

2016 UNDERWATER BRIDGE INSPECTION REPORT



BRIDGE # 36013 US 71 over LITTLE FORK RIVER

DISTRICT: District 1 COUNTY: Koochiching CITY/TOWNSHIP: T - 69 R - 25
STATE: Minnesota

Date of Inspection: 06/03/2016

Equipment Used:

Owner: State Highway Agency

Inspected By: Stromberg, Dan

Report Written By: Dan Stromberg

Report Reviewed By:

Final Report Date:



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UNDERWATER INSPECTION

REPORT SUMMARY

The substructure units inspected at Bridge No. 36013, Piers 2 and 3, were found to be generally in good condition with no defects of structural significance observed. A minor scour depression was observed beginning at the upstream nose of Pier 2, and running along entire north face ending at the downstream nose. Light accumulations of timber debris were noted at the upstream nose both piers. No significant changes have occurred to the substructure condition or the channel bottom configuration since the 2012 inspection.

INSPECTION FINDINGS

A) The concrete of both piers was typically smooth and sound, except for some minor scaling from 4 feet above to 1 foot below the waterline with 1/4 inch maximum penetration. B) A 4 foot radius scour depression was observed at the upstream nose and along the north side of Pier 2. The depression was 3 feet deep relative to the adjacent channel bottom. C) An 8 inch by 4 inch and 1 inch deep spall was observed at the downstream end of Pier 2 located approximately 10 feet below the waterline. D) A light accumulation of timber debris, consisting of up to 6 inch diameter branches, was observed from the channel bottom up to the waterline, at the upstream end of Pier 3. E) A moderate accumulation of timber debris, consisting of a 1 foot diameter log and 6 inch diameter and smaller branches, was observed around upstream nose of Pier 2 extending from channel bottom up 2 feet. F) The channel bottom at Piers 2 and 3 typically consisted of silty sand, with some gravel, and allowed up to 6 inches of maximum probe rod penetration.

RECOMMENDATIONS

Monitor accumulations of timber debris during future inspections, and consider removal operations if debris is found to be increasing excessively in the future. 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 #: 36013
Feature Intersected: LITTLE FORK RIVER
Facility Carried: US 71
District: District 1
County: 036 - Koochiching

Bridge Description:

The superstructure consists of five pre-stressed concrete girder spans supported by two reinforced concrete abutments and four reinforced concrete piers. The substructure units are designated as South Abutment, Piers 1 through 4, and North Abutment.

2. INSPECTION DATA

Professional Engineer/Team Leader: Daniel G. Stromberg
Inspection Diver: Daniel G. Stromberg
Date of Underwater Inspection: 06/03/2016
Weather Conditions: Partly Cloudy, 70°F
Underwater Visibility (feet): 2 feet
Waterway Velocity (ft/sec): 2 ft/sec

3. SUBSTRUCTURE INSPECTION DATA

Substructure(s) Inspected: Piers 2 and 3.

General Shape:

The piers have oblong rectangular shafts with rounded noses and are founded on a rectangular footings supported by deep driven steel H-piles.

Maximum Water Depth at Substructure(s) Inspected (feet): approximately 14.5 feet

4. WATERLINE DATUM

Water Level Reference: The top of pier cap at upstream end of Pier 2.
Waterline Elevation (feet): 1078.3 feet
Description: The waterline was approximately 32.5 feet below reference.

5. NBIS CODING INFORMATION

(Minnesota specific codes are used for 92B and 113)

Item 60: Substructure: Code: 7
Item 61: Channel and Channel Protection: Code: 7
Item 62: Culvert: Code:
Item 92B: Underwater Inspection: Code: Y 48 06/2016

Item 113: Scour Critical Bridge:

Code: I

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
210	Reinforced Concrete Pier Wall	54	LF	53	1		

UNDERWATER INSPECTION

INSPECTION PROCEDURES

The routine underwater inspection of Bridge 36013 (over Little Fork River) was completed on June 3, 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 (SSA and/or SCUBA) 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 concrete piers. According to the bridge inventory, Piers 2 and 3 are founded on rectangular footings supported by deep driven steel H-piles. 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: 36013

US 71 over LITTLE FORK RIVER

Date: 07/26/2016

+ GENERAL +	+ ROADWAY +	+ INSPECTION +																				
Agency Br. No. Crew District 01 Maint. Area 1B County 036 - Koochiching City Township 36088 - T - 69 R - 25 Desc. Loc. 1.5 MI N OF LITTLE FORK Sect., Twp., Range 33 - 069N - 25W Latitude 48 ° 25 ' 27.42 " Longitude 93 ° 34 ' 11.89 " Custodian 01 - State Highway Agency Owner 01 - State Highway Agency BMU Agreement Year Built 1980 MN Year Reconstructed FHWA Year Reconstructed MN Temporary Status Bridge Plan Location 1 - CENTRAL Date Opened to Traffic 7/1/1980 On - Off System 1 - ON Legislative District 03A Potential ABC 0 - No	Bridge Match ID (TIS) 0 Roadway O/U Key Route On Structure Route Sys 02 - USTH Number 71 Roadway Name or Description US 71 Level of Service 1 - MAINLINE Roadway Type 2 - 2-way traffic Control Section (TH Only) 13 Reference Point 405+00.597 Detour Length 5.0 mi. Lanes ON 2 UNDER 0 ADT 2000 YEAR 2008 HCA DT ADTT % Functional Class 02 - Rural - Principal Arterial - Other	Userkey 17 Structurally Deficient N Functionally Obsolete N Sufficiency Rating 99.3 Routine Inspection Date 05/12/2015 Routine Inspection Frequency 24 Inspector Name Stromberg, Dan Status A - Open																				
		+ NBI CONDITION RATINGS +																				
		Deck 7 Unsound Deck % Superstructure 8 Substructure 7 Channel 7 Culvert N																				
	+ RDWY DIMENSIONS +	+ NBI APPRAISAL RATINGS +																				
	If Divided NB-EB SB-WB Roadway Width 46.80 ft. ft. Vertical Clearance ft. ft. Max. Vert. Clear. ft. ft. Horizontal Clear. 46.7 ft. ft. Lateral Clearance ft. ft. Appr. Surface Width 36.0 ft. Bridge Roadway Width 46.8 ft. Median Width On Bridge ft.	Structure Evaluation 7 Deck Geometry 9 Underclearances N Waterway Adequacy 9 Approach Alignment 8																				
+ STRUCTURE +	+ MISC. BRIDGE DATA +	+ SAFETY FEATURES +																				
Service On 1 - Highway Service Under 5 - Waterway Main Span Type 5 - Prestress or Precast Main Span Design 01 - Beam Span Main Span Detail Appr. Span Type Appr. Span Design Appr. Span Detail Skew 20 RIGHT Culvert Type Barrel Length Cantilever ID Number of Spans MAIN: 5 APPR: 0 TOTAL: Main Span Length 93.0 ft. Structure Length 466.0 ft. Deck Width (Out-to-Out) 50.2 ft. Deck Material 1 - Concrete Cast-in-Place Wear Surf Type 1 - Monolithic Concrete Wear Surf Install Year Wear Course/Fill Depth 0.00 ft. Deck Membrane 0 - None Deck Rebars 1 - Epoxy Coated Reinforcing Deck Rebars Install Year 1980 Structure Area (Out-to-Out) 23393 sq. ft. Roadway Area (Curb-to-Curb) 21808 sq. ft. Sidewalk Width 50A. Lt 0.00 ft. 50B. Rt 0.00 ft. Curb Height Lt 0.25 ft. Rt 0.25 ft. Rail Type Lt 22 Rt 22	Structure Flared 0 - No flare Parallel Structure N - No parallel structure Field Conn. ID Abutment Foundation (Material/Type) 1 - CONC 3 - FTG PILE Pier Foundation (Material/Type) 1 - CONC 3 - FTG PILE Historic Status 5 - Not eligible	Bridge Railing 1 - MEETS STANDARDS GR Transition 1 - MEETS STANDARDS Appr. Guardrail 1 - MEETS STANDARDS GR Termini 1 - MEETS STANDARDS																				
	+ PAINT +	+ IN DEPTH INSP. +																				
	Year Painted Unsound Paint % Painted Area sq. ft. Primer Type Finish Type	<table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th style="text-align: center;">Y/N</th> <th style="text-align: center;">Freq</th> <th style="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;">06/03/2016</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	06/03/2016	Pinned Asbly.				Spec. Feat.			
	Y/N	Freq	Date																			
Frac. Critical																						
Underwater		60	06/03/2016																			
Pinned Asbly.																						
Spec. Feat.																						
	+ BRIDGE SIGNS +	+ WATERWAY +																				
	Posted Load 0 - Not Required Traffic 0 - Not Required Horizontal 1 - Object Markers Vertical N - Not Applicable	Drainage Area (sq. mi.) 1835.0 Waterway Opening (sf.) 8060 Navigation Control 0 - No nav. control on Pier Protection 1 - Not required Nav. Clr. (ft.) Vert. 0.0 Horiz. 0.0 Nav. Vert. Lift Bridge Clear. (ft.) 0 MN Scour Code I - LOW RISK Year																				
		+ CAPACITY RATINGS +																				
		Design Load 5 - HS 20 Operating Rating 2 - HS TRUCK 50.4 Inventory Rating 2 - HS TRUCK 27.8 Posting VEH: SEMI: DBL: Rating Date 8/19/2003 Overweight Permit Codes A 1 - No Restriction B 1 - No Restriction C 1 - No Restriction																				

MINNESOTA BRIDGE INSPECTION REPORT

08/03/2016

Inspector: CO Bridge

BRIDGE 36013 US 71 OVER LITTLE FORK RIVER

County: Koochiching Location: 1.5 MI N OF LITTLE FORK Length: 466.0 ft.
 City: Route: 02 - USTH 71 Ref. Pt.: 405+00.597 Deck Width: 50.2 ft.
 Township: 36088 - T - 69 R - 25 Control Section: 13 Rdwy. Area/ Pct. Unsnd: 21808 sq. ft. / %
 Section: 33 Township: 069N Range: 25W Maint. Area: 1B Paint Area/ Pct. Unsnd: sq. ft. / %
 Span Type: 5 - Prestressed Concrete 2 - Local Agency Bridge Nbr.: Culvert: N/A
 List: Stringer/Multi-beam or Girder Postings:
 NBI Deck: 7 Super: 8 Sub: 7 Chan: 7 Culv: N
 Open, Posted, Closed: A - Open
 MN Scour Code: 1 - LOW 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 99.3

ELEM NBR	ELEMENT NAME	REPORT TYPE	INSP. DATE	QUANTITY	QTY CS 1	QTY CS 2	QTY CS 3	QTY CS 4
12	Reinforced Concrete Deck	Underwater	07/26/2016	23393 SF	23393	0	0	0
		Migrated Values		23393 SF	23393	0	0	0
	Notes: 2015- No Change.							
	Span 3 has several areas under the deck which have been patched for a total of 10 sq. ft. Moderate leaching at joints under Piers. Rust stain minor delam over Pier 2 east end.							
510	Wearing Surfaces	Underwater	07/26/2016	21808 SF	21808	0	0	0
		Migrated Values		21808 SF	21808	0	0	0
	Notes: Top of Concrete Deck with Epoxy Reinforcement Notes: 2015-2 Small spalls No. end/ 2 small spalls So. end 2011- repaired							
109	Prestressed Concrete Open Girder/Beam	Underwater	07/26/2016	2330 LF	2330	0	0	0
		Migrated Values		2330 LF	2330	0	0	0
	Notes: 2015- Span 1 beam 2 west corner above pier 1 6in. x 6in. spall - span 2 beam 1 west corner above pier 2 6in. x 6in. spall - span 3 beam 2 west side bottom near pier 3 4in. x 2in. spall. Span 4 West facia girder has superficial horizontal cracking at top east side of girder at Pier 3. Superficial cracking at Span 3 Pier 2, at West facia girder. Span 5 west facia girder has spall 1 ft. x 1 in.							
210	Reinforced Concrete Pier Wall	Underwater	07/26/2016	125 LF	120	5	0	0
		Migrated Values		125 LF	120	5	0	0
	Notes: 2015-No Change 6sf. of delam / spalling							
215	Reinforced Concrete Abutment	Underwater	07/26/2016	151 LF	146	5	0	0
		Migrated Values		151 LF	146	5	0	0
	Notes: [2016] Migrator added 40 LF to abutment quantity to account for wingwalls (CS1:40 CS2:0 CS3:0 CS4:0). 2015- No Change. 2009 - 2 ft x 2 ft x 1 ft deep washout NE corner back of abutment. Abuts. have 2 light crack each. Cork between abutment and wings has deteriorated and is falling out. South East spall, 4 ft x 18 in. x 6 in. deep, rebar exposed girder connection. NW end abut parapet 5 in. x 3 in. spall. Wingwall notes: 2015- No Change. 2013- NE wing 8' horizontal crack.							

ELEM NBR	ELEMENT NAME	REPORT TYPE	INSP. DATE	QUANTITY	QTY CS 1	QTY CS 2	QTY CS 3	QTY CS 4
234	Reinforced Concrete Pier Cap	Underwater	07/26/2016	200 LF	180	20	0	0
		Migrated Values		200 LF	180	20	0	0
Notes: (2015-No Change)								
2013- Pier 4 light vert. crack full height under beam 3 N. face.								
All Pier caps have light vert. cracks in both faces. Lengths vary from 8 in. to 16 in. long at the tops to the full depth of the cap. Pier 1 has 13, Pier 2 has 27, Pier 3 has 17, and Pier 4 has 19. Pier 3 also has light horiz. cracks at the center of the caps at Bay 2 and 3. Pier 4 has a light 3 ft. diag. crack near the east end and light map cracking near center face of cap.								
300	Strip Seal Expansion Joint	Underwater	07/26/2016	111 LF	111	0	0	0
		Migrated Values		111 LF	111	0	0	0
Notes: 2015- No Change.								
2011- replace complete strip seal and extrusion.								
301	Pourable Joint Seal	Underwater	07/26/2016	208 LF	199	9	0	0
		Migrated Values		208 LF	199	9	0	0
Notes: 2015- 6 Ft failed sealant.								
2013- pier 1 1'x2" spall.								
Pier 2 2009 2 ft. x 5 in. spall. Repaired 2011.								
Pier 3 joint 3 ft. x 4 in. delam.								
310	Elastomeric Bearing	Underwater	07/26/2016	40 EA	35	5	0	0
		Migrated Values		40 EA	35	5	0	0
Notes: 2015- No Change.								
2009 - S end Beam: 5 = tipped 1 in. east ; 4 = tipped 5/8 in. east; 3 = tipped 3/4 in. east; 2 = tipped 1/2 in. east. 1 tipped back 1 1/4 in. NE corner is lifted 3/8 in.								
N.W. and S.E. bearing pads are twisted noticeably.								
313	Fixed Bearing	Underwater	07/26/2016	10 EA	10	0	0	0
		Migrated Values		10 EA	10	0	0	0
Notes: 2015- Pier 4 beam 3 west side pin is working out of pier cap, Pier 1 beam 2 east side pin is working out of pier cap.								
321	Reinforced Concrete Approach Slab	Underwater	07/26/2016	1440 SF	0	1440	0	0
		Migrated Values		1440 SF	0	1440	0	0
Notes: [2016] Migrator assumed an approach slab length of 20FT and used the inventory quantity of 36FT for the width.								
2015- No Change.								
2011- Spalls Repaired. S. App. 1 light Longitudinal Crack. N. App. 3 small spalls 6"X6"X2" deep and 3 light longitudinal cracks.								
331	Reinforced Concrete Bridge Railing	Underwater	07/26/2016	932 LF	932	0	0	0
		Migrated Values		932 LF	932	0	0	0
Notes: 2015- No Change.								
2011- Powered washed and thorosealed entire rail.								
800	Critical Deficiencies or Safety Hazards	Underwater	07/26/2016	1 EA	1	0	0	0
		Migrated Values		1 EA	1	0	0	0
Notes: No critical structural deficiencies or serious safety hazards are present on this structure.								
810	Concrete Decks - Cracking & Sealing	Underwater	07/26/2016	0 LF	0	0	0	0
		Migrated Values		0 LF	0	0	0	0
Notes: 2011- Sealed.								

ELEM NBR	ELEMENT NAME	REPORT TYPE	INSP. DATE	QUANTITY	QTY CS 1	QTY CS 2	QTY CS 3	QTY CS 4
815	Plow Fingers	Underwater	07/26/2016	1 EA	1	0	0	0
		Migrated Values		1 EA	1	0	0	0
Notes: 2015- No Change.								
883	Concrete Shear Cracking	Underwater	07/26/2016	1 EA	1	0	0	0
		Migrated Values		1 EA	1	0	0	0
Notes: Use this element to monitor the presence of shear cracking on concrete elements. Pay particular attention to the concrete pier caps and prestressed concrete beams.								
891	Other Bridge Signing	Underwater	07/26/2016	1 EA	1	0	0	0
		Migrated Values		1 EA	1	0	0	0
Notes: Signs Required: Horizontal Clearance								
892	Slopes & Slope Protection	Underwater	07/26/2016	1 EA	1	0	0	0
		Migrated Values		1 EA	1	0	0	0
Notes: 2015- SW corner 5 yds rip rap								
Rip rap north end, kids have removed about 10%								
893	Guardrail	Underwater	07/26/2016	1 EA	1	0	0	0
		Migrated Values		1 EA	1	0	0	0
Notes: 2015- No Change.								
894	Deck & Approach Drainage	Underwater	07/26/2016	1 EA	1	0	0	0
		Migrated Values		1 EA	1	0	0	0
Notes: 2013- SW corner sunk 1'-6"/4'x4'.								
900	Protected Species	Underwater	07/26/2016	1 EA	0	1	0	0
		Migrated Values		1 EA	0	1	0	0
Notes: [2016] Migrator determined the presence of swallows on this structure based on data in the inventory or comments in the general/miscellaneous notes.								

General Notes: Note: Swallow nests under bridge. Post report note (D. L. Davidson, 6/7/05): Underwater dive inspection done on 7/19/04 by Ayres Associates. NBI ratings reported for item 60, Substructure = 7, and item 61, Channel and Protection = 8. Pier 3 probed for scour south side 10 ft to bottom; north side 13 ft - 14 ft to bottom. Pier 2 scour East side 3 ft hole, , 8 ft across on west end 4 ft. hole 20 ft. long x 10 ft. wide . Low water exposed full view. 07/09/2009 Inspection: D.Perkins/ D. Bystrom
02/03/2010 post inspection note by G.Elmquist: 2008 underwater inspection performed by Collins Engineers. 05/11/2011 Inspection: R.Edstrom/D.Bystrom
08/08/2011 Snooper inspection Roger Edstrom/Dave Bystrom
05/13/2013 Insp. D. Perkins/M. Larson
06/18/2013 Snooper Insp. D. Perkins/D. Bystrom
05/12/2015 Routine Insp. - D. Perkins/ M. Larson
06/16/2015 Snooper inspection: D. Briski / J. Feth
06/03/2016 Underwater Inspection - Collins Engineers

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:

62. Culvert NBI:

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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71. Waterway Adeq NBI:

72. Appr Roadway
Alignment NBI:

Inventory Notes:

Inspector's Signature

Reviewer's Signature

Pictures



Photo 1 - Overall View of Downstream Fascia, Looking Southeast.



Photo 2 - Overall View of Upstream Fascia, Looking Northwest.

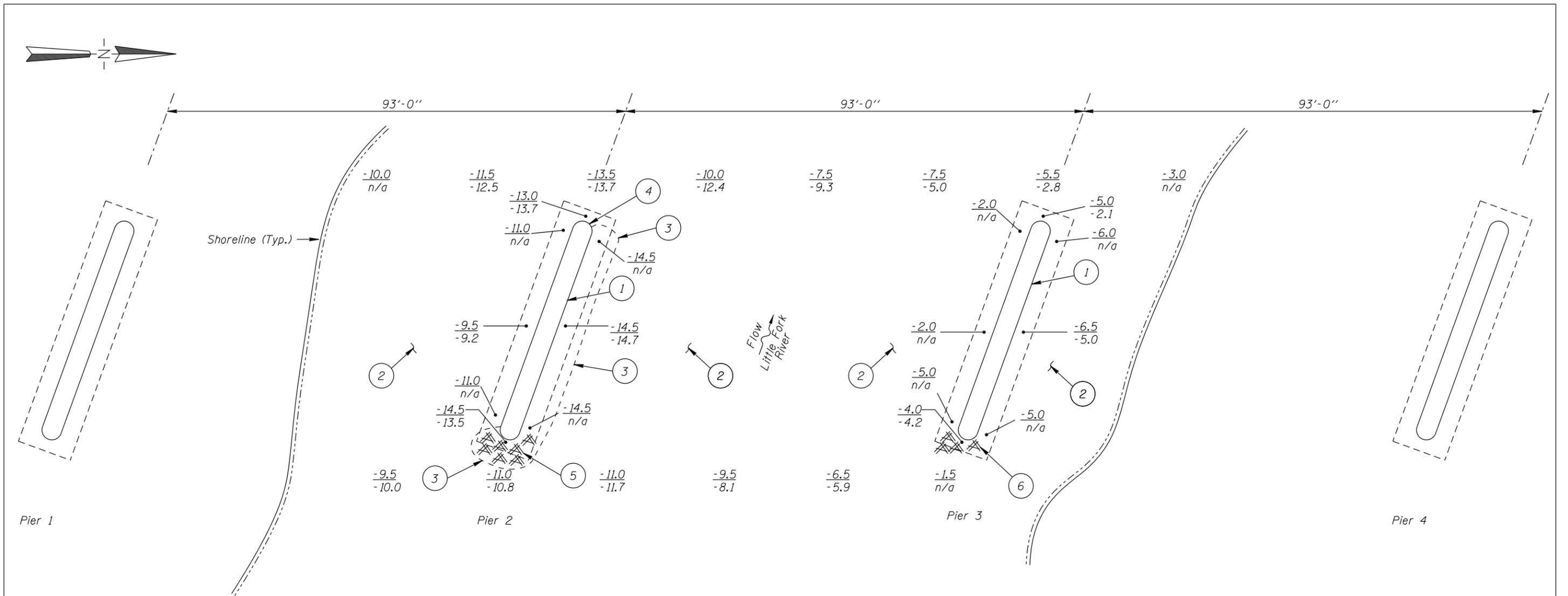
Pictures



Photo 3 - Overall View of Pier 2, Looking Northwest.



Photo 4 - Overall View of Pier 3, Looking Southwest.



INSPECTION NOTES:

- ① The concrete of both piers was typically smooth and sound, except for some minor scaling from 4 feet above to 1 foot below the waterline with 1/4 inch maximum penetration.
- ② The channel bottom at Piers 2 and 3 typically consisted of silty sand, with some gravel, and allowed up to 6 inches of maximum probe rod penetration.
- ③ A 4 foot radius scour depression was observed at the upstream nose and along the north side of Pier 2. The depression was 3 feet deep relative to the adjacent channel bottom.
- ④ An 8 inch by 4 inch and 1 inch deep spall was observed at the downstream end of Pier 2 located approximately 10 feet below the waterline.
- ⑤ A light accumulation of timber debris, consisting of up to 6 inch diameter branches, was observed from the channel bottom up to the waterline, at the upstream end of Pier 3.
- ⑥ Moderate accumulation of timber debris, consisting of a 1 foot diameter log and 6 inch diameter and smaller branches, was observed around upstream nose of Pier 2 extending from channel bottom up 2 feet.

GENERAL NOTES:

- 1. Piers 2 and 3 were inspected underwater.
- 2. At the time of inspection on June 03, 2016, the waterline was located approximately 32.5 feet below the top of the pier cap at the upstream end of Pier 2. This corresponds with a waterline elevation of 1078.3 feet based on previous report dated August 14, 2012.
- 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

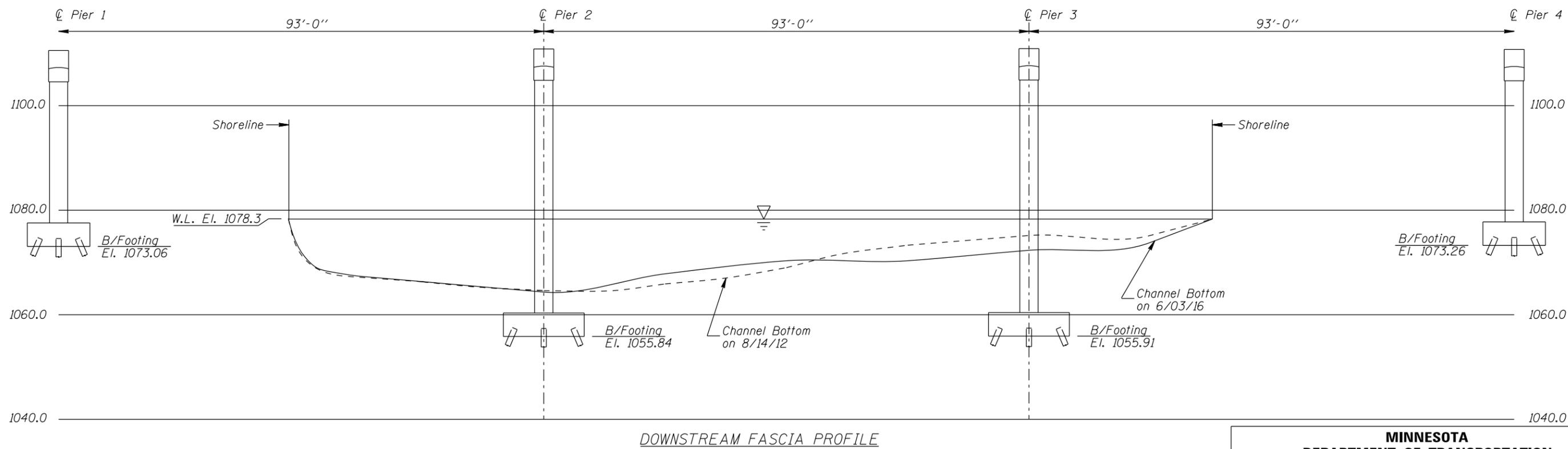
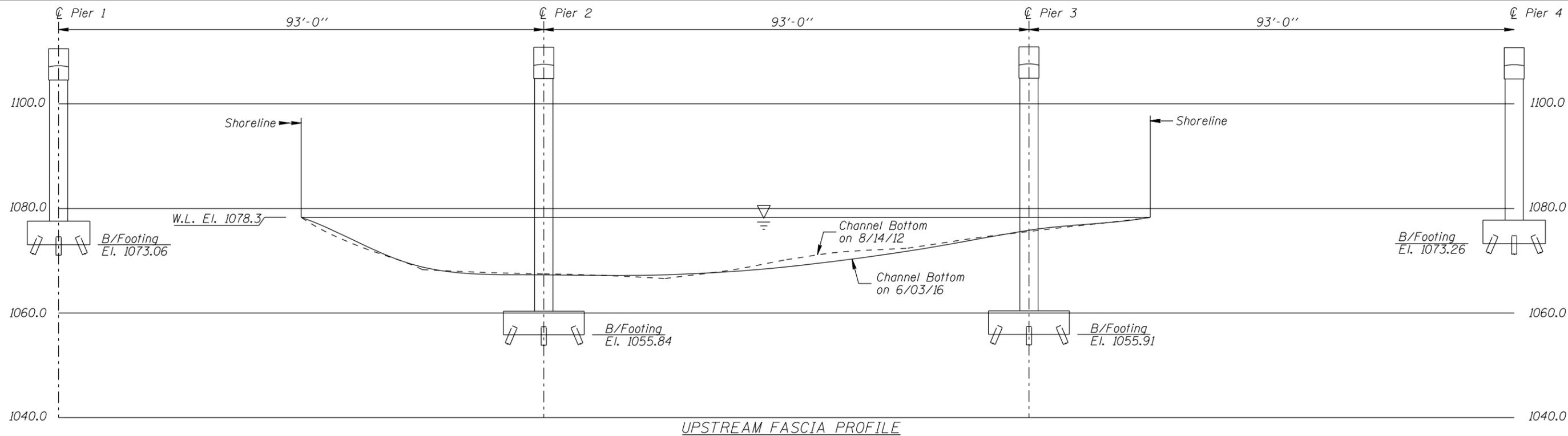
- 8.0 Sounding Depth from Waterline (6/03/16)
- 9.0 Sounding Depth from Waterline (8/14/12)
- Timber Debris
- Scour Depression

Note:

All soundings based on 2016 waterline location.

TYPICAL END VIEW OF PIERS 2 AND 3

MINNESOTA DEPARTMENT OF TRANSPORTATION UNDERWATER BRIDGE INSPECTION		
STRUCTURE NO. 36013 OVER LITTLE FORK RIVER DISTRICT 1, KOOCHICHING COUNTY		
INSPECTION AND SOUNDING PLAN		
Drawn By: MRS	COLLINS ENGINEERS	Date: JUNE 3, 2016
Checked By: DGS	<small>123 North Wacker Drive Suite 900 Chicago, IL 60606 (312) 704-9300 www.collinsengr.com</small>	Scale: NTS
Code: 968736013		Figure No.: 1



Note:
Refer to Figure 1 for General Notes.

MINNESOTA DEPARTMENT OF TRANSPORTATION UNDERWATER BRIDGE INSPECTION		
STRUCTURE NO. 36013 OVER LITTLE FORK RIVER DISTRICT 1, KOOCHICHING COUNTY		
UPSTREAM AND DOWNSTREAM FASCIA PROFILES		
Drawn By: MRS	COLLINS ENGINEERS	Date: JUNE 03, 2016
Checked By: DGS		Scale: 1"=20'
Code: 968736013		Figure No.: 2