

UNDERWATER BRIDGE INSPECTION REPORT

STRUCTURE NO. 25552

TWP 370 (155th AVE.)

OVER

NORTH BRANCH MIDDLE FORK ZUMBRO RIVER

GOODHUE 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 unit inspected below water at Bridge No. 25552, Pier 1, was found to be in good condition with no defects of structural significance observed. The steel pipe piles appeared to be sound with the protective coating still mostly intact. The channel bottom appeared stable with silty sand and no significant scour. Timber debris accumulation was observed at the upstream nose and along the north side of Pier 1.

INSPECTION FINDINGS:

- (A) All steel piles were in good condition with painted coating intact.
- (B) The channel bottom material consisted of silty sand with 6 inch of probe rod penetration.
- (C) Accumulation of timber debris was observed at the upstream nose and along the north side of the pier extending from the channel bottom to 4 feet above the waterline.

RECOMMENDATIONS:

- (A) The inspection of the submerged substructure units of Structure No. 25552 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.
- (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,

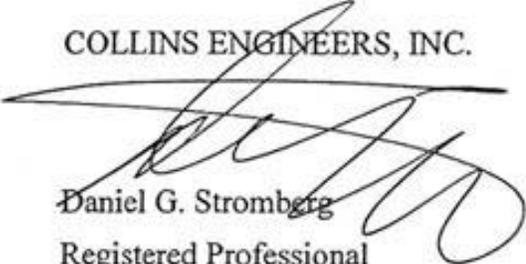
PROFESSIONAL ENGINEER

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: 25552

Feature Crossed: North Branch Middle Fork Zumbro River

Feature Carried: TWP 370 (155th AVE.)

Location: District 6 - Goodhue County

Bridge Description: The superstructure consists of two spans of reinforced concrete beams and deck supported by two reinforced concrete abutments and one steel pipe pile bent pier.

2. INSPECTION DATA

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

Dive Team: Brandon Corr, Charles Euwema

Date: September 12, 2012

Weather Conditions: Overcast, 70° F

Underwater Visibility: 2.0 feet

Waterway Velocity: Negligible

3. SUBSTRUCTURE INSPECTION DATA

Substructure Inspected: Pier 1.

General Shape: Pier 1 consists of six concrete filled steel shell piles supporting a reinforced concrete cap.

Maximum Water Depth at Substructure Inspected: Approximately 0.3 feet.

4. WATERLINE DATUM

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

Water Surface: The waterline was approximately 8.5 feet below reference.

Waterline Elevation = 91.5

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/9/12

Item 113: Scour Critical Bridges: Code R

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

X Yes ___ No

6. STRUCTURAL ELEMENT CONDITION RATING

Item #	Element Description	Quantity	Unit	Conditions				
				1	2	3	4	5
382	Cast in Place Piling	6	EA	6				
361	Scour	1	EA	1				
985	Slopes and Slope Protection	1	EA	1				



Photograph 1. Overall View of Bridge, Looking West.



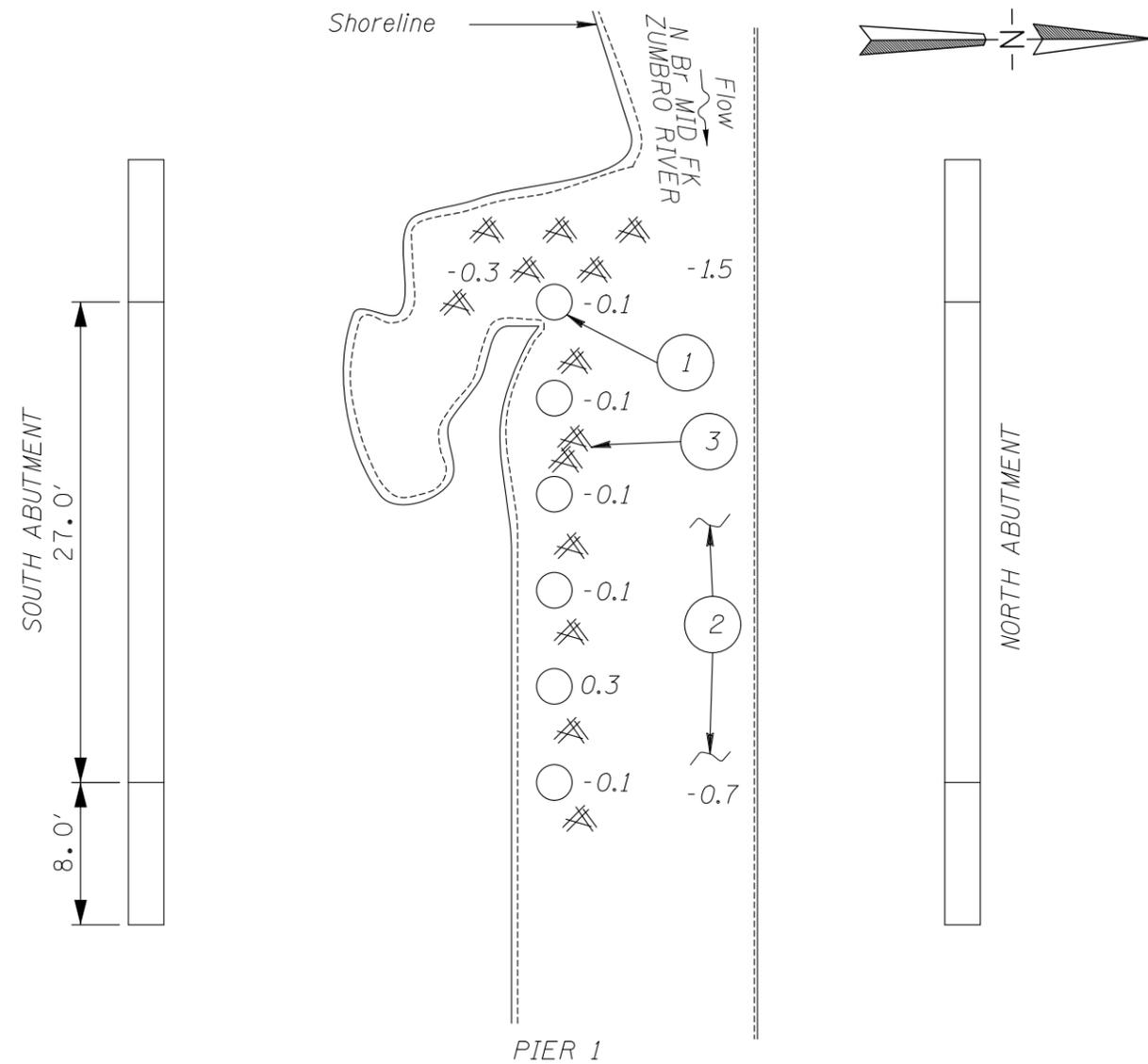
Photograph 2. View of Pier 1, Looking Northeast.



Photograph 3. View of North Abutment, Looking North.



Photograph 4. View of South Abutment, Looking South.



General Notes:

1. Pier 1 was inspected underwater.
2. At the time of inspection on September 12, 2012, the waterline was located 8.5 feet below bottom of pier cap at the downstream nose of pier. Since design drawings were not available, a reference elevation of 100.0 was assumed. Based on the assumed reference, the waterline elevation was 91.5.
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 structure units.

Inspection Notes:

- ① All steel piles were in good condition with paint coating intact.
- ② The channel bottom material consisted of silty sand allowing 6 inch of penetration.
- ③ Timber debris accumulation was observed at the upstream end and along the north face of the pier extending from the channel bottom to 4 feet above the waterline.

Legend

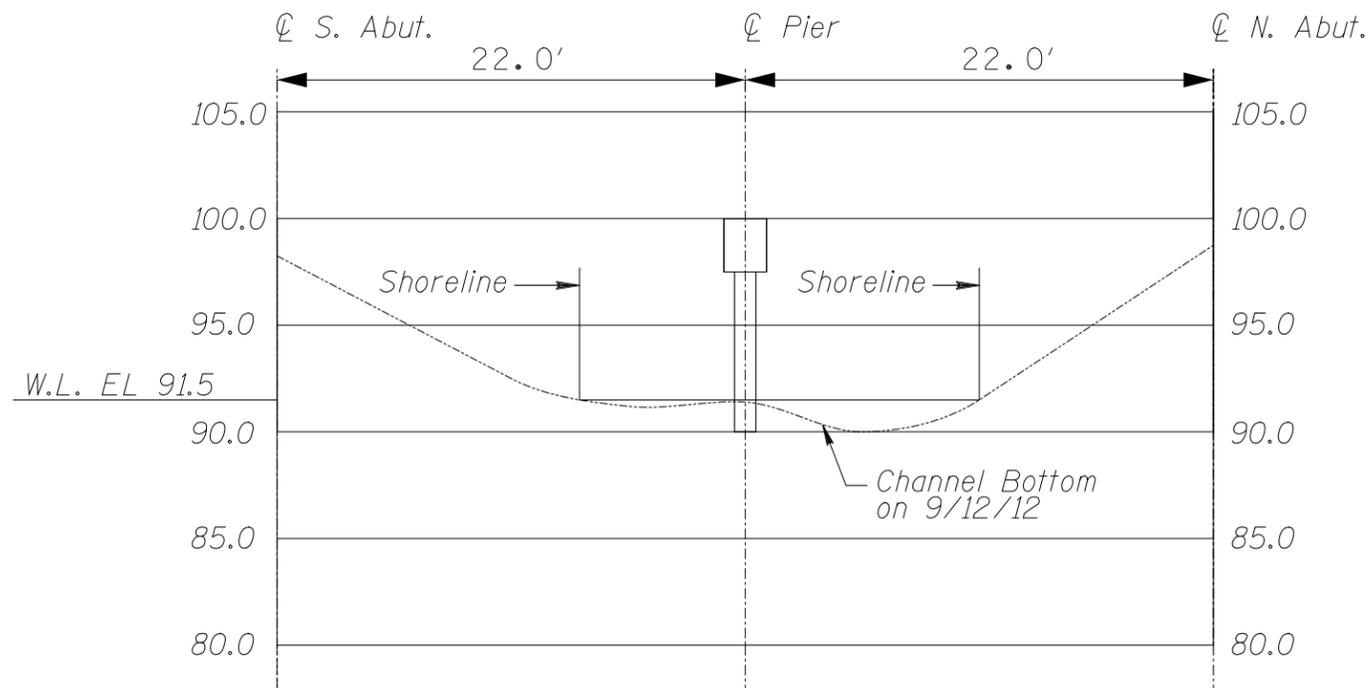
- 5.7 Sounding Depth from Waterline (9/12/12)
- Timber Pile
- ⌘ Timber Debris



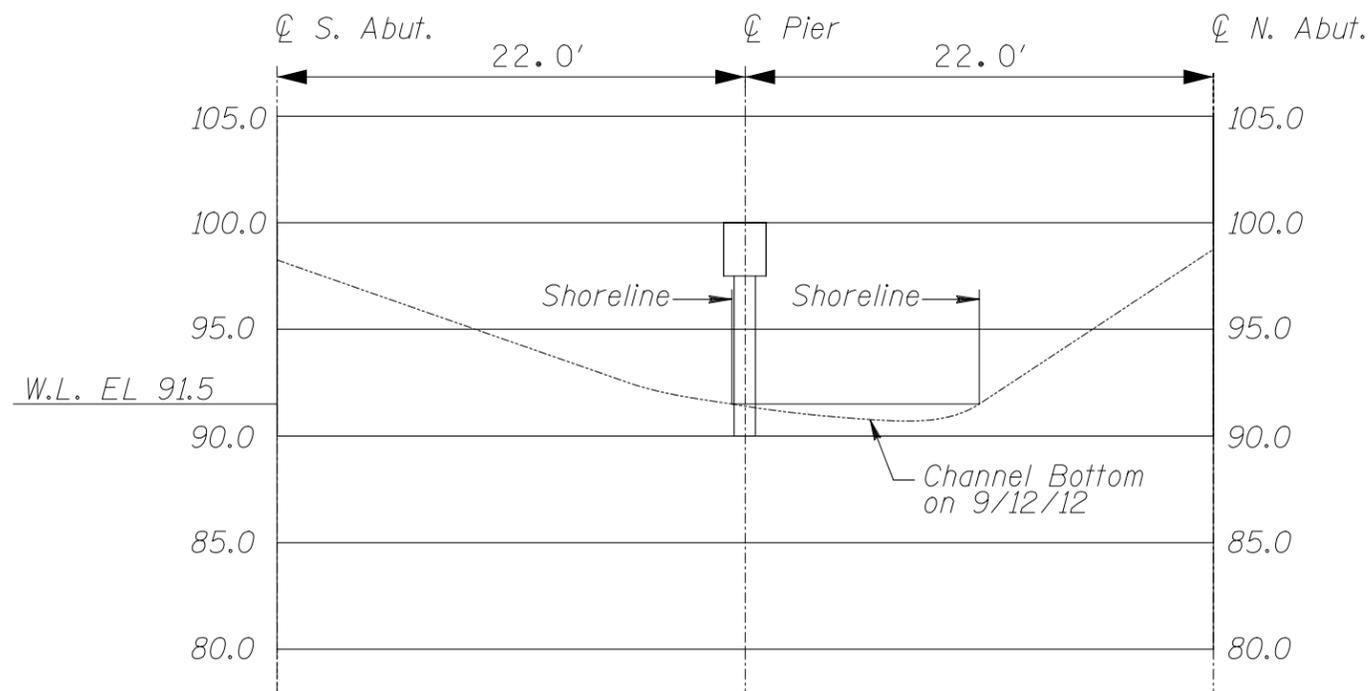
TYPICAL END VIEW OF PIERS

MINNESOTA DEPARTMENT OF TRANSPORTATION UNDERWATER BRIDGE INSPECTION		
STRUCTURE NO. 25552 OVER THE N BRANCH MIDDLE FORK OF ZUMBRO RIVER DISTRICT 6 - GOODHUE COUNTY		
INSPECTION AND SOUNDING PLAN		
Drawn By: CRE	COLLINS ENGINEERS	Date: SEPT. 2012
Checked By: RAF		Scale: NTS
Code: Z42325552		Figure No.: 2

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UPSTREAM FASCIA PROFILE



DOWNSTREAM FASCIA PROFILE

Note:
 Refer to Figure 1 for General Notes.

MINNESOTA DEPARTMENT OF TRANSPORTATION UNDERWATER BRIDGE INSPECTION		
STRUCTURE NO. 25552 OVER THE N BRANCH MIDDLE FORK OF ZUMBRO RIVER DISTRICT 6 - GOODHUE COUNTY		
UPSTREAM AND DOWNSTREAM FASCIA PROFILES		
Drawn By: CRE Checked By: RAF Code: Z42325552	COLLINS ENGINEERS	123 North Wacker Drive Suite 900 Chicago, IL 60606 (312) 704-9300 www.collinsengr.com
		Date: SEPT. 2012 Scale: NTS 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: 25552 WEATHER: Overcast, 70° F

WATERWAY CROSSED: North Branch Middle Fork Zumbro River

DIVING OPERATION: _____ SCUBA _____ SURFACE SUPPLIED AIR
 OTHER Wading due to low water levels

PERSONNEL: Brandon Corr, Charles Euwema

EQUIPMENT: Scraper, Lead Line, Sounding Pole, Probe Rod, Camera

TIME IN WATER: 4:15 P.M.

TIME OUT OF WATER: 4:30 P.M.

WATERWAY DATA: VELOCITY negligible

VISIBILITY 2.0 feet

DEPTH 0.3 feet maximum at Pier 1.

ELEMENTS INSPECTED: Pier 1

REMARKS: Overall Pier 1 was found to be in good condition with no defects of structural significance observed. The channel bottom appeared stable with silty sand and no significant scour. Timber debris was accumulated at the upstream nose and along the north side of the pier.

FURTHER ACTION NEEDED: _____ YES NO

The inspection of the submerged substructure units of Structure No. 25552 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. 25552
 INSPECTORS Collins Engineers, Inc.
 ON-SITE TEAM LEADER Roy A. Forsyth, P.E.
 WATERWAY CROSSED North Branch Middle Fork Zumbro 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 (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	0.3'	7	N	N	8	N	7	8	7	7	6	6	N	7	N	7	N	N

*UNDERWATER PORTION ONLY

REMARKS: Overall Pier 1 was found to be in good condition with no defects of structural significance observed. The channel bottom appeared stable with silty sand and no significant scour. Timber debris was accumulated at the upstream nose and along the north side of the pier.

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.