

UNDERWATER BRIDGE INSPECTION REPORT

STRUCTURE NO. L4665
UN-NAMED TWP RD
OVER THE
SOUTH FORK RIVER
DISTRICT 6 - FILLMORE COUNTY



PREPARED FOR THE
MINNESOTA DEPARTMENT OF TRANSPORTATION
BY
COLLINS ENGINEERS, INC.
JOB NO. 5221

MINNESOTA DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

REPORT SUMMARY:

The substructure units inspected at Bridge No. L4665, North and South Abutments, were found to generally be in good condition with no material of structural significance. There was, however, a significant accumulation of timber drift throughout the channel at the bridge. The channel bottom around the substructure units appeared stable with no evidence of significant scour.

INSPECTION FINDINGS:

- (A) A heavy accumulation of timber debris was observed at the upstream fascia of the bridge, under much of the bridge superstructure, and about 10 feet upstream of the bridge and each abutment, consisting of 1 foot in diameter and smaller logs and branches, extending from the channel bottom to 1 foot above the waterline.
- (B) Concrete of the abutments was rough, with scaling that had $\frac{1}{4}$ inch maximum penetration.
- (C) The steel beams showed light surface corrosion with no detectable loss of section.
- (D) The underside of the deck was in satisfactory condition with random isolated cracking of timber deck plank members.

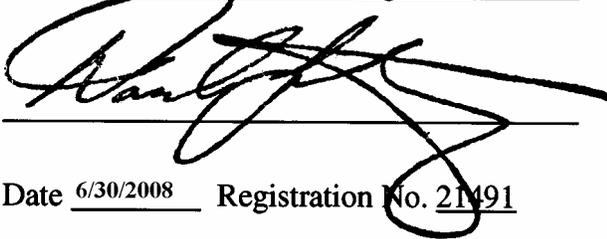
RECOMMENDATIONS:

- (A) Remove the heavy accumulation of timber debris which is significantly restricting the channel at the bridge and has the potential to exert considerable lateral load on the bridge superstructure.

- (B) Reinspect the submerged substructure units at the normal maximum recommended (NBIS) interval of five (5) years.

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

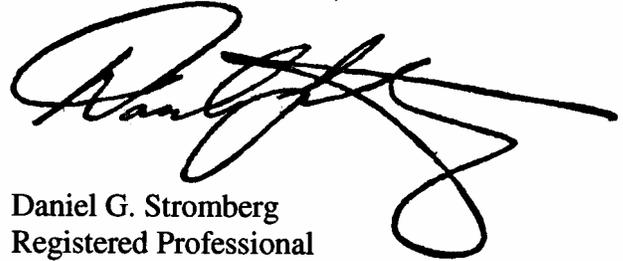


A large, stylized handwritten signature in black ink, appearing to read 'Daniel G. Stromberg', is written over a horizontal line. Below the signature, the date and registration number are printed.

Date 6/30/2008 Registration No. 21491

Respectfully submitted,

COLLINS ENGINEERS, INC.



A large, stylized handwritten signature in black ink, appearing to read 'Daniel G. Stromberg', is written over a horizontal line.

Daniel G. Stromberg
Registered Professional
Engineer, State of Minnesota

MINNESOTA DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

1. BRIDGE DATA

Bridge Number: L4665

Feature Crossed: South Fork River

Feature Carried: Un-named TWP Road

Location: District 6 - Fillmore County

Bridge Description: The bridge superstructure consists of a single span of multiple steel beams (I-Beams) supporting a timber plank deck. The superstructure is supported by two concrete abutments.

2. INSPECTION DATA

Professional Engineer/Team Leader: Daniel G. Stromberg, P.E., S.E.

Dive Team: Clayton G. Brookins, Valerie Roustan

Date: October 25, 2007

Weather Conditions: Sunny, 60°F

Underwater Visibility: 3.0 Feet

Waterway Velocity: 0.5 f.p.s

3. SUBSTRUCTURE INSPECTION DATA

Substructure Inspected: North and South Abutments.

General Shape: Solid wall concrete abutment.

Maximum Water Depth at Substructure Inspected: Approximately 4.0 feet.

4. WATERLINE DATUM

Water Level Reference: The bottom of the beam at each of the corners of the bridge.

Water Surface: The waterline was approximately:

0.3 Below Reference at the Southwest corner

0.6 Below Reference at the Southeast corner

0.7 Below Reference at the Northeast corner

0.3 Below Reference at the Northwest corner

Assumed Waterline Elevation = 99.7 based on Southwest Corner

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 4

Item 92B: Underwater Inspection: Code B/08/07

Item 113: Scour Critical Bridges: Code G/07

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

 Yes X No



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



Photograph 2. View of the North End of the Structure, Looking Southeast.



Photograph 3. View of South End of the Structure, Looking Southeast. Note heavy timber debris.



Photograph 4. View of the South Abutment and Underside of Deck between Beams 5 and 4, Looking South. Note crack deck plank members.



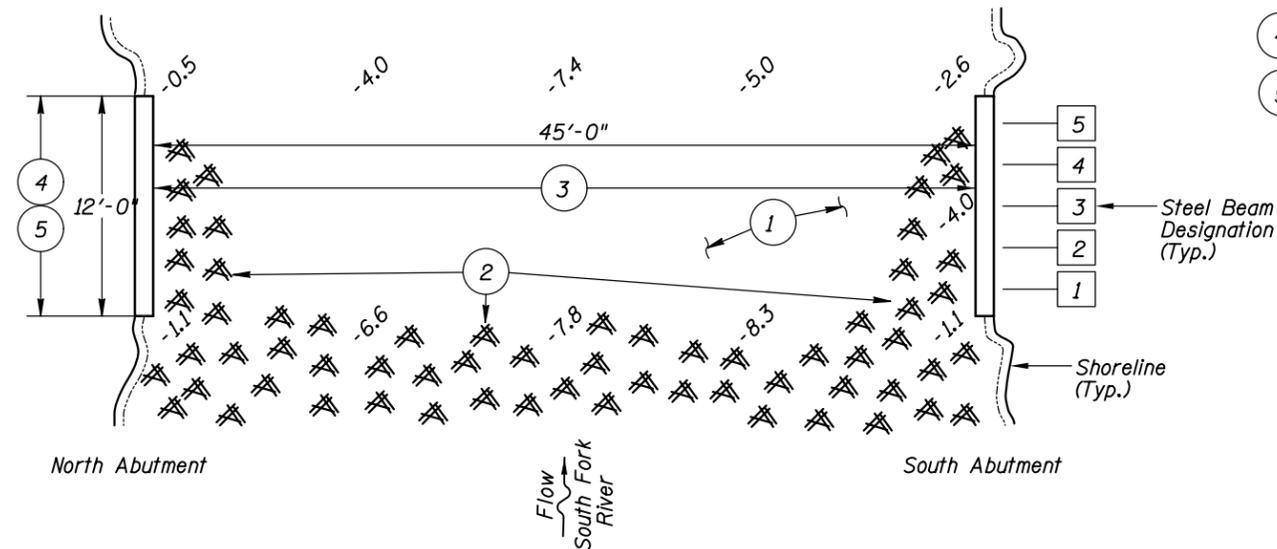
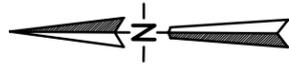
Photograph 5. View of the South Abutment and Underside of Deck between Beams 4 and 3, Looking South. Note timber debris up to superstructure.



Photograph 6. View of the South Abutment and Underside of Deck between Beams 3 and 2, Looking South. Note timber debris up to superstructure.



Photograph 7. View of the South Abutment and Underside of Deck between Beams 2 and 1, Looking South. Note timber debris up to superstructure.



INSPECTION NOTES:

- ① Channel bottom consisted of soft organics and silt with up to 2 feet of probe rod penetration.
- ② Heavy accumulation of timber debris was observed at the upstream fascia of bridge, under most of the superstructure span, and about 10 feet upstream of the bridge and each abutment consisting of 1 foot diameter and smaller logs and branches extending from the channel bottom to 1 foot above the waterline.
- ③ Concrete was rough and scaling was present with approximately 1/4 inch of maximum penetration.
- ④ The steel beams showed light surface corrosion with no notable section loss.
- ⑤ The underside of deck exhibited random cracking in isolated deck plank members.

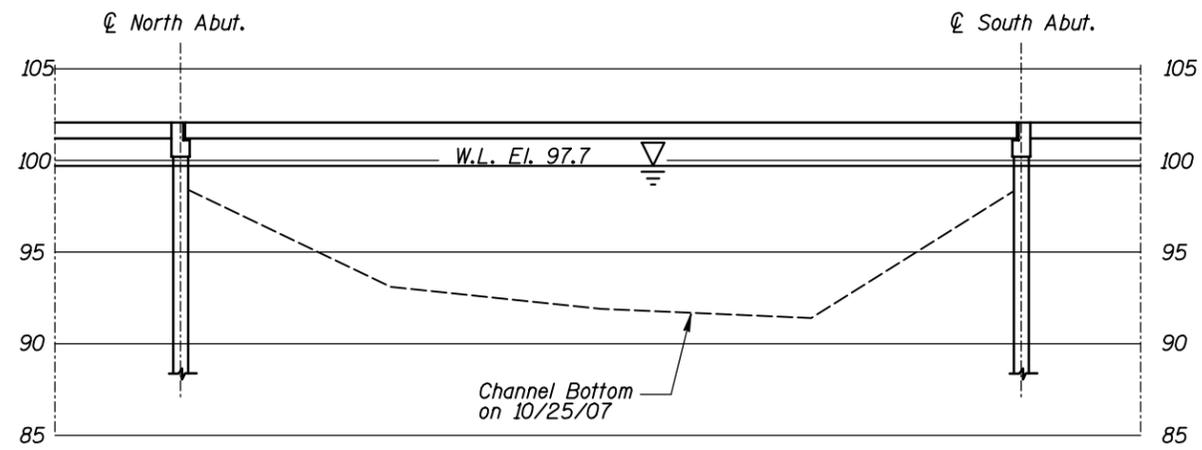
GENERAL NOTES:

1. The North and South Abutments were inspected underwater.
2. At the time of inspection, on October 25, 2007, the waterline was located approximately 0.3 feet below the bottom of the beam at the southwest corner of the bridge. No bridge plans were available, so the reference point was taken to be at Elevation 100 feet. This corresponds to the assumed waterline elevation of 99.7 feet.
3. Soundings indicate the water depth at the time of inspection and are measured in feet.
4. Soundings were taken parallel to north and south fascias at 1/4 point intervals.

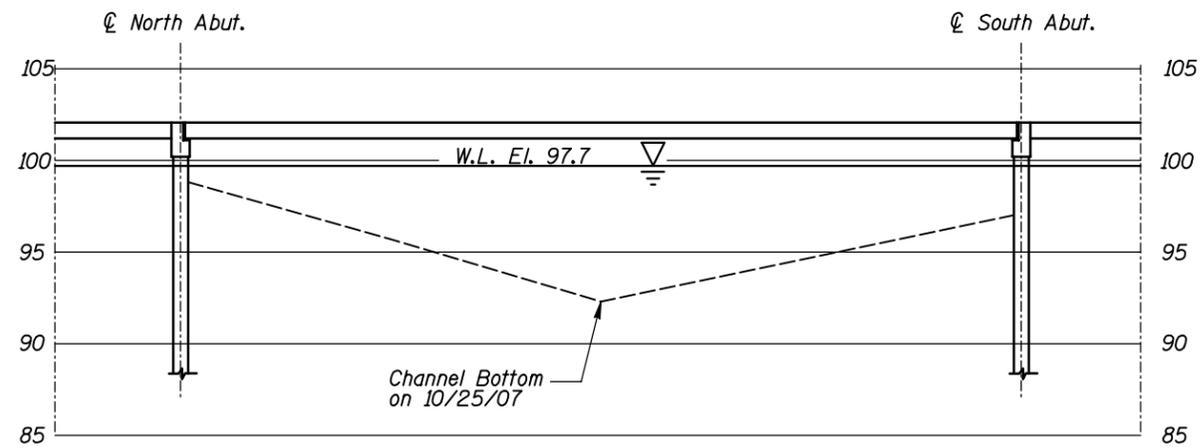
Legend

- 0.4 Sounding Depth (10/25/07)
- Timber Debris

MINNESOTA DEPARTMENT OF TRANSPORTATION UNDERWATER BRIDGE INSPECTION		
STRUCTURE NO. L4665 OVER THE SOUTH FORK RIVER DISTRICT 6, FILLMORE COUNTY, CITY OF SHELVIN		
INSPECTION AND SOUNDING PLAN		
Drawn By: CAI	COLLINS ENGINEERS	Date: OCT, 2007
Checked By: MDK		Scale: NTS
Code: 5221L4665		Figure No.: 1
<small>123 North Wacker Drive Suite 300 Chicago, IL 60606 (312) 704-9300 www.collinsengr.com</small>		



UPSTREAM FASCIA PROFILE



DOWNSTREAM FASCIA PROFILE

Note:

Refer to Figure 1 for General Notes.

MINNESOTA DEPARTMENT OF TRANSPORTATION UNDERWATER BRIDGE INSPECTION		
STRUCTURE NO. L4665 OVER THE SOUTH FORK RIVER DISTRICT 6, FILLMORE COUNTY, CITY OF SHELVIN		
UPSTREAM AND DOWNSTREAM FASCIA PROFILES		
Drawn By: CAI Checked By: MDK Code: 5221L4665	COLLINS ENGINEERS	133 North Wacker Drive Suite 300 Chicago, IL 60606 (312) 704-9300 www.collinsengr.com
		Date: OCT, 2007 Scale: 1"=10' Figure No.: 2

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

INSPECTORS: Collins Engineers, Inc. DATE: October 25, 2007

ON-SITE TEAM LEADER: Daniel G. Stromberg, P.E., S.E

BRIDGE NO: L4665 WEATHER: Sunny, 60°F

WATERWAY CROSSED: South Fork River

DIVING OPERATION: SCUBA SURFACE SUPPLIED AIR
 OTHER

PERSONNEL: Clayton G. Brookins, Valerie Roustan

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

TIME IN WATER: 3:15 p.m.

TIME OUT OF WATER: 3:45 p.m.

WATERWAY DATA: VELOCITY 0.5 f.p.s

VISIBILITY 3.0 feet

DEPTH 4.0 feet maximum at South Abutment

ELEMENTS INSPECTED: North and South Abutments

REMARKS: A heavy accumulation of timber debris was observed at the upstream fascia of the bridge and about 10 feet upstream of the bridge and each abutment consisting of 1 foot in diameter and smaller logs and branches, extending from the channel bottom to 1 foot above the waterline. Concrete of the abutments is rough, with scaling that had ¼ inch maximum penetration. The steel beams showed light surface corrosion with no notable loss of section. The underside of the deck is in satisfactory condition with random cracking in isolated timber deck plank members.

FURTHER ACTION NEEDED: YES NO

Remove the heavy accumulation of timber debris which is significantly restricting the channel at the bridge and has the potential to exert considerable lateral load on the bridge superstructure.

Reinspect the submerged substructure units at the normal maximum recommended (NBIS) interval of five (5) years.

MINNESOTA DEPARTMENT OF TRANSPORTATION
OFFICE OF BRIDGES AND STRUCTURES

UNDERWATER INSPECTION CONDITION RATING FORM

BRIDGE NO. L4665
 INSPECTORS Collins Engineers, Inc.
 ON-SITE TEAM LEADER Daniel G. Stromberg, P.E., S.E.
 WATERWAY CROSSED South Fork River

INSPECTION DATE October 25, 2007
 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
	North Abutment	N.A	N	6	N	9	N	6	8	N	N	4	4	6	6	N	N	N	N
	South Abutment	4.0'	N	6	N	9	N	6	8	N	N	4	4	6	6	N	N	N	N

*UNDERWATER PORTION ONLY

REMARKS: A heavy accumulation of timber debris was observed at the upstream fascia of the bridge and about 10 feet upstream of the bridge and each abutment consisting of 1 foot in diameter and smaller logs and branches, extending from the channel bottom to 1 foot above the waterline. Concrete of the abutments is rough, with scaling that had 1/4 inch maximum penetration. The steel beams showed light surface corrosion with no notable loss of section. The underside of the deck is in satisfactory condition with random cracking in isolated timber deck plank members.

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.