

UNDERWATER BRIDGE INSPECTION REPORT

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STRUCTURE NO. L4177

CSAH 116

OVER THE

HUNTING SHACK RIVER

ST. LOUIS COUNTY

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JUNE 22, 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 inspected at structure No. L4177, a corrugated metal pipe culvert, was found to be in good condition with no defects of structural significance. The corrugated steel pipe exhibited light surface corrosion at the waterline with no significant loss of section. The culvert openings were well armored with riprap.

INSPECTION FINDINGS:

- (A) The corrugated metal pipe exhibited light surface corrosion at the waterline with no significant loss of section.
- (B) The culvert pipe bottom was fairly clean of any infill with only randomly interspersed sandy gravel as well as small rocks.
- (C) The culvert openings were well protected against scour/erosion by up to 1 foot diameter riprap.

RECOMMENDATIONS:

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

Inspection Team Leader:  
Daniel G. Stromberg, P.E.

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: L4177

Feature Crossed: Hunting Shack River

Feature Carried: CSAH 116

Location: St. Louis County

Bridge Description: The structure consists of a corrugated metal pipe culvert.

2. INSPECTION DATA

Professional Engineer Diver: Daniel G. Stromberg, P.E.

Dive Team: Clayton Brookins, Breanne Stromberg

Date: June 22, 2012

Weather Conditions: Sunny, 75° F

Underwater Visibility: 2 feet

Waterway Velocity: None / Negligible

3. SUBSTRUCTURE INSPECTION DATA

Substructure Inspected: Corrugated Metal Pipe Culvert.

General Shape: Oval Corrugated Metal Pipe.

Maximum Water Depth at Substructure Inspected: Approximately 4.6 feet.

4. WATERLINE DATUM

Water Level Reference: Top of the Culvert pipe at the center of the downstream opening.

Water Surface: The waterline was approximately 3.3 feet below the reference.

Assumed Waterline Elevation 96.7.

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 8

Item 92B: Underwater Inspection: Code B/06/12

Item 113: Scour Critical Bridges: Code E/12

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
240	Corrugated Metal Pipe Culvert	38	LF	38				



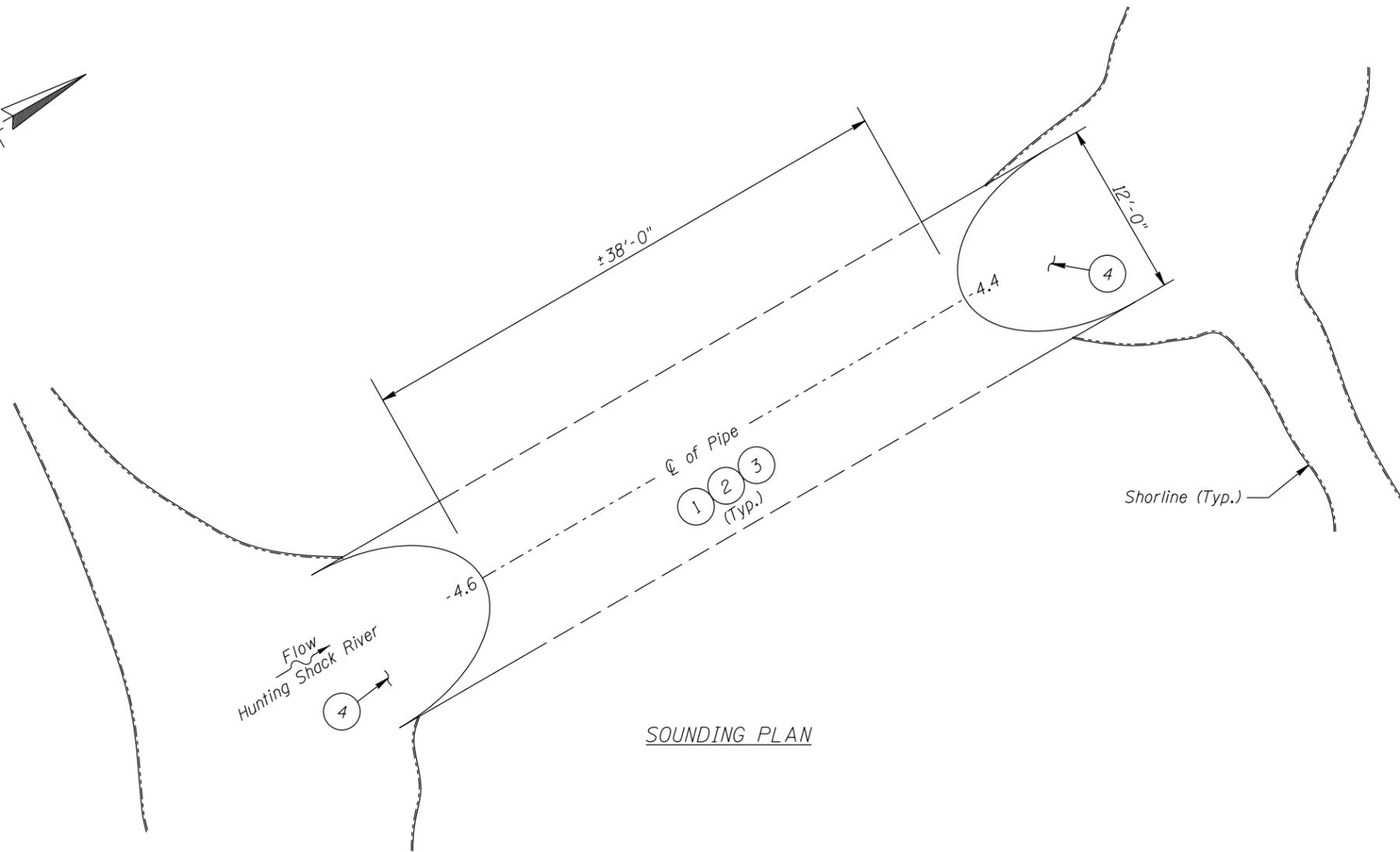
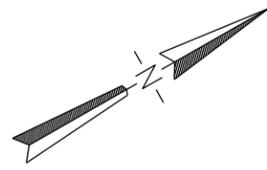
Photograph 1. View of Upstream Opening, Looking North.



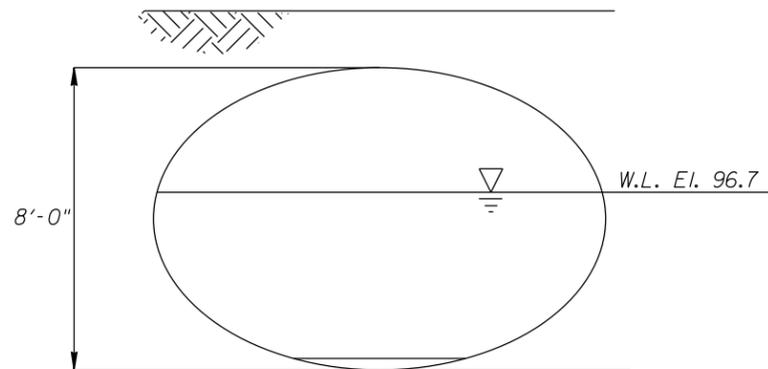
Photograph 2. View of Downstream Opening, Looking South.



Photograph 3. Typical View of the Steel Condition at the Waterline, Looking Southeast.



SOUNDING PLAN



DOWNSTREAM PROFILE

INSPECTION NOTES:

- ① The culvert exhibits good galvanizing and only minor surface corrosion with negligible loss of section.
- ② The culvert alignment was in good condition with no deflections or distortions. The joints/fasteners were in place and secure.
- ③ The culvert pipe bottom was fairly clean of any infill with only randomly interspersed sandy gravel as well as small rocks.
- ④ The culvert openings were well protected against scour/erosion by up to 1 foot diameter riprap.

Legend

-0.4 Sounding Depth (6/22/2012)

GENERAL NOTES:

1. CMP Culvert was inspected underwater.
2. At the time of inspection, on June 22, 2012, the waterline was located approximately 3.3 feet below the top of the pipe at the downstream opening. Since insufficient elevation information was available, a reference elevation of 100.0 was assumed. This corresponds to a waterline elevation of 96.7.
3. Soundings indicate the water depth at the time of inspection and are measured in feet.

<b>MINNESOTA DEPARTMENT OF TRANSPORTATION UNDERWATER BRIDGE INSPECTION</b>		
STRUCTURE NO. L4177 CSAH 116 OVER HUNTING SHACK RIVER ST LOUIS COUNTY		
INSPECTION AND SOUNDING PLAN		
Drawn By: BMS	<b>COLLINS ENGINEERS</b>	Date: JULY 2012
Checked By: LJ		Scale: NTS
Code: 7423L4177		Figure No.: 1

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MINNESOTA DEPARTMENT OF TRANSPORTATION  
OFFICE OF BRIDGES AND STRUCTURES

DAILY DIVING REPORT

INSPECTORS: Collins Engineers, Inc. DATE: June 22, 2012

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

BRIDGE NO: L4177 WEATHER: Sunny, 75° F

WATERWAY CROSSED: Hunting Shack River

DIVING OPERATION:  SCUBA  SURFACE SUPPLIED AIR  
 OTHER

PERSONNEL: Clayton Brookins, Breanne Stromberg

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

TIME IN WATER: 10:45 A.M.

TIME OUT OF WATER: 11:30 A.M.

WATERWAY DATA: VELOCITY None / Negligible

VISIBILITY 2 feet

DEPTH 4.6 feet maximum

ELEMENTS INSPECTED: Corrugated Metal Pipe Culvert

REMARKS: Overall, the corrugated metal pipe culvert, was found to be in good condition with no defects of structural significance. The corrugated steel pipe exhibited light surface corrosion at the waterline with no significant loss of section. The channel bottom at the openings was armored by riprap and appeared.

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. L4177  
 INSPECTORS Collins Engineers, Inc.  
 ON-SITE TEAM LEADER Daniel G. Stromberg, P.E.  
 WATERWAY CROSSED Hunting Shack River

INSPECTION DATE June 22, 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	CULVERT	FOOTINGS	CMP DISPLACEMENT	OTHER (CMP PIPE)	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	4.6'	N	N	N	8	7	7	N	8	8	N	8	N	7	N	N	N	N

REMARKS: Overall, the corrugated metal pipe culvert, was found to be in good condition with no defects of structural significance. The corrugated steel pipe exhibited light surface corrosion at the waterline with no significant loss of section. The channel bottom at the openings was armored by riprap and appeared.

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.