

DESIGN DATA

2010 AND CURRENT INTERIM AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS
LOAD AND RESISTANCE FACTOR DESIGN METHOD
HL 93 LIVE LOAD
DEAD LOAD INCLUDES 20 p.s.f. ALLOWANCE FOR FUTURE WEARING COURSE MODIFICATIONS
MATERIAL DESIGN PROPERTIES:
REINFORCED CONCRETE:
f'c = 4 ksi f_y = 60 ksi
PRESTRESSED CONCRETE:
f'c = 8 ksi f_y = 270 ksi
DECK AREA = 9405 SQ. FT.
2014 PROJECTED ADTT FOR YEAR 2031
1694 PROJECTED ADTT FOR YEAR 2031
DESIGN SPEED = 60 MILES PER HOUR
BRIDGE OPERATING RATING HS 63.9

LIST OF SHEETS

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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 DECK ANCHORAGES. THE BEAMS SHALL BE ERECTED IN FINAL POSITION PRIOR TO DRILLING HOLES FOR AND PLACING DECK ANCHORAGES.

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

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

BAR MARKED WITH THE SUFFIX "S" SHALL BE STAINLESS STEEL.

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

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

FOR STAGE 1 CONSTRUCTION, CONSTRUCTION OF EACH ABUTMENT SHALL NOT BE STARTED UNTIL THE APPROACH FILL AT THAT ABUTMENT HAS BEEN CONSTRUCTED TO THE FULL HEIGHT AND CROSS SECTION AND ALLOWED TO SETTLE FOR 1 MONTH, SEE SPECIAL PROVISIONS.

CONTRACTOR SHALL DRESS SLOPES AND PLACE FILTER MATERIALS AND RIPRAP IN APPROXIMATE AREAS AS DIRECTED BY THE ENGINEER.

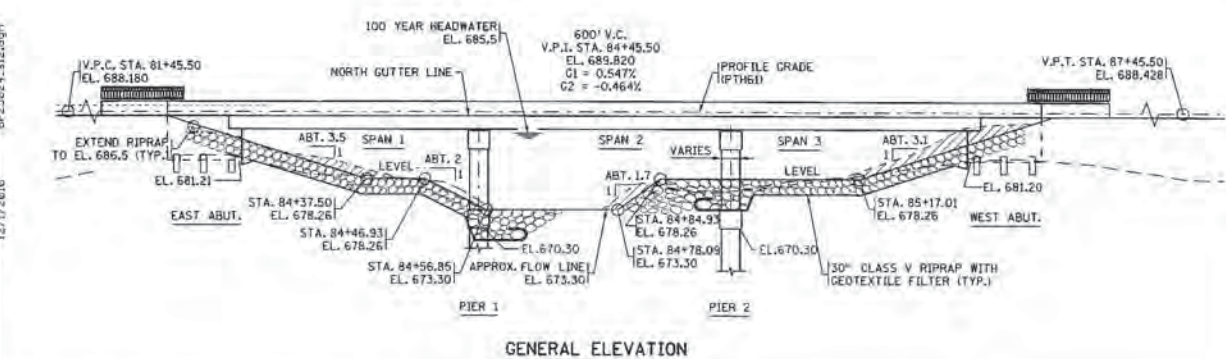
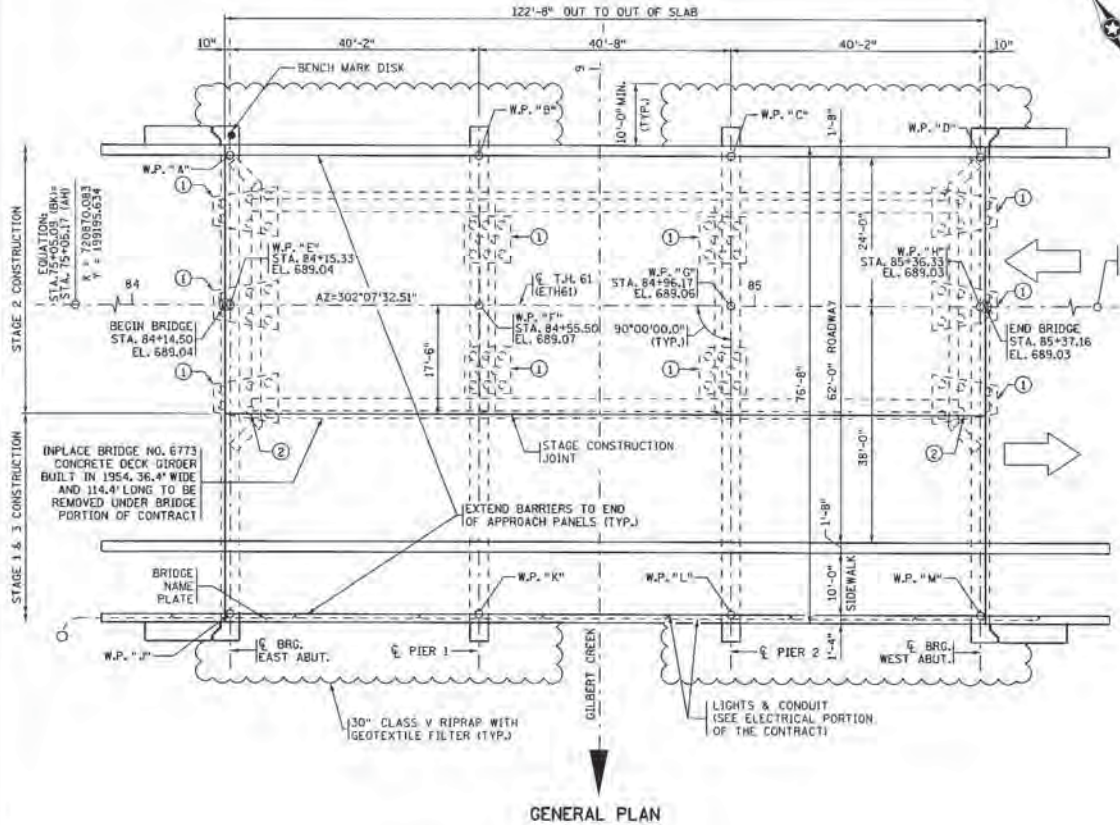
RIPRAP SHALL TIE TO EXISTING SPUR DIKES.

NO CUTTING WILL BE PERMITTED UNTIL THE CUTTING LIMITS HAVE BEEN OUTLINED BY THE CONTRACTOR AND APPROVED BY THE ENGINEER. REMOVAL SHALL CONFORM TO SPEC 2433.

CONTRACTOR SHALL CONSIDER THE GEOTECHNICAL LIMITS UNDER ALL POSSIBLE CONSTRUCTION LOADS DURING ERECTION OF ALL PRECAST CONCRETE ELEMENTS.

1) REMOVAL OF EXISTING PILES WILL BE REQUIRED TO CONSTRUCT STAGE 2 OF THIS PLAN. SEE SPECIAL PROVISIONS.

2) SEE SHEET NO. 5 FOR TEMPORARY STEEL SHEET PILING DETAILS FOR STAGING CONSTRUCTION. SEE SPECIAL PROVISIONS.



NOTES

TRAFFIC TO BE STAGED DURING CONSTRUCTION.

HATCHED AREA TO BE REMOVED UNDER GRADING PORTION OF CONTRACT.

SEE SURVEY SHEET FOR INPLACE UTILITIES.

APPROXIMATELY 566 SQ. FT. OF WATERWAY IS AVAILABLE BELOW EL. 683.2.

SEE SHEET 46 RIPRAP DETAILS.

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: *Jihshya J. Lin* DATE: 12/3/10
NAME: JIHSHYA J. LIN LIC NO. 19115

TRUNK HIGHWAY NO. 61
MINNESOTA
DEPARTMENT OF TRANSPORTATION

BRIDGE NO. 25024

T.H. 61 OVER GILBERT CREEK
1.6 MILES N.W. OF SOUTH JUNCTION OF T.H. 63

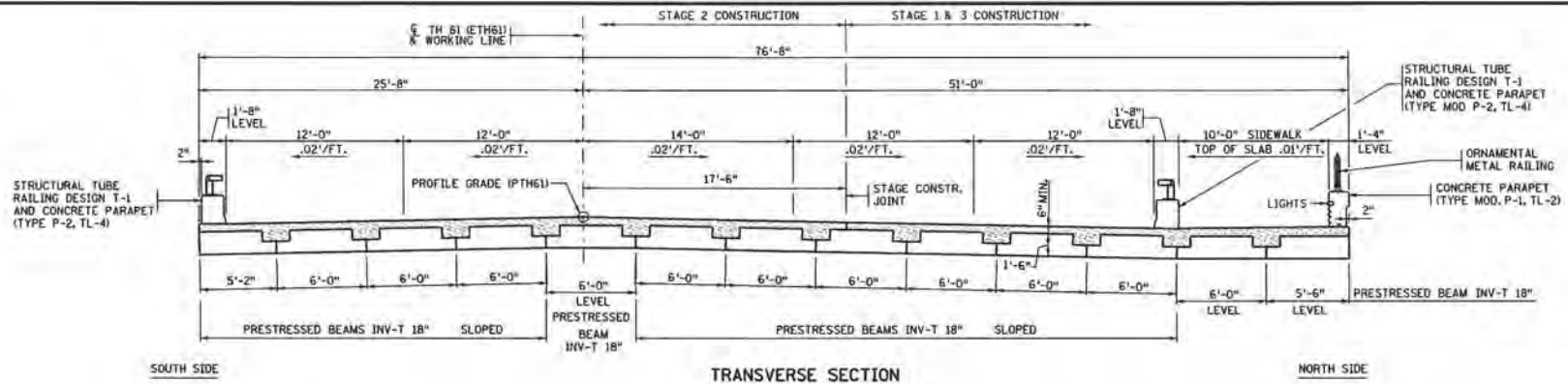
IDENTIFICATION NO. 508

GENERAL PLAN AND ELEVATION

SEC. 31 T. 112 N. R. 12 W.
CITY OF LAKE CITY DOODHIE COUNTY

APPROVED: *Ravin Waston* STATE BRIDGE ENGINEER FOR
DATE: 12/3/10

DES. P.J.K.	DR. P.F./H.A.W.	25024
CHK. J.J.L.	CHK. J.A.J.	



SCHEDULE OF QUANTITIES FOR ENTIRE BRIDGE			
ITEM NO.	ITEM	UNIT	QUANTITY
2401.512	BRIDGE SLAB CONCRETE (3Y33AHP)	SQ.FT.	9405 (P)
⑤ 2401.513	TYPE P-2 (TL-4) RAILING CONCRETE (3Y46A)	LIN. FT.	163 (P)
⑤ 2401.513	TYPE MOD P-2 (TL-4) RAILING CONCRETE (3Y46A)	LIN. FT.	163 (P)
⑤ 2401.513	TYPE MOD P-1 (TL-2) RAILING CONCRETE (3Y46A)	LIN. FT.	163 (P)
⑥ 2401.541	REINFORCEMENT BARS (EPOXY COATED)	POUND	104510 (P)
2401.601	STRUCTURE EXCAVATION	LUMP SUM	1
2401.601	FOUNDATION PREP PILE BENT PIERS	LUMP SUM	1
2401.618	BRIDGE DECK PLANING	SQ. FT.	9542 (P)
⑤ 2402.583	ORNAMENTAL METAL RAILING	LIN. FT.	163 (P)
⑦ 2402.584	STRUCTURAL TUBE RAILING DESIGN T-1	LIN. FT.	314 (P)
2402.590	ELASTOMERIC BEARING PAD TYPE 1	EACH	6 (P)
2402.590	ELASTOMERIC BEARING PAD TYPE 2	EACH	66 (P)
2402.590	ELASTOMERIC BEARING PAD TYPE 3	EACH	6 (P)
2402.602	SHEAR STUDS	EACH	120 (P)
⑧ 2405.601	PRECAST PIER WALL	LUMP SUM	1
⑧ 2405.602	PRECAST PIER CAP ELEMENT	EACH	4 (P)
⑧ 2405.602	PRECAST PIER BASE ELEMENT	EACH	4 (P)
⑧ 2405.602	PRECAST WINGWALL ELEMENT	EACH	4 (P)
⑧ 2405.602	PRECAST ABUTMENT ELEMENT	EACH	4 (P)
② 2405.603	PRESTRESSED BEAMS INV-T 18" TYPE 1	LIN. FT.	121 (P)
③ 2405.603	PRESTRESSED BEAMS INV-T 18" TYPE 2	LIN. FT.	1331 (P)
④ 2405.603	PRESTRESSED BEAMS INV-T 18" TYPE 3	LIN. FT.	121 (P)
2411.618	ARCH CONC TEXTURE (ASHLAR STONE)	SQ. FT.	2383 (P)
2411.618	ARCH SURFACE FINISH (MULTI COLOR)	SQ. FT.	2383 (P)
2411.618	ANTI-GRAFFITI COATING	SQ. FT.	2383 (P)
2433.516	ANCHORAGES TYPE REINF BARS	EACH	269 (P)
2433.516	ANCHORAGES TYPE REINF BARS (STAINLESS STEEL)	EACH	248 (P)
2433.516	ANCHORAGES TYPE 1	EACH	39 (P)

SCHEDULE OF QUANTITIES FOR ENTIRE BRIDGE			
ITEM NO.	ITEM	UNIT	QUANTITY
2433.602	REMOVE ANCHORAGE	EACH	39 (P)
① 2442.501	REMOVE EXISTING BRIDGE	LUMP SUM	1
2452.507	C-I-P CONCRETE PILING DELIVERED 12"	LIN. FT.	1500
2452.507	C-I-P CONCRETE PILING DELIVERED 16"	LIN. FT.	1120
2452.508	C-I-P CONCRETE PILING DRIVEN 12"	LIN. FT.	1500
2452.508	C-I-P CONCRETE PILING DRIVEN 16"	LIN. FT.	1120
2452.519	C-I-P CONCRETE TEST PILE 70 FT LONG 12"	EACH	2
2452.519	C-I-P CONCRETE TEST PILE 75 FT LONG 12"	EACH	2
2452.519	C-I-P CONCRETE TEST PILE 80 FT LONG 16"	EACH	4
2452.527	PILE REDRIVING	EACH	8
2452.601	STEEL SHEET PILING (TEMPORARY)	LUMP SUM	1
2472.525	COUPLERS (REINFORCEMENT BARS) T-19	EACH	60 (P)
2502.502	DRAINAGE SYSTEM TYPE (B910)	LUMP SUM	1
2511.501	RANDOM RIPRAP CLASS V	CU. YD.	1350
2511.515	GEOTEXTILE FILTER TYPE IV (MOD)	SQ.YD.	1480
2545.509	CONDUIT SYSTEM (LIGHTING)	LUMP SUM	1

- ① REMOVE EXISTING BRIDGE NO. 6773
- ② "PRESTRESSED BEAM INV-T 18" TYPE 1" INCLUDES BEAMS DESIGNATED AS B1.
- ③ "PRESTRESSED BEAM INV-T 18" TYPE 2" INCLUDES BEAMS DESIGNATED AS B2 AND B3.
- ④ "PRESTRESSED BEAM INV-T 18" TYPE 3" INCLUDES BEAMS DESIGNATED AS B4.
- ⑤ INCLUDES 40 LIN. FT. FOR APPROACH PANELS.
- ⑥ INCLUDES CAST IN PLACE DECK REINFORCEMENT AND RAILING REINFORCEMENT ONLY.
- ⑦ INCLUDES 68 LIN. FT. FOR APPROACH PANELS.
- ⑧ INCLUDING FRICTION COLLARS, LEVELING DEVICES, GROUT & CLOSURE POUR. SEE SPECIAL PROVISIONS.
- ⑨ INCLUDING INSERTS, DOWEL, SCC, GROUT & CLOSURE POUR. SEE SPECIAL PROVISIONS.

PROPOSED PIER CONSTRUCTION SEQUENCE:

- 1 CONTRACTOR SHALL PREPARE SITE FOR CONSTRUCTION. CONTRACTOR IS TO CLEAR AND GRUB. CONTRACTOR SHALL DESIGN & INSTALL CRANE PAD BASED ON THE RECOMMENDED SOIL PROPERTIES IN THE GEOTECHNICAL REPORT. CONTRACTOR IS RESPONSIBLE TO MAINTAIN THE GEOTECHNICAL STABILITY OF THE SITE DURING THE ENTIRE PERIOD OF BRIDGE CONSTRUCTION.
- 2 PROVIDE LEVELING PAD FOR ERECTION OF PIER BASE ELEMENTS TO THE ELEVATION PER THE PLAN.
- 3 INSTALL PIER BASE ELEMENT TO FINAL LOCATION AND APPROXIMATE ELEVATION AS PER THE PLAN.
- 4 INSTALL PILING USING PIER BASE ELEMENT AS A TEMPLATE. MAINTAIN PILES WITHIN SPECIFIED TOLERANCES (SEE TOLERANCE TABLE IN THIS SHEET.)
- 5 INSTALL NECESSARY TEMPORARY SUPPORTING COLLARS ON PILES OR OTHER TYPES OF SUPPORTS (SEE SHEET NO. 22.) CONNECT LEVELING DEVICES FOR PRECAST BASE ELEMENT (ELEMENT A) AND PRECAST CAP ELEMENTS (ELEMENT C OR E).
- 6 CONTRACTOR SHALL VERIFY LOCATION OF PILE TIP WITH RESPECT TO TOLERANCES. ENGINEER APPROVAL IS NEEDED TO PROCEED AFTER THIS STEP.
- 7 INSTALL PRECAST PIER CAP ELEMENT (ELEMENT C OR E). USING LEVELING DEVICES, ADJUST PRECAST PIER CAP ELEMENT INTO POSITION AS SHOWN IN THE PLAN.
- 8 CONTRACTOR SHALL VERIFY LOCATION OF PILES AND ELEVATIONS OF PRECAST ELEMENTS. ENGINEER APPROVAL IS NEEDED TO PROCEED AFTER THIS STEP.
- 9 PREPARE PRECAST PIER CAP ELEMENT FOR GROUTING OPERATIONS, INCLUDING ALL NECESSARY FORMWORK. PREPARE PRECAST BASE ELEMENT FOR GROUTING OPERATIONS, INCLUDING ALL NECESSARY FORMWORK. ALL FORMWORK SHALL BE WATERTIGHT TO AVOID ANY GROUT FROM LEAKING DURING GROUTING.
- 10 PERFORM GROUTING OPERATIONS. SEE SPECIAL PROVISIONS FOR MATERIAL & CONSTRUCTION REQUIREMENTS.
- 11 WAIT AT LEAST 24 HOURS OR UNTIL GROUT HAS ACHIEVE THE REQUIRED STRENGTH BEFORE PLACING SUPERSTRUCTURE ELEMENTS.
- 12 REMOVE TEMPORARY SUPPORTING COLLARS, LEVELING DEVICES AND ANY TEMPORARY SUPPORTS.
- 13 CONTRACTOR SHALL VERIFY ELEVATIONS AND LOCATIONS OF PRECAST ELEMENTS. ENGINEER APPROVAL IS NEEDED TO PROCEED AFTER THIS STEP.
- 14 PREPARE PRECAST PIER WALL ELEMENT (ELEMENT B OR D) FOR ERECTION. INSTALL SHEAR STUDS ON PILES AND THREADED RODS INTO INSERTS IN THE PRECAST WALL ELEMENTS PER THE PLAN.
- 15 INSTALL PRECAST PIER WALL ELEMENTS (ELEMENT B OR D). FORM AROUND THE PIER WALL ELEMENTS & VOIDS BETWEEN PIER WALL ELEMENTS.
- 16 INSTALL WATERPROOFING TO MAKE FORMS WATER TIGHT.
- 17 PLACE SCC CONCRETE IN VOID BETWEEN PRECAST PIER PANEL ELEMENTS.
- 18 GROUT TO FILL APPROX 5" VOID BETWEEN THE TOP OF PIER WALL ELEMENTS & THE BOTTOM OF PIER CAP.

PROPOSED ABUTMENT CONSTRUCTION SEQUENCE:

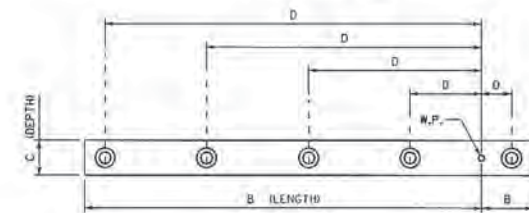
- 1 CONTRACTOR SHALL PREPARE SITE FOR CONSTRUCTION. CONTRACTOR IS TO CLEAR AND GRUB. CONTRACTOR SHALL DESIGN & INSTALL CRANE PAD BASED ON THE RECOMMENDED SOIL PROPERTIES IN THE GEOTECHNICAL REPORT. CONTRACTOR IS RESPONSIBLE TO MAINTAIN THE GEOTECHNICAL STABILITY OF THE SITE DURING THE ENTIRE PERIOD OF BRIDGE CONSTRUCTION.
- 2 INSTALL PILING. MAINTAIN PILE WITHIN SPECIFIED TOLERANCES (SEE TOLERANCE TABLE IN THIS SHEET).
- 3 INSTALL TEMPORARY SUPPORTING COLLARS OR OTHER TYPES OF SUPPORTS (SEE SHEET NO. 22.) ON PILES. CONNECT LEVELING DEVICES FOR PRECAST ELEMENT.
- 4 CONTRACTOR SHALL VALIDATE LOCATION OF PILE TIP WITH RESPECT TO TOLERANCES. ENGINEER APPROVAL IS NEEDED TO PROCEED AFTER THIS STEP.
- 5 INSTALL PRECAST ELEMENT. USING LEVELING DEVICES, ADJUST PRECAST ELEMENT INTO POSITION AS SHOWN IN THE PLAN.
- 6 USING LEVELING DEVICES, ADJUST PRECAST ELEMENTS INTO FINAL POSITION.
- 7 CONTRACTOR SHALL VERIFY ELEVATIONS OF PRECAST ELEMENTS. ENGINEER APPROVAL IS NEEDED TO PROCEED AFTER THIS STEP.
- 8 PREPARE PRECAST ELEMENT FOR GROUTING OPERATIONS, INCLUDING ALL NECESSARY FORMWORK. ALL FORMWORK SHALL BE WATERTIGHT TO AVOID GROUT FROM LEAKING DURING GROUTING.
- 9 PERFORM GROUTING OPERATIONS. SEE SPECIAL PROVISIONS FOR MATERIAL & CONSTRUCTION REQUIREMENTS.
- 10 WAIT AT LEAST 24 HOURS OR UNTIL GROUT HAS ACHIEVE THE REQUIRED STRENGTH BEFORE PLACING SUPERSTRUCTURE ELEMENTS.
- 11 CONTRACTOR SHALL VERIFY ELEVATIONS & LOCATION OF PRECAST ELEMENTS. ENGINEER APPROVAL IS NEEDED TO PROCEED AFTER THIS STEP.
- 12 REMOVE TEMPORARY SUPPORTING COLLARS, LEVELING DEVICES AND ANY TEMPORARY SUPPORTS.

PRECAST ELEMENT NOTES:

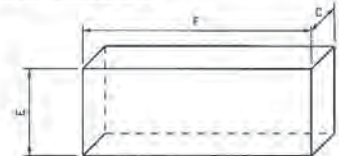
- 1 FABRICATOR SHALL BE RESPONSIBLE FOR EXERCISING CARE IN LIFTING, HANDLING, STORING, AND TRANSPORTING OF THE PRECAST ELEMENTS TO PREVENT CRACKING OR DAMAGING. ELEMENTS SHALL BE LIFTED BY DEVICES AS DESIGNED BY THE CONTRACTOR AND REVIEWED BY THE ENGINEER.
- 2 USE THE PCI DESIGN HANDBOOK, PRECAST AND PRESTRESSED CONCRETE, SEVENTH EDITION WITH ALL INTERIMS AND ERRATA FOR THE DESIGN AND DETAIL OF LIFTING SUPPORTS AND HANDLING CONSIDERATIONS (NO CRACKING CRITERIA). LIFTING HARDWARE LEFT IN PLACE SHALL BE GALVANIZED.
- 3 WEIGHTS ARE DEFINED IN ELEMENT WEIGHT TABLE.
- 4 ALL ELEMENTS SHALL BE CLEAN AND CONTAIN NO DIRT, OIL, GREASE, OR OTHER LOOSE MATERIAL BEFORE PLACING GROUT OR CONCRETE. WATER BLAST AFTER CLEANING.
- 5 FINAL PILE HEAD POSITION SHALL NOT DEVIATE FROM THE LOCATION DESIGNATED BY MORE THAN 1" IN ANY DIRECTION IN ORDER TO ALLOW THE PRECAST ELEMENTS TO BE INSTALLED.
- 6 THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER FOR REVIEW A DETAILED CONSTRUCTION SEQUENCE OF THE WORK TASKS TO BE PERFORMED BEFORE STARTING OF CONSTRUCTION. DETAIL WORK TASKS AND METHOD FOR PILE REMOVAL IN EXISTING BRIDGE, DETAIL WORK TASK AND METHODS FOR QUALITY CONTROL FOR ELEMENT GEOMETRICS (SEE SPECIAL PROVISIONS), DETAIL WORK TASK AND METHODS FOR ADJUSTING ELEVATIONS FOR PRECAST SUBSTRUCTURE ELEMENTS (SEE SPECIAL PROVISIONS), DETAIL WORK TASK AND METHODS FOR PLACING SCC CONCRETE IN VOID AT PIERS (SEE SPECIAL PROVISIONS). THE PLANS HAVE BEEN DEVELOPED ASSUMING THE FOLLOWING CONSTRUCTION SEQUENCES.



ELEVATION VIEW



**PLAN VIEW
PRECAST ELEMENT**



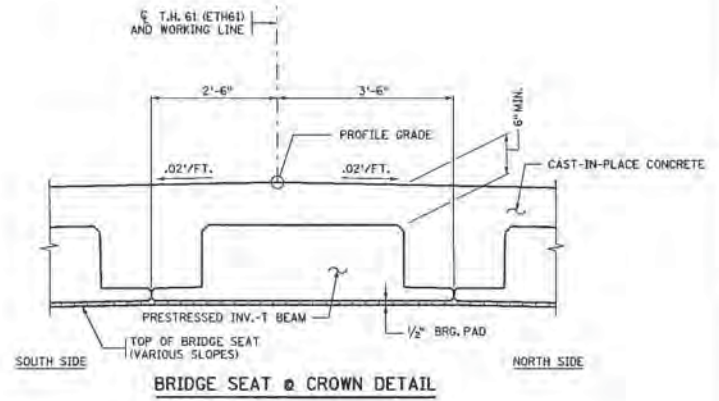
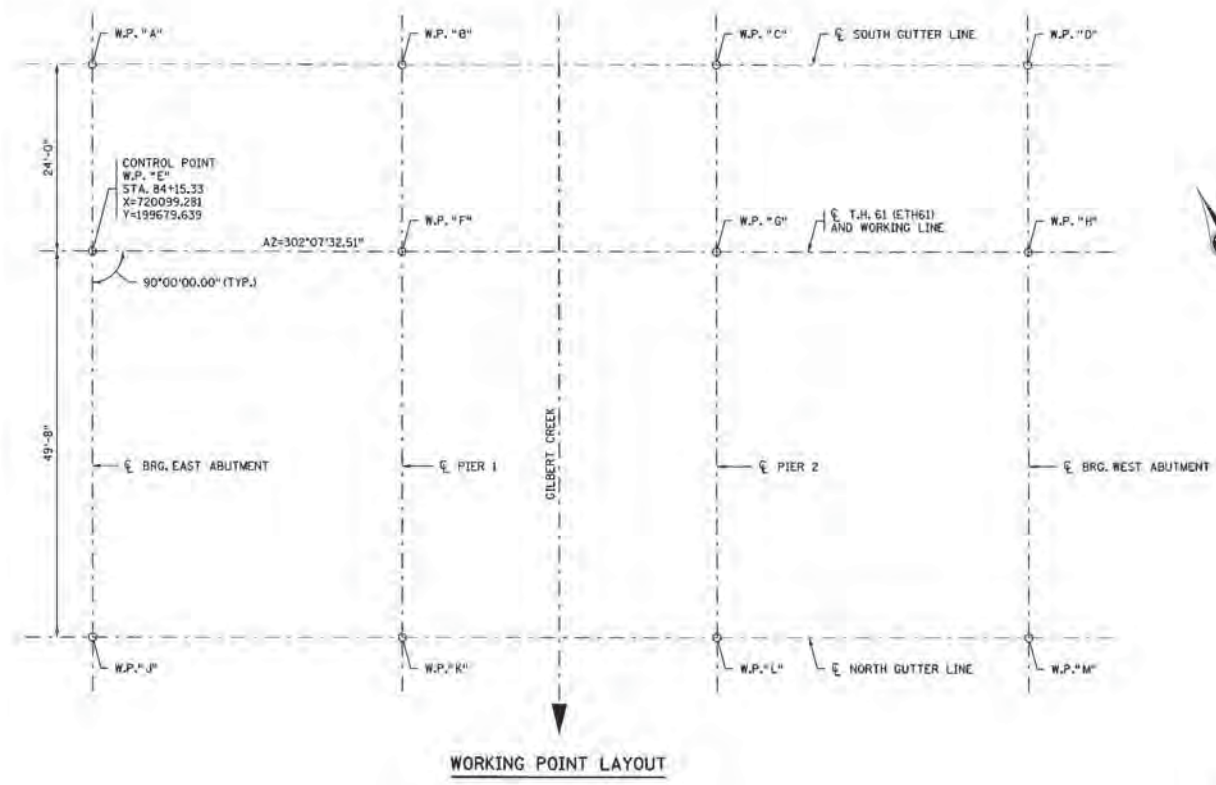
ELEVATION VIEW PRECAST PIER WALL ELEMENT

PRECAST ELEMENT WEIGHT TABLE		
ELEMENT	STAGE	APPROX. WEIGHT (TONS)
WINGWALL	-	18
ABUT	1	43
ABUT	2	45
PIER A	1	34
PIER (PER PANEL) B	1	8
PIER (PER PANEL) B	1	8
PIER C	1	34
PIER A	2	34
PIER (PER PANEL) B	2	8
PIER (PER PANEL) D	2	9
PIER E	2	36

PRECAST ELEMENT TOLERANCES		
A	PRECAST ELEMENT HEIGHT	$\pm 3/8"$
B	PRECAST ELEMENT LENGTH	$\pm 1/4"$
C	PRECAST ELEMENT DEPTH	$\pm 1/4"$
D	PILE THRU HOLE LOCATION	$\pm 3/8"$
E	PIER WALL HEIGHT	$\pm 1/2"$
F	PIER WALL LENGTH	$\pm 1/4"$

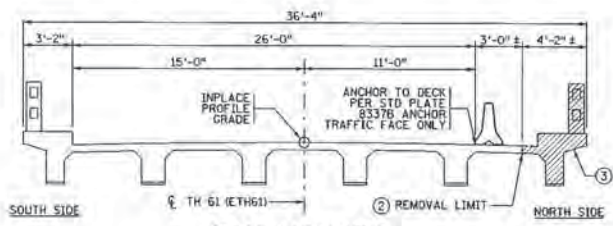
CERTIFIED BY: <i>J. Lin</i> NAME: JINSHYA J. LIN LIC. NO. 19115	DATE: 12/3/10	TITLE: CONSTRUCTION NOTES	DES: P.J.K. DRG: J.J.L.	DR: K.G.S. DR: J.A.J.	APPROVED: <i>J. Lin</i> 12/3/10	BRIDGE NO. 25024
SHEET NO. 3 OF 54 SHEETS						

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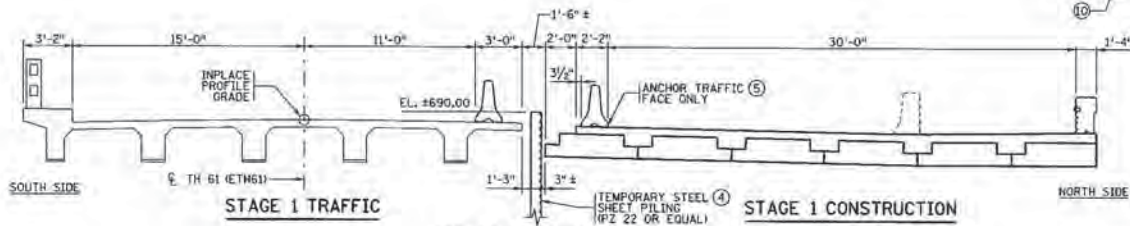


DIMENSIONS BETWEEN WORKING POINTS													ELEVATIONS				
POINT	STATION	X-COORDIN	Y-COORDIN	A	B	C	D	E	F	G	H	J	K	L	M	TOP OF ROADWAY	POINT
A	84+15.33	720086.518	199659.314	40.17				24.00	46.79				83.91	109.37		688.56	A
B	84+55.50	720052.501	199680.674		40.67				24.00	47.22			83.91	84.15	109.37	688.59	B
C	84+96.17	720018.062	199702.299			40.17			24.00	46.79	109.37	84.15		83.91		688.58	C
D	85+36.33	719984.045	199723.659				24.00						109.37	83.91		688.55	D
E	84+15.33	720099.281	199679.639					40.17			49.67	63.88				689.04	E
F	84+55.50	720065.264	199700.999				40.67				49.67	64.19				689.07	F
G	84+96.17	720030.824	199722.624							40.17			49.67	63.88		689.06	G
H	85+36.33	719996.808	199743.984										49.67			689.03	H
J	84+15.33	720125.692	199721.701									40.17				688.38	J
K	84+55.50	720091.676	199743.061										40.67			688.41	K
L	84+96.17	720057.236	199764.686											40.17		688.40	L
M	85+36.33	720023.219	199786.046													688.37	M

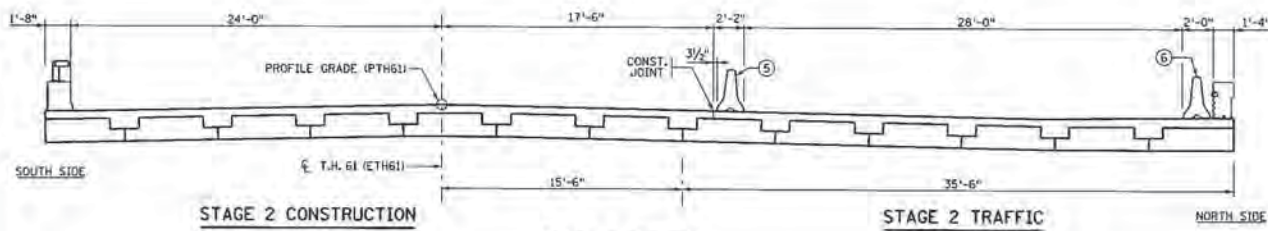
CERTIFIED BY <i>Jishya J. Lin</i> LICENSED PROFESSIONAL ENGINEER NAME: JISHYA J. LIN	DATE 12/3/10	TITLE BRIDGE LAYOUT	DESIGNED BY P.J.K.	DRAWN BY P.F./H.A.W.	APPROVED BY J.J.L.	DATE 12/3/10	BRIDGE NO. 25024
						SHEET NO. 4 OF 54 SHEETS	



STAGE 1 DEMOLITION
(INPLACE BRIDGE NO 6773)



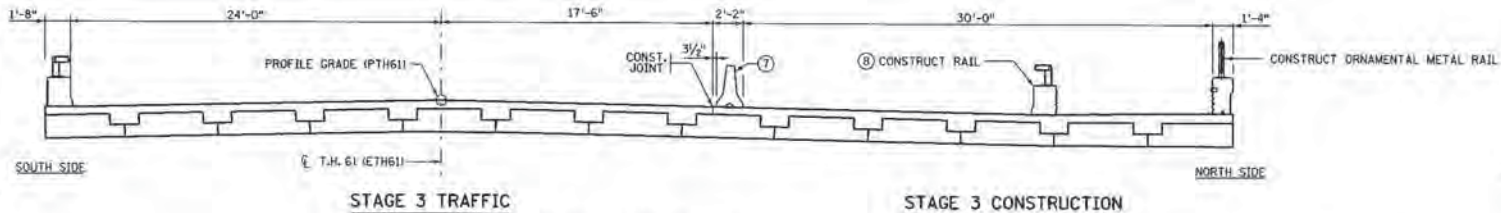
STAGE 1 SECTION
STAGE 2 PER SP2513-70 GRADING PLAN



STAGE 2 CONSTRUCTION

STAGE 2 SECTION
STAGE 3 PER SP2513-70 GRADING PLAN

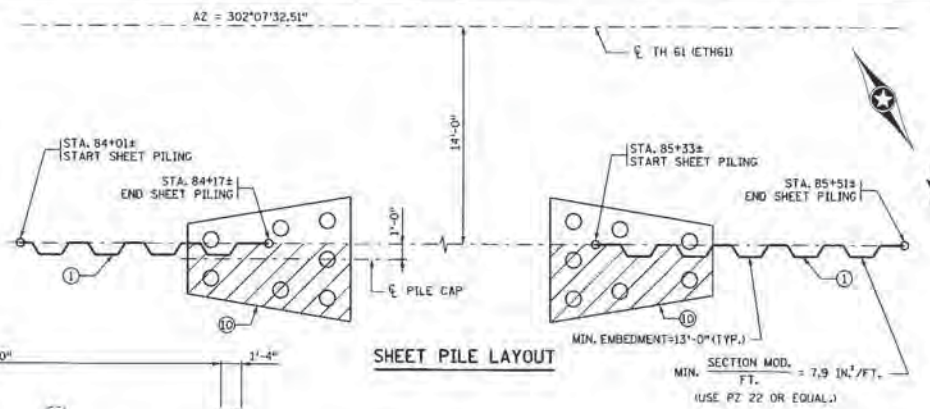
STAGE 2 TRAFFIC



STAGE 3 TRAFFIC

STAGE 3 SECTION (3)
STAGE 4 PER SP2513-70 GRADING PLAN

STAGE 3 CONSTRUCTION



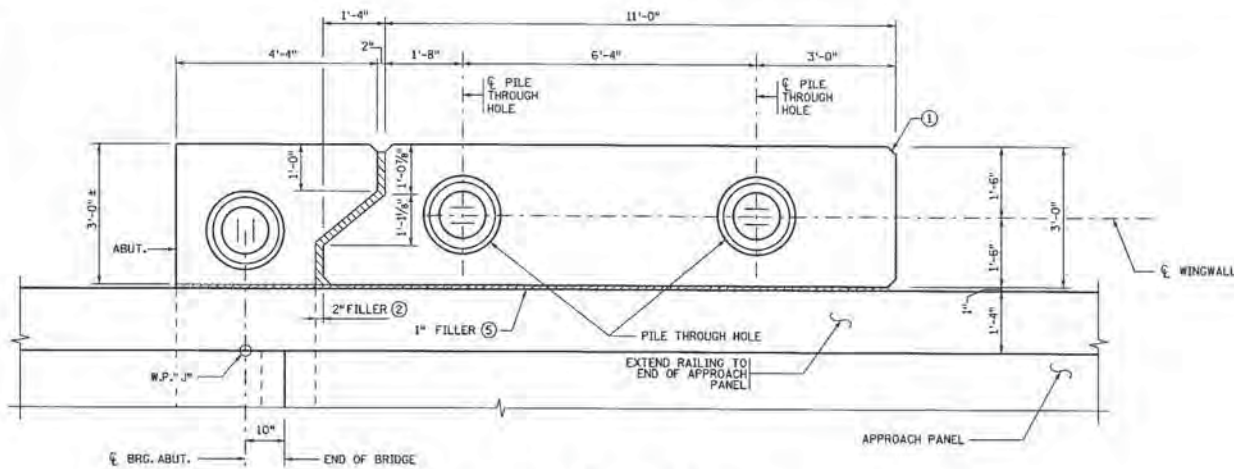
SHEET PILE LAYOUT

NOTES:

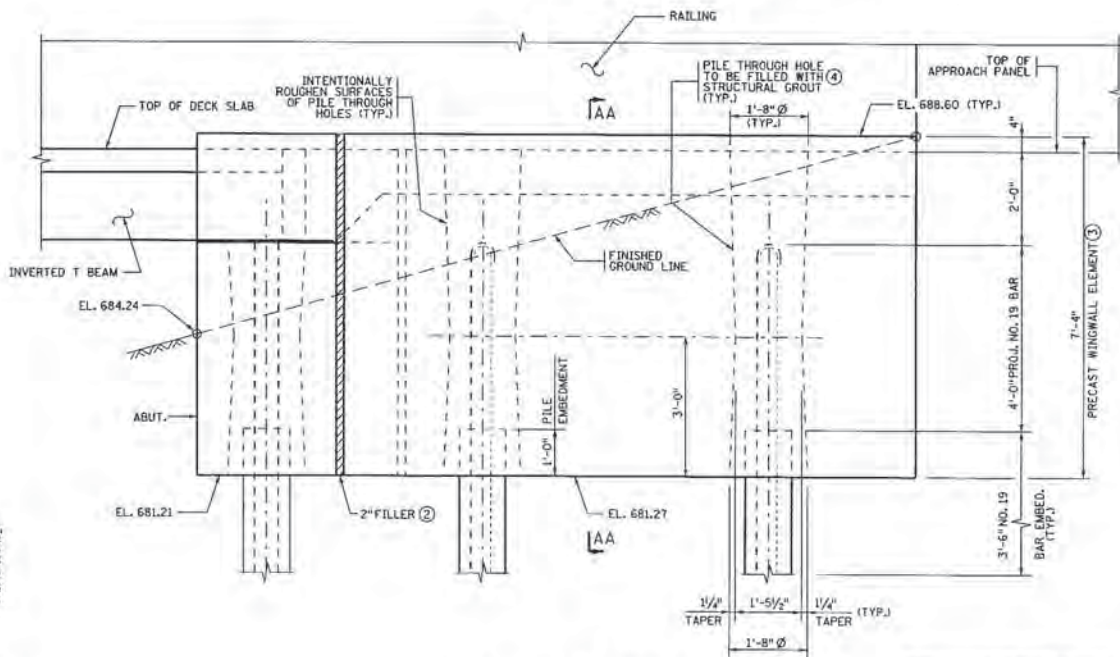
- 1 TOP OF SHEET PILING EL. = 690 FT.-MIN.
- 2 NO CUTTING WILL BE PERMITTED UNTIL THE CUTTING LIMITS HAVE BEEN OUTLINED BY THE CONTRACTOR AND APPROVED BY THE ENGINEER. REMOVAL SHALL CONFORM TO SPEC 2435.
- 3 REMOVAL SHALL INCLUDE, IF NECESSARY, PART OF INPLACE RAILING, DECK, CURB, ABUTMENTS, WINGWALLS, PIER CAP, PILE CAPS & TIMBER PILES FOR THE INSTALLATION OF TEMPORARY STEEL SHEET PILING. THIS REMOVAL WORK SHALL BE INCLUDED IN PAY ITEM 2442.501 "REMOVE EXISTING BRIDGE". SEE SPECIAL PROVISIONS.
- 4 TEMPORARY STEEL SHEET PILING SHALL BE INCLUDED IN PAY ITEM 2452.601, "STEEL SHEET PILING (TEMPORARY)". SEE SPECIAL PROVISIONS.
- 5 ANCHORAGES SHALL BE PAID IN ITEM NO. 2433.516, "ANCHORAGES TYPE 1". THE TEMPORARY BARRIER SHALL BE INCLUDED IN GRADING PORTION OF THIS CONTRACT.
- 6 NO ANCHORAGES NEEDED.
- 7 REMOVAL OF THE ANCHORAGES & GROUTING OF HOLES SHALL BE PAID IN ITEM NO. 2433.602, "REMOVE ANCHORAGE". THE REMOVAL OF TEMPORARY BARRIERS SHALL BE INCLUDED IN THE GRADING PORTION OF THIS CONTRACT. SEE SPECIAL PROVISIONS.
- 8 TO BE INSTALLED WITH REINFORCEMENT BAR ANCHORAGES. SEE SPECIAL PROVISIONS.
- 9 SEE ABUTMENT & PIER SHEETS FOR STAGING CONSTRUCTION & CLOSURE POLYS.
- 10 CONTRACTOR SHALL DETERMINE CONCRETE LIMIT FOR STAGE 1 CONSTRUCTION. THE REMOVAL LIMIT SHALL BE REVIEWED BY THE ENGINEER. SEE SPECIAL PROVISIONS.

INDICATES REMOVAL

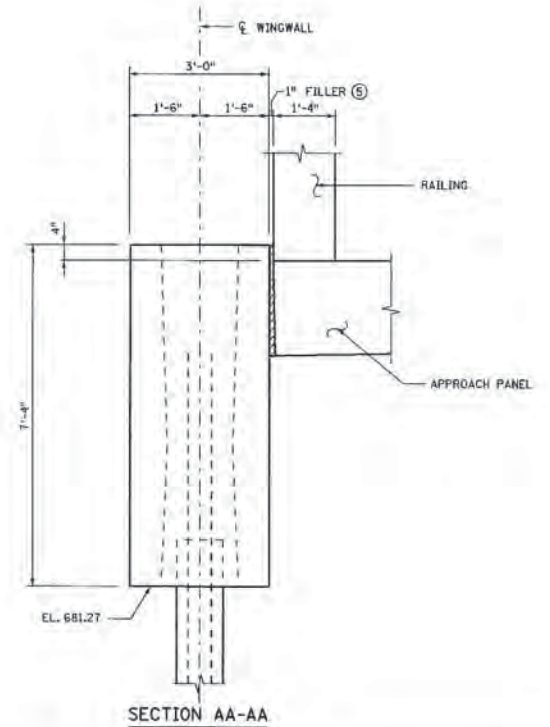
CERTIFIED BY <i>Jinshya J. Lin</i> DATE: 12/3/10 LISENSED PROFESSIONAL ENGINEER NAME: JINSHYA J. LIN LIC. NO. 19115	TITLE: CONSTRUCTION STAGING	DES: P.J.K. CHK: J.J.L.	DR: K.G.S. CHK: J.A.J.	APPROVED: 12/3/10	BRIDGE NO. 25024
	SHEET NO. 5 OF 54 SHEETS				



NORTH EAST WINGWALL PLAN VIEW
(STAGE 1)



NORTH EAST WINGWALL ELEVATION
(STAGE 1)



SECTION AA-AA

NOTES:

- ① CHAMFER 2" UNLESS NOTED OTHERWISE.
- ② POLYSTYRENE TYPE A.
- ③ STRUCTURAL CONCRETE (3Y43).
- ④ SEE SPECIAL PROVISIONS.
- ⑤ POLYSTYRENE TYPE B.

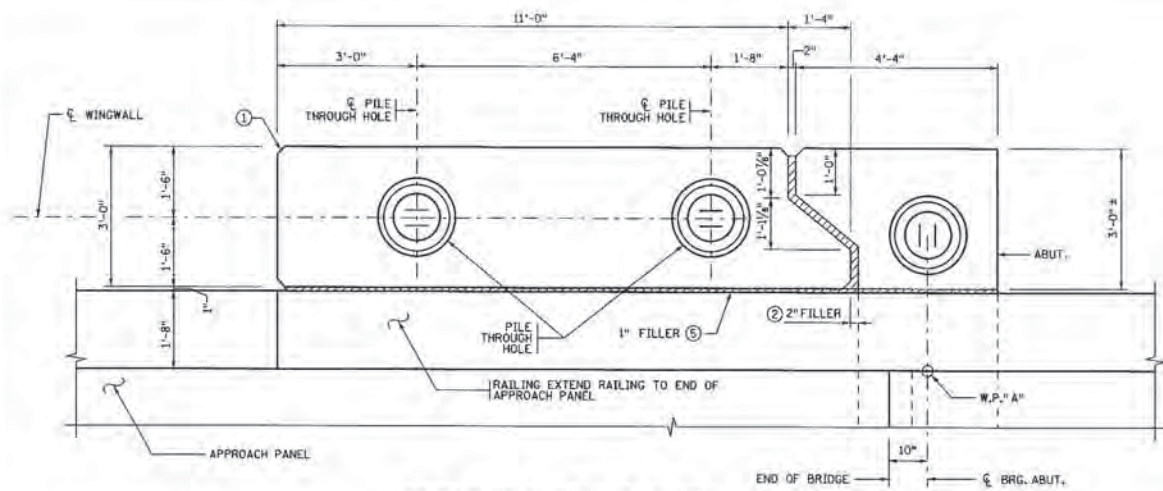
CERTIFIED BY *J. L. Lin*
 LICENSED PROFESSIONAL ENGINEER
 NAME: JINSHYA J. LIN DATE: 12/21/10
 LIC. NO. 19115

TITLE:
EAST ABUTMENT GEOMETRICS

DES: P.J.K. OR: P.F./TKB
 CHK: J.L.L. CHK: P.J.K./MAK
 APPROVED: 12/21/10

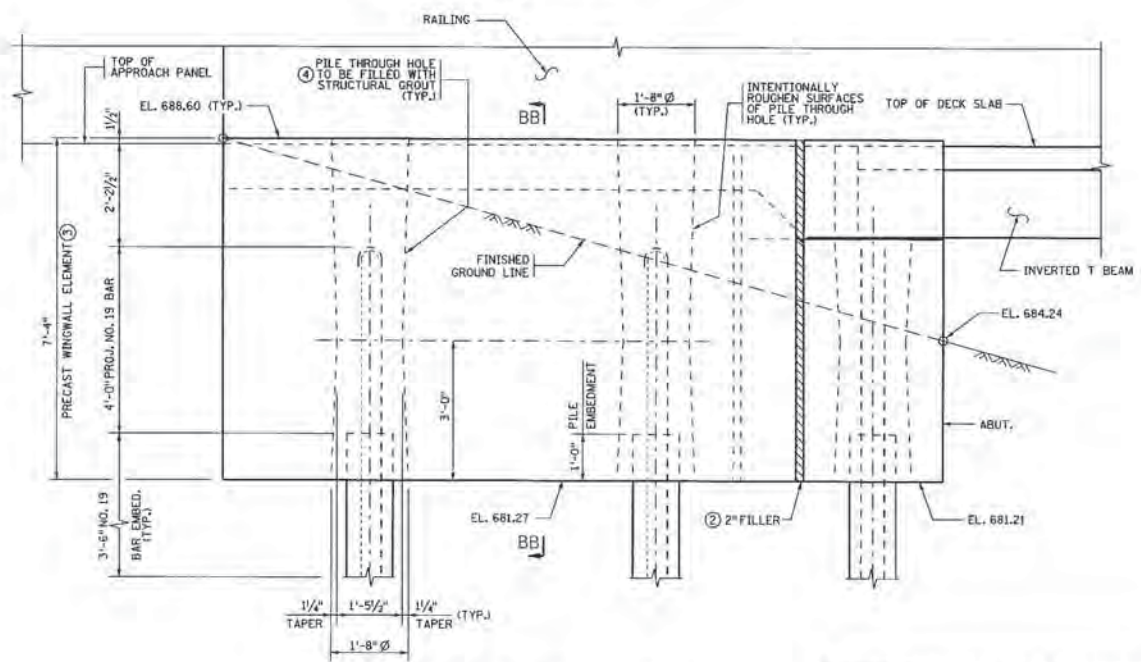
BRIDGE NO.
 25024

SHEET NO. 7 OF 54 SHEETS

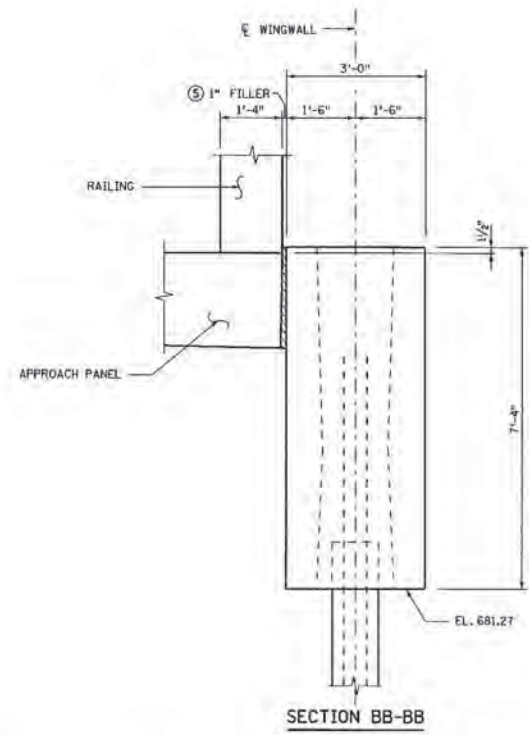


SOUTH EAST WINGWALL PLAN VIEW
(STAGE 2)

- NOTES:**
- ① CHAMFER 2" UNLESS NOTED OTHERWISE.
 - ② POLYSTYRENE TYPE A.
 - ③ STRUCTURAL CONCRETE (3Y43).
 - ④ SEE SPEC/AIL PROVISIONS.
 - ⑤ POLYSTYRENE TYPE B.



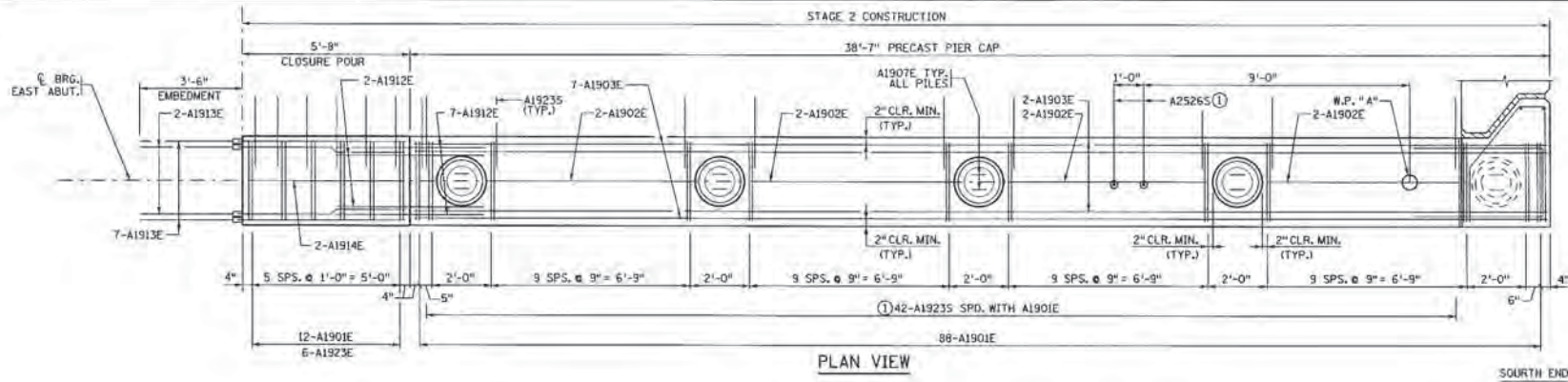
SOUTH EAST WINGWALL ELEVATION
(STAGE 2)



SECTION BB-BB

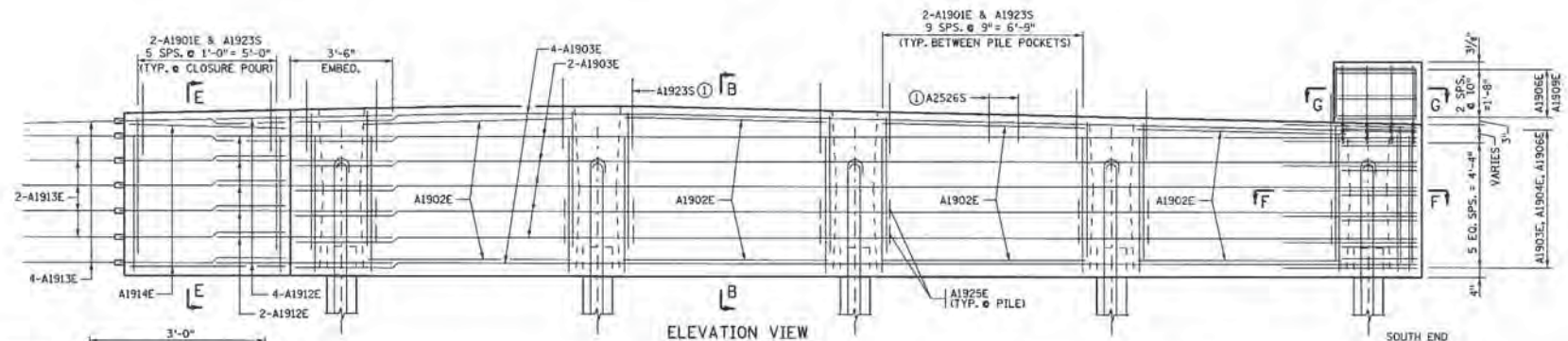
CERTIFIED BY: <i>Jishya J. Lin</i> LICENSED PROFESSIONAL ENGINEER NAME: JISHYA J. LIN LIC. NO. 19115	DATE: 12/21/10	TITLE: EAST ABUTMENT GEOMETRICS	DES: P.J.K.	OR: P.F./TKB	APPROVED:	BRIDGE NO. 25024
			CHK: J.J.L.	CHK: P.J.K./MAK	12/21/10	

12/16/2010 9:23:27 AM



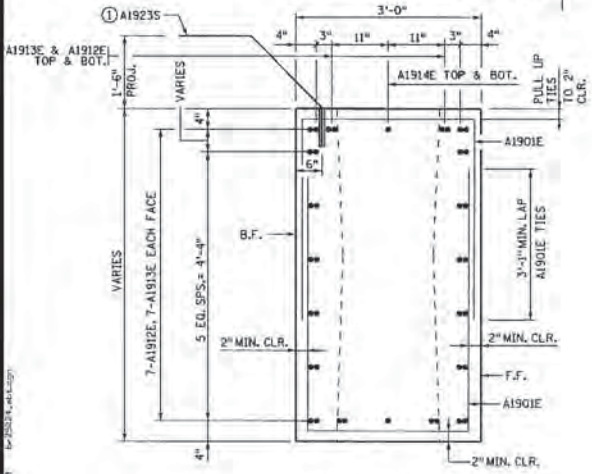
PLAN VIEW

SOUTH END

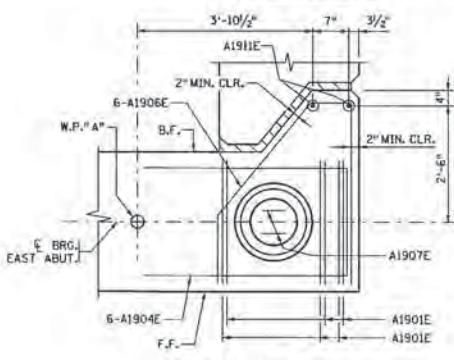


ELEVATION VIEW

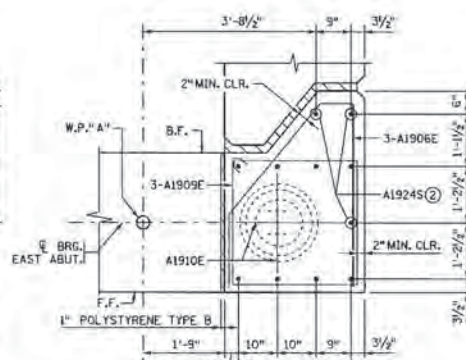
SOUTH END



SECTION E-E



SECTION F-F



SECTION G-G

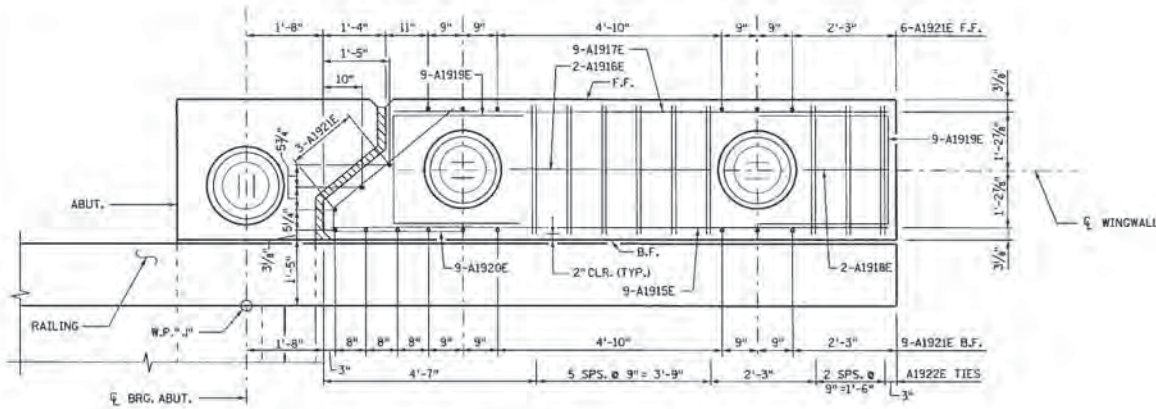
- NOTES:**
- F.F. DENOTES FRONT FACE.
 - B.F. DENOTES BACK FACE.
 - SEE SHEET NO. 9 FOR SECTION B.B.
 - PARAPET ANCHORAGE TO BE INSTALLED AFTER DECK PLACEMENT.
 - ① FIELD LOCATE A1923S AND A2526S TO AVOID DRILLING THROUGH HORIZONTAL REBARS. SEE SHEET NO. 20 FOR ANCHORAGE DETAILS.
 - ② A1924S TO BE PROJECTED FROM PRECAST ABUTMENT INTO CAST-IN-PLACE PARAPET 1'-10" @ SOUTH END. SEE DETAIL 2 ON SHEET NO. 20.

CERTIFIED BY *J. Lin* 12/3/10
 LICENSED PROFESSIONAL ENGINEER GATE
 NAME: JINSHYA J. LIN LIC. NO. 19115

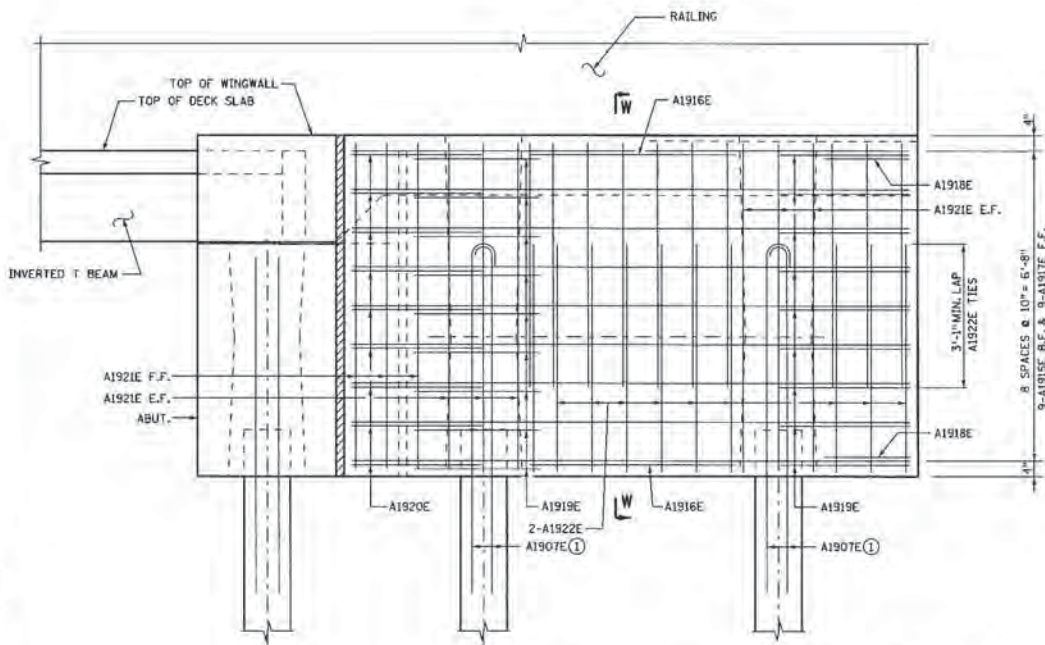
TITLE: EAST ABUTMENT REINFORCEMENT

DES: P.J.K. DR: P.F./TKB APPROVED:
 CHG: J.J.L. CHG: P.J.K./MAK 12/3/10
 SHEET NO. 10 OF 54 SHEETS

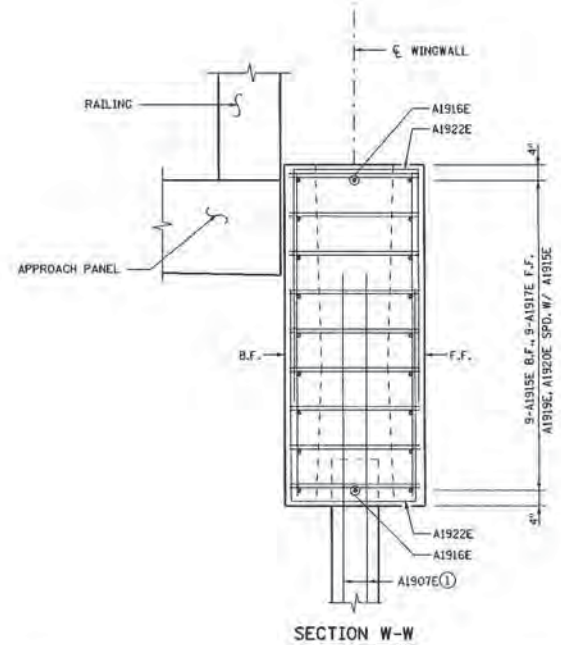
BRIDGE NO. 25024



NORTH EAST WINGWALL PLAN VIEW
(STAGE 1)



NORTH EAST WINGWALL ELEVATION
(STAGE 1)



SECTION W-W

NOTES:

- B.F. DENOTES BACK FACE.
- F.F. DENOTES FRONT FACE.
- E.F. DENOTES EACH FACE.

- ① PLACED IN FIELD BEFORE PILE IS FILLED WITH CONCRETE.

CERTIFIED BY *J. Lin* 12/3/10
REGISTERED PROFESSIONAL ENGINEER
 NAME: J. LIN DATE: 12/3/10
 LIC. NO. 19115

TITLE: **EAST ABUTMENT REINFORCEMENT**

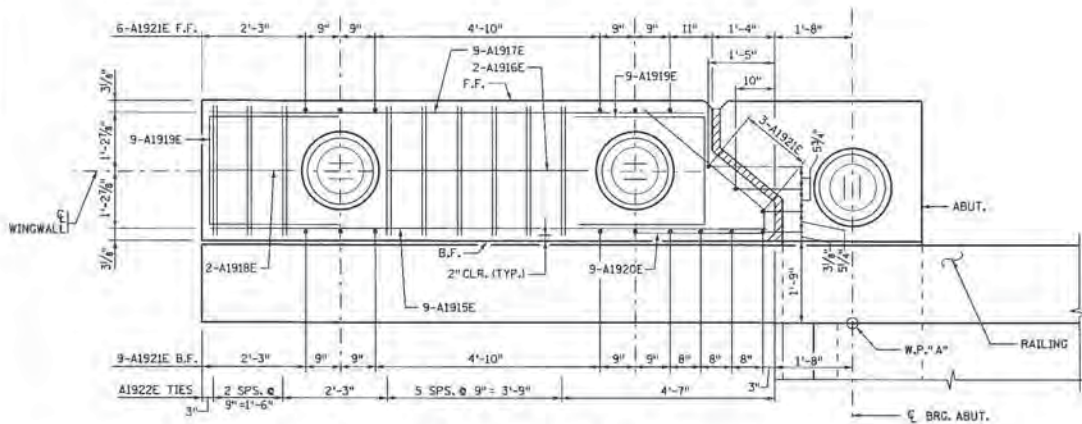
DES: P.J.K. DR: P.F./TKB APPROVED: *J.J.L.*
 CHK: J.J.L. DRG: P.J.K./MAX DATE: 12/3/10
 SHEET NO. 11 OF 54 SHEETS

BRIDGE NO. 25024

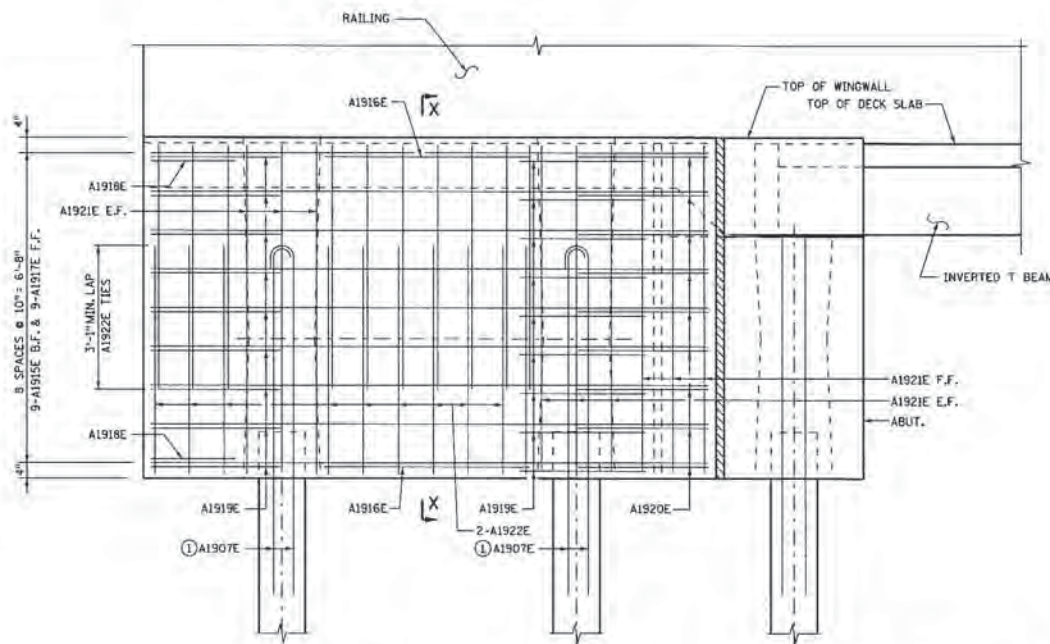
NOTES:

- B.F. DENOTES BACK FACE.
- F.F. DENOTES FRONT FACE.
- E.F. DENOTES EACH FACE.

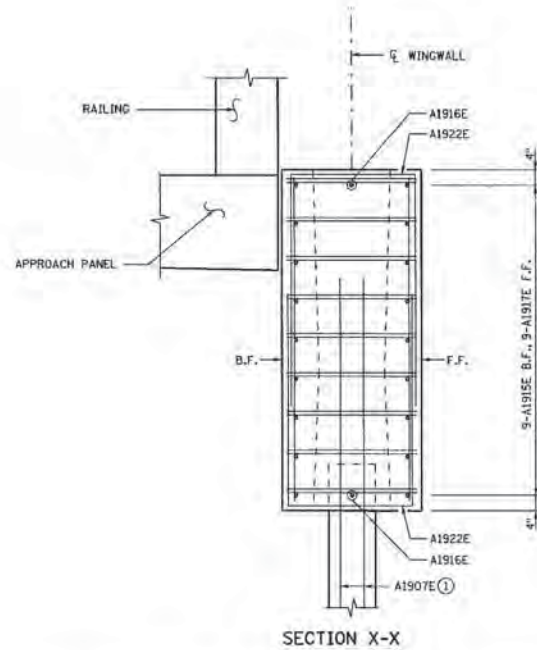
① PLACED IN FIELD BEFORE PILE IS FILLED WITH CONCRETE.



SOUTH EAST WINGWALL PLAN VIEW
(STAGE 2)



SOUTH EAST WINGWALL ELEVATION
(STAGE 2)

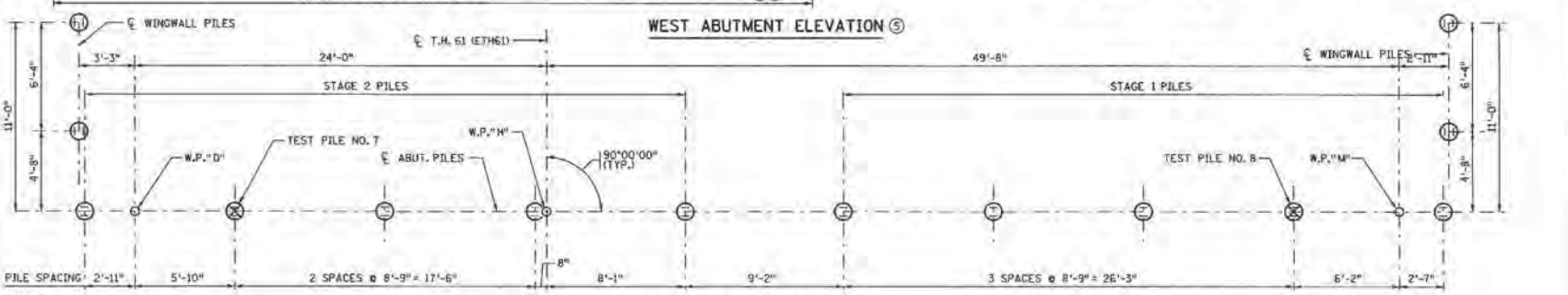
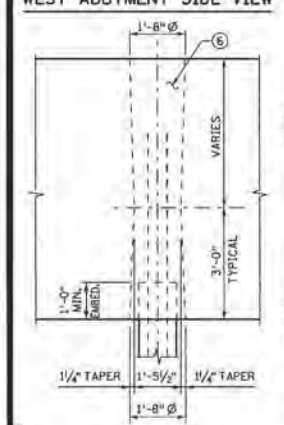
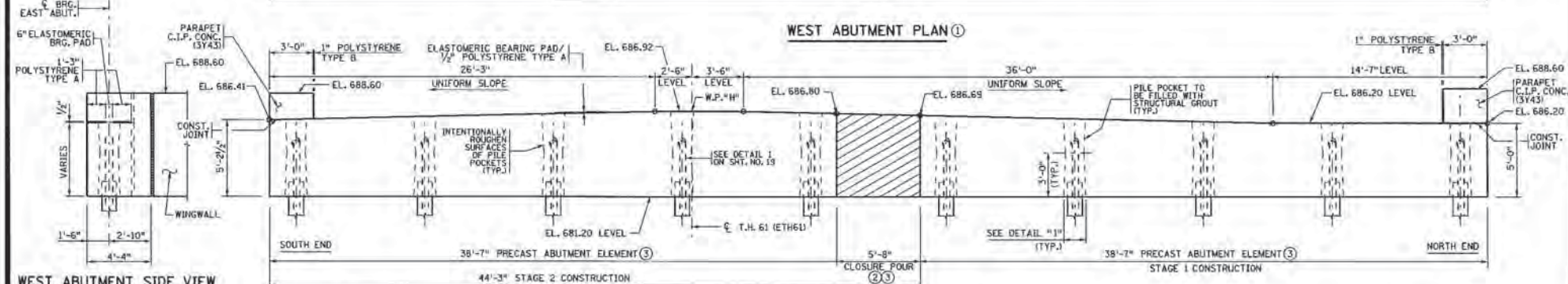
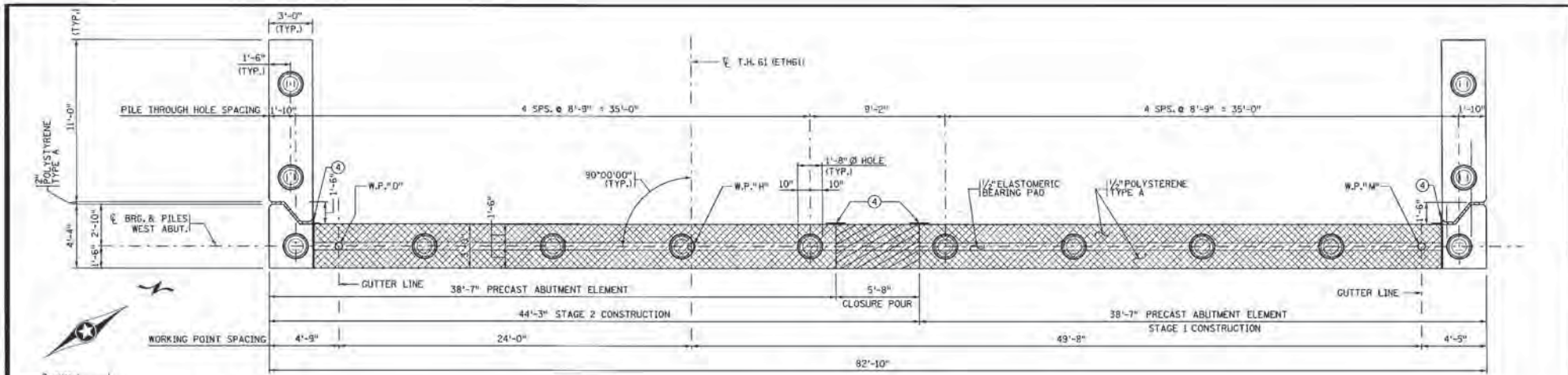


CERTIFIED BY: *J. Lin* 12/3/10
REGISTERED PROFESSIONAL ENGINEER
 NAME: JIBSHYA J. LIN DATE: 12/3/10
 LIC. NO. 19115

TITLE: EAST ABUTMENT REINFORCEMENT

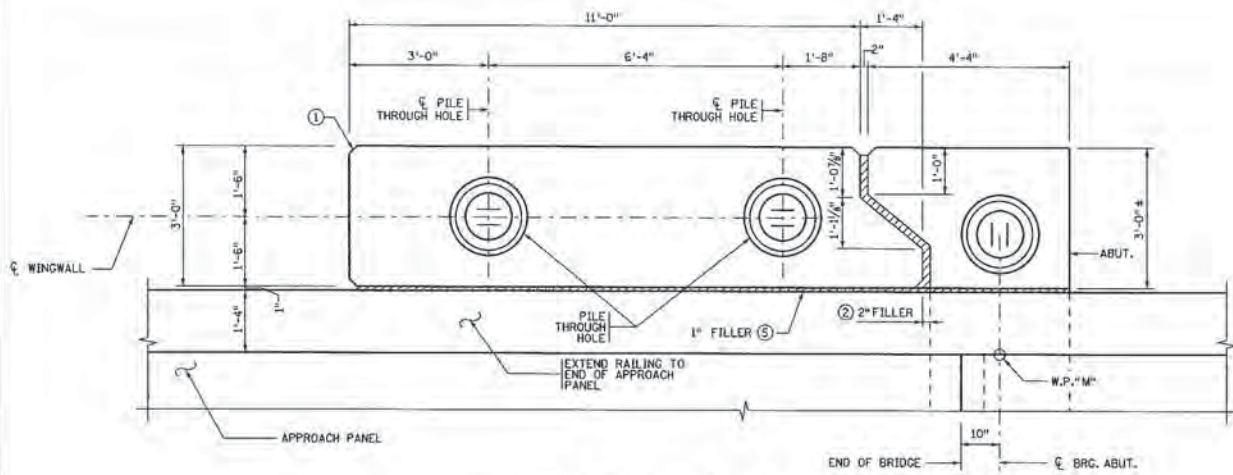
DES: P.J.K. DR: P.J./TKB APPROVED: *J.J.L.*
 CHK: J.J.L. CHK: P.J.K./MAK DATE: 12/3/10
 SHEET NO. 12 OF 54 SHEETS

BRIDGE NO. 25024

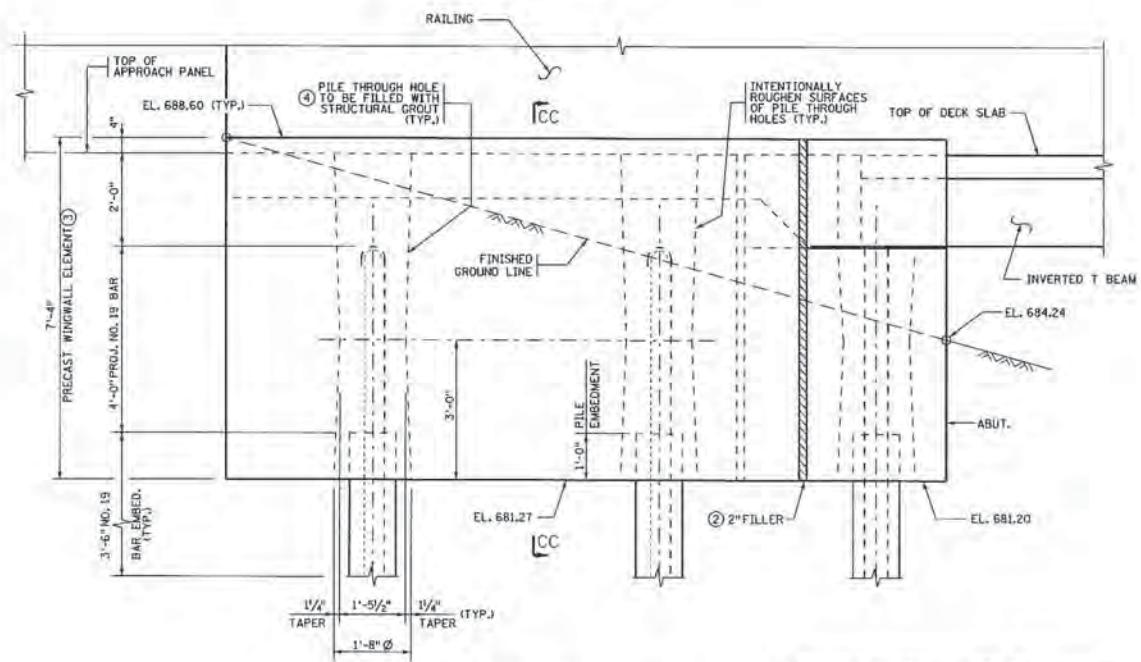


- NOTES:
- ① SEE SHEET NO. 20 FOR PILE NOTES AND PRECAST ABUTMENT ELEMENT NOTES.
 - ② CLOSURE POUR TO OCCUR @ END OF STAGE 2 CONSTRUCTION BEFORE BEAM PLACEMENT.
 - ③ STRUCTURAL CONCRETE (3Y43).
 - ④ MEMBRANE WATERPROOFING SYSTEM PER MN/DOT SPEC. 2481.3B & 2'-0" WIDE GEOTEXTILE TYPE II PER MN/DOT SPEC. 3733.
 - ⑤ ELEVATIONS SHOWN TO BE TO THE TOP OF CONCRETE.
 - ⑥ FILL WITH GROUT. SEE SPECIAL PROVISIONS.

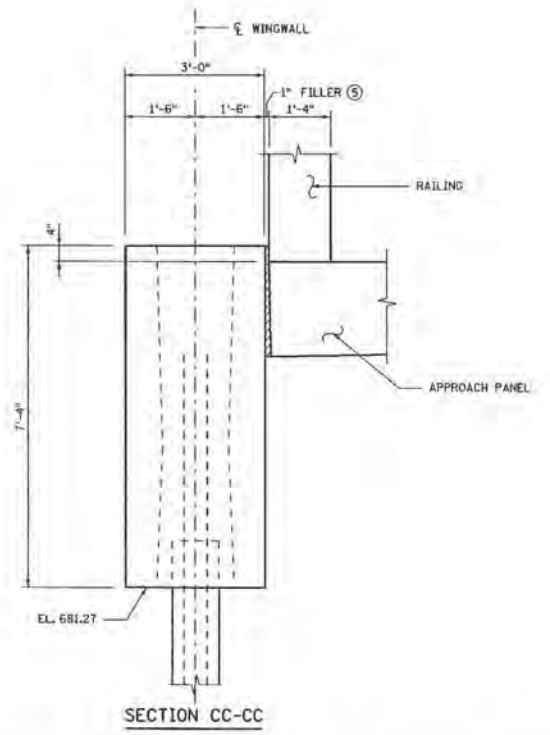
CERTIFIED BY <i>J. Lin</i> LICENSED PROFESSIONAL ENGINEER NAME: JINSHYA J. LIN LIC. NO. 13115	DATE 12/3/10 LIC. NO. 13115	TITLE:	DES:	DR:	CHK:	APPROVED:	BRIDGE NO. 25024
		WEST ABUTMENT GEOMETRICS	P.J.K.	TKB	J.J.L.	P.J.K./MAK	
SHEET NO. 13 OF 54 SHEETS							



NORTH WEST WINGWALL PLAN VIEW
(STAGE 1)



NORTH WEST WINGWALL ELEVATION
(STAGE 1)

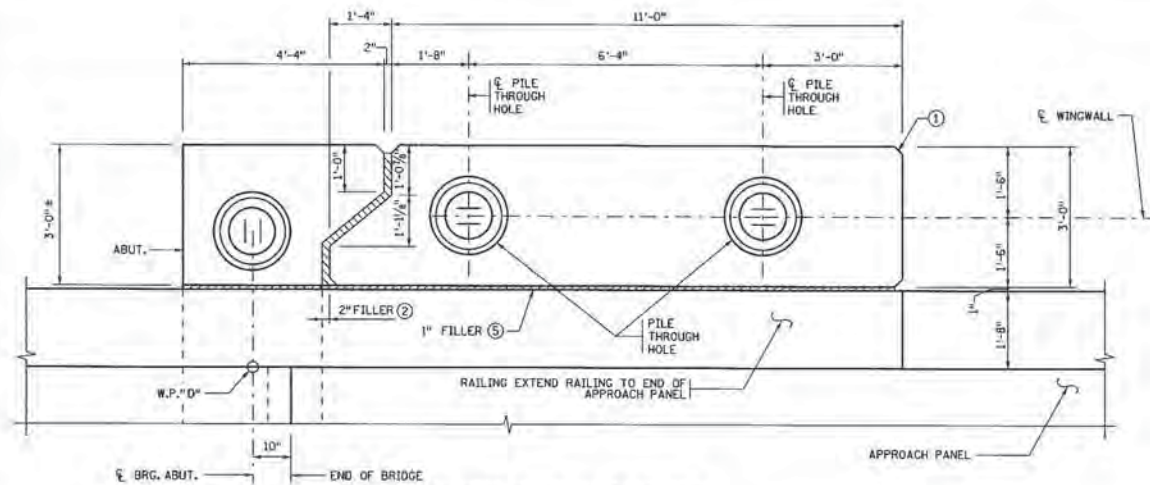


SECTION CC-CC

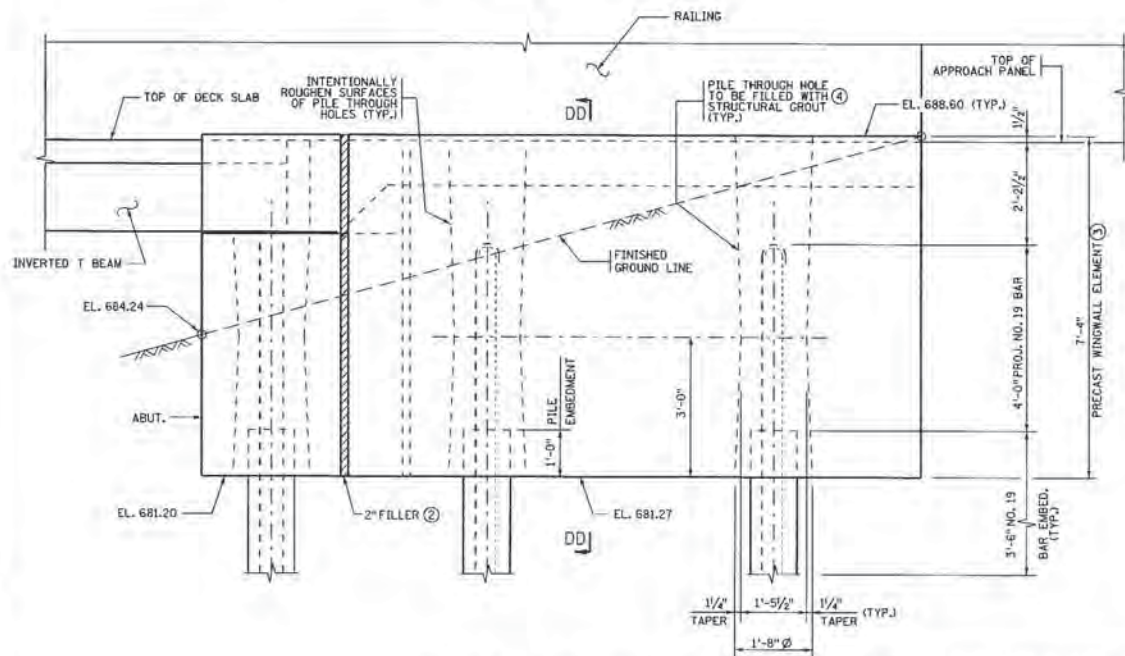
- NOTES:**
- ① CHAMFER 2" UNLESS NOTED OTHERWISE.
 - ② POLYSTYRENE TYPE A.
 - ③ STRUCTURAL CONCRETE (3Y43).
 - ④ SEE SPECIAL PROVISIONS.
 - ⑤ POLYSTYRENE TYPE B.

12/16/2018 10:23:27 AM

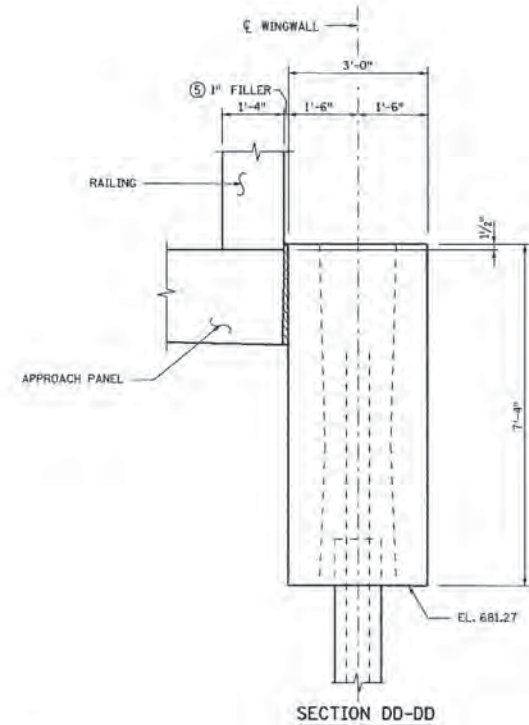
CERTIFIED BY: <i>Jinshya J. Lin</i> LICENSED PROFESSIONAL ENGINEER NAME: JINSHYA J. LIN DATE: 12/21/18 LIC. NO. 19115	TITLE: WEST ABUTMENT GEOMETRICS	DES: P.J.K. CHK: J.J.L.	DRG: TKB CHK: P.J.K./MAK	APPROVED: <i>[Signature]</i> DATE: 12/21/18	BRIDGE NO. 25024
		SHEET NO. 14 OF 54 SHEETS			



SOUTH WEST WINGWALL PLAN VIEW
(STAGE 2)



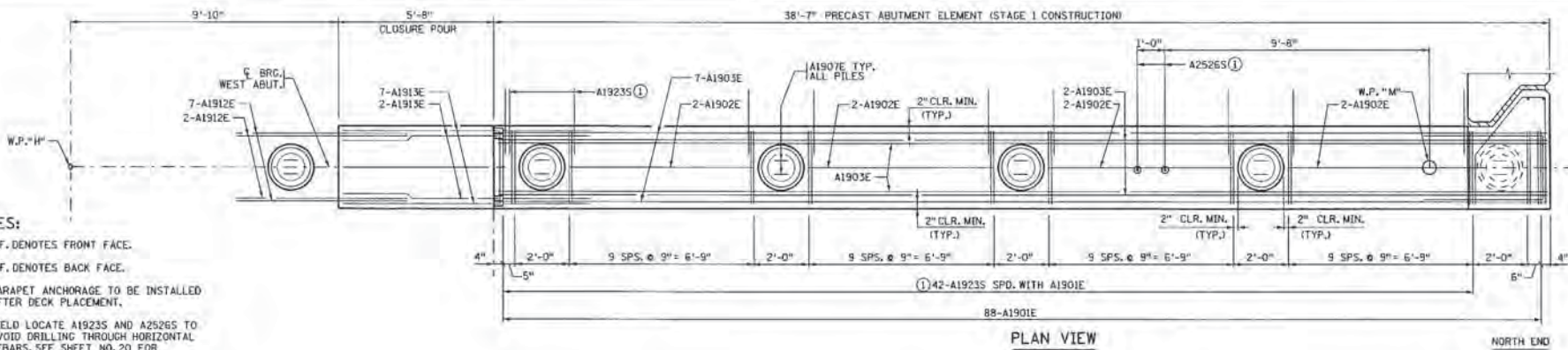
SOUTH WEST WINGWALL ELEVATION
(STAGE 2)



SECTION DD-DD

- NOTES:**
- ① CHAMFER 2" UNLESS NOTED OTHERWISE.
 - ② POLYSTYRENE TYPE A.
 - ③ STRUCTURAL CONCRETE (3Y43).
 - ④ SEE SPECIAL PROVISIONS.
 - ⑤ POLYSTYRENE TYPE B.

CERTIFIED BY <i>J. L. N.</i> NAME: JHSHYA J. L. N.	DATE 12/21/10 LIC. NO. 19115	TITLE: WEST ABUTMENT GEOMETRICS	DES: P.J.K. CHK: J.J.L.	DR: TXB CHK: P.J.K./MAK	APPROVED: 12/21/10	BRIDGE NO. 25024
SHEET NO. 15 OF 54 SHEETS						



NOTES:

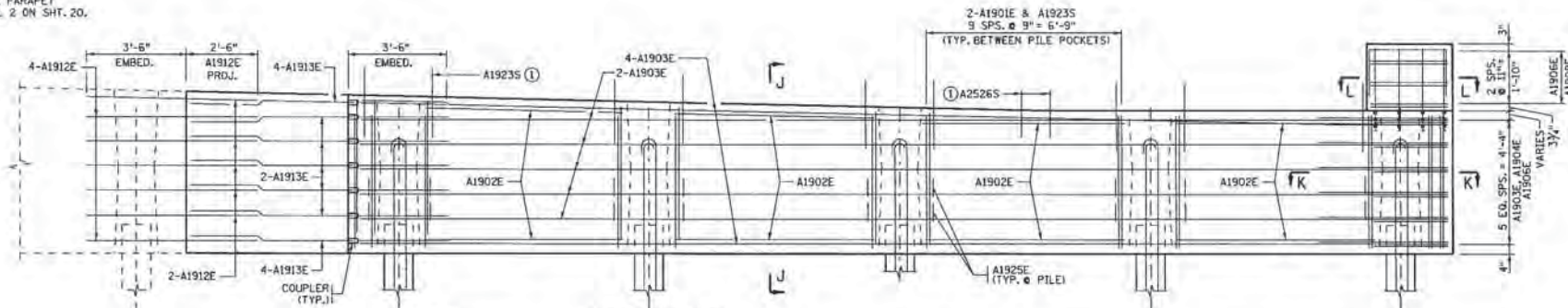
F.F. DENOTES FRONT FACE.

B.F. DENOTES BACK FACE.

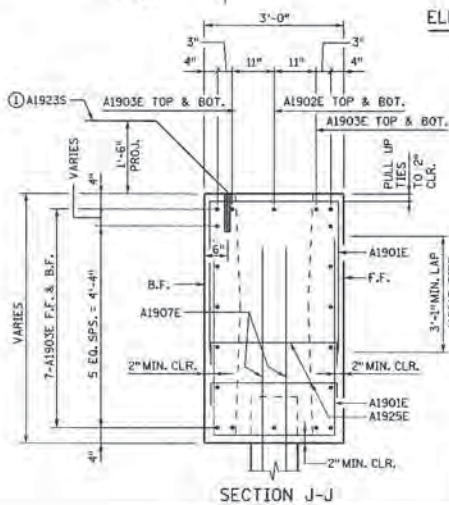
PARAPET ANCHORAGE TO BE INSTALLED AFTER DECK PLACEMENT.

① FIELD LOCATE A1923S AND A2526S TO AVOID DRILLING THROUGH HORIZONTAL REBARS. SEE SHEET NO. 20 FOR ANCHORAGE DETAILS.

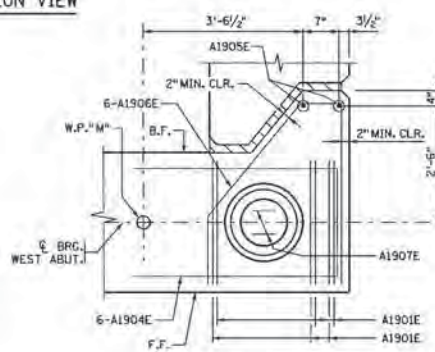
② A1908S TO BE PROJECTED FROM PRECAST ABUTMENT INTO CAST-IN-PLACE PARAPET 2'-2\"/>



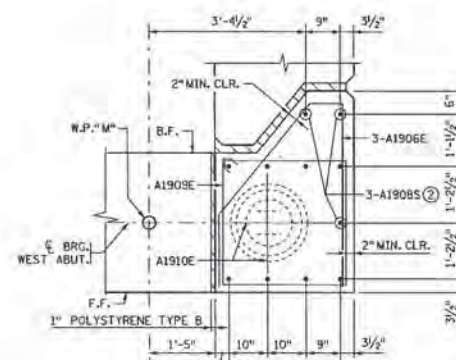
ELEVATION VIEW



SECTION J-J



SECTION K-K



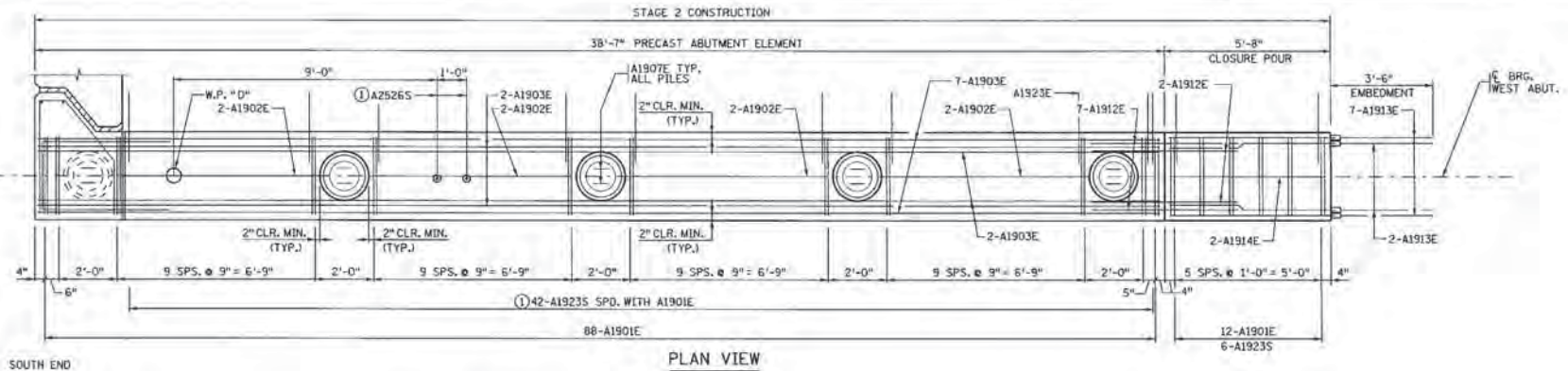
SECTION L-L

CERTIFIED BY *Jimshya J. Lin* 12/3/10
 LICENSED PROFESSIONAL ENGINEER DATE
 NAME: JIMSHYA J. LIN LIC. NO. 19115

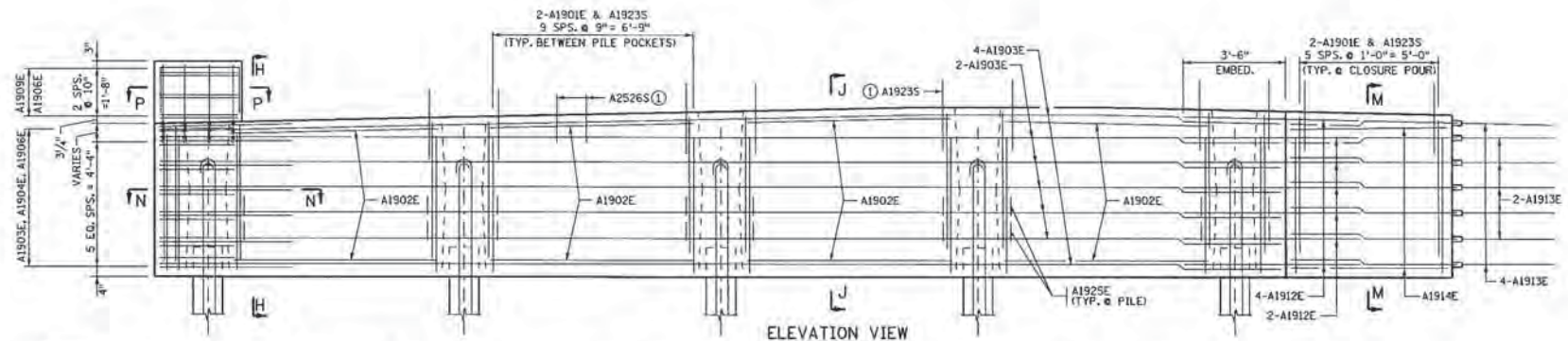
TITLE: **WEST ABUTMENT REINFORCEMENT**

DES: P.J.K. DR: TKB APPROVED: *J.J.L.*
 CHK: J.J.L. CRK: P.J.K./M.A.K. 12/3/10
 SHEET NO. 16 OF 54 SHEETS

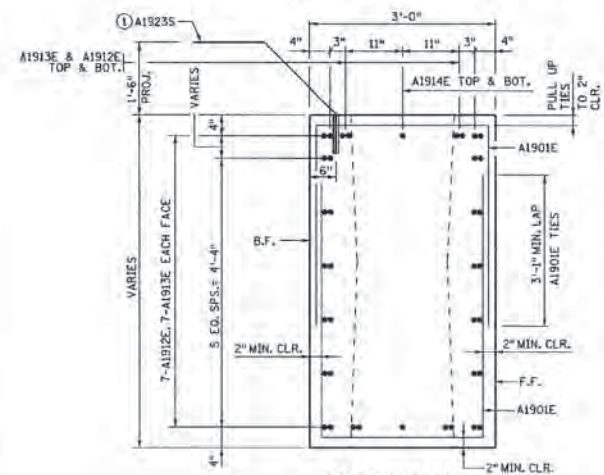
BRIDGE NO. 25024



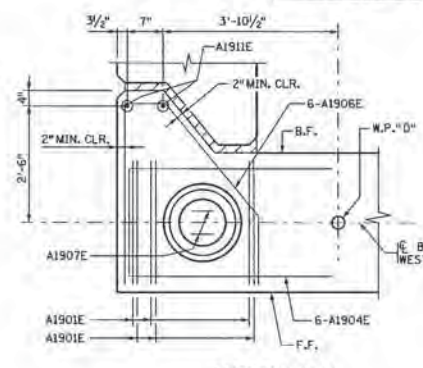
PLAN VIEW



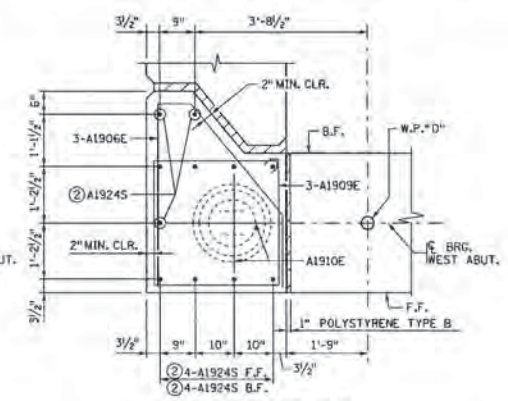
ELEVATION VIEW



SECTION M-M



SECTION N-N



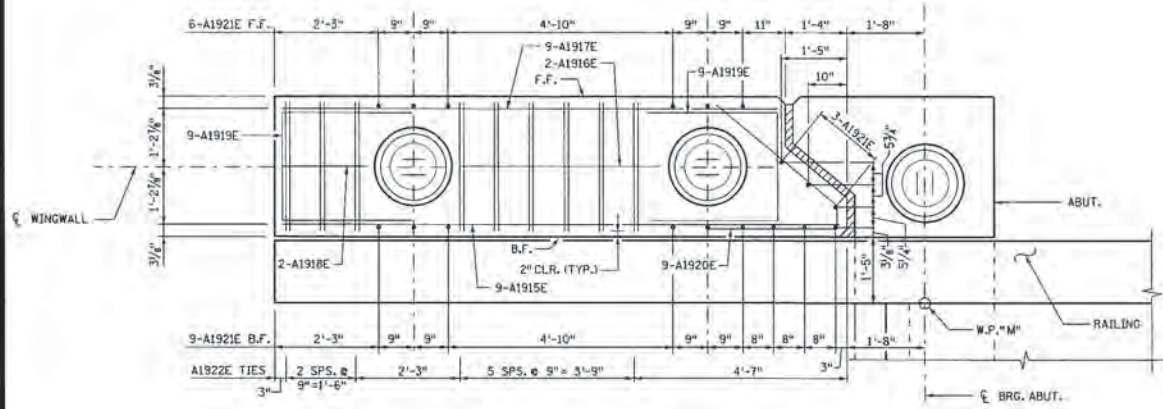
SECTION P-P

- NOTES:**
- F.F. DENOTES FRONT FACE.
 - B.F. DENOTES BACK FACE.
 - SEE SHEET NO. 16 FOR SECTION J-J.
 - PARAPET ANCHORAGE TO BE INSTALLED AFTER DECK PLACEMENT.
 - ① FIELD LOCATE A1923S AND A2526S TO AVOID DRILLING THROUGH HORIZONTAL REBARS. SEE SHEET NO. 20 FOR ANCHORAGE DETAILS.
 - ② A1924S TO BE PROJECTED FROM PRECAST ABUTMENT INTO CAST-IN-PLACE PARAPET 1'-10" @ SOUTH END. SEE DETAIL 2 ON SHEET NO. 20.

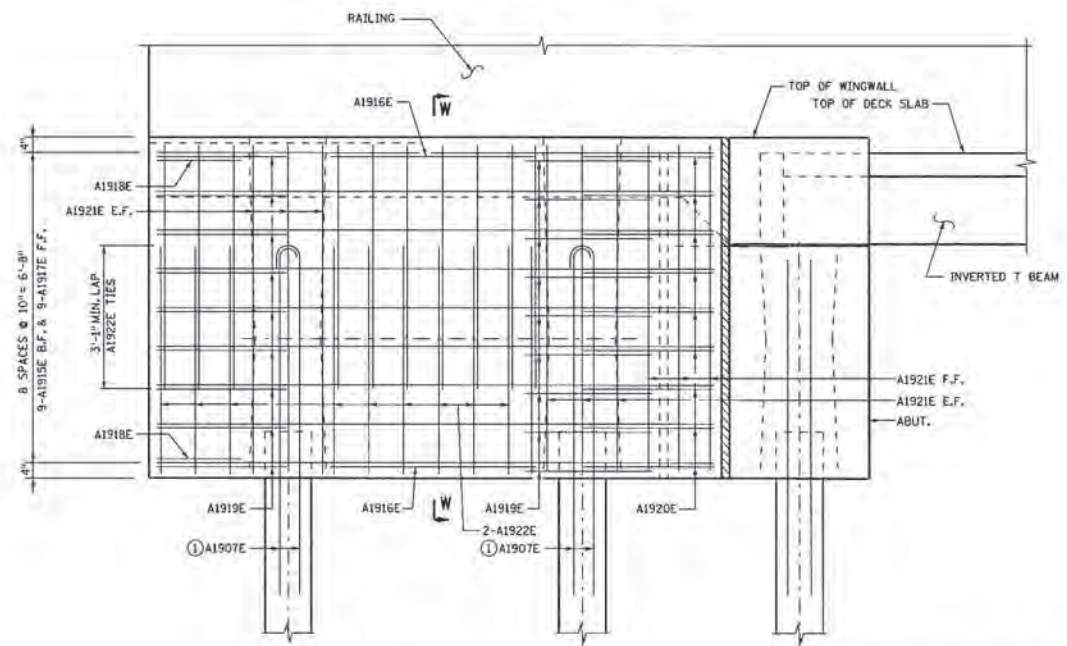
CERTIFIED BY LICENSED PROFESSIONAL ENGINEER NAME: JINSHYA J. LIN	DATE 12/3/10 LIC. NO. 15115	TITLE: WEST ABUTMENT REINFORCEMENT	DES: P.J.K.	DR: P.F./TKB	APPROVED:	BRIDGE NO. 25024
			CHK: J.J.L.	CHK: P.J.K./MAK	12/5/10	

NOTES:

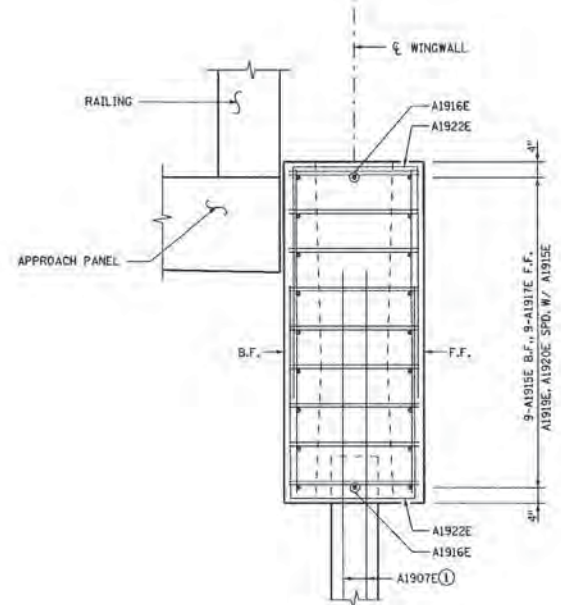
- B.F. DENOTES BACK FACE.
- F.F. DENOTES FRONT FACE.
- E.F. DENOTES EACH FACE.
- ① PLACED IN FIELD BEFORE PILE IS FILLED WITH CONCRETE.



NORTH WEST WINGWALL PLAN VIEW
(STAGE 1)



NORTH WEST WINGWALL ELEVATION
(STAGE 1)



SECTION W-W

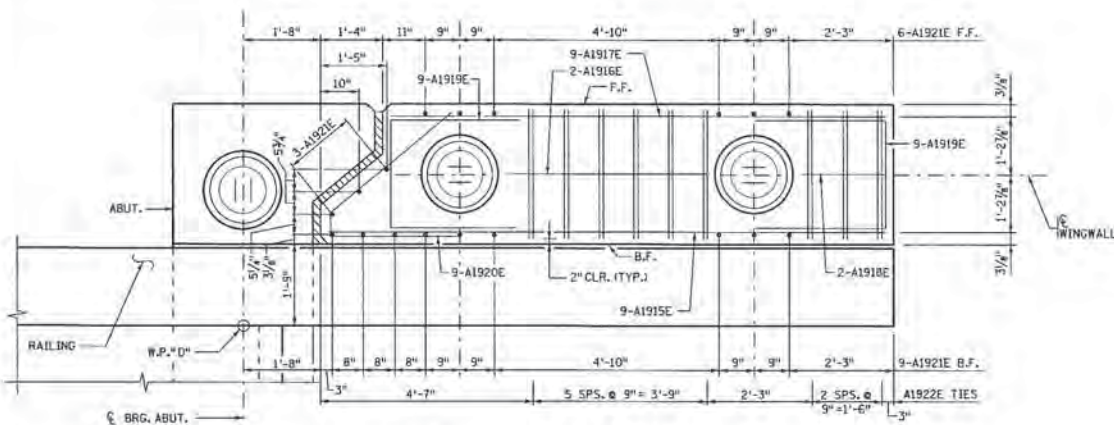
17/2/2010

CERTIFIED BY <i>J. Jimshya J. Lin</i> LICENSED PROFESSIONAL ENGINEER NAME: JIMSHYA J. LIN LIC. NO. 19115	DATE 12/3/10 DATE	TITLE: WEST ABUTMENT REINFORCEMENT	DES: P.J.K. OR: TKB CHK: J.J.L. OR: P.J.K./MAK	APPROVED: 12/3/10	BRIDGE NO. 25024
			SHEET NO. 18 OF 54 SHEETS		

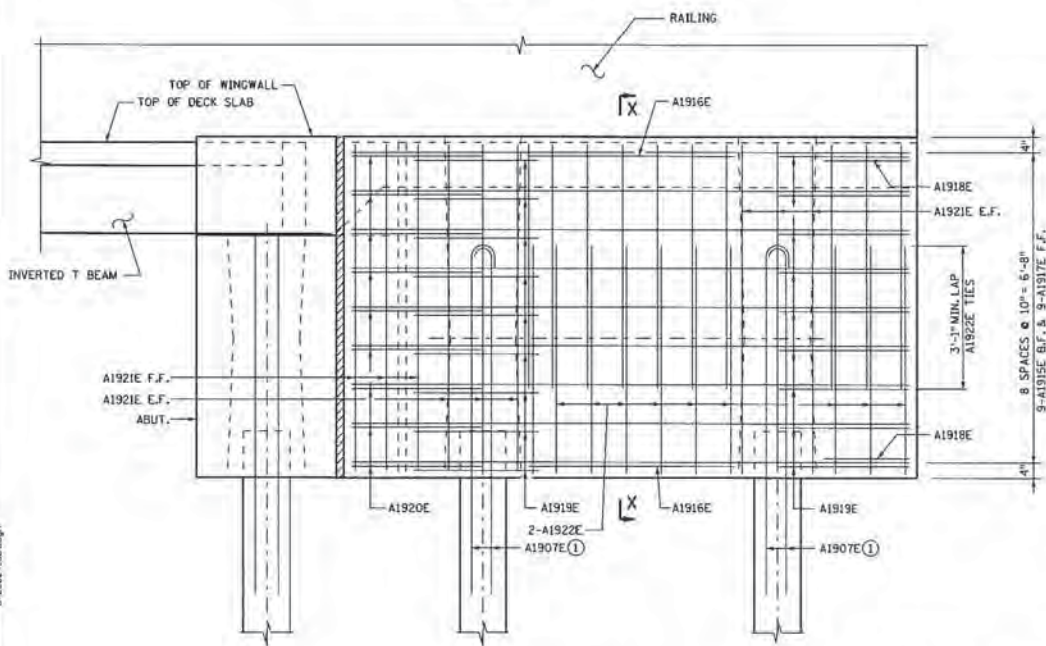
NOTES:

B.F. DENOTES BACK FACE.
 F.F. DENOTES FRONT FACE.
 E.F. DENOTES EACH FACE.

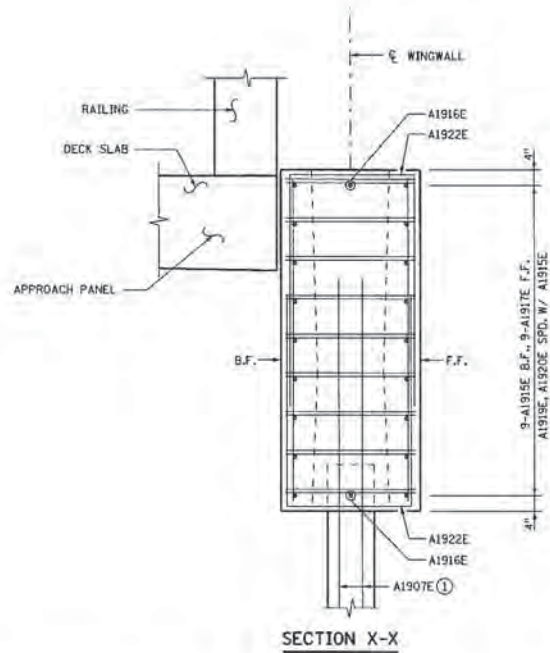
① PLACED IN FIELD BEFORE PILE IS FILLED WITH CONCRETE.



SOUTH WEST WINGWALL PLAN VIEW
 (STAGE 2)



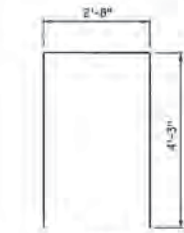
SOUTH WEST WINGWALL ELEVATION
 (STAGE 2)



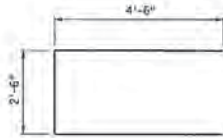
SECTION X-X

CERTIFIED BY <i>J. Jinhya</i> LICENSED PROFESSIONAL ENGINEER NAME: JINSHYA, J. LIN	DATE 12/3/10 LIC. NO. 19115	TITLE: WEST ABUTMENT REINFORCEMENT	DES: P.J.K.	DRN: TRB	APPROVED:	BRIDGE NO. 25024
			CHG: J.J.L.	CHG: P.J.K./MAK	12/3/10	

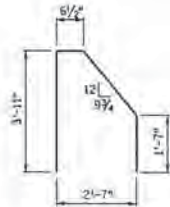
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A1901E



A1904E



A1906E

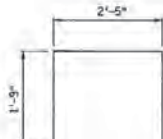


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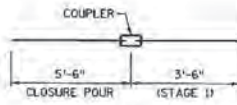
DETAIL 1



A1909E



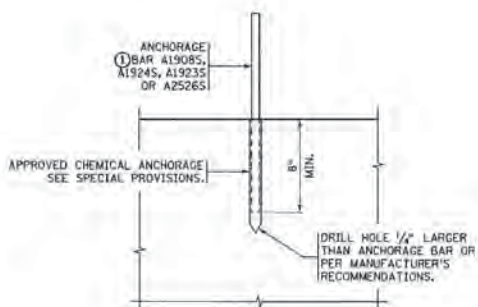
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A1913E

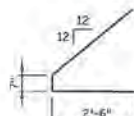


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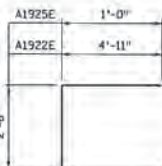


ANCHORAGE DETAIL

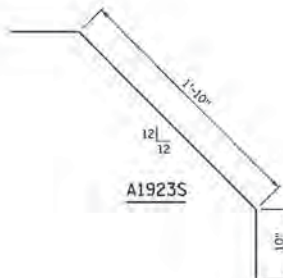
DETAIL 2



A1920E



A1922E, A1925E



A1923S

© BILL OF REINFORCEMENT FOR TWO ABUTMENTS

BAR	NO. STAGE 1	NO. STAGE 2	NO. CLOSURE STAGE	TOTAL	LENGTH	SHAPE	LOCATION
A1901E	176	176	24	376	11'-2"	U	VERTICAL TIE
A1902E	16	16		32	6'-9"	U	HORIZONTAL
A1903E	36	36		72	38'-3"	U	HORIZONTAL
A1904E	12	12		24	11'-6"	U	HORIZONTAL
A1905E	4			4	4'-8"	U	VERTICAL
A1906E	18	18		36	8'-8"	U	HORIZONTAL
A1907E	28	28		56	9'-0"	U	PILE DOWEL
A1908S	22			22	2'-10"	U	VERTICAL ANCHORAGE
A1909E	6	6		12	11'-8"	U	PARAPET HORIZONTAL TIE
A1910E	4	4		8	5'-11"	U	PARAPET TOP TIE
A1911E		4		4	4'-10"	U	VERTICAL
A1912E		36		36	6'-0"	U	HORIZONTAL
A1913E	36			36	9'-0"	U	HORIZONTAL
A1914E			2	2	5'-4"	U	HORIZONTAL
A1915E	18	18		36	12'-0"	U	WINGWALL HORIZONTAL
A1916E	4	4		8	4'-4"	U	WINGWALL HORIZONTAL
A1917E	18	18		36	10'-8"	U	WINGWALL HORIZONTAL
A1918E	4	4		8	7'-10"	U	WINGWALL HORIZONTAL
A1919E	36	36		72	8'-6"	U	WINGWALL HORIZONTAL TIE
A1920E	18	18		36	6'-3"	U	WINGWALL HORIZONTAL TIE
A1921E	36	36		72	7'-0"	U	VERTICAL
A1922E	36	36		72	12'-6"	U	VERTICAL
A1923S	84	84	12	180	4'-8"	U	APPROACH PANEL TIE
A1924S		22		22	2'-6"	U	VERTICAL ANCHORAGE
A1925E	56	56		112	4'-8"	U	VERTICAL TIE
A2526S	4	4		8	2'-5"	U	ANCHORAGE

- ① NOT INCLUDED IN WEIGHT OF REINFORCEMENT. INCLUDED IN ITEM "ANCHORAGES TYPE REINFORCEMENT BARS (STAINLESS STEEL)".
- ② NOT INCLUDED IN WEIGHT OF REINFORCEMENT. INCLUDED IN ITEM "COUPLERS (REINFORCEMENT BARS) T-19".

PRECAST ABUTMENT ELEMENT NOTES:

THE PRECAST ABUTMENT ELEMENT PICK POINTS OR LIFTING LOOPS SHALL BE DESIGNED BY THE PRECAST MANUFACTURER, FLEXURAL EFFECTS AND TORSIONAL EFFECTS DUE TO THE ECCENTRICITY OF THE ABUTMENT ELEMENTS SHALL BE CONSIDERED IN THE DESIGN.

PICK POINTS OR LIFTING LOOP LOCATIONS SHALL BE APPROVED BY THE ENGINEER PRIOR TO FABRICATION.

THE METHOD OF SUPPORTING THE PRECAST ABUTMENT ELEMENTS DURING ERECTION SHALL BE SUBMITTED TO THE ENGINEER PRIOR TO THE ERECTION. SPECIAL EMPHASIS IS PLACED ON THE CONTRACTORS METHOD OF ELEVATION CONTROL.

DISTRICT MATERIALS WILL PROVIDE COMPRESSIVE STRENGTH TESTING OF THE CONCRETE USED TO FILL THE ABUTMENT PILING ENCASEMENTS. BLOCKING AND TEMPORARY SHORING SHALL NOT BE REMOVED UNTIL 3500 PSI HAS BEEN ACHIEVED, SEE SPECIAL PROVISIONS.

EAST & WEST ABUTMENT COMPUTED PILE LOAD - TONS/PILE

FACTORED DEAD LOAD	56.0
FACTORED LIVE LOAD	34.0
*FACTORED DESIGN LOAD	90.0

*BASED ON STRENGTH I LOAD COMBINATION

EAST & WEST ABUTMENT REQUIRED NOMINAL PILE BEARING RESISTANCE R_n - TONS/PILE

FIELD CONTROL METHOD	φ dyn	*R _n
MN/DOT NOMINAL RESISTANCE FORMULA	0.40	225.0
PDA	0.65	138.5

*R_n = φ FACTORED DESIGN LOAD / φ dyn

SUMMARY OF QUANTITIES FOR TWO ABUTMENTS

STRUCTURAL CONCRETE (3Y43)	142 CU. YD.
REINFORCEMENT BARS (EPOXY COATED)	18540 POUND
ANCHORAGES TYPE REINFORCEMENT BARS (STAINLESS STEEL)	232 EACH
COUPLERS (REINFORCEMENT BARS) T-19	36 EACH
CAST-IN-PLACE TEST PILE 75 FT. LONG 12"	2 EACH
CAST-IN-PLACE TEST PILE 70 FT. LONG 12"	2 EACH
CAST-IN-PLACE PILE 60 FT. LONG DELIVERED 12"	720 LIN. FT.
CAST-IN-PLACE PILE 60 FT. LONG DRIVEN 12"	720 LIN. FT.
PILE REDRIVING	4 EACH
MEMBRANE WATERPROOFING SYSTEM/GEOTEXTILE TYPE II	43 LIN. FT.
2" POLYSTYRENE TYPE A	109 SQ. FT.
1/2" POLYSTYRENE TYPE A	383 SQ. FT.
1" POLYSTYRENE TYPE B	76 SQ. FT.
CAST-IN-PLACE PILE 65 FT. LONG DELIVERED 12"	780 LIN. FT.
CAST-IN-PLACE PILE 65 FT. LONG DRIVEN 12"	780 LIN. FT.
BENCH MARK DISK	1 EACH

- ① DOES NOT INCLUDE TEST PILE.
- ② PAYMENT SHALL BE CONSIDERED INCIDENTAL TO ITEM "PRECAST ABUTMENT ELEMENT".
- ③ STRUCTURAL CONCRETE (3Y43) IS INCLUDED IN PRICE BID FOR "PRECAST ABUTMENT ELEMENT".
- ④ REINFORCEMENT IS INCLUDED IN PRICE BID FOR "PRECAST ABUTMENT ELEMENT".
- ⑤ STATE WILL FURNISH DISK, BEND PRONGS OUTWARD TO ANCHOR DISK IN CONCRETE, BOTTOM OF DISK TOP TO BE PLACED FLUSH WITH CONCRETE. PAYMENT FOR PLACING SHALL BE CONSIDERED INCIDENTAL TO CONCRETE PAY ITEMS.

PILE NOTES

- 1 C.I.P. TEST PILE 75 FT. LONG STAGE 1 CONSTRUCTION
- 1 C.I.P. TEST PILE 75 FT. LONG STAGE 2 CONSTRUCTION
- 6 C.I.P. PILE EST. LENGTH 65 FT. STAGE 1 CONSTRUCTION
- 6 C.I.P. PILE EST. LENGTH 65 FT. STAGE 2 CONSTRUCTION
- 14 C.I.P. PILES REQ'D. FOR EAST ABUTMENT.
- 1 C.I.P. TEST PILE 70 FT. LONG STAGE 1 CONSTRUCTION
- 1 C.I.P. TEST PILE 70 FT. LONG STAGE 2 CONSTRUCTION
- 6 C.I.P. PILE EST. LENGTH 60 FT. STAGE 1 CONSTRUCTION
- 6 C.I.P. PILE EST. LENGTH 60 FT. STAGE 2 CONSTRUCTION
- 14 C.I.P. PILES REQ'D. FOR WEST ABUTMENT.

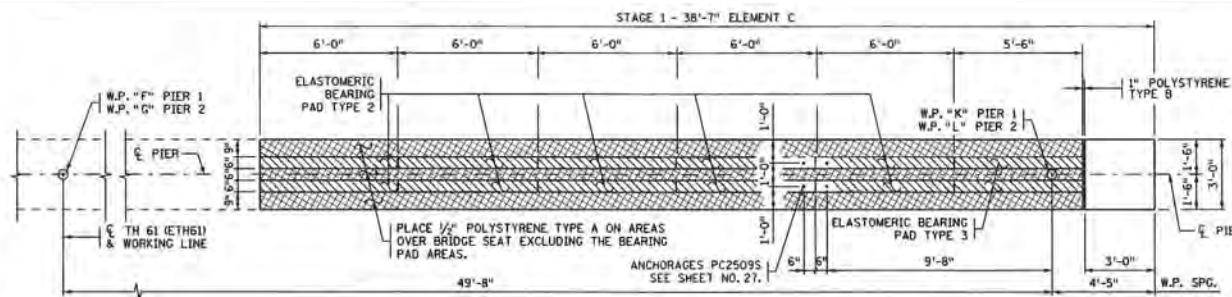
PILE SPACING SHOWN IS AT BOTTOM OF ABUTMENT. ALL PILES TO BE 12" Ø.

FOR PILE SPLICE DETAILS SEE DETAIL B201.

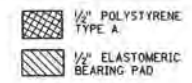
CERTIFIED BY *Jishya J. Lin* 12/21/10 DATE
 LICENSED PROFESSIONAL ENGINEER
 NAME: JISHYA J. LIN LIC. NO. 19315

TITLE: ABUTMENT REINFORCEMENT

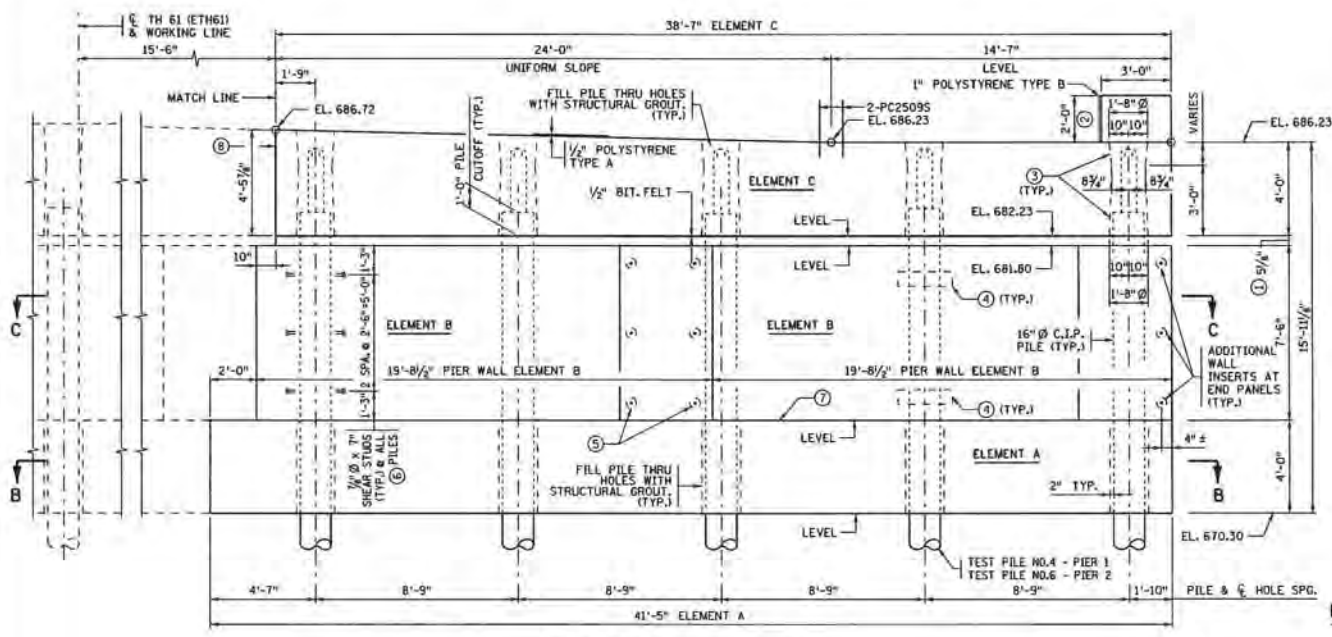
DESIGNER: P.J.K. DRAWN: TKB APPROVED: J.J.L. DATE: 12/21/10
 CHECKED: J.J.L. DRAWN: P.J.M./MAK
 SHEET NO. 20 OF 54 SHEETS BRIDGE NO. 25024



STAGE 1 - PLAN: PIERS

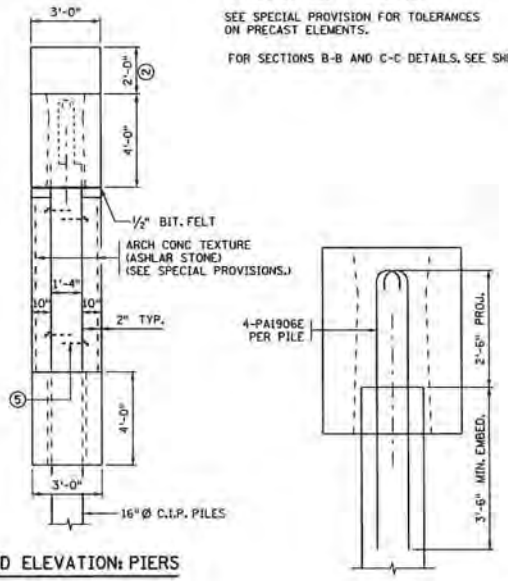


- NOTES:**
- 1 CAST-IN-PLACE STRUCTURAL CONC. 3Y43SCC AND 1/2" BIT. FELT ATTACHED TO BOTTOM OF CAP.
 - 2 CAST IN PLACE STRUCTURAL CONCRETE (3Y43).
 - 3 INTENTIONALLY ROUGHEN SURFACE OF PILE THRU HOLES.
 - 4 PIER CAP & BASE MAY BE TEMPORARILY SUPPORTED BY TEMPORARY SUPPORT COLLARS OR OTHER APPROVED METHOD OF TEMPORARY SUPPORT. SEE SPECIAL PROVISIONS. SEE SHEET NO. 22 FOR PROPOSED METHOD.
 - 5 CONCRETE INSERTS, TO BE 3'-0" MAX. SPACING AND AT LEAST 2" CLEAR OF PILES. SEE SECTION B-B IN SHEET NO. 26 FOR DETAILS. STAGGER PATTERN FOR OPPOSING WALL PANELS TO PREVENT INTERFERENCE IN CONSTRUCTION.
 - 6 SHEAR STUD SPACING SHALL BE ADJUSTED TO ALLOW TEMPORARY SUPPORT COLLARS.
 - 7 PRESSURE INJECT EPOXY TO SEAL THE VOID BETWEEN ELEMENTS A & B TO WATERTIGHT BEFORE PLACING SCC. THIS WORK WILL BE INCIDENTAL TO PAY ITEM "PRECAST PIER WALL".
 - 8 INTENTIONALLY ROUGHEN SURFACE FOR CLOSURE POUR.
- CONTRACTOR TO SUBMIT SHOP DRAWINGS DETAILING, FORM WORK, CONSTRUCTION SEQUENCE, SUPPORT ELEMENTS METHOD OF INSTALLATION OF ELEMENTS.
- SEE SPECIAL PROVISION FOR TOLERANCES ON PRECAST ELEMENTS.
- FOR SECTIONS B-B AND C-C DETAILS, SEE SHEET NO. 22.



STAGE 1 - ELEVATION: PIERS

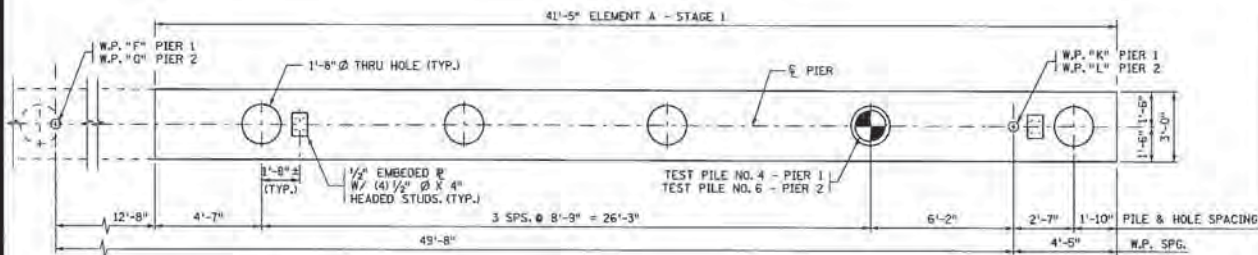
NORTH END



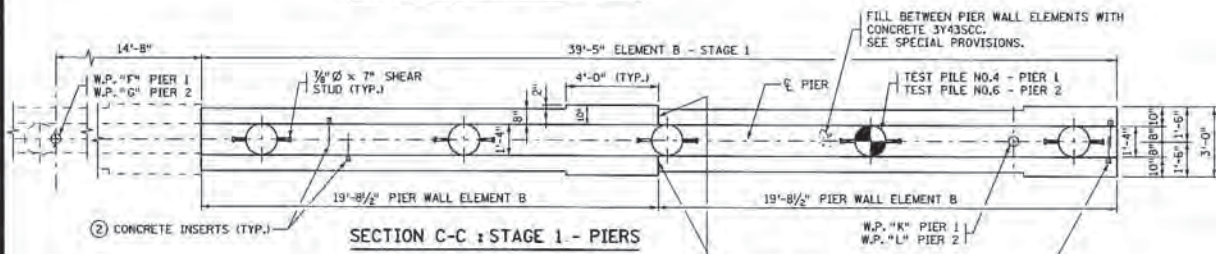
END ELEVATION: PIERS

PIER REINFORCEMENT DETAIL
CAST PA1906E WITH PILES

CERTIFIED BY <i>Jinshyr J. Lin</i> LICENSED PROFESSIONAL ENGINEER NAME: JINSHYR J. LIN LIC. NO. 19115	DATE 12/22/10	TITLE: STAGE 1 PIERS 1 & 2 PLAN & ELEVATION	DESIGNED BY PJK	DRAWN BY JJJ	CHECKED BY GRF	APPROVED BY JAJ	BRIDGE NO. 25024
			SHEET NO. 21 OF 54 SHEETS				



SECTION B-B : STAGE 1 - PIERS



SECTION C-C : STAGE 1 - PIERS

PILE NOTES

- 4 CAST-IN-PLACE CONC. TEST PILES 80 FT. LONG
 - 16 CAST-IN-PLACE CONC. PILES EST. LENGTH 70 FT.
 - 20 CAST-IN-PLACE CONC. PILES REQ'D FOR 2 PIERS
- PILE SPACING SHOWN IS AT BOTTOM OF PIER BASE ELEMENTS.
- PILES TO HAVE A NOMINAL DIAMETER OF 16" AND MIN. WALL THICKNESS 3/8".
- FOR PILE SPLICE DETAILS SEE DETAIL B20I.
- SEE DETAILS ON SHEET NOS. 21 & 23 FOR REINFORCEMENT CAST WITH PILES.

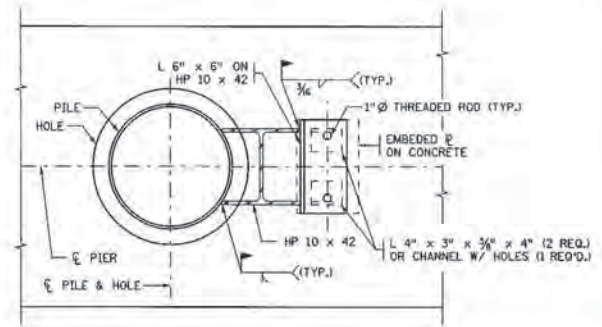
PIERS 1 AND 2 COMPUTED PILE LOAD - ①	
TONS/PILE	
FACTORED DEAD LOAD	106.0
FACTORED LIVE LOAD	35.0
*FACTORED DESIGN LOAD	144.0

*BASED ON STRENGTH I LOAD COMBINATION

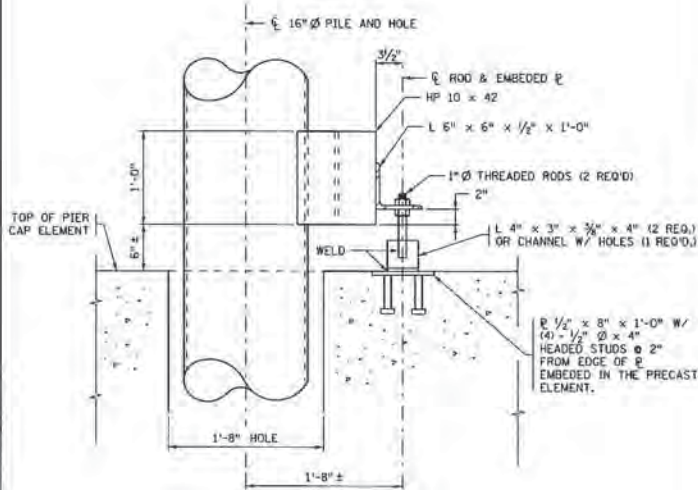
PIERS 1 AND 2 ①		
REQUIRED NOMINAL PILE BEARING RESISTANCE R_n - TONS/PILE		
FIELD CONTROL METHOD	ϕ dyn	* R_n
Mn/DOT NOMINAL RESISTANCE FORMULA	0.40	360.0
PDA	0.65	222.0

* R_n = (FACTORED DESIGN LOAD) / ϕ dyn

- ① FOR PILES IN BOTH STAGES 1 & 2.
- ② SEE SECTION B-B IN SHEET NO. 26 FOR DETAILS.



TOP VIEW



ELEVATION

BASE ELEMENT SUPPORT AND LEVELING DEVICE (PROPOSED) ①

① INSIDE FACE OF TWO EXTERIOR PILES OF EACH STAGE CONSTRUCTION

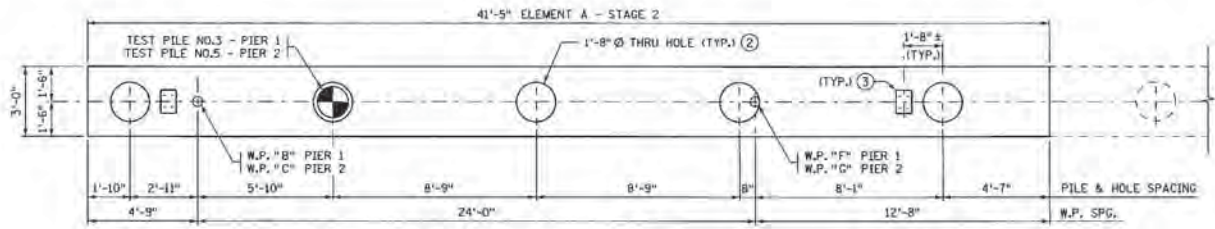
① CONTRACTOR SHALL DESIGN THE LEVELING DEVICE PER PRECAST ELEMENT WEIGHT AS SHOWN IN SHEET NO. 3.

CERTIFIED BY: *Jinshya J. L. Din* 13/2/10
 LICENSED PROFESSIONAL ENGINEER DATE
 NAME: JINSHYA J. L. DIN LIC. NO. 19115

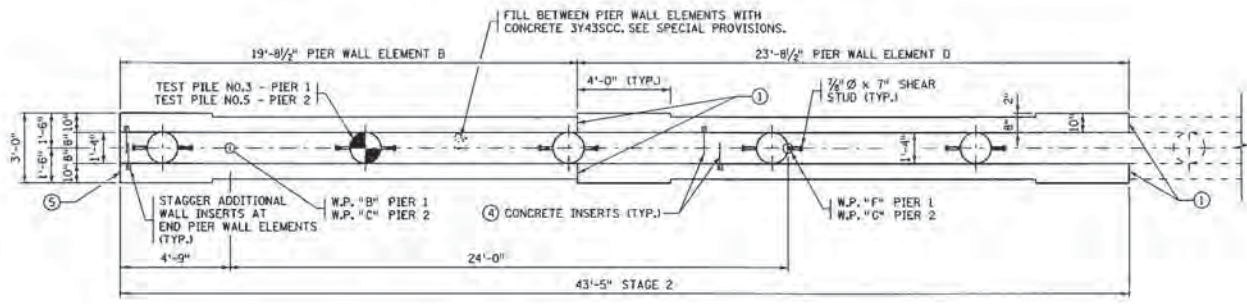
TITLE: STAGE 1 PIERS 1 & 2 SECTIONS & DETAILS

DES: PJK OR: GRF APPROVED: 12/21/10
 CHK: JJJL CHK: JAJ DATE

BRIDGE NO. 25024
 SHEET NO. 22 OF 54 SHEETS



SECTION E-E : STAGE 2 - PIERS





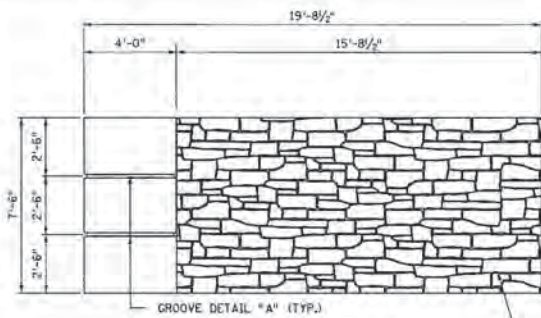
SECTION F-F : STAGE 2 - PIERS

NOTES:

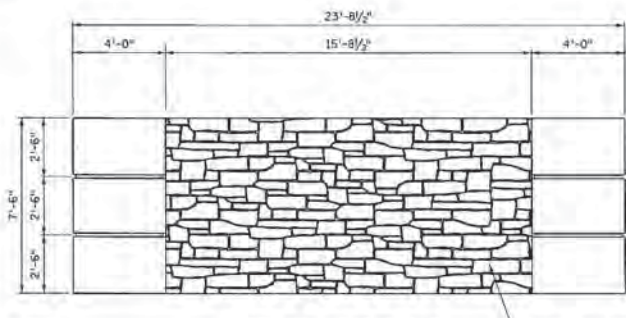
- ① PRESSURE INJECT EPOXY TO SEAL THE VOIDS BETWEEN ELEMENTS A & B TO WATERTIGHT BEFORE PLACING SCC.
- ② INTENTIONALLY ROUGHEN SURFACE FOR CLOSURE POUR.
- ③ 1/2" x 12" x 5" EMBEDDED $\#$ (4) - 1/2" ϕ x 4" HEADED STUDS.
- ④ SEE SECTION B-B IN SHEET NO. 26 FOR DETAILS.
- ⑤ CONTRACTOR TO FORM THE END OF PIERS TO WATERTIGHT.

12/13/2010 10:47:40 AM

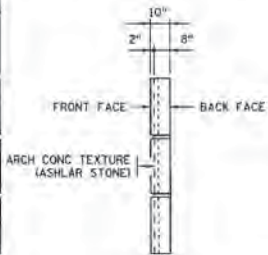
CERTIFIED BY  JINSHYA J. LIN LICENSED PROFESSIONAL ENGINEER LIC. NO. 19115	DATE 12/3/10	TITLE: STAGE 2 PIERS 1 & 2 SECTIONS	DES: PJK	DR: DRF	APPROVED: 	BRIDGE NO. 25024
			CHK: JAL	CHK: JAJ	12/3/10	



PIER WALL ELEMENT B
(12 PIER WALL ELEMENTS REQUIRED)



PIER WALL ELEMNET D
(14 PIER WALL ELEMENTS REQUIRED)



END ELEVATION

NOTES:

CONTRACTOR TO SUBMIT FORM WORK FOR HOLDING THE PIER WALL ELEMENTS TO THE COLUMNS FOR ENGINEERS APPROVAL. SEE SPECIAL PROVISIONS.
SEE SECTION C-C ON SHEET NO. 22 AND SECTION F-F ON SHEET NO. 24 FOR ADDITIONAL DETAILS.

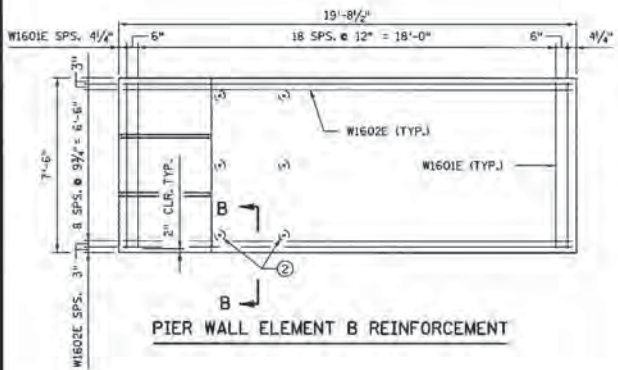
BILL OF REINFORCEMENT FOR 2 PIERS WALL ELEMENTS B & D				
BAR	NO.	LENGTH	SHAPE	LOCATION
W1601E	352	7'-2"	—	VERTICAL
W1602E	132	19'-4"	—	HORIZONTAL
W1603E	44	23'-4"	—	HORIZONTAL

① SUMMARY OF QUANTITIES FOR 2 PIERS WALL ELEMENTS B & D

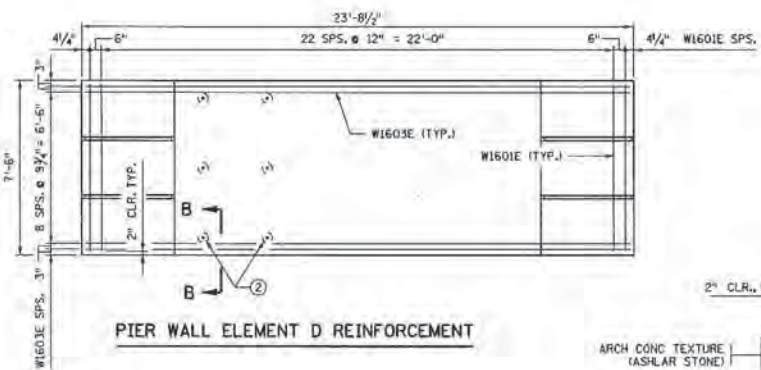
STRUCTURAL CONCRETE (3Y43)	65	CU. YD.
REINFORCEMENT BARS (EPOXY COATED)	6360	POUND
CONCRETE INSERTS WITH 1/2" Ø THREADED RODS	396	EACH

NOTES:

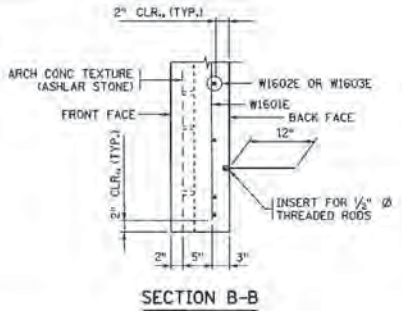
- ① PAYMENT FOR QUANTITIES TO BE INCLUDED IN PRICE BID FOR PAY ITEM "PRECAST PIER WALL". INCLUDES 12 WALL ELEMENT B AND 4 WALL ELEMENT D.
- ② CONCRETE INSERTS TO BE 3'-0" MAX. SPACING & AT LEAST 2" CLEAR OF PILES. STAGGER PATTERN FOR OPPOSING WALL PANELS TO PREVENT INTERFERENCE IN CONSTRUCTION.



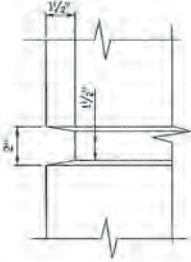
PIER WALL ELEMENT B REINFORCEMENT



PIER WALL ELEMENT D REINFORCEMENT

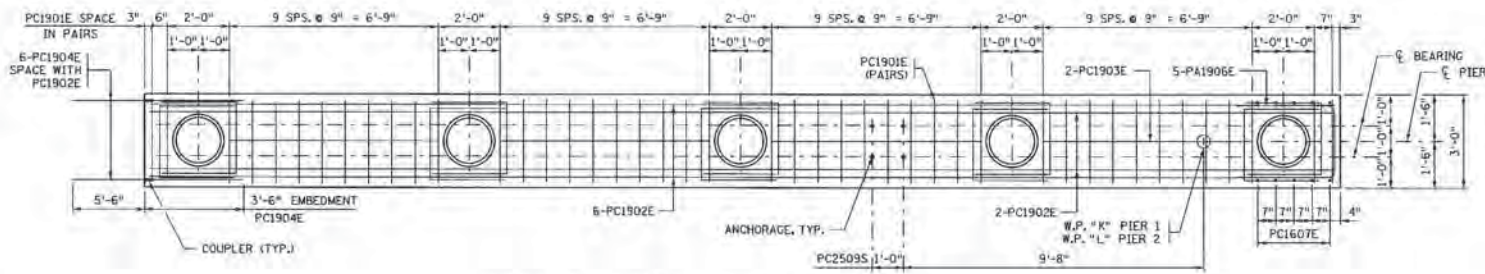


SECTION B-B



DETAIL "A"

CERTIFIED BY NAME: JINSHYA J. LIN LIC. NO. 19115	DATE 12/3/10	TITLE PRECAST PIER WALL ELEMENT DETAILS & REINFORCEMENT	DES: PJK DR: JAL	GRF: GRF JAL	APPROVED: 12/3/10	BRIDGE NO. 25024
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PLAN: PIER CAP ELEMENT C REINFORCEMENT

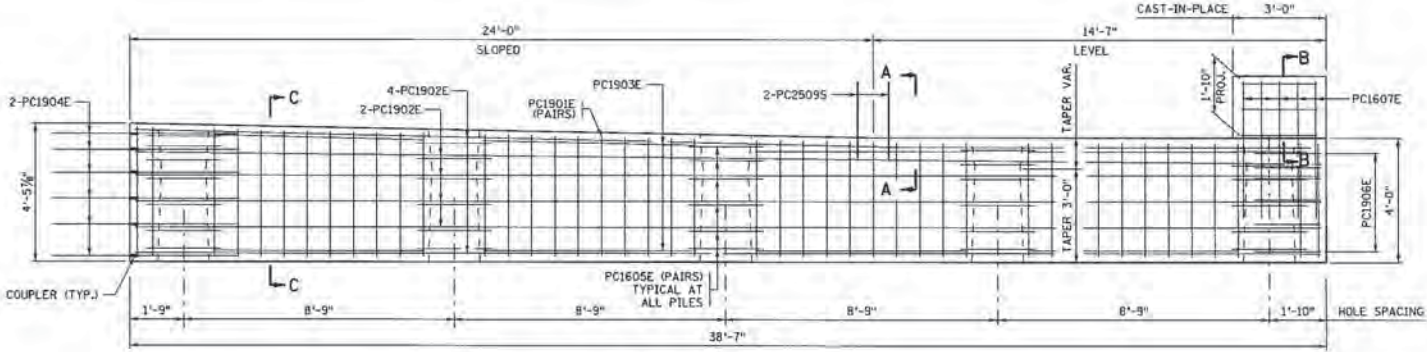
BILL OF REINFORCEMENT FOR 2 PIERS (2 CAP ELEMENTS C)

BAR	NO.	LENGTH	SHAPE	LOCATION
PC1901E	176	10'-0"	□	STIRRUPS
PC1902E	32	38'-3"	—	HORIZONTAL
PC1903E	16	6'-9"	—	HORIZONTAL
PC1904E	24	SEE DETAIL	—	HORIZONTAL DOWEL
PC1605E	120	8'-4"	—	HORIZONTAL
PC1906E	10	8'-8"	—	HORIZONTAL
PC1607E	10	11'-6"	—	VERTICAL DOWEL
PC1608E	14	2'-8"	—	HORIZONTAL
PC2503S	8	2'-6"	—	ANCHORAGE

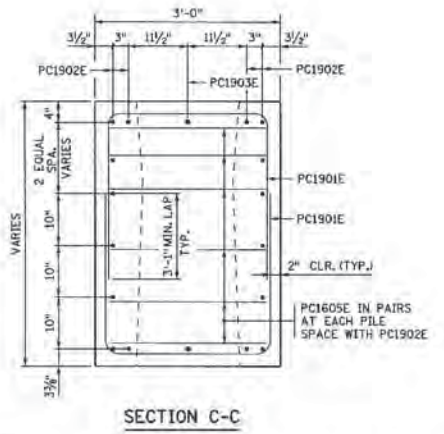
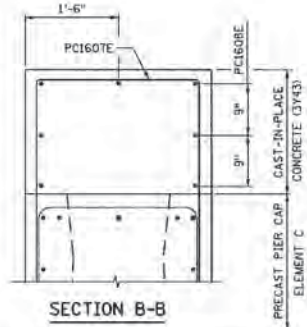
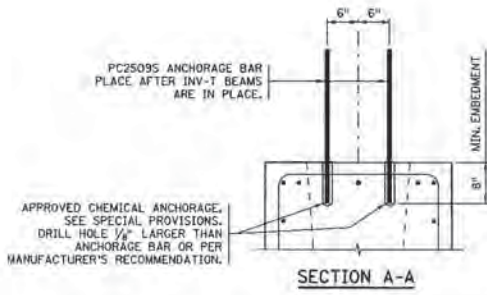
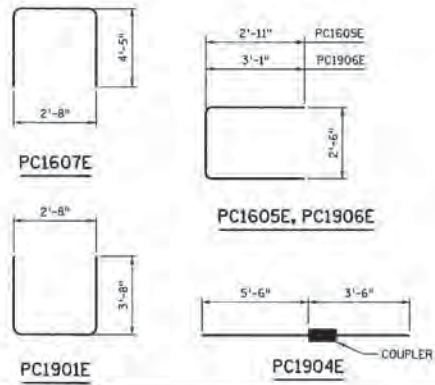
SUMMARY OF QUANTITIES FOR 2 PIERS (2 CAP ELEMENTS C)

STRUCTURAL CONCRETE (3743)	33 CU. YD.
REINFORCEMENT BARS (EPOXY COATED)	5980 POUND
COUPLERS (REINFORCEMENT BARS) T-19	24 EACH
ANCHORAGES TYPE REIN BARS (STAINLESS STEEL)	8 EACH

- NOTES:**
- TO BE INCLUDED IN PRICE BID FOR PAY ITEM "COUPLERS (REINFORCEMENT BARS) T-19".
 - CONCRETE QUANTITY FOR PRECAST ELEMENT C ONLY. REINFORCEMENT QUANTITY INCLUDES PRECAST ELEMENT C AND THE CAST IN PLACE CAP. PLASTER TO BE INCLUDED IN PRICE BID FOR PAY ITEM "PRECAST PIER CAP ELEMENT".
 - STAINLESS STEEL BARS PLUS DRILLING AND INSTALLING TO BE INCLUDED IN PRICE BID FOR PAY ITEM "ANCHORAGES TYPE REIN BARS (STAINLESS STEEL)".



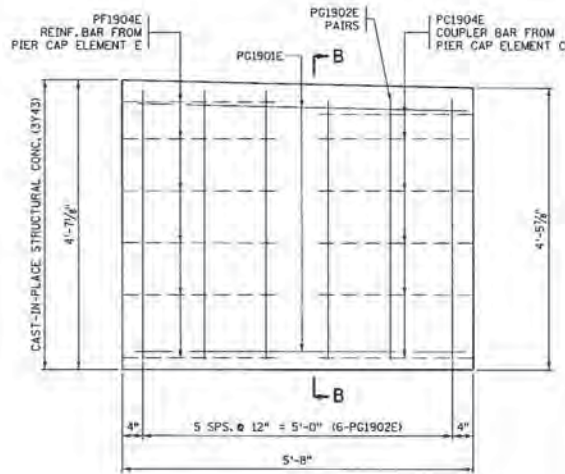
ELEVATION: PIER CAP ELEMENT C REINFORCEMENT
(2 PIER CAP ELEMENTS REQUIRED)



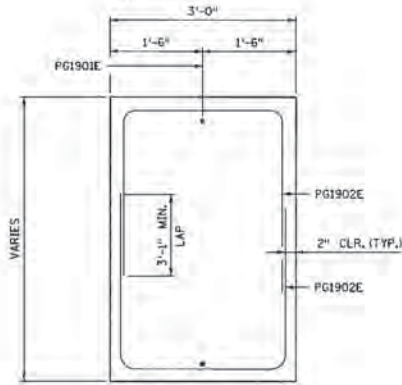
CERTIFIED BY: <i>Jishmya J. Lin</i> 12/3/10 LICENSED PROFESSIONAL ENGINEER NAME: JISHMYA J. LIN LIC. NO. 19115	TITLE: PRECAST PIER CAP ELEMENT REINFORCEMENT	DES: P.JL CHK: J.JL	DRG: GRF CHK: JAJ	APPROVED: 12/3/10	BRIDGE NO. 25024
SHEET NO. 27 OF 54 SHEETS					

BILL OF REINFORCEMENT FOR 2 PIER CLOSURE POURS (ELEMENT G)

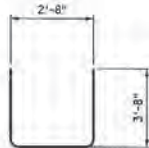
BAR	NO.	LENGTH	SHAPE	LOCATION
PG1901E	4	5'-4"	—	HORIZONTAL
PG1902E	24	10'-0"	⊠	STIRRUP



CLOSURE (ELEMENT G)



SECTION B-B



PG1902E

① SUMMARY OF QUANTITIES FOR 2 PIER CLOSURE POURS (ELEMENT G)

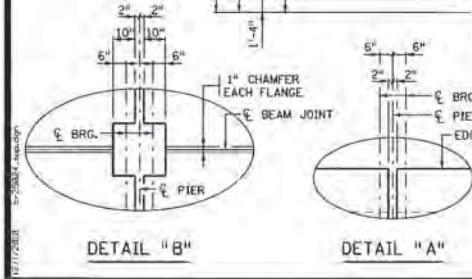
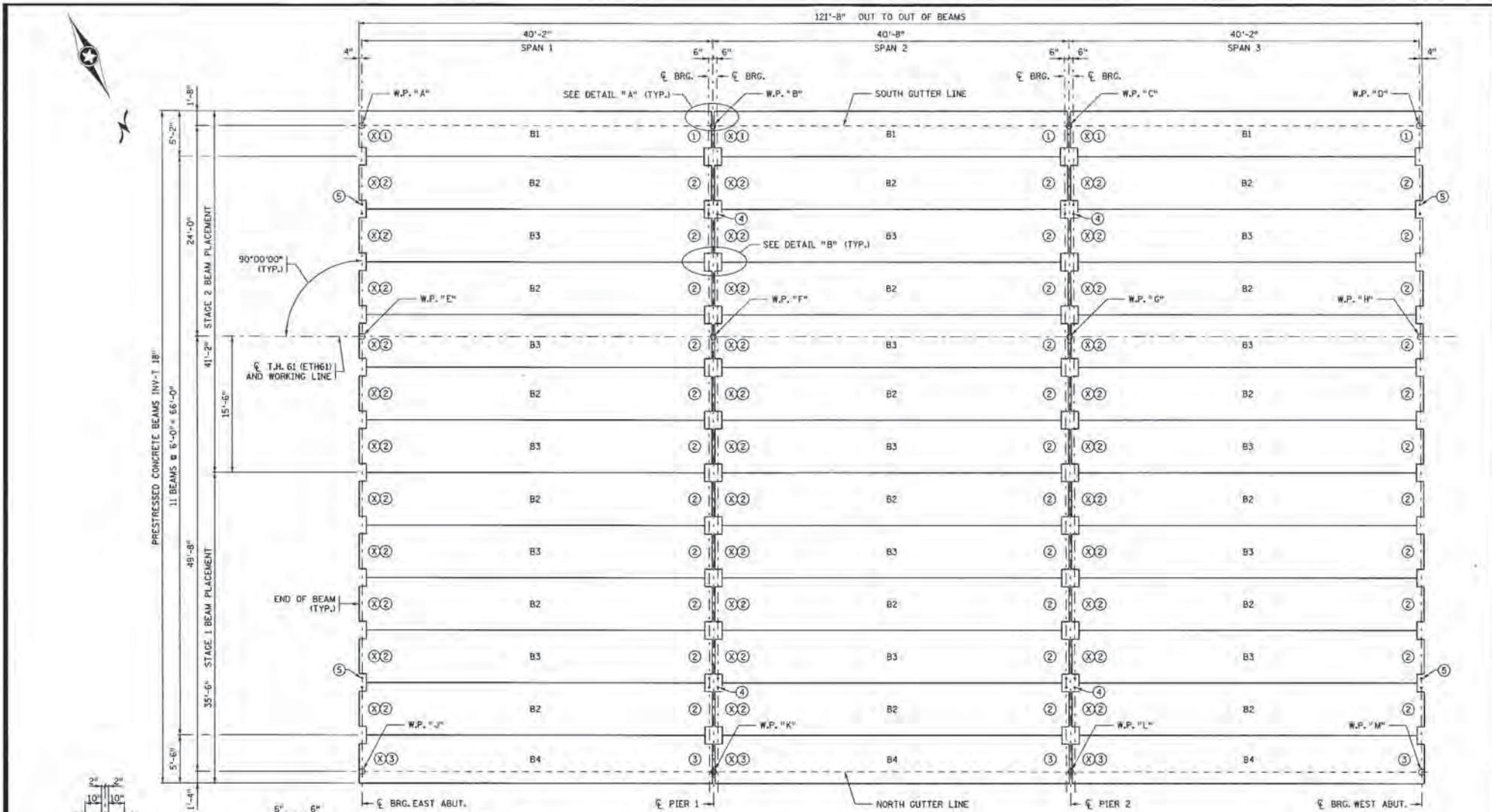
STRUCTURAL CONCRETE (3Y43)	6 CU. YD.
REINFORCEMENT BARS (EPOXY COATED)	390 POUND

① PAYMENT FOR QUANTITIES TO BE INCLUDED IN PRICE BID FOR PAY ITEM "PRECAST PIER CAP ELEMENT". INCLUDES QUANTITY FOR 2 CLOSURE POURS (ELEMENT G).

CERTIFIED BY <i>Jihshya J. Lin</i> LICENSED PROFESSIONAL ENGINEER NAME: JIHSHYA J. LIN	DATE 12/3/10 SALE LIC. NO. 19115	TITLE CLOSURE POUR (ELEMENT G) REINFORCEMENT	DESIGNED BY PJK CHKD BY JUL	DRAWN BY GRF CHKD BY JAJ	APPROVED BY <i>JAJ</i> DATE 12/3/10	BRIDGE NO. 25024
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SHEET NO. 29 OF 54 SHEETS

12/1/2010 2:58:21 PM



NOTES:

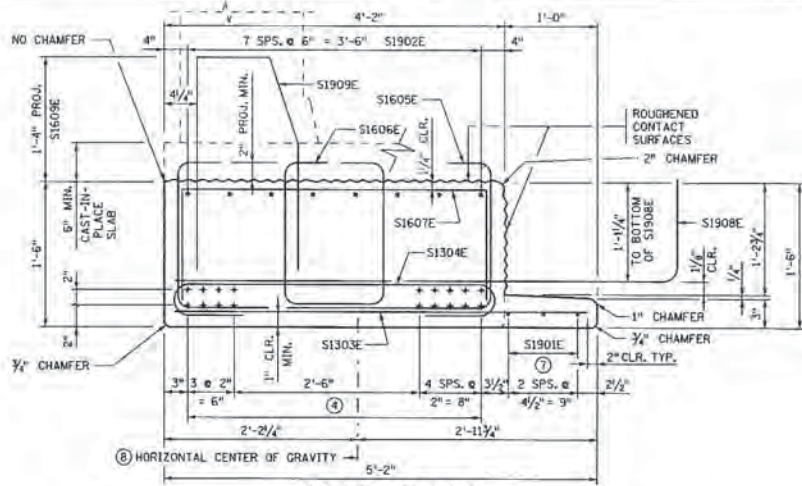
- "PRESTRESSED BEAMS INV-T 18" TYPE 1" INCLUDES BEAMS DESIGNATED AS B1.
- "PRESTRESSED BEAMS INV-T 18" TYPE 2" INCLUDES BEAMS DESIGNATED AS B2 AND B3.
- "PRESTRESSED BEAMS INV-T 18" TYPE 3" INCLUDES BEAMS DESIGNATED AS B4.
- (X) DENOTES "X" END OF BEAM.
- (1) DENOTES ELASTOMERIC BEARING PAD TYPE I. SEE SHEET NOS. 37 & 50.

FRAMING PLAN

- (2) DENOTES ELASTOMERIC BEARING PAD TYPE 2. SEE SHEET NOS. 37 & 50.
- (3) DENOTES ELASTOMERIC BEARING PAD TYPE 3. SEE SHEET NOS. 37 & 50.
- (4) PF2509S OR PC2509S ANCHORAGE LOCATIONS. SEE PIER SHEETS OR PART LONGITUDINAL SECTION FOR DETAILS.

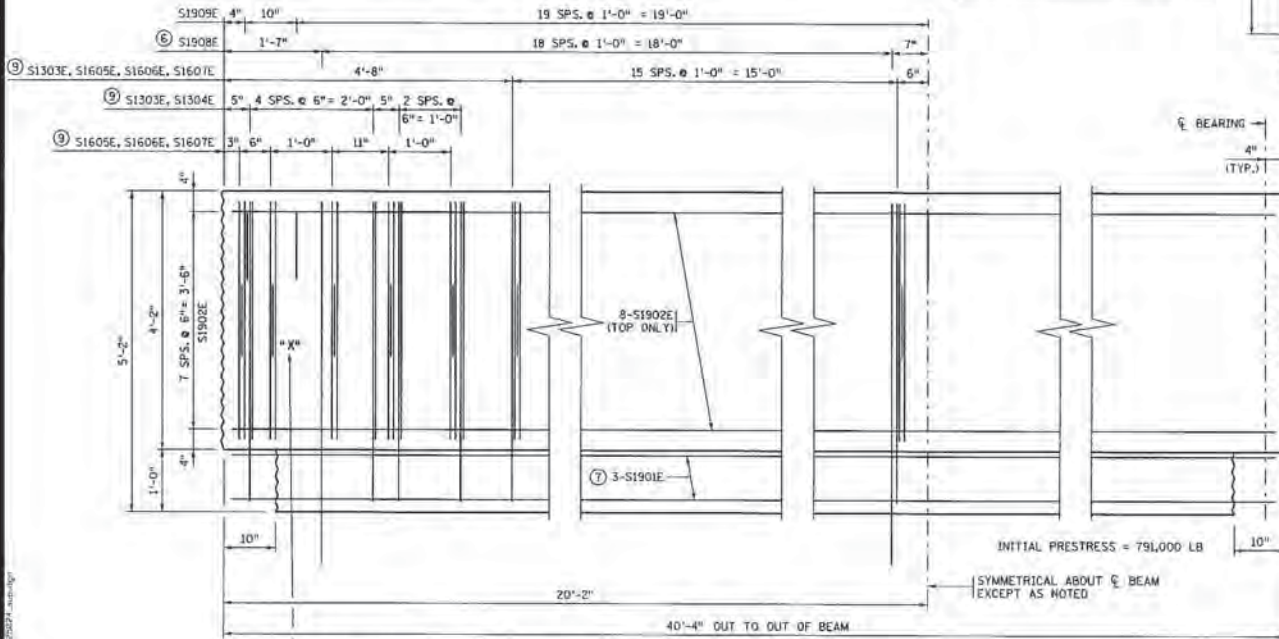
- (5) A2525S ANCHORAGE LOCATIONS. SEE ABUTMENT SHEETS OR PART LONGITUDINAL SECTION FOR DETAILS.

CERTIFIED BY LICENSED PROFESSIONAL ENGINEER NAME: JISHYA L. LIN	DATE 12/3/10 LIC. NO. 19115	TITLE: FRAMING PLAN	DES: P.J.K. DR: K.G.S. CHK: B.J.J. CDR: D.C.H. APPROVED: 12/3/10	BRIDGE NO. 25024 SHEET NO. 30 OF 54 SHEETS
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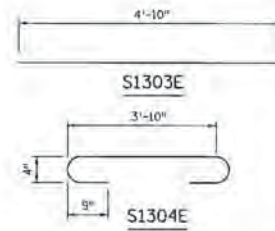
END VIEW BEAMS B1

CUT STRANDS FLUSH WITH CONCRETE, PAINT ENDS WITH AN APPROVED GRAY EPOXY EXCEPT AS NOTED.
(BEAMS B1 = 3 REQUIRED THUS)



MARK THIS END OF BEAM, SEE FRAMING PLAN FOR BEAM PLACEMENT.

PARTIAL PLAN - PRETENSIONED BEAM



HANDLING NOTE:

BEAMS SHALL BE SUPPORTED ONLY WITHIN 2'-0" FROM THEIR ENDS, WHETHER BEING LIFTED, OR SUPPORTED DURING STORAGE. DURING STORAGE, SUPPORTS TO BE PLACED BENEATH WEB SECTION ONLY, NOT BENEATH FLANGES, SUPPORT AT ALL TIMES PRIOR TO FINAL PLACEMENT, SO THAT BEAM SELF WEIGHT CAN COUNTERACT PRESTRESS FORCE TO PREVENT CRACKING AT THE TOP OF THE BEAM.

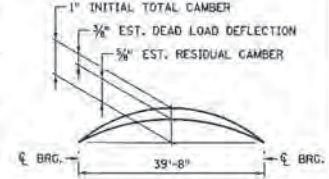
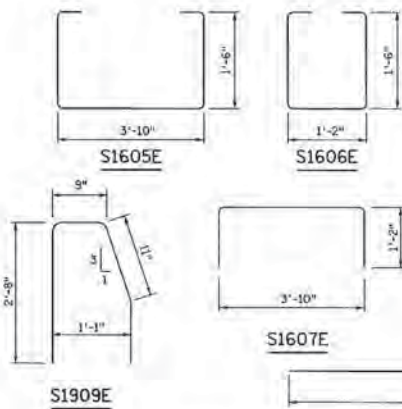
CALCULATED PRESTRESS LOSSES	
ELASTIC SHORTENING LOSS	8.50 KSI
LONG TERM LOSSES	18.94 KSI
TOTAL LOSSES	27.44 KSI

MINIMUM CONCRETE STRENGTH - P.S.I.	
① f'c	② f'c
5000	6000

PRESTRESSING STRAND DIAMETER	
1/2" □	3/4" □
0.60" □	0.75" □

Y DISTANCES (IN INCHES)			
	NO.	CL. SPAN	END
STRAIGHT STRANDS	18	3.00	
DRAPED STRANDS	0	N/A	N/A
TOTAL STRANDS	18	3.00	

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

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

GENERAL NOTES

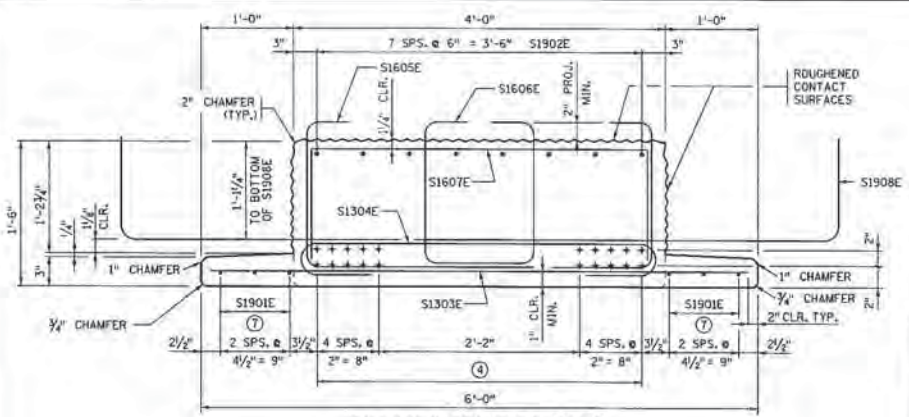
- ALL CONCRETE EDGES SHALL BE FORMED WITH A 3/4" CHAMFER UNLESS OTHERWISE NOTED.
- ALL CONTACT SURFACES, EXCEPT FLANGE EDGES, SHALL BE ROUGHENED FOR BOND AS SHOWN, SEE SPECIAL PROVISIONS.
- PROVIDE HANDLING HOOKS OR DEVICES WITHIN 2'-0" FROM THE ENDS OF THE BEAM, AS REQUIRED BY CONTRACTOR.
- EACH BEAM 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. 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 BEAM INV-T 18" TYPE 1 SEE Mn/DOT SPEC. 2405.
- SHOP DRAWINGS ARE REQUIRED, SEE SPECIAL PROVISIONS.
- APPROXIMATE WEIGHT OF PRECAST SECTION IS 20.5 TONS.
- ① MINIMUM CONCRETE STRENGTH AT TIME OF PRESTRESS TRANSFER.
- ② MINIMUM CONCRETE STRENGTH WHEN BEAM CAN BE TRANSPORTED AND INSTALLED.
- ③ STRAIGHT STRANDS.
- ④ PRESTRESSING STRANDS SHALL BE 7-WIRE LOW RELAXATION STRAND, CONFORMING TO ASTM A416, GRADE 270.
- ⑤ S1908 TRANSVERSE BARS SHOULD BE CAREFULLY SPACED AS SHOWN. ADJUST STIRRUP BAR SPACING AS NECESSARY TO ACCOMMODATE SPACING OF S1908 BARS.
- ⑥ AT FABRICATOR'S OPTION, S1901E BARS MAY BE REPLACED WITH 0.60" PRESTRESSING STRANDS. THESE STRANDS SHALL BE TENSIONED TO A NOMINAL 5000 POUNDS EACH PRIOR TO POURING BEAM CONCRETE, AND SHALL BE CUT WHEN f'c STRENGTH IS ACHIEVED ALONG WITH OTHER PRESTRESSING STRANDS. THESE STRANDS ARE NOT INCLUDED IN THE INITIAL PRESTRESS FORCE SHOWN HEREIN.
- ⑦ PLACE HANDLING HOOKS OR DEVICES WITHIN 2'-0" FROM THE HORIZONTAL CENTER OF GRAVITY SUCH THAT BEAMS WILL NOT TEND TO TIP WHEN LIFTED. HANDLING HOOKS OR DEVICES SHALL BE WITHIN 2'-0" FROM THE ENDS OF THE BEAM, AS REQUIRED BY CONTRACTOR.
- ⑧ BARS PLACED IN SEQUENCE SHOWN.

BEAM B1

CERTIFIED BY *J. L. Lin* 12/21/10
LICENSED PROFESSIONAL ENGINEER
NAME: JINSHYA J. LIN LIC. NO. 19115

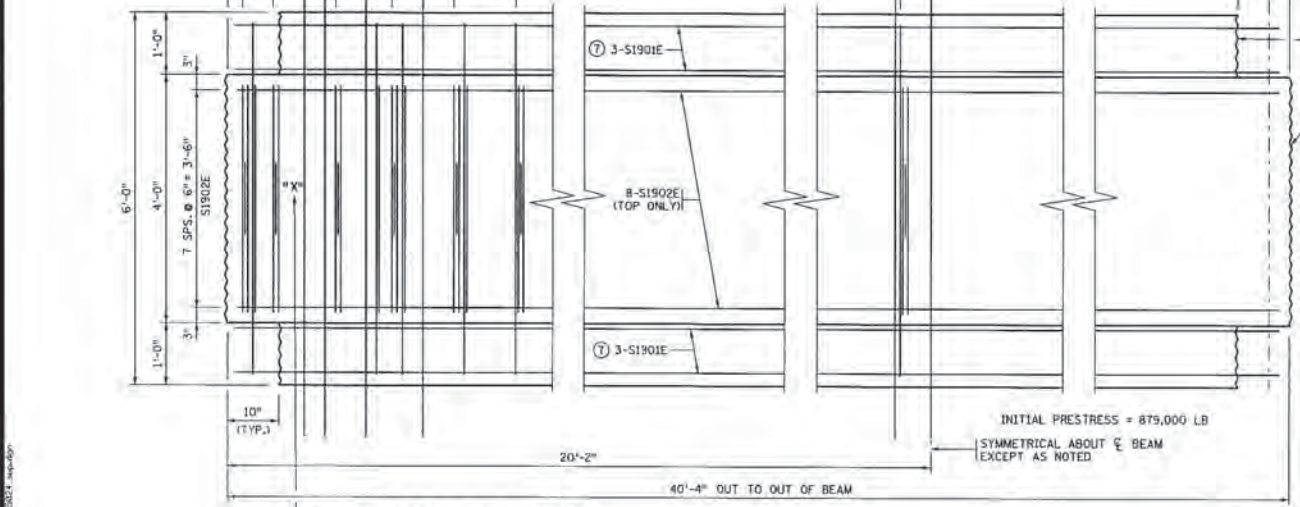
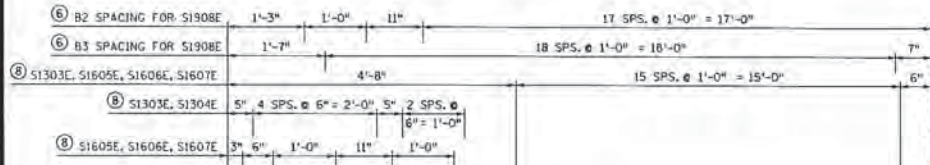
PRESTRESSED BEAM INV-T 18" TYPE 1

DES: P.J.K.	DR: K.G.S.	APPROVED: 12/21/10	BRIDGE NO. 25024
CHK: B.J.J.	CHK: D.C.H.		
SHEET NO. 31 OF 54 SHEETS			



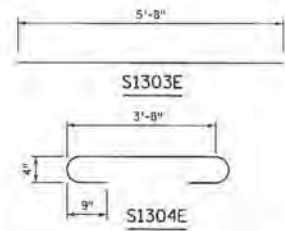
END VIEW BEAMS B2 OR B3

CUT STRANDS FLUSH WITH CONCRETE. PAINT ENDS WITH AN APPROVED GRAY EPOXY EXCEPT AS NOTED. (BEAMS B2 = 18 REQUIRED THUS, BEAMS B3 = 15 REQUIRED THUS)



MARK THIS END OF BEAM. SEE FRAMING PLAN FOR BEAM PLACEMENT.

PARTIAL PLAN - PRETENSIONED BEAM



HANDLING NOTE:
BEAMS SHALL BE SUPPORTED ONLY WITHIN 2'-0" FROM THEIR ENDS, WHETHER BEING LIFTED, OR SUPPORTED DURING STORAGE. DURING STORAGE, SUPPORTS TO BE PLACED BENEATH WEB SECTION ONLY, NOT BENEATH FLANGES. SUPPORT AT ALL TIMES PRIOR TO FINAL PLACEMENT, SO THAT BEAM SELF WEIGHT CAN COUNTERACT PRESTRESS FORCE TO PREVENT CRACKING AT THE TOP OF THE BEAM.

CALCULATED PRESTRESS LOSSES

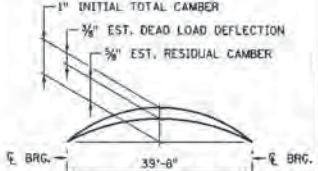
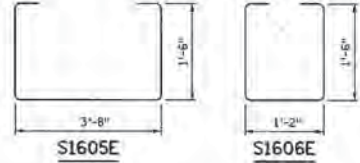
ELASTIC SHORTENING LOSS	9.17 KSI
LONG TERM LOSSES	19.71 KSI
TOTAL LOSSES	28.88 KSI

MINIMUM CONCRETE STRENGTH - P.S.I.	
① f'ci	② f'c
5000	6000

PRESTRESSING STRAND DIAMETER	
⑤ 1/2" □	⑥ 0.60" ☒

Y DISTANCES (IN INCHES)			
	NO.	℄ SPAN	END
STRAIGHT STRANDS	20	3.00	
DRAPED STRANDS	0	N/A	N/A
TOTAL STRANDS	20	3.00	

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

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



S1607E



S1908E

GENERAL NOTES

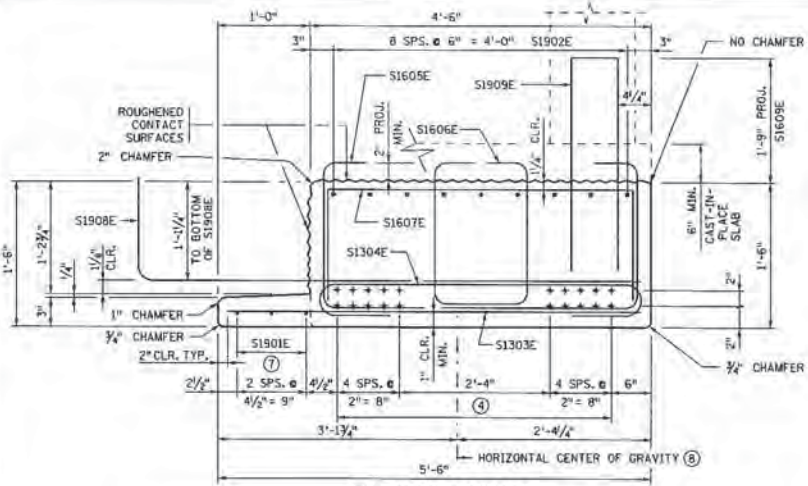
- ALL CONCRETE EDGES SHALL BE FORMED WITH A 3/4" CHAMFER UNLESS OTHERWISE NOTED.
- ALL CONTACT SURFACES, EXCEPT FLANGE EDGES, SHALL BE ROUGHENED FOR BOND AS SHOWN, SEE SPECIAL PROVISIONS.
- PROVIDE HANDLING HOOKS OR DEVICES WITHIN 2'-0" FROM THE ENDS OF THE BEAM, AS REQUIRED BY CONTRACTOR.
- EACH BEAM 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. ALL MARKINGS SHALL BE STENCILED 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 BEAM INV-T 18" TYPE 2" SEE Mn/DOT SPEC. 2405.
- SHOP DRAWINGS ARE REQUIRED. SEE SPECIAL PROVISIONS.
- APPROXIMATE WEIGHT OF PRECAST SECTION IS 20.5 TONS.
- ① MINIMUM CONCRETE STRENGTH AT TIME OF PRESTRESS TRANSFER.
- ② MINIMUM CONCRETE STRENGTH WHEN BEAM CAN BE TRANSPORTED AND INSTALLED.
- ③ STRAIGHT STRANDS.
- ④ PRESTRESSING STRANDS SHALL BE 7-WIRE LOW RELAXATION STRAND, CONFORMING TO ASTM A416, GRADE 270.
- ⑤ S1908E TRANSVERSE BARS SHOULD BE CAREFULLY SPACED AS SHOWN. ADJUST STIRRUP BAR SPACING AS NECESSARY TO ACCOMMODATE SPACING OF S1908E BARS.
- ⑥ AT FABRICATOR'S OPTION, S1901E BARS MAY BE REPLACED WITH 0.60" PRESTRESSING STRANDS. THESE STRANDS SHALL BE TENSIONED TO A NOMINAL 5000 POUNDS EACH PRIOR TO POURING BEAM CONCRETE, AND SHALL BE CUT WHEN f'ci STRENGTH IS ACHIEVED ALONG WITH OTHER PRESTRESSING STRANDS. THESE STRANDS ARE NOT INCLUDED IN THE INITIAL PRESTRESS FORCE SHOWN HEREIN.
- ⑦ BARS PLACED IN SEQUENCE SHOWN.

BEAMS B2 & B3

CERTIFIED BY: *Jishya J. Lin* 12/21/10
LICENSED PROFESSIONAL ENGINEER DATE
NAME: JISHYA J. LIN LIC. NO. 19115

TITLE: PRESTRESSED BEAM INV-T 18" TYPE 2

DES: P.J.K.	DR: K.G.S.	APPROVED: 12/21/10	BRIDGE NO. 25024
CHK: B.J.L.	CHK: D.C.H.	SHEET NO. 32 OF 54 SHEETS	



END VIEW BEAMS B4

CUT STRANDS FLUSH WITH CONCRETE. PAINT ENDS WITH AN APPROVED GRAY EPOXY EXCEPT AS NOTED. (BEAMS B4 = 3 REQUIRED THUS)

HANDLING NOTE:

BEAMS SHALL BE SUPPORTED ONLY WITHIN 2'-0" FROM THEIR ENDS, WHETHER BEING LIFTED, OR SUPPORTED DURING STORAGE. DURING STORAGE, SUPPORTS TO BE PLACED BENEATH WEB SECTION ONLY, NOT BENEATH FLANGES. SUPPORT AT ALL TIMES PRIOR TO FINAL PLACEMENT, SO THAT BEAM SELF WEIGHT CAN COUNTERACT PRESTRESS FORCE TO PREVENT CRACKING AT THE TOP OF THE BEAM.

CALCULATED PRESTRESS LOSSES

ELASTIC SHORTENING LOSS	8.91 KSI
LONG TERM LOSSES	19.16 KSI
TOTAL LOSSES	28.07 KSI

MINIMUM CONCRETE STRENGTH - P.S.I.

① f'ci	② f'c
5000	6000

PRESTRESSING STRAND DIAMETER

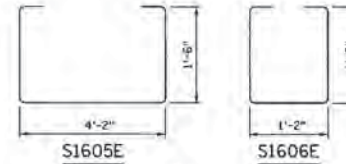
⑤	1/2" □
⑥	0.60" □

Y DISTANCES (IN INCHES)

	NO.	℄ SPAN	END
STRAIGHT STRANDS	20	3.00	X/A
DRAPED STRANDS	0	N/A	N/A
TOTAL STRANDS	20	3.00	X/A

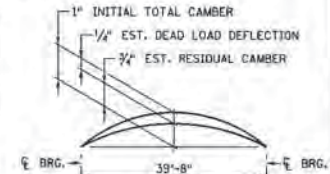
Y = DISTANCE TO CENTER OF GRAVITY OF STRANDS FROM BOTTOM OF BEAM. ALL STRANDS SPACED 2" CENTER TO CENTER, HORIZONTALLY AND VERTICALLY, EXCEPT AS NOTED.

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



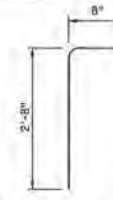
S1605E

S1606E



CAMBER DIAGRAM

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



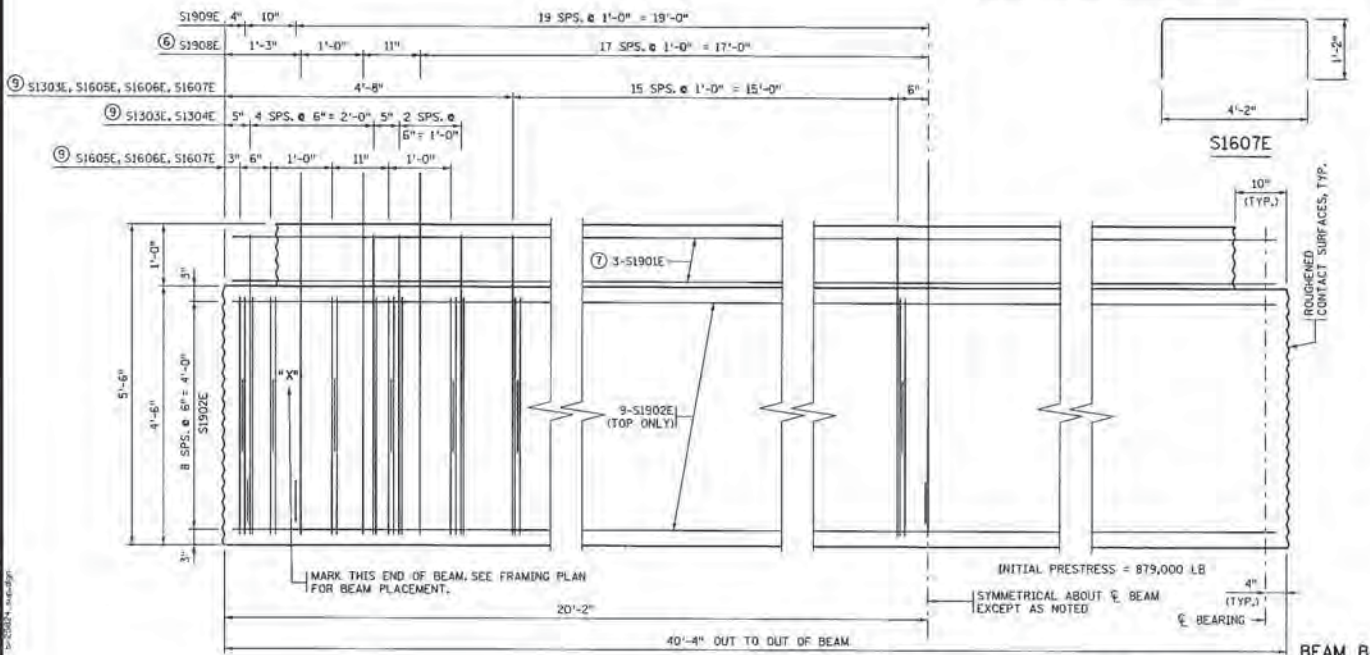
S1909E



S1908E

GENERAL NOTES

- ALL CONCRETE EDGES SHALL BE FORMED WITH A 3/4" CHAMFER UNLESS OTHERWISE NOTED.
- ALL CONTACT SURFACES, EXCEPT FLANGE EDGES, SHALL BE ROUGHENED FOR BOND AS SHOWN. SEE SPECIAL PROVISIONS.
- PROVIDE HANDLING HOOKS OR DEVICES WITHIN 2'-0" FROM THE ENDS OF THE BEAM, 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. ALL MARKINGS SHALL BE STENCILED 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 BEAM INV-T 18" TYPE 3. SEE Mn/DOT SPEC. 2405.
- SHOP DRAWINGS ARE REQUIRED. SEE SPECIAL PROVISIONS.
- APPROXIMATE WEIGHT OF PRECAST SECTION IS 21.9 TONS.
- MINIMUM CONCRETE STRENGTH AT TIME OF PRESTRESS TRANSFER.
- MINIMUM CONCRETE STRENGTH WHEN BEAM CAN BE TRANSPORTED AND INSTALLED.
- STRAIGHT STRANDS.
- PRESTRESSING STRANDS SHALL BE 7-WIRE LOW RELAXATION STRAND, CONFORMING TO ASTM A416, GRADE 270.
- S1908E TRANSVERSE BARS SHOULD BE CAREFULLY SPACED AS SHOWN. ADJUST STIRRUP BAR SPACING AS NECESSARY TO ACCOMMODATE SPACING OF S1908E BARS.
- AT FABRICATORS OPTION, S1901E BARS MAY BE REPLACED WITH 0.60" PRESTRESSING STRANDS. THESE STRANDS SHALL BE TENSIONED TO A NOMINAL 5000 POUNDS EACH PRIOR TO POURING BEAM CONCRETE, AND SHALL BE CUT WHEN f'ci STRENGTH IS ACHIEVED ALONG WITH OTHER PRESTRESSING STRANDS. THESE STRANDS ARE NOT INCLUDED IN THE INITIAL PRESTRESS FORCE SHOWN HEREIN.
- PLACE HANDLING HOOKS OR DEVICES WITH RESPECT TO HORIZONTAL CENTER OF GRAVITY SUCH THAT BEAMS WILL NOT TEND TO TIP WHEN LIFTED. HANDLING HOOKS OR DEVICES SHALL BE WITHIN 2'-0" FROM THE ENDS OF THE BEAM, AS REQUIRED BY CONTRACTOR.
- BARS PLACED IN SEQUENCE SHOWN.



BEAM B4

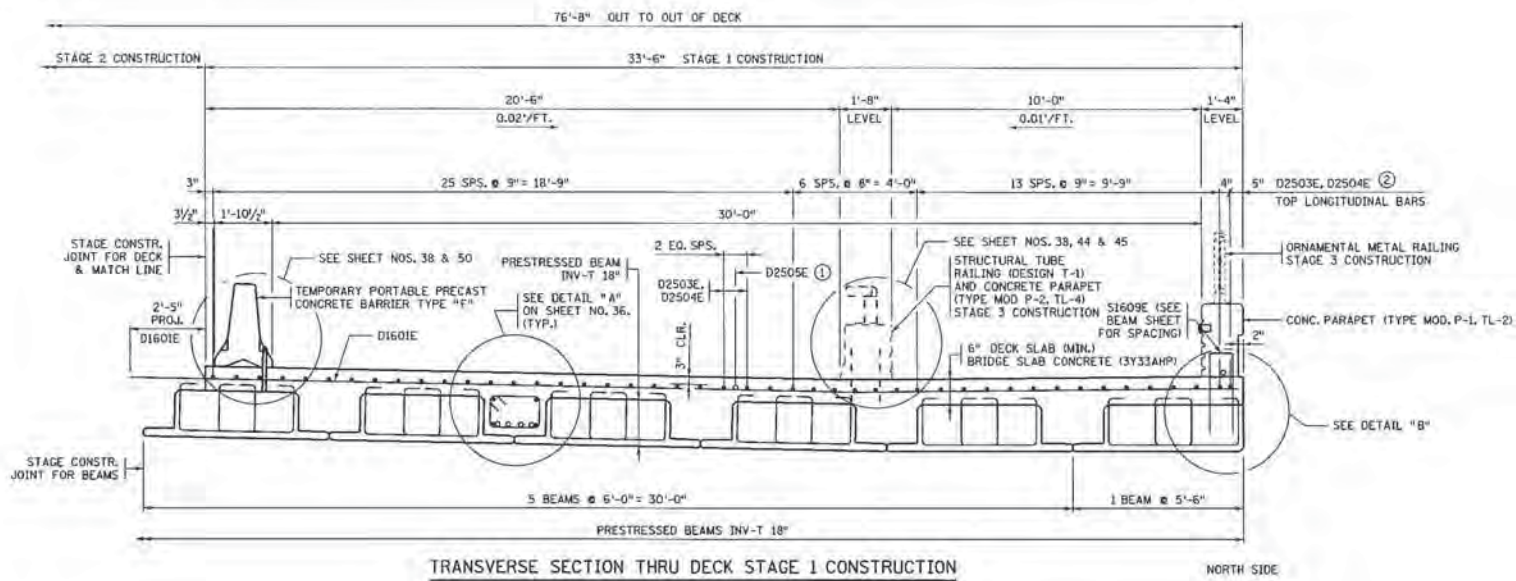
PARTIAL PLAN - PRETENSIONED BEAM

CERTIFIED BY: *Jishya J. Lin* 12/2/10
 LICENSED PROFESSIONAL ENGINEER DATE
 NAME: JISHYA J. LIN LIC. NO. 19115

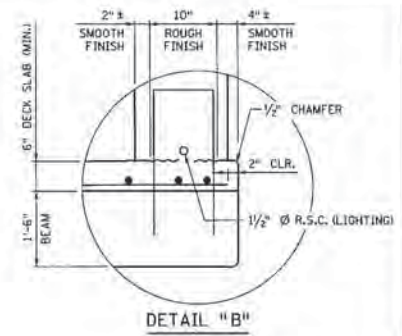
TITLE: PRESTRESSED BEAM INV-T 18" TYPE 3

DES: P.J.K.	DR: K.G.S.	APPROVED: <i>J.J.L.</i>	BRIDGE NO. 25024
CHK: B.J.L.	CHK: D.C.H.	12/2/10	

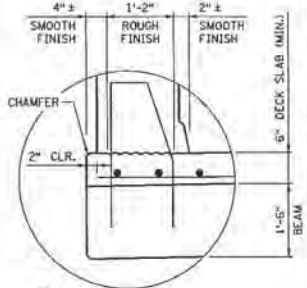
SHEET NO. 33 OF 54 SHEETS



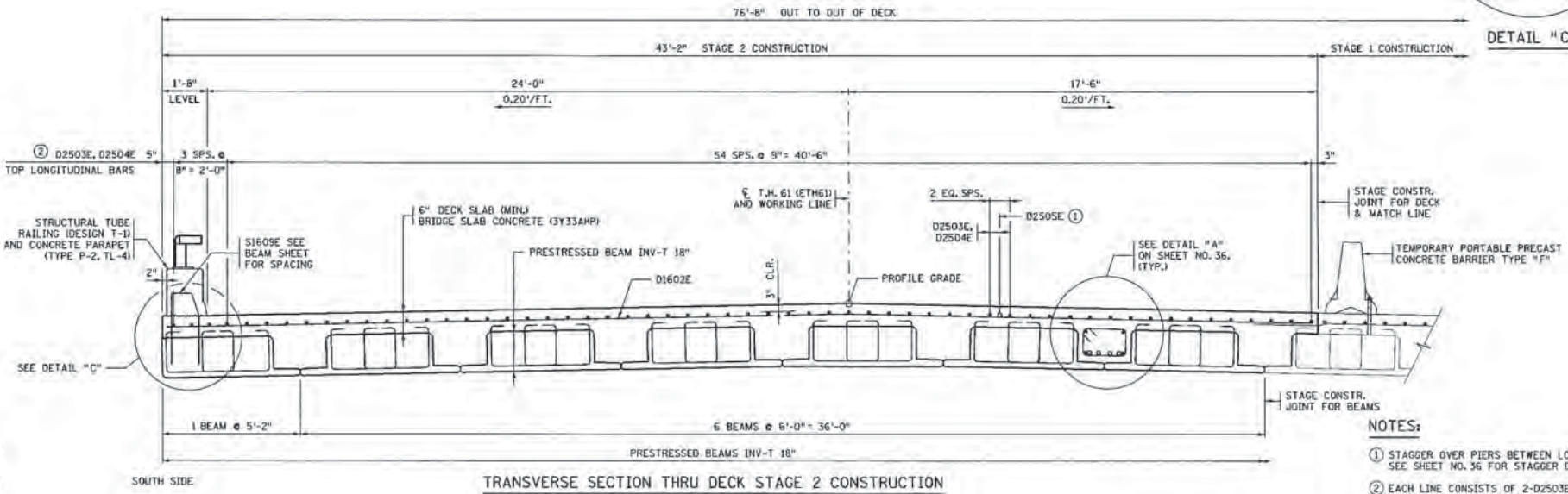
TRANSVERSE SECTION THRU DECK STAGE I CONSTRUCTION



DETAIL "B"



DETAIL "C"

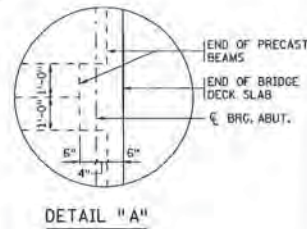
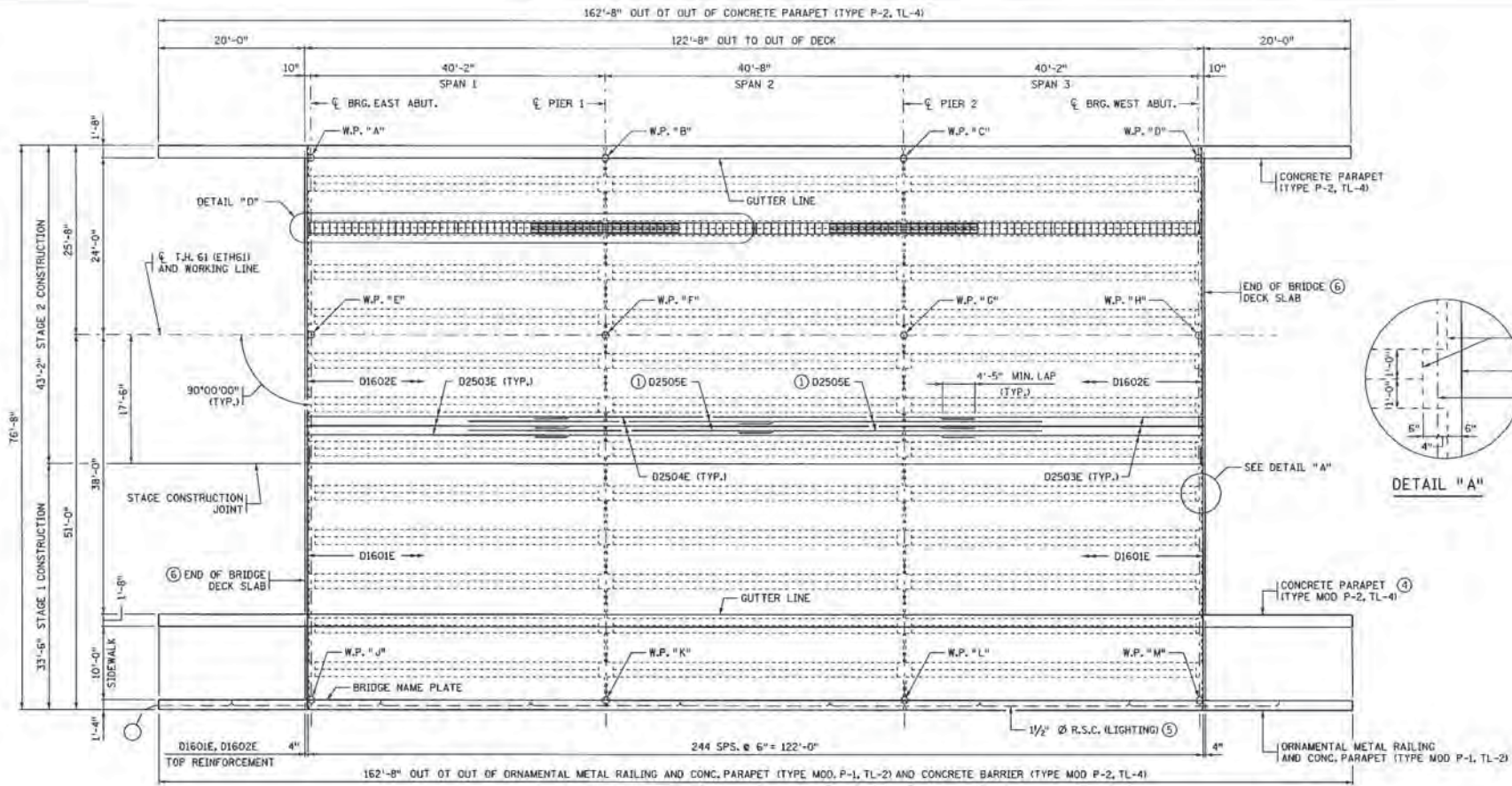


TRANSVERSE SECTION THRU DECK STAGE 2 CONSTRUCTION

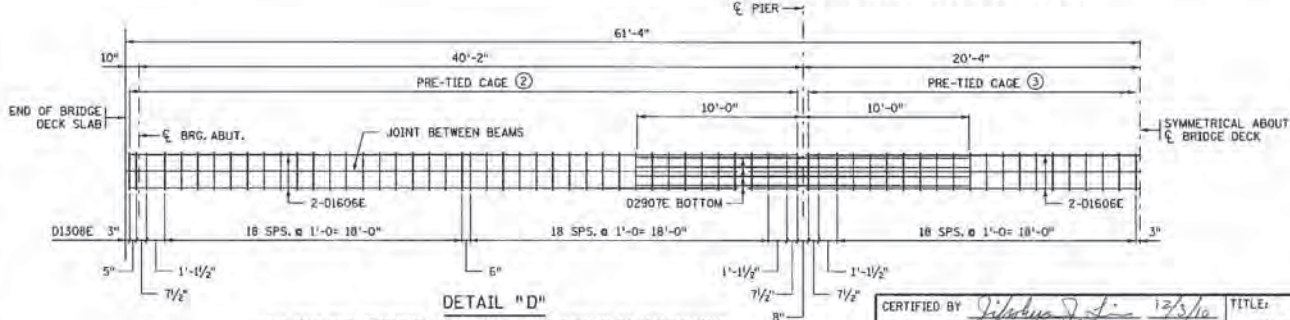
- NOTES:
- ① STAGGER OVER PIERS BETWEEN LONGITUDINAL BARS. SEE SHEET NO. 36 FOR STAGGER DIAGRAM.
 - ② EACH LINE CONSISTS OF 2-D2503E & 1-D2504E. 2-D2505E EACH LINE OVER PIERS NOT SHOWN. SEE DECK SLAB PLAN FOR REINFORCEMENT PLACEMENT.

CERTIFIED BY <i>Jishya J. Lin</i> LICENSED PROFESSIONAL ENGINEER NAME: JISHYA J. LIN	DATE 12/3/10	TITLE: SUPERSTRUCTURE DETAILS	DES: P.J.K.	DR: K.G.S.	APPROVED: <i>[Signature]</i>	BRIDGE NO. 25024
	LIC. NO. 19115		CHK: B.L.J.	CHK: D.C.H.	12/3/10	

12/1/2010 8:25:24 AM



DECK SLAB PLAN
BEAM AND BARRIER REINFORCEMENT NOT SHOWN

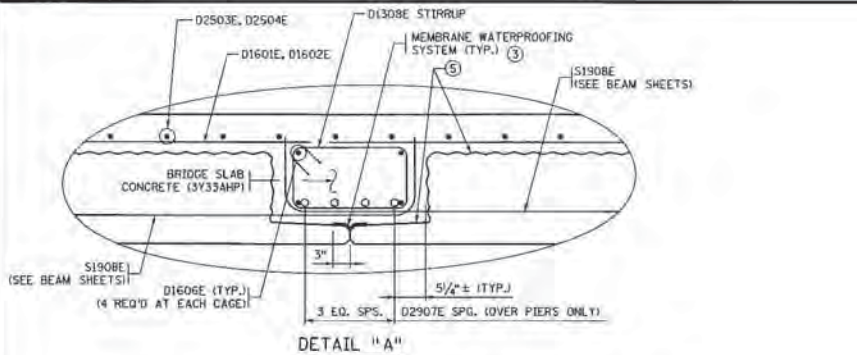


NOTES:

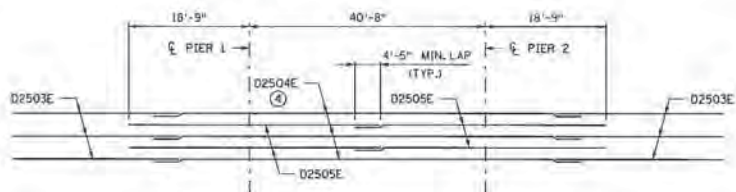
- ① STAGGER OVER PIERS BETWEEN LONGITUDINAL BARS. SEE SHEET NO. 36 FOR STAGGER DIAGRAM.
- ② TYPICAL PRE-TIED CAGE @ SPANS 1 & 3. ONE REQUIRED AT EACH JOINT BETWEEN BEAMS. 24 PRE-TIED CAGES REQUIRED FOR ENTIRE BRIDGE.
- ③ TYPICAL PRE-TIED CAGE @ SPAN 2. ONE REQUIRED AT EACH JOINT BETWEEN BEAMS. 12 PRE-TIED CAGES REQUIRED FOR ENTIRE BRIDGE.
- ④ STRUCTURAL TUBE RAILING (DESIGN T-1) & CONCRETE PARAPET (TYPE MOD P-2, TL-4) TO BE CONSTRUCTED DURING STAGE 3. SEE STAGING SHEETS.
- ⑤ SEE SHEET NOS. 47 & 48 FOR DETAILS.
- ⑥ SEE "TYP. LONGITUDINAL SECTION AT ABUTMENT" ON SHEET NO. 36 FOR ADDITIONAL END OF DECK REINFORCEMENT.

HALF DECK REINFORCEMENT SHOWN. OTHER HALF SIMILAR BY 180° ROTATION. SEE DETAIL "A" ON SHEET NO. 36 FOR ADDITIONAL DETAILS.

CERTIFIED BY <i>Jishya J. Lin</i> LICENSED PROFESSIONAL ENGINEER NAME: JISHYA J. LIN LIC. NO. 19115	DATE 12/3/10	TITLE: SUPERSTRUCTURE DETAILS	DES: P.J.K.	DR: K.G.S.	APPROVED:	BRIDGE NO. 25024
			DR: B.J.J.	CHK: D.C.H.	12/3/10	

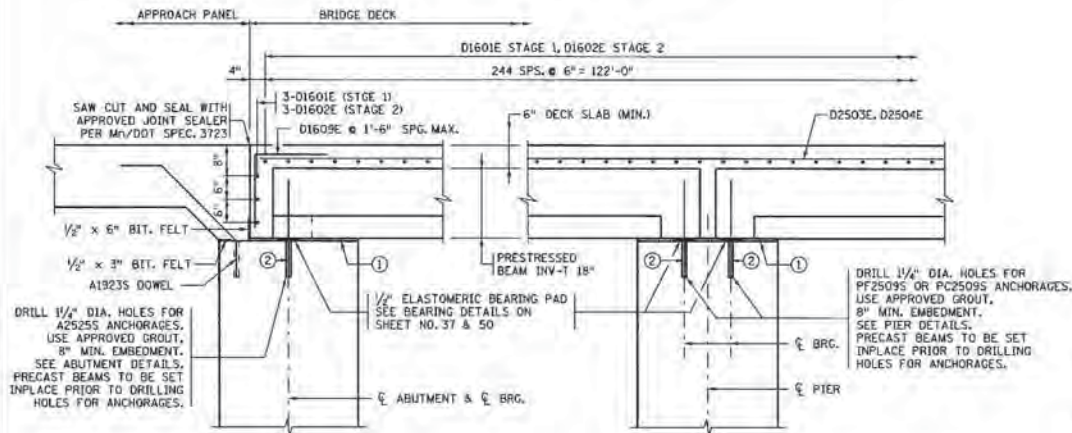


DETAIL "A"



TYPICAL STAGGER DIAGRAM OVER PIERS

D2505E AT ABOUT 4 1/2" CENTERS BETWEEN D2503E AND D2504E. TOP LONGITUDINAL REINFORCEMENT, PLACE FULL WIDTH OF DECK.



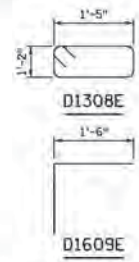
TYP. LONGITUDINAL SECTION AT ABUTMENTS

TYP. LONGITUDINAL SECTION AT PIERS

SUMMARY OF QUANTITIES FOR SUPERSTRUCTURE

ITEM	UNIT	STAGE 1	STAGE 2	STAGE 3	TOTAL
6	BRIDGE SLAB CONCRETE (3Y33AHP)	4109	5296	---	9405
7	TYPE MOD P-1, TL-2 RAILING CONCRETE (3Y46A)	163	---	---	163
8	TYPE P-2 (TL-4) CONCRETE (3Y46A)	---	163	---	163
9	TYPE MOD P-2 (TL-4) CONCRETE (3Y46A)	---	---	163	163
10	ORNAMENTAL METAL RAILING	---	---	163	163
10	STRUCTURAL TUBE RAILING DESIGN T-1	---	157	---	157
10	REINFORCEMENT BARS (EPOXY COATED)	44960	57410	2140	104510
11	ANCHORAGE TYPE REIN BARS	---	---	269	269
11	ANCHORAGES TYPE 1	39	---	---	39
11	REMOVE ANCHORAGE	---	---	39	39
11	ELASTOMERIC BEARING PAD TYPE 1	6	---	---	6
11	ELASTOMERIC BEARING PAD TYPE 2	30	36	---	66
11	ELASTOMERIC BEARING PAD TYPE 3	---	6	---	6
11	PRESTRESSED BEAM INV-T 18" TYPE 1	---	121	---	121
11	PRESTRESSED BEAM INV-T 18" TYPE 2	605	726	---	1331
11	PRESTRESSED BEAM INV-T 18" TYPE 3	121	---	---	121
11	1/2" x 3" BIT FELT	71	82	---	153
11	1/2" x 6" BIT FELT	71	82	---	153
11	ARCH CONC TEXTURE (ASHLAR STONE)	296	---	202	498
11	ARCH SURFACE FINISH (MULTI COLOR)	296	---	202	498
11	ANTI-GRAFFITI COATING	296	---	202	498
12	BRIDGE DECK PLANING	3063	6479	---	9542
11	MEMBRANE WATERPROOFING SYSTEM	608	852	---	1460
11	BRIDGE NAME PLATE	1	---	---	1

- 6 "BRIDGE SLAB CONCRETE (3Y33AHP)" VOLUME IS APPROXIMATELY 137 CU. YDS. FOR STAGE 1 CONSTRUCTION & 182 CU. YDS. FOR STAGE 2 CONSTRUCTION.
- 7 "TYPE P-1, TL-2 RAILING CONCRETE (3Y46A)" VOLUME IS APPROXIMATELY 17 CU. YDS.
- 8 "TYPE P-2 (TL-4) RAILING CONCRETE (3Y46A)" VOLUME IS APPROXIMATELY 15 CU. YDS.
- 9 "TYPE MOD P-2 (TL-4) RAILING CONCRETE (3Y46A)" VOLUME IS APPROXIMATELY 16 CU. YDS.
- 10 INCLUDES SLAB AND RAILING REINFORCEMENT.
- 11 PAYMENT SHALL BE CONSIDERED INCIDENTAL TO PAY ITEM "BRIDGE SLAB CONCRETE (3Y33AHP)".
- 12 INCLUDES 2346 SQ. FT. FOR BRIDGE APPROACH PANELS.
- 13 SEE SPECIAL PROVISIONS.



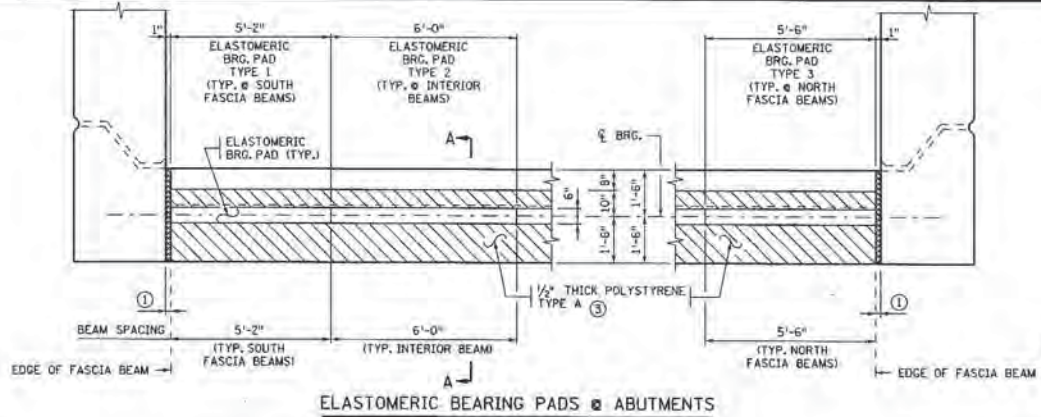
BILL OF REINFORCEMENT FOR SUPERSTRUCTURE

BAR	NO. FOR STAGE 1 CONSTRUCTION	NO. FOR STAGE 2 CONSTRUCTION	LENGTH	SHAPE	LOCATION
D1601E	251	---	35'-9"	---	DECK TRANSVERSE
D1602E	---	251	42'-10"	---	DECK TRANSVERSE
D2503E	92	116	35'-7"	---	DECK LONGITUDINAL
D2504E	46	58	60'-0"	---	DECK LONGITUDINAL
D2505E	88	114	41'-4"	---	DECK LONGITUDINAL
D1606E	60	84	40'-4"	---	CAGE LONGITUDINAL
D2907E	40	56	20'-0"	---	CAGE LONGIT. OVER PIERS
D1308E	640	896	5'-11"	---	CAGE STIRRUP
D1609E	46	60	3'-0"	---	DECK END

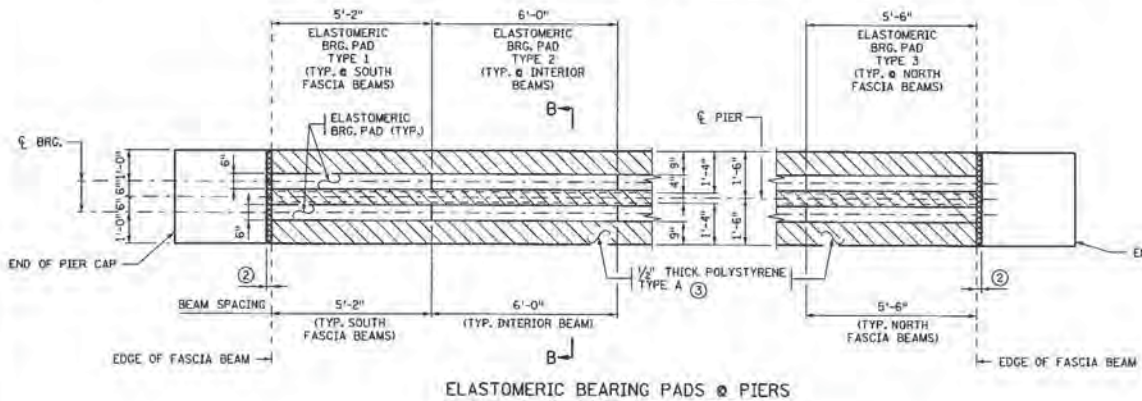
NOTES:

- 1 PLACE 1/2" POLYSTYRENE TYPE A UNDER ALL BEAM AREAS OVER BRIDGE SEAT EXCLUDING THE BEARING PAD AREAS. SEE BEARING DETAILS ON SHEET NO. 37.
- 2 SEE SHEET NOS. 10, 17, 21 & 23 FOR LOCATIONS.
- 3 MEMBRANE WATERPROOFING SYSTEM IS INCIDENTAL. PERFORATE AS REQUIRED TO DRAIN ANY WATER. MEMBRANE AT THIS LOCATION USED AS LOCAL BOND BREAKER, NOT WATERPROOFING.
- 4 CENTER D2504E OVER BRIDGE SPANS.
- 5 CONTRACTOR SHALL PREWET PRECAST BEAMS BEFORE DECK CONCRETE IS PLACED, SEE SPECIAL PROVISIONS.

CERTIFIED BY <i>Jihshya J. Lin</i> NAME: JIHSHYA J. LIN	DATE 12/5/10 LIC. NO. 19115	TITLE: SUPERSTRUCTURE DETAILS	DESIGNED BY F.J.K. CHKD BY B.J.J.	DRAWN BY K.G.S. CHKD BY D.C.H.	APPROVED BY 12/5/10 SHEET NO. 36 OF 54 SHEETS	BRIDGE NO. 25024
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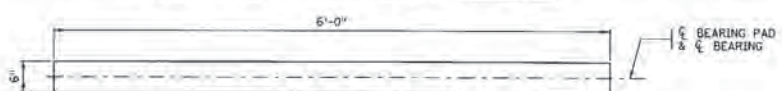
ELASTOMERIC BEARING PADS @ ABUTMENTS



ELASTOMERIC BEARING PADS @ PIERS



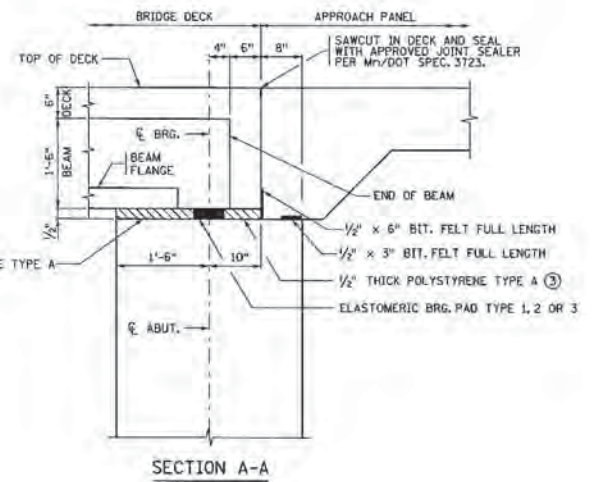
ELASTOMERIC BEARING PAD TYPE 1 PLAN VIEW



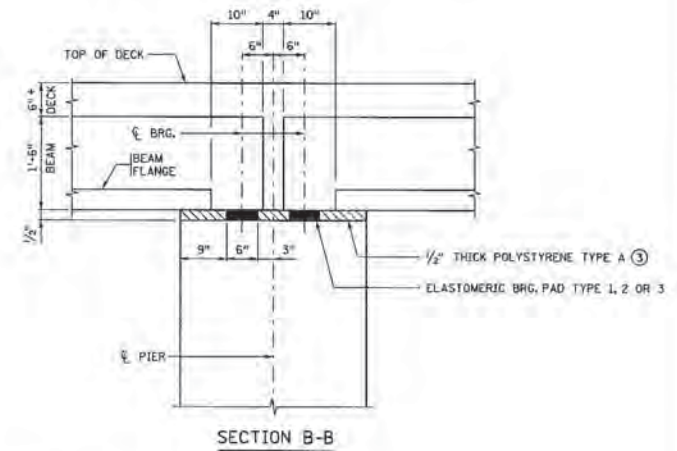
ELASTOMERIC BEARING PAD TYPE 2 PLAN VIEW



ELASTOMERIC BEARING PAD TYPE 3 PLAN VIEW



SECTION A-A

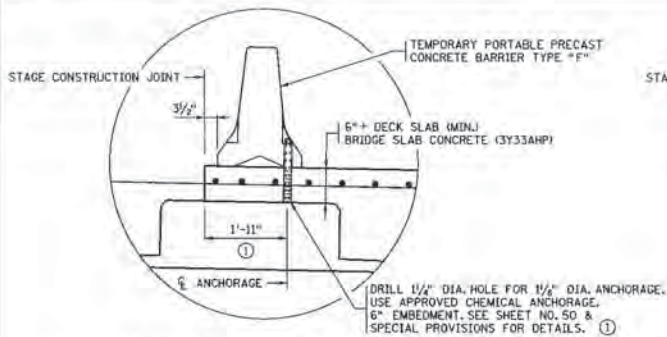


SECTION B-B

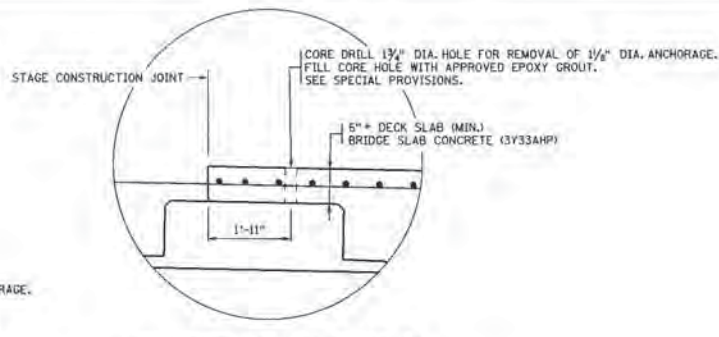
NOTES:

- ① 1" POLYSTYRENE TYPE B SEE ABUTMENT SHEETS FOR DETAILS.
- ② 1" POLYSTYRENE TYPE B SEE PIER SHEETS FOR DETAILS.
- ③ 1/2" POLYSTYRENE TYPE A SEE ABUTMENT & PIER SHEETS FOR DETAILS.

CERTIFIED BY <i>Jishya J. Lin</i> LICENSED PROFESSIONAL ENGINEER NAME: JISHYA J. LIN	DATE 12/21/10 LIC. NO. 19115	TITLE: SUPERSTRUCTURE DETAILS	DESIGNED BY P.J.K.	DRAWN BY K.G.S.	APPROVED BY 12/21/10	BRIDGE NO. 25024
			CHECKED BY B.J.J.	CHECKED BY D.C.H.	SHEET NO. 37 OF 54 SHEETS	



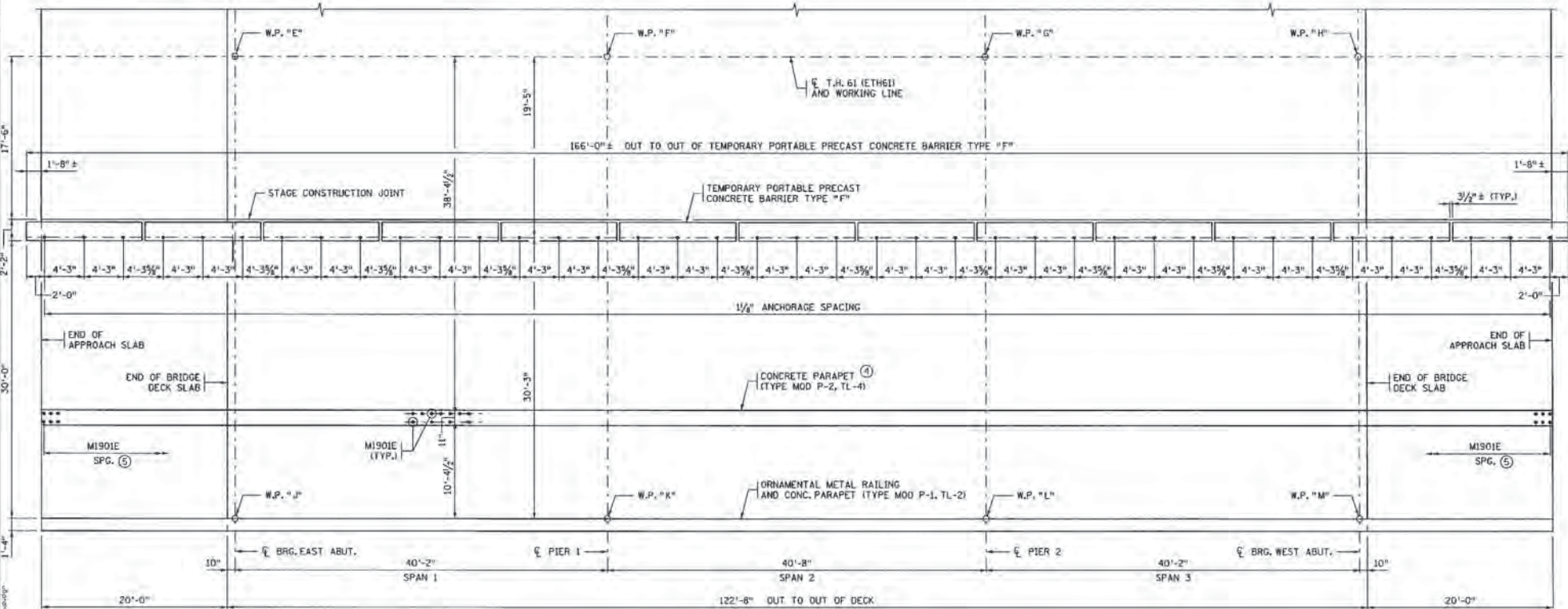
ANCHORAGE PLACEMENT DETAIL ①
(TEMPORARY BARRIER)



ANCHORAGE REMOVAL DETAIL ③

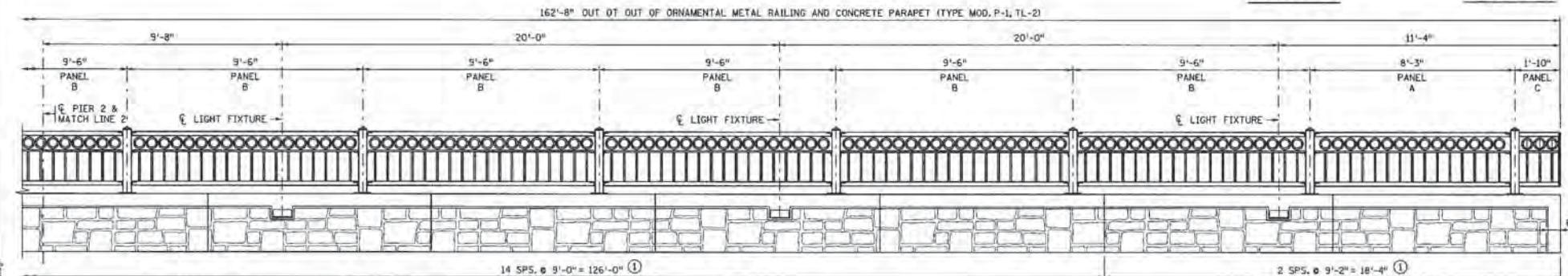
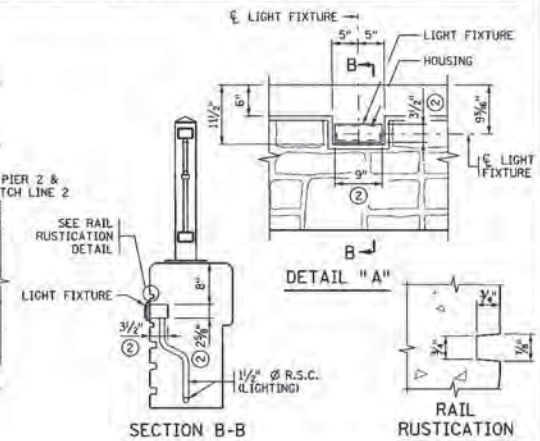
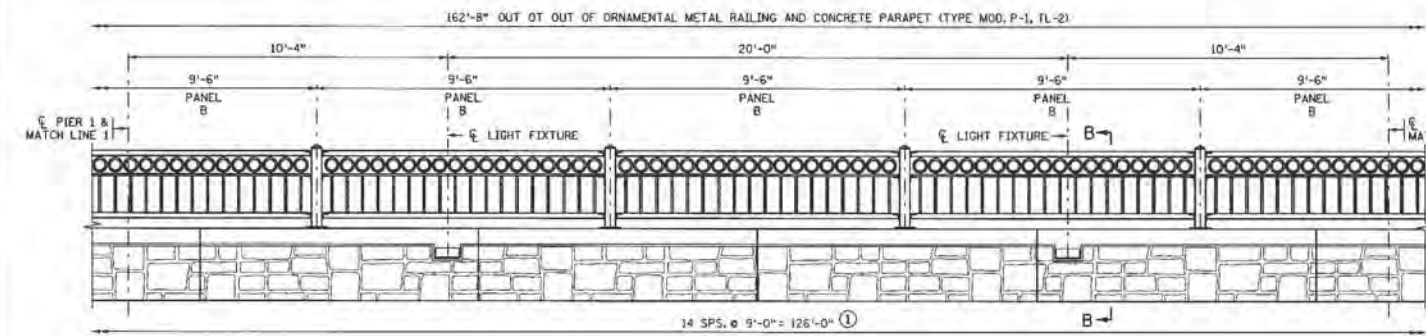
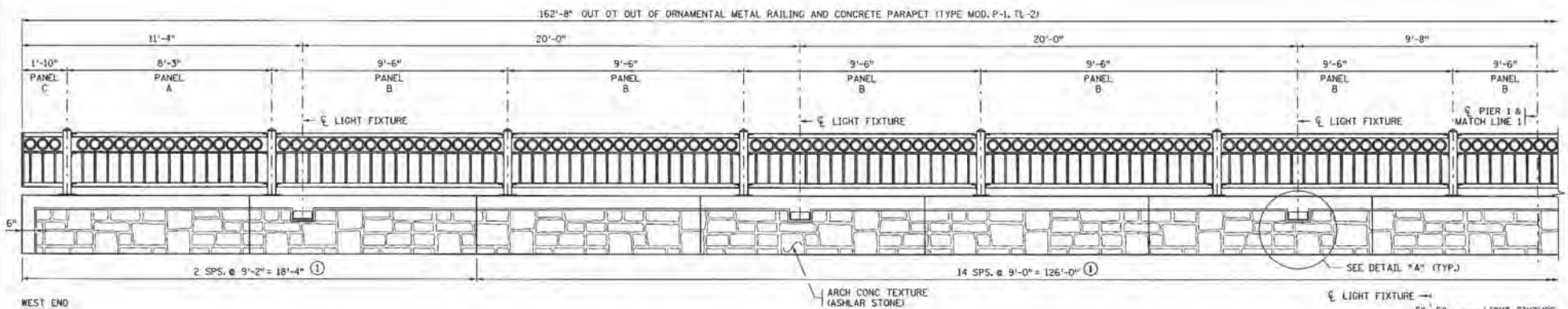
NOTES:

- ① CONTRACTOR SHALL PLACE ANCHOR BOLTS AS SHOWN AS TO AVOID HITTING DECK LONGITUDINAL BARS WHILE DRILLING.
- ② TEMPORARY BARRIER TO BE INCLUDED IN GRADING PORTION OF CONTRACT. THE ANCHORAGES OF THE BARRIER TO BE INCLUDED IN PRICE BID "ANCHORAGES TYPE 1" PER EACH.
- ③ ALL REMOVAL OF THE ANCHORAGES TO BE DONE DURING STAGE 3 CONSTRUCTION. ALL REMOVAL ITEMS TO BE INCLUDED IN PRICE BID "REMOVE ANCHORAGE" PER EACH.
- ④ TO BE CONSTRUCTED DURING STAGE 3.
- ⑤ SEE SHEET NOS. 44 & 45 FOR MISOIE ANCHORAGE SPACING. ANCHORAGES FOR THE CONCRETE PARAPET (TYPE MOD P-1, TL-2) TO BE PAID FOR UNDER BID ITEM "ANCHORAGE TYPE REINF BARS" PER EACH.



PLAN VIEW ANCHORAGE SPACING

CERTIFIED BY <i>Jishnya J. Lin</i> LICENSED PROFESSIONAL ENGINEER NAME: JISHNYA J. LIN	DATE 12/3/10 DATE LIC. NO. 19115	TITLE: SUPERSTRUCTURE DETAILS	DES: P.J.K.	DR: K.G.S.	APPROVED:	BRIDGE NO. 25024
			CHK: B.L.J.	CHK: D.C.H.	12/5/10 SHEET NO. 38 OF 54 SHEETS	

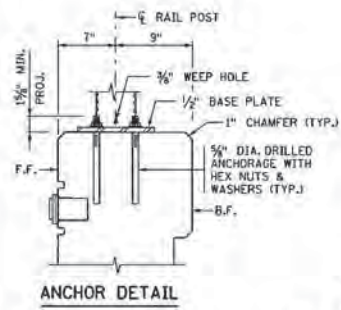
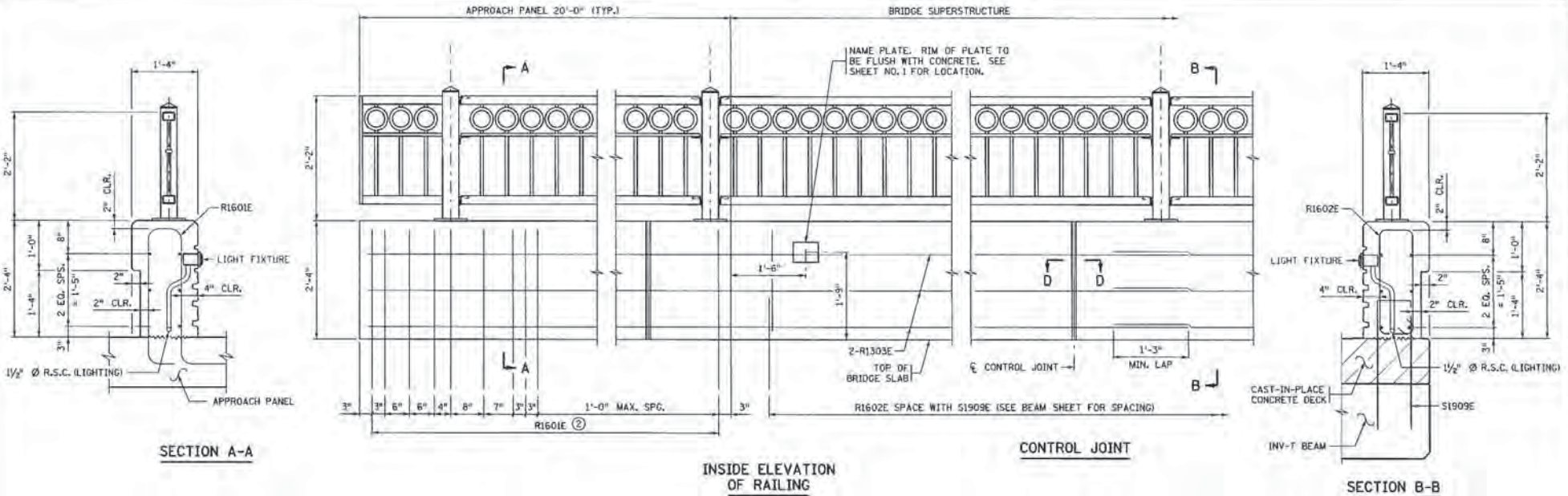


NOTE:
 ① CONTROL JOINT SPACING.
 ② VERIFY SIZE OF LIGHT FIXTURE BLOCK OUT REQUIRED WITH LIGHTING PLAN. ADJUST LIGHT FIXTURE SPACING AND/OR REINFORCEMENT SPACING AS NECESSARY FOR FIT.

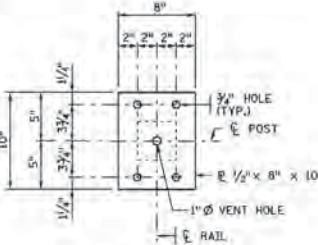
INSIDE ELEVATION OF BARRIER

EAST END

CERTIFIED BY LICENSED PROFESSIONAL ENGINEER NAME: JIMSHYA J. LIN LIC. NO. 19115	DATE 12/3/10	TITLE: ORNAMENTAL METAL RAILING AND CONCRETE PARAPET (TYPE MOD P-1, TL-2)	DES: P.J.K.	DR: K.G.S.	APPROVED:	BRIDGE NO. 25024
			CHG: J.J.L.	CHG: J.A.L.	12/3/10	



NOTE:
IF REINFORCEMENT IS HIT WHEN DRILLING HOLES FOR ANCHORAGES, MOVE POST SLIGHTLY LONGITUDINALLY AND REDRILL, ALTERNATE DIRECTION OF MOVEMENT SO THAT THE OVERALL RAIL LENGTH COMES OUT THE SAME.

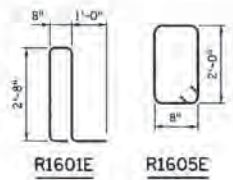


BASE PLATE (TYP.)



SECTION D-D CONTROL JOINT DETAILS

BILL OF REINFORCEMENT FOR PARAPET				
BAR	NO.	LENGTH	SHAPE	LOCATION
R1601E	52	7'-6"		RAIL BASE VERTICAL
R1602E	123	6'-2"		RAIL BASE VERTICAL
R1303E	18	55'-0"		RAIL BASE LONGIT.



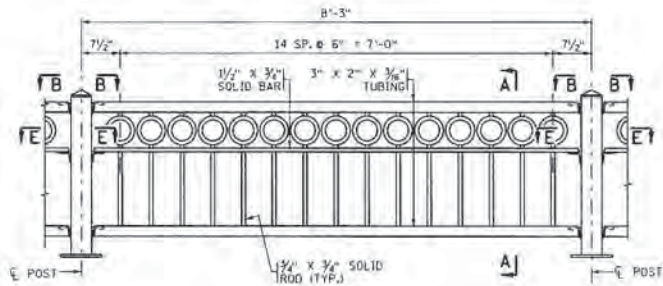
- GENERAL NOTES**
- CONCRETE PARAPET BARRIER = 432 LBS./FT. (0.107 CU. YDS./FT.)
 - SEE SHEET NO. 41 FOR ORNAMENTAL METAL RAILING DETAILS.
 - SEE SPECIAL PROVISIONS FOR RAIL ANCHORAGE REQUIREMENTS.
 - FINISH ALL EDGES OF RAIL WITH 1/2" CHAMFER, EXCEPT WHERE OTHERWISE NOTED.
 - ALL MATERIAL IN THE CONCRETE BARRIER IS LISTED IN SUMMARY OF QUANTITIES FOR SUPERSTRUCTURE.
 - THE RAILING, BASE PLATES, AND PROTRUDING PORTIONS OF BOLTS, NUTS AND WASHERS SHALL BE PAINTED IN ACCORDANCE WITH THE SPECIAL PROVISIONS.
 - LENGTH OF "TYPE MOD P-1 (TL-2) RAILING CONCRETE (3Y46A)" FOR PAYMENT SHALL BE MEASURED BETWEEN END FACES OF CONCRETE BARRIER.
 - SEE SHEET NO. 39 FOR CONTROL JOINT SPACING & LIGHT FIXTURE SPACING.
 - SEE SHEET NO. 41 FOR ADDITIONAL NOTES.
 - F.F. DENOTES FRONT FACE.
 - B.F. DENOTES BACK FACE.
 - ① SEE SPECIAL PROVISIONS FOR JOINT SEALING REQUIREMENTS.
 - ② R1601E BARRIER REINFORCEMENT SUPPLIED IN BRIDGE PORTION OF CONTRACT & INSTALLED IN GRADING PORTION OF CONTRACT FOR APPROACH PANELS.

REVISED:
APPROVED: DECEMBER 18, 2003
David S. Hagan
STATE BOND OWNER

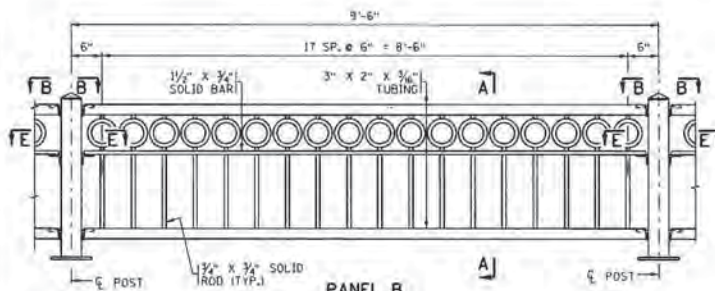
CERTIFIED BY *Jihshya J. Lin* 12/3/10
LICENSED PROFESSIONAL ENGINEER DATE
NAME: JIHSHYA J. LIN LIC. NO. 19115

ORNAMENTAL METAL RAILING AND CONCRETE PARAPET (TYPE MOD P-1, TL-2)

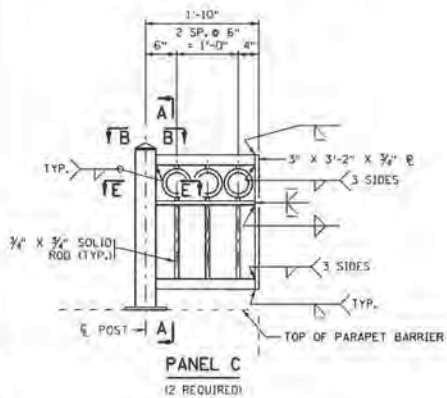
(MODIFIED) FIG. 5-397.154
DESIGNER: P.J.K. DRAWN: K.G.S. APPROVED: J.A.J. 12/3/10
SHEET NO. 40 OF 54 SHEETS BRIDGE NO. 25024



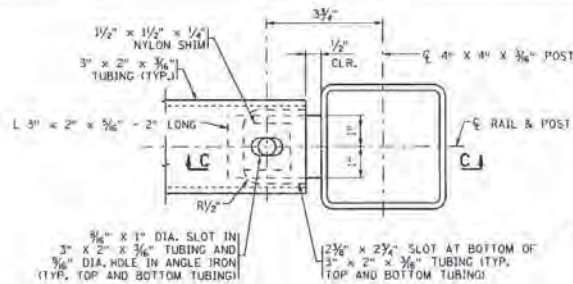
PANEL A
(2 REQUIRED)



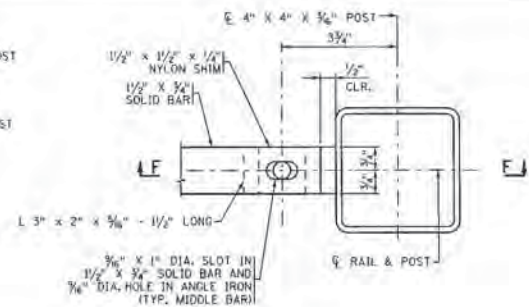
PANEL B
(15 REQUIRED)



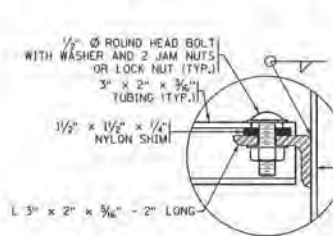
PANEL C
(2 REQUIRED)



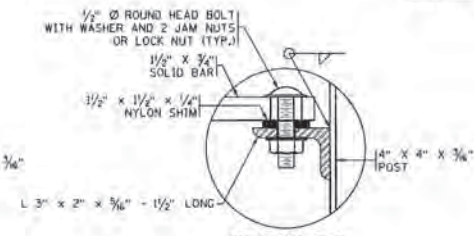
SECTION B-B



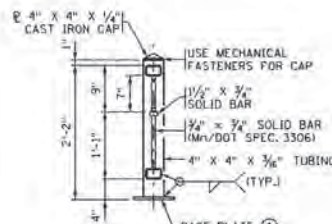
SECTION E-E



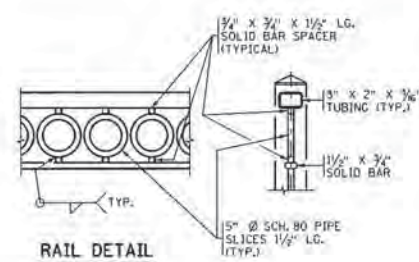
SECTION C-C



SECTION F-F



SECTION A-A
(18 POSTS REQUIRED)



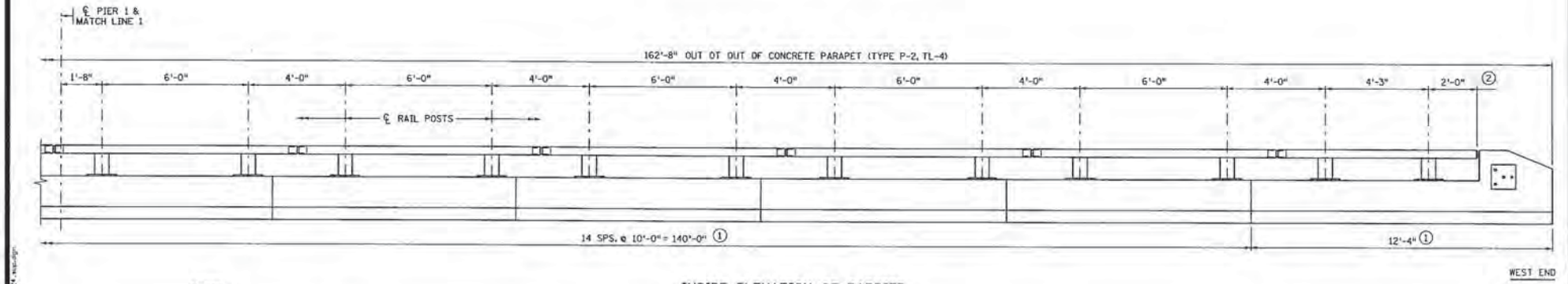
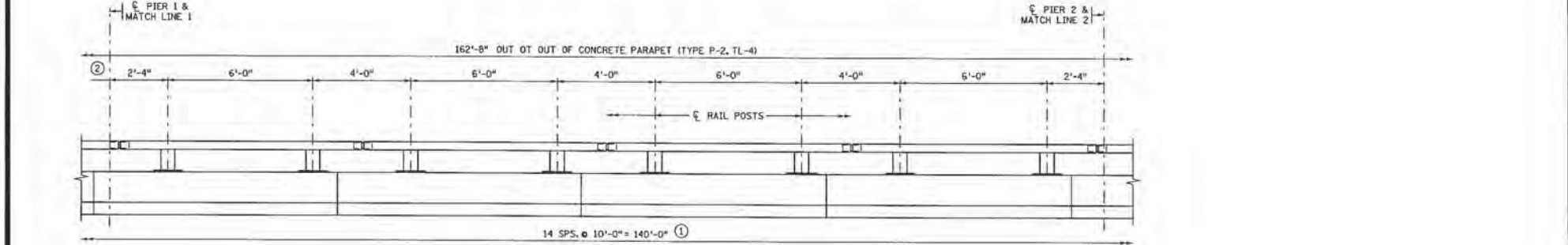
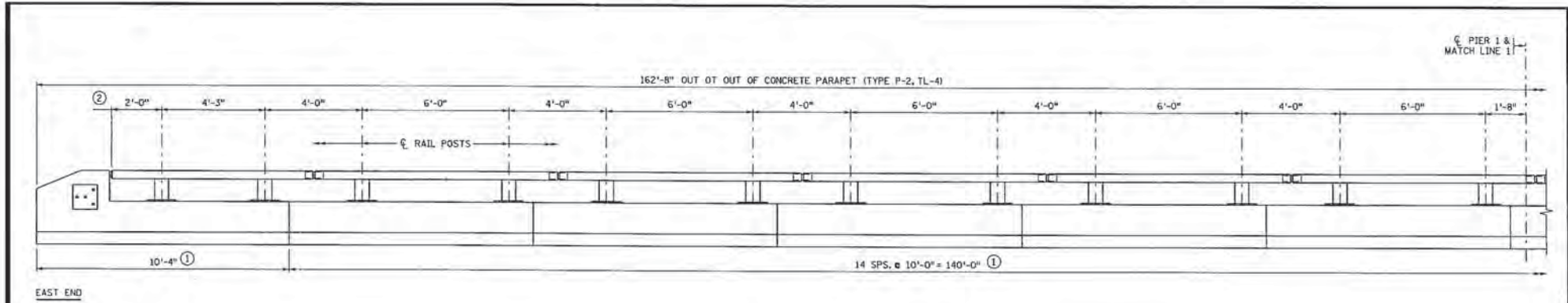
RAIL DETAIL

GENERAL NOTES

- LENGTH OF "ORNAMENTAL METAL RAILING" FOR PAYMENT SHALL BE MEASURED BETWEEN THE OUTSIDE ENDS OF THE METAL RAILING.
- ALL STRUCTURAL STEEL TUBING IN THE RAIL SHALL CONFORM TO MN/DOT SPEC. 3361 TYPE A.
- MATERIAL FOR CLOSURE PLATES, BASE PLATES AND PICKETS SHALL CONFORM TO MN/DOT SPEC. 3306.
- FASTENERS SHALL BE PER SPEC 3391 AND SHALL BE MECHANICALLY GALVANIZED PER ASTM B695 CLASS 50.
- FOR RAIL ANCHORAGE REQUIREMENTS SEE SPECIAL PROVISIONS.
- VENT HOLES SHALL BE DRILLED IN THE RAIL POST BASE AND THE RAIL TUBES AS NECESSARY TO FACILITATE GALVANIZING.
- RAIL POSTS AND PICKETS SHALL BE VERTICAL.
- HORIZONTAL RAILS SHALL BE PARALLEL TO THE TOP OF THE PARAPET.
- FOR RAIL COATING SEE SPECIAL PROVISIONS.
- PRICE BID FOR "ORNAMENTAL METAL RAILING" INCLUDES ANCHORAGES AND ALL MATERIAL ABOVE TOP OF CONCRETE PARAPET.
- RAILING SHALL BE GROUNDED WITH 3/8" DIA. COPPER ROD AS PER MN/DOT SPEC. 2557.

① SEE SHEET NO. 40 FOR BASE PLATE DETAILS.

CERTIFIED BY NAME: JINSHIYA J. LIN	DATE 12/3/10 LIC. NO. 19115	TITLE ORNAMENTAL METAL RAILING AND CONCRETE PARAPET (TYPE MOD P-1, TL-2)	DESIGNED BY P.J.K.	DRAWN BY J.A.L.	APPROVED BY K.G.S.	DATE 12/3/10	BRIDGE NO. 25024
SHEET NO. 41 OF 54 SHEETS							



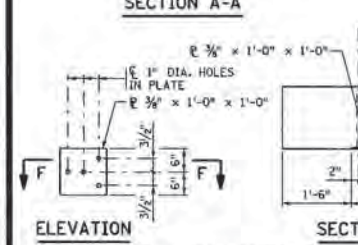
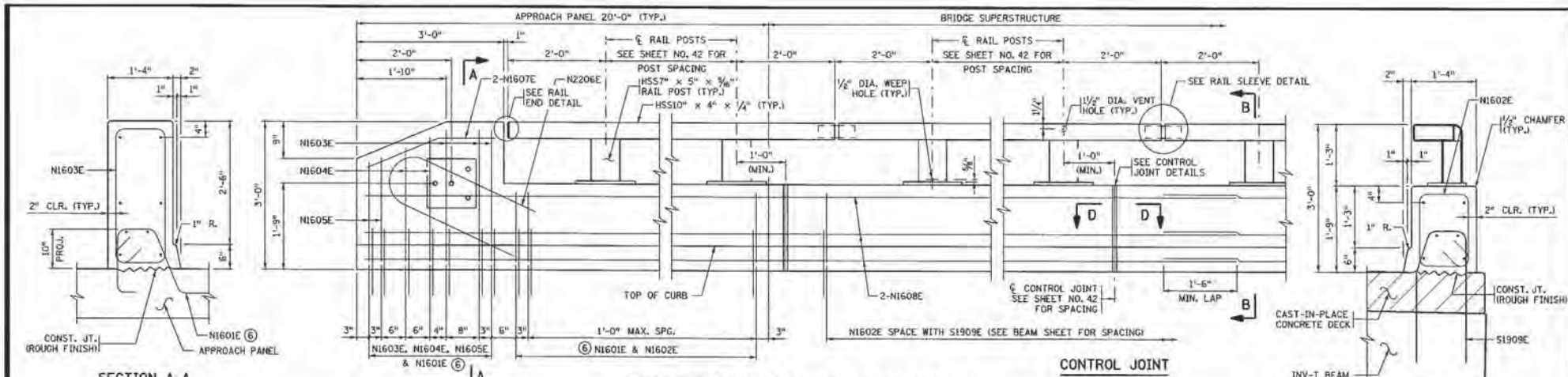
NOTE:

- ① CONTROL JOINT SPACING.
- ② RAIL POST SPACING.

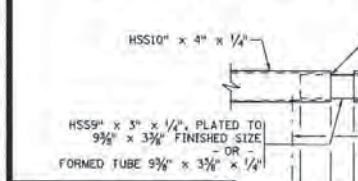
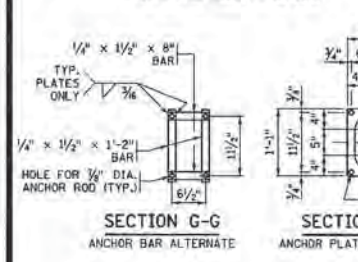
INSIDE ELEVATION OF BARRIER

CERTIFIED BY <i>J. L. Lin</i> LICENSED PROFESSIONAL ENGINEER NAME: JISHYA J. LIN	DATE 12/3/10 LIC. NO. 19115	STRUCTURAL TUBE RAILING (DESIGN T-1) AND CONCRETE PARAPET (TYPE P-2, TL-4) (SOUTH TRAFFIC RAILING)		DES: P.J.K. CHK: J.L.L.	DR: K.O.S. CHK: J.A.L.	APPROVED: 12/3/10	BRIDGE NO. 25024
		SHEET NO. 42 OF 54 SHEETS					

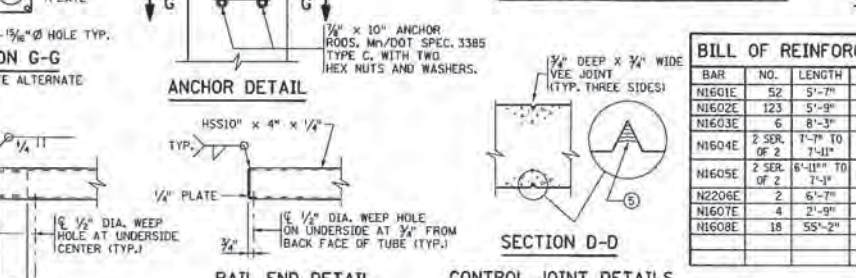
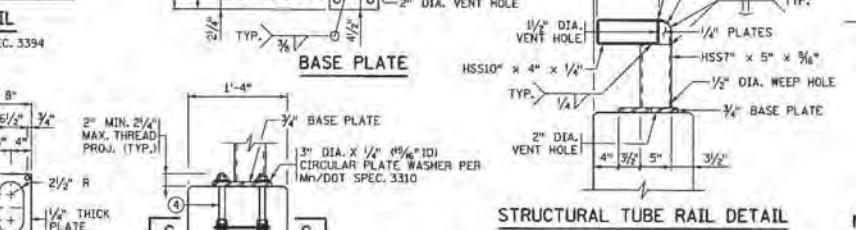
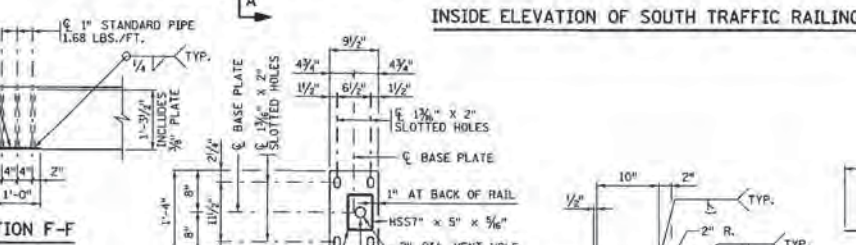
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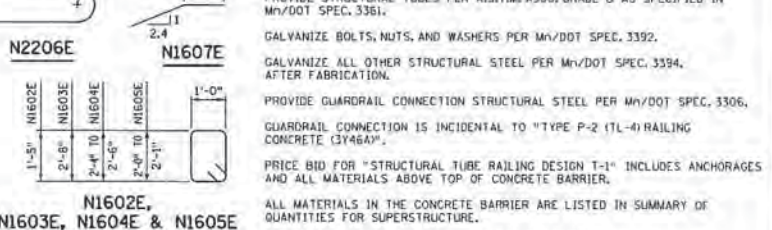
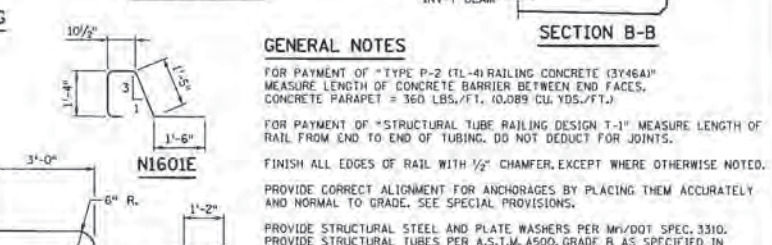
SECTION A-A
GUARDRAIL CONNECTION DETAIL
 GALVANIZE AFTER FABRICATION PER Mn/DOT SPEC. 3394
 ESTIMATED WEIGHT = 22 LBS.



SECTION G-G
ANCHOR BAR ALTERNATE
SECTION G-G
ANCHOR PLATE ALTERNATE
SECTION G-G
ANCHOR BAR ALTERNATE



RAIL END DETAIL
CONTROL JOINT DETAILS

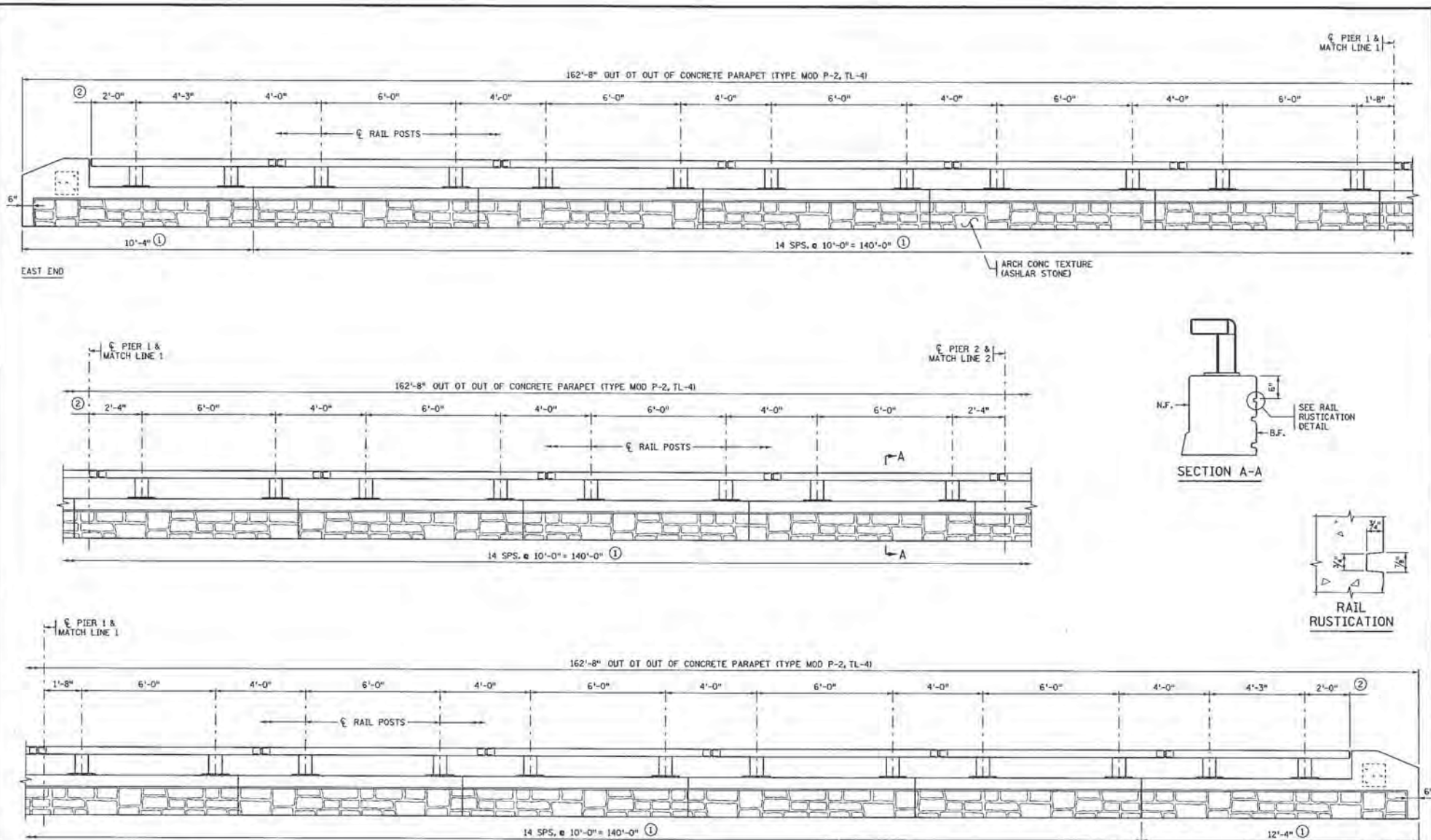


BILL OF REINFORCEMENT FOR PARAPET

BAR	NO.	LENGTH	SHAPE	LOCATION
N1601E	52	5'-7"	BENT	PARAPET VERTICAL
N1602E	123	5'-9"	BENT	PARAPET VERTICAL
N1603E	6	8'-3"	BENT	PARAPET VERTICAL
N1604E	2 SER.	7'-7" TO 7'-11"	BENT	PARAPET VERTICAL
N1605E	2 SER.	6'-11" TO 7'-3"	BENT	PARAPET VERTICAL
N2206E	2	6'-7"	BENT	PARAPET END
N1607E	4	2'-9"	BENT	PARAPET END LONGIT.
N1608E	18	55'-2"	BENT	PARAPET LONGITUDINAL

GENERAL NOTES

- FOR PAYMENT OF "TYPE P-2 (TL-4) RAILING CONCRETE (3Y46A)" MEASURE LENGTH OF CONCRETE BARRIER BETWEEN END FACES. CONCRETE PARAPET = 360 LBS./FT. (0.089 CU. YDS./FT.)
- FOR PAYMENT OF "STRUCTURAL TUBE RAILING DESIGN T-1" MEASURE LENGTH OF RAIL FROM END TO END OF TUBING. DO NOT DEDUCT FOR JOINTS.
- FINISH ALL EDGES OF RAIL WITH 1/2" CHAMFER, EXCEPT WHERE OTHERWISE NOTED.
- PROVIDE CORRECT ALIGNMENT FOR ANCHORAGES BY PLACING THEM ACCURATELY AND NORMAL TO GRADE. SEE SPECIAL PROVISIONS.
- PROVIDE STRUCTURAL STEEL AND PLATE WASHERS PER Mn/DOT SPEC. 3310. PROVIDE STRUCTURAL TUBES PER A.S.T.M. A500, GRADE B AS SPECIFIED IN Mn/DOT SPEC. 3361.
- GALVANIZE BOLTS, NUTS, AND WASHERS PER Mn/DOT SPEC. 3392.
- GALVANIZE ALL OTHER STRUCTURAL STEEL PER Mn/DOT SPEC. 3394, AFTER FABRICATION.
- PROVIDE GUARDRAIL CONNECTION STRUCTURAL STEEL PER Mn/DOT SPEC. 3306. GUARDRAIL CONNECTION IS INCIDENTAL TO "TYPE P-2 (TL-4) RAILING CONCRETE (3Y46A)".
- PRICE BID FOR "STRUCTURAL TUBE RAILING DESIGN T-1" INCLUDES ANCHORAGES AND ALL MATERIALS ABOVE TOP OF CONCRETE BARRIER.
- ALL MATERIALS IN THE CONCRETE BARRIER ARE LISTED IN SUMMARY OF PROVISIONS FOR SUPERSTRUCTURE.
- SEE SPECIAL PROVISIONS FOR PAINT REQUIREMENTS.
- CONTINUOUSLY GROUND THE METAL RAILING AS DIRECTED IN THE SPECIAL PROVISIONS. REFER TO THE ELECTRICAL PLANS AND ELECTRICAL SPECIAL PROVISIONS FOR DETAILS REGARDING BONDING MULTIPLE ELECTRICAL GROUNDING SYSTEMS.
- 1" AT RAILING JOINTS.
- 5" AT RAILING JOINTS.
- SUBSTITUTION OF CHEMICAL ANCHOR RODS FOR CAST-IN-PLACE ANCHORAGE IS NOT PERMITTED.
- SEE SPECIAL PROVISIONS FOR JOINT SEALING REQUIREMENTS.
- N1601E SUPPLIED IN BRIDGE PORTION OF CONTRACT & INSTALLED IN GRADING PORTION OF CONTRACT.



OUTSIDE ELEVATION OF BARRIER
(SIDEWALK FACE SHOWN)

- NOTES:
- ① CONTROL JOINT SPACING.
 - ② RAIL POST SPACING.
 - N.F. DENOTES NEAR FACE.
 - B.F. DENOTES BACK FACE.

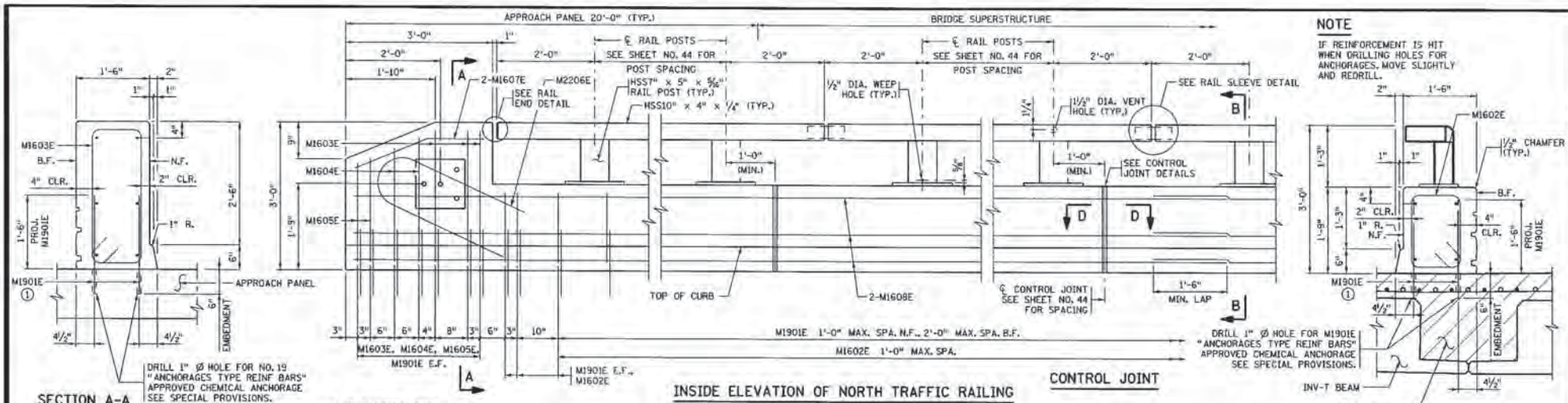
CERTIFIED BY *J. Lin* 12/3/10
 LICENSED PROFESSIONAL ENGINEER DATE
 NAME: JIHSIYA J. LIN LIC. NO. 19115

STRUCTURAL TUBE RAILING (DESIGN T-1)
 AND CONCRETE PARAPET (TYPE MOD P-2, TL-4)
 (NORTH TRAFFIC RAILING)

DES: P.J.K. DR: K.G.S. APPROVED: 12/3/10
 CHK: J.J.L. CHK: J.A.J.
 SHEET NO. 44 OF 54 SHEETS

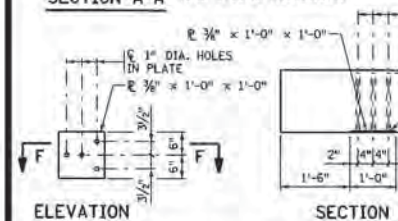
BRIDGE NO. 25024

11/20/2010 10:25:42 AM

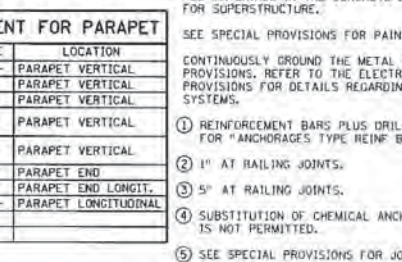
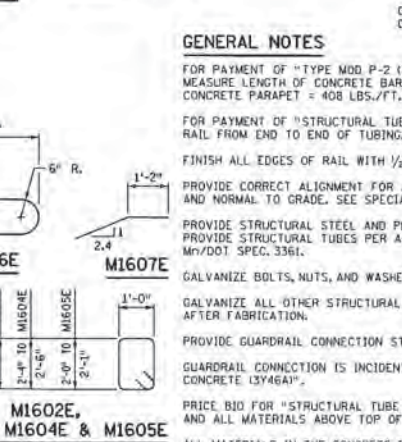
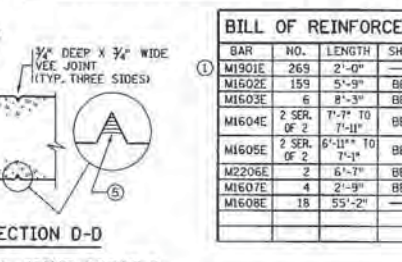
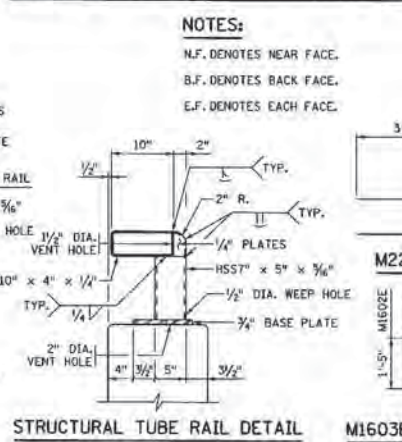
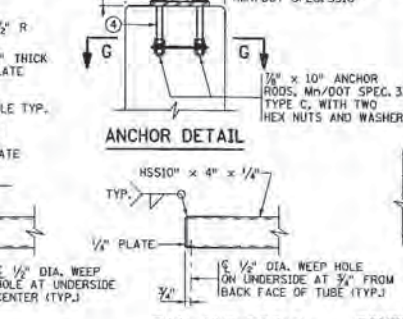
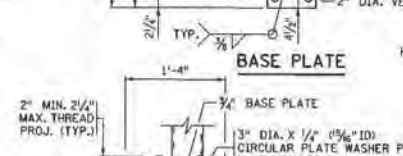
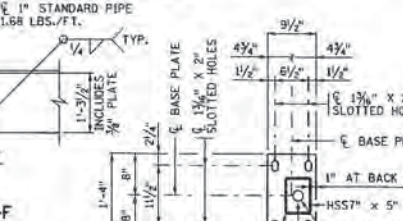
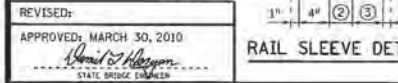
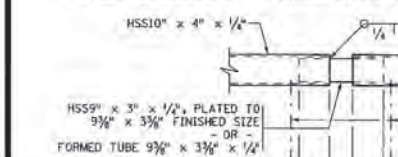
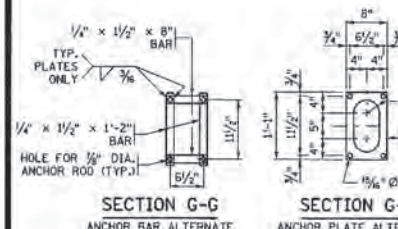


NOTE
IF REINFORCEMENT IS HIT WHEN DRILLING HOLES FOR ANCHORAGES, MOVE SLIGHTLY AND REDRILL.

SECTION A-A
DRILL 1" Ø HOLE FOR NO. 19 ANCHORAGES TYPE REINF BARS APPROVED CHEMICAL ANCHORAGE SEE SPECIAL PROVISIONS.



GUARDRAIL CONNECTION DETAIL
GALVANIZE AFTER FABRICATION PER Mn/DOT SPEC. 3394
ESTIMATED WEIGHT = 22 LBS.



BILL OF REINFORCEMENT FOR PARAPET

BAR NO.	LENGTH	SHAPE	LOCATION
M1901E 269	2'-0"	—	PARAPET VERTICAL
M1602E 159	5'-9"	BENT	PARAPET VERTICAL
M1603E 6	8'-3"	BENT	PARAPET VERTICAL
M1604E 2 SER. OF 2	7'-7" TO 7'-11"	BENT	PARAPET VERTICAL
M1605E 2 SER. OF 2	6'-11" TO 7'-1"	BENT	PARAPET VERTICAL
M2206E 2	7'-1"	BENT	PARAPET END
M1607E 4	2'-9"	BENT	PARAPET END LONGIT.
M1608E 18	5'-2"	—	PARAPET LONGITUDINAL

GENERAL NOTES

FOR PAYMENT OF TYPE MOD P-2 (TL-4) RAILING CONCRETE (3Y46A1) MEASURE LENGTH OF CONCRETE BARRIER BETWEEN END FACES. CONCRETE PARAPET = 408 LBS./FT. (0.101 CU. YDS./FT.)

FOR PAYMENT OF STRUCTURAL TUBE RAILING DESIGN T-1 MEASURE LENGTH OF RAIL FROM END TO END OF TUBING, DO NOT DEDUCT FOR JOINTS.

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

PROVIDE CORRECT ALIGNMENT FOR ANCHORAGES BY PLACING THEM ACCURATELY AND NORMAL TO GRADE. SEE SPECIAL PROVISIONS.

PROVIDE STRUCTURAL STEEL AND PLATE WASHERS PER Mn/DOT SPEC. 3310. PROVIDE STRUCTURAL TUBES PER A.S.T.M. A500, GRADE B AS SPECIFIED IN Mn/DOT SPEC. 3361.

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

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

PROVIDE GUARDRAIL CONNECTION STRUCTURAL STEEL PER Mn/DOT SPEC. 3306.

GUARDRAIL CONNECTION IS INCIDENTAL TO TYPE MOD P-2 (TL-4) RAILING CONCRETE (3Y46A1).

PRICE BID FOR STRUCTURAL TUBE RAILING DESIGN T-1 INCLUDES ANCHORAGES AND ALL MATERIALS ABOVE TOP OF CONCRETE BARRIER.

ALL MATERIALS IN THE CONCRETE BARRIER ARE LISTED IN SUMMARY OF QUANTITIES FOR SUPERSTRUCTURE.

SEE SPECIAL PROVISIONS FOR PAINT REQUIREMENTS.

CONTINUOUSLY GROUND THE METAL RAILING AS DIRECTED IN THE SPECIAL PROVISIONS. REFER TO THE ELECTRICAL PLANS AND ELECTRICAL SPECIAL PROVISIONS FOR DETAILS REGARDING BONDING MULTIPLE ELECTRICAL GROUNDING SYSTEMS.

① REINFORCEMENT BARS PLUS DRILLING AND INSTALLING INCLUDED IN PAYMENT FOR ANCHORAGES TYPE REINF BARS.

② 1" AT RAILING JOINTS.

③ 5" AT RAILING JOINTS.

④ SUBSTITUTION OF CHEMICAL ANCHOR RODS FOR CAST-IN-PLACE ANCHORAGE IS NOT PERMITTED.

⑤ SEE SPECIAL PROVISIONS FOR JOINT SEALING REQUIREMENTS.

REVISED:
APPROVED: MARCH 30, 2010
STAT BRIDGE ENGINEER

CERTIFIED BY: [Signature]
LICENSED PROFESSIONAL ENGINEER
NAME: JINSHYKA J. LEM
LIC. NO. 19115

STRUCTURAL TUBE RAILING (DESIGN T-1) AND CONCRETE PARAPET (TYPE MOD P-2, TL-4) (NORTH TRAFFIC RAILING)

(MODIFIED) FIG. 5-397.157
DESIGNER: P.J.K. / CHK: J.L.L.
DRAWN: K.G.S. / CHK: J.A.J.
APPROVED: [Signature] / DATE: 1/16/11
BRIDGE NO. 25024
SHEET NO. 45 OF 54 SHEETS

GENERAL NOTES

SEE SPECIAL PROVISIONS FOR MATERIALS, PREPARATION AND PLACEMENT.

GEOTEXTILE FILTER MATERIAL AS PER Mn/DOT SPECIAL PROVISION 2511.

PAYMENT WILL BE MADE UNDER ITEM 2511.515 GEOTEXTILE FILTER TYPE IV (M00) BY THE SQ. YD.

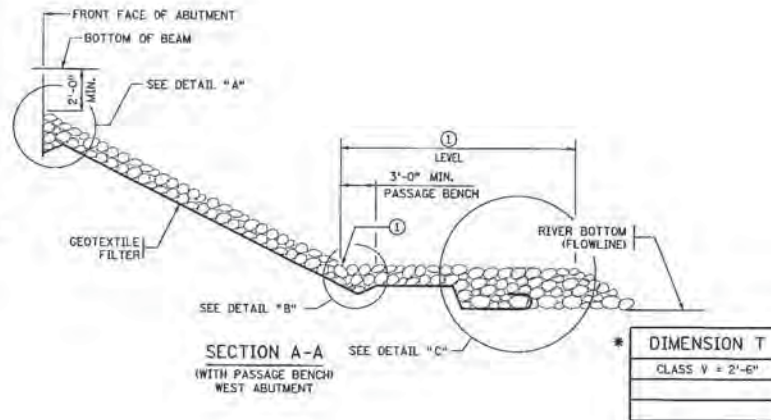
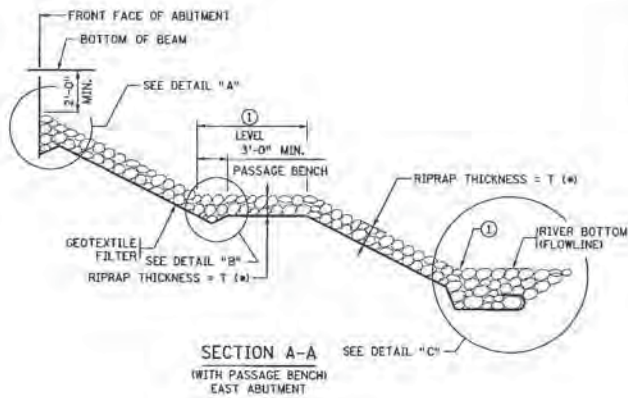
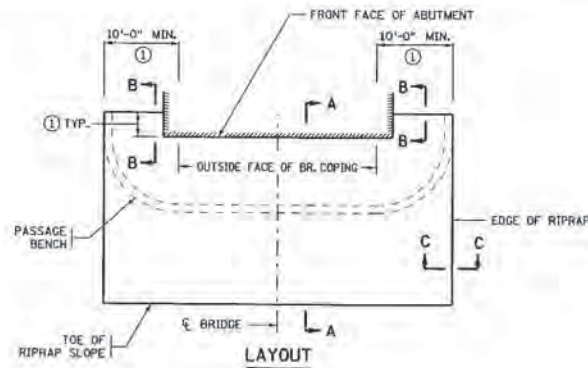
PAYMENT WILL BE MADE UNDER ITEM 2511.501 RANDOM RIPRAP CLASS V BY THE CU. YD.

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

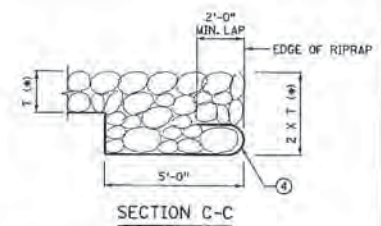
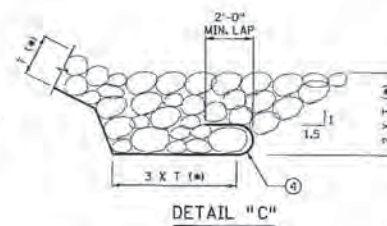
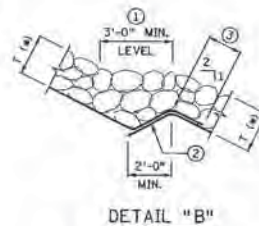
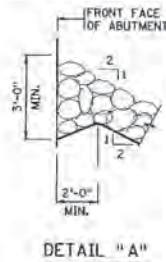
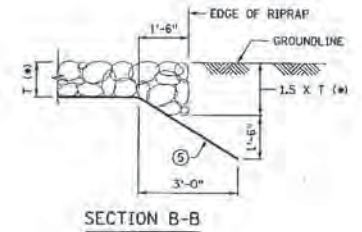
BENCHES TO BE SURFACED WITH AGGREGATE CLASS 5 INCIDENTAL TO RIPRAP. BENCHES SHOULD TIE INTO NATURAL GROUND LINES OUTSIDE OF BRIDGE.

SLOPE BOTTOM OF TRENCHES 1:20 PARALLEL TO ABUTMENT FACE TO PROVIDE POSITIVE DRAINAGE.

- ① SEE PLAN SHEET NO. 1 FOR DIMENSIONS, AND FOR ELEVATIONS OF RIPRAP TOE AND PASSAGE BENCHES.
- ② PLACE RIPRAP IN TRENCH TO HOLD THE GEOTEXTILE FABRIC IN PLACE BEFORE PLACING THE REST OF THE RIPRAP (FROM THE BOTTOM OF THE SLOPE).
- ③ OVERLAP GEOTEXTILE FILTER 1'-6" MINIMUM.
- ④ WRAP GEOTEXTILE FILTER AROUND TOE, OVERHANG BETWEEN 1ST AND 2ND LAYER OF RIPRAP.
- ⑤ BURY EDGES OF GEOTEXTILE FILTER SUFFICIENTLY TO DIRECT WATER FLOW OVER THE FABRIC WITHOUT UNDERMINING.



* DIMENSION T
CLASS V = 2'-6"



REVISED:
APPROVED: XXXXXXXX.XX, XXXX
STATE BRIDGE ENGINEER

CERTIFIED BY *Jirshya J. Lin* 12/5/10
 LICENSED PROFESSIONAL ENGINEER
 NAME: JIRSHYA J. LIN LIC. NO. 19115

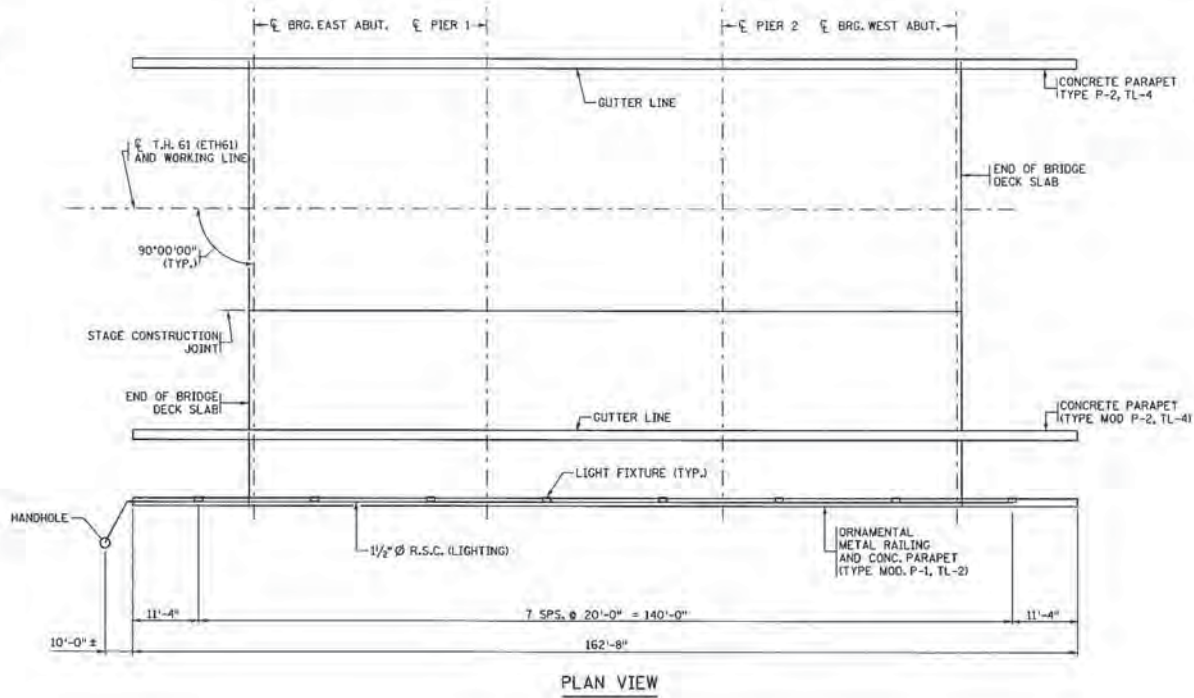
RIPRAP SLOPE WITH GEOTEXTILE FILTER (SLOPES 1:2 AND FLATTER)

DES: PJK DR: TKB/GRF APPROVED: 12/5/10
 DR: JJJ CR: JAJ

BRIDGE NO. 25024

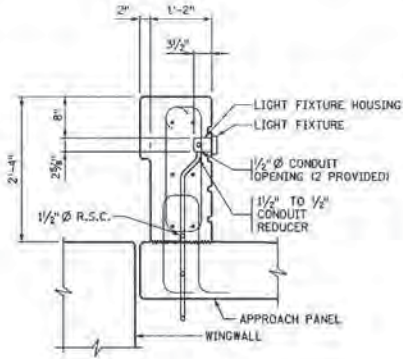
SHEET NO. 46 OF 54 SHEETS

NOTE:
SEE SHEET NO. 48 FOR LIGHTING DETAILS.

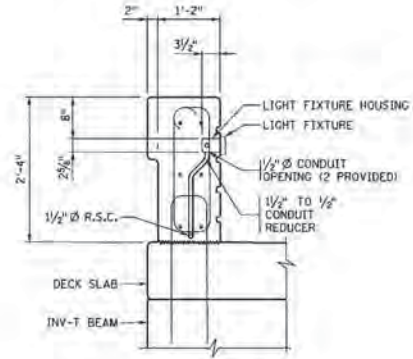


CERTIFIED BY <i>Jishya J. Lin</i> LICENSED PROFESSIONAL ENGINEER NAME: JISHYA J. LIN	DATE 12/3/10	TITLE: CONDUIT SYSTEM (LIGHTING)	DES: PJK	DR: TKB/GRF	APPROVED:	BRIDGE NO. 25024
	LIC. NO. 19115		CHK: J.L.	CHK: JAJ	12/3/10	
			SHEET NO. 47 OF 54 SHEETS			

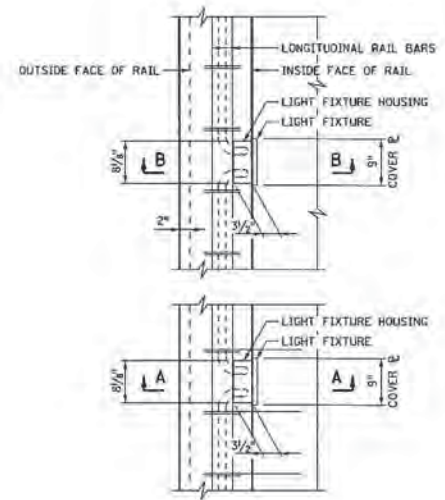
12/17/2010 10:25:24 AM



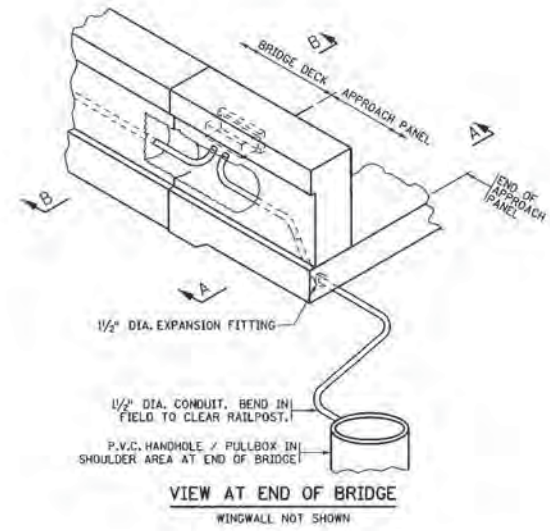
SECTION A-A ①
 ① APPROACH PANEL



SECTION B-B ①
 ① BRIDGE DECK



PLAN
 RECESSED LIGHTING
 ON INSIDE FACE OF
 CONCRETE PARAPET ①



VIEW AT END OF BRIDGE
 WINGWALL NOT SHOWN

SUMMARY OF QUANTITIES FOR CONDUIT SYSTEM (LIGHTING)	
1/2" Ø END CAPS	16 EACH
1/2" DIA. R.S.C.	190' LIN. FT.
1/2" DIA. END CAP	1 EACH
1/2" TO 1/2" CONDUIT REDUCER	8 EACH
P.V.C. HANDHOLE / PULLBOX (STD. PLATE B114)	1 EACH
1/2" DIA. EXPANSION FITTING	1 EACH

② SYSTEM TO BE GROUNDED.
 ALL MATERIAL LISTED ABOVE TO BE INCLUDED IN PRICE BID FOR "CONDUIT SYSTEM (LIGHTING)"
 QUANTITIES LISTED ABOVE ARE FOR INFORMATIONAL PURPOSES. ANY ADDITIONAL MINOR ITEMS AND SLIGHT CHANGES IN QUANTITIES REQUIRED SHALL BE FURNISHED BY THE CONTRACTOR WITH NO ADDITIONAL COMPENSATION.

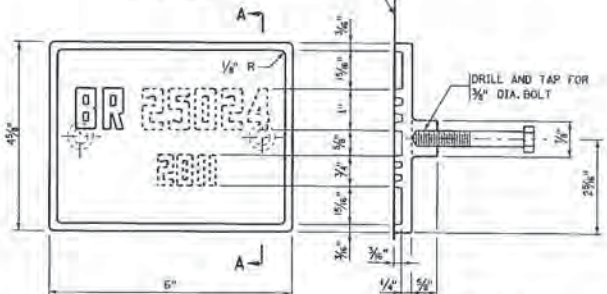
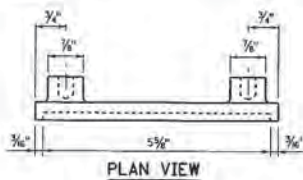
GENERAL NOTES
 ① SEE SHEET NOS. 39 & 40 FOR ADDITIONAL REINFORCEMENT PLACEMENT AND DETAIL DIMENSIONS.

REVISION: 10-22-2009
 APPROVED: SEPTEMBER 26, 2003
 STATE BRIDGE ENGINEER

CERTIFIED BY: *Jihshya J. Lin* 12/3/10
 LICENSED PROFESSIONAL ENGINEER DATE
 NAME: JIHSHYA J. LIN LIC. NO. 19115

CONDUIT SYSTEM (LIGHTING)

DES: PJK DPL: TKB/GRF APPROVED: 12/3/10
 CHK: JLL CHK: JAJ
 SHEET NO. 48 OF 54 SHEETS
 FIG. 5-397.403 MODIFIED
 BRIDGE NO. 25024

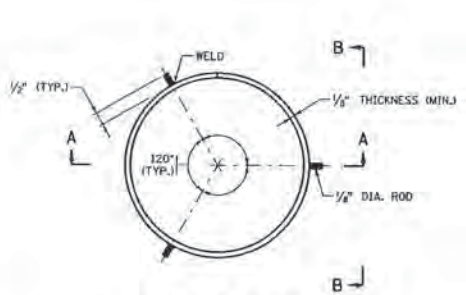


THE DASHED NUMBERS SHOWN ABOVE ARE FOR ILLUSTRATION. DATA TO BE SHOWN ON NAMEPLATE IS AS FOLLOWS:

BRIDGE 25024
YEAR 2011

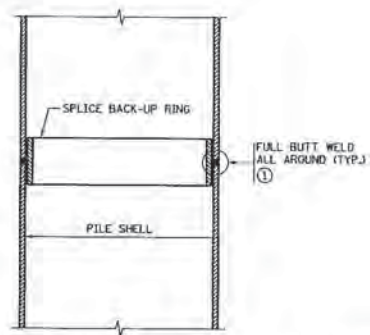


NOTES:
NO SHOP DRAWING REQUIRED.
MATERIAL SHALL COMPLY WITH Mn/DOT SPEC. 3327.
LETTERS AND NUMBERS SHALL CONFORM TO THOSE SHOWN.
DRAFT ON LETTERS AND NUMBERS SHALL NOT BE MORE THAN 3" IN 12".
HORIZONTAL SPACING OF LETTERS AND NUMBERS SHALL PRODUCE A BALANCED LAYOUT IN PROPORTION TO SPACING SHOWN.
TOP SURFACE OF LETTERS, NUMBERS AND FRAMES SHALL BE BURNTISHED.
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.



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 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-U4c WELD CONFIGURATION.

APPROVED: NOVEMBER 22, 2002
Daniel S. Anderson
STATE BRIDGE ENGINEER

STATE OF MINNESOTA
DEPARTMENT OF TRANSPORTATION
BRIDGE NAMEPLATE
(FOR NEW BRIDGES)

REVISION
DETAIL NO.
B101

APPROVED: NOVEMBER 22, 2002
Daniel S. Anderson
STATE BRIDGE ENGINEER

STATE OF MINNESOTA
DEPARTMENT OF TRANSPORTATION
PILE SPLICE
(CAST-IN-PLACE CONCRETE PILES)

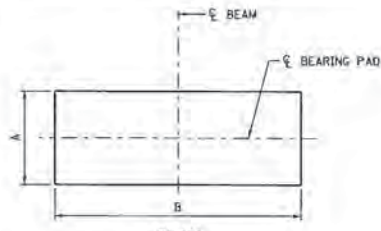
REVISION
DETAIL NO.
B201

CERTIFIED BY *Jishya J. Lin* 12/3/10
REGISTERED PROFESSIONAL ENGINEER DATE
NAME: JISHYA J. LIN LIC. NO. 19115

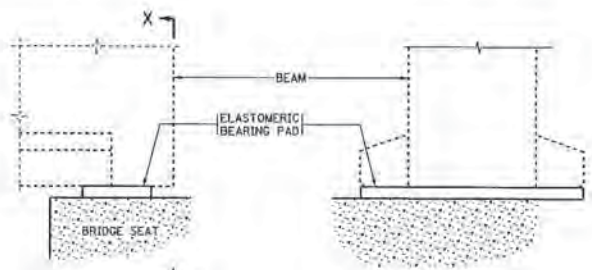
TITLE:
DETAILS

DES: PJK OR: TKB/GRF
CHK: JLL CLK: JAJ
APPROVED: 12/3/10
SHEET NO. 49 OF 54 SHEETS

BRIDGE NO.
25024



PLAN
(BEAM NOT SHOWN)



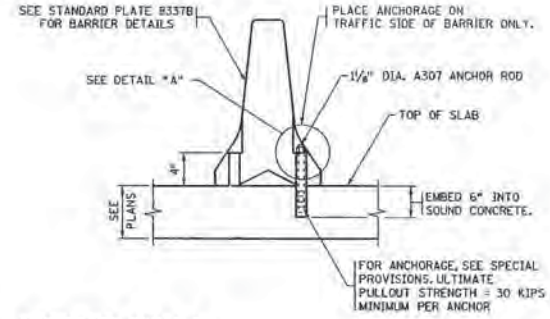
SIDE ELEVATION

SECTION X-X

TABLE						
PAD TYPE	LOCATION	BEAM SIZE	BEARING PAD SIZE			SHAPE FACTOR
			A	B	D (1)	
1		5'-2"	6"	62"	1/2"	5.5
2		6'-0"	6"	72"	1/2"	5.5
3		5'-6"	6"	66"	1/2"	5.5

NOTES:

ELASTOMERIC MATERIALS AND PAD CONSTRUCTION SHALL COMPLY WITH Mn/DOT SPEC. 374I.
 PAYMENT FOR ELASTOMERIC BEARING PAD, TYPE 1, 2 AND 3, INCLUDED IN ITEM "ELASTOMERIC BEARING PAD TYPE 1", "ELASTOMERIC BEARING PAD TYPE 2" AND "ELASTOMERIC BEARING PAD TYPE 3" PER EACH.
 (1) "D" INDICATES THE THICKNESS OF THE BEARING PAD.



ANCHORAGE DETAILS
REINFORCEMENT NOT SHOWN

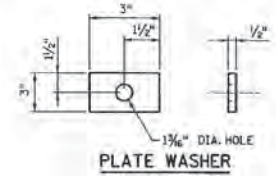
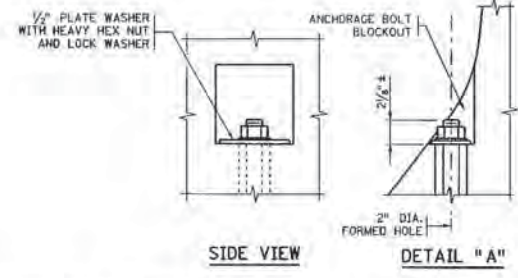


PLATE WASHER



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 INCLUDED IN PRICE BID FOR ITEM "ANCHORAGES TYPE 1".
 REMOVE ANCHORAGES AND FILL ANCHORAGE HOLES WITH AN APPROVED EPOXY GROUT AFTER THE PORTABLE BARRIERS ARE REMOVED TO BE INCLUDED IN PRICE BID FOR PAY ITEM "REMOVE ANCHORAGE".
 SEE SPECIAL PROVISIONS.

APPROVED: NOVEMBER 22, 2002
David S. Anderson
 STATE BRIDGE ENGINEER

STATE OF MINNESOTA
 DEPARTMENT OF TRANSPORTATION
ELASTOMERIC BEARING PAD
 (PRESTRESSED CONCRETE BEAMS)

REVISION 12-17-2008
 DETAIL NO. **B305**

APPROVED: NOVEMBER 22, 2002
David S. Anderson
 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**
8920

CERTIFIED BY *Jihshya J. Lin* 12/3/10
 LICENSED PROFESSIONAL ENGINEER
 NAME: JIHSHYA J. LIN LIC. NO. 19115

TITLE: **DETAILS**

DES: PJK DR: TKB/GRF
 CHK: JJJ CHK: JAJ
 APPROVED: 12/3/10

BRIDGE NO. **25024**

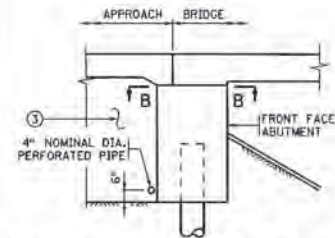
SHEET NO. 50 OF 54 SHEETS

SUMMARY OF QUANTITIES FOR DRAINAGE SYSTEM

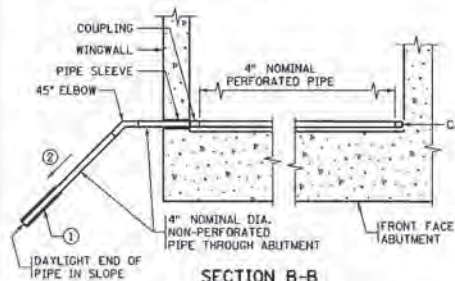
4" DIA. PERFORATED PIPE	154 LIN. FT.
4" DIA. NON-PERFORATED PIPE	60 LIN. FT.
45° ELBOW	2 EACH
4" DIA. END CAP	2 EACH
4" DIA. COUPLING	2 EACH
PIPE SLEEVE	2 EACH
① PRECAST CONCRETE HEADWALL	2 EACH

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

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



SECTION THROUGH INTEGRAL ABUTMENT



SECTION B-B

NOTES:

- ALL PIPE SHALL COMPLY WITH Mn/DOT SPEC. 3245.
- WRAP PERFORATED PIPE WITH GEOTEXTILE AS PER Mn/DOT SPEC. 3733, TYPE I. ATTACH TO PIPE AS PER Mn/DOT SPEC. 2502.
- ① PRECAST CONCRETE HEADWALL WITH RODENT SCREEN. SEE STANDARD PLATE 3131 FOR DETAILS.
- ② 1/8" PER FT. MINIMUM SLOPE.
- ③ MATERIAL SHALL COMPLY WITH Mn/DOT SPEC. 3149.2B. SELECT GRANULAR BORROW, MODIFIED SO THAT NO MORE THAN 10% PASSES A NO. 200 SIEVE. (UNDER GRADING PORTION OF CONTRACT)

APPROVED: MARCH 26, 2009

Daniel J. Johnson
STATE BRIDGE ENGINEER

STATE OF MINNESOTA
DEPARTMENT OF TRANSPORTATION

DRAINAGE SYSTEM

REVISED
10-22-2009

DETAIL NO.

B910

CERTIFIED BY: *Jihshya J. Lin* 12/3/10 DATE
LICENSED PROFESSIONAL ENGINEER
NAME: JIHSHYA J. LIN LIC. NO. 19115

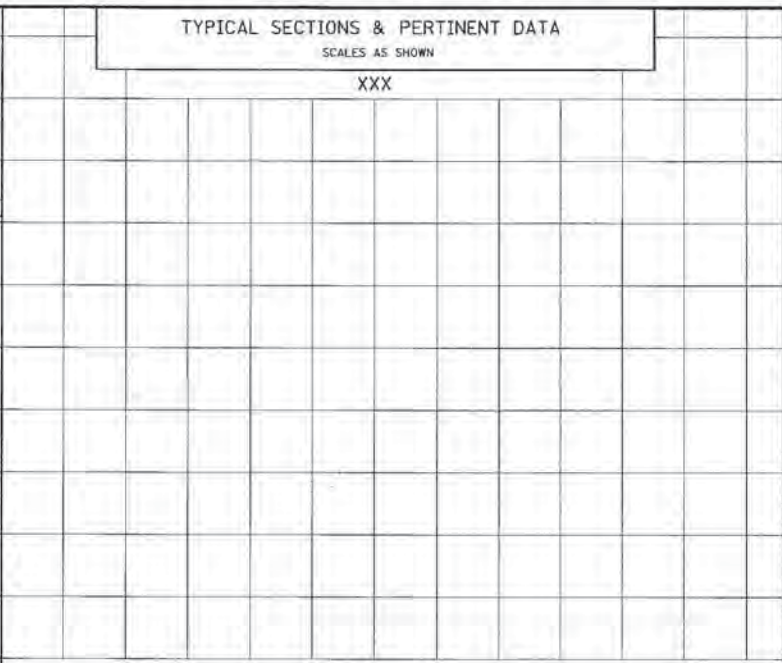
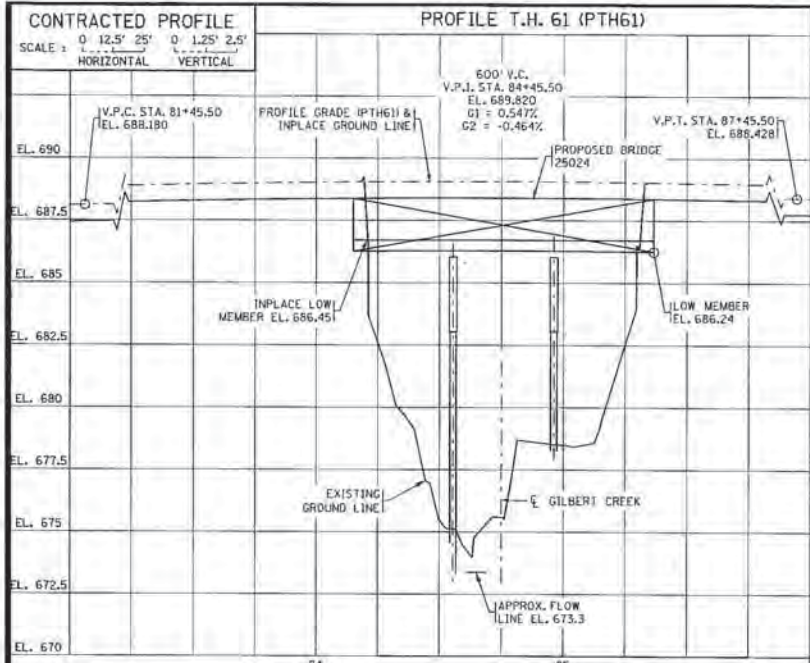
TITLE:

DETAILS

DES: PJK DR: TRB/GRF APPROVED: *[Signature]*
CHK: JLL CHK: JAJ
SHEET NO. 51 OF 54 SHEETS

BRIDGE NO.
25024

12/7/2010 10:25:22 AM



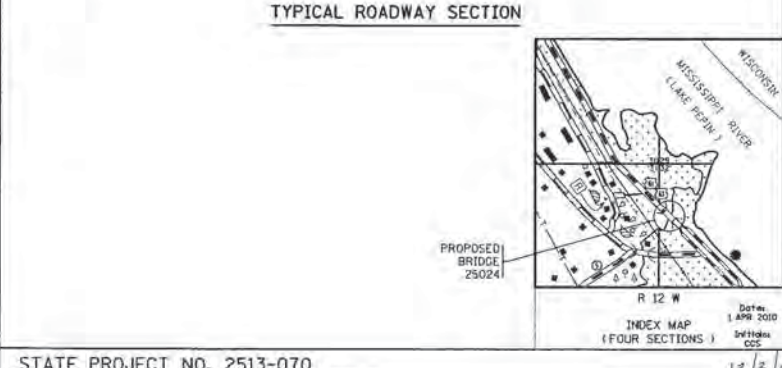
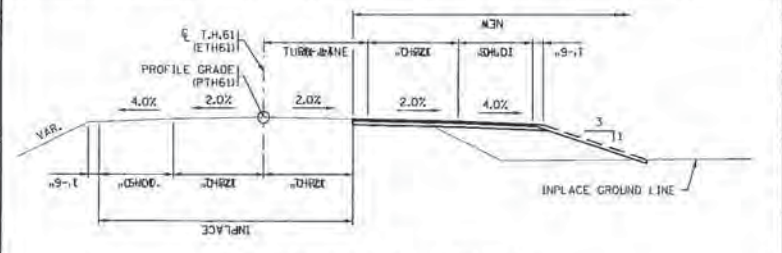
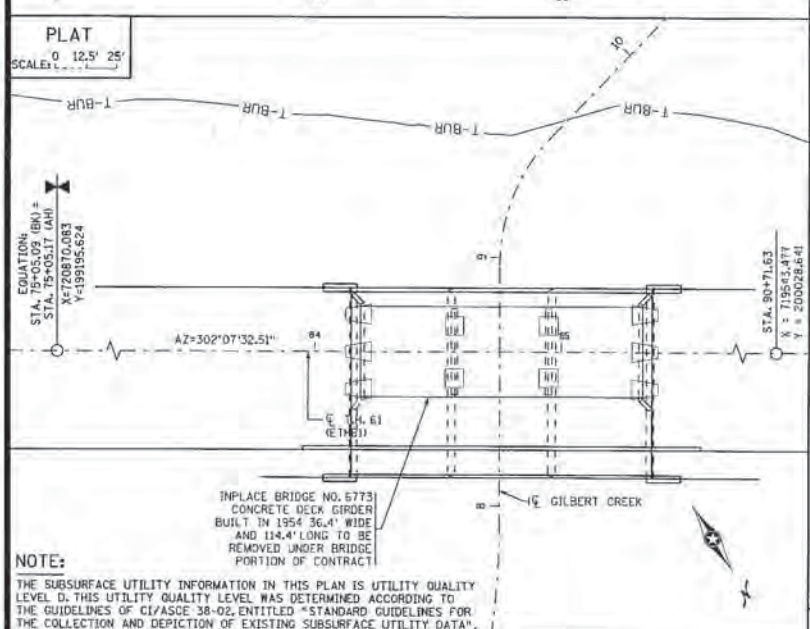
LOCATION ENGINEER'S OBSERVATIONS AT BRIDGE SITE

- SPECIAL FEATURES: THE CHANNEL HAS DIKES UPSTREAM OF THE BRIDGE CONTAINING THE WATER TO THE CHANNEL.
- 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.
- APPARENT HIGHWATER ELEVATION 677.49 OBTAINED FROM: DIRT MARKS ON TREES
- OTHER DATA: APPROX. VELOCITY OF WATER AT TIME OF SURVEY, EXTREME HIGH WATER: 683.03 LOWEST FOUNDATION ELEV. = 683.29

HYDRAULIC ENGINEER'S RECOMMENDATION
 DATE: 06-15-2009

STREAM OR DITCH DESIGNATION: GILBERT CREEK
 DRAINAGE AREA: 27.0 SQ. MI.
 MAX. FLOOD ON RECORD: NA
 MAXIMUM OBSERVED HIGHWATER ELEVATION: NA
 DESIGN FLOOD (50 YR. FREQ.): 4300 C.F.S.
 HEADWATER ELEVATION: 684.6 FT.
 DESIGN MEAN VELOCITY THROUGH STRUCTURE: 8.3 F.P.S.
 TOTAL STAGE INCREASE: 0.1 FT.
 LOW MEMBER AT OR ABOVE ELEVATION: 686.4 FT.
 WATERWAY AREA REQUIRED BELOW ELEV. 683.2 = 518.8 SQ. FT. AT RIGHT ANGLES TO CHANNEL
 BASIC FLOOD (100 YR. FREQ.): 6300 C.F.S.
 HEADWATER ELEVATION: 685.5 FT.
 TOTAL STAGE INCREASE: 1.4 FT.
 MEAN VELOCITY THROUGH STRUCTURE: 8.9 F.P.S.
 FLOWLINE ELEVATION: 673.3 FT. SKEW ANGLE: 0°
 ESTIMATED PRELIMINARY TOTAL SCOUR AT PIER EL. 665.8 (500 OR 0T YR. FREQ.)

HYDRAULIC ELEVATIONS REFERENCED TO NGVD29 DATUM



SCOUR CONFIRMATION RECOMMENDATION
 DATE: XX-XX-XX

TOTAL SCOUR AT PIER EL. XXX.XX (500 OR 0T YR. FREQ.)
 SCOUR CODE: OBTAIN FROM HYDRAULIC ENGINEER

BRIDGE SURVEY SHEETS MADE FROM:
 CALCULATED FIELD FILES COLLECTED ON 07/97

BENCH MARK ELEVATION 683.78 (NGVD 1929 ADJ.)
 LOCATION 1.7 MILES NORTHWEST ON TRUNK HIGHWAY 61 FROM JUNCTION TRUNK HIGHWAY 61 AND TRUNK HIGHWAY 63 AT LAKE CITY, 19.0 FEET NORTHEAST OF TRUNK HIGHWAY 61 IN SOUTHEAST CONCRETE ABUTMENT OF TRUNK HIGHWAY 61 BRIDGE 6773 OVER GILBERT CREEK, 1.0 FOOT NORTHEAST OF CONCRETE PILLAR.

GSID STATION #9591

ALL ELEVATIONS IN PLAN REFERENCED TO NGVD29

MINNESOTA
 DEPARTMENT OF TRANSPORTATION

BRIDGE SURVEY

PROPOSED BRIDGE LOCATED
 1.6 MILES N.W. OF SOUTH
 JUNCTION OF T.H. 63

SEC 31 T 112 N R 12 W
 COUNTY: GOODHUE
 CITY: LAKE CITY

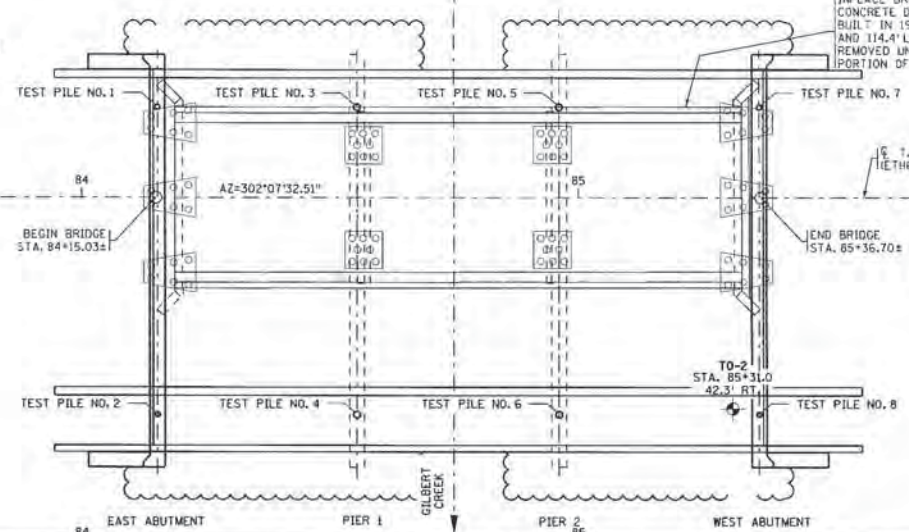
BRIDGE NO. 25024

EQUATION:
 STA. 75+05.09 (BK) =
 STA. 75+05.17 (AH)
 X = 726870.083
 Y = 139255.654

T0-1
 STA. 83+74.3
 ST.2' LT.

INPLACE BRIDGE NO. 6773
 CONCRETE DECK GIRDER
 BUILT IN 1954 36.4' WIDE
 AND 114.4' LONG TO BE
 REMOVED UNDER BRIDGE
 PORTION OF CONTRACT

TS STA. 90+71.63
 X = 719543.477
 Y = 200028.641



EL. 700	83	84	PIER 1	PIER 2	85	86	EL. 700
EL. 690							EL. 690
EL. 680							EL. 680
EL. 670							EL. 670
EL. 660							EL. 660
EL. 650							EL. 650
EL. 640							EL. 640
EL. 630							EL. 630
EL. 620							EL. 620
EL. 610							EL. 610
EL. 600							EL. 600
							EL. 590

T01
 Elevation 683.5

Coh (est)	SPT N60	Soils
3	7	slightly organic, slightly plastic Fine Sand, brown and moist
6	13	Sand and Gravel, brown and moist
7	4	slightly plastic Silty Loam, grays and moist
4	6	Silty Clay Loam with a few pebbles, grays and very moist
4	10	Loamy Sand with a little Gravel, gray and wet
W/H	29	Coarse Sand to Sand, gray to gray-brown, saturated
32	46	Sand and Gravel, brown and saturated
46	37	Gravel
37	35	Sand, brown and saturated
35		Sand and Gravel, browns and saturated
23		
41		
40		Sand with a thin seam of Fine Sand at 53.0', brown and saturated
39		
40		
47		
50		Sand with a little Gravel, brown and saturated
42		
58		
58		

T02
 Elevation 683.8

Coh (est)	SPT N60	Soils
16	11	slightly organic, slightly plastic Fine Sandy Loam, dark brown and moist
11	4	Loamy Sand, brown and moist
4	W/H	Silty Clay Loam to plastic Silty Loam with a few seams and traces of Loamy Sand 18.0'-19.5', dark gray to gray, very moist
15	15	Coarse Sand with some Gravel, gray-brown and wet
28	15	Coarse Sand and Gravel, gray-brown and saturated
30	23	Coarse Sand with a little Gravel, brown and saturated
23	40	
40	37	Sand, browns and saturated
37	54	
54	56	Sand with a little Gravel, gray-brown to brown, saturated
56	74	
74		

EXISTING GROUND PROFILE
 30' LT. - - - - -
 T.H. 61 - - - - -
 60' RT. - - - - -