

UNDERWATER BRIDGE INSPECTION REPORT

STRUCTURE NO. 66532
227th STREET (TWP 45)
OVER THE
STRAIGHT RIVER
DISTRICT 6 - RICE COUNTY



SEPTEMBER 12, 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. 66532, Piers 1 and 2, were found to be in good condition with no defects of structural significance observed. Timber debris accumulations were observed at both piers, with heavy amounts at Pier 2. The channel bottom around the substructure units appeared to be in stable condition with no evidence of significant scour.

INSPECTION FINDINGS:

- (A) The channel bottom material at Pier 2 consisted of soft silty infilling and organics with 6 inches of probe rod penetration. Firm rock was at times encountered at Pier 2 under a 1 to 1.5 foot thick layer of soft channel bottom material.
- (B) A heavy timber debris accumulation consisting of 2 feet diameter and smaller logs and branches was observed on the upstream side of Pier 2, extending from the channel bottom to 6 feet above the waterline and up to 30 feet south of the upstream nose.
- (C) Concrete was smooth and sound on both piers.
- (D) The channel bottom material at Pier 1 consisted of firm rock and gravel with no probe rod penetration around the upstream half of the pier, and sand silty infilling with 3 inches of probe rod penetration around the downstream half of the pier.
- (E) A 1 foot diameter log was observed on the channel bottom along the east face of Pier 1.

RECOMMENDATIONS:

- (A) Remove accumulations of timber debris at both piers (particularly at Pier 2) to alleviate further accumulation, scour influence, and any excessive lateral force on the piers.

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

Inspection Team Leader



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

Respectfully submitted,

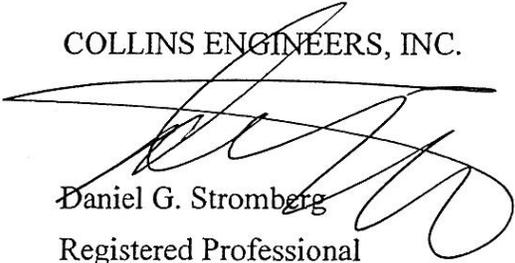
PROFESSIONAL ENGINEER

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: 66532

Feature Crossed: Straight River

Feature Carried: 227th Street

Location: District 6 - Rice County

Bridge Description: The bridge superstructure consists of three spans of multiple precast concrete beams supporting a concrete deck. The superstructure is supported by two reinforced concrete abutments and two reinforced concrete piers. The piers are comprised of steel H-pile bents encased in concrete. The piers are numbered 1 and 2 starting from the west end of the bridge.

2. INSPECTION DATA

Professional Engineer Diver: Roy A. Forsyth, P.E.

Dive Team: Charles R. Euwema, Brandon Corr

Date: September 12, 2012

Weather Conditions: Cloudy, 65 °F

Underwater Visibility: 1.0 foot

Waterway Velocity: 1.0 ft/s

3. SUBSTRUCTURE INSPECTION DATA

Substructure Inspected: Piers 1 and 2

General Shape: The piers each consist of a rectangular slender concrete shaft and a rectangular pier cap, both with rounded ends. The concrete shaft encases a single row of six steel H-piles, and runs from the cap into the channel bottom.

Maximum Water Depth at Substructure Inspected: Approximately 3.4 feet.

4. WATERLINE DATUM

Water Level Reference: The top of the pier cap at the downstream end of Pier 2.

Water Surface: The waterline was approximately 10.1 feet below reference.

Waterline Elevation = 1038.2.

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 5

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

Item 113: Scour Critical Bridges: Code N

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	69	LF	69				
985	Slope and Slope Protection	1	EA	1				



Photograph 1. Overall View of Structure, Looking Northeast.



Photograph 2. View of Pier 1, Looking Southeast.



Photograph 3. View of Pier 2 and Timber Debris, Looking Northwest.



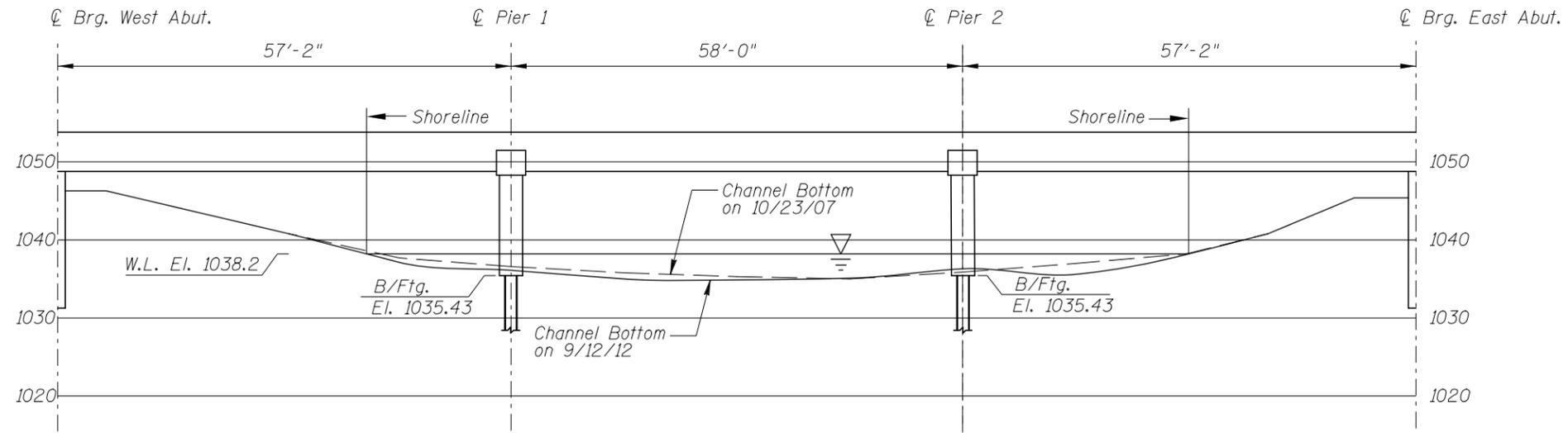
Photograph 4. View of the Upstream End of Pier 2 and Timber Debris, Looking Northwest.



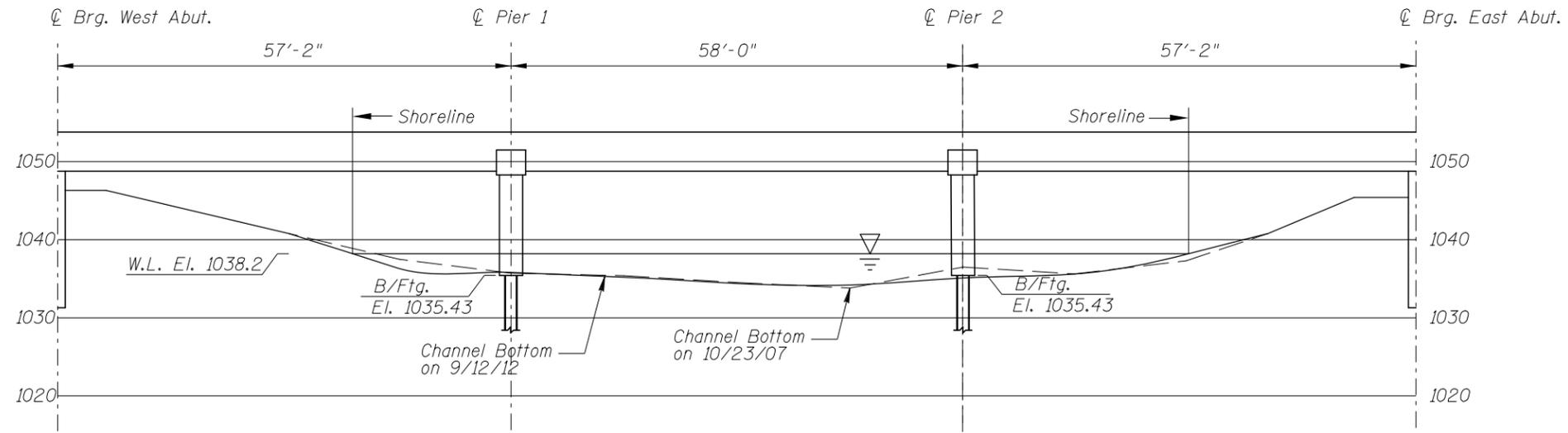
Photograph 5. View of West Abutment, Looking West.



Photograph 6. View of East Abutment, Looking East.



UPSTREAM FASCIA PROFILE



DOWNSTREAM FASCIA PROFILE

Note:
Refer to Figure 1 for General Notes.

MINNESOTA DEPARTMENT OF TRANSPORTATION UNDERWATER BRIDGE INSPECTION		
STRUCTURE NO. 66532 OVER THE STRAIGHT RIVER DISTRICT 6, RICE COUNTY		
UPSTREAM AND DOWNSTREAM FASCIA PROFILES		
Drawn By: CRE	COLLINS ENGINEERS <small>123 North Wacker Drive Suite 900 Chicago, IL 60606 (312) 704-9300 www.collinsengr.com</small>	Date: SEPT. 2012
Checked By: VR		Scale: 1"=20'
Code: 522166532		Figure No.: 2

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

INSPECTORS: Collins Engineers, Inc. DATE: September 12, 2012

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

BRIDGE NO: 66532 WEATHER: Cloudy, 65 °F

WATERWAY CROSSED: Straight River

DIVING OPERATION: SCUBA SURFACE SUPPLIED AIR
 OTHER

PERSONNEL: Charles R. Euwema, Brandon Corr

EQUIPMENT: Commercial Scuba, Probe Rod, Sounding Pole, Camera, Hand Tools

TIME IN WATER: 11:00 a.m.

TIME OUT OF WATER: 11:20 a.m.

WATERWAY DATA: VELOCITY 1.0 ft/s

VISIBILITY 1.0 foot

DEPTH 3.4 feet maximum at Pier 2

ELEMENTS INSPECTED: Piers 1 and 2

REMARKS: Overall, Piers 1 and 2 were found to be in good condition with no defects of structural significance observed. Timber debris accumulations were observed at both piers, with heavy amounts at Pier 2. The channel bottom around the substructure units appeared to be in stable condition with no evidence of significant scour.

FURTHER ACTION NEEDED: YES NO

Remove accumulations of timber debris at both piers (particularly at Pier 2) to alleviate further accumulation, scour influence, and any excessive lateral force on the piers.

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. 66532
 INSPECTORS Collins Engineers, Inc.
 ON-SITE TEAM LEADER Roy A. Forsyth, P.E.
 WATERWAY CROSSED Straight River

INSPECTION DATE September 12, 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	3.0'	N	7	N	8	N	7	N	8	8	8	8	7	N	N	N	N	N
	Pier 2	3.4'	N	7	N	8	N	7	N	8	8	4	5	7	N	N	N	N	N

*UNDERWATER PORTION ONLY

REMARKS: Overall, Piers 1 and 2 were found to be in good condition with no defects of structural significance observed. Timber debris accumulations were observed at both piers, with heavy amounts at Pier 2. The channel bottom around the substructure units appeared to be in stable condition with no evidence of significant scour.

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.