

UNDERWATER BRIDGE INSPECTION REPORT

STRUCTURE NO. L5773
MUN 1 (BLACK DOG RD.)
OVER
BLACK DOG CREEK
CITY OF BURNSVILLE



MAY 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 units inspected at bridge No. L5773, the East and West Abutments and the concrete floor slab, were found to be in satisfactory condition with no defects of structural significance. The concrete floor apron/toe was exposed at the upstream and downstream faces with a maximum vertical exposure of 1 foot near the downstream corner of the West Abutment. The steel sheet piling exhibited light corrosion with minor pitting and rust nodules up to 2 inches. The channel bottom through the structure was a concrete floor slab. No signs of floor slab undermining was observed.

INSPECTION FINDINGS:

- (A) The channel bottom material through the structure consisted of a concrete floor slab. The channel bottom material upstream of the structure consisted of construction debris and riprap up to 2 feet in diameter. The channel bottom material downstream of the structure consisted of silty clay with up to 6 inches of probe rod penetration.
- (B) The concrete surfaces of the East and West Abutments were typically sound with no significant deterioration observed.
- (C) The concrete apron/toe was exposed along the entire downstream face with up to 6 inches of vertical exposure. No undermining was observed.
- (D) The concrete apron/toe was exposed along the upstream face from the west abutment to the west quarter point with up to 1 foot of vertical exposure. No undermining was observed.
- (E) A spall measuring 1 foot wide with a maximum penetration of 2 inches was observed at the midpoint on the top edge of the floor. No reinforcing steel was exposed.

- (F) The steel sheet piling of the return walls exhibited moderate corrosion with rust nodules typically measuring 1 inch in diameter and a maximum of 2 inches in diameter with minor pitting up to 1/8 inch deep.

RECOMMENDATIONS:

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

Inspection Team Leader:



Ryan P. Breen, P.E.

Respectfully submitted,

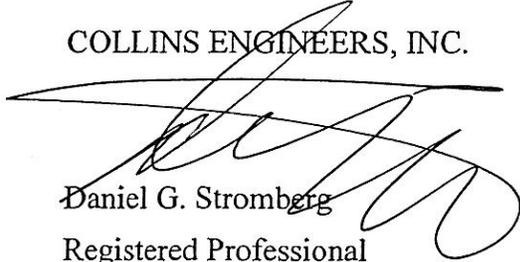
PROFESSIONAL ENGINEER

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

1. BRIDGE DATA

Bridge Number: L5773

Feature Crossed: Black Dog Creek

Feature Carried: Mun. 1 (Black Dog Road)

Location: Dakota County, City of Burnsville

Bridge Description: The structure consists of a reinforced concrete slab supported by two concrete abutment walls and a concrete floor slab. Steel sheet pile approach walls run from the shore line perpendicular to the abutment walls. Structure was previously a dam.

2. INSPECTION DATA

Professional Engineer Diver: Ryan P. Breen, P.E.

Dive Team: Marc B. Parker, Michael J. Banasiak

Date: May 21, 2012

Weather Conditions: Sunny, 80° F

Underwater Visibility: None / Negligible

Waterway Velocity: 1 ft/s

3. SUBSTRUCTURE INSPECTION DATA

Substructure Inspected: East and West Abutments and the Concrete floor slab

General Shape: The structure consists of two concrete abutment walls with a concrete floor slab. Steel sheet pile approach walls run from the shore line perpendicular to the abutment walls.

Maximum Water Depth at Substructure Inspected: Approximately 9.3 feet.

4. WATERLINE DATUM

Water Level Reference: Elevation gauge on the upstream corner of the West Abutment.

Waterline Elevation: The waterline was 690.1

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 8

Item 92B: Underwater Inspection: Code B/05/12

Item 113: Scour Critical Bridges: Code F/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
215	Concrete Abutment Wall	49	LF	49				
985	Slope and Slope Protection	4	EA	2	2			
217	Steel Sheet Pile Walls	178	LF	106	72			



Photograph 1. View of the Upstream Fascia, Looking Northeast.



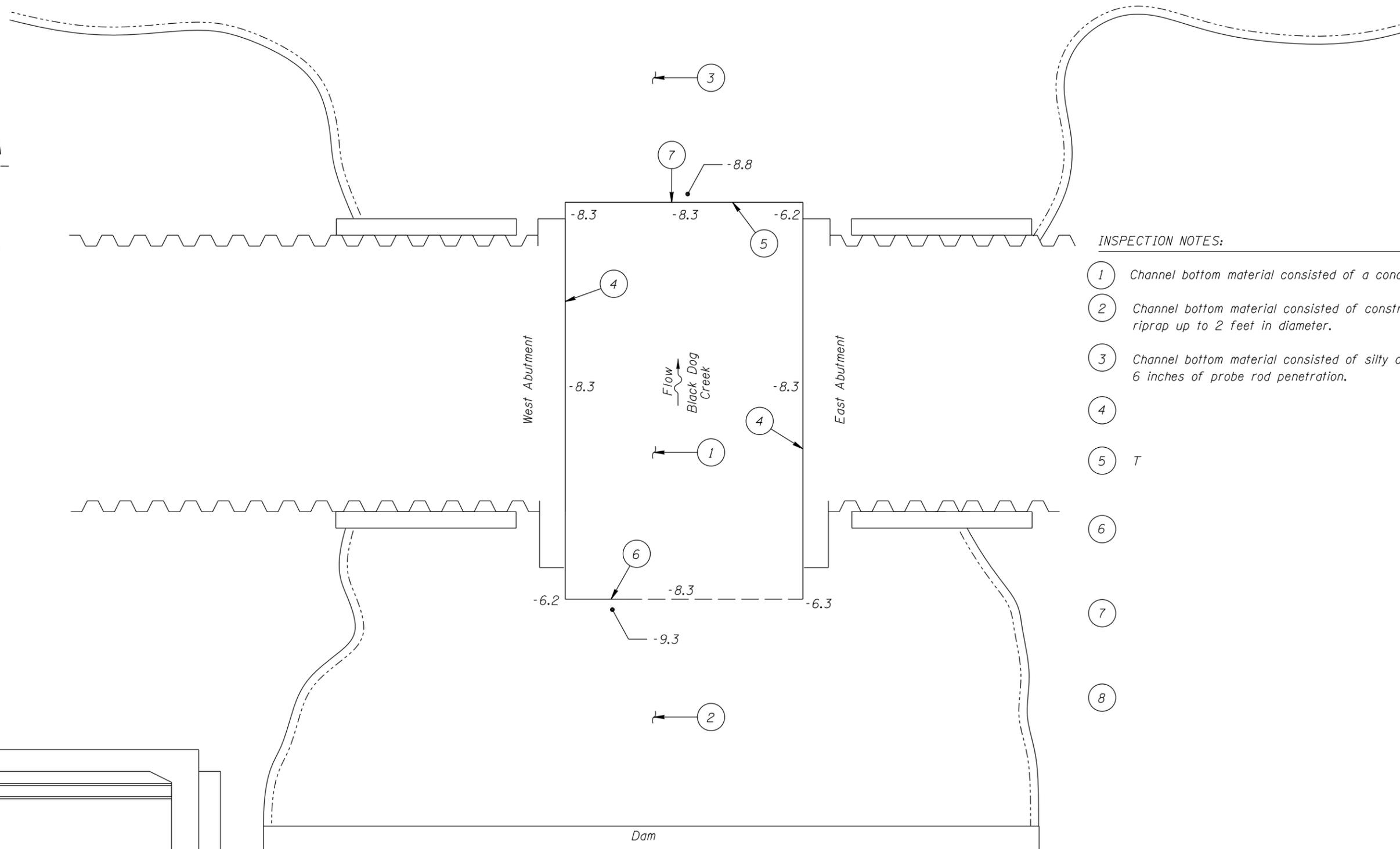
Photograph 2. View of the East Abutment, Looking Northeast.



Photograph 3. View of the West Abutment, Looking Northwest.

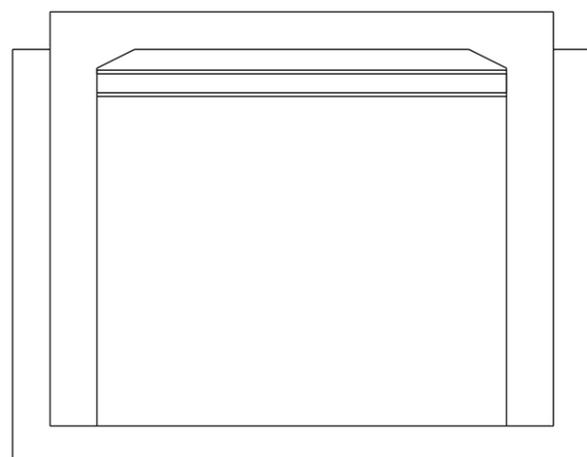


Photograph 4. View of the Upstream Channel and New Dam Structure, Looking South.



INSPECTION NOTES:

- ① Channel bottom material consisted of a concrete floor.
- ② Channel bottom material consisted of construction debris and riprap up to 2 feet in diameter.
- ③ Channel bottom material consisted of silty clay with up to 6 inches of probe rod penetration.
- ④
- ⑤ T
- ⑥
- ⑦
- ⑧



TYPICAL END VIEW OF STRUCTURE

GENERAL NOTES:

1. East and West Abutments and the concrete floor slab were inspected underwater.
2. At the time of inspection on May 21, 2012, the waterline elevation was approximately 690.1 as noted on the existing elevation gauge on the southwest wall of the west abutment.
3. Soundings indicate the water depth at the time of inspection and are measured in feet.
4. Soundings were taken at midpoints of the fascias and at the midpoints of the channel.

Legend

Sounding Depth from Waterline (5/21/12)

① Inspection Note Number

Note:

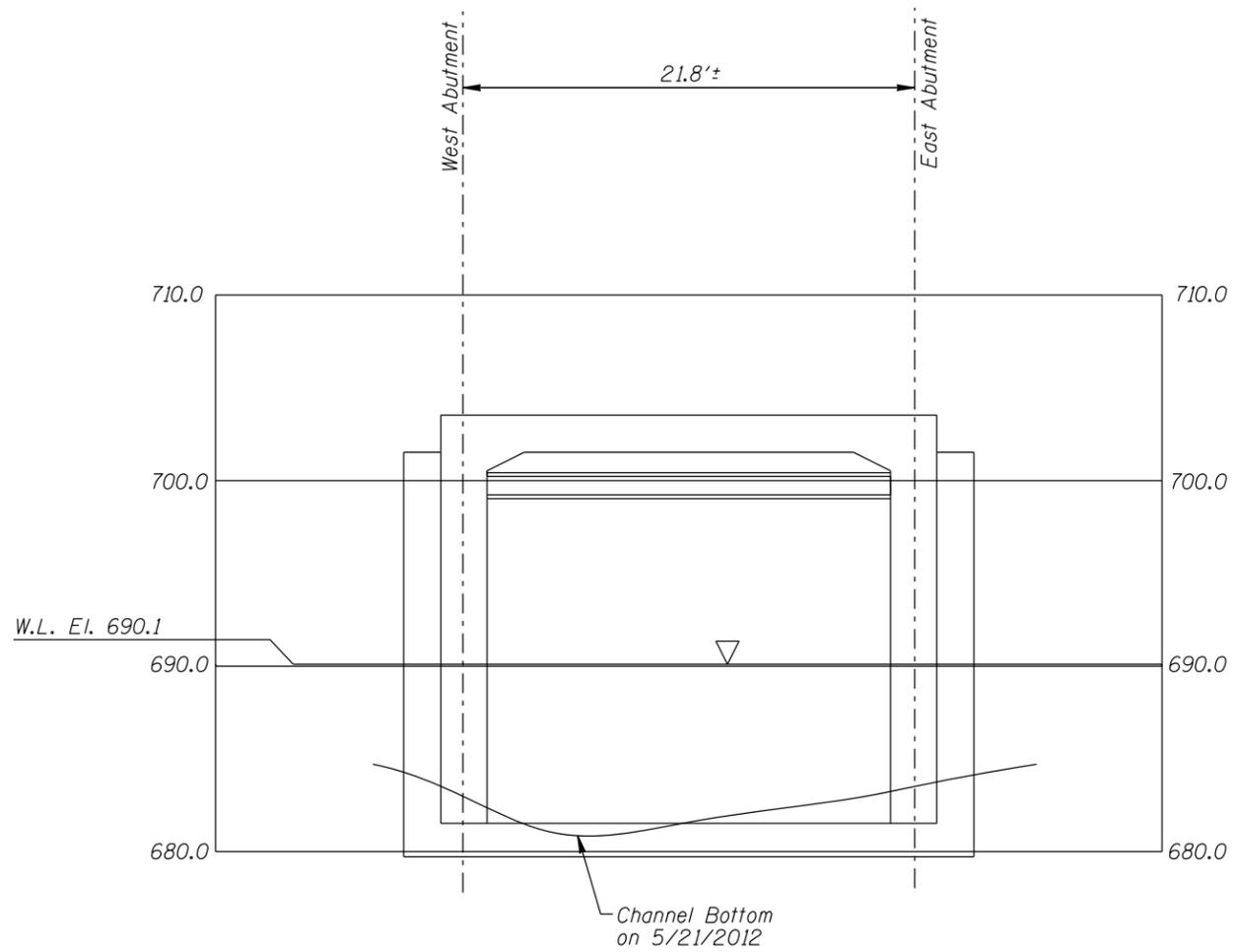
All soundings are based on 2012 waterline.

**MINNESOTA
DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION**

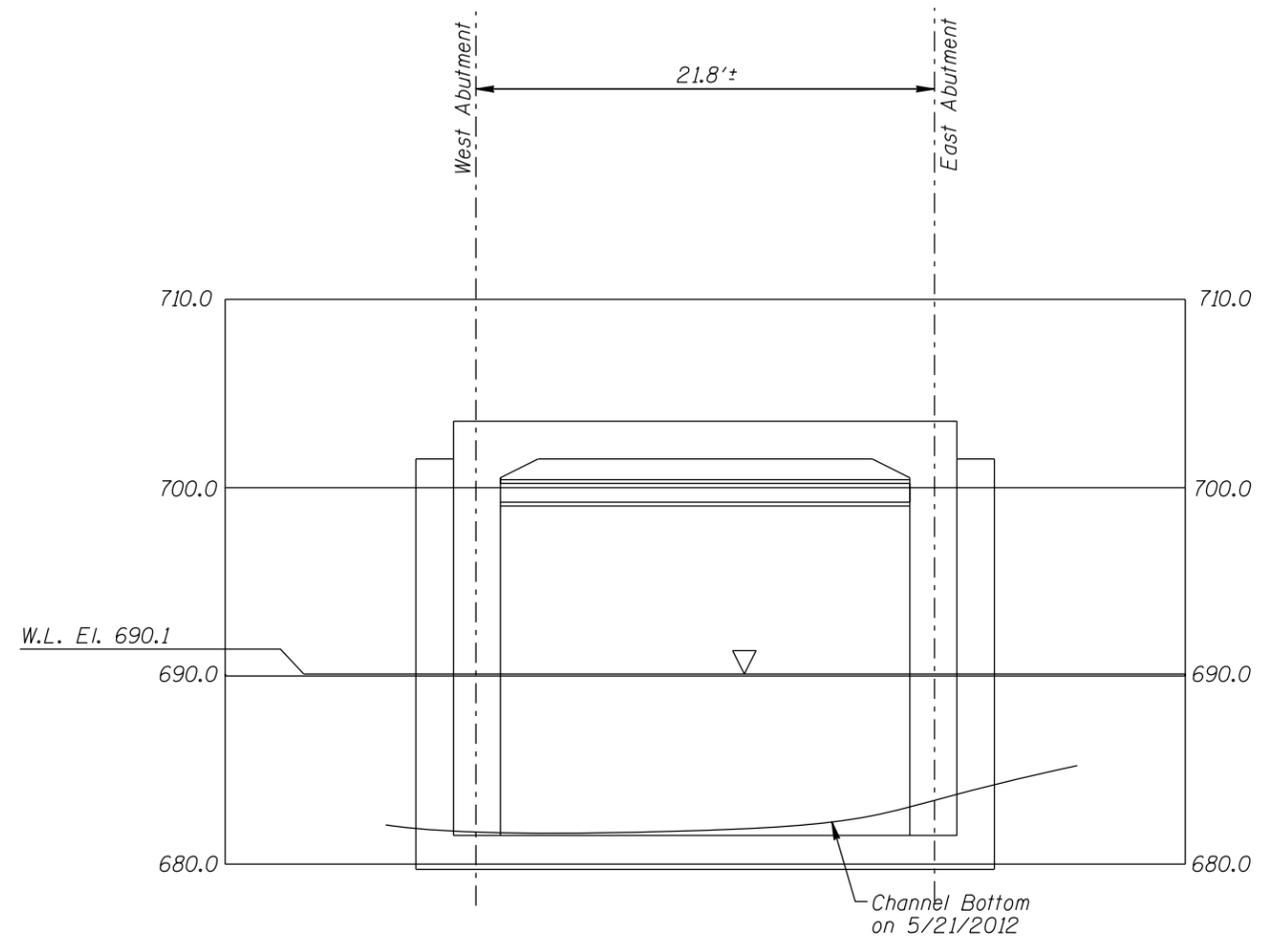
STRUCTURE NO. L5773
BLACK DOG ROAD OVER BLACK DOG CREEK
CITY OF BURNSVILLE

INSPECTION AND SOUNDING PLAN

Drawn By: MBP	COLLINS ENGINEERS <small>123 North Wacker Drive Suite 900 Chicago, IL 60606 (312) 704-9300 www.collinsengr.com</small>	Date: MAY, 2012
Checked By: RPB		Scale: NTS
Code: 7423L5773		Figure No.: 1



UPSTREAM FASCIA PROFILE



DOWNSTREAM FASCIA PROFILE

Note:
Refer to Figure 1 for General Notes.

MINNESOTA DEPARTMENT OF TRANSPORTATION UNDERWATER BRIDGE INSPECTION		
STRUCTURE NO. L5773 BLACK DOG ROAD OVER BLACK DOG CREEK CITY OF BURNSVILLE		
UPSTREAM AND DOWNSTREAM FASCIA PROFILES		
Drawn By: MBP	COLLINS ENGINEERS <small>123 North Wacker Drive Suite 900 Chicago, IL 60606 (312) 704-9300 www.collinsengr.com</small>	Date: MAY, 2012
Checked By: RPB		Scale: N.T.S.
Code: 7423L5773		Figure No.: 2

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

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

ON-SITE TEAM LEADER: Ryan P. Breen, P.E.

BRIDGE NO: L5773 WEATHER: Cloudy, 60° F

WATERWAY CROSSED: Black Dog Creek

DIVING OPERATION: SCUBA SURFACE SUPPLIED AIR
 OTHER _____

PERSONNEL: Marc B. Parker, Michael J. Banasiak

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

TIME IN WATER: 3:45 p.m.

TIME OUT OF WATER: 4:30 p.m.

WATERWAY DATA: VELOCITY 1 ft/s

VISIBILITY None / Negligible

DEPTH 9.3 maximum at upstream end of concrete floor

ELEMENTS INSPECTED: East and West Abutments and Concrete Floor Slab

REMARKS: Overall, the East and West Abutments and concrete floor slab were found to be in satisfactory condition with no defects of structural significance. The concrete floor apron/toe was exposed at the upstream and downstream faces with a maximum vertical exposure of 1 foot at the upstream west corner. The steel sheet piling return walls exhibited light corrosion with minor pitting and rust nodules up to 2 inches. The channel bottom through the structure consisted of a concrete floor slab. No signs of undermining were observed.

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. L5773
 INSPECTORS Collins Engineers, Inc.
 ON-SITE TEAM LEADER Ryan P. Breen, P.E.
 WATERWAY CROSSED Black Dog Creek

INSPECTION DATE May 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

UNIT REFERENCE NO.	UNIT DESCRIPTION	MAXIMUM DEPTH OF WATER	SUBSTRUCTURE						CHANNEL					GENERAL					
			PILING	COLUMNS, SHAFTS, OR FACES*	FLOOR SLAB	DISPLACEMENT	OTHER (SHEET PILE WALLS)	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
	West Abutment	8.3'	N	7	6	8	6	6	N	8	8	N	8	7	6	N	7	N	N
	East Abutment	8.3'	N	7	6	8	6	6	N	8	8	N	8	7	6	N	7	N	N

*UNDERWATER PORTION ONLY

REMARKS: Overall, the East and West Abutments and concrete floor slab were found to be in satisfactory condition with no defects of structural significance. The concrete floor apron/toe was exposed at the upstream and downstream faces with a maximum vertical exposure of 1 foot at the upstream west corner. The steel sheet piling return walls exhibited light corrosion with minor pitting and rust nodules up to 2 inches. The channel bottom through the structure consisted of a concrete floor slab. No signs of undermining were observed.

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.