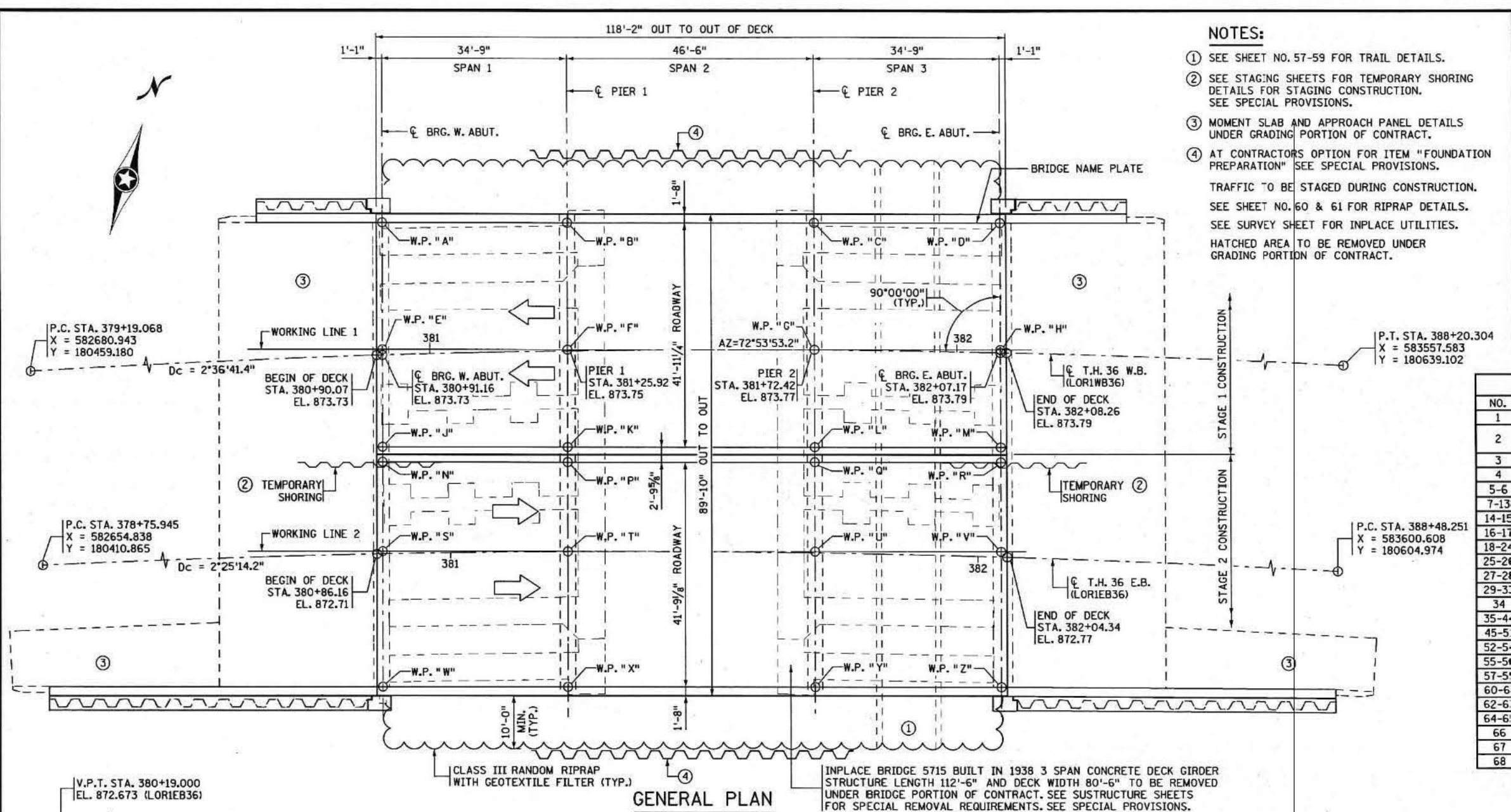


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- NOTES:**
- SEE SHEET NO. 57-59 FOR TRAIL DETAILS.
 - SEE STAGING SHEETS FOR TEMPORARY SHORING DETAILS FOR STAGING CONSTRUCTION. SEE SPECIAL PROVISIONS.
 - MOMENT SLAB AND APPROACH PANEL DETAILS UNDER GRADING PORTION OF CONTRACT.
 - AT CONTRACTOR'S OPTION FOR ITEM "FOUNDATION PREPARATION" SEE SPECIAL PROVISIONS. TRAFFIC TO BE STAGED DURING CONSTRUCTION. SEE SHEET NO. 60 & 61 FOR RIPRAP DETAILS. SEE SURVEY SHEET FOR INPLACE UTILITIES. HATCHED AREA TO BE REMOVED UNDER GRADING PORTION OF CONTRACT.

FED. PROJ. NO. NHPP-IBRD 0036(311)

DESIGN DATA

2012 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:
 $f'_c = 4 \text{ ksi}$ $n = 8$
 $F_y = 60 \text{ ksi}$ FOR REINFORCEMENT
 PRESTRESSED CONCRETE:
 $f'_c = 6 \text{ ksi}$ $n=1$
 $f_{pu} = 270 \text{ ksi}$ FOR 1/2" AND 0.6" DIAMETER LOW RELAXATION STRANDS

STRUCTURAL STEEL:
 $F_y = 50 \text{ ksi}$ STRUCTURAL STEEL SPEC. 3309

DECK AREA = 10600 SQ. FT.
 77000 PROJECTED ADT FOR YEAR 2033
 DESIGN SPEED = 65 MPH
 HL 93 LRFR BRIDGE OPERATING
 RATING FACTOR RF = 2.023

LIST OF SHEETS

NO.	DESCRIPTION
1	GENERAL PLAN AND ELEVATION
2	TRANSVERSE SECTION AND SCHEDULE OF QUANTITIES
3	BRIDGE LAYOUT
4	CONSTRUCTION NOTES
5-6	STAGING DETAILS
7-13	WEST ABUTMENT DETAILS AND REINFORCEMENT
14-15	NW WINGWALL DETAILS & REINFORCEMENT
16-17	SW WINGWALL DETAILS & REINFORCEMENT
18-24	EAST ABUTMENT DETAILS & REINFORCEMENT
25-26	NE WINGWALL DETAILS & REINFORCEMENT
27-28	SE WINGWALL DETAILS & REINFORCEMENT
29-33	PIER DETAILS & REINFORCEMENT
34	FRAMING PLAN
35-44	PRESTRESSED BEAM INV-T 18"
45-51	SUPERSTRUCTURE DETAILS
52-54	CONCRETE BARRIER TYPE (MOD F, TL-4)
55-56	SPLIT MEDIAN BARRIER AND GLARE SCREEN
57-59	CONCRETE WALK W/ PEDESTRIAN RAILING DETAILS
60-61	RIPRAP SLOPE WITH GEOTEXTILE FILTER
62-63	SQUARE PRESTRESSED CONCRETE PILE
64-65	DETAILS
66	AS-BUILT BRIDGE DATA
67	BRIDGE SURVEY
68	BRIDGE BORINGS

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: *Angel M. Staples* DATE: 2/1/13
 LICENSED PROFESSIONAL ENGINEER
 NAME: ANGEL M. STAPLES LIC NO. 41656

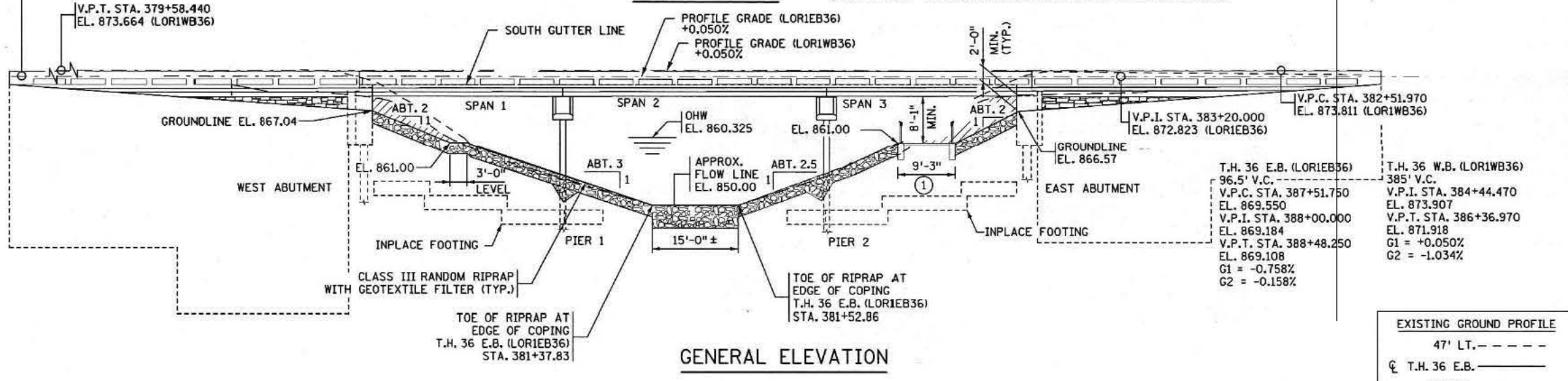
TRUNK HIGHWAY NO. 36
 MINNESOTA
 DEPARTMENT OF TRANSPORTATION

BRIDGE NO. 62037
 T.H. 36 OVER KELLER LAKE
 0.4 MILES WEST OF JUNCTION
 T.H. 36 AND T.H. 61
 IN MAPLEWOOD

IDENTIFICATION NO. 526
GENERAL PLAN AND ELEVATION
 SEC. 9 T 29 N R 22 W
 CITY OF MAPLEWOOD RAMSEY COUNTY

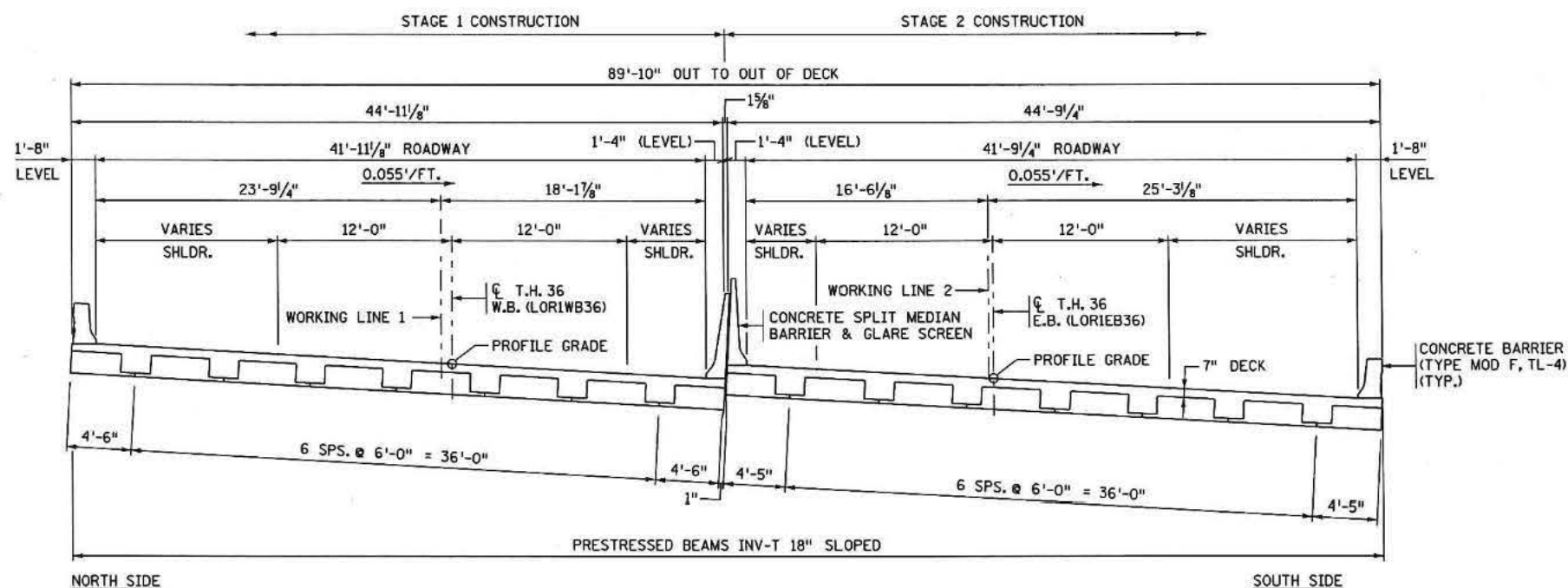
APPROVED: *Nancy D. Dambarger* STATE BRIDGE ENGINEER
 DATE: 2/1/13

DES.	NJV/MDH	DR.	RLV	62037
CHK.	AMS	CHK.	DCH	



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

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

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

BARS MARKED WITH THE SUFFIX "S" SHALL BE STAINLESS STEEL. SEE SPECIAL PROVISIONS.

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

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

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

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

SCHEDULE OF QUANTITIES FOR ENTIRE BRIDGE

ITEM NO.	ITEM	UNIT	STAGE 1	STAGE 2	TOTAL QUANTITY	ITEM NO.	ITEM	UNIT	STAGE 1	STAGE 2	TOTAL QUANTITY
2104.601	REMOVE REGULATED WASTE MATERIAL (BRIDGE)	LUMP SUM	.5	.5	1	2411.618	ANTI-GRAFFITI COATING	SQ. FT.	691	612	1303 (P)
2401.501	STRUCTURAL CONCRETE (3Y43)	CU. YD.	2	8	10 (P)	2411.618	ARCHITECTURAL CCNC TEXTURE (COURSED STONE)	SQ. FT.	691	612	1303 (P)
2401.512	BRIDGE SLAB CONCRETE (3Y33HP)	SQ. FT.	5310	5290	10600 (P)	2411.618	WINGWALL FACADE	SQ. FT.	236	497	733 (P)
2401.513	TYPE MOD F (TL-4) RAILING CONCRETE (3Y46)	LIN. FT.	164	242	406 (P)	2433.516	ANCHORAGES TYPE REINF BARS (STAINLESS STEEL)	EACH	134	134	268
2401.514	SPLIT GLARE SCREEN MEDIAN BARRIER CONCRETE (3Y46)	LIN. FT.	118	118	236 (P)	2433.602	GROUTED REINFORCEMENT BARS	EACH	74	74	148
② 2401.541	REINFORCEMENT BARS (EPOXY COATED)	POUND	53210	57190	110400 (P)	① 2442.501	REMOVE EXISTING BRIDGE	LUMP SUM	.5	.5	1
2401.601	STRUCTURE EXCAVATION	LUMP SUM	.5	.5	1	2452.602	16" SQUARE PRECAST CONCRETE TEST PILE 65 FT LONG	EACH	4	-	4
2401.601	FOUNDATION PREPARATION	LUMP SUM	.5	.5	1	2452.603	16" SQUARE PRECAST CONCRETE PILING DELIVERED	LIN. FT.	1690	1950	3640
2402.590	ELASTOMERIC BEARING PAD TYPE 1	EACH	12	-	12	2452.603	16" SQUARE PRECAST CONCRETE PILING DRIVEN	LIN. FT.	1690	1950	3640
2402.590	ELASTOMERIC BEARING PAD TYPE 2	EACH	36	36	72	2452.527	PILE REDRIVING	EACH	4	-	4
2402.590	ELASTOMERIC BEARING PAD TYPE 3	EACH	-	12	12	2452.601	TEMPORARY STRUCTURAL SHORING	LUMP SUM	1	-	1
2405.602	PRECAST PIER ELEMENT	EACH	2	2	4	2452.602	PILE ANALYSIS	EACH	4	-	4
2405.602	PRECAST ABUTMENT ELEMENT	EACH	4	4	8	2452.618	STEEL SHEET PILING (PERMANENT)	SQ. FT.	1563	3420	4983 (P)
2405.603	PRESTRESSED BEAMS INV-T 18" TYPE 1	LIN. FT.	233	-	233 (P)	2502.502	DRAINAGE SYSTEM TYPE (B910)	LUMP SUM	.5	.5	1
2405.603	PRESTRESSED BEAMS INV-T 18" TYPE 2	LIN. FT.	699	699	1398 (P)	2511.501	RANDOM RIPRAP CLASS III	CU. YD.	437	436	873 (P)
2405.603	PRESTRESSED BEAMS INV-T 18" TYPE 3	LIN. FT.	-	233	233 (P)	2511.515	GEOTEXTILE FILTER TYPE IV (MOD)	SQ. YD.	952	951	1903 (P)
2411.501	STRUCTURAL CONCRETE (3Y33)	CU. YD.	-	21	21 (P)	2521.501	5" CONCRETE WALK	SQ. FT.	-	673	673 (P)
2411.603	PEDESTRIAN RAILING TYPE SPECIAL	LIN. FT.	-	188	188 (P)						
2411.618	ARCHITECTURAL SURFACE FINISH (MULTI COLOR)	SQ. FT.	691	612	1303 (P)						

① REMOVE EXISTING BRIDGE NO. 5715.
② INCLUDES REINFORCEMENT MODIFICATIONS OF THE PRECAST PIER ELEMENTS: STAGE 1 (350 LBS.) STAGE 2 (360 LBS.) TOTAL (710 LBS.)

③ INCLUDES REINFORCEMENT MODIFICATIONS OF THE PRECAST ABUTMENT ELEMENTS: STAGE 1 (670 LBS.) STAGE 2 (730 LBS.) TOTAL (1400 LBS.)

REVISION		
DATE	DESCRIPTION	APPROVED BY
5-21-2013	ADDED REINFORCING FOR EASE OF FABRICATION	AMS

CERTIFIED BY *Angel M. Staples* 8/5/13
LICENSED PROFESSIONAL ENGINEER
 NAME: ANGEL M. STAPLES LIC. NO. 41656

TITLE: **TRANSVERSE SECTION AND SCHEDULE OF QUANTITIES**

DES: NJV/MDH DR: RLV APPROVED: 8/5/13
 CHK: AMS CHK: DCH
 SHEET NO. 2R OF 68 SHEETS

BRIDGE NO. 62037

PIER CONSTRUCTION SEQUENCE:

THE PIER HAS BEEN DESIGNED AND THE PLANS HAVE BEEN DEVELOPED ASSUMING THE FOLLOWING CONSTRUCTION SEQUENCE.

- ① CONTRACTOR SHALL PREPARE SITE FOR CONSTRUCTION. CONTRACTOR IS TO CLEAR AND GRUB. IN ACCORDANCE WITH THE GRADING PORTION OF CONTRACT. 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 USING A TEMPLATE TO MAINTAIN PILES WITHIN SPECIFIED TOLERANCES. (SEE TOLERANCE TABLE IN THIS SHEET.) SPLICE PILE IF NEEDED.
- ③ CONTRACTOR SHALL VERIFY LOCATION AND ELEVATION OF PILE TIP WITH RESPECT TO TOLERANCES. ENGINEER APPROVAL IS NEEDED TO PROCEED AFTER THIS STEP. DRILL REQUIRED ANCHORAGES INTO PILE WITHOUT DAMAGING PILES.
- ④ INSTALL NECESSARY TEMPORARY SUPPORTING COLLARS ON PILES OR OTHER TYPES OF SUPPORTS. CONNECT LEVELING DEVICES FOR PRECAST CAP ELEMENTS.
- ⑤ INSTALL PRECAST PIER CAP ELEMENTS USING LEVELING DEVICES, ADJUST PRECAST PIER CAP ELEMENT INTO POSITION AS SHOWN IN THE PLAN.
- ⑥ CONTRACTOR SHALL VERIFY LOCATION OF PILES AND ELEVATIONS OF PRECAST ELEMENTS. ENGINEER APPROVAL IS NEEDED TO PROCEED AFTER THIS STEP.
- ⑦ PREPARE PRECAST PIER CAP ELEMENT FOR GROUTING OPERATIONS, INCLUDING ALL NECESSARY FORMWORK. ALL FORMWORK SHALL BE WATERTIGHT TO AVOID ANY GROUT FROM LEAKING DURING GROUTING.
- ⑧ PERFORM GROUTING OPERATIONS. SEE SPECIAL PROVISIONS FOR MATERIAL & CONSTRUCTION REQUIREMENTS.
- ⑨ WAIT UNTIL GROUT HAS ACHIEVED THE REQUIRED STRENGTH BEFORE REMOVAL OF FRAMEWORK AND PLACING SUPERSTRUCTURE ELEMENTS.
- ⑩ REMOVE TEMPORARY SUPPORTING COLLARS, LEVELING DEVICES AND ANY TEMPORARY SUPPORTS.
- ⑪ CONTRACTOR SHALL VERIFY ELEVATIONS AND LOCATIONS OF PRECAST ELEMENTS. ENGINEER APPROVAL IS NEEDED TO PROCEED AFTER THIS STEP.

ABUTMENT CONSTRUCTION SEQUENCE:

THE ABUTMENT HAS BEEN DESIGNED AND THE PLANS HAVE BEEN DEVELOPED ASSUMING THE FOLLOWING CONSTRUCTION SEQUENCE.

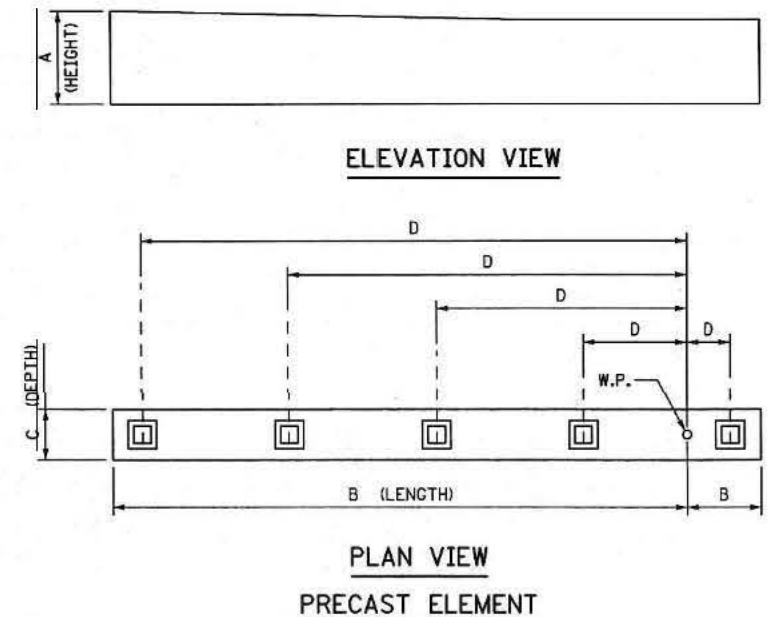
- ① CONTRACTOR SHALL PREPARE SITE FOR CONSTRUCTION. CONTRACTOR IS TO CLEAR AND GRUB. IN ACCORDANCE WITH THE GRADING PORTION OF CONTRACT. CONTRACTOR SHALL DESIGN & INSTALL CRANE PAD BASED ON THE RECOMMENDED SOIL PROPERTIES IN THE GEOTECHNICAL REPORT. CONTRACTOR IS RESPONSIBLE TO MAINTAIN THE GEOTECHNICAL STABILITY OF THE SITE DURING THE ENTIRE PERIOD OF BRIDGE CONSTRUCTION.
- ② INSTALL PILING USING A TEMPLATE TO MAINTAIN PILES WITHIN SPECIFIED TOLERANCES. (SEE TOLERANCE TABLE IN THIS SHEET.) SPLICE PILE IF NEEDED.
- ③ CONTRACTOR SHALL VERIFY LOCATION AND ELEVATION OF PILE TIP WITH RESPECT TO TOLERANCES. ENGINEER APPROVAL IS NEEDED TO PROCEED AFTER THIS STEP. DRILL REQUIRED ANCHORAGES INTO PILE WITHOUT DAMAGING PILES.
- ④ INSTALL TEMPORARY SUPPORTING COLLARS OR OTHER TYPES OF SUPPORTS. CONNECT LEVELING DEVICES FOR PRECAST ELEMENT.
- ⑤ INSTALL PRECAST ABUTMENT ELEMENT USING LEVELING DEVICES, ADJUST PRECAST ABUTMENT ELEMENT INTO POSITION AS SHOWN IN THE PLAN.
- ⑥ USING LEVELING DEVICES, ADJUST PRECAST ELEMENTS INTO FINAL POSITION.
- ⑦ CONTRACTOR SHALL VERIFY LOCATION AND 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 OPERATIONS.
- ⑨ PERFORM GROUTING OPERATIONS. SEE SPECIAL PROVISIONS FOR MATERIAL & CONSTRUCTION REQUIREMENTS.
- ⑩ WAIT UNTIL GROUT HAS ACHIEVED THE REQUIRED STRENGTH BEFORE REMOVAL OF FORMWORK AND PLACING SUPERSTRUCTURE ELEMENTS.
- ⑪ REMOVE TEMPORARY SUPPORTING COLLARS LEVELING DEVICES AND ANY TEMPORARY SUPPORTS.
- ⑫ CONTRACTOR SHALL VERIFY ELEVATIONS & LOCATION OF PRECAST ELEMENTS. ENGINEER APPROVAL IS NEEDED TO PROCEED AFTER THIS STEP.

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 AND ARE APPROXIMATE.
- 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 2" 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. THE SUBMITTAL SHALL DETAIL WORK TASKS, METHODS AND DURATIONS FOR: PILE REMOVAL IN EXISTING BRIDGE. QUALITY CONTROL FOR ELEMENT GEOMETRICS. ADJUSTING ELEVATIONS FOR PRECAST SUBSTRUCTURE ELEMENTS. SEE BRIDGE SPECIAL PROVISIONS. APPROVAL SHALL NOT RELIEVE THE CONTRACTOR OF ANY RESPONSIBILITY FOR THE STABILITY OF THE EXISTING AND NEW BRIDGE DURING ANY CONTRACTOR OPERATIONS. THE PLANS HAVE BEEN DEVELOPED ASSUMING THE PREVIOUS SEQUENCE(S).

ELEMENT	STRUCTURE LOCATION	STAGE	APPROX. WEIGHT (TONS)
ABUT A	WEST	1	47
ABUT B	WEST	1	40
ABUT C	WEST	2	35
ABUT D	WEST	2	30
ABUT E	EAST	1	47
ABUT F	EAST	1	40
ABUT G	EAST	2	35
ABUT H	EAST	2	30
PIER A	PIER 1/PIER 2	1	41
PIER B	PIER 1/PIER 2	2	40

A	PRECAST ELEMENT HEIGHT	±3/16"
B	PRECAST ELEMENT LENGTH	±1/4"
C	PRECAST ELEMENT DEPTH	±1/4"
D	PILE THRU HOLE LOCATION	±3/16"



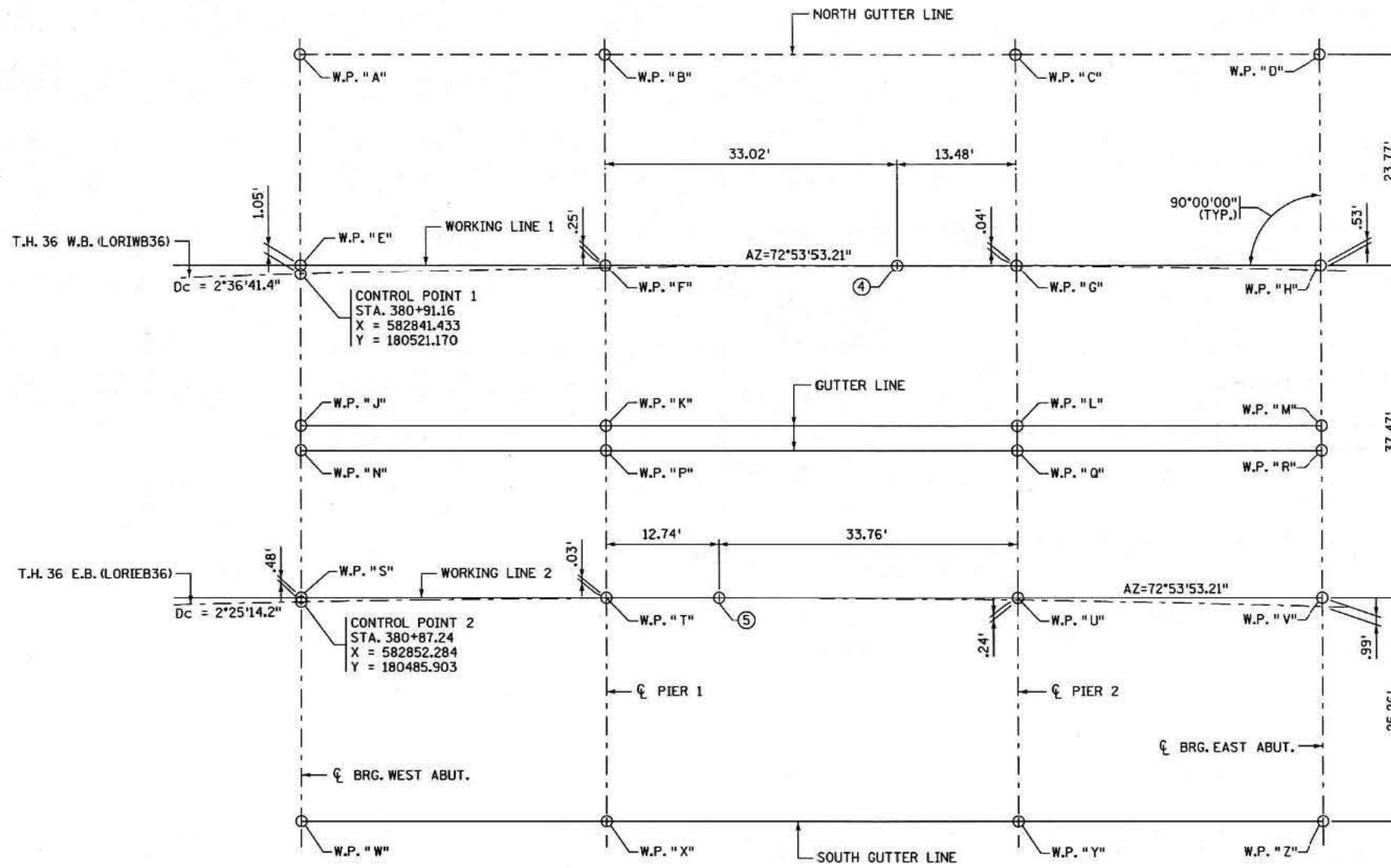
CERTIFIED BY <i>Angel M. Staples</i> 2/1/13 LICENSED PROFESSIONAL ENGINEER DATE NAME: ANGEL M. STAPLES LIC. NO. 41656	TITLE: PRECAST ELEMENT CONSTRUCTION NOTES	DES: NJV	DR: RLV	APPROVED:	BRIDGE NO. 62037
		CHK: MDH	CHK: DCH	2/1/13	

SHEET NO. 3 OF 68 SHEETS

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- NOTES:**
- WORKING POINTS STATIONS AND ELEVATIONS ARE BASED OFF T.H. 36 W.B. (LORIB36).
 - WORKING POINTS STATIONS AND ELEVATIONS ARE BASED OFF T.H. 36 E.B. (LORIEB36).
 - MEASURED PERPENDICULAR FROM TOP OF ROADWAY CROSS SLOPE.
 - WORKING LINE TANGENT TO ϕ T.H. 36 W.B. (LORIB36) STA. 381+58.94
 - WORKING LINE TANGENT TO ϕ T.H. 36 E.B. (LORIEB36) STA. 381+34.74



① ELEVATIONS FOR T.H. 36 W.B.

POINT	STATION	TOP OF ROADWAY	TOP OF ROW TO BR. SEAT	BRIDGE SEAT
A	380+91.92	875.10	2.13	872.97
B	381+26.28	875.07	2.13	872.94
C	381+72.27	875.08	2.13	872.95
D	382+06.64	875.13	2.13	873.00
E	380+91.19	873.79	2.13	871.66
F	381+25.92	873.76	2.13	871.63
G	381+72.42	873.77	2.13	871.65
H	382+07.16	873.82	2.13	871.69
J	380+90.63	872.79	2.13	870.66
K	381+25.65	872.76	2.13	870.63
L	381+72.53	872.77	2.13	870.65
M	382+07.56	872.82	2.13	870.69

② ELEVATIONS FOR T.H. 36 E.B.

POINT	STATION	TOP OF ROADWAY	TOP OF ROW TO BR. SEAT	BRIDGE SEAT
N	380+87.58	873.64	2.13	871.51
P	381+22.08	873.63	2.13	871.51
Q	381+68.26	873.67	2.13	871.54
R	382+02.75	873.73	2.13	871.60
S	380+87.25	872.73	2.13	870.61
T	381+21.99	872.73	2.13	870.60
U	381+68.49	872.76	2.13	870.63
V	382+03.22	872.82	2.13	870.69
W	380+86.74	871.34	2.13	869.22
X	381+21.86	871.34	2.13	869.21
Y	381+68.85	871.37	2.13	869.24
Z	382+03.96	871.43	2.13	869.30

③ TOP OF ROADWAY TO BRIDGE SEAT

	DECK THICKNESS	BEAM HEIGHT	BEARING HEIGHT	TOTAL	
				INCHES	FEET
W. ABUT.	7"	18"	1/2"	25 1/2"	2.13'
PIER 1	7"	18"	1/2"	25 1/2"	2.13'
PIER 2	7"	18"	1/2"	25 1/2"	2.13'
E. ABUT.	7"	18"	1/2"	25 1/2"	2.13'

WORKING POINT LAYOUT

① DIMENSIONS BETWEEN WORKING POINTS FOR T.H. 36 W.B.

POINT	STATION	X-COORDIN	Y-COORDIN	A	B	C	D	E	F	G	H	J	K	L	M
A	380+91.92	582834.135	180544.890		34.75			23.77	42.10				54.46	91.43	
B	381+26.28	582867.349	180555.109			46.50		23.77	52.22	54.46		62.62	91.43		
C	381+72.27	582911.793	180568.783				34.75		23.77	42.10	91.43	62.62	54.46		
D	382+06.64	582945.006	180579.002							23.77	91.43	54.46			
E	380+91.19	582841.125	180522.171					34.75			18.16	39.21			
F	381+25.92	582874.339	180532.390						46.50		18.16	49.92			
G	381+72.42	582918.783	180546.064							34.75		18.16	39.21		
H	382+07.16	582951.996	180556.283									18.16			
J	380+90.63	582846.467	180504.811								34.75				
K	381+25.65	582879.680	180515.030									46.50			
L	381+72.53	582924.124	180528.704										34.75		
M	382+07.56	582957.337	180538.923											34.75	

② DIMENSIONS BETWEEN WORKING POINTS FOR T.H. 36 E.B.

POINT	STATION	X-COORDIN	Y-COORDIN	N	P	Q	R	S	T	U	V	W	X	Y	Z
N	380+87.58	582847.290	180502.134		34.75			16.51	38.47				54.33	91.36	
P	381+22.08	582880.503	180512.353			46.50		16.51	49.34		54.33	62.50	91.36		
Q	381+68.26	582924.947	180526.028				34.75			16.51	38.47	91.36	62.50	54.33	
R	382+02.75	582958.161	180536.247								16.51		91.36	54.33	
S	380+87.25	582852.144	180486.358					34.75			25.26	42.96			
T	381+21.99	582885.357	180496.577						46.5		25.26	52.92			
U	381+68.49	582929.801	180510.251							34.75		25.26	42.96		
V	382+03.22	582963.015	180520.470									25.26			
W	380+86.74	582859.572	180462.215									34.75			
X	381+21.86	582892.786	180472.434										46.5		
Y	381+68.85	582937.230	180486.108											34.75	
Z	382+03.96	582970.443	180496.327												34.75

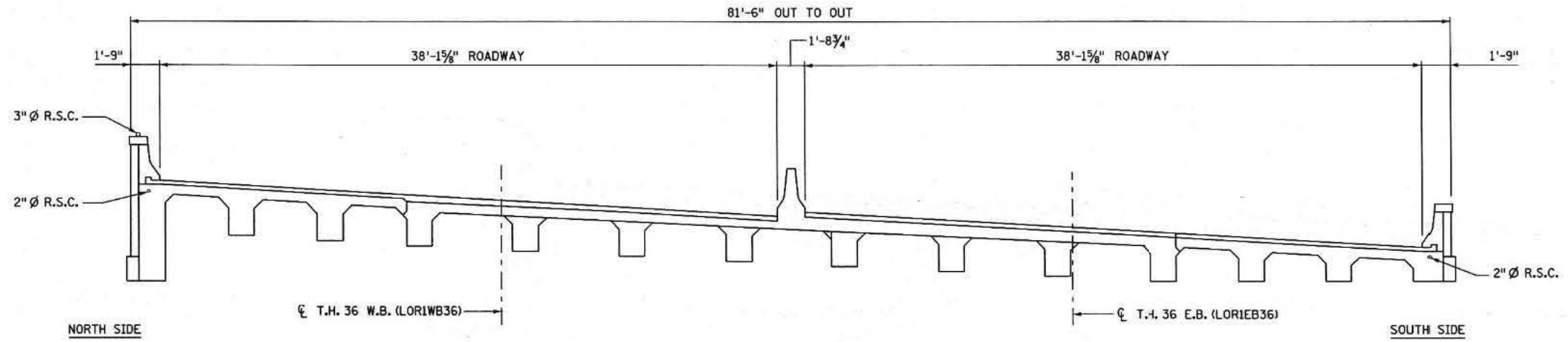
CERTIFIED BY *Angel M. Staples* 2/1/13 DATE
 LICENSED PROFESSIONAL ENGINEER
 NAME: ANGEL M. STAPLES LIC. NO. 41656

TITLE: BRIDGE LAYOUT

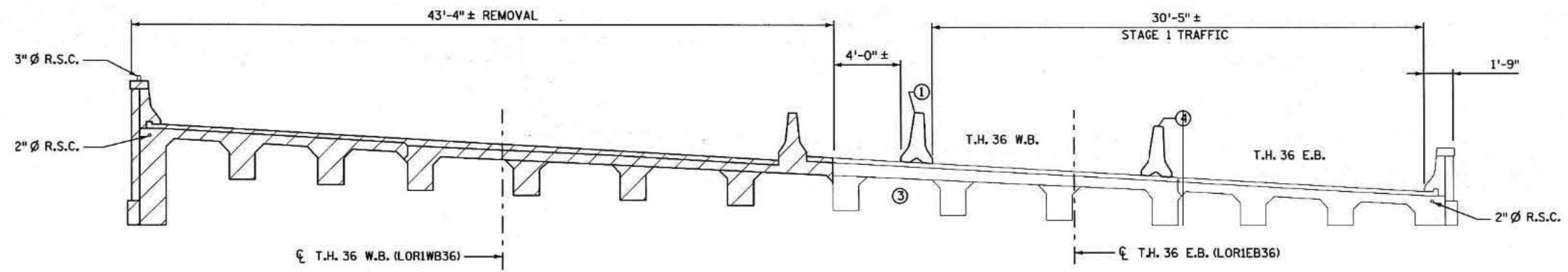
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 CHK: AMS CHK: DCH

SHEET NO. 4 OF 68 SHEETS BRIDGE NO. 62037

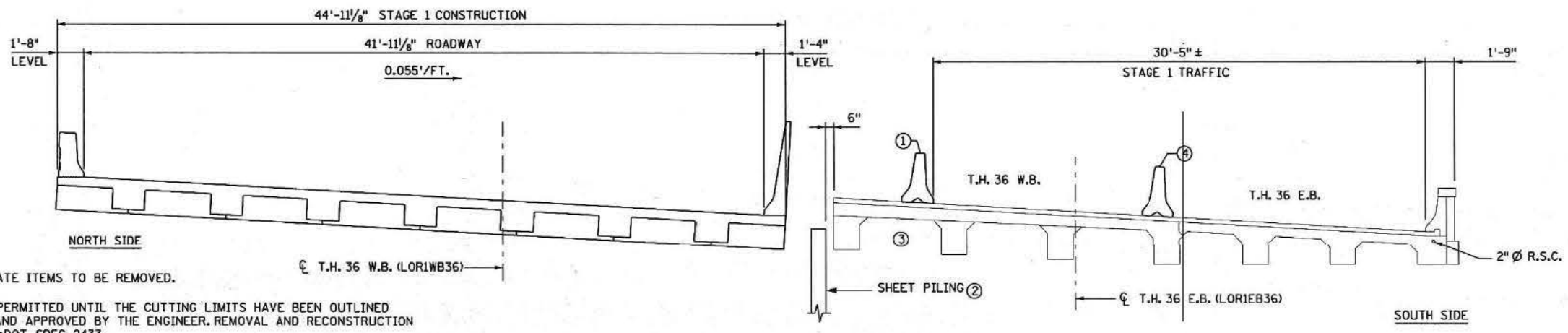
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INPLACE TRANSVERSE SECTION



STAGE 1 REMOVAL



STAGE 1 CONSTRUCTION

NOTES:



HATCHED AREAS INDICATE ITEMS TO BE REMOVED.

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

REMOVAL OF EXISTING SUPERSTRUCTURES AND SUBSTRUCTURES SHALL BE REMOVED UNDER BRIDGE PORTION OF CONTRACT. INCLUDED IN PRICE BID FOR "REMOVE EXISTING BRIDGE".

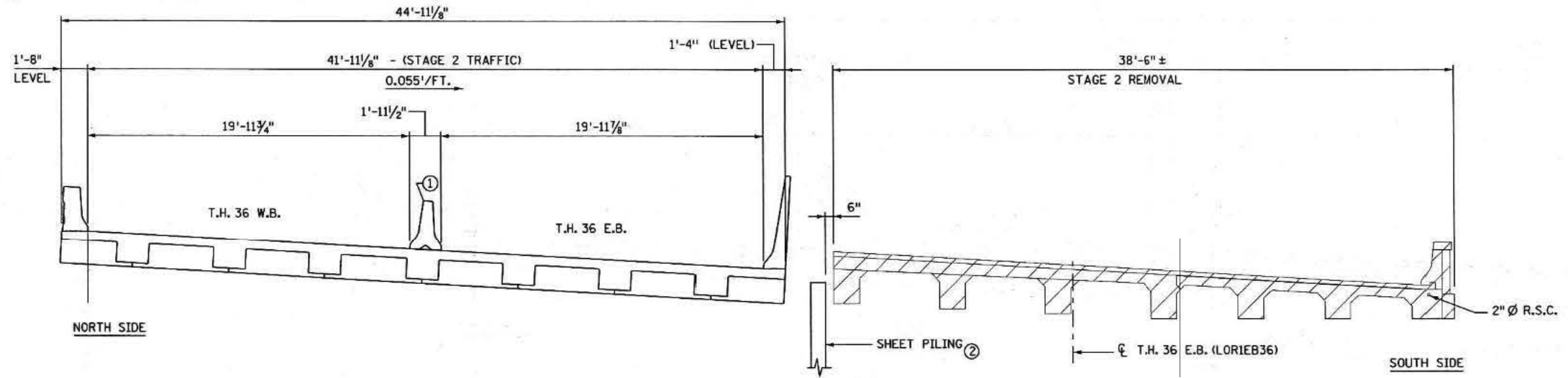
- ① PORTABLE CONCRETE BARRIER INCLUDED IN GRADING PORTION OF CONTRACT. SEE DETAIL B920 FOR ANCHORAGE DETAILS.
- ② TEMPORARY SHEETING OR SHORING SHALL BE DESIGNED BY CONTRACTOR. INCLUDED IN PRICE BID FOR "STRUCTURE EXCAVATION".
- ③ EXISTING STRUCTURE WILL NEED TO BE STRUCTURALLY SUPPORTED DURING STAGE 1 CONSTRUCTION. STRUCTURAL SHORING IS TO BE DESIGNED BY CONTRACTOR AND APPROVED BY ENGINEER. INCLUDED IN PRICE BID FOR "TEMPORARY STRUCTURAL SHORING".

- ④ PORTABLE CONCRETE BARRIER INCLUDED IN GRADING PORTION OF CONTRACT. NO ANCHORAGE REQUIRED.

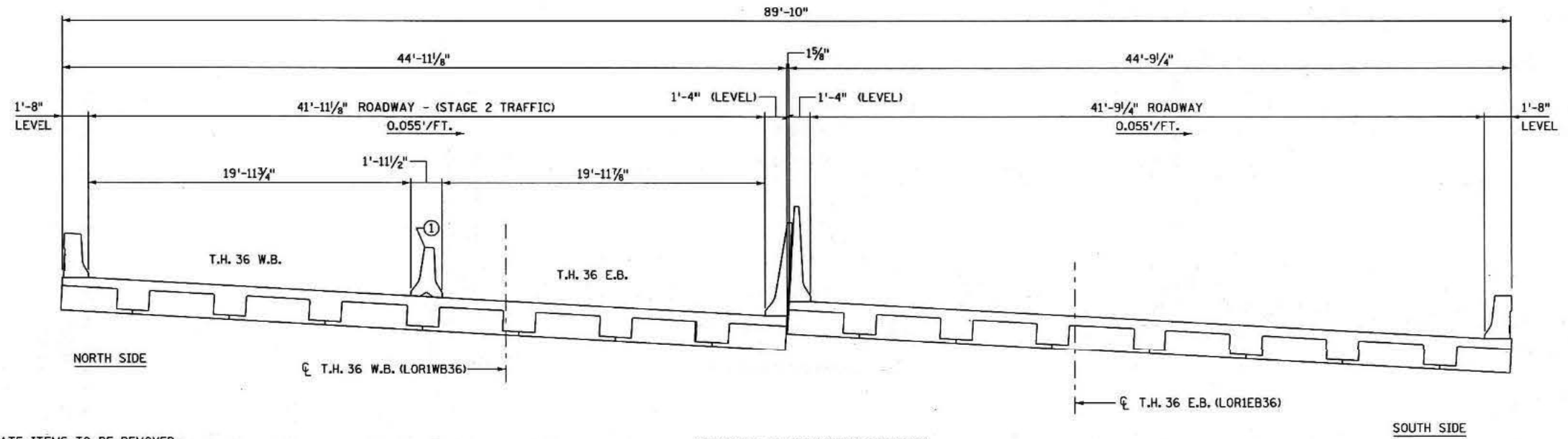
CERTIFIED BY <i>Angel M. Staples</i> 2/1/13 LICENSED PROFESSIONAL ENGINEER NAME: ANGEL M. STAPLES LIC. NO. 41656	TITLE: STAGING DETAILS (STAGE 1)	DES: NJV/MDH	DR: RLV	APPROVED:	BRIDGE NO. 62037
		CHK: AMS	CHK: DCH	2/1/13	
SHEET NO. 5 OF 68 SHEETS					

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TIME: 8/16/20 8:16:20 AM
 PLOTTED: 01-FEB-2013
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STAGE 2 REMOVAL



STAGE 2 CONSTRUCTION

NOTES:

HATCHED AREAS INDICATE ITEMS TO BE REMOVED.

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

REMOVAL OF EXISTING SUPERSTRUCTURES AND SUBSTRUCTURES SHALL BE REMOVED UNDER BRIDGE PORTION OF CONTRACT AND ARE INCLUDED IN PRICE BID FOR "REMOVE EXISTING BRIDGE".

- ① PORTABLE CONCRETE BARRIER INCLUDED IN GRADING PORTION OF CONTRACT. NO ANCHORAGE REQUIRED.
- ② TEMPORARY SHEETING OR SHORING SHALL BE DESIGNED BY CONTRACTOR. INCLUDED IN PRICE BID FOR "STRUCTURE EXCAVATION".

CERTIFIED BY <i>Angel M. Staples</i> 2/1/13 LICENSED PROFESSIONAL ENGINEER DATE NAME: ANGEL M. STAPLES LIC. NO. 41656	TITLE: STAGING DETAILS (STAGE 2)	DES: NJV/MDH	DR: RLV	APPROVED: 2/1/13	BRIDGE NO. 62037
		CHK: AMS	CHK: DCH	SHEET NO. 6 OF 68 SHEETS	

FILENAME: IP_PWP-d148947-br62037_s1r.dgn

**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	182.8
PDA	0.65	112.5

* $R_n = (\text{FACTORED DESIGN LOAD}) / \phi_{dyn}$

**WEST ABUTMENT
COMPUTED PILE LOAD -
TONS/PILE**

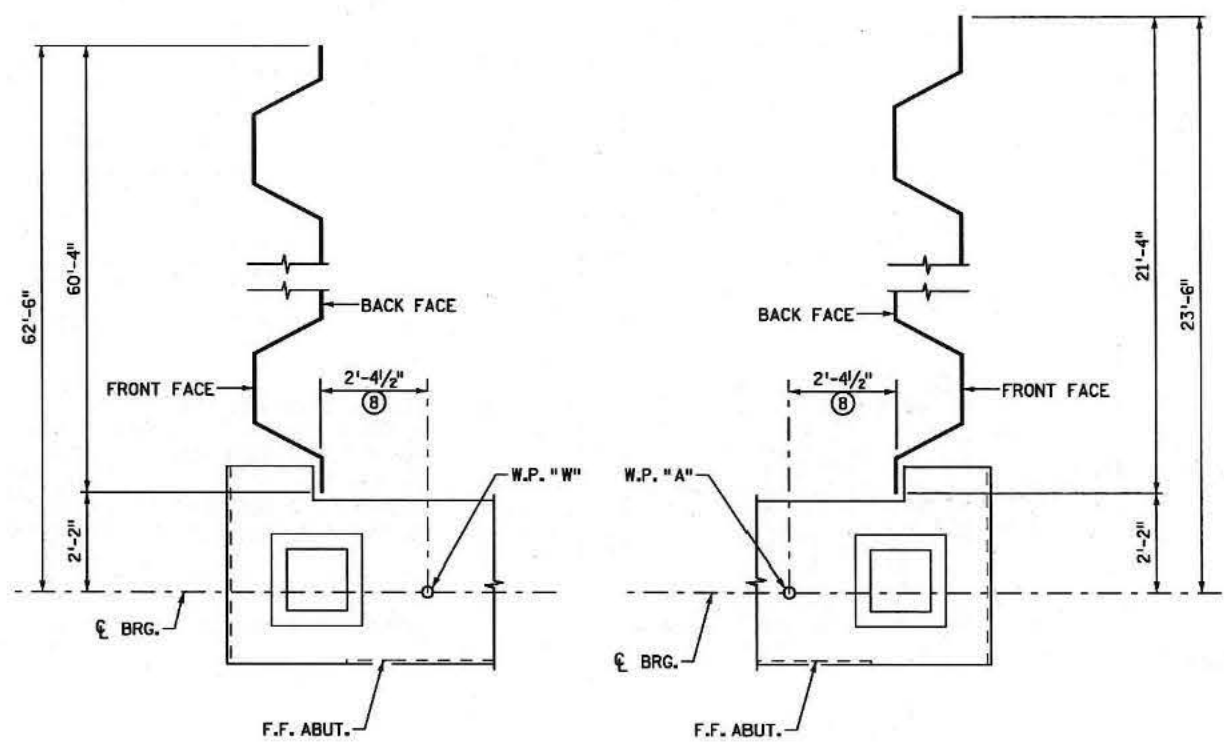
FACTORED DEAD LOAD + EARTH PRESSURE	48.0
FACTORED LIVE LOAD	25.1
* FACTORED DESIGN LOAD	73.1

* BASED ON STRENGTH I LOAD COMBINATION

PILE NOTES

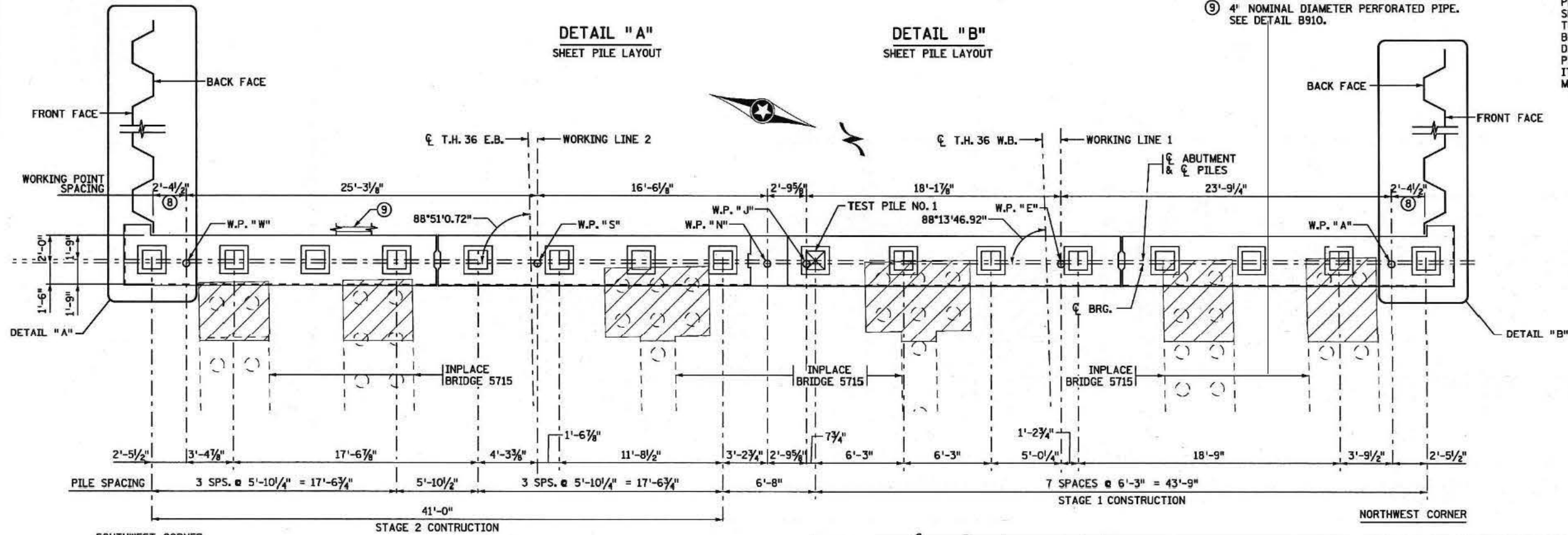
- 1 16" SQUARE PRECAST CONC. TEST PILES 65 FT. LONG
- 7 16" SQUARE PRECAST CONC. PILES EST. LENGTH 65 FT.
- 8 16" SQUARE PRECAST CONC. PILES REQ'D FOR WEST ABUTMENT-STAGE 1.
- 8 16" SQUARE PRECAST CONC. PILES EST. LENGTH 65 FT.
- 8 16" SQUARE PRECAST CONC. PILES REQ'D FOR WEST ABUTMENT-STAGE 2.

PILE SPACING SHOWN IS AT BOTTOM OF ABUTMENT.
FOR PILE DETAILS SEE SHEET "SQUARE PRESTRESSED CONCRETE PILE DETAILS."
PILES SHALL BE DRIVEN WITHIN SPECIFIED TOLERANCES. SEE SPECIAL PROVISIONS.



DETAIL "A"
SHEET PILE LAYOUT

DETAIL "B"
SHEET PILE LAYOUT



PILE LAYOUT

SUMMARY OF QUANTITIES FOR WEST ABUTMENT

ITEM	UNIT	STAGE 1	STAGE 2	TOTAL
PRECAST ABUTMENT ELEMENT	EACH	2	2	4
STRUCTURAL CONCRETE (3Y43)	CU. YD.	43	35	78
STRUCTURAL GROUT	CU. YD.	9	7	16
ANTI-GRAFFITI COATING	SQ. FT.	261	179	440
ARCH SURFACE FINISH (MULTI COLOR)	SQ. FT.	261	179	440
ARCH CONC TEXTURE (COURSED STONE)	SQ. FT.	261	179	440
REINFORCEMENT BARS (EPOXY COATED)	POUND	4100	3870	7970
ANCHORAGES TYPE REINF BARS (STAINLESS STEEL)	EACH	52	52	104
GROUTED REINFORCEMENT BARS	EACH	23	23	46
16" SQUARE PRECAST CONCRETE PILING DELIVERED	LIN. FT.	455	520	975
16" SQUARE PRECAST CONCRETE PILING DRIVEN	LIN. FT.	455	520	975
16" SQUARE PRECAST CONCRETE TEST PILE 65 FT LONG	EACH	1	-	1
PILE REDRIVING	EACH	1	-	1
PILE ANALYSIS	EACH	1	-	1
MEMBRANE WATERPROOFING SYSTEM	LIN. FT.	18	28	46
2" POLYSTYRENE TYPE A	SQ. FT.	32	21	53
1/2" POLYSTYRENE TYPE B	SQ. FT.	8	8	16

- ① DOES NOT INCLUDE TEST PILES.
- ② PAYMENT SHALL BE CONSIDERED INCIDENTAL TO PAY ITEM "PRECAST ABUTMENT ELEMENT".
- ③ 42 CU. YD. (STAGE 1) AND 31 CU. YD. (STAGE 2) SHALL BE CONSIDERED INCIDENTAL TO PAY ITEM "PRECAST ABUTMENT ELEMENT".
- ④ 1 CU. YD. (STAGE 1) AND 4 CU. YD. (STAGE 2) SHALL BE INCLUDED IN PRICE BID "STRUCTURAL CONCRETE (3Y43)".
- ⑤ 4070 POUNDS (STAGE 1) AND 3710 POUNDS (STAGE 2) SHALL BE CONSIDERED INCIDENTAL TO PAY ITEM "PRECAST ABUTMENT ELEMENT".
- ⑥ 30 POUNDS (STAGE 1) AND 160 POUNDS (STAGE 2) SHALL BE INCLUDED IN PRICE BID "REINFORCEMENT BARS (EPOXY COATED)".
- ⑦ NOT INCLUDED IN PAY ITEM "REINFORCEMENT BARS (EPOXY COATED)".
- ⑧ DIMENSION TO F.F. OF SHEETPILE.
- ⑨ 4" NOMINAL DIAMETER PERFORATED PIPE. SEE DETAIL B910.

NOTES:

- DENOTES NEW PRECAST PILE
- DENOTES NEW PRECAST TEST PILE
- DENOTES INPLACE TIMBER PILES.
- F.F. - DENOTES FRONT FACE.
- B.F. - DENOTES BACK FACE
- FOR WINGWALL DETAILS SEE SHEET NOS. 14 -17.
- ALL PORTIONS OF SUBSTRUCTURES, INCLUDING PILING AND MINOR OBSTRUCTIONS, SHALL BE COMPLETELY REMOVED WHEN THEY INTERFERE WITH NEW STRUCTURE PER MnDOT SPEC. 2442. PAYMENT SHALL BE CONSIDERED INCIDENTAL TO ITEM "REMOVE EXISTING BRIDGE." PAYMENT FOR THE DISPOSAL OF THE INPLACE TIMBER PILES SHALL BE PAID FOR UNDER ITEM "REMOVE REGULATED WASTE MATERIAL (BRIDGE)".

TIME: 9:26:22 AM
PLOTTED: 01-FEB-2013
PATH & FILENAME: Bridge/Final_Design/6/62037/Cadd-Plan/br62037_s1r

CERTIFIED BY *Angel M. Staples* 2/1/13
LICENSED PROFESSIONAL ENGINEER DATE
NAME: ANGEL M. STAPLES LIC. NO. 41656

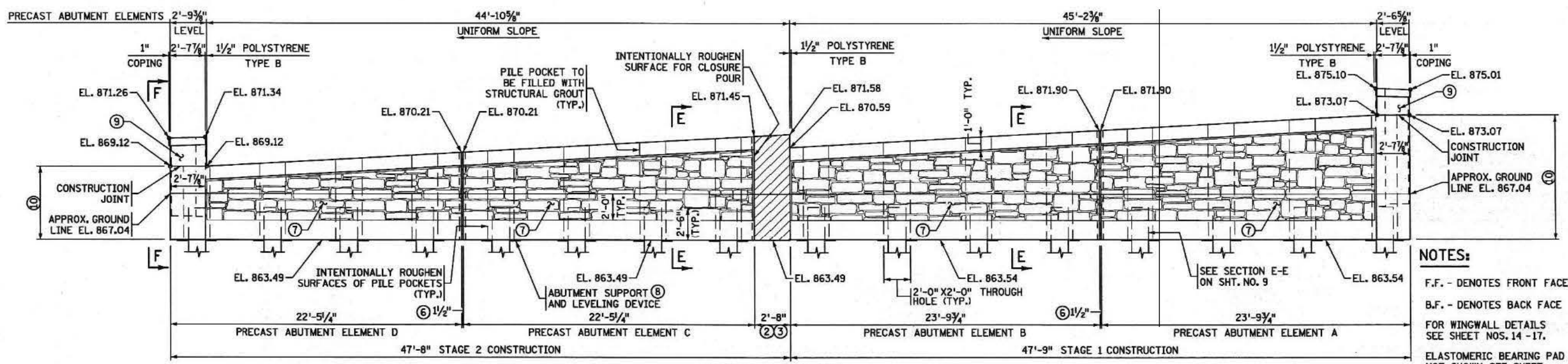
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DES: MDH DR: TKB
CHK: NJV CHK: DCH
APPROVED: 2/1/13
SHEET NO. 7 OF 68 SHEETS

BRIDGE NO. 62037

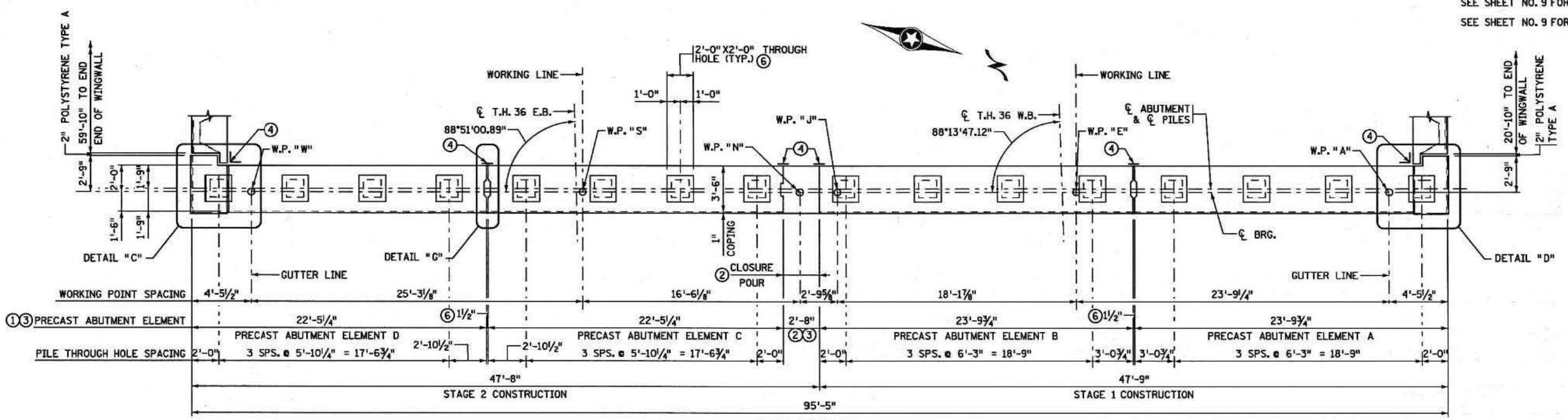
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ELEVATION VIEW 5

- NOTES:**
- F.F. - DENOTES FRONT FACE.
 - B.F. - DENOTES BACK FACE
 - FOR WINGWALL DETAILS SEE SHEET NOS. 14 - 17.
 - ELASTOMERIC BEARING PAD NOT SHOWN. SEE SHEET NO. 52 FOR DETAILS.
 - SEE SHEET NO. 9 FOR DETAIL "C".
 - SEE SHEET NO. 9 FOR DETAIL "D".
 - SEE SHEET NO. 9 FOR DETAIL "G".
 - SEE SHEET NO. 9 FOR SECTION E-E.
 - SEE SHEET NO. 9 FOR VIEW F-F.



PLAN VIEW 1

- NOTES:**
- 1 SEE SHEET NO. 3 FOR PRECAST ABUTMENT ELEMENT NOTES.
 - 2 CLOSURE POUR TO OCCUR @ END OF STAGE 2 CONSTRUCTION BEFORE BEAM PLACEMENT. CLOSURE POUR TO BE 3'-7" WIDTH FULL HEIGHT X 2'-8" IN LENGTH.
 - 3 STRUCTURAL CONCRETE (3Y43).
 - 4 MEMBRANE WATERPROOFING SYSTEM PER MDOT SPEC. 2481.3B & 2'-0" WIDE GEOTEXTILE TYPE II PER MDOT SPEC. 3733.
 - 5 ELEVATIONS SHOWN TO BE TO THE TOP OF CONCRETE.
 - 6 FILL WITH STRUCTURAL GROUT. SEE SPECIAL PROVISIONS.
 - 7 ARCHITECTURAL CONCRETE TEXTURE (COURSED STONE) ARCHITECTURAL SURFACE FINISH (MULTI COLOR) ANTI-GRAFFITI COATING
 - 8 ABUTMENT TO BE TEMPORARILY SUPPORTED BY TEMPORARY SUPPORT COLLARS OR OTHER APPROVED METHOD OF TEMPORARY SUPPORT.
 - 9 CAST-IN-PLACE PARAPET. SEE SHEET NO. 9 FOR DETAILS.
 - 10 SEE "PRECAST ABUTMENT ELEMENT HEIGHTS" TABLE ON SHEET NO. 9.
- SEE SPECIAL PROVISIONS FOR TOLERANCES ON PRECAST ELEMENTS.

CERTIFIED BY *Angel M. Staples* 2/1/13
 LICENSED PROFESSIONAL ENGINEER DATE
 NAME: ANGEL M. STAPLES LIC. NO. 41656

TITLE: WEST ABUTMENT GEOMETRICS

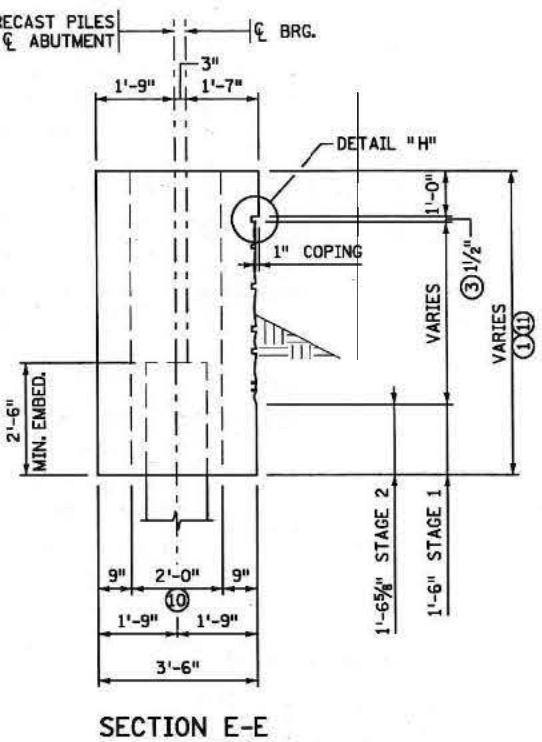
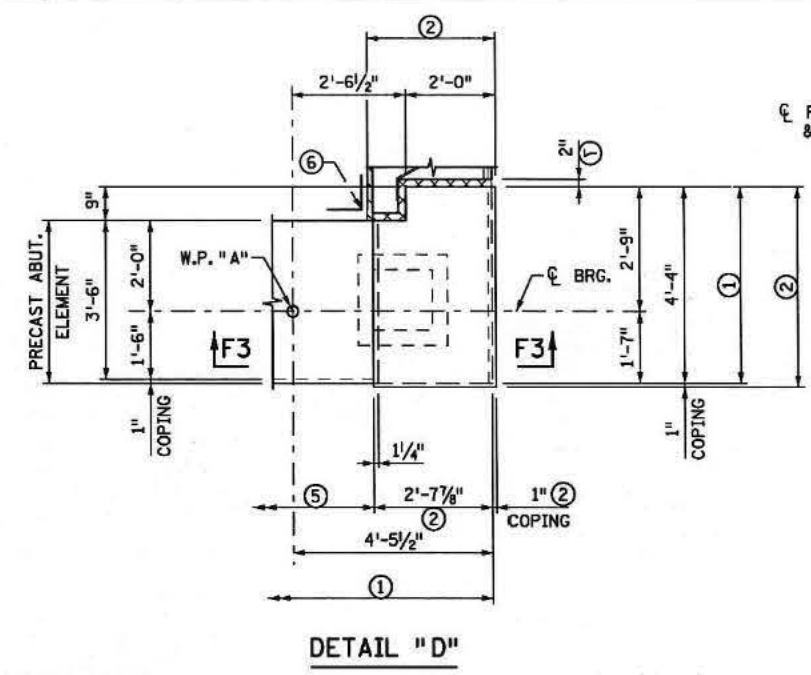
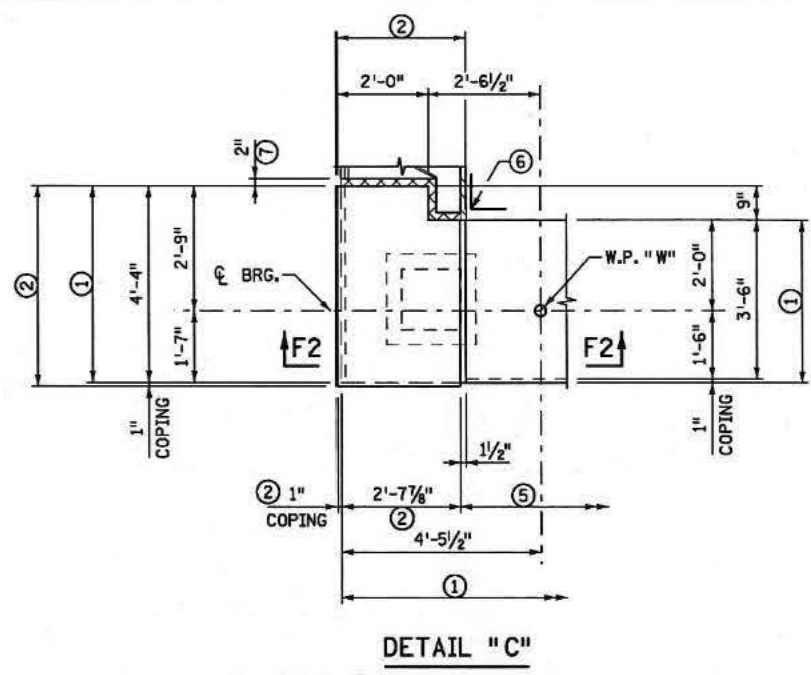
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CHK: NJV	CHK: DCH	

SHEET NO. 8 OF 68 SHEETS

BRIDGE NO. 62037

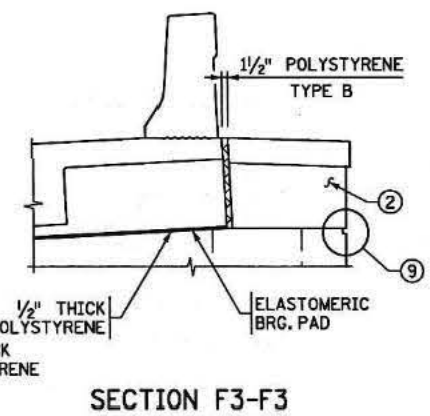
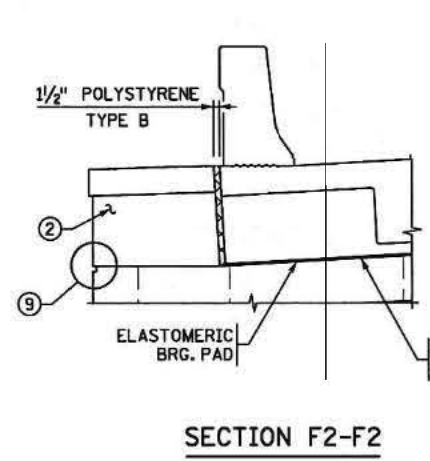
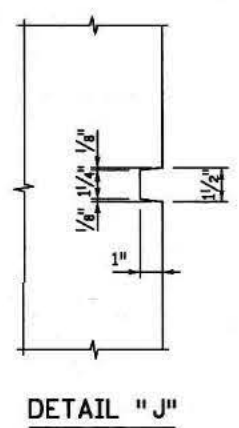
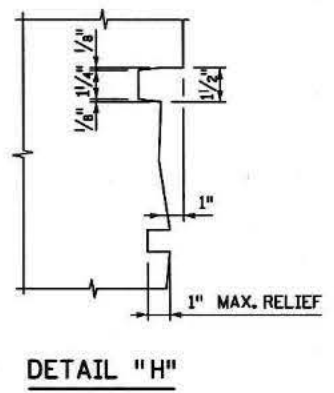
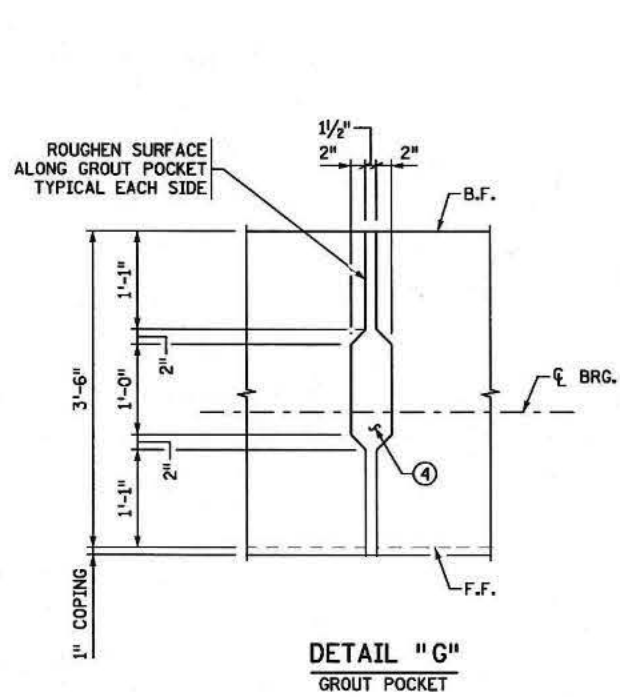
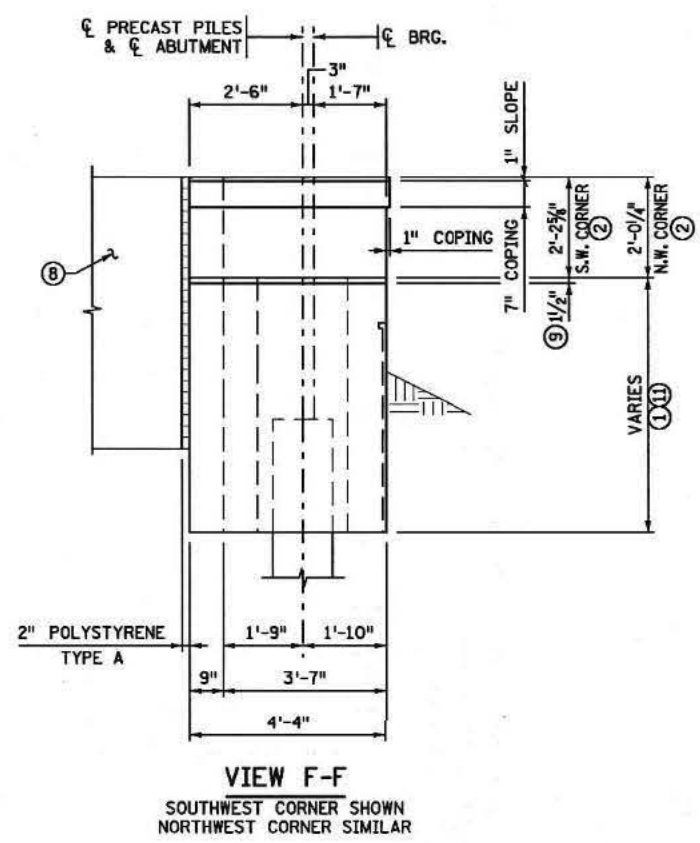
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PRECAST ABUTMENT ELEMENT HEIGHTS		
ABUTMENT ELEMENT I.D.	LOWER HEIGHT	UPPER HEIGHT
A	8'-4 3/8"	9'-6 3/8"
B	7'-0 5/8"	8'-4 3/8"
C	6'-8 5/8"	7'-11 1/2"
D	5'-7 1/2"	6'-8 5/8"

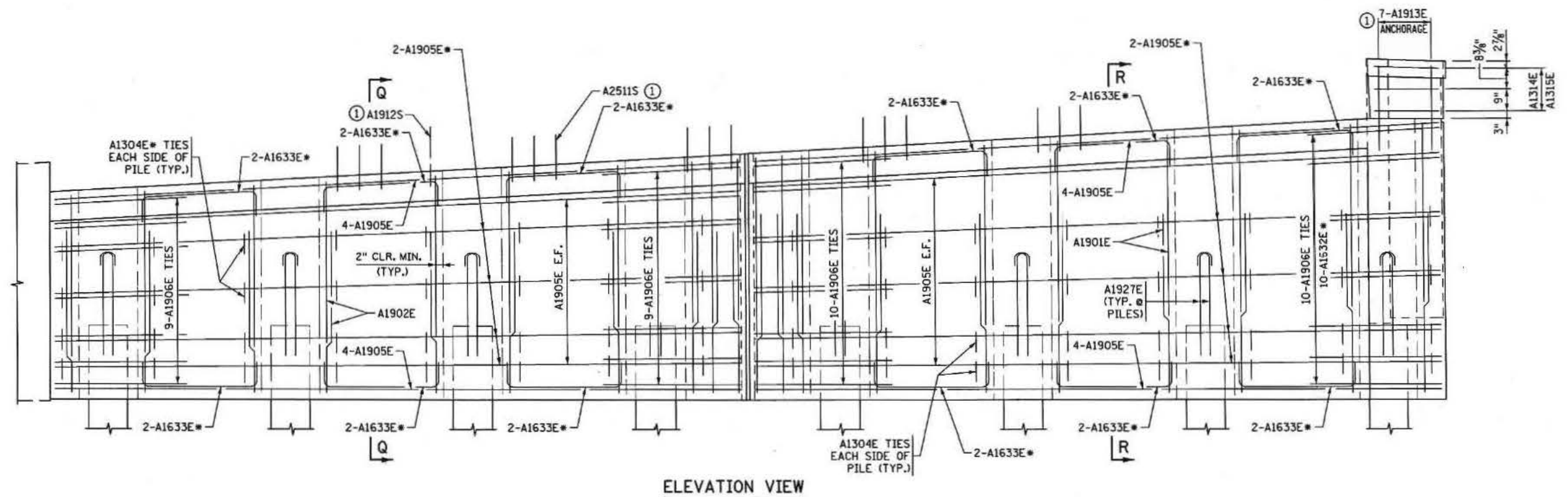
- NOTES:**
- PRECAST ABUTMENT ELEMENT STRUCTURAL CONCRETE (3Y43).
 - PARAPET CAST-IN-PLACE STRUCTURAL CONCRETE (3Y43).
 - SEE DETAIL "H" FOR REVEAL AT ABUTMENT FRONT FACE.
 - FILL WITH STRUCTURAL GROUT. SEE SPECIAL PROVISIONS.
 - ARCHITECTURAL CONCRETE TEXTURE (COURSED STONE) ARCHITECTURAL SURFACE FINISH (MULTI COLOR) ANTI-GRAFFITI COATING.
 - MEMBRANE WATERPROOFING SYSTEM.
 - 2" POLYSTYRENE TYPE A.
 - WINGWALL FACADE SEE SHEET NOS. 14 - 17.
 - SEE DETAIL "J" FOR REVEAL AT CORNERS.
 - 2'-0" X 2'-0" THROUGH HOLE FILLED WITH STRUCTURAL GROUT (TYP. FOR ALL PILES).
 - SEE "ABUTMENT PRECAST ELEMENT HEIGHTS" TABLE.
- F.F. - DENOTES FRONT FACE.
 B.F. - DENOTES BACK FACE



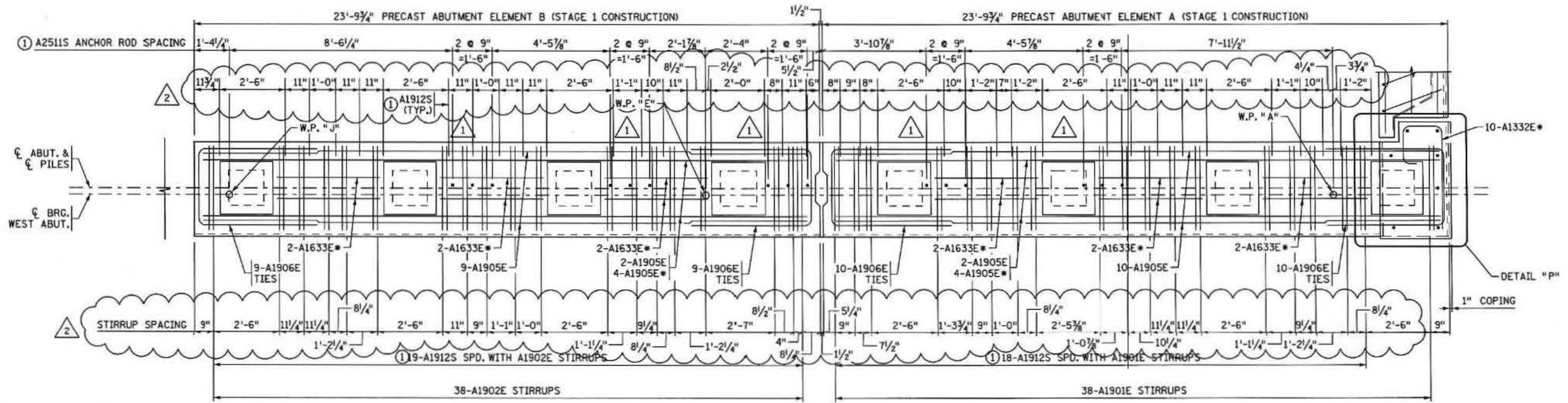
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NAME: ANGEL M. STAPLES LIC. NO. 41656		SHEET NO. 9 OF 68 SHEETS		

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TIME: 2:46:48 PM
 PLOTTED: 02-AUG-2013
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ELEVATION VIEW



PLAN VIEW
 STAGE 1 CONSTRUCTION

NOTES:
 ① FIELD LOCATE A2511S, A1912S AND A1913E ANCHORAGES TO AVOID DRILLING THROUGH HORIZONTAL REBARS. SEE ANCHORAGE DETAILS. ANCHORAGES TO BE INSTALLED AFTER BEAM PLACEMENT.
 * - DENOTES ADDED REINFORCEMENT.

SEE SHEET NO. 12 FOR DETAIL "P".
 SEE SHEET NO. 12 FOR SECTION Q-Q.
 SEE SHEET NO. 12 FOR SECTION R-R.
 F.F. - DENOTES FRONT FACE.
 B.F. - DENOTES BACK FACE.
 E.F. - DENOTES EACH FACE.

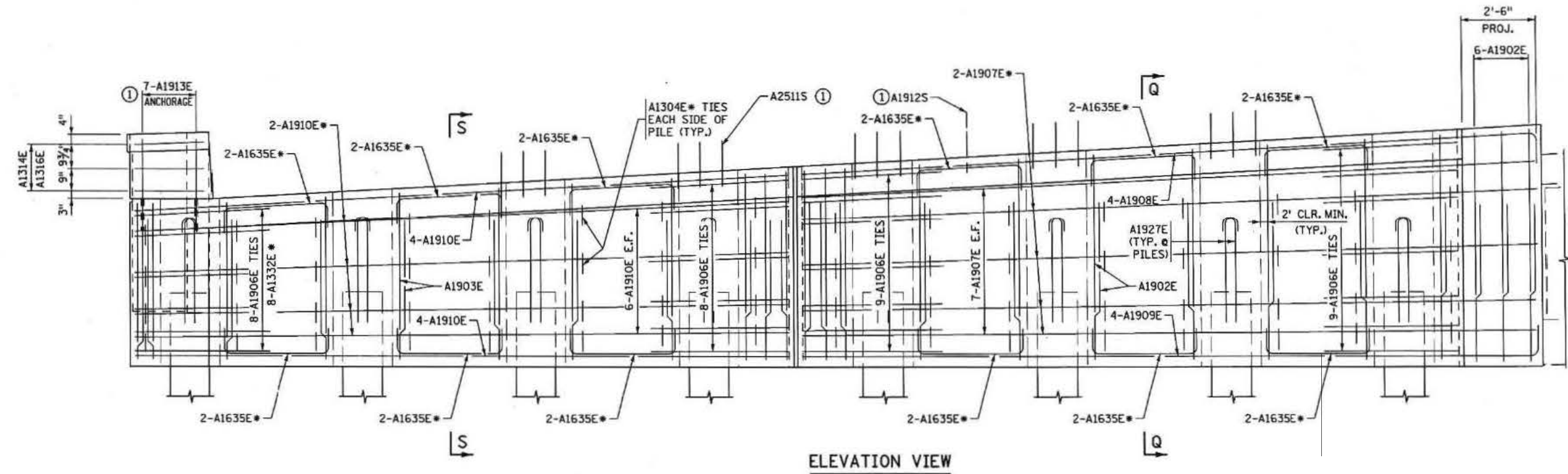
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DATE	DESCRIPTION	APPROVED BY
5/3/13	REPOSITIONED A2511S ANCHOR RODS	AMS
5/21/13	ADDED REINFORCING FOR EASE OF FABRICATION	AMS

CERTIFIED BY Angel M. Staples 9/5/13
 LICENSED PROFESSIONAL ENGINEER DATE
 NAME: ANGEL M. STAPLES LIC. NO. 41656

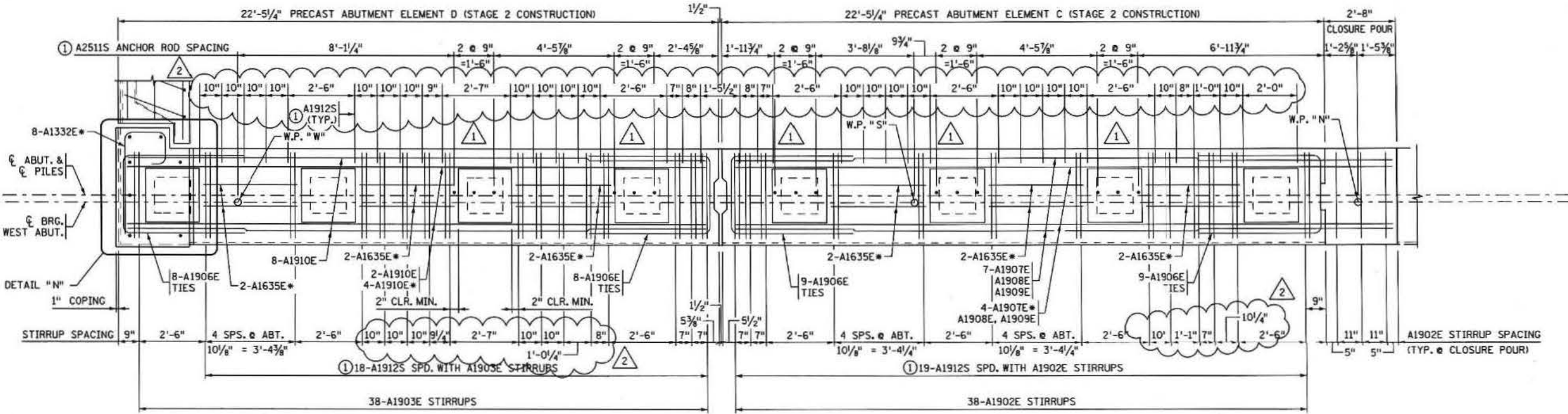
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 BRIDGE NO. 62037

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 PLOTTED: 02-JUG-2013



ELEVATION VIEW



PLAN VIEW
STAGE 2 CONSTRUCTION

NOTES:

① FIELD LOCATE A2511S, A1912S AND A1913E ANCHORAGES TO AVOID DRILLING THROUGH HORIZONTAL REBARS. SEE ANCHORAGE DETAILS. ANCHORAGES TO BE INSTALLED AFTER BEAM PLACEMENT.

* DENOTES ADDED REINFORCEMENT. ②

SEE SHEET NO. 12 FOR DETAIL "N".
 SEE SHEET NO. 12 FOR SECTION Q-Q.
 SEE SHEET NO. 12 FOR SECTION S-S.
 F.F. - DENOTES FRONT FACE.
 B.F. - DENOTES BACK FACE.
 E.F. - DENOTES EACH FACE.

REVISION		
DATE	DESCRIPTION	APPROVED BY
5/3/13	REPOSITIONED A2511S ANCHOR RODS	AMS
5/21/13	ADDED REINFORCING FOR EASE OF FABRICATION	AMS

CERTIFIED BY *Angel M. Staples* 8/5/13
 LICENSED PROFESSIONAL ENGINEER DATE
 NAME: ANGEL M. STAPLES LIC. NO. 41656

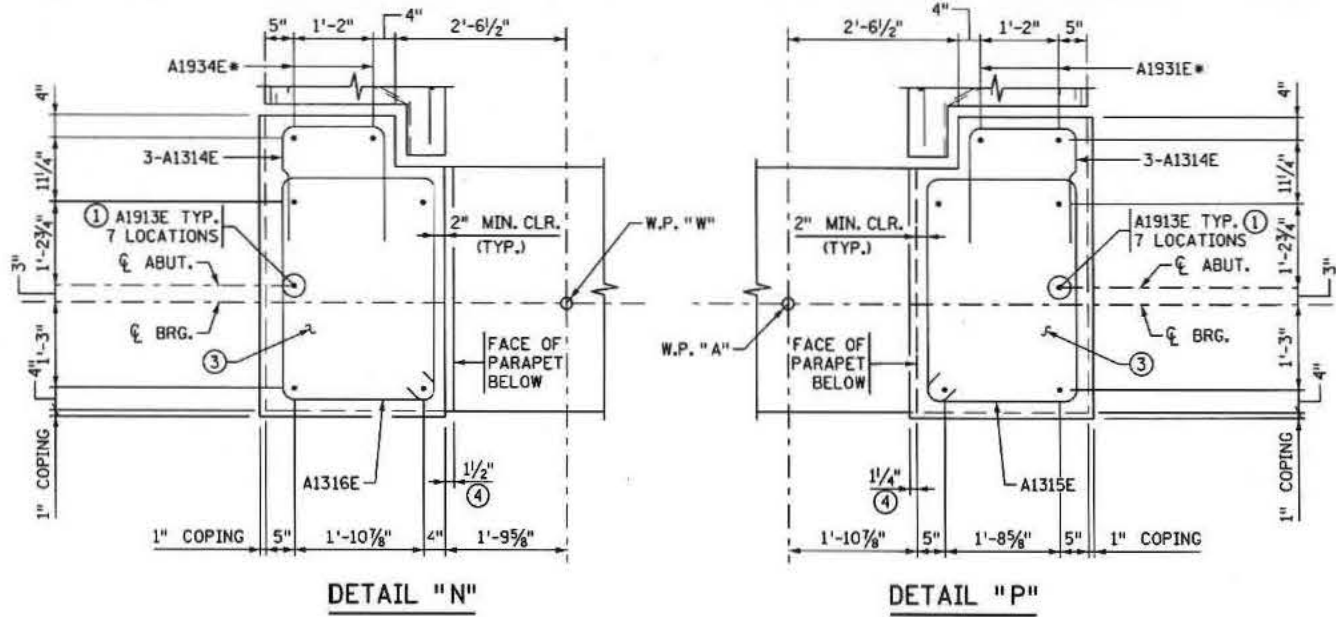
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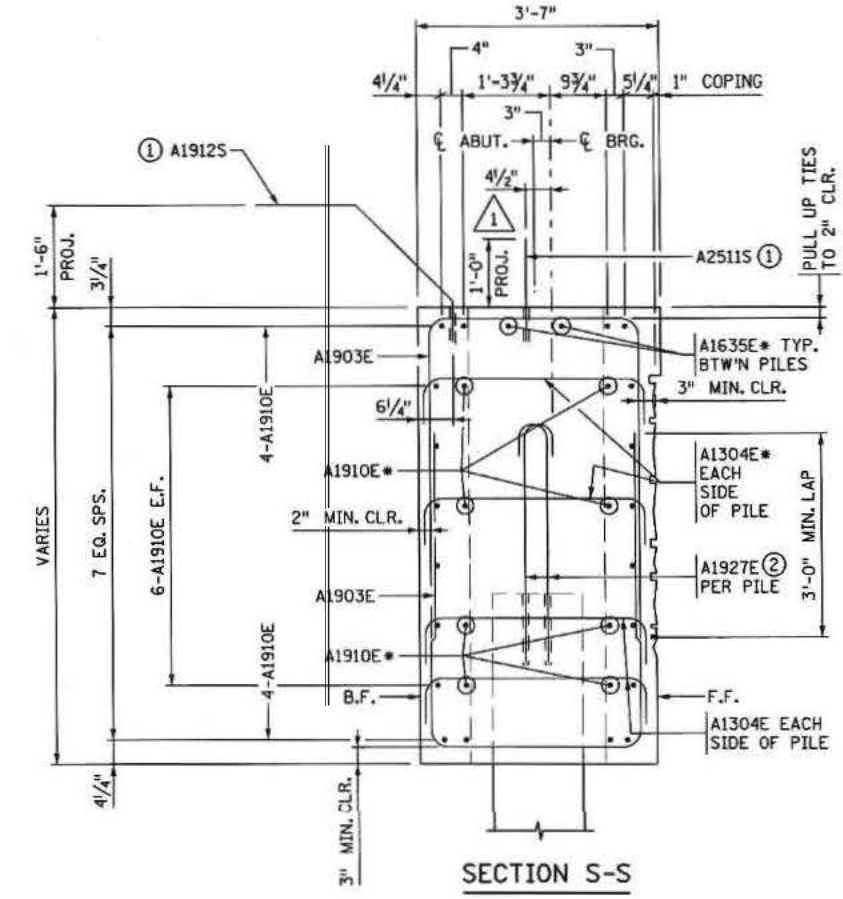
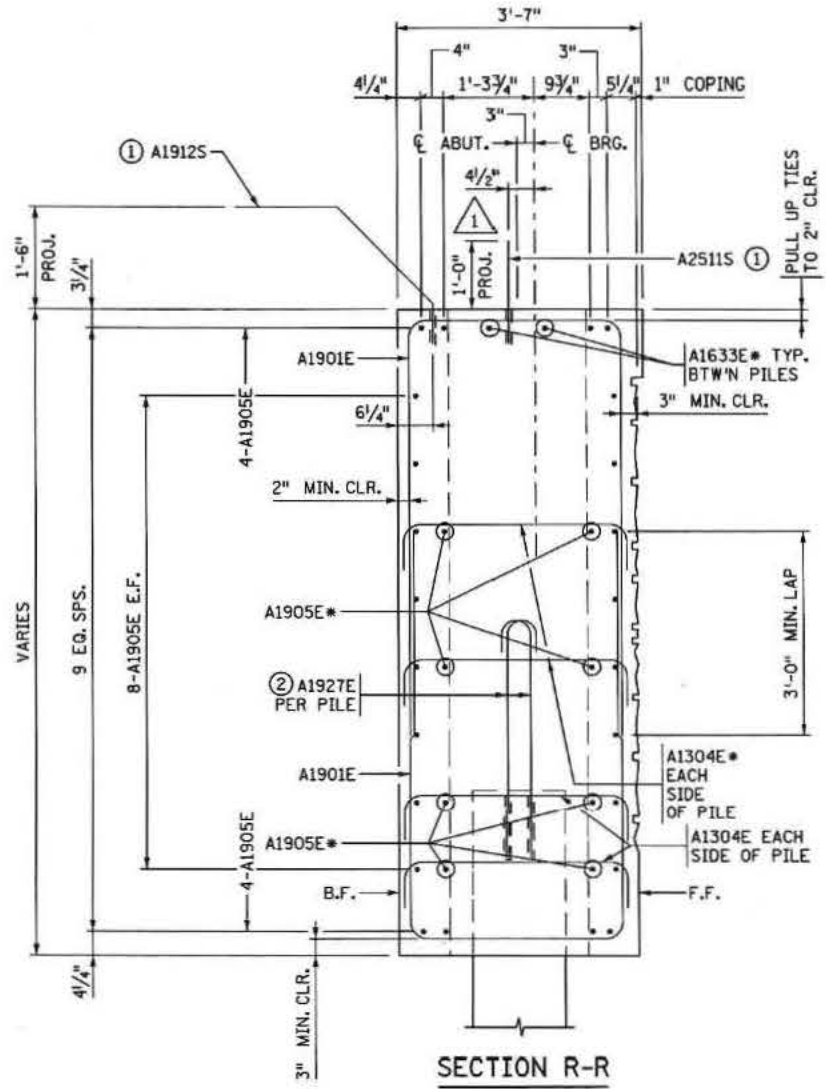
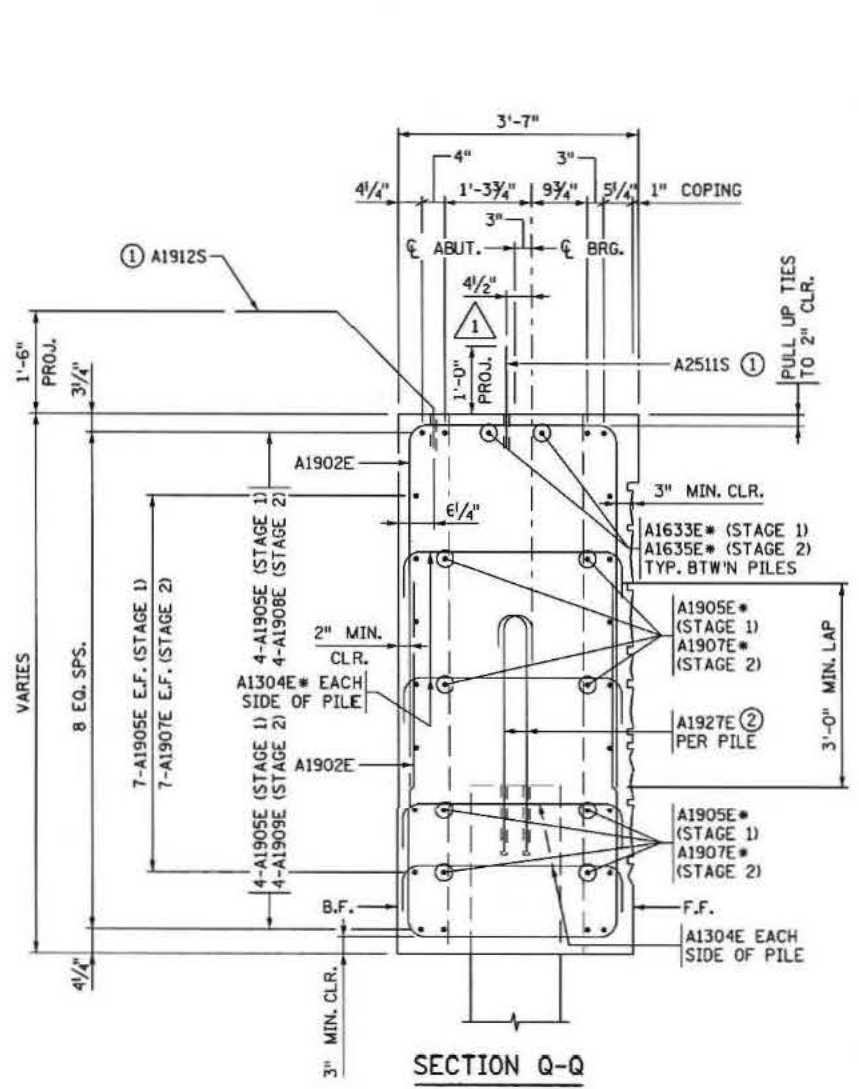
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- NOTES:**
- FIELD LOCATE A2511S, A1912S AND A1913E ANCHORAGES TO AVOID DRILLING THROUGH HORIZONTAL REBARS. SEE ANCHORAGE DETAILS. ANCHORAGES TO BE INSTALLED AFTER BEAM PLACEMENT.
 - BARS TO BE FIELD DRILLED AND GROUTED WHEN PILE IS AT FINAL ELEVATION PRIOR TO ABUTMENT PLACEMENT. SEE DETAIL "V" AND ANCHORAGE DETAIL ON SHEET NO. 13.
 - CAST-IN-PLACE PARAPET.
 - SLOPED FACE OF PARAPET.
- DENOTES ADDED REINFORCEMENT. △
- F.F. - DENOTES FRONT FACE.
 B.F. - DENOTES BACK FACE.
 E.F. - DENOTES EACH FACE.



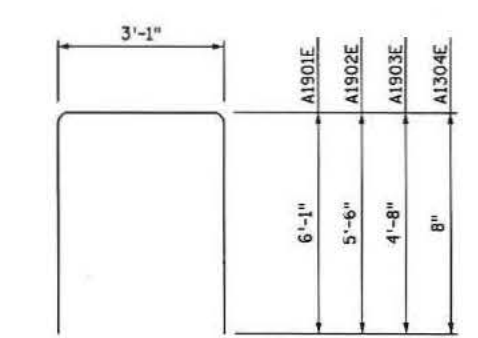
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5/3/13	REPOSITIONED A2511S ANCHOR RODS	AMS
5/21/13	ADDED REINFORCING FOR EASE OF FABRICATION	AMS

CERTIFIED BY Angel M. Staples 8/5/13
 LICENSED PROFESSIONAL ENGINEER DATE
 NAME: ANGEL M. STAPLES LIC. NO. 41656

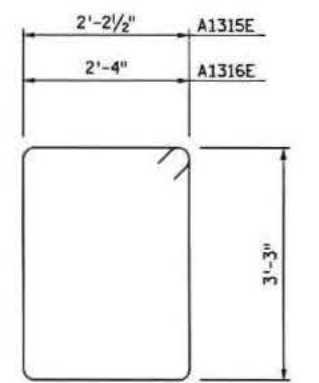
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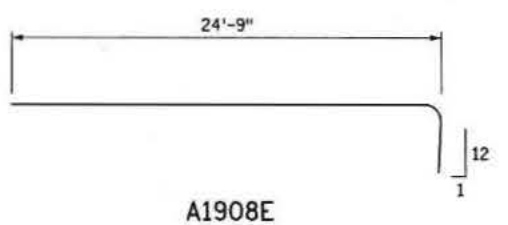
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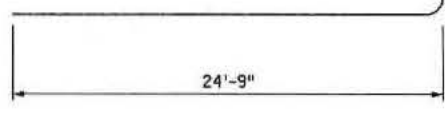
A1901E, A1902E, A1903E & A1304E



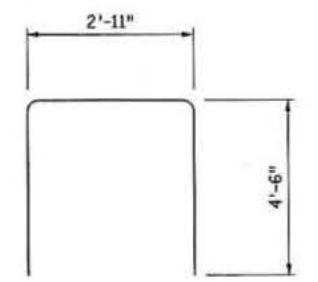
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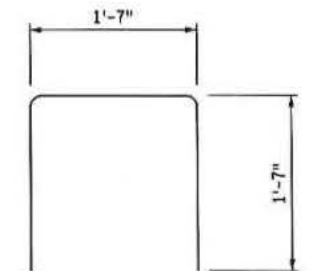
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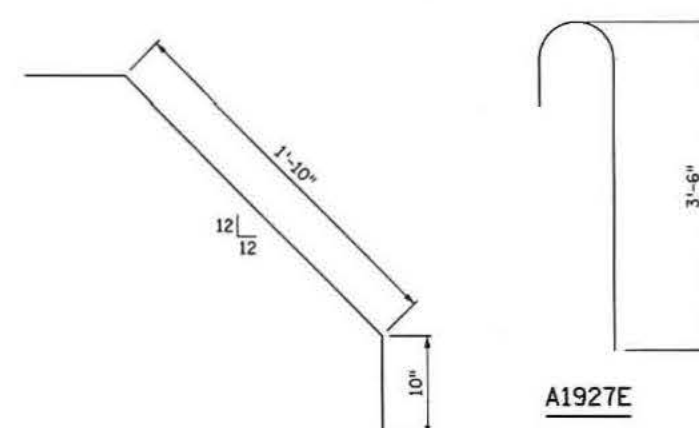
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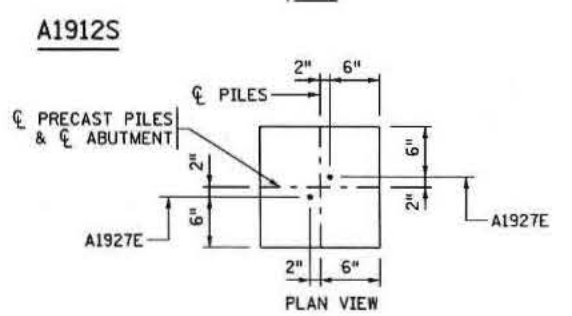
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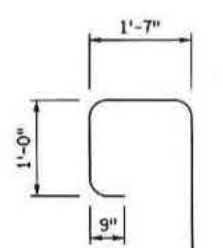
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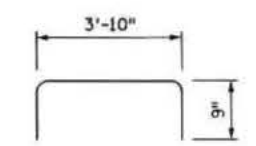
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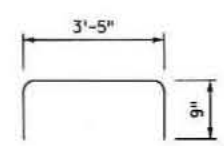
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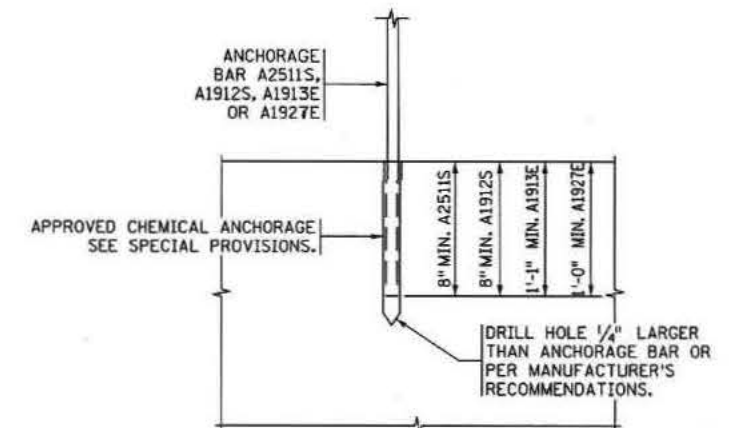
A1332E*



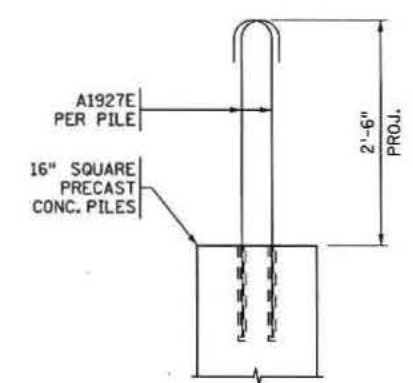
A1633E*



A1635E*



ANCHORAGE DETAIL



DETAIL "V"
ELEVATION VIEW

① BILL OF REINFORCEMENT FOR WEST ABUTMENT

BAR	NO. STAGE 1	NO. STAGE 2	NO. CLOSURE POUR (2)	TOTAL	LENGTH	SHAPE	LOCATION
A1901E	38			38	15'-3"	U	STIRRUP
A1902E	38	38	6	82	14'-1"	U	STIRRUP
A1903E		38		38	12'-5"	U	STIRRUP
A1304E*	64	64		128	4'-5"	U	TIE
A1905E*	56			56	23'-5"	U	LONGITUDINAL
A1906E	38	34		72	11'-11"	U	END TIE
A1907E*		22		22	24'-8"	U	LONGITUDINAL
A1908E		4		4	25'-9"	U	LONGITUDINAL
A1909E		4		4	25'-9"	U	LONGITUDINAL
A1910E*		24		24	22'-1"	U	LONGITUDINAL
A2511S	15	15		30	1'-8"	U	ANCHORAGE
A1912S	37	37		74	4'-8"	U	APPROACH PANEL ANCHORAGE
A1913E	7	7		14	2'-7"	U	PARAPET ANCHORAGE
A1314E	3	3		6	4'-9"	U	PARAPET TIE
A1315E	3			3	11'-7"	U	PARAPET TIE
A1316E		3		3	11'-11"	U	PARAPET TIE
A1927E	16	16		32	4'-2"	U	PILE TIES
A1931E*	2	2		4	9'-0"	U	VERTICAL
A1332E*	10	8		18	7'-2"	U	HORIZONTAL TIE
A1633E*	24			24	5'-4"	U	LONGITUDINAL TIE
A1934E*	2	2		4	5'-2"	U	VERTICAL
A1635E*		24		24	4'-11"	U	LONGITUDINAL TIE

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

- ① PAYMENT FOR REINFORCEMENT SHALL BE CONSIDERED INCIDENTAL TO PAY ITEM "PRECAST ABUTMENT ELEMENT" UNLESS OTHERWISE NOTED.
- ② REINFORCEMENT IS INCLUDED IN PAY ITEM "REINFORCEMENT BARS (EPOXY COATED)".
- ③ NOT INCLUDED IN WEIGHT OF REINFORCEMENT. INCLUDED IN ITEM "ANCHORAGE TYPE REINF BARS (STAINLESS STEEL)".
- ④ NOT INCLUDED IN WEIGHT OF REINFORCEMENT. INCLUDED IN ITEM "GROUTED REINFORCEMENT BARS".

⑤ A1304E ADDED 64 ADDITIONAL BARS
 A1905E ADDED 1C ADDITIONAL BARS
 A1907E ADDED 8 ADDITIONAL BARS
 A1910E ADDED 4 ADDITIONAL BARS

*-DENOTES ADDED REINFORCEMENT. ②

REVISION		
DATE	DESCRIPTION	APPROVED BY
5/21/13	ADDED REINFORCING FOR EASE OF FABRICATION	AMS

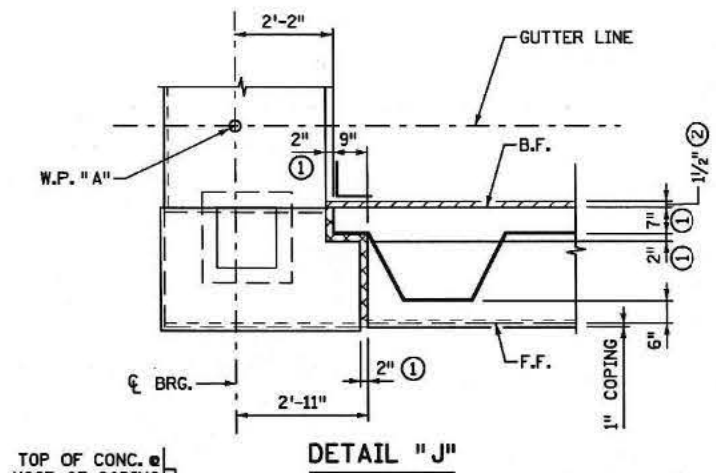
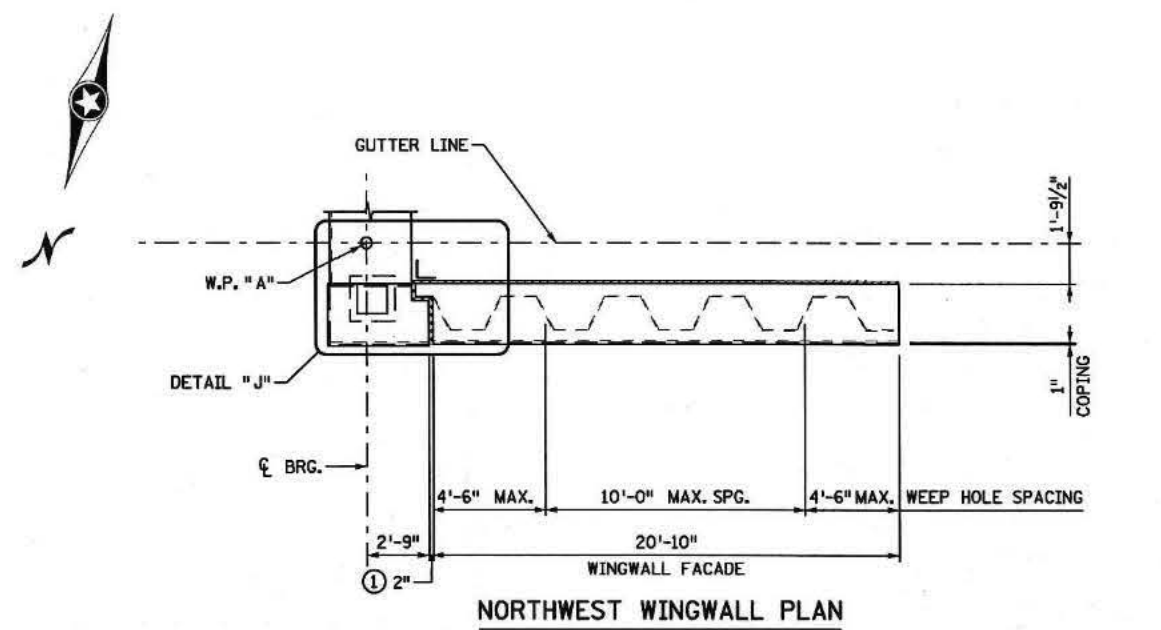
CERTIFIED BY Angel M. Staples 8/5/13
 LICENSED PROFESSIONAL ENGINEER DATE
 NAME: ANGEL M. STAPLES LIC. NO. 41656

TITLE: WEST ABUTMENT REINFORCEMENT

DES: MDH DR: TKB APPROVED: 8/5/13
 CHK: NJV CHK: DCH
 SHEET NO. 13R OF 68 SHEETS BRIDGE NO. 62037

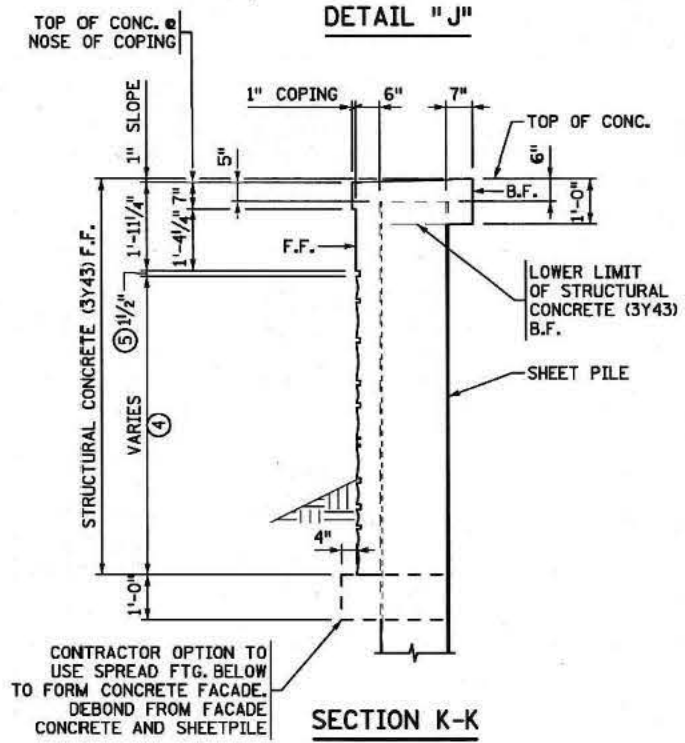
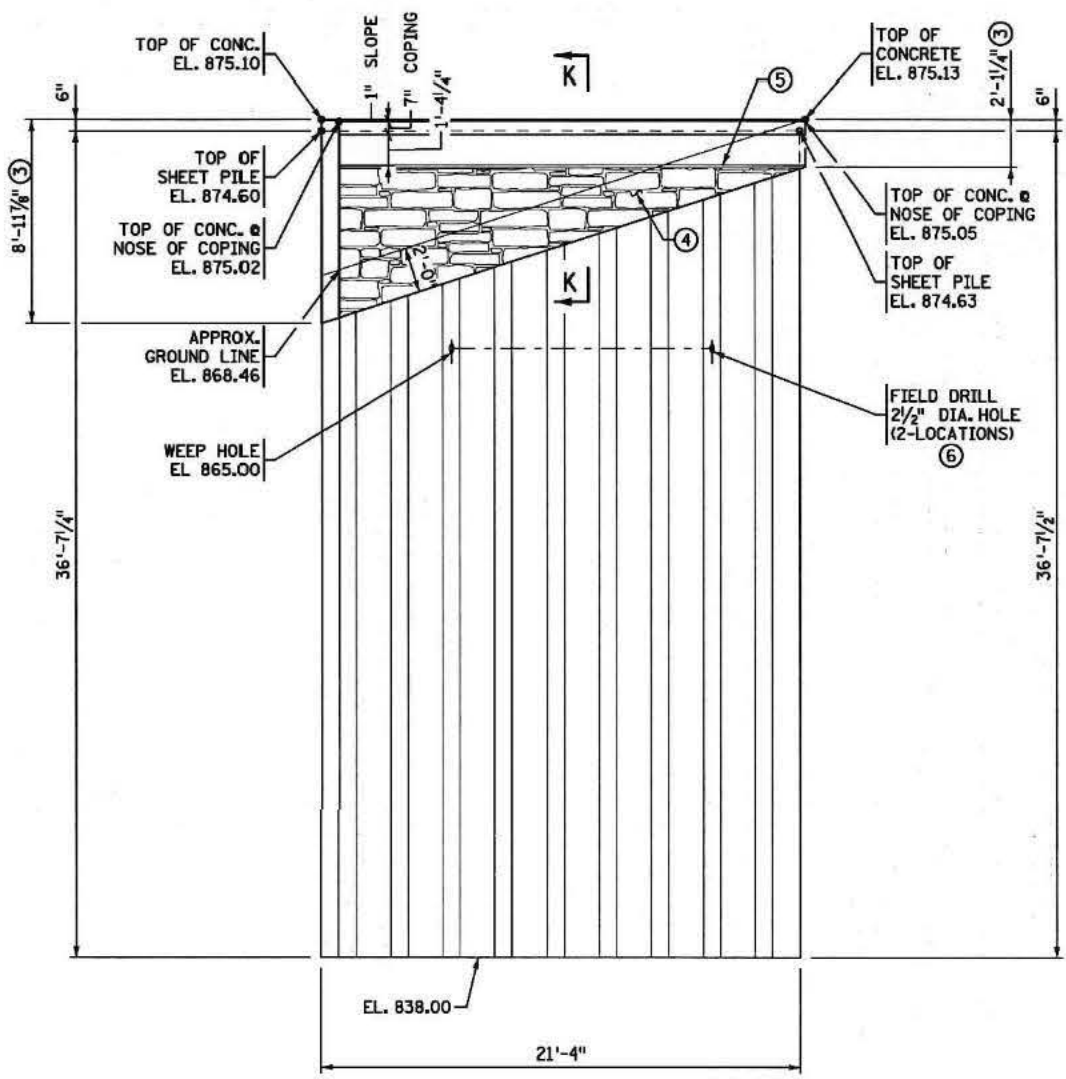
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- NOTES:**
- ① 2" POLYSTYRENE TYPE A.
 - ② 1 1/2" POLYSTYRENE TYPE B.
 - ③ STRUCTURAL CONCRETE (3Y43).
 - ④ ARCHITECTURAL CONCRETE TEXTURE (COURSED STONE), ARCHITECTURAL SURFACE FINISH (MULTI COLOR), ANTI-GRAFFITI COATING.
 - ⑤ SEE DETAIL "H" ON SHEET NO. 9 FOR REVEAL.
 - ⑥ DRIVE SHEET PILE 8'-0" AND CONSTRUCT 2 1/2" DIA. WEEP HOLES @ 10'-0" MAX O.C. AT LOCATION SHOWN ON ELEVATION VIEW.
- F.F. - DENOTES FRONT FACE.
B.F. - DENOTES BACK FACE.

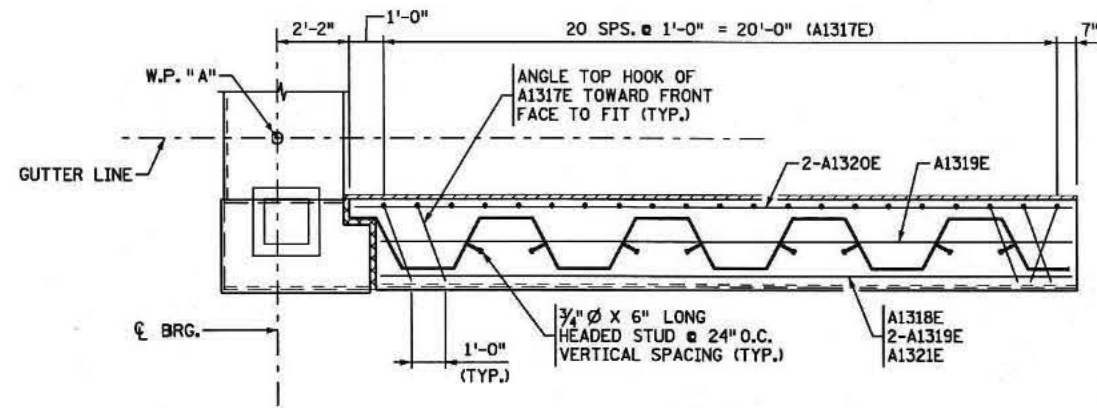
- DESIGN CRITERIA:**
- SHEET PILE MINIMUM EFFECTIVE SECTION MODULUS
= 36.49 IN³/FT. FOR A-328 STEEL, F_y = 39 ksi
= 28.07 IN³/FT. FOR A-572 STEEL, F_y = 50 ksi
- SHEET PILE MINIMUM MOMENT OF INERTIA
= 364.42 IN⁴/FT.
- DURING CONSTRUCTION A MAXIMUM EXCAVATION LIMIT OF 3'-0" BELOW FINAL GROUND LINE IS REQUIRED AT ALL TIMES.



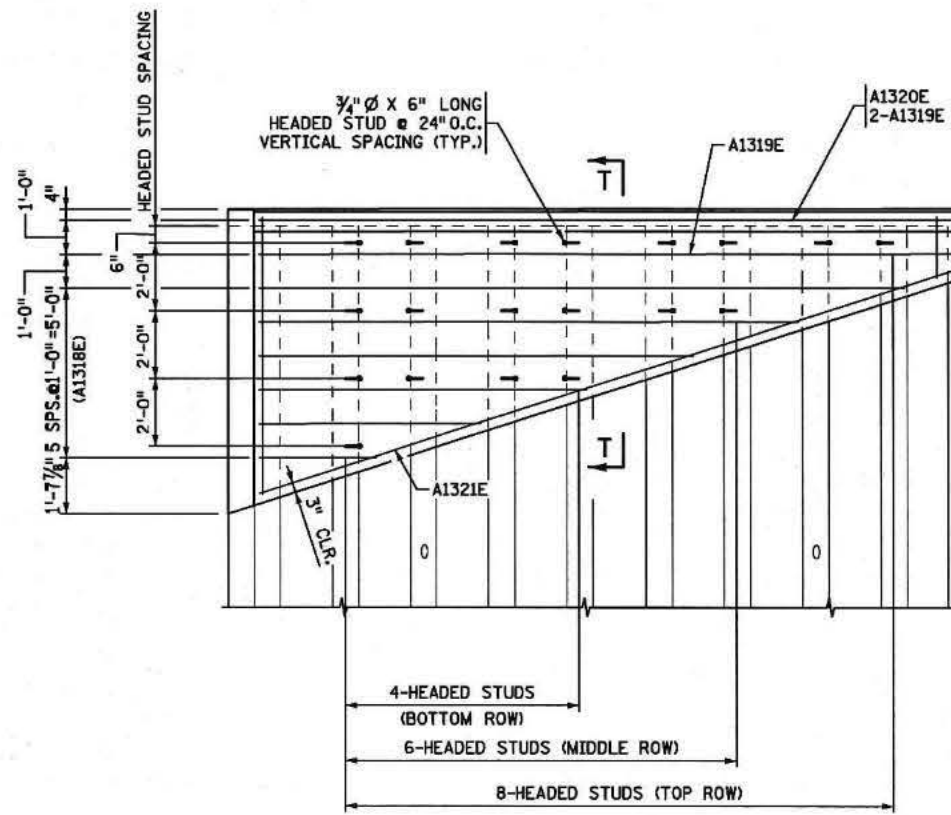
CERTIFIED BY: <i>Angel M. Staples</i>	DATE: 2/1/13	TITLE: NORTHWEST WINGWALL GEOMETRICS	DES: MDH	DR: TKB	APPROVED: <i>2/1/13</i>	BRIDGE NO. 62037
NAME: ANGEL M. STAPLES	LIC. NO. 41656		CHK: NJV	CHK: DCH	SHEET NO. 14 OF 68 SHEETS	

FILENAME: IP_PWP-d1489447-br62037_sfr.dgn

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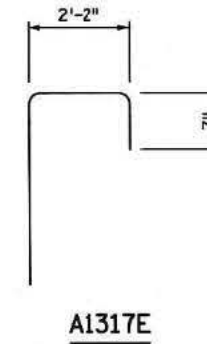


NORTHWEST WINGWALL PLAN



NORTHWEST WINGWALL ELEVATION

SHEET PILE ELEVATION
(STAGE 1)
ABUTMENT NOT SHOWN FOR CLARITY



A1317E

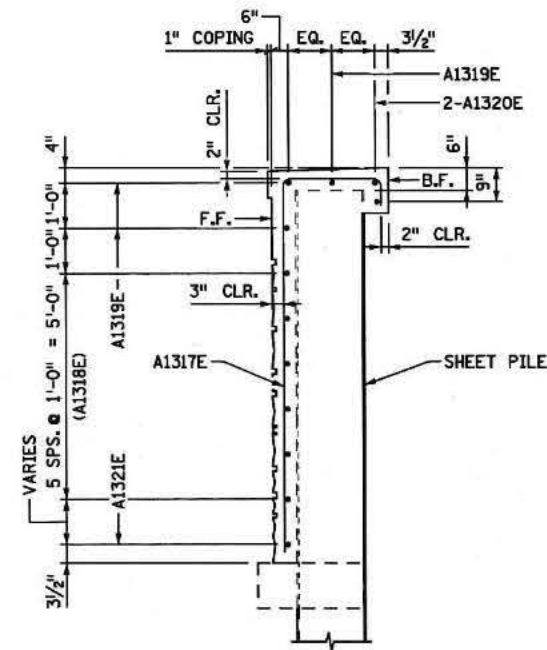
BILL OF REINFORCEMENT FOR NORTHWEST WINGWALL

BAR	NO.	LENGTH	SHAPE	LOCATION
A1317E	1 SET OF 21	4'-6" TO 10'-11"	U	NW WINGWALL VERT.
A1318E	1 SET OF 6	3'-5" TO 19'-0"	—	NW WINGWALL HORIZ.
A1319E	3	20'-6"	—	NW WINGWALL HORIZ.
A1320E	2	21'-3"	—	NW WINGWALL HORIZ.
A1321E	1	21'-6"	—	NW WINGWALL HORIZ.

SUMMARY OF QUANTITIES FOR NORTHWEST WINGWALL

STEEL SHEET PILING (PERMANENT)	781 SQ. FT.
WINGWALL FACADE	116 SQ. FT.
ANTI-GRAFFITI COATING	71 SQ. FT.
ARCH SURFACE FINISH (MULTI COLOR)	71 SQ. FT.
ARCH CONC. TEXTURE (COURSED STONE)	71 SQ. FT.
STRUCTURAL CONCRETE (3Y43)	6 CU. YD.
REINFORCEMENT BARS (EPOXY COATED)	240 POUND
SHEAR STUDS	19 EACH
1/2" POLYSTYRENE TYPE B	22 SQ. FT.

- ① PAYMENT SHALL BE CONSIDERED INCIDENTAL TO PAY ITEM "WINGWALL FACADE".
- ② PAYMENT SHALL BE CONSIDERED INCIDENTAL TO PAY ITEM "STEEL SHEET PILING (PERMANENT)".



SECTION T-T

NOTES:

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

CERTIFIED BY Angel M. Staples 2/1/13
LICENSED PROFESSIONAL ENGINEER DATE
NAME: ANGEL M. STAPLES LIC. NO. 41656

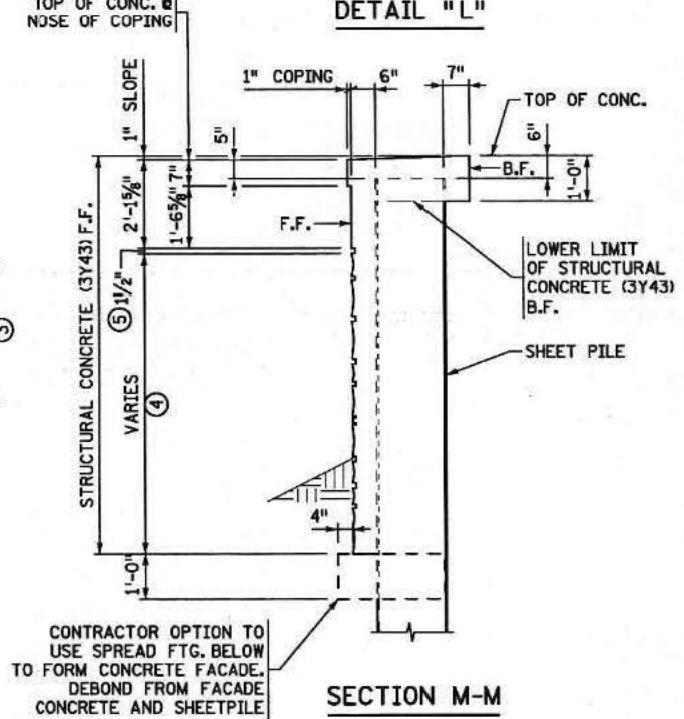
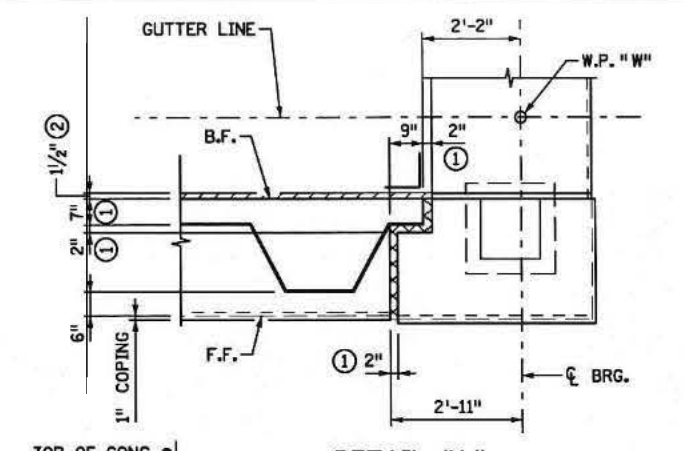
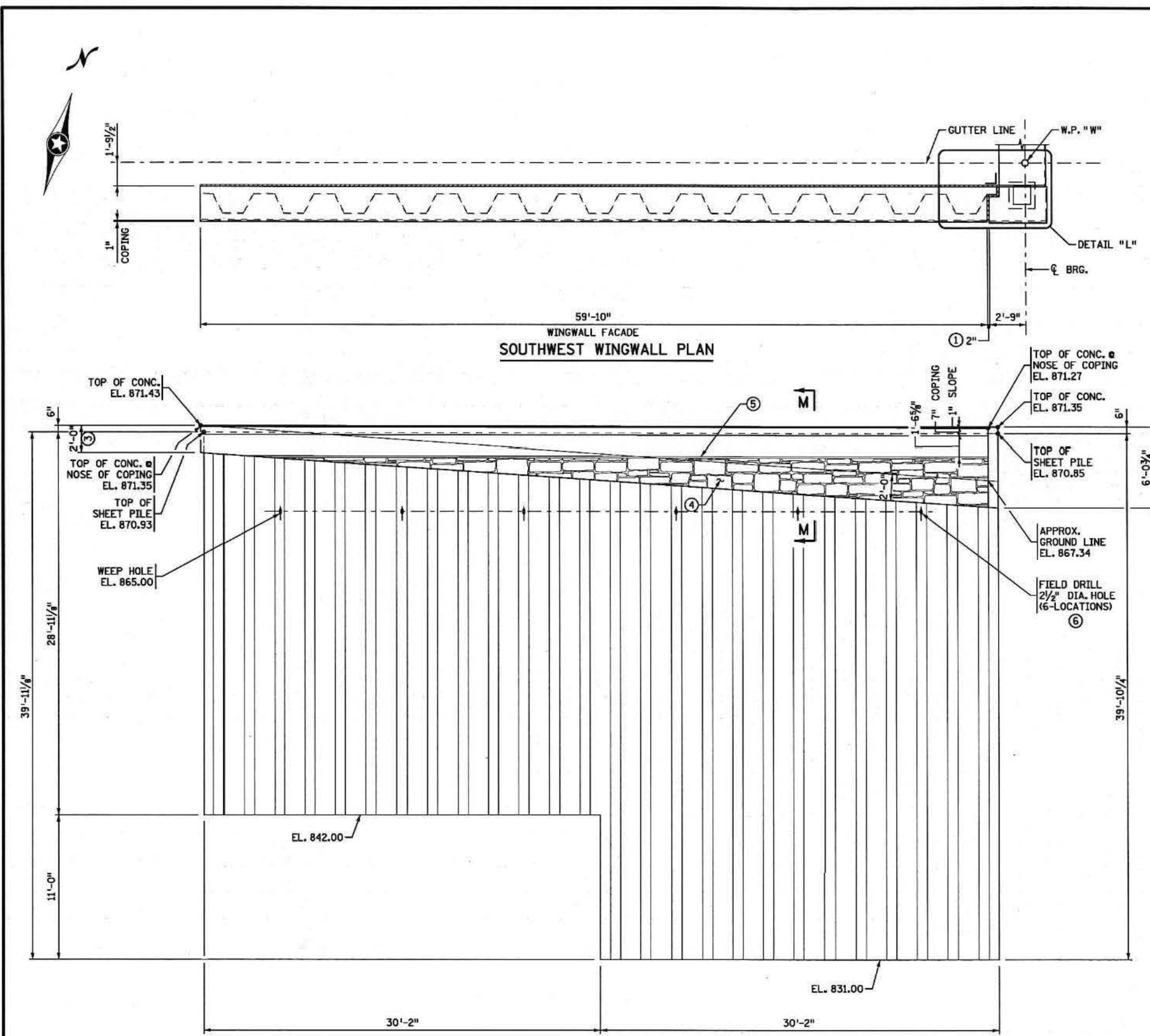
TITLE: **NORTHWEST WINGWALL REINFORCEMENT**

DES: MDH DR: TKB APPROVED: 2/1/13
CHK: NJV CHK: DCH
SHEET NO. 15 OF 68 SHEETS

BRIDGE NO. 62037

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CONTRACTOR OPTION TO USE SPREAD FTG. BELOW TO FORM CONCRETE FACADE. DEBOND FROM FACADE CONCRETE AND SHEETPILE

NOTES:

- ① 2" POLYSTYRENE TYPE A.
 - ② 1/2" POLYSTYRENE TYPE B.
 - ③ STRUCTURAL CONCRETE (3Y43).
 - ④ ARCHITECTURAL CONCRETE TEXTURE (COURSED STONE). ARCHITECTURAL SURFACE FINISH (MULTI COLOR). ANTI-GRAFFITI COATING.
 - ⑤ SEE DETAIL "H" ON SHEET NO. 9 FOR REVEAL.
 - ⑥ DRIVE SHEET PILE 8'-0" AND CONSTRUCT 2 1/2" DIA. WEEP HOLES @ 10'-0" MAX O.C. AT LOCATION SHOWN ON ELEVATION VIEW.
- F.F. - DENOTES FRONT FACE.
B.F. - DENOTES BACK FACE

DESIGN CRITERIA:

SHEET PILE MINIMUM EFFECTIVE SECTION MODULUS
 = 33.18 IN³/FT. FOR A-328 STEEL F_y = 39 ksi
 = 25.53 IN³/FT. FOR A-572 STEEL F_y = 50 ksi

SHEET PILE MINIMUM MOMENT OF INERTIA
 = 155.91⁴/FT.

DURING CONSTRUCTION A MAXIMUM EXCAVATION LIMIT OF 3'-0" BELOW FINAL GROUND LINE IS REQUIRED AT ALL TIMES.

SOUTHWEST WINGWALL ELEVATION

SHEET PILE ELEVATION
 (STAGE 2)
 ABUTMENT NOT SHOWN FOR CLARITY

CERTIFIED BY Angel M. Staples 2/1/13
 LICENSED PROFESSIONAL ENGINEER DATE
 NAME: ANGEL M. STAPLES LIC. NO. 41656

TITLE: **SOUTHWEST WINGWALL GEOMETRICS**

DES: MDH	DR: TKB	APPROVED: 2/1/13
CHK: NJV	CHK: DCH	
SHEET NO. 16 OF 68 SHEETS		

BRIDGE NO. 62037

FILENAME: IP_PWP-d148947-br62037_sfr.dgn

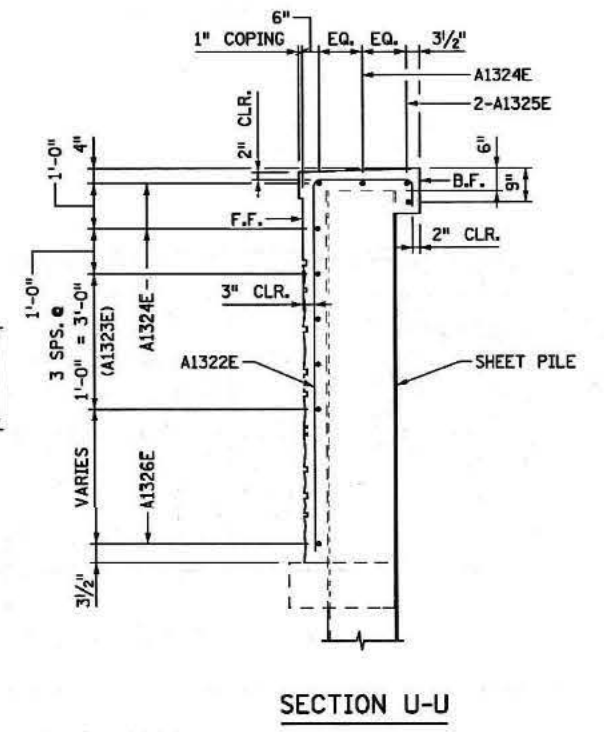
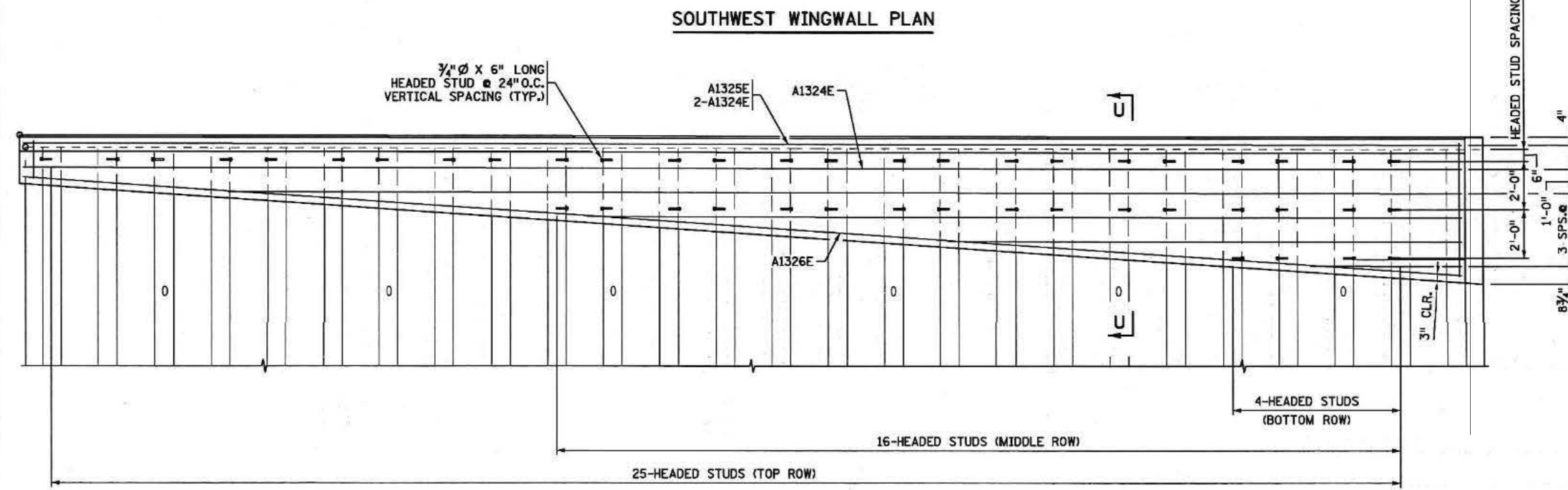
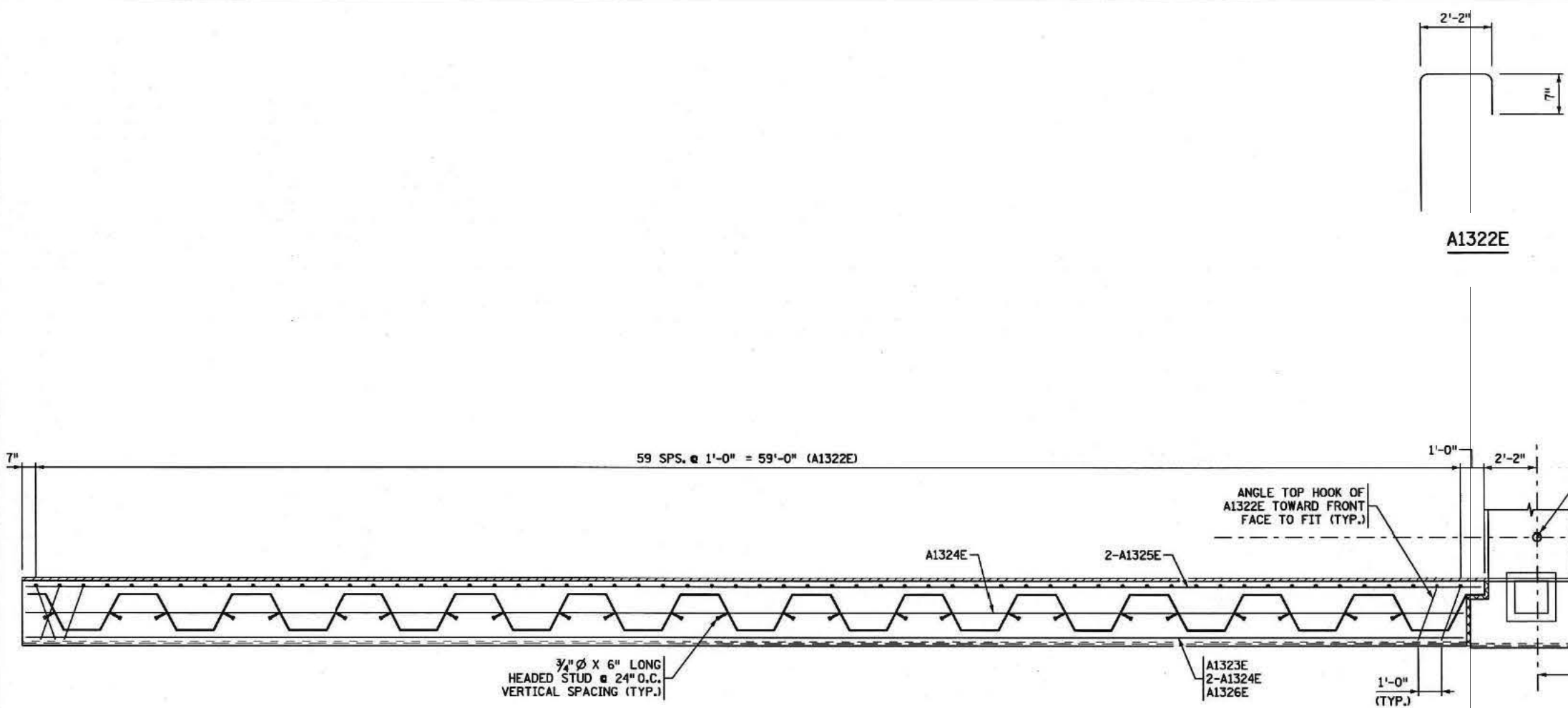
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BILL OF REINFORCEMENT FOR SOUTHWEST WINGWALL				
BAR	NO.	LENGTH	SHAPE	LOCATION
A1322E	1 SET OF 60	4'-3" TO 8'-3"		SW WINGWALL VERT.
A1323E	1 SET OF 4	6'-0" TO 51'-0"		SW WINGWALL HORIZ.
A1324E	3	59'-6"		SW WINGWALL HORIZ.
A1325E	2	60'-0"		SW WINGWALL HORIZ.
A1326E	1	59'-7"		SW WINGWALL HORIZ.

SUMMARY OF QUANTITIES FOR SOUTHWEST WINGWALL	
STEEL SHEET PILING (PERMANENT)	2075 SQ. FT.
WINGWALL FACADE	240 SQ. FT.
ANTI-GRAFFITI COATING	107 SQ. FT.
ARCH SURFACE FINISH (MULTI COLOR)	107 SQ. FT.
ARCH CONC. TEXTURE (COURSED STONE)	107 SQ. FT.
STRUCTURAL CONCRETE (3Y43)	12 CU. YD.
REINFORCEMENT BARS (EPOXY COATED)	570 POUND
SHEAR STUDS	45 EACH
1/2" POLYSTYRENE TYPE B	61 SQ. FT.

- ① PAYMENT SHALL BE CONSIDERED INCIDENTAL TO PAY ITEM "WINGWALL FACADE".
- ② PAYMENT SHALL BE CONSIDERED INCIDENTAL TO PAY ITEM "STEEL SHEET PILING (PERMANENT)".

NOTES:
F.F. - DENOTES FRONT FACE.
B.F. - DENOTES BACK FACE



SOUTHWEST WINGWALL ELEVATION

SHEET PILE ELEVATION (STAGE 2)
ABUTMENT NOT SHOWN FOR CLARITY

CERTIFIED BY *Angel M. Staples* 2/1/13
LICENSED PROFESSIONAL ENGINEER DATE
NAME: ANGEL M. STAPLES LIC. NO. 41656

TITLE: SOUTHWEST WINGWALL REINFORCEMENT

DES: MDH DR: TKB
CHK: NJV CHK: DCH
APPROVED: 2/1/13
SHEET NO. 17 OF 68 SHEETS

BRIDGE NO. 62037

FILENAME: IP_P\WP\148947\br62037_sfr.dgn
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TIME: 9:26:31 AM
 PLOTTED: 01-FEB-2013

EAST ABUTMENT REQUIRED NOMINAL PILE BEARING RESISTANCE R_n - TONS/PILE		
FIELD CONTROL METHOD	ϕ dyn	* R_n
MN/DOT NOMINAL RESISTANCE FORMULA	0.40	182.8
PDA	0.65	112.5

* $R_n = (\text{FACTORED DESIGN LOAD}) / \phi_{\text{dyn}}$

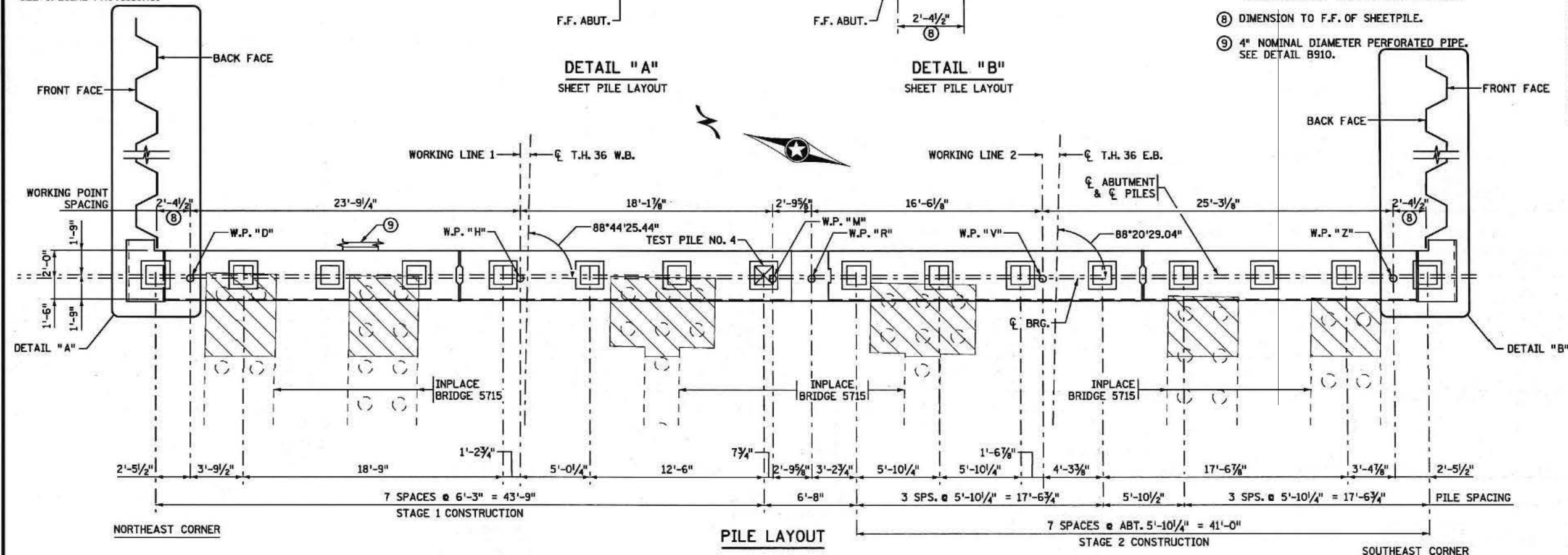
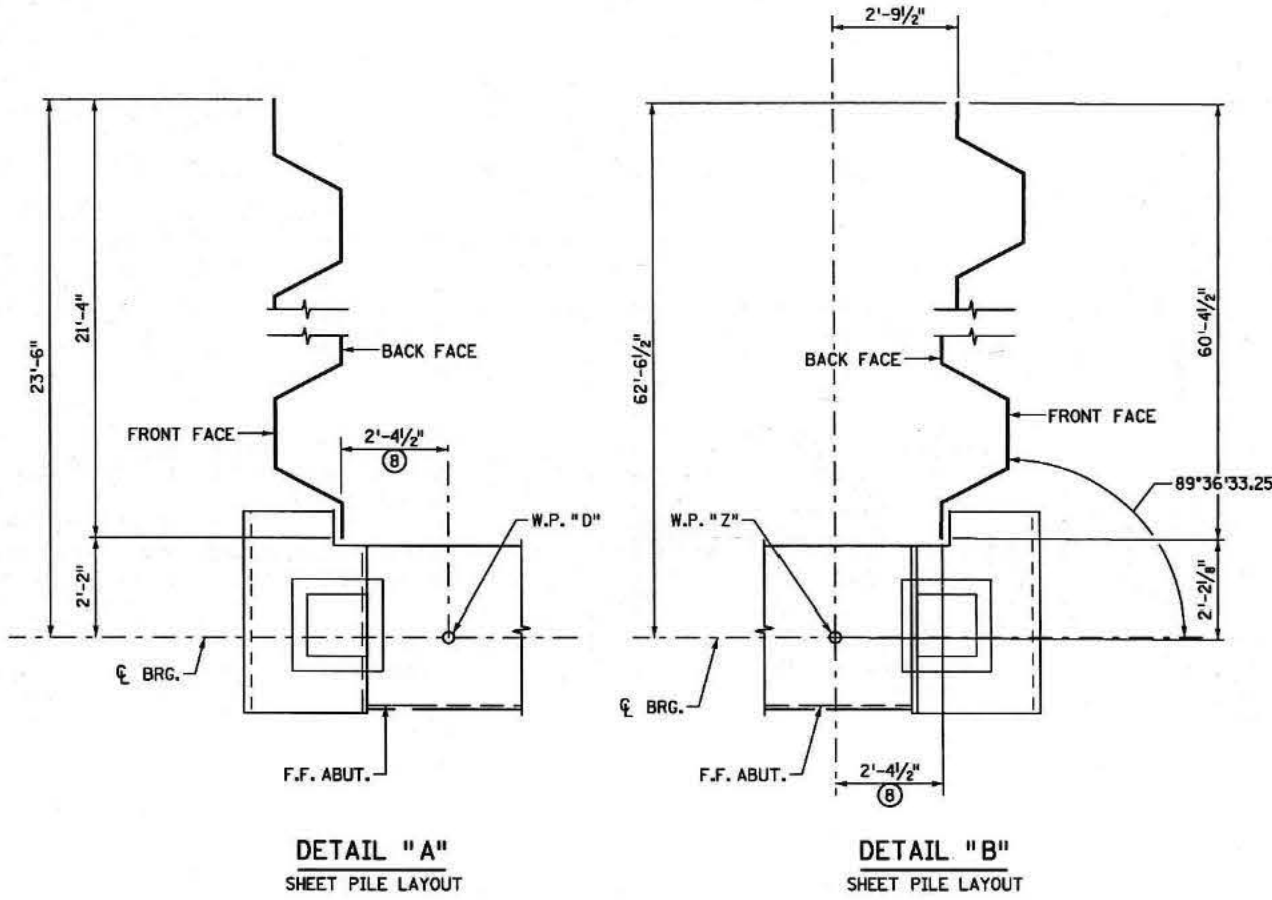
EAST ABUTMENT COMPUTED PILE LOAD - TONS/PILE	
FACTORED DEAD LOAD + EARTH PRESSURE	48.0
FACTORED LIVE LOAD	25.1
*FACTORED DESIGN LOAD	73.1

*BASED ON STRENGTH I LOAD COMBINATION

PILE NOTES

- 1 16" SQUARE PRECAST CONC. TEST PILES 65 FT. LONG
- 7 16" SQUARE PRECAST CONC. PILES EST. LENGTH 65 FT.
- 8 16" SQUARE PRECAST CONC. PILES REQ'D FOR EAST ABUTMENT-STAGE 1.
- 8 16" SQUARE PRECAST CONC. PILES EST. LENGTH 65 FT.
- 8 16" SQUARE PRECAST CONC. PILES REQ'D FOR EAST ABUTMENT-STAGE 2.

PILE SPACING SHOWN IS AT BOTTOM OF ABUTMENT.
 FOR PILE DETAILS SEE SHEET "SQUARE PRESTRESSED CONCRETE PILE DETAILS."
 PILES SHALL BE DRIVEN WITHIN SPECIFIED TOLERANCES. SEE SPECIAL PROVISIONS.



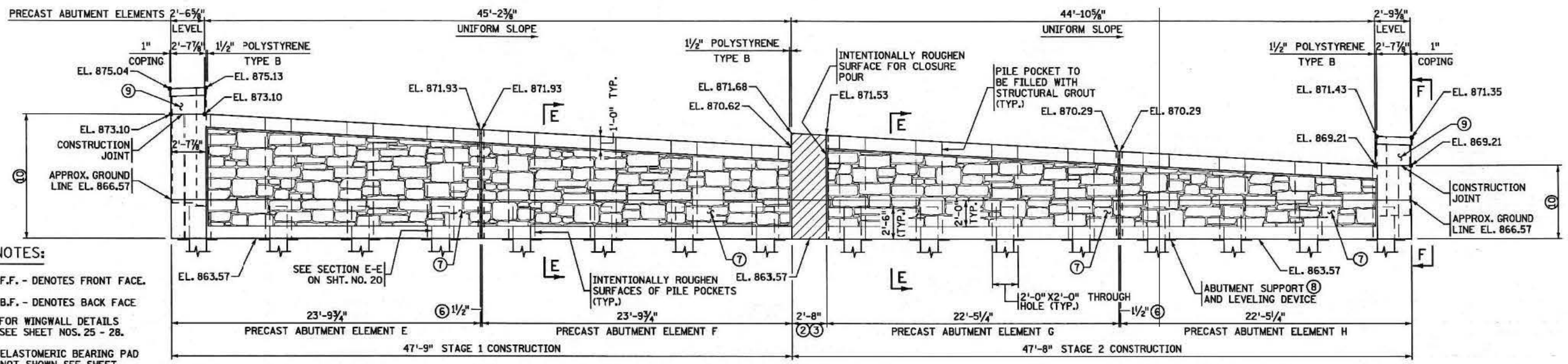
SUMMARY OF QUANTITIES FOR EAST ABUTMENT				
ITEM	UNIT	STAGE 1	STAGE 2	TOTAL
PRECAST ABUTMENT ELEMENT	EACH	2	2	4
STRUCTURAL CONCRETE (3Y43)	CU. YD.	43	35	78
STRUCTURAL GROUT	CU. YD.	9	7	16
ANTI-GRAFFITI COATING	SQ. FT.	283	203	486
ARCH SURFACE FINISH (MULTI COLOR)	SQ. FT.	283	203	486
ARCH CONC TEXTURE (COURSED STONE)	SQ. FT.	283	203	486
REINFORCEMENT BARS (EPOXY COATED)	POUND	4100	3870	7970
ANCHORAGES TYPE REINF BARS (STAINLESS STEEL)	EACH	52	52	104
GROUTED REINFORCEMENT BARS	EACH	23	23	46
16" SQUARE PRECAST CONCRETE PILING DELIVERED	LIN. FT.	455	520	975
16" SQUARE PRECAST CONCRETE PILING DRIVEN	LIN. FT.	455	520	975
16" SQUARE PRECAST CONCRETE TEST PILE 65 FT LONG	EACH	1	-	1
PILE REDRIVING	EACH	1	-	1
PILE ANALYSIS	EACH	1	-	1
MEMBRANE WATERPROOFING SYSTEM	LIN. FT.	18	28	46
2" POLYSTYRENE TYPE A	SQ. FT.	32	21	53
1 1/2" POLYSTYRENE TYPE B	SQ. FT.	8	8	16

- ① DOES NOT INCLUDE TEST PILES.
 ② PAYMENT SHALL BE CONSIDERED INCIDENTAL TO PAY ITEM "PRECAST ABUTMENT ELEMENT".
 ③ 42 CU. YD. (STAGE 1) AND 31 CU. YD. (STAGE 2) SHALL BE CONSIDERED INCIDENTAL TO PAY ITEM "PRECAST ABUTMENT ELEMENT".
 ④ 1 CU. YD. (STAGE 1) AND 4 CU. YD. (STAGE 2) SHALL BE INCLUDED IN PRICE BID "STRUCTURAL CONCRETE (3Y43)".
 ⑤ 4070 POUNDS (STAGE 1) AND 3710 POUNDS (STAGE 2) SHALL BE CONSIDERED INCIDENTAL TO PAY ITEM "PRECAST ABUTMENT ELEMENT".
 ⑥ 30 POUNDS (STAGE 1) AND 160 POUNDS (STAGE 2) SHALL BE INCLUDED IN PRICE BID "REINFORCEMENT BARS (EPOXY COATED)".
 ⑦ NOT INCLUDED IN PAY ITEM "REINFORCEMENT BARS (EPOXY COATED)".
 ⑧ DIMENSION TO F.F. OF SHEETPILE.
 ⑨ 4" NOMINAL DIAMETER PERFORATED PIPE. SEE DETAIL B910.
- NOTES:**
- DENOTES NEW PRECAST PILE
 - DENOTES NEW PRECAST TEST PILE
 - DENOTES INPLACE TIMBER PILES.
 - F.F. - DENOTES FRONT FACE.
 - B.F. - DENOTES BACK FACE
 - FOR WINGWALL DETAILS SEE SHEET NOS. 25 - 28.
 - ALL PORTIONS OF SUBSTRUCTURES, INCLUDING PILING AND MINOR OBSTRUCTIONS, SHALL BE COMPLETELY REMOVED WHEN THEY INTERFERE WITH NEW STRUCTURE PER MnDOT SPEC. 2442. PAYMENT SHALL BE CONSIDERED INCIDENTAL TO ITEM "REMOVE EXISTING BRIDGE." PAYMENT FOR THE DISPOSAL OF THE INPLACE TIMBER PILES SHALL BE PAID FOR UNDER ITEM "REMOVE REGULATED WASTE MATERIAL (BRIDGE)".

CERTIFIED BY <i>Angel M. Staples</i> 2/1/13 LICENSED PROFESSIONAL ENGINEER DATE	TITLE: EAST ABUTMENT GEOMETRICS	DES: MDH DR: TKB CHK: NJV CHK: DCH	APPROVED: 2/1/13	BRIDGE NO. 62037
NAME: ANGEL M. STAPLES LIC. NO. 41656		SHEET NO. 18 OF 68 SHEETS		

FILE NAME: IP_PWP-d1489447-b62037_sfr.dgn

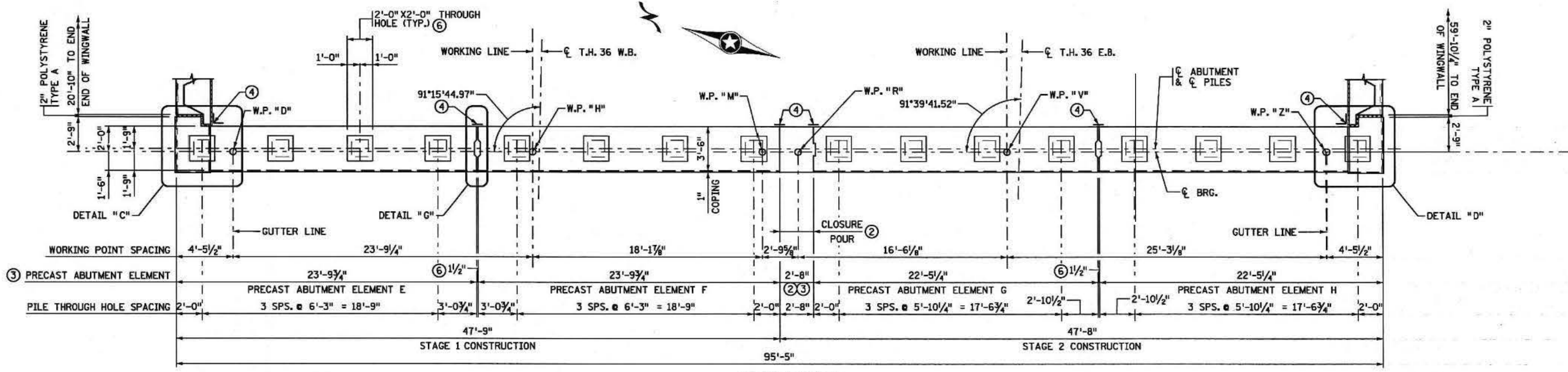
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PATH & FILE NAME: Bridge/Final_Design/16/62037/Cadd-Plan/br62037_sfr



ELEVATION VIEW 5

NOTES:

- F.F. - DENOTES FRONT FACE.
- B.F. - DENOTES BACK FACE.
- FOR WINGWALL DETAILS SEE SHEET NOS. 25 - 28.
- ELASTOMERIC BEARING PAD NOT SHOWN. SEE SHEET NO. 52 FOR DETAILS.
- SEE SHEET NO. 20 FOR DETAIL "C".
- SEE SHEET NO. 20 FOR DETAIL "D".
- SEE SHEET NO. 20 FOR DETAIL "G".
- SEE SHEET NO. 20 FOR SECTION E-E.
- SEE SHEET NO. 20 FOR VIEW F-F.



PLAN VIEW 1

NOTES:

- 1 SEE SHEET NO. 3 FOR PRECAST ABUTMENT ELEMENT NOTES.
- 2 CLOSURE POUR TO OCCUR @ END OF STAGE 2 CONSTRUCTION BEFORE BEAM PLACEMENT. CLOSURE POUR TO BE 3'-7" WIDTH FULL HEIGHT X 2'-8" IN LENGTH.
- 3 STRUCTURAL CONCRETE (3Y43).
- 4 MEMBRANE WATERPROOFING SYSTEM PER MNDOT SPEC. 2481.3B & 2'-0" WIDE GEOTEXTILE TYPE II PER MNDOT SPEC. 3733.
- 5 ELEVATIONS SHOWN TO BE TO THE TOP OF CONCRETE.
- 6 FILL WITH STRUCTURAL GROUT. SEE SPECIAL PROVISIONS.
- 7 ARCHITECTURAL CONCRETE TEXTURE (COURSED STONE) ARCHITECTURAL SURFACE FINISH (MULTI COLOR) ANTI-GRAFFITI COATING
- 8 ABUTMENT TO BE TEMPORARILY SUPPORTED BY TEMPORARY SUPPORT COLLARS OR OTHER APPROVED METHOD OF TEMPORARY SUPPORT.
- 9 CAST-IN-PLACE PARAPET. SEE SHEET NO. 20 FOR DETAILS.
- 10 SEE "PRECAST ABUTMENT ELEMENT HEIGHTS" TABLE ON SHEET NO. 20.

SEE SPECIAL PROVISIONS FOR TOLERANCES ON PRECAST ELEMENTS.

CERTIFIED BY *Angel M. Staples* 2/1/13
 LICENSED PROFESSIONAL ENGINEER DATE
 NAME: ANGEL M. STAPLES LIC. NO. 41656

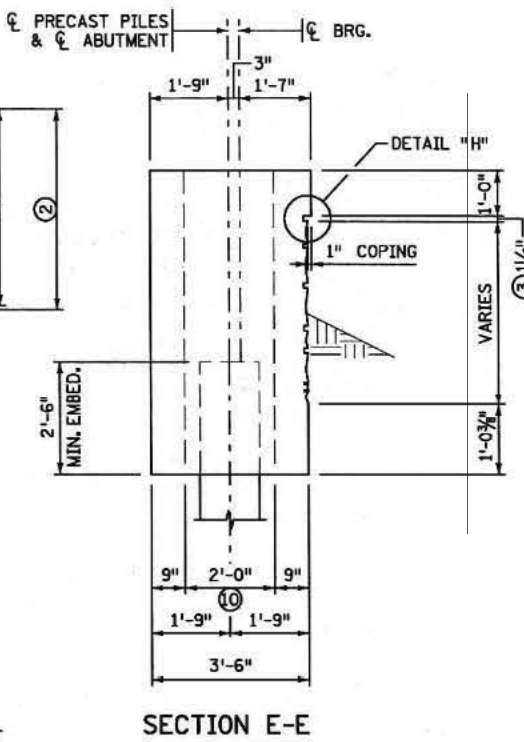
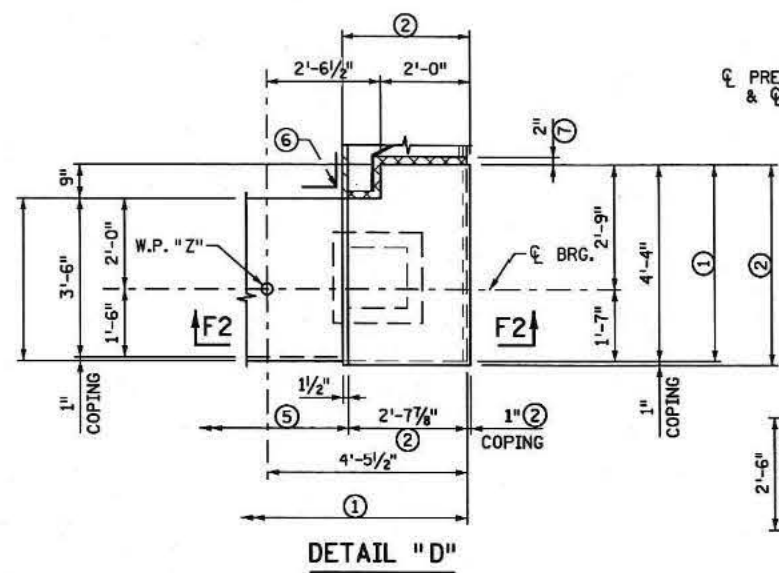
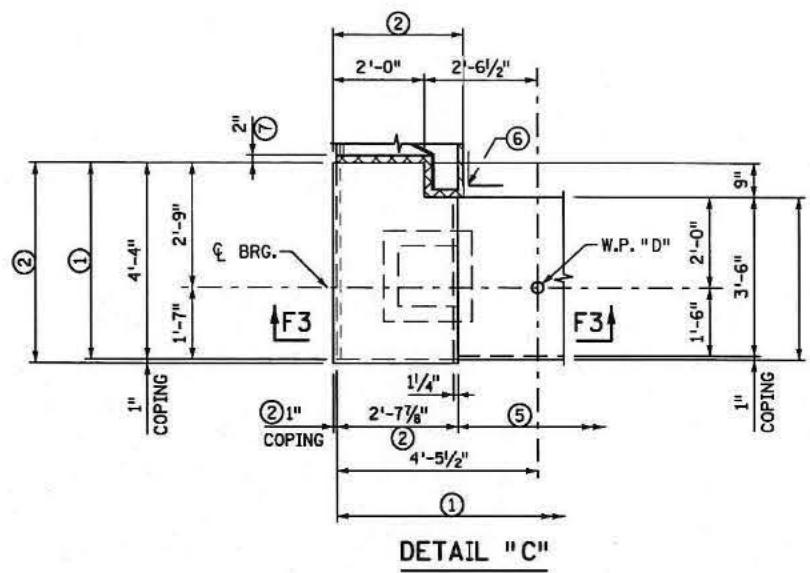
TITLE: EAST ABUTMENT GEOMETRICS

DES: MDH	DR: TKB	APPROVED: 2/1/13
CHK: NJV	CHK: DCH	

BRIDGE NO. 62037
 SHEET NO. 19 OF 68 SHEETS

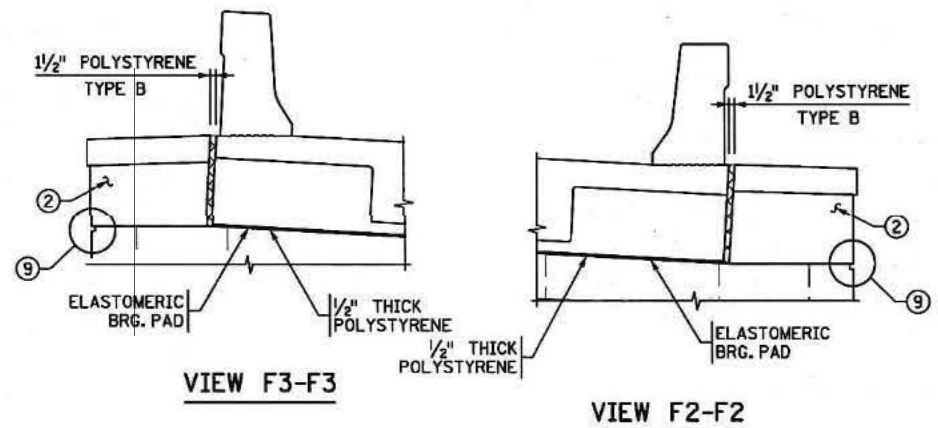
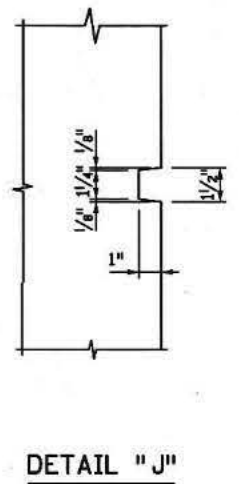
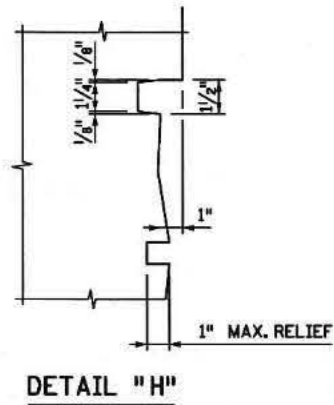
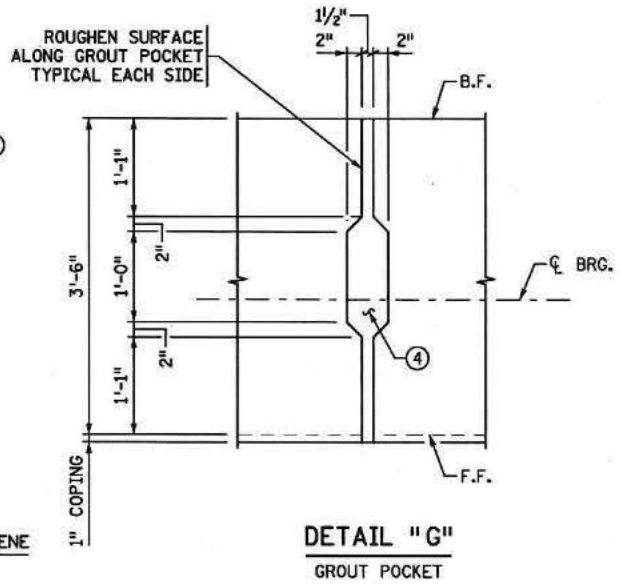
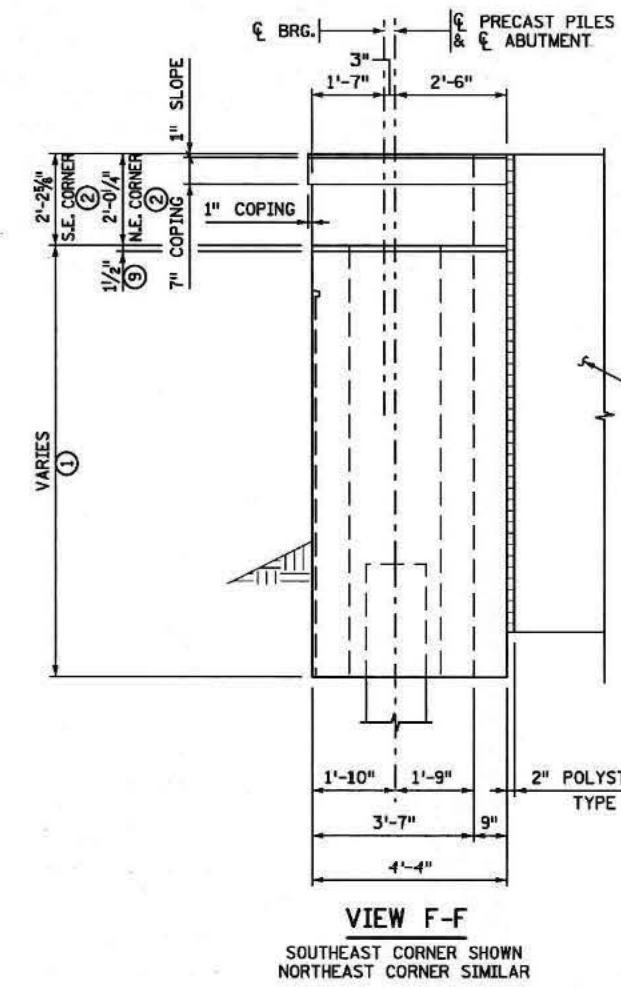
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PLOTTED: 01-FEB-2013
PATH & FILENAME: Bridge/Final_Design/6/62037/Cadd-Plan/br62037_sfr



PRECAST ABUTMENT ELEMENT HEIGHTS		
ABUTMENT ELEMENT I.D.	LOWER HEIGHT	UPPER HEIGHT
A	8'-4 ³ / ₈ "	9'-6 ³ / ₈ "
B	7'-0 ³ / ₈ "	8'-4 ³ / ₈ "
C	6'-8 ³ / ₈ "	7'-11 ¹ / ₂ "
D	5'-7 ¹ / ₂ "	6'-8 ³ / ₈ "

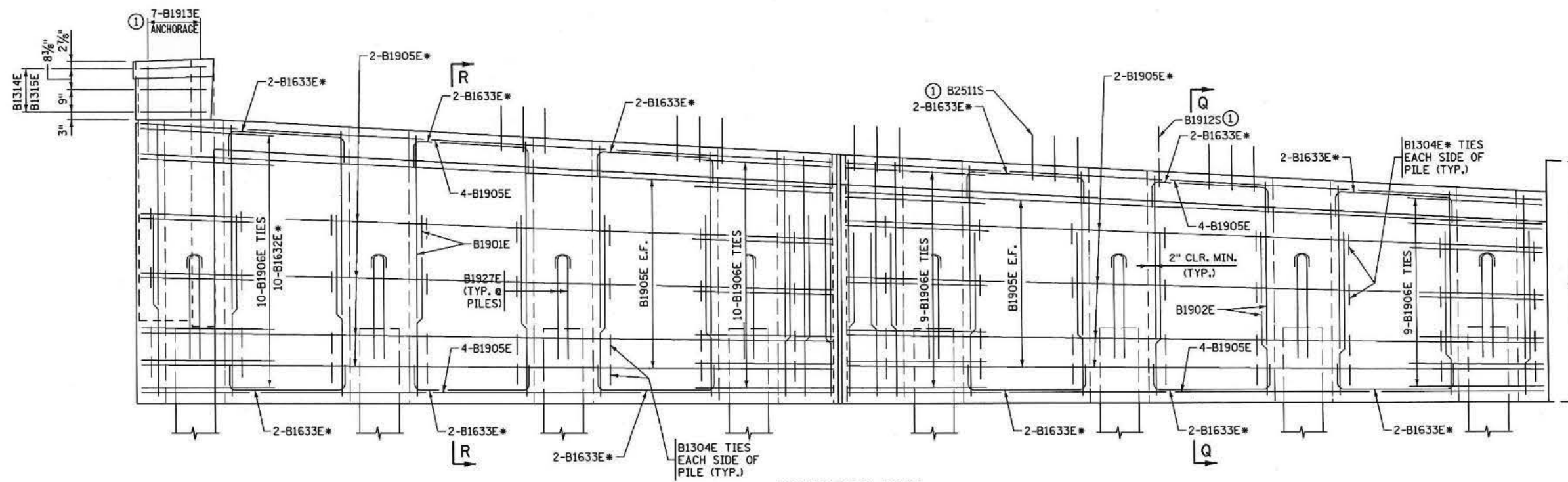
- NOTES:**
- PRECAST ABUTMENT ELEMENT STRUCTURAL CONCRETE (3Y43).
 - PARAPET CAST-IN-PLACE STRUCTURAL CONCRETE (3Y43).
 - SEE DETAIL "H" FOR REVEAL AT ABUTMENT FRONT FACE.
 - FILL WITH STRUCTURAL GROUT. SEE SPECIAL PROVISIONS.
 - ARCHITECTURAL CONCRETE TEXTURE (COURSED STONE) ARCHITECTURAL SURFACE FINISH (MULTI COLOR) ANTI-GRAFFITI COATING.
 - MEMBRANE WATERPROOFING SYSTEM.
 - 2" POLYSTYRENE TYPE A.
 - WINGWALL FACADE SEE SHEET NOS. 25 - 28.
 - SEE DETAIL "J" FOR REVEAL AT CORNERS.
 - 2'-0" X 2'-0" THROUGH HOLE FILLED WITH STRUCTURAL GROUT (TYP. FOR ALL PILES).
 - SEE "ABUTMENT PRECAST ELEMENT HEIGHTS" TABLE.
- F.F. - DENOTES FRONT FACE.
B.F. - DENOTES BACK FACE



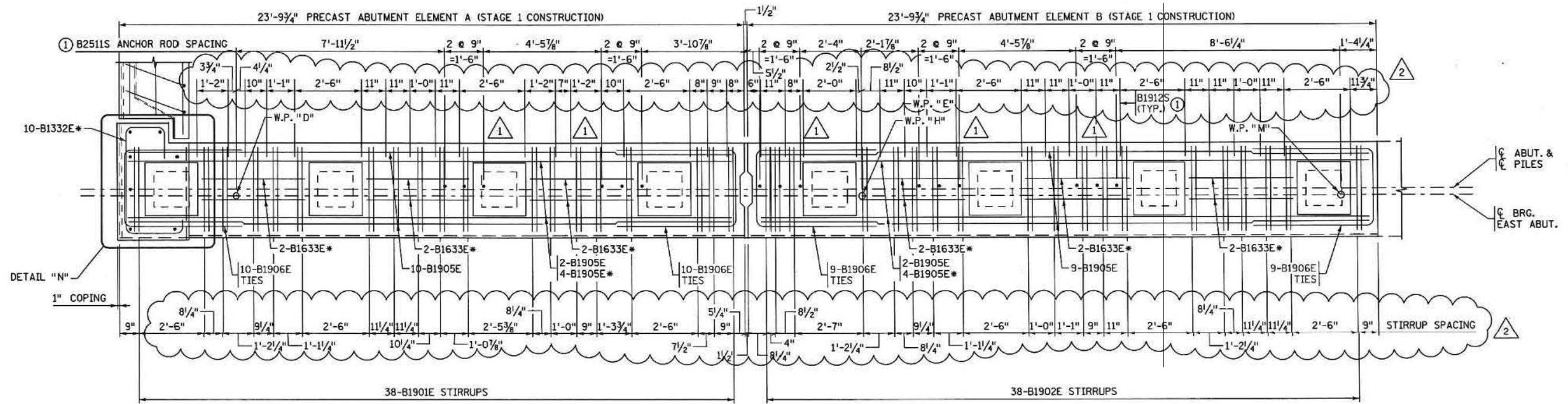
CERTIFIED BY <i>Angel M. Staples</i> 2/1/13 LICENSED PROFESSIONAL ENGINEER NAME: ANGEL M. STAPLES LIC. NO. 41656	TITLE: EAST ABUTMENT GEOMETRICS	DES: MDH DR: TKB CHK: NJV CHK: DCH	APPROVED: <i>2/1/13</i>	BRIDGE NO. 62037
		SHEET NO. 20 OF 68 SHEETS		

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TIME: 2:51:21 PM
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ELEVATION VIEW



PLAN VIEW
 STAGE 1 CONSTRUCTION

NOTES:

① FIELD LOCATE B2511S, B1912S AND B1913E ANCHORAGES TO AVOID DRILLING THROUGH HORIZONTAL REBARS. SEE ANCHORAGE DETAILS. ANCHORAGES TO BE INSTALLED AFTER BEAM PLACEMENT.

*-DENOTES ADDED REINFORCEMENT. ②

SEE SHEET NO. 23 FOR DETAIL "N".
 SEE SHEET NO. 23 FOR SECTION Q-Q.
 SEE SHEET NO. 23 FOR SECTION R-R.
 F.F. - DENOTES FRONT FACE.
 B.F. - DENOTES BACK FACE.
 E.F. - DENOTES EACH FACE.

REVISION		
DATE	DESCRIPTION	APPROVED BY
5/3/13	REPOSITIONED B2511S ANCHOR RODS	AMS
5/21/13	ADDED REINFORCING FOR EASE OF FABRICATION	AMS

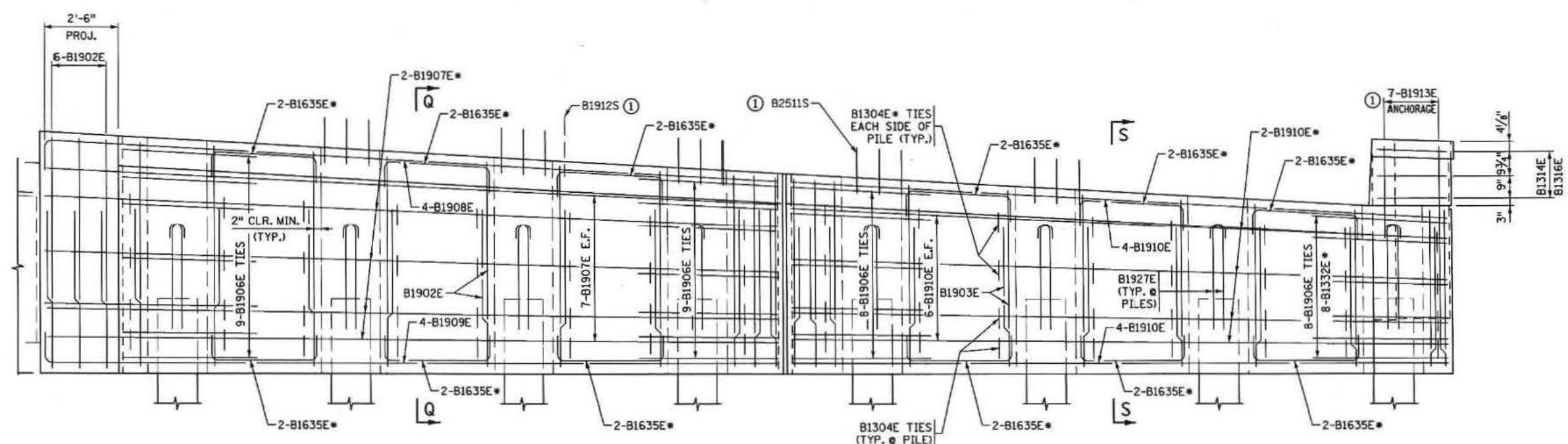
CERTIFIED BY *Angel M. Staples* 8/5/13
 LICENSED PROFESSIONAL ENGINEER DATE
 NAME: ANGEL M. STAPLES LIC. NO. 41656

TITLE: EAST ABUTMENT REINFORCEMENT

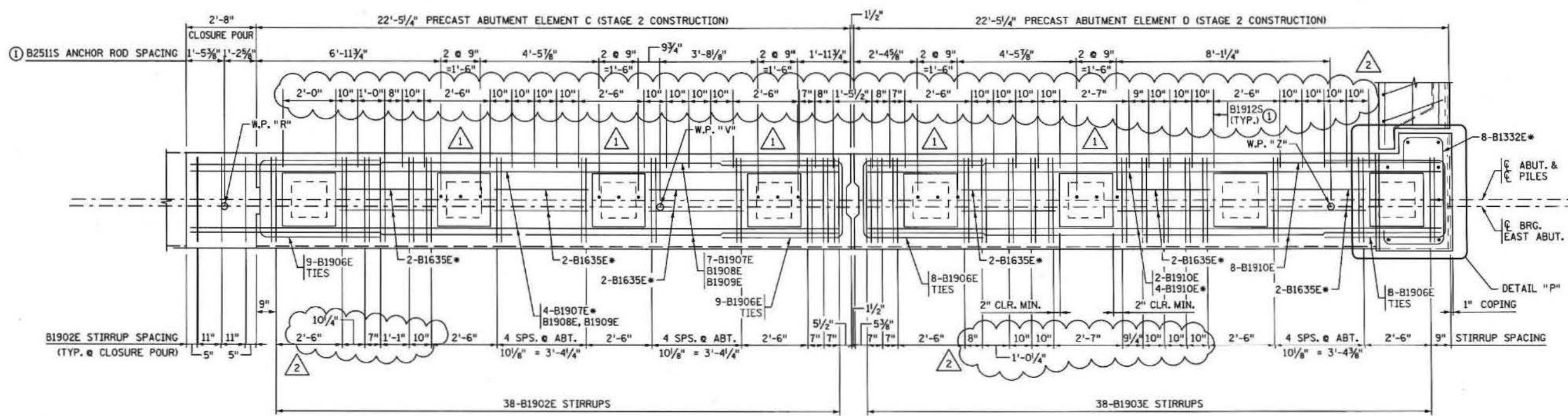
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 CHK: NJV CHK: DCH
 SHEET NO. 21R OF 68 SHEETS BRIDGE NO. 62037

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ELEVATION VIEW



PLAN VIEW
 STAGE 2 CONSTRUCTION

NOTES:
 ① FIELD LOCATE B2511S, B1912S AND B1913E ANCHORAGES TO AVOID DRILLING THROUGH HORIZONTAL REBARS. SEE ANCHORAGE DETAILS. ANCHORAGES TO BE INSTALLED AFTER BEAM PLACEMENT.
 * DENOTES ADDED REINFORCEMENT.

SEE SHEET NO. 23 FOR DETAIL "P".
 SEE SHEET NO. 23 FOR SECTION Q-Q.
 SEE SHEET NO. 23 FOR SECTION S-S.
 F.F. - DENOTES FRONT FACE.
 B.F. - DENOTES BACK FACE.
 E.F. - DENOTES EACH FACE.

REVISION		
DATE	DESCRIPTION	APPROVED BY
5/3/13	REPOSITIONED B2511S ANCHOR RODS	AMS
5/21/13	ADDED REINFORCING FOR EASE OF FABRICATION	AMS

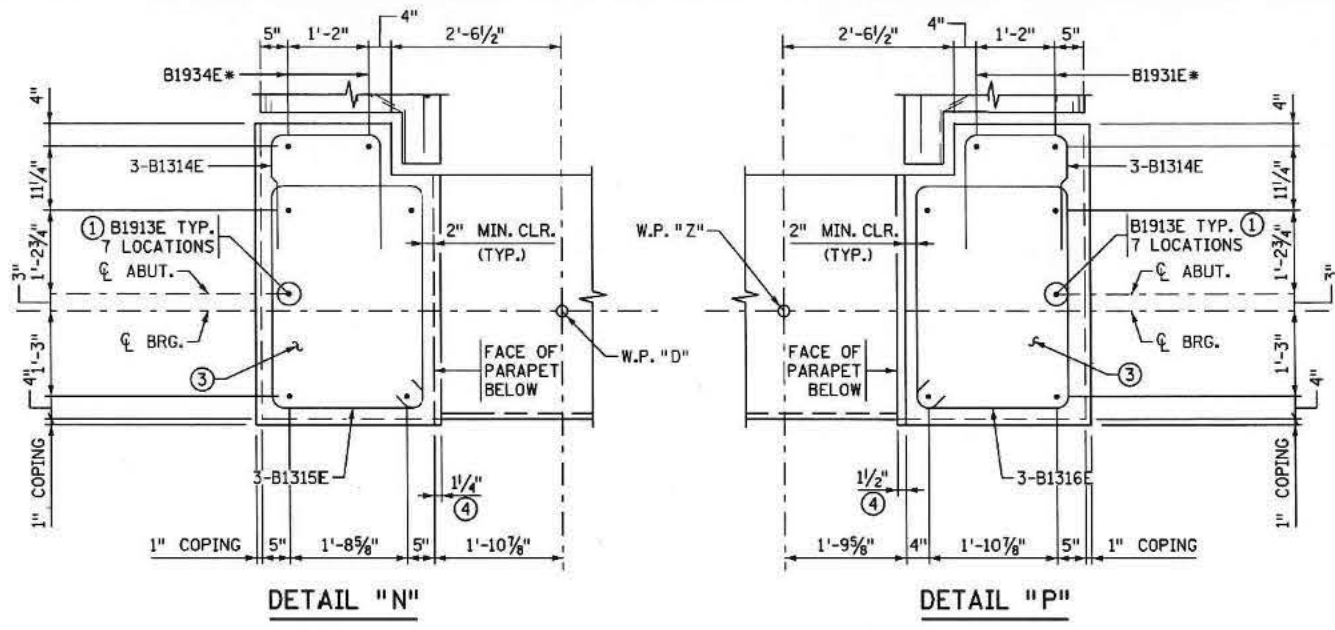
CERTIFIED BY: *Angel M. Staples* 8/5/13
 LICENSED PROFESSIONAL ENGINEER DATE
 NAME: ANGEL M. STAPLES LIC. NO. 41656

TITLE: EAST ABUTMENT REINFORCEMENT

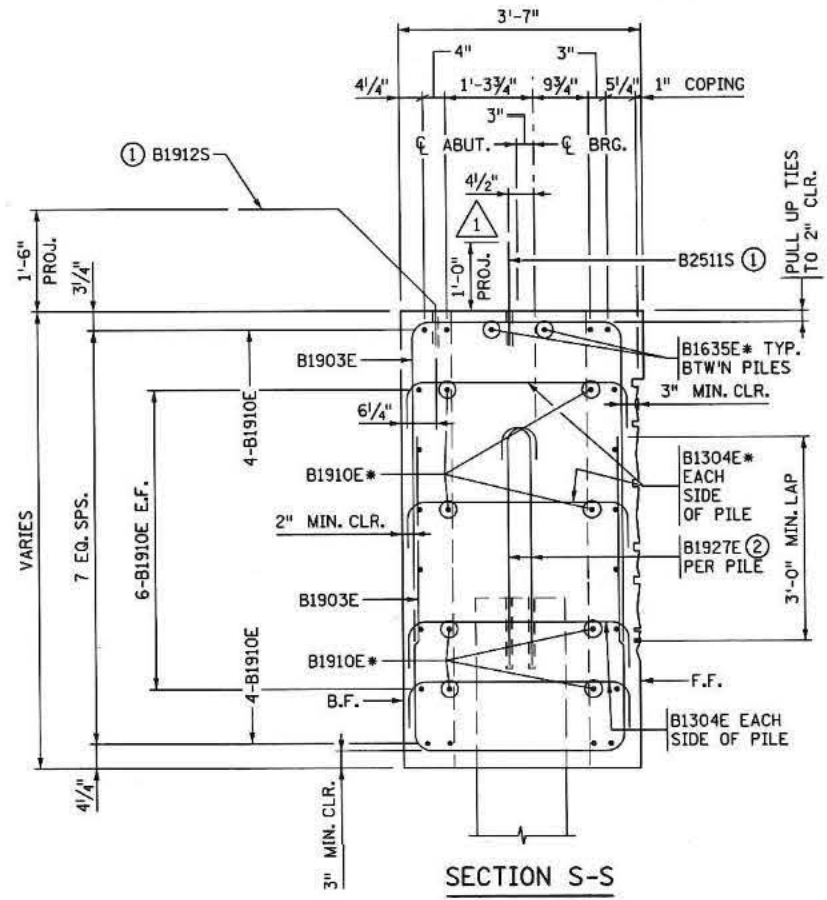
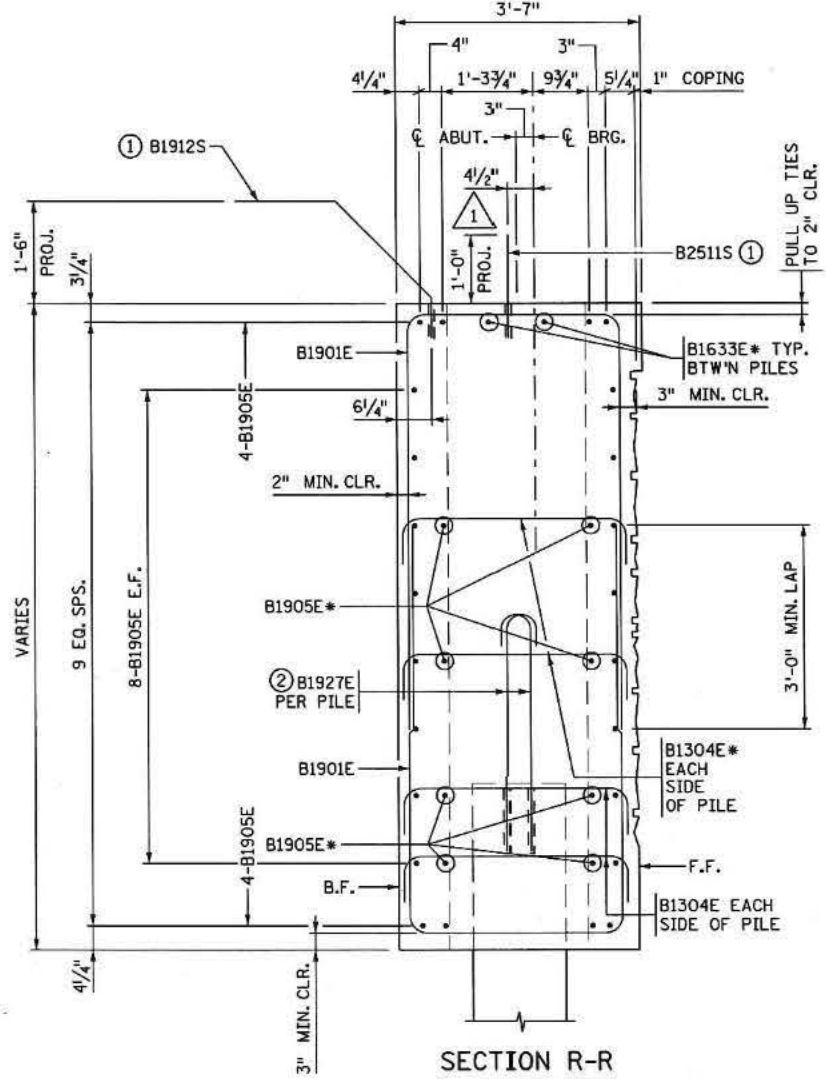
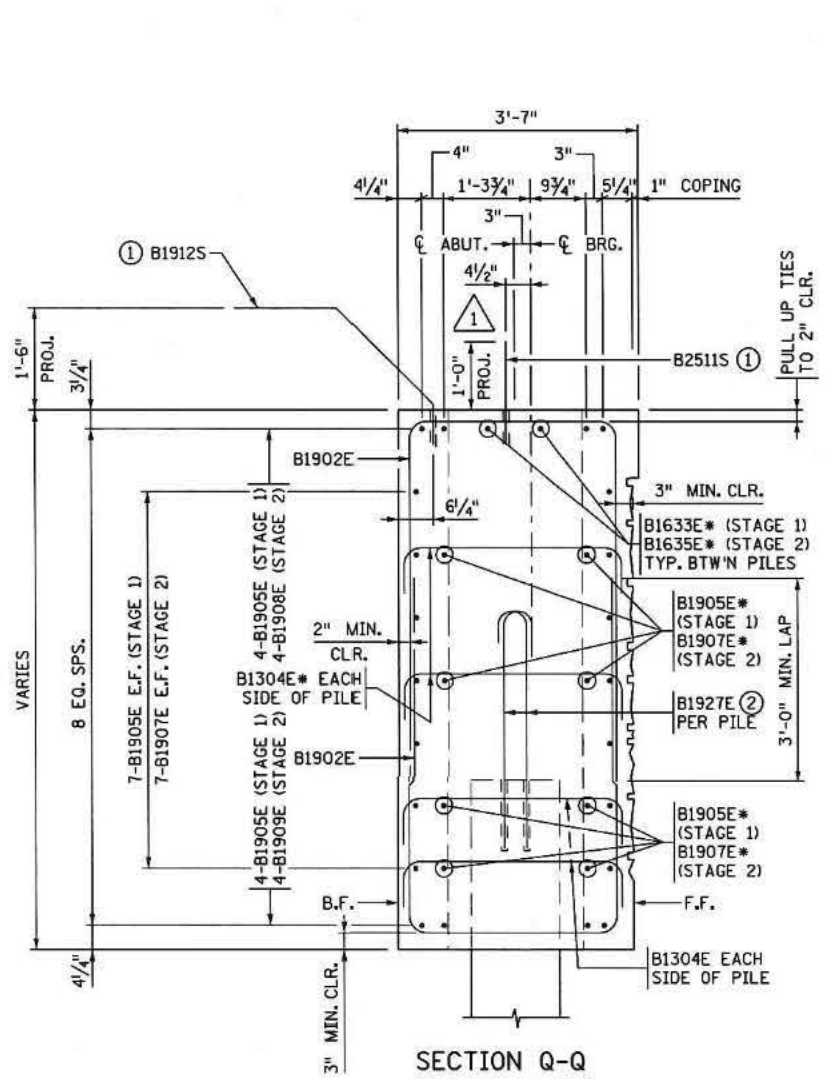
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- NOTES:**
- FIELD LOCATE B2511S, B1912S AND B1913E ANCHORAGES TO AVOID DRILLING THROUGH HORIZONTAL REBARS. SEE ANCHORAGE DETAILS. ANCHORAGES TO BE INSTALLED AFTER DECK PLACEMENT.
 - BARS TO BE FIELD DRILLED AND GROUTED WHEN PILE IS AT FINAL ELEVATION PRIOR TO ABUTMENT PLACEMENT. SEE DETAIL "V" AND ANCHORAGE DETAIL ON SHEET NO. 24.
 - CAST-IN-PLACE PARAPET.
 - SLOPED FACE OF PARAPET.
- *-DENOTES ADDED REINFORCEMENT. \triangle
- F.F. - DENOTES FRONT FACE.
 B.F. - DENOTES BACK FACE.
 E.F. - DENOTES EACH FACE.



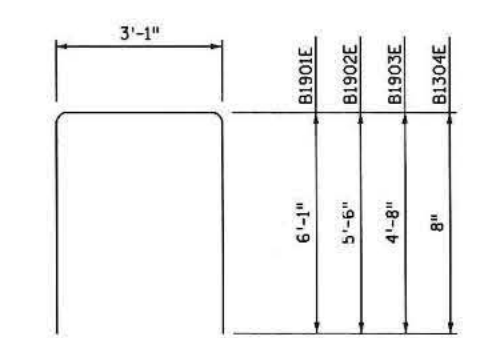
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DATE	DESCRIPTION	APPROVED BY
5/3/13	REPOSITIONED B2511S ANCHOR RODS	AMS
5/21/13	ADDED REINFORCING FOR EASE OF FABRICATION	AMS

DES: MDH	DR: TKB	APPROVED: 8/5/13	BRIDGE NO. 62037
CHK: NJV	CHK: DCH	SHEET NO. 23R OF 68 SHEETS	

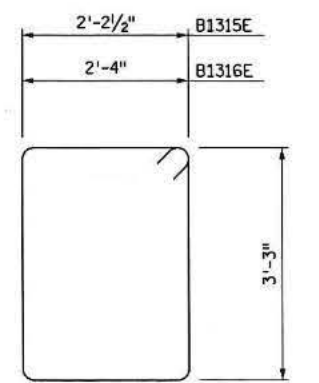
CERTIFIED BY Angel M. Staples 8/5/13
 LICENSED PROFESSIONAL ENGINEER DATE
 NAME: ANGEL M. STAPLES LIC. NO. 41656

TITLE: EAST ABUTMENT REINFORCEMENT

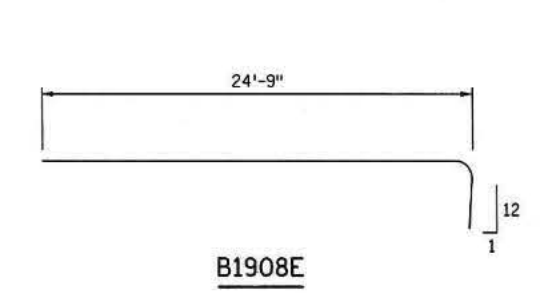
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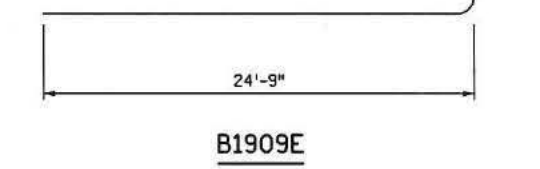
B1901E, B1902E, B1903E & B1304E



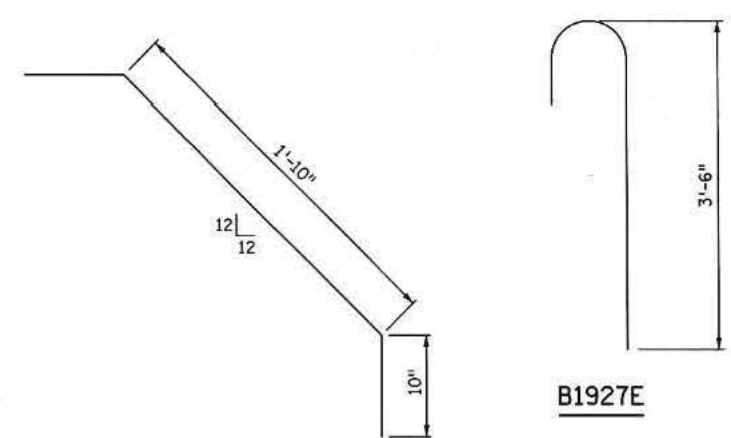
B1315E, B1316E



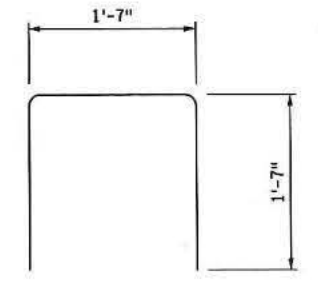
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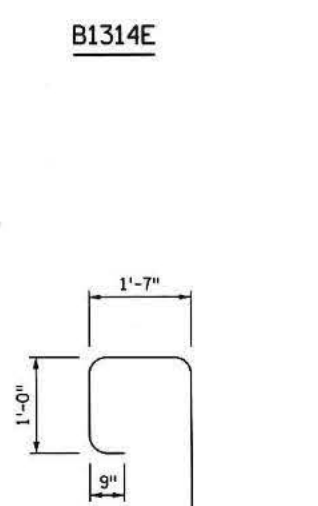
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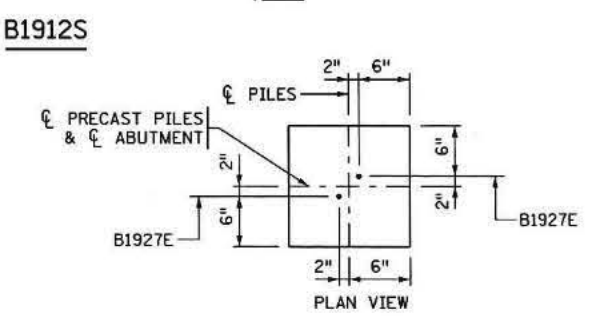
B1927E



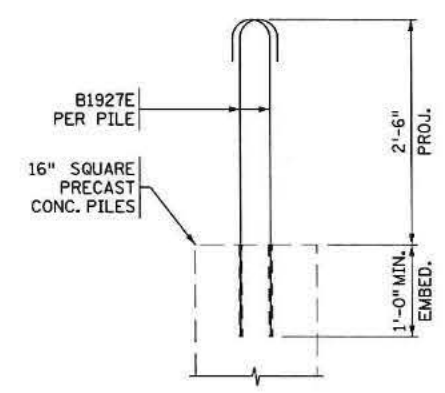
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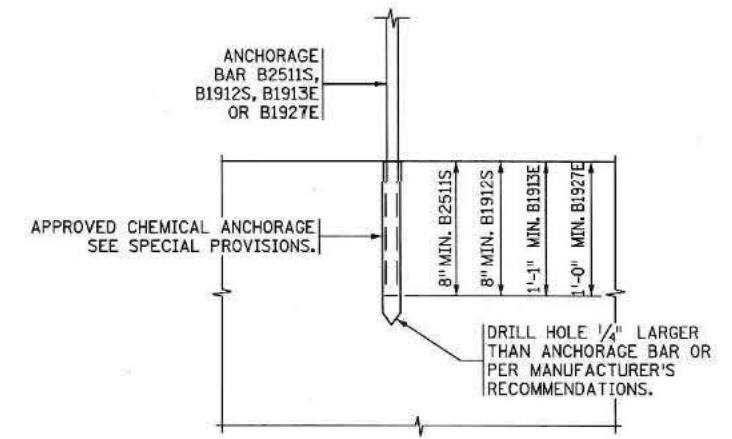
B1314E



B1912S



**DETAIL "V"
ELEVATION VIEW**



ANCHORAGE DETAIL

① BILL OF REINFORCEMENT FOR WEST ABUTMENT

BAR	NO. STAGE 1	NO. STAGE 2	NO. CLOSURE POUR ②	TOTAL	LENGTH	SHAPE	LOCATION
B1901E	38			38	15'-3"	U	STIRRUP
B1902E	38	38	6	82	14'-1"	U	STIRRUP
B1903E		38		38	12'-5"	U	STIRRUP
⑤ B1304E*	64	64		128	4'-5"	U	TIE
⑤ B1905E*	56			56	23'-5"	—	LONGITUDINAL
B1906E	38	34		72	11'-11"	U	END TIE
⑤ B1907E*		22		22	24'-8"	—	LONGITUDINAL
B1908E		4		4	25'-9"	—	LONGITUDINAL
B1909E		4		4	25'-9"	—	LONGITUDINAL
⑤ B1910E*		24		24	22'-1"	—	LONGITUDINAL
③ B2511S	15	15		30	1'-8"	—	ANCHORAGE
③ B1912S	37	37		74	4'-8"	U	APPROACH PANEL ANCHORAGE
④ B1913E	7	7		14	2'-7"	—	PARAPET ANCHORAGE
② B1314E	3	3		6	4'-9"	—	PARAPET TIE
② B1315E	3			3	11'-7"	U	PARAPET TIE
② B1316E		3		3	11'-11"	U	PARAPET TIE
④ B1927E	16	16		32	4'-2"	—	PILE TIES
B1931E*	2	2		4	9'-0"	—	VERTICAL
B1332E*	10	8		18	7'-2"	U	HORIZONTAL TIE
B1633E*	24			24	5'-4"	—	LONGITUDINAL TIE
B1934E*	2	2		4	5'-2"	—	VERTICAL
B1635E*		24		24	4'-11"	—	LONGITUDINAL TIE

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

- ① PAYMENT FOR REINFORCEMENT SHALL BE CONSIDERED INCIDENTAL TO PAY ITEM "PRECAST ABUTMENT ELEMENT" UNLESS OTHERWISE NOTED.
- ② REINFORCEMENT IS INCLUDED IN PAY ITEM "REINFORCEMENT BARS (EPOXY COATED)".
- ③ NOT INCLUDED IN WEIGHT OF REINFORCEMENT. INCLUDED IN ITEM "ANCHORAGE TYPE REINF BARS (STAINLESS STEEL)".
- ④ NOT INCLUDED IN WEIGHT OF REINFORCEMENT. INCLUDED IN ITEM "GROUTED REINFORCEMENT BARS".

⑤ B1304E ADDED 64 ADDITIONAL BARS
 B1905E ADDED 10 ADDITIONAL BARS
 B1907E ADDED 8 ADDITIONAL BARS
 B1910E ADDED 4 ADDITIONAL BARS

*-DENOTES ADDED REINFORCEMENT. ②

CERTIFIED BY Angel M. Staples 9/5/13
 LICENSED PROFESSIONAL ENGINEER DATE
 NAME: ANGEL M. STAPLES LIC. NO. 41656

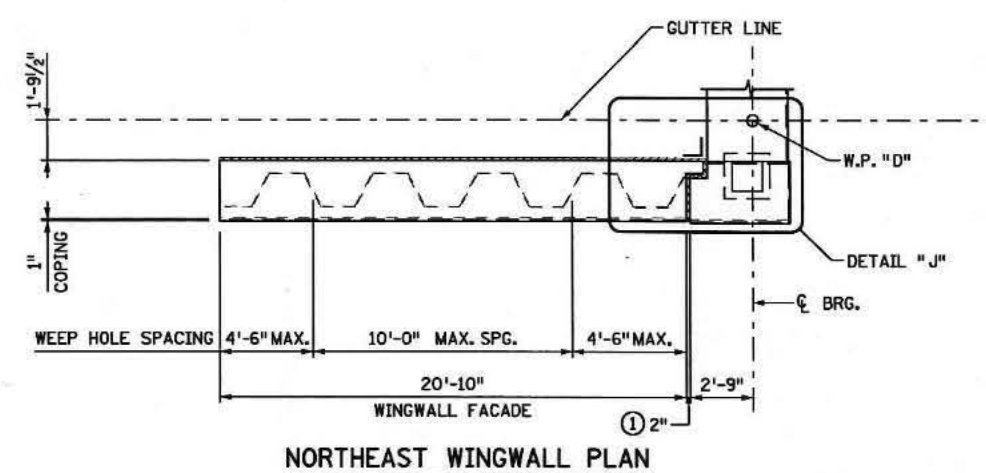
TITLE: **EAST ABUTMENT REINFORCEMENT**

REVISION		
DATE	DESCRIPTION	APPROVED BY
5/21/13	ADDED REINFORCING FOR EASE OF FABRICATION	AMS

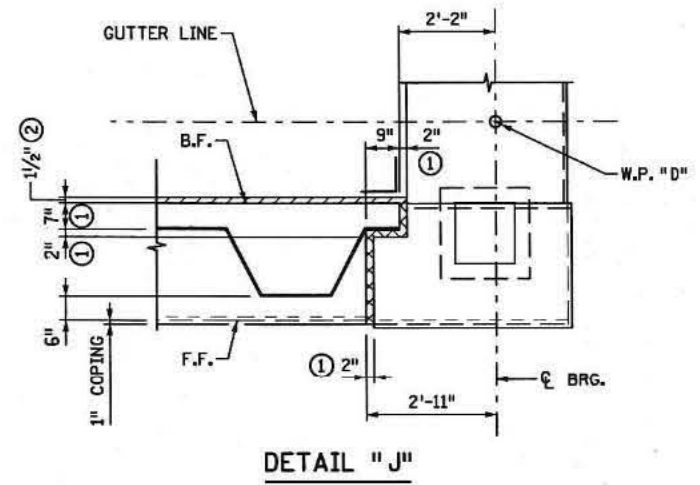
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 BRIDGE NO. 62037

FILENAME: IP_PWP-cl48947-br62037_sfr.dgn

TIME: 9:28:30 AM
PLOTTED: 01-FEB-2013
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NORTHEAST WINGWALL PLAN



DETAIL "J"

NOTES:

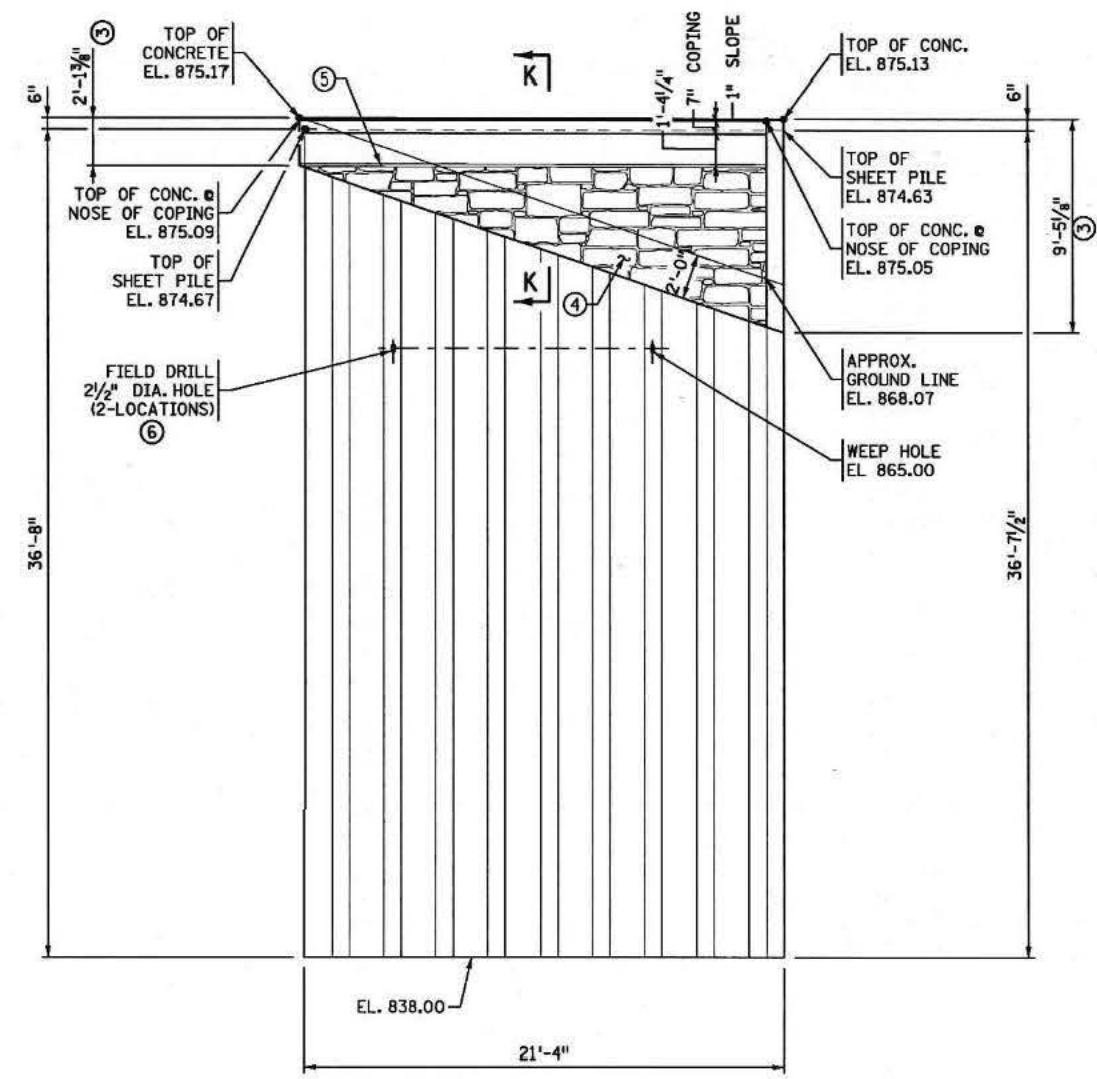
- ① 2" POLYSTYRENE TYPE A.
- ② 1/2" POLYSTYRENE TYPE B.
- ③ STRUCTURAL CONCRETE (3Y43).
- ④ ARCHITECTURAL CONCRETE TEXTURE (COURSED STONE).
ARCHITECTURAL SURFACE FINISH (MULTI COLOR).
ANTI-GRAFFITI COATING.
- ⑤ SEE DETAIL "H" ON SHEET NO. 20 FOR REVEAL.
- ⑥ DRIVE SHEET PILE 8'-0" AND CONSTRUCT
2 1/2" DIA. WEEP HOLES @ 10'-0" MAX O.C.
AT LOCATION SHOWN ON ELEVATION VIEW.

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

DESIGN CRITERIA:

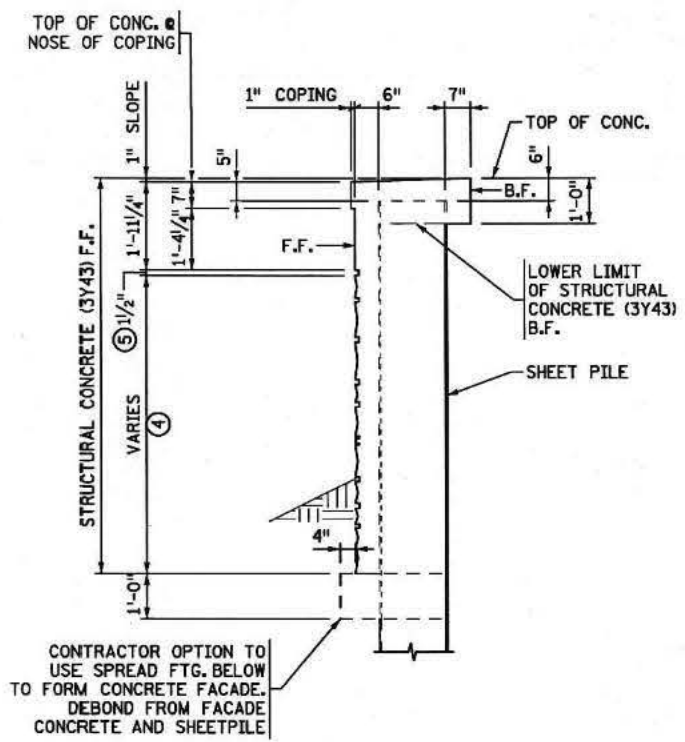
SHEET PILE MINIMUM EFFECTIVE SECTION MODULUS
= 38.72 IN³/FT. FOR A-328 STEEL Fy = 39 ksi
= 29.78 IN³/FT. FOR A-572 STEEL Fy = 50 ksi
SHEET PILE MINIMUM MOMENT OF INERTIA
= 413.01⁴/FT.

DURING CONSTRUCTION A MAXIMUM EXCAVATION LIMIT OF
3'-0" BELOW FINAL GROUND LINE IS REQUIRED AT ALL TIMES.



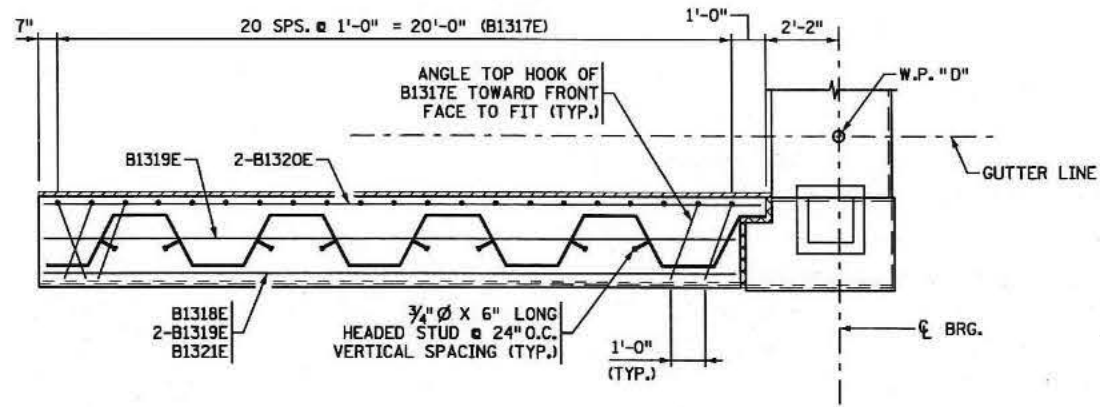
NORTHEAST WINGWALL ELEVATION

SHEET PILE ELEVATION
(STAGE 1)
ABUTMENT NOT SHOWN FOR CLARITY

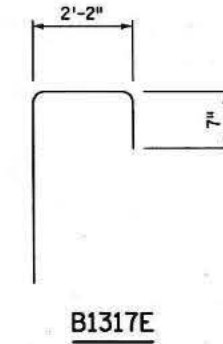


SECTION K-K

CERTIFIED BY <i>Angel M. Staples</i> LICENSED PROFESSIONAL ENGINEER	2/1/13 DATE	TITLE: NORTHEAST WINGWALL GEOMETRICS	DES: MDH	DR: TKB	APPROVED: <i>2/1/13</i>	BRIDGE NO. 62037
			CHK: NJV	CHK: DCH	SHEET NO. 25 OF 68 SHEETS	
NAME: ANGEL M. STAPLES LIC. NO. 41656						



NORTHEAST WINGWALL PLAN



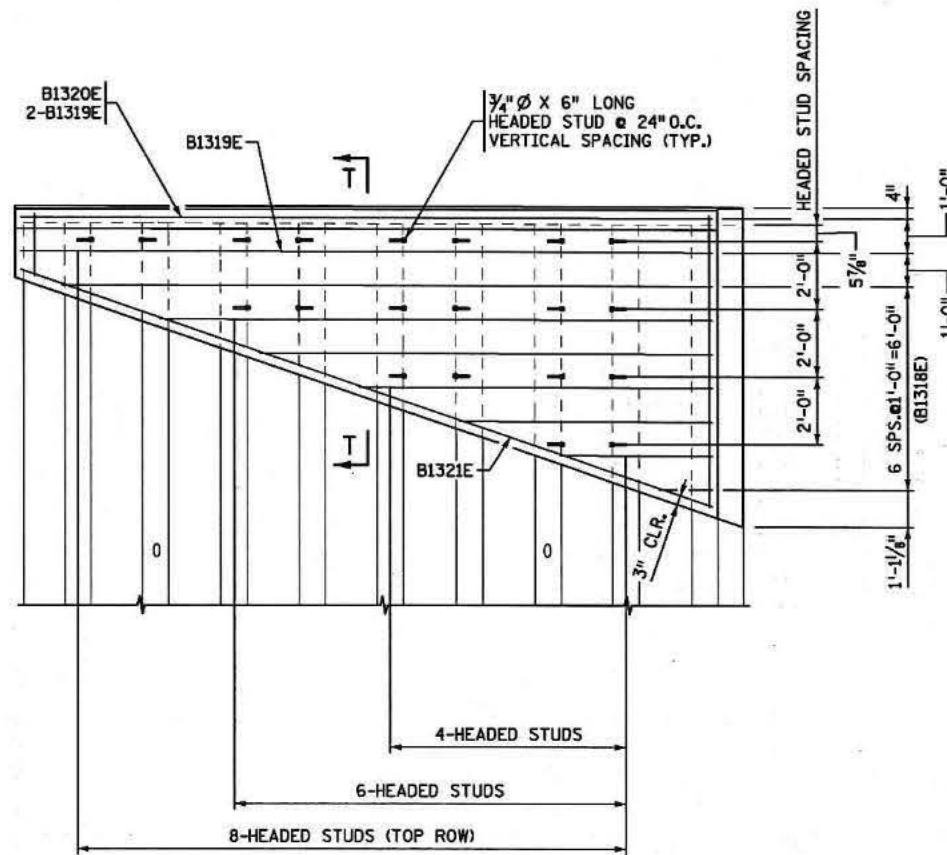
BILL OF REINFORCEMENT FOR NORTHEAST WINGWALL

BAR	NO.	LENGTH	SHAPE	LOCATION
B1317E	1 SET OF 21	4'-6" TO 11'-3"		NE WINGWALL VERT.
B1318E	1 SET OF 7	1'-6" TO 19'-3"		NE WINGWALL HORIZ.
B1319E	3	20'-6"		NE WINGWALL HORIZ.
B1320E	2	21'-3"		NE WINGWALL HORIZ.
B1321E	1	21'-6"		NE WINGWALL HORIZ.

SUMMARY OF QUANTITIES FOR NORTHEAST WINGWALL

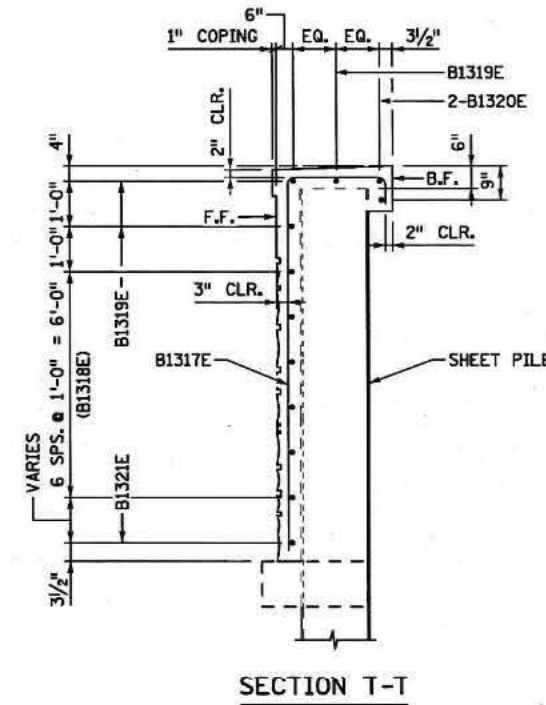
STEEL SHEET PILING (PERMANENT)	782 SQ. FT.
WINGWALL FACADE	120 SQ. FT.
ANTI-GRAFFITI COATING	76 SQ. FT.
ARCH SURFACE FINISH (MULTI COLOR)	76 SQ. FT.
ARCH CONC. TEXTURE (COURSED STONE)	76 SQ. FT.
STRUCTURAL CONCRETE (3Y43)	8 CU. YD.
REINFORCEMENT BARS (EPOXY COATED)	250 POUND
SHEAR STUDS	20 EACH
1/2" POLYSTYRENE TYPE B	22 SQ. FT.

- ① PAYMENT SHALL BE CONSIDERED INCIDENTAL TO PAY ITEM "WINGWALL FACADE".
- ② PAYMENT SHALL BE CONSIDERED INCIDENTAL TO PAY ITEM "STEEL SHEET PILING (PERMANENT)".



NORTHEAST WINGWALL ELEVATION

SHEET PILE ELEVATION (STAGE 1)
 ABUTMENT NOT SHOWN FOR CLARITY



SECTION T-T

NOTES:

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

CERTIFIED BY Angel M. Staples 2/1/13
 LICENSED PROFESSIONAL ENGINEER DATE
 NAME: ANGEL M. STAPLES LIC. NO. 41656

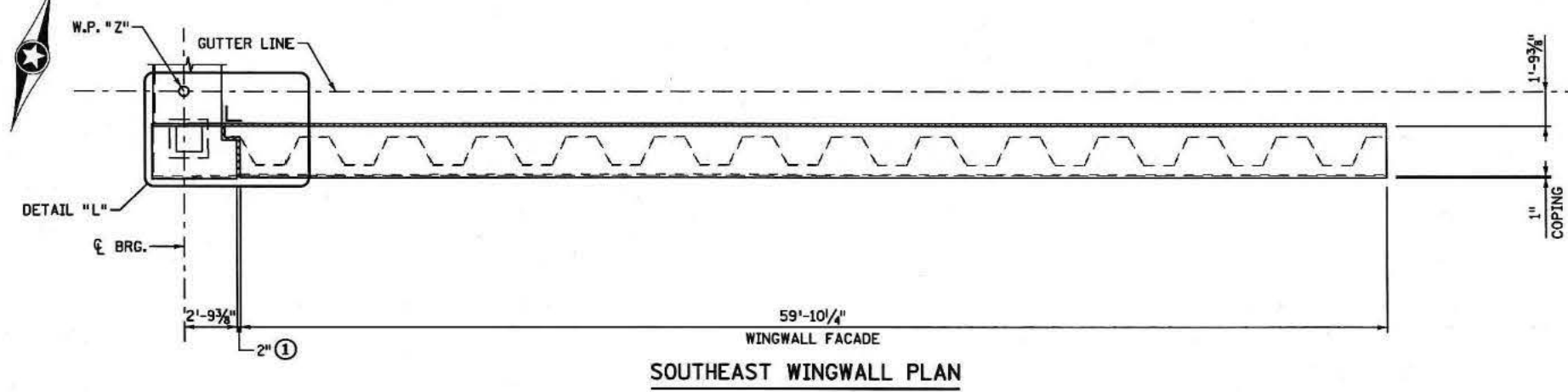
TITLE: NORTHEAST WINGWALL REINFORCEMENT

DES: MDH DR: TKB
 CHK: NJV CHK: DCH
 APPROVED: 2/1/13
 SHEET NO. 26 OF 68 SHEETS

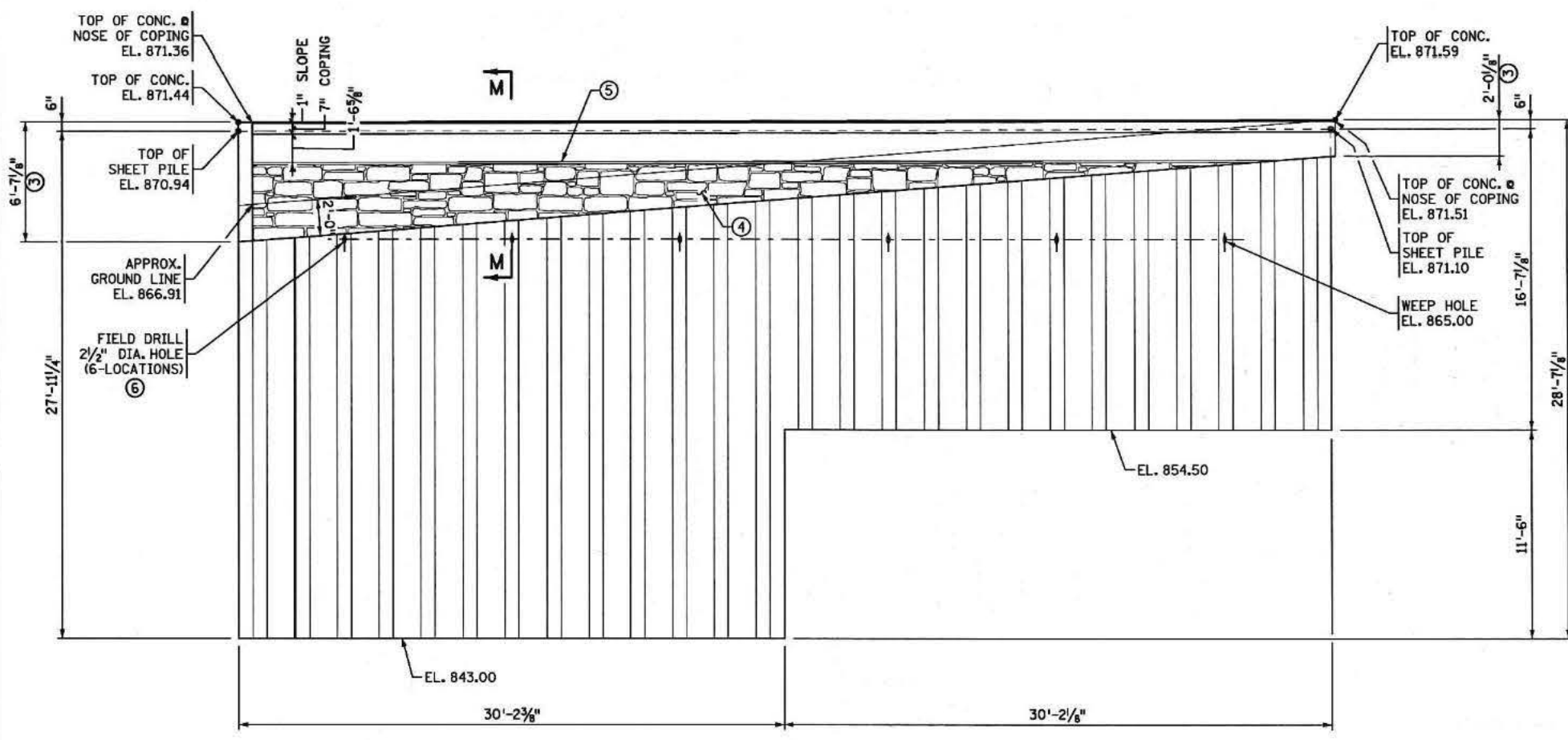
BRIDGE NO. 62037

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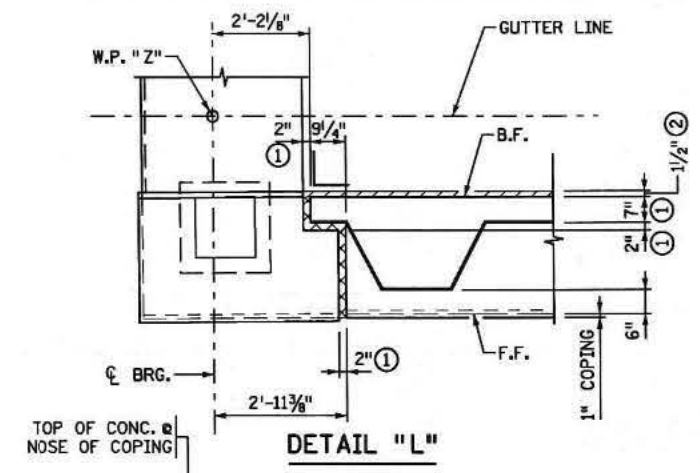


SOUTHEAST WINGWALL PLAN

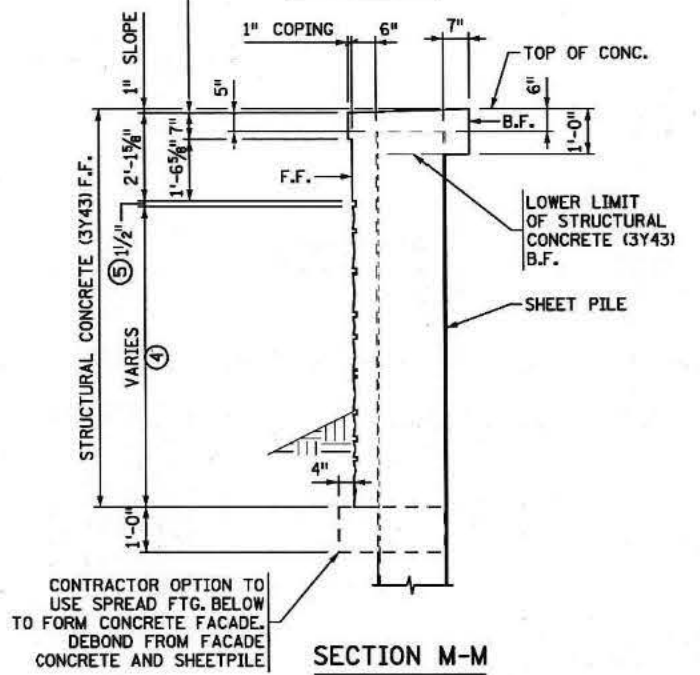


SOUTHEAST WINGWALL ELEVATION

SHEET PILE ELEVATION
(STAGE 2)
ABUTMENT NOT SHOWN FOR CLARITY



DETAIL "L"



SECTION M-M

NOTES:

- ① 2" POLYSTYRENE TYPE A.
- ② 1 1/2" POLYSTYRENE TYPE B.
- ③ STRUCTURAL CONCRETE (3Y43).
- ④ ARCHITECTURAL CONCRETE TEXTURE (COURSED STONE), ARCHITECTURAL SURFACE FINISH (MULTI COLOR), ANTI-GRAFFITI COATING.
- ⑤ SEE DETAIL "H" ON SHEET NO. 20 FOR REVEAL.
- ⑥ DRIVE SHEET PILE 8'-0" AND CONSTRUCT 2 1/2" DIA. WEEP HOLES @ 10'-0" MAX O.C. AT LOCATION SHOWN ON ELEVATION VIEW.

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

DESIGN CRITERIA:

SHEET PILE MINIMUM EFFECTIVE SECTION MODULUS
= 18.23 IN³/FT. FOR A-328 STEEL Fy = 39 ksi
= 14.03 IN³/FT. FOR A-572 STEEL Fy = 50 ksi
SHEET PILE MINIMUM MOMENT OF INERTIA
= 90.94⁴/FT.

DURING CONSTRUCTION A MAXIMUM EXCAVATION LIMIT OF 3'-0" BELOW FINAL GROUND LINE IS REQUIRED AT ALL TIMES.

CERTIFIED BY <i>Angel M. Staples</i> 2/1/13 LICENSED PROFESSIONAL ENGINEER DATE NAME: ANGEL M. STAPLES LIC. NO. 41656	TITLE: SOUTHEAST WINGWALL GEOMETRICS	DES: MDH CHK: NJV	DR: TKB CHK: DCH	APPROVED: 2/1/13	BRIDGE NO. 62037 SHEET NO. 27 OF 68 SHEETS

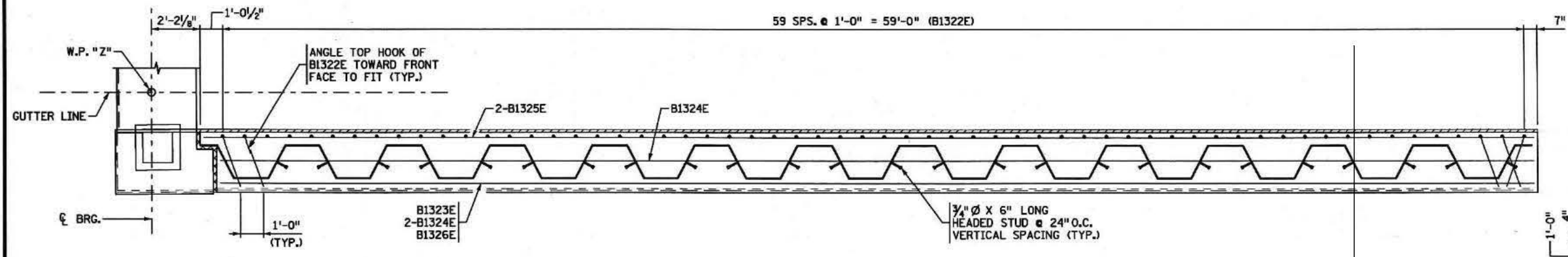
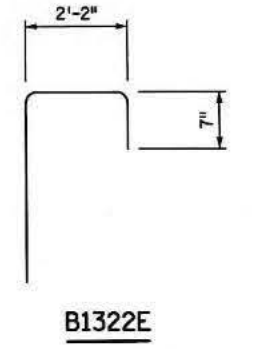
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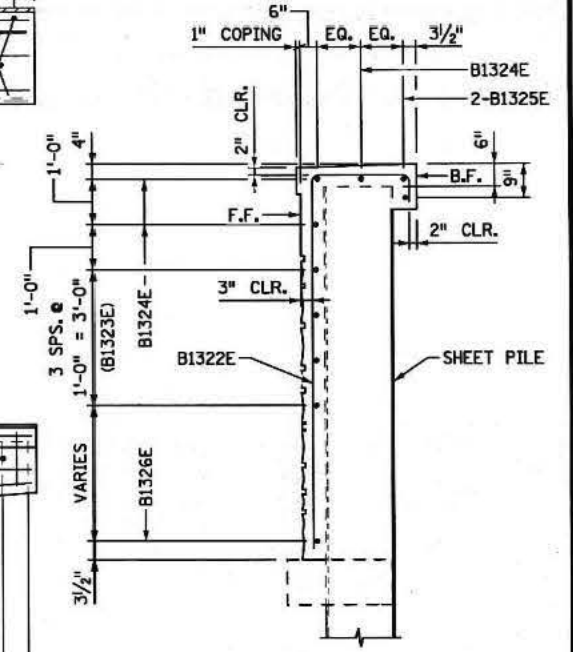
SUMMARY OF QUANTITIES FOR SOUTHEAST WINGWALL	
STEEL SHEET PILING (PERMANENT)	1345 SQ. FT.
WINGWALL FACADE	257 SQ. FT.
ANTI-GRAFFITI COATING	123 SQ. FT.
ARCH SURFACE FINISH (MULTI COLOR)	123 SQ. FT.
ARCH CONC. TEXTURE (COURSED STONE)	123 SQ. FT.
STRUCTURAL CONCRETE (3Y43)	13 CU. YD.
REINFORCEMENT BARS (EPOXY COATED)	590 POUND
SHEAR STUDS	45 EACH
1/2" POLYSTYRENE TYPE B	61 SQ. FT.

- ① PAYMENT SHALL BE CONSIDERED INCIDENTAL TO PAY ITEM "WINGWALL FACADE".
- ② PAYMENT SHALL BE CONSIDERED INCIDENTAL TO PAY ITEM "STEEL SHEET PILING (PERMANENT)".

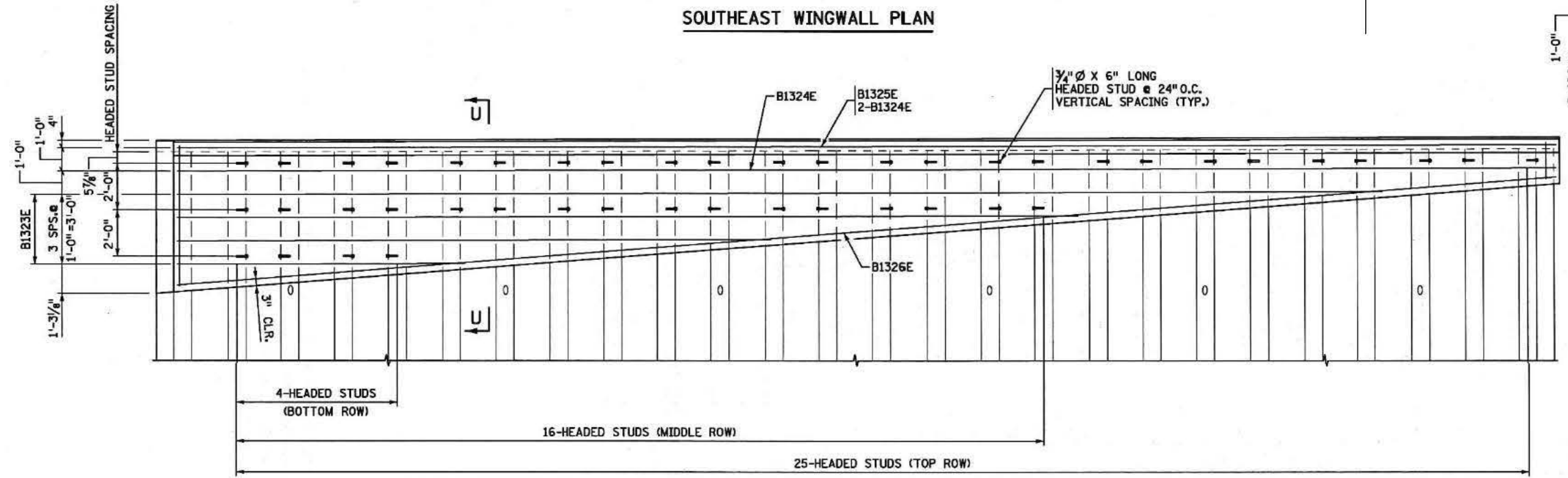
BILL OF REINFORCEMENT FOR SOUTHEAST WINGWALL				
BAR	NO.	LENGTH	SHAPE	LOCATION
B1322E	1 SET OF 60	4'-3" TO 8'-9"	U	SE WINGWALL VERT.
B1323E	1 SET OF 4	12'-4" TO 52'-0"	—	SE WINGWALL HORIZ.
B1324E	3	59'-6"	—	SE WINGWALL HORIZ.
B1325E	2	60'-0"	—	SE WINGWALL HORIZ.
B1326E	1	59'-7"	—	SE WINGWALL HORIZ.



SOUTHEAST WINGWALL PLAN



SECTION U-U



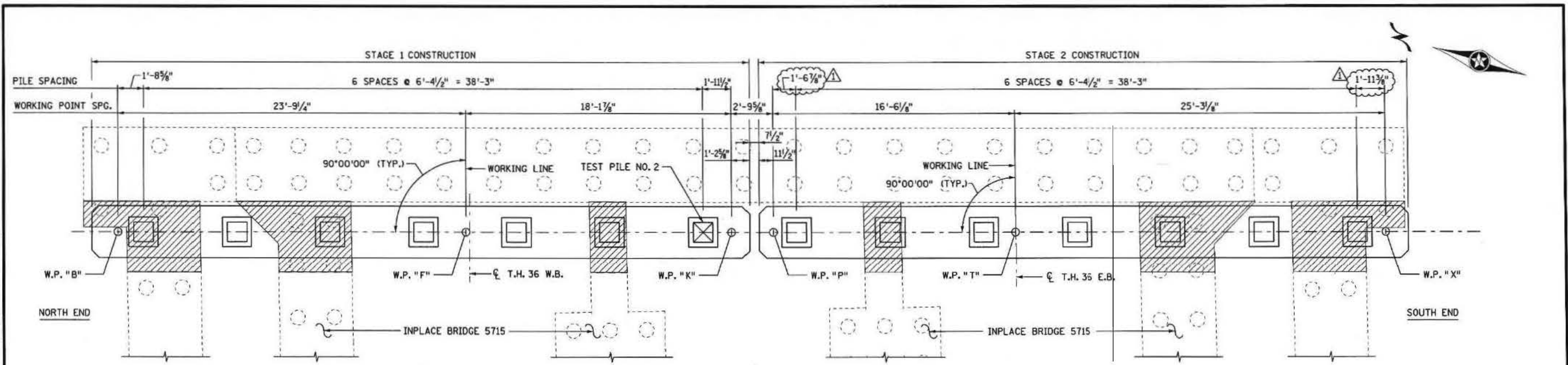
SOUTHEAST WINGWALL ELEVATION

SHEET PILE ELEVATION (STAGE 2)
 ABUTMENT NOT SHOWN FOR CLARITY

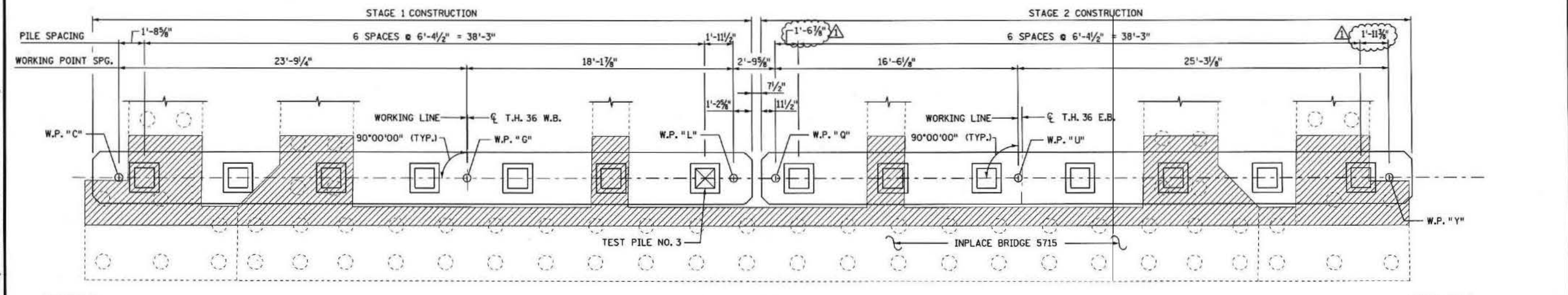
- NOTES:**
 F.F. - DENOTES FRONT FACE.
 B.F. - DENOTES BACK FACE

CERTIFIED BY <i>Angel M. Staples</i> 2/1/13 LICENSED PROFESSIONAL ENGINEER DATE NAME: ANGEL M. STAPLES LIC. NO. 41656	TITLE: SOUTHEAST WINGWALL REINFORCEMENT	DES: MDH DR: TKB CHK: NJV CHK: DCH	APPROVED: <i>2/1/13</i>	BRIDGE NO. 62037 SHEET NO. 28 OF 68 SHEETS

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 PLOTTED: 02-AUG-2013



PIER 1 PLAN VIEW

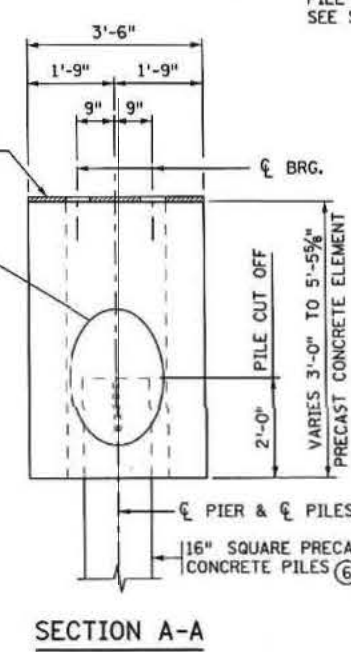
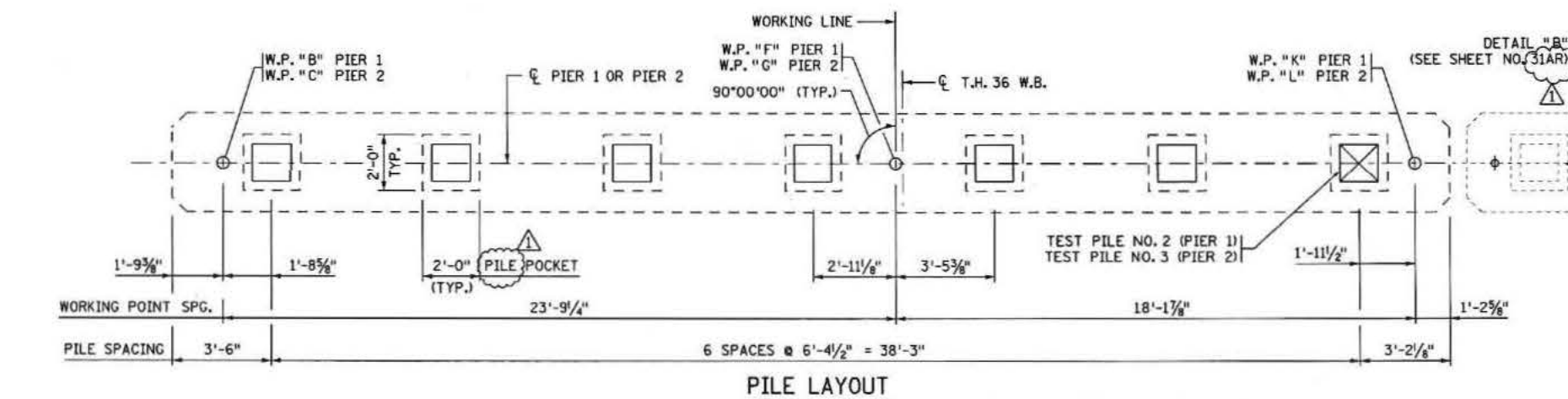
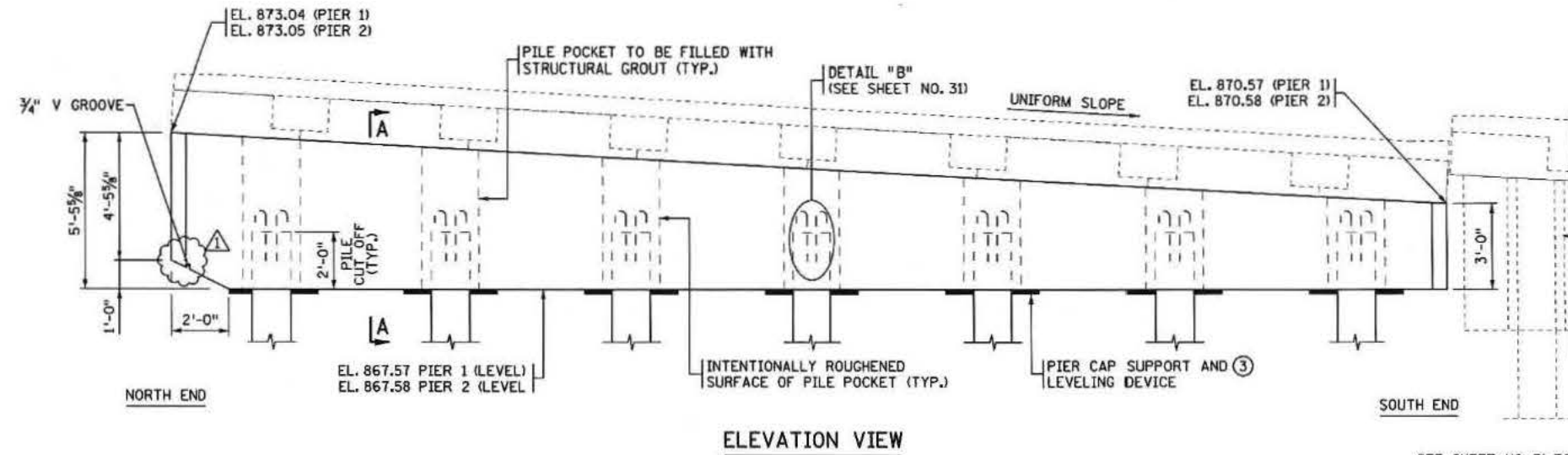
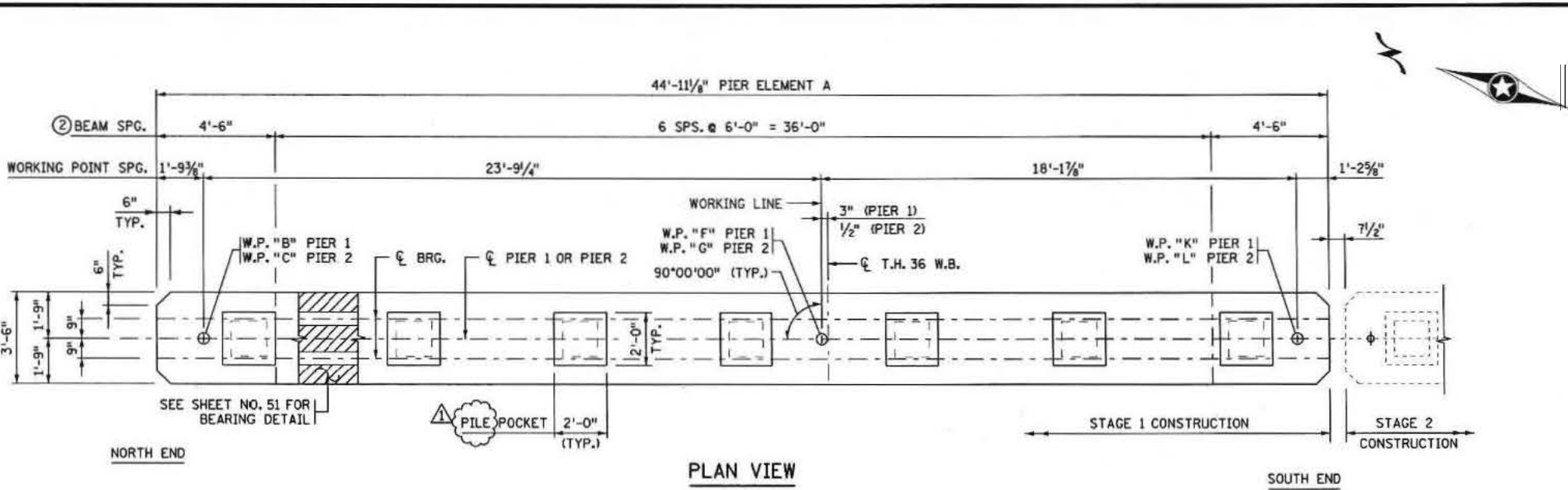


PIER 2 PLAN VIEW

- NOTES:**
- ALL PORTIONS OF SUBSTRUCTURES, INCLUDING PILING AND MINOR OBSTRUCTIONS, SHALL BE COMPLETELY REMOVED WHEN THEY INTERFERE WITH NEW STRUCTURE PER MNDOT SPEC. 2442. PAYMENT SHALL BE CONSIDERED INCIDENTAL TO ITEM "REMOVE EXISTING BRIDGE". PAYMENT FOR THE DISPOSAL OF THE INPLACE TIMBER PILES SHALL BE PAID FOR UNDER ITEM "REMOVE REGULATED WASTE MATERIAL (BRIDGE)".
 - DENOTES NEW PRECAST CONCRETE PILE.
 - DENOTES NEW PRECAST CONCRETE TEST PILE.
 - DENOTES INPLACE TIMBER PILE.

REVISION			APPROVED BY	CERTIFIED BY	DATE	TITLE:	DES: M.D.H./N.J.V.	DR: B.T.N.	APPROVED:	BRIDGE NO.
DATE	DESCRIPTION	AMS								
5-21-2013	REVISED DIMENSIONS	AMS		ANGEL M. STAPLES	8/5/13	PIER PILE LAYOUT			8/5/13	62037

FILENAME: IP_PWP-d1489447-Br62037_Pir.dgn
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 PLOTTED: 02-AUG-2013



SUMMARY OF QUANTITIES ④ FOR TWO PIERS - STAGE 1

PRECAST PIER ELEMENT	2 EACH
STRUCTURAL CONCRETE (3Y43)	40 CU. YD.
REINFORCEMENT BARS (EPOXY COATED)	7210 POUND
ANCHORAGES TYPE REINF BARS (STAINLESS STEEL)	30 EACH
16" SQUARE PRECAST CONC. PILING DELIVERED	780 LIN. FT.
16" SQUARE PRECAST CONC. PILING DRIVEN	780 LIN. FT.
16" SQUARE PRECAST CONC. TEST PILE 65 FT. LONG	2 EACH
STRUCTURAL GROUT	7 CU. YD.
PILE REDRIVING	2 EACH
PILE ANALYSES	2 EACH
GROUTED REINFORCEMENT BARS	28 EACH

- ① DOES NOT INCLUDE TEST PILES.
- ⑦ INCLUDES 350 POUNDS FOR FIELD MODIFICATION.

PIER COMPUTED PILE LOAD - TONS/PILE

FACTORED DEAD LOAD	78.0
FACTORED LIVE LOAD	42.0
FACTORED OVERTURNING	0.0
*FACTORED DESIGN LOAD	120.0

*BASED ON STRENGTH I LOAD COMBINATION

PILE NOTES

- 1 16" SQUARE PRECAST CONC. TEST PILES 65 FT. LONG
- 6 16" SQUARE PRECAST CONC. PILES EST. LENGTH 65 FT.
- 7 16" SQUARE PRECAST CONC. PILES REQ'D FOR PIER 1 - STAGE 1
- 1 16" SQUARE PRECAST CONC. TEST PILES 65 FT. LONG
- 6 16" SQUARE PRECAST CONC. PILES EST. LENGTH 65 FT.
- 7 16" SQUARE PRECAST CONC. PILES REQ'D FOR PIER 2 - STAGE 1

PILE SPACING SHOWN IS AT BOTTOM OF PIER CAP.
 FOR PILE DETAILS SEE SHEET "SQUARE PRESTRESSED CONCRETE PILE DETAILS".
 THE PILES SHALL BE DRIVEN TO A MINIMUM TIP ELEVATION OF 826.0.
 PILE SHALL BE DRIVEN WITHIN SPECIFIED TOLERANCES. SEE SPECIAL PROVISION.

PIER REQUIRED NOMINAL PILE BEARING RESISTANCE R_n - TONS/PILE

FIELD CONTROL METHOD	φ _{dyn}	*R _n
MN/DOT NOMINAL RESISTANCE FORMULA	0.40	300.0
PDA	0.65	184.6

- *R_n = (FACTORED DESIGN LOAD) / φ_{dyn}
- DIMENSIONS FOR BEAMS ARE TAKEN PARALLEL TO ROADWAY CROSS SLOPE.
 - PIER CAP TO BE TEMPORARILY SUPPORTED BY TEMPORARY SUPPORT COLLARS OR OTHER APPROVED METHOD OF TEMPORARY SUPPORT. SEE SPECIAL PROVISIONS.
 - SUMMARY OF QUANTITIES FOR STAGE 1 PIER 1 AND PIER 2.
 - PAYMENT SHALL BE CONSIDERED INCIDENTAL TO PAY ITEM "PRECAST PIER ELEMENT".
 - PILE TO BE SANDBLASTED. SEE SPECIAL PROVISIONS.
- SEE SPECIAL PROVISION FOR TOLERANCES ON PRECAST ELEMENTS.
 ELEVATIONS SHOWN TO BE TO THE TOP OF CONCRETE.

REVISION

DATE	DESCRIPTION	APPROVED BY
5-21-2013	ADDED REINFORCING FOR EASE OF FABRICATION AND RELOCATED 3/4" V GROOVE	AMS

CERTIFIED BY *Angel M. Staples* 8/5/13
 LICENSED PROFESSIONAL ENGINEER
 NAME: ANGEL M. STAPLES LIC. NO. 41656

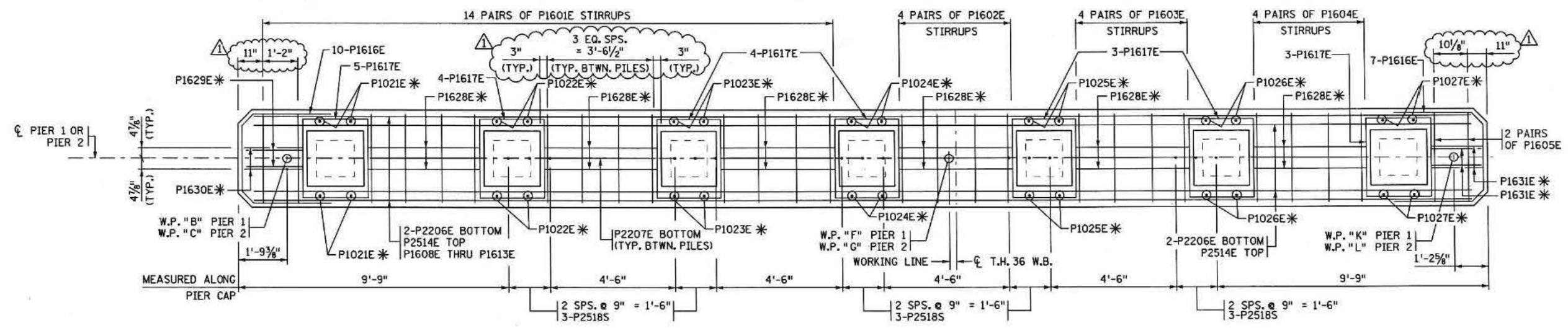
TITLE: PIER 1 AND PIER 2 GEOMETRICS
 STAGE 1 CONSTRUCTION

DES: M.D.H./N.J.V. DR: B.T.N. APPROVED: 8/5/13
 CHK: P.J.K. CHK: N.J.V.
 SHEET NO. 30R OF 68 SHEETS BRIDGE NO. 62037

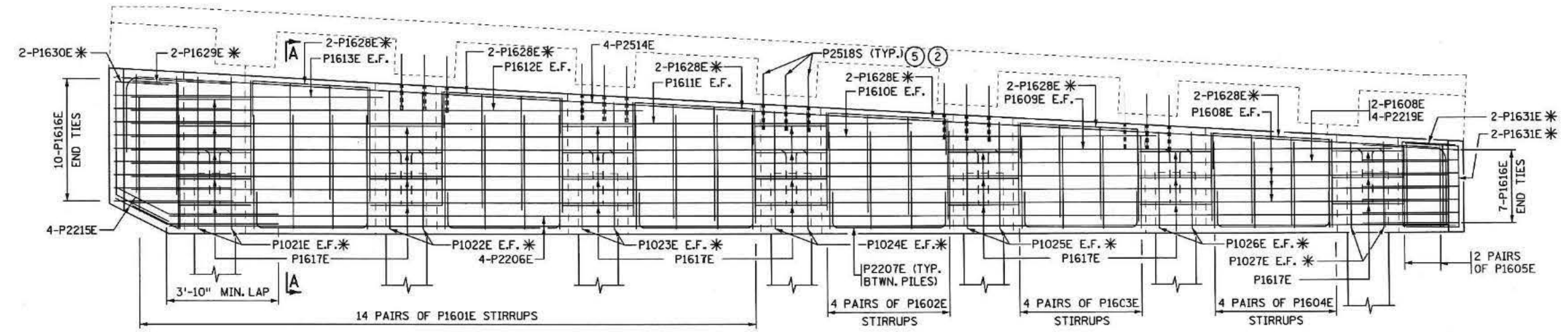
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PLAN VIEW

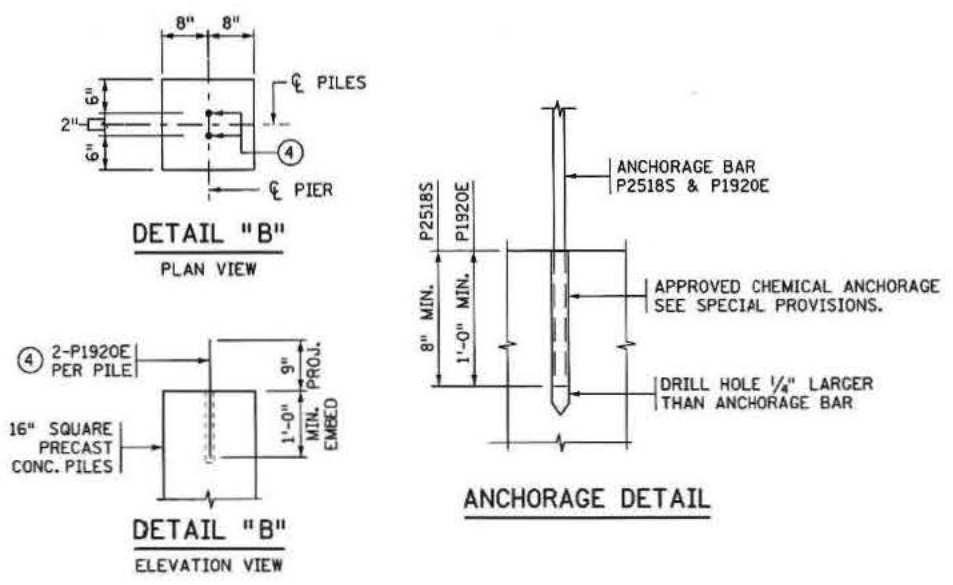
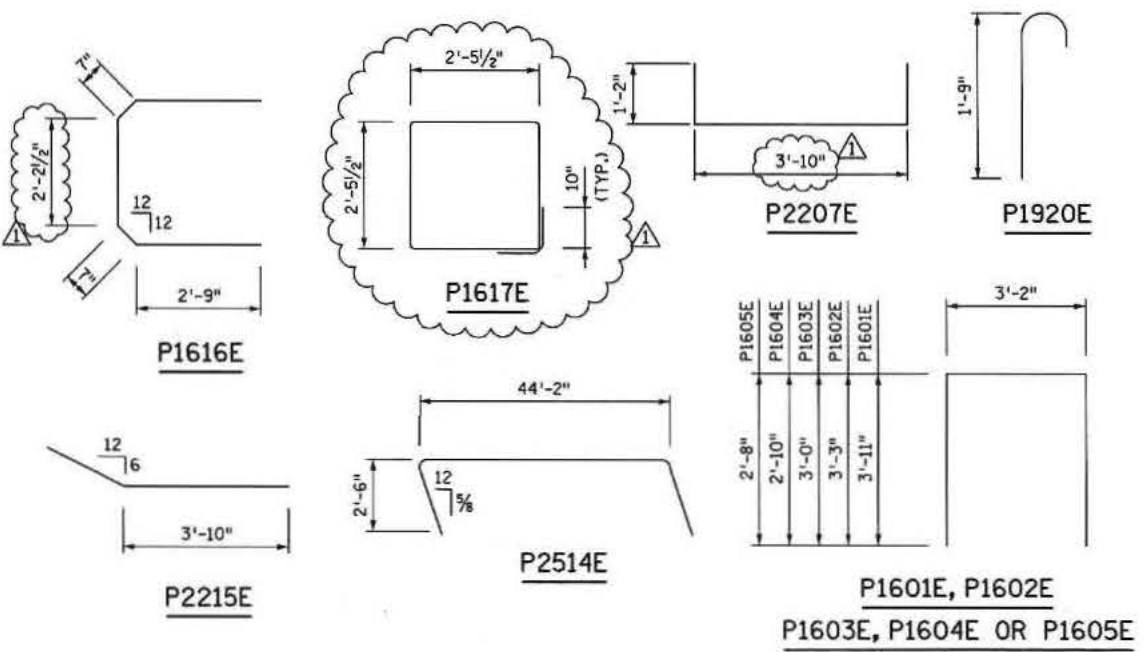
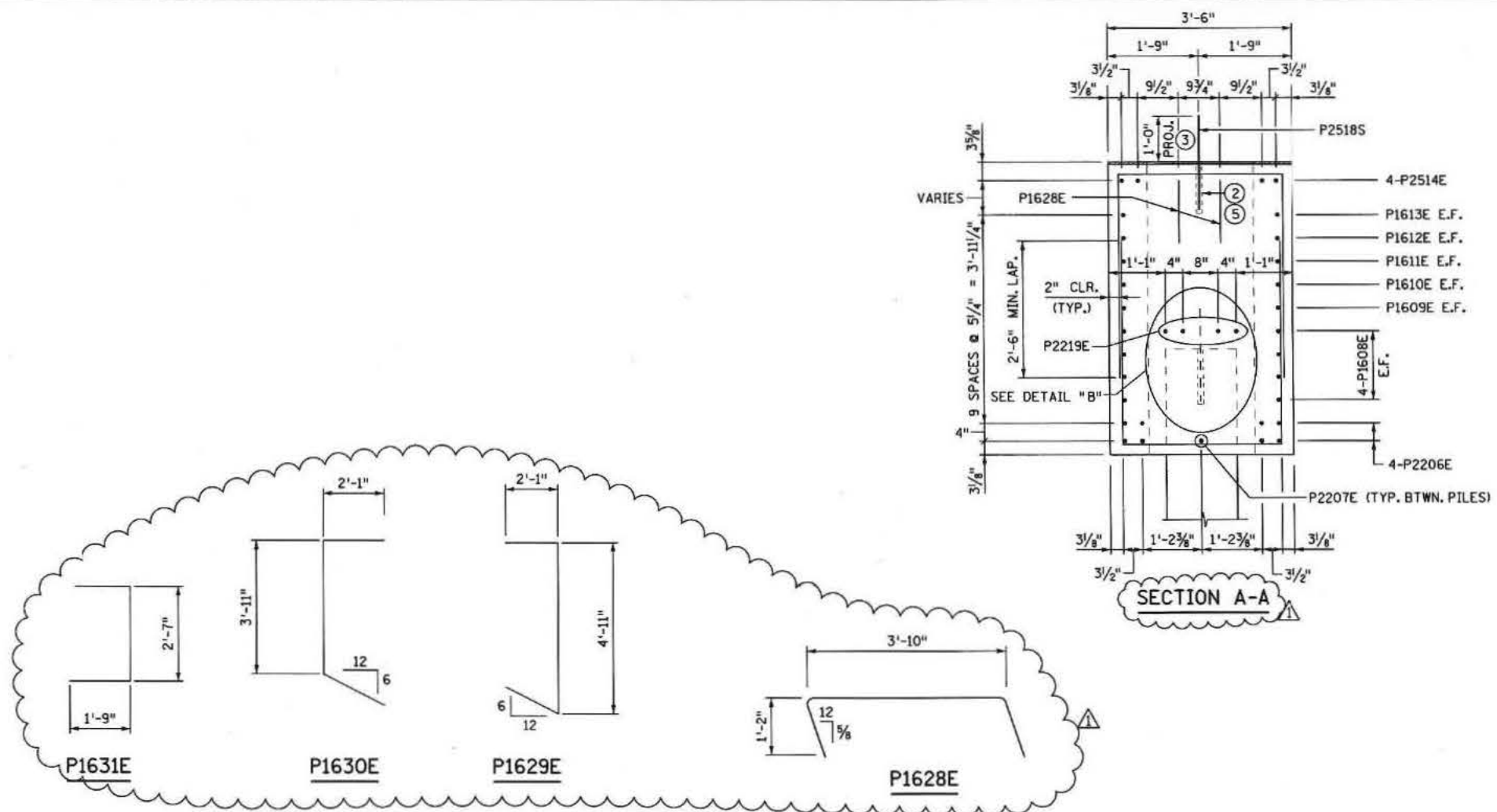


ELEVATION VIEW

NOTES:
 * DENOTES ADDED REINFORCING.
 SEE SHEET NO. 31AR FOR KEYNOTES & SECTION A-A.
 E.F. DENOTES EACH FACE

REVISION			DATE	APPROVED BY	CERTIFIED BY	DATE	TITLE	DES: M.D.H./N.J.V.	DR: B.T.N.	APPROVED:	BRIDGE NO.
DATE	DESCRIPTION	APPROVED BY									
5-21-2013	ADDED REINFORCING FOR EASE OF FABRICATION	AMS	8/5/13	Angel M. Staples	8/5/13		PIER 1 AND PIER 2 REINFORCEMENT STAGE 1 CONSTRUCTION	CHK: P.J.K.	CHK: N.J.V.	8/5/13	62037
SHEET NO. 31R OF 68 SHEETS											

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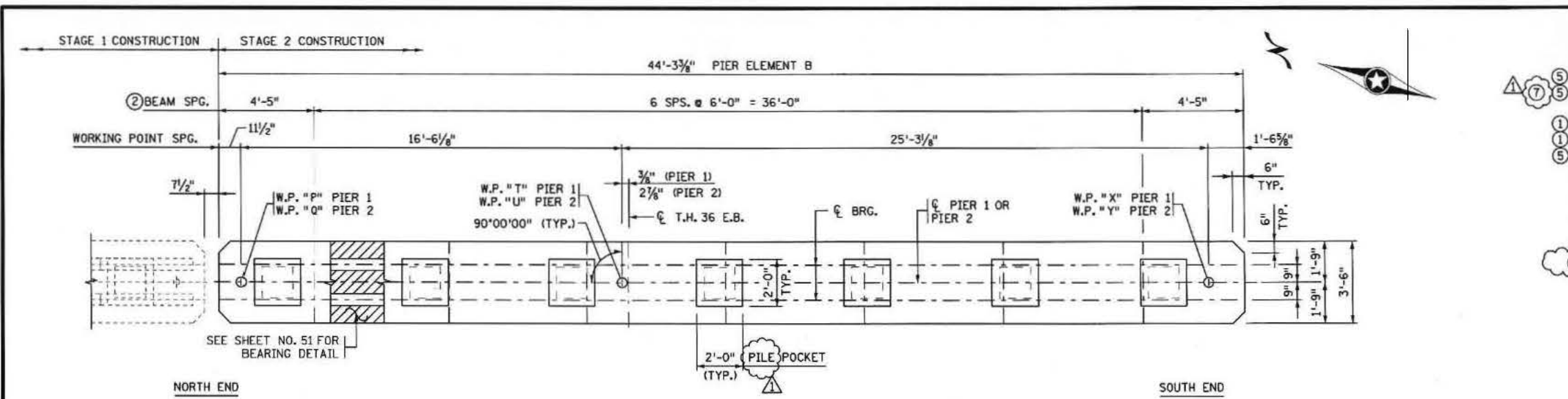
① BILL OF REINFORCEMENT FOR TWO PIERS - STAGE 1

BAR NO.	NO.	LENGTH	SHAPE	LOCATION
P1601E	56	11'-0"	□	STIRRUP
P1602E	16	9'-8"	□	STIRRUP
P1603E	16	9'-2"	□	STIRRUP
P1604E	16	8'-10"	□	STIRRUP
P1605E	8	8'-6"	□	STIRRUP
P2206E	16	42'-8"	—	HORIZONTAL
P2207E	12	6'-2"	—	HORIZONTAL BTWN. PILES
P1608E	16	43'-9"	—	HORIZONTAL
P1609E	4	41'-10"	—	HORIZONTAL
P1610E	4	34'-0"	—	HORIZONTAL
P1611E	4	25'-10"	—	HORIZONTAL
P1612E	4	17'-0"	—	HORIZONTAL
P1613E	4	8'-5"	—	HORIZONTAL
P2514E	8	49'-2"	—	HORIZONTAL
P2215E	16	5'-7"	—	HORIZONTAL
P1616E	34	8'-11"	—	END TIES
P1617E	52	11'-6"	—	AROUND PILES
P2518S	30	1'-8"	—	ANCHORAGE DOWEL
P2219E	8	43'-9"	—	HORIZONTAL
P1920E	28	2'-5"	—	ANCHORAGE DOWEL
P1021E	8	4'-8 1/2"	—	VERTICAL
P1022E	8	4'-4 1/2"	—	VERTICAL
P1023E	8	4'-0"	—	VERTICAL
P1024E	8	3'-8"	—	VERTICAL
P1025E	8	3'-3 1/2"	—	VERTICAL
P1026E	8	2'-11 1/2"	—	VERTICAL
P1027E	8	2'-7"	—	VERTICAL
P1628E	24	6'-2"	—	HORIZONTAL
P1629E	4	9'-0"	—	END TIES
P1630E	4	8'-0"	—	END TIES
P1631E	8	6'-1"	—	END TIES

- NOTES:**
- ① PAYMENT FOR REINFORCEMENT SHALL BE CONSIDERED INCIDENTAL TO PAY ITEM "PRECAST PIER ELEMENT" UNLESS OTHERWISE NOTED. TOTAL REINFORCEMENT LISTED IS FOR TWO PIER ELEMENTS.
 - ② PRECAST BEAMS TO BE SET IN PLACE PRIOR TO DRILLING HOLES FOR ANCHORAGES. DRILL 1 1/4" Ø HOLES FOR NO. 25 ANCHORAGES. USE APPROVED GROUT. 8" MIN. EMBEDMENT. INCLUDED IN PAY ITEM "ANCHORAGES TYPE REINF BARS (STAINLESS STEEL)".
 - ③ WRAP PROJECTED PART OF DOWEL WITH 1/2" THICK FOAM PIPE INSULATION FOR FULL HEIGHT.
 - ④ BARS TO BE FIELD DRILLED AND GROUTED ONCE PILE IS AT FINAL ELEVATION PRIOR TO CAP PLACEMENT DRILL 1" Ø HOLES FOR NO. 19 ANCHORAGE. INCLUDED IN PAY ITEM "GROUTED REINFORCEMENT BARS".
E.F. DENOTE EACH FACE.
 - ⑤ FIELD LOCATE ANCHORAGES TO AVOID DRILLING THROUGH REBARS.

REVISION			DATE	DESCRIPTION	APPROVED BY	CERTIFIED BY <i>Angel M. Staples</i> 8/5/13 LICENSED PROFESSIONAL ENGINEER	DATE	TITLE: PIER 1 AND PIER 2 REINFORCEMENT STAGE 1 CONSTRUCTION	DES: M.D.H./N.J.V., DR: B.T.N.	APPROVED: <i>8/5/13</i>	BRIDGE NO. 62037
NO.	DATE	DESCRIPTION									
1	5-21-2013	ADDED REINFORCING FOR EASE OF FABRICATION			AMS	ANGEL M. STAPLES	8/5/13				

FILENAME: IP_PWP-0148947-Br62037_P1r.dgn
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 TIME: 3:07:16 PM
 PLOTTED: 02-AUG-2013



PLAN VIEW

SUMMARY OF QUANTITIES ④ FOR TWO PIERS - STAGE 2

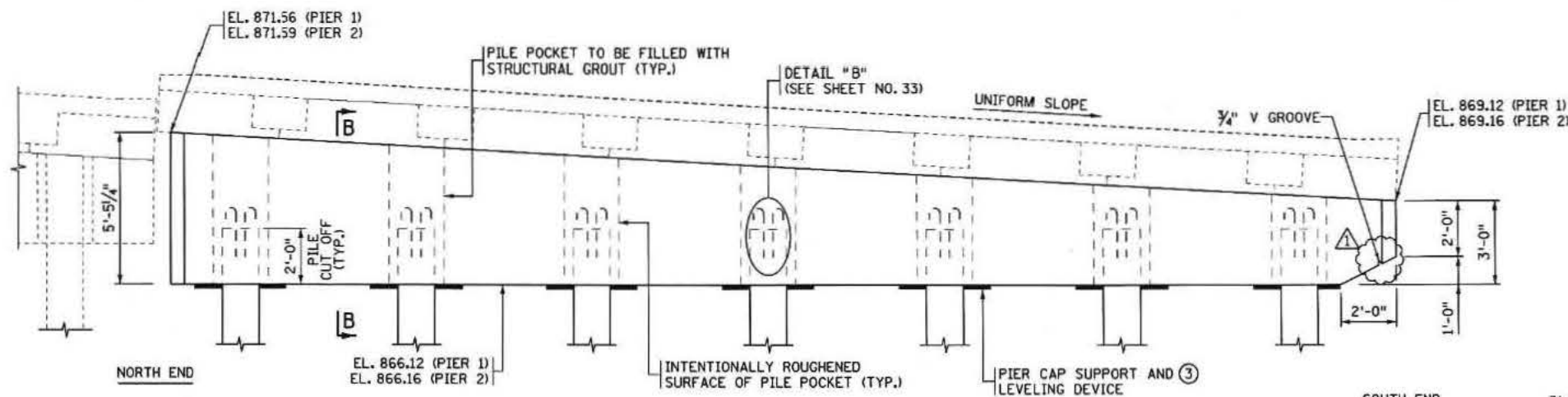
PRECAST PIER ELEMENT	2 EACH
STRUCTURAL CONCRETE (3Y43)	40 CU. YD.
REINFORCEMENT BARS (EPOXY COATED)	6720 POUND
ANCHORAGES TYPE REINF BARS (STAINLESS STEEL)	30 EACH
16" SQUARE PRECAST CONC. PILING DELIVERED	910 LIN. FT.
16" SQUARE PRECAST CONC. PILING DRIVEN	910 LIN. FT.
STRUCTURAL GROUT	7 CU. YD.
GROUTED REINFORCEMENT BARS	28 EACH

⑦ INCLUDES 360 POUNDS FOR FIELD MODIFICATION.

PIER COMPUTED PILE LOAD - TONS/PILE

FACTORED DEAD LOAD	78.0
FACTORED LIVE LOAD	42.0
FACTORED OVERTURNING	0.0
*FACTORED DESIGN LOAD	120.0

*BASED ON STRENGTH I LOAD COMBINATION



ELEVATION VIEW

- PILE NOTES**
- 0 16" SQUARE PRECAST CONC. TEST PILES FT. LONG
 - 7 16" SQUARE PRECAST CONC. PILES EST. LENGTH 65 FT.
 - 7 16" SQUARE PRECAST CONC. PILES REQ'D FOR PIER 1 - STAGE 2
 - 0 16" SQUARE PRECAST CONC. TEST PILES FT. LONG
 - 7 16" SQUARE PRECAST CONC. PILES EST. LENGTH 65 FT.
 - 7 16" SQUARE PRECAST CONC. PILES REQ'D FOR PIER 2 - STAGE 2

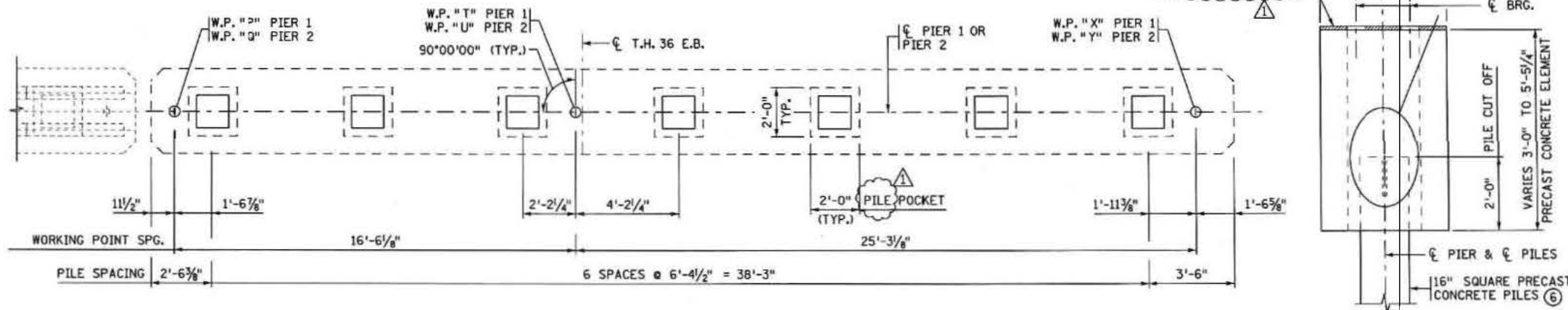
PILE SPACING SHOWN IS AT BOTTOM OF PIER CAP.
 FOR PILE DETAILS SEE SHEET "SQUARE PRESTRESSED CONCRETE PILE DETAILS".
 THE PILES SHALL BE DRIVEN TO A MINIMUM TIP ELEVATION OF 826.0.
 PILE SHALL BE DRIVEN WITHIN SPECIFIED TOLERANCES. SEE SPECIAL PROVISION.

PIER REQUIRED NOMINAL PILE BEARING RESISTANCE R_n - TONS/PILE

FIELD CONTROL METHOD	φ _{dyn}	*R _n
MN/DOT NOMINAL RESISTANCE FORMULA	0.40	300.0
PDA	0.65	184.6

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

- ② DIMENSIONS FOR BEAMS ARE TAKEN PARALLEL TO ROADWAY CROSS SLOPE.
- ③ PIER CAP TO BE TEMPORARILY SUPPORTED BY TEMPORARY SUPPORT COLLARS OR OTHER APPROVED METHOD OF TEMPORARY SUPPORT. SEE SPECIAL PROVISIONS.
- ④ SUMMARY OF QUANTITIES FOR STAGE 2 PIER 1 AND PIER 2.
- ⑤ PAYMENT SHALL BE CONSIDERED INCIDENTAL TO PAY ITEM "PRECAST PIER ELEMENT".
- ⑥ PILE TO BE SANDBLASTED. SEE SPECIAL PROVISIONS. SEE SPECIAL PROVISION FOR TOLERANCES ON PRECAST ELEMENTS. ELEVATIONS SHOWN TO BE TO THE TOP OF CONCRETE.



PILE LAYOUT

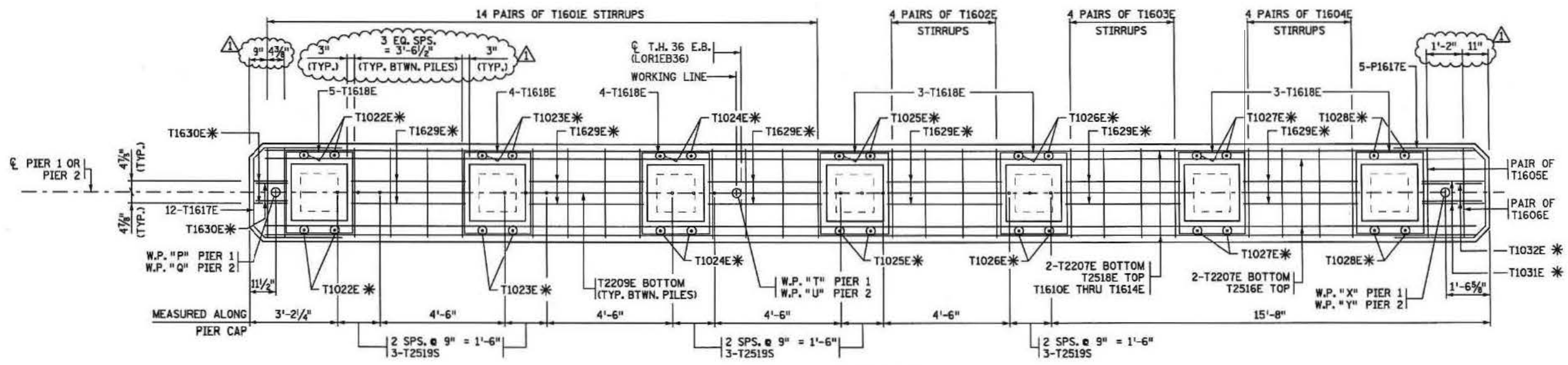
SECTION B-B

REVISION			APPROVED BY	CERTIFIED BY <i>Angel M. Staples</i> 8/5/13 LICENSED PROFESSIONAL ENGINEER	TITLE: PIER 1 AND PIER 2 GEOMETRICS STAGE 2 CONSTRUCTION	DES: M.D.H./N.J.V. DR: B.T.N. APPROVED: 8/5/13	BRIDGE NO. 62037
DATE	DESCRIPTION	APPROVED BY					
5-21-2013	ADDED REINFORCING FOR EASE OF FABRICATION AND RELOCATED 3/4" V GROOVE	AMS	NAME: ANGEL M. STAPLES LIC. NO. 41656			SHEET NO. 32R OF 68 SHEETS	

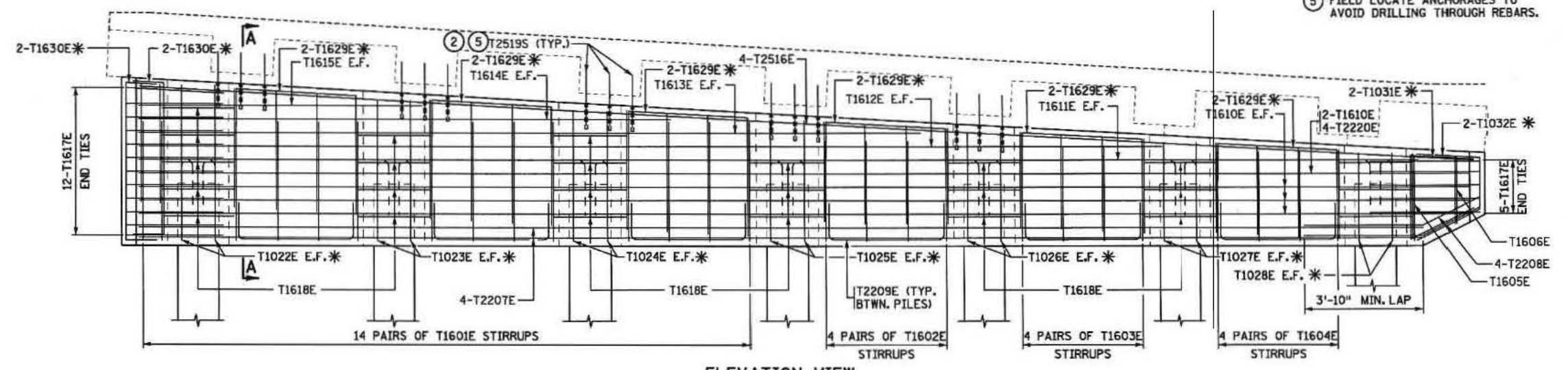
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TIME: 2:57:39 PM
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 PATH & FILENAME: Bridge/FInol_Design/6/62037/Cadd-Plan/Br62037_P1r.dgn



PLAN VIEW



ELEVATION VIEW

NOTES:
 * DENOTES ADDED REINFORCING.
 SEE SHEET NO. 33R FOR KEYNOTES & SECTION A-A.
 E.F. DENOTES EACH FACE

REVISION		
DATE	DESCRIPTION	APPROVED BY
5-21-2013	ADDED REINFORCING FOR EASE OF FABRICATION	AMS

CERTIFIED BY *Angel M. Staples* 8/5/13
 LICENSED PROFESSIONAL ENGINEER
 NAME: ANGEL M. STAPLES LIC. NO. 41656

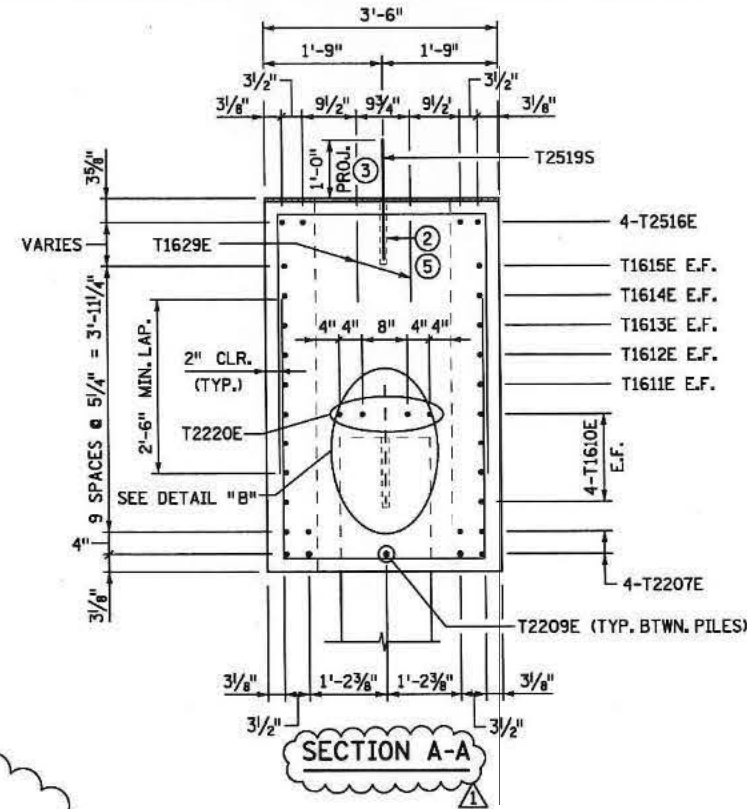
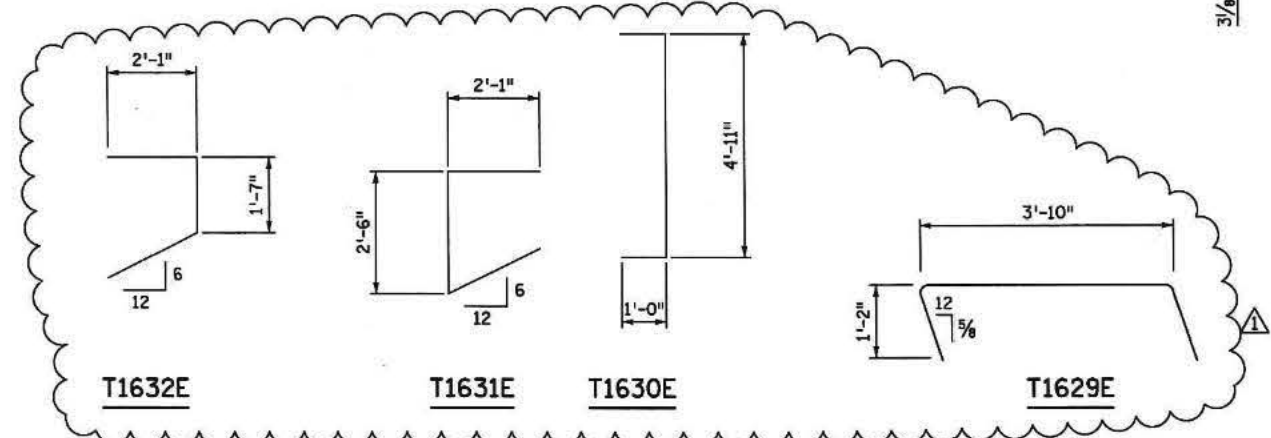
TITLE: PIER 1 AND PIER 2 REINFORCEMENT
 STAGE 2 CONSTRUCTION

DES: M.D.H./N.J.V. DR: B.T.N. APPROVED: 8/5/13
 CHK: P.J.K. CHK: N.J.V.

BRIDGE NO. 62037
 SHEET NO. 33R OF 68 SHEETS

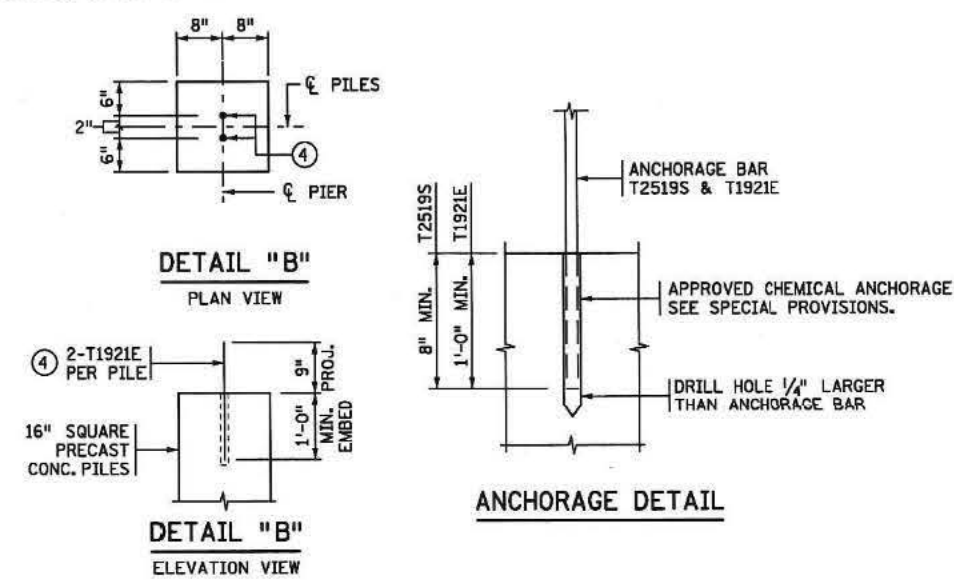
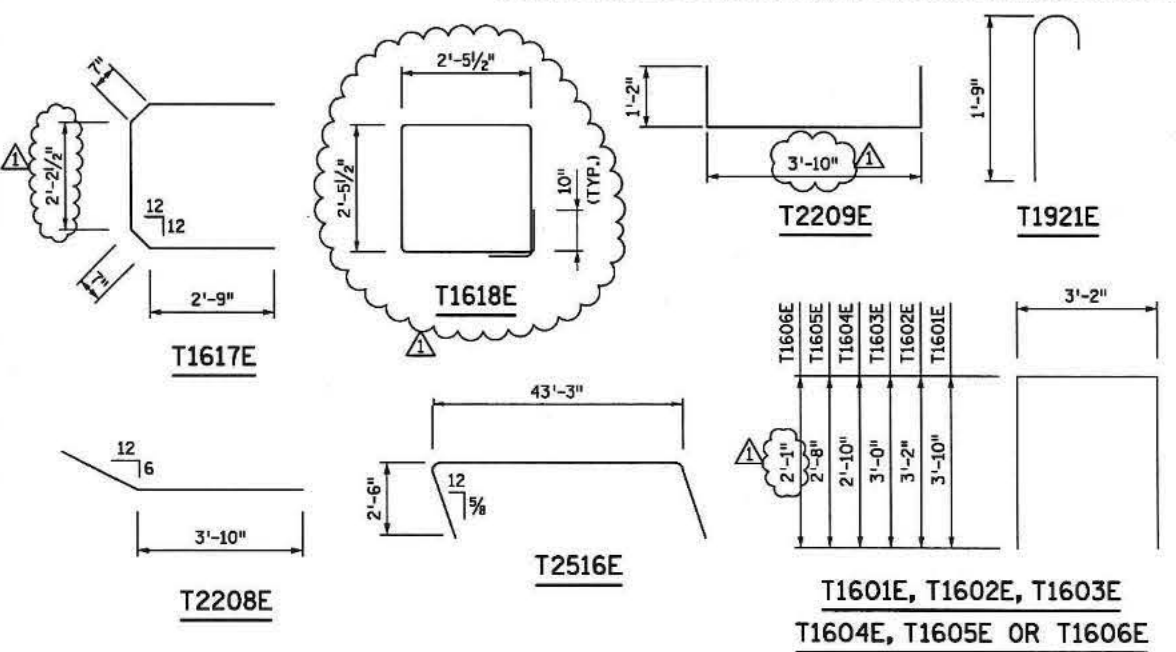
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TIME: 2:57:50 PM
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① BILL OF REINFORCEMENT FOR TWO PIERS - STAGE 2

BAR NO.	LENGTH	SHAPE	LOCATION
T1601E	56 10'-10"	□	STIRRUP
T1602E	16 9'-6"	□	STIRRUP
T1603E	16 9'-2"	□	STIRRUP
T1604E	16 8'-10"	□	STIRRUP
T1605E	4 8'-6"	□	STIRRUP
T1606E	4 7'-4"	□	STIRRUP
T2207E	16 4'-8"	—	HORIZONTAL
T2208E	16 5'-7"	—	HORIZONTAL
T2209E	12 6'-2"	—	HORIZONTAL BTWN. PIERS
T1610E	16 43'-2"	—	HORIZONTAL
T1611E	4 41'-6"	—	HORIZONTAL
T1612E	4 33'-2"	—	HORIZONTAL
T1613E	4 25'-4"	—	HORIZONTAL
T1614E	4 17'-4"	—	HORIZONTAL
T1615E	4 9'-3"	—	HORIZONTAL
T2516E	8 47'-7"	—	HORIZONTAL
T1617E	34 8'-11"	—	END TIES
T1618E	50 11'-6"	—	AROUND PIERS
T2519S	30 1'-8"	—	ANCHORAGE DOWEL
T2220E	8 43'-2"	—	HORIZONTAL
T1921E	28 2'-5"	—	ANCHORAGE DOWEL
T1022E	8 4'-8 1/2"	—	VERTICAL
T1023E	8 4'-4 1/2"	—	VERTICAL
T1024E	8 4'-0"	—	VERTICAL
T1025E	8 3'-8"	—	VERTICAL
T1026E	8 3'-3 1/2"	—	VERTICAL
T1027E	8 2'-11 1/2"	—	VERTICAL
T1028E	8 2'-7"	—	VERTICAL
T1629E	24 6'-2"	—	HORIZONTAL
T1630E	8 6'-11"	—	END TIES
T1631E	4 6'-7"	—	END TIES
T1632E	4 5'-8"	—	END TIES



- NOTES:**
- PAYMENT FOR REINFORCEMENT SHALL BE CONSIDERED INCIDENTAL TO PAY ITEM "PRECAST PIER ELEMENT" UNLESS OTHERWISE NOTED. TOTAL REINFORCEMENT LISTED IS FOR TWO PIER ELEMENTS.
 - PRECAST BEAMS TO BE SET IN PLACE PRIOR TO DRILLING HOLES FOR ANCHORAGES. DRILL 1/4" Ø HOLES FOR NO. 25 ANCHORAGES. USE APPROVED GROUT, 8" MIN. EMBEDMENT. INCLUDED IN PAYITEM "ANCHORAGES TYPE REINF BARS (STAINLESS STEEL)".
 - WRAP PROJECTED PART OF DOWEL WITH 1/2" THICK FOAM PIPE INSULATION FOR FULL HEIGHT.
 - BARs TO BE FIELD DRILLED AND GROUTED ONCE PILE IS AT FINAL ELEVATION PRIOR TO CAP PLACEMENT DRILL 1" Ø HOLES FOR NO. 19 ANCHORAGE. INCLUDED IN PAY ITEM "GROUTED REINFORCEMENT BARS".
- E.F. DENOTE EACH FACE.
- FIELD LOCATE ANCHORAGES TO AVOID DRILLING THROUGH REBARS.

REVISION		
DATE	DESCRIPTION	APPROVED BY
5-21-2013	ADDED REINFORCING FOR EASE OF FABRICATION	AMS

CERTIFIED BY *Angel M. Staples* 8/5/13
 LICENSED PROFESSIONAL ENGINEER
 NAME: ANGEL M. STAPLES DATE: 8/5/13
 LIC. NO. 41656

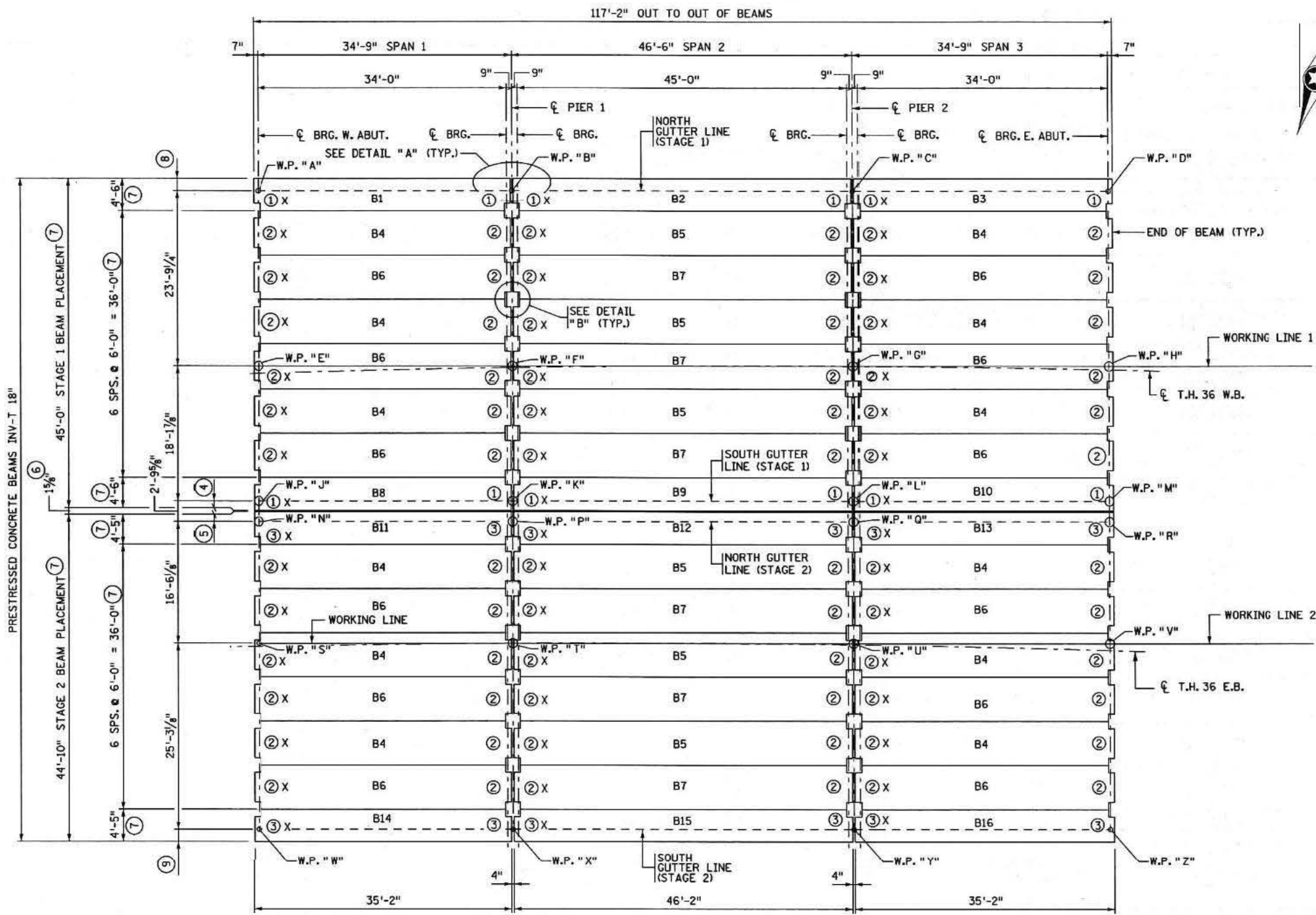
TITLE: PIER 1 AND PIER 2 REINFORCEMENT STAGE 2 CONSTRUCTION

DES: M.D.H./N.J.V.	DR: B.T.N.	APPROVED: 8/5/13	BRIDGE NO. 62037
CHK: P.J.K.	CHK: N.J.V.		

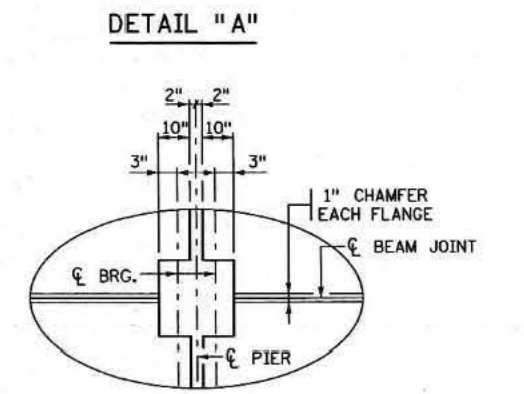
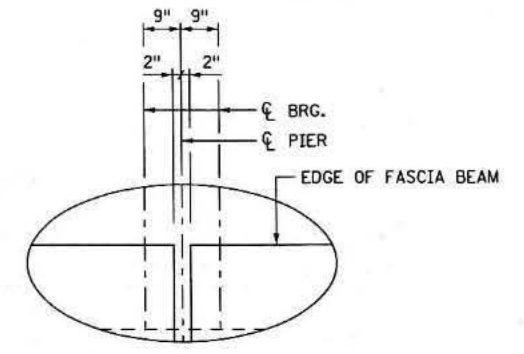
SHEET NO. 33AR OF 68 SHEETS

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TIME: 8:16:27 AM
 PLOTTED: 01-FEB-2013
 PATH & FILENAME: Bridge\Final_Design\62037\Cadd\Plan\br62037_sup



FRAMING PLAN



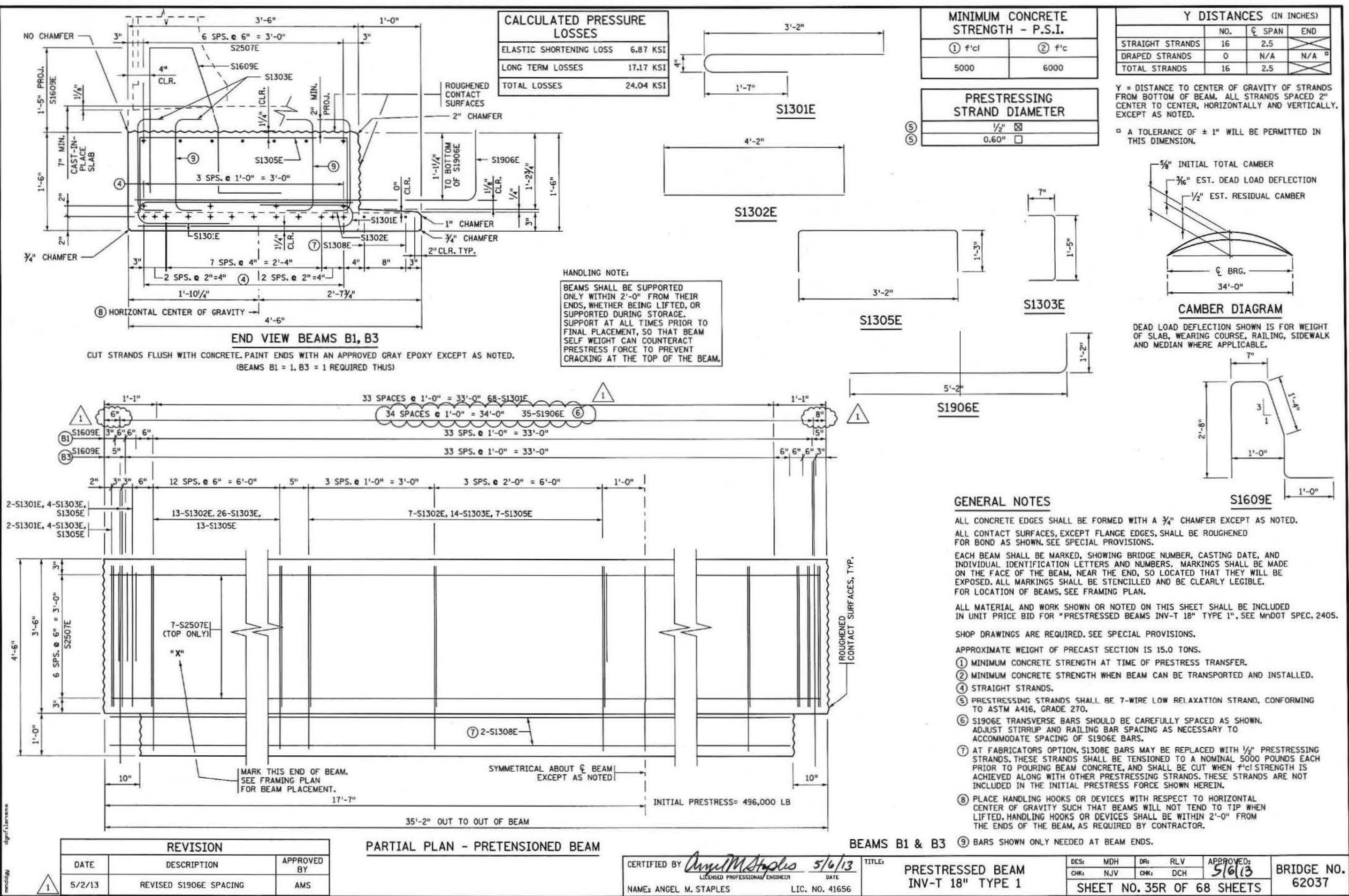
NOTES:

- X DENOTES "X" END OF PRECAST BEAM.
 - ① ELASTOMERIC BEARING PAD TYPE 1. SEE SHEET NO. 51.
 - ② ELASTOMERIC BEARING PAD TYPE 2. SEE SHEET NO. 51.
 - ③ ELASTOMERIC BEARING PAD TYPE 3. SEE SHEET NO. 51.
 - ④ DENOTES HORIZONTAL DISTANCES FROM WORKING POINT TO TOP OF BEAM EDGE (1'-3 3/8") AND WORKING POINT TO BOTTOM OF BEAM EDGE (1'-2 5/8").
 - ⑤ DENOTES HORIZONTAL DISTANCES FROM WORKING POINT TO TOP OF BEAM EDGE (1'-4 5/8") AND WORKING POINT TO BOTTOM OF BEAM EDGE (1'-5 3/8").
 - ⑥ DENOTES HORIZONTAL DISTANCE BETWEEN TOP OF BEAM EDGES AT THE 1" POLYSTYRENE JOINT. SEE DETAIL "B" ON SHEET NO. 45 FOR ADDITIONAL INFORMATION.
 - ⑦ DIMENSIONS FOR BEAMS ARE TAKEN PARALLEL TO ROADWAY CROSS SLOPE.
 - ⑧ DENOTES HORIZONTAL DISTANCES FROM WORKING POINT TO TOP OF BEAM EDGE (1'-8 3/8") AND WORKING POINT TO BOTTOM OF BEAM EDGE (1'-9 3/8").
 - ⑨ DENOTES HORIZONTAL DISTANCES FROM WORKING POINT TO TOP OF BEAM EDGE (1'-7 7/8") AND WORKING POINT TO BOTTOM OF BEAM EDGE (1'-6 5/8").
- "PRESTRESSED BEAMS INV-T 18" TYPE 1" INCLUDES BEAMS DESIGNATED AS B1, B2, B3, B8, B9 AND B10.
- "PRESTRESSED BEAMS INV-T 18" TYPE 2" INCLUDES BEAMS DESIGNATED AS B4, B5, B6 AND B7.
- "PRESTRESSED BEAMS INV-T 18" TYPE 3" INCLUDES BEAMS DESIGNATED AS B11, B12, B13, B14, B15 AND B16.

CERTIFIED BY <i>Angel M. Staples</i> LICENSED PROFESSIONAL ENGINEER	DATE 2/1/13	TITLE: FRAMING PLAN	DES: NJV CHK: MDH	DR: RLV CHK: DCH	APPROVED: <i>2/1/13</i>	BRIDGE NO. 62037
NAME: ANGEL M. STAPLES LIC. NO. 41656		SHEET NO. 34 OF 68 SHEETS				

FILENAME: IP_PWP-1489447-162037-sup.dgn

TIME: 6:21:49 PM
PLOTTED: 02-MAY-2013
PATH & FILENAME: Bridge/Final_Design/16/62037/Cadd/Plan/16/62037-sup.dgn



CALCULATED PRESSURE LOSSES	
ELASTIC SHORTENING LOSS	6.87 KSI
LONG TERM LOSSES	17.17 KSI
TOTAL LOSSES	24.04 KSI

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

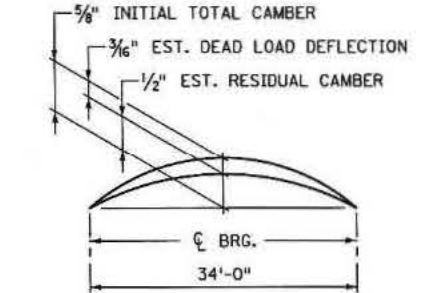
Y DISTANCES (IN INCHES)			
	NO.	CL. SPAN	END
STRAIGHT STRANDS	16	2.5	
DRAPED STRANDS	0	N/A	N/A
TOTAL STRANDS	16	2.5	

PRESTRESSING STRAND DIAMETER	
⑤	1/2" <input checked="" type="checkbox"/>
⑥	0.60" <input type="checkbox"/>

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.

HANDLING NOTE:
BEAMS SHALL BE SUPPORTED ONLY WITHIN 2'-0" FROM THEIR ENDS, WHETHER BEING LIFTED, OR SUPPORTED DURING STORAGE. 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.



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 EXCEPT AS NOTED.
- ALL CONTACT SURFACES, EXCEPT FLANGE EDGES, SHALL BE ROUGHENED FOR BOND AS SHOWN. SEE SPECIAL PROVISIONS.
- 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 BEAMS INV-T 18" TYPE 1", SEE MCDOT SPEC. 2405.
- SHOP DRAWINGS ARE REQUIRED. SEE SPECIAL PROVISIONS.
- APPROXIMATE WEIGHT OF PRECAST SECTION IS 15.0 TONS.
- ① MINIMUM CONCRETE STRENGTH AT TIME OF PRESTRESS TRANSFER.
- ② MINIMUM CONCRETE STRENGTH WHEN BEAM CAN BE TRANSPORTED AND INSTALLED.
- ④ STRAIGHT STRANDS.
- ⑤ PRESTRESSING STRANDS SHALL BE 7-WIRE LOW RELAXATION STRAND, CONFORMING TO ASTM A416, GRADE 270.
- ⑥ S1906 TRANSVERSE BARS SHOULD BE CAREFULLY SPACED AS SHOWN. ADJUST STIRRUP AND RAILING BAR SPACING AS NECESSARY TO ACCOMMODATE SPACING OF S1906 BARS.
- ⑦ AT FABRICATOR'S OPTION, S1308E BARS MAY BE REPLACED WITH 1/2" 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.
- ⑧ 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.
- ⑨ BARS SHOWN ONLY NEEDED AT BEAM ENDS.

REVISION		
DATE	DESCRIPTION	APPROVED BY
5/2/13	REVISED S1906 SPACING	AMS

PARTIAL PLAN - PRETENSIONED BEAM

CERTIFIED BY *Angel M. Staples* 5/6/13
 LICENSED PROFESSIONAL ENGINEER
 NAME: ANGEL M. STAPLES LIC. NO. 41656

TITLE: **PRESTRESSED BEAM INV-T 18" TYPE 1**

DES: MDH	DR: RLV	APPROVED: 5/6/13	BRIDGE NO. 62037
CHK: NJV	CHK: DCH		

SHEET NO. 35R OF 68 SHEETS

FILENAME: IP_PWP-dl489447v62037_sup.dgn

TIME: 6:21:05 PM
PLOTTED: 02-MAY-2013
PATH & FILENAME: Bridge/Final_Design/6/62037/Cadd-Plan/vr62037_sup.dgn

END VIEW BEAM B2

END VIEW BEAM B2
CUT STRANDS FLUSH WITH CONCRETE. PAINT ENDS WITH AN APPROVED GRAY EPOXY EXCEPT AS NOTED.
(BEAMS B2 = 1 REQUIRED THUS)

CALCULATED PRESSURE LOSSES

ELASTIC SHORTENING LOSS	9.00 KSI
LONG TERM LOSSES	20.34 KSI
TOTAL LOSSES	29.34 KSI

MINIMUM CONCRETE STRENGTH - P.S.I.

① f'ci	② f'c
5000	6000

Y DISTANCES (IN INCHES)

	NO.	CL. SPAN	END
STRAIGHT STRANDS	26	3.38	
DRAPED STRANDS	0	N/A	N/A
TOTAL STRANDS	26	3.38	

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.

HANDLING NOTE:
BEAMS SHALL BE SUPPORTED ONLY WITHIN 2'-0" FROM THEIR ENDS, WHETHER BEING LIFTED, OR SUPPORTED DURING STORAGE. 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.

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 EXCEPT AS NOTED.
- ALL CONTACT SURFACES, EXCEPT FLANGE EDGES, SHALL BE ROUGHENED FOR BOND AS SHOWN. SEE SPECIAL PROVISIONS.
- 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 BEAMS INV-T 18" TYPE 1", SEE MnDOT SPEC. 2405.
- SHOP DRAWINGS ARE REQUIRED. SEE SPECIAL PROVISIONS.
- APPROXIMATE WEIGHT OF PRECAST SECTION IS 19.6 TONS.
- ① MINIMUM CONCRETE STRENGTH AT TIME OF PRESTRESS TRANSFER.
- ② MINIMUM CONCRETE STRENGTH WHEN BEAM CAN BE TRANSPORTED AND INSTALLED.
- ④ STRAIGHT STRANDS.
- ⑤ PRESTRESSING STRANDS SHALL BE 7-WIRE LOW RELAXATION STRAND, CONFORMING TO ASTM A416, GRADE 270.
- ⑥ S1906E TRANSVERSE BARS SHOULD BE CAREFULLY SPACED AS SHOWN. ADJUST STIRRUP AND RAILING BAR SPACING AS NECESSARY TO ACCOMMODATE SPACING OF S1906E BARS.
- ⑦ AT FABRICATORS OPTION, S1308E BARS MAY BE REPLACED WITH 1/2" 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.
- ⑧ 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.
- ⑨ BARS SHOWN ONLY NEEDED AT BEAM ENDS.

PARTIAL PLAN - PRETENSIONED BEAM

46'-2" OUT TO OUT OF BEAM
INITIAL PRESTRESS = 806,000 LB

REVISION		
DATE	DESCRIPTION	APPROVED BY
5/2/13	REVISED S1906E SPACING	AMS

CERTIFIED BY Angel M. Staples 5/6/13
LICENSED PROFESSIONAL ENGINEER
NAME: ANGEL M. STAPLES LIC. NO. 41656

TITLE: **PRESTRESSED BEAM INV-T 18" TYPE 1**

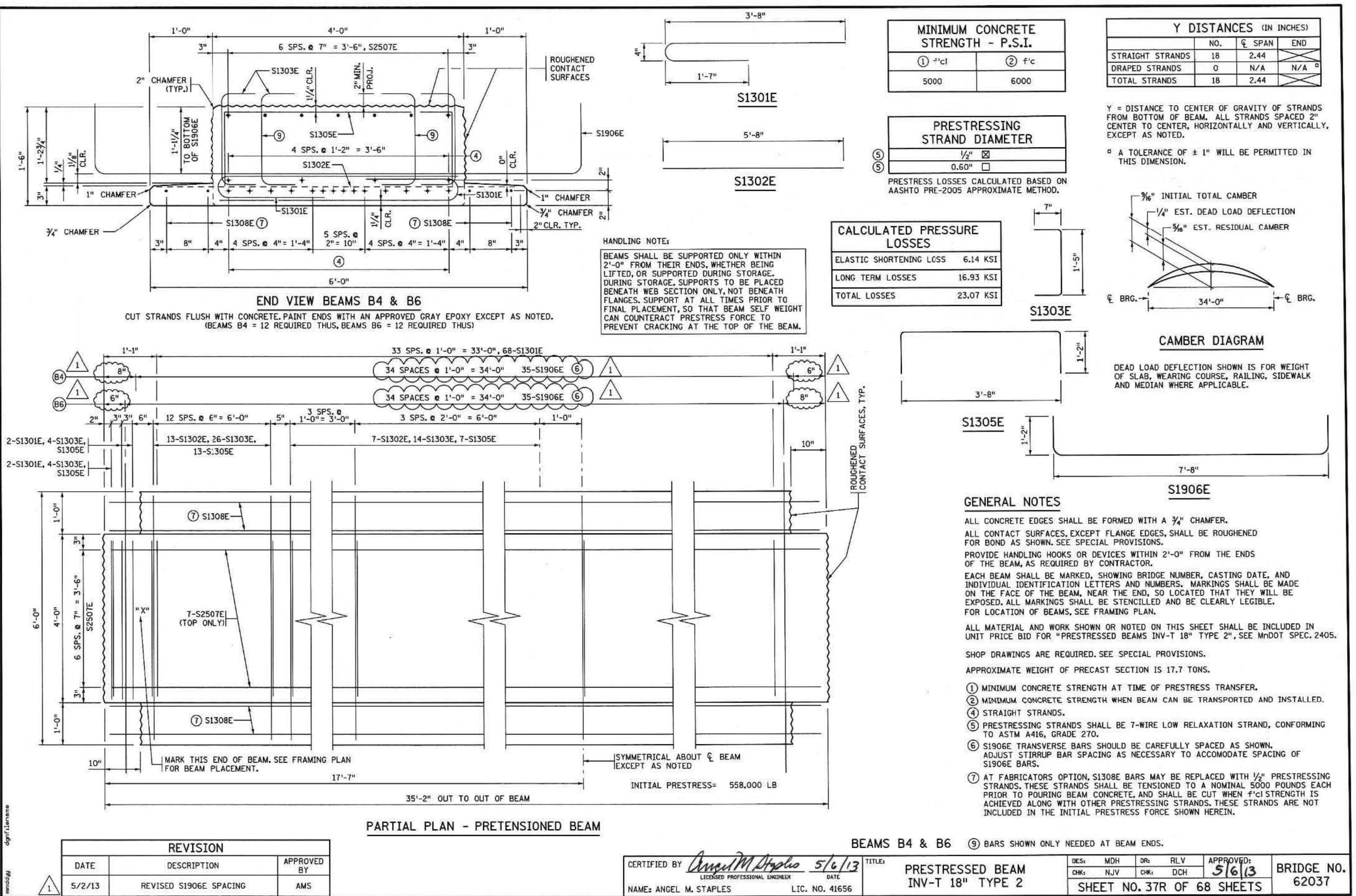
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CHK: NJV	CHK: DCH	

SHEET NO. 36R OF 68 SHEETS

BRIDGE NO. 62037

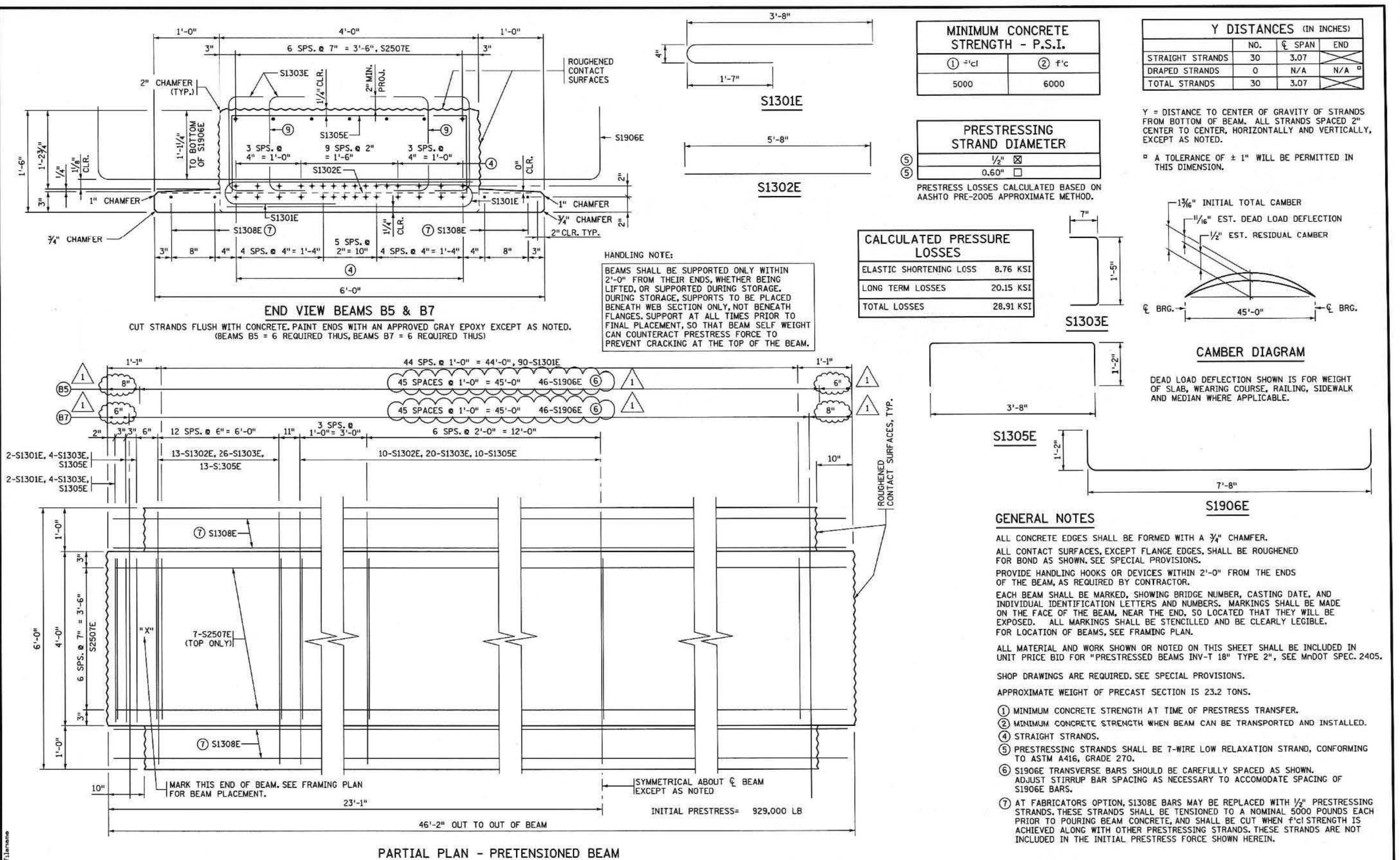
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FILENAME: IP_PWP\dl489447\br62037_swp.dgn

TIME: 6:19:43 PM
PLOTTED: 02-MAY-2013
PATH & FILENAME: Bridge/Final_Design/E/62037/Cadd/Plan/br62037_swp.dgn



REVISION		
DATE	DESCRIPTION	APPROVED BY
5/2/13	REVISED S1906E SPACING	AMS

CERTIFIED BY Angel M. Staples 5/6/13
LICENSED PROFESSIONAL ENGINEER
NAME: ANGEL M. STAPLES LIC. NO. 41656

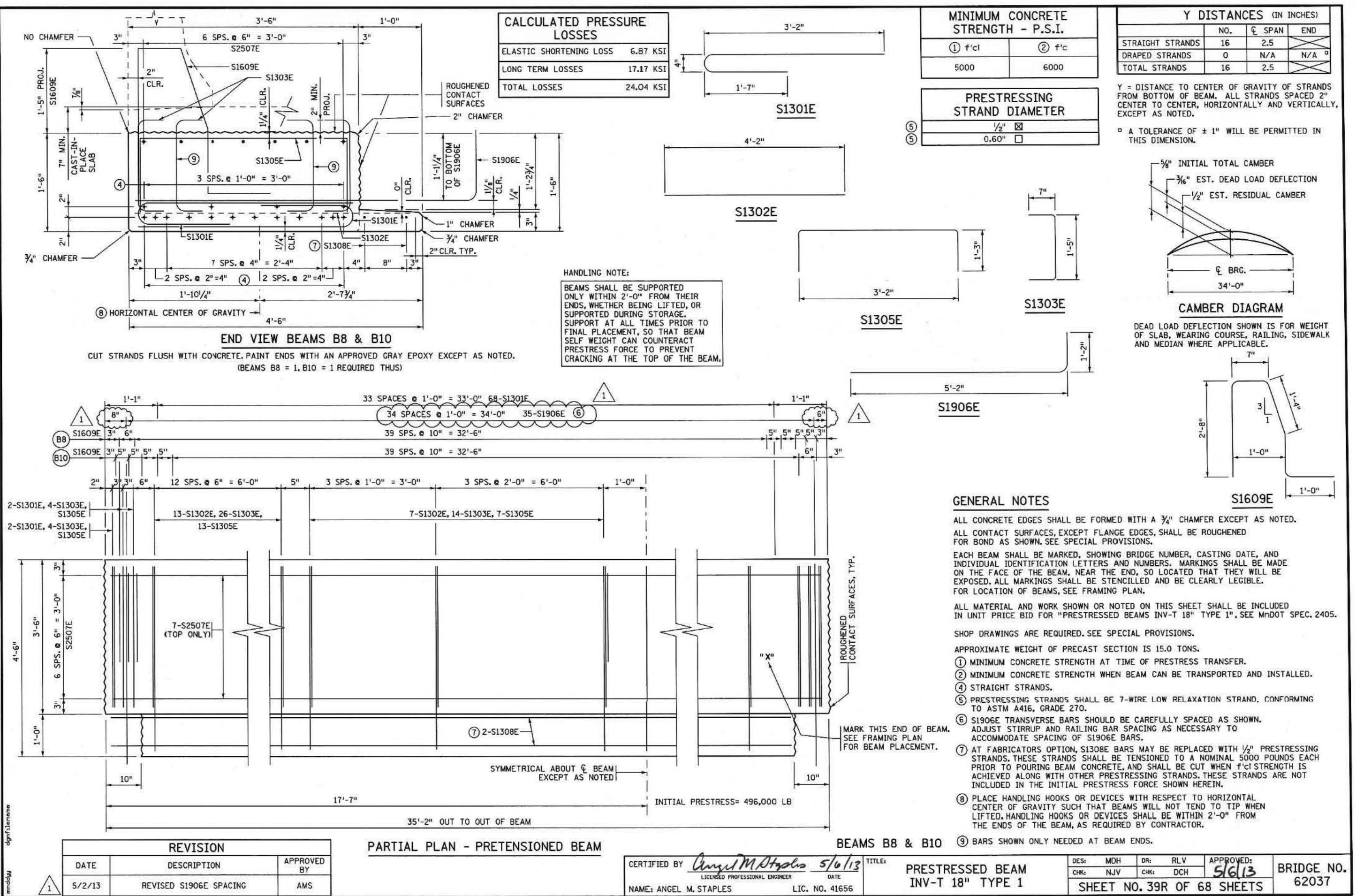
TITLE: PRESTRESSED BEAM
INV-T 18" TYPE 2

DES: MDH DR: RLV APPROVED: 5/6/13
CHK: NJV CHK: DCH
SHEET NO. 38R OF 68 SHEETS
BRIDGE NO. 62037

FILENAME: IP_PWP-d1489447-br62037-sup.dgn

PATH & FILENAME: Bridge/Incl_Design/6/62037/Cadd/Plan/br62037-sup.dgn

TIME: 6:33:48 PM
PLOTTED: 02-MAY-2013



CALCULATED PRESSURE LOSSES	
ELASTIC SHORTENING LOSS	6.87 KSI
LONG TERM LOSSES	17.17 KSI
TOTAL LOSSES	24.04 KSI

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

Y DISTANCES (IN INCHES)			
	NO.	CL. SPAN	END
STRAIGHT STRANDS	16	2.5	N/A
DRAPED STRANDS	0	N/A	N/A
TOTAL STRANDS	16	2.5	N/A

PRESTRESSING STRAND DIAMETER	
⑤	1/2" <input checked="" type="checkbox"/>
⑥	0.60" <input type="checkbox"/>

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.

HANDLING NOTE:
 BEAMS SHALL BE SUPPORTED ONLY WITHIN 2'-0" FROM THEIR ENDS, WHETHER BEING LIFTED, OR SUPPORTED DURING STORAGE. 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.

GENERAL NOTES

- ALL CONCRETE EDGES SHALL BE FORMED WITH A 3/8" CHAMFER EXCEPT AS NOTED.
- ALL CONTACT SURFACES, EXCEPT FLANGE EDGES, SHALL BE ROUGHENED FOR BOND AS SHOWN. SEE SPECIAL PROVISIONS.
- 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 BEAMS INV-T 18" TYPE 1", SEE MDOT SPEC. 2405.
- SHOP DRAWINGS ARE REQUIRED. SEE SPECIAL PROVISIONS.
- APPROXIMATE WEIGHT OF PRECAST SECTION IS 15.0 TONS.
- ① MINIMUM CONCRETE STRENGTH AT TIME OF PRESTRESS TRANSFER.
- ② MINIMUM CONCRETE STRENGTH WHEN BEAM CAN BE TRANSPORTED AND INSTALLED.
- ④ STRAIGHT STRANDS.
- ⑤ PRESTRESSING STRANDS SHALL BE 7-WIRE LOW RELAXATION STRAND, CONFORMING TO ASTM A416, GRADE 270.
- ⑥ S1906E TRANSVERSE BARS SHOULD BE CAREFULLY SPACED AS SHOWN. ADJUST STIRRUP AND RAILING BAR SPACING AS NECESSARY TO ACCOMMODATE SPACING OF S1906E BARS.
- ⑦ AT FABRICATORS OPTION, S1308E BARS MAY BE REPLACED WITH 1/2" 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.
- ⑧ 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.
- ⑨ BARS SHOWN ONLY NEEDED AT BEAM ENDS.

REVISION		
DATE	DESCRIPTION	APPROVED BY
5/2/13	REVISED S1906E SPACING	AMS

PARTIAL PLAN - PRETENSIONED BEAM

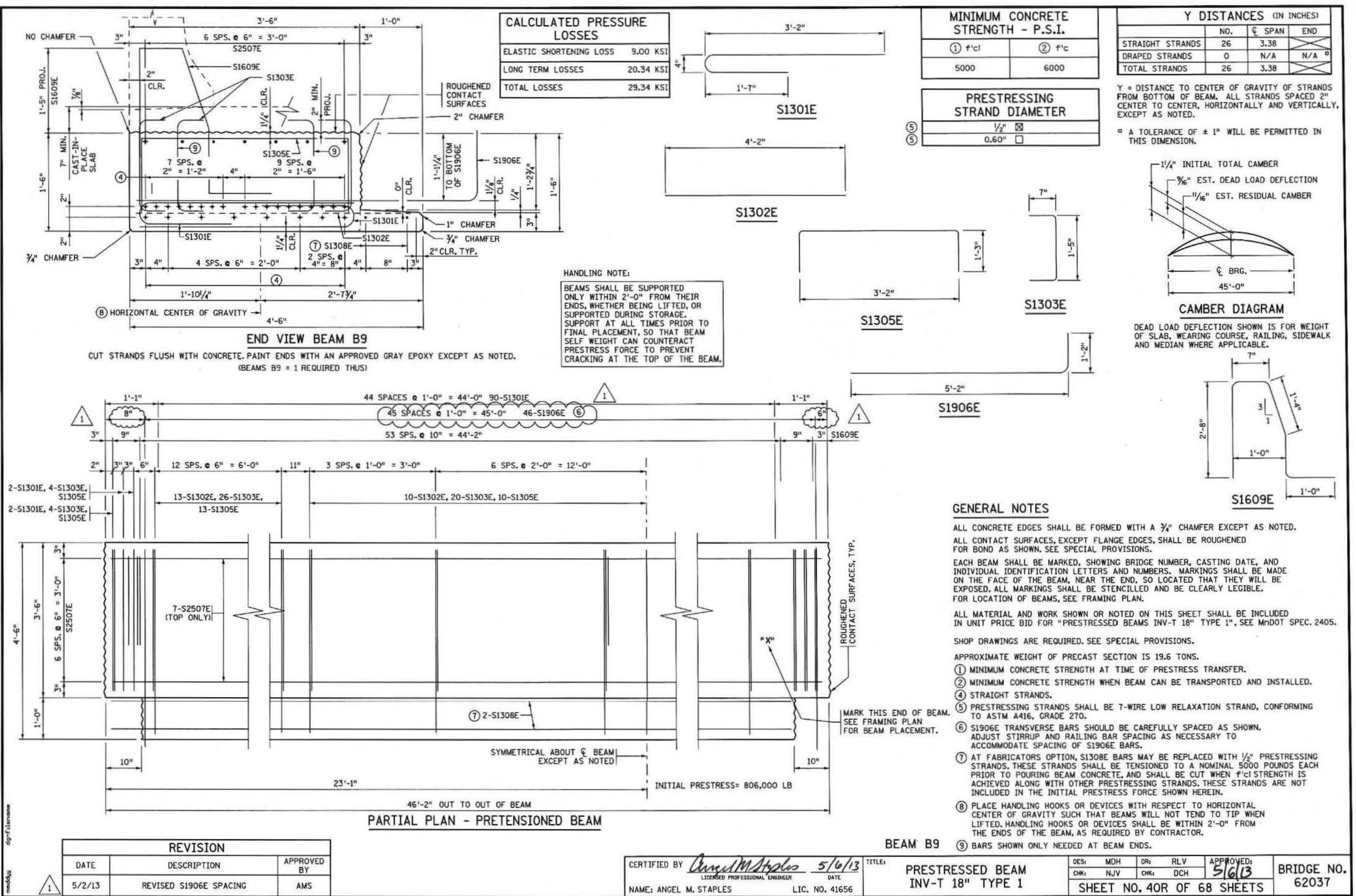
CERTIFIED BY Angel M. Staples 5/6/13
 LICENSED PROFESSIONAL ENGINEER
 NAME: ANGEL M. STAPLES LIC. NO. 41656

TITLE: **PRESTRESSED BEAM INV-T 18" TYPE 1**

DES: MDH	DR: RLV	APPROVED: <u>SIG/13</u>	BRIDGE NO. 62037
CHK: NJV	CHK: DCH	SHEET NO. 39R OF 68 SHEETS	

FILENAME: IP_PWP-d148947-br62037_sup.dgn

TIME: 6:34 PM
PLOTTED: 02-MAY-2013
PATH & FILENAME: Bridge/Incl_Design/6/62037/Cadd-Plan/br62037_sup.dgn



REVISION		
DATE	DESCRIPTION	APPROVED BY
5/2/13	REVISED S1906E SPACING	AMS

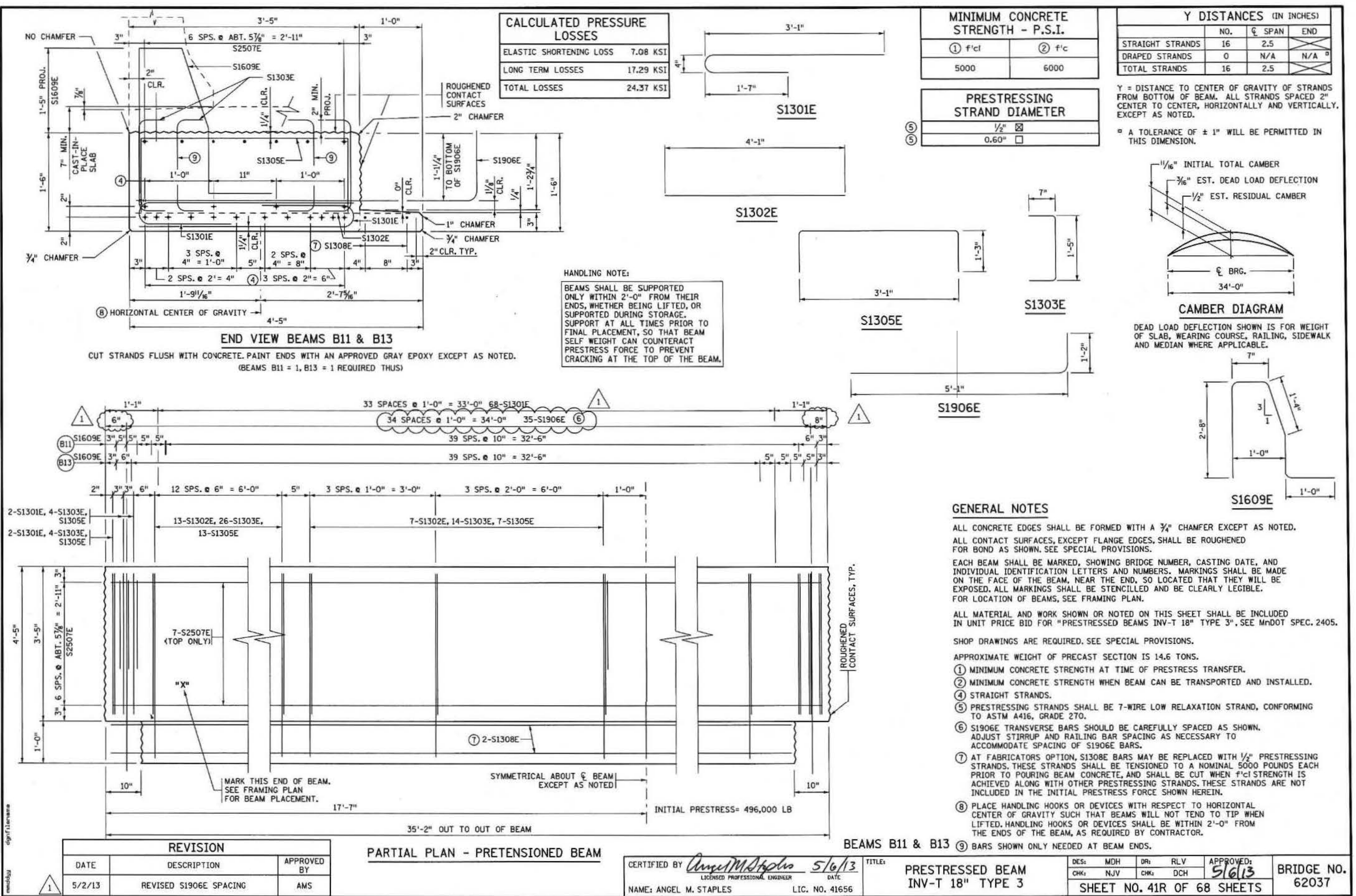
CERTIFIED BY *Angel M. Staples* 5/6/13
 LICENSED PROFESSIONAL ENGINEER
 NAME: ANGEL M. STAPLES LIC. NO. 41656

TITLE: PRESTRESSED BEAM
 INV-T 18" TYPE 1

DES: MDH DR: RLV APPROVED: 5/6/13
 CHK: NJV CHK: DCH
 SHEET NO. 40R OF 68 SHEETS BRIDGE NO. 62037

FILENAME: IP_PWP-dl48947-bv62037-sup.dgn

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PLOTTED: 02-MAY-2013
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REVISION		
DATE	DESCRIPTION	APPROVED BY
5/2/13	REVISED S1906E SPACING	AMS

PARTIAL PLAN - PRETENSIONED BEAM

CERTIFIED BY *Angel M. Staples* 5/6/13
LICENSED PROFESSIONAL ENGINEER
NAME: ANGEL M. STAPLES LIC. NO. 41656

TITLE: **PRESTRESSED BEAM INV-T 18" TYPE 3**

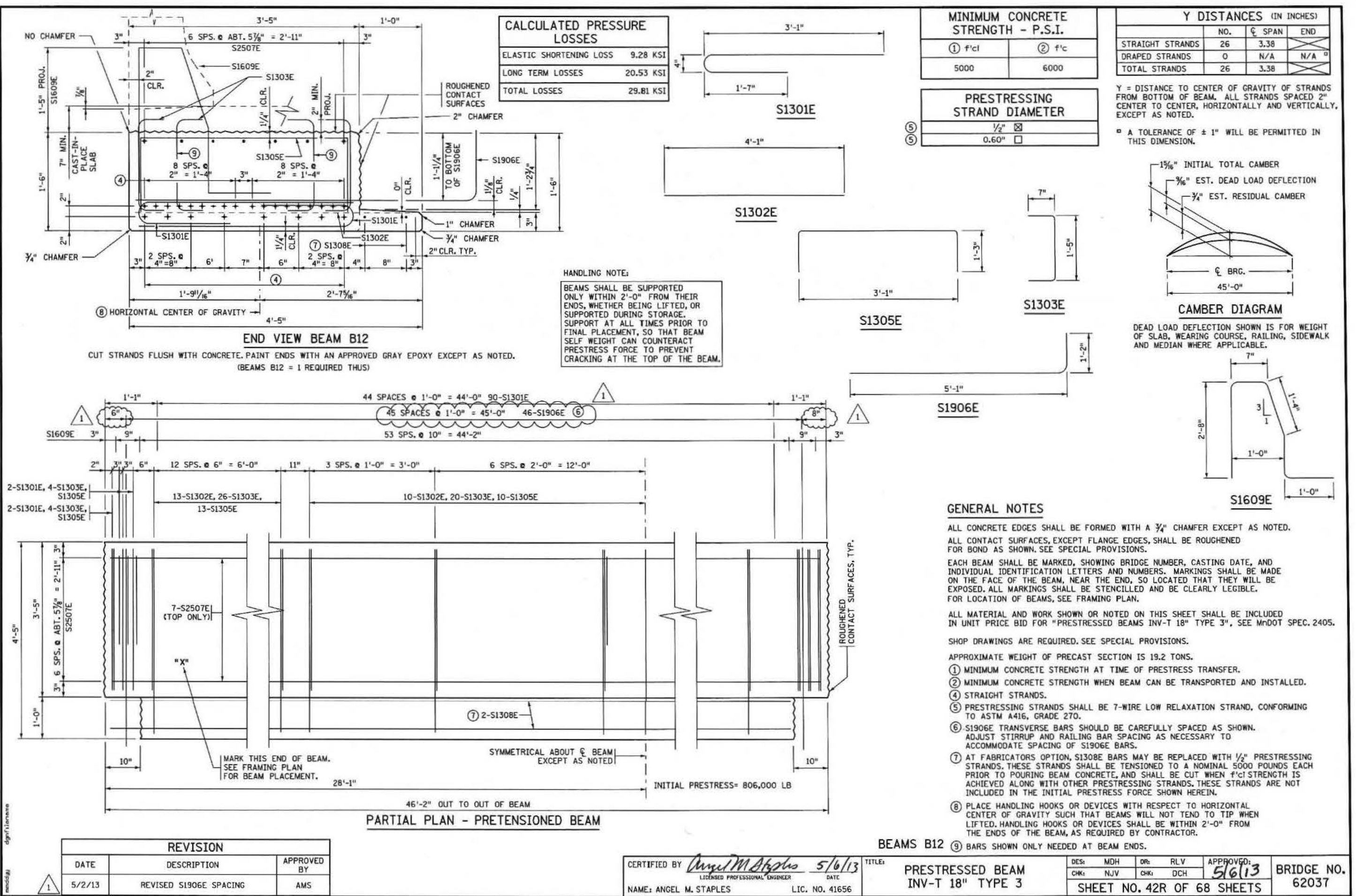
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CHK: NJV	CHK: DCH		

SHEET NO. 41R OF 68 SHEETS

FILENAME: IP_PWP-d148947v62037_sup.dgn

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TIME: 6:40:05 PM
PLOTTED: 02-MAY-2013



CALCULATED PRESSURE LOSSES	
ELASTIC SHORTENING LOSS	9.28 KSI
LONG TERM LOSSES	20.53 KSI
TOTAL LOSSES	29.81 KSI

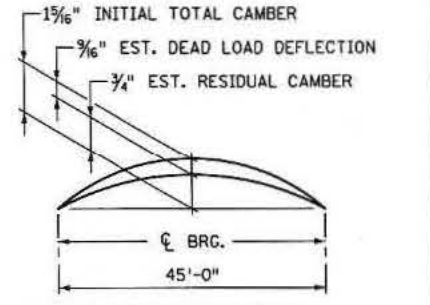
MINIMUM CONCRETE STRENGTH - P.S.I.	
① f'ci	② f'c
5000	6000

Y DISTANCES (IN INCHES)			
	NO.	CL. SPAN	END
STRAIGHT STRANDS	26	3.38	
DRAPED STRANDS	0	N/A	N/A
TOTAL STRANDS	26	3.38	

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

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.



HANDLING NOTE:
BEAMS SHALL BE SUPPORTED ONLY WITHIN 2'-0" FROM THEIR ENDS, WHETHER BEING LIFTED, OR SUPPORTED DURING STORAGE. 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.

- GENERAL NOTES**
- ALL CONCRETE EDGES SHALL BE FORMED WITH A 3/4" CHAMFER EXCEPT AS NOTED.
 - ALL CONTACT SURFACES, EXCEPT FLANGE EDGES, SHALL BE ROUGHENED FOR BOND AS SHOWN. SEE SPECIAL PROVISIONS.
 - 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 BEAMS INV-T 18" TYPE 3", SEE MnDOT SPEC. 2405.
 - SHOP DRAWINGS ARE REQUIRED. SEE SPECIAL PROVISIONS.
 - APPROXIMATE WEIGHT OF PRECAST SECTION IS 19.2 TONS.
 - ① MINIMUM CONCRETE STRENGTH AT TIME OF PRESTRESS TRANSFER.
 - ② MINIMUM CONCRETE STRENGTH WHEN BEAM CAN BE TRANSPORTED AND INSTALLED.
 - ④ STRAIGHT STRANDS.
 - ⑤ PRESTRESSING STRANDS SHALL BE 7-WIRE LOW RELAXATION STRAND, CONFORMING TO ASTM A416, GRADE 270.
 - ⑥ S1906E TRANSVERSE BARS SHOULD BE CAREFULLY SPACED AS SHOWN. ADJUST STIRRUP AND RAILING BAR SPACING AS NECESSARY TO ACCOMMODATE SPACING OF S1906E BARS.
 - ⑦ AT FABRICATOR'S OPTION, S1308E BARS MAY BE REPLACED WITH 1/2" 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.
 - ⑧ 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.

REVISION		
DATE	DESCRIPTION	APPROVED BY
5/2/13	REVISED S1906E SPACING	AMS

CERTIFIED BY Angel M. Staples 5/6/13
LICENSED PROFESSIONAL ENGINEER
NAME: ANGEL M. STAPLES LIC. NO. 41656

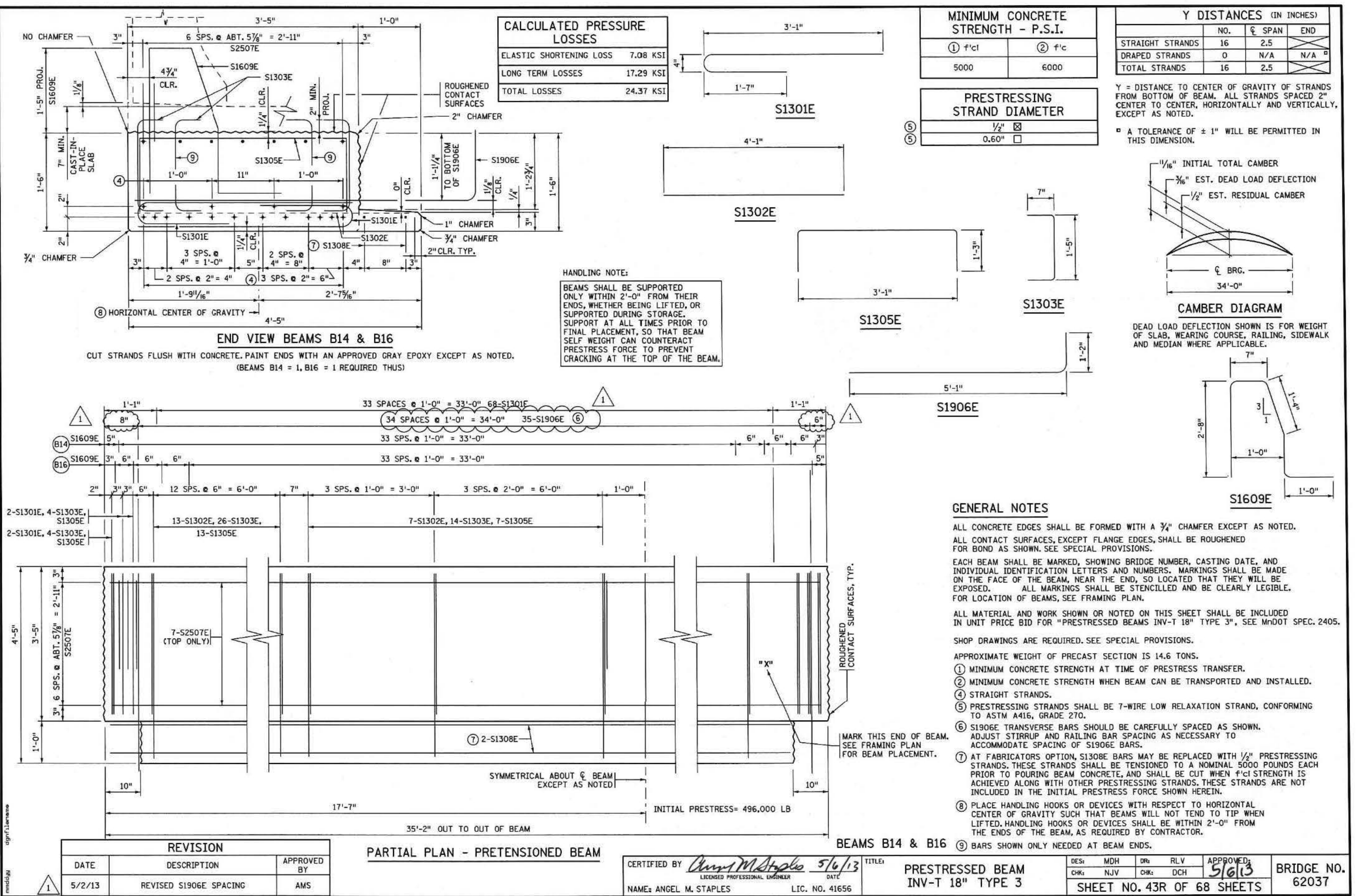
BEAMS B12 ⑨ BARS SHOWN ONLY NEEDED AT BEAM ENDS.

TITLE: **PRESTRESSED BEAM INV-T 18" TYPE 3**

DES: MOH	DR: RLV	APPROVED: 5/6/13	BRIDGE NO. 62037
CHK: NJV	CHK: DCH	SHEET NO. 42R OF 68 SHEETS	

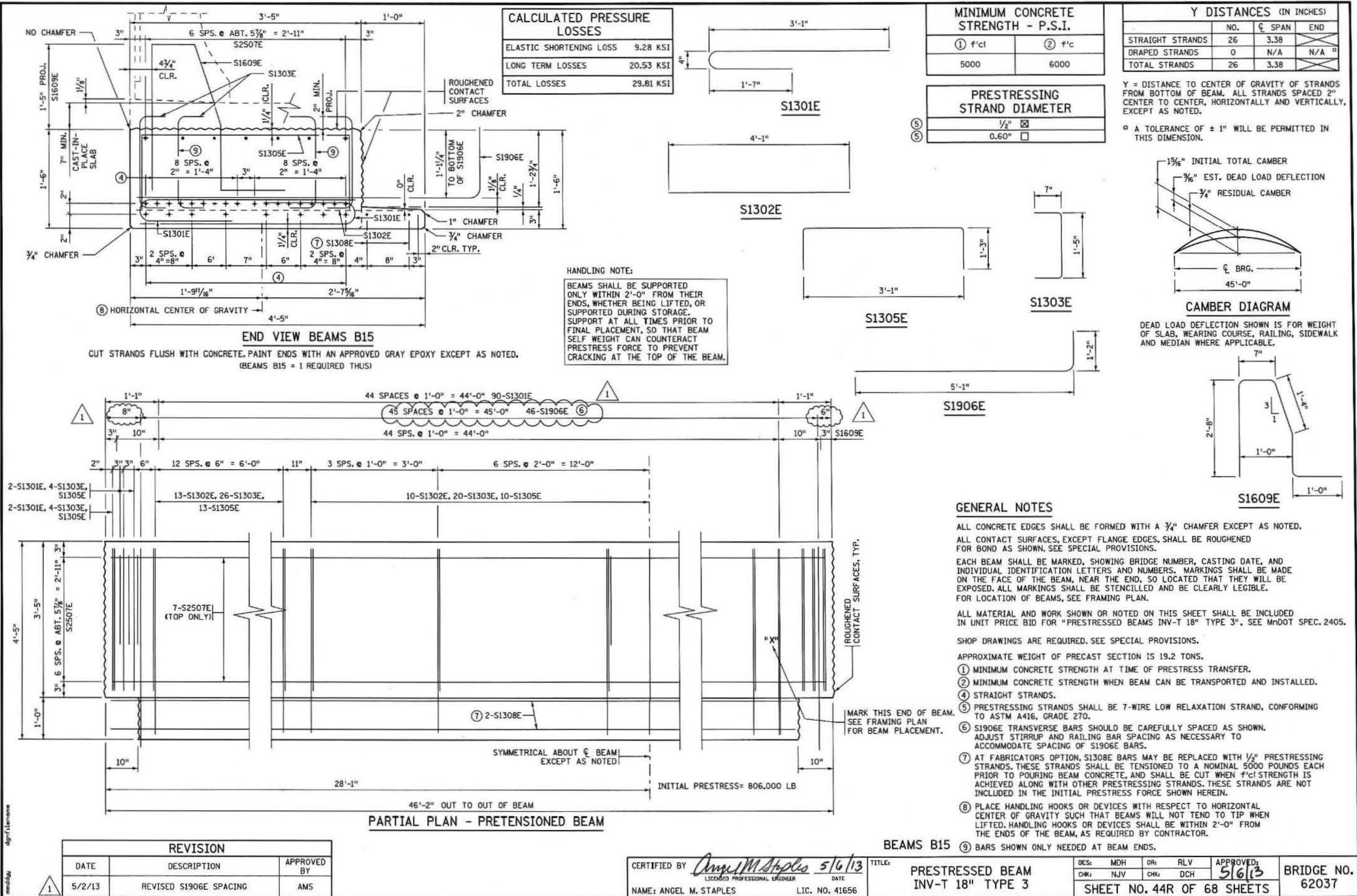
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REVISION		
DATE	DESCRIPTION	APPROVED BY
5/2/13	REVISED S1906E SPACING	AMS

CERTIFIED BY *Angel M. Staples* 5/6/13
LICENSED PROFESSIONAL ENGINEER
NAME: ANGEL M. STAPLES LIC. NO. 41656

TITLE: **PRESTRESSED BEAM INV-T 18" TYPE 3**

DES: MDH	DR: RLV	APPROVED: 5/6/13	BRIDGE NO. 62037
CHK: NJV	CHK: DCH		

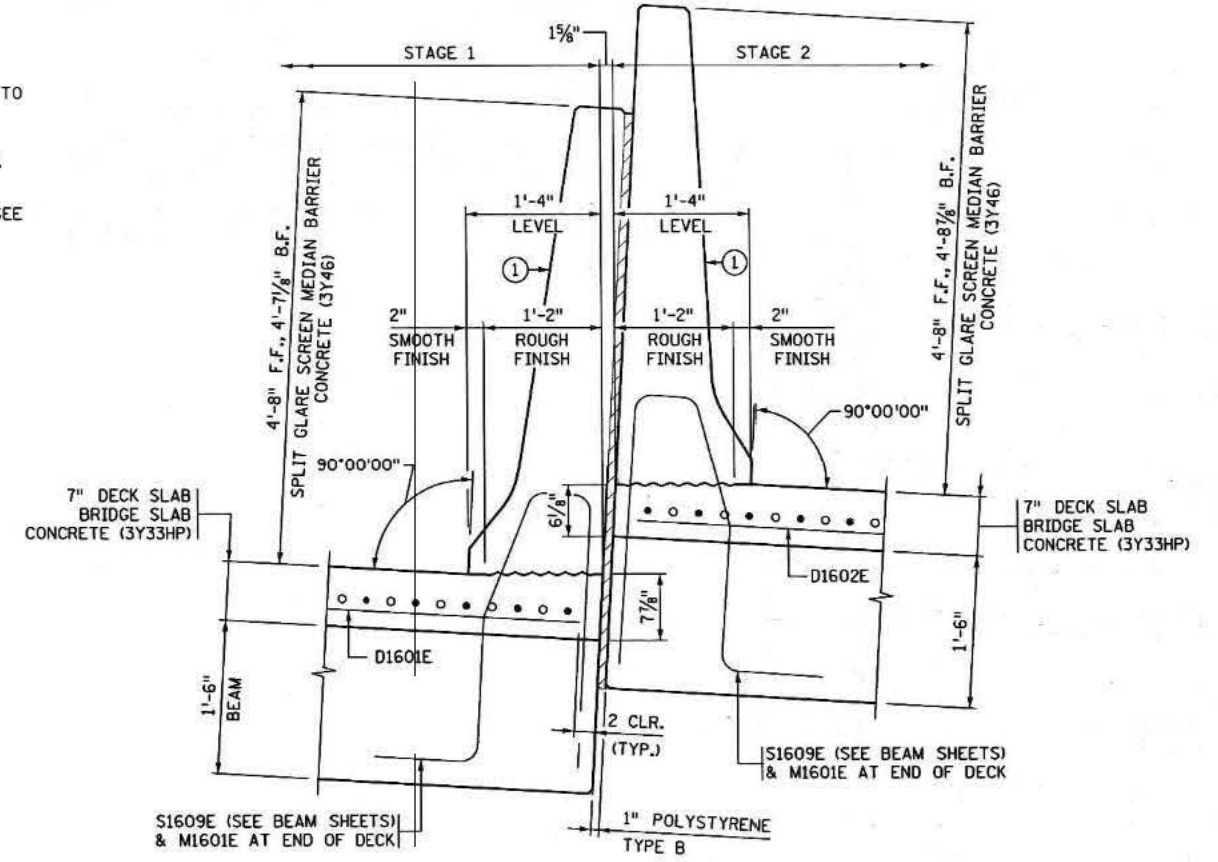
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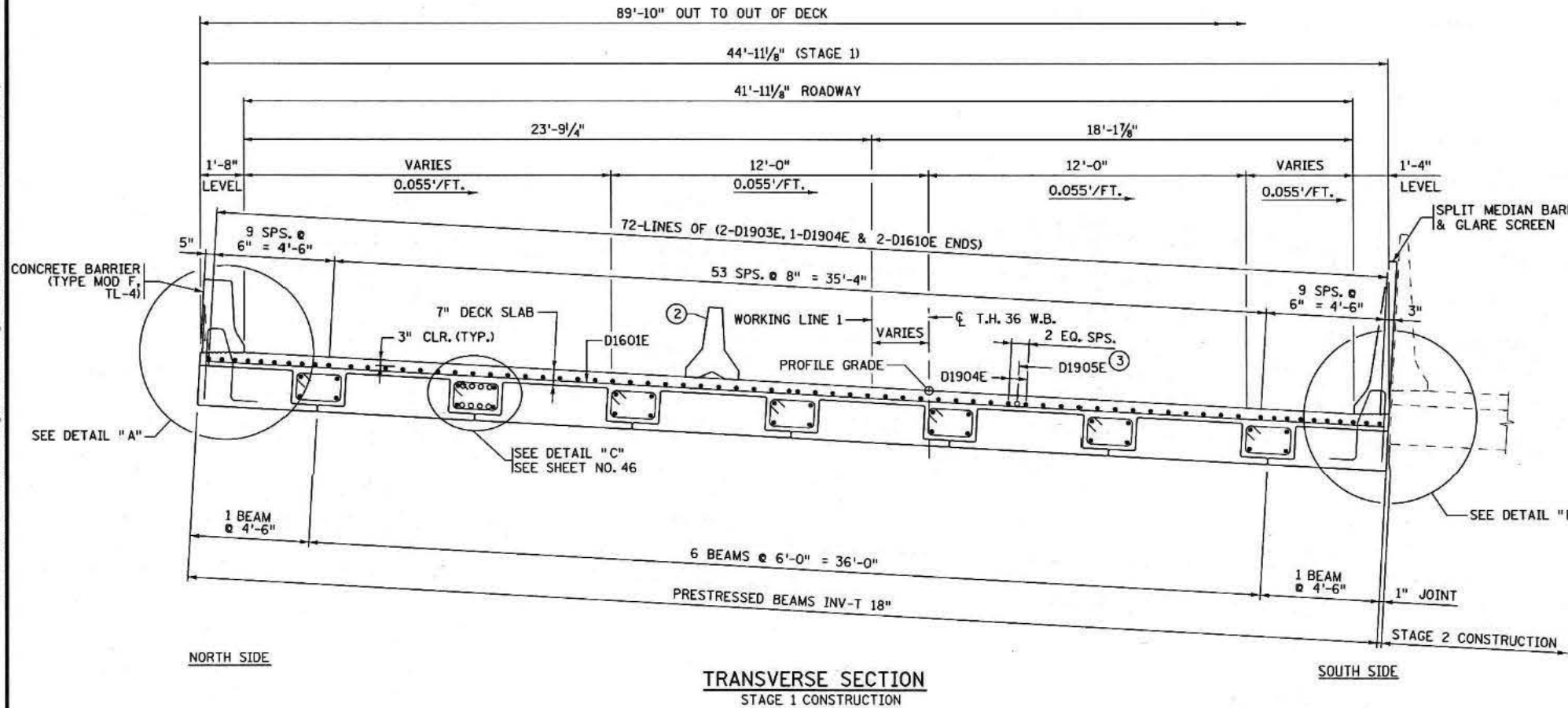
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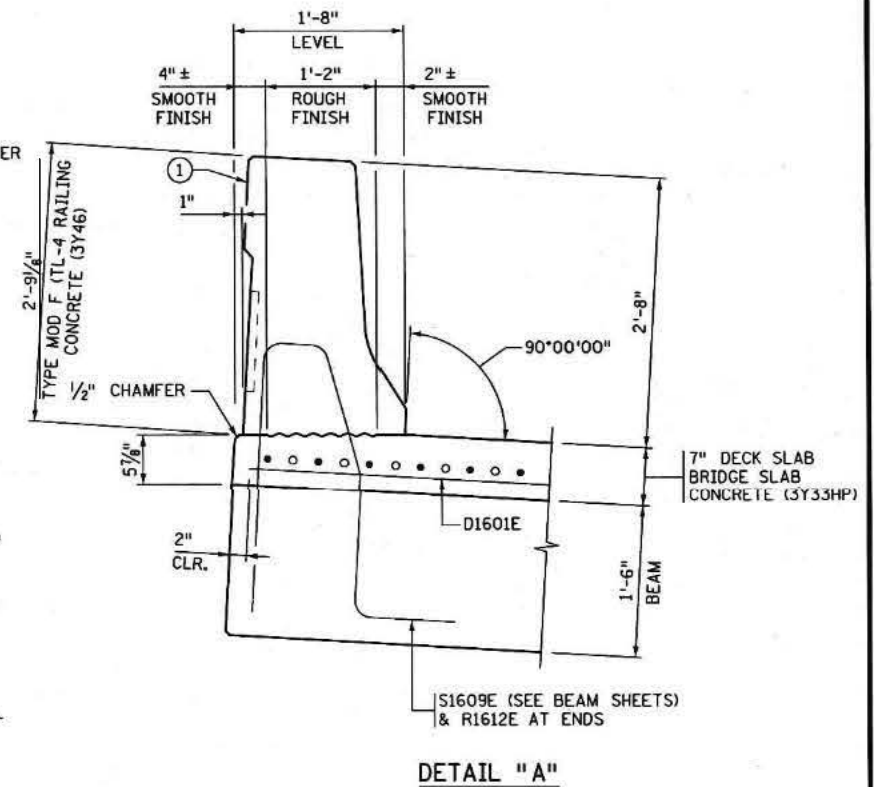
- ① DECK UNDER BARRIER TO BE PLACED LEVEL, BARRIER TO BE PLACED 90° TO CROSS SLOPE OF ROADWAY DECK.
- ② TEMPORARY PORTABLE PRECAST CONCRETE BARRIER TYPE "F". ANCHORAGES NOT REQUIRED. SEE SHEET NO. 6 FOR LOCATION.
- ③ STAGGER OVER PIERS BETWEEN LONGITUDINAL BARS. SEE SHEET NO. 50 FOR STAGGER DIAGRAM OVER PIERS.



DETAIL "B"



**TRANSVERSE SECTION
 STAGE 1 CONSTRUCTION**

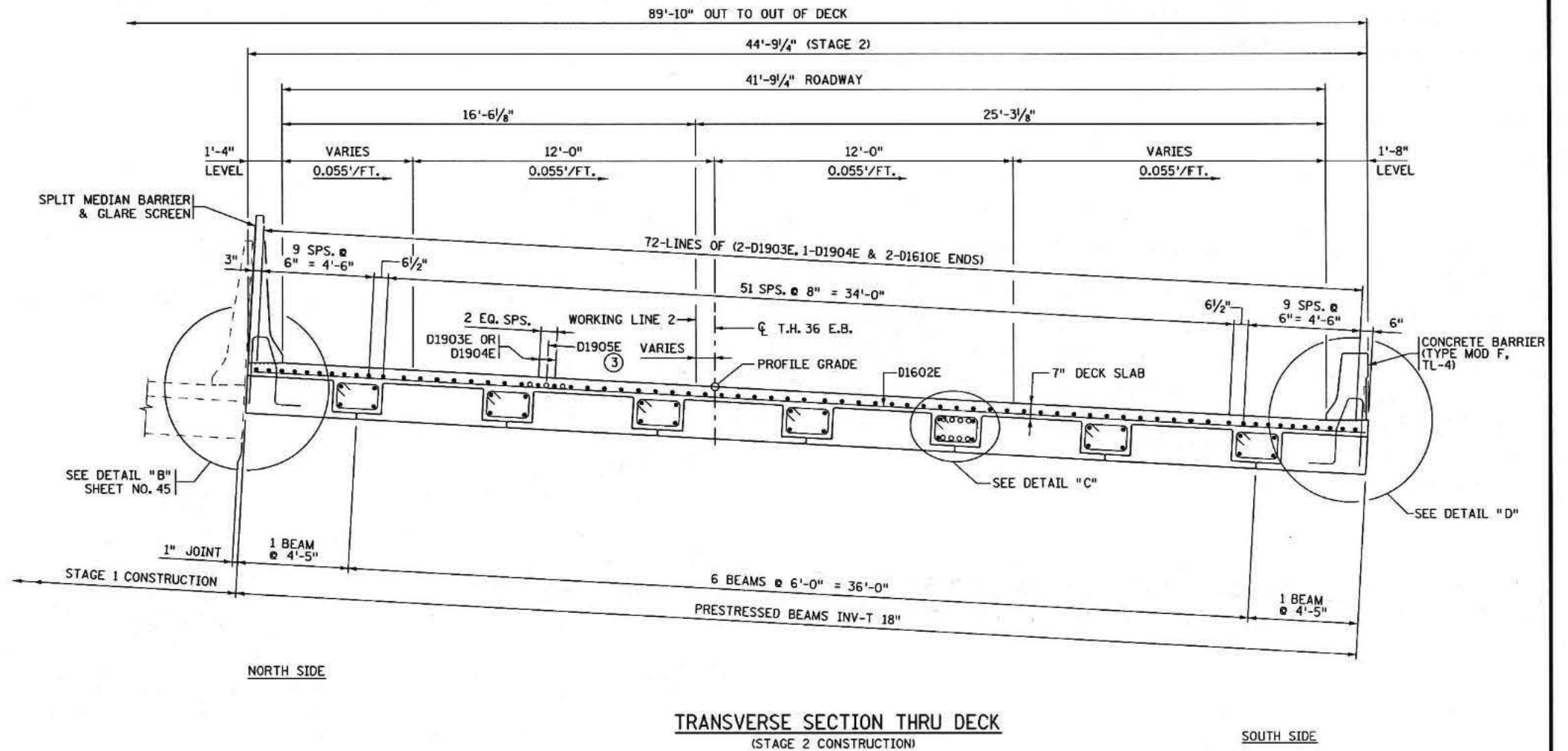
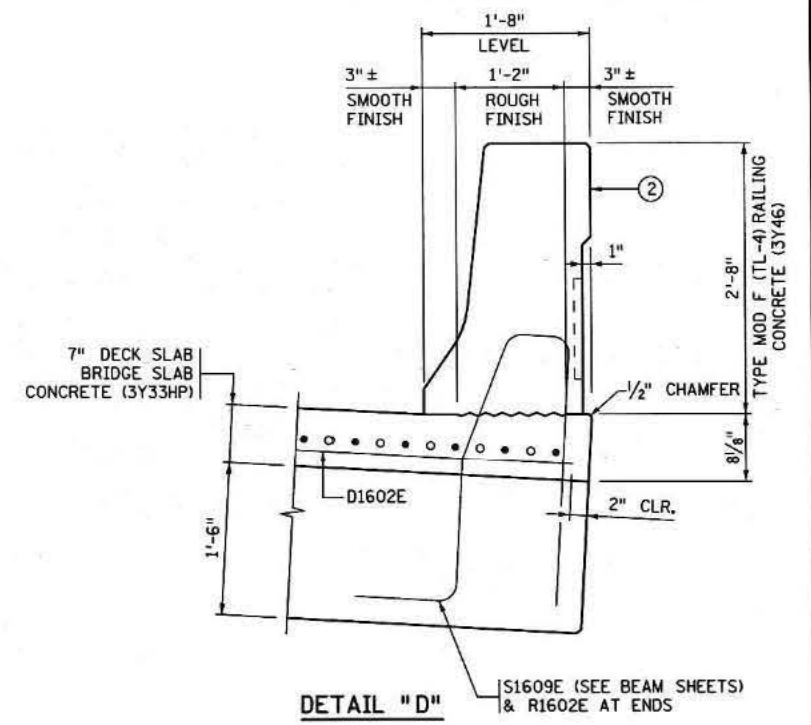
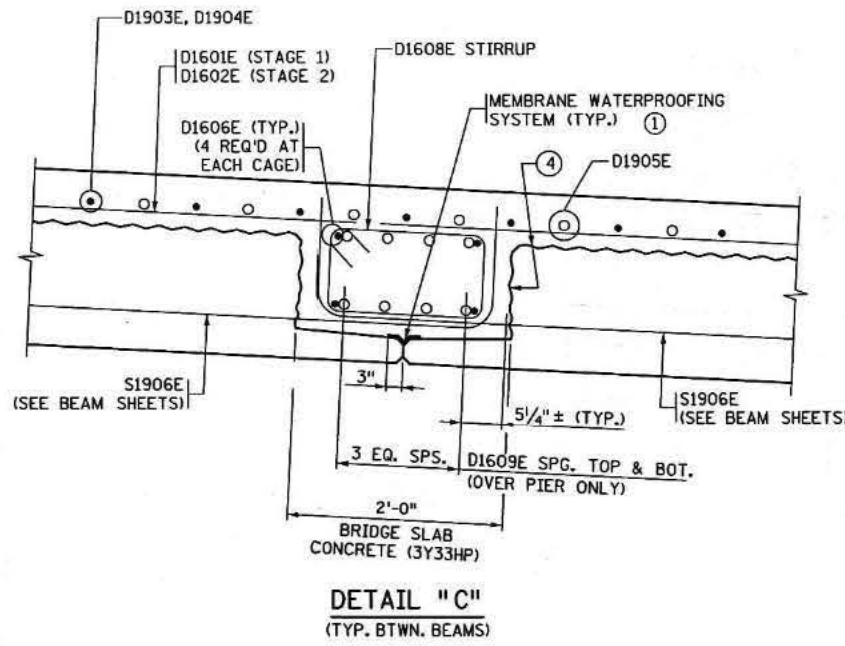


DETAIL "A"

CERTIFIED BY <i>Angel M. Staples</i> 2/1/13 LICENSED PROFESSIONAL ENGINEER DATE		TITLE: SUPERSTRUCTURE DETAILS		DES: MDH DR: RLV CHK: NJV CHK: DCH		APPROVED: <i>2/1/13</i>		BRIDGE NO. 62037	
NAME: ANGEL M. STAPLES LIC. NO. 41656				SHEET NO. 45 OF 68 SHEETS					

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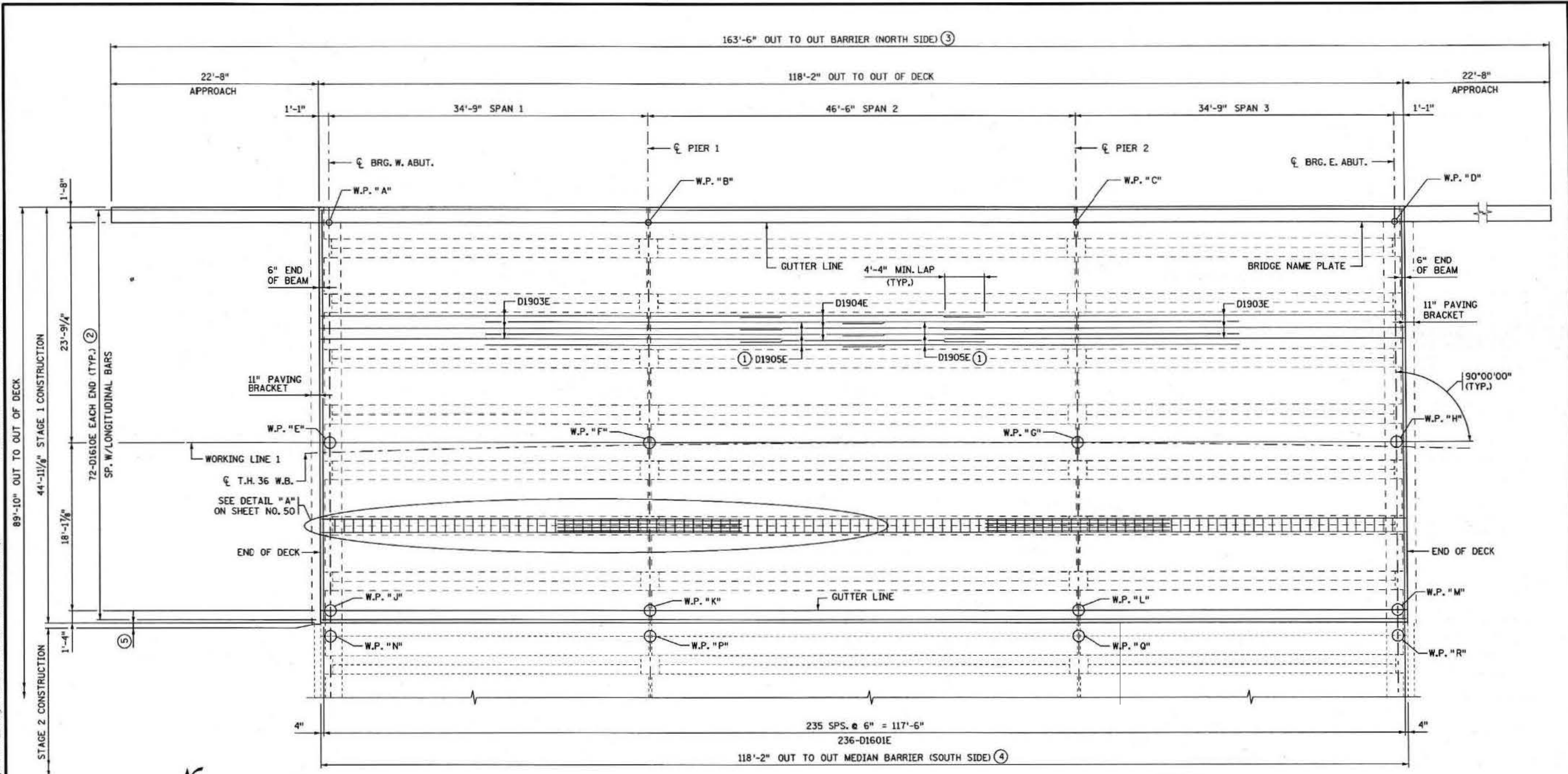


- NOTES:**
- MEMBRANE WATERPROOFING SYSTEM IS INCIDENTAL TO "BRIDGE SLAB CONCRETE (3Y33HP)". PERFORATE AS REQUIRED TO DRAIN ANY WATER. MEMBRANE AT THIS LOCATION USED AS LOCAL BOND BREAKER, NOT WATERPROOFING.
 - BARRIER SHALL BE PLACED PLUMB.
 - STAGGER OVER PIERS BETWEEN LONGITUDINAL BARS. SEE SHEET NO. 50 FOR STAGGER DIAGRAM OVER PIERS.
 - CONTRACTOR SHALL PREWET PRECAST BEAMS BEFORE DECK CONCRETE IS PLACED. SEE SPECIAL PROVISIONS.

CERTIFIED BY <i>Angel M. Staples</i> 2/1/13 LICENSED PROFESSIONAL ENGINEER DATE		TITLE: SUPERSTRUCTURE DETAILS		DES: MDH DR: RLV CHK: NJV CHK: DCH		APPROVED: <i>2/1/13</i>		BRIDGE NO. 62037	
NAME: ANGEL M. STAPLES LIC. NO. 41656				SHEET NO. 46 OF 68 SHEETS					

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DECK PLAN
(STAGE 1 CONSTRUCTION)

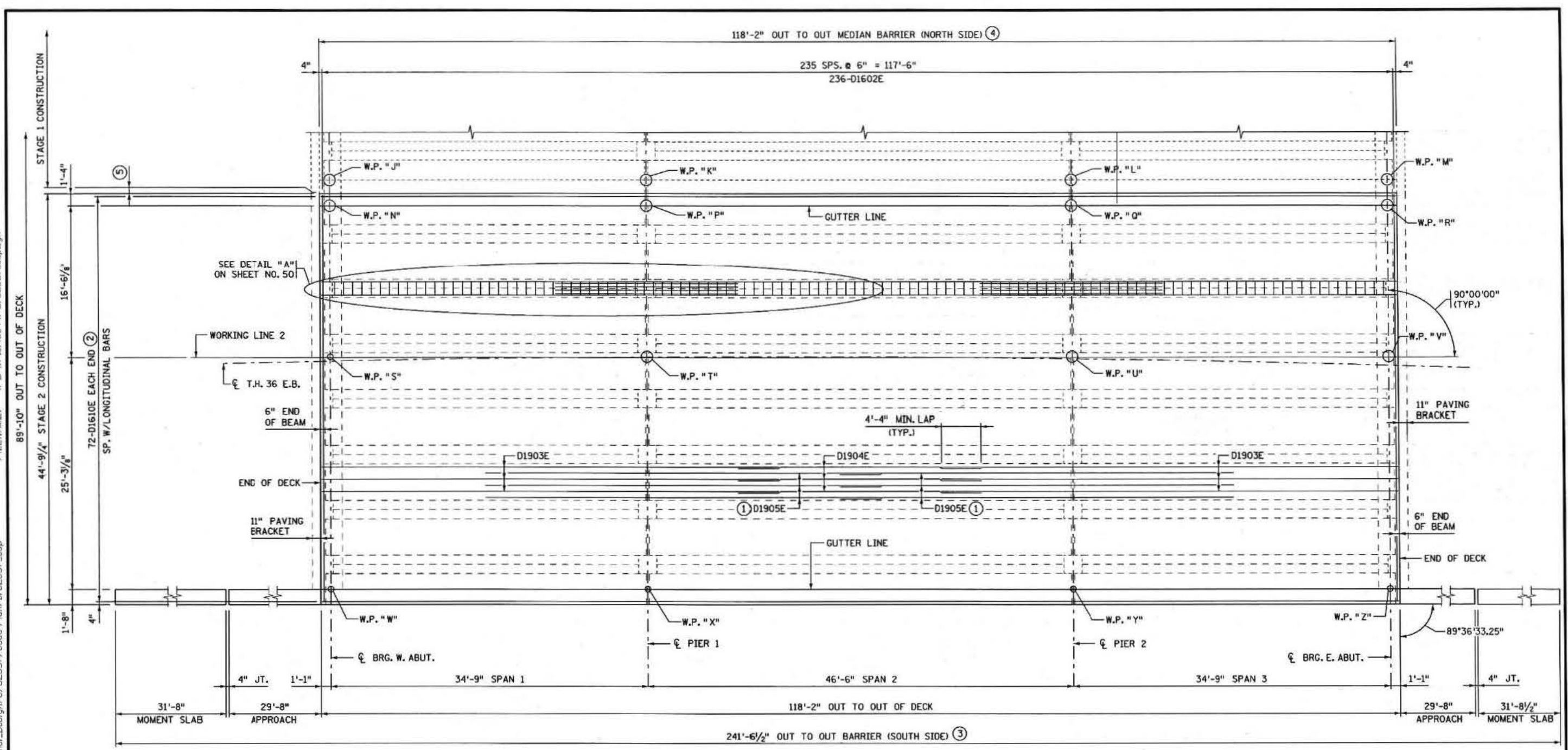
NOTES:

- ① STAGGER OVER PIERS BETWEEN LONGITUDINAL BARS. SEE SHEET NO. 50 FOR STAGGER DIAGRAM OVER PIERS.
- ② SEE SHEET NO. 45 FOR LONGITUDINAL AND END TIE REINFORCEMENT SPACING.
- ③ SEE CONCRETE BARRIER (TYPE MOD F, TL-4) SHEETS FOR CONTROL JOINT SPACING.
- ④ SEE SPLIT MEDIAN BARRIER AND GLARE SCREEN SHEETS FOR CONTROL JOINT SPACING.
- ⑤ 1" JOINT BETWEEN BARRIERS, BRIDGE DECKS AND INV-T BEAMS. SEE DETAIL "A" ON SHEET NO. 45.

CERTIFIED BY <i>Angel M. Staples</i> 2/1/13 LICENSED PROFESSIONAL ENGINEER DATE NAME: ANGEL M. STAPLES LIC. NO. 41656	TITLE: SUPERSTRUCTURE DETAILS	DES: MDH	DR: RLV	APPROVED: 2/1/13	BRIDGE NO. 62037
		CHK: NJV	CHK: DCH	SHEET NO. 47 OF 68 SHEETS	

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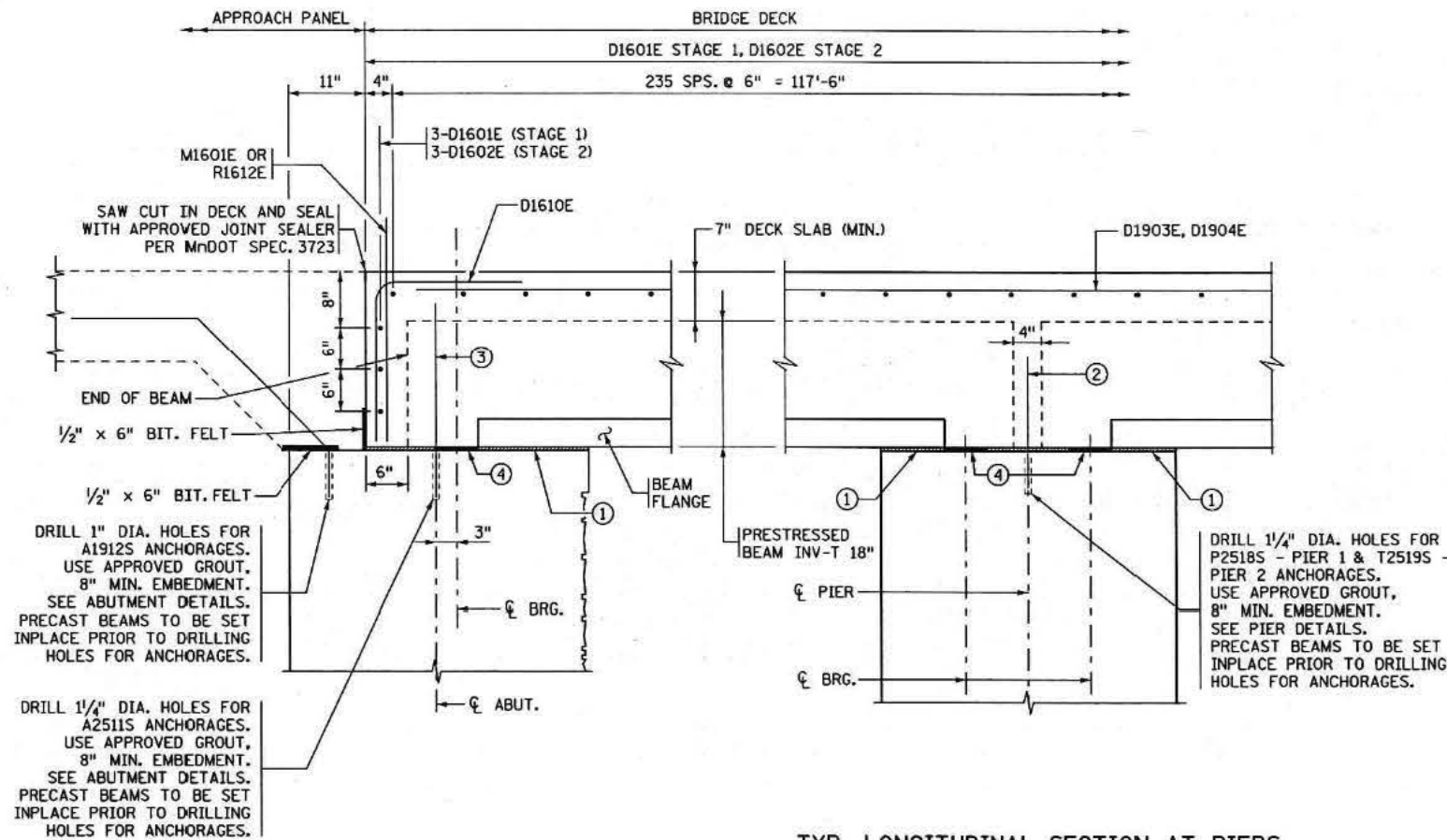
DECK PLAN
(STAGE 2 CONSTRUCTION)

- NOTES:**
- ① STAGGER OVER PIERS BETWEEN LONGITUDINAL BARS. SEE SHEET NO. 50 FOR STAGGER DIAGRAM OVER PIERS.
 - ② SEE SHEET NO. 46 FOR LONGITUDINAL AND END TIE REINFORCEMENT SPACING.
 - ③ SEE CONCRETE BARRIER (TYPE MOD F, TL-4) SHEETS FOR CONTROL JOINT SPACING.
 - ④ SEE SPLIT MEDIAN BARRIER AND GLARE SCREEN SHEETS FOR CONTROL JOINT SPACING.
 - ⑤ 1" JOINT BETWEEN BARRIERS, BRIDGE DECKS AND INV-T BEAMS. SEE DETAIL "A" ON SHEET NO. 45.

CERTIFIED BY <i>Angel M. Staples</i> 2/1/13 LICENSED PROFESSIONAL ENGINEER DATE NAME: ANGEL M. STAPLES LIC. NO. 41656	TITLE: SUPERSTRUCTURE DETAILS	DES: MDH	DR: RLV	APPROVED: 2/1/13	BRIDGE NO. 62037
		CHK: NJV	CHK: DCH	SHEET NO. 48 OF 68 SHEETS	

**BILL OF REINFORCEMENT
FOR SUPERSTRUCTURE**

BAR	STAGE 1 NO.	STAGE 2 NO.	LENGTH	SHAPE	LOCATION
D1601E	242	—	44'-7"	—	DECK TRANSVERSE
D1602E	—	242	44'-5"	—	DECK TRANSVERSE
D1903E	144	144	50'-0"	—	DECK LONGITUDINAL
D1904E	72	72	26'-6"	—	JOINT LONGITUDINAL
D1905E	142	142	43'-2"	—	JOINT LONGIT. OVER PIERS
D1606E	56	56	34'-8"	—	JOINT LONGITUDINAL
D1607E	28	28	45'-6"	—	DECK LONG. OVER PIER
D1608E	1064	1064	6'-1"	⊠	JOINT STIRRUP
D1609E	112	112	20'-0"	—	JOINT LONGIT. OVER PIERS
D1610E	144	144	4'-8"	—	END OF DECK

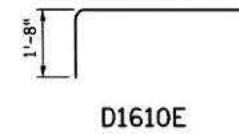
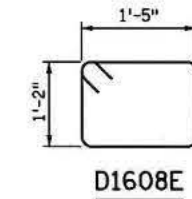


TYP. LONGITUDINAL SECTION AT PIERS

TYP. LONGITUDINAL SECTION AT ABUTMENTS

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. 51.
- ② WRAP PROJECTED PART OF DOWEL WITH 1/2" THICK FOAM PIPE INSULATION FOR FULL HEIGHT. SEE PIER SHEETS FOR LOCATION.
- ③ NO WRAPPING REQUIRED.
- ④ 1/2" ELASTOMERIC BEARING PAD. SEE BEARING DETAILS ON SHEET NO. 51.



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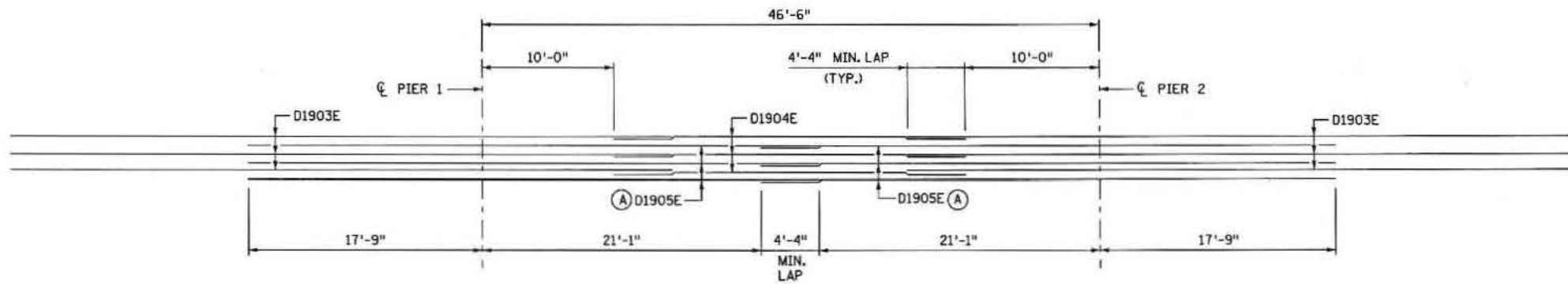
CERTIFIED BY <i>Angel M. Staples</i> 2/1/13 LICENSED PROFESSIONAL ENGINEER DATE NAME: ANGEL M. STAPLES LIC. NO. 41656	TITLE: SUPERSTRUCTURE DETAILS		DES: MDH CHK: NJV	DR: RLV CHK: DCH	APPROVED: <i>2/1/13</i>	BRIDGE NO. 62037 SHEET NO. 49 OF 68 SHEETS

TIME : 8:40:01 AM
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SUMMARY OF QUANTITIES FOR SUPERSTRUCTURE

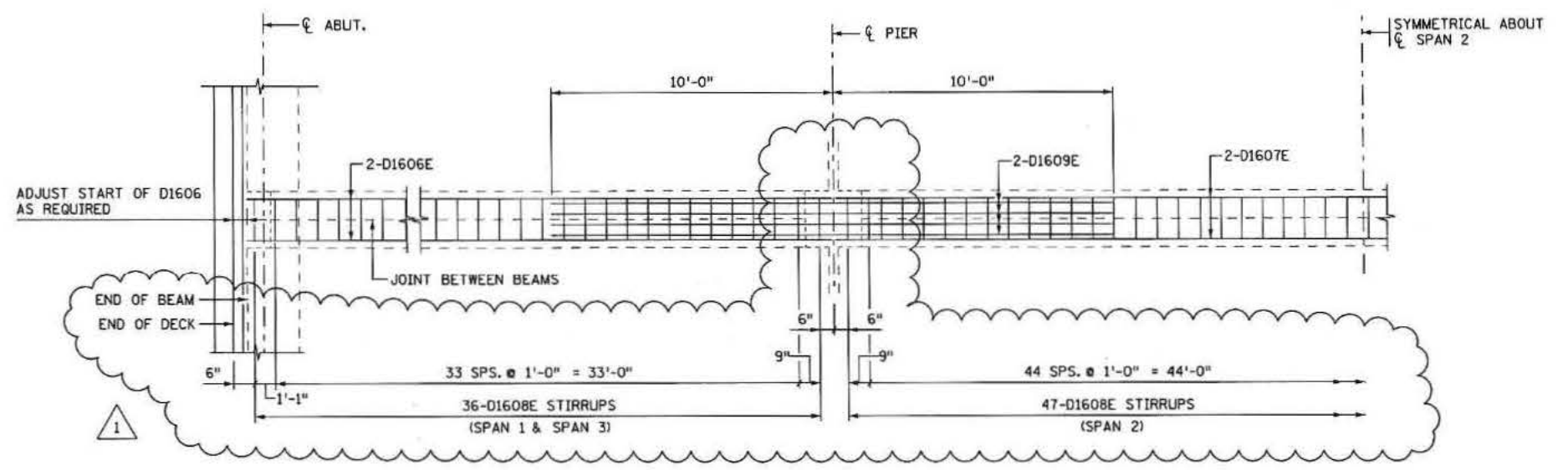
ITEM	UNIT	STAGE 1	STAGE 2	TOTAL
1 BRIDGE SLAB CONCRETE (3Y33HP)	SQ. FT.	5310	5290	10600
2 TYPE MOD F (TL-4) RAILING CONCRETE (3Y46)	LIN. FT.	164	242	406
3 SPLIT GLARE SCREEN MEDIAN BARRIER CONCRETE (3Y46)	LIN. FT.	118	118	236
4 REINFORCEMENT BARS (EPOXY COATED)	POUND	52130	53740	105870
ELASTOMERIC BEARING PAD TYPE 1	EACH	12	—	12
ELASTOMERIC BEARING PAD TYPE 2	EACH	36	36	72
ELASTOMERIC BEARING PAD TYPE 3	EACH	—	12	12
6 PRESTRESSED BEAM INV-T 18" TYPE 1	LIN. FT.	233	—	233
7 PRESTRESSED BEAM INV-T 18" TYPE 2	LIN. FT.	699	699	1398
8 PRESTRESSED BEAM INV-T 18" TYPE 3	LIN. FT.	—	233	233
10 1" POLYSTYRENE TYPE B	SQ. FT.	816	—	816
9 BRIDGE NAME PLATE	EACH	1	—	1
5 1/2" POLYSTYRENE TYPE A	SQ. FT.	424	422	846
6 MEMBRANE WATERPROOFING SYSTEM	LIN. FT.	781	781	1562
5 1/2" X 6" BIT FELT	LIN. FT.	180	180	360

- ① "BRIDGE SLAB CONCRETE (3Y33HP)" VOLUME IS APPROXIMATELY 196 CU. YDS. FOR STAGE 1 CONSTRUCTION AND 196 CU. YDS. FOR STAGE 2 CONSTRUCTION.
- ② "TYPE MOD F (TL-4) RAILING CONCRETE (3Y46)" VOLUME IS APPROXIMATELY 20 CU. YDS. FOR STAGE 1 CONSTRUCTION AND 29 CU. YDS. FOR STAGE 2 CONSTRUCTION.
- ③ "SPLIT GLARE SCREEN MEDIAN BARRIER CONCRETE (3Y46)" VOLUME IS APPROXIMATELY 16 CU. YDS. FOR STAGE 1 CONSTRUCTION AND 17 CU. YDS. FOR STAGE 2 CONSTRUCTION.
- ④ INCLUDES CAST IN PLACE SLAB AND BARRIER REINFORCEMENT.
- ⑤ PAYMENT SHALL BE CONSIDERED INCIDENTAL TO PAY ITEM "BRIDGE SLAB CONCRETE (3Y33HP)".
- ⑥ "PRESTRESSED BEAMS INV-T 18" TYPE 1" INCLUDES BEAMS DESIGNATED AS B1, B2, B3, B8, B9 AND B10.
- ⑦ "PRESTRESSED BEAMS INV-T 18" TYPE 2" INCLUDES BEAMS DESIGNATED AS B4 B5, B6 AND B7.
- ⑧ "PRESTRESSED BEAMS INV-T 18" TYPE 3" INCLUDES BEAMS DESIGNATED AS B11, B12, B13, B14, B15 AND B16.
- ⑨ PAYMENT SHALL BE CONSIDERED INCIDENTAL TO PAY ITEM "TYPE MOD F (TL-4) RAILING CONCRETE (3Y46)".
- ⑩ PAYMENT SHALL BE CONSIDERED INCIDENTAL TO PAY ITEM "SPLIT GLARE SCREEN MEDIAN BARRIER CONCRETE (3Y46)".



TYPICAL STAGGER DIAGRAM OVER PIERS

(A) D1905E STAGGERED BETWEEN LONGITUDINAL BARS OVER PIERS THE ENTIRE WIDTH OF BRIDGE.



DETAIL "A"

REVISION		
DATE	DESCRIPTION	APPROVED BY
5/2/13	REVISED D1608E STIRRUPS SPACING	AMS

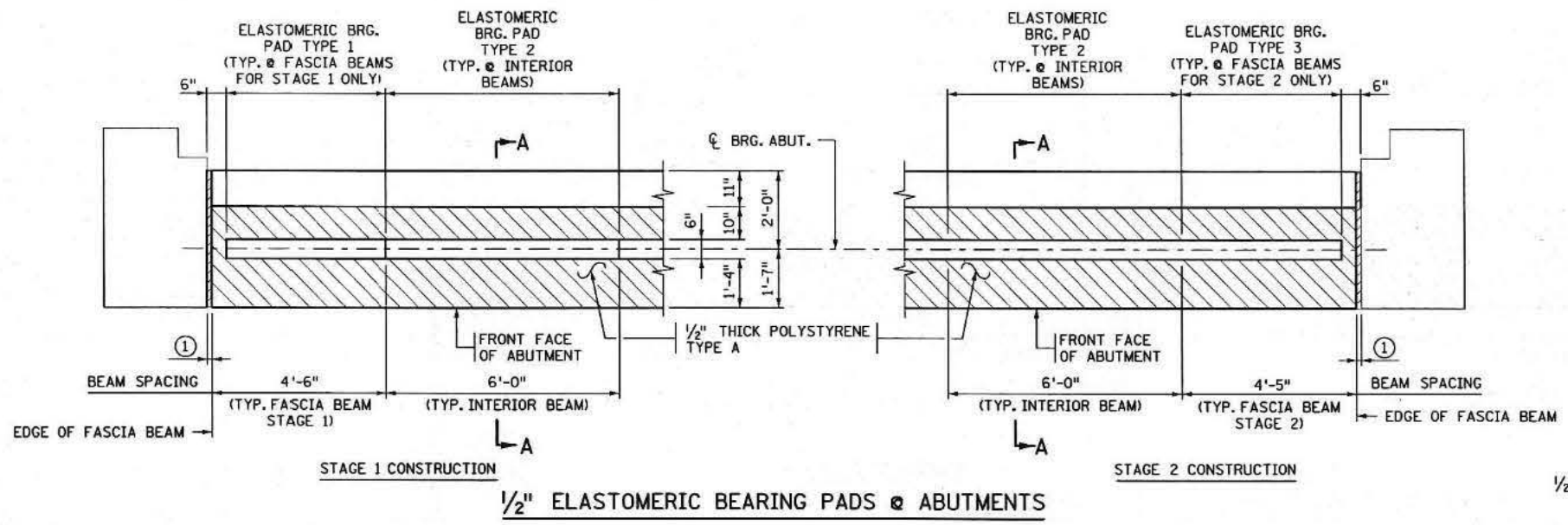
CERTIFIED BY *Angel M. Staples* 5/6/13
 LICENSED PROFESSIONAL ENGINEER
 NAME: ANGEL M. STAPLES L.I.C. NO. 41656

TITLE: SUPERSTRUCTURE DETAILS
 SHEET NO. 50R OF 68 SHEETS

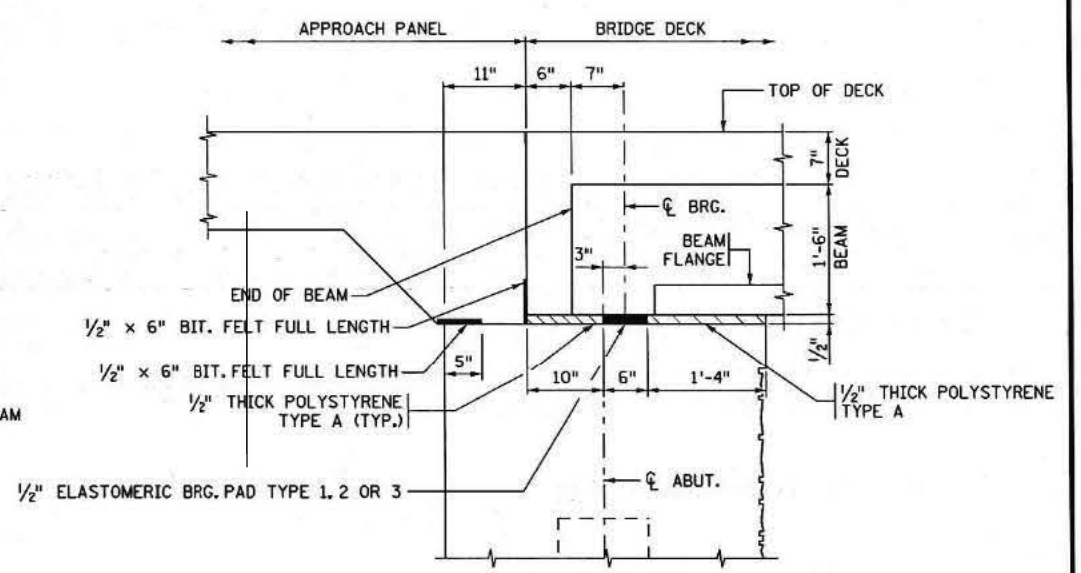
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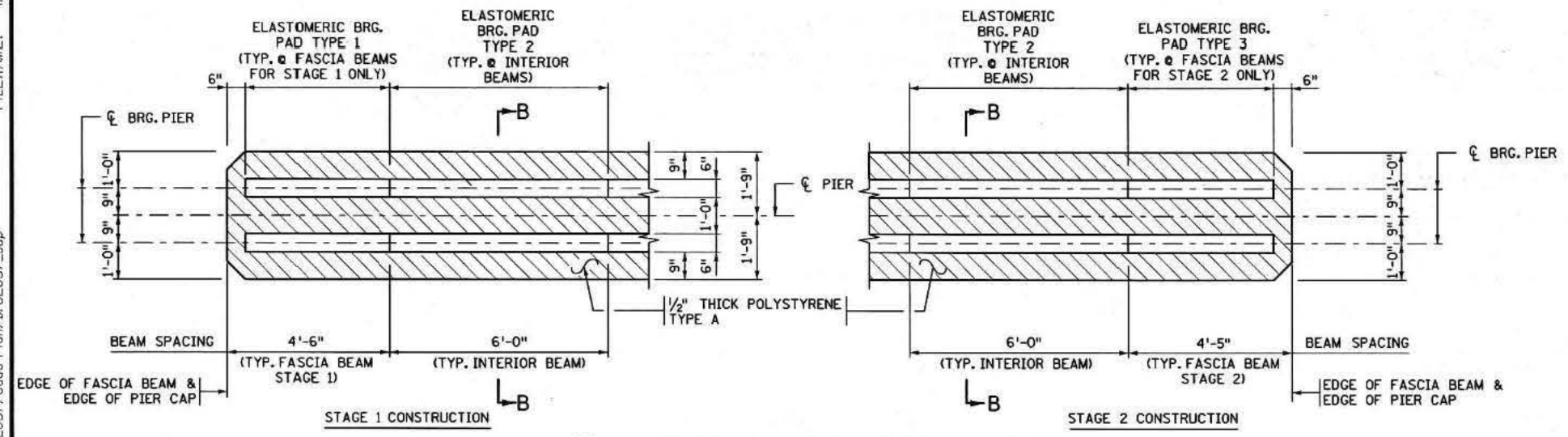
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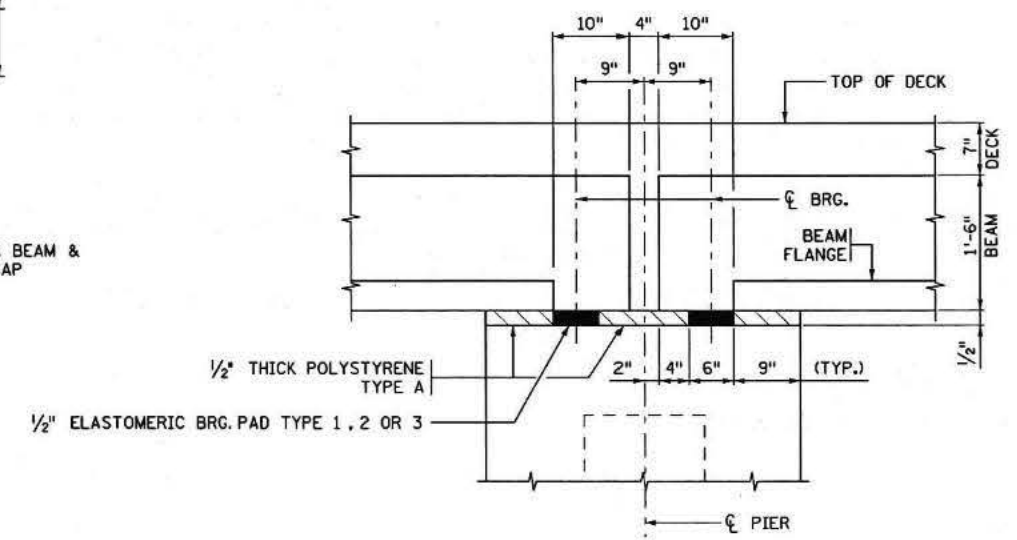
1/2" ELASTOMERIC BEARING PADS @ ABUTMENTS



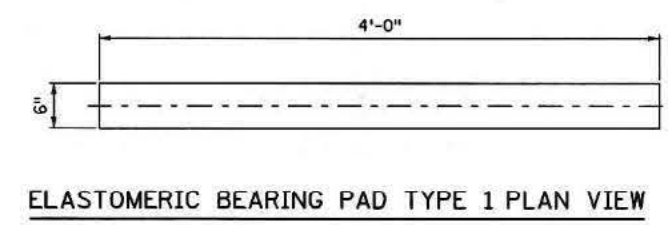
SECTION A-A



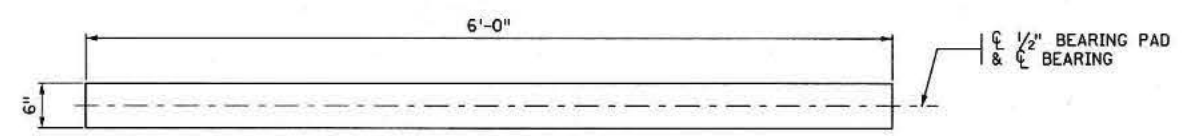
1/2" ELASTOMERIC BEARING PADS @ PIER



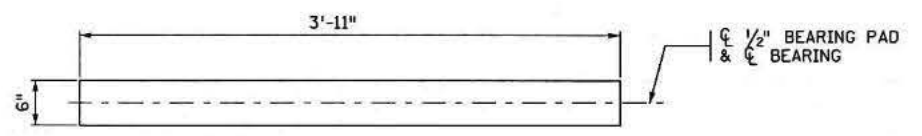
SECTION B-B



ELASTOMERIC BEARING PAD TYPE 1 PLAN VIEW



ELASTOMERIC BEARING PAD TYPE 2 PLAN VIEW



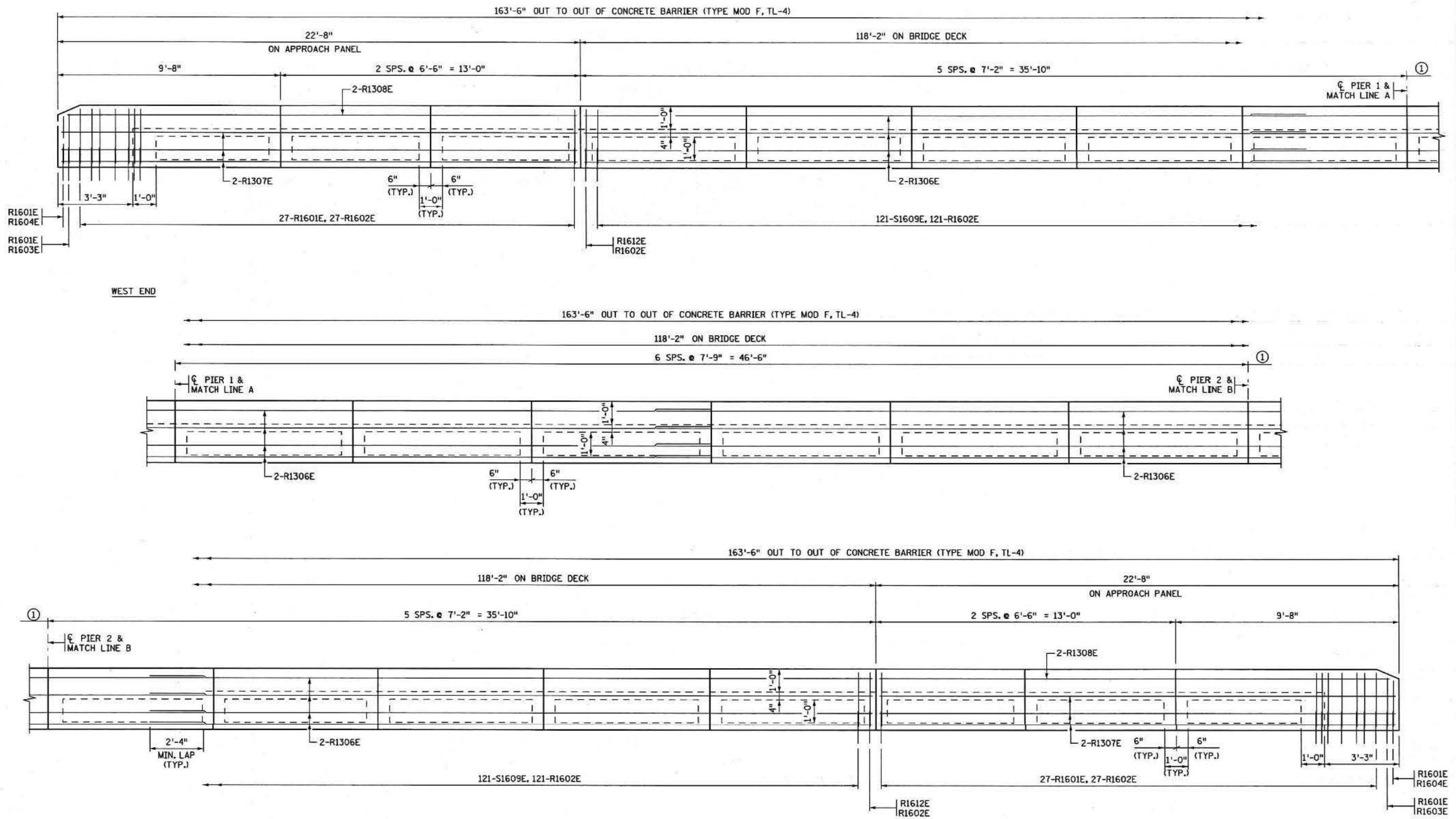
ELASTOMERIC BEARING PAD TYPE 3 PLAN VIEW

- NOTES:**
- ① 1/2" POLYSTYRENE TYPE B SEE ABUTMENT SHEETS
 - ▨ DENOTES 1/2" THICK POLYSTYRENE TYPE A.

CERTIFIED BY <i>Angel M. Staples</i> 2/1/13 LICENSED PROFESSIONAL ENGINEER DATE		TITLE: SUPERSTRUCTURE DETAILS		DES: MDH DR: RLV CHK: NJV CHK: DCH		APPROVED: <i>2/1/13</i>		BRIDGE NO. 62037	
NAME: ANGEL M. STAPLES LIC. NO. 41656				SHEET NO. 51 OF 68 SHEETS					

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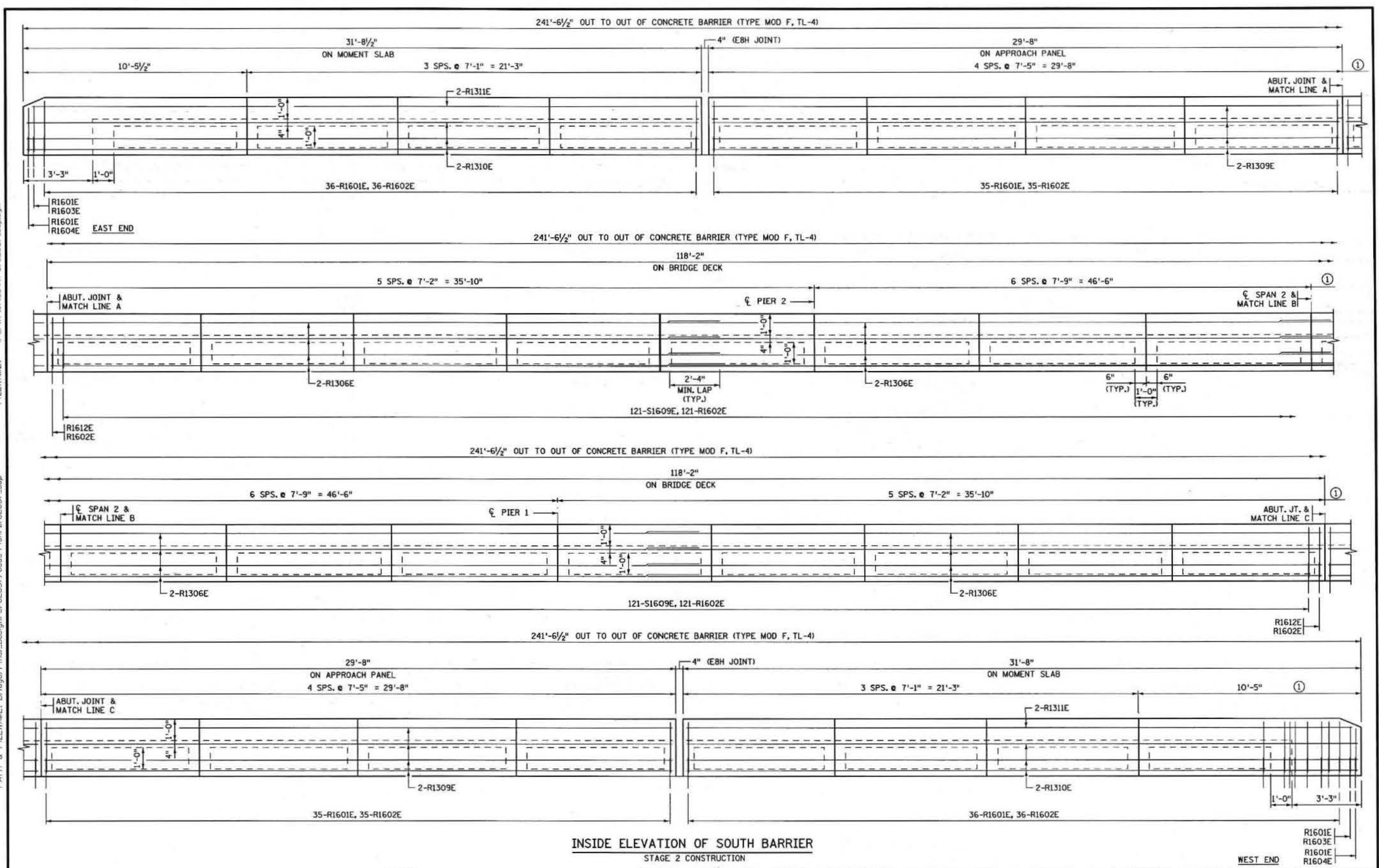


INSIDE ELEVATION OF NORTH BARRIER
 STAGE 1 CONSTRUCTION

NOTE:
 ① CONTROL JOINT SPACING.

CERTIFIED BY <i>Angel M. Staples</i> 2/1/13 LICENSED PROFESSIONAL ENGINEER NAME: ANGEL M. STAPLES LIC. NO. 41656	TITLE: CONCRETE BARRIER (TYPE MOD F, TL-4)	DES: MDH	DR: RLV	APPROVED: 2/1/13	BRIDGE NO. 62037
		CHK: NJV	CHK: DCH	SHEET NO. 52 OF 68 SHEETS	

TIME : 8:16:37 AM
 PLOTTED : 01-FEB-2013
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 FILENAME: IP_PWP/1489447/br62037_sup.dgn



INSIDE ELEVATION OF SOUTH BARRIER
STAGE 2 CONSTRUCTION

NOTE:
① CONTROL JOINT SPACING.

CERTIFIED BY Angel M. Staples 2/1/13
 LICENSED PROFESSIONAL ENGINEER DATE
 NAME: ANGEL M. STAPLES LIC. NO. 41656

TITLE: **CONCRETE BARRIER (TYPE MOD F, TL-4)**

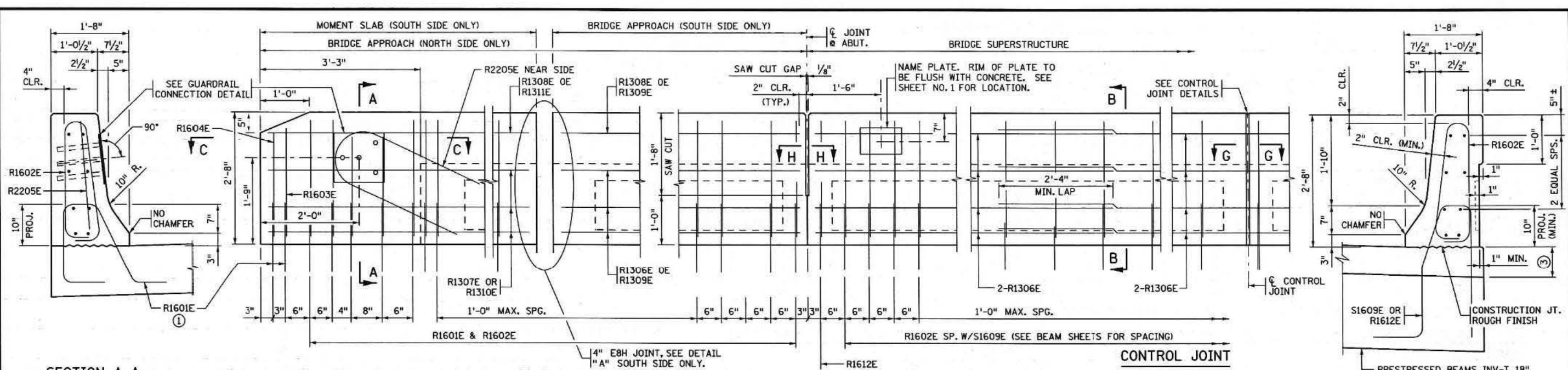
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SHEET NO. 53 OF 68 SHEETS

BRIDGE NO. 62037

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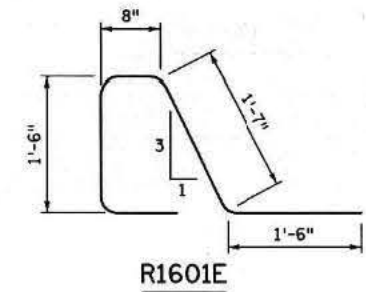
SECTION A-A

JOINT AT ABUTMENT

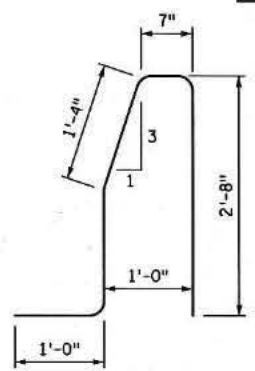
SECTION B-B

INSIDE ELEVATION OF PARAPET

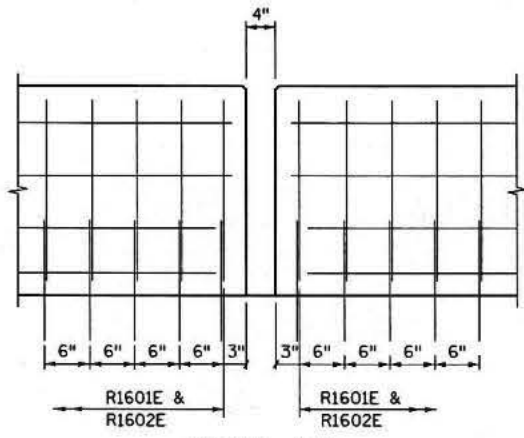
PARAPET MEETS TEST LEVEL 2 REQUIREMENTS OF NCHRP REPORT 350



R1601E

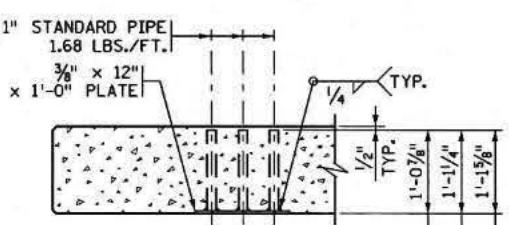


R1612E



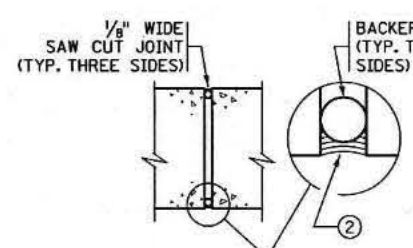
DETAIL 'A'

E8H JOINT SOUTH SIDE OF BRIDGE ONLY.

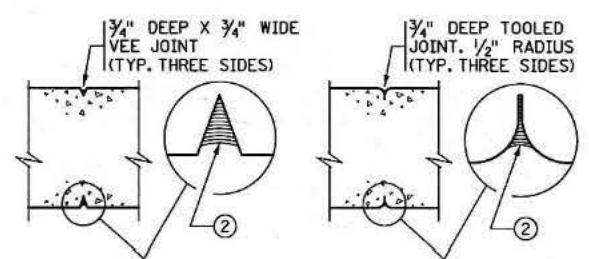


SECTION B-B

(REINFORCEMENT NOT SHOWN)
★ DIMENSIONS INCLUDE 3/8" PLATE



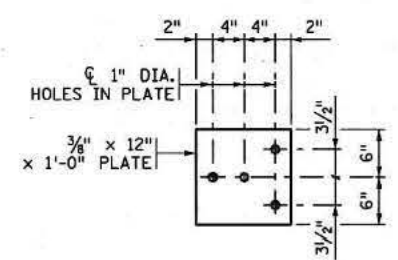
SECTION H-H



SECTION G-G

SECTION G-G

CONTROL JOINT DETAILS



GUARDRAIL CONNECTION DETAIL

GALVANIZE AFTER FABRICATION PER SPEC. 3394
ESTIMATED WEIGHT = 23 LBS

BILL OF REINFORCEMENT FOR TWO BARRIERS					
BAR	STAGE 1 NO.	STAGE 2 NO.	LENGTH	SHAPE	LOCATION
R1601E	58	146	7'-4"	D	APPROACH DOWEL
R1602E	177	265	6'-3"	U	BARRIER VERTICAL
R1603E	2	2	5'-9"	U	BARRIER VERTICAL
R1604E	2	2	5'-7"	U	BARRIER VERTICAL
R2205E	2	2	6'-6"	U	BARRIER VERTICAL
R1306E	32	32	31'-3"	—	BARRIER LONGIT.
R1307E	12	—	22'-4"	—	BARRIER LONGIT.
R1308E	4	—	22'-0"	—	BARRIER LONGIT.
R1309E	—	16	29'-4"	—	BARRIER LONGIT.
R1310E	—	12	31'-4"	—	BARRIER LONGIT.
R1311E	—	4	31'-0"	—	BARRIER LONGIT.
R1612E	2	2	7'-0"	S	END OF DECK DOWEL

GENERAL NOTES

- LENGTH OF "TYPE MOD F (TL-4) RAILING CONCRETE (3Y46)" FOR PAYMENT SHALL BE MEASURED BETWEEN THE OUTSIDE FACES OF THE CONCRETE BARRIER.
- CONCRETE BARRIER (NORTH SIDE) = 495 LBS./FT. (0.122 CU. YDS./FT.)
CONCRETE BARRIER (SOUTH SIDE) = 485 LBS./FT. (0.120 CU. YDS./FT.)
- FINISH ALL EDGES OF BARRIER WITH 1/2" CHAMFER, EXCEPT WHERE OTHERWISE NOTED.
- MAXIMUM SPACING OF CONCRETE CONTROL JOINTS SHALL BE 10 FT.
- SEE SHEET NO.S 52 AND 53 FOR JOINT SPACING.
- GUARDRAIL CONNECTION TO BE STRUCTURAL STEEL, SPEC. 3306.
- GUARDRAIL CONNECTION TO BE CONSIDERED INCIDENTAL TO "TYPE MOD F (TL-4) RAILING CONCRETE (3Y46)".
- BARRIER QUANTITIES ARE LISTED IN SUMMARY OF QUANTITIES FOR SUPERSTRUCTURE.
- ① PLACE BAR ON TOP OF BOTTOM REINFORCEMENT MAT.
- ② SEE SPECIAL PROVISIONS FOR JOINT SEALING REQUIREMENTS.
- ③ VARIES SEE SHEET NO. 45 & 46 FOR DETAILS.

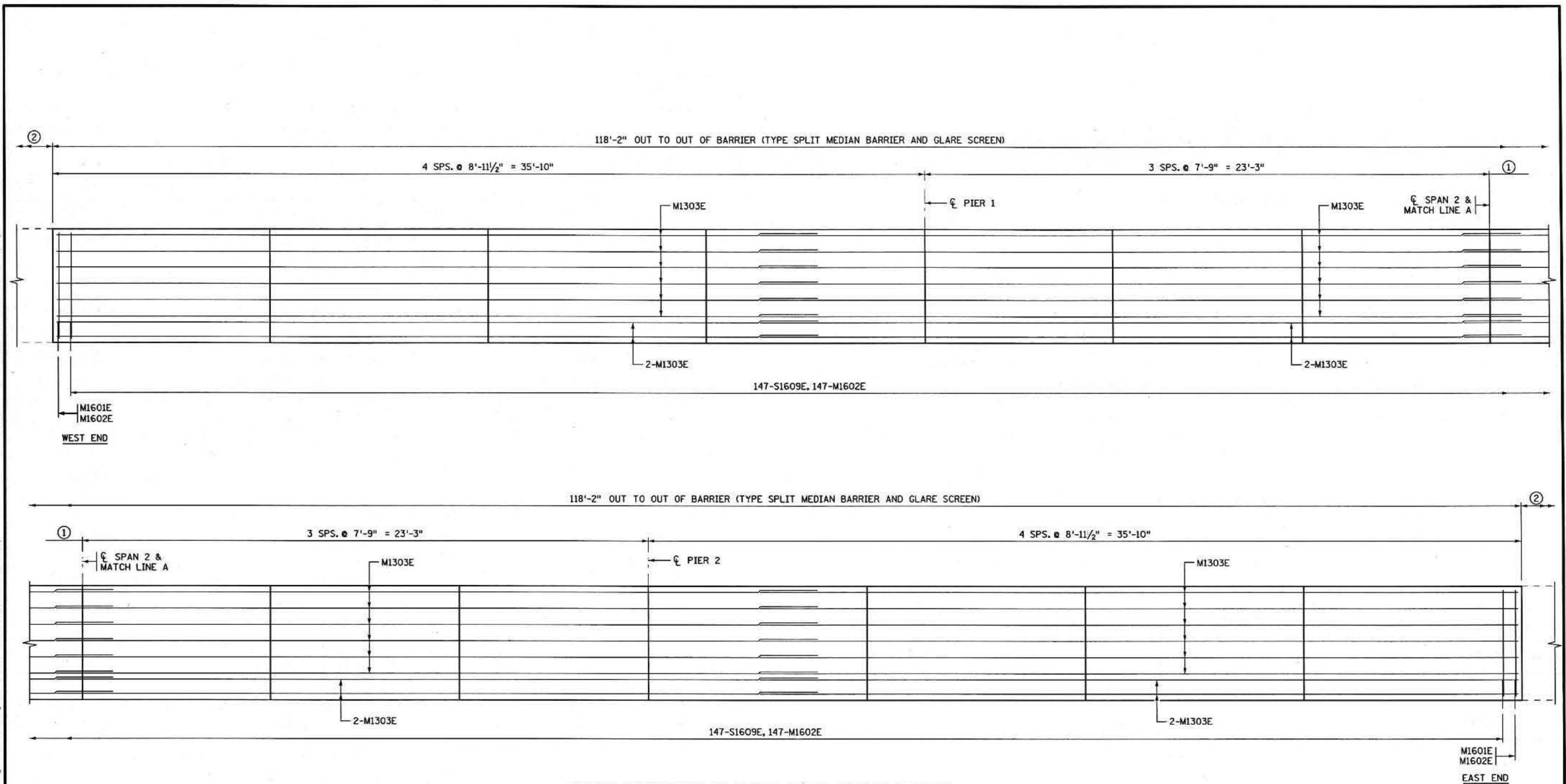
FIG. 5-397.115 MOD

CERTIFIED BY <i>Angel M. Staples</i> 2/1/13 LICENSED PROFESSIONAL ENGINEER NAME: ANGEL M. STAPLES LIC. NO. 41656	DATE: 2/1/13	TITLE: CONCRETE BARRIER (TYPE MOD F, TL-4) WITH INTEGRAL END POST (WITHOUT CONCRETE WEARING COURSE)	DES: MDH CHK: NJV	DR: RLV CHK: DCH	APPROVED: 2/1/13	BRIDGE NO. 62037
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SHEET NO. 54 OF 68 SHEETS

FILENAME: IP_PWP:d:\489447\br62037_sup.dgn

TIME: 8:08:51 AM
PLOTTED: 01-FEB-2013
PATH & FILENAME: Bridge\Final_Design\6/62037\Cadd-Plan\br62037_sup



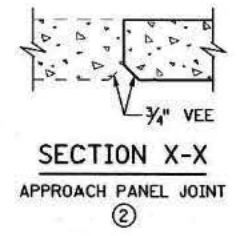
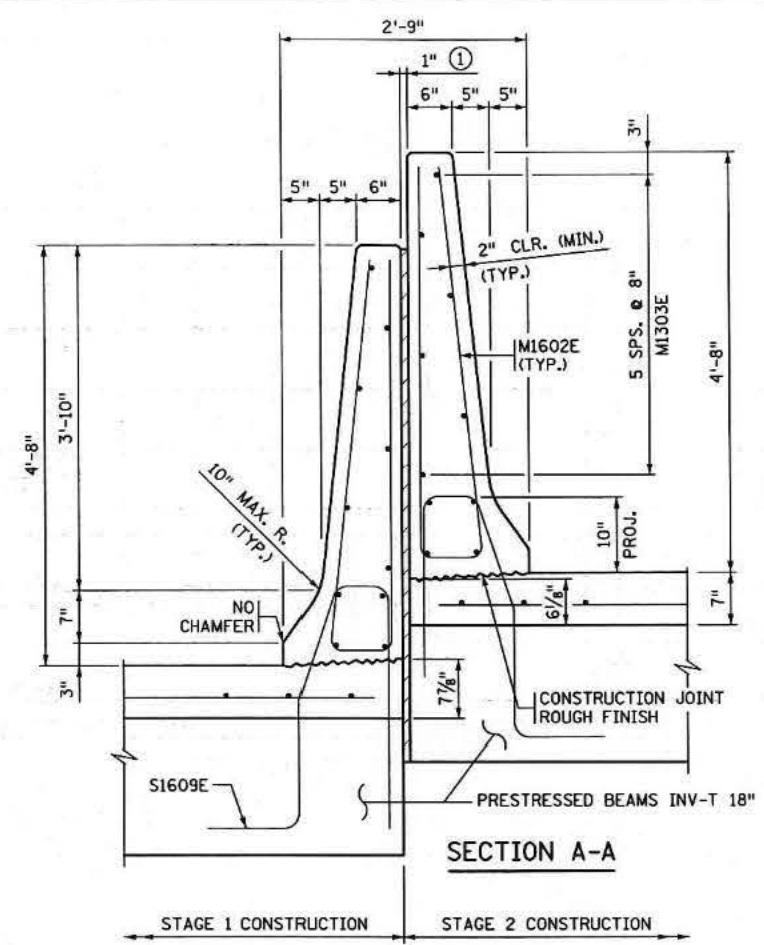
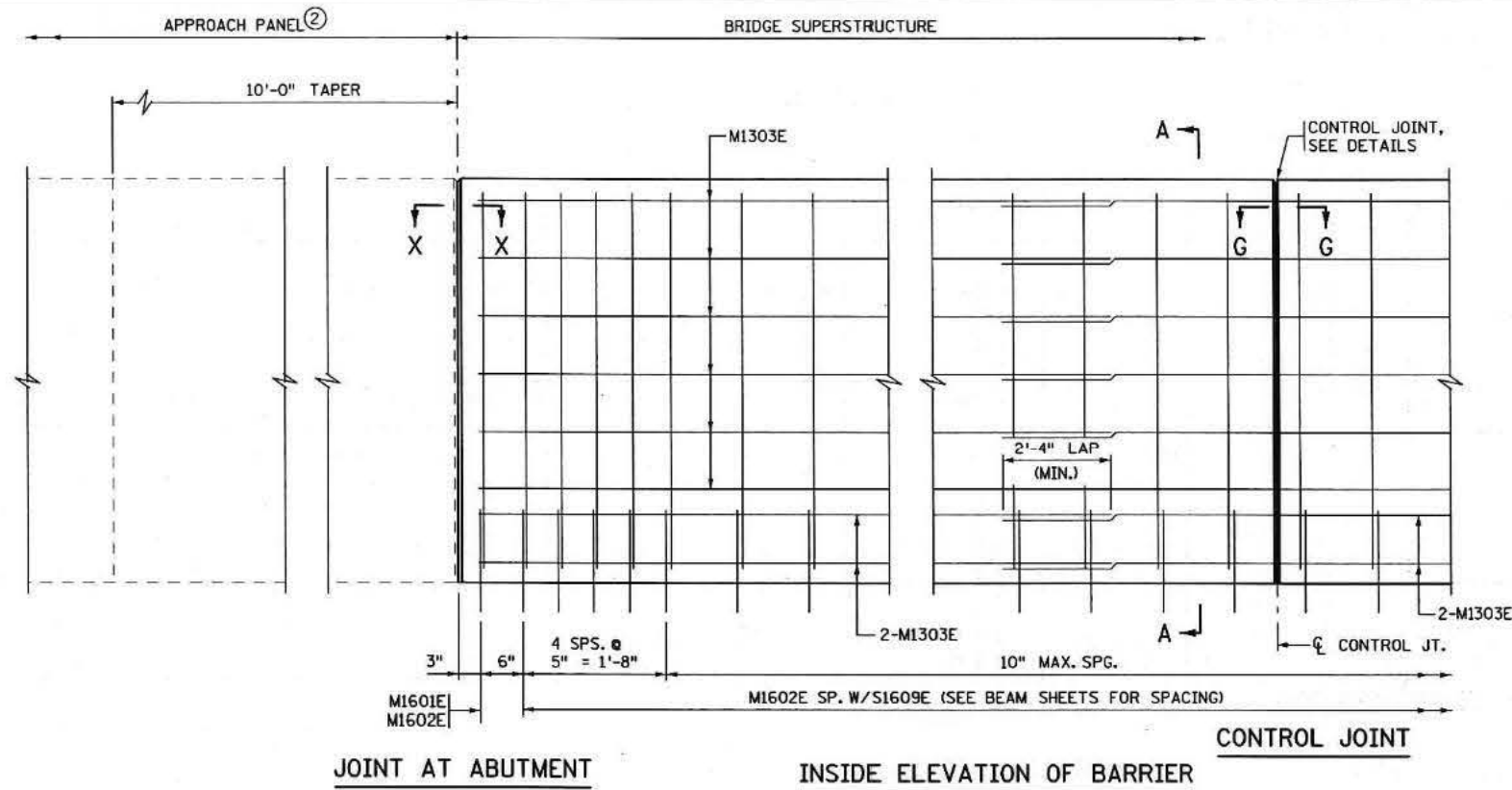
INSIDE ELEVATION OF SOUTH SPLIT MEDIAN BARRIER
NORTH SPLIT MEDIAN BARRIER TO BE OPPOSITE HAND

- NOTE:**
- ① CONTROL JOINT SPACING.
 - ② APPROACH PANEL, SEE GRADING PLAN.

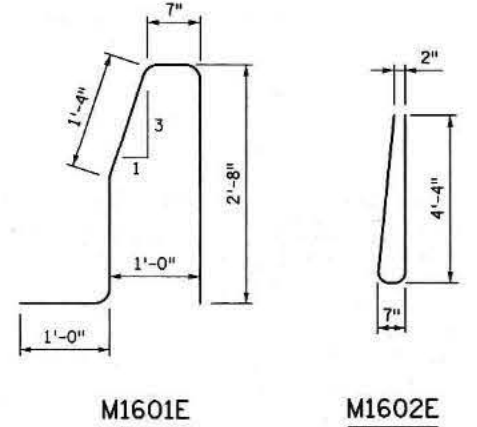
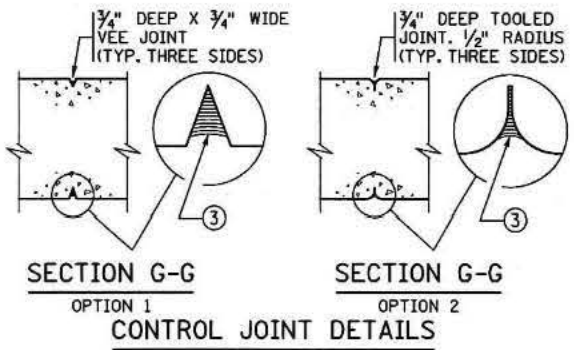
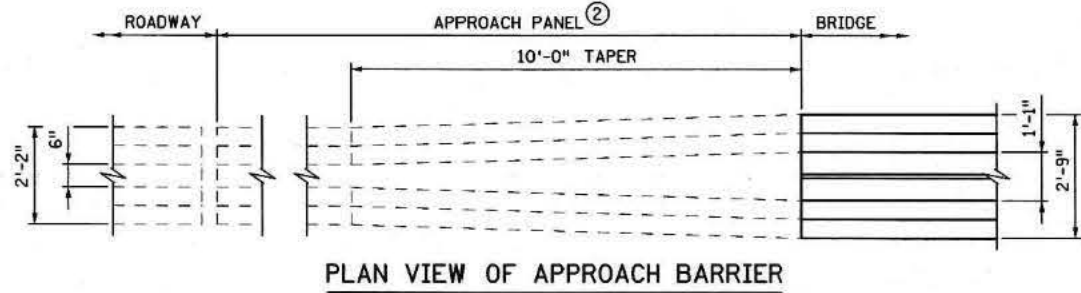
CERTIFIED BY <i>Angel M. Staples</i> 2/1/13 LICENSED PROFESSIONAL ENGINEER DATE NAME: ANGEL M. STAPLES LIC. NO. 41656	TITLE: SPLIT MEDIAN BARRIER AND GLARE SCREEN	DES: MDH	DR: RLV	APPROVED: <i>2/1/13</i>	BRIDGE NO. 62037
		CHK: NJV	CHK: DCH	SHEET NO. 55 OF 68 SHEETS	

FILENAME: IP_PWPd\489447\br62037_sup.dgn

TIME: 8:05:58 AM
 PLOTTED: 01-FEB-2013
 PATH & FILENAME: Bridge\Final_Design\6/62037/Cadd-Plan\br62037_sup



RAIL MEETS TEST LEVEL 4 REQUIREMENTS OF NCHRP REPORT 350.



BILL OF REINFORCEMENT FOR BARRIER					
BAR	STAGE 1 NO.	STAGE 2 NO.	LENGTH	SHAPE	LOCATION
M1601E	2	2	7'-0"	5	BARRIER DOWEL
M1602E	148	148	9'-3"	1	BARRIER VERTICAL
M1303E	40	40	31'-3"	1	BARRIER LONGITUDINAL

GENERAL NOTES

- LENGTH OF "SPLIT GLARE SCREEN MEDIAN BARRIER CONCRETE (3Y46)" FOR PAYMENT SHALL BE MEASURED BETWEEN THE OUTSIDE FACES OF THE CONCRETE BARRIER PER RUN.
- CONCRETE BARRIER SHALL BE CONC. MIX 3Y46.
- CONCRETE BARRIER: SECTION A-A, BRIDGE BARRIER 1112 LBS./FT. (0.275 CU. YDS./FT.)
- FINISH ALL EDGES OF BARRIER WITH 1/2" CHAMFER, EXCEPT WHERE OTHERWISE NOTED.
- MAXIMUM SPACING OF CONCRETE CONTROL JOINTS SHALL BE 10 FT.
- SEE SHEET NO. 55 FOR CONTROL JOINT SPACING.
- BARRIER QUANTITIES ARE INCLUDED IN SUMMARY OF QUANTITIES FOR SUPERSTRUCTURE.
- ① 1" POLYSTYRENE, TYPE B. SEE SPECIAL PROVISIONS. TO BE CONSIDERED INCIDENTAL TO "SPLIT GLARE SCREEN MEDIAN BARRIER CONCRETE (3Y46)".
- ② JOINT TO BE ADJACENT TO TRANSVERSE SLAB JOINTS IN APPROACH PANEL WHEN REQUIRED.
- ③ SEE SPECIAL PROVISIONS FOR JOINT SEALING REQUIREMENTS.

CERTIFIED BY *Angel M. Staples* 2/1/13 DATE
 LICENSED PROFESSIONAL ENGINEER
 NAME: ANGEL M. STAPLES LIC. NO. 41656

TITLE: SPLIT MEDIAN BARRIER AND GLARE SCREEN TYPE F (WITHOUT CONCRETE WEARING COURSE)

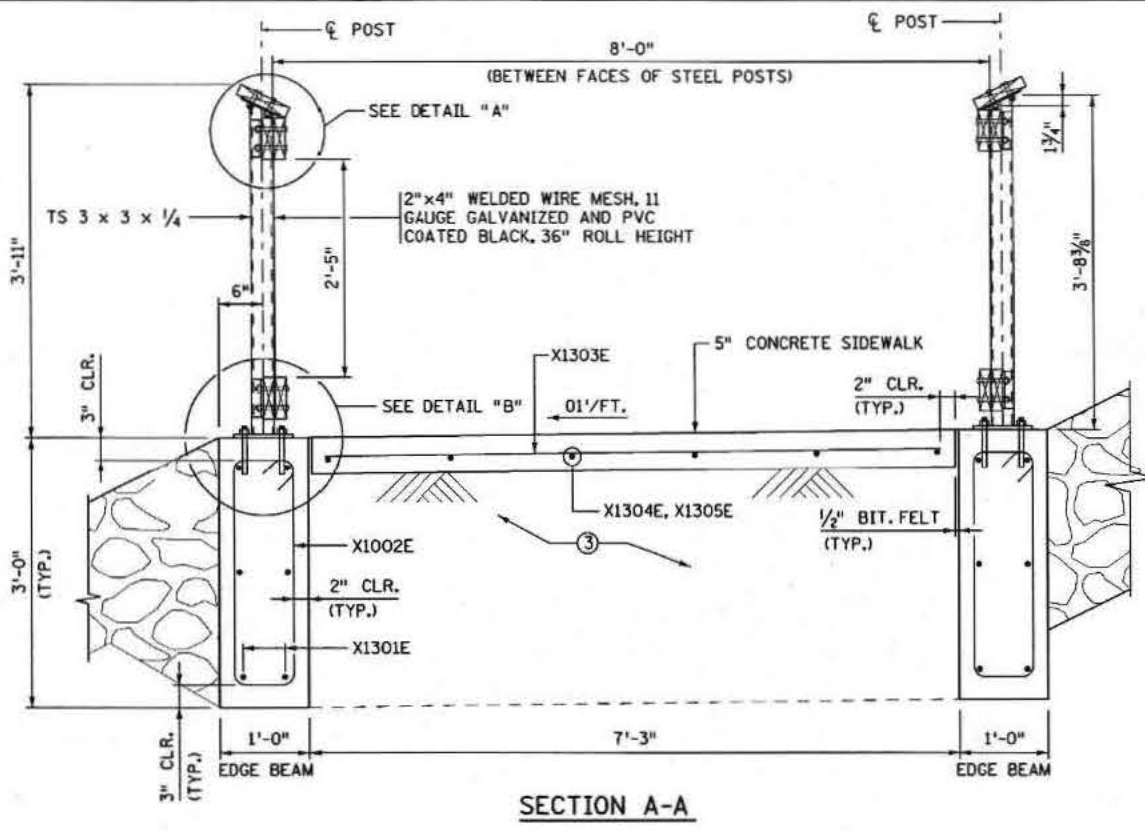
DES: MDH DR: RLV
 CHK: NJV CHK: DCH

APPROVED: 2/1/13
 FIG. 5-397.135 MOD.

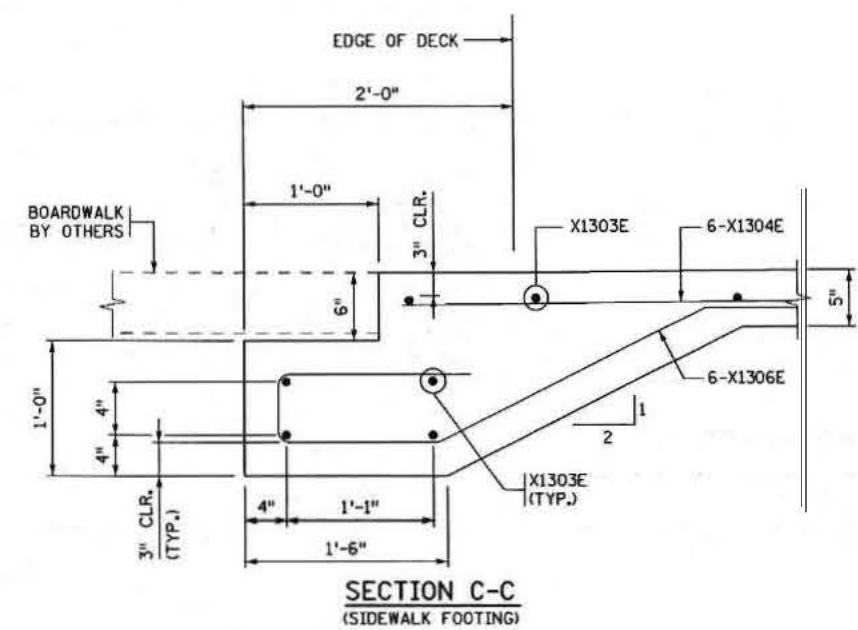
BRIDGE NO. 62037
 SHEET NO. 56 OF 68 SHEETS

FILENAME: IP_PWP\p1489447\br62037.dwg

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PLOTED: 01-FEB-2013
PATH & FILENAME: Bridge\Final_Design\6162037\Cadd\Plan\br62037.dwg

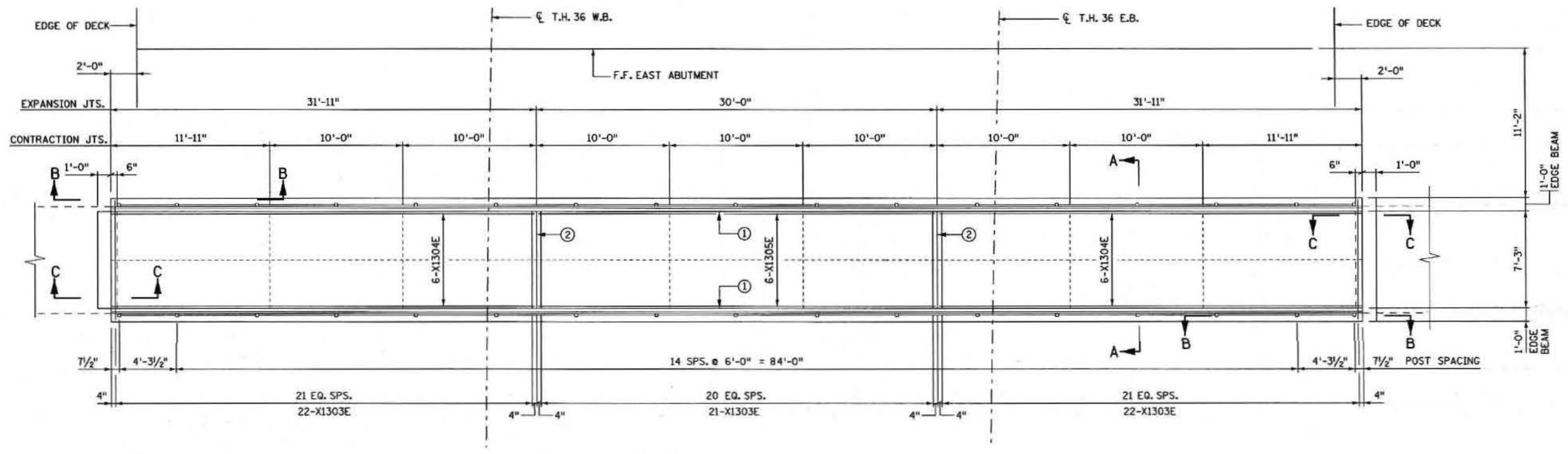


SECTION A-A



SECTION C-C
(SIDEWALK FOOTING)

- NOTES:**
- ALL STRUCTURAL STEEL SHALL COMPLY WITH MNDOT SPEC. 3309.
 - ALL TIMBER SHALL COMPLY WITH MNDOT SPEC. 3426
 - ALL TIMBER SHALL BE NOMINAL SIZE.
 - THE CONSTRUCTION OF TIMBER SHALL COMPLY WITH MNDOT SPEC. 2403.
 - SIDEWALK CONCRETE TRANSVERSE EXPANSION JOINTS, BIT, FELT, JOINT SEALER ARE INCLUDED IN PRICE BID FOR "5" CONCRETE WALK" PER SQ. FT.
 - ① LONGITUDINAL EXPANSION JOINT SHALL INCLUDE A 1/2" TRANSVERSE BIT, FELT JOINT WITH 1" JOINT SEALER PER SPEC. 3720.
 - ② REINFORCEMENT SHALL NOT RUN THROUGH JOINT.
 - ALL TIMBER CONNECTIONS SHALL BE MADE WITH ASTM A307 3/8" DIAMETER CARRIAGE BOLTS UNLESS OTHERWISE NOTED ON THIS SHEET.
 - ALL WELDS SHALL BE THE MINIMUM SIZE REQUIRED PER CURRENT AASHTO REQUIREMENTS UNLESS NOTED OTHERWISE.
 - ALL LUMBER SHALL BE TREATED, SELECT GRADE AND WANE FREE.
 - SIDEWALK CONCRETE TO BE CONCRETE MIX NO. 3A32.
 - SEE SHEET NO. 58 FOR DETAILS "A" AND "B" AND SECTION B-B.
 - FOR BASE PLATE ANCHORAGE REQUIREMENTS SEE SPECIAL PROVISIONS.
 - ③ SELECT GRANULAR BORROW MODIFIED 10% (CV), MATERIAL SHALL COMPLY WITH MNDOT SPEC. 3149.2B, MODIFIED SO THAT NO MORE THAN 10% PASSES A NO. 200 SIEVE.

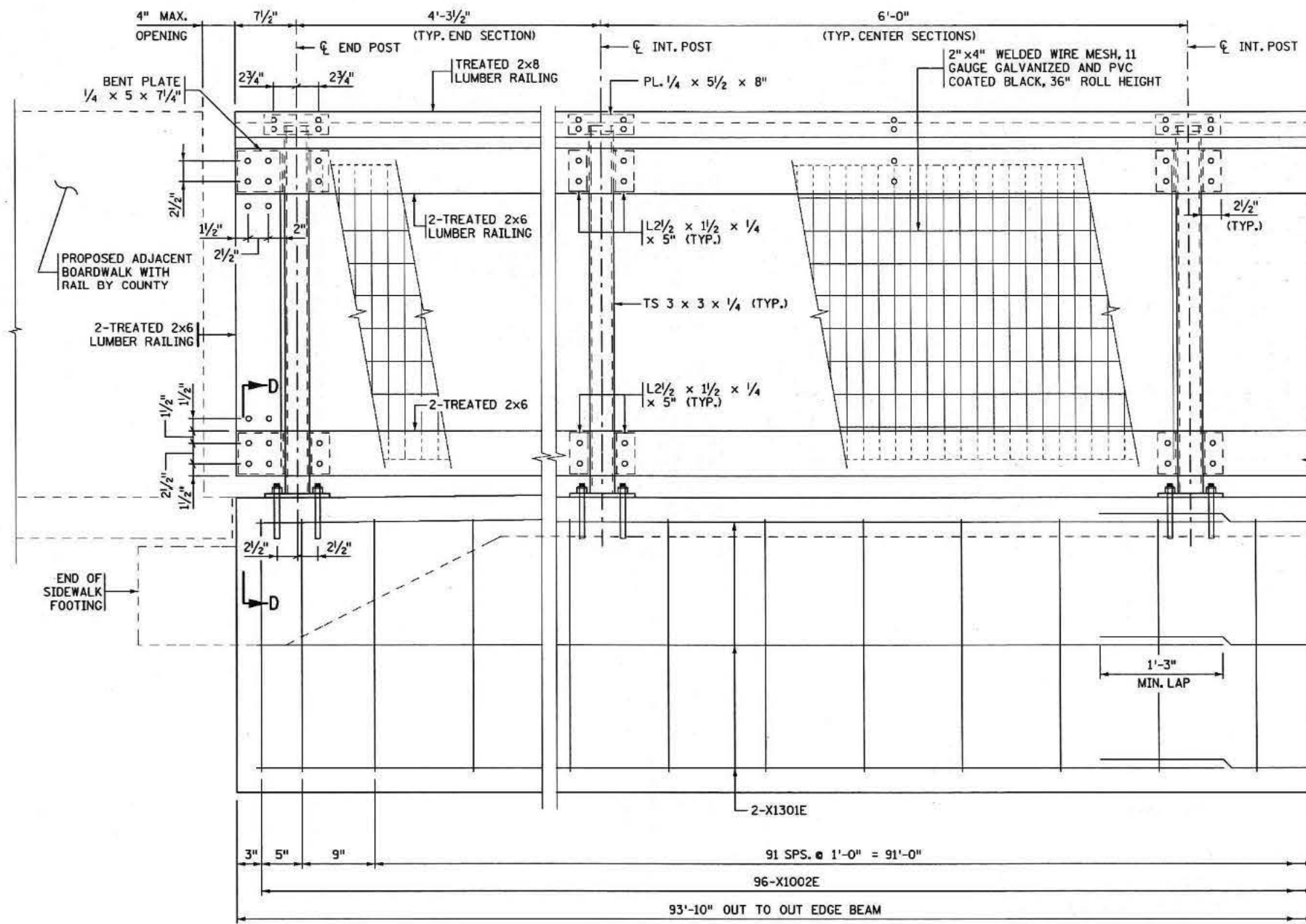


SIDEWALK PLAN

CERTIFIED BY <i>Angel M. Staples</i> 2/1/13 LICENSED PROFESSIONAL ENGINEER NAME: ANGEL M. STAPLES LIC. NO. 41656	TITLE: CONCRETE WALK WITH PEDESTRIAN RAILING	DES: MDH	DR: RLV	APPROVED: 2/1/13	BRIDGE NO. 62037
		CHK: NJV	CHK: DCH	SHEET NO. 57 OF 68 SHEETS	

FILENAME: IP_PWP\dl48944\br62037_d.dgn

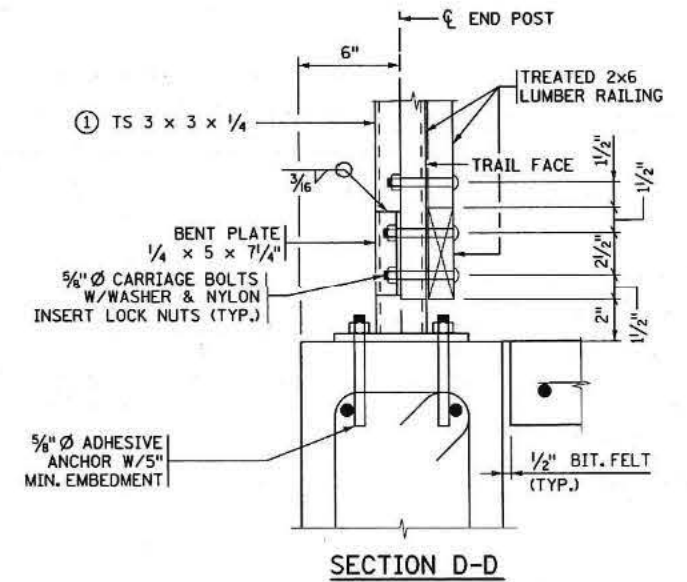
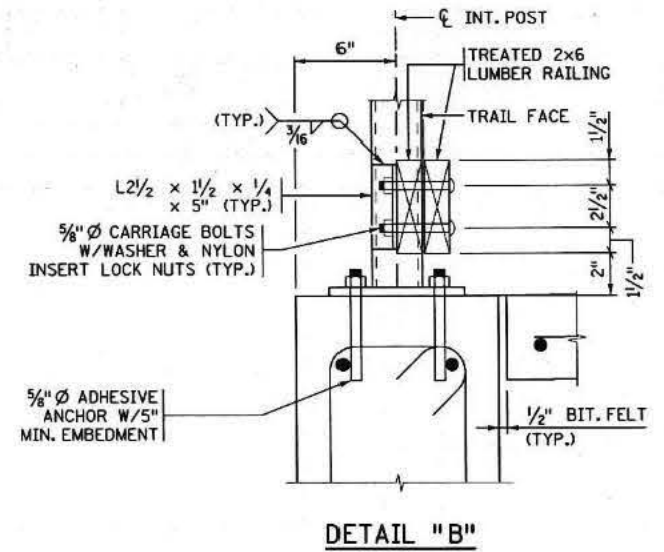
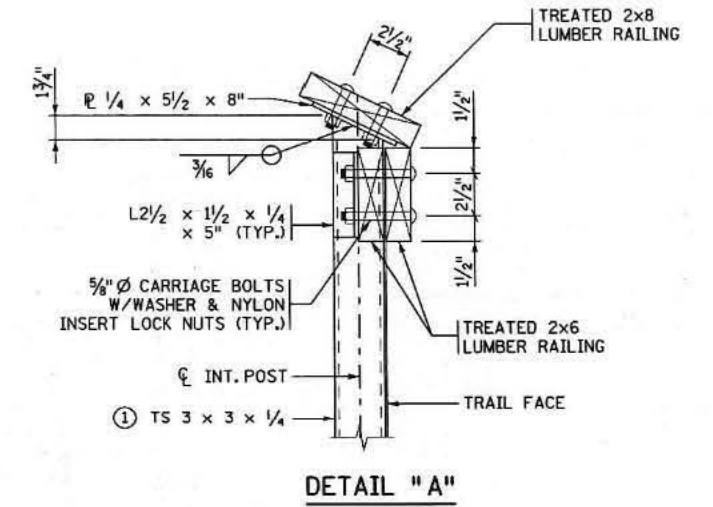
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SECTION B-B

NOTE:

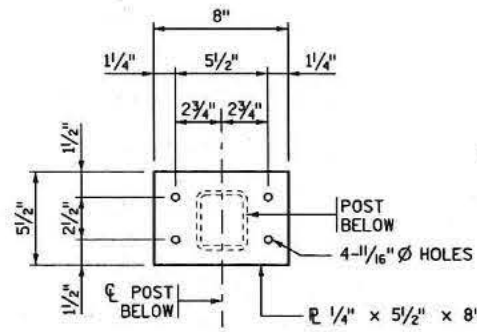
- ① TOP OF POST SHALL HAVE A 30° TAPER ON TOP. SEE "TOP OF POST DETAIL".
- SEE SHEET NO. 57 FOR LOCATION OF DETAIL "A" AND "B" AND SECTION B-B..



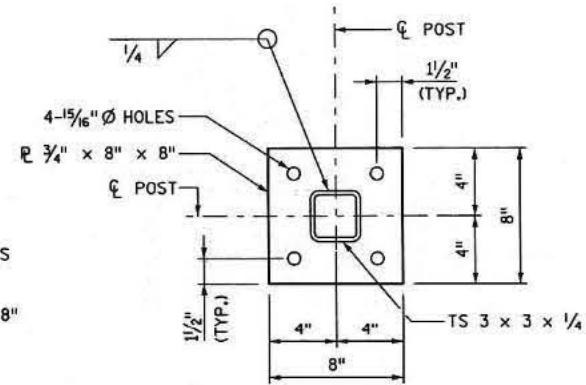
CERTIFIED BY <i>Angel M. Staples</i> 2/1/13 LICENSED PROFESSIONAL ENGINEER NAME: ANGEL M. STAPLES LIC. NO. 41656	TITLE: CONCRETE WALK WITH PEDESTRIAN RAILING	DES: MDH	DR: RLV	APPROVED: 2/1/13	BRIDGE NO. 62037
		CHK: NJV	CHK: DCH	SHEET NO. 58 OF 68 SHEETS	

FILENAME: IP_PWP-d1489447-br62037_d.dgn

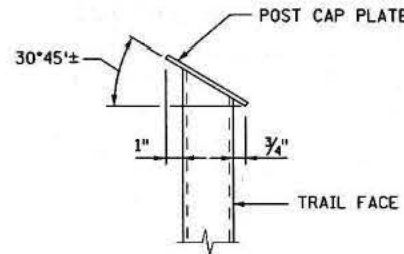
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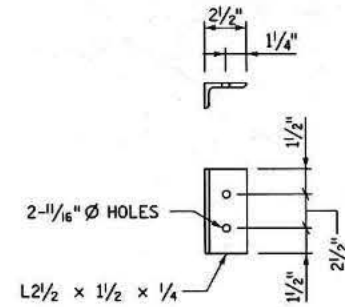
POST CAP PLATE



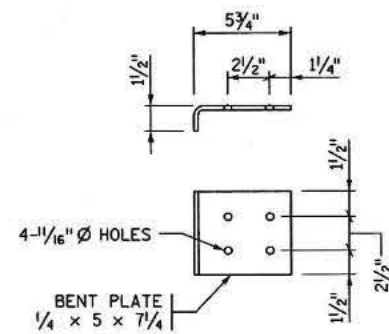
POST BASE PLATE



TOP OF POST DETAIL



ANGLE AT POST



BENT PLATE AT END POST

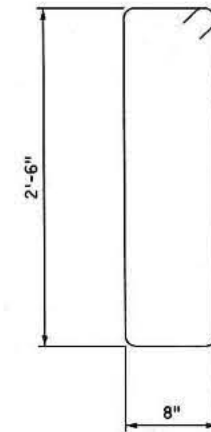
BILL OF REINFORCEMENT FOR PEDESTRIAN SIDEWALK

BAR	NO.	LENGTH	SHAPE	LOCATION
X1301E	36	32'-0"	—	EDGE BEAM LONGITUDINAL
X1002E	192	7'-0"	⊠	EDGE BEAM STIRRUP
X1303E	73	6'-10"	—	SIDEWALK TRANSVERSE
X1304E	12	31'-7"	—	SIDEWALK LONGITUDINAL
X1305E	6	29'-8"	—	SIDEWALK LONGITUDINAL
X1306E	12	7'-0"	—	SIDEWALK EDGE BEAM

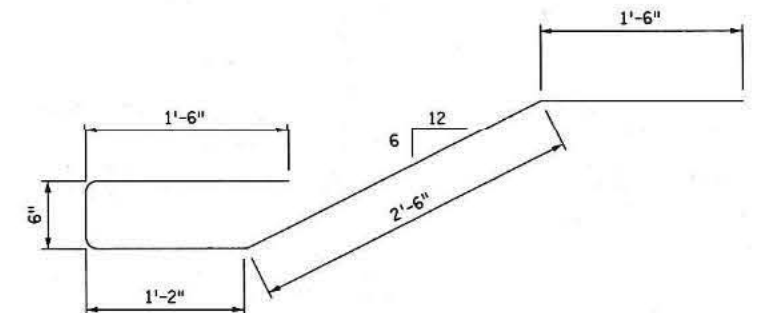
SUMMARY OF QUANTITIES FOR PEDESTRIAN SIDEWALK

5" CONCRETE WALK	673 SQ. FT.
STRUCTURAL CONCRETE (3Y33)	21 CU. YD.
PEDESTRIAN RAILING	188 LIN. FT.
REINFORCEMENT BARS (EPOXY COATED)	2040 POUND
1/2" x 5" BIT. FELT	188 LIN. FT.
1 SELECT GRANULAR BORROW MODIFIED 10% (CV)	70 CU. YD.

① PAYMENT SHALL BE CONSIDERED INCIDENTAL TO PAY ITEM 5" CONCRETE WALK".



X1301E

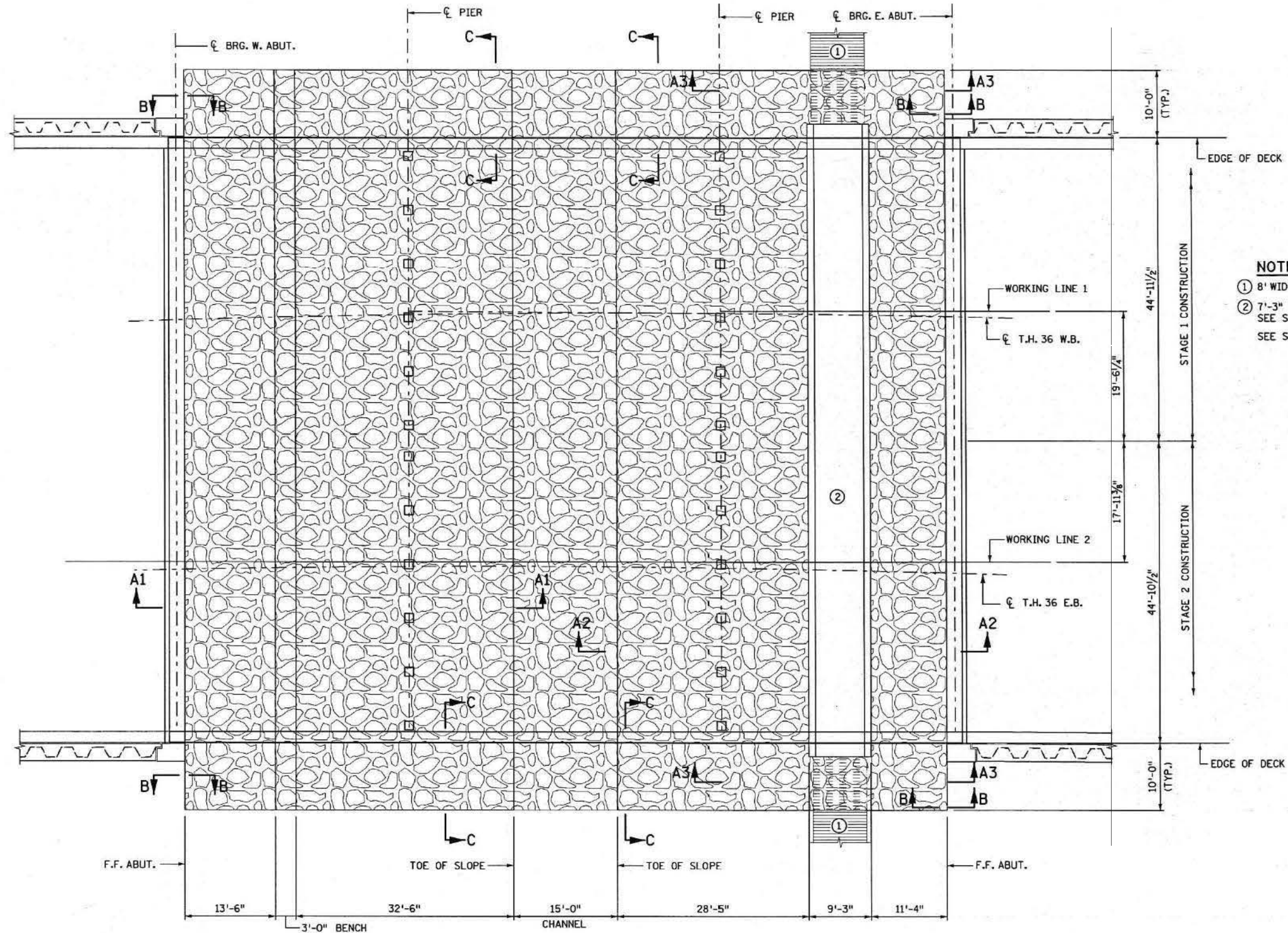


X1306E

CERTIFIED BY: <i>Angel M. Staples</i> 2/1/13 <small>LICENSED PROFESSIONAL ENGINEER DATE</small>	TITLE: CONCRETE WALK WITH PEDESTRIAN RAILING	DES: MDH CHK: NJV	DR: RLV CHK: DCH	APPROVED: <i>2/1/13</i>	BRIDGE NO. 62037
NAME: ANGEL M. STAPLES LIC. NO. 41656		SHEET NO. 59 OF 68 SHEETS			

FILENAME: IP_PWP.d1489447\br62037_dd.dgn

TIME: 8:09:26 AM
 PLOTTED: 01-FEB-2013
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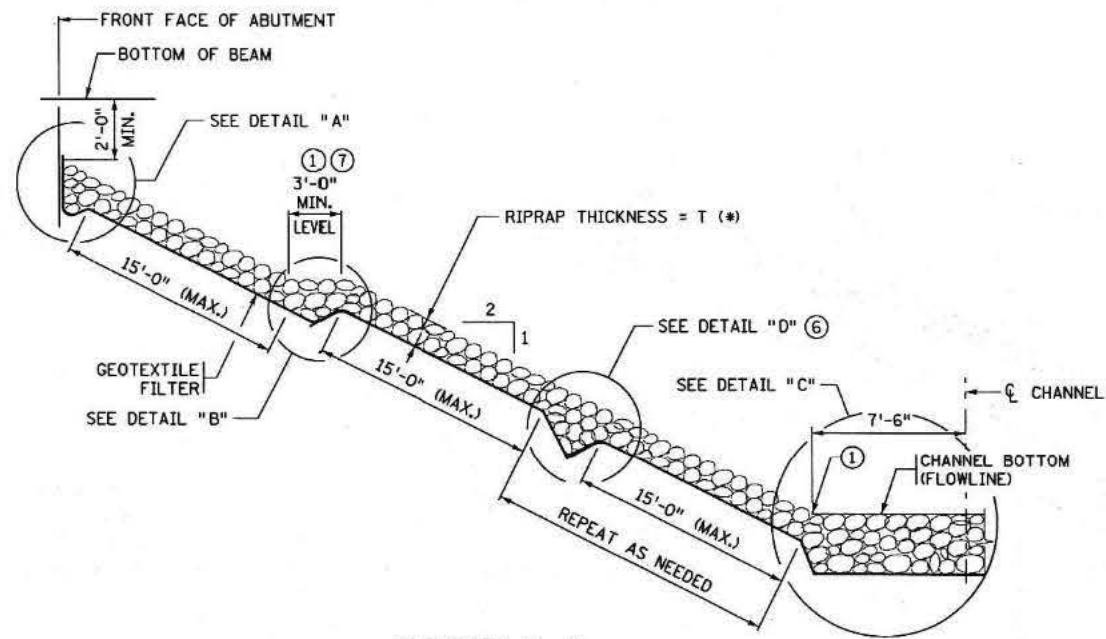
- NOTES:**
- ① 8' WIDE BOARDWALK, BY OTHERS
 - ② 7'-3" WIDE SIDEWALK WITH 1'-0" EDGE BEAMS. SEE SHEET NO. 57 FOR DETAILS
- SEE SHEET NO. 61 FOR ALL SECTIONS AND GENERAL NOTES.

RIPRAP SLOPE PLAN

CERTIFIED BY <i>Angel M. Staples</i> 2/1/13 LICENSED PROFESSIONAL ENGINEER DATE NAME: ANGEL M. STAPLES LIC. NO. 41656	TITLE: CLASS III RIPRAP WITH GEOTEXTILE FILTER	DES: NJV	DR: RLV	APPROVED: <i>AMS</i>	BRIDGE NO. 62037
		CHK: AMS	CHK: DCH	SHEET NO. 60 OF 68 SHEETS	

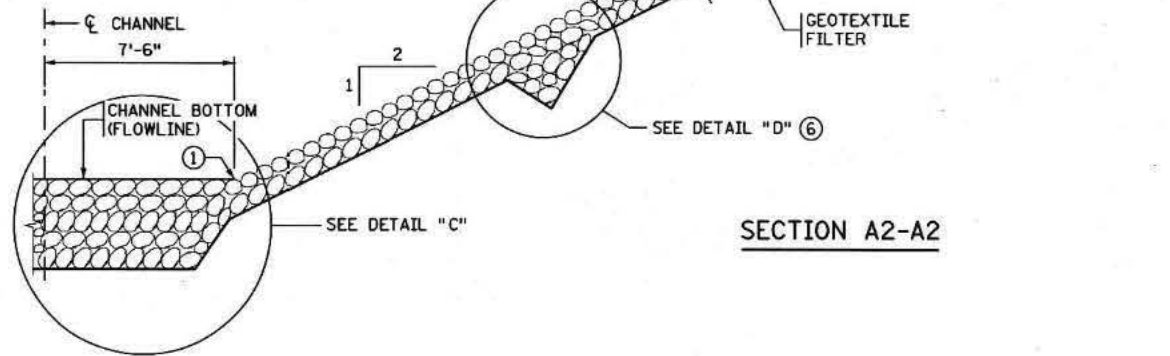
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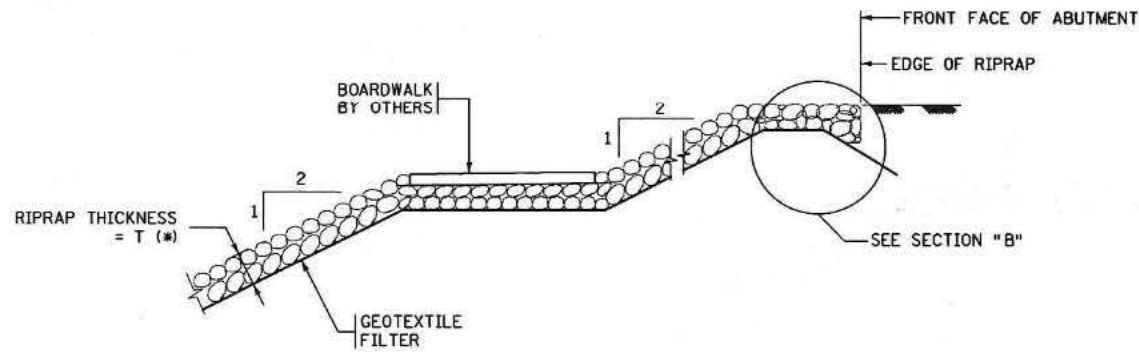


SECTION A1-A1
(PASSAGE BENCH WITH EXTENSION)

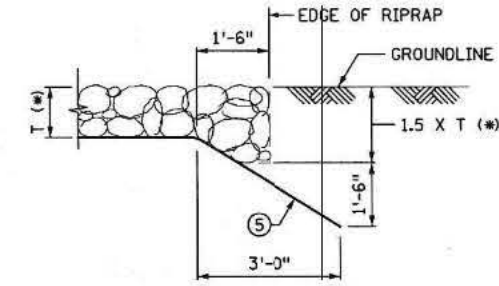
FOR SIDEWALK DETAILS
 SEE SHEET NO.S 57 & 58



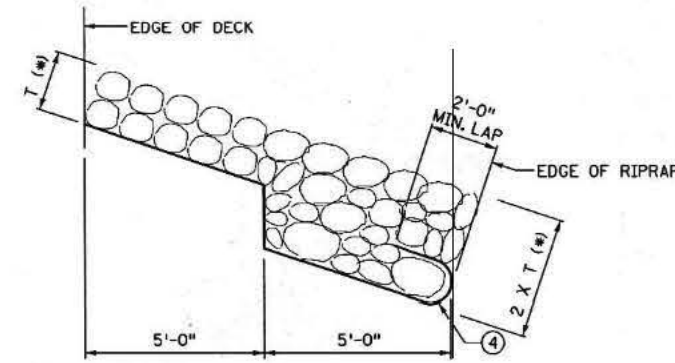
SECTION A2-A2



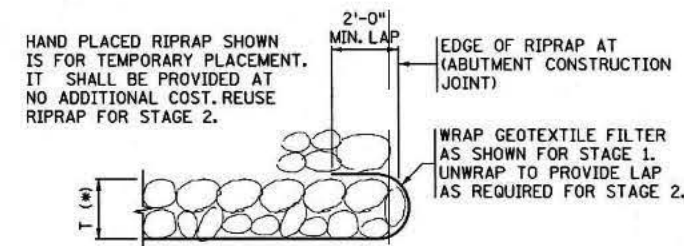
SECTION A3-A3



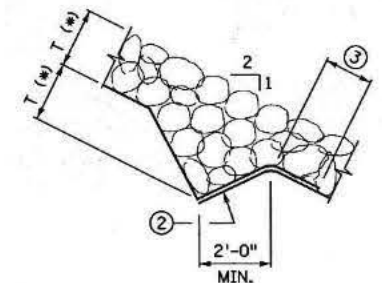
SECTION B-B



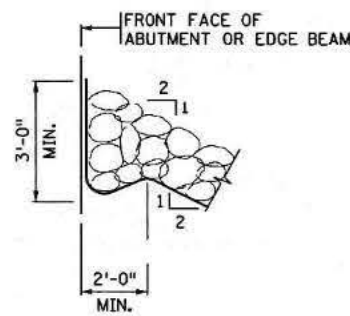
SECTION C-C



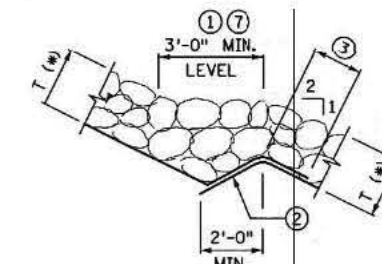
SECTION E-E



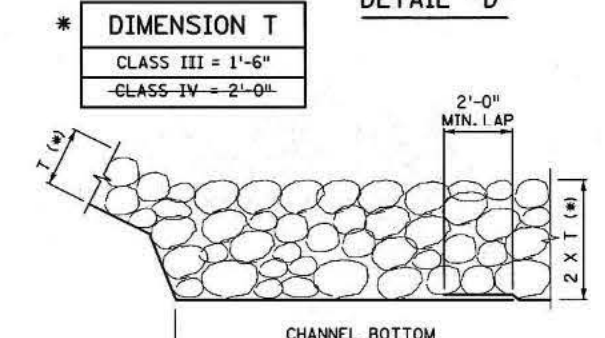
DETAIL \"D\"



DETAIL \"A\"



DETAIL \"B\"



DETAIL \"C\"

* DIMENSION T	
CLASS III = 1'-6"	
CLASS IV = 2'-0"	

GENERAL NOTES

- SEE SPECIAL PROVISIONS FOR MATERIALS, PREPARATION AND PLACEMENT.
- USE GEOTEXTILE FILTER MATERIAL AS PER MDOT SPECIAL PROVISION 2511.
- PAYMENT WILL BE MADE UNDER ITEM 2511.515 GEOTEXTILE FILTER TYPE IV (MODIFIED) BY THE SQ. YD.
- PAYMENT WILL BE MADE UNDER ITEM 2511.501 RANDOM RIPRAP CLASS III BY THE CU. YD.
- SLOPES ARE EXPRESSED AS A RATIO OF VERTICAL DISTANCE : HORIZONTAL DISTANCE.
- SLOPE BOTTOM OF TRENCHES 1:20 PARALLEL TO ABUTMENT FACE TO PROVIDE POSITIVE DRAINAGE.

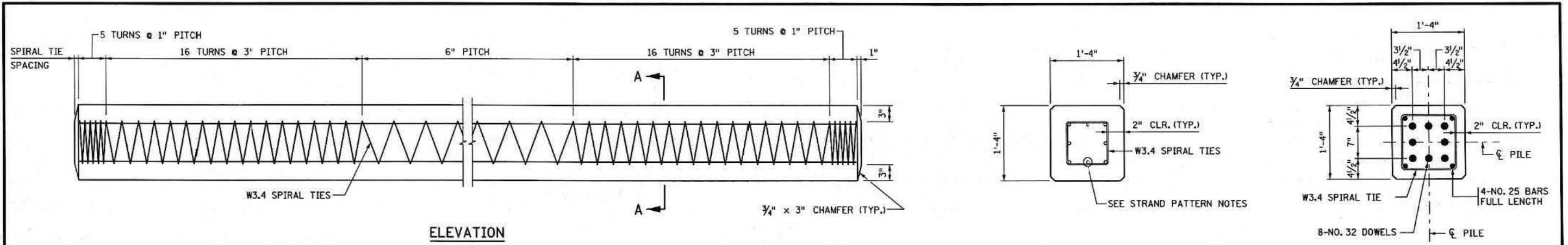
- ① SEE PLAN SHEET NO. 1 FOR DIMENSIONS, AND FOR ELEVATIONS OF RIPRAP TOE AND PASSAGE BENCHES.
- ② PLACE RIPRAP IN TRENCH TO HOLD THE GEOTEXTILE FABRIC IN PLACE BEFORE PLACING THE REST OF THE RIPRAP (FROM THE BOTTOM OF THE SLOPE).
- ③ OVERLAP GEOTEXTILE FILTER 2'-0" MINIMUM.
- ④ WRAP GEOTEXTILE FILTER AROUND TOE, OVERHANG BETWEEN 1ST AND 2ND LAYER OF RIPRAP. USE HAND PLACEMENT OR SIMILAR METHODS TO ESTABLISH PROFILE AND PLACE FABRIC IF UNDER WATER.
- ⑤ BURY EDGES OF GEOTEXTILE FILTER TO DIRECT WATER FLOW OVER THE FABRIC WITHOUT UNDERMINING.
- ⑥ OMIT THE TRENCH SHOWN IN DETAIL "D" AND THE 15'-0" MAXIMUM SPACING BETWEEN TRENCHES FOR SLOPES 1:3 OR FLATTER.
- ⑦ SURFACE BENCHES WITH AGGREGATE CLASS 5 (INCIDENTAL TO RIPRAP). TIE BENCHES TO NATURAL GROUND LINES OUTSIDE OF BRIDGE.

SEE SHEET NO. 60 FOR LOCATION OF SECTIONS.

CERTIFIED BY <i>Angel M. Staples</i> 2/1/13 <small>LICENSED PROFESSIONAL ENGINEER</small>	DATE	TITLE RIPRAP SLOPE WITH GEOTEXTILE FILTER (SLOPES 1:2 AND FLATTER)	DES: NJV CHK: AMS	DR: RLV CHK: DCH	APPROVED: <i>2/1/13</i>	BRIDGE NO. 62037
NAME: ANGEL M. STAPLES	LIC. NO. 41656		SHEET NO. 61 OF 68 SHEETS			

FILENAME: IP_PWP.d148947\br62037_dd.dgn

TIME: 8:09:39 AM
 PLOTTED: 01-FEB-2013
 PATH & FILENAME: Bridge/Finl_Design/6/62037/Cadd/Plan/br62037_dd



ELEVATION

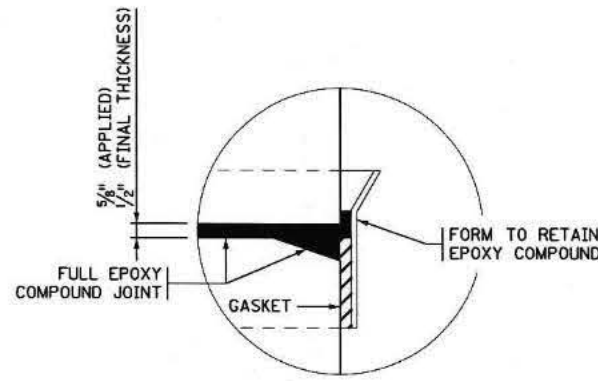
SECTION A-A

SECTION D-D
 (SEE NONDRIVABLE UNFORSEEN REINFORCED PRECAST SPLICE DETAILS)

STRAND PATTERN NOTES:

8 ~ 0.6" Ø GRADE 7-WIRE LOW-RELAXATION STRAND CONFORMING TO ASTM A416, AT 33 KIPS INITIAL PULL.
 THE STRANDS SHALL BE LOCATED AS FOLLOWS:
 PLACE ONE STRAND AT EACH CORNER AND PLACE THE REMAINING STRANDS EQUALLY SPACED BETWEEN THE CORNER STRANDS.
 THE TOTAL STRAND PATTERN SHALL BE CONCENTRIC WITH THE NOMINAL CONCRETE SECTION OF THE PILE.

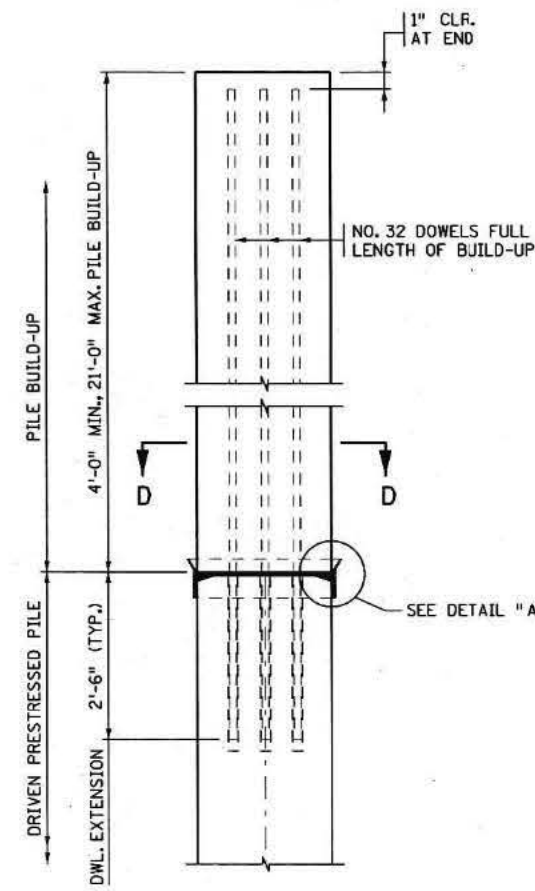
② PILE SPLICE SHALL BE CONSIDERED INCIDENTAL TO PAY ITEM "16" SQUARE PRECAST PILE.



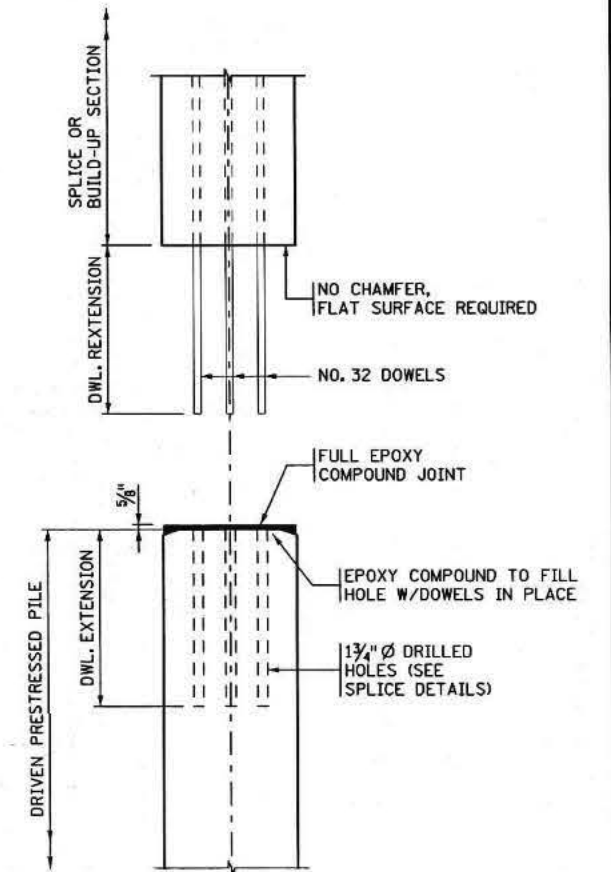
DETAIL "A" ① ②

NOTES:

- ① PRESTRESSING STRANDS, SPIRAL TIES AND/OR REINFORCEMENT ARE NOT SHOWN FOR CLARITY.
- ② PILE SPLICE SHALL BE CONSIDERED INCIDENTAL TO PAY ITEM "16" SQUARE PRECAST PILE.



NONDRIVABLE UNFORSEEN ①
 REINFORCED PRECAST
 PILE BUILD-UP DETAIL



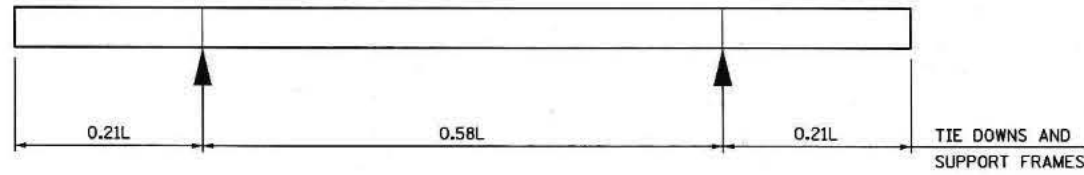
TYPICAL SPLICE
 BEFORE BONDING

CERTIFIED BY <i>Angel M. Staples</i> 2/1/13 LICENSED PROFESSIONAL ENGINEER DATE NAME: ANGEL M. STAPLES LIC. NO. 41656	TITLE: SQUARE PRESTRESSED CONCRETE PILE DETAILS	DES: NJV	DR: RLV	APPROVED:	BRIDGE NO. 62037
		CHK: MDH	CHK: DCH	2/1/13	

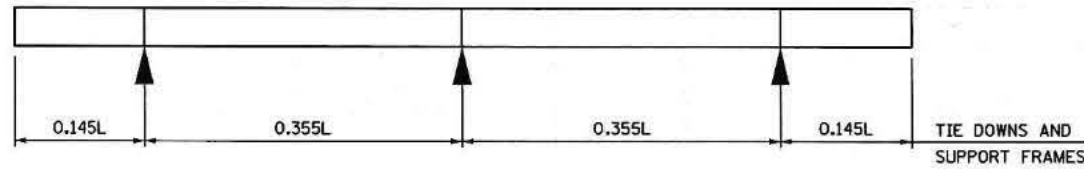
SHEET NO. 62 OF 68 SHEETS

FILENAME: IP_PWP.d148947\br62037_dd.dgn

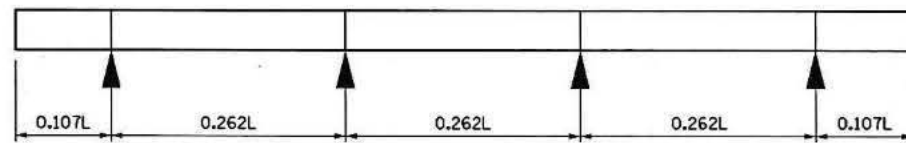
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PLOTTED : 01-FEB-2013
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2-POINT SUPPORT

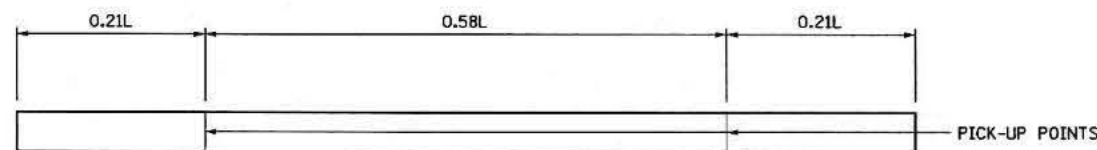


3-POINT SUPPORT



4-POINT SUPPORT

STORAGE AND TRANSPORTATION SUPPORT DETAILS



2-POINT SUPPORT

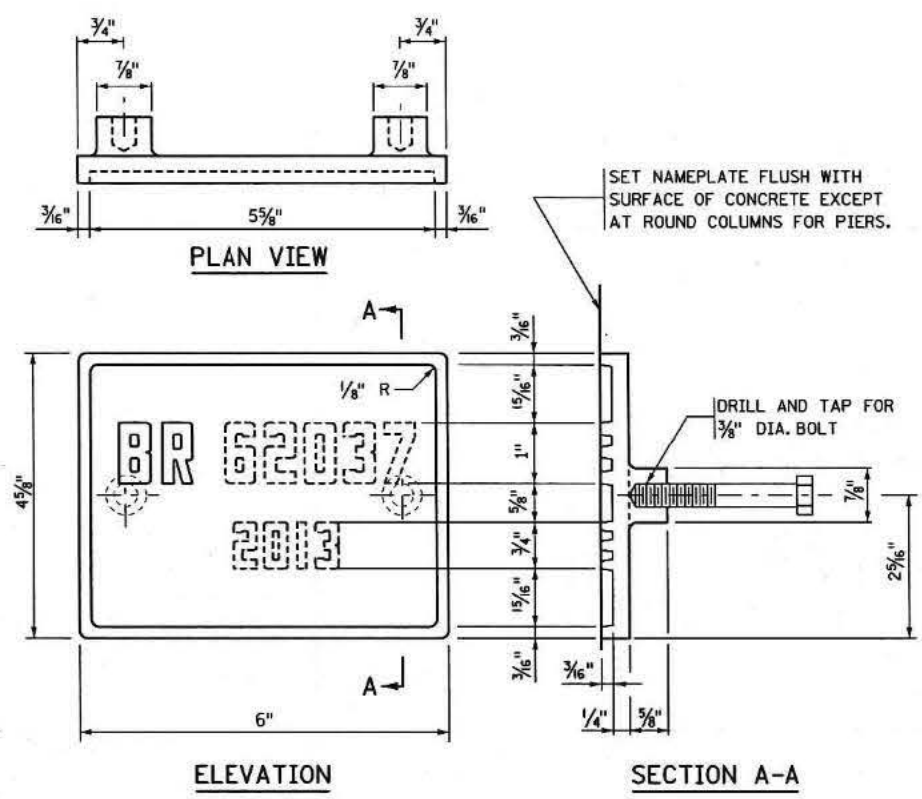
PILE PICK-UP DETAIL

PRESTRESSED CONCRETE PILE NOTES:

- DESIGN SPECIFICATIONS:
2012 AND CURRENT INTERIM AASHTO LRFD BRIDGE DESIGN SPECIFICATION.
- SPIRAL TIES:
EACH WRAP OF SPIRALS SHALL BE TIED TO AT LEAST TWO CORNER STRANDS. ONE TURN REQUIRED FOR SPIRAL SPLICES.
- CONCRETE CLASS:
CONCRETE FOR ALL PILES SHALL BE 3W36.
- CONCRETE STRENGTH:
THE PILE CYLINDER STRENGTH SHALL BE 6,000 PSI MINIMUM AT 28 DAYS AND 4,000 PSI MINIMUM AT TIME OF TRANSFER OF THE PRESTRESSING FORCE.
- SPLICE BONDING MATERIAL:
THE MATERIAL TO FILL DOWEL HOLES AND FORM THE JOINT BETWEEN PILE SECTIONS SHALL BE A EPOXY COMPOUND RECOMMENDED BY THE PRECAST PILE SUPPLIER AND SHOULD MEET THE EPOXY MAUNUFACTURERS RECOMMENDATIONS. SEESPECIAL PROVISIONS.
- PICK-UP POINTS:
PILES SHALL BE MARKED AT THE PICK-UP POINTS TO INDICATE PROPER POINTS FOR ATTACHING HANDLING LINES.
- REINFORCING STEEL:
ALL REINFORCING STEEL SHALL BE GRADE 60, EXCEPT THAT SPIRAL TIES SHALL BE MANUFACTURED FROM COLD-DRAWN STEEL WIRE MEETING THE REQUIREMENTS OF ASTM A82.
- PRESTRESSING STEEL:
PRESTRESSING STEEL SHALL BE SEVEN-WIRE STRAND, GRADE 270, LOW-RELAXATION STRAND (LRS).
- CORROSION PROTECTION OF EXPOSED STRANDS:
FOR ALL PILES HAVING ENDS EXPOSED TO THE ENVIRONMENT AND NOT EMBEDDED UNDER FINAL CONDITIONS, PROTECT THE STRANDS AS FOLLOWS: PRIOR TO SHIPMENT, CUT STRANDS AT APPROPRIATE END(S) BACK TO A MINMUM DEPTH OF 1 INCH BELOW THE CONCRETE SURFACE AND PATCH.

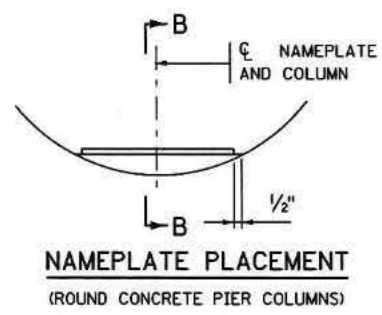
CERTIFIED BY <i>Angel M. Staples</i> <u>2/1/13</u> <small>LICENSED PROFESSIONAL ENGINEER DATE</small>	TITLE:	DES: NJV DR: RLV CHK: MDH CHK: DCH	APPROVED: <i>2/1/13</i>	BRIDGE NO. 62037
NAME: ANGEL M. STAPLES LIC. NO. 41656	SQUARE PRESTRESSED CONCRETE PILE DETAILS	SHEET NO. 63 OF 68 SHEETS		

TIME : 8:52 AM
 PLOTTED : 01-FEB-2013
 PATH & FILENAME: Bridge/Final_Design/6/62037/Cadd-Plan/br62037_did
 FILENAME: IP_PWP-cl489447-br62037_dd.dgn



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

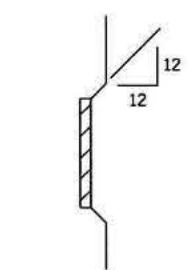
BRIDGE 62037
 YEAR 2013



NAMEPLATE PLACEMENT
 (ROUND CONCRETE PIER COLUMNS)



NUMBERS FOR NAMEPLATE



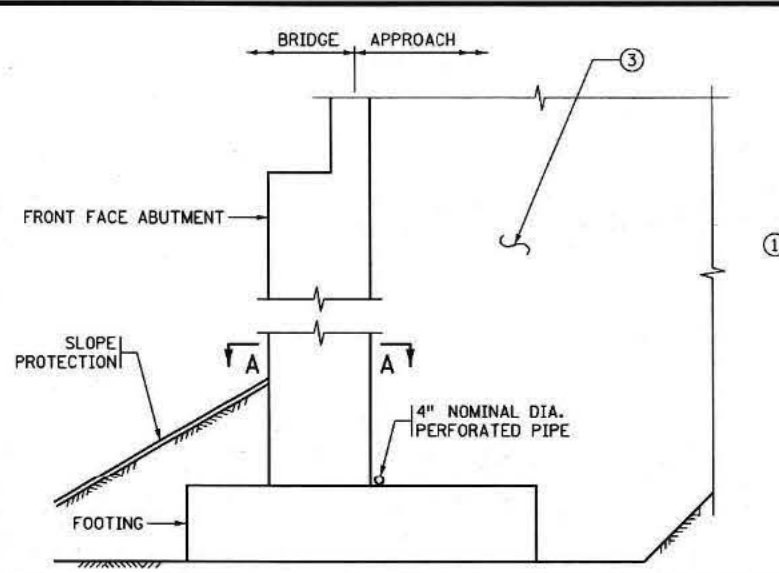
SECTION B-B

NOTES:

- NO SHOP DRAWING REQUIRED.
- MATERIAL SHALL COMPLY WITH Mn/DOT SPEC. 3327.
- LETTERS AND NUMBERS SHALL CONFORM TO THOSE SHOWN.
- DRAFT ON LETTERS AND NUMBERS SHALL NOT BE MORE THAN 3" IN 12".
- HORIZONTAL SPACING OF LETTERS AND NUMBERS SHALL PRODUCE A BALANCED LAYOUT IN PROPORTION TO SPACING SHOWN.
- TOP SURFACE OF LETTERS, NUMBERS AND FRAMES SHALL BE BURNISHED.
- FURNISH 2 STEEL BOLTS 3/8" DIA. x 3" LONG WITH EACH PLATE.
- ALL DIMENSIONS FOR 3/4" HIGH LETTERS AND NUMBERS SHALL BE IN DIRECT PROPORTION TO THOSE SHOWN FOR THE 1" HIGH LETTERS AND NUMBERS.

APPROVED: NOVEMBER 22, 2002	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION	REVISION	DETAIL NO.
<i>Samuel M. Staples</i> STATE BRIDGE ENGINEER	BRIDGE NAMEPLATE (FOR NEW BRIDGES)		B101
CERTIFIED BY <i>Angel M. Staples</i> 2/1/13 LICENSED PROFESSIONAL ENGINEER DATE	TITLE: DETAILS	DES: NJV DR: RLV CHK: MDH CHK: DCH	APPROVED: <i>2/1/13</i> BRIDGE NO. 62037
NAME: ANGEL M. STAPLES LIC. NO. 41656		SHEET NO. 64 OF 68 SHEETS	

TIME : 8:59 AM
 PLOTTED : 01-FEB-2013
 PATH & FILENAME: Bridge/Final_Design/6/62037/Cadd-Plan/br62037.dd
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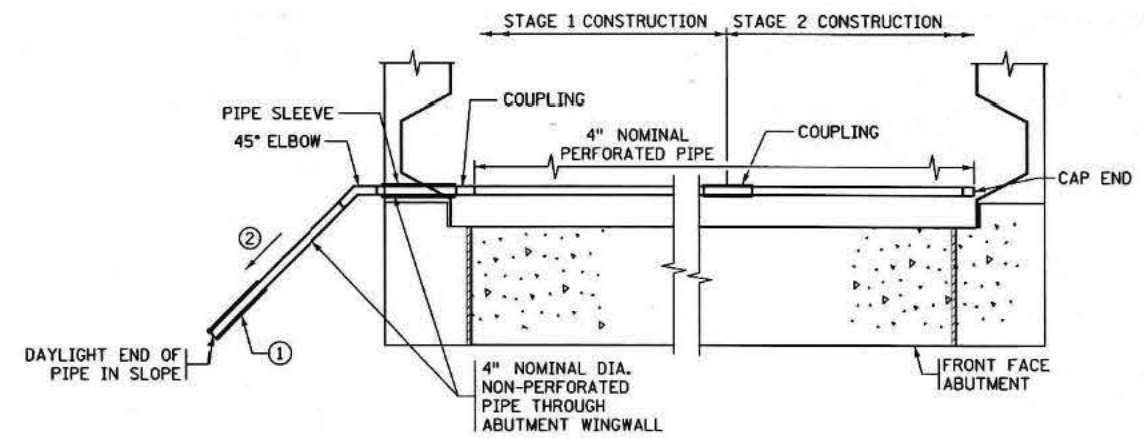


SECTION THROUGH PARAPET AND SEMI INTEGRAL ABUTMENTS

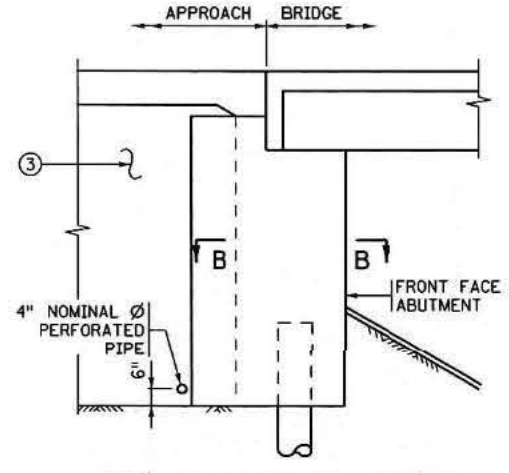
SUMMARY OF QUANTITIES FOR DRAINAGE SYSTEM	
4" DIA. PERFORATED PIPE	180 LIN. FT.
4" DIA. NON-PERFORATED PIPE	30 LIN. FT.
45° ELBOW	2 EACH
4" DIA. END CAP	2 EACH
4" DIA. COUPLING	4 EACH
PIPE SLEEVE	2 EACH
PRECAST CONCRETE HEADWALL	2 EACH

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)".



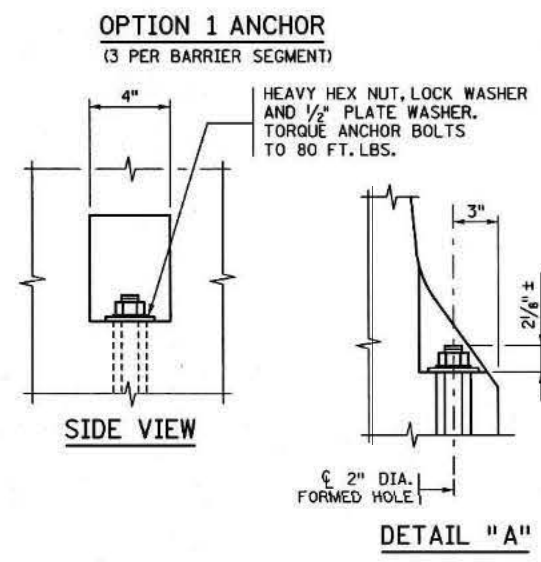
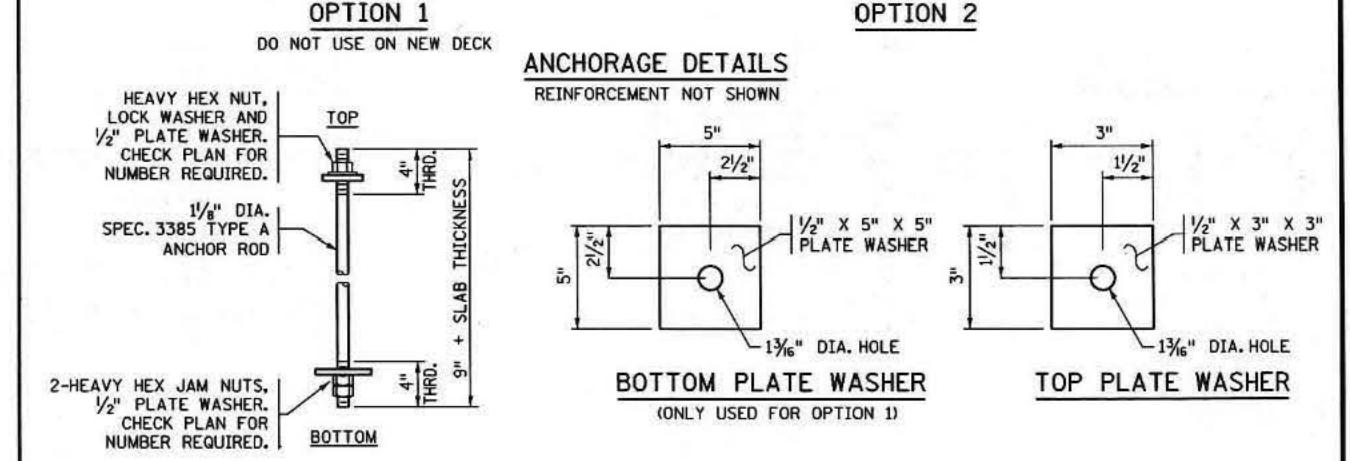
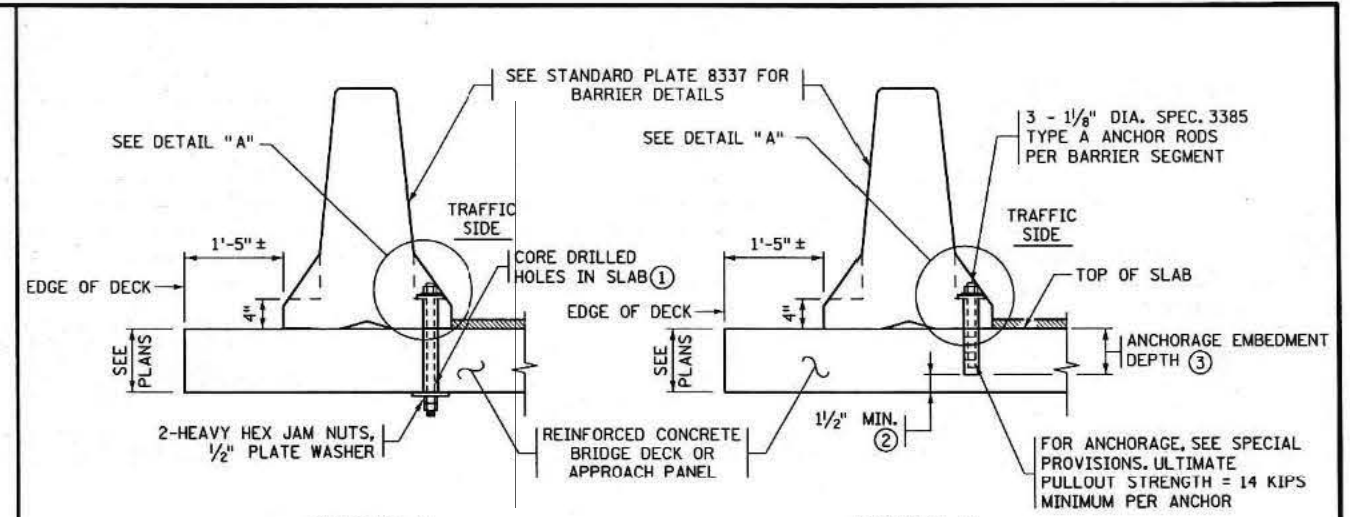
SECTION B-B



SECTION THROUGH ABUTMENT

- NOTES:**
- ALL PIPE SHALL COMPLY WITH MnDOT SPEC. 3245.
 - WRAP PERFORATED PIPE WITH GEOTEXTILE AS PER MnDOT SPEC. 3733, TYPE 1. ATTACH TO PIPE AS PER MnDOT 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 MnDOT SPEC. 3149.2B SELECT GRANULAR BORROW, MODIFIED SO THAT NO MORE THAN 10% PASSES A NO. 200 SIEVE. (UNDER GRADING PORTION OF CONTRACT)

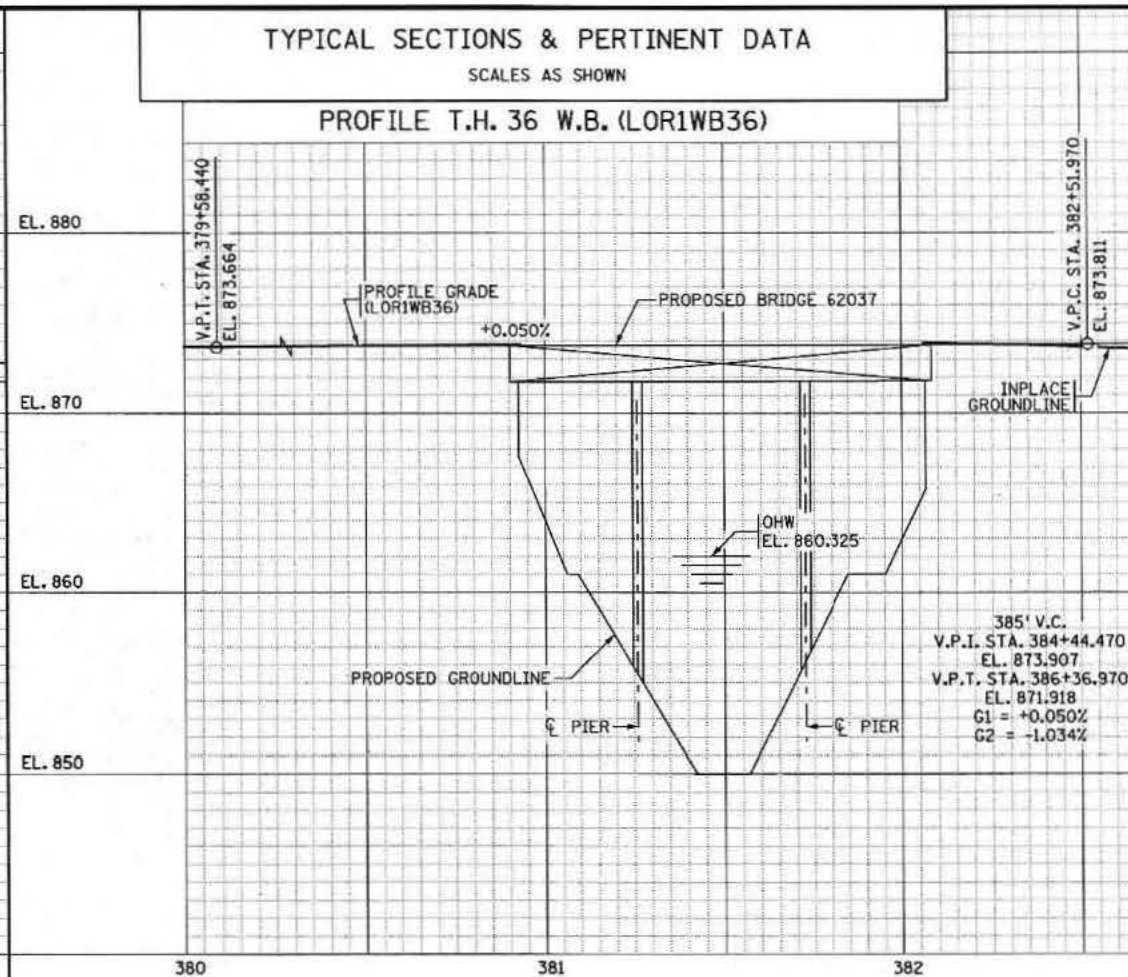
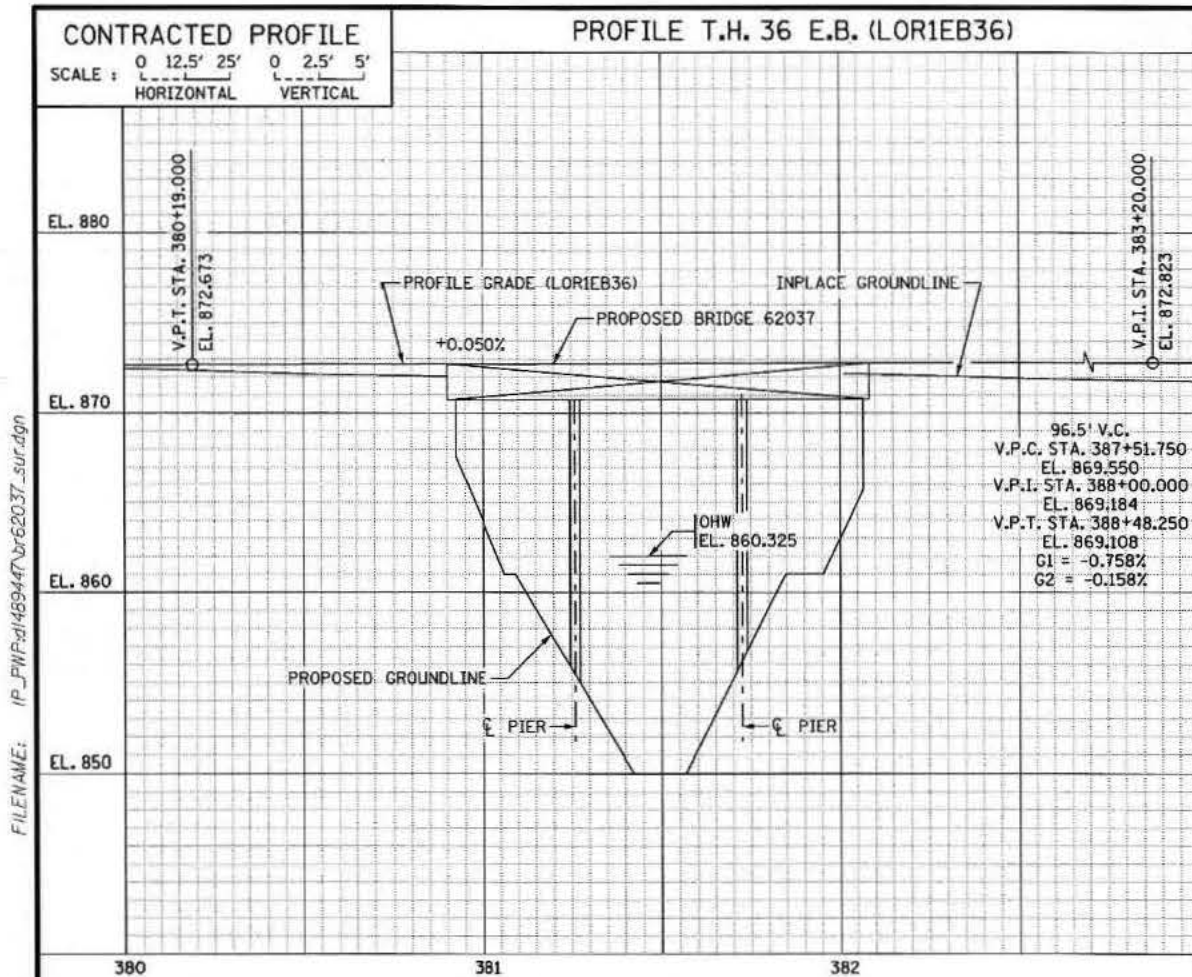
APPROVED: MARCH 26, 2009	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION	REVISED 10-22-2009	DETAIL NO.
<i>Daniel J. Morgan</i> STATE BRIDGE ENGINEER	DRAINAGE SYSTEM		B910 MOD.



- NOTES:**
- ALL HARDWARE TO BE GALVANIZED PER SPEC. 3392.
 - ALL STRUCTURAL STEEL TO BE SPEC. 3306 UNLESS OTHERWISE NOTED.
 - COST OF ANCHORAGE SYSTEM, ANCHOR REMOVAL AND GROUTING OF HOLE ARE INCIDENTAL TO THE COST OF PLACING THE TEMPORARY PORTABLE PRECAST BARRIER.
 - PIN BARRIERS TOGETHER PER STANDARD PLATE 8337.
 - THROUGH BOLT ANCHORS MUST BE USED IF THE DECK IS PENETRATED DURING DRILLING PROCESS.
 - DO NOT USE ON BRIDGES OR APPROACH PANELS WITH A BITUMINOUS OVERLAY.
 - REFER TO TRAFFIC CONTROL PLANS FOR DEPLOYMENT LENGTH AND BARRIER TERMINATION REQUIREMENTS.
 - ANCHOR ON TRAFFIC SIDE OF BARRIER ONLY.
 - SEE SPECIAL PROVISIONS FOR BARRIER INSTALLATION AND REMOVAL REQUIREMENTS.
 - ① PERCUSSION DRILLING OF THESE HOLES IS NOT PERMITTED.
 - ② 1/2" MINIMUM TO PREVENT BOTTOM OF SLAB FROM SPALLING OR FRACTURING DURING DRILLING.
 - ③ 5 1/2" MINIMUM AND 6" MAXIMUM FOR BRIDGE DECKS WITH TOP MAT REINFORCEMENT AND SOUND CONCRETE. 9" MINIMUM AND 10 1/2" MAXIMUM FOR SOUND CONCRETE APPROACH PANELS.

APPROVED: DECEMBER 21, 2011	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION	REVISED 05-24-2012	DETAIL NO.
<i>Nancy Dubenberger</i> STATE BRIDGE ENGINEER	TEMPORARY PORTABLE PRECAST CONCRETE BARRIER ANCHORAGE (TEMPORARY USAGE IN LIMITED BARRIER DISPLACEMENT AREAS)		B920

CERTIFIED BY <i>Angel M. Staples</i> 2/1/13 LICENSED PROFESSIONAL ENGINEER DATE	TITLE: DETAILS	DES: NJV DR: RLV CHK: MDH CHK: DCH	APPROVED: 2/1/13	BRIDGE NO. 62037
NAME: ANGEL M. STAPLES LIC. NO. 41656		SHEET NO. 65 OF 68 SHEETS		



LOCATION ENGINEER'S OBSERVATIONS AT BRIDGE SITE

- SPECIAL FEATURES: WATERFALLS, DAMS, FLOODS, ICE, DEBRIS, SLIDING BANKS, RECREATIONAL BOATING.
- 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 OBTAINED FROM:
- OTHER DATA: APPROX. VELOCITY OF WATER AT TIME OF SURVEY.

HYDRAULIC ENGINEERS RECOMMENDATION
DATE: 01-10-12

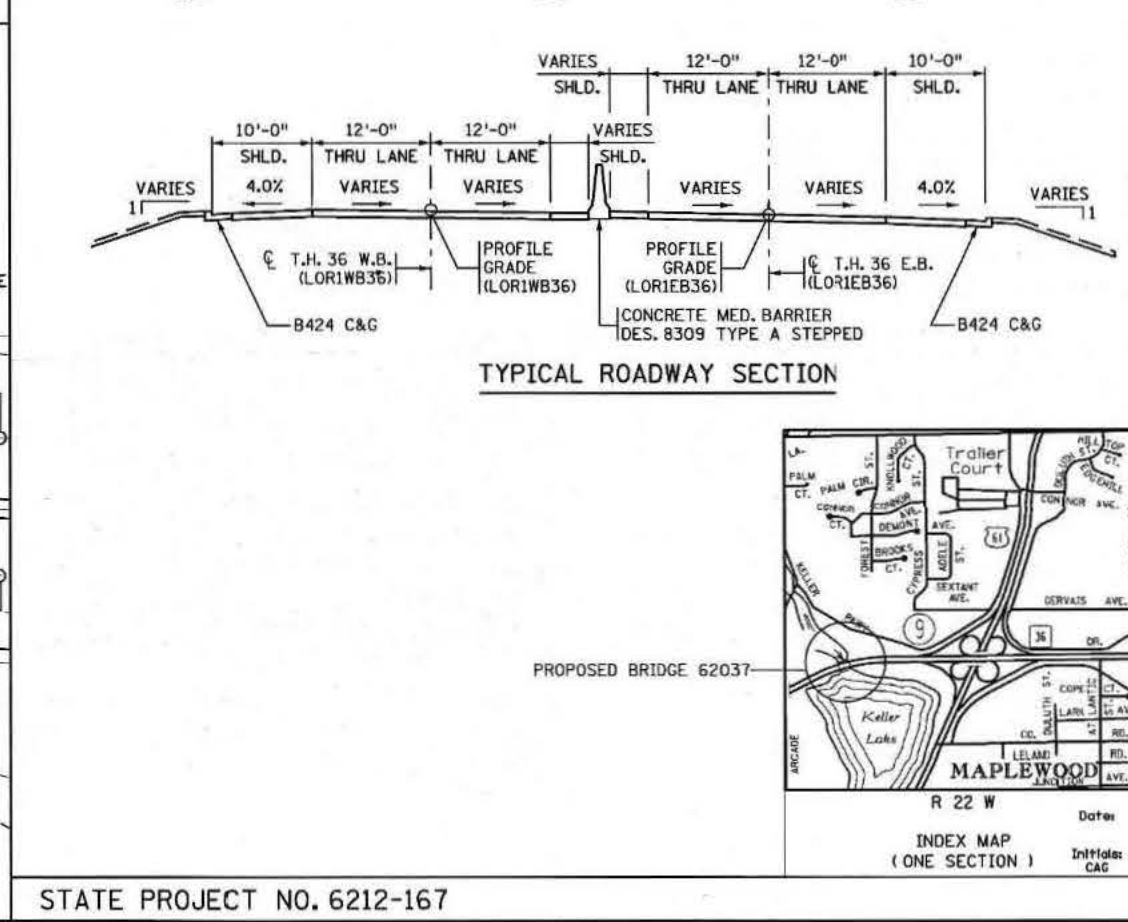
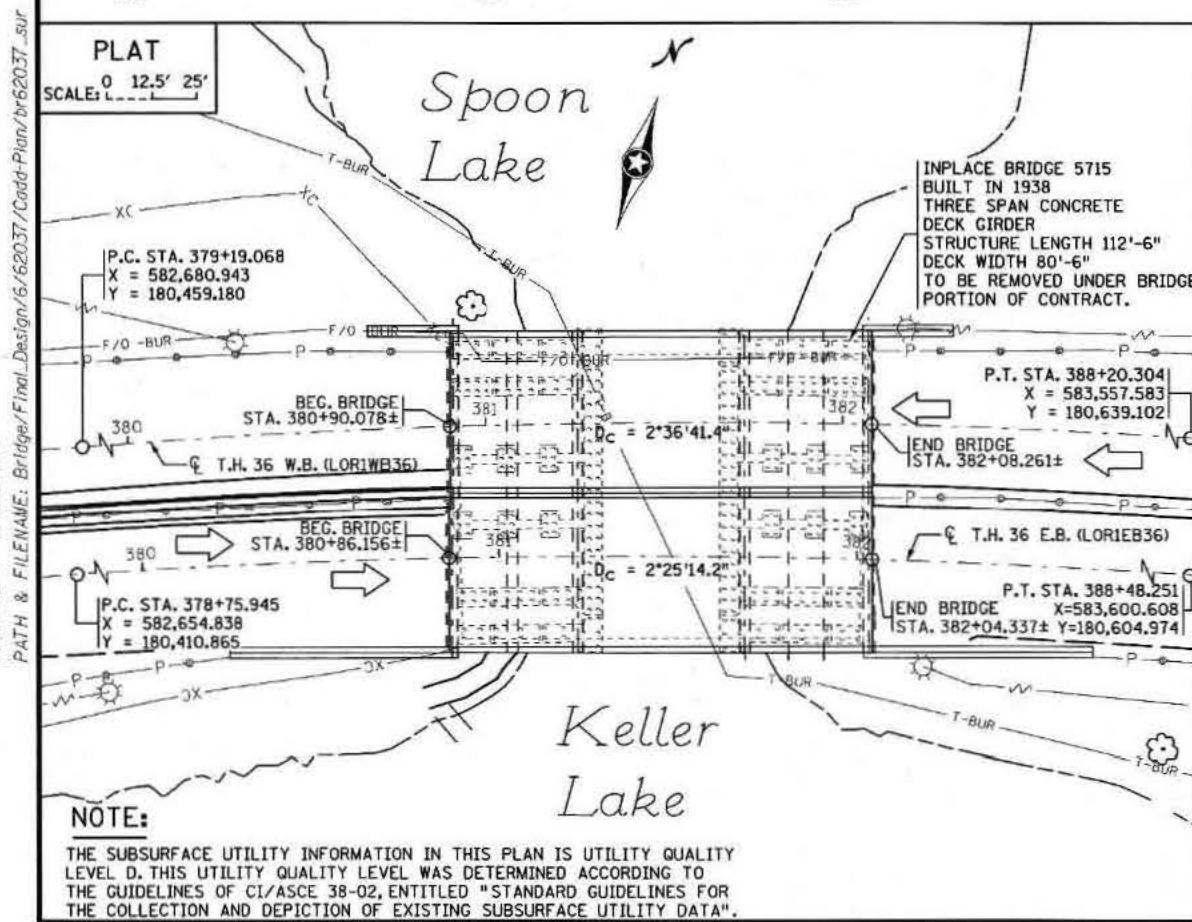
STREAM OR DITCH DESIGNATION: KELLER LAKE

THIS STRUCTURE IS OVER A CHANNEL THAT JOINS KELLER LAKE AND LAKE GERVAIS. INPLACE BRIDGE NO. 5715 ACTS AS A LEVELOR STRUCTURE BETWEEN THE TWO LAKES. KELLER LAKE THEN OUTLETS TO KELLER-PHALEN CHANNEL WHICH HAS A WEIR CONTROL STRUCTURE SET AT ELEVATION 858 FT (1), WHICH EMPTIES INTO LAKE PHALEN.

OHW = 860.325 (NAVD 88 DATUM)
100 YR. EL. = 861.597 (NAVD 88 DATUM)

ESTIMATED PRELIMINARY TOTAL SCOUR AT PIER EL. NA (500 OR 0T YR. FREQ.)

(1) MOST LIKELY IN VERTICAL DATUM NGVD 29.



SCOUR CONFIRMATION RECOMMENDATION
DATE: 01-10-12

TOTAL SCOUR AT PIER EL. N.A. (500 OR 0T YR. FREQ.)
SCOUR CODE: N

BRIDGE SURVEY SHEETS MADE FROM :
SURVEY TIN shp6200a.tif
PHOTOGRAMMETRIC MAPPING ASP 965-118. SUPPLEMENTED BY 2010 FIELD WORK.

BENCH MARK ELEVATION 894.171 (N.A.V.D. 88 ADJ.)
LOCATION 6212 L: MARK IS A MnDOT DISK S.E. CORNER BRIDGE 62007 ARCADE STREET (CR60) OVER T.H. 36

2nd BENCH MARK ELEVATION 943.249 (N.A.V.D. 88 ADJ.)
LOCATION 6212 K: MARK IS A MnDOT DISK S.E. CORNER BRIDGE 62006 EDGERTON STREET (CR58) OVER T.H. 36
HORIZONTAL DATUM: RAMSEY COUNTY ENGLISH N.A.D. 83 1996 ADJUSTMENT (HARN) VERTICAL DATUM: N.A.V.D. 1988

MINNESOTA DEPARTMENT OF TRANSPORTATION

BRIDGE SURVEY

PROPOSED BRIDGE LOCATED 0.4 MILES WEST OF THE JCT. OF T.H. 36 & T.H. 61

SEC 9 T 29 N R 22 W
COUNTY: RAMSEY
CITY: MAPLEWOOD

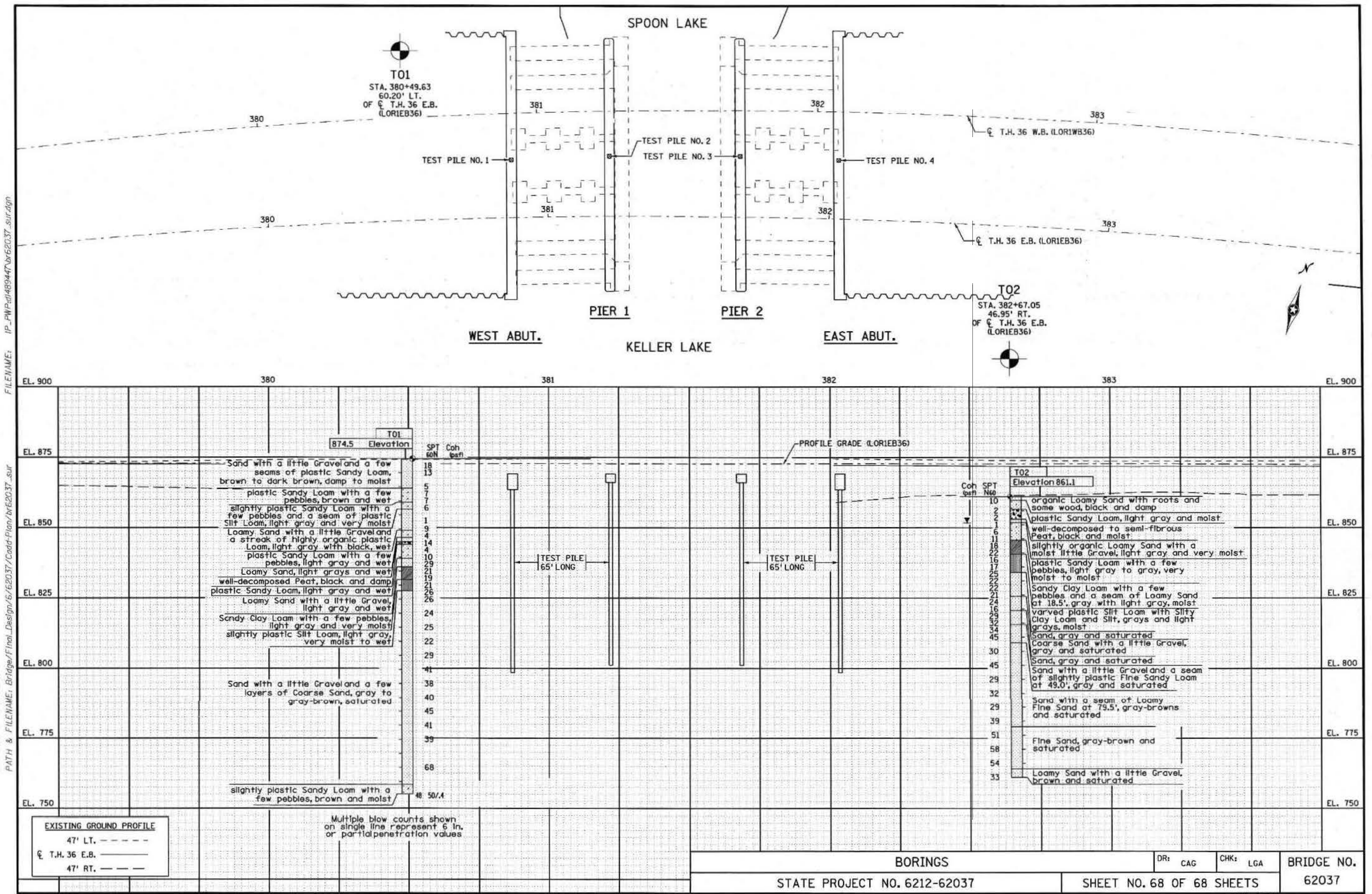
BRIDGE NO. **62037**

STATE PROJECT NO. 6212-167

SHEET NO. 67 OF 68 SHEETS

2/11/13

TIME: 8:20:42 AM
 PLOTTED: 01-FEB-2013
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TIME: 8:23:08 AM
 PLOTTED: 01-FEB-2013
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