

UNDERWATER BRIDGE INSPECTION REPORT

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STRUCTURE NO. 07542

CSAH NO. 9

OVER THE

BLUE EARTH RIVER

DISTRICT 7 - BLUE EARTH COUNTY

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PREPARED FOR THE  
MINNESOTA DEPARTMENT OF TRANSPORTATION

BY  
COLLINS ENGINEERS, INC.

JOB NO. 5221 (CEI 135)

MINNESOTA DEPARTMENT OF TRANSPORTATION  
UNDERWATER BRIDGE INSPECTION

REPORT SUMMARY:

The substructure units inspected at Bridge No. 07542, Piers 1 through 4, were found to be in good condition with no defects of structural significance observed. Minor defects such as random small areas of poor consolidation and/or minimal section loss were observed on all of the piers. The channel bottom appeared stable with no evidence of significant scour or appreciable changes since the previous inspection.

INSPECTION FINDINGS:

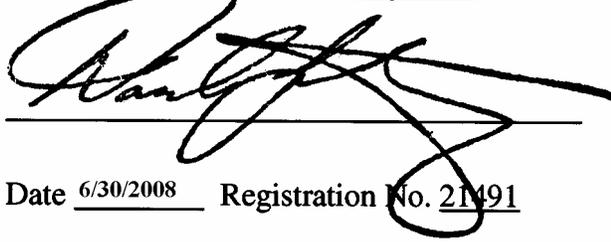
- (A) Areas of minor poor consolidation and/or section loss were observed in and around the waterline at random locations on all of the piers, typically with up to 1 inch of penetration.
- (B) Timber debris consisting of logs and branches was observed at Pier 2 extending from the upstream nose to the midpoint on both side faces extending from the channel bottom up 4 feet.

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: 07542

Feature Crossed: Blue Earth River

Feature Carried: CSAH No. 9

Location: District 7 - Blue Earth County

Bridge Description: Bridge No. 07542 consists of a five span steel beam structure supported by two concrete abutments on piles and four concrete piers on piles, with the piers numbered 1 to 4 starting from the west.

2. INSPECTION DATA

Professional Engineer/Team Leader: Daniel G. Stromberg, P.E., S.E.

Dive Team: Clayton G. Brookins, Valerie Roustan

Date: October 22, 2007

Weather Conditions: Partly Cloudy, 48°F

Underwater Visibility: 1.0 foot

Waterway Velocity: 2.5 f.p.s

3. SUBSTRUCTURE INSPECTION DATA

Substructure Inspected: Piers 1 through 4.

General Shape: The piers consist of oblong rectangular hammerhead shafts with rounded noses. The piers are supported by rectangular footings founded on piles.

Maximum Water Depth at Substructure Inspected: Approximately 14.0 feet.

4. WATERLINE DATUM

Water Level Reference: The top of the pier at the upstream end of Pier 4.

Water Surface: The waterline was approximately 29.5 feet below reference.  
Waterline Elevation = 874.4.

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

Item 60: Substructure: Code 7

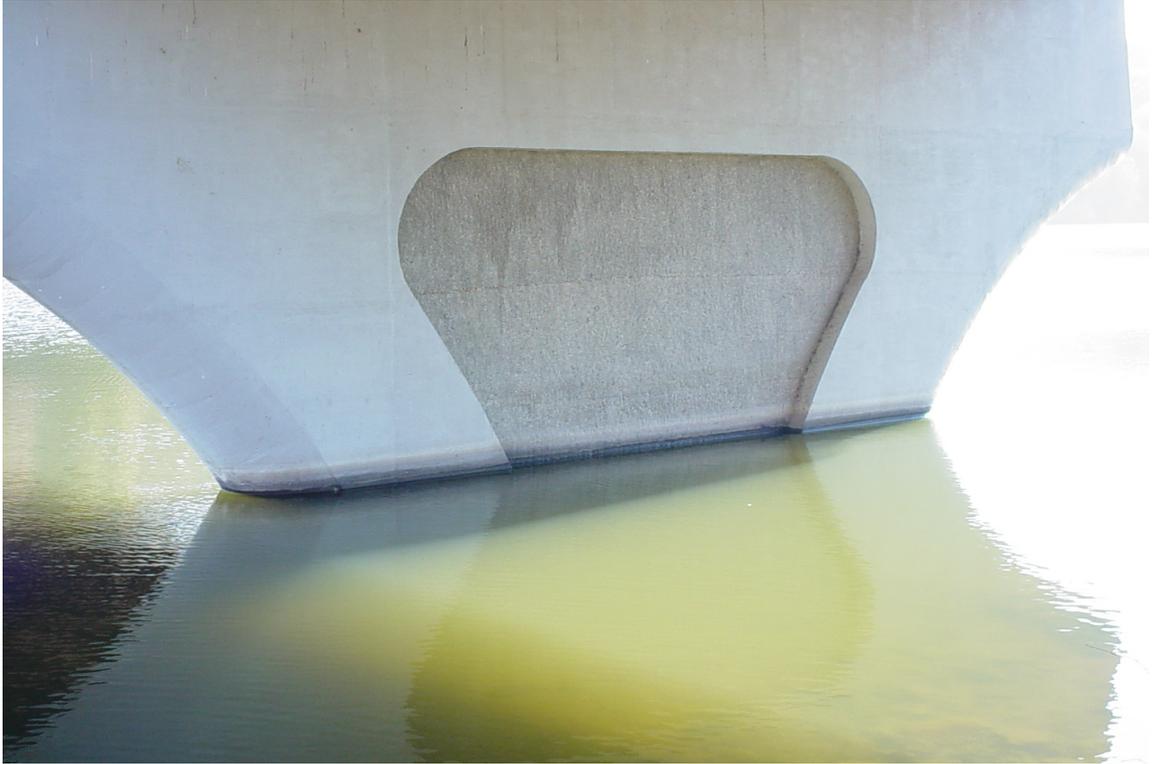
Item 61: Channel and Channel Protection: Code 7

Item 92B: Underwater Inspection: Code B/10/07

Item 113: Scour Critical Bridges: Code J/91

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 Pier 1, Looking Southeast.



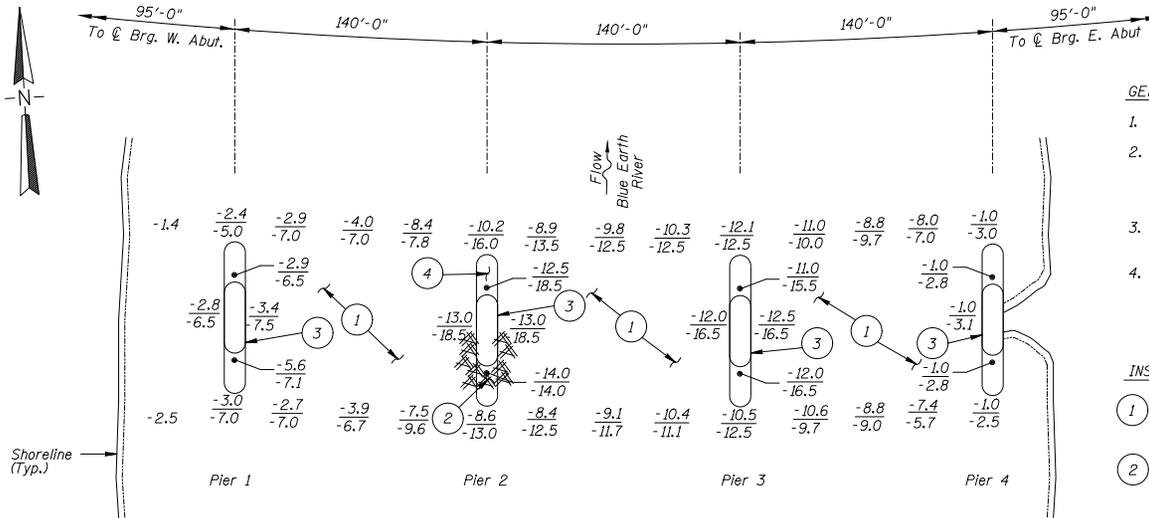
Photograph 2. View of Pier 2, Looking Southeast.



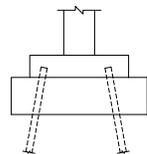
Photograph 3. View of Pier 3, Looking Southeast.



Photograph 4. View of Pier 4, Looking Northwest.



SOUNDING PLAN



TYPICAL END VIEW OF PIERS

GENERAL NOTES:

- Piers 1 through 4 were inspected underwater.
- At the time of inspection on October 22, 2007, the waterline was located approximately 28.5 feet below the top of the pier cap at the upstream end of Pier 4. This corresponds to a waterline elevation of 875.4 based on the previous report dated September 20, 1997.
- Soundings indicate the water depth at the time of inspection and are measured in feet.
- Soundings were taken parallel to the bridge at 1/4 point intervals between the substructure units.

INSPECTION NOTES:

- The channel bottom material consisted of soft silt with up to 2 feet of probe rod penetration.
- A moderate accumulation of timber debris, consisting of logs and branches, was observed at Pier 2 and extended from the upstream nose to the midpoint on each face of the pier and from the channel bottom up 4 feet.
- Areas of minor poor consolidation and/or section loss were observed in and around the waterline at random locations on all of the piers, typically with up to 1 inch of penetration.
- The remains of the sheet pile cofferdam used during original construction were observed along the downstream nose of the pier.

Legend

- 0.4 Sounding Depth (10/22/07)
- 0.4 Sounding Depth (11/2/02)
- Timber Debris

Note:

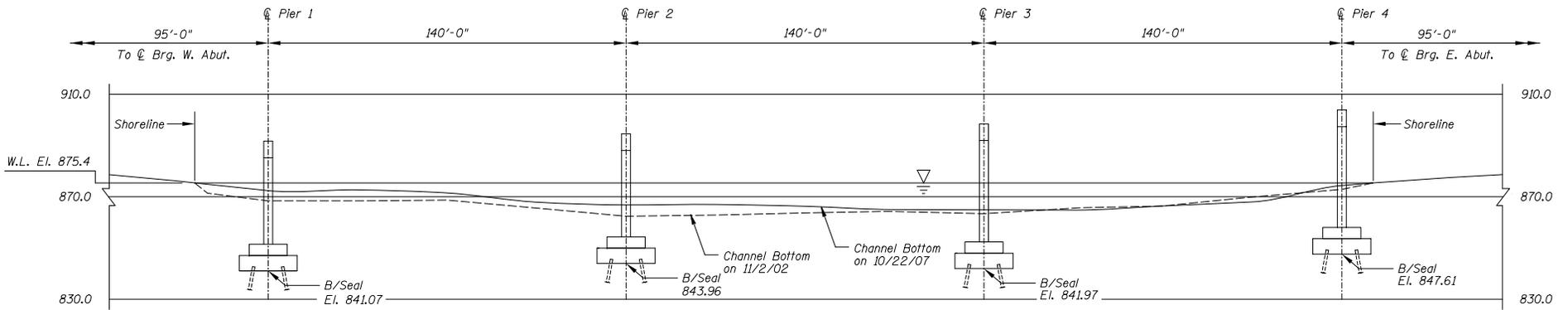
All soundings based on 2007 waterline location.

MINNESOTA  
DEPARTMENT OF TRANSPORTATION  
UNDERWATER BRIDGE INSPECTION

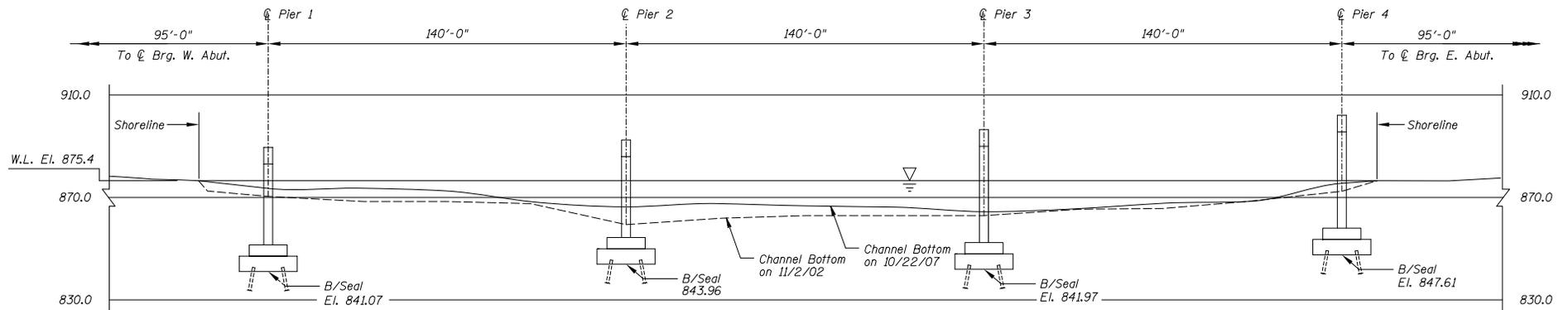
STRUCTURE NO. 07542  
OVER THE BLUE EARTH RIVER  
DISTRICT 7, BLUE EARTH COUNTY

INSPECTION AND SOUNDING PLAN

Drawn By: MDK		Date: OCT. 2007
Checked By: DGS		Scale: NTS
Code: 52210135		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. 07542 OVER THE BLUE EARTH RIVER DISTRICT 7, BLUE EARTH COUNTY		
UPSTREAM AND DOWNSTREAM FASCIA PROFILES		
Drawn By: MDK	<b>COLLINS ENGINEERS</b>	Date: OCT. 2007
Checked By: DGS		Scale: 1"=40'
Code: 52210135		Figure No.: 2

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

INSPECTORS: Collins Engineers, Inc. DATE: October 22, 2007

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

BRIDGE NO: 07542 WEATHER: Partly Cloudy, 48°F

WATERWAY CROSSED: Blue Earth River

DIVING OPERATION:  SCUBA  SURFACE SUPPLIED AIR  
 OTHER

PERSONNEL: Clayton G. Brookins, Valerie Roustan

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

TIME IN WATER: 12:10 p.m.

TIME OUT OF WATER: 12:50 p.m.

WATERWAY DATA: VELOCITY 2.5 f.p.s

VISIBILITY 1.0 foot

DEPTH 17 feet maximum at Pier 2

ELEMENTS INSPECTED: Piers 1 through 4

REMARKS: Overall, the concrete below water was in sound and good condition with no defects of structural significance observed. Areas of minor poor consolidation and/or section loss were observed in and around the waterline at random locations on all of the piers, typically with up to 1 inch of penetration. Timber debris consisting of logs and branches was observed at Pier 2 extending from the upstream nose to the midpoint on each side of the pier extending from the channel bottom up 4 feet. The channel bottom appeared stable with no evidence of significant scour or notable change since the last inspection.

FURTHER ACTION NEEDED:  YES  NO

Reinspect the submerged substructure 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. 07542  
 INSPECTORS Collins Engineers, Inc.  
 ON-SITE TEAM LEADER. Daniel G. Stromberg, P.E., S.E.  
 WATERWAY CROSSED Blue Earth River

INSPECTION DATE October 22, 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	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	3.4'	N	7	N	9	N	7	8	8	8	N	8	7	N	N	N	N	N
	Pier 2	14.0'	N	7	N	9	N	7	8	N	N	7	7	7	N	N	N	N	N
	Pier 3	12.5'	N	7	N	9	N	7	8	N	N	N	8	7	N	N	N	N	N
	Pier 4	1.0'	N	7	N	9	N	7	8	8	8	N	8	7	N	N	N	N	N

\*UNDERWATER PORTION ONLY

REMARKS: Overall, the concrete below water was in sound and good condition with no defects of structural significance observed. Areas of minor poor consolidation and/or section loss were observed in and around the waterline at random locations on all of the piers, typically with up to 1 inch of penetration. Timber debris consisting of logs and branches was observed at Pier 2 extending from the upstream nose to the midpoint on each side of the pier extending from the channel bottom up 4 feet. The channel bottom appeared stable with no evidence of significant scour or notable change 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.