UNDERWATER BRIDGE INSPECTION REPORT

STRUCTURE NO. 66546

MSAS 123 (2ND AVE. SW)

OVER THE

CANNON RIVER

CITY OF FARIBAULT, RICE COUNTY

SEPTEMBER 13, 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 unit inspected at Bridge No. 66546, Pier 1, was found to be generally in satisfactory to fair condition with no defects of structural significance observed. The concrete was typically soft and easily erodible with up to 3 inches of penetration over 50 percent of the pier face from channel bottom to 1 foot above the waterline. Random locations exhibited exposed coated reinforcing steel with no surface corrosion present. The north and south embankment slopes were lined with an articulated concrete mat and the channel bottom material at the pier consisted of randomly displaced paving stones with sand infill.

INSPECTION FINDINGS:

(A) The north and south embankment slopes were lined with articulated concrete mat from top of slope to 1 foot below the waterline.

(B) Approximately 50 percent of the total pier wall surface typically exhibited soft and easily erodible concrete with up to 3 inches of penetration from the channel bottom to 1 foot above the waterline with exposed coated reinforcing steel present.

(C) The channel bottom material consisted of random displaced paving stones with sand infill.

RECOMMENDATIONS:

(A) Monitor concrete deterioration at Pier 1 and if the deficiencies continue to progress and the exposed reinforcing steel starts to corrode, repairs may become warranted at that time.

(B) The inspection of the submerged substructure units of Structure No. 66546 can most likely be accomplished in the future without the use of a dive team. To perform the underwater inspection, a properly equipped qualified inspector will have to enter the water during a period of low flow. As channel bottom contours and depths of flow can change quickly, it is recommended that lead line soundings of water depth be taken along the upstream and downstream fascias to determine whether wading is possible prior to beginning the inspection. If conditions are unsafe for inspection by wading, then an underwater inspection with the use of a dive team will be required.

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

Inspection Team Leader

Roy Forsyth

Roy A. Forsyth, PE
Date 6/30/2014 License# 49270

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: 66546

Feature Crossed: Cannon River

Feature Carried: MSAS 123 (2^{ND} AVE. SW)

Location: City of Faribault, Rice County

Bridge Description: The superstructure consists of a two span haunched slab bridge supporting a reinforced concrete deck. The bridge is supported by two reinforced concrete abutments and one reinforced concrete pier wall with steel H-Piles extending from the bottom of the wall up 7 feet.

2. INSPECTION DATA

Professional Engineer/Team Leader: Roy A. Forsyth, P.E.

Dive Team: Charles R. Euwema, Brandon Corr

Date: September 13, 2012

Weather Conditions: Sunny, 80^{o} F

Underwater Visibility: 1.0 foot

Waterway Velocity: Negligible

3. SUBSTRUCTURE INSPECTION DATA

Substructure Inspected: Pier 1

General Shape: The pier consists of an oblong reinforced concrete pier wall with rounded noses. The pier wall encases 18 steel H-Piles which extend into the pier wall from the bottom of the pier wall up 7 feet.

Maximum Water Depth at Substructure Inspected: Approximately 2.5 feet.

4. WATERLINE DATUM

Water Level Reference: The bottom of architectural cap at downstream nose of Pier 1.

Water Surface: The waterline was approximately 8.1 feet below reference. Waterline Elevation = 954.8

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

Item 60: Substructure: Code 6

Item 61: Channel and Channel Protection: Code 8

Item 92B: Underwater Inspection: Code A/9/12

Item 113: Scour Critical Bridges: Code L

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	Reinforced Concrete Pier Wall	81	LF	40		41		
985	Slopes and Slope Protection	1	EA	1				

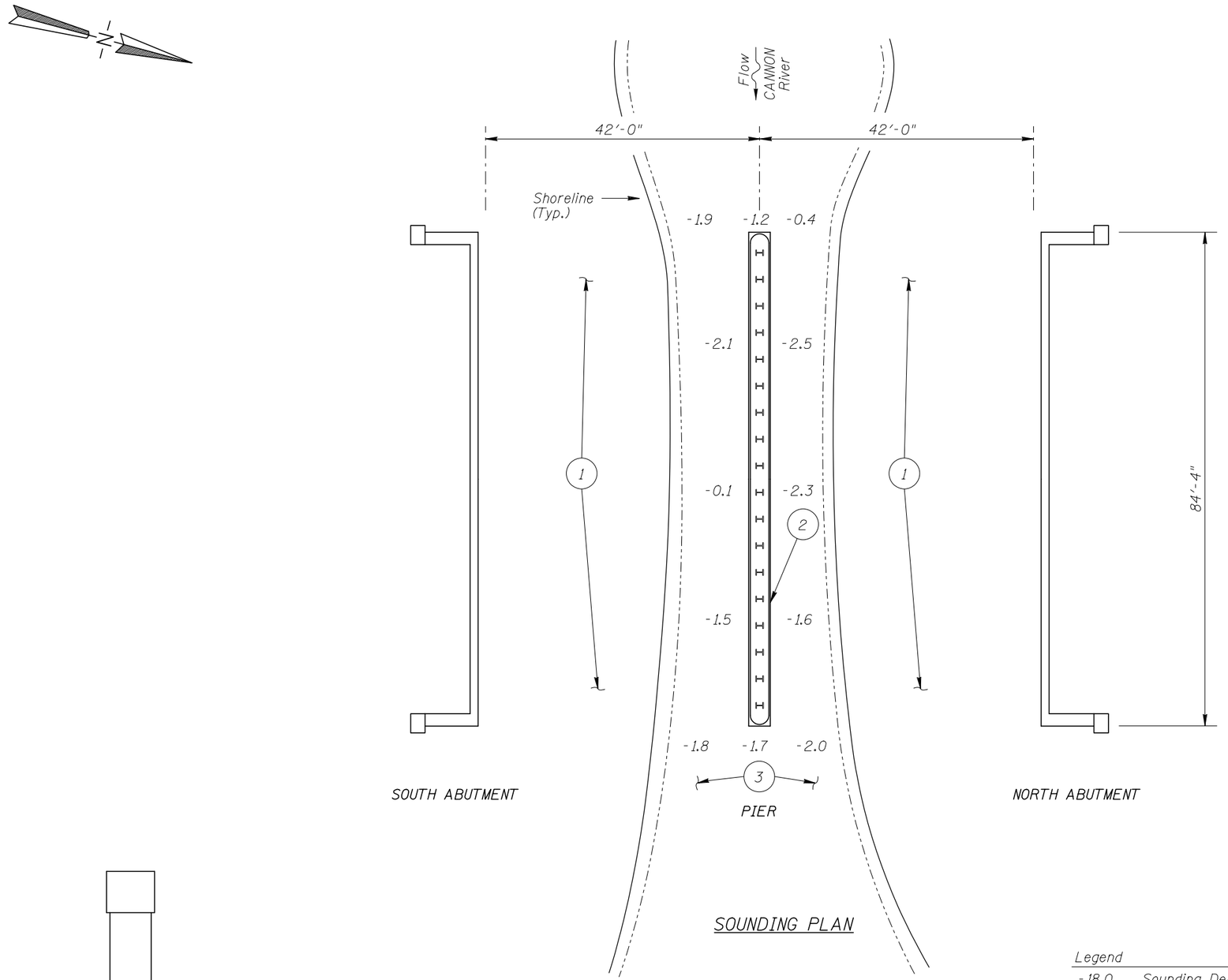
Photograph 1. Overall View of the Structure, Looking Southeast.

Photograph 2. View of South Abutment, Looking Southwest.

Photograph 3. View of Pier 1, Looking Southwest.

Photograph 4. View of North Abutment, Looking Northwest.

Photograph 5. View of Typical Spalled Concrete along the South Face of Pier 1, Looking North.



SOUNDING PLAN

Inspection Notes:

1. The north and south slope embankments were lined with articulated concrete mat from top of slope to 1 foot below waterline and from 10 feet upstream to 10 feet downstream of the bridge fascias.
2. Approximately 50 percent of the concrete surface of the pier wall exhibited soft and easily erodible concrete with up to 3 inches of penetration from channel bottom to 1 foot above waterline and exposed coated reinforcing steel was present.
3. The channel bottom consisted of randomly displaced paving stones with sandy infill.

General Notes:

1. The concrete pier was inspected during the underwater inspection.
2. At the time of inspection on September 13, 2012, the waterline was located approximately 8.1 feet below bottom of architectural pier cap at downstream nose of the pier. This corresponds with a waterline elevation of 954.8 feet.
3. Soundings indicate the water depth at the time of inspection and are measured in feet.

Legend

-18.0	Sounding Depth from Waterline (9/13/12)
1	Inspection Note Number
H	12x74 Steel H-Pile

Note:

Refer to Figure 2 for Inspection Notes.

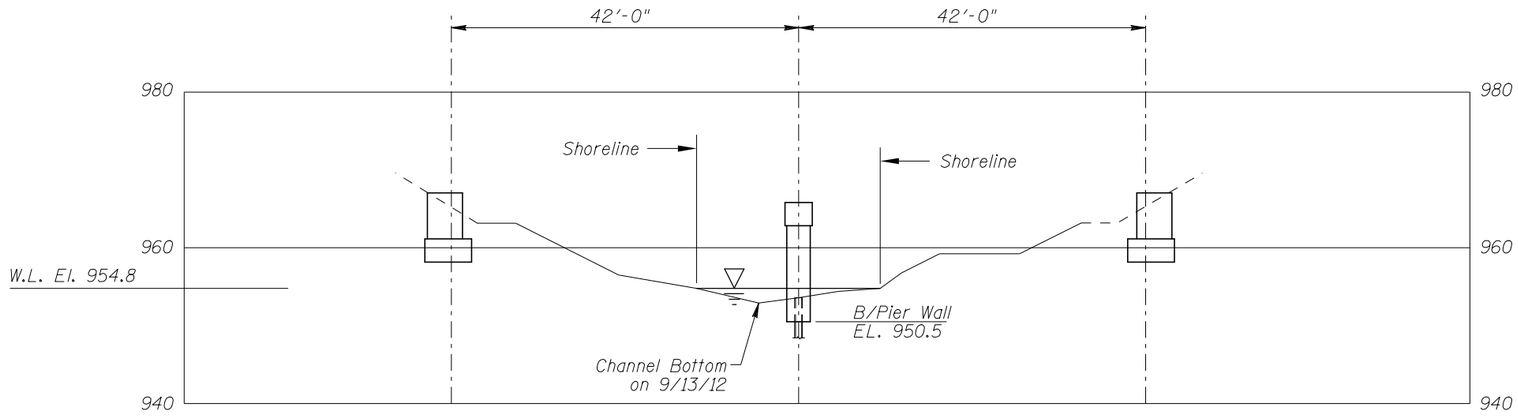
TYPICAL END VIEW OF TOWERS

MINNESOTA
DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

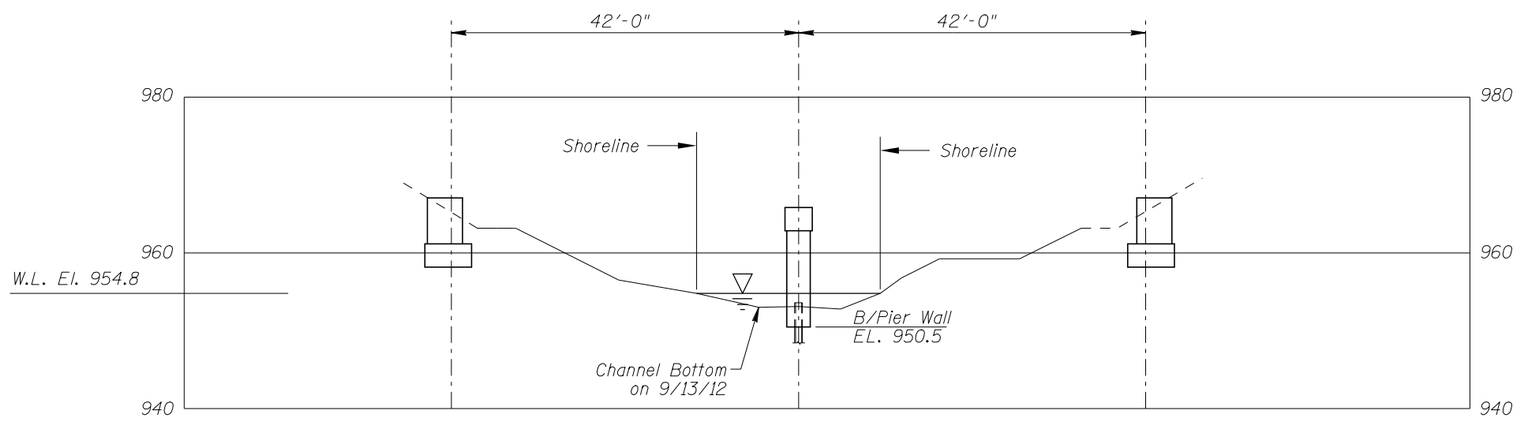
STRUCTURE NO. 66546
OVER THE CANNON RIVER
CITY OF FARIBAULT, RICE COUNTY

INSPECTION AND SOUNDING PLAN

Drawn By: CRE	COLLINS ENGINEERS, INC. 123 North Wacker Drive Suite 900 Chicago, IL 60606 (312) 704-9300 www.collinsengr.com	Date: SEPT. 2012
Checked By: RAF		Scale: N.T.S.
Code: 742366546		Figure No.: 1



UPSTREAM FASCIA PROFILE



DOWNSTREAM FASCIA PROFILE

Note:

Refer to Figure 1 for General Notes.

MINNESOTA
DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

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OVER THE CANNON RIVER
CITY OF FARIBAULT, RICE COUNTY

UPSTREAM AND DOWNSTREAM
FASCIA PROFILES

Drawn By: CRE	COLLINS ENGINEERS INC 123 North Wacker Drive Suite 900 Chicago, IL 60606 (312) 704-9300 www.collinsengr.com	Date: SEPT. 2012
Checked By: RAF		Scale: 1"=20'
Code: 742366546		Figure No.: 2

MINNESOTA DEPARTMENT OF TRANSPORTATION
OFFICE OF BRIDGES AND STRUCTURES

DAILY DIVING REPORT

INSPECTORS: Collins Engineers, Inc. DATE: September 13, 2012

ON-SITE TEAM LEADER: Roy A. Forsyth, P.E.

BRIDGE NO: 66546 WEATHER: Sunny, 80° F

WATERWAY CROSSED: Cannon River

DIVING OPERATION: _____ SCUBA _____ SURFACE SUPPLIED AIR

X OTHER Inspection by Wading

PERSONNEL: Charles R. Euwema, Brandon Corr

EQUIPMENT: Dry Suit, Camera, Sounding Pole, Probe Rod

TIME IN WATER: 1:00 P.M.

TIME OUT OF WATER: 2:00 P.M.

WATERWAY DATA: VELOCITY negligible

VISIBILITY 1.0 foot

DEPTH 2.5 feet at Pier 1

ELEMENTS INSPECTED: Pier 1

REMARKS: Overall, Pier 1 was found to be generally in satisfactory condition with no defects of structural significance observed. The concrete was typically soft and easily erodible with up to 3 inches of penetration over 50 percent of the pier wall surface from the channel bottom to 1 foot above the waterline. Random locations exhibited exposed coated reinforcing steel with no surface corrosion. The north and south embankment slopes were lined with an articulated concrete mat. The channel bottom material consisted of random displaced paving stones with sand infill.

FURTHER ACTION NEEDED: _____ YES ____X___ NO

Monitor concrete deterioration at Pier 1 and if the deficiencies continue to progress and the exposed reinforcing steel starts to corrode, repairs may become warranted at that time.

The inspection of the submerged substructure units of Structure No. 66546 can most likely be accomplished in the future without the use of a dive team. To perform the underwater inspection, a properly equipped qualified inspector will have to enter the water during a period of low flow. As channel bottom contours and depths of flow can change quickly, it is recommended that lead line soundings of water depth be taken along the upstream and downstream fascias to determine whether wading is possible prior to beginning the inspection. If conditions are unsafe for inspection by wading, then an underwater inspection with the use of a dive team will be required.

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. 66546
INSPECTORS Collins Engineers, Inc.
ON-SITE TEAM LEADER Roy A. Forsyth P.E.
WATERWAY CROSSED Cannon River

INSPECTION DATE September 13, 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.		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
	UNIT DESCRIPTION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
	Pier 1	2.5’	N	6	N	8	N	6	8	8	8	N	8	6	N	N	N	N	N

*UNDERWATER PORTION ONLY

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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.