

UNDERWATER BRIDGE INSPECTION REPORT

STRUCTURE NO. 25541
CSAH NO. 9
OVER THE
LITTLE CANNON RIVER
GOODHUE COUNTY



MAY 24, 2012

PREPARED FOR THE
MINNESOTA DEPARTMENT OF TRANSPORTATION

BY
COLLINS ENGINEERS, INC.

JOB NO. 7423

MINNESOTA DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

REPORT SUMMARY:

The substructure unit inspected at Bridge No. 25541, Bent 2, was found to be in good condition. There was a light accumulation of timber debris around the upstream nose of Bent 2. The channel bottom appeared to be stable with no evidence of significant scour.

INSPECTION FINDINGS:

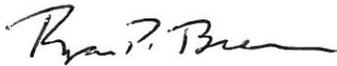
- (A) The channel bottom material consisted of silty clay with a probe rod penetration of up to 3 feet.
- (B) A light accumulation of timber debris up to 6 inches in diameter was noted at the upstream nose of Bent 2.
- (C) All the steel piles were in sound condition with coating intact above and below water.

RECOMMENDATIONS:

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

- (B) The inspection of the submerged substructure units of Structure No. 25541 can most likely be accomplished in the future without using a dive team. To perform the underwater inspection, a properly equipped and qualified inspector will have to perform the inspection during a period of low water and low flow. As channel bottom contours and water depths can change abruptly, it is recommended that lead line soundings of water depth be taken along the upstream and downstream fascias to determine whether a wading inspection is possible prior to beginning the inspection. If conditions are unsafe for inspection by wading, then an underwater inspection with the use of a dive team will be required.

Inspection Team Leader:



Ryan P. Breen, P.E.

Respectfully submitted,

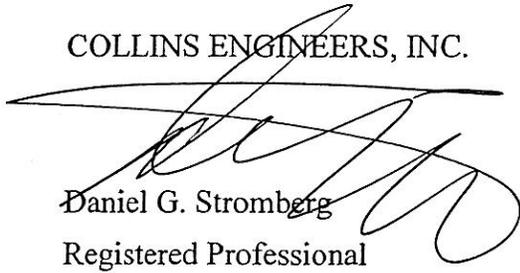
PROFESSIONAL ENGINEER

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: 25541

Feature Crossed: Little Cannon River

Feature Carried: CSAH NO. 9

Location: District 1 – Goodhue County, Township of Warsaw

Bridge Description: The superstructure consists of a three span concrete deck with steel girders. The superstructure is supported by two concrete abutments and two bents consisting of a concrete bent cap and ten 14 inch diameter coated steel pipe piles.

2. INSPECTION DATA

Professional Engineer Diver: Ryan P. Breen, P.E.

Dive Team: Marc B. Parker, Michael J. Banasiak

Date: May 24, 2012

Weather Conditions: Partly Sunny, 80° F

Underwater Visibility: 0.5 feet

Waterway Velocity: Negligible

3. SUBSTRUCTURE INSPECTION DATA

Substructure Inspected: Bent 2

General Shape: Bents 1 and 2 consist of a single line of ten 14 inch diameter coated steel pipe piles supporting a concrete cap.

Maximum Water Depth at Substructure Inspected: Approximately 1.8 feet.

4. WATERLINE DATUM

Water Level Reference: Top of bent cap at upstream nose of Bent 2.

Water Surface: The waterline was approximately 10.9 feet below the reference.
Assumed Waterline Elevation 89.1

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 7

Item 92B: Underwater Inspection: Code A/05/12

Item 113: Scour Critical Bridges: Code R

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
419	Steel Pipe Piles	10	EA	10				



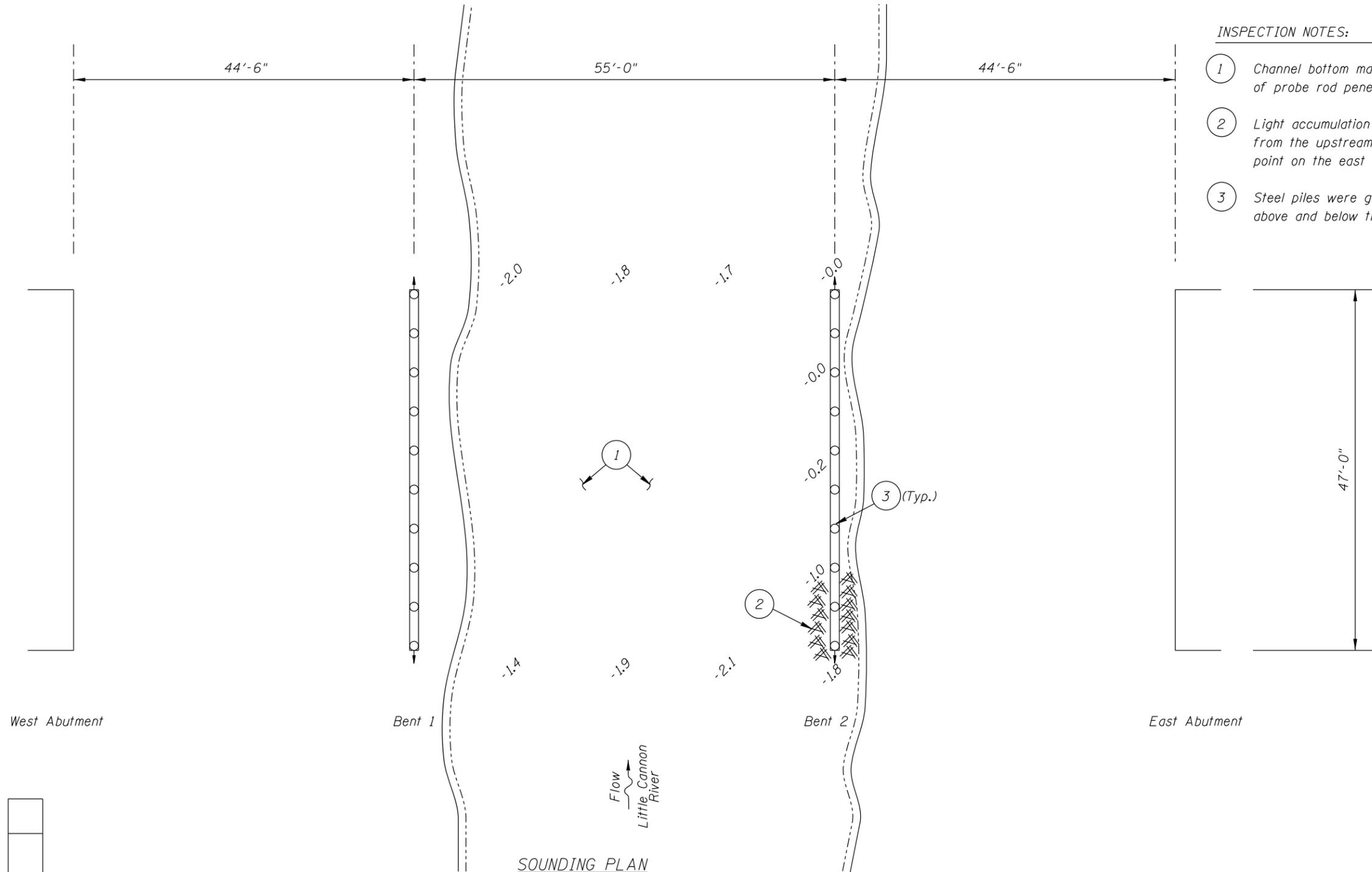
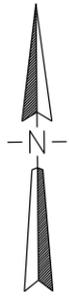
Photograph 1. Overall View of Structure, Looking Northwest.



Photograph 2. View of Bent 1, Looking Northwest.



Photograph 3. View of Bent 2, Looking Northeast.



- INSPECTION NOTES:**
- ① Channel bottom material consisted of silty clay with up to 3 feet of probe rod penetration.
 - ② Light accumulation of timber debris up to 6 inches in diameter, from the upstream nose of Bent 2 to the upstream quarter point on the east and west faces.
 - ③ Steel piles were generally sound, and the coating was intact above and below the waterline.

West Abutment

Bent 1

Bent 2

East Abutment

Flow
Little Cannon River

SOUNDING PLAN

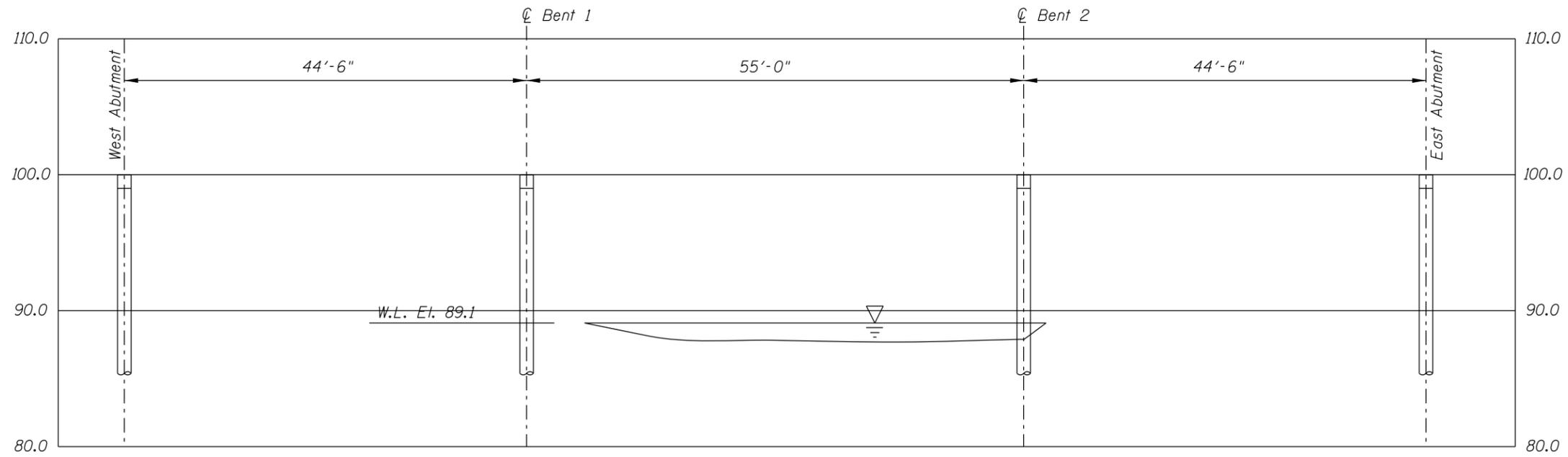
- GENERAL NOTES:**
1. Bent 2 was inspected underwater.
 2. At the time of inspection on May 24, 2012, the waterline was located approximately 10.9 feet below the top of bent cap at upstream end of Bent 2. Since elevation information was not available a reference elevation of 100.0 was assumed. Based on the assumed reference the waterline elevation was 89.1.
 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**
- 3.0 Sounding Depth from Waterline (5/24/12)
 - Timber Debris
 - 14"φ Coated Steel Pipe Piles
 - 14"φ Battered Coated Steel Pipe Piles

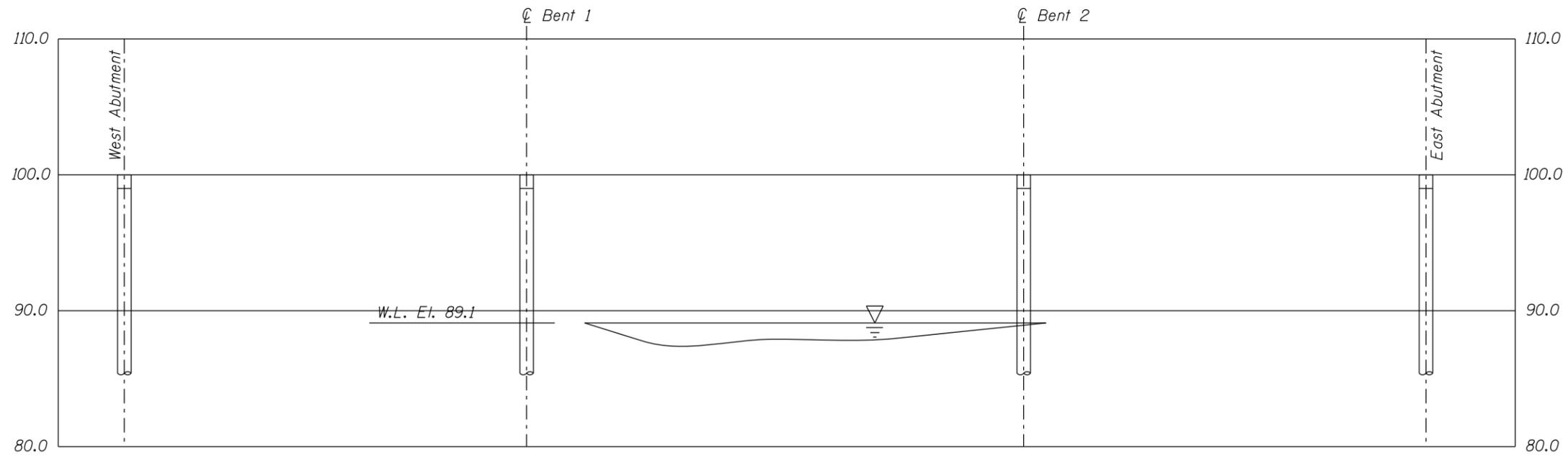
TYPICAL END VIEW OF PIERS



MINNESOTA DEPARTMENT OF TRANSPORTATION UNDERWATER BRIDGE INSPECTION		
STRUCTURE NO. 25541 CSAH NO. 9 OVER LITTLE CANNON RIVER GOODHUE COUNTY		
INSPECTION AND SOUNDING PLAN		
Drawn By: BLV	COLLINS ENGINEERS	Date: MAY, 2012
Checked By: RPB	<small>123 North Wacker Drive Suite 900 Chicago, IL 60606 (312) 704-9300 www.collinsengr.com</small>	Scale: 1"=15'
Code: 742325541		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. 25541 CSAH NO. 9 OVER LITTLE CANNON RIVER GOODHUE COUNTY		
UPSTREAM AND DOWNSTREAM FASCIA PROFILES		
Drawn By: BLV	COLLINS ENGINEERS <small>123 North Wacker Drive Suite 900 Chicago, IL 60606 (312) 704-9300 www.collinsengr.com</small>	Date: MAY, 2012
Checked By: RPB		Scale: 1"=15'
Code: 742325541		Figure No.: 2

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

INSPECTORS: Collins Engineers, Inc. DATE: May 24, 2012

ON-SITE TEAM LEADER: Ryan P. Breen, P.E.

BRIDGE NO: 25541 WEATHER: Partly Sunny, 80° F

WATERWAY CROSSED: Little Cannon River

DIVING OPERATION: _____ SCUBA _____ SURFACE SUPPLIED AIR
 OTHER Wading

PERSONNEL: Marc B. Parker, Michael J. Banasiak

EQUIPMENT: Dry Suit, Scraper, Lead Line, Probe Rod, Camera, Hand Tools

TIME IN WATER: 9:00 a.m.

TIME OUT OF WATER: 10:00 a.m.

WATERWAY DATA: VELOCITY 0.25 ft/s

VISIBILITY 0.5 feet

DEPTH 1.8 feet maximum at Bent 2

ELEMENTS INSPECTED: Bent 2

REMARKS: Overall, Bent 2 was found to be in good condition. There was a light accumulation of timber debris around the upstream nose of Bent 2. The channel bottom appeared to be stable with no evidence of significant scour.

FURTHER ACTION NEEDED: _____ YES NO

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

The inspection of the submerged substructure units of Structure No. 25541 can most likely be accomplished in the future without using a dive team. To perform the underwater inspection, a properly equipped and qualified inspector will have to perform the inspection during a period of low water and low flow. As channel bottom contours and water depths can change abruptly, it is recommended that lead line soundings of water depth be taken along the upstream and downstream fascias to determine whether a wading inspection is possible prior to beginning the inspection. If conditions are unsafe for inspection by wading, then an underwater inspection with the use of a dive team will be required.

MINNESOTA DEPARTMENT OF TRANSPORTATION
OFFICE OF BRIDGES AND STRUCTURES

UNDERWATER INSPECTION CONDITION RATING FORM

BRIDGE NO. 25541
 INSPECTORS Collins Engineers, Inc.
 ON-SITE TEAM LEADER Ryan P. Breen, P.E.
 WATERWAY CROSSED Little Cannon Creek

INSPECTION DATE May 24, 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
	Bent 2	1.8'	7	N	N	8	N	7	N	N	7	7	7	N	7	N	N	N	N

*UNDERWATER PORTION ONLY

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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.