

UNDERWATER BRIDGE INSPECTION REPORT

STRUCTURE NO. 14523

MSAS NO. 129 (12th AVENUE / 15th AVENUE)

OVER THE

RED RIVER OF THE NORTH

DISTRICT 4 - CLAY COUNTY, FARGO, ND / MOORHEAD, MN



JULY 13.2012

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 No. 14523, Piers 2 and 3, were in good condition with no defects of structural significance observed. The channel bottom appears to be stable with no evidence of significant scour or appreciable changes since the previous inspection. Heavy timber debris accumulation, observed during previous underwater inspection, was still present around the perimeter of Pier 2.

INSPECTION FINDINGS:

- (A) The concrete surfaces of the piers above and below water were smooth and sound with random minor areas of poor consolidation with ¼" maximum penetration.
- (B) A heavy accumulation of timber debris consisting of logs and branches was observed around the entire perimeter of Pier 2 extending from streambed to 6 feet above.
- (C) A light accumulation of timber debris consisting of limbs and branches was observed around the entire perimeter of Pier 3.

RECOMMENDATIONS:

- (A) Remove the timber debris during future maintenance operations.

- (B) 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 08/10/12

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: 14523

Feature Crossed: Red River of the North

Feature Carried: MSAS No. 129 (12th Avenue / 15th Avenue)

Location: District 4 - Clay County, Fargo, ND / Moorhead, MN

Bridge Description: The Bridge is a five span structure consisting of a multiple prestressed I-beam superstructure supporting a reinforced concrete deck. The superstructure is supported by two reinforced concrete abutments and four intermediate concrete piers. The piers are numbered 1 through 4 starting from the west 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 13, 2012

Weather Conditions: Partly Cloudy, 70° F

Underwater Visibility: Negligible/None.

Waterway Velocity: 1.5 ft/sec

3. SUBSTRUCTURE INSPECTION DATA

Substructure Inspected: Piers 2 and 3.

General Shape: The piers consist of single line of steel H-piles encased in a rectangular pier shaft supporting a rectangular cap.

Maximum Water Depth at Substructure Inspected: Approximately 9.4 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 12.2 feet below reference.
Waterline Elevation = 871.5.

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 5

Item 92B: Underwater Inspection: Code B/07/12

Item 113: Scour Critical Bridges: Code F/07

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	Concrete Pier Wall	148	LF	148				
985	Slopes and Slope Protection	1	EA		1			



Photograph 1. Overall View of the Structure, Looking North.



Photograph 2. View of Pier 1, Looking Northwest.



Photograph 3. View of Pier 2, Looking Northwest.



Photograph 4. View of Pier 2, Looking Southeast.



Photograph 5. View of Pier 3, Looking Northeast.



Photograph 6. View of Pier 4, Looking West.

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

INSPECTORS: Ayres Associates DATE: July 13, 2012

ON-SITE TEAM LEADER: Ricardo S. Narvaez

BRIDGE NO: 14523 WEATHER: Partly Cloudy, 70° F

WATERWAY CROSSED: Red River of the North

DIVING OPERATION: _____ SCUBA SURFACE SUPPLIED AIR
_____ OTHER _____

PERSONNEL: Jason Cook, Adam Enderby

EQUIPMENT: SSA, U/W Light, Hammer, Sounding Pole, Camera

TIME IN WATER: 7:25 a.m.

TIME OUT OF WATER: 7:45 a.m.

WATERWAY DATA: VELOCITY 1.5 ft/sec

VISIBILITY Negligible/None

DEPTH 9.4 feet maximum at Pier 3.

ELEMENTS INSPECTED: Piers 2 and 3

REMARKS: Overall, the concrete was smooth and sound. A heavy accumulation of timber debris consisting of logs and branches was observed around the entire perimeter of Pier 2. A light accumulation of timber debris consisting of smaller pieces of drift was observed around the entire perimeter of Pier 3. The channel bottom material was soft clay with some cobbles and appeared stable.

FURTHER ACTION NEEDED: _____ YES NO

Remove the timber debris during future maintenance operations.

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. 14523
 INSPECTORS Ayres Associates
 ON-SITE TEAM LEADER Ricardo S. Narvaez
 WATERWAY CROSSED Red River of the North

INSPECTION DATE July 13, 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.

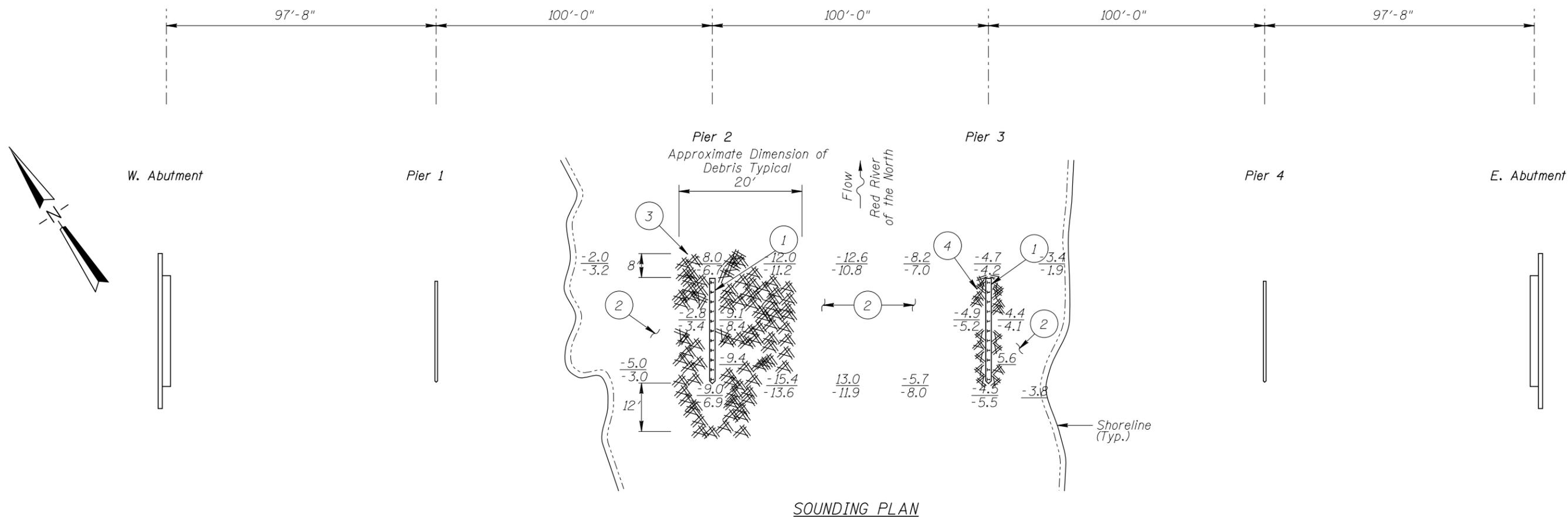
CONDITION RATING

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 2	9.4'	N	8	N	9	N	8	7	6	5	4	5	8	N	N	N	N	N
	Pier 3	5.6'	N	8	N	9	N	8	7	6	N	7	7	8	N	N	N	N	N

*UNDERWATER PORTION ONLY

REMARKS: Overall, the concrete was smooth and sound. A heavy accumulation of timber debris consisting of logs and branches was observed around the entire perimeter of Pier 2. A light accumulation of timber debris was observed around the entire perimeter of Pier 3. The channel bottom material was soft clay with some cobbles and appeared stable.

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 2 and 3 were inspected underwater.
2. At the time of inspection on July 13, 2012, the waterline was located approximately 12.2 feet below the top of the pier cap at the downstream end of Pier 2. This corresponds with a waterline elevation of 871.5 feet based on previous report dated August 22, 2007.
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:

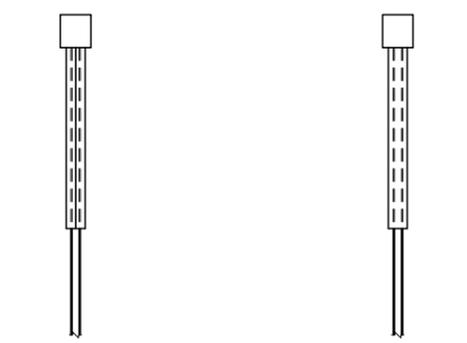
- 1 Overall, the concrete was smooth and sound.
- 2 The channel bottom consisted of soft clay with probe rod penetration up to 1.5 feet and random 12-inch-diameter cobbles.
- 3 A heavy accumulation of timber debris consisting logs and branches was observed around the entire perimeter of Pier 2 extending from stream bed to 6 feet above.
- 4 A light accumulation of timber debris consisting of limbs and branches was observed around the entire perimeter of Pier 3.

Legend

- 5.2 Sounding Depth (7/13/12)
- 5.2 Sounding Depth (8/22/07)
- Timber Debris

Note:

All soundings based on 2012 waterline location.

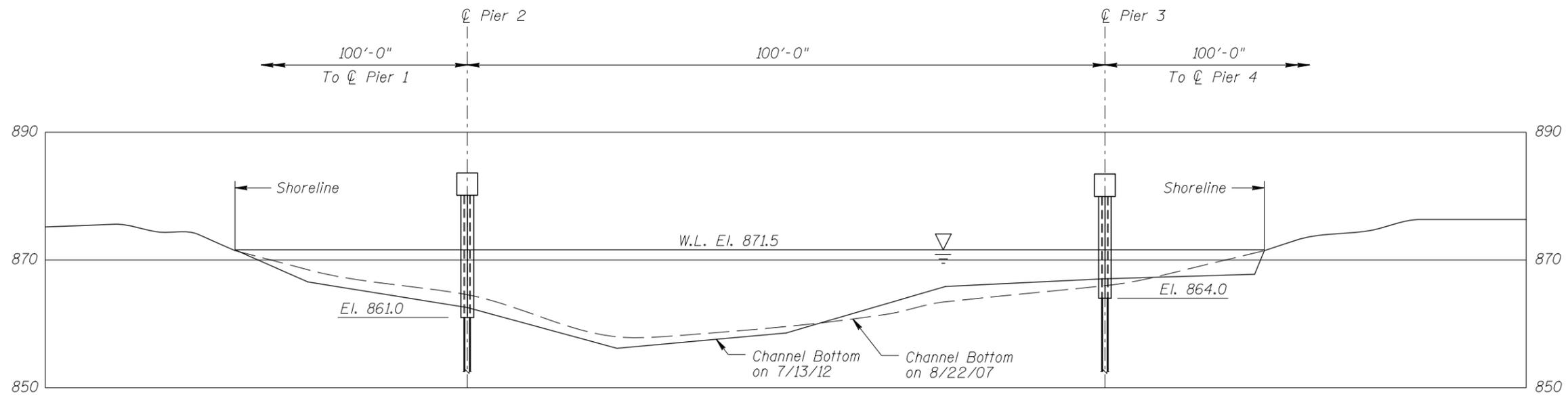


UPSTREAM DOWNSTREAM
TYPICAL END VIEW OF PIERS 2 & 3

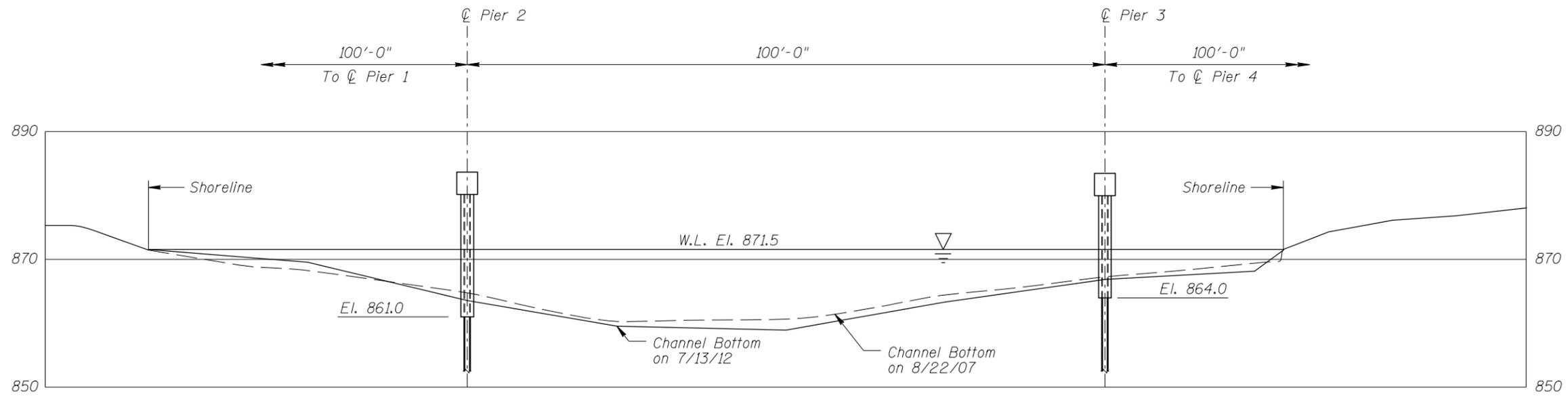
MINNESOTA DEPARTMENT OF TRANSPORTATION UNDERWATER BRIDGE INSPECTION	
STRUCTURE NO. 14523 OVER RED RIVER OF THE NORTH DISTRICT 4, CLAY COUNTY, CITY OF MOORHEAD	
INSPECTION AND SOUNDING PLAN	
Drawn JAC Checked By: BKS Code: 522114523	Date: JULY 2012 Scale: NTS Figure No.: 1

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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. 14523 OVER RED RIVER OF THE NORTH DISTRICT 4, CLAY COUNTY, CITY OF MOORHEAD UPSTREAM AND DOWNSTREAM FASCIA PROFILES		
COLLINS ENGINEERS <small>123 North Wacker Drive Suite 300 Chicago, IL 60606 (312) 704-9300 www.collinsengr.com</small>	Drawn By: JAC Checked By: BKS Code: 522114523	AYRES ASSOCIATES Date: JULY 2012 Scale: 1"=20' Figure No.: 2