

UNDERWATER BRIDGE INSPECTION REPORT

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STRUCTURE NO. L6492

TWP 129

OVER

COUNTY DITCH #11

DISTRICT 3 – MILLE LACS COUNTY

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OCTOBER 26, 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 structure inspected at Structure No. L6492, two precast concrete arch pipe culverts, was found to be generally in good condition with no defects of structural significance observed. The concrete of the structure was generally smooth and sound. A 2 to 6 inch thick layer of silt typically covered the culvert floor.

INSPECTION FINDINGS:

- (A) The floor of the culvert was typically covered with a 2 to 6 inch layer of silt.
- (B) The concrete of both culvert pipes was sound with no defects of structural significance observed.
- (C) The channel bottom material at the upstream and downstream openings was soft organic silt allowing up to 1.5 feet of probe rod penetration.

RECOMMENDATIONS:

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

Inspection Team Leader:

WSB and Associates



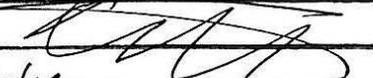
Barritt Lovelace  
Registered Professional Engineer  
Bridge Safety Inspection Team Leader

Respectfully submitted,

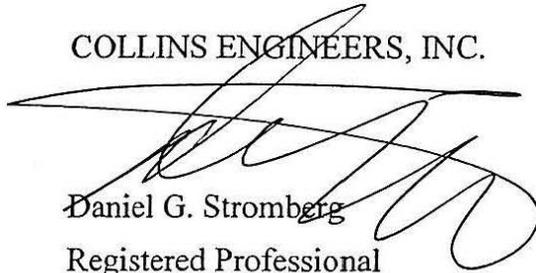
PROFESSIONAL ENGINEER

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: L6492

Feature Crossed: County Ditch #11, BR#1

Feature Carried: TWP 129

Location: District 3 – Mille Lacs County

Bridge Description: The structure consists of two concrete arch pipe culverts with tapered wingwalls (precast end unit) at both openings.

2. INSPECTION DATA

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

Dive Team: Lukas Janulis, P.E., Marc Parker

Date: October 26, 2012

Weather Conditions: Cloudy, 40° F

Underwater Visibility: None/negligible

Waterway Velocity: Negligible

3. SUBSTRUCTURE INSPECTION DATA

Substructure Inspected: Pipe Culvert.

General Shape: Two precast concrete arch pipe culverts.

Maximum Water Depth at Substructure Inspected: Approximately 4.5 feet.

4. WATERLINE DATUM

Water Level Reference: The top of the ceiling at the midpoint of the south pipe.  
Assumed Elevation = 100.0

Water Surface: The waterline was approximately 0.3 feet below reference.  
Assumed Waterline Elevation = 99.7

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

Item 62: Culvert: Code 7

Item 61: Channel and Channel Protection: Code 7

Item 92B: Underwater Inspection: Code B/10/12

Item 113: Scour Critical Bridges: Code E

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
241	Concrete Culvert	180	LF	180				
388	Culvert Headwall	4	EA	4				



Photograph 1. Overall View of the West Opening, Looking North.



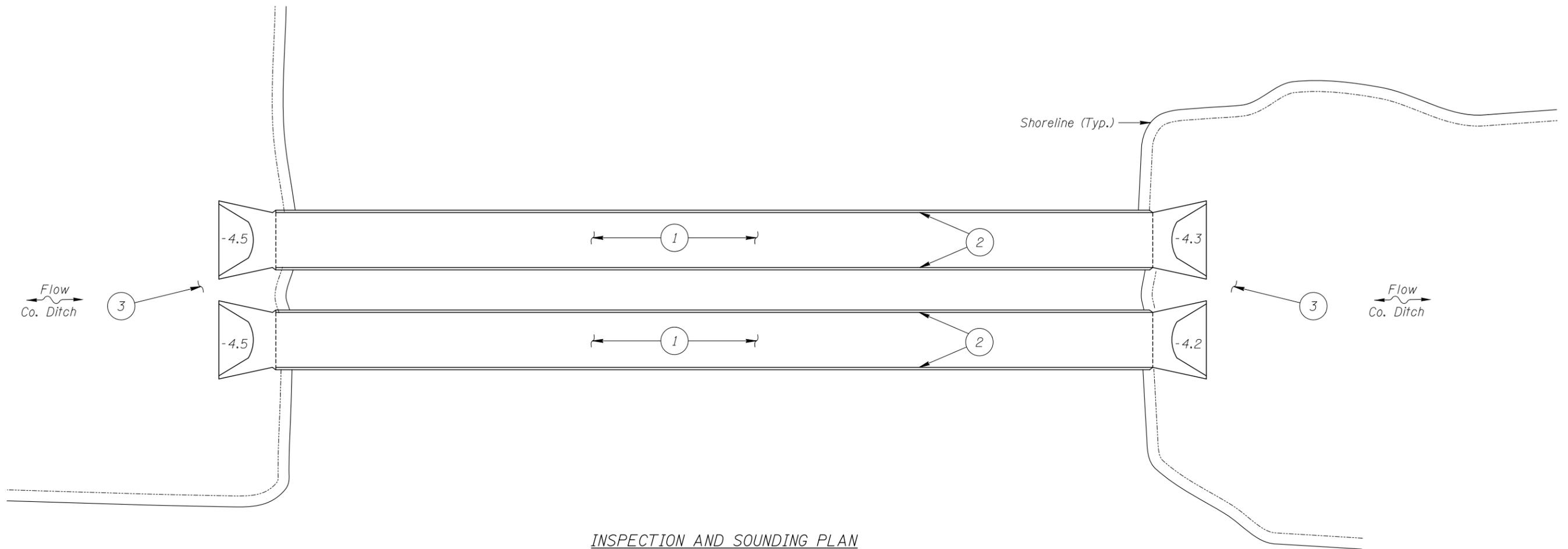
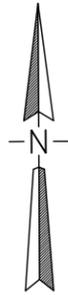
Photograph 2. View of West Channel, Looking West.



Photograph 3. View of East Channel, Looking East.



Photograph 4. Overall View of the East Opening, Looking Northwest.



INSPECTION AND SOUNDING PLAN

GENERAL NOTES:

1. The pipe culvert was inspected underwater.
2. At the time of inspection on October 26, 2012, the waterline was located approximately 0.3 feet below the ceiling of the south pipe at the west opening. Since no plans were available at the time of the inspection, a waterline reference elevation of 100.0 feet was assumed. This corresponds with a waterline elevation of 99.7 feet.
3. Soundings indicate the water depth at the time of inspection and are measured in feet.
4. Soundings were taken at the upstream and downstream openings of the culvert.

INSPECTION NOTES:

- ① The floor of the culverts was typically covered with a 2 to 6 inch layer of silt.
- ② The concrete of both culverts was sound with no defects of structural significance observed.
- ③ The channel bottom at the upstream and downstream openings was soft organic silt with up to 1.5 feet of probe rod penetration.

Legend

-1.0 Sounding Depth from Waterline (10/26/12)

<b>MINNESOTA DEPARTMENT OF TRANSPORTATION UNDERWATER BRIDGE INSPECTION</b>		
STRUCTURE NO. L6492 OVER COUNTY DITCH DISTRICT 3, MILLE LACS COUNTY INSPECTION AND SOUNDING PLAN		
Drawn By: JTF	<b>COLLINS ENGINEERS</b>	Date: OCTOBER, 2012
Checked By: LJ	123 North Wacker Drive Suite 900 Chicago, IL 60606 (312) 704-9300 www.collinsengr.com	Scale: NTS
Code: 7423L6492		Figure No.: 1

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

INSPECTORS: Collins Engineers, Inc. DATE: October 26, 1012

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

BRIDGE NO: L6492 WEATHER: Cloudy, 40° F

WATERWAY CROSSED: County Ditch #11, BR#1

DIVING OPERATION: \_\_\_\_\_ SCUBA  SURFACE SUPPLIED AIR  
\_\_\_\_\_ OTHER \_\_\_\_\_

PERSONNEL: Lukas Janulis, P.E., Marc Parker

EQUIPMENT: Commercial SSA, Dry Suit, Sounding Pole, Underwater Light, Camera.

TIME IN WATER: 4:45 P.M.

TIME OUT OF WATER: 5:00 P.M.

WATERWAY DATA: VELOCITY Negligible

VISIBILITY Negligible

DEPTH 4.5 feet max at west headwall.

ELEMENTS INSPECTED: Culvert (precast concrete) and Wingwalls (precast end units)

REMARKS: Overall, structure was found to be generally in good condition with no defects of structural significance observed. Concrete of the structure was generally smooth and sound. The culvert floor was covered with a 2 to 6 inch layer of silt along the entire culvert. The channel bottom at the upstream and downstream openings was soft organic silt allowing up to 1.5 feet of probe rod penetration.

FURTHER ACTION NEEDED: \_\_\_\_\_ YES  NO

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. L6492  
 INSPECTORS Collins Engineers, Inc.  
 ON-SITE TEAM LEADER. Barritt Lovelace, P.E. (WSB)  
 WATERWAY CROSSED County Ditch #11, BR #1

INSPECTION DATE: October 26, 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 (CULVERT)	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
	Culvert (North)	4.5'	N	N	N	N	7	7	N	N	N	7	7	7	N	N	N	N	N
	Culvert (South)	4.5'	N	N	N	N	7	7	N	N	N	7	7	7	N	N	N	N	N

\*UNDERWATER PORTION ONLY

REMARKS: Overall, structure was found to be generally in good condition with no defects of structural significance observed. Concrete of the structure was generally smooth and sound. The culvert floor was covered with a 2 to 6 inch layer of silt along the entire culvert. The channel bottom at the upstream and downstream openings was soft organic silt allowing up to 1.5 feet of probe rod penetration.

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.