

UNDERWATER BRIDGE INSPECTION REPORT

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STRUCTURE NO. 02519

CSAH NO. 22

OVER THE

RUM RIVER

METRO DISTRICT - ANOKA COUNTY

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SEPTEMBER 9, 2012

PREPARED FOR THE

MINNESOTA DEPARTMENT OF TRANSPORTATION

BY

COLLINS ENGINEERS, INC.

AND

WSB & ASSOCIATES, INC.

JOB NO. 2107

MINNESOTA DEPARTMENT OF TRANSPORTATION  
UNDERWATER BRIDGE INSPECTION

REPORT SUMMARY:

The substructure units inspected at Bridge No. 02519, Piers 1 and 2, were found to be generally in good condition below water with no defects of structural significance observed. Minor scaling and footing exposure was observed at both piers. The channel bottom around the substructure units presently appears stable with no evidence of significant scour or appreciable changes since the previous inspection.

INSPECTION FINDINGS:

- (A) The top of the footing at each pier was exposed. At Pier 1, the footing was partially exposed along the center of the east face at 2.2 feet below the waterline, with no vertical exposure detected. At Pier 2, the top of footing exposure was encountered at 4.4 feet below the waterline, extending around the upstream nose, and along the east and west faces from the pier nose to the mid point with no vertical face exposure.
- (B) A band of light scaling was observed around both piers from 1 foot above to 6 inches below the waterline, with typical penetrations of 1/16 inch and a maximum penetration of 1/8 inch.
- (C) A 20-foot-long by 2-foot-diameter log was observed along the east face of Pier 2 on the channel bottom.

RECOMMENDATIONS:

- (A) Monitor the footing exposures during future inspections.
- (B) Reinspect the submerged substructure units at the normal maximum recommended (NBIS) interval of sixty (60) months.

Inspection Team Leader:

WSB and Associates



Barritt Lovelace  
Registered Professional Engineer  
Bridge Safety Inspection Team Leader

Respectfully submitted,

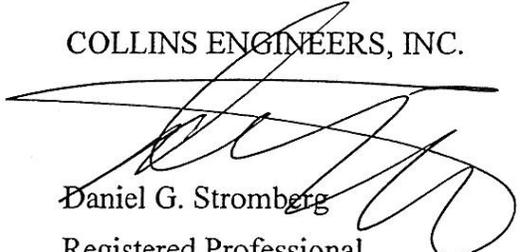
PROFESSIONAL ENGINEER

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: 02519

Feature Crossed: Rum River

Feature Carried: CSAH No. 22

Location: Metro District - Anoka County

Bridge Description: The superstructure consists of a three span, multiple concrete beam structure. The superstructure is supported by two concrete abutments and two concrete hammerhead piers, numbered 1 and 2 starting from the west. The substructure units are all founded on steel H-piles.

2. INSPECTION DATA

Professional Engineer/Team Leader: Barritt Lovelace, P.E.

Dive Team: Brad Robinson (WSB), Lukas Janulis (Collins)

Date: September 9, 2012

Weather Conditions: Sunny, 70 °F

Underwater Visibility: 2.0 Feet

Waterway Velocity: 2.0 ft/s

3. SUBSTRUCTURE INSPECTION DATA

Substructure Inspected: Piers 1 and 2

General Shape: The piers are each of concrete hammerhead design with an oblong rectangular shaft having rounded noses, supported by a rectangular footing also with round noses and founded on steel H-piles.

Maximum Water Depth at Substructure Inspected: Approximately 4.4 feet.

4. WATERLINE DATUM

Water Level Reference: The top of the pier cap at the downstream end of Pier 1.

Water Surface: The waterline was approximately 13.2 feet below reference.

Waterline Elevation = 446.5

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/09/12

Item 113: Scour Critical Bridges: Code O/12

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:

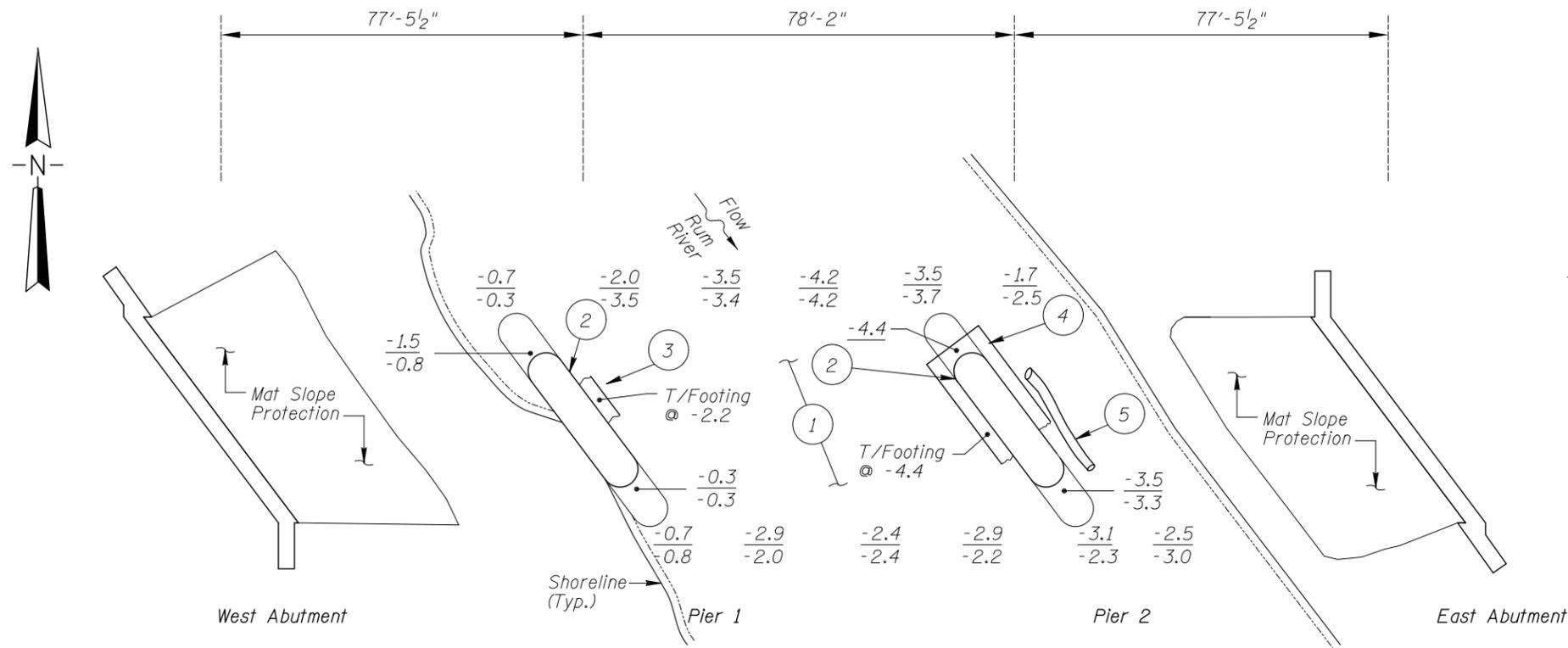
Item #	Element Description	Quantity	Unit	Conditions				
				1	2	3	4	5
210	Concrete Pier Wall	30	LF		30			
361	Scour	1	EA	1				
985	Slopes	1	EA		1			



Photograph 1. View of Pier 1, Looking East.



Photograph 2. View of Pier 2, Looking West.



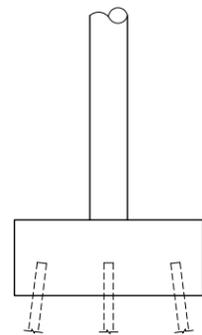
SOUNDING PLAN

GENERAL NOTES:

1. Piers 1 and 2 were inspected underwater.
2. At the time of inspection on September 9, 2012, the waterline was located approximately 13.2 feet below the top of the pier cap at the downstream end of Pier 1. This corresponds to a waterline elevation of 446.5.
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 sand with scattered 2 to 12 inch cobbles.
- 2 A band of light scaling was observed from 1 foot above to 6 inches below the waterline around both piers with typical penetrations of 1/16 inch and maximum penetrations of 1/8 inch. Above and below the band of scaling the concrete was smooth and sound.
- 3 The top of the footing was partially exposed at 2.2 feet below the waterline along the center of the east face of Pier 1 with no vertical exposure observed.
- 4 The top of the footing was exposed at 4.4 feet below the waterline, around the upstream nose, and along the east and west faces from the upstream nose to the mid point, with no vertical face exposure.
- 5 A 20-foot-long by 2-foot-diameter log was observed along the east face of Pier 2 on the channel bottom.



TYPICAL END VIEW OF PIERS

Legend

- 2.0 Sounding Depth (9/9/12)
- 2.5 Sounding Depth (8/14/07)

Note:

All soundings based on 2012 waterline location.

MINNESOTA  
DEPARTMENT OF TRANSPORTATION  
UNDERWATER BRIDGE INSPECTION

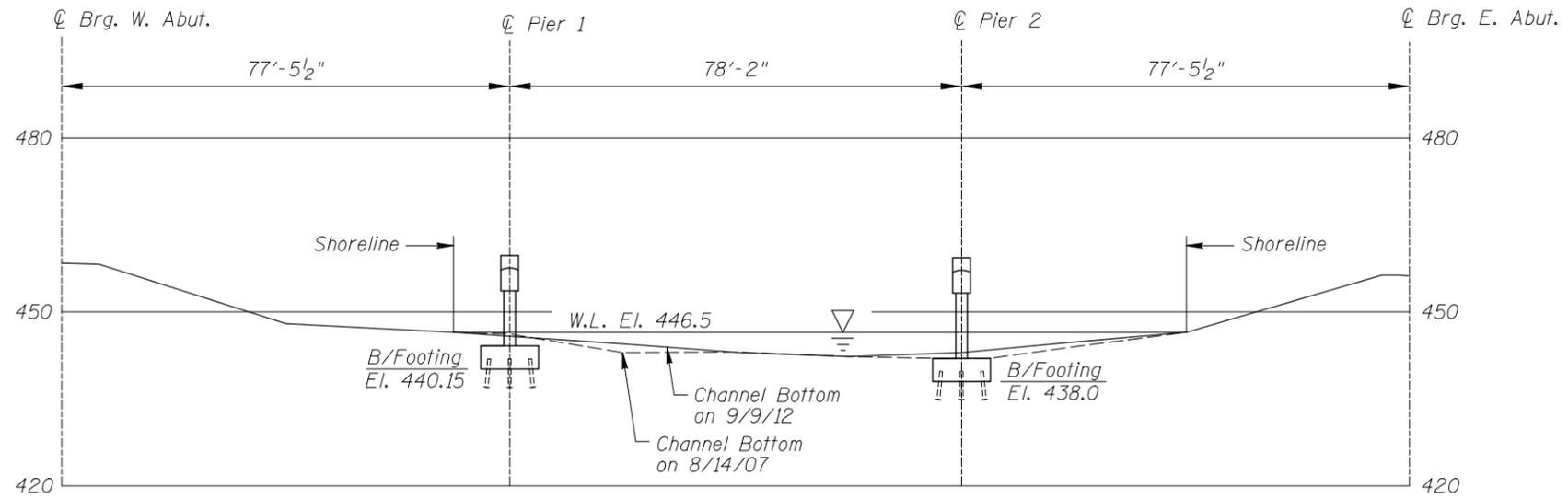
STRUCTURE NO. 02519  
OVER THE RUM RIVER  
METRO DISTRICT, ANOKA COUNTY

INSPECTION AND SOUNDING PLAN

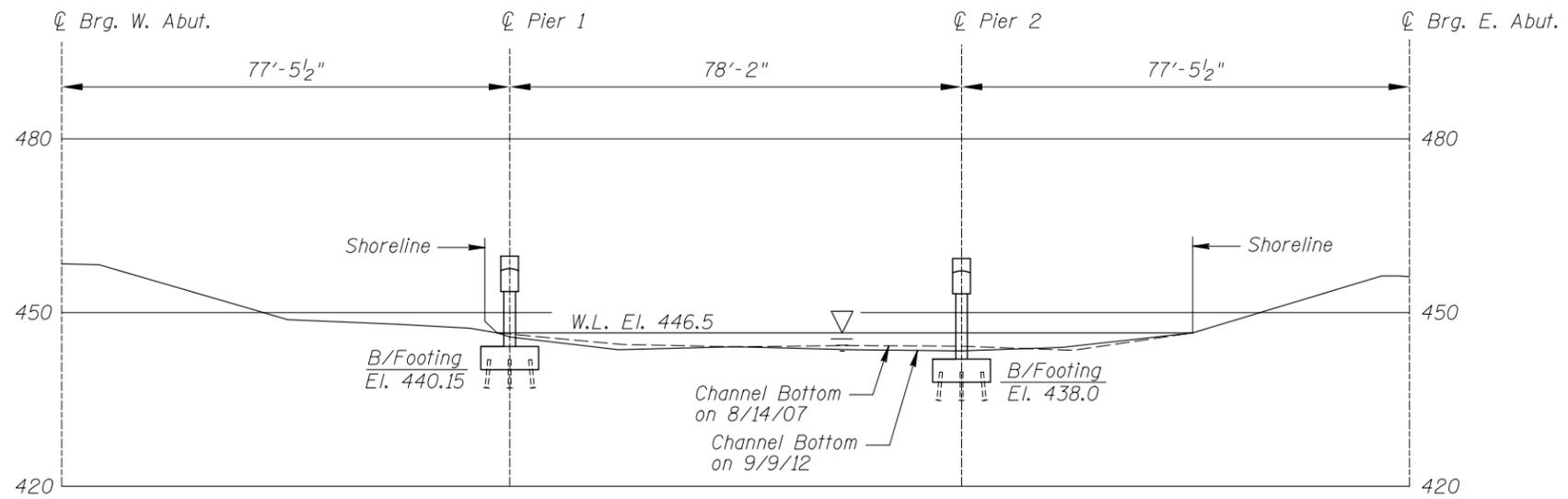
Drawn By: BJR		Date: SEP. 2012
Checked By: BRL		Scale: NTS
Code: 52210104		Figure No.: 1

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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. 02519 OVER THE RUM RIVER METRO DISTRICT, ANOKA COUNTY <b>UPSTREAM AND DOWNSTREAM FASCIA PROFILES</b>		
Drawn By: BJR	<b>COLLINS ENGINEERS</b>	Date: SEP. 2012
Checked By: BRL		Scale: 1"=30'
Code: 52210104		Figure No.: 2

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

INSPECTORS: WSB & Associates and Collins Engineers      DATE: September 9, 2012

ON-SITE TEAM LEADER: Barritt Lovelace, P.E.

BRIDGE NO: 02519      WEATHER: Sunny, 70°F

WATERWAY CROSSED: Rum River

DIVING OPERATION:  SCUBA       SURFACE SUPPLIED AIR  
 OTHER

PERSONNEL: Brad Robinson (WSB), Lukas Janulis (Collins)

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

TIME IN WATER: 4:00 P.M.

TIME OUT OF WATER: 4:20 P.M.

WATERWAY DATA: VELOCITY 2.0 ft/s

VISIBILITY 2.0 feet

DEPTH 4.4 feet maximum at Pier 2

ELEMENTS INSPECTED: Piers 1 and 2

REMARKS: Overall, the concrete was in good condition with no defects of structural significance below water. Each of the piers exhibited minor footing exposure (top of footing only). The channel bottom appeared stable with no appreciable changes since the previous inspection.

FURTHER ACTION NEEDED:       YES       NO

Monitor footing exposure during future inspections.

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. 02519  
 INSPECTORS WSB & Associates and Collins Engineers, Inc.  
 ON-SITE TEAM LEADER Barritt Lovelace, P.E.  
 WATERWAY CROSSED Rum River

INSPECTION DATE September 9, 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	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	2.2'	N	7	7	8	N	7	6	7	7	8	7	7	N	N	N	N	N
	Pier 2	4.4'	N	7	7	8	N	7	6	7	7	6	6	7	N	N	N	N	N

\*UNDERWATER PORTION ONLY

REMARKS: Overall, the concrete was in good condition with no defects of structural significance below water. Each of the piers exhibited minor footing exposure (top of footing only). The channel bottom appeared stable with 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.