

2016 UNDERWATER BRIDGE INSPECTION REPORT



BRIDGE # 6564 CSAH 11 over ZUMBRO RIVER

DISTRICT: District 6 COUNTY: Wabasha CITY/TOWNSHIP: Hammond
STATE: Minnesota

Date of Inspection: 07/25/2016

Equipment Used:

Owner: County Highway Agency

Inspected By: Owens, Garrett

Report Written By: Garrett Owens

Report Reviewed By:

Final Report Date:

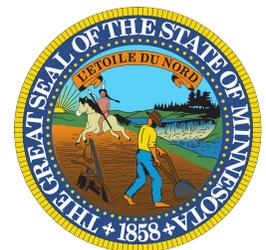


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UNDERWATER INSPECTION

REPORT SUMMARY

Structure No. 6564, was found to be generally in good condition with no defects of structural significance observed below the water. The channel bottom was silty sand and gravel. Pier 1 had timber debris accumulation present along the west face of the pier extending up to 5 feet above the waterline. Partial footing exposure was observed near the upstream end of Pier 1 with a maximum vertical face exposure of 1.5 feet. Pier 2 exhibited a scour depression at the upstream nose with a maximum depth of 2 feet.

INSPECTION FINDINGS

- (A) There was a 3 foot radius by 2 foot deep scour depression at the upstream nose of Pier 2. There was an 8 inch diameter log present in the scour depression.
- (B) The channel bottom material consisted of silty sand and gravel with 3 inch penetration.
- (C) Timber debris accumulation, consisting of 12 inch diameter and smaller logs, was present from the channel bottom to 2 feet below the waterline between shore and the west face of Pier 1.
- (D) The footing was partially exposed from the northwest corner of Pier 1 around the upstream nose to the upstream east 1/4-point with a maximum vertical face exposure of 1.8 feet. The top of footing was located 6.8 feet below water surface.
- (E) An 18 inch wide by 10 feet vertical corner spall up to 2 inches deep with exposed rebar extended 9 inches below the waterline at the northwest corner of the upstream nose of Pier 2.

RECOMMENDATIONS

- (A) Monitor the extent of footing exposure as well as timber debris accumulation during future underwater inspections.
- (B) 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 #: 6564
Feature Intersected: ZUMBRO RIVER
Facility Carried: CSAH 11
District: District 6
County: 079 - Wabasha

Bridge Description:

The superstructure consists of four spans of multiple steel beams supported by two reinforced concrete abutments and three reinforced concrete piers. The substructure units are designated as West Abutment, Piers 1 through 3 and East Abutment.

2. INSPECTION DATA

Professional Engineer/Team Leader: Garrett R. Owens, P.E.
Inspection Diver: Garrett R. Owens, P.E.
Date of Underwater Inspection: 07/25/2016
Weather Conditions: Cloudy, 85°F
Underwater Visibility (feet): 2
Waterway Velocity (ft/sec): 2

3. SUBSTRUCTURE INSPECTION DATA

Substructure(s) Inspected: Piers 1 and 2

General Shape:

The piers have oblong rectangular shafts with diamond shaped noses and are founded on pile supported rectangular footings.

Maximum Water Depth at Substructure(s) Inspected (feet): 8.6

4. WATERLINE DATUM

Water Level Reference: The top of pier cap at downstream nose of Pier 2.
Waterline Elevation (feet): 82.6
Description: The waterline was approximately 17.4 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: 6
Item 62: Culvert: Code:
Item 92B: Underwater Inspection: Code: Y 48 07/2016

Item 113: Scour Critical Bridge:

Code: O

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	77	LF	75		2	
220	Reinforced Concrete Footing	10	LF		10		
885	Scour	1	EA		1		

UNDERWATER INSPECTION

INSPECTION PROCEDURES

The routine underwater inspection of Bridge 6564 (CSAH 11 over the Zumbro River) was completed on July 25, 2016. The underwater inspection was conducted from shore. The inspection was conducted by a team consisting of a PE-Diver with a valid MnDOT Team Leader certification, a backup diver and a dive tender. The inspection utilized commercial dive equipment and techniques (SSA and/or SCUBA) in accordance with OSHA regulations. 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 reinforced concrete piers. According to the bridge inventory or design drawings, Piers 1 and 2 were founded on pile supported rectangular footings. Inspection procedures followed FHWA guidance and the MnDOT Bridge and Structure Inspection Program Manual with channel bottom probing to search for foundations. The routine underwater inspection frequency is recommended to remain at a maximum of 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: 6564

CSAH 11 over ZUMBRO RIVER

Date: 10/20/2016

+ GENERAL +	+ ROADWAY +	+ INSPECTION +																				
Agency Br. No. Crew District 06 Maint. Area County 079 - Wabasha City Hammond Township Desc. Loc. 0.1 MI E OF JCT CSAH 6 Sect., Twp., Range 28 - 109N - 13W Latitude 44 ° 13' 20.09 " Longitude 92 ° 22' 19.65 " Custodian 02 - County Highway Agency Owner 02 - County Highway Agency BMU Agreement Year Built 1955 MN Year Reconstructed 1998 FHWA Year Reconstructed MN Temporary Status Bridge Plan Location 3 - COUNTY Date Opened to Traffic 10/1/1955 On - Off System 1 - ON Legislative District 28B Potential ABC 2 - N/A	Bridge Match ID (TIS) 0 Roadway O/U Key Route On Structure Route Sys 04 - CSAH Number 11 Roadway Name or Description CSAH 11 Level of Service 1 - MAINLINE Roadway Type 2 - 2-way traffic Control Section (TH Only) Reference Point 004+00.136 Detour Length 14.0 mi. Lanes ON 2 UNDER 0 ADT 598 YEAR 2008 HCA DT ADTT % Functional Class 07 - Rural - Major Collector	Userkey 119 Structurally Deficient N Functionally Obsolete N Sufficiency Rating 75.5 Routine Inspection Date 04/07/2014 Routine Inspection Frequency 24 Inspector Name Owens, Garrett Status A - Open																				
		+ NBI CONDITION RATINGS +																				
		Deck 7 Unsound Deck % Superstructure 7 Substructure 6 Channel 6 Culvert N																				
	+ RDWY DIMENSIONS +	+ NBI APPRAISAL RATINGS +																				
	If Divided NB-EB SB-WB Roadway Width 24.00 ft. ft. Vertical Clearance ft. ft. Max. Vert. Clear. ft. ft. Horizontal Clear. 23.9 ft. ft. Lateral Clearance ft. ft. Appr. Surface Width 29.0 ft. Bridge Roadway Width 24.0 ft. Median Width On Bridge ft.	Structure Evaluation 6 Deck Geometry 4 Underclearances N Waterway Adequacy 9 Approach Alignment 8																				
+ STRUCTURE +	+ MISC. BRIDGE DATA +	+ SAFETY FEATURES +																				
Service On 5 - Highway-pedestrian Service Under 5 - Waterway Main Span Type 4 - Steel Continuous 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: 4 APPR: 0 TOTAL: Main Span Length 100.0 ft. Structure Length 346.6 ft. Deck Width (Out-to-Out) 33.3 ft. Deck Material 1 - Concrete Cast-in-Place Wear Surf Type 4 - Low Slump Concrete Wear Surf Install Year 1998 Wear Course/Fill Depth 0.17 ft. Deck Membrane 0 - None Deck Rebars 0 - None Deck Rebars Install Year Structure Area (Out-to-Out) 11542 sq. ft. Roadway Area (Curb-to-Curb) 8320 sq. ft. Sidewalk Width 50A. Lt 5.00 ft. 50B. Rt 0.00 ft. Curb Height Lt 0.75 ft. Rt 0.75 ft. Rail Type Lt 35 Rt 35	Structure Flared 0 - No flare Parallel Structure N - No parallel structure Field Conn. ID 2 - Riveted Abutment Foundation (Material/Type) 3 - FTG PILE Pier Foundation (Material/Type) 3 - FTG PILE Historic Status 5 - Not eligible	Bridge Railing 0 - SUBSTANDARD GR Transition 0 - SUBSTANDARD Appr. Guardrail 0 - SUBSTANDARD GR Termini N - NOT REQUIRED																				
	+ PAINT +	+ IN DEPTH INSP. +																				
	Year Painted 1998 Unsound Paint % Painted Area 24600 sq. ft. Primer Type 4 - Organic Zinc - non 3309 Finish Type M - Urethane	<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;">07/25/2016</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	07/25/2016	Pinned Asbly.				Spec. Feat.			
	Y/N	Freq	Date																			
Frac. Critical																						
Underwater		60	07/25/2016																			
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.) Waterway Opening (sf.) 5593 Navigation Control 0 - No nav. control on Pier Protection <table style="width: 100%; border-collapse: collapse;"> <tr> <td>Nav. Clr. (ft.)</td> <td style="text-align: center;">Vert. 0.0</td> <td style="text-align: center;">Horiz. 0.0</td> </tr> </table> Nav. Vert. Lift Bridge Clear. (ft.) MN Scour Code O - STBL - ACT Year 1997	Nav. Clr. (ft.)	Vert. 0.0	Horiz. 0.0																	
Nav. Clr. (ft.)	Vert. 0.0	Horiz. 0.0																				
		+ CAPACITY RATINGS +																				
		Design Load 2 - H 15 Operating Rating 2 - HS TRUCK 26.1 Inventory Rating 2 - HS TRUCK 15.7 Posting VEH: SEMI: DBL: Rating Date 02/20/2015 Overweight Permit Codes A N - N/A B N - N/A C N - N/A																				

MINNESOTA BRIDGE INSPECTION REPORT

12/21/2016

Inspector: CO Bridge

BRIDGE 6564 CSAH 11 OVER ZUMBRO RIVER

County: Wabasha	Location: 0.1 MI E OF JCT CSAH 6	Length: 346.6 ft.
City: Hammond	Route: 04 - CSAH 11 Ref. Pt.: 004+00.136	Deck Width: 33.3 ft.
Township:	Control Section:	Rdwy. Area/ Pct. Unsnd: 8320 sq. ft. / %
Section: 28 Township: 109N Range: 13W Maint. Area:		Paint Area/ Pct. Unsnd: 24600 sq. ft. / %
Span Type: 4 - Steel Continuous 2 - List: Stringer/Multi-beam or Girder	Local Agency Bridge Nbr.:	Culvert: N/A
NBI Deck: 7 Super: 7 Sub: 6 Chan: 6 Culv: N		Postings:
	Open, Posted, Closed: A - Open	
	MN Scour Code: O - STBL - ACT REQD	

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 75.5

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	10/20/2016	11542 SF	10217	1300	25	0
		Update	04/12/2016	11542 SF	10217	1300	25	0
Notes: There are scattered cracks with efflorescence. There are small areas where the deck has been patched. [2014] - spans 1, 2, 3, and 4 have map cracking between all beams 15'-20' west of pier 1 with 4 delaminations. Coping has 2 - 3"x9" areas of delamination. Span 2, west end next to joint has 4 - 6"x12" and 2 - 6"x24" delaminations. Span 4 has a delamination with exposed rebar at the joint.								
510	Wearing Surfaces	Underwater	10/20/2016	8320 SF	8148	172	0	0
		Update	04/12/2016	8320 SF	8148	172	0	0
Notes: Low Slump Overlay with Uncoated Rebar Notes: [2014] - deck was chain dragged. Unsound area is <1%. No visible spalls or patches. Isolated delamination.								
107	Steel Open Girder/Beam	Underwater	10/20/2016	2415 LF	1515	900	0	0
		Update	04/12/2016	2415 LF	1515	900	0	0
Notes: The beams were painted in 1998. The paint system is showing signs of distress. The fascia beams have scattered areas of active corrosion along the bottom flange. There are small areas of peeling paint and active corrosion on the bottom flange of Beams 6 and 7 over Pier 1. The paint system is peeling and chalking in scattered areas along the flanges. The paint on the webs of the beams is primarily intact. [2014] - both bottom flanges of fascia beams have flaking paint and rust on the top of top of flange. Span 4/G6/Diaphragm 5 is missing a top bolt. there is flaking rust at drain 4 from pier 1 at the south fascia beam and diaphragm connection.								
515	Steel Protective Coating	Underwater	10/20/2016	24600 SF	22800	750	550	500
		Update	04/12/2016	24600 SF	22800	750	550	500
Notes: [2016] Migrator used inventory quantity of 24,600 SF and estimated the condition states.								
210	Reinforced Concrete Pier Wall	Underwater	10/20/2016	115 LF	102	9	4	0
		Update	04/12/2016	115 LF	102	9	4	0
Notes: Pier 1 - There are scattered vertical and horizontal hairline cracks on both sides of the pier wall. There is a 4 inch diameter spall in the west face south end of the wall and a 6 inch diameter spall in the east face north end of the wall. [2014] - no change Pier 2 - Spalled concrete on the end of the pier wall upstream side. There is spalled concrete in the middle of the pier wall west side. Pier 3 - Scattered vertical cracks both sides and ends of the pier wall. West face of pier 3 under B1 has a 1 ft horizontal crack and a 3in X 4in chip at the north end 2016.								
215	Reinforced Concrete Abutment	Underwater	10/20/2016	115 LF	75	40	0	0
		Update	04/12/2016	115 LF	75	40	0	0
Notes: [2016] Migrator added 40 LF to abutment quantity to account for wingwalls (CS1:40 CS2:0 CS3:0 CS4:0). West abutment - 10 vertical cracks no efflorescence. There is small spall between beams 3 and 4 and deteriorated concrete at the top edge of the abutment between beams 5 and 6. East abutment - 9 vertical cracks no efflorescence. There is a 4 square foot area of delaminated concrete between beams 3 and 4. [2014] - inspection condition codes have been changed due to new language in the BIM. 8in X 2in area of delamination between B1 and B2 on the front face 2016. Wingwall notes: There are small vertical cracks top of all wingwalls. [2014] - no change								

BRIDGE 6564 CSAH 11 OVER ZUMBRO RIVER

ELEM NBR	ELEMENT NAME	REPORT TYPE	INSP. DATE	QUANTITY	QTY CS 1	QTY CS 2	QTY CS 3	QTY CS 4
220	Reinforced Concrete Pile Cap/Footing	Underwater	10/20/2016	10 LF	0	10	0	0
Notes: [2016] Underwater Inspection - The footing was partially exposed from the northwest corner of Pier 1 around the upstream nose to the upstream east 1/4-point with a maximum vertical face exposure of 1.8 feet. The top of footing was located 6.8 feet below water surface.								
234	Reinforced Concrete Pier Cap	Underwater	10/20/2016	115 LF	102	10	3	0
		Update	04/12/2016	115 LF	102	10	3	0
Notes: Pier 1 - There are scattered vertical cracks in both faces of the pier cap. Pier 2 - Delaminated and spalled concrete under the north fascia bearing. There are scattered vertical cracks in both faces of the pier cap. Pier 3 - There are scattered vertical cracks in both faces of the pier cap. [2014, 2016] - no change								
300	Strip Seal Expansion Joint	Underwater	10/20/2016	72 LF	72	0	0	0
		Update	04/12/2016	72 LF	72	0	0	0
Notes: The strip seals were full of dirt; however no signs of leakage on the bridge seat. [2014,2016] - no change.								
301	Pourable Joint Seal	Underwater	10/20/2016	144 LF	138	6	0	0
		Update	04/12/2016	144 LF	138	6	0	0
Notes: The pourable joints are located over the piers. There is 3 ft loss of joint adhesion in the joint over pier 2.								
311	Movable Bearing	Underwater	10/20/2016	28 EA	5	18	5	0
		Update	04/12/2016	28 EA	5	18	5	0
Notes: The movable bearings are located at the abutments and piers 1 and 3. Failed paint with active corrosion (mostly on the bottom plates) on the bearings at the abutments. The expansion bearings were centered at 50° F. [2014] - The expansion bearings were centered at 30° F. All bearings appear to be free to move and work as intended. Condition codes have been changed due to new language in the BIM. A nut is loose on bearing 7 on pier 2. 2016 W. abut B1-5 have minor corrosion CS2, B6-7 have moderate corrosion with minor LOS CS3. East abut bearings are all set slightly in expansion at 32 degrees. B1-2 have minor corrosion on the bottom plate. B3-4 have mod corrosion with minor LOS. B5 has mod corrosion on the bolted connection and the bolts are pulling out. B6-7 have moderate corrosion.								
313	Fixed Bearing	Underwater	10/20/2016	7 EA	2	5	0	0
		Update	04/12/2016	7 EA	2	5	0	0
Notes: The fixed bearings are located at pier 2. The fixed bearings show little paint deterioration. [2014, 2016] - no change.								
330	Metal Bridge Railing	Underwater	10/20/2016	696 LF	665	20	10	1
		Update	04/12/2016	696 LF	665	20	10	1
Notes: [2016] Migrator assumed concrete/metal combination type rail, S rail sec 24 has a moderate bend from impact 10' CS3. Sec 3,4 have 20 ft on top rail that has slight corrosion CS2. N rail sec 11 East end of top rail has a 4 inch area of LOS and corrosion CS4. [2014] - galvanized decorative railing is mostly in good condition. Inspection condition codes have been changed due to new language in the BIM. Section 2 from the west end on the north railing has 2 damaged vertical spindels, but the horizontal tubes are not damaged.								
515	Steel Protective Coating	Underwater	10/20/2016	1764 SF	0	1743	20	1
		Update	04/12/2016	1764 SF	0	1743	20	1
Notes: [2016] Faded but still Functioning.								
331	Reinforced Concrete Bridge Railing	Underwater	10/20/2016	696 LF	675	21	0	0
		Update	04/12/2016	696 LF	675	21	0	0
Notes: [2016] Migrator assumed concrete/metal combination type rail. Both rails have failing SSF and all posts have minor chips 21 ft CS2 2016.								
800	Critical Deficiencies or Safety Hazards	Underwater	10/20/2016	1 EA	1	0	0	0
		Update	04/12/2016	1 EA	1	0	0	0
Notes: [2014, 2016] - no critical findings noted at time of inspection.								
810	Concrete Decks - Cracking & Sealing	Underwater	10/20/2016	960 LF	630	330	0	0
		Update	04/12/2016	960 LF	630	330	0	0
Notes: The are approximately 960 linear feet if unsealed deck cracks. Many of these cracks have associated delamination's. The center line cold joint is not sealed. [2014] - deck cracks have been recently sealed.								

BRIDGE 6564 CSAH 11 OVER ZUMBRO RIVER

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	10/20/2016	1 EA	1	0	0	0
		Update	04/12/2016	1 EA	1	0	0	0
Notes: All plow straps were in place at the time of inspection. [2014,2016] - no change								
822	Bituminous Approach Roadway	Underwater	10/20/2016	2 EA	2	0	0	0
		Update	04/12/2016	2 EA	2	0	0	0
Notes: Both approaches have a bit wedge approximate 10 ft, and minor cracks 2016.								
883	Concrete Shear Cracking	Underwater	10/20/2016	1 EA	1	0	0	0
		Update	04/12/2016	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. 2016 None noted.								
885	Scour	Underwater	10/20/2016	1 EA	0	1	0	0
		Update	04/12/2016	1 EA	1	0	0	0
Notes: Could not check this bridge for scour. Minor area of scour was noted in 1999. The bridge should be added to the underwater inspection program. [2014, 2016] - no change								
[2016] Underwater Inspection - There was a 3 foot radius by 2 foot deep scour depression at the upstream nose of Pier 2. There was an 8 inch diameter log present in the scour depression.								
891	Other Bridge Signing	Underwater	10/20/2016	1 EA	1	0	0	0
		Update	04/12/2016	1 EA	1	0	0	0
Notes: All signs were in place at the time of inspection. [2014, 2016] - no change								
892	Slopes & Slope Protection	Underwater	10/20/2016	1 EA	0	1	0	0
		Update	04/12/2016	1 EA	0	1	0	0
Notes: Vandals have displaced the east abutment rip rap. There is an area of slope erosion along the north side of the west abutment along the ditch drain. West slope is missing some riprap but appears stable 2016.								
893	Guardrail	Underwater	10/20/2016	1 EA	1	0	0	0
		Update	04/12/2016	1 EA	1	0	0	0
Notes: Guardrail is located at the SE corner only. All guardrail sections were intact at the time of inspection. [2014, 2016] - no change								
894	Deck & Approach Drainage	Underwater	10/20/2016	1 EA	0	1	0	0
		Update	04/12/2016	1 EA	0	1	0	0
Notes: The drain pipe at the NW corner that drains the strip seal is broken open. All other drains were open at the time of inspection. 3 plugged 2016.								
895	Sidewalk, Curb, & Median	Underwater	10/20/2016	1 EA	0	1	0	0
		Update	04/12/2016	1 EA	0	1	0	0
Notes: South side curb has scattered cracks and two small spalls. North side sidewalk has numerous areas of stone pop outs and approximately 350 linear feet of unsealed cracks. [2014] - transverse cracks in sidewalks have recently been sealed with epoxy.								
899	Miscellaneous Items	Underwater	10/20/2016	1 EA	0	1	0	0
		Update	04/12/2016	1 EA	0	1	0	0
Notes: there is graffiti painted on both sides of pier 3. There is a utility pipe along the inside of the north fascia beam.								
900	Protected Species	Underwater	10/20/2016	1 EA	0	1	0	0
		Update	04/12/2016	1 EA	0	1	0	0
Notes: 2016 Swallow nests are present.								

General Notes: MnDOT Inspected by Robert Pyfferoen and assistants Gary Waletzli & Aaron Forthun 2014, 2016.

BRIDGE 6564 CSAH 11 OVER ZUMBRO RIVER

ELEM NBR	ELEMENT NAME	REPORT TYPE	INSP. DATE	QUANTITY	QTY CS 1	QTY CS 2	QTY CS 3	QTY CS 4
	58. Deck NBI:	Recent concrete overlay. No spalls or patches.						
	36A. Brdg Railings NBI:							
	36B. Transitions NBI:							
	36C. Appr Guardrail NBI:							
	36D. Appr Guardrail Terminal NBI:							
	59. Superstructure NBI:	minor corrosion						
	60. Substructure NBI:	minor spalling						
	61. Channel NBI:	There is bank erosion on both sides of the bridge. There are trees with exposed roots lining the bank on both sides of the channel.						
	62. Culvert NBI:							
	71. Waterway Adeq NBI:							
	72. Appr Roadway Alignment NBI:							
	Inventory Notes:							

Inspector's Signature

Reviewer's Signature

Pictures



Photo 1 - Downstream Elevation Looking Northwest



Photo 2 - Upstream Elevation Looking Southwest

Pictures



Photo 3 - Typical View of Pier 1 Looking Southwest

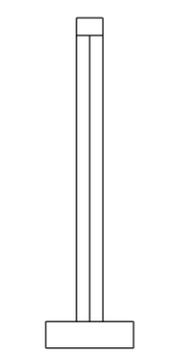
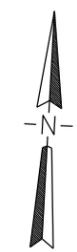
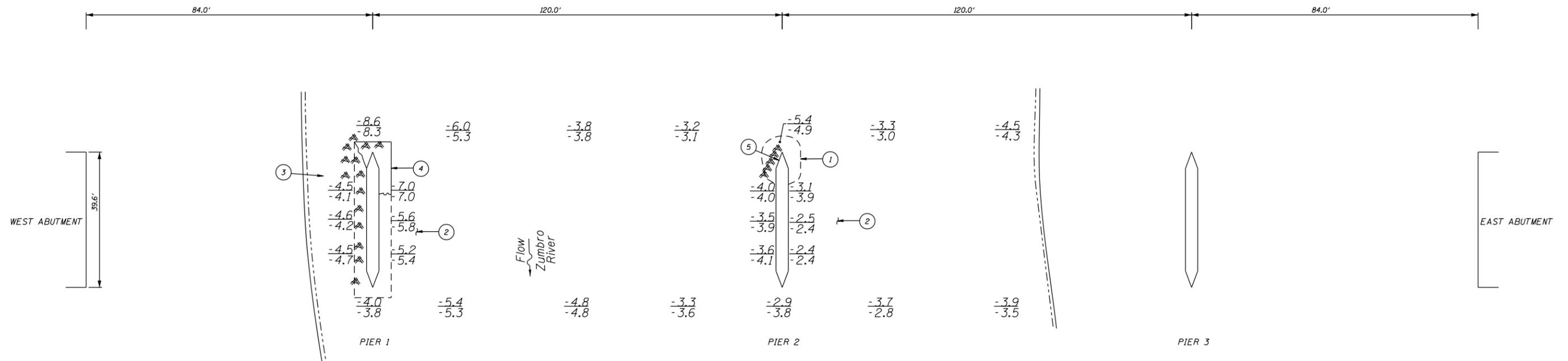


Photo 4 - Typical View of Pier 2 Looking West

Pictures



Photo 5 - View of Spall Noted at Pier 2 Looking East



END VIEW OF PIER

GENERAL NOTES:

1. Piers 1 and 2 were inspected underwater.
2. At the time of inspection, on July 22, 2016, the waterline was located approximately 17.4 feet below the top of the pier cap of the downstream nose 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 82.6.
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 quarter -point intervals between the substructure units as well as around the structures.

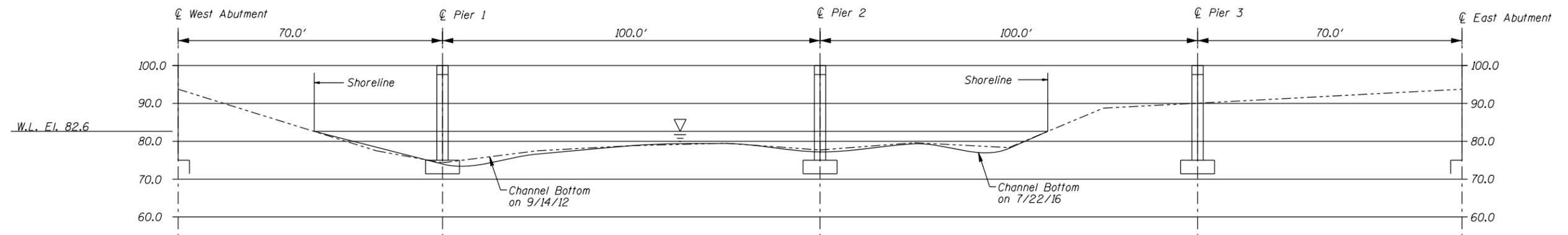
INSPECTION NOTES:

- ① There was a 3 foot radius by 2 foot deep scour depression at the upstream nose of Pier 2. There was also a single 8 inch diameter log present in the depression.
- ② The channel bottom material consisted of silty sand and gravel allowing 3 inches of probe rod penetration.
- ③ Moderate accumulation of timber debris, consisting of 1 foot diameter and smaller drift pieces, was observed from the channel bottom to 2 feet below the waterline between the shore and the west face of Pier 1.
- ④ The footing was partially exposed from the northwest corner of Pier 1 around the upstream nose to the upstream 1/4-point along the east face of the pier with a maximum vertical face exposure of 1.8 feet. The top of the footing was located at approximately 6.8 feet below the water surface.
- ⑤ An 18 inch wide by 10 foot vertical corner spall up to 2 inches deep with exposed rebar extended 9 inches below the waterline.

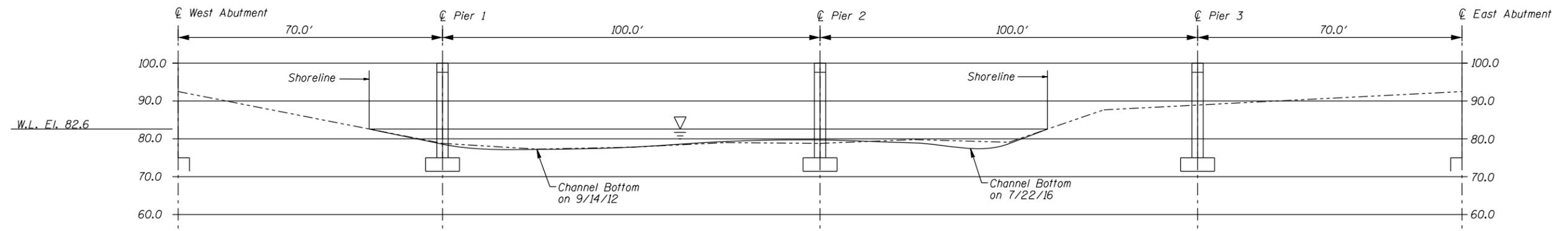
Legend

- 2.6 Sounding Depth from Waterline (7/25/16)
- 2.6 Sounding Depth from Waterline (9/14/12)
- ① Inspection Note Number
- Timber Debris
- Scour Pocket

MINNESOTA DEPARTMENT OF TRANSPORTATION UNDERWATER BRIDGE INSPECTION		
STRUCTURE NO. 6564 OVER THE ZUMBRO RIVER WABASHA COUNTY		
INSPECTION AND SOUNDING PLAN		
Drawn By: LBH	COLLINS ENGINEERS	Date: JULY 2016
Checked by: BRL	<small>1599 Selby Avenue Suite 206 St. Paul, MN 55104 (651) 646-8502 www.collinsengr.com</small>	Scale: NTS
Project: 63-9687		Figure No.: 1



UPSTREAM FASCIA PROFILE



DOWNSTREAM FASCIA PROFILE

MINNESOTA DEPARTMENT OF TRANSPORTATION UNDERWATER BRIDGE INSPECTION		
STRUCTURE NO. 6564 OVER THE ZUMBRO RIVER WABASHA COUNTY UPSTREAM AND DOWNSTREAM FASCIA PROFILES		
Drawn By: LBH	COLLINS ENGINEERS <small>1599 Selby Avenue Suite 206 St. Paul, MN 55104 (651) 646-8502 www.collinsengr.com</small>	Date: JULY 2016
Drawn By: BRL		Scale: 1"=30'
Project: 63-9687		Figure No.: 2