2017 UNDERWATER
BRIDGE INSPECTION REPORT

BRIDGE # 36514
CSAH 18 over RAPID RIVER

DISTRICT: District 1 **COUNTY:** Koochiching **CITY/TOWNSHIP:** T - 160 R - 29

STATE: Minnesota

Date of Inspection: 08/03/2016

Equipment Used:

Owner: County Highway Agency

Inspected By: Forsyth, Roy

Report Written By: Roy Forsyth

Report Reviewed By:

Final Report Date:

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UNDERWATER INSPECTION

REPORT SUMMARY

The substructure units inspected at Bridge No. 36514, Piers 1 and 2, were generally in good condition with no defects of structural significance observed. An accumulation of timber debris were observed at the upstream noses and east face of Pier 2. The channel bottom appeared to be in stable condition with no evidence of significant scour.

INSPECTION FINDINGS

(A) The channel material consisted of sand and gravel with some silt and up to 6 inches of probe rod penetration.
(B) A moderate accumulation of timber debris was observed, consisting of numerous logs and tree trunks measuring up to 1 foot in diameter lying across the upstream nose and extending to the easterly shoreline. Debris extended from channel bottom up 3 feet at Pier 2.
(C) The shoreline consisted of up to 2 feet diameter riprap.
(D) Light scaling from 3 feet above the waterline to the channel bottom with 1/8 inch typical to 1/4 inch maximum penetrations was observed along the entire perimeter of Pier 1 and Pier 2.

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 #: 36514

Feature Intersected: RAPID RIVER

Facility Carried: CSAH 18

District: District 1

County: 036 - Koochiching

Bridge Description:

The superstructure consists of precast concrete beams supporting a reinforced concrete deck. The substructure consists of two reinforced concrete abutments and two reinforced concrete pier columns founded on steel H-piles. The piers are labeled Piers 1 and 2 from west to east.

2. INSPECTION DATA

Professional Engineer/Team Leader: Roy Forsyth

Inspection Diver: Roy Forsyth

Date of Underwater Inspection: 08/03/2016

Weather Conditions: Sunny, 80 F

Underwater Visibility (feet): 1

Waterway Velocity (ft/sec): 1

3. SUBSTRUCTURE INSPECTION DATA

Substructure(s) Inspected: Piers 1 and 2

General Shape:

The piers each consist of an oblong rectangular shaft with rounded noses, which rests upon a rectangular footing founded on piles.

Maximum Water Depth at Substructure(s) Inspected (feet): 7.0

4. WATERLINE DATUM

Water Level Reference: Top of cap at the north end of Pier 2.

Waterline Elevation (feet): 1069.9

Description: The waterline was located 14.3 ft below the refence.

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 8/2016

Item 113: Scour Critical Bridge: Code: N

Bridge is scour critical because abutment or pier foundation is rated as unstable due to observed scour at bridge site.

[ ] Yes [X] No (Mark your selection with an X)

6. STRUCTURAL ELEMENT CONDITION RATING

ELEM #	Element Description	Quantity	Unit	Conditions			
				CS1	CS2	CS3	CS4
205	Reinforced concrete column	2	EA	2			
885	Scour	1	EA	1			

UNDERWATER INSPECTION

INSPECTION PROCEDURES

The routine underwater inspection of Bridge 36514 (CSAH 18 over the Rapid River) was completed on August 3, 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. Due to waterway conditions at the time of inspection, the inspection could be accomplished by wading 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 2 reinforced concrete columns. According to the bridge inventory or design drawings, Piers 1 and 2 were founded on piles. Inspection procedures followed FHWA guidance and the MnDOT Bridge and Structure inspection Program Manual with channel bottom probing to search for bottom 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: 36514 **CSAH 18 over RAPID RIVER** Date: 01/31/2017

+GENERAL+

Agency Br. No.	**Crew**
District	01 **Maint. Area**
County	036 - Koochiching
City	
Township	36047 - T - 160 R - 29
Desc. Loc.	1.1 MI SE OF JCT TH 11
Sect., Twp., Range	18 - 160N - 29W
Latitude	48 ° 40 ' 42.44 "
Longitude	94 ° 25 ' 31.38 "
Custodian	02 - County Highway Agency
Owner	02 - County Highway Agency
BMU Agreement	
Year Built	1976
MN Year Reconstructed	
FHWA Year Reconstructed	
MN Temporary Status	
Bridge Plan Location	3 - COUNTY
Date Opened to Traffic	10/1/1976
On - Off System	0 - OFF
Legislative District	03A
Potential ABC	2 - N/A

+STRUCTURE+

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	0
Culvert Type	
Barrel Length	
Cantilever ID	

Number of Spans

MAIN: 3 **APPR:** 0 **TOTAL:**

Main Span Length	55.0 **ft.**
Structure Length	166.1 **ft.**
Deck Width (Out-to-Out)	34.9 **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)	5797 **sq. ft.**
Roadway Area (Curb-to-Curb)	5317 **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**	08	**Rt**	08

+ROADWAY+

Bridge Match ID (TIS)	0
Roadway O/U Key	Route On Structure
Route Sys	04 - CSAH **Number** 18
Roadway Name or Description	CSAH 18
Level of Service	1 - MAINLINE
Roadway Type	2 - 2-way traffic
Control Section (TH Only)	
Reference Point	004+00.870
Detour Length	99.0 **mi.**
Lanes	**ON** 2 **UNDER** 0
	ADT 85 **YEAR** 2008
HCADT	**ADTT** **%**
Functional Class	09 - Rural - Local

+RDWY DIMENSIONS+

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.**

+MISC. BRIDGE DATA+

Structure Flared	0 - No flare
Parallel Structure	N - No parallel structure
Field Conn. ID	
Abutment	1 - CONC
Foundation (Material/Type)	4 - PILE BENT
Pier Foundation (Material/Type)	1 - CONC 3 - FTG PILE
Historic Status	5 - Not eligible

+PAINT+

Year Painted	
Unsound Paint %	
Painted Area	**sq. ft.**
Primer Type	
Finish Type	

+BRIDGE SIGNS+

Posted Load	0 - Not Required
Traffic	0 - Not Required
Horizontal	0 - Not Required
Vertical	N - Not Applicable

+INSPECTION+

Userkey	76
Structurally Deficient	N
Functionally Obsolete	N
Sufficiency Rating	91.4
Routine Inspection Date	09/15/2015
Routine Inspection Frequency	12
Inspector Name	Forsyth, Roy
Status	A - Open

+NBI CONDITION RATINGS+

Deck	7	**Unsound Deck %**
Superstructure	8	
Substructure	6	
Channel	7	
Culvert	N	

+NBI APPRAISAL RATINGS+

Structure Evaluation	6
Deck Geometry	8
Underclearances	N
Waterway Adequacy	9
Approach Alignment	5

+SAFETY FEATURES+

Bridge Railing	0 - SUBSTANDARD
GR Transition	0 - SUBSTANDARD
Appr. Guardrail	0 - SUBSTANDARD
GR Termini	N - NOT REQUIRED

+IN DEPTH INSP.+

	Y/N	**Freq**	**Date**
Frac. Critical			
Underwater		60	08/03/2016
Pinned Asbly.			
Spec. Feat.			

+WATERWAY+

Drainage Area (sq. mi.)	552.0
Waterway Opening (sf.)	1490
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	N - STBL - LIM **Year** 2002

+CAPACITY RATINGS+

Design Load	A - HL 93	
Operating Rating	3 - HL-93	1.32
Inventory Rating	3 - HL-93	1.02

Posting VEH: **SEMI:** **DBL:**

Rating Date 06/02/2016

Overweight Permit Codes

A	1 - No Restriction	**B**	1 - No Restriction	**C**	1 - No Restriction

BRIDGE 36514 CSAH 18 OVER RAPID RIVER

County: Koochiching
City:
Township: 36047 - T - 160 R - 29
Section: 18 Township: 160N Range: 29W
Span Type: 5 - Prestressed Concrete 2 - Stringer/Multi-beam or Girder
List:
NBI Deck: 7 Super: 8 Sub: 6 Chan: 7

Location: 1.1 MI SE OF JCT TH 11
Route: 04 - CSAH 18 Ref. Pt.: 004+00.870
Control Section:
Maint. Area:
Local Agency Bridge Nbr.:
Culv: N
Open, Posted, Closed: A - Open
MN Scour Code: N - STBL - LIM SCOUR

Length: 166.1 ft.
Deck Width: 34.9 ft.
Rdwy. Area/ Pct. Unsnd: 5317 sq. ft. / %
Paint Area/ Pct. Unsnd: sq. ft. / %
Culvert: N/A
Postings:

Appraisal Ratings - Approach: 5 Waterway: 9
Required Bridge Signs - Load Posting: 0 - Not Required Traffic: 0 - Not Required
Horizntal: 0 - Not Required Vertical: N - Not Applicable

Unofficial Structurally Deficient N
Unofficial Functionally Obsolete N
Unofficial Sufficiency Rating 91.4

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	01/31/2017	5797 SF	5797	0	0	0
		Migrated Values		5797 SF	5797	0	0	0
	Notes: Top of Concrete Deck with Uncoated Rebar Notes: [2016] Migrator assumed CS1.							
	510 - Wearing Surfaces	Underwater	01/31/2017	5317 SF	5211	0	106	0
		Migrated Values		5317 SF	5211	0	106	0
	Notes: Top of Concrete Deck with Uncoated Rebar Notes: 2015 - Discoloration of deck is not a good sign- rusting rebar. 2014 - Four 6" diameter holes about 3/4 " deep in west span. Two other spalls west end. Rebar marks are showing through in many locations. 3/4" sand in gutters. 2013 - Red rebar becmoning more numerous. Longitudinal hairline crack - 3' long near middle of deck. Patch 10 pock marks. 1 pock mark id 1" deep. 2012 - 3" spalled pock marks. Protection angle at each end is good. 2010 - Entire deck aggregate is starting to polish. 2008 - Minor gravel in gutter. 2005 - Scrape grass away at west ends of bridge. Agg. exposed. No cracks in deck NO SALT LINES.							
109	Prestressed Concrete Open Girder/Beam	Underwater	01/31/2017	663 LF	663	0	0	0
		Migrated Values		663 LF	663	0	0	0
	Notes: 2013 - East span - strange form marks in bottom flange.							
205	Reinforced Concrete Column	Underwater	01/31/2017	2 EA	2	0	0	0
		Migrated Values		2 EA	2	0	0	0
	Notes: 2015 - Water - 18" deep at E pier & 24" at W pier. 2014 - Hammerhead style pier. Water stain about 3' from water today. Water 3' deep at west piers. 2007 - water about 2' deep on west side of west pier. Same for east. Concrete pitted on upstream side. 2006 - water depths at piers. West Pier: NW end and middle - 30" deep. SW end - 18" deep. East Side - at least 48" deep. East Pier: East side - 36" to 48". West side - unknown. Debris on top of west pier cap. Previous - Minor debris west pier.							

ELEM NBR	ELEMENT NAME	REPORT TYPE	INSP. DATE	QUANTITY	QTY CS 1	QTY CS 2	QTY CS 3	QTY CS 4
215	Reinforced Concrete Abutment	Underwater	01/31/2017	109 LF	40	36	33	0
		Migrated Values		109 LF	40	36	33	0

Notes: [2016] Migrator added 40 LF to abutment quantity to account for wingwalls (CS1:40 CS2:0 CS3:0 CS4:0).

2015 - Should fill in at face of east abut to get rid of water.
2014 - Severe green stains face of abutments. Water at base of SE abutment
2013 - Water at E. Abut. - concrete flaking - 12" X 12" X 1/4". NE corner - mold looks worse.
2012 - bad leacheate on abutment. 1 salt line - west abutment. 10 rebar spots or form ties.
2011 - Cork in W abut is deteriorated. 12" diameter flaking at SE corner.
2010 - both abutments have moss at all 4 corners. Also water at E Abut.
2009 - E Abut has settled 12" at front face. The discoloration and mold is getting worse.
2008 - Ground at south half of east abut has settled and has 1/2" to 6" water. Lots of leacheate at NW & SW face of abutment. Previous - 1" cork missing between abut and wing at SW corner. Hole along south side of e abut for 8'.

Green stains on abutment getting worst. E. Abut. worse than west.
2004 - water in front of east abutment.

Wingwall notes:
2014 - Discoloration on top.

234	Reinforced Concrete Pier Cap	Underwater	01/31/2017	69 LF	69	0	0	0
		Migrated Values		69 LF	69	0	0	0

Notes: 2012 - no apparent cracking. Debris still there. Debris actually on top of west pier.

301	Pourable Joint Seal	Underwater	01/31/2017	105 LF	105	0	0	0
		Migrated Values		105 LF	105	0	0	0

Notes: GREEN/YELLOW MOLD AT NW 7 NE ABUT CORNERS.

311	Movable Bearing	Underwater	01/31/2017	16 EA	16	0	0	0
		Migrated Values		16 EA	16	0	0	0

Notes: South Pier - expansion

313	Fixed Bearing	Underwater	01/31/2017	8 EA	8	0	0	0
		Migrated Values		8 EA	8	0	0	0

Notes: North Pier is Fixed

331	Reinforced Concrete Bridge Railing	Underwater	01/31/2017	331 LF	0	0	331	0
		Migrated Values		331 LF	0	0	331	0

Notes:
2014 - Appearance is terrible. Rebar exposed a 1 minor crack per section. Outside edge is black. Flaking on north side is the worst.
2013 - Same.
2012 - rebar exposed a 1 minor crack per section.
2010 - rebar is exposed.
2009 - Poor appearance.
2008 - finish flaking off in several areas. Several bad cracks.
2007 - some rebar showing in every panel. Lots of mold on outside face of rail.
2006 - More rebar showing thru.
2005 - Concrete flaking off NW corner. Rebar showing in spots on no. side. Several cork strips missing between rail panels
Surface finish coming off at the base.
N SIDE SCRAPED BY SNOWPLOW. HAS DARK COLORING. BAD CRACK 1/2 WAY IN EACH PANEL. SOME PANELS HAVE 3 CRACKS.

800	Critical Deficiencies or Safety Hazards	Underwater	01/31/2017	1 EA	1	0	0	0
		Migrated Values		1 EA	1	0	0	0

Notes: NO CRITICAL FINDINGS OBSERVED DURING THE LAST INSPECTION. Minor debris against south side of piers.

822	Bituminous Approach Roadway	Underwater	01/31/2017	2 EA	0	2	0	0
		Migrated Values		2 EA	0	2	0	0

Notes: New bit. in 2003. Bump on each end.

ELEM NBR	ELEMENT NAME	REPORT TYPE	INSP. DATE	QUANTITY	QTY CS 1	QTY CS 2	QTY CS 3	QTY CS 4
883	Concrete Shear Cracking	Underwater	01/31/2017	1 EA	1	0	0	0
		Migrated Values		1 EA	1	0	0	0
	Notes: Use this element to monitor the presence of shear cracking on concrete elements. Pay particular attention to the concrete pier caps and prestressed concrete beams.							
885	Scour	Underwater	01/31/2017	1 EA	1	0	0	0
891	Other Bridge Signing	Underwater	01/31/2017	1 EA	1	0	0	0
		Migrated Values		1 EA	1	0	0	0
	Notes: 2005 - bump sign on west delineator.							
892	Slopes & Slope Protection	Underwater	01/31/2017	1 EA	0	1	0	0
		Migrated Values		1 EA	0	1	0	0
	Notes: 2014 - Erosion starting 20' from north on west side under bridge. NE ditch is stabilized. 1/2 the riprap is covered with silt on east slope. 40'' of SE slope has slid. Erosion in ditches also. Riprap covered with silt RIPRAP COVERED WITH SILT ON W ABUT.							
894	Deck & Approach Drainage	Underwater	01/31/2017	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.							
900	Protected Species	Underwater	01/31/2017	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:

2015 - D. Grindall, Erickson Engineering. Some debris at east pier. Cut and remove brush from side of bridge.
2014 - Inspection by D. Grindall Erickson Engineering. Minor debris against east pier.
2013 - Inspection by D. Grindall Erickson Engineering. Cut and remove brush on sides. Remove debris at east pier. Water - 18" deep at west pier.
2012 - DG & WH. Bit appraoches werepatched summer of 2012 by County. Water is about 1.5' below normal water levels.
2011 - DG & WH. Water is 15" below normal water level and is 1' deep at east pier and less at west. Constructed 1976.
2010 - DG & WH. Approx 9' to water.
2009 - Trees were cut and removed after inspection. 24' bit surf with 4' to 6' gravel shldrs.
2008 - Cut & remove brush on sides. Cut up tree at east pier. Lots of nests in middle span. Water 1' deep at west pier.
2007 - Cut brush low on sides. Pigeons under bridge - Lots of nest. About 4' high river banks. Gravely mud bottom. Cut up tree against west pier. Evidence of 2 previous bridges to the south.
2006 - Evidence of 2 old bridges in river. One 100 yards south and the other 200 yards south of existing bridge.
2005 - DG inspector.
2004 - DG inspector. Debris on top of west pier. DG - inspector. Evidence of old bridge piling in river 300' to 500' to the south. PONTIS inspection comments - DG PONTIS inspection comments - Inspector - DG. *CRACK AT 1/2 SPAN IN EVERY RAIL. SALT STAINS - E ABUT. NO CRACKS OR
SALT STAINS IN DECK. 2:1 SLOPES WITH RIPRAP.

1991 COMMENTS - RIPRAP WITH LOTS OF SEDIMENT. AVE. SIZE - 15"""".
RANGES FROM 6 TO 24"""". SOME BIRD NESTS UNDERNEATH. 2"""" EROSION SE
SIDE DOWN SLOPE TO UNDER 2 GIRDER.

1/93 NO CHANGE. BAD BUMP AT W. ABUT.

12/93 COMMENTS - MATERIAL BETWEEN RAILS DETERIORATING.

1/95 COMMENTS - BUMP ON E SIDE ALSO. NO SALT LEACHING.

1/96 COMMENTS - E ABUT STAINING IS WORST.

1/97 COMMENTS - 8 FLOOR DRAINS. NO OTHER CHANGES.

12/97 - REMOVE BRUSH AT ABUTMENTS. LOWER 12"""" OF RAILING IS SPALLING.
DECK - 10% AGGREGATE POLISHING. GENERALLY 2 HAIRLINE CRACKS PER RAIL

ELEM NBR	ELEMENT NAME	REPORT TYPE	INSP. DATE	QUANTITY	QTY CS 1	QTY CS 2	QTY CS 3	QTY CS 4
	SECTION.							
	1/99 - LOT OF BIRD NESTS IN MIDDLE SPAN							
	1999 COMMENTS - MANY NESTS & PIGEONS.							
	1/2001 COMMENTS - TOO MANY NESTS TO COUNT - GREATER THAN 50.							
58. Deck NBI:								
36A. Brdg Railings NBI:								
36B. Transitions NBI:								
36C. Appr Guardrail NBI:								
36D. Appr Guardrail Terminal NBI:								
59. Superstructure NBI:								
60. Substructure NBI:								
61. Channel NBI:								
62. Culvert NBI:								
71. Waterway Adeq NBI:								
72. Appr Roadway Alignment NBI:								

Inspector's Signature

Reviewer's Signature

Pictures

Photo 1 - Overall looking southeast.

Photo 2 - West Abutment looking west.

Pictures

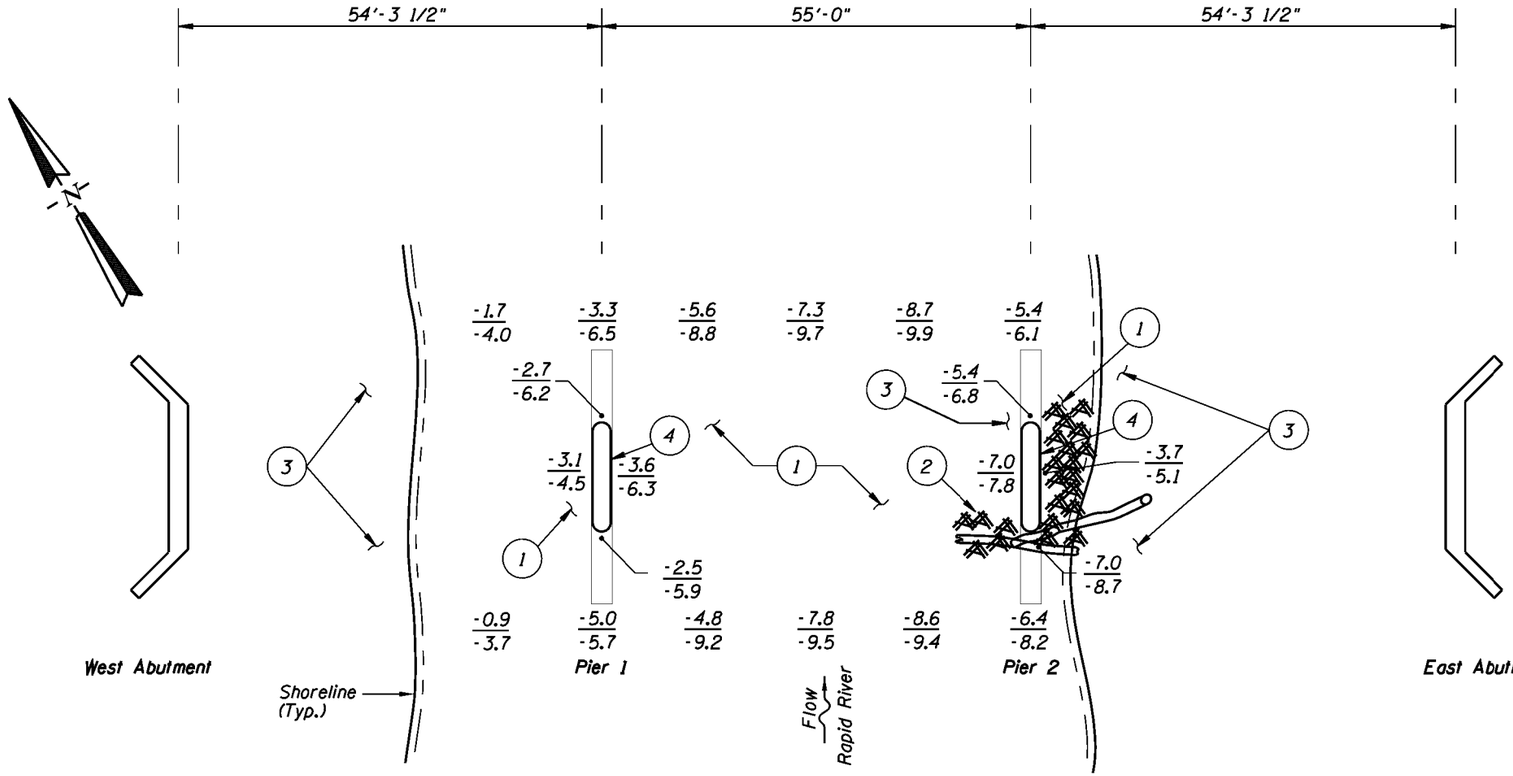
Photo 3 - Pier 1 looking east.

Photo 4 - Pier 2 looking west.

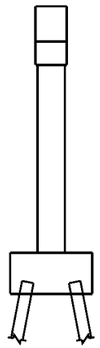
Pictures

Photo 5 - East Abutment looking east.

Photo 6 - Overall looking northeast.



SOUNDING PLAN



TYPICAL END VIEW OF PIERS

GENERAL NOTES:

1. Piers 1 and 2 were inspected underwater at this bridge.
2. At the time of inspection on August 3, 2016, the waterline was located approximately 14.3 feet below the top of pier cap at north fascia of Pier 2. This corresponds with a waterline elevation of 1069.9 feet based on design drawings.
3. Soundings indicate the water depth at the time of inspection and are measured in feet. All soundings based on 2016 waterline location.
4. Soundings were taken parallel to the bridge at 1/4 points between the substructure units.

INSPECTION NOTES:

(1) The channel material consisted of sand and gravel with some silt and up to 6 inches of probe rod penetration.

(2) A moderate accumulation of timber debris was observed, consisting of numerous logs and tree trunks measuring up to 1 foot in diameter lying across the upstream nose and extending to the easterly shoreline. Debris extended from channel bottom up 3 feet at Pier 2.

(3) The shoreline consisted of up to 2 feet diameter riprap.

(4) Light scaling from 3 feet above the waterline to the channel bottom with 1/8 inch typical to 1/4 inch maximum penetrations was observed along the entire perimeter of Pier 1 and Pier 2.

Legend

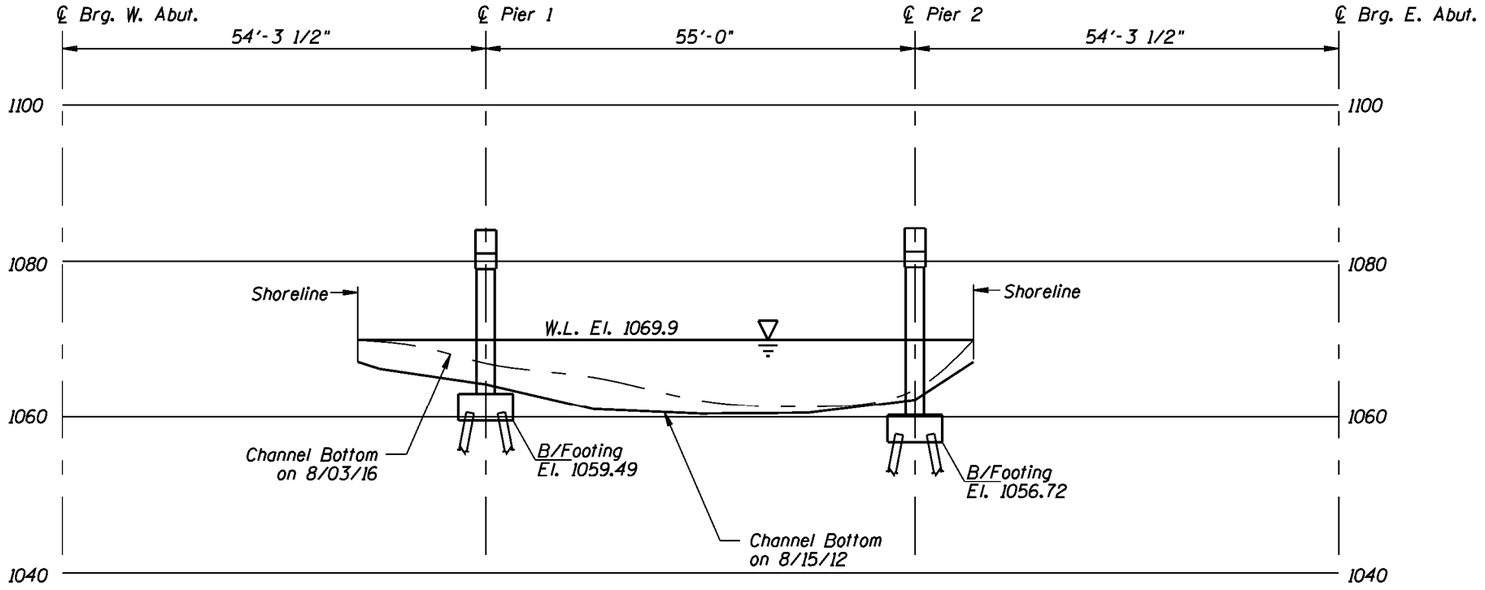
-3.1	Sounding Depth (8/3/16)
-3.1	Sounding Depth (8/15/12)
	Timber Debris

MINNESOTA
DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

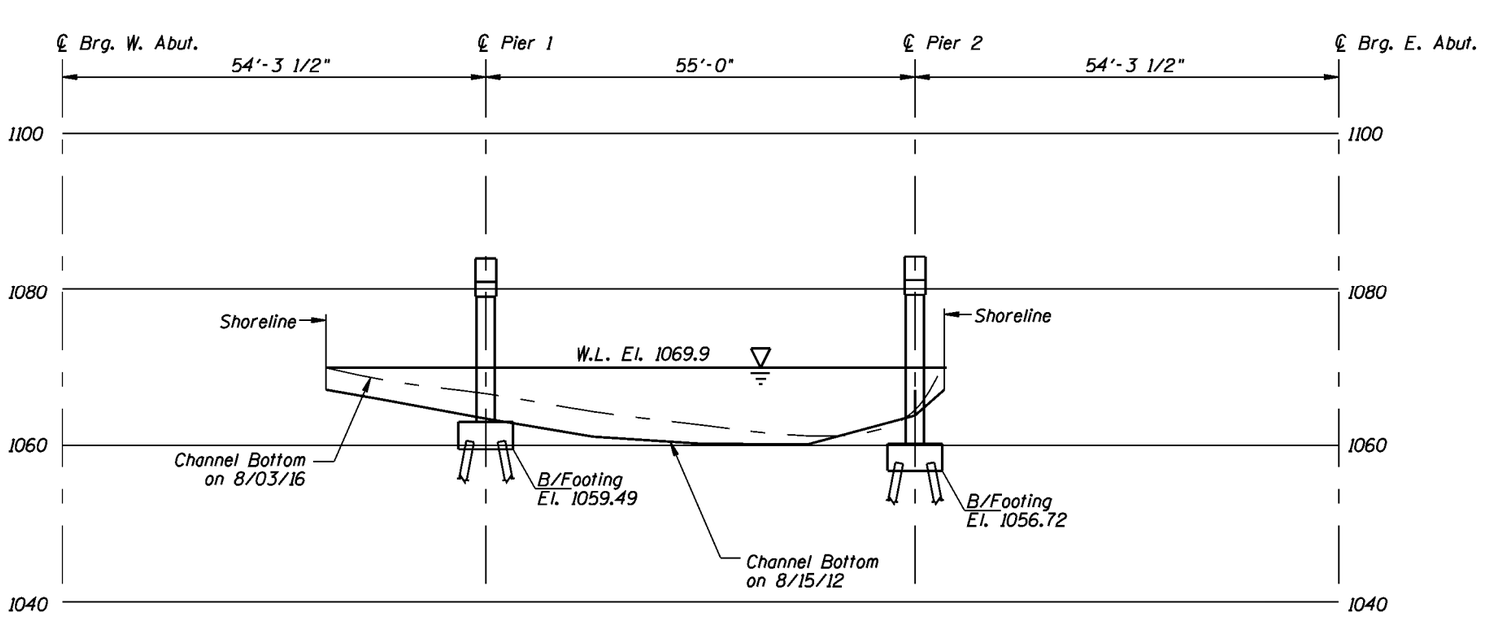
STRUCTURE NO. 36514
OVER THE RAPID RIVER
DISTRICT 1, KOOCHICHING COUNTY

INSPECTION AND SOUNDING PLAN

Drawn By: JCG	COLLINS ENGINEERS, INC. 1599 Selby Ave. Suite 206 St. Paul, MN. 55104 (651) 646-8502 www.collinsengr.com	Date: 8/03/2016
Checked By: RAF		Scale: NTS
Project: 9687		Figure No.: 1



UPSTREAM FASCIA PROFILE



DOWNSTREAM FASCIA PROFILE

Legend

Channel Bottom per 2012 Inspection

Channel Bottom per 2016 Inspection

MINNESOTA
DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

STRUCTURE NO. 36514
OVER THE RAPID RIVER
DISTRICT 1, KOOCHICHING COUNTY

UPSTREAM AND DOWNSTREAM FASCIA PROFILES

Drawn By: JCG	COLLINS ENGINEERS, INC. 1599 Selby Ave. Suite 206 St. Paul, MN. 55104 (651) 646-8502 www.collinsengr.com	Date: 8/03/2016
Checked By: RAF		Scale: NTS
Project: 9687		Figure No.: 2