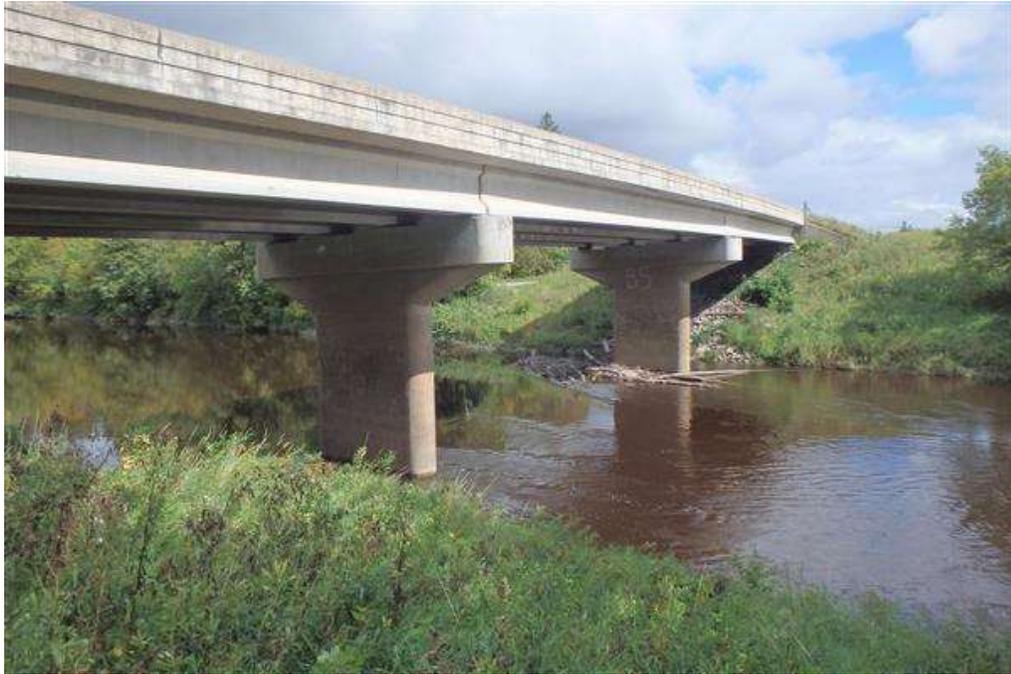


2017 UNDERWATER BRIDGE INSPECTION REPORT



BRIDGE # 69541 CSAH 52 over ST LOUIS RIVER

DISTRICT: District 1

COUNTY: St. Louis

CITY/TOWNSHIP: TOIVOLA

STATE: Minnesota

Date of Inspection: 09/13/2016

Equipment Used:

Owner: County Highway Agency

Inspected By: Parker, Marc

Report Written By: Marc Parker

Report Reviewed By:

Final Report Date:



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UNDERWATER INSPECTION

REPORT SUMMARY

The substructure units inspected below water at Bridge No. 69541, Piers 1 and 2, were in good condition with no defects of structural significance below water. Light scaling was observed from 1 to 3 feet above the water line to the channel bottom, with a maximum of 1/8 inch penetration. Heavy to light timber debris accumulations were observed at both piers, with the most significant accumulation occurring upstream and along the west face of Pier 2 with up to 2 foot diameter logs.

INSPECTION FINDINGS

- (A) The channel bottom material consisted of sand and gravel with random pieces of riprap 6 to 8 inches in diameter and smaller, allowing up to 3 inches of probe rod penetration.
- (B) Light concrete scaling, with up to 1/8 inch penetration was observed from 1 foot above the waterline to the channel bottom, and up to 3 feet above the waterline at the upstream noses.
- (C) Heavy accumulation of timber debris consisting of logs and branches up to 2 foot in diameter was present at the upstream half and along the west face of Pier 2 extending from the channel bottom to 3 feet above the waterline and from approximately 20 feet off the pier face.
- (D) The channel bottom material consisted of silt with up to 6 inches of probe rod penetration.
- (E) A light accumulation of timber debris up to 6 inches in diameter was present around the upstream half of Pier 1.

RECOMMENDATIONS

- (A) Reinspect the submerged substructure units at the normal maximum recommended (NBIS) interval of sixty (60) months.
- (B) The heavy timber accumulation at Pier 2 was not significantly affecting the hydraulic capacity of the St. Louis River at the time of the inspection. However, the accumulation should be monitored to ensure size and extent of the accumulation does not increase significantly, affecting the channel flow.

Contractor: Collins Engineers, Inc.

Contractor Job Number: 9687

UNDERWATER INSPECTION

1. BRIDGE DATA

Bridge #: 69541
Feature Intersected: ST LOUIS RIVER
Facility Carried: CSAH 52
District: District 1
County: 069 - St. Louis

Bridge Description:

The superstructure consists of three spans of precast beams supporting a reinforced concrete deck. The superstructure is supported by two reinforced concrete abutments and two reinforced concrete piers.

2. INSPECTION DATA

Professional Engineer/Team Leader: Marc Parker
Inspection Diver: Marc Parker
Date of Underwater Inspection: 09/13/2016
Weather Conditions: Overcast, 60°F
Underwater Visibility (feet): 2.0 feet
Waterway Velocity (ft/sec): 3.0 ft/sec

3. SUBSTRUCTURE INSPECTION DATA

Substructure(s) Inspected: Piers 1 and 2.

General Shape:

Each pier consisted of a reinforced concrete hammerhead pier cap supported by a reinforced concrete pier wall. At the time of inspection, no plans were available for this structure, but according to the bridge inventory the piers are supported by piles.

Maximum Water Depth at Substructure(s) Inspected (feet): 6.5 feet

4. WATERLINE DATUM

Water Level Reference: The top of the pier cap at the downstream end of Pier 2.
Waterline Elevation (feet): 75.5 feet
Description: The waterline was located approximately 24.5 feet below the 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: 6
Item 62: Culvert: Code:
Item 92B: Underwater Inspection: Code: Y 48 09/2016

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	36	LF	36			
885	Scour	1	EA	1			

UNDERWATER INSPECTION

INSPECTION PROCEDURES

The routine underwater inspection of Bridge 695415 (CSAH 52 over St. Louis River) was completed on September 13, 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 hammerhead style piers. According to the bridge inventory, Piers 1 and 2 are founded on 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: 69541

CSAH 52 over ST LOUIS RIVER

Date: 02/02/2017

+ GENERAL +	+ ROADWAY +	+ INSPECTION +																				
Agency Br. No. 229 Crew District 01 Maint. Area County 069 - St. Louis City Township 69064 - TOIVOLA Desc. Loc. 0.5 MI W OF JCT CSAH 83 Sect., Twp., Range 8 - 054N - 19W Latitude 47 ° 10 ' 1.30 " Longitude 92 ° 46 ' 47.34 " Custodian 02 - County Highway Agency Owner 02 - County Highway Agency BMU Agreement Year Built 1986 MN Year Reconstructed FHWA Year Reconstructed MN Temporary Status Bridge Plan Location 3 - COUNTY Date Opened to Traffic 6/1/1987 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 52 Roadway Name or Description CSAH 52 Level of Service 1 - MAINLINE Roadway Type 2 - 2-way traffic Control Section (TH Only) Reference Point 001+00.470 Detour Length 12.0 mi. Lanes ON 2 UNDER 0 ADT 95 YEAR 2008 HCA DT ADTT % Functional Class 08 - Rural - Minor Collector	Userkey 109 Structurally Deficient N Functionally Obsolete N Sufficiency Rating 96.3 Routine Inspection Date 09/16/2016 Routine Inspection Frequency 24 Inspector Name Parker, Marc Status A - Open																				
	+ RDWY DIMENSIONS +	+ NBI CONDITION RATINGS +																				
	If Divided NB-EB SB-WB Roadway Width 32.00 ft. ft. Vertical Clearance ft. ft. Max. Vert. Clear. ft. ft. Horizontal Clear. ft. ft. Lateral Clearance ft. ft. Appr. Surface Width 32.0 ft. Bridge Roadway Width 32.0 ft. Median Width On Bridge ft.	Deck 7 Unsound Deck % Superstructure 7 Substructure 7 Channel 6 Culvert N																				
+ STRUCTURE +	+ MISC. BRIDGE DATA +	+ NBI APPRAISAL RATINGS +																				
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 10 RIGHT Culvert Type Barrel Length Cantilever ID Number of Spans MAIN: 3 APPR: 0 TOTAL: Main Span Length 83.3 ft. Structure Length 253.6 ft. Deck Width (Out-to-Out) 35.3 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 0 - None Deck Rebars Install Year Structure Area (Out-to-Out) 8952 sq. ft. Roadway Area (Curb-to-Curb) 8116 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	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) 1 - CONC 4 - PILE BENT Historic Status 5 - Not eligible	Structure Evaluation 6 Deck Geometry 8 Underclearances N Waterway Adequacy 9 Approach Alignment 7																				
	+ PAINT +	+ SAFETY FEATURES +																				
	Year Painted Unsound Paint % Painted Area sq. ft. Primer Type Finish Type	Bridge Railing 1 - MEETS STANDARDS GR Transition 0 - SUBSTANDARD Appr. Guardrail 1 - MEETS STANDARDS GR Termini 1 - MEETS STANDARDS																				
	+ BRIDGE SIGNS +	+ IN DEPTH INSP. +																				
	Posted Load 0 - Not Required Traffic 0 - Not Required Horizontal 1 - Object Markers Vertical N - Not Applicable	<table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 30%;"></th> <th style="width: 10%; text-align: center;">Y/N</th> <th style="width: 10%; text-align: center;">Freq</th> <th style="width: 10%; 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;">09/13/2016</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	09/13/2016	Pinned Asbly.				Spec. Feat.			
	Y/N	Freq	Date																			
Frac. Critical																						
Underwater		60	09/13/2016																			
Pinned Asbly.																						
Spec. Feat.																						
		+ WATERWAY +																				
		Drainage Area (sq. mi.) 1190.0 Waterway Opening (sf.) 4079 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 1 - LOW RISK Year 1992																				
		+ CAPACITY RATINGS +																				
		Design Load 5 - HS 20 Operating Rating 2 - HS TRUCK 28.0 Inventory Rating 2 - HS TRUCK 16.8 Posting VEH: SEMI: DBL: Rating Date 11/12/2015 Overweight Permit Codes A 1 - No Restriction B 2 - Straddle 2 Lanes C 2 - Straddle 2 Lanes																				

MINNESOTA BRIDGE INSPECTION REPORT

02/03/2017

BRIDGE 69541 CSAH 52 OVER ST LOUIS RIVER

County: St. Louis	Location: 0.5 MI W OF JCT CSAH 83	Length: 253.6 ft.
City:	Route: 04 - CSAH 52 Ref. Pt.: 001+00.470	Deck Width: 35.3 ft.
Township: 69064 - TOIVOLA	Control Section:	Rdwy. Area/ Pct. Unsnd: 8116 sq. ft. / %
Section: 8 Township: 054N Range: 19W Maint. Area:		Paint Area/ Pct. Unsnd: sq. ft. / %
Span Type: 5 - Prestressed Concrete 2 - Stringer/Multi-beam or Girder	Local Agency Bridge Nbr.: 229	Culvert: N/A
List:		Postings:
NBI Deck: 7 Super: 7 Sub: 7 Chan: 6 Culv: N		
	Open, Posted, Closed: A - Open	
	MN Scour Code: I - LOW RISK	

Appraisal Ratings - Approach: 7 Waterway: 9	Unofficial Structurally Deficient	N
Required Bridge Signs - Load Posting: 0 - Not Required	Unofficial Functionally Obsolete	N
Horizontal: 1 - Object Markers	Unofficial Sufficiency Rating	96.3
Traffic: 0 - Not Required		
Vertical: N - Not Applicable		

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	02/02/2017	8952 SF	8952	0	0	0
		Routine	09/16/2016	8952 SF	8952	0	0	0
Notes: [2016] Minor leaching under each poured joint. No other deterioration present. [2014-2012] No additional deterioration noted. MINOR LEACHING AT E. PIER.								
510	Wearing Surfaces	Underwater	02/02/2017	8116 SF	8062	54	0	0
		Routine	09/16/2016	8116 SF	8062	54	0	0
Notes: [2016] Spalling along poured joints is full length of poured joint 1 and some along poured joint 2. Spalling is less than 1" in depth. Minor popouts throughout deck. [2014-2013] No change in condition. 2012-Small scrape near midspan of bridge. Spalls near pier joints warranting CS2.								
109	Prestressed Concrete Open Girder/Beam	Underwater	02/02/2017	1010 LF	1009	1	0	0
		Routine	09/16/2016	1010 LF	1009	1	0	0
Notes: [2016] Chip in east end of beam 4 east abutment. [2014-2012] No deterioration noted.								
210	Reinforced Concrete Pier Wall	Underwater	02/02/2017	36 LF	36	0	0	0
		Routine	09/16/2016	36 LF	36	0	0	0
Notes: [2016-2013] No additional deterioration noted. 2012-Debris still at E. Pier Wall. [2012 Underwater] Light scale observed from 2' above water line to channel bottom with a maximum of 1/8" penetration Debris E. pier.								
215	Reinforced Concrete Abutment	Underwater	02/02/2017	124 LF	83	41	0	0
		Routine	09/16/2016	124 LF	83	41	0	0
Notes: [2016] Added 52 LF to abutment quantity to account for wingwalls. 3 Spalls middle of east abutment about 1' in diameter. Minor scale/popouts middle of east parapet above seat. 1' long spall top on SE wing. [2014-2013] No additional deterioration noted. 2012-West abutment has horizontal crack near the top of the parapet from thermal movement of bridge deck. East abutment bridge seat is covered in gravel. Minor spall on the SE wingwall warranting CS2. HAIRLINE CRACK THROUGH W. SEAT. East gravel covered.								
234	Reinforced Concrete Pier Cap	Underwater	02/02/2017	72 LF	72	0	0	0
		Routine	09/16/2016	72 LF	72	0	0	0
Notes: [2016-2012] No deterioration noted.								

BRIDGE 69541 CSAH 52 OVER ST LOUIS RIVER

ELEM NBR	ELEMENT NAME	REPORT TYPE	INSP. DATE	QUANTITY	QTY CS 1	QTY CS 2	QTY CS 3	QTY CS 4
300	Strip Seal Expansion Joint	Underwater	02/02/2017	36 LF	0	0	36	0
		Routine	09/16/2016	36 LF	0	0	36	0
<p>Notes: [2016] Joint has 4.375" gap on south end and 3.125 on north end. Strip seal torn allowing gravel to deposit on abutment seat. [2014-2012] Element represents joint at east abutment. No additional deterioration noted. One cap screw broken off at each expansion joint cover plate. FILLED WITH GRAVEL. EAST STRIP SEAL EXPANSION JOINT IS GONE.</p>								
301	Pourable Joint Seal	Underwater	02/02/2017	72 LF	0	36	36	0
		Routine	09/16/2016	72 LF	0	36	36	0
<p>Notes: [2016] Minor leaching below both pier joints on underside of deck indicating both joints failing. No joint on west end of deck just steel protection along end of deck. [2014-2013] Poured joint at pier 1 has extensive spalling, sealant has minimal adhesion, repairs needed. 2012-Element represents joints at piers and west abutment. Small spall near the east pier joint, many small spalls along the west pier joint.</p>								
310	Elastomeric Bearing	Underwater	02/02/2017	16 EA	12	4	0	0
		Routine	09/16/2016	16 EA	12	4	0	0
<p>Notes: [2016] Pads on pier 2 show lateral movement. All bearings leaning to the south with east having the most lean. [2014-2013] No additional deterioration noted. 2012-Pads at both abutments show lateral movement due to the curvature of the bridge. East abutment most severe warranting CS2. E. abut. pads are deflecting sideways. Located at abutments and pier 2.</p>								
313	Fixed Bearing	Underwater	02/02/2017	8 EA	8	0	0	0
		Routine	09/16/2016	8 EA	8	0	0	0
<p>Notes: [2016-2013] No deterioration noted. 2012-Element represents bearings at pier 1.</p>								
331	Reinforced Concrete Bridge Railing	Underwater	02/02/2017	505 LF	495	10	0	0
		Routine	09/16/2016	505 LF	495	10	0	0
<p>Notes: [2016] Cracks are 0.004" to 0.01" in width. Spots of rust staining on base of north rail 1" to 2" in diameter. Spalls in south rail are 2' in length with no exposed reinforcement. [2014] 1 to 2 vertical hairline cracks per rail panel. [2013] No additional deterioration noted. 2012-Minor scraping, 2 spalls on the south barrier warranting CS2. Needs paint.</p>								
800	Critical Deficiencies or Safety Hazards	Underwater	02/02/2017	1 EA	1	0	0	0
		Routine	09/16/2016	1 EA	1	0	0	0
<p>Notes: [2016-2013] No critical deficiencies or safety hazards found during this inspection.</p>								
815	Plow Fingers	Underwater	02/02/2017	1 EA	1	0	0	0
		Routine	09/16/2016	1 EA	1	0	0	0
<p>Notes: [2016] All plow fingers present 4 per lane. No evidence along center of joint to indicate plow finger had been removed. [2014] Plow strap at center line missing. [2013-2012] All straps in place.</p>								
823	Gravel Approach Roadway	Underwater	02/02/2017	2 EA	2	0	0	0
		Routine	09/16/2016	2 EA	2	0	0	0
<p>Notes: [2016-2013] No signs of settlement or undermining. No pot holes present in roadway.</p>								
855	Secondary Members (Superstructure)	Underwater	02/02/2017	1 EA	1	0	0	0
		Routine	09/16/2016	1 EA	1	0	0	0
<p>Notes: [2016-2012] No deterioration noted. Element represents 21 steel intermediate and 6 concrete end diaphragms.</p>								
883	Concrete Shear Cracking	Underwater	02/02/2017	1 EA	1	0	0	0
		Routine	09/16/2016	1 EA	1	0	0	0
<p>Notes: [2016] No shear cracking present.</p>								

BRIDGE 69541 CSAH 52 OVER ST LOUIS RIVER

ELEM NBR	ELEMENT NAME	REPORT TYPE	INSP. DATE	QUANTITY	QTY CS 1	QTY CS 2	QTY CS 3	QTY CS 4
884	Substructure Settlement & Movement	Underwater	02/02/2017	1 EA	1	0	0	0
		Routine	09/16/2016	1 EA	1	0	0	0
Notes: [2016-2012] No additional deterioration noted. At abutment, elastomeric bearing pads showing rotation of deck.								
885	Scour	Underwater	02/02/2017	1 EA	1	0	0	0
891	Other Bridge Signing	Underwater	02/02/2017	1 EA	1	0	0	0
		Routine	09/16/2016	1 EA	1	0	0	0
Notes: [2016] All signs present with no deterioration. [2014-2012] All signs in place. 4 DELINEATORS.								
892	Slopes & Slope Protection	Underwater	02/02/2017	1 EA	0	1	0	0
		Routine	09/16/2016	1 EA	0	1	0	0
Notes: [2016] Minor erosion on east slope due to water leaking through failed strip seal joint. [2014] No notable erosion present. [2013] Brush and trees removed. 2012-Tree and brush removal. Tree covered. Some erosion.								
893	Guardrail	Underwater	02/02/2017	1 EA	0	1	0	0
		Routine	09/16/2016	1 EA	0	1	0	0
Notes: [2016] 2 posts rotted on NE. 1 rotten post on NE and NW have carpenter ant infestation. Dents and scrapes throughout rail. Hole torn in SW rail [2014-2012] 4 rotted posts are in NW corner. W-beam w/ BCT ends. MINOR DAMAGE NE. Railing damaged several spots. 4-posts rotted NE corner.								
894	Deck & Approach Drainage	Underwater	02/02/2017	1 EA	1	0	0	0
		Routine	09/16/2016	1 EA	1	0	0	0
Notes: [2016] No notable ponding or drainage-related slope erosion. [2014-2012] No deterioration noted.								
900	Protected Species	Underwater	02/02/2017	2 EA	0	1	1	0
		Routine	09/16/2016	2 EA	0	1	1	0
Notes: [2016] Cliff swallow nests present on span 2. Bat droppings on abutment seats and on flanges of beams. Bat species is unknown.								
General Notes: SLC District 5 Inspected by: [2016] CG : [2014] CG, BH : [2013] BH, CG [7/09/2012] - Post 2012 Flood Inspection by JRM and RRC from TKDA. Underwater inspection performed by WSB.								
58. Deck NBI: [2016] Spalling along poured joints is full length of poured joint 1 and some along poured joint 2. Spalling is less than 1" in depth. Minor popouts throughout top of deck. [2014-2013] Deck in good condition has minor cracking and spalling along poured joint at pier 1.								
36A. Brdg Railings NBI: Concrete Barrier type J. Meets standards for all speeds.								
36B. Transitions NBI: East transition end posts are not 3' in length.								
36C. Appr Guardrail NBI: W-beam with timber posts. Traffic barrier B8307.								
36D. Appr Guardrail Terminal NBI: 4 ELT End Terminals.								
59. Superstructure NBI: [2016] Chip in end of beam 4 over east abutment. [2014-2013] Bearings are showing signs of lateral movement otherwise good condition								

BRIDGE 69541 CSAH 52 OVER ST LOUIS RIVER

ELEM NBR	ELEMENT NAME	REPORT TYPE	INSP. DATE	QUANTITY	QTY CS 1	QTY CS 2	QTY CS 3	QTY CS 4
60.	Substructure NBI:	[2016] 3 Spalls middle of east abutment about 1' in diameter. Minor scale/popouts middle of east parapet above seat. 1' long spall top on SE wing. [2014] Light scale on pier walls. [2013] Substructure is in good condition and proper alignment						
61.	Channel NBI:	[2016 U/W] Timber debris accumulations were present at Piers 1 and 2. [2016] Debris caught on piers with large trees caught on north end of pier 2. Debris no restricting channel flow. [2014] No notable scour around bridge structure. Minor bank erosion.						
62.	Culvert NBI:							
71.	Waterway Adeq NBI:	[2016-2014] Highest water mark on piers is about 2' below top of pier caps.						
72.	Appr Roadway Alignment NBI:	[2016-2014] Bridge on curve slightly affecting sight distance.						

Inspector's Signature

Reviewer's Signature

Pictures



Photo 1 - Upstream Fascia, Looking Southwest

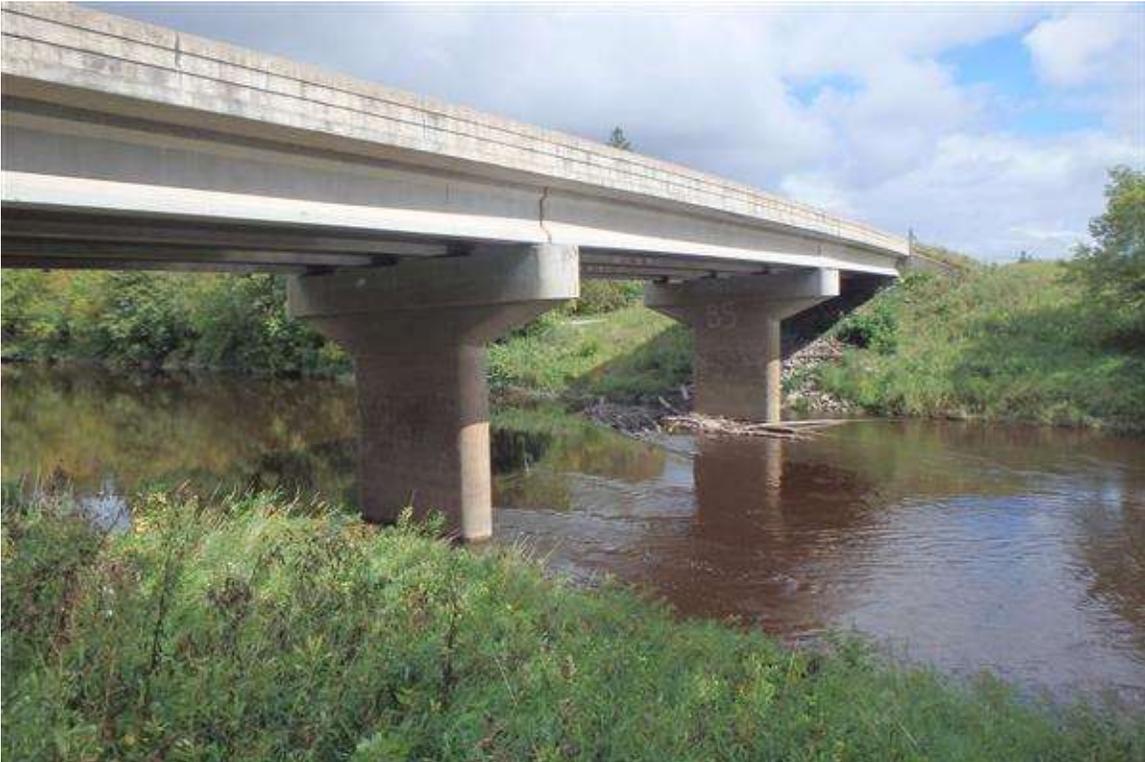


Photo 2 - Downstream Fascia, Looking Northeast

Pictures

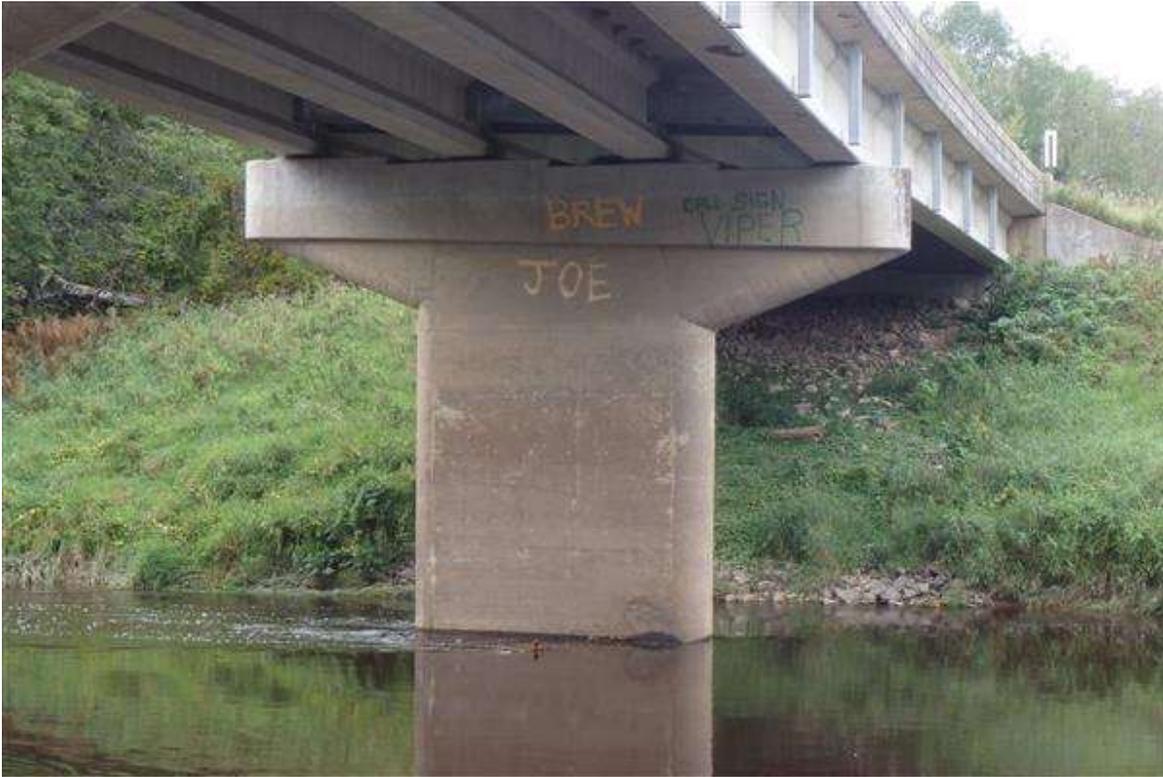


Photo 3 - Pier 1, Looking West

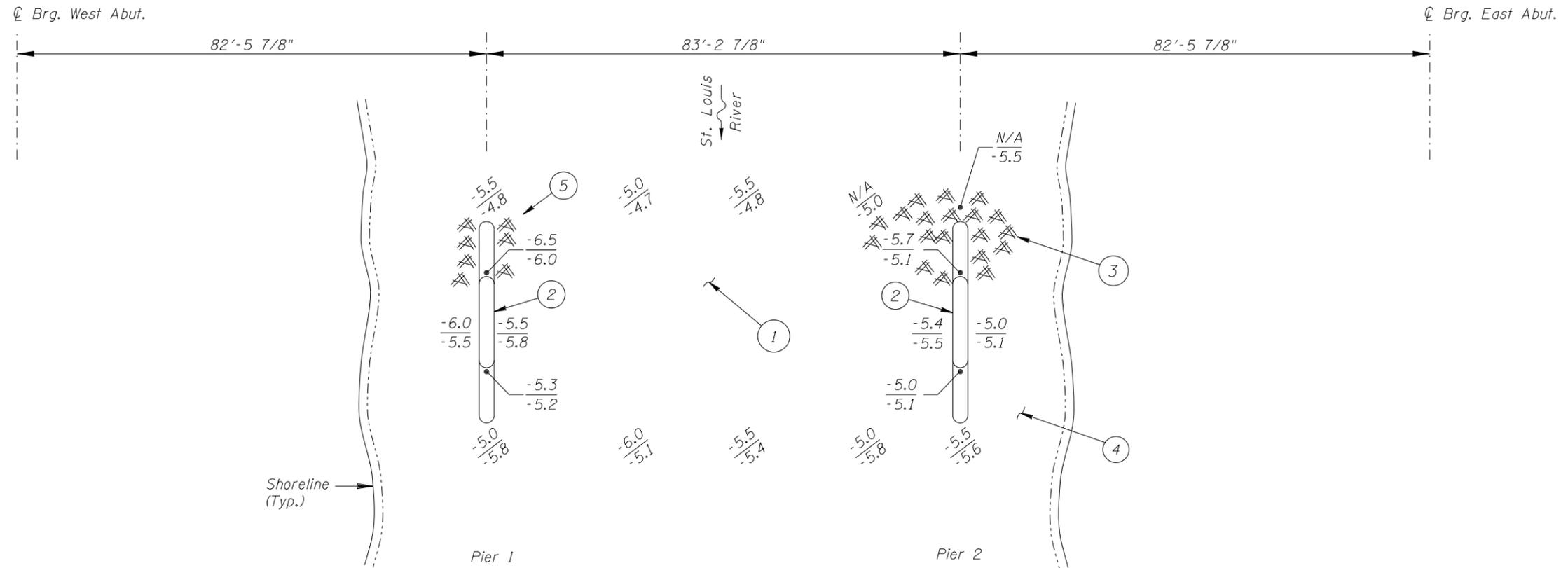
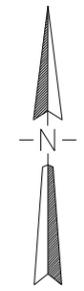


Photo 4 - Pier 2, Looking Southwest

Pictures



Photo 5 - Timber Debris Accumulation at Pier 2, Looking Southwest



SOUNDING PLAN

GENERAL NOTES:

1. Piers 1 and 2 were inspected underwater.
2. At the time of inspection on September 13, 2016, the waterline was located approximately 24.5 feet below the top of the pier cap at the downstream end of Pier 2. Since insufficient bridge elevation information was available a reference elevation of 100.0 was assumed. Based on the assumed reference the waterline elevation was 75.5.
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.

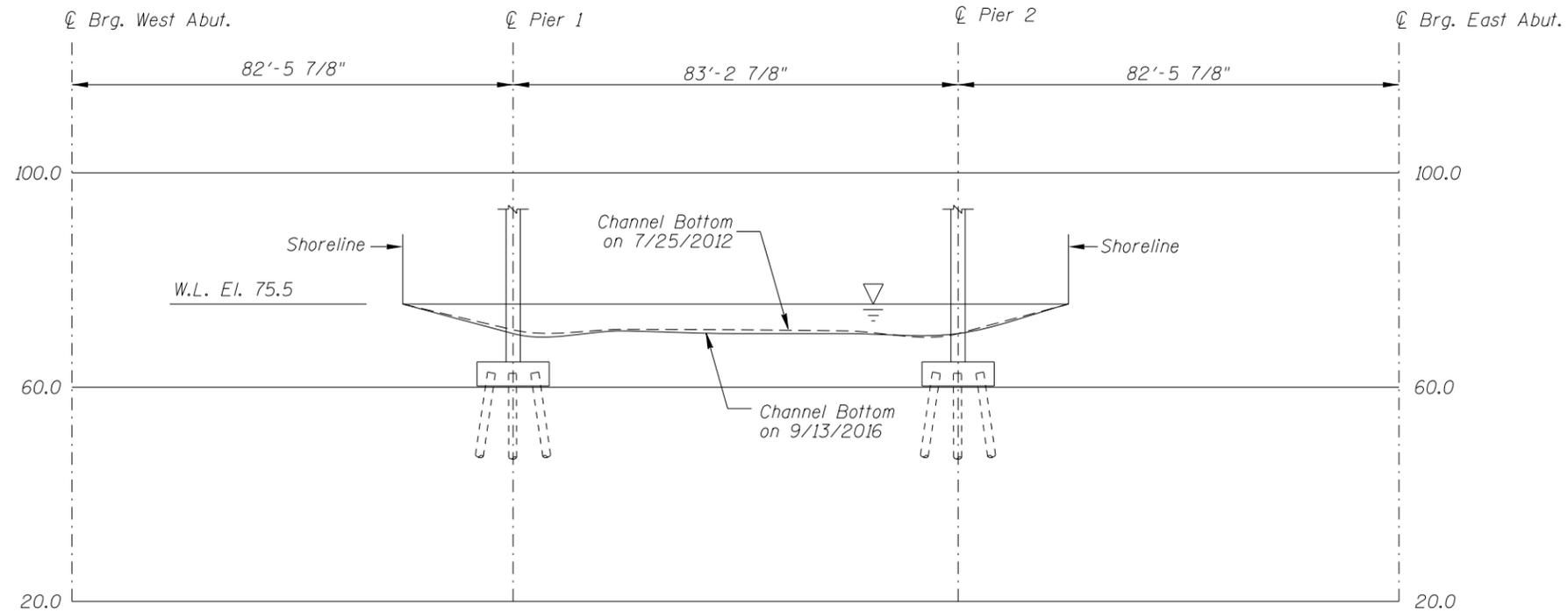
INSPECTION NOTES:

1. The channel bottom material consisted of sand and gravel with random pieces of riprap 6 to 8 inches in diameter and smaller, allowing up to 3 inches of probe rod penetration.
2. Light concrete scaling, with up to 1/8 inch penetration was observed from 1 foot above the waterline to the channel bottom, and up to 3 feet above the waterline at the upstream noses.
3. Heavy accumulation of timber debris consisting of logs and branches up to 2 foot in diameter was present at the upstream half and along the west face of Pier 2 extending from the channel bottom to 3 feet above the waterline and approximately 20 feet off the pier face.
4. Channel bottom material consisted of silt with up to 6 inches of probe rod penetration.
5. Light accumulation of timber debris up to 6 inches in diameter was present around the upstream half of Pier 1.

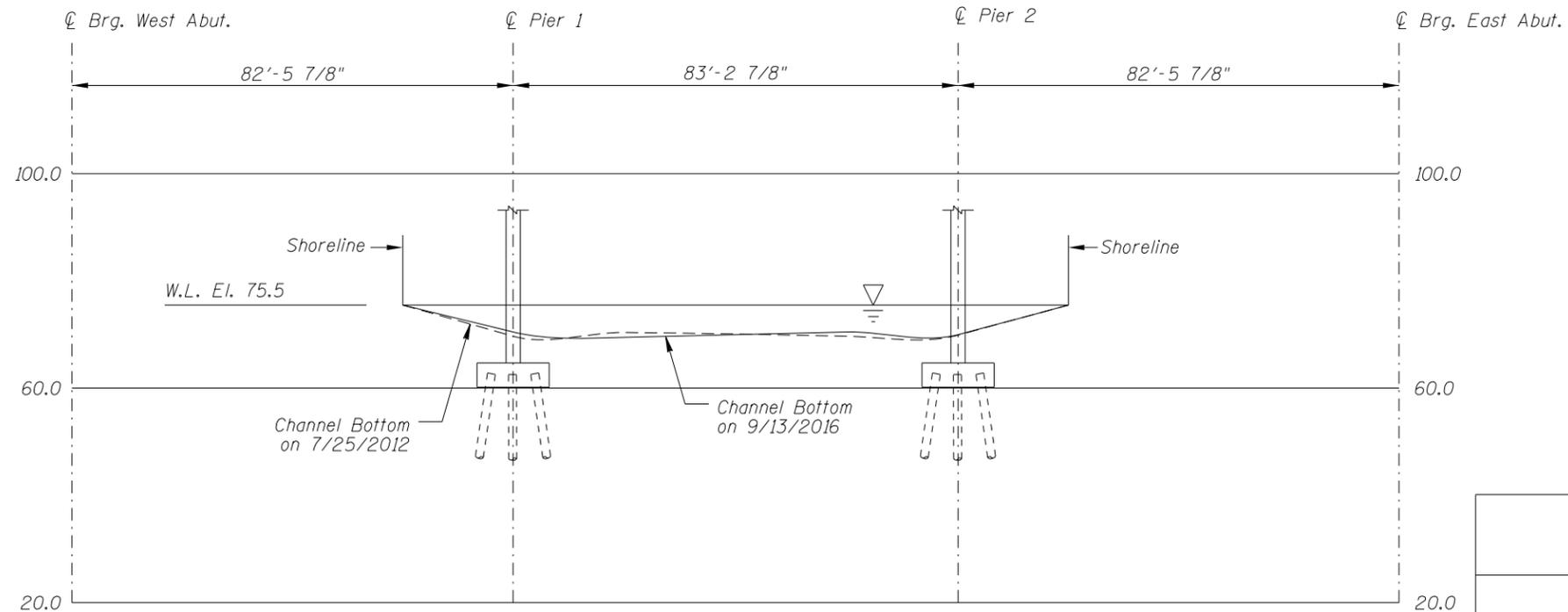
Legend

- 5.5 Sounding Depth from Waterline (9/13/2016)
- 5.6 Sounding Depth from Waterline (7/25/2012)
- Timber Debris

MINNESOTA DEPARTMENT OF TRANSPORTATION UNDERWATER BRIDGE INSPECTION		
STRUCTURE NO. 69541 CSAH 52 OVER THE ST. LOUIS RIVER DISTRICT 1, ST. LOUIS COUNTY		
INSPECTION AND SOUNDING PLAN		
DRAWN BY: RT	COLLINS ENGINEERS	DATE: SEPT 13, 2016
CHECKED BY: MBP	<small>133 North Wacker Drive Suite 300 Chicago, IL 60606 (312) 704-9300 www.collinsengr.com</small>	SCALE: NTS
CODE: 96876954I		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. 6954I CSAH 52 OVER THE ST. LOUIS RIVER DISTRICT I, ST. LOUIS COUNTY UPSTREAM AND DOWNSTREAM FASCIA PROFILES		
DRAWN BY: RT	COLLINS ENGINEERS <small>133 North Wacker Drive Suite 300 Chicago, IL 60606 (312) 704-9300 www.collinsengr.com</small>	DATE: SEPT 13, 2016
CHECKED BY: MBP		SCALE: 1"=20'
CODE: 96876954I		FIGURE NO.: 2