

UNDERWATER BRIDGE INSPECTION REPORT

STRUCTURE NO. 18501
CSAH NO. 16
OVER THE
PINE RIVER (CROSS LAKE / RUSH LAKE)
DISTRICT 3 – CROW WING COUNTY



PREPARED FOR THE
MINNESOTA DEPARTMENT OF TRANSPORTATION
BY
COLLINS ENGINEERS, INC.
JOB NO. 3512

MINNESOTA DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

REPORT SUMMARY:

The substructure units inspected below water at Bridge No. 18501, Piers 1, 2, and 3, were found to be in good condition with coating failure below the waterline covering 15% to 20% of the surface area. The channel bottom around the substructure units appeared stable with no significant scour or debris accumulations.

INSPECTION FINDINGS:

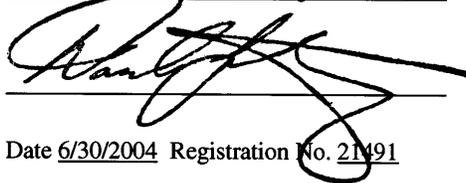
- (A) All of the piles at each of the piers exhibited coating failure below the waterline on 15% to 20% of the surface area. Aquatic growth was observed on all piles from the waterline to the mudline.

RECOMMENDATIONS:

- (A) 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.

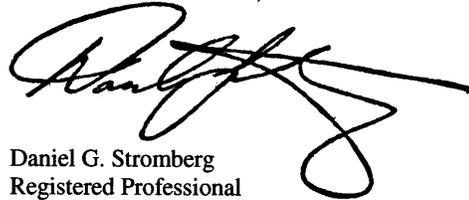
Daniel G. Stromberg



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: 18501

Feature Crossed: The Pine River (Cross Lake / Rush Lake)

Feature Carried: CSAH No. 16

Location: District 3 – Crow Wing County

Bridge Description: The superstructure consists of four spans of multiple concrete beams. The superstructure is supported by two reinforced concrete abutments and three steel pipe pile piers. The piers are numbered 1 through 3 starting from the south end of the bridge.

2. INSPECTION DATA

Professional Engineer/Team Leader: Shirley M. Walker, P.E.

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

Date: September 26, 2002

Weather Conditions: Sunny, " 50E F

Underwater Visibility: " 5 Feet

Waterway Velocity: Negligible / None

3. SUBSTRUCTURE INSPECTION DATA

Substructure Inspected: Piers 1, 2, and 3.

General Shape: Piers 1, 2, and 3 consist of a single line of eight steel pipe piles supporting a reinforced concrete cap. Each abutment is an open abutment with a concrete sloped wall.

Maximum Water Depth at Substructure Inspected: Approximately 8.0 feet.

4. WATERLINE DATUM

Water Level Reference: The top of the pier cap at the west end of Pier 2.

Water Surface: The waterline was approximately 9.5 feet below reference.
Assumed Waterline Elevation = 90.5

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

Item 60: Substructure: Code 7

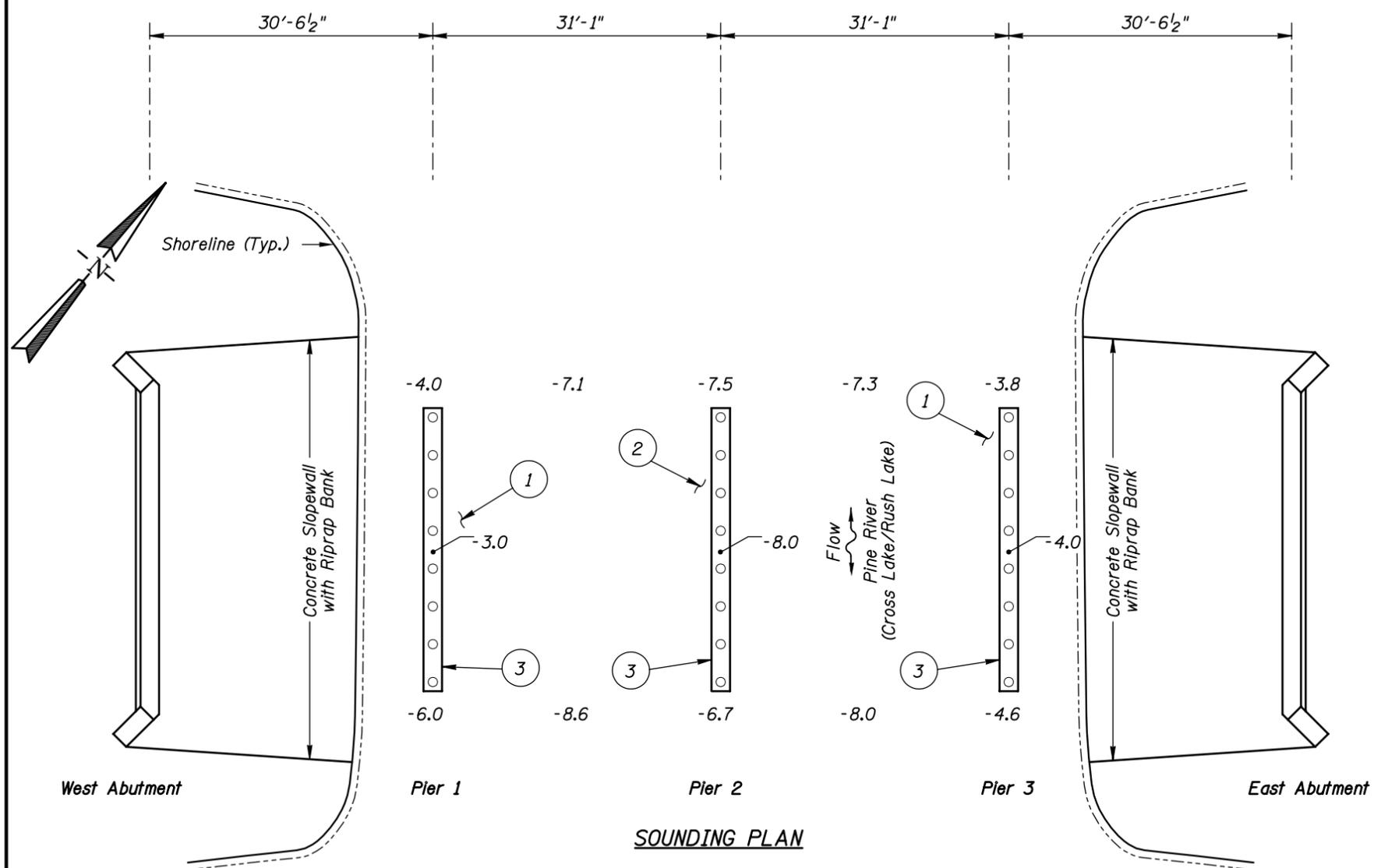
Item 61: Channel and Channel Protection: Code 8

Item 92B: Underwater Inspection: Code B/09/02

Item 113: Scour Critical Bridges: Code I/02

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

_____ Yes X No

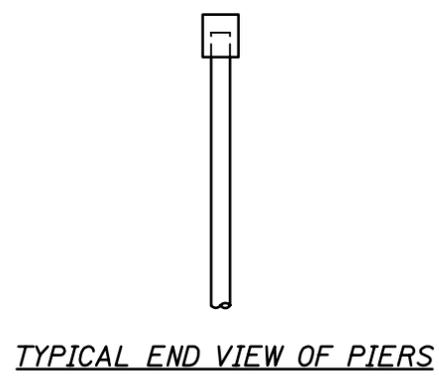


GENERAL NOTES:

1. Piers 1, 2, and 3 were inspected underwater.
2. At the time of inspection on September 26, 2002, the waterline was located approximately 9.5 feet below the top of the pile cap at the north end of Pier 2. Since insufficient bridge elevation information was available, a reference elevation of 100.0 was assumed. Based on the assumed reference the waterline elevation was 90.5.
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 mid point intervals between the substructure units.

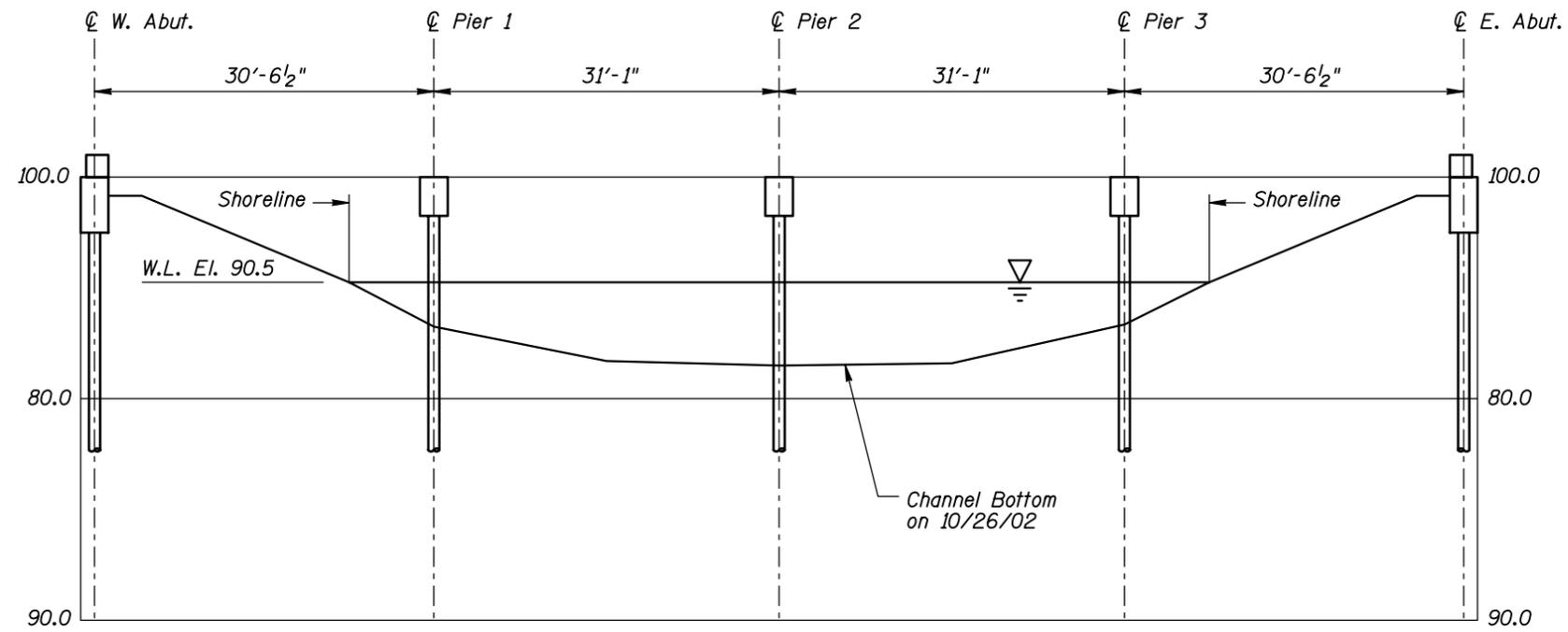
INSPECTION NOTES:

- 1 The channel bottom around Piers 1 and 3 consisted of 1 to 2 foot diameter riprap.
- 2 The channel bottom around Pier 2 consisted of gravel and 4 to 6 inch diameter cobbles with up to 2 inches of probe rod penetration.
- 3 The piles exhibited coating failure covering 15% to 20% of the surface area below the waterline. All piles exhibited a layer aquatic growth from the waterline to the mudline.

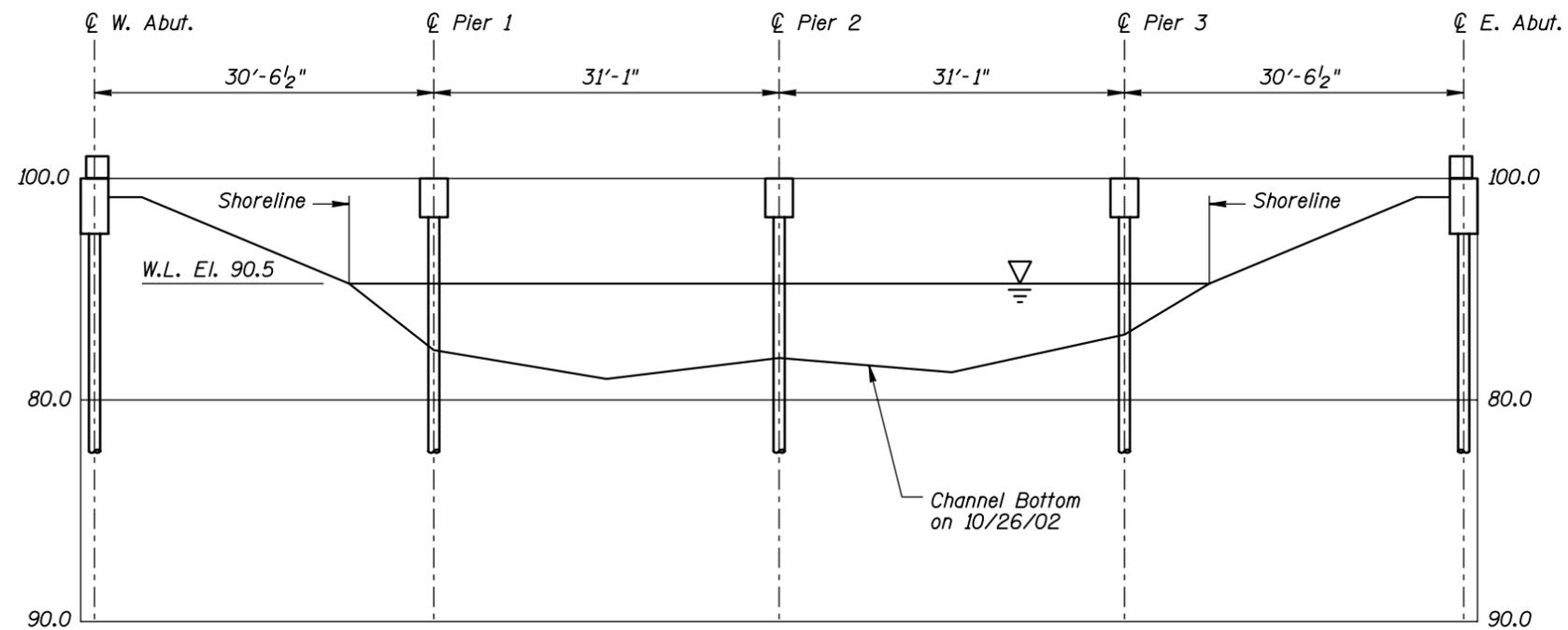


- Legend**
- 5.2 Sounding Depth from Waterline (9/26/02)
 - Steel Pipe, Cast-in-place Concrete Pile

MINNESOTA DEPARTMENT OF TRANSPORTATION UNDERWATER BRIDGE INSPECTION		
STRUCTURE NO. 18501 OVER THE PINE RIVER (CROSS LAKE/RUSH LAKE) DISTRICT 3, CROW WING COUNTY		
INSPECTION AND SOUNDING PLAN		
Drawn By: PRH	COLLINS ENGINEERS, INC.	Date: SEPT. 2002
Checked By: MDK	300 W. WASHINGTON, STE. 600 CHICAGO, ILLINOIS 60606 (312) 704-9300	Scale: NTS
Code: 351218501		Figure No.: 1



NORTH FASCIA PROFILE



SOUTH FASCIA PROFILE

Note:
Refer to Figure 1 for General Notes.

MINNESOTA DEPARTMENT OF TRANSPORTATION UNDERWATER BRIDGE INSPECTION		
STRUCTURE NO. 18501 OVER THE PINE RIVER (CROSS LAKE/RUSH LAKE) DISTRICT 3, CROW WING COUNTY		
NORTH AND SOUTH FASCIA PROFILES		
Drawn By: PRH	 COLLINS ENGINEERS, INC. 300 W. WASHINGTON, STE. 600 CHICAGO, ILLINOIS 60606 (312) 704-9300	Date: SEPT. 2002
Checked By: MDK		Scale: 1/16" = 1'
Code: 351218501		Figure No.: 2



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



Photograph 2. View of Pier 1, Looking Northeast.



Photograph 3. View of Pier 2 (in center), Looking North.



Photograph 4. View of Pier 3, Looking Southwest.

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

INSPECTORS: Collins Engineers, Inc. DATE: September 26, 2002
ON-SITE TEAM LEADER: Shirley M. Walker, P.E.
BRIDGE NO: 18501 WEATHER: Sunny, " 50E F
WATERWAY CROSSED: The Pine River (Cross Lake / Rush Lake)
DIVING OPERATION: X SCUBA SURFACE SUPPLIED AIR
 OTHER

PERSONNEL: Michelle D. Koerbel, Clayton G. Brookins
EQUIPMENT: Scuba, U/W Light, Scraper, Lead Line, Sounding Pole, Probe Rod, Camera
TIME IN WATER: 3:05 A.M.
TIME OUT OF WATER: 3:25 A.M.
WATERWAY DATA: VELOCITY Negligible / None
 VISIBILITY " 5 feet
 DEPTH " 8 feet at Pier 2

ELEMENTS INSPECTED: Piers 1, 2, and 3.

REMARKS: Overall, the submerged steel of the piles was in good condition with coating failure covering 15 to 20% of the submerged surface area. All piles exhibited aquatic growth from the waterline to the mudline. There was no significant scour or other channel bottom deficiencies.

FURTHER ACTION NEEDED: _____ YES _____ X _____ NO

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. 18501
INSPECTORS Collins Engineers, Inc.
ON-SITE TEAM LEADER Shirley M. Walker, P.E.
WATERWAY CROSSED The Pine River (Cross Lake / Rush Lake)

INSPECTION DATE September 26, 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 1	6.0'	7	N	N	9	N	7	8	8	8	N	8	N	8	N	8	N	N
	Pier 2	8.0'	7	N	N	9	N	7	8	N	N	N	8	N	8	N	8	N	N
	Pier 3	4.6'	7	N	N	9	N	7	8	8	8	N	8	N	8	N	8	N	N

*UNDERWATER PORTION ONLY

REMARKS: Overall, the submerged steel of the piles was in good condition with coating failure covering 15 to 20% of the submerged surface area. All piles exhibited aquatic growth from the waterline to the mudline. There was no significant scour or other channel bottom deficiencies.

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.