CONCRETE WEARING COURSE

☐ LOW SLUMP

☐ OTHER 3Y43HFWC (Cemstone)
TYPE OR MANUFACTURER

EXPANSION JOINTS

JOINT MANUFACTURER D.S. Brown

MANUFACTURER'S IDENTIFICATION SSA2
MFR'S No. AND/OR LETTER DESIGNATION FOR JOINT USED

GLAND MANUFACTURER D.S. Brown
NAME AND ADDRESS (CITY, STATE)

SIZE OF GLAND _____

MANUFACTURER'S IDENTIFICATION A2R-400
MFR'S No. AND/OR LETTER DESIGNATION FOR GLAND USED

ELASTOMERIC BEARING PADS

PAD MANUFACTURER PACAL Industries, LLC (Roseville, MN)
NAME AND ADDRESS (CITY, STATE)

SPECIAL SURFACE FINISH

SYSTEM: 2401.3F2C COLOR: 26622 (Pearl Gray)

FINISHING ROADWAY FACES OF BARRIER RAILING

TYPE: Acrolon 218 COLOR: 27038 (Black)

ANTI-GRAFFITI COATING

MANUFACTURER _____
NAME AND ADDRESS (CITY, STATE)

PRODUCT NAME: _____ LOCATION: _____

PAINT SYSTEM

Mn/DOT SPECIFICATION NUMBER 2478
2478 OR 2479 OR OTHER

MANUFACTURER Sherwin Williams (Cleveland, OH)
NAME AND ADDRESS (CITY, STATE)

PRIME COAT _____
Mn/DOT MATERIAL SPECIFICATION NUMBER

INTERMEDIATE COAT Sherwin Williams Macropoxy 646
Mn/DOT MATERIAL SPECIFICATION NUMBER

FINISH COAT 3520, 2478 27038 (Black)
Mn/DOT MATERIAL SPECIFICATION NUMBER COLOR

PLAN QUALITY

RATE 1 (AGREE), 2 (NEUTRAL), OR 3 (DISAGREE, PLEASE COMMENT BELOW)

DIMENSIONING AND DETAILING ADEQUATELY DESCRIBED REQUIRED CONSTRUCTION. _____

BAR LISTS AND QUANTITIES WERE TYPICALLY COMPLETE AND FREE OF ERRORS. _____

SCALE OF DRAWINGS AND OVERALL LEGIBILITY OF LINES AND TEXT WAS GOOD. _____

(SB) SPECIAL PROVISIONS ADEQUATELY DESCRIBED SPECIAL WORK AND PAYMENT. _____

COMMENTS: _____

NUMBER OF BRIDGE SUPPLEMENTAL AGREEMENTS: _____ COST: $ _____

LIST SIGNIFICANT ERRORS OR OMISSIONS IN PLAN DETAILS OR PAY QUANTITIES IN THE SPACE PROVIDED AT RIGHT.

BRIDGE REMOVAL / BRIDGE OPENING

NUMBER OF AND DATE OLD BRIDGE WAS REMOVED (IF APPLICABLE):

BRIDGE NUMBER _____ DATE REMOVED _____

DATE NEW BRIDGE WAS OPENED TO TRAFFIC September 15, 2015

NOTIFY THE BRIDGE OFFICE BRIDGE MANAGEMENT UNIT WITH THIS INFORMATION AS SOON AS POSSIBLE. (651) 366-4557

OTHER ITEMS ①

① UTILITIES ADDED DURING CONSTRUCTION AND SPECIALTY ITEMS.

FINAL QUANTITIES ENTERED ON SCHEDULE OF QUANTITIES: YES ☐ NO ☐

SUMMARY OF SIGNIFICANT AS-BUILT CHANGES

THE AS-BUILT INFORMATION WAS ADDED TO THE PLAN BY:

_____ _____
INSPECTOR(S) SIGNATURE DATE

CHECKED BY: _____ _____
PROJECT ENGINEER/SUPERVISOR SIGNATURE DATE

AT THE TIME OF THE FINAL, THIS COMPLETED AS-BUILT BRIDGE DATA SHEET MUST BE SUBMITTED TO THE BRIDGE OFFICE - ATTN: REGIONAL CONSTRUCTION ENGINEER (MS610).

AS-BUILT DETAILS (AS NEEDED)

REVISION: 10-28-2008
APPROVED: SEPTEMBER 26, 2003
STATE BRIDGE ENGINEER

NO.	DATE	BY	DESCRIPTION OF REVISIONS

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA
SIGNED _____ MATTHEW J. CHRISTENSEN
DATE: 5/8/2013 LIC. NO.: 43076

TKDA
444 Cedar Street, Suite 1500
Saint Paul, MN 55101
651.292.4400
tkda.com

EASTBOUND WARNER ROAD
ST. PAUL, RAMSEY COUNTY, MINNESOTA
S.P. NO. 062-636-006

TITLE: AS-BUILT BRIDGE DATA

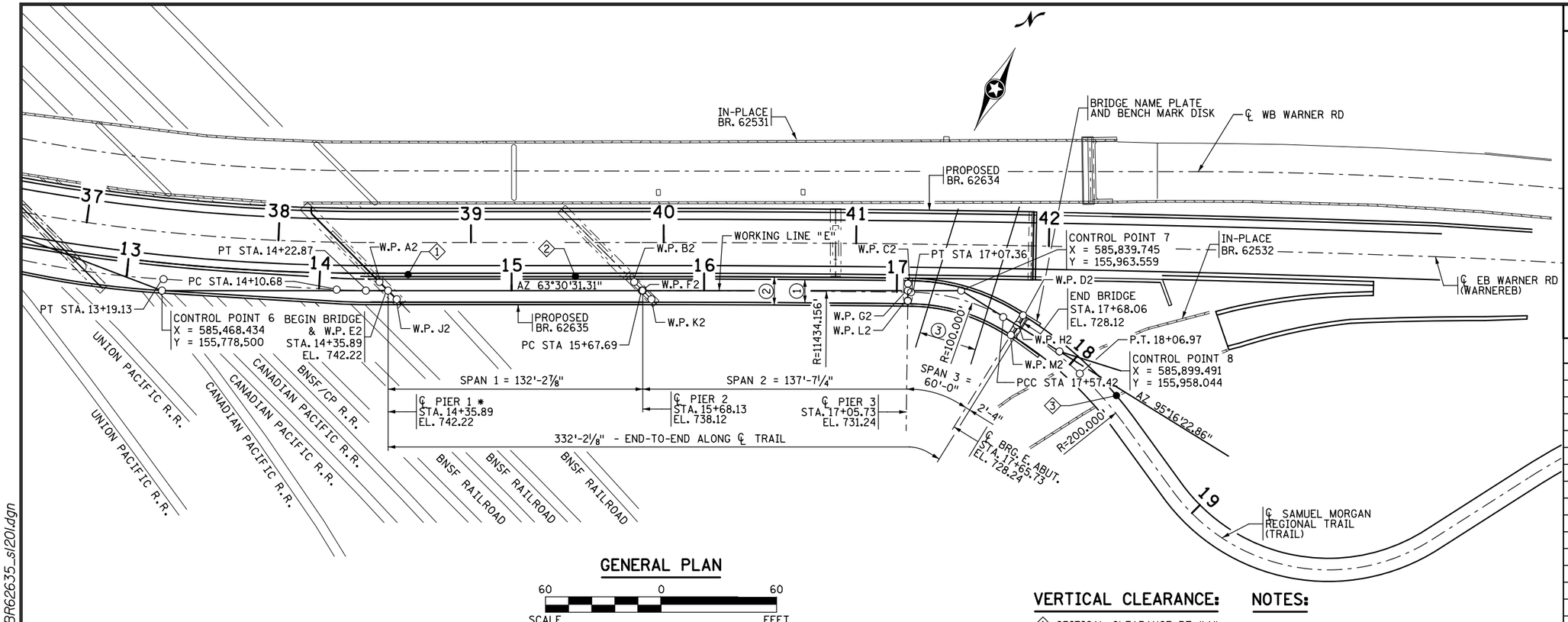
DES: JRM DR: JRM APPROVED
CHK: MJC CHK: MJC

Sheet No. 64 of 77 Sheets

FIG. 5-397.900

Bridge No. 62635

DATE: 5/8/2013 TIME: 10:01:48 AM
FILENAME: K:\Pr-z\Ramsey\City\J511\3000\hwy-brdg\brdg\62635\standard\CBR62635_det05.dgn



GENERAL PLAN

60 0 60
SCALE FEET

VERTICAL CLEARANCE:

1. CRITICAL CLEARANCE PT. "A" 27.35' VERTICAL CLEARANCE. BNSF (BNSF1)
2. CRITICAL CLEARANCE PT. "B" 24.97' VERT. CLR. FOR FUTURE TRACK. ASSUMED SAME PROFILE AS ADJACENT BNSF TRACK.
3. CRITICAL CLEARANCE PT. "B" 10.24' VERTICAL CLEARANCE.

NOTES:

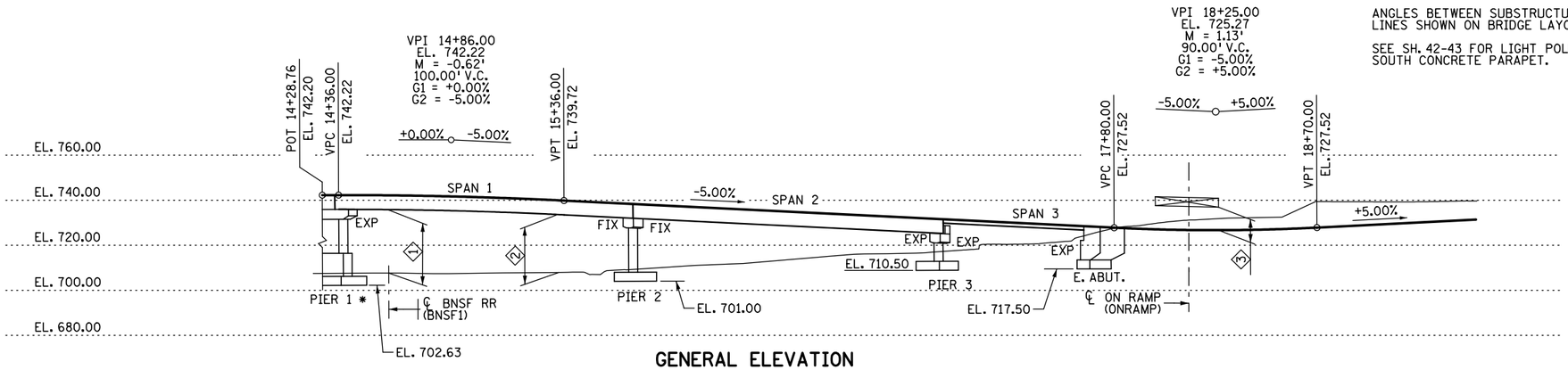
1. 12'-0" CURB-TO-CURB TRAIL WIDTH.
2. 14'-6" OUT-TO-OUT DECK WIDTH.
3. SEE SPECIAL PROVISIONS FOR RESTRICTIONS ON STORING MATERIALS OR DRIVING VEHICLES ACROSS THIS 30' ZONE.

* PIER 1 OF BR. 62635 = PIER 4 OF BR. 62634. REFERRED TO AS PIER 1 THROUGHOUT THE REST OF THIS PLAN.

THE BRIDGE NAMEPLATE AND BENCH MARK DISK SHALL BE PLACED ON THE NORTH SIDE NEAR THE EAST ABUTMENT.

ANGLES BETWEEN SUBSTRUCTURES AND WORKING LINES SHOWN ON BRIDGE LAYOUT SHEET.

SEE SH. 42-43 FOR LIGHT POLE STATIONS FOR SOUTH CONCRETE PARAPET.



GENERAL ELEVATION

60 0 60
SCALE FEET

DESIGN DATA

2012 AASHTO LRFD
BRIDGE DESIGN SPECIFICATIONS AND AASHTO GUIDE SPECIFICATIONS FOR DESIGN OF PEDESTRIAN BRIDGES

LOAD AND RESISTANCE FACTOR DESIGN METHOD

DESIGN LOADING: PEDESTRIAN LOADING 90 PSF W/ NO REDUCTION OR 20,000 POUND VEHICLE LIVE LOAD (H10 TRUCK)

MATERIAL DESIGN PROPERTIES:
REINFORCED CONCRETE:
f'c = 4.0 ksi n = 8
Fy = 60 ksi FOR REINFORCEMENT
PRESTRESSED CONCRETE:
f'c = 9.0 ksi n = 1
fpu = 270 ksi FOR 0.6" DIAMETER LOW RELAXATION STRANDS

DECK AREA = 4,818 SQ. FT.

DESIGN SPEED = 20 MILES PER HOUR

LIST OF SHEETS

TKDA
444 Cedar Street, Suite 1500
Saint Paul, MN 55101
651.292.4400
tkda.com

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SIGNED Matthew J. Christensen DATE 12/19/2016

NAME MATTHEW J. CHRISTENSEN LICENSE 43076

MINNESOTA
DEPARTMENT OF TRANSPORTATION

BRIDGE NO. 62635
GENERAL PLAN AND ELEVATION

SAMUEL MORGAN REGIONAL TRAIL OVER RAILROADS
0.8 MILES S.W. OF JCT. T.H. 61

IDENTIFICATION NO. 501 & 109

SEC. 4 T 28 N R 22 W

ST. PAUL RAMSEY COUNTY

APPROVED _____ RAMSEY COUNTY ENGINEER
DATE _____

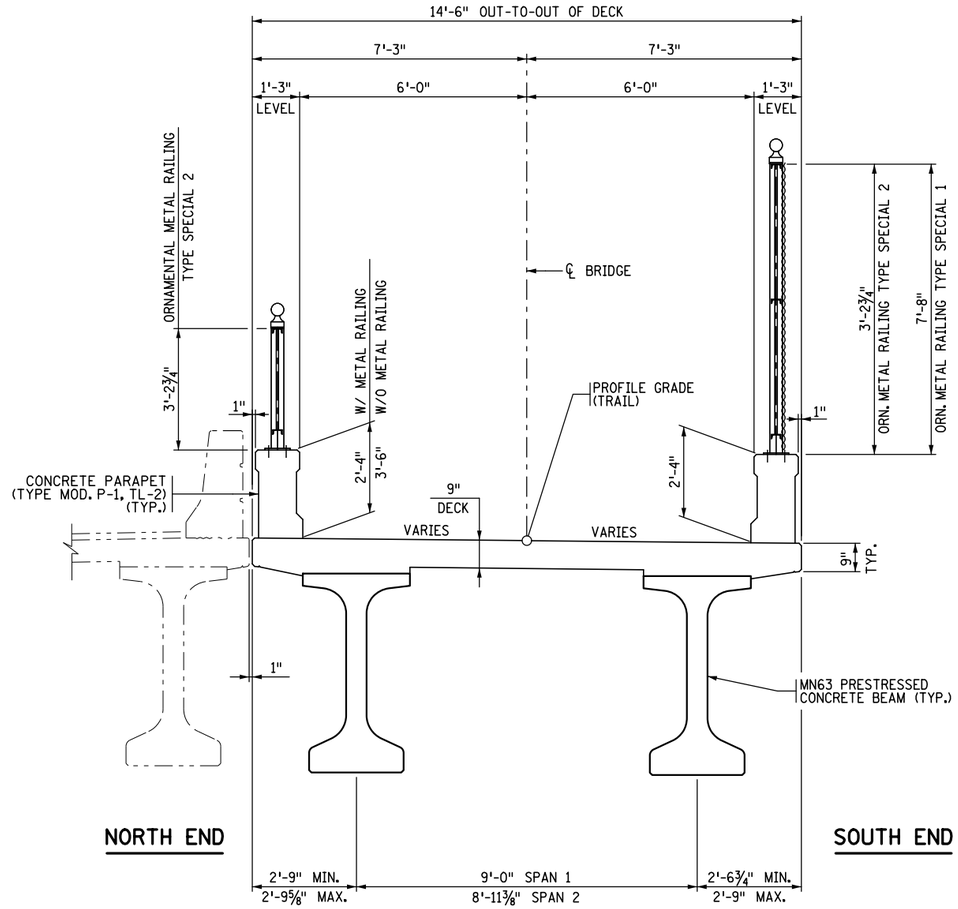
APPROVED _____ STATE BRIDGE ENGINEER
DATE _____

RAMSEY COUNTY
S.P. 062-636-006

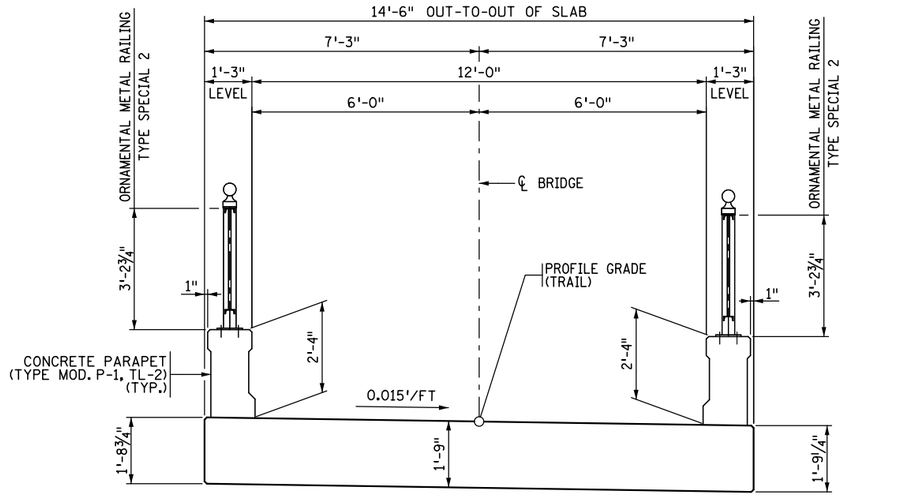
EASTBOUND WARNER ROAD
BRIDGE RECONSTRUCTION

DES: MJC	DR: MPB
CHK: LJL	CHK: LJL

DATE: 12/19/2016 TIME: 9:48:53 AM
FILENAME: K:\nr-z\RamseyCty\5113000\hwy-brdg\brdg\62635\general\CBR62635_sl201.dgn



TYPICAL SECTION SPANS 1 & 2 ①



TYPICAL SECTION SLAB SPAN 3

NOTES:

① CROSS SLOPE VARIES. SEE "SUPERELEVATION PLAN" SHEET FOR DETAILS.

CONSTRUCTION NOTES:

THE 2005 EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR CONSTRUCTION" SHALL GOVERN.

BRIDGE SEAT REINFORCEMENT SHALL BE CAREFULLY PLACED TO AVOID INTERFERENCE WITH DRILLING HOLES FOR ANCHOR RODS. THE BEAMS SHALL BE ERECTED IN FINAL POSITION PRIOR TO DRILLING HOLES FOR AND PLACING ANCHOR RODS.

THE FIRST TWO DIGITS OF EACH BAR MARK INDICATE THE BAR SIZE IN MILLIMETERS. BARS MARKED WITH THE SUFFIX "E" SHALL BE EPOXY COATED IN ACCORDANCE WITH SPEC. 3301.

THE PILE LOADS SHOWN IN THE PLANS AND THE CORRESPONDING NOMINAL PILE BEARING RESISTANCE (R_n) WERE COMPUTED USING LRFD METHODOLOGY. PILE BEARING RESISTANCE DETERMINED IN THE FIELD SHALL INCORPORATE THE METHODS AND/OR FORMULAS DESCRIBED IN THE SPECIAL PROVISIONS.

THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY QUALITY LEVEL D. THIS UTILITY QUALITY LEVEL WAS DETERMINED ACCORDING TO THE GUIDELINES OF CI/ASCE 38-02. ENTITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA."

SCHEDULE OF QUANTITIES FOR ENTIRE BRIDGE NO. 62635

LINE NO.	ITEM NUMBER	ITEM	UNIT	QUANTITY	
C1	2105.609	HAUL & DISPOSE OF CONTAMINATED SOIL	TON	167	(1)
C2	2301.551	BRIDGE APPROACH PANEL	EACH	1	
C3	2401.501	STRUCTURAL CONCRETE (1A43)	CU YD	79	P
C4	2401.501	STRUCTURAL CONCRETE (3Y43)	CU YD	75	P
C5	2401.512	BRIDGE SLAB CONCRETE (3Y43HFWC)	SQ FT	4818	P
C6	2401.513	TYPE MOD P-1 RAILING CONCRETE (3Y46)	LIN FT	730	P
C7	2401.521	STRUCTURE EXCAVATION CLASS R	CU YD	60	
C8	2401.541	REINFORCEMENT BARS	POUND	7410	P
C9	2401.541	REINFORCEMENT BARS (EPOXY COATED)	POUND	56540	P
C10	2401.601	STRUCTURE EXCAVATION	LUMP SUM	1	
C11	2401.601	FOUNDATION PREPARATION PIER 2	LUMP SUM	1	
C12	2401.601	FOUNDATION PREPARATION PIER 3	LUMP SUM	1	
C13	2401.618	REINFORCED SIDEWALK SLAB TYPE 1 (3A42)	SQ FT	269	P
C14	2401.618	REINFORCED SIDEWALK SLAB TYPE 2 (3A42)	SQ FT	223	P
C15	2402.521	STRUCTURAL STEEL (3306)	POUND	777	P
C16	2402.583	ORNAMENTAL METAL RAILING TYPE SPECIAL 1	LIN FT	115	P
C17	2403.583	ORNAMENTAL METAL RAILING TYPE SPECIAL 2	LIN FT	474	P
C18	2402.591	EXPANSION JOINT DEVICES, TYPE 4	LIN FT	28	P
C19	2402.595	BEARING ASSEMBLY	EACH	12	
C20	2402.601	LIFTING FRAME	LUMP SUM	1	
C21	2405.502	PRESTRESSED CONCRETE BEAMS MN63	LIN FT	538	P
C22	2405.511	DIAPHRAGMS FOR TYPE MN63 PREST BEAMS	LIN FT	54	P
C23	2451.601	DEWATERING (BRIDGE 62635)	LUMP SUM	1	
C24	2452.601	MICROPILE MOBILIZATION	LUMP SUM	1	
C25	2452.602	MICROPILES	EACH	17	P
C26	2452.602	MICROPILE PROOF LOAD TEST	EACH	3	P
C27	2502.502	DRAINAGE SYSTEM TYPE (B910)	LUMP SUM	1	
C28	2545.509	CONDUIT SYSTEM (LIGHTING) TYPE 1	LUMP SUM	1	

(1) NON-PARTICIPATING ITEM.

NO.	DATE	BY	DESCRIPTION OF REVISIONS

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SIGNED Matthew J. Christensen MATTHEW J. CHRISTENSEN
DATE: 12/19/2016 LIC. NO.: 43076

TKDA
444 Cedar Street, Suite 1500
Saint Paul, MN 55101
651.292.4400
tkda.com

EASTBOUND WARNER ROAD
ST. PAUL, RAMSEY COUNTY, MINNESOTA
S.P. NO. 062-636-006

TITLE: TYPICAL SECTIONS & SCHEDULE OF QUANTITIES

DES: MJC | DR: MPB | APPROVED
CHK: LJL | CHK: LJL

Sheet No. 2 of 77 Sheets

Bridge No. 62635

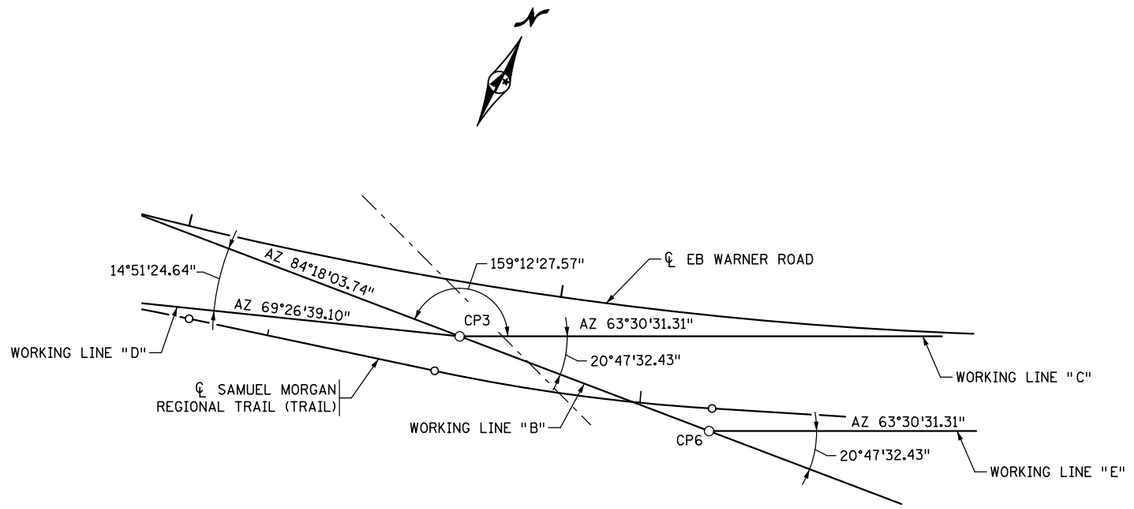
DATE: 12/19/2016 TIME: 9:48:54 AM
FILENAME: K:\nr-z\Ramsey(Cty)\51\3000\hwy-brdg\brdg\62635\general\CBR62635_sl202.dgn

CONTROL POINTS		
POINT	X-COORD.	Y-COORD.
CP1	584,704.344	155,728.670
CP2	584,747.211	155,706.526
CP3	585,398.356	155,771.507
CP4	585,882.041	156,012.571
CP5	584,948.194	155,602.698
CP6	585,468.434	155,778.500
CP7	585,839.745	155,963.559
CP8	585,899.491	155,958.044

NOTES:

CP1, ETC. ..... DENOTES WORKING LINE CONTROL POINTS

SEE ALIGNMENT TABULATIONS FOR INFORMATION ON THE ALIGNMENTS OF EB WARNER ROAD (WARNEREB) AND SAMUEL MORGAN REGIONAL TRAIL (TRAIL).



WORKING LINE DETAILS AT CONTROL POINT 3 (CP3)

WORKING LINE LAYOUT FOR BRIDGES 62634, 62635, & 62636

DATE: 12/9/2016 TIME: 9:48:55 AM
FILENAME: K:\n-z\RamseyCty\51\3000\hwy-brdg\brdg\62635\general\CBR62635_sl203.dgn

NO.	DATE	BY	DESCRIPTION OF REVISIONS

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SIGNED _____ MATTHEW J. CHRISTENSEN

DATE: 12/9/2016 LIC. NO.: 43076

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651.292.4400
tkda.com

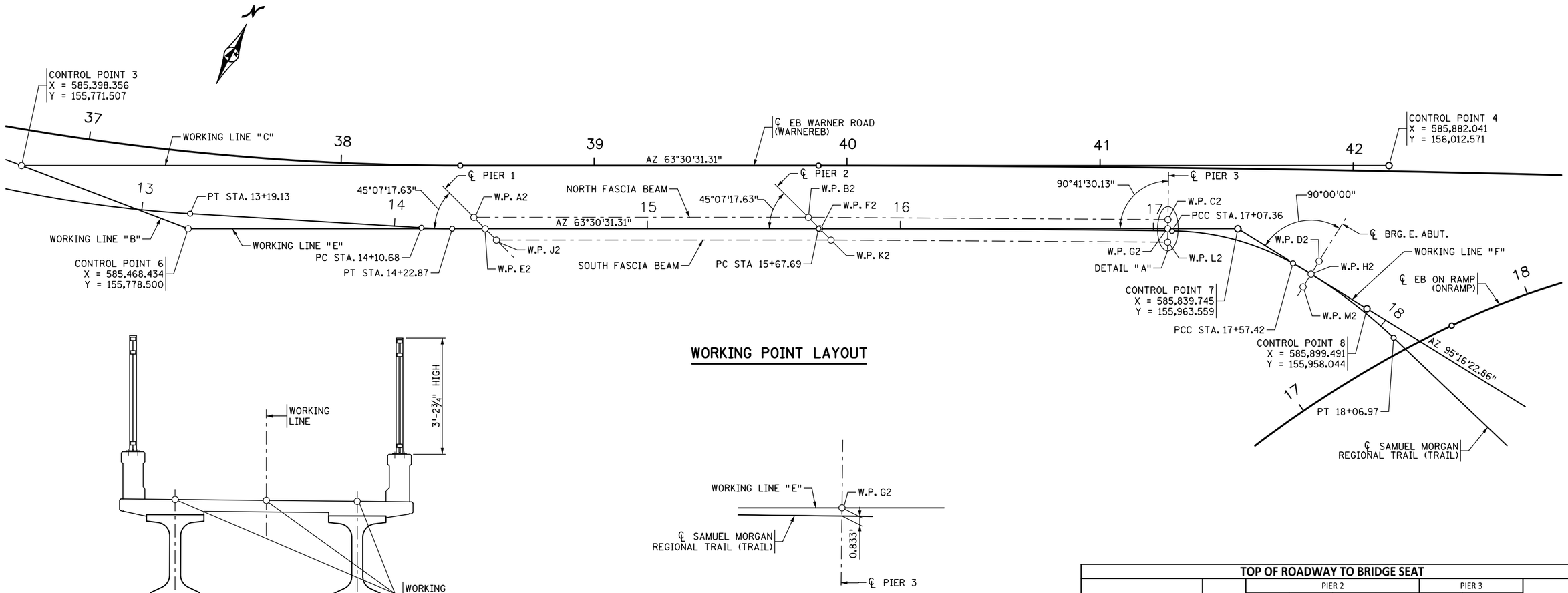
EASTBOUND WARNER ROAD
ST. PAUL, RAMSEY COUNTY, MINNESOTA
S.P. NO. 062-636-006

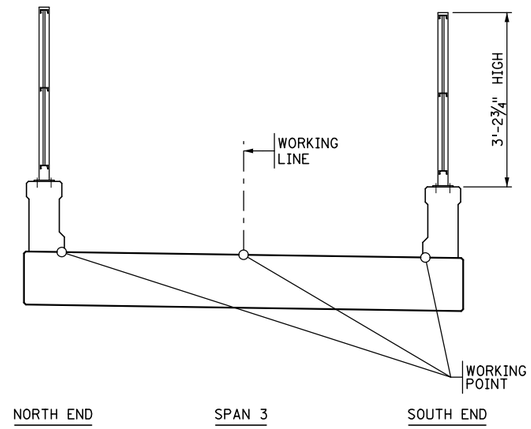
TITLE: WORKING LINE LAYOUT

DES: MJC	DR: MAV	APPROVED
CHK: LJL	CHK: LJL	

Sheet No. 3 of 77 Sheets

Bridge No. 62635





WORKING POINT LOCATIONS

WORKING POINT LAYOUT

DETAIL "A"

TOP OF ROADWAY TO BRIDGE SEAT

	PIER 1	PIER 2				PIER 3		E. ABUT.
		SPAN 1 - BM 1-1	SPAN 1 - BM 1-2	SPAN 2 - BM 2-1	SPAN 2 - BM 2-2	SPAN 2	SPAN 3	
SLAB THICKNESS	9"	9"	9"	9"	9"	9"	21"	21"
STOOL HEIGHT	1.875"	3"	5"	2"	4"	4.75"	9.19" (1)	9.19" (1)
BEAM HEIGHT	63"	63"	63"	63"	63"	63"	-	-
BEARING ASSEMBLY HEIGHT	5.25"	3.25"	3.25"	3.25"	3.25"	5.25"	4.625"	4.625"
TOTAL (INCHES)	79.13	78.25	80.25	77.25	79.25	82.00	34.82	34.82
TOTAL (FEET)	6.59	6.52	6.69	6.44	6.60	6.83	2.90	2.90

(1) SLAB THICKENING AT END BEARINGS.

DIMENSIONS BETWEEN WORKING POINTS

POINT	STATION	X-COORD.	Y-COORD.	A2	B2	C2	D2	E2	F2	G2	H2	J2	K2	L2	M2
A2	14+31.41	585,567.469	155,832.886		132.24			6.35	136.79				141.49	274.44	
B2	15+63.65	585,685.823	155,891.873			142.14			6.35	142.16		123.60		142.36	197.48
C2	17+05.73	585,813.425	155,954.484				61.96			3.62	60.54	265.53	133.42		59.70
D2	17+65.73	585,874.224	155,966.402								6.00		193.08	60.31	
E2	14+35.89	585,573.487	155,830.858						132.24			6.35	136.79		
F2	15+68.13	585,691.841	155,889.844							137.61			6.35	137.65	
G2	17+05.73	585,815.001	155,951.226								59.39			5.33	58.21
H2	17+65.73	585,873.672	155,960.427												6.00
J2	14+40.37	585,579.505	155,828.829										132.24		
K2	15+72.61	585,697.859	155,887.815											133.06	
L2	17+05.73	585,817.318	155,946.431												56.38
M2	17+65.73	585,873.121	155,954.453												

ELEVATIONS

TOP OF ROADWAY	TOP/DECK TO BR. SEAT	BRIDGE SEAT	POINT
742.14	6.59	735.55	A2
738.41	6.48	731.93	B2
731.30	6.83	724.47	C2
728.33	2.90	725.43	D2
742.22			E2
738.12			F2
731.25			G2
728.24			H2
742.29	6.59	735.70	J2
737.83	6.65	731.18	K2
731.17	6.83	724.34	L2
728.15	2.90	725.25	M2

DATE: 12/19/2016 TIME: 9:48:56 AM
FILENAME: K:\nr-v\RamseyCty\51i\3000\hwy-brdg\brdg\62635\general\CBR62635_si204.dgn

NO.	DATE	BY	DESCRIPTION OF REVISIONS

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SIGNED Matthew J. Christensen MATTHEW J. CHRISTENSEN
DATE: 12/19/2016 LIC. NO.: 43076

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EASTBOUND WARNER ROAD
ST. PAUL, RAMSEY COUNTY, MINNESOTA
S.P. NO. 062-636-006

TITLE: BRIDGE LAYOUT

DES: MJC | DR: LJL | APPROVED
CHK: ROC | CHK: ROC

Sheet No. 4 of 77 Sheets

Bridge No. 62635

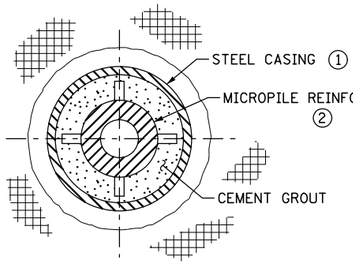
MICROPILE DETAILS

LOCATION	NUMBER EACH	① STEEL CASING SIZE	② MICROPILE REINFORCING SIZE	③ GROUTED BOND ZONE DIA. (IN)	FACTORED DESIGN LOAD (TONS)	REQ'D NOM. BEARING CAPACITY (TONS)	④ BOTTOM FOOTING ELEVATION	⑤ TOP BEDROCK ELEVATION	⑥ CASED LENGTH (FT)	⑦ GROUTED BOND LENGTH (FT)	⑧ PLUNGE LENGTH (FT)	⑨ FOOTING EMBEDMENT LENGTH (FT)	⑩ TOTAL MICROPILE LENGTH (FT)	NOTES
BR. 62634 PIER 3	26	7 5/8" DIA. W/ 0.43" WALL THICKNESS	USE 75KSI THREADED BAR WITH MIN. AREA OF 6.82 SQ. IN.	7.625	125	178	698.86	646.00	52.86	15.00	1.00	1.00	69.00	
BR. 62634 PIER 4	25	NO CASING	USE 75KSI THREADED BAR WITH MIN. AREA OF 9.81 SQ. IN.	7.625	147	211	702.63	705.00	0.00	20.00	0.00	1.00	21.00	ROCK EXCAVATION NO CASING USED
BR. 62634 PIER 6	12	7 5/8" DIA. W/ 0.43" WALL THICKNESS	USE 75KSI THREADED BAR WITH MIN. AREA OF 9.81 SQ. IN.	7.625	154	220	707.50	701.70	5.80	23.00	1.00	1.00	30.00	
BR. 62634 EAST ABUTMENT	19	7 5/8" DIA. W/ 0.43" WALL THICKNESS	USE 75KSI THREADED BAR WITH MIN. AREA OF 6.82 SQ. IN.	7.625	99	141	719.00	700.00	19.00	17.00	1.00	1.00	37.00	
BR. 62634 NE RETAINING WALL	4	7 5/8" DIA. W/ 0.43" WALL THICKNESS	USE 75KSI THREADED BAR WITH MIN. AREA OF 6.82 SQ. IN.	7.625	83	118	728.83	700.00	28.83	16.00	1.00	1.00	46.00	
BR. 62634 SE RETAINING WALL	6	7 5/8" DIA. W/ 0.43" WALL THICKNESS	USE 75KSI THREADED BAR WITH MIN. AREA OF 6.82 SQ. IN.	7.625	101	144	724.17	700.00	24.17	18.00	1.00	1.00	44.00	16' TALL WALL SEGMENT
	4						730.67		30.67				50.00	10' TALL WALL SEGMENT
BR. 62635 PIER 2	6	NO CASING	USE 75KSI THREADED BAR WITH MIN. AREA OF 6.82 SQ. IN.	7.625	137	196	701.00	704.00	0.00	18.00	0.00	1.00	19.00	ROCK EXCAVATION NO CASING USED
BR. 62635 PIER 3	6	7 5/8" DIA. W/ 0.43" WALL THICKNESS	USE 75KSI THREADED BAR WITH MIN. AREA OF 9.81 SQ. IN.	7.625	110	157	710.50	706.80	3.70	19.00	0.00	1.00	24.00	NO CASING USED
BR. 62635 EAST ABUTMENT	5	7 5/8" DIA. W/ 0.43" WALL THICKNESS	USE 75KSI THREADED BAR WITH MIN. AREA OF 6.82 SQ. IN.	7.625	88	126	717.50	704.50	13.00	17.00	1.00	1.00	31.00	

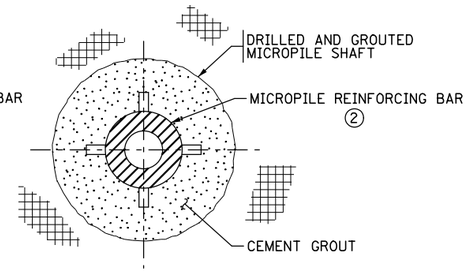
1

NOTES:

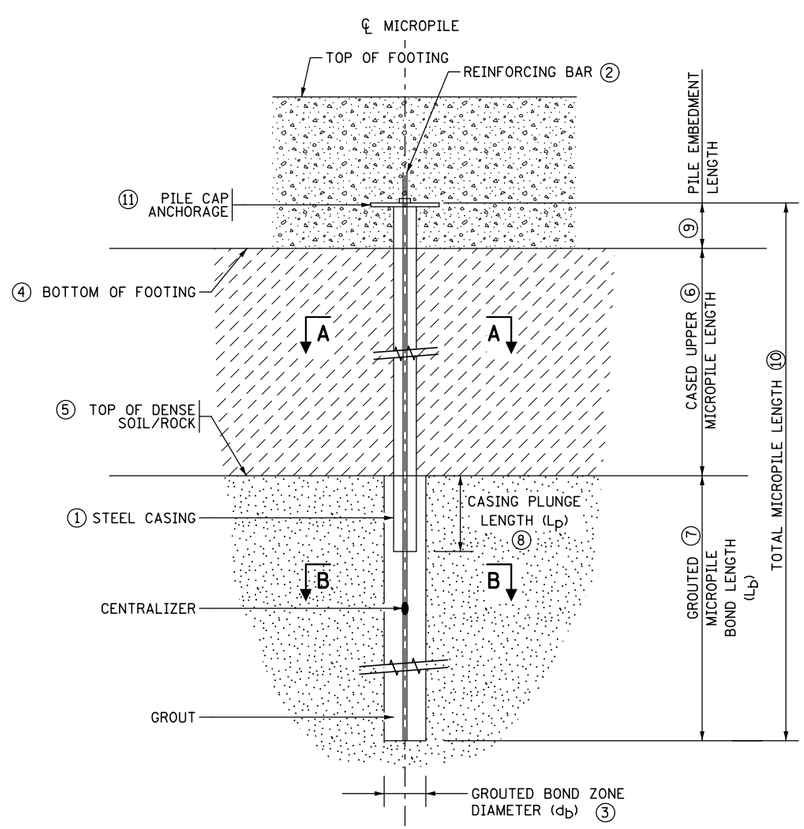
⑪ PILE CAP ANCHORAGE TO BE DESIGNED BY CONTRACTOR TO SUPPORT CAPACITY OF MICROPILE.



SECTION A-A



SECTION B-B



TYPICAL DETAIL OF COMPOSITE REINFORCED MICROPILE

DATE: 12/19/2016 TIME: 9:46:58 AM
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NO.	DATE	BY	DESCRIPTION OF REVISIONS
⚠	9/30/13	MAV	CHANGE TO MICROPILE BAR

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA
SIGNED _____ MATTHEW J. CHRISTENSEN
DATE: 12/19/2016 LIC. NO.: 43076

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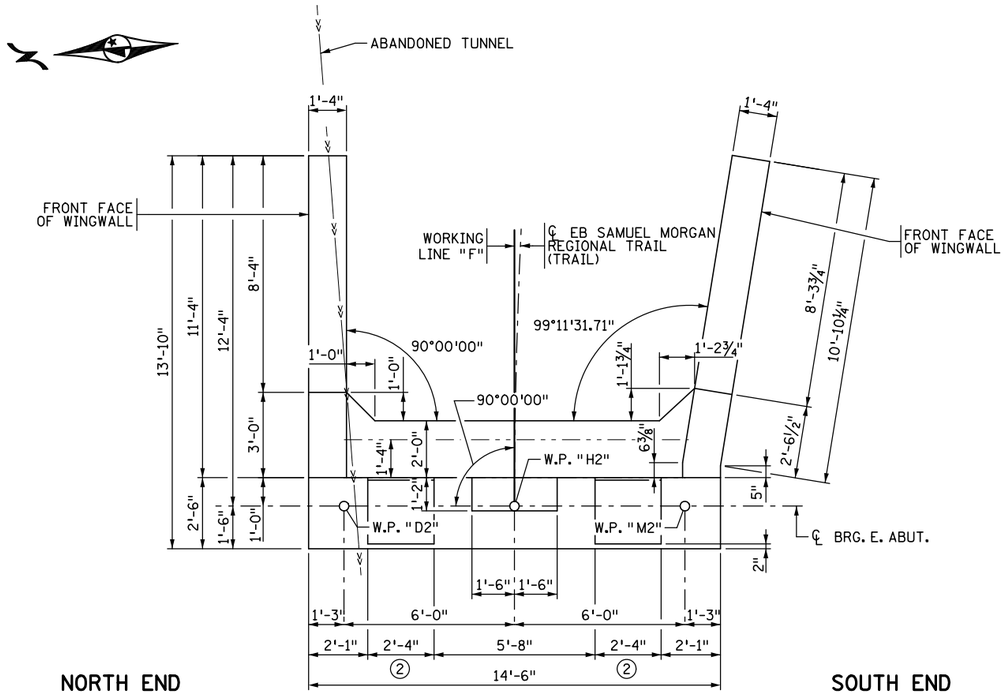
Saint Paul, MN 55101
651.292.4400
tkda.com

EASTBOUND WARNER ROAD
ST. PAUL, RAMSEY COUNTY, MINNESOTA
S.P. NO. 062-636-006

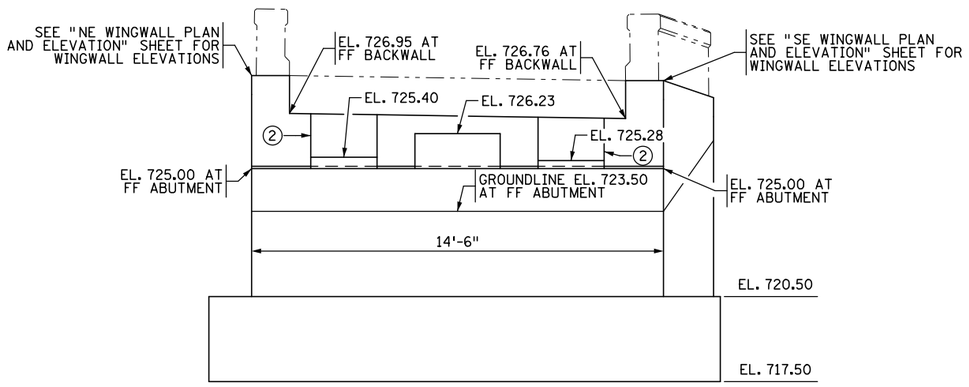
TITLE: MICROPILE DETAILS

DES: MAV | DR: MAV | APPROVED
CHK: MJC | CHK: MJC
Sheet No. 5 of 77 Sheets

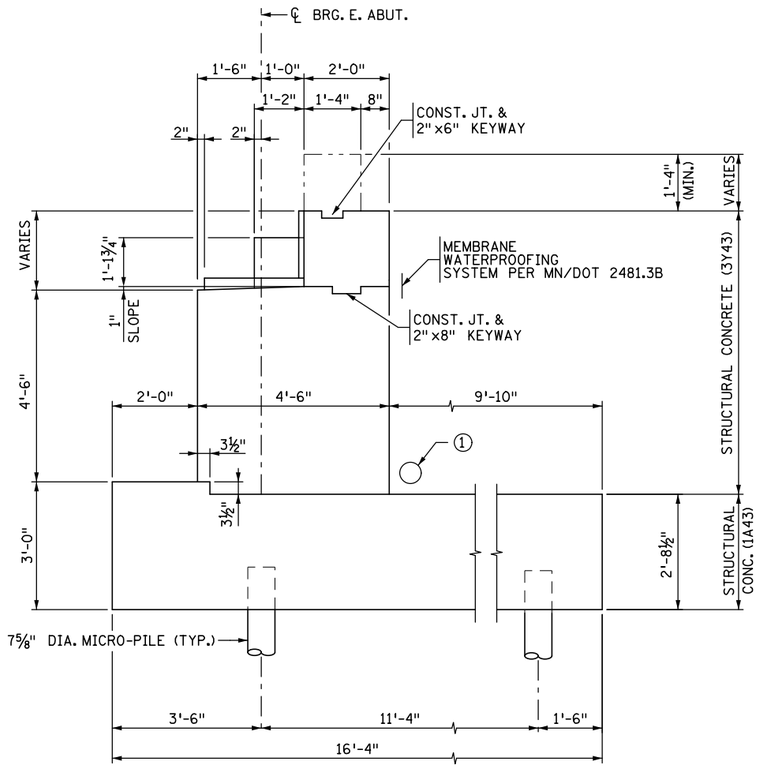
Bridge No. 62635



EAST ABUTMENT PLAN



EAST ABUTMENT ELEVATION



TYPICAL SECTION

NOTES:

① DRAINAGE SYSTEM. SEE DETAIL B910.

② POUR 1½" CONCRETE SPACER BLOCK ON BACKWALL OF EAST ABUTMENT TO MATCH PEDESTALS. (POUR MONOLITHICALLY WITH BACKWALL.)

VERIFY TOP ELEVATION OF ABANDONED TUNNEL. CONDITION AND LOAD CAPACITY OF TUNNEL ARE UNKNOWN. ANY DEWATERING WILL BE INCLUDED IN THE LUMP SUM PRICE OF "DEWATERING (BRIDGE 62635)."

DATE: 12/19/2016 TIME: 9:48:59 AM
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NO.	DATE	BY	DESCRIPTION OF REVISIONS

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DATE: 12/19/2016 LIC. NO.: 43076

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EASTBOUND WARNER ROAD
ST. PAUL, RAMSEY COUNTY, MINNESOTA
S.P. NO. 062-636-006

TITLE: EAST ABUTMENT PLAN & ELEVATION

DES: MAV	DR: MAV	APPROVED
CHK: MJC	CHK: ROC	

Sheet No. 6 of 77 Sheets

Bridge No. 62635

PILE NOTES:

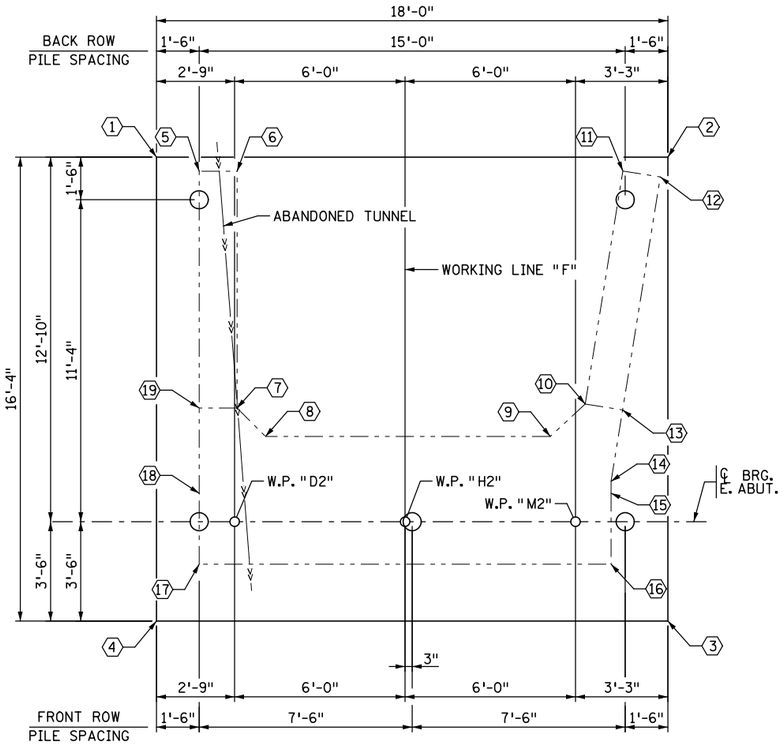
PILE SPACING SHOWN IS AT BOTTOM OF FOOTING.

ALL PILES ARE 7⅝" DIAMETER MICROPILES.

1 PROOF TEST
5 MICROPILES REQUIRED FOR EAST ABUTMENT.

SEE "MICROPILE DETAILS" SHEET
AND GEOTECHNICAL REPORT FOR
MORE INFORMATION.

PILE THAT WILL BE PROOF TESTED
WILL BE COORDINATED BY THE
ENGINEER AND THE CONTRACTOR.



EAST ABUTMENT FOOTING PLAN

FOOTING COORDINATES		
POINT	X	Y
⟨1⟩	585,887.255	155,967.961
⟨2⟩	585,885.601	155,950.037
⟨3⟩	585,869.337	155,951.538
⟨4⟩	585,870.991	155,969.462

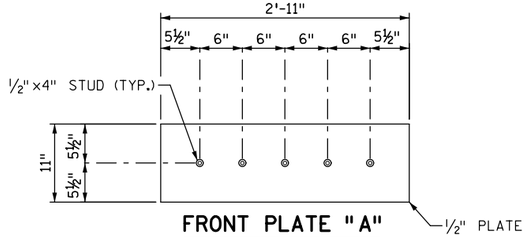
STEM COORDINATES		
POINT	X	Y
⟨5⟩	585,886.620	155,966.514
⟨6⟩	585,886.497	155,965.186
⟨7⟩	585,878.199	155,966.952
⟨8⟩	585,877.111	155,965.048
⟨9⟩	585,876.190	155,955.066
⟨10⟩	585,877.217	155,953.733
⟨11⟩	585,885.262	155,951.658
⟨12⟩	585,884.929	155,950.367
⟨13⟩	585,876.884	155,952.442
⟨14⟩	585,874.420	155,953.078
⟨15⟩	585,874.002	155,953.116
⟨16⟩	585,871.512	155,953.346
⟨17⟩	585,872.845	155,967.785
⟨18⟩	585,875.334	155,967.555
⟨19⟩	585,878.322	155,967.280

EAST ABUTMENT COMPUTED PILE LOAD - TONS/PILE	
FACTORED DEAD LOAD	63
FACTORED LIVE LOAD	25
* FACTORED DESIGN LOAD	88

* BASED ON STRENGTH I LOAD COMBINATION.

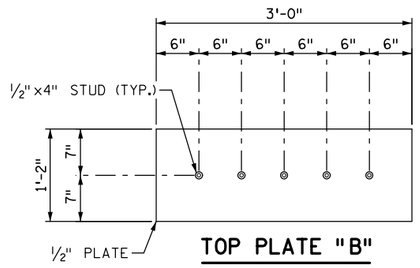
EAST ABUTMENT REQUIRED NOMINAL MICROPILE BEARING RESISTANCE R_n - TONS/PILE		
	ϕ_{stat}	$*R_n$
PROOF TEST	0.7	126

$*R_n$ = (FACTORED DESIGN LOAD) / ϕ_{stat}



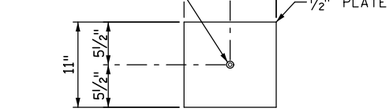
FRONT PLATE "A"

(1 THUS)
(WEIGHT = 56 LBS. EACH)



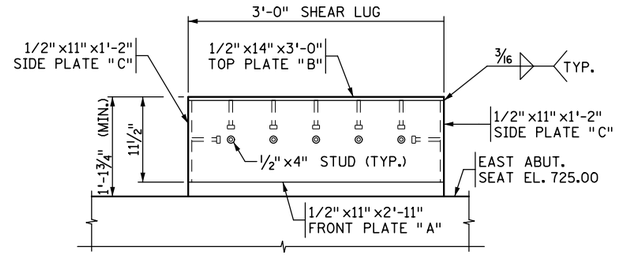
TOP PLATE "B"

(1 THUS)
(WEIGHT = 73 LBS. EACH)



SIDE PLATE "C"

(2 THUS)
(WEIGHT = 23 LBS. EACH)



TRANSVERSE SECTION

NOTES:

STRUCTURAL STEEL ARMOR PLATES SHALL COMPLY WITH Mn/DOT SPEC 3306.

GALVANIZE STEEL ARMOR PLATES PER Mn/DOT SPEC 3394 AFTER FABRICATION.

STEEL ARMOR PLATES TO BE INCLUDED IN PRICE BID FOR STRUCTURAL STEEL (3306).

SHEAR LUG ARMOR PLATE DETAILS

(SEE SHEET 9 FOR SHEAR LUG DETAILS)

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EASTBOUND WARNER ROAD
ST. PAUL, RAMSEY COUNTY, MINNESOTA
S.P. NO. 062-636-006

TITLE: EAST ABUTMENT FOOTING PLAN

DES: MAV	DR: MAV	APPROVED
CHK: MJC	CHK: ROC	

Sheet No. 7 of 77 Sheets

Bridge No. 62635

DATE: 12/19/2016 TIME: 9:49:00 AM
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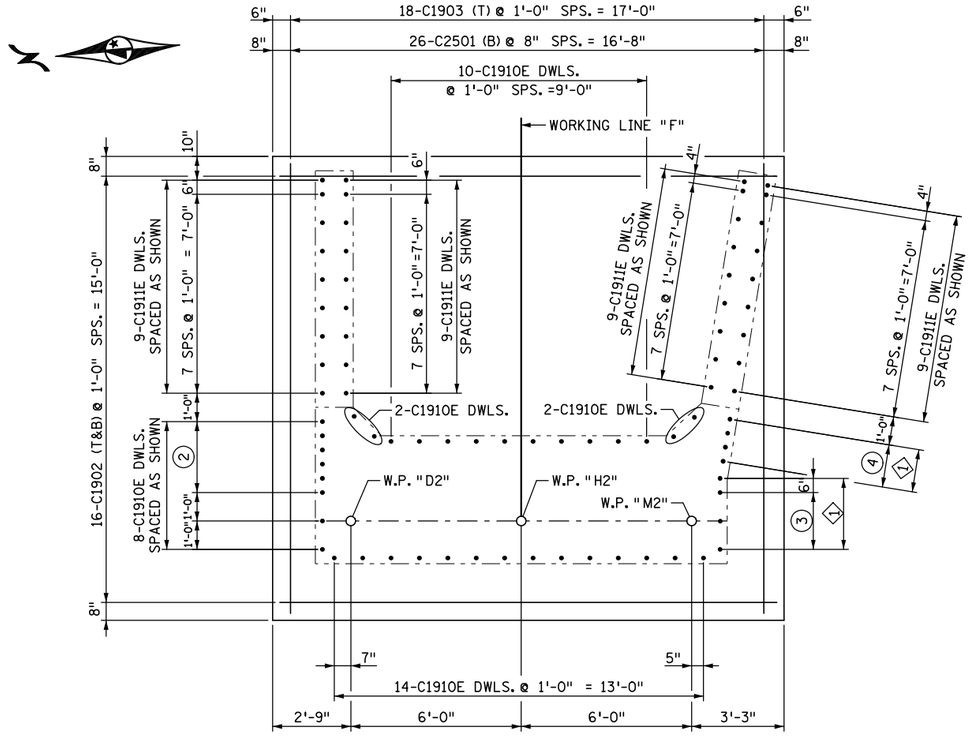
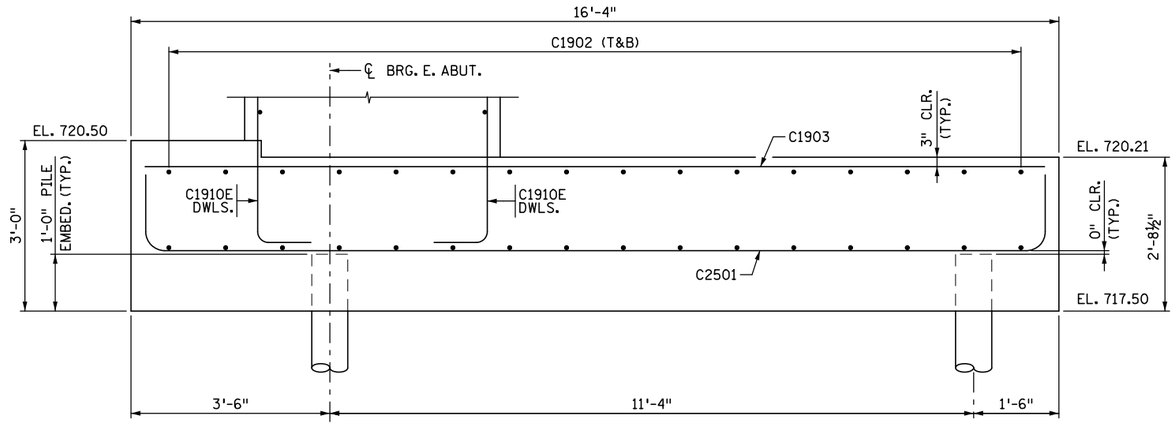


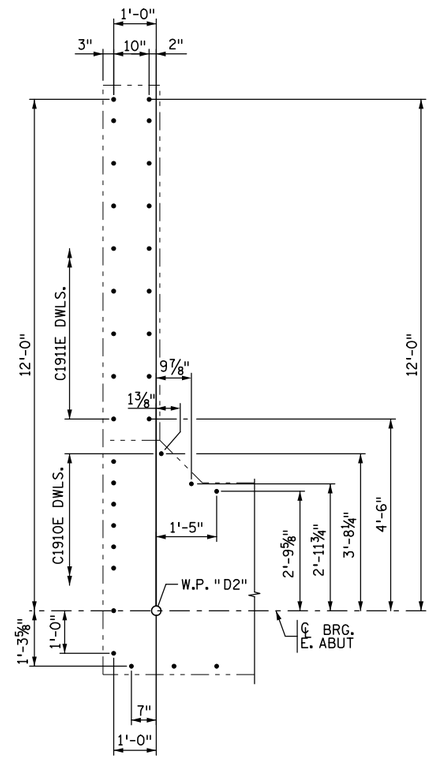
NORTH

EAST ABUTMENT FOOTING REINFORCEMENT ①

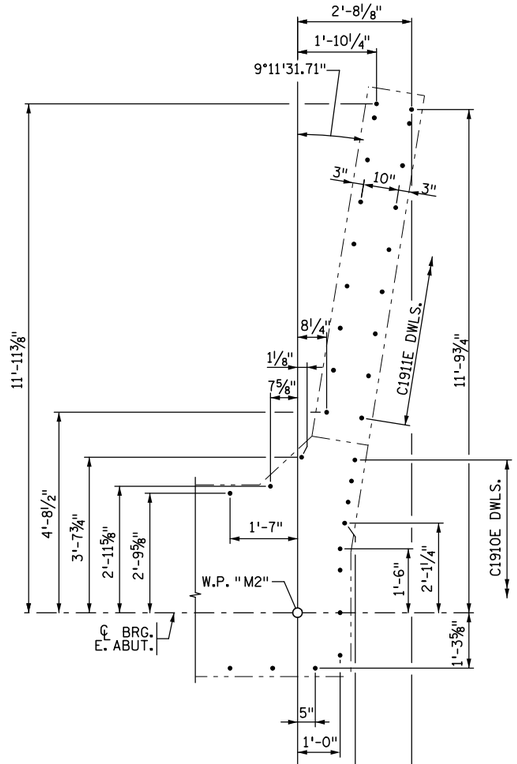
SOUTH



TYPICAL SECTION



NORTHEAST CORNER DETAIL



SOUTHEAST CORNER DETAIL

BAR CALL-OUTS:

① 4-C1910E DWLS. SPACED AS SHOWN

NOTES:

① TRANS. AND LONG. FOOTING REINF. SHALL BE ADJUSTED TO AVOID ABUTMENT STEM DOWEL BARS.

② 5 SPS. @ 6" = 2'-6"

③ 2 SPS. @ 1'-0" = 2'-0"

④ 3 SPS. @ 6" = 1'-6"

DATE: 12/19/2016 TIME: 9:49:00 AM
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SIGNED Matthew V. Christensen MATTHEW J. CHRISTENSEN
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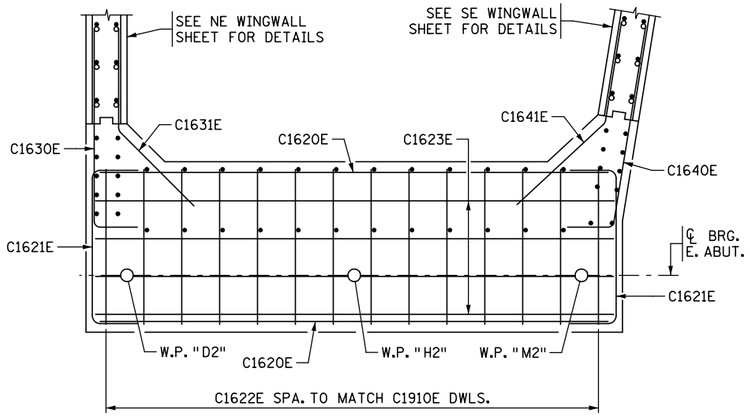
EASTBOUND WARNER ROAD
ST. PAUL, RAMSEY COUNTY, MINNESOTA
S.P. NO. 062-636-006

TITLE: EAST ABUTMENT FOOTING REINFORCEMENT

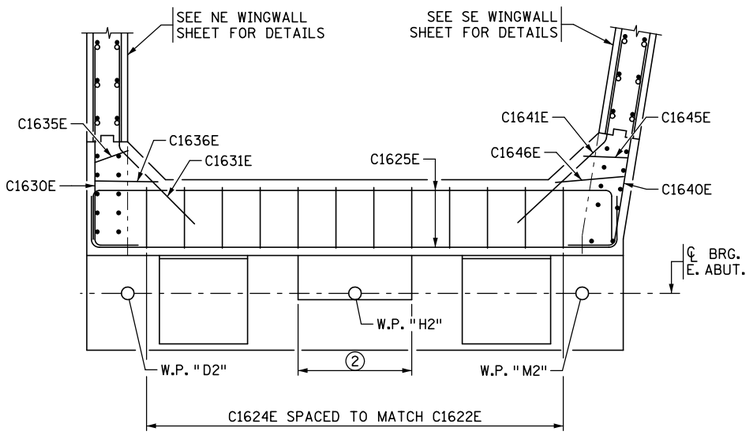
DES: MAV	DR: MAV	APPROVED
CHK: MJC	CHK: ROC	

Sheet No. 8 of 77 Sheets

Bridge No. 62635



SECTION A-A



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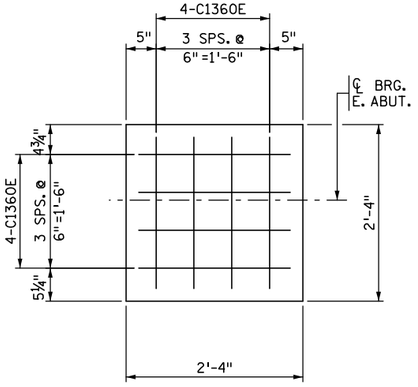
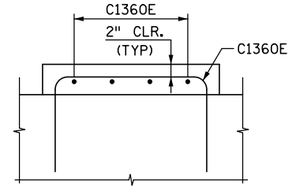


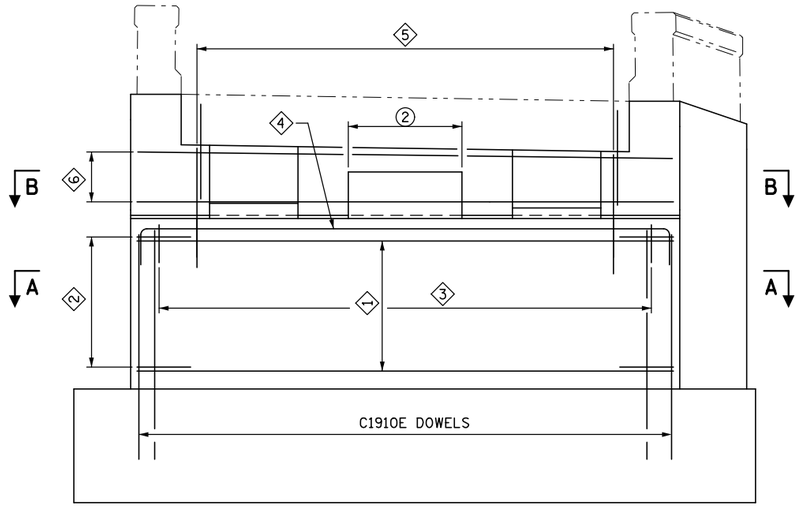
PLAN



ELEVATION

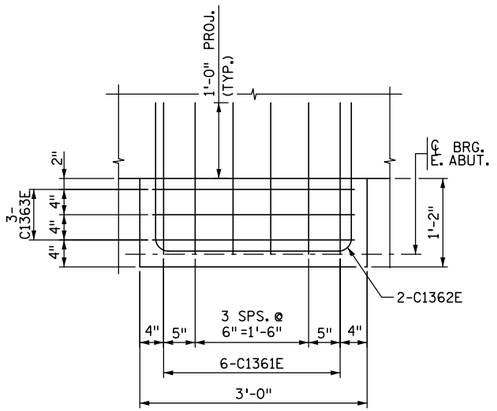
PEDESTAL REINFORCEMENT

(2 THUS)

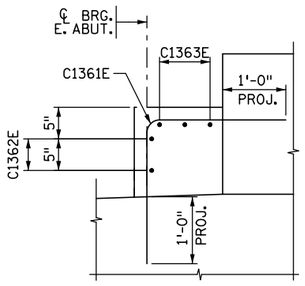


EAST ABUTMENT REINFORCEMENT

(PILE AND FOOTING REINFORCEMENT NOT SHOWN FOR CLARITY)



PLAN



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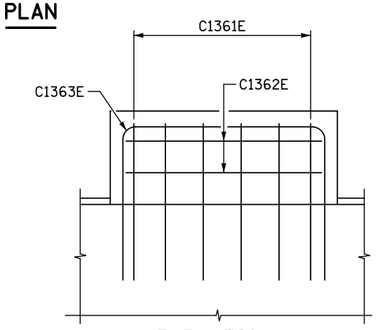
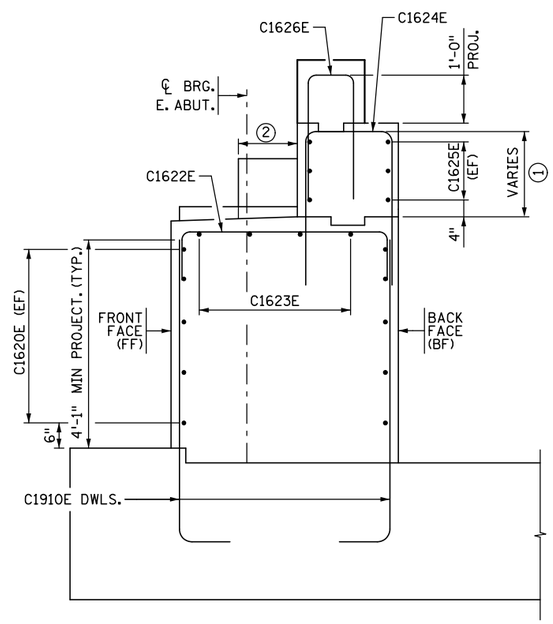


ELEVATION

SHEAR KEY REINFORCEMENT



TYPICAL SECTION

(PILE AND FOOTING REINFORCEMENT NOT SHOWN FOR CLARITY)

BAR CALL-OUTS

1. 5-C1620E (EF) @ 1'-0" MAX. SPS.
2. 5-C1621E (EF) SPACED TO MATCH ENDS OF C1620E BARS.
3. 14-C1622E SPACED TO MATCH C1910E DWLS.
4. 4-C1623E @ 1'-0" SPS. SPACED TO MATCH C1910E DWLS.
5. 12-C1624E SPACED TO MATCH C1622E. 12-C1626E SPACED TO MATCH C1624E.
6. 3-C1625E (EF) @ EVEN SPS. (SLOPE TO MATCH BACKWALL)

NOTES:

1. ADJUST PROJECTION TO PROVIDE 2" CLR. COVER FROM TOP OF BACKWALL
2. SEE "SHEAR KEY REINFORCEMENT" FOR REINFORCEMENT DETAILS

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DATE: 12/19/2016 LIC. NO.: 43076

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EASTBOUND WARNER ROAD
ST. PAUL, RAMSEY COUNTY, MINNESOTA
S.P. NO. 062-636-006

TITLE: EAST ABUTMENT REINFORCEMENT

DES: MAV	DR: MAV	APPROVED
CHK: MJC	CHK: ROC	

Sheet No. 9 of 77 Sheets

Bridge No. 62635

DATE: 12/19/2016 TIME: 9:49:01 AM
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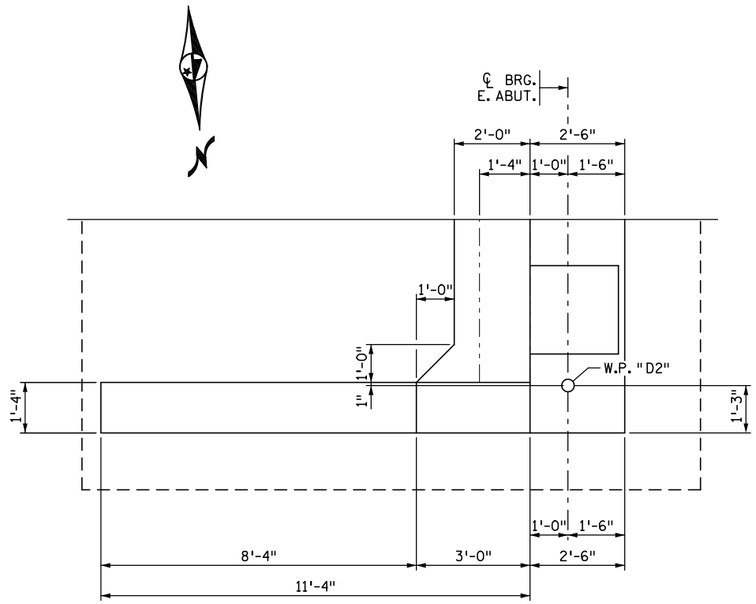


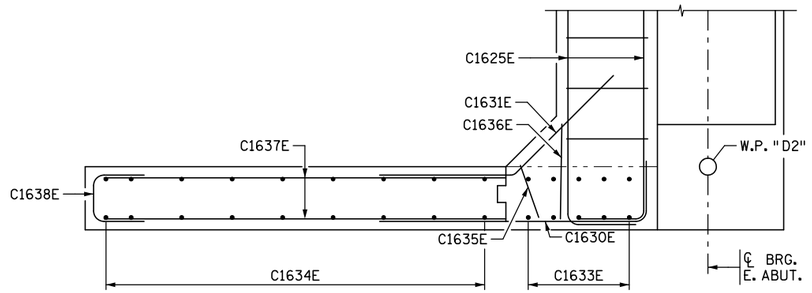
NORTHEAST WINGWALL PLAN

BAR CALL-OUTS

1. 5-C1630E (FF) & 5-C1631E (BF) SPACED TO MATCH C1620E.
2. 3-C1630E (FF) & 3-C1631E (BF) SPACED TO MATCH C1625E.
3. 2-C1632E SPACED AS SHOWN
4. 5-C1633E SPACED TO MATCH C1910E DWLS.
5. 1-C1635E & 1-C1636E SPA. TO MATCH C1910E DWLS. SEE SECTION C-C FOR PLACEMENT.
6. 8-C1637E SPACED TO MATCH C1630E (FF) 8-C1637E SPACED TO MATCH C1631E (BF)
7. 2-C1637E (EF) SPACED TO MATCH C1632E
8. 9-C1634E SPACED TO MATCH C1911E DWLS.
9. 10-C1638E SPACED TO MATCH ENDS OF C1637E.
10. 14-C1639E SPACED AS SHOWN ON "NORTH CONCRETE PARAPET" SHEET.

NOTES:

(1) ADJUST LAP LENGTH TO PROVIDE 2" CLR. TO TOP OF WINGWALL.



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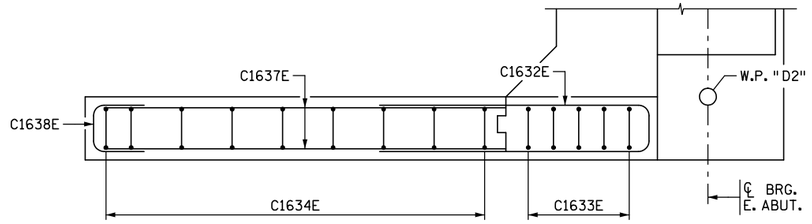

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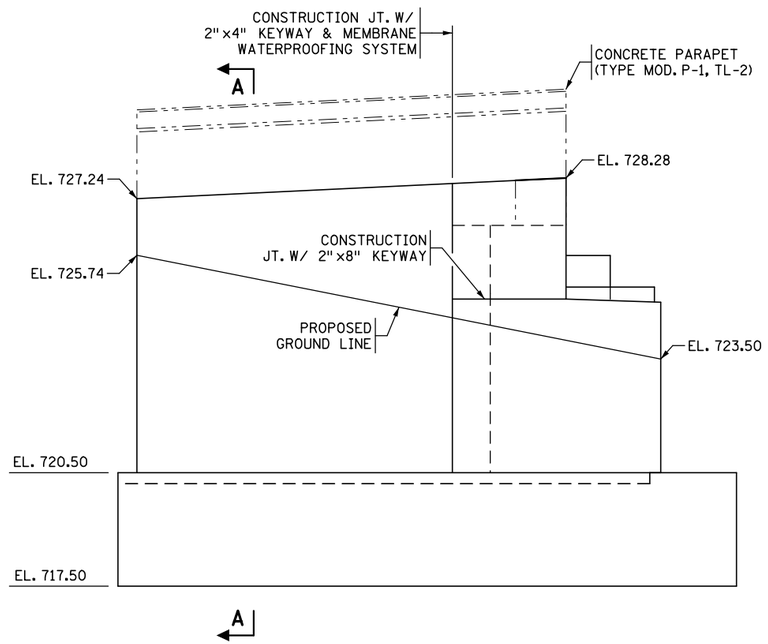
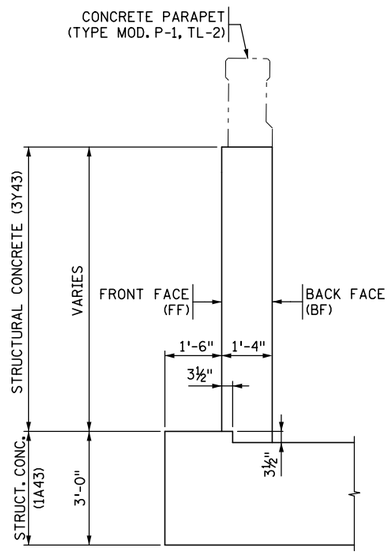
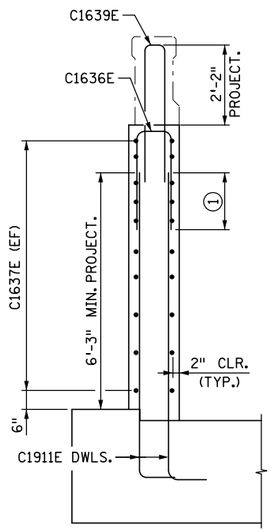


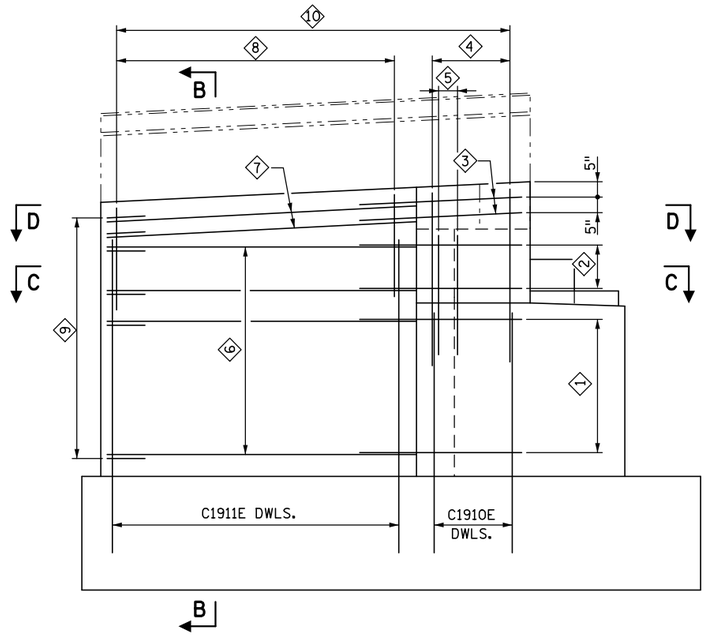
NORTHEAST WINGWALL ELEAVATION



SECTION A-A



SECTION B-B



NORTHEAST WINGWALL REINFORCEMENT

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SIGNED Matthew V. Christensen MATTHEW J. CHRISTENSEN
DATE: 12/19/2016 LIC. NO.: 43076

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ST. PAUL, RAMSEY COUNTY, MINNESOTA
S.P. NO. 062-636-006

TITLE: NORTHEAST WINGWALL

DES: MAV	DR: MAV	APPROVED
CHK: MJC	CHK: ROC	

Sheet No. 10 of 77 Sheets

Bridge No. 62635

DATE: 12/19/2016 TIME: 9:49:02 AM
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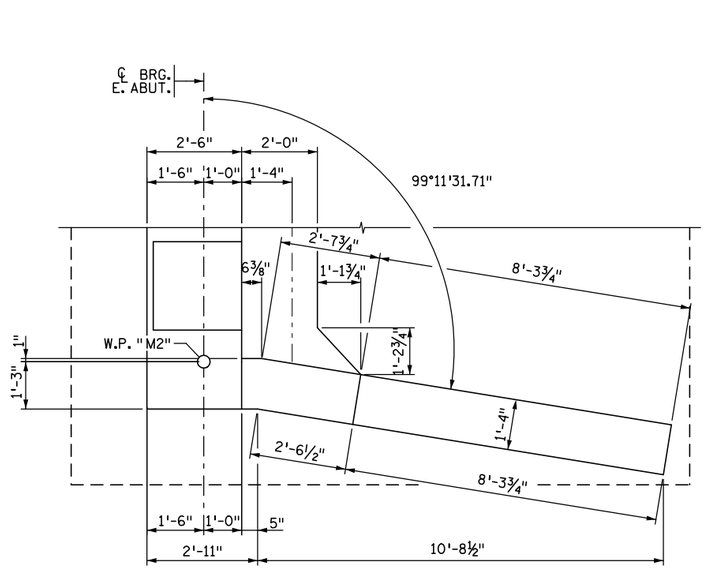


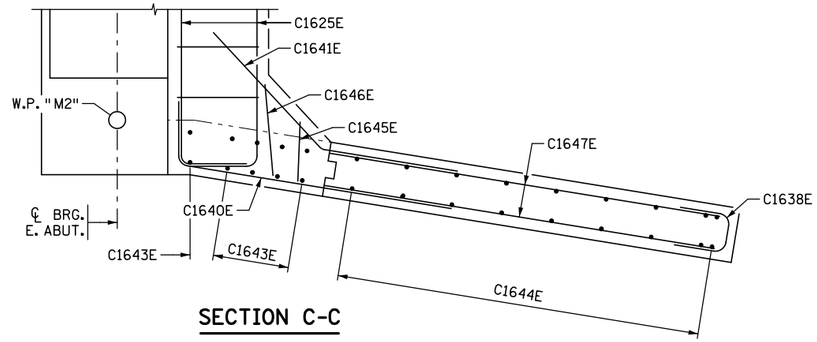
SOUTHEAST WINGWALL PLAN

BAR CALL-OUTS

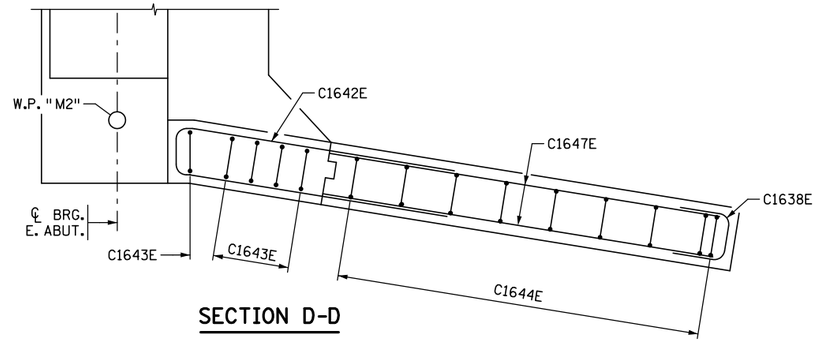
1. 5-C1640E (FF) & 5-C1641E (BF) SPACED TO MATCH C1620E.
2. 3-C1640E (FF) & 3-C1641E (BF) SPACED TO MATCH C1625E.
3. 2-C1642E SPACED AS SHOWN
4. 5-C1643E SPACED TO MATCH C1910E DWLS.
5. 1-C1645E & 1-C1646E SPA. TO MATCH C1910E DWLS. SEE SECTION C-C FOR PLACEMENT.
6. 8-C1647E SPACED TO MATCH C1640E (FF) 8-C1647E SPACED TO MATCH C1641E (BF)
7. 2-C1647E (EF) SPACED TO MATCH C1642E
8. 9-C1644E SPACED TO MATCH C1911E DWLS.
9. 10-C1638E SPACED TO MATCH ENDS OF C1647E.
10. 14-C1639E SPACED AS SHOWN ON "SOUTH CONCRETE PARAPET" SHEET.

NOTES:

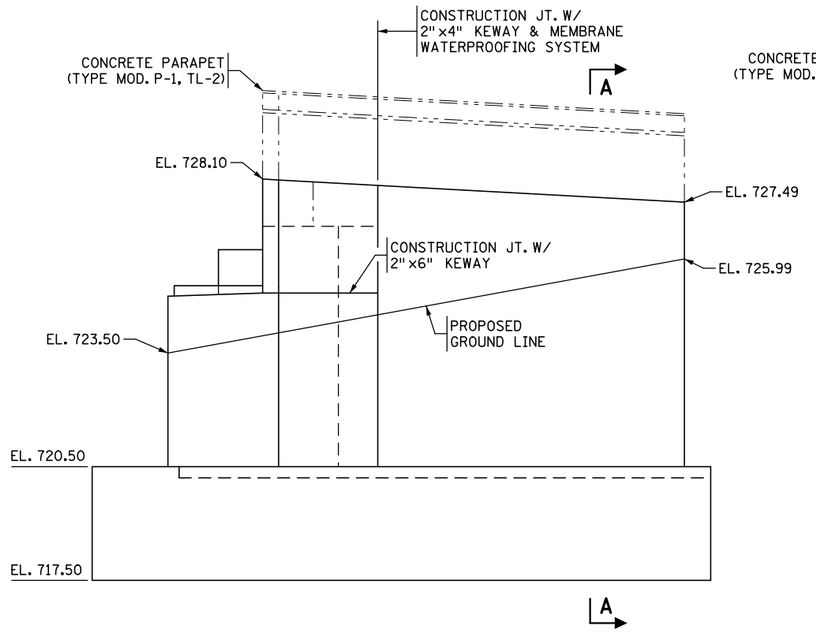
1. ADJUST LAP LENGTH TO PROVIDE 2" CLR. TO TOP OF WINGWALL.



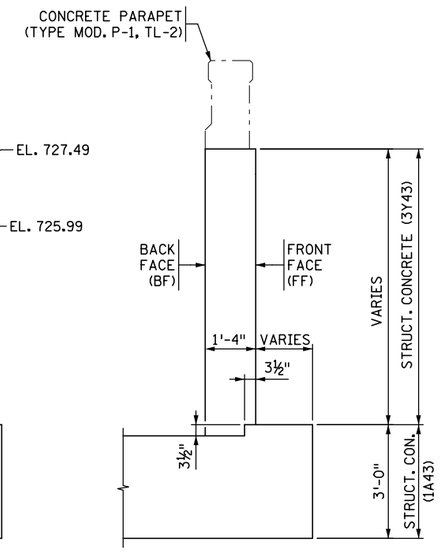
SECTION C-C



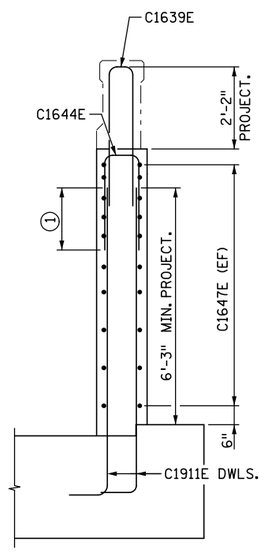
SECTION D-D



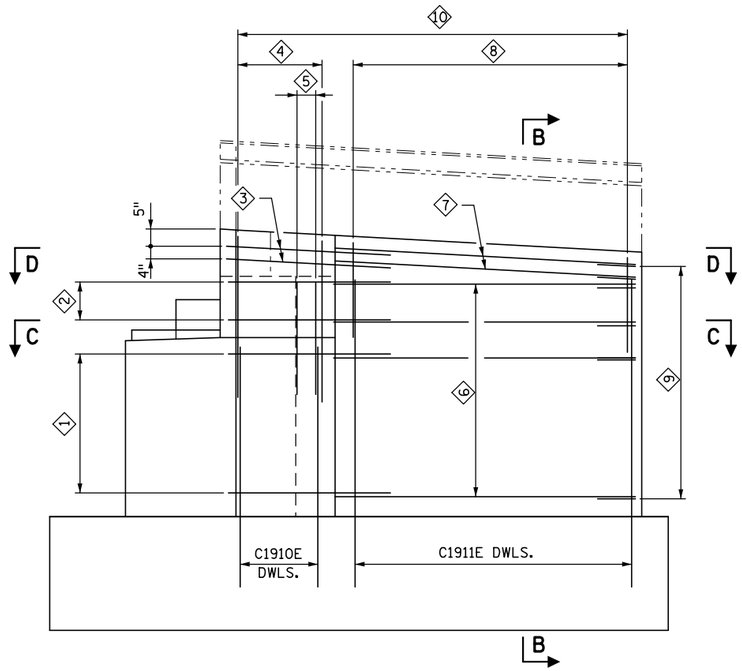
SOUTHEAST WINGWALL ELEVATION



SECTION A-A



SECTION B-B



SOUTHEAST WINGWALL REINFORCING

NO.	DATE	BY	DESCRIPTION OF REVISIONS

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA
SIGNED Matthew V. Christensen MATTHEW J. CHRISTENSEN
DATE: 12/19/2016 LIC. NO.: 43076

TKDA
444 Cedar Street, Suite 1500
Saint Paul, MN 55101
651.292.4400
tkda.com

EASTBOUND WARNER ROAD
ST. PAUL, RAMSEY COUNTY, MINNESOTA
S.P. NO. 062-636-006

TITLE: SOUTHEAST WINGWALL

DES: MAV	DR: MAV	APPROVED
CHK: MJC	CHK: ROC	

Sheet No. 11 of 77 Sheets

Bridge No. 62635

DATE: 12/19/2016 TIME: 9:49:03 AM
FILENAME: K:\nr-z\RamseyCty\V5\13000\hwy-brdg\brdg\62635\dbut\CBR62635_abt06.dgn

BILL OF REINFORCEMENT - EAST ABUTMENT

BAR	NO.	LENGTH	SHAPE	LOCATION
C2501	26	18'-6"	⌊⌋	FOOTING BOTTOM TRANSVERSE
C1902	32	17'-6"	——	FOOTING LONGITUDINAL
C1903	18	15'-10"	——	FOOTING TOP TRANSVERSE
C1910E	44	7'-0"	L	FOOTING DOWEL BAR
C1911E	36	9'-2"	L	FOOTING DOWEL BAR
C1620E	10	14'-2"	——	STEM HORIZONTAL
C1621E	10	6'-6"	⌐¬	STEM HORIZONTAL END TIE
C1622E	14	6'-8"	⌐¬	STEM CAP TRANSVERSE TIE
C1623E	4	16'-6"	⌐¬	STEM CAP LONGITUDINAL TIE
C1624E	12	8'-0"	⌐¬	BACKWALL VERTICAL
C1625E	6	16'-10"	⌐¬	BACKWALL HORIZONTAL
C1626E	12	6'-0"	⌐¬	END BLOCK TIE
C1630E	8	6'-3"	L	NE WINGWALL CONST. JT. TIE
C1631E	8	5'-6"	\	NE WINGWALL CONST. JT. TIE
C1632E	2	11'-8"	⌐¬	NE WINGWALL CONST. JT. TIE
C1633E	5	9'-8"	⌐¬	NE WINGWALL VERTICAL
C1634E	9	6'-5"	⌐¬	NE WINGWALL VERTICAL
C1635E	1	7'-6"	⌐¬	NE WINGWALL BACKWALL CAP TIE
C1636E	1	8'-3"	⌐¬	NE WINGWALL BACKWALL CAP TIE
C1637E	20	8'-2"	——	NE WINGWALL HORIZONTAL
C1638E	20	3'-6"	⌐¬	NE WINGWALL END TIE
C1639E	28	8'-1"	⌐¬	NE WINGWALL BARRIER DOWEL
C1640E	8	6'-10"	L	SE WINGWALL CONST. JT. TIE
C1641E	8	5'-10"	\	SE WINGWALL CONST. JT. TIE
C1642E	2	12'-2"	⌐¬	SE WINGWALL CONST. JT. TIE
C1643E	5	9'-8"	⌐¬	SE WINGWALL VERTICAL
C1644E	9	5'-11"	⌐¬	SE WINGWALL VERTICAL
C1645E	1	7'-6"	⌐¬	SE WINGWALL BACKWALL CAP TIE
C1646E	1	8'-2"	⌐¬	SE WINGWALL BACKWALL CAP TIE
C1647E	20	8'-0"	——	SE WINGWALL HORIZONTAL
C1360E	16	4'-6"	⌐¬	PEDESTAL REINFORCEMENT
C1361E	6	4'-0"	L	SHEAR LUG REINFORCEMENT
C1362E	2	6'-7"	⌐¬	SHEAR LUG REINFORCEMENT
C1363E	3	6'-8"	⌐¬	SHEAR LUG REINFORCEMENT

SUMMARY OF QUANTITIES FOR EAST ABUTMENT

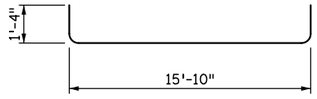
ITEM DESCRIPTION	UNIT	QUANTITY
STRUCTURAL CONCRETE (1A43)	CU YD	33
STRUCTURAL CONCRETE (3Y43)	CU YD	20
REINFORCEMENT BARS	POUND	2560
REINFORCEMENT BARS (EPOXY COATED)	POUND	2850
STRUCTURE EXCAVATION	LUMP SUM	1
STRUCTURAL STEEL (3306)	POUND	175
MICROPILE MOBILIZATION	LUMP SUM	PART
MICROPILES	EACH	5
MICROPILE PROOF LOAD TEST	EACH	1
DRAINAGE SYSTEM TYPE (B910)	LUMP SUM	1

NOTES:

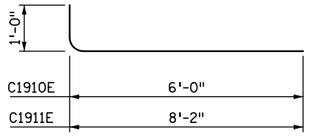
BENT BAR DIMENSIONS GIVEN ARE OUT-TO-OUT. ACTUAL BAR LENGTHS SHALL BE DETERMINED BASED ON THE DETAIL DIMENSIONS SHOWN IN THE BAR BENDING DIAGRAMS.

* DENOTES STANDARD STIRRUP HOOK.

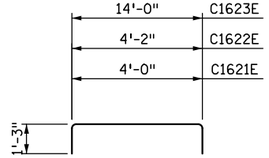
BAR BENDING DIAGRAMS



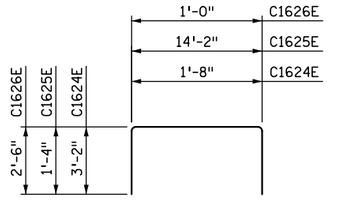
C2501



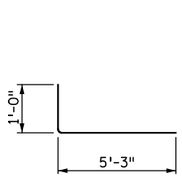
C1910E & C1911E



C1621E, C1622E, & C1623E



C1624E, C1625E, & C1626E



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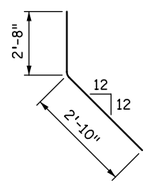
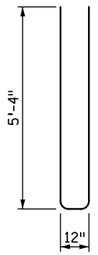
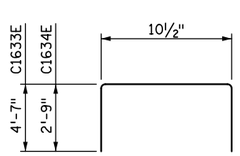


C1631E



C1632E



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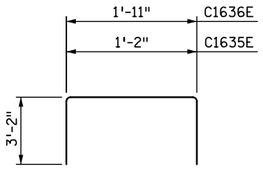
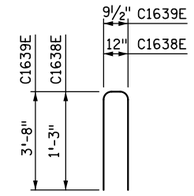


C1635E & C1636E



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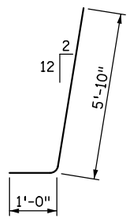

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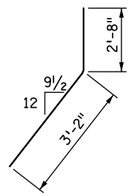
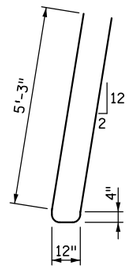
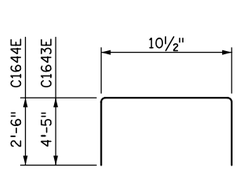


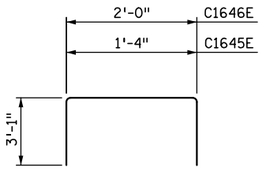
C1641E



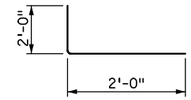
C1642E



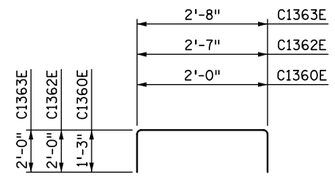
C1643E & C1644E



C1645E & C1646E



C1361E



C1360E, C1362E, & C1363E

DATE: 12/19/2016 TIME: 9:49:03 AM
FILENAME: K:\Tr-2\RamseyCty\5i\3000\hwy-brdg\brdg\62635\abut\CBR62635_abt07.dgn

NO.	DATE	BY	DESCRIPTION OF REVISIONS

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA
SIGNED Matthew V. Christensen MATTHEW J. CHRISTENSEN
DATE: 12/19/2016 LIC. NO.: 43076

TKDA
444 Cedar Street, Suite 1500
Saint Paul, MN 55101
651.292.4400
tkda.com

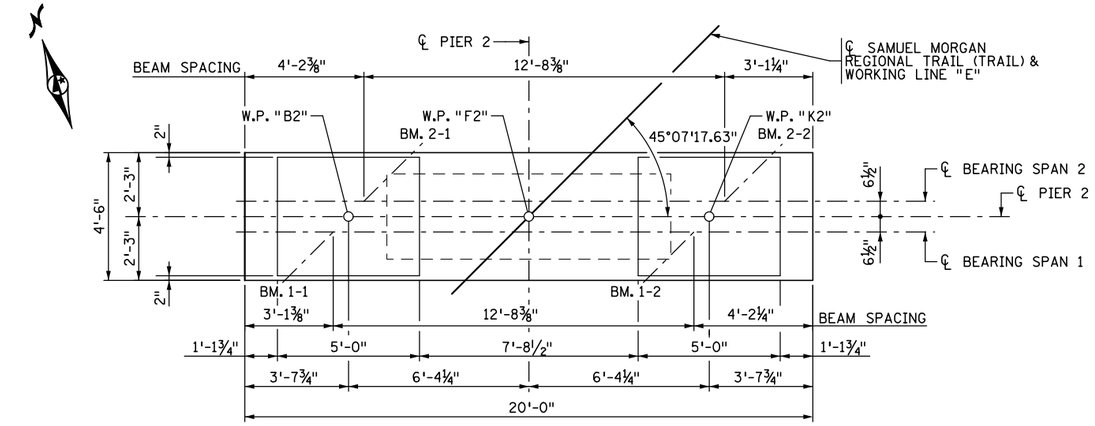
EASTBOUND WARNER ROAD
ST. PAUL, RAMSEY COUNTY, MINNESOTA
S.P. NO. 062-636-006

TITLE: EAST ABUTMENT BARLIST & QUANTITIES

DES: MAV	DR: MAV	APPROVED
CHK: MJC	CHK: ROC	

Sheet No. 12 of 77 Sheets

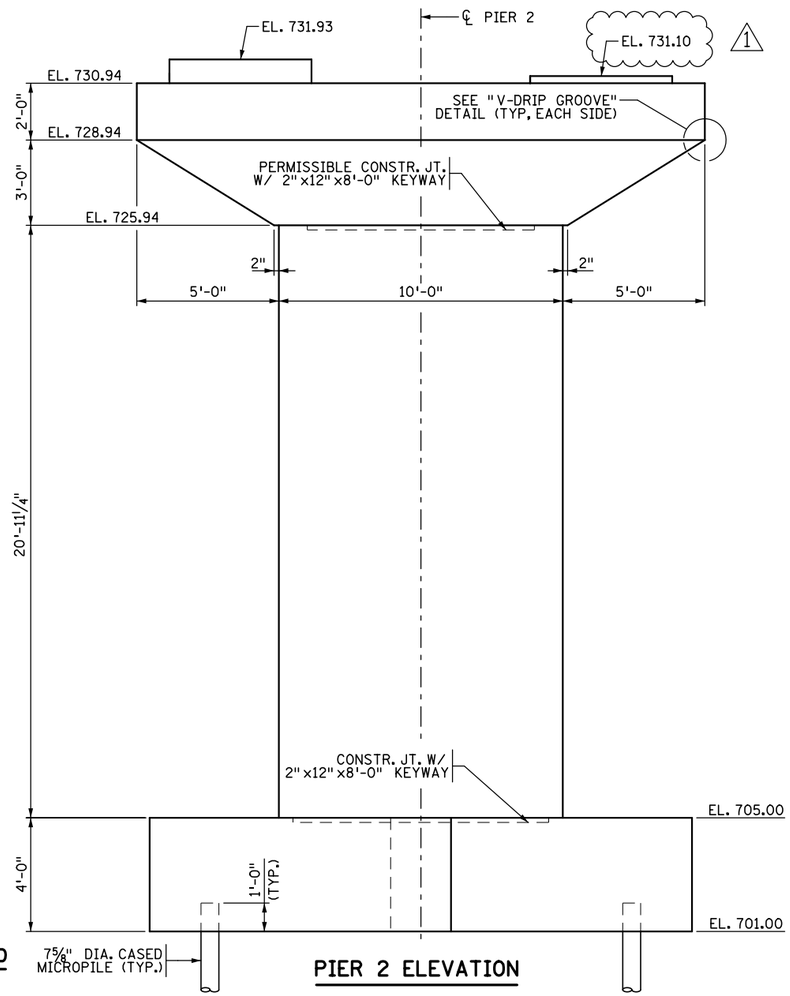
Bridge No. 62635



NORTH END

PIER 2 PLAN ①

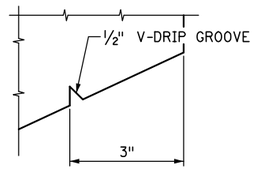
SOUTH END



NORTH END

PIER 2 ELEVATION

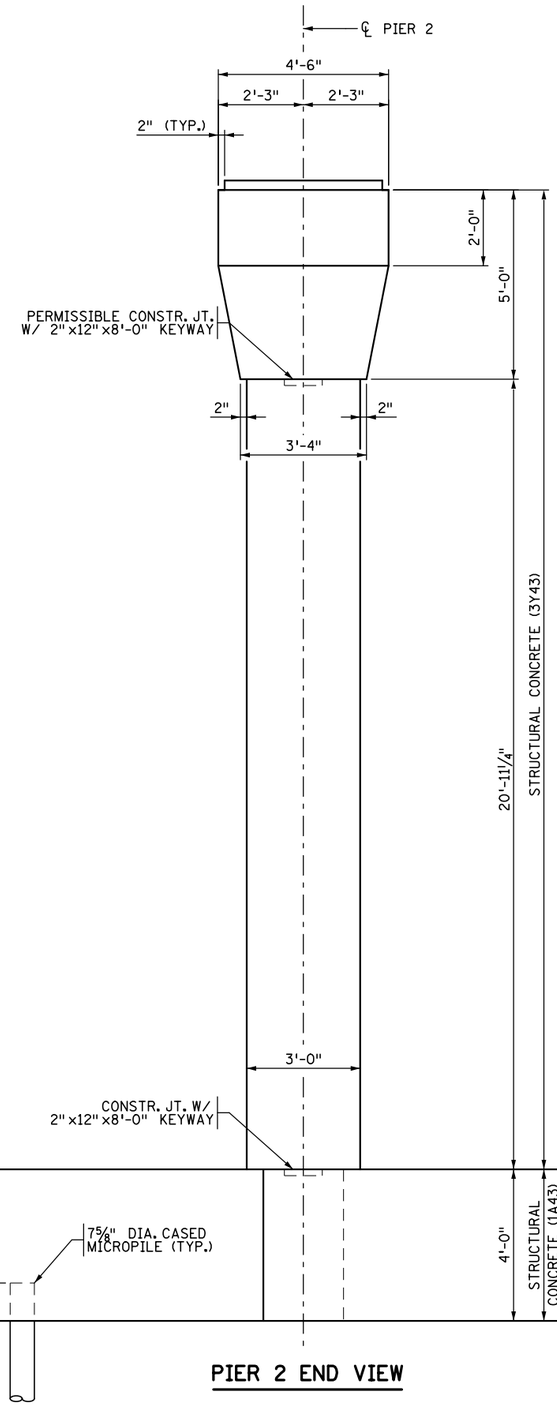
SOUTH END



V-DRIP GROOVE DETAIL

NOTES:

① SEE SH. 26 FOR BEAM INTERSECTION ANGLES



PIER 2 END VIEW

DATE: 12/19/2016 TIME: 9:49:05 AM
FILENAME: K:\nr-z\RamseyCty\51\13000\hwy-brdg\brdg\62635\pier\CBR62635_plr2_01.dgn

NO.	DATE	BY	DESCRIPTION OF REVISIONS
1	10/28/14	LJL	REVISE PIER PEDESTAL ELEVATION

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA
SIGNED _____ MATTHEW J. CHRISTENSEN
DATE: 12/19/2016 LIC. NO.: 43076

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tkda.com

EASTBOUND WARNER ROAD
ST. PAUL, RAMSEY COUNTY, MINNESOTA
S.P. NO. 062-636-006

TITLE:
PIER 2
PLAN AND ELEVATION

DES: MAV	DR: MAV	APPROVED
CHK: MJC	CHK: ROC	

Sheet No. 13 of 77 Sheets

Bridge No. 62635

PILE NOTES:

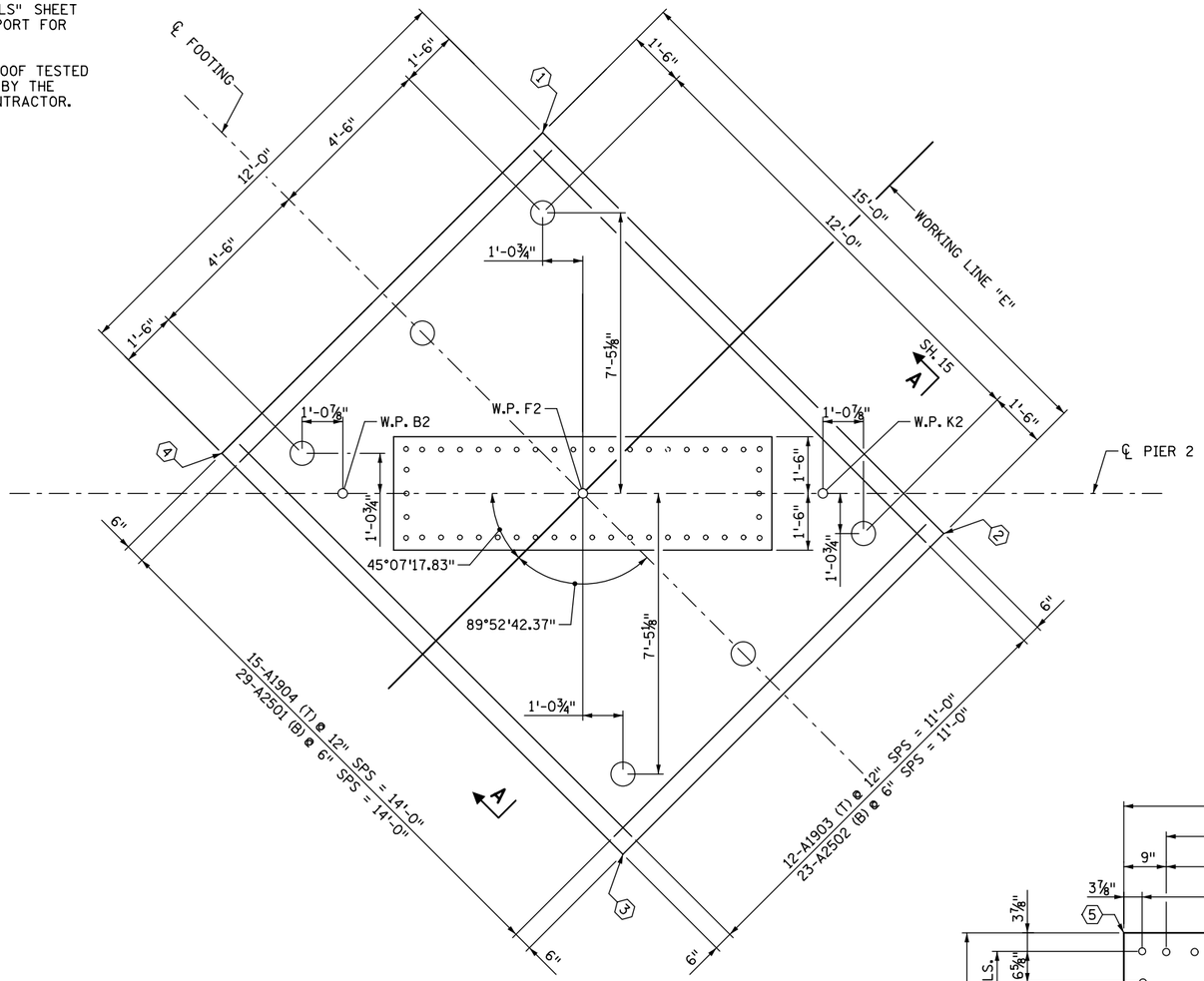
PILE SPACING SHOWN IS AT BOTTOM OF FOOTING.

ALL PILES ARE 7⅝" DIAMETER MICROPILES.

1 PROOF TEST
6 MICROPILES REQUIRED FOR PIER 2 FOOTING.

SEE "MICROPILE DETAILS" SHEET AND GEOTECHNICAL REPORT FOR MORE INFORMATION.

PILE THAT WILL BE PROOF TESTED WILL BE COORDINATED BY THE ENGINEER AND THE CONTRACTOR.



PIER 2 COMPUTED PILE LOAD - TONS/PILE	
FACTORED DEAD LOAD	92
FACTORED LIVE LOAD	26
FACTORED OVERTURNING	19
* FACTORED DESIGN LOAD	137

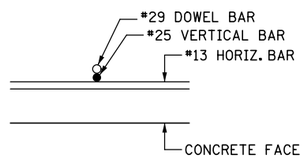
* BASED ON STRENGTH V LOAD COMBINATION.

PIER 2 REQUIRED NOMINAL MICROPILE BEARING RESISTANCE R_n - TONS/PILE		
	φ_{stat}	$*R_n$
PROOF TEST	0.7	196

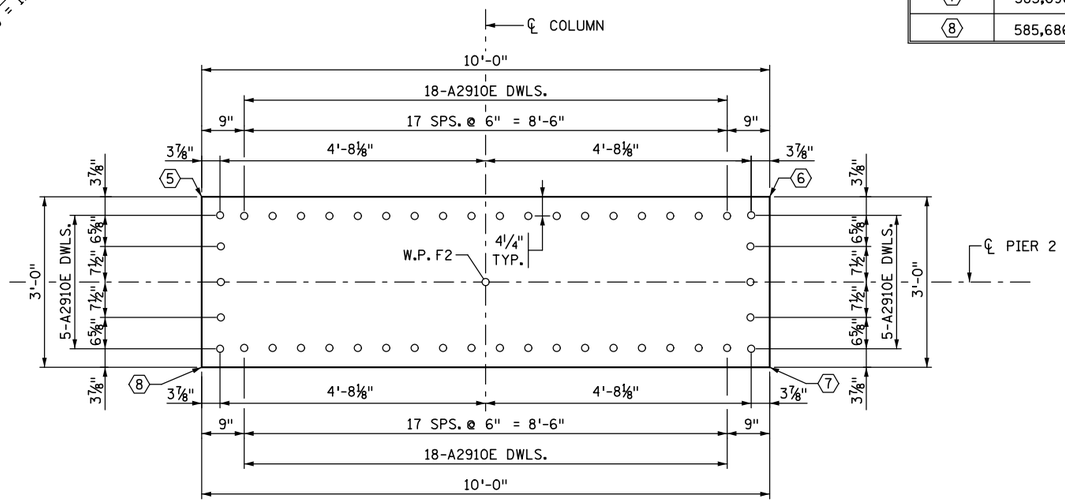
$*R_n$ = (FACTORED DESIGN LOAD) / φ_{stat}

FOOTING COORDINATES		
POINT	X	Y
①	585,693.885	155,899.229
②	585,700.548	155,885.790
③	585,689.797	155,880.460
④	585,683.134	155,893.899

COLUMN COORDINATES		
POINT	X	Y
⑤	585,687.582	155,892.863
⑥	585,697.058	155,889.668
⑦	585,696.100	155,886.826
⑧	585,686.624	155,890.020



TYPICAL DOWEL BAR PLACEMENT



DOWEL BAR LAYOUT

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NO.	DATE	BY	DESCRIPTION OF REVISIONS

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SIGNED Matthew V. Christensen MATTHEW J. CHRISTENSEN
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tkda.com

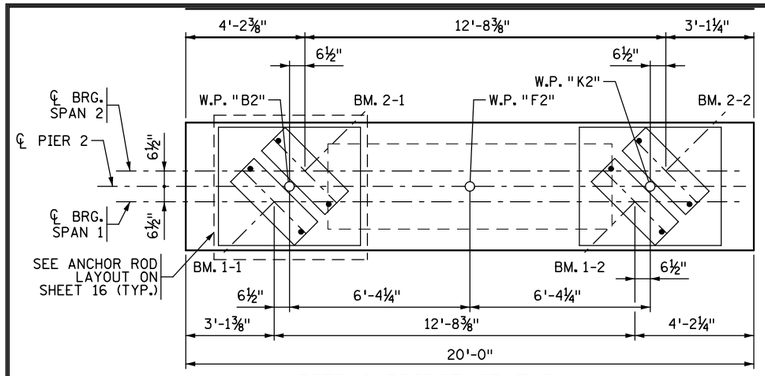
EASTBOUND WARNER ROAD
ST. PAUL, RAMSEY COUNTY, MINNESOTA
S.P. NO. 062-636-006

TITLE: PIER 2 FOOTING PLAN & REINFORCEMENT

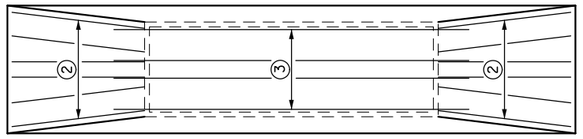
DES: MAV	DR: MAV	APPROVED
CHK: MJC	CHK: ROC	

Sheet No. 14 of 77 Sheets

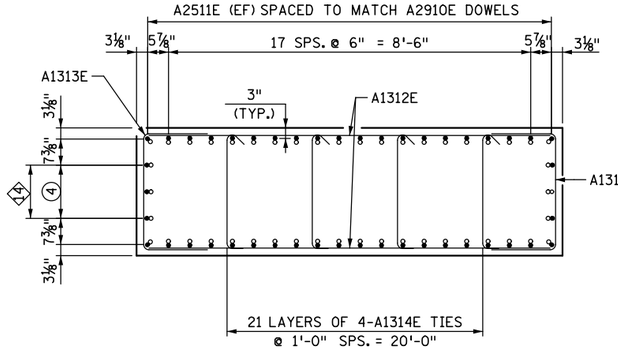
Bridge No. 62635



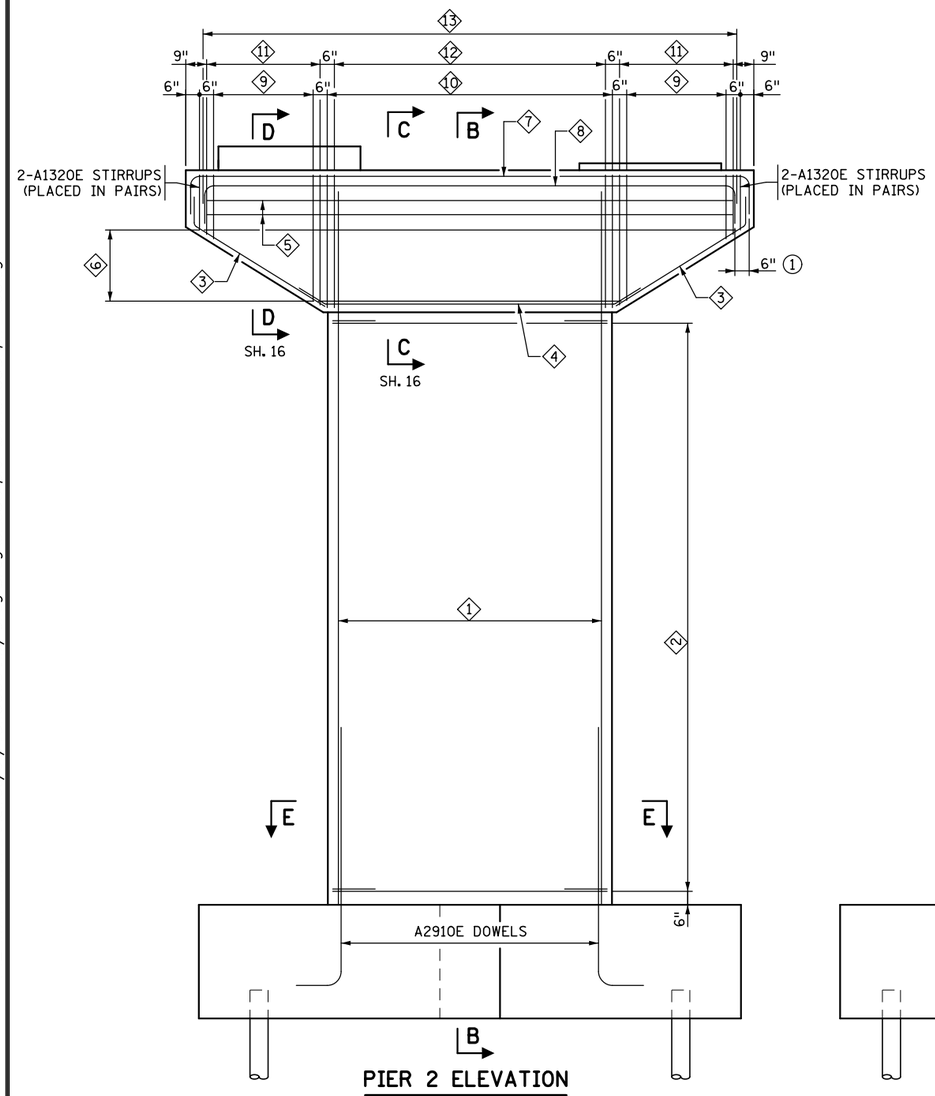
PIER 2 BRIDGE SEAT PLAN



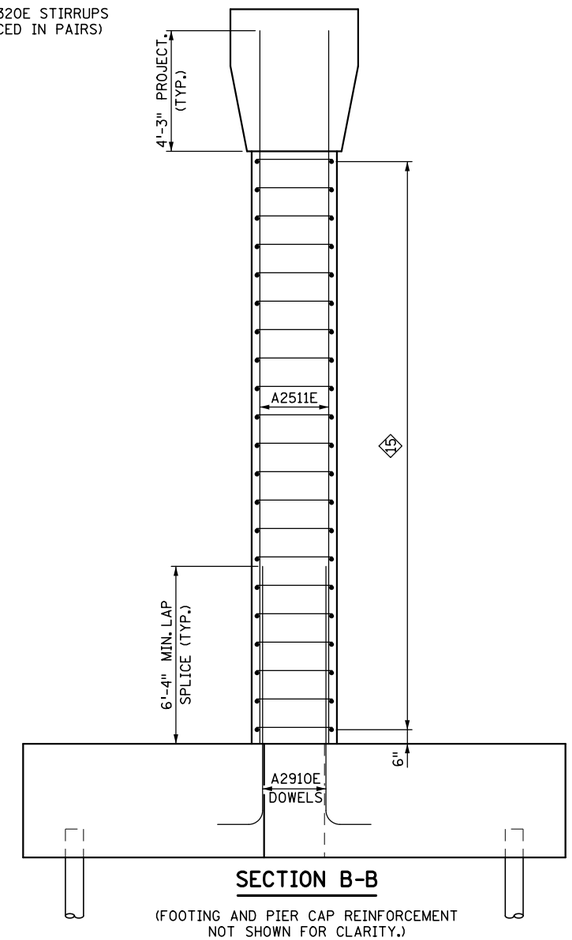
PIER 2 CAP BOTTOM REINFORCEMENT PLAN



COLUMN REINFORCEMENT - SECTION E-E

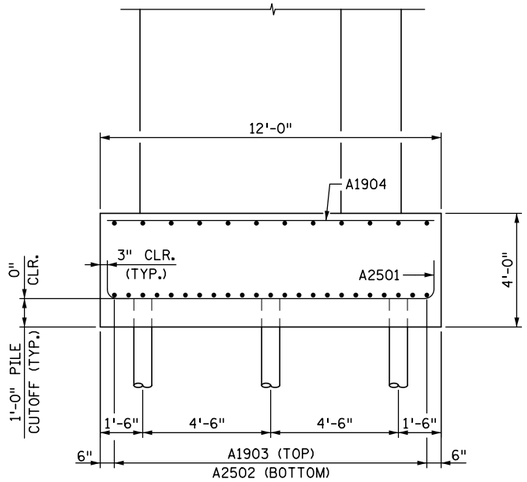


PIER 2 ELEVATION



SECTION B-B

(FOOTING AND PIER CAP REINFORCEMENT NOT SHOWN FOR CLARITY.)



SECTION A-A

(SHEET 14)

BAR CALL-OUTS

1. 46-A2511E SPACED TO MATCH A2910E DOWELS. SEE COLUMN REINFORCEMENT.
2. 21-A1312E (EF) @ 1'-0" SPS. = 20'-0" 21-A1313E (EF) SPACED TO MATCH END OF A1312E.
3. 6-A1326E SPACED TO MATCH BOTTOM OF A1320E, A1321E AND A1322E STIRRUPS. PLACE BARS AS SHOWN IN SECTION D-D AND BOTTOM REINFORCEMENT PLAN.
4. 4-A1325E SPACED TO MATCH BOTTOM OF A1323E AND A1324E STIRRUPS. PLACE BARS AS SHOWN IN SECTION C-C AND BOTTOM REINFORCEMENT PLAN.
5. 6-A1328E SPACED AS SHOWN IN SECTIONS C-C AND D-D.
6. 6-SER. OF 6-A1327E SPACED AS SHOWN IN SECTIONS C-C AND D-D.
7. 6-A2530E SPACED AS SHOWN IN SECTION C-C.
8. 6-A2529E SPACED AS SHOWN IN SECTION C-C.
9. 2-SER. OF 8-A1321E (PLACED IN PAIRS) @ 6" SPS. = 3'-6".
10. 42-A1323E (PLACED IN PAIRS) @ 6" = 10'-0"
11. 1-SER. OF 9-A1322E @ 6" SPS. = 4'-0"
12. 20-A1324E @ 6" SPS. = 9'-6".
13. 19-A1331E SPACED TO MATCH EVERY OTHER A1321E OR A1323E STIRRUPS. PLACE BARS TO PROVIDE 2" CLR. SPACING FOR ANCHOR ROD.
14. A2511E (EF) SPACED TO MATCH A2910E DOWELS.
15. A1314E TIES SPACED TO MATCH A1312E. SEE COLUMN REINFORCEMENT.

NOTES:

CLEAR CONCRETE COVER TO BE TAKEN AS 2" UNLESS OTHERWISE NOTED.

1. OFFSET HOOKS LATERALLY AS SHOWN.
2. A1326E BARS. FLARE AS SHOWN IN SECTION C-C ON PIER 2 REINFORCEMENT DETAILS.
3. A1325E BARS. SPACE BARS AS SHOWN IN SECTION C-C ON PIER 2 REINFORCEMENT DETAILS.
4. 2 SPS. @ 7½" = 1'-3"

DATE: 12/19/2016 TIME: 9:49:06 AM
FILENAME: K:\n-z\RamseyCty\5i\3000\hwy-brdg\brdg\62635\plr\CBR62635_plr2_03.dgn

NO.	DATE	BY	DESCRIPTION OF REVISIONS

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA
SIGNED Matthew V. Christensen MATTHEW J. CHRISTENSEN
DATE: 12/19/2016 LIC. NO.: 43076

TKDA
444 Cedar Street, Suite 1500
Saint Paul, MN 55101
651.292.4400
tkda.com

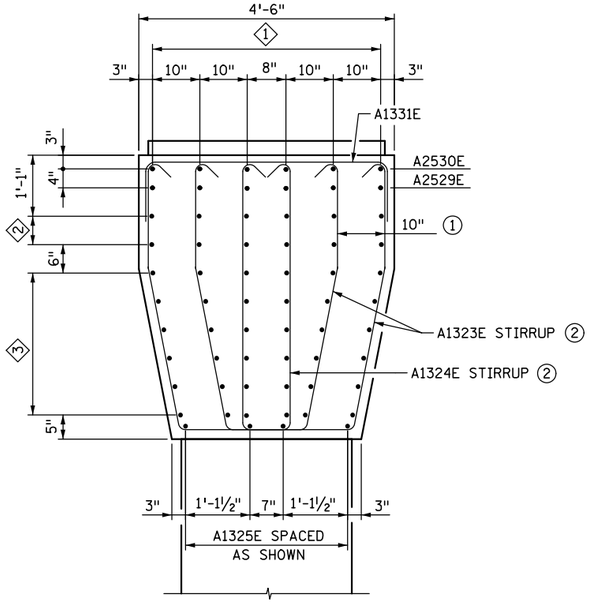
EASTBOUND WARNER ROAD
ST. PAUL, RAMSEY COUNTY, MINNESOTA
S.P. NO. 062-636-006

TITLE: PIER 2 REINFORCEMENT

DES: MAV	DR: MAV	APPROVED
CHK: MJC	CHK: ROC	

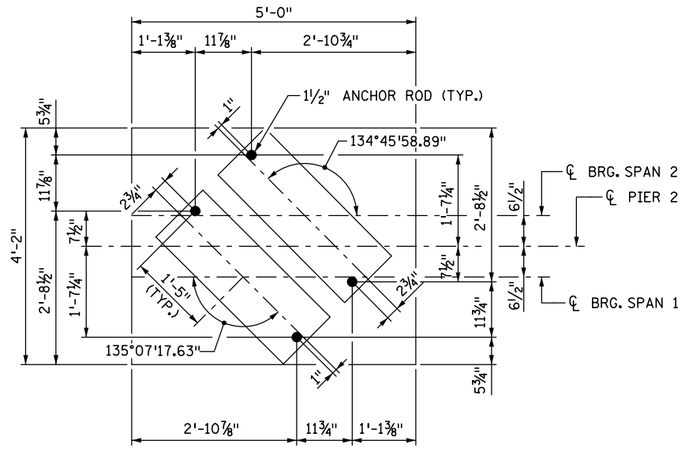
Sheet No. 15 of 77 Sheets

Bridge No. 62635

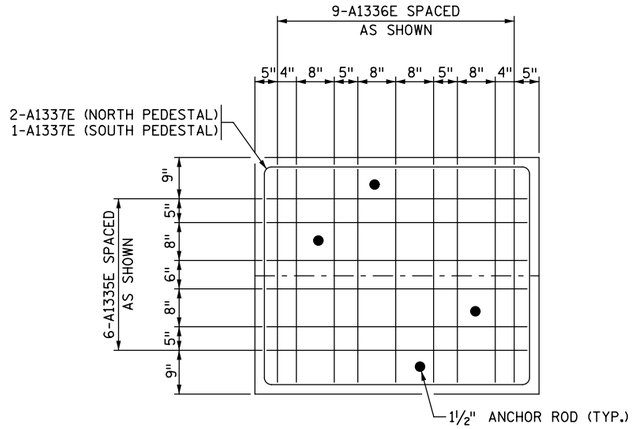


SECTION C-C

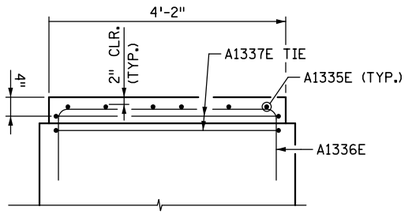
(SHEET 15)



TYPICAL ANCHOR ROD PLACEMENT

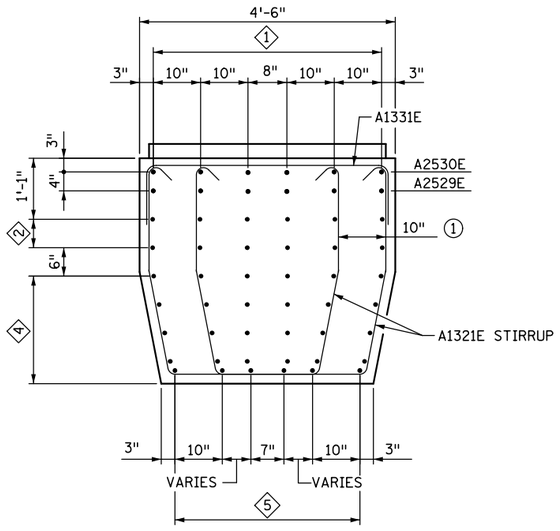


TYPICAL PEDESTAL REINFORCEMENT

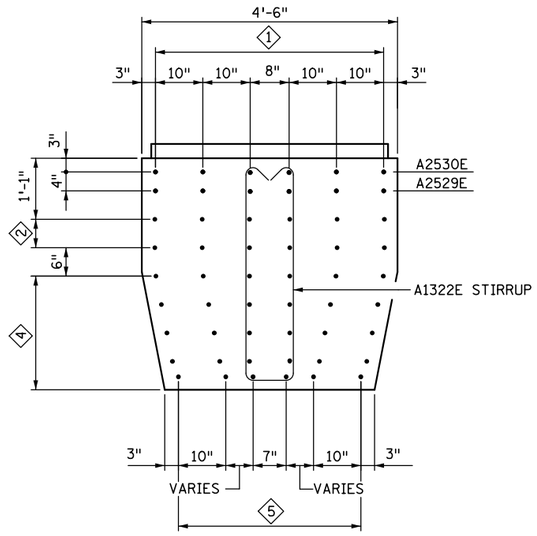


PEDESTAL ELEVATION

(END VIEW SHOWN)



(SECTION C-C SHOWING A1321E STIRRUP)



(SECTION C-C SHOWING A1322E STIRRUP)

SECTION D-D

(SECTIONS SHOWN ARE OFFSET BY 3")

(SHEET 15)

BAR CALL-OUTS:

1. 1 LAYER OF A2529E BARS AND 1 LAYER OF A2530E BARS SPACED AS SHOWN.
2. A1328E BARS (IN 4 LAYERS) @ 6" SPS. = 1'-6" TIE BARS TO A1320E, A1321E, A1322E, A1323E AND A1324E STIRRUPS.
3. A1327E BARS @ 6" SPS. = 3'-6" TIE BARS TO A1320E, A1321E, A1322E, A1323E AND A1324E STIRRUPS.
4. A1327E BARS @ 6" SPS. MORE A1326E BARS WILL APPEAR IN CROSS SECTION AS SECTION GETS DEEPER.
5. A1326E BARS TO BE SPACED AS SHOWN WITH A VARIABLE SPACING.

NOTES:

1. A1321E AND A1323E STIRRUPS TO BE PLACED IN PAIRS OFFSET LATERALLY BY 10"
2. A1323E AND A1324E STIRRUPS ARE OFFSET BY 3" THROUGHOUT SECTION.

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SIGNED _____ MATTHEW J. CHRISTENSEN

DATE: 12/19/2016 LIC. NO.: 43076

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EASTBOUND WARNER ROAD
ST. PAUL, RAMSEY COUNTY, MINNESOTA
S.P. NO. 062-636-006

TITLE:
PIER 2
REINFORCEMENT DETAILS

DES: MAV	DR: MAV	APPROVED
CHK: MJC	CHK: ROC	

Sheet No. 16 of 77 Sheets

Bridge No. 62635

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BILL OF REINFORCEMENT - PIER 2				
BAR	NO.	LENGTH	SHAPE	LOCATION
A2501	29	14'-2"		FOOTING BOTTOM TRANSVERSE
A2502	29	17'-2"		FOOTING BOTTOM LONGITUDINAL
A1903	12	14'-6"		FOOTING TOP LONGITUDINAL
A1904	15	11'-6"		FOOTING TOP TRANSVERSE
A2910E	46	10'-10"		FOOTING DOWEL BAR
A2511E	46	25'-2"		COLUMN VERTICALS
A1312E	42	9'-8"		CRASH WALL TIES
A1313E	42	5'-8"		CRASH WALL CROSS TIE
A1314E	84	3'-5"		CRASH WALL TOP TIE
A1320E	4	7'-11"		CAP STIRRUP
A1321E	32	SER-1		CAP STIRRUP
A1322E	18	SER-2		CAP STIRRUP
A1323E	42	12'-5"		CAP STIRRUP
A1324E	20	10'-11"		CAP STIRRUP
A1325E	4	12'-4"		CAP BOTTOM REINFORCING
A1326E	12	6'-7"		CAP BOTTOM REINFORCING
A1327E	36	SER-3		CAP HORIZONTAL
A1328E	12	18'-6"		CAP HORIZONTAL
A2529E	6	21'-4"		CAP HORIZONTAL
A2530E	6	22'-4"		CAP HORIZONTAL
A1331E	19	6'-6"		CAP TIE
A1335E	12	7'-7"		PEDESTAL REINFORCEMENT
A1336E	18	6'-9"		PEDESTAL REINFORCEMENT
A1337E	3	17'-9"		PEDESTAL REINFORCEMENT

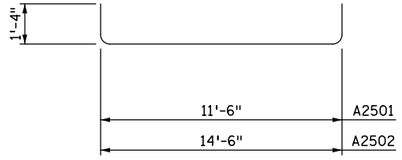
SER. 1 = 4 SERIES OF 8 BARS (8'-5" TO 12'-0")

SER. 2 = 2 SERIES OF 9 BARS (5'-9" TO 10'-9")

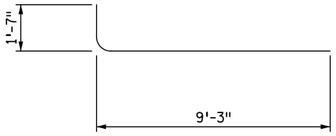
SER. 3 = 6 SERIES OF 6 BARS (18'-10" TO 10'-10")

SUMMARY OF QUANTITIES FOR PIER 2		
ITEM DESCRIPTION	UNIT	QUANTITY
HAUL & DISPOSE OF CONTAMINATED SOIL	TON	167
STRUCTURAL CONCRETE (1A43)	CU YD	27
STRUCTURAL CONCRETE (3Y43)	CU YD	38
STRUCTURE EXCAVATION CLASS R	CU YD	60
REINFORCEMENT BARS	POUND	2950
REINFORCEMENT BARS (EPOXY COATED)	POUND	7790
FOUNDATION PREPARATION PIER 2	LUMP SUM	1
MICROPILE MOBILIZATION	LUMP SUM	PART
MICROPILES	EACH	6
MICROPILE PROOF LOAD TEST	EACH	1

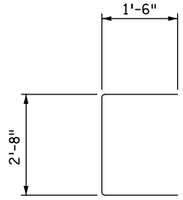
BAR BENDING DIAGRAMS



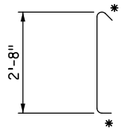
A2501 & A2502



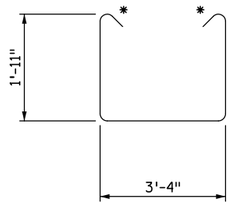
A2910E



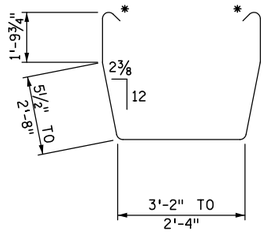
A1313E



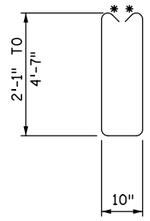
A1314E



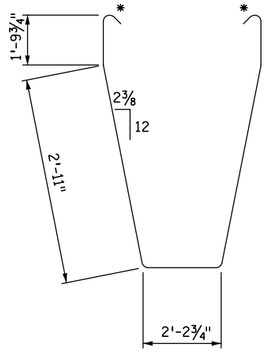
A1320E



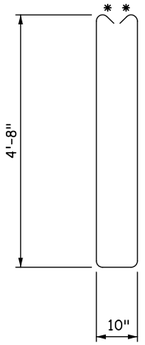
A1321E



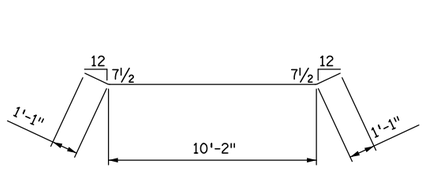
A1322E



A1323E



A1324E



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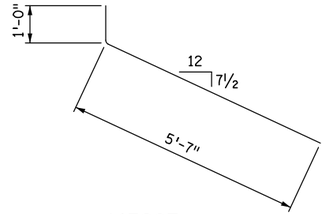

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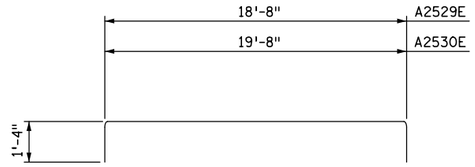
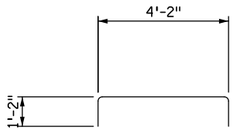
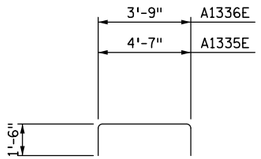


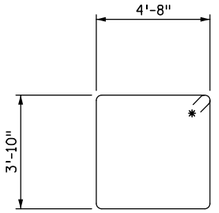
A2529E & A2530E



A1331E



A1335E & A1336E



A1337E

NOTES:

BENT BAR DIMENSIONS GIVEN ARE OUT-TO-OUT. ACTUAL BAR LENGTHS SHALL BE DETERMINED BASED ON THE DETAIL DIMENSIONS SHOWN IN THE BAR BENDING DIAGRAMS.

* DENOTES STANDARD STIRRUP HOOK.

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SIGNED Matthew V. Christensen MATTHEW J. CHRISTENSEN
DATE: 12/19/2016 LIC. NO.: 43076

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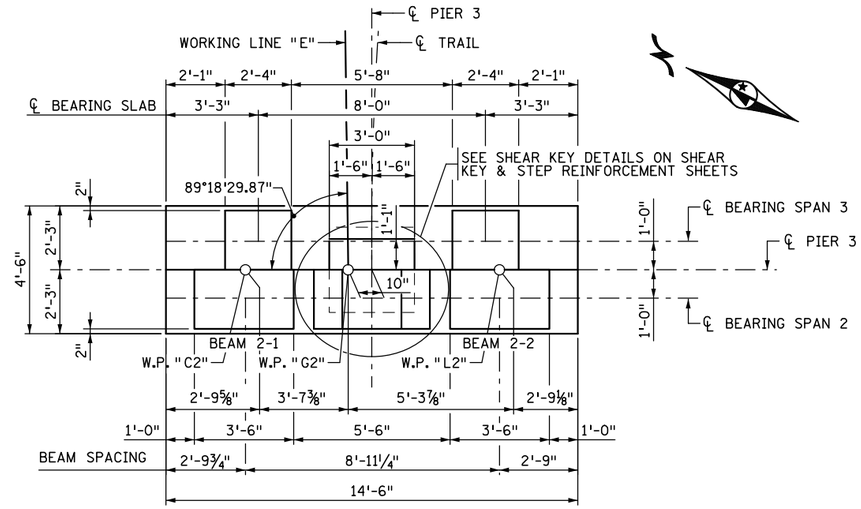
EASTBOUND WARNER ROAD
ST. PAUL, RAMSEY COUNTY, MINNESOTA
S.P. NO. 062-636-006

TITLE:
PIER 2
BARLIST & QUANTITIES

DES: MAV	DR: MAV	APPROVED
CHK: MJC	CHK: ROC	

Sheet No. 17 of 77 Sheets

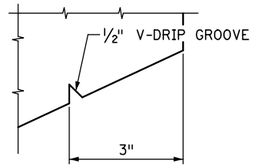
Bridge No. 62635



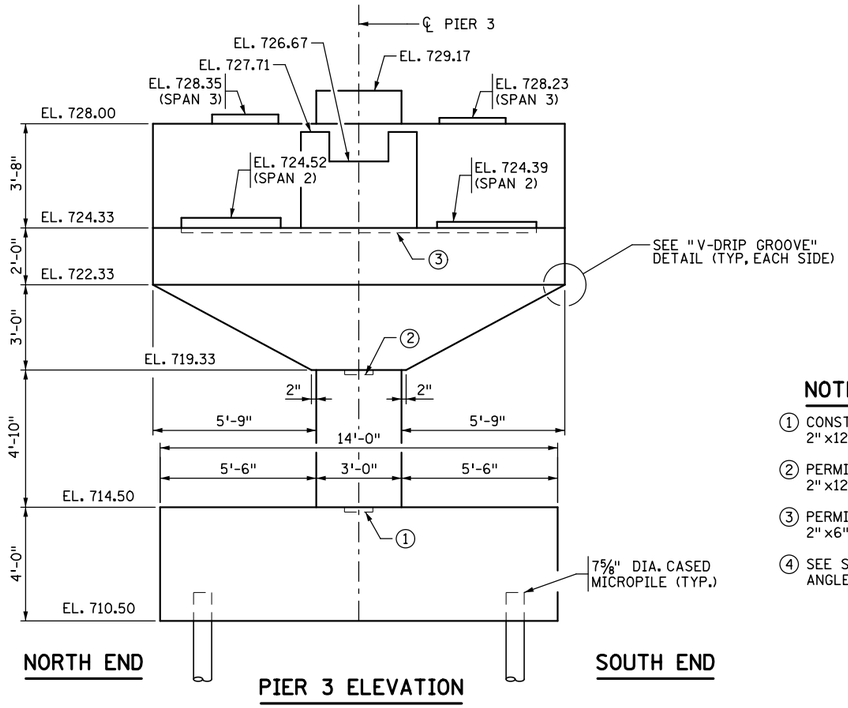
NORTH END

SOUTH END

PIER 3 PLAN ④



V-DRIP GROOVE DETAIL



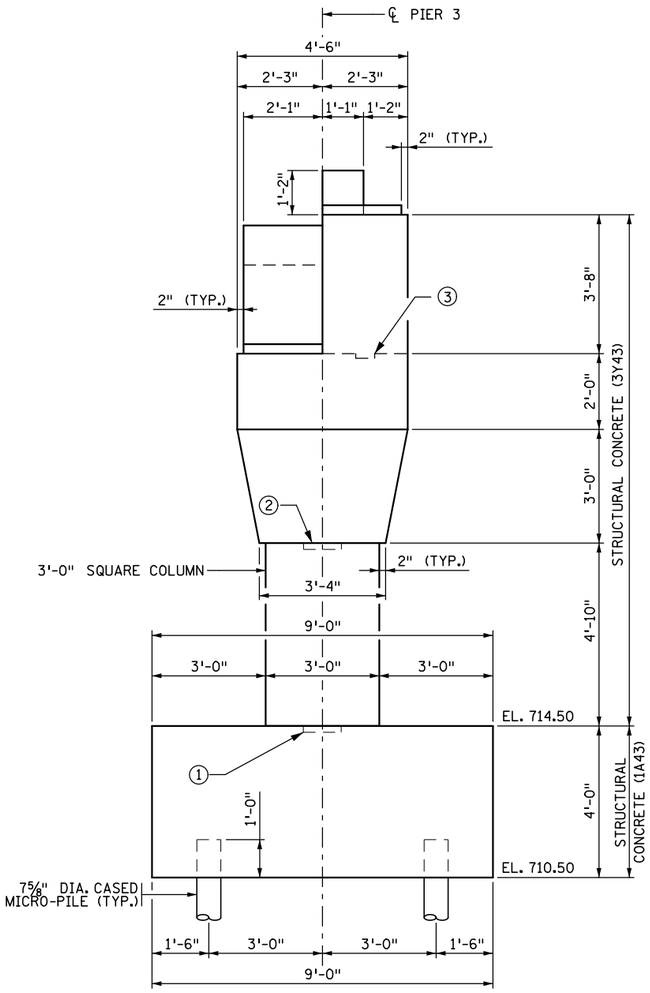
NORTH END

SOUTH END

PIER 3 ELEVATION

NOTES:

1. CONSTRUCTION JOINT W/ 2"x12"x1'-0" KEYWAY.
2. PERMISSIBLE CONST. JOINT W/ 2"x12"x1'-0" KEYWAY.
3. PERMISSIBLE CONST. JOINT W/ 2"x6"x12'-6" KEYWAY.
4. SEE SH. 26 FOR BEAM INTERSECTION ANGLES.



PIER 3 END VIEW

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S.P. NO. 062-636-006

TITLE:
PIER 3
PLAN AND ELEVATION

DES: MAV	DR: MAV	APPROVED
CHK: MJC	CHK: ROC	

Sheet No. 18 of 77 Sheets

Bridge No. 62635

PILE NOTES:

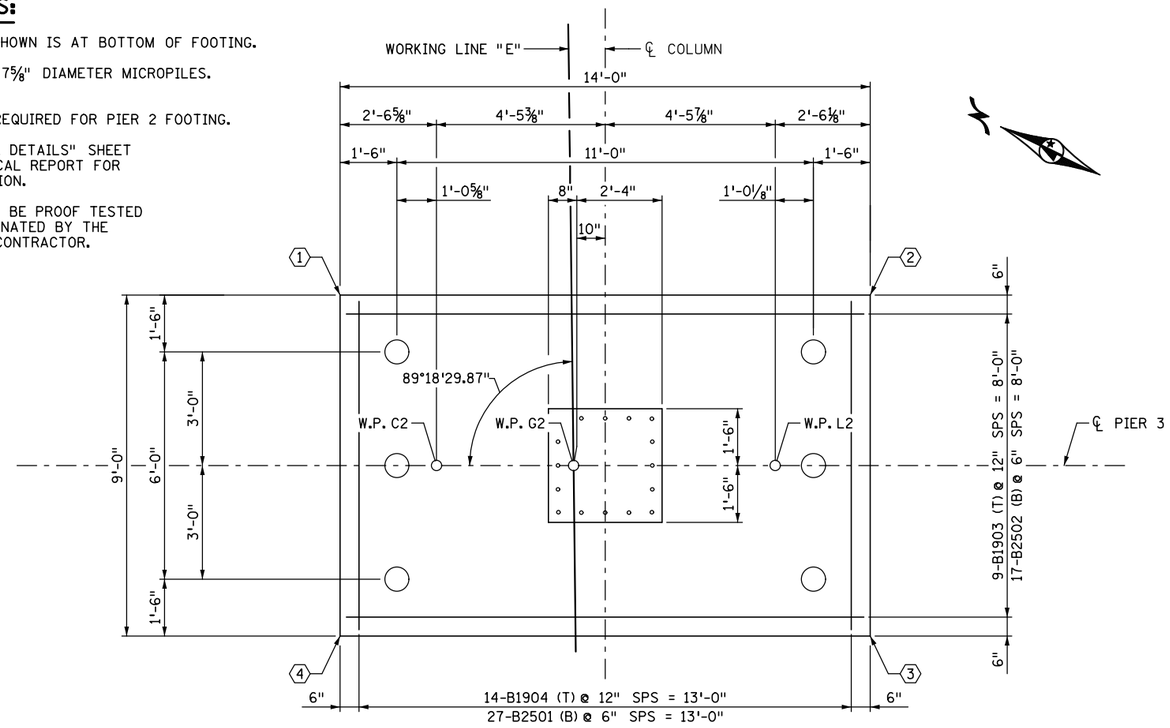
PILE SPACING SHOWN IS AT BOTTOM OF FOOTING.

ALL PILES ARE 7⅝" DIAMETER MICROPILES.

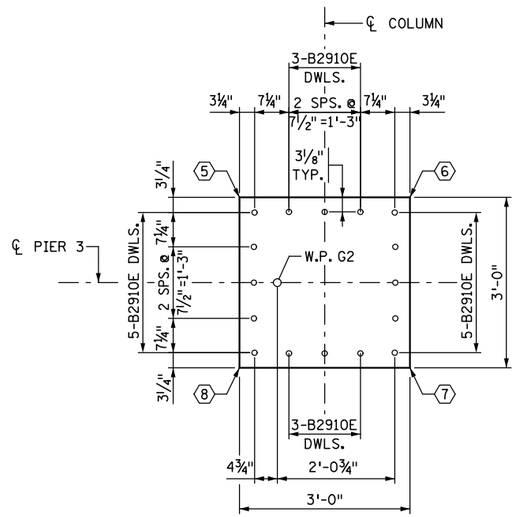
1 PROOF TEST
6 MICROPILES REQUIRED FOR PIER 2 FOOTING.

SEE "MICROPILE DETAILS" SHEET AND GEOTECHNICAL REPORT FOR MORE INFORMATION.

PILE THAT WILL BE PROOF TESTED WILL BE COORDINATED BY THE ENGINEER AND CONTRACTOR.



PIER 3 - PILE LAYOUT & FOOTING REINFORCEMENT



DOWEL BAR LAYOUT

PIER 3
COMPUTED PILE LOAD - TONS/PILE

FACTORED DEAD LOAD	70
FACTORED LIVE LOAD	14
FACTORED OVERTURNING	26
* FACTORED DESIGN LOAD	110

* BASED ON STRENGTH V LOAD COMBINATION.

PIER 3
REQUIRED NOMINAL MICROPILE BEARING RESISTANCE R_n - TONS/PILE

	φ_{stat}	$*R_n$
PROOF TEST	0.7	157

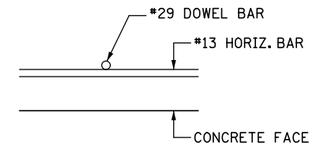
$*R_n$ = (FACTORED DESIGN LOAD) / φ_{stat}

FOOTING COORDINATES

POINT	X	Y
⟨1⟩	585,816.368	155,958.737
⟨2⟩	585,822.461	155,946.132
⟨3⟩	585,814.358	155,942.215
⟨4⟩	585,808.265	155,954.819

COLUMN COORDINATES

POINT	X	Y
⟨5⟩	585,816.061	155,952.479
⟨6⟩	585,817.367	155,949.778
⟨7⟩	585,814.666	155,948.472
⟨8⟩	585,813.360	155,951.172



TYPICAL DOWEL BAR PLACEMENT

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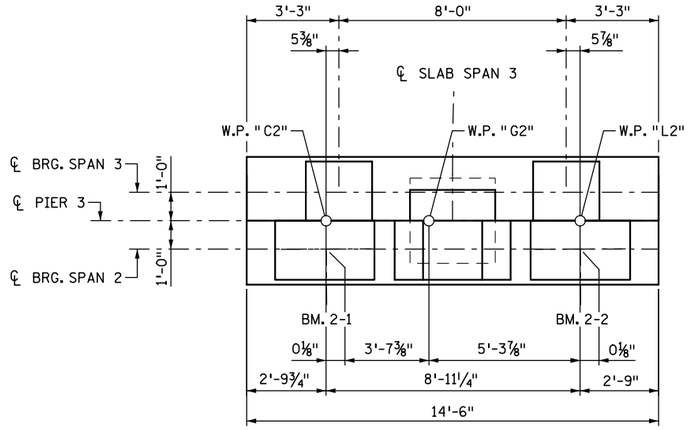
S.P. NO. 062-636-006

TITLE:
PIER 3 FOOTING
PLAN & REINFORCEMENT

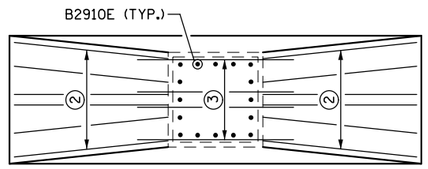
DES: MAV	DR: MAV	APPROVED
CHK: MJC	CHK: ROC	

Sheet No. 19 of 77 Sheets

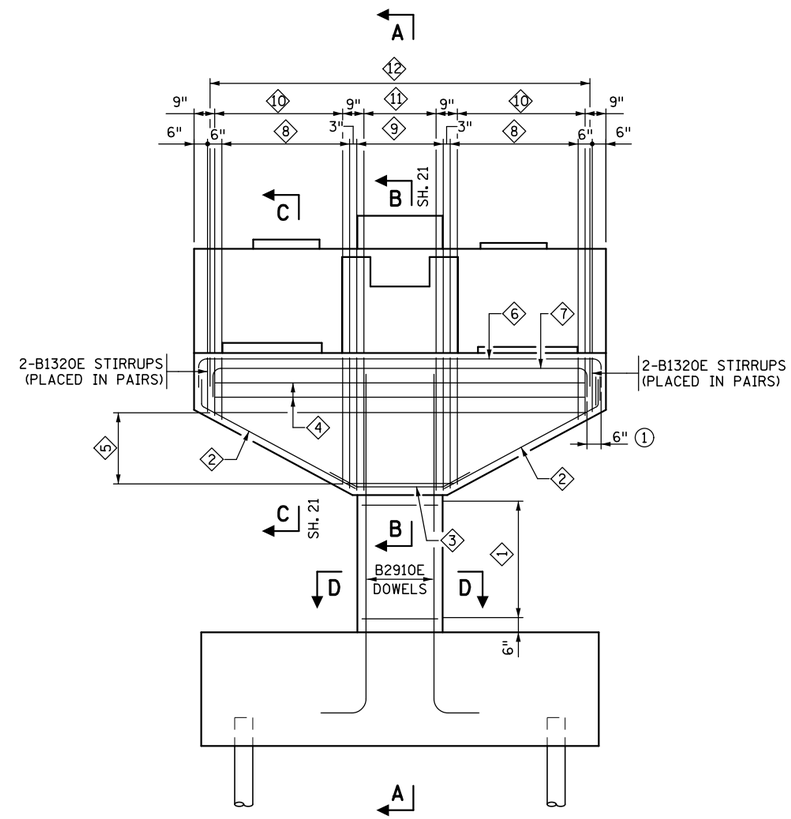
Bridge No. 62635



PIER 3 BRIDGE SEAT PLAN

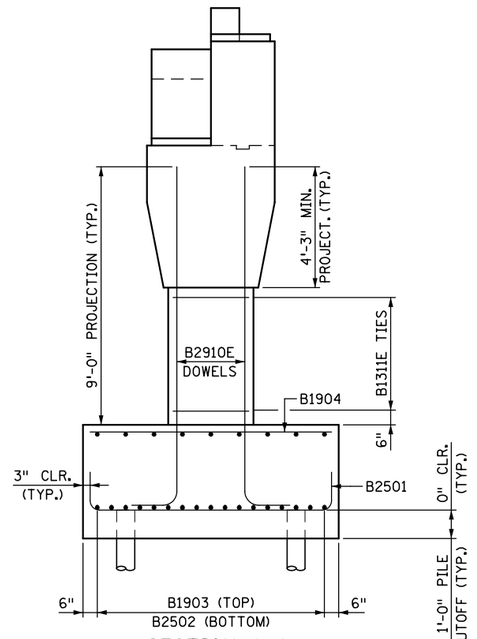


PIER 3 CAP BOTTOM REINFORCING PLAN



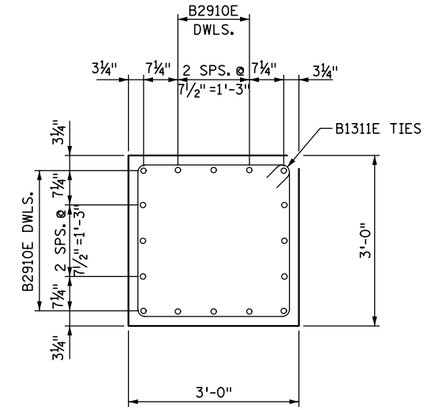
PIER 3 ELEVATION

(STEP REINFORCEMENT NOT SHOWN FOR CLARITY.)



SECTION A-A

(PIER CAP REINFORCEMENT NOT SHOWN FOR CLARITY)



COLUMN REINFORCEMENT - SECTION D-D

NOTES:

1. OFFSET HOOKS LATERALLY AS SHOWN.
2. B1326E BARS. FLARE AS SHOWN IN SECTION C-C ON PIER 3 REINFORCEMENT DETAILS.
3. B1325E BARS. SPACE BARS AS SHOWN IN SECTION B-B ON PIER 2 REINFORCEMENT DETAILS.

BAR CALL-OUTS

1. 5-B1311E TIES @ 1'-0" SPS. = 4'-0".
2. 6-B1326E SPACED TO MATCH BOTTOM OF B1320E, B1321E AND B1322E STIRRUPS. PLACE BARS AS SHOWN IN SECTION C-C AND BOTTOM REINFORCEMENT PLAN.
3. 4-B1325E SPACED TO MATCH BOTTOM OF B1323E AND B1324E STIRRUPS. PLACE BARS AS SHOWN IN SECTION B-B AND BOTTOM REINFORCEMENT PLAN.
4. 6-B1328E SPACED AS SHOWN IN SECTIONS B-B AND C-C.
5. 6-SER. OF 6-B1327E SPACED AS SHOWN IN SECTIONS B-B AND C-C.
6. 6-B2230E SPACED AS SHOWN IN SECTION B-B.
7. 6-B2229E SPACED AS SHOWN IN SECTION B-B.
8. 2-SER. OF 10-B1321E (PLACED IN PAIRS) @ 6" SPS. = 4'-6".
9. 14-B1323E (PLACED IN PAIRS) @ 6" = 3'-0"
10. 1-SER. OF 10-B1322E @ 6" SPS. = 4'-6"
11. 6-B1324E @ 6" SPS. = 2'-6".
12. 14-B1331E SPACED TO MATCH EVERY OTHER B1321E OR B1323E STIRRUPS.

DATE: 12/19/2016 TIME: 9:49:10 AM
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NO.	DATE	BY	DESCRIPTION OF REVISIONS

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA
SIGNED Matthew V. Christensen MATTHEW J. CHRISTENSEN
DATE: 12/19/2016 LIC. NO.: 43076

TKDA
444 Cedar Street, Suite 1500
Saint Paul, MN 55101
651.292.4400
tkda.com

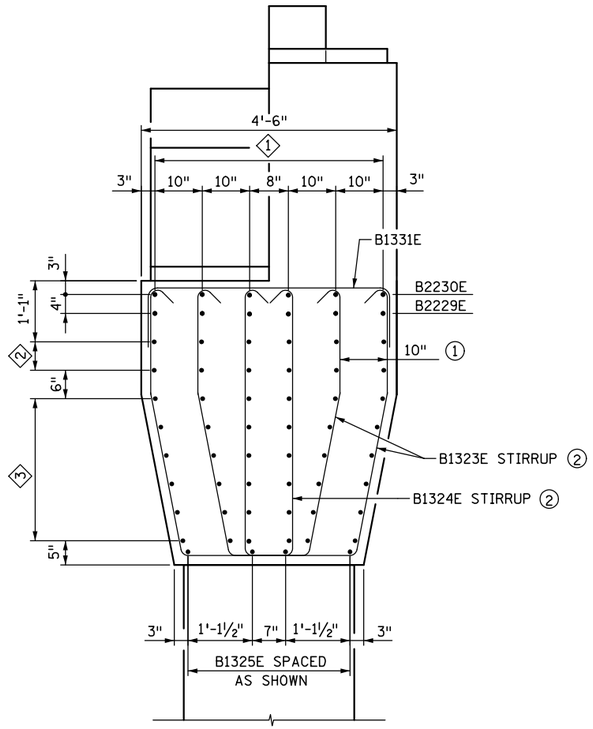
EASTBOUND WARNER ROAD
ST. PAUL, RAMSEY COUNTY, MINNESOTA
S.P. NO. 062-636-006

TITLE: PIER 3 REINFORCEMENT

DES: MAV	DR: MAV	APPROVED
CHK: MJC	CHK: ROC	

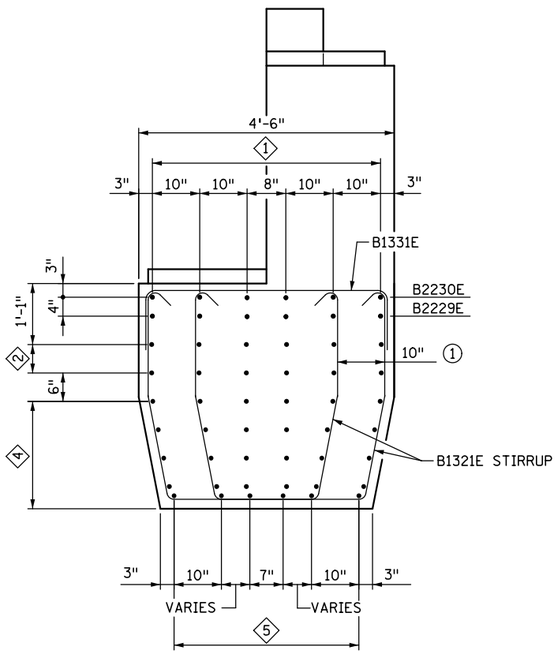
Sheet No. 20 of 77 Sheets

Bridge No. 62635

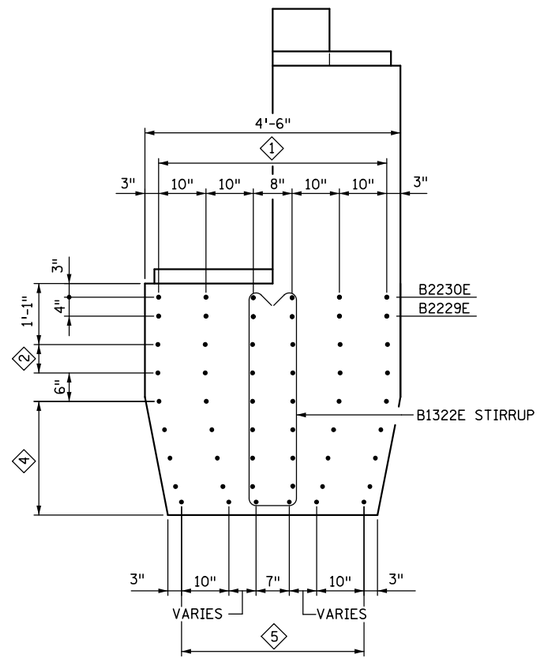


SECTION B-B

(STEP AND SHEAR KEY REINFORCEMENT NOT SHOWN FOR CLARITY.)
(SHEET 20)



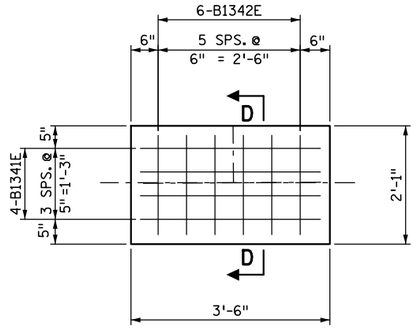
(SECTION C-C SHOWING B1321E STIRRUP)



(SECTION C-C SHOWING B1322E STIRRUP)

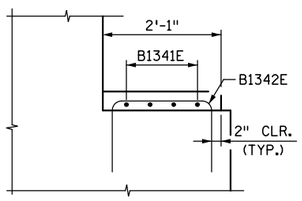
SECTION C-C

(SECTIONS SHOWN ARE OFFSET BY 3")
(STEP AND SHEAR KEY REINFORCEMENT NOT SHOWN FOR CLARITY.)
(SHEET 20)



PEDESTAL REINFORCEMENT PLAN

(BM. 2-1 & BM. 2-2)



SECTION D-D

NOTES:

① B1321E AND B1323E STIRRUPS TO BE PLACED IN PAIRS OFFSET LATERALLY BY 10"

② B1323E AND B1324E STIRRUPS ARE OFFSET BY 3" THROUGHOUT SECTION.

BAR CALL-OUTS:

1. 1 LAYER OF B2229E BARS AND 1 LAYER OF B2230E BARS SPACED AS SHOWN.
2. B1328E BARS (IN 2 LAYERS) @ 6" SPS. TIE BARS TO B1320E, B1321E, B1322E, B1323E, & B1324E STIRRUPS.
3. B1327E BARS @ 6" SPS. = 2'-6" TIE BARS TO B1320E, B1321E, B1322E, B1323E, & B1324E STIRRUPS.
4. B1327E BARS @ 6" SPS. MORE B1326E BARS WILL APPEAR IN CROSS SECTION AS SECTION GETS DEEPER.
5. B1326E BARS TO BE SPACED AS SHOWN WITH A VARIABLE SPACING.

DATE: 12/19/2016 TIME: 9:49:11 AM
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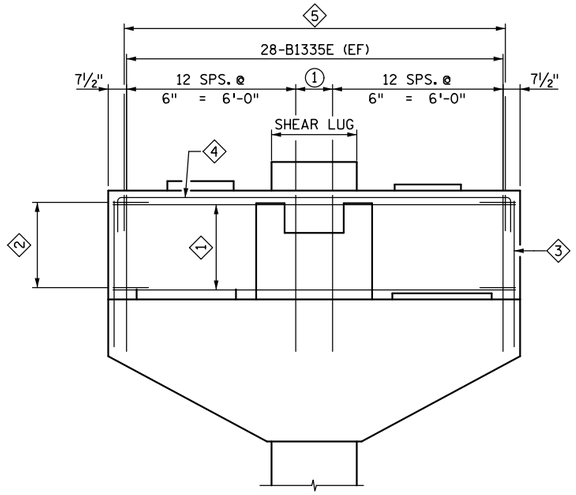
EASTBOUND WARNER ROAD
ST. PAUL, RAMSEY COUNTY, MINNESOTA
S.P. NO. 062-636-006

TITLE:
PIER 3
REINFORCEMENT DETAILS

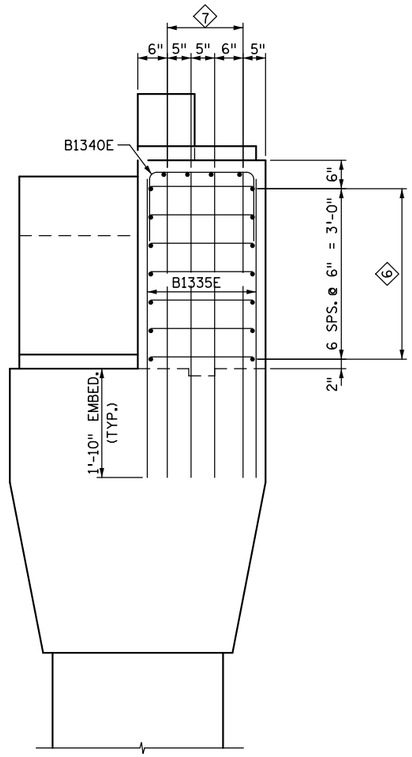
DES: MAV	DR: MAV	APPROVED
CHK: MJC	CHK: ROC	

Sheet No. 21 of 77 Sheets

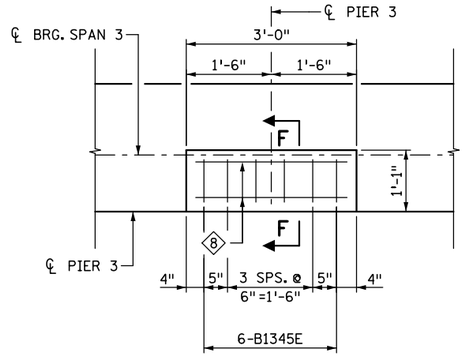
Bridge No. 62635



STEP REINFORCEMENT

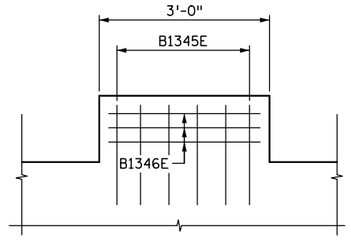


STEP REINFORCEMENT END VIEW



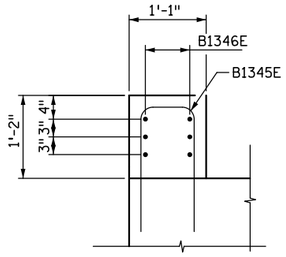
SHEAR LUG PLAN

(SEE SHEAR LUG ARMOR PLATE DETAILS)



SHEAR LUG ELEVATION

(SEE SHEAR LUG ARMOR PLATE DETAILS)



SECTION F-F

BAR CALL-OUTS

1. 7-B1337E BARS (EF) @ 6" SPS = 3'-0".
2. 7-B1338E (EF) SPACED TO MATCH B1337E.
3. 4-B1336E (EF) SPACED AS SHOWN IN STEP REINFORCEMENT END VIEW.
4. 4-B1339E SPACED TO MATCH B1336E.
5. 28-B1340E SPACED TO MATCH B1335E.
6. B1337E SPACED AS SHOWN. B1338E (EF) SPACED TO MATCH B1337E.
7. B1336E SPACED AS SHOWN. B1339E SPACED TO MATCH B1336E.
8. 3-B1346E @ 3" SPS. = 6".

NOTES:

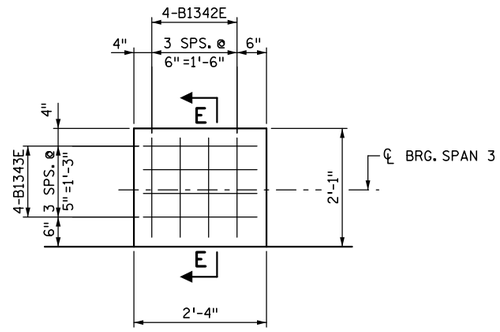
CLEAR COVER IS 2" UNLESS OTHERWISE NOTED.

STRUCTURAL STEEL SHALL COMPLY WITH Mn/DOT SPEC. 3306.

GALVANIZE STEEL ARMOR PLATES PER Mn/DOT SPEC. 3394 AFTER FABRICATION.

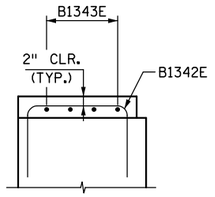
STEEL ARMOR PLATES TO BE INCLUDED IN PRICE BID FOR STRUCTURAL STEEL (3306).

(1) 3 SPS. @ 5" = 1'-3"

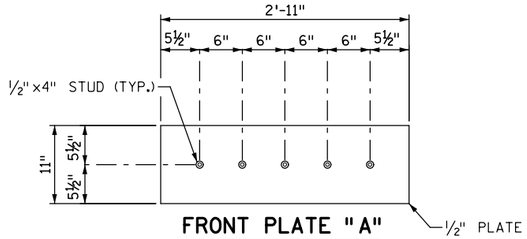


PEDESTAL REINFORCEMENT PLAN

(SLAB SPAN 3)
(2 THUS)

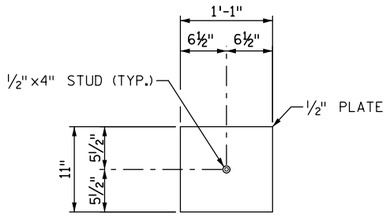


SECTION E-E



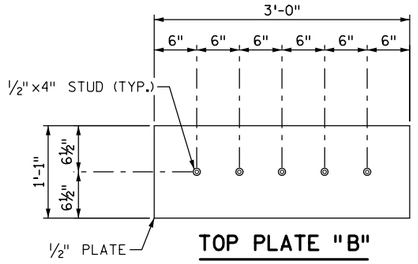
FRONT PLATE "A"

(1 THUS)
(WEIGHT = 56 LBS. EACH)



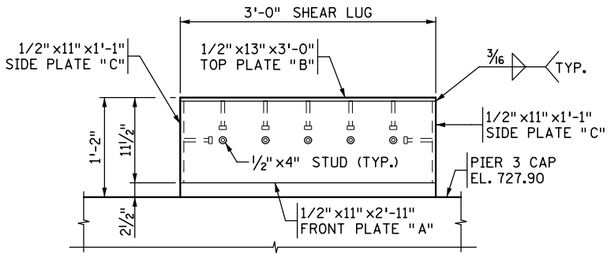
SIDE PLATE "C"

(2 THUS)
(WEIGHT = 21 LBS. EACH)



TOP PLATE "B"

(1 THUS)
(WEIGHT = 68 LBS. EACH)



TRANSVERSE SECTION

SHEAR LUG ARMOR PLATE DETAILS

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SIGNED Matthew V. Christensen MATTHEW J. CHRISTENSEN
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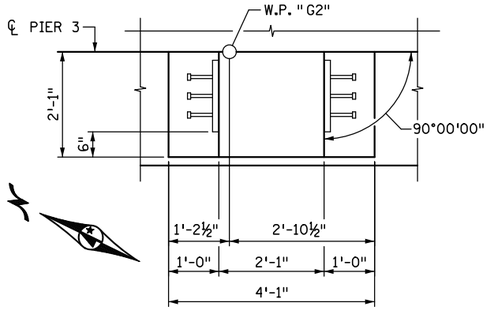
EASTBOUND WARNER ROAD
ST. PAUL, RAMSEY COUNTY, MINNESOTA
S.P. NO. 062-636-006

TITLE: PIER 3 STEP REINFORCEMENT DETAILS

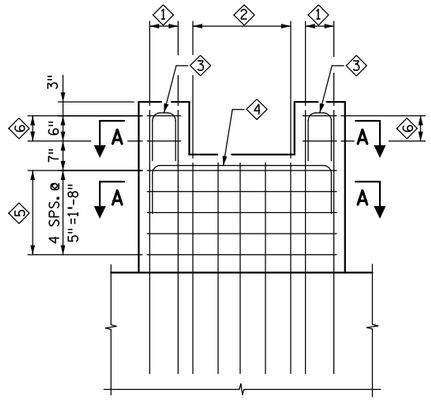
DES: MAV	DR: MAV	APPROVED
CHK: MJC	CHK: ROC	

Sheet No. 22 of 77 Sheets

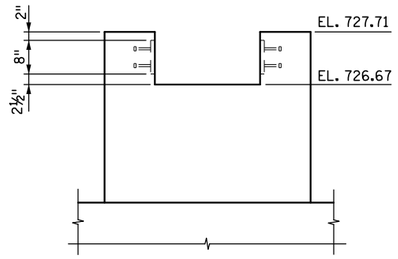
Bridge No. 62635



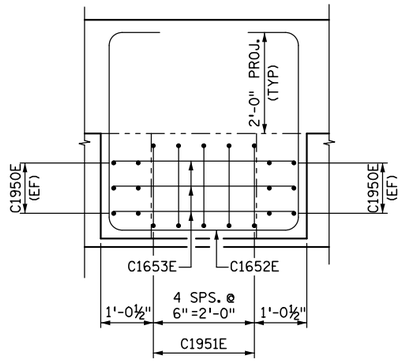
SHEAR KEY PLAN



SHEAR KEY REINFORCEMENT

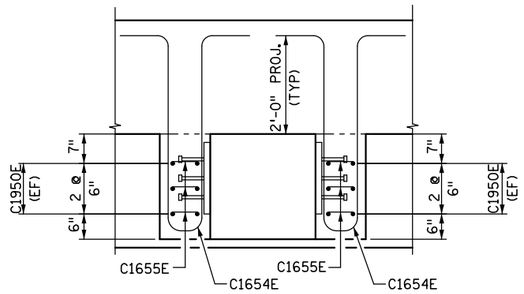


SHEAR KEY ELEVATION



SECTION A-A

(STEP REINFORCEMENT NOT SHOWN FOR CLARITY)



SECTION B-B

(STEP REINFORCEMENT NOT SHOWN FOR CLARITY)

BAR CALL-OUTS

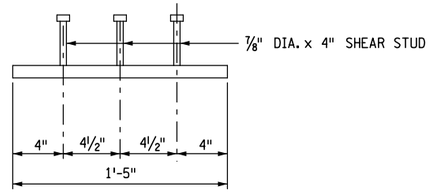
1. 3-B1950E (E.F) @ SPS. SHOWN IN SECTION B-B
2. 5-B1951E @ SPS. SHOWN IN SECTION A-A
3. 3-B1655E SPACED TO MATCH B1950E
4. 3-B1653E SPACED TO MATCH B1950E
5. 5-B1652E @ SPACING SHOWN
6. 2-B1654E @ SPACING SHOWN

NOTES:

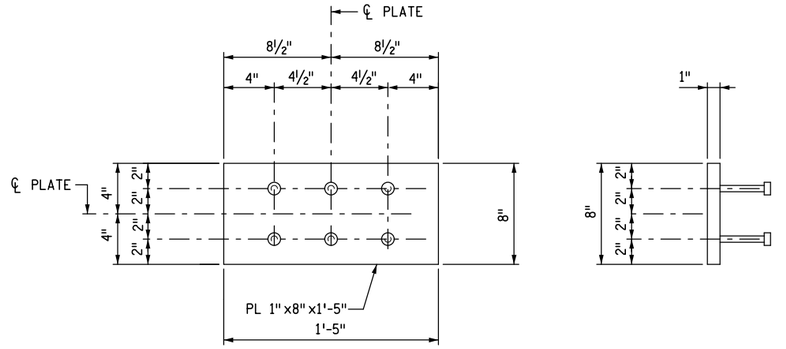
STRUCTURAL STEEL ARMOR PLATES SHALL COMPLY WITH Mn/DOT SPEC 3306.

GALVANIZE STEEL ARMOR PLATES PER Mn/DOT SPEC 3394 AFTER FABRICATION.

STEEL ARMOR PLATES TO BE INCLUDED IN PRICE BID FOR STRUCTURAL STEEL (3306).



PLAN



ELEVATION

SECTION

SHEAR KEY PROTECTION PLATE

2 REQ'D - (43 lbs. EACH)

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TITLE: PIER 3 SHEAR KEY REINFORCEMENT

DES: MAV	DR: MAV	APPROVED
CHK: MJC	CHK: ROC	

Sheet No. 23 of 77 Sheets

Bridge No. 62635

BILL OF REINFORCEMENT - PIER 3

BAR	NO.	LENGTH	SHAPE	LOCATION
B2501	27	11'-2"		FOOTING BOTTOM LONGITUDINAL
B2502	17	16'-2"		FOOTING BOTTOM TRANSVERSE
B1903	9	13'-6"		FOOTING TOP TRANSVERSE
B1904	14	8'-6"		FOOTING BOTTOM LONGITUDINAL
B2910E	16	13'-5"		FOOTING DOWEL BAR
B1311E	5	11'-5"		COLUMN TIES
B1320E	4	7'-11"		CAP STIRRUP
B1321E	40	SER-1		CAP STIRRUP
B1322E	20	SER-2		CAP STIRRUP
B1323E	14	12'-5"		CAP STIRRUP
B1324E	6	10'-11"		CAP STIRRUP
B1325E	4	5'-4"		CAP BOTTOM REINFORCING
B1326E	12	7'-3"		CAP BOTTOM REINFORCING
B1327E	36	SER-3		CAP HORIZONTAL
B1328E	12	13'-0"		CAP HORIZONTAL
B2229E	6	15'-6"		CAP HORIZONTAL
B2230E	6	16'-6"		CAP HORIZONTAL
B1331E	14	6'-6"		CAP TIE
B1335E	56	5'-3"		STEP VERTICAL
B1336E	8	5'-2"		STEP VERTICAL
B1337E	14	14'-2"		STEP HORIZONTAL
B1338E	14	4'-10"		STEP END
B1339E	4	17'-2"		STEP CAP
B1340E	28	4'-11"		STEP CAP
B1341E	8	5'-8"		PEDESTAL REINFORCEMENT
B1342E	20	4'-3"		PEDESTAL REINFORCEMENT
B1343E	8	4'-6"		PEDESTAL REINFORCEMENT
B1345E	6	4'-9"		SHEAR LUG CAP
B1346E	6	2'-8"		SHEAR LUG HORIZONTAL
B1950E	12	5'-2"		SHEAR KEY REINFORCEMENT
B1951E	5	10'-0"		SHEAR KEY REINFORCEMENT
B1652E	5	13'-7"		SHEAR KEY REINFORCEMENT
B1653E	3	5'-7"		SHEAR KEY REINFORCEMENT
B1654E	4	10'-6"		SHEAR KEY REINFORCEMENT
B1655E	6	2'-6"		SHEAR KEY REINFORCEMENT

SER. 1 = 4 SERIES OF 10 BARS (8'-3" TO 12'-3")

SER. 2 = 2 SERIES OF 10 BARS (5'-8" TO 10'-6")

SER. 3 = 6 SERIES OF 6 BARS (13'-2" TO 3'-11")

NOTES:

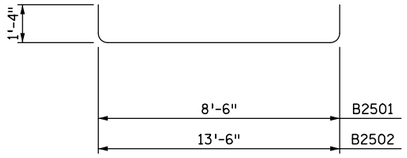
BENT BAR DIMENSIONS GIVEN ARE OUT-TO-OUT. ACTUAL BAR LENGTHS SHALL BE DETERMINED BASED ON THE DETAIL DIMENSIONS SHOWN IN THE BAR BENDING DIAGRAMS.

* DENOTES STANDARD STIRRUP HOOK.

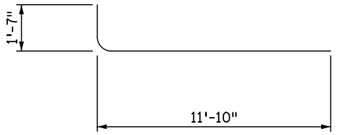
SUMMARY OF QUANTITIES FOR PIER 3

ITEM DESCRIPTION	UNIT	QUANTITY
STRUCTURAL CONCRETE (1A43)	CU YD	19
STRUCTURAL CONCRETE (3Y43)	CU YD	117
REINFORCEMENT BARS	POUND	1900
REINFORCEMENT BARS (EPOXY COATED)	POUND	3060
FOUNDATION PREPARATION PIER 3	LUMP SUM	1
STRUCTURAL STEEL (3306)	POUND	252
MICROPILE MOBILIZATION	LUMP SUM	PART
MICROPILES	EACH	6
MICROPILE PROOF LOAD TEST	EACH	1

BAR BENDING DIAGRAMS



B2501 & B2502



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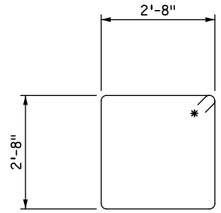

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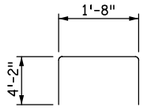

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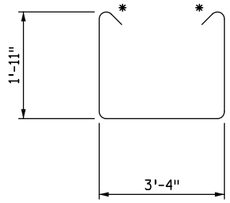

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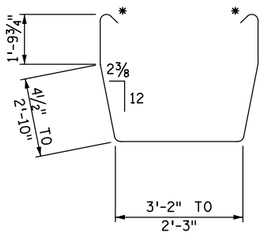

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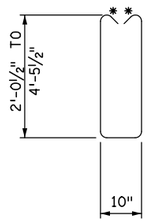

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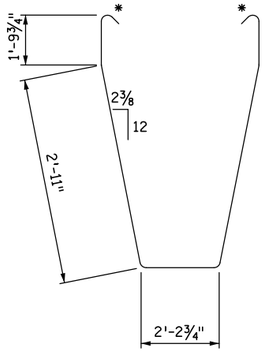

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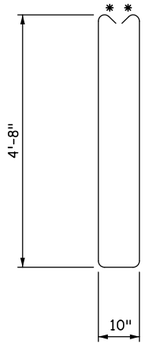

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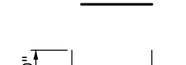

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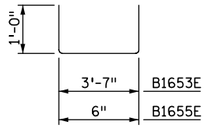

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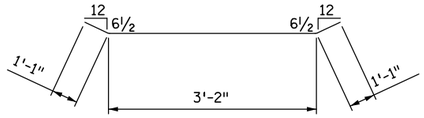

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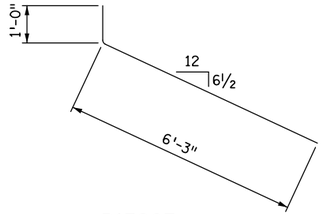

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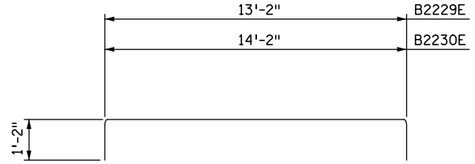

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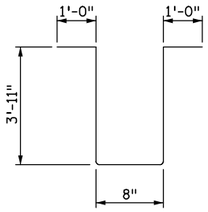

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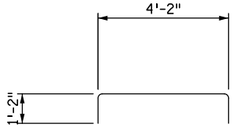

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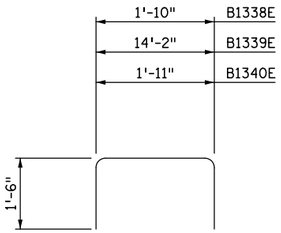

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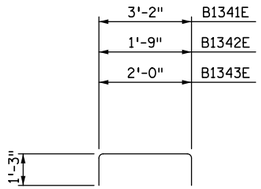

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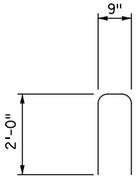

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NO.	DATE	BY	DESCRIPTION OF REVISIONS

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA
SIGNED Matthew V. Christensen MATTHEW J. CHRISTENSEN
DATE: 12/19/2016 LIC. NO.: 43076

TKDA
444 Cedar Street, Suite 1500
Saint Paul, MN 55101
651.292.4400
tkda.com

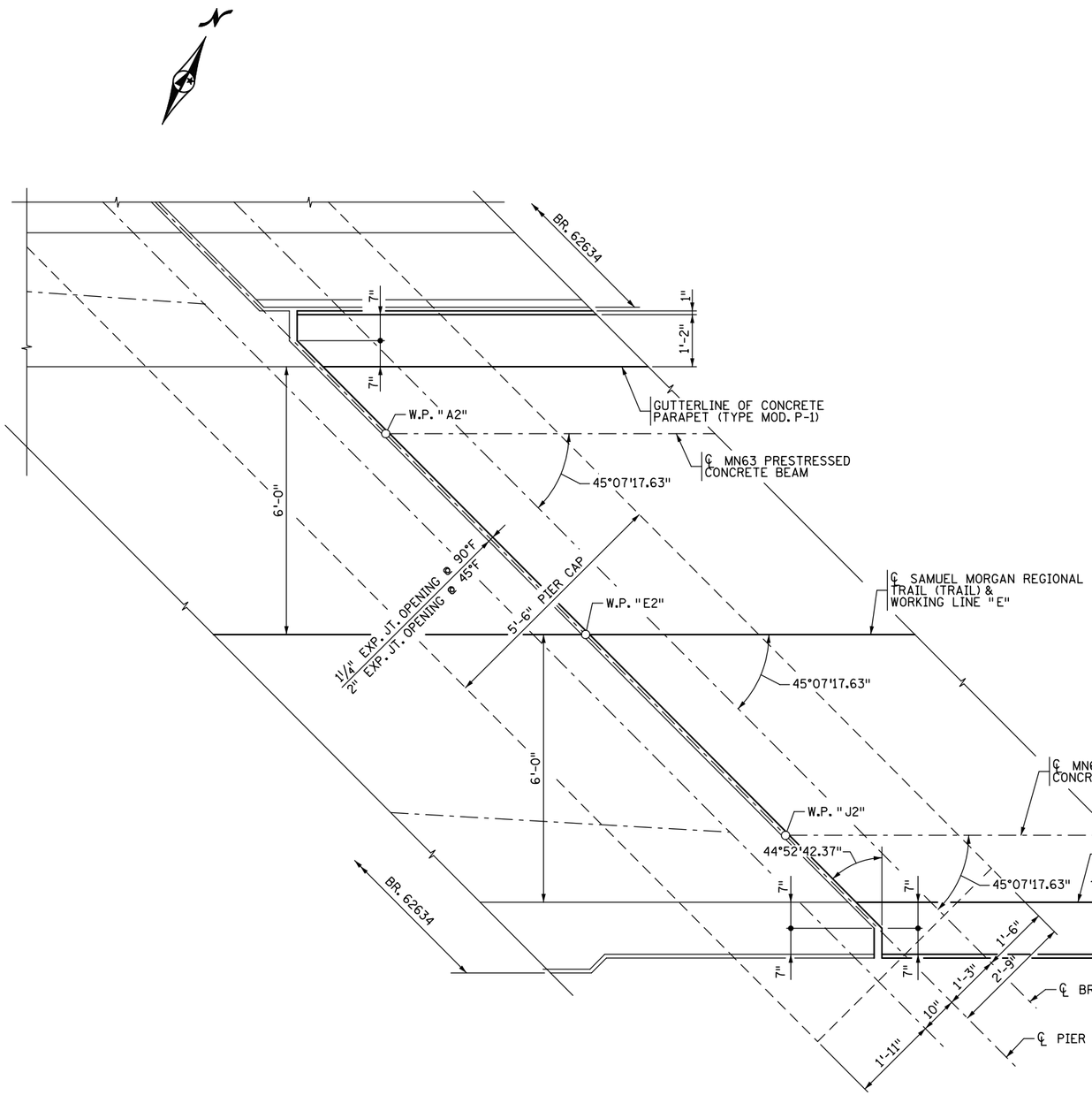
EASTBOUND WARNER ROAD
ST. PAUL, RAMSEY COUNTY, MINNESOTA
S.P. NO. 062-636-006

TITLE:
PIER 3
BARLIST & QUANTITIES

DES: MAV	DR: MAV	APPROVED
CHK: MJC	CHK: ROC	

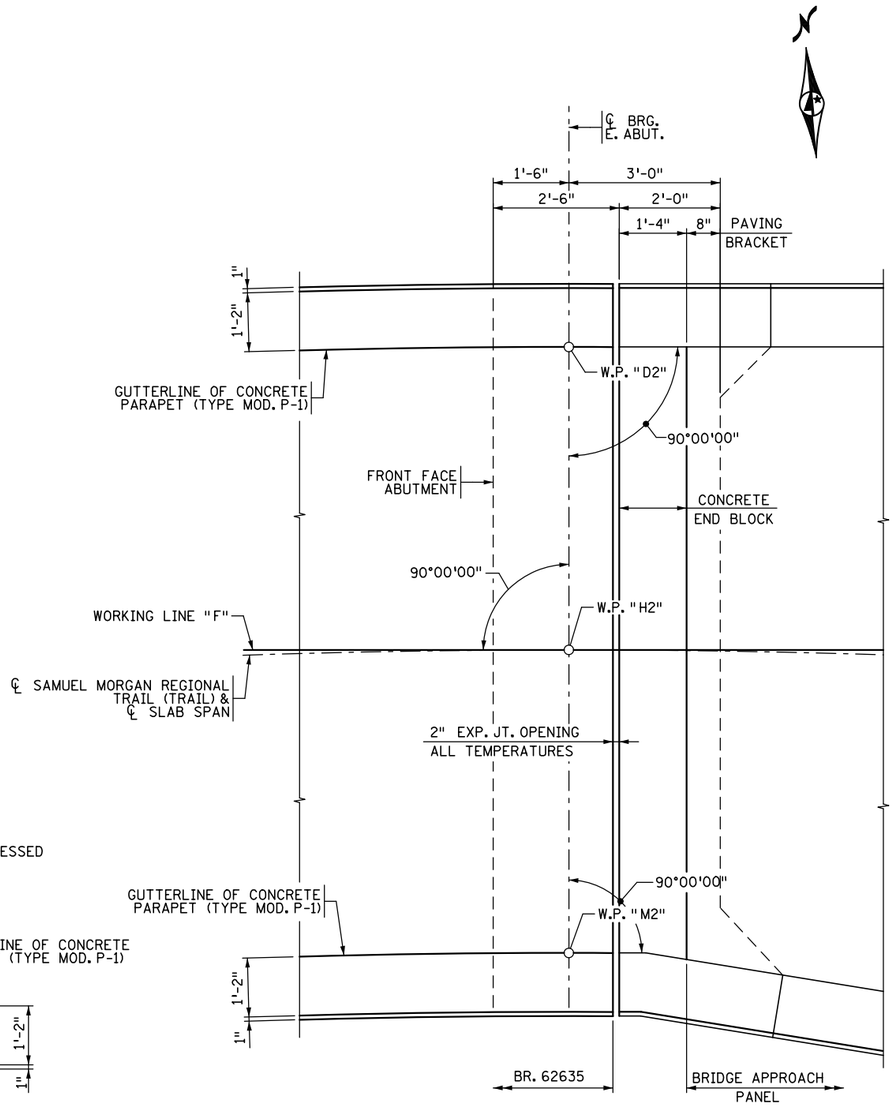
Sheet No. 24 of 77 Sheets

Bridge No. 62635



PIER 1

* PIER 1 BRIDGE 62635
PIER 4 BRIDGE 62634



EAST ABUTMENT

NOTES

EXPANSION JOINT COVERPLATES NOT SHOWN.
SEE EXPANSION JOINT DEVICES DRAWINGS
FOR FURTHER INFORMATION.

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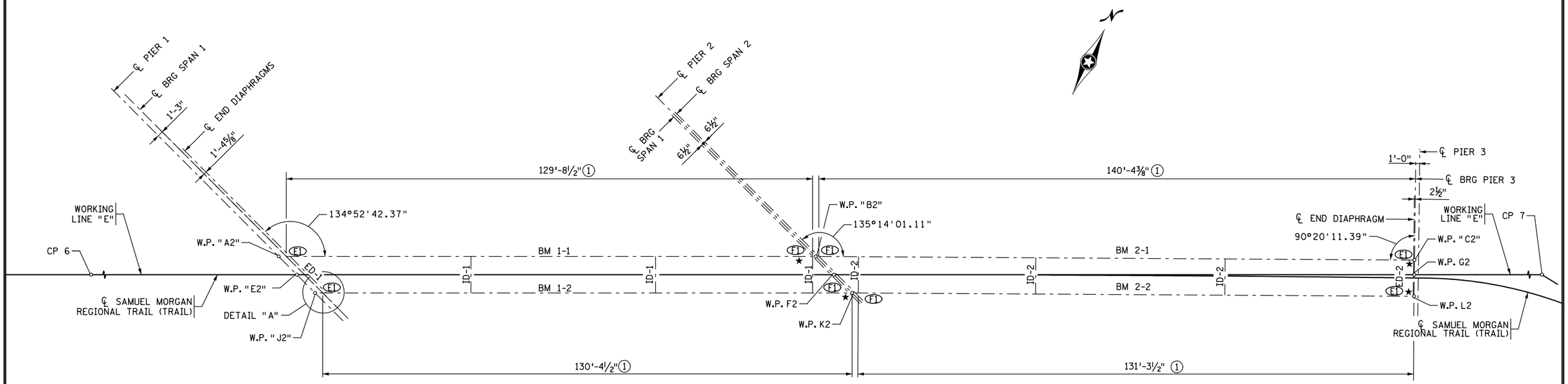
EASTBOUND WARNER ROAD
ST. PAUL, RAMSEY COUNTY, MINNESOTA
S.P. NO. 062-636-006

TITLE: CORNER DETAILS

DES: MAV	DR: MAV	APPROVED
CHK: MJC	CHK: ROC	

Sheet No. 25 of 77 Sheets

Bridge No. 62635

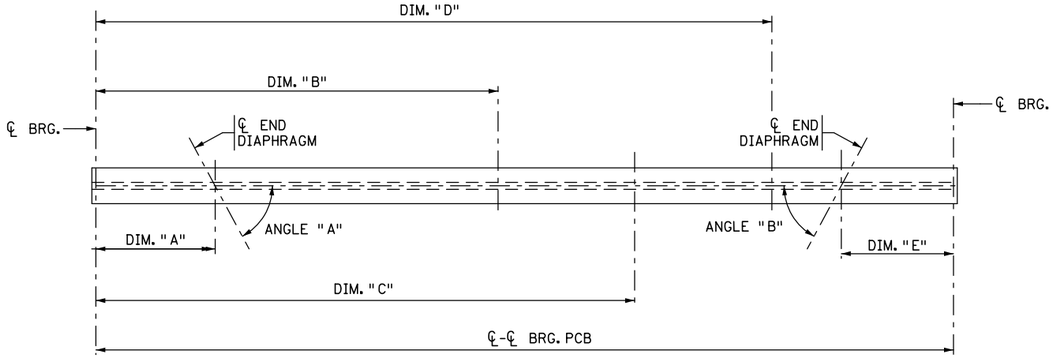


FRAMING PLAN

INTERMEDIATE DIAPHRAGM LENGTHS	
ID NO.	DIAPHRAGM LENGTH (CL-CL BEAM WEB)
ID-1	9'-0"
ID-2	8'-11⅜"

END DIAPHRAGM LENGTHS	
ED NO.	DIAPHRAGM LENGTH (CL-CL BEAM WEB) ②
ED-1	12'-8⅜"
ED-2	8'-11⅜"

② DIMENSIONS MEASURED ALONG ℄ END DIAPHRAGM



SCHEMATIC BEAM LAYOUT - TYPICAL SPAN

PRESTRESSED CONCRETE BEAM DATA AND INSERT LOCATIONS SPANS 1 & 2 ②

BEAM ID	CL-CL BRG.	CL BRG.	DIM. "A"	DIM. "B"	DIM. "C"	DIM. "D"	DIM. "E"	CL BRG.	ANGLE "A"	ANGLE "B"	TOP FLANGE COPING
BM 1-1	129'-8½"		1'-11½" (E)	43'-2⅞" (R)	86'-5⅝" (R)	129'-8½" (R)		(R)	45°07'17.63"		Y
BM 1-2	130'-4½"		2'-7½" (E)	34'-11¼" (L)	78'-2⅛" (L)	121'-5" (L)			45°07'17.63"		Y
BM 2-1	140'-4⅜"			9'-0¼" (R)	52'-9⅜" (R)	96'-6⅝" (R)	0'-2½" (E)			89°39'48.61"	N
BM 2-2	131'-3½"	(L)		0" (L)	43'-9¼" (L)	87'-6⅝" (L)	0'-2½" (E)			89°39'48.61"	N

NOTES:

FOR INTERMEDIATE DIAPHRAGMS, THE TABULATED DIMENSIONS DEFINE THE LOCATION OF THE INSERTS FOR THE CONNECTION ANGLES. THEY ARE CUMULATIVE DIMENSIONS AND ARE MEASURED FROM ℄ BEARING AT THE EAST END OF THE BEAM ALONG THE ℄ OF BEAM (LOOKING UPSTATION).

(L).... DENOTES AN INTERIOR DIAPHRAGM LOCATION WITH THE DIAPHRAGM CONNECTING ON THE LEFT SIDE OF THE WEB (LOOKING UPSTATION).

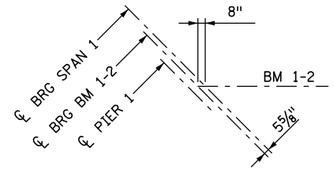
(R).... DENOTES AN INTERIOR DIAPHRAGM LOCATION WITH THE DIAPHRAGM CONNECTING ON THE RIGHT SIDE OF THE WEB (LOOKING UPSTATION).

(B).... DENOTES AN INTERIOR DIAPHRAGM LOCATION WITH THE DIAPHRAGM CONNECTING ON BOTH SIDES OF THE WEB.

FOR THE END DIAPHRAGMS, THE TABULATED DIMENSIONS DEFINE THE LOCATION OF ℄ DIAPHRAGM (MEASURED FROM THE RESPECTIVE ℄ BRG). THE CORRESPONDING FRAMING ANGLE OF THE END DIAPHRAGM HAS BEEN PROVIDED AS WELL.

(E).... DENOTES THE ℄ END DIAPHRAGM DIMENSION ASSOCIATED WITH AN END DIAPHRAGM.

SEE STANDARD MN63 PRESTRESSED CONCRETE BEAM SHEETS FOR DIMENSIONS OF TOP FLANGE COPING AND OTHER BEAM DETAILS.



DETAIL "A"

NOTES:

BM 2-3
- 3 DENOTES THE SPAN NUMBER
- 2 DENOTES THE SEQUENTIAL BEAM NUMBER IN A GIVEN SPAN

E1 DENOTES EXPANSION CURVED PLATE BEARING ASSEMBLY, TYPE 1

F1 DENOTES FIXED CURVED PLATE BEARING ASSEMBLY, TYPE 1

★ DENOTES "X" END OF BEAM

① MEASURED ALONG ℄ BEAM

② ALL DIMENSIONS SHOWN ARE HORIZONTAL DIMENSIONS. CONTRACTOR TO ADJUST FOR BEAM SLOPED LENGTHS SHOWN ON THE BEAM SHEETS.

LEGEND:

DIM "A" .... DENOTES DISTANCE FROM LEFT ℄ BRG. TO ℄ END DIAPHRAGM

DIM "E" .... DENOTES DISTANCE FROM RIGHT ℄ BRG. TO ℄ END DIAPHRAGM

DIM "B" THRU DIM "D" .... DENOTE DISTANCES FROM LEFT ℄ BRG. TO ℄ INSERTS FOR INTERMEDIATE DIAPHRAGMS

NO.	DATE	BY	DESCRIPTION OF REVISIONS

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SIGNED _____ MATTHEW J. CHRISTENSEN
DATE: 12/19/2016 LIC. NO.: 43076

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tkda.com

EASTBOUND WARNER ROAD
ST. PAUL, RAMSEY COUNTY, MINNESOTA
S.P. NO. 062-636-006

TITLE: FRAMING PLAN

DES: MPB	DR: MPB	APPROVED
CHK: JRM	CHK: ROC	

Sheet No. 26 of 77 Sheets

Bridge No. 62635

DATE: 12/19/2016 TIME: 9:49:15 AM
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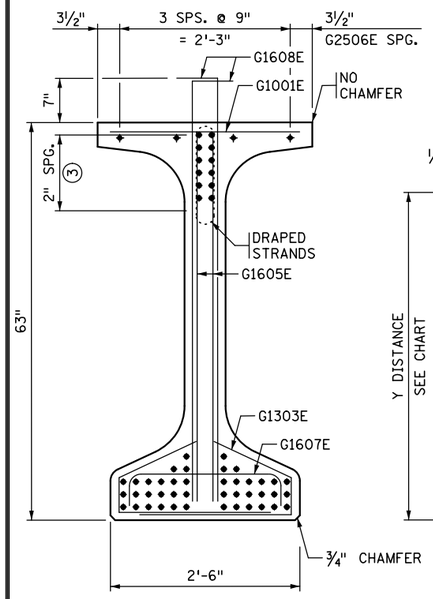
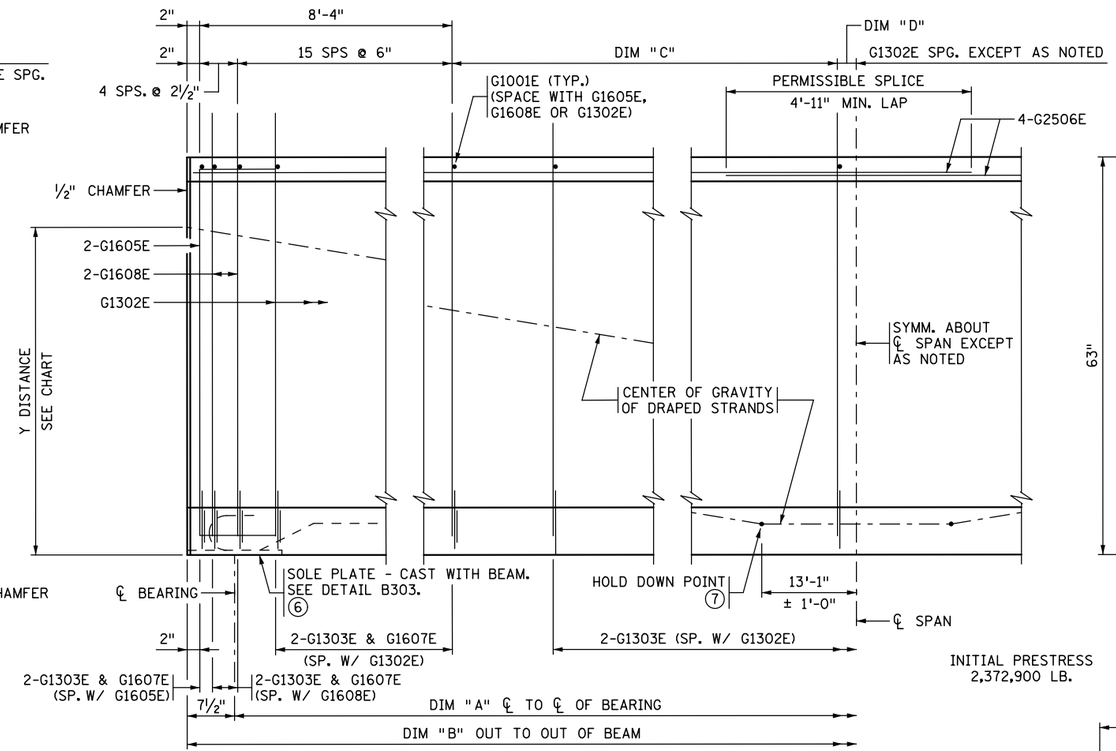


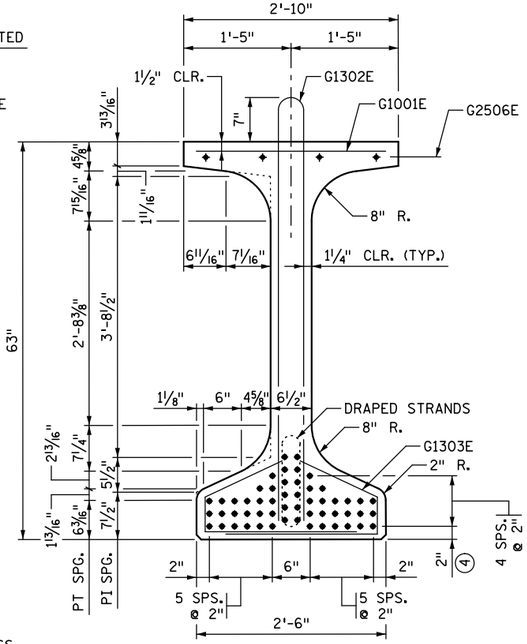
END VIEW

CUT STRANDS FLUSH WITH CONCRETE. PAINT ENDS WITH AN APPROVED GRAY EPOXY EXCEPT AS NOTED.



BEAM ELEVATION

INITIAL PRESTRESS 2,372,900 LB.

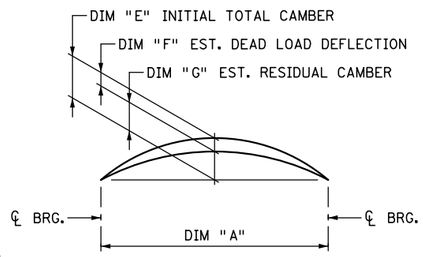


SECTION AT ℄ SPAN

Y DISTANCES (IN INCHES)			
	NO.	℄ SPAN	END
STRAIGHT STRANDS	42	4.67	
DRAPED STRANDS	12	8.00	53.00 ▫
TOTAL STRANDS	54	5.41	

Y = DISTANCE TO CENTER OF GRAVITY OF STRANDS FROM BOTTOM OF BEAM. ALL STRANDS SPACED 2" CENTER TO CENTER, HORIZONTALLY AND VERTICALLY, EXCEPT AS NOTED.

▫ A TOLERANCE OF ± 1" WILL BE PERMITTED IN THIS DIMENSION.



CAMBER DIAGRAM

INITIAL CAMBER IS GIVEN AFTER DIAPHRAGMS ARE IN PLACE.

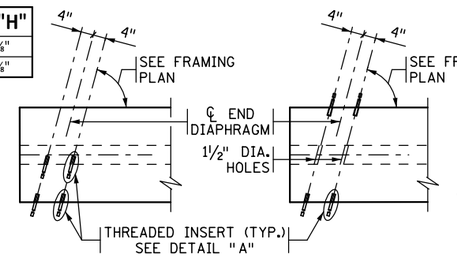
DEAD LOAD DEFLECTION SHOWN IS FOR WEIGHT OF SLAB, WEARING COURSE, RAILING, SIDEWALK AND MEDIAN WHERE APPLICABLE.

ENGINEER WILL TAKE ELEVATIONS AT TOP OF BEAMS AFTER ERECTION AND WILL ALLOW FOR DEFLECTION SHOWN TO ENABLE CONTRACTOR TO BUILD FORMS TO CORRECT GRADE AND SPECIFIED SLAB THICKNESS.

BEAM ID	DIM "A"	DIM "B" ⑧	DIM "B" ⑨	DIM "C"	DIM "D"	NOTES
BM 1-1	129'-8½"	130'-11½"	131'-0⅛"	48 SPS @ 14"	0'-11¾"	PLACE G1302E & G1303E @ CL SPAN
BM 1-2	130'-4½"	131'-7½"	131'-8⅛"	49 SPS @ 14"	0'-1¾"	OMIT G1302E & G1303E @ CL SPAN

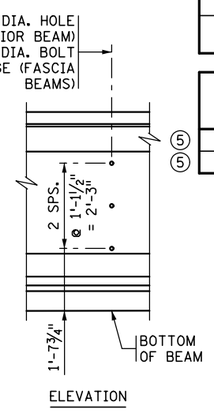
BEAM ID	DIM "E"	DIM "F"	DIM "G"	DIM "H"
BM 1-1	6¼"	4¾"	1½"	2'-1⅜"
BM 1-2	6¼"	4¾"	1½"	2'-9⅜"

BEAM ID	"X"	"Y"	"Z"
BM 1-1	25.62	26.02	51.64
BM 1-2	25.56	26.02	51.58



CONCRETE END DIAPHRAGM

PARAPET ABUTMENT
(SEE END DIAPHRAGM DETAILS SHEET)



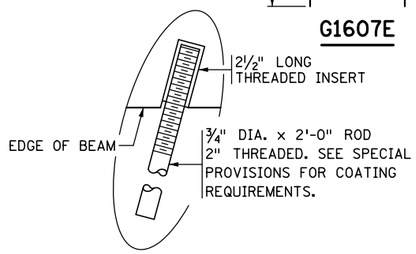
STEEL INTERMEDIATE DIAPHRAGM

(SEE DETAIL B403 FOR DIAPHRAGM DETAILS)

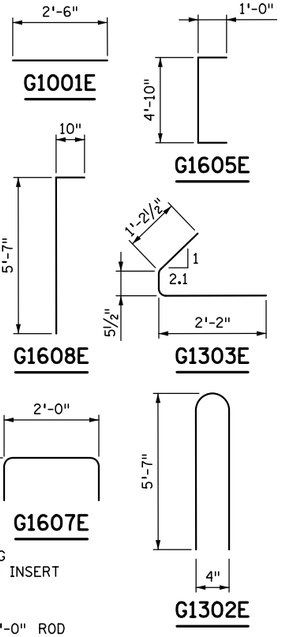
CALCULATED PRESTRESS LOSSES	
ELASTIC SHORTENING LOSS	"X" KSI
LONG TERM LOSSES	"Y" KSI
TOTAL LOSSES	"Z" KSI

MINIMUM CONCRETE STRENGTH - K.S.I.	
① f'ci	② f'c
7.5 KSI	9.0 KSI

PRESTRESSING STRAND DIAMETER
½" ☐
0.60" ☒



DETAIL "A"



GENERAL NOTES

TOPS OF BEAMS SHALL BE ROUGH FLOATED AND BROOMED TRANSVERSELY FOR BOND.

PROVIDE HANDLING HOOKS OR DEVICES AS REQUIRED BY CONTRACTOR.

EACH BEAM SHALL BE MARKED, SHOWING BRIDGE NUMBER, CASTING DATE, AND INDIVIDUAL IDENTIFICATION LETTERS AND NUMBERS. MARKINGS SHALL BE MADE ON THE FACE OF THE BEAM, NEAR THE END, SO LOCATED THAT THEY WILL BE EXPOSED AFTER THE END DIAPHRAGMS HAVE BEEN CAST. FASCIA BEAMS SHALL BE MARKED ON THE INSIDE FACE. ALL MARKINGS SHALL BE STENCILLED AND BE CLEARLY LEGIBLE. FOR LOCATION OF BEAMS, SEE FRAMING PLAN.

ALL MATERIAL AND WORK SHOWN OR NOTED ON THIS SHEET SHALL BE INCLUDED IN UNIT PRICE BID FOR PRESTRESSED CONCRETE BEAMS. SEE Mn/DOT SPEC. 2405.

SEE FRAMING PLAN FOR BEAM END MARKED "X" AND DIAPHRAGM SPACING.

APPROXIMATE WT. OF BEAMS VARIES FROM 57.2 TONS (BM 1-2) TO 56.9 TONS (BM 1-1).

AS AN ALTERNATE TO THE DIAPHRAGM ANCHORAGES SHOWN, THE CONTRACTOR MAY SUBMIT DETAILS OF A CAST-IN-PLACE ANCHORAGE TO THE ENGINEER FOR APPROVAL. ANCHORAGE MUST PROVIDE AN ULTIMATE PULL OUT STRENGTH OF 15 KIPS PER ANCHORAGE.

① MINIMUM CONCRETE STRENGTH AT TIME OF PRESTRESS TRANSFER.

② MINIMUM CONCRETE STRENGTH WHEN BEAM CAN BE TRANSPORTED AND INSTALLED.

③ DRAPED STRANDS.

④ STRAIGHT STRANDS.

⑤ PRESTRESSING STRANDS SHALL BE 7-WIRE LOW RELAXATION STRAND, CONFORMING TO ASTM A416, GRADE 270.

⑥ FOR INTEGRAL ABUTMENT, SOLE PLATE CAN BE ELIMINATED OR REPLACED WITH AN APPROVED PROTECTION PLATE.

⑦ CENTER OF GRAVITY OF HOLD DOWNS WHEN MULTIPLE HOLD DOWNS ARE USED.

⑧ HORIZONTAL BEAM LENGTH (BEAM DIMESIONS BASED OFF OF HORZ. LENGTH).

⑨ SLOPED BEAM LENGTH.

REVISED: 10-22-2009

APPROVED: JUNE 14, 2006
Daniel L. Hlavsa
STATE BRIDGE ENGINEER

NO.	DATE	BY	DESCRIPTION OF REVISIONS

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA
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DATE: 12/19/2016 LIC. NO.: 43076

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EASTBOUND WARNER ROAD
ST. PAUL, RAMSEY COUNTY, MINNESOTA
S.P. NO. 062-636-006

TITLE: MN63 PRESTRESSED CONCRETE BEAM (PRETENSIONED) MN63-132

DES: MPB	DR: MPB	APPROVED
CHK: JRM	CHK: JRM	

Sheet No. 27 of 77 Sheets

Bridge No. 62635

BEAMS BM 1-1 & BM 1-2 — **FIG. 5-397.509**

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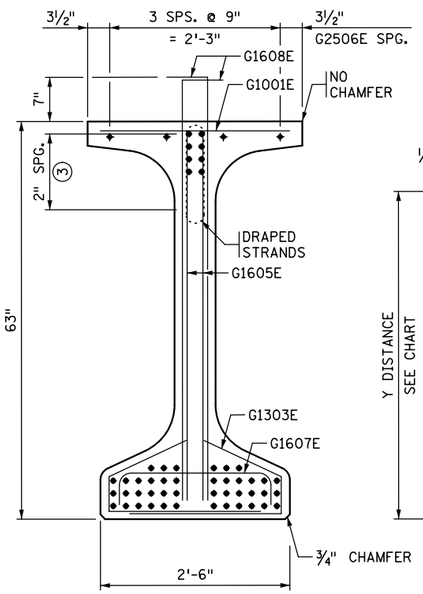
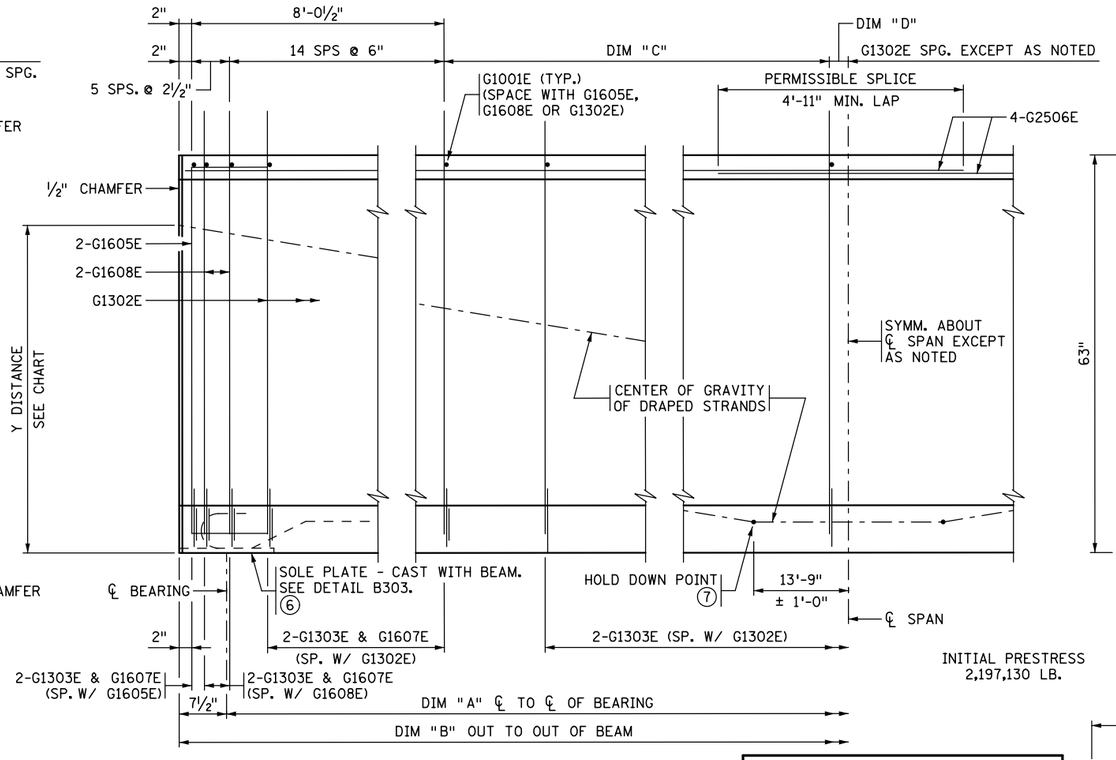


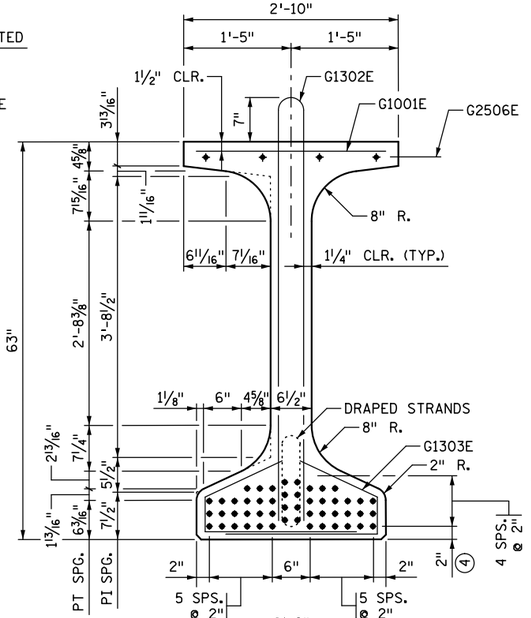
END VIEW

CUT STRANDS FLUSH WITH CONCRETE. PAINT ENDS WITH AN APPROVED GRAY EPOXY EXCEPT AS NOTED.



BEAM ELEVATION

INITIAL PRESTRESS 2,197,130 LB.

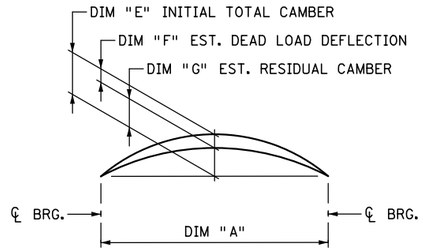


SECTION AT ℄ SPAN

Y DISTANCES (IN INCHES)			
	NO.	℄ SPAN	END
STRAIGHT STRANDS	42	4.57	
DRAPED STRANDS	8	6.00	57.00 ▫
TOTAL STRANDS	50	4.80	

Y = DISTANCE TO CENTER OF GRAVITY OF STRANDS FROM BOTTOM OF BEAM. ALL STRANDS SPACED 2" CENTER TO CENTER, HORIZONTALLY AND VERTICALLY, EXCEPT AS NOTED.

▫ A TOLERANCE OF ± 1" WILL BE PERMITTED IN THIS DIMENSION.



CAMBER DIAGRAM

INITIAL CAMBER IS GIVEN AFTER DIAPHRAGMS ARE IN PLACE.

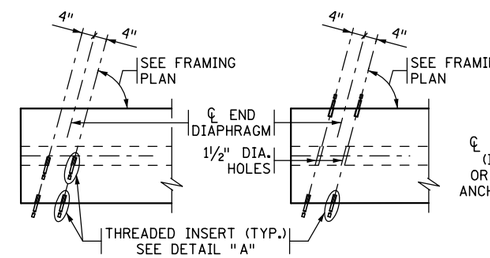
DEAD LOAD DEFLECTION SHOWN IS FOR WEIGHT OF SLAB, WEARING COURSE, RAILING, SIDEWALK AND MEDIAN WHERE APPLICABLE.

ENGINEER WILL TAKE ELEVATIONS AT TOP OF BEAMS AFTER ERECTION AND WILL ALLOW FOR DEFLECTION SHOWN TO ENABLE CONTRACTOR TO BUILD FORMS TO CORRECT GRADE AND SPECIFIED SLAB THICKNESS.

BEAM ID	DIM "A"	DIM "B"	DIM "B"	DIM "C"	DIM "D"	NOTES
BM 2-1	140'-4⅜"	141'-7⅜"	141'-9¾"	53 SPS @ 14"	0'-9⅜" (+)	PLACE G1302E & G1303E @ CL SPAN
BM 2-2	131'-3½"	132'-6½"	132'-8⅝"	49 SPS @ 14"	0'-10⅜" (+)	PLACE G1302E & G1303E @ CL SPAN

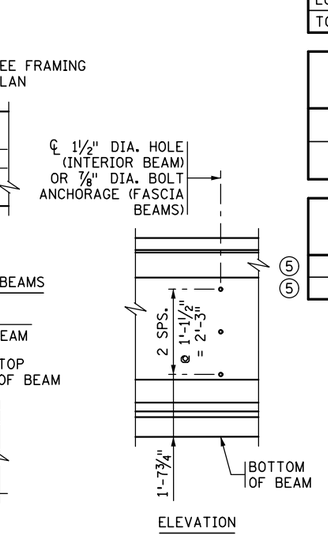
BEAM ID	DIM "E"	DIM "F"	DIM "G"
BM 2-1	6⅛"	5⅛"	1"
BM 2-2	6"	3¼"	2¼"

BEAM ID	"X"	"Y"	"Z"
BM 2-1	22.89	24.78	47.67
BM 2-2	23.88	24.78	48.66



CONCRETE END DIAPHRAGM

PARAPET ABUTMENT
(SEE END DIAPHRAGM DETAILS SHEET)



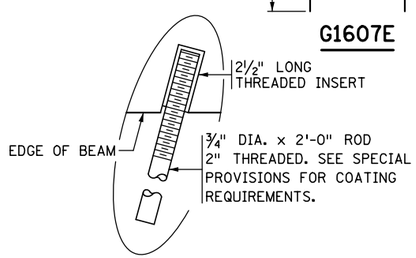
STEEL INTERMEDIATE DIAPHRAGM

(SEE DETAIL B403 FOR DIAPHRAGM DETAILS)

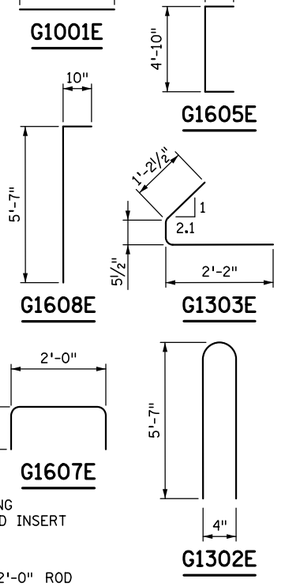
CALCULATED PRESTRESS LOSSES	
ELASTIC SHORTENING LOSS	"X" KSI
LONG TERM LOSSES	"Y" KSI
TOTAL LOSSES	"Z" KSI

MINIMUM CONCRETE STRENGTH - K.S.I.	
① f'cI	② f'c
7.5 KSI	9.0 KSI

PRESTRESSING STRAND DIAMETER
½" ☐
0.60" ☒



DETAIL "A"



GENERAL NOTES

TOPS OF BEAMS SHALL BE ROUGH FLOATED AND BROOMED TRANSVERSELY FOR BOND.

PROVIDE HANDLING HOOKS OR DEVICES AS REQUIRED BY CONTRACTOR.

EACH BEAM SHALL BE MARKED, SHOWING BRIDGE NUMBER, CASTING DATE, AND INDIVIDUAL IDENTIFICATION LETTERS AND NUMBERS. MARKINGS SHALL BE MADE ON THE FACE OF THE BEAM, NEAR THE END, SO LOCATED THAT THEY WILL BE EXPOSED AFTER THE END DIAPHRAGMS HAVE BEEN CAST. FASCIA BEAMS SHALL BE MARKED ON THE INSIDE FACE. ALL MARKINGS SHALL BE STENCILLED AND BE CLEARLY LEGIBLE. FOR LOCATION OF BEAMS, SEE FRAMING PLAN.

ALL MATERIAL AND WORK SHOWN OR NOTED ON THIS SHEET SHALL BE INCLUDED IN UNIT PRICE BID FOR PRESTRESSED CONCRETE BEAMS. SEE Mn/DOT SPEC. 2405.

SEE FRAMING PLAN FOR BEAM END MARKED "X" AND DIAPHRAGM SPACING.

APPROXIMATE WT. OF BEAMS VARIES FROM 61.5 TONS (BM 2-1) TO 57.6 TONS (BM 2-2).

AS AN ALTERNATE TO THE DIAPHRAGM ANCHORAGES SHOWN, THE CONTRACTOR MAY SUBMIT DETAILS OF A CAST-IN-PLACE ANCHORAGE TO THE ENGINEER FOR APPROVAL. ANCHORAGE MUST PROVIDE AN ULTIMATE PULL OUT STRENGTH OF 15 KIPS PER ANCHORAGE.

① MINIMUM CONCRETE STRENGTH AT TIME OF PRESTRESS TRANSFER.

② MINIMUM CONCRETE STRENGTH WHEN BEAM CAN BE TRANSPORTED AND INSTALLED.

③ DRAPED STRANDS.

④ STRAIGHT STRANDS.

⑤ PRESTRESSING STRANDS SHALL BE 7-WIRE LOW RELAXATION STRAND, CONFORMING TO ASTM A416, GRADE 270.

⑥ FOR INTEGRAL ABUTMENT, SOLE PLATE CAN BE ELIMINATED OR REPLACED WITH AN APPROVED PROTECTION PLATE.

⑦ CENTER OF GRAVITY OF HOLD DOWNS WHEN MULTIPLE HOLD DOWNS ARE USED.

⑧ HORIZONTAL BEAM LENGTH (BEAM DIMENSIONS BASED OFF OF HORIZ. LENGTH).

⑨ SLOPED BEAM LENGTH.

REVISED: 10-22-2009

APPROVED: JUNE 14, 2006
Daniel T. Warner
STATE BRIDGE ENGINEER

NO.	DATE	BY	DESCRIPTION OF REVISIONS

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA
SIGNED Matthew J. Christensen MATTHEW J. CHRISTENSEN
DATE: 12/19/2016 LIC. NO.: 43076

TKDA
444 Cedar Street, Suite 1500
Saint Paul, MN 55101
651.292.4400
tkda.com

EASTBOUND WARNER ROAD
ST. PAUL, RAMSEY COUNTY, MINNESOTA
S.P. NO. 062-636-006

TITLE: MN63 PRESTRESSED CONCRETE BEAM (PRETENSIONED) MN63-142

DES: MPB	DR: MPB	APPROVED
CHK: JRM	CHK: JRM	

Sheet No. 28 of 77 Sheets

Bridge No. 62635

BEAMS BM 2-1 & BM 2-2 — FIG. 5-397.509

DATE: 12/19/2016 TIME: 9:49:17 AM
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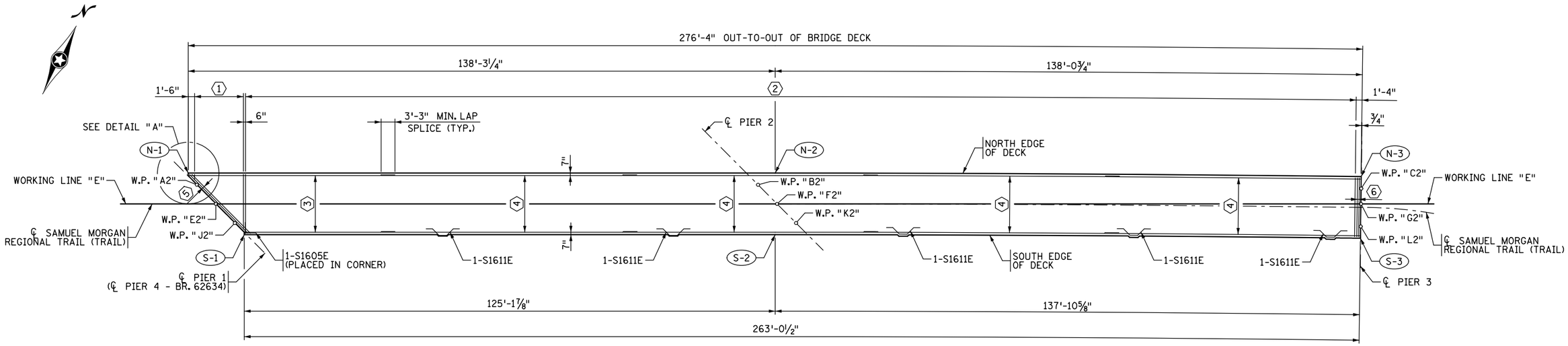


BOTTOM LAYER DECK REINFORCEMENT - SPANS 1 & 2

NORTH EDGE OF DECK				
POINT NO.	X-COORD.	Y-COORD.	STATION	OFFSET
N-1	585,564.465	155,834.462	14+29.42	-7.25
N-2	585,688.216	155,896.138	15+67.69	-7.25
N-3	585,812.152	155,956.976	17+05.67	-7.25

SOUTH EDGE OF DECK				
POINT NO.	X-COORD.	Y-COORD.	STATION	OFFSET
S-1	585,582.667	155,827.332	14+42.53	7.25
S-2	585,694.684	155,883.160	15+67.69	7.25
S-3	585,818.462	155,943.921	17+05.67	7.25

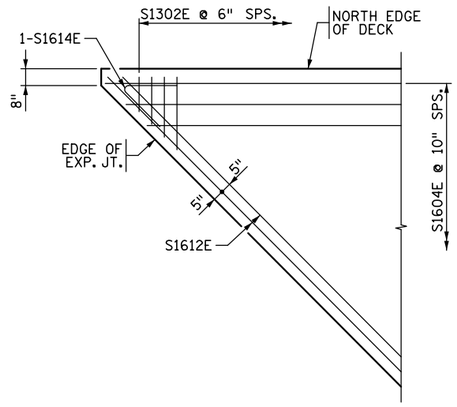
BAR CALL-OUTS:

1. 1 SERIES OF 24-S1302E SPA. @ 6" = 11'-6"
2. 524-S1301E SPA. @ 6" MAX.
3. 1-SER. OF 17-S1604E SPA. @ 10" = 13'-4" STAGGER SPLICES
4. 17-S1603E SPA. @ 10" = 13'-4" STAGGER SPLICES
5. 2-S1612E SPACED AS SHOWN IN LONGITUDINAL SECTION
6. 2-S1613E SPACED AS SHOWN IN LONGITUDINAL SECTION

NOTES:

ALL TRANSVERSE REINFORCEMENT BARS IN THE BRIDGE DECK ARE TO BE PLACED RADIALLY AT THE MAXIMUM SPACING SHOWN.

ALL LONGITUDINAL REINFORCEMENT BARS IN THE BRIDGE DECK ARE TO BE PLACED CONCENTRIC TO ℄ SAMUEL MORGAN REGIONAL TRAIL AT THE MAXIMUM SPACING SHOWN.



DETAIL "A"

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NO.	DATE	BY	DESCRIPTION OF REVISIONS

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA
SIGNED _____ MATTHEW J. CHRISTENSEN
DATE: 12/19/2016 LIC. NO.: 43076

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Saint Paul, MN 55101
651.292.4400
tkda.com

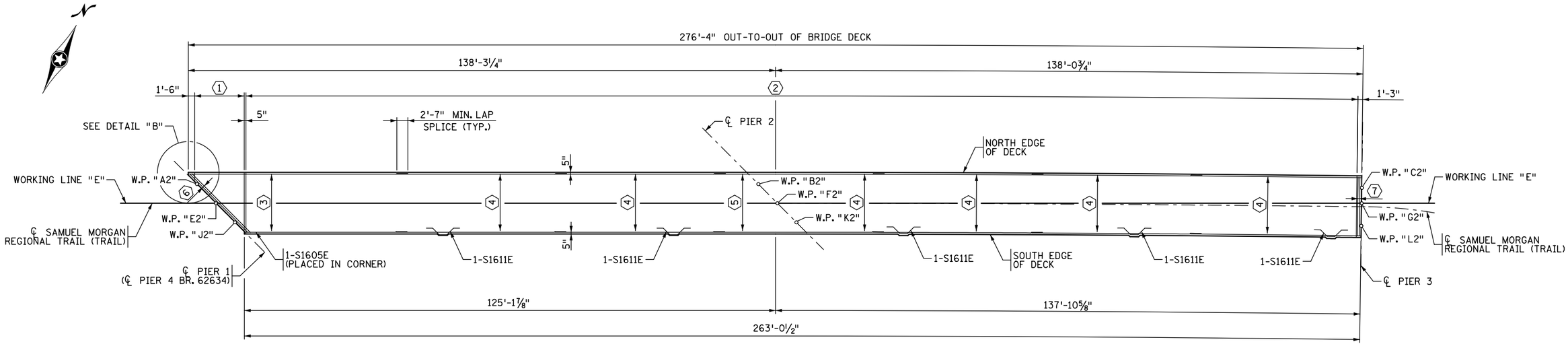
EASTBOUND WARNER ROAD
ST. PAUL, RAMSEY COUNTY, MINNESOTA
S.P. NO. 062-636-006

TITLE: BOTTOM LAYER DECK REINFORCEMENT

DES: JRM	DR: JRM	APPROVED
CHK: MJC	CHK: ROC	

Sheet No. 29 of 77 Sheets

Bridge No. 62635



TOP LAYER DECK REINFORCEMENT - SPANS 1 & 2

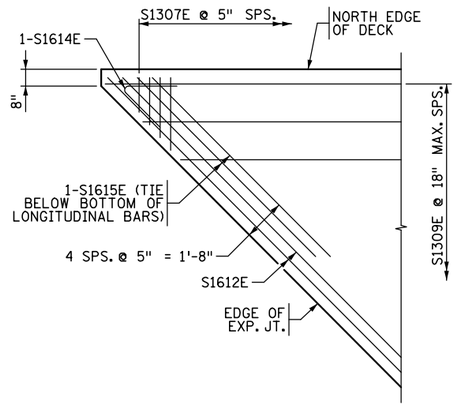
BAR CALL-OUTS:

1. 1 SERIES OF 29-S1307E SPA. @ 5" = 11'-8"
2. 629-S1306E SPA. @ 5" MAX.
3. 1 SERIES OF 11-S1309E SPA. @ 18" MAX = 13'-8" STAGGER SPLICES
4. 11-S1308E SPA. @ 18" MAX = 13'-8" STAGGER SPLICES
5. 20-S1910E PLACED AS SHOWN IN BAR STAGGER DETAIL OVER PIER 2
6. 2-S1612E SPACED AS SHOWN IN LONGITUDINAL SECTION
7. 2-S1613E SPACED AS SHOWN IN LONGITUDINAL SECTION

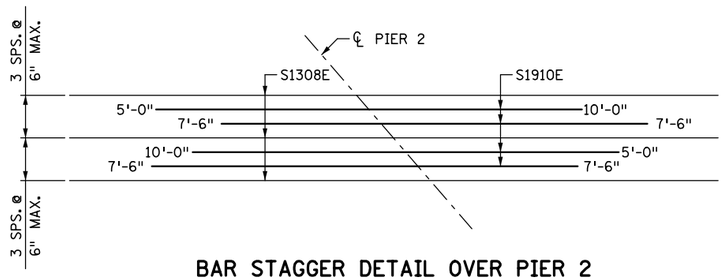
NOTES:

ALL TRANSVERSE REINFORCEMENT BARS IN THE BRIDGE DECK ARE TO BE PLACED RADIALLY AT THE MAXIMUM SPACING SHOWN.

ALL LONGITUDINAL REINFORCEMENT BARS IN THE BRIDGE DECK ARE TO BE PLACED CONCENTRIC TO ℄ SAMUEL MORGAN REGIONAL TRAIL AT THE MAXIMUM SPACING SHOWN.



DETAIL "B"



BAR STAGGER DETAIL OVER PIER 2

NO.	DATE	BY	DESCRIPTION OF REVISIONS

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA

SIGNED _____ MATTHEW J. CHRISTENSEN

DATE: 12/19/2016 LIC. NO.: 43076

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Saint Paul, MN 55101
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tkda.com

EASTBOUND WARNER ROAD
ST. PAUL, RAMSEY COUNTY, MINNESOTA
S.P. NO. 062-636-006

TITLE: TOP LAYER DECK REINFORCEMENT

DES: JRM	DR: JRM	APPROVED
CHK: MJC	CHK: ROC	

Sheet No. 30 of 77 Sheets

Bridge No. 62635

DATE: 12/19/2016 TIME: 9:49:18 AM
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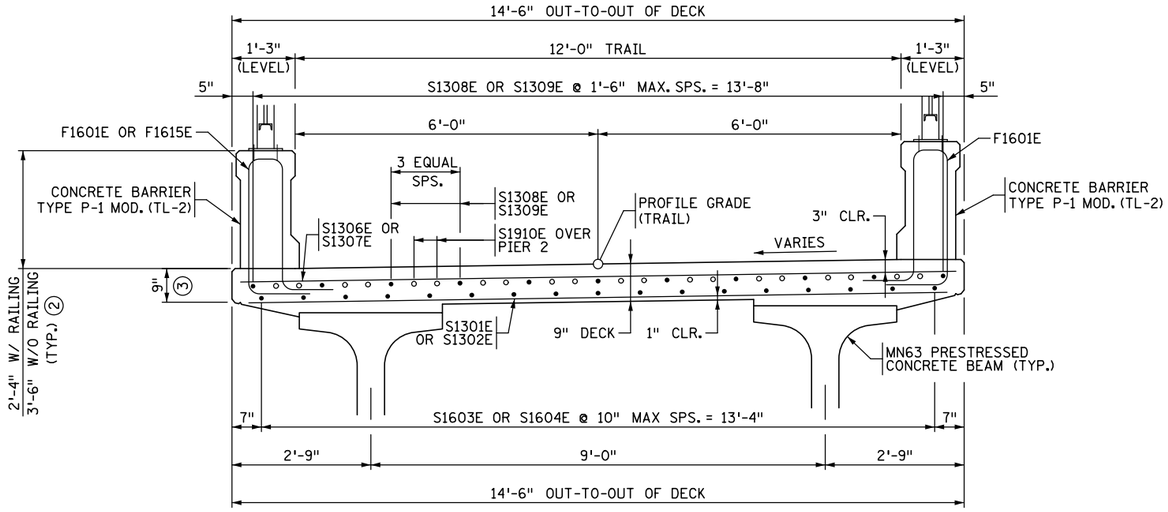
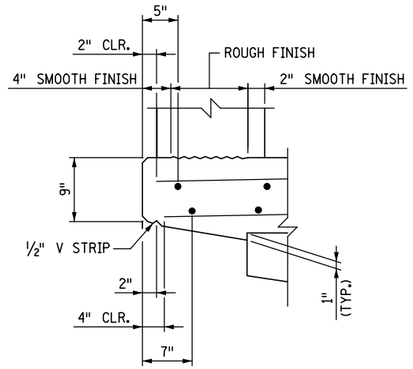


TYPICAL REINFORCEMENT - SPANS 1 & 2



EDGE DETAIL

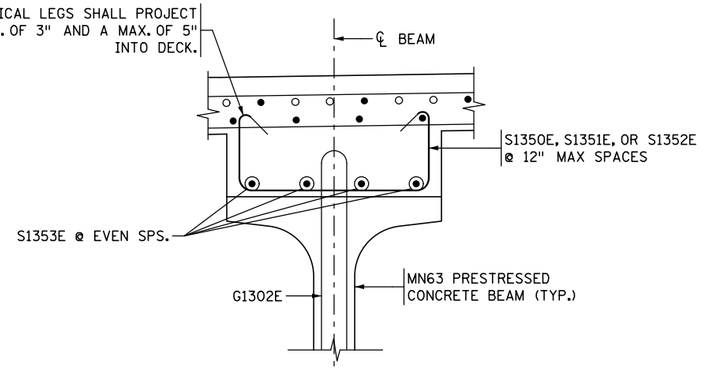
NOTES:

TYPICAL SECTIONS SHOW GENERIC TRANSVERSE AND LONGITUDINAL REINFORCEMENT AND THE TYPICAL SPACING OF THE LONGITUDINAL REINFORCEMENT. FOR SPECIFIC BAR MARKS REFER TO BOTTOM LAYER DECK REINFORCEMENT SHEETS AND TOP LAYER DECK REINFORCEMENT SHEETS.

(1) MAKE SAWCUT IN STRUCTURAL SLAB AND CONCRETE WEARING COURSE DIRECTLY ABOVE V-STRIP AT ℄ PIER AS SOON AS CUTTING CAN BE DONE WITHOUT RAVELING THE CONCRETE. SEAL SAWCUT IN WEARING COURSE ONLY WITH CONCRETE JOINT SEALER Mn/DOT SPEC 3723.

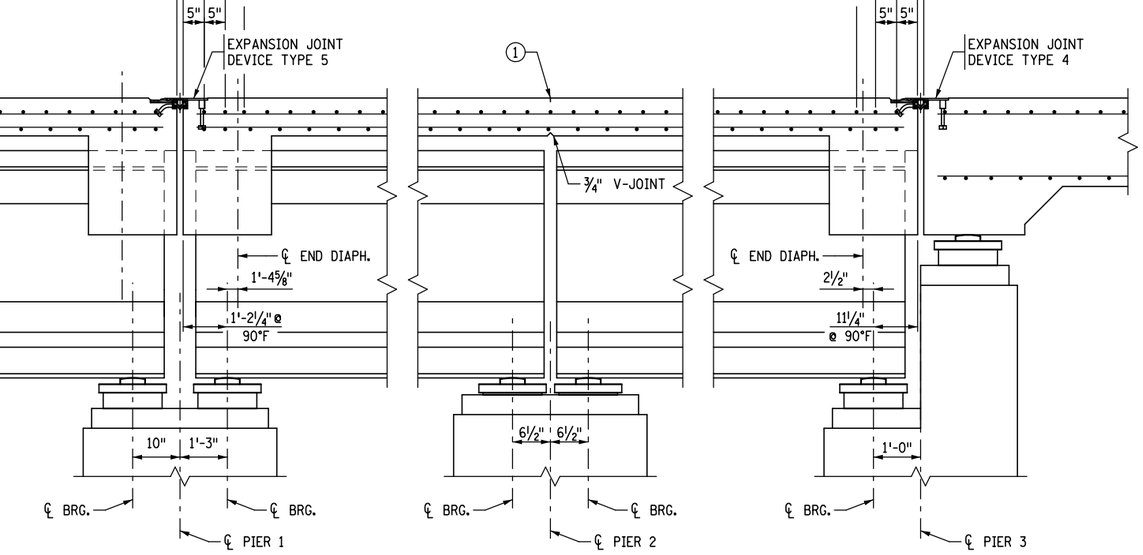
(2) TYPE MOD. P-1 RAILING CONCRETE (3Y46).

(3) BRIDGE SLAB CONCRETE (3Y43HFWC).



ADDITIONAL REINFORCEMENT - SPAN 1 STOOLS

BAR CALL-OUTS (BM 1-1):	BAR CALL-OUTS (BM 1-2):
60-S1350E	80-S1350E
40-S1351E	20-S1351E
20-S1352E	20-S1352E
12-S1353E	12-S1353E

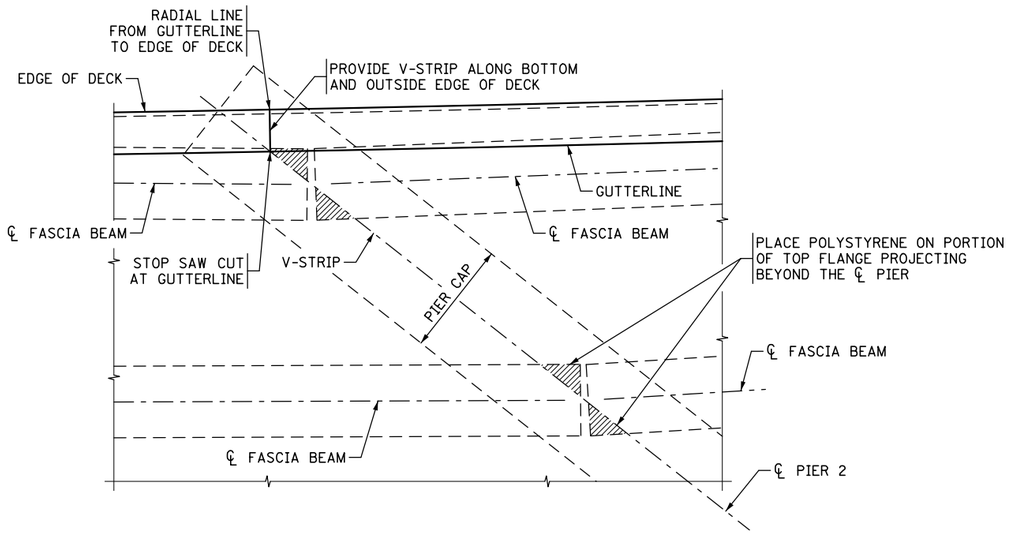


PIER 1
(PIER 4 BRIDGE 62634)

PIER 2

PIER 3

PARTIAL LONGITUDINAL SECTION



TYPICAL SAW CUT DETAIL AT PIER 2

NO.	DATE	BY	DESCRIPTION OF REVISIONS

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SIGNED Matthew V. Christensen MATTHEW J. CHRISTENSEN
DATE: 12/19/2016 LIC. NO.: 43076

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tkda.com

EASTBOUND WARNER ROAD
ST. PAUL, RAMSEY COUNTY, MINNESOTA
S.P. NO. 062-636-006

TITLE: DECK REINFORCEMENT DETAILS

DES: JRM	DR: JRM	APPROVED
CHK: MJC	CHK: ROC	

Sheet No. 31 of 77 Sheets

Bridge No. 62635

DATE: 12/19/2016 TIME: 9:49:9 AM
FILENAME: K:\nr-z\RamseyCty\Vol3000\hwy-brdg\brdg\62635\super\CBR62635_sup07.dgn

NOTES:

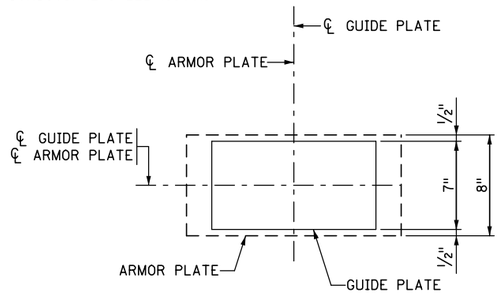
THE REINFORCEMENT SHOWN ON THIS SHEET IS IN ADDITION TO THE BOTTOM AND TOP LAYER REINFORCEMENT DETAILED ON THE DECK REINFORCMENT SHEETS.

(1) FOR FURTHER INFORMATION ON THE PLACEMENT OF BARS WITH AN "SD" PREFIX SEE END DIAPHRAGM DETAILS SHEET 2 OF 2.

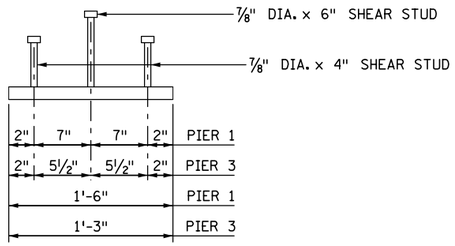
STRUCTURAL STEEL GUIDE PLATES SHALL COMPLY WITH MN/DOT SPEC. 3306.

GALVANIZE STEEL GUIDE PLATES PER MN/DOT SPEC. 3394 AFTER FABRICATION.

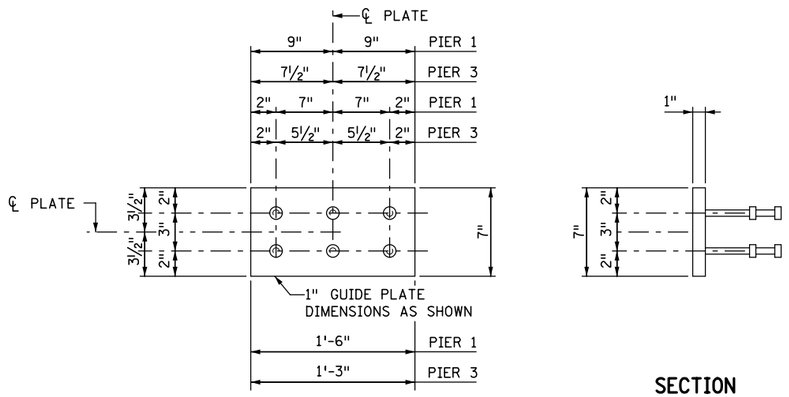
STEEL GUIDE PLATES TO BE INCLUDED IN PRICE BID FOR STRUCTURAL STEEL (3306).



SHEAR KEY GUIDE PLATE POSITION



PLAN

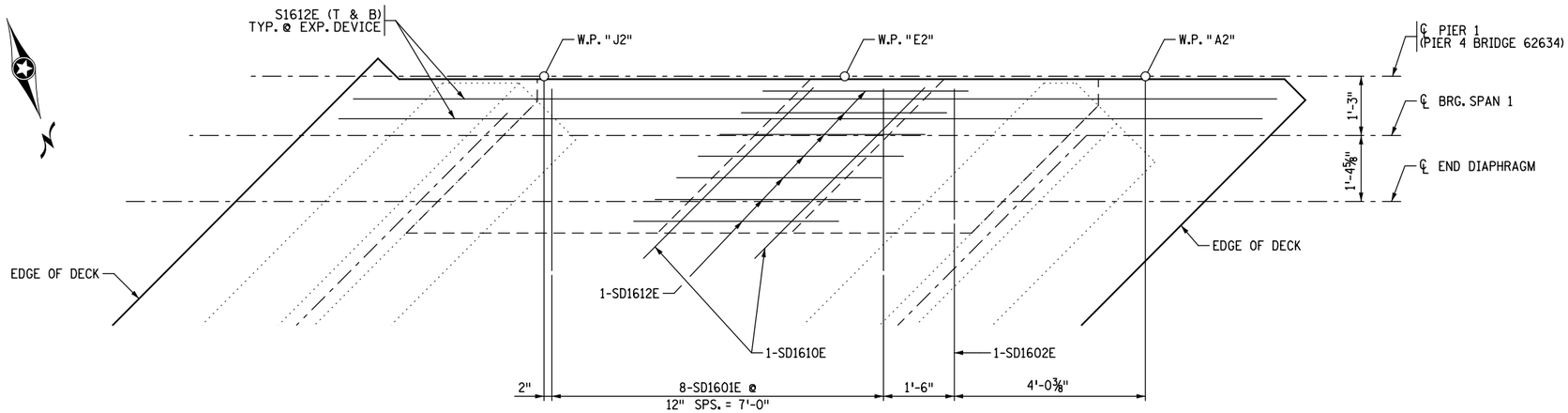


ELEVATION

SECTION

SHEAR KEY GUIDE PLATE

2 REQ'D - (43 lbs. EACH) FOR PIER 1
2 REQ'D - (37 lbs. EACH) FOR PIER 3



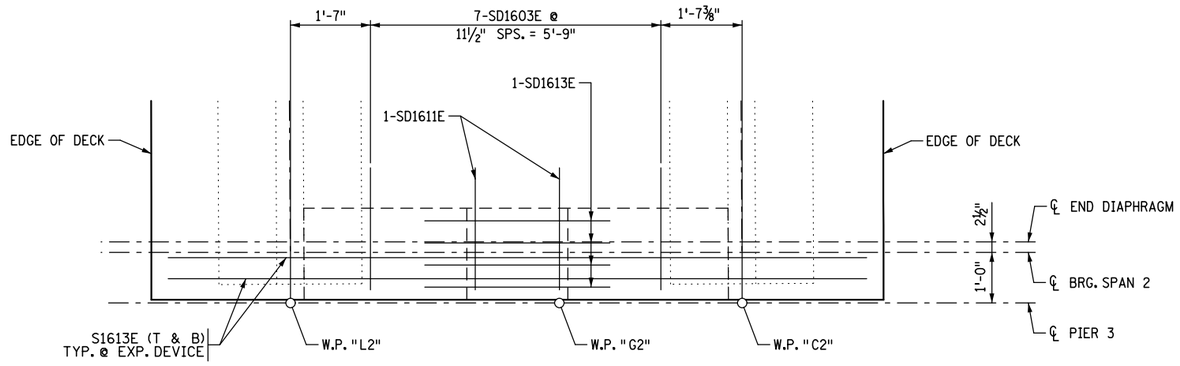
BARS "A": 2-SD1308E (1)
BARS "B": 4-SD2504E (1)
BARS "C": 3-SD2506E (1)

ED-1

ADDITIONAL REINFORCEMENT - PIER 1

ED-2

BARS "A": 2-SD1309E (1)
BARS "B": 2-SD2205E (1)
BARS "C": 2-SD1907E (1)



ADDITIONAL REINFORCEMENT - PIER 3

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NO.	DATE	BY	DESCRIPTION OF REVISIONS

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SIGNED _____ MATTHEW J. CHRISTENSEN
DATE: 12/19/2016 LIC. NO.: 43076

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tkda.com

EASTBOUND WARNER ROAD
ST. PAUL, RAMSEY COUNTY, MINNESOTA
S.P. NO. 062-636-006

TITLE: END DIAPHRAGM REINFORCEMENT (1 OF 2)

DES: JRM	DR: JRM	APPROVED
CHK: MJC	CHK: ROC	

Sheet No. 32 of 77 Sheets

Bridge No. 62635

NOTES:

CONCRETE FOR END DIAPHRAGMS SHALL BE THE SAME MIX AS USED IN DECK.

QUANTITIES FOR END DIAPHRAGM CONCRETE AND REINFORCEMENT SHOWN ON THIS DETAIL SHALL BE LISTED IN SUPERSTRUCTURE QUANTITIES.

THREADED RODS ARE INCIDENTAL TO PRESTRESSED CONCRETE BEAMS.

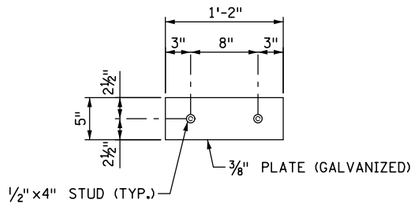
① WHEN CONSTRUCTION JOINT IS USED AT THIS LOCATION, DIAPHRAGM FALSEWORK SHALL REMAIN INPLACE UNTIL COMPLETION OF SLAB CURING PERIOD.

② PERPENDICULAR TO CENTERLINE OF DIAPHRAGM. SEE PLANS FOR DIMENSION.

③ SEE FRAMING PLAN DATA SHEET FOR DIMENSIONS.

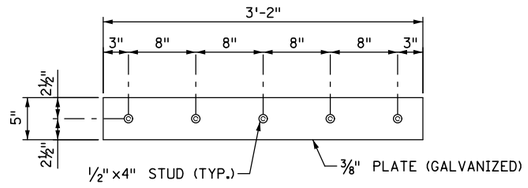
④ PROVIDE ½" POLYSTYRENE BOND BREAKER BETWEEN SHEAR KEY AND SHEAR LUG.

⑤ SECURE BITUMINOUS FELT AND POLYSTYRENE TO SHEAR KEY W/ APPROVED ADHESIVES.



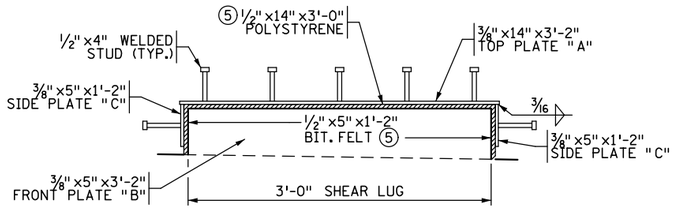
SIDE PLATE "C"

(2 THUS)
(WEIGHT = 8 LBS. EACH)

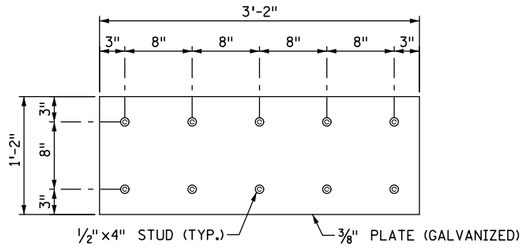


FRONT PLATE "B"

(1 THUS)
(WEIGHT = 22 LBS. EACH)



TRANSVERSE SECTION

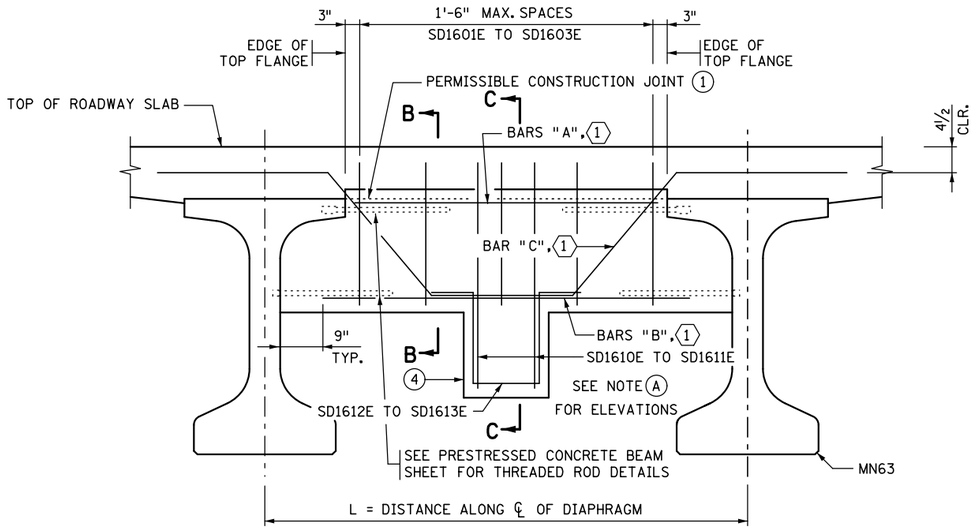


TOP PLATE "A"

(1 THUS)
(WEIGHT = 59 LBS. EACH)

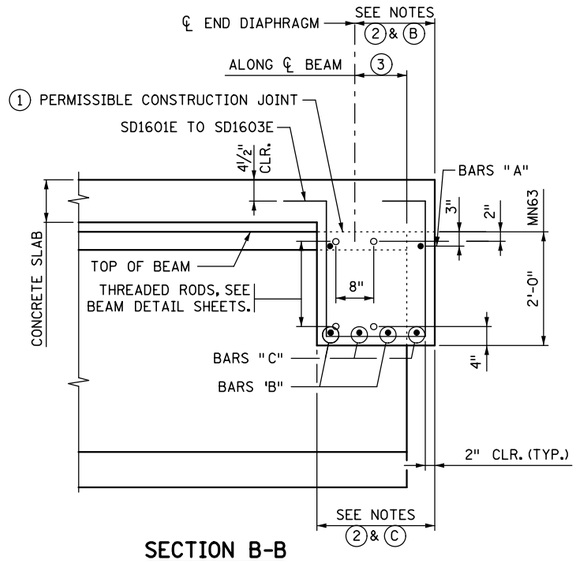
SHEAR LUG BOX DETAILS

(2 THUS)

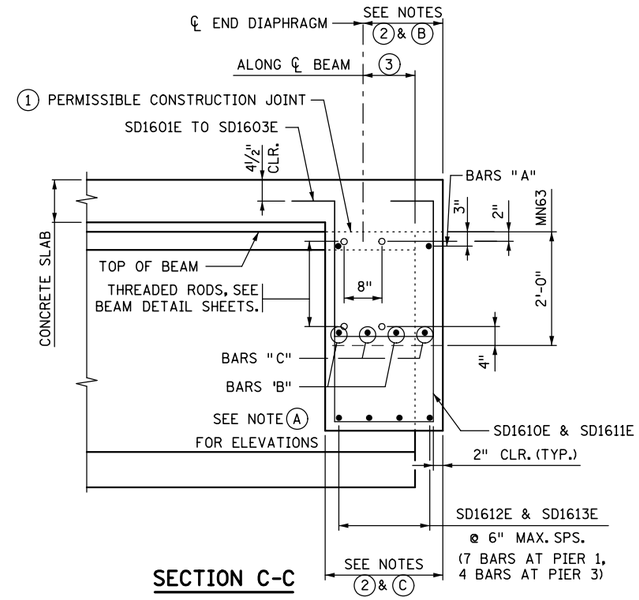


① BAR MARKS FOR BARS "A", "B", AND "C" ARE SHOWN FOR EACH END DIAPHRAGM ON END DIAPHRAGM DETAILS SHEET 1 OF 2.

PART TRANSVERSE SECTION WITH SHEAR KEY



SECTION B-B



SECTION C-C

Ⓐ ELEVATIONS FOR BOT. OF SHEAR KEY ARE AS FOLLOWS:

PIER 1, SPAN 1 - EL. 737.63
PIER 3, SPAN 2 - EL. 726.71

Ⓑ DISTANCE FROM EDGE OF DECK TO ℄ END DIAPH. ARE AS FOLLOWS:

PIER 1, SPAN 1 - 2'-6⅞"
PIER 3, SPAN 2 - 1'-1¾"

Ⓒ END DIAPHRAGM WIDTHS IN SHEAR KEY BAY FROM EDGE OF DECK ARE AS FOLLOWS:

PIER 1, SPAN 1 - 3'-2⅞"
PIER 3, SPAN 2 - 1'-9¾"

DATE: 12/19/2016 TIME: 9:49:20 AM
FILENAME: K:\n-z RamseyCty\5I\3000\hwy-brdg\brdg\62635\super\CBR62635_sup09.dgn

NO.	DATE	BY	DESCRIPTION OF REVISIONS

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA
SIGNED Matthew J. Christensen MATTHEW J. CHRISTENSEN
DATE: 12/19/2016 LIC. NO.: 43076

TKDA
444 Cedar Street, Suite 1500
Saint Paul, MN 55101
651.292.4400
tkda.com

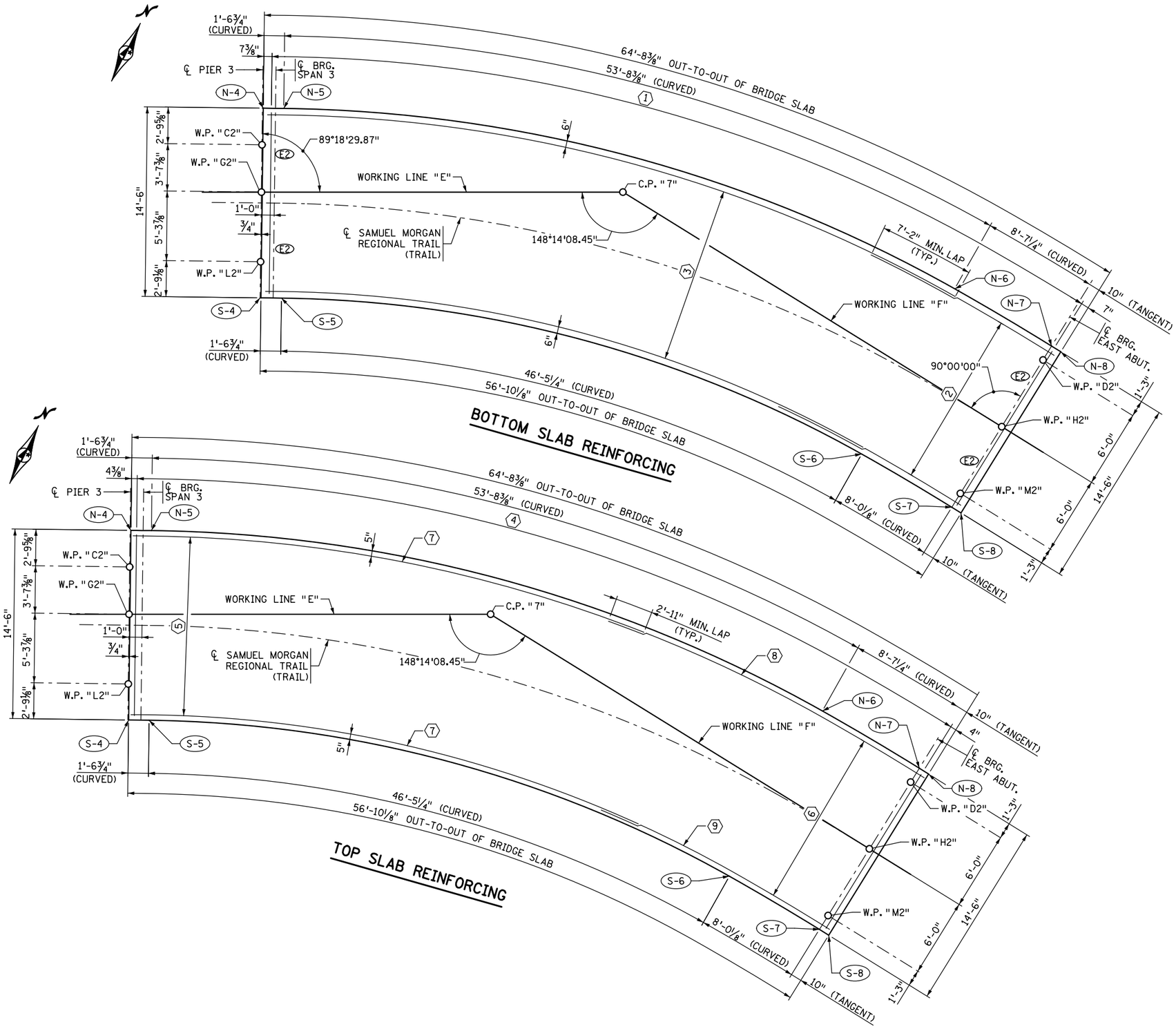
EASTBOUND WARNER ROAD
ST. PAUL, RAMSEY COUNTY, MINNESOTA
S.P. NO. 062-636-006

TITLE: END DIAPHRAGM REINFORCEMENT (2 OF 2)

DES: JRM	DR: JRM	APPROVED
CHK: MJC	CHK: ROC	

Sheet No. 33 of 77 Sheets

Bridge No. 62635



NORTH EDGE OF DECK				
POINT NO.	X-COORD.	Y-COORD.	STATION	OFFSET
N-4	585,812.264	155,957.030	17+05.79	-7.25
N-5	585,813.675	155,957.712	17+07.36	-7.25
N-6	585,865.753	155,968.260	17+57.42	-7.25
N-7	585,874.338	155,967.647	17+65.73	-7.25
N-8	585,875.168	155,967.570	17+66.54	-7.25

SOUTH EDGE OF DECK				
POINT NO.	X-COORD.	Y-COORD.	STATION	OFFSET
S-4	585,818.575	155,943.976	17+05.79	7.25
S-5	585,819.984	155,944.657	17+07.36	7.25
S-6	585,865.021	155,953.778	17+57.42	7.25
S-7	585,873.006	155,953.208	17+65.73	7.25
S-8	585,873.836	155,953.131	17+66.60	7.25

BAR CALL-OUTS:

(1) 128-S1620E @ 6" MAX. SPS. = 63'-6"
W/ 128-S1623E (EF) SPACED TO MATCH

(2) 1-SER. OF 37-S2521E @ 4½" SPS. = 13'-6" (2)

(3) 1-SER. OF 37-S3222E SPACED TO MATCH S2521E (2)

(4) 193-S1324E @ 4" MAX. SPS. =64'-0"

(5) 42-S1325E @ 4" SPS. = 13'-8" (1)

(6) 42-S1326E SPACED TO MATCH S1326E (1)

(7) 4-S1325E

(8) 4-S1327E

(9) 4-S1328E

NOTES:

ALL TRANSVERSE REINFORCEMENT BARS IN THE BRIDGE SLAB ARE TO BE PLACED RADIALLY AT THE MAXIMUM SPACING SHOWN.

ALL LONGITUDINAL REINFORCEMENT BARS IN THE BRIDGE SLAB ARE TO BE PLACED CONCENTRIC TO ℄ SAMUEL MORGAN REGIONAL TRAIL AT THE MAXIMUM SPACING SHOWN.

(1) ALTERNATE SPLICE LOCATION OF S1325E & S1326E

(2) ALTERNATE SPLICE LOCATION OF S3222E & S2521E

SEE SH. 37 & 38 FOR LIFTING FRAME INSERT LOCATION. INSERTS TO BE EMBEDDED IN SLAB SPAN 3.

(E2) DENOTES EXPANSION CURVED PLATE BEARING ASSEMBLY, TYPE 2

DATE: 12/9/2016 TIME: 9:49:21 AM
FILENAME: K:\n-z\RamseyCty\5113000\hwy-brdg\brdg\62635\super\CBR62635_supII.dgn

NO.	DATE	BY	DESCRIPTION OF REVISIONS

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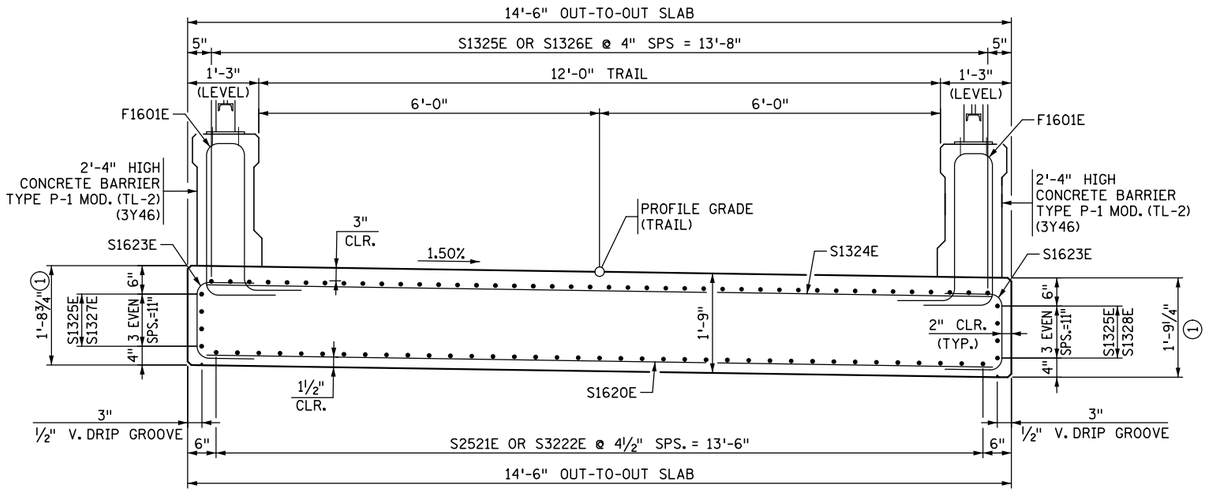
EASTBOUND WARNER ROAD
ST. PAUL, RAMSEY COUNTY, MINNESOTA
S.P. NO. 062-636-006

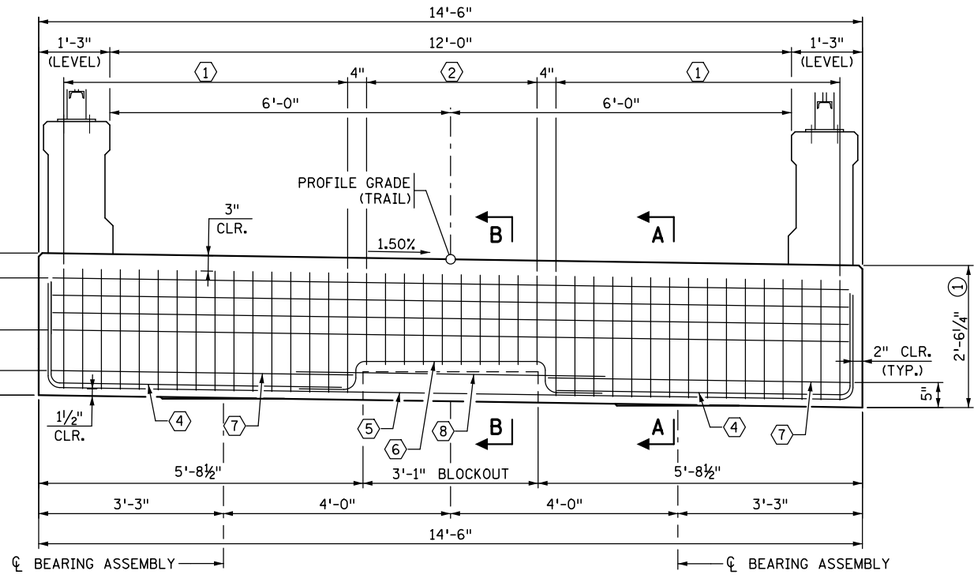
TITLE: SPAN 3 SLAB REINFORCEMENT

DES: LJL | DR: MAV | APPROVED
CHK: MJC | CHK: ROC
Sheet No. 34 of 77 Sheets

Bridge No. 62635

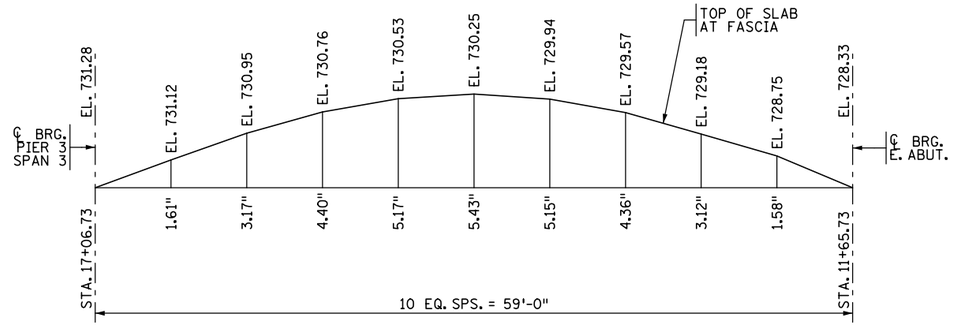


TYPICAL SLAB SECTION



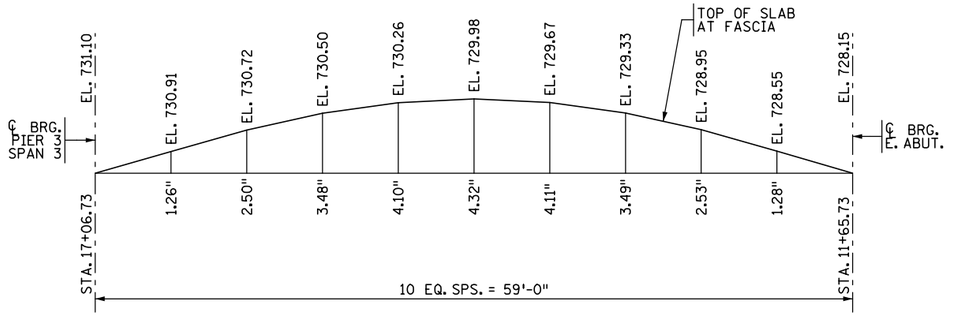
SLAB SECTION AT ENDS

(PIER 3 & EAST ABUTMENT SIMILAR)



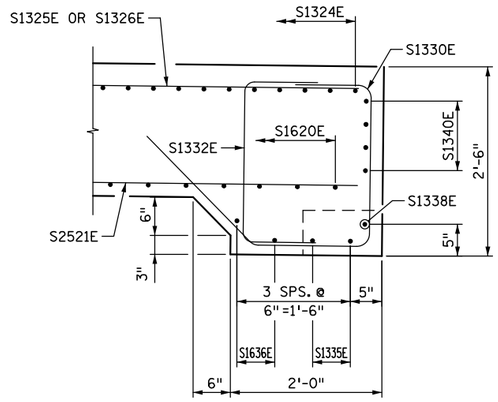
NORTH EDGE SLAB CAMBER DIAGRAM

(CONTRACTOR TO ALLOW FOR 2½" OF INSTANTANEOUS DEAD LOAD DEFLECTION)



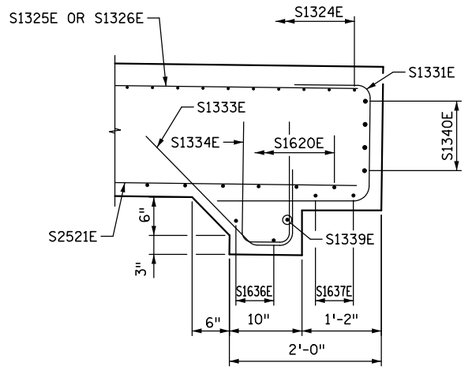
SOUTH EDGE SLAB CAMBER DIAGRAM

(CONTRACTOR TO ALLOW FOR 2½" OF INSTANTANEOUS DEAD LOAD DEFLECTION)



SECTION A-A

(EXP. JT. DEVICE NOT SHOWN FOR CLARITY)



SECTION B-B

(EXP. JT. DEVICE NOT SHOWN FOR CLARITY)

BAR CALL-OUTS:

1. 16-S1330E SPACED TO MATCH S1325E OR S1326E W/ 16-S1332E SPACED TO MATCH S1330E
2. 10-S1331E SPACED TO MATCH S1325E OR S1326E W/ 10-S1333E & 10-S1334E SPACED TO MATCH S1331E
3. 4-S1340E SPACED TO MATCH S1325E, S1327E, OR S1328E
4. 2-S1635E
5. 2-S1636E
6. 2-S1637E SPACED TO MATCH S1635E
7. 1-S1338E
8. 1-S1339E SPACED TO MATCH S1338E

NOTES:

SEE SH. 33, "END DIAPHRAGM REINFORCEMENT (2 OF 2)" FOR SHEAR KEY BOX DETAILS

(1) BRIDGE SLAB CONCRETE (3Y43HFWC).

NO.	DATE	BY	DESCRIPTION OF REVISIONS

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EASTBOUND WARNER ROAD
ST. PAUL, RAMSEY COUNTY, MINNESOTA
S.P. NO. 062-636-006

TITLE: SLAB REINFORCEMENT DETAILS

DES: LJL	DR: MAV	APPROVED
CHK: MJC	CHK: ROC	

Sheet No. 35 of 77 Sheets

Bridge No. 62635

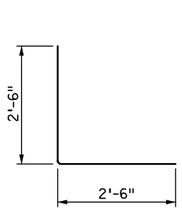
DATE: 12/19/2016 TIME: 9:49:22 AM
FILENAME: K:\nr-z\RamseyCty\V5i\3000\hwy-brdg\brdg\62635\super\CBR62635_sup12.dgn

BILL OF REINFORCEMENT - BRIDGE DECK

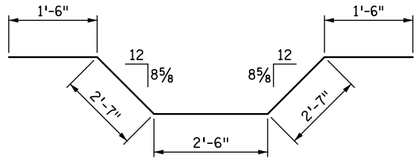
BAR	NO.	LENGTH	SHAPE	LOCATION
S1301E	524	13'-10"		SPAN 1 & 2 BOTTOM TRANSVERSE
S1302E	24	SER 1		SPAN 1 & 2 BOTTOM TRANSVERSE
S1603E	68	60'-0"		SPAN 1 & 2 BOTTOM LONGITUDINAL
S1604E	17	SER 2		SPAN 1 & 2 BOTTOM LONGITUDINAL
S1605E	2	5'-0"		SPAN 1 & 2 TOP & BOT. SE CORNER
S1306E	629	14'-2"		SPAN 1 & 2 TOP TRANSVERSE
S1307E	29	SER 3		SPAN 1 & 2 TOP TRANSVERSE
S1308E	66	40'-0"		SPAN 1 & 2 TOP LONGITUDINAL
S1309E	11	SER 4		SPAN 1 & 2 TOP LONGITUDINAL
S1910E	20	15'-0"		SPAN 1 & 2 LONGITUDINAL OVER PIER
S1611E	10	10'-8"		LIGHT PEDESTAL BUMPOUT
S1612E	4	19'-6"		EXPANSION JOINT NEAR PIER 1
S1613E	4	13'-10"		EXPANSION JOINT NEAR PIER 3
S1614E	2	4'-0"		TOP & BOTTOM CORNER
S1615E	2	10'-0"		TOP CORNER TRANSVERSE
S1620E	128	14'-2"		SPAN 3 BOTTOM TRANSVERSE
S2521E	37	SER 5		SPAN 3 BOTTOM LONGITUDINAL
S3222E	37	SER 6		SPAN 3 BOTTOM LONGITUDINAL
S1623E	256	5'-10"		SPAN 3 EDGE
S1324E	193	14'-2"		SPAN 3 TOP TRANSVERSE
S1325E	50	40'-0"		SPAN 3 TOP LONGITUDINAL
S1326E	42	SER 7		SPAN 3 TOP LONGITUDINAL
S1327E	4	27'-6"		EDGE LONGITUDINAL
S1328E	4	19'-8"		EDGE LONGITUDINAL
S1330E	64	6'-8"		SPAN 3 END VERTICAL
S1331E	20	4'-6"		SPAN 3 END VERTICAL
S1332E	64	4'-2"		SPAN 3 END VERTICAL
S1333E	20	3'-4"		SPAN 3 END VERTICAL
S1334E	20	4'-2"		SPAN 3 END VERTICAL
S1635E	8	7'-2"		SPAN 3 BOTTOM HORIZONTAL
S1636E	4	17'-10"		SPAN 3 BOTTOM HORIZONTAL
S1637E	4	6'-9"		SPAN 3 BLOCKOUT
S1338E	4	8'-7"		SPAN 3 HORIZONTAL
S1339E	2	5'-6"		SPAN 3 BLOCKOUT
S1340E	8	16'-0"		SPAN 3 HORIZONTAL
S1330E	140	5'-2"		STOOL REINFORCEMENT
S1331E	60	5'-6"		STOOL REINFORCEMENT
S1332E	40	5'-10"		STOOL REINFORCEMENT
S1333E	24	45'-0"		STOOL REINFORCEMENT

SER 1 1 SERIES OF 24 BARS (1'-4" TO 12'-11")
SER 2 1 SERIES OF 17 BARS (36'-0" TO 49'-0")
SER 3 1 SERIES OF 29 BARS (1'-8" TO 13'-5")
SER 4 1 SERIES OF 11 BARS (38'-0" TO 55'-6")
SER 5 1 SERIES OF 37 BARS (RADIUS 193'-3" TO 206'-9")
SER 6 1 SERIES OF 37 BARS (47'-9" TO 55'-0", RADIUS 93'-3" TO 106'-9")
SER 7 1 SERIES OF 42 BARS (19'-8" TO 27'-6")

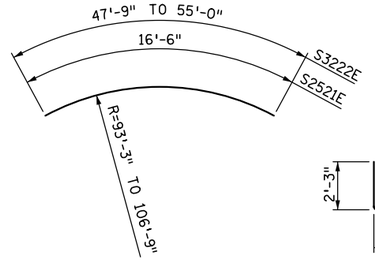
BAR BENDING DIAGRAMS



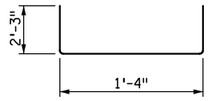
S1605E



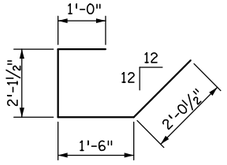
S1611E



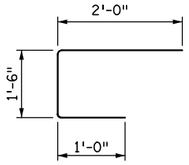
S2521E & S3222E



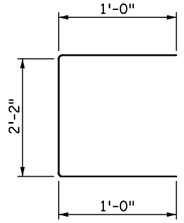
S1623E



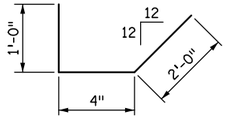
S1330E



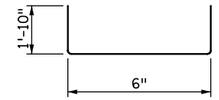
S1331E



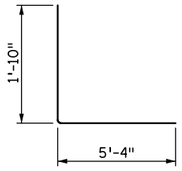
S1332E



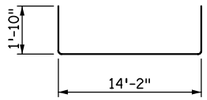
S1333E



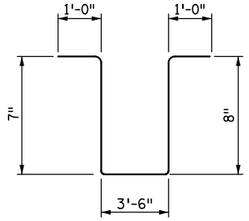
S1334E



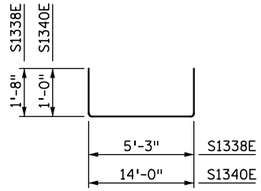
S1635E



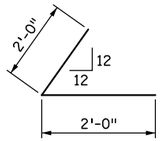
S1636E



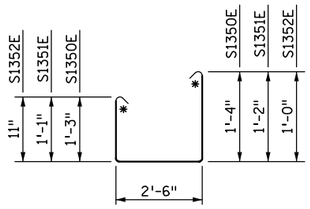
S1637E



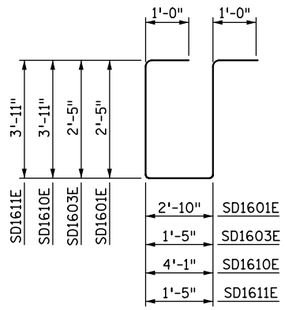
S1338E & S1340E



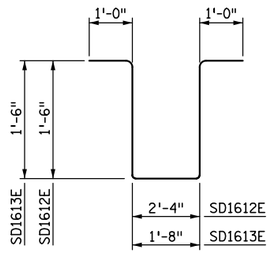
S1614E



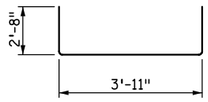
S1350E, S1351E & S1352E



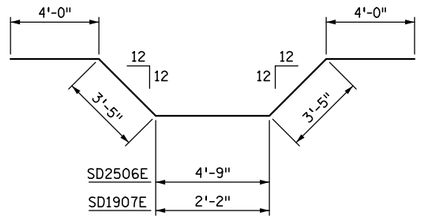
SD1601E, SD1603E, SD1610E & SD1611E



SD1612E & SD1613E



SD1602E



SD2506E & SD1907E

SUMMARY OF QUANTITIES FOR SUPERSTRUCTURE

	ITEM DESCRIPTION	UNIT	QUANTITY
(1)	BRIDGE SLAB CONCRETE (3Y43HFWC)	SQ FT	4818
(2)	TYPE MOD P-1 RAILING CONCRETE (3Y46)	LIN FT	730
(3)	REINFORCEMENT BARS (EPOXY COATED)	POUND	42840
	REINFORCED SIDEWALK SLAB TYPE 1 (3A42)	SQ FT	269
	REINFORCED SIDEWALK SLAB TYPE 2 (3A42)	SQ FT	223
	STRUCTURAL STEEL (3306)	POUND	350
	ORNAMENTAL METAL RAILING TYPE SPECIAL 1	LIN FT	115
	ORNAMENTAL METAL RAILING TYPE SPECIAL 2	LIN FT	474
	EXPANSION JOINT DEVICES, TYPE 4	LIN FT	28
(4)	FIXED CURVED PLATE BEARING ASSEMBLY, TYPE F-1	EACH	4
(4)	EXPANSION CURVED PLATE BEARING ASSEMBLY, TYPE E-1	EACH	4
(4)	EXPANSION CURVED PLATE BEARING ASSEMBLY, TYPE E-2	EACH	4
	PRESTRESSED CONCRETE BEAMS MN63	LIN FT	538
	DIAPHRAGMS FOR TYPE MN63 PREST BEAMS	LIN FT	54
	CONDUIT SYSTEM (LIGHTING) TYPE 1	LUMP SUM	1
(5)(6)	BENCH MARK DISK	EACH	1
(6)	BRIDGE NAME PLATE	EACH	1

(1) "BRIDGE SLAB CONCRETE (3Y43HFWC)" VOLUME WAS COMPUTED USING AN AVERAGE STOOL HEIGHT OF 2½". ITEM INCLUDES FOR SPANS 1 & 2 APPROX. 124 CUBIC YARDS FOR SLAB AND APPROX. 5 CUBIC YARDS FOR END DIAPHRAGMS. ITEM INCLUDES FOR SPAN 3 APPROX. 59 CUBIC YARDS FOR SLAB.

(2) "TYPE MOD P-1 RAILING CONCRETE (3Y46)" VOLUME IS APPROXIMATELY 81 CUBIC YARDS.

(3) INCLUDES SLAB, END DIAPHRAGM, BARRIER AND PARAPET REINFORCEMENT.

(4) PAYMENT FOR BEARINGS INCLUDED IN ITEM "BEARING ASSEMBLIES" PER EACH.

(5) STATE WILL FURNISH DISK. BEND PRONGS OUTWARD TO ANCHOR DISK IN CONCRETE. BOTTOM OF DISK TOP TO BE PLACED FLUSH WITH CONCRETE. PAYMENT FOR PLACING SHALL BE CONSIDERED INCIDENTAL TO CONCRETE PAY ITEMS.

(6) PAYMENT SHALL BE CONSIDERED INCIDENTAL TO ITEM "TYPE MOD P-1 RAILING CONCRETE (3Y46)".

BILL OF REINFORCEMENT - END DIAPHRAGMS

BAR	NO.	LENGTH	SHAPE	LOCATION
SD1601E	8	12'-1"		VERTICAL TIES AT ED-1
SD1602E	1	9'-3"		VERTICAL TIES AT ED-1
SD1603E	7	8'-3"		VERTICAL TIES AT ED-1
SD2504E	4	10'-6"		LONGITUDINAL BOTTOM AT ED-1
SD2205E	2	7'-0"		LONGITUDINAL BOTTOM AT ED-2
SD2506E	3	19'-7"		LONGITUDINAL BENT UP AT ED-1
SD1907E	2	17'-0"		LONGITUDINAL BENT UP AT ED-2
SD1308E	2	8'-5"		LONGITUDINAL TOP AT ED-1
SD1309E	2	5'-10"		LONGITUDINAL TOP AT ED-2
SD1610E	2	13'-11"		VERTICAL TIES AT ED-1
SD1611E	2	11'-3"		VERTICAL TIES AT ED-2
SD1612E	7	7'-4"		LONGITUDINAL BENT UP AT ED-1
SD1613E	4	6'-8"		LONGITUDINAL BENT UP AT ED-2

NOTE:

BENT BAR DIMENSIONS GIVEN ARE OUT-TO-OUT. ACTUAL BAR LENGTHS SHALL BE DETERMINED BASED ON THE DETAIL DIMENSIONS SHOWN IN THE BAR BENDING DIAGRAMS.

* DENOTES STANDARD STIRRUP HOOK.

NO.	DATE	BY	DESCRIPTION OF REVISIONS

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA
SIGNED Matthew J. Christensen MATTHEW J. CHRISTENSEN
DATE: 12/19/2016 LIC. NO.: 43076

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EASTBOUND WARNER ROAD
ST. PAUL, RAMSEY COUNTY, MINNESOTA
S.P. NO. 062-636-006

TITLE: SUPERSTRUCTURE BARLIST AND QUANTITIES

DES: JRM | DR: JRM | APPROVED
CHK: MJC | CHK: ROC
Sheet No. 36 of 77 Sheets

Bridge No. 62635

DATE: 12/19/2016 TIME: 9:49:22 AM
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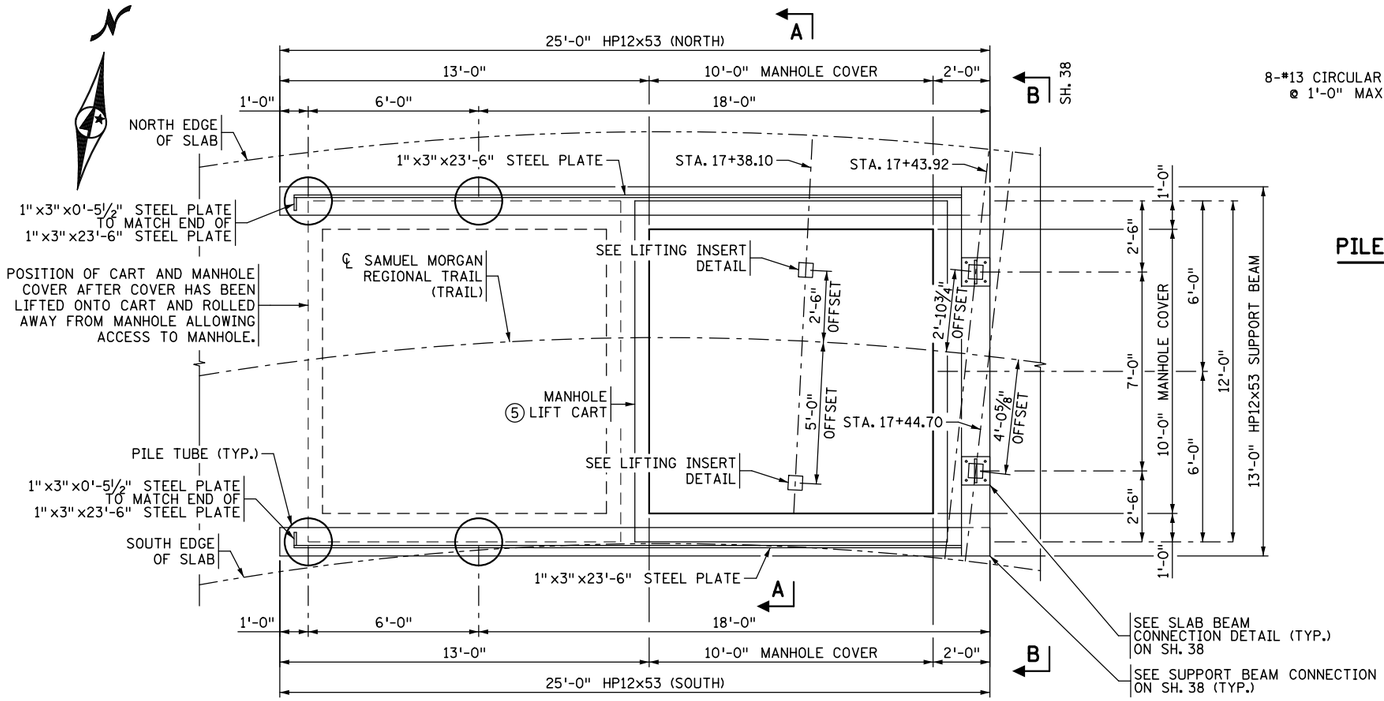
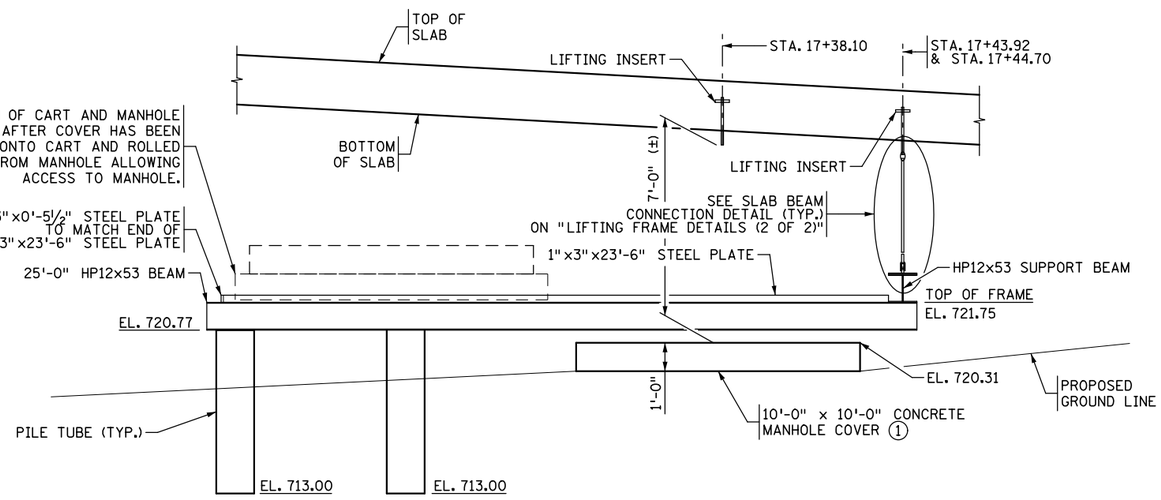
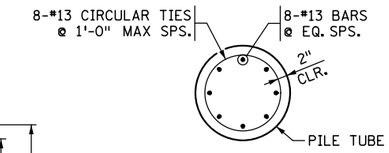


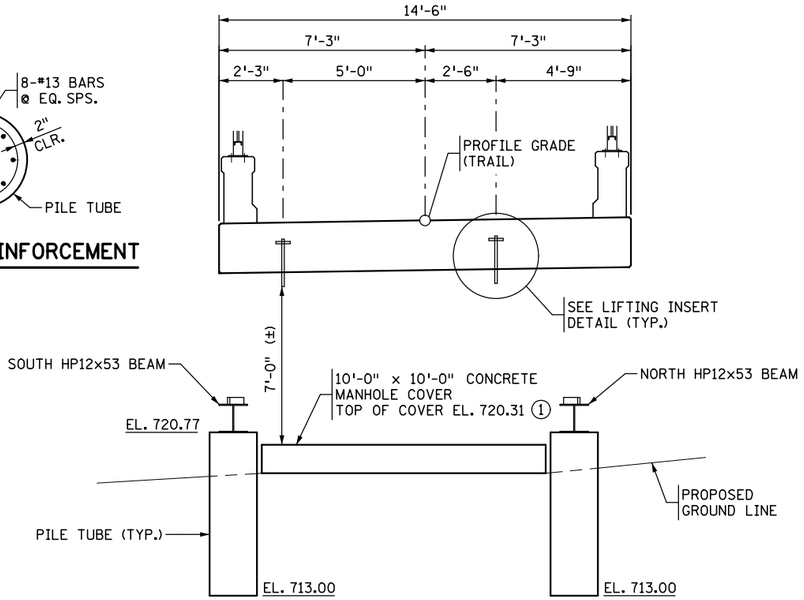
MANHOLE LIFTING FRAME PLAN



MANHOLE LIFTING FRAME ELEVATION

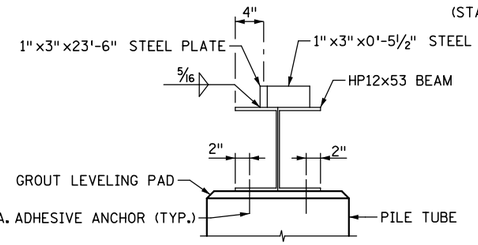


PILE TUBE REINFORCEMENT

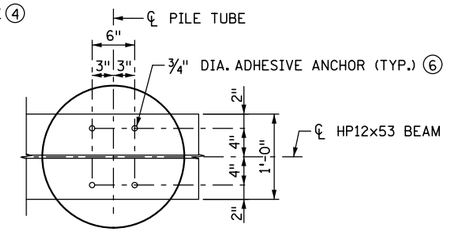


SECTION A-A

(STA. 17+38.10)



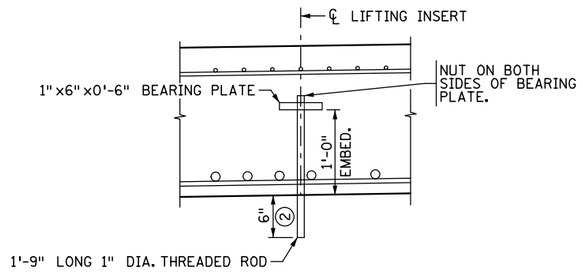
ELEVATION



PLAN

BEAM-PILE TUBE CONNECTION

(SOUTH BEAM SHOWN, NORTH BEAM OPPOSITE HAND)



LIFTING INSERT DETAIL

(4 THUS)
(ALL LIFTING INSERT STEEL SHALL BE STAINLESS STEEL CONFORMING TO STANDARD SPEC. 3312)
(CAPACITY OF MANHOLE LIFTING INSERT SYSTEM IS 30 KIP)
(PLACE INSERT TO AVOID CONTACT WITH REINFORCING BARS, PROVIDE 1" CLEAR BETWEEN INSERT AND REBAR.)

NOTES:

CONTRACTOR SHALL SUBMIT DETAILED SHOP DRAWINGS OF MANHOLE LIFTING FRAME & CART FOR ENGINEERS APPROVAL. SHOP DRAWINGS ARE TO BE INCLUDED IN PRICE BID FOR 2402.601 "LIFTING FRAME."

UNLESS SPECIFIED, ALL STRUCTURAL STEEL SHALL CONFORM TO STANDARD SPEC. 3306 AND BE GALVANIZED PER Mn/DOT SPEC. 3394 AFTER FABRICATION.

PILE TUBES TO BE 20" DIAMETER ROUND BUILDERS TUBE MADE OF MULTIPLE LAYERS OF FIBER, SPIRAL WOUND AND LAMINATED WITH ADHESIVE.

① CONTRACTOR TO VERIFY MANHOLE COVER ELEVATION.

② ADD STAINLESS STEEL NUTS TO END OF THREADED ROD TO PROTECT 6" PROJECTION. (ALL THREADS SHALL BE COVERED WITH NUTS)

③ ¾" DIA. ADHESIVE ANCHORS TO EMBED 8" INTO PILE TUBE.

④ WELD PLATE TO MATCH END OF 1"x3"x23'-6" PLATE

⑤ SEE "LIFT FRAME DETAILS (2 OF 2)" SHEET FOR CART DETAILS

⑥ HOLES TO BE PROVIDED IN TOP AND BOTTOM FLANGES OF HP12x53 BEAM TO ALLOW FOR DRILLING OF ADHESIVE ANCHORS.

NO.	DATE	BY	DESCRIPTION OF REVISIONS

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DATE: 12/19/2016 LIC. NO.: 43076

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EASTBOUND WARNER ROAD
ST. PAUL, RAMSEY COUNTY, MINNESOTA
S.P. NO. 062-636-006

TITLE: LIFTING FRAME DETAILS (1 OF 2)

DES: MAV	DR: MAV	APPROVED
CHK: MJC	CHK: LJL	

Sheet No. 37 of 77 Sheets

Bridge No. 62635

DATE: 12/19/2016 TIME: 9:49:24 AM
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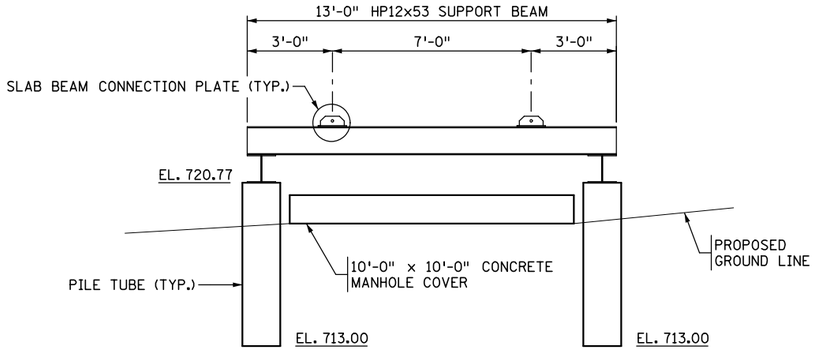
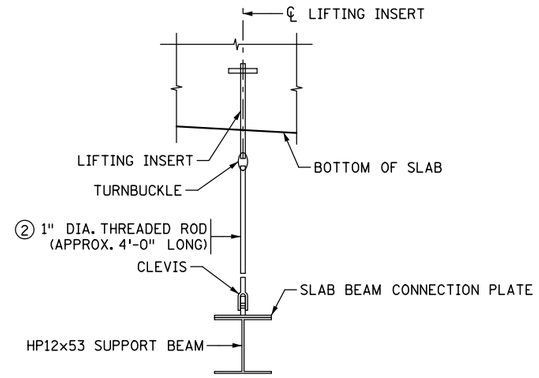
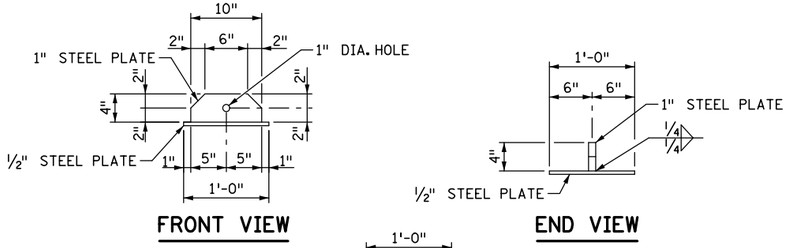


SECTION B-B

(SHEET 37)

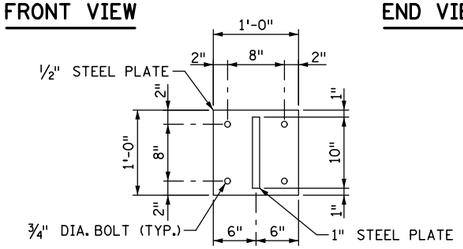


SLAB BEAM CONNECTION DETAIL



FRONT VIEW

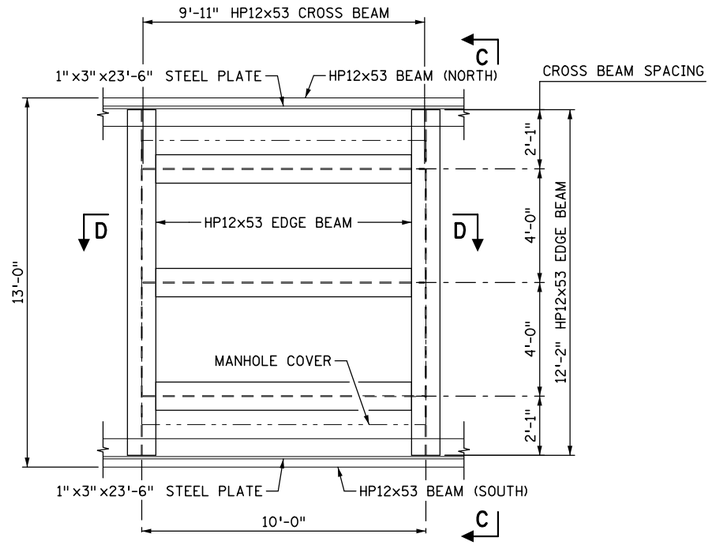
END VIEW



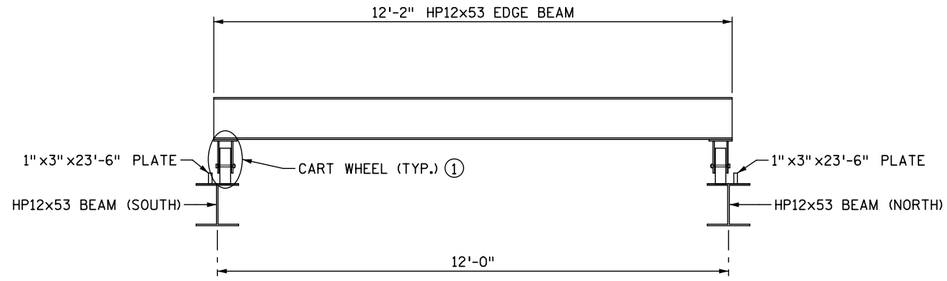
PLAN VIEW

SLAB BEAM CONNECTION PLATE

(2 REQ'D - 31 LBS. EACH)



MANHOLE LIFTING CART PLAN



VIEW C-C

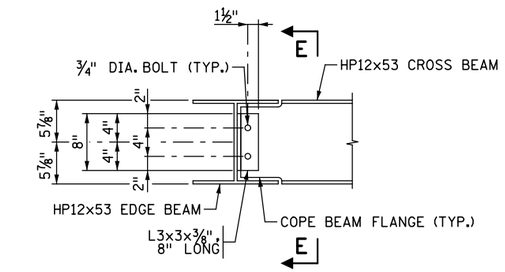
SUMMARY OF QUANTITIES LIFTING FRAME			
NOTE	ITEM	UNIT	QUANTITY
1	PILE TUBE	LIN FT	32
2	HP12x53	LIN FT	118
	LIFTING INSERTS	EACH	4
	TURNBUCKLE	EACH	2
	THREADED ROD	LIN FT	8
	CLEVIS	EACH	2
	SLAB BEAM CONNECTION PLATE	EACH	2

1 INCLUDES REINFORCEMENT BARS AND 3Y43 CONCRETE

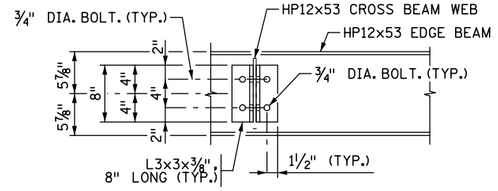
2 INCLUDES PLATE STEEL AND BEAM CONNECTION STEEL

THE SUMMARY OF QUANTITIES FOR LIFTING FRAME IS SHOWN ABOVE IN TABLE OF QUANTITIES. ANY ADDITIONAL MINOR ITEMS OR SLIGHT CHANGES OF QUANTITIES SHALL BE FURNISHED BY THE CONTRACTOR WITH NO ADDITIONAL COMPENSATION.

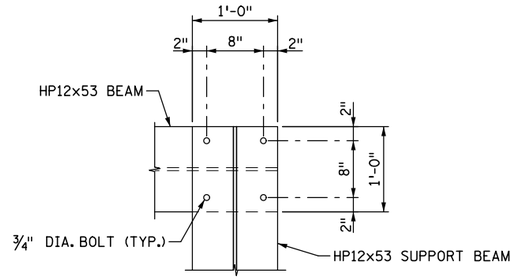
PAYMENT WILL BE INCLUDED IN THE SINGLE LUMP SUM PRICE FOR ITEM 2402.601 "LIFTING FRAME"



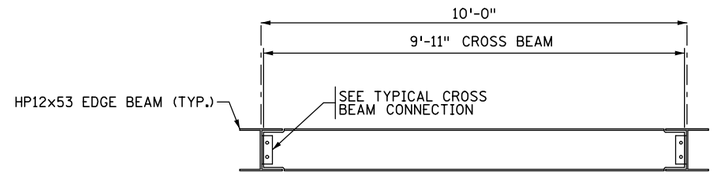
TYPICAL CROSS BEAM CONNECTION



SECTION E-E



SUPPORT BEAM CONNECTION



SECTION D-D

NOTES:

CONTRACTOR SHALL SUBMIT DETAILED SHOP DRAWINGS OF MANHOLE LIFTING FRAME & CART FOR ENGINEERS APPROVAL. SHOP DRAWINGS ARE TO BE INCLUDED IN PRICE BID FOR 2402.601 "LIFTING FRAME."

UNLESS SPECIFIED, ALL STRUCTURAL STEEL SHALL CONFORM TO STANDARD SPEC. 3306 AND BE GALVANIZED PER Mn/DOT SPEC. 3394 AFTER FABRICATION.

① CONTRACTOR TO SELECT WHEEL AND DESIGN WHEEL TO EDGE BEAM CONNECTION TO HAVE MINIMUM CAPACITY OF 5,000 LBS. (4 WHEELS REQUIRED FOR CART) WHEELS SHALL BE SUITABLE FOR EXTERIOR APPLICATION.

② FIELD CUT THREADED ROD TO FIT.

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NO.	DATE	BY	DESCRIPTION OF REVISIONS

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SIGNED _____ MATTHEW J. CHRISTENSEN

DATE: 12/19/2016 LIC. NO.: 43076

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tkda.com

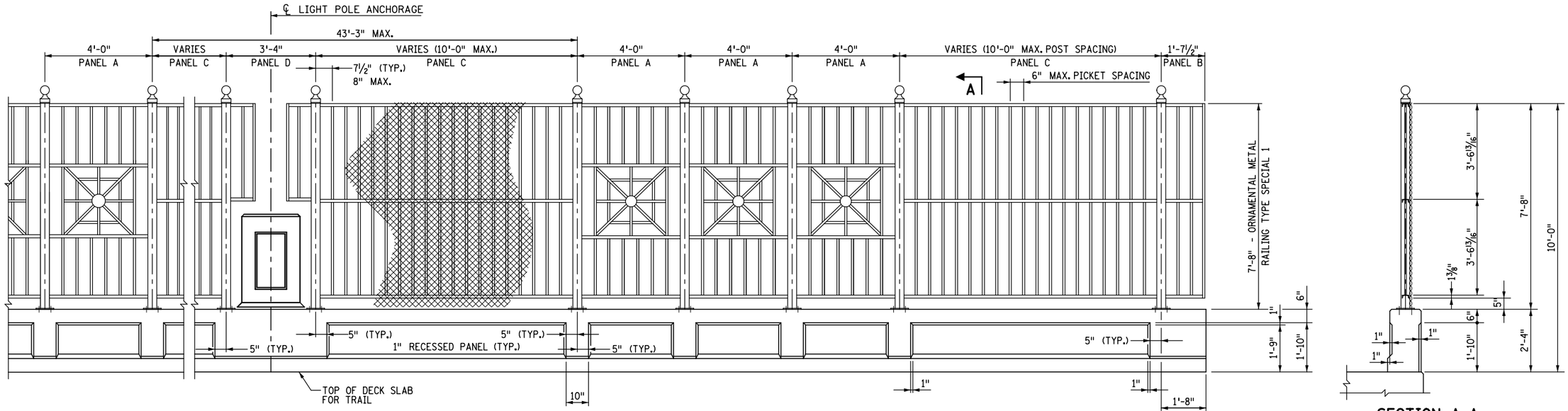
EASTBOUND WARNER ROAD
ST. PAUL, RAMSEY COUNTY, MINNESOTA
S.P. NO. 062-636-006

TITLE: LIFTING FRAME DETAILS (2 OF 2)

DES: MAV	DR: MAV	APPROVED
CHK: MJC	CHK: LJL	

Sheet No. 38 of 77 Sheets

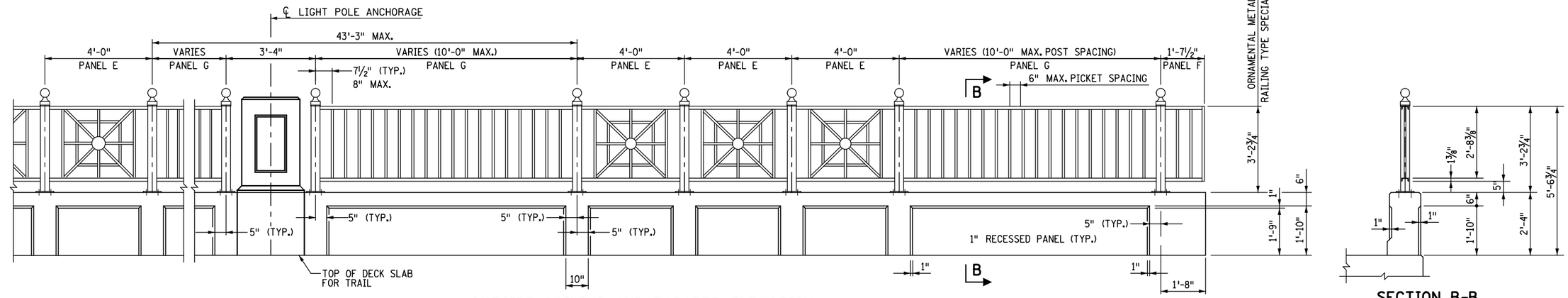
Bridge No. 62635



INSIDE RAILING AND PARAPET ELEVATION

(ORNAMENTAL METAL RAILING TYPE SPECIAL 1 SHOWN)

SECTION A-A



OUTSIDE RAILING AND PARAPET ELEVATION

(ORNAMENTAL METAL RAILING TYPE SPECIAL 2 SHOWN)

SECTION B-B

NOTES

SEE SHEETS 51, 52, AND 53 FOR ADDITIONAL ORNAMENTAL METAL RAILING DETAILS.

ORNAMENTAL METAL RAILING (TYPE SPECIAL 1 & 2) SHALL BE FABRICATED TO THE CURVE RADII SHOWN IN THE PLANS EXCEPT THAT PANELS "A", "E", "J", "K", & "L" MAY BE FABRICATED ON STRAIGHT LINE CHORDS BETWEEN CENTERS OF RAIL POSTS.

ONE INCH DEEP RECESSED PANELS ON INSIDE AND OUTSIDE FACES OF CONCRETE PARAPET ARE TO BE INCLUDED IN PRICE BID FOR "ORNAMENTAL METAL RAILING TYPE SPECIAL 1" OR "ORNAMENTAL METAL RAILING TYPE SPECIAL 2".

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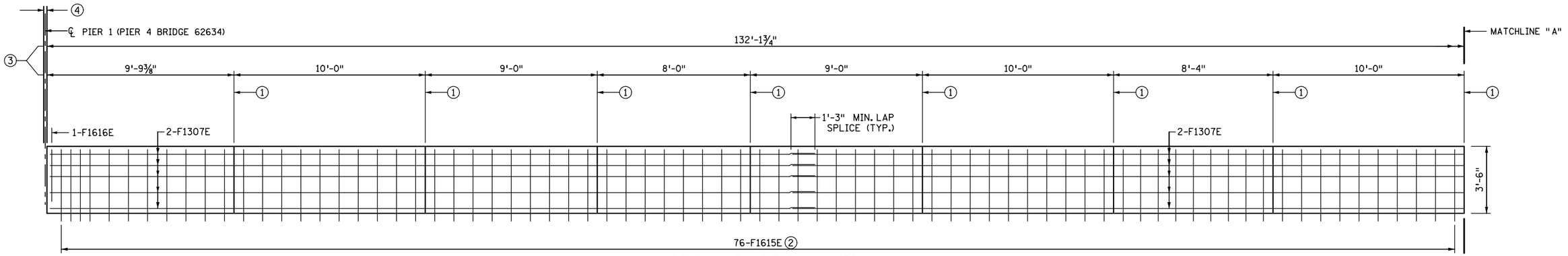
EASTBOUND WARNER ROAD
ST. PAUL, RAMSEY COUNTY, MINNESOTA
S.P. NO. 062-636-006

TITLE: AESTHETIC DETAILS

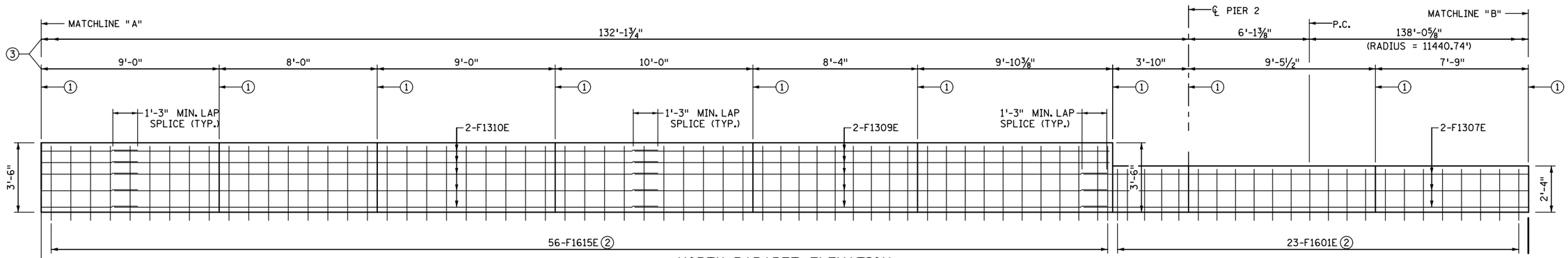
DES: ROC	DR: RRC	APPROVED
CHK: MJC	CHK: ROC	

Sheet No. 39 of 77 Sheets

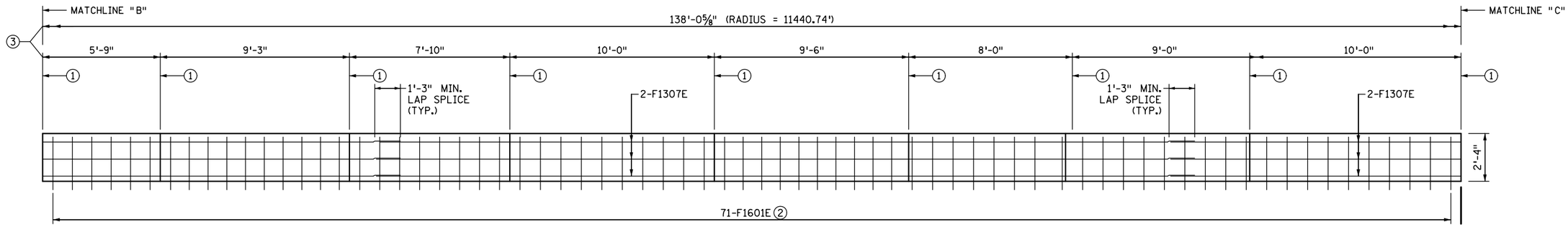
Bridge No. 62635



NORTH PARAPET ELEVATION
(INSIDE FACE OF NORTH PARAPET SHOWN)



NORTH PARAPET ELEVATION
(INSIDE FACE OF NORTH PARAPET SHOWN)



NORTH PARAPET ELEVATION
(INSIDE FACE OF NORTH PARAPET SHOWN)

NOTES

1. ① DENOTES CONTROL JOINT
2. ② FOR SPACING OF VERTICAL REINFORCEMENT SEE CONCRETE PARAPET SHEET.
3. ③ CONCRETE PARAPET MEASUREMENTS ARE ALONG NORTH CENTERLINE OF ORNAMENTAL METAL RAILING AND PARAPET.
4. ④ SEE BR. 62634 EXPANSION JOINT SHEETS FOR EXP. JT. OPENINGS @ 90°F AND 45°F MEASURED ALONG GUTTERLINES.

NO.	DATE	BY	DESCRIPTION OF REVISIONS

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EASTBOUND WARNER ROAD
ST. PAUL, RAMSEY COUNTY, MINNESOTA
S.P. NO. 062-636-006

TITLE: NORTH CONCRETE PARAPET (1 OF 2)

DES: ROC	DR: RRC	APPROVED
CHK: MJC	CHK: MJC	

Sheet No. 40 of 77 Sheets

Bridge No. 62635

DATE: 12/19/2016 TIME: 9:49:27 AM
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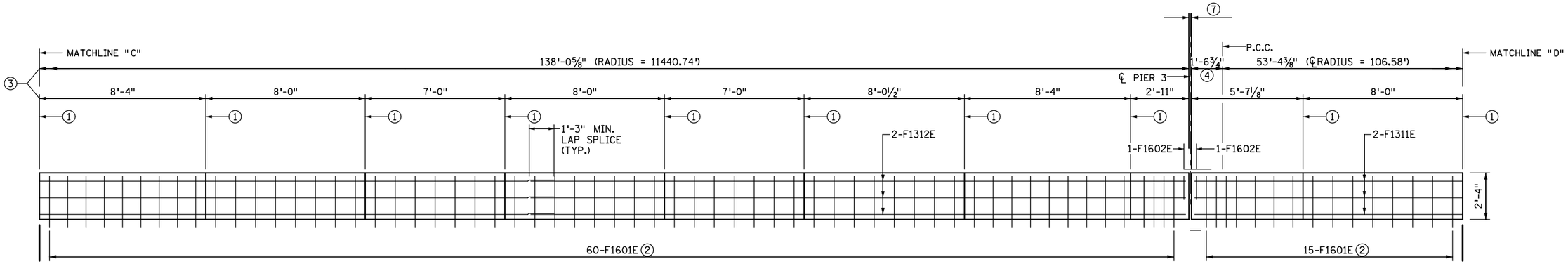
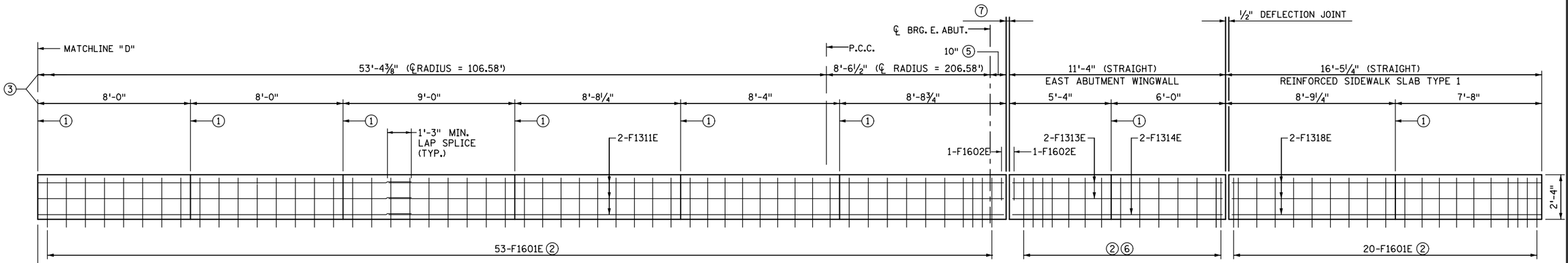


NORTH PARAPET ELEVATION
(INSIDE FACE OF NORTH PARAPET SHOWN)



NORTH PARAPET ELEVATION
(INSIDE FACE OF NORTH PARAPET SHOWN)

NOTES

1. DENOTES CONTROL JOINT
2. FOR SPACING OF VERTICAL REINFORCEMENT SEE CONCRETE PARAPET SHEET.
3. CONCRETE PARAPET MEASUREMENTS ARE ALONG NORTH CENTERLINE OF ORNAMENTAL METAL RAILING AND PARAPET.
4. ℄ RADIUS = 11440.74'
5. STRAIGHT ALIGNMENT
6. SEE EAST ABUTMENT PLANS FOR RAILING BARS EMBEDDED IN ABUTMENT WINGWALL.
7. SEE EXPANSION JOINT SHEETS FOR EXP. JT. OPENINGS @ 90°F & 45°F MEASURED ALONG GUTTERLINES.

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S.P. NO. 062-636-006

TITLE: NORTH CONCRETE PARAPET (2 OF 2)

DES: ROC	DR: RRC	APPROVED
CHK: MJC	CHK: MJC	

Sheet No. 41 of 77 Sheets

Bridge No. 62635

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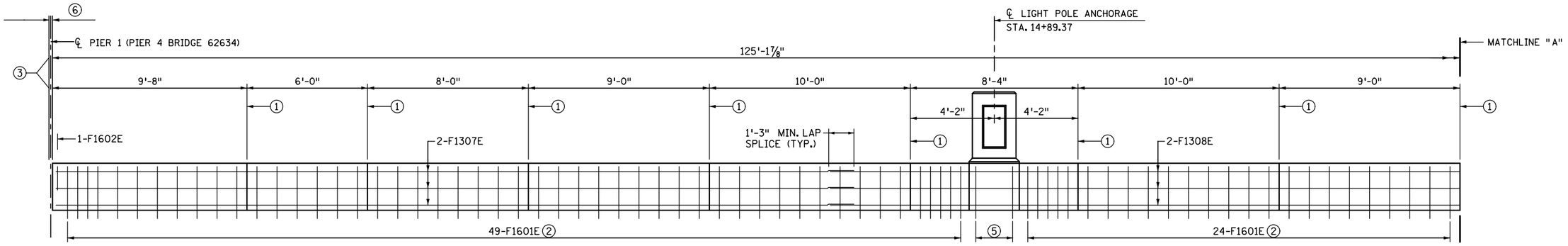
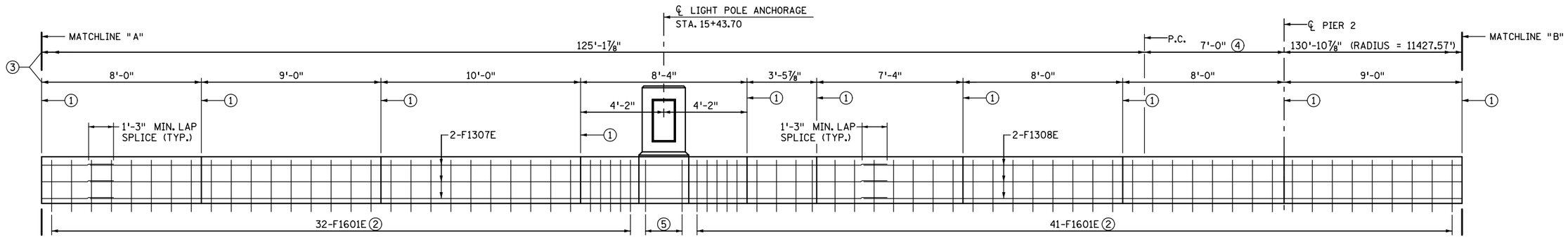
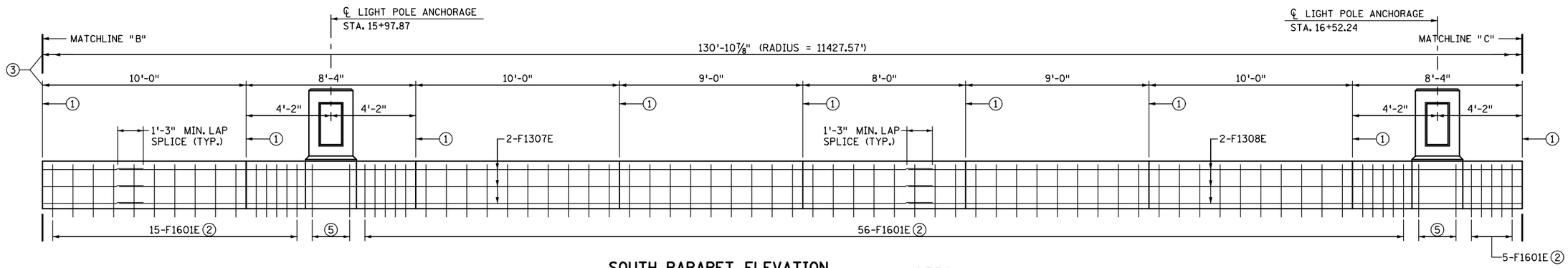


SOUTH PARAPET ELEVATION
(OUTSIDE FACE OF SOUTH PARAPET SHOWN)



SOUTH PARAPET ELEVATION
(OUTSIDE FACE OF SOUTH PARAPET SHOWN)



SOUTH PARAPET ELEVATION
(OUTSIDE FACE OF SOUTH PARAPET SHOWN)

NOTES

① DENOTES CONTROL JOINT

② FOR SPACING OF VERTICAL REINFORCEMENT SEE CONCRETE PARAPET SHEET.

③ CONCRETE PARAPET MEASUREMENTS ARE ALONG SOUTH CENTERLINE OF ORNAMENTAL METAL RAILING AND PARAPET.

④ RADIUS = 11427.57'.

⑤ GROUP I BARS:
5-F1603E
3-F1304E
10-F1605E
4-F1306E
SEE "LIGHT POLE ANCHORAGE REINFORCEMENT (TRAIL LIGHTING)" SHEET FOR ADDITIONAL DETAILS.

⑥ SEE EXPANSION JOINT SHEETS FOR EXP. JT. OPENINGS @ 90°F & 45°F MEASURED ALONG GUTTERLINES.

NO.	DATE	BY	DESCRIPTION OF REVISIONS

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA
SIGNED Matthew J. Christensen MATTHEW J. CHRISTENSEN
DATE: 12/19/2016 LIC. NO.: 43076

TKDA
444 Cedar Street, Suite 1500
Saint Paul, MN 55101
651.292.4400
tkda.com

EASTBOUND WARNER ROAD
ST. PAUL, RAMSEY COUNTY, MINNESOTA
S.P. NO. 062-636-006

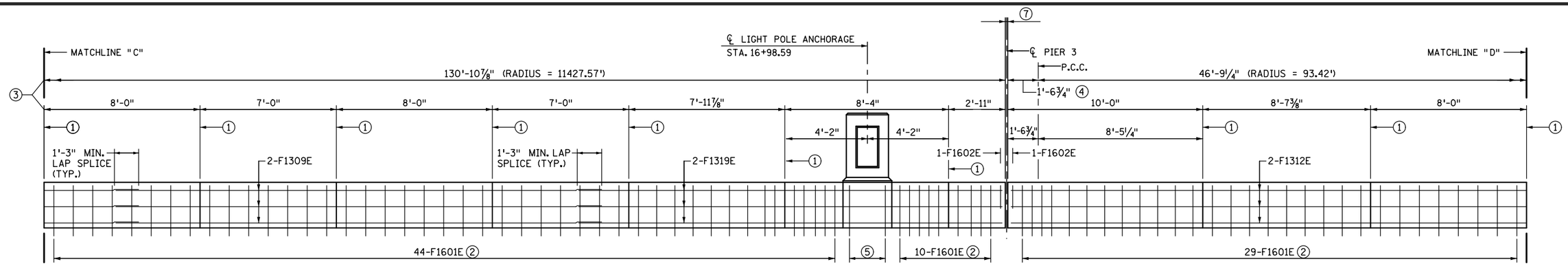
TITLE: SOUTH CONCRETE PARAPET (1 OF 2)

DES: ROC	DR: RRC	APPROVED
CHK: MJC	CHK: MJC	

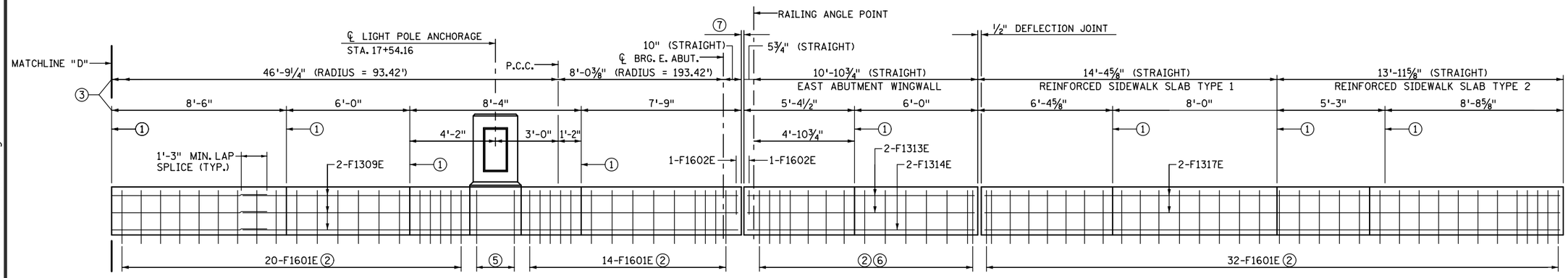
Sheet No. 42 of 77 Sheets

Bridge No. 62635

DATE: 12/19/2016 TIME: 9:49:28 AM
FILENAME: K:\nr-z\RamseyCty\51\3000\hwy-brdg\brdg\62635\super\CBR62635_rail\S01.dgn



SOUTH PARAPET ELEVATION
(OUTSIDE FACE OF SOUTH PARAPET SHOWN)



SOUTH PARAPET ELEVATION
(OUTSIDE FACE OF SOUTH PARAPET SHOWN)

NOTES

① DENOTES CONTROL JOINT

② FOR SPACING OF VERTICAL REINFORCEMENT SEE CONCRETE PARAPET SHEET.

③ CONCRETE PARAPET MEASUREMENTS ARE ALONG SOUTH CENTERLINE OF ORNAMENTAL METAL RAILING AND PARAPET.

④ RADIUS = 11427.57'.

⑤ GROUP I BARS:
5-F1603E
3-F1304E
10-F1605E
4-F1306E
SEE "LIGHT POLE ANCHORAGE REINFORCMENT (TRAIL LIGHTING)" SHEET FOR ADDITIONAL DETAILS.

⑥ SEE EAST ABUTMENT FOR PARAPET BARS EMBEDDED IN ABUTMENT WINGWALL.

⑦ SEE EXPANSION JOINT SHEETS FOR EXP. JT. OPENINGS @ 90°F & 45°F MEASURED ALONG GUTTERLINES.

NO.	DATE	BY	DESCRIPTION OF REVISIONS

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SIGNED Matthew V. Christensen MATTHEW J. CHRISTENSEN
DATE: 12/19/2016 LIC. NO.: 43076

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EASTBOUND WARNER ROAD
ST. PAUL, RAMSEY COUNTY, MINNESOTA
S.P. NO. 062-636-006

TITLE: SOUTH CONCRETE PARAPET (2 OF 2)

DES: ROC	DR: RRC	APPROVED
CHK: MJC	CHK: MJC	

Sheet No. 43 of 77 Sheets

Bridge No. 62635

DATE: 12/19/2016 TIME: 9:49:29 AM
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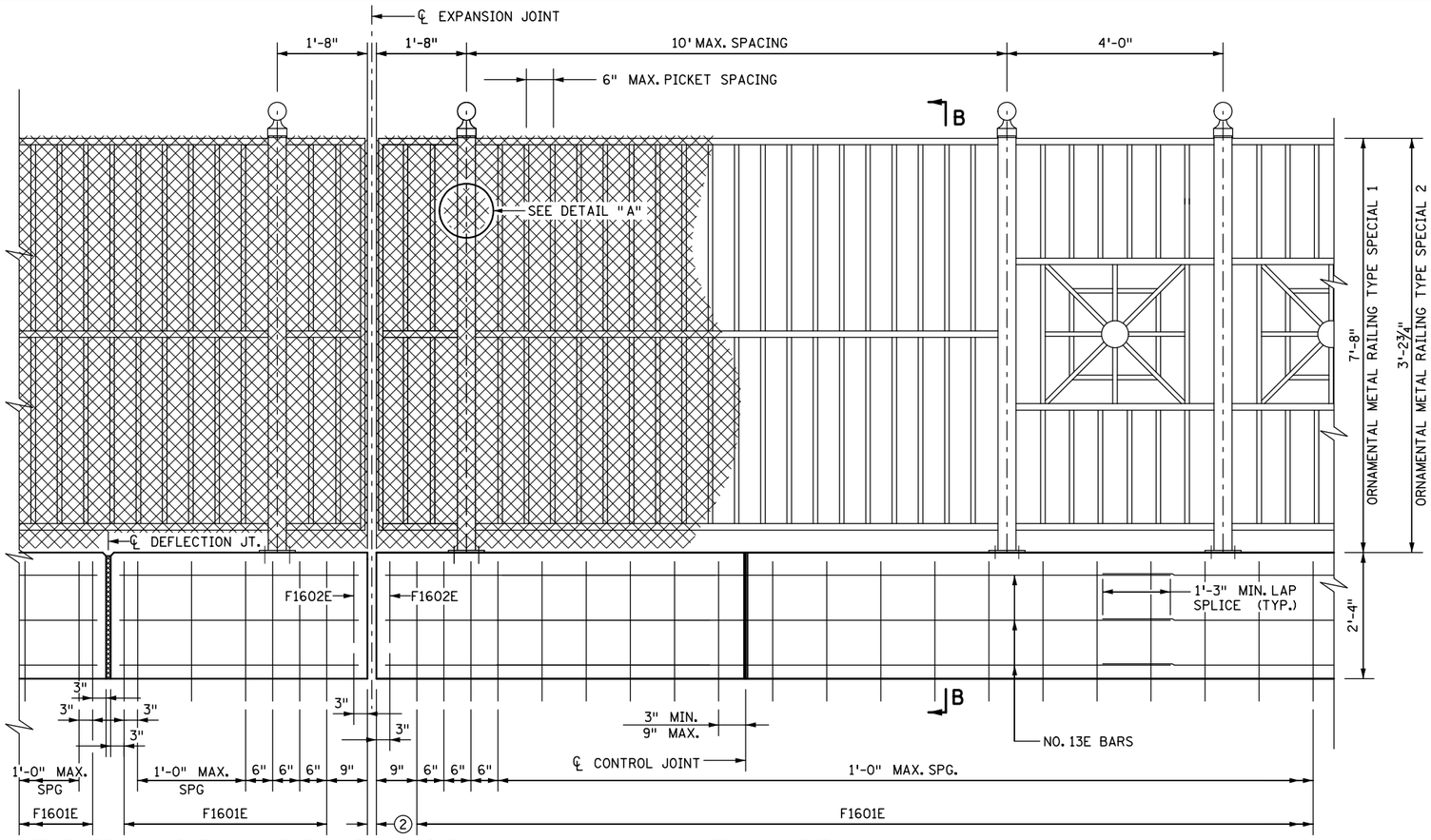
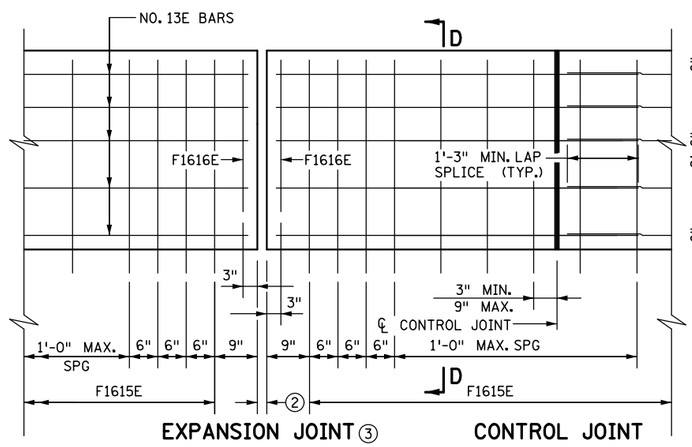


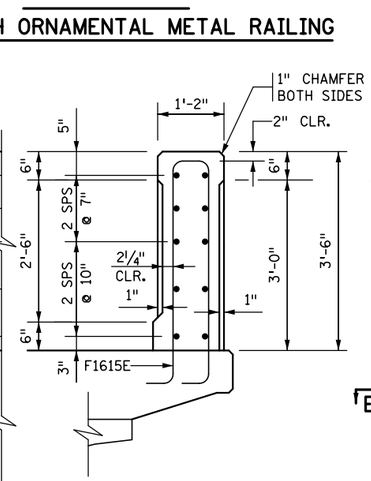
DEFLECTION JOINT EXPANSION JOINT ③ CONTROL JOINT

CONCRETE PARAPET WITH ORNAMENTAL METAL RAILING

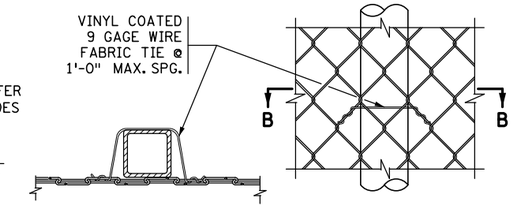


EXPANSION JOINT ③ CONTROL JOINT

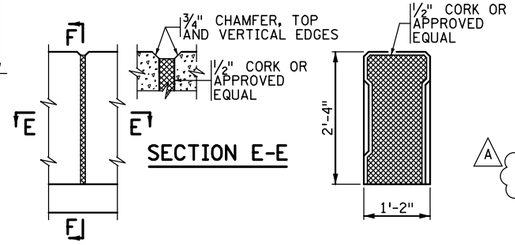
CONCRETE PARAPET WITHOUT ORNAMENTAL METAL RAILING



SECTION D-D

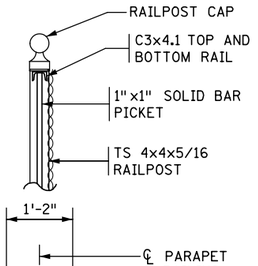


DETAIL "A"

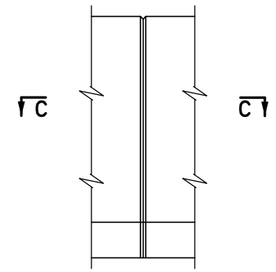


ELEVATION SECTION E-E SECTION F-F

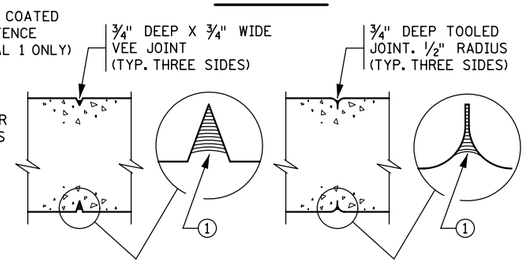
DEFLECTION JOINT DETAILS



SECTION B-B



ELEVATION



SECTION C-C SECTION C-C

OPTION 1 OPTION 2

CONTROL JOINT DETAILS

GENERAL NOTES

LENGTH OF "TYPE MOD. P-1 RAILING CONCRETE (3Y46)" FOR PAYMENT SHALL BE MEASURED ALONG THE CENTERLINE OF CONCRETE PARAPET AND RAILING BETWEEN THE OUTSIDE FACES OF THE CONCRETE PARAPET. PRICE BID INCLUDES THE COST OF CONSTRUCTING THE RECESSED PANELS AT INSIDE AND OUTSIDE FACES OF CONCRETE PARAPET AS SHOWN ON AESTHETIC DETAIL SHEETS.

LENGTH OF "ORNAMENTAL METAL RAILING TYPE SPECIAL 1 AND 2" FOR PAYMENT SHALL BE MEASURED FROM OUTSIDE ENDS OF METAL RAILING AS SHOWN ON RAILING ELEVATION SHEETS. NO DEDUCTIONS WILL BE MADE FOR GAPS IN RAILING AT EXPANSION JOINTS AND LIGHT POLE ANCHORAGES. PRICE BID INCLUDES ANCHORAGES AND ALL MATERIAL ABOVE TOP OF PARAPET.

CONCRETE PARAPET (2'-4" HIGH) = 408 LBS./FT. (0.101 CU. YDS./FT.)

CONCRETE PARAPET (3'-6" HIGH) = 613 LBS./FT. (0.151 CU. YDS./FT.)

ALL STRUCTURAL STEEL TUBING IN THE RAIL SHALL CONFORM TO MnDOT SPEC. 3361 TYPE A.

Ⓐ MATERIAL FOR BASE PLATES, CHANNELS, AND PICKETS SHALL CONFORM TO MnDOT SPEC. 3306.

FOR RAIL ANCHORAGE REQUIREMENTS, SEE ORNAMENTAL METAL RAILING DETAIL SAND THE SPECIAL PROVISIONS.

RAILING SHALL BE GROUNDED WITH ⅝" DIA. COPPER ROD AS PER Mn/DOT SPEC. 2557. CONTRACTOR SHALL PROVIDE GROUNDING DETAILS TO ENGINEER FOR APPROVAL.

VENT HOLES SHALL BE DRILLED IN THE RAIL POST BASE AND RAIL TUBES AS NECESSARY TO FACILITATE GALVANIZING.

RAIL POSTS AND PICKETS SHALL BE VERTICAL.

HORIZONTAL RAILS SHALL BE PARALLEL TO THE TOP OF PARAPET.

FOR THE RAIL COATING, SEE THE SPECIAL PROVISIONS.

THE RAILING, BASE PLATES, AND PROTRUDING PORTIONS OF BOLTS, NUTS, AND WASHERS SHALL BE PAINTED IN ACCORDANCE WITH THE SPECIAL PROVISIONS.

THE CHAIN LINK FABRIC AND FABRIC TIES SHALL BE VINYL COATED AND CONFORM TO Mn/DOT SPEC. 3376. THE COLOR SHALL BE BLACK.

WIRE TIES SHALL BE 9 GAGE GALVANIZED STEEL OR 0.179" MIN. ALUMINUM ALLOY CONFORMING TO A.S.T.M. B211, ALLY 1100-H18. USE 121*2 GAGE GALVANIZED HOG RINGS FOR WIRE TIES.

SEE SHEETS 51, 52 AND 53 FOR ADDITIONAL ORNAMENTAL METAL RAILING DETAILS.

MAXIMUM SPACING OF CONTROL JOINTS SHALL BE 10 FT.

FOR SPACING OF RAILING POSTS AND JOINTS, SEE RAILING ELEVATION SHEETS.

SEE SHEET 46 FOR BILL OF REINFORCEMENT AND BAR BENDING DETAILS.

① SEE SPECIAL PROVISIONS FOR JOINT SEALING REQUIREMENTS.

② SEE EXPANSION JOINT SHEETS FOR EXPANSION JOINT OPENINGS AT 90° AND 45° MEASURED ALONG GUTTERLINE.

③ EXPANSION JOINT (DEVICE NOT SHOWN).

NO.	DATE	BY	DESCRIPTION OF REVISIONS
A	7/25/13	MJC	CHANGE IN MATERIAL FOR METAL RAILING

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA
SIGNED Matthew J. Christensen MATTHEW J. CHRISTENSEN
DATE: 12/19/2016 LIC. NO.: 43076

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tkda.com

EASTBOUND WARNER ROAD
ST. PAUL, RAMSEY COUNTY, MINNESOTA
S.P. NO. 062-636-006

TITLE:
ORNAMENTAL METAL RAILING (TYPE SPECIAL)
CONCRETE PARAPET (TYPE MOD. P-1)

DES: ROC	DR: SFH	APPROVED
CHK: MJC	CHK: MJC	

Sheet No. 44 of 77 Sheets

Bridge No. 62635

DATE: 12/19/2016 TIME: 9:49:30 AM
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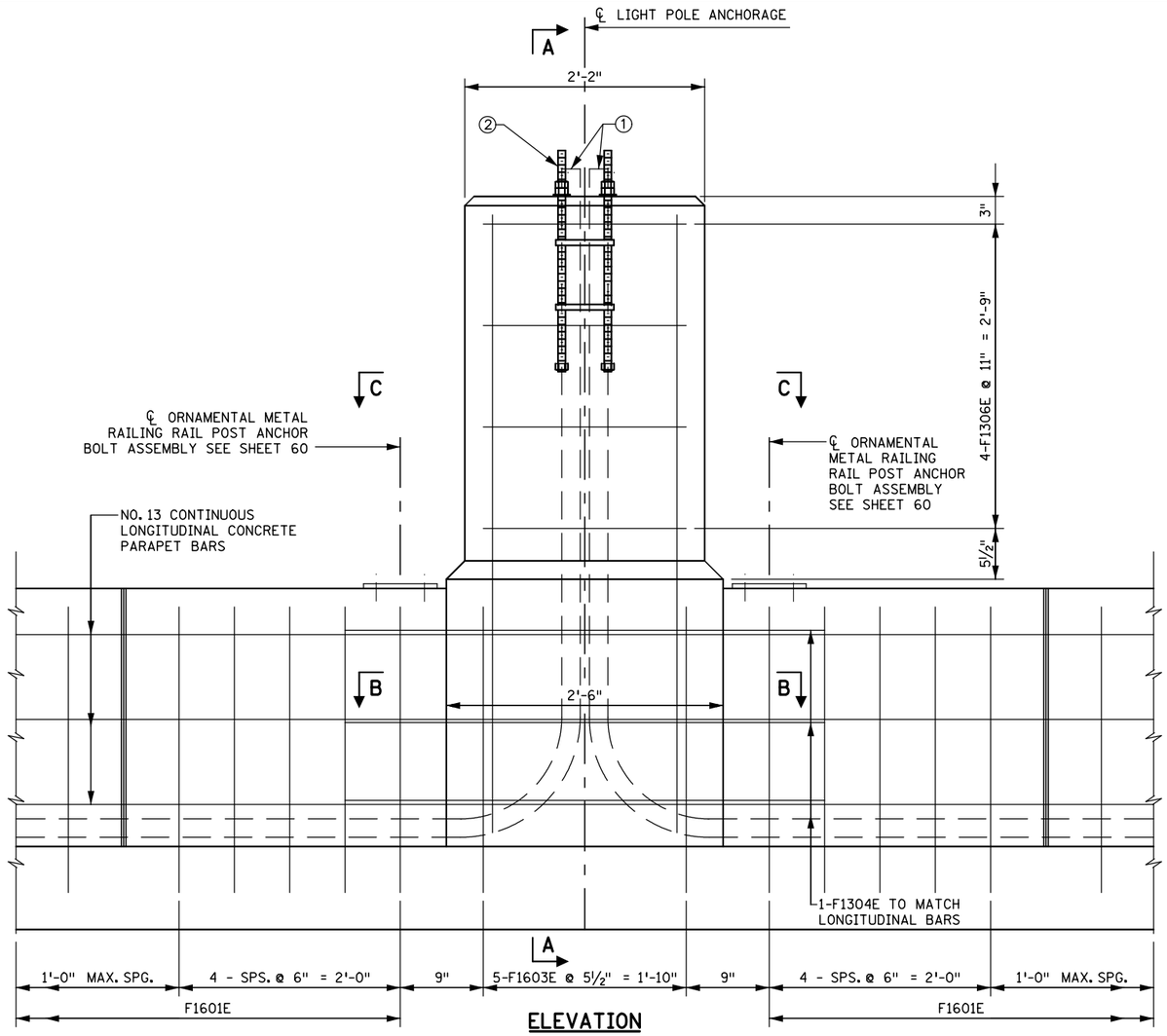

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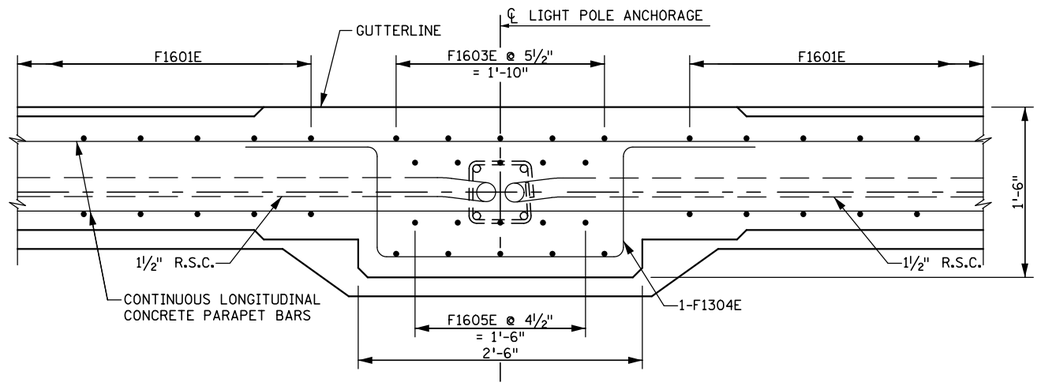
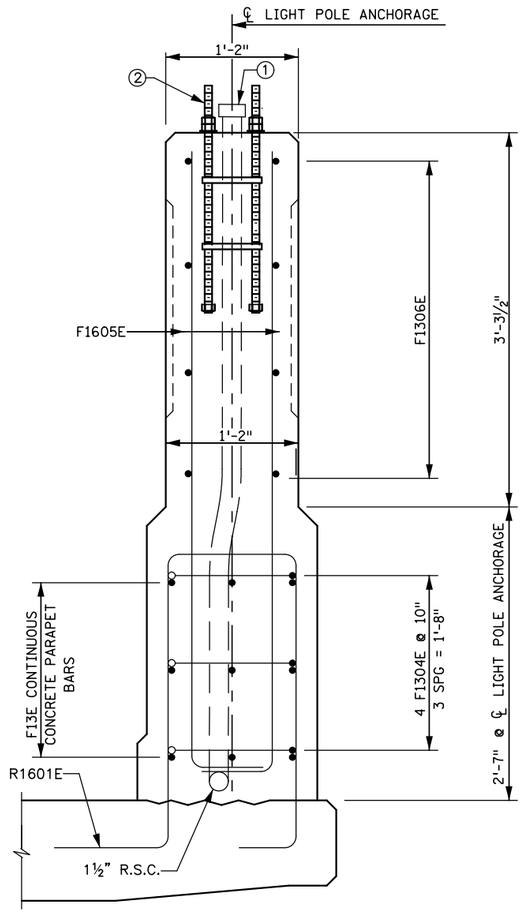
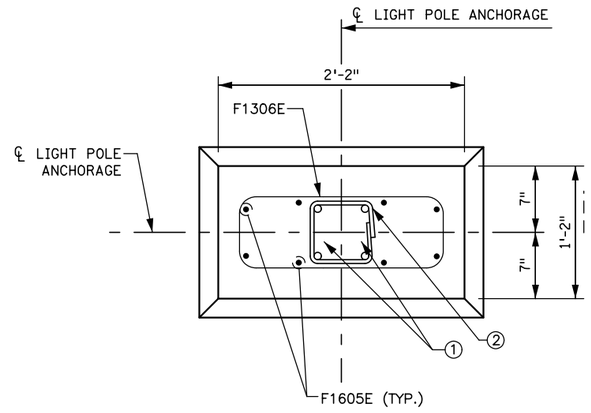


SECTION B-B



SECTION A-A



SECTION C-C

NOTES

SEE SHEET 46 FOR BAR LIST AND BAR BENDING DIAGRAMS.

① 1½" DIA. R.S.C. OR EQUAL SHALL EXTEND 3" ABOVE TOP OF CONCRETE BASE AND BE CAPPED. CHECK FOR LOCATION OF LIGHT POLE ANCHORAGES FOR PROPER PLACEMENT OF CONDUIT AND ANCHOR ROD ASSEMBLY.

② SEE SHEET 60 FOR ANCHOR ROD ASSEMBLY DETAILS AND PLACEMENT.

DATE: 12/19/2016 TIME: 9:49:31 AM
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NO.	DATE	BY	DESCRIPTION OF REVISIONS

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SIGNED Matthew J. Christensen MATTHEW J. CHRISTENSEN
DATE: 12/19/2016 LIC. NO.: 43076

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Saint Paul, MN 55101
651.292.4400
tkda.com

EASTBOUND WARNER ROAD
ST. PAUL, RAMSEY COUNTY, MINNESOTA
S.P. NO. 062-636-006

TITLE: LIGHT POLE ANCHORAGE REINFORCEMENT (TRAIL LIGHTING)

DES: ROC	DR: RRC	APPROVED
CHK: MJC	CHK: MJC	

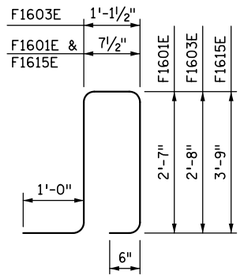
Sheet No. 45 of 77 Sheets

Bridge No. 62635

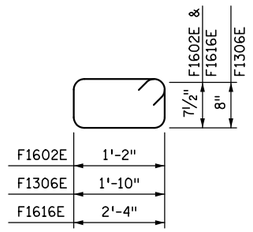
BILL OF REINFORCEMENT - CONCRETE PARAPET

BAR	NO.	LENGTH	SHAPE	LOCATION
F1601E	623	7'-3"		RAIL BASE VERTICAL
F1602E	9	4'-6"		RAIL BASE VERTICAL
F1603E	30	7'-11"		LIGHT BASE VERTICAL
F1304E	18	6'-2"		LIGHT BASE LONGITUDINAL TIE
F1605E	60	6'-2"		LIGHT BASE VERTICAL
F1306E	24	5'-9"		LIGHT BASE LONGITUDINAL TIE
F1307E	56	40'-0"		RAIL BASE LONGITUDINAL
F1308E	30	35'-0"		RAIL BASE LONGITUDINAL
F1309E	22	25'-0"		RAIL BASE LONGITUDINAL
F1310E	10	27'-6"		RAIL BASE LONGITUDINAL
F1311E	12	33'-0"		RAIL BASE LONGITUDINAL
F1312E	12	34'-0"		RAIL BASE LONGITUDINAL
F1313E	8	11'-0"		RAIL BASE LONGITUDINAL
F1314E	4	10'-9"		RAIL BASE LONGITUDINAL
F1615E	132	9'-7"		RAIL BASE VERTICAL
F1616E	1	6'-10"		RAIL BASE VERTICAL
F1317E	6	27'-11"		RAIL BASE LONGITUDINAL
F1318E	6	16'-0"		RAIL BASE LONGITUDINAL
F1319E	6	23'-0"		RAIL BASE LONGITUDINAL

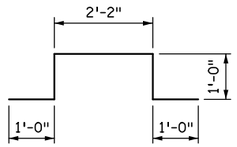
BAR BENDING DIAGRAMS



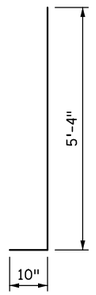
F1601E, F1603E, & F1615E



F1602E, F1306E, & F1616E



F1304E



F1605E

NOTE:

BENT BAR DIMENSIONS GIVEN ARE OUT-TO-OUT. ACTUAL BAR LENGTHS SHALL BE DETERMINED BASED ON THE DETAIL DIMENSIONS SHOWN IN THE BAR BENDING DIAGRAMS.

* DENOTES STANDARD STIRRUP HOOK.

DATE: 12/19/2016 TIME: 9:49:31 AM
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NO.	DATE	BY	DESCRIPTION OF REVISIONS
1	2/10/2015	MJC	UPDATED BILL OF REINFORCEMENT

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA
SIGNED _____ MATTHEW J. CHRISTENSEN
DATE: 12/19/2016 LIC. NO.: 43076

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tkda.com

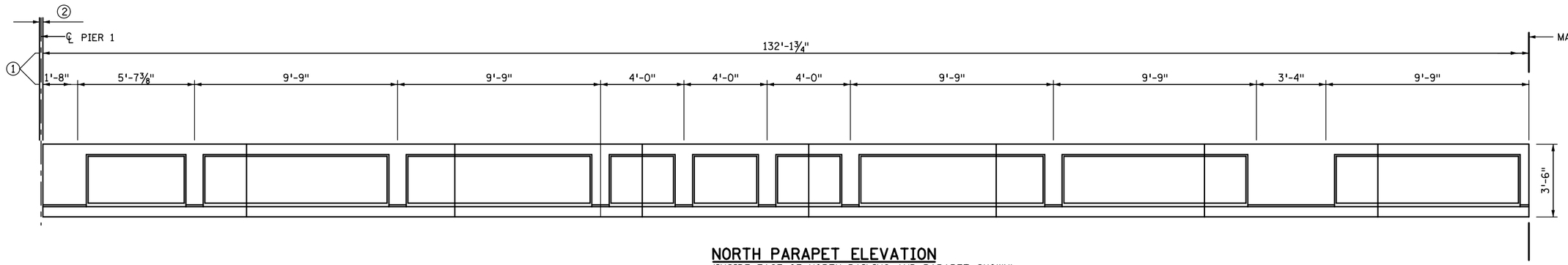
EASTBOUND WARNER ROAD
ST. PAUL, RAMSEY COUNTY, MINNESOTA
S.P. NO. 062-636-006

TITLE: PARAPET BARLIST

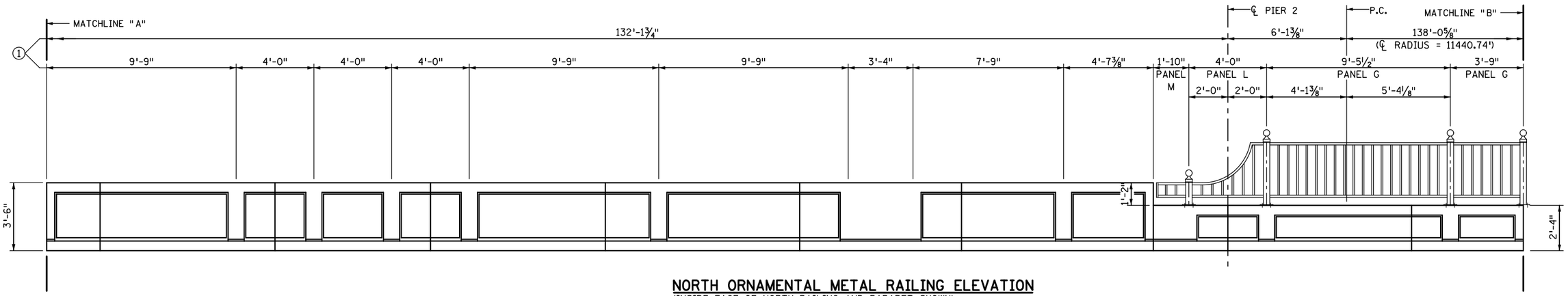
DES: ROC	DR: RRC	APPROVED
CHK: MJC	CHK: MJC	

Sheet No. 46 of 77 Sheets

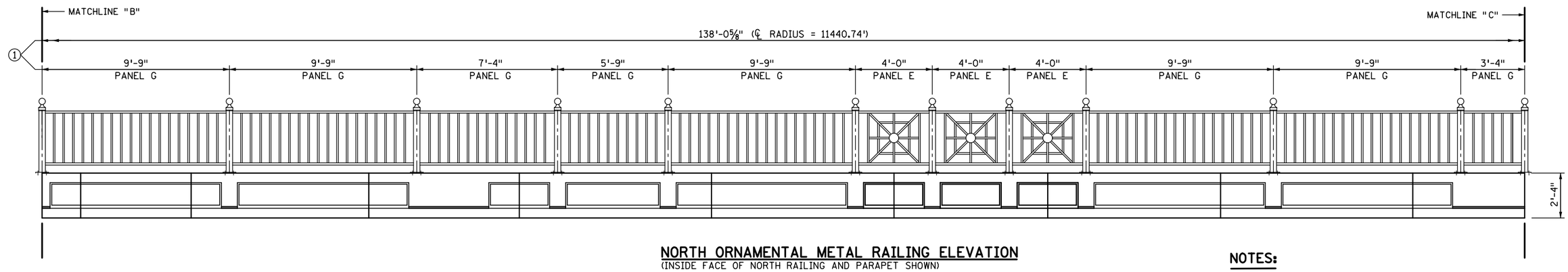
Bridge No. 62635



NORTH PARAPET ELEVATION
(INSIDE FACE OF NORTH RAILING AND PARAPET SHOWN)



NORTH ORNAMENTAL METAL RAILING ELEVATION
(INSIDE FACE OF NORTH RAILING AND PARAPET SHOWN)



NORTH ORNAMENTAL METAL RAILING ELEVATION
(INSIDE FACE OF NORTH RAILING AND PARAPET SHOWN)

NOTES:

①ORNAMENTAL METAL RAILING MEASURMENTS ARE ALONG CENTERLINE OF CONCRETE PARAPET AND ORNAMENTAL METAL RAILING.

②SEE BRIDGE 62634 EXPANSION JOINT SHEETS FOR EXP. JT. OPENINGS @ 90°F & 45°F MEASURED ALONG GUTTERLINES.

NO.	DATE	BY	DESCRIPTION OF REVISIONS

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EASTBOUND WARNER ROAD
ST. PAUL, RAMSEY COUNTY, MINNESOTA
S.P. NO. 062-636-006

TITLE: NORTH ORNAMENTAL METAL RAILING (1 OF 2)

DES: ROC	DR: RRC	APPROVED
CHK: MJC	CHK: MJC	

Sheet No. 47 of 77 Sheets

Bridge No. 62635

DATE: 12/19/2016 TIME: 9:49:32 AM
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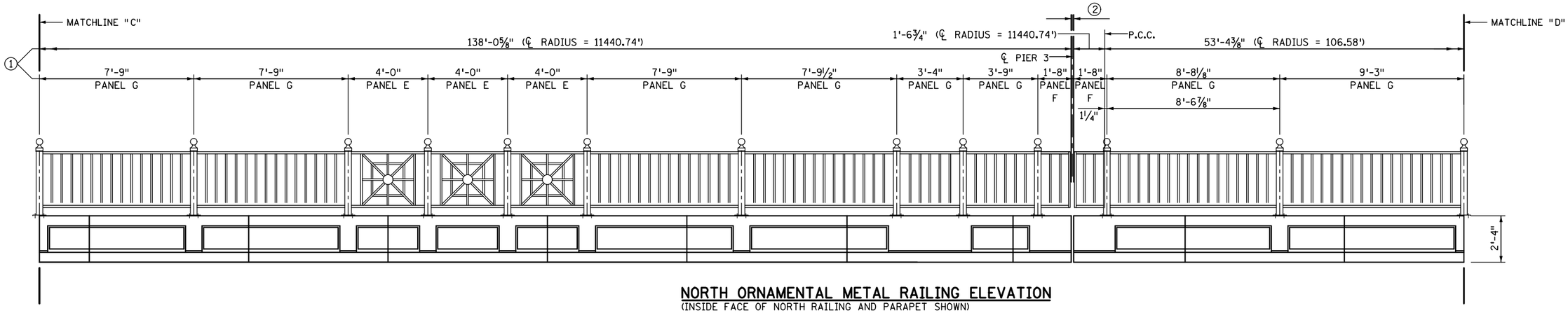
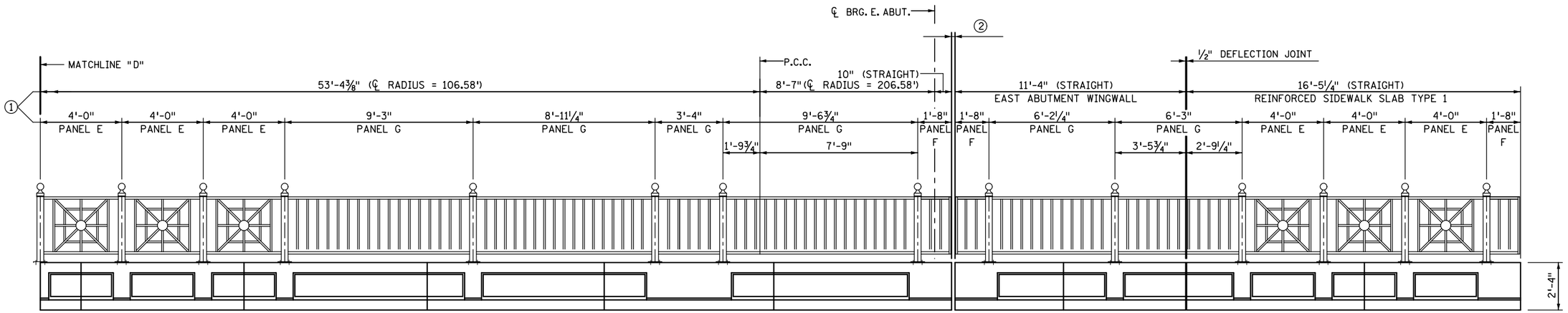


NORTH ORNAMENTAL METAL RAILING ELEVATION
(INSIDE FACE OF NORTH RAILING AND PARAPET SHOWN)



NORTH ORNAMENTAL METAL RAILING ELEVATION
(INSIDE FACE OF NORTH RAILING AND PARAPET SHOWN)

NOTES:

1. ORNAMENTAL METAL RAILING MEASURMENTS ARE ALONG CENTERLINE OF CONCRETE PARAPET AND ORNAMENTAL METAL RAILING.
2. SEE EXPANSION JOINT SHEETS FOR EXP. JT. OPENINGS @ 90°F & 45°F MEASURED ALONG GUTTERLINES.

DATE: 12/19/2016 TIME: 9:49:33 AM
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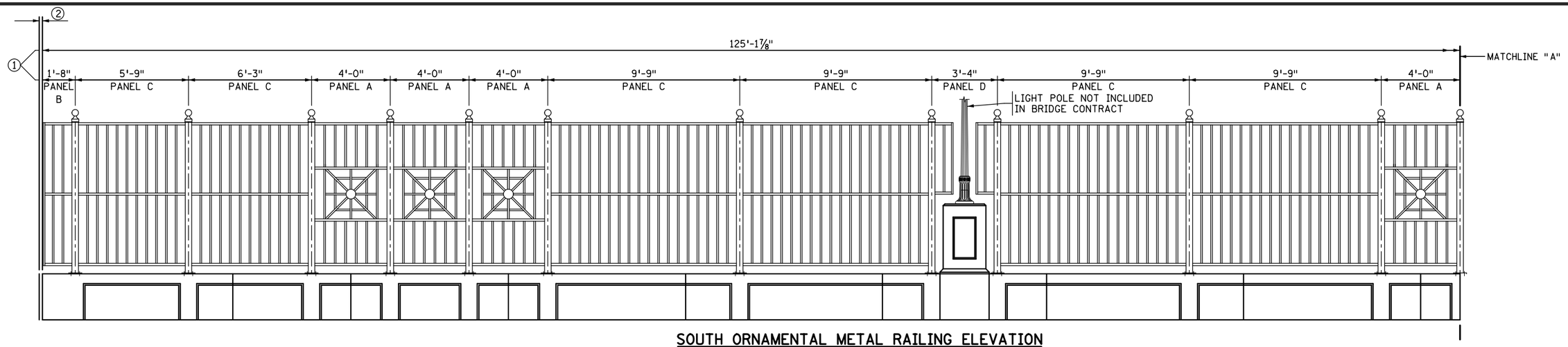
ST. PAUL, RAMSEY COUNTY, MINNESOTA
S.P. NO. 062-636-006

TITLE: NORTH ORNAMENTAL METAL RAILING (2 OF 2)

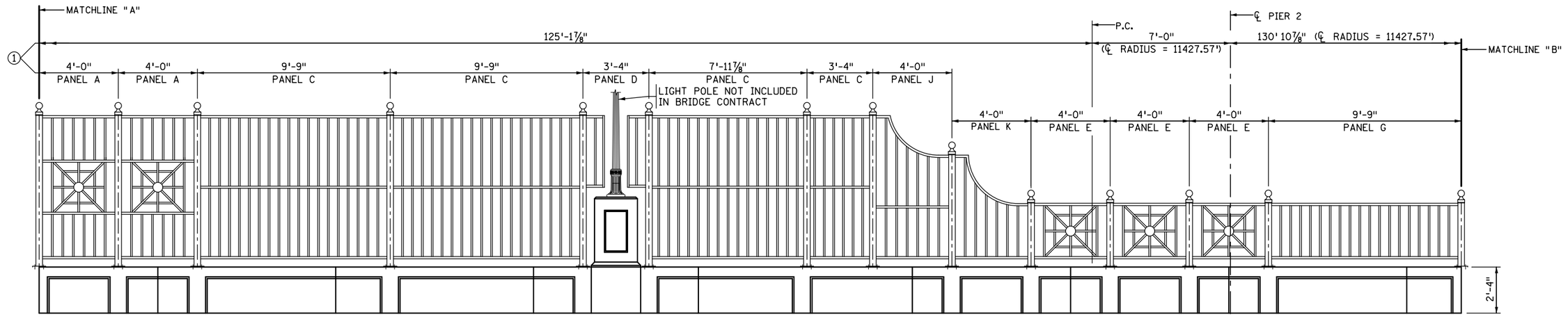
DES: ROC	DR: RRC	APPROVED
CHK: MJC	CHK: MJC	

Sheet No. 48 of 77 Sheets

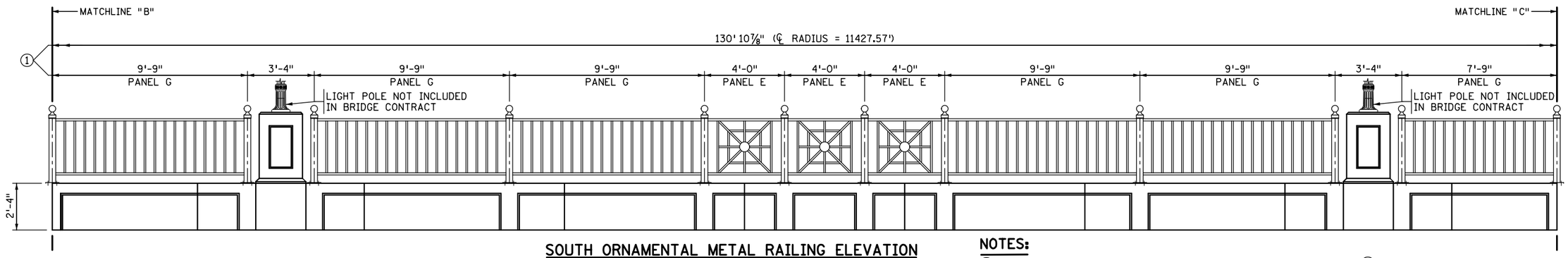
Bridge No. 62635



SOUTH ORNAMENTAL METAL RAILING ELEVATION
(OUTSIDE FACE OF SOUTH RAILING AND PARAPET SHOWN)



SOUTH ORNAMENTAL METAL RAILING ELEVATION
(OUTSIDE FACE OF SOUTH RAILING AND PARAPET SHOWN)



SOUTH ORNAMENTAL METAL RAILING ELEVATION
(OUTSIDE FACE OF SOUTH RAILING AND PARAPET SHOWN)

NOTES:

1. ORNAMENTAL METAL RAILING MEASURMENTS ARE ALONG CENTERLINE OF CONCRETE PARAPET AND ORNAMENTAL METAL RAILING.
2. SEE BRIDGE 62634 EXPANSION JOINT SHEETS FOR EXP. JT. OPENINGS @ 90°F & 45°F MEASURED ALONG GUTTERLINES.

NO.	DATE	BY	DESCRIPTION OF REVISIONS

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA
SIGNED Matthew J. Christensen MATTHEW J. CHRISTENSEN
DATE: 12/19/2016 LIC. NO.: 43076

TKDA
444 Cedar Street, Suite 1500
Saint Paul, MN 55101
651.292.4400
tkda.com

EASTBOUND WARNER ROAD
ST. PAUL, RAMSEY COUNTY, MINNESOTA
S.P. NO. 062-636-006

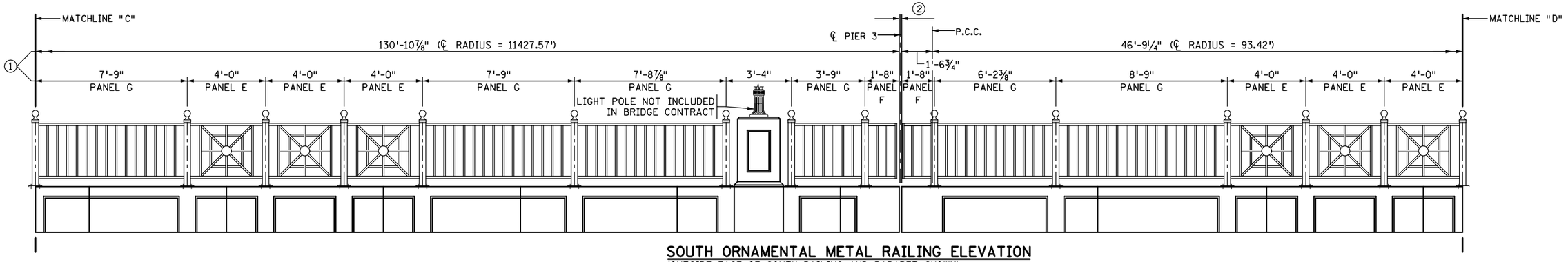
TITLE: SOUTH ORNAMENTAL METAL RAILING (1 OF 2)

DES: ROC	DR: RRC	APPROVED
CHK: MJC	CHK: MJC	

Sheet No. 49 of 77 Sheets

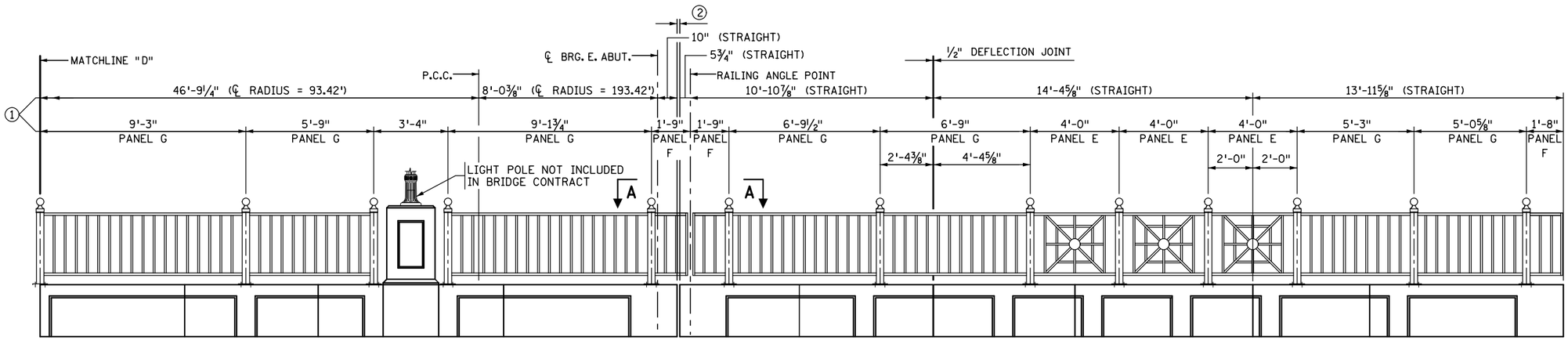
Bridge No. 62635

DATE: 12/19/2016 TIME: 9:49:33 AM
FILENAME: K:\n-2\RamseyCty\5\13000\hwy-brdg\brdg\62635\super\CBR62635_parapetS01.dgn



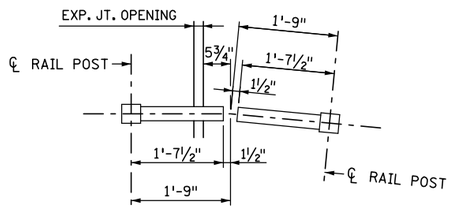
SOUTH ORNAMENTAL METAL RAILING ELEVATION

(OUTSIDE FACE OF SOUTH RAILING AND PARAPET SHOWN)



SOUTH ORNAMENTAL METAL RAILING ELEVATION

(OUTSIDE FACE OF SOUTH RAILING AND PARAPET SHOWN)



VIEW A-A

NOTES:

1. ORNAMENTAL METAL RAILING MEASURMENTS ARE ALONG CENTERLINE OF CONCRETE PARAPET AND ORNAMENTAL METAL RAILING.
2. SEE EXPANSION JOINT SHEETS FOR EXP. JT. OPENINGS @ 90°F & 45°F MEASURED ALONG GUTTERLINES.

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EASTBOUND WARNER ROAD
ST. PAUL, RAMSEY COUNTY, MINNESOTA
S.P. NO. 062-636-006

TITLE: SOUTH ORNAMENTAL METAL RAILING (2 OF 2)

DES: ROC	DR: RRC	APPROVED
CHK: MJC	CHK: MJC	

Sheet No. 50 of 77 Sheets

Bridge No. 62635

DATE: 12/19/2016 TIME: 9:49:34 AM
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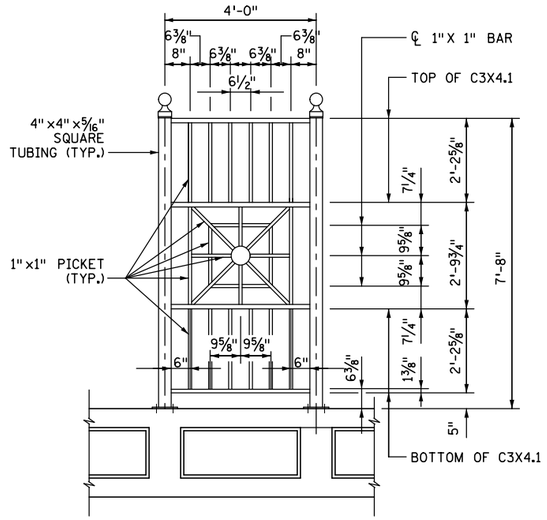
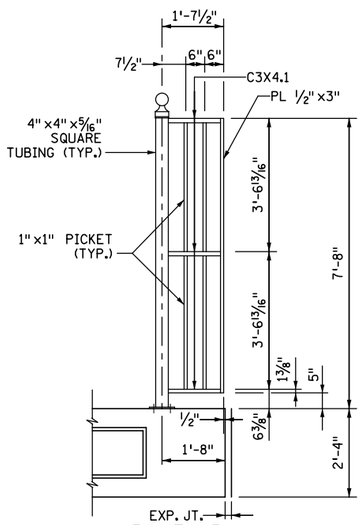


PANEL A



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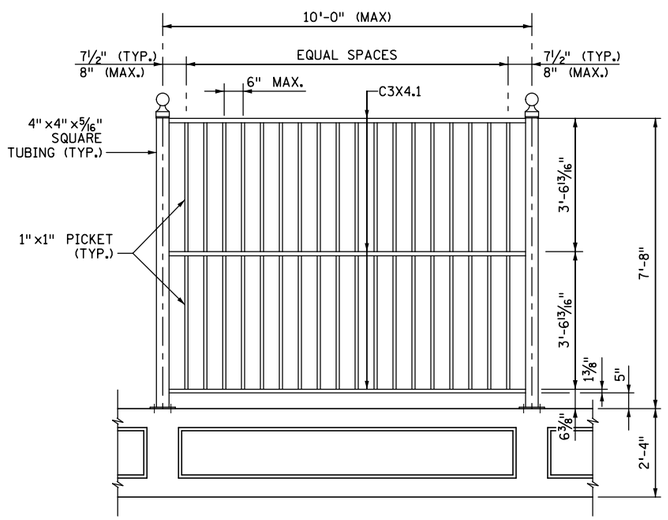

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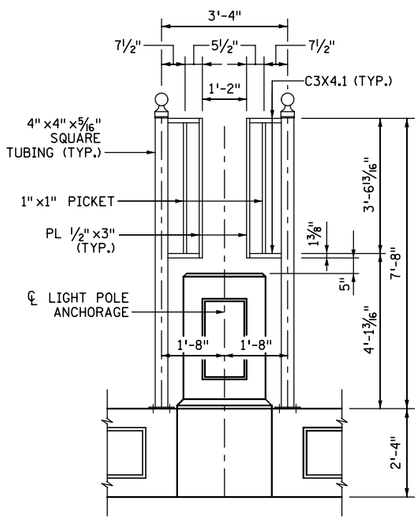

PANEL D

NOTES

HORIZONTAL RAILS (C3X4.1) FOR PANELS THAT ARE 4'-0" LONG OR SHORTER BETWEEN POSTS MAY BE FABRICATED TO STRAIGHT CHORDS BETWEEN POSTS

ALL OTHER PANELS SHALL BE FABRICATED TO THE RADII SHOWN ON THE ORNAMENTAL METAL RAILING ELEVATION SHEETS.

ALL PANELS FOR TYPE SPECIAL 1 HAVE BLACK VINYL COATED CHAIN LINK FABRIC ATTACHED.

SEE SHEETS 39, 52, AND 53 FOR ADDITIONAL DETAILS AND NOTES.

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SIGNED _____ MATTHEW J. CHRISTENSEN

DATE: 12/19/2016 LIC. NO.: 43076

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EASTBOUND WARNER ROAD
ST. PAUL, RAMSEY COUNTY, MINNESOTA
S.P. NO. 062-636-006

TITLE:
ORNAMENTAL METAL RAILING (TYPE 1)

DES: LJL	DR: LJL	APPROVED
CHK: MJC	CHK: MJC	

Sheet No. 51 of 77 Sheets

Bridge No. 62635

DATE: 12/19/2016 TIME: 9:49:35 AM
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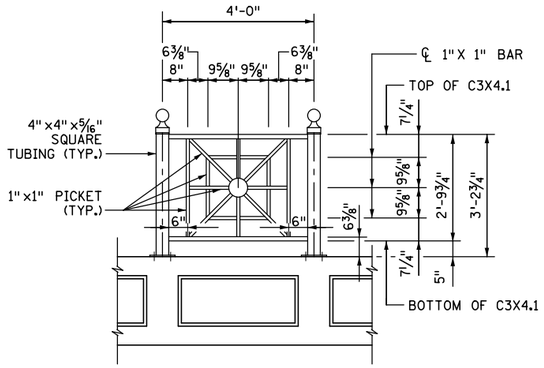

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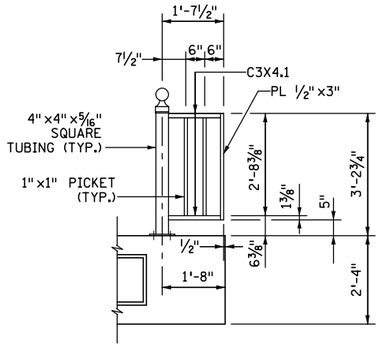

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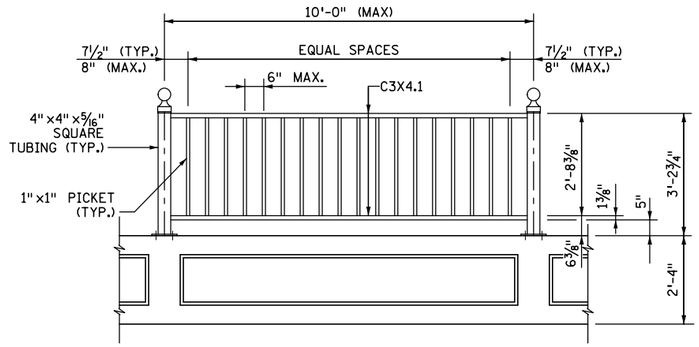

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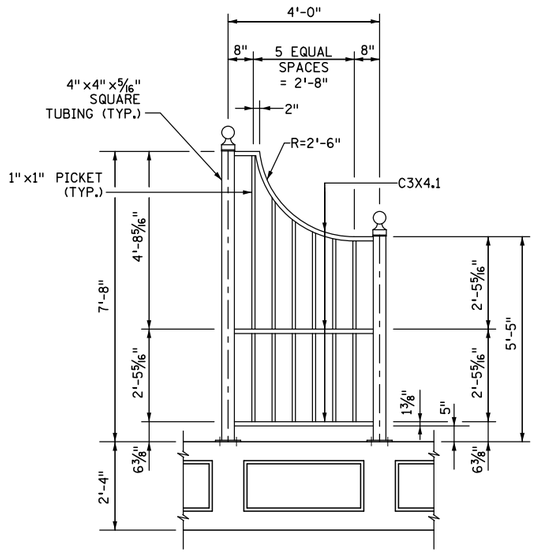

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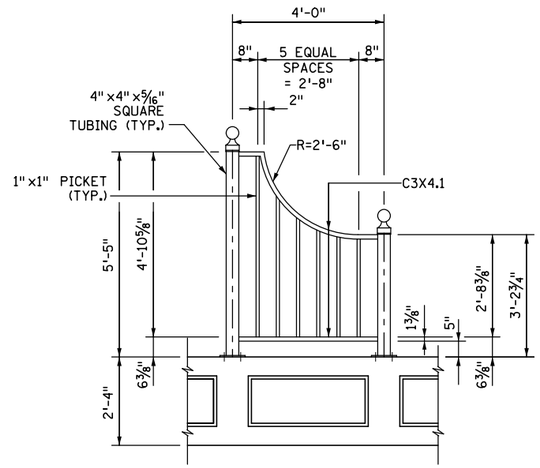
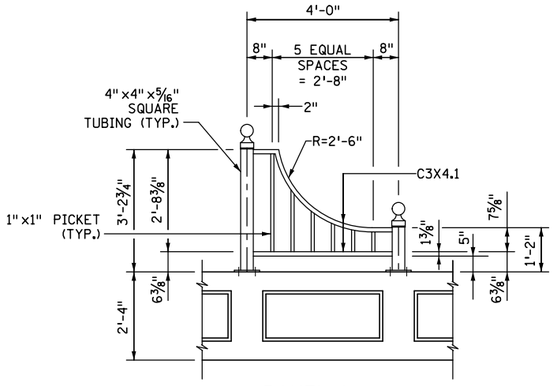


PANEL K



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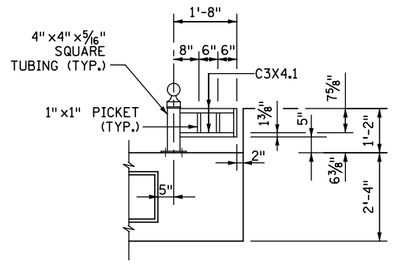

PANEL M

DATE: 12/19/2016 TIME: 9:49:36 AM
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NO.	DATE	BY	DESCRIPTION OF REVISIONS

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DATE: 12/19/2016 LIC. NO.: 43076

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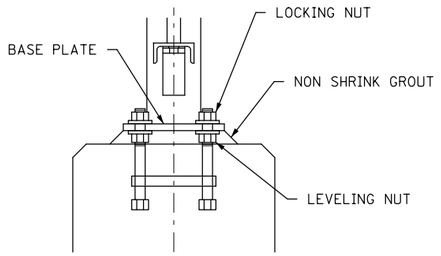
EASTBOUND WARNER ROAD
ST. PAUL, RAMSEY COUNTY, MINNESOTA
S.P. NO. 062-636-006

TITLE: ORNAMENTAL METAL RAILING (TYPE 2)

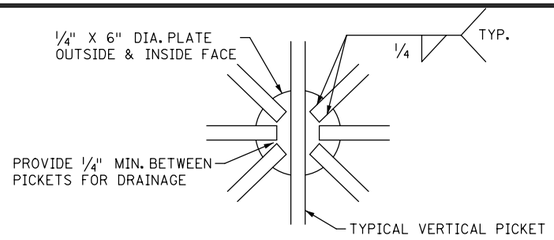
DES: LJL	DR: LJL	APPROVED
CHK: MJC	CHK: MJC	

Sheet No. 52 of 77 Sheets

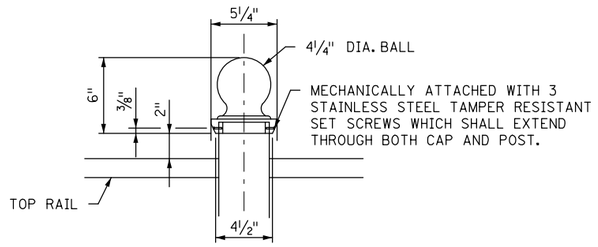
Bridge No. 62635



TYPICAL RAILPOST BASE ANCHORAGE

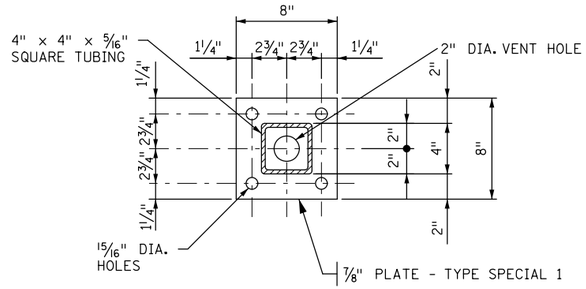


RAILING PANEL A CENTER DETAIL

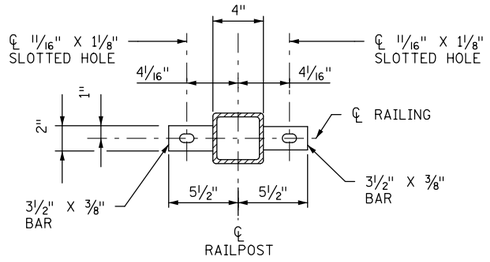


STEEL RAILPOST CAP

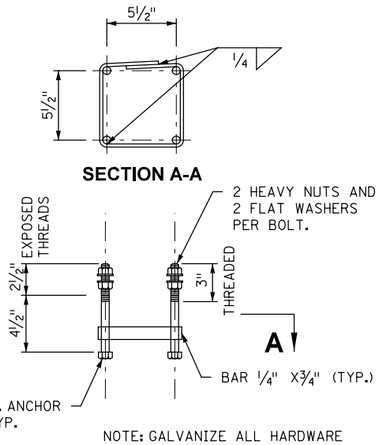
THE LAWLER LINE OR EQUIVALENT
NO. 123 - 4 1/4" DIA. BALL



BASE PLATE DETAIL

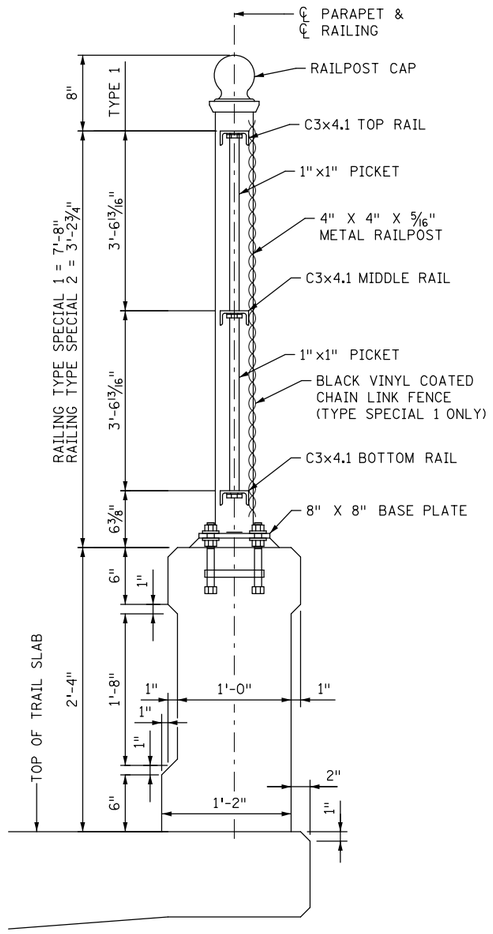


TOP VIEW

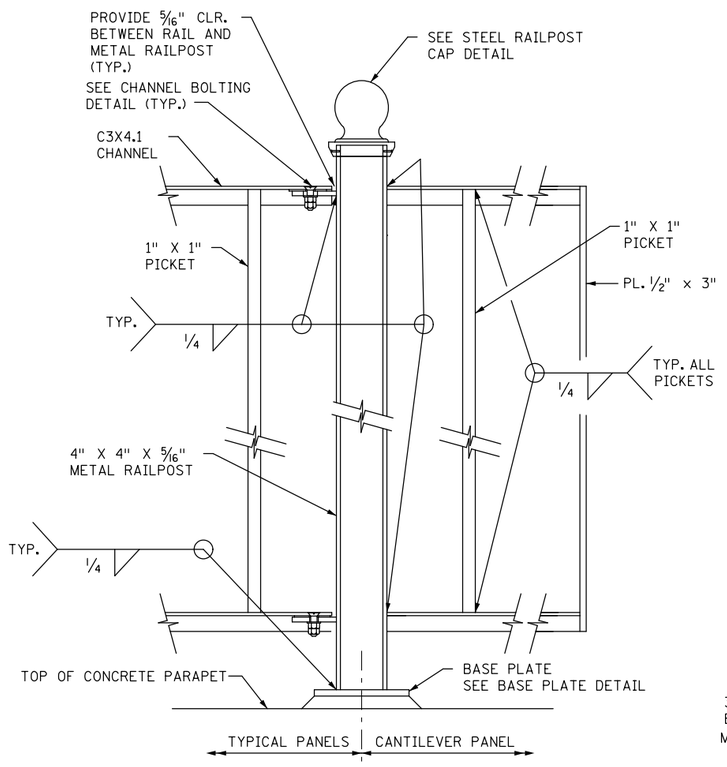


NOTE: GALVANIZE ALL HARDWARE PER SPEC. 3392.

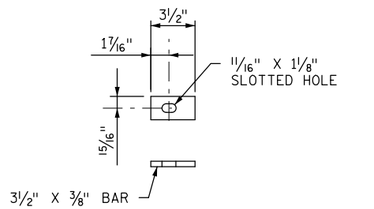
RAILPOST ANCHORAGE



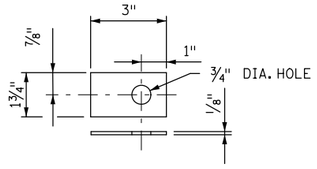
TYPICAL RAILPOST SECTION



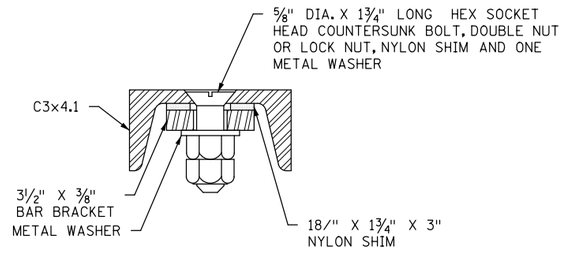
TYPICAL RAILING POST CONNECTIONS



BRACKET DETAIL



NYLON SHIM DETAIL



CHANNEL BOLTING DETAIL

GENERAL NOTES

ALL HORIZONTAL RAILS AND SPINDLES TO BE SET PARALLEL TO GRADE & VERTICAL SPINDLES & POSTS TO BE SET PLUMB. DIAGONAL SPINDLES TO BE SET FROM ℄ TO ℄ OF VERTICAL & HORIZONTAL INTERSECTIONS.

LENGTH OF "ORNAMENTAL METAL RAILING TYPE SPECIAL 1 & 2" FOR PAYMENT IS MEASURED BETWEEN THE OUTSIDE FACES OF ORNAMENTAL METAL RAILING WITHOUT DEDUCTIONS FOR EXPANSION JOINT OPENINGS.

PRICE BID FOR "ORNAMENTAL METAL RAILING TYPE SPECIAL 1& 2" INCLUDES ANCHORAGE AND ALL MATERIAL ABOVE TOP OF CONCRETE PARAPET.

ANCHORAGES SHALL BE ACCURATELY PLACED TO PROVIDE CORRECT ALIGNMENT OF RAILING. SET VERTICALLY.

ALL STRUCTURAL STEEL MATERIAL SHALL COMPLY WITH SPEC. 3306, ALL FASTENERS SHALL COMPLY WITH SPEC. 3391.2A

GALV. BOLTS, NUTS, AND WASHERS AS PER SPEC. 3392.

GALVANIZE ALL OTHER STRUCTURAL STEEL AS PER SPEC. 3394 AFTER FABRICATION.

ALL RAILING MEMBERS SHALL BE FLAT AFTER FABRICATION AND GALV. TO WITHIN 1/8" IN 10 FT. BY MECHANICAL MEANS.

AFTER GALVANIZING RAILING, FASTENERS AND BRACKETS SHALL BE PAINTED AS PER SPEC. 2478. PAINT COLOR SHALL BE BLACK.

RAILING SHALL BE GROUNDED WITH 5/8" DIA. COPPER ROD AS PER Mn/DOT SPEC. 2557. CONTRACTOR SHALL PROVIDE GROUNDING DETAILS TO ENGINEER FOR APPROVAL.

DATE: 12/19/2016 TIME: 9:49:37 AM
FILENAME: K:\n-z\RamseyCty\5i\3000\hwy-brdg\brdg\62635\super\CBR62635_ral04.dgn

NO.	DATE	BY	DESCRIPTION OF REVISIONS

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SIGNED MATTHEW J. CHRISTENSEN
DATE: 12/19/2016 LIC. NO.: 43076

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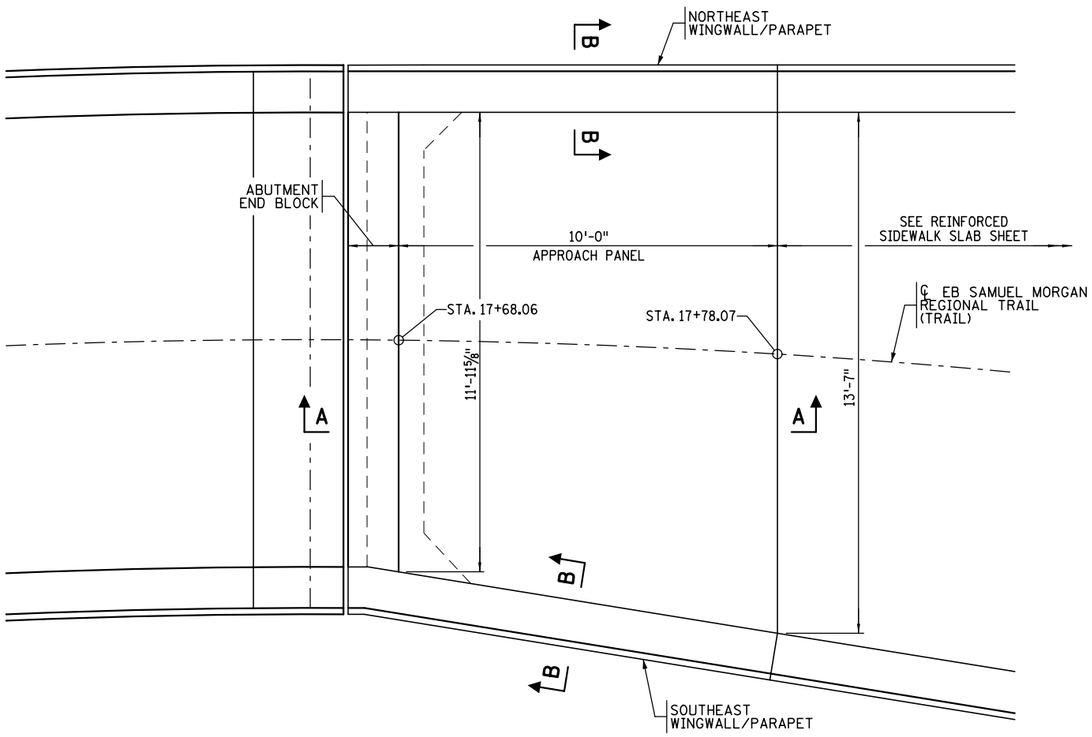
EASTBOUND WARNER ROAD
ST. PAUL, RAMSEY COUNTY, MINNESOTA
S.P. NO. 062-636-006

TITLE: ORNAMENTAL METAL RAILING DETAILS

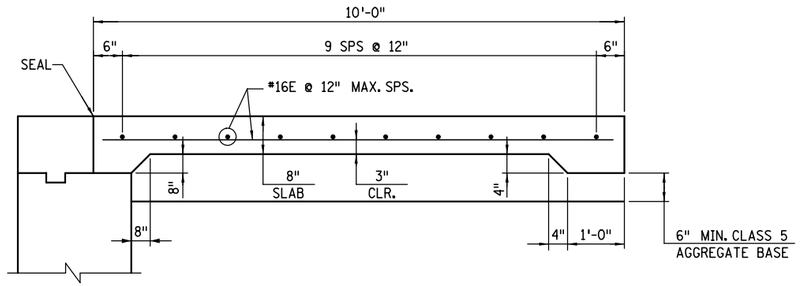
DES: ROC	DR: RRC	APPROVED
CHK: MJC	CHK: MJC	

Sheet No. 53 of 77 Sheets

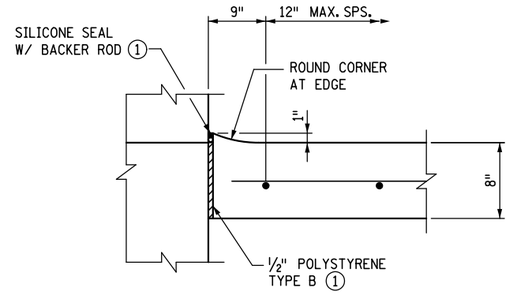
Bridge No. 62635



EAST APPROACH PANEL PLAN



SECTION A-A



SECTION B-B

NOTES:

PAYMENT FOR 2301.551 "BRIDGE APPROACH PANEL" INCLUDES CONCRETE AND REINFORCEMENT

CONCRETE SHALL BE 3A42.

REINFORCEMENT SHALL BE A.S.T.M. GRADE 60 AND EPOXY COATED PER SPEC. 3301.

6" CLASS 5 AGGREGATE BASE IS INCLUDED IN ROADWAY PLANS.

(1) INCIDENTAL.

DATE: 12/19/2016 TIME: 9:49:37 AM
FILENAME: K:\n-z\RamseyCty\5I\3000\hwy-brdg\brdg\62635\abut\CBR62635_app01.dgn

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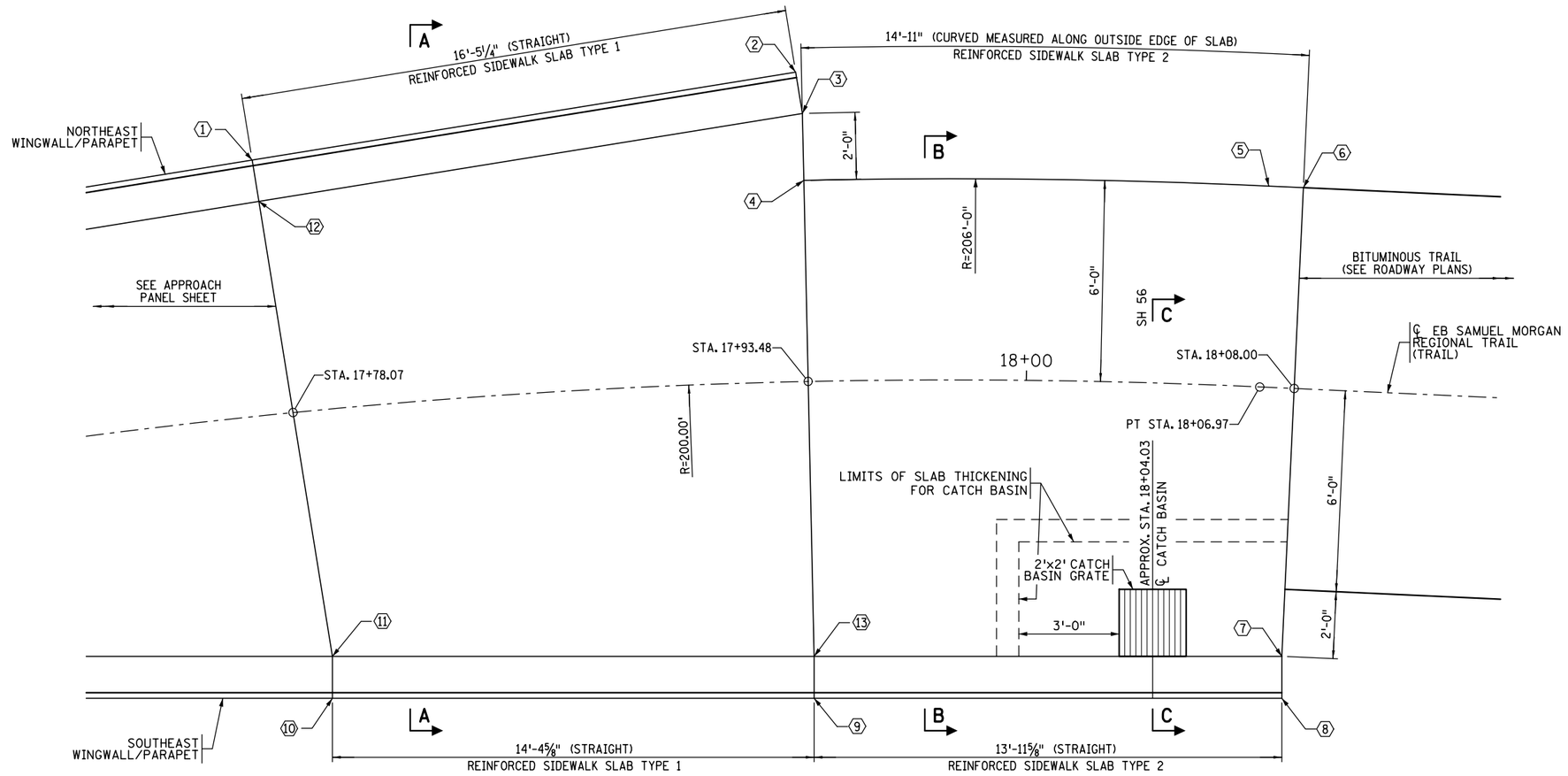
EASTBOUND WARNER ROAD
ST. PAUL, RAMSEY COUNTY, MINNESOTA
S.P. NO. 062-636-006

TITLE:
EAST ABUTMENT
APPROACH PANEL DETAILS

DES: SJS	DR: SJS	APPROVED
CHK: ROC	CHK: ROC	

Sheet No. 54 of 77 Sheets

Bridge No.
62635

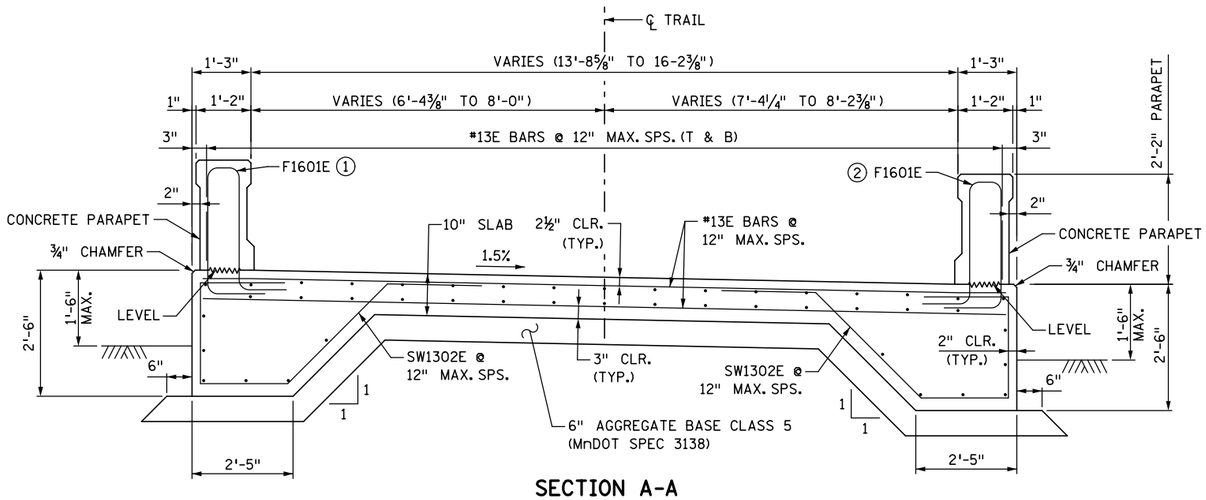


REINFORCED SIDEWALK SLAB PLAN

REINFORCED SIDEWALK TYPE 1 AND 2				
POINT NO.	X-COORD.	Y-COORD.	STATION	OFFSET
1	585,886.620	155,966.513	17+77.62	-7.62
2	585,902.988	155,965.002	17+93.32	-9.24
3	585,902.866	155,963.675	17+93.50	-7.92
4	585,902.415	155,961.811	17+93.48	-6.00
5	585,915.820	155,958.180	18+06.97	-6.00
6	585,916.806	155,957.877	18+08.00	-6.00
7	585,912.712	155,944.577	18+08.00	7.92
8	585,912.380	155,943.285	18+08.06	9.25
9	585,898.854	155,946.775	17+93.46	9.45
10	585,884.929	155,950.367	17+78.42	8.60
11	585,885.262	155,951.658	17+78.55	7.27
12	585,886.497	155,965.186	17+77.70	-6.29
13	585,899.188	155,948.066	17+93.49	8.12

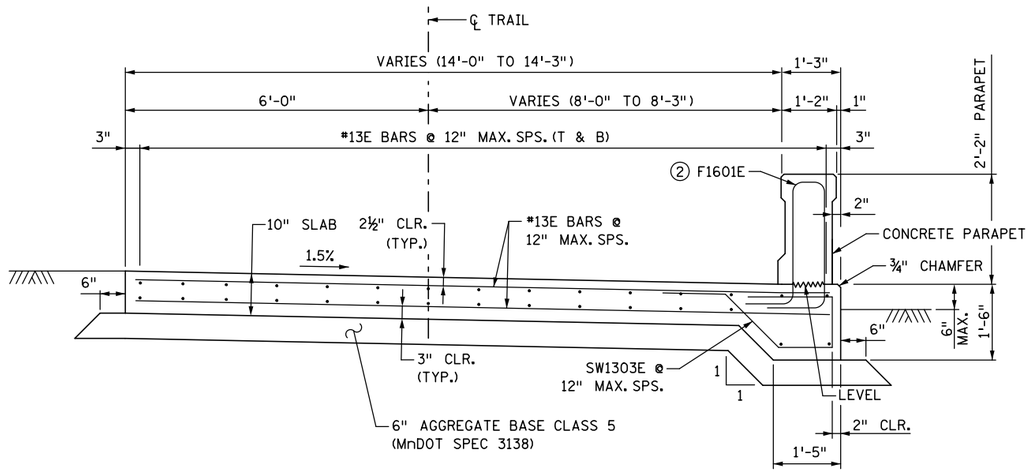
NOTES:

1. SEE NORTH CONCRETE PARAPET SHEET FOR NUMBER AND SPACING OF F1601E BARS.
2. SEE SOUTH CONCRETE PARAPET SHEET FOR NUMBER AND SPACING OF F1601E BARS.



SECTION A-A

(REINFORCED SIDEWALK SLAB TYPE 1)



SECTION B-B

(REINFORCED SIDEWALK SLAB TYPE 2)

NO.	DATE	BY	DESCRIPTION OF REVISIONS

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA
SIGNED Matthew V. Christensen MATTHEW J. CHRISTENSEN
DATE: 12/19/2016 LIC. NO.: 43076

TKDA
444 Cedar Street, Suite 1500
Saint Paul, MN 55101
651.292.4400
tkda.com

EASTBOUND WARNER ROAD
ST. PAUL, RAMSEY COUNTY, MINNESOTA
S.P. NO. 062-636-006

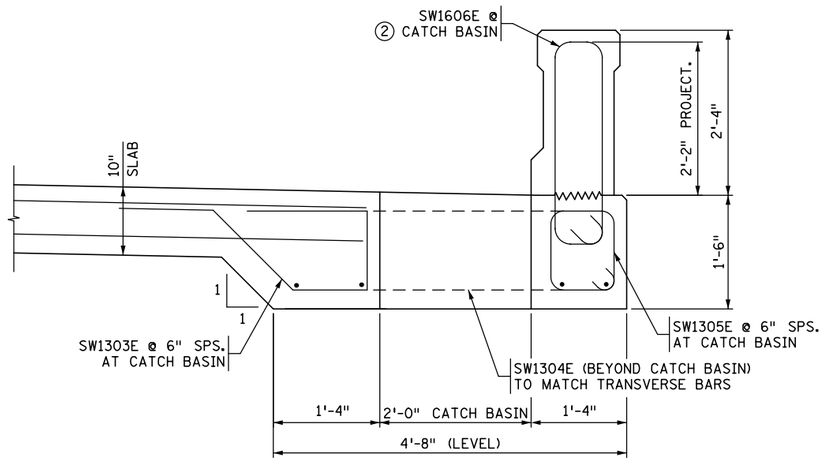
TITLE: REINFORCED SIDEWALK SLAB DETAILS (1 OF 2)

DES: SJS	DR: SJS	APPROVED
CHK: ROC	CHK: ROC	

Sheet No. 55 of 77 Sheets

Bridge No. 62635

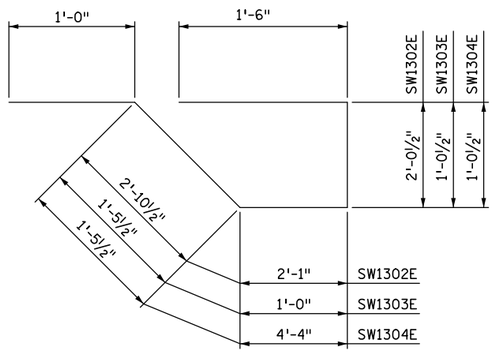
DATE: 12/19/2016 TIME: 9:49:38 AM
FILENAME: K:\Pr-2\Ramsey\Cty\51\3000\hwy-brdg\brdg\62635\abut\CBR62635_app02.dgn



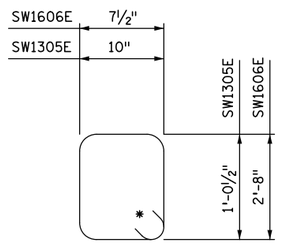
SECTION C-C

(REINFORCED SIDEWALK SLAB TYPE 2)

BAR BENDING DIAGRAMS



SW1302E, SW1303E, & SW1304E



SW1305E & SW1606E

NOTE:

BENT BAR DIMENSIONS GIVEN ARE OUT-TO-OUT. ACTUAL BAR LENGTHS SHALL BE DETERMINED BASED ON THE DETAIL DIMENSIONS SHOWN IN THE BAR BENDING DIAGRAMS.

* DENOTES STANDARD STIRRUP HOOK.

SUMMARY OF QUANTITIES FOR REINFORCED SIDEWALK

	ITEM DESCRIPTION	UNIT	QUANTITY
①	REINFORCED SIDEWALK SLAB TYPE 1	SQ. FT.	268
①	REINFORCED SIDEWALK SLAB TYPE 2	SQ. FT.	223
	6" AGGREGATE BASE CLASS 5	CU YD	10

① PAYMENT INCLUDES CONCRETE AND REINFORCEMENT BARS

THE SUMMARY OF QUANTITIES FOR REINFORCED CONCRETE SLAB TYPE 1 & 2 (3A42) IS SHOWN ABOVE IN TABLE OF QUANTITIES. ANY ADDITIONAL MINOR ITEMS OR SLIGHT CHANGES OF QUANTITIES SHALL BE FURNISHED BY THE CONTRACTOR WITH NO ADDITIONAL COMPENSATION.

PAYMENT WILL BE INCLUDED IN THE SINGLE LUMP SUM PRICE FOR ITEM 2402.618 "REINFORCED CONCRETE SLAB TYPE 1 (3A42)" AND "REINFORCED CONCRETE SLAB TYPE 2 (3A42)."

6" AGGREGATE BASE CLASS 5 IS INCLUDED IN ROADWAY PLANS.

NOTES:

CONCRETE PARAPET RAILING TYPE MOD. P-1 AND REINFORCEMENT BARS NOT EMBEDDED IN THE SIDEWALK SLAB ARE INCLUDED IN THE SUPERSTRUCTURE QUANTITIES.

FIELD CUT CONTINUOUS STRAIGHT BARS AS REQUIRED AT CATCH BASIN.

CONCRETE MIX SHALL BE 3A42 FOR REINFORCEMENT SIDEWALK SLABS.

AS PER Mn/DOT SPEC. 3301, USE EPOXY COATED GRADE 60 REINFORCEMENT BARS IN REINFORCED SIDEWALK SLABS.

② REPLACE F1601E BARS WITH SW1606E BARS AT CATCH BASIN.

DATE: 12/19/2016 TIME: 9:49:39 AM
FILENAME: K:\nr-z\RamseyCty\V5\l3000\hwy-brdg\brdg\62635\dbut\CBR62635_app03.dgn

NO.	DATE	BY	DESCRIPTION OF REVISIONS

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA
SIGNED Matthew V. Christensen MATTHEW J. CHRISTENSEN
DATE: 12/19/2016 LIC. NO.: 43076

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444 Cedar Street, Suite 1500
Saint Paul, MN 55101
651.292.4400
tkda.com

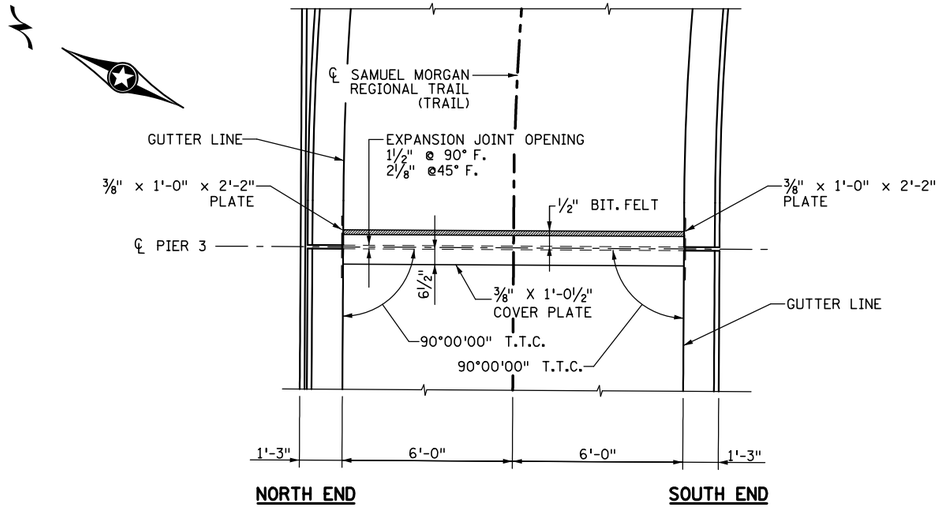
EASTBOUND WARNER ROAD
ST. PAUL, RAMSEY COUNTY, MINNESOTA
S.P. NO. 062-636-006

TITLE: REINFORCED SIDEWALK SLAB DETAILS (2 OF 2)

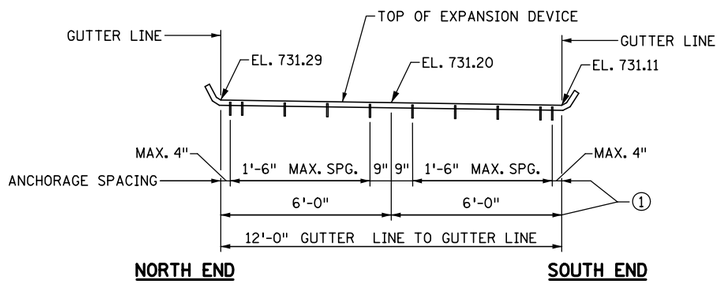
DES: ROC	DR: MAV	APPROVED
CHK: MJC	CHK: ROC	

Sheet No. 56 of 77 Sheets

Bridge No. 62635



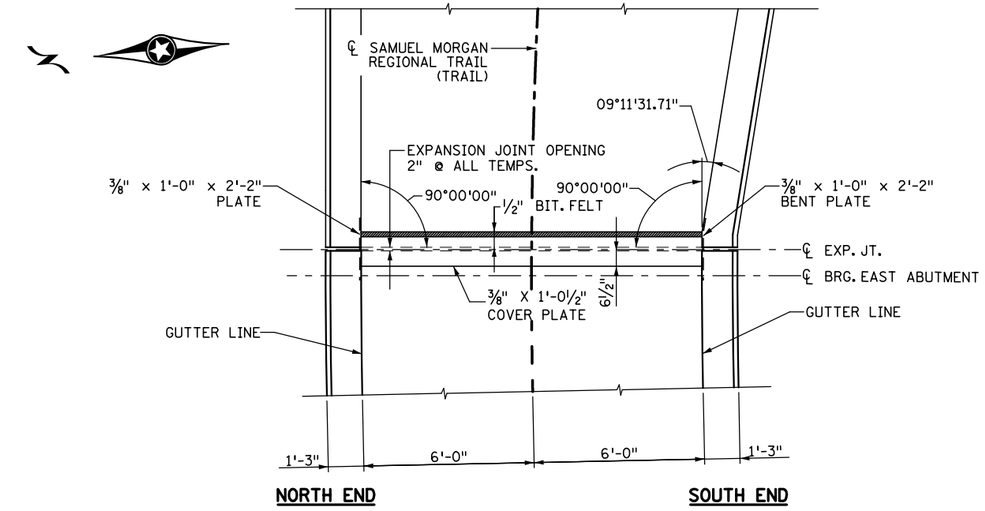
PLAN VIEW



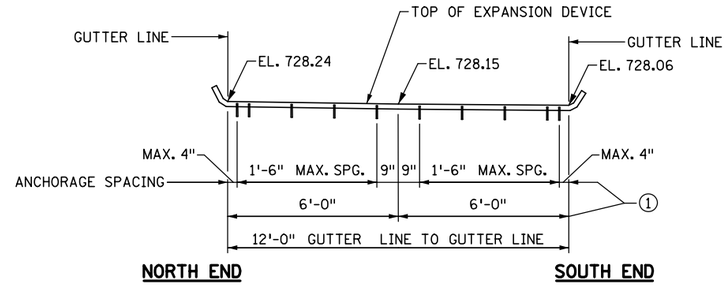
ELEVATION VIEW

WATERPROOF EXPANSION DEVICES (TYPE 4) AT PIER 3

(ELEVATIONS SHOWN ARE ½" BELOW TOP OF SLAB AT ℄ JOINT)



PLAN VIEW



ELEVATION VIEW

WATERPROOF EXPANSION DEVICES (TYPE 4) AT EAST ABUTMENT

(ELEVATIONS SHOWN ARE ½" BELOW TOP OF SLAB AT ℄ JOINT)

NOTES

① DIMENSIONS ARE ALONG CENTERLINE OF JOINT.

PIER 1 EXPANSION JOINT IS DETAILED AND PAID FOR UNDER PIER 4 OF BRIDGE 62634.

DATE: 12/19/2016 TIME: 9:49:40 AM
FILENAME: K:\nr-z\RamseyCty\15113000\hwy-brdg\brdg\62635\super\CBR62635_exp01.dgn

NO.	DATE	BY	DESCRIPTION OF REVISIONS

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA
SIGNED Matthew J. Christensen MATTHEW J. CHRISTENSEN
DATE: 12/19/2016 LIC. NO.: 43076

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Saint Paul, MN 55101
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tkda.com

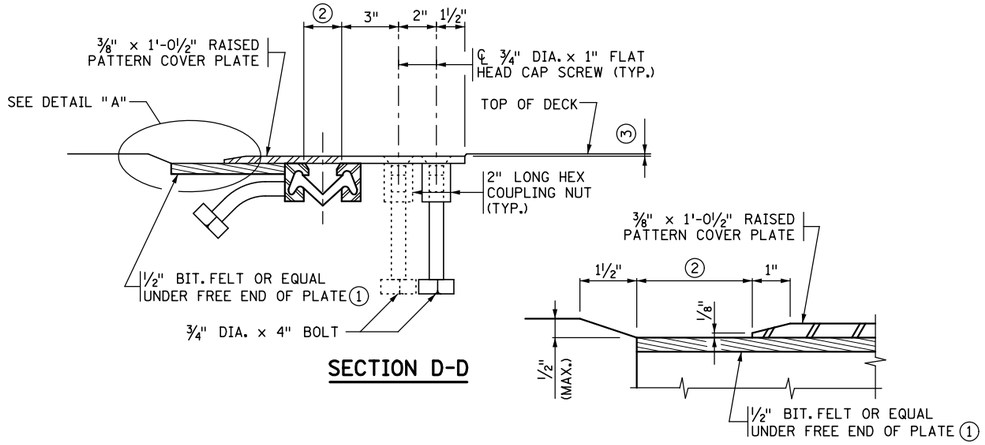
EASTBOUND WARNER ROAD
ST. PAUL, RAMSEY COUNTY, MINNESOTA
S.P. NO. 062-636-006

TITLE: EXPANSION JOINT DEVICES PLAN AND ELEVATION (PIER 3 AND EAST ABUTMENT)

DES: ROC	DR: RRC	APPROVED
CHK: MJC	CHK: MJC	

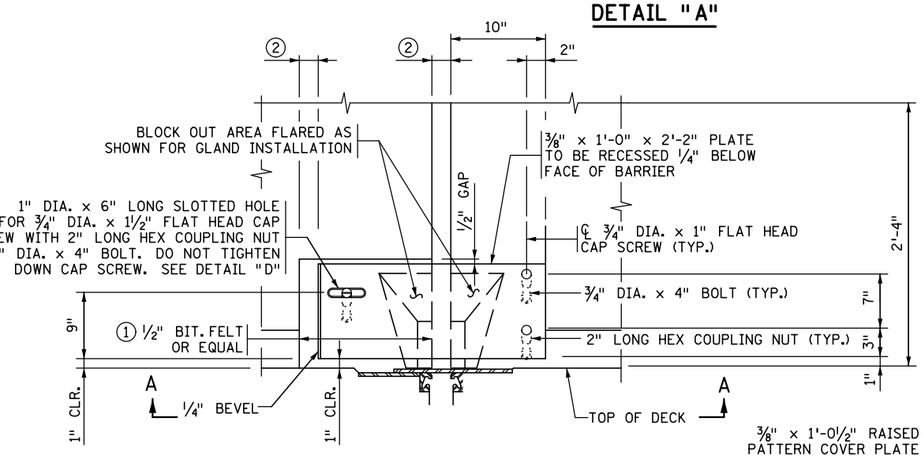
Sheet No. 57 of 77 Sheets

Bridge No. 62635

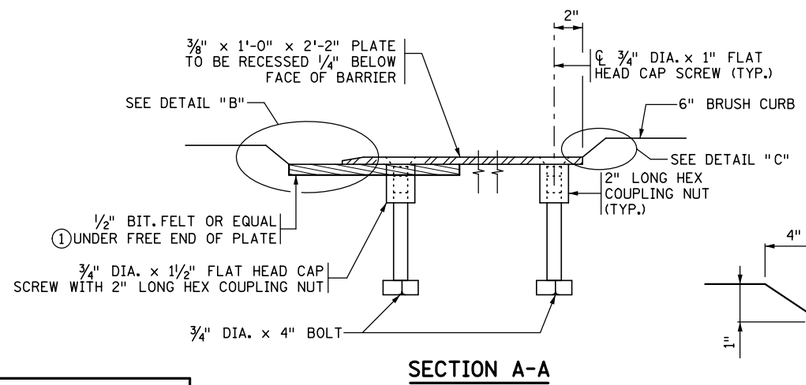


SECTION D-D

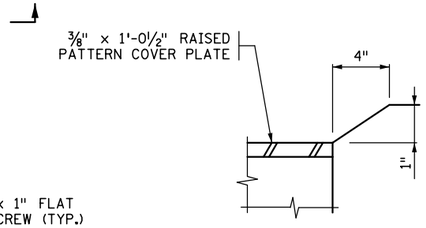
DETAIL "A"



INSIDE ELEVATION
(CONCRETE PARAPET RAILING)



SECTION A-A



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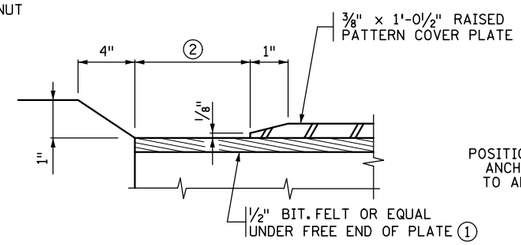
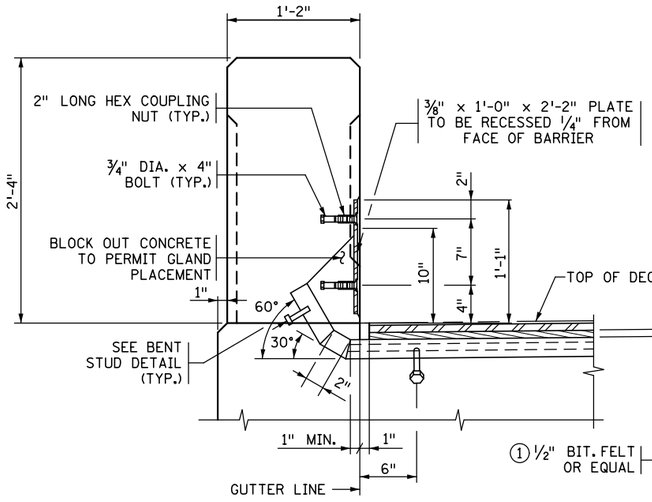
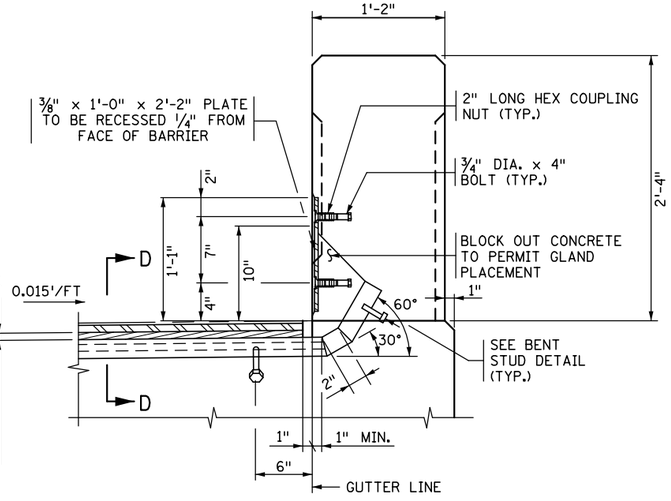


DETAIL "B"

NOTE:
TRANSVERSE DECK REINFORCEMENT MAY BE SHIFTED THE MINIMUM DISTANCE REQUIRED FOR EXPANSION DEVICE PLACEMENT

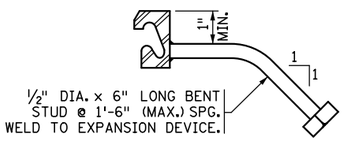


NORTH CONCRETE PARAPET RAILING

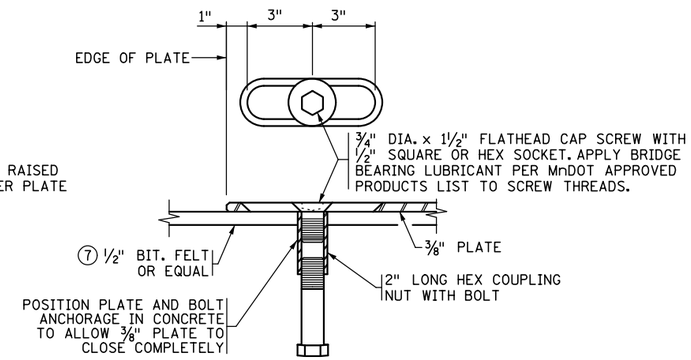


SOUTH CONCRETE PARAPET RAILING

SECTION THROUGH RAILINGS - INTEGRAL SIDEWALK



BENT STUD DETAIL



DETAIL "D"

GENERAL NOTES

GALVANIZE STRUCTURAL STEEL AFTER FABRICATION AS PER SPEC. 3394. GALVANIZE FASTENERS AS PER SPEC. 3392.

JOINTS IN EXTRUSION SHALL BE LOCATED AT BREAKS IN TRANSVERSE PROFILE AND AS OTHERWISE REQUIRED. JOINTS SHALL BE CLOSE FIT AND WELDED. REPAIR AFTER WELDING AS PER SPEC. 2471.3L.

STRUCTURAL STEEL SHALL COMPLY WITH SPEC. 3306 OR SPEC. 3309.

EXPANSION DEVICE SHALL BE STRAIGHTENED TO A TOLERANCE OF ⅛" IN 10 FT.

¾" DIA. X ½" FLATHEAD CAP SCREW WITH ½" SQUARE OR HEX SOCKET PER SPEC 3391. CAP SCREWS SHALL BE COUNTERSUNK 1/16" BELOW TOP OF PLATE. APPLY BRIDGE BEARING LUBRICANT PER MnDOT APPROVED PRODUCTS LIST TO SCREW THREADS

LENGTH OF PAYMENT FOR DEVICE IS FROM OUT TO OUT OF EXTRUSION ALONG CENTERLINE OF JOINT.

① USE LARGEST SINGLE PIECE POSSIBLE. USE OF SMALL PIECES OR SCRAPS SECURED TOGETHER IS PROHIBITED.

② SEE EXPANSION JOINT DEVICES PLAN AND ELEVATION (PIER 3 AND EAST ABUTMENT FOR JOINT OPENINGS)

③ ⅛" (¼" MAX.)

REVISION: 02-23-2011

APPROVED: SEPTEMBER 26, 2003
Daniel L. Morgan
STATE BRIDGE ENGINEER

NO.	DATE	BY	DESCRIPTION OF REVISIONS

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DATE: 12/19/2016 LIC. NO.: 43076

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tkda.com

EASTBOUND WARNER ROAD
ST. PAUL, RAMSEY COUNTY, MINNESOTA
S.P. NO. 062-636-006

TITLE: WATERPROOF EXPANSION DEVICE

DES: ROC	DR: RRC	APPROVED
CHK: MJC	CHK: ROC	

Sheet No. 58 of 77 Sheets

Bridge No. 62635

FIG. 5-397.630 MOD.

DATE: 12/19/2016 TIME: 9:49:41 AM
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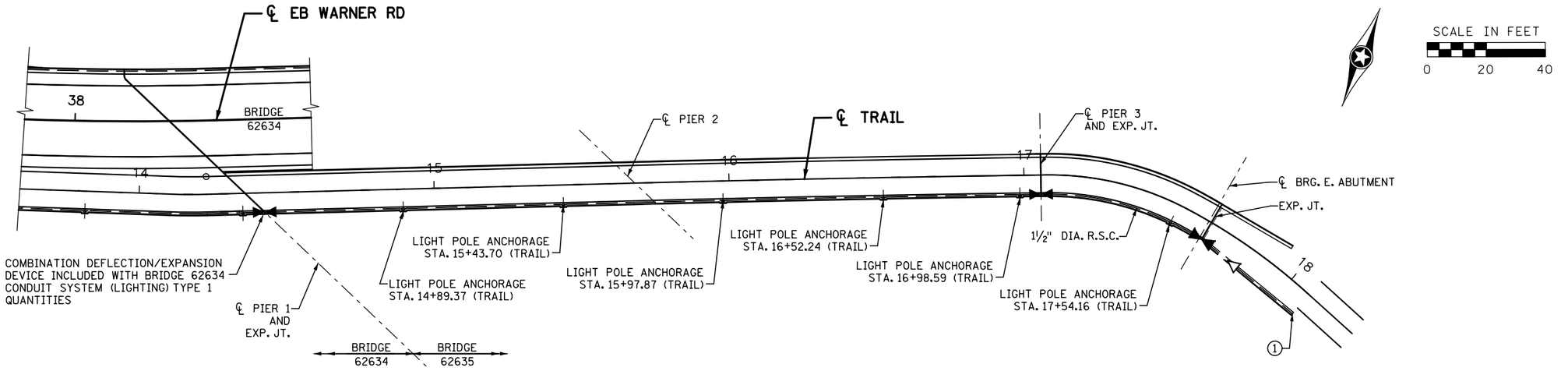
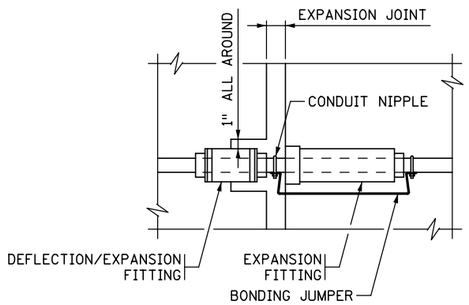
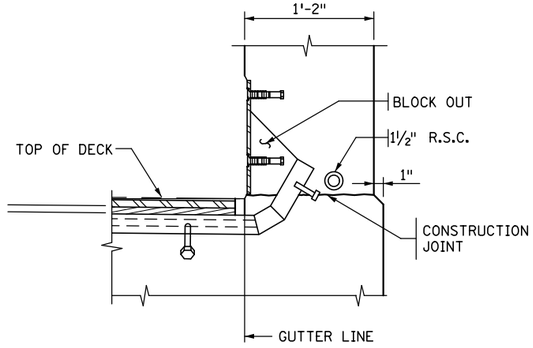


LIGHT POLE (TRAIL LIGHTING) ②



COMBINATION DEFLECTION/EXPANSION FITTING



SECTION THROUGH CONCRETE PARAPET

LEGEND

- COMBINATION DEFLECTION/EXPANSION FITTING
- DEFLECTION/EXPANSION FITTING
- 1½" R.S.C.

NOTES:

CONDUIT SYSTEM FOR TRAIL LIGHTING AT SOUTH CONCRETE PARAPET IS PAID FOR UNDER ITEM NO. 2545.509 "CONDUIT SYSTEM (LIGHTING) TYPE 1". SEE SHEET 60 FOR SUMMARY OF QUANTITIES AND LIGHT POLE ANCHORAGE DETAILS.

① END OF CONDUIT FOR "CONDUIT SYSTEM (LIGHTING) TYPE 1". CONNECT TO LIGHTING SYSTEM IN GRADING CONTRACT.

② SEE GRADING PLANS FOR LIGHTING UNITS, WIRING DIAGRAMS AND OTHER ITEMS NOT INCLUDED IN "CONDUIT SYSTEM (LIGHTING) TYPE 1".

DATE: 12/19/2016 TIME: 9:49:42 AM
FILENAME: K:\Vr-z\RamseyCty\V5I13000\hwy-brdg\brdg\62635\super\CBR62635_cond01.dgn

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DATE: 12/19/2016 LIC. NO.: 43076

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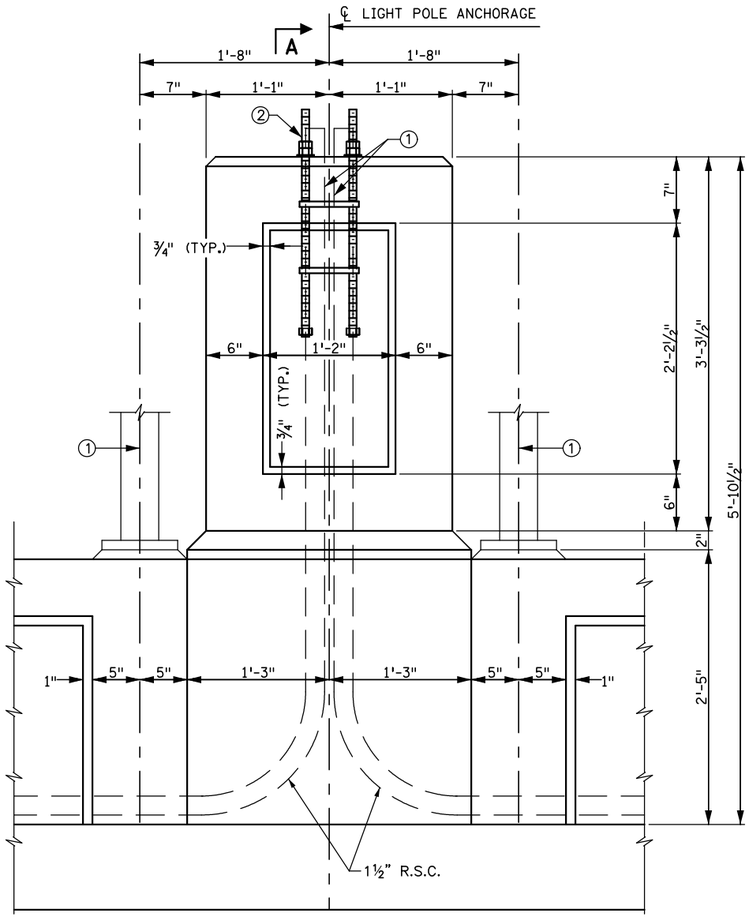
EASTBOUND WARNER ROAD
ST. PAUL, RAMSEY COUNTY, MINNESOTA
S.P. NO. 062-636-006

TITLE:
CONDUIT SYSTEM (LIGHTING) TYPE 1

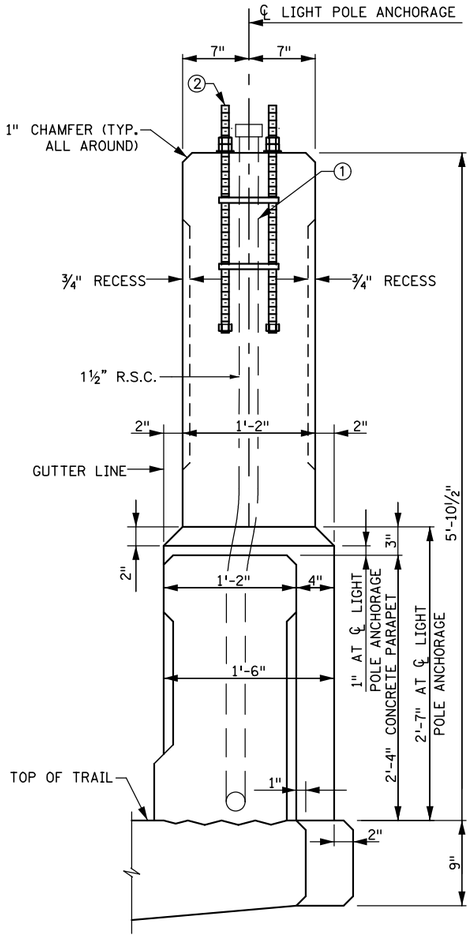
DES: ROC	DR: RRC	APPROVED
CHK: MJC	CHK: MJC	

Sheet No. 59 of 77 Sheets

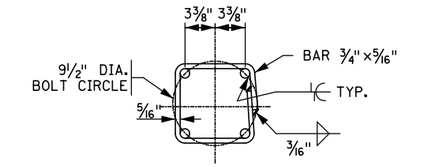
Bridge No. 62635



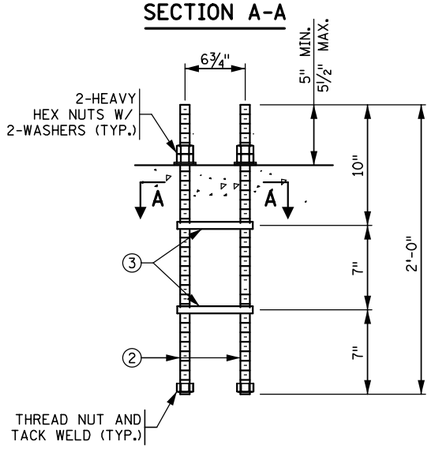
A ELEVATION



SECTION A-A

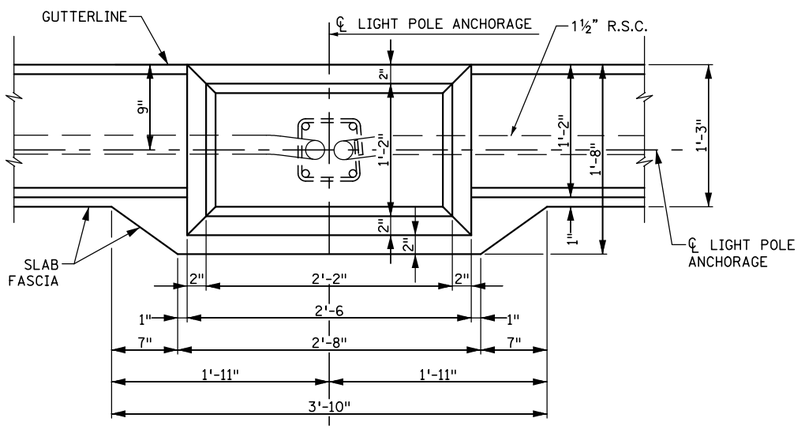


SECTION A-A



ELEVATION

ANCHOR ROD ASSEMBLY - TYPE SPECIAL



PLAN

SUMMARY OF QUANTITIES FOR CONDUIT SYSTEM (LIGHTING) TYPE 1 ⑤	
ANCHOR ROD ASSEMBLY	6 EACH
1½" DIA. R.S.C.	425 LIN. FT.
1½" DIA. END CAPS	12 EACH
DEFLECTION/EXPANSION FITTINGS	2 EACH
COMBINATION DEFLECTION/EXPANSION FITTINGS	1 EACH

ADDITIONAL CONCRETE PARAPET AND DECK CONCRETE REQUIRED TO CONSTRUCT THE LIGHT POLE ANCHORAGE IS INCIDENTAL TO THE CONCRETE PARAPET AND DECK CONCRETE PAY ITEMS, RESPECTIVELY.

ALL MATERIALS LISTED ABOVE IS INCLUDED IN PRICE BID FOR "CONDUIT SYSTEM (LIGHTING) TYPE 1".

NOTES

BOND AND GROUND THE CONDUIT SYSTEM (LIGHTING) IN ACCORDANCE WITH THE APPLICABLE PORTIONS OF Mn/DOT SPEC. 2545.3R.

SEE SHEET 45 FOR REINFORCEMENT DETAILS. ADDITIONAL REINFORCEMENT AT LIGHT POLE ANCHORAGES IS INCLUDED IN WEIGHT FOR PAYMENT UNDER REINFORCEMENT BARS (EPOXY COATED).

ANCHOR RODS ARE TO BE ¾" NOMINAL DIA. WITH 1–8UNC–2A THREADS. HEAVY HEX NUT PER Mn/DOT SPEC. 3391.2A FOR ¾" DIA. THREADED RODS. NUTS TO BE TAPPED 1⁄64' OVERSIZED PRIOR TO GALVANIZING.

GALVANIZE THREADED RODS, CAGES, AND NUTS AFTER FABRICATION PER Mn/DOT SPEC. 3392.

① 1½" DIA. R.S.C. OR EQUAL SHALL EXTEND 3" ABOVE TOP OF CONCRETE BASE AND BE CAPPED. CHECK FOR LOCATION OF LIGHT POLE ANCHORAGES FOR PROPER PLACEMENT OF CONDUIT AND ANCHOR ROD ASSEMBLY.

② THREADED RODS AND STEEL PER Mn/DOT SPEC. 3309, 3310, OR 3385 TYPE B.

③ PROVIDE A WELDED CAGE FOR ROD ALIGNMENT. STEEL PER Mn/DOT SPEEC. 3306. PROVIDE A TEMPLATE FOR TOP ALIGNMENT OF RODS. FURNISHING AND INSTLALLING LIGHT STANDARD ANCHOR RODS IN CONCRETE SLAB BLISTERS SHALL BE INCLUDED IN PRICE PAID FOR 2545.509 "CONDUIT SYSTEM LIGHTING".

④ CENTERLINE OF ORNAMEENTAL MEETAL RAILING TYPE SPECIAL POST.

⑤ QUANTITIES LISTED ARE FOR INFORMATIONAL PURPOSES, ANY ADDITIONAL MINOR ITEMS OR CHANGES IN QUANTIITIES REQUIRED SHALL BE FURNISHED BY THE CONTRACTOR WITH NO ADDITIONAL COMPENSATION.

DATE: 12/19/2016 TIME: 9:49:43 AM
FILENAME: K:\n-2 RamseyCty\5i\3000\hwy-brdg\brdg\62635\super\CBR62635_light_anchorage_1.dgn

NO.	DATE	BY	DESCRIPTION OF REVISIONS

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SIGNED MATTHEW J. CHRISTENSEN
DATE: 12/19/2016 LIC. NO.: 43076

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tkda.com

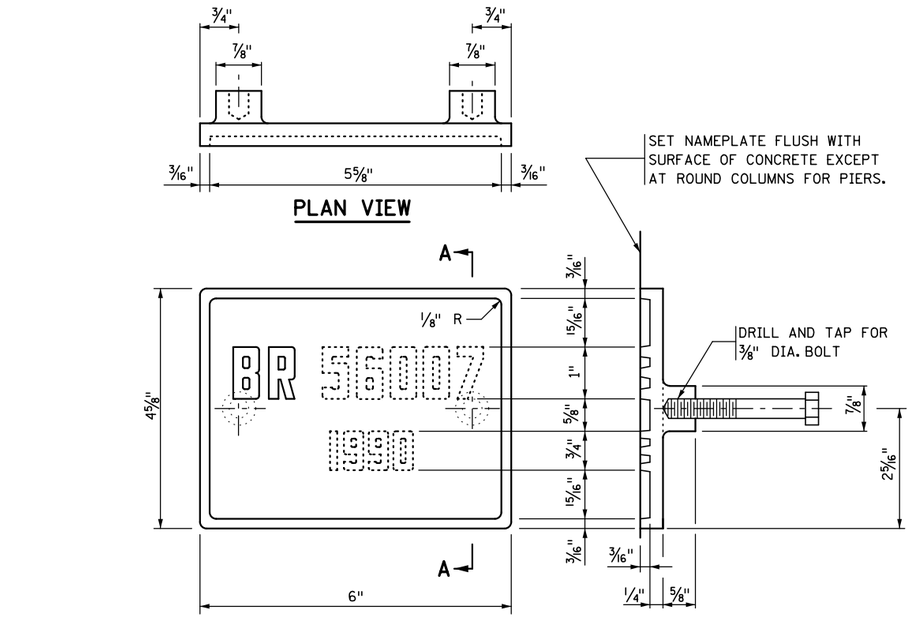
EASTBOUND WARNER ROAD
ST. PAUL, RAMSEY COUNTY, MINNESOTA
S.P. NO. 062-636-006

TITLE: LIGHT POLE ANCHORAGE (TRAIL LIGHTING)

DES: ROC	DR: RRC	APPROVED
CHK: MJC	CHK: MJC	

Sheet No. 60 of 77 Sheets

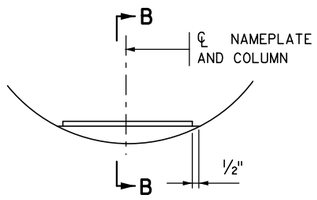
Bridge No. 62635



THE DASHED NUMBERS SHOWN ABOVE ARE FOR ILLUSTRATION.
DATA TO BE SHOWN ON NAMEPLATE IS AS FOLLOWS:

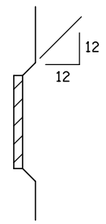
BRIDGE 62635

YEAR 2014



NAMEPLATE PLACEMENT

(ROUND CONCRETE PIER COLUMNS)



SECTION B-B

NUMBERS FOR NAMEPLATE

NOTES:

NO SHOP DRAWING REQUIRED.

MATERIAL SHALL COMPLY WITH Mn/DOT SPEC. 3327.

LETTERS AND NUMBERS SHALL CONFORM TO THOSE SHOWN.

DRAFT ON LETTERS AND NUMBERS SHALL NOT BE MORE THAN 3" IN 12".

HORIZONTAL SPACING OF LETTERS AND NUMBERS SHALL PRODUCE A BALANCED LAYOUT IN PROPORTION TO SPACING SHOWN.

TOP SURFACE OF LETTERS, NUMBERS AND FRAMES SHALL BE BURNISHED.

FURNISH 2 STEEL BOLTS 3/8" DIA. x 3" LONG WITH EACH PLATE.

ALL DIMENSIONS FOR 3/4" HIGH LETTERS AND NUMBERS SHALL BE IN DIRECT PROPORTION TO THOSE SHOWN FOR THE 1" HIGH LETTERS AND NUMBERS.

APPROVED: NOVEMBER 22, 2002	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION	REVISION	DETAIL NO.
Daniel L. Hogan STATE BRIDGE ENGINEER	**BRIDGE NAMEPLATE** (FOR NEW BRIDGES)		B101

NO.	DATE	BY	DESCRIPTION OF REVISIONS

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA
SIGNED Matthew J. Christensen MATTHEW J. CHRISTENSEN
DATE: 12/19/2016 LIC. NO.: 43076

TKDA
444 Cedar Street, Suite 1500
Saint Paul, MN 55101
651.292.4400
tkda.com

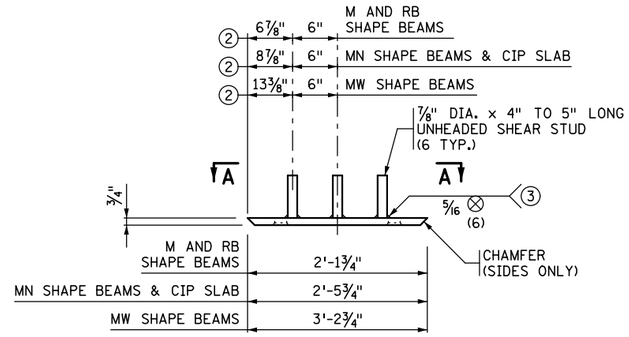
EASTBOUND WARNER ROAD
ST. PAUL, RAMSEY COUNTY, MINNESOTA
S.P. NO. 062-636-006

TITLE: STANDARD DETAILS B101 & B303

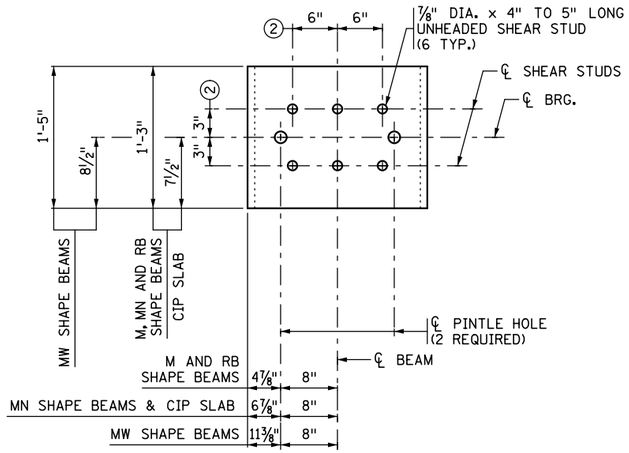
DES: LJL	DR: RRC	APPROVED
CHK: MJC	CHK: MJC	

Sheet No. 61 of 77 Sheets

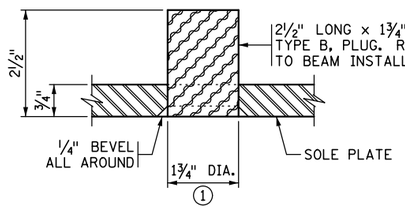
Bridge No. 62635



FRONT ELEVATION



SECTION A-A



PINTLE HOLE DETAIL

NOTES:

MATERIAL TO BE STRUCTURAL STEEL PER MnDOT SPEC. 3306.

WELDED STUDS TO BE WELDABLE CARBON STEEL PER MnDOT SPEC. 3391.2D.

SOLE PLATE FOR BEARING ASSEMBLY TO BE GALVANIZED PER MnDOT SPEC. 3394 AFTER FABRICATION.

PINTLE HOLES SHALL BE FREE OF ZINC BUILD UP FROM GALVANIZING.

SOLE PLATES ARE INCIDENTAL TO PRESTRESSED CONCRETE BEAMS & CIP SLAB.

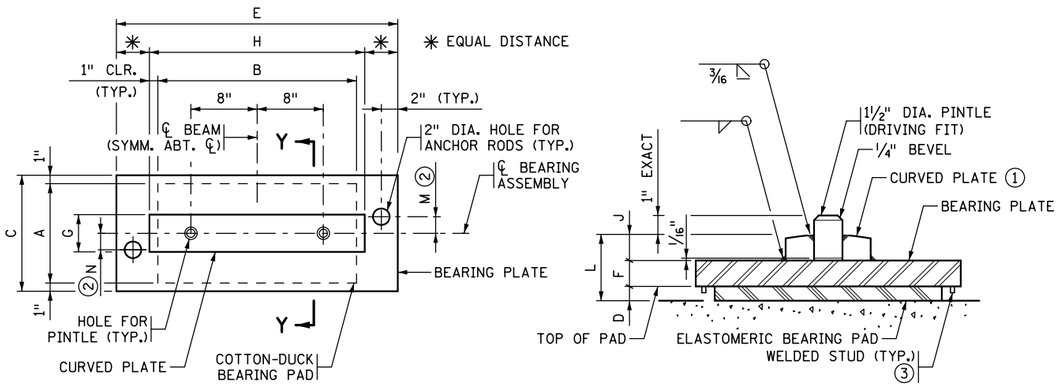
(1) FOR 1 1/2" DIA. PINTLES.

(2) THESE DIMENSIONS MAY BE MODIFIED TO CLEAR PRESTRESSED STRANDS. HOWEVER, CHANGES MUST BE APPROVED BY THE ENGINEER.

(3) THE REQUIREMENTS FOR WELDING STUDS SHALL COMPLY WITH AASHTO/AWS D1.1.

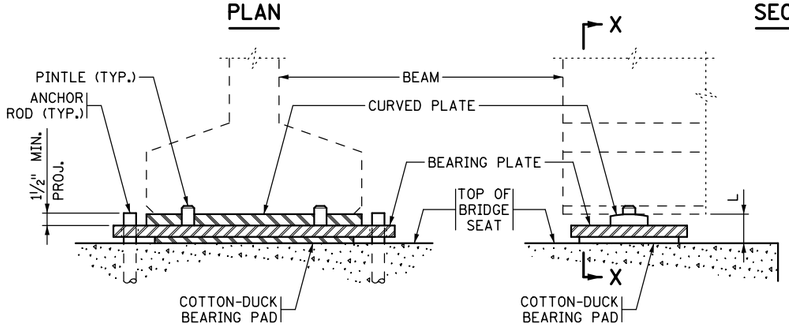
APPROVED: SEPTEMBER 22, 2011	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION	REVISED	DETAIL NO.
Nancy Daubenberger STATE BRIDGE ENGINEER	**SOLE PLATE** (PRESTRESSED CONCRETE BEAMS) (FOR BEARINGS WITH PINTLES)		B303 MODIFIED

DATE: 12/19/2016 TIME: 9:49:44 AM
FILENAME: K:\nr-z\RamseyCty\51\3000\hwy-brdg\brdg\62635\standard\CBR62635_det01.dgn



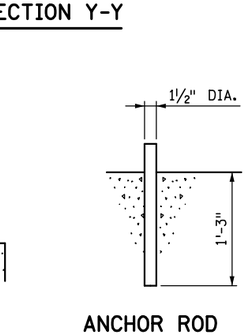
PLAN

SECTION Y-Y



SECTION X-X

2'-2" BOTTOM FLANGE SHOWN



SIDE ELEVATION

ANCHOR RODS NOT SHOWN

ANCHOR ROD DETAIL

TABLE

ASSEMBLY TYPE	LOCATION	BEAM SIZE	BEARING PAD SIZE			SHAPE FACTOR	BEARING PLATE SIZE			CURVED PLATE SIZE			ANCHOR ROD OFFSET		ANCHOR ROD OFFSET		ASSY. HEIGHT	CURVED PLATE
			A	B	D		C	E	F	G	H	J	+/- ②	M	+/- ②	N	L	R ①
F1	PIER 2	MN63	12"	24"	½"	8.0	14"	38"	1½"	4½"	26"	1¼"	-	1"	-	2¾"	3¼"	16"

NOTES:

COTTON-DUCK PADS MUST BE MANUFACTURED AND TESTED UNDER COMPRESSION IN ACCORDANCE WITH MILITARY SPECIFICATION MIL-C-882E, EXCEPT WHERE SUPERSEDED BY THE CURRENT AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS ARTICAL 14.7.6.2

ALL STEEL PLATES SHALL COMPLY WITH MnDOT SPEC. 3306.

ANCHOR RODS SHALL COMPLY WITH MnDOT SPEC. 3306. GALVANIZE PER MnDOT SPEC. 3394.

PINTLES SHALL COMPLY WITH MnDOT SPEC. 3309.

GALVANIZE STRUCTURAL STEEL BEARING ASSEMBLY AFTER FABRICATION PER MnDOT SPEC. 3394, EXCEPT AS NOTED.

PAYMENT FOR BEARING ASSEMBLY SHALL INCLUDE ALL MATERIAL ON THIS DETAIL.

① THE MIN. RADIUS SHALL BE 16" UNLESS OTHERWISE SPECIFIED IN THE TABLE. THE MAX. RADIUS SHALL BE 24". FINISH TO 250 MICRO. THE FINISHED THICKNESS OF THE PLATE MAY BE 1/16" LESS THAN SHOWN.

② "+" DENOTES OFFSET AS SHOWN.
"-" DENOTES OFFSET OPPOSITE OF SHOWN.

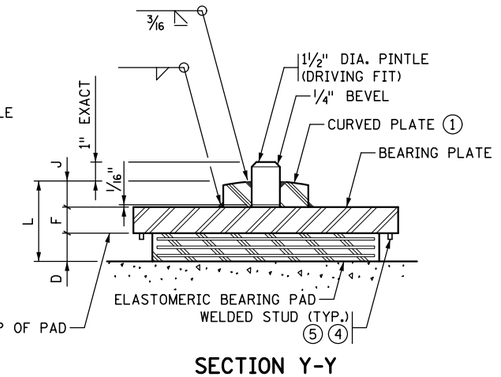
③ 5/16" DIA. × 3/8" KNOCK-OFF WELD STUDS INSTALLED ON BEARING PLATE AROUND PERIMETER OF BEARING PAD. CENTERLINE STUD TO EDGE OF PAD DIMENSION = ½", MAX. STUD SPACING = 4", AND MAX. SPACING TO PAD CORNER = 2".

DESIGN DATA:

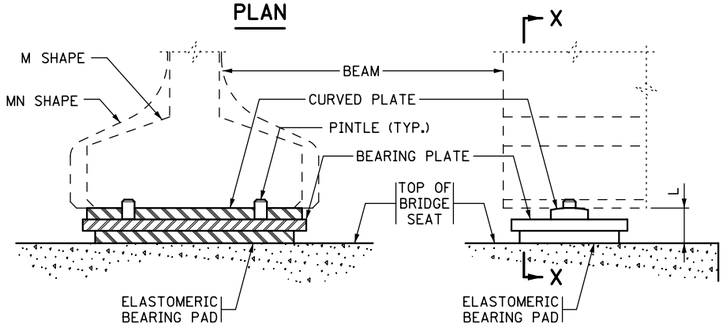
MAXIMUM HORIZONTAL LOAD IS 70 KIPS FOR 1½" PINTLES.

APPROVED: SEPTEMBER 22, 2011	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION	REVISED	DETAIL NO.
STATE BRIDGE ENGINEER	CURVED PLATE BEARING ASSEMBLY (PRESTRESSED CONCRETE BEAMS) (FIXED)		B310

PLAN

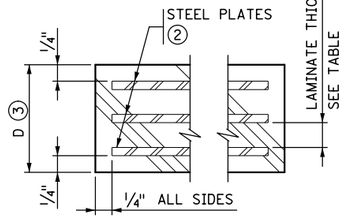


SECTION Y-Y



SECTION X-X

SIDE ELEVATION



SECTION THROUGH ELASTOMERIC BEARING PAD

TABLE

ASSEMBLY TYPE	LOCATION	BEAM SIZE	BEARING PAD SIZE			STEEL PLATES		LAMINATES		SHAPE FACTOR	BEARING PLATE SIZE			CURVED PLATE SIZE			ASSY. HEIGHT	CURVED PLATE
			A	B	D	NO.	THICK.	NO.	THICK.		C	E	F	G	H	J	L	R ①
E1	P1&P3-S1	MN63	12"	24"	2½"	4	⅛"	3	½"	8.0	14"	27"	1½"	4½"	26"	1¼"	5¼"	16"
E2	P3-S3&E. ABUT.	SLAB	12"	24"	1⅞"	3	⅛"	2	½"	8.0	14"	27"	1½"	4½"	26"	1¼"	4⅝"	16"

NOTES:

ELASTOMERIC MATERIALS AND PAD CONSTRUCTION SHALL COMPLY WITH MnDOT SPEC. 3741.

ALL STEEL PLATES SHALL COMPLY WITH MnDOT SPEC. 3306.

PINTLES SHALL COMPLY WITH MnDOT SPEC. 3309.

GALVANIZE STRUCTURAL STEEL BEARING ASSEMBLY AFTER FABRICATION PER MnDOT SPEC. 3394, EXCEPT AS NOTED.

PAYMENT FOR BEARING ASSEMBLY SHALL INCLUDE ALL MATERIAL ON THIS DETAIL.

⑤ 3/8" SQUARE BAR INSTALLED ON BEARING PLATE AROUND PERIMETER OF BEARING PAD. CENTERLINE BAR TO EDGE OF PAD DIMENSION = ½". BAR TO EXTEND AROUND FULL PERIMETER OF BEARING PAD AND TO BE WELDED ON OUTSIDE FACE OF BAR USING ¼" FILLET WELD. (FOR BEARING ASSEMBLY E2).

① THE MIN. RADIUS SHALL BE 16" UNLESS OTHERWISE SPECIFIED IN THE TABLE. THE MAX. RADIUS SHALL BE 24". FINISH TO 250 MICRO. THE FINISHED THICKNESS OF THE PLATE MAY BE 1/16" LESS THAN SHOWN.

② DO NOT GALVANIZE THESE PLATES.

③ THE TOTAL THICKNESS SHOWN INCLUDES THE STEEL PLATES.

④ 5/16" DIA. × 3/8" KNOCK-OFF WELD STUDS INSTALLED ON BEARING PLATE AROUND PERIMETER OF BEARING PAD. CENTERLINE STUD TO EDGE OF PAD DIMENSION = ½", MAX. STUD SPACING = 4", AND MAX. SPACING TO PAD CORNER = 2" (FOR BEARING ASSEMBLY E1).

DESIGN DATA:

MAXIMUM HORIZONTAL LOAD IS 70 KIPS FOR 1½" PINTLES.

APPROVED: SEPTEMBER 22, 2011	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION	REVISED	DETAIL NO.
STATE BRIDGE ENGINEER	CURVED PLATE BEARING ASSEMBLY (PRESTRESSED CONCRETE BEAMS) (EXPANSION)		B311 MODIFIED

NO.	DATE	BY	DESCRIPTION OF REVISIONS

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA
SIGNED _____ MATTHEW J. CHRISTENSEN
DATE: 12/19/2016 LIC. NO.: 43076

TKDA
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Saint Paul, MN 55101
651.292.4400
tkda.com

EASTBOUND WARNER ROAD
ST. PAUL, RAMSEY COUNTY, MINNESOTA
S.P. NO. 062-636-006

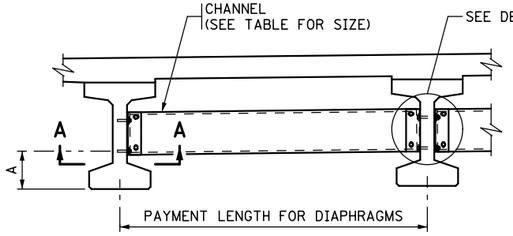
TITLE: STANDARD DETAILS B310 & B311

DES: JRM	DR: JRM	APPROVED
CHK: ROC	CHK: ROC	

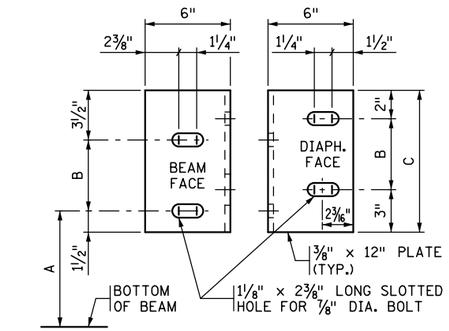
Sheet No. 62 of 77 Sheets

Bridge No. 62635

DATE: 12/19/2016 TIME: 9:49:46 AM
FILENAME: K:\nr-r\RamseyCty\5i\3000\hwy-brdg\brdg\62635\standard\CBR62635_det02.dgn

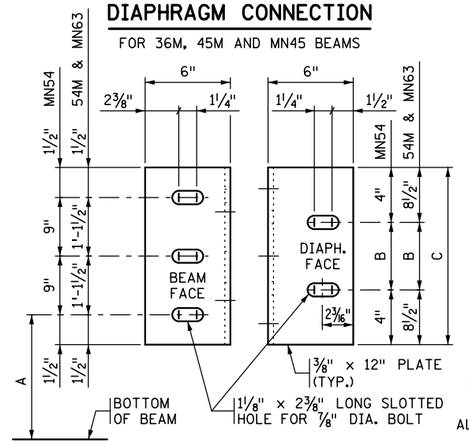


PART TRANSVERSE SECTION AT DIAPHRAGM



DIAPHRAGM CONNECTION

FOR 36M, 45M AND MN45 BEAMS

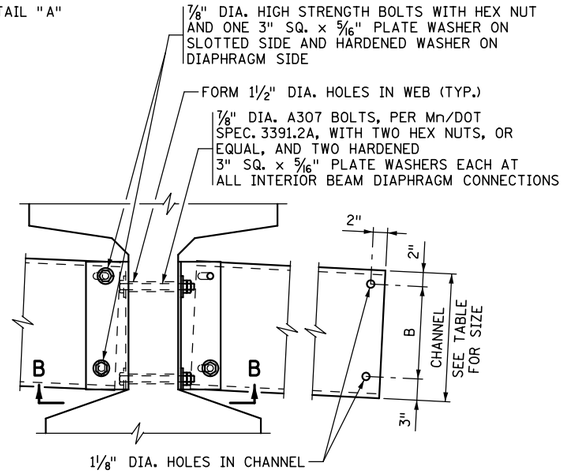


DIAPHRAGM CONNECTION

FOR 54M, MN54 AND MN63 BEAMS

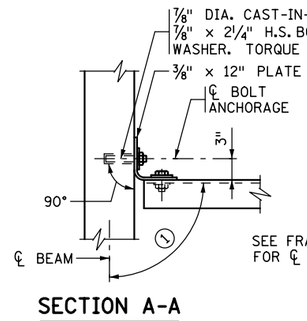
TABLE

BEAM HEIGHT	DISTANCE			CHANNEL SIZE
	A	B	C	
36M	1'-3"	7"	1'-0"	C12x20.7
45M	1'-3¾"	1'-1"	1'-6"	MC18x42.7
54M	1'-2¼"	1'-1"	2'-6"	MC18x42.7
MN45	1'-7¾"	7"	1'-0"	C12x20.7
MN54	1'-7¾"	1'-1"	1'-9"	MC18x42.7
MN63	1'-7¾"	1'-1"	2'-6"	MC18x42.7



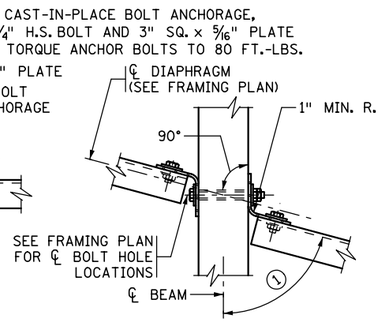
DETAIL "A"

INTERIOR BEAM WITH CONTINUOUS LINE OF DIAPHRAGMS



SECTION A-A

TYPICAL SECTION AT ALL FASCIA BEAMS



SECTION B-B

TYPICAL SECTION AT INTERIOR BEAM WITH CONTINUOUS OR STAGGERED INTERMEDIATE DIAPHRAGMS

NOTES:

ALL STEEL SHALL CONFORM TO Mn/DOT SPEC. 3306.

INSTALLATION SHALL CONFORM TO Mn/DOT SPEC. 2405.3M.

THE LEG OF THE 12" PLATE SHALL BE SHOP BENT TO CONFORM TO THE DIAPHRAGM. A ⅜" × 6" × 6" ANGLE MAY BE USED FOR DIAPHRAGMS PERPENDICULAR TO BEAMS.

ALL STRUCTURAL STEEL SHOWN ON THIS DETAIL, INCLUDING BOLTS AND WASHERS, SHALL BE INCLUDED IN UNIT PRICE BID FOR DIAPHRAGMS FOR PRESTRESSED BEAMS.

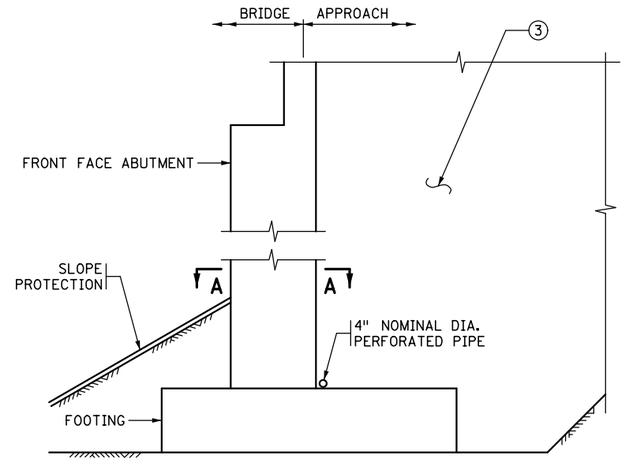
BENT PLATES MAY BE USED IN PLACE OF CHANNELS. THE BENT PLATES MUST BE THE SAME HEIGHT AS THE CHANNELS THEY REPLACE, BE 5⁄16" IN THICKNESS, AND HAVE LEGS 5" LONG.

STEEL PLATES AND SHAPES SHALL BE GALVANIZED IN ACCORDANCE WITH Mn/DOT SPEC. 3394.

GALVANIZE BOLTS, NUTS AND WASHERS PER Mn/DOT SPEC. 3392.

① FOR SKEW ANGLES UNDER 20°, USE 90° LESS THE SKEW ANGLE. FOR SKEW ANGLES OVER 20°, USE 90°.

APPROVED: OCTOBER 26, 2005	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION	REVISED 06-14-2006 10-22-2009	DETAIL NO.
Daniel L. Morgan STATE BRIDGE ENGINEER	**STEEL INTERMEDIATE DIAPHRAGM** (FOR 36M - 54M, MN45 - MN63 PRESTRESSED CONCRETE BEAMS)		**B403**



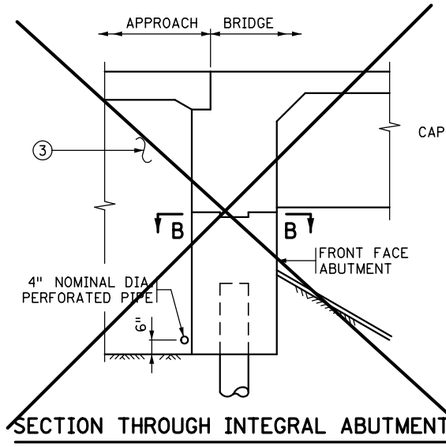
SUMMARY OF QUANTITIES FOR DRAINAGE SYSTEM

	4" DIA. PERFORATED PIPE	12 LIN. FT.
	4" DIA. NON-PERFORATED PIPE	7 LIN. FT.
	45° ELBOW	1 EACH
	4" DIA. END CAP	1 EACH
	4" DIA. COUPLING	1 EACH
	PIPE SLEEVE	1 EACH
①	PRECAST CONCRETE HEADWALL	1 EACH

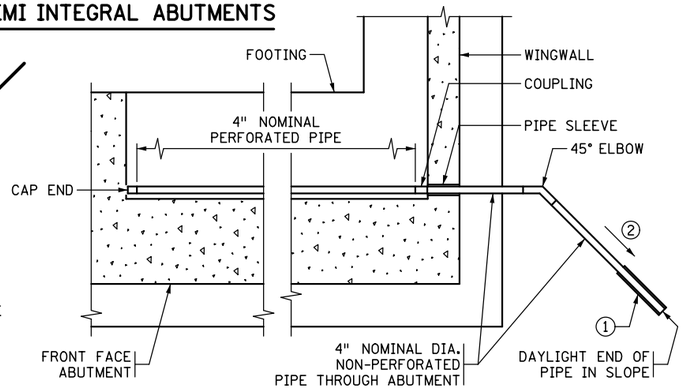
THE SUMMARY OF QUANTITIES FOR DRAINAGE SYSTEM IS AS SHOWN ABOVE. ANY ADDITIONAL MINOR ITEMS OR SLIGHT CHANGES OF QUANTITIES REQUIRED SHALL BE FURNISHED BY THE CONTRACTOR WITH NO ADDITIONAL COMPENSATION.

PAYMENT WILL BE INCLUDED IN THE SINGLE LUMP SUM PRICE FOR ITEM 2502.502 "DRAINAGE SYSTEM TYPE (B910)".

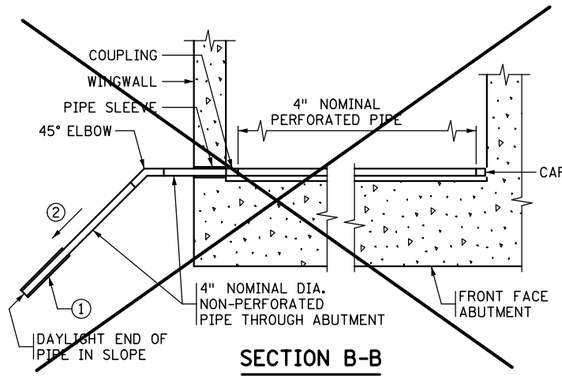
SECTION THROUGH PARAPET AND SEMI INTEGRAL ABUTMENTS



SECTION THROUGH INTEGRAL ABUTMENT



SECTION A-A



SECTION B-B

NOTES:

ALL PIPE SHALL COMPLY WITH Mn/DOT SPEC. 3245.

WRAP PERFORATED PIPE WITH GEOTEXTILE AS PER Mn/DOT SPEC. 3733, TYPE 1. ATTACH TO PIPE AS PER Mn/DOT SPEC. 2502.

① PRECAST CONCRETE HEADWALL WITH RODENT SCREEN. SEE STANDARD PLATE 3131 FOR DETAILS.

② ⅛" PER FT. MINIMUM SLOPE.

③ MATERIAL SHALL COMPLY WITH Mn/DOT SPEC. 3149.2B SELECT GRANULAR BORROW, MODIFIED SO THAT NO MORE THAN 10% PASSES A NO. 200 SIEVE. (UNDER GRADING PORTION OF CONTRACT)

APPROVED: MARCH 26, 2009	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION	REVISED 10-22-2009	DETAIL NO.
Daniel L. Morgan STATE BRIDGE ENGINEER	**DRAINAGE SYSTEM**		**B910**

NO.	DATE	BY	DESCRIPTION OF REVISIONS

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA
SIGNED Matthew J. Christensen MATTHEW J. CHRISTENSEN
DATE: 12/19/2016 LIC. NO.: 43076

TKDA
444 Cedar Street, Suite 1500
Saint Paul, MN 55101
651.292.4400
tkda.com

EASTBOUND WARNER ROAD
ST. PAUL, RAMSEY COUNTY, MINNESOTA
S.P. NO. 062-636-006

TITLE: STANDARD DETAILS B403 & B910

DES: LJL	DR: RRC	APPROVED
CHK: MJC	CHK: MJC	

Sheet No. 63 of 77 Sheets

Bridge No. 62635

DATE: 12/19/2016 TIME: 9:49:47 AM
FILENAME: K:\nr-s\RamseyCty\5li\3000\hwy-brdg\brdg\62635\standard\CBR62635_det03.dgn

CONCRETE WEARING COURSE

☐ LOW SLUMP

☐ OTHER _____
TYPE OR MANUFACTURER

EXPANSION JOINTS

JOINT MANUFACTURER

MANUFACTURER'S IDENTIFICATION _____
MFR'S No. AND/OR LETTER DESIGNATION FOR JOINT USED

GLAND MANUFACTURER _____
NAME AND ADDRESS (CITY, STATE)

SIZE OF GLAND _____

MANUFACTURER'S IDENTIFICATION _____
MFR'S No. AND/OR LETTER DESIGNATION FOR GLAND USED

ELASTOMERIC BEARING PADS

PAD MANUFACTURER _____
NAME AND ADDRESS (CITY, STATE)

SPECIAL SURFACE FINISH

SYSTEM: _____ COLOR: _____

FINISHING ROADWAY FACES OF BARRIER RAILING

TYPE: _____ COLOR: _____

ANTI-GRAFFITI COATING

MANUFACTURER _____
NAME AND ADDRESS (CITY, STATE)

PRODUCT NAME: _____ LOCATION: _____

PAINT SYSTEM

Mn/DOT SPECIFICATION NUMBER _____
2478 OR 2479 OR OTHER

MANUFACTURER _____
NAME AND ADDRESS (CITY, STATE)

PRIME COAT _____
Mn/DOT MATERIAL SPECIFICATION NUMBER

INTERMEDIATE COAT _____
Mn/DOT MATERIAL SPECIFICATION NUMBER

FINISH COAT _____ _____
Mn/DOT MATERIAL SPECIFICATION NUMBER COLOR

PLAN QUALITY

RATE 1 (AGREE), 2 (NEUTRAL), OR 3 (DISAGREE, PLEASE COMMENT BELOW)

DIMENSIONING AND DETAILING ADEQUATELY DESCRIBED REQUIRED CONSTRUCTION. _____

BAR LISTS AND QUANTITIES WERE TYPICALLY COMPLETE AND FREE OF ERRORS. _____

SCALE OF DRAWINGS AND OVERALL LEGIBILITY OF LINES AND TEXT WAS GOOD. _____

(SB) SPECIAL PROVISIONS ADEQUATELY DESCRIBED SPECIAL WORK AND PAYMENT. _____

COMMENTS: _____

NUMBER OF BRIDGE
SUPPLEMENTAL AGREEMENTS: _____ COST: $ _____

LIST SIGNIFICANT ERRORS OR OMISSIONS IN PLAN DETAILS OR PAY QUANTITIES IN THE SPACE PROVIDED AT RIGHT.

BRIDGE REMOVAL / BRIDGE OPENING

NUMBER OF AND DATE OLD BRIDGE WAS REMOVED (IF APPLICABLE):

BRIDGE NUMBER _____ DATE REMOVED _____

DATE NEW BRIDGE WAS OPENED TO TRAFFIC _____

NOTIFY THE BRIDGE OFFICE BRIDGE MANAGEMENT UNIT WITH THIS INFORMATION AS SOON AS POSSIBLE. (651) 366-4557

OTHER ITEMS ①

① UTILITIES ADDED DURING CONSTRUCTION AND SPECIALTY ITEMS.

FINAL QUANTITIES ENTERED ON SCHEDULE OF QUANTITIES: YES ☐ NO ☐

SUMMARY OF SIGNIFICANT AS-BUILT CHANGES

THE AS-BUILT INFORMATION WAS ADDED TO THE PLAN BY:

_____ _____
INSPECTOR(S) SIGNATURE DATE

CHECKED BY: _____ _____
PROJECT ENGINEER/SUPERVISOR SIGNATURE DATE

AT THE TIME OF THE FINAL, THIS COMPLETED AS-BUILT BRIDGE DATA SHEET MUST BE SUBMITTED TO THE BRIDGE OFFICE - ATTN: REGIONAL CONSTRUCTION ENGINEER (MS610).

DATE: 12/19/2016 TIME: 9:49:48 AM
FILENAME: K:\nr-z\RamseyCty\51\13000\hwy-brdg\brdg\62635\standard\CBR62635_det05.dgn

REVISION: 10-28-2008
APPROVED: SEPTEMBER 26, 2003
Daniel C. Hoyson
STATE BRIDGE ENGINEER

AS-BUILT DETAILS
(AS NEEDED)

FIG. 5-397.900

NO.	DATE	BY	DESCRIPTION OF REVISIONS

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA
SIGNED _____ MATTHEW J. CHRISTENSEN
DATE: 12/19/2016 LIC. NO.: 43076

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tkda.com

EASTBOUND WARNER ROAD
ST. PAUL, RAMSEY COUNTY, MINNESOTA
S.P. NO. 062-636-006

TITLE: AS-BUILT BRIDGE DATA

DES: JRM	DR: JRM	APPROVED
CHK: MJC	CHK: MJC	

Sheet No. 64 of 77 Sheets

Bridge No. 62635

ALIGNMENT TABULATION

POINT NO. OR CURVE NAME	POINT	STATION	CIRCULAR CURVE DATA					COORDINATES		AZIMUTH
			DELTA	DEGREE	RADIUS	TANGENT	LENGTH	X	Y	
TRAIL										
	PC	2+50.000						584,479.9730	155,839.2479	119° 52' 35.95"
TRAIL-1	PI	3+71.259	7° 11' 57.55" LT	2° 58' 20.94"	1,927.538'	121.259'	242.199'	584,585.1166	155,778.8447	PI
	CC							585,440.1463	157,510.6161	
	PRC	4+92.199						584,697.0011	155,732.0944	112° 40' 38.40"
	PRC	4+92.199						584,697.0011	155,732.0944	
TRAIL-2	PI	4+96.253	4° 38' 36.59" RT	57° 17' 44.81"	100.000'	4.054'	8.104'	584,700.7421	155,730.5312	PI
	CC							584,658.4470	155,639.8253	
	PT	5+00.303						584,704.3443	155,728.6703	117° 19' 14.99"
	PC	7+30.375						584,908.7520	155,623.0735	
TRAIL-3	PI	7+74.769	47° 52' 35.89" LT	57° 17' 44.81"	100.000'	44.394'	83.560'	584,948.1939	155,602.6979	PI
	CC							584,954.6493	155,711.9185	
	PT	8+13.936						584,989.7613	155,618.2855	69° 26' 39.10"
	PC	11+26.184						585,282.1285	155,727.9218	
TRAIL-4	PI	11+52.545	6° 02' 09.08" RT	11° 27' 32.96"	500.000'	26.361'	52.673'	585,306.8109	155,737.1776	PI
	CC							585,457.6883	155,259.7565	
	PT	11+78.857						585,332.3298	155,743.7867	75° 28' 48.18"
	PC	12+45.140						585,396.4965	155,760.4052	
TRAIL-5	PI	12+82.204	8° 28' 43.88" LT	11° 27' 32.96"	500.000'	37.064'	73.992'	585,432.3764	155,769.6977	PI
	CC							585,271.1380	156,244.4354	
	PT	13+19.132						585,466.4939	155,784.1789	67° 00' 04.30"
	PC	14+10.676						585,550.7606	155,819.9459	
TRAIL-6	PI	14+16.773	3° 29' 32.99" LT	28° 38' 52.40"	200.000'	6.097'	12.191'	585,556.3734	155,822.3282	PI
	CC							585,472.6182	156,004.0485	
	PT	14+22.867						585,561.8306	155,825.0481	63° 30' 31.31"
	PC	15+67.692						585,691.4496	155,889.6492	
TRAIL-7	PI	16+37.527	0° 41' 59.52" RT	0° 30' 03.94"	11,434.156'	69.835'	139.668'	585,753.9518	155,920.7998	PI
	CC							590,791.7918	145,656.0559	
	PCC	17+07.360						585,816.8299	155,951.1846	64° 12' 30.82"
	PCC	17+07.360						585,816.8299	155,951.1846	
TRAIL-8	PI	17+32.928	28° 41' 05.25" RT	57° 17' 44.81"	100.000'	25.568'	50.064'	585,839.8514	155,962.3094	PI
	CC							585,860.3396	155,861.1462	
	PCC	17+57.424						585,865.3873	155,961.0188	92° 53' 36.07"
	PCC	17+57.424						585,865.3873	155,961.0188	
TRAIL-9	PI	17+82.325	14° 11' 38.26" RT	28° 38' 52.40"	200.000'	24.901'	49.546'	585,890.2561	155,959.7619	PI
	CC							585,855.2918	155,761.2737	
	PT	18+06.970						585,914.0576	155,952.4453	107° 05' 14.34"
	PC	18+98.509						586,001.5550	155,925.5488	
TRAIL-10	PI	19+71.521	72° 16' 06.10" LT	57° 17' 44.81"	100.000'	73.013'	126.132'	586,071.3448	155,904.0956	PI
	CC							586,030.9379	156,021.1346	
	PT	20+24.641						586,113.0340	155,964.0361	34° 49' 08.24"
	PC	20+54.641						586,130.1635	155,988.6649	
TRAIL-11	PI	20+91.507	4° 13' 21.76" RT	5° 43' 46.48"	1,000.000'	36.867'	73.700'	586,151.2139	156,018.9311	PI
	CC							586,951.1239	155,417.6797	
	PCC	21+28.341						586,174.4358	156,047.5651	39° 02' 30.00"
	PCC	21+28.341						586,174.4358	156,047.5651	
TRAIL-12	PI	22+31.863	33° 52' 07.17" RT	16° 51' 06.12"	340.000'	103.522'	200.981'	586,239.6431	156,127.9698	PI
	CC							586,438.5097	155,833.4041	
	PT	23+29.322						586,338.5946	156,158.3917	72° 54' 37.17"
1201	POT	23+75.731						586,382.9545	156,172.0299	

ALIGNMENT TABULATION

POINT NO. OR CURVE NAME	POINT	STATION	CIRCULAR CURVE DATA					COORDINATES		AZIMUTH
			DELTA	DEGREE	RADIUS	TANGENT	LENGTH	X	Y	
OFF RAMP										
	PC	6+25.000						584,490.7721	155,858.0459	119° 52' 35.95"
OFFRAMP-1	PI	7+52.672	7° 39' 53.72" LT	3° 00' 22.67"	1,905.859'	127.672'	254.962'	584,601.4761	155,794.4483	PI
	CC							585,440.1463	157,510.6161	
	PT	8+79.962						584,719.6737	155,746.1845	112° 12' 42.23"
1301	POT	12+79.743						585,089.7877	155,595.0554	
ON RAMP										
1400	POT	14+25.000						585,810.2729	155,649.9631	15° 12' 14.54"
	PC	15+89.600						585,853.4404	155,808.8015	
ONRAMP-1	PI	16+79.791	22° 39' 59.91" RT	12° 43' 56.62"	450.000'	90.191'	178.023'	585,877.0936	155,895.8357	PI
	CC							586,287.6895	155,690.7858	
	PCC	17+67.623						585,932.4602	155,967.0324	37° 52' 14.45"
	PCC	17+67.623						585,932.4602	155,967.0324	
ONRAMP-2	PI	18+29.352	23° 15' 14.17" RT	19° 05' 54.94"	300.000'	61.728'	121.757'	585,970.3541	156,015.7606	PI
	CC							586,169.2797	155,782.8680	
	PCC	18+89.381						586,024.4079	156,045.5696	61° 07' 28.62"
	PCC	18+89.381						586,024.4079	156,045.5696	
ONRAMP-3	PI	20+58.344	11° 47' 08.55" RT	3° 30' 00.00"	1,637.022'	168.963'	336.735'	586,172.3645	156,127.1631	PI
	CC							586,814.9361	154,612.0749	
	PT	22+26.115						586,333.8675	156,176.8161	72° 54' 37.17"

ALIGNMENT TABULATION

POINT NO. OR CURVE NAME	POINT	STATION	CIRCULAR CURVE DATA					COORDINATES		AZIMUTH
			DELTA	DEGREE	RADIUS	TANGENT	LENGTH	X	Y	
WARNER ROAD EB										
1000	POT	24+50.000						584,227.3082	156,013.4580	119° 59' 03.32"
	PC	25+65.226						584,327.1127	155,955.8725	
WARNEREB-1	PI	29+21.370	24° 32' 51.22" LT	3° 30' 00.00"	1,637.022'	356.144'	701.359'	584,635.5912	155,777.8853	PI
	CC							585,145.2342	157,373.8002	
	PCC	32+66.585						584,990.1330	155,744.1421	95° 26' 12.10"
	PCC	32+66.585						584,990.1330	155,744.1421	
WARNEREB-2	PI	35+64.591	31° 55' 40.79" LT	5° 30' 00.00"	1,041.741'	298.006'	580.509'	585,286.7987	155,715.9073	PI
	CC							585,088.8337	156,781.1973	
	PT	38+47.094						585,553.5150	155,848.8365	63° 30' 31.31"
	PC	39+88.751						585,680.2981	155,912.0242	
WARNEREB-3	PI	41+96.081	2° 04' 23.08" RT	0° 30' 00.00"	11,459.156'	207.330'	414.615'	585,865.8592	156,004.5064	PI
	CC							590,791.7918	145,656.0559	
	PCC	44+03.366						586,054.6443	156,090.2156	65° 34' 54.39"
	PCC	44+03.366						586,054.6443	156,090.2156	
WARNEREB-4	PI	45+50.137	7° 19' 42.79" RT	2° 30' 00.00"	2,291.832'	146.771'	293.142'	586,188.2872	156,150.8899	PI
	CC							587,002.0743	154,003.3825	
	PT	46+96.508						586,328.5780	156,194.0213	72° 54' 37.17"
1001	POT	48+92.012						586,515.4493	156,251.4736	

DATE: 12/19/2016 TIME: 9:49:49 AM
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NO.	DATE	BY	DESCRIPTION OF REVISIONS

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA
SIGNED Matthew J. Christensen MATTHEW J. CHRISTENSEN
DATE: 12/19/2016 LIC. NO.: 43076

TKDA
444 Cedar Street, Suite 1500
Saint Paul, MN 55101
651.292.4400
tkda.com

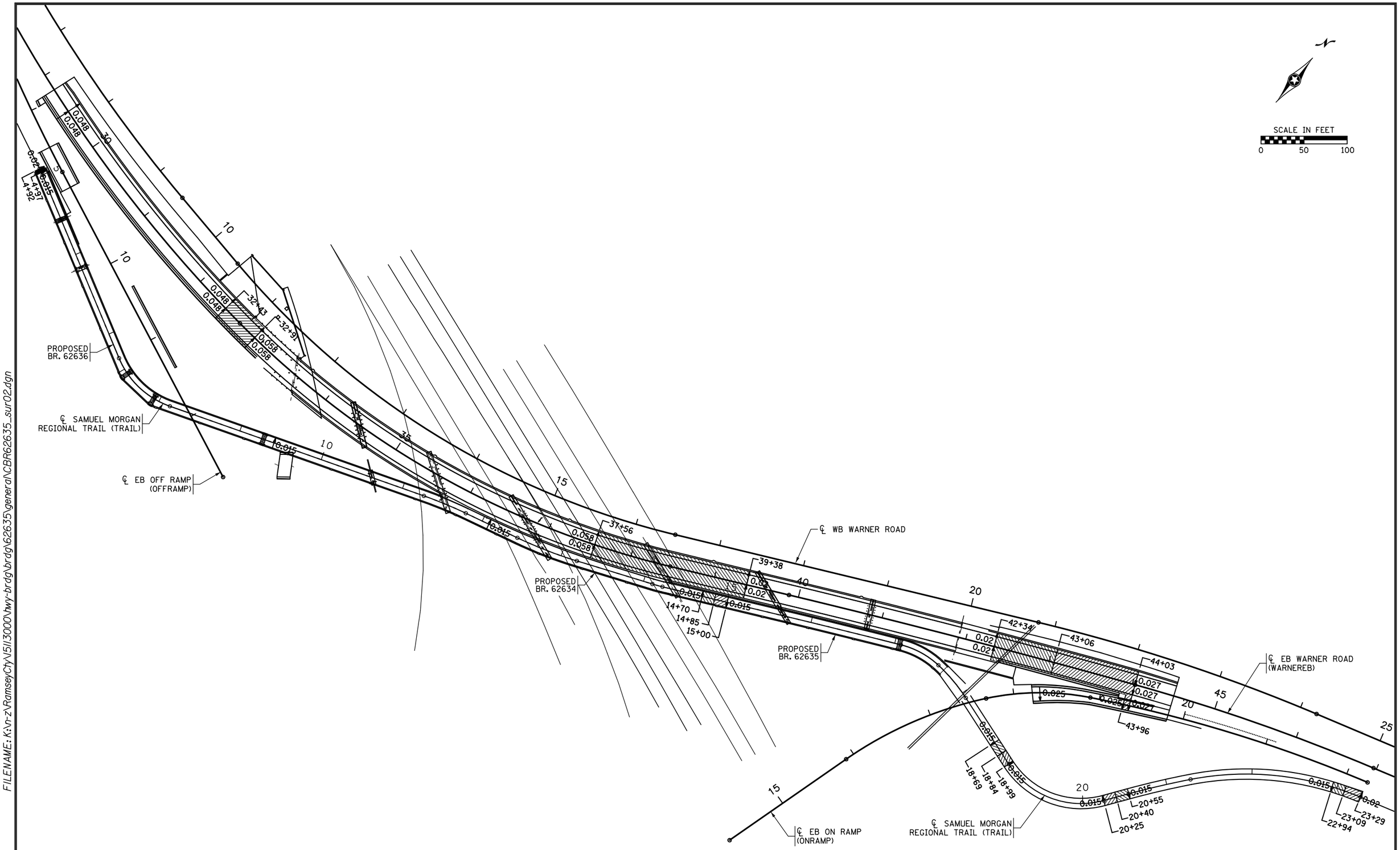
EASTBOUND WARNER ROAD
ST. PAUL, RAMSEY COUNTY, MINNESOTA
S.P. NO. 062-636-006

TITLE: ALIGNMENT TABULATION

DES: SJS	DR: MPB	APPROVED
CHK: LJL	CHK: LJL	

Sheet No. 65 of 77 Sheets

Bridge No. 62635



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NO.	DATE	BY	DESCRIPTION OF REVISIONS

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA

SIGNED _____ MATTHEW J. CHRISTENSEN

DATE: 12/19/2016 LIC. NO.: 43076

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tkda.com

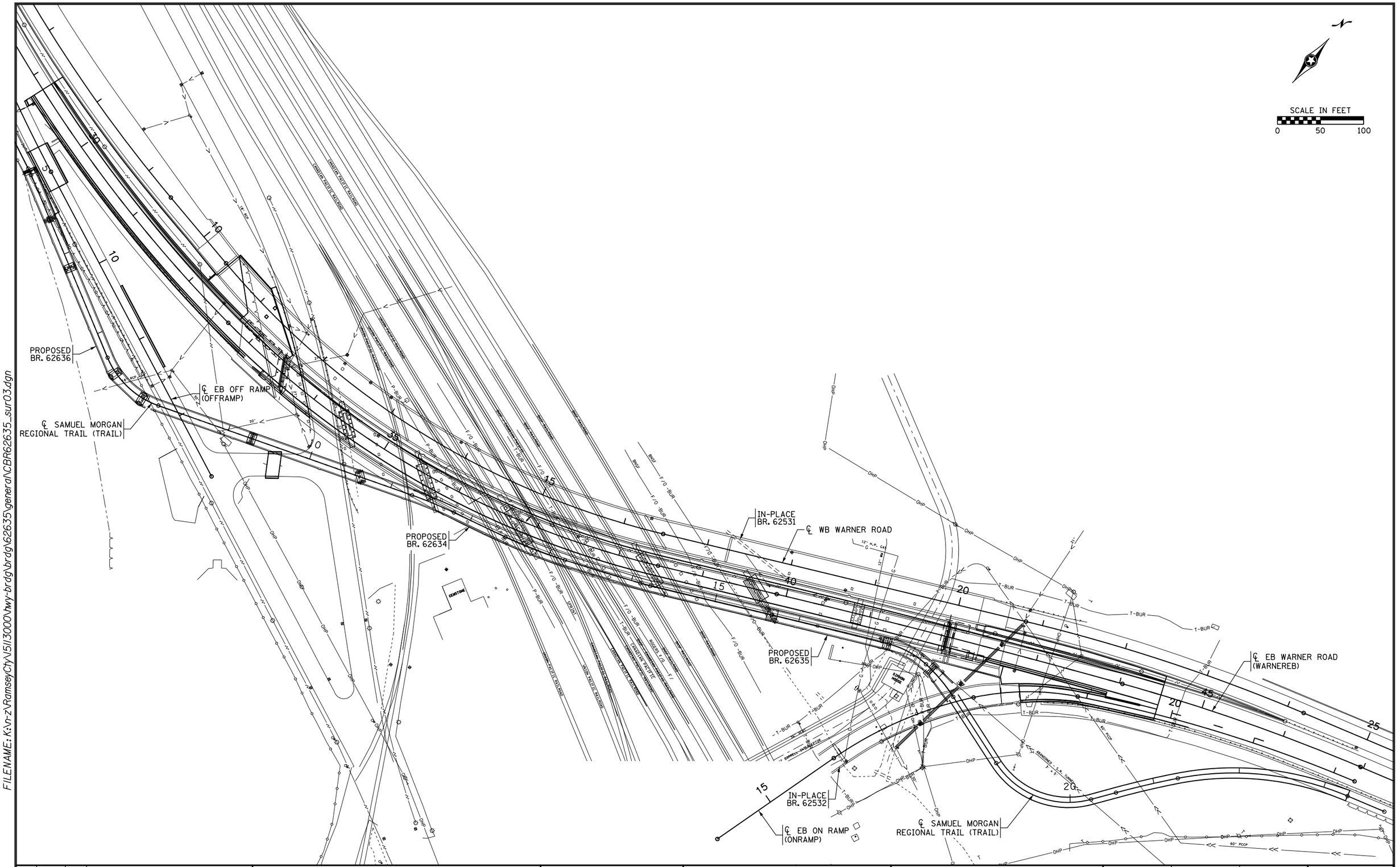
EASTBOUND WARNER ROAD
ST. PAUL, RAMSEY COUNTY, MINNESOTA
S.P. NO. 062-636-006

TITLE:
SUPERELEVATION PLAN

DES:	SJS	DR:	MPB	APPROVED
CHK:	LJL	CHK:	LJL	

Sheet No. 66 of 77 Sheets

Bridge No. 62635



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NO.	DATE	BY	DESCRIPTION OF REVISIONS

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA

SIGNED _____ MATTHEW J. CHRISTENSEN

DATE: 12/19/2016 LIC. NO.: 43076

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EASTBOUND WARNER ROAD
ST. PAUL, RAMSEY COUNTY, MINNESOTA
S.P. NO. 062-636-006

TITLE:
INPLACE TOPOGRAPHY AND UTILITES

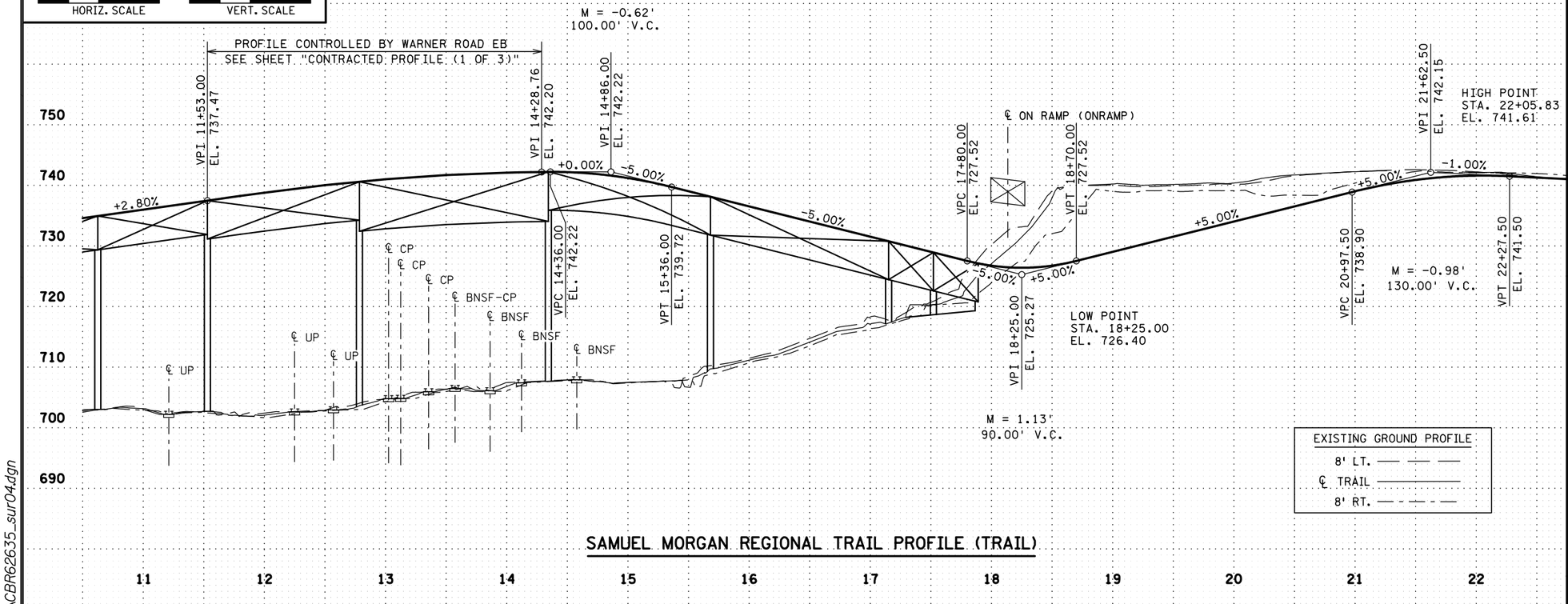
DES: SJS	DR: MPB	APPROVED
CHK: LJL	CHK: LJL	

Sheet No. 67 of 77 Sheets

Bridge No. 62635

CONTRACTED PROFILE

0 50 100 HORIZ. SCALE — 0 10 20 VERT. SCALE

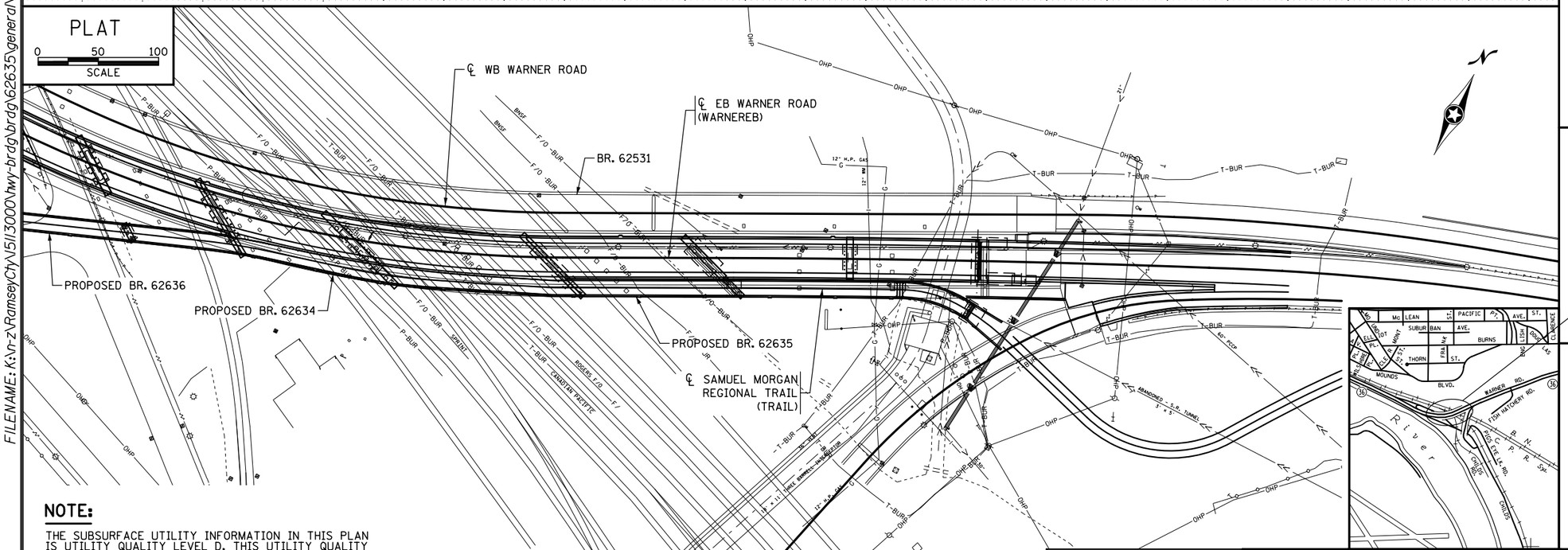


EXISTING GROUND PROFILE
8' LT. — — —
℄ TRAIL ———
8' RT. — — — —

SAMUEL MORGAN REGIONAL TRAIL PROFILE (TRAIL)

PLAT

0 50 100 SCALE



NOTE:

THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY QUALITY LEVEL D. THIS UTILITY QUALITY LEVEL WAS DETERMINED ACCORDING TO THE GUIDELINES OF CI/ASCE 38-02. ENTITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA."

LOCATION ENGINEER'S OBSERVATIONS AT BRIDGE SITE

1. Special Features: Waterfalls, dams, floods, ice, debris, sliding banks, recreational boating.
2. Other bridges or culverts over the same stream (particularly structures which carry high water without overflow of roadway): Given location, type, length, height above high water, cross-sectional area etc.
3. Apparent highwater elevation — Obtained from
4. Other data: Approx. velocity of water at time of survey

HYDRAULIC ENGINEER'S RECOMMENDATION

DATE:

Stream or ditch designation:

Drainage area:

Max. flood on record: Design flood (..... yr. freq.) ..... C.F.S.

Max. observed highwater elevation:

Design highwater elevation:

Design mean velocity through structure ..... F.P.S.

Low superstructure at or above elevation:

Flowline elevation: Skew angle:

Waterway area req'd. below elevation ..... = ... Sq. Ft. at Rt. angles to channel.

In the interest of flood plain zoning the regional flood (100 yr. freq.) is .....C.F.S. at stage ..... and mean velocity of ..... F.P.S. with ..... Ft. swellhead.

The above recommendation will provide a structure of adequate waterway to pass the regional flood within criteria established by the Dept. of Natural Resources.

FOUNDATION ENGINEER'S RECOMMENDATION

GEOTECHNICAL EVALUATION REPORT
BY BRAUN INTERTEC CORPORATION.
BRAUN PROJECT NO. BL-09-01520
DATED: JULY 13, 2010

FINAL GEOTECHNICAL EVALUATION REPORT
BY BRAUN INTERTEC CORPORATION.
BRAUN PROJECT NO. BL-09-01520E
DATED: FEBRUARY 5, 2013

BENCH MARK ELEVATION: 744.40 1929 NGVD
WARNER ROAD BRIDGE 62531, 3-14-1996.
CITY DATUM = 50.30 E

BENCH MARK ELEVATION: 720.65 1929 NGVD
CHILDS ROAD BRIDGE 62532, 3-14-1996.
CITY DATUM = 26.55 E

PROPOSED BRIDGES
62634, 62635, & 62636
& EXISTING BR. 62531

MINNESOTA
DEPARTMENT OF TRANSPORTATION

BRIDGE SURVEY

SAMUEL MORGAN REGIONAL TRAIL OVER RAILROADS
0.8 MILES S.W. OF JCT. T.H. 61

IDENTIFICATION NO. 501 & 109

SEC. 4 T 28 N R 22 W

ST. PAUL RAMSEY COUNTY

Bridge No. 62635

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TITLE: BRIDGE SURVEY

DES: MJC	DR: MPB	APPROVED
CHK: LJL	CHK: LJL	

Sheet No. 68 of 77 Sheets

Bridge No. 62635

STATE PROJ. NO. 062-636-006

DATE: 12/9/2016 TIME: 9:49:53 AM
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CONTRACTED PROFILE

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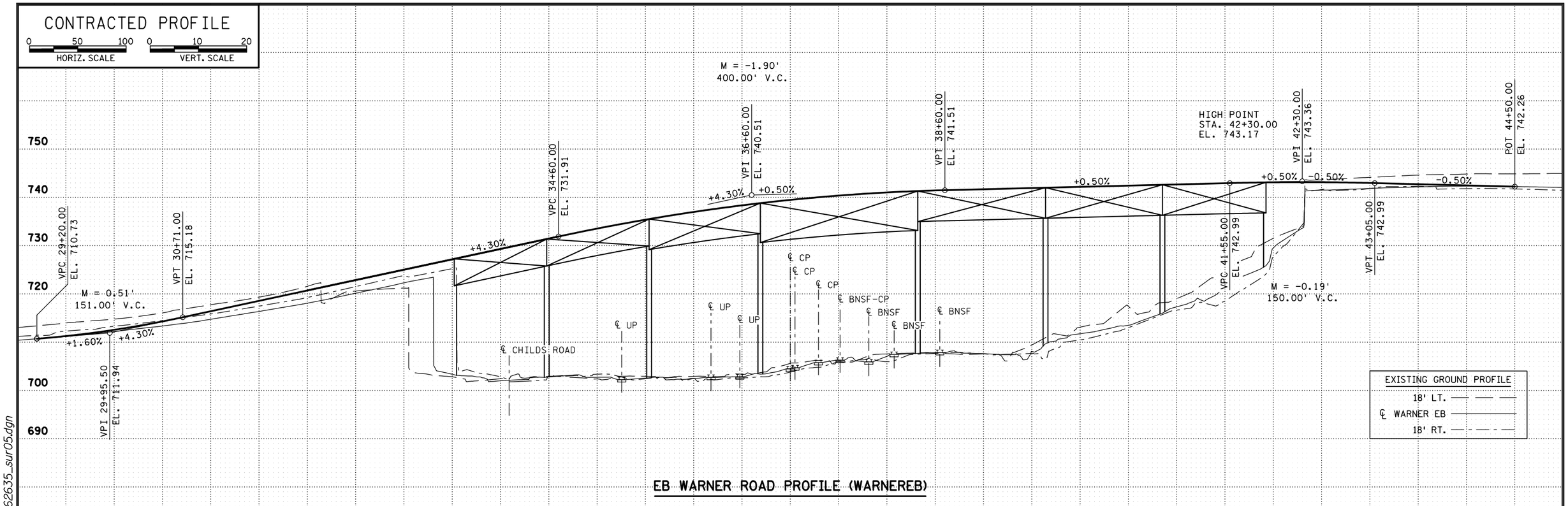
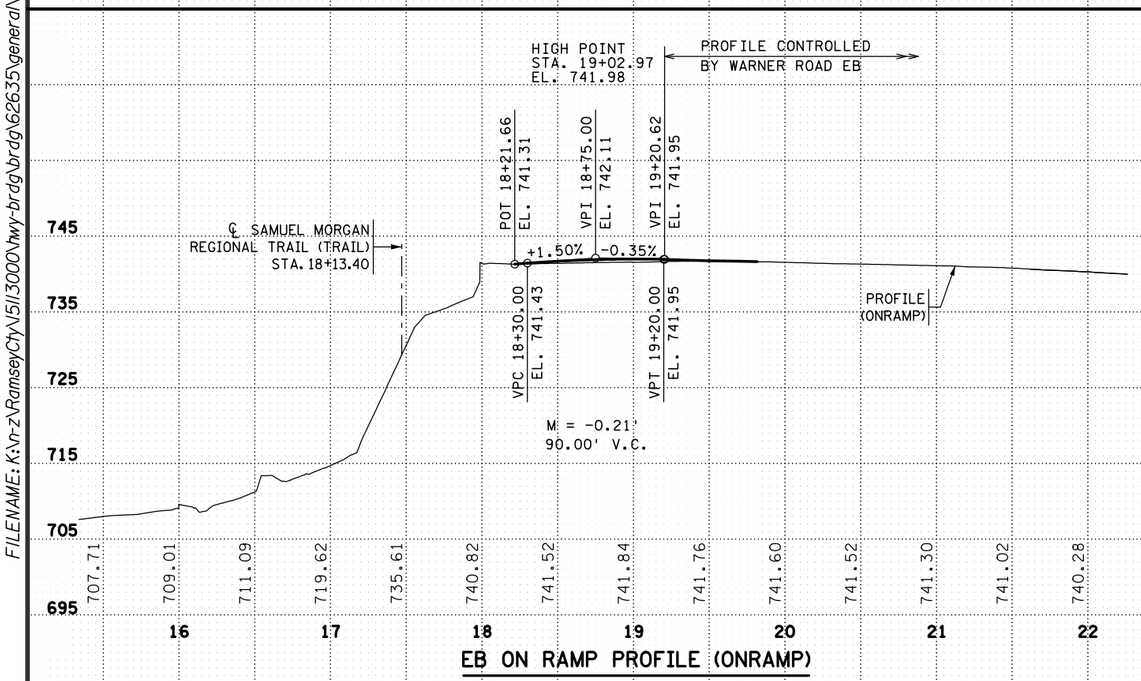
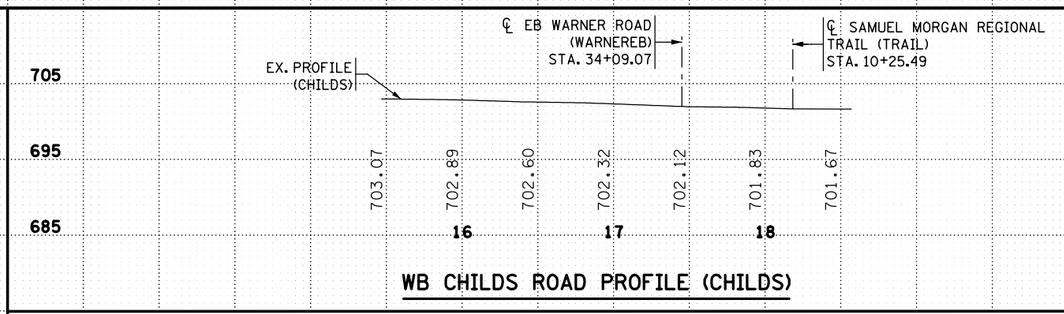
0 10 20 VERT. SCALE



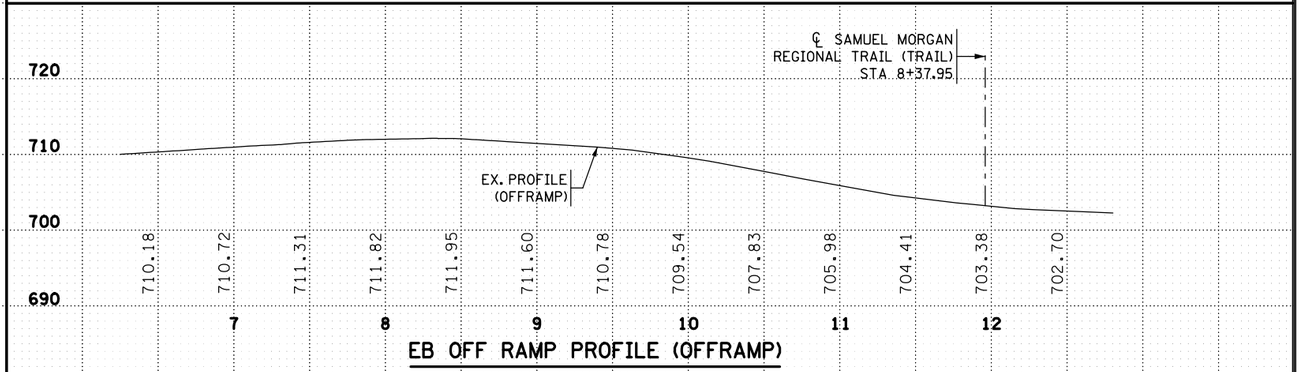
EB WARNER ROAD PROFILE (WARNEREB)



EB ON RAMP PROFILE (ONRAMP)



WB CHILDS ROAD PROFILE (CHILDS)



EB OFF RAMP PROFILE (OFFRAMP)

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STATE PROJ. NO. 062-636-006

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TITLE: CONTRACTED PROFILES (1 OF 3)

DES: SJS	DR: MPB	APPROVED
CHK: LJL	CHK: LJL	

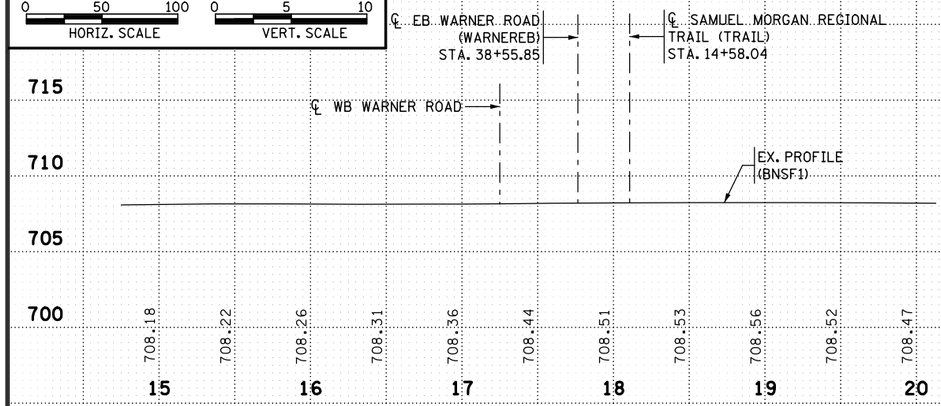
Sheet No. 69 of 77 Sheets

Bridge No. 62635

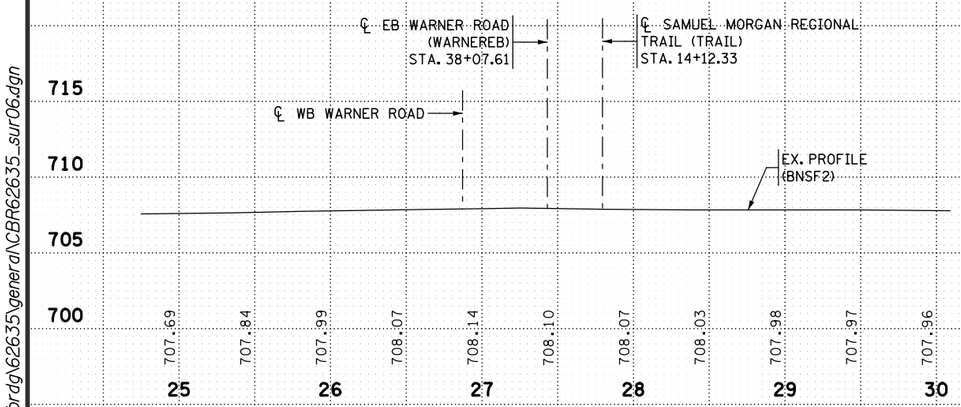
CONTRACTED PROFILE

0 50 100 HORIZ. SCALE

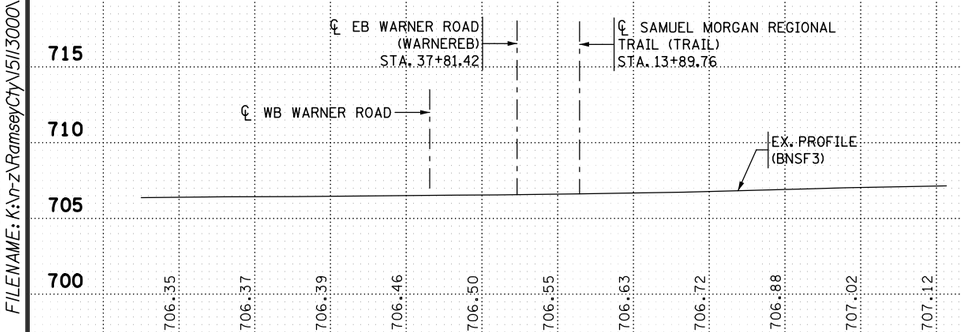
0 5 10 VERT. SCALE



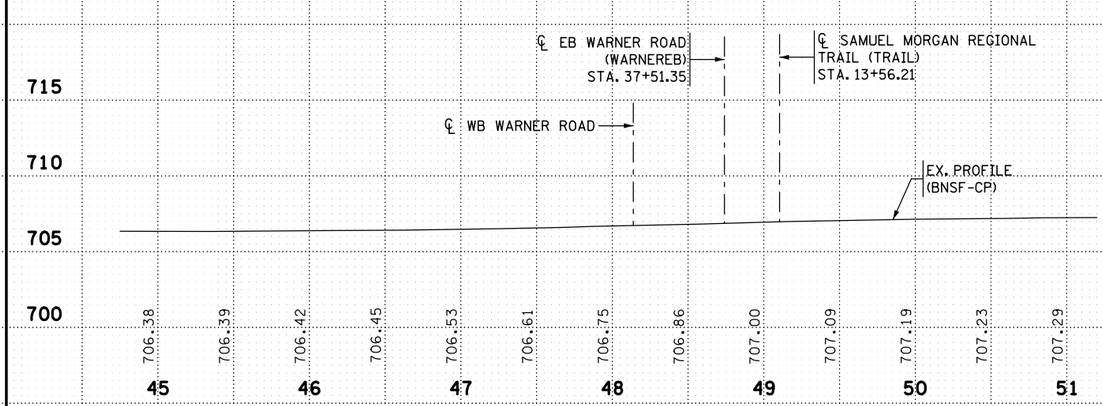
BNSF RR PROFILE (BNSF1)



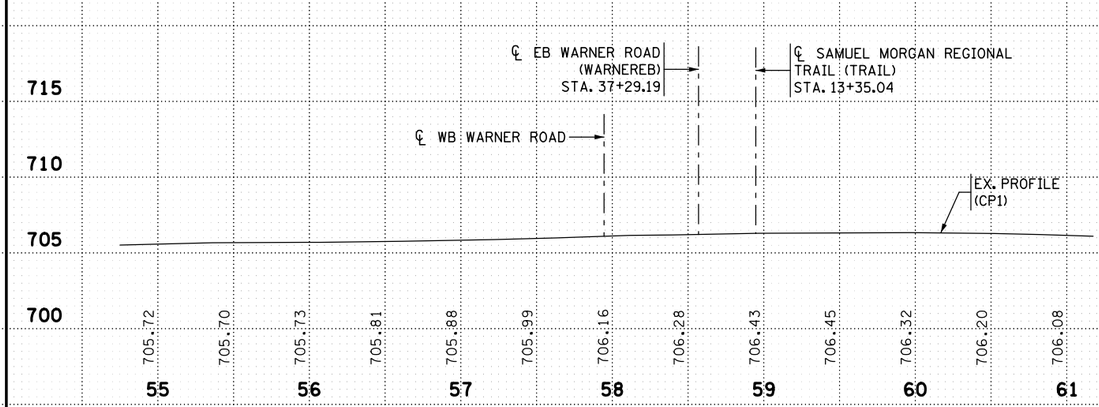
BNSF RR PROFILE (BNSF2)



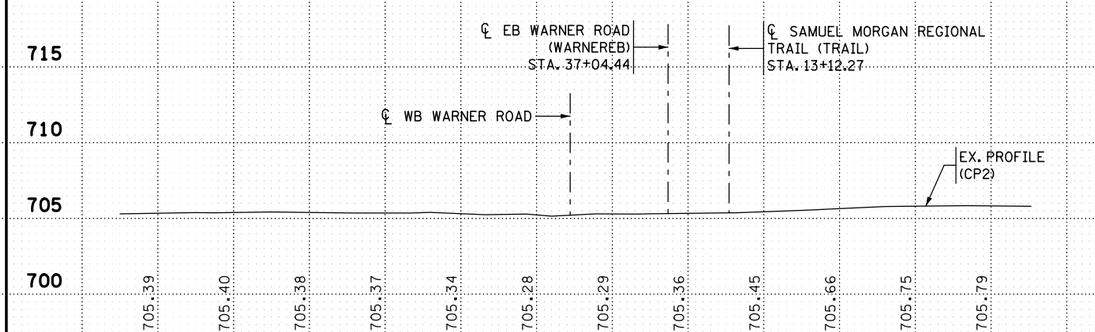
BNSF RR PROFILE (BNSF3)



BNSF-CP RR PROFILE (BNSF-CP)



CP RR PROFILE (CP1)



CP RR PROFILE (CP2)

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STATE PROJ. NO. 062-636-006

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TITLE: CONTRACTED PROFILES (2 OF 3)

DES: SJS	DR: MPB	APPROVED
CHK: LJL	CHK: LJL	

Sheet No. 70 of 77 Sheets

Bridge No. 62635

CONTRACTED PROFILE

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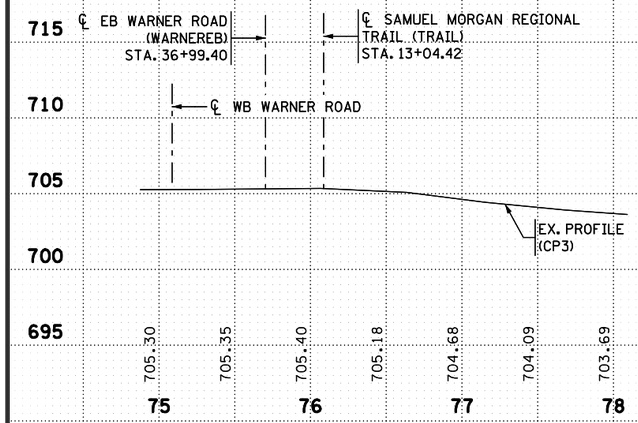
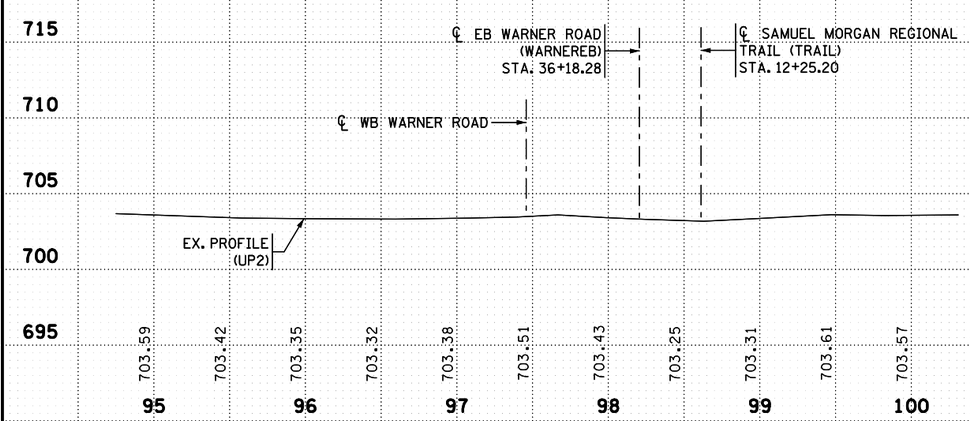
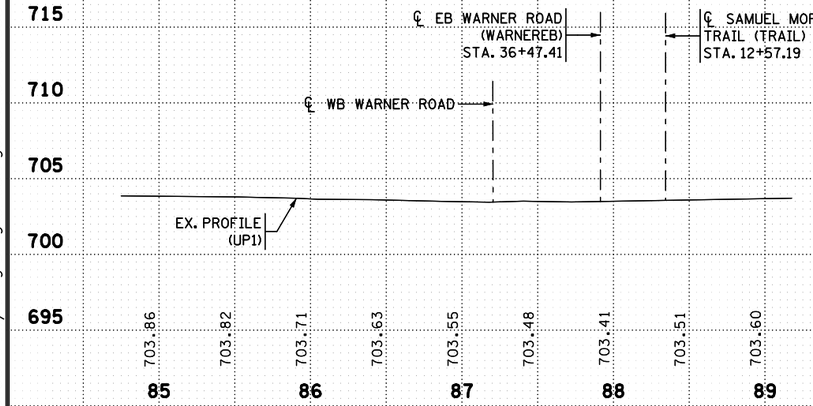
0 5 10 VERT. SCALE



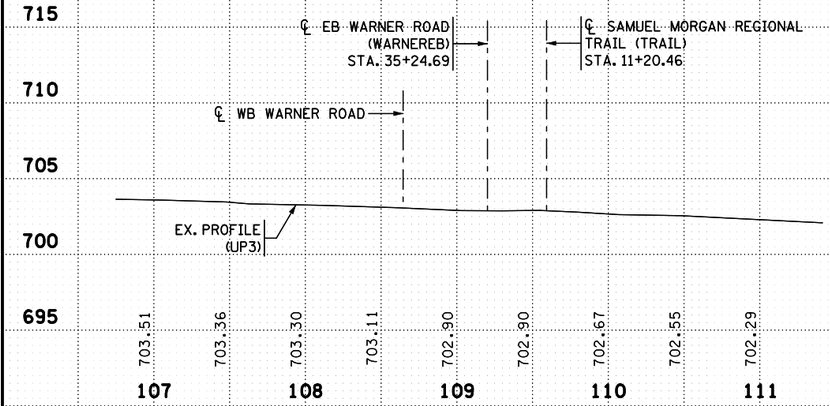
CP RR PROFILE (CP3)



UP RR PROFILE (UP2)



UP RR PROFILE (UP1)



UP RR PROFILE (UP3)

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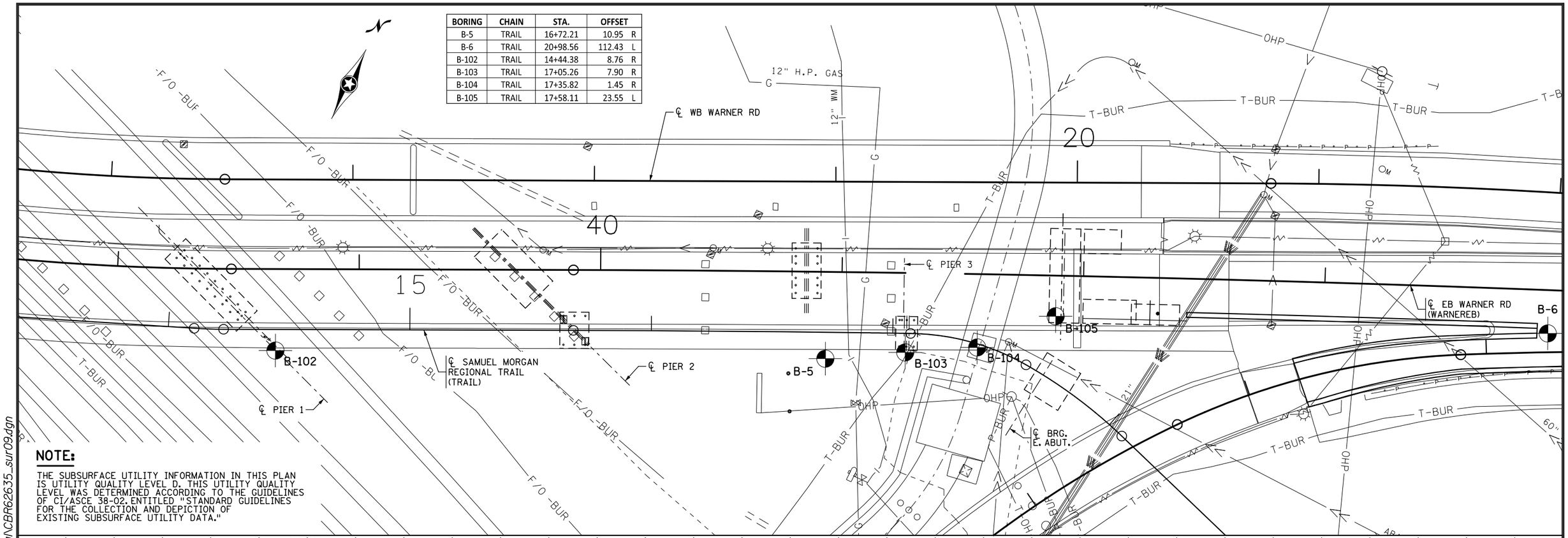
TITLE: CONTRACTED PROFILES (3 OF 3)

DES: MJC	DR: MPB	APPROVED
CHK: LJL	CHK: LJL	

Sheet No. 71 of 77 Sheets

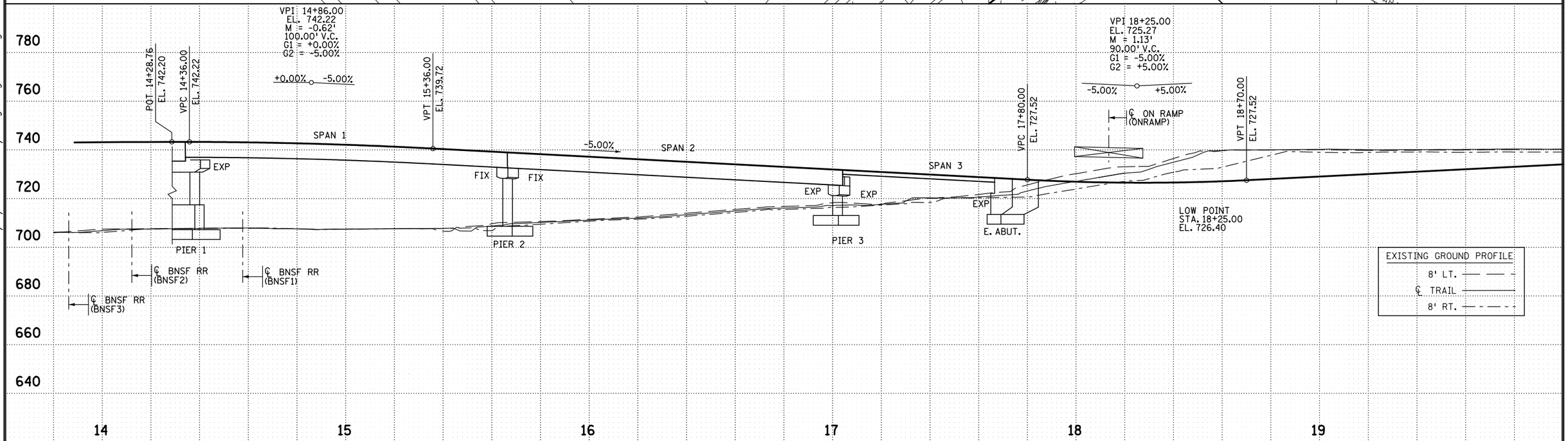
Bridge No. 62635

BORING	CHAIN	STA.	OFFSET
B-5	TRAIL	16+72.21	10.95 R
B-6	TRAIL	20+98.56	112.43 L
B-102	TRAIL	14+44.38	8.76 R
B-103	TRAIL	17+05.26	7.90 R
B-104	TRAIL	17+35.82	1.45 R
B-105	TRAIL	17+58.11	23.55 L



NOTE:

THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY QUALITY LEVEL D. THIS UTILITY QUALITY LEVEL WAS DETERMINED ACCORDING TO THE GUIDELINES OF CI/ASCE 38-02. ENTITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA."



DATE: 12/19/2016 TIME: 9:50:01 AM
FILENAME: K:\n-z\RamseyCty\5i\3000\hwy-brdg\brdg\62635\general\CBR62635_sur09.dgn

NO.	DATE	BY	DESCRIPTION OF REVISIONS

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA
SIGNED Matthew J. Christensen MATTHEW J. CHRISTENSEN
DATE: 12/19/2016 LIC. NO.: 43076

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Saint Paul, MN 55101
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tkda.com

EASTBOUND WARNER ROAD
ST. PAUL, RAMSEY COUNTY, MINNESOTA
S.P. NO. 062-636-006

TITLE: BRIDGE SURVEY PLAN & PROFILE

DES: MJC	DR: MPB	APPROVED
CHK: LJL	CHK: LJL	

Sheet No. 72 of 77 Sheets

Bridge No. 62635

MINNESOTA DEPARTMENT OF TRANSPORTATION – GEOTECHNICAL SECTION

LABORATORY LOG & TEST RESULTS – SUBSURFACE EXPLORATION

UNIQUE NUMBER

This boring was taken by Braun Intertec under a consultant contract for Mn/DOT

U.S. Customary Units

State Project	Bridge No. or Job Desc.	Trunk Highway/Location	Boring No.	Ground Elevation
164-020-01	62635	Warner Rd over BNSF RR/Childs Rd	B-5	715.7 (Surveyed)

Location: Co. Coordinate: X=585790 Y=155926 (ft.)
Latitude (North)=44°56'38.45" Longitude (West)=93°03'07.29"
No Station-Offset Information Available

Drill Machine 7511
Hammer CME Automatic Calibrated

SHEET 1 of 1
Drilling Completed 10/12/09

DEPTH	Depth / Elev.	Lithology	Classification	Drilling Operation	SPT N60 / REC (%)	MC (%) / RQD (%)	COH (psf) / ACL (ft)	γ (pcf) / Core Breaks	Soil / Rock	Other Tests Or Remarks / Formation or Member
			Gravelly Loamy Sand (SM), dk brn, moist, fill			10				SPT hammer energy measured at 79% efficiency on 8/28/2008. See attached Grain Size Accumulation Curve.
	2.0 / 713.7	×								
	3.0 / 712.7		nonpl Sandy Loam (SM), slorg, blk, wet, fill		11	17				OC=4.5% 0.0 ppm=PID
▼ 5			Cr Loamy Sand (SP-SM), w/ Sst pieces, brownish gry, moist to 5 feet then sat, fill		20	15				0.0 ppm=PID See attached Grain Size Accumulation Curve.
	7.0 / 708.7									
	8.0 / 707.7		Sandstone, lt yel, sat, fill		13	19				0.0 ppm=PID
10			Cr Loamy Sand (SM), w/ cobbles, w/ trace brick and concrete, brownish red, wet, fill		33	20				0.0 ppm=PID Drillers Note: Jetting water used to wash sand out of the auger below the 14-foot depth.
					59	17				0.0 ppm=PID Soil sample collected for chemical laboratory analysis.
	14.0 / 701.7		Top of Bedrock							ST PETER SANDSTONE
15			Sandstone, cemented, lt gry and lt yel		50/0.4	15				
	16.6 / 699.1		Bottom of Hole – 16.6' Auger met refusal at 16.5' Groundwater sample collected from boring for chemical laboratory analysis. Boring sealed with bentomite grout.		50/0.1	15				

Index Sheet Code 3.0 Soil Class:N. McKinney Rock Class: Edit: Date: 11/12/09
N:\GINT\PROJECTS\MINNEAPOLIS\2009\01520.GPJ

DATE: 12/19/2016 TIME: 9:50:02 AM
FILENAME: K:\nr-z\RamseyCty\5I\3000\hwy-brdg\brdg\62635\general\CBR62635_sur10.dgn

STATE PROJ. NO. 062-636-006

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TITLE: SOIL BORINGS (1 OF 5)

DES: LJL	DR: LJL	APPROVED
CHK: MJC	CHK: MJC	

Sheet No. 73 of 77 Sheets

Bridge No. 62635

MINNESOTA DEPARTMENT OF TRANSPORTATION – GEOTECHNICAL SECTION

LABORATORY LOG & TEST RESULTS – SUBSURFACE EXPLORATION

UNIQUE NUMBER

This boring was taken by Braun Intertec under a consultant contract for Mn/DOT

U.S. Customary Units

State Project	Bridge No. or Job Desc.	Trunk Highway/Location	Boring No.	Ground Elevation
164-020-01	62635	Warner Rd over BNSF RR/Childs Rd	B-6	741.9 (Surveyed)

Location: Co. Coordinate: X=586053 Y=156073 (ft.)

Latitude (North)=44°56'39.89" Longitude (West)=93°03'03.64"

No Station-Offset Information Available

Drill Machine 7511 | Hammer CME Automatic Calibrated | SHEET 1 of 2 | Drilling Completed 10/20/09

DEPTH	Depth / Elev.	Lithology	Classification	Drilling Operation	SPT N60 / REC (%)	MC (%) / RQD (%)	COH (psf) / ACL (ft)	γ (pcf) / Core Breaks	Soil / Rock	Other Tests Or Remarks / Formation or Member
	0.5 741.4		Bituminous, 6 1/2 inches			6				SPT hammer energy measured at 79% efficiency on 8/28/2008.
	1.5 740.4		Aggregate base, 12 inches		28	3				0.0 ppm=PID See attached Grain Size Accumulation Curve. Soil sample collected for chemical laboratory analysis.
5			Cr Sand (SP-SM), w/ trace G, lt brn, dry to 20 feet then sat, meddense to dense		37	3				0.0 ppm=PID
					41	3				0.0 ppm=PID
10					25	3				0.0 ppm=PID
					45	3				0.0 ppm=PID See attached Grain Size Accumulation Curve.
15					22	3				0.0 ppm=PID
▼20					50	9				0.0 ppm=PID
25										0.0 ppm=PID

Index Sheet Code 3.0 (Continued Next Page) Soil Class:N. McKinney Rock Class: Edit: Date: 11/12/09

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MINNESOTA DEPARTMENT OF TRANSPORTATION – GEOTECHNICAL SECTION

LABORATORY LOG & TEST RESULTS – SUBSURFACE EXPLORATION

UNIQUE NUMBER

This boring was taken by Braun Intertec under a consultant contract for Mn/DOT

U.S. Customary Units

Mn/DOT GEOTECHNICAL SECTION – LOG & TEST RESULTS SHEET 2 of 2

State Project	Bridge No. or Job Desc.	Trunk Highway/Location	Boring No.	Ground Elevation
164-020-01	62635	Warner Rd over BNSF RR/Childs Rd	B-6	741.9 (Surveyed)

DEPTH	Depth / Elev.	Lithology	Classification	Drilling Operation	SPT N60 / REC (%)	MC (%) / RQD (%)	COH (psf) / ACL (ft)	γ (pcf) / Core Breaks	Soil / Rock	Other Tests Or Remarks / Formation or Member
					49	10				
30			Cr Sand (SP-SM), w/ trace G, lt brn, dry to 20 feet then sat, meddense to dense (continued)		26	12				0.0 ppm=PID
	31.0 710.9		Bottom of Hole – 31' Boring sealed with bentomite grout.							

Soil Class:N. McKinney Rock Class: Edit: Date: 11/12/09

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DATE: 12/19/2016 TIME: 9:50:03 AM
FILENAME: K:\n-2\RamseyCty\55i\3000\hwy-brdg\brdg\62635\general\CBR62635_surf.dgn

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TITLE: SOIL BORINGS (2 OF 5)

DES: LJL | DR: LJL | APPROVED
CHK: MJC | CHK: MJC

Bridge No. 62635

MINNESOTA DEPARTMENT OF TRANSPORTATION – GEOTECHNICAL SECTION

LABORATORY LOG & TEST RESULTS – SUBSURFACE EXPLORATION

UNIQUE NUMBER

This boring was taken by Braun Intertec under a consultant contract for Mn/DOT

U.S. Customary Units

State Project	Bridge No. or Job Desc.	Trunk Highway/Location	Boring No.	Ground Elevation
062-636-005	62634 Pier 4	EB Warner Rd over Childs Rd & RR	B-102	738.4 (GPS)

Location: Co. Coordinate: X=585567 Y=155836 (ft.)
Latitude (North)=44°56'37.57" Longitude (West)=93°03'10.40"
No Station-Offset Information Available

Drill Machine 7514 | Hammer CME Automatic Calibrated | SHEET 1 of 2 | Drilling Completed 9/6/12

DEPTH	Depth Elev.	Lithology	Classification	Drilling Operation	SPT N60 / REC (%)	MC (%) / RQD (%)	COH (psf) / ACL (ft)	γ (pcf) / Core Breaks	Soil / Rock	Other Tests Or Remarks / Formation or Member
			Bridge Deck at 0 ft.							SPT hammer calibrated to 81% efficiency on 10/11/12.
5										
			Air							
10										
15										
20										
25										

Index Sheet Code 3.0 (Continued Next Page)

Soil Class: Rock Class: Edit: Date: 1/16/13
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MINNESOTA DEPARTMENT OF TRANSPORTATION – GEOTECHNICAL SECTION

LABORATORY LOG & TEST RESULTS – SUBSURFACE EXPLORATION

UNIQUE NUMBER

This boring was taken by Braun Intertec under a consultant contract for Mn/DOT

U.S. Customary Units

Mn/DOT GEOTECHNICAL SECTION – LOG & TEST RESULTS — SHEET 2 of 2

State Project	Bridge No. or Job Desc.	Trunk Highway/Location	Boring No.	Ground Elevation
062-636-005	62634 Pier 4	EB Warner Rd over Childs Rd & RR	B-102	738.4 (GPS)

DEPTH	Depth Elev.	Lithology	Classification	Drilling Operation	SPT N60 / REC (%)	MC (%) / RQD (%)	COH (psf) / ACL (ft)	γ (pcf) / Core Breaks	Soil / Rock	Other Tests Or Remarks / Formation or Member
			Air (continued)							
30	30.0 708.4		slpl SL, F to Cr, tr G, dk brn, frzn, (SM) Fill							
	33.0 705.4		Sst S, F, tr G, gry & lt gry, moist, vdense, (SP-SM) Residual Soil		59					0.0 ppm = PID
35	37.0 701.4		wxSst, F, lt gry, yel & wht, moist, textural: S, F (SP), Bedrock		100/.2					ST PETER SANDSTONE
	38.2 700.2		Bottom of Hole – 38.2'. Auger Refusal @ 37 ft. SS Refusal @ 38.2 ft. Boring backfilled.							

Soil Class: Rock Class: Edit: Date: 1/16/13
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DATE: 12/19/2016 TIME: 9:50:04 AM
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STATE PROJ. NO. 062-636-006

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TITLE: SOIL BORINGS (3 OF 5)

DES: LJL	DR: LJL	APPROVED
CHK: MJC	CHK: MJC	

Sheet No. 75 of 77 Sheets

Bridge No. 62635

MINNESOTA DEPARTMENT OF TRANSPORTATION – GEOTECHNICAL SECTION

LABORATORY LOG & TEST RESULTS – SUBSURFACE EXPLORATION

UNIQUE NUMBER

This boring was taken by Braun Intertec under a consultant contract for Mn/DOT

U.S. Customary Units

State Project	Bridge No. or Job Desc.	Trunk Highway/Location	Boring No.	Ground Elevation
062-636-005	62634 Pier 3	EB Warner Rd over Childs Rd & RR	B-103	715.8 (GPS)

Location: Co. Coordinate: X=585863 Y=155949 (ft.)
Latitude (North)=44°56'38.68" Longitude (West)=93°03'06.77"
No Station-Offset Information Available

Drill Machine GP-1 | SHEET 1 of 1
Hammer CME Automatic Calibrated | Drilling Completed 9/10/12

DEPTH	Depth Elev.	Lithology	Classification	Drilling Operation	SPT N60 / REC (%)	MC (%) / RQD (%)	COH (psf) / ACL (ft)	γ (pcf) / Core Breaks	Soil / Rock	Other Tests Or Remarks / Formation or Member
	0.7 715.1		slpl SL, blk, moist, (SM) Swamp Deposit							SPT hammer calibrated to 64% efficiency on 09/18/09.
			LS, F, gry & blk, wet, (SM) Fill		11					0.0 ppm = PID P200=20%
	4.0 711.8				3					0.0 ppm = PID
5			LS, F, brn, sat, vloose, (SP-SM) Alluvium		5					0.0 ppm = PID
	9.0 706.8				19/.5					ST PETER SANDSTONE
10	10.5 705.3		wx Sst, F, yel, sat, texural: S, F (SP) Bedrock		50/.5					0.0 ppm = PID

Bottom of Hole – 10.5'. (SS Refusal)
H20 @ 6.3 ft with 7 ft of AUG.
H20 @ 3.5 ft after removal of AUG.
Boring backfilled.

Index Sheet Code 3.0

Soil Class: Rock Class: Edit: Date: 1/16/13
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MINNESOTA DEPARTMENT OF TRANSPORTATION – GEOTECHNICAL SECTION

LABORATORY LOG & TEST RESULTS – SUBSURFACE EXPLORATION

UNIQUE NUMBER

This boring was taken by Braun Intertec under a consultant contract for Mn/DOT

U.S. Customary Units

State Project	Bridge No. or Job Desc.	Trunk Highway/Location	Boring No.	Ground Elevation
062-636-005	62635 E Abut	EB Warner Rd over Childs Rd & RR	B-104	720.5 (GPS)

Location: Co. Coordinate: X=585863 Y=155960 (ft.)
Latitude (North)=44°56'38.79" Longitude (West)=93°03'06.28"
No Station-Offset Information Available

Drill Machine 7514 | SHEET 1 of 1
Hammer CME Automatic Calibrated | Drilling Completed 9/10/12

DEPTH	Depth Elev.	Lithology	Classification	Drilling Operation	SPT N60 / REC (%)	MC (%) / RQD (%)	COH (psf) / ACL (ft)	γ (pcf) / Core Breaks	Soil / Rock	Other Tests Or Remarks / Formation or Member
	2.0 718.5		slpl SL, F to Cr, tr G, dk brn, moist, (SM) Swamp Deposit							SPT hammer calibrated to 81% efficiency on 10/11/12.
			pl SL, F, w/G, brn, wet, (SC) Fill		5					0.0 ppm = PID
	4.0 716.5				9					0.0 ppm = PID
5			G, w/Si & F to Cr S, lns of C, red brn, wet to sat @ 6 ft, loose to vdense, (GP-GM) Colluvium		32					
10					29					
					64					
15					47					
	16.0 704.5				12/.5					ST PETER SANDSTONE
			wx Sst, tr G, wht & tan, sat, textural: S, F (SP-SM) Bedrock		50/.4 15/.5					
20	20.3 700.2				50/.3					

Bottom of Hole – 20.3'.
H20 @ 6 ft w/20 ft of AUG.
Boring then backfilled.

Index Sheet Code 3.0

Soil Class: Rock Class: Edit: Date: 1/16/13
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DATE: 12/19/2016 TIME: 9:50:06 AM
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STATE PROJ. NO. 062-636-006

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TITLE: SOIL BORINGS (4 OF 5)

DES: LJL	DR: LJL	APPROVED
CHK: MJC	CHK: MJC	

Sheet No. 76 of 77 Sheets

Bridge No. 62635

MINNESOTA DEPARTMENT OF TRANSPORTATION – GEOTECHNICAL SECTION

LABORATORY LOG & TEST RESULTS – SUBSURFACE EXPLORATION

UNIQUE NUMBER

This boring was taken by Braun Intertec under a consultant contract for Mn/DOT

U.S. Customary Units

State Project	Bridge No. or Job Desc.	Trunk Highway/Location	Boring No.	Ground Elevation
062-636-005	62634 E Abut	EB Warner Rd over Childs Rd & RR	B-105	741.0 (GPS)

Location: Co. Coordinate: X=585868 Y=155985 (ft.)
Latitude (North)=44°56'39.04" Longitude (West)=93°03'06.21"
No Station-Offset Information Available

Drill Machine 7514 | Hammer CME Automatic Calibrated | SHEET 1 of 2 | Drilling Completed 9/7/12

DEPTH	Depth Elev.	Lithology	Classification	Drilling Operation	SPT N60 / REC (%)	MC (%) / RQD (%)	COH (psf) / ACL (ft)	γ (pcf) / Core Breaks	Soil / Rock	Other Tests Or Remarks / Formation or Member
			Bridge Deck at 0'							SPT hammer calibrated to 81% efficiency on 10/11/12.
5										
			Air							
10										
15										
	17.5 723.5				9	3				P200=5%
20			S, F, brn, wet to sat @ 24 ft, vloose to loose, (SP) Alluvium or Fill		3					Little recovery.
					2					
25										

Index Sheet Code 3.0 (Continued Next Page)

Soil Class: Rock Class: Edit: Date: 1/16/13
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MINNESOTA DEPARTMENT OF TRANSPORTATION – GEOTECHNICAL SECTION

LABORATORY LOG & TEST RESULTS – SUBSURFACE EXPLORATION

UNIQUE NUMBER

This boring was taken by Braun Intertec under a consultant contract for Mn/DOT

U.S. Customary Units

Mn/DOT GEOTECHNICAL SECTION – LOG & TEST RESULTS — SHEET 2 of 2

State Project	Bridge No. or Job Desc.	Trunk Highway/Location	Boring No.	Ground Elevation
062-636-005	62634 E Abut	EB Warner Rd over Childs Rd & RR	B-105	741.0 (GPS)

DEPTH	Depth Elev.	Lithology	Classification	Drilling Operation	SPT N60 / REC (%)	MC (%) / RQD (%)	COH (psf) / ACL (ft)	γ (pcf) / Core Breaks	Soil / Rock	Other Tests Or Remarks / Formation or Member
	26.0 715.0		S, F, brn, wet to sat @ 24 ft, vloose to loose, (SP) Alluvium or Fill (continued)		WH					Little recovery.
30					32					
			G, w/F to Cr S, Si, Bldrs, brn, sat, dense to vdense, (GP-GM) Colluvium		39					
					48					
35					75					
	37.0 704.0		Bottom of Hole – 37'. (Auger Refusal) H20 @ 24 ft w/24 ft of AUG H20 @ 29 ft w/37 ft of AUG. Boring grouted.							Pushed Boulder.

Soil Class: Rock Class: Edit: Date: 1/16/13
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DATE: 12/19/2016 TIME: 9:50:07 AM
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STATE PROJ. NO. 062-636-006

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TITLE: SOIL BORINGS (5 OF 5)

DES: LJL	DR: LJL	APPROVED
CHK: MJC	CHK: MJC	

Sheet No. 77 of 77 Sheets

Bridge No. 62635