

UNDERWATER BRIDGE INSPECTION REPORT

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STRUCTURE NO. 66518  
CSAH NO. 1 (HESTER ST.)  
OVER THE  
CANNON RIVER OVERFLOW  
RICE COUNTY

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MAY 23, 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 66518, Pier 1 and the East and West Abutments, were found to be in good condition with no defects of structural significance observed. A minor local scour depression and a moderate to heavy accumulation of timber debris were observed at the upstream end of Pier 1.

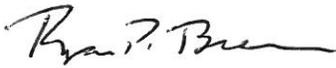
INSPECTION FINDINGS:

- (A) A localized scour depression, 6 feet in diameter and 1.5 feet deep, was observed at the upstream end of Pier 1.
- (B) 1/32 inch wide vertical cracks were observed in the center and at the upstream quarter point of the East Abutment breast wall, extending from the beam seat to the channel bottom.
- (C) A moderate to heavy accumulation of timber debris, including a 12 inch diameter tree, was observed at the upstream end of Pier 1 extending from the channel bottom to 3 feet above the waterline.

RECOMMENDATIONS:

- (A) Remove timber debris at Pier 1.
- (B) Reinspect the submerged substructure units at the normal maximum recommended (NBIS) interval of sixty (60) months.

Inspection Team Leader:



Ryan P. Breen, P.E.

Respectfully submitted,

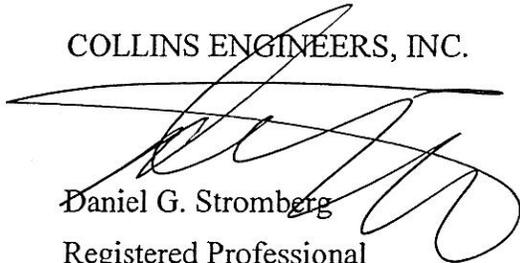
PROFESSIONAL ENGINEER

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: 66518

Feature Crossed: Cannon River Overflow

Feature Carried: CSAH No. 1

Location: District 6 - Rice County

Bridge Description: The superstructure consists of two spans of multiple steel girders supporting a reinforced concrete deck. The superstructure is supported by two reinforced concrete abutments and one reinforced concrete pier. The pier is supported by a spread footing founded on bedrock.

2. INSPECTION DATA

Professional Engineer/Team Leader: Ryan P. Breen, P.E.

Dive Team: Michael Banasiak, Marc Parker

Date: May 23, 2012

Weather Conditions: Cloudy, 65°F

Underwater Visibility: 1.0 foot

Waterway Velocity: 1.0 f.p.s

3. SUBSTRUCTURE INSPECTION DATA

Substructure Inspected: Pier 1 and the East and West Abutments.

General Shape: The pier consists of a reinforced concrete shaft supporting a reinforced concrete hammerhead cap. The shaft is supported by a rectangular concrete spread footing founded on bedrock. The abutments consist of reinforced concrete breast walls with tapered wingwalls.

Maximum Water Depth at Substructure Inspected: Approximately 3.8 feet.

4. WATERLINE DATUM

Water Level Reference: The top of the pier cap on the north end of Pier 1.

Water Surface: The waterline was approximately 13.0 feet below reference.

Waterline Elevation = 908.5

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/05/12

Item 113: Scour Critical Bridges: Code I/91

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
210	Reinforced Conc. Pier Wall	32	LF	32				
215	Reinforced Conc. Abutment	112	LF	112				



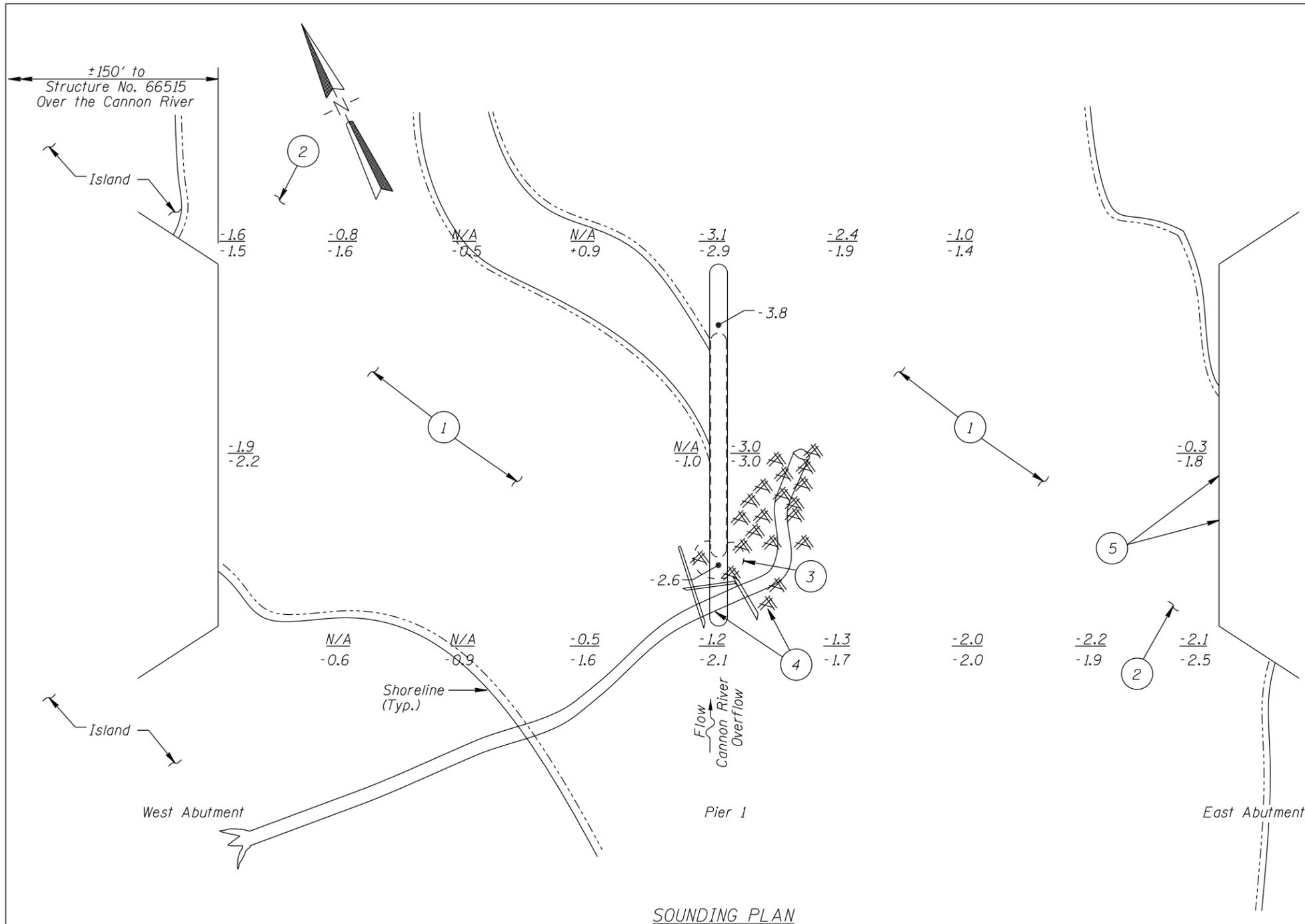
Photograph 1. View of the West Abutment, Looking Northwest.



Photograph 2. View of Pier 1, Looking Northeast.



Photograph 3. View of the East Abutment, Looking Northeast.



**GENERAL NOTES:**

1. The East and West Abutments and Pier 1 were inspected at this bridge.
2. At the time of inspection on MAY 23, 2012, the waterline was located approximately 13.0 feet below the top of the cap at the North end of Pier 1. This corresponds to a waterline elevation of 908.5 based on design drawings.
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 silty sand and clay with 6 inches to 1.5 feet of probe rod penetration.
- ② The channel bottom material consisted of cobbles, 6 inch diameter and smaller, with 1 inch of maximum probe rod penetration.
- ③ Scour depression, 6 feet in diameter and 1.5 feet deep, observed at the upstream nose of Pier 1.
- ④ A moderate to heavy accumulation of timber debris was observed at the upstream end of Pier 1, including a 12 inch diameter tree and smaller branches, extending from the channel bottom to 3 feet above the waterline.
- ⑤ Vertical cracks 1/32 inch wide were observed on the face of the East Abutment extending from bridge seat to channel bottom.

**Legend**

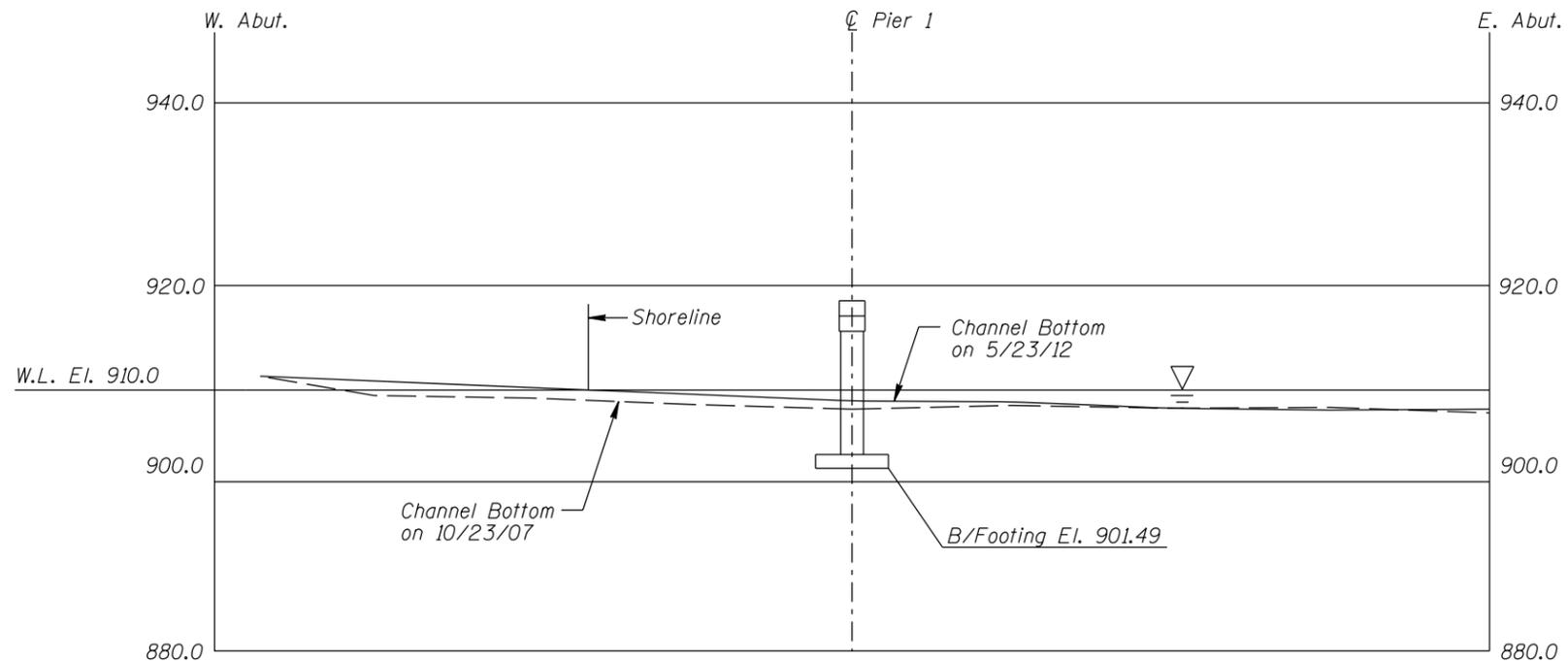
- 9.0 Sounding Depth (5/23/12)
- 9.0 Sounding Depth (10/23/07)

Timber Debris

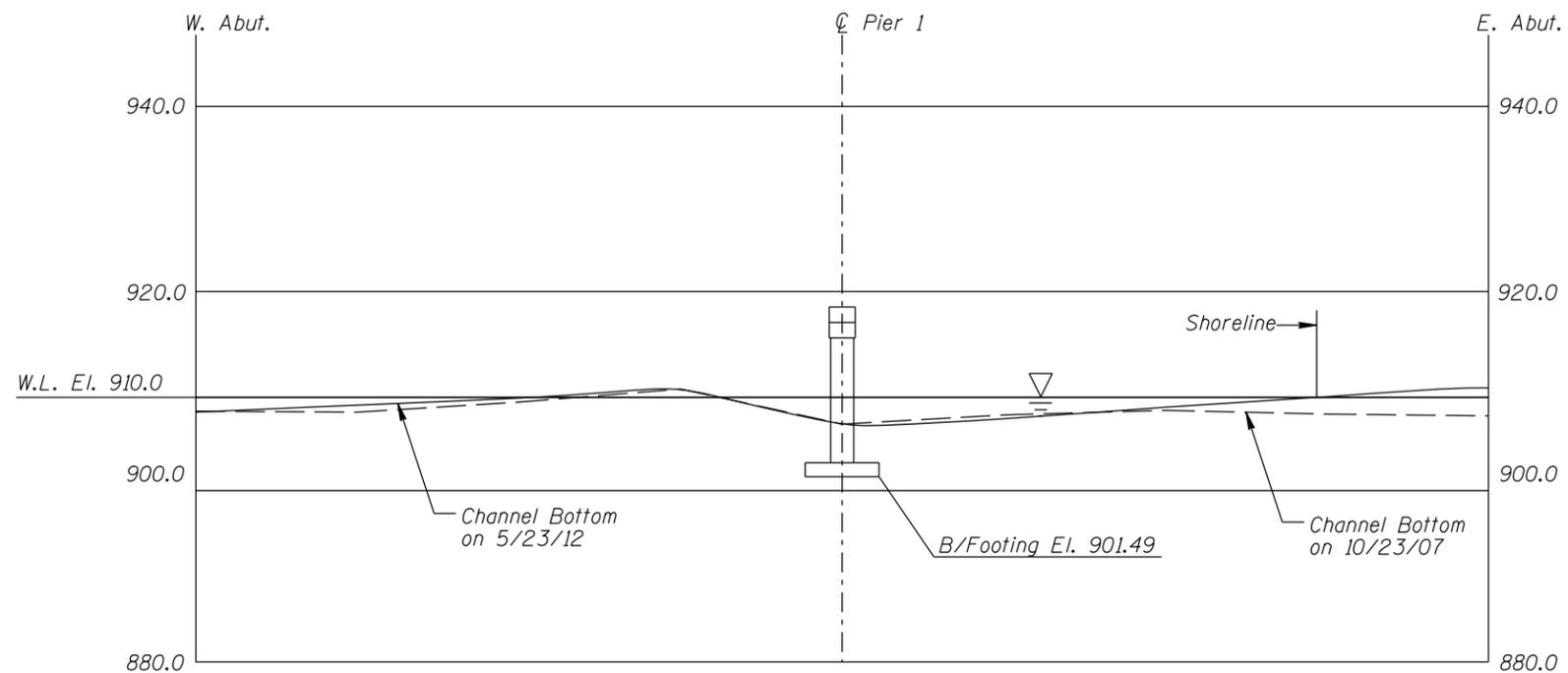
**Note:**

All soundings based on 2012 waterline location.

<b>MINNESOTA DEPARTMENT OF TRANSPORTATION UNDERWATER BRIDGE INSPECTION</b>		
STRUCTURE NO. 66518 CSAH NO. 1 (HESTER ST.) OVER THE CANNON RIVER OVERFLOW RICE COUNTY		
INSPECTION AND SOUNDING PLAN		
Drawn By: MJB	<b>COLLINS ENGINEERS</b>	Date: MAY 2012
Checked By: LJ	<small>123 North Wacker Drive Suite 900 Chicago, IL 60606 (312) 704-9300 www.collinsengr.com</small>	Scale: NTS
Code: 742366518		Figure No.: 1



UPSTREAM FASCIA PROFILE



DOWNSTREAM FASCIA PROFILE

Note:  
Refer to Figure 1 for General Notes.

<b>MINNESOTA DEPARTMENT OF TRANSPORTATION UNDERWATER BRIDGE INSPECTION</b>		
STRUCTURE NO. 66518 CSAH NO. 1 (HESTER ST.) OVER THE CANNON RIVER OVERFLOW RICE COUNTY		
UPSTREAM AND DOWNSTREAM FASCIA PROFILES		
Drawn By: MJB	<b>COLLINS ENGINEERS</b> <small>123 North Wacker Drive Suite 900 Chicago, IL 60606 (312) 704-9300 www.collinsengr.com</small>	Date: MAY 2012
Checked By: LJ		Scale: 1"=20'
Code: 742366518		Figure No.: 2

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

INSPECTORS: Collins Engineers, Inc. DATE: May 23, 2012

ON-SITE TEAM LEADER: Ryan P. Breen, P.E.

BRIDGE NO: 66518 WEATHER: Cloudy, 65°F

WATERWAY CROSSED: Cannon River Overflow

DIVING OPERATION:  SCUBA  SURFACE SUPPLIED AIR  
 OTHER

PERSONNEL: Michael Banasiak, Marc Parker

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

TIME IN WATER: 9:15 A.M.

TIME OUT OF WATER: 10:00 A.M.

WATERWAY DATA: VELOCITY 1.0 f.p.s

VISIBILITY 1.0 f00t

DEPTH 3.8 feet maximum at Pier 1

ELEMENTS INSPECTED: The West and East Abutments and Pier 1

REMARKS: Overall, the concrete was smooth and with no defects of structural significance. A local scour depression, 6 feet in diameter and 1.5 feet deep, was observed at the upstream end of Pier 1. 1/32 inch wide vertical cracks were observed in the center and at the upstream quarter point of the East Abutment breast wall, extending from the beam seat to the channel bottom. A moderate to heavy accumulation of timber debris, including a 12 inch diameter tree, was observed at the upstream end of Pier 1 extending from the channel bottom to 3 feet above the waterline.

FURTHER ACTION NEEDED:  YES  NO

Remove timber debris at Pier 1.

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. 66518  
 INSPECTORS Collins Engineers, Inc.  
 ON-SITE TEAM LEADER Ryan P. Breen, P.E.  
 WATERWAY CROSSED Cannon River Overflow

INSPECTION DATE May 23, 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	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
	West Abutment	1.9'	N	7	N	8	N	7	8	7	N	N	7	7	N	N	N	N	N
	Pier 1	3.8'	N	7	N	8	N	7	7	N	N	6	6	7	N	N	N	N	N
	South Abutment	2.1'	N	7	N	8	N	7	8	7	N	N	7	7	N	N	N	N	N

\*UNDERWATER PORTION ONLY

REMARKS: Overall, the concrete was smooth and sound with no defects of structural significance. A local scour depression, 6 feet in diameter and 1.5 feet deep, was observed at the upstream end of Pier 1. 1/32 inch wide vertical cracks were observed in the center and at the upstream quarter point of the East Abutment breast wall, extending from the beam seat to the channel bottom. A moderate to heavy accumulation of timber debris, including a 12 inch diameter tree, was observed at the upstream end of Pier 1 extending from the channel bottom to 3 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.