

UNDERWATER BRIDGE INSPECTION REPORT

STRUCTURE NO. 60506

MSAS NO. 113

OVER THE

RED RIVER OF THE NORTH

DISTRICT 2 - POLK COUNTY, CITY OF EAST GRAND FORKS



AUGUST 29, 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. 60506, Piers 6 and 7, were found to generally be in good condition with no defects of structural significance. A moderate to heavy accumulation of timber debris was encountered on the channel bottom at both columns of Pier 7. A light accumulation of timber debris was observed at the upstream nose of Pier 6. The channel bottom appeared stable with some degradation, but no significant scour since the previous inspection.

INSPECTION FINDINGS:

- (A) A moderate accumulation of timber debris, consisting of 1 to 2 foot diameter logs, was observed around the entire perimeter of the upstream column of Pier 7 and extended from the channel bottom up 6 feet and approximately 8 feet off the column faces.
- (B) A moderate accumulation of timber debris, consisting of 1 foot diameter and smaller logs and branches, was observed around the entire perimeter of the downstream column of Pier 7 and extended from the channel bottom up 4 feet and up to 6 feet off the column faces.
- (C) A light accumulation of timber debris, consisting of 6 inch diameter branches, was observed at the upstream end of Pier 6 which extended from the channel bottom up 1 foot and 4 feet from the pier.

RECOMMENDATIONS:

- (A) Monitor the accumulations of timber debris at Pier 7 during future underwater inspections and consider removal if it is found to be increasing.
- (B) 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,

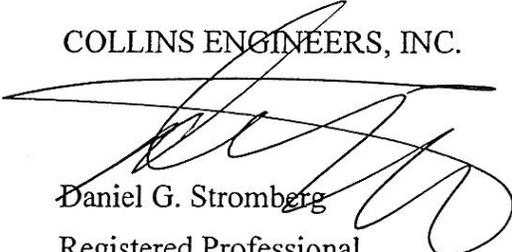
PROFESSIONAL ENGINEER

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: 60506

Feature Crossed: Red River of the North

Feature Carried: MSAS No. 113

Location: District 2 - Polk County, City of East Grand Forks

Bridge Description: The bridge superstructure consists of thirteen spans of multiple steel girders. The superstructure is supported by two reinforced concrete abutments, three reinforced concrete piers, and nine steel bent piers. The abutments and piers are supported by reinforced concrete footings founded on steel H-piles. The piers are numbered starting from the west end of the bridge.

2. INSPECTION DATA

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

Dive Team: Jason A. Cook, Anthony J. Coffaro

Date: August 29, 2012

Weather Conditions: Sunny, 75° F

Underwater Visibility: None/Negligible

Waterway Velocity: 1.0 ft/sec

3. SUBSTRUCTURE INSPECTION DATA

Substructure Inspected: Piers 6 and 7

General Shape: The piers consist of two elongated octagonal reinforced concrete columns supporting a rectangular concrete pier cap with rounded or pointed ends. The columns are connected by a concrete diaphragm and two horizontal cross-beams. The columns are supported by separate rectangular footings which are founded on steel H-piles.

Maximum Water Depth at Substructure Inspected: Approximately 19.7 feet.

4. WATERLINE DATUM

Water Level Reference: The top of the pier cap at the upstream end of Pier 7.

Water Surface: The waterline was approximately 38.3 feet below reference.
Waterline Elevation = 795.1.

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 6

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

Item 113: Scour Critical Bridges: Code I

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	4	EA	4				
985	Slopes and Slope Protection	1	EA	1				



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



Photograph 2. View of Pier 6, Looking West.



Photograph 3. View of Pier 7, Looking West.



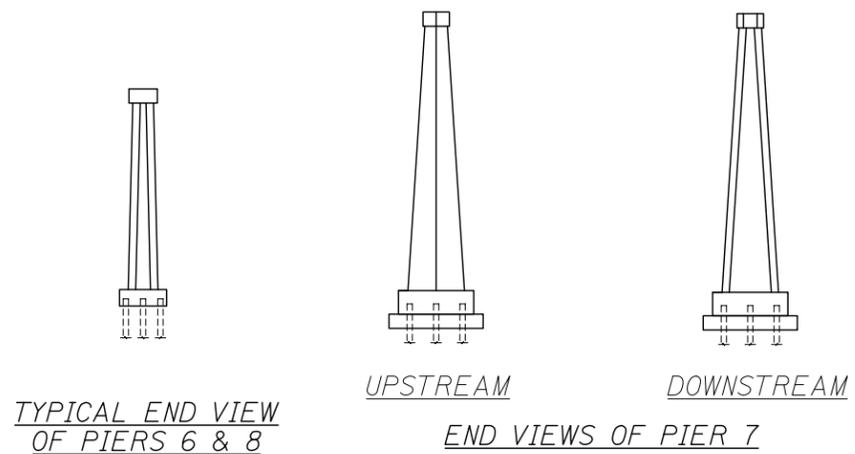
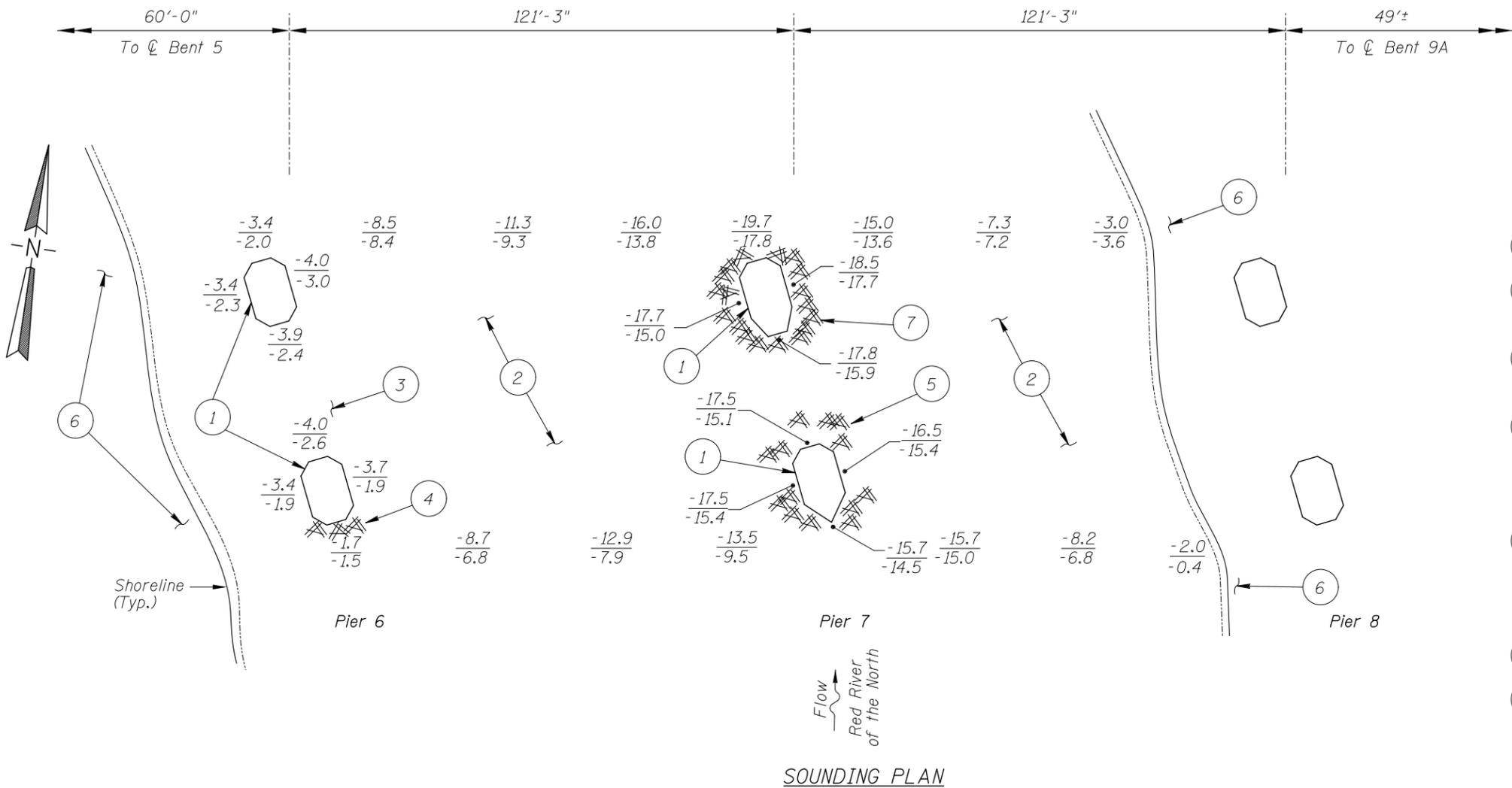
Photograph 4. View of Pier 8 and East Embankment, Looking East.

GENERAL NOTES:

1. Piers 6 and 7 were inspected underwater.
2. At the time of inspection on August 29, 2012, the waterline was located approximately 38.3 feet below the top of the pier cap at the upstream end of Pier 7. This corresponds with a waterline elevation of 795.1 based on the report dated October 28, 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 Overall, the concrete of the piers was sound and smooth.
- ② The channel bottom consisted of sandy clay with a probe rod penetration of up to 6 inches.
- ③ The channel bottom consisted of sandy silt with up to 1 foot of probe rod penetration.
- ④ A light accumulation of timber debris, consisting of 6 inch diameter branches, was observed at the upstream end of Pier 6 which extended from the channel bottom up 1 foot and 4 feet off the column faces.
- ⑤ A moderate accumulation of timber debris, consisting of 1 to 2 foot diameter logs, was observed around the entire perimeter of upstream column of Pier 7. The debris extended from channel bottom up 6 feet and approximately 8 feet off the column faces.
- ⑥ Both riverbanks of the channel exhibited moderate erosion.
- ⑦ A moderate accumulation of timber debris consisting of 1 foot diameter and smaller logs and branches was observed around the entire perimeter of downstream column of Pier 7. The debris extended from channel bottom up 4 feet and up to 6 feet off the column faces.



Legend

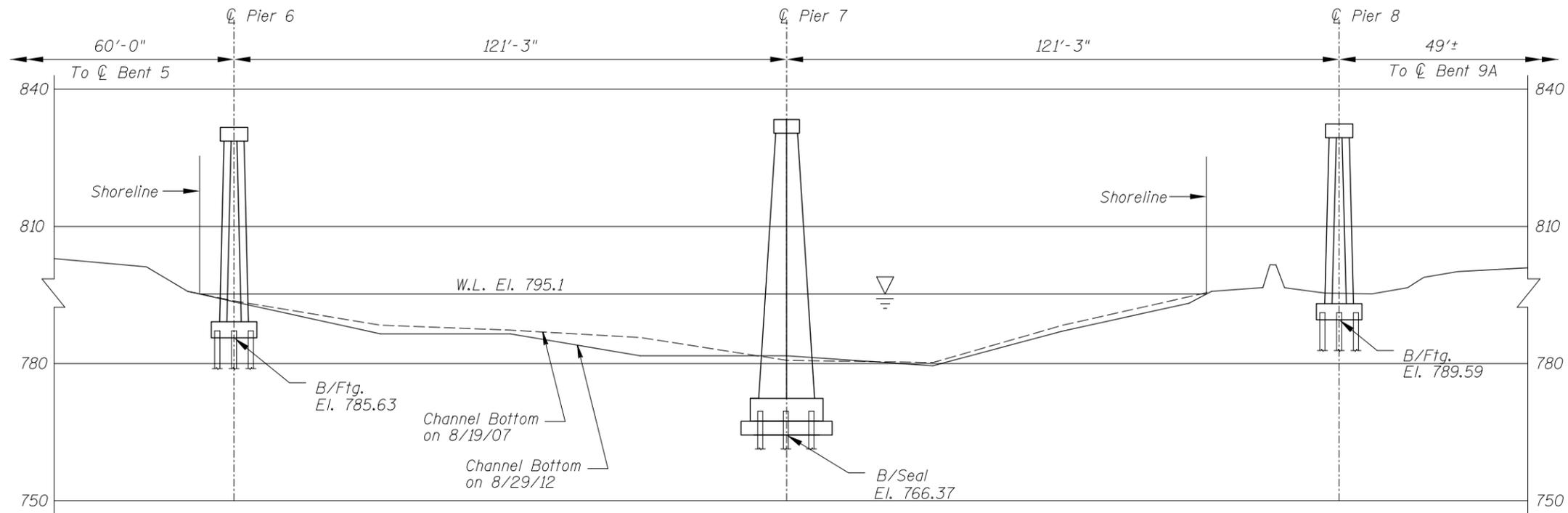
- 2.0 Sounding Depth (8/29/12)
- 5.2 Sounding Depth (8/19/07)
- Timber Debris

Note:

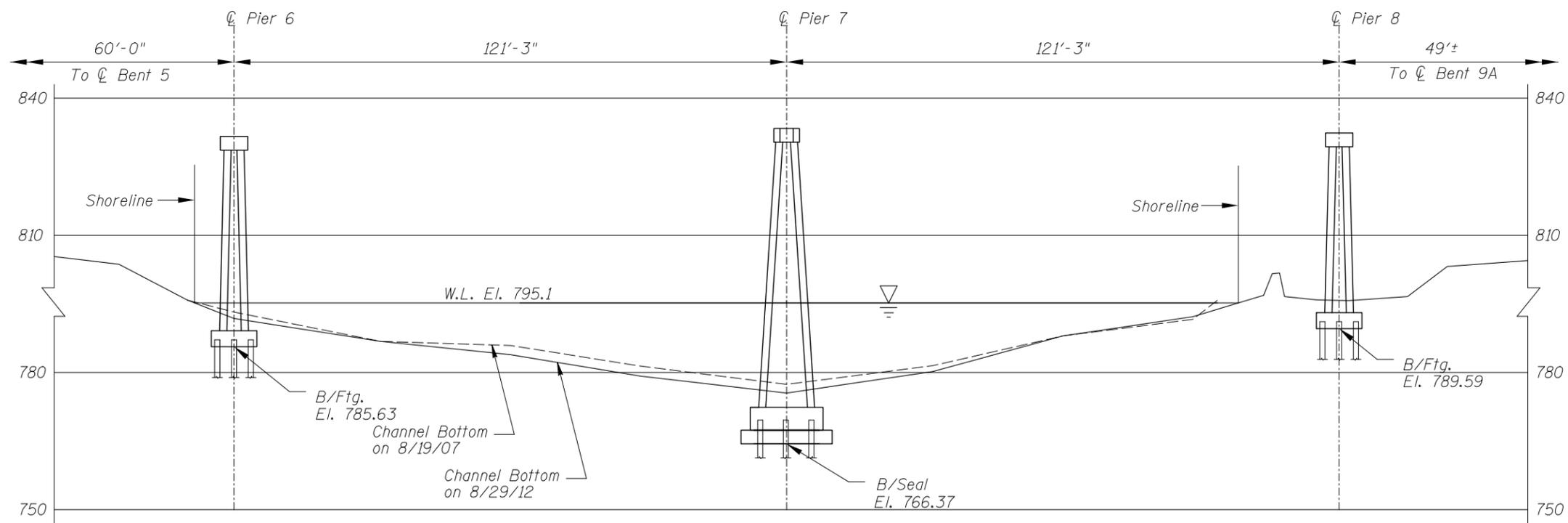
All soundings based on 2012 waterline location.

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

MINNESOTA DEPARTMENT OF TRANSPORTATION UNDERWATER BRIDGE INSPECTION		
STRUCTURE NO. 60506 OVER THE RED RIVER OF THE NORTH DISTRICT 2, POLK COUNTY, CITY OF EAST GRAND FORKS		
INSPECTION AND SOUNDING PLAN		
Drawn By: JAC	AVRES ASSOCIATES 3433 Oakwood Hills Parkway Eau Claire, WI 54701 www.AyresAssociates.com	Date: SEPT, 2012
Checked By: BKS		Scale: NTS
Code: 742360506		Figure No.: 1



UPSTREAM FASCIA PROFILE



DOWNSTREAM FASCIA PROFILE

Note:
Refer to Figure 1 for General Notes.

MINNESOTA DEPARTMENT OF TRANSPORTATION UNDERWATER BRIDGE INSPECTION			
STRUCTURE NO. 60506 OVER THE RED RIVER OF THE NORTH DISTRICT 2, POLK COUNTY, CITY OF EAST GRAND FORKS UPSTREAM AND DOWNSTREAM FASCIA PROFILES			
Drawn By: JAC Checked By: BKS Code: 742360506	<table border="1"> <tr> <td style="text-align: center;"> AVRES ASSOCIATES </td> <td> 3433 Oakwood Hills Parkway Eau Claire, WI 54701 www.AyresAssociates.com </td> </tr> </table>	AVRES ASSOCIATES	3433 Oakwood Hills Parkway Eau Claire, WI 54701 www.AyresAssociates.com
AVRES ASSOCIATES	3433 Oakwood Hills Parkway Eau Claire, WI 54701 www.AyresAssociates.com		
Date: SEPT, 2012 Scale: 1"=30' Figure No.: 2			

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

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

INSPECTORS: Ayres Associates DATE: August 29, 2012

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

BRIDGE NO: 60506 WEATHER: Sunny, 75° F

WATERWAY CROSSED: Red River of the North

DIVING OPERATION: _____ SCUBA SURFACE SUPPLIED AIR
_____ OTHER _____

PERSONNEL: Jason A. Cook, Anthony J. Coffaro

EQUIPMENT: SSA, Lead Line, Sounding Pole, U/W Lights, Fathometer, Hammer,

Camera

TIME IN WATER: 11:40 A.M.

TIME OUT OF WATER: 12:35 P.M.

WATERWAY DATA: VELOCITY 1.0 ft/sec

VISIBILITY None/Negligible

DEPTH 19.7 feet maximum at Pier 7

ELEMENTS INSPECTED: Piers 6 and 7

REMARKS: Overall, the concrete of the piers was smooth and sound. Moderate accumulations of timber debris were encountered around the entire perimeter of the upstream and downstream columns of Pier 7, extending from the channel bottom up 4 to 6 feet. A light accumulation of timber debris was also present upstream end of Pier 6, extending from the channel bottom up 1 foot. Overall, the channel appeared stable with some degradation, but no significant scour since the last inspection.

FURTHER ACTION NEEDED: _____ YES NO

Monitor the accumulations of timber debris at Pier 7 during future underwater 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. 60506
 INSPECTORS Ayres Associates
 ON-SITE TEAM LEADER Brian K. Schroeder, P.E.
 WATERWAY CROSSED Red River of the North

INSPECTION DATE August 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

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 6	4.0'	N	7	N	8	N	7	7	6	6	7	6	7	N	N	N	N	N
	Pier 7	19.7'	N	7	N	8	N	7	7	6	6	6	6	7	N	N	N	N	N

*UNDERWATER PORTION ONLY

REMARKS: Overall, the concrete of the piers was smooth and sound. Moderate accumulations of timber debris were encountered around the entire perimeter of the upstream and downstream columns of Pier 7, extending from the channel bottom up 4 to 6 feet. A light accumulation of timber debris was also present upstream end of Pier 6, extending from the channel bottom up 1 foot. Overall, the channel appeared stable with some degradation, but no significant scour since the last inspection..

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.