

# 2016 UNDERWATER BRIDGE INSPECTION REPORT



**BRIDGE # 27549**  
**42nd AVE (CAMDEN) over MISSISSIPPI RIVER; RR**

DISTRICT: Metro                      COUNTY: Hennepin                      CITY/TOWNSHIP: Minneapolis  
STATE: Minnesota

Date of Inspection: 11/10/2016

Equipment Used:

Owner: City or Municipal 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

The concrete substructure units inspected at Bridge 27549, Piers 9 and 10, were generally in good condition with no structurally significant defects observed. Hairline vertical cracking was observed on both piers. The footing at Pier 9 was exposed around the entire perimeter with up to 2.5 feet of vertical face exposure along the west side. Light to moderate timber debris was observed at the upstream nose and the east side of Pier 9. The channel bottom appeared stable with no significant scour or appreciable changes since the previous inspection.

### INSPECTION FINDINGS

- (A) The channel bottom material around Pier 9 consisted of riprap up to 1 foot in diameter at the upstream nose and sand infilling around the rest of the pier that allowed up to 1.5 foot of probe rod penetration.
  - (B) The top of the footing around the entire perimeter of Pier 9 was exposed with vertical face exposure between 1 foot at the upstream west corner, 4 inches along the downstream face, and a maximum of 2.5 feet along the west face.
  - (C) An 18 inch diameter log was observed on the channel bottom at the upstream end of Pier 9.
  - (D) Timber debris and a log that was 18 inches in diameter and 30 feet long was observed on the channel bottom along the east face of Pier 9.
  - (E) Numerous vertical hairline cracks were observed extending from the top of the webwall to 1 foot below the waterline on both faces of Piers 9 and 10.
  - (F) The channel bottom material around Pier 10 consisted of 1 to 3 foot diameter riprap with sand infilling that allowed up to 8 inches of probe rod penetration.
  - (G) A vertical 1/8 inch wide crack was observed extending from the top of the webwall to the waterline on the west face of Pier 9.
- (A) Overall, the concrete of Piers 9 and 10 was generally smooth and sound with some random minor areas of poor consolidation with 1/4 inch maximum penetration.

### RECOMMENDATIONS

- (A) Monitor the timber debris at Pier 9 and 10, and if found to be increasing in the future, removal operations may become warranted.
- (B) Monitor the footing exposure at Pier 9 during future underwater inspections.
- (C) 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 #: 27549  
Feature Intersected: MISSISSIPPI RIVER; RR  
Facility Carried: 42nd AVE (CAMDEN)  
District: Metro  
County: 027 - Hennepin

#### Bridge Description:

The superstructure consists of a continuous steel girder structure supporting a reinforced concrete deck. The superstructure is supported by eleven reinforced concrete piers and two reinforced concrete abutments, all founded on piles. The piers in the water are numbered 9 and 10 from west to east.

### 2. INSPECTION DATA

Professional Engineer/Team Leader: Garrett R. Owens, P.E.  
Inspection Diver: Garrett R. Owens, P.E.  
Date of Underwater Inspection: 11/10/2016  
Weather Conditions: Sunny, 63°F  
Underwater Visibility (feet): 2.0  
Waterway Velocity (ft/sec): 2.0

### 3. SUBSTRUCTURE INSPECTION DATA

Substructure(s) Inspected: Piers 9 and 10

#### General Shape:

The piers consist of two rectangular columns supporting a hammerhead pier cap. The columns are connected by a concrete webwall and are supported by rectangular concrete footings and seals that are founded on steel piles.

Maximum Water Depth at Substructure(s) Inspected (feet): 11.8

### 4. WATERLINE DATUM

Water Level Reference: The top of the pier wall at the downstream end of Pier 9  
Waterline Elevation (feet): 799.6  
Description: The waterline was approximately 2.9 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 11/2016

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

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	70	LF	70			
220	Reinforced Concrete Footing	40	LF		40		
885	Scour	1	EA	1			

## **UNDERWATER INSPECTION**

### INSPECTION PROCEDURES

The routine underwater inspection of Bridge 27549 (42nd Avenue over the Mississippi River) was completed on November 10, 2016. The underwater inspection was conducted from a 21 ft 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 (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 9 - 10 were founded on reinforced concrete footings supported on piles. 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: 27549      42nd AVE (CAMDEN) over MISSISSIPPI RIVER;  
RR

Date: 02/02/2017

+ GENERAL +	+ ROADWAY +	+ INSPECTION +
Agency Br. No. 4213      Crew	Bridge Match ID (TIS) 0	Userkey 173
District 05      Maint. Area	Roadway O/U Key Route On Structure	Structurally Deficient N
County 027 - Hennepin	Route Sys 05 - MSAS      Number 262	Functionally Obsolete N
City Minneapolis	Roadway Name or Description	Sufficiency Rating 78.4
Township	Camden Bridge	Routine Inspection Date 09/19/2016
Desc. Loc. 0.2 MI E OF LYNDALE AVE	Level of Service 1 - MAINLINE	Routine Inspection Frequency 24
Sect., Twp., Range 3 - 029N - 24W	Roadway Type 2 - 2-way traffic	Inspector Name Owens, Garrett
Latitude 45 ° 1' 56.26 "	Control Section (TH Only)	Status A - Open
Longitude 93 ° 16' 58.76 "	Reference Point 001+00.764	<b>+ NBI      CONDITION      RATINGS +</b>
Custodian 04 - City or Municipal Highway	Detour Length 3.0 mi.	Deck 7      Unsound 0
Owner 04 - City or Municipal Highway	Lanes ON 4      UNDER 0	Superstructure 7      Deck %
BMU Agreement	ADT 15750      YEAR 2013	Substructure 7
Year Built 1975	HCA DT      ADTT %	Channel 7
MN Year Reconstructed	Functional Class 16 - Urban - Minor Arterial	Culvert N
FHWA Year Reconstructed 2010		<b>+ NBI      APPRAISAL      RATINGS +</b>
MN Temporary Status	<b>+ RDWY      DIMENSIONS +</b>	Structure Evaluation 7
Bridge Plan Location 4 - MUNICIPAL	If Divided      NB-EB      SB-WB	Deck Geometry 4
Date Opened to Traffic 1/1/1976	Roadway Width 52.00 ft.      ft.	Underclearances N
On - Off System 1 - ON	Vertical Clearance      ft.      ft.	Waterway Adequacy 8
Legislative District 59A	Max. Vert. Clear.      ft.      ft.	Approach Alignment 8
Potential ABC 2 - N/A	Horizontal Clear. 51.9 ft.      ft.	<b>+ SAFETY      FEATURES +</b>
<b>+ STRUCTURE +</b>	Lateral Clearance      ft.      ft.	Bridge Railing 1 - MEETS STANDARDS
Service On 5 - Highway-pedestrian	Appr. Surface Width 52.0 ft.	GR Transition N - NOT REQUIRED
Service Under 7 - Railroad - waterway	Bridge Roadway Width 52.0 ft.	Appr. Guardrail N - NOT REQUIRED
Main Span Type 4 - Steel Continuous	Median Width On Bridge ft.	GR Termini N - NOT REQUIRED
Main Span Design 01 - Beam Span	<b>+ MISC.      BRIDGE      DATA +</b>	<b>+ IN      DEPTH      INSP. +</b>
Main Span Detail	Structure Flared 0 - No flare	Y/N      Freq      Date
Appr. Span Type	Parallel Structure N - No parallel structure	Frac. Critical
Appr. Span Design	Field Conn. ID 4 - Bolted	Underwater 60      11/10/2016
Appr. Span Detail	Abutment Foundation (Material/Type) 0 - UNKNOWN	Pinned Asbly.
Skew 0	Pier Foundation (Material/Type) 0 - UNKNOWN	Spec. Feat.
Culvert Type	Historic Status 5 - Not eligible	<b>+ WATERWAY +</b>
Barrel Length		Drainage Area (sq. mi.)
Cantilever ID F - Friction Hinge	<b>+ PAINT +</b>	Waterway Opening (sf.) 99999
Number of Spans	Year Painted 2011	Navigation Control 0 - No nav. control on
MAIN: 10      APPR: 0      TOTAL:	Unsound Paint % 0	Pier Protection
Main Span Length 253.0 ft.	Painted Area 199745 sq. ft.	Nav. Clr. (ft.)      Vert. 0.0      Horiz. 0.0
Structure Length 1495.0 ft.	Primer Type Z - Other (Unknown)	Nav. Vert. Lift Bridge Clear. (ft.)
Deck Width (Out-to-Out) 70.0 ft.	Finish Type L - Other (Unknown)	MN Scour Code N - STBL - LIM      Year 1996
Deck Material 1 - Concrete Cast-in-Place	<b>+ BRIDGE      SIGNS +</b>	<b>+ CAPACITY      RATINGS +</b>
Wear Surf Type 4 - Low Slump Concrete	Posted Load 0 - Not Required	Design Load 5 - HS 20
Wear Surf Install Year	Traffic 0 - Not Required	Operating Rating 2 - HS TRUCK      38.8
Wear Course/Fill Depth 0.00 ft.	Horizontal 0 - Not Required	Inventory Rating 2 - HS TRUCK      23.2
Deck Membrane 0 - None	Vertical N - Not Applicable	Posting VEH:      SEMI:      DBL:
Deck Rebars 1 - Epoxy Coated Reinforcing		Rating Date 10/15/2010
Deck Rebars Install Year		Overweight Permit Codes
Structure Area (Out-to-Out) 104657 sq. ft.		A N - N/A      B N - N/A      C N - N/A
Roadway Area (Curb-to-Curb) 77745 sq. ft.		
Sidewalk Width 50A. Lt 6.00 ft.      50B. Rt 6.00 ft.		
Curb Height Lt 0.00 ft.      Rt 0.00 ft.		
Rail Type Lt 22      Rt 22		

**MINNESOTA BRIDGE INSPECTION REPORT**

02/02/2017

**BRIDGE 27549 42nd AVE (CAMDEN) OVER MISSISSIPPI RIVER; RR**

County: Hennepin	Location: 0.2 MI E OF LYNDAL AVE	Length: 1495.0 ft.
City: Minneapolis	Route: 05 - MSAS 262 Ref. Pt.: 001+00.764	Deck Width: 70.0 ft.
Township:	Control Section:	Rdwy. Area/ Pct. Unsnd: 77745 sq. ft. / 0%
Section: 3 Township: 029N Range: 24W Maint. Area:		Paint Area/ Pct. Unsnd: 199745 sq. ft. / 0%
Span Type: 4 - Steel Continuous 2 -	Local Agency Bridge Nbr.: 4213	Culvert: N/A
List: Stringer/Multi-beam or Girder		Postings:
NBI Deck: 7 Super: 7 Sub: 7 Chan: 7 Culv: N		
	Open, Posted, Closed: A - Open	
	MN Scour Code: N - STBL - LIM SCOUR	

Appraisal Ratings - Approach: 8	Waterway: 8	Unofficial Structurally Deficient	N
Required Bridge Signs - Load Posting: 0 - Not Required	Traffic: 0 - Not Required	Unofficial Functionally Obsolete	N
Horizontal: 0 - Not Required	Vertical: N - Not Applicable	Unofficial Sufficiency Rating	78.4

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	11/10/2016	104657 SF	0	104657	0	0
		Routine	09/19/2016	104657 SF	0	104657	0	0
Notes: MANY FULL DEPTH TRANSVERSE AND LONGITUDINAL CRACKS WITH EFFLORESCENCE.								
510 - Wearing Surfaces		Underwater	11/10/2016	77745 SF	0	77745	0	0
		Routine	09/19/2016	77745 SF	0	77745	0	0
Notes: Low Slump Overlay with Epoxy Rebar Notes: THE ROADWAY HAS MANY UNSEALED FINE TO MEDIUM SIZE TRANSVERSE AND LONGITUDINAL CRACKS. THE TOTAL DISTRESSED AREA IS ABOUT 2-10% DECK.								
107	Steel Open Girder/Beam	Underwater	11/10/2016	10154 LF	10144	10	0	0
		Routine	09/19/2016	10154 LF	10144	10	0	0
Notes: [2014] MINOR RUST IN THREE LOCATIONS APPEARS TO BE PLATE SCABS. MINOR RUST SPOTS.								
515 - Steel Protective Coating		Underwater	11/10/2016	199745 SF	199744	0	1	0
		Routine	09/19/2016	199745 SF	199744	0	1	0
Notes: PAINT SYSTEM MINOR PAINT FLAKING.								
205	Reinforced Concrete Column	Underwater	11/10/2016	16 EA	0	16	0	0
		Routine	09/19/2016	16 EA	0	16	0	0
Notes: COLUMNS HAVE MODERATE DETERIORATION. MANY FINE SIZE CRACKS AND SMALL SPALLS. CRACKS AND DELAMINATION.								
210	Reinforced Concrete Pier Wall	Underwater	11/10/2016	70 LF	70	0	0	0
		Routine	09/19/2016	70 LF	70	0	0	0
Notes: PIER 7: ONE SMALL SPALL ON THE WEST AND TWO DELAMINATION AREAS ON THE EAST WITH SPALLS. DRAINAGE SYSTEM ATTACHED TO WEST SIDE. VERTICAL CRACKS. JOINT MATERIAL BETWEEN WALL AND STAIRS MISSING ON BOTH SIDES. 8 WEEP HOLES EAST FACE.								
215	Reinforced Concrete Abutment	Underwater	11/10/2016	114 LF	0	114	0	0
		Routine	09/19/2016	114 LF	0	114	0	0
Notes: [2016] EAST SIDE ONLY. THE STUB ABUTMENT HAS MANY SMALL SIZED FULL HEIGHT CRACKS. THE BACKWALL HAS FINE SIZED RANDOM CRACKS. SOUTH EAST CORNER WOOD FORM STILL INPLACE. TWO - FIVE FOOT RADIUS UTILITY HOLES FILLED WITH BRICKS AND CONCRETE IN BAY 2 AND 5. MINOR DELAMINATION AND SPALLS. Wingwall notes: ONLY ON EAST ABUTMENT. 3' WOOD BOARD NAILED SE WALL. MINOR FINE SIZE RANDOM CRACKS.								
220	Reinforced Concrete Pile Cap/Footing	Underwater	11/10/2016	40 LF	0	40	0	0
		Routine	09/19/2016	92 LF	0	92	0	0
Notes: [2016] FOOTINGS OF PIER 9 & 10 ARE IN THE RIVER. MANY TRANSVERSE FINE SIZE CRACKS. [2016] Underwater Inspection - The top of the footing around the entire perimeter of Pier 9 was exposed with vertical face exposure between 1 foot at the upstream west corner, 4 inches along the downstream face, and a maximum of 2.5 feet along the west face.								

**BRIDGE 27549 42nd AVE (CAMDEN) OVER MISSISSIPPI RIVER; RR**

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	11/10/2016	561 LF	0	561	0	0
		Routine	09/19/2016	561 LF	0	561	0	0
<p>Notes: THE FOURTH PIER CAP HAS ONE FINE SIZE VERTICAL CRACK ON BOTH SIDES OF BOTH COLUMNS. THE CRACK RUNS FROM THE TOP TO 3/4 OF THE WAY DOWN. THE FIFTH PIER CAP HAS A FEW FINE SIZED CRACKS. THE SIXTH PIER CAP HAS A FEW FINE SIZED CRACKS ON THE WEST AND ONE FINE SIZED VERTICAL CRACK ON THE EAST SIDE OF THE CAP. PIER #8 FROM THE WEST: THE CENTER OF THE WEST CAP FACE HAS THREE FINE SIZED HORIZONTAL CRACKS, ONE 3', ONE 5' AND THE OTHER 15'. THE NORTH END OF THE WEST FACE HAS ONE VERTICAL 5' CRACK. PIER #9 FROM THE WEST: THERE IS ONE FULL HEIGHT FINE SIZED CRACK ON BOTH SIDES OF THE CAP AND ONE 10" LONGITUDINAL CRACK ON THE WEST FACE. PIER #10 FROM THE WEST: THERE IS ONE 5' FINE SIZED VERTICAL CRACK ON BOTH SIDES OF THE CAP. PIER #11 FROM THE WEST: THERE IS MINOR GRAFFITI ON THE WEST AND EAST FACE OF THE CAP. THERE IS ONE FINE SIZED VERTICAL CRACK 4' DOWN THE CENTER OF THE CAP. THERE IS ONE FINE SIZED HORIZONTAL CRACK. RUST STAINS. HEAVY RUST STAINS ON ALL CAPS.</p>								
300	Strip Seal Expansion Joint	Underwater	11/10/2016	223 LF	223	0	0	0
		Routine	09/19/2016	223 LF	223	0	0	0
<p>Notes: SAND AND DEBRIS IN JOINT NOT CAUSING ANY PROBLEMS. EAST JOINT FULL OF DIRT AND VEGETATION.</p>								
301	Pourable Joint Seal	Underwater	11/10/2016	70 LF	70	0	0	0
		Routine	09/19/2016	70 LF	70	0	0	0
<p>Notes: THE POURABLE JOINTS ON EAST APPROACH IS SOUND AND INTACT.</p>								
303	Assembly Joint with Seal	Underwater	11/10/2016	140 LF	140	0	0	0
		Routine	09/19/2016	140 LF	140	0	0	0
<p>Notes: SAND AND DEBRIS IN JOINT NOT CAUSING ANY PROBLEMS.</p>								
311	Movable Bearing	Underwater	11/10/2016	28 EA	28	0	0	0
		Routine	09/19/2016	28 EA	28	0	0	0
<p>Notes: THE WEST ABUTMENT (PIER #7) MINOR RUST SPOTS. BOLTS AND WASHERS MINOR RUST AND BEARING PLATE.</p>								
313	Fixed Bearing	Underwater	11/10/2016	14 EA	12	2	0	0
		Routine	09/19/2016	14 EA	12	2	0	0
<p>Notes: MINOR RUST SPOTS. BOLTS, WASHERS AND BEARING PLATE HAVE MINOR RUST. [2014]HEAVY RUST ON BOLTS AT GIRDER #1 &amp; 7.</p>								
321	Reinforced Concrete Approach Slab	Underwater	11/10/2016	1040 SF	1040	0	0	0
		Routine	09/19/2016	1040 SF	1040	0	0	0
<p>Notes: [2016] THE CONCRETE APPROACH ON THE EAST ONLY - ONE LONGITUDINAL CRACKING ALONG POURED JOINT. WEST APPROACH IS MN/DOT'S.</p>								
330	Metal Bridge Railing	Underwater	11/10/2016	3194 LF	3194	0	0	0
		Routine	09/19/2016	3194 LF	3194	0	0	0
<p>Notes: [2014]MINOR RUST SPOTS AT CAP AND BASE. 54" HIGH. [2015] GRAFFITI, PAINT CHIPPING AND PLOW DAMAGE. EYE BOLTS ADDED AT STAIRS, RUSTY.</p>								
515 - Steel Protective Coating		Underwater	11/10/2016	14373 SF	14373	0	0	0
		Routine	09/19/2016	14373 SF	14373	0	0	0
<p>Notes: [2016] RUST MODERATE ON RAILING CAPS. MINOR PAINT CHIPPING AND RUST AT BASE.</p>								
800	Critical Deficiencies or Safety Hazards	Underwater	11/10/2016	1 EA	1	0	0	0
		Routine	09/19/2016	1 EA	1	0	0	0
<p>Notes: NO CRITICAL FINDINGS.</p>								
810	Concrete Decks - Cracking & Sealing	Underwater	11/10/2016	19552 LF	0	19552	0	0
		Routine	09/19/2016	19552 LF	0	19552	0	0
<p>Notes: MANY SEALED AND UNSEALED FINE TO MEDIUM SIZE TRANSVERSE AND LONGITUDINAL CRACKS. [2014]UNSEALED MODERATE SIZE CRACKS AND DENSITY.</p>								

**BRIDGE 27549 42nd AVE (CAMDEN) OVER MISSISSIPPI RIVER; RR**

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	11/10/2016	1 EA	1	0	0	0
		Routine	09/19/2016	1 EA	1	0	0	0
Notes: PLOW STRAPS ON WEST JOINT AT RAILROAD TRACKS. 14 STRAPS.								
850	Steel Hinge Assembly	Underwater	11/10/2016	28 EA	21	7	0	0
		Routine	09/19/2016	28 EA	21	7	0	0
Notes: THE FIRST STEEL HINGES AT PIER #2 ON THE WEST, PITTING. THE REST HAVE NO NOTABLE CORROSION. MINOR PAINT PEELING. [2012]GREASED SLIDE/ASSEMBLIES.								
855	Secondary Members (Superstructure)	Underwater	11/10/2016	1 EA	1	0	0	0
		Routine	09/19/2016	1 EA	1	0	0	0
Notes: DIAPHRAGMS - PORTIONS DAMAGE DURING CONSTRUCTION, MINOR RUST. SWAY BRACING - CONNECTION PLATE AT PIER 3 BETWEEN GIRDER 6 AND 7 HAS A 3" HOLE.								
856	Secondary Members (Substructure)	Underwater	11/10/2016	1 EA	1	0	0	0
		Routine	09/19/2016	1 EA	1	0	0	0
Notes: PIER CRASH STRUT ON PIER 3 AT RAILROAD TRACKS - GOOD.								
883	Concrete Shear Cracking	Underwater	11/10/2016	1 EA	1	0	0	0
		Routine	09/19/2016	1 EA	1	0	0	0
Notes: NO SHEAR CRACKING								
885	Scour	Underwater	11/10/2016	1 EA	1	0	0	0
		Routine	09/19/2016	1 EA	1	0	0	0
Notes: [2012]COLLINS ENGINEERING PERFORMED AN UNDERWATER INSPECTION ON THE BRIDGE. [2013]SOUNDING INSPECTION REPORT FOR DETAILS. NO SCOUR EXISTS. [2015]SOUNDING IN FILE.								
891	Other Bridge Signing	Underwater	11/10/2016	1 EA	1	0	0	0
		Routine	09/19/2016	1 EA	1	0	0	0
Notes: THERE ARE SIX INFORMATIONAL SIGNS ATTACHED TO LIGHT POSTS. ONE HAS MINOR GRAFFITI. CLEARANCE SIGN 8' 6" ON BIKE TRAIL UNDER EAST END. BOTH SIDES OF TRAIL. MISSING OBJECT MARKER NE BARRIER. FOUR "WALK YOUR BIKE ACROSS BRIDGE" SIGN AT SIDEWALK. THERE IS A SPEED LIMIT SIGN (DAMAGED) ON THE NORTH END OF THE NORTH COLUMN OF PIER #10. [2015] "400 FT AHEAD" SIGN BENT.								
892	Slopes & Slope Protection	Underwater	11/10/2016	1 EA	0	1	0	0
		Routine	09/19/2016	1 EA	0	1	0	0
Notes: SLOPE PROTECTION AT PIER 7 WEST BANK AND EAST ABUTMENT AND BANK. THE RIVER ROCK ON THE EAST AND WEST BANK HAVE ROLLED AND EXPOSING THE FELT BY TRAIL.								
894	Deck & Approach Drainage	Underwater	11/10/2016	1 EA	1	0	0	0
		Routine	09/19/2016	1 EA	1	0	0	0
Notes: DECK DRAINS THROUGH DRAINAGE SYSTEM TO A HOLDING POND. [2014]HANGERS ARE RUSTY. WEST GASKET SLIDING OFF THE PIPE.								
895	Sidewalk, Curb, & Median	Underwater	11/10/2016	1 EA	1	0	0	0
		Routine	09/19/2016	1 EA	1	0	0	0
Notes: SIDEWALK: THERE ARE MANY SEALED AND UNSEALED FINE TO MEDIUM SIZED TRANSVERSE CRACKS. THE N.E. APPROACH PANEL HAS A HAND HOLE SUNK AND WATER PONDING. BOTH EAST SIDEWALKS HAVE A LOW AREA THAT IS 20' FROM EAST JOINT. CURB: CAST IN PLACE CONCRETE PARAPET 42". FIVE LARGE GAPS AT JOINTS AT CURB WALL. NORTH PLATE AT PIER 7 HAS TWO BOLTS CAME OFF AND ONE IS LOOSE. MANY FINE SIZE RANDOM CRACKS AND SCRAPE MARKS. RUST STAINS AND SURFACE FINISH FLAKING. [2014]FEW SMALL SPALLS. [2015] PLOW DAMAGE.								
899	Miscellaneous Items	Underwater	11/10/2016	1 EA	0	0	0	1
		Routine	09/19/2016	1 EA	0	0	0	1
Notes: LIGHTING: TWO LIGHTS ON THE NORTH HAVE CAMERAS AND WI-FI. BROADBAND PRO BIRD-X PIGEON SONIC REPELLER INSTALLED ON THE UNDER DECK IN SPAN 4 & 5 AND 3 & 4, WORKING.								

**BRIDGE 27549 42nd AVE (CAMDEN) OVER MISSISSIPPI RIVER; RR**

ELEM NBR	ELEMENT NAME	REPORT TYPE	INSP. DATE	QUANTITY	QTY CS 1	QTY CS 2	QTY CS 3	QTY CS 4
900	Protected Species	Underwater	11/10/2016	1 EA	0	1	0	0
		Routine	09/19/2016	1 EA	0	1	0	0

Notes: SWALLOWS NESTING UNDER BRIDGE.

General Notes: #27549A - BRIDGE OVER I-94 INSPECTED BY MN/DOT. WEST ABUTMENT TO PIER 2.  
 #27549 - PIER 2 TO EAST ABUTMENT INSPECTED BY CITY OF MPLS.  
 NOTE: TWO ORIGINAL PLANS IN 1974 & 1975. PLAN 1 1974 USE FORM PIER 5 (PIER 7 IN PLAN 2) TO EAST ABUTMENT. PLAN 2 1975 USE WEST ABUTMENT TO PIER 7 AND HAS SECTION OF BRIDGE OVER I-94 ADDED.  
 NOTE: FOR ADDITIONAL INFORMATION LOOK IN 'SNOOPER REPORTS', 'UNDER WATER INSPECTION' AND 'SOUNDING REPORTS'  
 AREA UNDER: I-94 SOUTHBOUND RUNS UNDER THE FIRST SPAN FROM THE WEST. PAINTED IN 2009. I-94 NORTHBOUND RUNS UNDER THE SECOND SPAN FROM THE WEST. THE C.P. RR RUNS UNDER THE THIRD SPAN FROM THE WEST. THERE IS ONE MAINLINE TRACK. THE VERTICAL CLEARANCE IS 23.4' AND THE LATERAL CLEARANCE IS 23.7'.  
 NOTE: #9988 PEDESTRIAN RAMP BRIDGE ATTACHED ON WEST BANK. THE STRUCTURE VIBRATES UNDER LOAD.  
 NOTE: 2010 - DECK, SIDEWALK, RAILING, C-I-P CURB RAILING, LIGHTING AND HINGE ASSEMBLY WERE REPLACED. DECK SEAL AND CRACK SEAL.  
 NOTE: 2011 GIRDERS AND RAILING PAINTED. PIER 5 COLUMN HAS 3 SPALLS WERE PATCHED IN 2011.

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 - View of West Shoreline Looking Northwest



Photo 4 - Typical View of Pier 9 Looking Northwest

## Pictures



Photo 5 - Typical View of Pier 10 Looking Northeast

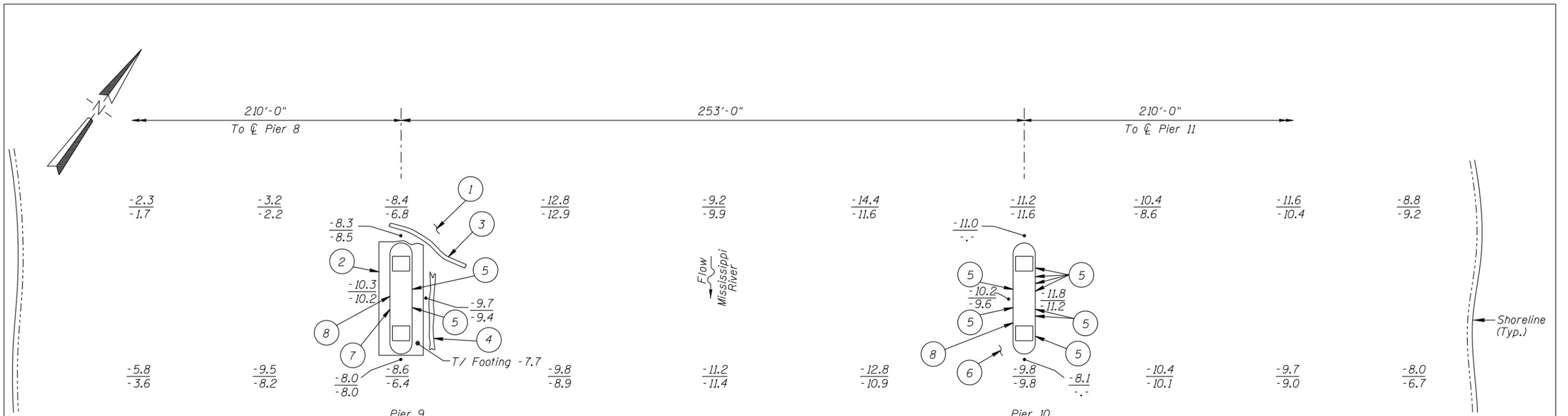


Photo 6 - View of East Shoreline Looking West

## Pictures



Photo 7 - Upstream Elevation Looking South



**SOUNDING PLAN**

**INSPECTION NOTES:**

- 1 The channel bottom material around Pier 9 consisted of riprap up to 1 foot in diameter at the upstream nose and sand infilling around the rest of the pier that allowed up to 1.5 foot of probe rod penetration.
- 2 The top of the footing around the entire perimeter of Pier 9 was exposed with vertical face exposure between 1 foot at the upstream west corner, 4 inches along the downstream face, and a maximum of 2.5 feet along the west face.
- 3 An 18 inch diameter log was observed on the channel bottom at the upstream end of Pier 9.
- 4 Timber debris and a log that was 18 inches in diameter and 30 feet long was observed on the channel bottom along the east face of Pier 9.
- 5 Numerous vertical hairline cracks were observed extending from the top of the webwall to 1 foot below the waterline on both faces of Piers 9 and 10.
- 6 The channel bottom material around Pier 10 consisted of 1 to 3 foot diameter riprap with sand infilling that allowed up to 8 inches of probe rod penetration.
- 7 A vertical 1/8 inch wide crack was observed extending from the top of the webwall to the waterline on the west face of Pier 9.
- 8 Overall, the concrete of Piers 9 and 10 was generally smooth and sound with some random minor areas of poor consolidation with 1/4 inch maximum penetration.

**GENERAL NOTES:**

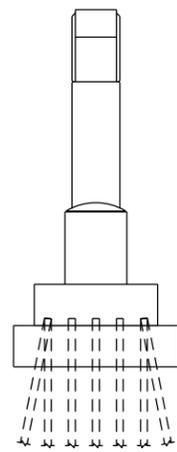
- 1 Piers 9 and 10 were inspected underwater.
- 2 At the time of inspection on November 10, 2016 the waterline was located approximately 2.9 feet below the top of the pier wall at the downstream end of Pier 9. This corresponds with a waterline elevation of 799.6.
- 3 Soundings indicate the water depth at the time of inspection and are measured in feet.
- 4 Soundings were taken parallel to the bridge at 1/4 point intervals between the substructure units.

**Note:**

All soundings based on 2016 waterline location.

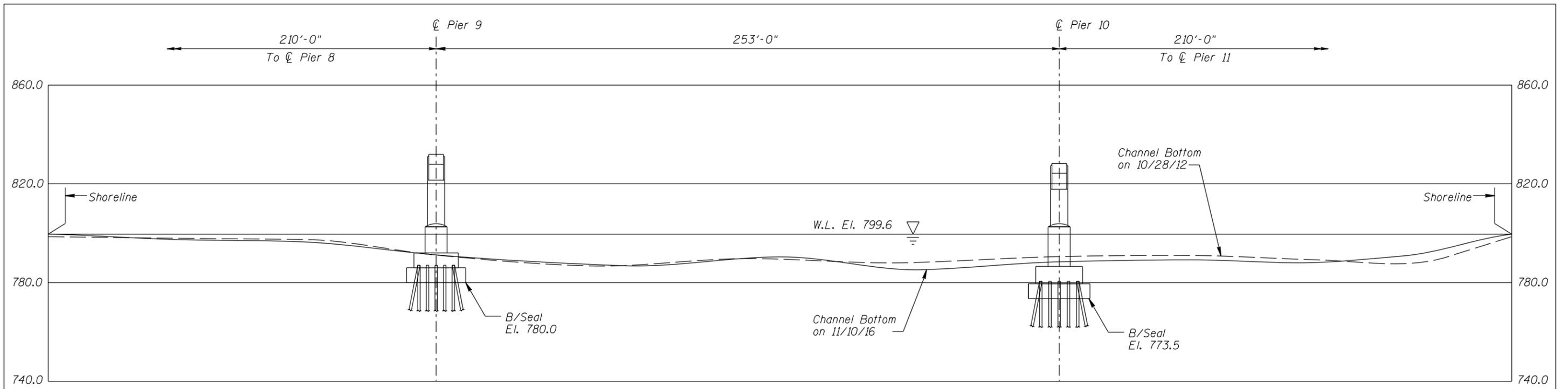
**Legend**

- 6.0 Sounding Depth (11/10/16)
- 6.7 Sounding Depth (10/28/12)
- .- Sounding Depth Not Previously Taken

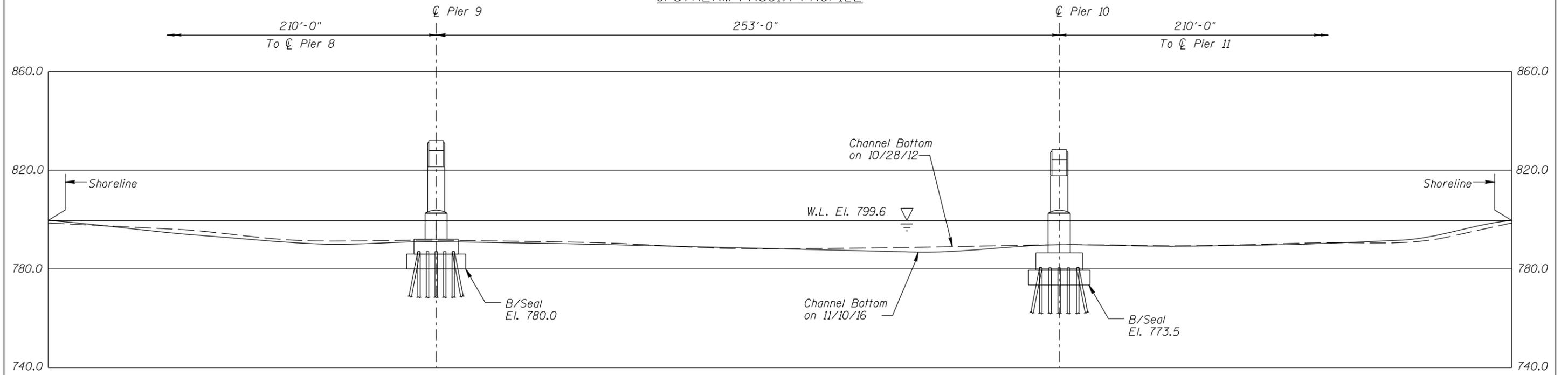


**TYPICAL END VIEW OF PIERS**

<b>MINNESOTA DEPARTMENT OF TRANSPORTATION UNDERWATER BRIDGE INSPECTION</b>		
STRUCTURE NO. 27549 OVER THE MISSISSIPPI RIVER HENNEPIN COUNTY, CITY OF MINNEAPOLIS		
<b>INSPECTION AND SOUNDING PLAN</b>		
Drawn By: GRO	<b>COLLINS ENGINEERS</b>	Date: JAN. 2017
Checked By: CRS	<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

Note:  
Refer to Figure 1 for General Notes.

<b>MINNESOTA DEPARTMENT OF TRANSPORTATION UNDERWATER BRIDGE INSPECTION</b>		
STRUCTURE NO. 27549 OVER THE MISSISSIPPI RIVER HENNEPIN COUNTY, CITY OF MINNEAPOLIS		
<b>UPSTREAM AND DOWNSTREAM FASCIA PROFILES</b>		
Drawn By: GRO	<b>COLLINS ENGINEERS</b> <small>1599 Selby Avenue Suite 206 St. Paul, MN 55104 (651) 646-8502 www.collinsengr.com</small>	Date: JAN. 2017
Checked By: CRS		Scale: 1" = 40'
Project: 63-9687		Figure No.: 2