

# 2016 UNDERWATER BRIDGE INSPECTION REPORT



## BRIDGE # 4886 CSAH 32 over CLEARWATER RIVER

DISTRICT: District 2      COUNTY: Clearwater      CITY/TOWNSHIP: COPLEY  
STATE: Minnesota

Date of Inspection: 09/25/2016

Equipment Used:

Owner: County 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. 4886, East and West Abutments, were found to generally be in satisfactory condition with no defects of structural significance below water. The concrete surfaces were typically smooth and sound with some areas of mostly minor deterioration noted. Overall, the channel bottom configuration appeared to be in stable condition with no notable scour depressions observed. There was, however, partial footing exposure observed at both abutments with up to 6 inches of vertical face exposure.

### INSPECTION FINDINGS

- A. Loss of section at the joint between the southeast wingwall and East Abutment breastwall, located 4.8 feet below the top of the wingwall measuring 6 inches in diameter with a maximum penetration of 1 inch with no exposed reinforcing steel.
- B. Random vertical cracks extending from the bridge seat down 4 feet measuring from hairline to 1/16 inches wide located approximately every 5 feet along both abutment faces.
- C. Above and below the waterline the concrete was typically smooth and sound with areas of hairline map cracking on the wingwalls and on the abutment breastwall faces. Random areas of minor scaling were noted on the northeast wingwall.
- D. The channel bottom consisted of silty sand allowing 1 foot of probe rod penetration.
- E. Footing exposure was observed along a 15 foot section at the East Abutment near the midpoint with 6 inches of maximum vertical exposure.
- F. The end of southwest wingwall had a delaminated and/or spalled area approximately 6 inches below the waterline. The area measured 2 foot wide, 2 feet high, with 6 inches of penetration and one exposed reinforcing steel bar.
- G. Footing exposure was observed along a 10 foot section at the West Abutment near the midpoint with no vertical face exposure.
- H. An area of scaling up to 2 inches deep was observed from the midpoint of the southwest wingwall to the West Abutment breastwall extending from 6 inches to 18 inches below the waterline.
- I. An area of scaling, 1 foot high by 2 feet wide and up to 2 inches deep, was observed beginning on the southeast wingwall and extending to the East Abutment breastwall.
- J. The end of the southeast wingwall exhibited an area of scaling at the waterline. The area measured 1 foot wide by 1 foot high and approximately 2 inches deep.
- K. A 1/16 inch wide vertical crack was observed 6 inches from the edge of the northeast wingwall and extending from the top of the wingwall to the channel bottom.

### RECOMMENDATIONS

- (A) 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 #: 4886  
Feature Intersected: CLEARWATER RIVER  
Facility Carried: CSAH 32  
District: District 2  
County: 015 - Clearwater

#### Bridge Description:

The bridge superstructure consists of a single span of multiple steel girders (I-Beams) supporting a reinforced concrete deck. The superstructure is supported by two reinforced concrete abutments.

### 2. INSPECTION DATA

Professional Engineer/Team Leader: Garrett R. Owens  
Inspection Diver: Garrett R. Owens  
Date of Underwater Inspection: 09/25/2016  
Weather Conditions: Overcast, 60°F  
Underwater Visibility (feet): 4.0 feet  
Waterway Velocity (ft/sec): Negligible

### 3. SUBSTRUCTURE INSPECTION DATA

Substructure(s) Inspected: East and West Abutments.

#### General Shape:

Solid wall reinforced concrete abutment with skewed wingwalls with foundations founded on concrete piles.

Maximum Water Depth at Substructure(s) Inspected (feet): 5.6 feet

### 4. WATERLINE DATUM

Water Level Reference: The top of bearing seat at the south end of West Abutment.  
Waterline Elevation (feet): 98.0 feet  
Description: The waterline was approximately 2.0 feet below reference

### 5. NBIS CODING INFORMATION

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

Item 60: Substructure: Code: 6  
Item 61: Channel and Channel Protection: Code: 7  
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
215	Reinforced Concrete Abutment	84	LF	36	28	20	
202	Reinforced Concrete Footing	25	LF	25			
885	Scour	1	EA	1			

## UNDERWATER INSPECTION

### INSPECTION PROCEDURES

The routine underwater inspection of Bridge 4886 (CSAH 32 over Clearwater River) was completed on September 25, 2016. The underwater inspection was conducted from the 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. 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 abutments. According to structure inventory, the inspected substructure units are founded on concrete pile supported footings. 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: 4886

CSAH 32 over CLEARWATER RIVER

Date: 12/22/2016

+ GENERAL +	+ ROADWAY +	+ INSPECTION +																				
<b>Agency Br. No.</b> Crew <b>District</b> 02 <b>Maint. Area</b> <b>County</b> 015 - Clearwater <b>City</b> <b>Township</b> 15003 - COPLEY <b>Desc. Loc.</b> 0.5 MI E OF JCT TH 92 <b>Sect., Twp., Range</b> 29 - 147N - 37W <b>Latitude</b> 47 ° 31 ' 4.01 " <b>Longitude</b> 95 ° 23 ' 25.37 " <b>Custodian</b> 02 - County Highway Agency <b>Owner</b> 02 - County Highway Agency <b>BMU Agreement</b> <b>Year Built</b> 1929 <b>MN Year Reconstructed</b> <b>FHWA Year Reconstructed</b> <b>MN Temporary Status</b> <b>Bridge Plan Location</b> 3 - COUNTY <b>Date Opened to Traffic</b> <b>On - Off System</b> 0 - OFF <b>Legislative District</b> 02B <b>Potential ABC</b> 2 - N/A	<b>Bridge Match ID (TIS)</b> 0 <b>Roadway O/U Key</b> Route On Structure <b>Route Sys</b> 04 - CSAH <b>Number</b> 32 <b>Roadway Name or Description</b> CSAH 32 <b>Level of Service</b> 1 - MAINLINE <b>Roadway Type</b> 2 - 2-way traffic <b>Control Section (TH Only)</b> <b>Reference Point</b> 000+00.720 <b>Detour Length</b> 1.0 mi. <b>Lanes</b> <b>ON</b> 2 <b>UNDER</b> 0 <b>ADT</b> 150 <b>YEAR</b> 2007 <b>HCA DT</b> <b>ADTT</b> % <b>Functional Class</b> 09 - Rural - Local	<b>Userkey</b> 55 <b>Structurally Deficient</b> N <b>Functionally Obsolete</b> N <b>Sufficiency Rating</b> 58.7 <b>Routine Inspection Date</b> 10/03/2015 <b>Routine Inspection Frequency</b> 24 <b>Inspector Name</b> Stromberg, Dan <b>Status</b> P - Posted for Load																				
		<b>+ NBI CONDITION RATINGS +</b>																				
		<b>Deck</b> 6 <b>Unsound Deck %</b> <b>Superstructure</b> 6 <b>Substructure</b> 6 <b>Channel</b> 7 <b>Culvert</b> N																				
	<b>+ RDWY DIMENSIONS +</b>	<b>+ NBI APPRAISAL RATINGS +</b>																				
	<b>If Divided</b> <b>NB-EB</b> <b>SB-WB</b> <b>Roadway Width</b> 21.00 ft. ft. <b>Vertical Clearance</b> ft. ft. <b>Max. Vert. Clear.</b> ft. ft. <b>Horizontal Clear.</b> ft. ft. <b>Lateral Clearance</b> ft. ft. <b>Appr. Surface Width</b> 28.0 ft. <b>Bridge Roadway Width</b> 21.0 ft. <b>Median Width On Bridge</b> ft.	<b>Structure Evaluation</b> 5 <b>Deck Geometry</b> 4 <b>Underclearances</b> N <b>Waterway Adequacy</b> 8 <b>Approach Alignment</b> 8																				
<b>+ STRUCTURE +</b>	<b>+ MISC. BRIDGE DATA +</b>	<b>+ SAFETY FEATURES +</b>																				
<b>Service On</b> 1 - Highway <b>Service Under</b> 5 - Waterway <b>Main Span Type</b> 3 - Steel <b>Main Span Design</b> 01 - Beam Span <b>Main Span Detail</b> <b>Appr. Span Type</b> <b>Appr. Span Design</b> <b>Appr. Span Detail</b> <b>Skew</b> 0 <b>Culvert Type</b> <b>Barrel Length</b> <b>Cantilever ID</b>  <b>Number of Spans</b> <b>MAIN:</b> 1 <b>APPR:</b> 0 <b>TOTAL:</b> <b>Main Span Length</b> 29.7 ft. <b>Structure Length</b> 32.2 ft. <b>Deck Width (Out-to-Out)</b> 22.0 ft. <b>Deck Material</b> 1 - Concrete Cast-in-Place <b>Wear Surf Type</b> 8 - Gravel <b>Wear Surf Install Year</b> <b>Wear Course/Fill Depth</b> 0.00 ft. <b>Deck Membrane</b> 0 - None <b>Deck Rebars</b> 0 - None <b>Deck Rebars Install Year</b> <b>Structure Area (Out-to-Out)</b> 708 sq. ft. <b>Roadway Area (Curb-to-Curb)</b> 678 sq. ft. <b>Sidewalk Width</b> 50A. Lt 0.70 ft. 50B. Rt 0.70 ft. <b>Curb Height</b> Lt 0.67 ft. Rt 0.67 ft. <b>Rail Type</b> Lt 36 Rt 36	<b>Structure Flared</b> 0 - No flare <b>Parallel Structure</b> N - No parallel structure <b>Field Conn. ID</b> <b>Abutment Foundation (Material/Type)</b> 1 - CONC 4 - PILE BENT <b>Pier Foundation (Material/Type)</b> N - N/A N - N/A <b>Historic Status</b> 5 - Not eligible	<b>Bridge Railing</b> 0 - SUBSTANDARD <b>GR Transition</b> 0 - SUBSTANDARD <b>Appr. Guardrail</b> 0 - SUBSTANDARD <b>GR Termini</b> 0 - SUBSTANDARD																				
	<b>+ PAINT +</b>	<b>+ IN DEPTH INSP. +</b>																				
	<b>Year Painted</b> <b>Unsound Paint %</b> <b>Painted Area</b> sq. ft. <b>Primer Type</b> <b>Finish Type</b>	<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><b>Frac. Critical</b></td> <td></td> <td></td> <td></td> </tr> <tr> <td><b>Underwater</b></td> <td></td> <td style="text-align: center;">60</td> <td style="text-align: center;">09/25/2016</td> </tr> <tr> <td><b>Pinned Asbly.</b></td> <td></td> <td></td> <td></td> </tr> <tr> <td><b>Spec. Feat.</b></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>		Y/N	Freq	Date	<b>Frac. Critical</b>				<b>Underwater</b>		60	09/25/2016	<b>Pinned Asbly.</b>				<b>Spec. Feat.</b>			
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<b>Spec. Feat.</b>																						
	<b>+ BRIDGE SIGNS +</b>	<b>+ WATERWAY +</b>																				
	<b>Posted Load</b> 2 - Vehicle & Semi (Type R12-5) <b>Traffic</b> 0 - Not Required <b>Horizontal</b> 1 - Object Markers <b>Vertical</b> N - Not Applicable	<b>Drainage Area (sq. mi.)</b> <b>Waterway Opening (sf.)</b> 145 <b>Navigation Control</b> 0 - No nav. control on <b>Pier Protection</b> - <b>Nav. Clr. (ft.)</b> <b>Vert.</b> 0.0 <b>Horiz.</b> 0.0 <b>Nav. Vert. Lift Bridge Clear. (ft.)</b> <b>MN Scour Code</b> I - LOW RISK <b>Year</b> 1998																				
		<b>+ CAPACITY RATINGS +</b>																				
		<b>Design Load</b> 0 - Other/Unknown <b>Operating Rating</b> 2 - HS TRUCK 17.0 <b>Inventory Rating</b> 2 - HS TRUCK 10.2 <b>Posting VEH:</b> 23 <b>SEMI:</b> 39 <b>DBL:</b> 39 <b>Rating Date</b> 02/07/2014 <b>Overweight Permit Codes</b> <b>A</b> N - N/A <b>B</b> N - N/A <b>C</b> N - N/A																				

# MINNESOTA BRIDGE INSPECTION REPORT

12/27/2016

Inspector: CO Bridge

## BRIDGE 4886 CSAH 32 OVER CLEARWATER RIVER

County: Clearwater	Location: 0.5 MI E OF JCT TH 92	Length: 32.2 ft.
City:	Route: 04 - CSAH 32 Ref. Pt.: 000+00.720	Deck Width: 22.0 ft.
Township: 15003 - COPLEY	Control Section:	Rdwy. Area/ Pct. Unsnd: 678 sq. ft. / %
Section: 29 Township: 147N Range: 37W Maint. Area:		Paint Area/ Pct. Unsnd: sq. ft. / %
Span Type: 3 - Steel 2 - Stringer/Multi-beam or List: Girder	Local Agency Bridge Nbr.:	Culvert: N/A
NBI Deck: 6 Super: 6 Sub: 6 Chan: 7 Culv: N		Postings: 23 39 39
	Open, Posted, Closed: P - Posted for Load	
	MN Scour Code: 1 - LOW RISK	

Appraisal Ratings - Approach: 8	Waterway: 8	Unofficial Structurally Deficient	N
Required Bridge Signs - Load Posting: 2 - Vehicle & Semi (Type R12-5)	Traffic: 0 - Not Required	Unofficial Functionally Obsolete	N
Horizontal: 1 - Object Markers	Vertical: N - Not Applicable	Unofficial Sufficiency Rating	58.7

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	12/22/2016	708 SF	637	0	71	0
		Migrated Values		708 SF	637	0	71	0
Notes: Segregation of concrete during construction at the centerline the full length of the deck. Some reinforcing is exposed.								
510 - Wearing Surfaces		Underwater	12/22/2016	678 SF	610	0	68	0
		Migrated Values		678 SF	610	0	68	0
Notes: Top of Concrete Deck with Uncoated Rebar Notes: Minor spalls exceeding 2 percent but less than 10 percent of the surface of the deck.								
107	Steel Open Girder/Beam	Underwater	12/22/2016	322 LF	0	322	0	0
		Migrated Values		322 LF	0	322	0	0
Notes: Surface and freckle rust forming on all beams. Surface rust is prevalent on both fascia beams for the entire length.								
515 - Steel Protective Coating		Underwater	12/22/2016	999 SF	0	0	800	199
		Migrated Values		999 SF	0	0	800	199
Notes: [2016] Migrator assumed quantity of 999 SF and estimated the condition states.								
215	Reinforced Concrete Abutment	Underwater	12/22/2016	84 LF	36	28	20	0
		Migrated Values		84 LF	36	28	20	0
Notes: [2016] Migrator added 40 LF to abutment quantity to account for wingwalls (CS1:0 CS2:20 CS3:20 CS4:0). Minor cracking at all four abutment ends. Numerous minor cracks at the SW corner of abutment between fascia and second beam.								
Wingwall notes: The North wingwalls have minor cracking, the South wingwalls have significant cracking and spalling with minor efflorescence.								
331	Reinforced Concrete Bridge Railing	Underwater	12/22/2016	66 LF	0	66	0	0
		Migrated Values		66 LF	0	66	0	0
Notes: Minor cracks and spalls throughout entire railing. The SW end of the railing has extensive cracking and saturation extending 3 feet of the railing. No surface evidence of rebar corrosion.								
800	Critical Deficiencies or Safety Hazards	Underwater	12/22/2016	1 EA	1	0	0	0
		Migrated Values		1 EA	1	0	0	0
Notes: NO CRITICAL FINDINGS OBSERVED DURING THE LAST INSPECTION.								
810	Concrete Decks - Cracking & Sealing	Underwater	12/22/2016	0 LF	0	0	0	0
		Migrated Values		0 LF	0	0	0	0

**BRIDGE 4886 CSAH 32 OVER CLEARWATER RIVER**

ELEM NBR	ELEMENT NAME	REPORT TYPE	INSP. DATE	QUANTITY	QTY CS 1	QTY CS 2	QTY CS 3	QTY CS 4
890	Load Posting or Vertical Clearance Signing	Underwater	12/22/2016	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	12/22/2016	1 EA	1	0	0	0
		Migrated Values		1 EA	1	0	0	0
Notes: Signs Required: Load Posting Horizontal Clearance								
02/07/2014: Load Posting Required: 23T/39T/39T. NBI 41: Status coded 'B - Open, Posting Required'. Agency to notify MnDOT BADMU when signs are installed.								
Bridge office notified by email of posting in place on 9/12/14.								
892	Slopes & Slope Protection	Underwater	12/22/2016	1 EA	1	0	0	0
		Migrated Values		1 EA	1	0	0	0
Notes: Use this element to rate the condition of slopes and slope protection.								
894	Deck & Approach Drainage	Underwater	12/22/2016	1 EA	1	0	0	0
		Migrated Values		1 EA	1	0	0	0
Notes: Use this element to rate the condition, function, and adequacy of the drainage system.								
895	Sidewalk, Curb, & Median	Underwater	12/22/2016	1 EA	0	1	0	0
		Migrated Values		1 EA	0	1	0	0
Notes: Minor cracking and spalling. The NW & NE corner of the curb has impact damage with exposed rebar. The SW corner has been impacted but has no exposed rebar.								
900	Protected Species	Underwater	12/22/2016	1 EA	1	0	0	0
		Migrated Values		1 EA	1	0	0	0
Notes: Use this element to track the presence of protected species living on this structure.								

General Notes: 11/16/95 No comments.

1/13/97 No comments.

09/19/97

71) The outer end of the SW wingwall is spalling and cracking, with minor efflorescence. No exposed rebar.

11/24/98 No comments.

9/29/99 No comments.

10/30/00

NBI Codes - Channel & Protection - Floating bog in channel downstream at bridge is restricting waterway slightly. Rating was an 8, is now a 6.

2001-10-31

NBI - Deck) Medium scaling of 1/4 inch to 1/2 inch in depth of deck, and minor spalls. Rating remains at a 6.

NBI - Superstructure) Minor concrete deterioration. Rating remains a 6.

NBI - Substructure) The outer end of the SW wingwall is spalling and cracking with minor efflorescence. No exposed rebar. Rating remains a 5.

NBI - Channel & Protection) Floating bog is removed. Rating was a 6 is now an 8.

2003-10-30 No comments

2005-12-28 No comments

2007-10-24 No comments

2007-8-17

Underwater inspection done by Collins Engineers, Inc.

Findings are as follows:

NBI - Substructure upgraded from a 5 to 6.

NBI - Channel & Protection lowered from an 8 to 7.

**BRIDGE 4886 CSAH 32 OVER CLEARWATER RIVER**

ELEM NBR	ELEMENT NAME	REPORT TYPE	INSP. DATE	QUANTITY	QTY CS 1	QTY CS 2	QTY CS 3	QTY CS 4
			2009-11-18	No comments.				
			2011-10-27	No comments.				
			2012-8-13	Underwater inspection done by Ayres Associates & Collins Engineers, Inc. A copy of the inspection is in the file.				
			2015-10-03	Initial inspections done on 10/3. Returned on 11/5 with a boat to do a more through inspection of the deck underside and beams. Photos are in the bridge file.				
	58. Deck NBI:			Minor spalls exceeding 2 percent but less than 10 percent of the surface of the deck. Deck underside shows segregation of concrete during construction at the centerline the full length of the deck. Some reinforcing is exposed.				
	36A. Brdg Railings NBI:							
	36B. Transitions NBI:							
	36C. Appr Guardrail NBI:							
	36D. Appr Guardrail Terminal NBI:							
	59. Superstructure NBI:			Surface and freckle rust forming on all beams. Surface rust is prevalent on both fascia beams for the entire length.				
	60. Substructure NBI:			Minor cracking at all four abutment ends. Numerous minor cracks at the SW corner of abutment between fascia and second beam. The North wingwalls have minor cracking, the South wingwalls have significant cracking and spalling with minor efflorescence.				
	61. Channel NBI:							
	62. Culvert NBI:							
	71. Waterway Adeq NBI:							
	72. Appr Roadway Alignment NBI:							
	Inventory Notes:							

\_\_\_\_\_  
Inspector's Signature

\_\_\_\_\_  
Reviewer's Signature

# Pictures



Photo 1 - Overall View of Upstream Fascia, Looking North



Photo 2 - Overall View of Downstream Fascia, Looking South

## Pictures



Photo 3 - View of West Abutment, Looking West

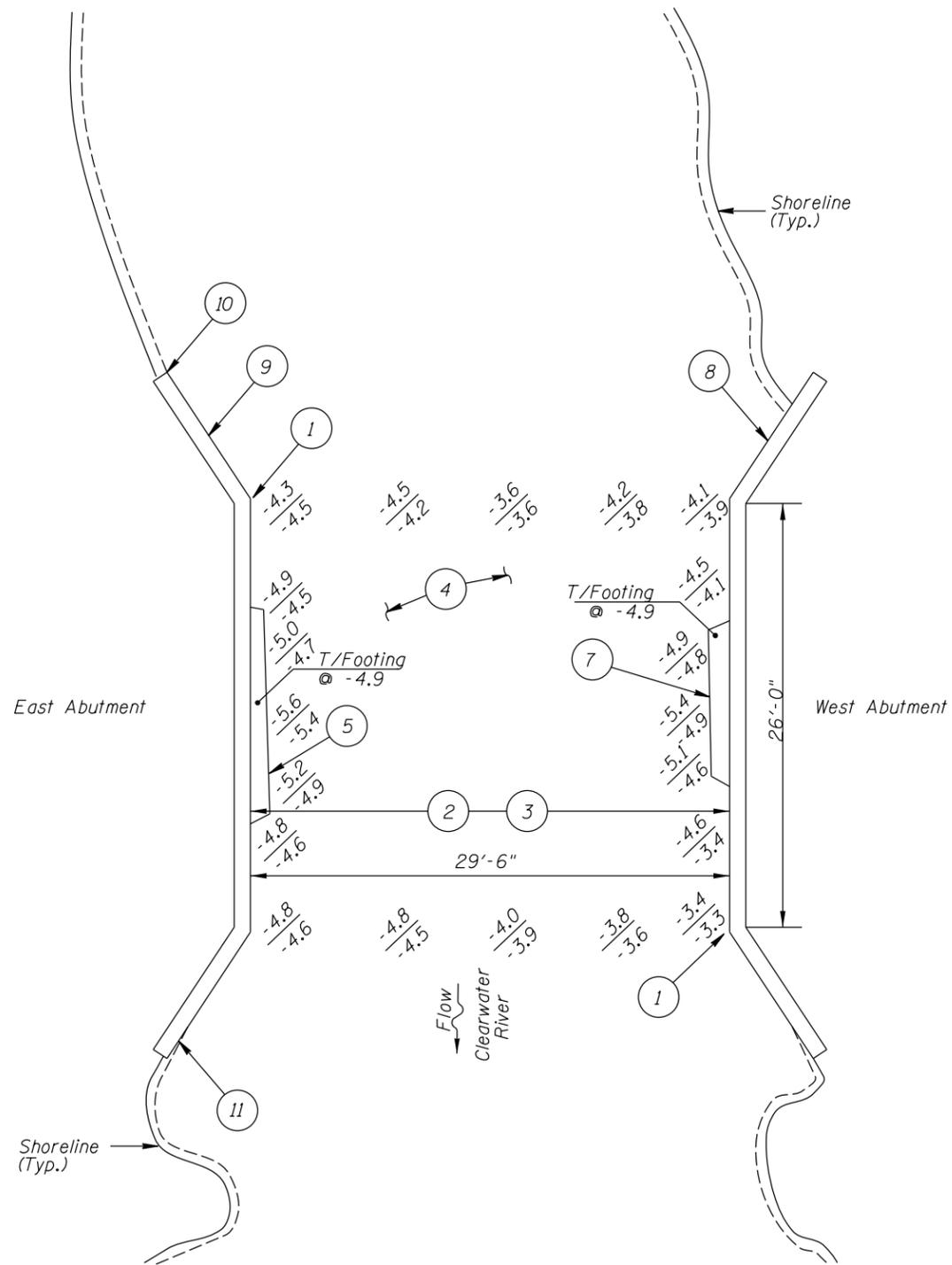
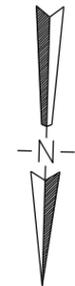


Photo 4 - View of East Abutment, Looking East

## Pictures

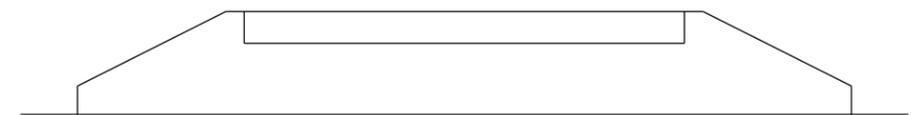


Photo 5 - View of Deterioration at Southwest Wingwall, Looking Southwest



**INSPECTION NOTES:**

- 1 Loss of section at the joint between the southeast wingwall and East Abutment breastwall, located 4.8 feet below the top of the wingwall measuring 6 inches in diameter with a maximum penetration of 1 inch with no exposed reinforcing steel.
- 2 Random vertical cracks extending from the bridge seat down 4 feet measuring from hairline to 1/16 inches wide located approximately every 5 feet along both abutment faces.
- 3 Above and below the waterline the concrete was typically smooth and sound with areas of hairline map cracking on the wingwalls and on the abutment breastwall faces. Random areas of minor scaling were noted on the northeast wingwall.
- 4 The channel bottom consisted of silty sand allowing 1 foot of probe rod penetration.
- 5 Footing exposure was observed along a 15 foot section at the East Abutment near the midpoint with 6 inches of maximum vertical exposure.
- 6 The end of southwest wingwall had a delaminated and/or spalled area approximately 6 inches below the waterline. The area measured 2 foot wide, 2 feet high, with 6 inches of penetration and one exposed reinforcing steel bar.
- 7 Footing exposure was observed along a 10 foot section at the West Abutment near the midpoint with no vertical face exposure.
- 8 An area of scaling up to 2 inches deep was observed from the midpoint of the southwest wingwall to the West Abutment breastwall extending from 6 inches to 18 inches below the waterline.
- 9 An area of scaling, 1 foot high by 2 feet wide and up to 2 inches deep, was observed beginning on the southeast wingwall and extending to the East Abutment breastwall.
- 10 The end of the southeast wingwall exhibited an area of scaling at the waterline. The area measured 1 foot wide by 1 foot high and approximately 2 inches deep.
- 11 A 1/16 inch wide vertical crack was observed 6 inches from the edge of the northeast wingwall and extending from the top of the wingwall to the channel bottom.



TYPICAL ELEVATION VIEW OF EACH ABUTMENT

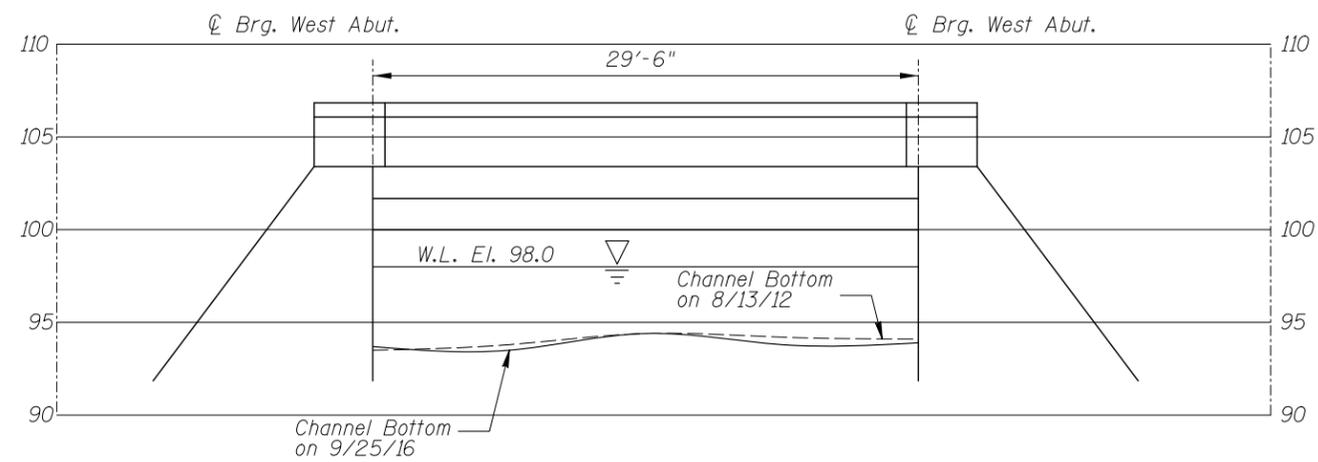
**GENERAL NOTES:**

1. The East and West Abutments were inspected underwater.
2. At the time of inspection, on September 25, 2016, the waterline was located approximately 2.0 feet below the top of the bearing seat at the south end of the West Abutment. Due to lack of design plan information, the reference elevation was assumed to be 100.0 feet. This corresponds to waterline elevation of 98.0 feet.
3. Soundings indicate the water depth at the time of inspection and are measured in feet.
4. Soundings were taken parallel to north and south fascias at 1/4 point intervals.

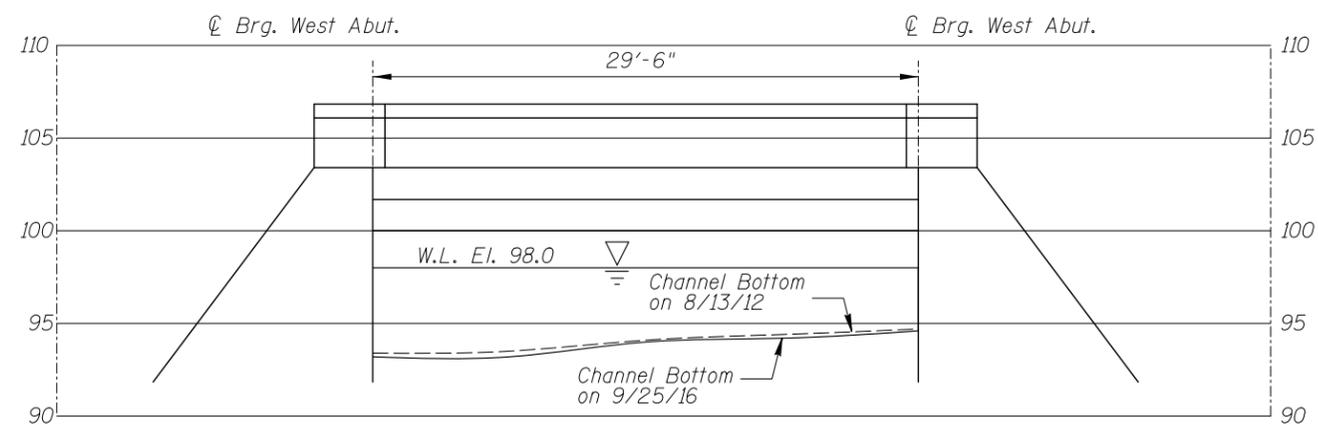
**Legend**

- 0.4 Sounding Depth (9/25/16)
- 0.4 Sounding Depth (8/13/12)

<b>MINNESOTA DEPARTMENT OF TRANSPORTATION UNDERWATER BRIDGE INSPECTION</b>		
STRUCTURE NO. 4886 OVER THE HEIR CREEK DISTRICT 2, CLEARWATER COUNTY, CITY OF BAGELY		
INSPECTION AND SOUNDING PLAN		
Drawn By: BMS	<b>COLLINS ENGINEERS</b>	Date: NOV., 2016
Checked By: DGS	123 North Wacker Drive Suite 900 Chicago, IL 60606 (312) 704-9300 www.collinsengr.com	Scale: NTS
Code: 96874886		Figure No.: 1



UPSTREAM FASCIA PROFILE



DOWNSTREAM FASCIA PROFILE

Note: \_\_\_\_\_  
 Refer to Figure 1 for General Notes.

<b>MINNESOTA DEPARTMENT OF TRANSPORTATION UNDERWATER BRIDGE INSPECTION</b>		
STRUCTURE NO. 4886 OVER THE HEIR CREEK DISTRICT 2, CLEARWATER COUNTY, CITY OF BAGELY		
<b>UPSTREAM AND DOWNSTREAM FASCIA PROFILES</b>		
Drawn By: BMS	<b>COLLINS ENGINEERS</b> <small>123 North Wacker Drive Suite 900 Chicago, IL 60606 (312) 704-0300 www.collinsengr.com</small>	Date: NOV., 2016
Checked By: DGS		Scale: 1"=10'
Code: 96874886		Figure No.: 2