UNDERWATER BRIDGE INSPECTION REPORT

STRUCTURE NO. 69530

CSAH NO. 139

OVER THE

LITTLE FORK RIVER

ST. LOUIS COUNTY

SEPTEMBER 18, 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. 69530, Piers 1 and 2, were found to be in good condition with no defects of structural significance observed. No footing exposure was detected; however, the footings along the south side of Pier 2 and along the north side of Pier 1 were located below approximately 2.2 feet of soft silt. The channel bottom around the substructure units appeared well established and stable with no evidence of significant scour and no appreciable changes since the previous inspection.

INSPECTION FINDINGS:

(A) The footings along the south side of Pier 2 and along the north side of Pier 1 were located (could be encountered) below 2.2 feet of soft silt.

(B) Scaling at Piers 1 and 2 was observed 1.5 feet above the waterline to 1 foot below the waterline with 1/4 inch maximum penetration along the entire perimeter. Apart from the localized scaling, the concrete of both piers was smooth and sound with only random areas of poor concrete consolidation exhibiting a maximum penetration of 1/2 inch.

RECOMMENDATIONS:

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

Respectfully submitted,

Inspection Team Leader:

Nicholas R. Triandafilou, P.E.

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: 69530

Feature Crossed: Little Fork River

Feature Carried: CSAH No. 139

Location: St. Louis County

Bridge Description: The bridge consists of a three span precast concrete I-beam superstructure supported by two concrete abutments and two concrete piers. The abutments and piers are founded on concrete piles. The piers are numbered 1 and 2 starting from the south.

2. INSPECTION DATA

Professional Engineer Diver: Nicholas R. Triandafilou, P.E.

Dive Team: Marc B. Parker, Clayton G. Brookins

Date: September 18, 2012

Weather Conditions: Sunny, 30°F

Underwater Visibility: 2.0 feet

Waterway Velocity: Negligible/None

3. SUBSTRUCTURE INSPECTION DATA

Substructure Inspected: Piers 1 and 2.

General Shape: The pier shafts are rectangular with rounded noses and sit on rectangular footings founded on piles.

Maximum Water Depth at Substructure Inspected: Approximately 7.7 Feet.

4. WATERLINE DATUM

Water Level Reference: The top of the pier cap on the east end of Pier 1.

Water Surface: The waterline was approximately 22.0 feet below reference.
Waterline Elevation = 1241.9.

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/09/12

Item 113: Scour Critical Bridges: Code I/92

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

_____ Yes X No

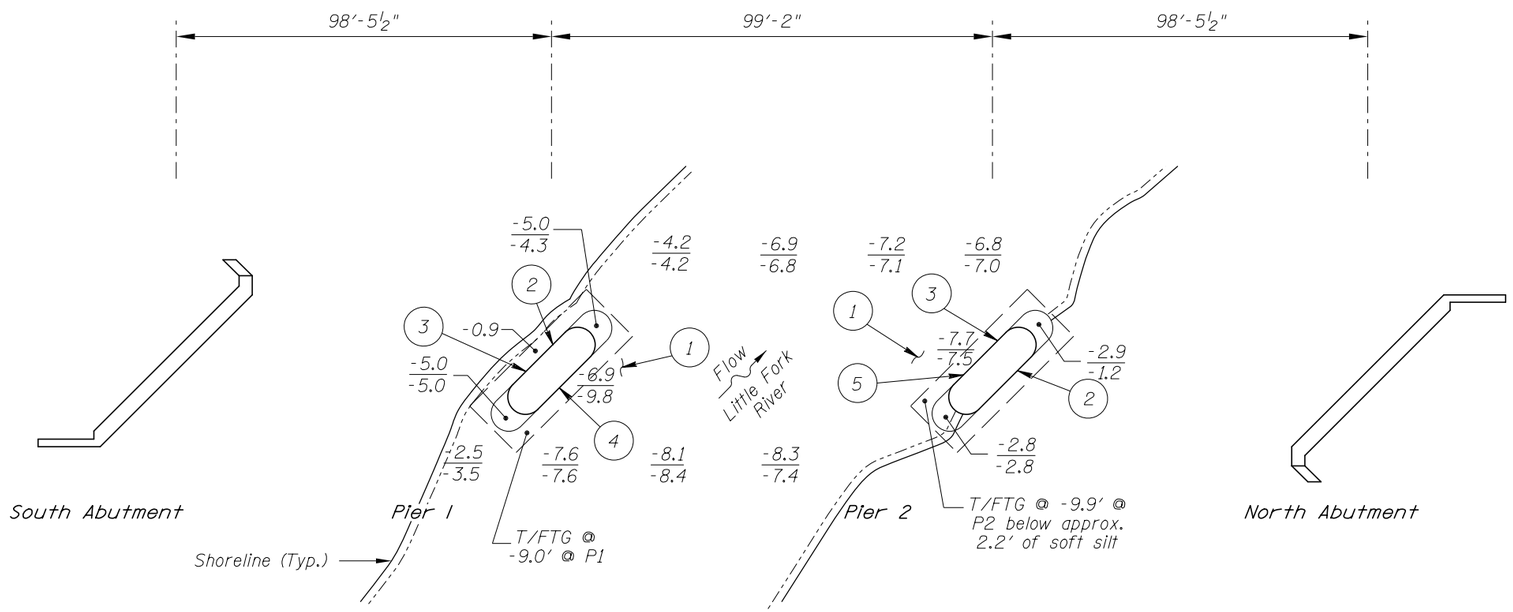
6. STRUCTURAL ELEMENT CONDITION RATING

Item #	Element Description	Quantity	Unit	Conditions				
				1	2	3	4	5
205	Reinforced Concrete Column	2	EA	2	0	0	0	n/a
985	Slopes & Slope Protection	1	EA	1	0	0	n/a	n/a

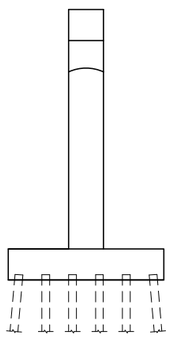
Photograph 1. Overall View of the Structure, Looking Northwest.

Photograph 2. View of Pier 1, Looking Southwest.

Photograph 3. View of Pier 2, Looking Northeast.



SOUNDING PLAN



TYPICAL END VIEW OF PIERS

GENERAL NOTES:

1. Piers 1 and 2 were inspected at this bridge.
2. At the time of inspection, on September 18, 2012, the waterline was located approximately 22.0 feet below the top of the cap at the upstream end of Pier 1. This corresponds to a waterline elevation of 1241.9 based on the previous report dated August 28, 2002.
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 soft silt and scattered rocks and cobbles with probe rod penetrations up to 2 feet at Pier 2 and up to 2.0 feet at Pier 1.

(2) Scaling was observed 1.5 feet above the waterline to 1 foot below the waterline, with 1/4 inch maximum penetration along the entire perimeter of Piers 1 and 2.

(3) The concrete at both piers was smooth and sound with random areas of poor consolidation with 1/2 inch of penetration above and below band of scaling.

(4) The top of the footing along the north face of Pier 1 was located with a probe rod below 2.1 feet of soft silt.

(5) The top of the footing along the south face of Pier 2 was located with a probe rod below 2.2 foot of soft silt.

Legend

-8.8	Sounding Depth (9/18/12)
-8.8	Sounding Depth (8/25/07)

Note:

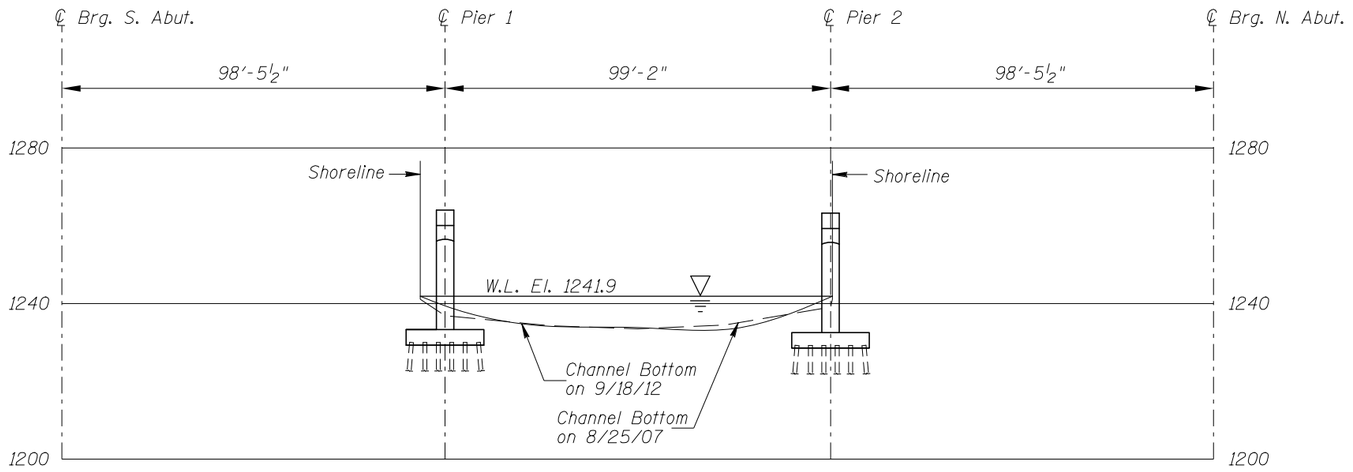
All soundings based on 2012 waterline location.

MINNESOTA
DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

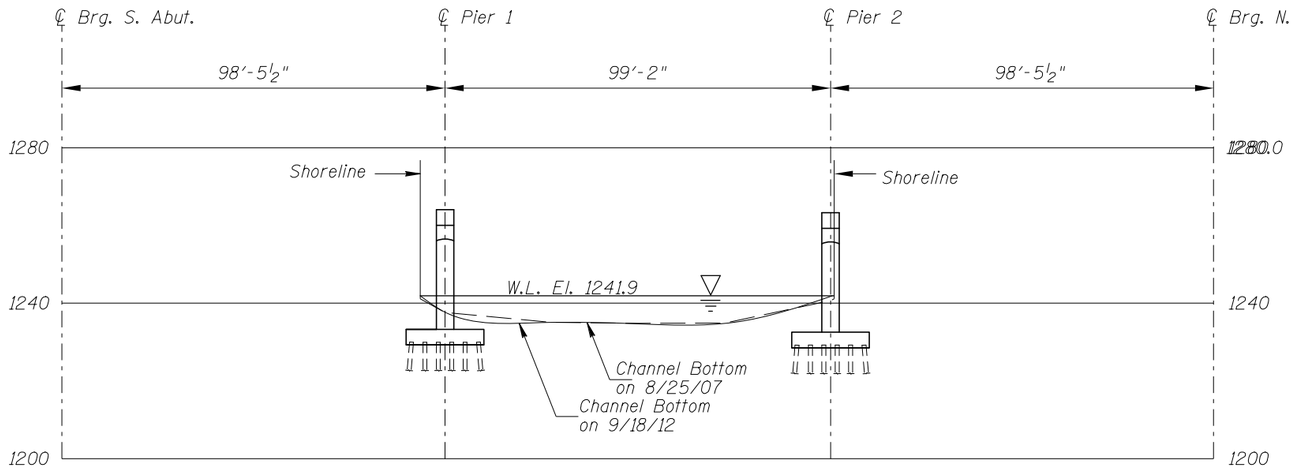
STRUCTURE NO. 69530
OVER THE LITTLE FORK RIVER
DISTRICT 1, ST. LOUIS COUNTY

INSPECTION AND SOUNDING PLAN

Drawn By: BMS	COLLINS ENGINEERS, INC. 123 North Wacker Drive Suite 900 Chicago, IL 60606 (312) 704-9300 www.collinsengr.com	Date: NOV. 2012
Checked By: LJ		Scale: NTS
Code: 742369530		Figure No.: 1



UPSTREAM FASCIA PROFILE



DOWNSTREAM FASCIA PROFILE

Note:

Refer to Figure 1 for General Notes.

MINNESOTA
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UNDERWATER BRIDGE INSPECTION

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UPSTREAM AND DOWNSTREAM FASCIA PROFILES

Drawn By: BMS	COLLINS ENGINEERS, INC 123 North Wacker Drive Suite 900 Chicago, Il. 60606 (312) 704-9300 www.collinsengr.com	Date: NOV. 2012
Checked By: LJ		Scale: 1"=40'
Code: 742369530		Figure No.: 2

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

INSPECTORS: Collins Engineers, Inc. DATE: September 18, 2012

ON-SITE TEAM LEADER: Nicholas R. Triandafilou, P.E.

BRIDGE NO: 69530 WEATHER: Sunny, 30°F

WATERWAY CROSSED: Little Fork River

DIVING OPERATION: X SCUBA _____ SURFACE SUPPLIED AIR

_____ OTHER _____

PERSONNEL: Marc B. Parker, Clayton G. Brookins

EQUIPMENT: Commercial Scuba, U/W Light, Hand Tools, Probe Rod, and Camera

TIME IN WATER: 8:15 A.M.

TIME OUT OF WATER: 8:50 A.M.

WATERWAY DATA: VELOCITY Negligible/None

VISIBILITY 2.0 feet

DEPTH 7.7 Feet maximum at Pier 1

ELEMENTS INSPECTED: Piers 1 and 2

REMARKS: The substructure units inspected underwater were found to be in good condition with no defects of structural significance observed. No footing exposure was detected; however, the footings along the south side of Pier 2 and along the north side of Pier 1 were located below approximately 2.2 feet of soft silt. The channel bottom around the substructure units appeared well established and stable with no evidence of significant scour and no appreciable changes since the previous inspection.

FURTHER ACTION NEEDED: _____ YES X 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. 69530
INSPECTORS Collins Engineers, Inc.
ON-SITE TEAM LEADER Nicholas R. Triandafilou, P.E.
WATERWAY CROSSED Little Fork River

INSPECTION DATE September 18, 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

			SUBSTRUCTURE						CHANNEL					GENERAL					
UNIT REFERENCE NO.	UNIT DESCRIPTION	MAXIMUM DEPTH OF WATER	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	6.9’	N	7	N	8	N	7	7	8	8	N	7	7	N	N	N	N	N
	Pier 2	7.7’	N	7	N	8	N	7	7	8	8	N	7	7	N	N	N	N	N

*UNDERWATER PORTION ONLY

REMARKS: The substructure units inspected underwater were found to be in good condition with no defects of structural significance observed. No footing exposure was detected; however, the footings along the south side of Pier 2 and along the north side of Pier 1 were located below approximately 2.2 feet of soft silt. The channel bottom around the substructure units appeared well established and stable with no evidence of significant scour and no appreciable changes since the previous 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.