

UNDERWATER BRIDGE INSPECTION REPORT

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STRUCTURE NO. 97918

CR 725

OVER THE

HELLEWAGS CREEK

ST. LOUIS COUNTY

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SEPTEMBER 27, 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 unit inspected at Bridge No. 97918, a pre-cast concrete pipe arch culvert, was found to be in good condition, with no defects of structural significance. The concrete of all exposed surfaces was smooth and sound with no notable defects. All the lap joints were well aligned with no significant gaps between culvert segments. The floor of the culvert was exposed and clear of debris throughout the length of the culvert. The concrete toe at the upstream opening was exposed with a maximum vertical exposure of 1 foot.

INSPECTION FINDINGS:

- (A) The channel bottom material at the upstream opening of the culvert typically consisted of soft silt and small timber debris allowing a maximum probe rod penetration of 1 foot.
- (B) The channel bottom material at the downstream opening of the culvert typically consisted of sandy silt and stones allowing a maximum probe rod penetration of 6 inches.
- (C) All exposed concrete surfaces were smooth and sound.
- (D) All concrete joints were well aligned and with no notable gaps between culvert sections.
- (E) The floor of the culvert was exposed throughout the length of the culvert and at the upstream toe with a maximum vertical toe exposure of 1 foot.

RECOMMENDATIONS:

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

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

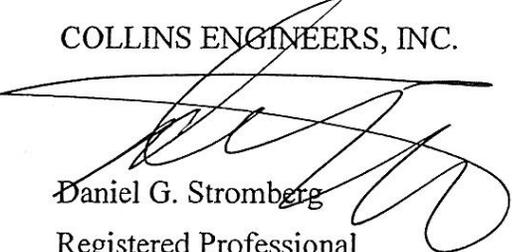
Respectfully submitted,

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: 97918

Feature Crossed: Hellewags Creek

Feature Carried: CR 725

Location: St. Louis County

Bridge Description: The substructure consists of an 8 foot wide by 5 foot high precast concrete pipe arch culvert.

2. INSPECTION DATA

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

Dive Team: Marc B. Parker, Clay G. Brookins

Date: September 27, 2012

Weather Conditions: Sunny, 60° F

Underwater Visibility: 2 feet

Waterway Velocity: None / Negligible

3. SUBSTRUCTURE INSPECTION DATA

Substructure Inspected: Concrete pipe culvert

General Shape: The substructure consists of an 8 foot wide by 5 foot high precast concrete pipe arch culvert.

Maximum Water Depth at Substructure Inspected: Approximately 6.2 feet.

4. WATERLINE DATUM

Water Level Reference: Top of the concrete pipe inversion at the upstream opening.

Water Surface: The waterline was approximately 0.2 feet above the reference.

Waterline Elevation 100.2.

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

Item 62: Culvert Condition: Code 7

Item 61: Channel and Channel Protection: Code 7

Item 92B: Underwater Inspection: Code B/09/12

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.

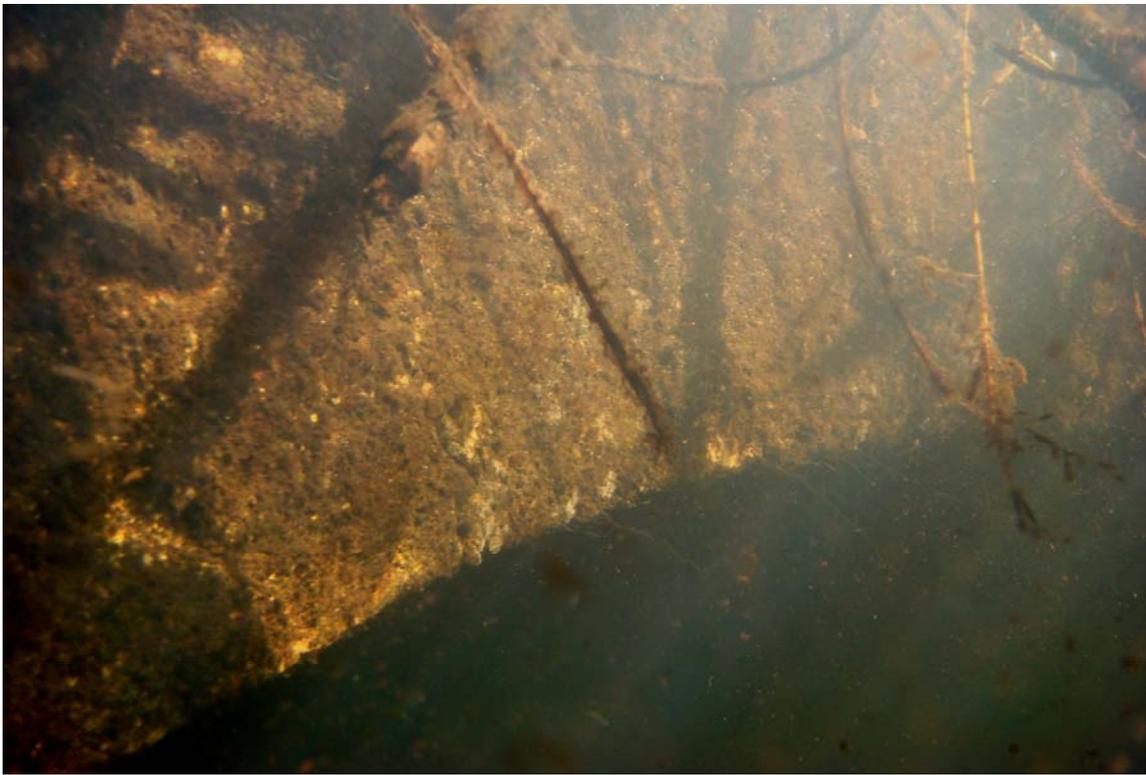
       Yes   X   No

6. STRUCTURAL ELEMENT CONDITION RATING

Item #	Element Description	Quantity	Unit	Conditions				
				1	2	3	4	5
241	Concrete Culvert	75	EA	75	0	0	0	n/a
985	Slopes and Slope Protection	1	EA	1	0	0	n/a	n/a



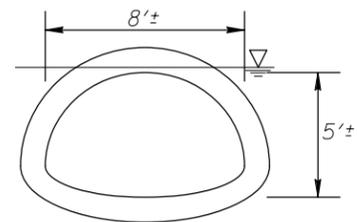
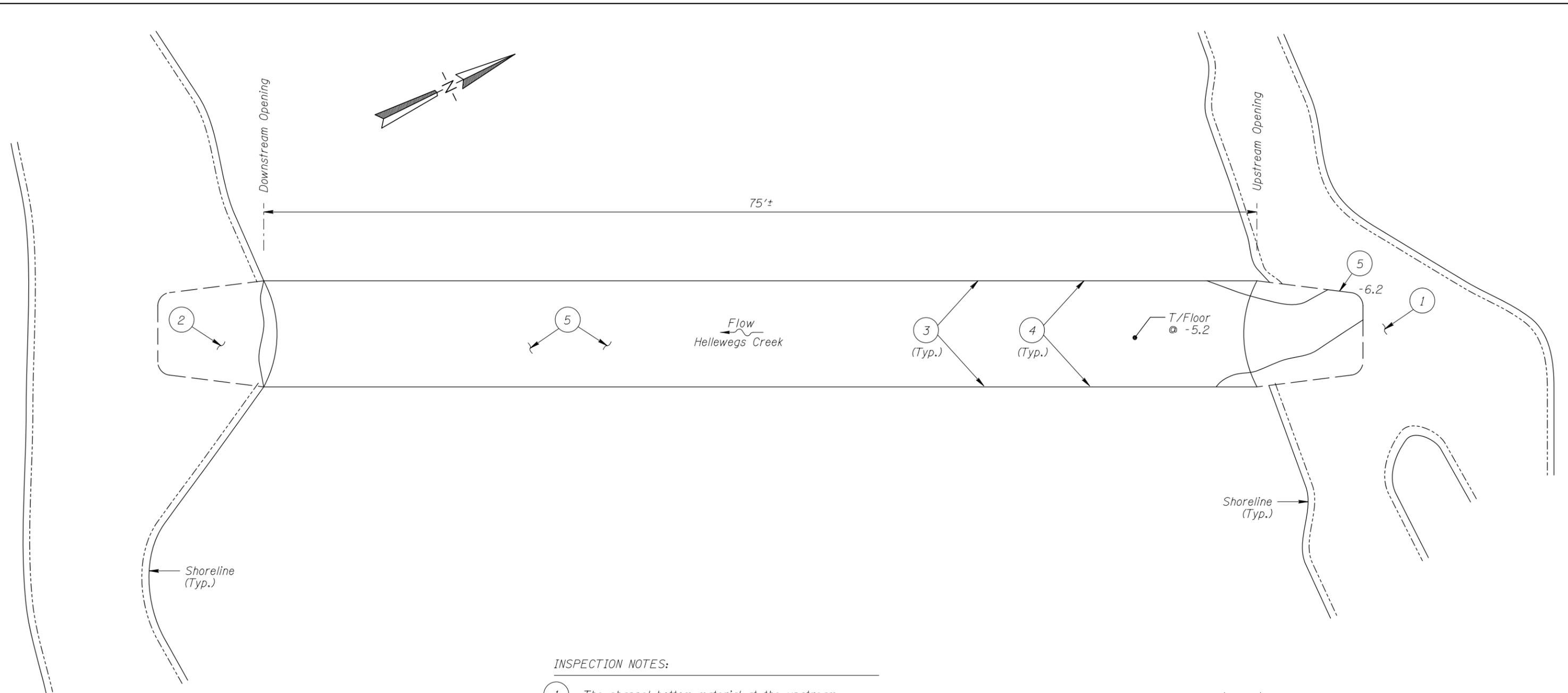
Photograph 1. View of the Downstream Opening of the Structure, Looking Northeast



Photograph 2. View of the Typical Concrete Condition Below Water, Looking Northeast.



Photograph 3. View of a Typical Concrete Joint, Looking East.



TYPICAL END VIEW OF CULVERT

**INSPECTION NOTES:**

- 1 The channel bottom material at the upstream opening of the culvert typically consisted of soft silt and small timber debris allowing a maximum probe rod penetration of 1 foot.
- 2 The channel bottom material at the downstream opening of the culvert typically consisted of sandy silt and stones allowing a maximum probe rod penetration of 6 inches.
- 3 All exposed concrete surfaces were smooth and sound.
- 4 All concrete joints were well aligned and with no notable gaps between culvert sections.
- 5 The floor of the culvert was exposed throughout the length of the culvert and at the upstream toe with a maximum vertical toe exposure of 1 foot.

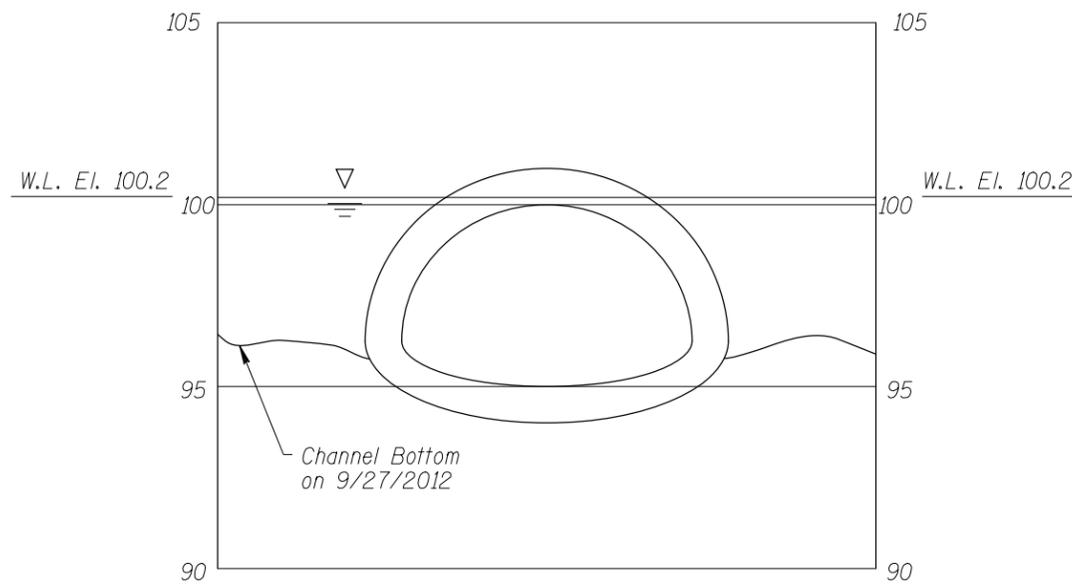
**GENERAL NOTES:**

- 1. The concrete pipe culvert was inspected during the underwater inspection.
- 2. At the time of inspection on September 27, 2012, the waterline was located approximately 0.2 feet above the top of the culvert inversion at the upstream opening. Since elevation information was not available a reference elevation of 100.0 was assumed. Based on the assumed reference the waterline elevation was 100.2.
- 3. Soundings indicate the water depth at the time of inspection and are measured in feet.

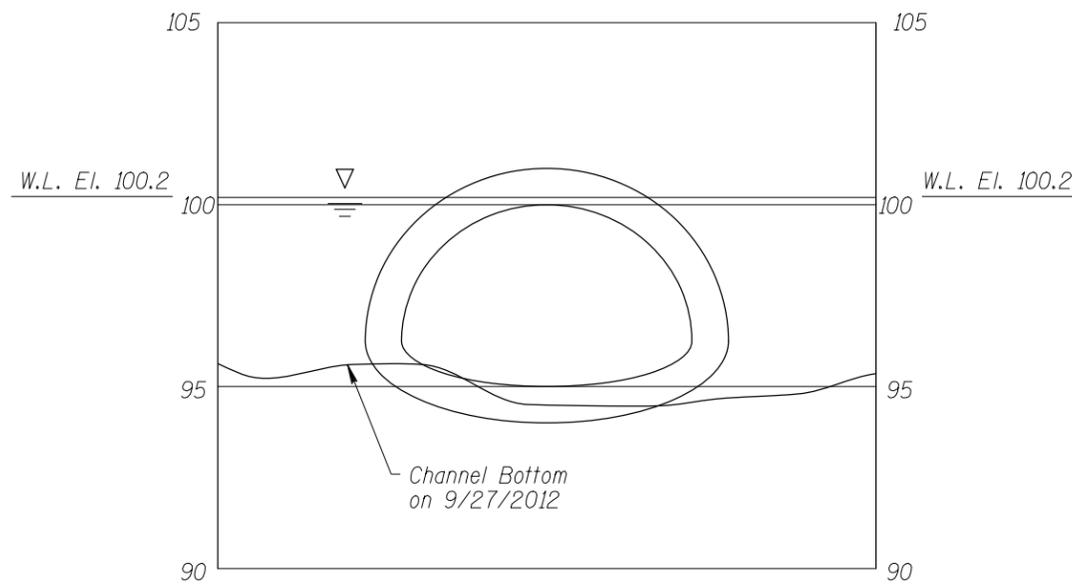
**Legend**

- 1.0 Sounding Depth from Waterline (9/27/2012)
- A Pile Identification Designation
- 1 Inspection Note Number

<b>MINNESOTA DEPARTMENT OF TRANSPORTATION UNDERWATER BRIDGE INSPECTION</b>		
STRUCTURE NO. 97918 CR 725 OVER THE HELLEWAGS CREEK ST. LOUIS COUNTY		
<b>INSPECTION AND SOUNDING PLAN</b>		
Drawn By: MBP	<b>COLLINS ENGINEERS</b>	Date: DEC. 2012
Checked By: LJ	<small>123 North Wacker Drive Suite 900 Chicago, IL 60606 (312) 704-9300 www.collinsengr.com</small>	Scale: NTS
Code: 742397918		Figure No.: 1



DOWNSTREAM FASCIA PROFILE



UPSTREAM FASCIA PROFILE

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

<b>MINNESOTA DEPARTMENT OF TRANSPORTATION UNDERWATER BRIDGE INSPECTION</b>		
STRUCTURE NO. 97918 CR 725 OVER THE HELLEWAGS CREEK ST. LOUIS COUNTY		
<b>UPSTREAM AND DOWNSTREAM FASCIA PROFILES</b>		
Drawn By: MBP	<b>COLLINS ENGINEERS</b> <small>123 North Wacker Drive Suite 900 Chicago, IL 60606 (312) 764-9300 www.collinsengr.com</small>	Date: DEC. 2012
Checked By: LJ		Scale: 1"=5'
Code: 742397918		Figure No.: 2

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

INSPECTORS: Collins Engineers, Inc. DATE: September 27, 2012

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

BRIDGE NO: 97918 WEATHER: Sunny, 60° F

WATERWAY CROSSED: Hellewags Creek

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

PERSONNEL: Marc B. Parker, Clayton G. Brookins

EQUIPMENT: Surface-supplied Air Diving Equipment, Probe Rod, Camera

TIME IN WATER: 10:15 A.M.

TIME OUT OF WATER: 10:55 A.M.

WATERWAY DATA: VELOCITY None / Negligible

VISIBILITY 2 feet

DEPTH 6.2 feet maximum at the upstream opening

ELEMENTS INSPECTED: The concrete pipe culvert

REMARKS: Overall, the substructure unit inspected underwater was found to be in good condition, with no defects of structural significance. The concrete of all exposed surfaces was smooth and sound with no notable defects. All the lap joints were well aligned with no significant gaps between culvert segments. The floor of the culvert was exposed and clear of debris throughout the length of the culvert. The concrete toe at the upstream opening was exposed with a maximum vertical exposure of 1 foot.

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. 97918  
 INSPECTORS Collins Engineers, Inc.  
 ON-SITE TEAM LEADER Daniel G. Stromberg, P.E.  
 WATERWAY CROSSED Hellewags Creek

INSPECTION DATE September 27, 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	CONCRETE PIPE CULVERT	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
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
	Concrete Culvert	6.2'	N	7	N	8	N	7	N	7	N	N	7	7	N	N	N	N	N

\*UNDERWATER PORTION ONLY

REMARKS: Overall, the substructure unit inspected underwater was found to be in good condition, with no defects of structural significance. The concrete of all exposed surfaces was smooth and sound with no notable defects. All the lap joints were well aligned with no significant gaps between culvert segments. The floor of the culvert was exposed and clear of debris throughout the length of the culvert. The concrete toe at the upstream opening was exposed with a maximum vertical exposure of 1 foot.

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.