

2016 UNDERWATER BRIDGE INSPECTION REPORT



BRIDGE # L9571 TWP 7992 over PELICAN RIVER

DISTRICT: District 1

COUNTY: St. Louis

CITY/TOWNSHIP: LEIDING

STATE: Minnesota

Date of Inspection: 06/19/2016

Equipment Used:

Owner: Town or Township Highway Agency

Inspected By: Janulis, Lukas

Report Written By: Lukas Janulis

Report Reviewed By:

Final Report Date:



TABLE OF CONTENTS

	PAGE NUMBER
UNDERWATER SUMMARY	3
UNDERWATER INSPECTION	4
UNDERWATER INSPECTION PROCEDURES	6
STRUCTURE INVENTORY	7
ELEMENTS	8
PICTURES	12
BRIDGE L9571 UNDERWATER INSPECTIONS DRAWINGS 2016	15

UNDERWATER INSPECTION

REPORT SUMMARY

The substructure units inspected at Bridge No. L9571, the North and South Abutments, were found to be generally in fair condition below water, with only minor defects of structural significance. The H-Piles exhibited light to moderate corrosion with pitting up to 1/8 inch deep as well as some rust delaminations. The timber backwall and wingwalls were sound and tight with no observed loss of backfill or structural deficiencies. The channel bottom appeared to be stable with no evidence of significant scour.

INSPECTION FINDINGS

A) The channel bottom material typically consisted of riprap up to 2 feet in diameter with sand infill having a maximum probe rod penetration of 6 inches.

B) The steel H-Piles typically exhibited light surface corrosion with pitting up to 1/32 inch deep, extending from the top of the pile to 1.5 feet above the waterline.

C) The steel H-Piles typically exhibited moderate corrosion with pitting up to 1/8 inch deep and rust delaminations up to 1/8 inch thick, extending from 1.5 feet above the waterline to the channel bottom.

D) The timber backwall was typically sound and well aligned with no noticeable loss of backfill or notable defects.

RECOMMENDATIONS

(A) The inspection of the submerged substructure units of Structure No. L9571 can most likely be accomplished in the future without the use of a dive team. To perform the underwater inspection, a properly equipped qualified inspector will have to enter the water during a period of low flow. As channel bottom contours and depths of flow can change quickly, it is recommended that lead line soundings of water depth be taken along the upstream and downstream fascias to determine whether wading is possible prior to beginning the inspection. If conditions are unsafe for inspection by wading, then an underwater inspection with the use of a dive team will be required.

(B) Monitor the extent of corrosion and associated section loss on the steel H-Piles.

(C) Reinspect the submerged substructure 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 #: L9571
Feature Intersected: PELICAN RIVER
Facility Carried: TWP 7992
District: District 1
County: 069 - St. Louis
Bridge Description:

The superstructure consists of a timber deck supported by ten steel I-Beams. The superstructure is supported by two abutments consisting of five 8-inch H-Piles, two 8-inch channels as the pile cap, and a timber backwall.

2. INSPECTION DATA

Professional Engineer/Team Leader: Lukas Janulis
Inspection Diver: Lukas Janulis
Date of Underwater Inspection: 06/19/2016
Weather Conditions: Sunny, 80°F
Underwater Visibility (feet): 2 feet
Waterway Velocity (ft/sec): 0.5 ft/sec

3. SUBSTRUCTURE INSPECTION DATA

Substructure(s) Inspected: The North and South Abutments
General Shape:

The North and South Abutments each consist of five steel 8-inch H-Piles with a cap consisting of two 8-inch steel channels bolted to the sides of the H-Piles. The backwall was comprised of 4-inch by 12-inch timber boards.

Maximum Water Depth at Substructure(s) Inspected (feet): Approximately 1.6 feet

4. WATERLINE DATUM

Water Level Reference: Bottom of the east fascia girder above Pile E of the South Abutment.
Waterline Elevation (feet): 96.3 feet
Description: The waterline was approximately 3.7 feet below the reference.

5. NBIS CODING INFORMATION

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

Item 60: Substructure: Code: 5
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
216	Timber Abutment	40	LF			40	
225	Steel or CIP Piling	18	EA		8	10	
881	Steel Section Loss	1	EA			1	
885	Scour	1	EA	1			

UNDERWATER INSPECTION

INSPECTION PROCEDURES

The routine underwater inspection of Bridge L9571 (TWP 7992 over the Pelican River) was completed on June 19, 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. Due to waterway conditions at the time of the inspection, the inspection could be accomplished by wading 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 timber abutments. The North and South Abutments consist of five steel 8-inch H-Piles with a cap consisting of two 8-inch steel channels bolted to the sides of the 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: L9571

TWP 7992 over PELICAN RIVER

Date: 08/15/2016

+ GENERAL +	+ ROADWAY +	+ INSPECTION +																				
Agency Br. No. 777 Crew District 01 Maint. Area County 069 - St. Louis City Township 69041 - LEIDING Desc. Loc. 0.7 MI E OF JCT TH 53 Sect., Twp., Range 18 - 064N - 19W Latitude 48 ° 2' 2.17 " Longitude 92 ° 49' 10.43 " Custodian 03 - Town or Township Highway Owner 03 - Town or Township Highway BMU Agreement Year Built 1975 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 06A Potential ABC 2 - N/A	Bridge Match ID (TIS) 0 Roadway O/U Key Route On Structure Route Sys 08 - TWNS Number 7992 Roadway Name or Description TWNS 7992 Level of Service 1 - MAINLINE Roadway Type 2 - 2-way traffic Control Section (TH Only) Reference Point 001+00.740 Detour Length 99.0 mi. Lanes ON 2 UNDER 0 ADT 23 YEAR 1969 HCA DT ADTT % Functional Class 09 - Rural - Local	Userkey 109 Structurally Deficient N Functionally Obsolete N Sufficiency Rating 68.6 Routine Inspection Date 09/23/2015 Routine Inspection Frequency 24 Inspector Name Janulis, Lukas Status P - Posted for Load																				
		+ NBI CONDITION RATINGS +																				
		Deck 6 Unsound Deck % 10 Superstructure 5 Substructure 5 Channel 7 Culvert N																				
		+ NBI APPRAISAL RATINGS +																				
		Structure Evaluation 5 Deck Geometry 5 Underclearances N Waterway Adequacy 8 Approach Alignment 5																				
		+ SAFETY FEATURES +																				
		Bridge Railing 0 - SUBSTANDARD GR Transition N - NOT REQUIRED Appr. Guardrail N - NOT REQUIRED GR Termini N - NOT REQUIRED																				
		+ 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 style="text-align: center;">N</td> <td></td> <td></td> </tr> <tr> <td>Underwater</td> <td style="text-align: center;">Y</td> <td style="text-align: center;">60</td> <td style="text-align: center;">06/19/2016</td> </tr> <tr> <td>Pinned Asbly.</td> <td style="text-align: center;">N</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	N			Underwater	Y	60	06/19/2016	Pinned Asbly.	N			Spec. Feat.			
	Y/N	Freq	Date																			
Frac. Critical	N																					
Underwater	Y	60	06/19/2016																			
Pinned Asbly.	N																					
Spec. Feat.																						
		+ WATERWAY +																				
		Drainage Area (sq. mi.) 124.0 Waterway Opening (sf.) 350 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 I - LOW RISK Year 1994																				
		+ CAPACITY RATINGS +																				
		Design Load 4 - H 20 Operating Rating 2 - HS TRUCK 21.2 Inventory Rating 2 - HS TRUCK 12.6 Posting VEH: 34 SEMI: DBL: Rating Date 12/24/2012 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 3 - Steel Main Span Design 01 - Beam Span Main Span Detail Appr. Span Type Appr. Span Design Appr. Span Detail Skew 0 Culvert Type Barrel Length Cantilever ID Number of Spans MAIN: 1 APPR: 0 TOTAL: Main Span Length 47.0 ft. Structure Length 48.5 ft. Deck Width (Out-to-Out) 24.0 ft. Deck Material 8 - Wood or Timber Wear Surf Type 6 - Bituminous Wear Surf Install Year Wear Course/Fill Depth 0.17 ft. Deck Membrane 0 - None Deck Rebars N - Not Applicable (no deck) Deck Rebars Install Year Structure Area (Out-to-Out) 1164 sq. ft. Roadway Area (Curb-to-Curb) 1119 sq. ft. Sidewalk Width 50A. Lt 0.00 ft. 50B. Rt 0.00 ft. Curb Height Lt 0.50 ft. Rt 0.50 ft. Rail Type Lt 37 Rt 37	If Divided NB-EB SB-WB Roadway Width 23.00 ft. ft. Vertical Clearance ft. ft. Max. Vert. Clear. ft. ft. Horizontal Clear. ft. ft. Lateral Clearance ft. ft. Appr. Surface Width 25.0 ft. Bridge Roadway Width 23.0 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) 3 - STEEL Pier Foundation (Material/Type) 4 - PILE BENT N - N/A N - N/A Historic Status 5 - Not eligible																				
		+ PAINT +																				
		Year Painted 1975 Unsound Paint % 10 Painted Area sq. ft. Primer Type 1 - Lead - non 3309 Finish Type																				
		+ BRIDGE SIGNS +																				
		Posted Load 1 - Vehicle Only (Type R12-1A) Traffic 0 - Not Required Horizontal 1 - Object Markers Vertical N - Not Applicable																				

MINNESOTA BRIDGE INSPECTION REPORT

08/26/2016

Inspector: CO Bridge

BRIDGE L9571 TWP 7992 OVER PELICAN RIVER

County: St. Louis	Location: 0.7 MI E OF JCT TH 53	Length: 48.5 ft.
City:	Route: 08 - TWNS 7992 Ref. Pt.: 001+00.740	Deck Width: 24.0 ft.
Township: 69041 - LEIDING	Control Section:	Rdwy. Area/ Pct. Unsnd: 1119 sq. ft. / 10%
Section: 18 Township: 064N Range: 19W Maint. Area:		Paint Area/ Pct. Unsnd: sq. ft. / 10%
Span Type: 3 - Steel 2 - Stringer/Multi-beam or Girder	Local Agency Bridge Nbr.: 777	Culvert: N/A
List:		Postings: 34
NBI Deck: 6 Super: 5 Sub: 5 Chan: 7 Culv: N		
	Open, Posted, Closed: P - Posted for Load	
	MN Scour Code: I - LOW RISK	

Appraisal Ratings - Approach: 5	Waterway: 8	Unofficial Structurally Deficient	N
Required Bridge Signs - Load Posting: 1 - Vehicle Only (Type R12-1A)	Traffic: 0 - Not Required	Unofficial Functionally Obsolete	N
Horizontal: 1 - Object Markers	Vertical: N - Not Applicable	Unofficial Sufficiency Rating	68.6

ELEM NBR	ELEMENT NAME	REPORT TYPE	INSP. DATE	QUANTITY	QTY CS 1	QTY CS 2	QTY CS 3	QTY CS 4
31	Timber Deck	Underwater	06/19/2016	1164 SF	1164	0	0	0
		Migrated Values		1164 SF	1164	0	0	0
Notes: [2016] Migrator assumed CS1.								
510 -	Wearing Surfaces	Underwater	06/19/2016	1119 SF	1097	0	22	0
		Migrated Values		1119 SF	1097	0	22	0
Notes: [2015] 0.25" cracks with a 1' to 3' spacing throughout bituminous. 2' X 3' area SW corner exposed deck boards with moderate decay. Large deck patch NW. [2013] Wearing surface has many moderate trans. cracks at a heavy density. Timber deck is water saturated with no presence of decay. Bituminous spalled. Some potholes.								
107	Steel Open Girder/Beam	Underwater	06/19/2016	486 LF	0	446	40	0
		Migrated Values		486 LF	0	446	40	0
Notes: [2015-2013] Beam ends have section loss with flaking rust. Remainder lengths of beams have chalking or failed paint with surface rust. Pack Rust Notes: [2015-2013] Packrust present at bolted connections of abut. caps and piles. No deformation of steel.								
515 -	Steel Protective Coating	Underwater	06/19/2016	999 SF	0	0	0	999
		Migrated Values		999 SF	0	0	0	999
Notes: [2016] Migrator assumed quantity of 999 SF and estimated the condition states.								
216	Timber Abutment	Underwater	06/19/2016	40 LF	0	10	30	0
		Migrated Values		40 LF	0	10	30	0
Notes: [2016] Migrator added 40 LF of abutment quantity to account for wingwalls (CS1:0 CS2:10 CS3:30 CS4:0). Wingwall notes: [2015-2013] SW, SE, and NE caps have severe decay. Timber wing walls have minor to moderate decay and slight misalignment.								
217	Masonry Abutment	Underwater	06/19/2016	49 LF	0	20	29	0
		Migrated Values		49 LF	0	20	29	0
Notes: [2015] Caps have flaking rust with minor section loss (more prevalent on south cap). Piling at waterline have 1/8" to 3/16" of section loss (up to 40% section loss on south abutment pile). [2013] Backing boards have very minor misalignment. Some pile stays have decay in tops. Piles have heavy surface rust with no flaking. Cap is built up of two channel beams bolted to all piles. Caps have granulated texture of failing oxide protective coating. Caps have flaking rust at all piles. S. abut tipping back slightly. Abutments are made up of steel piling, steel bearing caps and timber backing wall.								

BRIDGE L9571 TWP 7992 OVER PELICAN RIVER

ELEM NBR	ELEMENT NAME	REPORT TYPE	INSP. DATE	QUANTITY	QTY CS 1	QTY CS 2	QTY CS 3	QTY CS 4
225	Steel Pile	Underwater	06/19/2016	18 EA	8	0	10	0
		Migrated Values		18 EA	8	0	10	0
Notes: [2015] Piling at waterline have 1/8" to 3/16" of section loss. Up to 40% section loss on abutment piling. 5 piling per abutment. [2013] Heavy surface rust with no flaking rust. All piling rusting 100%. Need paint.								
515 -	Steel Protective Coating	Underwater	06/19/2016	999 SF	444	0	0	555
		Migrated Values		999 SF	444	0	0	555
Notes: [2016] Migrator assumed quantity of 999 SF and estimated the condition states.								
231	Steel Pier Cap	Underwater	06/19/2016	49 LF	0	25	24	0
		Migrated Values		49 LF	0	25	24	0
Notes: [2015] Caps have flaking rust with minor section loss (more prevalent on south cap). [2013] Cap is built up of two channel beams bolted to all piles. Caps have granulated texture of failing oxide protective coating. Caps have flaking rust at all piles. Top flange of cap channel kinked SW corner.								
515 -	Steel Protective Coating	Underwater	06/19/2016	999 SF	0	0	510	489
		Migrated Values		999 SF	0	0	510	489
Notes: [2016] Migrator assumed quantity of 999 SF and estimated the condition states.								
313	Fixed Bearing	Underwater	06/19/2016	20 EA	0	20	0	0
		Migrated Values		20 EA	0	20	0	0
Notes: [2015-2013] Rusting.								
330	Metal Bridge Railing	Underwater	06/19/2016	95 LF	0	95	0	0
		Migrated Values		95 LF	0	95	0	0
Notes: [2015-2013] Chalking paint. Flex Beam w/ Metal Posts.								
515 -	Steel Protective Coating	Underwater	06/19/2016	999 SF	999	0	0	0
		Migrated Values		999 SF	999	0	0	0
Notes: [2016] Migrator assumed CS1 and a quantity of 999 SF.								
800	Critical Deficiencies or Safety Hazards	Underwater	06/19/2016	1 EA	1	0	0	0
		Migrated Values		1 EA	1	0	0	0
Notes: [2015-2013] No critical findings during this inspection.								
823	Gravel Approach Roadway	Underwater	06/19/2016	2 EA	2	0	0	0
		Migrated Values		2 EA	2	0	0	0
Notes: [2015] Roadway has been graded removing potholes. No signs of settlement or undermining. [2013] Pot holes.								
855	Secondary Members (Superstructure)	Underwater	06/19/2016	31 EA	0	13	18	0
		Migrated Values		31 EA	0	13	18	0
Notes: [2015] Diaphragms have surface corrosion throughout with no paint. Diaphragms at abutments have flaking rust at beam connections on a bottom flange.								
881	Steel Section Loss	Underwater	06/19/2016	1 EA	0	0	1	0
		Migrated Values		1 EA	0	0	1	0
Notes: [2015] Piling at waterline have 1/8" to 3/16" of section loss. Up to 40% section loss on abutment piling. Minor section loss on bearing caps. [2013] Section loss is located on all beams at abutments.								
884	Substructure Settlement & Movement	Underwater	06/19/2016	1 EA	1	0	0	0
		Migrated Values		1 EA	1	0	0	0
Notes: [2015-2013] S. abut has pushed in very slightly.								

BRIDGE L9571 TWP 7992 OVER PELICAN RIVER

ELEM NBR	ELEMENT NAME	REPORT TYPE	INSP. DATE	QUANTITY	QTY CS 1	QTY CS 2	QTY CS 3	QTY CS 4
885	Scour	Underwater	06/19/2016	1 EA	1	0	0	0
		Migrated Values		1 EA	1	0	0	0
Notes: [2015] No scour present at base of abutments. No evidence of loss of backfill at base of backing wall. [2013] This element does not apply. No scour present. MN scour code: I-Low Risk.								
890	Load Posting or Vertical Clearance Signing	Underwater	06/19/2016	1 EA	1	0	0	0
		Migrated Values		1 EA	1	0	0	0
Notes: [2016] Structure requires a vertical clearance sign or load posting sign.								
891	Other Bridge Signing	Underwater	06/19/2016	1 EA	1	0	0	0
		Migrated Values		1 EA	1	0	0	0
Notes: [2015] All signs present with no deterioration. [2014 Update] 34T Load posting signs have been installed at bridge plus advance weight restriction warning signs. [2013] Load rated for 34 Ton, not posted. Delineators.								
892	Slopes & Slope Protection	Underwater	06/19/2016	2 EA	2	0	0	0
		Migrated Values		2 EA	2	0	0	0
Notes: [2015] No notable erosion present. [2013] Some riprap. Established veg. at wings.								
894	Deck & Approach Drainage	Underwater	06/19/2016	2 EA	1	1	0	0
		Migrated Values		2 EA	1	1	0	0
Notes: [2015] Potholes in approaches have been repaired. [2013] Minor erosion on SE and SW wings. Pot holes are retaining water and restricting water run-off.								
895	Sidewalk, Curb, & Median	Underwater	06/19/2016	1 EA	0	0	0	1
		Migrated Values		1 EA	0	0	0	1
Notes: [2015] 6' section of curb broken mid span west side. 2' of north end of west rail damaged by impact from plow or grader causing moderate decay. [2013] Moderate weathering with section missing on W. curb.								
899	Miscellaneous Items	Underwater	06/19/2016	1 EA	1	0	0	0
		Migrated Values		1 EA	1	0	0	0
Notes: [2015] No evidence of bats at bridge.								
900	Protected Species	Underwater	06/19/2016	1 EA	0	0	1	0
		Migrated Values		1 EA	0	0	1	0
Notes: [2016] Migrator determined the presence of bats on this structure based on comments made in the general/miscellaneous notes.								

- General Notes: SLC District 3
 Inspected by: [2015] CG, NB : [2013] JRS, JDO.
 No Guardrail
 [2014 Update] Update inspection to update signing element due to installation of load posting signs and to upload date stamped photo of load posting.
 Underwater Inspection - 6/19/2016 - Collins Engineers, Inc
58. Deck NBI: [2015] 0.25" cracks with a 1' to 3' spacing throughout bituminous. 2' X 3' area SW corner exposed deck boards with moderate decay. Large deck patch NW.
 [2013] Wearing surface has many moderate trans. cracks at a heavy density. Timber deck is water saturated with no presence of decay.
- 36A. Brdg Railings NBI: Flexbeam with steel posts substandard for all speeds. Substandard for all speeds.
- 36B. Transitions NBI: ADT is 23, and bridge roadway is wider than approach road way. Therefore, not required.
- 36C. Appr Guardrail NBI: ADT is 23, and bridge roadway is wider than approach road way. Therefore, not required.
- 36D. Appr Guardrail Terminal NBI: ADT is 23, and bridge roadway is wider than approach road way. Therefore, not required.
59. Superstructure NBI: [2015-2013] Beam ends have section loss with flaking rust. Remainder lengths of beams have chalking or failed paint with surface rust.

BRIDGE L9571 TWP 7992 OVER PELICAN 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:	[2015]	Caps have flaking rust with minor section loss. Piling at waterline have 1/8" to 3/16" of section loss. Moderate to extensive decay in wing caps.					
		[2013]	Steel piles have minor section loss of heavy surface rust. No flaking rust. All paint has failed.					
61.	Channel NBI:	[2015]	Minor erosion along stream banks.					
62.	Culvert NBI:							
71.	Waterway Adeq NBI:	[2015]	High water mark about 1' below abutment cap. Limited chance of overtopping.					
72.	Appr Roadway	[2015]	Curve to south causing about a 5 mph reduction in speed.					
	Alignment NBI:	[2013]	Minor speed reduction due to curve on South approach.					
	Inventory Notes:	[2015-2014 Update]	Bridge is located on TWP 7992.					

Lukas Janulis
Inspector's Signature

Reviewer's Signature

Pictures



Photo 1 - Overall View of Downstream Fascia, Looking Southwest



Photo 2 - Overall View of Upstream Fascia, Looking Southeast

Pictures



Photo 3 - Overall View of North Abutment, Looking North

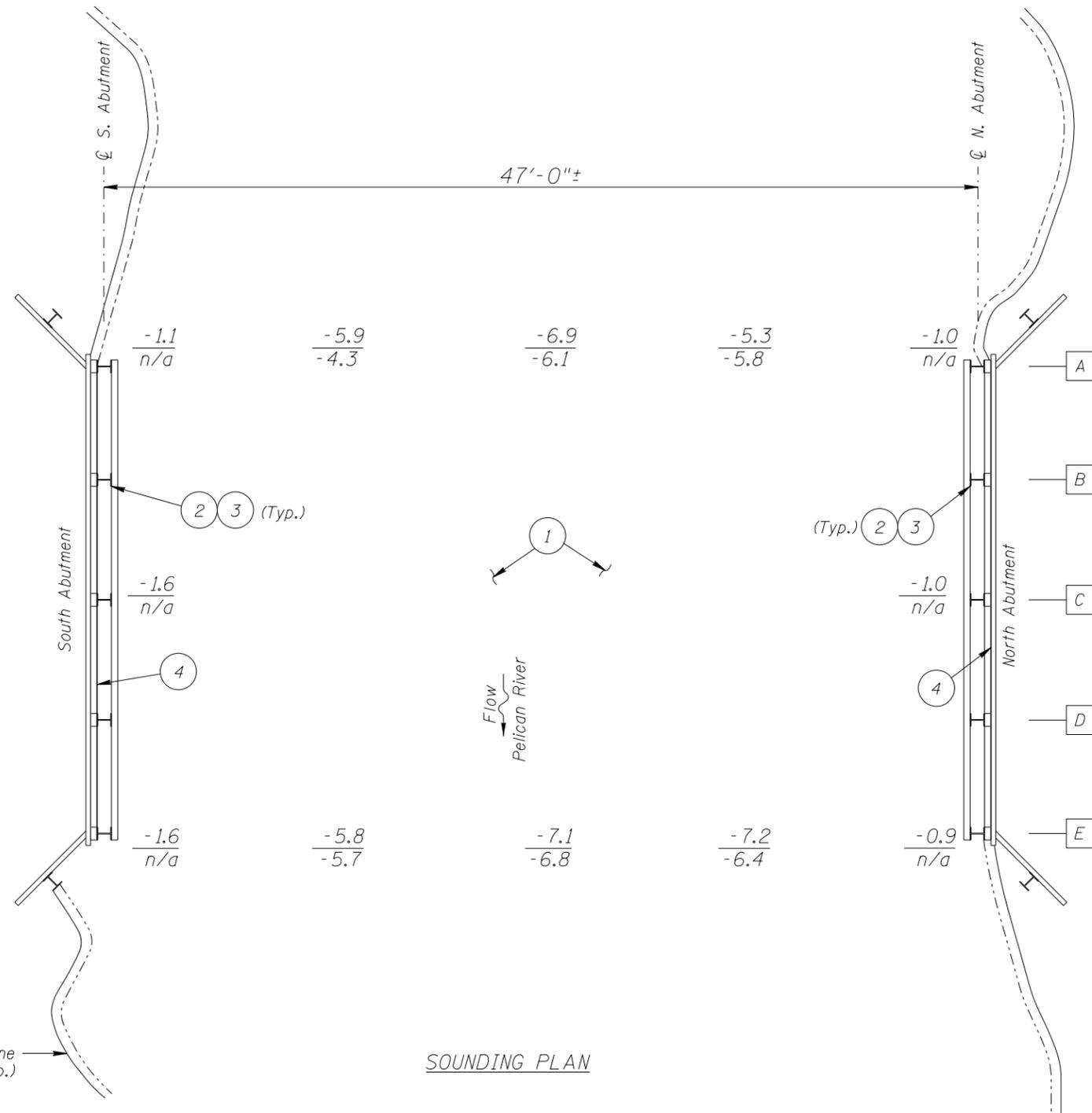
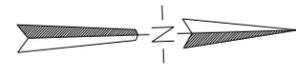


Photo 4 - Overall View of South Abutment, Looking South

Pictures



Photo 5 - Typical Steel Condition near Waterline, Looking South

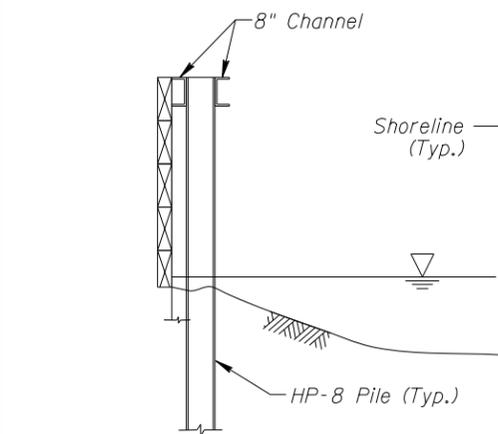


INSPECTION NOTES:

- 1 The channel bottom material typically consisted of riprap up to 2 feet in diameter with sand infill having a maximum probe rod penetration of 6 inches.
- 2 The steel H-Piles typically exhibited light surface corrosion with pitting up to 1/32 inch deep, extending from the top of the pile to 1.5 feet above the waterline.
- 3 The steel H-Piles typically exhibited moderate corrosion with pitting up to 1/8 inch deep and rust delaminations up to 1/8 inch thick, extending from 1.5 feet above the waterline to the channel bottom.
- 4 The timber backwall was typically sound and well aligned with no noticeable loss of backfill or notable defects.

GENERAL NOTES:

1. The North and South Abutments were inspected during the underwater inspection.
2. At the time of inspection on June 19, 2016, the waterline was located approximately 3.7 feet below the bottom of the east fascia girder near the South Abutment. Since elevation information was not available a reference elevation of 100.0 was assumed. Based on the assumed reference the waterline elevation was 96.3.
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.

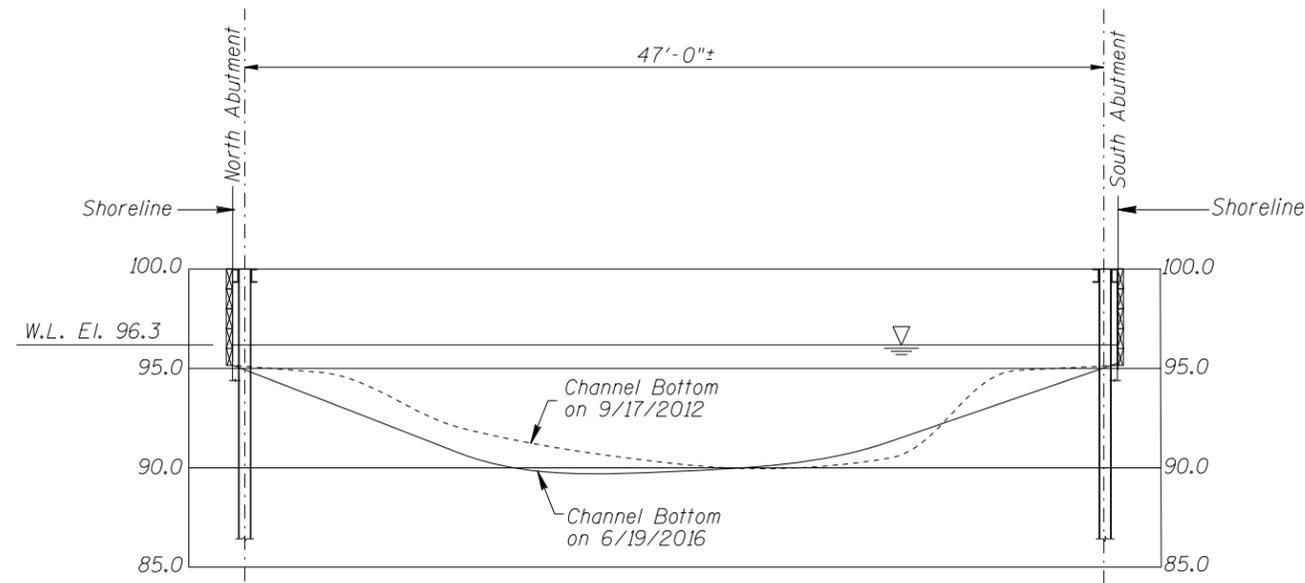


Note:
All soundings based on 2016 waterline location.

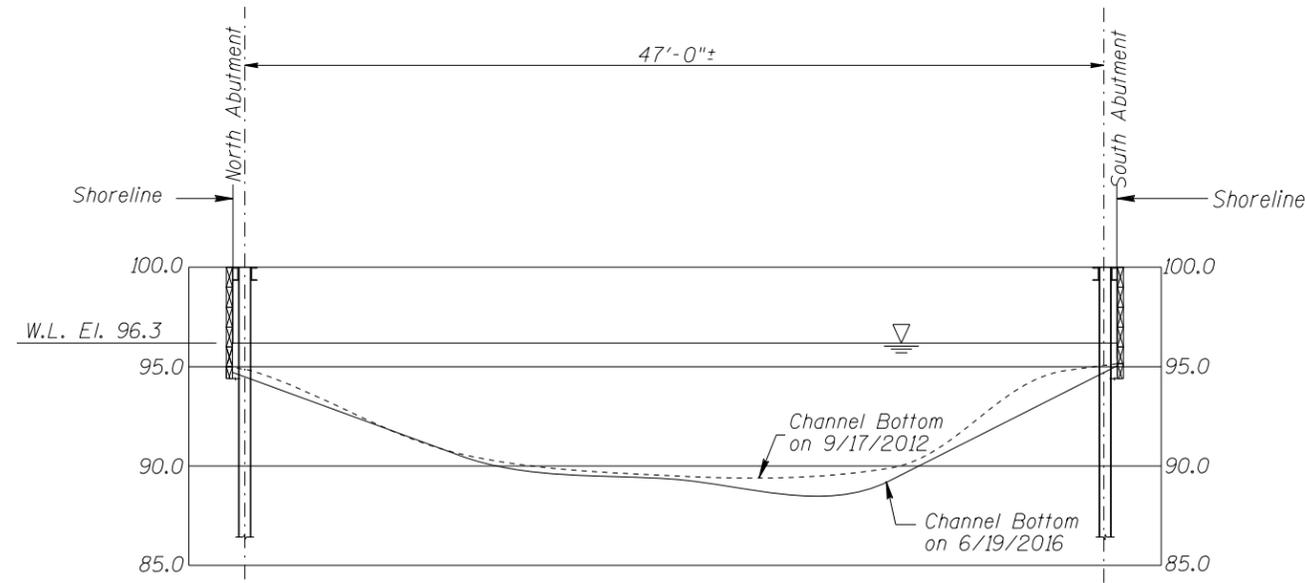
Legend

- 7.1 Sounding Depth from Waterline (6/19/2016)
- 6.8 Sounding Depth from Waterline (9/17/2012)
- A Pile Identification Designation
- H HP-Steel Piles
- 1 Inspection Note Number

MINNESOTA DEPARTMENT OF TRANSPORTATION UNDERWATER BRIDGE INSPECTION		
STRUCTURE NO. L9571 OVER PELICAN RIVER DISTRICT I, ST. LOUIS COUNTY		
INSPECTION AND SOUNDING PLAN		
DRAWN BY: MRS	COLLINS ENGINEERS	DATE: JUNE 19, 2016
CHECKED BY: LJ	<small>133 North Wacker Drive Suite 900 Chicago, IL 60606 (312) 704-9300 www.collinsengr.com</small>	SCALE: NTS
CODE: 9687L9571		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. L9571 OVER PELICAN RIVER DISTRICT I, ST. LOUIS COUNTY UPSTREAM AND DOWNSTREAM FASCIA PROFILES		
DRAWN BY: MRS	COLLINS ENGINEERS <small>133 North Wacker Drive Suite 900 Chicago, IL 60606 (312) 704-9300 www.collinsengr.com</small>	DATE: JUNE 19, 2016
CHECKED BY: LJ		SCALE: NTS
CODE: 9687L9571		FIGURE NO.: 2