

UNDERWATER BRIDGE INSPECTION REPORT

STRUCTURE NO. 1232

4th STREET BRIDGE

OVER THE

CANNON RIVER

DISTRICT 6 - RICE COUNTY



PREPARED FOR THE

MINNESOTA DEPARTMENT OF TRANSPORTATION

BY

COLLINS ENGINEERS, INC.

JOB NO. 5221

MINNESOTA DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

REPORT SUMMARY:

The substructure units inspected at Bridge No. 1232, Center Pier and East and West Abutments, were 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:

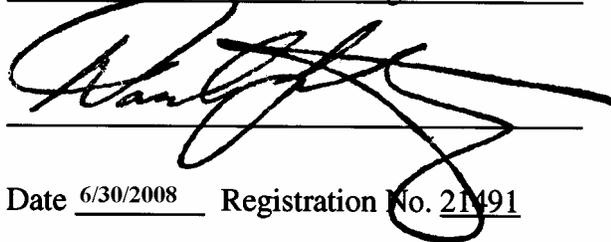
- (A) The concrete of the substructure units was smooth and sound with only random minor cracking of the resurfacing repairs.
- (B) The channel bottom consisted of stone and natural bed rock with no probe rod penetration possible.

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.

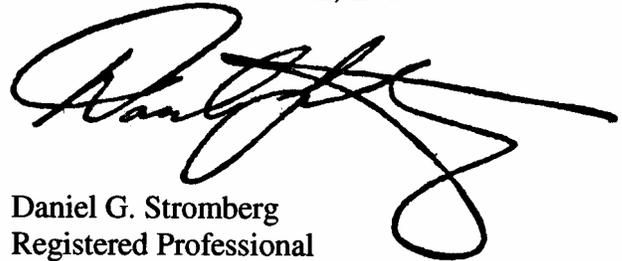
Daniel G. Stromberg



Date 6/30/2008 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: 1232

Feature Crossed: Cannon River

Feature Carried: 4th Street Bridge

Location: District 6 - Rice County

Bridge Description: The bridge superstructure consists of two concrete arch spans. The superstructure is supported on two reinforced concrete abutments and one reinforced concrete pier. The substructure units are keyed into bedrock.

2. INSPECTION DATA

Professional Engineer Diver: Daniel G. Stromberg, P.E., S.E.

Dive Team: Clayton G. Brookins, Valerie Roustan

Date: October 23, 2007

Weather Conditions: Sunny, 58° F

Underwater Visibility: 0.5 feet

Waterway Velocity: 4.0 f.p.s

3. SUBSTRUCTURE INSPECTION DATA

Substructure Inspected: Center Pier and East and West Abutments.

General Shape: Piers consist of oblong rectangular shafts with rounded ends. Abutments consist of vertical walls. Substructure units are keyed into bedrock.

Maximum Water Depth at Substructure Inspected: Approximately 5.0 feet.

4. WATERLINE DATUM

Water Level Reference: Springline at the downstream end of Center Pier.

Water Surface: The waterline was approximately 1.5 feet below the reference.
Assumed Waterline Elevation 895.0.

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/10/07

Item 113: Scour Critical Bridges: Code G/07

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

 Yes X No



Photograph 1. View of East Abutment, Looking Southeast.



Photograph 2. View of Center Pier, Looking Southeast.



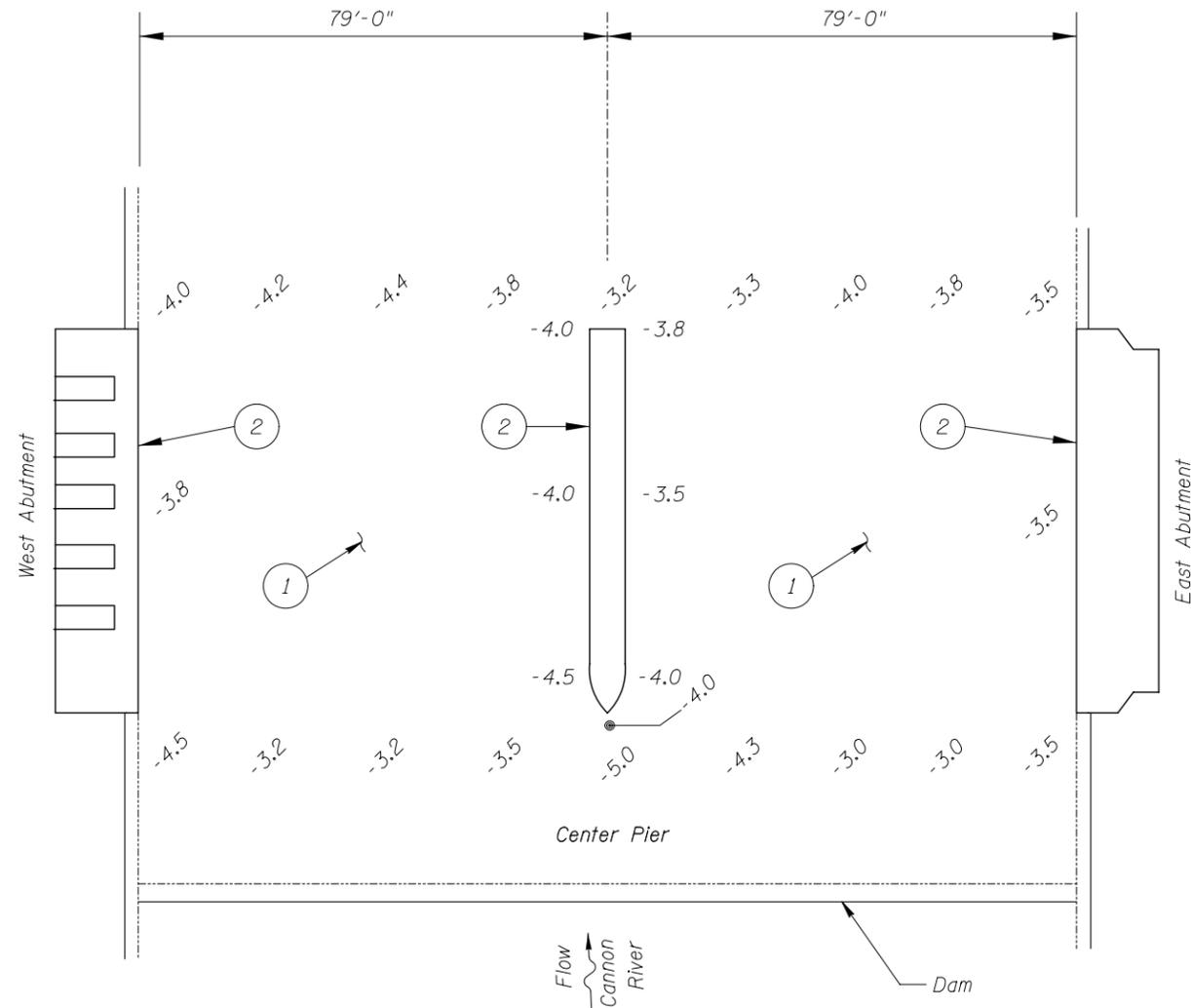
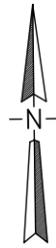
Photograph 3. View of West Abutment, Looking Southwest.



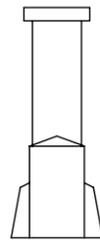
Photograph 4. View of the Downstream End of Center Pier, Looking Southeast. Note typical minor cracking of surfacing of all substructure units.



Photograph 5. View of Typical Cracking at East Abutment, Looking East.



SOUNDING PLAN



TYPICAL END VIEW PIER

INSPECTION NOTES:

- ① The channel bottom consisted of stone and natural bedrock with no probe rod penetration possible.
- ② The concrete was in smooth and sound condition with only random minor cracking of the resurfacing repairs.

GENERAL NOTES:

- 1. The East and West Abutments and the Center Pier were inspected underwater.
- 2. At the time of inspection, on October 23, 2007, the waterline was located approximately 1.5 feet below the spring line at the downstream end of the Center Pier. This corresponds to a waterline elevation of approximately 895 feet based on design repair plans.
- 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 as well as around the substructure units.

Legend

-0.4 Sounding Depth (10/23/07)

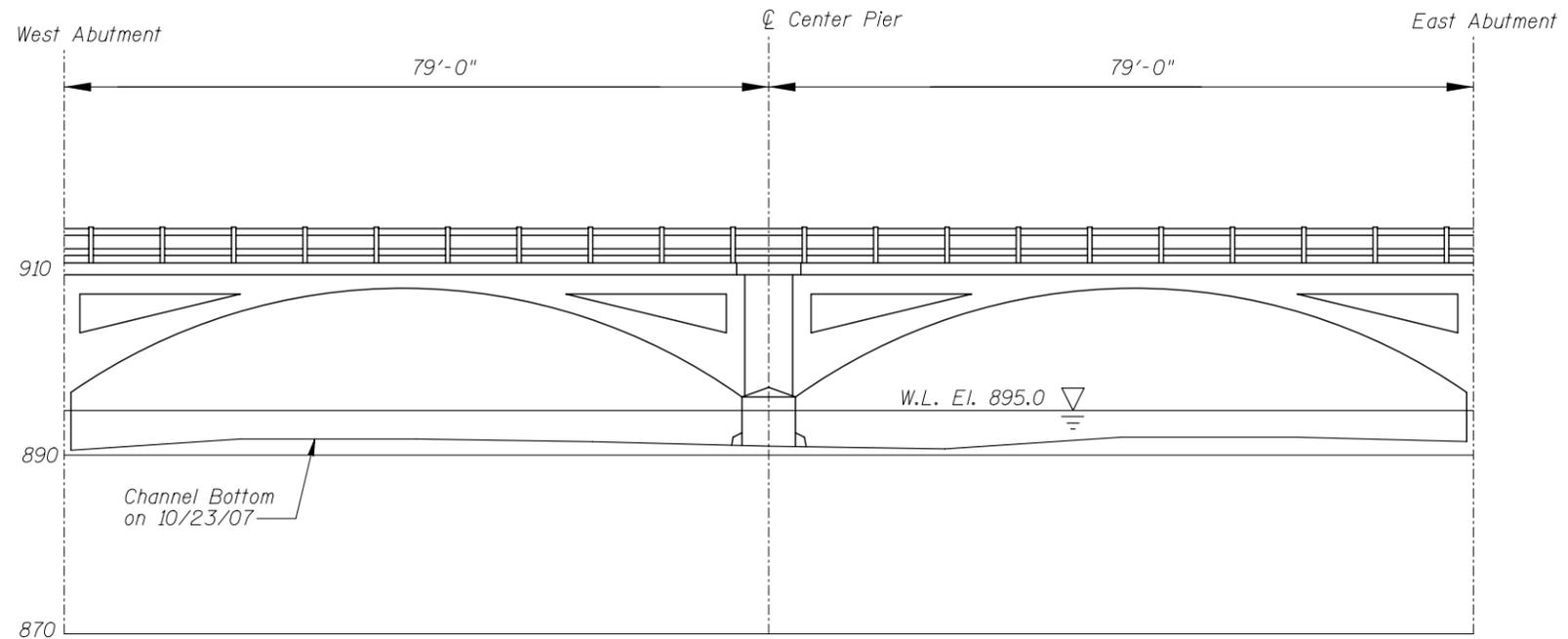
**MINNESOTA
DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION**

STRUCTURE NO. 1232
OVER THE CANNON RIVER
DISTRICT 6, RICE COUNTY

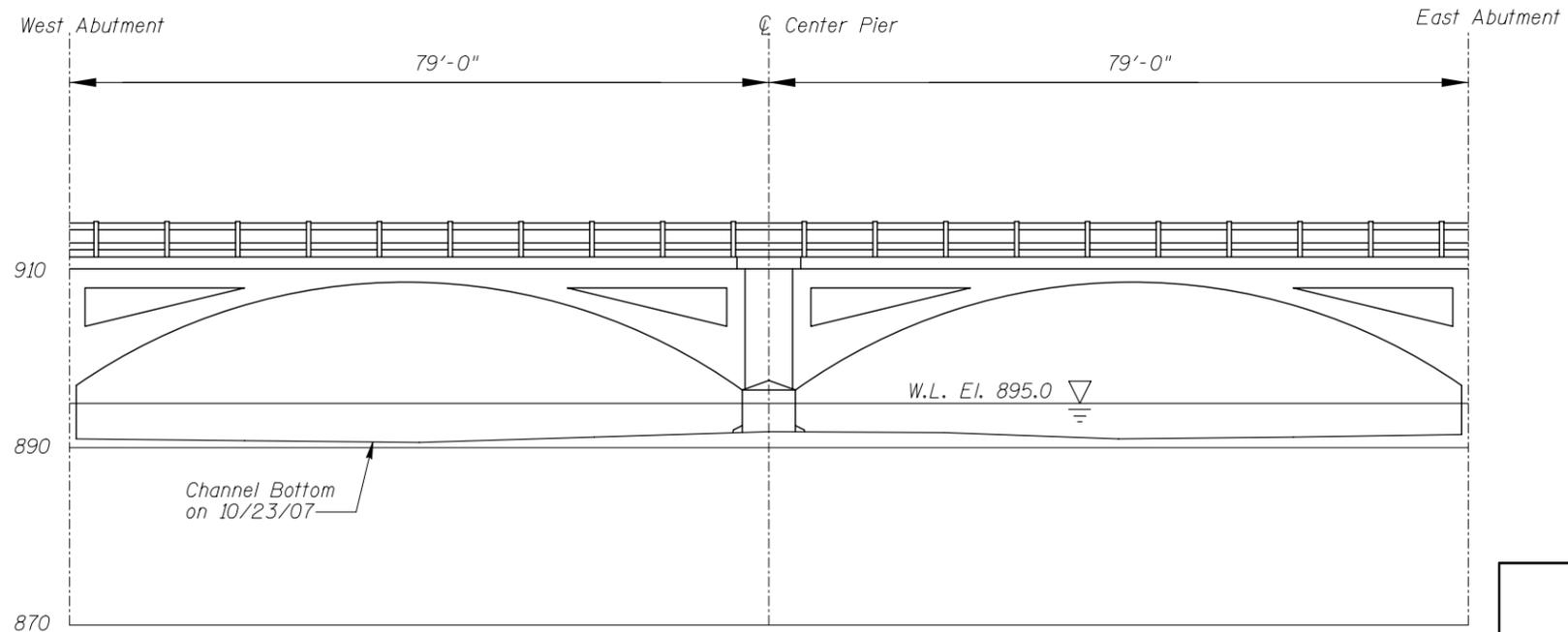
INSPECTION AND SOUNDING PLAN

Drawn By: RR		Date: OCT. 2007
Checked By: DGS		Scale: NTS
Code: 52211232		Figure No.: 1

123 North Wacker Drive
Suite 300
Chicago, IL 60606
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UPSTREAM FASCIA PROFILE



DOWNSTREAM FASCIA PROFILE

Note: _____
 Refer to Figure 1 for General Notes.

MINNESOTA DEPARTMENT OF TRANSPORTATION UNDERWATER BRIDGE INSPECTION		
STRUCTURE NO. 1232 OVER THE CANNON RIVER DISTRICT 6, RICE COUNTY		
UPSTREAM AND DOWNSTREAM FASCIA PROFILES		
Drawn By: RR	COLLINS ENGINEERS <small>123 North Wacker Drive Suite 300 Chicago, IL 60606 (312) 704-9300 www.collinsengr.com</small>	Date: OCT. 2007
Checked By: DGS		Scale: 1"=20'
Code: 52211232		Figure No.: 2

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

INSPECTORS: Collins Engineers, Inc. DATE: October 23, 2007

ON-SITE TEAM LEADER: Daniel G. Stromberg, P.E., S.E.

BRIDGE NO: 1232 WEATHER: Sunny, 58° F

WATERWAY CROSSED: Cannon River

DIVING OPERATION: SCUBA SURFACE SUPPLIED AIR
 OTHER

PERSONNEL: Clayton G. Brookins, Valerie Roustan

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

TIME IN WATER: 5:00 p.m.

TIME OUT OF WATER: 5:20 p.m.

WATERWAY DATA: VELOCITY 4.0 f.p.s

VISIBILITY 0.5 feet

DEPTH 5.0 feet maximum at Pier 1

ELEMENTS INSPECTED: Center Pier, East and West Abutments

REMARKS: Overall, the concrete below water was smooth and sound with only random minor cracking of the resurfacing repairs. The channel bottom consisted of stone and natural rock with no probe rod penetration and no conditions of concern.

FURTHER ACTION NEEDED: YES 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. 1232
 INSPECTORS Collins Engineers, Inc.
 ON-SITE TEAM LEADER Daniel G. Stromberg, P.E., S.E.
 WATERWAY CROSSED Cannon River

INSPECTION DATE October 23, 2007
 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
	Center Pier	5.0'	N	7	N	9	N	7	8	N	N	N	8	7	N	N	N	N	N
	West Abutment	4.5'	N	7	N	9	N	7	8	N	N	N	8	7	N	N	N	N	N
	East Abutment	3.5'	N	7	N	9	N	7	8	N	N	N	8	7	N	N	N	N	N

*UNDERWATER PORTION ONLY

REMARKS: Overall, the concrete below water was smooth and sound with only random minor cracking of the resurfacing repairs. The channel bottom consisted of stone and natural rock with no probe rod penetration and no conditions of concern.

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.