UNDERWATER BRIDGE INSPECTION REPORT

STRUCTURE NO. 02531

CSAH NO. 30

OVER THE

RUM RIVER

DISTRICT 5 - ANOKA COUNTY

PREPARED FOR THE

MINNESOTA DEPARTMENT OF TRANSPORTATION

BY

COLLINS ENGINEERS, INC.

JOB NO. 3512 (CEI 107)

MINNESOTA DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

REPORT SUMMARY:

The substructure units inspected at Bridge No. 02531, Piers 1 and 2, were found to be in good condition with no defects of structural significance observed. Minor local scour depressions were observed at each of the columns with the largest noted at the upstream ends of the piers. Minor undermining of the slope protection was observed at both the east and west embankments. Moderate accumulations of timber debris were encountered at both piers. The channel bottom around the substructure was stable with evidence of minor local scour, but with no appreciable changes since the previous inspection.

INSPECTION FINDINGS:

(A) Minor local scour depressions, 3 feet in diameter and 1 foot deep, were found at each of the upstream columns of the piers.

(B) Minor scour depressions were observed around all of the pier columns with a maximum radius of 1 foot and maximum depth of 1 foot. The extent of the scour diminished gradually towards the downstream end of the piers.

(C) The concrete slope protection exhibited undermining, 4 feet long by 3 inches high, with 1 foot of probe rod penetration along the east embankment. Portions of the concrete edge of the west embankment slope protection were broken off with undermining along the embankment having a maximum height of 1 foot and maximum horizontal penetration of 1 foot.

(D) Minor scaling of the concrete was observed on the piers from 2 feet below to 4 feet above the waterline, with a maximum penetration of 1/4 inch.

(E) A light accumulation of timber debris at the three upstream columns and an eight-inch-diameter tree along the west side of the pier was observed at Pier 2. A moderate accumulation of 4- to 6-inch-diameter timber debris was observed along the west side and lightly scattered around each of the columns at Pier 1.

RECOMMENDATIONS:

(A) Monitor the drift at the piers during future inspections and if found to be progressing removal of the accumulations of timber debris from around the piers may be warranted at that time.

(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

Date 6/30/2004 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: 02531

Feature Crossed: The Rum River

Feature Carried: CSAH No. 30

Location: District 5 - Anoka County

Bridge Description: The bridge superstructure consists of three spans of multiple prestressed concrete girders supporting a reinforced concrete deck. The superstructure is supported by two reinforced concrete abutments and two reinforced concrete piers. The piers are supported by concrete footings founded on cast-in-place concrete piles. The piers are numbered 1 and 2 starting from the west end of the bridge.

2. INSPECTION DATA

Professional Engineer/Team Leader: Shirley M. Walker, P.E.

Dive Team: Michelle D. Koerbel, Clayton G. Brookins

Date: September 24, 2002

Weather Conditions: Sunny, "45E F

Underwater Visibility: "1.5 Feet

Waterway Velocity: Negligible/None

3. SUBSTRUCTURE INSPECTION DATA

Substructure Inspected: Piers 1 and 2.

General Shape: The piers each consist of a row of six reinforced concrete circular columns, which directly support the concrete girders. The upper halves of the columns are connected by slender concrete diaphragms. The columns are supported by a continuous reinforced concrete footing founded on cast-in-place concrete piles.

Maximum Water Depth at Substructure Inspected: Approximately 10.3 feet.

4. WATERLINE DATUM

Water Level Reference: The top of pier cap at the downstream end of Pier 1.

Water Surface: The waterline was approximately 8.2 feet below reference.
Waterline Elevation = 845.0.

5. NBIS CODING INFORMATION (Minnesota specific codes are used for 92B and 113)

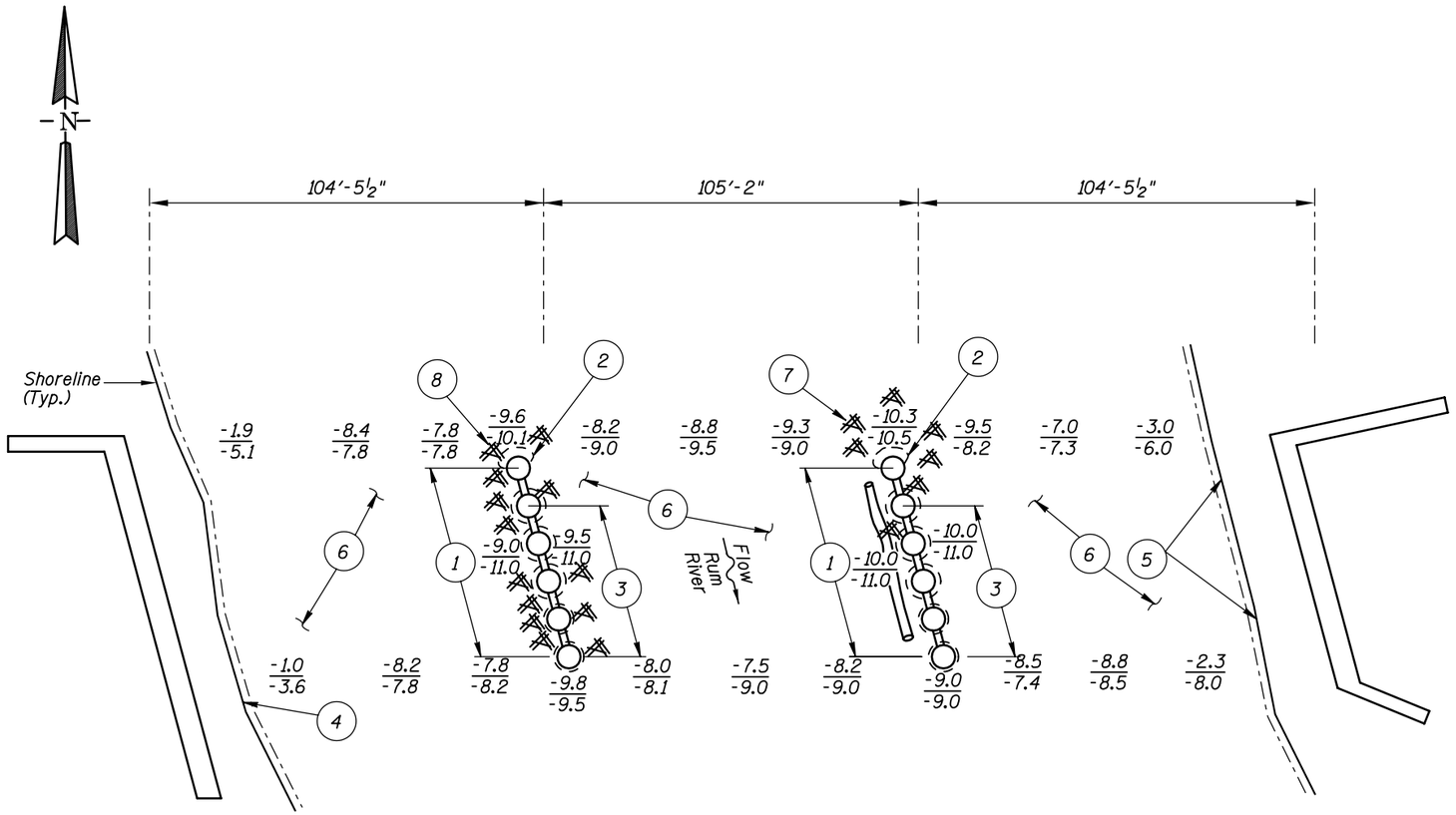
Item 60: Substructure: Code 7

Item 61: Channel and Channel Protection: Code 7

Item 92B: Underwater Inspection: Code B/09/02

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



SOUNDING PLAN

GENERAL NOTES:

1. Piers 1 and 2 were inspected underwater.
2. At the time of inspection, on September 24, 2002, the waterline was located approximately 8.2 feet below the top of Pier 1 at the downstream end. This corresponds to a waterline elevation of 845.0 based on the previous report dated September 15, 1997.
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 as well as around the pier structures.

INSPECTION NOTES:

(1) Minor scaling of the concrete was observed on the piers, from 2 feet below to 4 feet above the waterline, with a 1/4 inch maximum penetration.

(2) Minor scour pocket, 3 feet in diameter by 2 feet deep, was observed at the upstream column.

(3) Minor scour pockets were observed around columns with a maximum radius of 1 foot and maximum depth of 1 foot, diminishing in size towards the downstream end of the pier.

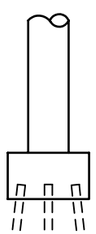
(4) Concrete slope protection exhibited undermining, 4 feet long by 3 inches high, with 1 foot of penetration under the protection.

(5) Portions of the concrete edge of the slope protection were broken off with undermining along the embankment up to a maximum height of 1 foot and maximum horizontal penetration under the protection of 1 foot.

(6) The channel bottom material consisted of soft sand with a maximum probe rod penetration of 1 foot around the substructure units.

(7) A light accumulation of timber debris at the three upstream columns and an eight-inch-diameter tree along the west side was observed at Pier 2.

(8) A moderate accumulation of 4- to 6-inch-diameter timber debris was observed along the west side and lightly scattered around each of the columns at Pier 1.



TYPICAL END VIEW OF PIERS

Legend

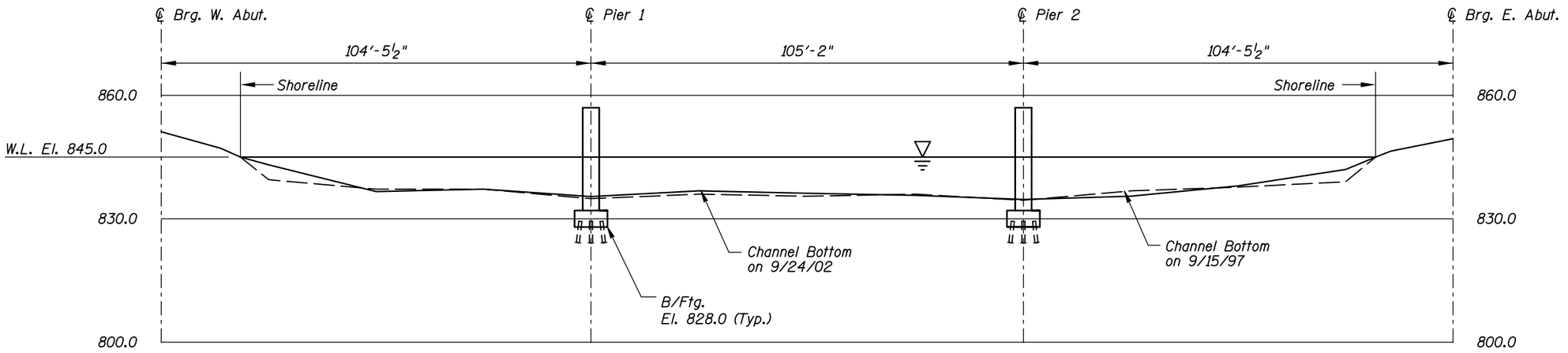
-2.0 / -5.2	Sounding Depth from Waterline (9/24/02) / Sounding Depth from Waterline (9/15/97)
	Scour Depression
	Timber Debris

MINNESOTA
DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

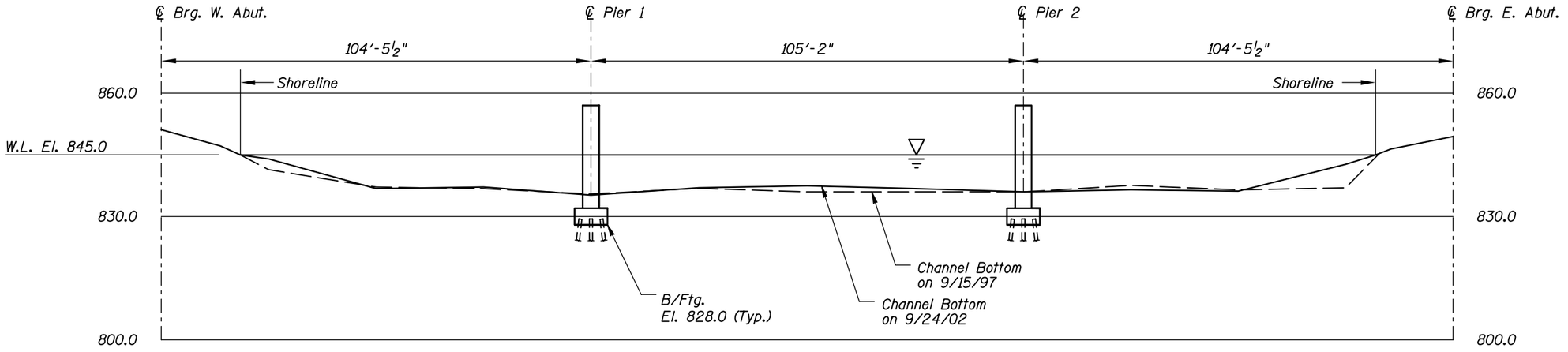
STRUCTURE NO. 02531
OVER THE RUM RIVER
DISTRICT 5, ANOKA COUNTY

INSPECTION AND SOUNDING PLAN

Drawn By: PRH	COLLINS ENGINEERS, INC.	Date: SEPT. 2002
Checked By: MDK	300 W. WASHINGTON, STE. 600 CHICAGO, ILLINOIS 60606 (312) 704-9300	Scale: NTS
Code: 35120107		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. 02531
OVER THE RUM RIVER
DISTRICT 5, ANOKA COUNTY

UPSTREAM AND DOWNSTREAM FASCIA PROFILES

Drawn By: PRH	**COLLINS ENGINEERS, INC.**	Date: SEPT. 2002
Checked By: MDK	300 W. WASHINGTON, STE. 600 CHICAGO, ILLINOIS 60606 (312) 704-9300	Scale: 1"=30'
Code: 35120107		Figure No.: 2

Photograph 1. Overall View of Bridge, Looking South.

Photograph 2. View of Pier 1, Looking Southeast.

Photograph 3. View of Pier 2, Looking West.

Photograph 4. View of West Slopewall, Looking South.

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

INSPECTORS: Collins Engineers, Inc. DATE: September 24, 202
ON-SITE TEAM LEADER: Shirley M. Walker, P.E.
BRIDGE NO: 02531 WEATHER: Sunny, "45E F
WATERWAY CROSSED: The Rum River
DIVING OPERATION: X SCUBA SURFACE SUPPLIED AIR
OTHER
PERSONNEL: Michelle D. Koerbel, Clayton G. Brookins
EQUIPMENT: Scuba, Probe Rod, Lead Line, Sounding Pole, U/W Light, Scraper, Camera
TIME IN WATER: 8:45 a.m.
TIME OUT OF WATER: 9:30 a.m.
WATERWAY DATA: VELOCITY Negligible/None
VISIBILITY "1.5 feet
DEPTH 10.3 feet maximum at Pier 2
ELEMENTS INSPECTED: Piers 1 and 2
REMARKS: Overall, the substructure units were found to be in good condition with no defects of structural significance. Minor undermining of the concreted riprap slope protection was observed at the east and west embankments. A light accumulation of timber debris was encountered at the upstream end and along the west side (an 8-inch-diameter tree) of Pier 2. A moderate accumulation of 4- to 6-inch-diameter timber debris was observed along the west side and lightly scattered around each of the columns at Pier 1. Minor scaling of the concrete was found on the piers at the waterline with penetrations of up to 1/4 inch. Minor scour pockets were observed at each of the pier columns with a maximum 3-feet-diameter by 2-feet-deep scour pocket at both of the upstream columns.

FURTHER ACTION NEEDED: _____ YES __X____ NO

Monitor the drift at the piers during future inspections and if found to be progressing removal of the accumulations of timber debris from around the piers may be warranted at that time.

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. 02531
INSPECTORS Collins Engineers, Inc.
ON-SITE TEAM LEADER Shirley M. Walker, P.E.
WATERWAY CROSSED The Rum River

INSPECTION DATE September 24, 2002

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

			SUBSTRUCTURE						CHANNEL					GENERAL					
UNIT REFERENCE NO.		MAXIMUM DEPTH OF WATER	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
	UNIT DESCRIPTION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
	Pier 1	9.8’	N	7	N	9	N	7	7	7	6	7	7	7	N	N	N	N	N
	Pier 2	10.3’	N	7	N	9	N	7	7	7	6	7	7	7	N	N	N	N	N

*UNDERWATER PORTION ONLY

REMARKS: Overall, the substructure units were found to be in good condition with no defects of structural significance. Minor undermining of the concreted riprap slope protection was observed at the east and west embankments. A light accumulation of timber debris was encountered at the upstream end and along the west side (an 8-inch-diameter tree) of Pier 2. A moderate accumulation of 4- to 6-inch-diameter timber debris was observed along the west side and lightly scattered around each of the columns at Pier 1. Minor scaling of the concrete was found on the piers at the waterline with penetrations of up to 1/4 inch. Minor scour pockets were observed at each of the pier columns with a maximum 3-feet-diameter by 2-feet-deep scour pocket at both of the upstream columns.

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.