

UNDERWATER BRIDGE INSPECTION REPORT

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STRUCTURE NO. L4675

TWP NO. 71

OVER THE

WEISEL CREEK

DISTRICT 6 - FILLMORE COUNTY

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PREPARED FOR THE  
MINNESOTA DEPARTMENT OF TRANSPORTATION

BY

COLLINS ENGINEERS, INC.

JOB NO. 5221 (CEI 146)

MINNESOTA DEPARTMENT OF TRANSPORTATION  
UNDERWATER BRIDGE INSPECTION

REPORT SUMMARY:

The substructure unit inspected at Bridge No. L4675, the East Abutment, was found to be in satisfactory condition. The masonry exhibited moderate deterioration of the mortar joints along the waterline. A minor localized scour depression was observed at the upstream corner of the East Abutment, and no significant changes have been found to have occurred since the previous inspection.

INSPECTION FINDINGS:

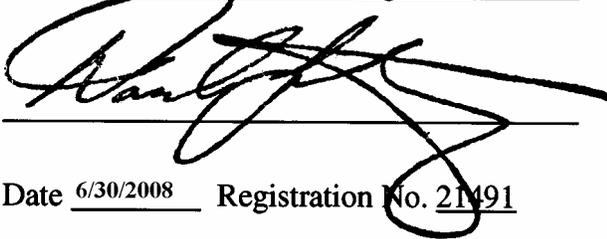
- (A) The abutment was in satisfactory condition with moderate deterioration of the masonry and a loss of joint mortar from the waterline to 2 feet below the waterline with typical penetrations of 4 inches and a maximum penetration of 12 inches.
- (B) A minor scour depression, 1 foot deep with a radius of 4 feet, was observed at the upstream corner of the East Abutment. The bottom of the depression was lined with riprap.
- (C) A 1.5-foot-wide ledge was exposed along the entire breastwall of the abutment with up to 3 feet of vertical face exposure and with no undermining below the ledge detected.

RECOMMENDATIONS:

- (A) Since insufficient bridge foundation information was available, monitor the East Abutment for any further ledge exposure and/or undermining during future inspections.
  
- (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

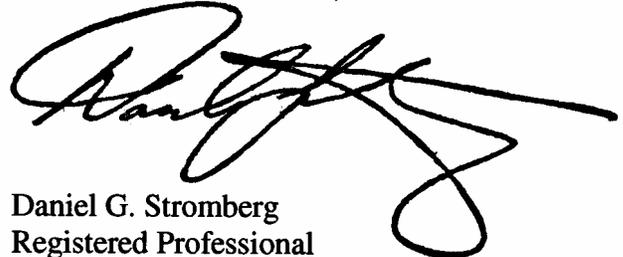


A large, stylized handwritten signature in black ink, appearing to read 'Dan G. Stromberg', is written over a horizontal line. Below the signature is another horizontal line.

Date 6/30/2008 Registration No. 21491

Respectfully submitted,

COLLINS ENGINEERS, INC.



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

Daniel G. Stromberg  
Registered Professional  
Engineer, State of Minnesota

MINNESOTA DEPARTMENT OF TRANSPORTATION  
UNDERWATER BRIDGE INSPECTION

1. BRIDGE DATA

Bridge Number: L4675

Feature Crossed: Weisel Creek

Feature Carried: TWP No. 71

Location: District 6 - Fillmore County

Bridge Description: The superstructure consists of a single span, multiple steel beam bridge. The superstructure is supported by two masonry abutments. No foundation information was available.

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: 2.0 feet

Waterway Velocity: Negligible/None

3. SUBSTRUCTURE INSPECTION DATA

Substructure Inspected: East Abutment.

General Shape: The abutments each consist of a masonry breast wall, flanked by wingwalls flared at an angle of approximately 45 degrees. The wingwalls taper from full height at the abutment to half height at the ends.

Maximum Water Depth at Substructure Inspected: Approximately 10.0 feet.

4. WATERLINE DATUM

Water Level Reference: The bottom of the northernmost steel beam at the West Abutment.

Water Surface: The waterline was approximately 11.1 feet below reference.  
Assumed Waterline Elevation = 88.9.

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 6

Item 92B: Underwater Inspection: Code B/10/07

Item 113: Scour Critical Bridges: Code G/92

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

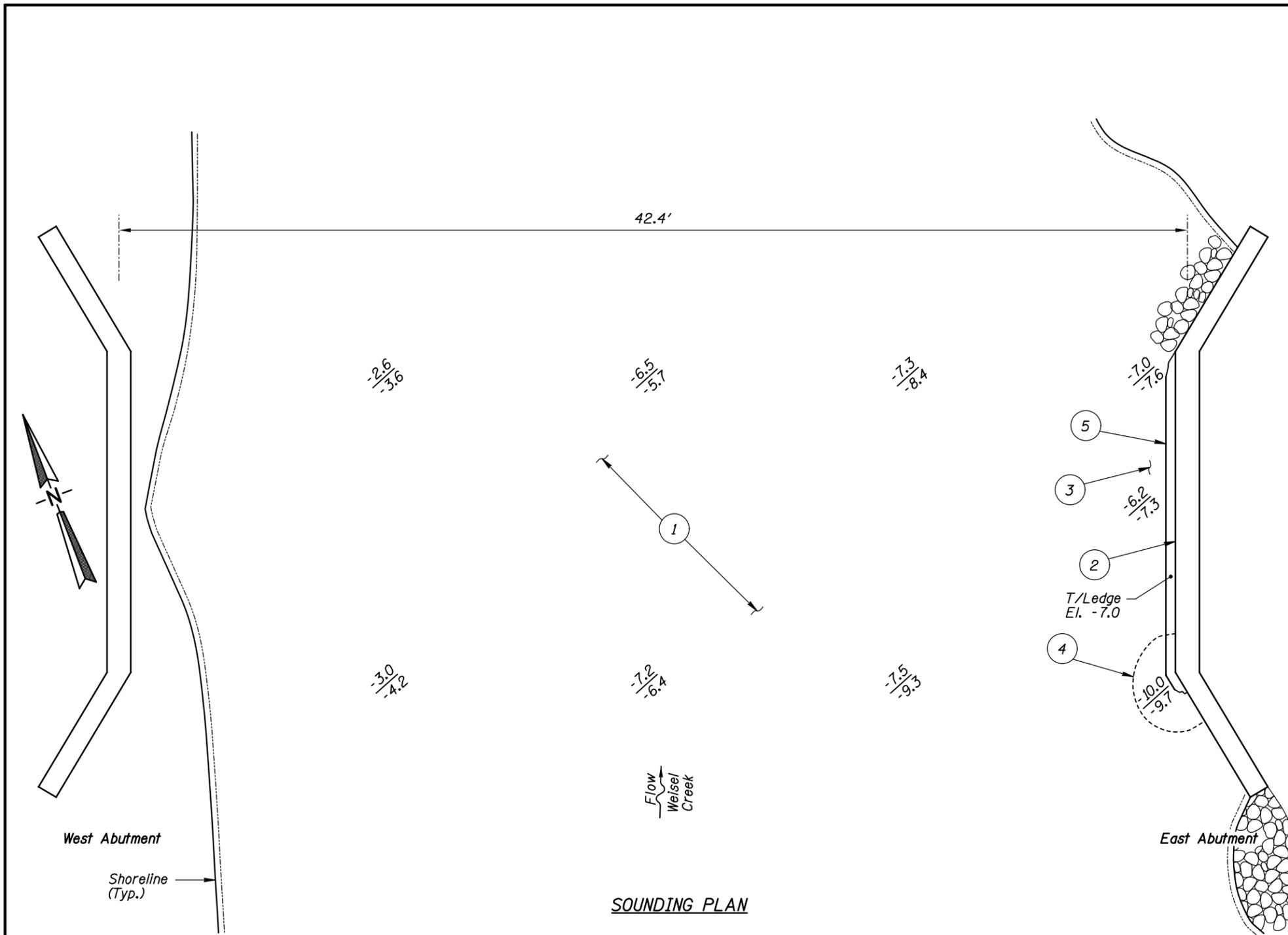
Yes  No



Photograph 1. View of East Abutment, Looking Southeast.



Photograph 2. View of West Abutment, Looking North.



**GENERAL NOTES:**

1. The East Abutment was inspected underwater.
2. At the time of inspection on October 25, 2007, the waterline was located approximately 11.1 feet below the bottom of steel on the northernmost beam at the West Abutment. Since insufficient bridge elevation information was available a reference elevation of 100.0 was assumed. Based on the assumed reference the waterline elevation was 88.9.
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 a soft silt material with 1 foot of maximum probe rod penetration.
- ② The mortar in the joints was deteriorated along the abutment wall from the waterline to 2 feet below the waterline with 4 inch typical penetrations, and 12 inch maximum penetrations near the waterline.
- ③ Riprap was observed along the entire face of the abutment, extending 3 feet into the channel.
- ④ A minor scour depression was observed, 1.5 foot deep with a radius of 4 feet. Riprap lined the bottom of the depression.
- ⑤ A 1.5-foot-wide ledge was exposed along the breastwall with up to 3 feet of vertical exposure and with no undermining detected.

**SOUNDING PLAN**

**Legend**

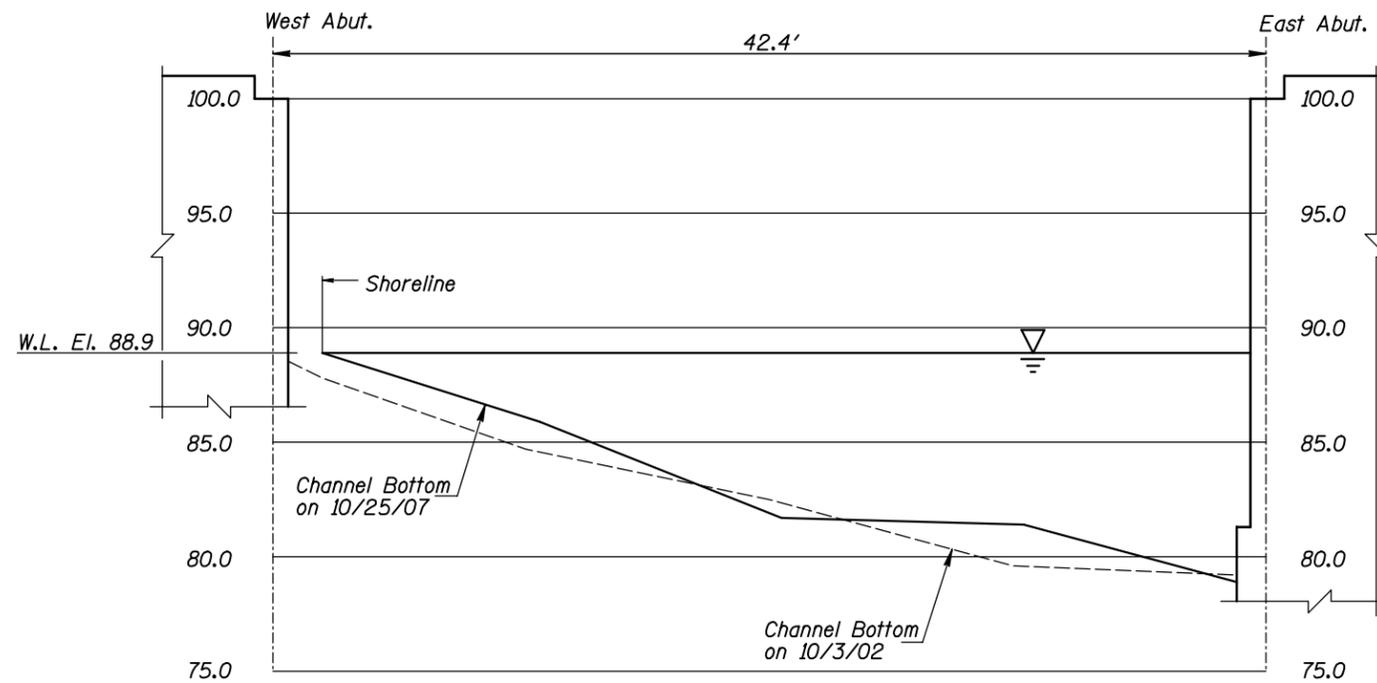
- 2.0 Sounding Depth (10/25/07)
- 5.2 Sounding Depth (10/3/02)

 Riprap

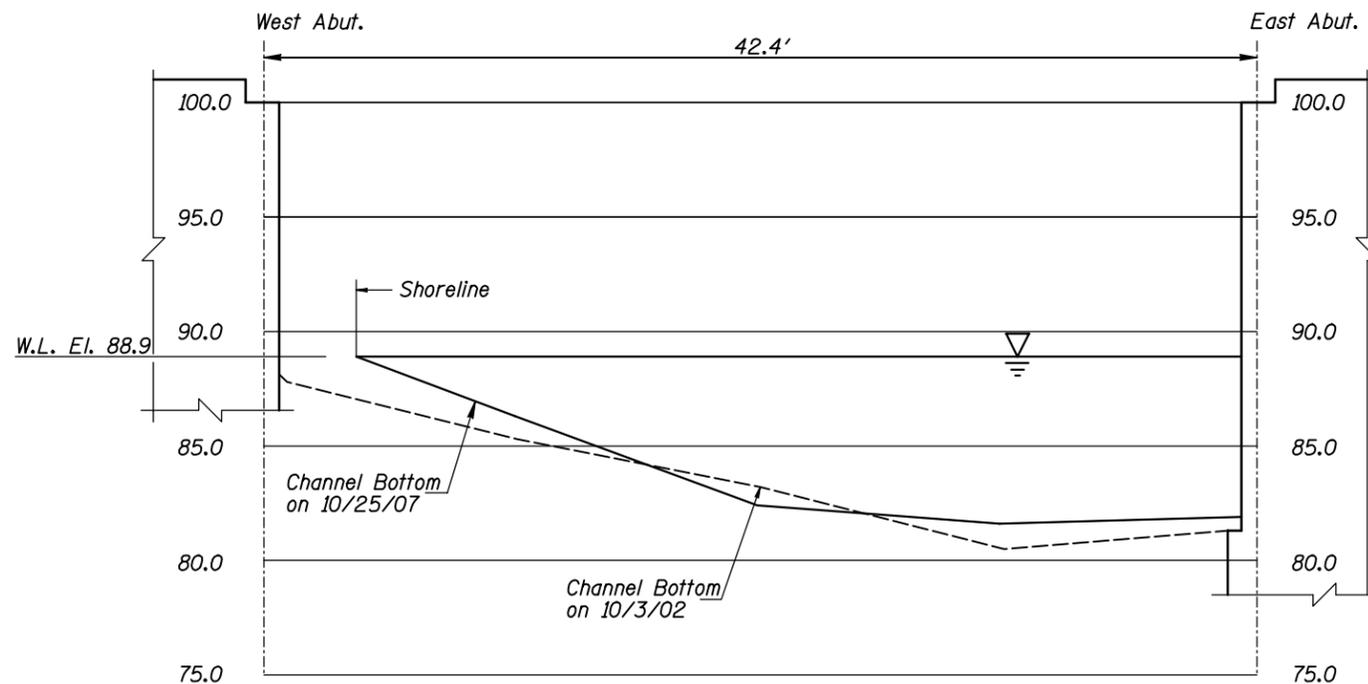
**Note:**

All soundings based on 2007 waterline location.

<b>MINNESOTA DEPARTMENT OF TRANSPORTATION UNDERWATER BRIDGE INSPECTION</b>		
STRUCTURE NO. L4675 OVER WEISEL CREEK DISTRICT 6, FILLMORE COUNTY		
<b>INSPECTION AND SOUNDING PLAN</b>		
Drawn By: LJ	<b>COLLINS ENGINEERS</b>	Date: OCT. 2007
Checked By: VR	<small>123 North Wacker Drive Suite 300 Chicago, IL 60606 (312) 704-9300 www.collinsengr.com</small>	Scale: NTS
Code: 52210146		Figure No.: 1



**UPSTREAM FASCIA PROFILE**  
Vertical Scale: 1/8" = 1'-0"



**DOWNSTREAM FASCIA PROFILE**  
Vertical Scale: 1/8" = 1'-0"

Note:  
Refer to Figure 1 for General Notes.

<b>MINNESOTA DEPARTMENT OF TRANSPORTATION UNDERWATER BRIDGE INSPECTION</b>		
STRUCTURE NO. L4675 OVER WEISEL CREEK DISTRICT 6, FILLMORE COUNTY		
<b>UPSTREAM AND DOWNSTREAM FASCIA PROFILES</b>		
Drawn By: LJ	<b>COLLINS ENGINEERS</b> <small>123 North Wacker Drive Suite 300 Chicago, IL 60606 (312) 704-9300 www.collinsengr.com</small>	Date: OCT. 2007
Checked By: VR		Scale: NTS (U.O.N.)
Code: 52210146		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: L4675 WEATHER: Sunny, 60°F

WATERWAY CROSSED: Weisel Creek

DIVING OPERATION:  SCUBA  SURFACE SUPPLIED AIR  
 OTHER

PERSONNEL: Clayton G. Brookins, Valerie Roustan

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

TIME IN WATER: 2:40 p.m.

TIME OUT OF WATER: 3:00 p.m.

WATERWAY DATA: VELOCITY Negligible/None

VISIBILITY 2.0 feet

DEPTH 10.0 feet maximum at East Abutment

ELEMENTS INSPECTED: East Abutment

REMARKS: The masonry of the abutment was in satisfactory condition with moderate deterioration of the stones and loss of mortar at the joints from the waterline to 2 feet above the waterline with 4 inch typical penetrations and 12 inches of maximum penetrations near the waterline. A 1.5-foot-wide ledge was exposed along the entire breastwall, with up to 3 feet of vertical face exposure and with no undermining detected. There was a minor scour depression observed at the south end of the East Abutment related to the maximum ledge exposure. The channel bottom consisted of soft silt material with 1 foot of maximum probe rod penetration.

FURTHER ACTION NEEDED:  YES  NO

Since insufficient bridge foundation information was available, monitor the East Abutment for further ledge exposure and/or undermining during future inspections.

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

MINNESOTA DEPARTMENT OF TRANSPORTATION  
OFFICE OF BRIDGES AND STRUCTURES

UNDERWATER INSPECTION CONDITION RATING FORM

BRIDGE NO. L4675  
 INSPECTORS Collins Engineers, Inc.  
 ON-SITE TEAM LEADER Daniel G. Stromberg, P.E., S.E.  
 WATERWAY CROSSED Weisel Creek

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	OVERALL SUBSTRUCTURE CONDITION CODE*	SCOUR	EMBANKMENT EROSION	EMBANKMENT PROTECTION	OTHER (DRIFT/DEBRIS)	OVERALL CHANNEL & PROTECTION CONDITION	CONCRETE	STEEL	TIMBER	LOSS OF SECTION (MORTAR)	PREVIOUS REPAIR OR MAINTENANCE	OTHER (MASONRY)
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
	East Abutment	10.0'	N	6	N	9	N	6	6	N	N	N	6	N	N	N	7	N	6

\*UNDERWATER PORTION ONLY

REMARKS: The masonry of the abutment was in satisfactory condition with moderate deterioration of the stones and loss of mortar at the joints from the waterline to 2 feet above the waterline with 4 inch typical penetrations and 12 inches of maximum penetrations near the waterline. A 1.5-foot-wide ledge was exposed along the entire breastwall, with up to 3 feet of vertical face exposure and with no undermining detected. There was a minor scour depression observed at the south end of the East Abutment related to the maximum ledge exposure. The channel bottom consisted of soft silt material with 1 foot of maximum probe rod penetration.

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.