

UNDERWATER BRIDGE INSPECTION REPORT

STRUCTURE NO. 24506

MSAS NO. 107

OVER THE

SHELL ROCK RIVER

DISTRICT 6 - FREEBORN COUNTY, CITY OF ALBERT LEA



PREPARED FOR THE
MINNESOTA DEPARTMENT OF TRANSPORTATION

BY

COLLINS ENGINEERS, INC.

JOB NO. 5221 (CEI 141)

MINNESOTA DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

REPORT SUMMARY:

The substructure units inspected at Bridge No. 24506, Piers 1 and 2, were found to be in good condition with no defects of structural significance observed. Random light scaling was observed on the faces of both piers. The channel bottom between the substructure units consisted of a concrete apron extending from the base of a dam located just upstream of the bridge to the downstream end of the piers. The apron was in good condition with no undermining or scour observed at the toe.

INSPECTION FINDINGS:

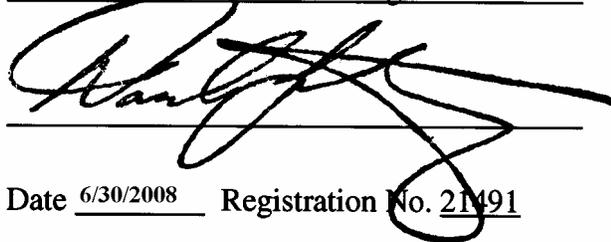
- (A) The concrete of the piers was in good condition with random areas of light scaling observed near the waterline.
- (B) An area of poorly formed concrete and section loss with exposed reinforcing steel was observed on the concrete apron near the downstream end of Pier 2 with 6 inches of maximum penetration.

RECOMMENDATIONS:

- (A) 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.

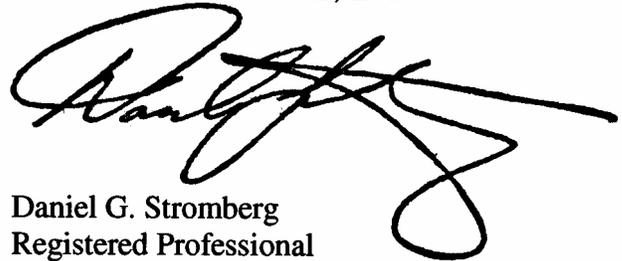
Daniel G. Stromberg



Date 6/30/2008 Registration No. 21491

Respectfully submitted,

COLLINS ENGINEERS, INC.



Daniel G. Stromberg
Registered Professional
Engineer, State of Minnesota

MINNESOTA DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

1. BRIDGE DATA

Bridge Number: 24506

Feature Crossed: Shell Rock River

Feature Carried: MSAS No. 107

Location: District 6 - Freeborn, County, City of Albert Lea

Bridge Description: The superstructure consists of a three span multiconcrete girder bridge. The structure is supported by two reinforced concrete abutments and two reinforced concrete piers. The piers and abutments are supported by cast-in-place concrete piles. The piers are numbered 1 and 2 beginning at the south end of the bridge.

2. INSPECTION DATA

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

Dive Team: Clayton G. Brookins, Valerie Roustan

Date: October 22, 2007

Weather Conditions: Partly Cloudy, 48°F

Underwater Visibility: 1.0 foot

Waterway Velocity: 1.5 f.p.s.

3. SUBSTRUCTURE INSPECTION DATA

Substructure Inspected: Piers 1 and 2.

General Shape: The piers consist of concrete rectangular shafts with rounded noses and are founded on cast-in place concrete piles.

Maximum Water Depth at Substructure Inspected: Approximately 4.2 feet.

4. WATERLINE DATUM

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

Water Surface: The waterline was approximately 6.8 feet below reference.
Waterline Elevation = 63.2.

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 8

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

Item 113: Scour Critical Bridges: Code I/92

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

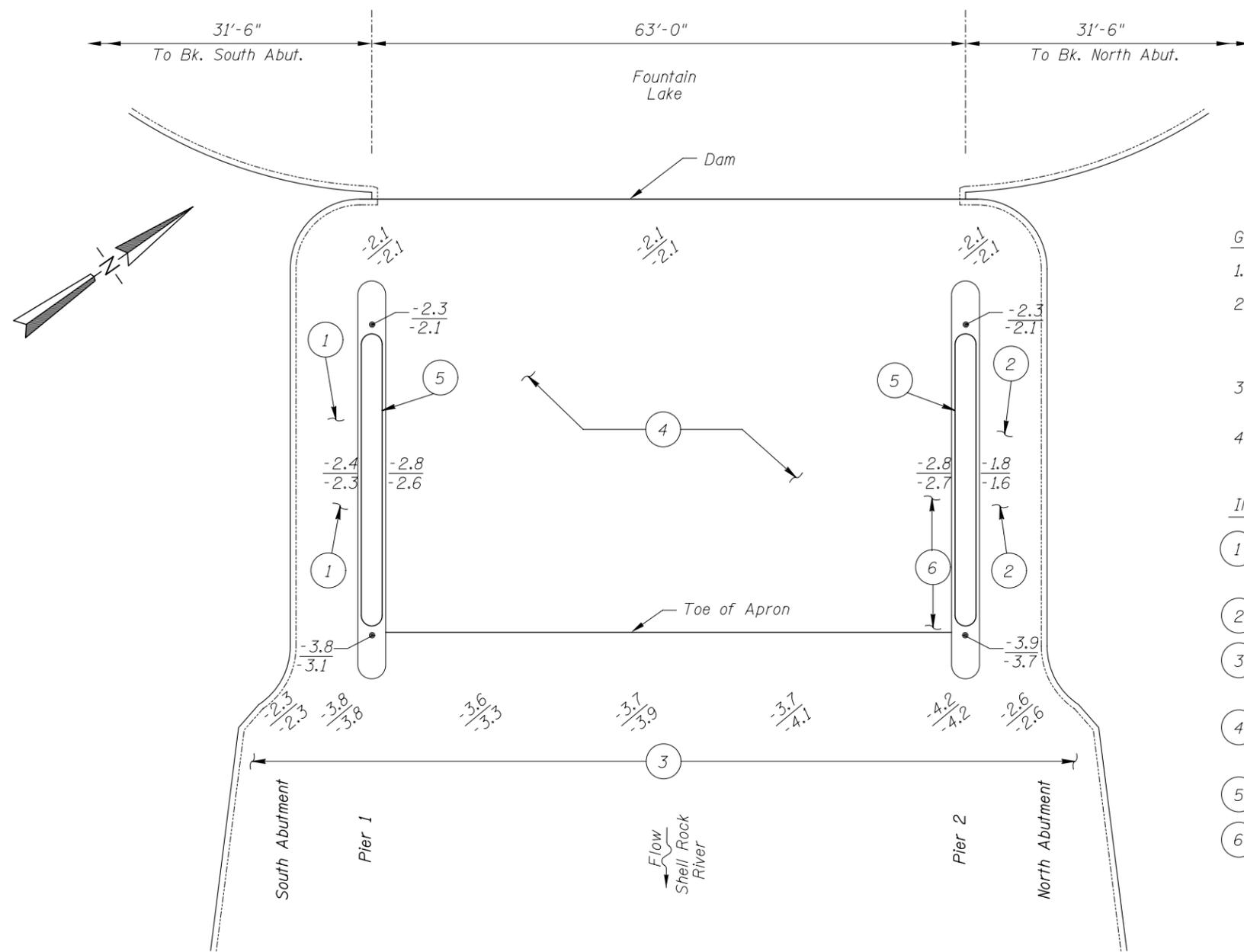
 Yes X No



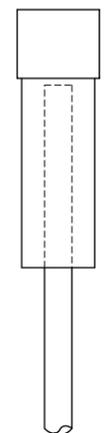
Photograph 1. View of Pier 1, Looking West.



Photograph 2. View of Pier 2, Looking North.



SOUNDING PLAN



TYPICAL END VIEW OF PIERS

GENERAL NOTES:

1. Piers 1 and 2 were inspected underwater.
2. At the time of inspection on October 22, 2007 the waterline was located approximately 6.8 feet below the top of the pier cap at the downstream end of Pier 1. This corresponds to a waterline elevation of 63.2, City Datum, based on the previous report dated November 2, 2002.
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 and gravel with random riprap up to 1 foot in diameter.
- ② The channel bottom material consisted of sandy gravel.
- ③ The channel bottom material consisted of silty gravel with scattered cobbles at the end of the concrete apron.
- ④ The channel bottom consisted of a concrete apron. The apron was in good condition with no undermining observed.
- ⑤ Random light scaling was observed near the waterline on both piers.
- ⑥ The concrete apron exhibited a 3 to 4 feet long area of poorly formed concrete and section loss with exposed reinforcing near the downstream end of Pier 2 with 6 inches of penetration.

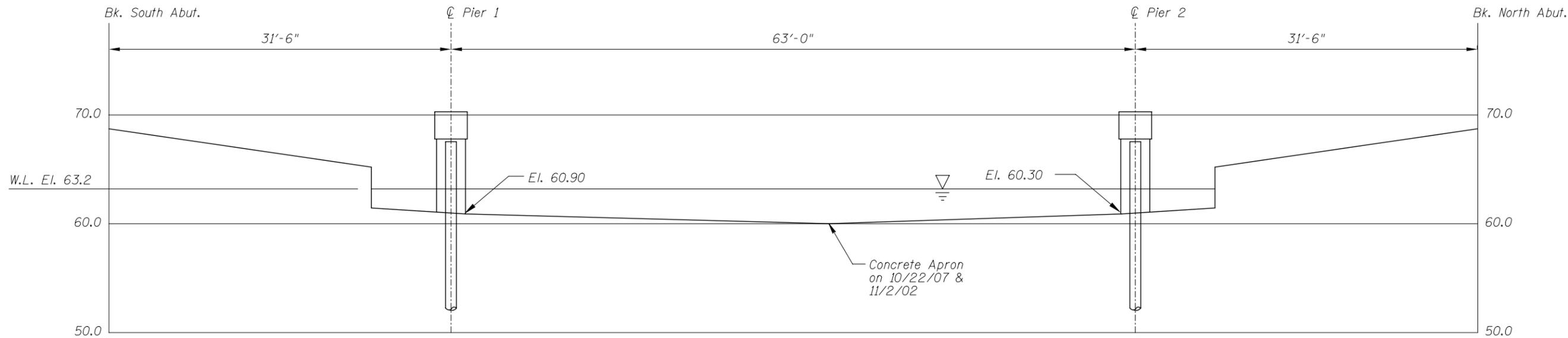
Legend

- 2.0 Sounding Depth (10/22/07)
- 5.2 Sounding Depth (11/2/02)

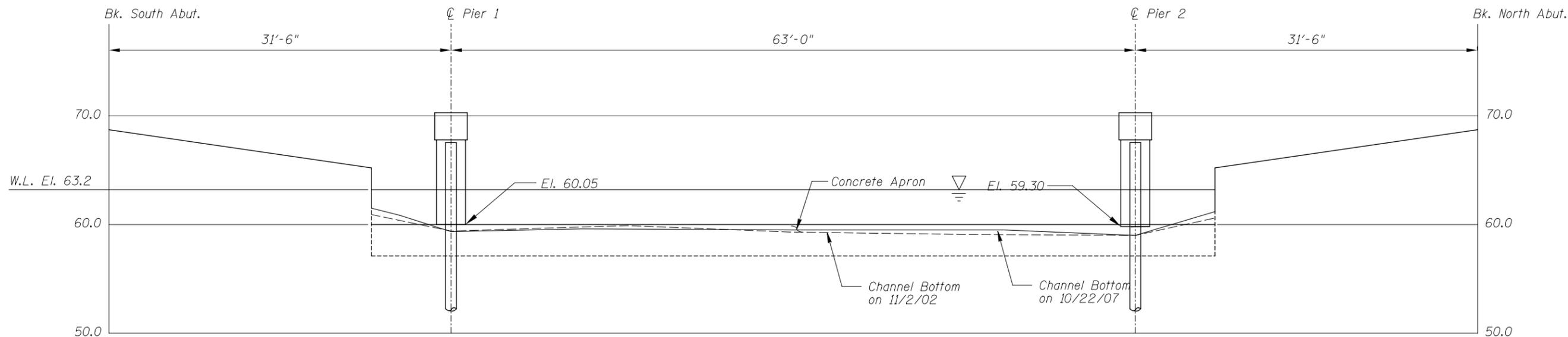
Note:

All soundings based on 2007 waterline location.

MINNESOTA DEPARTMENT OF TRANSPORTATION UNDERWATER BRIDGE INSPECTION		
STRUCTURE NO. 24506 OVER THE SHELL ROCK RIVER DISTRICT 6, FREEBORN COUNTY, CITY OF ALBERT LEA		
INSPECTION AND SOUNDING PLAN		
Drawn By: MDK	COLLINS ENGINEERS	Date: OCT. 2007
Checked By: DGS	<small>123 North Wacker Drive Suite 300 Chicago, IL 60606 (312) 704-9300 www.collinsengr.com</small>	Scale: NTS
Code: 55210141		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. 24506 OVER THE SHELL ROCK RIVER DISTRICT 6, FREEBORN COUNTY, CITY OF ALBERT LEA		
UPSTREAM AND DOWNSTREAM FASCIA PROFILES		
Drawn By: MDK	COLLINS ENGINEERS <small>123 North Wacker Drive Suite 300 Chicago, IL 60606 (312) 704-9300 www.collinsengr.com</small>	Date: OCT. 2007
Checked By: DGS		Scale: 1"=10'
Code: 52210141		Figure No.: 2

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

INSPECTORS: Collins Engineers, Inc. DATE: October 22, 2007

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

BRIDGE NO: 24506 WEATHER: Partly Cloudy, 48°F

WATERWAY CROSSED: Shell Rock River

DIVING OPERATION: SCUBA SURFACE SUPPLIED AIR
 OTHER

PERSONNEL: Clayton G. Brookins, Valerie Roustan

EQUIPMENT: Scuba, Sounding Pole, Camera, Scraper

TIME IN WATER: 3:30 p.m.

TIME OUT OF WATER: 4:00 p.m.

WATERWAY DATA: VELOCITY 1.5 f.p.s.

VISIBILITY 1.0 foot

DEPTH 4.2 feet maximum at Pier 2

ELEMENTS INSPECTED: Piers 1 and 2

REMARKS: The concrete of the piers was in good condition with random areas of light scaling observed at the waterline. An area of poorly formed concrete and section loss with exposed reinforcing was observed on the concrete apron near the downstream end of Pier 2 with 6 inches maximum penetration. Otherwise, the concrete apron was in good condition with no other notable defects or undermining observed.

FURTHER ACTION NEEDED: YES NO

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

MINNESOTA DEPARTMENT OF TRANSPORTATION
OFFICE OF BRIDGES AND STRUCTURES

UNDERWATER INSPECTION CONDITION RATING FORM

BRIDGE NO. 24506
 INSPECTORS Collins Engineers, Inc.
 ON-SITE TEAM LEADER Daniel G. Stromberg, P.E., S.E.
 WATERWAY CROSSED Shell Rock River

INSPECTION DATE October 22, 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 (APRON)	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
	Pier 1	3.8'	N	7	7	9	N	7	8	N	N	N	8	7	N	N	N	N	N
	Pier 2	4.2'	N	7	6	9	N	7	8	N	N	N	8	7	N	N	N	N	N

*UNDERWATER PORTION ONLY

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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.