

UNDERWATER BRIDGE INSPECTION REPORT

STRUCTURE NO. 69592

CSAH 29

OVER THE

WHITEFACE RIVER

ST. LOUIS COUNTY



JULY 25, 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 below water at Bridge No. 69592, Piers 1 and 2, were in good condition with no defects of structural significance. The steel piles exhibited surface corrosion over 100 percent of the surface area of the pile from 2 feet above the waterline to the channel bottom. No associated loss of section was observed. Moderate timber debris accumulation was observed at Pier 1 extending from the channel bottom to 5 feet above the waterline.

INSPECTION FINDINGS:

- (A) A moderate amount of timber debris was observed around Pier 1 consisting of logs and branches with up to 12 inch diameter. The debris extended from the shore out 20 feet to the upstream nose, and continued along the east face of the pier, extending from the channel bottom to 5 feet above the waterline.
- (B) The channel bottom material consisted of sand allowing 4 inches of probe rod penetration.
- (C) All steel pipe piles typically exhibited surface corrosion from 2 feet above the water line to the channel bottom, but no associated loss of section was observed.

RECOMMENDATIONS:

- (A) Monitor the extent of surface corrosion during future underwater inspections.
- (B) Monitor the timber debris accumulation at the piers, during future inspections, and if found to be increasing to a more detrimental extent, removal operations may become warranted at that time.
- (C) 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,

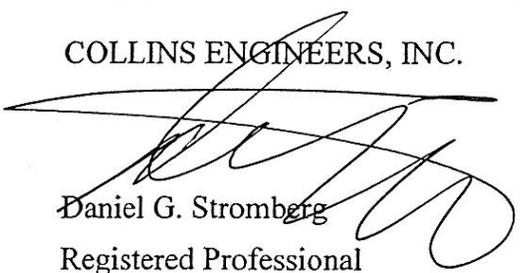
PROFESSIONAL ENGINEER

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: 69592

Feature Crossed: Whiteface River

Feature Carried: CSAH 29

Location: St. Louis County

Bridge Description: The superstructure consists of three spans of reinforced concrete deck. The bridge is supported by two reinforced concrete abutments supported by piles and two pile bent piers.

2. INSPECTION DATA

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

Dive Team: Kasey Yoder (WSB), John Loftus (Collins)

Date: July 25, 2012

Weather Conditions: Cloudy, 75° F

Underwater Visibility: 2.0 foot

Waterway Velocity: 0.5 ft/sec

3. SUBSTRUCTURE INSPECTION DATA

Substructure Inspected: Piers 1 and 2

General Shape: The piers consisted of a reinforced concrete pier cap supported by 6 steel pipe encased concrete piles.

Maximum Water Depth at Substructure Inspected: Approximately 3.6 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 feet below reference.
Waterline Elevation = 1265.61.

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/07/12

Item 113: Scour Critical Bridges: I/95

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:

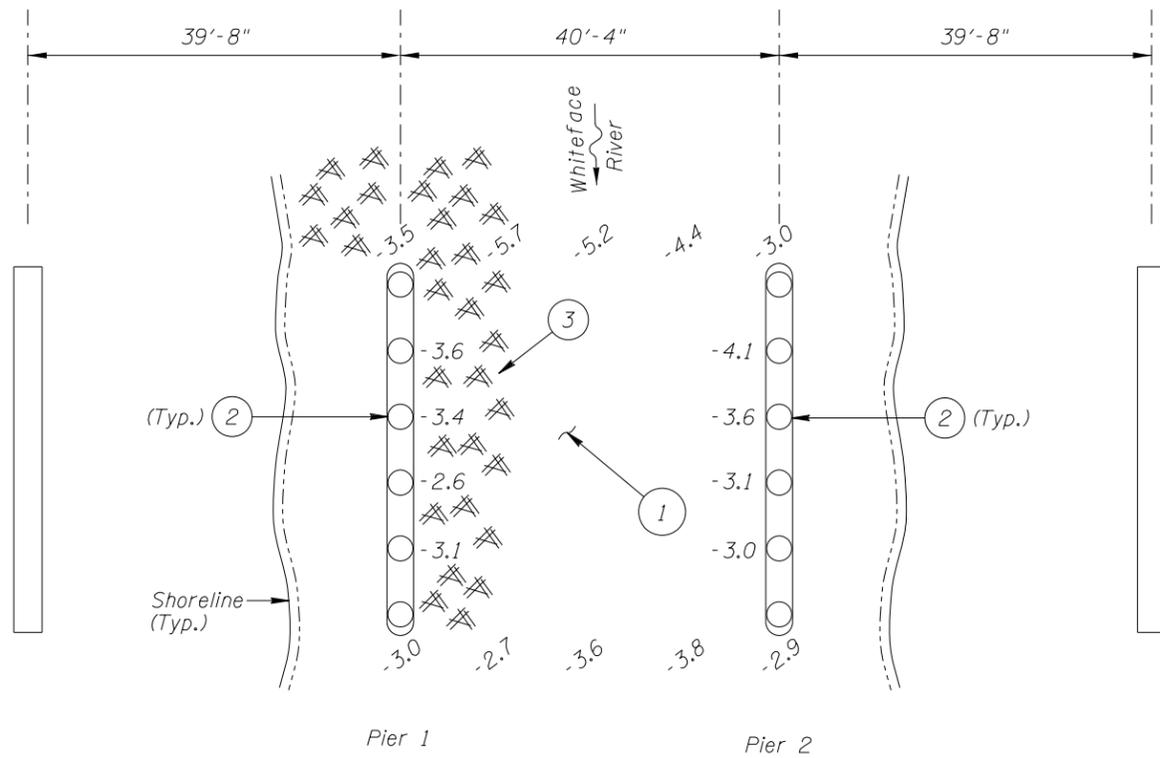
| Item # | Element Description | Quantity | Unit | Conditions | | | | |
|--------|----------------------|----------|------|------------|----|---|---|---|
| | | | | 1 | 2 | 3 | 4 | 5 |
| 282 | Cast-In-Place Piling | 12 | EA | | 12 | | | |
| 985 | Slopes | 1 | EA | 1 | | | | |



Photograph 1. View of Pier 1, Looking East.



Photograph 2. View of Pier 2, Looking Northeast.



SOUNDING PLAN

- Legend
- 1.2 Sounding Depth from Waterline (7/25/12)
 - Timber Debris

GENERAL NOTES:

1. Piers 1 and 2 were inspected underwater.
2. At the time of inspection on July 25, 2012, the waterline was located approximately 13.0 feet below the top of the pier cap at the downstream end of Pier 1. This corresponds with a waterline elevation of 1265.61 feet based on bridge design plans dated March 11, 1991.
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 allowing up to 4 inches of probe rod penetration.
- ② All steel pipe piles typically exhibited surface corrosion from 2 feet above the waterline to channel bottom, with no measurable section loss.
- ③ A moderate accumulation of timber debris, consisting of logs and branches 12 inch diameter and smaller, was observed from the shore out 20 feet to the upstream nose of Pier 1, and along the east face of the pier, extending off the face up to 10 feet. The debris extended from the channel bottom to 5 feet above the waterline.

**MINNESOTA
DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION**

STRUCTURE NO. 69592
OVER THE WHITEFACE RIVER
DISTRICT 1, ST. LOUIS COUNTY

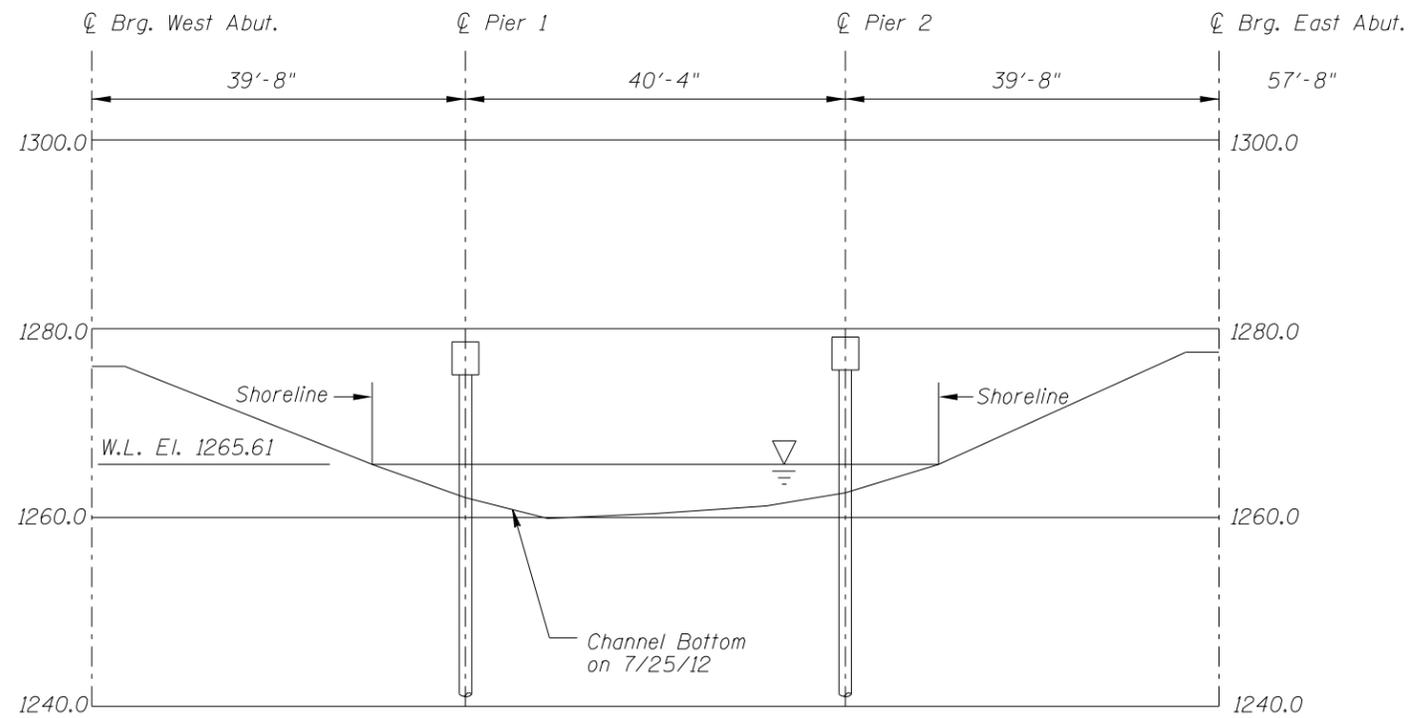
INSPECTION AND SOUNDING PLAN

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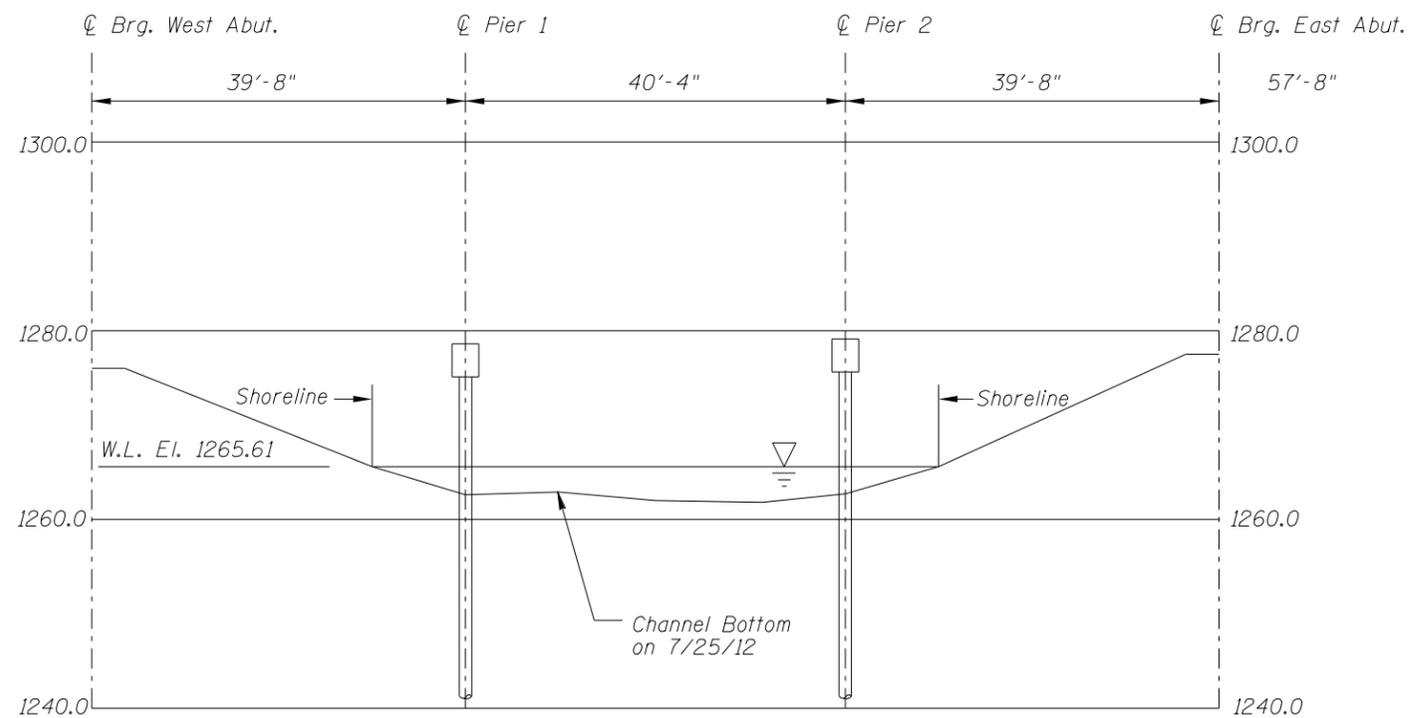
Drawn By: BJR
Checked By: BRL
Code: ---

COLLINS ENGINEERS
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www.collinsengr.com

Date: JULY 2012
Scale: NTS
Figure No.: 1



UPSTREAM FASCIA PROFILE



DOWNSTREAM FASCIA PROFILE

Note:
Refer to Figure 1 for General Notes.



| | | |
|--|------------------------------|-----------------|
| MINNESOTA DEPARTMENT OF TRANSPORTATION UNDERWATER BRIDGE INSPECTION | | |
| STRUCTURE NO. 69592 OVER THE WHITEFACE RIVER DISTRICT I, ST. LOUIS COUNTY | | |
| UPSTREAM AND DOWNSTREAM FASCIA PROFILES | | |
| Drawn By: BJR | COLLINS ENGINEERS | Date: JULY 2012 |
| Checked By: BRL | | Scale: 1"=20' |
| --- | | Figure No.: 2 |

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

INSPECTORS: WSB & Associates and Collins DATE: July 25, 2012

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

BRIDGE NO: 69592 WEATHER: Cloudy, 75° F

WATERWAY CROSSED: Whiteface River

DIVING OPERATION: SCUBA SURFACE SUPPLIED AIR
 OTHER

PERSONNEL: Kasey Yoder (WSB), John Loftus (Collins)

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

TIME IN WATER: 11:35 a.m.

TIME OUT OF WATER: 11:55 a.m.

WATERWAY DATA: VELOCITY 0.5 ft/sec.

VISIBILITY 2 feet

DEPTH 4.1 feet maximum at Pier 1

ELEMENTS INSPECTED: Pier 1 and Pier 2

REMARKS: Overall, Pier 1 and Pier 2 were in good condition with no defects of structural significance. The steel piles exhibited surface corrosion from 2 feet above the waterline to the channel bottom with no notable section loss. Moderate timber debris accumulation was observed around Pier 1 extending from the channel bottom to 5 feet above the waterline.

FURTHER ACTION NEEDED: YES NO

Monitor timber debris at Pier 1.

Monitor the extent of steel corrosion during future underwater 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. 69592
 INSPECTORS WSB & Associates, Inc. and Collins Engineers, Inc.
 ON-SITE TEAM LEADER Barritt Lovelace, P.E.
 WATERWAY CROSSED Whiteface River

INSPECTION DATE July, 25, 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 | 3.6' | 7 | N | N | 8 | N | 7 | 8 | 7 | 7 | 6 | 6 | N | 7 | N | N | N | N |
| | Pier 2 | 4.1' | 7 | N | N | 8 | N | 7 | 8 | 7 | 7 | 8 | 7 | N | 7 | N | N | N | N |
| | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | |

*UNDERWATER PORTION ONLY

REMARKS: Overall, Pier 1 and Pier 2 were in good condition with no defects of structural significance. The steel piles exhibited surface corrosion from 2 feet above the waterline to the channel bottom with no notable section loss. Moderate timber debris accumulation was observed around Pier 1 extending from the channel bottom to 5 feet above the waterline.

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.