

UNDERWATER BRIDGE INSPECTION REPORT

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STRUCTURE NO. 19529

CSAH 68

OVER THE

VERMILLION RIVER

DAKOTA COUNTY

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MAY 22, 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 units inspected at Bridge No. 19529, Bents 1, 2, and 4, were generally found to be in good condition with no defects of structural significance. The channel bottom around the substructure units was well established and in stable condition with no notable scour.

INSPECTION FINDINGS:

- (A) The steel pipe piles were sound with the coating intact above and below waterline.
- (B) Timber debris accumulation, consisting of up to 1 foot diameter logs, was observed extending from the midpoint of the east face of Bent 1 to the downstream nose.
- (C) The channel bottom material between the West Abutment and Bent 1 consisted of cobbles and riprap with no probe rod penetration.
- (D) The channel bottom material east of Bent 1 consisted of sandy silt allowing probe rod penetration of up to 6 inches.

RECOMMENDATIONS:

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

Inspection Team Leader:



Ryan P. Breen, P.E.

Respectfully submitted,

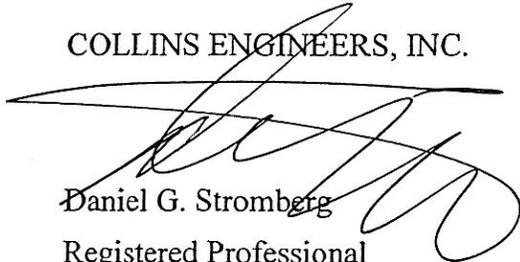
PROFESSIONAL ENGINEER

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: 19529

Feature Crossed: Vermillion River

Feature Carried: CSAH 68

Location: Dakota County, Township of Ravenna

Bridge Description: The bridge superstructure consists of a reinforced concrete deck supported by precast concrete girders. The superstructure is supported on two reinforced concrete abutments and four bents comprised of seven coated steel pipe piles. The substructure units are designated as The West Abutment, Bents 1 through 4, and The East Abutment.

2. INSPECTION DATA

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

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

Date: May 22, 2012

Weather Conditions: Sunny, 75° F

Underwater Visibility: 0.5 feet

Waterway Velocity: 0.5 ft/s

3. SUBSTRUCTURE INSPECTION DATA

Substructure Inspected: Bents 1, 2, and 4

General Shape: Bents consist of a reinforced concrete bent cap supported by seven coated steel pipe piles.

Maximum Water Depth at Substructure Inspected: 11.0 feet.

4. WATERLINE DATUM

Water Level Reference: Upstream end of Bent 1 pier cap.

Water Surface: The waterline was approximately 15.7 feet below the reference.  
Waterline Elevation 84.3 feet.

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/05/12

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 MEMBER CONDITION RATING:

Item #	Element Description	Quantity	Unit	Conditions				
				1	2	3	4	5
419	Painted Steel Piling	21	EA	21				
985	Slopes and Slope Protection	2	EA	2				



Photograph 1. View of Bent 1, Looking Southwest.



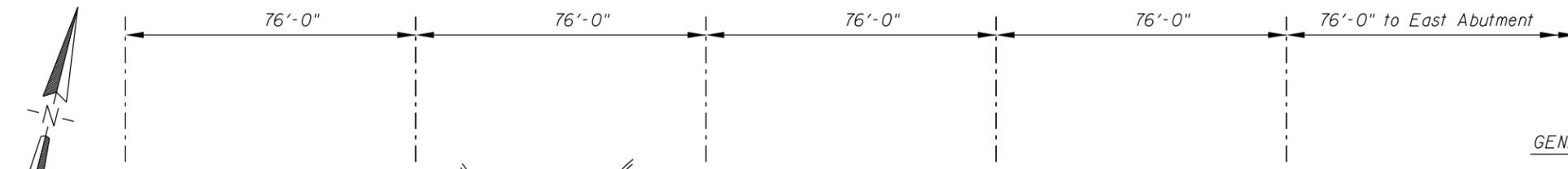
Photograph 2. View of Bent 2, Looking Southeast.



Photograph 3. View of Bent 3, Looking Southeast.

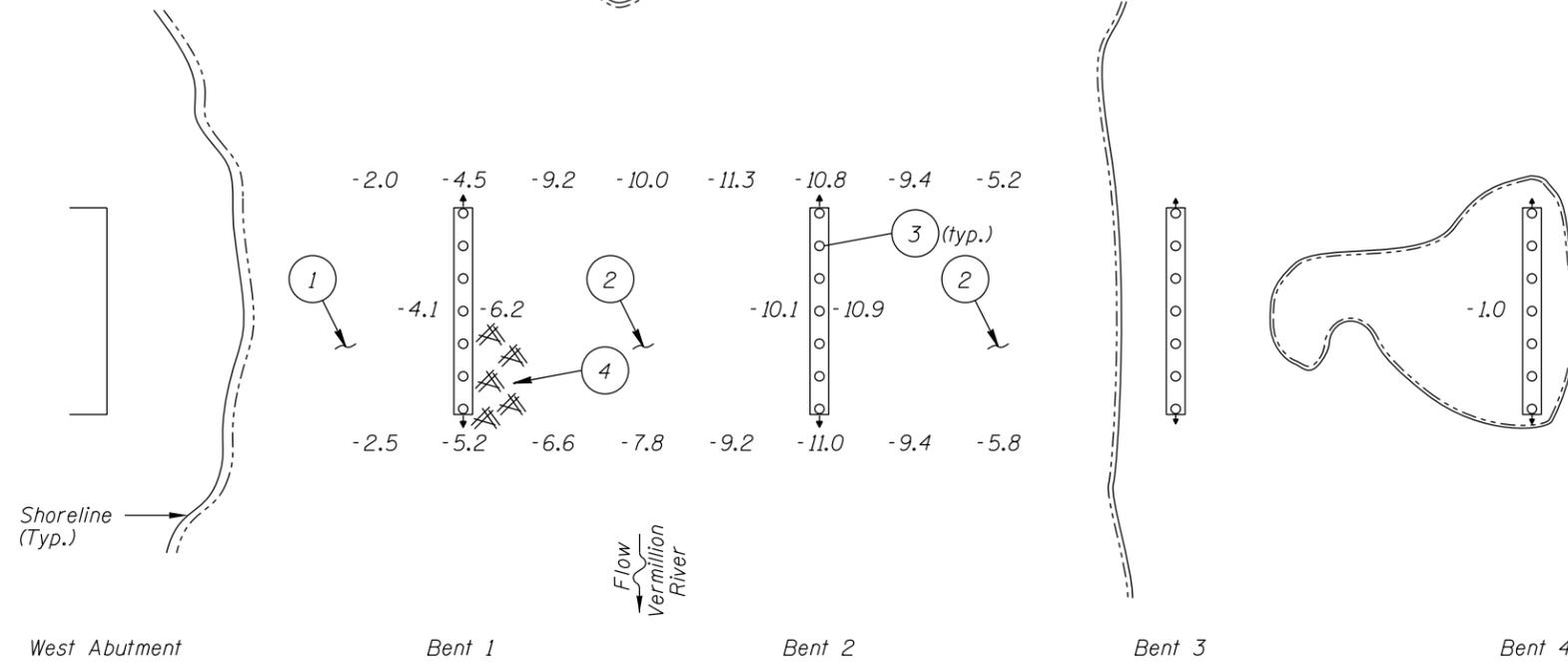


Photograph 4. View of Bent 4, Looking Northeast



**GENERAL NOTES:**

1. Bents 1, 2, and 4 were inspected underwater.
2. At the time of inspection on May 22, 2012, the waterline was located approximately 15.7 feet below the top of bent cap at the upstream end of Bent 1. Since elevation information was not available a reference elevation of 100.0 was assumed. Based on the assumed reference the waterline elevation was 84.3.
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 The channel bottom material consisted of cobbles and riprap up to 1 foot diameter.
- 2 The channel bottom material consisted of sandy silt with up to 6 inches of probe rod penetration.
- 3 The steel piles were structurally sound with the coating intact above and below waterline.
- 4 Accumulation of timber debris was observed along the east face on the downstream half of Bent 1. Logs and branches were up to 1 foot in diameter.

West Abutment

Bent 1

Bent 2

Bent 3

Bent 4

Flow  
Vermillion  
River

Shoreline  
(Typ.)

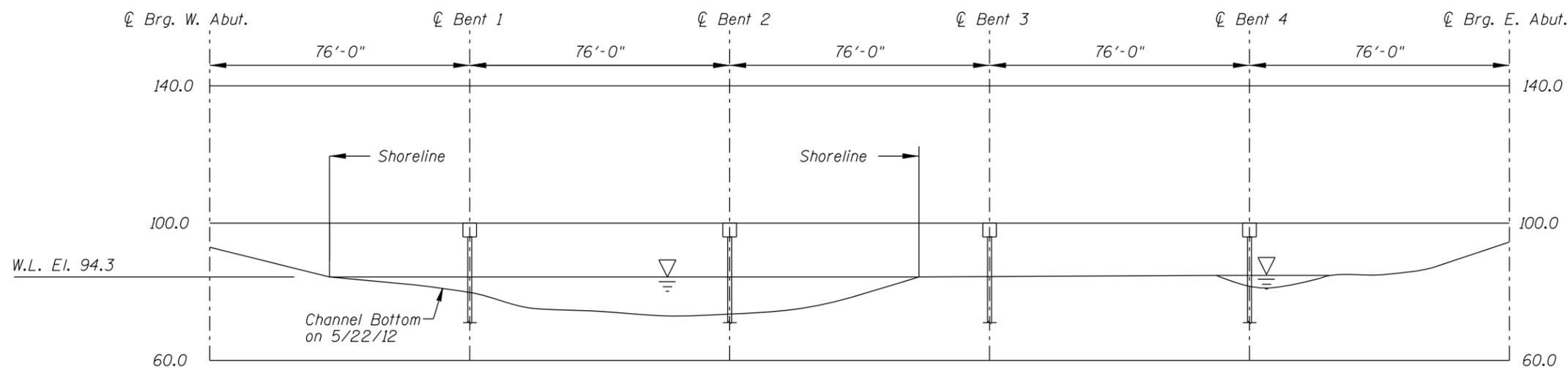
TYPICAL END VIEW OF BENTS



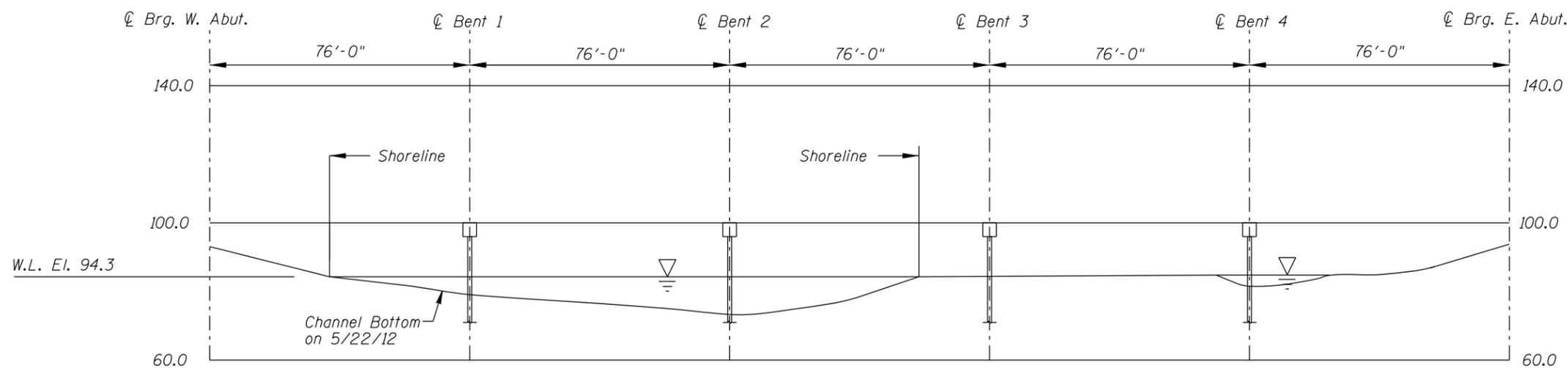
**Legend**

- 2.0 Sounding Depth from Waterline (5/22/12)
- ⊕ Battered Steel Pipe Pile
- Vertical Steel Pipe Pile
- ⌘ Timber Debris

<b>MINNESOTA DEPARTMENT OF TRANSPORTATION UNDERWATER BRIDGE INSPECTION</b>		
STRUCTURE NO. 19529 CSAH 68 OVER VERMILLION RIVER DAKOTA COUNTY, TOWNSHIP OF RAVENNA		
INSPECTION AND SOUNDING PLAN		
Drawn By: MJB	<b>COLLINS ENGINEERS</b> <small>123 North Wacker Drive Suite 900 Chicago, IL 60606 (312) 704-9300 www.collinsengr.com</small>	Date: MAY 2012
Checked By: RPB		Scale: NTS
Code: 742319529		Figure No.: 1



UPSTREAM FASCIA PROFILE



DOWNSTREAM FASCIA PROFILE

Note:  
 Refer to Figure 1 for General Notes.

<b>MINNESOTA DEPARTMENT OF TRANSPORTATION UNDERWATER BRIDGE INSPECTION</b>		
STRUCTURE NO. 19529 CSAH 68 OVER VERMILLION RIVER DAKOTA COUNTY, TOWNSHIP OF RAVENNA <b>UPSTREAM AND DOWNSTREAM FASCIA PROFILES</b>		
Drawn By: MJB Checked By: RPB Code: 742319529	<b>COLLINS ENGINEERS</b>	123 North Wacker Drive Suite 900 Chicago, IL 60606 (312) 704-9300 www.collinsengr.com
		Date: MAY 2012 Scale: 1"=40' Figure No.: 2

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

INSPECTORS: Collins Engineers, Inc. DATE: May 22, 2012

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

BRIDGE NO: 19529 WEATHER: Sunny, 75° F

WATERWAY CROSSED: Vermillion River

DIVING OPERATION:  SCUBA  SURFACE SUPPLIED AIR  
 OTHER

PERSONNEL: Marc B. Parker, Michael J. Banasiak

EQUIPMENT: Commercial Scuba, U/W Light, Scraper, Lead Line, Probe Rod, Camera, Fathometer

TIME IN WATER: 12:00 a.m.

TIME OUT OF WATER: 12:35 a.m.

WATERWAY DATA: VELOCITY 0.5 ft/s

VISIBILITY 0.5 feet

DEPTH 11.0 feet maximum at Bent 2

ELEMENTS INSPECTED: Bents 1, 2, and 4

REMARKS: Overall, the substructure units inspected were generally found to be in good condition with no defects of structural significance. The channel bottom around the substructure units was well established and in stable condition with no notable scour.

FURTHER ACTION NEEDED:  YES  NO

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. 19529  
 INSPECTORS Collins Engineers, Inc.  
 ON-SITE TEAM LEADER Ryan P. Breen, P.E.  
 WATERWAY CROSSED Vermillion River

INSPECTION DATE: May 22, 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 1	6.2'	7	N	N	8	N	7	N	N	N	6	6	N	7	N	N	N	N
	Bent 2	11.0'	7	N	N	8	N	7	N	N	N	7	7	N	7	N	N	N	N
	Bent 4	1.0'	7	N	N	8	N	7	N	N	N	7	7	N	7	N	N	N	N

\*UNDERWATER PORTION ONLY

REMARKS: Overall, the substructure units inspected were generally found to be in good condition with no defects of structural significance. The channel bottom around the substructure units was well established and in stable condition with no notable scour.

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.