

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



PREPARED FOR THE
MINNESOTA DEPARTMENT OF TRANSPORTATION

BY
COLLINS ENGINEERS, INC.

JOB NO. 3512 (CEI 40)

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 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, and a minor scour depression was observed at the downstream column of Pier 6. A scour depression was observed around Pier 8; however, the pier was in the dry on the east shore at the time of the inspection. The channel bottom appeared stable with no significant scour or appreciable changes since the previous inspection.

INSPECTION FINDINGS:

- (A) A scour pocket was observed around the upstream side of the downstream column of Pier 6 and measured approximately 1 foot deep with a 3 feet radius.
- (B) A heavy accumulation of timber debris, consisting of 1 to 2 foot diameter logs, was observed around the entire perimeter of both columns of Pier 7 and extended approximately 8 feet out away from the pier and up to 6 feet above the channel bottom.
- (C) A light accumulation of timber debris, consisting of 6 inch diameter branches, was observed at the upstream end of Pier 6 and extended from the channel bottom to the waterline.

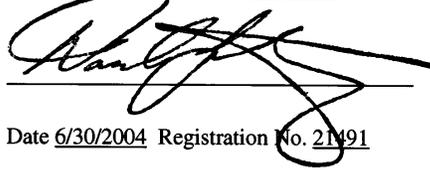
RECOMMENDATIONS:

- (A) Remove the heavy accumulations of timber debris from around Pier 7 during routine maintenance.

- (B) Reinspect the submerged substructure units at the normal maximum recommended (NBIS) interval of five (5) years.

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 6/30/2004 Registration No. 21491

Respectfully submitted,

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: The 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: Shirley M. Walker, P.E.

Dive Team: Clayton G. Brookins, Michelle D. Koerbel

Date: October 28, 2002

Weather Conditions: Rain and Snow, $\pm 35^{\circ}$ F

Underwater Visibility: ± 0.5 Feet

Waterway Velocity: Negligible/None

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 23 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 37.5 feet below reference.
Waterline Elevation = 795.9.

5. NBIS CODING INFORMATION (Minnesota specific codes are used for 92B and 113)

Item 60: Substructure: Code 7

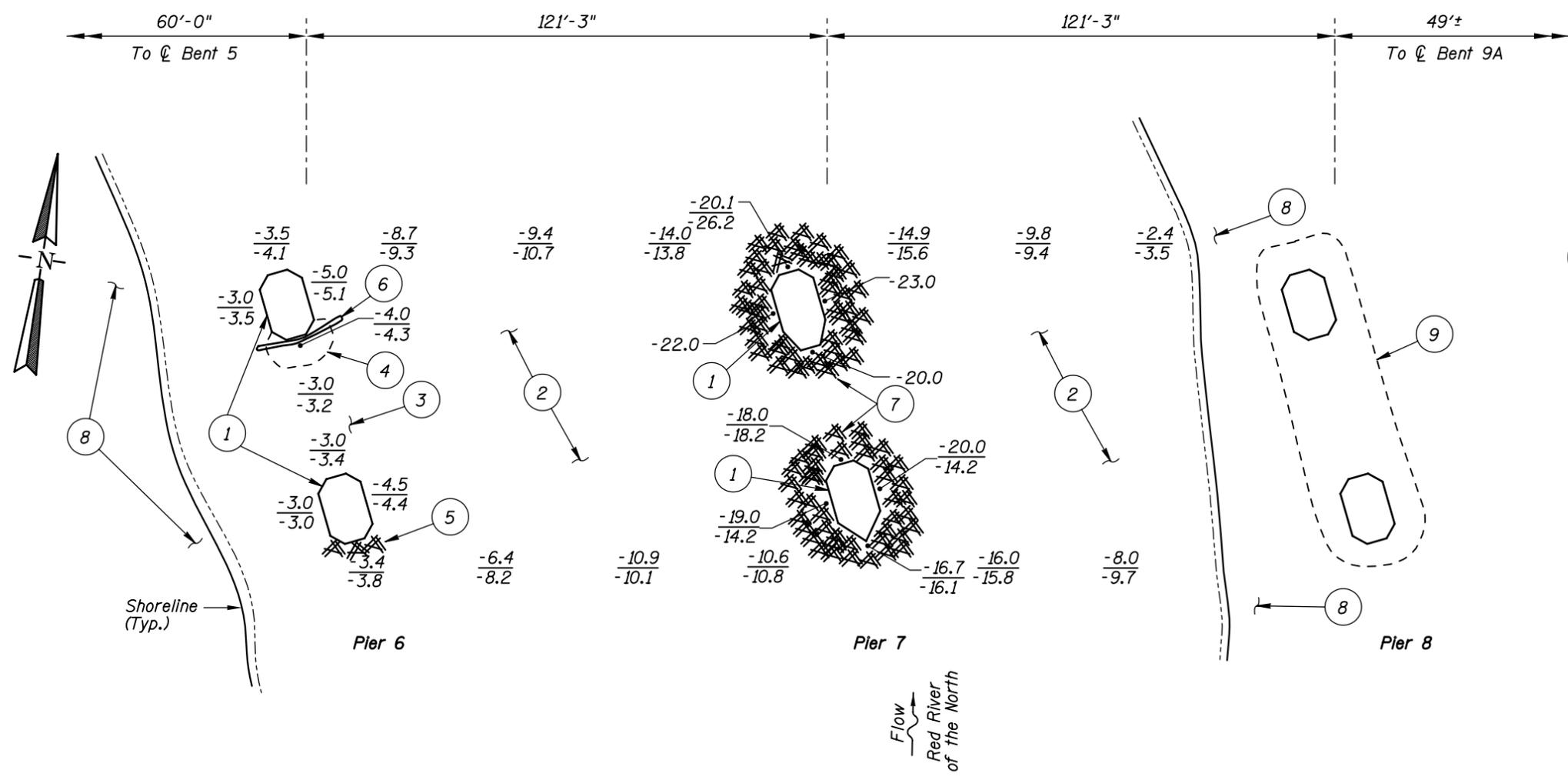
Item 61: Channel and Channel Protection: Code 5

Item 92B: Underwater Inspection: Code B/10/02

Item 113: Scour Critical Bridges: Code F/02

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

_____ Yes X No



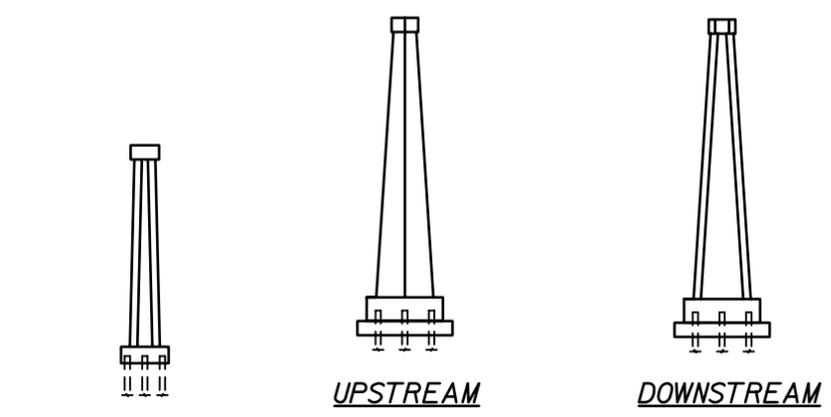
SOUNDING PLAN

GENERAL NOTES:

1. Piers 6 and 7 were inspected underwater.
2. At the time of inspection on October 28, 2002, the waterline was located approximately 37.5 feet below the top of the pier cap at the upstream end of Pier 7. This corresponds with a waterline elevation of 795.9 based on the previous report dated September 6, 1997.
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 reinforced concrete piers were in good condition with no deterioration of structural significance.
- ② The channel bottom consisted of firm clay overlaid by 2 inches of silt and scattered random riprap with a probe rod penetration of 3 inches.
- ③ The channel bottom consisted of sandy silt with up to 1 foot of probe rod penetration.
- ④ A scour depression was observed around the upstream side of the downstream column of Pier 6 and measured approximately 1 foot deep with a 3 foot radius.
- ⑤ A light accumulation of timber debris, consisting of 6 inch diameter branches, was observed at the upstream end of Pier 6 and extended from the channel bottom to the waterline.
- ⑥ A 6 inch diameter log was observed at the upstream end of the downstream column of Pier 6.
- ⑦ A heavy accumulation of timber debris, consisting of 1 to 2 foot diameter logs, was observed around the entire perimeter of both columns of Pier 7 and extended approximately 8 feet out away from the pier columns and up to 6 feet above the channel bottom.
- ⑧ Both riverbanks of the channel exhibited moderate erosion.
- ⑨ Dry scour depression was observed around Pier 8 and measured approximately 3 feet in radius and 1 to 2 feet deep.



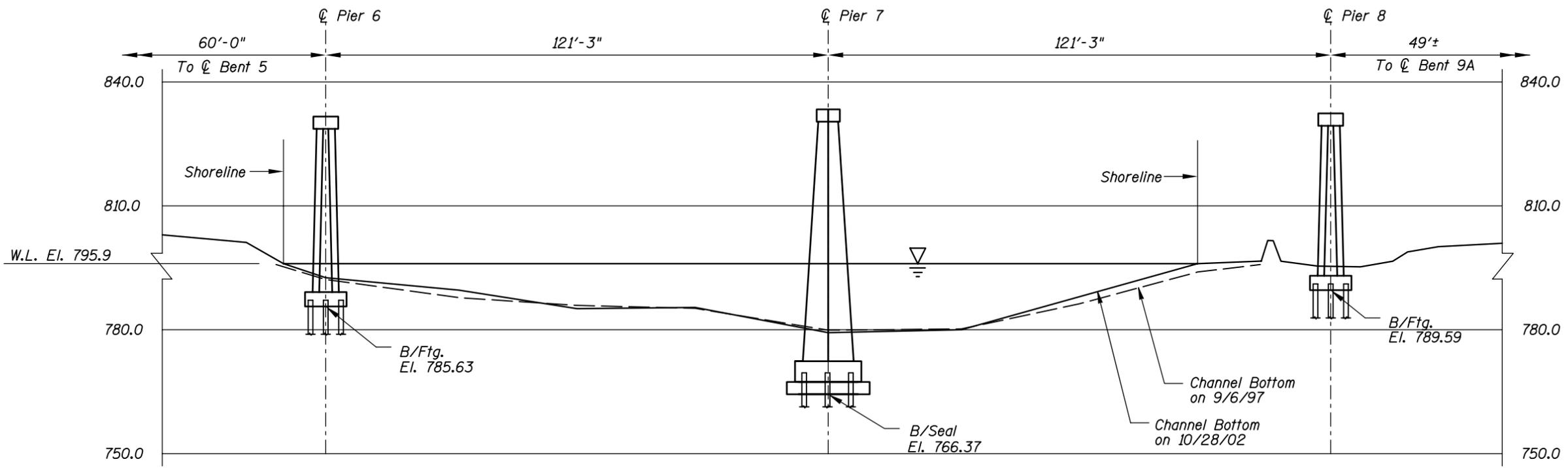
TYPICAL END VIEW OF PIERS 6 & 8

END VIEW OF PIER 7

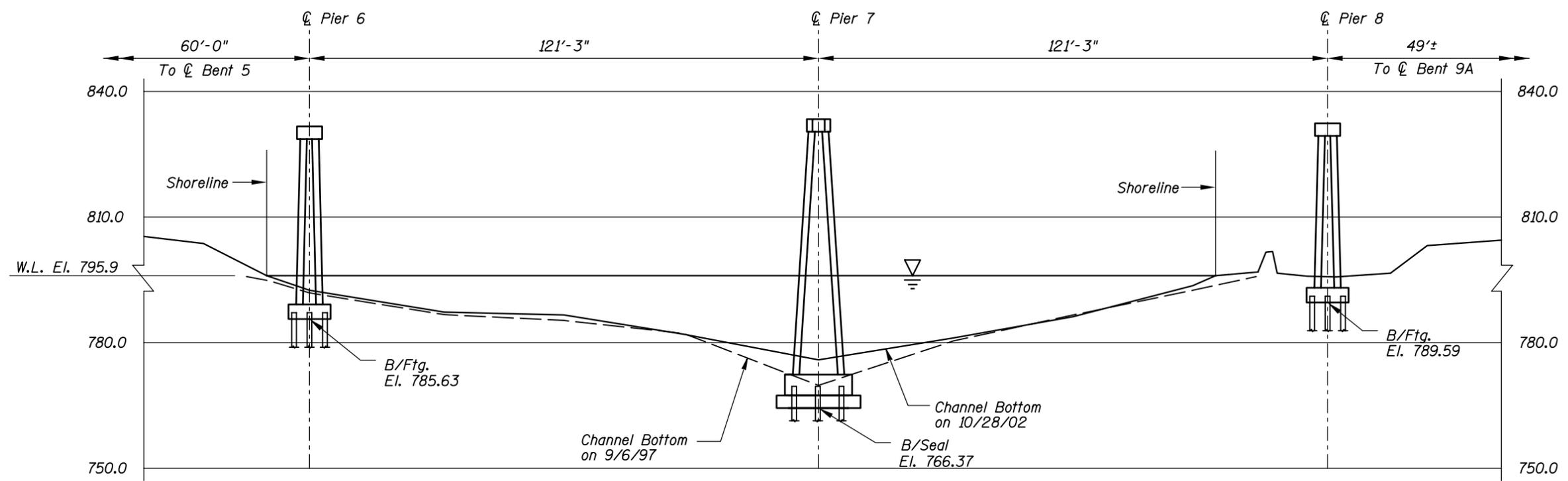
Legend

- 2.0 Sounding Depth from Waterline (10/28/02)
- 5.2 Sounding Depth from Waterline (9/6/97)
- Timber Debris
- Scour Depression

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: PRH	COLLINS ENGINEERS, INC.	Date: OCT. 2002
Checked By: MDK	300 W. WASHINGTON, STE. 600 CHICAGO, ILLINOIS 60606 (312) 704-9300	Scale: NTS
Code: 35120040		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: PRH	COLLINS ENGINEERS, INC. 300 W. WASHINGTON, STE. 600 CHICAGO, ILLINOIS 60606 (312) 704-9300	Date: OCT. 2002
Checked By: MDK		Scale: 1"=30'
Code: 35120040		Figure No.: 2



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



Photograph 2. View of Pier 6, Looking Southwest.



Photograph 3. View of Pier 7, Looking Southeast.



Photograph 4. View of Pier 8, Looking Southeast.



Photograph 5. View of the Upstream Column of Pier 7, Looking Southwest.



Photograph 6. View of the Downstream Column of Pier 7, Looking Southwest.

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

INSPECTORS: Collins Engineers, Inc. DATE: October 28, 2002
ON-SITE TEAM LEADER: Shirley M. Walker, P.E.
BRIDGE NO: 60506 WEATHER: Rain/Snow, " 35° F
WATERWAY CROSSED: The Red River of the North
DIVING OPERATION: X SCUBA SURFACE SUPPLIED AIR
OTHER

PERSONNEL: Clayton G. Brookins, Michelle D. Koerbel
EQUIPMENT: Scuba, Probe Rod, Lead Line, Sounding Pole, U/W Light, Scraper, Camera
TIME IN WATER: 7:45 A.M.
TIME OUT OF WATER: 8:45 A.M.
WATERWAY DATA: VELOCITY Negligible/None
VISIBILITY " 0.5 feet
DEPTH 23 feet maximum at Pier 7

ELEMENTS INSPECTED: Piers 6 and 7

REMARKS: Overall, the piers were found to be in good condition with no deterioration of structural significance. Moderate to heavy accumulations of timber debris were encountered on the channel bottom around Pier 7. A minor accumulation of timber debris was also present upstream end of Pier 6. A scour pocket was observed at the upstream end of the downstream column of Pier 6, but no footing exposure was observed at the piers. There was also a dry scour depression at Pier 8 on the east bank. Overall, the channel appeared stable with no significant scour or appreciable changes since the last inspection.

FURTHER ACTION NEEDED: X YES _____ NO

Remove the heavy accumulation of timber debris from around Pier 7 during routine maintenance.

Reinspect the submerged substructure units at the normal maximum recommended (NBIS) interval of five (5) years.

MINNESOTA DEPARTMENT OF TRANSPORTATION
OFFICE OF BRIDGES AND STRUCTURES

UNDERWATER INSPECTION CONDITION RATING FORM

BRIDGE NO. 60506
INSPECTORS Collins Engineers, Inc.
ON-SITE TEAM LEADER Shirley M. Walker, P.E.
WATERWAY CROSSED The Red River of the North

INSPECTION DATE October 28, 2002
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	5.0'	N	7	N	9	N	7	6	6	6	6	6	7	N	N	7	N	N
	Pier 7	23.0'	N	7	N	9	N	7	7	N	N	5	5	7	N	N	7	N	N

*UNDERWATER PORTION ONLY

REMARKS: Overall, the piers were found to be in good condition with no deterioration of structural significance. Moderate to heavy accumulations of timber debris were encountered on the channel bottom around Pier 7. A minor accumulation of timber debris was also present upstream end of Pier 6. A scour pocket was observed at the upstream end of the downstream column of Pier 6, but no footing exposure was observed at the piers. There was also a dry scour depression at Pier 8 on the east bank. Overall, the channel appeared stable with no significant scour or appreciable changes 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.