

UNDERWATER BRIDGE INSPECTION REPORT

STRUCTURE NO. L2510
MUN 41 (GRANT ST.)
OVER THE
NORTH BRANCH OF ZUMBRO RIVER
GOODHUE COUNTY



SEPTEMBER 12, 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 No. L2510, the East and West Abutments, were found to be generally in satisfactory condition. The masonry exhibited moderate deterioration of the mortar joints with minor cracking of the grout and loss of mortar. At the time of the inspection, both abutments were located out of the waterway, but were visually inspected up to the assumed high water line. The channel bottom was firm and consisted of 6 to 8 inch diameter cobbles.

INSPECTION FINDINGS:

- (A) The channel bottom material consisted of 6 to 8 inch diameter cobbles.
- (B) The masonry was typically in good condition with some cracking of the grout and minor loss of joint mortar.

RECOMMENDATIONS:

- (A) The inspection of the submerged substructure units of Structure No. L2510 can most likely be accomplished in the future without the use of a dive team. To perform the underwater inspection, a properly equipped qualified inspector will have to enter the water during a period of low flow. As channel bottom contours and depths of flow can change quickly, it is recommended that lead line soundings of water depth be taken along the upstream and downstream fascias to determine whether wading is possible prior to beginning the inspection. If conditions are unsafe for inspection by wading, then an underwater inspection with the use of a dive team will be required.

- (B) Reinspect the submerged substructure units at the normal maximum recommended (NBIS) interval of sixty (60) months.

Inspection Team Leader



Roy A. Forsyth, PE
Date 6/30/2014 License# 49270

Respectfully submitted,

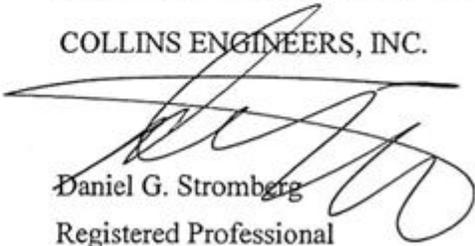
PROFESSIONAL ENGINEER

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: L2510

Feature Crossed: North Branch Zumbro River

Feature Carried: MUN 41

Location: District 6 - Goodhue 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: Roy A. Forsyth, P.E.

Dive Team: Charles R. Euwema, Brandon Corr

Date: September 12, 2012

Weather Conditions: Overcast, 70°F

Underwater Visibility: 2.0 feet

Waterway Velocity: 0.5 ft/s

3. SUBSTRUCTURE INSPECTION DATA

Substructure Inspected: East and West Abutments.

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 3/4 height at the ends.

Maximum Water Depth at Substructure Inspected: Dry at the abutments, 0.5 feet maximum in the channel.

4. WATERLINE DATUM

Water Level Reference: The top of the East Abutment at the downstream end.

Water Surface: The waterline was approximately 9.6 feet below reference.
Assumed Waterline Elevation = 90.4.

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 7

Item 92B: Underwater Inspection: Code A/9/12

Item 113: Scour Critical Bridges: Code R

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

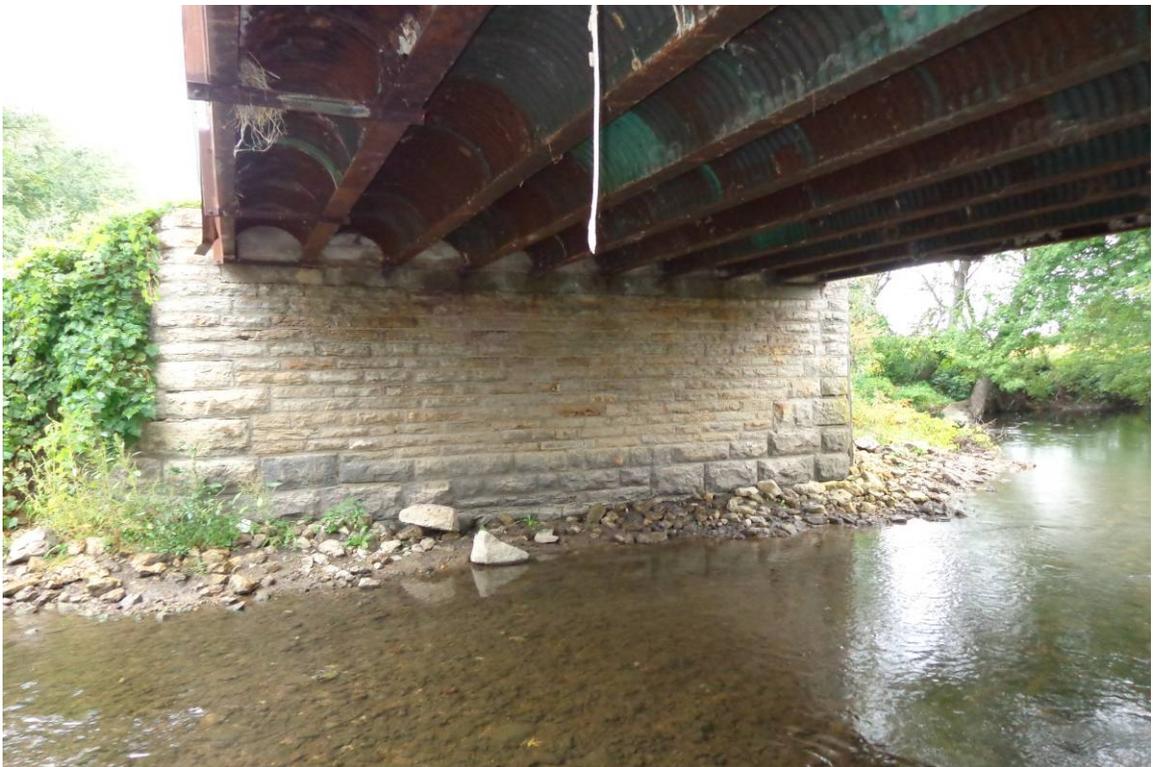
 Yes X No

6. STRUCTURAL ELEMENT CONDITION RATING

Item #	Element Description	Quantity	Unit	Conditions				
				1	2	3	4	5
217	Masonry Abutment	46	LF		46			



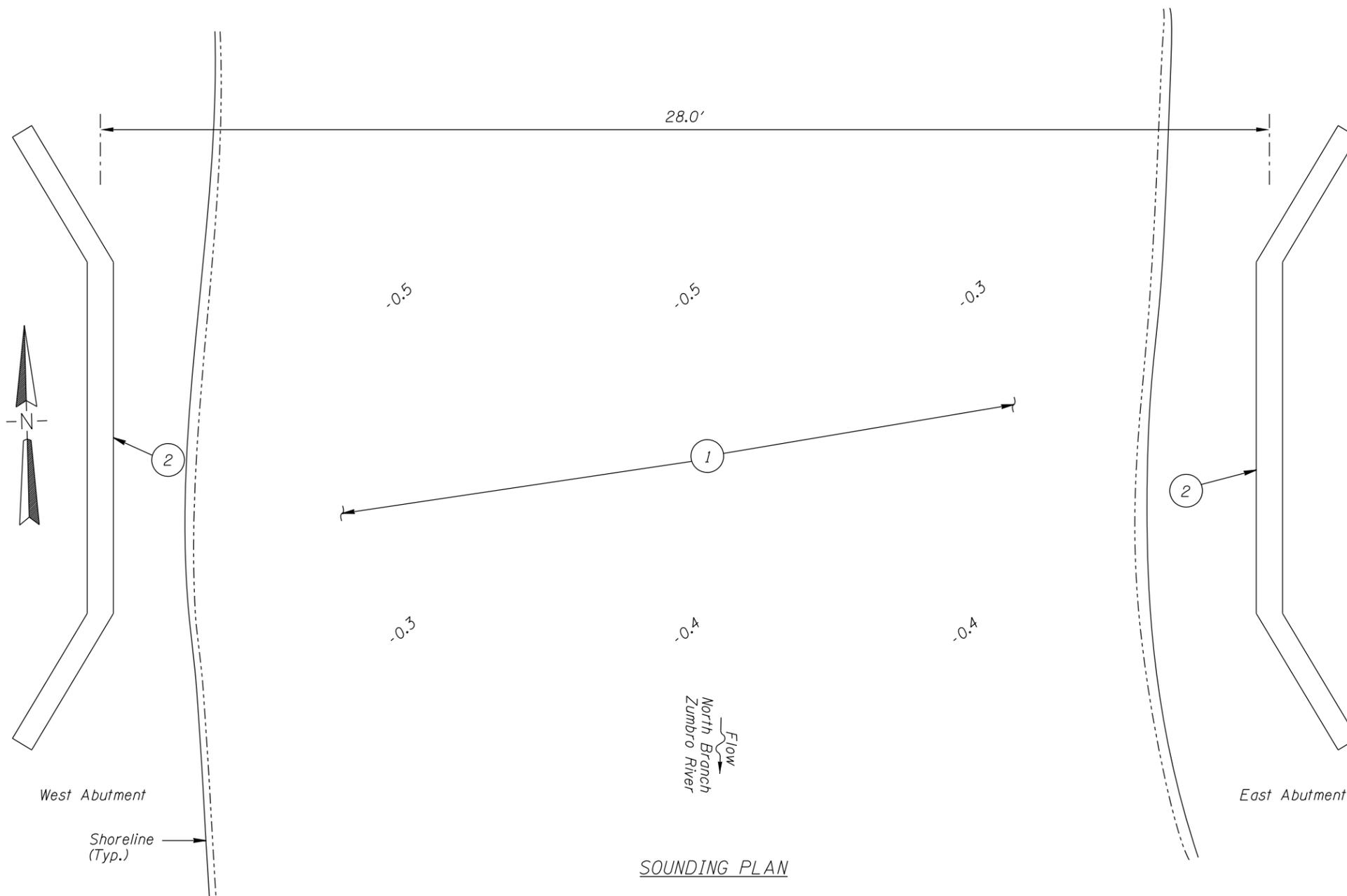
Photograph 1. View of East Abutment, Looking Northeast.



Photograph 2. View of West Abutment, Looking West.



Photograph 3. Overall View of the Structure, Looking South.



GENERAL NOTES:

1. At the time of inspection on September 12, 2012, the waterline was located approximately 9.6' feet below the top of the East Abutment at the downstream end. Since insufficient bridge elevation information was available a reference elevation of 100.0 was assumed. Based on the assumed reference the waterline elevation was 90.4.
2. Soundings indicate the water depth at the time of inspection and are measured in feet.
3. 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 6 to 8 inch diameter cobbles.
- ② The masonry up to the assumed waterline was typically in good condition with some cracking of the grout and at times minor loss of joint mortar.

Legend

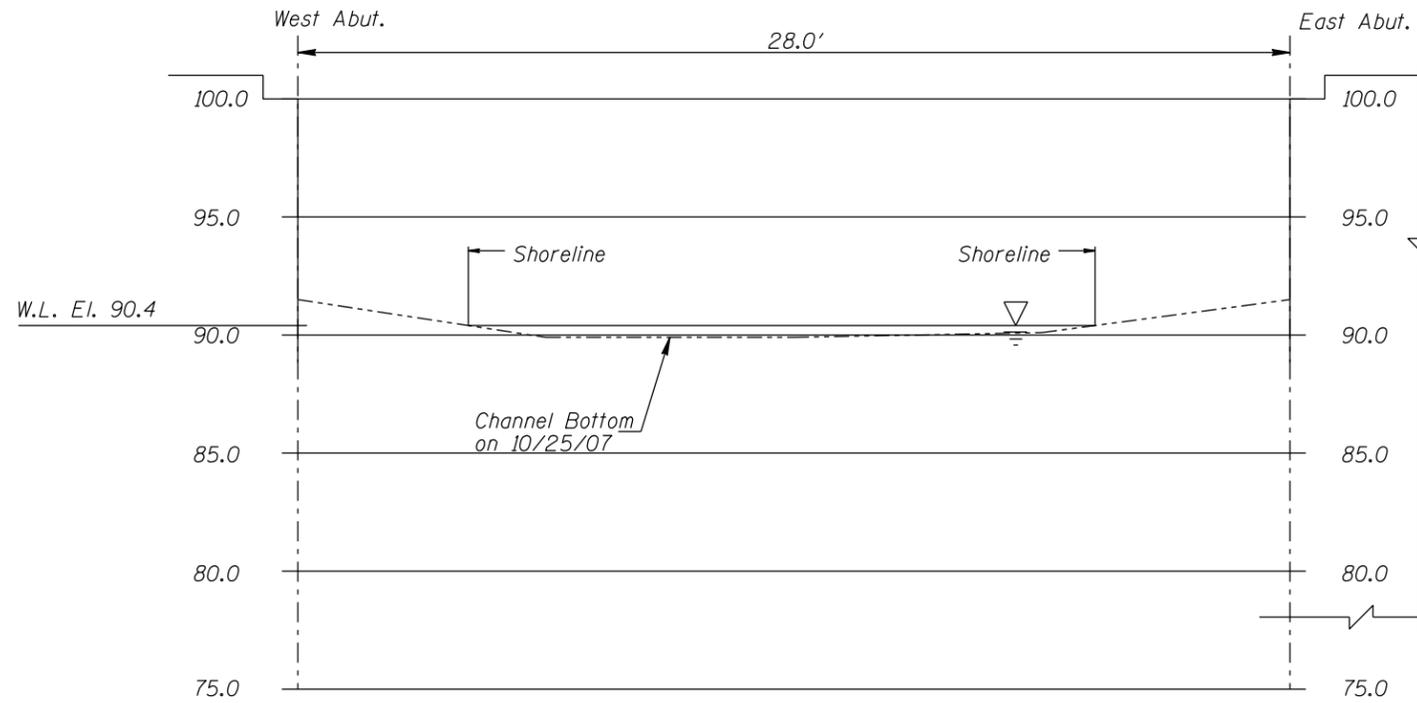
-5.2 Sounding Depth (9/12/12)

**MINNESOTA
DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION**

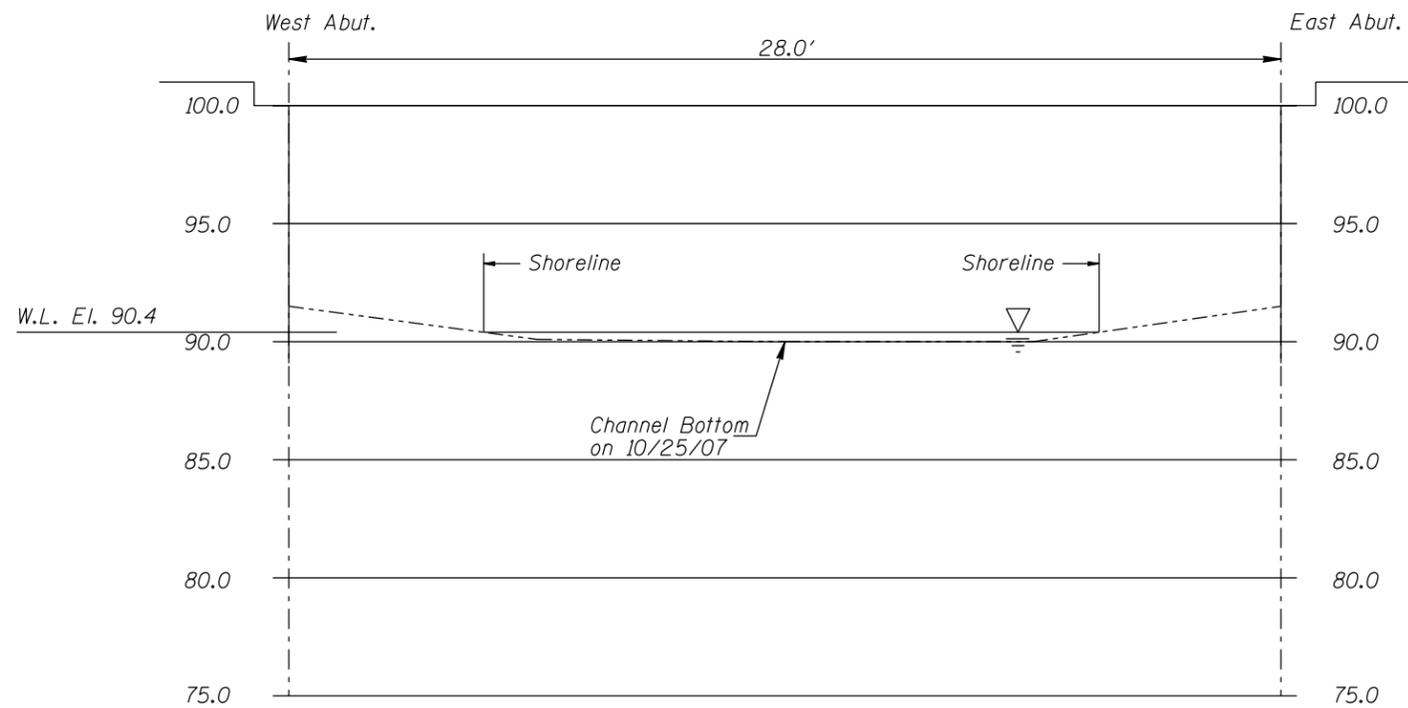
STRUCTURE NO. L2510
OVER NORTH BRANCH ZAMBRO RIVER
GOODHUE COUNTY

INSPECTION AND SOUNDING PLAN

Drawn By: CRE	COLLINS ENGINEERS <small>123 North Wacker Drive Suite 900 Chicago, IL 60606 (312) 704-0300 www.collinsengr.com</small>	Date: SEPT. 2012
Checked By: RAF		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.

MINNESOTA DEPARTMENT OF TRANSPORTATION UNDERWATER BRIDGE INSPECTION		
STRUCTURE NO. L2510 OVER NORTH BRANCH ZUMBRO RIVER GOODHUE COUNTY		
UPSTREAM AND DOWNSTREAM FASCIA PROFILES		
Drawn By: CRE	COLLINS ENGINEERS <small>123 North Wacker Drive Suite 900 Chicago, IL 60606 (312) 704-9300 www.collinsengr.com</small>	Date: SEPT. 2012
Checked By: RAF		Scale: NTS (U.O.N.)
Code: 52210146		Figure No.: 2

MINNESOTA DEPARTMENT OF TRANSPORTATION
OFFICE OF BRIDGES AND STRUCTURES

UNDERWATER INSPECTION CONDITION RATING FORM

BRIDGE NO. L2510
 INSPECTORS Collins Engineers, Inc.
 ON-SITE TEAM LEADER Roy A. Forsyth, P.E.
 WATERWAY CROSSED North Branch Zumbro River

INSPECTION DATE September 12, 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 (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	0.0'	N	6	N	8	N	6	N	N	N	N	6	N	N	N	7	N	6
	West Abutment	0.0'	N	6	N	8	N	6	N	N	N	N	6	N	N	N	7	N	6

*UNDERWATER PORTION ONLY

REMARKS: Overall, both abutments were found to be in satisfactory condition. The masonry exhibited moderate deterioration of the mortar joints with minor cracking of the grout and loss of joint mortar. The channel bottom was firm and consisted of 6 to 8 inch diameter cobbles.

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.

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

INSPECTORS: Collins Engineers, Inc. DATE: September 12, 2012

ON-SITE TEAM LEADER: Roy A. Forsyth, P.E.

BRIDGE NO: L2510 WEATHER: Overcast, 70°F

WATERWAY CROSSED: North Branch Zumbro River

DIVING OPERATION: _____ SCUBA _____ SURFACE SUPPLIED AIR
X OTHER Wade

PERSONNEL: Charles R. Euwema, Brandon Corr

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

TIME IN WATER: 5:20 p.m.

TIME OUT OF WATER: 5:30 p.m.

WATERWAY DATA: VELOCITY 0.5 f.p.s.

VISIBILITY 2.0 feet

DEPTH 0.5 feet maximum at midspan

ELEMENTS INSPECTED: East and West Abutments

REMARKS: Overall, both abutments were found to be in satisfactory condition. The masonry exhibited moderate deterioration of the mortar joints with minor cracking of the grout and loss of joint mortar. The channel bottom was firm and consisted of 6 to 8 inch diameter cobbles.

FURTHER ACTION NEEDED: _____ YES X NO

The inspection of the submerged substructure units of Structure No. L2510 can most likely be accomplished in the future without the use of a dive team. To perform the underwater inspection, a properly equipped qualified inspector will have to enter the water during a period of low flow. As channel bottom contours and depths of flow can change quickly, it is recommended that lead line soundings of water depth be taken along the upstream and downstream fascias to determine whether wading is possible prior to beginning the inspection. If conditions are unsafe for inspection by wading, then an underwater inspection with the use of a dive team will be required.

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