

2016 UNDERWATER BRIDGE INSPECTION REPORT



BRIDGE # 69533 CSAH 5 over WHITEFACE RIVER

DISTRICT: District 1

COUNTY: St. Louis

CITY/TOWNSHIP: MEADOWLANDS

STATE: Minnesota

Date of Inspection: 06/24/2016

Equipment Used:

Owner: County Highway Agency

Inspected By: Janulis, Lukas

Report Written By: Lukas Janulis

Report Reviewed By:

Final Report Date:



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UNDERWATER INSPECTION

REPORT SUMMARY

The substructure units inspected below water at Bridge No. 69533, Piers 1 and 2, were in satisfactory condition with no defects of structural significance. The steel piles typically exhibited minor surface corrosion with pitting and coating failure. Timber debris was present around the entire Pier 1, but was not restricting channel flow. Overall the structure condition was comparable to findings of the previous underwater inspection.

INSPECTION FINDINGS

- (A) The channel bottom material consisted of sandy silt allowing up to 6 inches of probe rod penetration.
- (B) A light accumulation of timber debris, consisting of logs and branches 3 inch diameter and smaller, was observed around the perimeter of Pier 1 extending 5 feet off all faces and from the channel bottom to 2 feet below the waterline.
- (C) The steel piles typically exhibited pitting 1/4 inch diameter with up to 1/8 inch penetration observed from 2 feet below the waterline to the channel bottom.
- (D) The steel piles from 1 foot above the waterline to the pile cap exhibited coating failure on approximately 25% of the surface area. Surface corrosion was present with no appreciable loss of section. The battered piles exhibited more significant coating failure covering up to 50% of the surface area.

RECOMMENDATIONS

- (A) Monitor the extent of surface corrosion during future underwater inspections.
- (B) Monitor the timber debris accumulation at the piers, during future inspections, and if found to be increasing to a more detrimental extent, removal operations may become warranted at that time.
- (C) 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 #: 69533
Feature Intersected: WHITEFACE RIVER
Facility Carried: CSAH 5
District: District 1
County: 069 - St. Louis

Bridge Description:

The superstructure consists of three spans of reinforced concrete deck. The bridge is supported by two reinforced concrete abutments and two pile bent piers.

2. INSPECTION DATA

Professional Engineer/Team Leader: Lukas Janulis
Inspection Diver: Lukas Janulis
Date of Underwater Inspection: 06/24/2016
Weather Conditions: Sunny, 75°F
Underwater Visibility (feet): 2 feet
Waterway Velocity (ft/sec): 0.5 ft/sec

3. SUBSTRUCTURE INSPECTION DATA

Substructure(s) Inspected: Piers 1 and 2.

General Shape:

The piers consisted of a reinforced concrete pier cap supported by eight steel pipe piles. At the time of inspection, no plans were available for this structure, therefore the exact substructure configuration was unknown.

Maximum Water Depth at Substructure(s) Inspected (feet): 7.5 feet

4. WATERLINE DATUM

Water Level Reference: The top of the pier cap at the downstream end of Pier 1.
Waterline Elevation (feet): 88.0 feet
Description: The waterline was located approximately 12.0 feet below the 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: K

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
225	Steel or CIP Piling	16	EA		16		
885	Scour	1	EA	1			

UNDERWATER INSPECTION

INSPECTION PROCEDURES

The routine underwater inspection of Bridge 69533 (CSAH 5 over Whiteface River) was completed on June 24, 2016. The underwater inspection was conducted from shore. The inspection was conducted by a team consisting of a Professional Engineer Diver with a valid MnDOT Team Leader certification, a backup diver and dive tender. The inspection utilized commercial dive equipment and techniques in accordance with OSHA regulations. Channel bottom 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 two piers. According to the bridge inventory, Piers 1 and 2 are founded on steel pipe piles supporting a reinforced concrete cap. Inspection procedures followed FHWA guidance and the MnDOT Bridge and Structure Inspection Program Manual with channel bottom probing to search for foundations. The maximum routine underwater inspection frequency is recommended to remain at 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: 69533

CSAH 5 over WHITEFACE RIVER

Date: 11/01/2016

+ GENERAL +	+ ROADWAY +	+ INSPECTION +																				
Agency Br. No. 201 Crew District 01 Maint. Area County 069 - St. Louis City Township 69044 - MEADOWLANDS Desc. Loc. 0.1 MI S OF JCT CSAH 29 Sect., Twp., Range 34 - 053N - 19W Latitude 47 ° 2' 20.13 " Longitude 92 ° 44' 36.21 " Custodian 02 - County Highway Agency Owner 02 - County Highway Agency BMU Agreement Year Built 1983 MN Year Reconstructed FHWA Year Reconstructed MN Temporary Status Bridge Plan Location 3 - COUNTY Date Opened to Traffic On - Off System 0 - OFF Legislative District 05B Potential ABC 2 - N/A	Bridge Match ID (TIS) 0 Roadway O/U Key Route On Structure Route Sys 04 - CSAH Number 5 Roadway Name or Description CSAH 5 Level of Service 1 - MAINLINE Roadway Type 2 - 2-way traffic Control Section (TH Only) Reference Point 007+00.850 Detour Length 22.0 mi. Lanes ON 2 UNDER 0 ADT 85 YEAR 2003 HCA DT ADTT % Functional Class 09 - Rural - Local	Userkey 109 Structurally Deficient N Functionally Obsolete N Sufficiency Rating 98.9 Routine Inspection Date 06/07/2016 Routine Inspection Frequency 24 Inspector Name Janulis, Lukas Status A - Open																				
		+ NBI CONDITION RATINGS +																				
		Deck 5 Unsound Deck % Superstructure 6 Substructure 6 Channel 6 Culvert N																				
		+ NBI APPRAISAL RATINGS +																				
		Structure Evaluation 6 Deck Geometry 7 Underclearances N Waterway Adequacy 9 Approach Alignment 8																				
		+ SAFETY FEATURES +																				
		Bridge Railing 1 - MEETS STANDARDS GR Transition 1 - MEETS STANDARDS Appr. Guardrail 1 - MEETS STANDARDS GR Termini 1 - MEETS STANDARDS																				
		+ 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: 15%; text-align: center;">Freq</th> <th style="width: 15%; text-align: center;">Date</th> </tr> </thead> <tbody> <tr> <td>Frac. Critical</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Underwater</td> <td></td> <td style="text-align: center;">60</td> <td style="text-align: center;">06/24/2016</td> </tr> <tr> <td>Pinned Asbly.</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Spec. Feat.</td> <td></td> <td></td> <td></td> </tr> </tbody> </table>		Y/N	Freq	Date	Frac. Critical				Underwater		60	06/24/2016	Pinned Asbly.				Spec. Feat.			
	Y/N	Freq	Date																			
Frac. Critical																						
Underwater		60	06/24/2016																			
Pinned Asbly.																						
Spec. Feat.																						
		+ WATERWAY +																				
		Drainage Area (sq. mi.) 476.0 Waterway Opening (sf.) 1693 Navigation Control 0 - No nav. control on Pier Protection - Nav. Clr. (ft.) Vert. 0.0 Horiz. 0.0 Nav. Vert. Lift Bridge Clear. (ft.) MN Scour Code K - LIMITED Year 2010																				
		+ CAPACITY RATINGS +																				
		Design Load 5 - HS 20 Operating Rating 2 - HS TRUCK 33.3 Inventory Rating 2 - HS TRUCK 20.0 Posting VEH: SEMI: DBL: Rating Date 08/30/2010 Overweight Permit Codes A N - N/A B N - N/A C N - N/A																				
+ STRUCTURE +	+ RDWY DIMENSIONS +																					
Service On 1 - Highway Service Under 5 - Waterway Main Span Type 5 - Prestress or Precast Main Span Design 21 - Quad Tee Main Span Detail Appr. Span Type Appr. Span Design Appr. Span Detail Skew 30 LEFT Culvert Type Barrel Length Cantilever ID Number of Spans MAIN: 3 APPR: 0 TOTAL: Main Span Length 58.3 ft. Structure Length 177.0 ft. Deck Width (Out-to-Out) 32.3 ft. Deck Material 1 - Concrete Cast-in-Place Wear Surf Type 6 - Bituminous Wear Surf Install Year Wear Course/Fill Depth 0.25 ft. Deck Membrane 0 - None Deck Rebars 0 - None Deck Rebars Install Year Structure Area (Out-to-Out) 5717 sq. ft. Roadway Area (Curb-to-Curb) 5134 sq. ft. Sidewalk Width 50A. Lt 0.00 ft. 50B. Rt 0.00 ft. Curb Height Lt 0.00 ft. Rt 0.00 ft. Rail Type Lt 22 Rt 22	If Divided NB-EB SB-WB Roadway Width 29.00 ft. ft. Vertical Clearance ft. ft. Max. Vert. Clear. ft. ft. Horizontal Clear. ft. ft. Lateral Clearance ft. ft. Appr. Surface Width 28.0 ft. Bridge Roadway Width 29.0 ft. Median Width On Bridge ft.																					
	+ MISC. BRIDGE DATA +																					
	Structure Flared 0 - No flare Parallel Structure N - No parallel structure Field Conn. ID Abutment Foundation (Material/Type) 1 - CONC 4 - PILE BENT Pier Foundation (Material/Type) 8 - CIP 4 - PILE BENT Historic Status 5 - Not eligible																					
	+ PAINT +																					
	Year Painted Unsound Paint % Painted Area sq. ft. Primer Type Finish Type																					
	+ BRIDGE SIGNS +																					
	Posted Load 0 - Not Required Traffic 0 - Not Required Horizontal 1 - Object Markers Vertical N - Not Applicable																					

MINNESOTA BRIDGE INSPECTION REPORT

11/09/2016

Inspector: CO Bridge

BRIDGE 69533 CSAH 5 OVER WHITEFACE RIVER

County: St. Louis	Location: 0.1 MI S OF JCT CSAH 29	Length: 177.0 ft.
City:	Route: 04 - CSAH 5 Ref. Pt.: 007+00.850	Deck Width: 32.3 ft.
Township: 69044 - MEADOWLANDS	Control Section:	Rdwy. Area/ Pct. Unsnd: 5134 sq. ft. / %
Section: 34 Township: 053N Range: 19W Maint. Area:		Paint Area/ Pct. Unsnd: sq. ft. / %
Span Type: 5 - Prestressed Concrete 2	Local Agency Bridge Nbr.: 201	Culvert: N/A
List:		Postings:
NBI Deck: 5 Super: 6 Sub: 6 Chan: 6 Culv: N		
	Open, Posted, Closed: A - Open	
	MN Scour Code: K - LIMITED RISK	

Appraisal Ratings - Approach: 8	Waterway: 9	Unofficial Structurally Deficient N
Required Bridge Signs - Load Posting: 0 - Not Required	Traffic: 0 - Not Required	Unofficial Functionally Obsolete N
Horizontal: 1 - Object Markers	Vertical: N - Not Applicable	Unofficial Sufficiency Rating 98.9

ELEM NBR	ELEMENT NAME	REPORT TYPE	INSP. DATE	QUANTITY	QTY CS 1	QTY CS 2	QTY CS 3	QTY CS 4
15	Prestressed Concrete Top Flange	Underwater	11/01/2016	5717 SF	5469	248	0	0
		Routine	06/07/2016	5717 SF	5469	248	0	0
Notes: [2016] Rust staining, corrosion, and efflorescence along underside of deck along quad tee joints. [2014] Leakage through all joints with rust staining and leaching. 4" efflorescence icicles common on joints span 3. [2013-2012] Minor leaching/staining at joints between adjacent quad tee beams.								
510 -	Wearing Surfaces	Underwater	11/01/2016	5134 SF	0	4692	261	181
		Routine	06/07/2016	5134 SF	0	4692	261	181
Notes: [2016] Some cracks up to 1.25" in width. Bituminous is peeling off along west edge of deck. [2014] Bituminous has 1/8" to 3/4" wide cracks spaced 2' to 5' throughout deck. Leakage through deck at piers and along quad tee joints. 4" efflorescence icicles common on joints span 3. Replacement of bit/OL recommended. [2013] Bituminous overlay has minor cracking and joints between quad T's leaking. [2012] Transverse cracking throughout the deck warranting CS2. CRACK ALONG C.L. BEARING @ PIERS. CALCIUM LEACHING BETWEEN BEAM JOINTS, ESP. N. SPAN.								
109	Prestressed Concrete Open Girder/Beam	Underwater	11/01/2016	4602 LF	4597	5	0	0
		Routine	06/07/2016	4602 LF	4597	5	0	0
Notes: [2016] Four areas of rust staining on vertical beams most deterioration along quad tee joints. [2014] Leakage through all joints with rust staining and leaching. 4" efflorescence icicles common on joints span 3. Rust staining on some quad tee stems along joints. [2013-2012] Minor leaching/staining at joints between adjacent quad tee beams.								
215	Reinforced Concrete Abutment	Underwater	11/01/2016	115 LF	58	57	0	0
		Routine	06/07/2016	115 LF	58	57	0	0
Notes: [2016] Added 36 LF to abutment quantity to account for wingwalls. North abutment may have some movement toward the river with NE wing face 2.75" and NW wing face 2" south of end diaphragms. [2014-2012] Debris on south abutment bridge seat. Debris from 2012 flood by E wing.								
225	Steel Pile	Underwater	11/01/2016	16 EA	0	16	0	0
		Routine	06/07/2016	16 EA	0	16	0	0
Notes: [2016-2012] Paint is flaking off all piles. Most are showing signs of corrosion.								
515 -	Steel Protective Coating	Underwater	11/01/2016	670 SF	435	0	67	168
		Routine	06/07/2016	670 SF	435	0	67	168
Notes: [2016] Estimated that 25% of paint on pier piles has failed.								
234	Reinforced Concrete Pier Cap	Underwater	11/01/2016	79 LF	76	3	0	0
		Routine	06/07/2016	79 LF	76	3	0	0
Notes: [2016-2012] Both piers have minor staining w/ efflorescence. CAP CHIPPED TOP P-1 UPSTREAM.								

BRIDGE 69533 CSAH 5 OVER WHITEFACE RIVER

ELEM NBR	ELEMENT NAME	REPORT TYPE	INSP. DATE	QUANTITY	QTY CS 1	QTY CS 2	QTY CS 3	QTY CS 4
310	Elastomeric Bearing	Underwater	11/01/2016	4 EA	4	0	0	0
		Routine	06/07/2016	4 EA	4	0	0	0
Notes: [2016-2013] Water leaking under NW pad North abutment. [2012] No deterioration noted.								
331	Reinforced Concrete Bridge Railing	Underwater	11/01/2016	354 LF	337	16	1	0
		Routine	06/07/2016	354 LF	337	16	1	0
Notes: [2016] Spall on backside of north end of west rail. 3 to 4 vertical cracks per rail panel with a width of 0.012" to 0.02". [2014-2012] Vertical cracking in both barriers, most severe on east end. 2 large spalls on the west barrier. LEACHING BACK FACE. NW ENDPOST CHIPPED. NUMEROUS VERT. CRACKS, ESP. EAST								
800	Critical Deficiencies or Safety Hazards	Underwater	11/01/2016	1 EA	1	0	0	0
		Routine	06/07/2016	1 EA	1	0	0	0
Notes: [2016-2014] No critical deficiencies or safety hazards found during this inspection.								
822	Bituminous Approach Roadway	Underwater	11/01/2016	1 EA	0	1	0	0
		Routine	06/07/2016	1 EA	0	1	0	0
Notes: [2016] Some settlement in approach with most in the north bound lane. traffic impact on bridge has not been significantly increased. [2014] Pot hole patched at centerline of north approach at joint with bridge deck. [2013] Some settle causing puddles at poured deck joint. [2012] Minor transverse cracking and a longitudinal crack along the centerline.								
823	Gravel Approach Roadway	Underwater	11/01/2016	1 EA	1	0	0	0
		Routine	06/07/2016	1 EA	1	0	0	0
Notes: [2016-2014] No signs of settlement or undermining. [2013-2012] No deterioration noted.								
855	Secondary Members (Superstructure)	Underwater	11/01/2016	1 EA	1	0	0	0
		Routine	06/07/2016	1 EA	1	0	0	0
Notes: [2016] Movement of north abutment to the south may have caused NE wing face 2.75" and NW wing face 2" to move south of end diaphragms. [2014-2012] No deterioration noted. End and Intermediate diaphragms.								
883	Concrete Shear Cracking	Underwater	11/01/2016	1 EA	1	0	0	0
		Routine	06/07/2016	1 EA	1	0	0	0
Notes: [2016] No shear cracking present.								
884	Substructure Settlement & Movement	Underwater	11/01/2016	1 EA	0	1	0	0
		Routine	06/07/2016	1 EA	0	1	0	0
Notes: [2016] North abutment may have some movement toward the river with NE wing face 2.75" and NW wing face 2" south of end diaphragms.								
885	Scour	Underwater	11/01/2016	1 EA	1	0	0	0
		Routine	06/07/2016	1 EA	1	0	0	0
Notes: [2016-2012] No deterioration noted. K - Limited risk. Monitoring required								
891	Other Bridge Signing	Underwater	11/01/2016	1 EA	1	0	0	0
		Routine	06/07/2016	1 EA	1	0	0	0
Notes: [2016] All signs present with no notable deterioration. [2014-2013] 4 Delineators and 6 guardrail markers. [2012] All signs in place. DELINEATORS.								

BRIDGE 69533 CSAH 5 OVER WHITEFACE RIVER

ELEM NBR	ELEMENT NAME	REPORT TYPE	INSP. DATE	QUANTITY	QTY CS 1	QTY CS 2	QTY CS 3	QTY CS 4
892	Slopes & Slope Protection	Underwater	11/01/2016	1 EA	1	0	0	0
		Routine	06/07/2016	1 EA	1	0	0	0
Notes: [2016-2014] No notable erosion. [2013] Slopes are protected by riprap. [2012] Debris near SE wingwall. Brush on slopes.								
893	Guardrail	Underwater	11/01/2016	1 EA	0	1	0	0
		Routine	06/07/2016	1 EA	0	1	0	0
Notes: [2016-2013] NW BCT end has barrel rivets broken. Minor dents and scrapes throughout. [2012] NW attenuator is broken warranting CS2. FLEX BEAM w/ BCT ends.								
894	Deck & Approach Drainage	Underwater	11/01/2016	1 EA	0	0	1	0
		Routine	06/07/2016	1 EA	0	0	1	0
Notes: [2016] Gravel has been cleaned off of deck. Cracking throughout and failure of bituminous along west rail restricting the flow of water to drains. [2014] No notable drainage-related slope erosion. Gravel deposits along gutter line but drains remain open. [2013-2012] Ditch has eroded exposing t/culvert. No additional deterioration noted. CULVERT SE OF BRIDGE, ERODED.								
895	Sidewalk, Curb, & Median	Underwater	11/01/2016	1 EA	1	0	0	0
		Routine	06/07/2016	1 EA	1	0	0	0
Notes: [2016-2014] Minor scrapes from plows. For curb at each end of rail (no approach panels).								
900	Protected Species	Underwater	11/01/2016	2 EA	0	1	1	0
		Routine	06/07/2016	2 EA	0	1	1	0
Notes: [2016] Swallow nest present on pier 1. Bat droppings present on beams, amount of droppings indicates bats are not roosting on bridge.								

General Notes: SLC District 5
 Inspected by: [2016] CG, NR : [2014] CG, BH.
 [2013] High water mark stain on side of bridge. Water level monitoring equipment mounted on west side with power supply mounted on guardrail behind SW wingwall (after 2012 flood?). Caisson from old bridge under span 1 at toe of slope.
 7/10/2012 - Post 2012 Flood Inspection by JRM and RRC from TKDA. Underwater inspection performed by WSB.
 RESIDENT NW CORNER BRIDGE SAYS HIGH WATER WAS UP TO HOUSE APPROX. 40 YRS AGO.

58. Deck NBI: [2016] Some cracks up to 1.25" in width. Bituminous is peeling off along edges of deck. Rust staining, corrosion, and efflorescence along underside of deck along quad tee joints.
 [2014] Bituminous has 1/8" to 3/4" wide cracks spaced 2' to 5' throughout deck. Leakage through deck at piers and along quad tee joints. 4" efflorescence icicles common on joints span 3.
 [2013] Bituminous overlay has minor cracking and joints between quad t's leaking.

36A. Brdg Railings NBI: Concrete barrier type J.

36B. Transitions NBI: Guardrail transition meets minimum standards. Traffic barrier design special.

36C. Appr Guardrail NBI: Flexbeam with timber posts. Traffic barrier type B8307

36D. Appr Guardrail Terminal NBI: Eccentric loader breakaway cable guardrail terminals.

59. Superstructure NBI: [2016] Few areas of rust staining on vertical beams.
 [2014] Leakage through all joints with rust staining and leaching. 4" efflorescence icicles common on span 3. Rust staining on some quad tee stems along joints.
 [2013] No deterioration noted.

60. Substructure NBI: [2016] Efflorescence and staining on pier caps from deck leakage.
 [2014-2013] Abutments are in good condition. Pier piling have some paint failure with surface corrosion.

61. Channel NBI: [2016] Minor erosion along banks.
 [2014] Debris built up around pier 1 on east side of bridge. Debris not restricting stream.

62. Culvert NBI:

71. Waterway Adeq NBI: [2016-2014] Over 10' of freeboard under bridge. Bridge did not over top during flood of 2012. Very Limited chance of over topping.

BRIDGE 69533 CSAH 5 OVER WHITEFACE RIVER

ELEM NBR	ELEMENT NAME	REPORT TYPE	INSP. DATE	QUANTITY	QTY CS 1	QTY CS 2	QTY CS 3	QTY CS 4
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72. Appr Roadway [2016-2014] Roadway flat and straight. No speed reduction or sight distance issues.
Alignment NBI:

Inventory Notes:

Inspector's Signature

Reviewer's Signature

Pictures



Photo 1 - Upstream Fascia, Looking Northwest



Photo 2 - Downstream Fascia, Looking Southeast

Pictures



Photo 3 - Pier 1, Looking Northwest

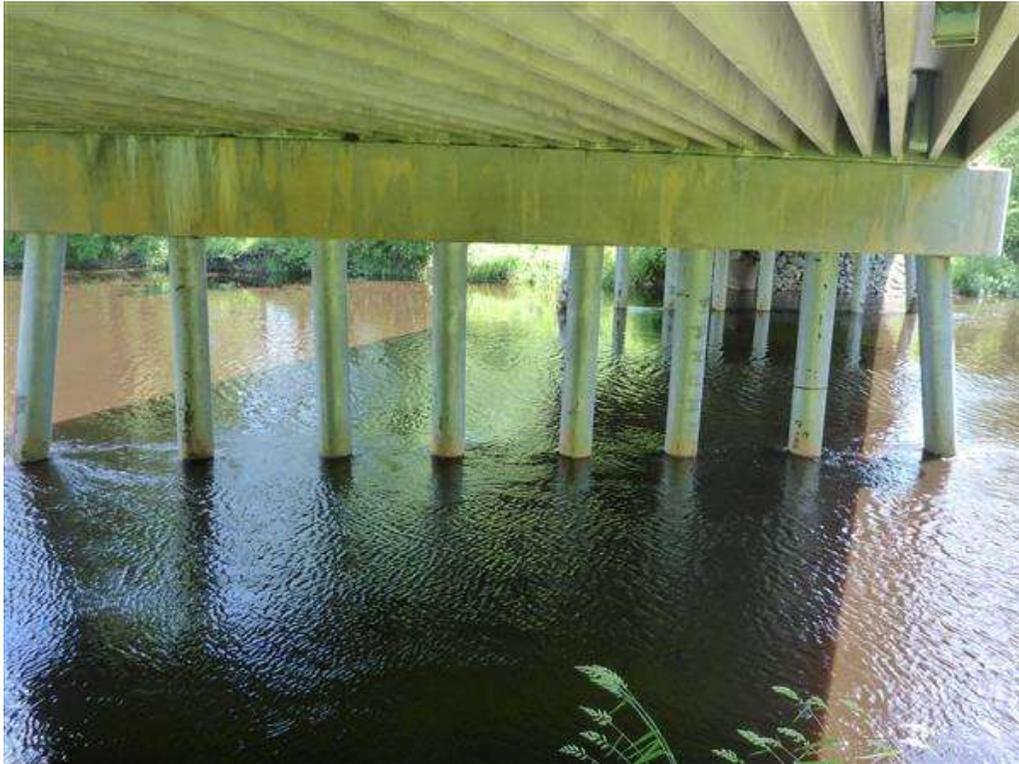
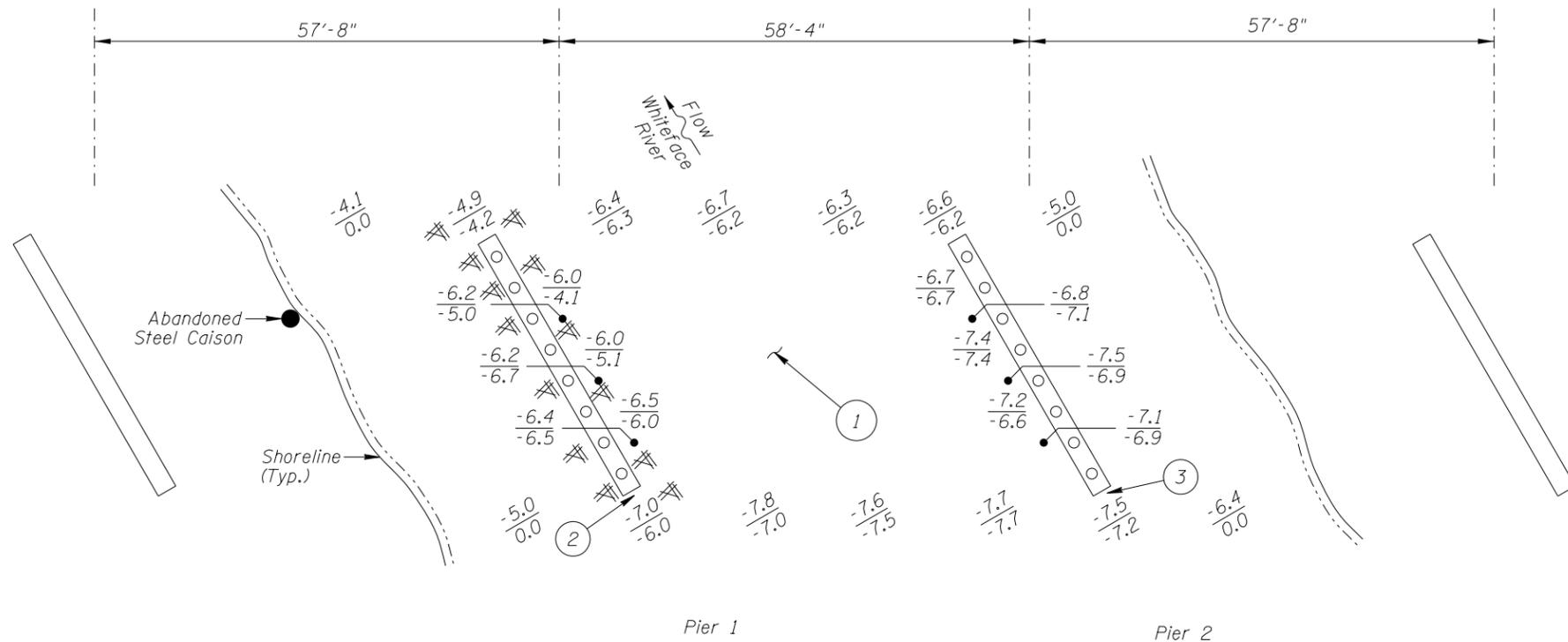
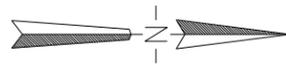


Photo 4 - Pier 2, Looking South

Pictures



Photo 5 - Typical Steel Condition (Pier 1 Pile Shown), Looking North



SOUNDING PLAN

INSPECTION NOTES:

- ① The channel bottom material consisted of sandy silt allowing up to 6 inches of probe rod penetration.
- ② A light accumulation of timber debris, consisting of branches 3 inch diameter and smaller, was observed around the perimeter of Pier 1 extending 5 feet off all faces and from the channel bottom to 2 feet below the waterline.
- ③ The steel piles typically exhibited pitting 1/4 inch dia. with up to 1/8 inch penetration observed from 2 feet below the waterline to the channel bottom.
- ④ The steel piles from 1 foot above the waterline to the cap exhibited coating failure on approximately 25% of the surface area. Surface corrosion was present with no appreciable loss of section. The battered piles exhibited more significant coating failure covering up to 50% of the surface area.

GENERAL NOTES:

1. Piers 1 and 2 were inspected underwater.
2. At the time of inspection on June 24, 2016, the waterline was located approximately 12.0 feet below the top of the pier cap at the downstream end of Pier 1. Since insufficient bridge elevation information was available a reference elevation of 100.0 was assumed. Based on the assumed reference the waterline elevation was 88.0.
3. Soundings indicate the water depth at the time of inspection and are measured in feet.
4. Soundings were taken parallel to the bridge at 1/4 point intervals between the substructure units.

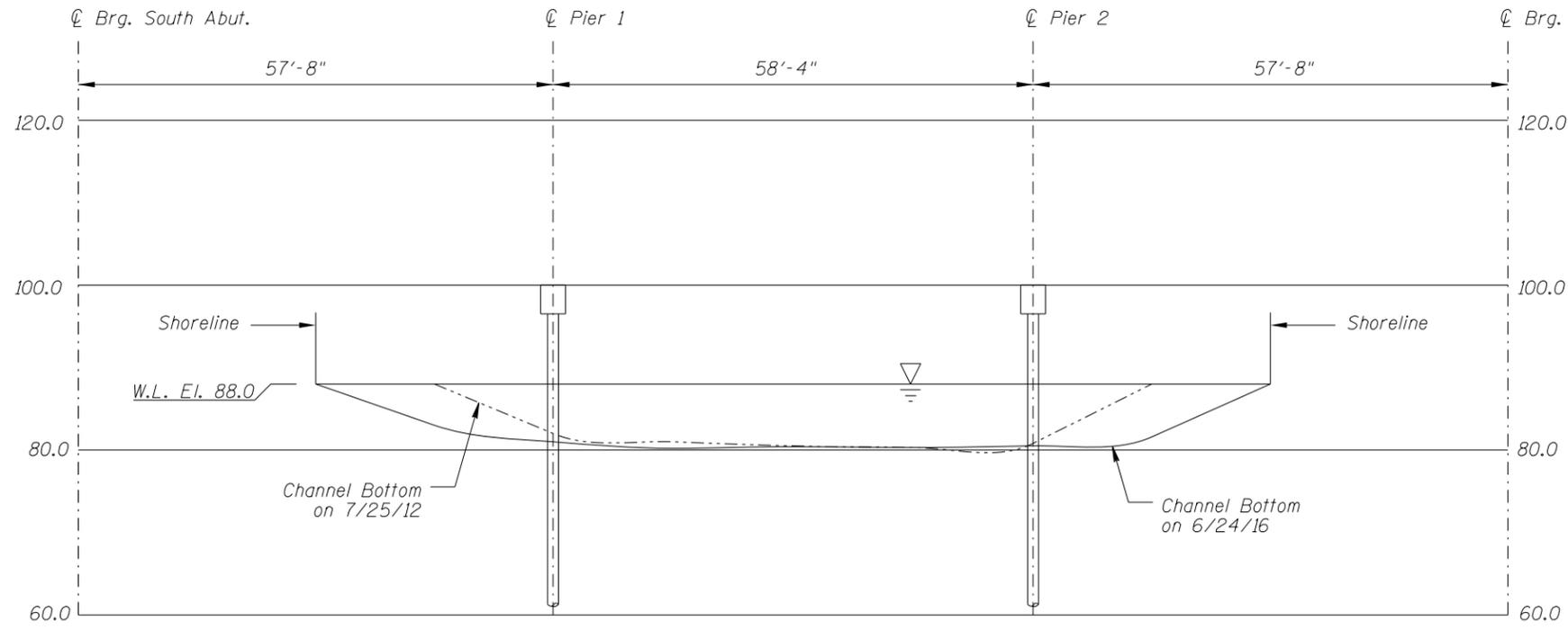
Legend

- 4.9 Sounding Depth from Waterline (6/24/16)
- 1.2 Sounding Depth from Waterline (7/25/12)
- Battered Pile
- ⊗ Timber Debris

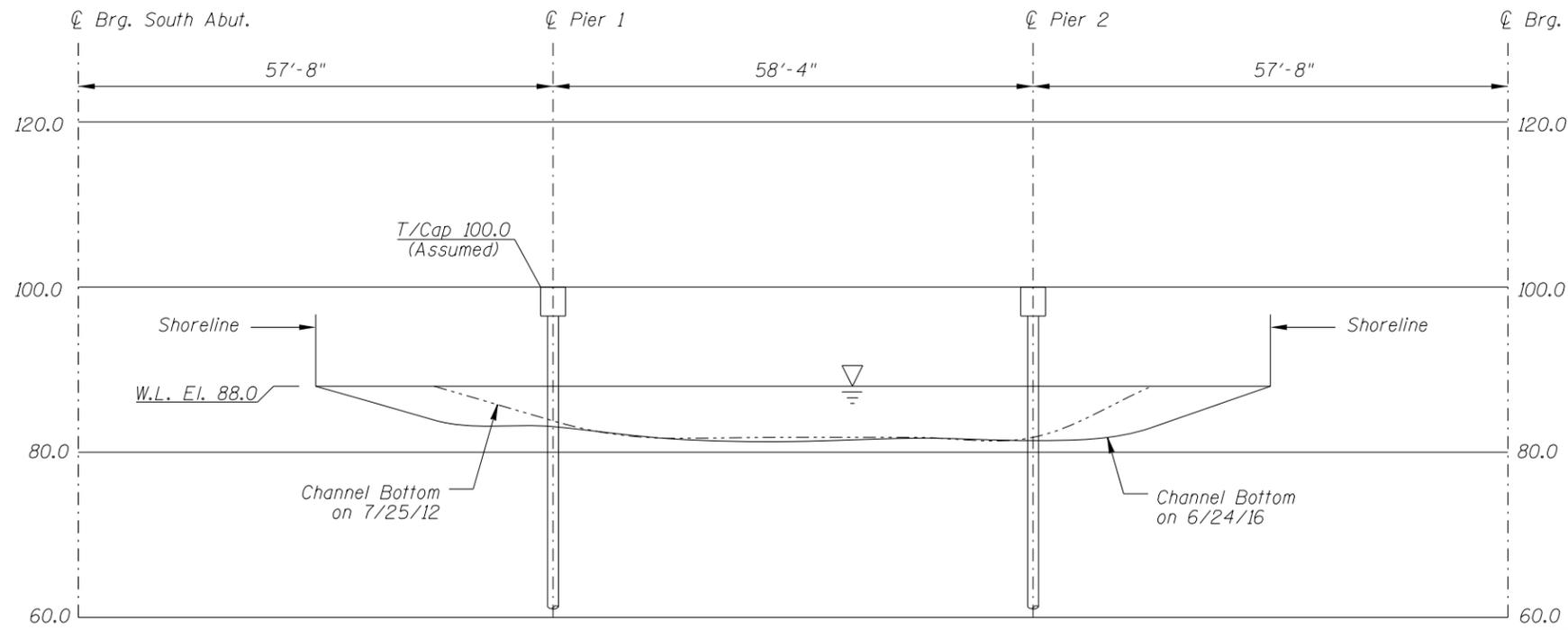
Note:

All soundings are based on 2016 waterline location.

MINNESOTA DEPARTMENT OF TRANSPORTATION UNDERWATER BRIDGE INSPECTION		
STRUCTURE NO. 69533 OVER THE WHITEFACE RIVER DISTRICT I, ST. LOUIS COUNTY		
INSPECTION AND SOUNDING PLAN		
DRAWN BY: ELN	COLLINS ENGINEERS	DATE: JUNE 24, 2016
CHECKED BY: LJ		SCALE: NTS
CODE: 968769533		FIGURE NO.: I



UPSTREAM FASCIA PROFILE



DOWNSTREAM FASCIA PROFILE

Note:
Refer to Figure 1 for General Notes.

MINNESOTA DEPARTMENT OF TRANSPORTATION UNDERWATER BRIDGE INSPECTION		
STRUCTURE NO. 69533 OVER THE WHITEFACE RIVER DISTRICT I, ST. LOUIS COUNTY		
UPSTREAM AND DOWNSTREAM FASCIA PROFILES		
DRAWN BY: ELN	COLLINS ENGINEERS <small>123 North Wacker Drive Suite 300 Chicago, IL 60606 (312) 704-9300 www.collinsengr.com</small>	DATE: JUNE 24, 2016
CHECKED BY: LJ		SCALE: 1"=20'
CODE: 968769533		FIGURE NO.: 2