

UNDERWATER BRIDGE INSPECTION REPORT

STRUCTURE NO. 27639

BRIDGE STREET

OVER THE

CROW RIVER

METRO DISTRICT - HENNEPIN COUNTY, CITY OF ROCKFORD



JULY 23, 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 at Bridge No. 27639, Piers 1, 2 and 3, were sound and in good condition with no structurally significant defects observed. A minor scour depression was observed at the upstream end of Pier 2. The channel bottom appeared stable with no conditions of concern at this time. A heavy accumulation of timber debris was located at the upstream nose of Pier 3.

INSPECTION FINDINGS:

- (A) The concrete of the piers was smooth and sound with no significant deterioration.
- (B) A scour depression 2 feet in radius by 1.5 feet deep was observed at the upstream end of Pier 2.
- (C) Heavy accumulation of timber debris consisting of logs and branches up to 14 inches in diameter was observed at the upstream nose of Pier 3. The debris extended to the midpoint on the east face of the pier, 10 feet upstream of the upstream nose, and from the channel bottom to 4 above the waterline.

RECOMMENDATIONS:

- (A) Monitor the scour depression at Pier 2 during future inspections.
- (B) Monitor the timber debris accumulation at Pier 3 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.

WSB and Associates



Barritt Lovelace
Registered Professional Engineer
Bridge Safety Inspection Team Leader

Respectfully submitted,

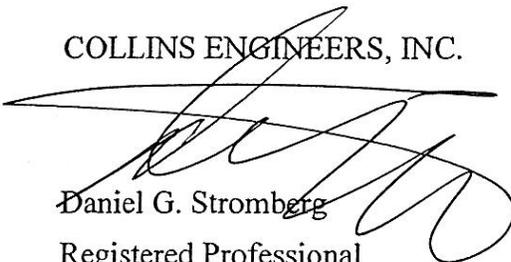
PROFESSIONAL ENGINEER

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: 27639

Feature Crossed: Crow River

Feature Carried: Bridge Street

Location: District 5 - Hennepin County, City of Rockford

Bridge Description: The bridge consists of a continuous four span multiple steel girder superstructure supporting a reinforced concrete deck. The superstructure is supported by two reinforced concrete abutments and three reinforced concrete piers. The piers are numbered 1 through 3 starting from the northwest end of the bridge. The pier footings are founded on concrete piles.

2. INSPECTION DATA

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

Dive Team: Brad Robinson (WSB), John Loftus (Collins)

Date: July 23, 2012

Weather Conditions: Sunny, 70° F

Underwater Visibility: 1.0 foot

Waterway Velocity: 2.5 ft/sec

3. SUBSTRUCTURE INSPECTION DATA

Substructure Inspected: Piers 1, 2 and 3.

General Shape: The piers are single stem hammerheads with oblong shafts and rounded ends supported by a rectangular footing/seal combination founded on concrete piles.

Maximum Water Depth at Substructure Inspected: Approximately 3.7 feet.

4. WATERLINE DATUM

Water Level Reference: The top of the pier cap at the downstream end of Pier 2.

Water Surface: The waterline was approximately 20.7 feet below reference.
Waterline Elevation = 895.2.

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: Code F/07

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

Yes No

6. STRUCTURAL ELEMENT CONDITION RATING

Item #	Element Description	Quantity	Unit	Conditions				
				1	2	3	4	5
210	Reinforced Concrete Pier Wall	66	LF	66				
985	Slopes and Slope Protection	2	EA		2			



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



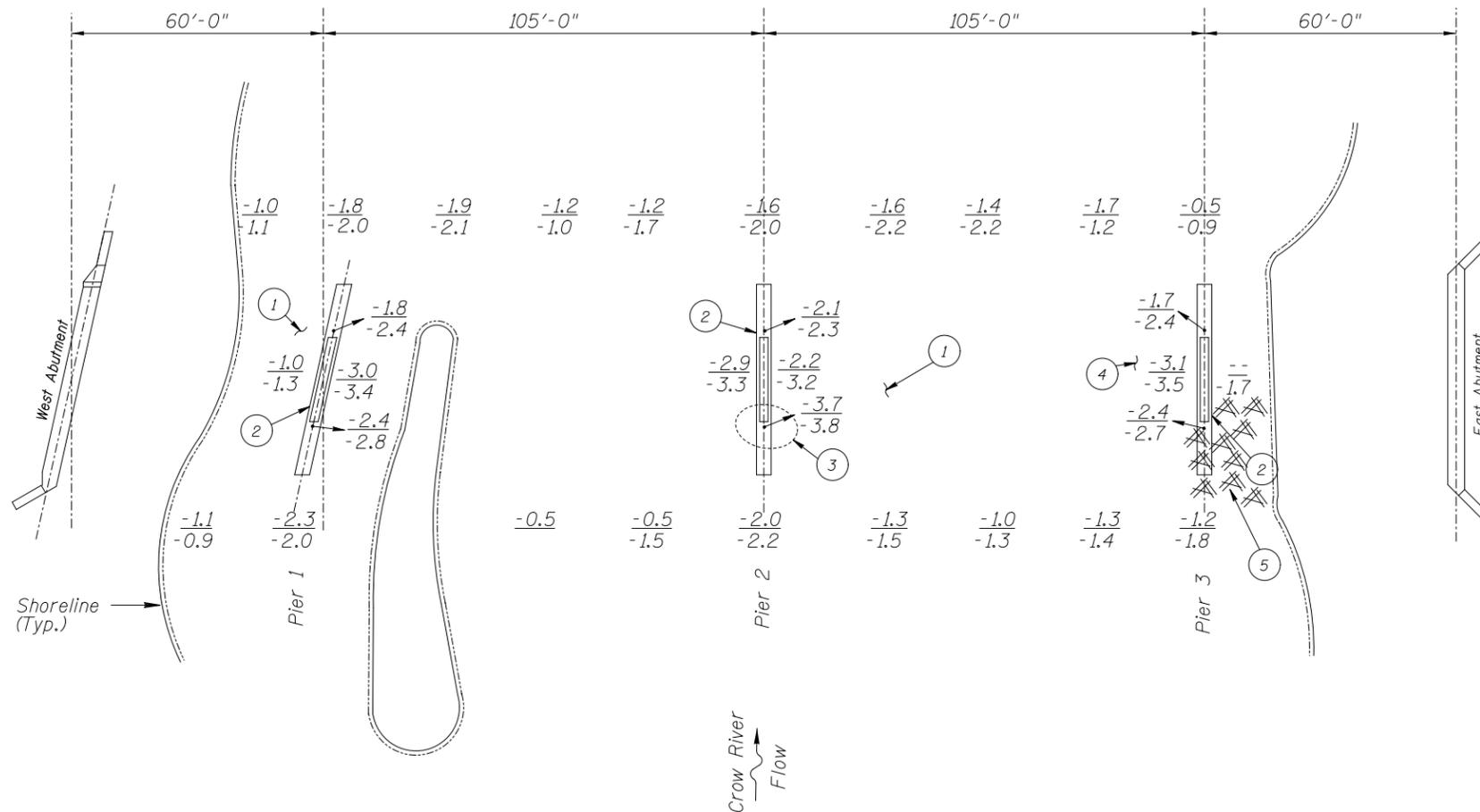
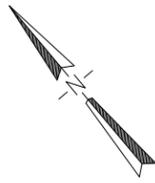
Photograph 2. View of Pier 1, Looking East.



Photograph 3. View of Pier 2, Looking West.



Photograph 4. View of Pier 3, Looking West. Note Timber Debris Accumulation at the Upstream Nose.



INSPECTION NOTES:

- 1 The channel bottom around Piers 1 and 2 consisted of 2 feet diameter and smaller rocks with no appreciable probe rod penetration possible.
- 2 Overall, concrete was smooth and sound without notable deterioration.
- 3 A scour depression 2 feet radius by 1.5 feet deep was observed at the upstream end of Pier 2.
- 4 The channel bottom around Pier 3 consisted of gravel with overlaying 2 inches of silt and with up to 3 inches of probe rod penetration.
- 5 Heavy accumulation of timber debris consisting of logs and branches up to 14" in diameter was observed at the upstream nose of Pier 3. The debris extended to the midpoint on the east face to the pier, 10 feet upstream of the upstream nose, and from channel bottom to 4 feet above the water line.

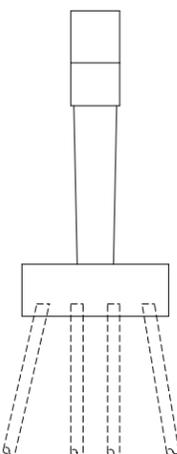
SOUNDING PLAN

GENERAL NOTES:

1. Piers 1, 2, and 3 were inspected underwater.
2. At the time of inspection on July 23, 2012, the waterline was located approximately 20.7 feet below the top of the pier cap at the downstream end of Pier 2. This corresponds to a waterline elevation of 895.2.
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.

Legend

- 2.4 Sounding Depth from Waterline (7/23/12)
- 2.4 Sounding Depth from Waterline (10/17/07)
- Scour Depression
- ⊘ Timber Debris



TYPICAL END VIEW OF EACH PIER SECTION

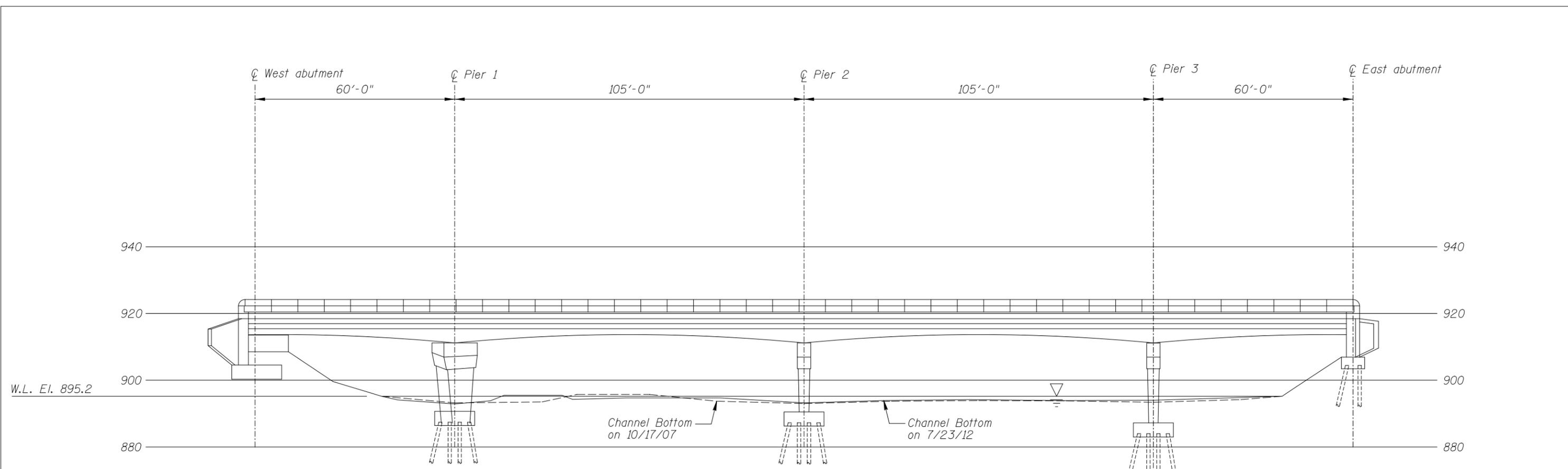
WSB
 & Associates, Inc.
 701 Xenia Avenue South, Suite 300
 Minneapolis, MN 55416
 www.wsbeng.com
 763-541-4800 • Fax 763-541-1700
 INFRASTRUCTURE • ENGINEERING • PLANNING • CONSTRUCTION

**MINNESOTA
 DEPARTMENT OF TRANSPORTATION
 UNDERWATER BRIDGE INSPECTION**

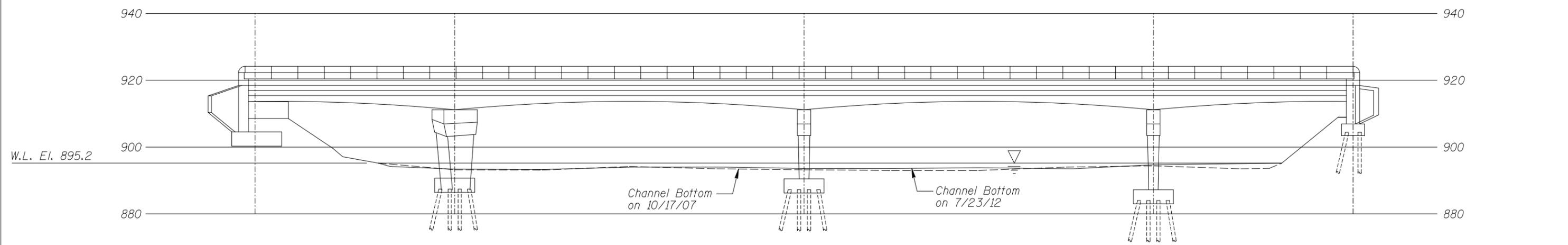
STRUCTURE NO. 27639
 OVER CROW RIVER
 DISTRICT 5, HENNEPIN COUNTY

INSPECTION AND SOUNDING PLAN

Drawn By: BJR	COLLINS ENGINEERS	123 North Wacker Drive Suite 300 Chicago, IL 60606 (312) 704-9300 www.collinsengr.com	Date: JULY 2012
Checked By: BRL			Scale: NTS
Code: 52210037			Figure No.: I



UPSTREAM FASCIA PROFILE



DOWNSTREAM FASCIA PROFILE

Note:
Refer to Figure 1 for General Notes.

MINNESOTA DEPARTMENT OF TRANSPORTATION UNDERWATER BRIDGE INSPECTION		
STRUCTURE NO. 27639 OVER THE CROW RIVER DISTRICT 5, HENNEPIN COUNTY UPSTREAM AND DOWNSTREAM FASCIA PROFILES		
Drawn By: BJR Checked By: BRL Code: 52210037	COLLINS ENGINEERS	123 North Wacker Drive Suite 300 Chicago, IL 60606 (312) 704-9300 www.collinsengr.com
		Date: JULY 2012 Scale: 1"=30' Figure No.: 2


WSB
 & Associates, Inc.
INFRASTRUCTURE • ENGINEERING • PLANNING • CONSTRUCTION

701 Xenia Avenue South, Suite 300
 Minneapolis, MN 55416
 www.wsbeng.com
 765-511-4800 • Fax 765-511-700

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

INSPECTORS: WSB & Associates and Collins DATE: July 23, 2012

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

BRIDGE NO: 27639 WEATHER: Sunny, 70° F

WATERWAY CROSSED: Crow River

DIVING OPERATION: SCUBA SURFACE SUPPLIED AIR
 OTHER

PERSONNEL: Brad Robinson (WSB), John Loftus (Collins)

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

TIME IN WATER: 8:30 a.m.

TIME OUT OF WATER: 9:03 a.m.

WATERWAY DATA: VELOCITY 2.5 ft/sec

VISIBILITY 1.0 foot

DEPTH 3.7 feet maximum at Pier 2

ELEMENTS INSPECTED: Piers 1, 2 and 3

REMARKS: Overall, the concrete of the piers was in smooth and sound condition with no notable defects. A scour depression 2 feet in radius and 1.5 foot deep was observed at the upstream end of Pier 2. Heavy accumulation of timber debris, consisting of logs and branches 14-inch-diameter and smaller, was observed at the upstream nose of Pier 3.

FURTHER ACTION NEEDED: YES NO

Monitor the scour depression at Pier 2 during future inspections.

Monitor the timber debris accumulation at Pier 3 during future inspections, and if found to be increasing to a more detrimental extent, removal operations may become warranted at that time.

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. 27639
 INSPECTORS WSB & Associates, Collins Engineers, Inc.
 ON-SITE TEAM LEADER Barritt Lovelace P.E. (WSB)
 WATERWAY CROSSED Crow River

INSPECTION DATE July 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 (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	3.0'	N	7	N	8	N	7	8	7	7	N	8	7	N	N	N	N	N
	Pier 2	3.7'	N	7	N	8	N	7	7	N	N	N	7	7	N	N	N	N	N
	Pier 3	3.1'	N	7	N	8	N	7	8	7	7	6	6	7	N	N	N	N	N

*UNDERWATER PORTION ONLY

REMARKS: Overall, the concrete of the piers was in smooth and sound condition with no notable defects. A scour depression 2 feet in radius and 1.5 foot deep was observed at the upstream end of Pier 2. Heavy accumulation of timber debris consisting of logs and branches 14-inch-diameter and smaller was observed at the upstream nose of Pier 3.

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.