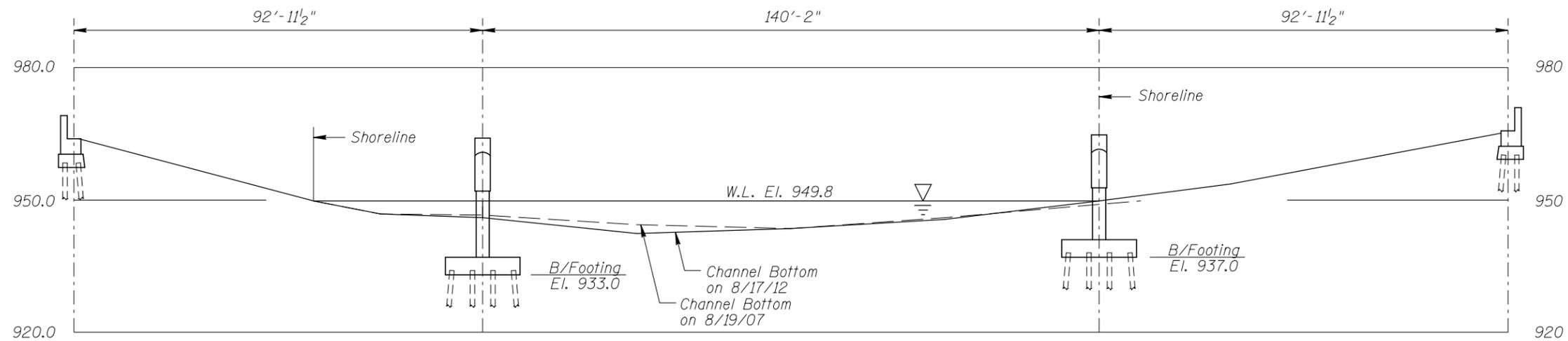
TYPICAL END VIEW OF PIERS

<b>MINNESOTA DEPARTMENT OF TRANSPORTATION UNDERWATER BRIDGE INSPECTION</b>		
STRUCTURE NO. 63516 OVER THE RED LAKE RIVER DISTRICT 2, RED LAKE COUNTY		
<b>INSPECTION AND SOUNDING PLAN</b>		
Drawn By: JAC	<b>AVRES ASSOCIATES</b> 3433 Oakwood Hills Parkway Eau Claire, WI 54701 www.AyresAssociates.com	Date: AUGUST, 2012
Checked By: BKS		Scale: NTS
Code: 522163516		Figure No.: 1

**COLLINS ENGINEERS**  
123 North Wacker Drive  
Suite 300  
Chicago, IL 60606  
(312) 704-9300  
www.collinsengr.com



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. 63516 OVER THE RED LAKE RIVER DISTRICT 2, RED LAKE COUNTY	
<b>UPSTREAM AND DOWNSTREAM FASCIA PROFILES</b>	
Drawn By: JAC	Date: AUGUST, 2012
Checked By: BKS	Scale: 1"=30'
Code: 522163516	Figure No.: 2

**COLLINS ENGINEERS**  
123 North Wacker Drive  
Suite 300  
Chicago, IL 60606  
(312) 704-9300  
www.collinsengr.com

**AYRES ASSOCIATES**  
3433 Oakwood Hills Parkway  
Eau Claire, WI 54701  
www.AyresAssociates.com

MINNESOTA DEPARTMENT OF TRANSPORTATION  
OFFICE OF BRIDGES AND STRUCTURES

DAILY DIVING REPORT

INSPECTORS: Ayres Associates DATE: August 17, 2012

ON-SITE TEAM LEADER: Brian K. Schroeder, P.E.

BRIDGE NO: 63516 WEATHER: Cloudy, 65 °F

WATERWAY CROSSED: Red Lake River

DIVING OPERATION:  SCUBA  SURFACE SUPPLIED AIR  
 OTHER

PERSONNEL: Jason A. Cook, James A. Hitchman

EQUIPMENT: Commercial Scuba, U/W Light, Sounding Rod, Camera, Hammer

TIME IN WATER: 9:35 A.M.

TIME OUT OF WATER: 9:45 A.M.

WATERWAY DATA: VELOCITY 0.5 ft/sec

VISIBILITY 1.0 foot

DEPTH 8.9 feet maximum at Pier 1

ELEMENTS INSPECTED: Piers 1 and 2

REMARKS: Overall, the concrete of the bridge piers was in good condition with no defects observed. Heavy accumulation of timber debris reported in 2007 was no longer present.

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. 63516  
 INSPECTORS Ayres Associates  
 ON-SITE TEAM LEADER Brian K. Schroeder, P.E.  
 WATERWAY CROSSED Red Lake River

INSPECTION DATE August 17, 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	8.9'	N	8	N	9	N	8	8	8	8	N	8	8	N	N	N	N	N
	Pier 2	2.7'	N	8	N	9	N	8	8	8	8	N	8	8	N	N	N	N	N

\*UNDERWATER PORTION ONLY

REMARKS: Overall, the concrete of the bridge piers was in good condition with no defects observed. Heavy accumulation of timber debris reported in 2007 was no longer present.

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.