

UNDERWATER BRIDGE INSPECTION REPORT

STRUCTURE NO. 27A34

MUN. 81 (ENCHANTED LANE)

OVER THE

CHANNEL OF LAKE MINNETONKA

CITY OF SHOREWOOD - HENNEPIN COUNTY



OCTOBER 28, 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. 27A34, Piers 1 and 2, were found to be in good condition with no defects of structural significance observed. The channel bottom appeared stable with no significant scour, and the channel bottom material consisted primarily of large riprap.

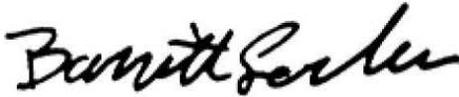
INSPECTION FINDINGS:

- (A) The channel bottom material consisted of 1 to 2.5 feet diameter riprap.
- (B) Timber piles were generally sound and in good condition with negligible deterioration.

RECOMMENDATIONS:

- (A) 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,

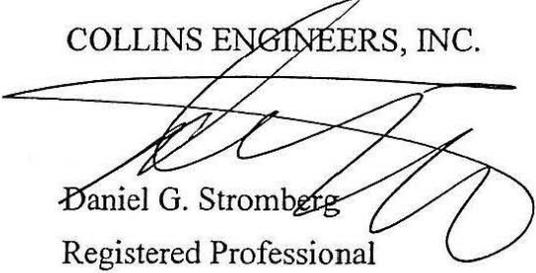
PROFESSIONAL ENGINEER

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: 27A34

Feature Crossed: Channel of Lake Minnetonka

Feature Carried: MUN. 81 (Enchanted Lane)

Location: City of Shorewood – Hennepin County

Bridge Description: The bridge superstructure consists of three spans of multiple timber beams. The superstructure is supported by two timber pile abutments and two timber pile bent piers. The piers are numbered 1 and 2 starting from the west end of the bridge.

2. INSPECTION DATA

Professional Engineer/Team Leader: Barritt R. Lovelace, P.E. (WSB)

Dive Team: Marc B. Parker, Lukas Janulis, P.E.

Date: October 28, 2012

Weather Conditions: Cloudy, 40°F

Underwater Visibility: 6.0 feet

Waterway Velocity: None

3. SUBSTRUCTURE INSPECTION DATA

Substructure Inspected: Piers 1 and 2

General Shape: Piers 1 and 2 each consist of eight timber piles driven to bearing into the channel bottom.

Maximum Water Depth at Substructure Inspected: Approximately 4.3 feet.

4. WATERLINE DATUM

Water Level Reference: Top of cap at the north end of Pier 1; assumed elevation of 100.0 feet.

Water Surface: 5.6 feet below reference; Assumed Waterline Elevation = 94.4 feet.

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 8

Item 92B: Underwater Inspection: Code B/10/12

Item 113: Scour Critical Bridges: Code I

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
228	Timber Pilings	16	EA	16				
985	Slopes	1	EA	1				



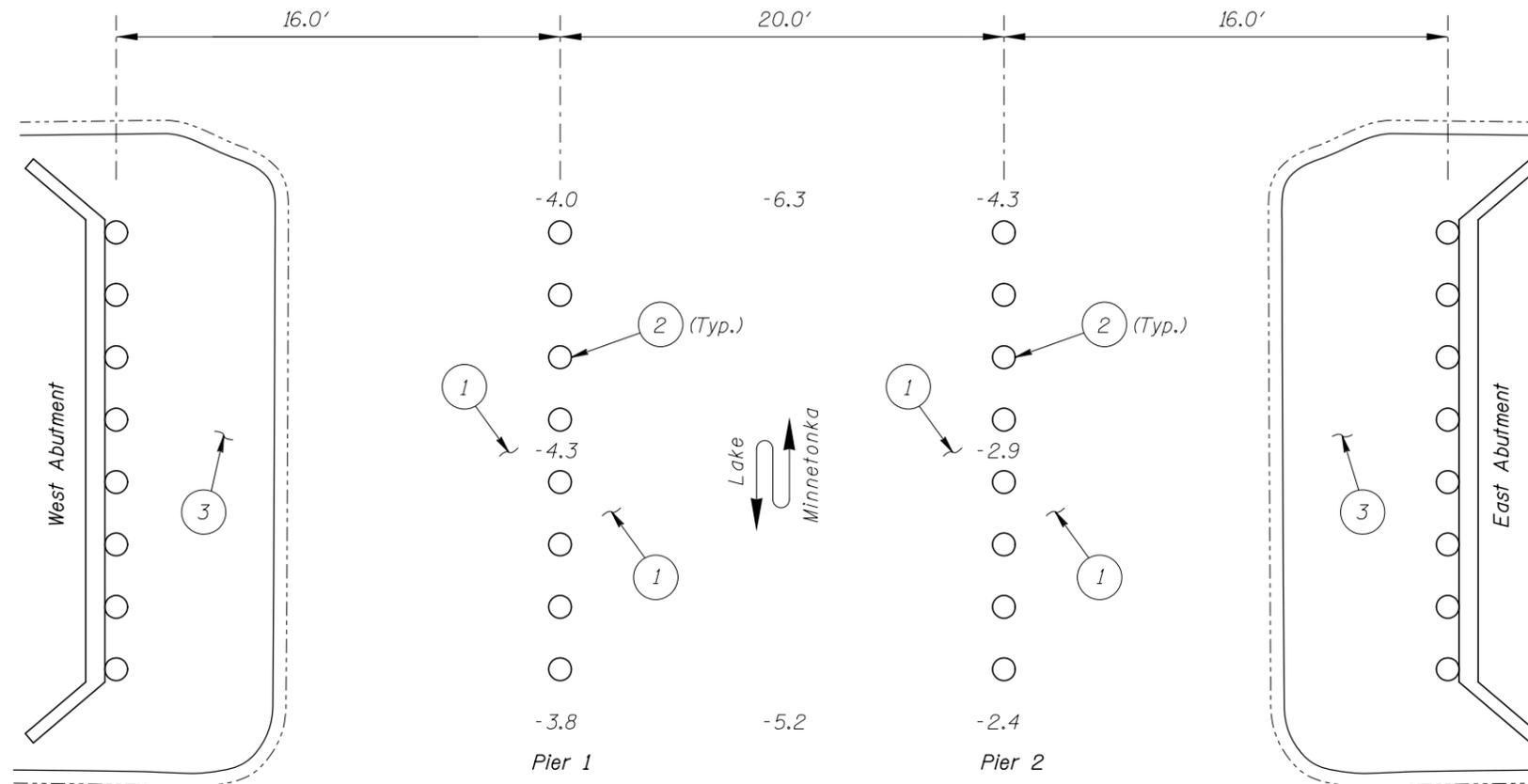
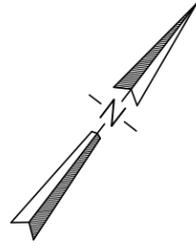
Photograph 1. Overall View of the Structure, Looking Southeast.



Photograph 2. View of Pier 1, Looking Northeast.



Photograph 3. View of Pier 2, Looking Northeast.



SOUNDING PLAN



TYPICAL END VIEW OF PIERS

INSPECTION NOTES:

- ① The channel bottom material consisted of 1 to 2.5 foot diameter riprap.
- ② The timber piles were generally sound and in good condition with negligible deterioration.
- ③ Large riprap protected both banks in the vicinity of the structure.

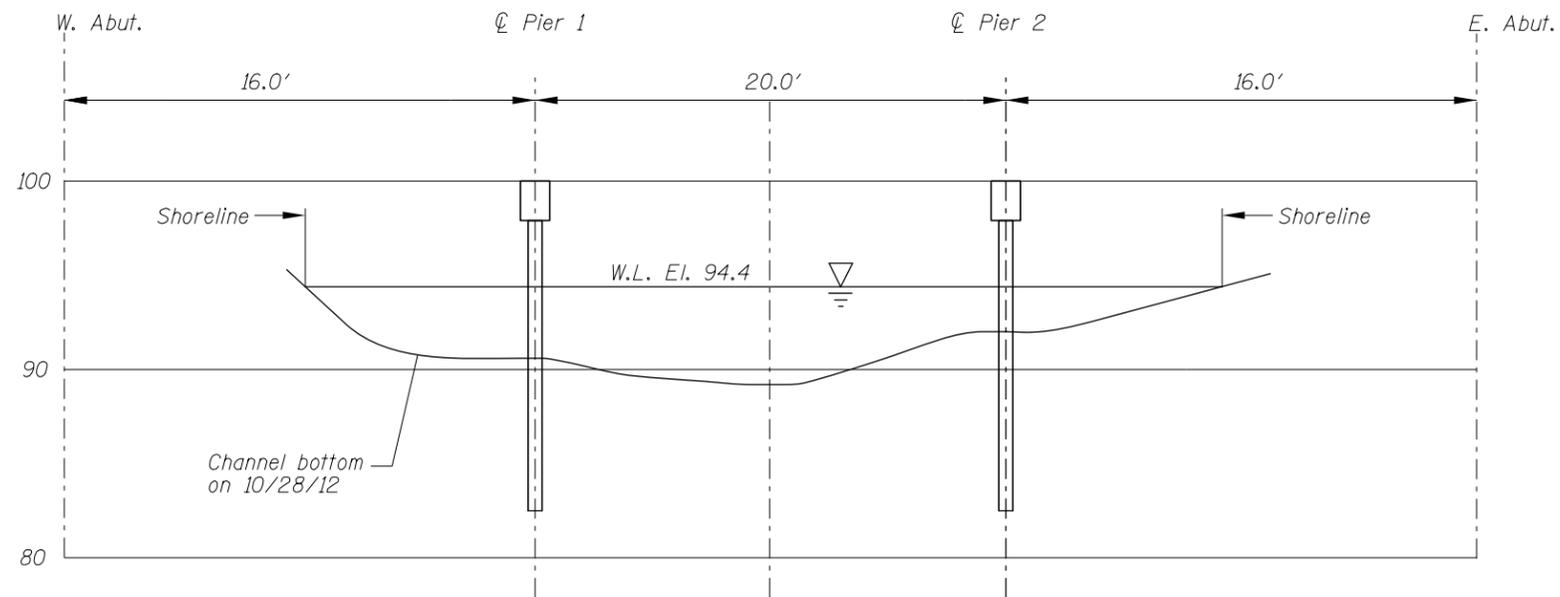
GENERAL NOTES:

- 1. Piers 1 and 2 were inspected underwater.
- 2. At the time of inspection on October 28, 2012 the waterline was located approximately 5.6 feet below the top of cap at the north end of Pier 1. No elevation data was available at the time of inspection so a reference elevation of 100.0 feet was used. Based on the reference this corresponds with a waterline elevation of 94.4 feet.
- 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.

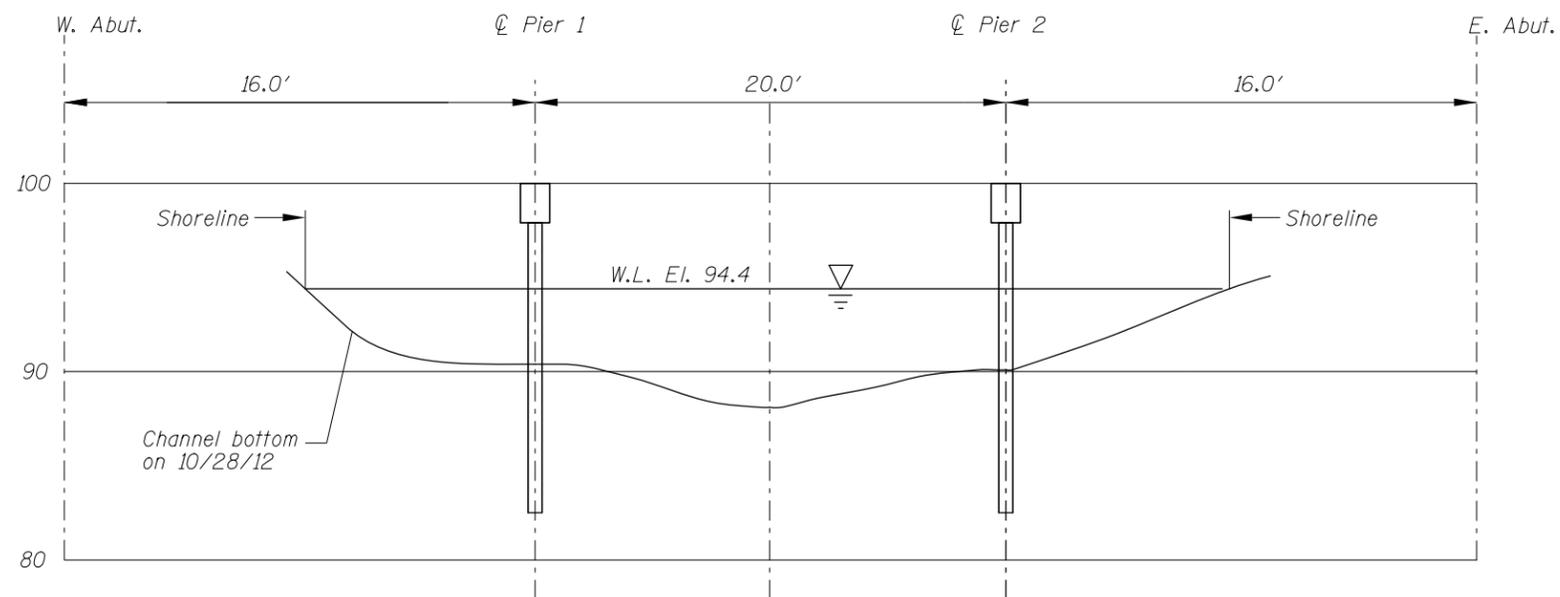
Legend

-2.2 Sounding Depth (10/28/12)

MINNESOTA DEPARTMENT OF TRANSPORTATION UNDERWATER BRIDGE INSPECTION		
STRUCTURE NO. 27A34 OVER THE CHANNEL OF LAKE MINNETONKA CITY OF SHOREWOOD, HENNEPIN COUNTY		
INSPECTION AND SOUNDING PLAN		
Drawn By: JTF	COLLINS ENGINEERS <small>123 North Wacker Drive Suite 900 Chicago, IL 60606 (312) 704-9300 www.collinsengr.com</small>	Date: OCT., 2012
Checked By: LJ		Scale: NTS
Code: 742327A34		Figure No.: 1



EAST FASCIA PROFILE



WEST FASCIA PROFILE

Note:
Refer to Figure 1 for General Notes.

MINNESOTA DEPARTMENT OF TRANSPORTATION UNDERWATER BRIDGE INSPECTION		
STRUCTURE NO. 27A34 OVER THE CHANNEL OF LAKE MINNETONKA CITY OF SHOREWOOD, HENNEPIN COUNTY		
UPSTREAM AND DOWNSTREAM FASCIA PROFILES		
Drawn By: JTF	COLLINS ENGINEERS <small>123 North Wacker Drive Suite 900 Chicago, IL 60606 (312) 704-9300 www.collinsengr.com</small>	Date: OCT., 2012
Checked By: LJ		Scale: 1"=10'
Code: 742327A34		Figure No.: 2

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

INSPECTORS: Collins Engineers, Inc. DATE: October 28, 2012

ON-SITE TEAM LEADER: Barritt R. Lovelace P.E. (WSB)

BRIDGE NO: 27A34 WEATHER: Cloudy, 40°F

WATERWAY CROSSED: Channel of Lake Minnetonka

DIVING OPERATION: SCUBA SURFACE SUPPLIED AIR
 OTHER

PERSONNEL: Marc B. Parker, Lukas Janulis, P.E.

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

TIME IN WATER: 18:05

TIME OUT OF WATER: 18:25

WATERWAY DATA: VELOCITY None

VISIBILITY 6.0 feet

DEPTH 4.3 feet maximum at both piers

ELEMENTS INSPECTED: Piers 1 and 2

REMARKS: Overall, the timber piles were found to be in good condition with no defects of structural significance observed. The channel bottom appeared stable with no significant scour. Both embankments were well armored by large riprap.

FURTHER ACTION NEEDED: YES 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. 27A34
 BINSPECTORS Collins Engineers, Inc.
 ON-SITE TEAM LEADER Barritt R. Lovelace, P.E. (WSB)
 WATERWAY CROSSED Mississippi River

INSPECTION DATE October 28, 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 (SHEET)	COLUMNS, SHAFTS, OR FACES*	FOOTINGS	DISPLACEMENT	OTHER CROSS-BRACING	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	4.3'	N	7	N	N	7	7	N	N	8	N	8	N	N	7	N	N	N
	Pier 2	4.3'	N	7	N	N	7	7	N	N	8	N	8	N	N	7	N	N	N

*UNDERWATER PORTION ONLY

REMARKS: Overall, the timber piles were found to be in good condition with no defects of structural significance observed. The channel bottom appeared stable with no significant scour. Both embankments were well armored by large riprap.

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.