

# 2016 UNDERWATER BRIDGE INSPECTION REPORT



## BRIDGE # 90475 CSAH 17(FRANCE AV) over NINE MILE CREEK

DISTRICT: Metro                      COUNTY: Hennepin                      CITY/TOWNSHIP: Bloomington  
STATE: Minnesota

Date of Inspection: 06/20/2016  
Equipment Used: Boat

Owner: County Highway Agency

Inspected By: Lovelace, Barritt

Report Written By: Barritt Lovelace  
Report Reviewed By:  
Final Report Date:



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## **UNDERWATER INSPECTION**

### REPORT SUMMARY

The substructure units of Bridge No. 90475, Barrels 1 and 2, were found to be in satisfactory condition with no defects of structural significance. The channel bottom was also in satisfactory condition with moderate sediment on the culvert floor.

### INSPECTION FINDINGS

The bottom consisted of organic material with random rip-rap and gravel penetration up to 6 inches.

### RECOMMENDATIONS

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

Contractor: Collins Engineers, Inc.

Contractor Job Number: 9687

## UNDERWATER INSPECTION

### 1. BRIDGE DATA

Bridge #: 90475  
Feature Intersected: NINE MILE CREEK  
Facility Carried: CSAH 17(FRANCE AV)  
District: Metro  
County: 027 - Hennepin  
Bridge Description:

The structure consists of two box culvert barrels. The barrels are numbered 1 and 2 starting from the South.

### 2. INSPECTION DATA

Professional Engineer/Team Leader: Barritt R. Lovelace, P.E.  
Inspection Diver: Barritt R. Lovelace, P.E.  
Date of Underwater Inspection: 06/20/2016  
Weather Conditions: Sunny, 74° F  
Underwater Visibility (feet): 0.25  
Waterway Velocity (ft/sec): 0.25

### 3. SUBSTRUCTURE INSPECTION DATA

Substructure(s) Inspected: Box Culvert Barrels 1 and 2.  
General Shape:  
Each barrel consists of a 10 foot square box culvert.

Maximum Water Depth at Substructure(s) Inspected (feet): 7.1

### 4. WATERLINE DATUM

Water Level Reference: Bottom of the culvert ceiling at the downstream end of box culvert.  
Waterline Elevation (feet): 98.9  
Description: The waterline was approximately 1.1 feet below reference.

### 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: 6  
Item 62: Culvert: Code:  
Item 92B: Underwater Inspection: Code: Y 48 06/2016

Item 113: Scour Critical Bridge:

Code: E

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

Yes  No (Mark your selection with an X)

6. STRUCTURAL ELEMENT CONDITION RATING

ELEM #	Element Description	Quantity	Unit	Conditions			
				CS1	CS2	CS3	CS4
241	Reinforced Concrete Culvert	138	LF		130	8	
870	Culvert End Treatment	2	EA		2		
885	Scour	1	EA	1			

## UNDERWATER INSPECTION

### INSPECTION PROCEDURES

The routine underwater inspection of Bridge 90475 (CSAH 17 over the Nine Mile Creek) was completed on June 20, 2016. The underwater inspection was conducted from shore. The inspection was conducted by a team consisting of a PE-Diver with a valid MnDOT Team Leader certification, a backup diver and a dive tender. The inspection utilized commercial dive equipment and techniques (SSA and/or SCUBA) in accordance with OSHA regulations. Profiles were taken along the upstream and downstream faces of the bridge and around the periphery of substructure units to determine the presence, location and area of scour.

The bridge elements inspected consisted of Box Culvert Barrels 1 and 2. Foundation was not available. Inspection procedures followed FHWA guidance and the MnDOT Bridge and Structure Inspection Program Manual with channel bottom probing to search for foundations. The routine underwater inspection frequency is recommended to remain at a maximum of 60 months based on those findings and risk factors. Also, inspection procedures should continue to follow the above approach and standard guidance with 100% Level I and 10% Level II intensity efforts.

# Minnesota Structure Inventory Report

Bridge ID: 90475

CSAH 17(FRANCE over NINE MILE CREEK  
AV)

Date: 09/02/2016

+ GENERAL +	+ ROADWAY +	+ INSPECTION +																				
<b>Agency Br. No.</b> 382 <b>Crew</b> <b>District</b> 05 <b>Maint. Area</b> <b>County</b> 027 - Hennepin <b>City</b> Bloomington <b>Township</b> <b>Desc. Loc.</b> 1.8 MI N OF JCT CSAH 1 <b>Sect., Twp., Range</b> 8 - 027N - 24W <b>Latitude</b> 44° 50' 12.81" <b>Longitude</b> 93° 19' 45.67" <b>Custodian</b> 02 - County Highway Agency <b>Owner</b> 02 - County Highway Agency <b>BMU Agreement</b> <b>Year Built</b> 1937 <b>MN Year Reconstructed</b> <b>FHWA Year Reconstructed</b> <b>MN Temporary Status</b> <b>Bridge Plan Location</b> 3 - COUNTY <b>Date Opened to Traffic</b> 1/1/1937 <b>On - Off System</b> 1 - ON <b>Legislative District</b> 41B <b>Potential ABC</b> 2 - N/A	<b>Bridge Match ID (TIS)</b> 0 <b>Roadway O/U Key</b> Route On Structure <b>Route Sys</b> 04 - CSAH <b>Number</b> 17 <b>Roadway Name or Description</b> CSAH 17 <b>Level of Service</b> 1 - MAINLINE <b>Roadway Type</b> 2 - 2-way traffic <b>Control Section (TH Only)</b> <b>Reference Point</b> 001+00.820 <b>Detour Length</b> 3.0 <b>mi.</b> <b>Lanes</b> <b>ON</b> 4 <b>UNDER</b> 0 <b>ADT</b> 14933 <b>YEAR</b> 2008 <b>HCADT</b> <b>ADTT</b> % <b>Functional Class</b> 16 - Urban - Minor Arterial	<b>Userkey</b> 67 <b>Structurally Deficient</b> N <b>Functionally Obsolete</b> N <b>Sufficiency Rating</b> 66.0 <b>Routine Inspection Date</b> 05/05/2016 <b>Routine Inspection Frequency</b> 24 <b>Inspector Name</b> Lovelace, Barritt <b>Status</b> A - Open																				
		+ NBI      CONDITION      RATINGS +																				
		<b>Deck</b> N <b>Unsound Deck %</b> <b>Superstructure</b> N <b>Substructure</b> N <b>Channel</b> 6 <b>Culvert</b> 5																				
		+ NBI      APPRAISAL      RATINGS +																				
		<b>Structure Evaluation</b> 5 <b>Deck Geometry</b> N <b>Underclearances</b> N <b>Waterway Adequacy</b> 6 <b>Approach Alignment</b> 8																				
		+ SAFETY      FEATURES +																				
		<b>Bridge Railing</b> 0 - SUBSTANDARD <b>GR Transition</b> 0 - SUBSTANDARD <b>Appr. Guardrail</b> 0 - SUBSTANDARD <b>GR Termini</b> 0 - SUBSTANDARD																				
		+ IN      DEPTH      INSP. +																				
		<table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 60%;"></th> <th style="width: 10%; text-align: center;">Y/N</th> <th style="width: 10%; text-align: center;">Freq</th> <th style="width: 20%; text-align: center;">Date</th> </tr> </thead> <tbody> <tr> <td><b>Frac. Critical</b></td> <td style="text-align: center;">N</td> <td></td> <td></td> </tr> <tr> <td><b>Underwater</b></td> <td style="text-align: center;">Y</td> <td style="text-align: center;">60</td> <td style="text-align: center;">06/20/2016</td> </tr> <tr> <td><b>Pinned Asbly.</b></td> <td style="text-align: center;">N</td> <td></td> <td></td> </tr> <tr> <td><b>Spec. Feat.</b></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>		Y/N	Freq	Date	<b>Frac. Critical</b>	N			<b>Underwater</b>	Y	60	06/20/2016	<b>Pinned Asbly.</b>	N			<b>Spec. Feat.</b>			
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<b>Pinned Asbly.</b>	N																					
<b>Spec. Feat.</b>																						
		+ WATERWAY +																				
		<b>Drainage Area (sq. mi.)</b> <b>Waterway Opening (sf.)</b> 128 <b>Navigation Control</b> 0 - No nav. control on <b>Pier Protection</b> ! <b>Nav. Clr. (ft.)</b> <b>Vert.</b> 0.0 <b>Horiz.</b> 0.0 <b>Nav. Vert. Lift Bridge Clear. (ft.)</b> <b>MN Scour Code</b> E - CULVERT <b>Year</b> 1991																				
		+ CAPACITY      RATINGS +																				
		<b>Design Load</b> 0 - Other/Unknown <b>Operating Rating</b> 2 - HS TRUCK      32.2 <b>Inventory Rating</b> 2 - HS TRUCK      22.4 <b>Posting VEH:</b> <b>SEMI:</b> <b>DBL:</b> <b>Rating Date</b> 5/1/1990 <b>Overweight Permit Codes</b> <b>A</b> N - N/A <b>B</b> N - N/A <b>C</b> N - N/A																				
+ STRUCTURE +	+ RDWY      DIMENSIONS +																					
<b>Service On</b> 1 - Highway <b>Service Under</b> 5 - Waterway <b>Main Span Type</b> 1 - Concrete <b>Main Span Design</b> 13 - Box Culvert <b>Main Span Detail</b> <b>Appr. Span Type</b> <b>Appr. Span Design</b> <b>Appr. Span Detail</b> <b>Skew</b> 0 <b>Culvert Type</b> W88D <b>Barrel Length</b> 69 <b>Cantilever ID</b>  <b>Number of Spans</b> <b>MAIN:</b> 2 <b>APPR:</b> 0 <b>TOTAL:</b> <b>Main Span Length</b> 8.0 ft. <b>Structure Length</b> 18.5 ft. <b>Deck Width (Out-to-Out)</b> 0.0 ft. <b>Deck Material</b> N - Not Applicable <b>Wear Surf Type</b> 6 - Bituminous <b>Wear Surf Install Year</b> <b>Wear Course/Fill Depth</b> 1.85 ft. <b>Deck Membrane</b> N - Not Applicable (applies <b>Deck Rebars</b> N - Not Applicable (no deck) <b>Deck Rebars Install Year</b> <b>Structure Area (Out-to-Out)</b> 0 <b>sq. ft.</b> <b>Roadway Area (Curb-to-Curb)</b> <b>sq. ft.</b> <b>Sidewalk Width</b> 50A. Lt 0.00 ft.      50B. Rt 0.00 ft. <b>Curb Height</b> Lt 0.00 ft.      Rt 0.00 ft. <b>Rail Type</b> Lt NN      Rt NN	<b>If Divided</b> <b>NB-EB</b> <b>SB-WB</b> <b>Roadway Width</b> 66.70 ft.      ft. <b>Vertical Clearance</b> ft.      ft. <b>Max. Vert. Clear.</b> ft.      ft. <b>Horizontal Clear.</b> ft.      ft. <b>Lateral Clearance</b> ft.      ft. <b>Appr. Surface Width</b> 66.7 ft. <b>Bridge Roadway Width</b> 0.0 ft. <b>Median Width On Bridge</b> ft.																					
	+ MISC.      BRIDGE      DATA +																					
	<b>Structure Flared</b> 0 - No flare <b>Parallel Structure</b> N - No parallel structure <b>Field Conn. ID</b> <b>Abutment Foundation (Material/Type)</b> N - N/A <b>Pier Foundation (Material/Type)</b> N - N/A <b>Historic Status</b> 5 - Not eligible																					
	+ PAINT +																					
	<b>Year Painted</b> <b>Unsound Paint %</b> <b>Painted Area</b> <b>sq. ft.</b> <b>Primer Type</b> <b>Finish Type</b>																					
	+ BRIDGE      SIGNS +																					
	<b>Posted Load</b> 0 - Not Required <b>Traffic</b> 0 - Not Required <b>Horizontal</b> 1 - Object Markers <b>Vertical</b> N - Not Applicable																					

# MINNESOTA BRIDGE INSPECTION REPORT

12/05/2016

Inspector: CO Bridge

## BRIDGE 90475 CSAH 17(FRANCE AV) OVER NINE MILE CREEK

County: Hennepin	Location: 1.8 MI N OF JCT CSAH 1	Length: 18.5 ft.
City: Bloomington	Route: 04 - CSAH 17 Ref. Pt.: 001+00.820	Deck Width: 0.0 ft.
Township:	Control Section:	Rdwy. Area/ Pct. Unsnd: sq. ft. / %
Section: 8 Township: 027N Range: 24W Maint. Area:		Paint Area/ Pct. Unsnd: sq. ft. / %
Span Type: 1 - Concrete 19 - Culvert (includes frame culverts)	Local Agency Bridge Nbr.: 382	Culvert: W88D
List:		Postings:
NBI Deck: N Super: N Sub: N Chan: 6 Culv: 5		
	Open, Posted, Closed: A - Open	
	MN Scour Code: E - CULVERT	

Appraisal Ratings - Approach: 8 Waterway: 6	Unofficial Structurally Deficient	N
Required Bridge Signs - Load Posting: 0 - Not Required	Unofficial Functionally Obsolete	N
Horizontal: 1 - Object Markers	Unofficial Sufficiency Rating	66.0
Traffic: 0 - Not Required		
Vertical: N - Not Applicable		

ELEM NBR	ELEMENT NAME	REPORT TYPE	INSP. DATE	QUANTITY	QTY CS 1	QTY CS 2	QTY CS 3	QTY CS 4
241	Reinforced Concrete Culvert	Underwater	06/20/2016	138 LF	0	130	8	0
		Routine	05/05/2016	138 LF	0	133	5	0
Notes: 241. Conc weathered w/ some honeycombed areas in walls and ceiling. Cracks and spalls w/ efflor @ the 2 const joints.'14-no change. '16-crack w/ efflor @ W end of S barrel.								
330	Metal Bridge Railing	Underwater	06/20/2016	36 LF	36	0	0	0
		Routine	05/05/2016	36 LF	36	0	0	0
Notes: 330. '16-element added. Guardrail attached to headwall on both sides.								
515	Steel Protective Coating	Underwater	06/20/2016	36 SF	0	35	0	1
		Routine	05/05/2016	36 SF	0	35	0	1
Notes: 515. Galvanizing is faded. Small surface rust area on E side @ N end.								
800	Critical Deficiencies or Safety Hazards	Underwater	06/20/2016	1 EA	1	0	0	0
		Routine	05/05/2016	1 EA	1	0	0	0
Notes: 800.								
870	Culvert End Treatment	Underwater	06/20/2016	2 EA	0	2	0	0
		Routine	05/05/2016	2 EA	0	2	0	0
Notes: 870. Conc weathered. Vert cracks and efflor in both. Surface coating added. East-Small honeycombed area and spall in SE wing. Spall on N end of headwall. West-10" scrape in NW wing. Vert crack in center of headwall. Small 8" X 6" spall on headwall. '14-tree debris @ W end partially blocks inlet. '16-tree debris has been removed.								
871	Roadway Over Culvert	Underwater	06/20/2016	1 EA	0	1	0	0
		Routine	05/05/2016	1 EA	0	1	0	0
Notes: 871. Many trans and long cracks in surface, some are sealed. Unsealed cracks up to 1/8" wide. '14-roadway is honeycombed and rutted. '16-road has been resurfaced. Mod, full width trans crack on both sides of culvert.								
885	Scour	Underwater	06/20/2016	1 EA	1	0	0	0
891	Other Bridge Signing	Underwater	06/20/2016	1 EA	1	0	0	0
		Routine	05/05/2016	1 EA	1	0	0	0
Notes: 891. Horiz clearance markers X4-4 placed @ approaches. No Parking signs on both sides of roadway.								
892	Slopes & Slope Protection	Underwater	06/20/2016	1 EA	1	0	0	0
		Routine	05/05/2016	1 EA	1	0	0	0
Notes: 892. '16-slopes well vegetated.								

**BRIDGE 90475 CSAH 17(FRANCE AV) OVER NINE MILE CREEK**

ELEM NBR	ELEMENT NAME	REPORT TYPE	INSP. DATE	QUANTITY	QTY CS 1	QTY CS 2	QTY CS 3	QTY CS 4
893	Guardrail	Underwater	06/20/2016	1 EA	0	1	0	0
		Routine	05/05/2016	1 EA	0	1	0	0
Notes: 893. No crashworthy end treatments. Rail is attached to bridge on each side w/ 3 I-beams. 2' high chain link fence on top of 5 guardrail posts by bit trail on W side - signed bike route. Minor damage in NW. '14-anchor rod broke in SW. NW end treatment is damaged. Minor damage in SW & NW. '16-no change.								
894	Deck & Approach Drainage	Underwater	06/20/2016	1 EA	1	0	0	0
		Routine	05/05/2016	1 EA	1	0	0	0
Notes: 894. '16-change to CS1-no notes to justify CS2 rating.								
899	Miscellaneous Items	Underwater	06/20/2016	1 EA	1	0	0	0
		Routine	05/05/2016	1 EA	1	0	0	0
Notes: 899. 4" steel conduit for 3" NSP cable placed in fill by W headwall. Buried telephone cable on E side. Diag brace @ N end of chain link fence on W side is detached from post.								
900	Protected Species	Underwater	06/20/2016	1 EA	1	0	0	0
		Routine	05/05/2016	1 EA	1	0	0	0
Notes: 900. '16-none noted.								

General Notes: \*Bridge 90475 (382) CSAH 17 / Nine Mile Creek 5/5/16 PTH and WJM.

Recommended Repairs:

899. Reattach diag brace at N end of chain link fence on west side.

58. Deck NBI:

36A. Brdg Railings NBI:

36B. Transitions NBI:

36C. Appr Guardrail NBI:

36D. Appr Guardrail Terminal NBI:

59. Superstructure NBI:

60. Substructure NBI:

61. Channel NBI: Tree debris is partially blocking culvert inlet. '16-tree debris has been removed.

62. Culvert NBI:

71. Waterway Adeq NBI:

72. Appr Roadway Alignment NBI:

Inventory Notes:

Barritt Lovelace

Inspector's Signature

Reviewer's Signature

# Pictures



Photo 1 - West Elevation, Looking East

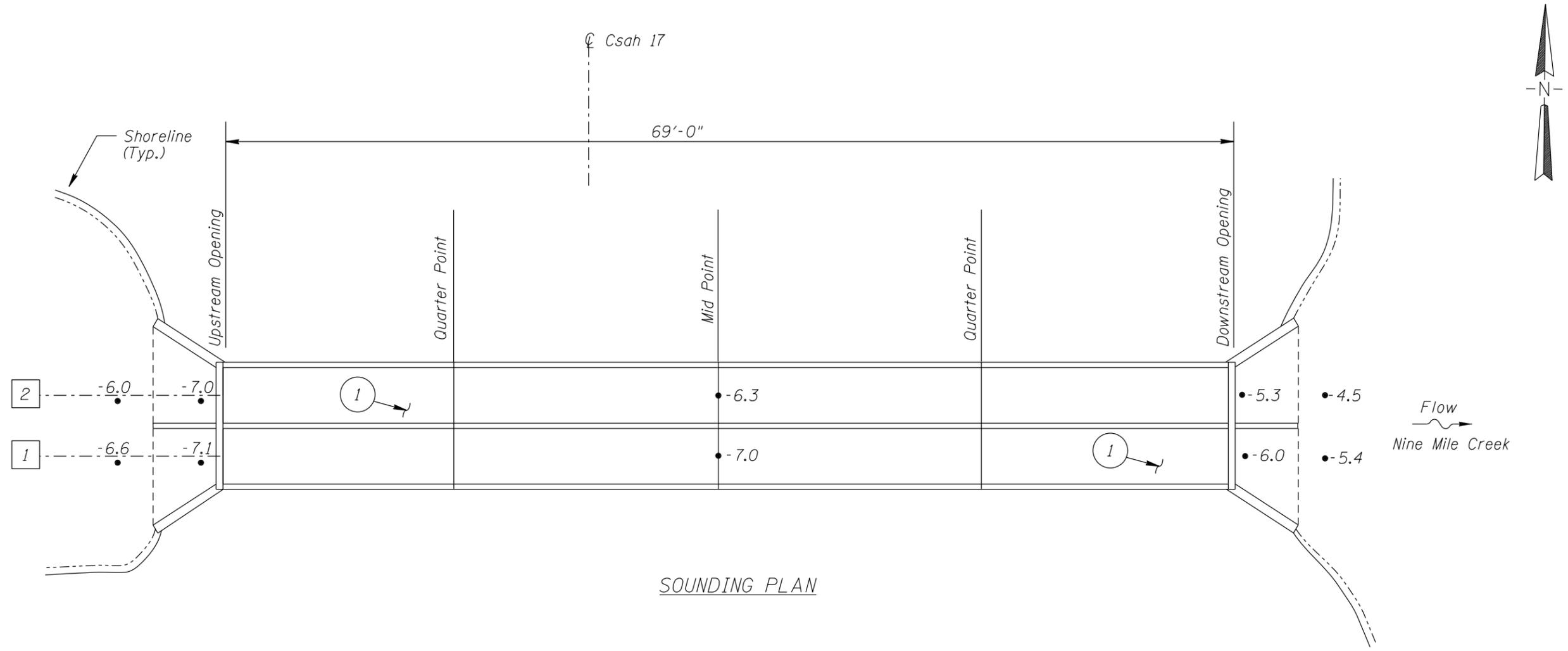


Photo 2 - East Elevation, Looking West

## Pictures



Photo 3 - Typical Interior Barrel, North Barrel Looking West



INSPECTION NOTES:

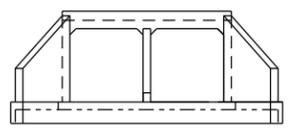
- ① The bottom consisted of organic material with random rip-rap and gravel penetration up to 6 inches.

GENERAL NOTES:

1. Two-barrel box culvert was inspected underwater.
2. At the time of inspection on June 20, 2016, the waterline was located approximately 1.1 feet below the bottom of the culvert ceiling at the downstream opening of box culvert. This corresponds to waterline elevation of 98.9 feet, which is assumed due to lack of plans with elevation information.
3. Soundings indicate the water depth at the time of inspection and are measured in feet.

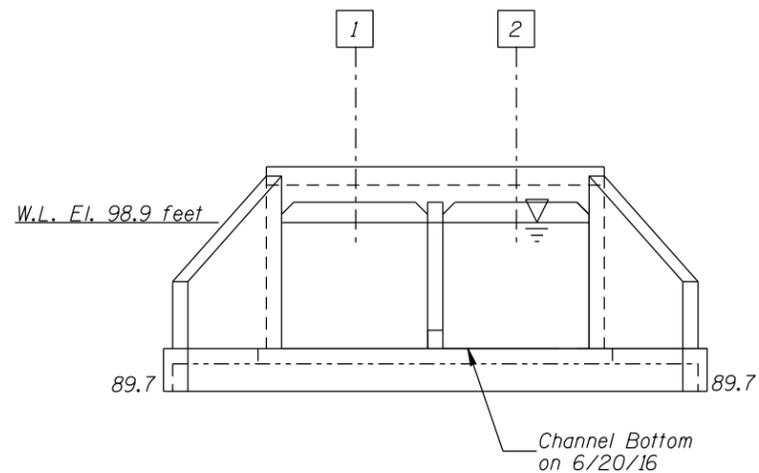
Legend

- 2.4 Sounding Depth from Waterline (6/20/16)
- ① Culvert Barrel Identification Designation

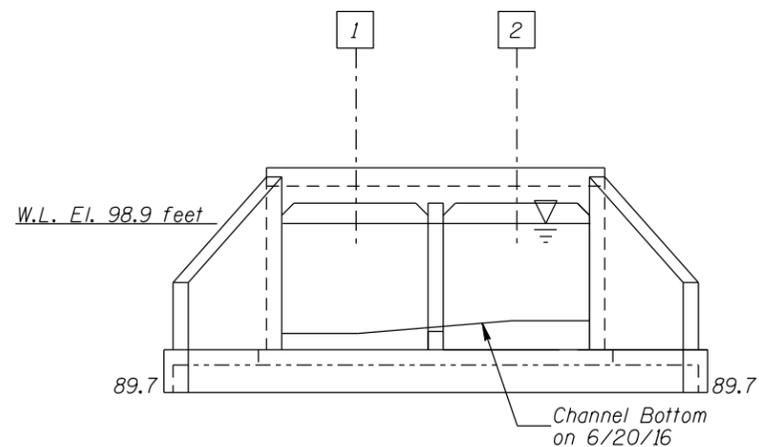


TYPICAL END VIEW OF CULVERT

<b>MINNESOTA DEPARTMENT OF TRANSPORTATION UNDERWATER BRIDGE INSPECTION</b>		
STRUCTURE NO. 90475 OVER NINE MILE CREEK HENNEPIN COUNTY		
<b>INSPECTION AND SOUNDING PLAN</b>		
Drawn By: LBH	<b>COLLINS ENGINEERS</b>	Date: June 2016
Checked By: BRL	1599 Selby Avenue Suite 205 St. Paul, MN 55104 (651) 646-8502 www.collinsengr.com	Scale: NTS
Project: 63-9687		Figure No.: 1



UPSTREAM OPENING PROFILE



DOWNSTREAM OPENING PROFILE

Note: \_\_\_\_\_  
 Refer to Figure 1 for General Notes.

<b>MINNESOTA DEPARTMENT OF TRANSPORTATION UNDERWATER BRIDGE INSPECTION</b>		
STRUCTURE NO. 90475 OVER NINE MILE CREEK HENNEPIN COUNTY		
UPSTREAM AND DOWNSTREAM OPENING PROFILES		
Drawn By: LBH	<b>COLLINS ENGINEERS</b> <small>1599 Selby Avenue Suite 206 St. Paul, MN 55104 (651) 646-8502 www.collinsengr.com</small>	Date: June 2016
Checked By: BRL		Scale: 1"=10'
Project: 63-9687		Figure No.: 2