UNDERWATER BRIDGE INSPECTION REPORT

STRUCTURE NO. 88639

CR 615

OVER

UNNAMED CREEK

ST. LOUIS COUNTY

JUNE 21, 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. 88639, a concrete box culvert, was found to be in good condition with no defects of structural significance. Light scaling was observed on all concrete surfaces throughout the length of the culvert with a typical penetration of 1/4 inch. An area of poorly consolidated concrete was observed near the west wall on the downstream end of the culvert. A portion of the concrete floor was covered by a 2 to 3 inch thick layer of gravel and silt.

INSPECTION FINDINGS:

(A) The concrete surfaces of the culvert were sound and in good condition with light scaling typically 1/4 inch deep.

(B) A portion of the culvert floor was typically covered by 2 to 3 inches of silt and gravel infill. The build-up of material appeared to be thicker near the culvert openings with no apron exposure present. The concrete floor was exposed along the west side near the middle half of the culvert length.

(C) An area of poorly consolidated concrete was observed on the west wall near the downstream end of the culvert with typically 2 to 3 inches of penetration.

(D) The channel bottom material upstream and downstream of the structure consisted of fairly soft sandy silt allowing 6 to 12 inches 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:
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: 88639

Feature Crossed: Unnamed Creek

Feature Carried: CR 615

Location: St. Louis County

Bridge Description: The structure consists of a precast concrete box culvert (12 foot wide opening).

2. INSPECTION DATA

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

Dive Team: Clayton Brookins, Breanne Stromberg

Date: June 21, 2012

Weather Conditions: Overcast, 65^{o} F

Underwater Visibility: 2 feet

Waterway Velocity: 1 ft/sec

3. SUBSTRUCTURE INSPECTION DATA

Substructure Inspected: Culvert.

General Shape: 12 foot wide by 4.5 feet high Precast Box Culvert.

Maximum Water Depth at Substructure Inspected: Approximately 4.7 feet.

4. WATERLINE DATUM

Water Level Reference: Top of the upstream headwall

Water Surface: The waterline was approximately 1.6 feet below the reference.
Assumed Waterline Elevation 98.4.

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 6

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.

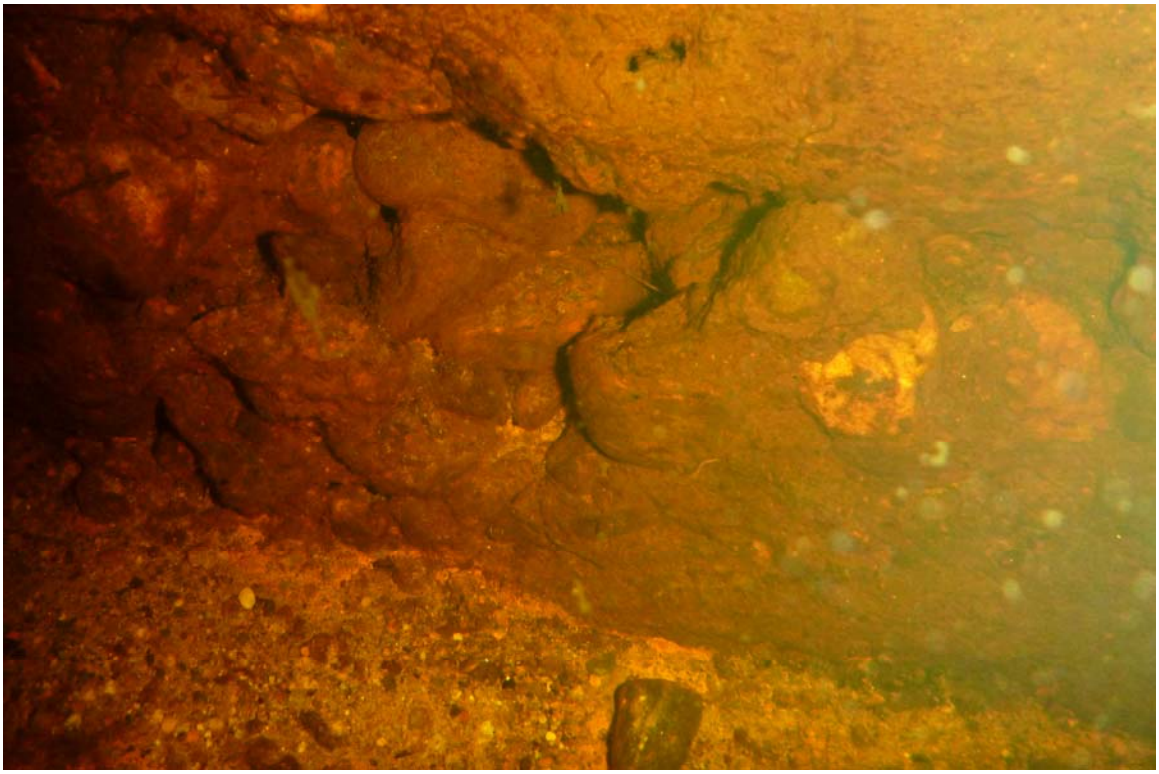
_____ Yes X No

6. STRUCTURAL ELEMENT CONDITION RATING

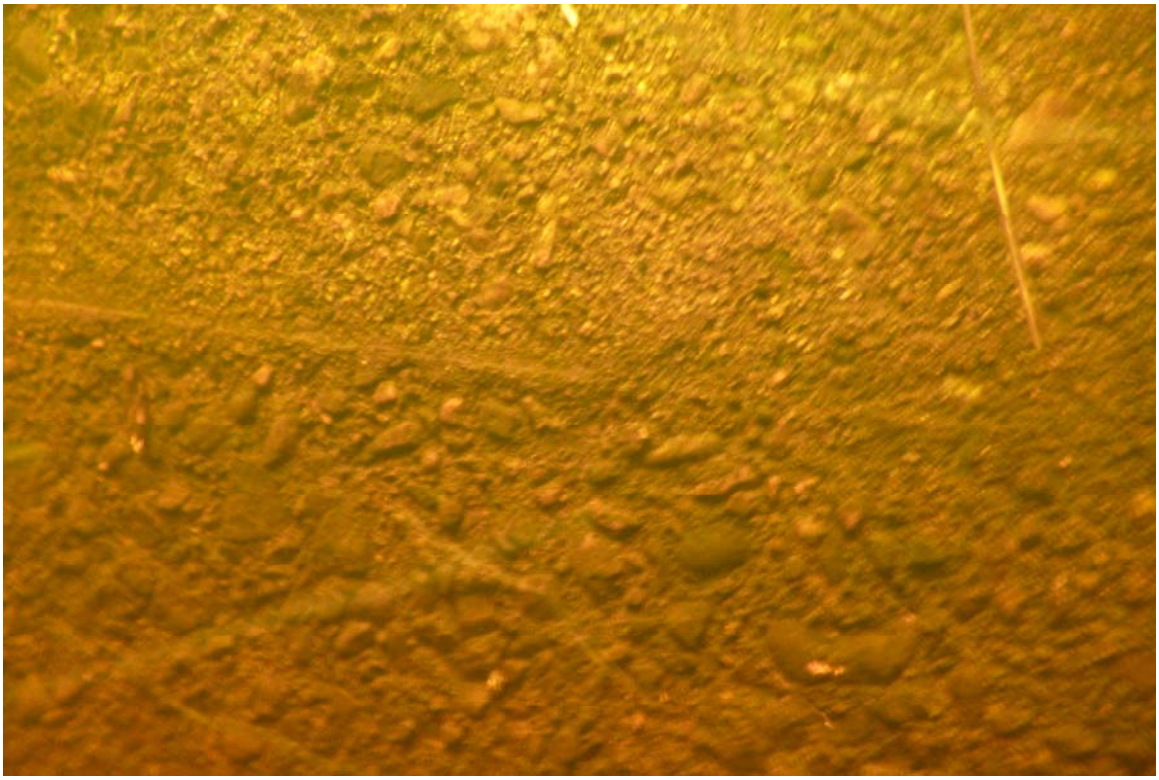
Item #	Element Description	Quantity	Unit	Conditions				
				1	2	3	4	5
241	Reinforced Conc. Culvert	32	LF		32			

Photograph 1. View of Upstream Opening, Looking Northwest.

Photograph 2. View of Downstream Opening, Looking Southwest.



Photograph 3. View of Poorly Consolidated Concrete at the Downstream end of the West Wall, Looking West.



Photograph 4. View of Typical Concrete Scaling Underwater, Looking West.

MINNESOTA DEPARTMENT OF TRANSPORTATION
OFFICE OF BRIDGES AND STRUCTURES

DAILY DIVING REPORT

INSPECTORS: Collins Engineers, Inc. DATE: June 21, 2012

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

BRIDGE NO: 88639 WEATHER: Overcast, 65° F

WATERWAY CROSSED: Unnamed Creek

DIVING OPERATION: _____ SCUBA __X__ SURFACE SUPPLIED AIR

_____ OTHER _____

PERSONNEL: Clayton Brookins, Breanne Stromberg

EQUIPMENT: Surface Supplied Air with Communications, U/W Light, Scraper, Lead Line, Probe Rod, Camera

TIME IN WATER: 8:00 A.M.

TIME OUT OF WATER: 9:00 A.M.

WATERWAY DATA: VELOCITY 1 ft/sec

VISIBILITY 2 Feet

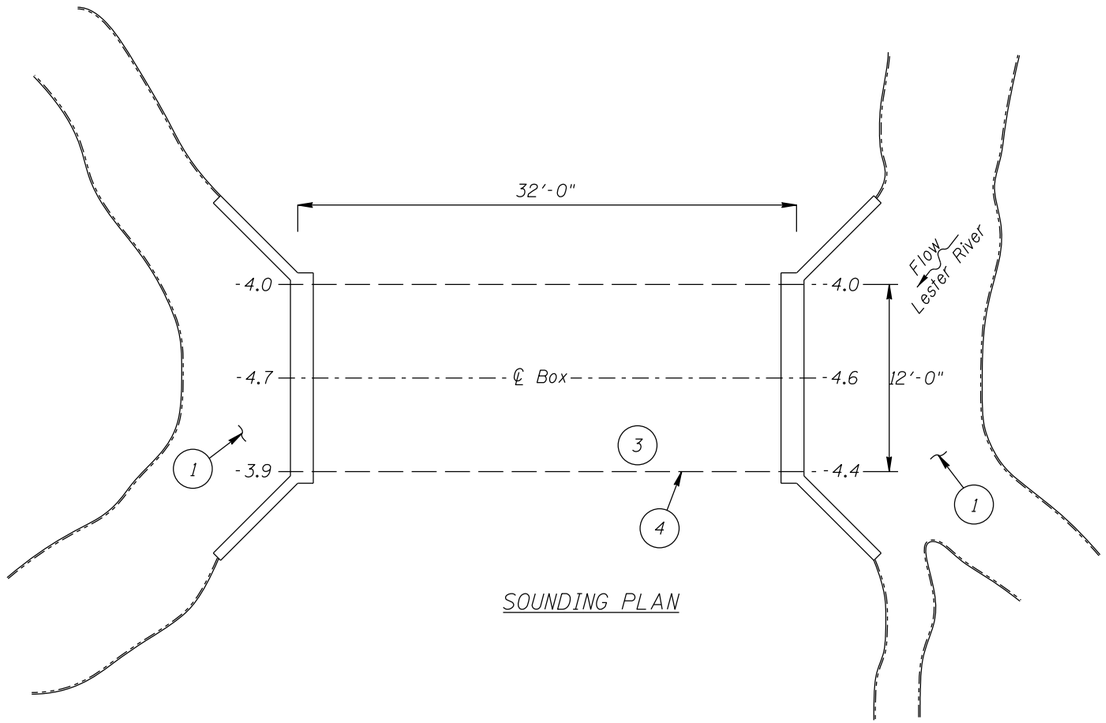
DEPTH 4.7 feet maximum

ELEMENTS INSPECTED: Culvert

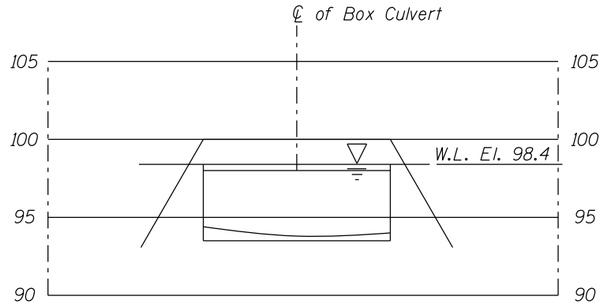
REMARKS: Overall, the concrete box culvert, was found to be in good condition with no defects of structural significance. Light scaling was observed on all concrete surfaces throughout the length of the culvert with a typical penetration of 1/4 inch. An area of poorly consolidated concrete was observed near the west wall near the downstream end of the culvert. The concrete floor was covered by a 2 to 3 inch thick layer of gravel and silt except along the west wall near the middle portion of the culvert where the floor was free of any infill/debris.

FURTHER ACTION NEEDED: _____ YES ___X___ NO

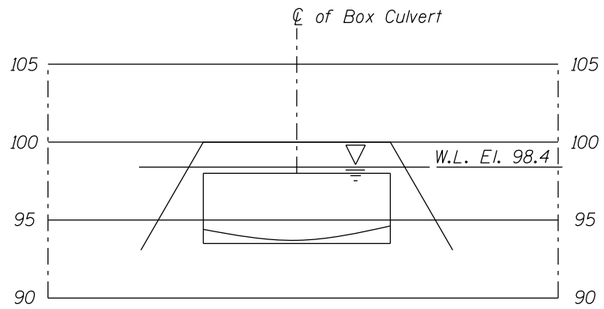
Reinspect the submerged substructure units at the normal maximum recommended (NBIS) interval of sixty (60) months.



SOUNDING PLAN



UPSTREAM FASCIA PROFILE



DOWNSTREAM FASCIA PROFILE

INSPECTION NOTES:

1. Channel bottom material consisted of fairly soft sandy silt allowing 6 to 12 inches of probe rod penetration.
2. Concrete was in good and sound condition. 1/4 deep inch scaling was observed on all surfaces.
3. The culvert floor was partially covered by a 2 to 3 inch thick layer of silt and gravel except along the west wall near the middle portion of the culvert, where the floor was typically free of any infill/debris.
4. An area of poor consolidation was observed on the west culvert wall with 2 to 3 inches of penetration.

GENERAL NOTES:

1. Concrete Box Culvert was inspected underwater.
2. At the time of inspection, on June 21, 2012, the waterline was located approximately 1.6 feet below the top of upstream headwall. Since insufficient elevation information was available, an elevation of 100.0 was assumed. This corresponds to a waterline elevation of 98.4.
3. Soundings indicate the water depth at the time of inspection and are measured in feet.

Legend

-0.4 Sounding Depth (6/21/2012)

MINNESOTA
DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

STRUCTURE NO. 88639
CR 615 OVER CREEK
ST LOUIS COUNTY

INSPECTION AND SOUNDING PLAN

Drawn By: BMS	COLLINS ENGINEERS INC 123 North Wacker Drive Suite 900 Chicago, IL 60606 (312) 704-9300 www.collinsengr.com	Date: JULY 2012
Checked By: LJ		Scale: NTS
Code: 742388639		Figure No.: 1

MINNESOTA DEPARTMENT OF TRANSPORTATION
OFFICE OF BRIDGES AND STRUCTURES

UNDERWATER INSPECTION CONDITION RATING FORM

BRIDGE NO. 88639
INSPECTORS Collins Engineers, Inc.
ON-SITE TEAM LEADER Daniel G. Stromberg, P.E.
WATERWAY CROSSED Unnamed Creek

INSPECTION DATE June 21, 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

			SUBSTRUCTURE						CHANNEL					GENERAL					
UNIT REFERENCE NO.		MAXIMUM DEPTH OF WATER	PILING	CONCRETE CULVERT	FOOTINGS	DISPLACEMENT	OTHER (HEADWALL/WINGWALL)	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
	UNIT DESCRIPTION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
	Culvert	4.7’	N	7	N	8	N	7	N	6	N	N	6	7	N	N	7	N	N

*UNDERWATER PORTION ONLY

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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.