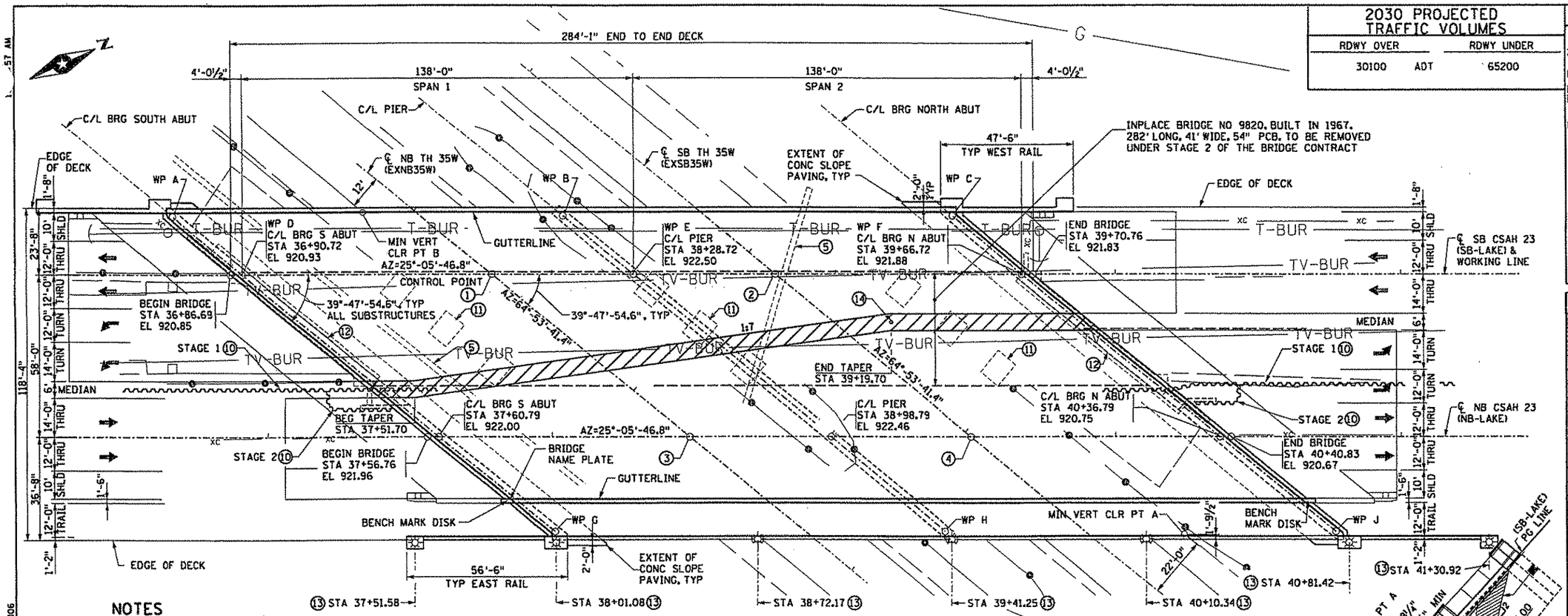


NOTES

(1) CONTROL POINT
(SB-LAKE) POT 37+78.732=
(EXNB35W) POT 770+35.169
X=539575.966 Y=152787.374

(2) (SB-LAKE) POT 38+78.718
(EXSB35W) POT 771+11.988
X=539618.375 Y=152877.921

(3) (NB-LAKE) POT 38+48.800=
(EXNB35W) POT 771+25.781
X=539658.019 Y=152825.819

(4) (NB-LAKE) POT 39+48.786
(EXSB35W) POT 772+02.600
X=539700.427 Y=152916.366

(5) EXISTING 24" RC PIPE TO BE REMOVED AND REPLACED AS REQUIRED UNDER GRADING PORTION OF CONTRACT.

(6) NOTE 6 NOT USED.

(7) NOTE 7 NOT USED.

(8) 12'-3" EXPOSURE

(9) 10'-0" EXPOSURE

(10) TEMPORARY SHEETING (SEE SPECIAL PROVISIONS).

(11) INPLACE PIER FOUNDATION, TYP.

(12) INPLACE ABUTMENT FOUNDATION.

(13) C/L LIGHT STANDARD.

(14) MEDIAN SIGN POST ANCHORAGE AT STATION 39+19.7.

SEE SHEET B3 FOR STAGE CONSTRUCTION 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.

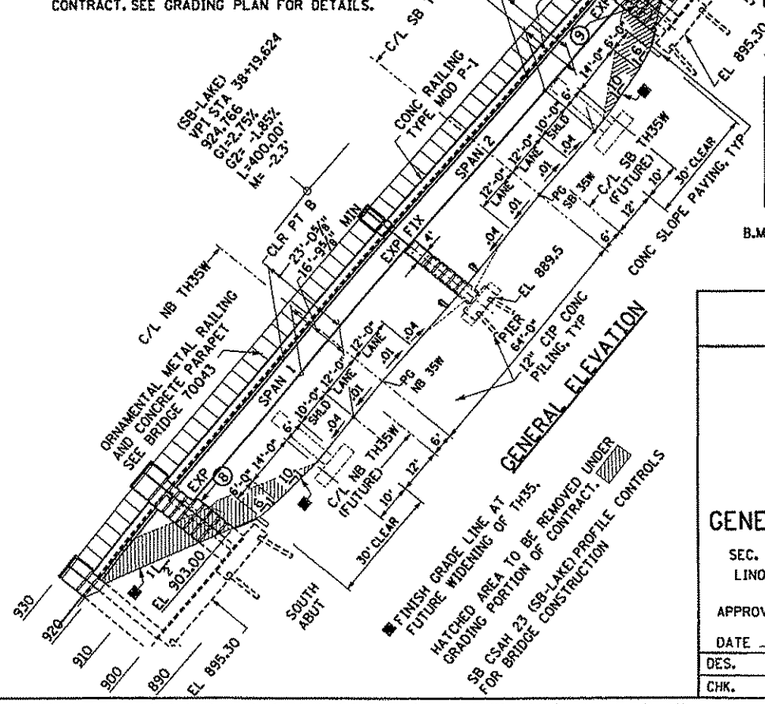
THE FIRST TWO DIGITS OF EACH BAR MARK INDICATE THE BAR NUMBER WHICH APPROXIMATES THE NOMINAL DIAMETER OF THE BAR IN MILLIMETERS (mm).

BARS MARKED WITH THE SUFFIX "E" SHALL BE EPOXY COATED IN ACCORDANCE WITH SPEC. 3301.

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".

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

GENERAL PLAN



2030 PROJECTED TRAFFIC VOLUMES

RDWY OVER		RDWY UNDER
30100	ADT	65200

FEDERAL PROJ NO STATE FUNDS

DESIGN DATA

2004 AND CURRENT INTERIM AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS
LOAD AND RESISTANCE FACTOR DESIGN METHOD

HL 93 LIVE LOAD
DEAD LOAD INCLUDES 20 psf ALLOWANCE FOR FUTURE WEARING COURSE MODIFICATIONS

MATERIAL DESIGN PROPERTIES:
REINFORCED CONCRETE:
f'c= 4 ksi n = 8
Fy= 60 ksi FOR REINFORCEMENT
PRESTRESSED CONCRETE:
f'c= 9 ksi
fpu= 270 ksi FOR ½" AND 0.6" DIA LOW RELAXATION STRAND
0.75 fpu FOR INITIAL PRESTRESS

DECK AREA = 33630 SQ FT
DESIGN SPEED OVER = 50 MPH
DESIGN SPEED UNDER = 70 MPH
BRIDGE OPERATING RATING HS 64.2

LIST OF SHEETS

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 John D Steenberg DATE 12/11/2006
LICENSED PROFESSIONAL ENGINEER
NAME JOHN D STEENBERG LIC NO 13865

B.M. ELEV. EL 913.965 (NAVD 88 DATUM)
SE CORNER EXIST BR 9820

CSAH NO. 23
MINNESOTA
DEPARTMENT OF TRANSPORTATION

BRIDGE NO 02817

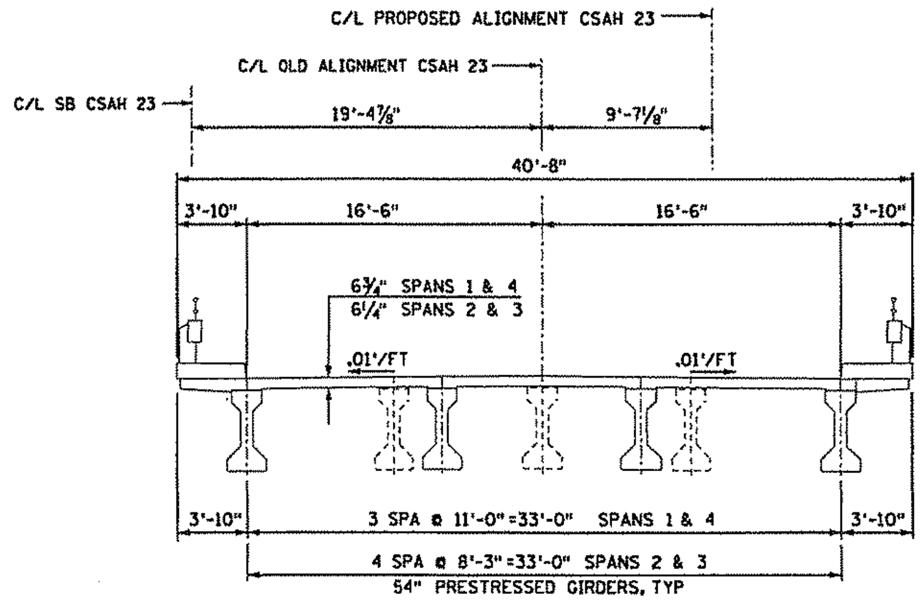
TH 35W UNDER CSAH 23 (LAKE DRIVE)
IN LINO LAKES
1.7 MI SW OF JCT
CSAH 14 AND TH 35W
(2) 138' PRESTRESSED BEAM SPANS
118'-4" WIDE (INCLUDES THRU LANES, RAISED MEDIAN AND 12' TRAIL)
IDENTIFICATION NO 501

GENERAL PLAN AND ELEVATION

SEC. 17 T 81 N R 22 W
LINO LAKES TOWNSHIP ANOKA COUNTY

APPROVED Karen Weston FOR STATE BRIDGE ENGINEER
DATE 1/10/07

DES.	MAW	DR.	MAW	02817
CHK.	JDS	CHK.	JDS	



EXISTING TRANSVERSE SECTION
INPLACE BRIDGE 9820

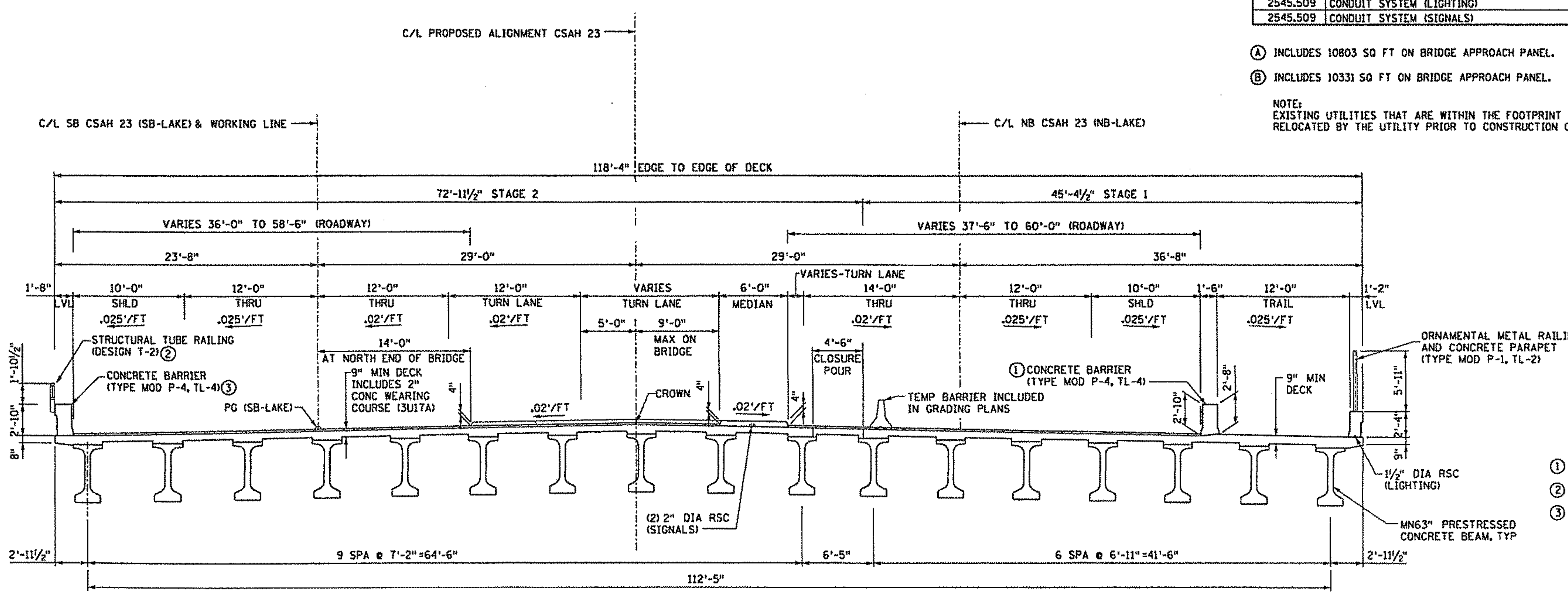
SCHEDULE OF QUANTITIES FOR ENTIRE BRIDGE

	ITEM NO	ITEM	UNIT	QUANTITY	
	2401.501	STRUCTURAL CONCRETE (1A43)	CU YD	1053	(P)
	2401.501	STRUCTURAL CONCRETE (3Y43)	CU YD	1954	(P)
	2401.512	BRIDGE SLAB CONCRETE (3Y36)	SQ FT	33630	(P)
	2401.513	TYPE MOD P-1 (TL-2) RAILING CONCRETE (3Y46)	LIN FT	386	(P)
	2401.513	TYPE MOD P-4 (TL-4) RAILING CONCRETE (3Y46)	LIN FT	656	(P)
	2401.516	RAISED MEDIAN CONCRETE (3Y46)	SQ FT	1547	(P)
	2401.541	REINFORCEMENT BARS	POUND	82300	(P)
	2401.541	REINFORCEMENT BARS (EPOXY COATED)	POUND	348690	(P)
	2401.601	STRUCTURE EXCAVATION	LUMP SUM	1	
(B)	2401.618	BRIDGE DECK PLANING	SQ FT	35950	(P)
	2402.583	ORNAMENTAL METAL RAILING	LIN FT	339	(P)
	2402.584	STRUCTURAL TUBE RAILING DESIGN T-2	LIN FT	355	(P)
	2402.591	EXPANSION JOINT DEVICES TYPE 5	LIN FT	359	(P)
	2402.595	BEARING ASSEMBLY	EACH	68	
(A)	2404.501	CONCRETE WEARING COURSE (3U17A)	SQ FT	38231	(P)
	2405.502	PRESTRESSED CONCRETE BEAMS MN63"	LIN FT	4709	(P)
	2405.511	DIAPHRAGMS FOR TYPE MN63 PREST BEAMS	LIN FT	703	(P)
	2411.618	ANTI-GRAFFITI COATING	SQ FT	5069	(P)
	2411.618	ARCHITECTURAL CONCRETE TEXTURE (FRACTURED GRANITE)	SQ FT	5069	(P)
	2411.618	ARCHITECTURAL SURFACE FINISH (MULTI COLOR)	SQ FT	5069	(P)
	2442.501	REMOVE EXISTING BRIDGE	LUMP SUM	1	
	2452.507	C-I-P CONCRETE PILING DELIVERED 12"	LIN FT	17440	
	2452.508	C-I-P CONCRETE PILING DRIVEN 12"	LIN FT	17440	
	2452.519	C-I-P CONC TEST PILE 60 FT LONG 12"	EACH	4	
	2452.519	C-I-P CONC TEST PILE 65 FT LONG 12"	EACH	8	
	2452.601	STEEL SHEET PILING (TEMPORARY)	LS	1	
	2452.602	PILE POINTS 12"	EACH	337	
	2452.602	PILE ANALYSIS	EACH	6	
	2502.502	DRAINAGE SYSTEM TYPE (B910)	LUMP SUM	1	
	2514.501	CONCRETE SLOPE PAVING	SQ YD	312	(P)
	2545.509	CONDUIT SYSTEM (LIGHTING)	LUMP SUM	1	
	2545.509	CONDUIT SYSTEM (SIGNALS)	LUMP SUM	1	

(A) INCLUDES 10803 SQ FT ON BRIDGE APPROACH PANEL.

(B) INCLUDES 10331 SQ FT ON BRIDGE APPROACH PANEL.

NOTE:
EXISTING UTILITIES THAT ARE WITHIN THE FOOTPRINT OF THE PROPOSED BRIDGE STRUCTURE ARE TO BE RELOCATED BY THE UTILITY PRIOR TO CONSTRUCTION OF THE BRIDGE. SEE SHEETS B94 & B95.



WEST END

TYPICAL TRANSVERSE SECTION

EAST END

NOTES

(1) STD FIG 5-397.173 MODIFIED.

(2) STD FIG 5-397.158 MODIFIED.

(3) STD FIG 5-397.173 MODIFIED.

SP 0280-55 SAP 02-623-13

0 4 8 12

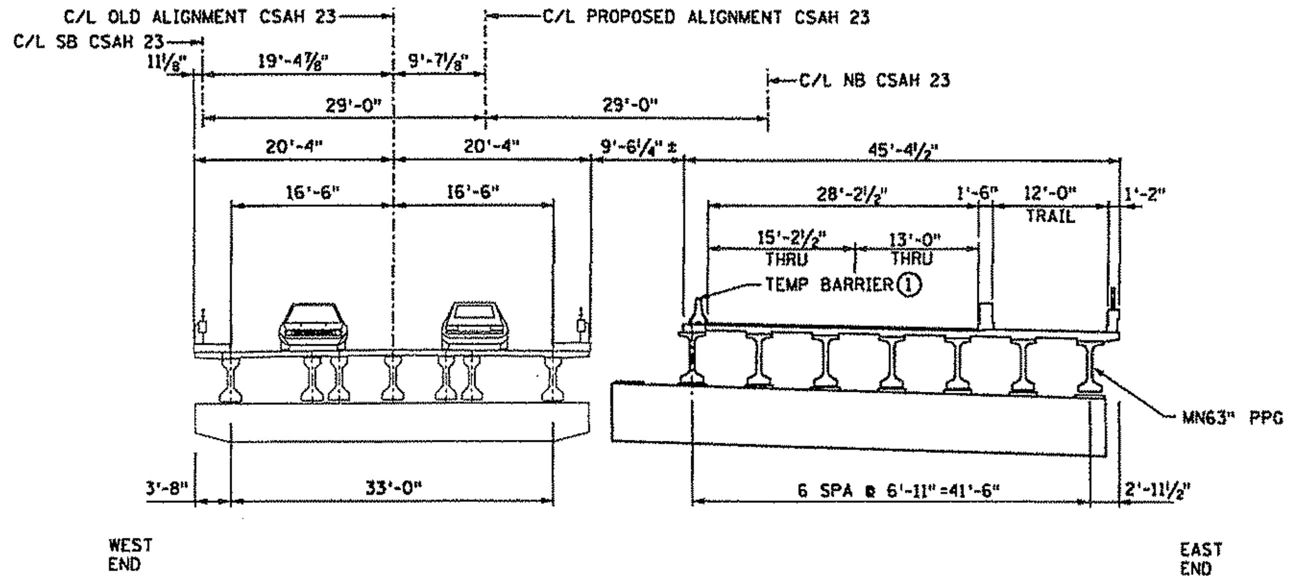
SEH
3535 VADNAIS CENTER DRIVE
ST PAUL, MN 55110
PHONE (651) 490-2000
FAX (651) 490-2150

I hereby certify that this plan, specification, or report 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

Signature: Date: 3/5/2007
Printed Name: JEFFREY A JOHNSON Reg. No. 17280

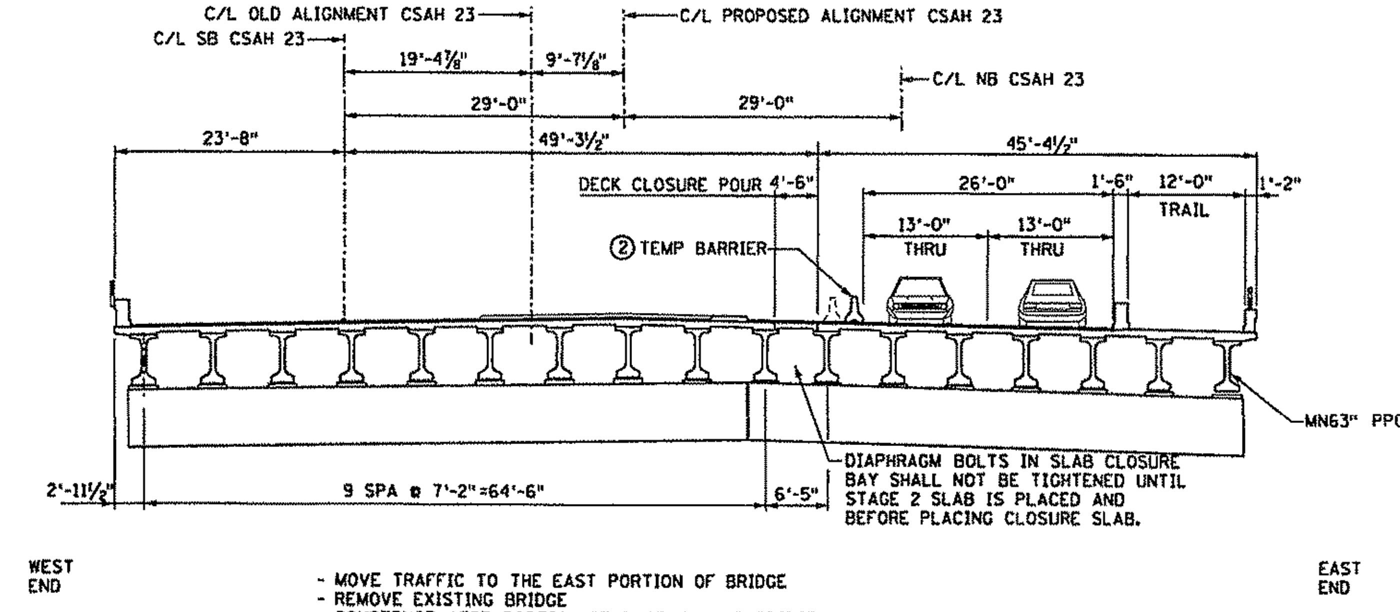
TITLE:
TYPICAL SECTION & SUMMARY OF QUANTITIES

DES: MAW	DR: MAW	APPROVED:	BRIDGE NO 02817
CHK: JDS	CHK: JDS		



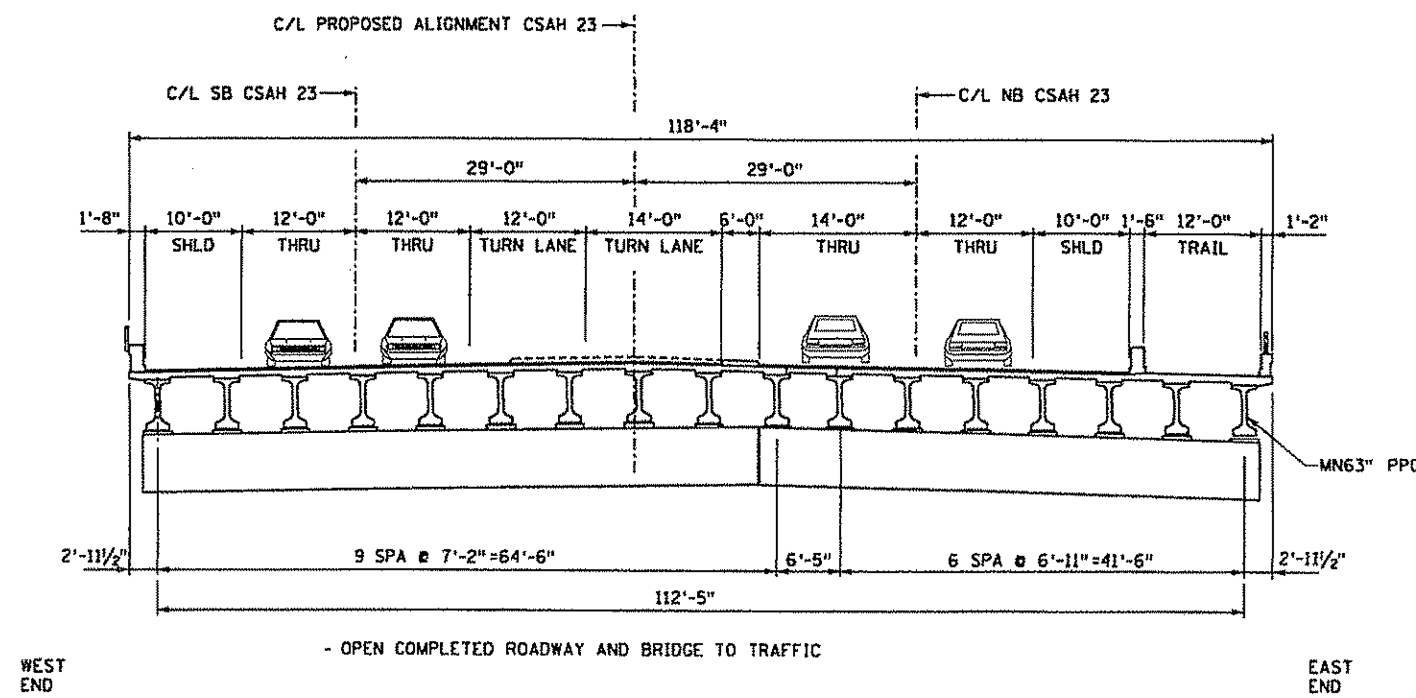
- TRAFFIC ON EXISTING BRIDGE
- DRIVE SHEET PILING TO PERMIT ABUTMENT CONSTRUCTION
- CONSTRUCT EAST PORTION OF ROADWAY AND BRIDGE WITH WEARING COURSE
- INSTALL TEMPORARY BARRIER. BOTH SIDES OF BARRIER ON BRIDGE DECK TO BE ANCHORED.

STAGE 1



- MOVE TRAFFIC TO THE EAST PORTION OF BRIDGE
- REMOVE EXISTING BRIDGE
- CONSTRUCT WEST PORTION OF ROADWAY AND BRIDGE
- PLACE DECK CLOSURE
- PLACE MEDIAN IN CENTER PORTION
- RELOCATE PORTABLE MEDIAN BARRIER FOR PLACEMENT OF CONCRETE OVERLAY. DO NOT ANCHOR TO DECK.
- PLACE WEARING COURSE ON WEST PORTION OF BRIDGE

STAGE 2



- OPEN COMPLETED ROADWAY AND BRIDGE TO TRAFFIC

STAGE 3

NOTES

① SUPPLYING, PLACING AND ANCHORING PORTABLE MEDIAN BARRIER INCLUDED IN GRADING PORTION OF CONTRACT. BOTH SIDES OF BARRIER ON BRIDGE DECK SHALL BE ANCHORED. SEE DTL B920, SHEET 109 FOR ANCHORAGE DETAILS.

② RELOCATED PORTABLE MEDIAN BARRIER, FOR PLACEMENT OF CONCRETE WEARING COURSES IN STAGE 2 ONLY. INCLUDED IN GRADING PORTION OF CONTRACT. DO NOT ANCHOR TO DECK.

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ST PAUL, MN 55110
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FAX (651) 490-2150

I hereby certify that this plan, specification, or report 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

Signature: Date: 11/21/2006

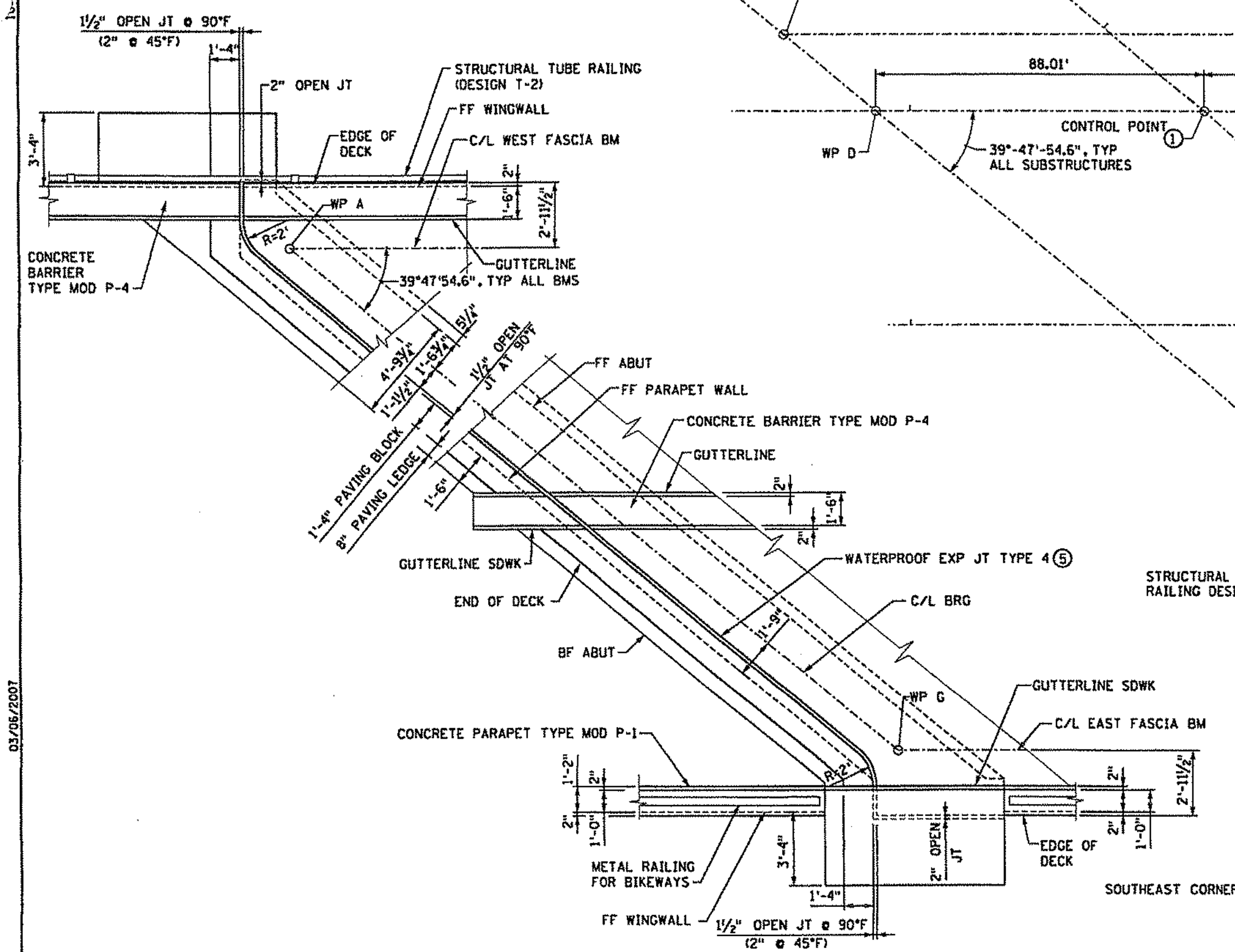
Printed Name: CHRISTOPHER A WUNSCH Reg. No. 42058

TITLE: CONSTRUCTION STAGING

SP 0280-55 SAP 02-623-13

DES: MAW	DR: MAW	APPROVED:
CHK: JDS	CHK: JDS	

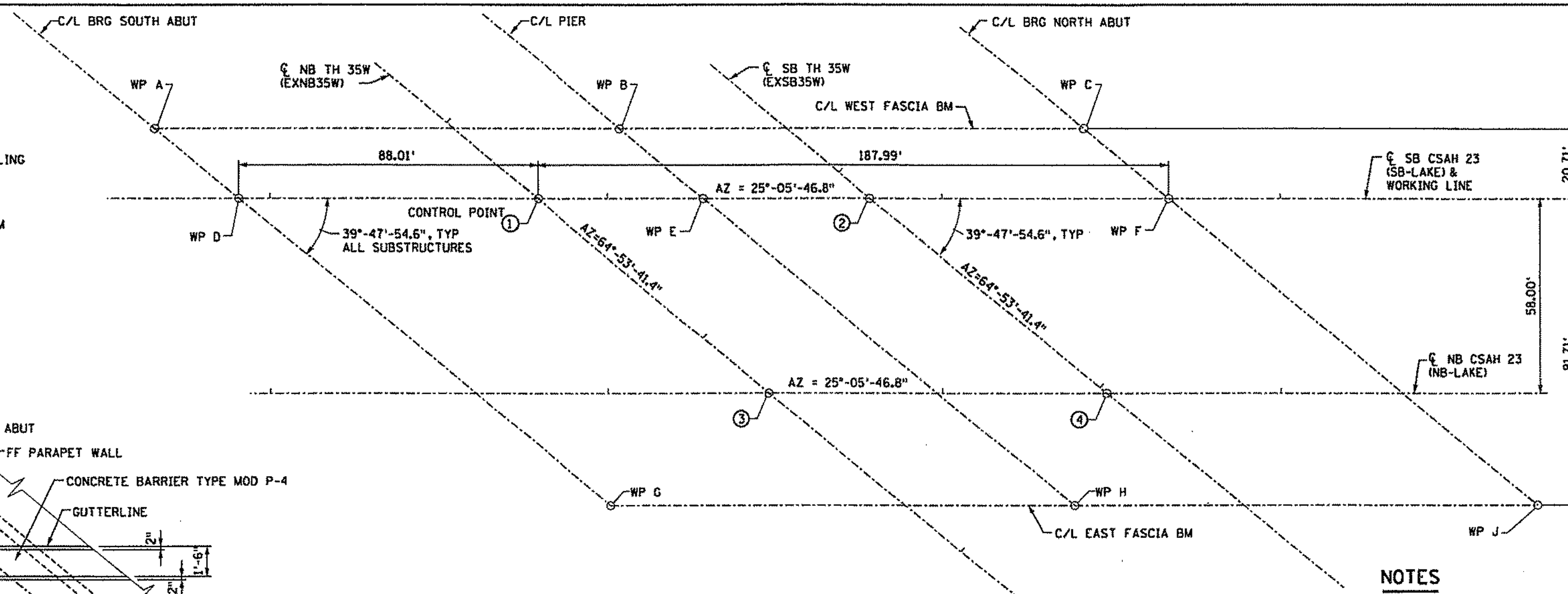
BRIDGE NO 02817



TYPICAL CORNER LAYOUT

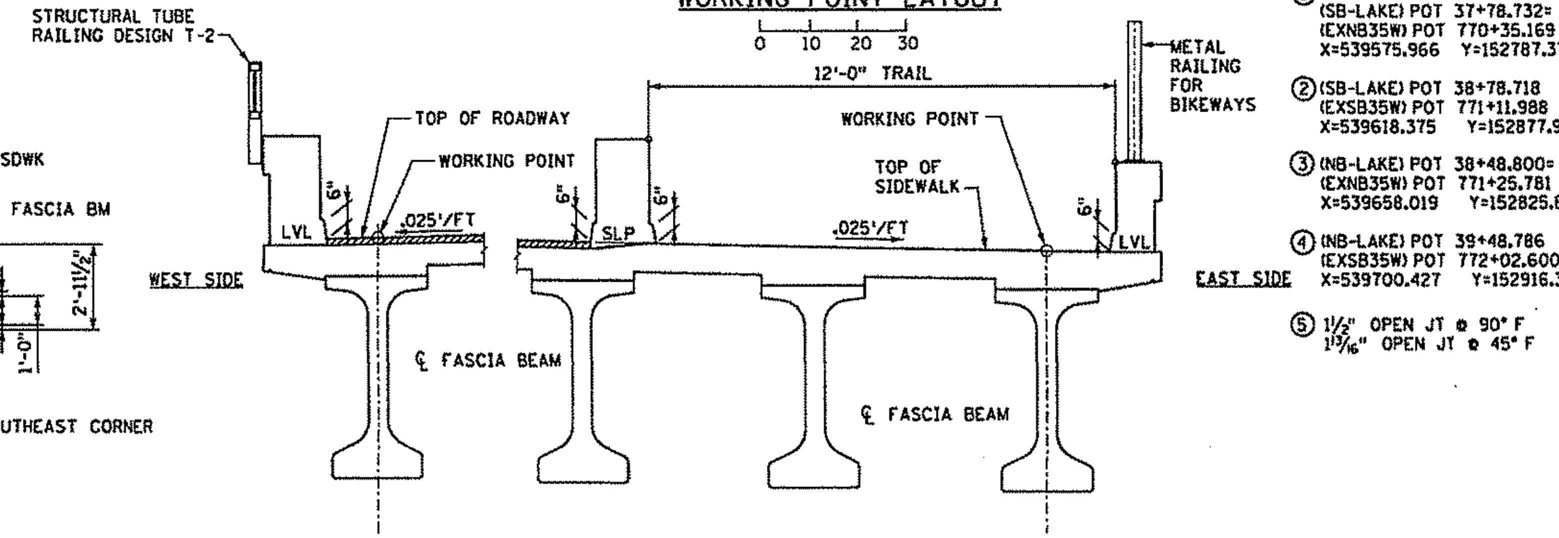
SOUTH ABUTMENT SHOWN, NORTH ABUTMENT SIMILAR

FF DENOTES FRONT FACE
BF DENOTES BACK FACE



WORKING POINT LAYOUT

0 10 20 30



WORKING POINT SCHEMATIC

NOTES

① CONTROL POINT (SB-LAKE) POT 37+78.732= (EXNB35W) POT 770+35.169 X=539575.966 Y=152787.374

② (SB-LAKE) POT 38+78.718 (EXSB35W) POT 771+11.988 X=539618.375 Y=152877.921

③ (NB-LAKE) POT 38+48.800= (EXNB35W) POT 771+25.781 X=539658.019 Y=152825.819

④ (NB-LAKE) POT 39+48.786 (EXSB35W) POT 772+02.600 X=539700.427 Y=152916.366

⑤ 1½" OPEN JT @ 90° F
1 3/16" OPEN JT @ 45° F

POINT NUMBER	DIMENSIONS BETWEEN WORKING POINTS													ELEVATIONS			
	POINT	STATION ①	X	Y	A	B	C	D	E	F	G	H	J	TOP OF SLAB	TOP OF SLAB TO BR SEAT	BRIDGE SEAT	POINT
	A	36+65.87	539509.343	152693.949										919.90	6.688	913.21	A
	B	38+03.87	539567.875	152818.921	138.00									921.86	6.521	915.34	B
	C	39+41.87	539626.406	152943.893	276.00	138.00								921.64	6.688	914.95	C
	D	36+90.72	539538.639	152707.675	32.35	115.02	252.00							920.93			D
	E	38+28.72	539597.171	152832.648	164.17	32.35	115.02	138.00						922.50			E
	F	39+66.72	539655.702	152957.620	301.57	164.17	32.35	276.00	138.00					921.88			F
	G	38+00.80	539668.378	152768.464	175.63	112.46	180.38	143.27	95.86	189.58				921.52	6.688	914.83	G
	H	39+38.80	539726.910	152893.436	295.18	175.63	112.46	264.49	143.27	95.86	138.00			921.34	6.521	914.82	H
	J	40+76.80	539785.441	153018.408	426.03	295.18	175.63	396.82	264.49	143.27	276.00	138.00		919.18	6.688	912.50	J

ALL DISTANCES ARE ALONG STRAIGHT LINES BETWEEN WORKING POINTS AND ARE GIVEN IN DECIMALS OF A FOOT.

COORDINATES BASED ON ANOKA COUNTY COORDINATE SYSTEM.

① STATIONS TAKEN ALONG ℄ CSAH 23 (SB-LAKE) AND WORKING LINE.

TOP OF ROADWAY TO BRIDGE SEAT

	S ABUT	PIER	N ABUT
SLAB THICKNESS	9"	9"	9"
STOOL HEIGHT	3"	3"	3"
BEAM HEIGHT	63"	63"	63"
BEARING HEIGHT	5¼"	3¼"	5¼"
TOTAL (IN)	80.25"	78.25"	80.25"
TOTAL (FT)	6.688'	6.521'	6.688'

SEH 3535 VADNAIS CENTER DRIVE ST PAUL, MN 55110 PHONE (651) 490-2000 FAX (651) 490-2150

I hereby certify that this plan, specification, or report 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
Signature: Date: 3/5/2007
Printed Name: JEFFREY A JOHNSON Reg. No. 17280

TITLE: BRIDGE LAYOUT

SP 0280-55 SAP 02-623-13
DES: MAW DR: MAW APPROVED:
CHK: JDS CHK: JDS

BRIDGE NO 02817

PILE NOTES

2 CAST-IN-PLACE CONC TEST PILES 65 FT LONG
53 CAST-IN-PLACE CONC PILES EST LENGTH 55 FT
55 CAST-IN-PLACE CONC. PILES REQ'D FOR SOUTH ABUT, STAGE 1.

PILE SPACING SHOWN IS AT BOTTOM OF FOOTING.

PILES MARKED THUS ⊘ TO BE BATTERED 4" PER FOOT IN DIRECTION SHOWN.

PILES TO HAVE A NOMINAL DIAMETER OF 12".

FOR PILE SPLICE DETAILS SEE DETAIL B201.

CONCRETE FILL FOR PILES TO BE MnDOT MIX 1C62.

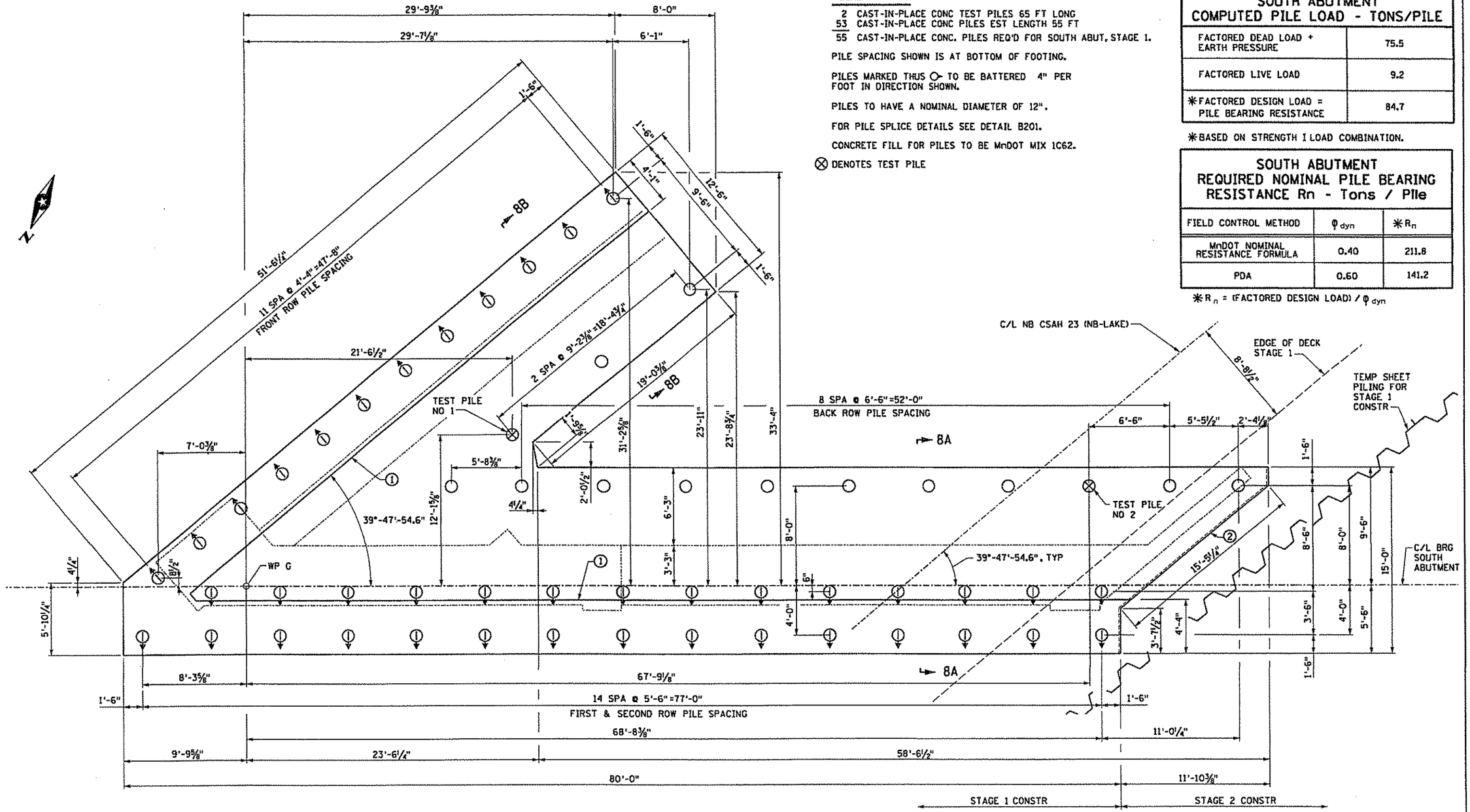
⊗ DENOTES TEST PILE

SOUTH ABUTMENT COMPUTED PILE LOAD - TONS/PILE	
FACTORED DEAD LOAD + EARTH PRESSURE	75.5
FACTORED LIVE LOAD	9.2
✳FACTORED DESIGN LOAD = PILE BEARING RESISTANCE	84.7

✳BASED ON STRENGTH I LOAD COMBINATION.

SOUTH ABUTMENT REQUIRED NOMINAL PILE BEARING RESISTANCE Rn - Tons / Pile		
FIELD CONTROL METHOD	φ_{dyn}	✳R_n
MnDOT NOMINAL RESISTANCE FORMULA	0.40	211.8
PDA	0.60	141.2

✳R_n = (FACTORED DESIGN LOAD) / φ_{dyn}



FOOTING PLAN-STAGE 1

SOUTHEAST CORNER

NOTES

① EDGE OF 4" VERT FTG KEY.

② HORIZ CONSTRUCTION JOINT W/ 2"×12" KEY CENTERED IN FOOTING.

SEE SHEET B14 FOR BAR LIST AND SUMMARY OF QUANTITIES.

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3535 VADNAIS CENTER DRIVE
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FAX (651) 490-2150

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Signature: _____ Date: 3/5/2007

Printed Name: JEFFREY A JOHNSON Reg. No. 17280

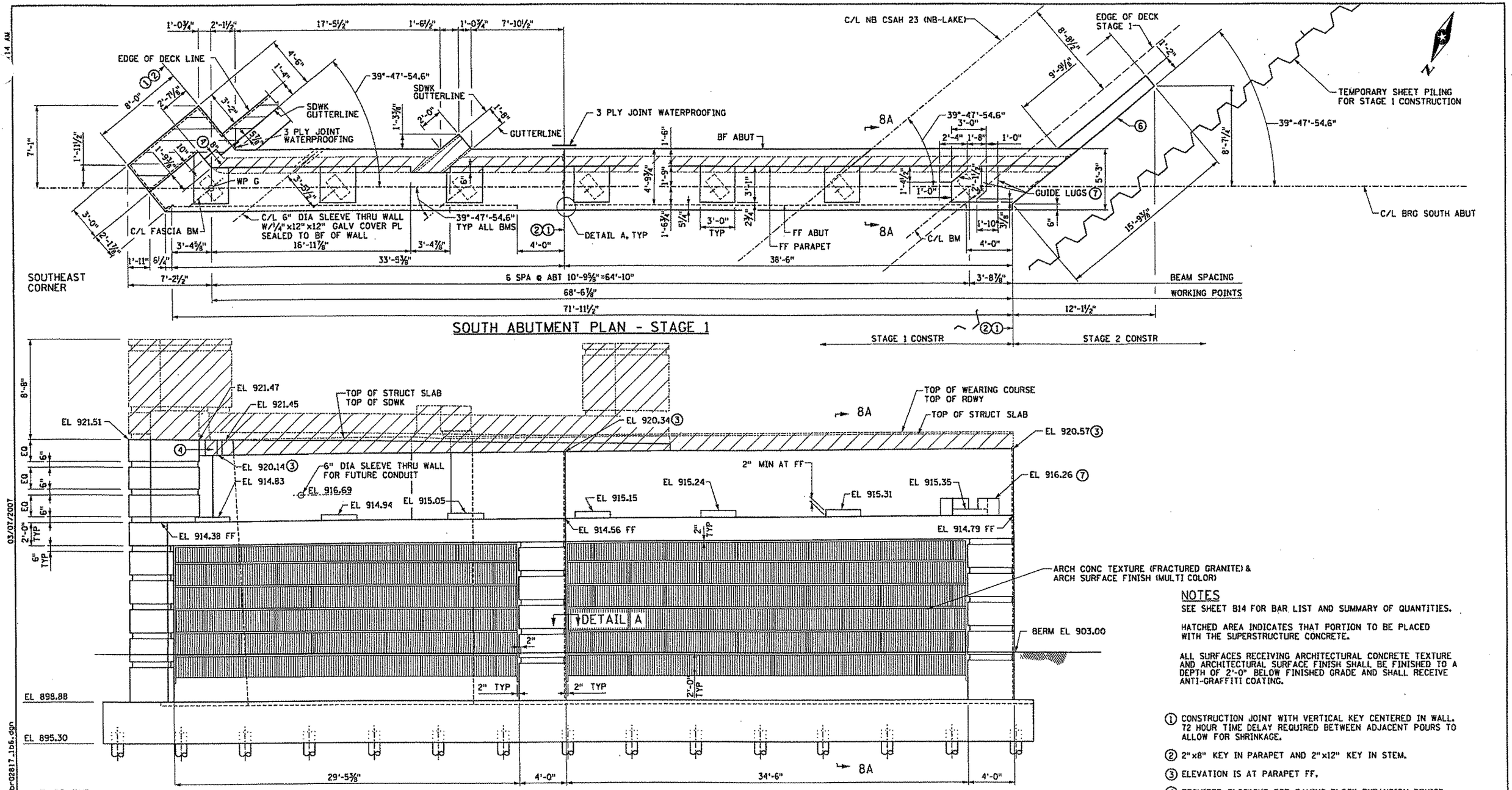
TITLE: SOUTH ABUTMENT DETAILS STAGE 1

SP 0280-55 SAP 02-623-13

DES: CAW	DR: MAW	APPROVED:
CHK: JDS	CHK: CAW	

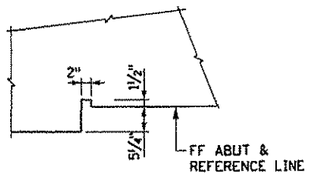
SHEET NO B5 OF 95 SHEETS

BRIDGE NO 02817



SOUTH ABUTMENT PLAN - STAGE 1

SOUTH ABUTMENT ELEVATION - STAGE 1



DETAIL A

NOTES

SEE SHEET B14 FOR BAR LIST AND SUMMARY OF QUANTITIES.

HATCHED AREA INDICATES THAT PORTION TO BE PLACED WITH THE SUPERSTRUCTURE CONCRETE.

ALL SURFACES RECEIVING ARCHITECTURAL CONCRETE TEXTURE AND ARCHITECTURAL SURFACE FINISH SHALL BE FINISHED TO A DEPTH OF 2'-0" BELOW FINISHED GRADE AND SHALL RECEIVE ANTI-GRAFFITI COATING.

① CONSTRUCTION JOINT WITH VERTICAL KEY CENTERED IN WALL. 72 HOUR TIME DELAY REQUIRED BETWEEN ADJACENT POURS TO ALLOW FOR SHRINKAGE.

② 2"x8" KEY IN PARAPET AND 2"x12" KEY IN STEM.

③ ELEVATION IS AT PARAPET FF.

④ REQUIRED BLOCKOUT FOR PAVING BLOCK EXPANSION DEVICE INSTALLATION.

⑥ STUB WALL FOR TEMP SHEETING SUPPORT FOR STAGE 2 CONSTR.

⑦ GUIDE LUGS TO BE POURED 1" CLEAR FROM BEAM BOTTOM FLANGE AFTER THE BEAMS HAVE BEEN SET IN PLACE. NO EXCEPTIONS.

FF=FRONT FACE
BF=BACK FACE
EF=EACH FACE

SEH
3535 VADNAIS CENTER DRIVE
ST PAUL, MN 55110
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FAX (651) 490-2150

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Signature: _____ Date: 3/5/2007
Printed Name: JEFFREY A JOHNSON Reg. No. 17280

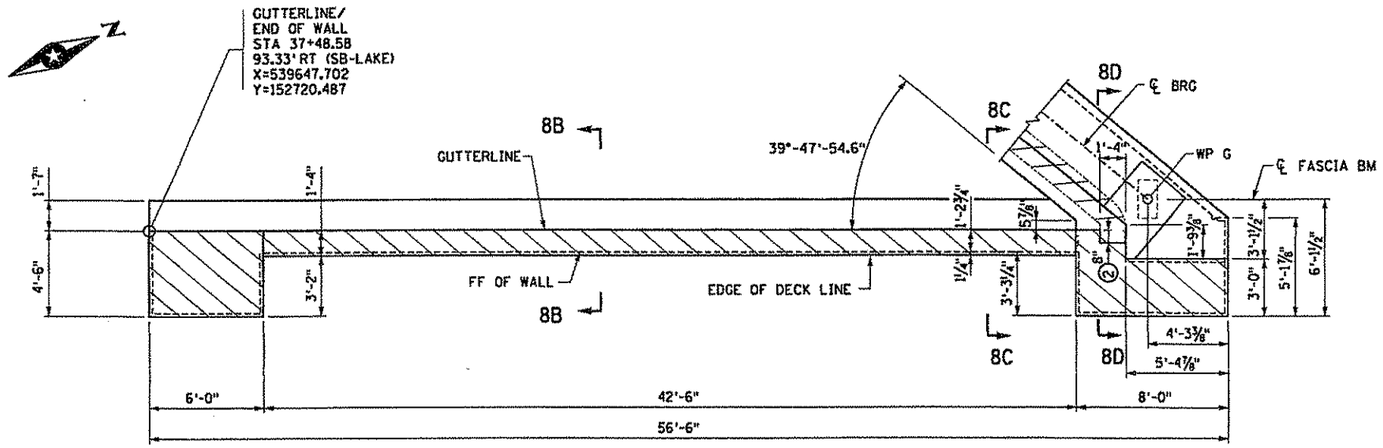
TITLE: SOUTH ABUTMENT DETAILS STAGE 1

SP 0280-55 SAP 02-623-13

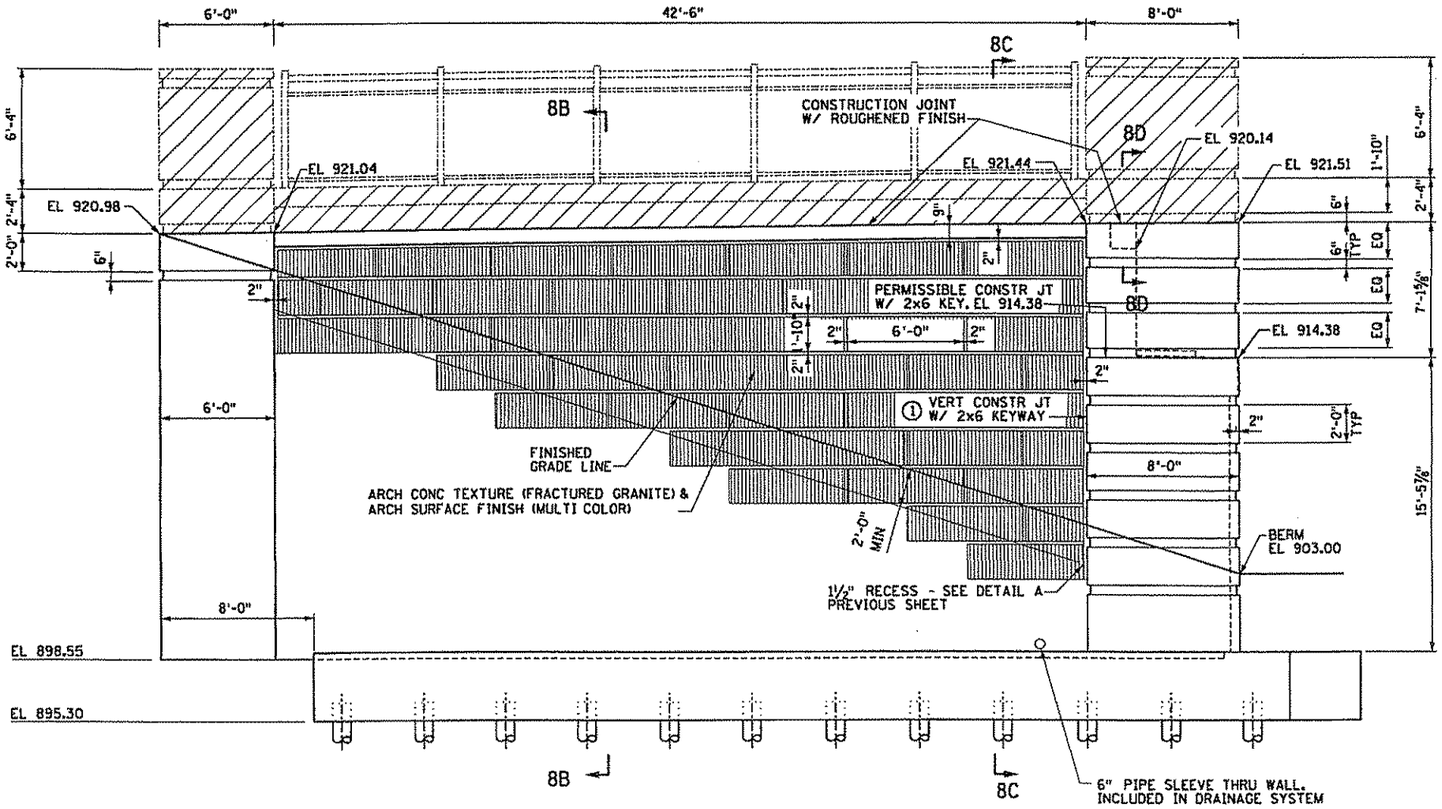
DES: CAW	DR: MAW	APPROVED:
CHK: JDS	CHK: CAW	

SHEET NO B6 OF 95 SHEETS

BRIDGE NO 02817



SOUTHEAST WINGWALL PLAN-STAGE 1



SOUTHEAST WINGWALL ELEVATION-STAGE 1

FF=FRONT FACE
BF=BACK FACE
EF=EACH FACE

NOTES

SEE SHEET B14 FOR BAR LIST AND SUMMARY OF QUANTITIES.

HATCHED AREA INDICATES THAT PORTION TO BE PLACED WITH THE SUPERSTRUCTURE CONCRETE.

① CONSTRUCTION JOINT WITH VERTICAL KEY CENTERED IN WALL. 72 HOUR TIME DELAY REQUIRED BETWEEN ADJACENT POURS TO ALLOW FOR SHRINKAGE.

② REQUIRED BLOCKOUT FOR PAVING BLOCK EXPANSION DEVICE INSTALLATION.

ALL SURFACES RECEIVING ARCHITECTURAL CONCRETE TEXTURE AND ARCHITECTURAL SURFACE FINISH SHALL BE FINISHED TO A DEPTH OF 2'-0" BELOW FINISHED GRADE AND SHALL RECEIVE ANTI-GRAFFITI COATING.

SEH
3535 VADNAIS CENTER DRIVE
ST PAUL, MN 55110
PHONE (651) 490-2000
FAX (651) 490-2150

I hereby certify that this plan, specification, or report 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
Signature: _____ Date: 3/5/2007
Printed Name: GEFFREY A JOHNSON Reg. No. 17280

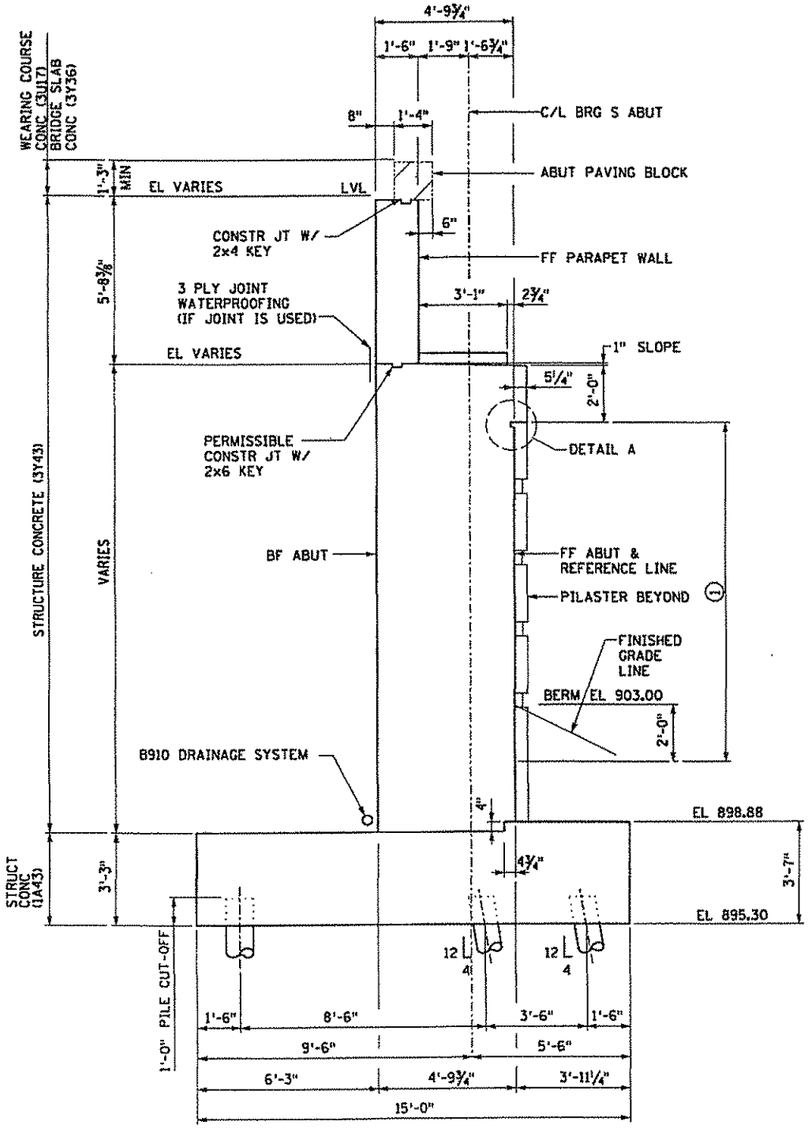
TITLE: SOUTH ABUTMENT DETAILS STAGE 1

SP 0280-55 SAP 02-623-13

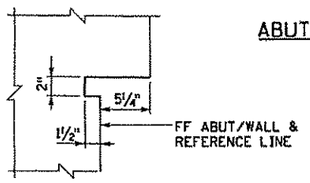
DES: CAW	DR: MAW	APPROVED:
CHK: JDS	CHK: CAW	

SHEET NO B7 OF 95 SHEETS

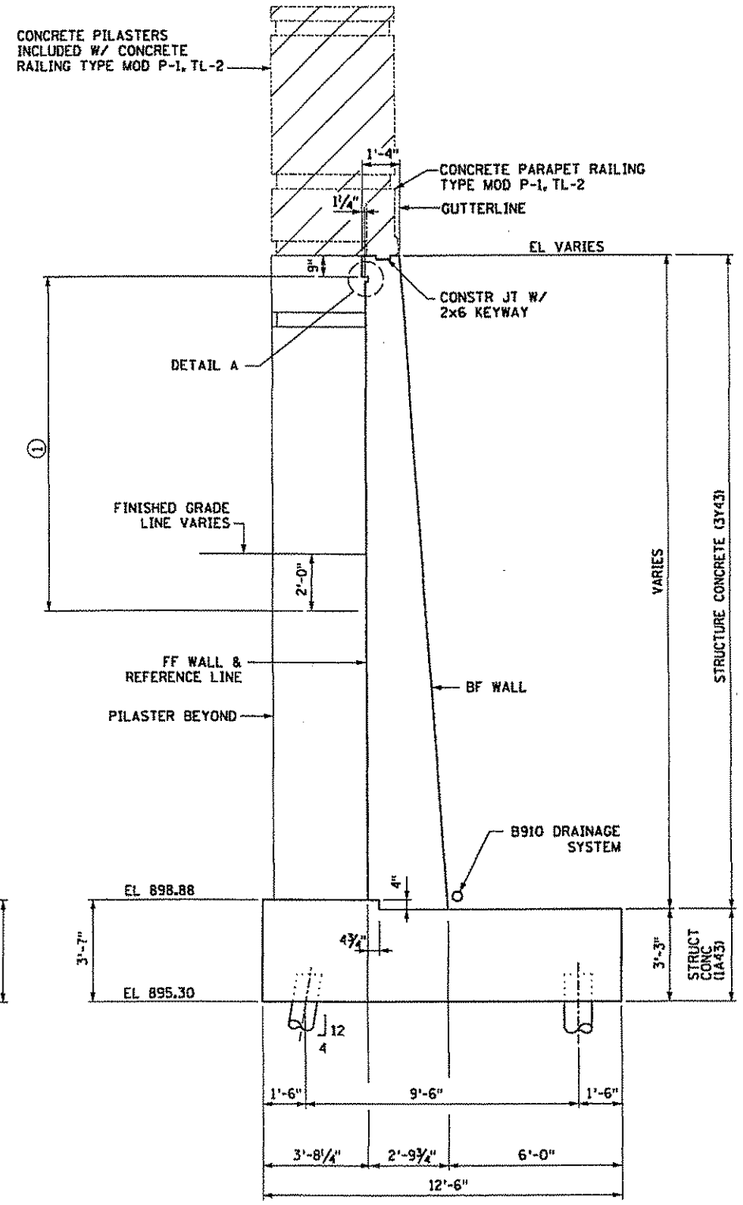
BRIDGE NO 02817



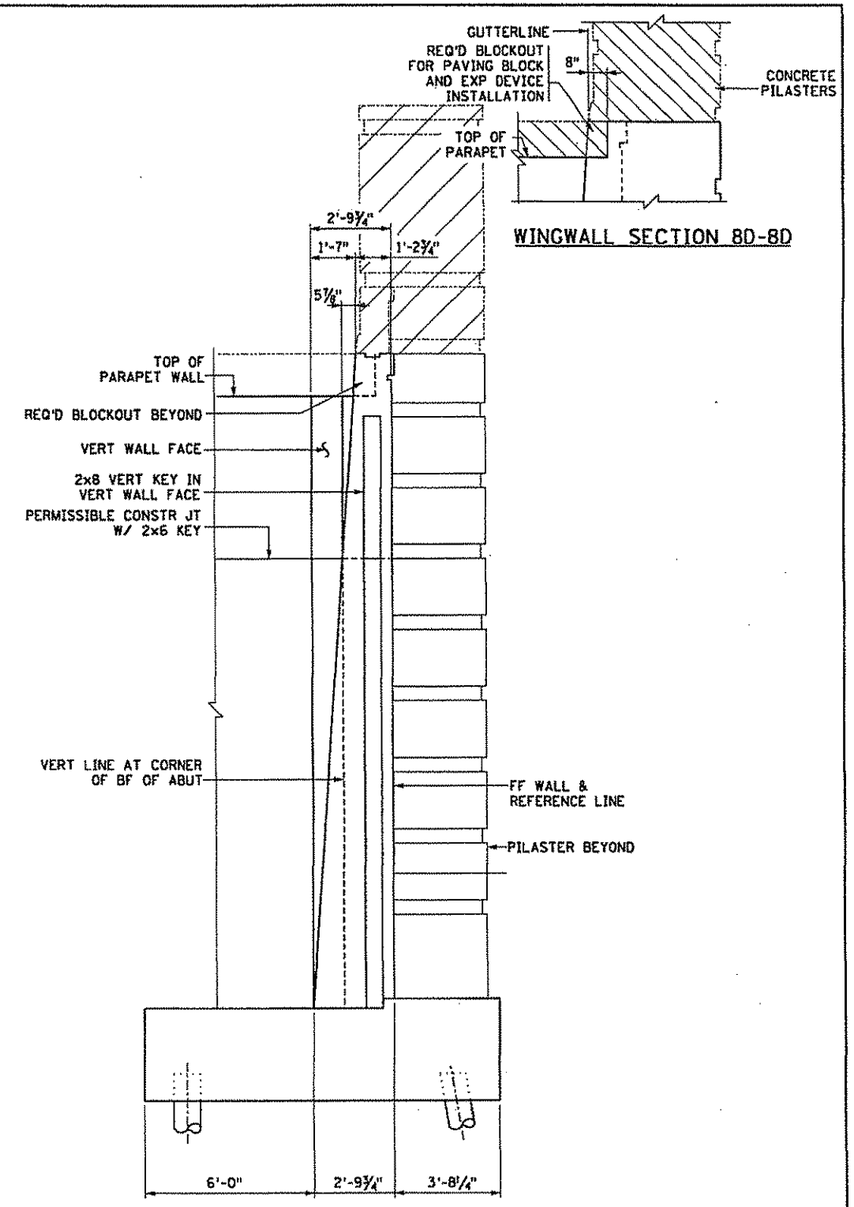
ABUTMENT SECTION 8A-8A



DETAIL A



WINGWALL SECTION 8B-8B



WINGWALL SECTION 8D-8D

WINGWALL SECTION 8C-8C

NOTES

SEE SHEET BI4 FOR BAR LIST AND SUMMARY OF QUANTITIES.

HATCHED AREA INDICATES THAT PORTION TO BE PLACED WITH THE SUPERSTRUCTURE CONCRETE.

① LIMITS OF ARCH CONC TEXTURE (FRACTURED GRANITE) & ARCH SURFACE FINISH (MULTI COLOR).

ALL SURFACES RECEIVING ARCHITECTURAL CONCRETE TEXTURE AND ARCHITECTURAL SURFACE FINISH SHALL BE FINISHED TO A DEPTH OF 2'-0" BELOW FINISHED GRADE AND SHALL RECEIVE ANTI-GRAFFITI COATING.

FF=FRONT FACE
BF=BACK FACE
EF=EACH FACE

SEH
3535 VADNAIS CENTER DRIVE
ST PAUL, MN 55110
PHONE (651) 490-2000
FAX (651) 490-2150

I hereby certify that this plan, specification, or report 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
Signature: _____ Date: 3/5/2007
Printed Name: JEFFREY A JOHNSON Reg. No. 17280

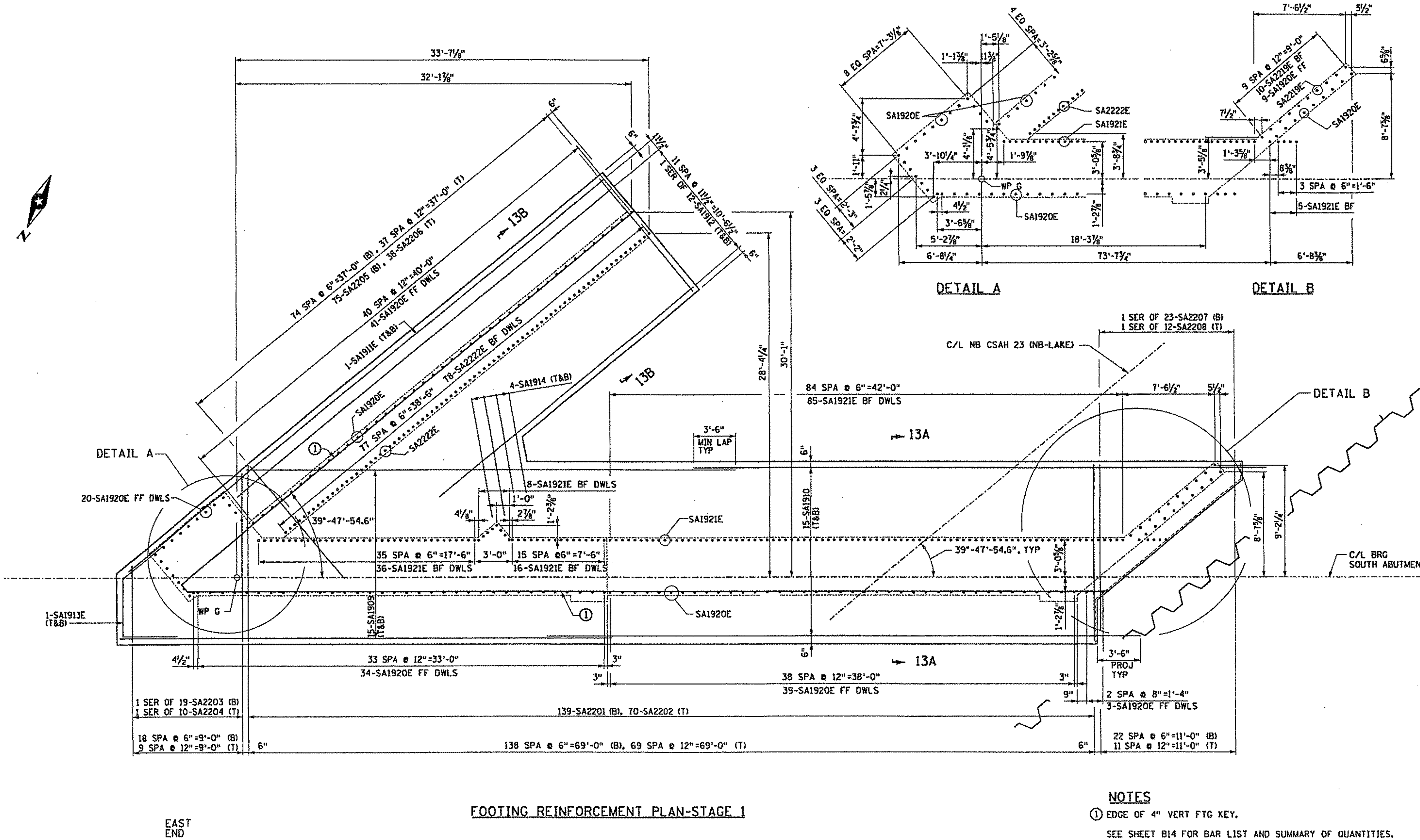
TITLE: SOUTH ABUTMENT DETAILS STAGE 1

SP 0280-55 SAP 02-623-13

DES: CAW	DR: MAW	APPROVED:
CHK: JDS	CHK: CAW	

SHEET NO B8 OF 95 SHEETS

BRIDGE NO 02817



FOOTING REINFORCEMENT PLAN-STAGE 1

NOTES

① EDGE OF 4" VERT FTG KEY.

SEE SHEET B14 FOR BAR LIST AND SUMMARY OF QUANTITIES.

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Signature: ______ Date: 3/5/2007

Printed Name: JEFFREY A JOHNSON Reg. No. 17280

TITLE: SOUTH ABUTMENT DETAILS STAGE 1

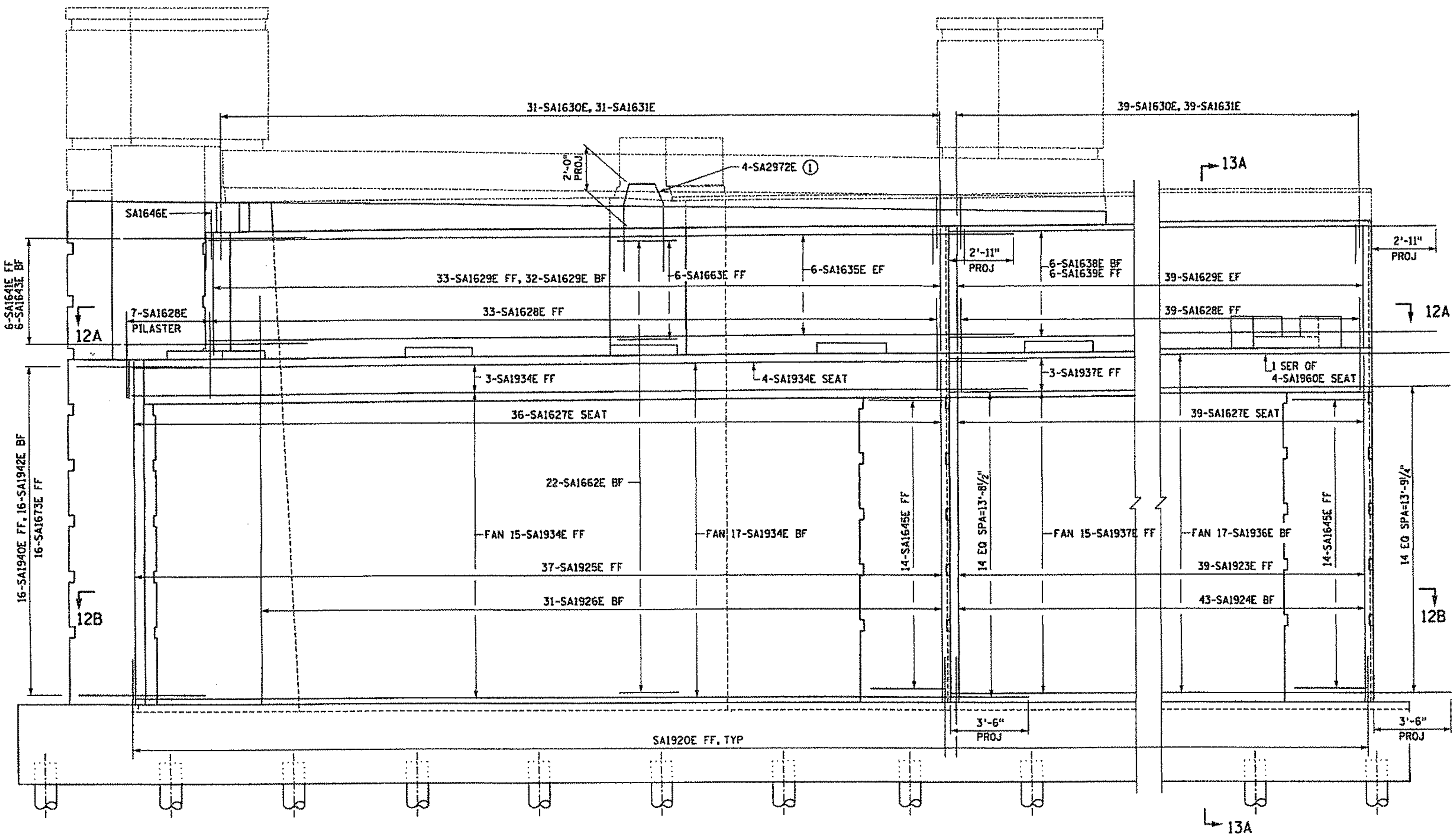
SP 0280-55 SAP 02-623-13

DES: CAW	DR: MAW	APPROVED:
CHK: JDS	CHK: CAW	

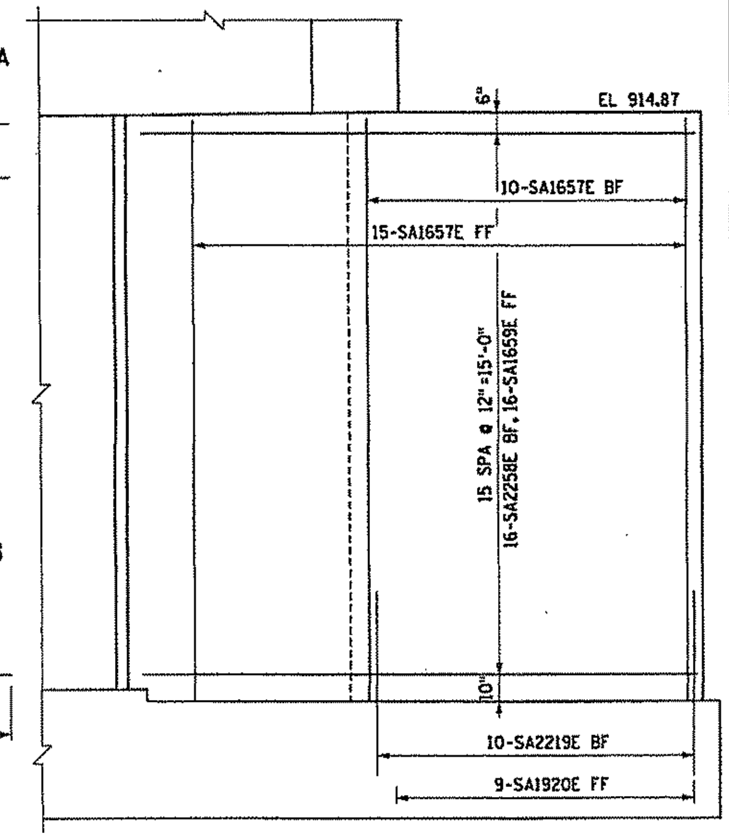
SHEET NO B9 OF 95 SHEETS

BRIDGE NO 02817

SOUTHEAST CORNER



SOUTH ABUTMENT ELEVATION



STUB WALL ELEVATION

NOTES

SEE SHEET B14 FOR BAR LIST AND SUMMARY OF QUANTITIES.

① SEE SIDEWALK MEDIAN BARRIER (TYPE MOD P-4) FOR PLACEMENT.

FF=FRONT FACE
BF=BACK FACE
EF=EACH FACE

SP 0280-55 SAP 02-623-13

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Signature: Date: 3/5/2007

Printed Name: JEFFREY A JOHNSON Reg. No. 17280

TITLE: SOUTH ABUTMENT DETAILS STAGE 1

DES: CAW	DR: MAW	APPROVED:
CHK: JDS	CHK: CAW	

SHEET NO B10 OF 95 SHEETS

BRIDGE NO 02817

03/06/2007

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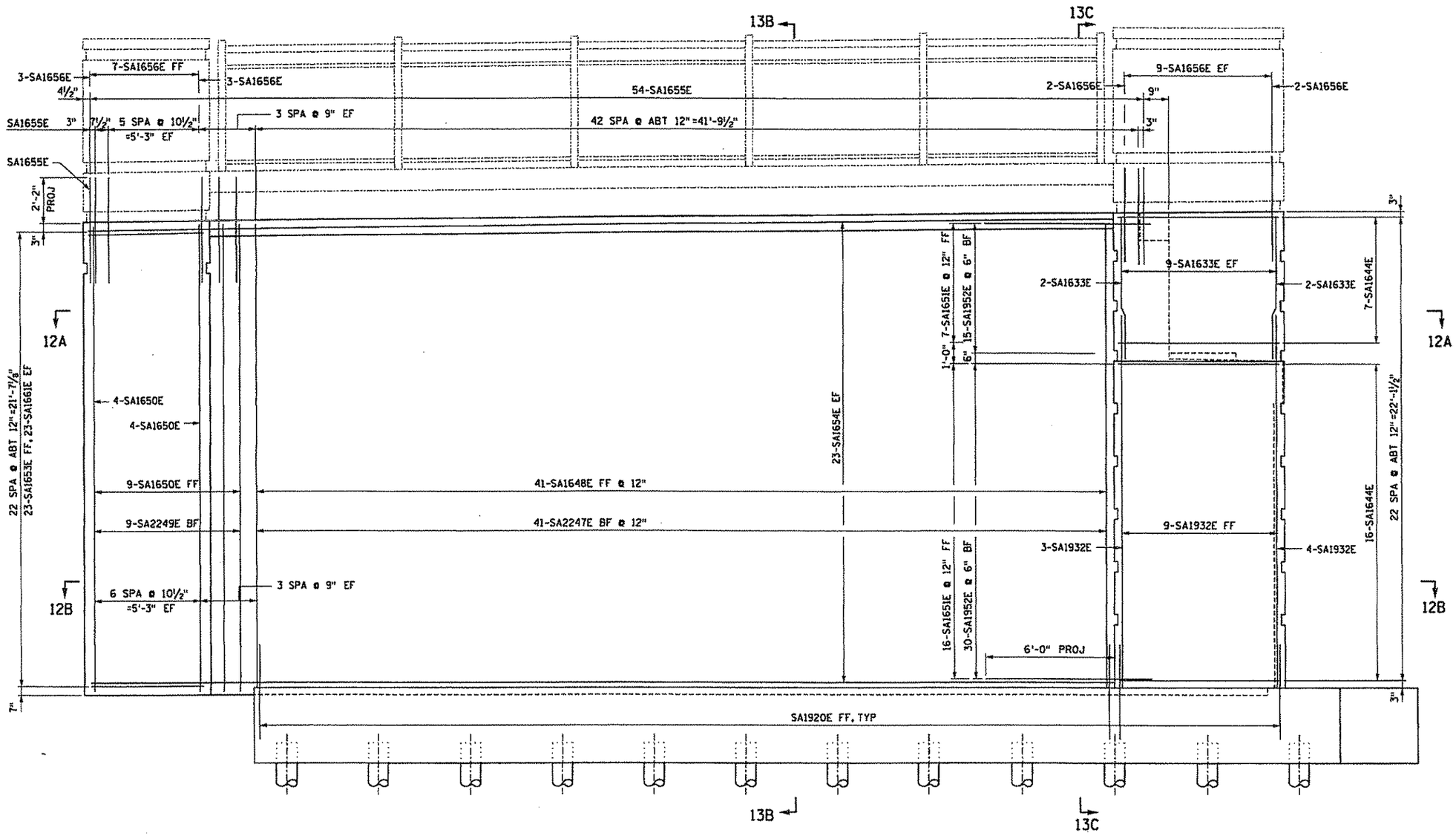

SOUTHEAST WINGWALL ELEVATION

NOTES

SEE SHEET B14 FOR BAR LIST AND SUMMARY OF QUANTITIES.

FF=FRONT FACE
BF=BACK FACE
EF=EACH FACE

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PHONE (651) 490-2000
FAX (651) 490-2150

I hereby certify that this plan, specification, or report 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
Signature: Date: 11/21/2006
Printed Name: CHRISTOPHER A WUNSCH Reg. No. 42058

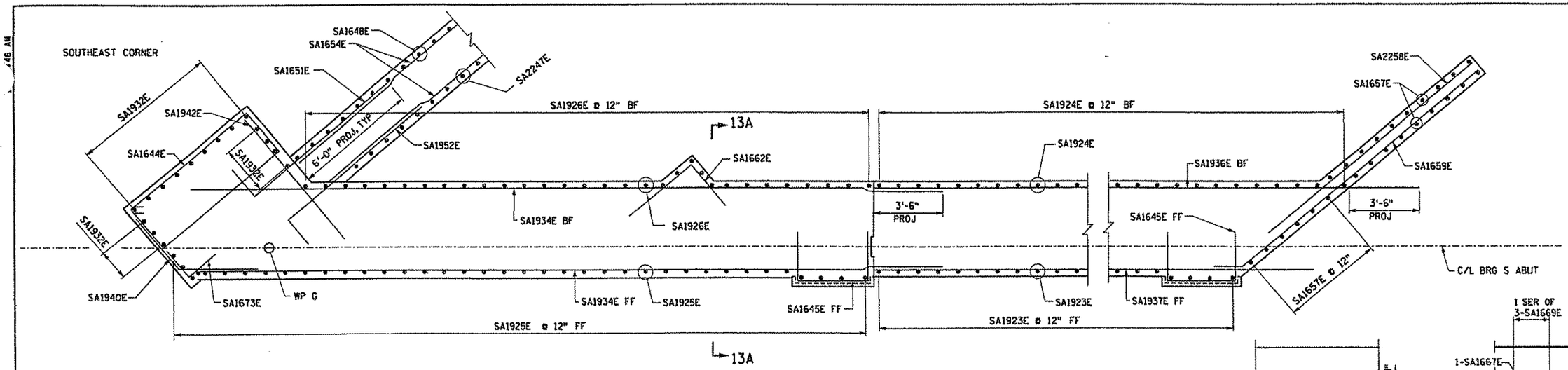
TITLE:
SOUTH ABUTMENT DETAILS
STAGE 1

SP 0280-55 SAP 02-623-13

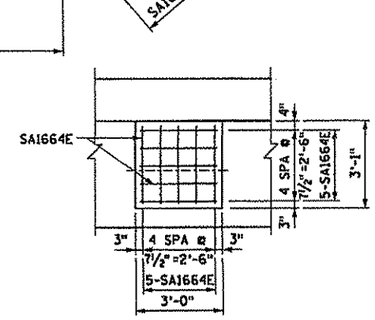
DES: CAW	DR: MAW	APPROVED:
CHK: JDS	CHK: CAW	

SHEET NO B11 OF 95 SHEETS

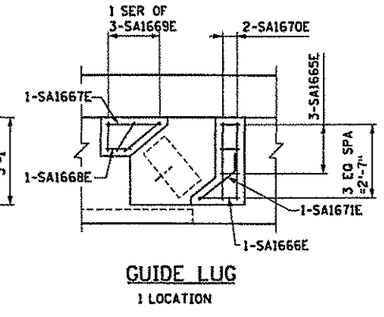
BRIDGE NO 02817



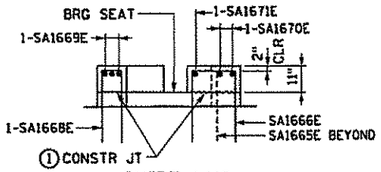
LOWER SECTION 12A-12A



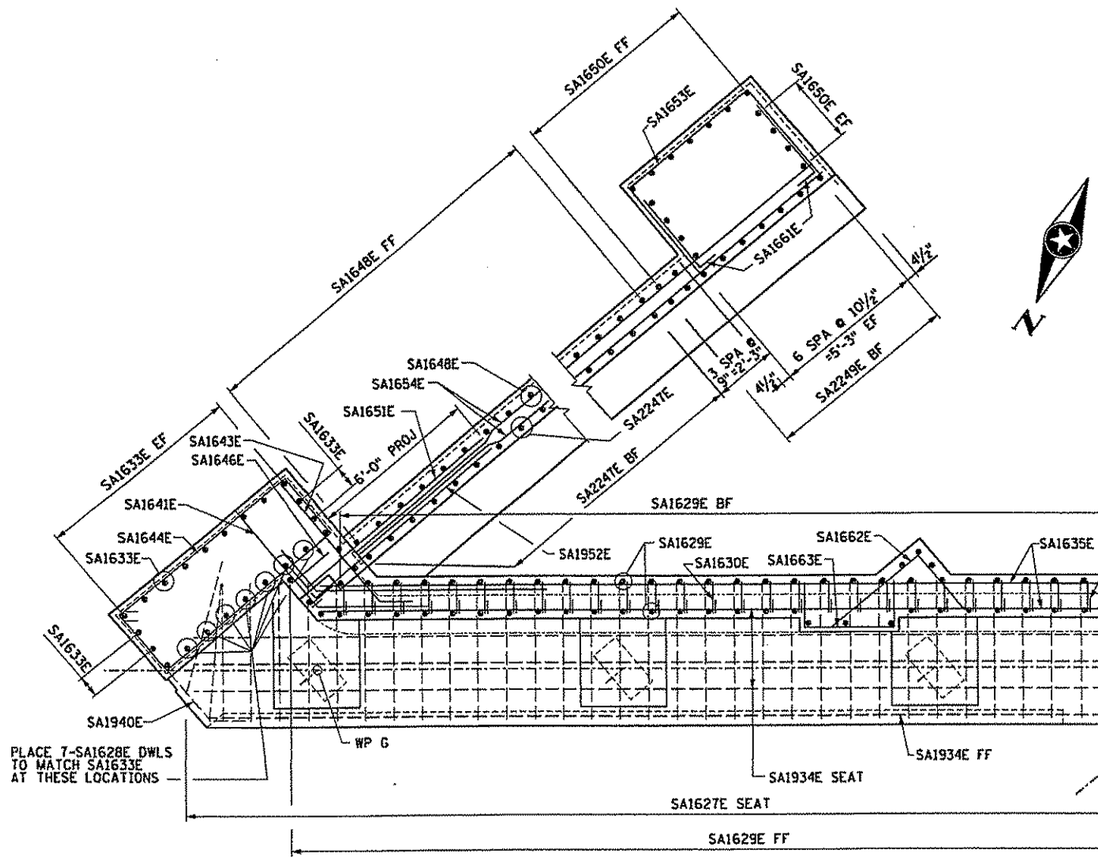
TYP BEARING SEAT
6 LOCATIONS



GUIDE LUG
1 LOCATION



GUIDE LUG
1 LOCATION



UPPER SECTION 12B-12B

FF=FRONT FACE
BF=BACK FACE
EF=EACH FACE

NOTES

SEE SHEET B14 FOR BAR LIST AND SUMMARY OF QUANTITIES.

① GUIDE LUGS TO BE POURED 1" CLEAR FROM BEAM BOTTOM FLANGE AFTER THE BEAMS HAVE BEEN SET IN PLACE. NO EXCEPTIONS.

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ST PAUL, MN 55110
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FAX (651) 490-2150

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Signature: Date: 3/5/2007
Printed Name: JEFFREY A JOHNSON Reg. No. 17280

TITLE: SOUTH ABUTMENT DETAILS STAGE 1

SP 0280-55 SAP 02-623-13

DES: CAW	DR: MAW	APPROVED:
CHK: JDS	CHK: CAW	

SHEET NO B12 OF 95 SHEETS

BRIDGE NO 02817

03/06/2007
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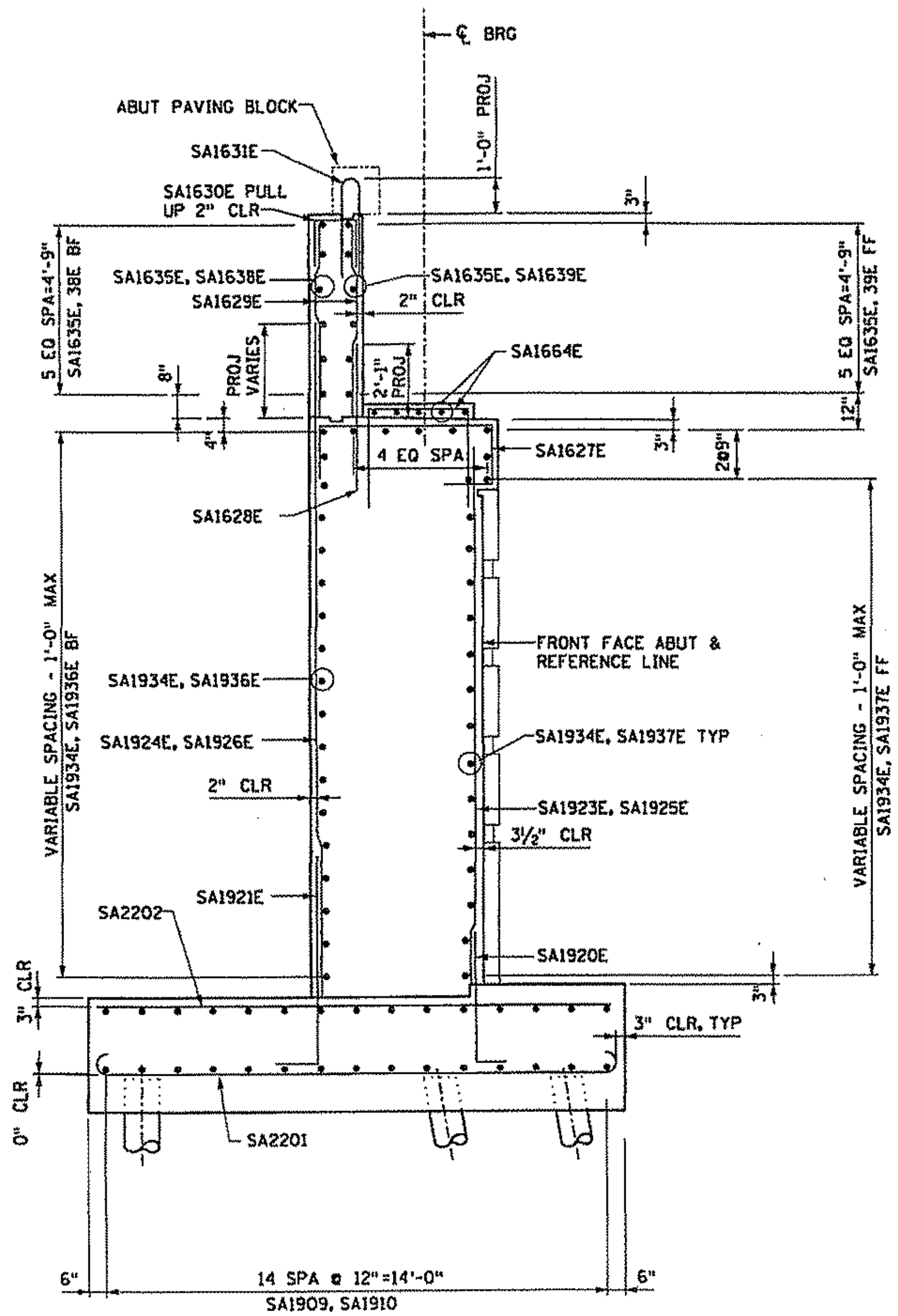
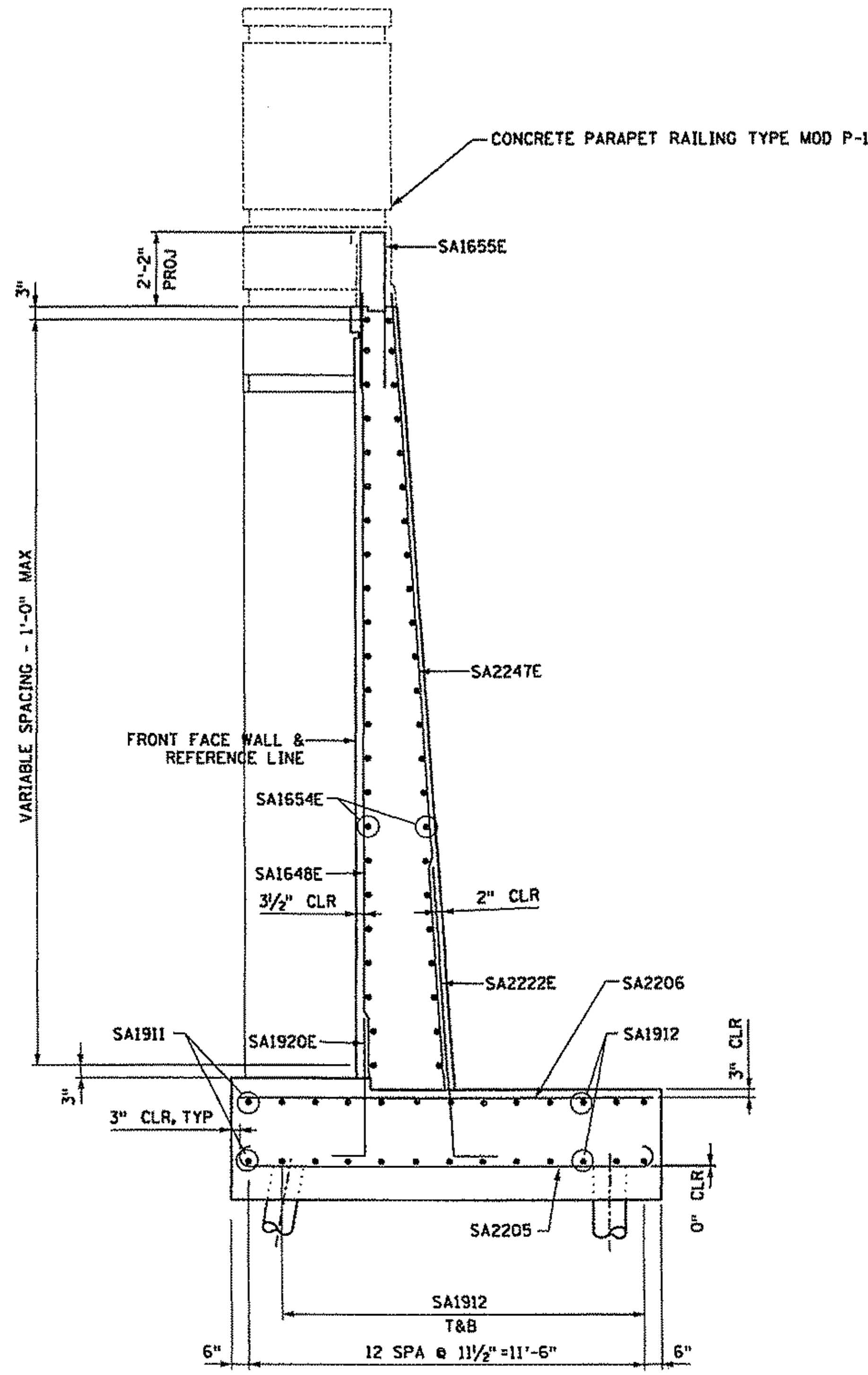
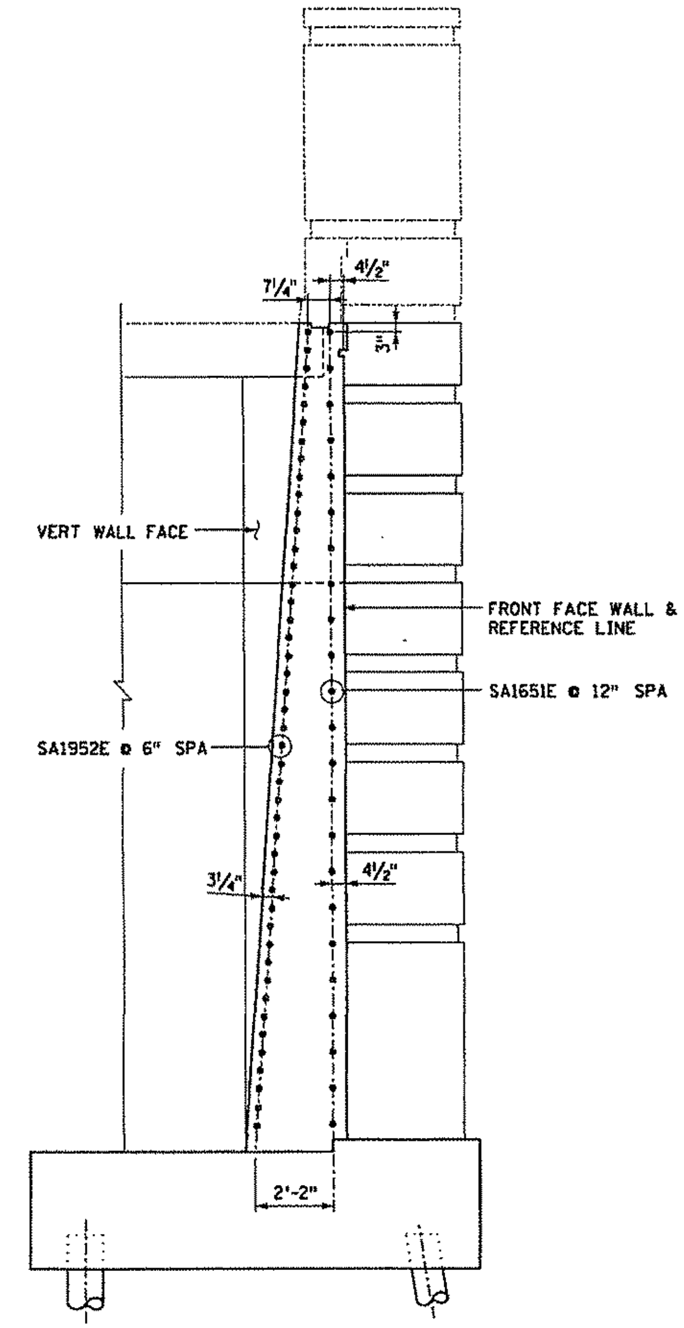


ABUTMENT SECTION 13A-13A



SOUTHEAST WINGWALL SECTION 13B-13B



SOUTHEAST WINGWALL SECTION 13C-13C

NOTES

SEE SHEET B14 FOR BAR LIST AND SUMMARY OF QUANTITIES.

FF=FRONT FACE
BF=BACK FACE
EF=EACH FACE

SP 0280-55 SAP 02-623-13

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3535 VADNAIS CENTER DRIVE
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FAX (651) 490-2150

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Signature: Date: 3/5/2007
Printed Name: JEFFREY A JOHNSON Reg. No. 17280

TITLE: SOUTH ABUTMENT DETAILS STAGE 1

DES: CAW	DR: MAW	APPROVED:	BRIDGE NO
CHK: JDS	CHK: CAW		02817

BAR MARK	NO OF SERIES	NO OF BARS	LENGTH	TYPE	DIMENSION A	DIMENSION B	DIMENSION C	DIMENSION D	LOCATION
SOUTH ABUTMENT-STAGE 1									
EPOXY COATED BARS									
SA2219E		10	7'-2"	100	6'-0"				FTG DWL
SA1920E		151	5'-5"	100	4'-5"				FTG DWL FF
SA1921E		150	9'-11"	100	8'-11"				FTG DWL BF
SA2222E		78	12'-5"	112	11'-3"	1			FTG DWL BF
SA1923E		39	15'-6"	STR					VERT FF
SA1924E		43	19'-2"	STR					VERT BF
SA1925E		37	15'-4"	STR					VERT FF
SA1926E		31	19'-0"	STR					VERT BF
SA1627E		75	8'-7"	211	4'-11"	1'-8"	1'-0"		SEAT
SA1628E		79	4'-2"	STR					PARAPET DWL
SA1629E		143	5'-6"	STR					VERT PARAPET
SA1630E		70	3'-10"	101	1'-4"	1'-2"			TOP PARAPET
SA1631E		70	6'-0"	127	0'-6"	3'-0"			PAVING BLOCK
SA1932E		16	17'-8"	STR					VERT PILASTER
SA1633E		22	6'-10"	STR					VERT PILASTER
SA1934E		39	37'-0"	STR					HORIZ BODY
SA1635E		12	33'-0"	STR					HORIZ PARAPET
SA1936E		17	47'-0"	STR					HORIZ BODY BF
SA1937E		18	42'-0"	STR					HORIZ BODY FF
SA1638E		6	47'-0"	STR					HORIZ PARAPET BF
SA1639E		6	46'-0"	STR					HORIZ PARAPET FF
SA1940E		16	6'-6"	111	3'-3"	10			HORIZ CORNER
SA1641E		6	7'-9"	111	4'-7"	10			HORIZ CORNER
SA1942E		16	8'-0"	STR					HORIZ CORNER
SA1643E		6	6'-8"	111	5'-10"	10			HORIZ CORNER
SA1644E		23	20'-7"	104	7'-5"	2'-5"			HORIZ CORNER
SA1645E		28	6'-5"	101	1'-6"	3'-5"			HORIZ FF PILASTER
SA1646E		1	5'-8"	101	2'-0"	1'-8"			CORNER TOP
SA2247E		41	22'-4"	STR					VERT WALL BF
SA1648E		41	22'-0"	STR					VERT WALL FF
SA2249E		9	22'-0"	STR					VERT WALL BF
SA1650E		17	22'-0"	STR					VERT WALL FF
SA1651E		23	8'-8"	100	7'-10"				HORIZ DWL FF
SA1952E		46	8'-10"	100	7'-10"				HORIZ DWL BF
SA1653E		23	13'-5"	101	4'-0"	5'-5"			HORIZ PILASTER
SA1654E		46	48'-4"	STR					WALL HORIZ
SA1655E		54	8'-4"	101	3'-10"	0'-8"			MOD P-I RAIL
SA1656E		35	4'-9"	STR					VERT RAIL
SA1657E		25	16'-0"	STR					VERT STUB WALL
SA2258E		16	13'-2"	STR					HORIZ STUB WALL
SA1659E		16	16'-6"	111	15'-6"	10			HORIZ STUB WALL
SA1960E	1	4	42'-0"	STR					ABUT SEAT
			47'-0"						
SA1661E		46	3'-10"	100	3'-0"				HORIZ PILASTER
SA1662E		22	6'-3"	100	3'-10"				UNDER BARRIER
SA1663E		6	6'-2"	101	1'-7"	3'-0"			UNDER BARRIER
SA1664E		70	6'-8"	101	2'-0"	2'-8"			BRG SEAT
SA1665E		3	5'-8"	101	2'-6"	0'-8"			GUIDE LUG
SA1666E		1	6'-5"	101	2'-6"	1'-5"			GUIDE LUG
SA1667E		1	6'-11"	101	2'-6"	1'-11"			GUIDE LUG
SA1668E		1	5'-10"	101	2'-6"	0'-10"			GUIDE LUG
SA1669E	1	3	1'-0"	STR					GUIDE LUG
			1'-8"						
SA1670E		2	2'-9"	STR					GUIDE LUG
SA1671E		1	2'-7"	111	1'-9"	10			GUIDE LUG
SA2972E		4	8'-8"	162	3'-0"	0'-11"	10 1/2"	3	VERT RAIL
SA1673E		16	3'-0"	100	1'-6"				HORIZ CORNER

BAR MARK	NO OF SERIES	NO OF BARS	LENGTH	TYPE	DIMENSION A	DIMENSION B	DIMENSION C	DIMENSION D	LOCATION
SOUTH ABUTMENT - STAGE 1									
BLACK BARS									
SA2201		139	16'-2"	129	14'-6"	0'-10"			TRANSV B
SA2202		70	14'-6"	STR					TRANSV T
SA2203	1	19	6'-10"	128	6'-0"	0'-10"			TRANSV B
			14'-5"		13'-7"	0'-10"			
SA2204	1	10	6'-0"	STR					TRANSV T
			13'-7"						
SA2205		75	13'-8"	129	12'-0"	0'-10"			TRANSV B
SA2206		38	12'-0"	STR					TRANSV T
SA2207	1	23	5'-4"	128	4'-6"	0'-10"			TRANSV B
			14'-5"		13'-7"	0'-10"			
SA2208	1	12	4'-6"	STR					TRANSV T
			13'-7"						
SA1909		30	40'-0"	STR					LONGIT T&B
SA1910		30	48'-6"	STR					LONGIT T&B
SA1911		2	50'-0"	STR					LONGIT T&B
SA1912	2	12	27'-3"	STR					LONGIT T&B
			39'-9"						
SA1913		2	13'-5"	113	4'-11"	4'-3"	14		CORNER
SA1914		8	10'-0"	STR					FILLET

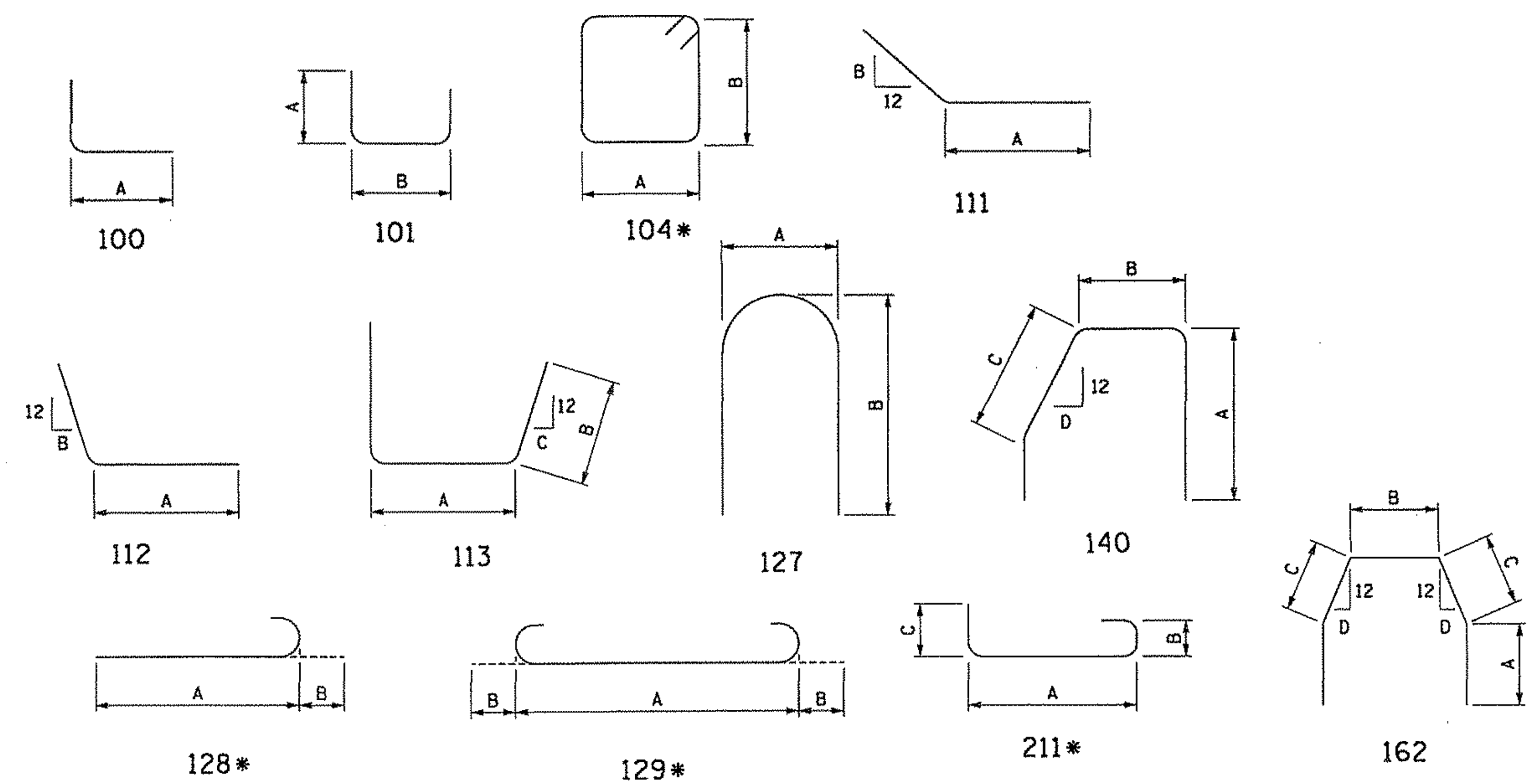
SUMMARY OF QUANTITIES FOR SOUTH ABUTMENT - STAGE 1

	ITEM	UNIT	QUANTITY
	STRUCTURAL CONCRETE (1A43)	CU YD	200
	STRUCTURAL CONCRETE (3Y43)	CU YD	371
	REINFORCEMENT BARS	POUND	16500
	REINFORCEMENT BARS (EPOXY COATED)	POUND	29400
(1)	C-I-P CONCRETE PILING DELIVERED 12"	LIN FT	2915
(1)	C-I-P CONCRETE PILING DRIVEN 12"	LIN FT	2915
	C-I-P CONCRETE TEST PILE 65 FT. LONG 12"	EACH	2
	PILE POINTS	EACH	55
	PILE ANALYSIS	EACH	1
(2)	3-PLY JOINT WATERPROOFING	LIN FT	117
	ANTI-GRAFFITI COATING	SQ FT	1149
	ARCH CONC TEXTURE (FRACTURED GRANITE)	SQ FT	1149
	ARCH SURFACE FINISH (MULTI COLOR)	SQ FT	1149
(2)	6" DIA PIPE SLEEVE WITH CAP	EACH	1

(1) DOES NOT INCLUDE TEST PILES.

(2) TO BE INCLUDED IN PRICE BID FOR OTHER ITEMS.

BAR BENDING DIAGRAMS



* BAR TYPE USES STANDARD STIRRUP AND TIE HOOKS.

NOTE:
BENT BAR DIMENSIONS GIVEN ARE OUT-TO-OUT. ACTUAL BAR LENGTHS SHALL BE DETERMINED BASED ON DIMENSIONS SHOWN IN THE BAR BENDING DIAGRAMS. TOTAL BAR LENGTHS SHOWN ARE FOR USE IN COMPUTING REINFORCEMENT BAR WEIGHTS FOR PAYMENT ONLY.

SP 0280-55 SAP 02-623-13

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FAX (651) 490-2150

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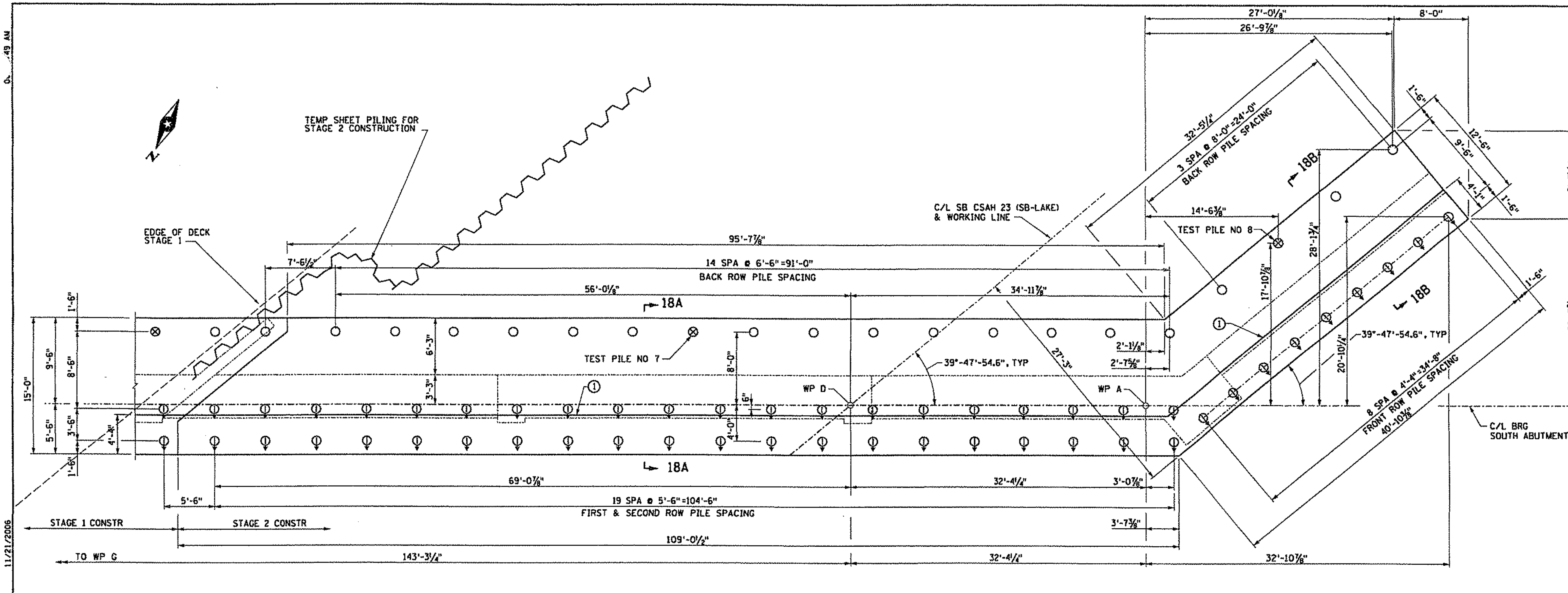
Signature: [signature] Date: 3/5/2007
Printed Name: JEFFREY A JOHNSON Reg. No. 17280

TITLE: SOUTH ABUTMENT - STAGE 1 BARLIST & SUMMARY OF QUANTITIES

DES: CAW	DR: MAW	APPROVED:
CHK: JDS	CHK: CAW	

BRIDGE NO 02817



FOOTING PLAN-STAGE 2

SOUTH ABUTMENT COMPUTED PILE LOAD - TONS/PILE	
FACTORED DEAD LOAD + EARTH PRESSURE	75.5
FACTORED LIVE LOAD	9.2
*FACTORED DESIGN LOAD = PILE BEARING RESISTANCE	84.7

*BASED ON STRENGTH I LOAD COMBINATION.

SOUTH ABUTMENT REQUIRED NOMINAL PILE BEARING RESISTANCE Rn - Tons / Pile		
FIELD CONTROL METHOD	φ_{dyn}	$*R_n$
MnDOT NOMINAL RESISTANCE FORMULA	0.40	211.8
PDA	0.60	141.2

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

PILE NOTES

2 CAST-IN-PLACE CONC TEST PILES 65 FT LONG
66 CAST-IN-PLACE CONC PILES EST LENGTH 55 FT
68 CAST-IN-PLACE CONC. PILES REQ'D FOR SOUTH ABUT. STAGE 2.

PILE SPACING SHOWN IS AT BOTTOM OF FOOTING.

PILES MARKED THUS ○- TO BE BATTERED 4" PER FOOT IN DIRECTION SHOWN.

PILES TO HAVE A NOMINAL DIAMETER OF 12".

FOR PILE SPLICE DETAILS SEE DETAIL B201.

CONCRETE FILL FOR PILES TO BE MnDOT MIX 1C62.

⊗ DENOTES TEST PILE

NOTES

① EDGE OF 4" VERT FTG KEY.

SEE SHEET B24 FOR BAR LIST AND SUMMARY OF QUANTITIES.

SP 0280-55 SAP 02-623-13

SEH 3535 VADNAIS CENTER DRIVE ST PAUL, MN 55110 PHONE (651) 490-2000 FAX (651) 490-2150

I hereby certify that this plan, specification, or report 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

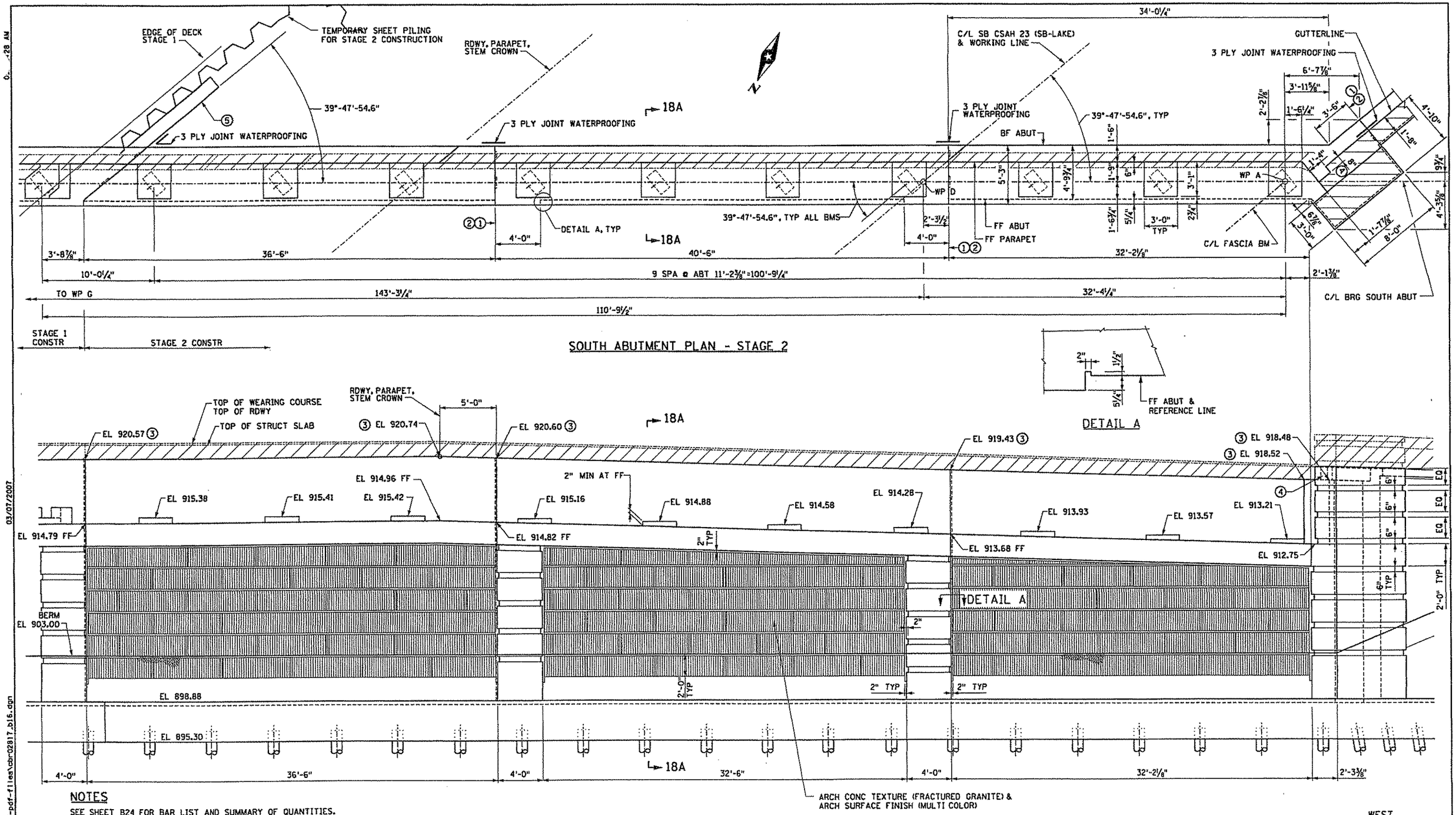
Signature: [signature] Date: 11/21/2006
Printed Name: CHRISTOPHER A WUNSCH Reg. No. 42058

TITLE: SOUTH ABUTMENT DETAILS STAGE 2

DES: CAW	DR: MAW	APPROVED:
CHK: JDS	CHK: CAW	

SHEET NO B15 OF 95 SHEETS

BRIDGE NO 02817



SOUTH ABUTMENT PLAN - STAGE 2

DETAIL A

ARCH CONC TEXTURE (FRACTURED GRANITE) & ARCH SURFACE FINISH (MULTI COLOR)

WEST END

SOUTH ABUTMENT ELEVATION - STAGE 2

NOTES

SEE SHEET B24 FOR BAR LIST AND SUMMARY OF QUANTITIES.

HATCHED AREA INDICATES THAT PORTION TO BE PLACED WITH THE SUPERSTRUCTURE CONCRETE.

① CONSTRUCTION JOINT WITH VERTICAL KEY CENTERED IN WALL. 72 HOUR TIME DELAY REQUIRED BETWEEN ADJACENT POURS TO ALLOW FOR SHRINKAGE.

② 2"x8" KEY IN PARAPET AND 2"x12" KEY IN STEM.

③ ELEVATION IS AT PARAPET FF.

④ REQUIRED BLOCKOUT FOR PAVING BLOCK EXPANSION DEVICE INSTALLATION.

⑤ STUB WALL FOR TEMP SHEETING SUPPORT FOR STAGE 2 CONSTRUCTION.

ALL SURFACES RECEIVING ARCHITECTURAL CONCRETE TEXTURE AND ARCHITECTURAL SURFACE FINISH SHALL BE FINISHED TO A DEPTH OF 2'-0" BELOW FINISHED GRADE AND SHALL RECEIVE ANTI-GRAFFITI COATING.

SEH
3535 VADNAIS CENTER DRIVE
ST PAUL, MN 55110
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Signature: _____ Date: 3/5/2007

Printed Name: JEFFREY A JOHNSON Reg. No. 17280

TITLE: SOUTH ABUTMENT DETAILS STAGE 2

SP 0280-55 SAP 02-623-13

DES: CAW | DR: MAW | APPROVED:

CHK: JDS | CHK: CAW

SHEET NO B16 OF 95 SHEETS

BRIDGE NO 02817

03/07/2007

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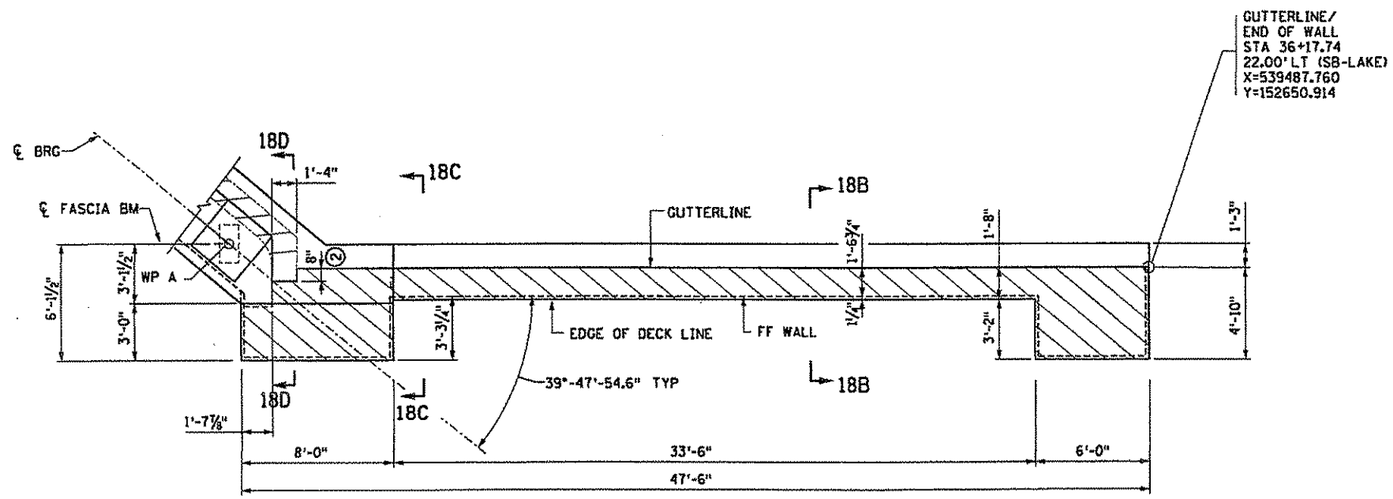
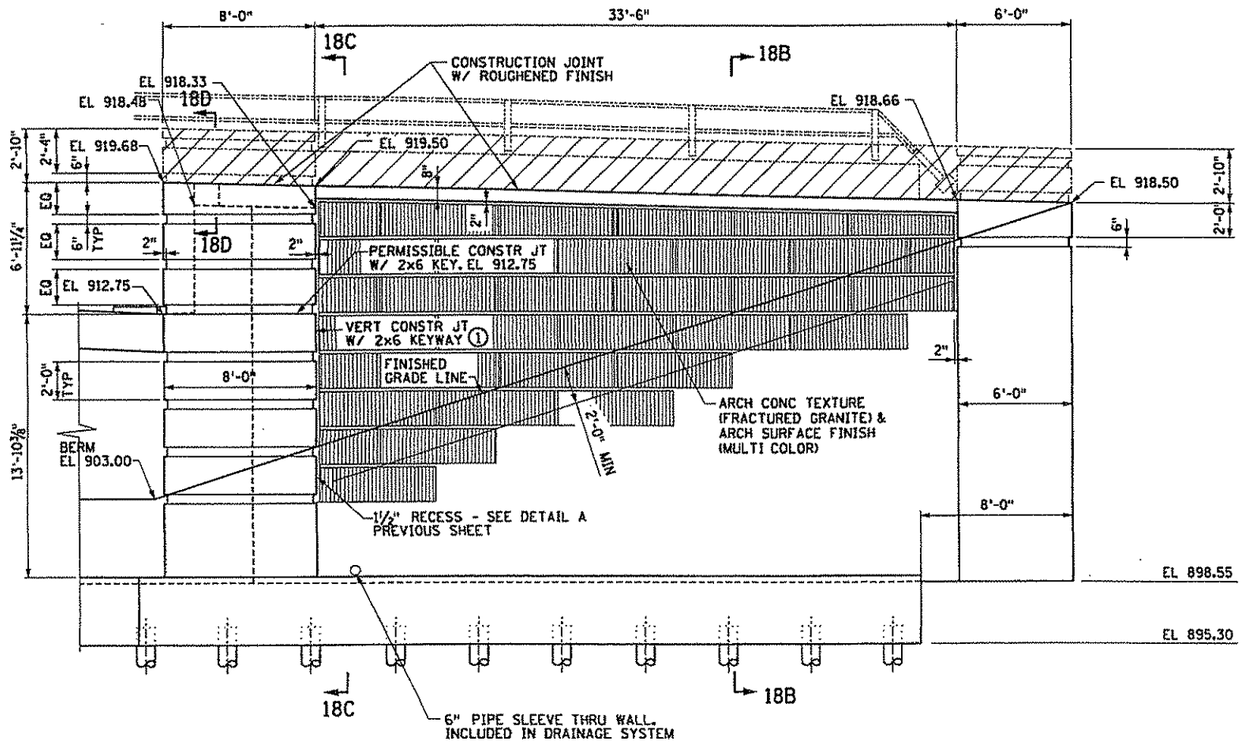


SOUTHWEST WINGWALL PLAN - STAGE 2



SOUTHWEST WINGWALL ELEVATION - STAGE 2

FF=FRONT FACE
BF=BACK FACE
EF=EACH FACE

NOTES

SEE SHEET B24 FOR BAR LIST AND SUMMARY OF QUANTITIES.

HATCHED AREA INDICATES THAT PORTION TO BE PLACED WITH THE SUPERSTRUCTURE CONCRETE.

1. CONSTRUCTION JOINT WITH VERTICAL KEY CENTERED IN WALL. 72 HOUR TIME DELAY REQUIRED BETWEEN ADJACENT POURS TO ALLOW FOR SHRINKAGE.
2. REQUIRED BLOCKOUT FOR PAVING BLOCK EXPANSION DEVICE INSTALLATION.

ALL SURFACES RECEIVING ARCHITECTURAL CONCRETE TEXTURE AND ARCHITECTURAL SURFACE FINISH SHALL BE FINISHED TO A DEPTH OF 2'-0" BELOW FINISHED GRADE AND SHALL RECEIVE ANTI-GRAFFITI COATING.

SEH
3535 VADNAIS CENTER DRIVE
ST PAUL, MN 55110
PHONE (651) 490-2000
FAX (651) 490-2150

I hereby certify that this plan, specification, or report 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
Signature: _____ Date: 3/5/2007
Printed Name: JEFFREY A JOHNSON Reg. No. 17280

TITLE: SOUTH ABUTMENT DETAILS STAGE 2

SP 0280-55 SAP 02-623-13

DES: CAW	DR: MAW	APPROVED:
CHK: JDS	CHK: CAW	

SHEET NO B17 OF 95 SHEETS

BRIDGE NO 02817

03/07/2007

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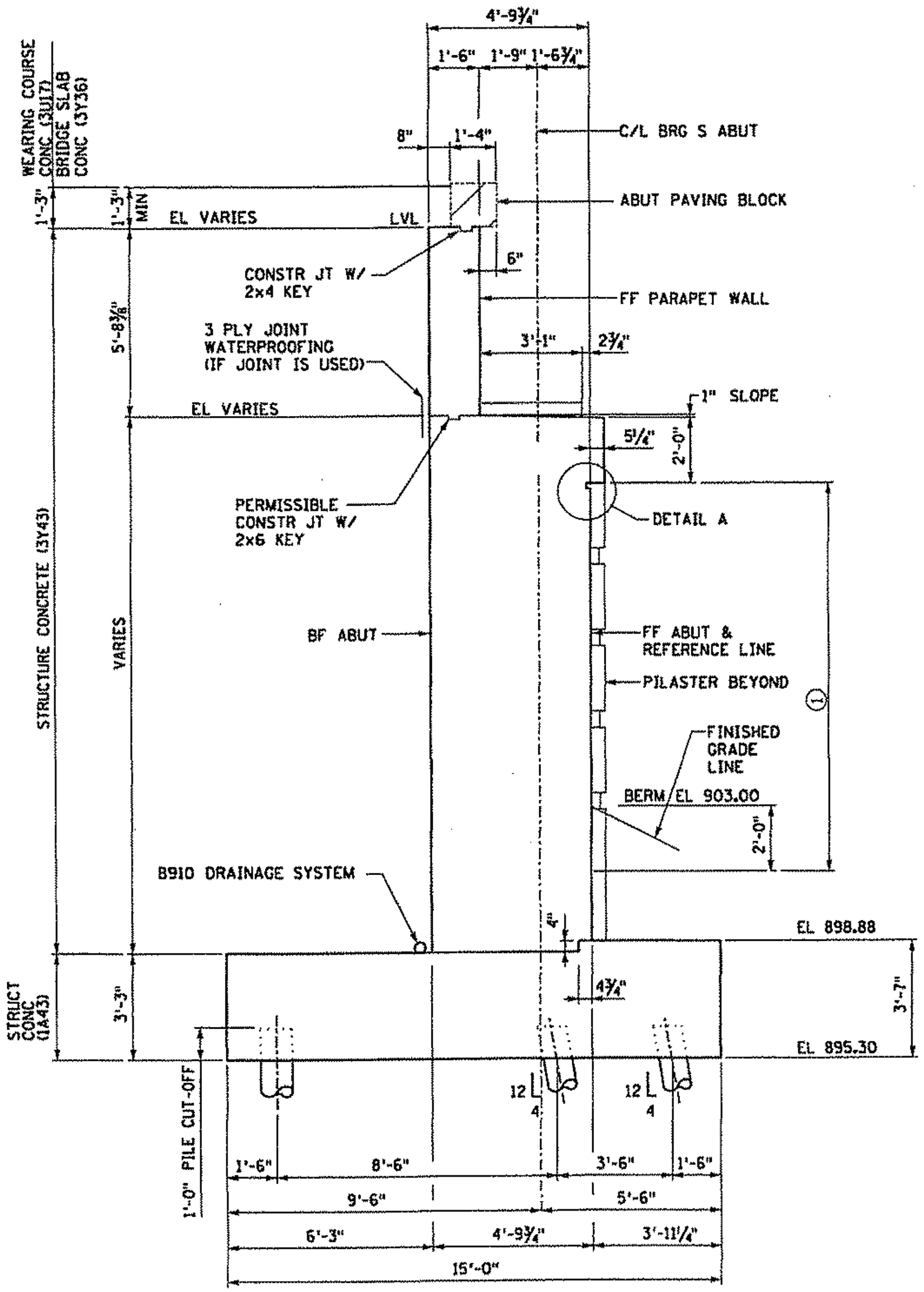
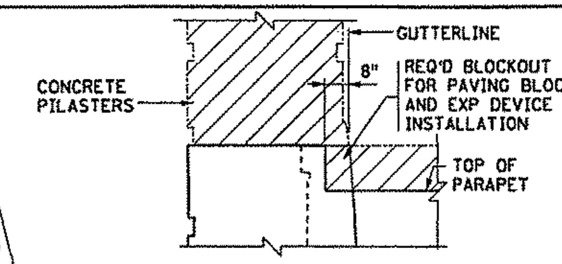
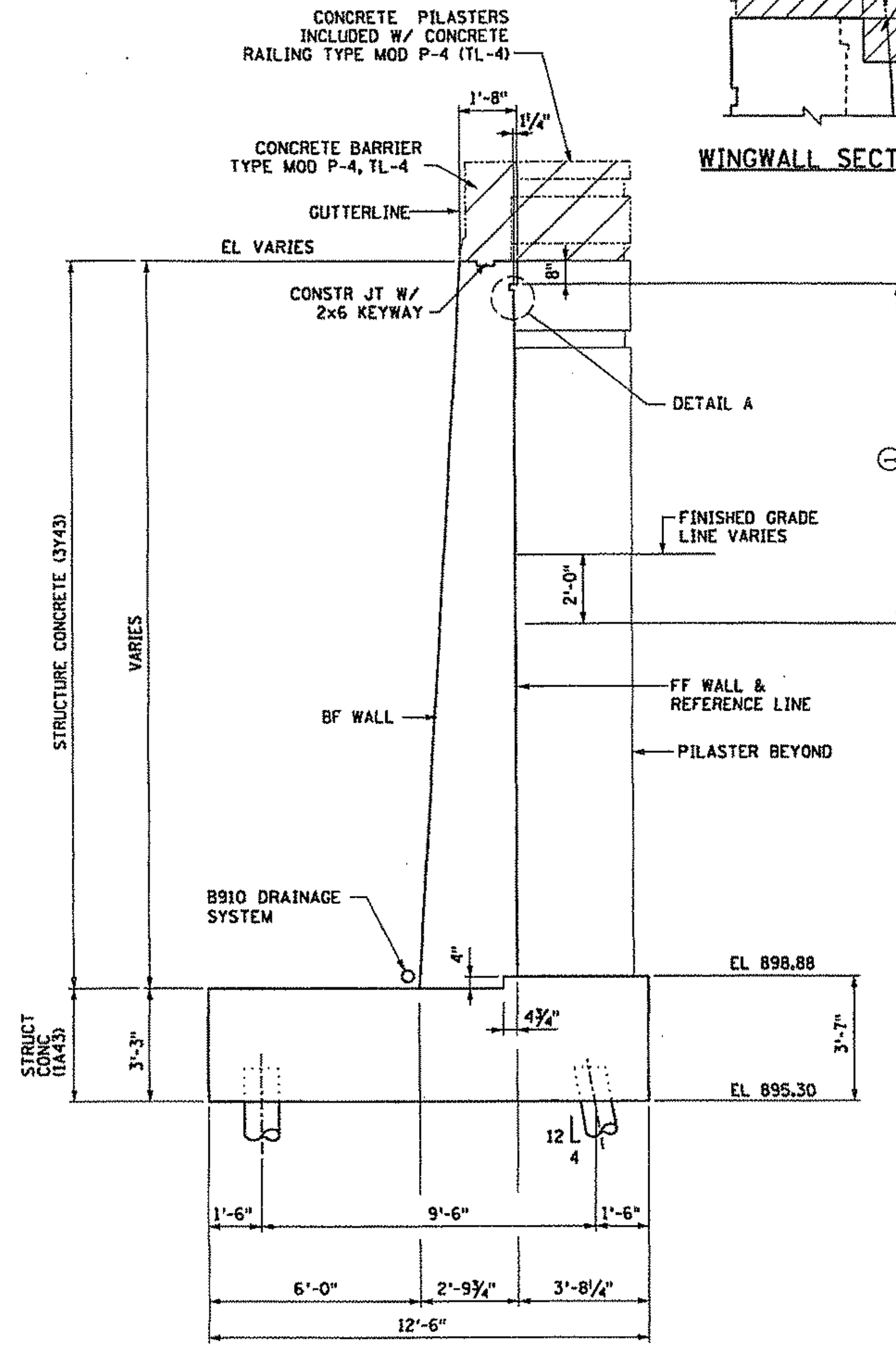


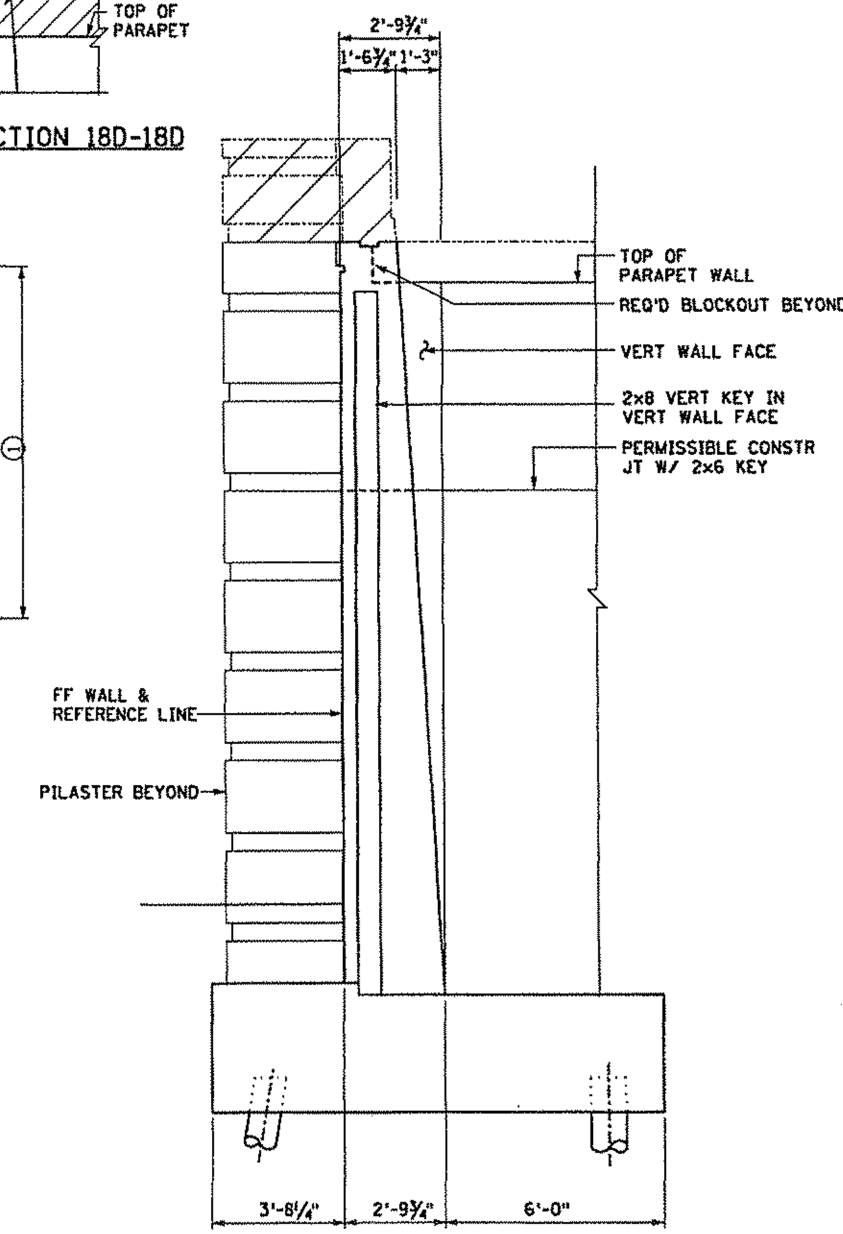
ABUTMENT SECTION 18A-18A



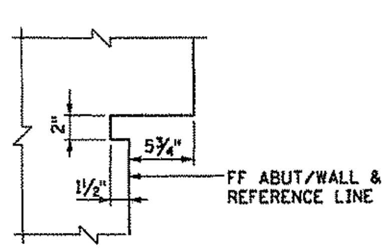
WINGWALL SECTION 18D-18D



WINGWALL SECTION 18B-18B



WINGWALL SECTION 18C-18C



DETAIL A

NOTES

SEE SHEET B24 FOR BAR LIST AND SUMMARY OF QUANTITIES.

HATCHED AREA INDICATES THAT PORTION TO BE PLACED WITH THE SUPERSTRUCTURE CONCRETE.

① LIMITS OF ARCH CONC TEXTURE (FRACTURED GRANITE) & ARCH SURFACE FINISH (MULTI COLOR).
ALL SURFACES RECEIVING ARCHITECTURAL CONCRETE TEXTURE AND ARCHITECTURAL SURFACE FINISH SHALL BE FINISHED TO A DEPTH OF 2'-0" BELOW FINISHED GRADE AND SHALL RECEIVE ANTI-GRAFFITI COATING.

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Signature: ______ Date: 3/5/2007
Printed Name: JEFFREY A JOHNSON Reg. No. 17280

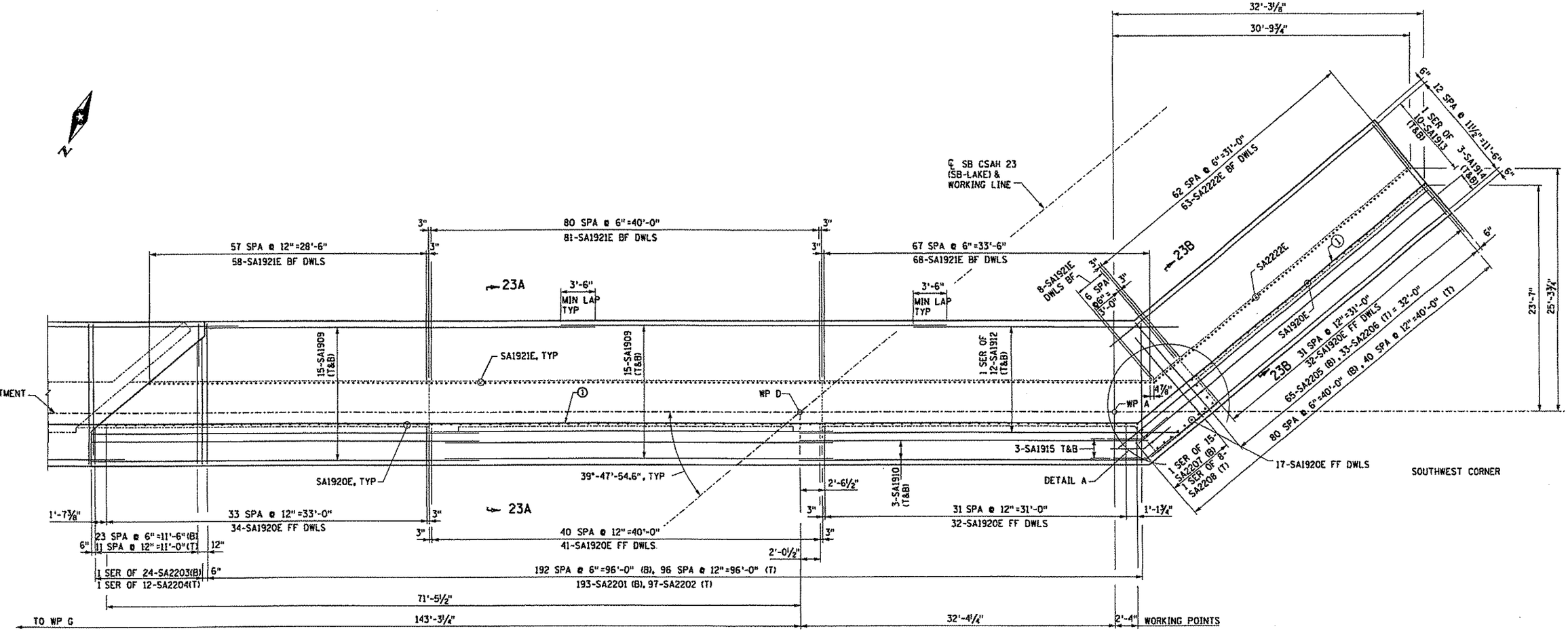
TITLE: SOUTH ABUTMENT DETAILS STAGE 2

SP 0280-55 SAP 02-623-13

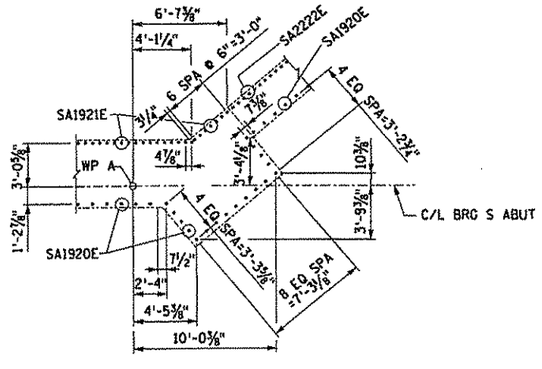
DES: CAW	DR: MAW	APPROVED:
CHK: JDS	CHK: CAW	

SHEET NO B18 OF 95 SHEETS

BRIDGE NO 02817



FOOTING REINFORCEMENT PLAN - STAGE 2



DETAIL A

NOTES

① EDGE OF 4" VERT FTG KEY.

SEE SHEET B24 FOR BAR LIST AND SUMMARY OF QUANTITIES.

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3535 VADNAIS CENTER DRIVE
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I hereby certify that this plan, specification, or report 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

Signature: _____ Date: 11/21/2006

Printed Name: CHRISTOPHER A WUNSCH Reg. No. 42058

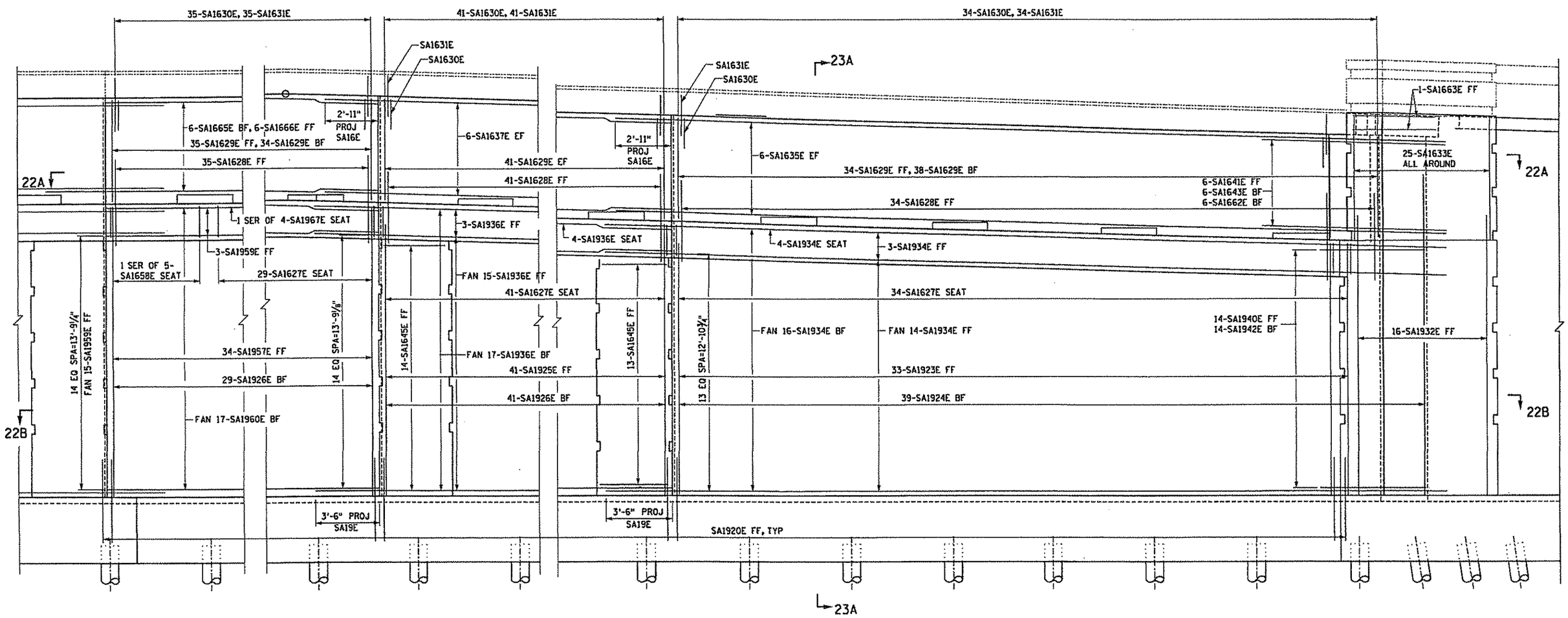
TITLE: SOUTH ABUTMENT DETAILS STAGE 2

SP 0280-55 SAP 02-623-13

DES: CAW	DR: MAW	APPROVED:
CHK: JDS	CHK: CAW	

SHEET NO B19 OF 95 SHEETS

BRIDGE NO 02817



SOUTH ABUTMENT ELEVATION

NOTES

SEE SHEET B24 FOR BAR LIST AND SUMMARY OF QUANTITIES.

FF=FRONT FACE
BF=BACK FACE
EF=EACH FACE

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Signature: _____ Date: 3/5/2007

Printed Name: JEFFREY A JOHNSON Reg. No. 17280

TITLE: SOUTH ABUTMENT DETAILS STAGE 2

SP 0280-55 SAP 02-623-13

DES: CAW	DR: MAW	APPROVED:
CHK: JDS	CHK: CAW	

SHEET NO B20 OF 95 SHEETS

BRIDGE NO 02817

03/06/2007

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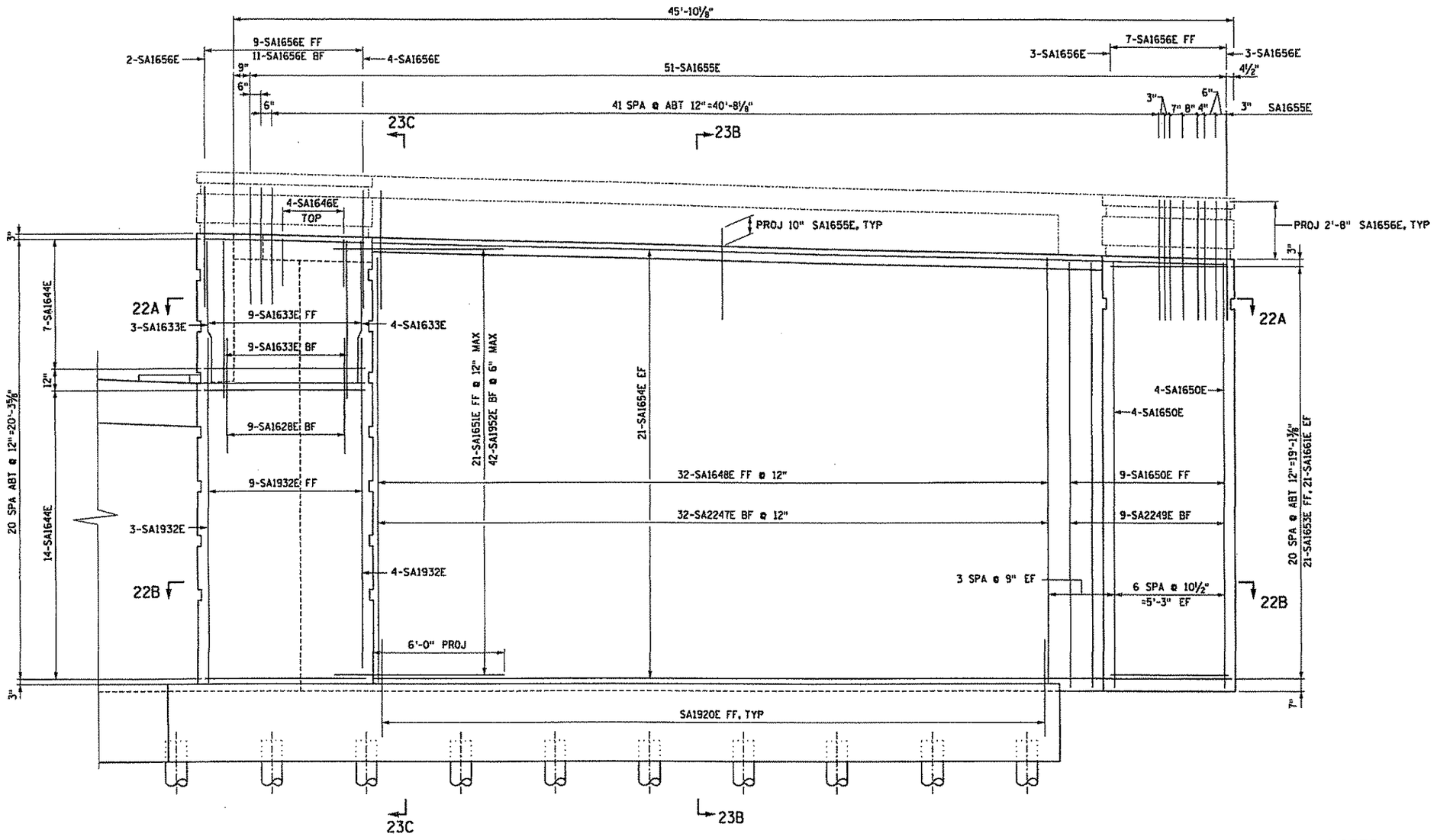

SOUTHWEST WINGWALL ELEVATION

NOTES

SEE SHEET B24 FOR BAR LIST AND SUMMARY OF QUANTITIES.

FF=FRONT FACE
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EF=EACH FACE

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Signature: _____ Date: 11/21/2006
Printed Name: CHRISTOPHER A WUNSCH Reg. No. 42058

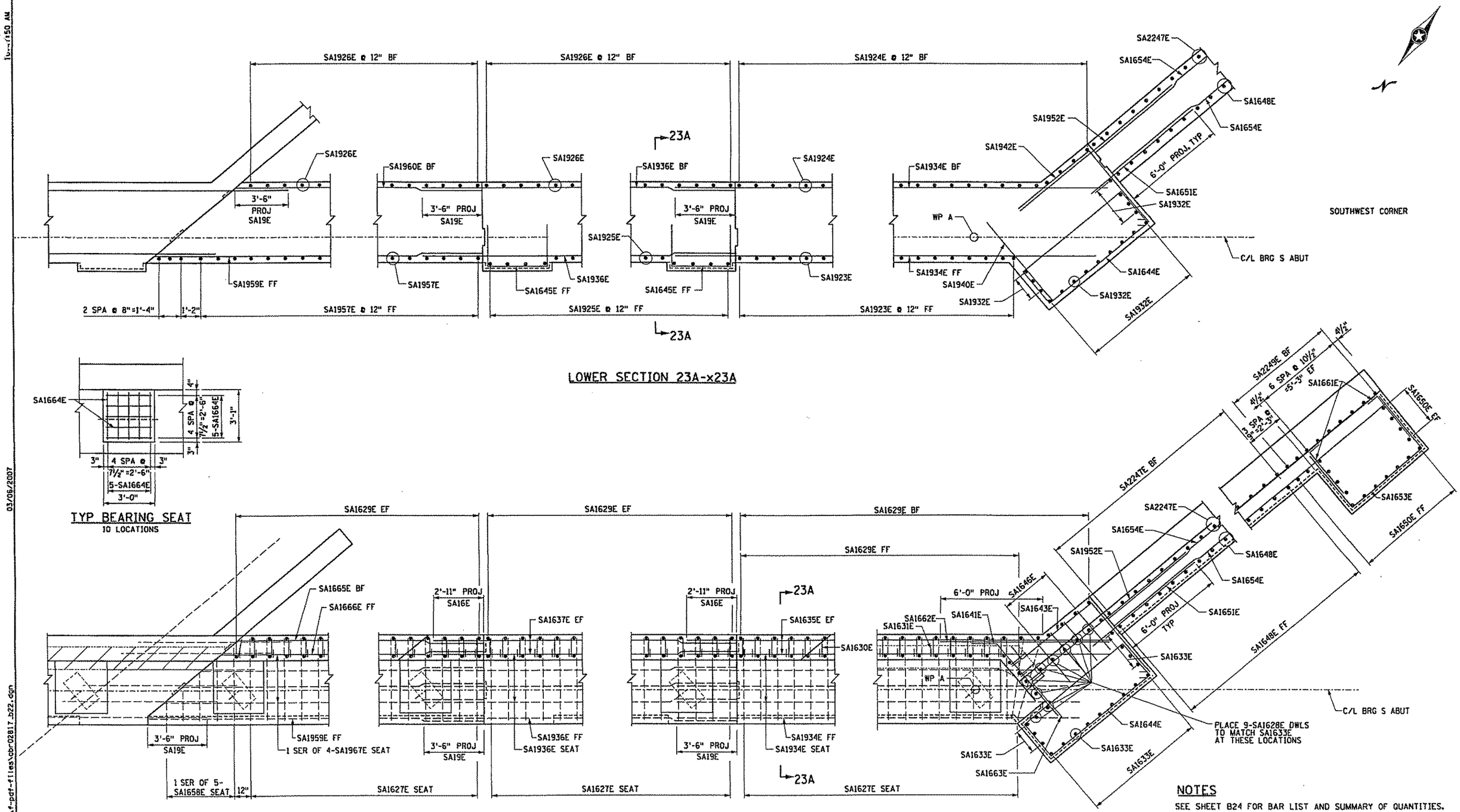
TITLE:
SOUTH ABUTMENT DETAILS
STAGE 2

SP 0280-55 SAP 02-623-13

DES: CAW	DR: MAW	APPROVED:
CHK: JDS	CHK: CAW	

SHEET NO B21 OF 95 SHEETS

BRIDGE NO
02817



NOTES

SEE SHEET B24 FOR BAR LIST AND SUMMARY OF QUANTITIES.

FF=FRONT FACE
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Signature: _____ Date: 3/5/2007
Printed Name: JEFFREY A JOHNSON Reg. No. 17280

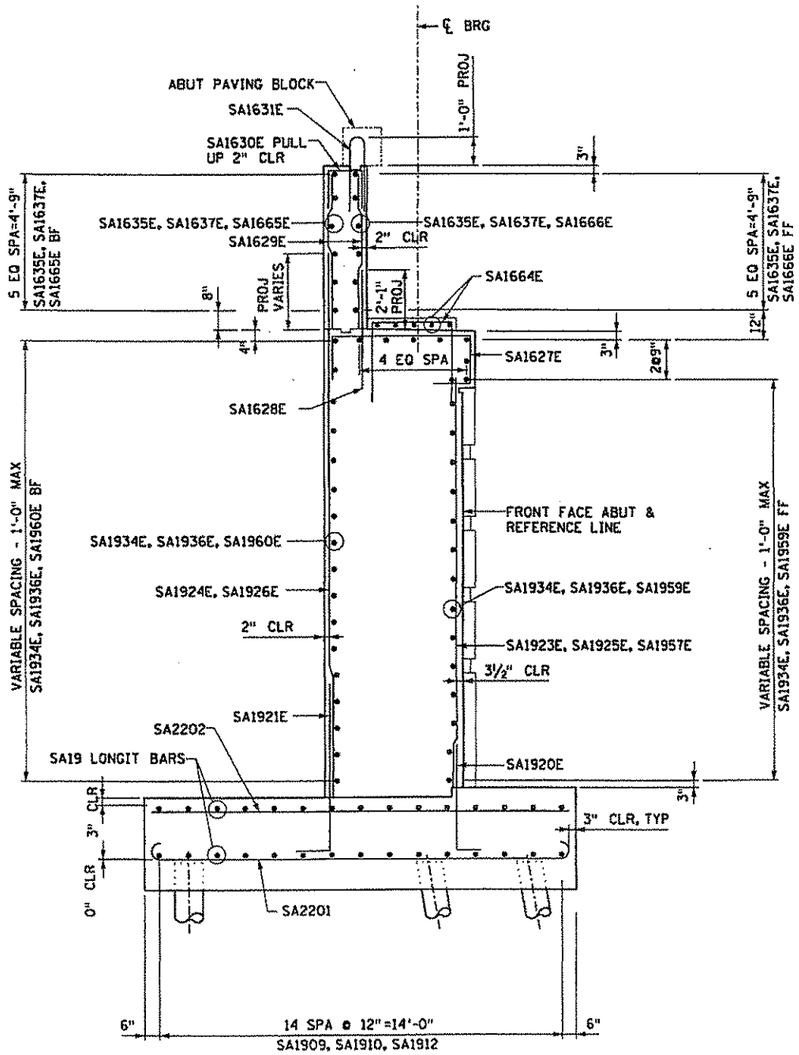
TITLE: SOUTH ABUTMENT DETAILS STAGE 2

SP 0280-55 SAP 02-623-13

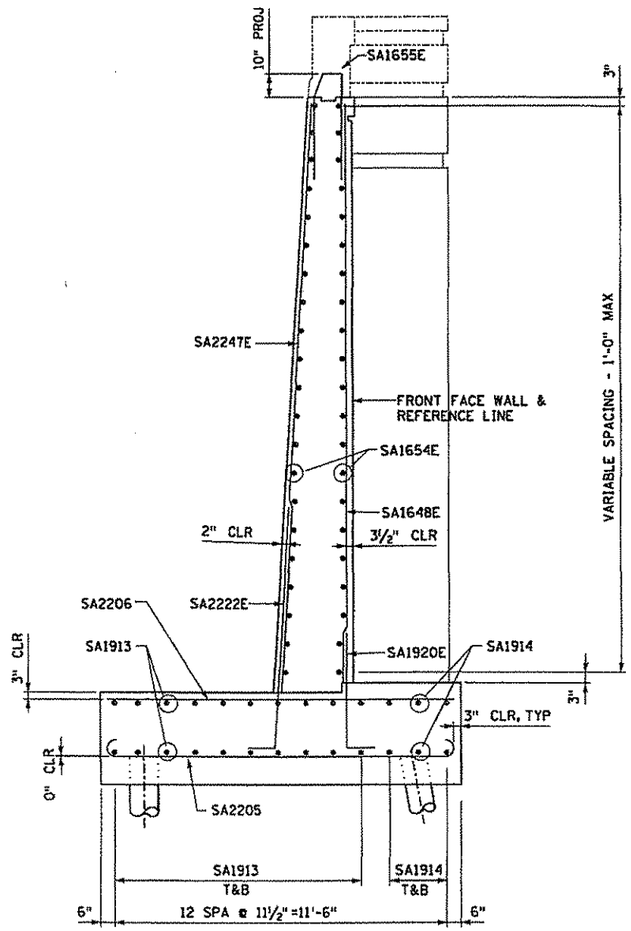
DES: CAW	DR: MAW	APPROVED:
CHK: JDS	CHK: CAW	

SHEET NO B22 OF 95 SHEETS

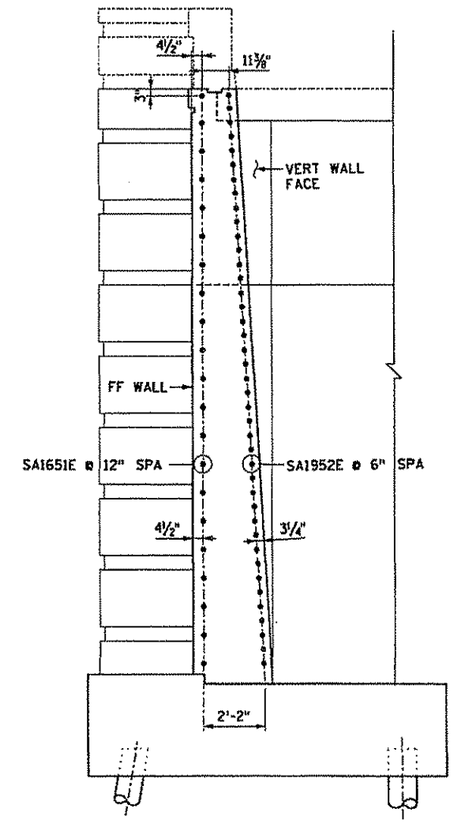
BRIDGE NO 02817



ABUTMENT SECTION 23A-23A



SOUTHWEST WINGWALL SECTION 23B-23B



SOUTHWEST WINGWALL SECTION 23C-23C

NOTES

SEE SHEET B24 FOR BAR LIST AND SUMMARY OF QUANTITIES.

FF=FRONT FACE
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Signature: _____ Date: 3/5/2007
Printed Name: JEFFREY A JOHNSON Reg. No. 17280

TITLE: SOUTH ABUTMENT DETAILS STAGE 2

SP 0280-55 SAP 02-623-13

DES: CAW	DR: MAW	APPROVED:
CHK: JDS	CHK: CAW	

SHEET NO B23 OF 95 SHEETS

BRIDGE NO 02817

BAR MARK	NO OF SERIES	NO OF BARS	LENGTH	TYPE	DIMENSION A	B	C	D	LOCATION
SOUTH ABUTMENT-STAGE 2									
EPOXY COATED BARS									
SA1920E		156	5'-5"	100	4'-5"				FTG DWL FF
SA1921E		215	9'-11"	100	8'-11"				FTG DWL BF
SA2222E		63	12'-5"	112	11'-3"	1			FTG DWL BF
SA1923E		33	13'-8"	STR					VERT FF
SA1924E		39	17'-5"	STR					VERT BF
SA1925E		41	14'-8"	STR					VERT FF
SA1926E		70	18'-6"	STR					VERT BF
SA1627E		104	8'-7"	211	4'-11"	1'-8"	1'-0"		SEAT
SA1628E		119	4'-2"	STR					PARAPET DWL
SA1629E		223	5'-6"	STR					VERT PARAPET
SA1630E		110	3'-10"	101	1'-4"	1'-2"			TOP PARAPET
SA1631E		110	6'-0"	127	0'-6"	3'-0"			PAVING BLOCK
SA1932E		16	15'-11"	STR					VERT PILASTER
SA1633E		25	6'-6"	STR					VERT PILASTER
SA1934E		37	39'-6"	STR					HORIZ BODY
SA1635E		12	40'-10"	STR					HORIZ PARAPET
SA1936E		39	44'-0"	STR					HORIZ BODY
SA1637E		12	43'-5"	STR					HORIZ PARAPET
SA1940E		14	6'-0"	STR					HORIZ CORNER
SA1641E		6	6'-11"	111	5'-11"	14			HORIZ CORNER
SA1942E		14	10'-8"	100	5'-4"				HORIZ CORNER
SA1643E		6	11'-6"	120	5'-4"	5'-2"			HORIZ CORNER
SA1644E		21	20'-7"	104	7'-5"	2'-5"			HORIZ CORNER
SA1645E		27	6'-5"	101	1'-6"	3'-5"			HORIZ FF PILASTER
SA1646E		4	6'-0"	100	3'-0"				CORNER TOP
SA2247E		32	20'-0"	STR					VERT WALL BF
SA1648E		32	19'-8"	STR					VERT WALL FF
SA2249E		9	19'-7"	STR					VERT WALL BF
SA1650E		17	19'-7"	STR					VERT WALL FF
SA1651E		21	7'-9"	STR					HORIZ DWL FF
SA1952E		42	12'-0"	STR					HORIZ DWL BF
SA1653E		21	14'-1"	101	4'-4"	5'-5"			HORIZ PILASTER
SA1654E		42	39'-4"	STR					WALL HORIZ
SA1655E		51	8'-4"	101	3'-10"	0'-8"			MOD P-1 RAIL
SA1656E		39	4'-9"	STR					VERT RAIL
SA1957E		34	14'-8"	STR					VERT FF
SA1658E	1	5	4'-6"	101	1'-8"	1'-2"			SEAT
			7'-9"		1'-8"	4'-5"			
SA1959E		18	36'-0"	STR					HORIZ BODY FF
SA1960E		17	30'-7"	STR					HORIZ BODY BF
SA1661E		42	3'-10"	100	3'-0"				HORIZ PILASTER
SA1662E		6	10'-0"	STR					HORIZ CORNER
SA1663E		2	3'-10"	100	2'-10"				HORIZ FF CORNER
SA1664E		100	6'-8"	101	2'-0"	2'-8"			BRG SEAT
SA1665E		6	30'-7"	STR					HORIZ PARAPET BF
SA1666E		6	32'-2"	STR					HORIZ PARAPET FF
SA1967E	1	4	32'-2"	STR					SEAT
			35'-7"						

BAR MARK	NO OF SERIES	NO OF BARS	LENGTH	TYPE	DIMENSION A	B	C	D	LOCATION
SOUTH ABUTMENT - STAGE 2									
BLACK BARS									
SA2201		193	16'-2"	129	14'-6"	0'-10"			TRANSV B
SA2202		97	14'-6"	STR					TRANSV T
SA2203	1	24	4'-7"	128	3'-9"	0'-10"			TRANSV B
			14'-1"		13'-3"	0'-10"			
SA2204	1	12	3'-9"	STR					TRANSV T
			12'-10"						
SA2205		65	13'-8"	129	12'-0"	0'-10"			TRANSV B
SA2206		33	12'-0"	STR					TRANSV T
SA2207	1	15	3'-4"	128	2'-6"	0'-10"			TRANSV B
			11'-7"		10'-9"	0'-10"			
SA2208	1	8	2'-6"	STR					TRANSV T
			10'-9"						
SA1909		60	40'-0"	STR					LONGIT T&B
SA1910		6	35'-10"	STR					LONGIT T&B
SA1912	2	12	27'-3"	STR					LONGIT T&B
			39'-2"						
SA1913	2	10	35'-11"	STR					LONGIT T&B
			41'-11"						
SA1914		6	40'-0"	STR					LONGIT T&B
SA1915		6	7'-0"	111	3'-6"	10			LONGIT T&B

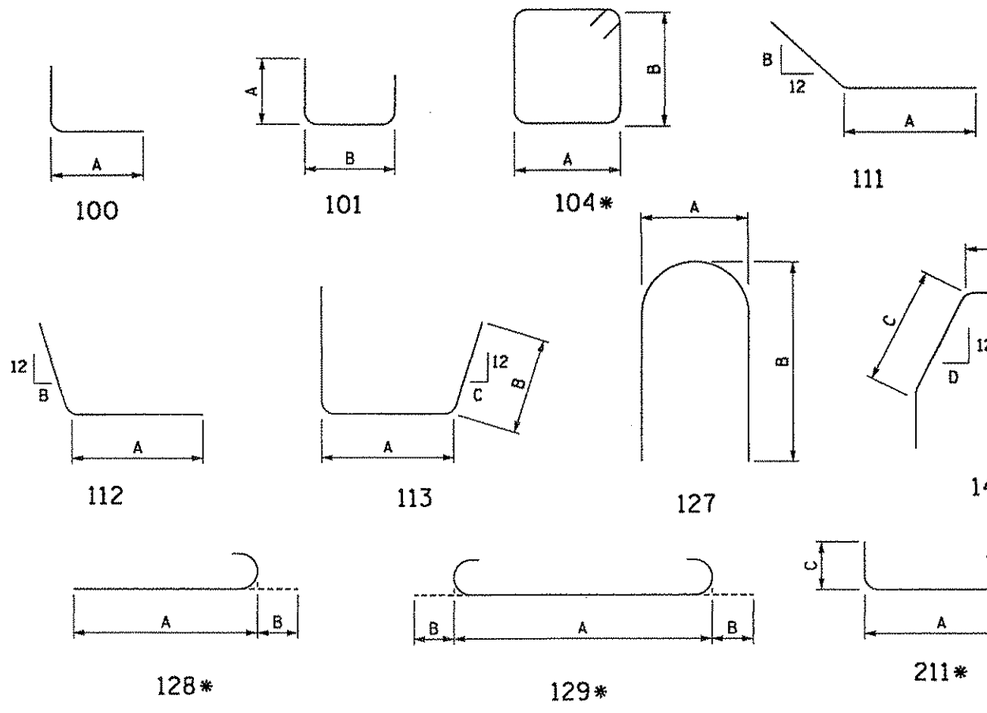
SUMMARY OF QUANTITIES FOR SOUTH ABUTMENT - STAGE 2

	ITEM	UNIT	QUANTITY
	STRUCTURAL CONCRETE (1A43)	CU YD	249
	STRUCTURAL CONCRETE (3Y43)	CU YD	453
	REINFORCEMENT BARS	POUND	19590
	REINFORCEMENT BARS (EPOXY COATED)	POUND	32380
(1)	C-I-P CONCRETE PILING DELIVERED 12"	LIN FT	3630
(1)	C-I-P CONCRETE PILING DRIVEN 12"	LIN FT	3630
	C-I-P CONCRETE TEST PILE 65 FT. LONG 12"	EACH	2
	PILE POINTS	EACH	68
	PILE ANALYSIS	EACH	1
(2)	3-PLY JOINT WATERPROOFING	LIN FT	196
	ANTI-GRAFFITI COATING	SQ FT	1405
	ARCH CONC TEXTURE (FRACTURED GRANITE)	SQ FT	1405
	ARCH SURFACE FINISH (MULTI COLOR)	SQ FT	1405

(1) DOES NOT INCLUDE TEST PILES.

(2) TO BE INCLUDED IN PRICE BID FOR OTHER ITEMS.

BAR BENDING DIAGRAMS



* BAR TYPE USES STANDARD STIRRUP AND TIE HOOKS.

NOTE:
BENT BAR DIMENSIONS GIVEN ARE OUT-TO-OUT. ACTUAL BAR LENGTHS SHALL BE DETERMINED BASED ON DIMENSIONS SHOWN IN THE BAR BENDING DIAGRAMS. TOTAL BAR LENGTHS SHOWN ARE FOR USE IN COMPUTING REINFORCEMENT BAR WEIGHTS FOR PAYMENT ONLY.

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Signature: _____ Date: 3/5/2007

Printed Name: JEFFREY A JOHNSON Reg. No. 17280

TITLE: SOUTH ABUTMENT - STAGE 2 BARLIST & SUMMARY OF QUANTITIES

SP 0280-55 SAP 02-623-13

DES: CAW	DR: MAW	APPROVED:
CHK: JDS	CHK: CAW	

SHEET NO B24 OF 95 SHEETS

BRIDGE NO 02817

NORTH ABUTMENT COMPUTED PILE LOAD - TONS/PILE	
FACTORED DEAD LOAD + EARTH PRESSURE	75.5
FACTORED LIVE LOAD	9.2
✳FACTORED DESIGN LOAD = PILE BEARING RESISTANCE	84.7

✳BASED ON STRENGTH I LOAD COMBINATION.

NORTH ABUTMENT REQUIRED NOMINAL PILE BEARING RESISTANCE Rn - Tons / Pile		
FIELD CONTROL METHOD	ϕ_{dyn}	✳R_n
MnDOT NOMINAL RESISTANCE FORMULA	0.40	211.8
PDA	0.60	141.2

✳R_n = (FACTORED DESIGN LOAD) / ϕ_{dyn}

PILE NOTES

2 CAST-IN-PLACE CONC TEST PILES 65 FT LONG
53 CAST-IN-PLACE CONC PILES EST LENGTH 55 FT
55 CAST-IN-PLACE CONC. PILES REQ'D FOR NORTH ABUT, STAGE 1.

PILE SPACING SHOWN IS AT BOTTOM OF FOOTING.

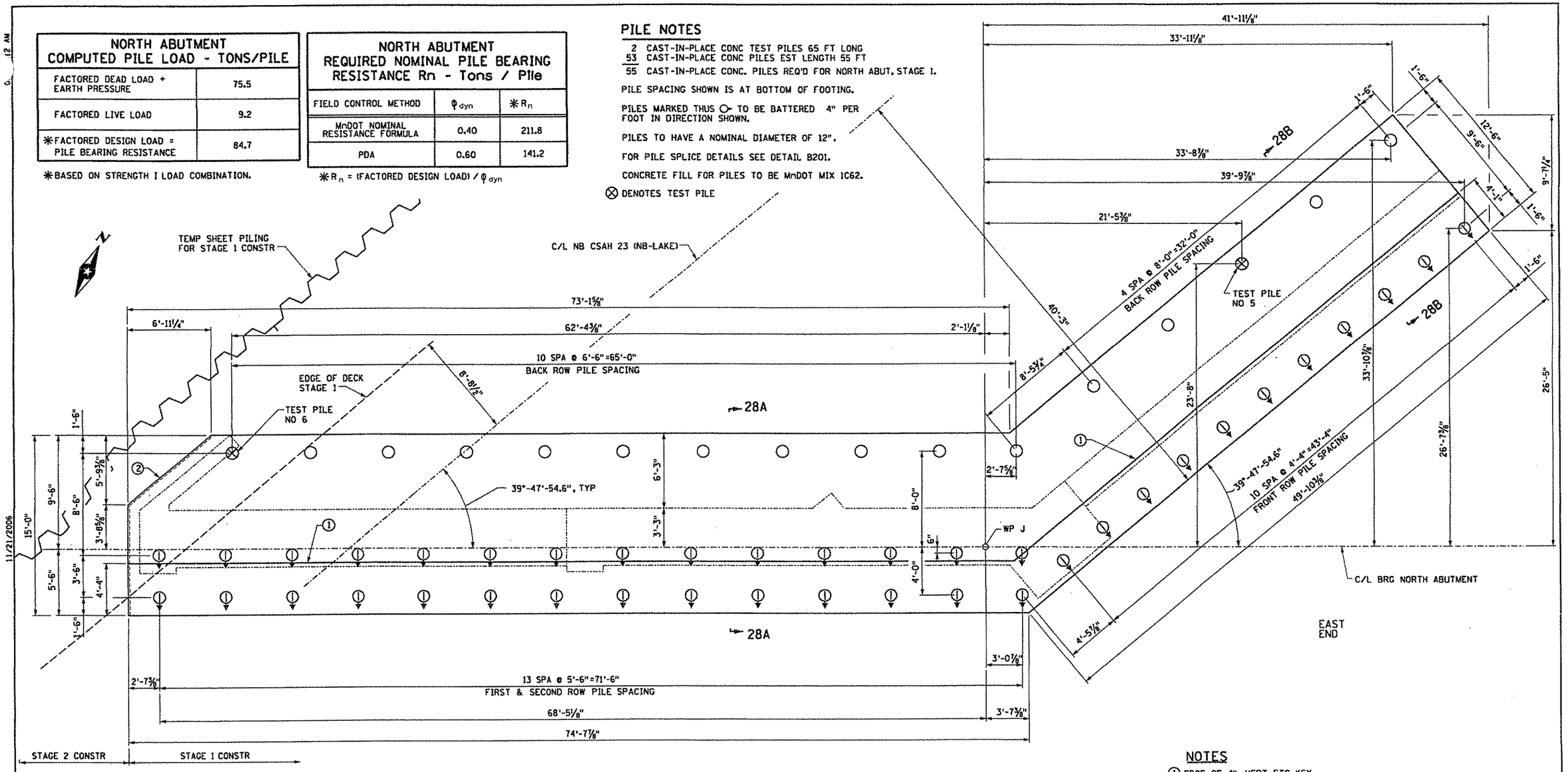
PILES MARKED THUS ⊖ TO BE BATTERED 4" PER FOOT IN DIRECTION SHOWN.

PILES TO HAVE A NOMINAL DIAMETER OF 12".

FOR PILE SPLICE DETAILS SEE DETAIL B201.

CONCRETE FILL FOR PILES TO BE MnDOT MIX 1C62.

⊗ DENOTES TEST PILE



FOOTING PLAN-STAGE 1

NOTES

① EDGE OF 4" VERT FTG KEY.
② HORIZ CONSTRUCTION JOINT W/ 2"x12" KEY CENTERED IN FOOTING.

SEE SHEET B34 FOR BAR LIST AND SUMMARY OF QUANTITIES.

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Signature: _____ Date: 11/21/2006
Printed Name: CHRISTOPHER A WUNSCH Reg. No. 42058

TITLE: NORTH ABUTMENT DETAILS STAGE 1

SP 0280-55 SAP 02-623-13

DES: CAW	DR: MAW	APPROVED:
CHK: JDS	CHK: CAW	

SHEET NO B25 OF 95 SHEETS

BRIDGE NO 02817

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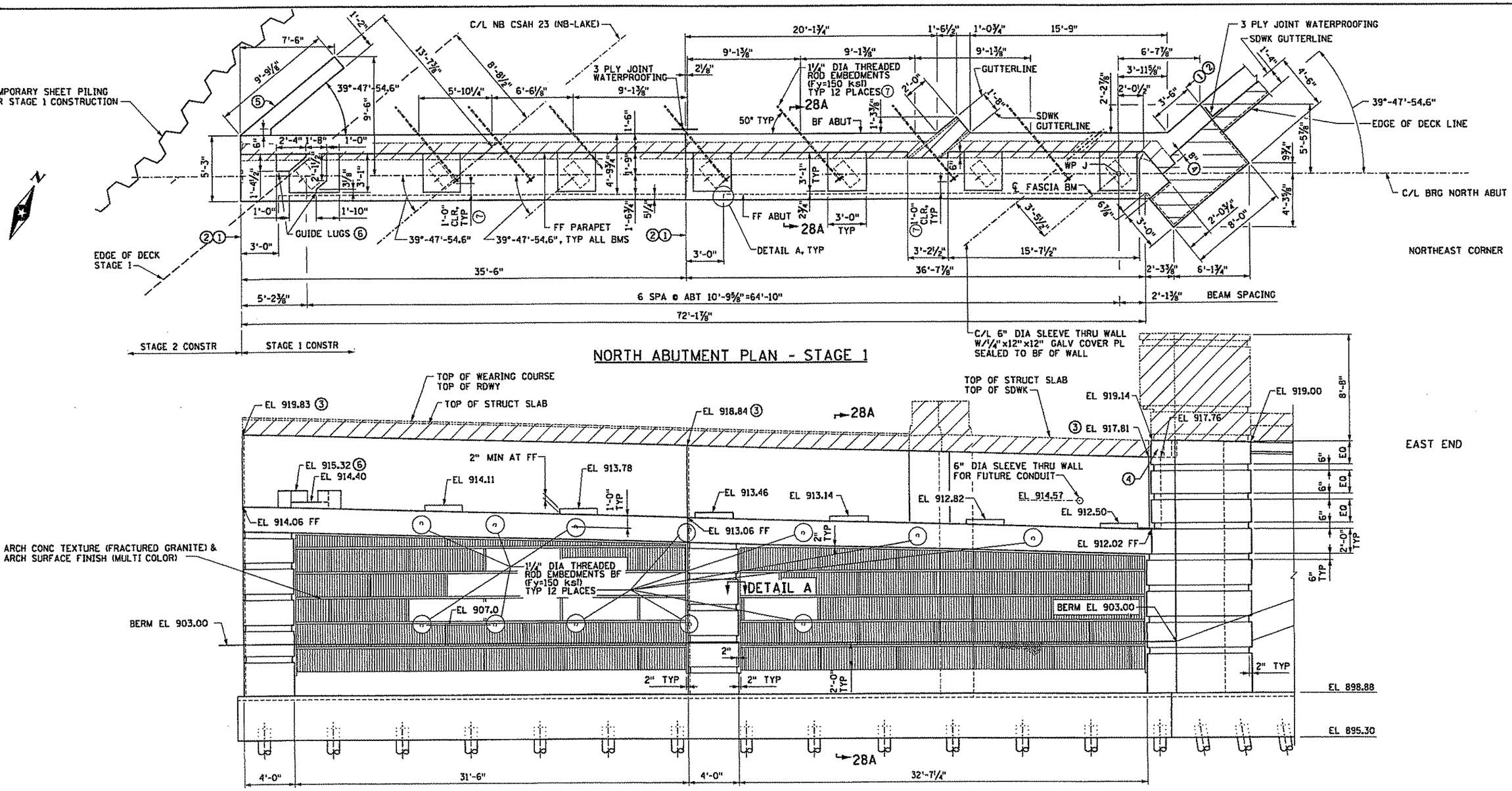

NORTH ABUTMENT PLAN - STAGE 1

NORTH ABUTMENT ELEVATION - STAGE 1

NOTES

SEE SHEET B34 FOR BAR LIST AND SUMMARY OF QUANTITIES.

HATCHED AREA INDICATES THAT PORTION TO BE PLACED WITH THE SUPERSTRUCTURE CONCRETE.

FF=FRONT FACE
BF=BACK FACE
EF=EACH FACE

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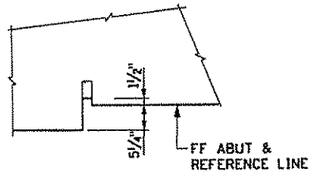

DETAIL A

NOTES

① CONSTRUCTION JOINT WITH VERTICAL KEY CENTERED IN WALL. 72 HOUR TIME DELAY REQUIRED BETWEEN ADJACENT POURS TO ALLOW FOR SHRINKAGE.

② 2"x8" KEY IN PARAPET AND 2"x12" KEY IN STEM.

③ ELEVATION IS AT PARAPET FF.

④ REQUIRED BLOCKOUT FOR PAVING BLOCK EXPANSION DEVICE INSTALLATION.

⑤ STUB WALL FOR TEMP SHEETING SUPPORT FOR STAGE 2 CONSTRUCTION.

⑥ GUIDE LUGS TO BE POURED 1" CLEAR FROM BEAM BOTTOM FLANGE AFTER THE BEAMS HAVE BEEN SET IN PLACE. NO EXCEPTIONS.

⑦ THREADED RODS TO BE INCLUDED IN PRICE BID FOR "STEEL SHEET PILING (TEMP)". SEE SHEETS B45-B55 FOR DETAILS.

SEH
3535 VADNAIS CENTER DRIVE
ST PAUL, MN 55110
PHONE (651) 490-2000
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I hereby certify that this plan, specification, or report 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

Signature: _____ Date: 3/5/2007

Printed Name: JEFFREY A. JOHNSON Reg. No. 17280

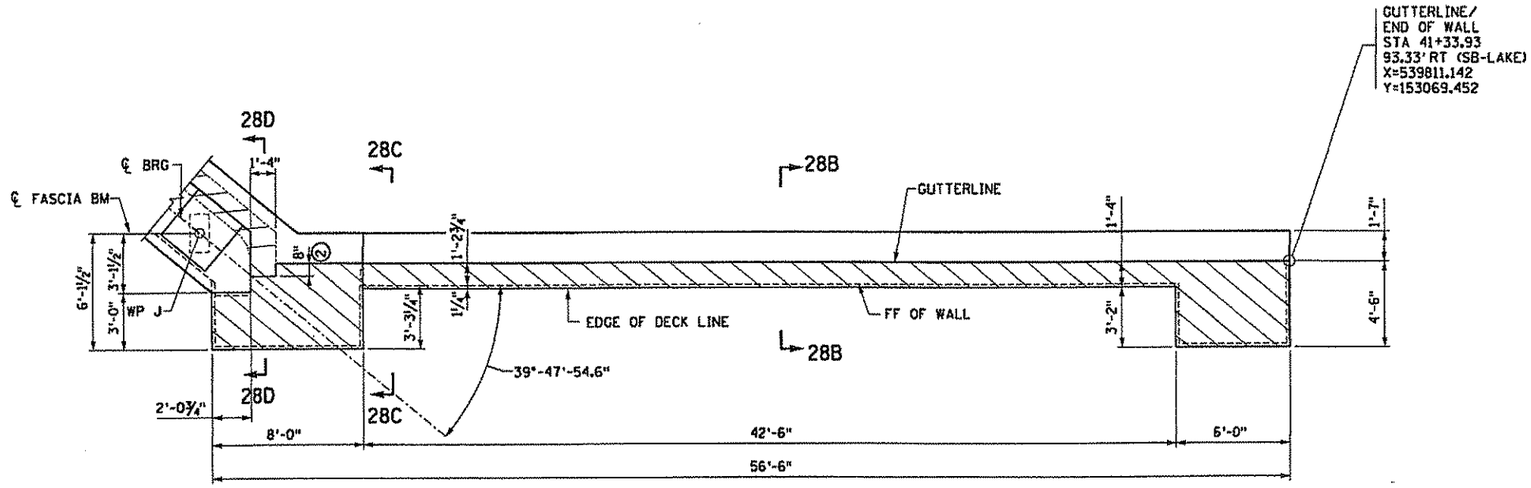
TITLE: NORTH ABUTMENT DETAILS STAGE 1

SP 0280-55 SAP 02-623-13

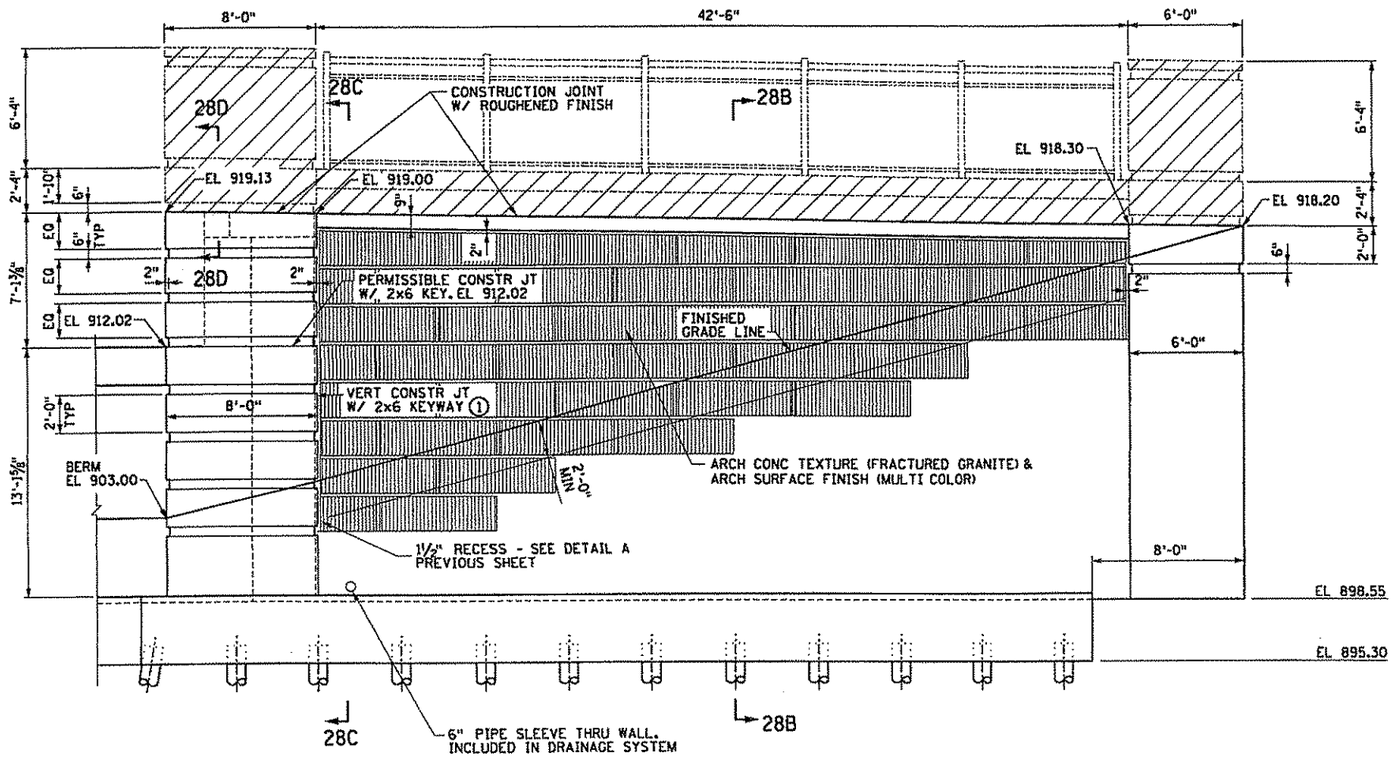
DES: CAW	DR: MAW	APPROVED:
CHK: JDS	CHK: CAW	

SHEET NO B26 OF 95 SHEETS

BRIDGE NO 02817



NORTHEAST WINGWALL PLAN - STAGE 1



NORTHEAST WINGWALL ELEVATION - STAGE 1

NOTES

SEE SHEET B34 FOR BAR LIST AND SUMMARY OF QUANTITIES.

HATCHED AREA INDICATES THAT PORTION TO BE PLACED WITH THE SUPERSTRUCTURE CONCRETE.

(1) CONSTRUCTION JOINT WITH VERTICAL KEY CENTERED IN WALL. 72 HOUR TIME DELAY REQUIRED BETWEEN ADJACENT POURS TO ALLOW FOR SHRINKAGE.

(2) REQUIRED BLOCKOUT FOR PAVING BLOCK EXPANSION DEVICE INSTALLATION.

FF=FRONT FACE
BF=BACK FACE
EF=EACH FACE

ALL SURFACES RECEIVING ARCHITECTURAL CONCRETE TEXTURE AND ARCHITECTURAL SURFACE FINISH SHALL BE FINISHED TO A DEPTH OF 2'-0" BELOW FINISHED GRADE AND SHALL RECEIVE ANTI-GRAFFITI COATING.

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Signature: _____ Date: 3/5/2007

Printed Name: JEFFREY A JOHNSON Reg. No. 17280

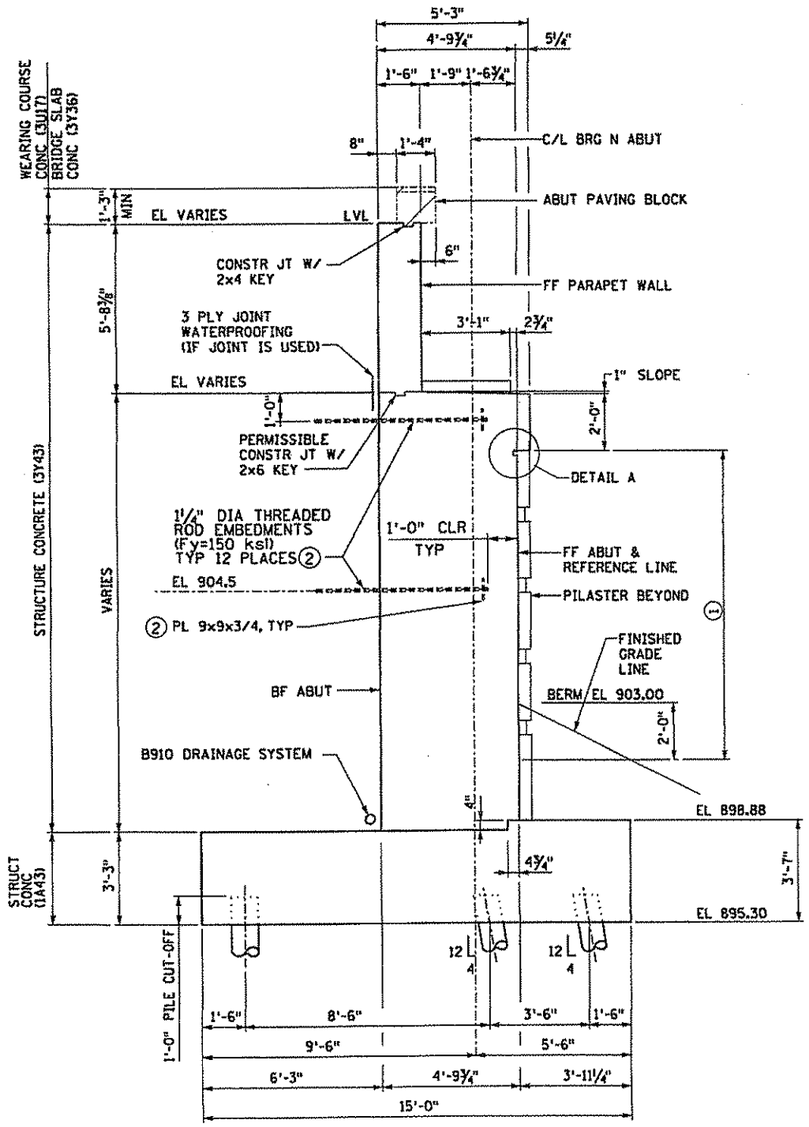
TITLE: NORTH ABUTMENT DETAILS STAGE 1

SP 0280-55 SAP 02-623-13

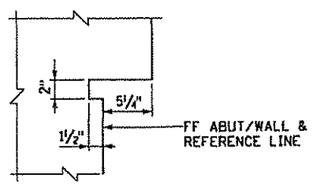
DES: CAW	DR: MAW	APPROVED:
CHK: JDS	CHK: CAW	

SHEET NO B27 OF 95 SHEETS

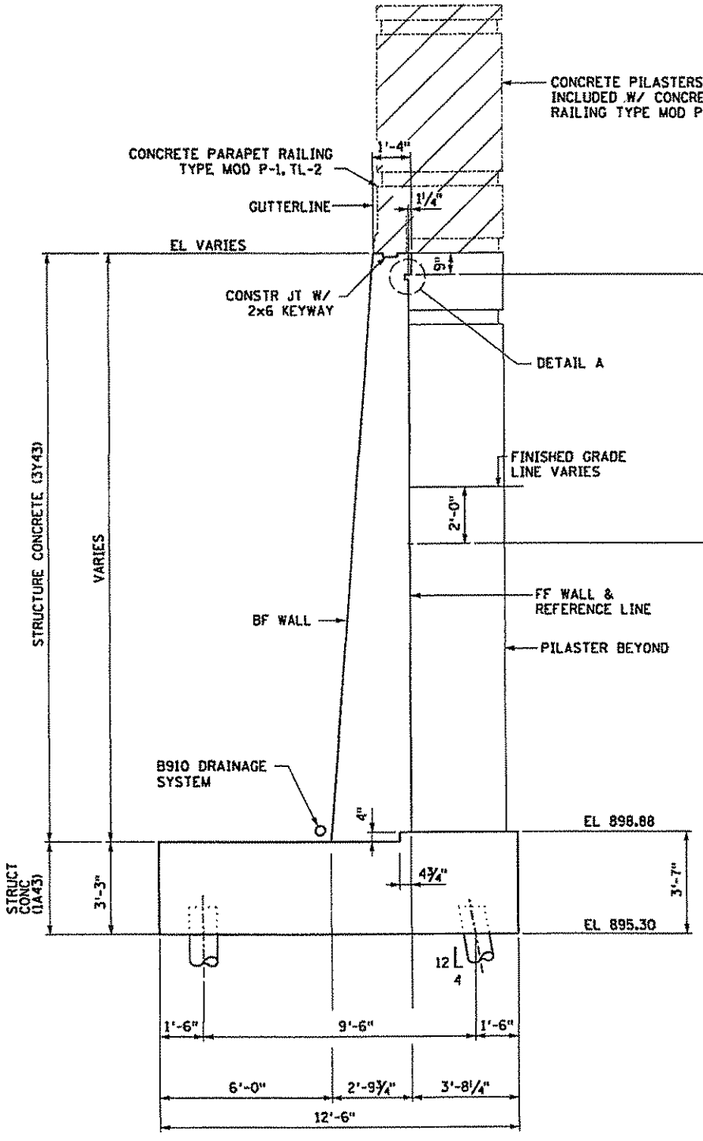
BRIDGE NO 02817



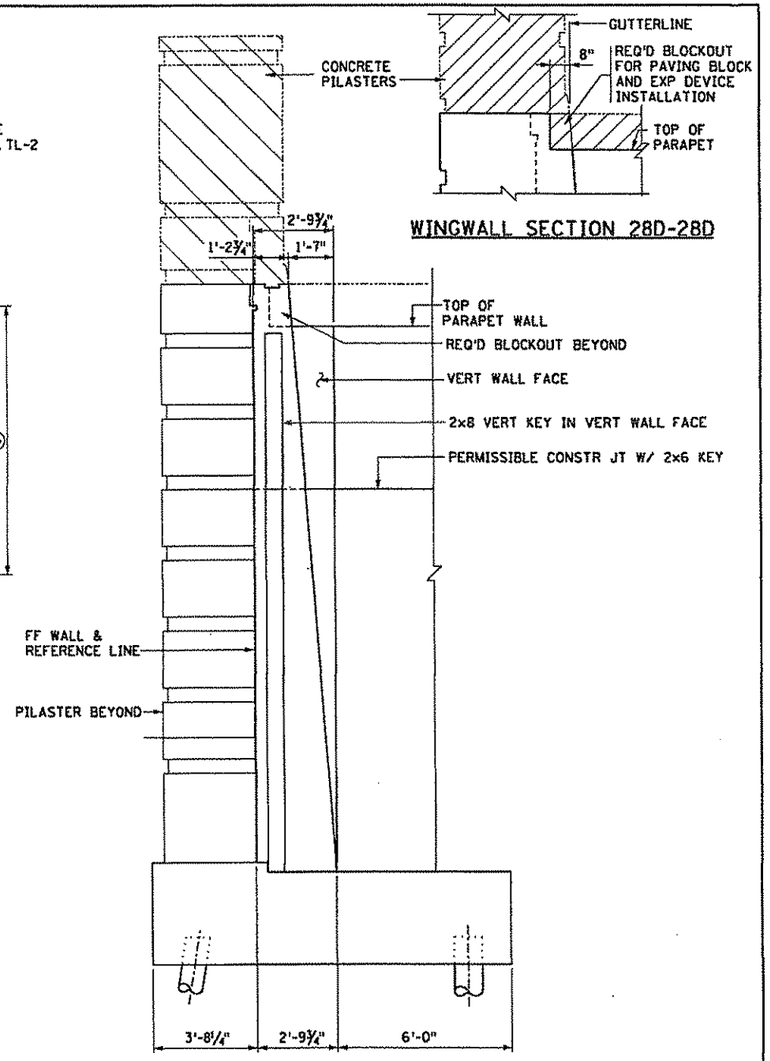
ABUTMENT SECTION 28A-28A



DETAIL A



WINGWALL SECTION 28B-28B



WINGWALL SECTION 28C-28C

WINGWALL SECTION 28D-28D

NOTES

SEE SHEET B34 FOR BAR LIST AND SUMMARY OF QUANTITIES.

HATCHED AREA INDICATES THAT PORTION TO BE PLACED WITH THE SUPERSTRUCTURE CONCRETE.

(1) LIMITS OF ARCH CONC TEXTURE (FRACTURED GRANITE) & ARCH SURFACE FINISH (MULTI COLOR). ALL SURFACES RECEIVING ARCHITECTURAL CONCRETE TEXTURE AND ARCHITECTURAL SURFACE FINISH SHALL BE FINISHED TO A DEPTH OF 2'-0" BELOW FINISHED GRADE AND SHALL RECEIVE ANTI-GRAFFITI COATING.

(2) THREADED RODS TO BE INCLUDED IN PRICE BID FOR "STEEL SHEET PILING (TEMP)". SEE SHEETS B45-B55 FOR DETAILS.

FF=FRONT FACE
BF=BACK FACE
EF=EACH FACE

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Signature: _____ Date: 3/5/2007

Printed Name: JEFFREY A JOHNSON Reg. No. 17280

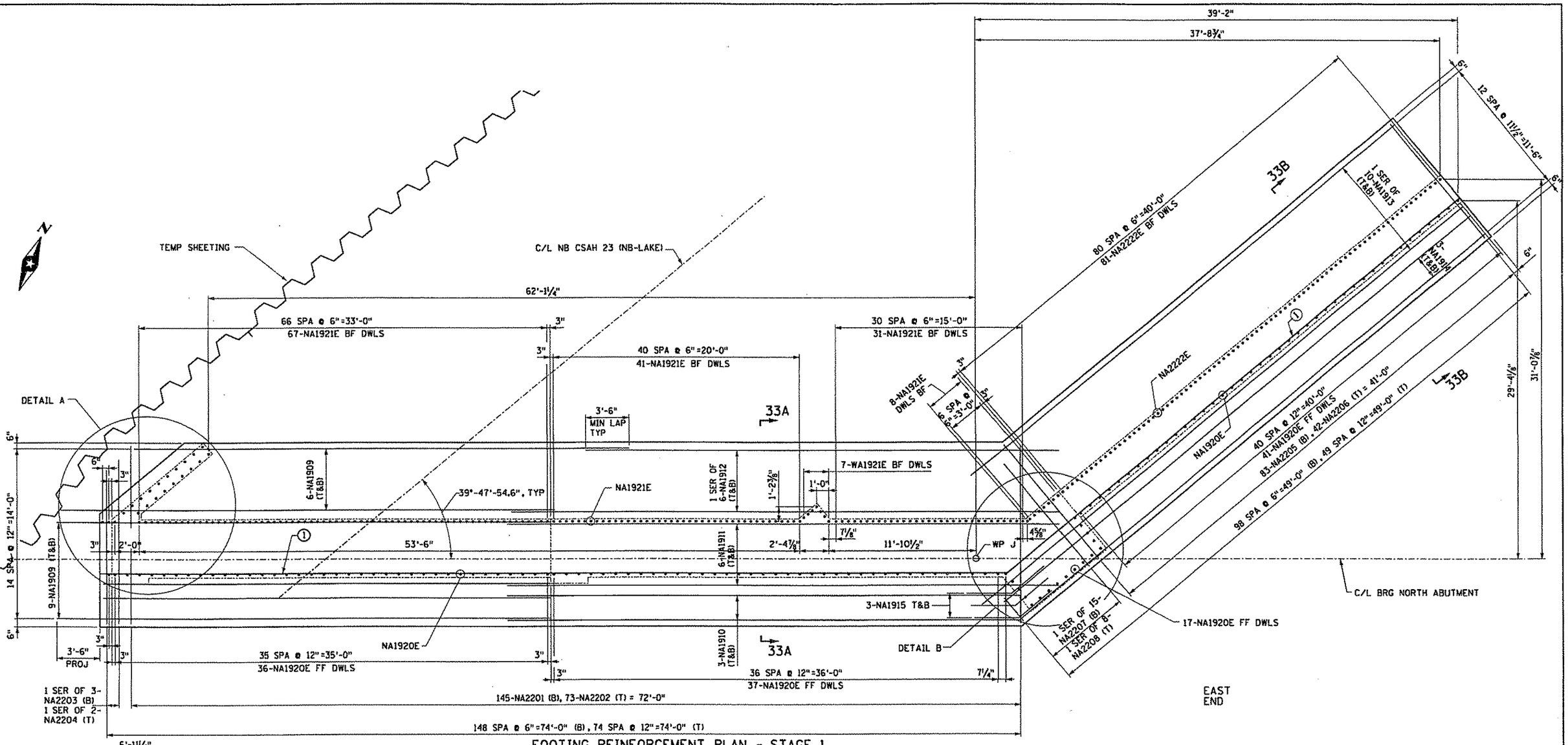
TITLE: NORTH ABUTMENT DETAILS STAGE 1

SP 0280-55 SAP 02-623-13

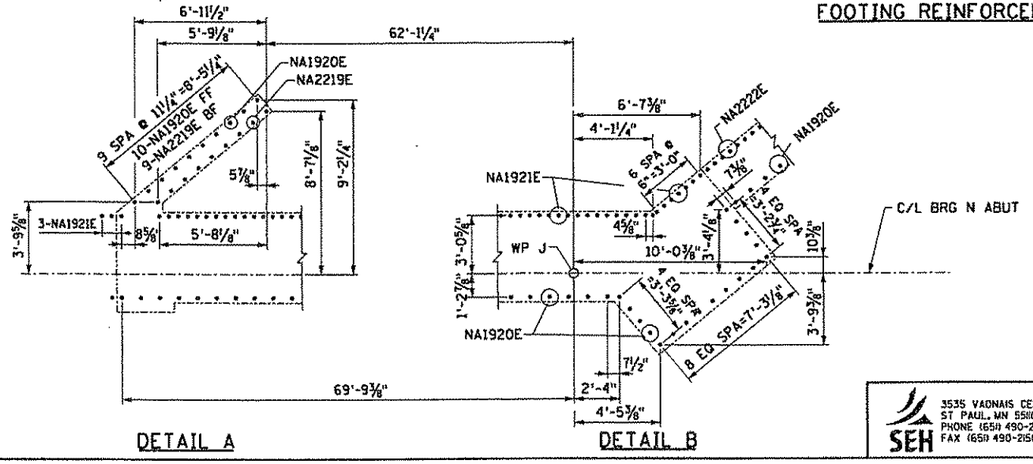
DES: CAW	DR: MAW	APPROVED:
CHK: JDS	CHK: CAW	

SHEET NO B28 OF 95 SHEETS

BRIDGE NO 02817



FOOTING REINFORCEMENT PLAN - STAGE 1



NOTES

(1) EDGE OF 4" VERT FTG KEY.

SEE SHEET B34 FOR BAR LIST AND SUMMARY OF QUANTITIES.

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ST PAUL, MN 55110
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FAX (651) 490-2150

I hereby certify that this plan, specification, or report 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
Signature: _____ Date: 11/21/2006
Printed Name: CHRISTOPHER A WUNSCH Reg. No. 42058

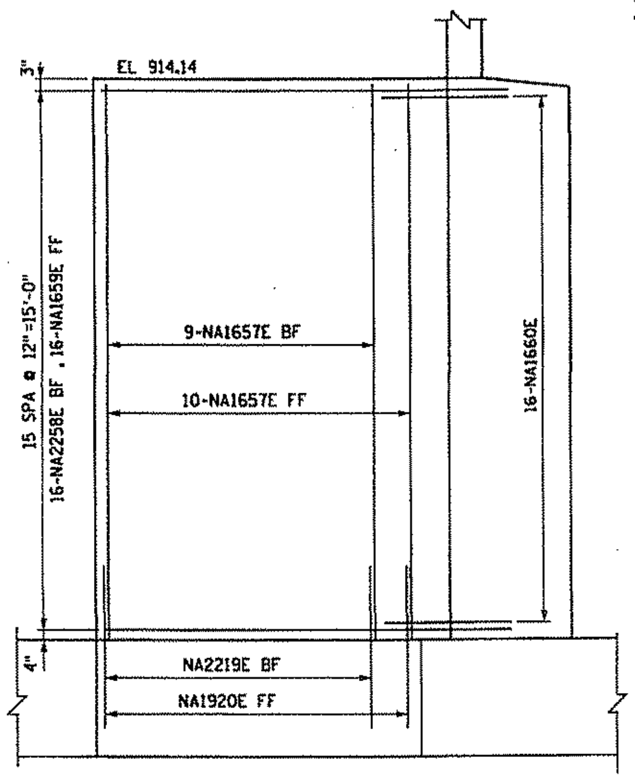
TITLE: NORTH ABUTMENT DETAILS STAGE 1

SP 0280-55 SAP 02-623-13

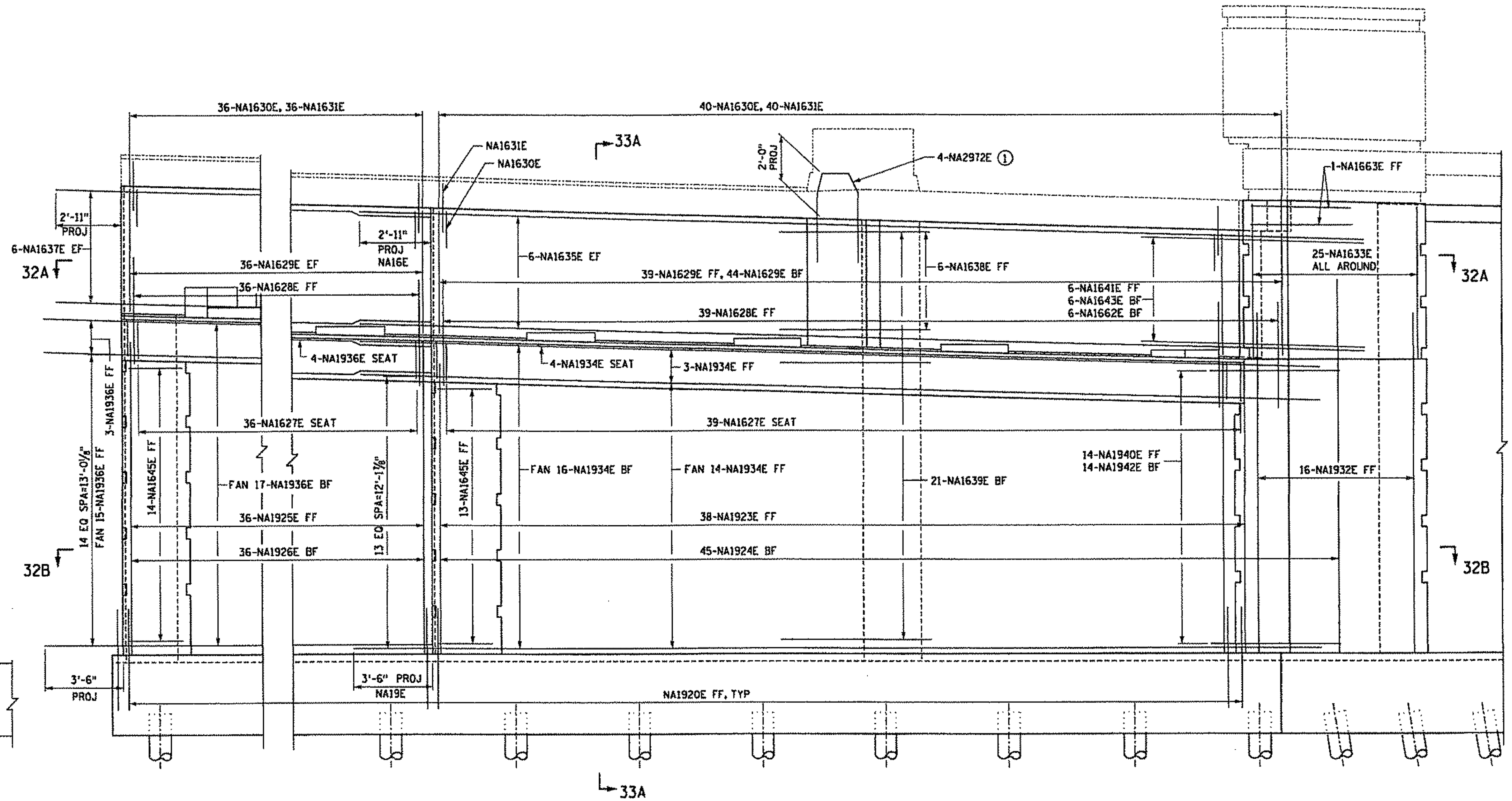
DES: CAW	DR: MAW	APPROVED:
CHK: JDS	CHK: CAW	

SHEET NO B29 OF 95 SHEETS

BRIDGE NO 02817



STUB WALL ELEVATION



NORTH ABUTMENT ELEVATION

FF=FRONT FACE
BF=BACK FACE
EF=EACH FACE

NOTES

SEE SHEET B34 FOR BAR LIST AND SUMMARY OF QUANTITIES.

(1) SEE SIDEWALK MEDIAN BARRIER (TYPE MOD P-4) FOR PLACEMENT.

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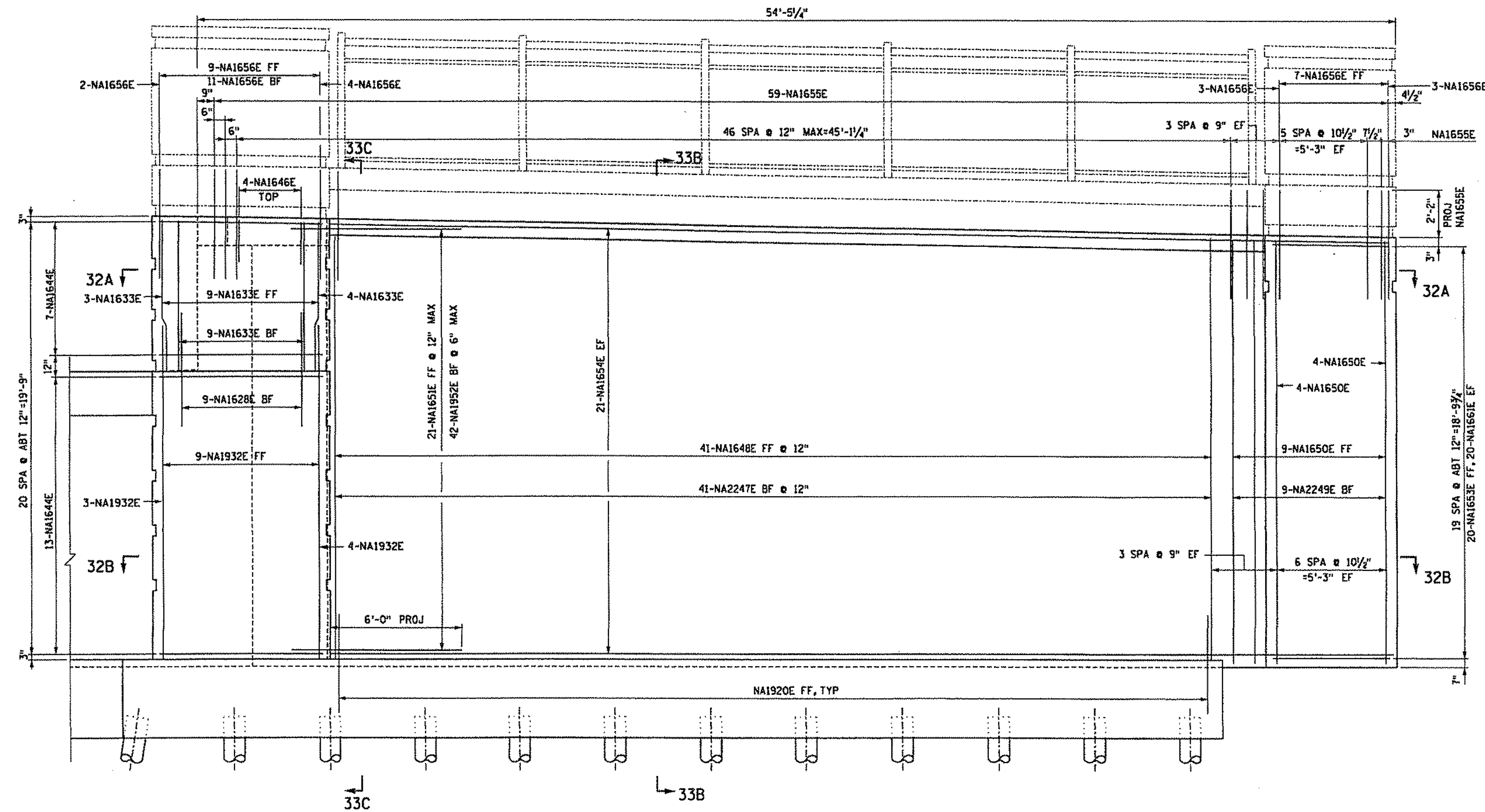
Signature: [signature] Date: 11/21/2006
Printed Name: CHRISTOPHER A. MUNSCH. Reg. No. 42058

SP 0280-55 SAP 02-623-13

TITLE: NORTH ABUTMENT DETAILS STAGE 1	DES: CAW	DR: MAW	APPROVED:	BRIDGE NO 02817
	CHK: JDS	CHK: CAW		
	SHEET NO B30 OF 95 SHEETS			



NORTHEAST WINGWALL ELEVATION

NOTES

SEE SHEET B34 FOR BAR LIST AND SUMMARY OF QUANTITIES.

FF=FRONT FACE
BF=BACK FACE
EF=EACH FACE

SP 0280-55 SAP 02-623-13

SEH 3535 VADNAIS CENTER DRIVE ST PAUL, MN 5510 PHONE (651) 490-2000 FAX (651) 490-2150

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Signature: Date: 11/21/2006

Printed Name: CHRISTOPHER A WUNSCH Reg. No. 42058

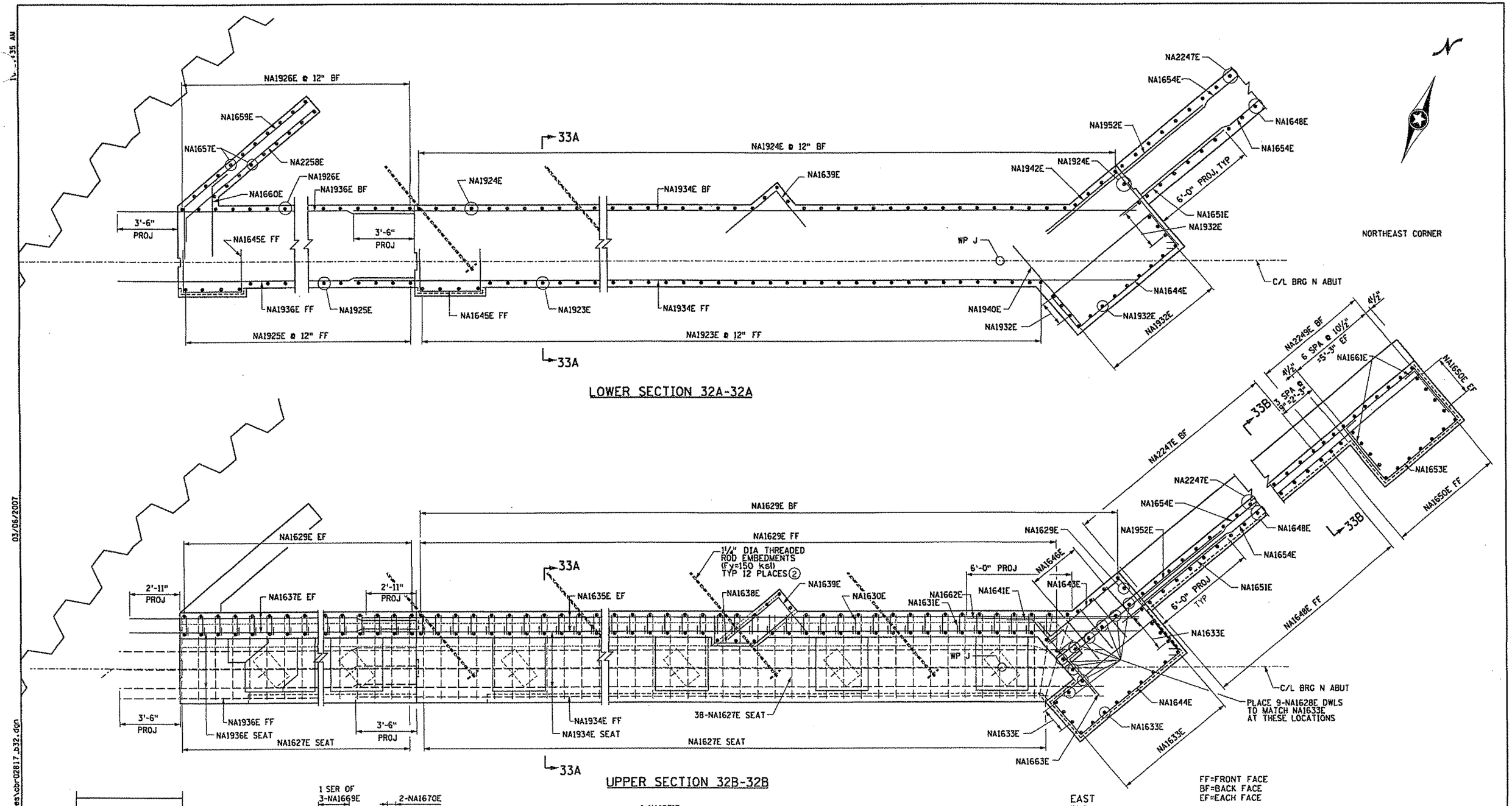
TITLE: NORTH ABUTMENT DETAILS STAGE 1

DES: CAW	DR: MAW	APPROVED:
CHK: JDS	CHK: CAW	

SHEET NO B31 OF 95 SHEETS

BRIDGE NO 02817

11/21/2006



LOWER SECTION 32A-32A

UPPER SECTION 32B-32B

NOTES

SEE SHEET B34 FOR BAR LIST AND SUMMARY OF QUANTITIES.

(1) GUIDE LUGS TO BE POURED 1" CLEAR FROM BEAM BOTTOM FLANGE AFTER THE BEAMS HAVE BEEN SET IN PLACE. NO EXCEPTIONS.

(2) THREADED RODS TO BE INCLUDED IN PRICE BID FOR "STEEL SHEET PILING (TEMP)". SEE SHEETS B85-B95 FOR DETAILS.

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Signature: _____ Date: 3/5/2007

Printed Name: JEFFREY A JOHNSON Reg. No. 17280

TITLE: NORTH ABUTMENT DETAILS STAGE 1

SP 0280-55 SAP 02-623-13

DES: CAW	DR: MAW	APPROVED:
CHK: JDS	CHK: CAW	

SHEET NO B32 OF 95 SHEETS

BRIDGE NO 02817

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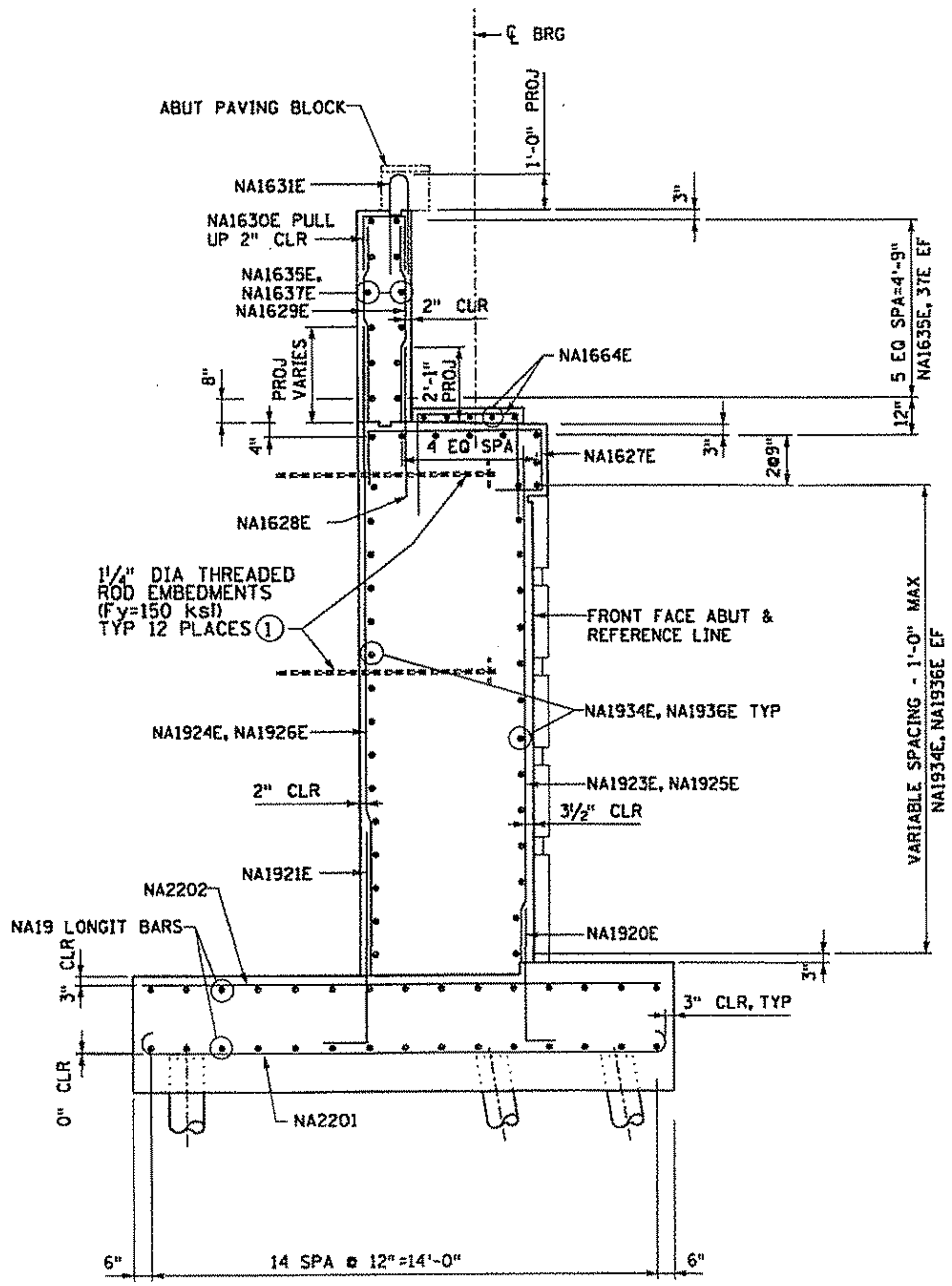
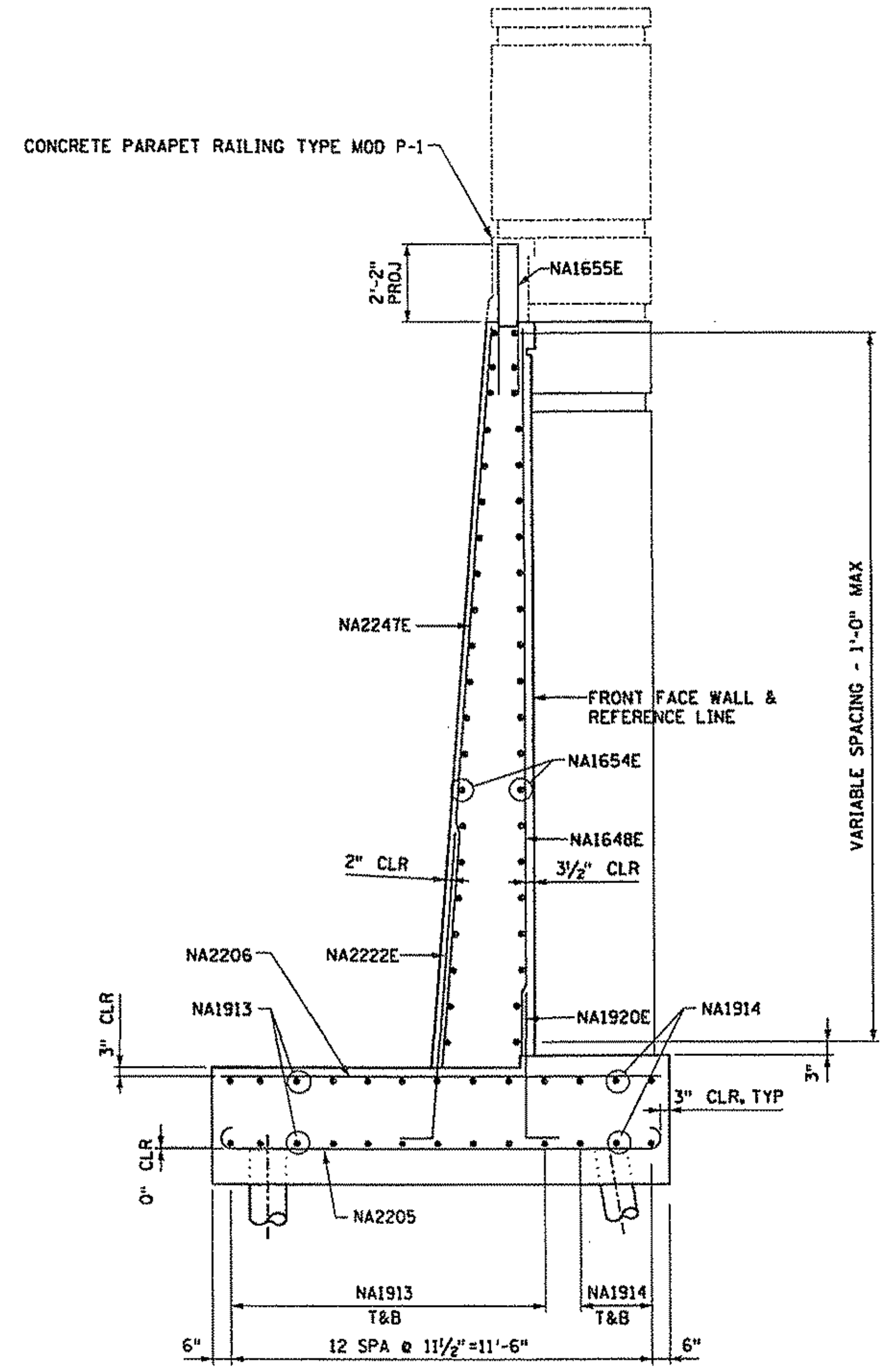
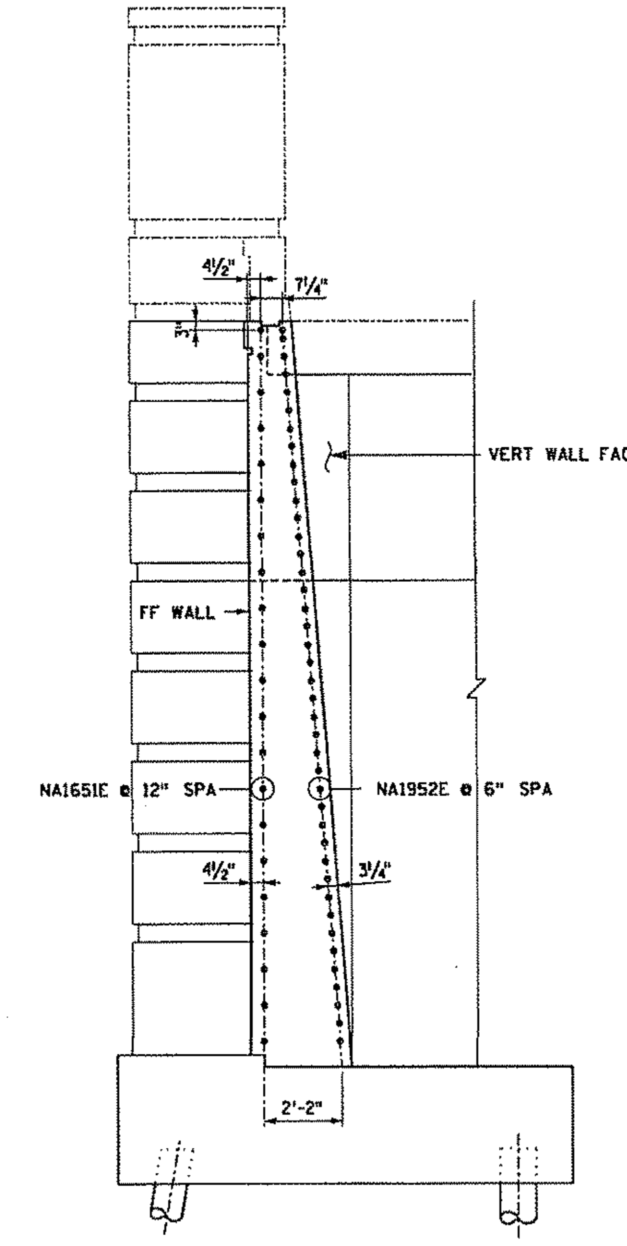


ABUTMENT SECTION 33A-33A



NORTHEAST WINGWALL SECTION 33B-33B



NORTHEAST WINGWALL SECTION 33C-33C

NOTES

SEE SHEET B34 FOR BAR LIST AND SUMMARY OF QUANTITIES.

① THREADED RODS TO BE INCLUDED IN PRICE BID FOR "STEEL SHEET PILING (TEMP)". SEE SHEETS B85-B95 FOR DETAILS.

FF=FRONT FACE
BF=BACK FACE
EF=EACH FACE

SP 0280-55 SAP 02-623-13

SEH 3535 VADNAIS CENTER DRIVE ST PAUL, MN 55110 PHONE (651) 490-2000 FAX (651) 490-2150	I hereby certify that this plan, specification, or report 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. Signature: [signature] Date: 3/5/2007 Printed Name: JEFFREY A JOHNSON Reg. No. 17280	TITLE: NORTH ABUTMENT DETAILS STAGE 1	DES: CAW / DR: MAW / APPROVED: / CHK: JDS / CHK: CAW / SHEET NO B33 OF 95 SHEETS	BRIDGE NO 02817

03/06/2007

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BAR MARK	NO OF SERIES	NO OF BARS	LENGTH	TYPE	DIMENSION A	B	C	D	LOCATION
NORTH ABUTMENT-STAGE 1									
EPOXY COATED BARS									
NA2219E		9	7'-2"	100	6'-0"				FTG DWL FF
NA1920E		143	5'-5"	100	4'-5"				FTG DWL FF
NA1921E		157	9'-11"	100	8'-11"				FTG DWL BF
NA2222E		81	12'-5"	112	11'-3"	1			FTG DWL BF
NA1923E		38	13'-0"	STR					VERT FF
NA1924E		45	16'-8"	STR					VERT BF
NA1925E		36	14'-0"	STR					VERT FF
NA1926E		36	17'-8"	STR					VERT BF
NA1627E		75	8'-7"	211	4'-11"	1'-8"	1'-0"		SEAT
NA1628E		84	4'-2"	STR					PARAPET DWL
NA1629E		155	5'-6"	STR					VERT PARAPET
NA1630E		76	3'-10"	101	1'-4"	1'-2"			TOP PARAPET
NA1631E		76	6'-0"	127	0'-6"	3'-0"			PAVING BLOCK
NA1932E		16	15'-3"	STR					VERT PILASTER
NA1633E		25	6'-10"	STR					VERT PILASTER
NA1934E		37	45'-10"	STR					HORIZ BODY
NA1635E		12	45'-3"	STR					HORIZ PARAPET
NA1936E		39	39'-0"	STR					HORIZ BODY
NA1637E		12	38'-5"	STR					HORIZ PARAPET
NA1638E		6	6'-8"	114	2'-4"	2'-9"	10		UNDER BARRIER
NA1639E		21	6'-3"	100	3'-10"				UNDER BARRIER
NA1940E		14	6'-0"	STR					HORIZ CORNER
NA1641E		6	6'-11"	111	5'-11"	14			HORIZ CORNER
NA1942E		14	10'-8"	100	5'-4"				HORIZ CORNER
NA1643E		6	11'-6"	120	5'-4"	5'-2"			HORIZ CORNER
NA1644E		20	20'-7"	104	7'-5"	2'-5"			HORIZ CORNER
NA1645E		27	6'-5"	101	1'-6"	3'-5"			HORIZ FF PILASTER
NA1646E		4	6'-0"	100	3'-0"				CORNER TOP
NA2247E		41	19'-7"	STR					VERT WALL BF
NA1648E		41	19'-3"	STR					VERT WALL FF
NA2249E		9	19'-5"	STR					VERT WALL BF
NA1650E		17	19'-5"	STR					VERT WALL FF
NA1651E		21	7'-9"	STR					HORIZ DWL FF
NA1952E		42	12'-0"	STR					HORIZ DWL BF
NA1653E		20	13'-5"	101	4'-0"	5'-5"			HORIZ PILASTER
NA1654E		42	48'-4"	STR					WALL HORIZ
NA1655E		59	8'-4"	101	3'-10"	0'-8"			MOD P-1 RAIL
NA1656E		38	4'-9"	STR					VERT RAIL
NA1657E		19	15'-5"	STR					STUB WALL
NA2258E		16	11'-8"	111	9'-8"	14			STUB WALL
NA1659E		16	12'-4"	111	9'-4"	14			STUB WALL
NA1660E		16	5'-0"	111	4'-0"	14			STUB WALL
NA1661E		40	3'-10"	100	3'-0"				HORIZ PILASTER
NA1662E		6	10'-0"	STR					HORIZ CORNER
NA1663E		2	3'-10"	100	2'-10"				HORIZ FF CORNER
NA1664E		70	6'-8"	101	2'-0"	2'-8"			BRG SEAT
NA1665E		3	5'-8"	101	2'-6"	0'-8"			GUIDE LUG
NA1666E		1	6'-5"	101	2'-6"	1'-5"			GUIDE LUG
NA1667E		1	6'-11"	101	2'-6"	1'-11"			GUIDE LUG
NA1668E		1	5'-10"	101	2'-6"	0'-10"			GUIDE LUG
NA1669E	1	3	1'-0"	STR					GUIDE LUG
			1'-8"						
NA1670E		2	2'-9"	STR					GUIDE LUG
NA1671E		1	2'-7"	111	1'-9"	10			GUIDE LUG
NA2972E		4	8'-8"	162	3'-0"	0'-11"	10 1/2"	3	VERT RAIL

BAR MARK	NO OF SERIES	NO OF BARS	LENGTH	TYPE	DIMENSION A	B	C	D	LOCATION
NORTH ABUTMENT - STAGE 1									
BLACK BARS									
NA2201		145	16'-2"	129	14'-6"	0'-10"			TRANSV B
NA2202		73	14'-6"	STR					TRANSV T
NA2203	1	3	13'-4"	128	12'-6"	0'-10"			TRANSV B
			14'-2"		13'-4"	0'-10"			
NA2204	1	2	12'-6"	STR					TRANSV T
			13'-4"						
NA2205		83	13'-8"	129	12'-0"	0'-10"			TRANSV B
NA2206		42	12'-0"	STR					TRANSV T
NA2207	1	15	3'-4"	128	2'-6"	0'-10"			TRANSV B
			11'-7"		10'-9"	0'-10"			
NA2208	1	8	2'-6"	STR					TRANSV T
			10'-9"						
NA1909		30	40'-0"	STR					LONGIT T&B
NA1910		6	41'-6"	STR					LONGIT T&B
NA1911		12	44'-9"	STR					LONGIT T&B
NA1912	2	6	38'-4"	STR					LONGIT T&B
			44'-4"						
NA1913	2	10	45'-0"	STR					LONGIT T&B
			52'-0"						
NA1914		6	49'-5"	STR					LONGIT T&B
NA1915		6	7'-0"	111	3'-6"	10			LONGIT T&B

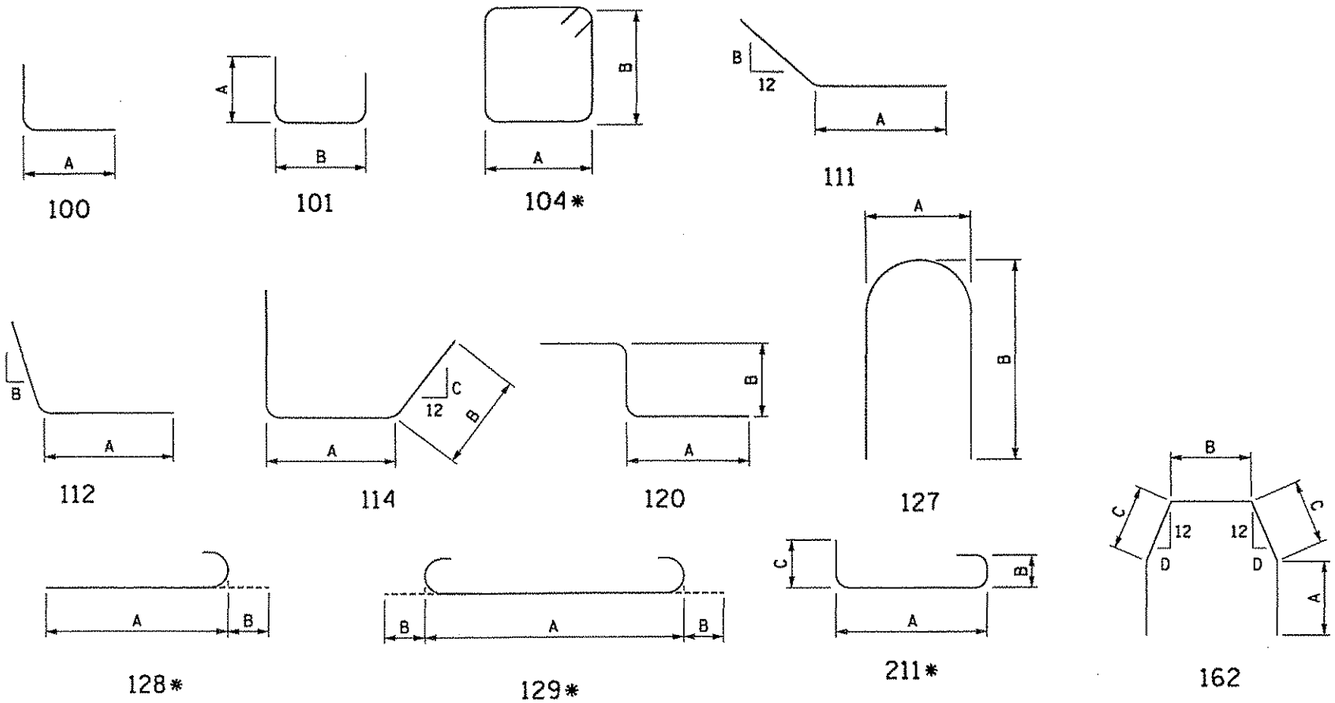
SUMMARY OF QUANTITIES FOR NORTH ABUTMENT - STAGE 1

	ITEM	UNIT	QUANTITY
	STRUCTURAL CONCRETE (1A43)	CU YD	206
	STRUCTURAL CONCRETE (3Y43)	CU YD	344
	REINFORCEMENT BARS	POUND	16470
	REINFORCEMENT BARS (EPOXY COATED)	POUND	28730
①	C-I-P CONCRETE PILING DELIVERED 12"	LIN FT	2915
①	C-I-P CONCRETE PILING DRIVEN 12"	LIN FT	2915
	C-I-P CONCRETE TEST PILE 65 FT LONG 12"	EACH	2
	PILE POINTS	EACH	55
	PILE ANALYSIS	EACH	1
②	3-PLY JOINT WATERPROOFING	LIN FT	120
	ANTI-GRAFFITI COATING	SQ FT	1015
	ARCH CONC TEXTURE (FRACTURED GRANITE)	SQ FT	1015
	ARCH SURFACE FINISH (MULTI COLOR)	SQ FT	1015
②	6" DIA PIPE SLEEVE WITH CAP	EACH	1

① DOES NOT INCLUDE TEST PILES.

② TO BE INCLUDED IN PRICE BID FOR OTHER ITEMS.

BAR BENDING DIAGRAMS



* BAR TYPE USES STANDARD STIRRUP AND TIE HOOKS.

NOTE:
BENT BAR DIMENSIONS GIVEN ARE OUT-TO-OUT. ACTUAL BAR LENGTHS SHALL BE DETERMINED BASED ON DIMENSIONS SHOWN IN THE BAR BENDING DIAGRAMS. TOTAL BAR LENGTHS SHOWN ARE FOR USE IN COMPUTING REINFORCEMENT BAR WEIGHTS FOR PAYMENT ONLY.

SP 0280-55 SAP 02-623-13

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Signature: _____ Date: 3/5/2007

Printed Name: JEFFREY A JOHNSON Reg. No. 17280

TITLE: NORTH ABUTMENT - STAGE 1 BARLIST & SUMMARY OF QUANTITIES

DES: CAW DR: MAW APPROVED:

CHK: JDS CHK: CAW

SHEET NO B34 OF 95 SHEETS

BRIDGE NO 02817

03/07/2007 07 AM

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NORTH ABUTMENT COMPUTED PILE LOAD - TONS/PILE	
FACTORED DEAD LOAD + EARTH PRESSURE	75.5
FACTORED LIVE LOAD	9.2
✱FACTORED DESIGN LOAD = PILE BEARING RESISTANCE	84.7

✱BASED ON STRENGTH I LOAD COMBINATION.

NORTH ABUTMENT REQUIRED NOMINAL PILE BEARING RESISTANCE Rn - Tons / Pile		
FIELD CONTROL METHOD	φ_{dyn}	✱R_n
MnDOT NOMINAL RESISTANCE FORMULA	0.40	211.8
PDA	0.60	141.2

✱R_n = (FACTORED DESIGN LOAD) / φ_{dyn}

PILE NOTES

2 CAST-IN-PLACE CONC TEST PILES 65 FT LONG
66 CAST-IN-PLACE CONC PILES EST LENGTH 55 FT
68 CAST-IN-PLACE CONC. PILES REQ'D FOR NORTH ABUT. STAGE 2.

PILE SPACING SHOWN IS AT BOTTOM OF FOOTING.

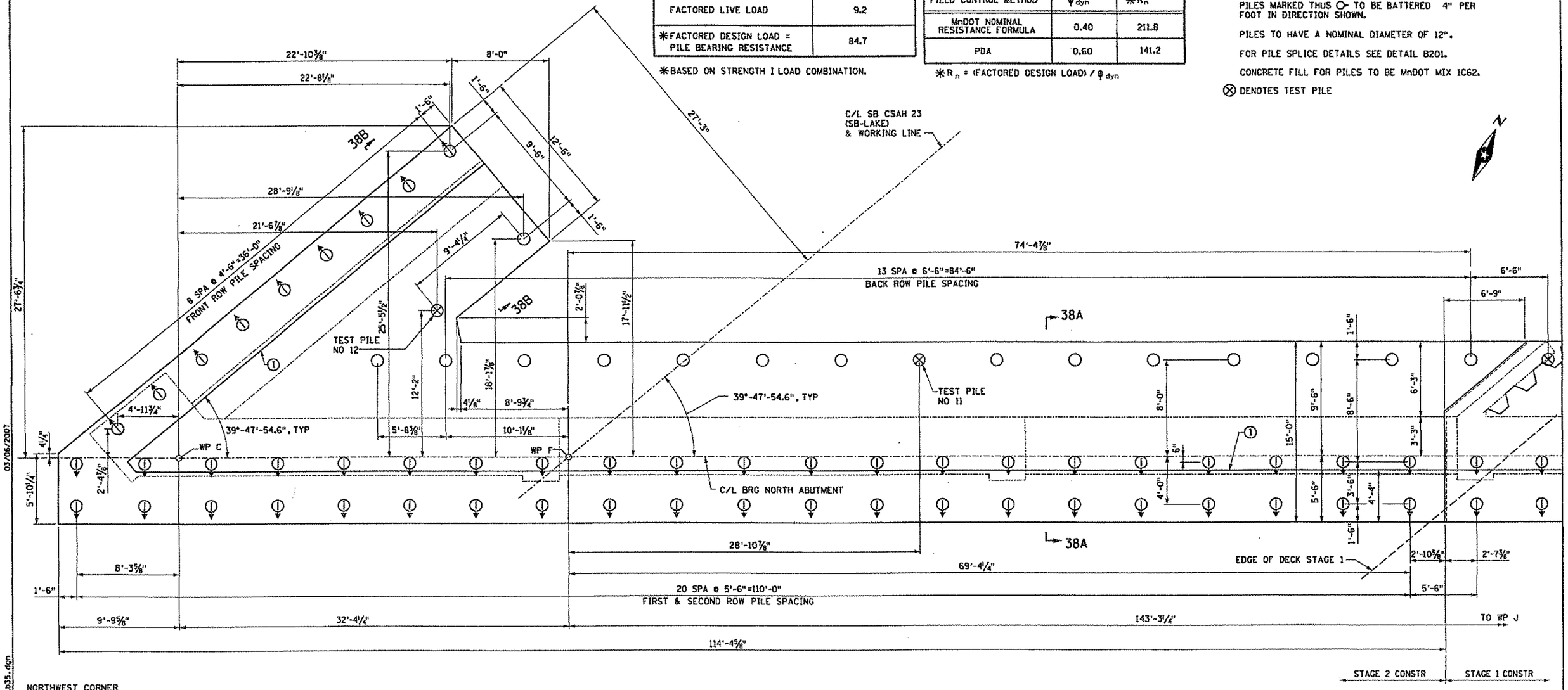
PILES MARKED THUS ⊖ TO BE BATTERED 4" PER FOOT IN DIRECTION SHOWN.

PILES TO HAVE A NOMINAL DIAMETER OF 12".

FOR PILE SPLICE DETAILS SEE DETAIL B201.

CONCRETE FILL FOR PILES TO BE MnDOT MIX 1C62.

⊗ DENOTES TEST PILE



FOOTING PLAN-STAGE 2

NOTES

① EDGE OF 4" VERT FTG KEY.

SEE SHEET B44 FOR BAR LIST AND SUMMARY OF QUANTITIES.

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Signature: _____ Date: 3/5/2007
Printed Name: JEFFREY A JOHNSON Reg. No. 17280

TITLE: NORTH ABUTMENT DETAILS STAGE 2

SP 0280-55 SAP 02-623-13

DES: CAW	DR: MAW	APPROVED:
CHK: JDS	CHK: CAW	

SHEET NO B35 OF 95 SHEETS

BRIDGE NO 02817

03/06/2007
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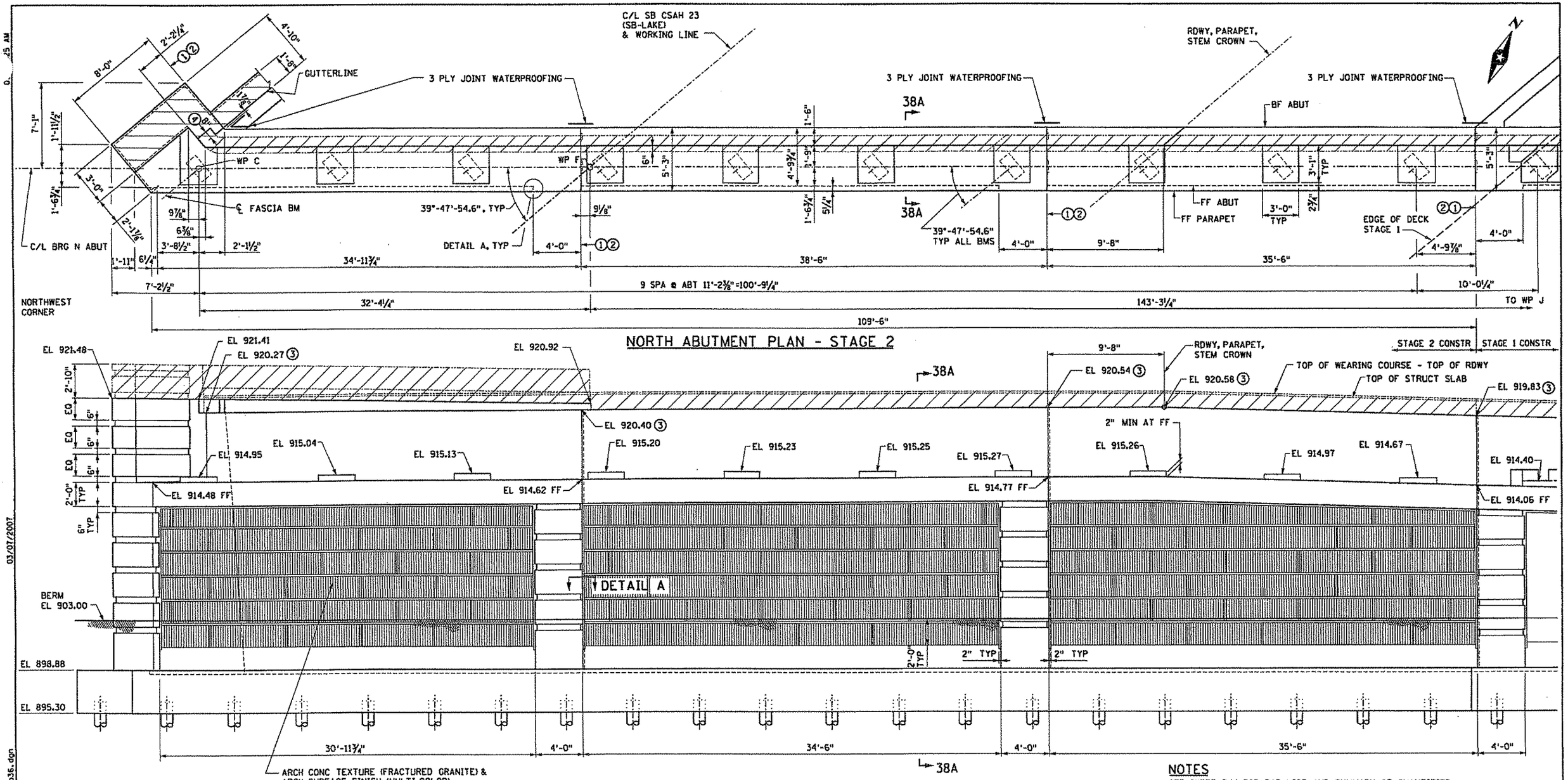
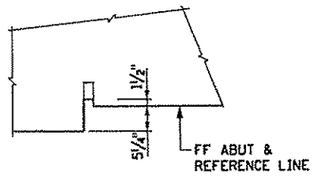


NORTH ABUTMENT PLAN - STAGE 2

NORTH ABUTMENT ELEVATION - STAGE 2



DETAIL A

FF=FRONT FACE
BF=BACK FACE
EF=EACH FACE

NOTES

SEE SHEET B44 FOR BAR LIST AND SUMMARY OF QUANTITIES.

HATCHED AREA INDICATES THAT PORTION TO BE PLACED WITH THE SUPERSTRUCTURE CONCRETE.

① CONSTRUCTION JOINT WITH VERTICAL KEY CENTERED IN WALL. 72 HOUR TIME DELAY REQUIRED BETWEEN ADJACENT POURS TO ALLOW FOR SHRINKAGE.

② 2"x8" KEY IN PARAPET AND 2"x12" KEY IN STEM.

③ ELEVATION AT PARAPET FF.

④ REQUIRED BLOCKOUT FOR PAVING BLOCK EXPANSION DEVICE INSTALLATION.

ALL SURFACES RECEIVING ARCHITECTURAL CONCRETE TEXTURE AND ARCHITECTURAL SURFACE FINISH SHALL BE FINISHED TO A DEPTH OF 2'-0" BELOW FINISHED GRADE AND SHALL RECEIVE ANTI-GRAFFITI COATING.

SEH
3535 VADNAIS CENTER DRIVE
ST PAUL, MN 55110
PHONE (651) 490-2000
FAX (651) 490-2150

I hereby certify that this plan, specification, or report 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
Signature: _____ Date: 3/5/2007
Printed Name: JEFFREY A JOHNSON Reg. No. 17280

TITLE: NORTH ABUTMENT DETAILS STAGE 2

SP 0280-55 SAP 02-623-13

DES: CAW	DR: MAW	APPROVED:
CHK: JDS	CHK: CAW	

SHEET NO B36 OF 95 SHEETS

BRIDGE NO 02817

03/07/2007
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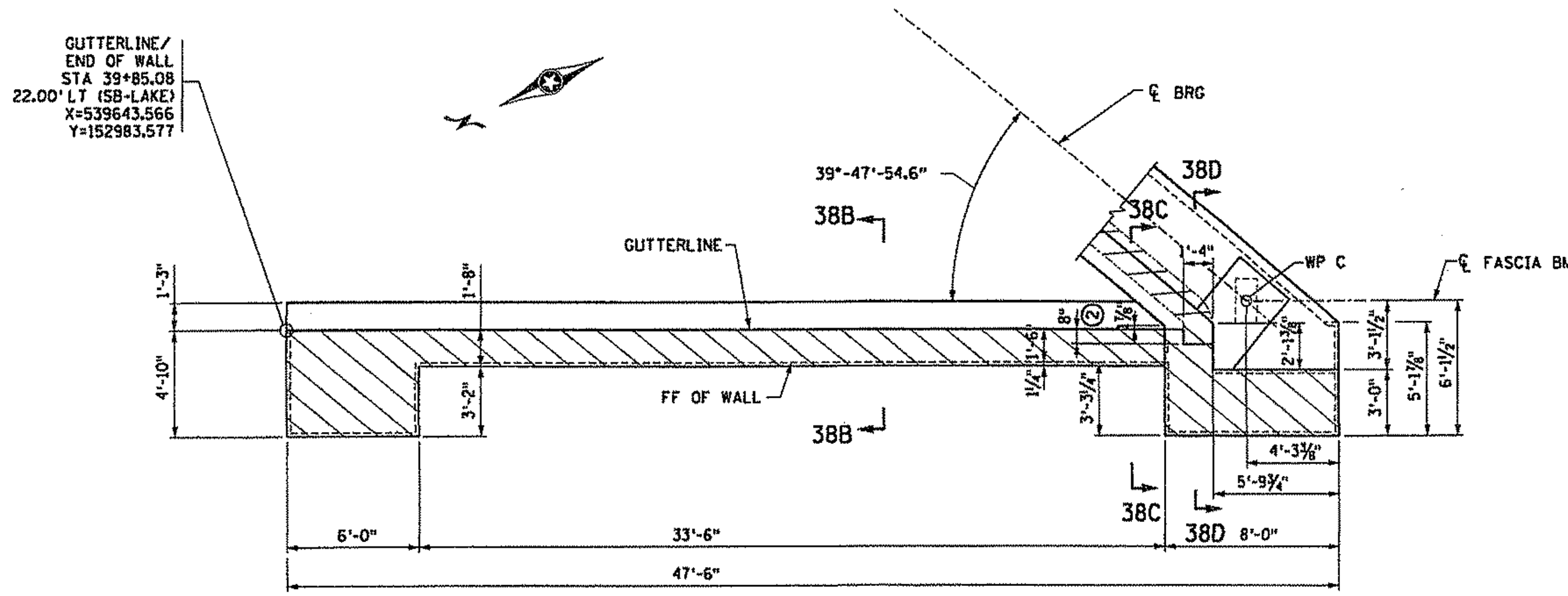
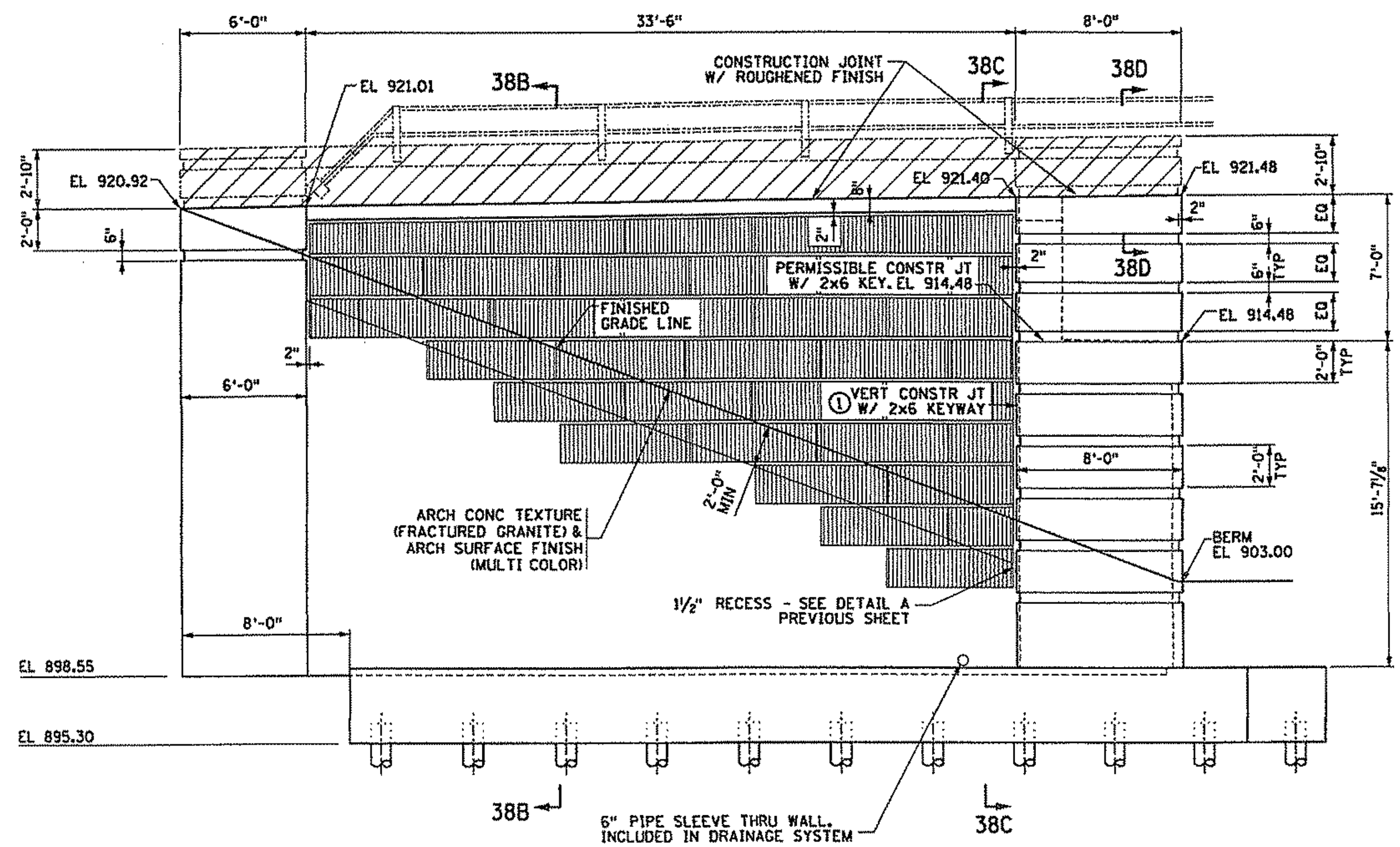


NORTHWEST WINGWALL PLAN - STAGE 1



NORTHWEST WINGWALL ELEVATION - STAGE 1

FF=FRONT FACE
BF=BACK FACE
EF=EACH FACE

NOTES

SEE SHEET B44 FOR BAR LIST AND SUMMARY OF QUANTITIES.

HATCHED AREA INDICATES THAT PORTION TO BE PLACED WITH THE SUPERSTRUCTURE CONCRETE.

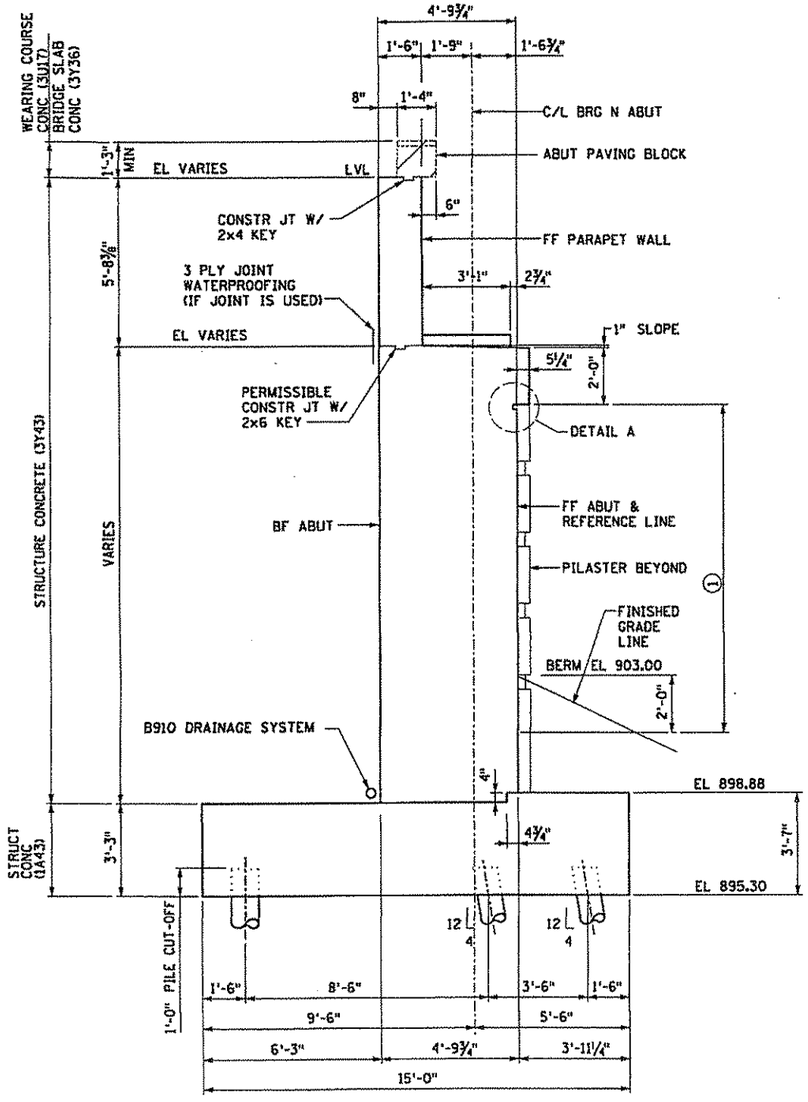
① CONSTRUCTION JOINT WITH VERTICAL KEY CENTERED IN WALL. 72 HOUR TIME DELAY REQUIRED BETWEEN ADJACENT POURS TO ALLOW FOR SHRINKAGE.

② REQUIRED BLOCKOUT FOR PAVING BLOCK EXPANSION DEVICE INSTALLATION.

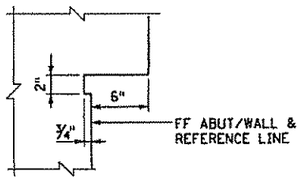
ALL SURFACES RECEIVING ARCHITECTURAL CONCRETE TEXTURE AND ARCHITECTURAL SURFACE FINISH SHALL BE FINISHED TO A DEPTH OF 2'-0" BELOW FINISHED GRADE AND SHALL RECEIVE ANTI-GRAFFITI COATING.

SP 0280-55 SAP 02-623-13

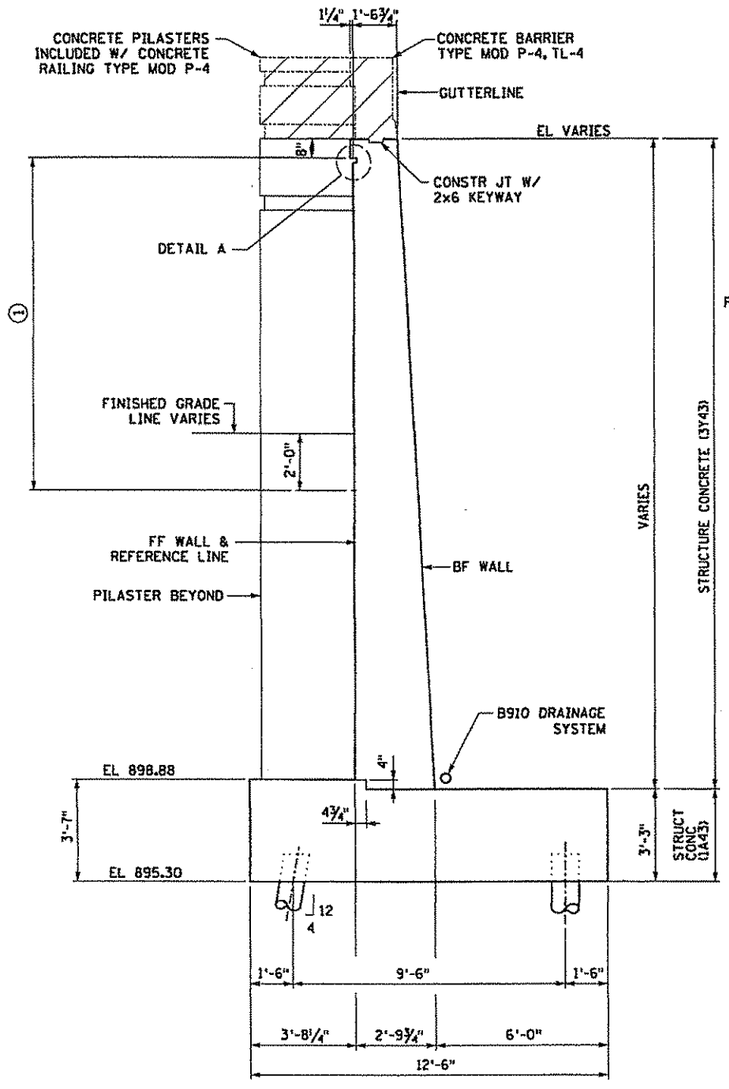
SEH 3535 VADNAIS CENTER DRIVE ST PAUL, MN 55110 PHONE (651) 490-2000 FAX (651) 490-2150	I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the state of Minnesota. Signature: Date: 3/5/2007 Printed Name: JEFFREY A JOHNSON Reg. No. 17280	TITLE: NORTH ABUTMENT DETAILS STAGE 2	DES: CAW DR: MAW APPROVED: CHK: JDS CHK: CAW SHEET NO B37 OF 95 SHEETS	BRIDGE NO 02817



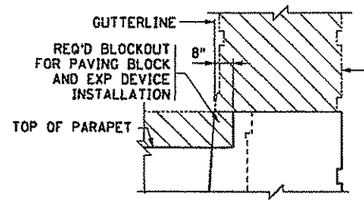
ABUTMENT SECTION 38A-38A



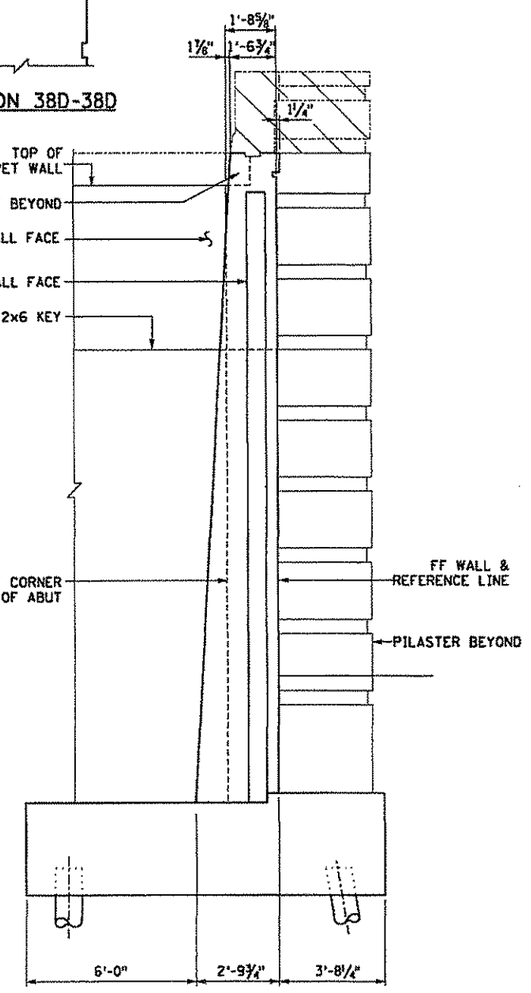
DETAIL A



WINGWALL SECTION 38B-38B



WINGWALL SECTION 38D-38D



WINGWALL SECTION 38C-38C

NOTES

SEE SHEET B44 FOR BAR LIST AND SUMMARY OF QUANTITIES.

HATCHED AREA INDICATES THAT PORTION TO BE PLACED WITH THE SUPERSTRUCTURE CONCRETE.

① LIMITS OF ARCH CONC TEXTURE (FRACTURED GRANITE) & ARCH SURFACE FINISH (MULTI COLOR).
ALL SURFACES RECEIVING ARCHITECTURAL CONCRETE TEXTURE AND ARCHITECTURAL SURFACE FINISH SHALL BE FINISHED TO A DEPTH OF 2'-0" BELOW FINISHED GRADE AND SHALL RECEIVE ANTI-GRAFFITI COATING.

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EF=EACH FACE

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Signature: _____ Date: 3/5/2007
Printed Name: JEFFREY A JOHNSON Reg. No. 17280

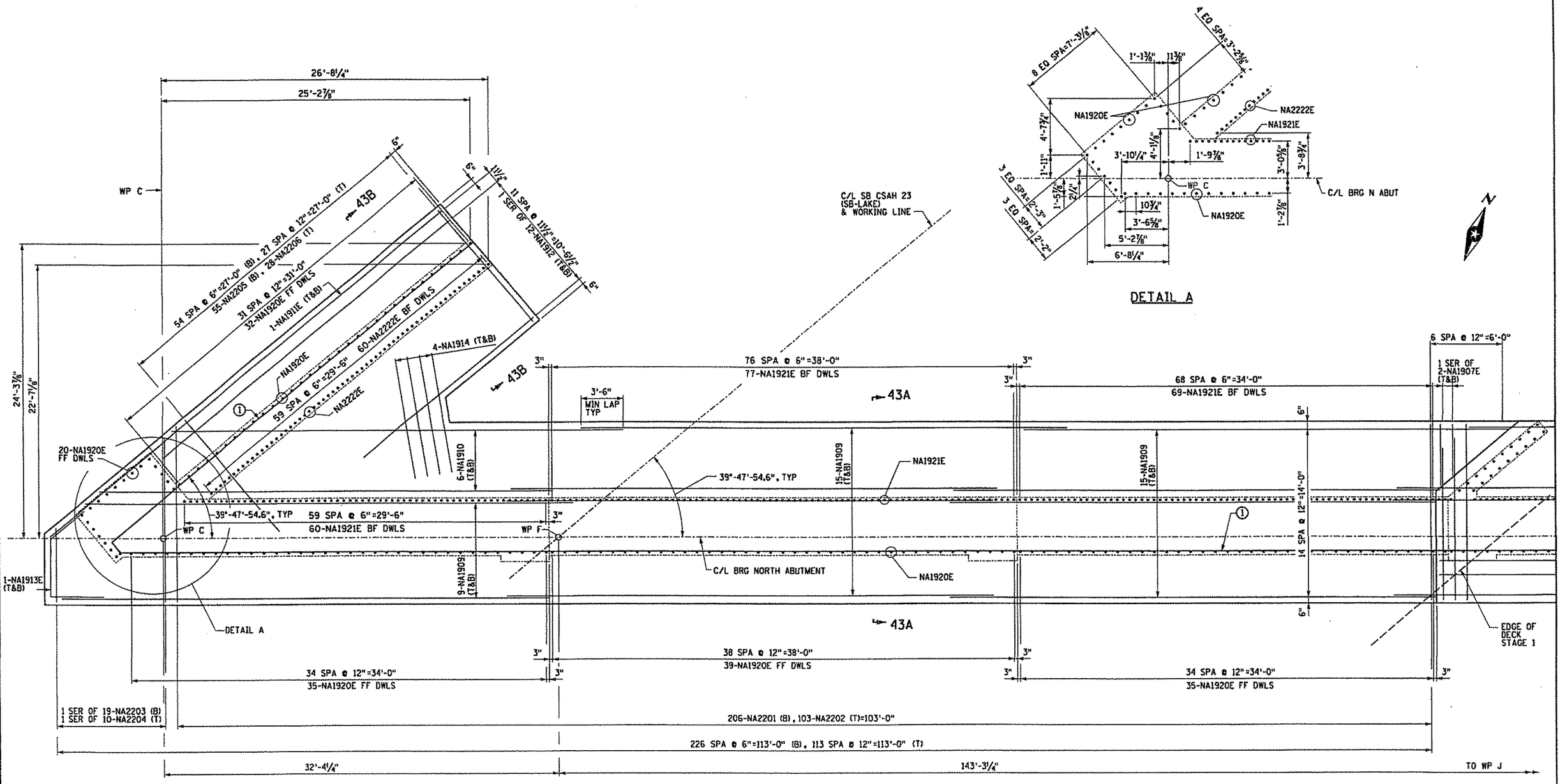
TITLE: NORTH ABUTMENT DETAILS STAGE 2

SP 0280-55 SAP 02-623-13

DES: CAW	DR: MAW	APPROVED:
CHK: JDS	CHK: CAW	

SHEET NO B38 OF 95 SHEETS

BRIDGE NO 02817



DETAIL A

FOOTING REINFORCEMENT PLAN - STAGE 2

NOTES

① EDGE OF 4" VERT FTG KEY.

SEE SHEET B44 FOR BAR LIST AND SUMMARY OF QUANTITIES.

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Printed Name: JEFFREY A JOHNSON Reg. No. 17280

TITLE: NORTH ABUTMENT DETAILS STAGE 2

SP 0280-55 SAP 02-623-13

DES: CAW	DR: MAW	APPROVED:
CHK: JDS	CHK: CAW	

SHEET NO B39 OF 95 SHEETS

BRIDGE NO 02817

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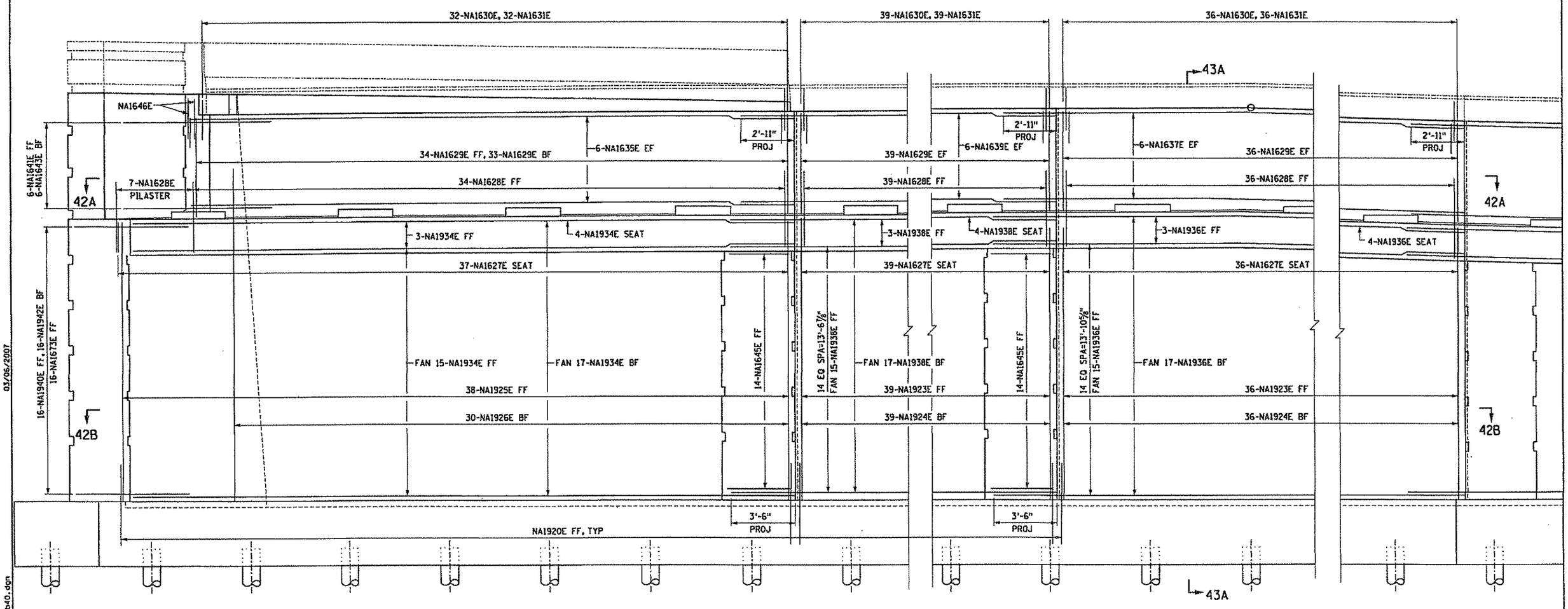

WEST
END

NORTH ABUTMENT ELEVATION

NOTES

SEE SHEET B44 FOR BAR LIST AND SUMMARY OF QUANTITIES.

FF=FRONT FACE
BF=BACK FACE
EF=EACH FACE

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ST PAUL, MN 55110
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Signature: _____ Date: 3/5/2007

Printed Name: JEFFREY A JOHNSON Reg. No. 17280

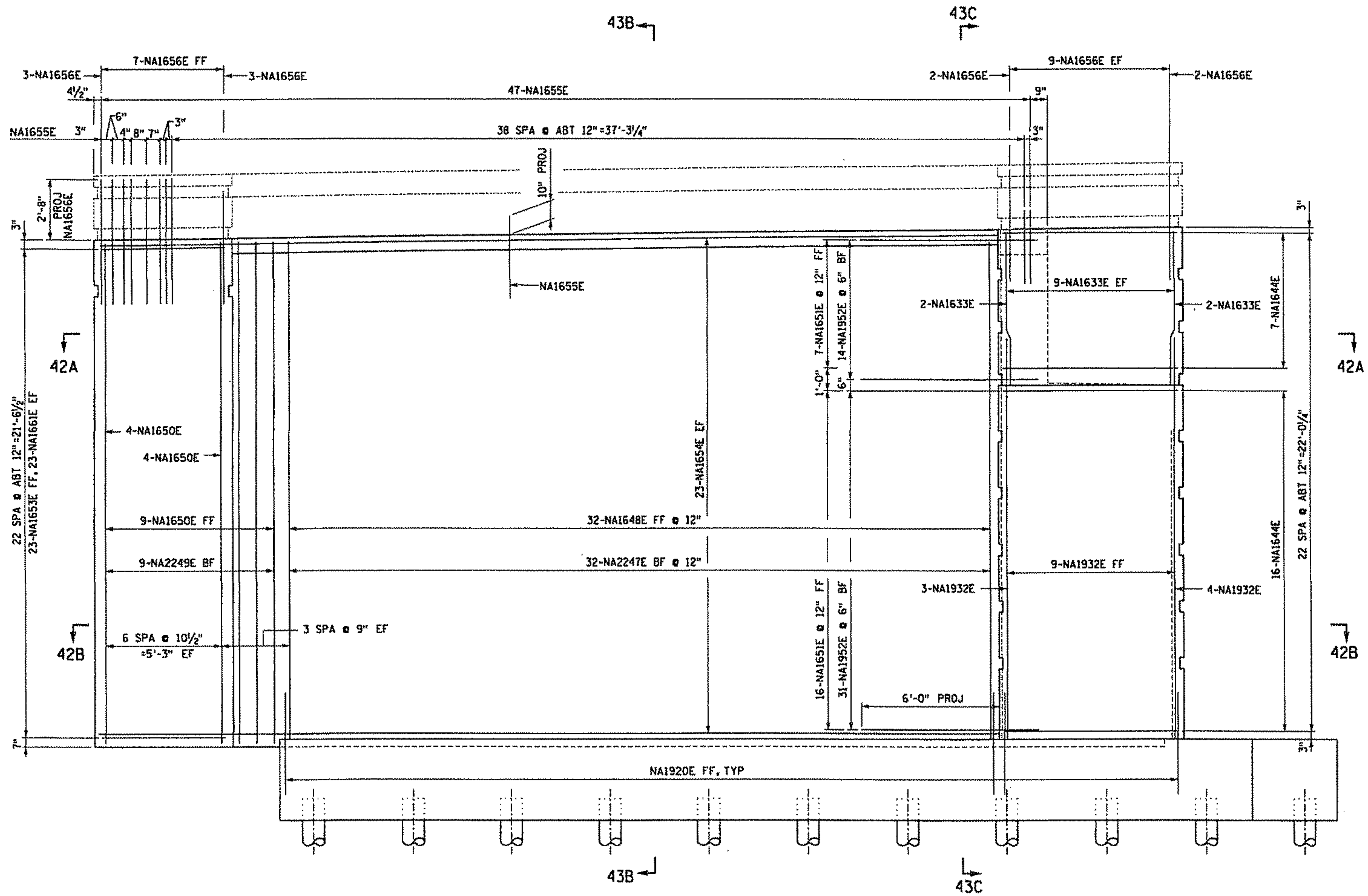
TITLE: NORTH ABUTMENT DETAILS STAGE 2

SP 0280-55 SAP 02-623-13

DES: CAW	DR: MAW	APPROVED:
CHK: JDS	CHK: CAW	

SHEET NO B40 OF 95 SHEETS

BRIDGE NO 02817



NORTHWEST WINGWALL ELEVATION

NOTES

SEE SHEET B44 FOR BAR LIST AND SUMMARY OF QUANTITIES.

FF=FRONT FACE
BF=BACK FACE
EF=EACH FACE

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3535 VADNAIS CENTER DRIVE
ST PAUL, MN 55110
PHONE (651) 490-2000
FAX (651) 490-2150

I hereby certify that this plan, specification, or report 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

Signature: Date: 11/21/2006

Printed Name: CHRISTOPHER A WUNSCH Reg. No. 42058

TITLE: NORTH ABUTMENT DETAILS STAGE 2

SP 0280-55 SAP 02-623-13

DES: CAW	DR: MAW	APPROVED:
CHK: JDS	CHK: CAW	

SHEET NO B41 OF 95 SHEETS

BRIDGE NO 02817

11/21/2006

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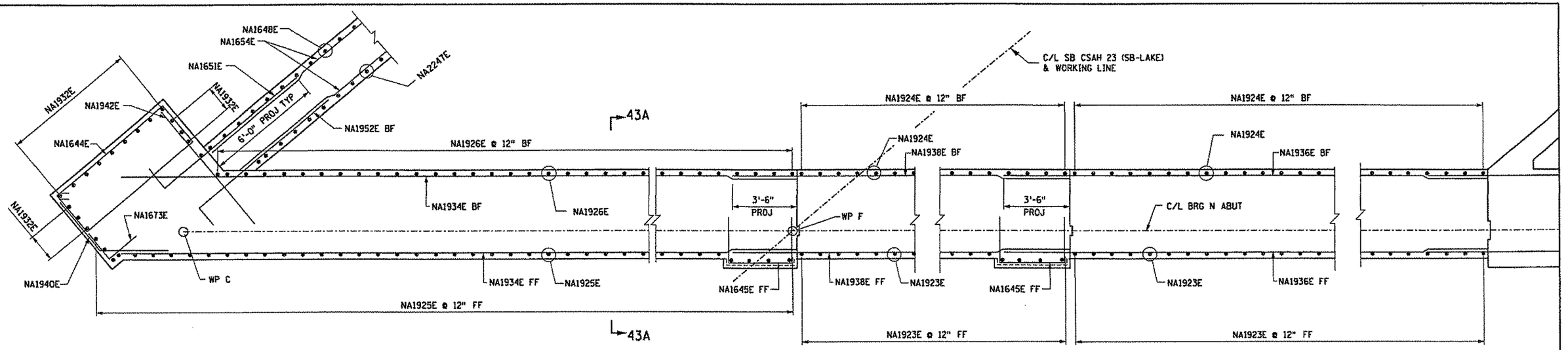
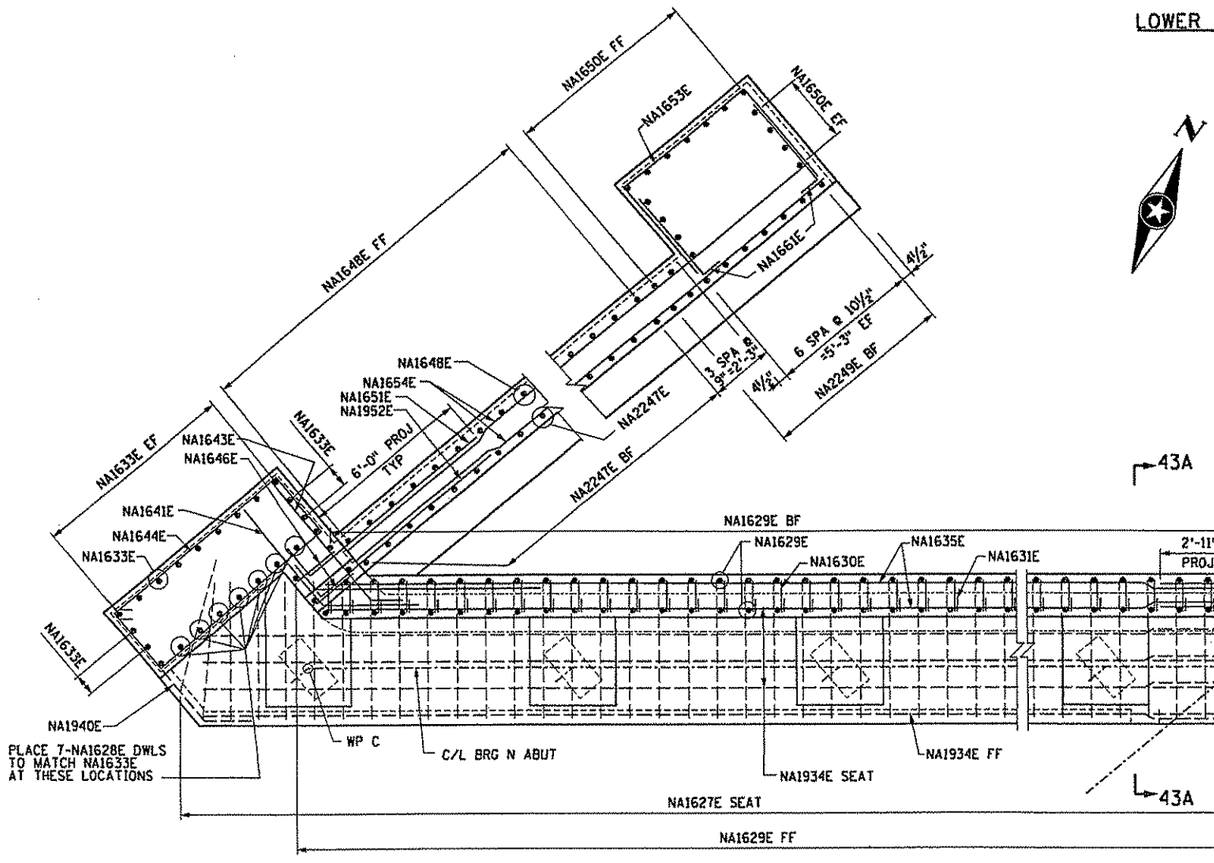


LOWER SECTION 42A-42A

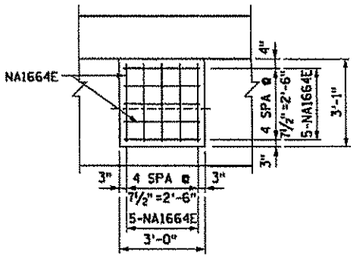


UPPER SECTION 42B-42B

NOTES

SEE SHEET 844 FOR BAR LIST AND SUMMARY OF QUANTITIES.

FF=FRONT FACE
BF=BACK FACE
EF=EACH FACE



TYP BEARING SEAT
12 LOCATIONS

SEH
3535 VADNAIS CENTER DRIVE
ST PAUL, MN 55110
PHONE (651) 490-2000
FAX (651) 490-2150

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Signature: _____ Date: 3/5/2007
Printed Name: JEFFREY A JOHNSON Reg. No. 17280

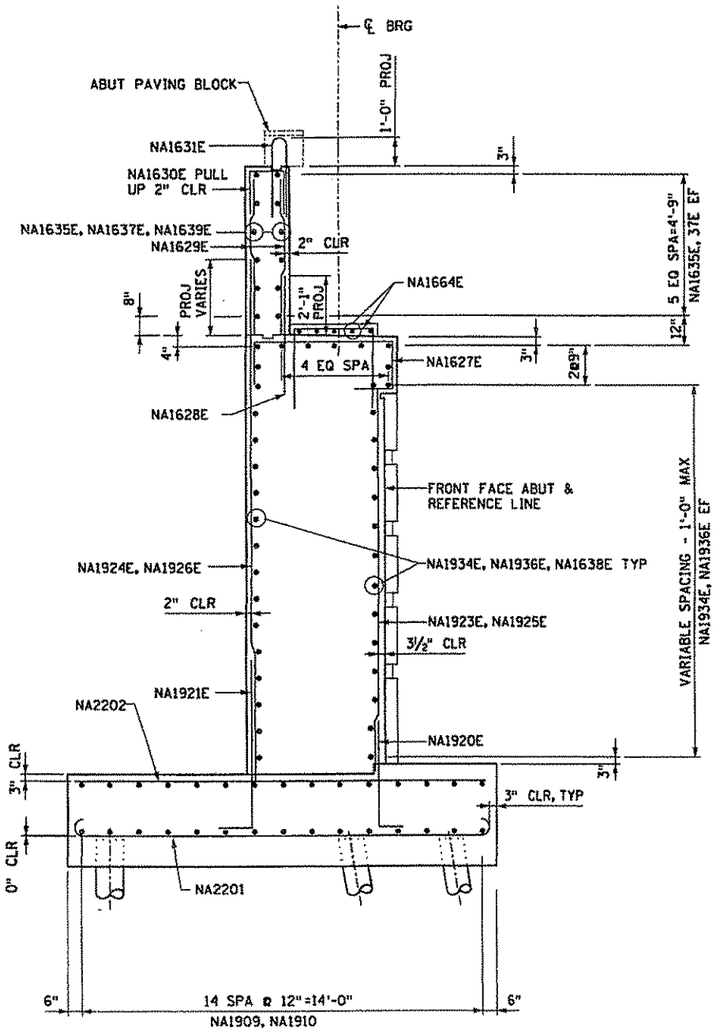
TITLE: NORTH ABUTMENT DETAILS STAGE 2

SP 0280-55 SAP 02-623-13

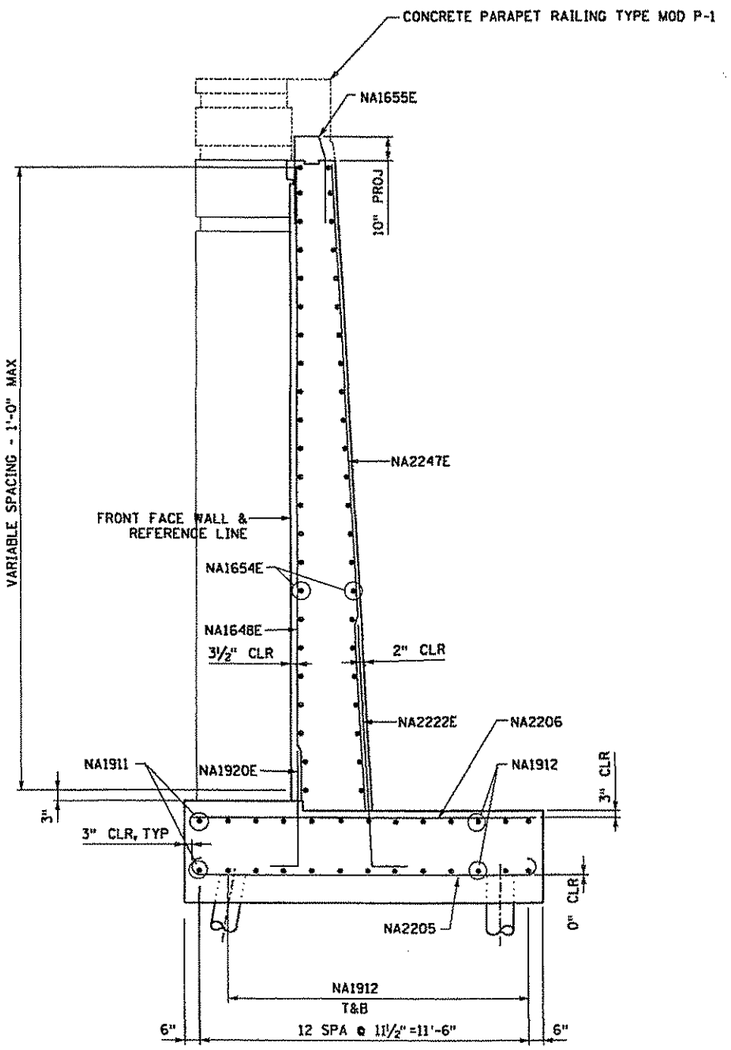
DES: CAW	DR: MAW	APPROVED:
CHK: JDS	CHK: CAW	

SHEET NO B42 OF 95 SHEETS

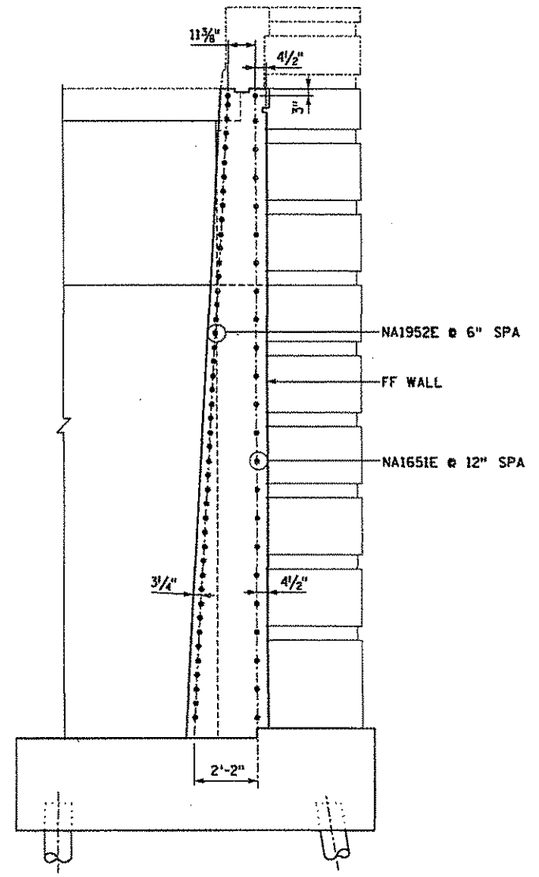
BRIDGE NO 02817



ABUTMENT SECTION 43A-43A



NORTHWEST WINGWALL SECTION 43B-43B



NORTHWEST WINGWALL SECTION 43C-43C

NOTES

SEE SHEET B44 FOR BAR LIST AND SUMMARY OF QUANTITIES.

FF=FRONT FACE
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EF=EACH FACE

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3535 VADNAIS CENTER DRIVE
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Printed Name: JEFFREY A JOHNSON Reg. No. 17280

TITLE: NORTH ABUTMENT DETAILS STAGE 2

SP 0280-55 SAP 02-623-13

DES: CAW	DR: MAW	APPROVED:
CHK: JDS	CHK: CAW	

SHEET NO B43 OF 95 SHEETS

BRIDGE NO 02817

BAR MARK	NO OF SERIES	NO OF BARS	LENGTH	TYPE	DIMENSION A	DIMENSION B	DIMENSION C	DIMENSION D	LOCATION
NORTH ABUTMENT-STAGE 2									
EPOXY COATED BARS									
NA1920E		161	5'-5"	100	4'-5"				FTG DWL FF
NA1921E		206	9'-11"	100	8'-11"				FTG DWL BF
NA2222E		60	12'-5"	112	11'-3"	1			FTG DWL BF
NA1923E		75	15'-0"	STR					VERT FF
NA1924E		75	18'-5"	STR					VERT BF
NA1925E		38	15'-5"	STR					VERT FF
NA1926E		30	18'-3"	STR					VERT BF
NA1627E		112	8'-7"	211	4'-11"	1'-8"	1'-0"		SEAT
NA1628E		116	4'-2"	STR					PARAPET DWL
NA1629E		217	5'-6"	STR					VERT PARAPET
NA1630E		107	3'-10"	101	1'-4"	1'-2"			TOP PARAPET
NA1631E		107	6'-0"	127	0'-6"	3'-0"			PAVING BLOCK
NA1932E		16	17'-8"	STR					VERT PILASTER
NA1633E		22	6'-9"	STR					VERT PILASTER
NA1934E		39	35'-0"	STR					HORIZ BODY
NA1635E		12	30'-10"	STR					HORIZ PARAPET
NA1936E		39	39'-0"	STR					HORIZ BODY
NA1637E		12	38'-5"	STR					HORIZ PARAPET
NA1938E		38	42'-0"	STR					HORIZ BODY
NA1639E		12	41'-5"	STR					HORIZ PARAPET
NA1940E		16	6'-6"	111	3'-3"	10			HORIZ CORNER
NA1641E		6	7'-9"	111	4'-7"	10			HORIZ CORNER
NA1942E		16	8'-0"	STR					HORIZ CORNER
NA1643E		6	6'-8"	111	5'-10"	10			HORIZ CORNER
NA1644E		23	20'-7"	104	7'-5"	2'-5"			HORIZ CORNER
NA1645E		28	6'-5"	101	1'-6"	3'-5"			HORIZ FF PILASTER
NA1646E		2	5'-8"	101	2'-0"	1'-8"			CORNER TOP
NA2247E		32	22'-4"	STR					VERT WALL BF
NA1648E		32	22'-0"	STR					VERT WALL FF
NA2249E		9	22'-0"	STR					VERT WALL BF
NA1650E		17	22'-0"	STR					VERT WALL FF
NA1651E		23	8'-8"	100	7'-10"				HORIZ DWL FF
NA1952E		45	8'-10"	100	7'-10"				HORIZ DWL BF
NA1653E		23	14'-1"	101	4'-4"	5'-5"			HORIZ PILASTER
NA1654E		46	39'-4"	STR					WALL HORIZ
NA1655E		47	7'-11"	140	3'-6"	10 1/2"	11"	3	MOD P-4 RAIL
NA1656E		35	4'-9"	STR					VERT RAIL
NA1661E		46	3'-10"	100	3'-0"				HORIZ PILASTER
NA1664E		100	6'-8"	101	2'-0"	2'-8"			BRG SEAT
NA1673E		16	3'-0"	100	1'-6"				HORIZ CORNER

BAR MARK	NO OF SERIES	NO OF BARS	LENGTH	TYPE	DIMENSION A	DIMENSION B	DIMENSION C	DIMENSION D	LOCATION
NORTH ABUTMENT - STAGE 2									
BLACK BARS									
NA2201		206	16'-2"	129	14'-6"	0'-10"			TRANSV B
NA2202		103	14'-6"	STR					TRANSV T
NA2203	1	19	6'-10"	128	6'-0"	0'-10"			TRANSV B
			14'-5"		13'-7"	0'-10"			
NA2204	1	10	6'-0"	STR					TRANSV T
			13'-7"						
NA2205		55	13'-8"	129	12'-0"	0'-10"			TRANSV B
NA2206		28	12'-0"	STR					TRANSV T
NA1907	2	2	4'-3"	STR					TRANSV T&B
			5'-0"						
NA1909		78	40'-0"	STR					LONGIT T&B
NA1910		12	37'-2"	STR					LONGIT T&B
NA1911		2	42'-0"	STR					LONGIT T&B
NA1912	2	12	18'-2"	STR					LONGIT T&B
			30'-9"						
NA1913		2	13'-5"	113	4'-11"	4'-3"	14		CORNER
NA1914		8	10'-0"	STR					FILLET

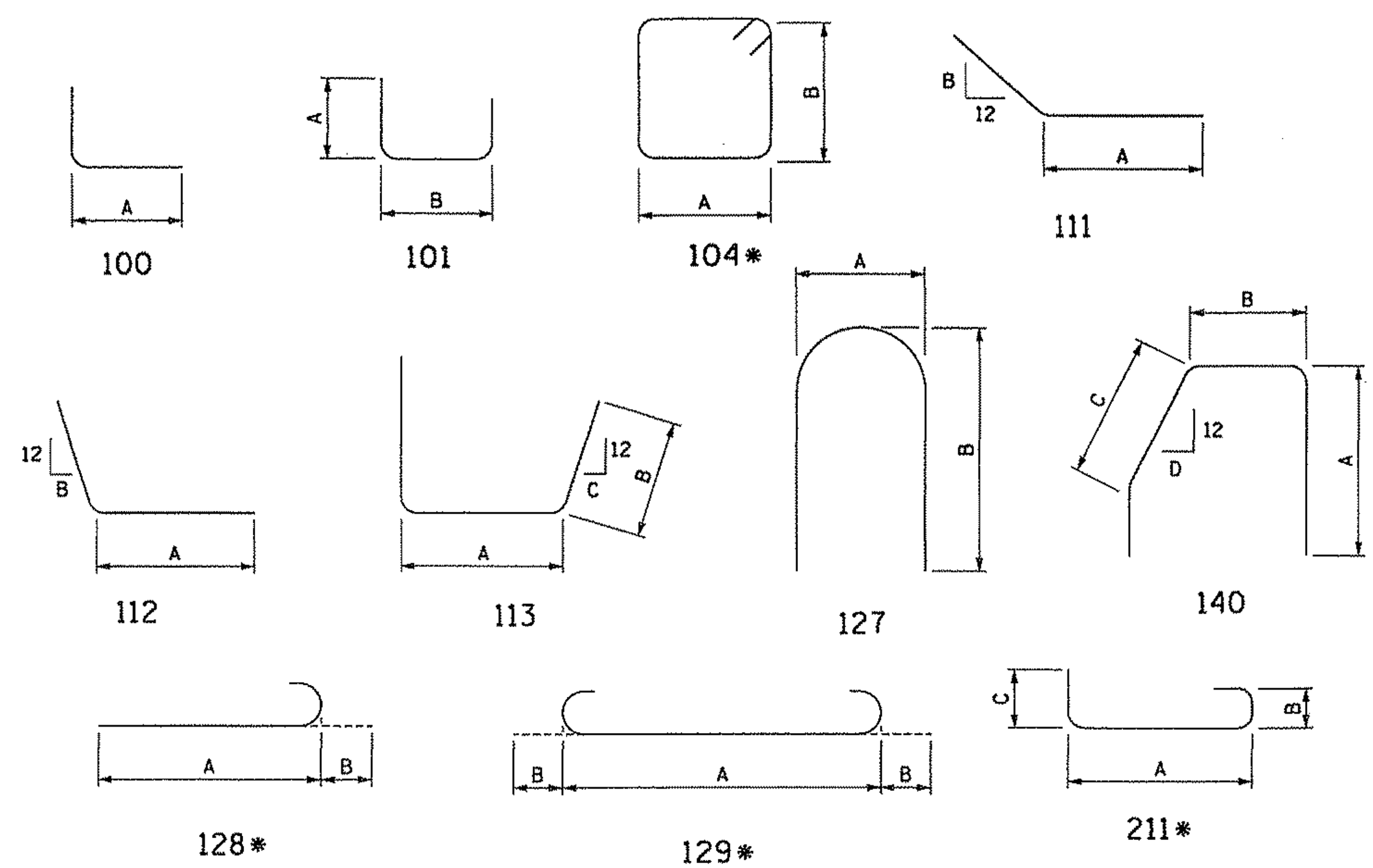
SUMMARY OF QUANTITIES FOR NORTH ABUTMENT - STAGE 2

	ITEM	UNIT	QUANTITY
	STRUCTURAL CONCRETE (1A43)	CU YD	243
	STRUCTURAL CONCRETE (3Y43)	CU YD	462
	REINFORCEMENT BARS	POUND	19250
	REINFORCEMENT BARS (EPOXY COATED)	POUND	32620
(1)	C-I-P CONCRETE PILING DELIVERED 12"	LIN FT	3630
(1)	C-I-P CONCRETE PILING DRIVEN 12"	LIN FT	3630
	C-I-P CONCRETE TEST PILE 65 FT LONG 12"	EACH	2
	PILE POINTS	EACH	68
	PILE ANALYSIS	EACH	1
(2)	3-PLY JOINT WATERPROOFING	LIN FT	193
	ANTI-GRAFFITI COATING	SQ FT	1500
	ARCH CONC TEXTURE (FRACTURED GRANITE)	SQ FT	1500
	ARCH SURFACE FINISH (MULTI COLOR)	SQ FT	1500

(1) DOES NOT INCLUDE TEST PILES.

(2) TO BE INCLUDED IN PRICE BID FOR OTHER ITEMS.

BAR BENDING DIAGRAMS



* BAR TYPE USES STANDARD STIRRUP AND TIE HOOKS.

NOTE:
BENT BAR DIMENSIONS GIVEN ARE OUT-TO-OUT. ACTUAL BAR LENGTHS SHALL BE DETERMINED BASED ON DIMENSIONS SHOWN IN THE BAR BENDING DIAGRAMS. TOTAL BAR LENGTHS SHOWN ARE FOR USE IN COMPUTING REINFORCEMENT BAR WEIGHTS FOR PAYMENT ONLY.

SP 0280-55 SAP 02-623-13

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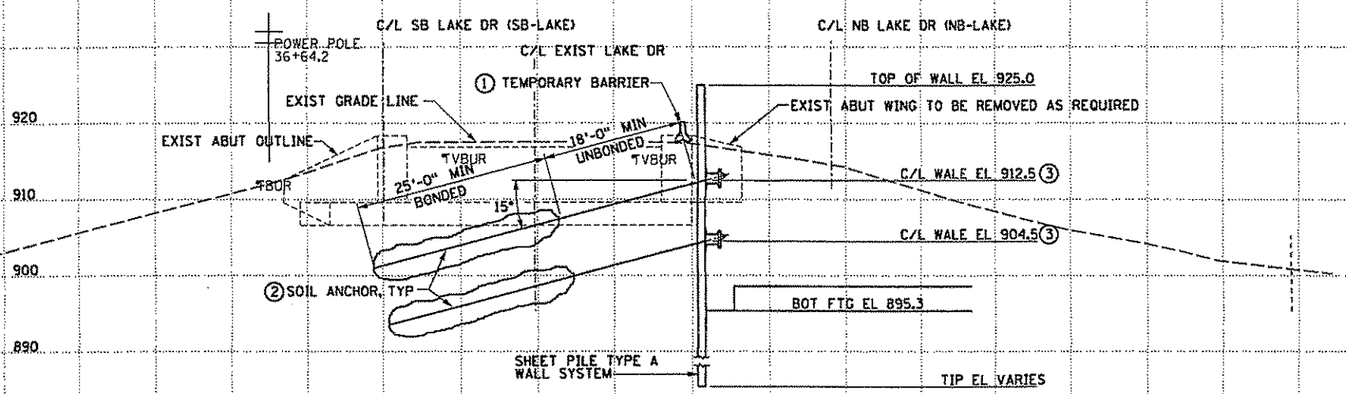
Signature: Date: 3/5/2007
Printed Name: JEFFREY A JOHNSON Reg. No. 17280

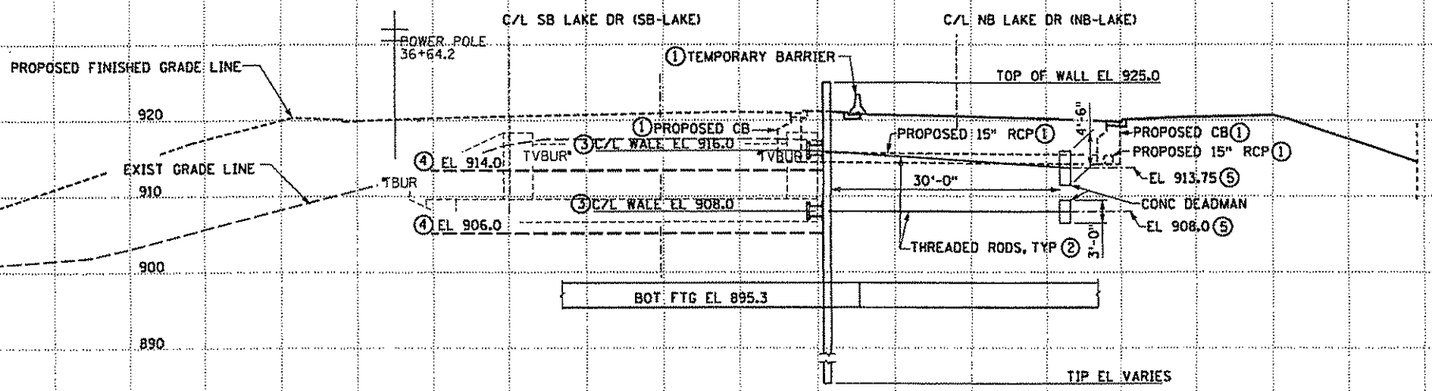
TITLE: NORTH ABUTMENT - STAGE 2 BARLIST & SUMMARY OF QUANTITIES

DES: CAW | DR: MAW | APPROVED:
CHK: JDS | CHK: CAW

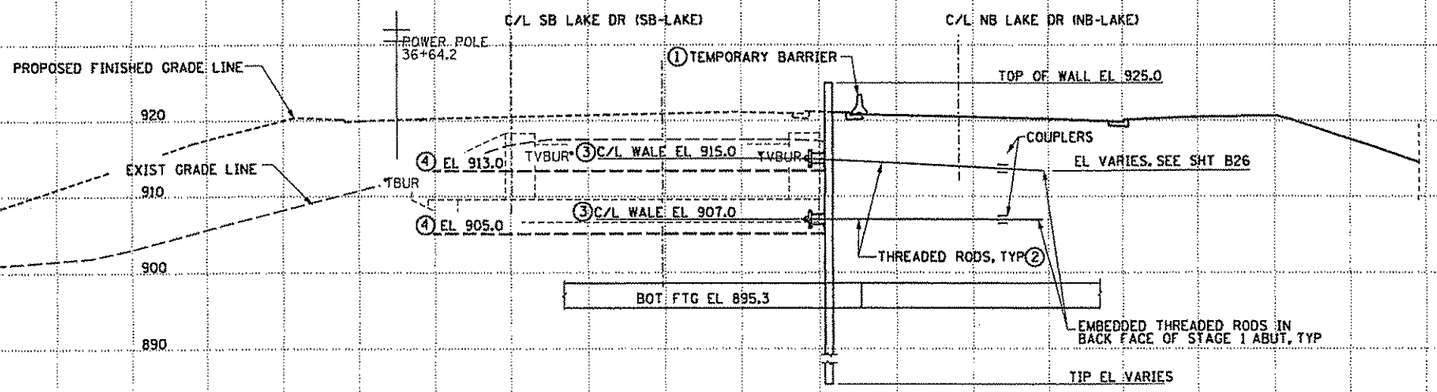
BRIDGE NO 02817



TYPICAL TEMPORARY SHEETING SECTION 45A-45A STAGE 1
(NORTH AND SOUTH ABUTMENTS)



SOUTH ABUTMENT SHEETING SECTION 45B-45B STAGE 2



NORTH ABUTMENT SHEETING SECTION 45C-45C STAGE 2

GENERAL NOTES:

CONTRACTOR TO FIELD VERIFY ALL DIMENSIONS BEFORE PROCEEDING WITH FABRICATION OF STEEL WALE ASSEMBLIES AND CORNER PILES.

CONTRACTOR TO SUBMIT SHOP DRAWINGS FOR SOIL ANCHOR SYSTEMS, STEEL SHEET PILING AND STEEL WALE ASSEMBLIES FOR DEPARTMENT REVIEW & APPROVAL.

ALL WALE ASSEMBLY MATERIALS TO BE A36 STEEL.

VERIFY STEEL SHEET PILING AND SOIL ANCHOR HEAD GEOMETRY PRIOR TO FABRICATION OF WALE ASSEMBLIES.

ALL WELDING TO BE IN ACCORDANCE WITH AWS D1.1/1.M.

THE SOIL ANCHOR AND THREADED ROD AT DEADMAN AND ABUTMENT SHALL BE 1" DIAMETER SOLID GRADE 150 ANCHORS IN ACCORDANCE WITH ASTM A-722.

ALL ANCHOR DIMENSIONS ARE FROM BACK OF WALL. CONTRACTOR TO ADD SUFFICIENT LENGTHS TO EXTEND THROUGH SHEET PILE & WALE AND ALLOW FOR TESTING PRESTRESSING AND LOCK-OFF.

SEE SPECIAL PROVISIONS FOR ADDITIONAL REQUIREMENTS.

NOTES:

① INCLUDED UNDER GRADING PORTION OF CONTRACT.

② SEE PLAN FOR LOCATIONS.

③ SEE SHEET B54 FOR WALE DETAILS.

④ REMOVE FILL IN STAGES AS ANCHORS ARE INSTALLED.

⑤ ELEVATION IS THE C/L OF THREADED ROD AT THE BACK FACE OF THE CONCRETE DEADMAN.

SEE SHEET PLAN VIEWS FOR ANCHOR LENGTHS.

SEH
3535 VADNAIS CENTER DRIVE
ST PAUL, MN 55110
PHONE (651) 490-2000
FAX (651) 490-2150

I hereby certify that this plan, specification, or report 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
Signature: John D Steenberg Date: 01/02/2007
Printed Name: JOHN D STEENBERG Reg. No. 13865

TITLE: TEMPORARY SHEETING DETAILS

SP 0280-55 SAP 02-623-13
DES: ALGE DR: MAW APPROVED:
CHK: JAJ CHK: ALGE
SHEET NO B45 OF 95 SHEETS

BRIDGE NO 02817

SUMMARY OF QUANTITIES Ⓓ FOR STEEL SHEET PILING (TEMPORARY) - STAGE 1

	ITEM	UNIT	QUANTITY
Ⓐ	SHEET PILE TYPE A	SQ FT	9650
Ⓑ	STRUCTURAL STEEL (3306)	POUND	12850
Ⓒ	SOIL ANCHORS	EACH	38

Ⓐ INCLUDES ALL STANDARD FABRICATED CORNERS AND TEE SECTIONS.

Ⓑ INCLUDES WALE SECTIONS, ANCHOR PLATES, STIFFENER PLATES AND 1 SHIM PLATE PER LOCATION.

Ⓒ INCLUDES INSTALLATION ALONG WITH ROD, NUT, WEDGE WASHER AND ADDITIONAL SHIM PLATES. INCLUDES ANCHOR INTO EXISTING ABUTMENT.

Ⓓ SEE SPECIAL PROVISIONS FOR ADDITIONAL REQUIREMENTS.

THE SUMMARY OF QUANTITIES FOR STEEL SHEET PILING (TEMPORARY) 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 FOR ALL ITEMS IN THE SUMMARY OF QUANTITIES WILL BE INCLUDED IN THE SINGLE LUMP SUM PRICE FOR ITEM 2452.601 "STEEL SHEET PILING (TEMPORARY)".

NOTES:

① INCLUDED UNDER GRADING PORTION OF CONTRACT.

② 'ZC' STANDARD FABRICATED CORNER CONNECTION W/ STD 6" LEG SECTIONS. SEE SHEET B55 FOR CORNER DETAILS.

③ SEE SHEET B54 FOR WALE DETAILS.

④ DRILL HOLE INTO EXIST ABUT STEM FOR UPPER ANCHORS. 12" MIN EMBEDMENT. SEE SPECIAL PROVISIONS. WORKING PULLOUT 75 KIPS MIN PER ANCHOR.

DESIGN DATA

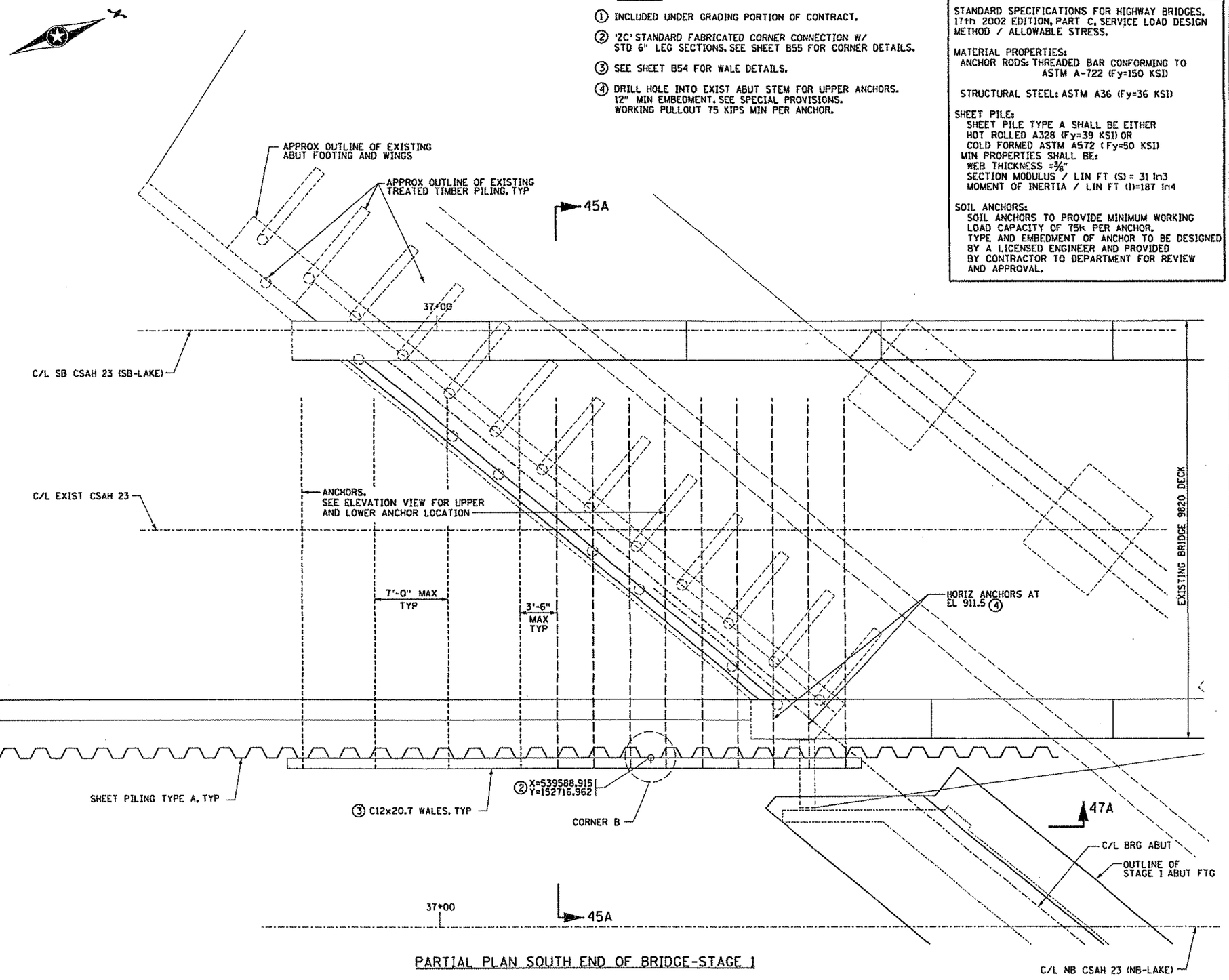
STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, 17th 2002 EDITION, PART C, SERVICE LOAD DESIGN METHOD / ALLOWABLE STRESS.

MATERIAL PROPERTIES:
ANCHOR RODS: THREADED BAR CONFORMING TO ASTM A-722 (Fy=150 KSI)

STRUCTURAL STEEL: ASTM A36 (Fy=36 KSI)

SHEET PILE:
SHEET PILE TYPE A SHALL BE EITHER HOT ROLLED A328 (Fy=39 KSI) OR COLD FORMED ASTM A572 (Fy=50 KSI)
MIN PROPERTIES SHALL BE:
WEB THICKNESS = 3/8"
SECTION MODULUS / LIN FT (S) = 31 In3
MOMENT OF INERTIA / LIN FT (I)=187 In4

SOIL ANCHORS:
SOIL ANCHORS TO PROVIDE MINIMUM WORKING LOAD CAPACITY OF 75k PER ANCHOR.
TYPE AND EMBEDMENT OF ANCHOR TO BE DESIGNED BY A LICENSED ENGINEER AND PROVIDED BY CONTRACTOR TO DEPARTMENT FOR REVIEW AND APPROVAL.



PARTIAL PLAN SOUTH END OF BRIDGE-STAGE 1

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3535 VADNAIS CENTER DRIVE
ST PAUL, MN 55110
PHONE (651) 490-2000
FAX (651) 490-2150

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Signature: John D Steenberg Date: 01/02/2007
Printed Name: JOHN D STEENBERG Reg. No. 13865

TITLE: TEMPORARY SHEETING DETAILS SOUTH ABUTMENT-STAGE 1

SP 0280-55 SAP 02-623-13
DES: ALGE DR: MAW APPROVED:
CHK: JAJ CHK: ALGE
SHEET NO B46 OF 95 SHEETS

BRIDGE NO 02817

NOTES:

1 SEE PLAN VIEW ON SHEET B46.

(2) 'ZC' STANDARD FABRICATED CORNER CONNECTION W/ STD 6" LEG SECTIONS. SEE SHEET B55 FOR CORNER DETAILS.

(3) SEE SHEET B54 FOR WALE DETAILS.

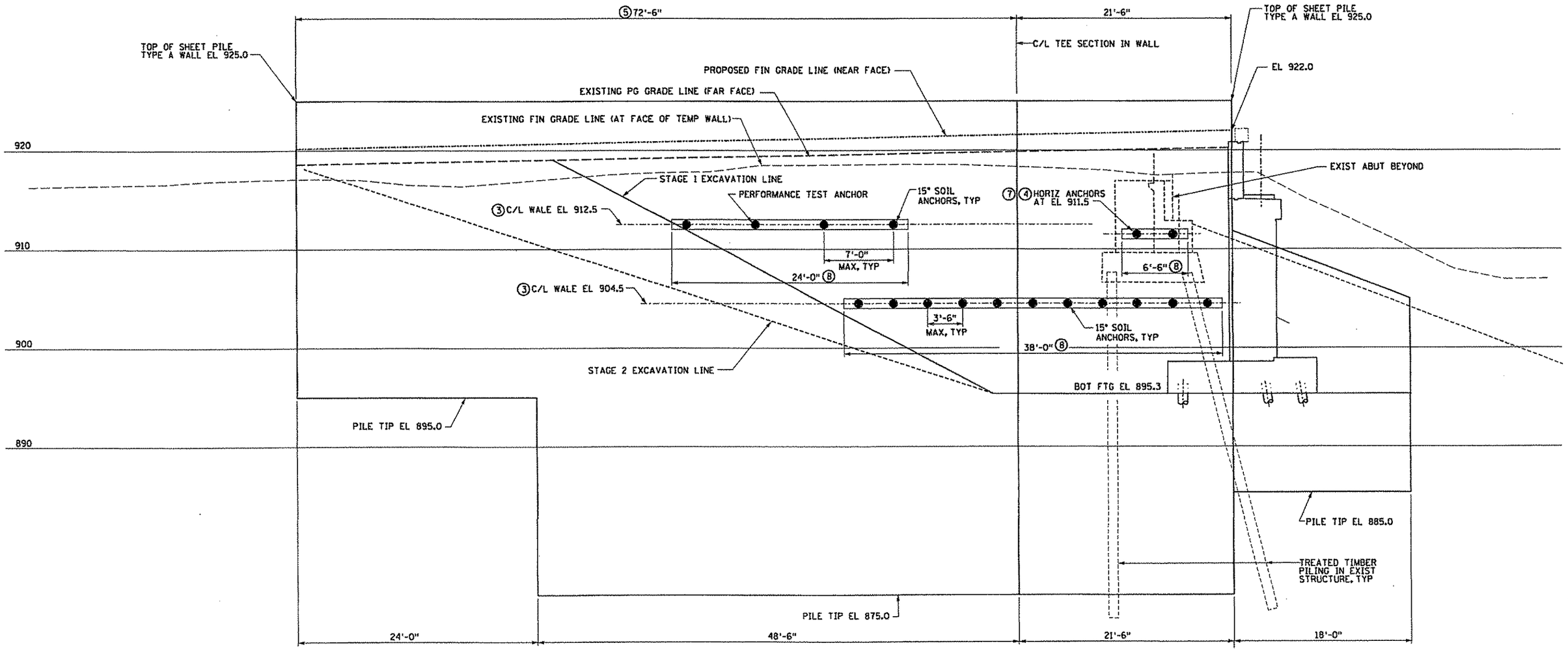
(4) DRILL HOLE INTO EXIST ABUT STEM. 12" MIN EMBEDMENT. SEE SPECIAL PROVISIONS. WORKING PULLOUT 75 KIPS MIN PER ANCHOR.

(5) DIMENSIONS ARE TO SHEETPILE CORNERS (COORDINATE POINTS SHOWN IN PLAN VIEW ON SHEET B46).

(6) SEE SHEET B46 FOR MIN BONDED AND UNBONDED ANCHOR LENGTHS.

(7) DO NOT TENSION THIS ANCHOR. SNUG NUT TIGHT. DO NOT OVER TIGHTEN.

(8) FIELD VERIFY LENGTHS PRIOR TO FABRICATION.



DEVELOPED ELEVATION 47A-47A AT SOUTH ABUTMENT-STAGE 1

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3535 VADNAIS CENTER DRIVE
ST PAUL, MN 55110
PHONE (651) 490-2000
FAX (651) 490-2150

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Signature: John D Steenberg Date: 01/02/2007

Printed Name: JOHN D STEENBERG Reg. No. 13865

TITLE:
TEMPORARY SHEETING DETAILS
SOUTH ABUTMENT-STAGE 1

SP 0280-55 SAP 02-623-13

DES: ALGE	DR: MAW	APPROVED:
CHK: JAJ	CHK: ALGE	

SHEET NO B47 OF 95 SHEETS

BRIDGE NO 02817

01/02/2007

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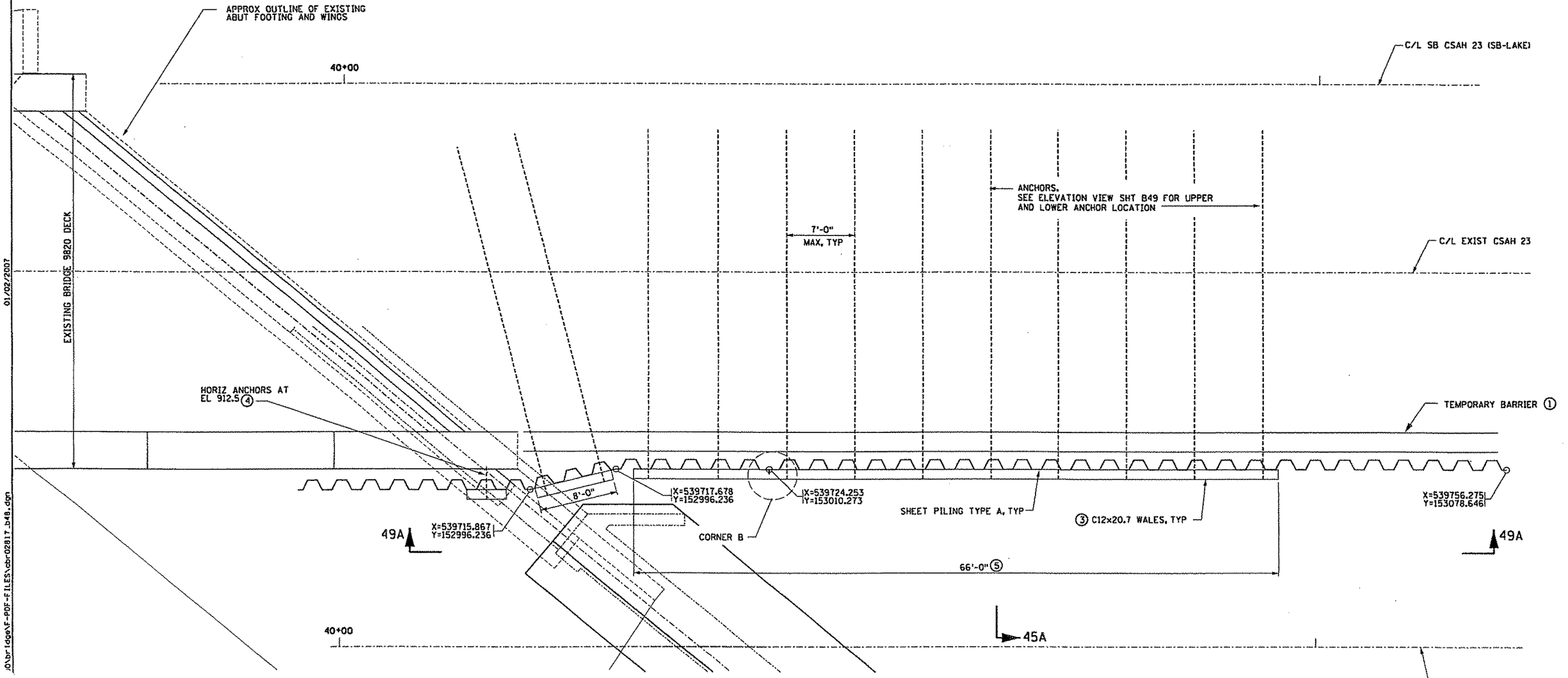
NOTES:

1. INCLUDED UNDER GRADING PORTION OF CONTRACT.
2. 'ZC' STANDARD FABRICATED CORNER CONNECTION W/ STD 6" LEG SECTIONS. SEE SHEET B55 FOR CORNER DETAILS.
3. SEE SHEET B54 FOR WALE DETAILS.
4. DRILL HOLE INTO EXIST ABUT STEM. 12" MIN EMBEDMENT. SEE SPECIAL PROVISIONS. WORKING PULLOUT 75 KIPS MIN PER ANCHOR.
5. FIELD VERIFY LENGTHS PRIOR TO FABRICATION.



PARTIAL PLAN NORTH END OF BRIDGE-STAGE 1

SEH
3535 VADNAIS CENTER DRIVE
ST PAUL, MN 55110
PHONE (651) 490-2000
FAX (651) 490-2150

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Signature: John D Steenberg Date: 01/02/2007

Printed Name: JOHN D STEENBERG Reg. No. 13865

TITLE: TEMPORARY SHEETING DETAILS NORTH ABUTMENT-STAGE 1

SP 0280-55 SAP 02-623-13

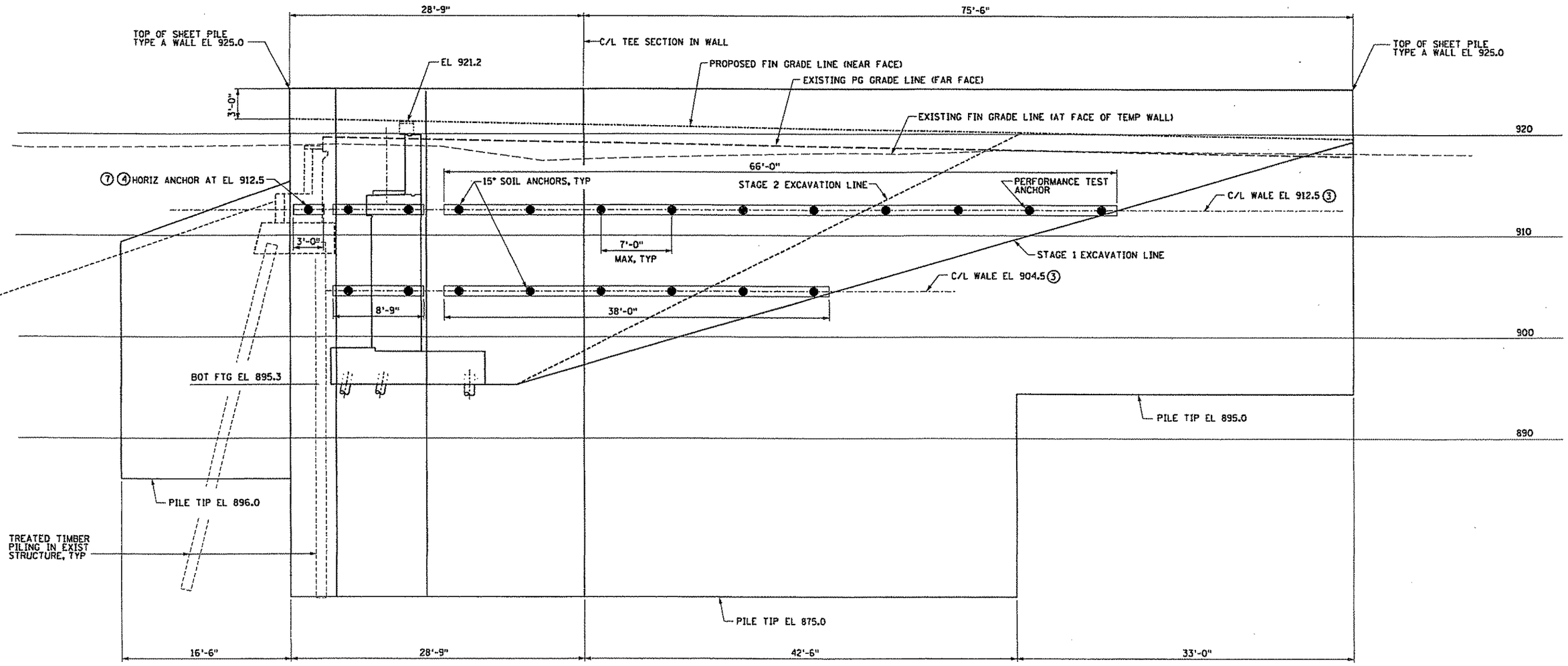
DES: ALGE	DR: MAW	APPROVED:
CHK: JAJ	CHK: ALGE	

SHEET NO B48 OF 95 SHEETS

BRIDGE NO 02817

NOTES:

1. SEE PLAN VIEW ON SHEET B48.
2. 'ZC' STANDARD FABRICATED CORNER CONNECTION W/ STD 6" LEG SECTIONS. SEE SHEET B55 FOR CORNER DETAILS.
3. SEE SHEET B54 FOR WALE DETAILS.
4. DRILL HOLE INTO EXIST ABUT STEM. 12" MIN EMBEDMENT. SEE SPECIAL PROVISIONS. WORKING PULLOUT 75 KIPS MIN PER ANCHOR.
5. DIMENSIONS ARE TO SHEETPILE CORNERS (COORDINATE POINTS SHOWN IN PLAN VIEW ON SHEET B48).
6. SEE SHEET B48 FOR ANCHOR LENGTHS.
7. DO NOT TENSION THIS ANCHOR. SNUG NUT TIGHT. DO NOT OVER TIGHTEN.



DEVELOPED ELEVATION 49A-49A AT NORTH ABUTMENT-STAGE 1

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ST PAUL, MN 55110
PHONE (651) 490-2000
FAX (651) 490-2150

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Signature: John D Steenberg Date: 01/02/2007
Printed Name: JOHN D STEENBERG Reg. No. 13865

TITLE: TEMPORARY SHEETING DETAILS NORTH ABUTMENT-STAGE 1

SP 0280-55 SAP 02-623-13

DES: ALGE	DR: MAW	APPROVED:
CHK: JAJ	CHK: ALGE	

SHEET NO B49 OF 95 SHEETS

BRIDGE NO 02817

SUMMARY OF QUANTITIES (D) FOR STEEL SHEET PILING (TEMPORARY) - STAGE 2

	ITEM	UNIT	QUANTITY
(A)	SHEET PILE TYPE A	SQ FT	1896
(B)	STRUCTURAL STEEL (3306)	POUND	10967
(C)	THREADED RODS	EACH	31

(A) INCLUDES ALL STANDARD FABRICATED CORNERS AND TEE SECTIONS.

(B) INCLUDES WALE SECTIONS, ANCHOR PLATES, STIFFENER PLATES AND 1 SHIM PLATE PER LOCATION.

(C) INCLUDES INSTALLATION PER SPECIAL PROVISIONS ALONG WITH ROD, NUT, WEDGE WASHER AND ADDITIONAL SHIM PLATES. INCLUDES ANCHOR INTO EXISTING ABUTMENT.

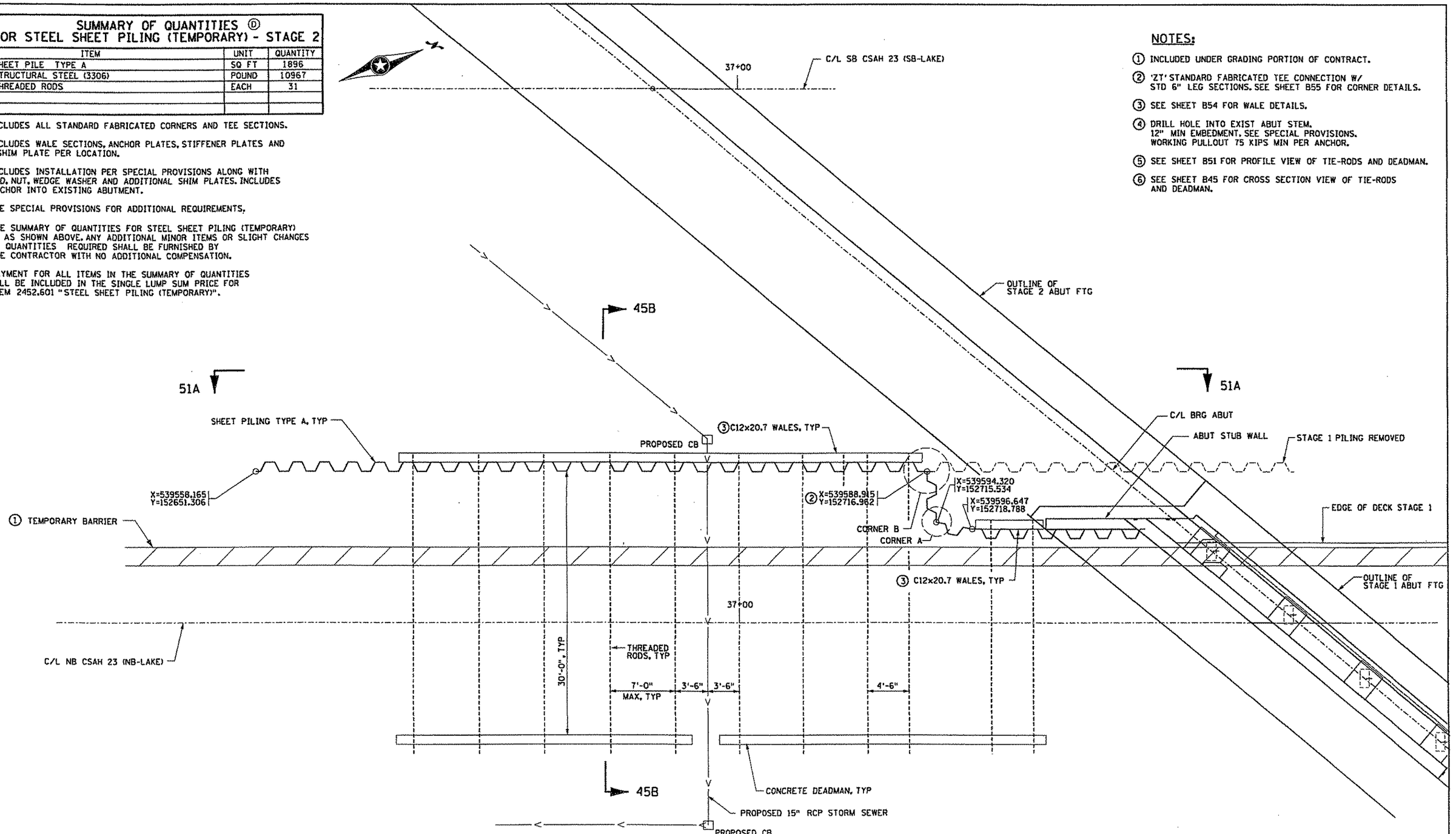
(D) SEE SPECIAL PROVISIONS FOR ADDITIONAL REQUIREMENTS,

THE SUMMARY OF QUANTITIES FOR STEEL SHEET PILING (TEMPORARY) 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 FOR ALL ITEMS IN THE SUMMARY OF QUANTITIES WILL BE INCLUDED IN THE SINGLE LUMP SUM PRICE FOR ITEM 2452.601 "STEEL SHEET PILING (TEMPORARY)".

NOTES:

1. INCLUDED UNDER GRADING PORTION OF CONTRACT.
2. 'ZT' STANDARD FABRICATED TEE CONNECTION W/ STD 6" LEG SECTIONS. SEE SHEET B55 FOR CORNER DETAILS.
3. SEE SHEET B54 FOR WALE DETAILS.
4. DRILL HOLE INTO EXIST ABUT STEM. 12" MIN EMBEDMENT. SEE SPECIAL PROVISIONS. WORKING PULLOUT 75 KIPS MIN PER ANCHOR.
5. SEE SHEET B51 FOR PROFILE VIEW OF TIE-RODS AND DEADMAN.
6. SEE SHEET B45 FOR CROSS SECTION VIEW OF TIE-RODS AND DEADMAN.



PARTIAL PLAN SOUTH END OF BRIDGE-STAGE 2

SEH
3535 VADNAIS CENTER DRIVE
ST PAUL, MN 55110
PHONE (651) 490-2000
FAX (651) 490-2150

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Signature: John D Steenberg Date: 01/02/2007
Printed Name: JOHN D STEENBERG Reg. No. 13865

TITLE: TEMPORARY SHEETING DETAILS SOUTH ABUTMENT-STAGE 2

SP 0280-55 SAP 02-623-13

DES: ALGE	DR: MAW	APPROVED:
CHK: JAJ	CHK: ALGE	

SHEET NO B50 OF 95 SHEETS

BRIDGE NO 02817

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NOTES:

1 SEE PLAN VIEW ON SHEET B50.

(2) 'ZC' STANDARD FABRICATED CORNER CONNECTION W/ STD 6" LEG SECTIONS. SEE SHEET B55 FOR CORNER DETAILS.

(3) SEE SHEET B54 FOR WALE DETAILS.

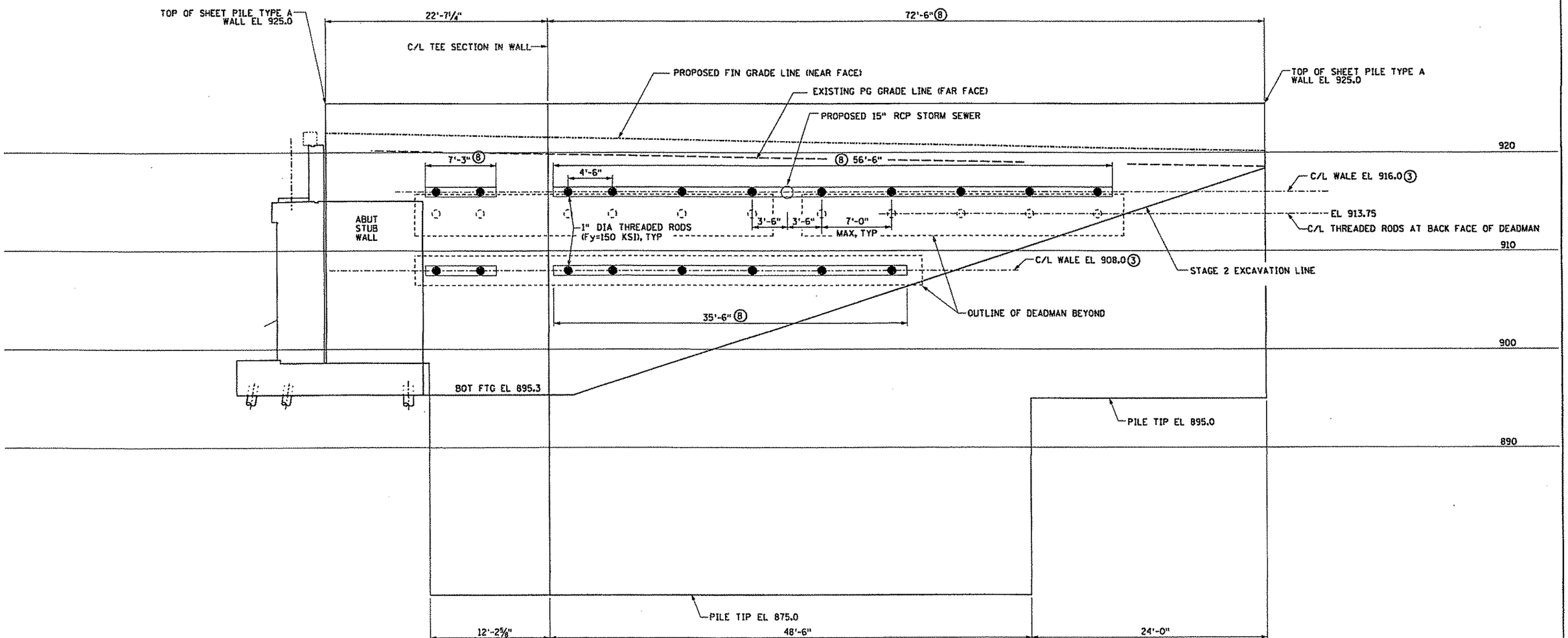
(4) DRILL HOLE INTO EXIST ABUT STEM. 12" MIN EMBEDMENT. SEE SPECIAL PROVISIONS. WORKING PULLOUT 75 KIPS MIN PER ANCHOR.

(5) DIMENSIONS ARE TO SHEETPILE CORNERS (COORDINATE POINTS SHOWN IN PLAN VIEW ON SHEET B50).

(6) SEE SHEET B50 FOR ANCHOR LENGTHS.

(7) DO NOT TENSION THIS ANCHOR. SNUG NUT TIGHT. DO NOT OVER TIGHTEN.

(8) FIELD VERIFY LENGTHS PRIOR TO FABRICATION.



DEVELOPED ELEVATION 51A-51A AT SOUTH ABUTMENT-STAGE 2

SEH
3535 VADNAIS CENTER DRIVE
ST PAUL, MN 55110
PHONE (651) 490-2000
FAX (651) 490-2150

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Signature: John D Steenberg Date: 01/02/2007

Printed Name: JOHN D STEENBERG Reg. No. 13865

TITLE: TEMPORARY SHEETING DETAILS SOUTH ABUTMENT-STAGE 2

SP 0280-55 SAP 02-623-13

DES: ALGE	DR: MAW	APPROVED:
CHK: JAJ	CHK: ALGE	

SHEET NO B51 OF 95 SHEETS

BRIDGE NO 02817

01/02/2007

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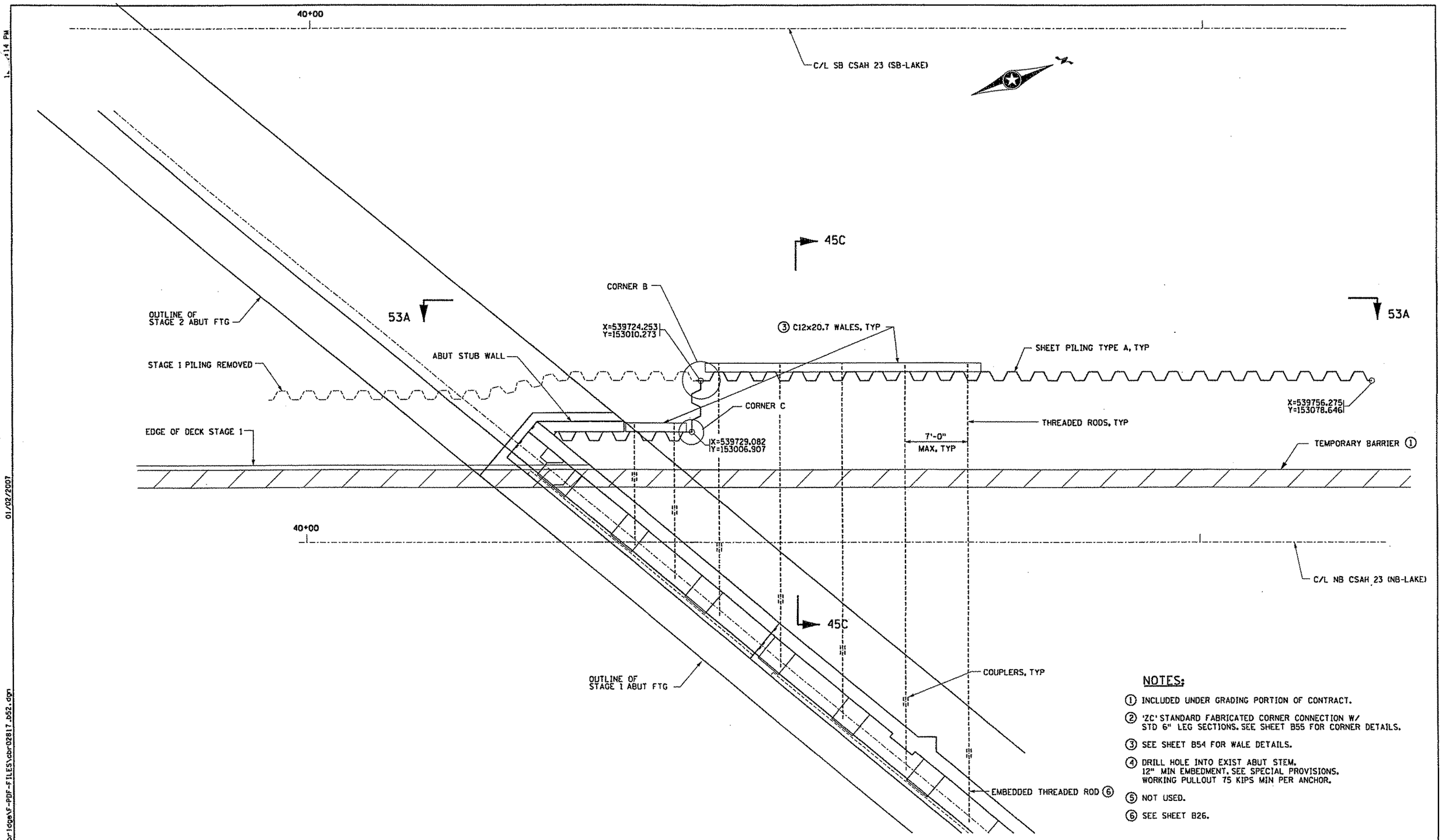

NOTES:

① INCLUDED UNDER GRADING PORTION OF CONTRACT.

② 'ZC' STANDARD FABRICATED CORNER CONNECTION W/ STD 6" LEG SECTIONS. SEE SHEET B55 FOR CORNER DETAILS.

③ SEE SHEET B54 FOR WALE DETAILS.

④ DRILL HOLE INTO EXIST ABUT STEM. 12" MIN EMBEDMENT. SEE SPECIAL PROVISIONS. WORKING PULLOUT 75 KIPS MIN PER ANCHOR.

⑤ NOT USED.

⑥ SEE SHEET B26.

PARTIAL PLAN NORTH END OF BRIDGE-STAGE 2

SEH
3535 VADNAIS CENTER DRIVE
ST PAUL, MN 55110
PHONE (651) 490-2000
FAX (651) 490-2150

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Signature: John D Steenberg Date: 01/02/2007
Printed Name: JOHN D STEENBERG Reg. No. 13865

TITLE:
TEMPORARY SHEETING DETAILS
NORTH ABUTMENT-STAGE 2

SP 0280-55 SAP 02-623-13

DES: ALGE	DR: MAW	APPROVED:
CHK: JAJ	CHK: ALGE	

SHEET NO B52 OF 95 SHEETS

BRIDGE NO 02817

01/02/2007
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NOTES:

1 SEE PLAN VIEW ON SHEET B52.

(2) 'ZC' STANDARD FABRICATED CORNER CONNECTION W/ STD 6" LEG SECTIONS. SEE SHEET B55 FOR CORNER DETAILS.

(3) SEE SHEET B54 FOR WALE DETAILS.

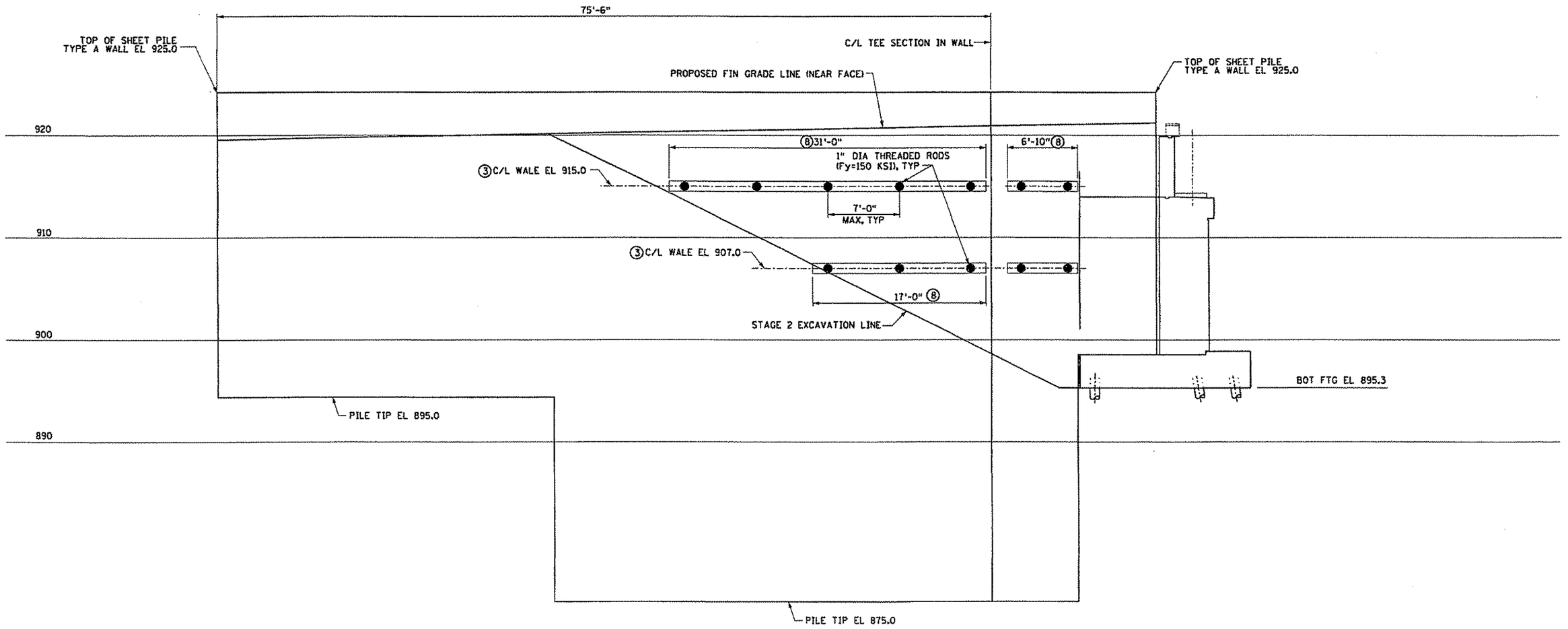
(4) DRILL HOLE INTO EXIST ABUT STEM. 12" MIN EMBEDMENT. SEE SPECIAL PROVISIONS. WORKING PULLOUT 75 KIPS MIN PER ANCHOR.

(5) DIMENSIONS ARE TO SHEETPILE CORNERS (COORDINATE POINTS SHOWN IN PLAN VIEW ON SHEET B52).

(6) SEE SHEET B52 FOR ANCHOR LENGTHS.

(7) DO NOT TENSION THIS ANCHOR. SNUG NUT TIGHT. DO NOT OVER TIGHTEN.

(8) FIELD VERIFY LENGTHS PRIOR TO FABRICATION.



DEVELOPED ELEVATION 53A-53A AT NORTH ABUTMENT-STAGE 2

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3535 VADNAIS CENTER DRIVE
ST PAUL, MN 55110
PHONE (651) 490-2000
FAX (651) 490-2150

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Signature: John D Steenberg Date: 01/02/2007
Printed Name: JOHN D STEENBERG Reg. No. 13865

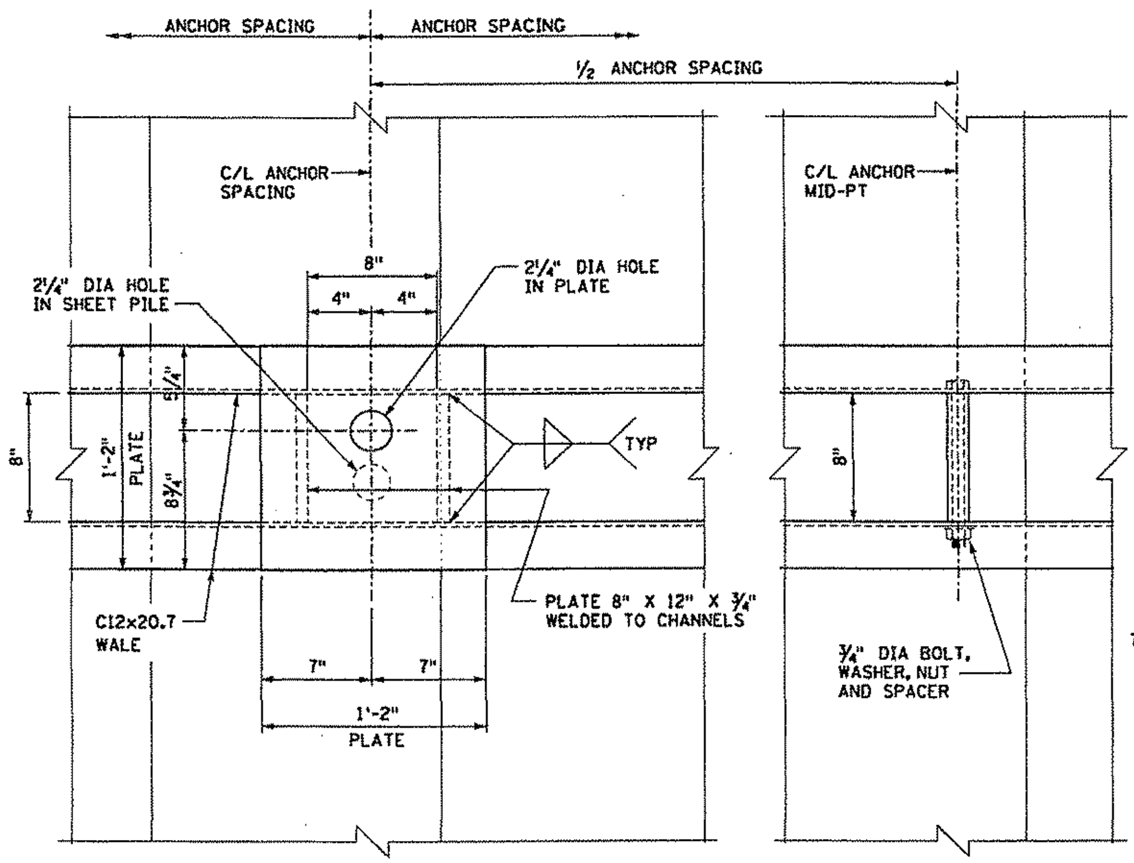
TITLE: TEMPORARY SHEETING DETAILS NORTH ABUTMENT-STAGE 2

SP 0280-55 SAP 02-623-13

DES: ALGE	DR: MAW	APPROVED:
CHK: JAJ	CHK: ALGE	

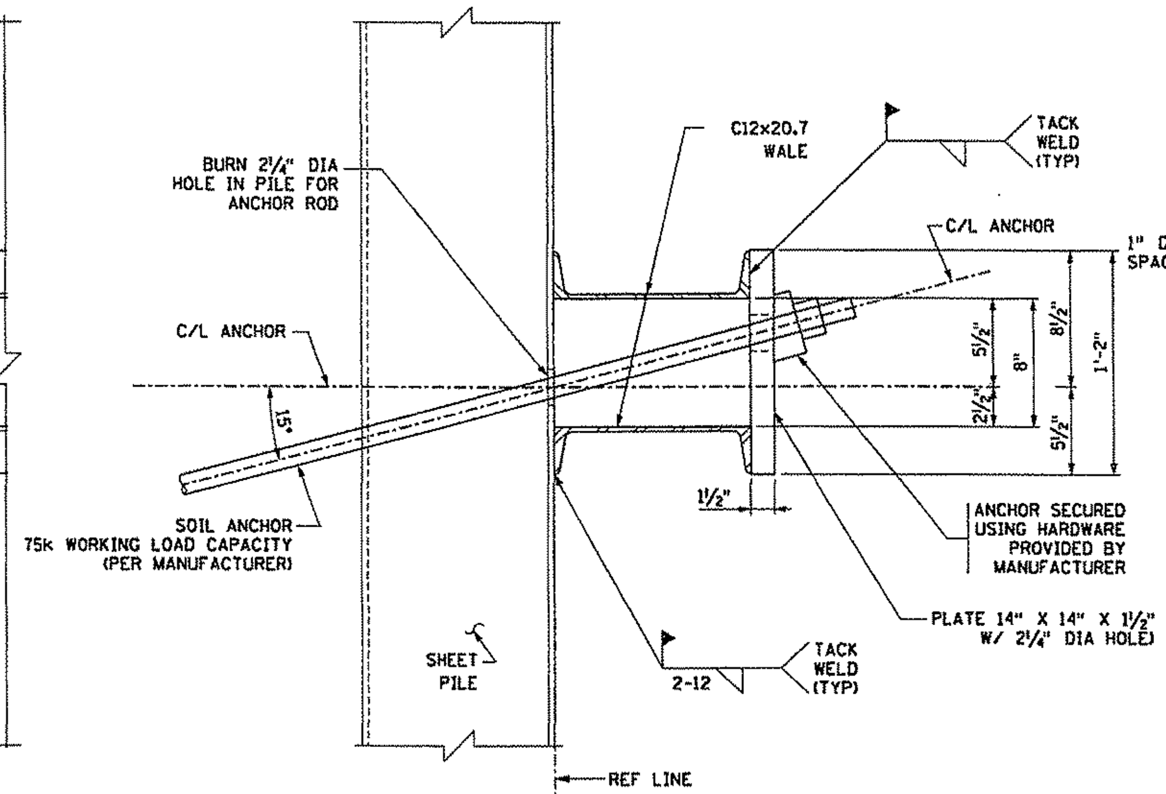
SHEET NO B53 OF 95 SHEETS

BRIDGE NO 02817



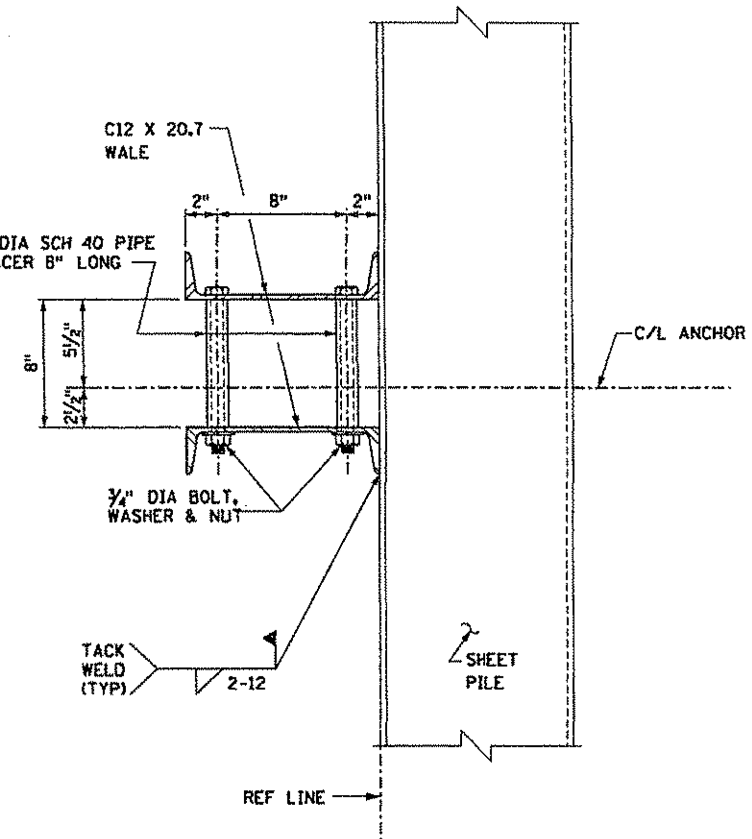
ELEVATION

(LOOKING AT FF OF SHEET PILE)
(ANCHOR ROD NOT SHOWN FOR CLARITY)

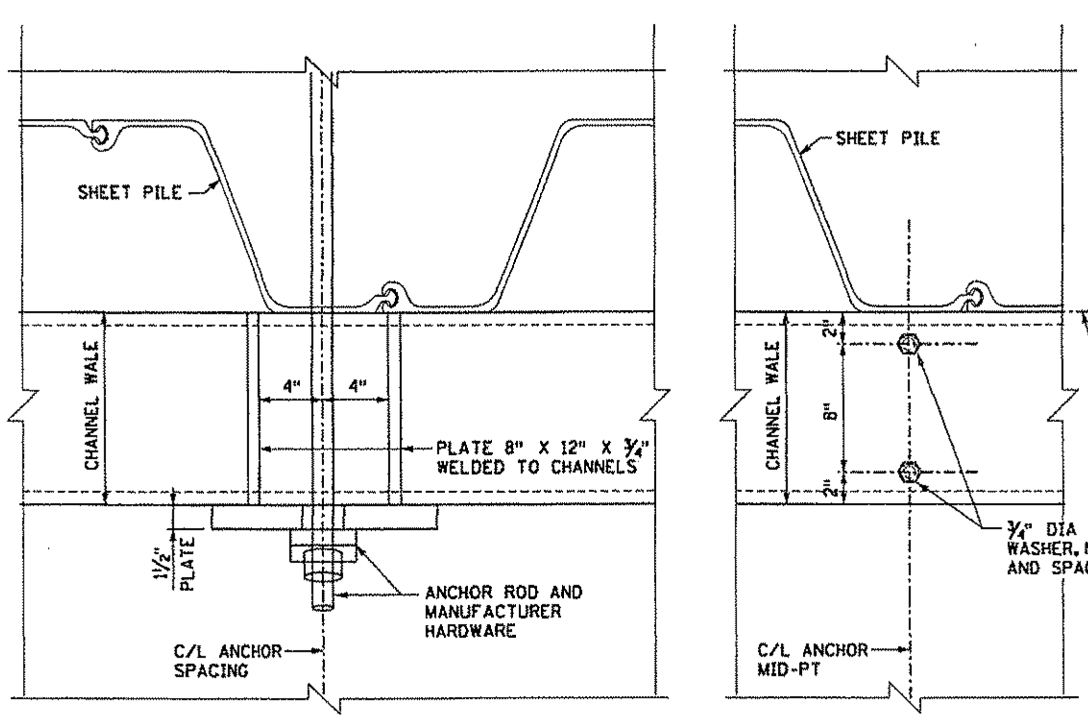


TYP SECTION AT 15° SOIL ANCHOR

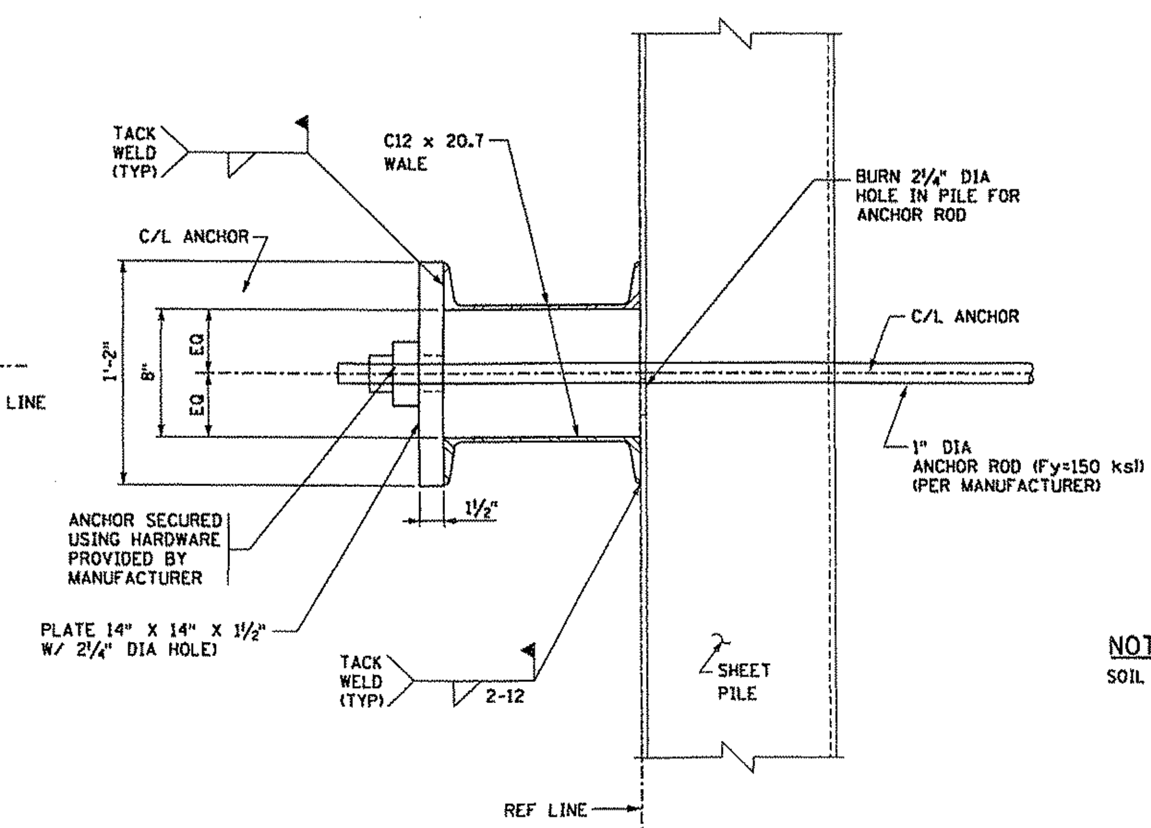
(STAGE 1)



TYP SECTION AT MID-PT



PLAN



TYP SECTION AT HORIZONTAL THREADED ANCHOR ROD

(STAGE 2)

NOTES

SOIL ANCHOR - 75k WORKING LOAD CAPACITY SOIL ANCHOR OR HELICAL ANCHOR.

FF=FRONT FACE
BF=BACK FACE
EF=EACH FACE

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3535 VADNAIS CENTER DRIVE
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PHONE (651) 490-2000
FAX (651) 490-2150

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Signature: John D Steenberg Date: 01/02/2007
Printed Name: JOHN D STEENBERG Reg. No. 13865

TITLE: WALE TO SHEET PILE CONNECTION DETAILS

SP 0280-55 SAP 02-623-13

DES: ALGE	DR: DLF	APPROVED:
CHK: JAJ	CHK: ALGE	

SHEET NO B54 OF 95 SHEETS

BRIDGE NO 02817

01/02/2007

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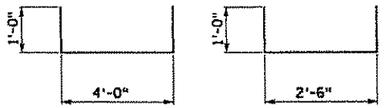
BILL OF REINFORCEMENT FOR DEADMAN

BAR	NO.	LENGTH	SHAPE	LOCATION	WT
D1601	138	6'-0"	⌊‾⌋	DEADMAN TIES	863.6
D1602	18	32'-6"	——	DEADMAN HORIZ	610.2
D1603	18	35'-6"	——	DEADMAN HORIZ	666.5
D1604	12	50'-6"	——	DEADMAN HORIZ	632.1
D1601	102	4'-6"	⌊‾⌋	DEADMAN TIES	478.7

SUMMARY OF QUANTITIES ① FOR DEADMAN

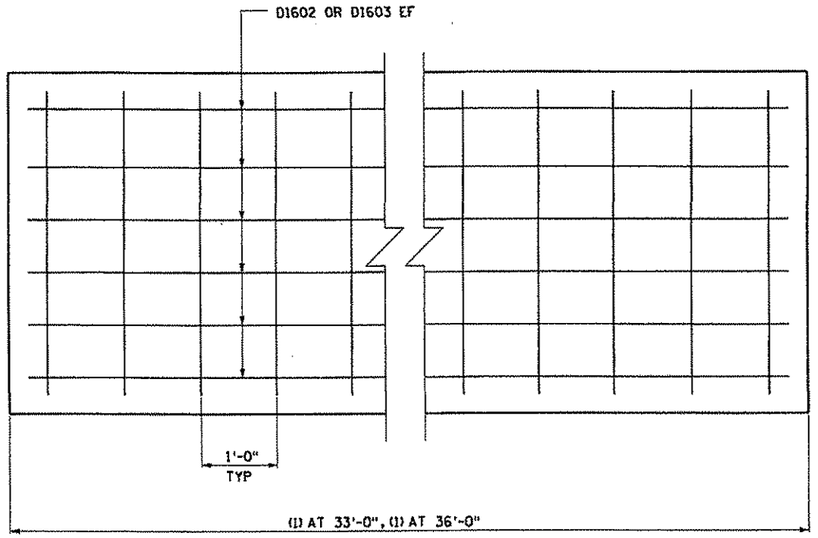
ITEM	UNIT	QUANTITY
STRUCTURE CONCRETE (1A43)	CU YD	28
REINFORCEMENT BARS	POUND	3250

① QUANTITIES SHOWN FOR DEADMAN ARE TO BE INCLUDED IN PRICE BID FOR ANCHORS.

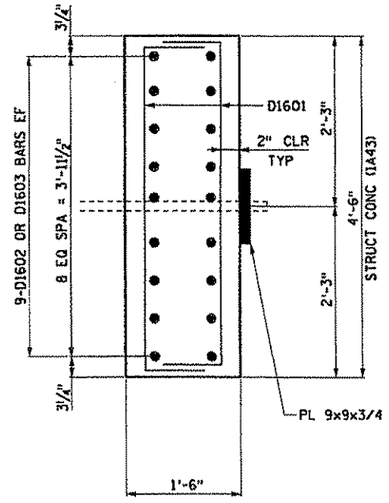


D1601 D1605

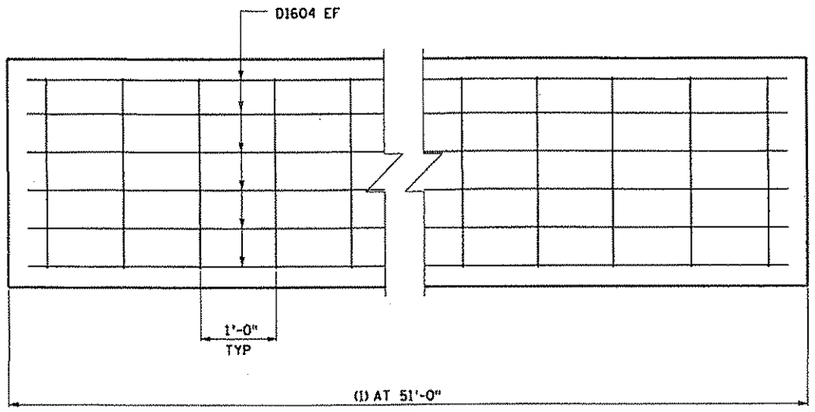
CONTRACTOR MAY PROVIDE A DIFFERENT DEADMAN DETAIL DESIGNED BY A LICENSED ENGINEER FOR APPROVAL.



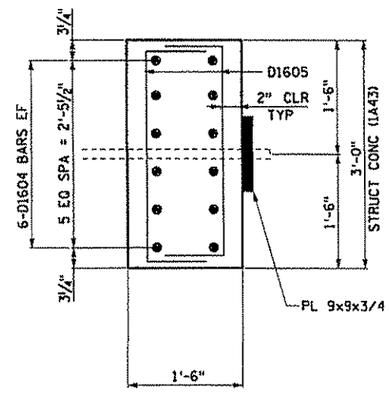
UPPER DEADMAN ELEVATION



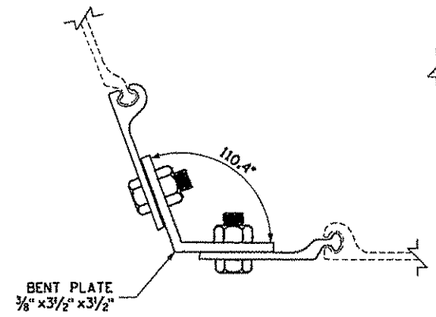
UPPER DEADMAN SECTION



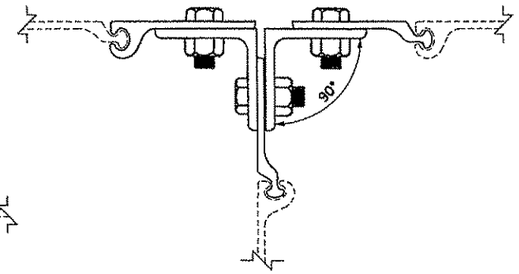
LOWER DEADMAN ELEVATION



LOWER DEADMAN SECTION



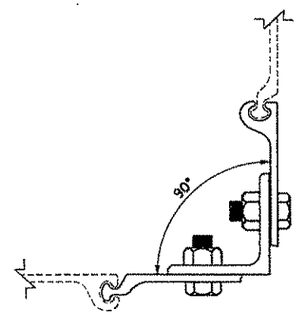
STD FABRICATED CORNER CONNECTION ZC270



STD FABRICATED CORNER CONNECTION ZT270

CORNER A

CORNER B



STD FABRICATED CORNER CONNECTION ZC271

CORNER C

ALL CORNERS USE 6" STANDARD LEGS AND 3½x3½x⅜ ANGLES UNLESS SHOWN OR NOTED OTHERWISE.

FASTENERS ARE ⅞" DIA A325(X) BOLTS SPACED ON 6" CENTERS THROUGHOUT THE LENGTH OF THE SECTION, EXCEPT FOR 2'-0" AT EACH END WHERE THEY ARE LOCATED ON 3" CENTERS.

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3535 VADNAIS CENTER DRIVE
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I hereby certify that this plan, specification, or report 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
Signature: John D Steenberg Date: 01/02/2007
Printed Name: JOHN D STEENBERG Reg. No. 13865

TITLE: TEMPORARY SHEETING DETAILS STAGE 1 AND 2

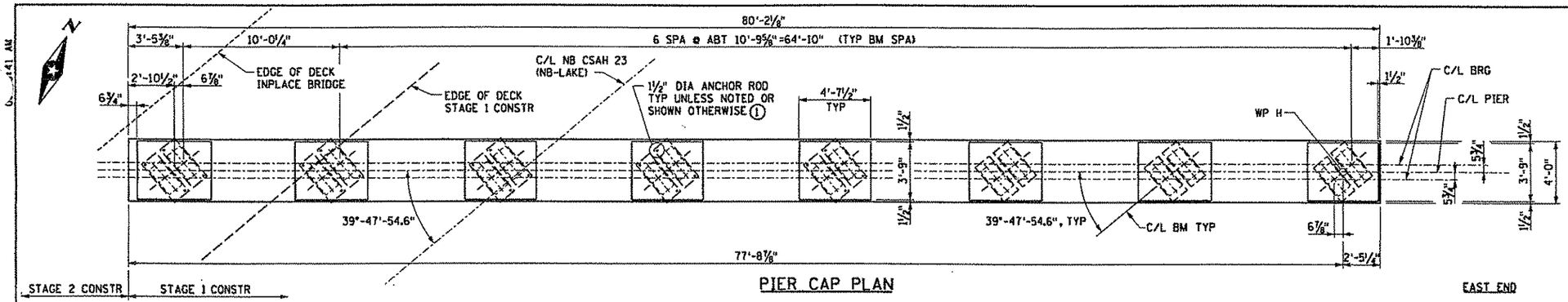
SP 0280-55 SAP 02-623-13

DES: ALGE	DR: MAW	APPROVED:
CHK: JAJ	CHK: ALGE	

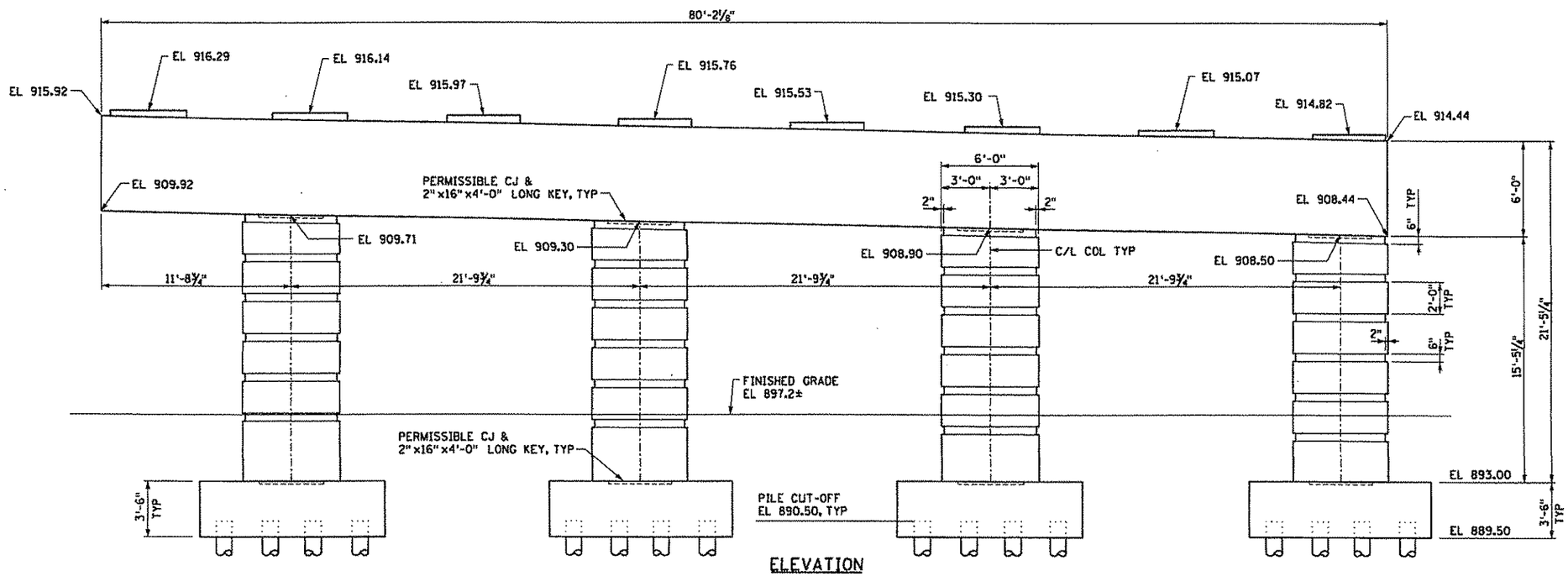
SHEET NO B55 OF 95 SHEETS

BRIDGE NO 02817

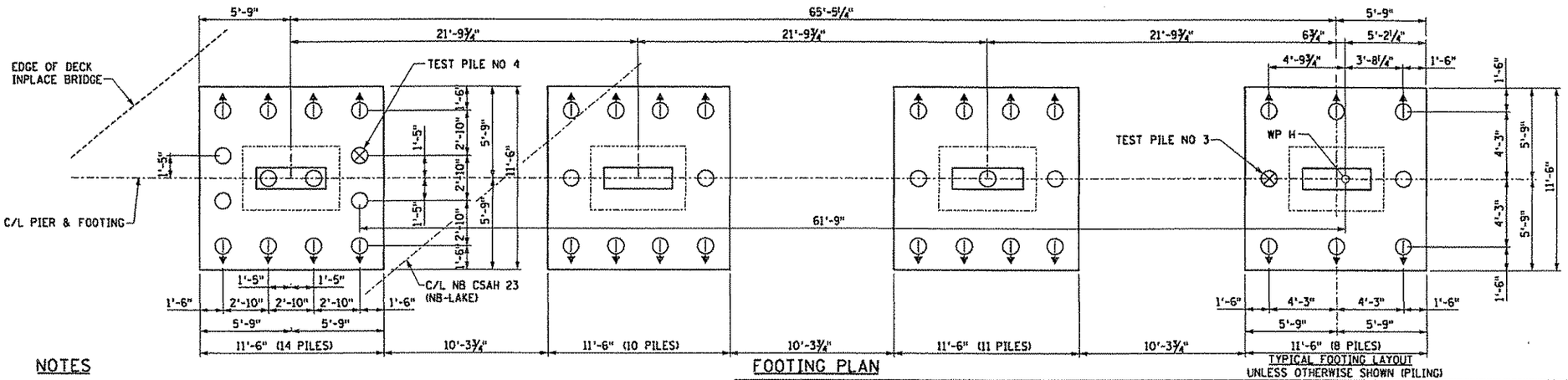
01/02/2007 S:\KOVL\...\Bridge\F-PDF-FILES\cbr02817_b55.dgn



PIER CAP PLAN

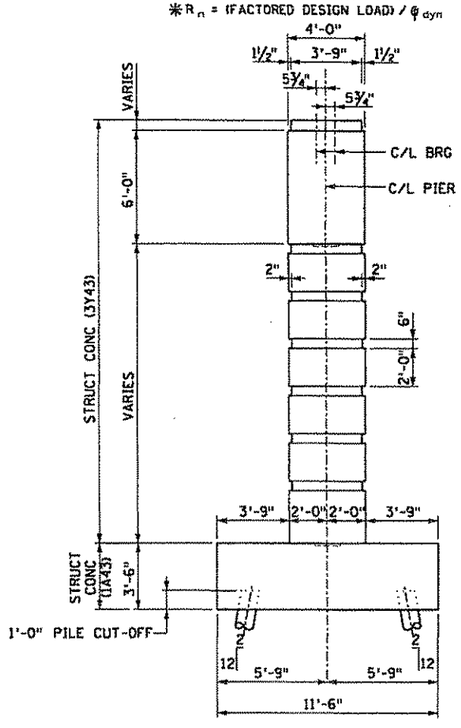


ELEVATION



FOOTING PLAN

TYPICAL FOOTING LAYOUT UNLESS OTHERWISE SHOWN (PILING)



END ELEVATION

PIER COMPUTED PILE LOAD - TONS/PILE	
FACTORED DEAD LOAD	43.9
FACTORED LIVE LOAD	21.0
FACTORED OVERTURNING	20.4
*FACTORED TOTAL LOAD	85.3

*BASED ON STRENGTH I LOAD COMBINATION

PIER REQUIRED NOMINAL PILE BEARING RESISTANCE Rn - Tons / Pile		
FIELD CONTROL METHOD	ϕ_{dyn}	*R_n
MnDOT NOMINAL RESISTANCE FORMULA	0.40	213.3
PDA	0.60	142.2

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

PILE NOTES

2 CAST-IN-PLACE CONC TEST PILES 60 FT LONG
41 CAST-IN-PLACE CONC PILES EST LENGTH 50 FT
43 CAST-IN-PLACE CONC PILES REQ'D FOR PIER EAST FRAME (STAGE 1).

PILE SPACING SHOWN IS AT BOTTOM OF FOOTING.

PILES MARKED THUS ⟜ TO BE BATTERED 2" PER FOOT IN DIRECTION SHOWN.

PILES TO HAVE A NOMINAL DIAMETER OF 12".

FOR PILE SPLICE DETAILS SEE DETAIL B201.

NOTES

(1) SEE SHEET B46 FOR TYPICAL ANCHOR ROD LAYOUT. SEE FRAMING PLAN FOR BEARING TYPES AND LOCATIONS.

SEE SHEET B48 FOR BAR LIST AND SUMMARY OF QUANTITIES.

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3535 VADNAIS CENTER DRIVE
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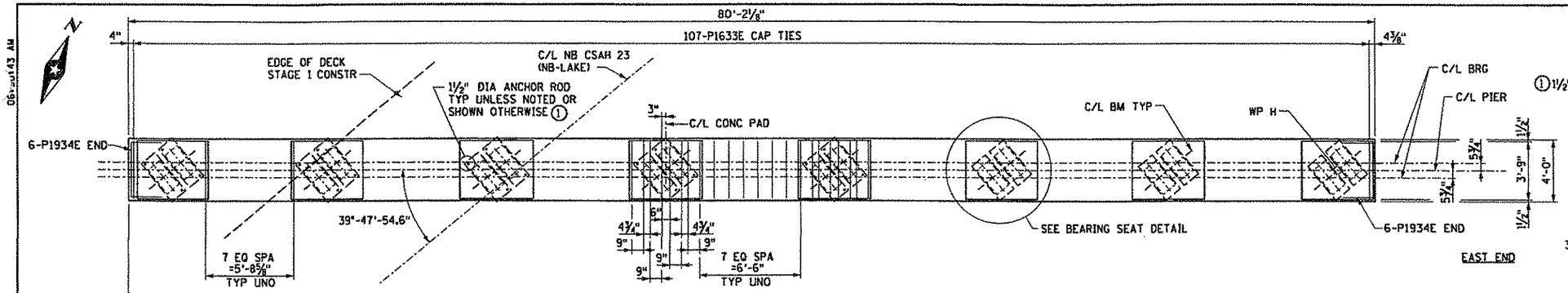
I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the state of Minnesota
Signature: [signature] Date: 11/21/2006
Printed Name: CHRISTOPHER A WUNSCH Reg. No. 42058

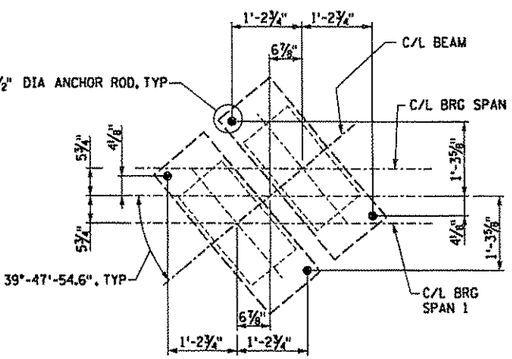
TITLE: PIER DETAILS - EAST FRAME STAGE 1

SP 0280-55 SAP 02-623-13
DES: CAW DR: MAW APPROVED:
CHK: JDS CHK: CAW
SHEET NO B56 OF 95 SHEETS
BRIDGE NO 02817

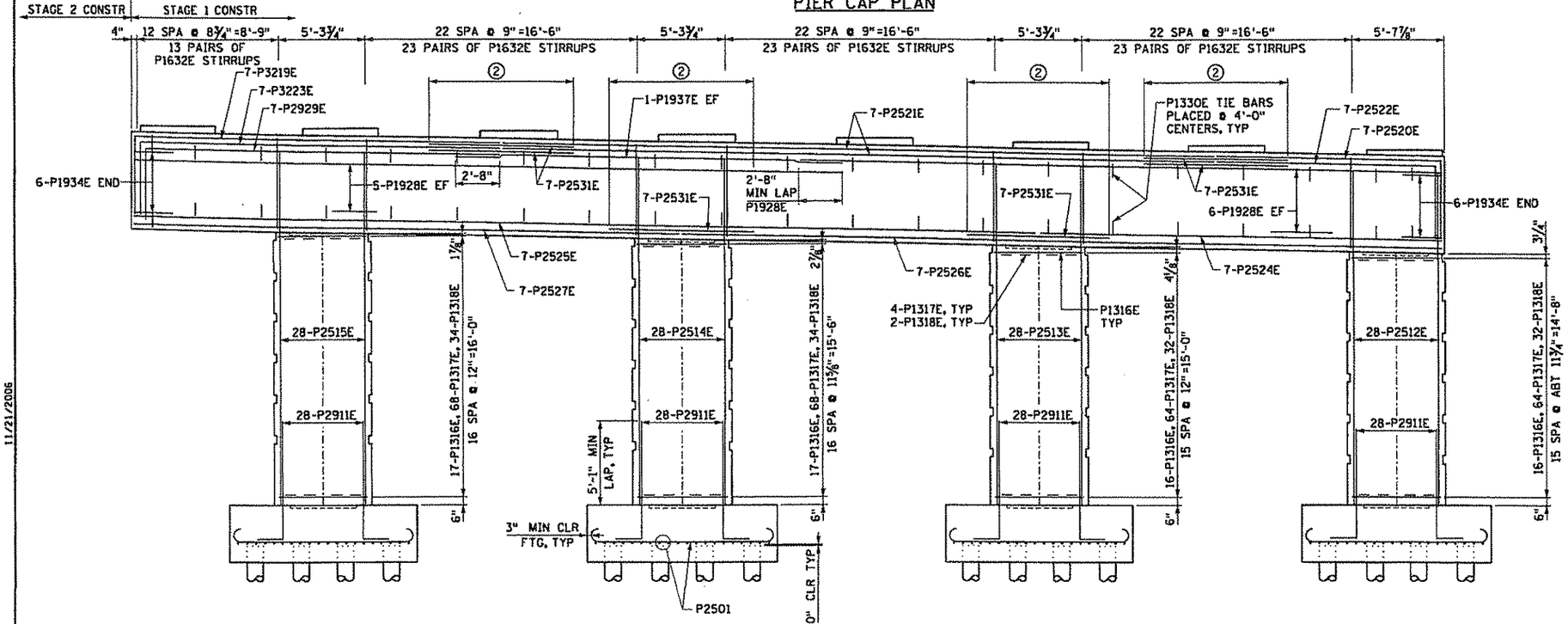
11/21/2006
...\00\brridges\dgn\br02817_pE1.dgn
...\141 AM

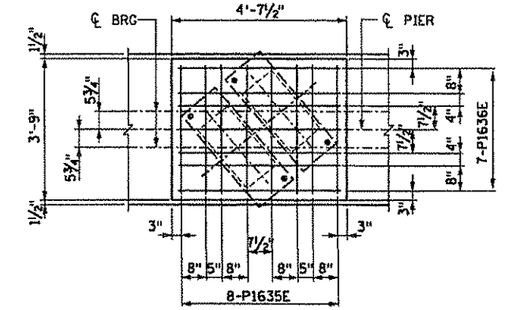


PIER CAP PLAN



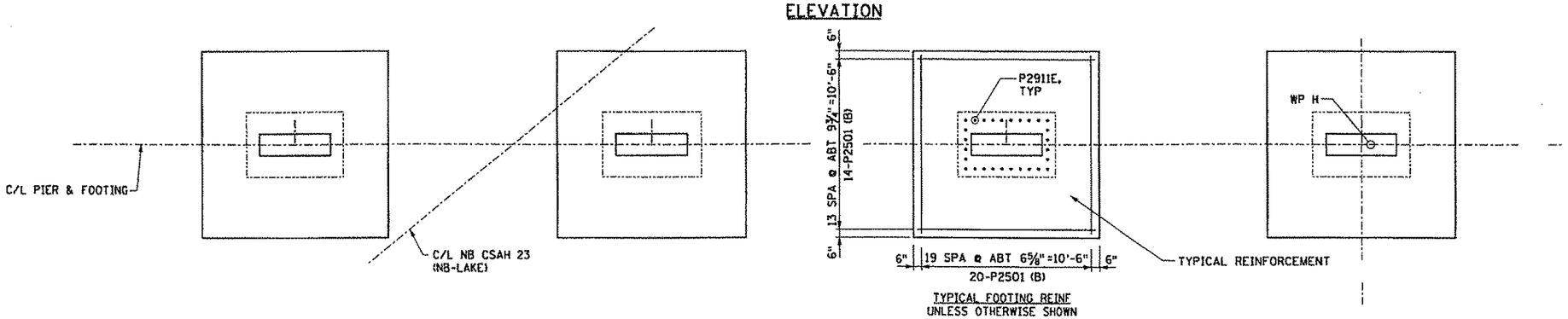
TYP ANCHOR ROD LAYOUT





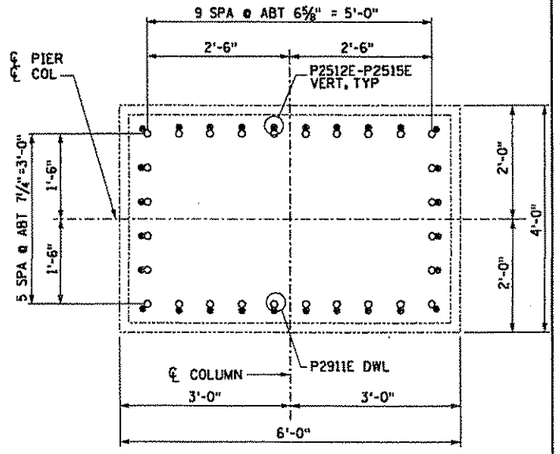
TYP BEARING SEAT

ELEVATION



TYPICAL FOOTING REINF
UNLESS OTHERWISE SHOWN

FOOTING PLAN



TYP FOOTING DOWEL LAYOUT

NOTES

① SEE FRAMING PLAN FOR BEARING TYPES & LOCATIONS.

② LAP BAR SPLICE DETAIL. SEE SHEET B59.

SEE SHEET B59 FOR BAR LIST AND SUMMARY OF QUANTITIES.

UNO=UNLESS NOTED OTHERWISE

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Signature: Date: 11/21/2006
Printed Name: CHRISTOPHER A WUNSCH Reg. No. 42058

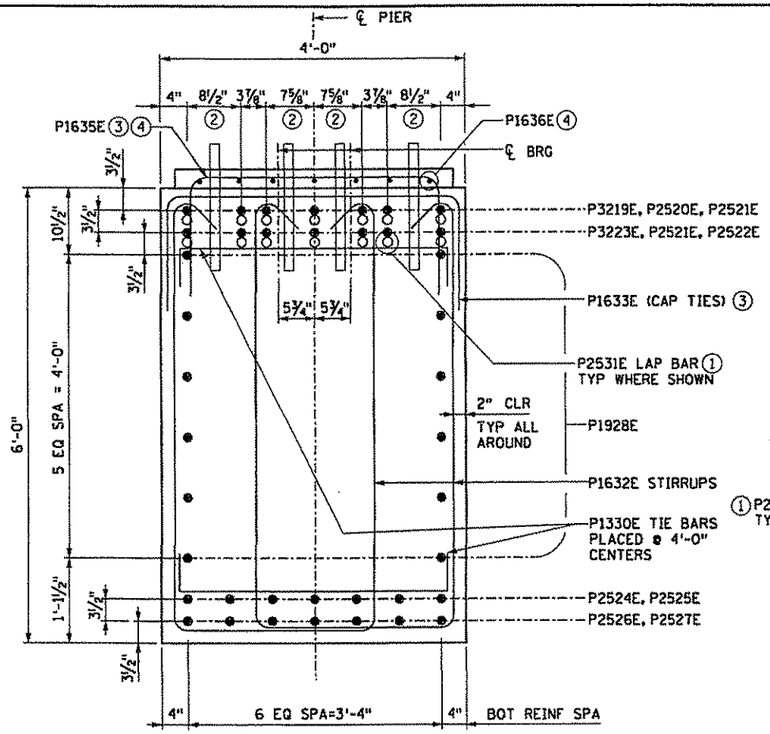
TITLE: PIER DETAILS - EAST FRAME STAGE 1

SP 0280-55 SAP 02-623-13

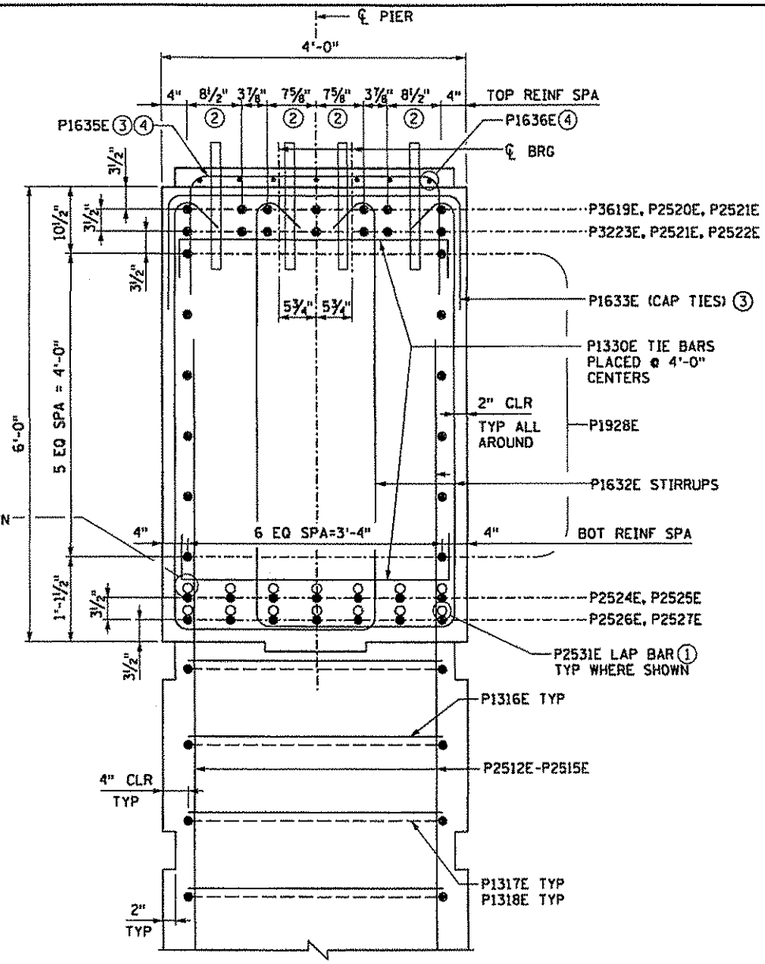
DES: CAW	DR: MAW	APPROVED:
CHK: JDS	CHK: CAW	

SHEET NO B57 OF 95 SHEETS

BRIDGE NO 02817



TYP CAP SECTION BETWEEN COLUMNS



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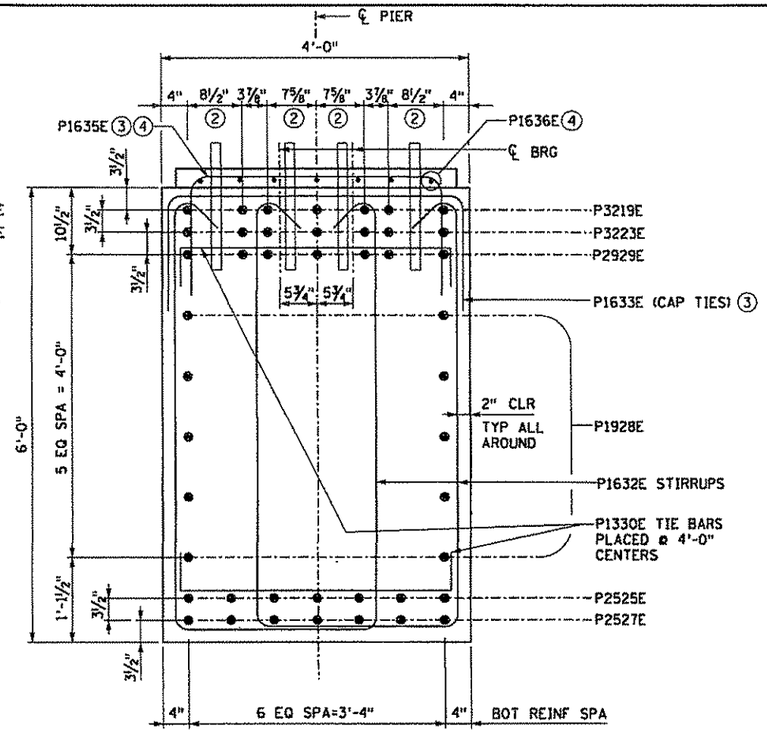
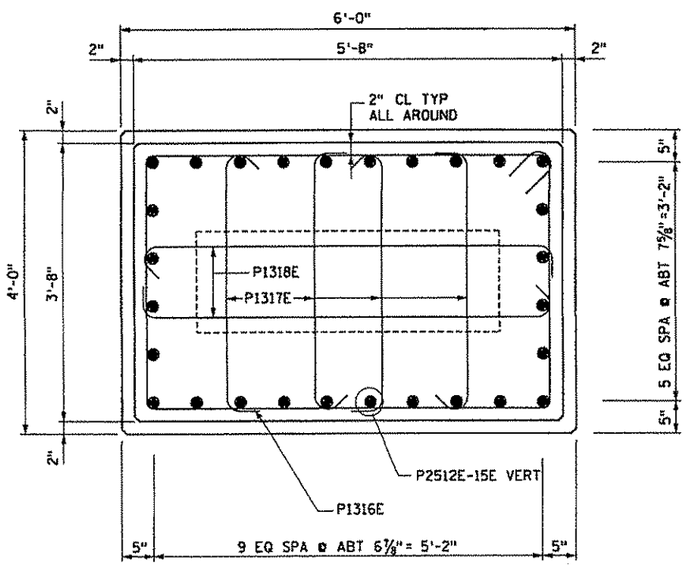
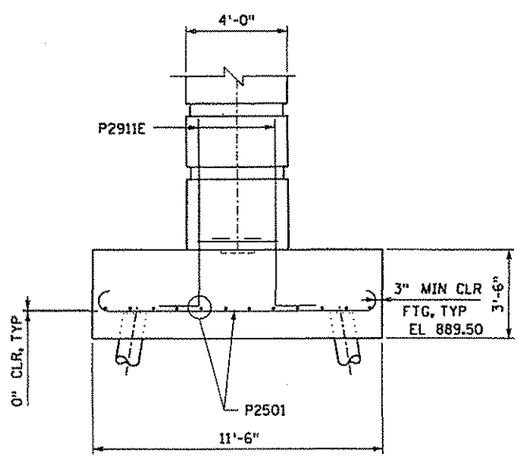


CAP SECTION AT CANTILEVERED END



TYP COLUMN SECTION



END ELEVATION

NOTES

SEE SHEET B59 FOR BAR LIST AND SUMMARY OF QUANTITIES.

SEE SHEET B56 FOR ARCHITECTURAL TREATMENT DETAILS.

① SEE SHEET B57 FOR LAP LOCATIONS.

② NO LAP ENCROACHMENT IN THIS AREA. SPACE MUST BE MAINTAINED FOR DRILLED ANCHOR RODS.

③ PULL UP TO 2" CLEAR.

④ SEE SHEET B57 FOR SPACING.

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Signature: Date: 11/21/2006

Printed Name: CHRISTOPHER A WUNSCH Reg. No. 42058

TITLE: PIER DETAILS

SP 0280-55 SAP 02-623-13

DES: CAW	DR: MAW	APPROVED:
CHK: JDS	CHK: CAW	

SHEET NO B58 OF 95 SHEETS

BRIDGE NO 02817

11/21/2006

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BAR MARK	NO OF SERIES	NO OF BARS	LENGTH	TYPE	DIMENSION A	B	C	D	LOCATION
PIER - STAGE 1									
EPOXY COATED BARS									
P2911E		112	9'-2"	100	7'-7"	1'-7"			FTG DWL
P2512E		28	20'-5"	STR					COLUMN VERT
P2513E		28	20'-10"	STR					COLUMN VERT
P2514E		28	21'-3"	STR					COLUMN VERT
P2515E		28	21'-8"	STR					COLUMN VERT
P1316E		66	18'-1"	104	5'-4"	3'-4"			COLUMN TIES
P1317E		264	4'-1"	123	3'-4"				COLUMN TIES
P1318E		132	6'-1"	123	5'-4"				COLUMN TIES
P3219E		7	27'-4"	100	22'-4"				CAP TOP
P2520E		7	18'-8"	100	13'-8"				CAP TOP
P2521E		14	43'-5"	STR					CAP TOP
P2522E		7	18'-3"	100	13'-3"				CAP TOP
P3223E		7	27'-0"	100	22'-0"				CAP TOP
P2524E		7	24'-6"	STR					CAP BOT
P2525E		7	55'-1"	STR					CAP BOT
P2526E		7	46'-6"	STR					CAP BOT
P2527E		7	33'-1"	STR					CAP BOT
P1928E		22	41'-3"	STR					CAP SIDE
P2929E		7	25'-8"	100	21'-8"				CAP TOP
P1330E		40	4'-8"	101	0'-6"	3'-8"			CAP TIES
P2531E		42	8'-9"	STR					LAP BAR
P1632E		164	14'-8"	102	2'-7"	5'-8"			CAP STIRRUPS
P1633E		107	7'-8"	101	2'-0"	3'-8"			CAP TIES
P1934E		12	8'-6"	101	2'-6"	3'-6"			CAP ENDS
P1635E		64	8'-5"	101	2'-6"	3'-5"			BRG SEAT
P1636E		56	9'-4"	101	2'-6"	4'-3 1/2"			BRG SEAT
P1937E		2	24'-0"	STR					CAP SIDE

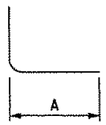
BAR MARK	NO OF SERIES	NO OF BARS	LENGTH	TYPE	DIMENSION A	B	C	D	LOCATION
PIER - STAGE 1									
BLACK BARS									
P2501		136	12'-10"	129	11'-0"	0'-11"			FOOTING BOT

SUMMARY OF QUANTITIES FOR PIER - STAGE 1

ITEM	UNIT	QUANTITY
STRUCTURAL CONCRETE (1A43)	CU YD	69
STRUCTURAL CONCRETE (3Y43)	CU YD	132
REINFORCEMENT BARS	POUND	4660
REINFORCEMENT BARS (EPOXY COATED)	POUND	26540
(1) C-I-P CONCRETE PILING DELIVERED 12"	LIN FT	2050
(1) C-I-P CONCRETE PILING DRIVEN 12"	LIN FT	2050
C-I-P CONCRETE TEST PILE 60 FT LONG 12"	EACH	2
PILE POINTS	EACH	43
PILE ANALYSIS	EACH	1

(1) DOES NOT INCLUDE TEST PILES.

BAR BENDING DIAGRAMS



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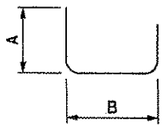

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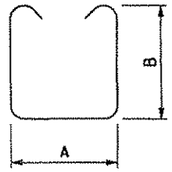

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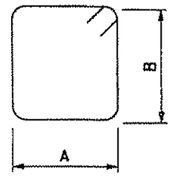

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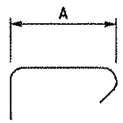

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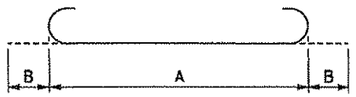

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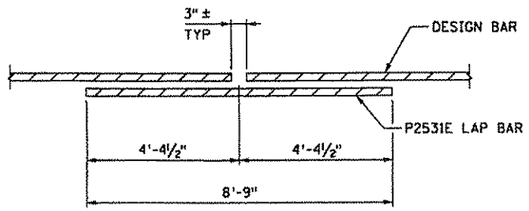

LAP BAR SPLICE DETAIL
NTS

* BAR TYPE USES STANDARD STIRRUP AND TIE HOOKS.

NOTE:
BENT BAR DIMENSIONS GIVEN ARE OUT-TO-OUT. ACTUAL BAR LENGTHS SHALL BE DETERMINED BASED ON DIMENSIONS SHOWN IN THE BAR BENDING DIAGRAMS. TOTAL BAR LENGTHS SHOWN ARE FOR USE IN COMPUTING REINFORCEMENT BAR WEIGHTS FOR PAYMENT ONLY.

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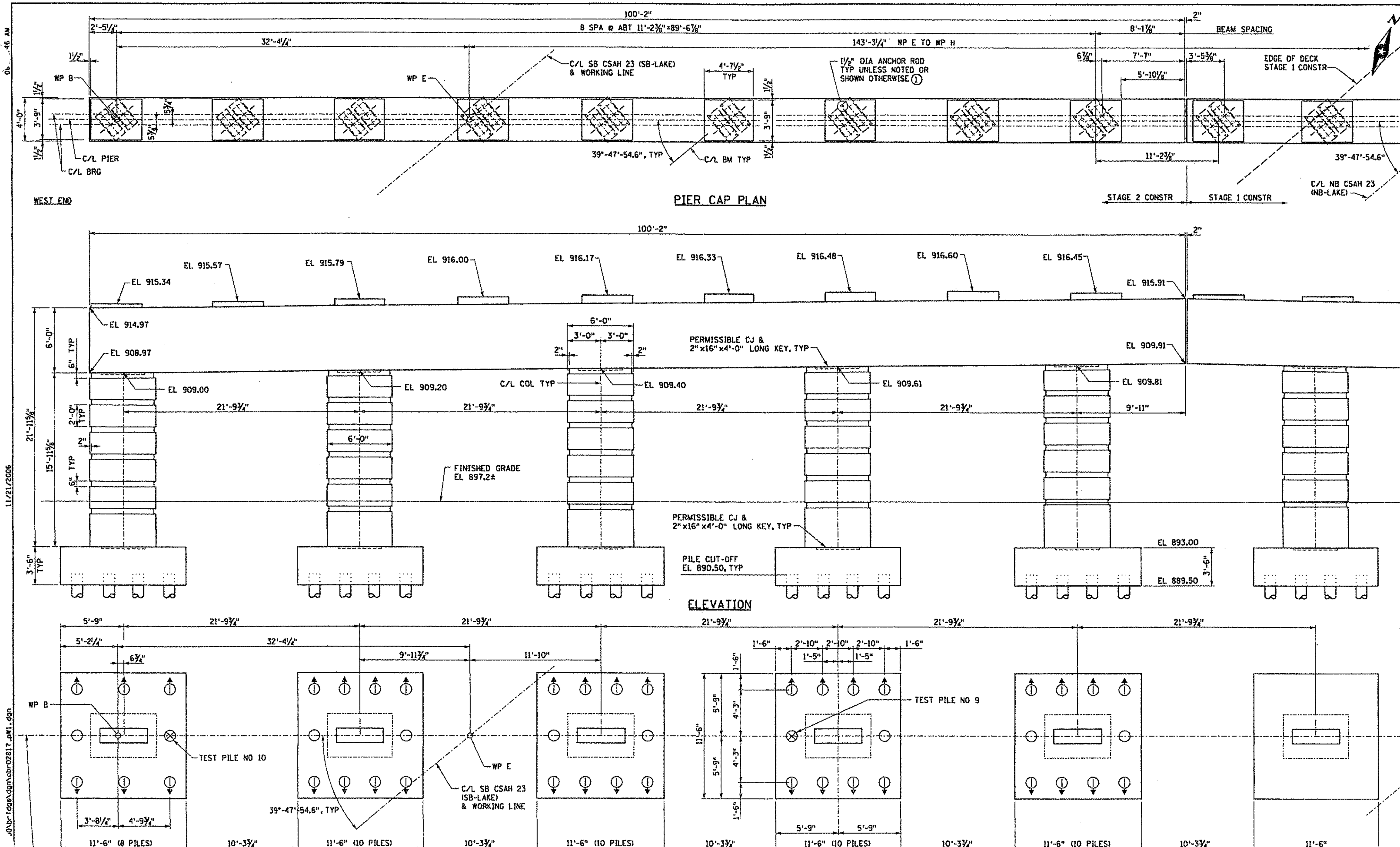
FAX (651) 490-2150

I hereby certify that this plan, specification, or report 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
Signature: Date: 11/21/2006
Printed Name: CHRISTOPHER A WUNSCH Reg. No. 42058

TITLE: PIER BARLIST & SUMMARY OF QUANTITIES STAGE 1

SP 0280-55 SAP 02-623-13
DES: CAW DR: MAW APPROVED:
CHK: JDS CHK: CAW

BRIDGE NO 02817



NOTES

① SEE SHEET B61 FOR TYPICAL ANCHOR ROD LAYOUT. SEE FRAMING PLAN FOR BEARING TYPES AND LOCATIONS.

SEE SHEET B64 FOR BAR LIST AND SUMMARY OF QUANTITIES.

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Signature: Date: 11/21/2006
Printed Name: CHRISTOPHER A WUNSCH Reg. No. 42058

TITLE: PIER DETAILS - WEST FRAME STAGE 2

SP 0280-55 SAP 02-623-13

DES: CAW	DR: MAW	APPROVED:
CHK: JDS	CHK: CAW	

SHEET NO B60 OF 95 SHEETS

BRIDGE NO 02817

PIER COMPUTED PILE LOAD - TONS/PILE	
FACTORED DEAD LOAD	50.9
FACTORED LIVE LOAD	21.8
FACTORED OVERTURNING	11.6
*FACTORED TOTAL LOAD	84.3

*BASED ON STRENGTH I LOAD COMBINATION

PIER REQUIRED NOMINAL PILE BEARING RESISTANCE Rn - Tons / Pile		
FIELD CONTROL METHOD	φ_{dyn}	$*R_n$
MnDOT NOMINAL RESISTANCE FORMULA	0.40	210.8
PDA	0.60	140.5

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

PILE NOTES

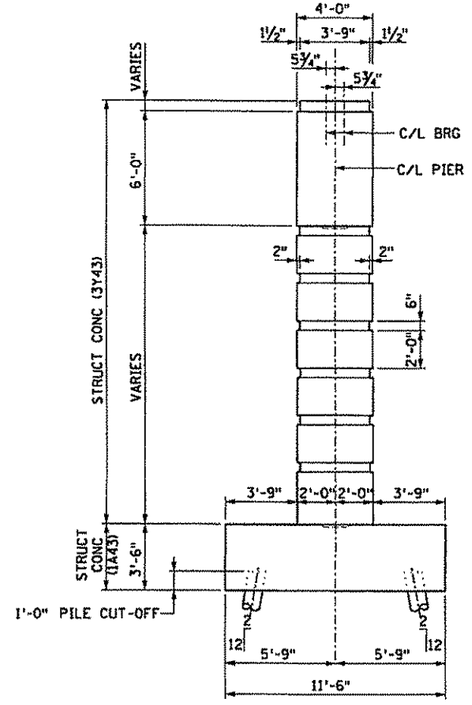
2 CAST-IN-PLACE CONC TEST PILES 60 FT LONG
46 CAST-IN-PLACE CONC PILES EST LENGTH 50 FT
48 CAST-IN-PLACE CONC PILES REQ'D FOR PIER EAST FRAME (STAGE 1).

PILE SPACING SHOWN IS AT BOTTOM OF FOOTING.

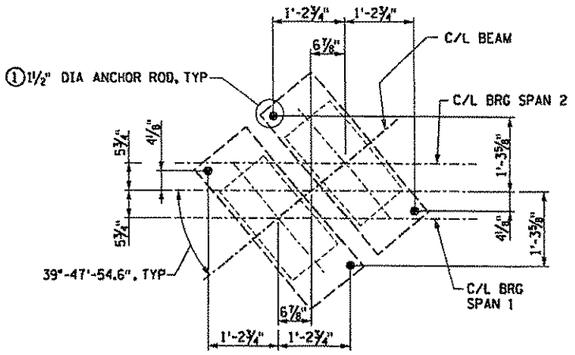
PILES MARKED THUS ⊖ TO BE BATTERED 2" PER FOOT IN DIRECTION SHOWN.

PILES TO HAVE A NOMINAL DIAMETER OF 12".

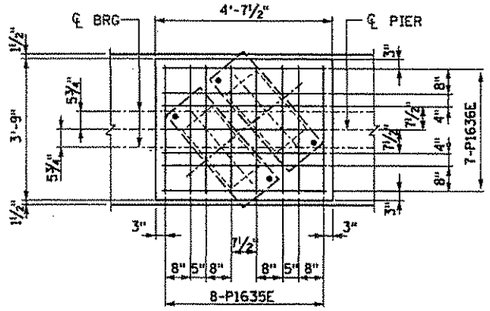
FOR PILE SPLICE DETAILS SEE DETAIL B201.



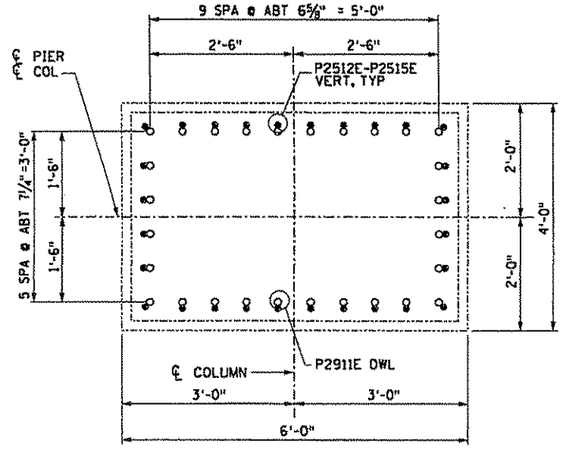
END ELEVATION



TYP ANCHOR ROD LAYOUT



TYP BEARING SEAT



TYP FOOTING DOWEL LAYOUT

NOTES

① SEE FRAMING PLAN FOR BEARING TYPES & LOCATIONS.

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3535 VADNAIS CENTER DRIVE
ST PAUL, MN 55110
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Signature: _____ Date: 11/21/2006
Printed Name: CHRISTOPHER A MUNSCH Reg. No. 42058

TITLE: PIER DETAILS - WEST FRAME STAGE 2

SP 0280-55 SAP 02-623-13

DES: CAW	DR: MAW	APPROVED:
CHK: JDS	CHK: CAW	

SHEET NO B61 OF 95 SHEETS

BRIDGE NO 02817

11/21/2006
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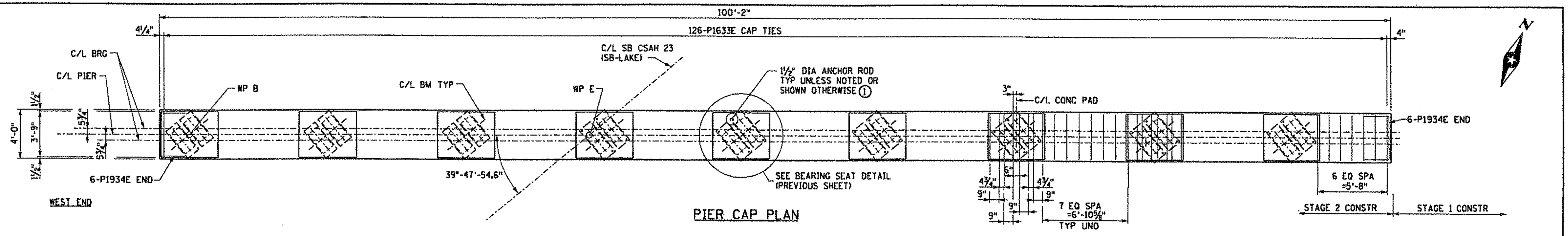
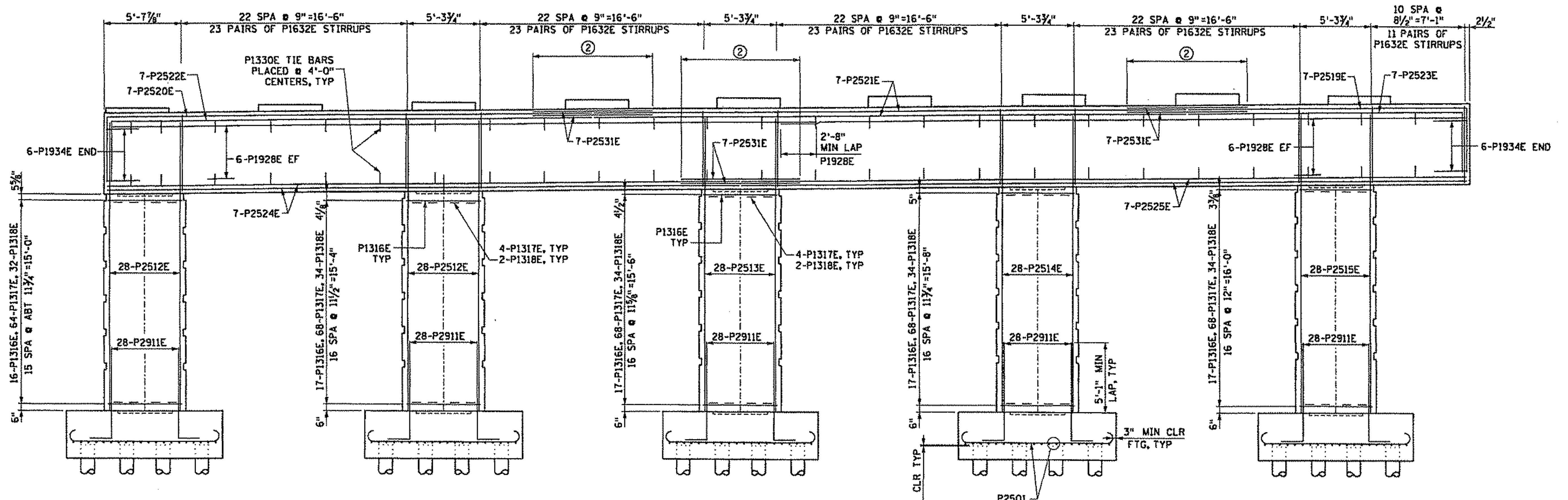
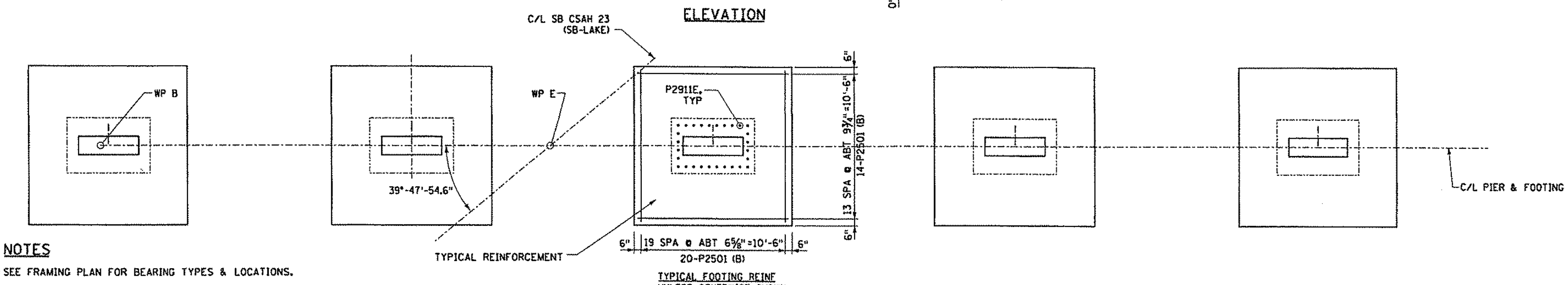


PIER CAP PLAN



ELEVATION



FOOTING PLAN

NOTES

① SEE FRAMING PLAN FOR BEARING TYPES & LOCATIONS.

② LAP BAR SPLICE DETAIL. SEE SHEET B64.

③ STIRRUP SPACING CENTERED OVER COLUMNS IN THIS AREA.

SEE SHEET B64 FOR BAR LIST AND SUMMARY OF QUANTITIES.

UNO=UNLESS NOTED OTHERWISE

SEH
3535 VADNAIS CENTER DRIVE
ST PAUL, MN 55110
PHONE (651) 490-2000
FAX (651) 490-2150

I hereby certify that this plan, specification, or report 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
Signature: [signature] Date: 11/21/2006
Printed Name: CHRISTOPHER A WUNSCH Reg. No. 42058

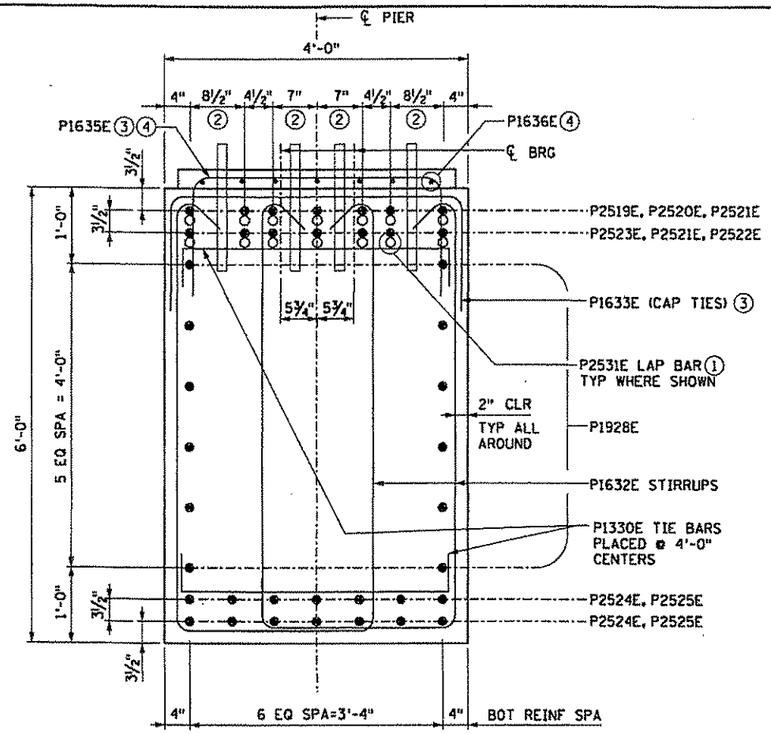
TITLE: PIER DETAILS - WEST FRAME STAGE 2

SP 0280-55 SAP 02-623-13

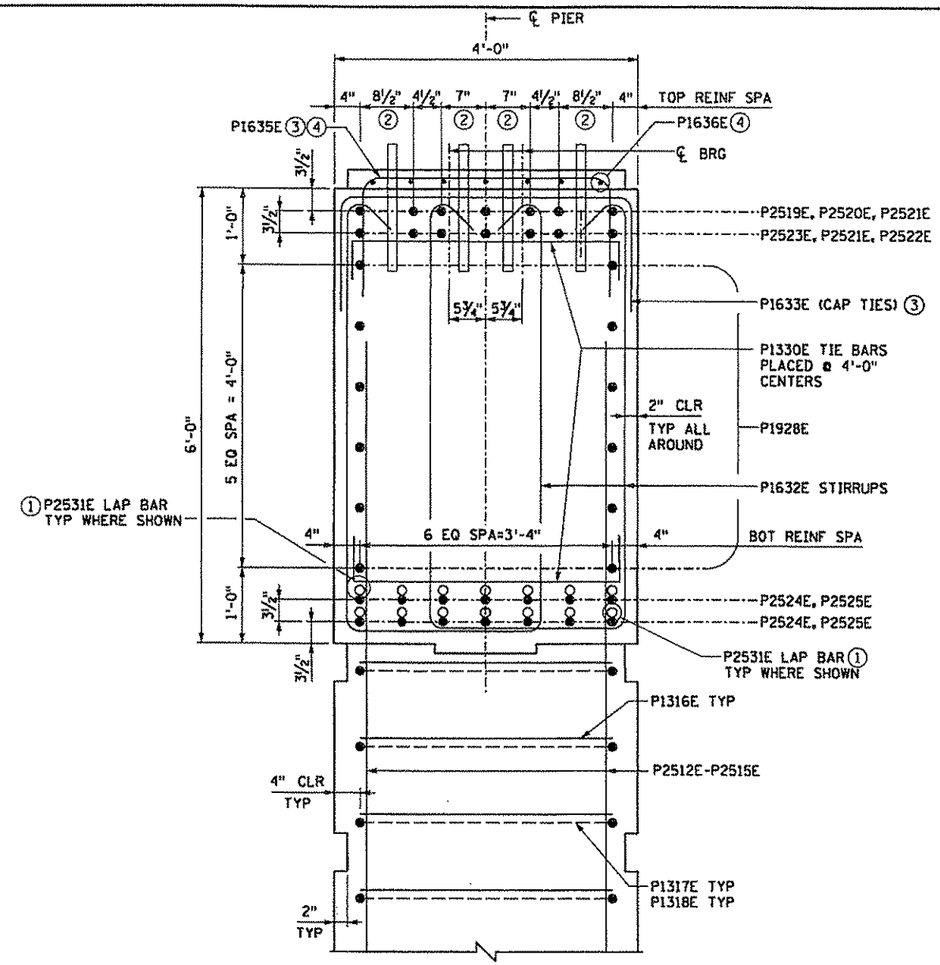
DES: CAW	DR: MAW	APPROVED:
CHK: JDS	CHK: CAW	

SHEET NO B62 OF 95 SHEETS

BRIDGE NO 02817



TYP CAP SECTION BETWEEN COLUMNS



TYP CAP SECTION AT COLUMNS

NOTES

SEE SHEET B64 FOR BAR LIST AND SUMMARY OF QUANTITIES.

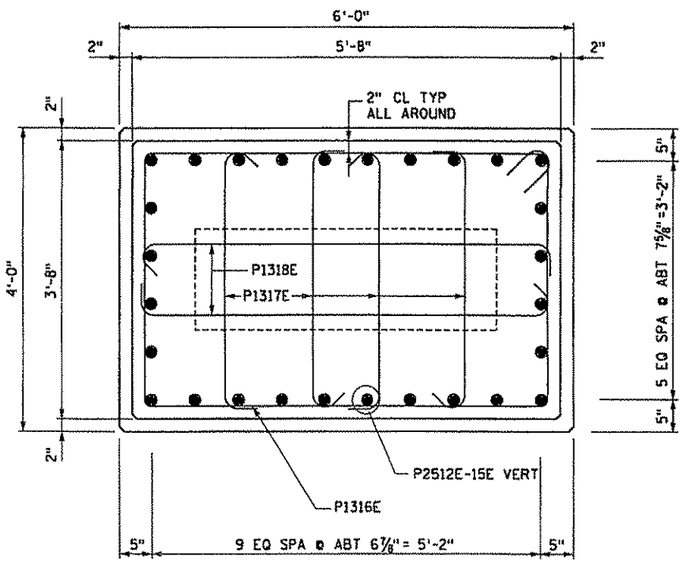
SEE SHEET B60 FOR ARCHITECTURAL TREATMENT DETAILS.

① SEE SHEET B62 FOR LAP LOCATIONS.

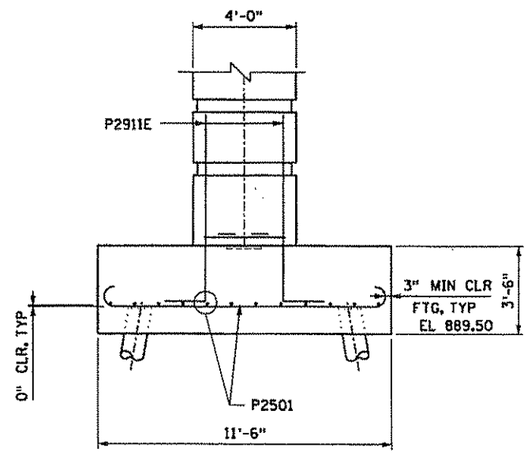
② NO LAP ENCROACHMENT IN THIS AREA. SPACE MUST BE MAINTAINED FOR DRILLED ANCHOR RODS.

③ PULL UP TO 2" CLEAR.

④ SEE SHEET B61 FOR SPACING.



TYP COLUMN SECTION



END ELEVATION

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Signature: Date: 11/21/2006

Printed Name: CHRISTOPHER A WUNSCH Reg. No. 42058

TITLE: PIER DETAILS - STAGE 2

SP 0280-55 SAP 02-623-13

DES: CAW	DR: MAW	APPROVED:
CHK: JDS	CHK: CAW	

SHEET NO B63 OF 95 SHEETS

BRIDGE NO 02817

11/21/2006

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st\kolu\ind.

BAR MARK	NO OF SERIES	NO OF BARS	LENGTH	TYPE	DIMENSION A	DIMENSION B	DIMENSION C	DIMENSION D	LOCATION
PIER (STAGE 2)									
EPOXY COATED BARS									
P2911E		140	9'-2"	100	7'-7"	1'-7"			FTG DWL
P2512E		56	21'-3"	STR					COLUMN VERT
P2513E		28	21'-8"	STR					COLUMN VERT
P2514E		28	21'-10"	STR					COLUMN VERT
P2515E		28	22'-1"	STR					COLUMN VERT
P1316E		84	18'-1"	104	5'-4"	3'-4"			COLUMN TIES
P1317E		336	4'-1"	123	3'-4"				COLUMN TIES
P1318E		168	6'-1"	123	5'-4"				COLUMN TIES
P2519E		7	25'-6"	100	20'-6"				CAP TOP
P2520E		7	40'-5"	100	35'-5"				CAP TOP
P2521E		14	43'-6"	STR					CAP TOP
P2522E		7	40'-1"	100	35'-1"				CAP TOP
P2523E		7	25'-2"	100	20'-2"				CAP TOP
P2524E		14	46'-4"	STR					CAP BOT
P2525E		14	53'-3"	STR					CAP BOT
P1928E		24	51'-3"	STR					CAP SIDE
P1330E		52	4'-8"	101	0'-6"	3'-8"			CAP TIES
P2531E		42	8'-9"	STR					LAP BAR
P1632E		206	14'-8"	102	2'-7"	5'-8"			CAP STIRRUPS
P1633E		126	7'-8"	101	2'-0"	3'-8"			CAP TIES
P1934E		12	8'-6"	101	2'-6"	3'-6"			CAP ENDS
P1635E		72	8'-5"	101	2'-6"	3'-5"			BRG SEAT
P1636E		63	9'-4"	101	2'-6"	4'-3 1/2"			BRG SEAT

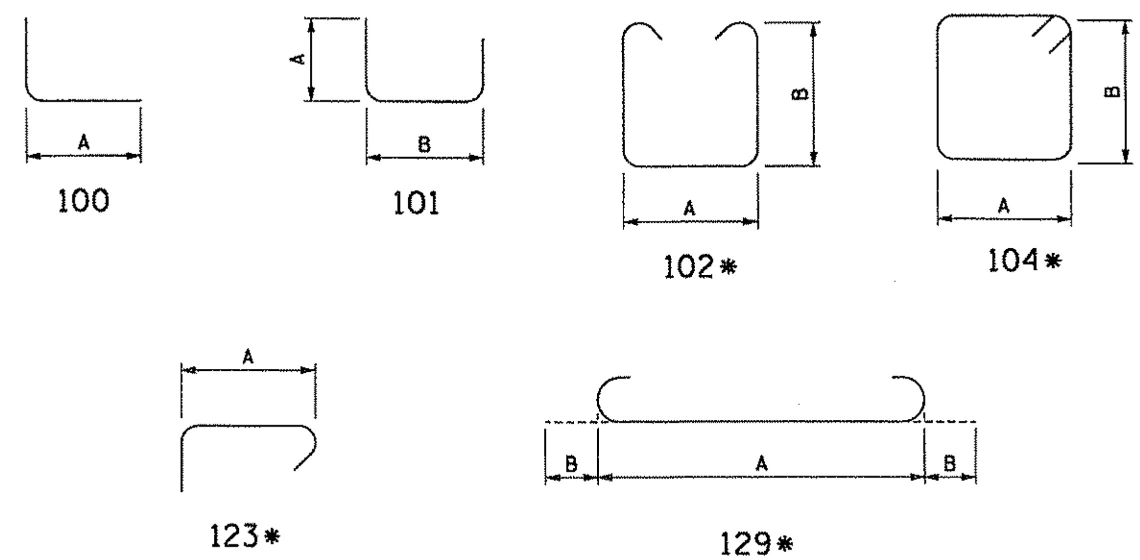
BAR MARK	NO OF SERIES	NO OF BARS	LENGTH	TYPE	DIMENSION A	DIMENSION B	DIMENSION C	DIMENSION D	LOCATION
PIER (STAGE 2)									
BLACK BARS									
P2501		170	12'-10"	129	11'-0"	0'-11"			FOOTING BOT

SUMMARY OF QUANTITIES FOR PIER - STAGE 2

	ITEM	UNIT	QUANTITY
	STRUCTURAL CONCRETE (1A43)	CU YD	86
	STRUCTURAL CONCRETE (3Y43)	CU YD	167
	REINFORCEMENT BARS	POUND	5830
	REINFORCEMENT BARS (EPOXY COATED)	POUND	31410
(1)	C-I-P CONCRETE PILING DELIVERED 12"	LIN FT	2300
(1)	C-I-P CONCRETE PILING DRIVEN 12"	LIN FT	2300
	C-I-P CONCRETE TEST PILE 60 FT LONG 12"	EACH	2
	PILE POINTS	EACH	48
	PILE ANALYSIS	EACH	1

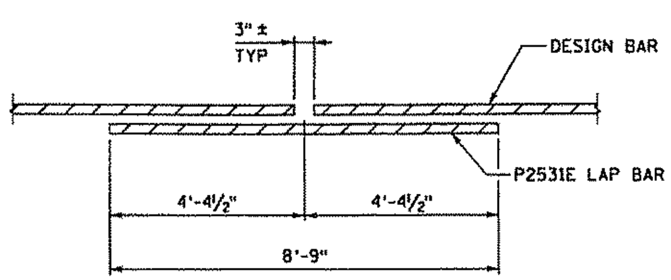
(1) DOES NOT INCLUDE TEST PILES.

BAR BENDING DIAGRAMS

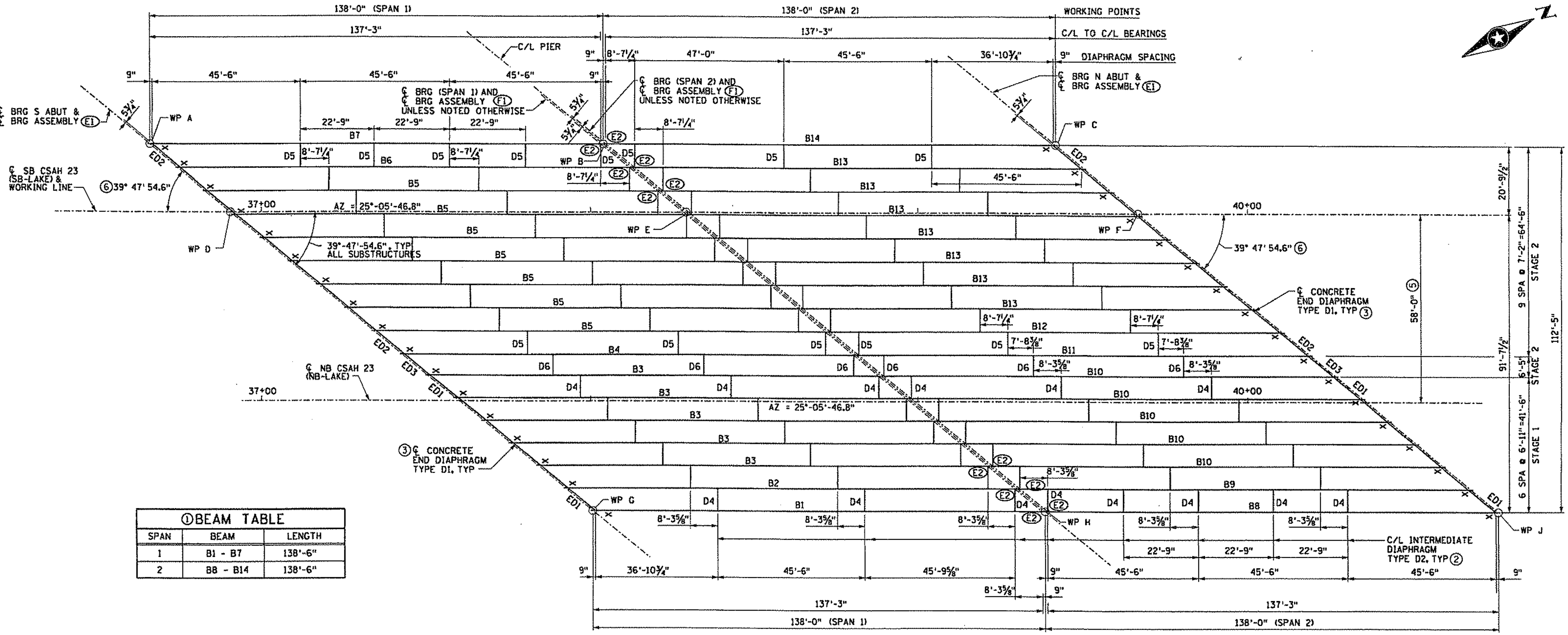


* BAR TYPE USES STANDARD STIRRUP AND TIE HOOKS.

NOTE:
BENT BAR DIMENSIONS GIVEN ARE OUT-TO-OUT. ACTUAL BAR LENGTHS SHALL BE DETERMINED BASED ON DIMENSIONS SHOWN IN THE BAR BENDING DIAGRAMS. TOTAL BAR LENGTHS SHOWN ARE FOR USE IN COMPUTING REINFORCEMENT BAR WEIGHTS FOR PAYMENT ONLY.



LAP BAR SPLICE DETAIL
NTS



(1) BEAM TABLE		
SPAN	BEAM	LENGTH
1	B1 - B7	138'-6"
2	B8 - B14	138'-6"

NOTES

"X" DENOTES END OF BEAM.

ALL BEAMS SET PARALLEL TO WORKING LINE.

ALL DIMENSIONS SHOWN ARE MEASURED ON A HORIZONTAL PLANE.

MARKS SHOWN (E1) & (E2) DENOTE EXPANSION BEARING ASSEMBLIES.
MARKS SHOWN (F1) DENOTE FIXED BEARING ASSEMBLIES.
SEE DETAILS SHEET B84 FOR BEARING DETAILS.

(1) SEE SHEET B66 FOR BEAM DETAILS.

(2) SEE SHEET B85 FOR INTERMEDIATE DIAPHRAGM DETAIL B403.

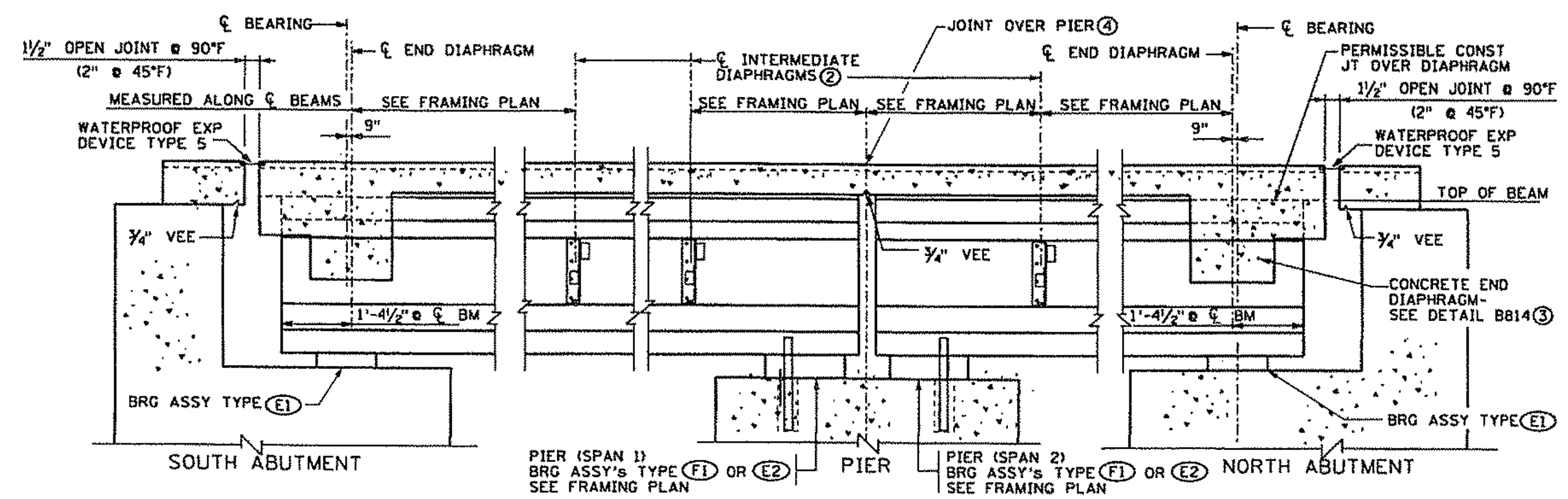
(3) SEE SHEET B85 FOR END DIAPHRAGM DETAIL B814. END DIAPHRAGMS (AT ABUTMENTS) ARE PAID FOR AS STRUCTURE CONCRETE (3Y43) PER CU. YD.

(4) MAKE 1" DEEP BY 3/8" WIDE SAW CUT IN CONCRETE ROADWAY SLAB (CONC MIX NO 3Y36) OVER PIERS AS SOON AS CUTTING CAN BE DONE WITHOUT RAVELING THE CONCRETE. AFTER CONSTRUCTION OF LOW SLUMP CONCRETE WEARING COURSE, MAKE 1" DEEP BY 3/8" WIDE SAW CUT DIRECTLY OVER PREVIOUS SAW CUT. FILL WITH CONCRETE JOINT SEALER, PER MnDOT SPEC 3723.

(5) MEASURED PERP TO WORKING LINE.

(6) ANGLE=39°-47'-54.6" (TYPICAL ALL SUBSTRUCTURES & DIAPHRAGMS).

(7) SYMMETRICAL ABOUT CENTERLINE UNLESS SHOWN OR NOTED OTHERWISE.



LONGITUDINAL SECTION
(ALONG ℄ OF BEAM)

SP 0280-55 SAP 02-623-13

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ST. PAUL, MN 5510
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I hereby certify that this plan, specification, or report 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
Signature: Date: 11/21/2006
Printed Name: CHRISTOPHER A WUNSCH Reg. No. 42058

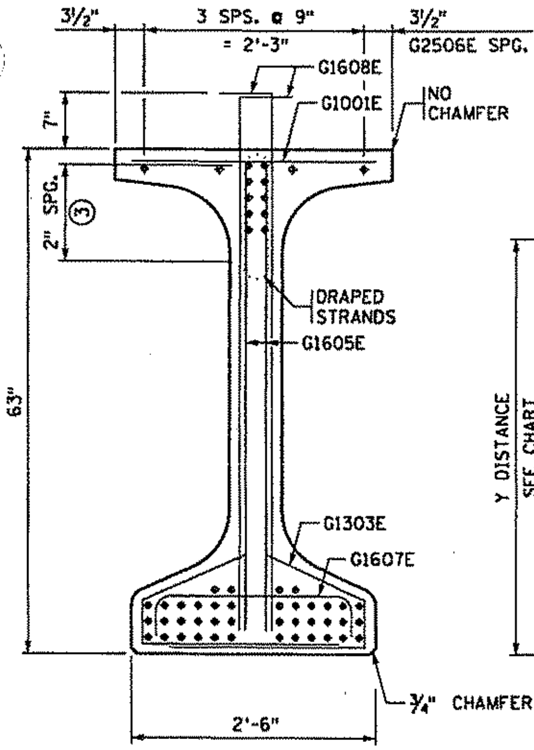
TITLE: FRAMING PLAN

DES: CAW	DR: MAW	APPROVED:
CHK: JDS	CHK: CAW	

SHEET NO B65 OF 95 SHEETS

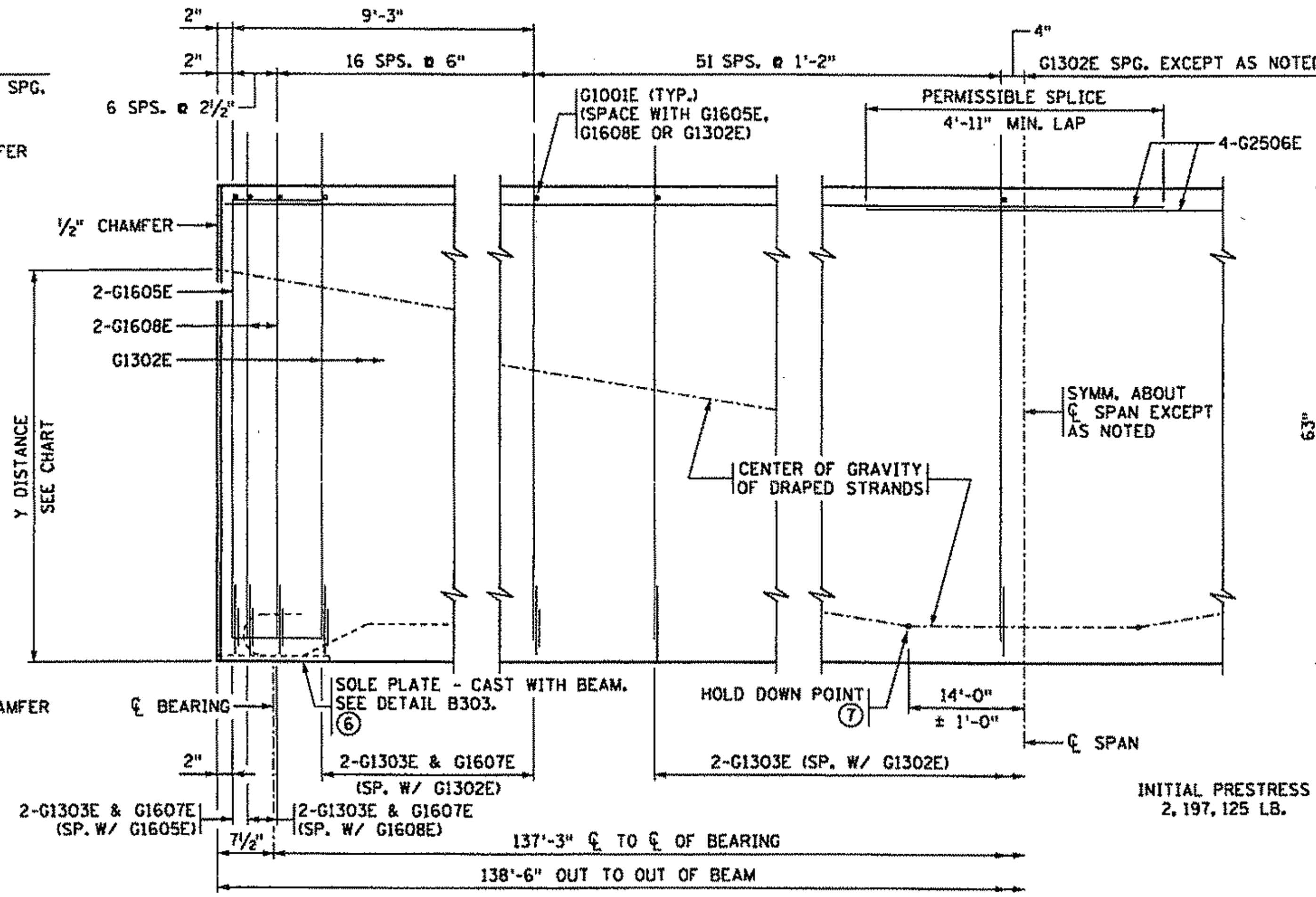
BRIDGE NO 02817

11/21/2006



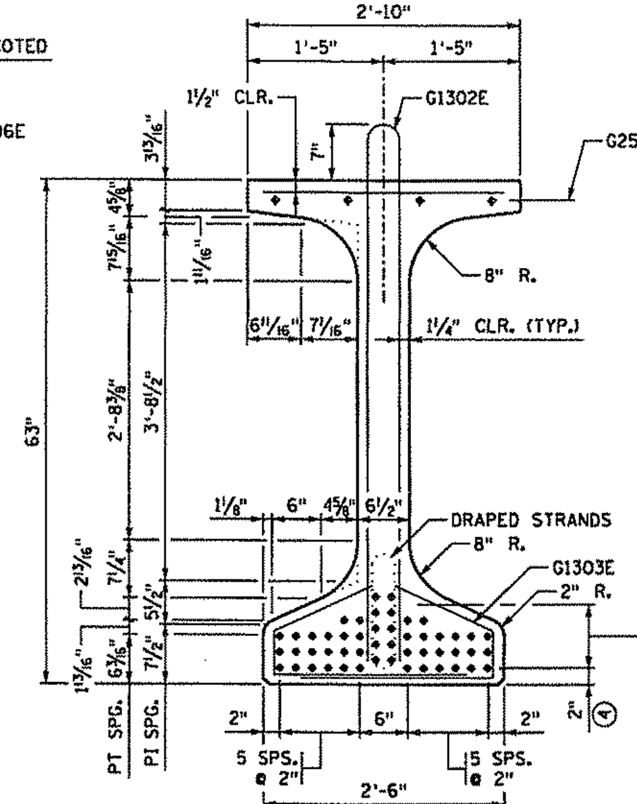
END VIEW

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



INITIAL PRESTRESS 2,197,125 LB.

BEAM ELEVATION

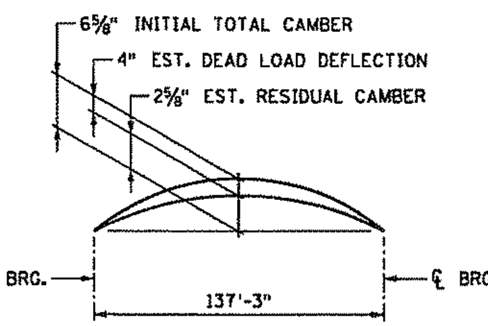


SECTION AT ℄ SPAN

Y DISTANCES (IN INCHES)			
	NO.	℄ SPAN	END
STRAIGHT STRANDS	40	4.40	
DRAPED STRANDS	10	7.00	56.00 ▫
TOTAL STRANDS	50	4.92	

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.

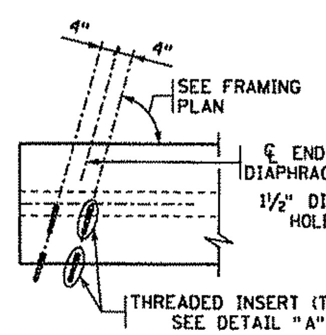


CAMBER DIAGRAM

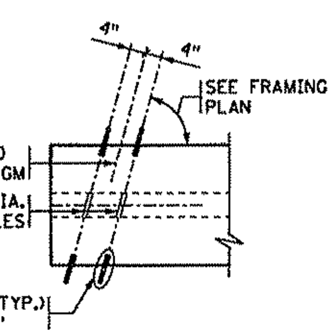
INITIAL CAMBER IS GIVEN AFTER DIAPHRAGMS ARE IN PLACE.

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

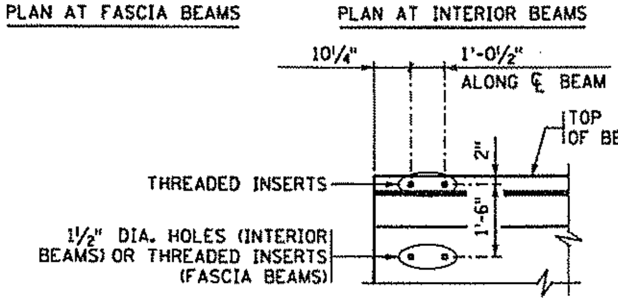
ENGINEER WILL TAKE ELEVATIONS AT TOP OF BEAMS AFTER ERECTION AND WILL ALLOW FOR DEFLECTION SHOWN TO ENABLE CONTRACTOR TO BUILD FORMS TO CORRECT GRADE AND SPECIFIED SLAB THICKNESS.



PLAN AT FASCIA BEAMS



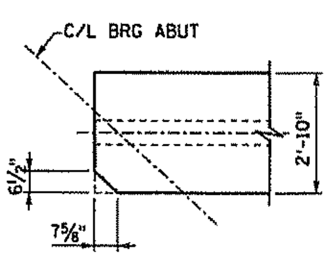
PLAN AT INTERIOR BEAMS



ELEVATION

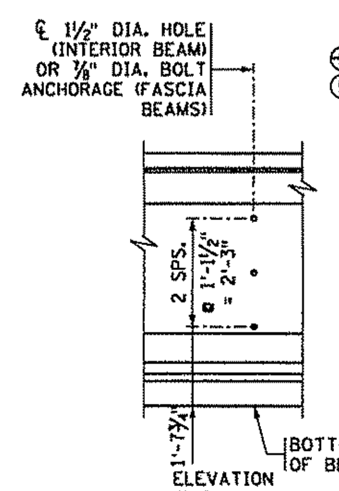
CONCRETE END DIAPHRAGM

PARAPET ABUTMENT
(SEE DETAIL B814 FOR DIAPHRAGM DETAILS)



BEAM COPE DETAIL

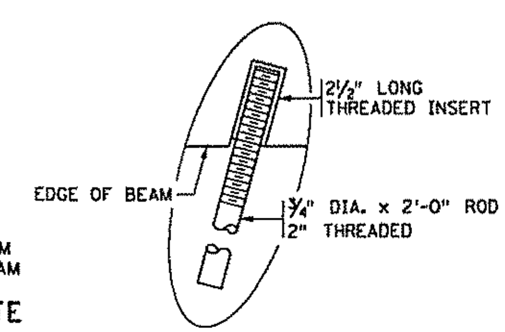
TYP TOP FLANGE AT ABUTMENTS



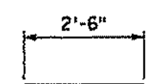
ELEVATION

STEEL INTERMEDIATE DIAPHRAGM

(SEE DETAIL B403 FOR DIAPHRAGM DETAILS)



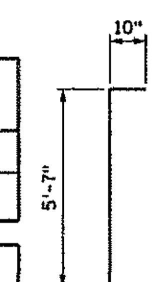
DETAIL "A"



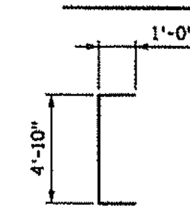
G1001E

MINIMUM CONCRETE STRENGTH - P.S.I.	
① f'ci	② f'c
6900	9000

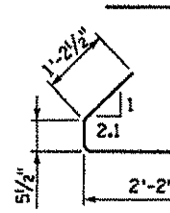
PRESTRESSING STRAND DIAMETER	
⑤	½" ☐
⑤	0.60" ☒



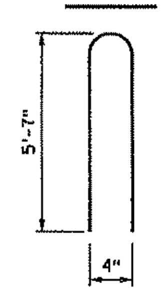
G1608E



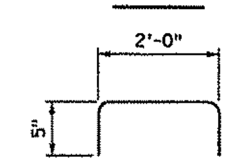
G1605E



G1303E



G1302E



G1607E

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 WEIGHT OF BEAM IS 60 TONS.

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.

BEAMS B1 - B14

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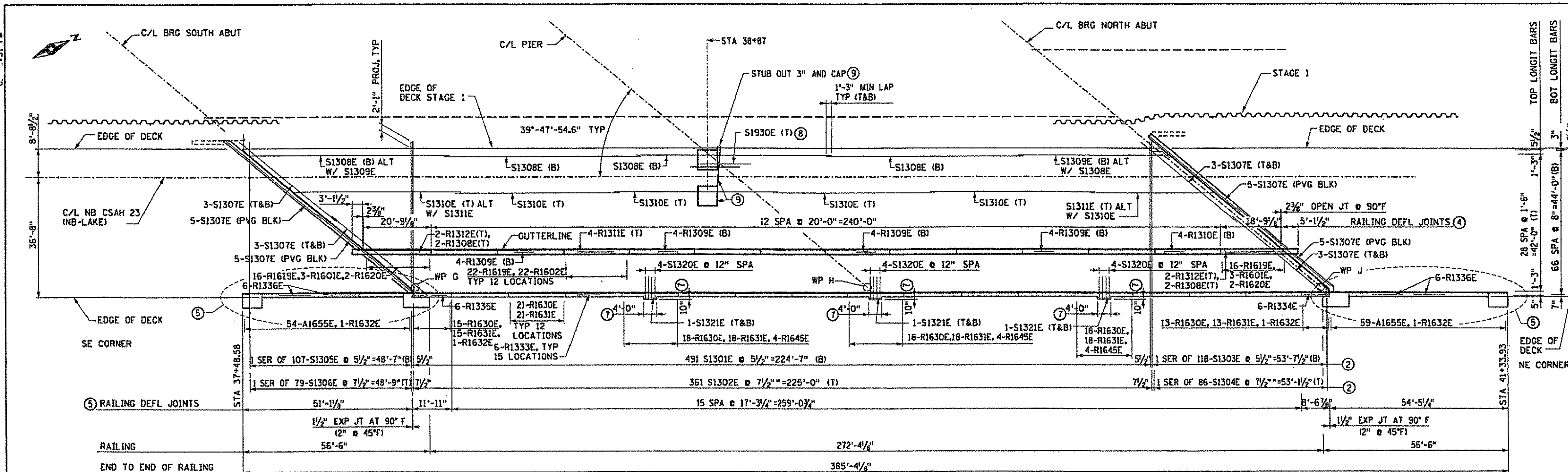
Signature: [signature] Date: 11/21/2006

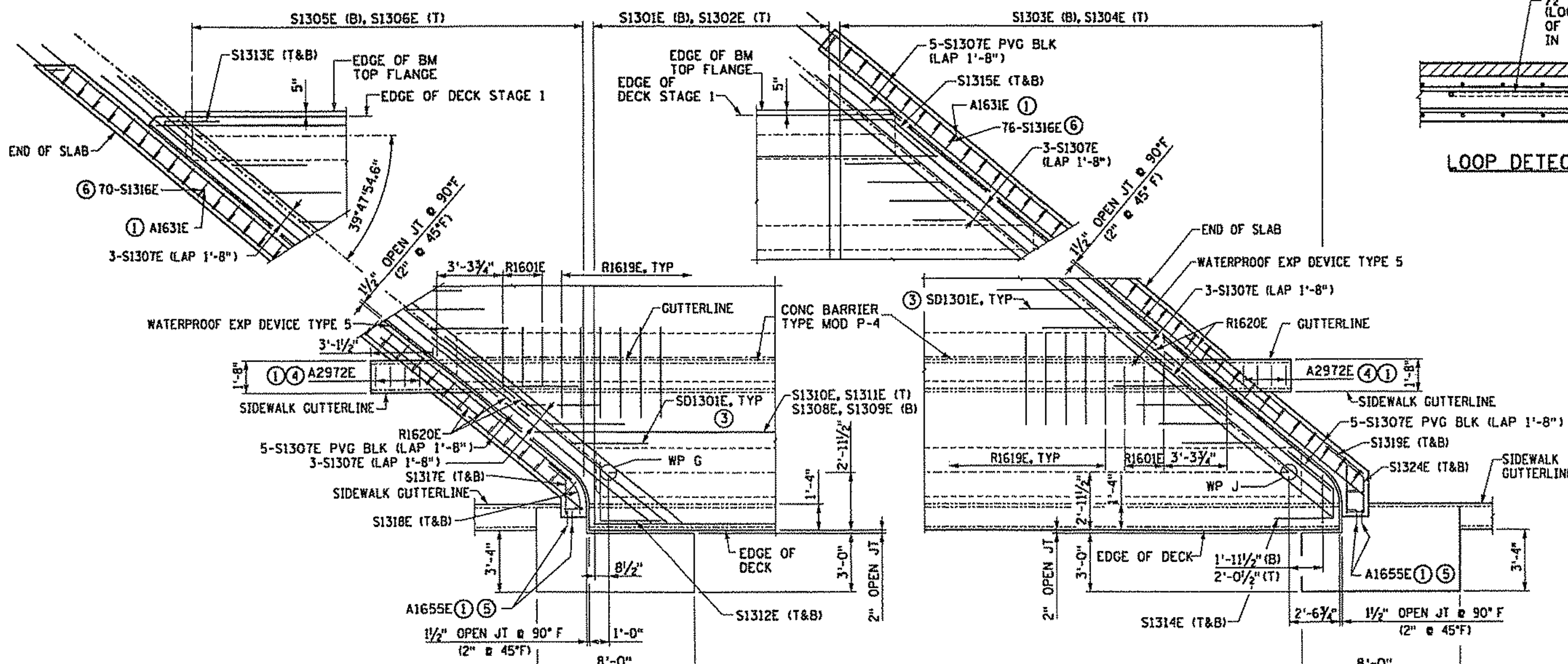
Printed Name: CHRISTOPHER A WUNSCH Reg. No. 42058

TITLE: MN63" PRESTRESSED CONCRETE BEAM (PRETENSIONED) MN63-138

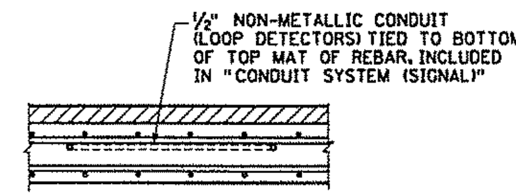
DES: CAW	DR: MAW	APPROVED:	BRIDGE NO 02817
CHK: JDS	CHK: CAW		



DECK PLAN - STAGE 1



CORNER LAYOUTS



LOOP DETECTOR

NOTES

ALL DIMENSIONS SHOWN ARE MEASURED ON A HORIZONTAL PLANE.

SEE SHEET B71 FOR SUPERSTRUCTURE BAR LIST AND SUMMARY OF QUANTITIES - STAGE 1.

THE SLAB THICKNESS DIMENSION IS MINIMUM. ANY TOLERANCES NECESSARY TO CORRECT CONSTRUCTION DISCREPANCIES ARE TO BE PLUS (+).

FF DENOTES FRONT FACE
BF DENOTES BACK FACE

1. SEE ABUTMENT SHEETS FOR DETAILS.
2. TRANSVERSE BAR SPACING ALONG EDGE OF DECK.
3. SEE SHEET B85 FOR END DIAPHRAGM DETAIL B814. END DIAPH (AT ABUTMENTS) ARE PAID FOR AS STRUCTURE CONCRETE (3Y43) PER CU YD.
4. SEE SHEET B73 FOR CONCRETE BARRIER (P-4, TL-4) DETAILS.
5. SEE SHEETS B73 - B77 FOR ORNAMENTAL METAL RAILING DETAILS AND CONCRETE PARAPET TYPE P-1 DETAILS.
6. SPACE WITH A16E ABUTMENT BARS.
7. BLISTER SLAB FOR RAIL POST. SEE DETAIL C, SHEET B70.
8. SEE STAGGER DETAIL ON SHEET B70.
9. ½" NON-METALLIC CONDUIT (LOOP DETECTORS) TIED TO BOTTOM OF TOP MAT OF REBAR. INCLUDED IN "CONDUIT SYSTEM (SIGNAL)". SEE SHEET B88.

SP 0280-55 SAP 02-623-13

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ST PAUL, MN 55110
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FAX (651) 490-2150

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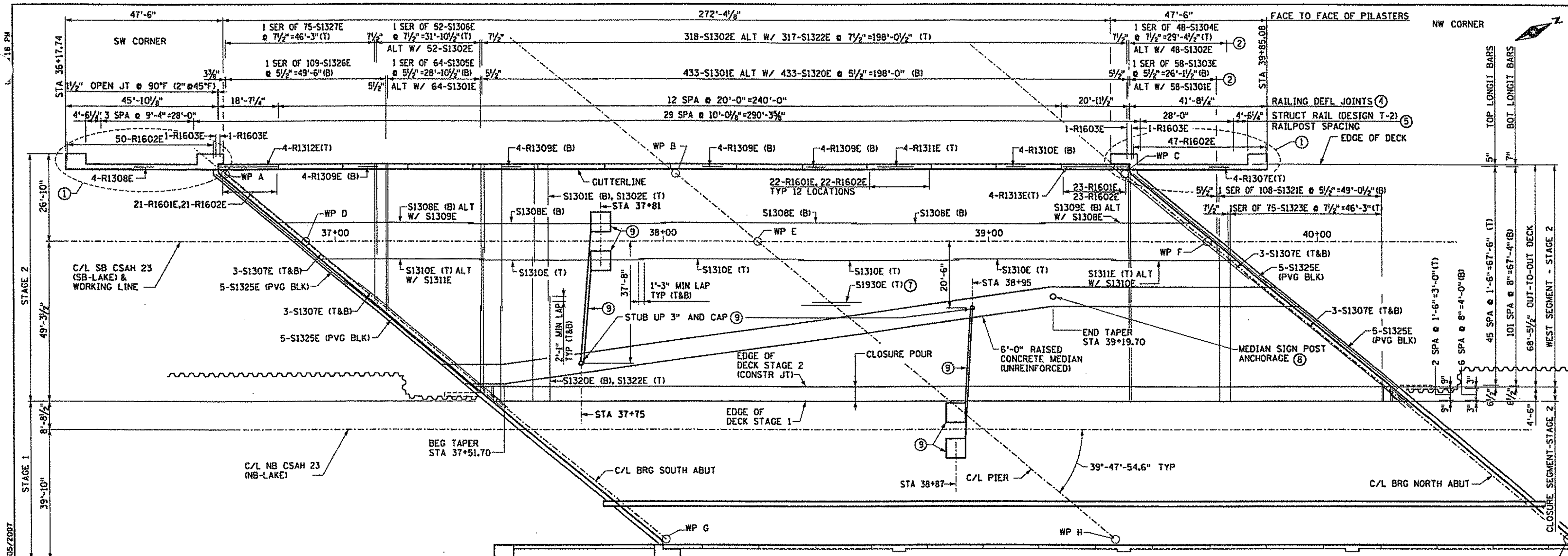
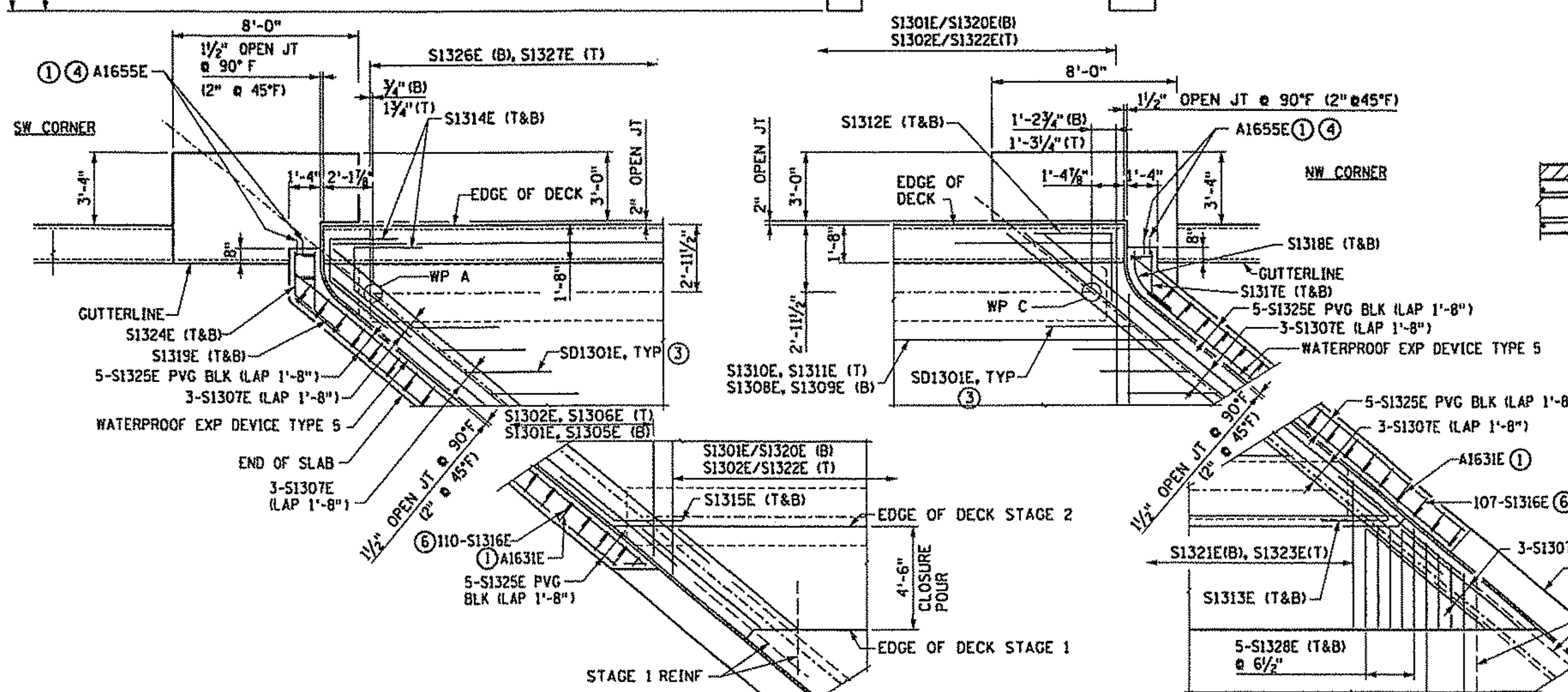
Signature: _______ Date: 3/5/2007
Printed Name: JEFFREY A JOHNSON Reg. No. 17280

TITLE:	DES: MAW	DR: MAW	APPROVED:	BRIDGE NO
SUPERSTRUCTURE DETAILS STAGE 1	CHK: CAW	CHK: CAW		02817
	SHEET NO B67 OF 95 SHEETS			

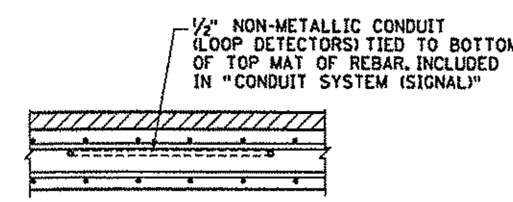
03/05/2007
S:\KO\L\Lino\...00\bridge\F-PDF-FILES\cbr02817_b67.dgn



DECK PLAN - STAGE 2



CORNER LAYOUTS



LOOP DETECTOR

NOTES

ALL DIMENSIONS SHOWN ARE MEASURED ON A HORIZONTAL PLANE.

SEE SHEET B72 FOR SUPERSTRUCTURE BAR LIST AND SUMMARY OF QUANTITIES - STAGE 2.

THE SLAB THICKNESS DIMENSION IS MINIMUM. ANY TOLERANCES NECESSARY TO CORRECT CONSTRUCTION DISCREPANCIES ARE TO BE PLUS (+).

(T) DENOTES TOP
(B) DENOTES BOTTOM

① SEE ABUTMENT SHEETS FOR DETAILS.

② TRANSVERSE BAR SPACING ALONG EDGE OF DECK.

③ SEE SHEET B85 FOR END DIAPHRAGM DETAIL B814. END DIAPH (AT ABUTMENTS) ARE PAID FOR AS STRUCTURE CONCRETE (3Y43) PER CU YD.

④ SEE SHEET B74 FOR CONCRETE BARRIER (P-4, TL-4) DETAILS.

⑤ SEE SHEET B78 FOR STRUCTURAL TUBE RAILING (DESIGN T-2) DETAILS.

⑥ SPACE WITH A16E ABUTMENT BARS.

⑦ SEE STAGGER DETAIL ON SHEET B70.

⑧ CENTER IN MEDIAN. SEE DETAIL ON SHEET B86.

⑨ ½" NON-METALLIC CONDUIT (LOOP DETECTORS) TIED TO BOTTOM OF TOP MAT OF REBAR. INCLUDED IN "CONDUIT SYSTEM (SIGNAL)". SEE SHEET B88.

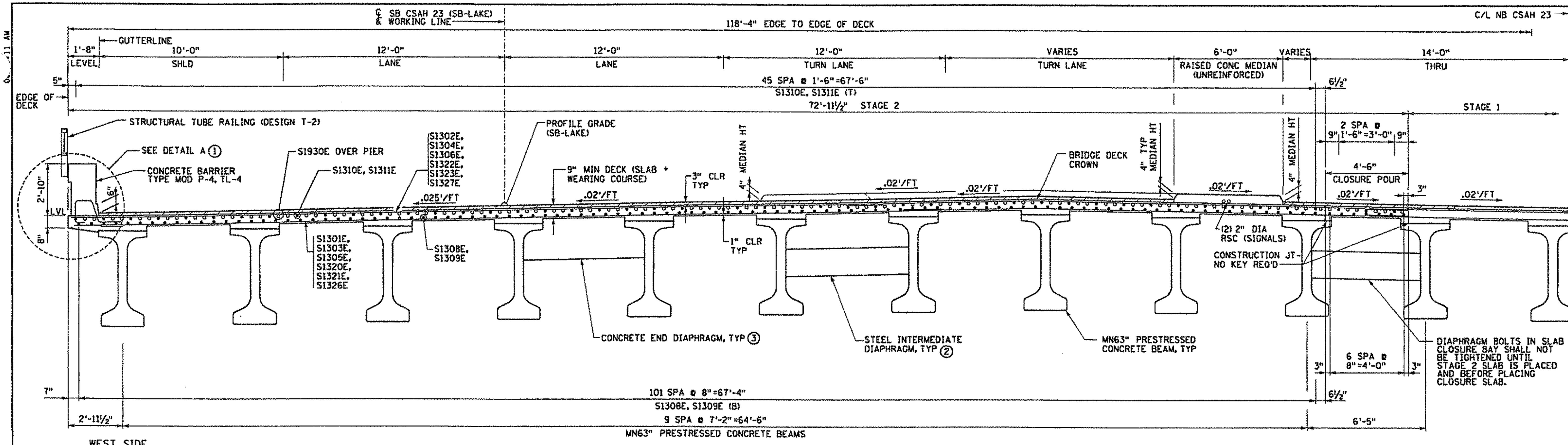
SP 0280-55 SAP 02-623-13

SEH 3535 VADNAIS CENTER DRIVE ST PAUL, MN 55110 PHONE (651) 490-2000 FAX (651) 490-2150

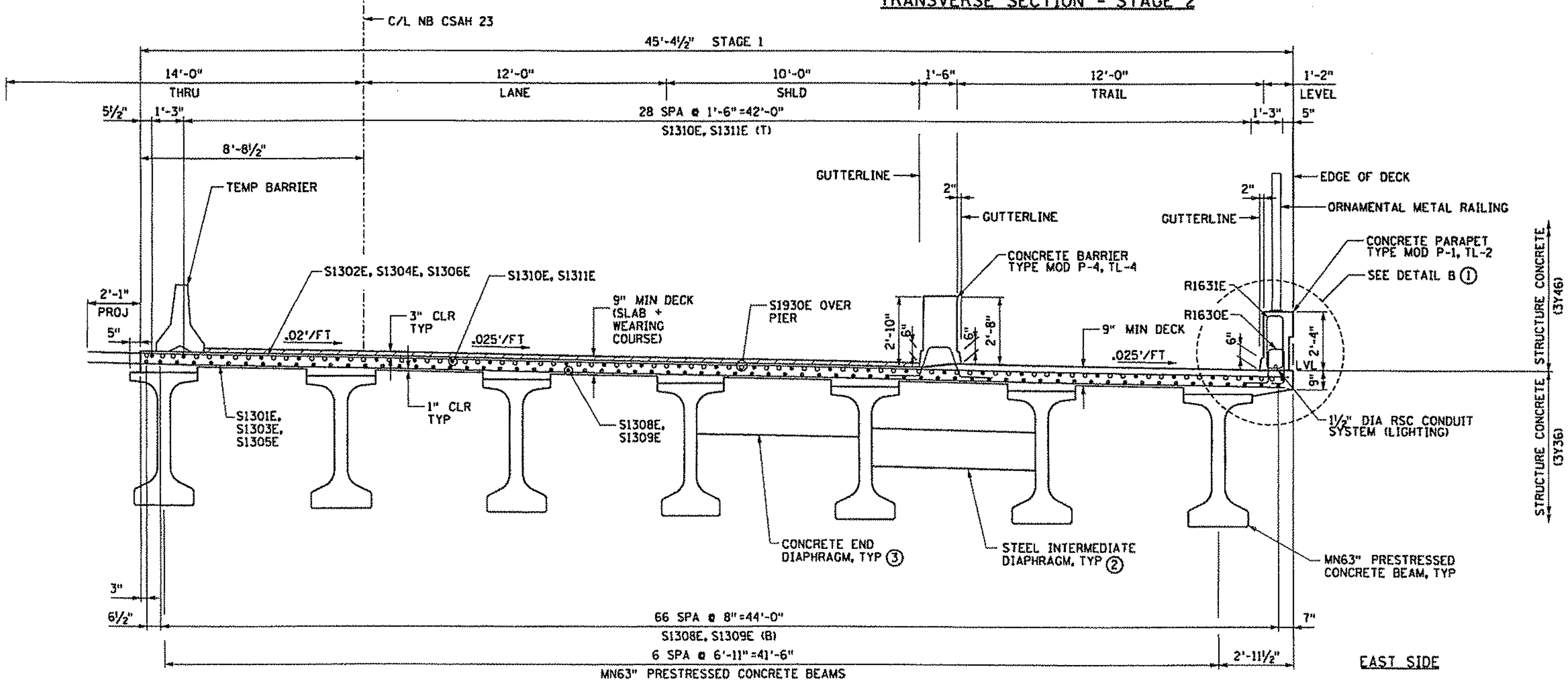
I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the state of Minnesota

Signature: Date: 3/5/2007
Printed Name: JEFFREY A. JOHNSON Reg. No. 17280

TITLE: SUPERSTRUCTURE DETAILS STAGE 2	DES: MAW	DR: MAW	APPROVED:
	CHK: CAW	CHK: CAW	
	SHEET NO B68 OF 95 SHEETS		BRIDGE NO 02817



TRANSVERSE SECTION - STAGE 2



TRANSVERSE SECTION - STAGE 1

NOTES

SEE SHEETS B71 & B72 FOR BAR LISTS AND QUANTITIES.

ALL DIMENSIONS SHOWN ARE ON A HORIZONTAL PLANE & MEASURED PERPENDICULAR TO WORKING LINE.

THE SLAB THICKNESS DIMENSION IS MINIMUM. ANY TOLERANCES NECESSARY TO CORRECT CONSTRUCTION DESCREPANCIES ARE TO BE PLUS (+).

SEE SHEETS B66 FOR BEAM DETAILS.

① SEE SHEET B70 FOR DETAILS A & B.

② SEE SHEET B85 FOR INTERMEDIATE DIAPHRAGM DETAIL B403.

③ SEE SHEET B85 FOR END DIAPHRAGM DETAIL B814. END DIAPHRAGMS (AT ABUTMENTS) ARE PAID FOR AS STRUCTURE CONCRETE (3Y43) PER THE CU YD.

SP 0280-55 SAP 02-623-13

SEH
3535 VADNAIS CENTER DRIVE
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I hereby certify that this plan, specification, or report 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

Signature: [signature] Date: 11/21/2006

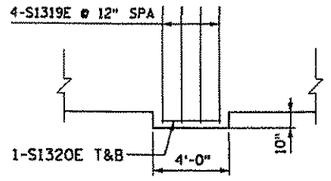
Printed Name: CHRISTOPHER A WUNSCH Reg. No. 42058

TITLE: SUPERSTRUCTURE DETAILS

DES: MAW	DR: MAW	APPROVED:
CHK: CAW	CHK: CAW	

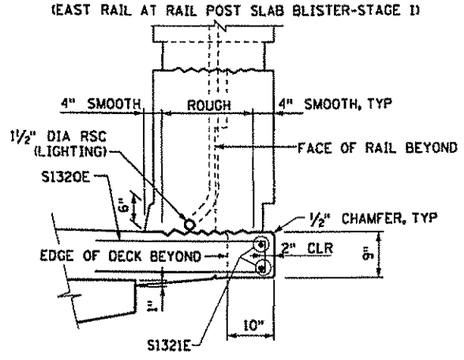
SHEET NO B69 OF 95 SHEETS

BRIDGE NO 02817



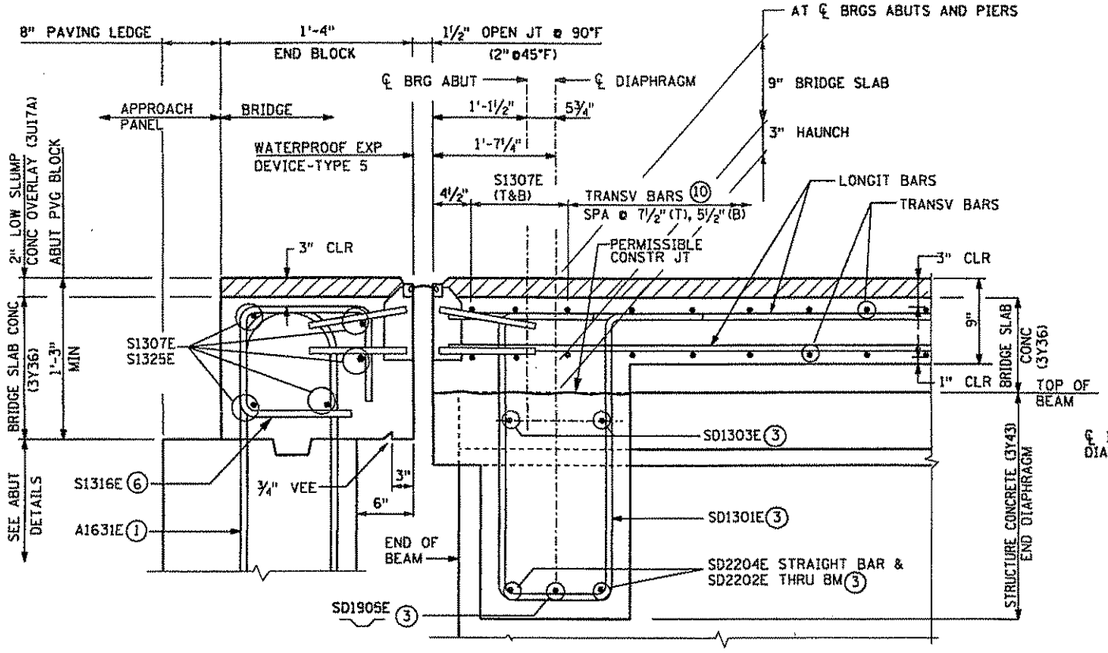
PLAN DETAIL D

(EAST RAIL AT RAIL POST SLAB BLISTER-STAGE I)

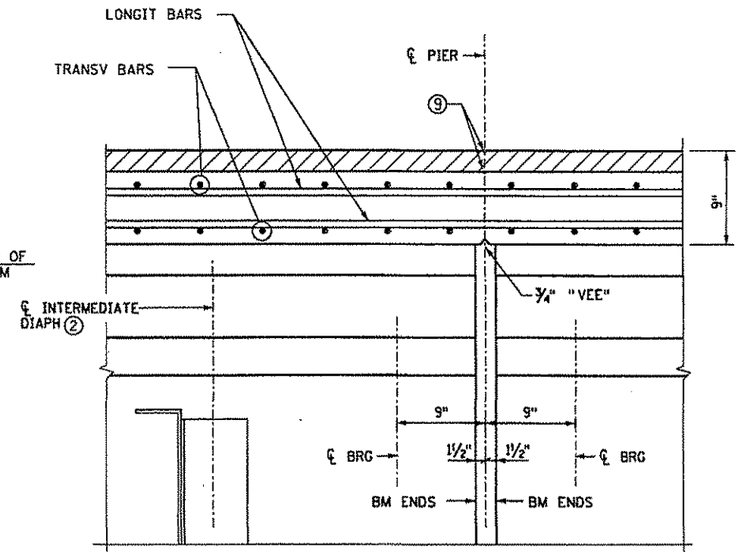


DETAIL C

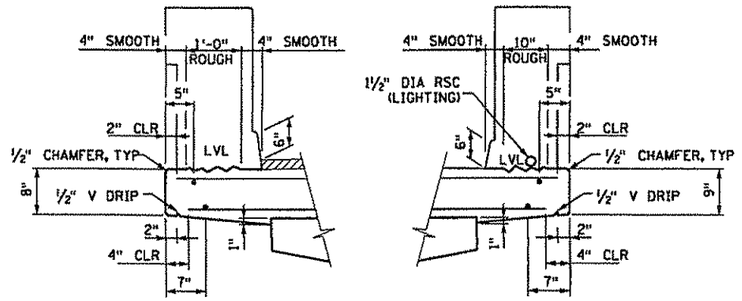
(EAST RAIL AT RAIL POST SLAB BLISTER-STAGE I)



SECTION AT ABUTMENT (7)



SECTION AT PIER (8)

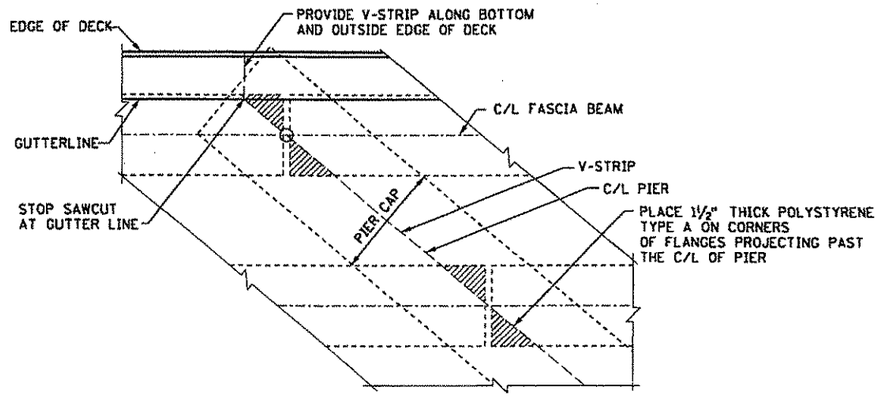


DETAIL A

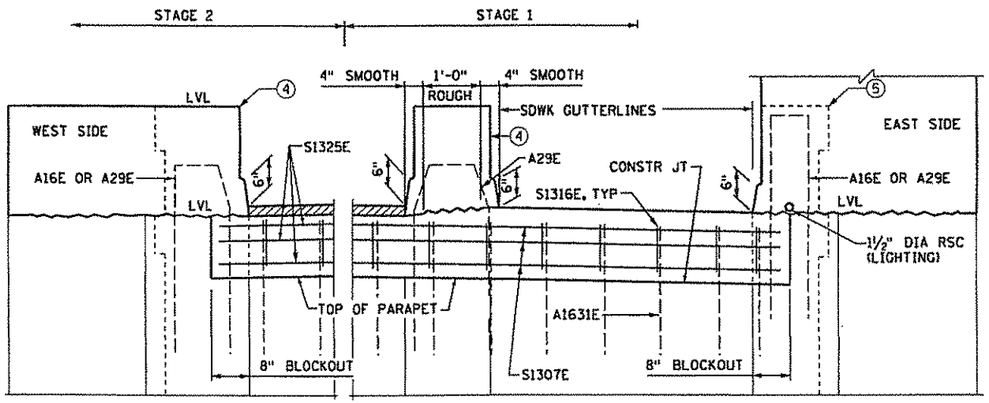
(WEST RAIL - STAGE 2)

DETAIL B

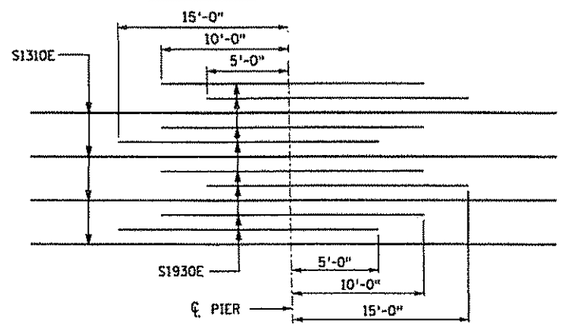
(EAST RAIL - STAGE 1)



PLAN VIEW



ELEVATION OF END BLOCKS AT NORTH ABUT



STAGGER DETAIL

ALTERNATE STAGGER S1930E AT 6" CENTERS BETWEEN S1310E TOP LONGITUDINAL REINF

NOTES

ALL DIMENSIONS SHOWN ARE MEASURED ON A HORIZONTAL PLANE.

SEE SHEETS B71 & B72 FOR SUPERSTRUCTURE BAR LIST AND SUMMARY OF QUANTITIES.

THE SLAB THICKNESS DIMENSION IS MINIMUM. ANY TOLERANCES NECESSARY TO CORRECT CONSTRUCTION DISCREPANCIES ARE TO BE PLUS (+).

FF DENOTES FRONT FACE
BF DENOTES BACK FACE

(1) SEE ABUTMENT SHEETS FOR DETAILS.

(2) SEE SHEET B85 FOR INTERMEDIATE DIAPHRAGM DETAIL B403.

(3) SEE SHEET B85 FOR END DIAPHRAGM DETAIL B814. END DIAPH (AT ABUTMENTS) ARE PAID FOR AS STRUCTURE CONCRETE (3Y43) PER CU YD.

(4) SEE SHEETS B73 & B74 FOR CONCRETE BARRIER (P-4, TL-4) DETAILS.

(5) SEE SHEETS B75 - B77 FOR ORNAMENTAL METAL RAILING DETAILS AND CONCRETE PARAPET TYPE P-1 DETAILS.

(6) SPACE WITH A16E ABUTMENT BARS.

(7) SECTION IS TAKEN NORMAL TO JOINT.

(8) MEASURED ALONG C/L OF BEAM.

(9) SEE NOTE 4, SHEET B65.

(10) TRANSVERSE BAR SPACING ALONG EDGE OF DECK.

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Signature: Date: 11/21/2006

Printed Name: CHRISTOPHER A. WUNSCH Reg. No. 42058

TITLE: SUPERSTRUCTURE DETAILS STAGE 1 & 2

SP 0280-55 SAP 02-623-13

DES: MAW	DR: MAW	APPROVED:
CHK: CAW	CHK: CAW	

SHEET NO B70 OF 95 SHEETS

BRIDGE NO 02817

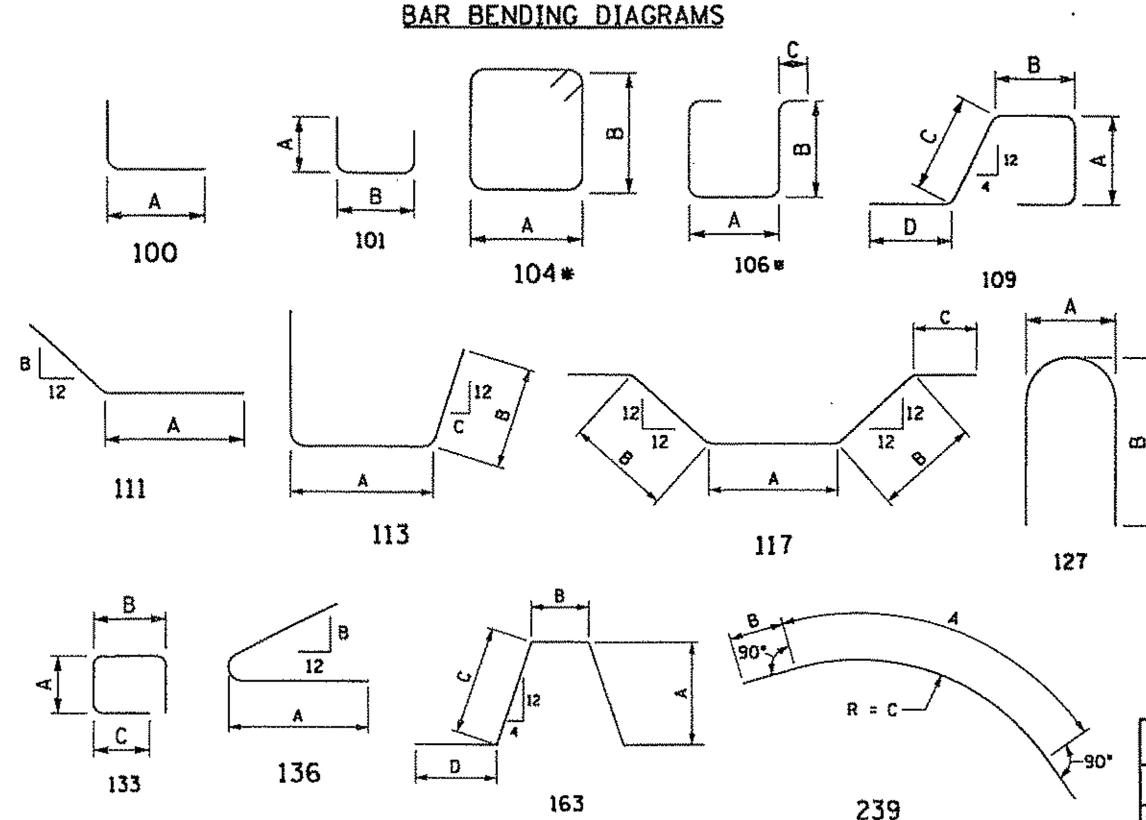
11/21/2006

s:\k01\1\final\bridge\dgn\br02817_ss4.dgn

BAR MARK	NO OF SERIES	NO OF BARS	LENGTH	TYPE	DIMENSION A	B	C	D	LOCATION
SUPERSTRUCTURE DECK - STAGE 1									
EPOXY COATED BARS									
S1301E		491	47'-0"	STR					TRANS (B)
S1302E		361	47'-4"	STR					TRANS (T)
S1303E	1	118	2'-6"	STR					TRANS (B)
			46'-10"						
S1304E	1	86	2'-3"	STR					TRANS (T)
			46'-8"						
S1305E	1	107	4'-1"	STR					TRANS (B)
			44'-9"						
S1306E	1	79	4'-1"	STR					TRANS (T)
			44'-6"						
S1307E		44	40'-0"	STR					TRANS ENDS
S1308E		272	60'-0"	STR					LONGIT (B)
S1309E		68	45'-0"	STR					LONGIT (B)
S1310E		155	50'-0"	STR					LONGIT (T)
S1311E		31	36'-3"	STR					LONGIT (T)
S1312E		2	6'-0"	100	3'-0"				CORNER (T&B)
S1313E		2	6'-0"	136	3'-0"	10			CORNER (T&B)
S1314E		2	7'-6"	113	1'-6"	3'-0"	14		CORNER (T&B)
S1315E		2	6'-0"	111	3'-0"	10			CORNER (T&B)
S1316E		146	3'-3"	133	0'-10"	0'-11"	0'-8"		PAVING BLOCK
S1317E		2	2'-8"	111	1'-10"	10			PAVING BLOCK
S1318E		2	3'-8"	239	1'-6"	1'-8"	1'-9"		PAVING BLOCK
S1319E		2	3'-5"	111	2'-7"	10			PAVING BLOCK
S1320E		12	6'-5"	101	3'-0"	0'-5"			SLAB BLISTER
S1321E		6	3'-8"	STR					SLAB BLISTER
S1324E		2	2'-8"	111	2'-0"	10			PAVING BLOCK
S1930E		61	15'-0"	STR					LONG (T) AT PIER
CONCRETE BARRIER TYPE MOD P4 - STAGE 1									
EPOXY COATED BARS									
R1601E		6	5'-8"	109	1'-4"	10 1/2"	1'-5"	1'-6"	BARRIER DOWEL
R1602E		296	7'-11"	104	1'-0"	2'-6"			BARRIER VERT
R2504E		8	8'-9"	104	1'-0"	2'-6"			BARRIER VERT
R1605E		4	7'-5"	104	1'-6"	1'-9"			BARRIER VERT
R1606E		6	8'-11"	104	1'-6"	2'-6"			BARRIER VERT
R1308E		4	19'-10"	STR					BARRIER LONGIT
R1309E		16	50'-0"	STR					BARRIER LONGIT
R1310E		4	20'-0"	STR					BARRIER LONGIT
R1311E		48	19'-6"	STR					BARRIER LONGIT
R1312E		4	18'-10"	STR					BARRIER LONGIT
R1613E		4	2'-3"	STR					BARRIER LONGIT
R1614E		8	4'-0"	STR					BARRIER LONGIT
R1615E		12	3'-0"	STR					BARRIER LONGIT
R1619E		296	6'-7"	163	1'-4"	0'-9"	1'-5"	1'-6"	BARRIER DOWEL
R1620E		6	7'-0"	163	1'-4"	1'-2"	1'-5"	1'-6"	BARRIER DOWEL
END DIAPHRAGM - STAGE 1									
EPOXY COATED BARS									
SD1301E		60	8'-0"	106	1'-6"	2'-6"	0'-9"		VERTICAL TIE
SD2202E		24	5'-0"	STR					LONGIT THRU BM
SD1303E		24	6'-0"	STR					LONGIT TOP
SD2204E		24	6'-0"	STR					LONGIT BOTTOM
SD1905E		12	17'-3"	117	2'-5"	3'-5"	4'-0"		LONGITUDINAL

BAR MARK	NO OF SERIES	NO OF BARS	LENGTH	TYPE	DIMENSION A	B	C	D	LOCATION
CONCRETE RAILING TYPE MOD P1 - STAGE 1									
EPOXY COATED BARS									
R1630E		334	5'-0"	106	7 1/2"	1'-5"	1'-0"		RAIL BASE VERT DWL
R1631E		334	6'-2"	104	7 1/2"	2'-1"			RAIL BASE VERT
R1632E		4	4'-6"	104	7 1/2"	1'-2"			RAIL BASE VERT
R1333E		90	16'-11"	STR					RAIL LONG
R1334E		6	8'-3"	STR					RAIL LONG
R1335E		6	11'-7"	STR					RAIL LONG
R1336E		24	27'-10"	STR					RAIL LONG
R1637E		116	8'-6"	STR					VERT POSTS
R1638E		11	5'-10"	STR					VERT POSTS
R1639E		9	5'-0"	STR					VERT POSTS
R1640E		9	3'-6"	100	2'-6"				BENT POCKET VERT
R1341E		20	19'-1"	104	5'-5"	3'-9"			HORIZ POSTS
R1342E		6	20'-9"	104	7'-5"	2'-6"			HORIZ POSTS
R1343E		3	7'-2"	101	2'-6"	2'-2"			HORIZ POSTS
R1344E		30	10'-5"	104	3'-5"	1'-5"			HORIZ POSTS
R1645E		12	8'-6"	106	1'-6"	2'-9"	1'-0"		RAIL BASE VERT
R1646E		6	7'-3"	101	1'-0"	5'-3"			END POST TOP
R1647E		24	5'-7"	101	1'-0"	3'-7"			END POST TOP
R1648E		3	5'-3"	101	1'-0"	3'-3"			INTER POST TOP
R1649E		9	3'-3"	101	1'-0"	1'-3"			INTER POST TOP
R1350E		14	23'-1"	104	7'-5"	3'-9"			HORIZ POSTS
R1651E		6	9'-3"	101	1'-0"	7'-3"			END POST TOP
R1352E		3	10'-5"	101	2'-6"	5'-5"			HORIZ POSTS

BAR BENDING DIAGRAMS



* BAR TYPE USES STANDARD STIRRUP AND TIE HOOKS.

NOTE
BENT BAR DIMENSIONS GIVEN ARE OUT-TO-OUT. ACTUAL BAR LENGTHS SHALL BE DETERMINED BASED ON DIMENSIONS SHOWN IN THE BAR BENDING DIAGRAMS. TOTAL BAR LENGTHS SHOWN ARE FOR USE IN COMPUTING REINFORCEMENT BAR WEIGHTS FOR PAYMENT ONLY.

SUMMARY OF QUANTITIES FOR SUPERSTRUCTURE - STAGE 1

	ITEM	UNIT	QUANTITY
⑧	STRUCTURAL CONCRETE (3Y43)	CU YD	9
④	BRIDGE SLAB CONCRETE (3Y36)	SQ FT	12918
⑤	TYPE MOD P-1 RAILING CONCRETE (3Y46)	LIN FT	386
⑤	TYPE MOD P-4 RAILING CONCRETE (3Y46)	LIN FT	288
⑩	REINFORCEMENT BARS (EPOXY COATED)	POUND	70380
⑬	BRIDGE DECK PLANING	SQ FT	9860
	ORNAMENTAL METAL RAILING	LIN FT	339
	EXPANSION DEVICES TYPE 5	LIN FT	145
⑪	BEARING ASSEMBLY	EACH	28
⑫④	CONCRETE WEARING COURSE (3U17A)	SQ FT	10411
	PRESTRESSED CONCRETE BEAMS MN63"	LIN FT	1939
⑨	DIAPHRAGMS FOR TYPE MN63" PRESTRESSED BEAMS	LIN FT	263
①	BRIDGE NAME PLATE	EACH	1
②①	PREFORMED JOINT FILLER	——	——
③①	BENCH MARK DISK	EACH	2
	CONDUIT SYSTEM (LIGHTING)	LUMP SUM	1

① INCLUDED IN PRICE BID FOR OTHER ITEMS.

② SEE JOINT FILLER TABLE.

③ STATE WILL FURNISH DISK. BEND PRONGS OUTWARD TO ANCHOR DISK IN CONCRETE. BOTTOM OF DISK TOP TO BE PLACED FLUSH WITH CONCRETE.

④ THE APPROXIMATE CONCRETE QUANTITIES ARE:
BRIDGE SLAB CONCRETE BASED ON AVERAGE STOOL HEIGHT OF 3" (3Y36)
359 CU YD

CONCRETE OVERLAY (3U17A)
64 CU YD

QUANTITIES INCLUDE ABUTMENT PAVING BLOCKS

⑤ TYPE MOD P-1 RAILING CONCRETE (3Y46) APPROX VOLUME = 74 CU YD.
TYPE MOD P-4 RAILING CONCRETE (3Y46) APPROX VOLUME = 41 CU YD.

⑥ TABLE IS FOR CONTRACTORS CONVENIENCE ONLY. CUT TO FIT.

⑦ NOTE 7 NOT USED.

⑧ END DIAPHRAGM CONCRETE ONLY.

⑨ INTERMEDIATE DIAPHRAGMS ONLY.

⑩ INCLUDES END DIAPHRAGMS, RAILING & DECK REINFORCEMENT.

⑪ INCLUDES THE FOLLOWING:
EXPANSION CURVED PLATE BEARING ASSEMBLY TYPE E1 14 EA.
EXPANSION CURVED PLATE BEARING ASSEMBLY TYPE E2 6 EA.
FIXED CURVED PLATE BEARING ASSEMBLY TYPE F1 8 EA.

⑫ INCLUDES 2398 SF ON BRIDGE APPROACH PANELS.

⑬ INCLUDES 2320 SF ON BRIDGE APPROACH PANELS.

⑥① PREFORMED JOINT FILLER LIST

TYPE	NO	SIZE	LOCATION
CORK	13	1" x 1'-2" x 1'-10"	TYPE MODIFIED P-4 RAIL DEFL JOINTS
CORK	16	1" x 1'-0" x 2'-4"	TYPE MODIFIED P-1 RAIL DEFL JOINTS
POLYSTYRENE	14	1½" x 1'-4" x 1'-7"	BEAM FLANGES AT PIER / CUT 2 FROM 1

SEH
3535 VADNAIS CENTER DRIVE
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PHONE (651) 490-2000
FAX (651) 490-2150

I hereby certify that this plan, specification, or report 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
Signature: [signature] Date: 11/21/2006
Printed Name: CHRISTOPHER A WUNSCH Reg. No. 42058

TITLE: SUPERSTRUCTURE BAR LISTS AND QUANTITIES STAGE 1

SP 0280-55 SAP 02-623-13

DES: MAW	DR: MAW	APPROVED:
CHK: CAW	CHK: CAW	

SHEET NO B71 OF 95 SHEETS

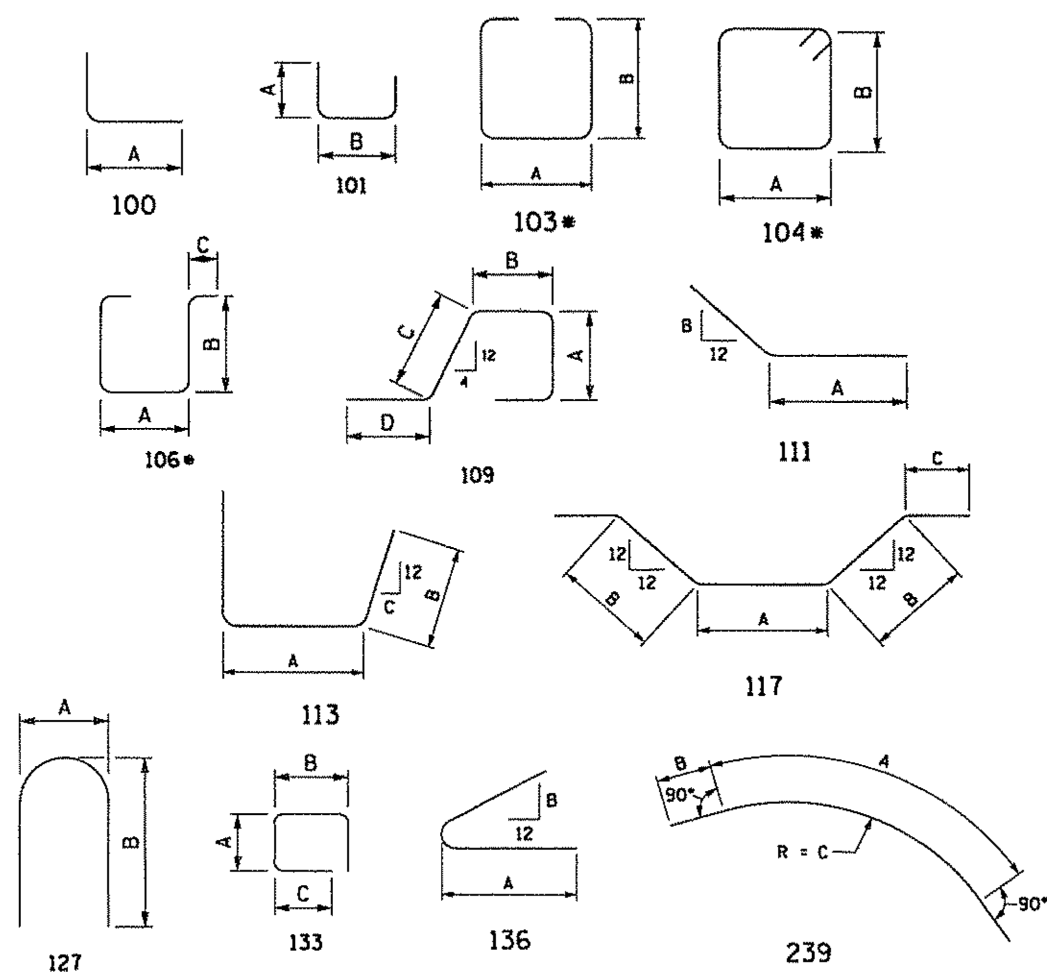
BRIDGE NO 02817

s:\ko\l\lino\J0\bridge\dgn\cbr02817_sbl.dgn 11/21/2006

BAR MARK	NO OF SERIES	NO OF BARS	LENGTH	TYPE	DIMENSION A	DIMENSION B	DIMENSION C	DIMENSION D	LOCATION
SUPERSTRUCTURE DECK - STAGE 2									
EPOXY COATED BARS									
S1301E		555	47'-4"	STR					TRANS (B)
S1302E		418	44'-4"	STR					TRANS (T)
S1303E	1	58	2'-6"	STR					TRANS (B)
			24'-0"						
S1304E	1	48	2'-3"	STR					TRANS (T)
			30'-0"						
S1305E	1	64	4'-1"	STR					TRANS (B)
			26'-2"						
S1306E	1	52	2'-6"	STR					TRANS (T)
			42'-0"						
S1307E		24	56'-0"	STR					TRANS ENDS
S1308E		436	60'-0"	STR					LONGIT (B)
S1309E		109	45'-0"	STR					LONGIT (B)
S1310E		245	50'-0"	STR					LONGIT (T)
S1311E		49	36'-3"	STR					LONGIT (T)
S1312E		2	6'-0"	100	3'-0"				CORNER (T&B)
S1313E		2	6'-0"	136	3'-0"	10			CORNER (T&B)
S1314E		4	7'-6"	113	1'-6"	3'-0"	14		CORNER (T&B)
S1315E		2	6'-0"	111	3'-0"	10			CORNER (T&B)
S1316E		217	3'-3"	133	0'-10"	0'-11"	0'-8"		PAVING BLOCK
S1317E		2	2'-8"	111	1'-10"	10			PAVING BLOCK
S1318E		2	3'-8"	239	1'-6"	1'-8"	1'-9"		PAVING BLOCK
S1319E		2	3'-5"	111	2'-7"	10			PAVING BLOCK
S1320E		433	27'-9"	STR					TRANS (B)
S1321E	1	108	4'-10"	STR					TRANS (B)
			47'-4"						
S1322E		317	30'-9"	STR					TRANS (T)
S1323E	1	75	4'-10"	STR					TRANS (T)
			44'-4"						
S1324E		2	2'-8"	111	2'-0"	10			PAVING BLOCK
S1325E		20	53'-6"	STR					TRANS ENDS
S1326E	1	109	2'-6"	STR					TRANS (B)
			45'-0"						
S1327E	1	75	2'-6"	STR					TRANS (T)
			42'-0"						
S1328E		10	4'-4"	STR					TRANS (T&B)
S1329E	2	4	2'-4"	STR					TRANS (T&B)
			3'-8"						
S1930E		97	15'-0"	STR					LONGIT (T) @ PIER
CONCRETE BARRIER TYPE MOD P4 - STAGE 2									
EPOXY COATED BARS									
R1601E		308	5'-8"	109	1'-4"	10 1/2"	1'-5"	1'-6"	BARRIER DOWEL
R1602E		405	7'-11"	104	1'-0"	2'-6"			BARRIER VERT
R1603E		4	6'-5"	104	1'-0"	1'-9"			BARRIER VERT
R2206E		2	6'-7"	127	1'-0"	3'-0"			BARRIER END
R1307E		8	41'-2"	STR					BARRIER LONGIT
R1308E		8	45'-4"	STR					BARRIER LONGIT
R1309E		16	50'-0"	STR					BARRIER LONGIT
R1310E		4	37'-7"	STR					BARRIER LONGIT
R1311E		48	19'-6"	STR					BARRIER LONGIT
R1312E		4	18'-1"	STR					BARRIER LONGIT
R1313E		4	20'-6"	STR					BARRIER LONGIT
R1316E		16	5'-0"	100	4'-0"				END POST
R1317E		8	15'-7"	103	5'-5"	4'-1"			END POST
R1318E		8	20'-5"	104	7'-5"	2'-5"			END POST
R1620E		4	9'-3"	101	1'-0"	7'-3"			END POST TOP
R1621E		6	7'-3"	101	1'-0"	5'-3"			END POST TOP
R1622E		7	4'-3"	101	1'-0"	2'-3"			END POST TOP
R1623E		17	6'-2"	101	1'-0"	4'-2"			END POST TOP

BAR MARK	NO OF SERIES	NO OF BARS	LENGTH	TYPE	DIMENSION A	DIMENSION B	DIMENSION C	DIMENSION D	LOCATION
END DIAPHRAGM - STAGE 2									
EPOXY COATED BARS									
SD1301E		118	8'-0"	106	1'-6"	2'-6"	0'-9"		VERTICAL TIE
SD2202E		36	5'-0"	STR					LONGIT THRU BM
SD1303E		4	5'-3"	STR					LONGIT TOP
SD2204E		4	5'-3"	STR					LONGIT BOTTOM
SD1905E		2	16'-5"	117	1'-7"	3'-5"	4'-0"		LONGITUDINAL
SD1306E		36	6'-5"	STR					LONGIT TOP
SD2507E		36	6'-5"	STR					LONGIT BOTTOM
SD1908E		18	17'-7"	117	2'-9"	3'-5"	4'-0"		LONGITUDINAL

BAR BENDING DIAGRAMS



* BAR TYPE USES STANDARD STIRRUP AND TIE HOOKS.

NOTE
BENT BAR DIMENSIONS GIVEN ARE OUT-TO-OUT. ACTUAL BAR LENGTHS SHALL BE DETERMINED BASED ON DIMENSIONS SHOWN IN THE BAR BENDING DIAGRAMS. TOTAL BAR LENGTHS SHOWN ARE FOR USE IN COMPUTING REINFORCEMENT BAR WEIGHTS FOR PAYMENT ONLY.

SUMMARY OF QUANTITIES FOR SUPERSTRUCTURE - STAGE 2

	ITEM	UNIT	QUANTITY
(8)	STRUCTURAL CONCRETE (3Y43)	CU YD	16
(4)	BRIDGE SLAB CONCRETE (3Y36)	SQ FT	20712
(5)	TYPE MOD P-4 RAILING CONCRETE (3Y46)	LIN FT	368
(7)	RAISED MEDIAN CONCRETE (3Y46)	SQ FT	1547
(10)	REINFORCEMENT BARS (EPOXY COATED)	POUND	97230
(13)	BRIDGE DECK PLANING	SQ FT	26090
	EXPANSION DEVICES TYPE 5	LIN FT	214
(11)	BEARING ASSEMBLY	EACH	40
	STRUCTURAL TUBE RAILING DESIGN 7-2	LIN FT	355
(12)(4)	CONCRETE WEARING COURSE (3U17A)	SQ FT	27820
	PRESTRESSED CONCRETE BEAMS MN63"	LIN FT	2770
(9)	DIAPHRAGMS FOR TYPE MN63" PRESTRESSED BEAMS	LIN FT	440
	-		
(2)(1)	PREFORMED JOINT FILLER	———	———
	CONDUIT SYSTEM (SIGNALS)	LUMP SUM	1

(1) INCLUDED IN PRICE BID FOR OTHER ITEMS.

(2) SEE JOINT FILLER TABLE.

(3) NOTE 3 NOT USED.

(4) THE APPROXIMATE CONCRETE QUANTITIES ARE:
BRIDGE SLAB CONCRETE BASED ON AVERAGE STOOL HEIGHT OF 3" (3Y36)
531 CU YD

CONCRETE OVERLAY (3U17A)
178 CU YD

QUANTITIES INCLUDE ABUTMENT PAVING BLOCKS

(5) TYPE MOD P-4 RAILING CONCRETE (3Y46) APPROX VOLUME = 64 CU YD.

(6) TABLE IS FOR CONTRACTORS CONVENIENCE ONLY. CUT TO FIT.

(7) RAISED MEDIAN CONCRETE (3Y46) APPROXIMATE VOLUME = 35 CU YD.

(8) END DIAPHRAGM CONCRETE ONLY.

(9) INTERMEDIATE DIAPHRAGMS ONLY.

(10) INCLUDES END DIAPHRAGMS, RAILING & DECK REINFORCEMENT.

(11) INCLUDES THE FOLLOWING:
EXPANSION CURVED PLATE BEARING ASSEMBLY TYPE E1 20 EA.
EXPANSION CURVED PLATE BEARING ASSEMBLY TYPE E2 6 EA.
FIXED CURVED PLATE BEARING ASSEMBLY TYPE FI 14 EA.

(12) INCLUDES 8405 SF ON BRIDGE APPROACH PANELS.

(13) INCLUDES 8011 SF ON BRIDGE APPROACH PANELS.

(6)(1) PREFORMED JOINT FILLER LIST

TYPE	NO	SIZE	LOCATION
CORK	13	1" x 1'-2" x 1'-10"	TYPE MODIFIED P-4 RAIL DEFL JOINTS
POLYSTYRENE	20	1½" x 1'-4" x 1'-7"	BEAM FLANGES AT PIER / CUT 2 FROM 1

SEH
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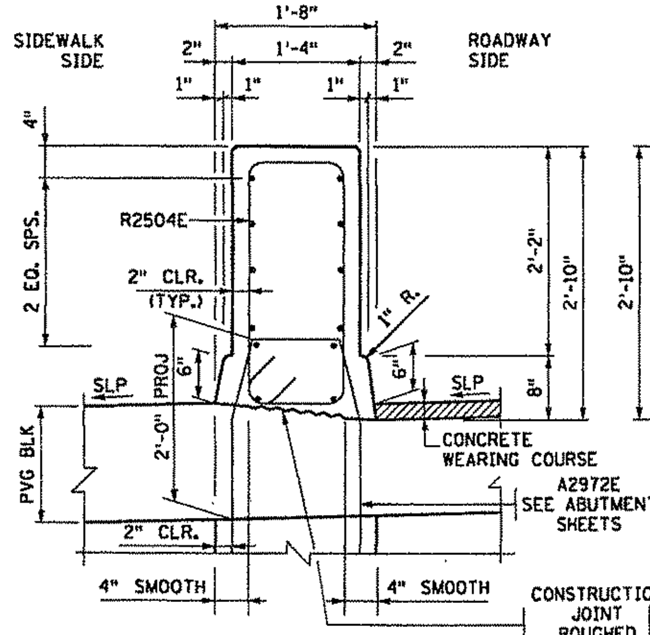
I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota
Signature: Date: 11/21/2006
Printed Name: CHRISTOPHER A WUNSCH Reg. No. 42058

TITLE: SUPERSTRUCTURE BAR LISTS AND QUANTITIES STAGE 2

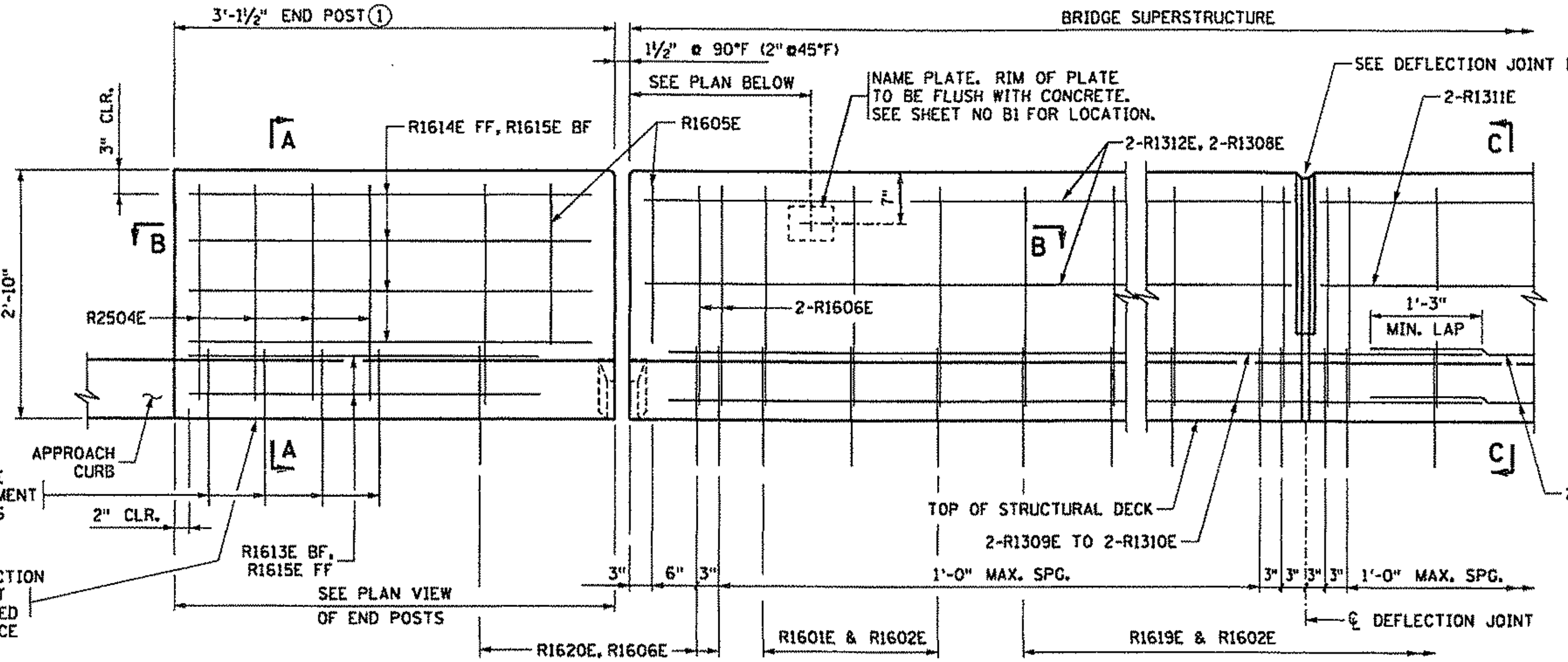
SP 0280-55 SAP 02-623-13

DES: MAW	DR: MAW	APPROVED:
CHK: CAW	CHK: CAW	

BRIDGE NO 02817



SECTION A-A



EXPANSION JOINT

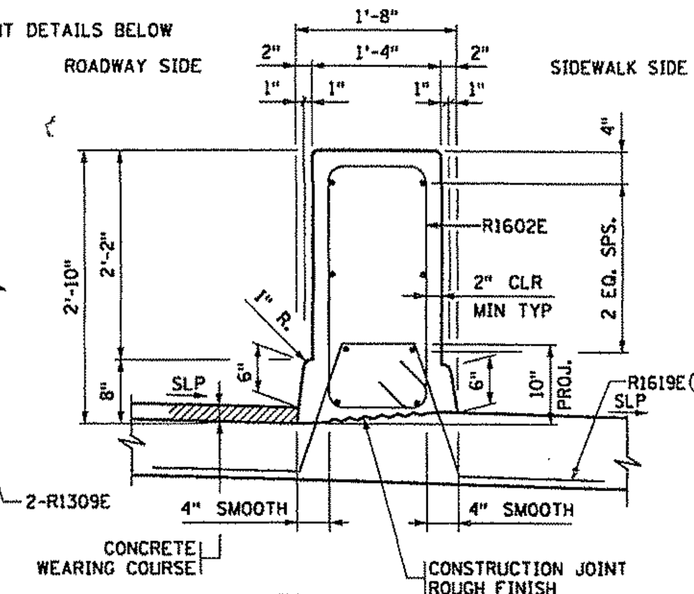
EXPANSION DEVICE NOT SHOWN

DEFLECTION JOINT

INSIDE ELEVATION OF RAILING

CONCRETE WEARING COURSE NOT SHOWN

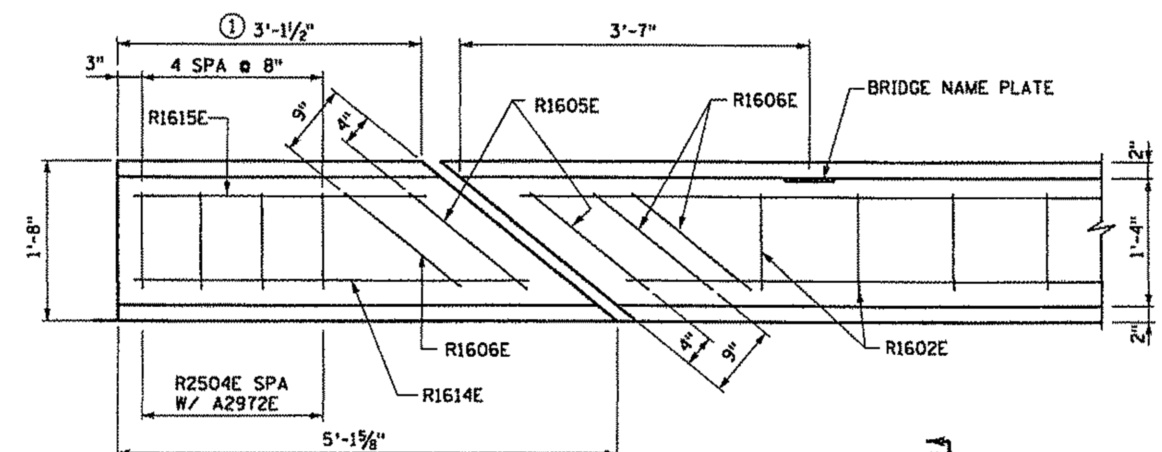
RAIL MEETS TEST LEVEL 4 REQUIREMENTS OF NCHRP REPORT 350



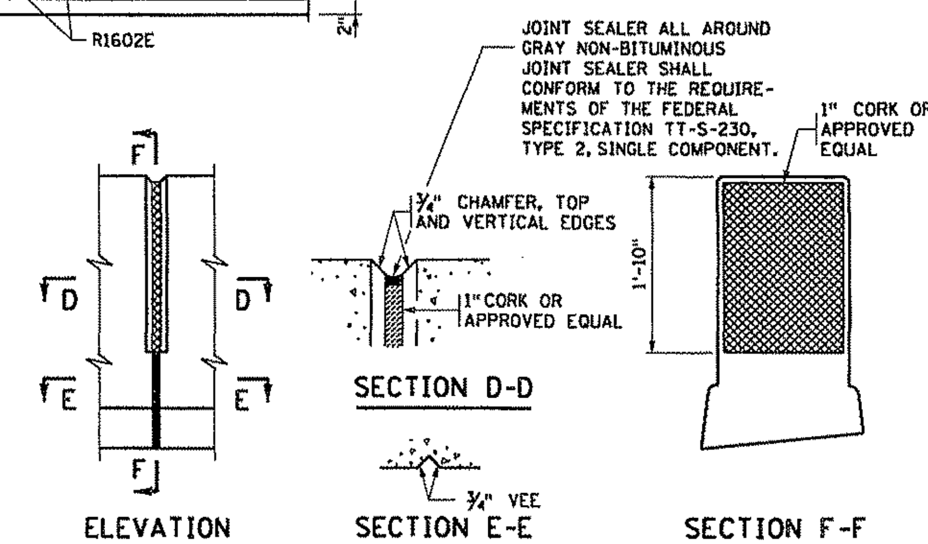
SECTION C-C

① END POST DIMENSIONS ARE ALONG OUTSIDE FACE OF END POST.

② PLACE BAR ON TOP OF BOTTOM REINFORCEMENT MAT.



PLAN SECTION B-B OF END POSTS



DEFLECTION JOINT DETAILS

ESTIMATED QUANTITY OF CORK PER JOINT = 2.15 SQ.FT.

NOTE:
THIS SHEET IS FOR SIDEWALK MEDIAN BARRIER ONLY.

GENERAL NOTES

LENGTH OF "TYPE MOD P-4, TL-4 BARRIER CONCRETE(3Y46)" FOR PAYMENT SHALL BE MEASURED BETWEEN THE OUTSIDE FACES OF THE CONCRETE BARRIER.

CONCRETE BARRIER = 579 LBS./FT. (0.143 CU. YDS./FT.)

FINISH ALL EDGES OF BARRIER WITH ½" VEE, EXCEPT WHERE OTHERWISE NOTED.

MAXIMUM SPACING OF CONCRETE DEFLECTION JOINTS SHALL BE 20 FT.

SEE SUPERSTRUCTURE SHEET FOR JOINT SPACING.

GUARDRAIL CONNECTION TO BE STRUCTURAL STEEL, Mn/DOT SPEC. 3306.

GALVANIZE STRUCTURAL STEEL PER Mn/DOT SPEC. 3394 AFTER FABRICATION.

GUARDRAIL CONNECTION, CORK AND NAME PLATE TO BE CONSIDERED INCIDENTAL TO "TYPE P-4, TL-4 BARRIER CONCRETE (3Y46 OR 3Y46A)".

SEE SHEET B71 FOR BAR LISTS AND SUMMARY OF QUANTITIES.

MODIFIED

FIG. 5-397.173

REVISED: 10-26-2005

APPROVED: JULY 25, 2005

STATE BRIDGE ENGINEER

SEH 3535 VADNAIS CENTER DRIVE ST PAUL, MN 55110 PHONE (651) 490-2000 FAX (651) 490-2150

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Signature: Date: 11/21/2006

Printed Name: CHRISTOPHER A. WUNSCH Reg. No. 42058

SP 0280-55 SAP 02-623-13

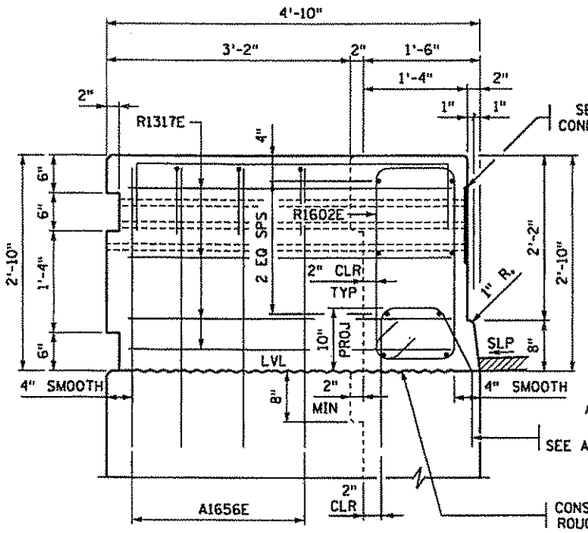
DES: MAW	DR: MAW
CHK: CAW	CHK: CAW

TITLE: CONC BARRIER (TYPE MOD P-4, TL-4) STAGE 1 INTEGRAL END POST (WITH CONC. WEARING COURSE)

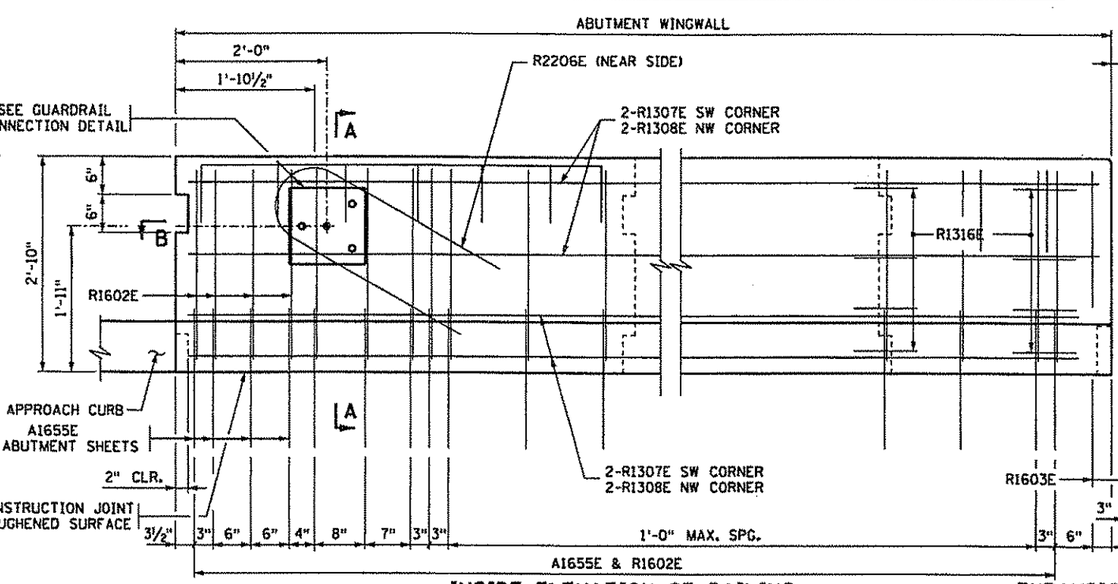
APPROVED:

SHEET NO B73 OF 95 SHEETS

BRIDGE NO 02817

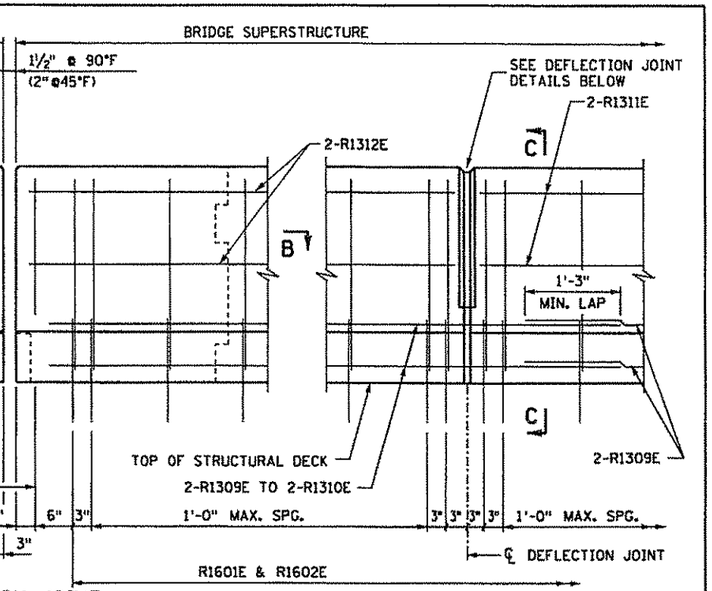


SECTION A-A



INSIDE ELEVATION OF RAILING

CONCRETE WEARING COURSE NOT SHOWN

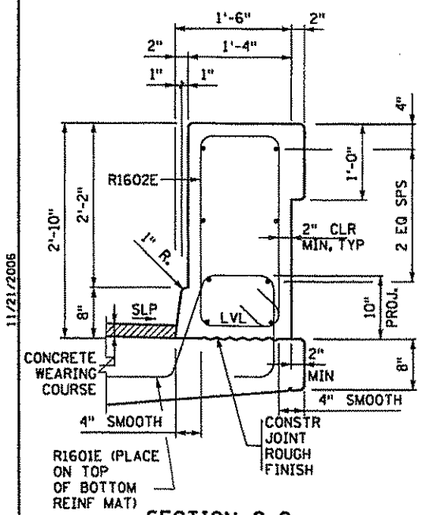


EXPANSION JOINT

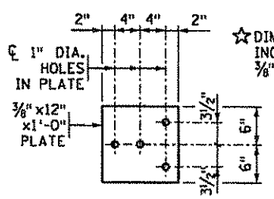
EXPANSION DEVICE NOT SHOWN

DEFLECTION JOINT

RAIL MEETS TEST LEVEL 4 REQUIREMENTS OF NCHRP REPORT 350



SECTION C-C

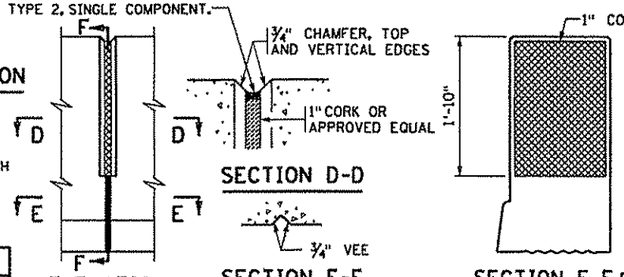


☆DIMENSIONS INCLUDE ⅜" PLATE

GUARDRAIL CONNECTION DETAIL

GALVANIZE AFTER FABRICATION PER Mn/DOT SPEC. 3394

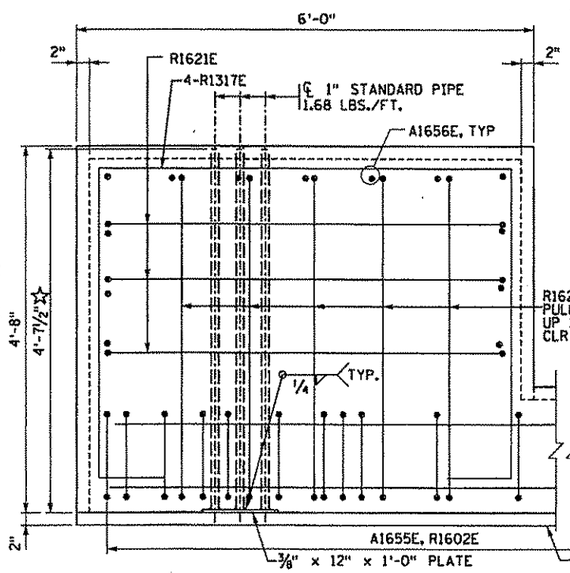
ESTIMATED WEIGHT = 47 LBS EACH

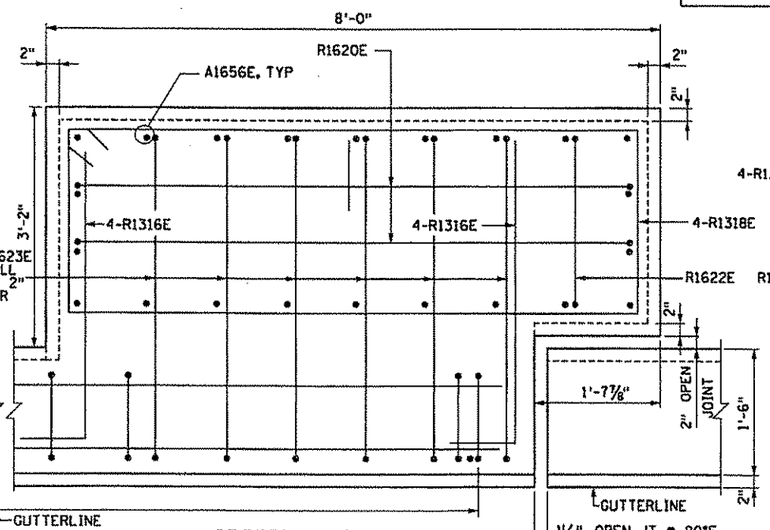


DEFLECTION JOINT DETAILS

ESTIMATED QUANTITY OF CORK PER JOINT = 2.15 SQ. FT.

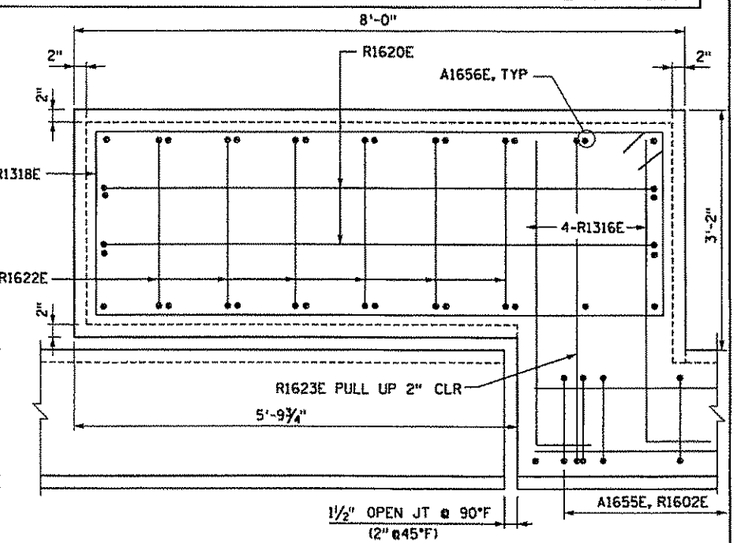
JOINT SEALER ALL AROUND GRAY NON-BITUMINOUS JOINT SEALER SHALL CONFORM TO THE REQUIREMENTS OF THE FEDERAL SPECIFICATION TT-S-230, TYPE 2, SINGLE COMPONENT.





SECTION B-B

SW CORNER



SECTION B-B

NW CORNER

GENERAL NOTES

LENGTH OF "TYPE MOD P-4, TL-4 BARRIER CONCRETE (3Y46 OR 3Y46A)" FOR PAYMENT SHALL BE MEASURED BETWEEN THE OUTSIDE FACES OF THE CONCRETE BARRIER.

CONCRETE BARRIER = 604 LBS./FT. (0.149 CU. YDS./FT.)

FINISH ALL EDGES OF BARRIER WITH ½" CHAMFER, EXCEPT WHERE OTHERWISE NOTED.

MAXIMUM SPACING OF CONCRETE DEFLECTION JOINTS SHALL BE 20 FT.

SEE SUPERSTRUCTURE SHEET FOR JOINT SPACING.

GUARDRAIL CONNECTION TO BE STRUCTURAL STEEL, Mn/DOT SPEC. 3306.

GALVANIZE STRUCTURAL STEEL PER Mn/DOT SPEC. 3394 AFTER FABRICATION.

GUARDRAIL CONNECTION AND CORK TO BE CONSIDERED INCIDENTAL TO "TYPE MOD P-4, TL-4 BARRIER CONCRETE (3Y46 OR 3Y46A)".

SEE SHEET B72 FOR BAR LISTS AND SUMMARY OF QUANTITIES.

MODIFIED

FIG. 5-397.173

REVISED: 10-26-2005

APPROVED: JULY 25, 2005

STATE BRIDGE ENGINEER

SEH
3535 VADNAIS CENTER DRIVE
ST PAUL, MN 55110
PHONE (651) 490-2000
FAX (651) 490-2150

I hereby certify that this plan, specification, or report 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

Signature _____ Date: 11/21/2006

Printed Name: CHRISTOPHER A WUNSCH Reg. No. 42058

TITLE: CONCRETE BARRIER (TYPE MOD P-4, TL-4) STAGE 2
INTEGRAL END POST (WITH CONCRETE WEARING COURSE)

SP 0280-55 SAP 02-623-13

DES: MAW DR: MAW CHK: CAW CHK: CAW

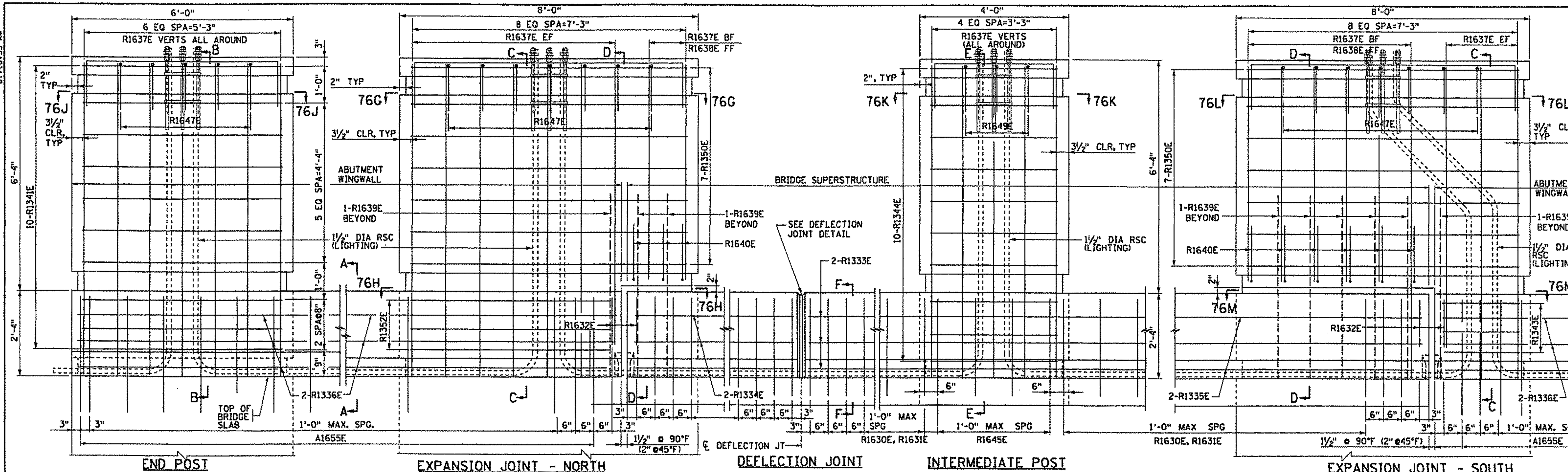
APPROVED:

SHEET NO B74 OF 95 SHEETS

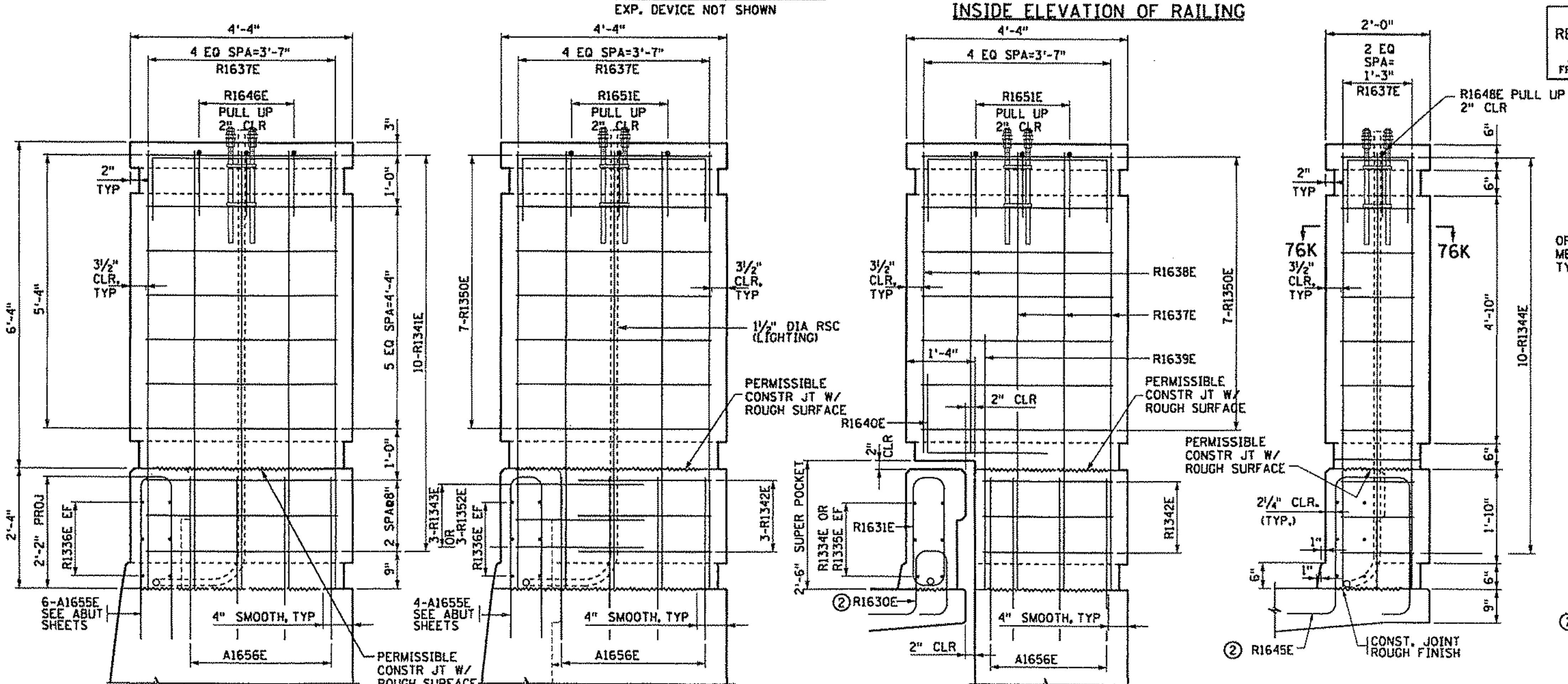
BRIDGE NO 02817

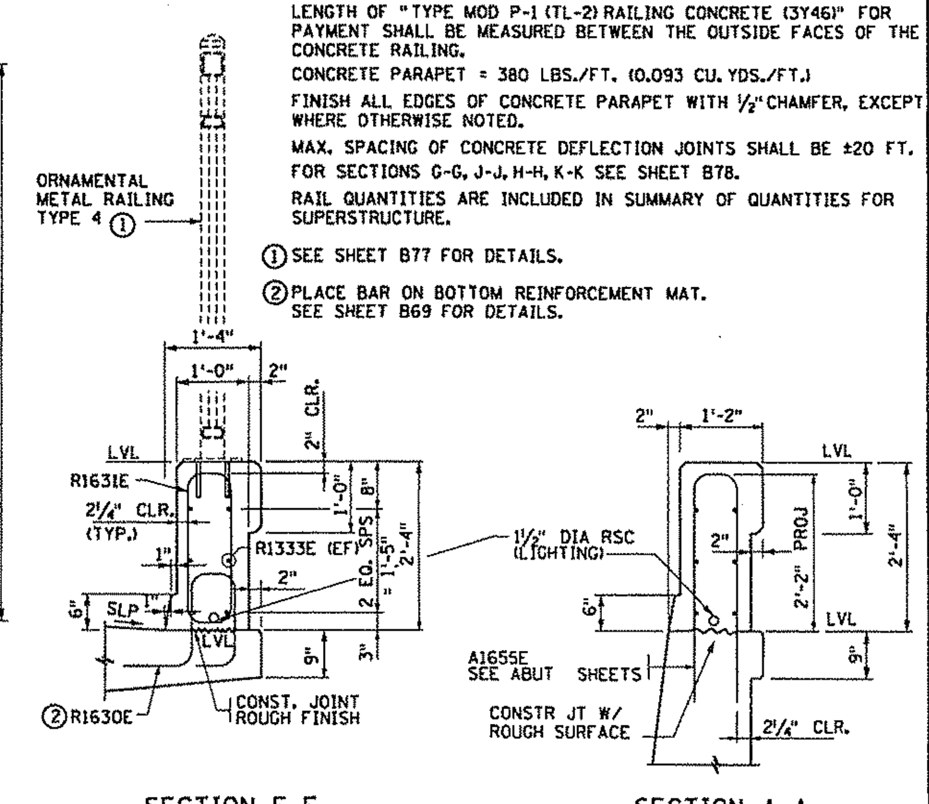
11/21/2006

S:\ROW\LNL Inc\...\bridge\dgn\cbr02817_173a.dgn



INSIDE ELEVATION OF RAILING





RAIL MEETS TEST LEVEL 2 REQUIREMENTS OF NCHRP REPORT 350.
THE RAIL MUST BE USED NEXT TO WALKWAY.
AN F-BARRIER MUST BE USED TO SEPARATE TRAFFIC FROM THIS RAIL IN THE 45 MPH (OR OVER) SPEED ZONE.

GENERAL NOTES

LENGTH OF "TYPE MOD P-1 (TL-2) RAILING CONCRETE (3Y46)" FOR PAYMENT SHALL BE MEASURED BETWEEN THE OUTSIDE FACES OF THE CONCRETE RAILING.

CONCRETE PARAPET = 380 LBS./FT. (0.093 CU. YDS./FT.)

FINISH ALL EDGES OF CONCRETE PARAPET WITH 1/2" CHAMFER, EXCEPT WHERE OTHERWISE NOTED.

MAX. SPACING OF CONCRETE DEFLECTION JOINTS SHALL BE ±20 FT.

FOR SECTIONS G-G, J-J, H-H, K-K SEE SHEET B78.

RAIL QUANTITIES ARE INCLUDED IN SUMMARY OF QUANTITIES FOR SUPERSTRUCTURE.

① SEE SHEET B77 FOR DETAILS.

② PLACE BAR ON BOTTOM REINFORCEMENT MAT. SEE SHEET B69 FOR DETAILS.

SP 0280-55 SAP 02-623-13

SEH 3535 VADNAIS CENTER DRIVE ST. PAUL, MN 55110 PHONE (651) 490-2000 FAX (651) 490-2150

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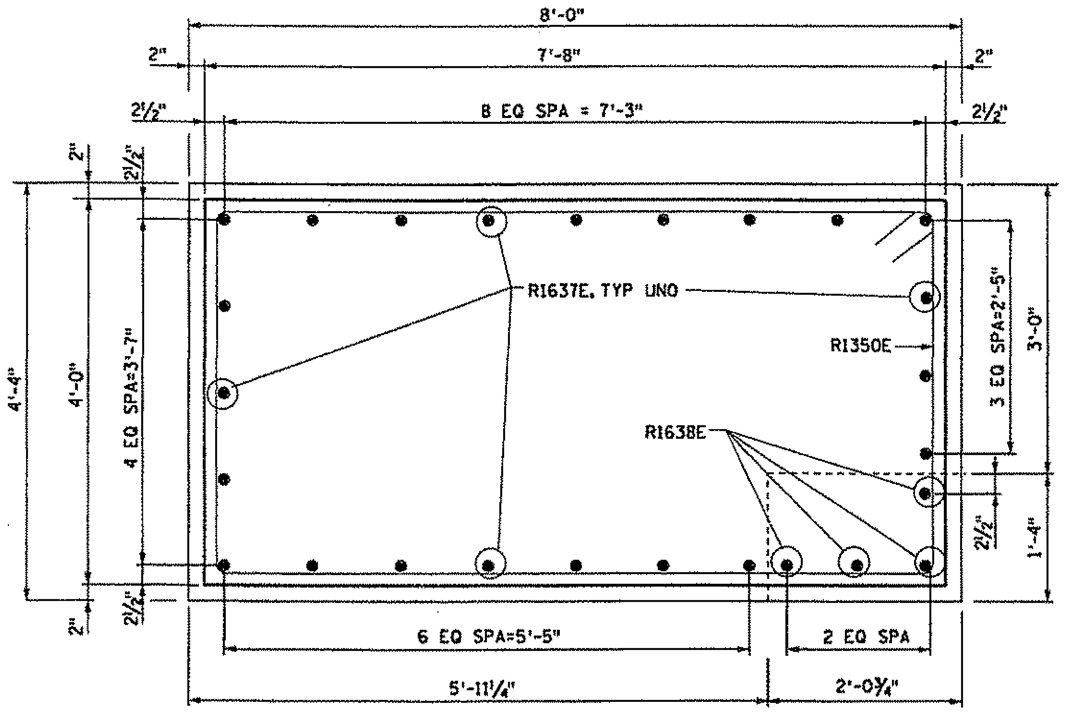
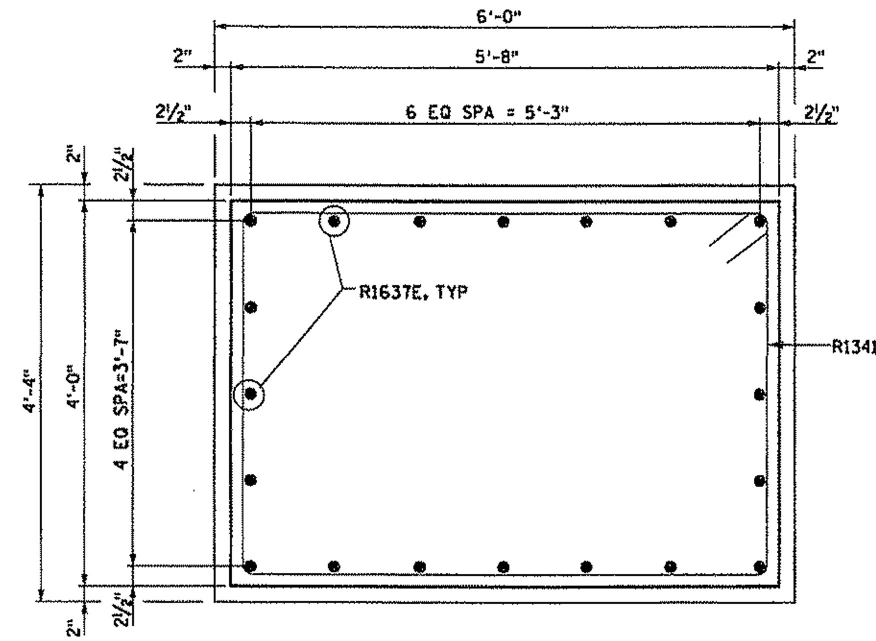
Signature: [signature] Date: 11/21/2006

Printed Name: CHRISTOPHER A. WUNSCH Reg. No. 42058

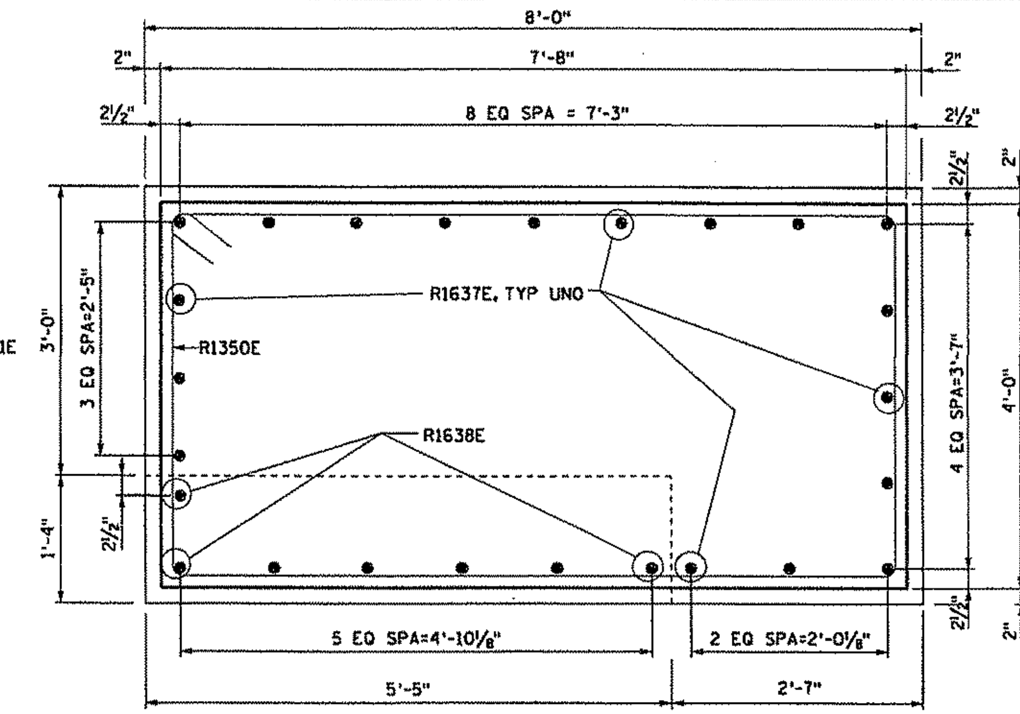
TITLE: CONCRETE PARAPET TYPE MOD P-1 DETAILS	DES: MAW / CHK: CAW	DR: MAW / CHK: CAW	APPROVED:
	SHEET NO B75 OF 95 SHEETS		BRIDGE NO 02817



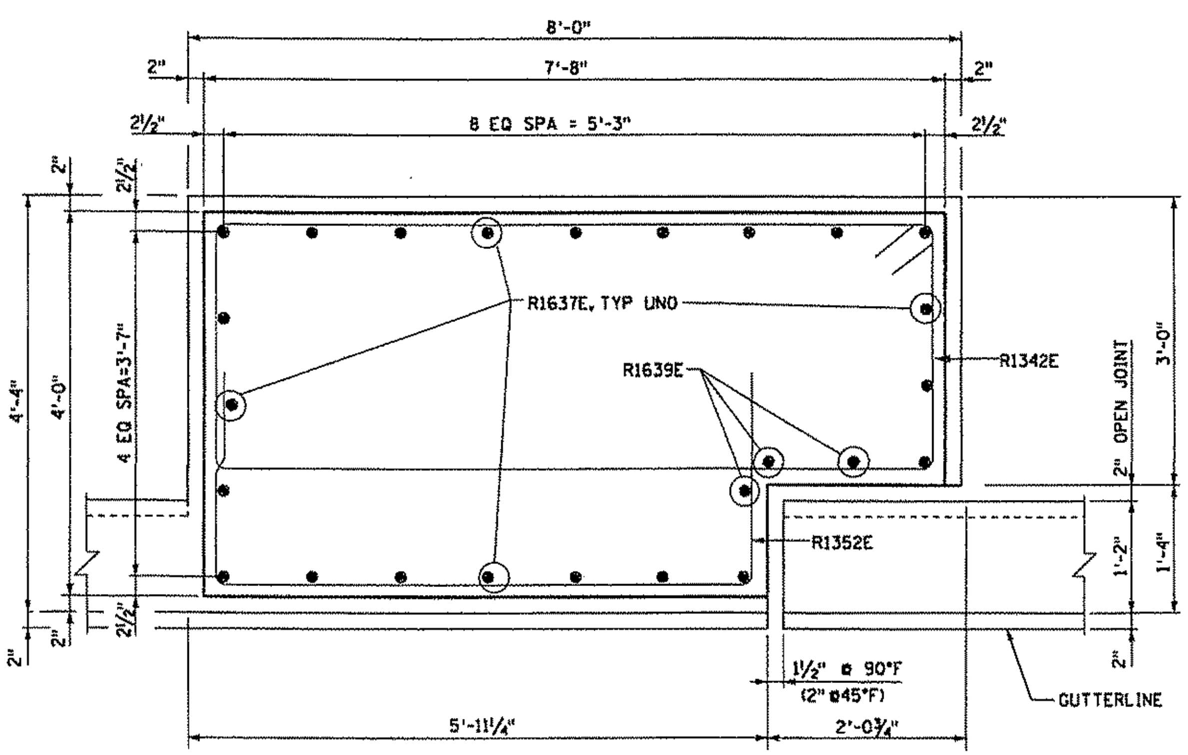
SECTION 76G-76G
NE CORNER SHOWN



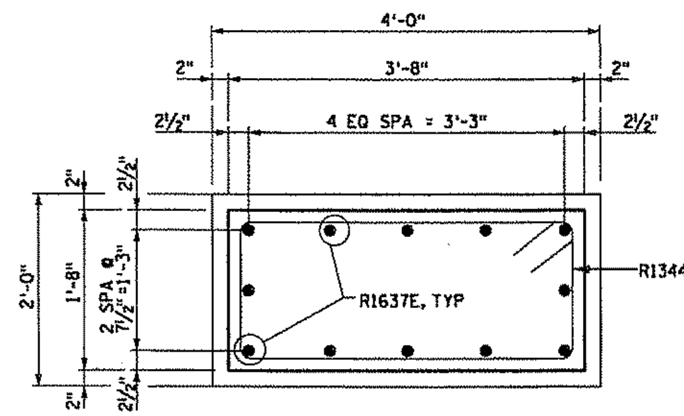
SECTION 76J-76J
END POST



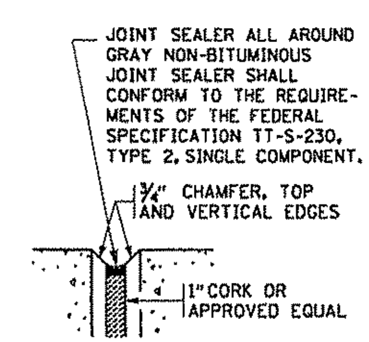
SECTION 76L-76L
SE CORNER SHOWN



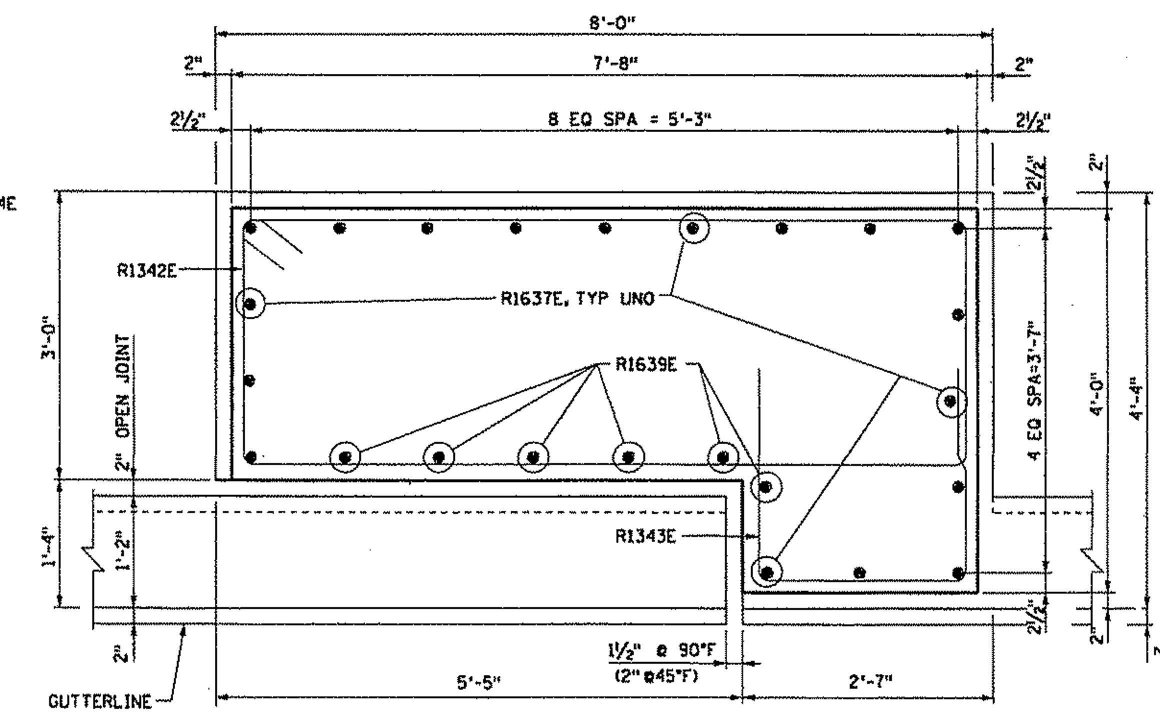
SECTION 76H-76H
NE CORNER SHOWN



SECTION 76K-76K
INTERMEDIATE POST



DEFLECTION
JOINT DETAIL



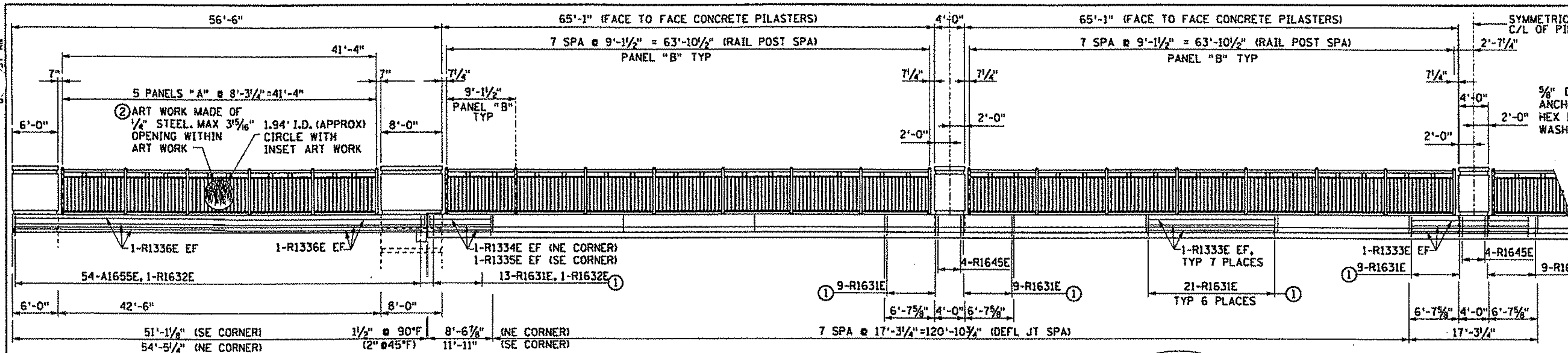
SECTION 76M-76M
SE CORNER SHOWN

SEH
3535 VADNAIS CENTER DRIVE
ST PAUL, MN 55110
PHONE (651) 490-2000
FAX (651) 490-2150

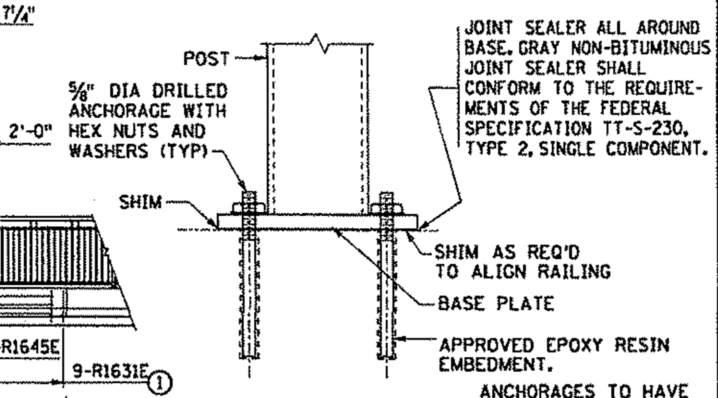
I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the state of Minnesota
Signature: Date: 11/21/2006
Printed Name: CHRISTOPHER A WUNSCH Reg. No. 42058

SP 0280-55 SAP 02-623-13

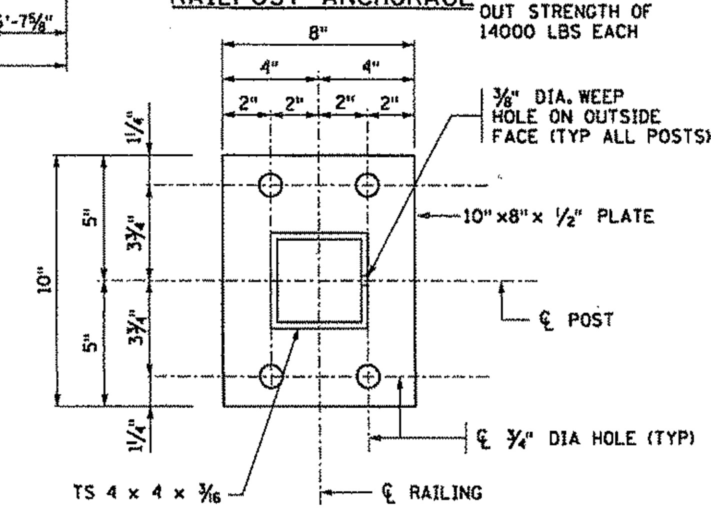
TITLE:			
CONCRETE PARAPET TYPE P-1 DETAILS	DES: MAW / CHK: CAW	DR: MAW / CHK: CAW	APPROVED:
	SHEET NO B76 OF 95 SHEETS		BRIDGE NO 02817



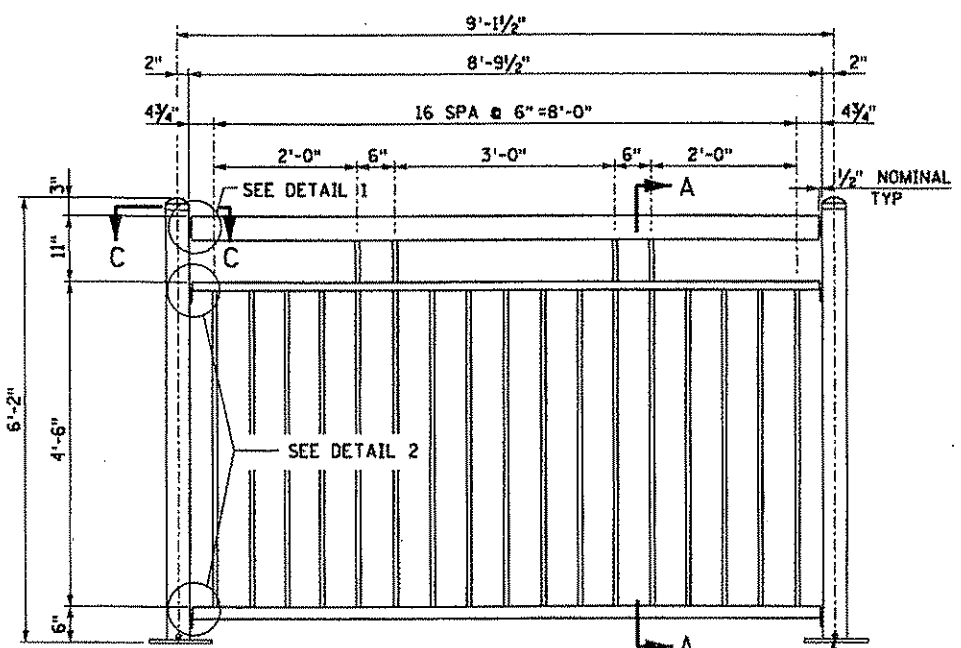
PARTIAL INSIDE RAILING ELEVATION



RAILPOST ANCHORAGE

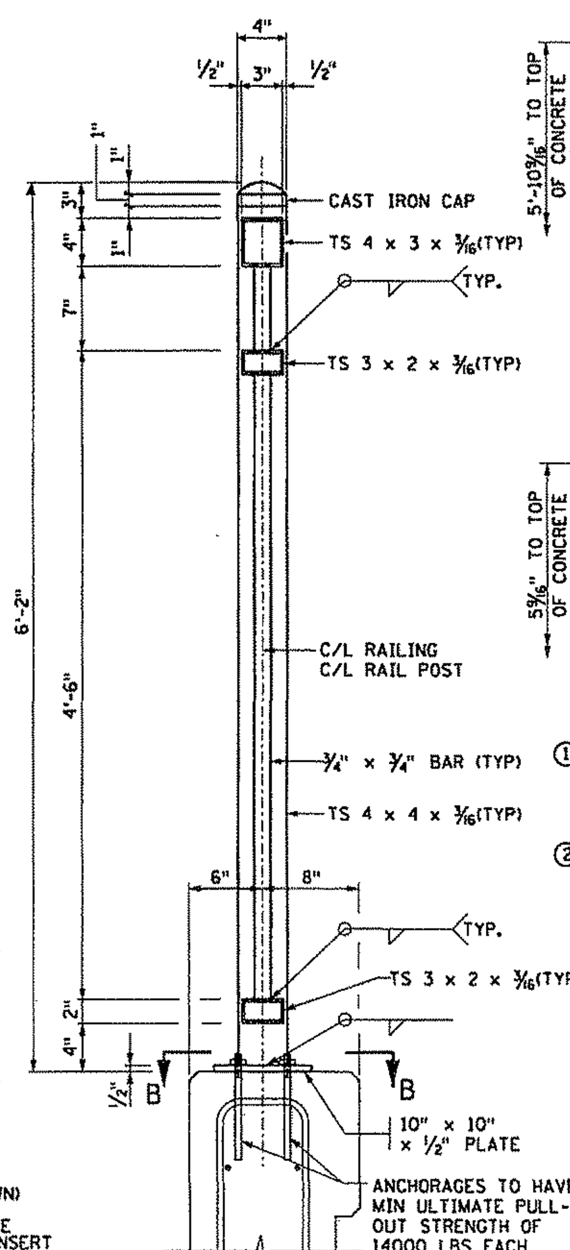


SECTION B-B

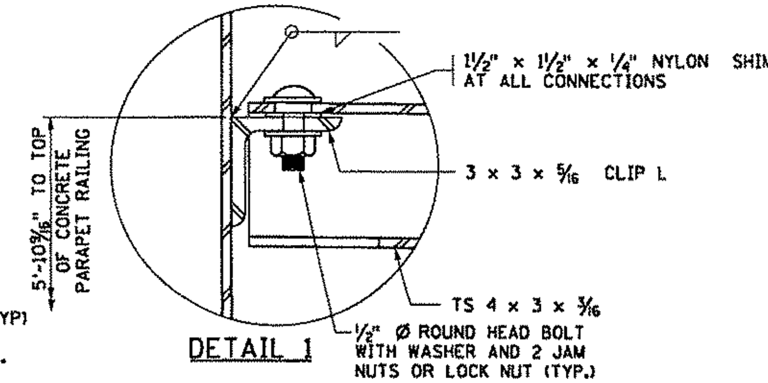


PANEL "B"
(28 THUS)

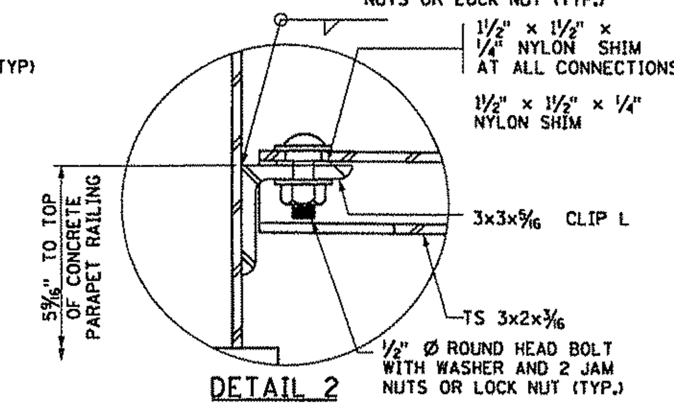
⅜" DIA WEEP HOLE ON OUTSIDE FACE (TYP ALL POSTS)



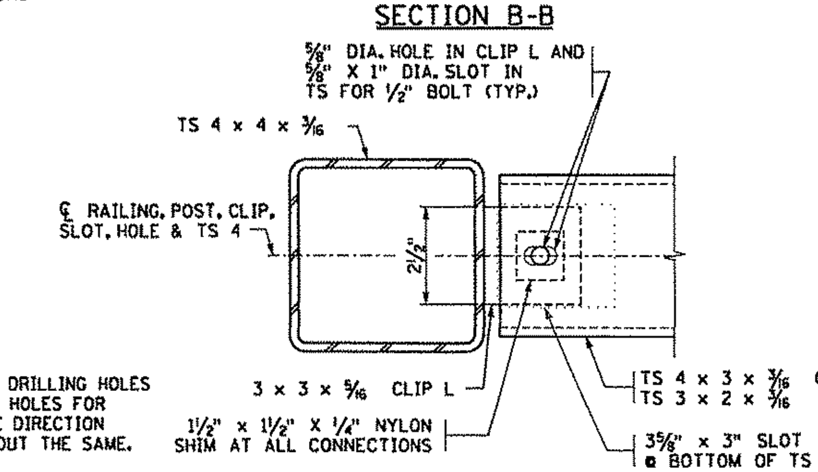
SECTION A-A



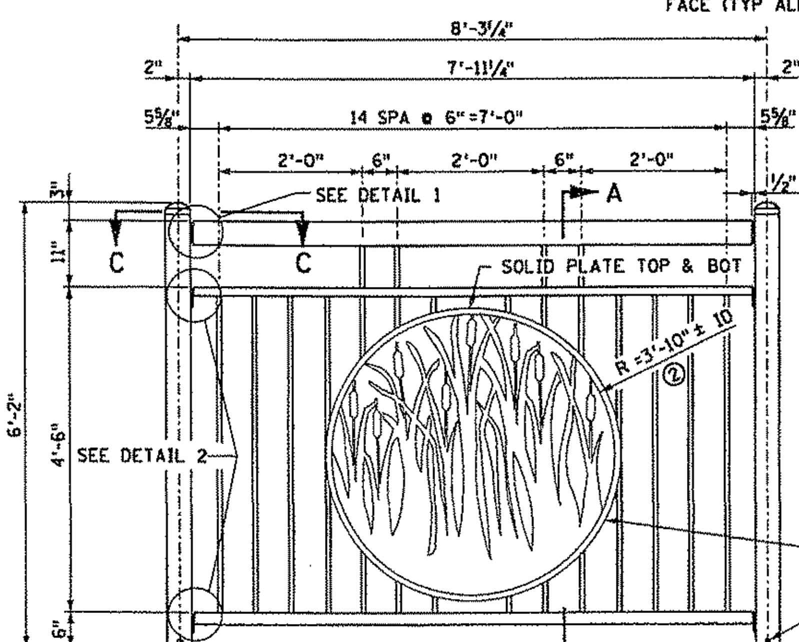
DETAIL 1



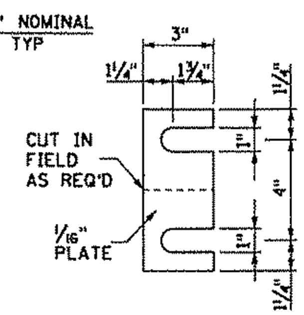
DETAIL 2
LOWER SHOWN



SECTION C-C



PANEL "A"
(8 THUS)
(2 THUS WITH ART WORK)



SHIM
(RAILING NOT SHOWN)

NOTES:

① BEND A1655E AND R1631E AS NECESSARY IN FIELD TO MISS DRILLING HOLES FOR ANCHORAGES. IF REINFORCEMENT IS HIT WHEN DRILLING HOLES FOR ANCHORAGES, MOVE POST SLIGHTLY AND REDRILL. ALTERNATE DIRECTION OF MOVEMENT SO THAT THE OVERALL RAIL LENGTH COMES OUT THE SAME.

② SEE LANDSCAPING PLANS FOR ADDITIONAL DETAILS AND NOTES.

GENERAL NOTES

SEE CONCRETE PARAPET TYPE MOD P-1 FOR PAYMENT OF RAILING BASE.

LENGTH OF "ORNAMENTAL METAL RAILING" FOR PAYMENT SHALL BE MEASURED FROM FACE TO FACE OF CONCRETE POSTS WITH NO DEDUCTION FOR OPEN JOINTS.

ALL STRUCTURAL STEEL TUBING IN THE RAIL SHALL BE PER 3361 TYPE A.

MATERIAL FOR CLOSURE ANGLES AND BASE PLATES SHALL CONFORM TO Mn/DOT SPEC. 3306.

FOR RAIL POST ANCHORAGE TYPE A SEE MnDOT SPEC 3385 AND SPECIAL PROVISIONS.

RAIL POSTS AND PICKETS SHALL BE VERTICAL.

FOR RAIL COATING SEE SPECIAL PROVISIONS.

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

RAILING SHALL BE GROUNDED WITH ⅝" DIA. COPPER ROD AS PER Mn/DOT SPEC. 2557. GROUND WIRE CONNECT TO PILING (TYP.).

THE CONNECTION AT ONE END OF EACH PANEL SHALL ALLOW FOR EXPANSION.

GALVANIZE THREADED RODS, BOLTS, NUTS AND WASHERS PER MnDOT SPEC 3392.

GALVANIZE ALL RAILING MEMBERS PER MnDOT SPEC 3394 AFTER FABRICATION.

ALL RAILING MEMBERS SHALL BE FLAT AFTER FABRICATION AND GALVANIZING TO WITHIN ⅛" IN 10 FT VERTICAL AND HORIZONTALLY BY MECHANICAL MEANS WITHOUT DAMAGE TO THE ZINC COATING.

SP 0280-55 SAP 02-623-13

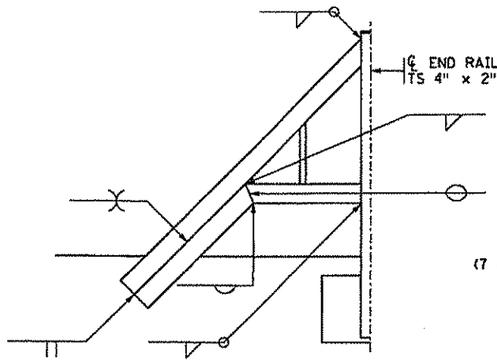
SEH
3535 VADNAIS CENTER DRIVE
ST PAUL, MN 55110
PHONE (651) 490-2000
FAX (651) 490-2150

I hereby certify that this plan, specification, or report 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
Signature: [signature] Date: 11/21/2006
Printed Name: CHRISTOPHER A WUNSCH Reg. No. 42058

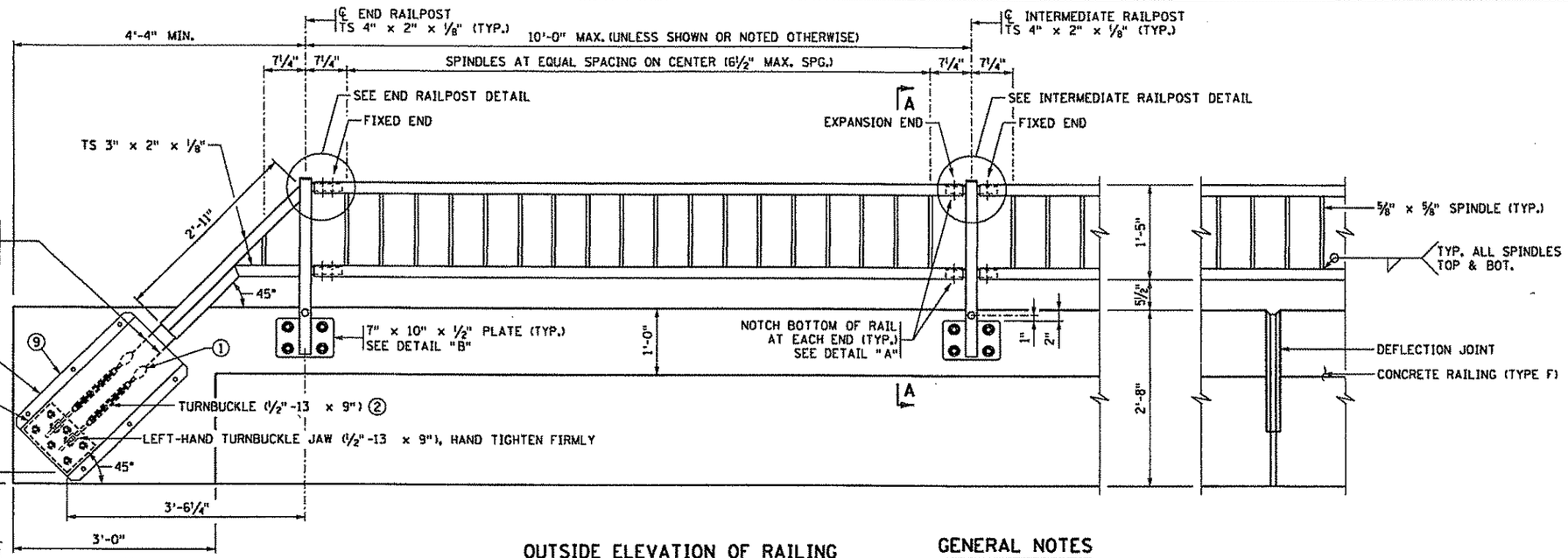
TITLE: METAL RAILING FOR BIKEWAYS AND CONCRETE PARAPET (TYPE P-1) (WITH INTEGRAL END POST)

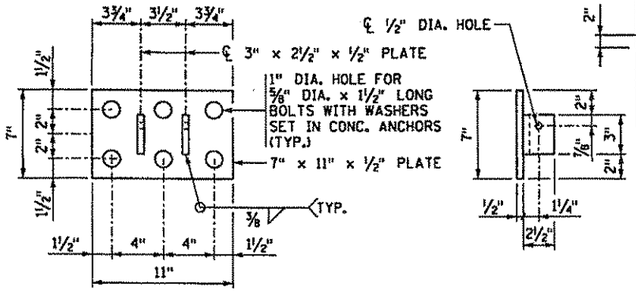
DES: MAW	DR: MAW	APPROVED:
CHK: CAW	CHK: CAW	

BRIDGE NO 02817

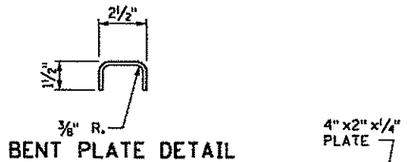


WELDS AT END PANEL

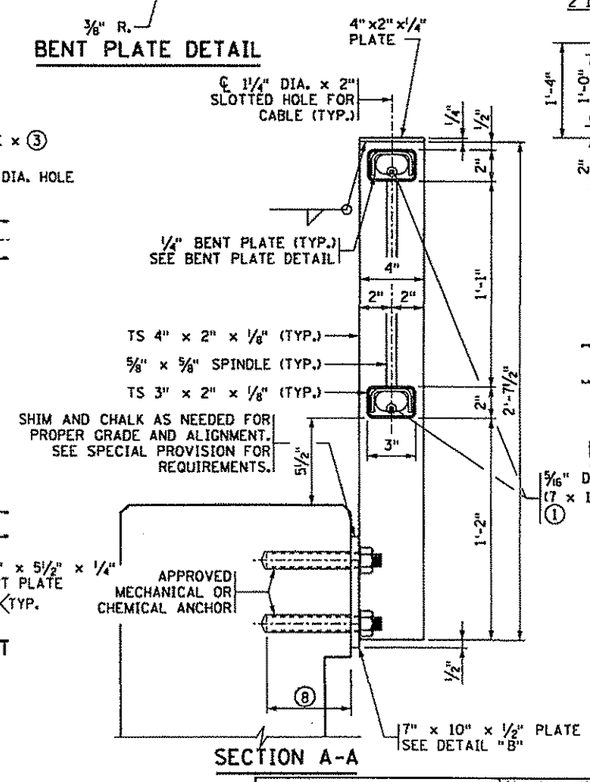




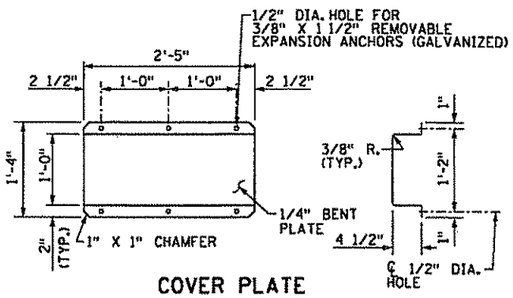
CABLE ANCHOR PLATE DETAIL



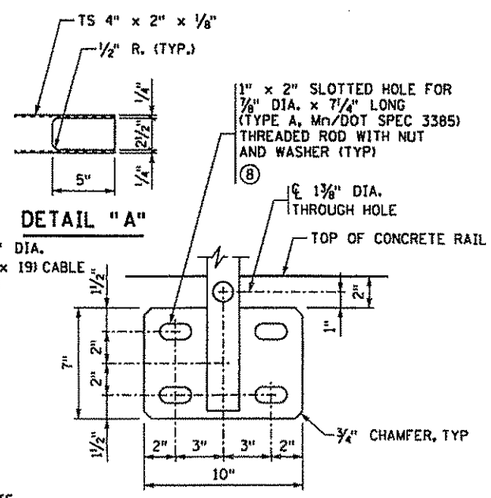
BENT PLATE DETAIL



SECTION A-A

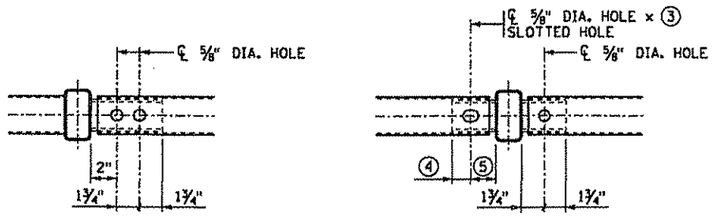


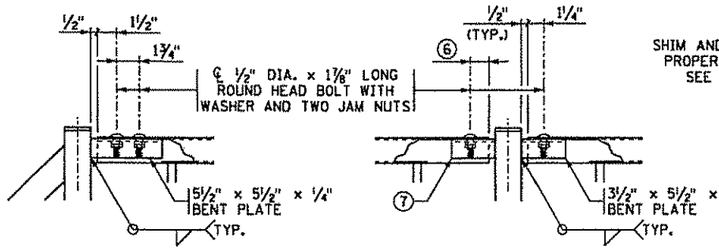
COVER PLATE



DETAIL "B"

OUTSIDE ELEVATION OF RAILING





END RAILPOST DETAIL

TOP AND BOTTOM RAIL CONNECTIONS ARE SIMILAR

INTERMEDIATE RAILPOST DETAIL

TOP AND BOTTOM RAIL CONNECTIONS ARE SIMILAR

GENERAL NOTES

SEE CONCRETE RAILING (OR CONCRETE PARAPET) SHEET FOR DETAILS, RAILPOST SPACING AND PAYMENT.

LENGTH OF "STRUCTURAL TUBE RAILING (DESIGN T-2)" FOR PAYMENT SHALL BE MEASURED BETWEEN THE OUTSIDE FACES OF THE CONCRETE RAIL.

ALL STRUCTURAL STEEL TUBING IN THE RAIL SHALL BE PER 3361 TYPE A.

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

RAILPOSTS AND SPINDLES SHALL BE NORMAL TO GRADE.

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

RAILING SHALL BE GROUNDED WITH ⅝" DIA COPPER ROD AS PER Mn/DOT SPEC 2557.

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

GALVANIZE ALL OTHER STRUCTURAL STEEL PER Mn/DOT SPEC 3394 AFTER FABRICATION.

ALL RAILING MEMBERS SHALL BE STRAIGHT AFTER FABRICATION AND GALVANIZING TO WITHIN ⅛" IN 10 FT BY MECHANICAL MEANS WITHOUT DAMAGE TO THE ZINC COATING.

ALL STRUCTURAL STEEL AND EXPOSED BOLTS, NUTS AND WASHERS ARE TO BE PAINTED AFTER GALVANIZING IN ACCORDANCE WITH THE SPECIAL PROVISIONS.

① CABLE WEDGE END FITTING FORGED SERIES -- STUD SOCKET ASSEMBLY, UNC ½" x 9" THREAD FOR ⅝" DIA (7 x 19) CABLE. MAY BE HELPFUL TO USE SPECIAL ASSEMBLY KIT TOOLS.

② IF ONLY ONE TURNBUCKLE IS USED PER CABLE, LOCATE ONE OF THESE SHOWN AT OTHER END OF WALL.

③ 1¼" (AT TYP EXP END) OR 3" (AT EXP END AT EXPANSION JOINT)

④ 1½" (AT TYP EXP END) OR 2½" (AT EXP END AT EXPANSION JOINT)

⑤ 2" (AT TYP EXP END) OR 3" (AT EXP END AT EXPANSION JOINT)

⑥ 1½" (AT TYP EXP END) OR 2½" (AT EXP END AT EXPANSION JOINT)

⑦ 3½" x 5½" x ⅜" BENT PLATE (AT TYP EXP END)
5½" x 5½" x ⅜" BENT PLATE (AT EXP END AT EXPANSION JOINT)

⑧ MINIMUM ULTIMATE PULLOUT STRENGTH OF 20,000 LBS EACH.

⑨ COVER PLATE SHALL BE GALVANIZED PER MnDOT SPEC 3394 AND PAINTED TO MATCH THE CONCRETE SURFACE TREATMENT IN ACCORDANCE WITH THE SPECIAL PROVISIONS.

MODIFIED

FIG. 5-397.158

REVISED:

APPROVED: OCTOBER 29, 2004

Daniel T. Klingen

STATE BRIDGE ENGINEER

SEH
3535 VADNAIS CENTER DRIVE
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I hereby certify that this plan, specification, or report 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

Signature: Date: 11/21/2006

Printed Name: CHRISTOPHER A WUNSCH Reg. No. 42058

TITLE: STRUCTURAL TUBE RAILING (DESIGN T-2)
AND CONC. RAILING (TYPE F) OR CONC. PARAPET (TYPE P-1)

SP 0280-55 SAP 02-623-13

DES: MAW DR: MAW

CHK: CAW CHK: CAW

APPROVED:

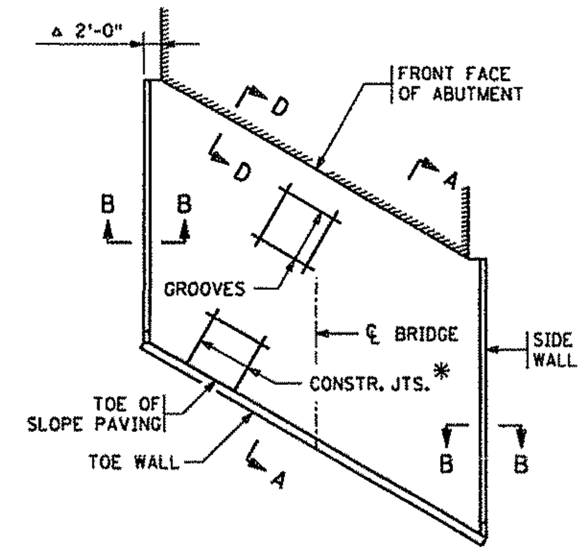
SHEET NO 878 OF 95 SHEETS

BRIDGE NO 02817

11/21/2006

J:\0\bridge\dgn\cbr02817_156.dgn

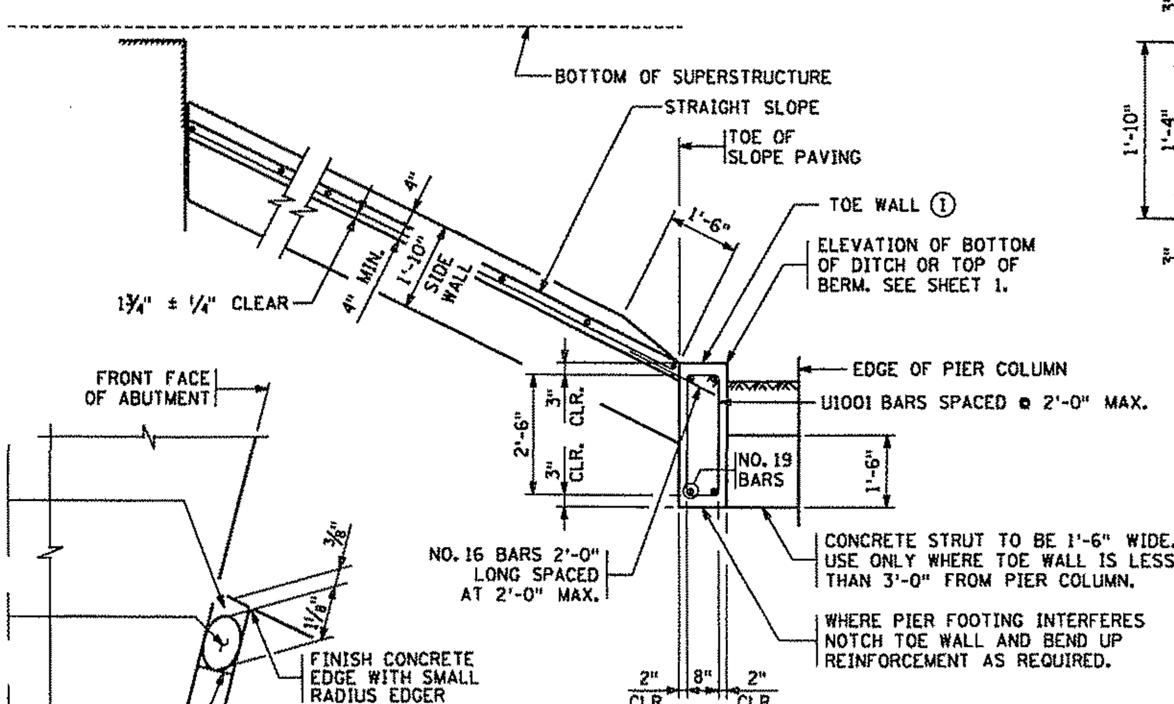
st\kolvi\ Inc.



LAYOUT FOR SLOPES AT HIGH ABUTMENTS

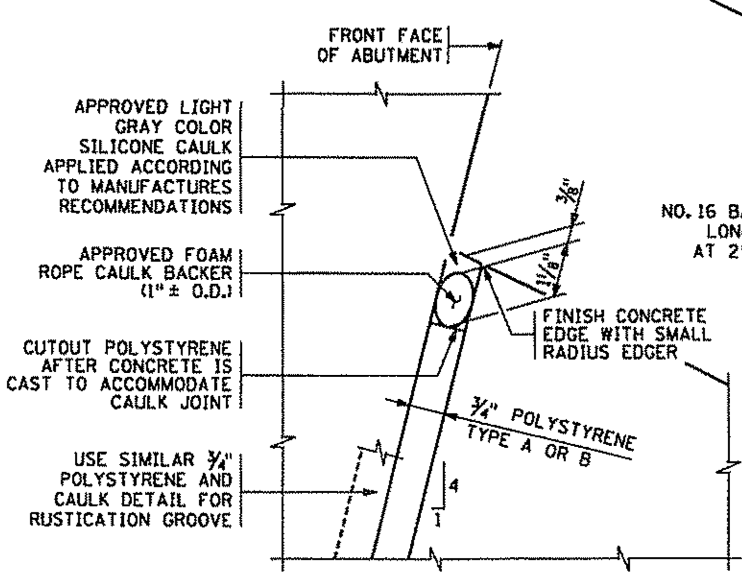
△ 2'-0" FOR TANGENT BRIDGE SUPERSTRUCTURES. VARIES 2'-0" MINIMUM FOR CURVED BRIDGE SUPERSTRUCTURE.

* VERTICAL CONSTRUCTION JOINTS MAY BE CONSTRUCTED PARALLEL TO ℄ OF BRIDGE FOR SKEWS TO 10° ONLY.



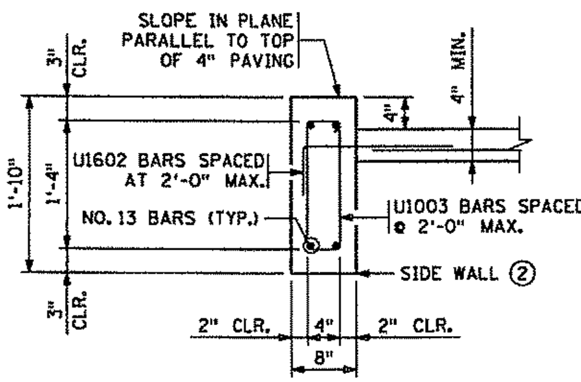
SECTION A-A

1:2 SLOPE SHOWN



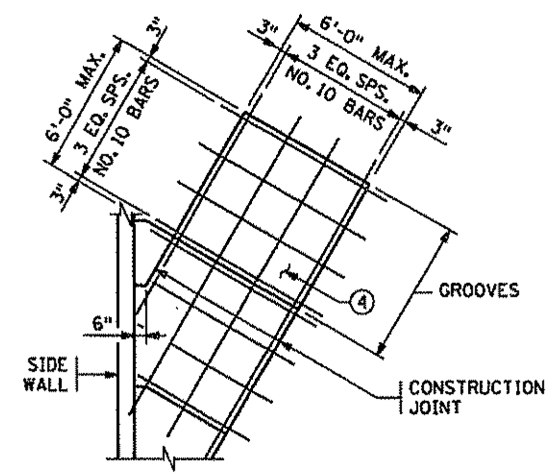
SECTION D-D

HIGH ABUTMENTS WITH RUSTICATION



SECTION B-B

NORMAL TO SLOPE



PAVING DETAIL

CONCRETE & REINFORCEMENT UNIT QUANTITIES

① 0.111 CU. YD. OF CONCRETE/LIN. FT. 8.37 LBS. OF REINFORCEMENT/LIN FT.

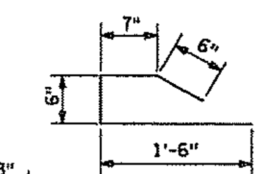
② 0.046 CU. YD. OF CONCRETE/LIN. FT. 4.46 LBS. OF REINFORCEMENT/LIN FT.

③ 0.058 CU. YD. OF CONCRETE/LIN. FT. 3.70 LBS. OF REINFORCEMENT/LIN FT. BASED ON A SLOPE OF 1:2.

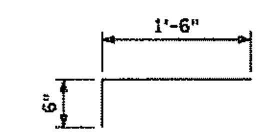
④ 0.111 CU. YD. OF CONCRETE/SQ. YD. 4.50 LBS. OF REINFORCEMENT/SQ. YD.

GENERAL NOTE

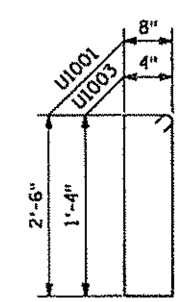
SLOPES ARE EXPRESSED AS A RATIO OF VERTICAL DISTANCE: HORIZONTAL DISTANCE.



U1304



U1602



U1001 & U1003

MODIFIED

REVISION:	
APPROVED: SEPTEMBER 26, 2003	STATE BRIDGE ENGINEER

SEH 3535 VADNAIS CENTER DRIVE ST PAUL, MN 55110 PHONE (651) 490-2000 FAX (651) 490-2150

I hereby certify that this plan, specification, or report 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
Signature: Date: 11/21/2006
Printed Name: CHRISTOPHER A NUNSCH Reg. No. 42058

TITLE: CONCRETE SLOPE PAVING UNDER BRIDGES

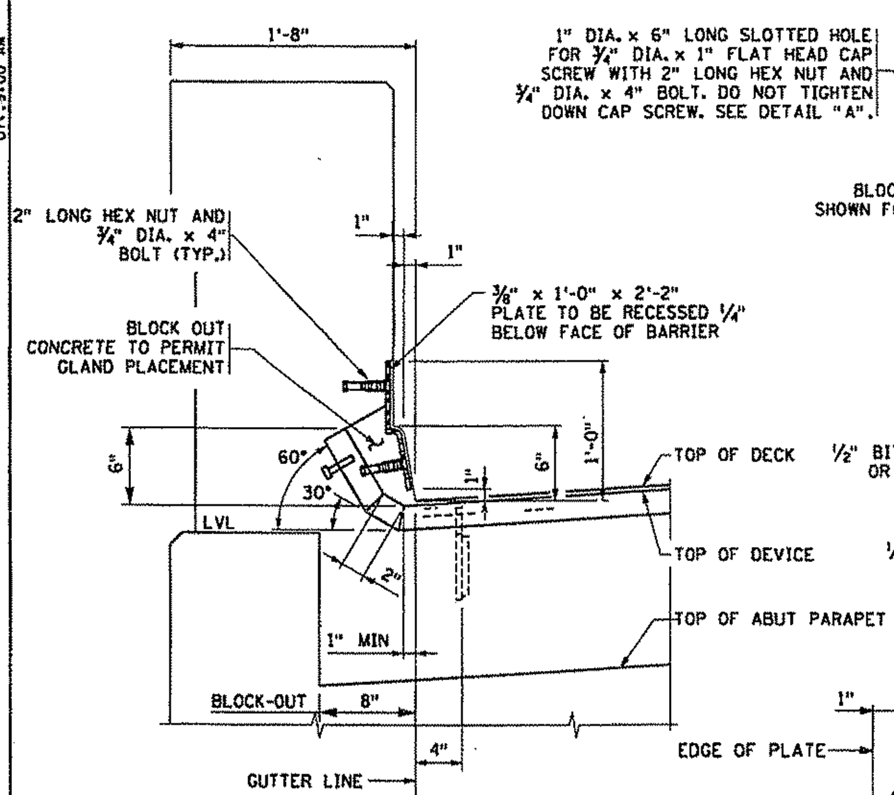
SP 0280-55 SAP 02-623-13

DES: MAW	DR: MAW	APPROVED:
CHK: CAW	CHK: CAW	

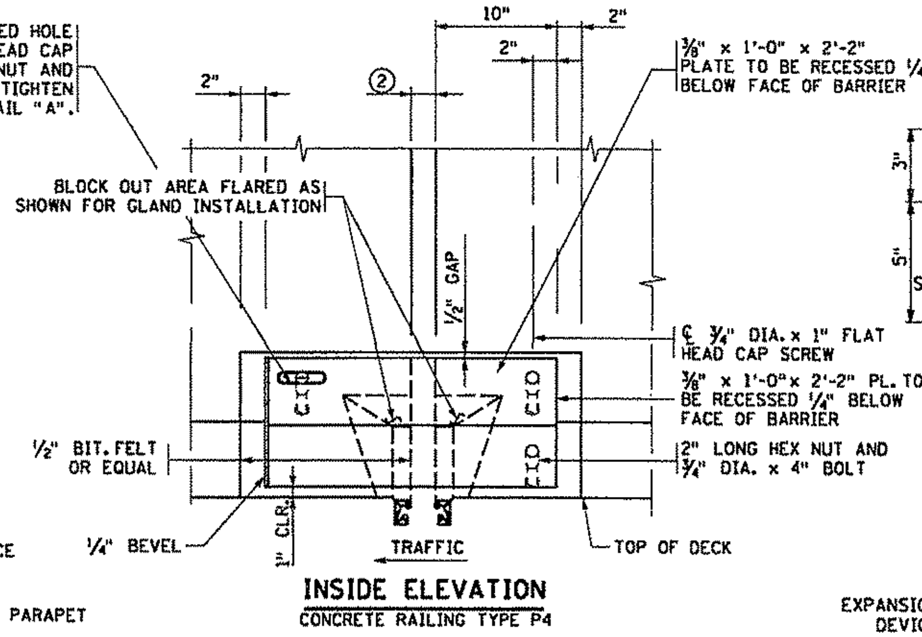
FIG. 5-397.301

SHEET NO B79 OF 95 SHEETS

BRIDGE NO 02817

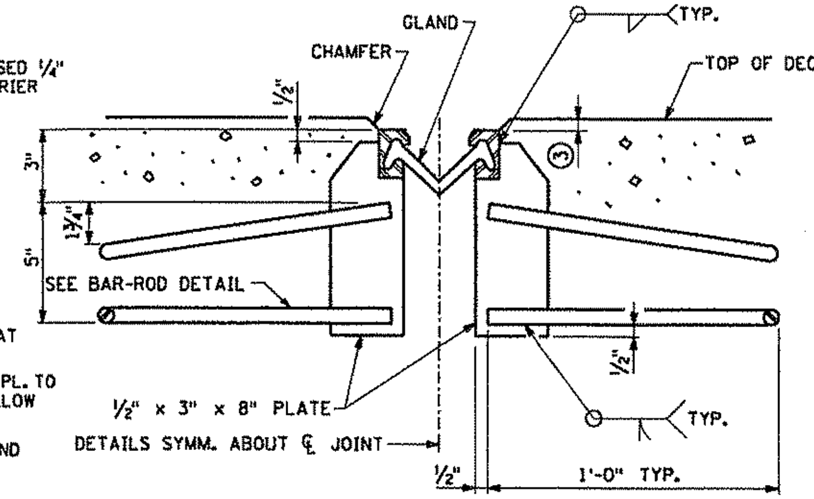


TYPE MOD P4 TRAFFIC BARRIER

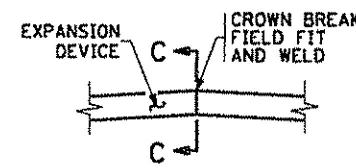


INSIDE ELEVATION

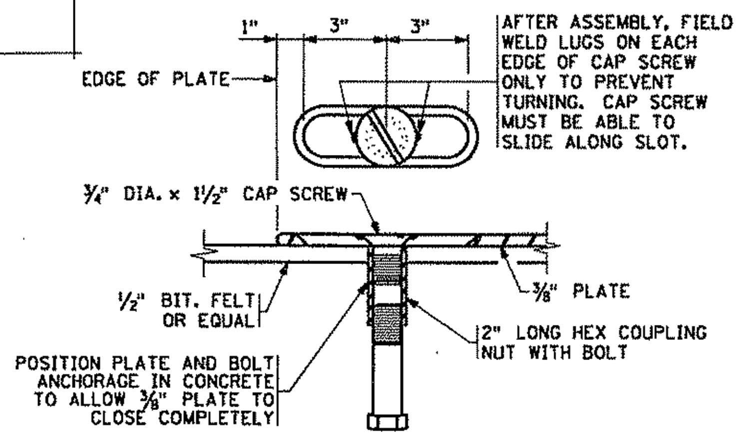
CONCRETE RAILING TYPE P4



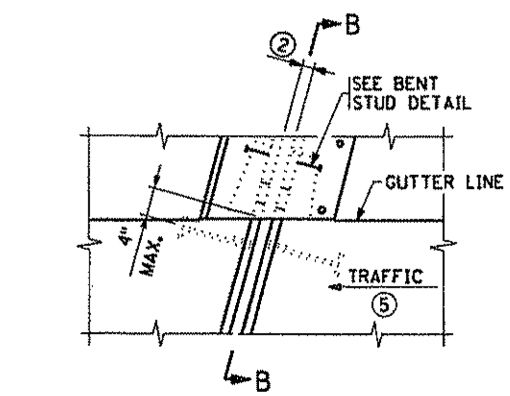
SECTION A-A



DETAIL "B"

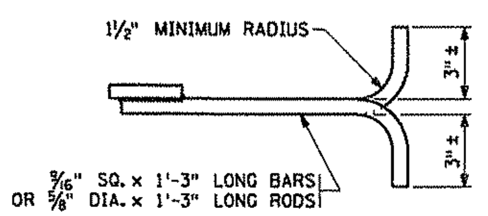


DETAIL "A"

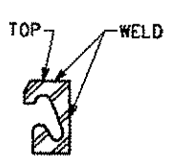


PLAN VIEW @ EXPANSION DEVICE

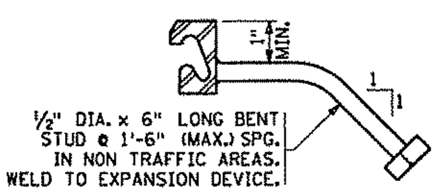
MEDIAN OR SIDEWALK ALTERNATE



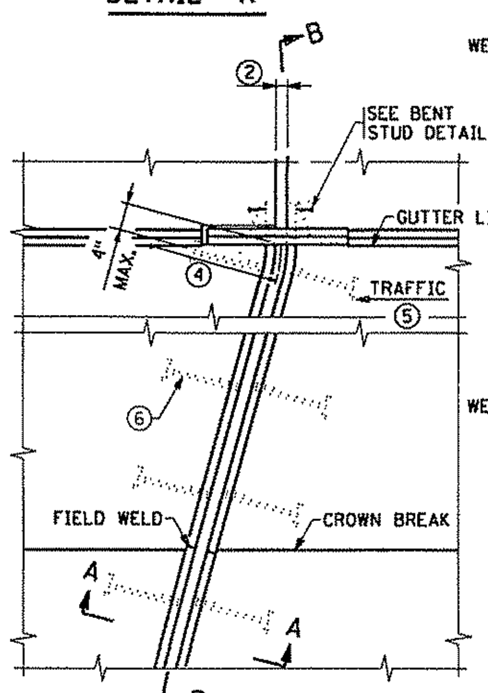
BAR-ROD DETAIL



SECTION C-C

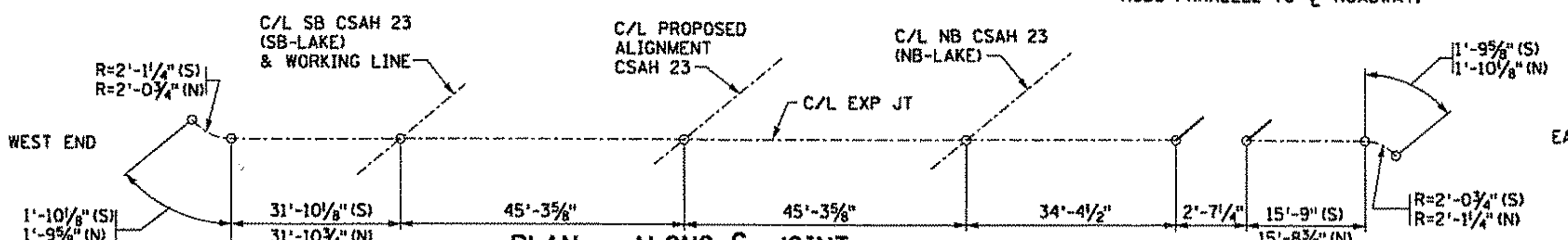


BENT STUD DETAIL

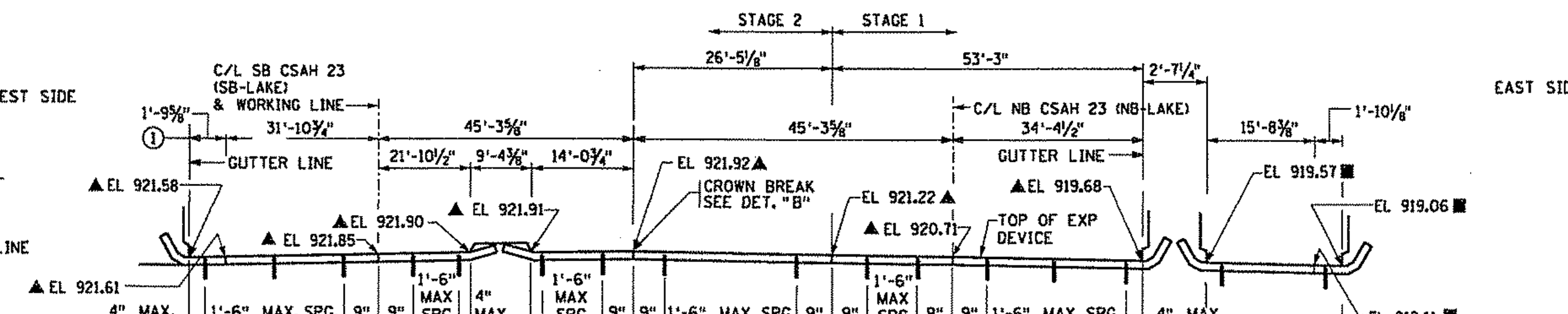


PLAN VIEW @ EXPANSION DEVICE

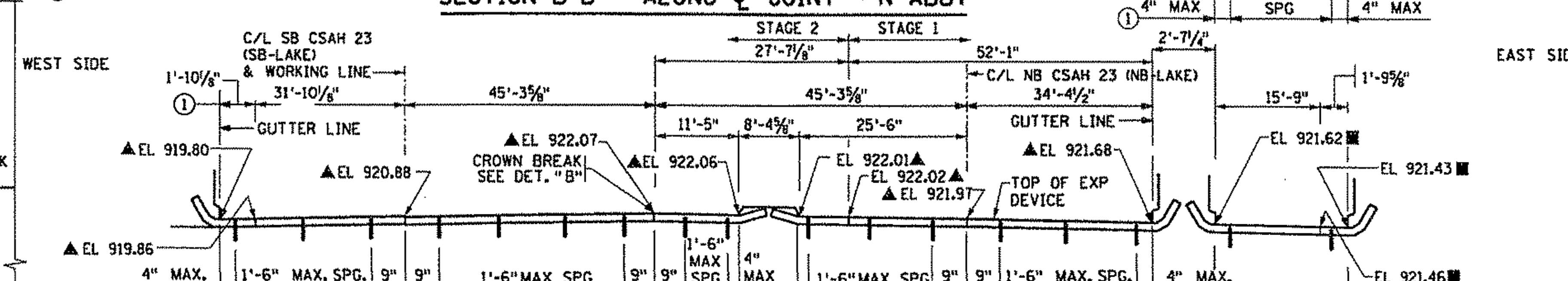
WITH CURVED DEVICE



PLAN ~ ALONG ℄ JOINT



SECTION B-B ~ ALONG ℄ JOINT - N ABUT



SECTION B-B ~ ALONG ℄ JOINT - S ABUT

▲ ELEVATIONS SHOWN ARE 1/8" BELOW TOP OF SLAB @ ℄ JOINT

■ ELEVATIONS SHOWN ARE 1/2" BELOW TOP OF SLAB @ ℄ JOINT

GENERAL NOTES

GALVANIZE STRUCTURAL STEEL AFTER FABRICATION AS PER Mn/DOT SPEC. 3394. GALVANIZE FASTENERS AS PER Mn/DOT 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 Mn/DOT SPEC. 2471.3L.

STRUCTURAL STEEL SHALL COMPLY WITH Mn/DOT SPEC. 3306 OR Mn/DOT SPEC. 3309.

EXPANSION DEVICE SHALL BE STRAIGHTENED TO A TOLERANCE OF 1/8" IN 10 FT.

CAP SCREWS SHALL BE COUNTERSUNK 1/16" BELOW TOP OF PLATE.

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

1. DIMENSIONS ARE ALONG CENTERLINE OF JOINT.
2. 1 1/2" AT 90°F (2" AT 45°F)
3. 1/8" (1/4" MAX.).
   1/2" (5/8" MAX.) WHEN SNOWPLOW FINGERS ARE USED. SNOWPLOW FINGERS ARE REQUIRED FOR SKEWS OVER 15° AND LESS THAN 50°.
4. SEE PLAN ALONG C/L JOINT (THIS SHEET) FOR RADIUS.
5. SEE SHEET NO B1 FOR DIRECTION OF TRAFFIC.
6. PLACE BAR-ROD NORMAL TO JOINT ON NEW BRIDGES AND JOINT REPLACEMENTS. ON JOINT REPLACEMENTS WHEN SKEW IS OVER 15° AND LESS THAN 50° BEND RODS PARALLEL TO ℄ ROADWAY.

MODIFIED

FIG. 5-397.627

REVISION:

APPROVED: SEPTEMBER 26, 2003

STATE BRIDGE ENGINEER

SEH
3535 VADNAIS CENTER DRIVE
ST PAUL, MN 5510
PHONE (651) 490-2000
FAX (651) 490-2150

I hereby certify that this plan, specification, or report 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

Signature: Date: 11/21/2006

Printed Name: CHRISTOPHER A WUNSCH Reg. No. 42058

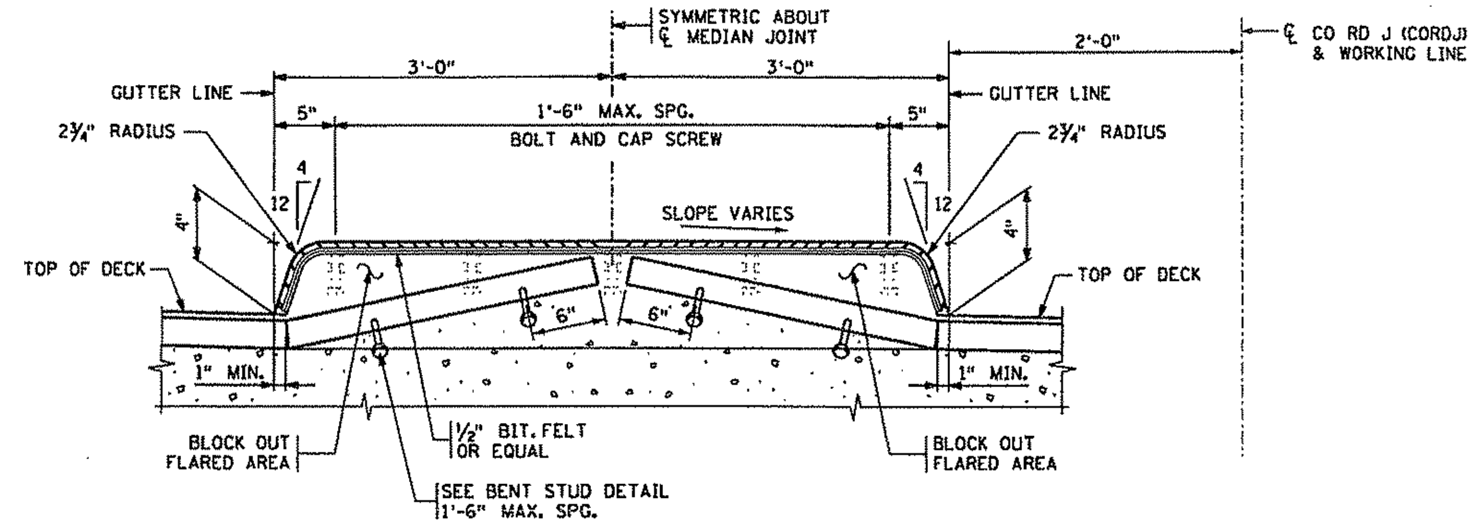
TITLE: WATERPROOF EXPANSION DEVICE (WITH TYPE MOD P-4 BARRIER)

SP 0280-55	SAP 02-623-13	
DES: MAW	DR: MAW	APPROVED:
CHK: CAW	CHK: CAW	

BRIDGE NO 02817

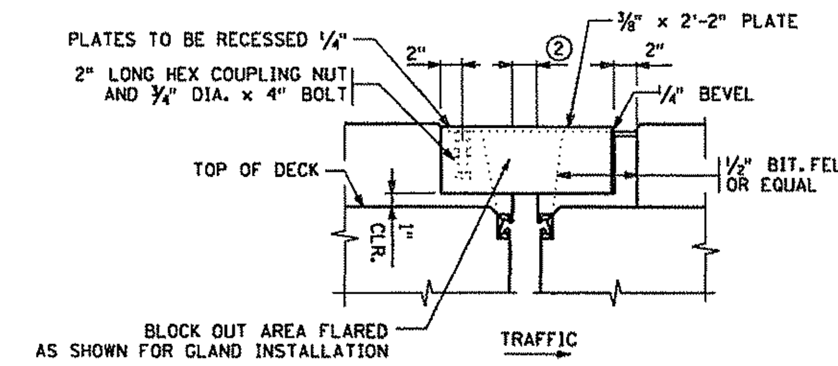
11/21/2006

g:\..\bridge\dgn\cbr02817_627.dgn



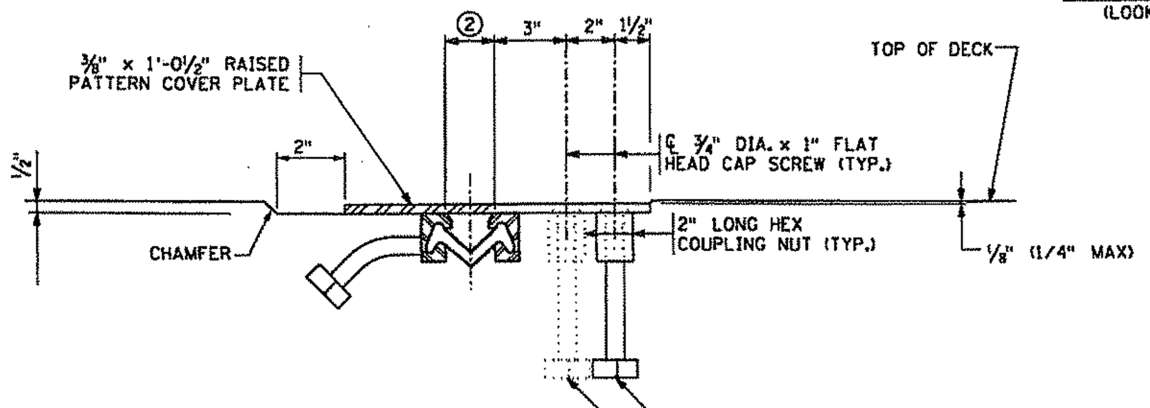
MEDIAN SECTION

(LOOKING EAST)



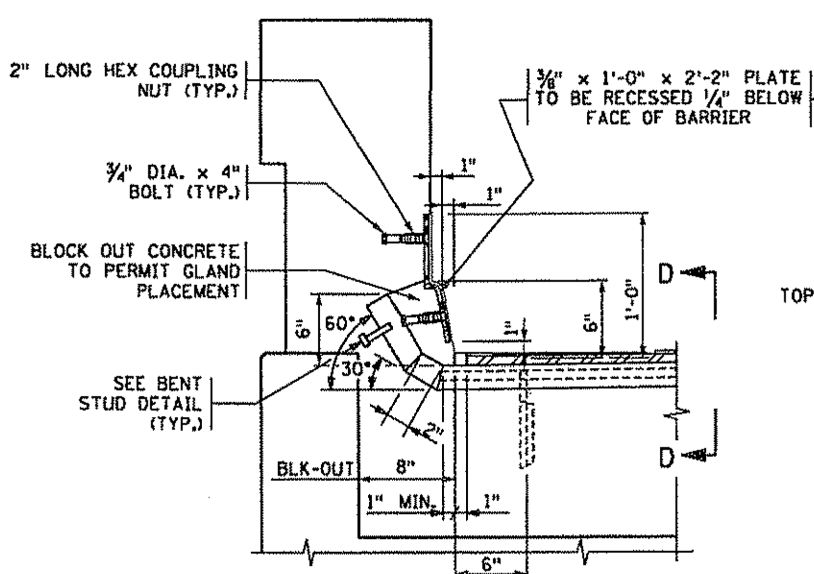
MEDIAN ELEVATION

NORTH PLATES SHOWN
SOUTH PLATES SIMILAR

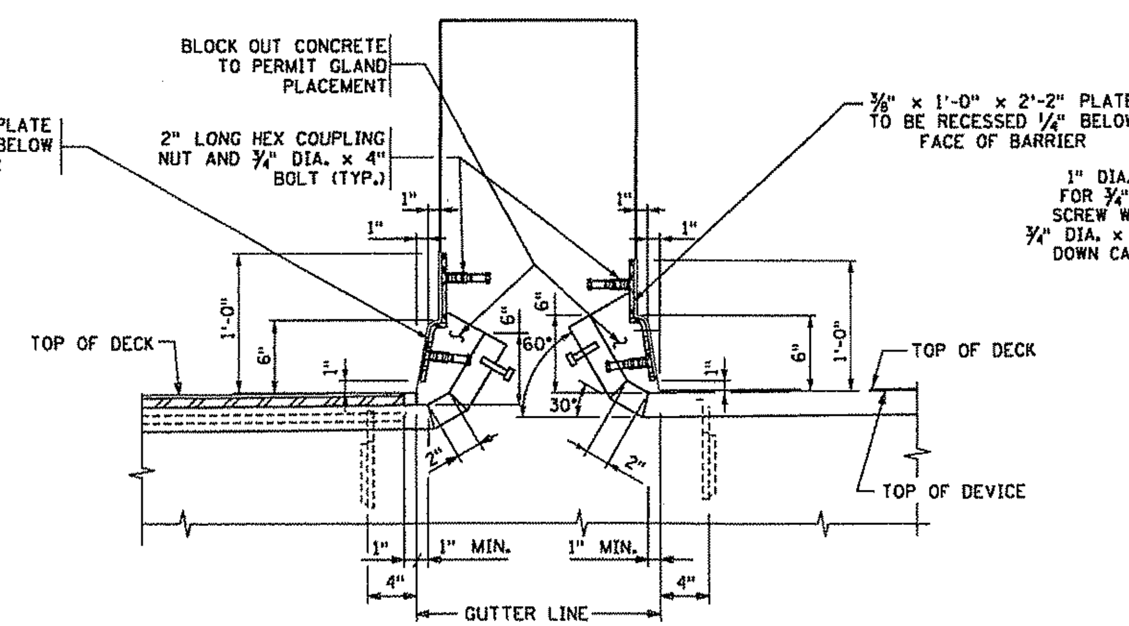


SECTION D-D

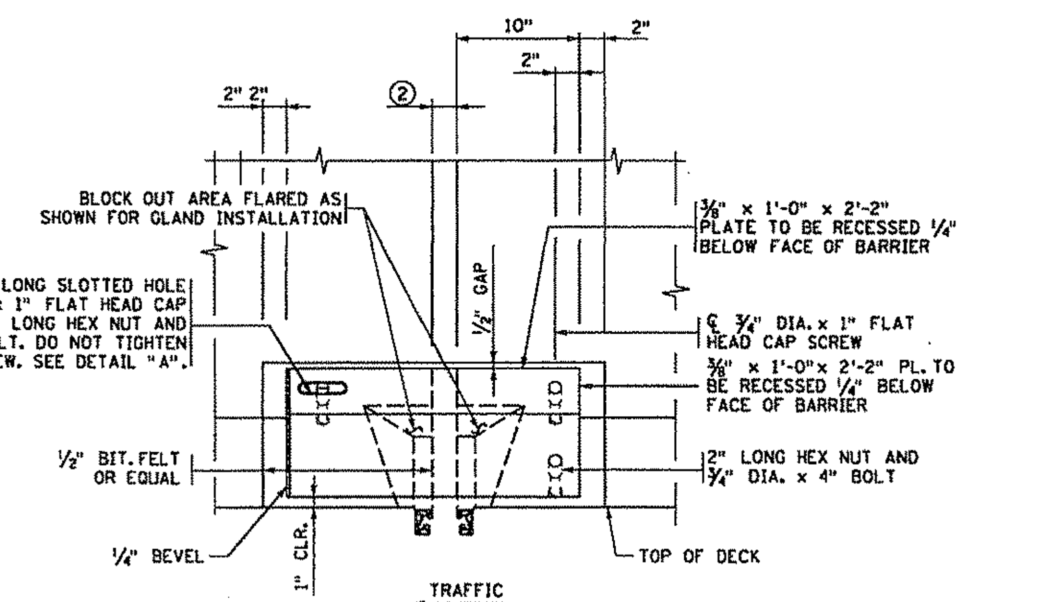
NOTE:
TRANSVERSE DECK REINFORCEMENT MAY BE SHIFTED THE MINIMUM DISTANCE REQUIRED FOR EXPANSION DEVICE PLACEMENT



TYPE MOD P-1 PARAPET RAILING



TYPE MOD P-4 TRAFFIC BARRIER (DBL FACE)



INSIDE ELEVATION

CONCRETE RAILING TYPE P4

GENERAL NOTE

SEE DETAIL 5-397.627 SHEET B69 FOR ADDITIONAL DETAILS AND NOTES.

MODIFIED

FIG. 5-397.630

SECTION THROUGH RAILINGS - INTEGRAL SIDEWALK/PAVING BLOCK

REVISION:

APPROVED: SEPTEMBER 26, 2003

STATE BRIDGE ENGINEER

SEH 3535 VADNAIS CENTER DRIVE ST. PAUL, MN 55110 PHONE (651) 490-2000 FAX (651) 490-2150

I hereby certify that this plan, specification, or report 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

Signature: Date: 11/21/2006
Printed Name: CHRISTOPHER A WUNSCH Reg. No. 42058

TITLE: WATERPROOF EXPANSION DEVICE (WITH RAISED MEDIAN OR SIDEWALK)

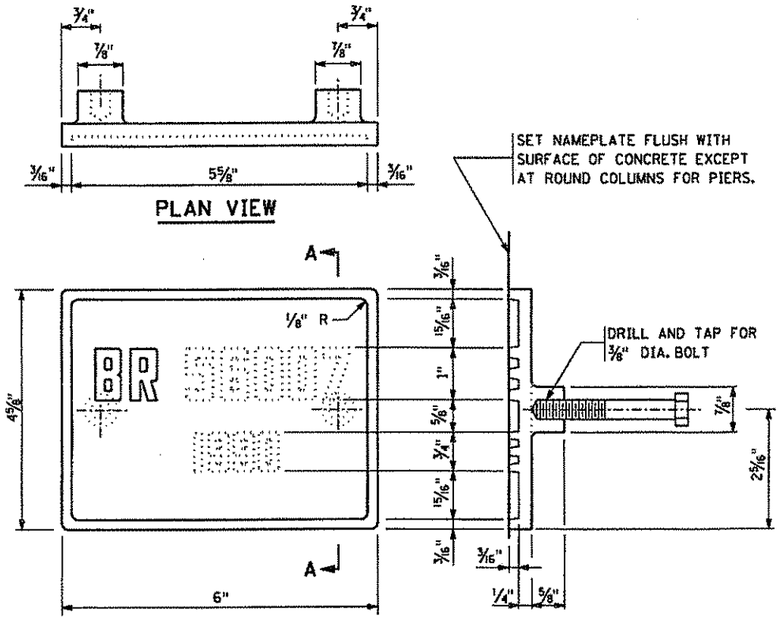
SP 0280-55 SAP 02-623-13

DES: MAW	DR: MAW	APPROVED:
CHK: CAW	CHK: CAW	

SHEET NO B81 OF 95 SHEETS

BRIDGE NO 02817

11/21/2006



PLAN VIEW

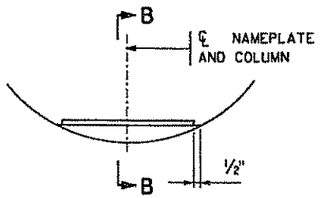
ELEVATION

SECTION A-A

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

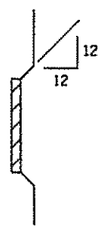
BRIDGE 02817

YEAR 2007



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".

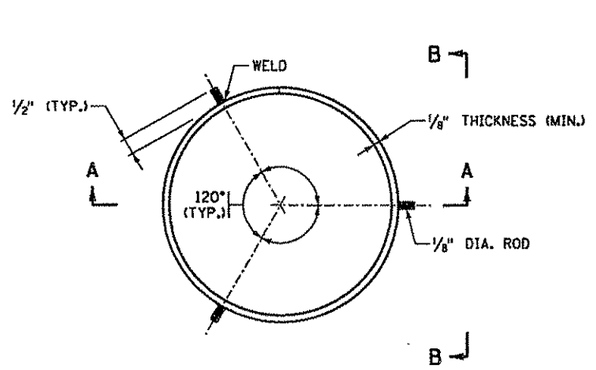
HORIZONTAL SPACING OF LETTERS AND NUMBERS SHALL PRODUCE A BALANCED LAYOUT IN PROPORTION TO SPACING SHOWN.

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 T. Hoogeveen STATE BRIDGE ENGINEER	BRIDGE NAMEPLATE (FOR NEW BRIDGES)		B101

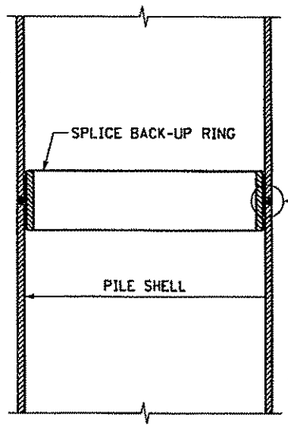


PLAN VIEW SPLICE

PILE NOT SHOWN

SECTION B-B

PILE NOT SHOWN



SECTION A-A

NOTES:

APPROVED COMMERCIAL PILE SPLICE BACK-UP RING MAY BE USED IN LIEU OF THE TYPE DETAILED. BACK-UP RING SHALL HAVE A TIGHT FIT.

WELDING ELECTRODES SHALL BE CELLULOSIC TYPE ELECTRODES E-6010 OR E-6011.

ELECTRODES WHICH HAVE BECOME WET, SOILED OR DAMAGED SHALL NOT BE USED.

WELDING SHALL NOT BE DONE WHEN THE AMBIENT TEMPERATURE IS LOWER THAN 0° F. OR WHEN THE PILE IS WET OR EXPOSED TO FALLING RAIN OR SNOW. WHEN THE PILE METAL TEMPERATURE IS BELOW 32° F., THE PILE METAL IN THE AREA OF THE WELD SHALL BE HEATED TO A MINIMUM TEMPERATURE OF 70° F. AND MAINTAINED AT THIS TEMPERATURE DURING WELDING.

(1) FOR PILE SHELL THICKNESSES GREATER THAN 1/2", USE A B-U4a WELD CONFIGURATION.

APPROVED: NOVEMBER 22, 2002	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION	REVISION	DETAIL NO.
Daniel T. Hoogeveen STATE BRIDGE ENGINEER	PILE SPLICE (CAST-IN-PLACE CONCRETE PILES) SP 0280-55 SAP 02-623-13		B201

3535 VADNAIS CENTER DRIVE
ST PAUL, MN 55110
PHONE (651) 490-2000
FAX (651) 490-2150

I hereby certify that this plan, specification, or report 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

Signature: Date: 11/21/2006

Printed Name: CHRISTOPHER A. WUNSCH Reg. No. 42058

TITLE: B DETAILS

DES: MAW	DR: MAW	APPROVED:
CHK: CAW	CHK: CAW	

SHEET NO B82 OF 95 SHEETS

BRIDGE NO 02817

11/21/2006

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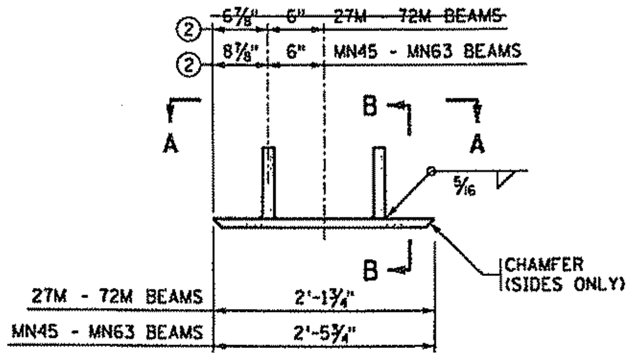
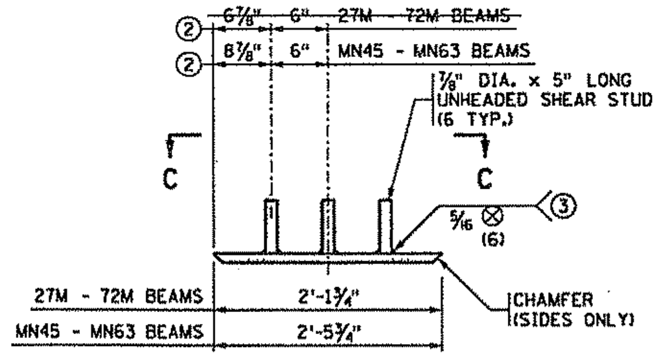
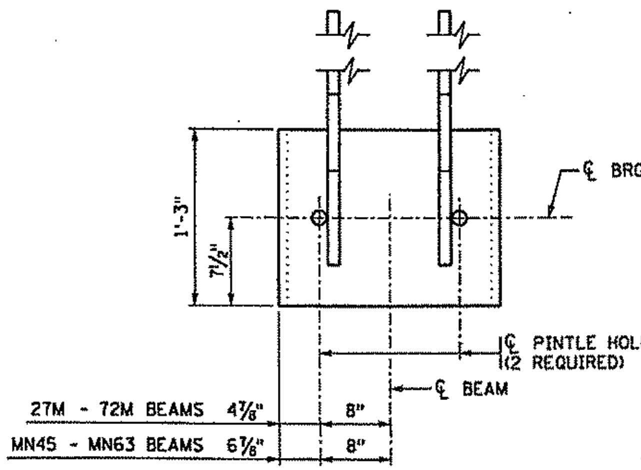


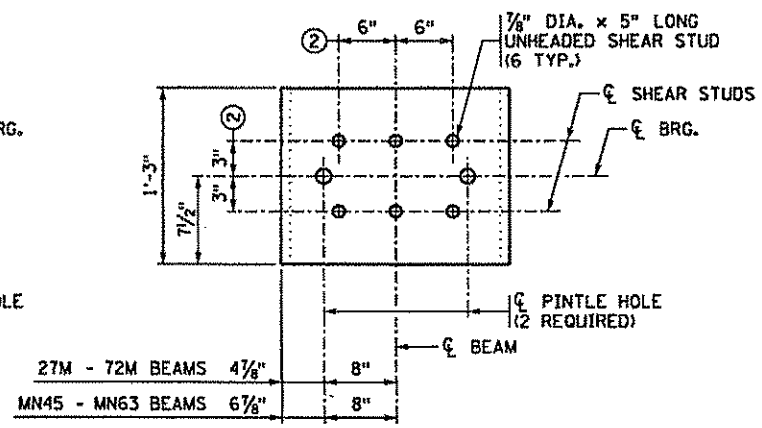
FRONT ELEVATION - OPTION 1



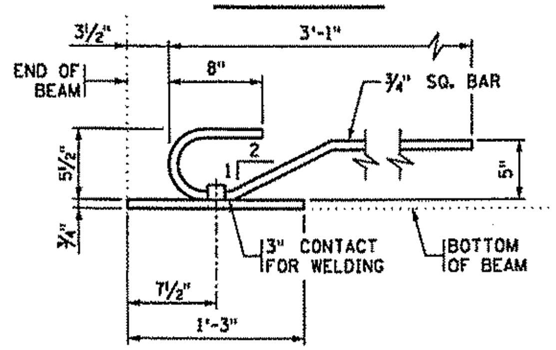
FRONT ELEVATION - OPTION 2



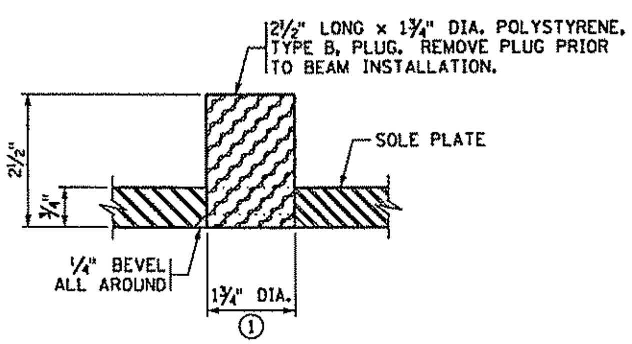
SECTION A-A



SECTION C-C



SECTION B-B



PINTLE HOLE DETAIL

NOTES:

MATERIAL TO BE STRUCTURAL STEEL PER Mn/DOT SPEC. 3306.

WELDED STUDS TO BE WELDABLE CARBON STEEL PER Mn/DOT SPEC. 3391.2D.

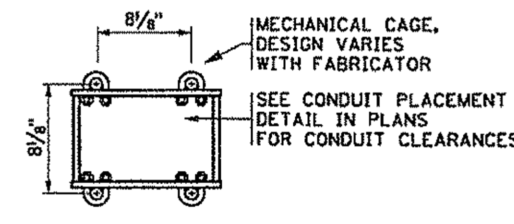
SOLE PLATE FOR BEARING ASSEMBLY TO BE GALVANIZED PER Mn/DOT SPEC. 3394 AFTER FABRICATION.

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

PAYMENT FOR SOLE PLATES ARE INCLUDED IN ITEM "PRESTRESSED CONCRETE BEAMS ".

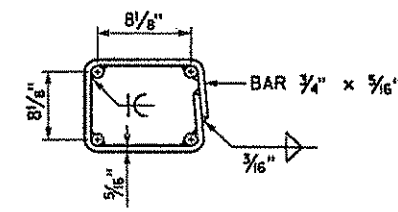
1. FOR 1½" DIA. PINTLES.
2. THESE DIMENSIONS MAY BE MODIFIED TO CLEAR PRESTRESSED STRANDS. HOWEVER, CHANGES MUST BE APPROVED BY THE ENGINEER.
3. THE REQUIREMENTS FOR WELDING STUDS SHALL COMPLY WITH AASHTO/AWS D1.5.

APPROVED: OCTOBER 26, 2005	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION	REVISED	DETAIL NO. MODIFIED
STATE BRIDGE ENGINEER	SOLE PLATE (PRESTRESSED CONCRETE BEAMS) (FOR BEARINGS WITH PINTLES)		B303



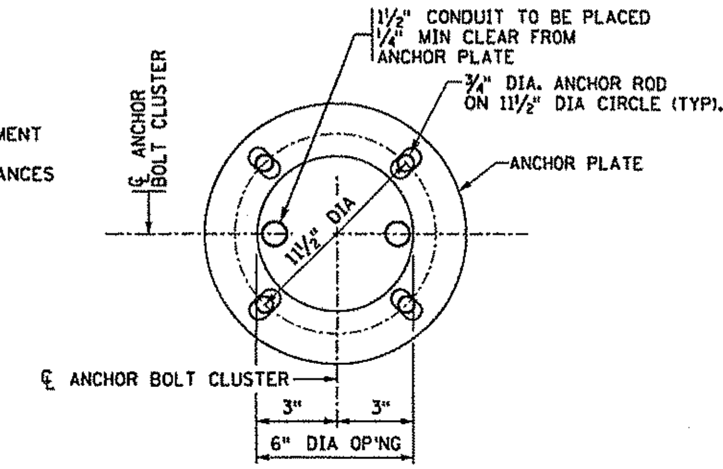
SECTION A-A

ALTERNATE MECHANICAL CAGE



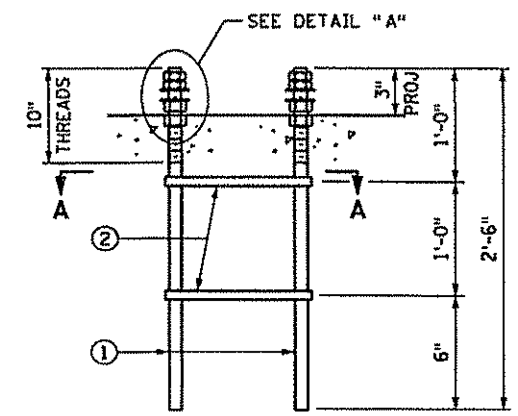
SECTION A-A

ALTERNATE WELDED CAGE

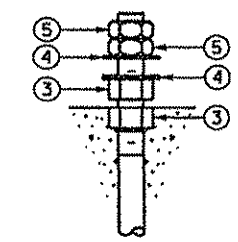


CONDUIT PLACEMENT DETAIL

CONDUIT SYSTEM (LIGHTING)



ELEVATION



DETAIL "A"

NOTES:

ALL RODS ARE TO BE ¾" NOMINAL DIA. WITH 1 - 8UNC - 2A THREADS. HEAVY HEX NUTS, JAM NUTS, AND FLAT WASHERS PER Mn/DOT SPEC. 3391.2A FOR ¾" DIA. THREADED RODS. NUTS TO BE TAPPED 1/64" OVERSIZED PRIOR TO GALVANIZING, AND RETAPPED TO STANDARD SIZE AFTER GALVANIZING.

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

TOP OF THE LOWER NUTS SHALL BE FLUSH WITH TOP OF CONCRETE RAILING.

SUBSTITUTE MATERIALS PER Mn/DOT SPEC. 1605.

1. THREADED RODS, STEEL AS PER Mn/DOT SPEC. 3309, 3310, OR 3385 TYPE B (6 REQUIRED).
2. PROVIDE A MECHANICAL OR WELDED CAGE FOR ROD ALIGNMENT. STEEL AS PER Mn/DOT SPEC. 3306 (2 REQUIRED).
3. HEAVY HEX NUTS FOR ¾" DIA. RODS (12 REQUIRED).
4. FLAT WASHERS FOR ¾" DIA. RODS (12 REQUIRED).
5. JAM NUTS FOR ¾" DIA. RODS (12 REQUIRED).

APPROVED: NOVEMBER 22, 2002	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION	REVISED 10-26-2004 03-02-2005	DETAIL NO.
STATE BRIDGE ENGINEER	ANCHOR BOLT CLUSTER FOR LIGHT POLES		MODIFIED B950

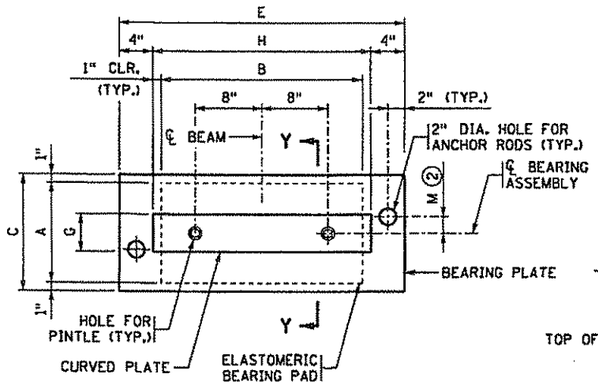
SEH 3535 VADNAIS CENTER DRIVE ST PAUL, MN 55110 PHONE (651) 490-2000 FAX (651) 490-2150

I hereby certify that this plan, specification, or report 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
Signature: Date: 3/5/2007
Printed Name: JEFFREY A. JOHNSON Reg. No. 17280

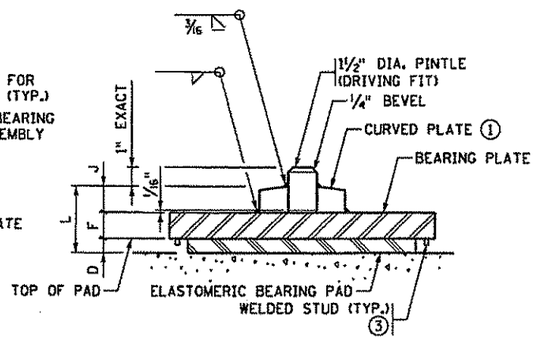
TITLE: B DETAILS

SP 0280-55 SAP 02-623-13

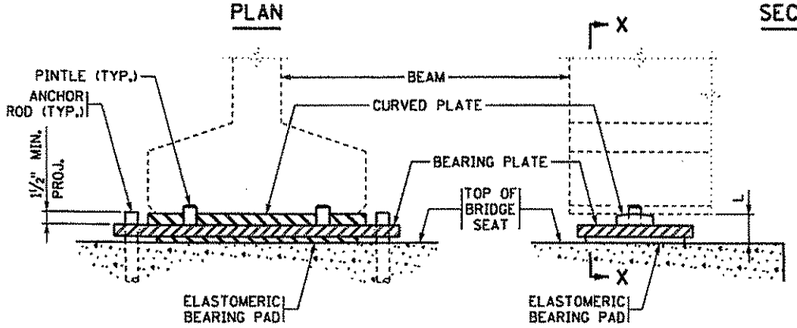
DES: MAW	DR: MAW	APPROVED:	BRIDGE NO
CHK: CAW	CHK: CAW		02817
SHEET NO B83 OF 95 SHEETS			



PLAN



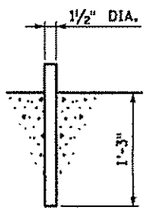
SECTION Y-Y



SECTION X-X

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	ASSY. HEIGHT	CURVED PLATE
			A	B	D		C	E	F	G	H	J	+/- ②	M	L	R ①
F1	PIER	MN63"	12"	24"	½"	8.0	14"	38"	1½"	4½"	26"	1¼"	+	5"	3¼"	19"

NOTES:

ELASTOMERIC MATERIALS AND PAD CONSTRUCTION SHALL COMPLY WITH Mn/DOT SPEC. 3741.

ALL STEEL PLATES SHALL COMPLY WITH Mn/DOT SPEC. 3306.

ANCHOR RODS SHALL COMPLY WITH Mn/DOT SPEC. 3306. GALVANIZE PER Mn/DOT SPEC. 3394.

PINTLES SHALL COMPLY WITH Mn/DOT SPEC. 3309.

GALVANIZE STRUCTURAL STEEL BEARING ASSEMBLY AFTER FABRICATION PER Mn/DOT SPEC. 3394, EXCEPT AS NOTED.

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

① THE MIN. RADIUS OF THE CURVED PLATE IS SHOWN. THE MAX. RADIUS IS 30". 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. x 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: NOVEMBER 22, 2002

Daniel D Morgan

STATE BRIDGE ENGINEER

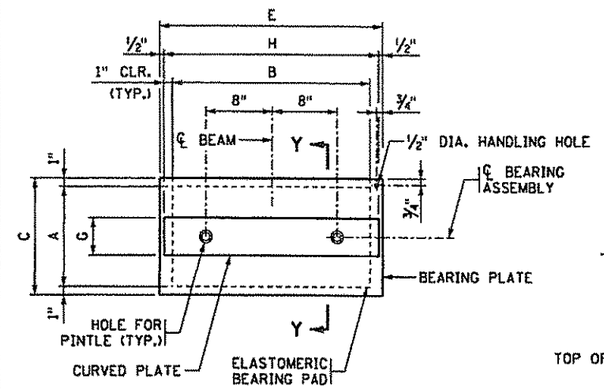
STATE OF MINNESOTA
DEPARTMENT OF TRANSPORTATION

CURVED PLATE BEARING ASSEMBLY

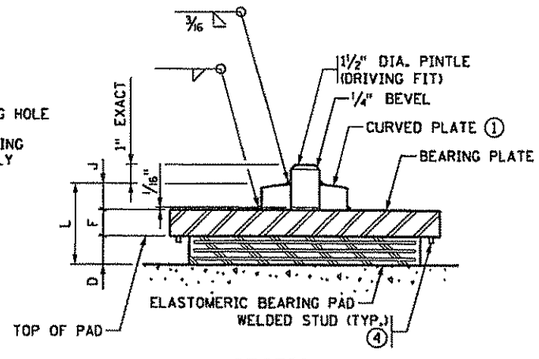
(PRESTRESSED CONCRETE BEAMS)
(FIXED)

REVISED 04-20-2004 12-01-2004

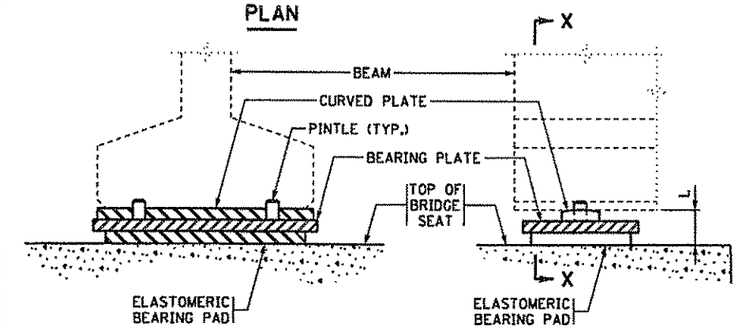
DETAIL NO. B310



PLAN

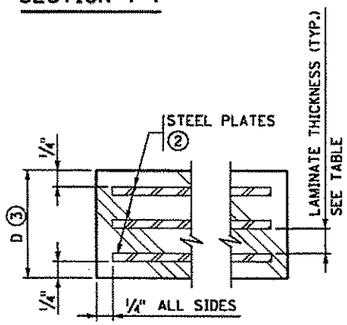


SECTION Y-Y



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	ABUTS	MN63"	12"	24"	2½"	4	⅛"	3	½"	8.0	14"	27"	1½"	4½"	26"	1¼"	5¼"	19"
E2	PIER	MN63"	12"	24"	½"	-	-	-	-	8.0	14"	27"	1½"	4½"	26"	1¼"	3¼"	19"

NOTES:

ELASTOMERIC MATERIALS AND PAD CONSTRUCTION SHALL COMPLY WITH Mn/DOT SPEC. 3741.

ALL STEEL PLATES SHALL COMPLY WITH Mn/DOT SPEC. 3306.

PINTLES SHALL COMPLY WITH Mn/DOT SPEC. 3309.

GALVANIZE STRUCTURAL STEEL BEARING ASSEMBLY AFTER FABRICATION PER Mn/DOT SPEC. 3394, EXCEPT AS NOTED.

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

① THE MIN. RADIUS OF THE CURVED PLATE IS SHOWN. THE MAX. RADIUS IS 30". 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. x 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: NOVEMBER 22, 2002

Daniel D Morgan

STATE BRIDGE ENGINEER

STATE OF MINNESOTA
DEPARTMENT OF TRANSPORTATION

CURVED PLATE BEARING ASSEMBLY

(PRESTRESSED CONCRETE BEAMS)
(EXPANSION)

SP 0280-55 SAP 02-623-13

REVISED 04-20-2004

DETAIL NO. B311

SEH
3535 VADNAIS CENTER DRIVE
ST PAUL, MN 55110
PHONE (651) 490-2000
FAX (651) 490-2150

I hereby certify that this plan, specification, or report 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

Signature: [signature] Date: 11/21/2006

Printed Name: CHRISTOPHER A WUNSCH Reg. No. 42058

TITLE: B DETAILS

DES: CAW	DR: MAW	APPROVED:
CHK: JDS	CHK: CAW	

SHEET NO B84 OF 95 SHEETS

BRIDGE NO 02817

11/21/2006

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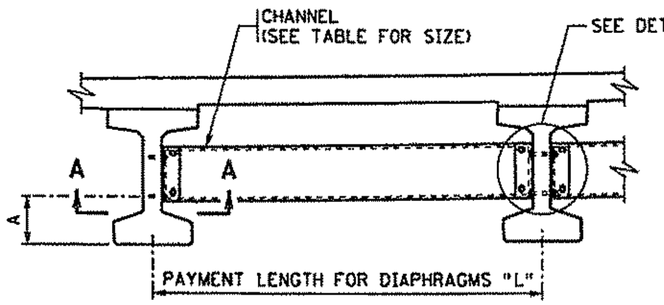
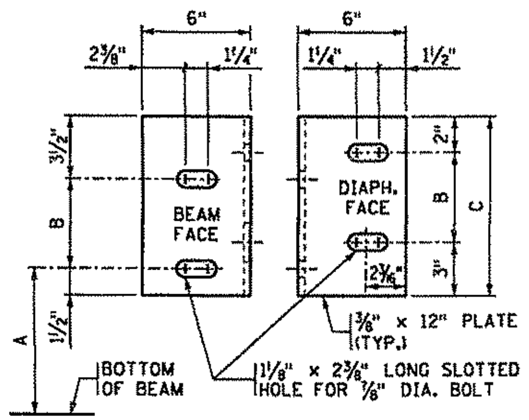
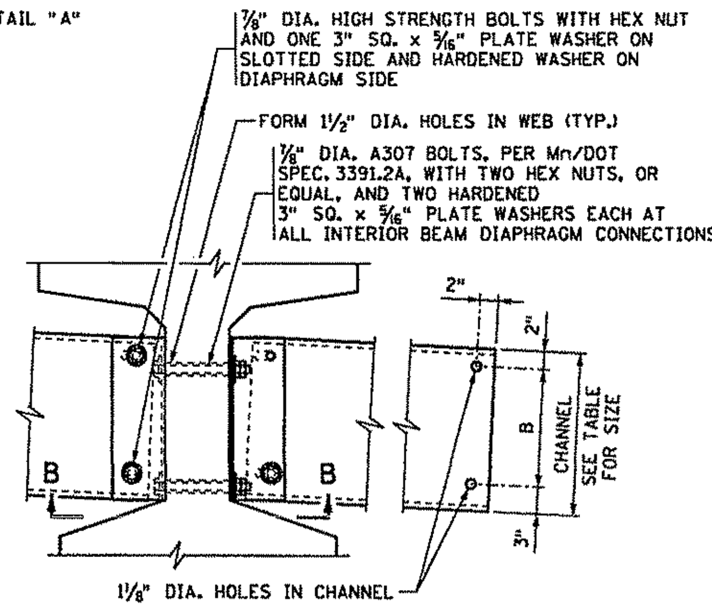


PART TRANSVERSE SECTION AT DIAPHRAGM



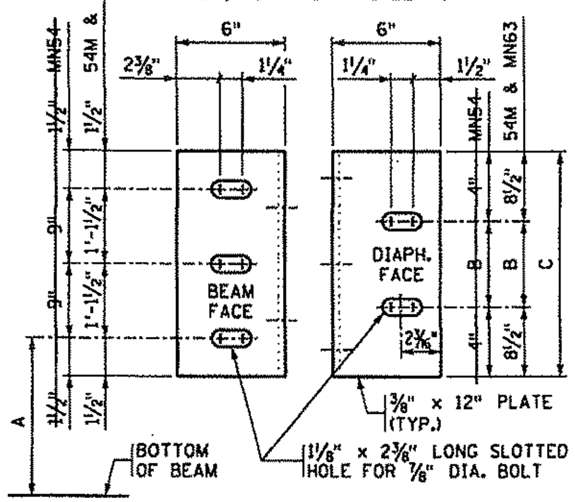
DIAPHRAGM CONNECTION

FOR 36M, 45M AND MN45 BEAMS



DETAIL "A"

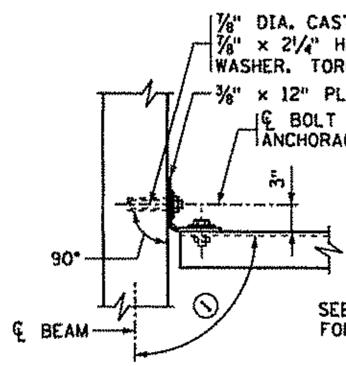
INTERIOR BEAM WITH CONTINUOUS LINE OF DIAPHRAGMS



DIAPHRAGM CONNECTION

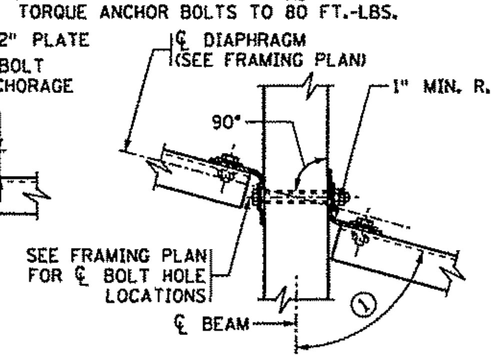
FOR 54M, MN54 AND MN63 BEAMS

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



SECTION A-A

TYPICAL SECTION AT ALL FASCIA BEAMS



SECTION B-B

TYPICAL SECTION AT INTERIOR BEAM WITH CONTINUOUS OR STAGGERED INTERMEDIATE DIAPHRAGMS

INTERMEDIATE DIAPHRAGM DATA		
MARK	NO	LENGTH "L"
D4	38	6'-11"
D5	56	7'-2"
D6	6	6'-5"

NOTES:

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

SEE Mn/DOT SPEC. 2405.3M FOR INSTALLATION.

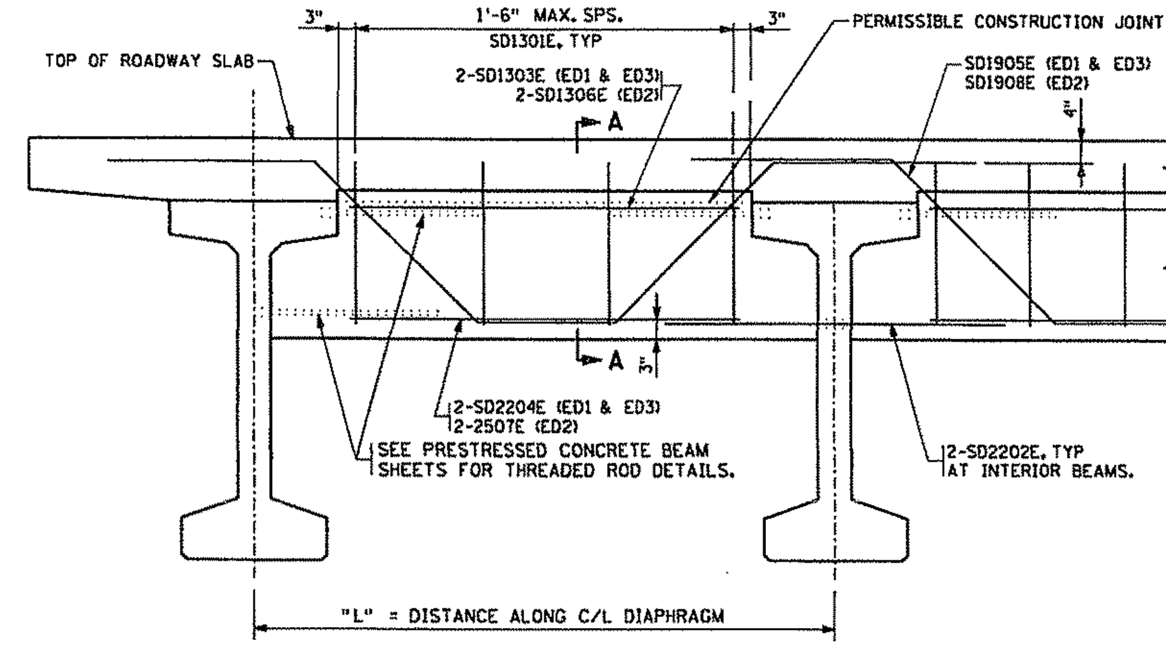
THE LEG OF THE 12" PLATE SHALL BE SHOP BENT TO CONFORM TO THE DIAPHRAGM. A 3/8 " x 6" x 6" ANGLE MAY BE USED FOR DIAPHRAGMS PERPENDICULAR TO BEAMS.

ALL STRUCTURAL STEEL SHOWN ON THIS DETAIL, INCLUDING BOLTS AND WASHERS, SHALL BE INCLUDED IN THE PAYMENT 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.

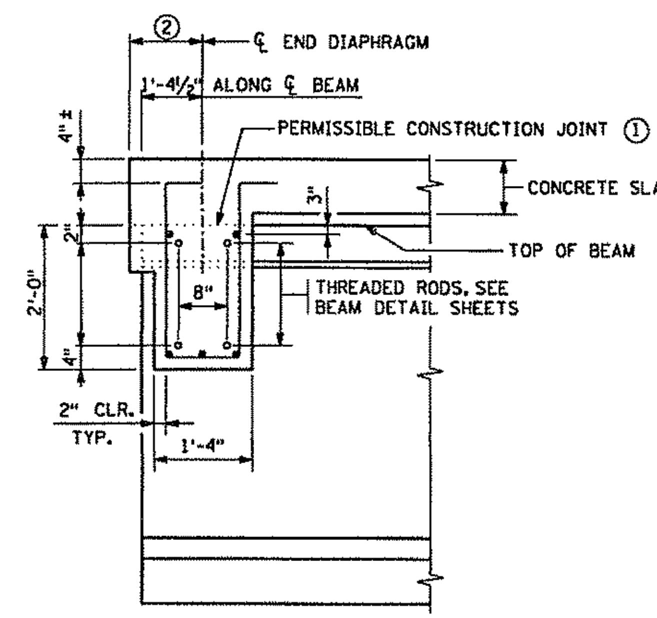
① FOR SKEW ANGLES UNDER 20°, USE 90° LESS THE SKEW ANGLE. FOR SKEW ANGLES OVER 20°, USE 90°.

APPROVED: OCTOBER 26, 2005 STATE BRIDGE ENGINEER	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION **STEEL INTERMEDIATE DIAPHRAGM** (FOR 36M - 54M, MN45 - MN63 PRESTRESSED CONCRETE BEAMS)	REVISED	DETAIL NO. MODIFIED B403



PART TRANSVERSE SECTION

LONGITUDINAL REINFORCEMENT IN BOTTOM OF DIAPHRAGM				
DISTANCE "L" ALONG ℄ OF DIAPHRAGM	BARS REQUIRED			
	STRAIGHT		BENT	
	NO.	SIZE	NO.	SIZE
~~UP TO 8'~~	~~2~~	~~19E~~	~~1~~	~~16E~~
OVER 8' TO 11'	2	22E	1	19E
OVER 11' TO 13'	2	25E	1	25E
~~OVER 13' TO 15'~~	~~2~~	~~29E~~	~~1~~	~~32E~~
~~OVER 15' TO 18'~~	~~2~~	~~36E~~	~~1~~	~~36E~~



SECTION A-A

END DIAPHRAGM DATA		
MARK	NO	LENGTH "L"
ED1	12	10'-9⅝"
ED2	18	11'-2⅜"
ED3	2	10'-0¼"

NOTES:

DIAPHRAGM CONCRETE TO BE MIX NO. 3Y43.

ALL DIAPHRAGM CONCRETE AND REINFORCEMENT BARS SHOWN ON THIS DETAIL TO BE INCLUDED IN PAYMENT FOR SUPERSTRUCTURE QUANTITIES.

THREADED RODS ARE INCLUDED IN PAYMENT FOR PRESTRESSED CONCRETE BEAMS MN63.

① USE OF CONSTRUCTION JOINT REQUIRES CLEARANCE FOR EXPANSION DEVICE. WHEN CONSTRUCTION JOINT IS USED AT THIS LOCATION, DIAPHRAGM FALSEWORK SHALL REMAIN IN PLACE UNTIL COMPLETION OF SLAB CURING PERIOD.

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

APPROVED: NOVEMBER 22, 2002 STATE BRIDGE ENGINEER	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION **CONCRETE END DIAPHRAGM** (MN63 PRESTRESSED CONCRETE BEAMS) (PARAPET ABUTMENT)	REVISION	DETAIL NO. MODIFIED B814

SP 0280-55 SAP 02-623-13

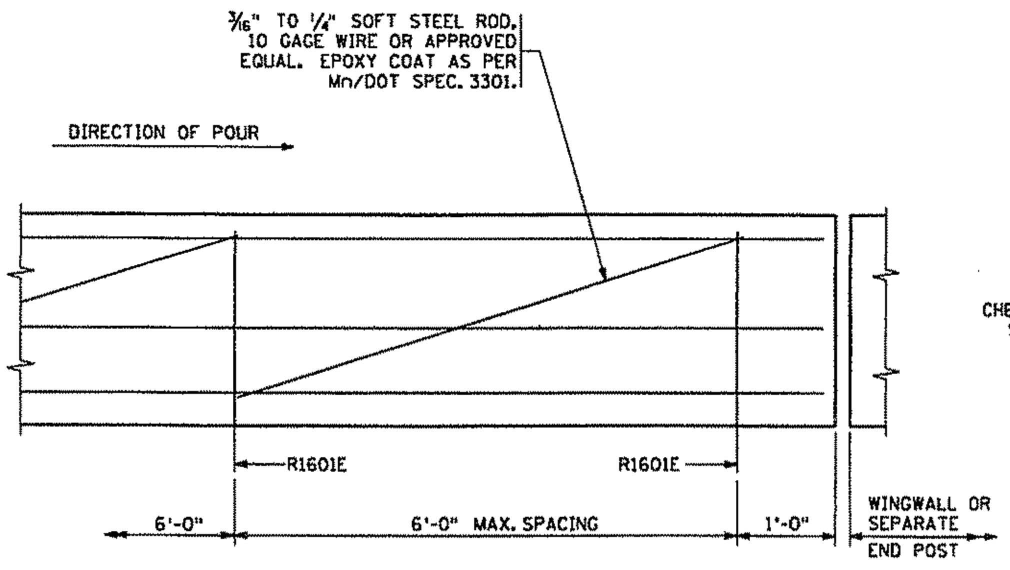
SEH 3535 VADNAIS CENTER DRIVE ST. PAUL, MN 55110 PHONE (651) 490-2000 FAX (651) 490-2150

I hereby certify that this plan, specification, or report 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
Signature: Date: 11/21/2006
Printed Name: CHRISTOPHER A. WUNSCH Reg. No. 42058

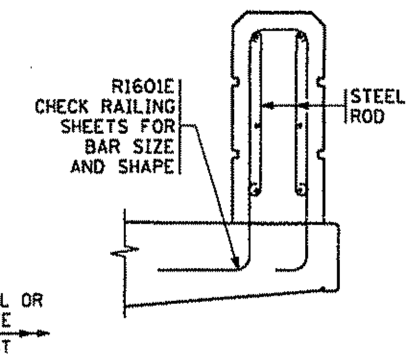
TITLE: B DETAILS

DES: MAW DR: MAW APPROVED:
CHK: CAW CHK: CAW

BRIDGE NO 02817

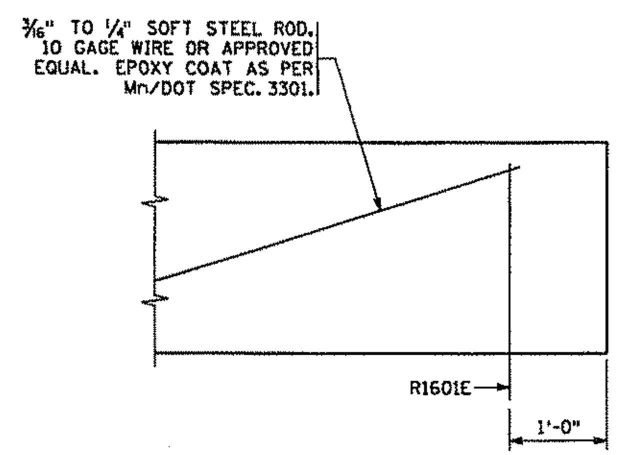


INSIDE ELEVATION OF RAILING



RAILING SECTION

FENCE NOT SHOWN



INSIDE ELEVATION OF RAILING

AT END OF WINGWALL

NOTES:

CONTRACTOR WILL TOOL V-GROOVE AT DEFLECTION JOINTS AT TIME RAIL IS CAST AND SHALL EXTEND V-GROOVE AROUND ENTIRE PERIMETER OF RAIL.

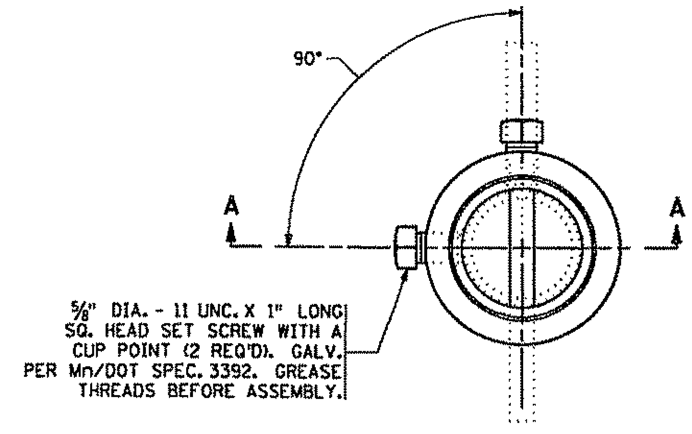
FOR ADDITIONAL DIMENSIONS, DETAILS, REINFORCEMENT AND NOTES SEE RAILING SHEET.

FORM RAIL FOR A MINIMUM OF 2' ON EACH SIDE OF EXPANSION DEVICES, LIGHT STANDARDS AND DECK DRAIN BOX OUTS.

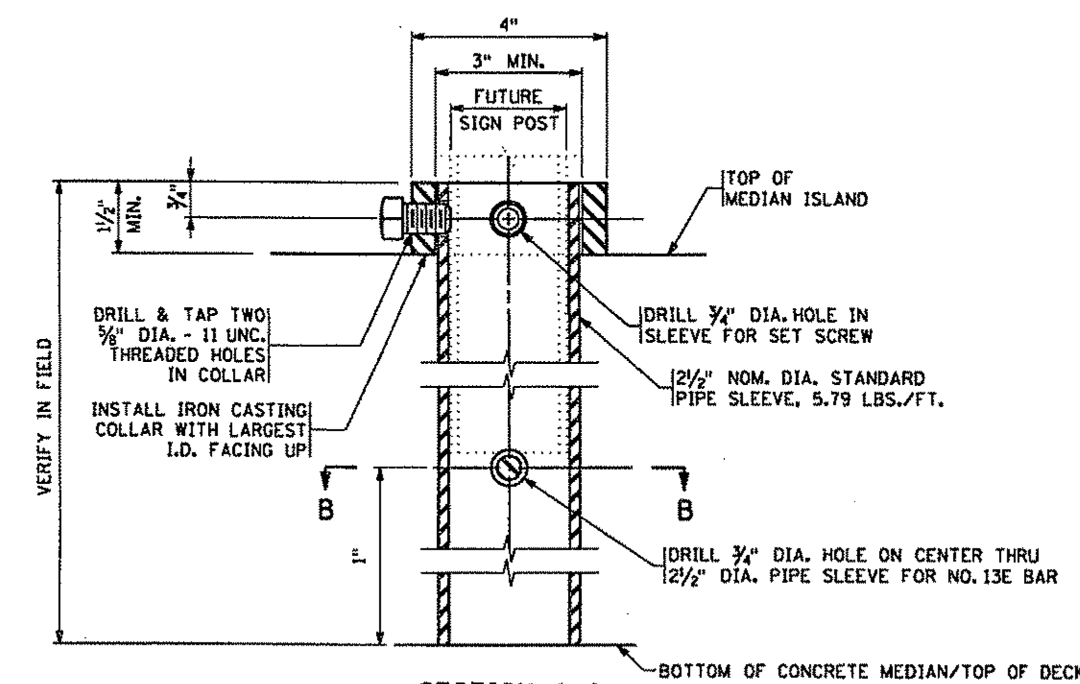
PAY QUANTITIES WILL NOT BE ADJUSTED AS A RESULT OF SELECTING THIS ALTERNATE.

USE A SIMILAR METHOD FOR TALLER RAILINGS OR MODIFIED VERSIONS OF THIS RAILING.

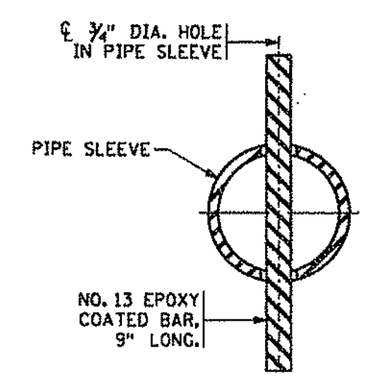
APPROVED: NOVEMBER 22, 2002	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION	REVISION	DETAIL NO.
STATE BRIDGE ENGINEER	CONCRETE PARAPET RAILING (SLIPFORM ALTERNATE)		B831



PLAN VIEW



SECTION A-A



SECTION B-B

NOTES:

GALVANIZE SIGN ANCHOR AFTER FABRICATION AS PER Mn/DOT SPEC. 3394

STRUCTURAL STEEL PIPE AS PER Mn/DOT SPEC. 3406, EXCEPT AS NOTED.

GRAY IRON CASTING, CLASS 25 A, AS PER AASHTO M 105. PROVIDE DRAFT ANGLES (3° MAXIMUM) AS NEEDED.

APPROVED: NOVEMBER 22, 2002	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION	REVISION	DETAIL NO.
STATE BRIDGE ENGINEER	MEDIAN SIGN POST ANCHOR		MODIFIED B901

SP 0280-55 SAP 02-623-13

SEH 3535 VADNAIS CENTER DRIVE ST PAUL, MN 55110 PHONE (651) 490-2000 FAX (651) 490-2150

I hereby certify that this plan, specification, or report 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

Signature: Date: 11/21/2006

Printed Name: CHRISTOPHER A WUNSCH Reg. No. 42058

TITLE: B DETAILS

DES: MAW	DR: MAW	APPROVED:	BRIDGE NO
CHK: CAW	CHK: CAW		02817

SHEET NO B86 OF 95 SHEETS

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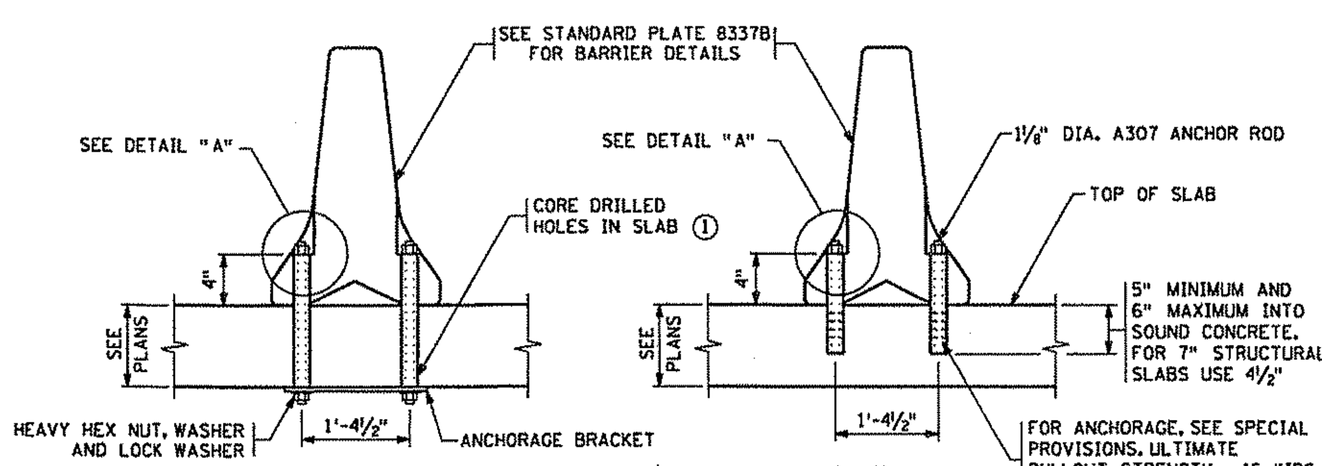


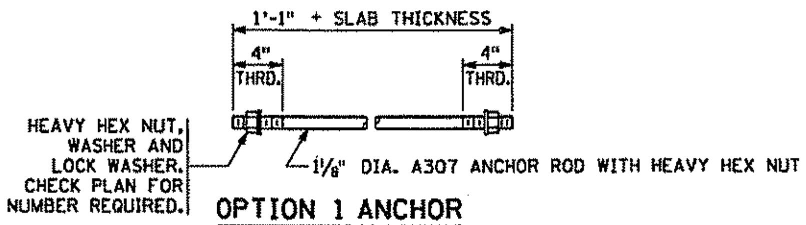
OPTION 1

DO NOT USE ON NEW DECK

OPTION 2

ANCHORAGE DETAILS

REINFORCEMENT NOT SHOWN



OPTION 1 ANCHOR

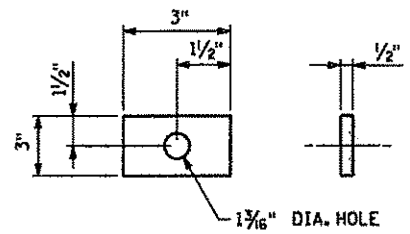
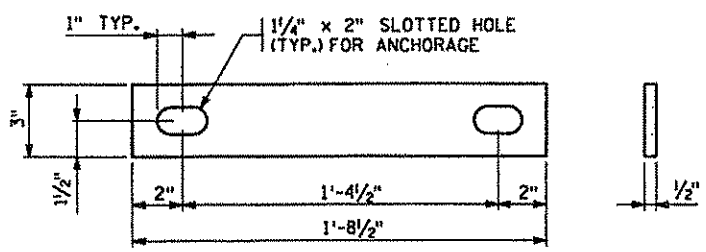
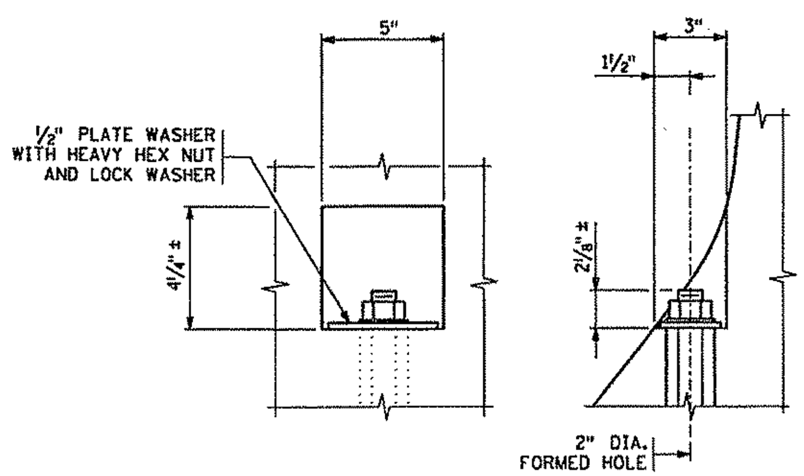


PLATE WASHER



ANCHORAGE BRACKET FOR OPTION 1



SIDE VIEW **DETAIL "A"**

NOTES:

ALL EXPOSED HARDWARE IS TO BE GALVANIZED AS PER Mn/DOT SPEC. 3392.

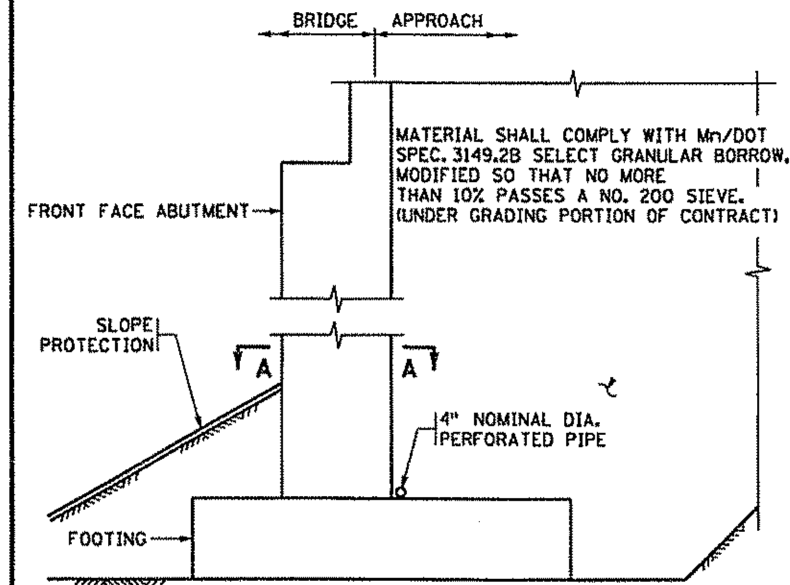
ALL STRUCTURAL STEEL IS TO BE Mn/DOT SPEC. 3306 UNLESS OTHERWISE NOTED.

COST OF ANCHORAGES IS INCIDENTAL TO THE COST OF PLACING THE PORTABLE PRECAST BARRIER.

FILL ANCHORAGE HOLES WITH AN APPROVED EPOXY GROUT AFTER THE PORTABLE BARRIERS ARE REMOVED.

① PERCUSSION DRILLING OF THESE HOLES IS NOT PERMITTED.

APPROVED: NOVEMBER 22, 2002 [signature] STATE BRIDGE ENGINEER	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION PORTABLE PRECAST BARRIER ANCHORAGE (TEMPORARY USAGE IN LIMITED BARRIER DISPLACEMENT AREAS)	REVISED 07-29-2003	DETAIL NO. MODIFIED B920



SECTION THROUGH ABUTMENT

SUMMARY OF QUANTITIES FOR DRAINAGE SYSTEM

	4" DIA PERFORATED PIPE	532	LIN FT
	4" DIA NON-PERFORATED PIPE	80	LIN FT
	4" DIA ELBOW	4	EACH
	4" DIA END CAP	8	EACH
	4" DIA COUPLING	2	EACH
	PIPE SLEEVE	4	EACH
①	PRECAST CONCRETE HEADWALL	4	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)".

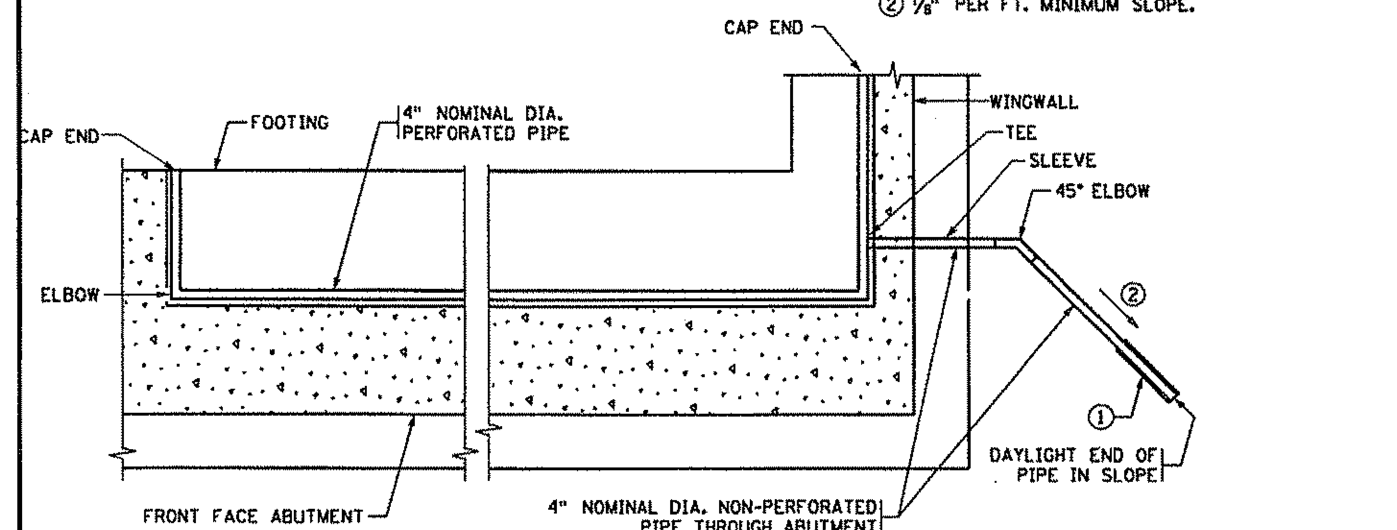
NOTES:

ALL PIPE SHALL BE AS PER Mn/DOT SPEC. 3245.

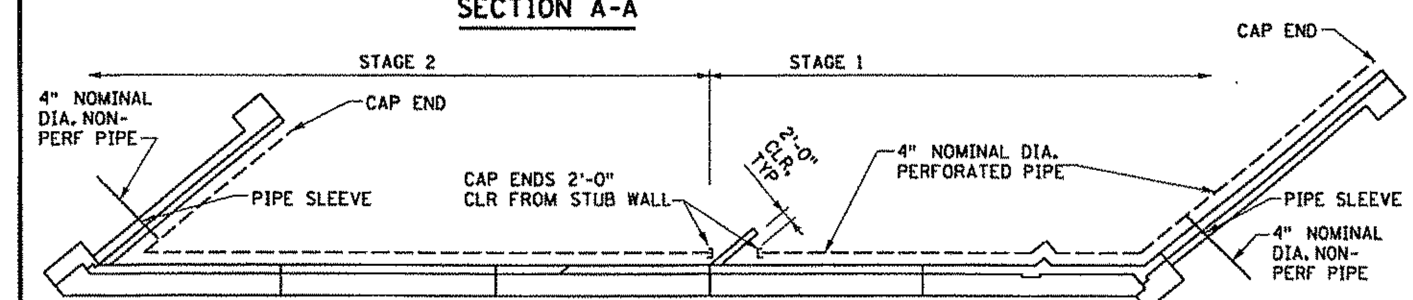
WRAP PERFORATED PIPE WITH GEOTEXTILE AS PER Mn/DOT SPEC. 3733, TYPE 1. ATTACH TO PIPE AS PER Mn/DOT SPEC. 2502.

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

② ⅛" PER FT. MINIMUM SLOPE.



SECTION A-A



ABUTMENT SCHEMATIC

NORTH ABUTMENT SHOWN

APPROVED: NOVEMBER 22, 2002 [signature] STATE BRIDGE ENGINEER	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION DRAINAGE SYSTEM (FOR HIGH ABUTMENTS)	REVISED 04-20-2004	DETAIL NO. MODIFIED B910

SP 0280-55 SAP 02-623-13

SEH 3535 VADNAIS CENTER DRIVE ST PAUL, MN 55110 PHONE (651) 490-2000 FAX (651) 490-2150

I hereby certify that this plan, specification, or report 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
Signature: [signature] Date: 01/08/2007
Printed Name: JOHN D STEENBERG Reg. No. 13865

TITLE: B DETAILS	DES: MAW	DR: MAW	APPROVED:	BRIDGE NO 02817
	CHK: CAW	CHK: CAW		
	SHEET NO B87 OF 95 SHEETS			

01/08/2007
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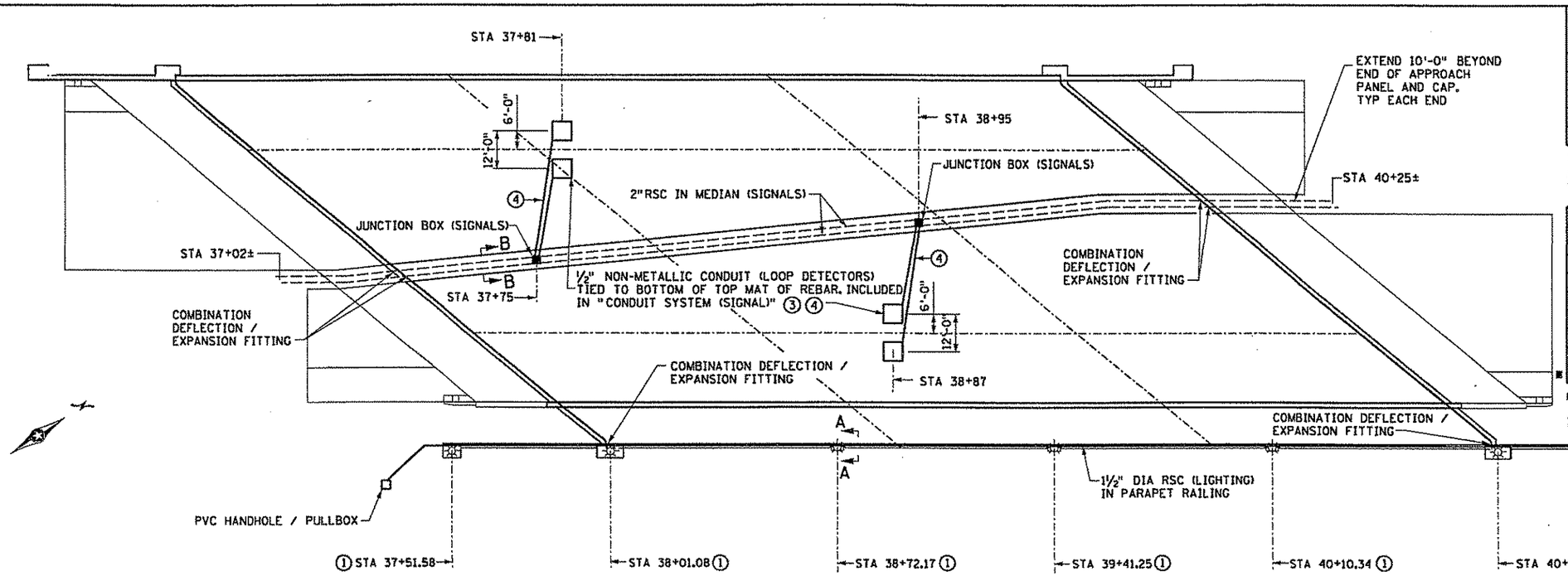


SUMMARY OF QUANTITIES FOR CONDUIT SYSTEM (LIGHTING)

LIGHT POLE ANCHORAGE	7	EACH
1½" DIA RSC	545	LIN. FT.
1½" DIA RSC END CAP	2	EACH
COMBINATION DEFLECTION/EXPANSION FITTING	2	EACH
PVC HANDHOLE / PULLBOX (STD PLATE 8114)	2	EACH

SYSTEM TO BE GROUNDED.

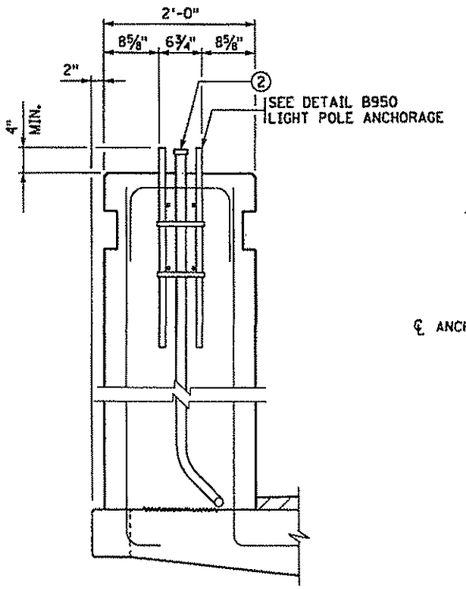
ALL MATERIAL LISTED ABOVE IS INCLUDED IN PRICE BID FOR "CONDUIT SYSTEM (LIGHTING)"

SUMMARY OF QUANTITIES FOR CONDUIT SYSTEM (SIGNALS)

½" DIA NMC	70	LIN FT
½" DIA NMC END CAP	3	EACH
2" DIA RSC	650	LIN FT
2" DIA RSC END CAP	4	EACH
COMBINATION DEFLECTION/EXPANSION FITTING	4	EACH
8"x8"x6" RS JUNCTION BOX W/ COVER PLATE	2	EACH
LOOP DETECTORS 6x6	4	EACH

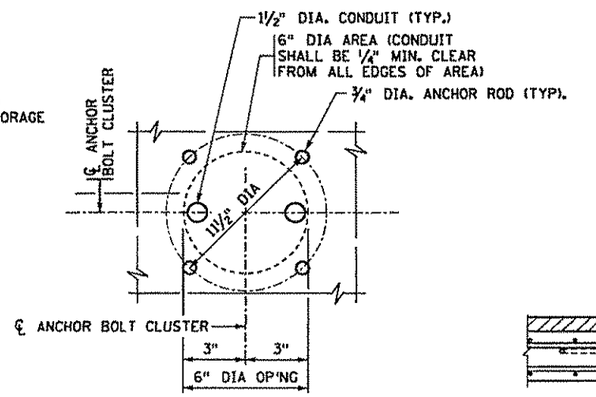
* INCLUDES LOOP WIRES AND WIRES FROM LOOPS TO JUNCTION BOX.

ALL MATERIAL LISTED ABOVE IS INCLUDED IN PRICE BID FOR "CONDUIT SYSTEM (SIGNALS)"



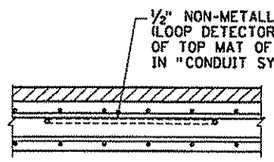
SECTION A-A

CONDUIT SYSTEM (LIGHTING)



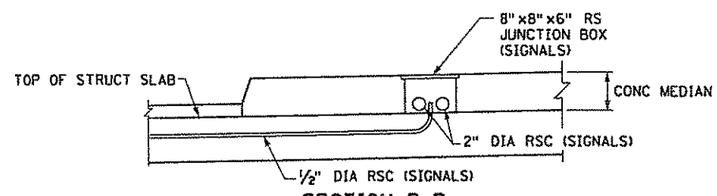
CONDUIT PLACEMENT DETAIL

CONDUIT SYSTEM (LIGHTING)



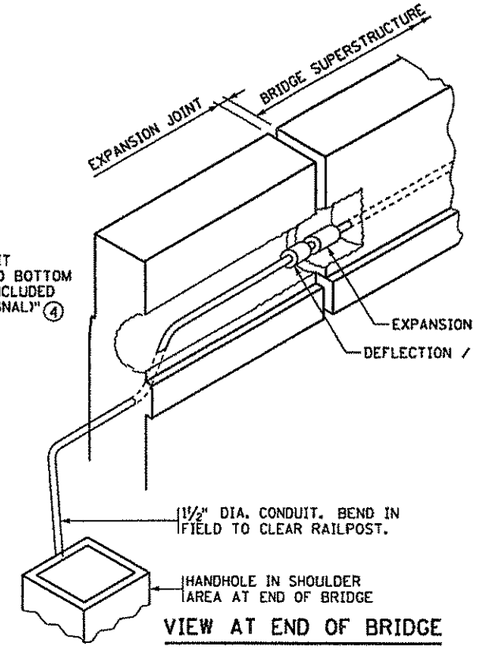
LOOP DETECTOR

INCLUDED UNDER "TRAFFIC SIGNAL SYSTEMS" SEE SIGNAL SYSTEM SHEETS



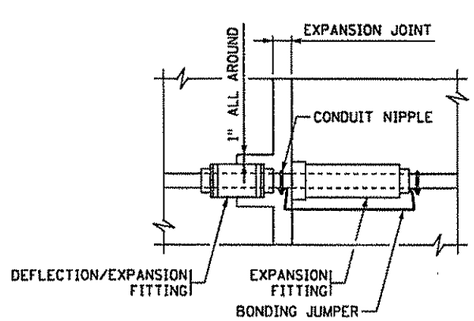
SECTION B-B

CONDUIT SYSTEM (SIGNALS)



VIEW AT END OF BRIDGE

APPROACH SLAB NOT SHOWN



COMBINATION DEFLECTION/EXPANSION FITTING

GENERAL NOTES

① C/L LIGHT STANDARD.

② EXTEND CONDUIT 3" ABOVE CONCRETE AND CAP.

③ SEE TRAFFIC SIGNAL PLANS FOR ADDIONAL LOOP INFORMATION.

④ ½" NON-METALLIC CONDUIT (LOOP DETECTORS) TIED TO BOTTOM OF TOP MAT OF REBAR (OR SO CONFIGURED AS TO BE A MIN OF 1" CLR FROM THE TOP OF THE STRUCTRAL DECK). INCLUDED IN "CONDUIT SYSTEM (SIGNAL)". COORDINATE W/ TRAFFIC SIGNAL PLANS. ALL WIRING ASSOCIATED W/ LOOP DETECTORS FROM THE LOOPS TO THE JUNCTION BOX IN THE MEDIAN TO BE INSTALLED UNDER BRIDGE CONTRACT.

RS = RIGID STEEL
RSC = RIGID STEEL CONDUIT
NMC = NON-METALLIC CONDUIT

MODIFIED

FIG. 5-397.403

REVISION:

APPROVED: SEPTEMBER 26, 2003

Daniel C. Magnuson

STATE BRIDGE ENGINEER

SEH
3535 VADNAIS CENTER DRIVE
ST PAUL, MN 55110
PHONE (651) 490-2000
FAX (651) 490-2150

I hereby certify that this plan, specification, or report 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

Signature: _____ Date: 3/5/2007

Printed Name: JEFFREY A JOHNSON Reg. No. 17280

TITLE: CONDUIT SYSTEMS

SP 0280-55 SAP 02-623-13

DES: MAW	DR: MAW	APPROVED:	BRIDGE NO 02817
CHK: CAW	CHK: CAW		

SHEET NO B88 OF 95 SHEETS

CONCRETE WEARING COURSE

☐ LOW SLUMP

☐ OTHER _____
TYPE OR MANUFACTURER

EXPANSION JOINTS

JOINT MANUFACTURER _____
NAME AND ADDRESS (CITY, STATE)

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

BEARING PADS

NEOPRENE PAD MANUFACTURER _____
NAME AND ADDRESS (CITY, STATE)

SPECIAL SURFACE TREATMENT

TYPE: _____ 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 CONSTRUCTION SPECIFICATION NUMBER _____
2476 OR 2478 OR 2479

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.

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) DATE

CHECKED BY: _____ _____
PROJECT ENGINEER / SUPERVISOR DATE

SUBMIT THIS FORM WITH THE PROJECT FINAL, AND SUBMIT A COPY TO THE OFFICE OF BRIDGES AND STRUCTURES - ATTN: REGIONAL CONSTRUCTION ENGINEER (MS610).

REVISION: 03-02-2005
APPROVED: SEPTEMBER 26, 2003
Daniel T. Hoogeveen
STATE BRIDGE ENGINEER

AS-BUILT DETAILS
(AS NEEDED)

SP 0280-55 SAP 02-623-13

FIG. 5-397.900

TITLE:	DES:	DR:	APPROVED:	
AS-BUILT BRIDGE DATA	CHK:	CHK:		BRIDGE NO 02817
	SHEET NO B89 OF 95 SHEETS			

11/21/2006

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stRevVi1.inp

ANOKA COUNTY COORDINATE SYSTEM WHICH IS RELATED TO THE MINNESOTA STATE PLANE COORDINATE SYSTEM NAD 83 ADJUSTMENT SOUTH ZONE.

SCALE 150'

℄ NW RAMP

BEGIN CONSTRUCTION
℄ N.W. RAMP
STA. 33+78.76
MATCH EXISTING

℄ SB C.S.A.H. 23

BEGIN CONSTRUCTION
℄ N.B. C.S.A.H. 23
(LAKE DR.)
STA. 17+76.14
MATCH EXISTING

BEGIN CONSTRUCTION
℄ S.W. RAMP
STA. 40+55.00
MATCH EXISTING

℄ CULRD

℄ SW RAMP

END CONSTRUCTION
℄ N.B. C.S.A.H. 23
(LAKE DR.)
STA. 49+64.22
MATCH EXISTING

END CONSTRUCTION
℄ N.E. RAMP
STA. 30+86.34
MATCH EXISTING

℄ NB C.S.A.H. 23

℄ SE RAMP

END CONSTRUCTION
℄ S.E. RAMP
STA. 26+98.89
MATCH EXISTING

℄ NE RAMP

℄ SB I-35W

℄ NB I-35W

3535 VADNAIS CENTER DRIVE
ST PAUL, MN 55110
PHONE (651) 490-2000
FAX (651) 490-2150

I hereby certify that this plan, specification, or report 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

Signature: Date: 11/21/2006

Printed Name: CHRISTOPHER A WUNSCH Reg. No. 42058

TITLE: ALIGNMENT PLAN

SP 0280-55 SAP 02-623-13

DES: SRH	DR: MAW	APPROVED:
CHK: CAW	CHK: CAW	

SHEET NO B90 OF 95 SHEETS

BRIDGE NO 02817

11/21/2006

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POINT NUMBER	POINT	STATION	CIRCULAR CURVE DATA					COORDINATES		AZIMUTH
			DELTA	DEGREE	RADIUS	TANGENT	LENGTH	X	Y	
N.B. C.S.A.H. 23 (CHAIN: NB-LAKE)										
1605	POT	9+99.450						538,413.5823	150,263.4363	
1609	PC	17+76.141						538,743.2247	150,966.7037	N 25° 06' 49.99" E
1610	PI	19+50.044	3° 28' 37.16" RT	1° 00' 00.00"	5,729.578'	173.903'	347.699'	538,817.0324	151,124.1668	PI
1611	CC							543,931.1625	148,534.9625	
1612	PT	21+23.840						538,900.2539	151,276.8637	N 28° 35' 27.15" E
1614	PC	21+73.840						538,924.1815	151,320.7667	N 28° 35' 27.15" E
1615	PI	24+06.881	3° 29' 40.35" LT	0° 45' 00.00"	7,639.437'	233.042'	465.939'	539,035.7041	151,525.3910	PI
1616	CC							532,216.3034	154,976.6350	
1617	PT	26+39.778						539,134.5467	151,736.4326	N 25° 05' 46.81" E
1620	POT	27+72.337						539,190.7705	151,856.4776	
1625	POT	27+72.337						539,201.6377	151,851.3879	
1629	PC	42+05.583						539,809.5366	153,149.3293	N 25° 05' 46.81" E
1630	PI	44+18.199	2° 07' 33.29" LT	0° 30' 00.00"	11,459.156'	212.616'	425.183'	539,899.7158	153,341.8733	PI
1631	CC							529,432.1717	158,009.6329	
1632	PT	46+30.766						539,982.6904	153,537.6300	N 22° 58' 13.52" E
1634	PC	46+80.766						540,002.2032	153,583.6654	N 22° 58' 13.52" E
1635	PI	48+22.510	2° 07' 33.29" RT	0° 45' 00.00"	7,639.437'	141.744'	283.455'	540,057.5196	153,714.1699	PI
1636	CC							547,035.8823	150,602.3301	
1637	PT	49+64.221						540,117.6390	153,842.5325	N 25° 05' 46.81" E
1640	POT	53+90.400						540,298.3990	154,228.4779	
S.B. C.S.A.H. 23 (CHAIN: SB-LAKE)										
1505	POT	10+00.004						538,402.7184	150,268.5329	
1509	PC	20+35.751						538,842.3092	151,206.3669	N 25° 06' 49.99" E
1510	PI	21+24.567	1° 19' 55.82" LT	0° 45' 00.00"	7,639.437'	88.815'	177.623'	538,880.0042	151,286.7863	PI
1511	CC							531,925.0588	154,448.6885	
1512	PT	22+13.374						538,915.8193	151,368.0604	N 23° 46' 54.17" E
1514	PC	22+63.374						538,935.9820	151,413.8148	N 23° 46' 54.17" E
1515	PI	23+94.842	1° 18' 52.63" RT	0° 30' 00.00"	11,459.156'	131.468'	262.924'	538,988.9968	151,534.1195	PI
1516	CC							549,422.1227	146,792.8726	
1517	PT	25+26.299						539,044.7578	151,653.1762	N 25° 05' 46.81" E
1520	POT	53+90.203						540,259.4583	154,246.7160	
S.W. RAMP (CHAIN: SWRAMP)										
1160	POT	40+00.000						538,868.4785	152,373.2315	
1164	PC	42+82.998						539,141.7916	152,446.6346	N 74° 58' 01.00" E
1165	PI	44+02.975	23° 39' 12.89" RT	10° 00' 00.00"	572.958'	119.977'	236.536'	539,257.6623	152,477.7537	PI
1166	CC							539,290.4033	151,893.2855	
1167	PT	45+19.534						539,376.2837	152,459.7704	S 81° 22' 46.11" E
1170	POT	45+63.209						539,419.4652	152,453.2240	
N.E. RAMP (CHAIN: NERAMP)										
1105	POT	30+00.000						539,842.9847	153,221.7195	
1109	PC	30+57.617						539,900.3743	153,216.6014	S 84° 54' 13.19" E
1110	PI	31+63.368	20° 54' 52.81" LT	10° 00' 00.00"	572.958'	105.750'	209.147'	540,005.7064	153,207.2075	PI
1111	CC							539,951.2704	153,787.2941	
1112	PT	32+66.764						540,107.4519	153,236.0338	N 74° 10' 54.00" E

POINT NUMBER	POINT	STATION	CIRCULAR CURVE DATA					COORDINATES		AZIMUTH
			DELTA	DEGREE	RADIUS	TANGENT	LENGTH	X	Y	
S.E. RAMP (CHAIN: SERAMP)										
1050	POT	20+00.000						539,479.2654	152,444.1582	
1054	PC	20+42.381						539,521.1671	152,437.8058	S 81° 22' 46.11" E
1055	PI	20+73.710	23° 35' 39.85" LT	38° 11' 49.87"	150.000'	31.329'	61.770'	539,552.1422	152,433.1099	PI
1056	CC							539,543.6506	152,586.1112	
1057	PCC	21+04.151						539,582.4074	152,441.2046	N 75° 01' 34.05" E
1059	PCC	21+04.151						539,582.4074	152,441.2046	N 75° 01' 34.05" E
1060	PI	21+94.079	33° 22' 24.05" LT	19° 05' 54.94"	300.000'	89.928'	174.742'	539,669.2820	152,464.4402	PI
1061	CC							539,504.8938	152,731.0178	
1062	PT	22+78.893						539,729.0497	152,531.6333	N 41° 39' 10.00" E
1065	POT	27+60.489						540,049.1252	152,891.4749	
N.W. RAMP (CHAIN: NWRAMP)										
1134	PC	30+00.000						538,928.9408	152,588.8101	N 59° 52' 47.67" E
1135	PI	32+02.083	23° 53' 50.67" LT	6° 00' 00.00"	954.930'	202.083'	398.290'	539,103.7378	152,690.2183	PI
1136	CC							538,449.7436	153,414.8009	
1137	PT	33+98.290						539,222.4694	152,853.7433	N 35° 58' 57.00" E
1139	PC	35+58.761						539,316.7523	152,983.5960	N 35° 58' 57.00" E
1140	PI	38+14.668	48° 08' 06.12" RT	10° 00' 00.00"	572.958'	255.907'	481.350'	539,467.1072	153,190.6748	PI
1141	CC							539,780.3877	152,646.9615	
1142	PT	40+40.112						539,721.6664	153,216.9022	N 84° 07' 03.12" E
1145	POT	40+98.705						539,779.9512	153,222.9073	
CUL-DE-SAC (CHAIN: CULRD)										
1535	POT	10+00.000						538,880.0791	152,043.0179	
	PC	10+39.891						538,919.8010	152,039.3444	95° 17' 01.34"
1540	PI	10+60.430	19° 49' 48.65" RT	48° 45' 44.52"	117.500'	20.539'	40.667'	538,940.2526	152,037.4531	PI
	CC							538,908.9807	151,922.3437	
	PT	10+80.558						538,958.8499	152,028.7360	115° 06' 49.99"
1545	POT	13+17.647						539,173.5253	151,928.1112	
1535	POT	10+00.000						538,880.0791	152,043.0179	
	PC	10+39.891						538,919.8010	152,039.3444	95° 17' 01.34"
1540	PI	10+60.430	19° 49' 48.65" RT	48° 45' 44.52"	117.500'	20.539'	40.667'	538,940.2526	152,037.4531	PI
	CC							538,908.9807	151,922.3437	
	PT	10+80.558						538,958.8499	152,028.7360	115° 06' 49.99"
1545	POT	13+17.647						539,173.5253	151,928.1112	
N.B. I-35W (CHAIN: EXNB35W)										
1210	POT	764+80.772						539,073.9430	152,552.1540	
1215	POT	791+16.337						541,460.5279	153,670.3740	
S.B. I-35W (CHAIN: EXSB35W)										
1200	POT	764+80.772						539,046.7890	152,610.1080	
1205	POT	791+16.337						541,433.3740	153,728.3280	

SEH
3535 VADNAIS CENTER DRIVE
ST PAUL, MN 55110
PHONE (651) 490-2000
FAX (651) 490-2150

I hereby certify that this plan, specification, or report 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
Signature: Date: 11/21/2006
Printed Name: CHRISTOPHER A. WUNSCH Reg. No. 42058

TITLE: ALIGNMENT TABULATIONS

SP 0280-55 SAP 02-623-13
DES: SRH DR: MAW APPROVED:
CHK: CAW CHK: CAW
SHEET NO B91 OF 95 SHEETS

BRIDGE NO 02817

11/21/2006 07:41:11 AM
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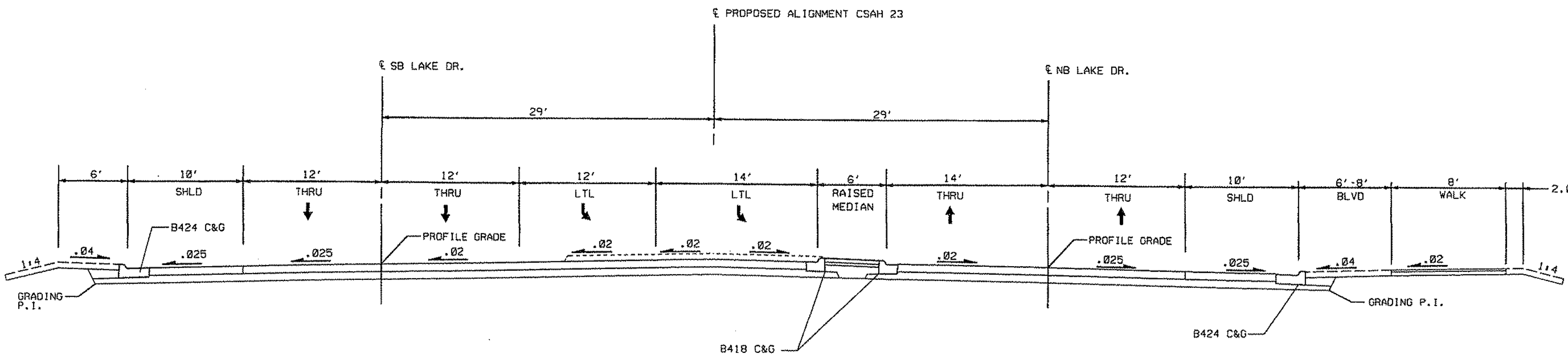
TYPICAL SECTION NO. 6 - LAKE DRIVE OVER I-35W

N.B. STA. 34+27 TO STA. 37+55
S.B. STA. 34+27 TO STA. 36+85

N.B. STA. 40+38 TO STA. 42+86
S.B. STA. 39+69 TO STA. 42+85



SEH 3535 VADNAIS CENTER DRIVE ST PAUL, MN 55110 PHONE (651) 490-2000 FAX (651) 490-2150

I hereby certify that this plan, specification, or report 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
Signature: ________ Date: 11/21/2006
Printed Name: CHRISTOPHER A WUNSCH Reg. No. 42058

TITLE: TYPICAL ROADWAY SECTIONS

SP 0280-55 SAP 02-623-13

DES: SRH	DR: MAW	APPROVED:
CHK: CAW	CHK: CAW	

SHEET NO B92 OF 95 SHEETS

BRIDGE NO 02817

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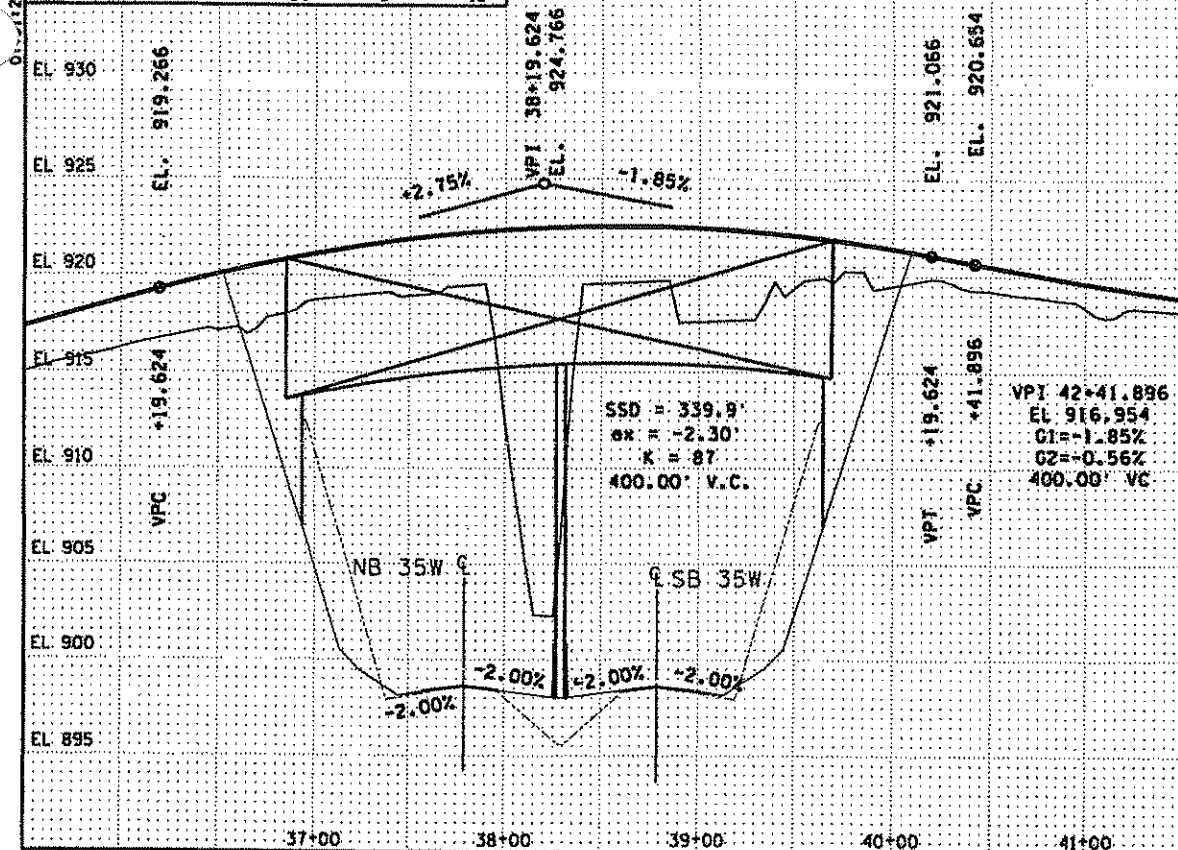
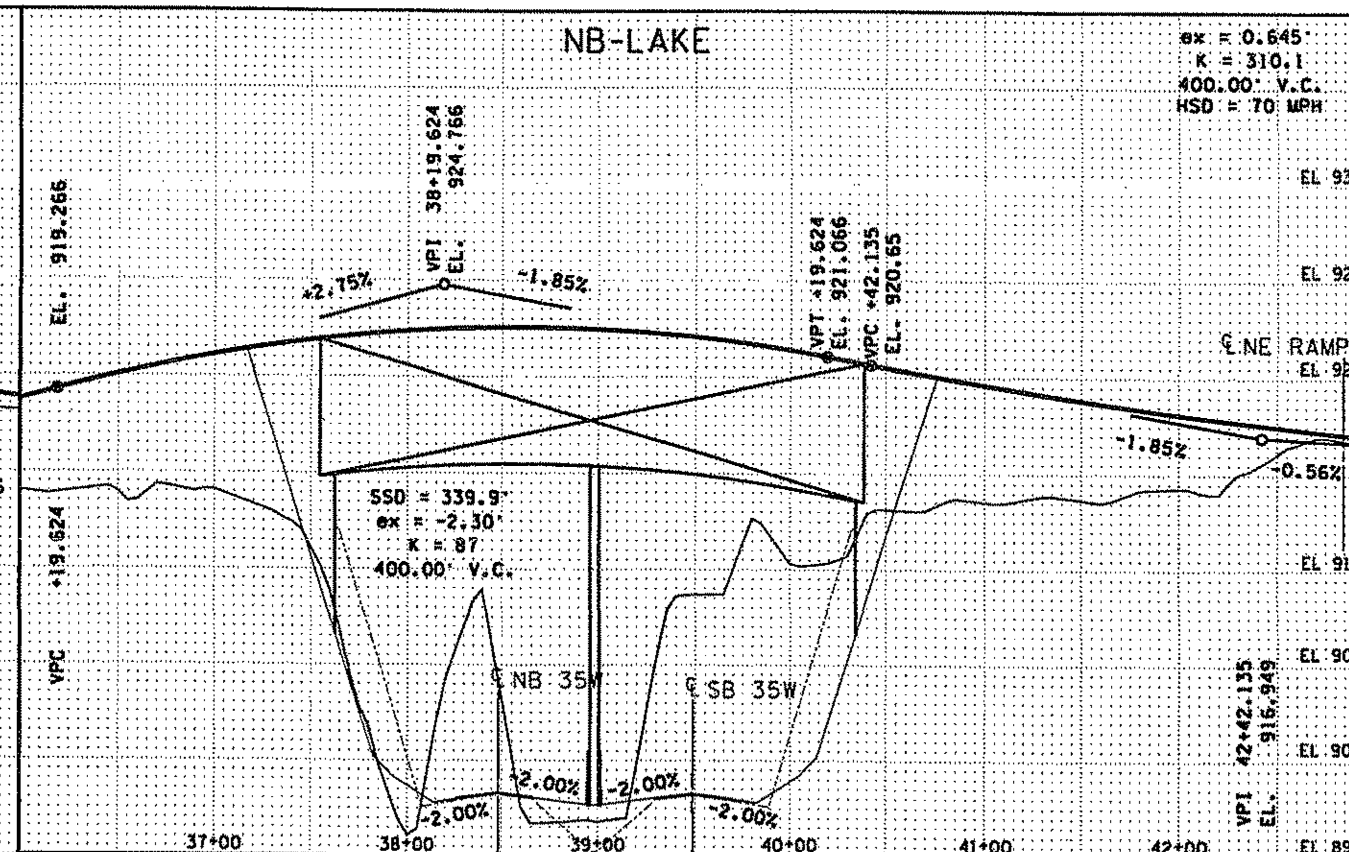
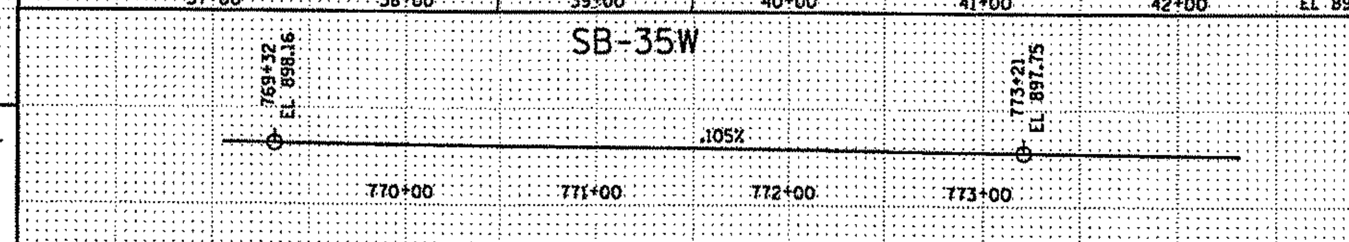
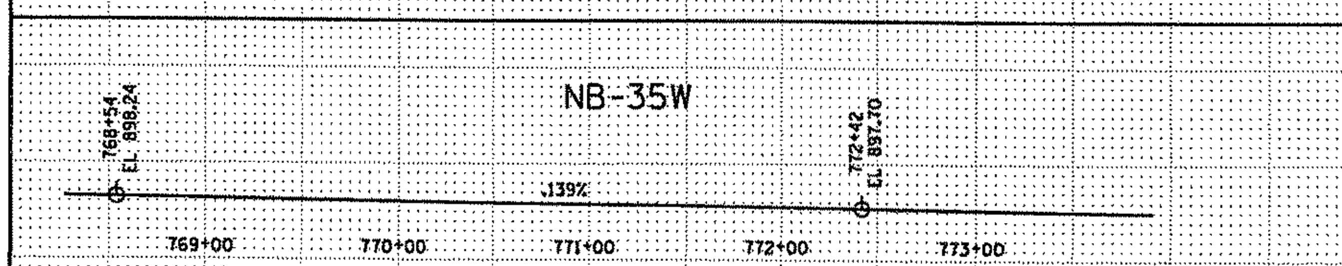
CONTRACTED PROFILE

SCALE: HOR. 0 50 VER. 0 10









PLAT

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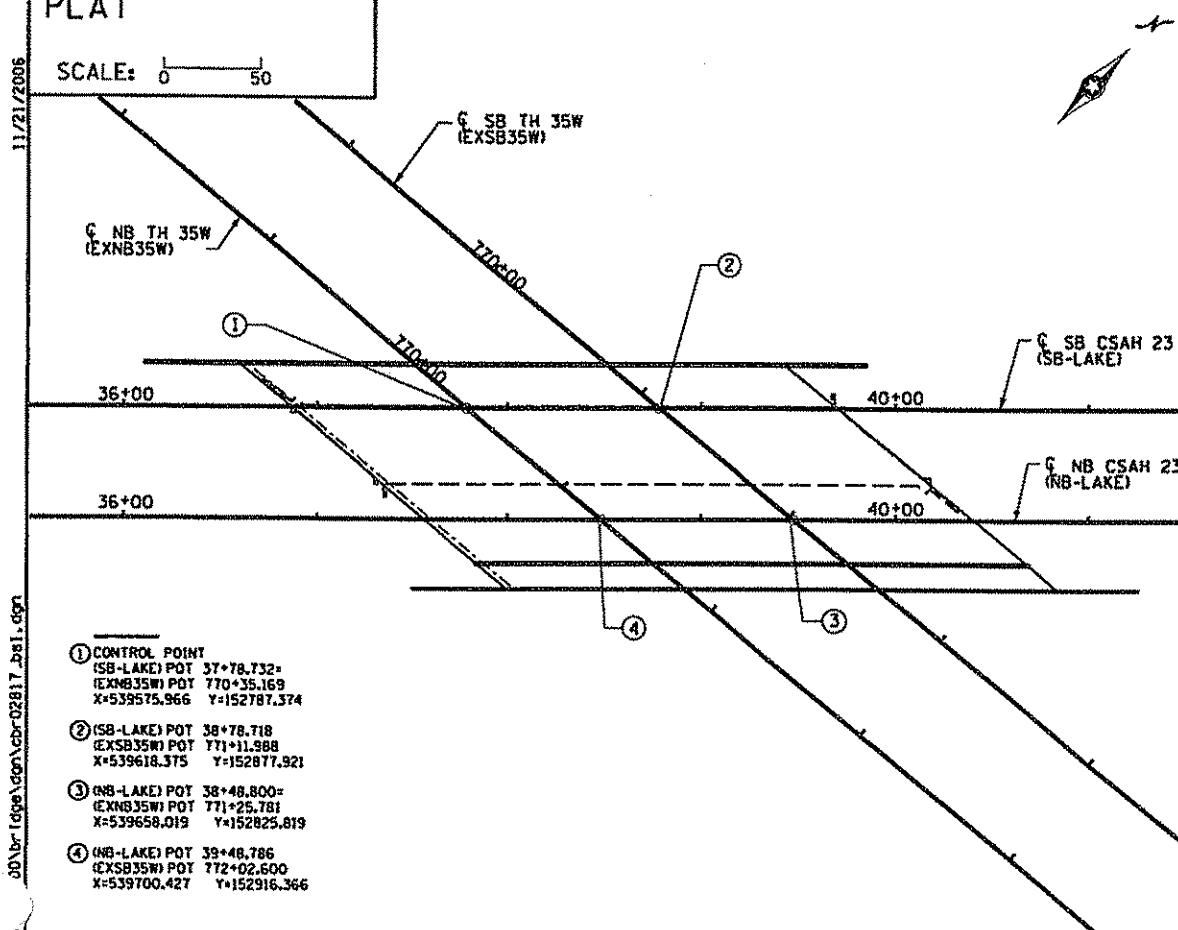
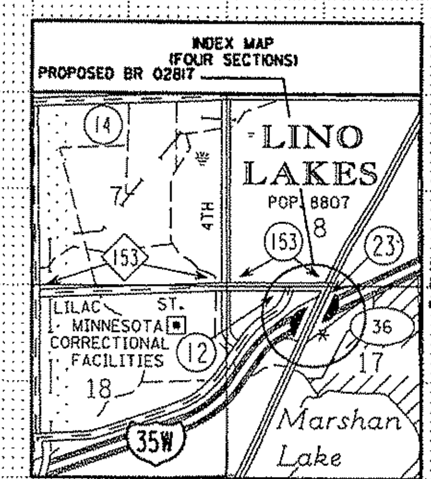


① CONTROL POINT
(SB-LAKE) POT 37+78.732=
(EXNB35W) POT 770+35.169
X=539575.966 Y=152787.374

② (SB-LAKE) POT 38+78.718
(EXSB35W) POT 771+11.988
X=539618.375 Y=152877.921

③ (NB-LAKE) POT 38+48.800=
(EXNB35W) POT 771+25.781
X=539658.019 Y=152825.819

④ (NB-LAKE) POT 39+48.786
(EXSB35W) POT 772+02.600
X=539700.427 Y=152916.366



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 RECOMMENDATIONS DATED ....

STREAM

FLOOD OF RECORD ( ) UNKNOWN .... CFS

MAXIMUM OBSERVED HIGHWATER ELEV. ( ) .... CFS

DESIGN FLOOD (YEAR FREQUENCY) ....

DESIGN STAGE ....

TOTAL STAGE INCREASE .... FT

DESIGN MEAN VELOCITY THROUGH STRUCTURE .... FPS

LOW MEMBER AT OR ABOVE ELEVATION ....

MIN. WATERWAY AREA REQUIRED BELOW ELEV. ... AT RIGHT ANGLE TO CHANNEL .... SF

BASIC FLOOD (100 YEAR FREQUENCY)

STAGE ....

TOTAL STAGE INCREASE .... FT

MEAN VELOCITY THROUGH STRUCTURE .... FPS

APPROX. FLOWLINE ELEV. .... SKEW ANGLE ..... DEG.

ESTIMATED PIER SCOUR ELEV. (... YR FREQUENCY) ....

(DESIGN STAGE AND STAGE ARE TAILWATER ELEVATIONS AT BRIDGE.)

BRIDGE SURVEY SHEETS MADE FROM :

SEH SURVEY

BENCH MARK ELEVATION 918.965 (NAVD 88 DATUM)

NAME & LOCATION:

SE CORNER EXISTING BRIDGE 9820
X=539592.837 Y=152731.248

BRIDGE SURVEY

PROPOSED BRIDGE LOCATED
TH 35W UNDER CSAH 23
IN LINO LAKES

SEC 17 TWP 31 N R 22 W

CITY OF LINO LAKES ANOKA CO

BRIDGE NO 02817

SEH
3535 VADNAIS CENTER DRIVE
ST PAUL, MN 55110
PHONE (651) 490-2000
FAX (651) 490-2150

I hereby certify that this plan, specification, or report 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

Signature: [signature] Date: 11/21/2006

Printed Name: CHRISTOPHER A WUNSCH Reg. No. 42058

TITLE: BRIDGE SURVEY	SP 0280-55 SAP 02-623-13		
	DES: MAW	DR: MAW	APPROVED:
	CHK: CAW	CHK: CAW	
	SHEET NO B93 OF 95 SHEETS		BRIDGE NO 02817

T-1
EL 897.52

T-3
EL 897.22

T-5
EL 893.94

T-2
EL 896.28

T-4
EL 896.34

T-6
EL 917.51

TEST PILE NO 8
WP A
TEST PILE NO 10
TEST PILE NO 12
INPLACE BRIDGE 9820
INPLACE UTILITIES
(TO BE RELOCATED BY THE UTILITY
PRIOR TO BRIDGE CONSTRUCTION, TYP)
770+00
EXIST 24"
RC PIPE
WP B
WP D
WP E
WP F
AZ = 25°-05'-46.8"
CONTROL POINT ①
AZ=64°-53'-41.4"
39°-47'-54.6" TYP
ALL SUBSTRUCTURES
TEST PILE NO 7
TEST PILE NO 9
TEST PILE NO 11
40+00
STAGE 1 SHEET PILE
STAGE 2 SHEET PILE
EXIST 24"
RC PIPE
TEST PILE NO 6
TEST PILE NO 4
TEST PILE NO 2
TEST PILE NO 1
TEST PILE NO 3
TEST PILE NO 5
WP G
WP H
WP J
C/L BRG S ABUT
C/L PIER
C/L BRG N ABUT

T-BUR
TV-BUR

① CONTROL POINT
(SB-LAKE) POT 37+78.732=
(EXNB35W) POT 770+35.169
X=539575.966 Y=152787.374

② (SB-LAKE) POT 38+78.718
(EXSB35W) POT 771+11.988
X=539618.375 Y=152877.921

③ (NB-LAKE) POT 38+48.800=
(EXNB35W) POT 771+25.781
X=539658.019 Y=152825.819

④ (NB-LAKE) POT 39+48.786
(EXSB35W) POT 772+02.600
X=539700.427 Y=152916.366

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".

(SB-LAKE)
VPI STA 38+19.624
924.766
G1=2.75%
G2= -1.85%
L=400.00'
M= -2.3'

(NB-LAKE)
VPI STA 38+19.221
924.773
G1=2.75%
G2= -1.85%
L=400.00'
M= -2.3'

T-1
STA 36+61.23
(SB-LAKE)
OFF 59.48 LT

T-2
STA 38+03.22
(SB-LAKE)
OFF 59.52' RT

T-6
STA 41+07.03
(SB-LAKE)
OFF 45.72 RT

C/L SB TH35W
C/L NB TH35W
EL 895.30
EL 889.5
EL 895.30

940
920
900
880
860
840
820
800
780

SPT N60

LOAMY SAND, trace roots, fine grained, dark brown, moist, loose, A-2-4, fill
SAND, fine grained, light brown, moist to about 7.5' then waterbearing, loose to very loose, A-3, alluvium
CLAY LOAM, a little gravel, dark gray, moist, firm, A-6, fill
SANDY CLAY LOAM, a little gravel, dark gray, moist, firm to stiff, A-6, fill
SANDY CLAY, a little gravel, dark gray, moist, stiff, A-6, fill
SAND, fine grained, brown, waterbearing, medium dense, a lense of silt at about 40.5', A-3, alluvium
SAND, fine to course grained, brown, waterbearing, medium dense, A-3, alluvium
SAND, fine grained, brown, waterbearing, very dense to dense, a lense of clay at about 47' and 50.5', A-3, alluvium
SLIGHTLY PEASTIC SANDY LOAM, a little gravel, fine grained, brown, wet, very dense, A-2-4, fill
SAND, fine grained, brown, waterbearing, dense to very dense, A-3, alluvium
Bottom of Hole - 76'

12" CIP CONC TEST PILES 65' LONG

SLIGHTLY ORGANIC SANDY LOAM, trace roots, fine grained, black, moist, very loose, A-8, topsoil or fill
SAND, fine grained, light brown, moist to about 7' then waterbearing, very loose to medium dense, A-3, alluvium
CLAY LOAM, a little gravel, dark gray, moist, very stiff, A-6, fill
SANDY CLAY LOAM, a little gravel, dark gray, moist, stiff, A-6, fill
SANDY CLAY, a little gravel, dark gray, moist, stiff, A-6, fill
SAND, fine grained, brown, waterbearing, very loose to medium dense, A-3, alluvium
SAND, a little gravel, fine to course grained, brown, waterbearing, medium dense, A-3, alluvium
SAND WITH GRAVEL, coarse to fine grained, brown, waterbearing, medium dense, A-1-b, alluvium
SLIGHTLY PLASTIC SANDY LOAM, a little gravel, fine grained, brown, wet, very dense, A-2-4, fill
SILT, brown, wet, very dense, A-4, alluvium
SAND, fine grained, brown, waterbearing, very dense to medium dense, lenses of silt loam, A-3, alluvium
Bottom of Hole - 86'

12" CIP CONC TEST PILES 60' LONG

LOAMY SAND WITH GRAVEL AND A LITTLE CLAY LOAM, pieces of concrete, plastic and glass, trace roots, dark brown, very loose, A-2-4, fill
SAND, fine grained, light brown, moist, loose, A-3, fill
SLIGHTLY PLASTIC SANDY LOAM, fine grained, brown, a little dark brown, moist, loose, A-2-4, fill
SAND, fine grained, light brown, a little reddish brown mottled at about 37'-38.5', moist to about 27.5' then waterbearing, loose to very dense, lenses of loamy sand, A-3, alluvium
SANDY CLAY LOAM, a little gravel, dark gray, moist, very stiff, a lense of clay loam, A-6, fill
SANDY CLAY, a little gravel, dark gray, moist, very stiff, A-6, fill
SAND, fine grained, brown, waterbearing, medium dense to dense, A-3, alluvium
LOAMY SAND, a little gravel, possible cobbles or boulders, fine grained, brown, waterbearing, very dense, A-2-4, fill or alluvium
SLIGHTLY PLASTIC SANDY LOAM, a little gravel, possible cobbles or boulders, brown, wet, very dense, A-4, fill
SAND, fine grained, brown, waterbearing, very dense, A-3, alluvium
Bottom of Hole - 86'

12" CIP CONC TEST
PILES 65' LONG

TEST PILE NO'S 5, 6, 11 & 12 TIP EL 831.30

TEST PILE NO'S 1, 2, 7 & 8 TIP EL 831.30

TEST PILE NO'S 3, 4, 9 & 10 TIP EL 830.50

03/05/2007

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SEH
3535 VADNAIS CENTER DRIVE
ST PAUL, MN 55110
PHONE (651) 490-2000
FAX (651) 490-2150

I hereby certify that this plan, specification, or report 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
Signature: _____ Date: 3/5/2007
Printed Name: JEFFREY A JOHNSON Reg. No. 17280

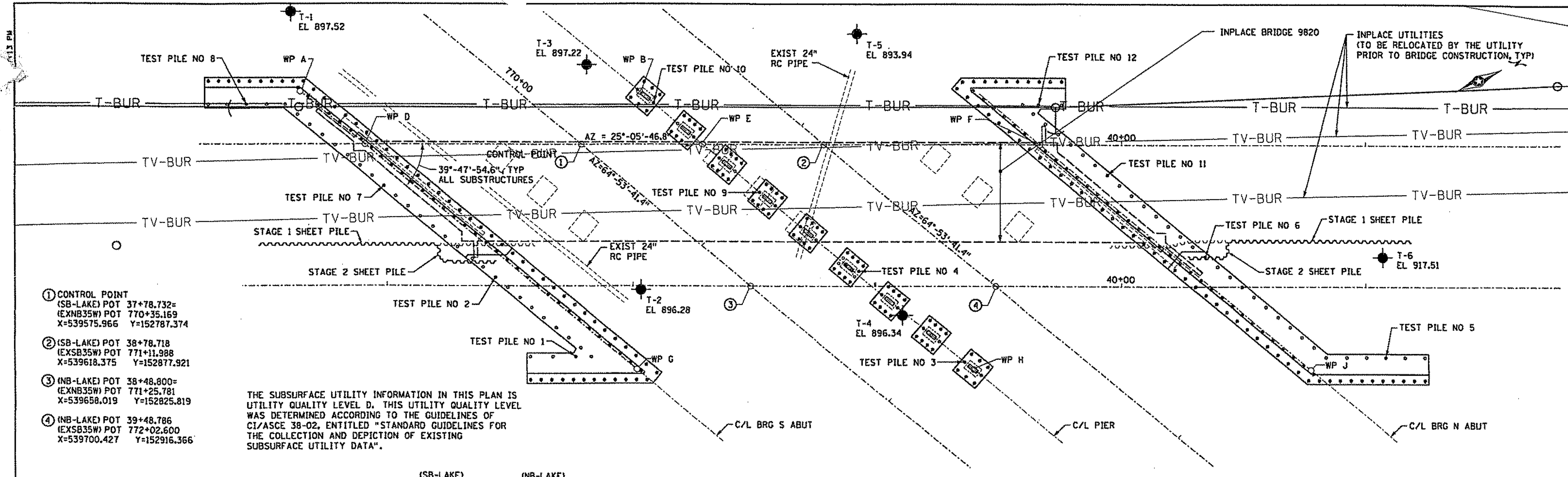
TITLE:
BRIDGE SURVEY
PLAN AND PROFILE
BORINGS T1, T2 & T6

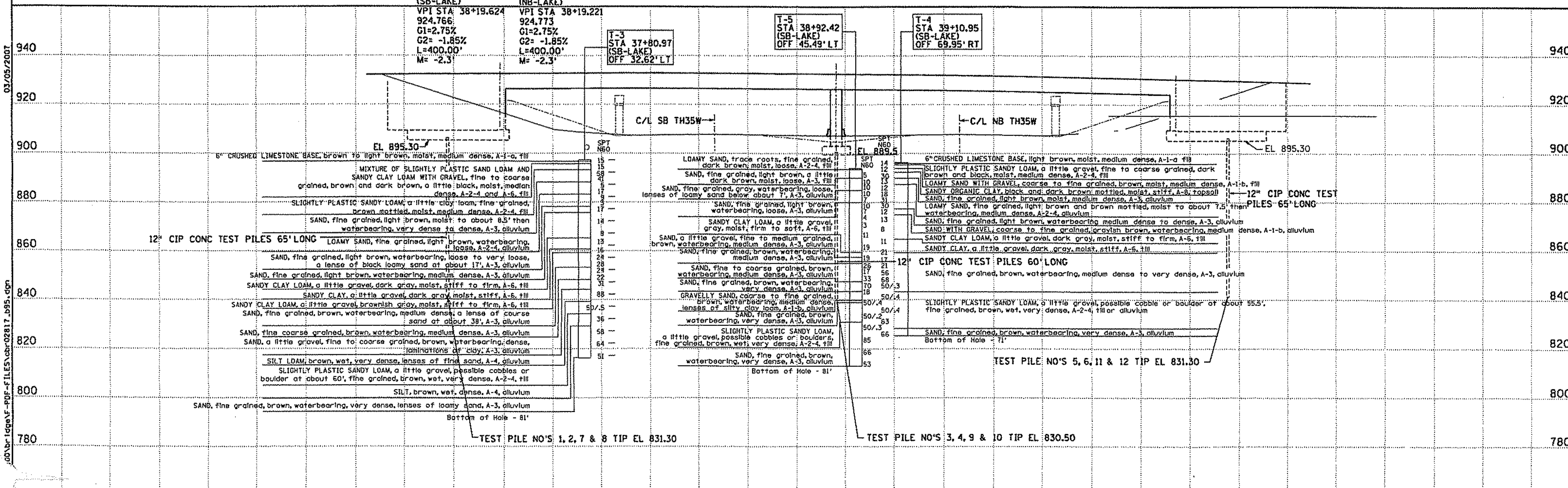
SP 0280-55 SAP 02-623-13

DES: MAW	DR: MAW	APPROVED:
CHK: CAW	CHK: CAW	

SHEET NO B94 OF 95 SHEETS

BRIDGE NO
02817





SEH 3535 VADNAIS CENTER DRIVE ST PAUL, MN 55110 PHONE (651) 490-2000 FAX (651) 490-2150	I hereby certify that this plan, specification, or report 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. Signature: Date: 3/5/2007 Printed Name: JEFFREY A JOHNSON Reg. No. 17280	TITLE: BRIDGE SURVEY PLAN AND PROFILE BORINGS T3, T4 & T5	SP 0280-55 SAP 02-623-13 DES: MAW DR: MAW CHK: CAW CHK: CAW APPROVED: SHEET NO B95 SHEETS BRIDGE NO 02817

03/05/2007