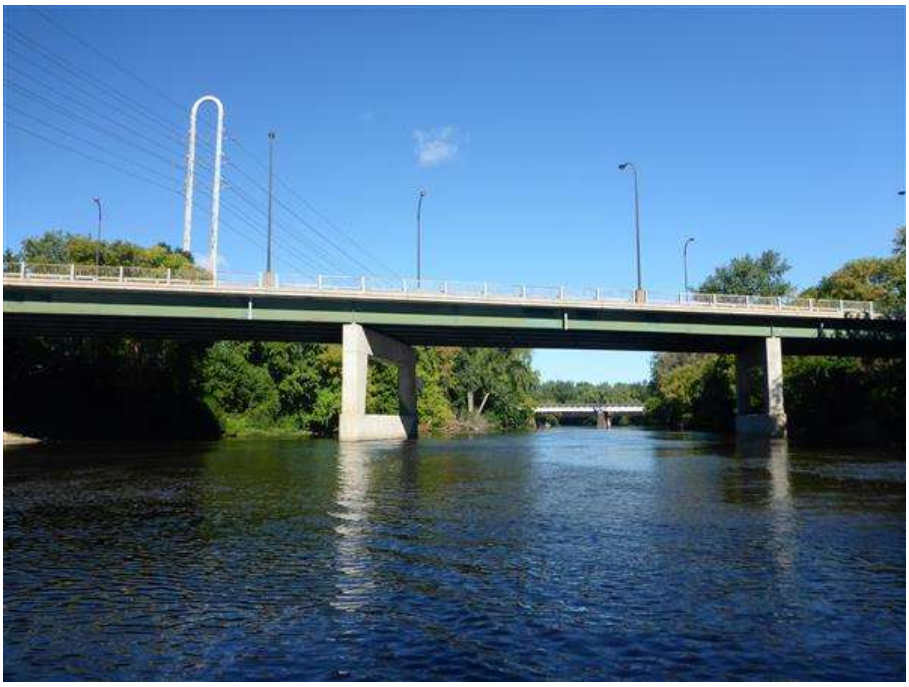
2017 UNDERWATER
BRIDGE INSPECTION REPORT



BRIDGE # 27537
CR52(1ST AV NE-WB) over MISSISSIPPI RIVER; ST

DISTRICT: Metro **COUNTY:** Hennepin **CITY/TOWNSHIP:** Minneapolis

STATE: Minnesota

Date of Inspection: 09/10/2016
Equipment Used:

Owner: County Highway Agency

Inspected By: Lovelace, Barritt

Report Written By: Barritt Lovelace
Report Reviewed By:
Final Report Date:

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UNDERWATER INSPECTION

REPORT SUMMARY

The substructure units inspected at Bridge No. 27537, Piers 2 and 3, were found to be in good condition with no defects of structural significance observed. Vertical cracking 1/16 inch maximum width was observed on both faces of Pier 2 and on the west face of Pier 3. Minor footing exposure was observed along the west face of Pier 3, with a maximum vertical exposure of 1.5 feet. Timber debris was observed along the upstream nose of Piers 2 and 3. The channel bottom appeared stable with no evidence of significant scour and with no significant changes since the previous inspection.

INSPECTION FINDINGS

(A) The channel bottom consisted of silty sand and scattered cobbles with up to 1 foot of probe rod penetration.

(B) The concrete piers exhibited light scaling from 1.5 foot above to 1 foot below the waterline.

(C) A light accumulation of timber debris, consisting of 1 foot-diameter logs and branches, was observed at the upstream end of Pier 3.

(D) Both embankments were well armored with grouted riprap.

(E) Vertical cracks 1/16 inch wide were observed along the west face of Pier 3, extending from channel bottom to top of pier shaft.

(F) Footing exposure (top at 7.4 feet below waterline) was observed along the west face of Pier 3. The footing's surface was rough with some irregularities. Steel sheet piling was observed along footing from the midpoint to the downstream nose with a maximum vertical exposure of 1.5 feet (footing and sheeting).

(G) Vertical cracks (1/16 inch maximum width) were observed along east face (5 cracks) and west face (3 cracks) of Pier 2, extending from channel bottom to top of pier shaft.

(H) A light accumulation of timber debris, consisting of 4 inch-diameter branches, was observed at the upstream end of Pier 2.

RECOMMENDATIONS

(A) Monitor the footing exposure on Pier 3 and vertical cracking in both piers's concrete 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 #: 27537

Feature Intersected: MISSISSIPPI RIVER; ST

Facility Carried: CR52(1ST AV NE-WB)

District: Metro

County: 027 - Hennepin

Bridge Description:

The bridge superstructure consists of four spans of multiple steel beams. The superstructure is supported by two reinforced concrete abutments and three reinforced concrete piers. The piers have spread footings that are keyed into rock, and the abutments are supported by timber piles. The piers are numbered 1 through 3 starting from the south end of the bridge.

2. INSPECTION DATA

Professional Engineer/Team Leader: Barritt Lovelace P.E.

Inspection Diver: Barritt Lovelace P.E.

Date of Underwater Inspection: 09/10/2016

Weather Conditions: Sunny, 65°F

Underwater Visibility (feet): 0.5

Waterway Velocity (ft/sec): 3.0

3. SUBSTRUCTURE INSPECTION DATA

Substructure(s) Inspected: Piers 2 and 3

General Shape:

Piers 2 and 3 each consist of two square columns which are supported by a rectangular shaft with rounded noses. The pier footings are rectangular and are keyed into rock.

Maximum Water Depth at Substructure(s) Inspected (feet): 10.1

4. WATERLINE DATUM

Water Level Reference: Below the benchmark reference at Elevation 802.05 located on the upstream nose of Pier 3.

Waterline Elevation (feet): 799.9

Description: The waterline was approximately 2.2 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: 7

Item 62: Culvert: Code:

Item 92B: Underwater Inspection: Code: Y 48 09/2016

Item 113: Scour Critical Bridge: Code: R

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
210	Reinforced Concrete Pier Wall	110	LF		110		
220	Reinforced Concrete Footing	40	LF		40		
885	Scour	1	EA		1		

UNDERWATER INSPECTION

INSPECTION PROCEDURES

The routine underwater inspection of Bridge 27537 (CSAH No. 52 (1st Ave.) over the East Channel of the Mississippi River) was completed on September 10, 2016. The underwater inspection was conducted from a 21 foot boat. 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 (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, Piers 2 and 3 were founded on reinforced concrete spread footings that are keyed into rock. 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: 27537 **CR52(1ST AV NE-WB) over MISSISSIPPI RIVER; ST** Date: 01/17/2017

+GENERAL+

Agency Br. No.		**Crew**	
District	05	**Maint. Area**	
County	027 - Hennepin		
City	Minneapolis		
Township			
Desc. Loc.	0.1 MI W JCT CSAH 23		
Sect., Twp., Range	23 - 029N - 24W		
Latitude	44 ° 59 ' 14.45 ''		
Longitude	93 ° 15 ' 37.55 ''		
Custodian	02 - County Highway Agency		
Owner	02 - County Highway Agency		
BMU Agreement			
Year Built	1971		
MN Year Reconstructed			
FHWA Year Reconstructed			
MN Temporary Status			
Bridge Plan Location	3 - COUNTY		
Date Opened to Traffic	1/1/1972		
On - Off System	1 - ON		
Legislative District	59B		
Potential ABC	2 - N/A		

+STRUCTURE+

Service On	5 - Highway-pedestrian		
Service Under	6 - Highway - 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	25 RIGHT		
Culvert Type			
Barrel Length			
Cantilever ID			

Number of Spans

MAIN: 4 **APPR:** 0 **TOTAL:**

Main Span Length	119.0	**ft.**	
Structure Length	413.8	**ft.**	
Deck Width (Out-to-Out)	53.8	**ft.**	
Deck Material	1 - Concrete Cast-in-Place		
Wear Surf Type	4 - Low Slump Concrete		
Wear Surf Install Year	1989		
Wear Course/Fill Depth	0.17	**ft.**	
Deck Membrane	0 - None		
Deck Rebars	0 - None		
Deck Rebars Install Year			
Structure Area (Out-to-Out)	22262	**sq. ft.**	
Roadway Area (Curb-to-Curb)	16555	**sq. ft.**	

Sidewalk Width	**50A. Lt**	9.00	**ft.**	**50B. Rt**	2.50	**ft.**
Curb Height	**Lt**	0.67	**ft.**	**Rt**	0.67	**ft.**
Rail Type	**Lt**	01		**Rt**	01	

+ROADWAY+

Bridge Match ID (TIS)	1
Roadway O/U Key	Route On Structure
Route Sys	04 - CSAH **Number** 52
Roadway Name or Description	WB 1st AVE NE (CSAH 52)
Level of Service	1 - MAINLINE
Roadway Type	1 - 1-way traffic
Control Section (TH Only)	
Reference Point	011+00.824
Detour Length	1.0 **mi.**
Lanes	**ON** 3 **UNDER** 3
	ADT 11700 **YEAR** 2005
HCADT	**ADTT** **%**
Functional Class	16 - Urban - Minor Arterial

+RDWY DIMENSIONS+

If Divided	**NB-EB**	**SB-WB**
Roadway Width	40.00 **ft.**	**ft.**
Vertical Clearance	**ft.**	**ft.**
Max. Vert. Clear.	**ft.**	**ft.**
Horizontal Clear.	39.9 **ft.**	**ft.**
Lateral Clearance	**ft.**	**ft.**

Appr. Surface Width	40.0	**ft.**
Bridge Roadway Width	40.0	**ft.**
Median Width On Bridge		**ft.**

+MISC. BRIDGE DATA+

Structure Flared	0 - No flare
Parallel Structure	L - Left structure (South or West)
Field Conn. ID	4 - Bolted
Abutment Foundation (Material/Type)	1 - CONC 3 - FTG PILE
Pier Foundation (Material/Type)	1 - CONC 2 - SPRD ROCK
Historic Status	5 - Not eligible

+PAINT+

Year Painted	1989	
Unsound Paint %	4	
Painted Area	43656	**sq. ft.**
Primer Type	5 - Inorganic Zinc - non	
Finish Type		

+BRIDGE SIGNS+

Posted Load	0 - Not Required
Traffic	0 - Not Required
Horizontal	1 - Object Markers
Vertical	N - Not Applicable

+INSPECTION+

Userkey	67
Structurally Deficient	N
Functionally Obsolete	N
Sufficiency Rating	80.6
Routine Inspection Date	10/21/2015
Routine Inspection Frequency	24
Inspector Name	Lovelace, Barritt
Status	A - Open

+NBI CONDITION RATINGS+

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

+NBI APPRAISAL RATINGS+

Structure Evaluation	6
Deck Geometry	4
Underclearances	7
Waterway Adequacy	8
Approach Alignment	8

+SAFETY FEATURES+

Bridge Railing	0 - SUBSTANDARD
GR Transition	1 - MEETS STANDARDS
Appr. Guardrail	1 - MEETS STANDARDS
GR Termini	0 - SUBSTANDARD

+IN DEPTH INSP.+

	Y/N	**Freq**	**Date**
Frac. Critical			
Underwater		60	09/10/2016
Pinned Asbly.			
Spec. Feat.			

+WATERWAY+

Drainage Area (sq. mi.)	19400.0		
Waterway Opening (sf.)	8000		
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	R - CRIT -	**Year**	1995

+CAPACITY RATINGS+

Design Load	9 - HS 25 (OR GREATER)	
Operating Rating	2 - HS TRUCK	47.2
Inventory Rating	2 - HS TRUCK	28.2
Posting	**VEH:** **SEMI:**	**DBL:**
Rating Date	10/29/2013	

Overweight Permit Codes

A N - N/A **B** N - N/A **C** N - N/A

BRIDGE 27537 CR52(1ST AV NE-WB) OVER MISSISSIPPI RIVER; ST

County: Hennepin
City: Minneapolis
Township:
Section: 23 Township: 029N Range: 24W
Span Type: 4 - Steel Continuous 2 - Stringer/Multi-beam or Girder
List:
NBI Deck: 6 Super: 6 Sub: 6 Chan: 7

Location: 0.1 MI W JCT CSAH 23
Route: 04 - CSAH 52 Ref. Pt.: 011+00.824
Control Section:
Maint. Area:
Local Agency Bridge Nbr.:
Culv: N
Open, Posted, Closed: A - Open
MN Scour Code: R - CRIT - MONITOR

Length: 413.8 ft.
Deck Width: 53.8 ft.
Rdwy. Area/ Pct. Unsnd: 16555 sq. ft. / %
Paint Area/ Pct. Unsnd: 43656 sq. ft. / 4%
Culvert: N/A
Postings:

Appraisal Ratings - Approach: 8 Waterway: 8
Required Bridge Signs - Load Posting: 0 - Not Required Traffic: 0 - Not Required
Horizntal: 1 - Object Markers Vertical: N - Not Applicable

Unofficial Structurally Deficient N
Unofficial Functionally Obsolete N
Unofficial Sufficiency Rating 80.6

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	01/17/2017	22262 SF	20036	0	2226	0
		Migrated Values		22262 SF	20036	0	2226	0
	Notes: 359. Numerous trans cracks in deck and coping w/ considerable efflor. Thickened portion cracked. 2' X 2' delam on S soffit near scupper on W side of P2. '13-few areas of map cracking. '15-1 SF spall in S soffit. 1600 LF of trans cracks w/ efflor.							
	510 - Wearing Surfaces	Underwater	01/17/2017	16555 SF	16555	0	0	0
		Migrated Values		16555 SF	16555	0	0	0
	Notes: Low Slump Overlay with Epoxy Rebar Notes: 377. Numerous sealed trans and long cracks. O/L surface is worn. '13-crack sealant worn away. Many cracks, some mod in size. Fine diag crack in SE. '15-most cracks have sealant worn away.							
107	Steel Open Girder/Beam	Underwater	01/17/2017	2490 LF	2362	128	0	0
		Migrated Values		2490 LF	2362	128	0	0
	Notes: 107. Fascia beams in W span painted. Top flange rusted below construction joints in walk. Bottom flange rusted in several areas. W span beams have minor to moderate rust. Minor pack rust on bottom flange of exterior fascia splices. Both fascia beams have bolt heads inside +/- 10" from top, +/- 4' apart for length of beam ground flat on exterior. '13-1st 4'-6' of 2nd & 4th beams from N @ E abut have sheet rust w/ minor section loss on bottom flange, stiffener & lower webs. Paint peeling & freckled rust on rest of beams @ E abut for 4'-6'. '15-20' of bottom flange of N fascia @ E abut has minor flaking rust & 40' of mod freckled rust.							
	Pack Rust Notes: 357. '13-element added. Pack rust @ bottom flange of splice plates of fascia beams. '15-no change.							
	515 - Steel Protective Coating	Underwater	01/17/2017	43656 SF	41412	0	1753	491
		Migrated Values		43656 SF	41412	0	1753	491
	Notes: [2016] Migrator used inventory quantity of 43,656 SF and estimated the condition states.							
205	Reinforced Concrete Column	Underwater	01/17/2017	6 EA	6	0	0	0
		Migrated Values		6 EA	6	0	0	0
	Notes: 205. Horiz cracks. '13-'15-no change.							
215	Reinforced Concrete Abutment	Underwater	01/17/2017	155 LF	46	106	3	0
		Migrated Values		155 LF	46	106	3	0
	Notes: [2016] Migrator added 40 LF to abutment quantity to account for wingwalls (CS1:30 CS2:10 CS3:0 CS4:0). 215. Vert cracks and water stains on both. Horiz and vert cracks w/ rust stains @ W. Leakage in NE corner. Vert cracks in E parapet. Spall in top of seat @ E. '13-horiz cracks in W are mod in size. '15-qty change-16' of W should be CS 1.							
	Wingwall notes: 387. '13-few fine cracks in NE. Small spall(<1 SF) in NW. '15-no change.							
220	Reinforced Concrete Pile Cap/Footing	Underwater	01/17/2017	40 LF	0	40	0	0
	Notes: [2016] Underwater Inspection - Footing exposure was observed along the west face of Pier 3. The footing's surface was rough with some irregularities. Steel sheet piling was observed along footing from the midpoint to the downstream nose with a maximum vertical exposure of 1.5 feet (footing and sheeting).							

ELEM NBR	ELEMENT NAME	REPORT TYPE	INSP. DATE	QUANTITY	QTY CS 1	QTY CS 2	QTY CS 3	QTY CS 4
234	Reinforced Concrete Pier Cap	Underwater	01/17/2017	164 LF	164	0	0	0
		Migrated Values		164 LF	164	0	0	0
	Notes: 234. Fine vert flex cracking in W pier. '13-'15-no change.							
300	Strip Seal Expansion Joint	Underwater	01/17/2017	177 LF	89	84	0	4
		Migrated Values		177 LF	89	84	0	4
	Notes: 300. Joint filled w/ sand and debris. 2' portion of inplace gland pulled out in NE. E abut seal leaks badly. '11-E joint is open 1". '13-55 degrees. E joint open 1-1/4" - 1-1/2". Filled w/ debris. '15-W partially filled w/ sand & debris. No change in opening of E. 4' pulled out of E @ N end.							
311	Movable Bearing	Underwater	01/17/2017	26 EA	14	6	0	6
		Migrated Values		26 EA	14	6	0	6
	Notes: 311. Abuts, P1, P3 & 2 ext bearings @ P2. Bearings @ E abut are moderately rusted, along w/ fascia beams @ W abut. '13-most bearings @ E abut are mod to heavily rusted. 6 ext bearings of all 3 piers have minor rust & paint failure-CS1. '15-no change.							
313	Fixed Bearing	Underwater	01/17/2017	4 EA	4	0	0	0
		Migrated Values		4 EA	4	0	0	0
	Notes: 313. Interior bearings @ P2. '13-bearings appear OK, no rust. '15-no change.							
321	Reinforced Concrete Approach Slab	Underwater	01/17/2017	1600 SF	0	800	800	0
		Migrated Values		1600 SF	0	800	800	0
	Notes: [2016] Migrator assumed an approach slab length of 20FT and used the inventory quantity of 40FT for the width. 321. Long and trans cracks @ approach panels. Settled 1/2" on W side. 2' of sealant missing on W side. Filler material @ end of W panel has settled up to 1". Filler in long cracks on W end is missing and deteriorated in areas. '13-2 patches in E, 4 SF each. '15-bit patch in W @ N gutter line. Large(up to 2"), unsealed cracks in W. Spalls & missing sealant @ thickened section of W. Conc app roadway is spalled @ W. Minor spalls along sawcuts in E.							
330	Metal Bridge Railing	Underwater	01/17/2017	1704 LF	0	1704	0	0
		Migrated Values		1704 LF	0	1704	0	0
	Notes: 334. Back side of rail end posts spalled @ guardrail connections. Ped rail is an ornamental metal rail 3.4' high. Minor rust on galvanized ped rail and on crash rail, especially @ bottom of posts. . Conc post in SW is spalled @ bridge ID plate. '13-weld @ base of 4th post W of 2nd light from W is broken and has minor rust. '15-qty change-from plans, crash rail is 865', ped rail is 839'. Back of conc post in NE is spalled @ guardrail connection.							
	515 - Steel Protective Coating	Underwater	01/17/2017	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	01/17/2017	1 EA	1	0	0	0
		Migrated Values		1 EA	1	0	0	0
	Notes: No critical structural deficiencies or serious safety hazards are present on this structure.							
810	Concrete Decks - Cracking & Sealing	Underwater	01/17/2017	0 LF	0	0	0	0
		Migrated Values		0 LF	0	0	0	0
	Notes: 358. Severity is insignificant. Density is < 10', but almost all sealed. '13-Severity is moderate. Density is <10'. Many unsealed cracks. '15-no change.							
815	Plow Fingers	Underwater	01/17/2017	1 EA	0	1	0	0
		Migrated Values		1 EA	0	1	0	0
	Notes: 983. One strap missing @ both ends. '13-'15-no change. Missing straps should lower CS.							
855	Secondary Members (Superstructure)	Underwater	01/17/2017	1 EA	1	0	0	0
		Migrated Values		1 EA	1	0	0	0
	Notes: 380. Steel diaphragms. Conc pier crash struts. Numerous fine vert cracks in struts of piers 2 and 3. Some delams. '13-no change. '15-vert cracks in crash struts are minor to mod in size-4 on P3 & 5 on P2.							

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	01/17/2017	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.							
885	Scour	Underwater	01/17/2017	1 EA	0	1	0	0
		Migrated Values		1 EA	1	0	0	0
	Notes: 361. R - Scour critical. Monitoring required. [2016] Underwater Inspection - Footing exposure along west face of Pier 3, maximum vertical exposure up to 1.5 feet. No notable change from previous inspection, continue to monitor.							
891	Other Bridge Signing	Underwater	01/17/2017	1 EA	0	1	0	0
		Migrated Values		1 EA	0	1	0	0
	Notes: 981. Horiz clearance marker X4-4 @ approach. No Parking and One Way sign @ NE corner. Sign mounted on upstream side of center pier: Danger Turn Back Dam Spillway and Turbulent Water Ahead. Blue and white scour monitoring sign mounted on W face of center pier strut. No Peds and Left Turn Yield On Green attached to signal pole in NE. '15-No Pedestrian sign in NE is faded.							
892	Slopes & Slope Protection	Underwater	01/17/2017	1 EA	0	1	0	0
		Migrated Values		1 EA	0	1	0	0
	Notes: 985. Grouted riprap cracked on E and W side of channel. Conc slope paving @ W abut. 3" gap between slope paving and E abut settled 8". Some undermining of E slope. '15-new belting attached to W abut. More areas of undermining on top of E slope.							
893	Guardrail	Underwater	01/17/2017	1 EA	1	0	0	0
		Migrated Values		1 EA	1	0	0	0
	Notes: 982. 6" X 4" structural tubing crash rail @ edge of walk. Guardrail attached to end posts w/ ends turned down or bent around @ NE and SE corner. Damaged in SE where rail attaches to conc post - leaves gap in guardrail. '13-damage in SE has been repaired. '15-rusted rail & loose spacer blocks in SE. Minor damage to SE rail.							
894	Deck & Approach Drainage	Underwater	01/17/2017	1 EA	1	0	0	0
		Migrated Values		1 EA	1	0	0	0
	Notes: 984. 4 drains in each curb line. '13-SE drain plugged. Some downspout brackets very rusty below deck under N gutter. '15-drains open.							
895	Sidewalk, Curb, & Median	Underwater	01/17/2017	1 EA	0	1	0	0
		Migrated Values		1 EA	0	1	0	0
	Notes: 986. Fine trans and long cracks in walk. Spalls and long crack @ electrical handhole near 2nd light base from W and handhole W of 2nd streetlight from E, both on N side. '13-vert cracks in curb & very small spall in NE app walk @ mast arm. Most cracks sealed.							
899	Miscellaneous Items	Underwater	01/17/2017	1 EA	0	1	0	0
		Migrated Values		1 EA	0	1	0	0
	Notes: 988. Water depth = X' @ center of channel. 1 - 8" gas main, 1 - 16" watermain and 4 - 4.5" phone conduits in 1st N bay. 8 - 4" Xcel Energy conduits in 1st S bay. 1 - 2" conduit for street lights and 1 - 3" conduit for traffic signals in N walk. Minor amounts of vagrant debris on conduit in SW corner. Utility grate cover under NE corner is loose and hanging. Light bases have some rust on bottom and conc under base is cracked and deteriorated. Most of conc base gone @ 1st and 3rd light from W on N side. Benchmark disc in NW app walk. Graffiti on beams @ E abut and outside of S fascia. Graffiti on E. '13-utility grate cover in NE is closed. Catwalk corroded under walk access covers @ both ends of N bay. Utility conduits in S bay @ E abut are rusted. Holes in utility conduits in S bay @ E abut. Watermain from E pier to E abut missing most galv sheet metal covering. '15-tree rubbing against light pole in SW. Most light bases corroded @ bottom & grout is cracked & broken.							
900	Protected Species	Underwater	01/17/2017	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: *Bridge 27537 CSAH 52 (WB 1st Ave N E)/Mississippi River and Street 10/21/15. JDE, WJM and PTH.

Recommended Repairs:

300. Repair inplace gland failure @ NE end.
311 & 313. Schedule bearings for future blast and paint.
321. Repair and fill cracks w/ bit in both approaches.
377. Seal deck cracks.
983. Replace missing plowstraps.
986. Repair spalls in walk @ handholes in N walk.

ELEM NBR	ELEMENT NAME	REPORT TYPE	INSP. DATE	QUANTITY	QTY CS 1	QTY CS 2	QTY CS 3	QTY CS 4
	988. Remove trees @ N end of W pier for snooper access. 988. Trim tree branch rubbing against light pole in SW.							
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

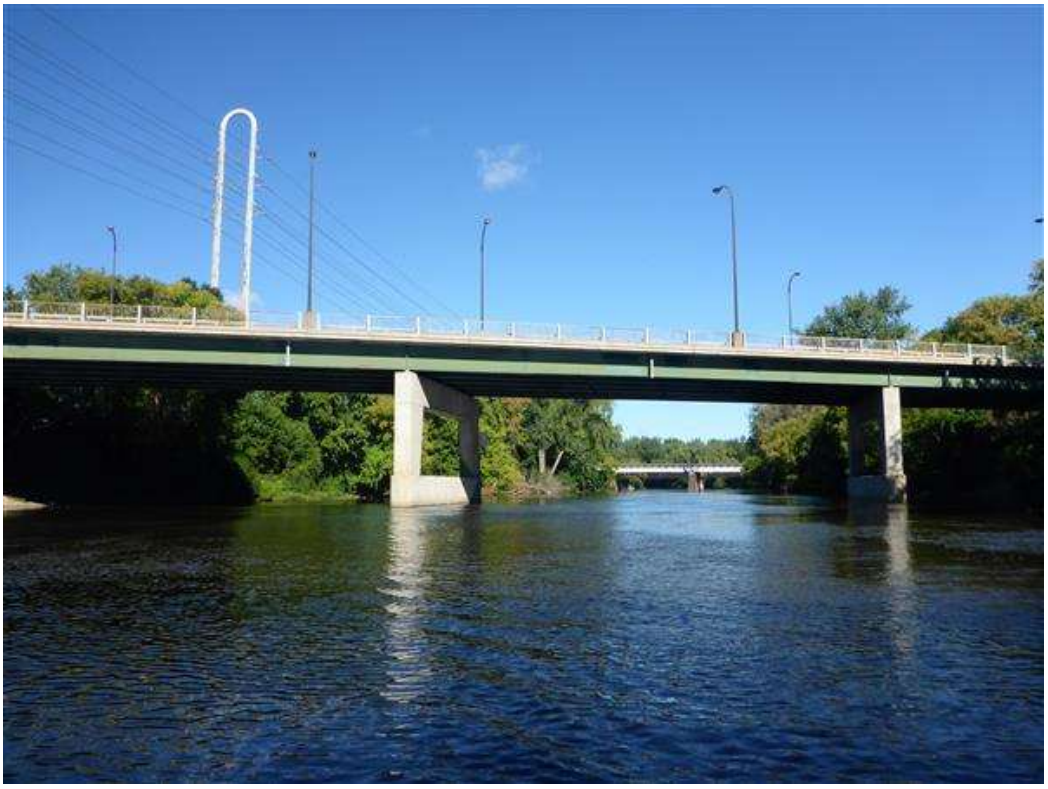


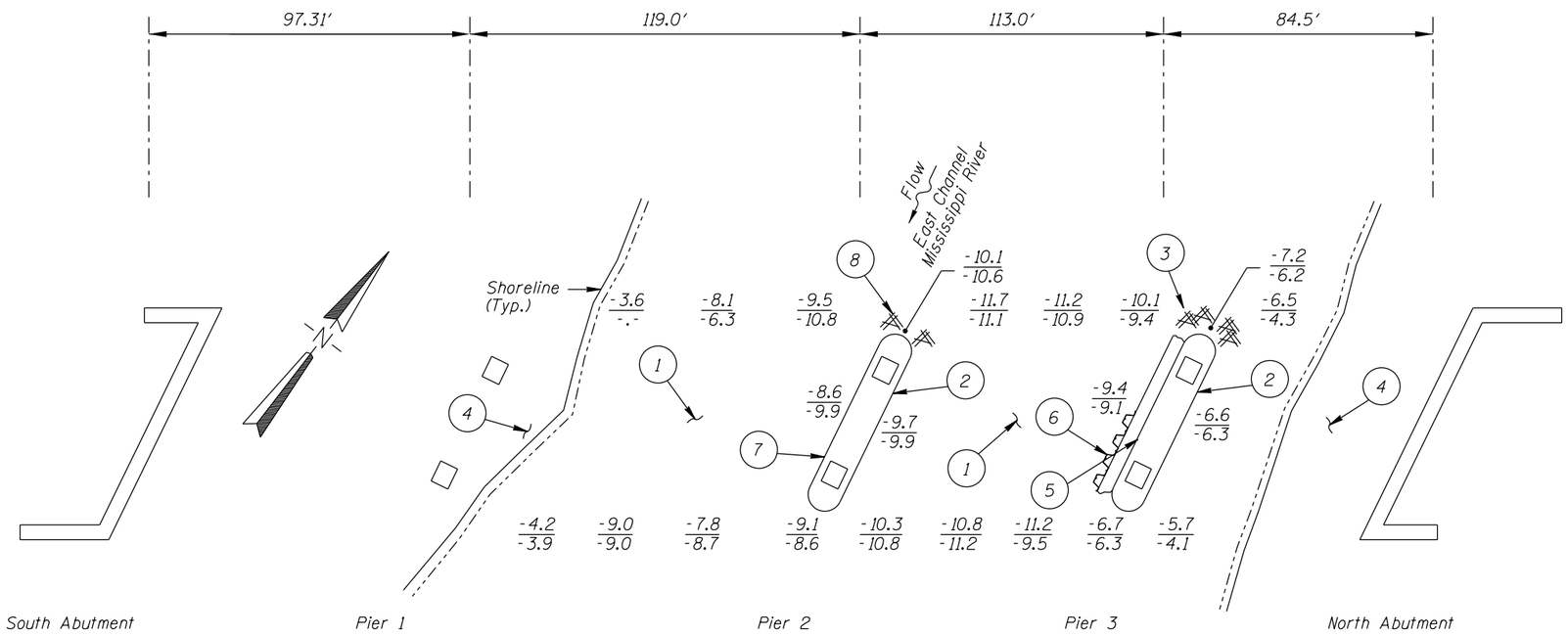
Photo 1 - Downstream Elevation, Looking North.

Photo 2 - Upstream Elevation, Looking South.

Pictures

Photo 3 - Pier 2, Looking West.

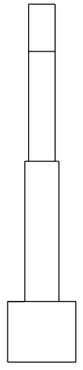
Photo 4 - Pier 3, Looking East.



SOUNDING PLAN

INSPECTION NOTES:

1. The channel bottom consisted of silty sand and scattered cobbles with up to 1 foot of probe rod penetration.
2. The concrete piers exhibited light scaling from 1.5 foot above to 1 foot below the waterline.
3. A light accumulation of timber debris, consisting of 1 foot-diameter logs and branches, was observed at the upstream end of Pier 3.
4. Both embankments were well armored with grouted riprap.
5. Vertical cracks 1/16 inch wide were observed along the west face of Pier 3, extending from channel bottom to top of pier shaft.
6. Footing exposure (top at 7.4 feet below waterline) was observed along the west face of Pier 3. The footing's surface was rough with some irregularities. Steel sheet piling was observed along footing from the midpoint to the downstream nose with a maximum vertical exposure of 1.5 feet (footing and sheeting).
7. Vertical cracks (1/16 inch maximum width) were observed along east face (5 cracks) and west face (3 cracks) of Pier 2, extending from channel bottom to top of pier shaft.
8. A light accumulation of timber debris, consisting of 4 inch-diameter branches, was observed at the upstream end of Pier 2.



TYPICAL END VIEW OF PIERS

GENERAL NOTES:

1. Piers 2 and 3 were inspected underwater.
2. At the time of inspection on October 28, 2012 the waterline was located approximately 2.2 feet below the benchmark reference at Elevation 802.05 on the upstream nose of Pier 3. Based on the reference this corresponds with a waterline elevation of 799.9.
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.

Legend

-3.0	Sounding Depth (9/10/16)
-2.2	Sounding Depth (10/28/12)
	Timber Debris

Note:

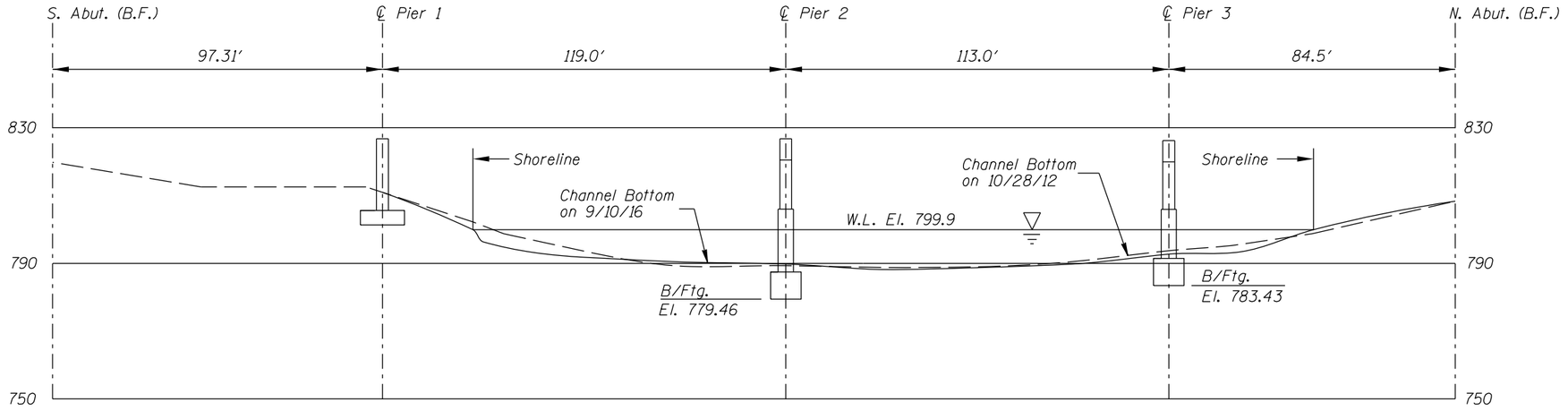
All soundings based on 2016 waterline location.

MINNESOTA
DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

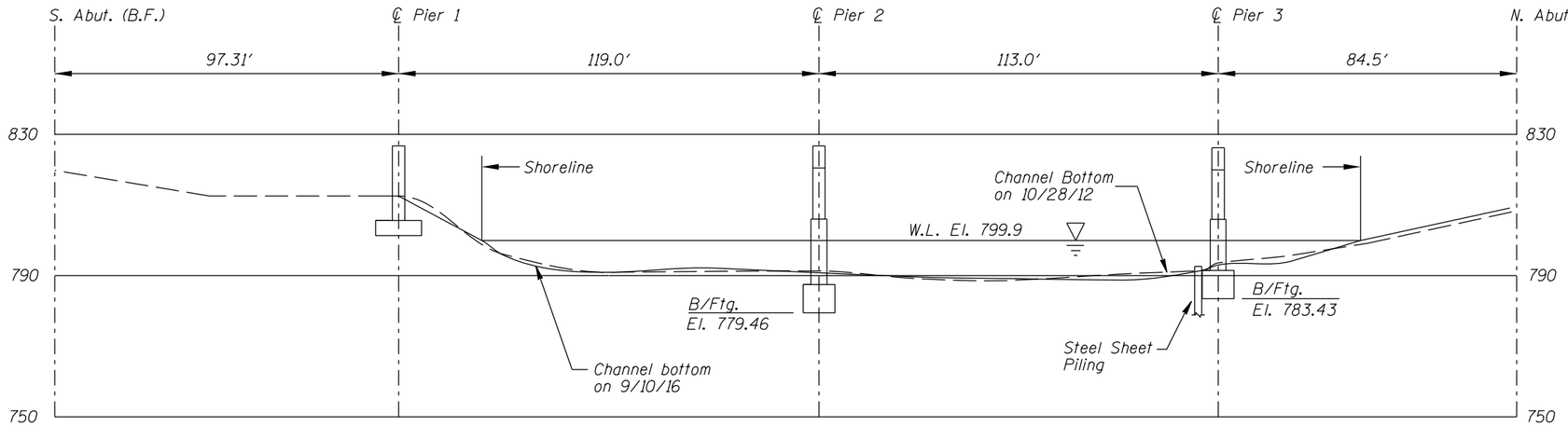
STRUCTURE NO. 27537
OVER THE EAST CHANNEL OF THE MISSISSIPPI RIVER
HENNEPIN COUNTY

INSPECTION AND SOUNDING PLAN

Drawn By: GRO	COLLINS ENGINEERS, PLLC 1599 Selby Avenue Suite 206 St. Paul, MN 55104 (651) 646-8502 www.collinsengr.com	Date: DEC. 2016
Checked By: BRL		Scale: NTS
Project: 63-9687		Figure No.: 1



UPSTREAM FASCIA PROFILE



DOWNSTREAM FASCIA PROFILE

Note:

Refer to Figure 1 for General Notes.

MINNESOTA
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UPSTREAM AND DOWNSTREAM
FASCIA PROFILES

Drawn By: GRO	COLLINS ENGINEERS 1599 Selby Avenue Suite 206 St. Paul, MN 55104 (651) 646-8502 www.collinsengr.com	Date: DEC, 2016
Checked By: BRL		Scale: 1"=40'
Project: 63-9687		Figure No.: 2