



Letter of Transmittal

Bridge Office
Mail Stop 610
3485 Hadley Avenue North
Oakdale MN 55128-3307

Office Tel: 651/366-4500
Fax: 651/366-4497

TO: Eric Embacher
Resident Engineer
Metro District Construction

FROM: Arielle Ehrlich *AMS for*
Bridge Design Engineer
Bridge Office

DATE: August 5, 2013

SUBJECT: S.P. 6212-167 (T.H. 36 Over Keller Lake) St Paul, MN
Bridge No. 62037 Plan revisions for Abutments and Piers

I've enclosed the revised Plan Sheet Nos. 2R, 10R, 11R, 12R, 13R, 21R, 22R, 23R, 24R, 29R, 30R, 31R, 31AR, 32R, 33R, and 33AR. The details were updated in order to ensure proper fabrication. Please remove and discard Sheet Nos. 2, 10, 11, 12, 13, 21, 22, 23, 24, 29, 30, 31, 32 and 33 in your original plan set and insert the enclosed new sheets. Thank you.

Sets of prints of the revised sheets are distributed as follows:

- Resident Engineer(Eric Embacher) – 3
- Paul J. Pilarski – 1
- Angel M. Staples – 1
- Jeff Southward – 1
- Bridge Office File - 1

Enclosures: Copies of sixteen new sheets as noted.

c.c.: N.T. Daubenberger
T.C. Styrbicki



Letter of Transmittal

Bridge Office
Mail Stop 610
3485 Hadley Avenue North
Oakdale MN 55128-3307

Office Tel: 651/366-4500
Fax: 651/366-4497

TO: Eric Embacher
Resident Engineer
Metro District Construction

FROM: Arielle Ehrlich *AHE*
Bridge Design Engineer
Bridge Office

DATE: May 6, 2013

SUBJECT: S.P. 6212-167 (T.H. 36 Over Keller Lake) St Paul, MN
Bridge No. 62037 Plan revisions for Inverted Tee Beams and Deck
Reinforcement

I've enclosed the revised Plan Sheet Nos. 10R, 11R, 12R, 21R, 22R, 23R, 35R, 36R, 37R, 38R, 39R, 40R, 41R, 42R, 43R, 44R, and 50R. The details were updated for ease of construction. Please replace the old sheets in your original final plan set (Sheet Nos. 10, 11, 12, 21, 22, 23, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, and 50) with the enclosed new sheets. Thank you.

Sets of prints of the revised sheets are distributed as follows:

- Resident Engineer(Eric Embacher) – 3
- Paul J. Pilarski – 1
- Angel M. Staples – 1
- Jeff Southward – 1
- Bridge Office File - 1

Enclosures: Copies of seventeen new sheets as noted.

c.c.: N.T. Daubenberger
T.C. Styrbicki

DESIGN DATA

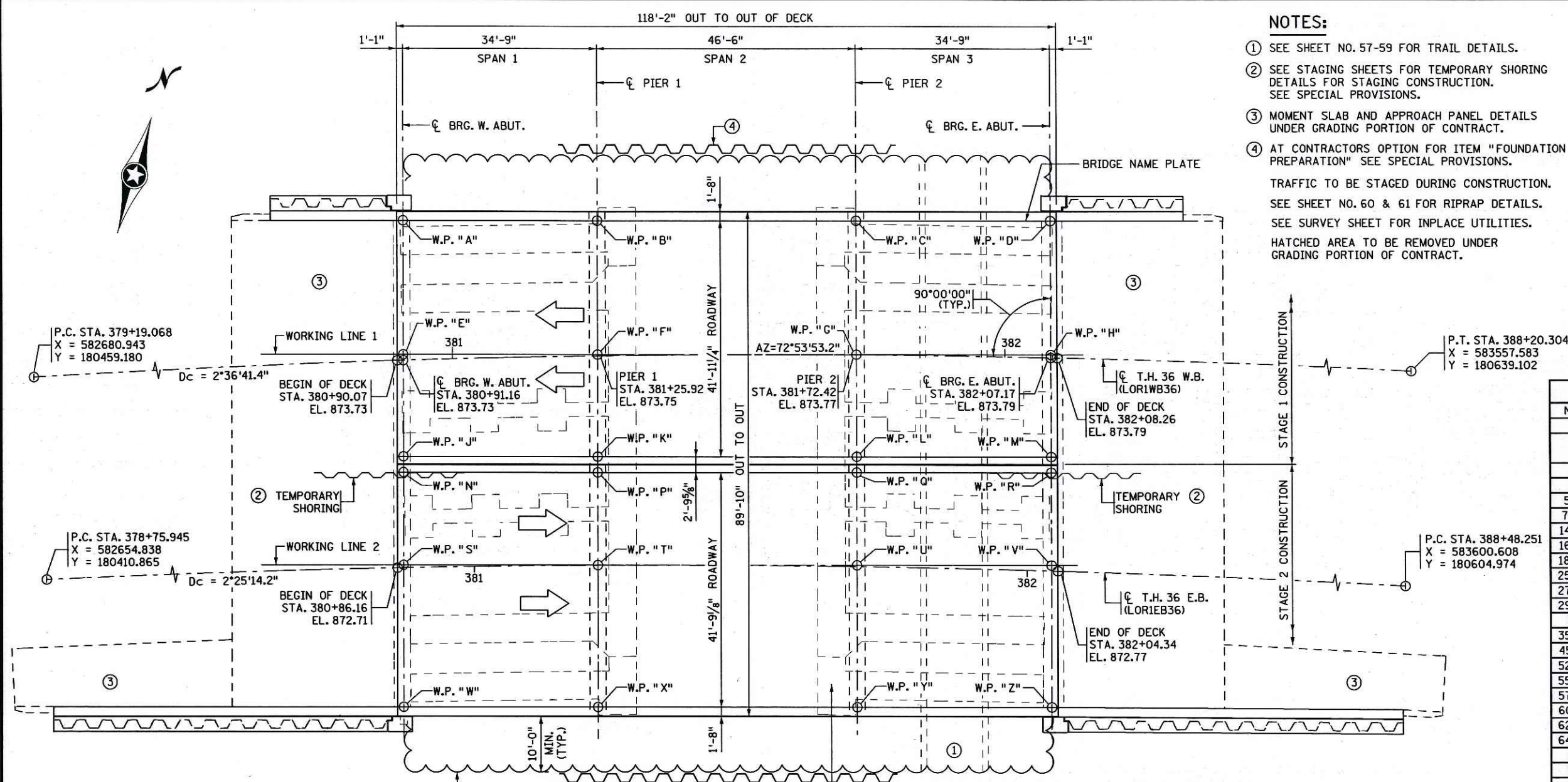
2012 AND CURRENT INTERIM AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS
 LOAD AND RESISTANCE FACTOR DESIGN METHOD
 HL 93 LIVE LOAD
 DEAD LOAD INCLUDES 20 p.s.f. ALLOWANCE FOR FUTURE WEARING COURSE MODIFICATIONS
 MATERIAL DESIGN PROPERTIES:
 REINFORCED CONCRETE:
 f'c = 4 ksi n = 8
 Fy = 60 ksi FOR REINFORCEMENT
 PRESTRESSED CONCRETE:
 f'c = 6 ksi n=1
 fpu = 270 ksi FOR 1/2" AND 0.6" DIAMETER LOW RELAXATION STRANDS
 STRUCTURAL STEEL:
 Fy = 50 ksi STRUCTURAL STEEL SPEC. 3309
 DECK AREA = 10600 SQ. FT.
 77000 PROJECTED ADT FOR YEAR 2033
 DESIGN SPEED = 65 MPH
 HL 93 LRFD BRIDGE OPERATING RATING FACTOR RF = 2.023

NOTES:

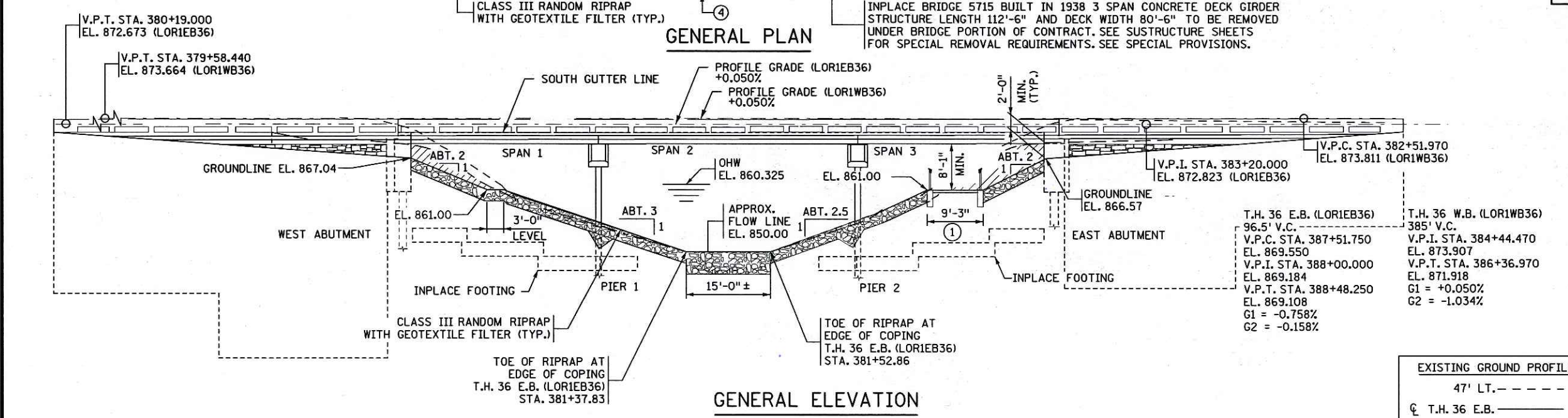
- ① SEE SHEET NO. 57-59 FOR TRAIL DETAILS.
 - ② SEE STAGING SHEETS FOR TEMPORARY SHORING DETAILS FOR STAGING CONSTRUCTION. SEE SPECIAL PROVISIONS.
 - ③ MOMENT SLAB AND APPROACH PANEL DETAILS UNDER GRADING PORTION OF CONTRACT.
 - ④ AT CONTRACTORS OPTION FOR ITEM "FOUNDATION PREPARATION" SEE SPECIAL PROVISIONS.
- 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.

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



GENERAL PLAN



GENERAL ELEVATION

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
 SIGNED: *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 Dauber* STATE BRIDGE ENGINEER
 DATE: 2/1/13
 DES. NVJ/MDH DR. RLV
 CHK. AMS CHK. DCH **62037**

EXISTING GROUND PROFILE

47' LT. -----
☉ T.H. 36 E.B. -----
47' RT. -----

TIME: 8:36:09 AM
 PLOTTED: 01-FEB-2013
 PATH & FILENAME: Bridge/Final_Design/6/62037/Cadd-Plan/br62037_s12.dgn
 FILENAME: IP_PWP-dl#89447/br62037_s12.dgn

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 GROUDED 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.

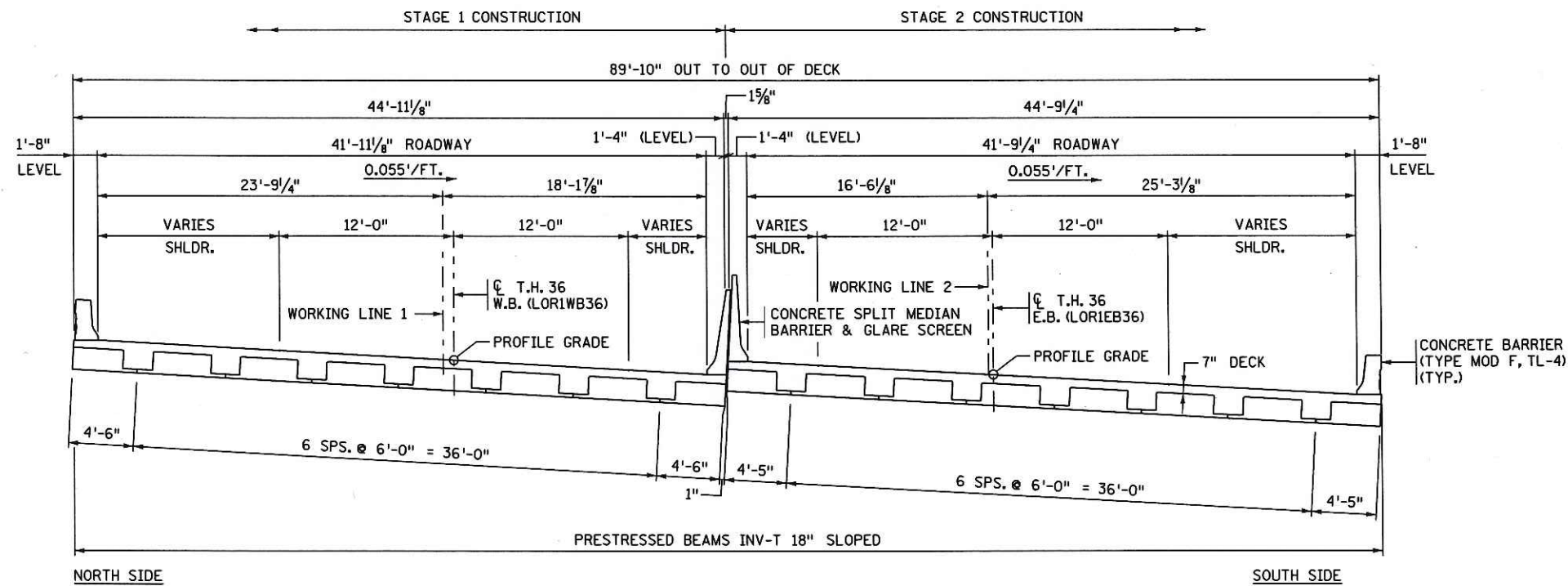
BARS MARKED WITH THE SUFFIX "S" SHALL BE STAINLESS STEEL. SEE SPECIAL PROVISIONS.

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.



TRANSVERSE SECTION

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 CONC 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
2401.541	REINFORCEMENT BARS (EPOXY COATED)	POUND	53210	57190	110400 (P)	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

BRIDGE NO. 62037
 SHEET NO. 2R OF 68 SHEETS

TIME : 3:01:50 PM
 PLOTTED : 02-AUG-2013
 PATH & FILENAME: Bridge/Final_Design/6/62037/Cadd-Plan/br62037_s12.dgn
 FILENAME: IP_PWP-df489447-br62037_s12.dgn

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.

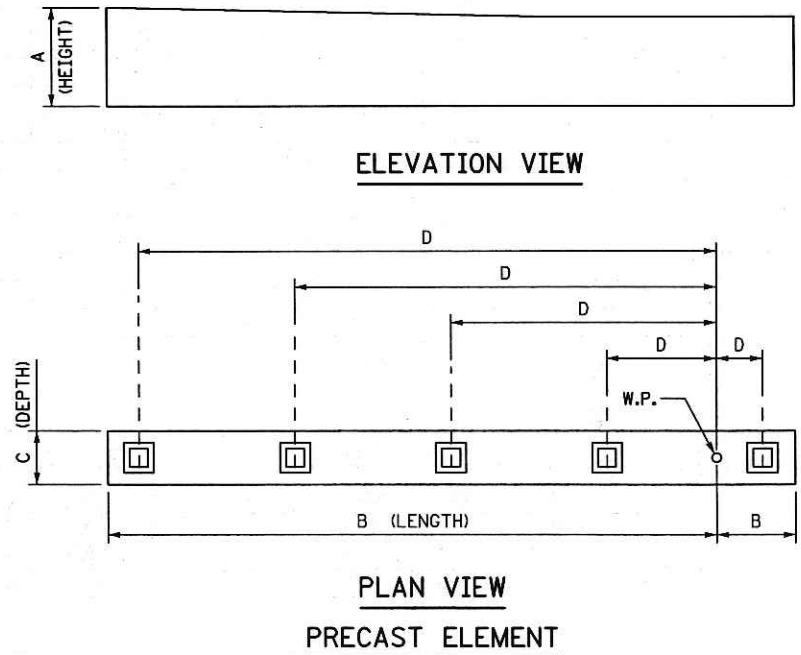
- ① CONTRACTOR SHALL PREPARE SITE FOR CONSTRUCTION. CONTRACTOR IS TO CLEAR AND GRUB. IN ACCORDANCE WITH THE GRADING PORTION OF CONTRACT. CONTRACTOR SHALL DESIGN & INSTALL CRANE PAD BASED ON THE RECOMMENDED SOIL PROPERTIES IN THE GEOTECHNICAL REPORT. CONTRACTOR IS RESPONSIBLE TO MAINTAIN THE GEOTECHNICAL 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).

PRECAST ELEMENT WEIGHT TABLE			
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

PRECAST ELEMENT TOLERANCES		
LETTER	DESCRIPTION	TOLERANCE
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"

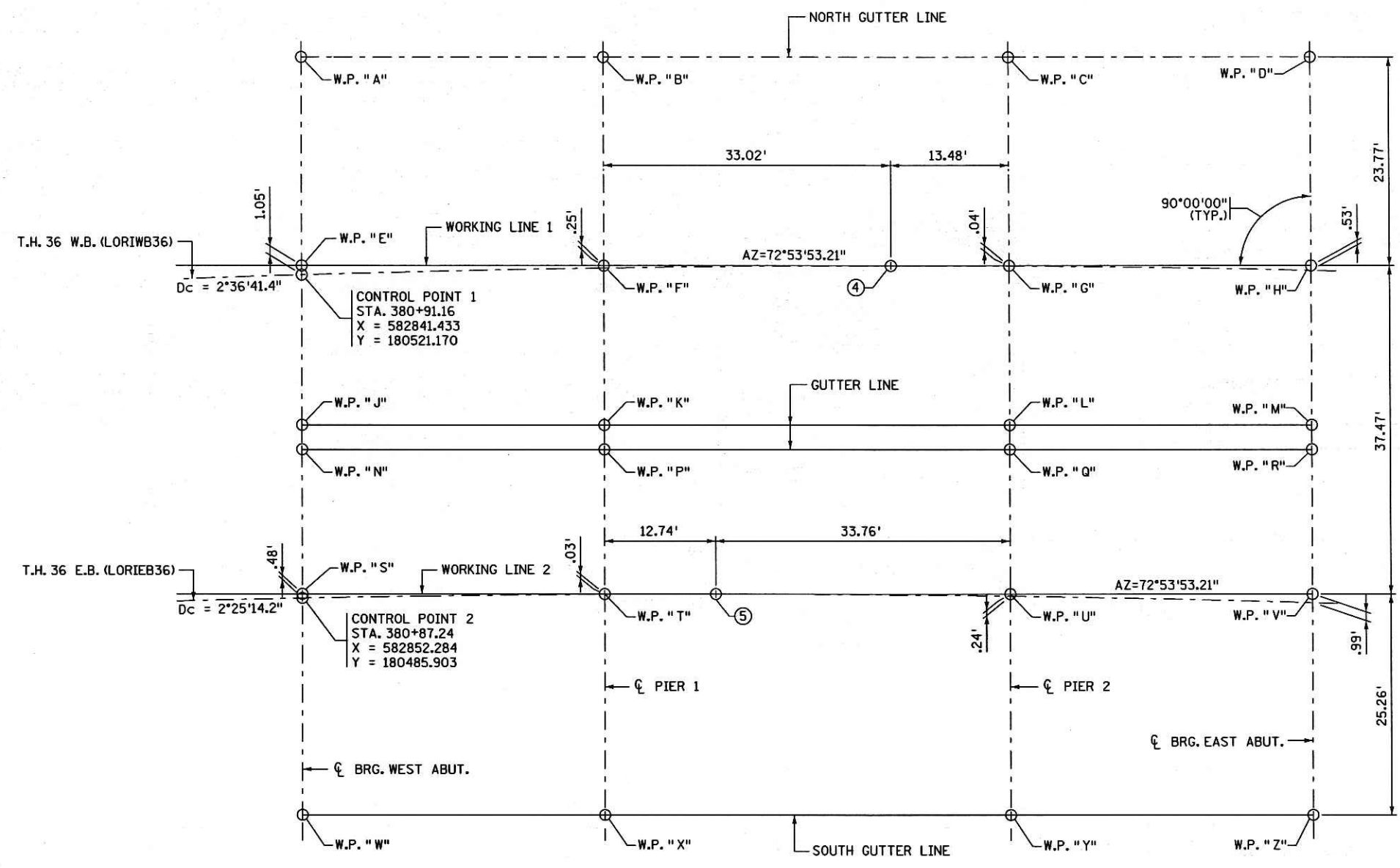


TIME : 8:16:04 AM
 PLOTTED : 01-FEB-2013
 PATH & FILENAME: Bridge/Final_Design/6/62037/Cadd-Plan/br62037_s12
 FILENAME: IP_PWP-cl#89447/br62037_s12.dgn

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	

NOTES:

- ① WORKING POINTS STATIONS AND ELEVATIONS ARE BASED OFF T.H. 36 W.B. (LOR1WB36).
- ② WORKING POINTS STATIONS AND ELEVATIONS ARE BASED OFF T.H. 36 E.B. (LOR1EB36).
- ③ MEASURED PERPENDICULAR FROM TOP OF ROADWAY CROSS SLOPE.
- ④ WORKING LINE TANGENT TO ϕ T.H. 36 W.B. (LOR1WB36) STA. 381+58.94
- ⑤ WORKING LINE TANGENT TO ϕ T.H. 36 E.B. (LOR1EB36) STA. 381+34.74



① ELEVATIONS FOR T.H. 36 W.B.

POINT	STATION	TOP OF ROADWAY	TOP OF ROWY 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 ROWY 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		54.33	62.50	91.36	
R	382+02.75	582958.161	180536.247							16.51		54.33	62.50	91.36	
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	42.96		
U	381+68.49	582929.801	180510.251								34.75		25.26	42.96	
V	382+03.22	582963.015	180520.470										25.26	42.96	
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
 LICENSED PROFESSIONAL ENGINEER DATE
 NAME: ANGEL M. STAPLES LIC. NO. 41656

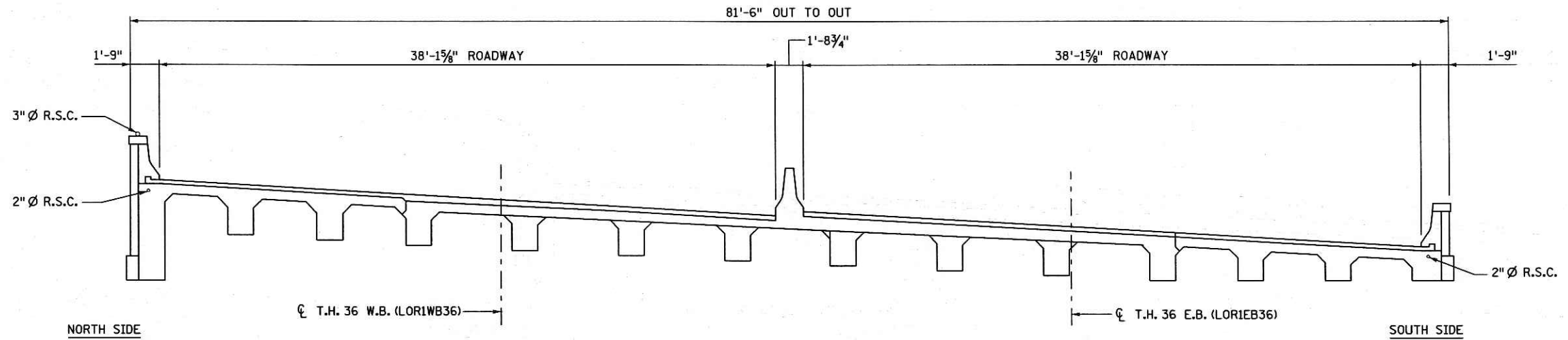
TITLE: BRIDGE LAYOUT

DES: NJV/MDH DR: RLW APPROVED: *2/1/13*
 CHK: AMS CHK: DCH
 SHEET NO. 4 OF 68 SHEETS BRIDGE NO. 62037

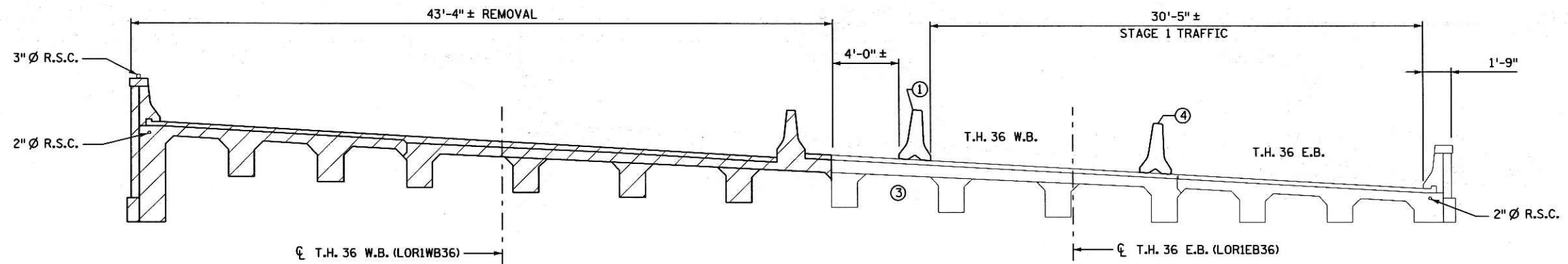
TIME: 8:16:07 AM
 PLOTTED: 01-FEB-2013
 PATH & FILENAME: Bridge/Final_Design/6/62037/Cadd-Plan/br62037_sl2.dgn

TIME : 8:16:14 AM
 PLOTTED : 01-FEB-2013
 PATH & FILENAME: Bridge/Final_Design/6/62037/Cadd-Plan/br62037.stg

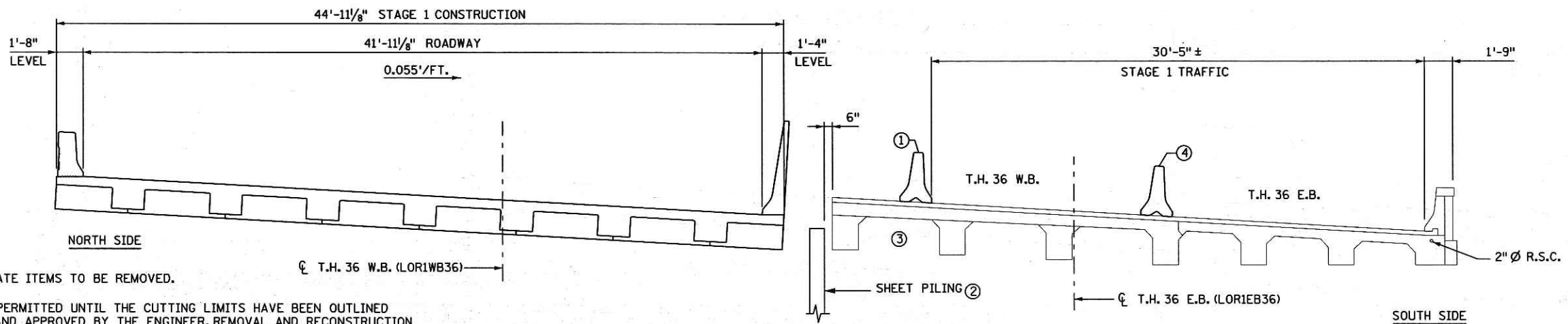
FILENAME: IP_PWP-1489447-br62037.stg.dgn



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".

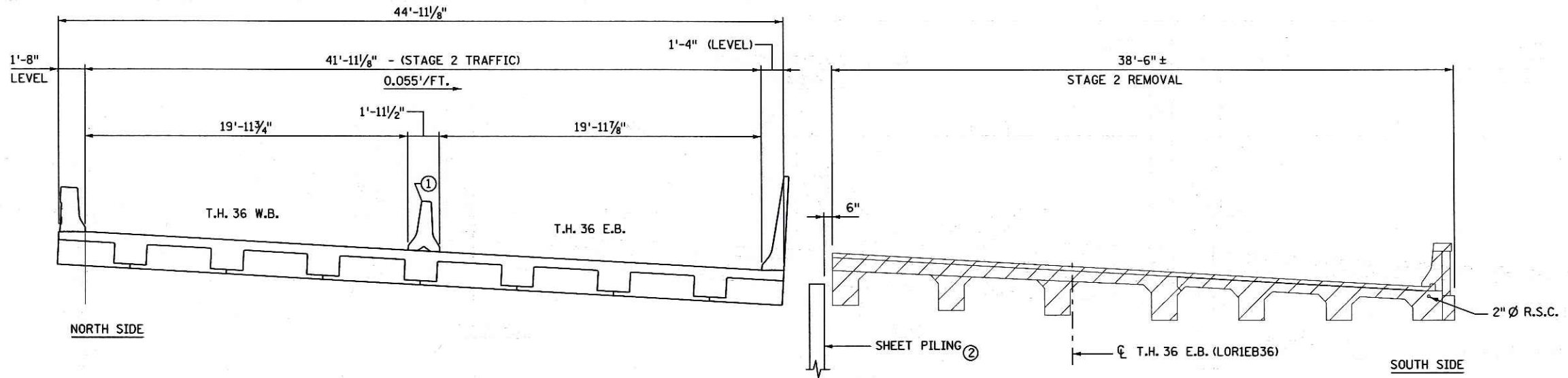
④ PORTABLE CONCRETE BARRIER INCLUDED IN GRADING PORTION OF CONTRACT. NO ANCHORAGE REQUIRED.

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

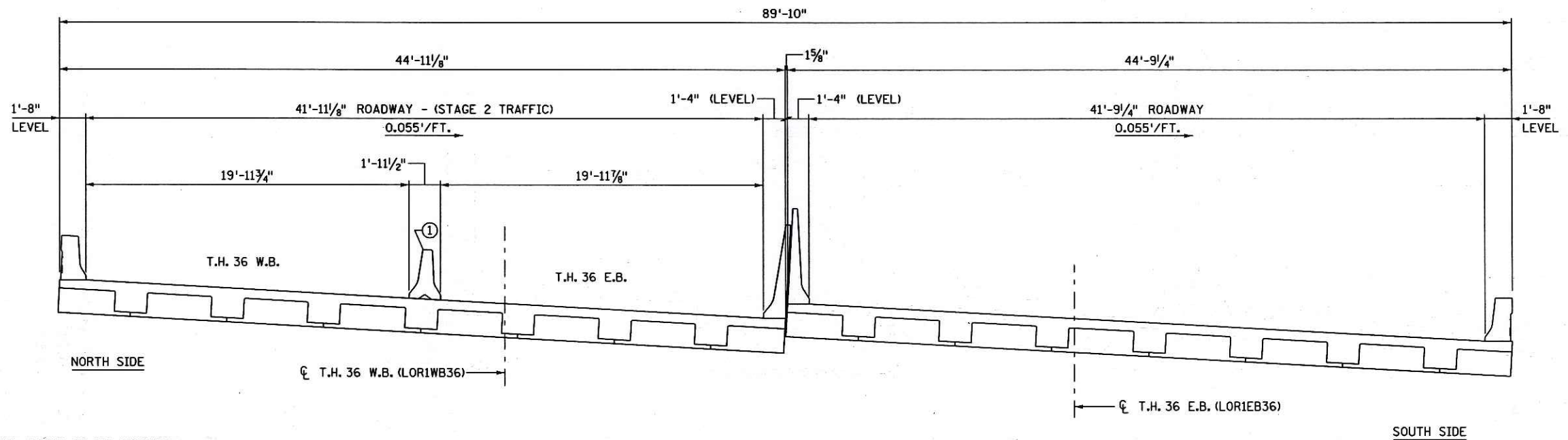
TITLE: STAGING DETAILS (STAGE 1)

DES: NJV/MDH	DR: RLV	APPROVED:
CHK: AMS	CHK: DCH	2/1/13
SHEET NO. 5 OF 68 SHEETS		

BRIDGE NO. 62037



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 MDOT 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 Angel M. Staples 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:
CHK: AMS	CHK: DCH	<u>2/1/13</u>
SHEET NO. 6 OF 68 SHEETS		

BRIDGE NO.
62037

TIME : 8:16:20 AM
 PLOTTED : 01-FEB-2013
 PATH & FILENAME: Bridge/Final_Design/6/62037/Cadd-Plan/br62037_stg

FILENAME: IP_PWP-cl489447-br62037_stg.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

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

**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.

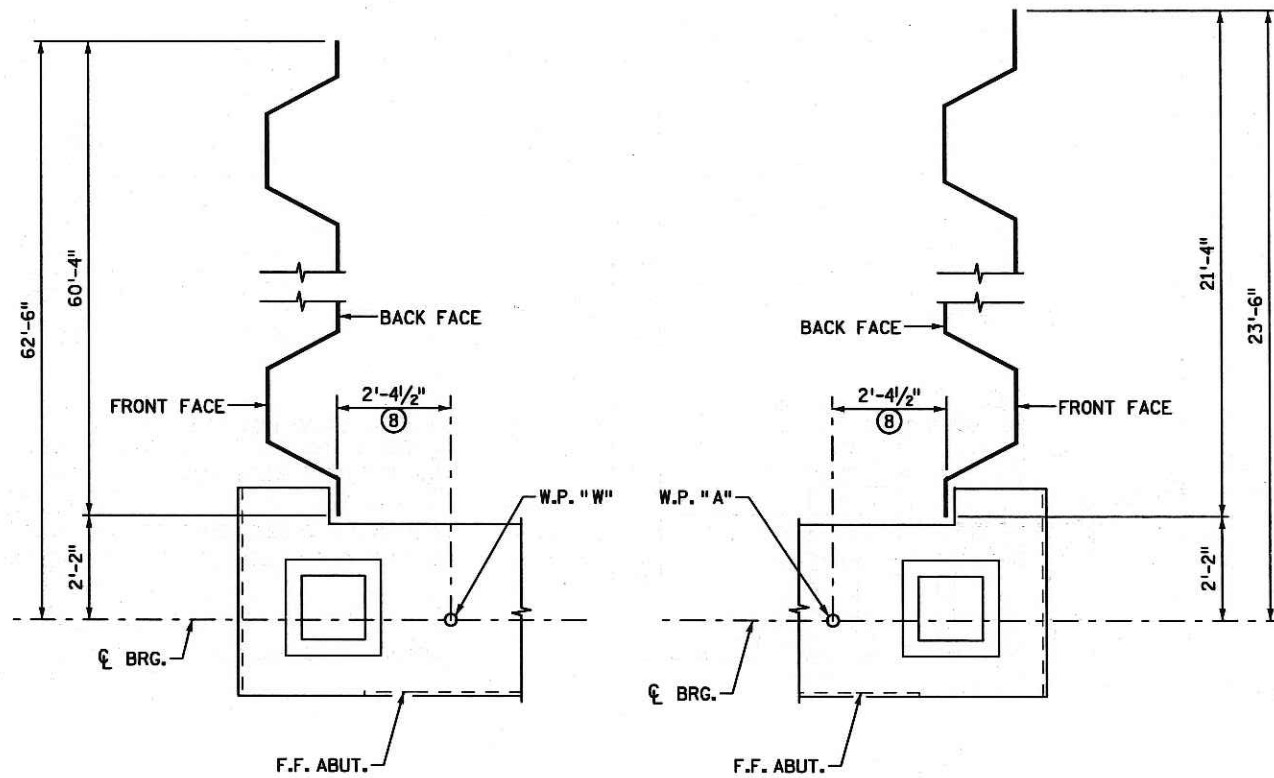
SUMMARY OF QUANTITIES FOR WEST ABUTMENT

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 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.

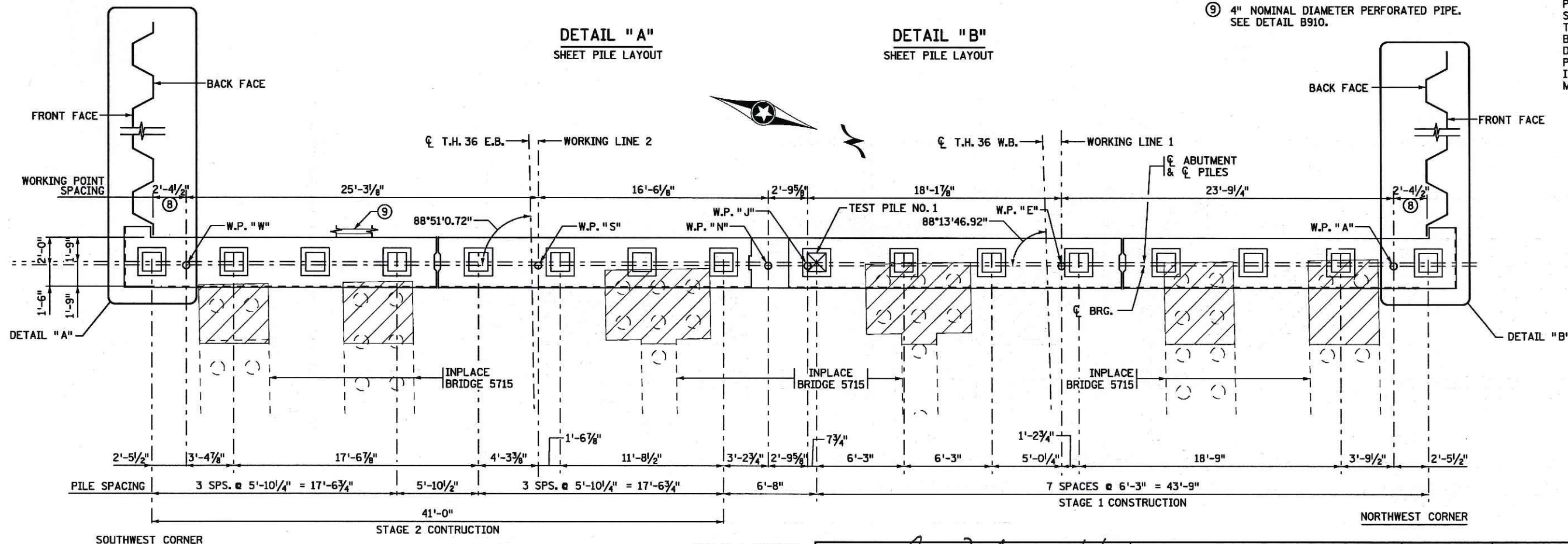
NOTES:

- 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 MDOT 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)".



**DETAIL "A"
SHEET PILE LAYOUT**

**DETAIL "B"
SHEET PILE LAYOUT**



PILE LAYOUT

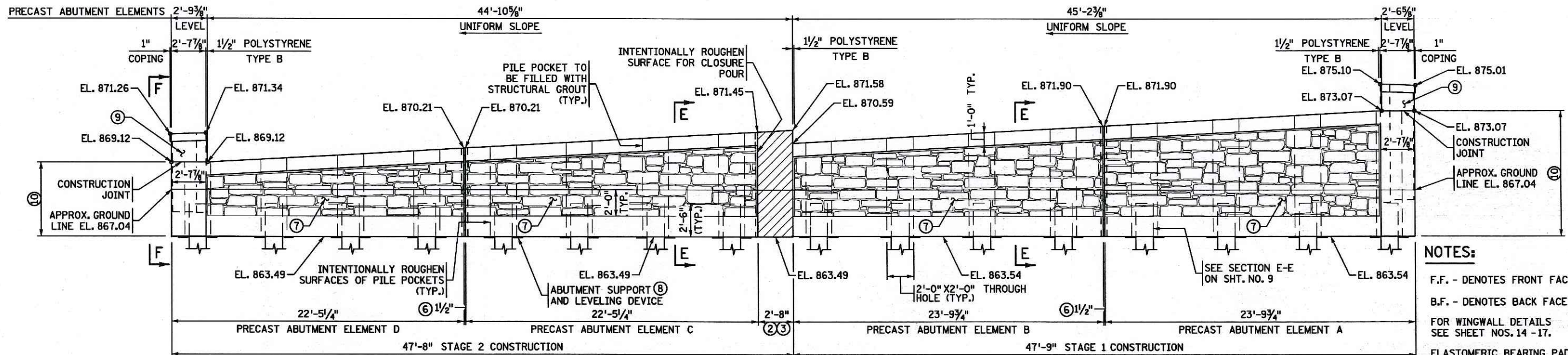
CERTIFIED BY Angel M. Staples 2/1/13
 LICENSED PROFESSIONAL ENGINEER DATE
 NAME: ANGEL M. STAPLES LIC. NO. 41656

TITLE: **WEST ABUTMENT
GEOMETRICS**

DES: MDH	DR: TKB	APPROVED: <u>2/1/13</u>	BRIDGE NO. 62037
CHK: NJV	CHK: DCH	SHEET NO. 7 OF 68 SHEETS	

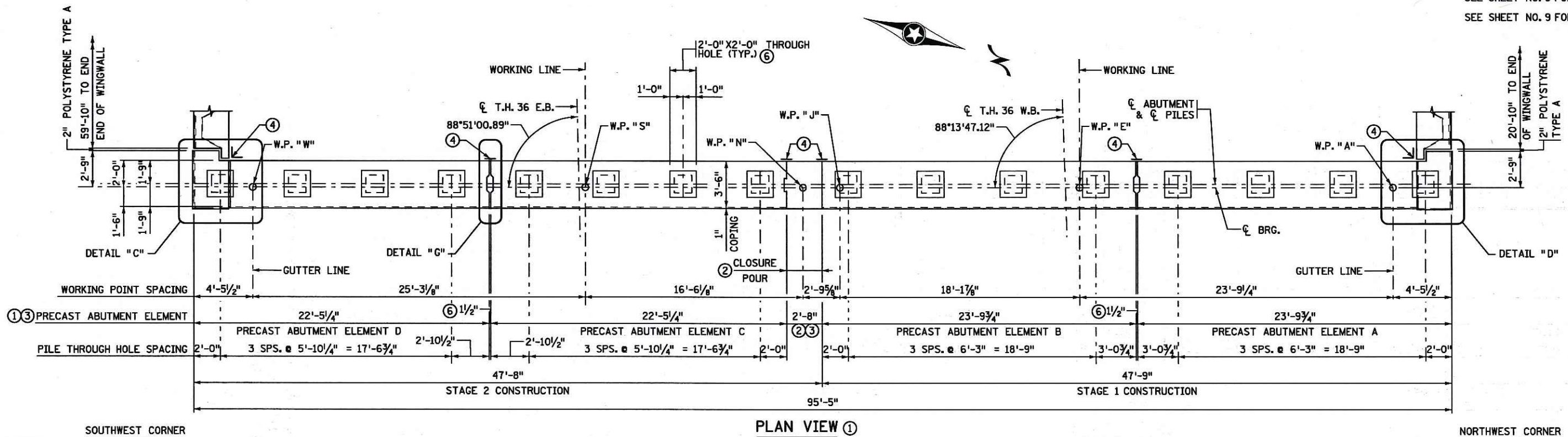
TIME: 9:26:22 AM
 PLOTTED: 01-FEB-2013
 PATH & FILENAME: Bridge\Final_Design\62037\Cadd-Plan\br62037-str

FILENAME: IP_PWP-df489447-br62037-str.dgn



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.

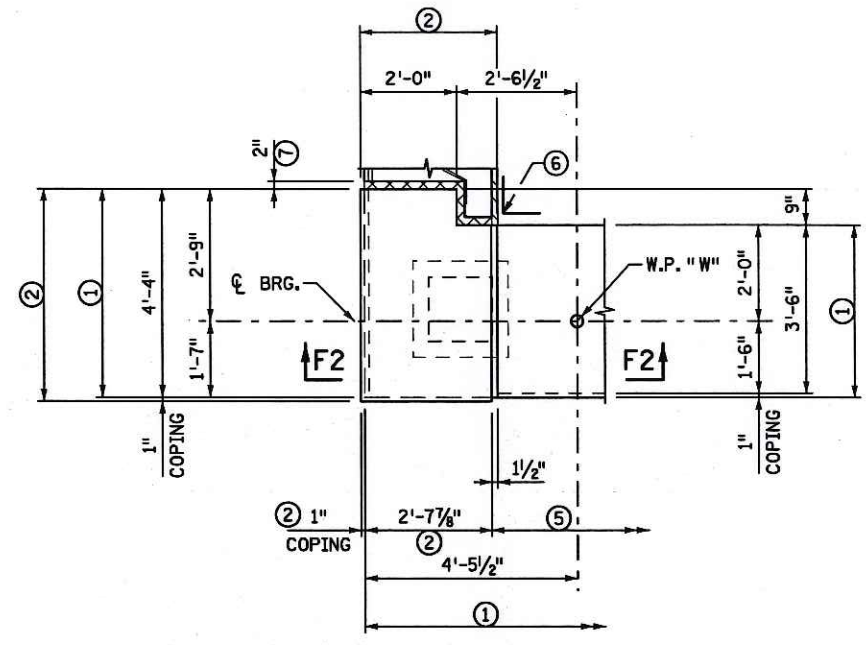
CERTIFIED BY *Angel M. Staples* 2/1/13
 LICENSED PROFESSIONAL ENGINEER DATE
 NAME: ANGEL M. STAPLES LIC. NO. 41656

TITLE: WEST ABUTMENT GEOMETRICS

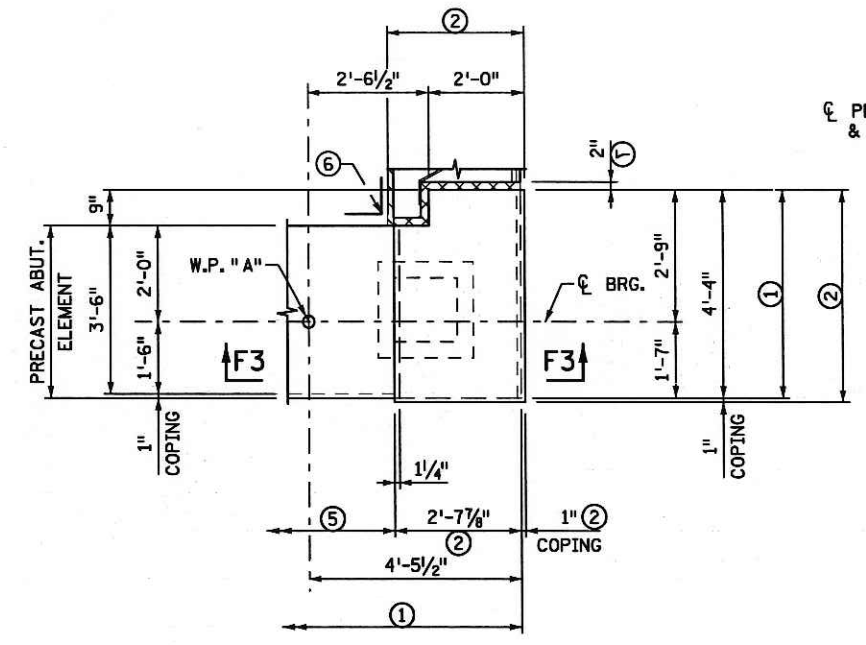
DES: MDH	DR: TKB	APPROVED: 2/1/13	BRIDGE NO. 62037
CHK: NJV	CHK: DCH	SHEET NO. 8 OF 68 SHEETS	

TIME: 9:26:37 AM
 PLOTTED: 01-FEB-2013
 PATH & FILENAME: Bridge/Final_Design/6/62037/Cadd-Plan/br62037_str

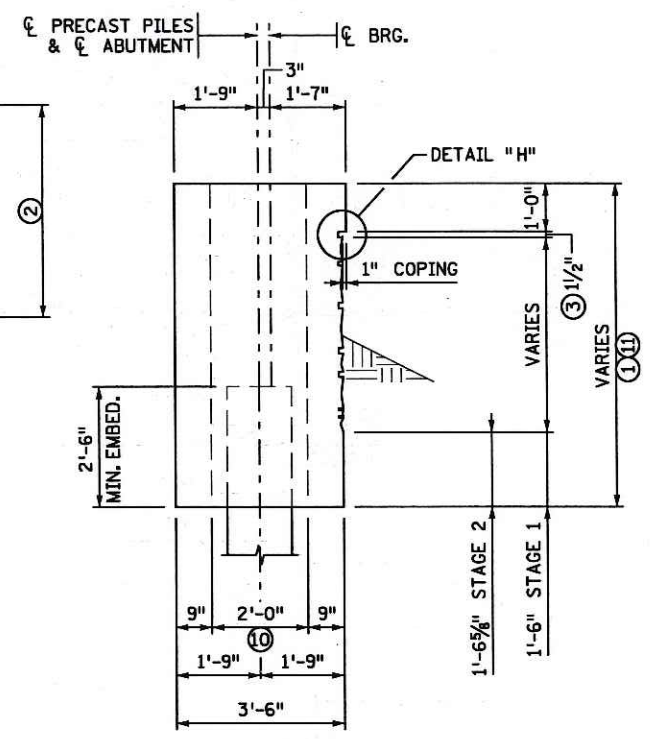
TIME : 9:26:56 AM
 PLOTTED : 01-FEB-2013
 PATH & FILENAME: Bridge/Final_Design/6/62037/Cadd-Plan/br62037_sfr



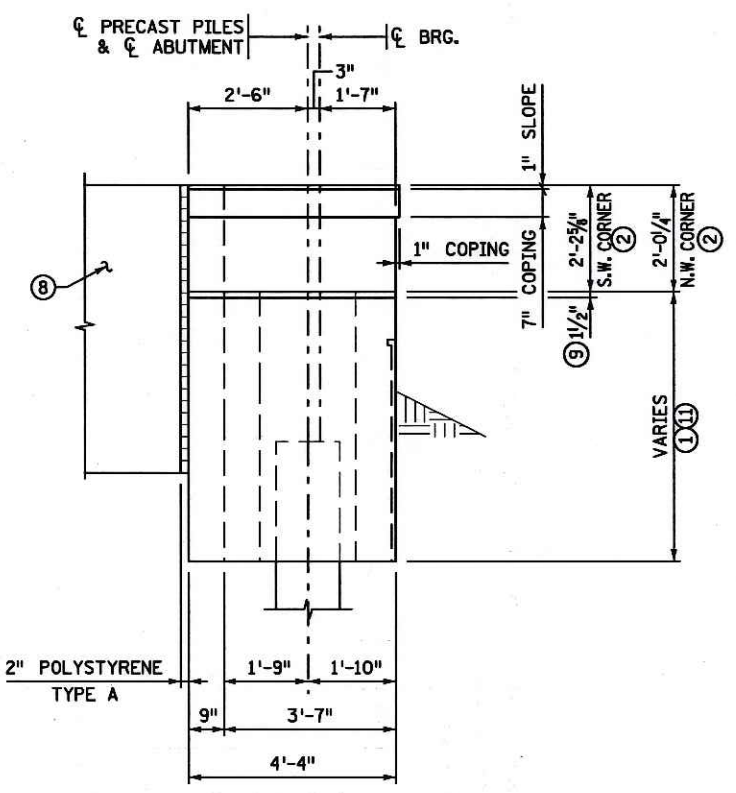
DETAIL "C"



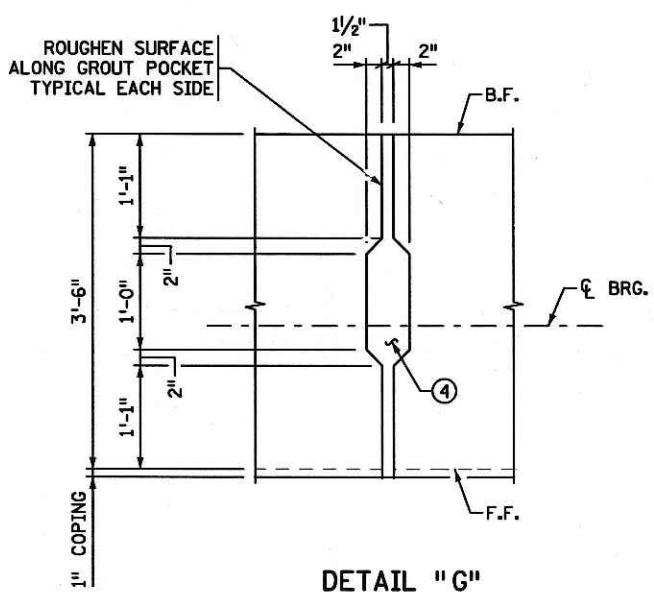
DETAIL "D"



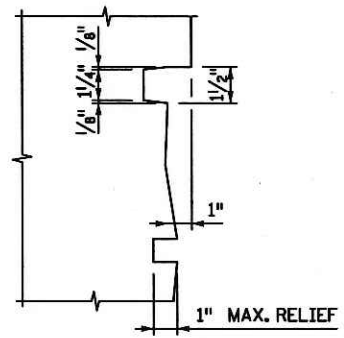
SECTION E-E



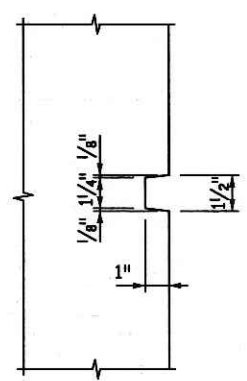
VIEW F-F
 SOUTHWEST CORNER SHOWN
 NORTHWEST CORNER SIMILAR



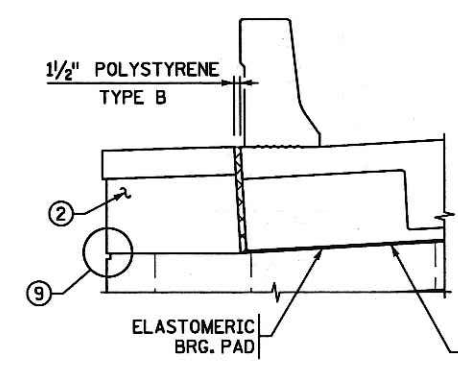
DETAIL "G"
 GROUT POCKET



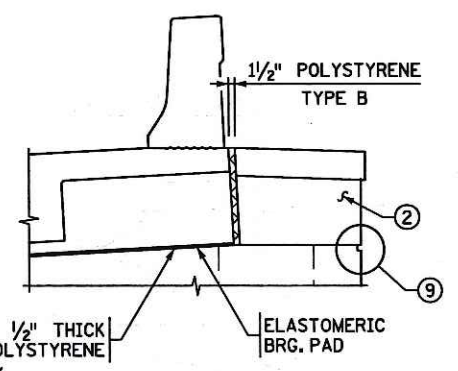
DETAIL "H"



DETAIL "J"



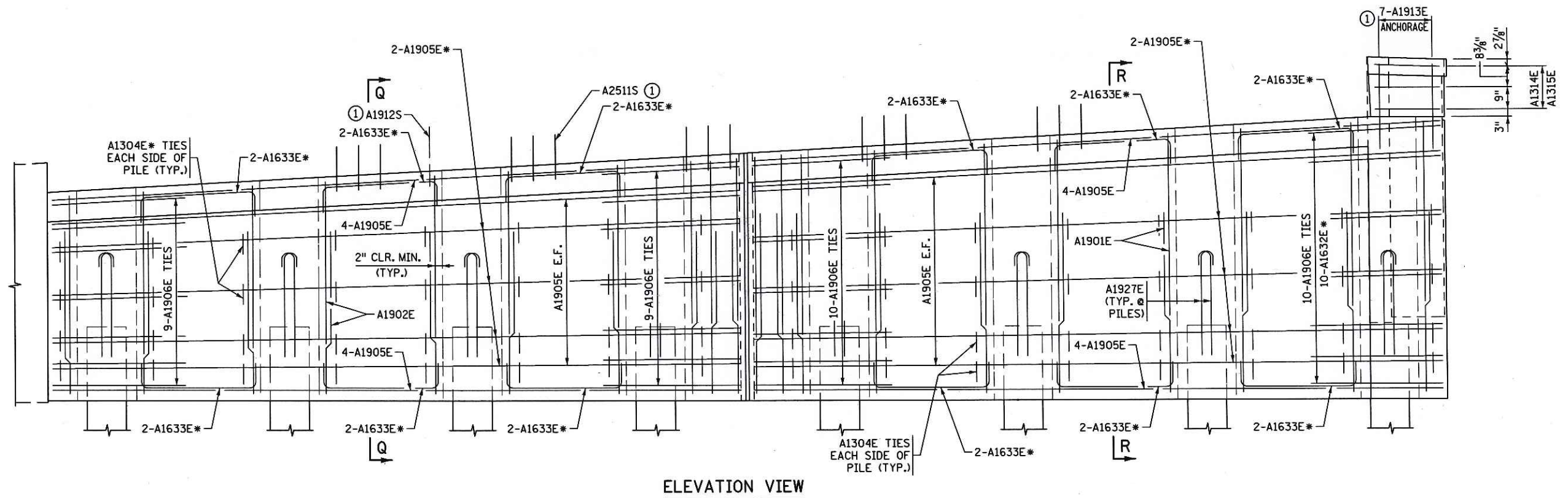
SECTION F2-F2



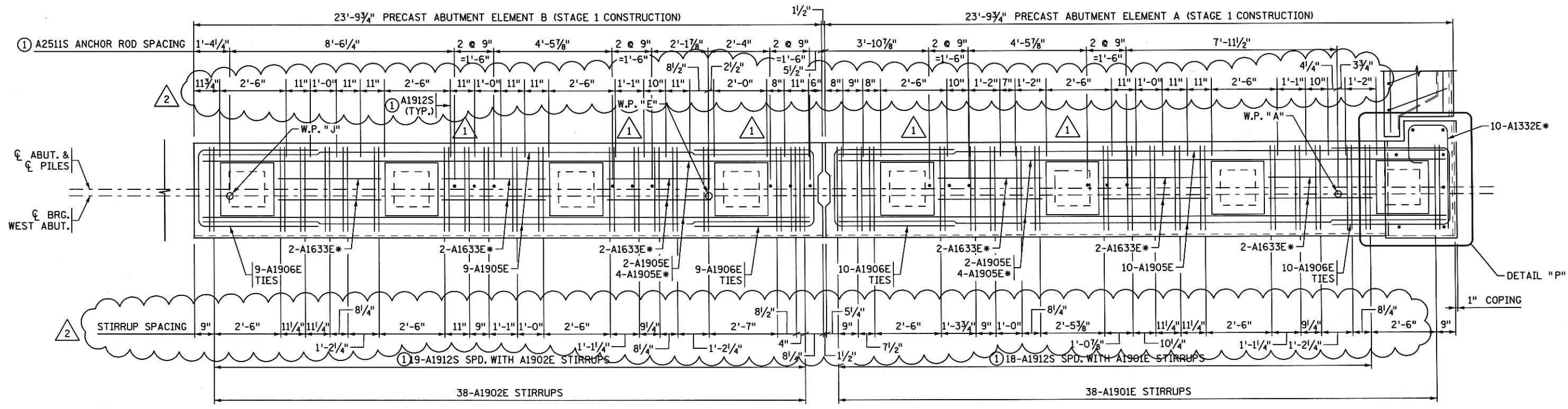
SECTION F3-F3

PRECAST ABUTMENT ELEMENT HEIGHTS		
ABUTMENT ELEMENT I.D.	LOWER HEIGHT	UPPER HEIGHT
A	8'-4 3/4"	9'-6 3/4"
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



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. ②

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.

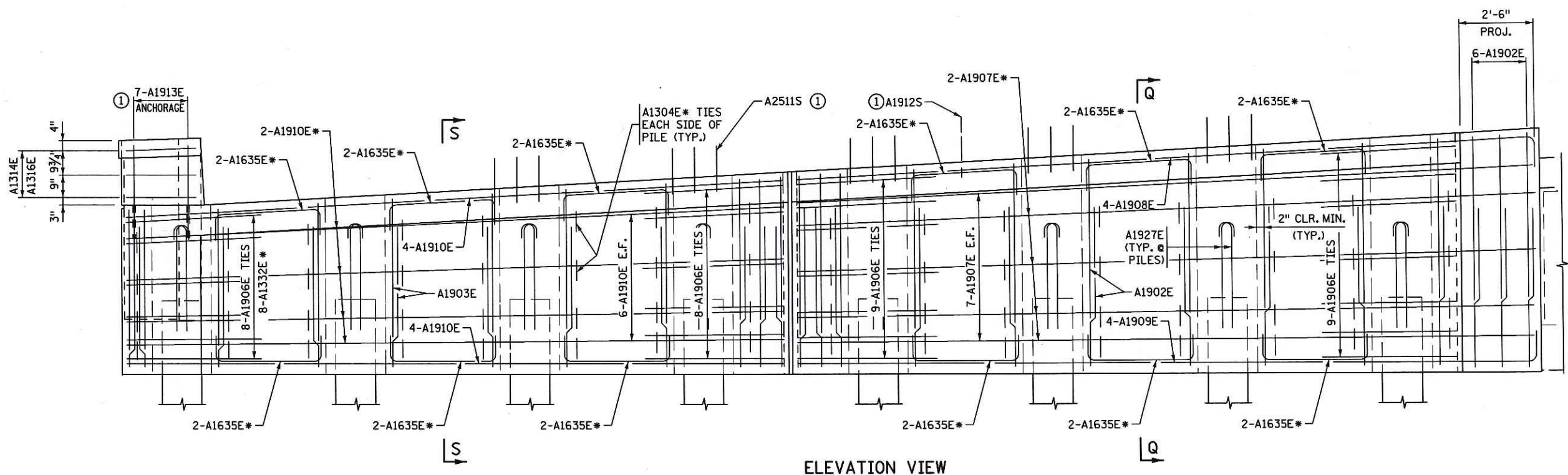
REVISION		
DATE	DESCRIPTION	APPROVED BY
5/3/13	REPOSITIONED A2511S ANCHOR RODS	AMS
5/21/13	ADDED REINFORCING FOR EASE OF FABRICATION	AMS

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

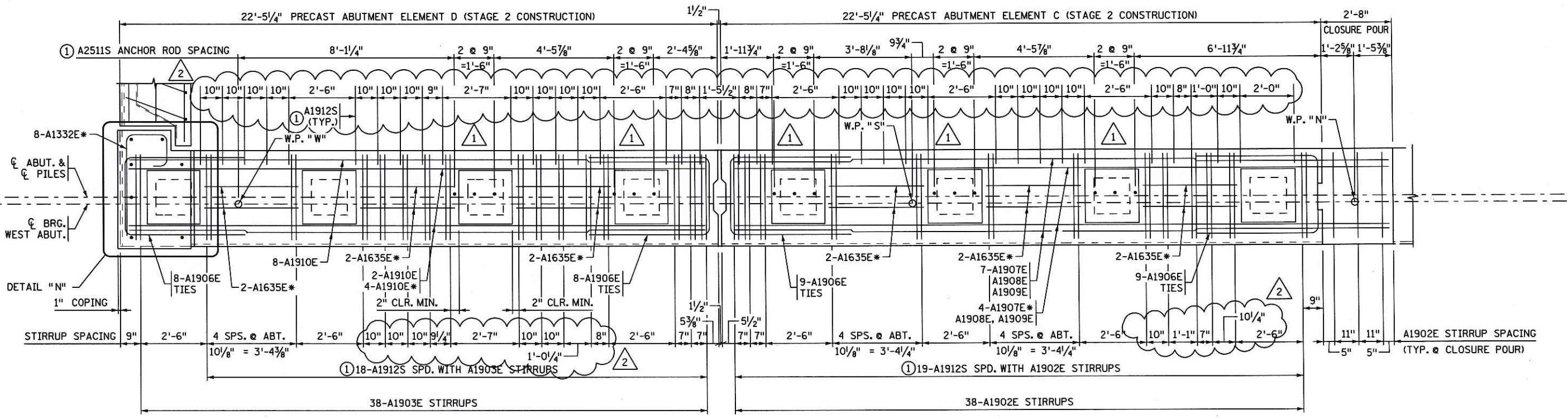
TITLE: WEST ABUTMENT REINFORCEMENT

DES: MDH DR: TKB APPROVED: 8/5/13
 CHK: NJV CHK: DCH
 SHEET NO. 10R OF 68 SHEETS BRIDGE NO. 62037

TIME : 2:49:27 PM
 PLOTTED : 02-AUG-2013
 PATH & FILENAME: Bridge/Final_Design/6/62037/Cadd-Plan/br62037_sfr.dgn
 FILENAME: IP_PWP-dl489447-br62037_sfr.dgn



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.

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

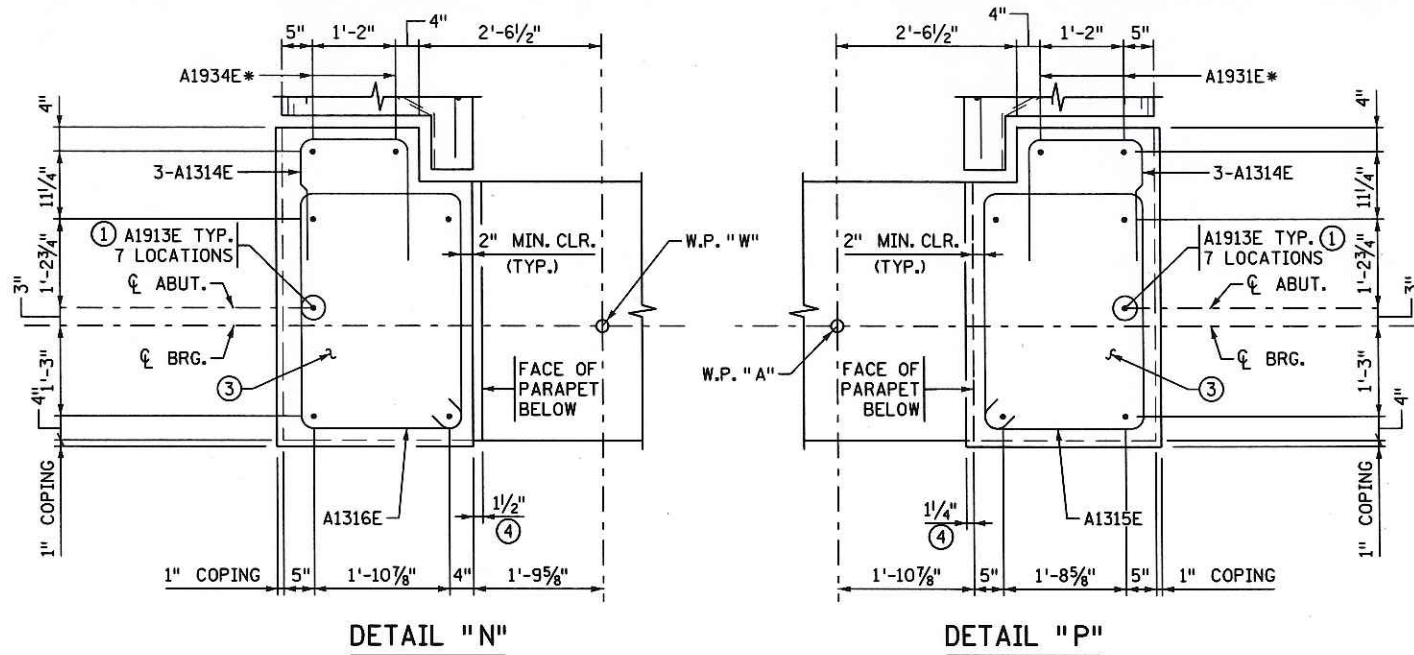
CERTIFIED BY *Angel M. Staples* 8/5/13
 LICENSED PROFESSIONAL ENGINEER DATE
 NAME: ANGEL M. STAPLES LIC. NO. 41656

TITLE: WEST ABUTMENT REINFORCEMENT

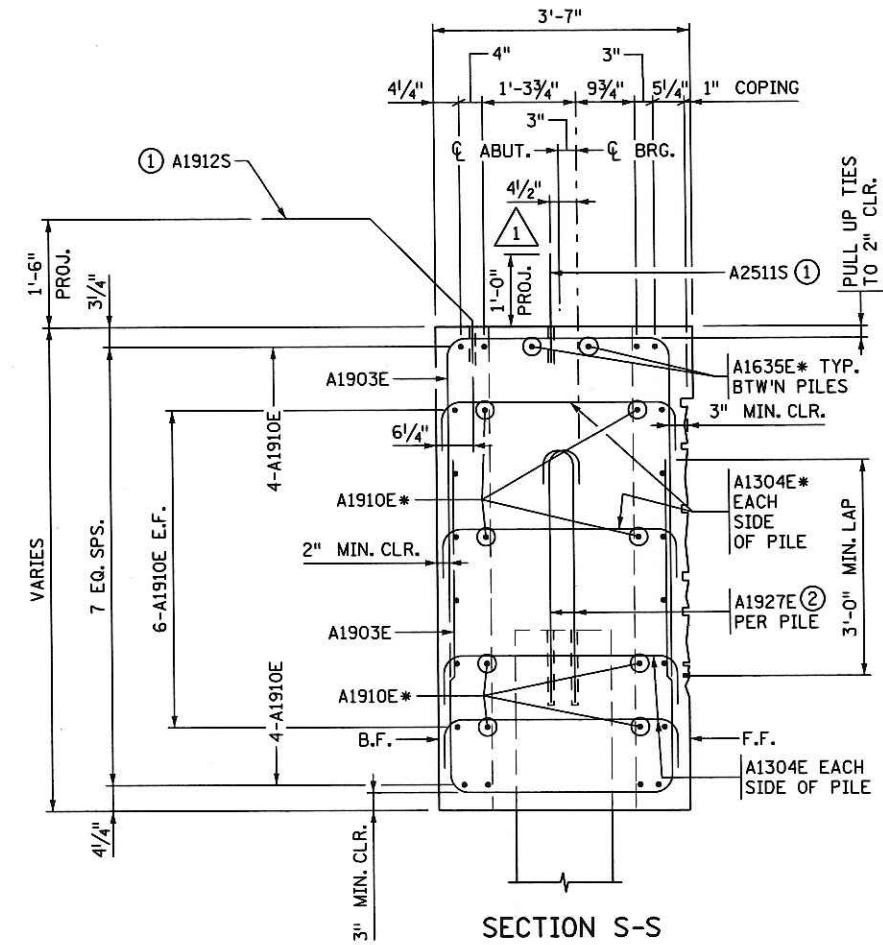
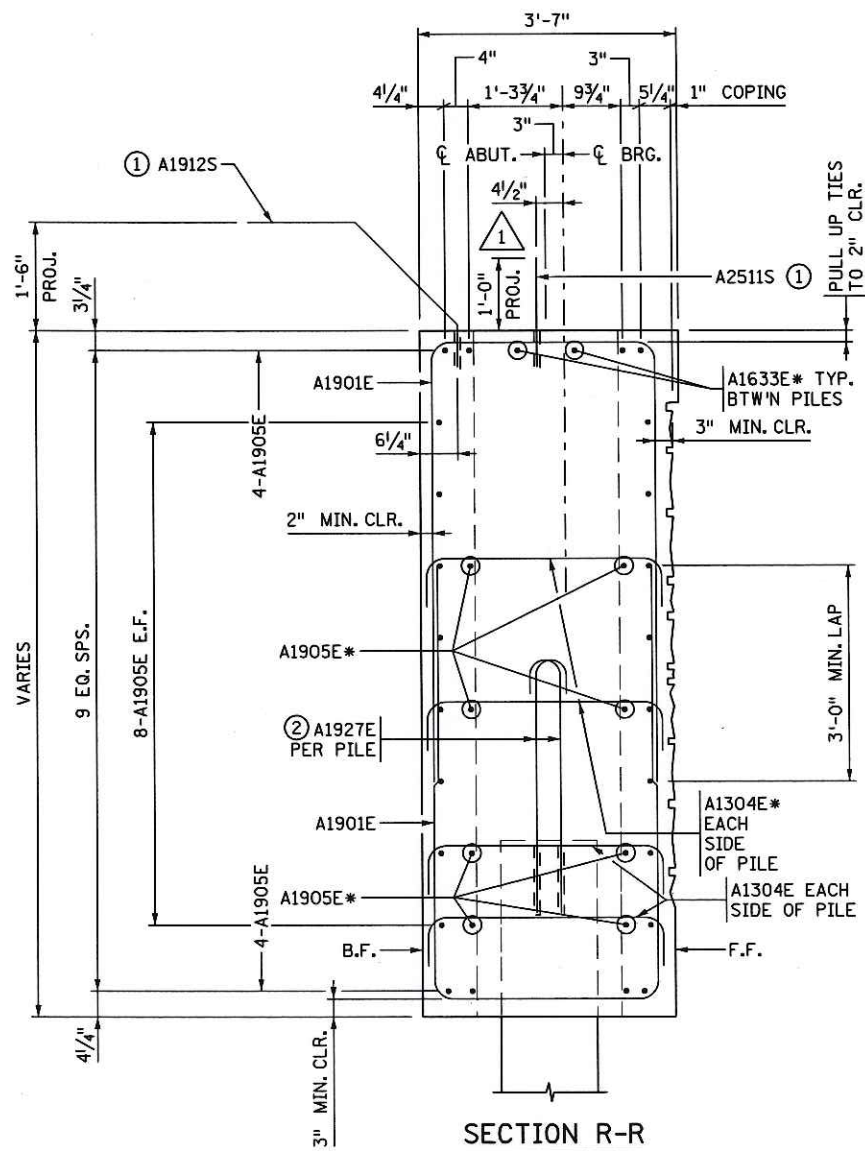
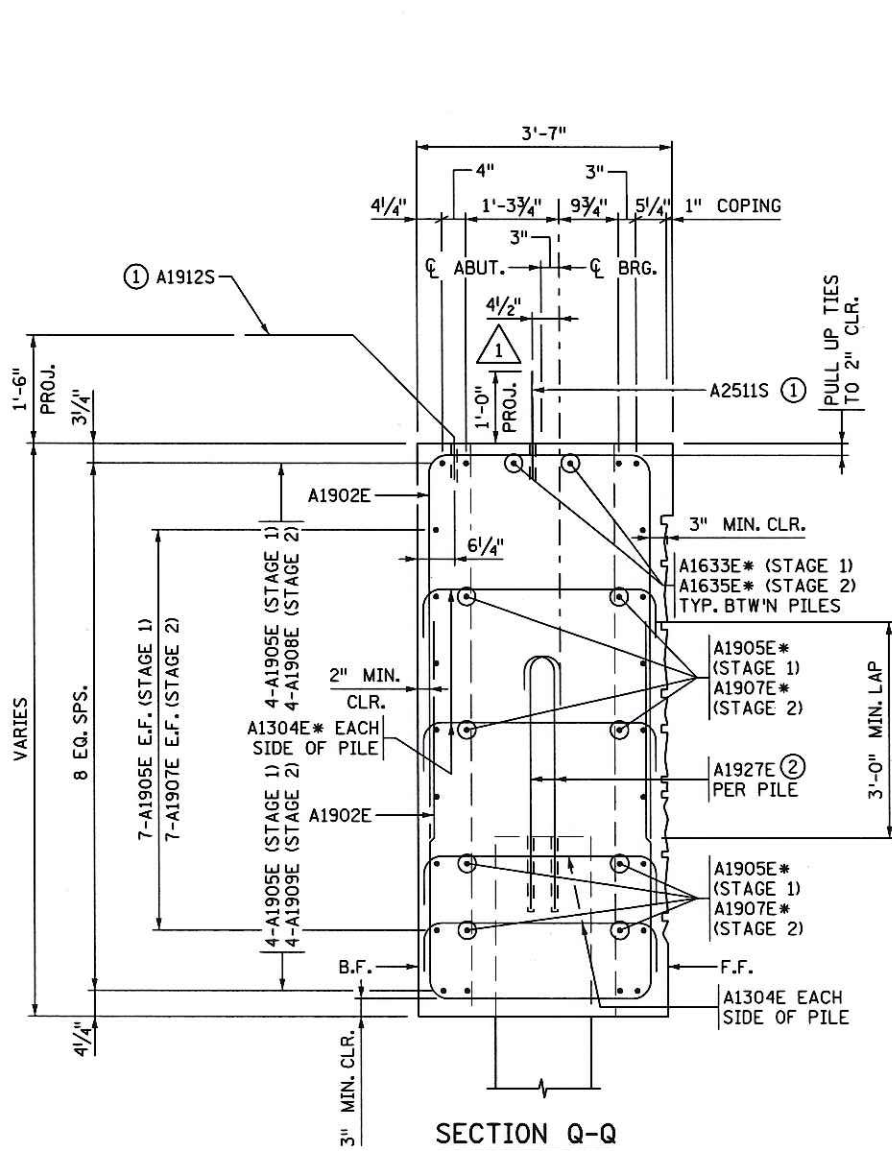
DES: MDH DR: TKB APPROVED: 8/5/13
 CHK: NJV CHK: DCH
 SHEET NO. 11R OF 68 SHEETS BRIDGE NO. 62037

TIME : 2:50:00 PM
 PLOTTED : 02-AUG-2013
 PATH & FILENAME: Bridge/Final_Design/6/62037/Cadd-Plan/br62037_sfr.dgn

FILENAME: IP_PWP-d1489447-br62037_sfr.dgn



- 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.



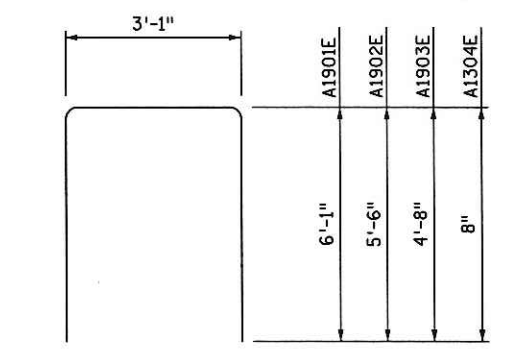
REVISION		
DATE	DESCRIPTION	APPROVED BY
5/3/13	REPOSITIONED A2511S ANCHOR RODS	AMS
5/21/13	ADDED REINFORCING FOR EASE OF FABRICATION	AMS

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

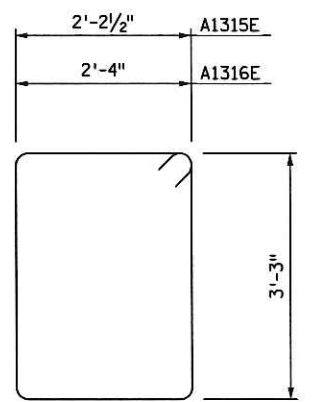
TITLE: WEST ABUTMENT REINFORCEMENT

DES: MDH DR: TKB APPROVED: 8/5/13
 CHK: NJV CHK: DCH
 SHEET NO. 12R OF 68 SHEETS BRIDGE NO. 62037

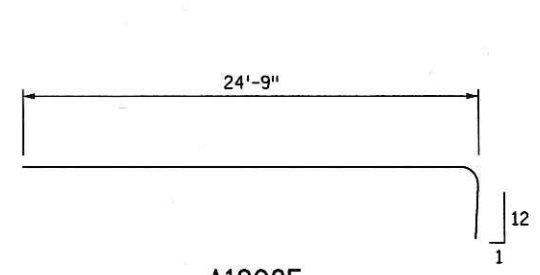
TIME : 2:50:33 PM
 PLOTTED : 02-AUG-2013
 PATH & FILENAME: Bridge/Final_Design/6/62037/Cadd-Plan/br62037_sfr.dgn
 FILENAME: IP_PWP-P-dl489447-br62037_sfr.dgn



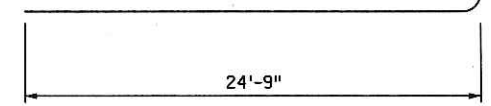
A1901E, A1902E, A1903E & A1304E



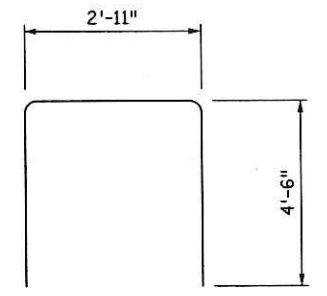
A1315E, A1316E



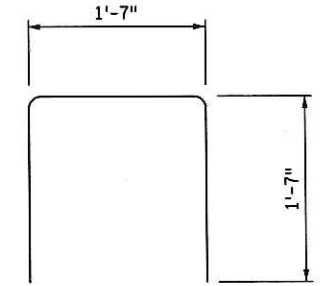
A1908E



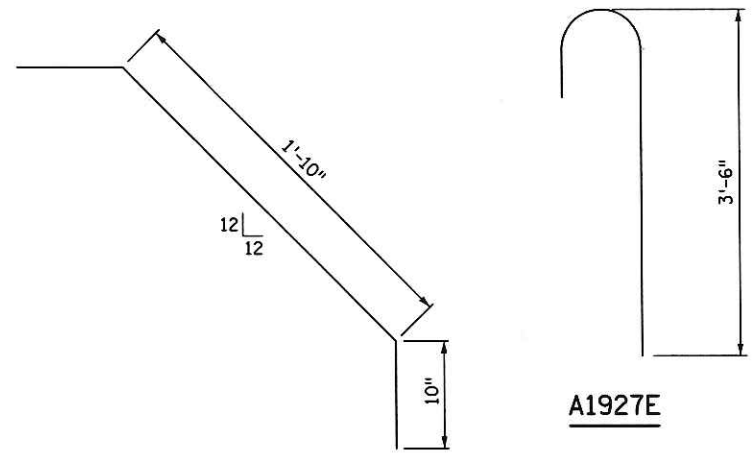
A1909E



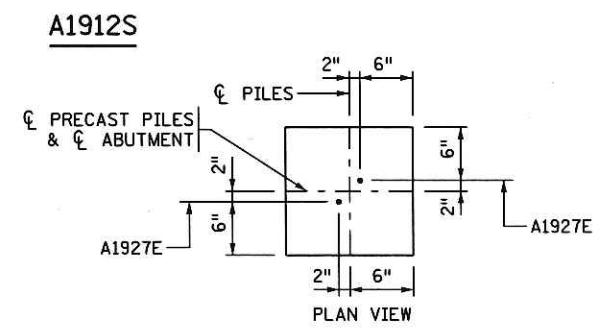
A1906E



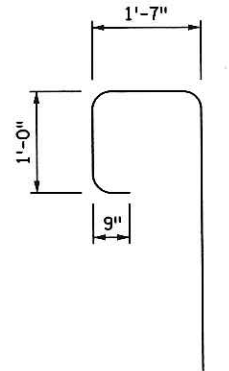
A1314E



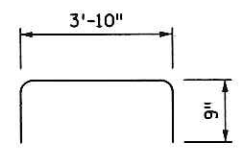
A1927E



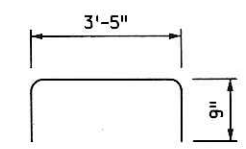
A1912S



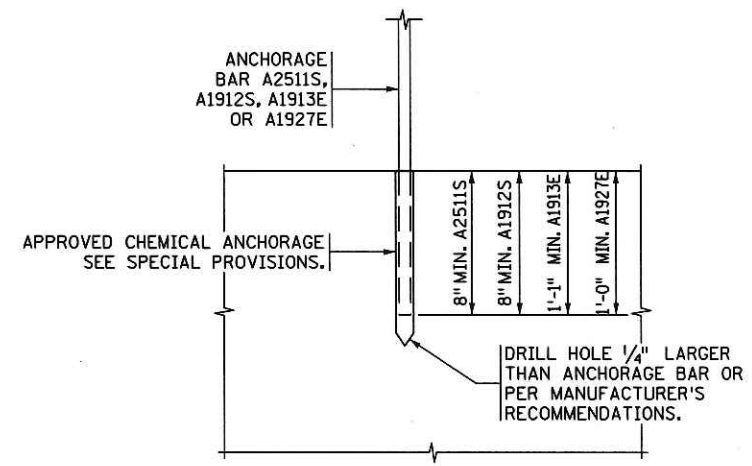
A1332E*



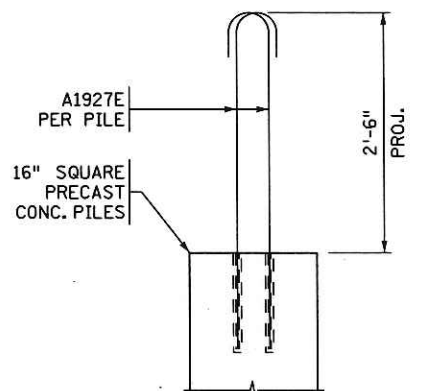
A1633E*



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		6	82	14'-1"	U	STIRRUP
A1903E		38		38	12'-5"	U	STIRRUP
⑤ A1304E*	64	64		128	4'-5"	U	TIE
⑤ A1905E*	56			56	23'-5"	—	LONGITUDINAL
A1906E	38	34		72	11'-11"	U	END TIE
⑤ A1907E*		22		22	24'-8"	—	LONGITUDINAL
A1908E		4		4	25'-9"	—	LONGITUDINAL
A1909E		4		4	25'-9"	—	LONGITUDINAL
⑤ A1910E*		24		24	22'-1"	—	LONGITUDINAL
③ A2511S	15	15		30	1'-8"	—	ANCHORAGE
③ A1912S	37	37		74	4'-8"	—	APPROACH PANEL ANCHORAGE
④ A1913E	7	7		14	2'-7"	—	PARAPET ANCHORAGE
② A1314E	3	3		6	4'-9"	U	PARAPET TIE
② A1315E	3			3	11'-7"	U	PARAPET TIE
② A1316E		3		3	11'-11"	U	PARAPET TIE
④ A1927E	16	16		32	4'-2"	—	PILE TIES
A1931E*	2	2		4	9'-0"	—	VERTICAL
A1332E*	10	8		18	7'-2"	U	HORIZONTAL TIE
A1633E*	24			24	5'-4"	U	LONGITUDINAL TIE
A1934E*	2	2		4	5'-2"	—	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 10 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

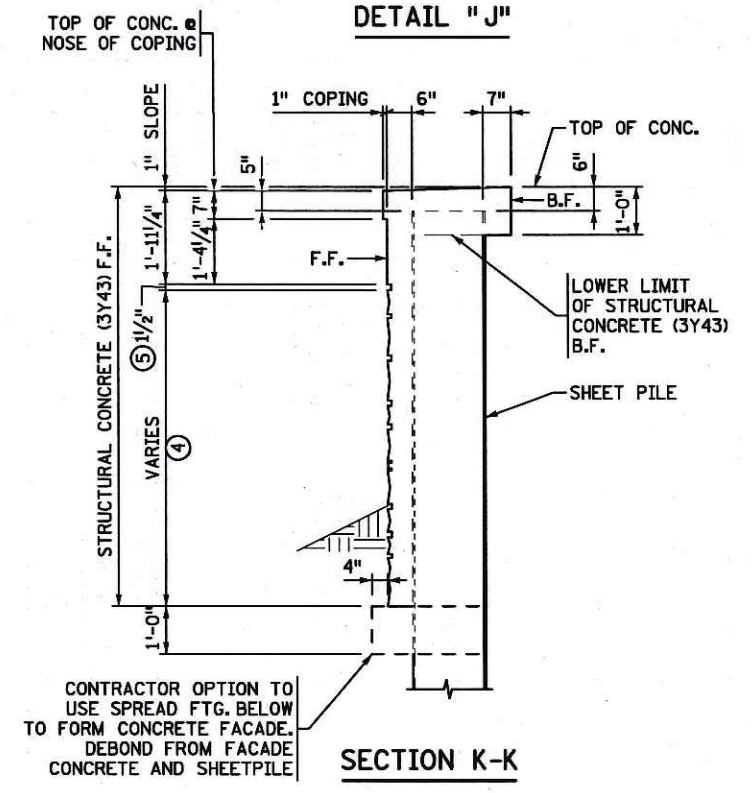
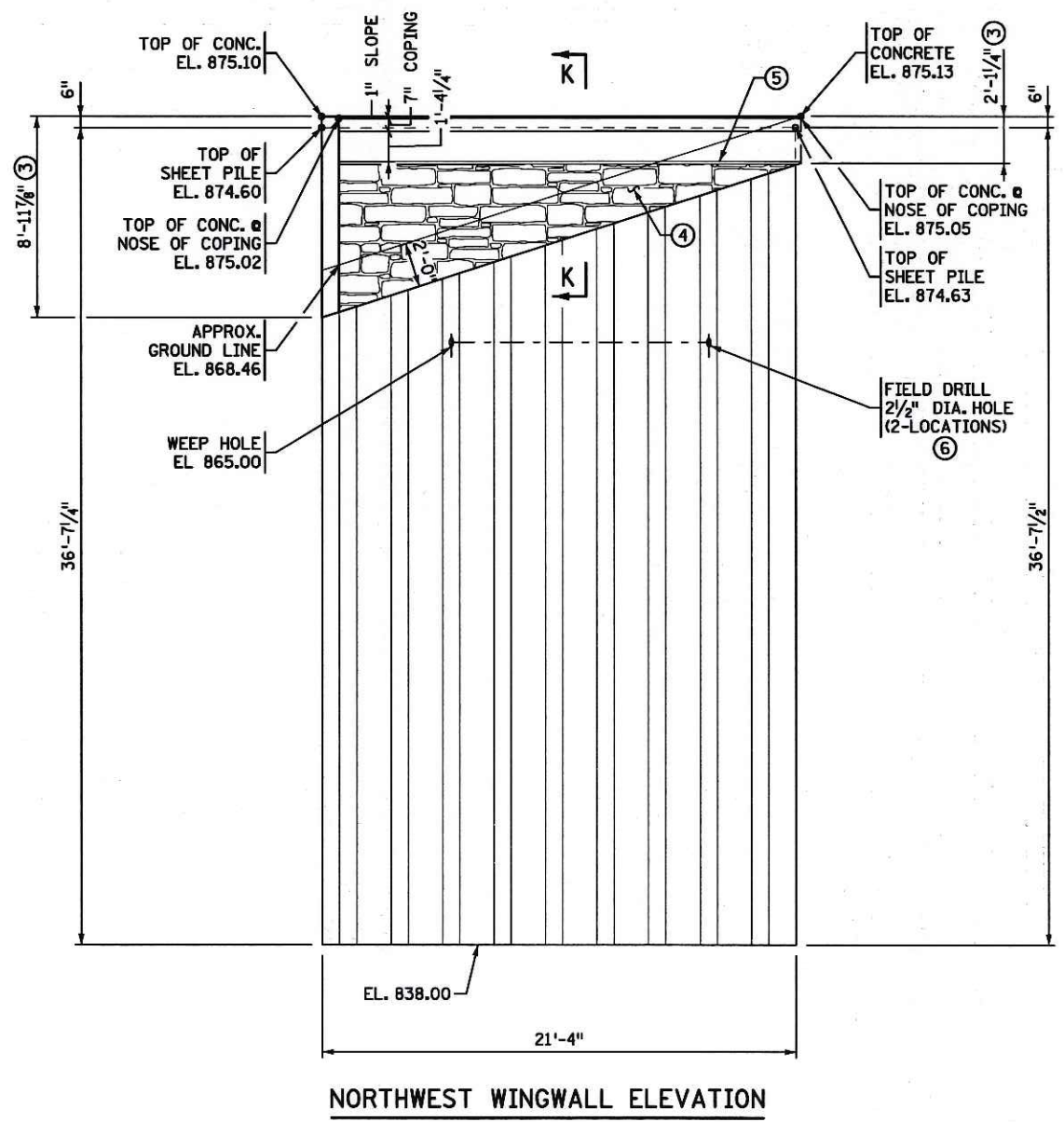
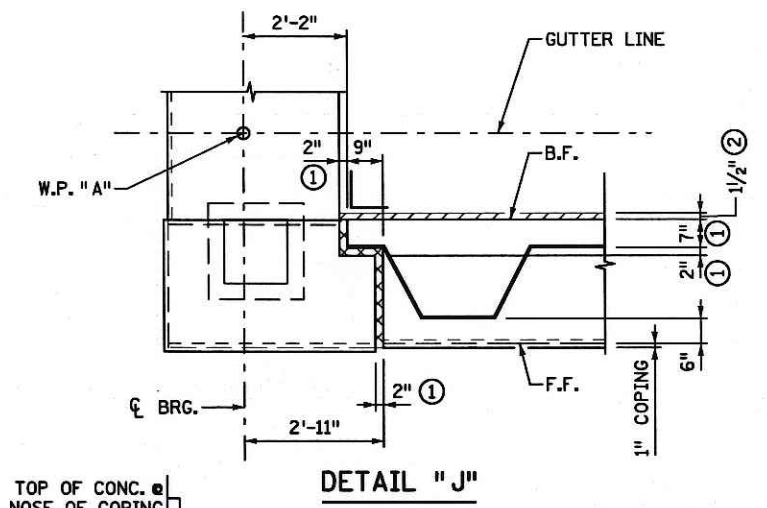
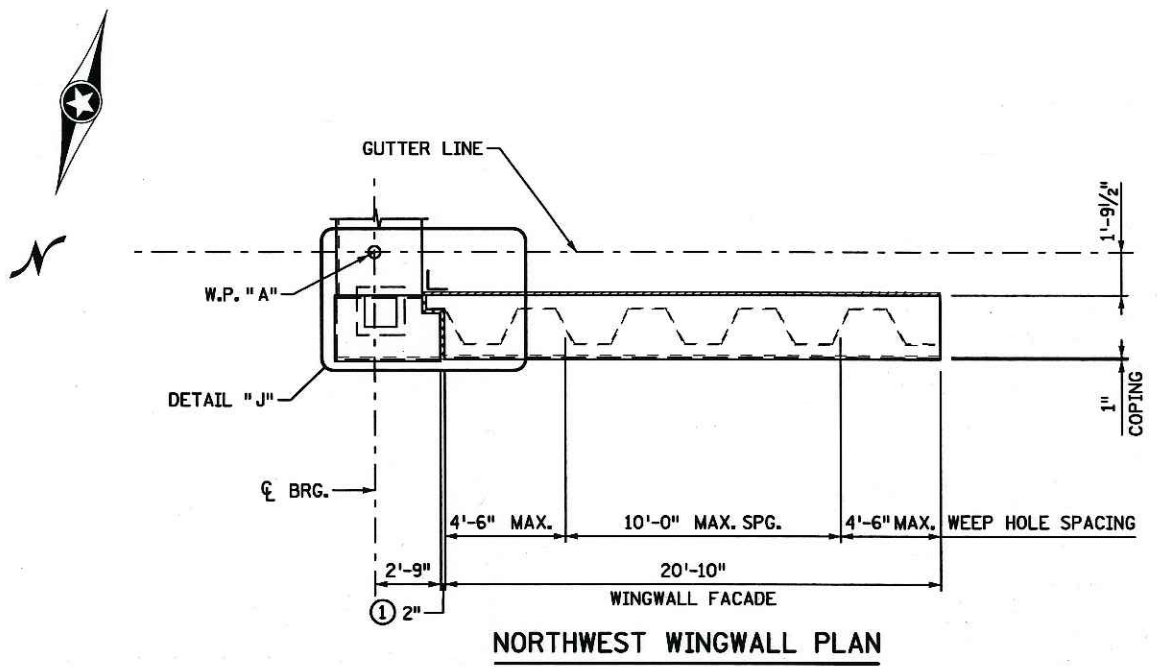
CERTIFIED BY Angel M. Staples 8/5/13
 LICENSED PROFESSIONAL ENGINEER DATE
 NAME: ANGEL M. STAPLES LIC. NO. 41656

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

TIME : 9:27:29 AM
 PLOTTED : 01-FEB-2013
 PATH & FILENAME: Bridge/Final_Design/6/62037/Cadd-Plan/br62037_str

FILENAME: IP_PWP-dl489447-br62037_str.dgn

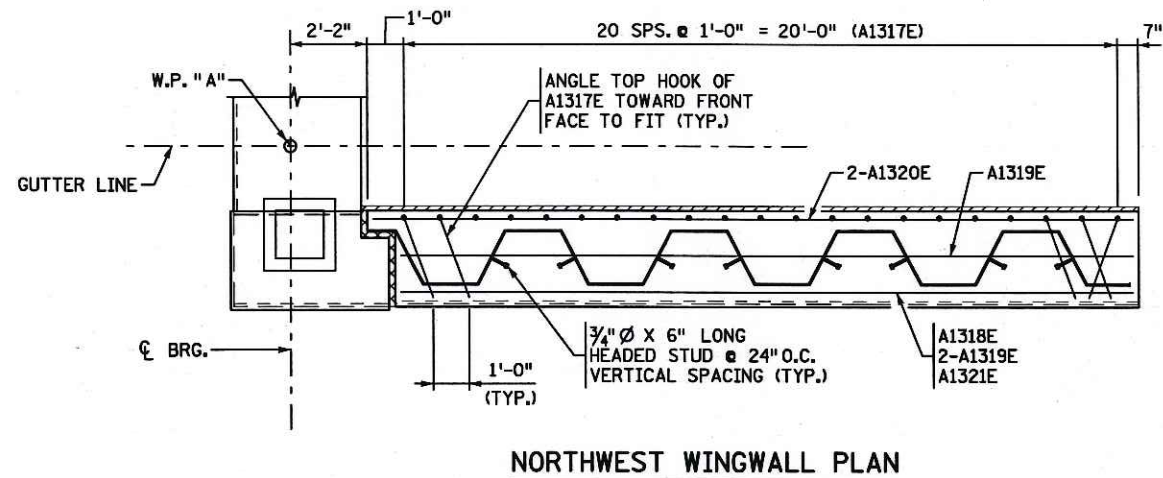


- NOTES:**
- 2" POLYSTYRENE TYPE A.
 - 1 1/2" POLYSTYRENE TYPE B.
 - STRUCTURAL CONCRETE (3Y43).
 - ARCHITECTURAL CONCRETE TEXTURE (COURSED STONE). ARCHITECTURAL SURFACE FINISH (MULTI COLOR). ANTI-GRAFFITI COATING.
 - SEE DETAIL "H" ON SHEET NO. 9 FOR REVEAL.
 - DRIVE SHEET PILE 8'-0" AND CONSTRUCT 2 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.

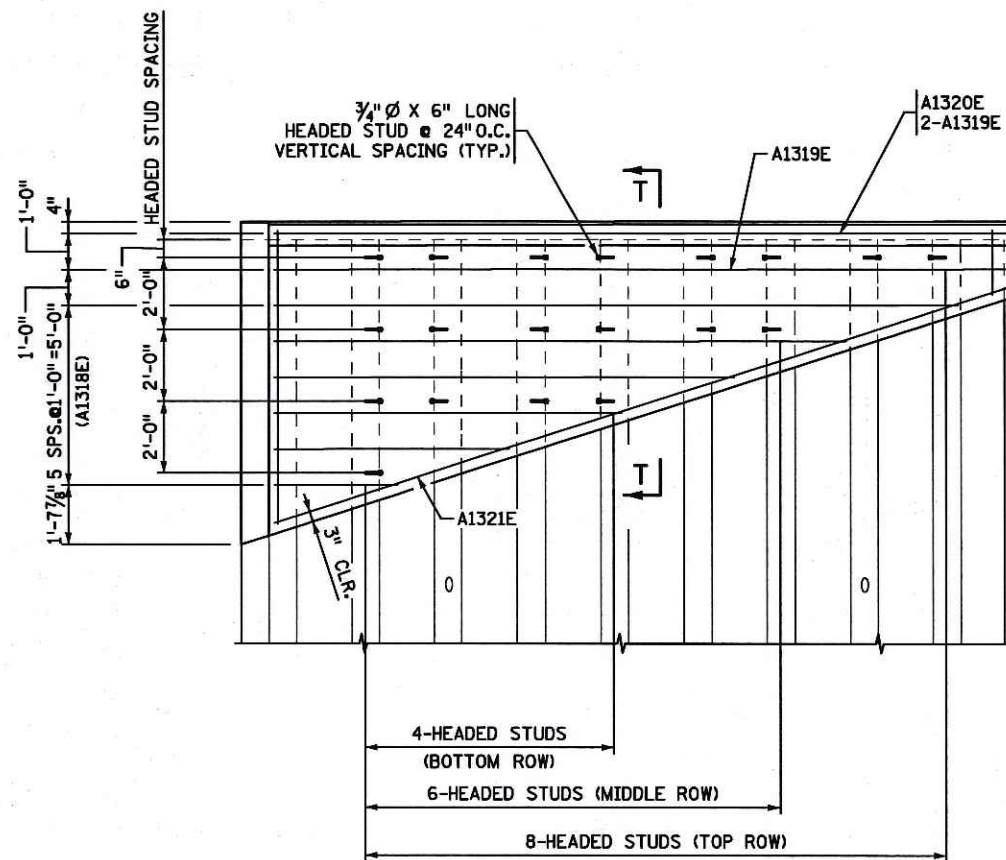
CERTIFIED BY <i>Angel M. Staples</i> LICENSED PROFESSIONAL ENGINEER NAME: ANGEL M. STAPLES	DATE 2/1/13 DATE LIC. NO. 41656	TITLE: NORTHWEST WINGWALL GEOMETRICS	DES: MDH	DR: TKB	APPROVED:	BRIDGE NO. 62037
			CHK: NJV	CHK: DCH	<i>2/1/13</i>	
			SHEET NO. 14 OF 68 SHEETS			

TIME : 9:27:47 AM
 PLOTTED : 01-FEB-2013
 PATH & FILENAME: Bridge/Final_Design/6/62037/Cadd-Plan/br62037_str

FILENAME: IP_PWP-d1489447-br62037_str.dgn

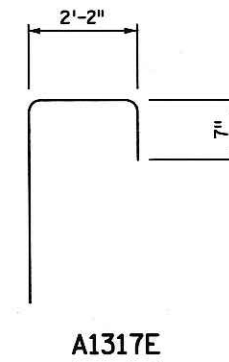


NORTHWEST WINGWALL PLAN



NORTHWEST WINGWALL ELEVATION

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



A1317E

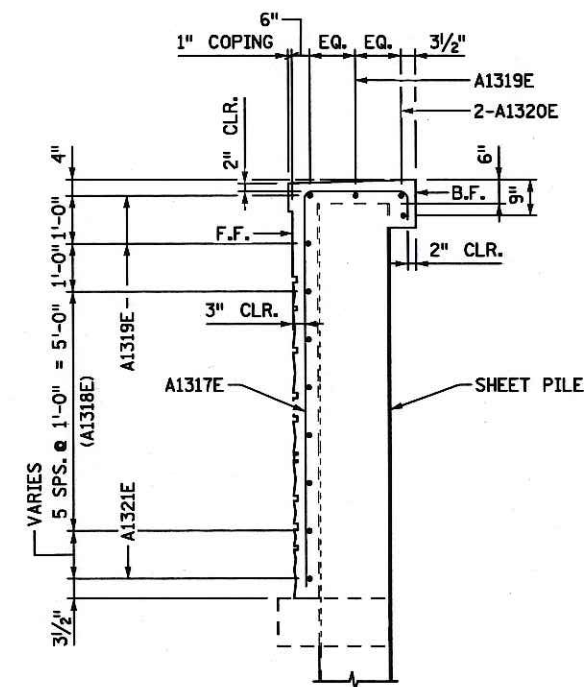
BILL OF REINFORCEMENT FOR NORTHWEST WINGWALL

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

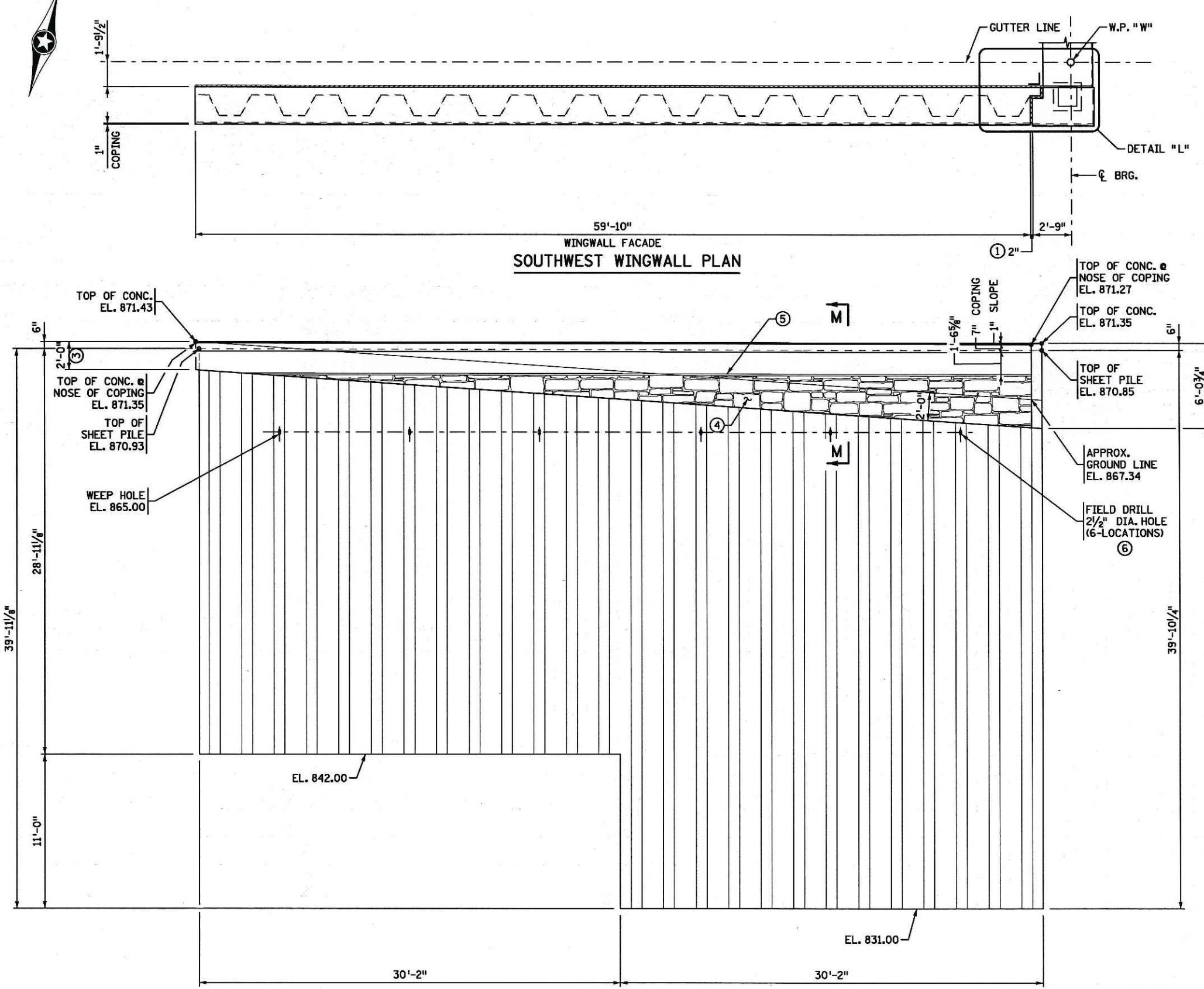
TITLE: **NORTHWEST WINGWALL REINFORCEMENT**

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

BRIDGE NO. 62037

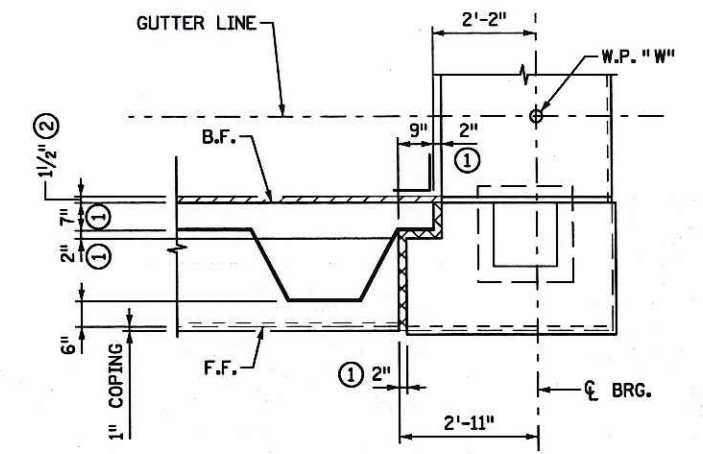
TIME : 9:26:44 AM
 PLOTTED : 01-FEB-2013
 PATH & FILENAME: Bridge/Final_Design/6/62037/Cadd-Plan/br62037_str

FILENAME: IP_PWP-df489447-br62037_str.dgn

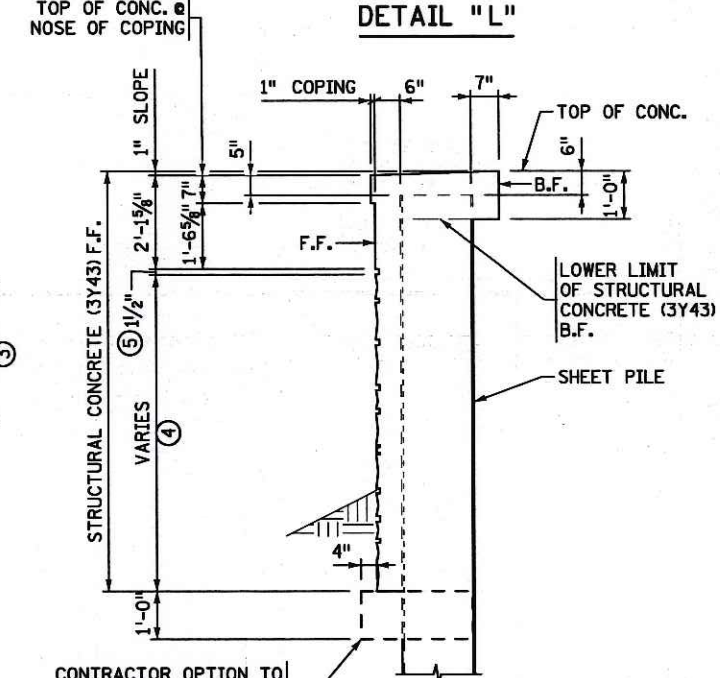


SOUTHWEST WINGWALL ELEVATION

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



DETAIL "L"



SECTION M-M

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 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
 = 155.91 IN⁴/FT.

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

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

TIME : 9:27:42 AM
 PLOTTED : 01-FEB-2013
 PATH & FILENAME: Bridge/Final_Design/6/62037/Cadd-Plan/br62037_str

FILENAME: IP_PWP-dl489447-br62037_str.dgn

BILL OF REINFORCEMENT FOR SOUTHWEST WINGWALL

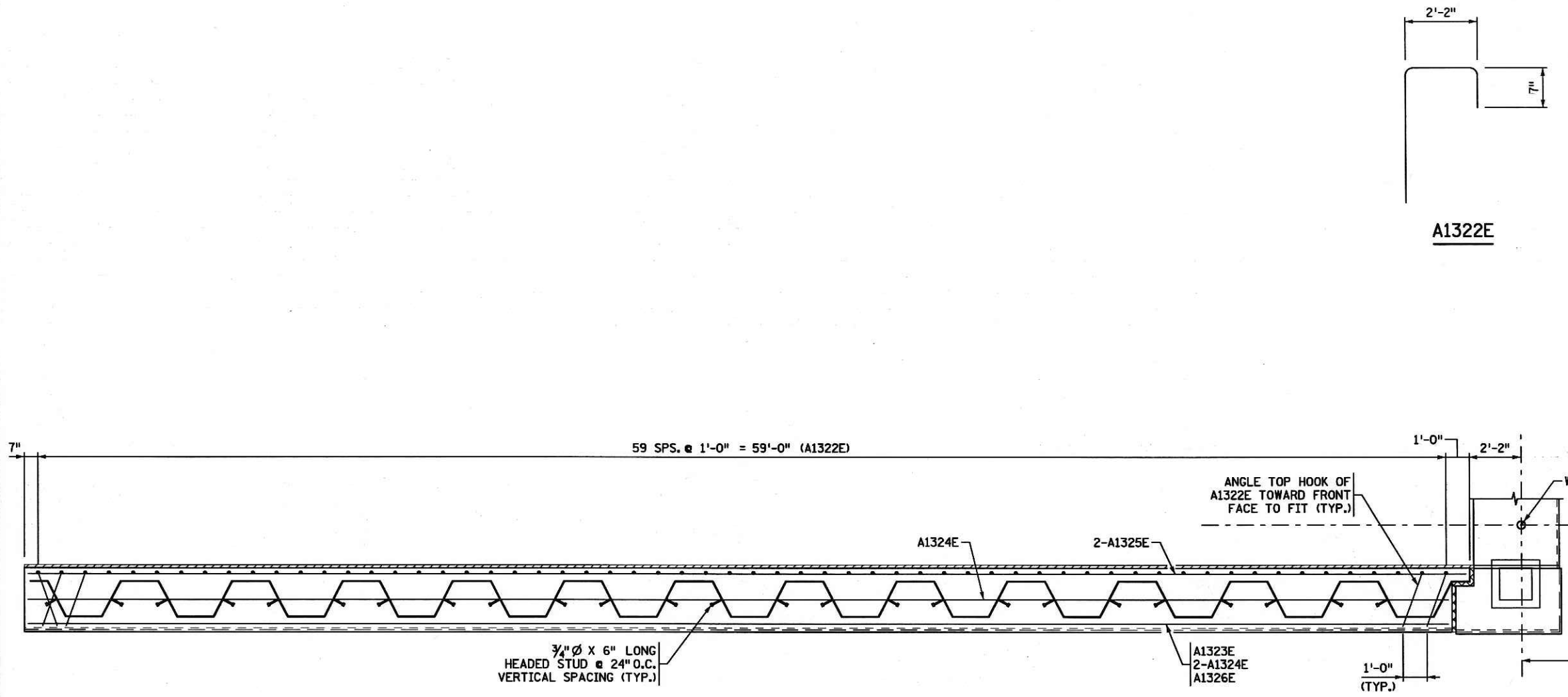
BAR	NO.	LENGTH	SHAPE	LOCATION
A1322E	1 SET OF 60	4'-3" TO 8'-3"		SW WINGWALL VERT.
A1323E	1 SET OF 4	6'-0" TO 5'-0"		SW WINGWALL HORIZ.
A1324E	3	59'-6"		SW WINGWALL HORIZ.
A1325E	2	60'-0"		SW WINGWALL HORIZ.
A1326E	1	59'-7"		SW WINGWALL HORIZ.

SUMMARY OF QUANTITIES FOR SOUTHWEST WINGWALL

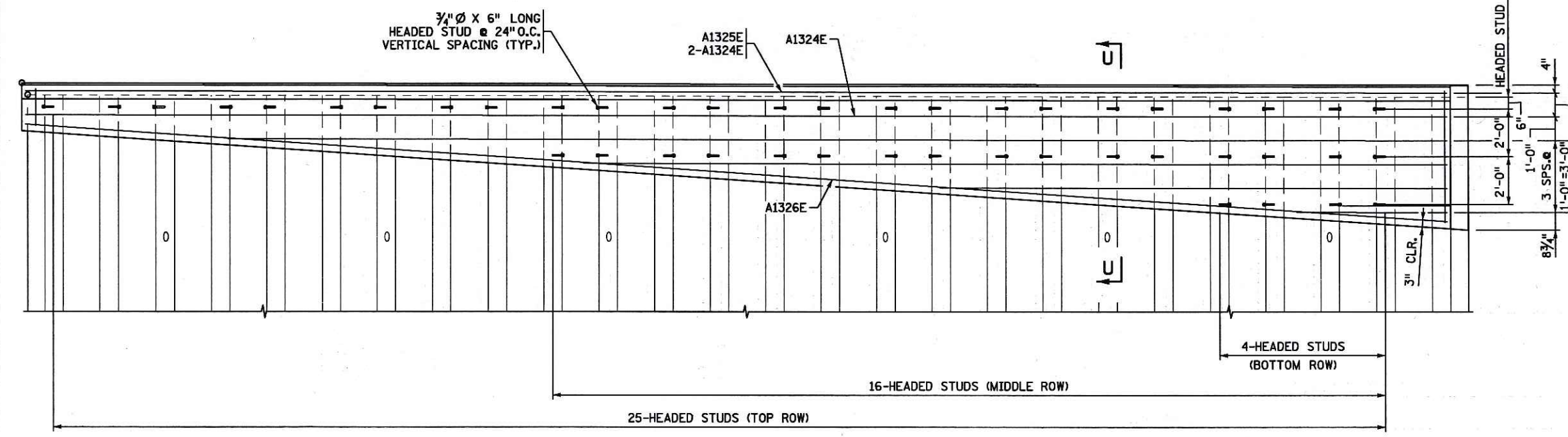
STEEL SHEET PILING (PERMANENT)	2075 SQ. FT.
WINGWALL FACADE	240 SQ. FT.
ANTI-GRAFFITI COATING	107 SQ. FT.
ARCH SURFACE FINISH (MULTI COLOR)	107 SQ. FT.
ARCH CONC. TEXTURE (COURSED STONE)	107 SQ. FT.
STRUCTURAL CONCRETE (3Y43)	12 CU. YD.
REINFORCEMENT BARS (EPOXY COATED)	570 POUND
SHEAR STUDS	45 EACH
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)".

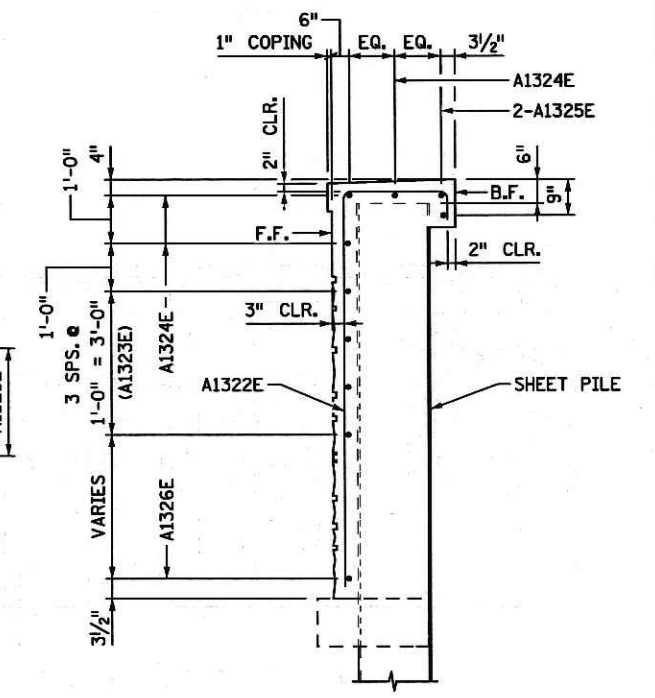
NOTES:
 F.F. - DENOTES FRONT FACE.
 B.F. - DENOTES BACK FACE



SOUTHWEST WINGWALL PLAN



SOUTHWEST WINGWALL ELEVATION



SECTION U-U

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

BRIDGE NO. 62037

**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 = (FACTORED DESIGN LOAD) / φ_{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

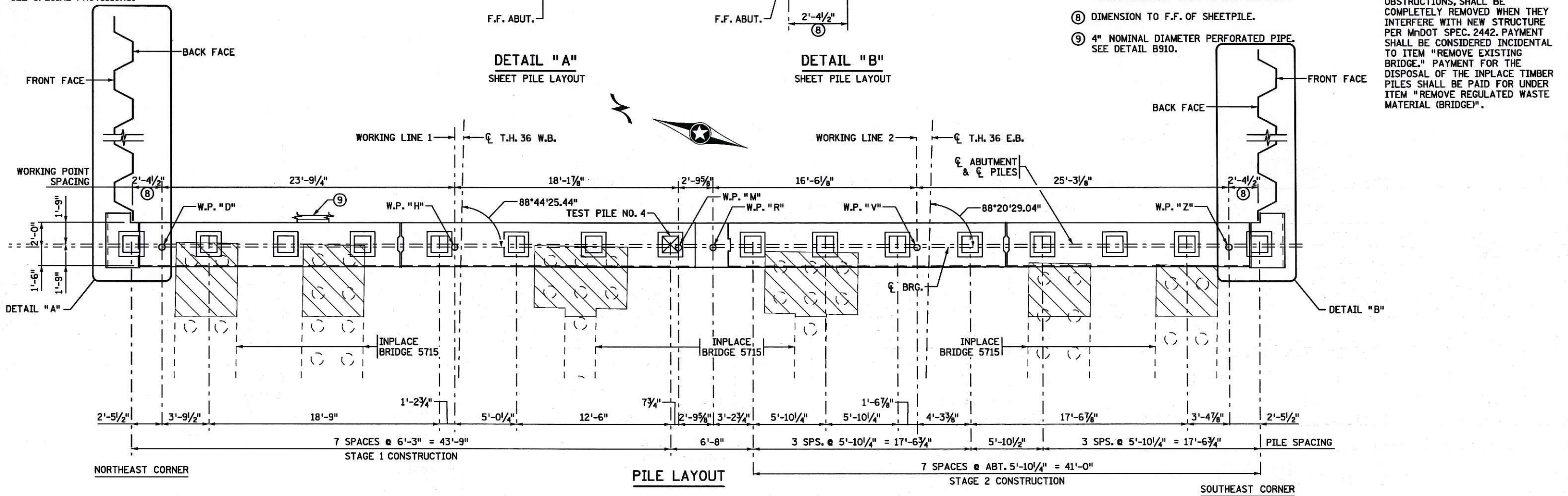
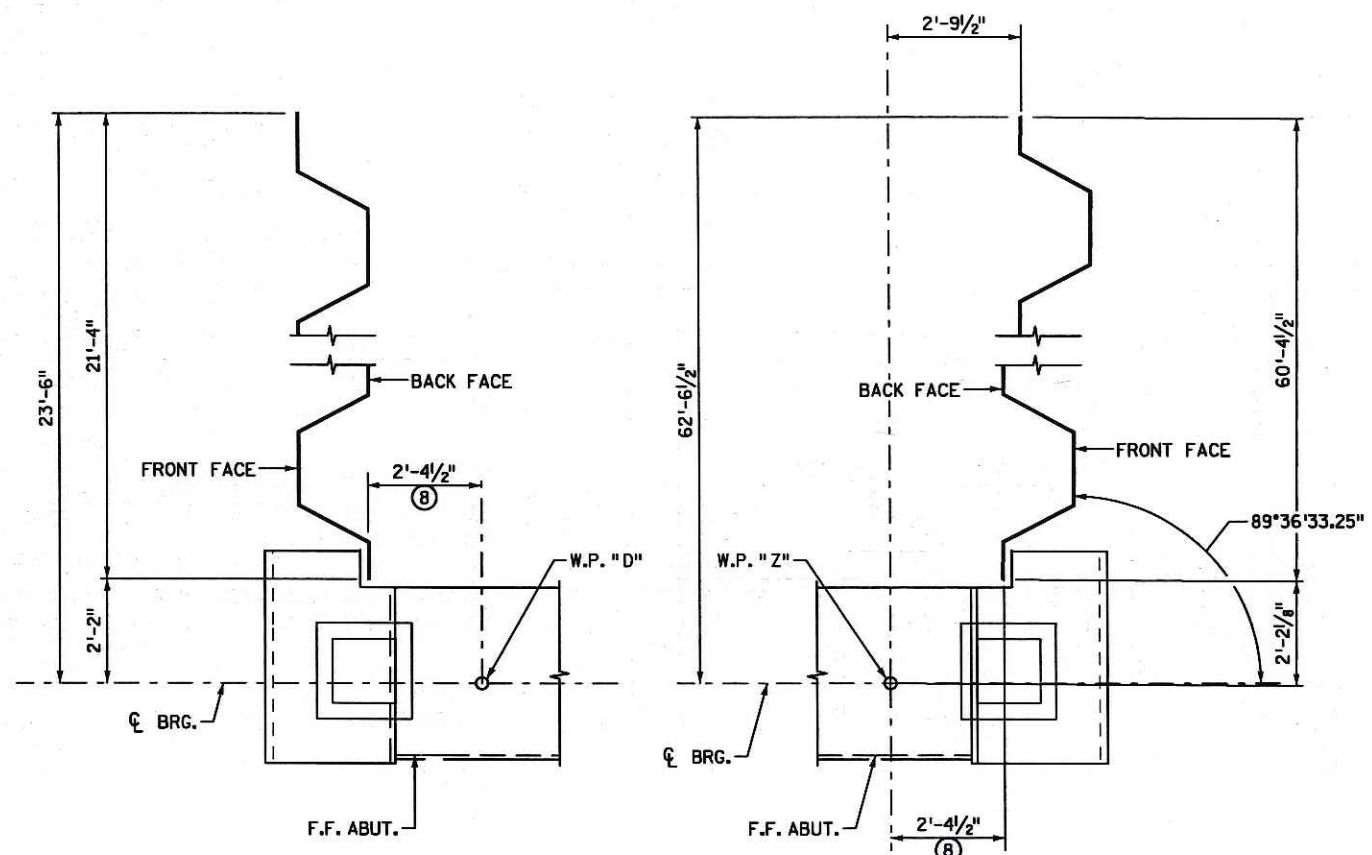
- 1 16" SQUARE PRECAST CONC. TEST PILES 65 FT. LONG
 - 7 16" SQUARE PRECAST CONC. PILES EST. LENGTH 65 FT.
 - 8 16" SQUARE PRECAST CONC. PILES REQ'D FOR EAST ABUTMENT-STAGE 1.
 - 8 16" SQUARE PRECAST CONC. PILES EST. LENGTH 65 FT.
 - 8 16" SQUARE PRECAST CONC. PILES REQ'D FOR EAST ABUTMENT-STAGE 2.
-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

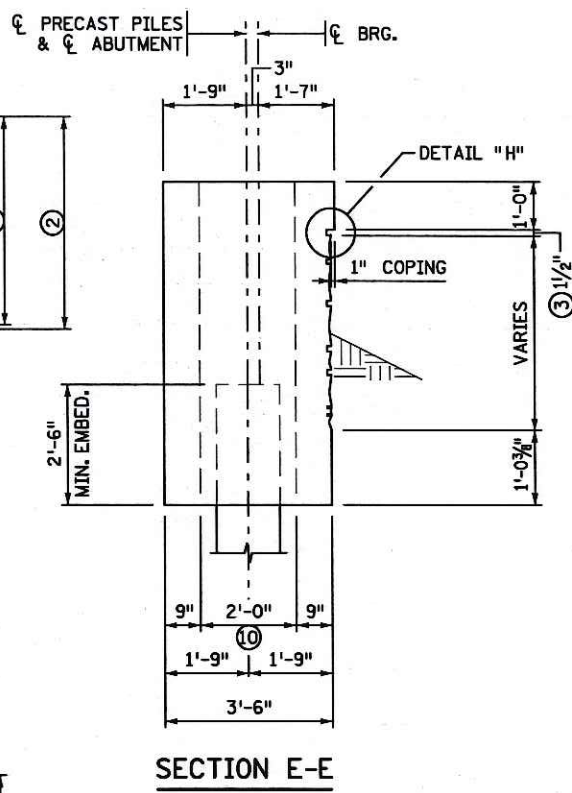
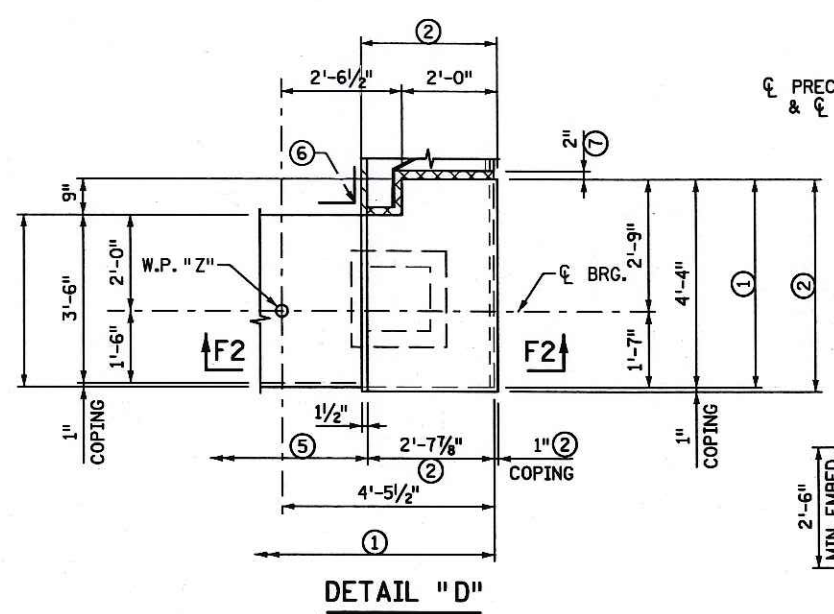
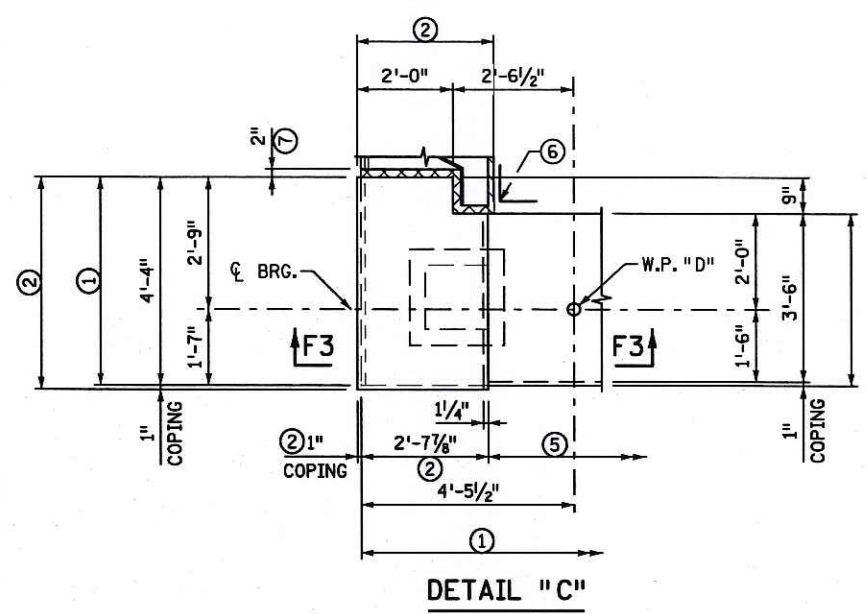
- ① DOES NOT INCLUDE TEST PILES.
- ② PAYMENT SHALL BE CONSIDERED INCIDENTAL TO PAY ITEM "PRECAST ABUTMENT ELEMENT".
- ③ 42 CU. YD. (STAGE 1) AND 31 CU. YD. (STAGE 2) SHALL BE CONSIDERED INCIDENTAL TO PAY ITEM "PRECAST ABUTMENT ELEMENT".
- ④ 1 CU. YD. (STAGE 1) AND 4 CU. YD. (STAGE 2) SHALL BE INCLUDED 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)".



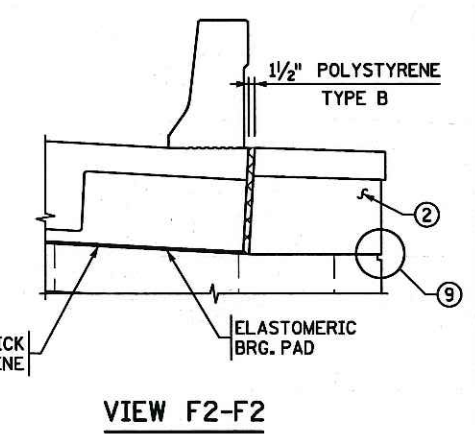
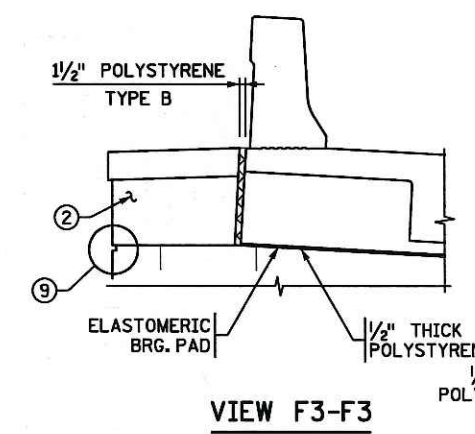
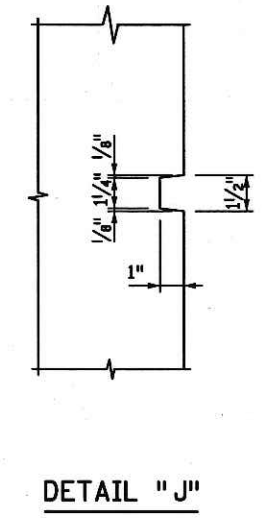
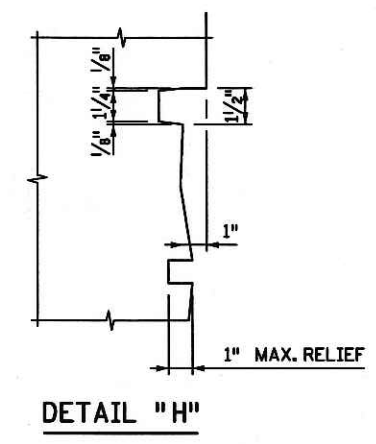
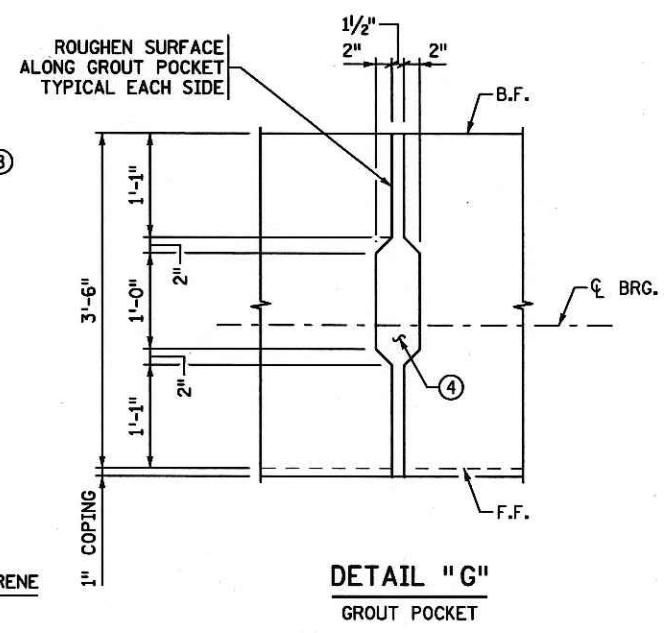
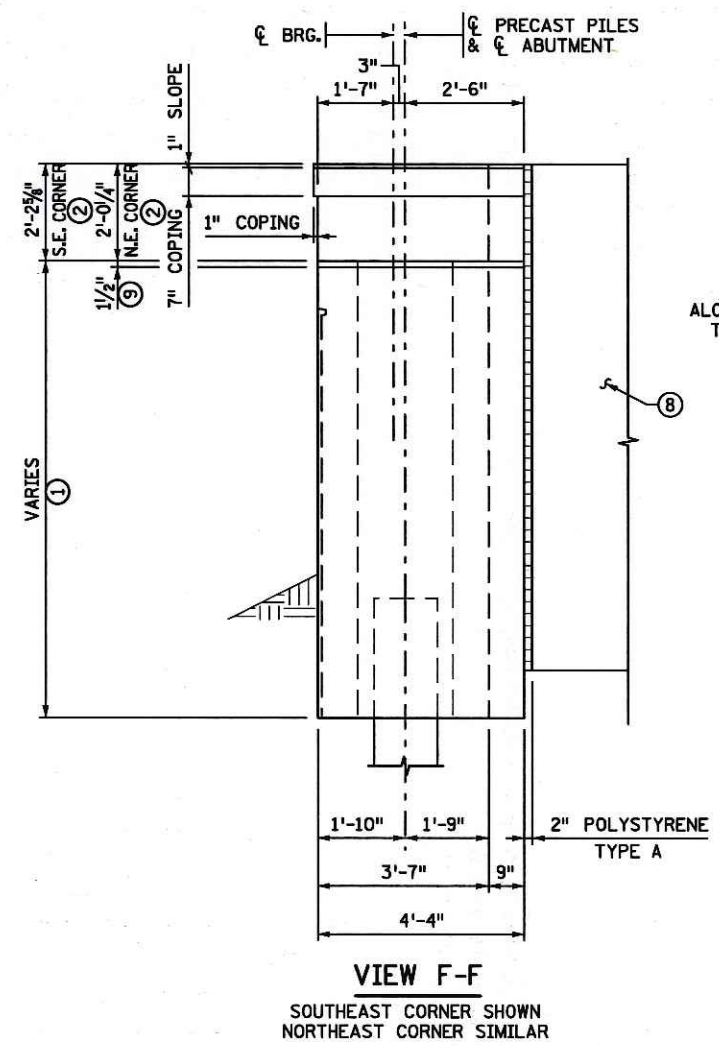
TIME: 9:26:31 AM
 PLOTTED: 01-FEB-2013
 PATH & FILENAME: Bridge/Final_Design/6/62037/Cadd-Plan/br62037_str.dgn

TIME : 9:27:04 AM
 PLOTTED : 01-FEB-2013
 PATH & FILENAME: Bridge/Finl_Design/6/62037/Cadd-Plan/br62037_str

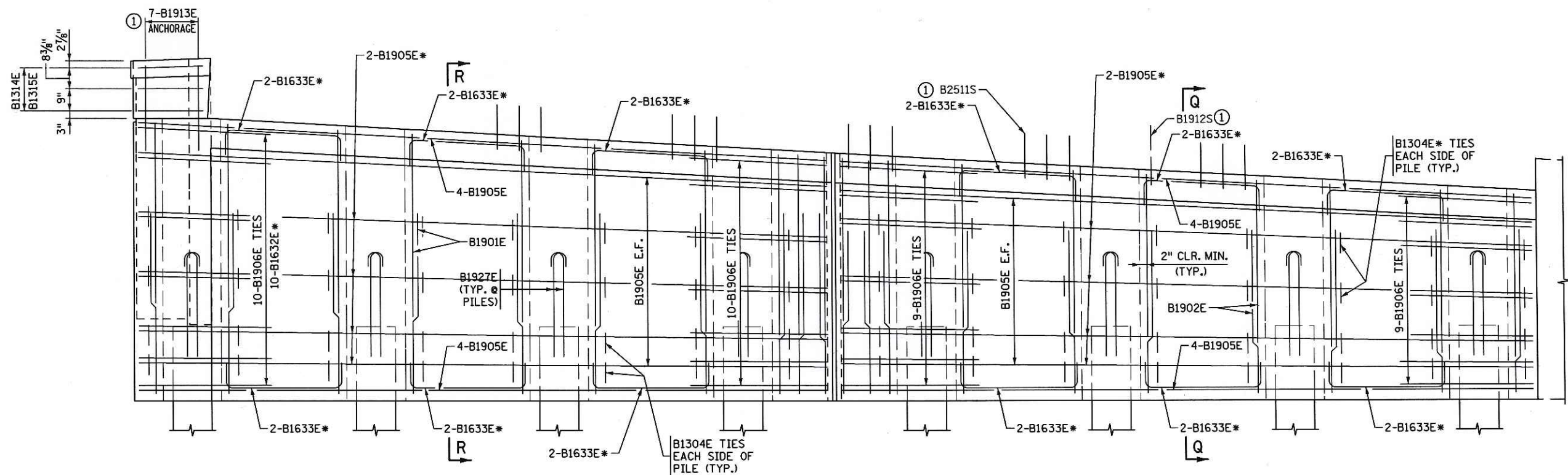


PRECAST ABUTMENT ELEMENT HEIGHTS		
ABUTMENT ELEMENT I.D.	LOWER HEIGHT	UPPER HEIGHT
A	8'-4 3/4"	9'-6 3/4"
B	7'-0 5/8"	8'-4 3/8"
C	6'-8 5/8"	7'-11 1/2"
D	5'-7 1/2"	6'-8 5/8"

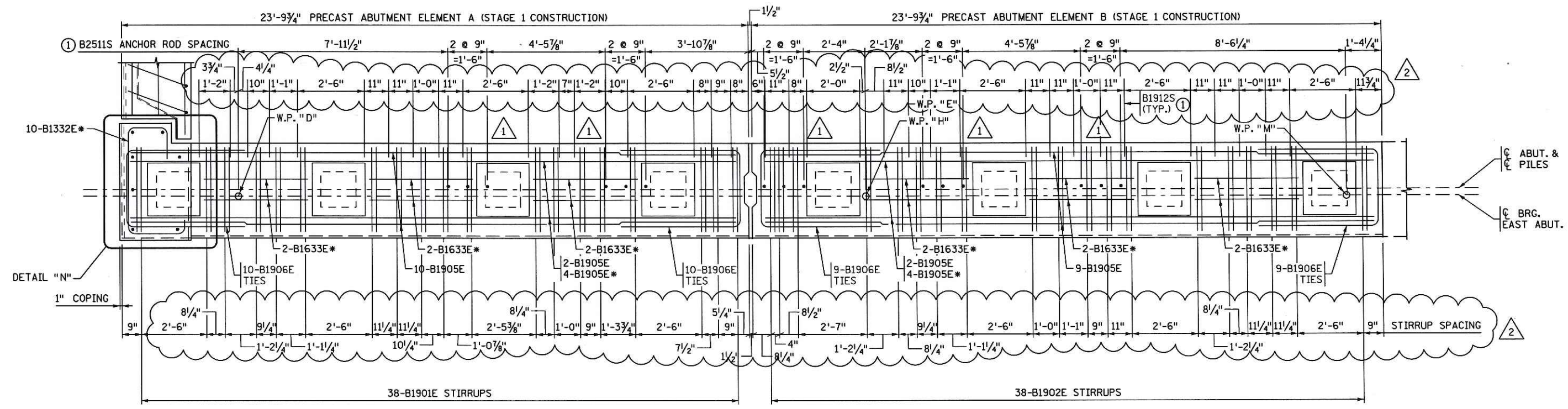
- NOTES:**
- PRECAST ABUTMENT ELEMENT STRUCTURAL CONCRETE (3Y43).
 - PARAPET CAST-IN-PLACE STRUCTURAL CONCRETE (3Y43).
 - SEE DETAIL "H" FOR REVEAL AT ABUTMENT FRONT FACE.
 - FILL WITH STRUCTURAL GROUT. SEE SPECIAL PROVISIONS.
 - ARCHITECTURAL CONCRETE TEXTURE (COURSED STONE) ARCHITECTURAL SURFACE FINISH (MULTI COLOR) ANTI-GRAFFITI COATING.
 - MEMBRANE WATERPROOFING SYSTEM.
 - 2" POLYSTYRENE TYPE A.
 - WINGWALL FACADE SEE SHEET NOS. 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



TIME : 2:51:21 PM
 PLOTTED : 02-AUG-2013
 PATH & FILENAME: Bridge/Final_Design/6/62037/Cadd-Plan/br62037_sfr.dgn
 FILENAME: IP_PWP-dl489447-br62037_sfr.dgn



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.

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.

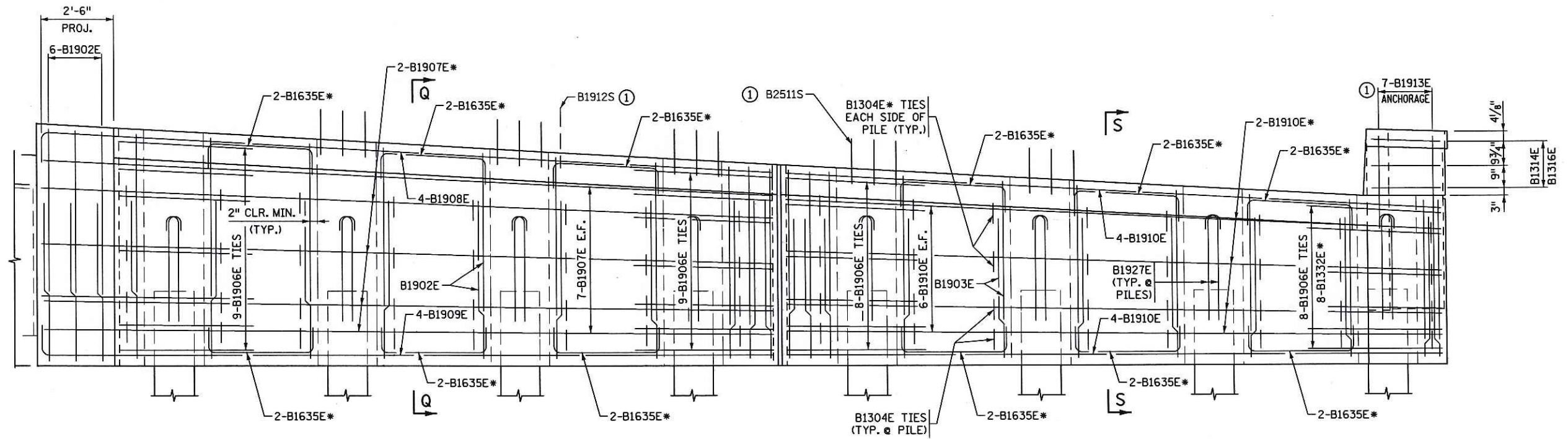
REVISION		
DATE	DESCRIPTION	APPROVED BY
5/3/13	REPOSITIONED B2511S ANCHOR RODS	AMS
5/21/13	ADDED REINFORCING FOR EASE OF FABRICATION	AMS

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

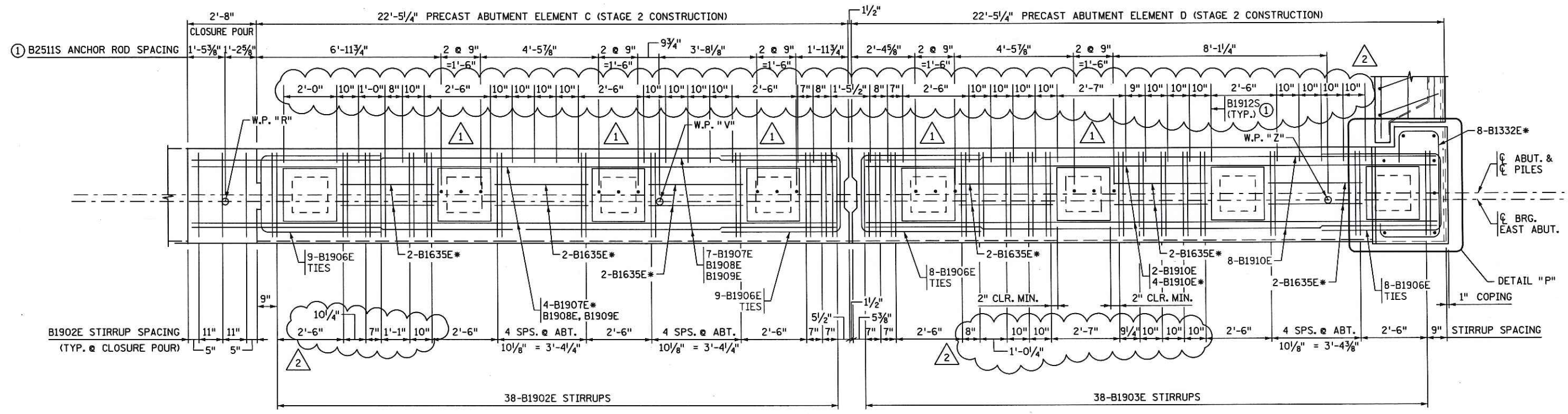
TITLE: EAST ABUTMENT REINFORCEMENT

DES: MDH DR: TKB APPROVED: 8/5/13
 CHK: NJV CHK: DCH
 SHEET NO. 21R OF 68 SHEETS BRIDGE NO. 62037

TIME : 2:52:03 PM
 PLOTTED : 02-AUG-2013
 PATH & FILENAME: Bridge/Final_Design/6/62037/Cadd-Plan/br62037_sfr.dgn
 FILENAME: IP_PWP-cl489447-br62037_sfr.dgn



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.

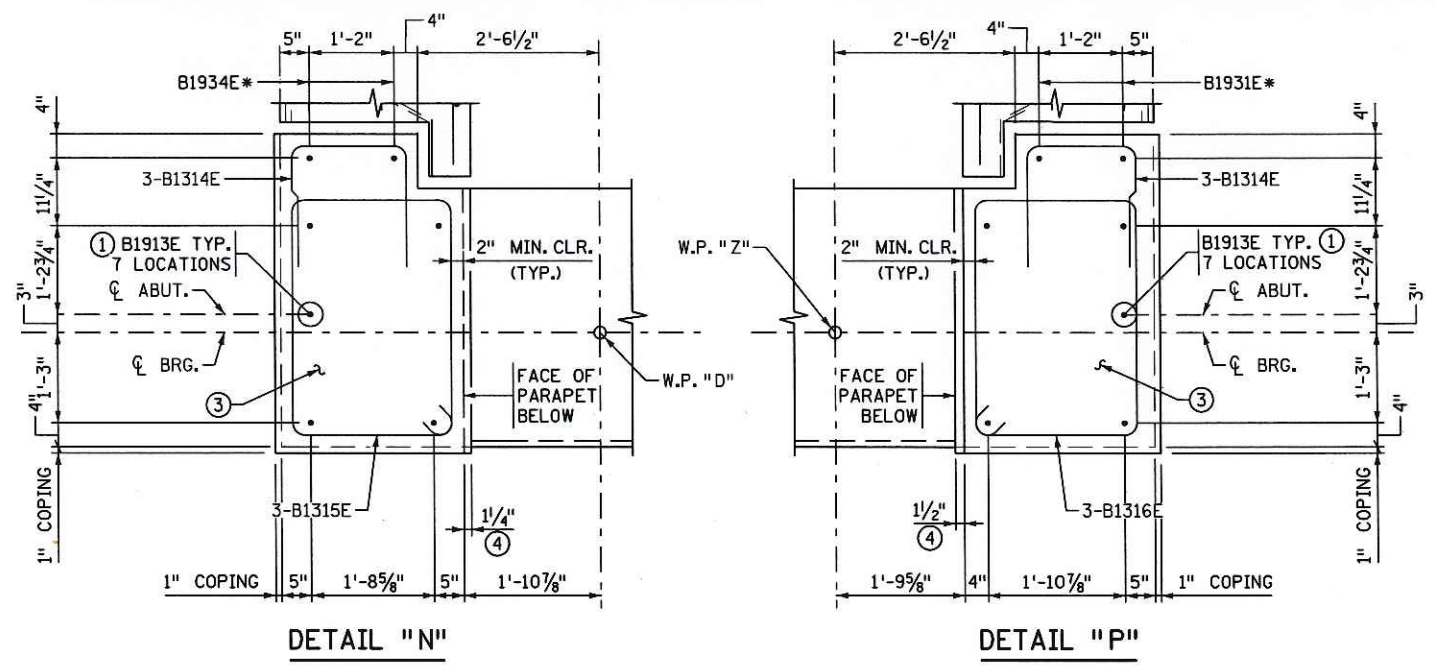
REVISION		
DATE	DESCRIPTION	APPROVED BY
5/3/13	REPOSITIONED B2511S ANCHOR RODS	AMS
5/21/13	ADDED REINFORCING FOR EASE OF FABRICATION	AMS

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

TITLE: EAST ABUTMENT REINFORCEMENT

DES: MDH DR: TKB APPROVED: 8/5/13
 CHK: NJV CHK: DCH
 SHEET NO. 22R OF 68 SHEETS BRIDGE NO. 62037

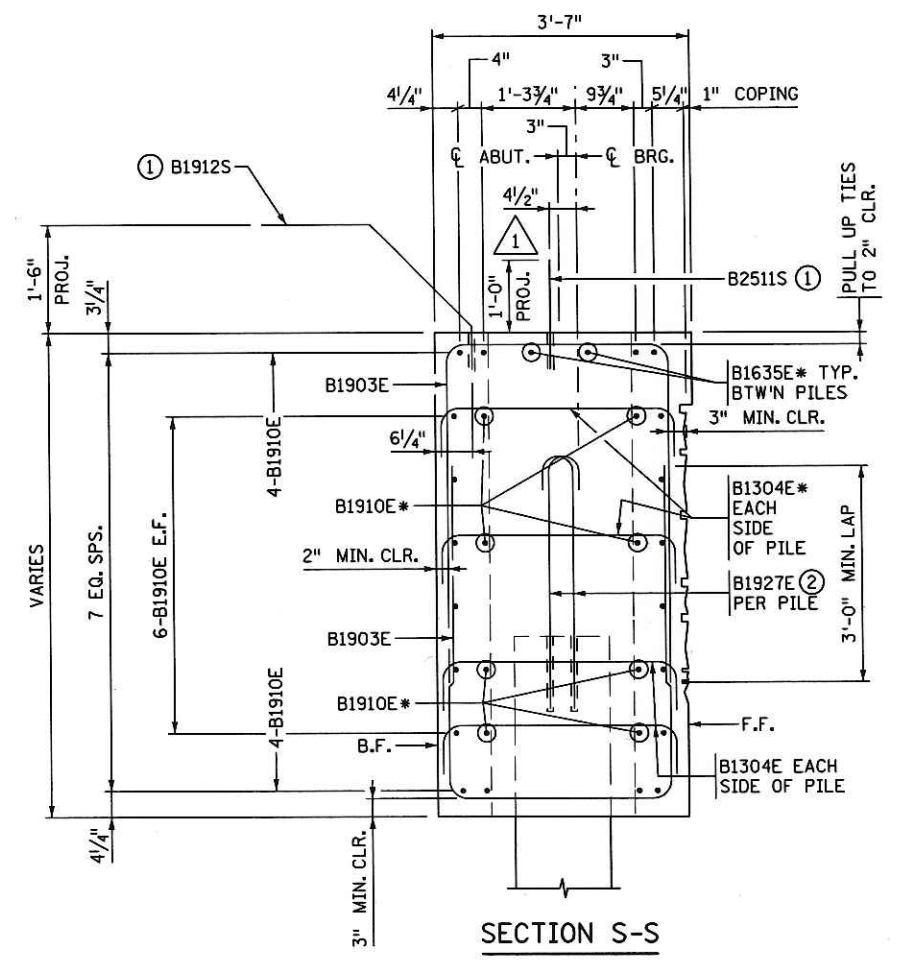
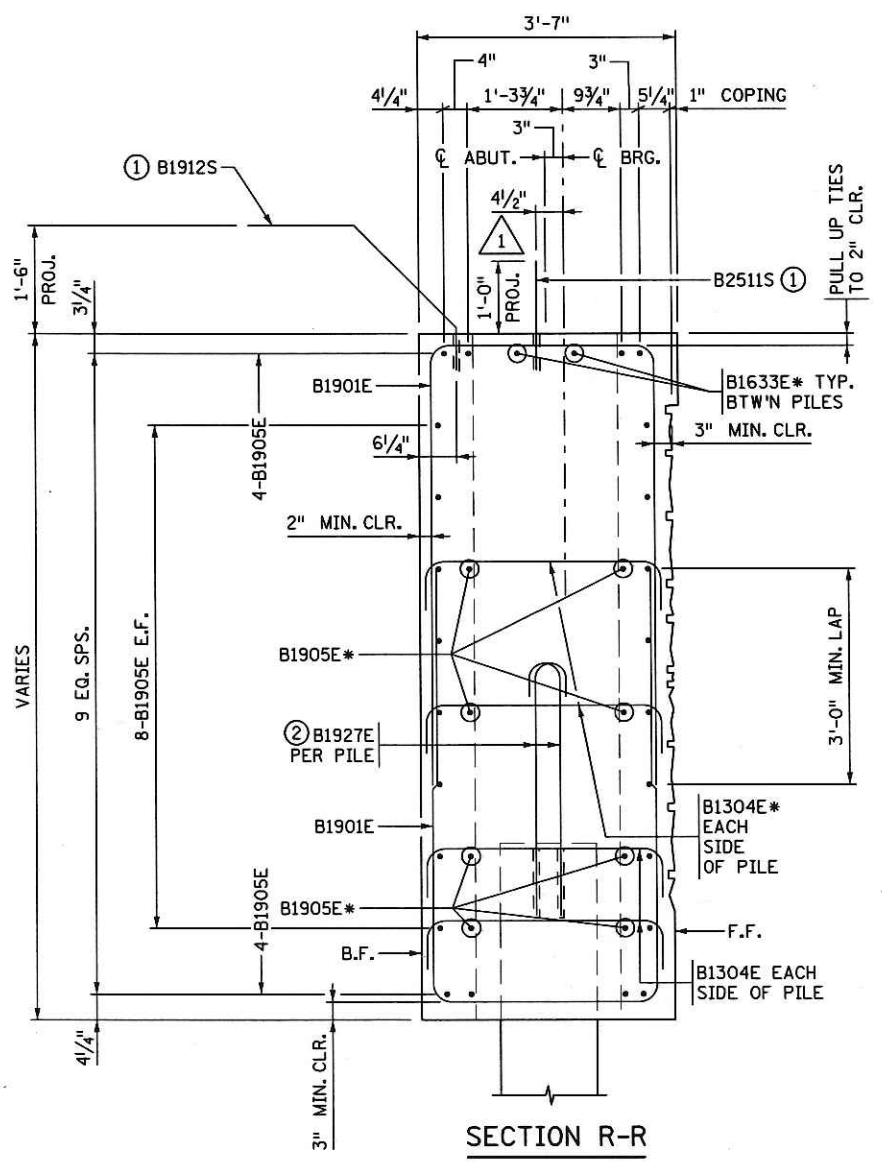
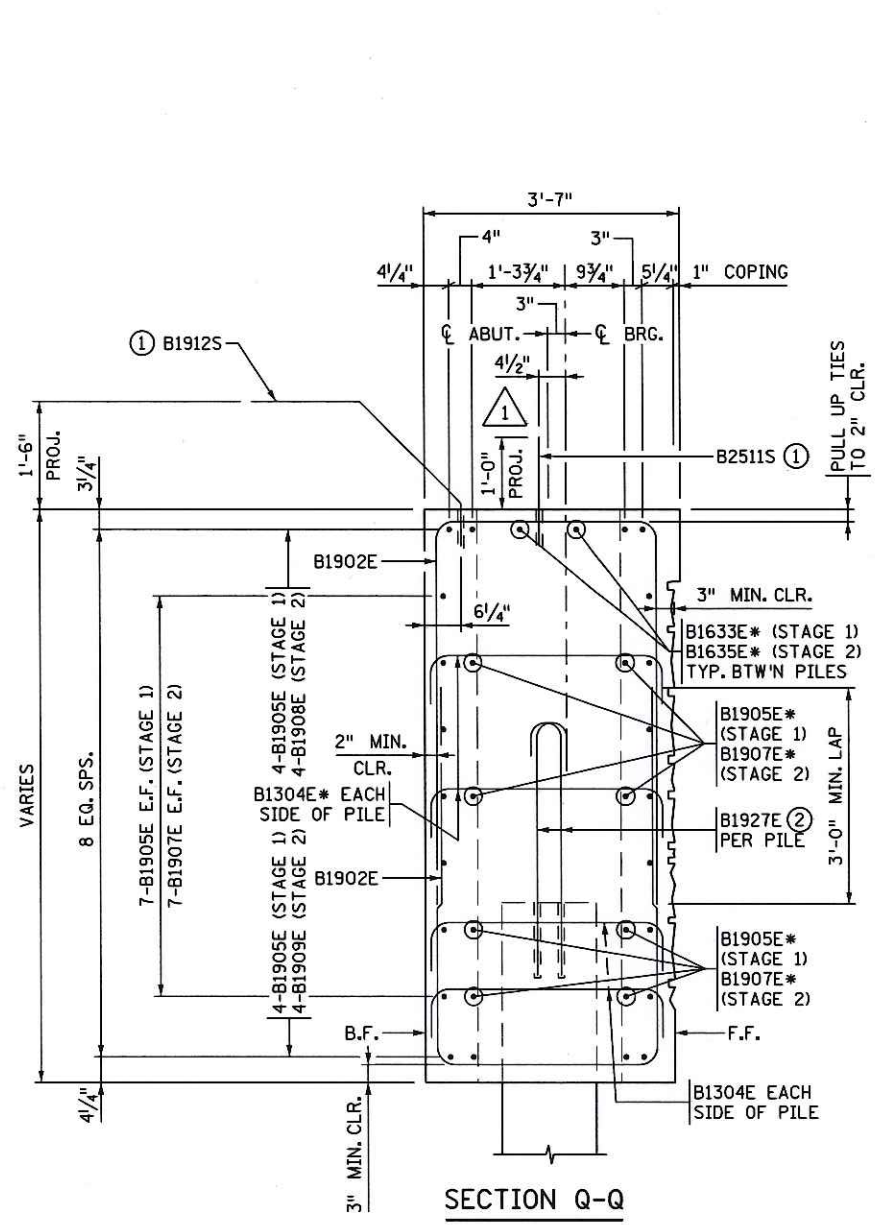
TIME : 2:55:18 PM
 PLOTTED : 02-AUG-2013
 PATH & FILENAME: Bridge/FInl_Design/6/62037/Cadd-Plan/br62037_str.dgn
 FILENAME: IP_PWP-dl489447-br62037_str.dgn



- 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. 2

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



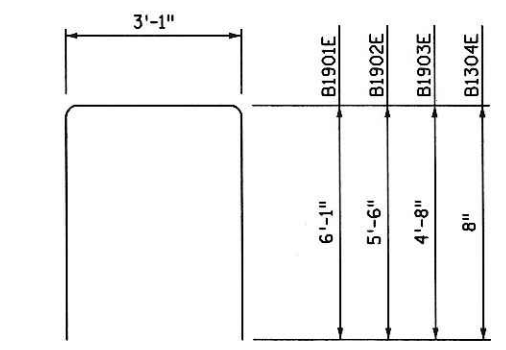
REVISION		
DATE	DESCRIPTION	APPROVED BY
5/3/13	REPOSITIONED B2511S ANCHOR RODS	AMS
5/21/13	ADDED REINFORCING FOR EASE OF FABRICATION	AMS

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

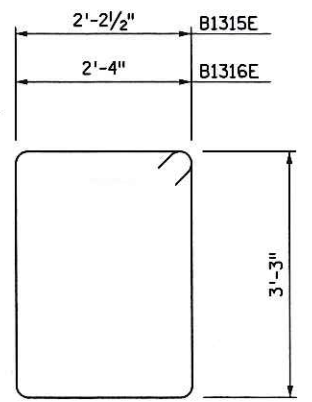
TITLE: EAST ABUTMENT REINFORCEMENT

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

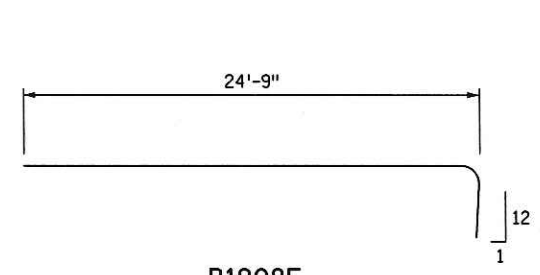
TIME : 2:54:10 PM
 PLOTTED : 02-AUG-2013
 PATH & FILENAME: Bridge/Final_Design/6/62037/Cadd-Plan/br62037_sfr.dgn
 FILENAME: IP_PWP-dl#89447/br62037_sfr.dgn



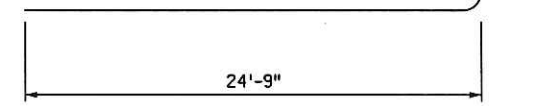
B1901E, B1902E, B1903E & B1304E



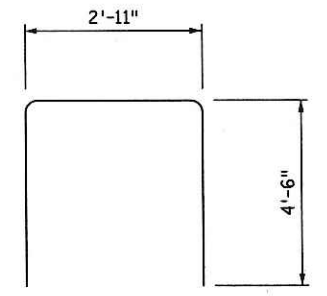
B1315E, B1316E



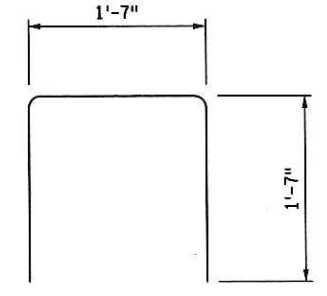
B1908E



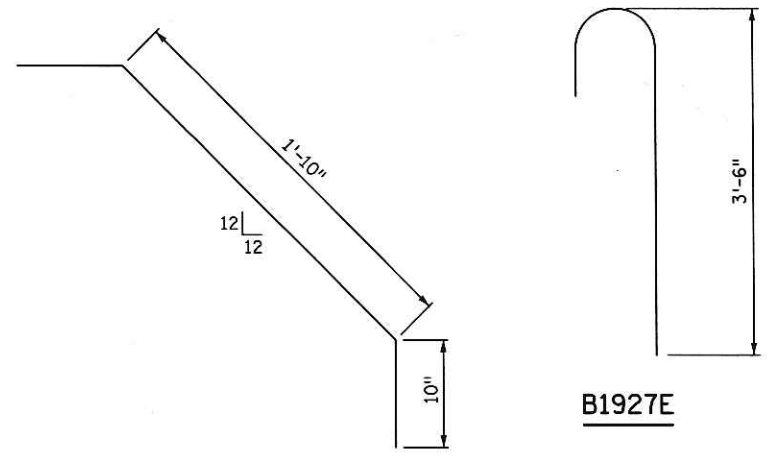
B1909E



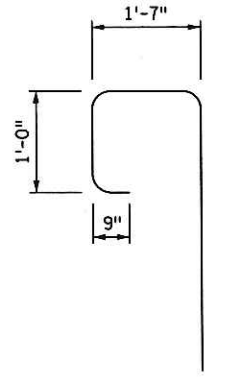
B1906E



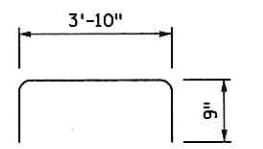
B1314E



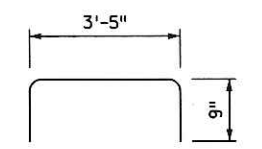
B1927E



B1332E*



B1633E*



B1635E*

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		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"	—	APPROACH PANEL ANCHORAGE
④ B1913E	7	7		14	2'-7"	—	PARAPET ANCHORAGE
② B1314E	3	3		6	4'-9"	U	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"	U	LONGITUDINAL TIE
B1934E*	2	2		4	5'-2"	—	VERTICAL
B1635E*		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.

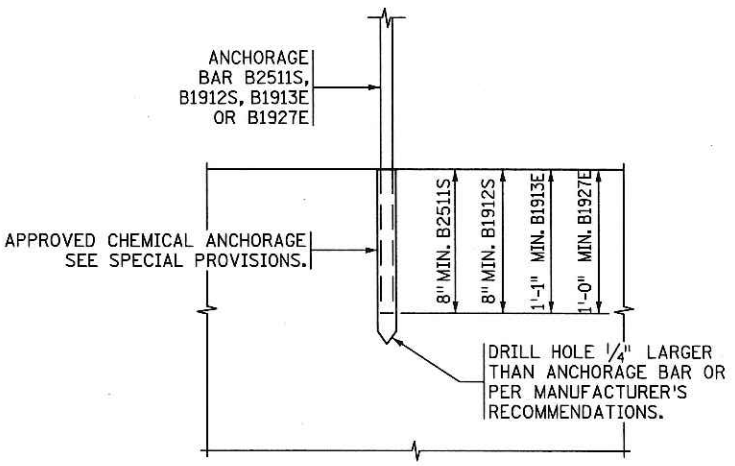
PICK POINTS OR LIFTING LOOP LOCATIONS SHALL BE APPROVED BY THE ENGINEER PRIOR TO FABRICATION.

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.

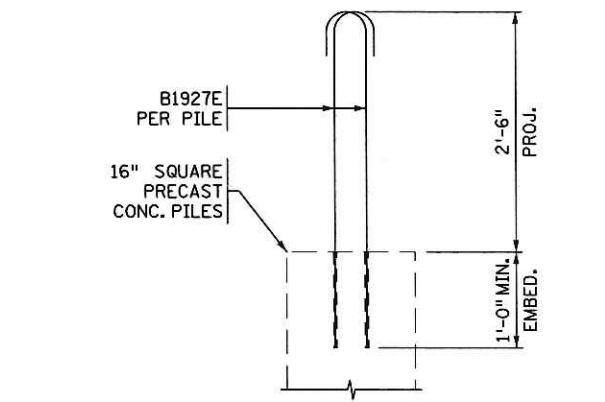
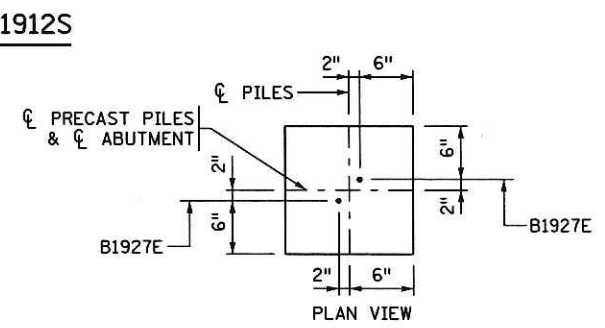
- ① PAYMENT FOR REINFORCEMENT SHALL BE CONSIDERED INCIDENTAL TO PAY ITEM "PRECAST ABUTMENT ELEMENT" UNLESS OTHERWISE NOTED.
- ② REINFORCEMENT IS INCLUDED IN PAY ITEM "REINFORCEMENT BARS (EPOXY COATED)".
- ③ NOT INCLUDED IN WEIGHT OF REINFORCEMENT. INCLUDED IN ITEM "ANCHORAGE TYPE REINF BARS (STAINLESS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

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

*-DENOTES ADDED REINFORCEMENT. ②



ANCHORAGE DETAIL



**DETAIL "V"
ELEVATION VIEW**

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

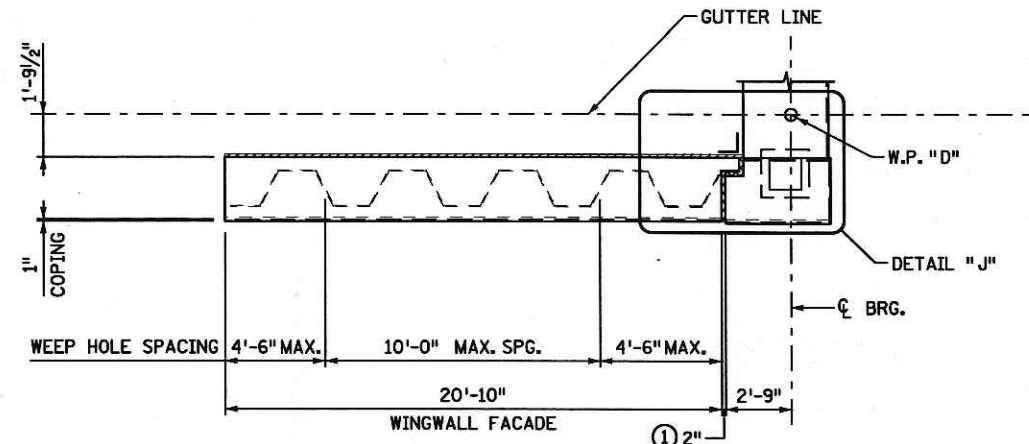
CERTIFIED BY *Angel M. Staples* 5/5/13
 LICENSED PROFESSIONAL ENGINEER DATE
 NAME: ANGEL M. STAPLES LIC. NO. 41656

TITLE: **EAST ABUTMENT REINFORCEMENT**

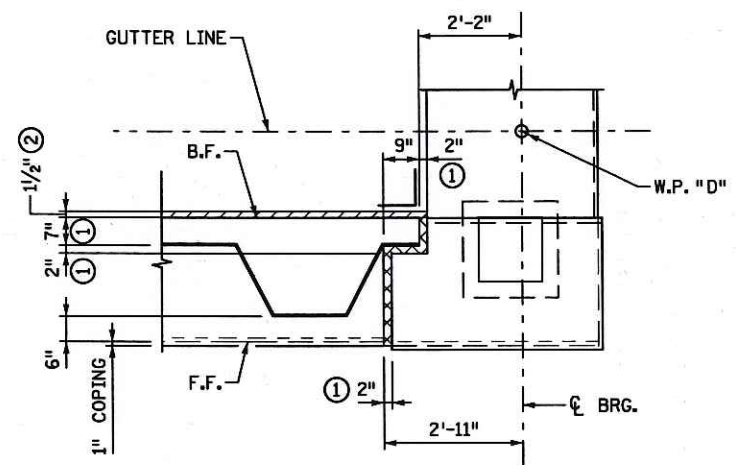
DES: MDH DR: TKB APPROVED: *8/5/13*
 CHK: NJV CHK: DCH
 SHEET NO. 24R OF 68 SHEETS BRIDGE NO. 62037

TIME : 9:26:30 AM
 PLOTTED : 01-FEB-2013
 PATH & FILENAME: Bridge/Final_Design/6/62037/Cadd-Plan/br62037_s1r

FILENAME: IP_PWP-d1489447-br62037_s1r.dgn



NORTHEAST WINGWALL PLAN



DETAIL "J"

NOTES:

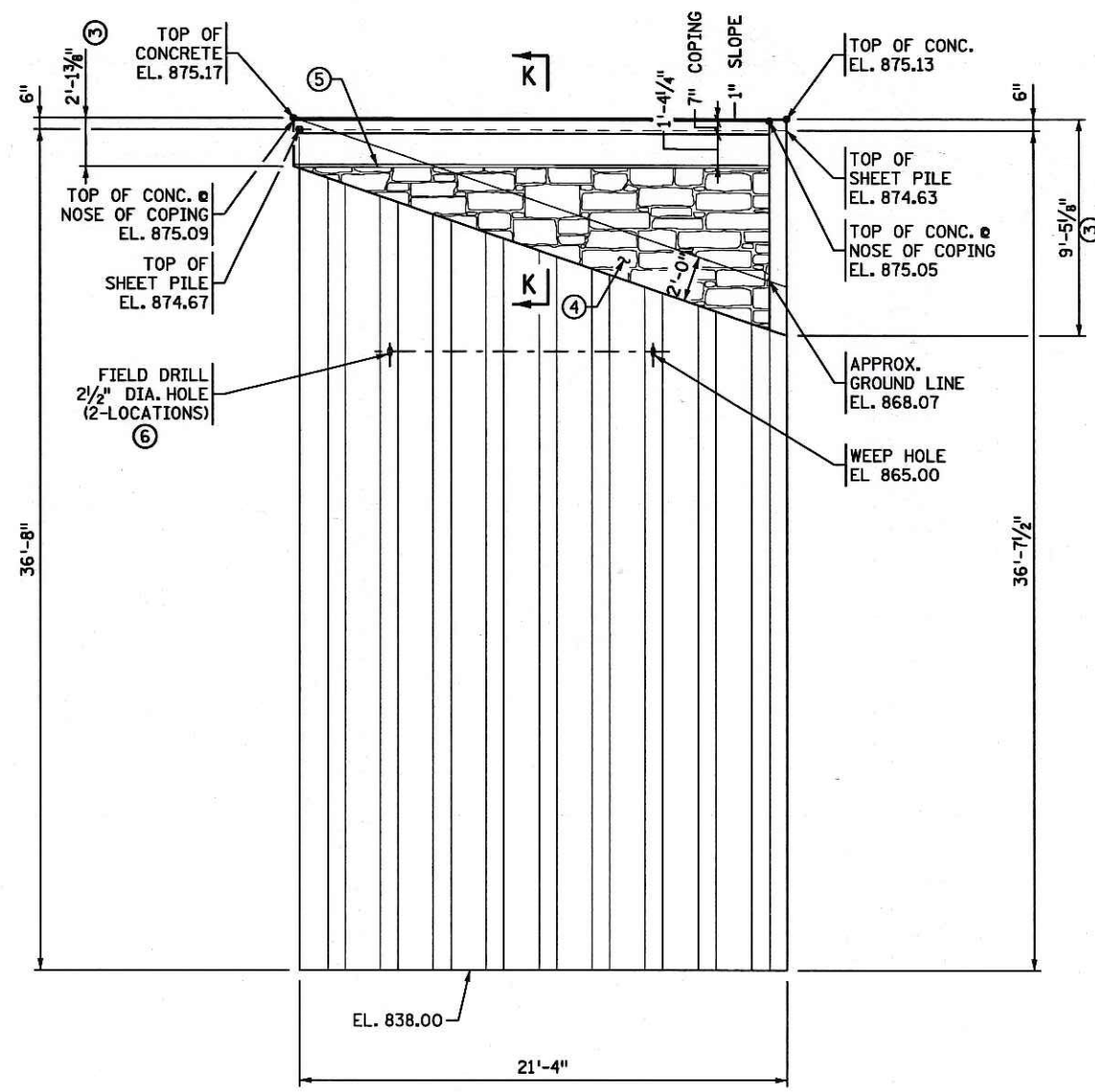
- ① 2" POLYSTYRENE TYPE A.
- ② 1 1/2" POLYSTYRENE TYPE B.
- ③ STRUCTURAL CONCRETE (3Y43).
- ④ ARCHITECTURAL CONCRETE TEXTURE (COURSED STONE). ARCHITECTURAL SURFACE FINISH (MULTI COLOR). ANTI-GRAFFITI COATING.
- ⑤ SEE DETAIL "H" ON SHEET NO. 20 FOR REVEAL.
- ⑥ DRIVE SHEET PILE 8'-0" AND CONSTRUCT 2 1/2" 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:

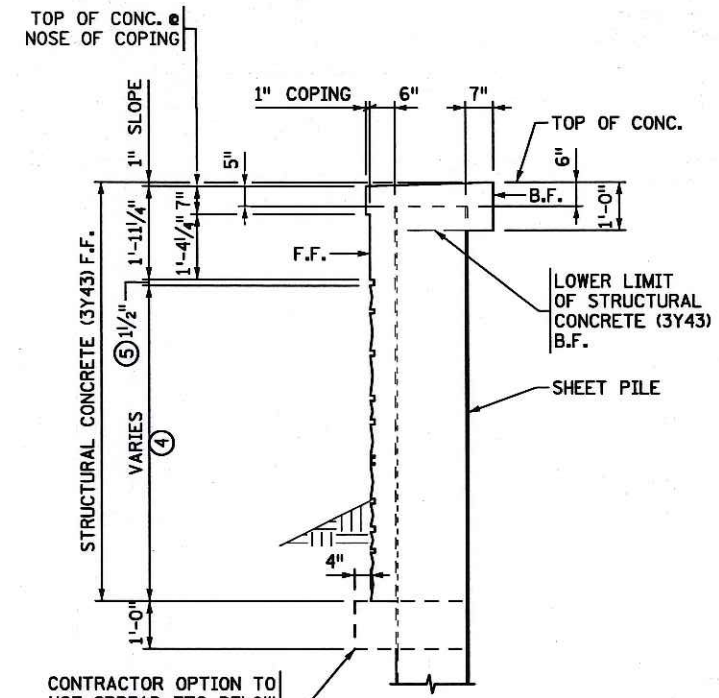
SHEET PILE MINIMUM EFFECTIVE SECTION MODULUS
 = 38.72 IN³/FT. FOR A-328 STEEL F_y = 39 ksi
 = 29.78 IN³/FT. FOR A-572 STEEL F_y = 50 ksi
 SHEET PILE MINIMUM MOMENT OF INERTIA
 = 413.01⁴/FT.

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

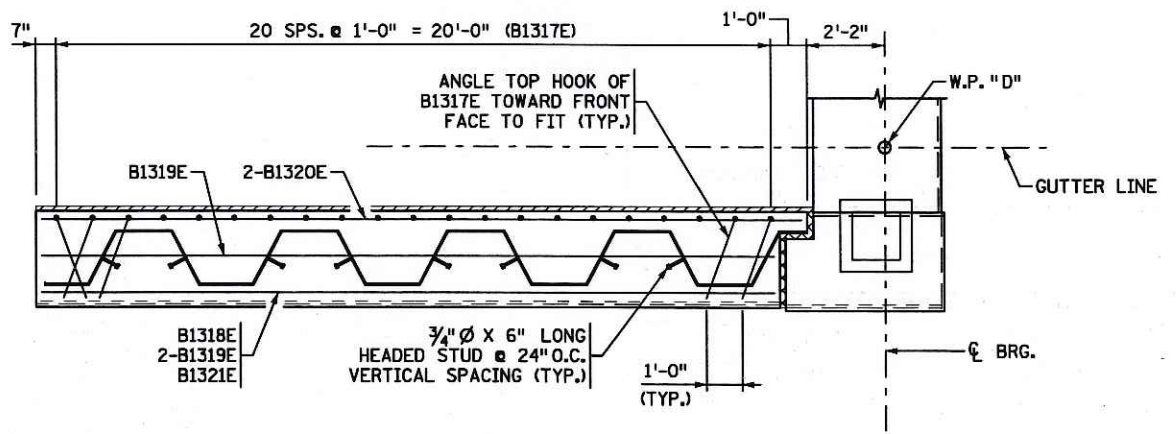
TITLE: NORTHEAST WINGWALL GEOMETRICS

DES:	MDH	DR:	TKB	APPROVED:
CHK:	NJV	CHK:	DCH	<i>2/1/13</i>
SHEET NO. 25 OF 68 SHEETS				

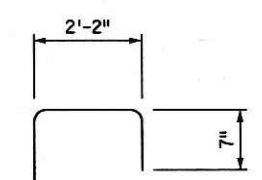
BRIDGE NO. 62037

TIME : 9:28:17 AM
 PLOTTED : 01-FEB-2013
 PATH & FILENAME: Bridge/Final_Design/6/62037/Cadd-Plan/br62037_str

FILENAME: IP_PWP-d1489447-br62037_str.dgn



NORTHEAST WINGWALL PLAN



B1317E

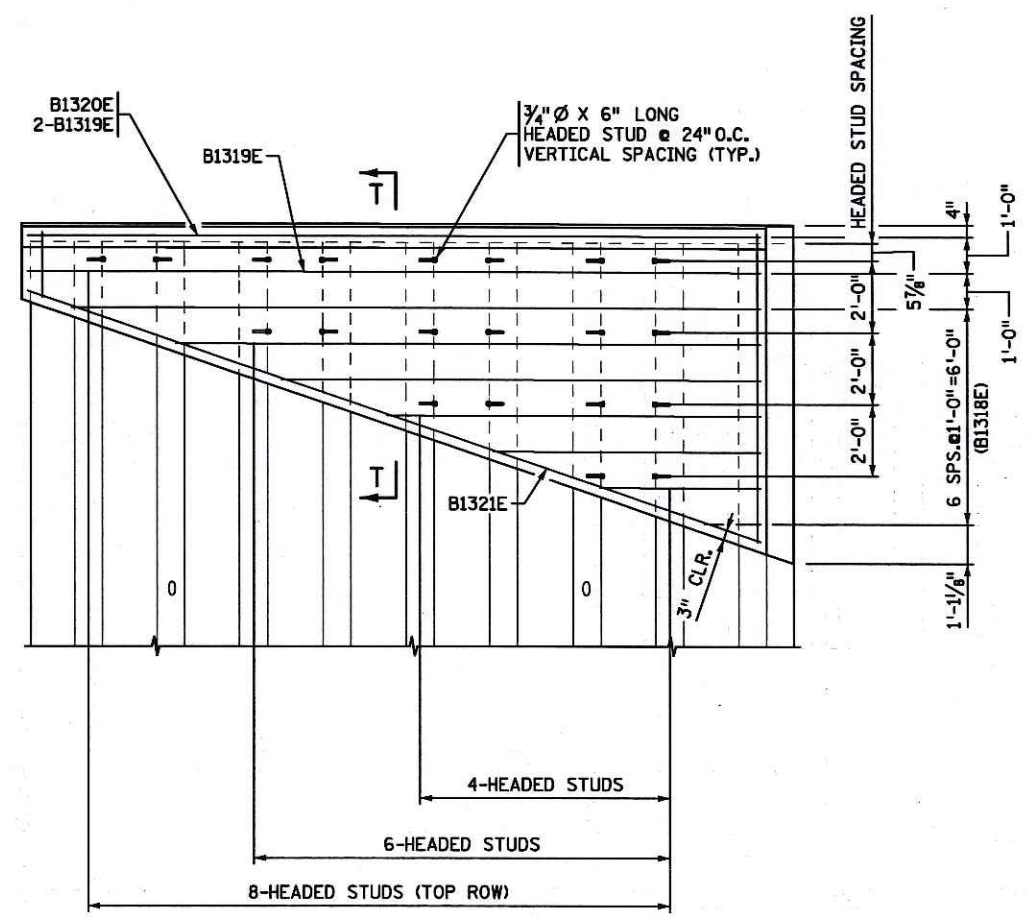
BILL OF REINFORCEMENT FOR NORTHEAST WINGWALL

BAR	NO.	LENGTH	SHAPE	LOCATION
B1317E	1 SET OF 21	4'-6" TO 11'-3"	U	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

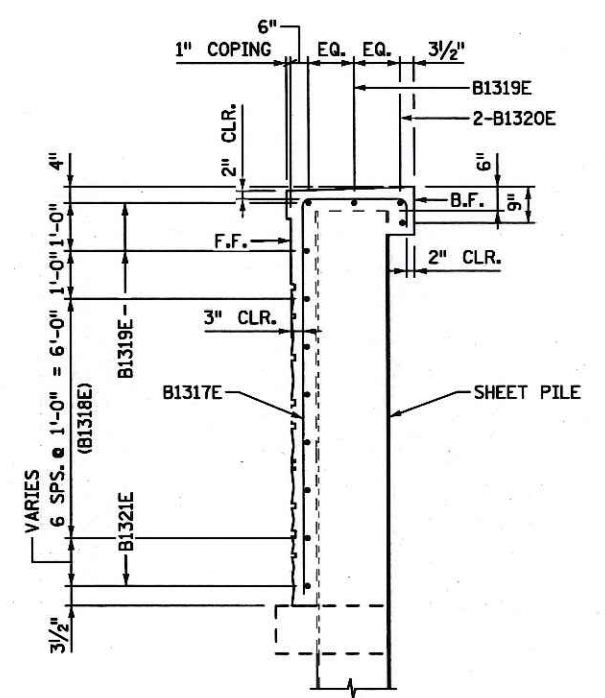
STEEL SHEET PILING (PERMANENT)	782 SQ. FT.
WINGWALL FACADE	120 SQ. FT.
ANTI-GRAFFITI COATING	76 SQ. FT.
ARCH SURFACE FINISH (MULTI COLOR)	76 SQ. FT.
ARCH CONC. TEXTURE (COURSED STONE)	76 SQ. FT.
STRUCTURAL CONCRETE (3Y43)	8 CU. YD.
REINFORCEMENT BARS (EPOXY COATED)	250 POUND
SHEAR STUDS	20 EACH
1/2"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

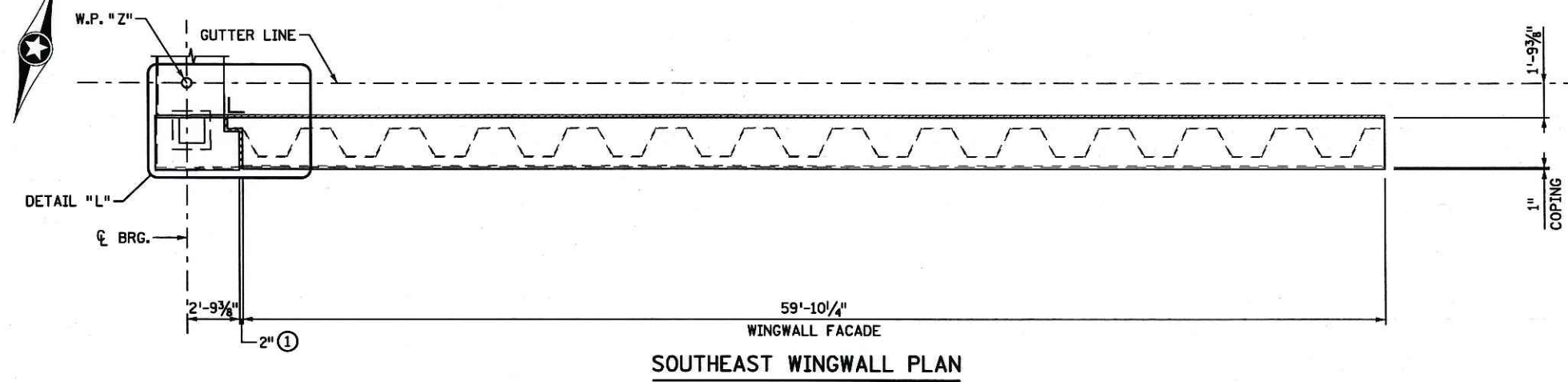
TITLE: NORTHEAST WINGWALL REINFORCEMENT

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

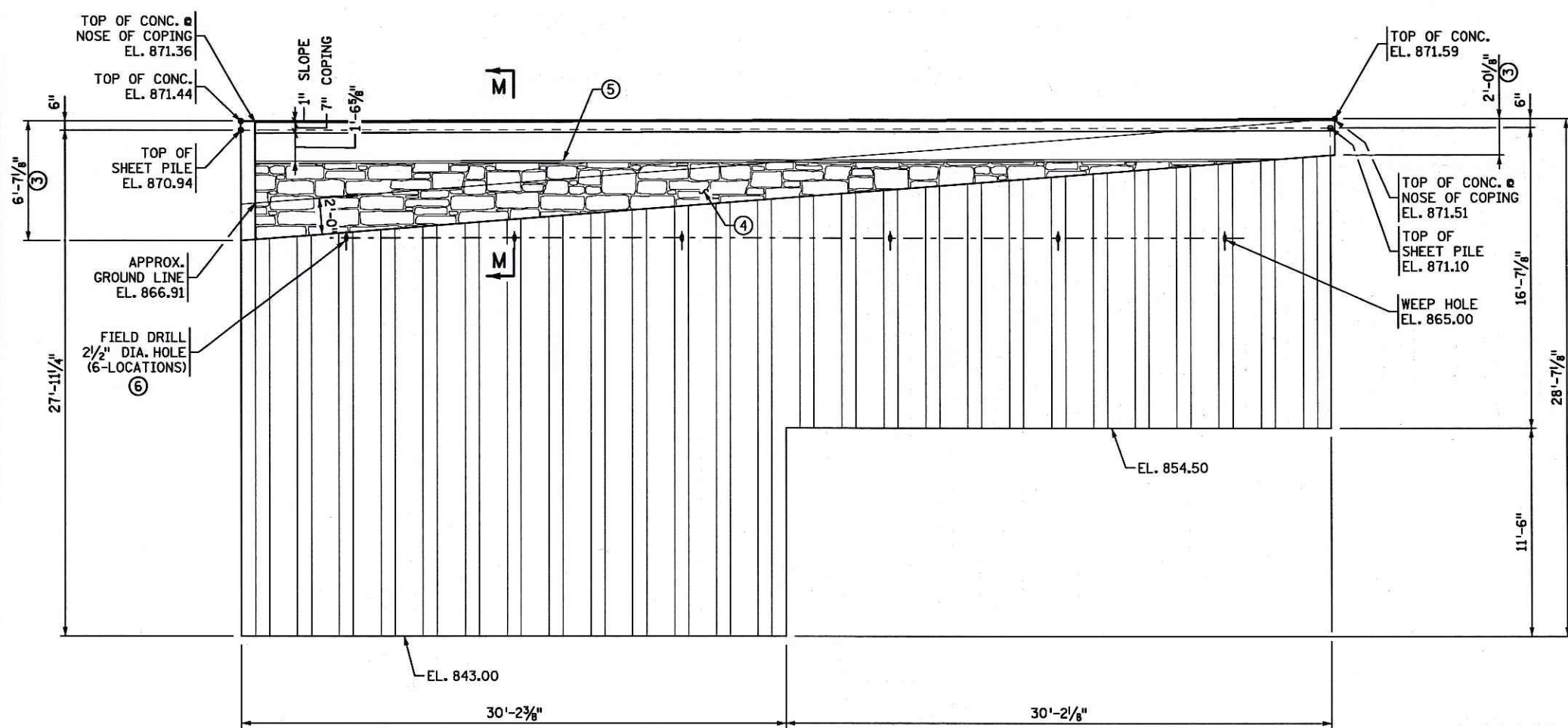
BRIDGE NO. 62037

TIME : 9:26:36 AM
 PLOTTED : 01-FEB-2013
 PATH & FILENAME: Bridge/Final_Design/6/62037/Cadd-Plan/br62037_str

FILENAME: IP_PWP-d1489447-br62037_str.dgn

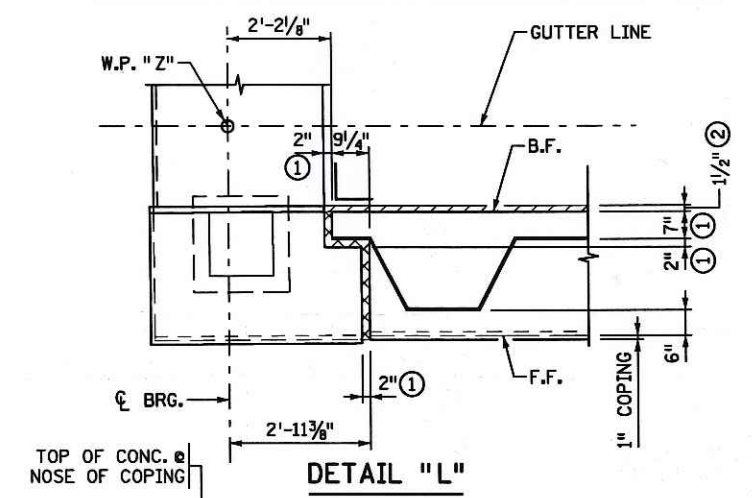


SOUTHEAST WINGWALL PLAN

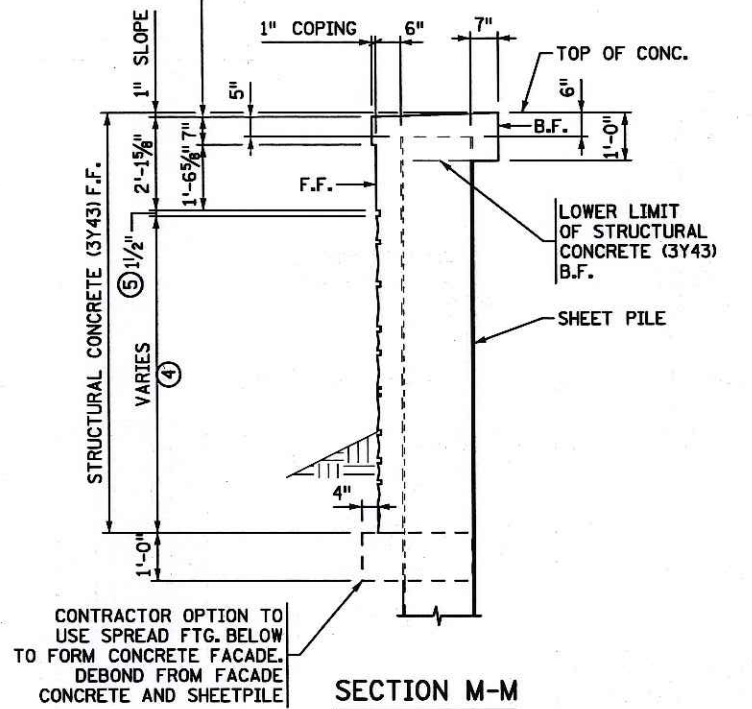


SOUTHEAST WINGWALL ELEVATION

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

TITLE: SOUTHEAST WINGWALL GEOMETRICS

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

SHEET NO. 27 OF 68 SHEETS

BRIDGE NO. 62037

TIME : 9:26:24 AM
 PLOTTED : 01-FEB-2013
 PATH & FILENAME: Bridge/Final_Design/6/62037/Cadd-Plan/br62037_str

FILENAME: IP_PWP-d1489447-br62037_str.dgn

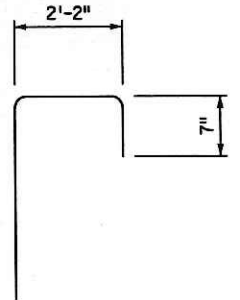
SUMMARY OF QUANTITIES FOR SOUTHEAST WINGWALL

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.

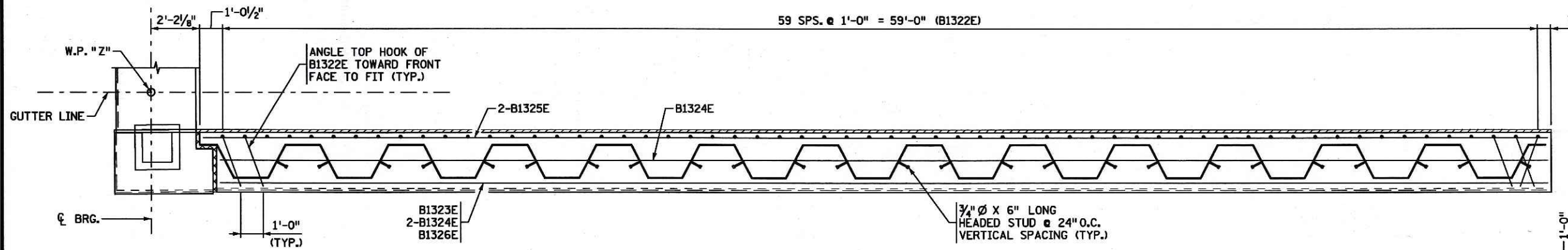
- ① PAYMENT SHALL BE CONSIDERED INCIDENTAL TO PAY ITEM "WINGWALL FACADE".
- ② PAYMENT SHALL BE CONSIDERED INCIDENTAL TO PAY ITEM "STEEL SHEET PILING (PERMANENT)".

BILL OF REINFORCEMENT FOR SOUTHEAST WINGWALL

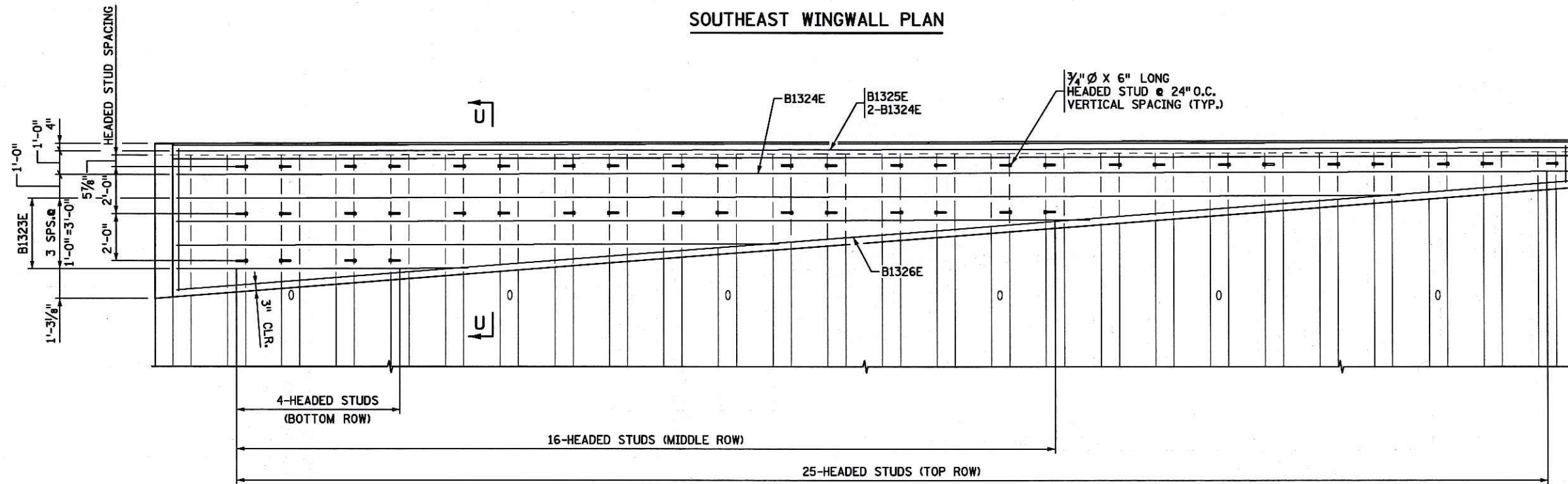
BAR	NO.	LENGTH	SHAPE	LOCATION
B1322E	1 SET OF 60	4'-3" TO 8'-9"	U	SE WINGWALL VERT.
B1323E	1 SET OF 4	12'-4" TO 52'-0"	—	SE WINGWALL HORIZ.
B1324E	3	59'-6"	—	SE WINGWALL HORIZ.
B1325E	2	60'-0"	—	SE WINGWALL HORIZ.
B1326E	1	59'-7"	—	SE WINGWALL HORIZ.



B1322E

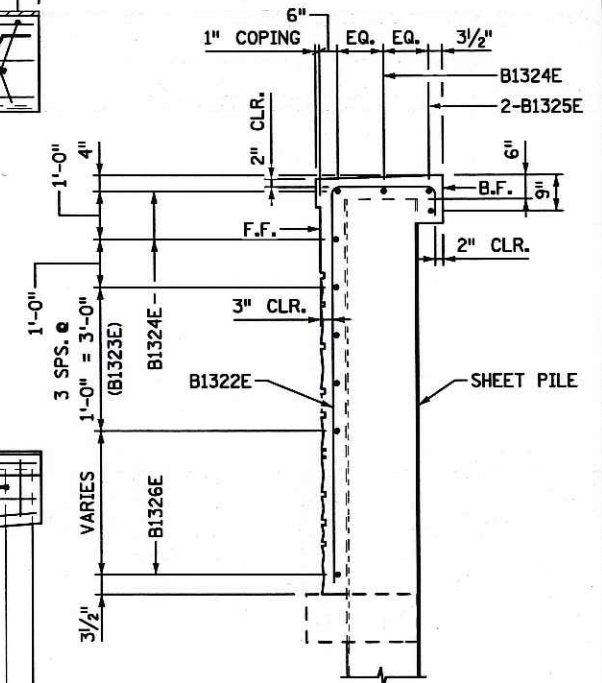


SOUTHEAST WINGWALL PLAN



SOUTHEAST WINGWALL ELEVATION

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



SECTION U-U

NOTES:

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

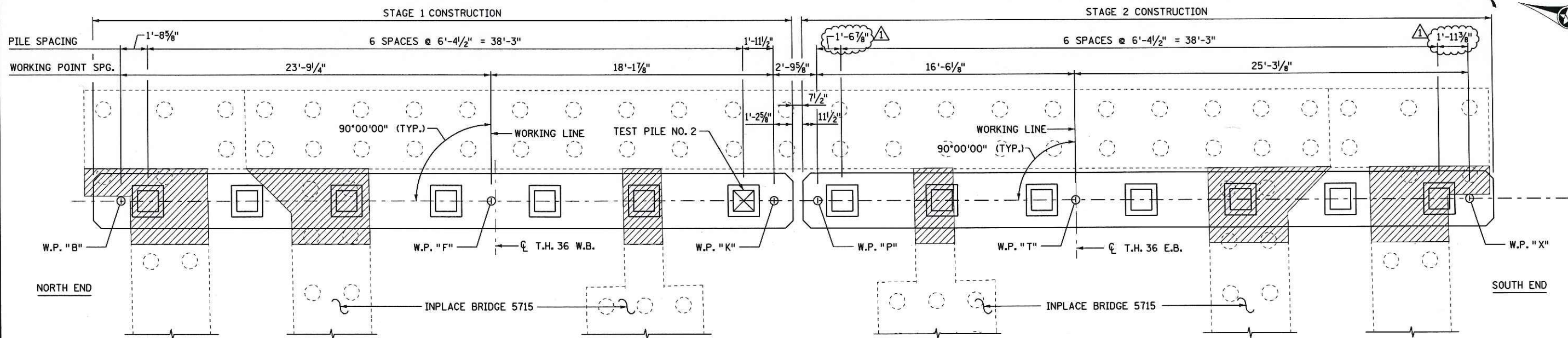
CERTIFIED BY *Angel M. Staples* 2/1/13
 LICENSED PROFESSIONAL ENGINEER DATE
 NAME: ANGEL M. STAPLES LIC. NO. 41656

TITLE: **SOUTHEAST WINGWALL REINFORCEMENT**

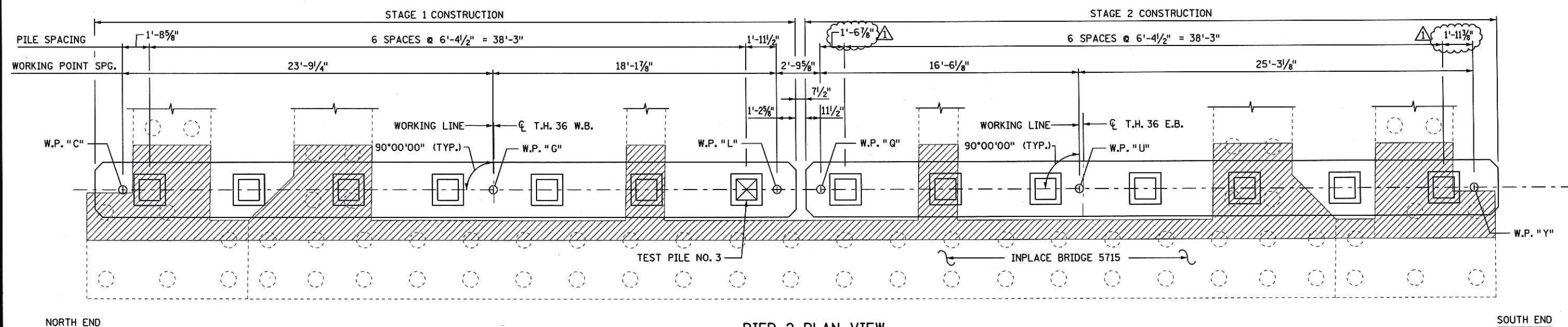
DES: MDH DR: TKB APPROVED: *2/1/13*
 CHK: NJV CHK: DCH
 SHEET NO. 28 OF 68 SHEETS

BRIDGE NO. 62037

TIME : 3:04:47 PM
 PLOTTED : 02-AUG-2013
 PATH & FILENAME: Bridge/Final_Design/6/62037/Cadd-Plan/Bridge/62037_Plr.dgn
 FILENAME: IP_PWP-d/489447/B62037_Plr.dgn



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 MDOT 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		
DATE	DESCRIPTION	APPROVED BY
5-21-2013	REVISED DIMENSIONS	AMS

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

TITLE: PIER PILE LAYOUT

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. 29R OF 68 SHEETS

**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
① 16" SQUARE PRECAST CONC. PILING DELIVERED	780 LIN. FT.
① 16" SQUARE PRECAST CONC. PILING DRIVEN	780 LIN. FT.
① 16" SQUARE PRECAST CONC. TEST PILE 65 FT. LONG	2 EACH
⑤ 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

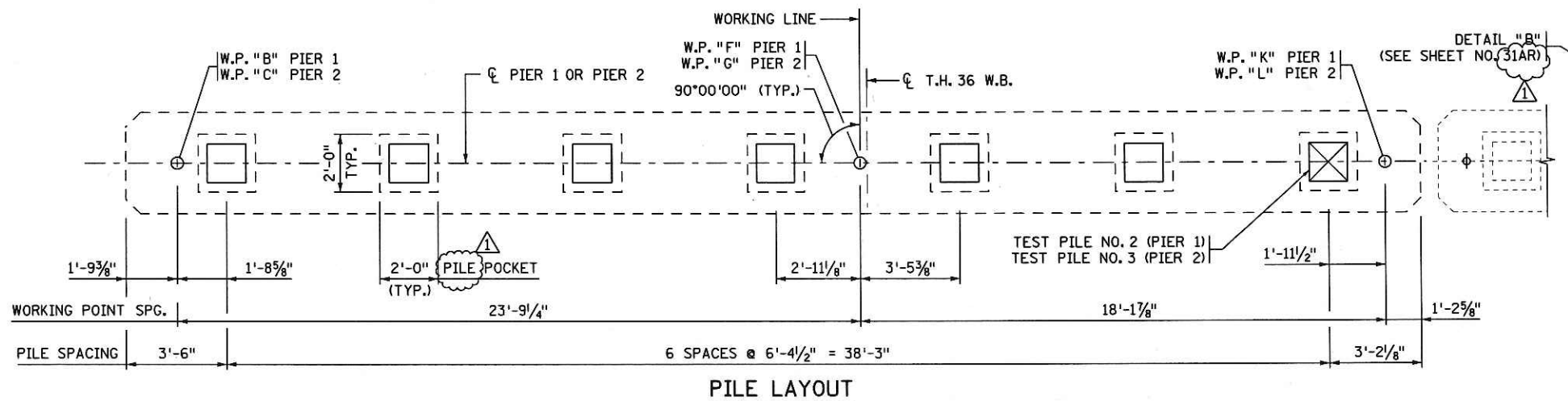
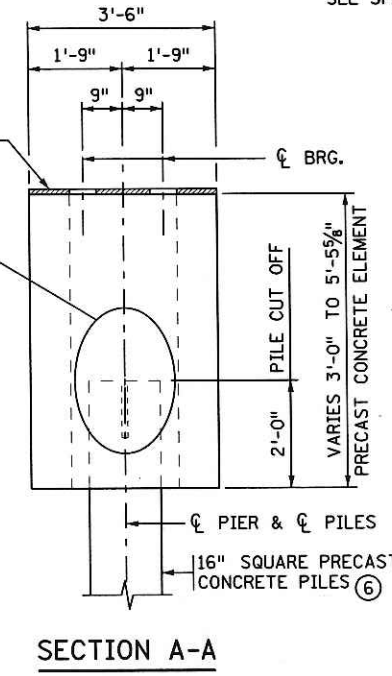
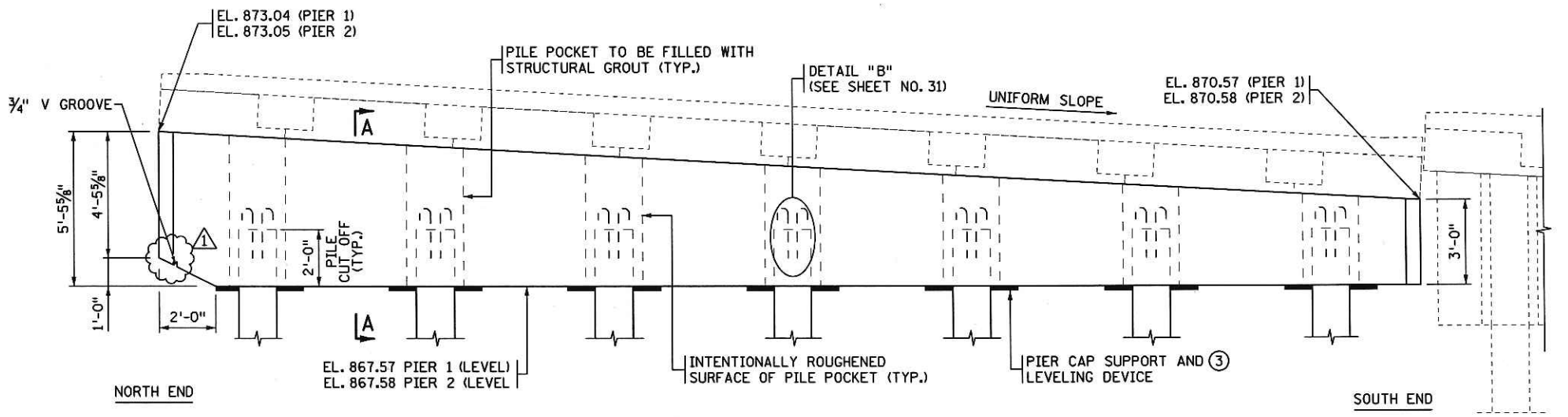
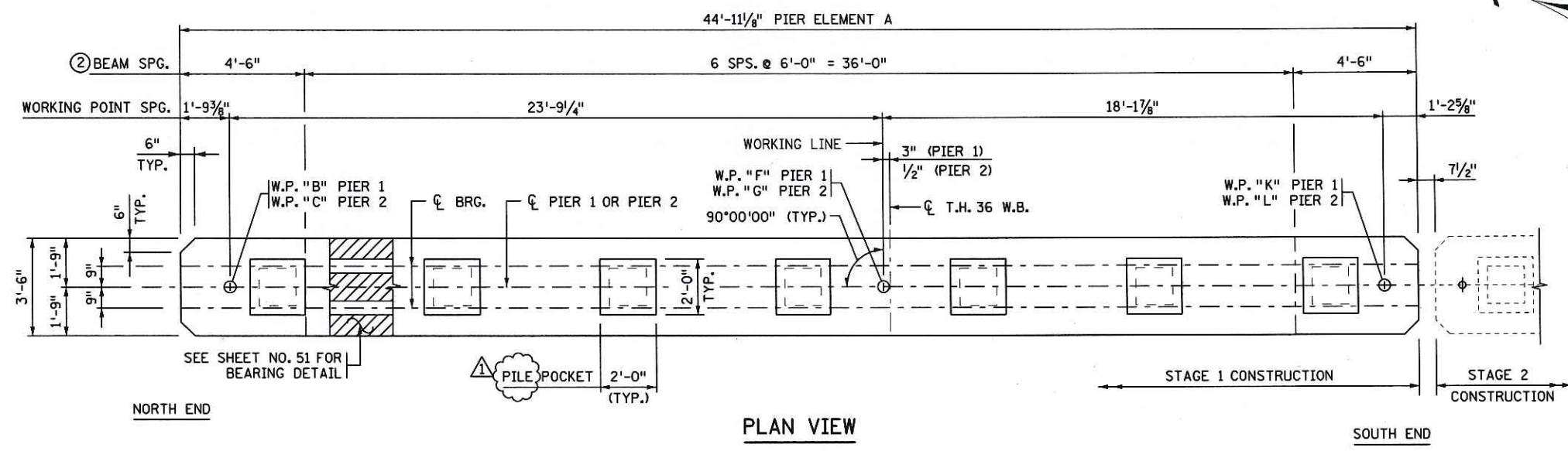
*BASED ON STRENGTH I LOAD COMBINATION

- 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

- * $R_n = (\text{FACTORED DESIGN LOAD}) / \phi_{dyn}$
- 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 1 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.



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

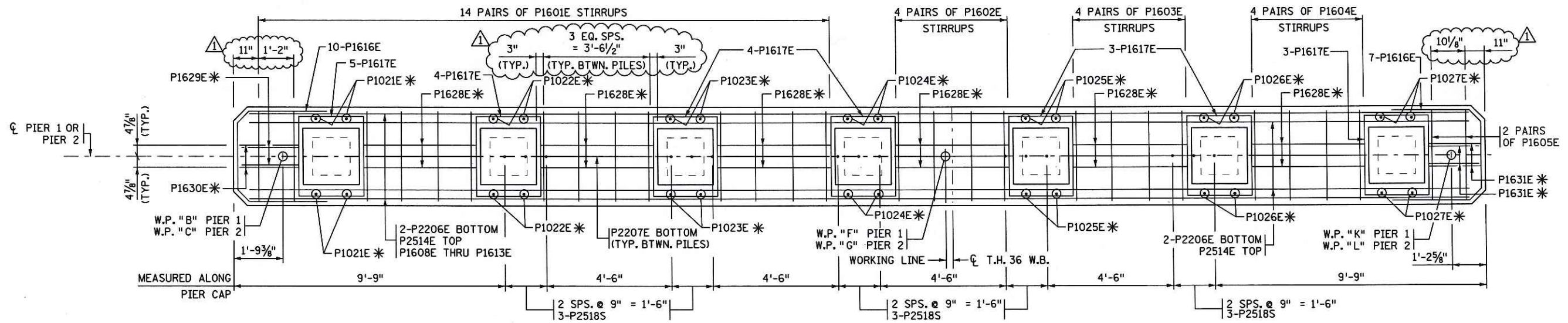
TITLE: PIER 1 AND PIER 2 GEOMETRICS
STAGE 1 CONSTRUCTION

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

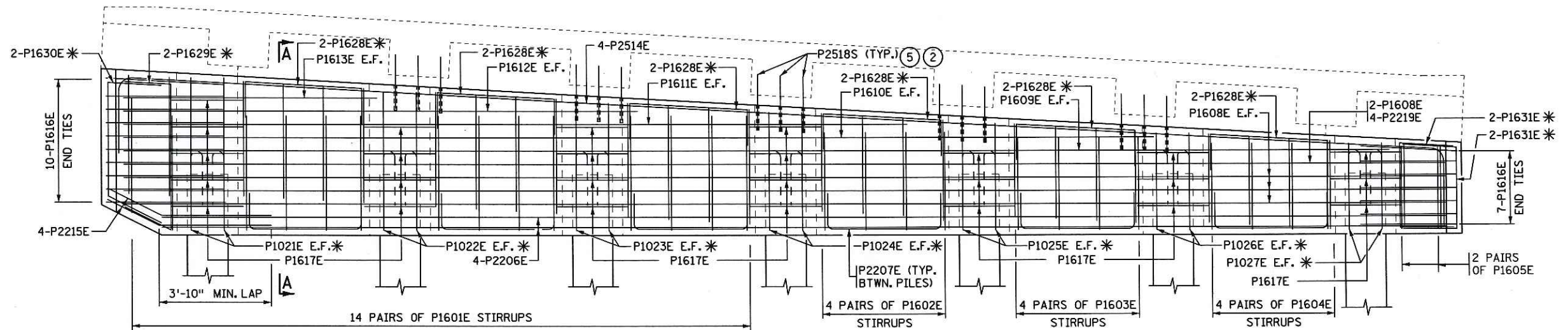
BRIDGE NO. 62037
SHEET NO. 30R OF 68 SHEETS

TIME: 3:05:30 PM
 PLOTTED: 02-AUG-2013
 PATH & FILENAME: Bridge/Final_Design/6/62037/Cadd-Plan/Br62037_Plr.dgn
 FILENAME: IP_PWP-d1489447\Br62037_Plr.dgn

TIME : 3:06:09 PM
 PLOTTED : 02-AUG-2013
 PATH & FILENAME: Bridge/Final_Design/6/62037/Cadd/Plan/Br62037_P1r.dgn
 FILENAME: IP_PWP-d1489447-Br62037_P1r.dgn



PLAN VIEW



ELEVATION VIEW

NOTES:
 * DENOTES ADDED REINFORCING.
 SEE SHEET NO. 31AR 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 DATE
 NAME: ANGEL M. STAPLES LIC. NO. 41656

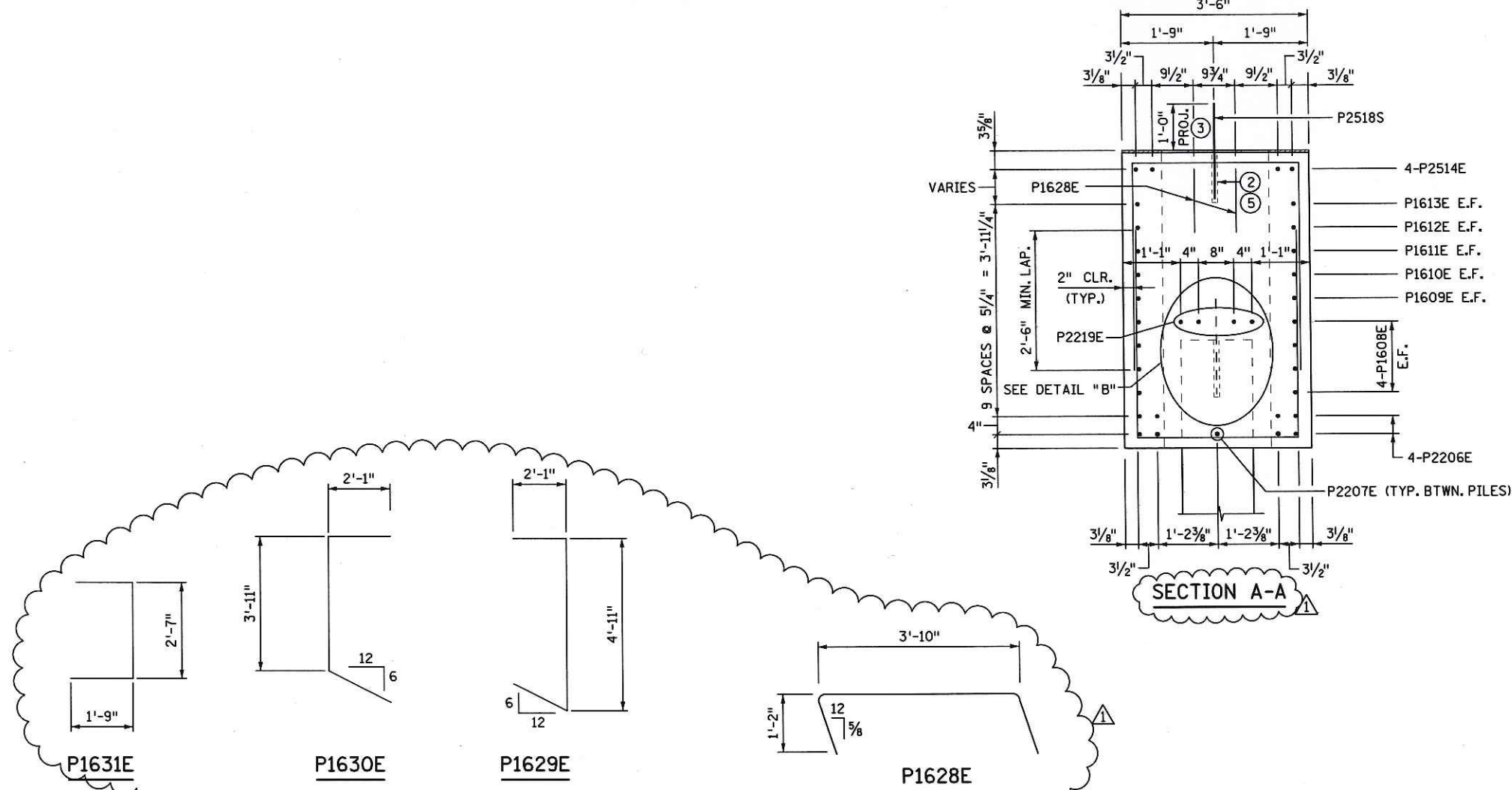
TITLE:
**PIER 1 AND PIER 2 REINFORCEMENT
 STAGE 1 CONSTRUCTION**

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

BRIDGE NO.
 62037

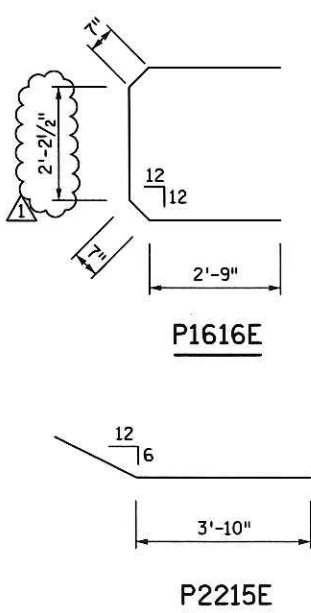
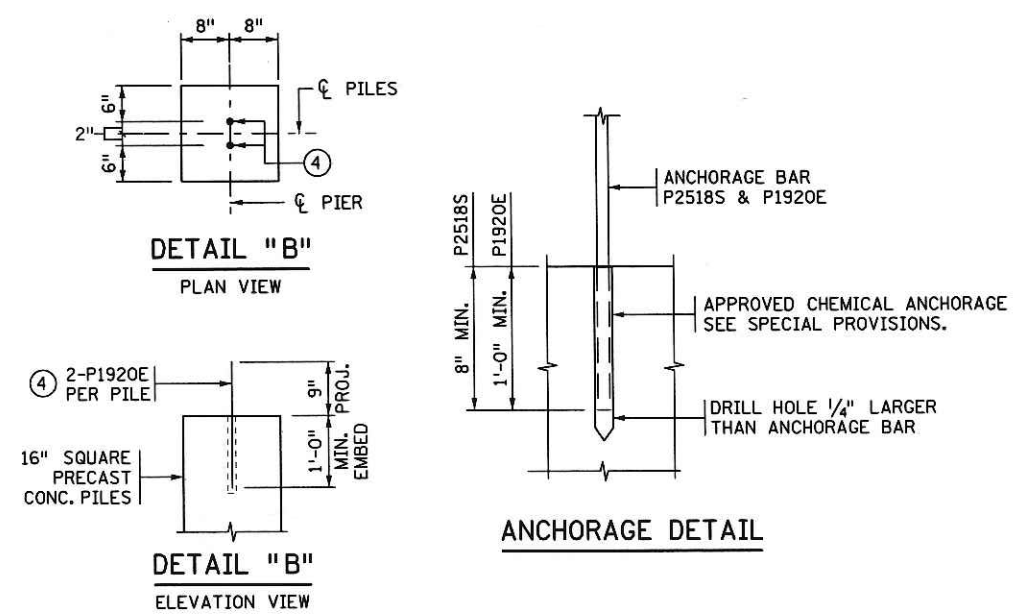
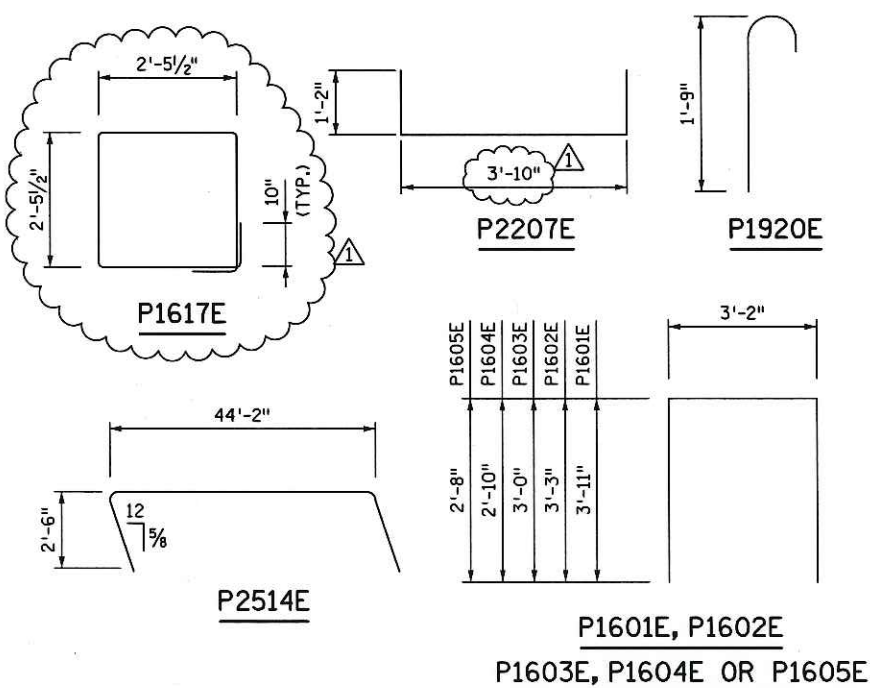
SHEET NO. 31R OF 68 SHEETS

TIME : 3:06:40 PM
 PLOTTED : 02-AUG-2013
 PATH & FILENAME: Bridge/Final_Design/6/62037/Cad/Plan/Br62037_P1r.dgn
 FILENAME: IP_PWP-d/489447/Br62037_P1r.dgn



① BILL OF REINFORCEMENT FOR TWO PIERS - STAGE 1

BAR	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'-4"	—	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 DWEL
P2219E	8	43'-9"	—	HORIZONTAL
P1920E	28	2'-5"	—	ANCHORAGE DWEL
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:**
- 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 1/4" Ø HOLES FOR NO. 25 ANCHORAGES. USE APPROVED GROUT. 8" MIN. EMBEDMENT. INCLUDED IN PAY ITEM "ANCHORAGES TYPE REINF BARS (STAINLESS STEEL)".
 - WRAP PROJECTED PART OF DWEL 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

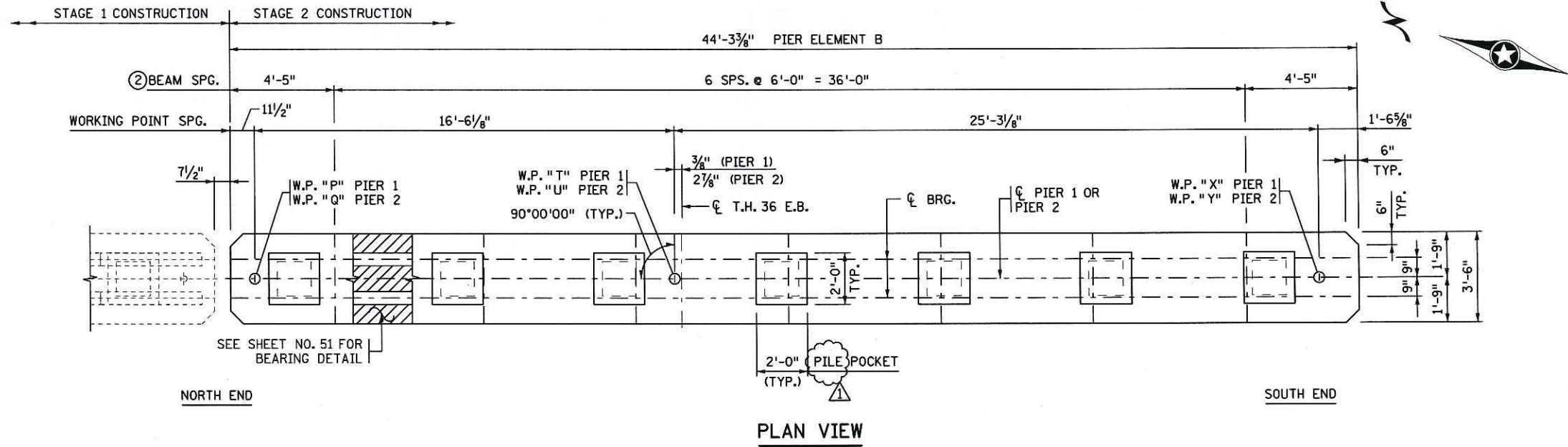
CERTIFIED BY Angel M. Staples 8/5/13
 LICENSED PROFESSIONAL ENGINEER DATE
 NAME: ANGEL M. STAPLES LIC. NO. 41656

TITLE: PIER 1 AND PIER 2 REINFORCEMENT STAGE 1 CONSTRUCTION

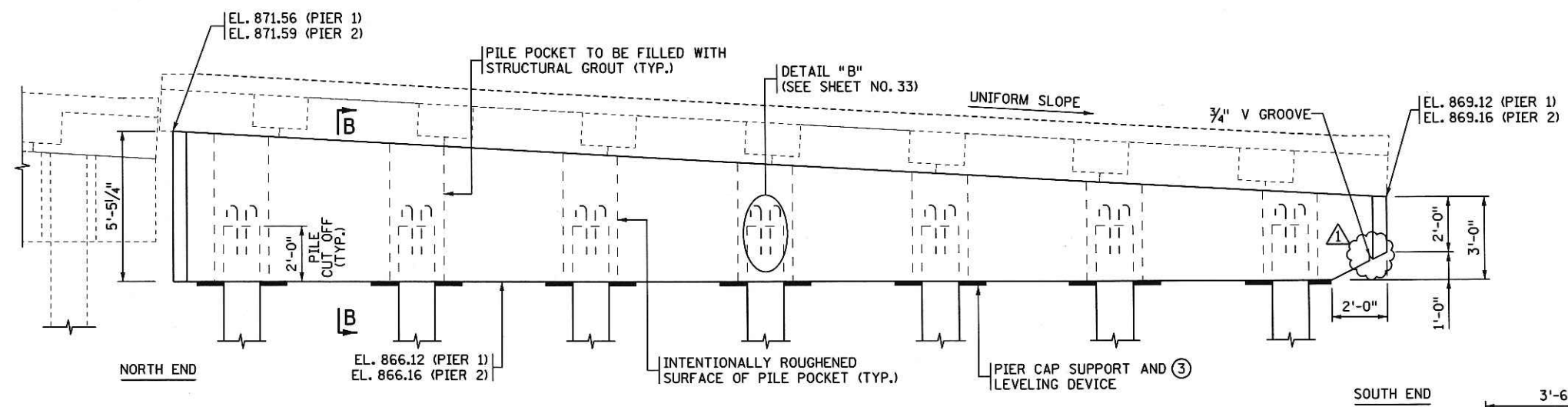
DES: M.D.H./N.J.V. DR: B.T.N. APPROVED: 8/5/13
 CHK: P.J.K. CHK: N.J.V.
 BRIDGE NO. 62037
 SHEET NO. 31AR OF 68 SHEETS

TIME : 3:07:18 PM
 PLOTTED : 02-AUG-2013
 PATH & FILENAME: Bridge/Final_Design/6/62037/Cadd/Plan/Br62037_Plr.dgn

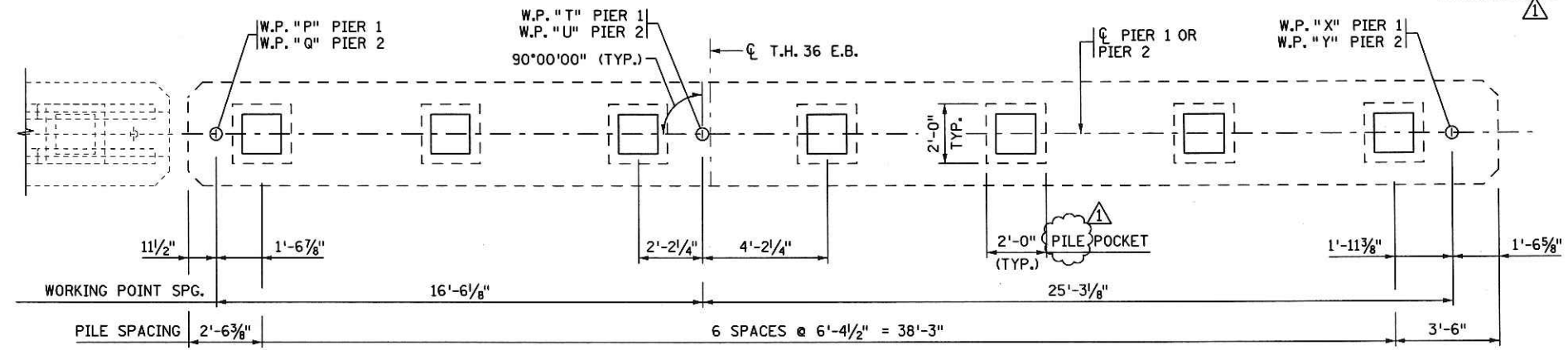
FILENAME: IP_PWP-dj489447Br62037_Plr.dgn



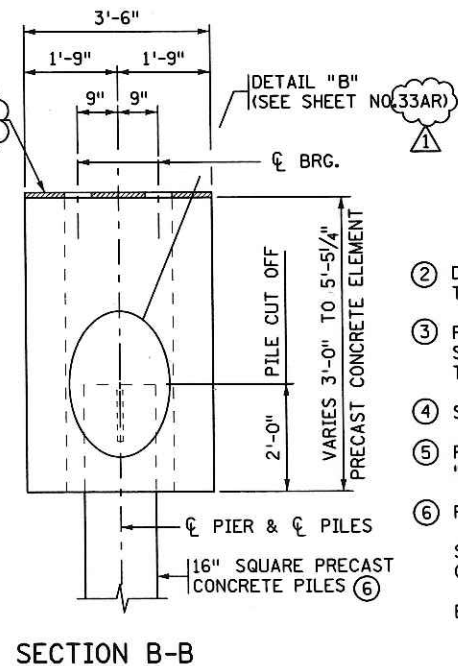
PLAN VIEW



ELEVATION VIEW



PILE LAYOUT



SECTION B-B

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

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	1846

*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.

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

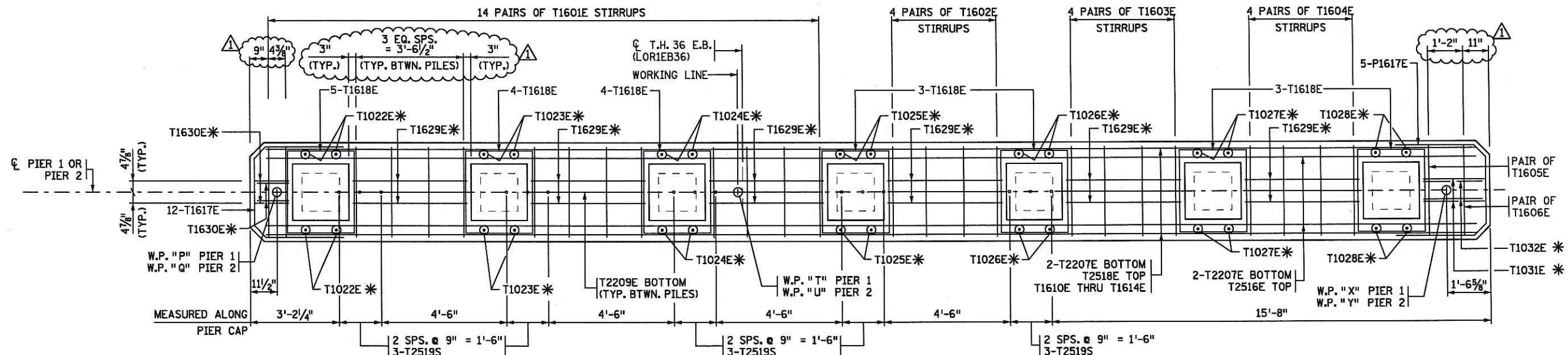
TITLE:
 PIER 1 AND PIER 2 GEOMETRICS
 STAGE 2 CONSTRUCTION

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. 32R OF 68 SHEETS

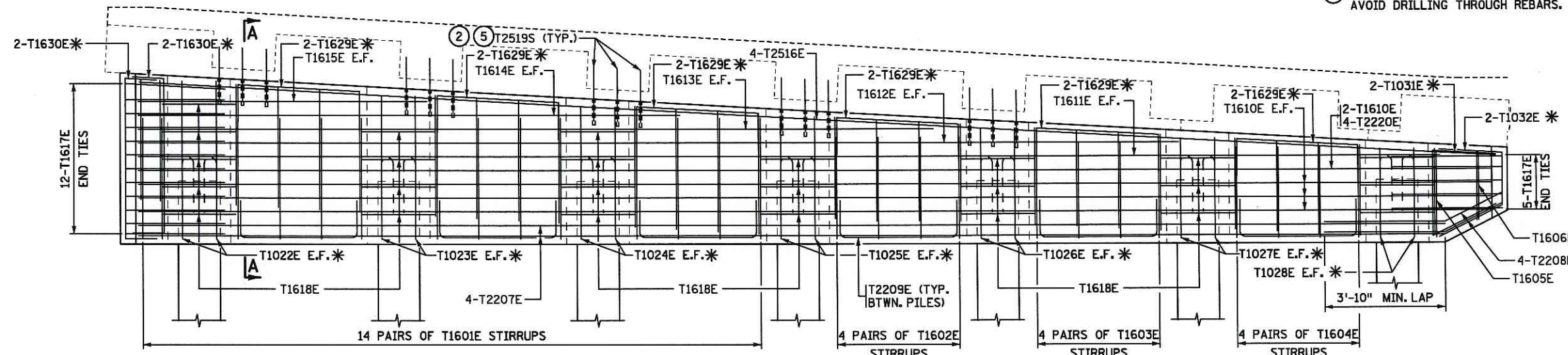
TIME : 2:57:39 PM
 PLOTTED : 29-MAY-2013
 PATH & FILENAME: Bridge/Final_Design/6/62037/Cadd/Plan/Br62037_Plr.dgn

FILENAME: IP_PWP-d148944\Br62037_Plr.dgn



PLAN VIEW

⑤ FIELD LOCATE ANCHORAGES TO AVOID DRILLING THROUGH REBARS.

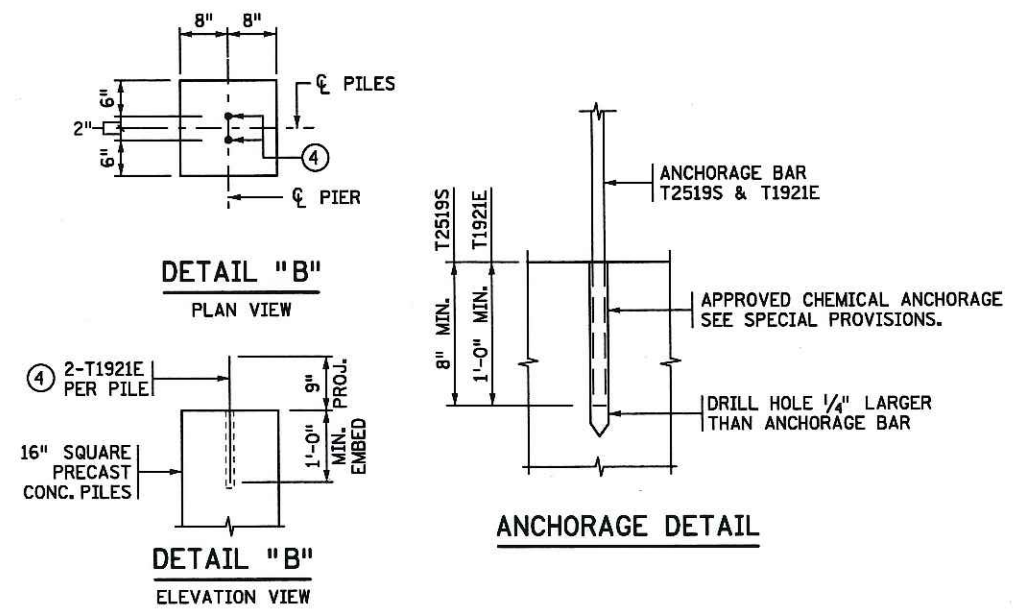
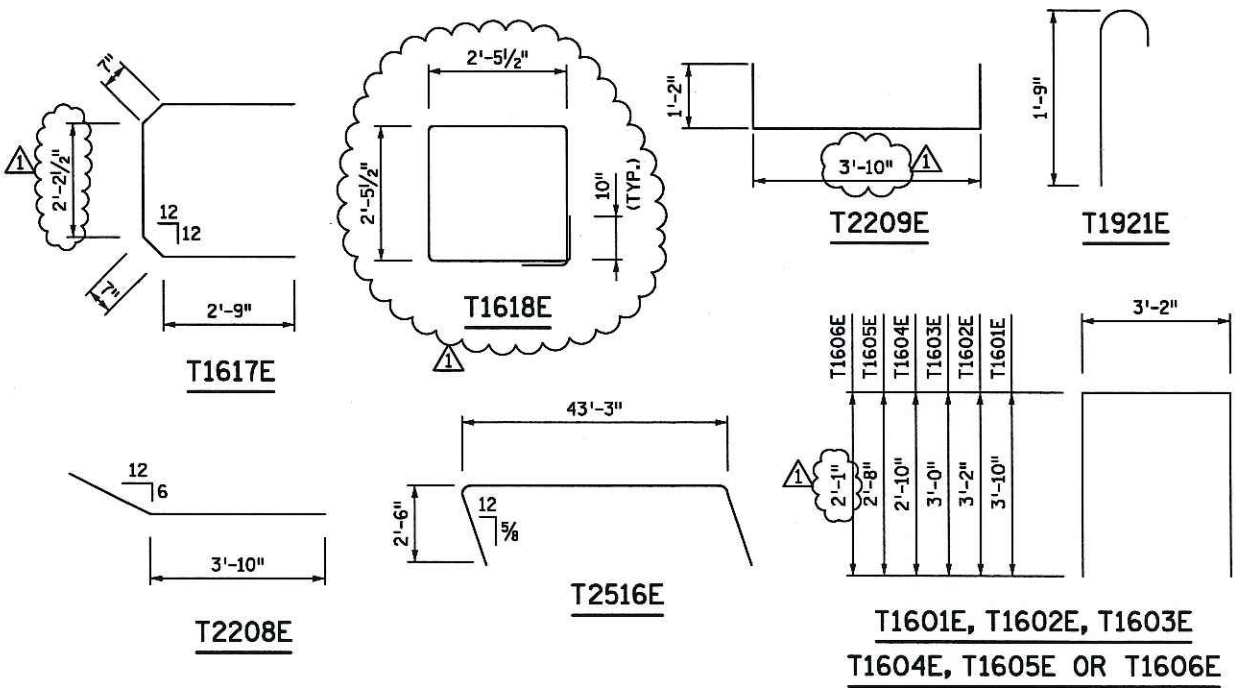
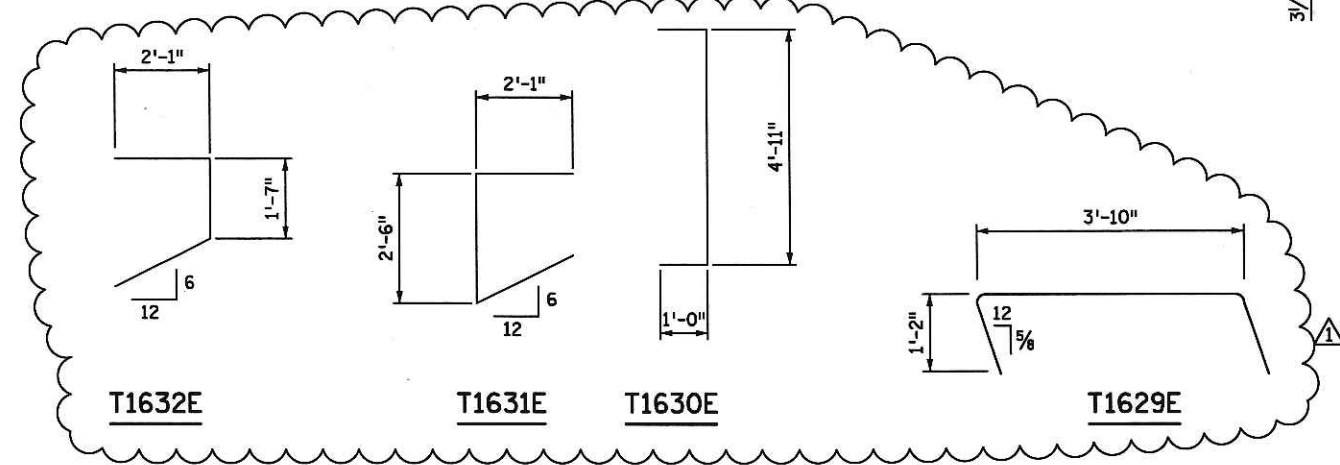
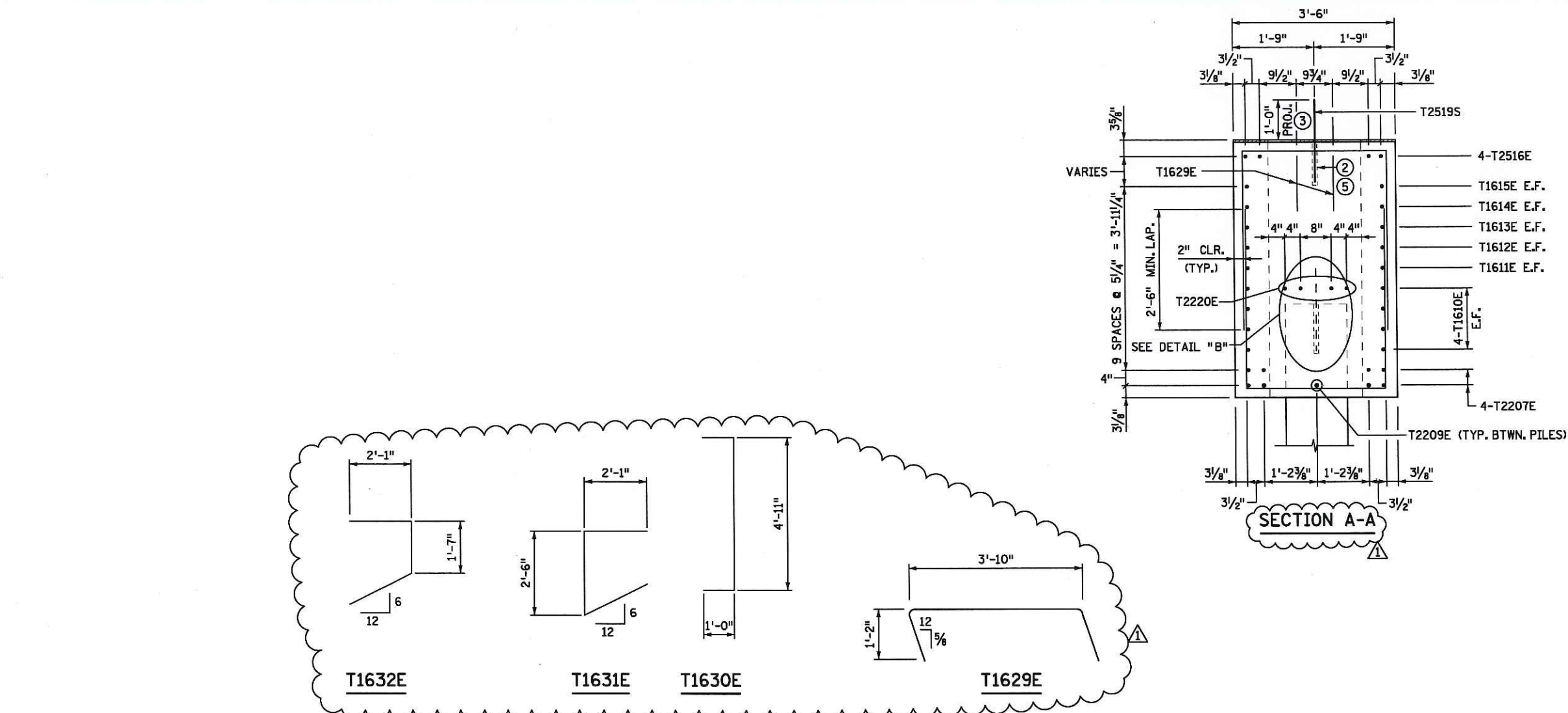


ELEVATION VIEW

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

REVISION			APPROVED BY	CERTIFIED BY	DATE	TITLE:	DES: M.D.H/N.J.V.	DR: B.T.N.	APPROVED:	BRIDGE NO.
DATE	DESCRIPTION	CHK: P.J.K.								
5-21-2013	ADDED REINFORCING FOR EASE OF FABRICATION	AMS	ANGEL M. STAPLES	8/5/13	08/05/2013	PIER 1 AND PIER 2 REINFORCEMENT STAGE 2 CONSTRUCTION			8/5/13	62037
							SHEET NO. 33R OF 68 SHEETS			

TIME : 2:57:50 PM
 PLOTTED : 29-MAY-2013
 PATH & FILENAME: Bridge/Final_Design/6/62037/Cadd-Plan/Br62037_Pir.dgn
 FILENAME: IP_PWP.dwg/48944/Br62037_Pir.dgn



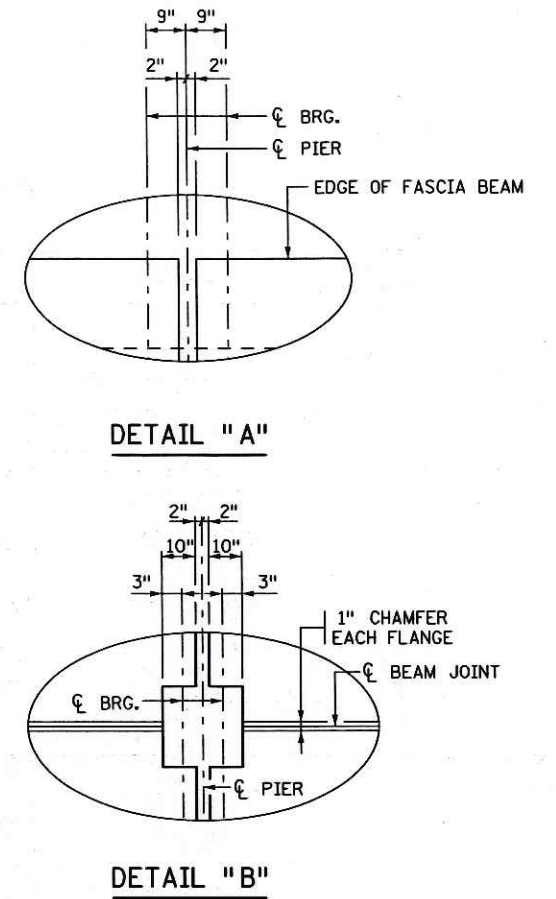
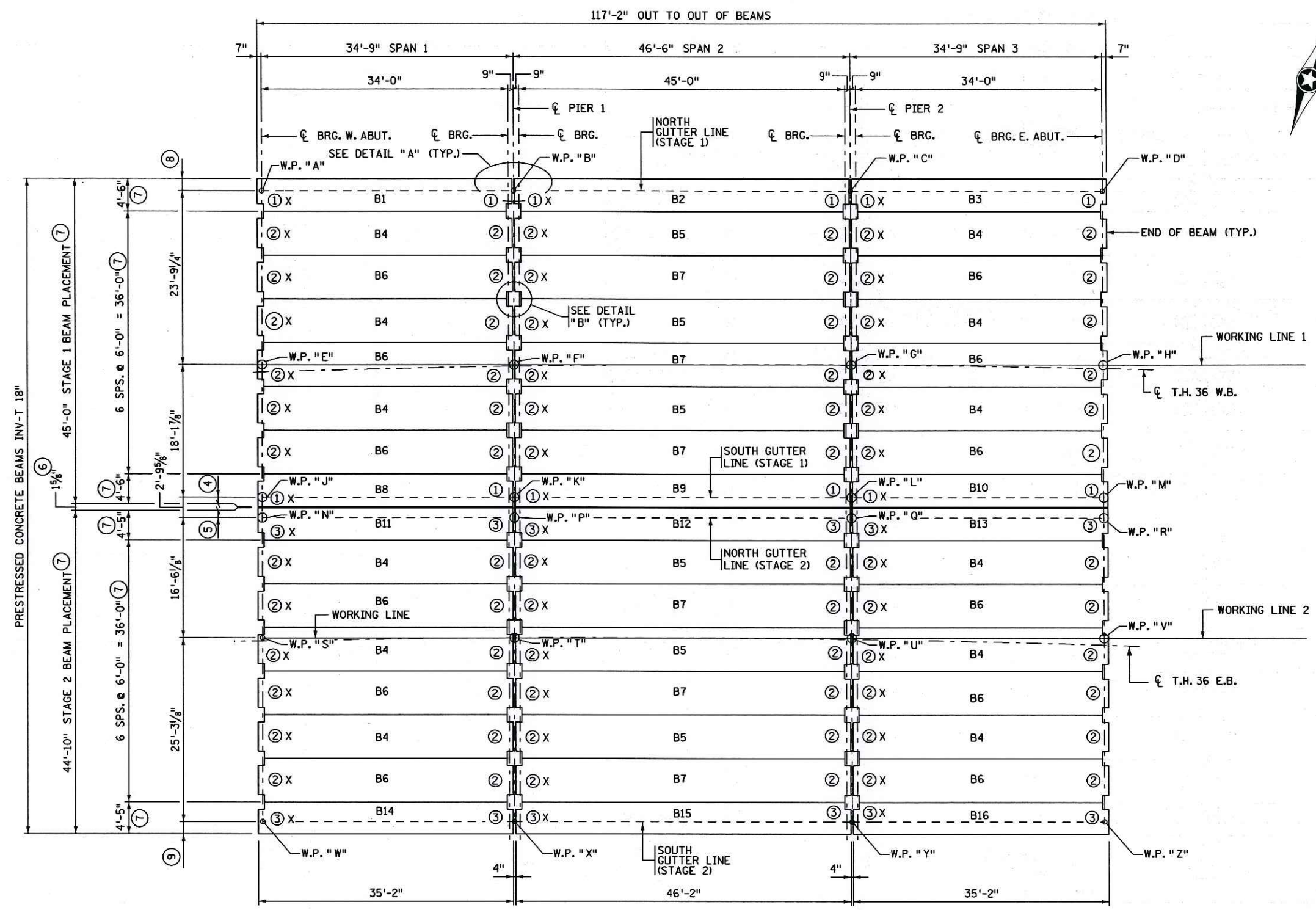
① BILL OF REINFORCEMENT FOR TWO PIERS - STAGE 2

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	41'-8"	—	HORIZONTAL
T2208E	16	5'-7"	—	HORIZONTAL
T2209E	12	6'-2"	—	HORIZONTAL BTWN. PILES
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 PILES
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 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".
 - FIELD LOCATE ANCHORAGES TO AVOID DRILLING THROUGH REBARS.
- E.F. DENOTE EACH FACE.

REVISION			APPROVED BY	CERTIFIED BY	TITLE	DES: M.D.H/N.J.V.	DR: B.T.N.	APPROVED: 8/5/13	BRIDGE NO. 62037
DATE	DESCRIPTION	CHG:							
5-21-2013	ADDED REINFORCING FOR EASE OF FABRICATION	AMS	ANGEL M. STAPLES	8/5/13	PIER 1 AND PIER 2 REINFORCEMENT STAGE 2 CONSTRUCTION	P.J.K.	N.J.V.	SHEET NO. 33AR OF 68 SHEETS	

TIME : 8:16:27 AM
 PLOTTED : 01-FEB-2013
 PATH & FILENAME: Bridge/Final_Design/6/62037/Cadd-Plan/br62037_ssp
 FILENAME: IP_PWP-df489447-br62037_ssp.dgn

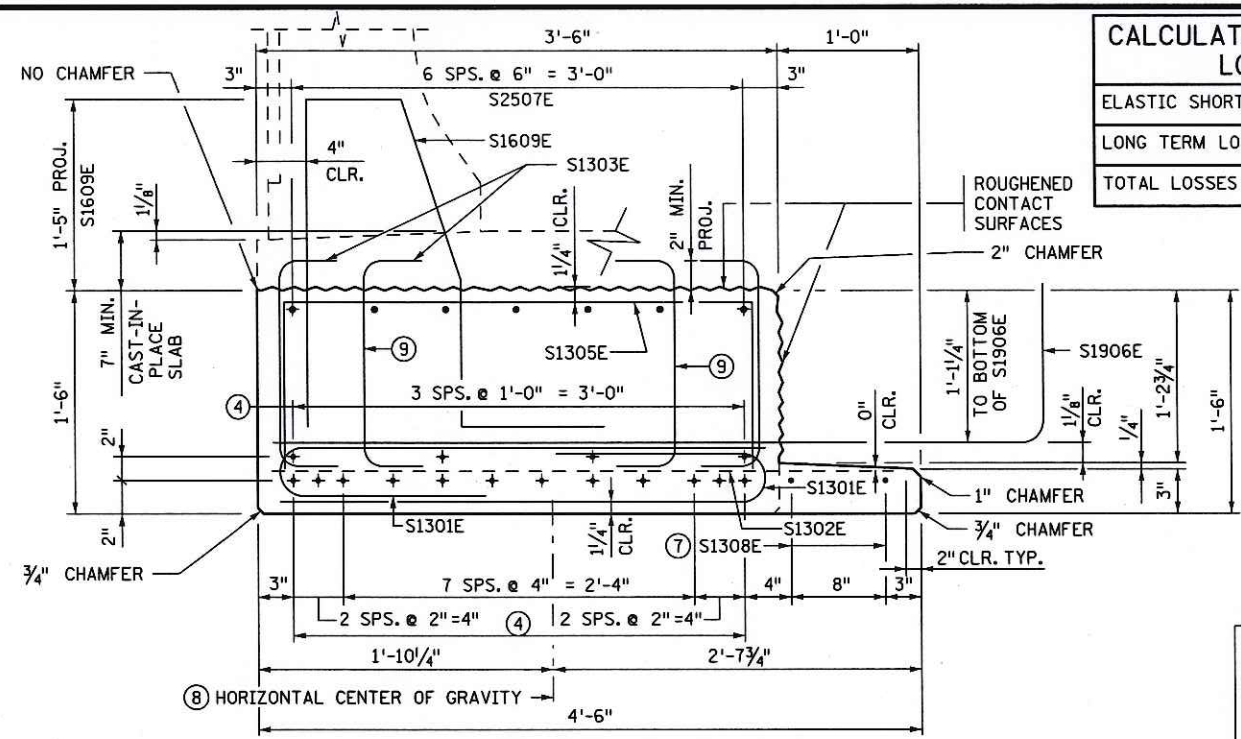


- NOTES:**
- X DENOTES "X" END OF PRECAST BEAM.
 - ① ELASTOMERIC BEARING PAD TYPE 1. SEE SHEET NO. 51.
 - ② ELASTOMERIC BEARING PAD TYPE 2. SEE SHEET NO. 51.
 - ③ ELASTOMERIC BEARING PAD TYPE 3. SEE SHEET NO. 51.
 - ④ DENOTES HORIZONTAL DISTANCES FROM WORKING POINT TO TOP OF BEAM EDGE (1'-3 3/8") AND 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 9/16") AND WORKING POINT TO BOTTOM OF BEAM EDGE (1'-5 5/8").
 - 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 5/8") 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.

FRAMING PLAN

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

TIME : 6:21:49 PM
 PLOTTED : 02-MAY-2013
 PATH & FILENAME: Bridge/Final_Design/6/62037/Cadd-Plan/br62037_sup.dgn
 FILENAME: IP_PWP-dj489447-br62037_sup.dgn

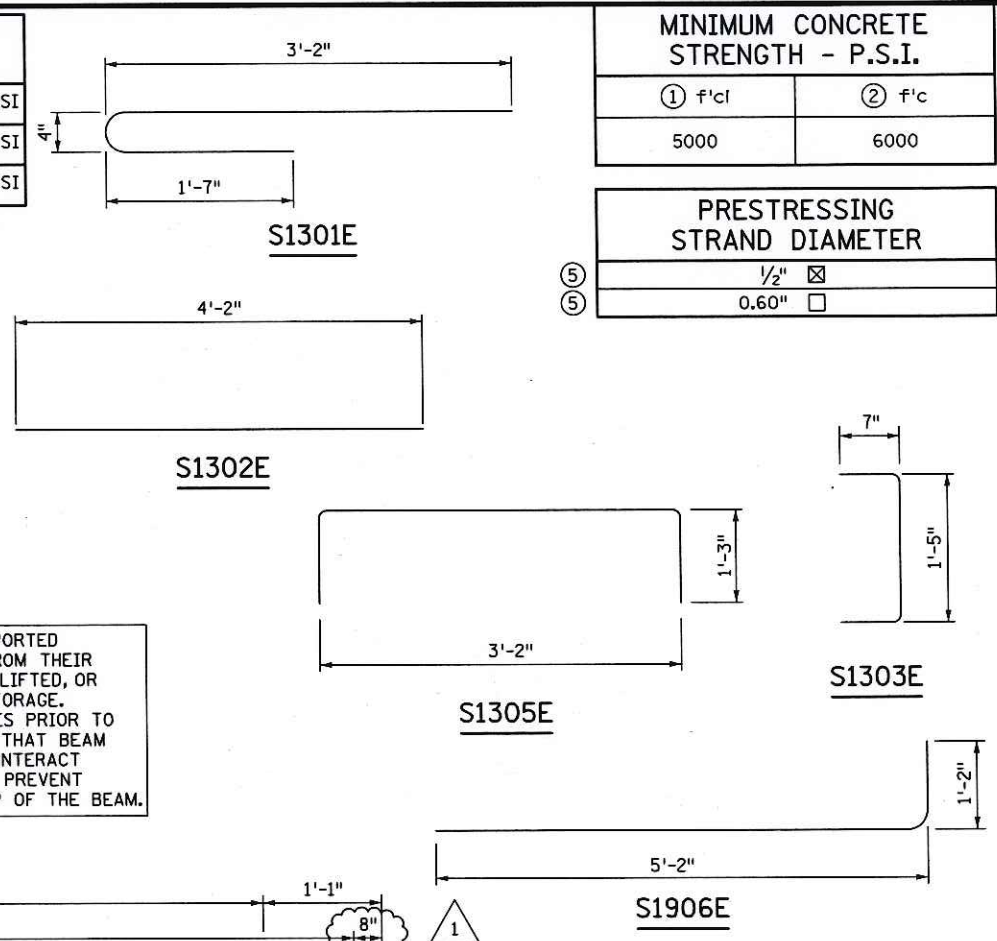


END VIEW BEAMS B1, B3

CUT STRANDS FLUSH WITH CONCRETE. PAINT ENDS WITH AN APPROVED GRAY EPOXY EXCEPT AS NOTED.
 (BEAMS B1 = 1, B3 = 1 REQUIRED THUS)

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

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.



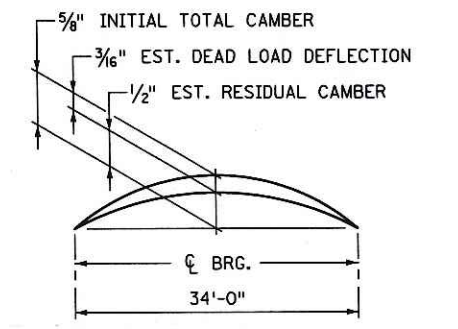
MINIMUM CONCRETE STRENGTH - P.S.I.	
① f'cl	② f'c
5000	6000

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

Y DISTANCES (IN INCHES)			
	NO.	CL. SPAN	END
STRAIGHT STRANDS	16	2.5	<input checked="" type="checkbox"/>
DRAPED STRANDS	0	N/A	<input checked="" type="checkbox"/>
TOTAL STRANDS	16	2.5	<input checked="" type="checkbox"/>

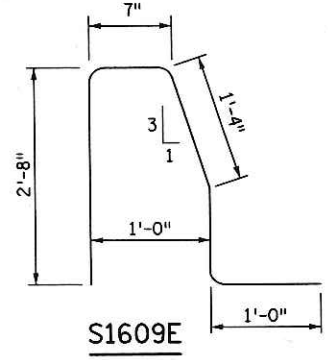
Y = DISTANCE TO CENTER OF GRAVITY OF STRANDS FROM BOTTOM OF BEAM. ALL STRANDS SPACED 2" CENTER TO CENTER, HORIZONTALLY AND VERTICALLY, EXCEPT AS NOTED.

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

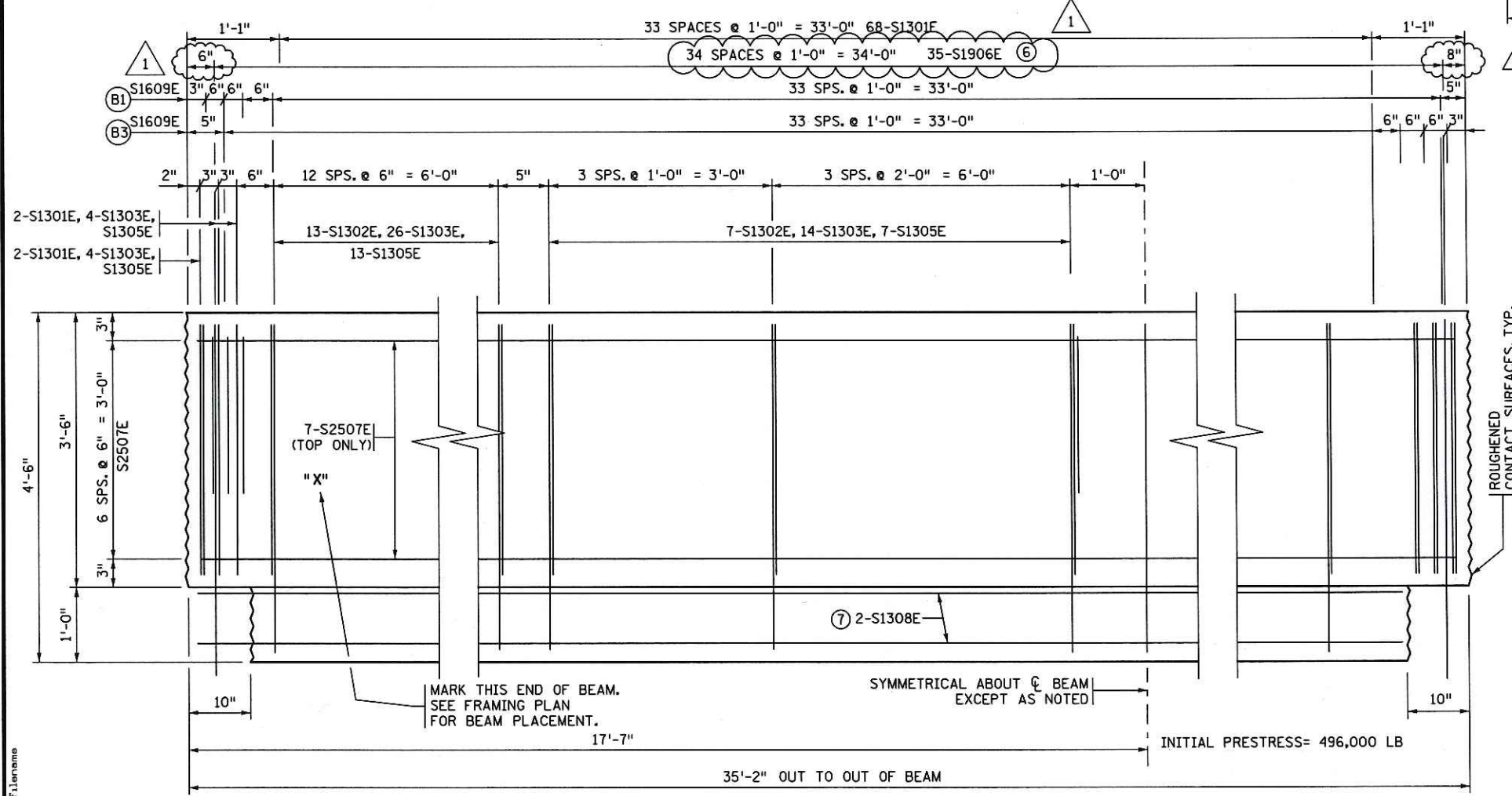


CAMBER DIAGRAM

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



S1609E



PARTIAL PLAN - PRETENSIONED BEAM

BEAMS B1 & B3 ⑨ BARS SHOWN ONLY NEEDED AT BEAM ENDS.

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 1", SEE MNDOT 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'cl 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

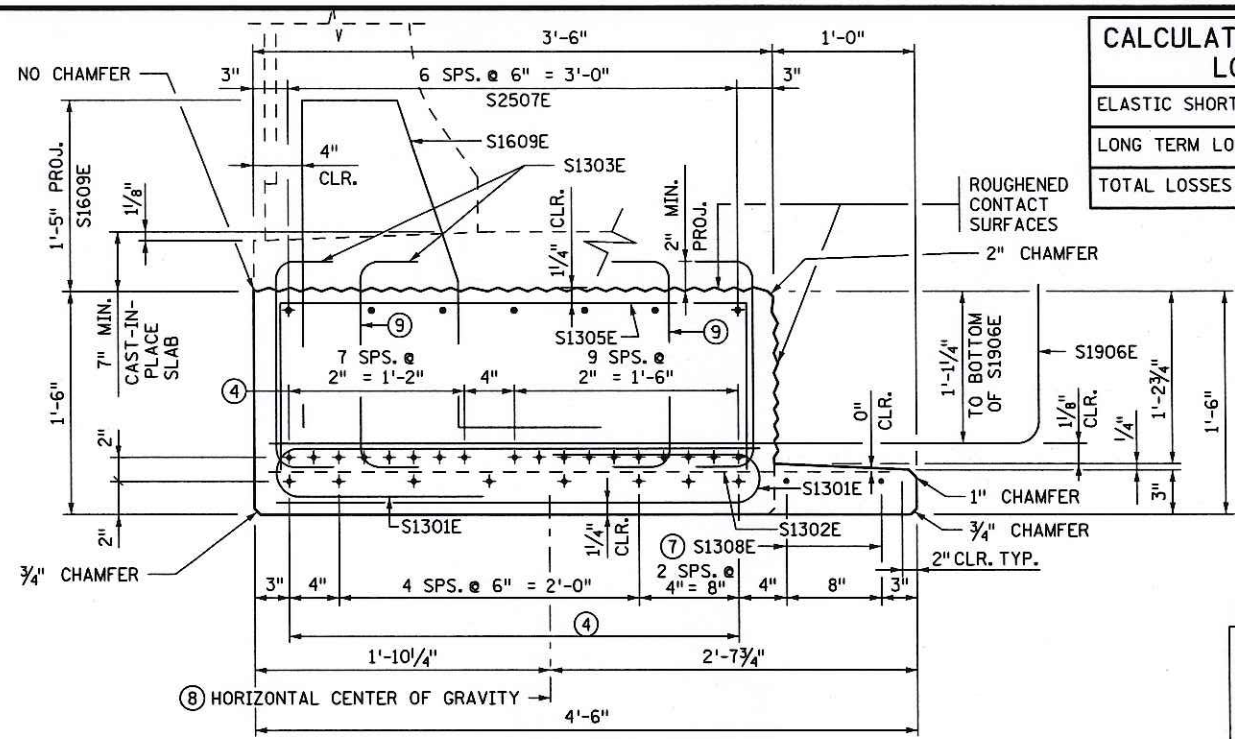
CERTIFIED BY Angel M. Staples 5/6/13
 LICENSED PROFESSIONAL ENGINEER DATE
 NAME: ANGEL M. STAPLES LIC. NO. 41656

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

DES: MDH OR: RLV APPROVED: 5/6/13
 CHK: NJV CHK: DCH
 SHEET NO. 35R OF 68 SHEETS

BRIDGE NO. 62037

TIME : 6:24:06 PM
 PLOTTED : 02-MAY-2013
 PATH & FILENAME: Bridge/Final_Design/6/62037/Cadd-Plan/br62037_sup.dgn
 FILENAME: IP_PWP-cl489447-br62037_sup.dgn
 dgmfilename
 mmdhjl



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'cl	② f'c
5000	6000

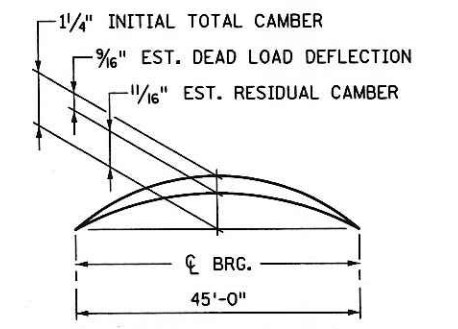
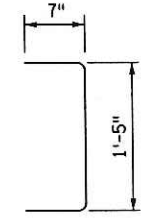
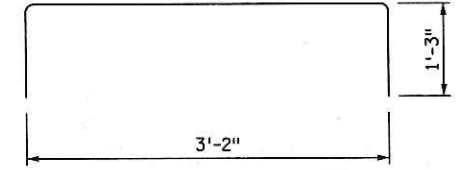
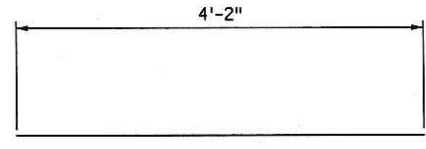
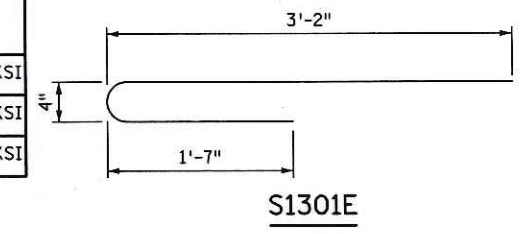
PRESTRESSING STRAND DIAMETER	
⑤ 1/2" □	
⑤ 0.60" □	

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.

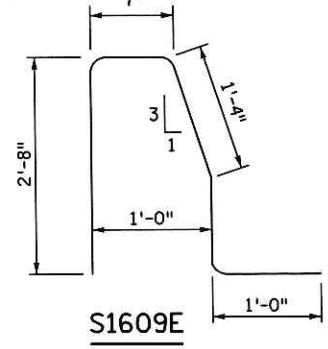
□ A TOLERANCE OF ± 1" WILL BE PERMITTED IN THIS DIMENSION.

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.

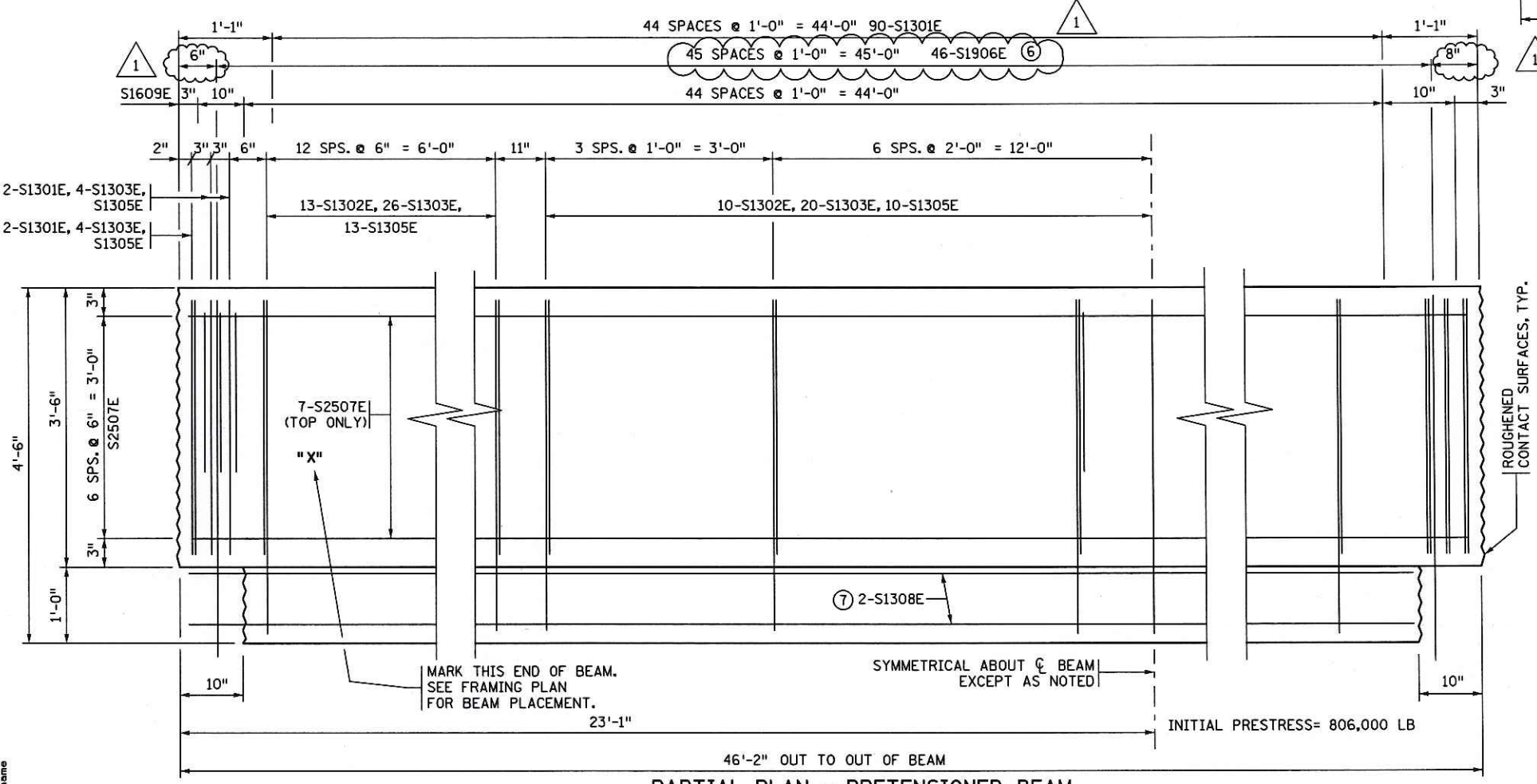


CAMBER DIAGRAM

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



S1609E



PARTIAL PLAN - PRETENSIONED BEAM

S1305E

S1303E

S1906E

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 1", SEE MDOT 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'cl 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.

BEAM B2

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

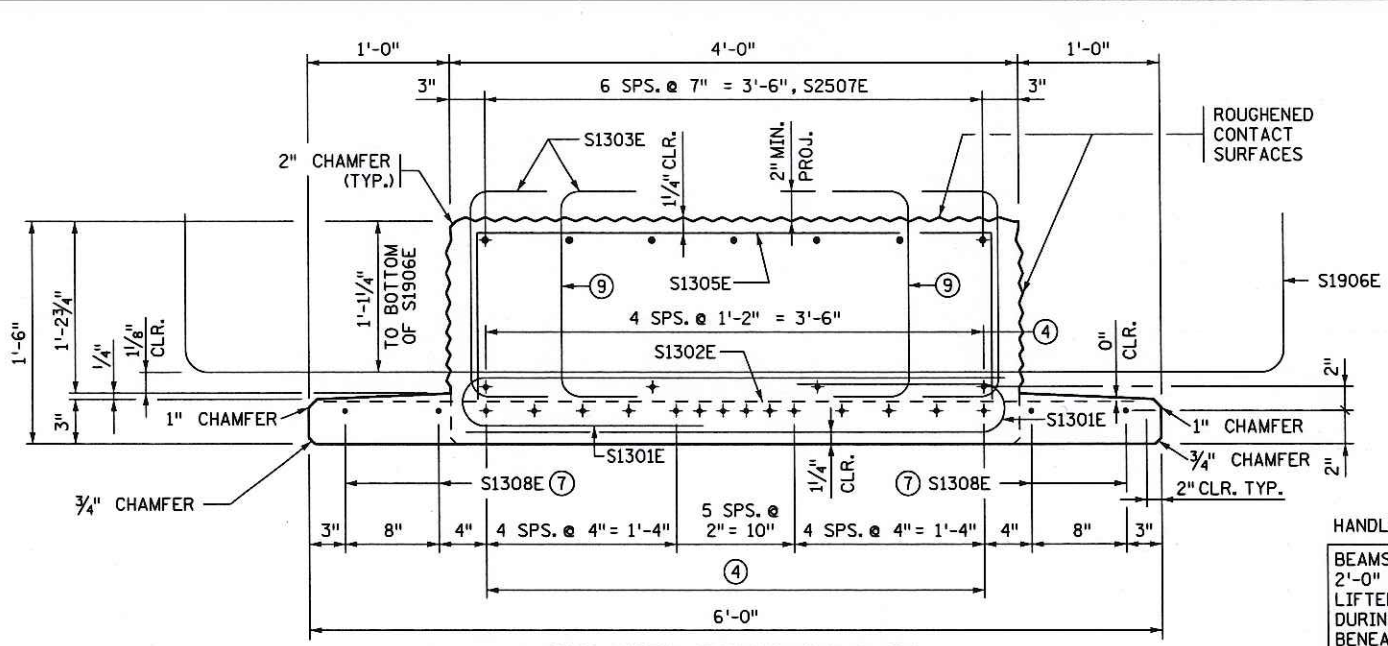
CERTIFIED BY Angel M. Staples 5/6/13
 LICENSED PROFESSIONAL ENGINEER DATE
 NAME: ANGEL M. STAPLES LIC. NO. 41656

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

DES: MDH DR: RLV APPROVED: 5/6/13
 CHK: NJV CHK: DCH
 SHEET NO. 36R OF 68 SHEETS

BRIDGE NO. 62037

TIME : 6:20:13 PM
 PLOTTED : 02-MAY-2013
 PATH & FILENAME: Bridge/Final_Design/6/62037/Cadd-Plan/br62037_sup.dgn
 FILENAME: IP_PWP-489447-br62037_sup.dgn



END VIEW BEAMS B4 & B6

CUT STRANDS FLUSH WITH CONCRETE. PAINT ENDS WITH AN APPROVED GRAY EPOXY EXCEPT AS NOTED.
 (BEAMS B4 = 12 REQUIRED THUS, BEAMS B6 = 12 REQUIRED THUS)

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

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

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

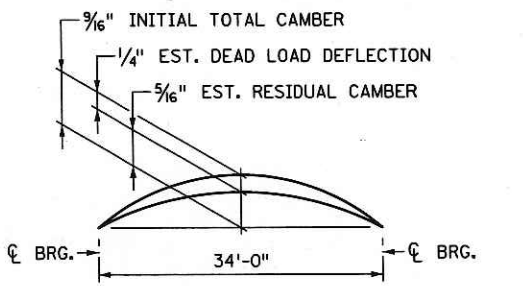
PRESTRESS LOSSES CALCULATED BASED ON AASHTO PRE-2005 APPROXIMATE METHOD.

CALCULATED PRESSURE LOSSES	
ELASTIC SHORTENING LOSS	6.14 KSI
LONG TERM LOSSES	16.93 KSI
TOTAL LOSSES	23.07 KSI

Y DISTANCES (IN INCHES)			
	NO.	CL. SPAN	END
STRAIGHT STRANDS	18	2.44	<input checked="" type="checkbox"/>
DRAPED STRANDS	0	N/A	N/A <input type="checkbox"/>
TOTAL STRANDS	18	2.44	<input checked="" type="checkbox"/>

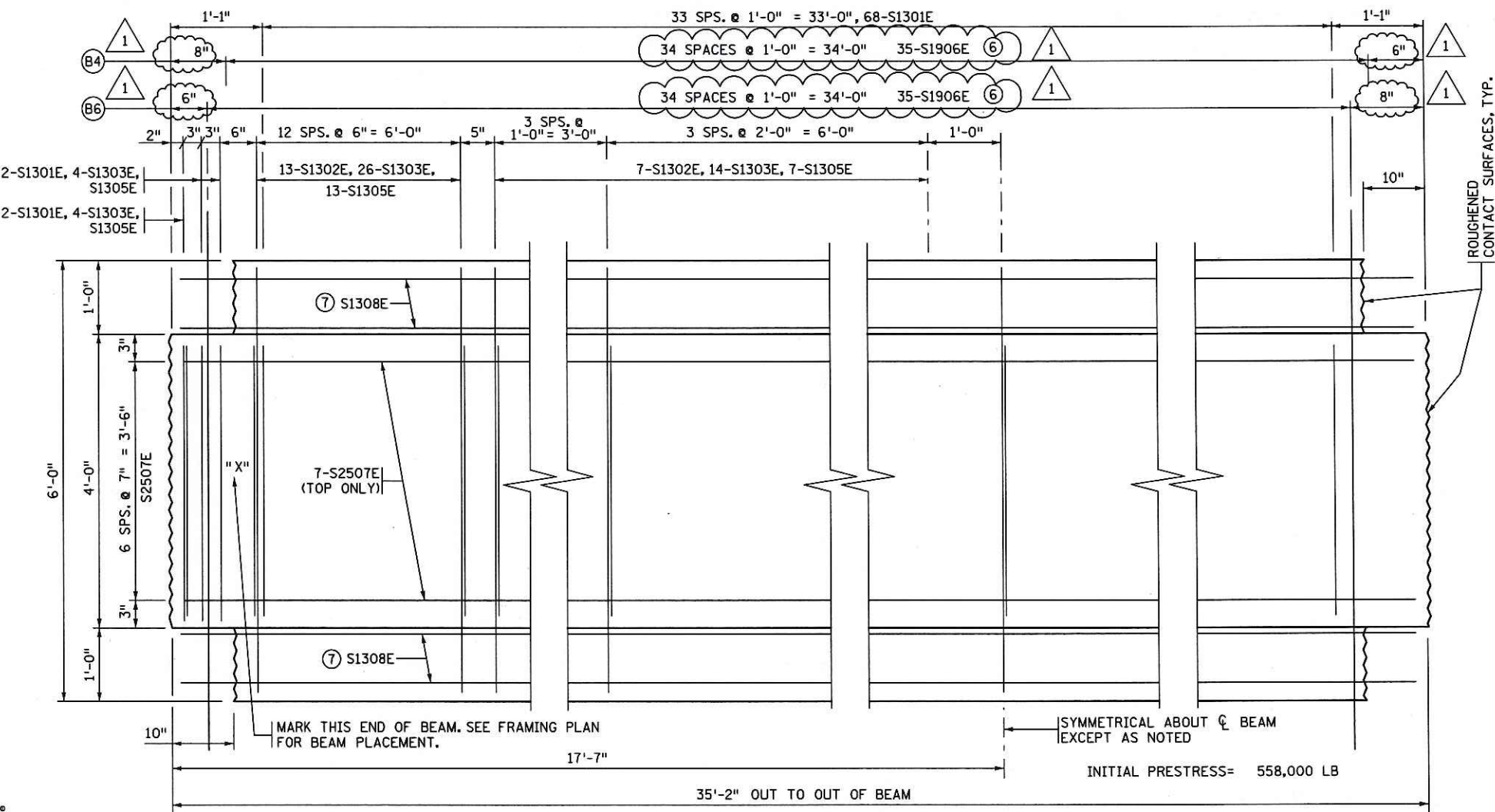
Y = DISTANCE TO CENTER OF GRAVITY OF STRANDS FROM BOTTOM OF BEAM. ALL STRANDS SPACED 2" CENTER TO CENTER, HORIZONTALLY AND VERTICALLY, EXCEPT AS NOTED.

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

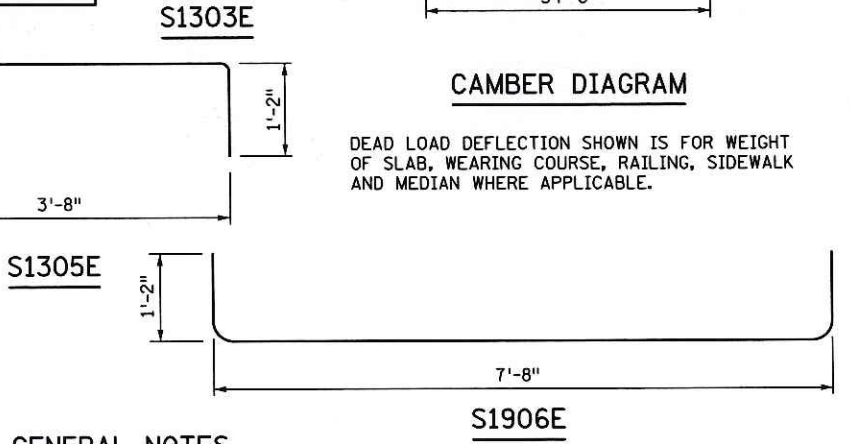


CAMBER DIAGRAM

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



PARTIAL PLAN - PRETENSIONED BEAM



GENERAL NOTES

- ALL CONCRETE EDGES SHALL BE FORMED WITH A 3/4" CHAMFER.
- ALL CONTACT SURFACES, EXCEPT FLANGE EDGES, SHALL BE ROUGHENED FOR BOND AS SHOWN. SEE SPECIAL PROVISIONS.
- PROVIDE HANDLING HOOKS OR DEVICES WITHIN 2'-0" FROM THE ENDS OF THE BEAM, AS REQUIRED BY CONTRACTOR.
- EACH BEAM SHALL BE MARKED, SHOWING BRIDGE NUMBER, CASTING DATE, AND INDIVIDUAL IDENTIFICATION LETTERS AND NUMBERS. MARKINGS SHALL BE MADE ON THE FACE OF THE BEAM, NEAR THE END, SO LOCATED THAT THEY WILL BE EXPOSED. ALL MARKINGS SHALL BE STENCILED AND BE CLEARLY LEGIBLE. FOR LOCATION OF BEAMS, SEE FRAMING PLAN.
- ALL MATERIAL AND WORK SHOWN OR NOTED ON THIS SHEET SHALL BE INCLUDED IN UNIT PRICE BID FOR "PRESTRESSED BEAMS INV-T 18" TYPE 2", SEE MNDOT SPEC. 2405.
- SHOP DRAWINGS ARE REQUIRED. SEE SPECIAL PROVISIONS.
- APPROXIMATE WEIGHT OF PRECAST SECTION IS 17.7 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 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.

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

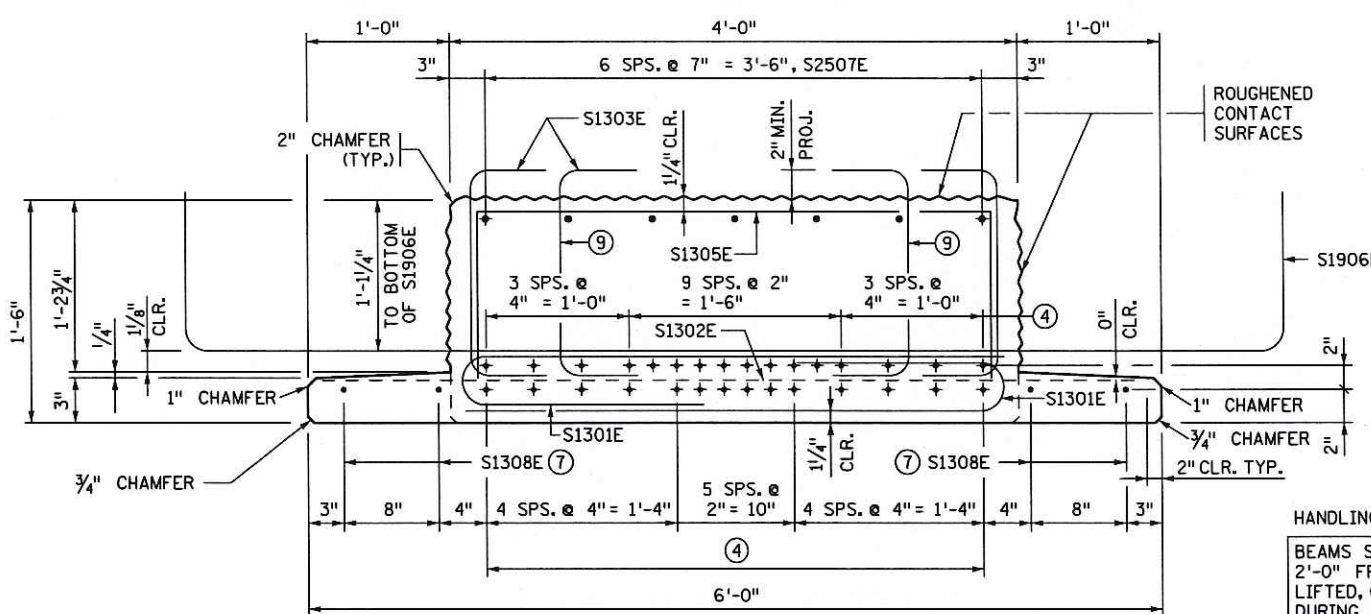
CERTIFIED BY *Angel M. Staples* 5/6/13
 LICENSED PROFESSIONAL ENGINEER
 NAME: ANGEL M. STAPLES LIC. NO. 41656

TITLE: PRESTRESSED BEAM
 INV-T 18" TYPE 2

DES: MDH OR: RLV
 CHK: NJV CHK: DCH
 APPROVED: 5/6/13
 SHEET NO. 37R OF 68 SHEETS

BRIDGE NO. 62037

TIME : 6:09:43 PM
 PLOTTED : 02-MAY-2013
 PATH & FILENAME: Bridge/Final_Design/6/62037/Cadd-Plan/br62037_sup.dgn
 FILENAME: IP_PWP:dl#89447/br62037_sup.dgn



END VIEW BEAMS B5 & B7

CUT STRANDS FLUSH WITH CONCRETE. PAINT ENDS WITH AN APPROVED GRAY EPOXY EXCEPT AS NOTED.
 (BEAMS B5 = 6 REQUIRED THUS, BEAMS B7 = 6 REQUIRED THUS)

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

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

Y DISTANCES (IN INCHES)			
	NO.	℄ SPAN	END
STRAIGHT STRANDS	30	3.07	℄
DRAPED STRANDS	0	N/A	N/A
TOTAL STRANDS	30	3.07	℄

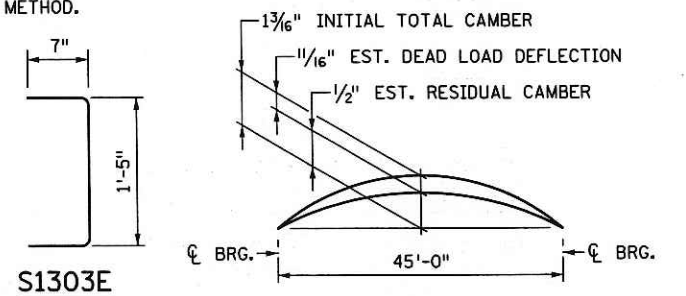
Y = DISTANCE TO CENTER OF GRAVITY OF STRANDS FROM BOTTOM OF BEAM. ALL STRANDS SPACED 2" CENTER TO CENTER, HORIZONTALLY AND VERTICALLY, EXCEPT AS NOTED.

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

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

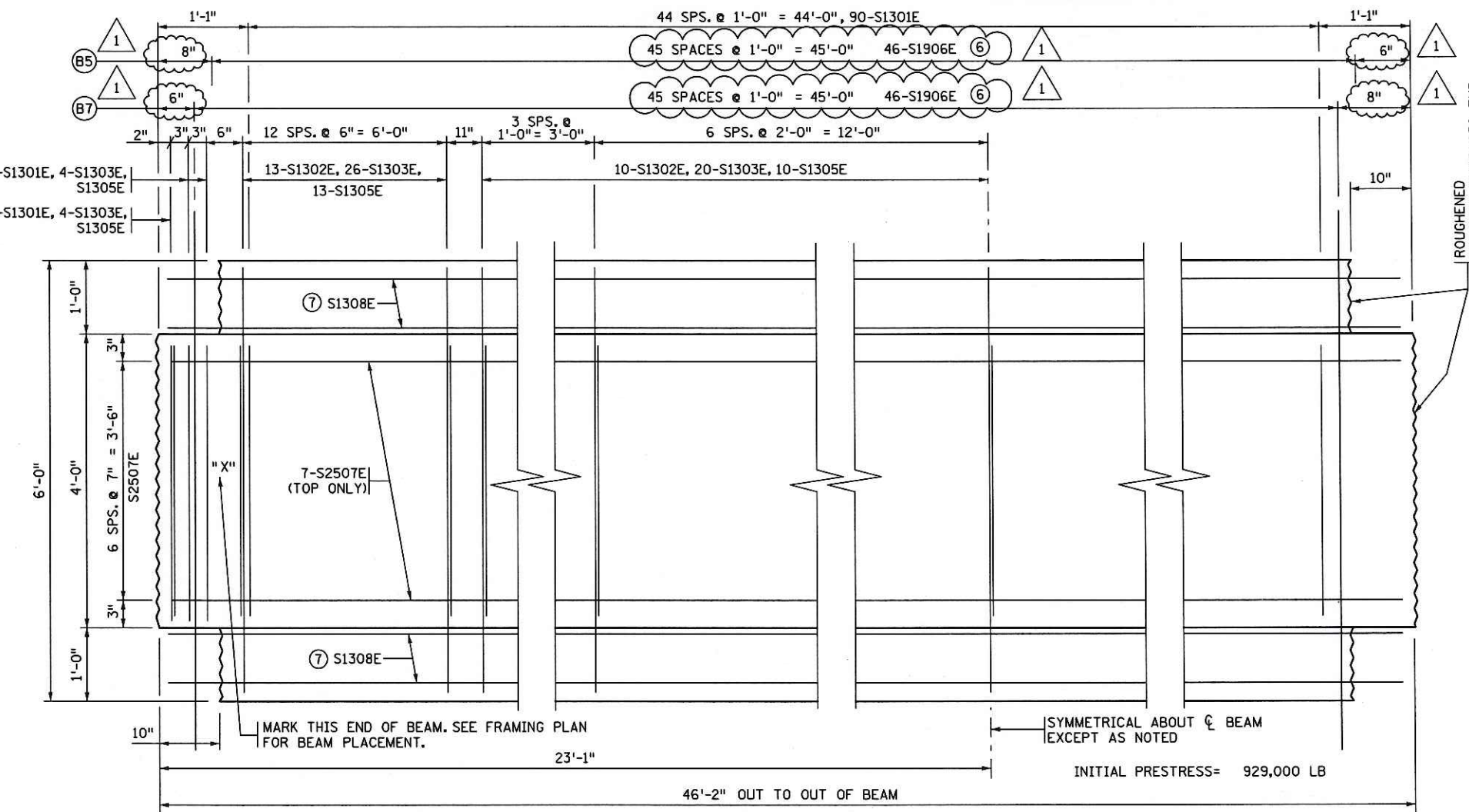
PRESTRESS LOSSES CALCULATED BASED ON AASHTO PRE-2005 APPROXIMATE METHOD.

CALCULATED PRESSURE LOSSES	
ELASTIC SHORTENING LOSS	8.76 KSI
LONG TERM LOSSES	20.15 KSI
TOTAL LOSSES	28.91 KSI



CAMBER DIAGRAM

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



PARTIAL PLAN - PRETENSIONED BEAM

GENERAL NOTES

- ALL CONCRETE EDGES SHALL BE FORMED WITH A 3/4" CHAMFER.
- ALL CONTACT SURFACES, EXCEPT FLANGE EDGES, SHALL BE ROUGHENED FOR BOND AS SHOWN. SEE SPECIAL PROVISIONS.
- PROVIDE HANDLING HOOKS OR DEVICES WITHIN 2'-0" FROM THE ENDS OF THE BEAM, AS REQUIRED BY CONTRACTOR.
- EACH BEAM SHALL BE MARKED, SHOWING BRIDGE NUMBER, CASTING DATE, AND INDIVIDUAL IDENTIFICATION LETTERS AND NUMBERS. MARKINGS SHALL BE MADE ON THE FACE OF THE BEAM, NEAR THE END, SO LOCATED THAT THEY WILL BE EXPOSED. ALL MARKINGS SHALL BE STENCILED AND BE CLEARLY LEGIBLE. FOR LOCATION OF BEAMS, SEE FRAMING PLAN.
- ALL MATERIAL AND WORK SHOWN OR NOTED ON THIS SHEET SHALL BE INCLUDED IN UNIT PRICE BID FOR "PRESTRESSED BEAMS INV-T 18" TYPE 2", SEE MDOT SPEC. 2405.
- SHOP DRAWINGS ARE REQUIRED. SEE SPECIAL PROVISIONS.
- APPROXIMATE WEIGHT OF PRECAST SECTION IS 23.2 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 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.

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

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

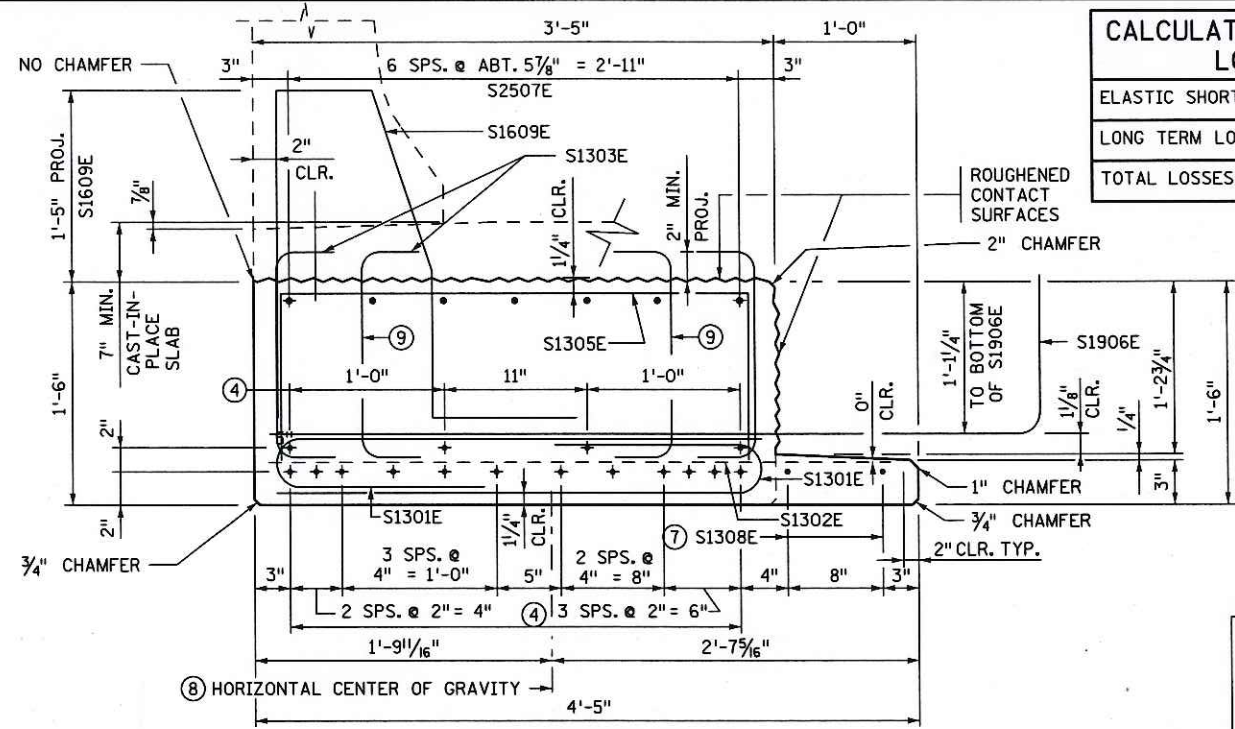
BEAMS B5 & B7 ⑨ BARS SHOWN ONLY NEEDED AT BEAM ENDS.

TITLE: PRESTRESSED BEAM INV-T 18" TYPE 2

DES: MDH OR: RLV APPROVED: 5/6/13
 CHK: NJV CHK: DCH

BRIDGE NO. 62037
 SHEET NO. 38R OF 68 SHEETS

TIME: 6:22:20 PM
 PLOTTED: 02-MAY-2013
 PATH & FILENAME: Bridge/Final_Design/6/62037/Cadd/Plan/br62037_sup.dgn
 FILENAME: IP_PWP-d1489447-br62037_sup.dgn
 dgmfile: name



END VIEW BEAMS B11 & B13
 CUT STRANDS FLUSH WITH CONCRETE. PAINT ENDS WITH AN APPROVED GRAY EPOXY EXCEPT AS NOTED.
 (BEAMS B11 = 1, B13 = 1 REQUIRED THUS)

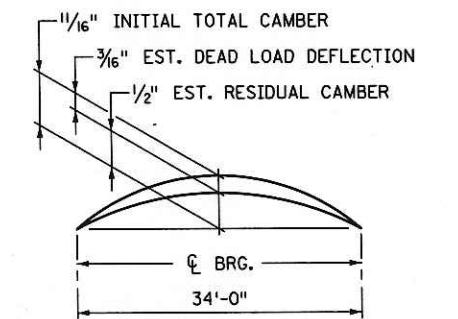
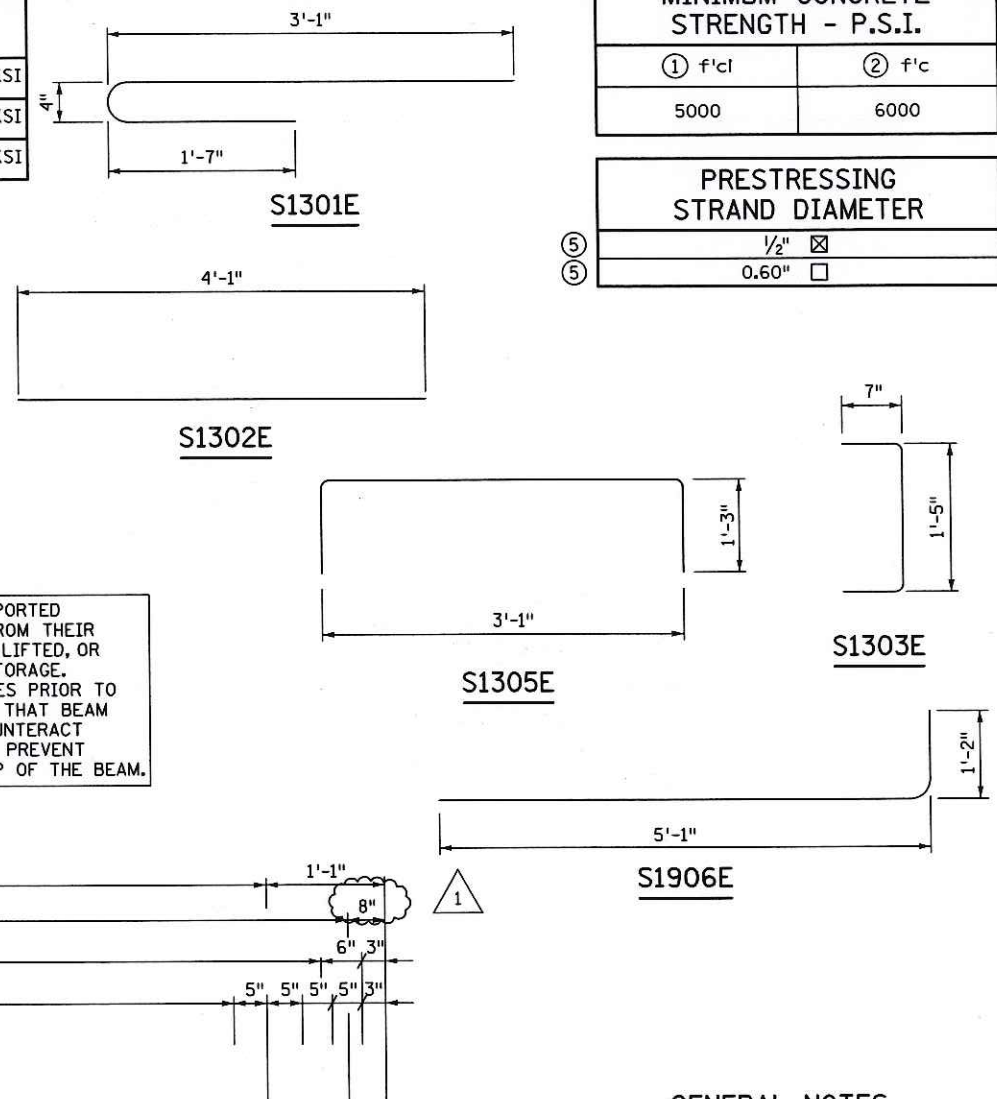
HANDLING NOTE:
 BEAMS SHALL BE SUPPORTED ONLY WITHIN 2'-0" FROM THEIR ENDS, WHETHER BEING LIFTED, OR SUPPORTED DURING STORAGE. SUPPORT AT ALL TIMES PRIOR TO FINAL PLACEMENT, SO THAT BEAM SELF WEIGHT CAN COUNTERACT PRESTRESS FORCE TO PREVENT CRACKING AT THE TOP OF THE BEAM.

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

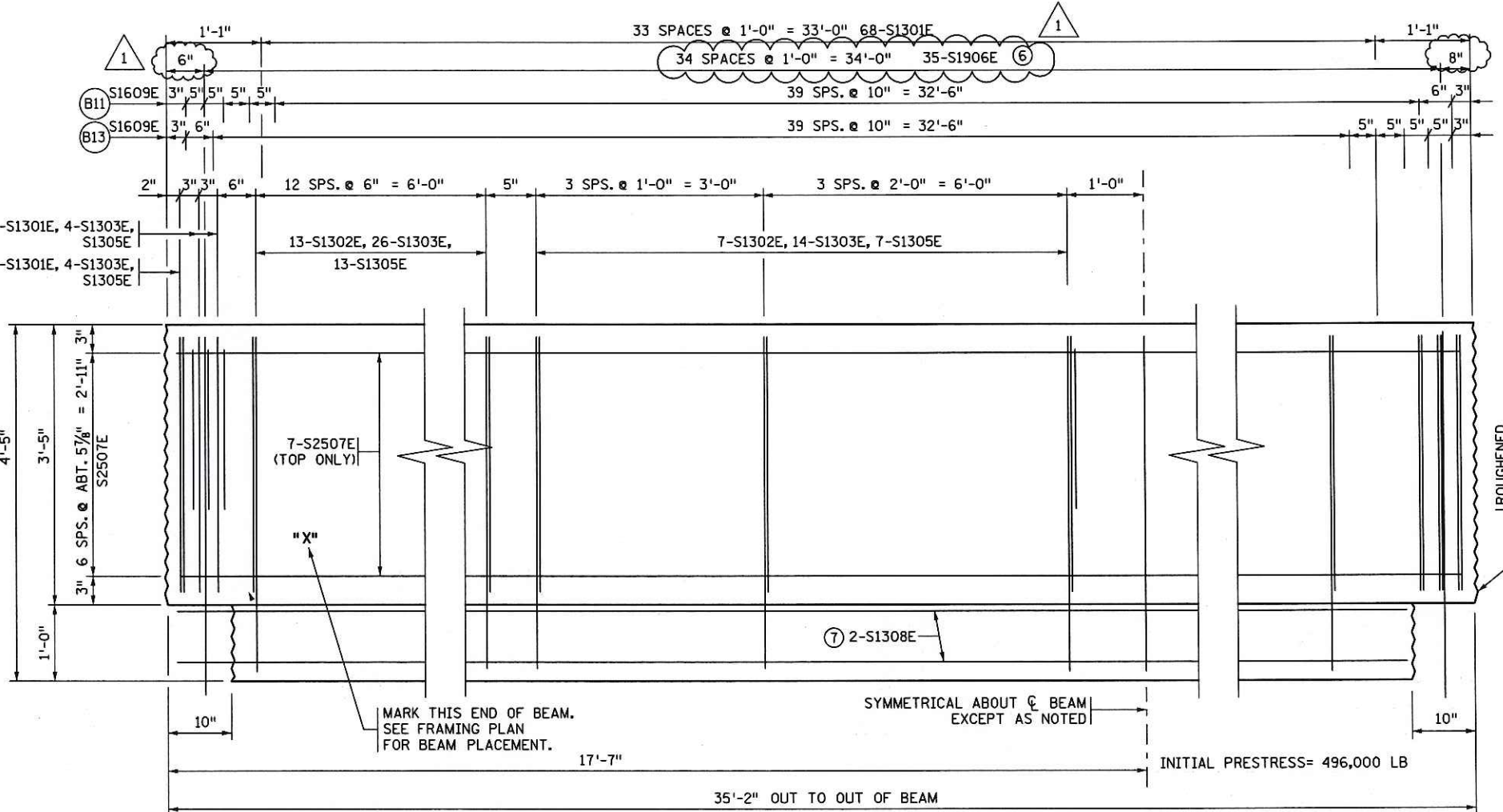
PRESTRESSING STRAND DIAMETER	
⑤ 1/2"	<input checked="" type="checkbox"/>
0.60"	<input type="checkbox"/>

Y DISTANCES (IN INCHES)			
	NO.	CL. SPAN	END
STRAIGHT STRANDS	16	2.5	<input checked="" type="checkbox"/>
DRAPED STRANDS	0	N/A	<input checked="" type="checkbox"/>
TOTAL STRANDS	16	2.5	<input checked="" 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.



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 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 14.6 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.

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

PARTIAL PLAN - PRETENSIONED BEAM

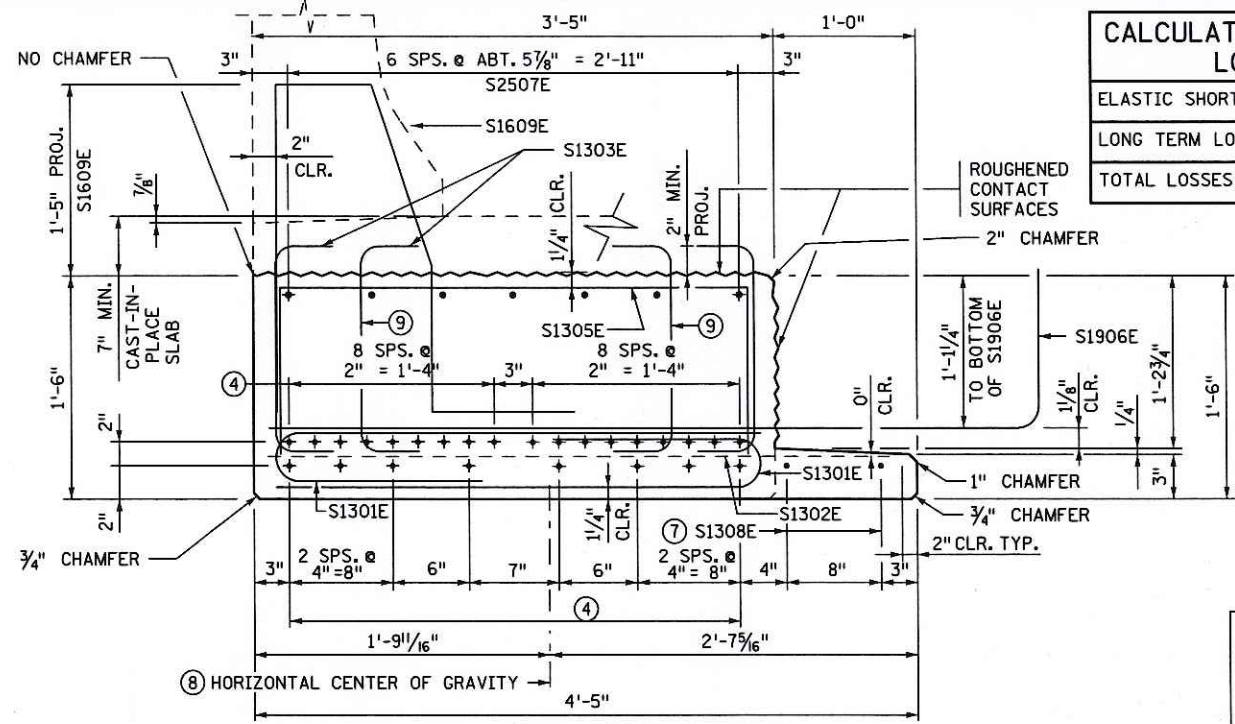
CERTIFIED BY: *Angel M. Staples* 5/6/13
 LICENSED PROFESSIONAL ENGINEER
 NAME: ANGEL M. STAPLES LIC. NO. 41656

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

DES: MDH DR: RLV APPROVED: *5/6/13*
 CHK: NJV CHK: DCH
 SHEET NO. 41R OF 68 SHEETS

BRIDGE NO. 62037

TIME : 6:11:05 PM
 PLOTTED : 02-MAY-2013
 PATH & FILENAME: Bridge/Final_Design/6/62037/Cadd-Plan/br62037_sup.dgn
 FILENAME: IP_PWP-dl489447-br62037_sup.dgn



END VIEW BEAM B12

CUT STRANDS FLUSH WITH CONCRETE. PAINT ENDS WITH AN APPROVED GRAY EPOXY EXCEPT AS NOTED.
 (BEAMS B12 = 1 REQUIRED THUS)

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

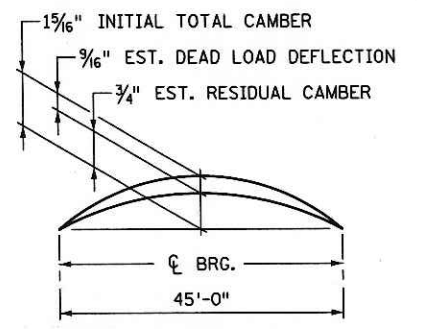
HANDLING NOTE:
 BEAMS SHALL BE SUPPORTED ONLY WITHIN 2'-0" FROM THEIR ENDS, WHETHER BEING LIFTED, OR SUPPORTED DURING STORAGE. SUPPORT AT ALL TIMES PRIOR TO FINAL PLACEMENT, SO THAT BEAM SELF WEIGHT CAN COUNTERACT PRESTRESS FORCE TO PREVENT CRACKING AT THE TOP OF THE BEAM.

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

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

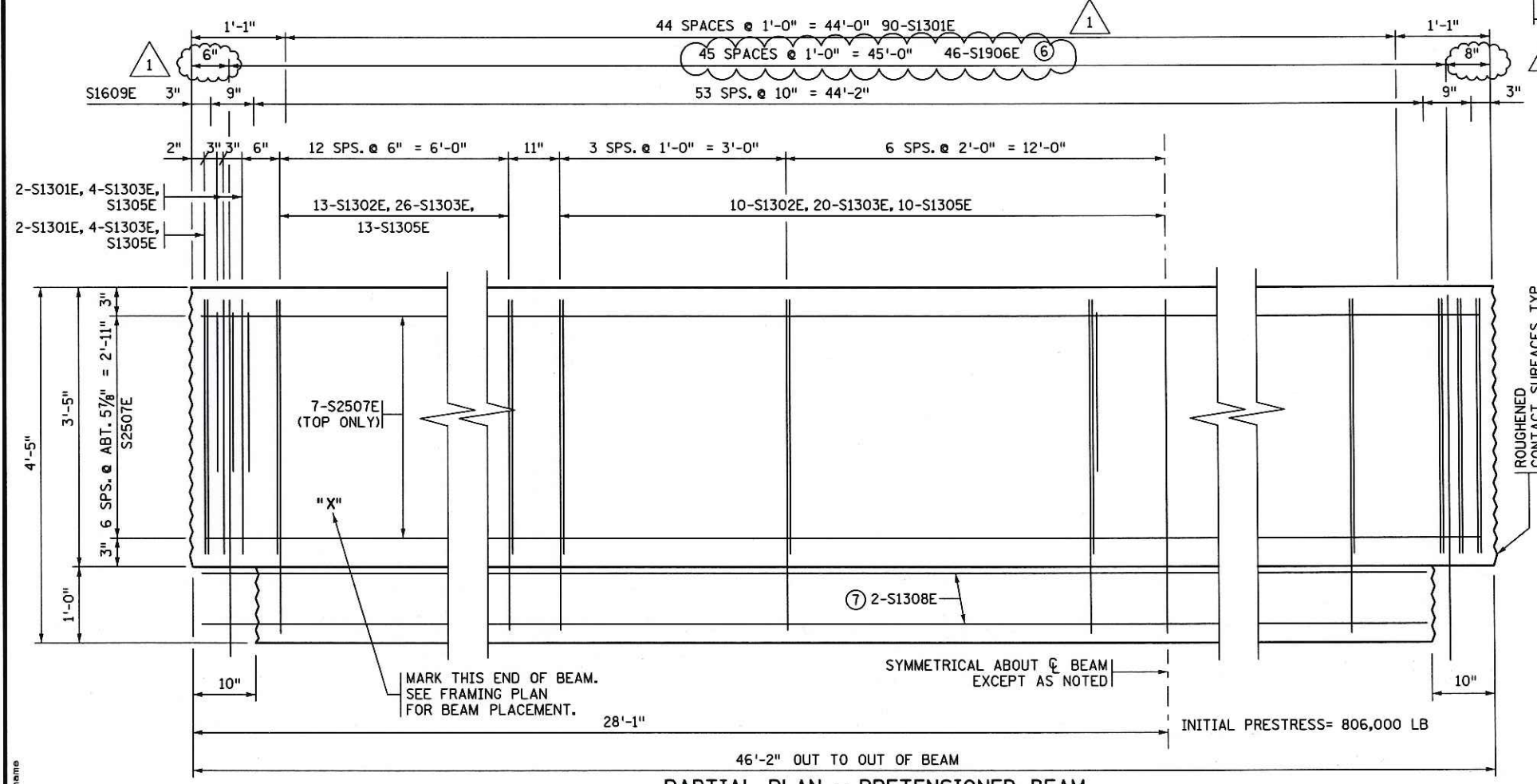
Y DISTANCES (IN INCHES)			
	NO.	CL. SPAN	END
STRAIGHT STRANDS	26	3.38	□
DRAPED STRANDS	0	N/A	N/A □
TOTAL STRANDS	26	3.38	□

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.

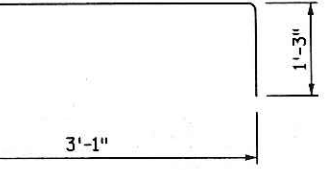


CAMBER DIAGRAM

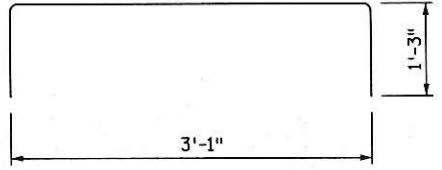
DEAD LOAD DEFLECTION SHOWN IS FOR WEIGHT OF SLAB, WEARING COURSE, RAILING, SIDEWALK AND MEDIAN WHERE APPLICABLE.



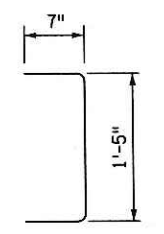
PARTIAL PLAN - PRETENSIONED BEAM



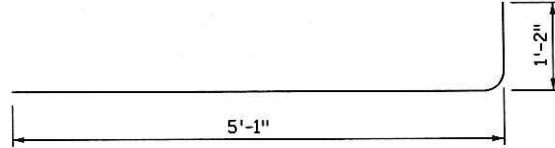
S1302E



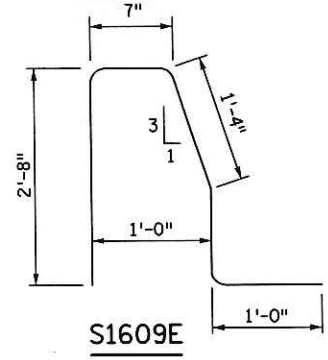
S1305E



S1303E



S1906E



S1609E

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 3", SEE MDOT 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 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'cl 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.

BEAMS B12 ⑨ BARS SHOWN ONLY NEEDED AT BEAM ENDS.

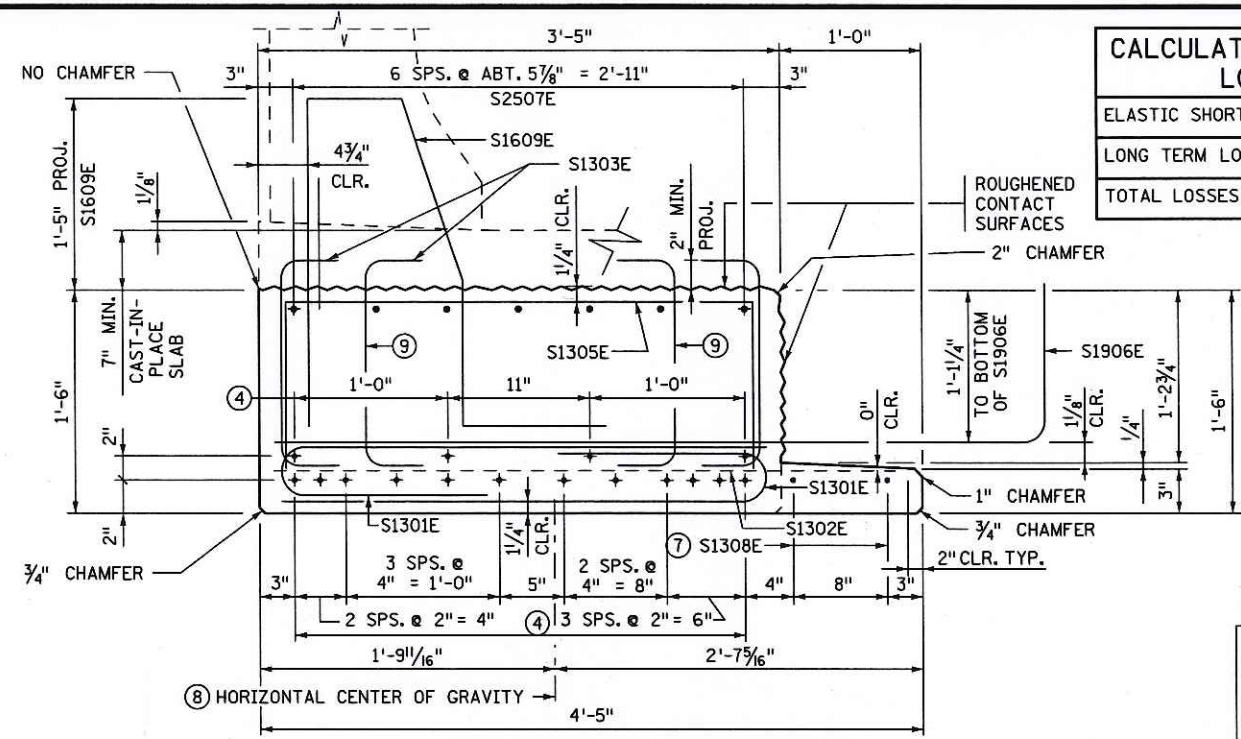
REVISION		
DATE	DESCRIPTION	APPROVED BY
5/2/13	REVISED S1906E SPACING	AMS

CERTIFIED BY *Angel M. Staples* 5/6/13
 LICENSED PROFESSIONAL ENGINEER DATE
 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		
SHEET NO. 42R OF 68 SHEETS			

6:02:20 PM
 PLOTTED : 02-MAY-2013
 PATH & FILENAME: Bridge/Final_Design/6/62037/Cadd-Plan/br62037_sup.dgn
 FILENAME: IP_PWP-dl489447-br62037_sup.dgn



CALCULATED PRESSURE LOSSES	
ELASTIC SHORTENING LOSS	7.08 KSI
LONG TERM LOSSES	17.29 KSI
TOTAL LOSSES	24.37 KSI

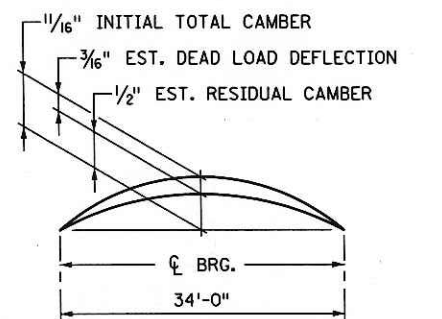
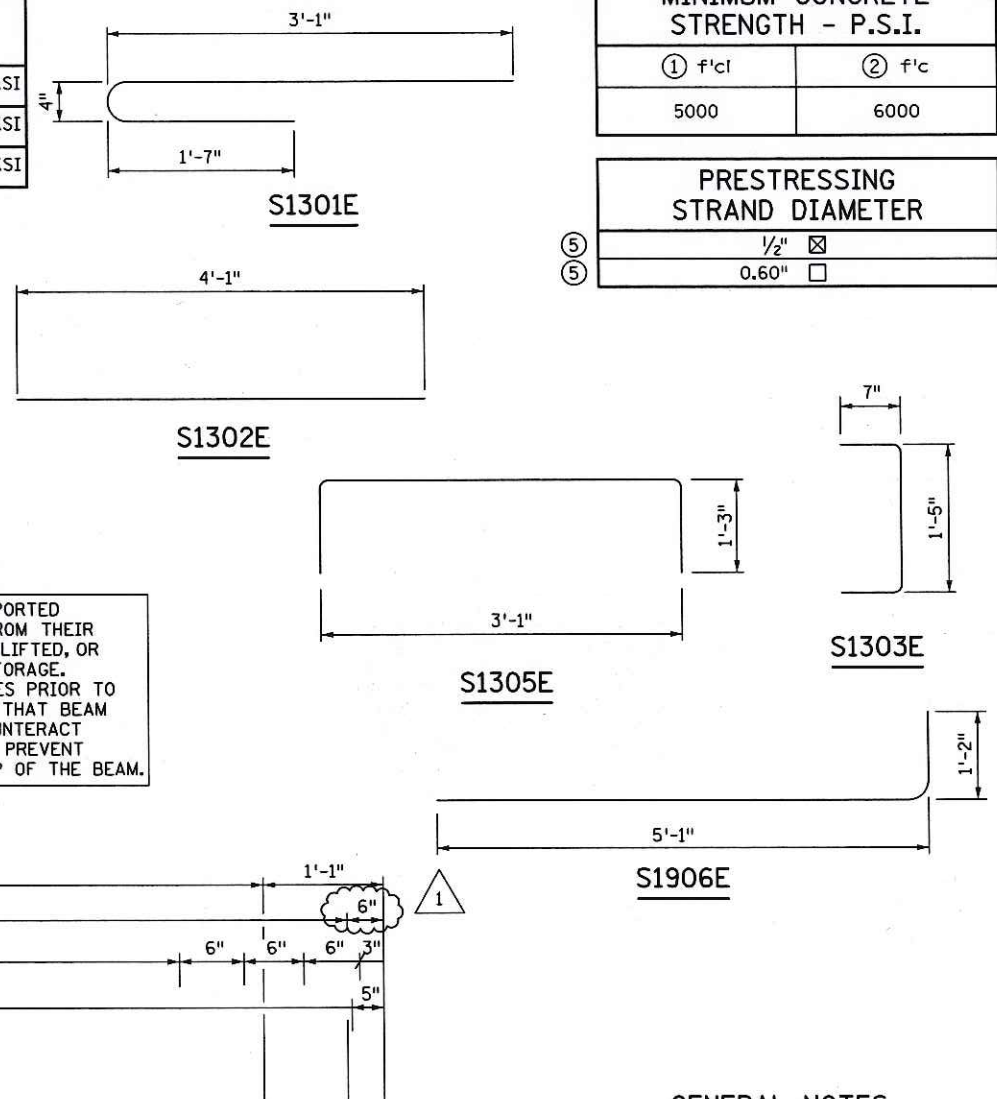
MINIMUM CONCRETE STRENGTH - P.S.I.	
① f'ci	② f'c
5000	6000

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

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

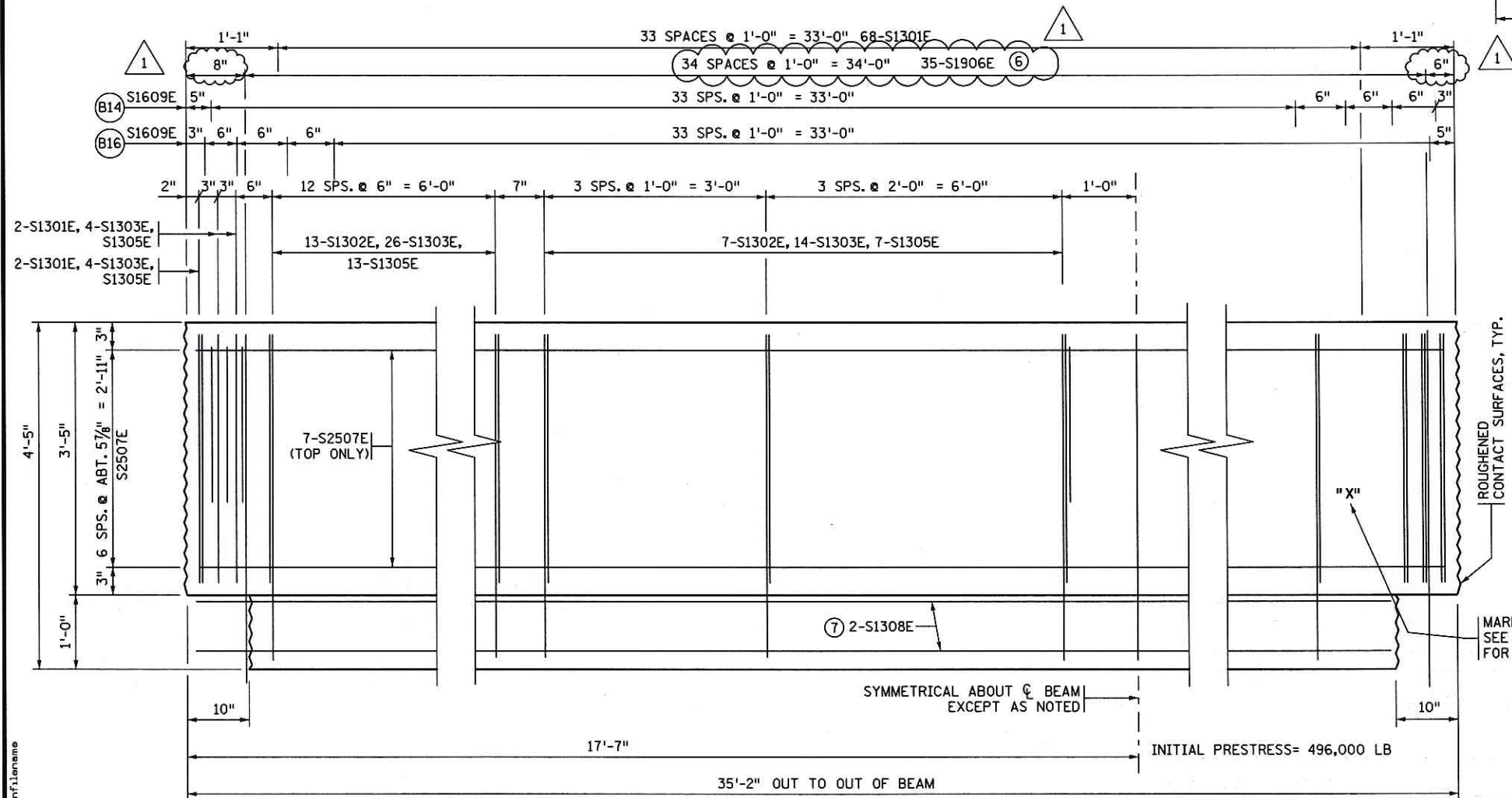
Y = DISTANCE TO CENTER OF GRAVITY OF STRANDS FROM BOTTOM OF BEAM. ALL STRANDS SPACED 2" CENTER TO CENTER, HORIZONTALLY AND VERTICALLY, EXCEPT AS NOTED.
 □ A TOLERANCE OF ± 1" WILL BE PERMITTED IN THIS DIMENSION.

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.

END VIEW BEAMS B14 & B16
 CUT STRANDS FLUSH WITH CONCRETE. PAINT ENDS WITH AN APPROVED GRAY EPOXY EXCEPT AS NOTED.
 (BEAMS B14 = 1, B16 = 1 REQUIRED THUS)



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 MDOT SPEC. 2405.
- SHOP DRAWINGS ARE REQUIRED. SEE SPECIAL PROVISIONS.
- APPROXIMATE WEIGHT OF PRECAST SECTION IS 14.6 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.

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

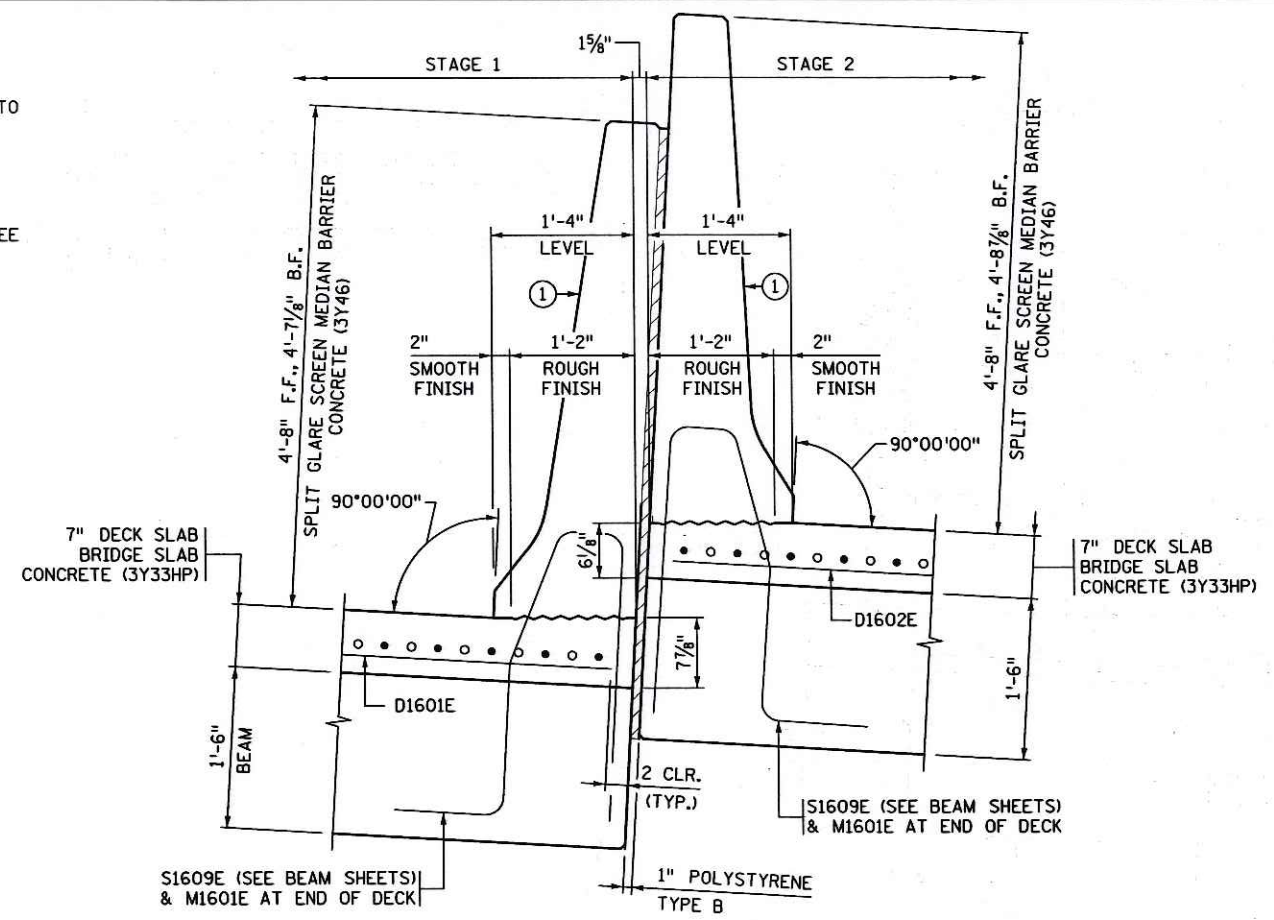
TITLE: **PRESTRESSED BEAM INV-T 18" TYPE 3**

DES: MDH OR: RLV
 CHK: NJV CHK: DCH
 APPROVED: *5/6/13*
 SHEET NO. 43R OF 68 SHEETS

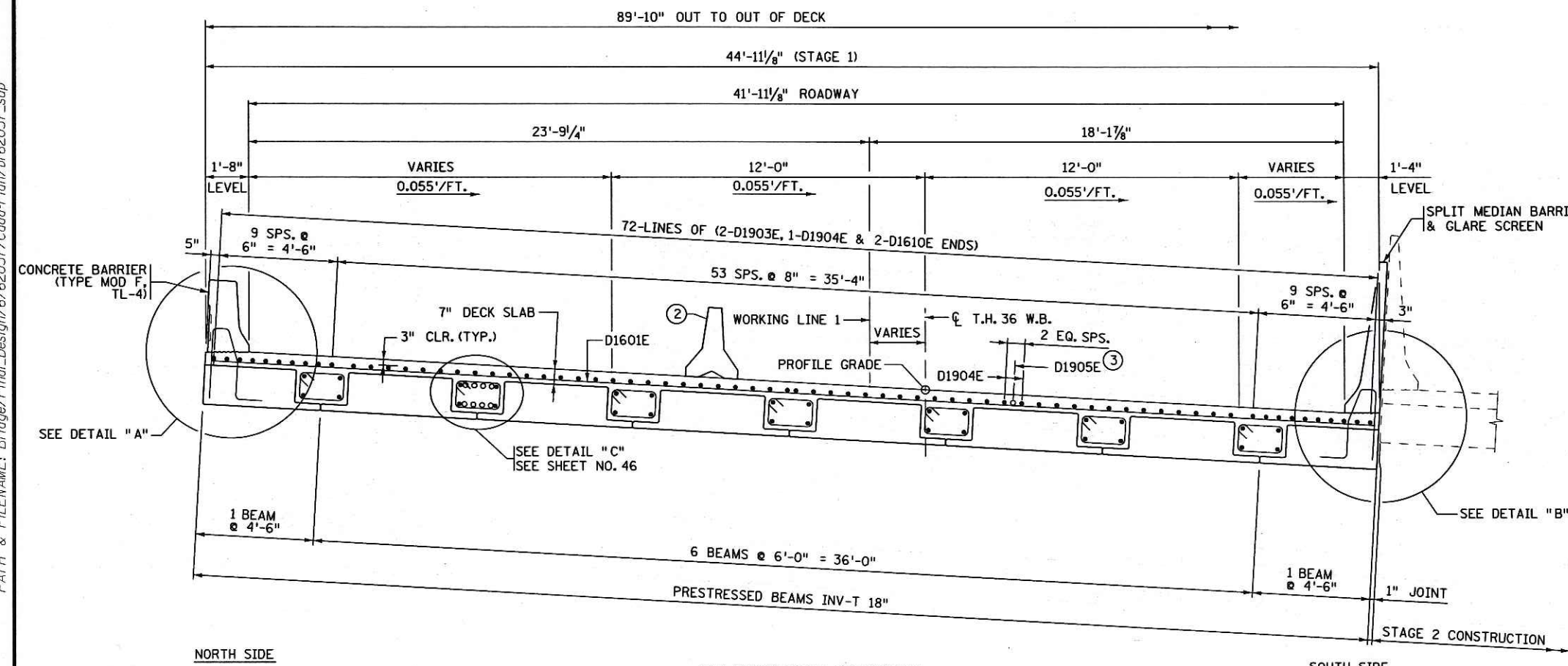
BRIDGE NO. 62037

NOTES:

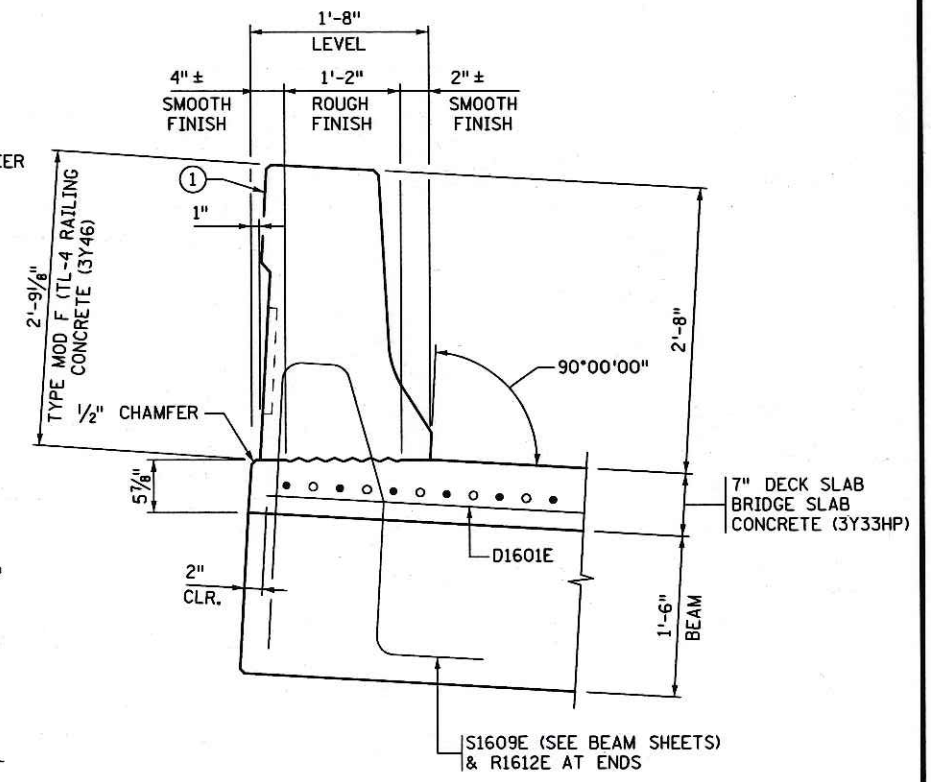
- ① DECK UNDER BARRIER TO BE PLACED LEVEL, BARRIER TO BE PLACED 90° TO CROSS SLOPE OF ROADWAY DECK.
- ② TEMPORARY PORTABLE PRECAST CONCRETE BARRIER TYPE "F", ANCHORAGES NOT REQUIRED. SEE SHEET NO. 6 FOR LOCATION.
- ③ STAGGER OVER PIERS BETWEEN LONGITUDINAL BARS. SEE SHEET NO. 50 FOR STAGGER DIAGRAM OVER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



DETAIL "B"



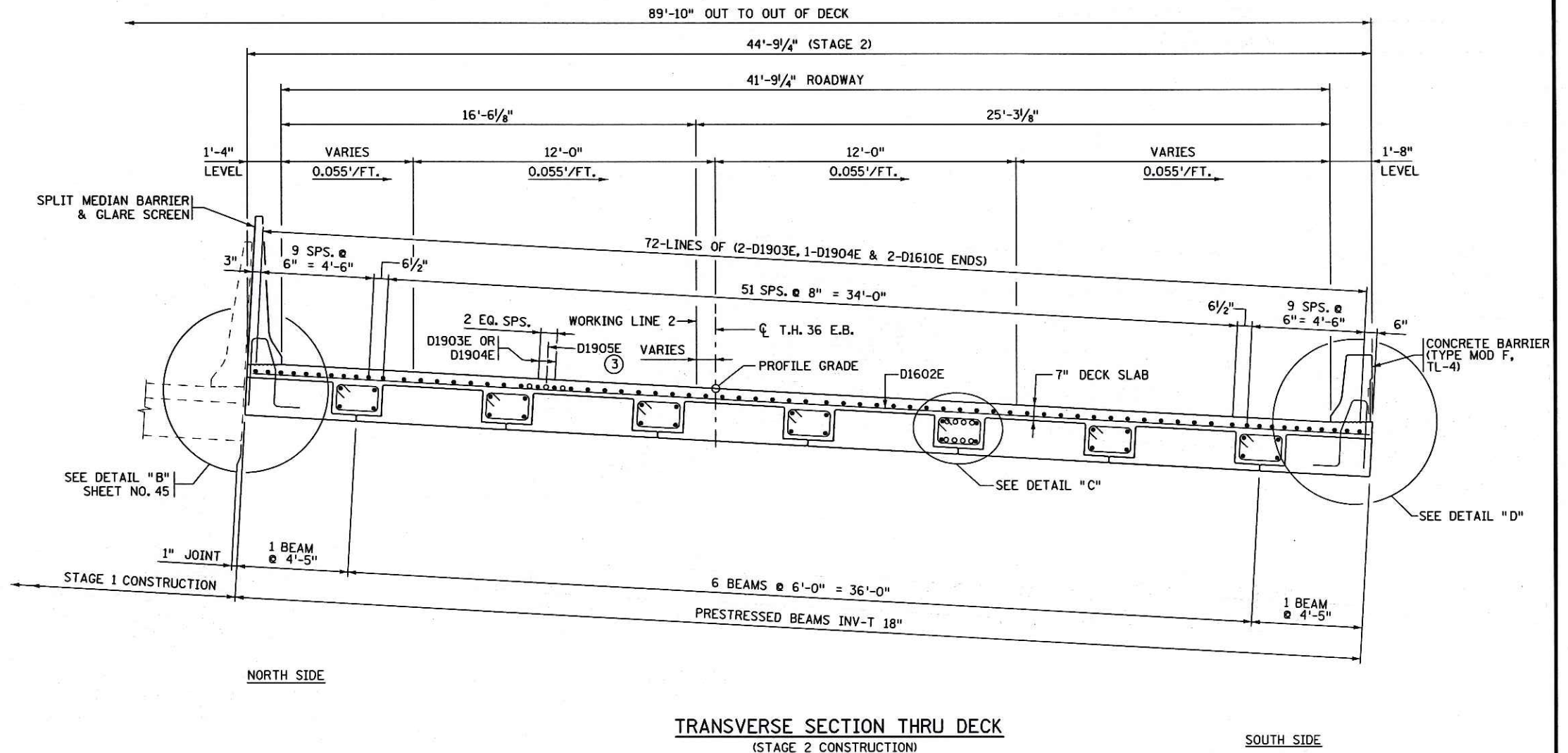
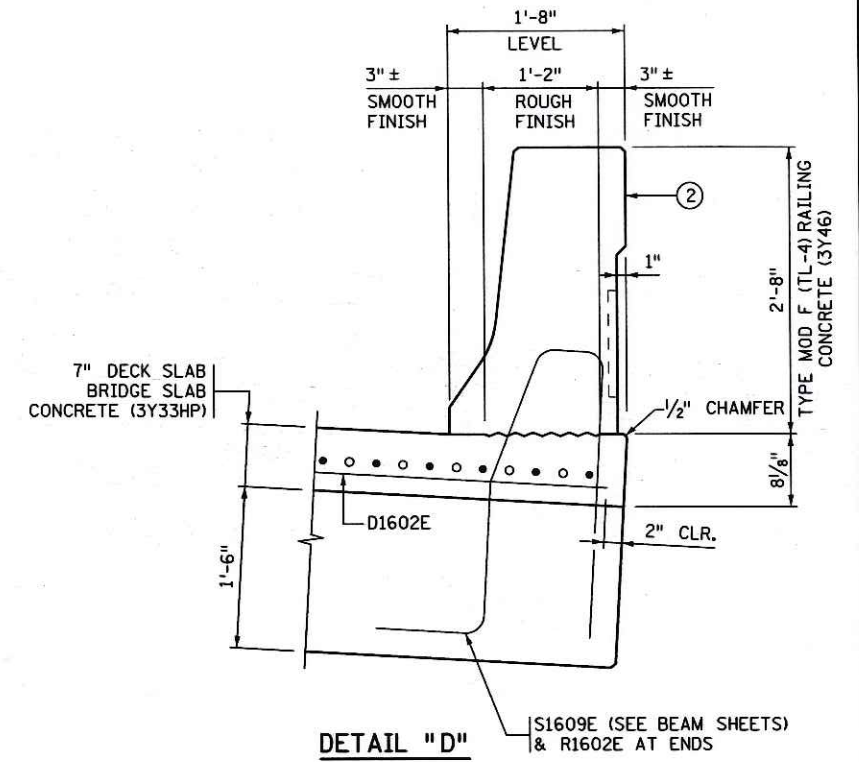
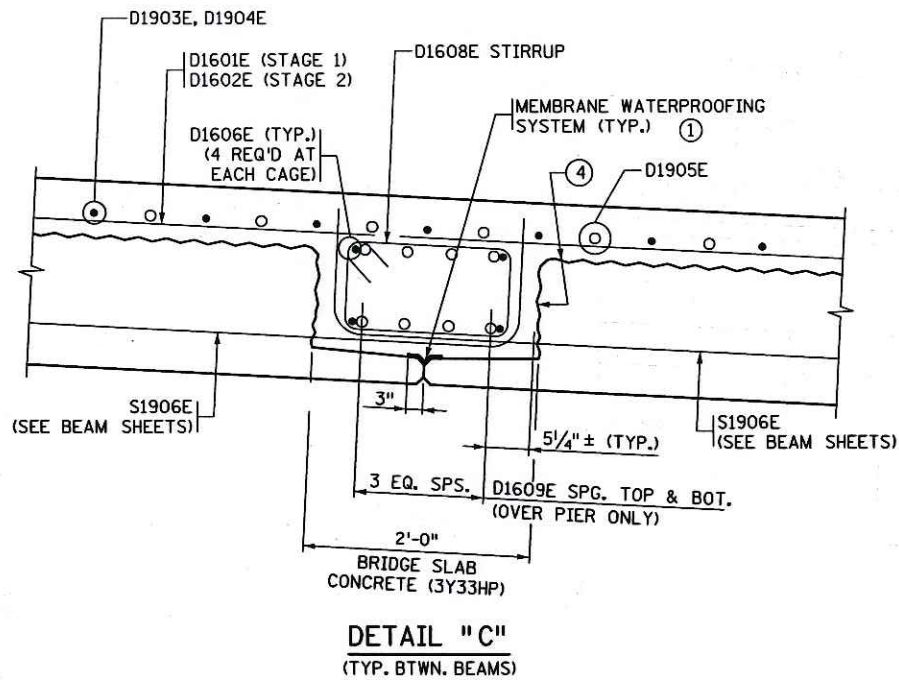
TRANSVERSE SECTION
STAGE 1 CONSTRUCTION



DETAIL "A"

TIME : 8:17:43 AM
 PLOTTED : 01-FEB-2013
 PATH & FILENAME: Bridge/Final_Design/6/62037/Cadd-Plan/br62037_sup

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



NOTES:

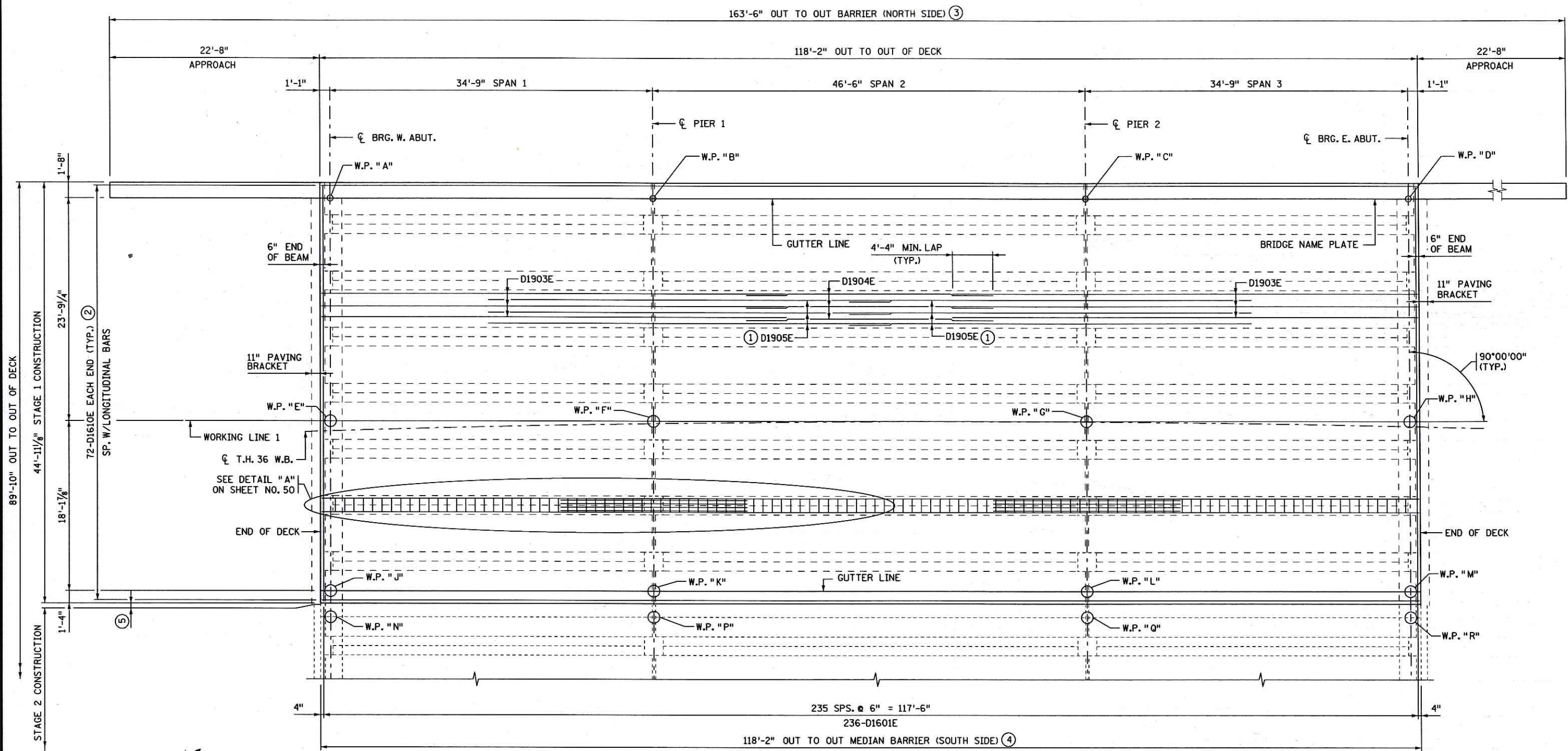
- ① MEMBRANE WATERPROOFING SYSTEM IS INCIDENTAL TO "BRIDGE SLAB CONCRETE (3Y33HP)". PERFORATE AS REQUIRED TO DRAIN ANY WATER. MEMBRANE AT THIS LOCATION USED AS LOCAL BOND BREAKER, NOT WATERPROOFING.
- ② BARRIER SHALL BE PLACED PLUMB.
- ③ STAGGER OVER PIERS BETWEEN LONGITUDINAL BARS. SEE SHEET NO. 50 FOR STAGGER DIAGRAM OVER PIERS.
- ④ CONTRACTOR SHALL PREWET PRECAST BEAMS BEFORE DECK CONCRETE IS PLACED. SEE SPECIAL PROVISIONS.

CERTIFIED BY <i>Angel M. Staples</i> LICENSED PROFESSIONAL ENGINEER	DATE 2/1/13	TITLE: SUPERSTRUCTURE DETAILS	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. 46 OF 68 SHEETS				

TIME : 8:17:50 AM
 PLOTTED : 01-FEB-2013
 PATH & FILENAME: Bridge/Final_Design/6/62037/Cadd-Plan/br62037_sup

TIME : 8:17:57 AM
 PLOTTED : 01-FEB-2013
 PATH & FILENAME: Bridge/Final_Design/6/62037/Cadd-Plan/br62037_sup

FILENAME: IP_PWP-d1489447-br62037_sup.dgn



DECK PLAN
 (STAGE 1 CONSTRUCTION)

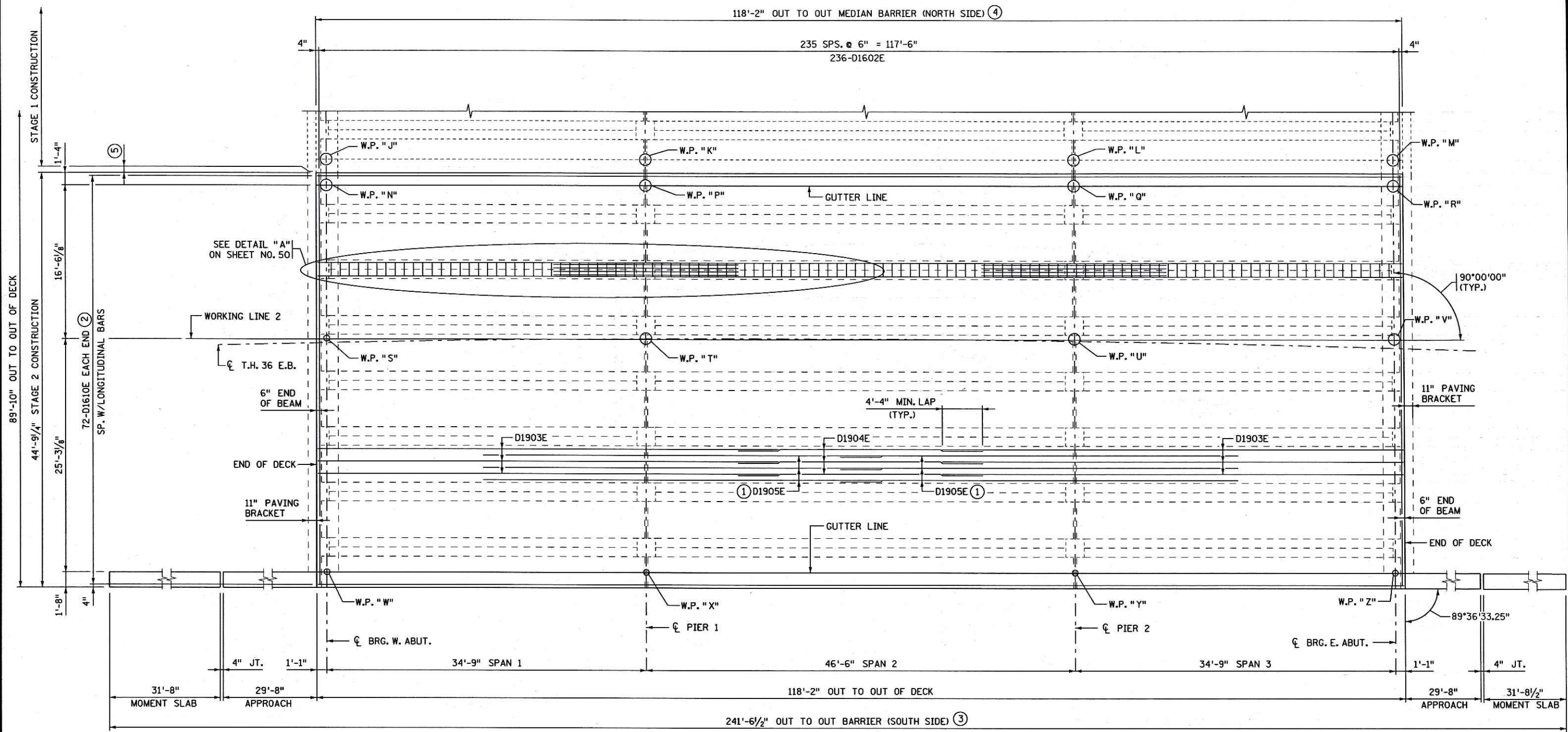
NOTES:

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

TIME : 8:18:04 AM
 PLOTTED : 01-FEB-2013
 PATH & FILENAME: Bridge/Final_Design/6/62037/Cadd-Plan/br62037_sup

FILENAME: IP_PWP-dj489447-br62037_sup.dgn



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.

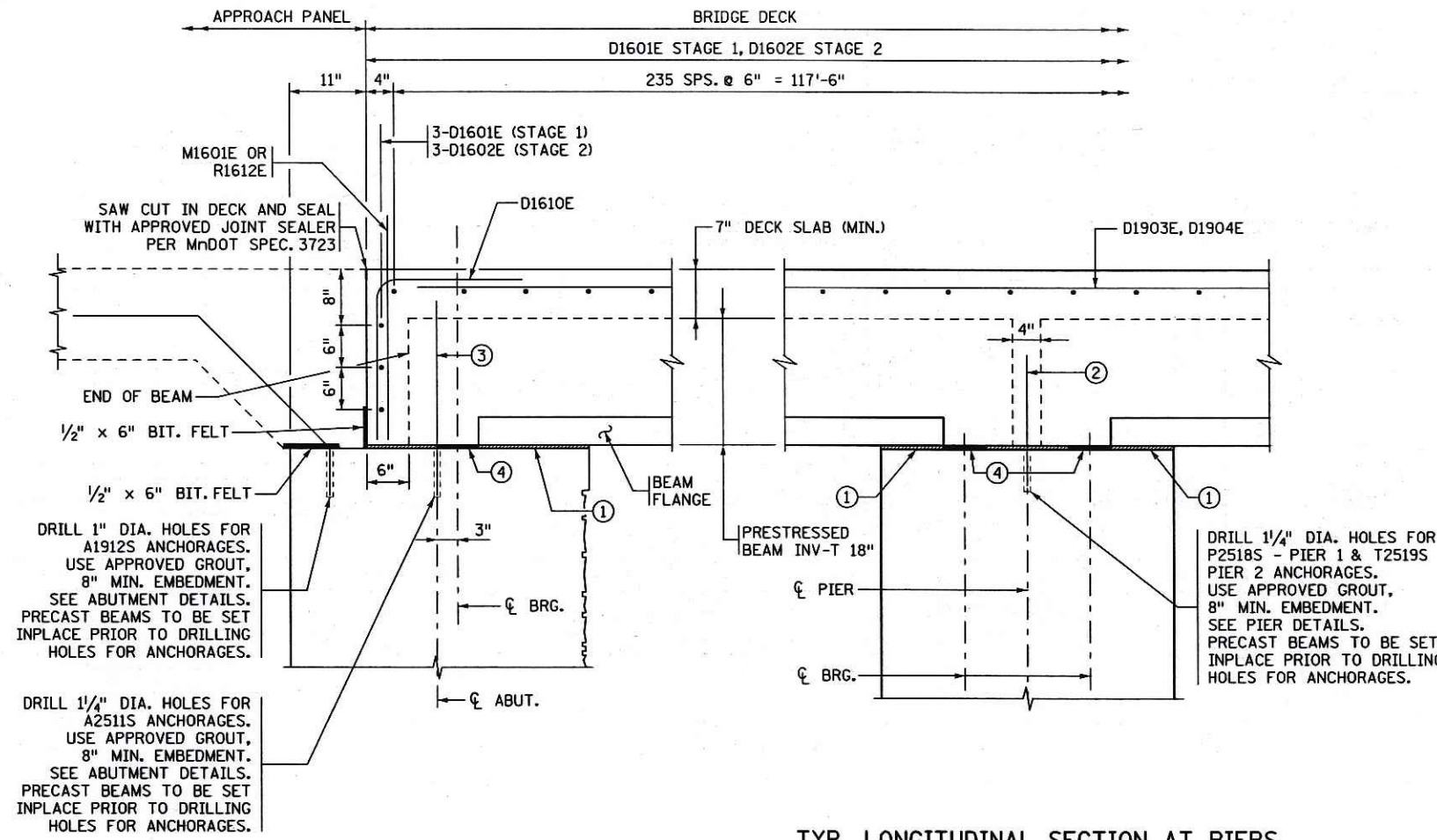
CERTIFIED BY <i>Angel M. Staples</i> LICENSED PROFESSIONAL ENGINEER NAME: ANGEL M. STAPLES	DATE 2/1/13 LIC. NO. 41656	TITLE: SUPERSTRUCTURE DETAILS	DES: MDH	DR: RLV	APPROVED:	BRIDGE NO. 62037
			CHK: NJV	CHK: DCH	<i>2/1/13</i>	
			SHEET NO. 48 OF 68 SHEETS			

**BILL OF REINFORCEMENT
FOR SUPERSTRUCTURE**

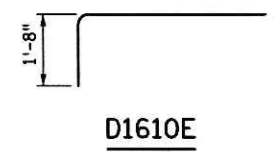
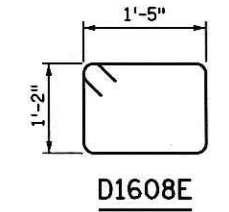
BAR	STAGE 1 NO.	STAGE 2 NO.	LENGTH	SHAPE	LOCATION
D1601E	242	—	44'-7"	—	DECK TRANSVERSE
D1602E	—	242	44'-5"	—	DECK TRANSVERSE
D1903E	144	144	50'-0"	—	DECK LONGITUDINAL
D1904E	72	72	26'-6"	—	JOINT LONGITUDINAL
D1905E	142	142	43'-2"	—	JOINT LONGIT. OVER PIERS
D1606E	56	56	34'-8"	—	JOINT LONGITUDINAL
D1607E	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

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.



TYP. LONGITUDINAL SECTION AT ABUTMENTS



TIME: 8:18:11 AM
 PLOTTED: 01-FEB-2013
 PATH & FILENAME: Bridge/Final_Design/6/62037/Cadd-Plan/br62037_sup
 FILENAME: IP_PWP-dl489447-br62037_sup.dgn
 dgm1name
 mmddjy

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

TITLE: SUPERSTRUCTURE DETAILS

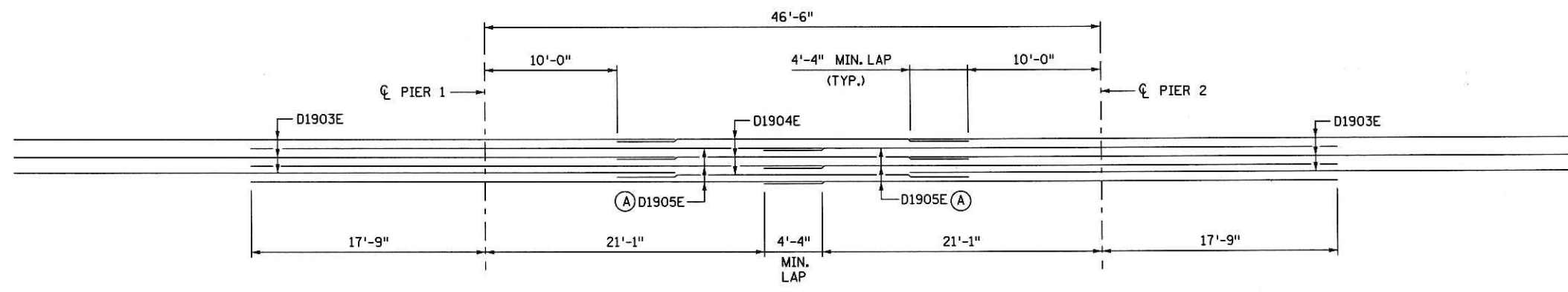
DES: MDH OR: RLW APPROVED: *2/1/13*
 CHK: NJV CHK: DCH
 SHEET NO. 49 OF 68 SHEETS

BRIDGE NO. 62037

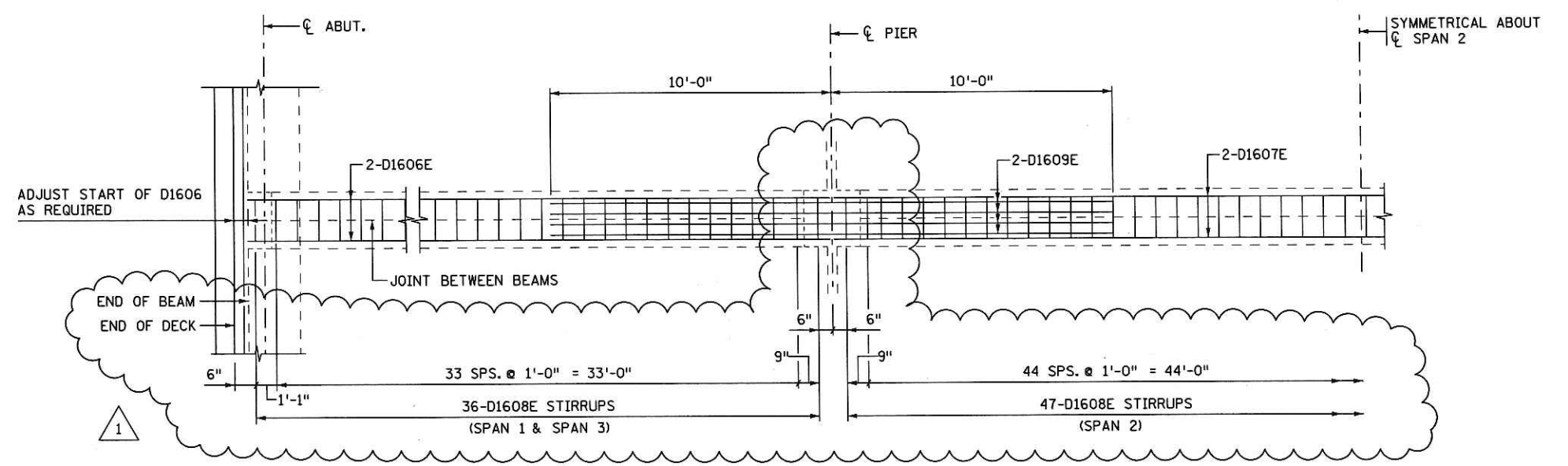
SUMMARY OF QUANTITIES FOR SUPERSTRUCTURE

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
⑤ 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 DATE
 NAME: ANGEL M. STAPLES LIC. NO. 41656

TITLE: SUPERSTRUCTURE DETAILS

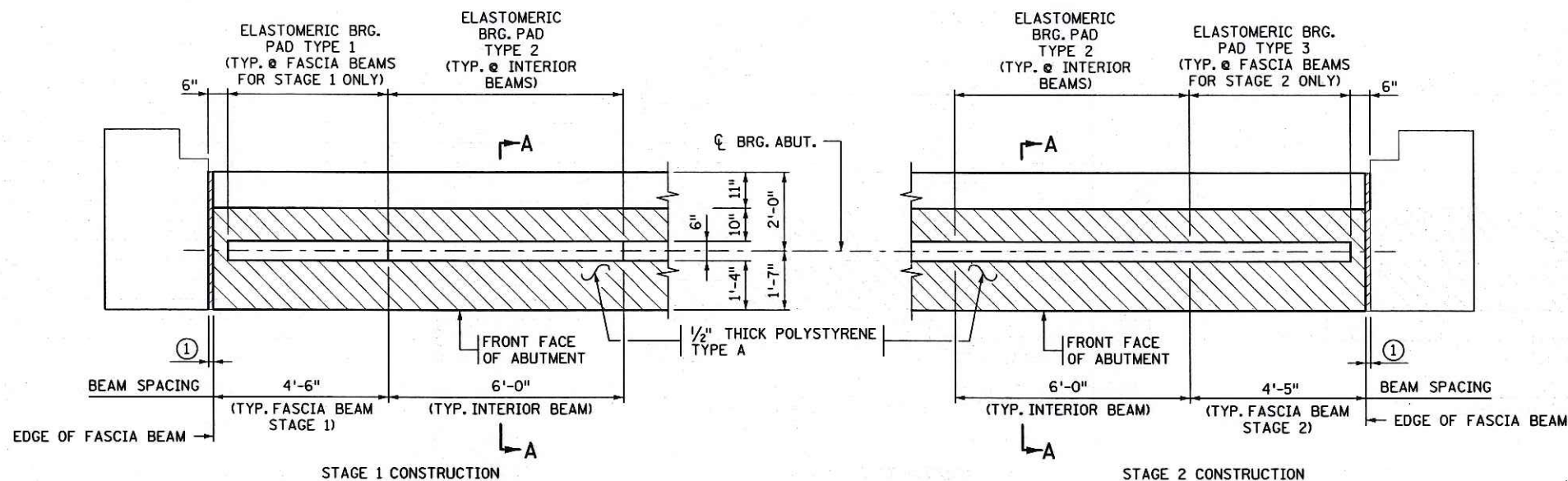
DES: MDH DR: RLV APPROVED: 5/6/13
 CHK: NJV CHK: DCH
 SHEET NO. 50R OF 68 SHEETS

BRIDGE NO. 62037

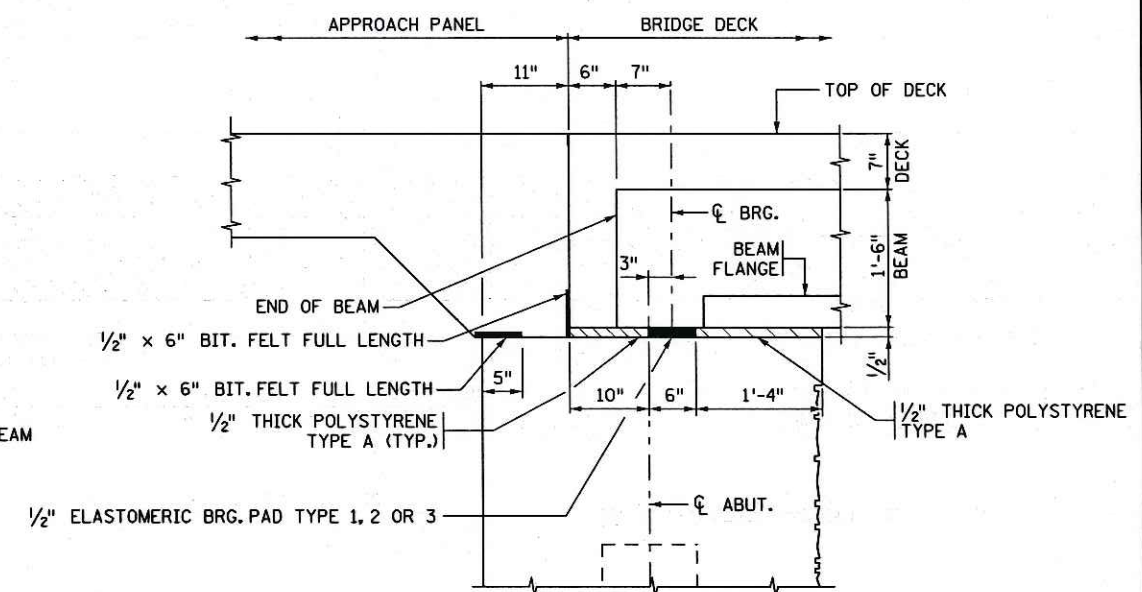
TIME : 8:40:01 AM
 PLOTTED : 06-MAY-2013
 PATH & FILENAME: Bridge/Final_Design/6/62037/Cadd-Plan/br62037_sup.dgn
 FILENAME: IP_PWP-dl489447\br62037_sup.dgn

FILENAME: IP_PWP-df489447-br62037_sup.dgn

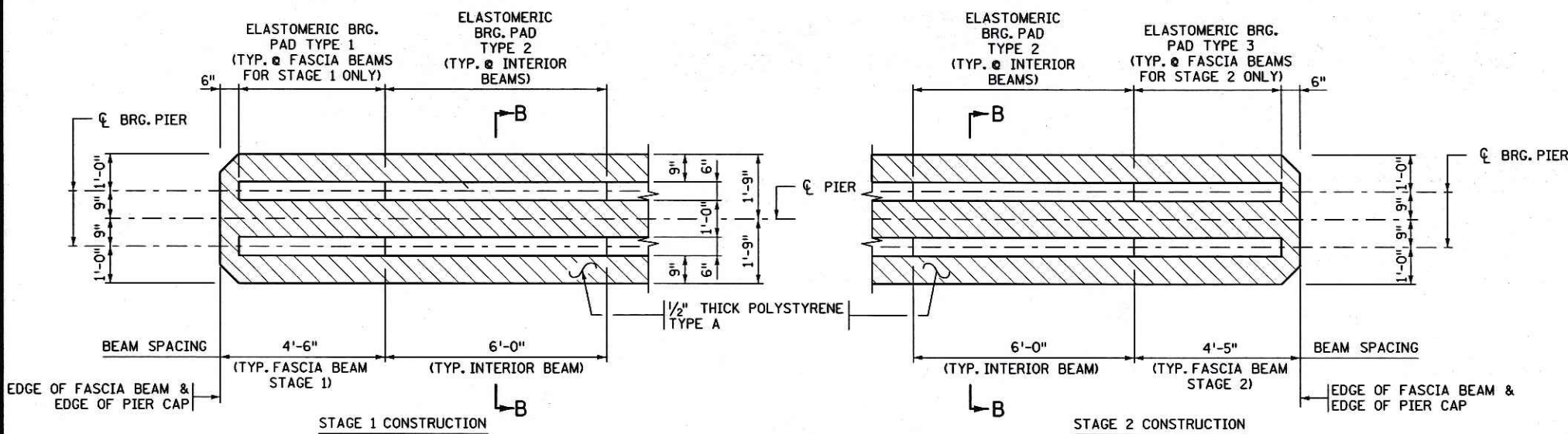
TIME: 8:18:24 AM
 PLOTTED: 01-FEB-2013
 PATH & FILENAME: Bridge/Final_Design/6/62037/Cadd-Plan/br62037_sup



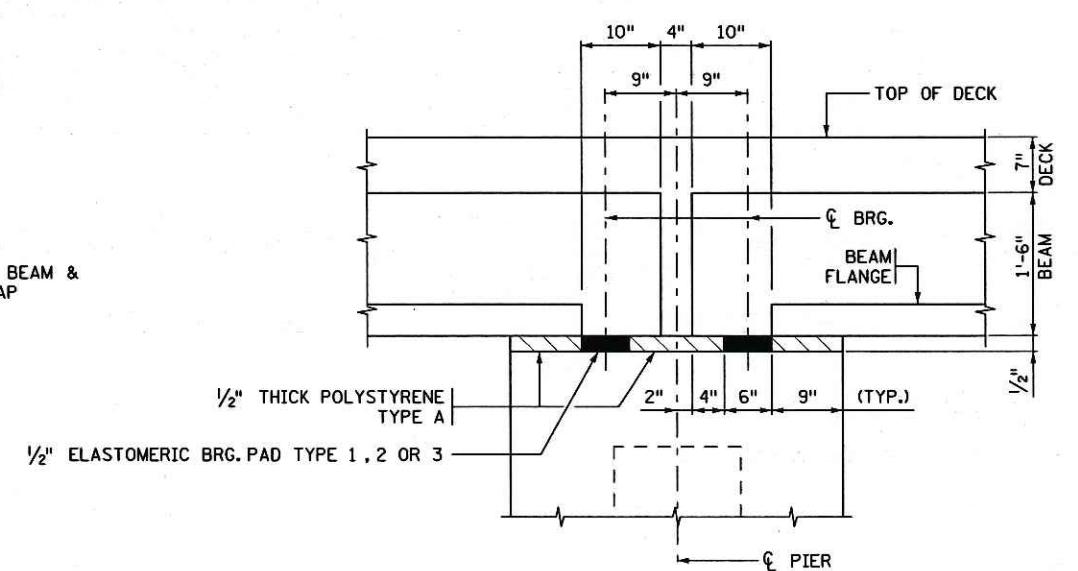
1/2" ELASTOMERIC BEARING PADS @ ABUTMENTS



SECTION A-A

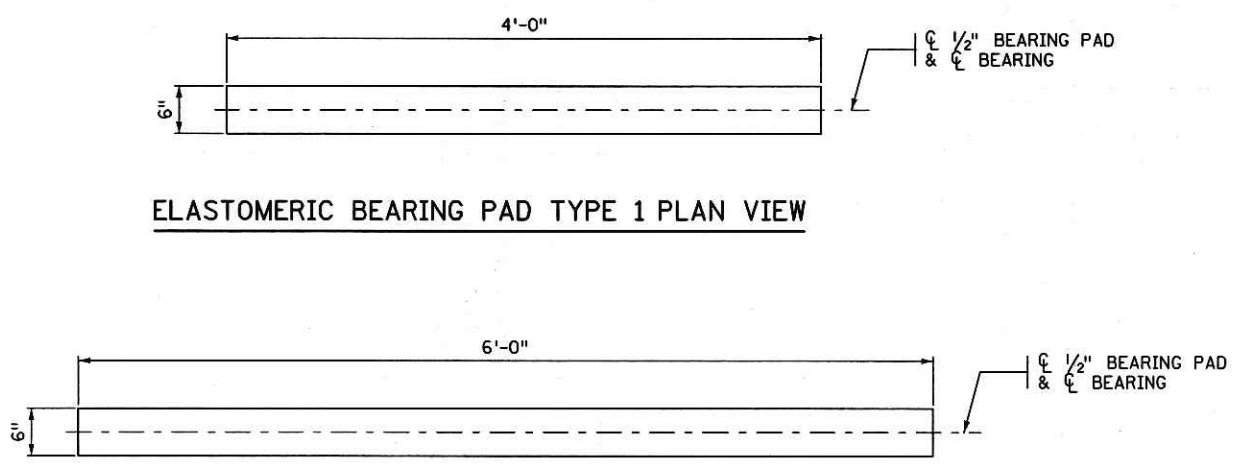


1/2" ELASTOMERIC BEARING PADS @ PIER

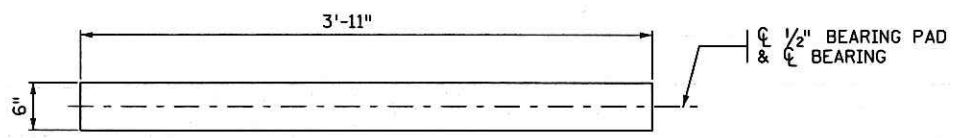


SECTION B-B

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
- DIAGONAL HATCHING DENOTES 1/2" THICK POLYSTYRENE TYPE A.

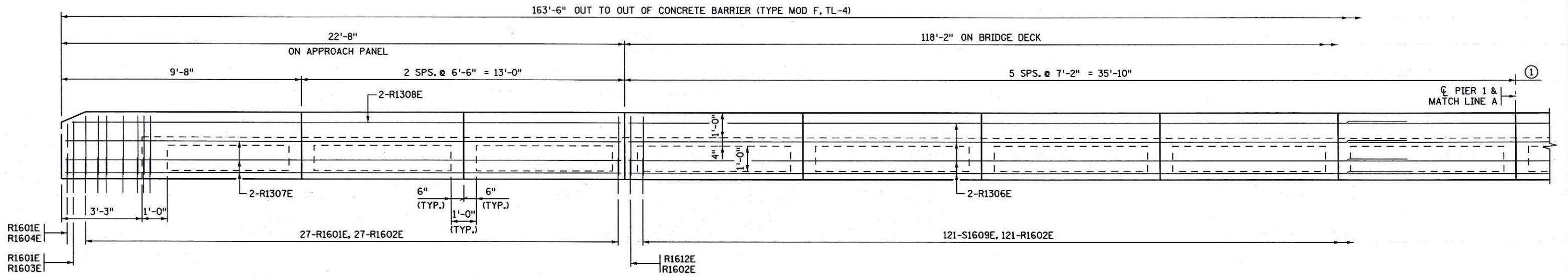
CERTIFIED BY <i>Angel M. Staples</i> 2/1/13 LICENSED PROFESSIONAL ENGINEER DATE		TITLE: SUPERSTRUCTURE DETAILS		DES: MDH CHK: NJV	DR: RLW CHK: DCH	APPROVED: <i>3/1/13</i>	BRIDGE NO. 62037
NAME: ANGEL M. STAPLES LIC. NO. 41656				SHEET NO. 51 OF 68 SHEETS			

FILENAME: IP_PWP-dl489447-br62037_sup.dgn

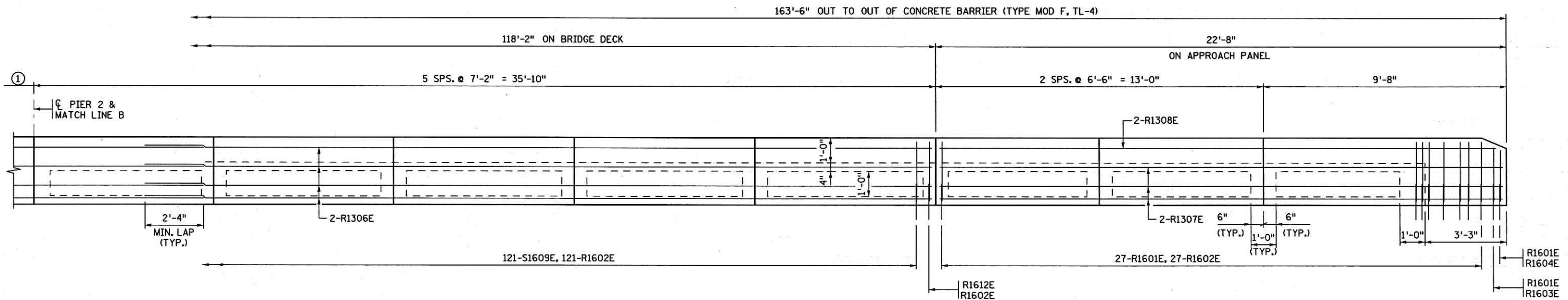
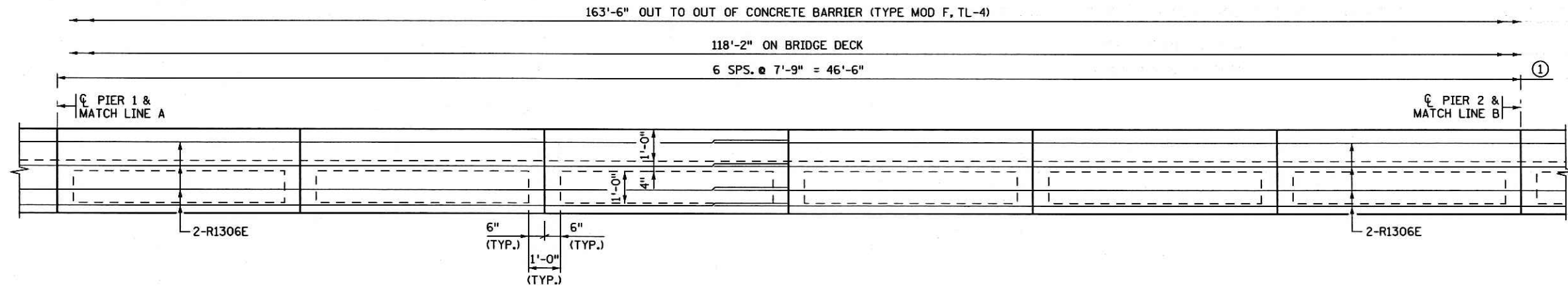
PATH & FILENAME: Bridge/Final_Design/6/62037/Cadd-Plan/br62037_sup

TIME: 8/8,31 AM

PLOTTED: 01-FEB-2013



WEST END



EAST END

INSIDE ELEVATION OF NORTH BARRIER

STAGE 1 CONSTRUCTION

NOTE:

- ① CONTROL JOINT SPACING.

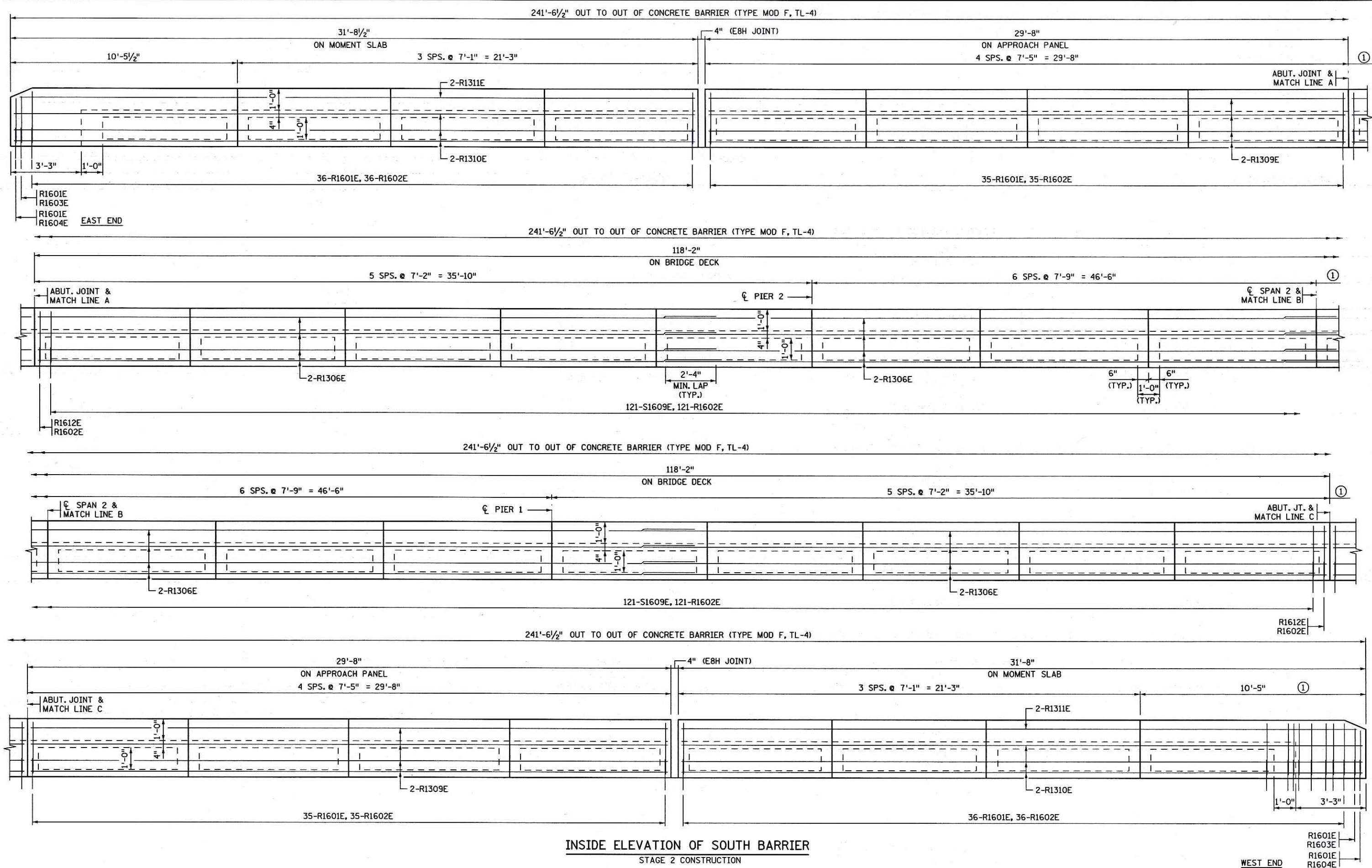
CERTIFIED BY *Angel M. Staples* 2/1/13
 LICENSED PROFESSIONAL ENGINEER DATE
 NAME: ANGEL M. STAPLES LIC. NO. 41656

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

DES: MDH DR: RLV APPROVED: 2/1/13
 CHK: NJV CHK: DCH
 SHEET NO. 52 OF 68 SHEETS

BRIDGE NO. 62037

TIME : 8:48:37 AM
 PLOTTED : 01-FEB-2013
 PATH & FILENAME: Bridge/Final_Design/6/62037/Cadd-Plan/br62037_sup
 FILENAME: IP_PWP-dl#89447-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)

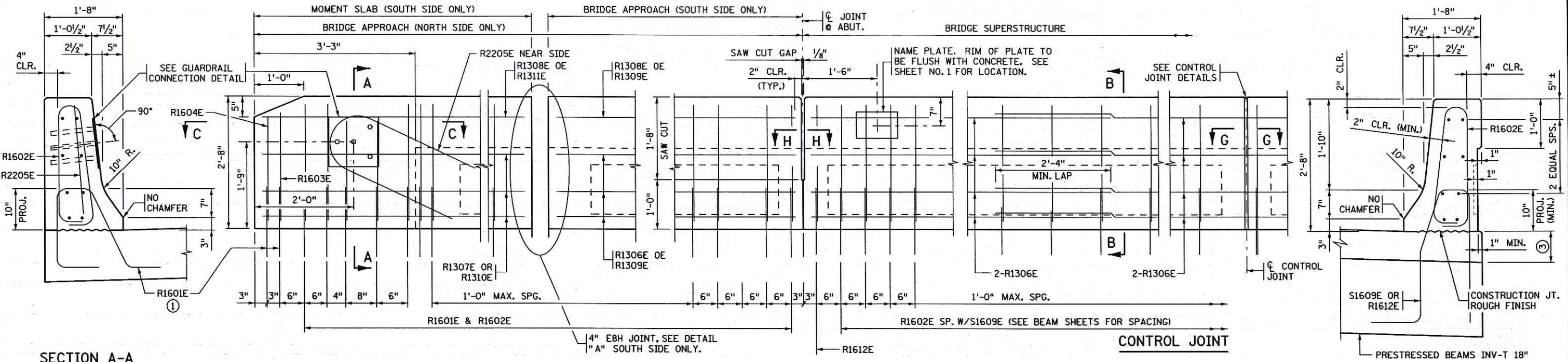
DES: MDH DR: RLV APPROVED: *2/1/13*
 CHK: NJV CHK: DCH
 SHEET NO. 53 OF 68 SHEETS

BRIDGE NO. 62037

FILENAME: IP_PWP-dj489447-br62037_sup.dgn

PATH & FILENAME: Bridge/Final_Design/6/62037/Cadd-Plan/br62037_sup

TIME: 8:48:44 AM
 PLOTTED: 01-FEB-2013

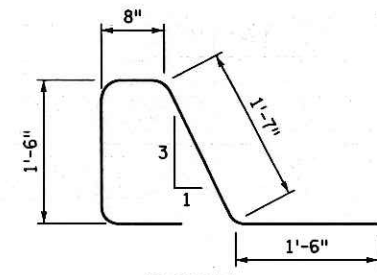


SECTION A-A

SECTION B-B

JOINT AT ABUTMENT

INSIDE ELEVATION OF PARAPET
 PARAPET MEETS TEST LEVEL 2
 REQUIREMENTS OF NCHRP REPORT 350

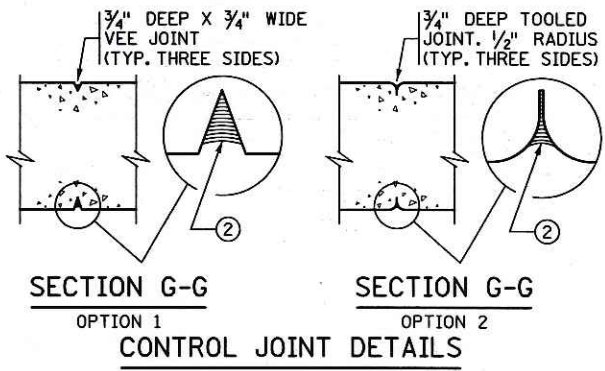
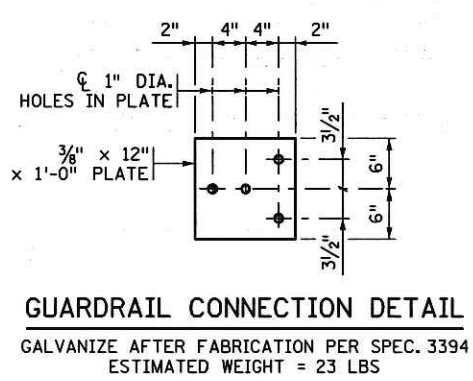
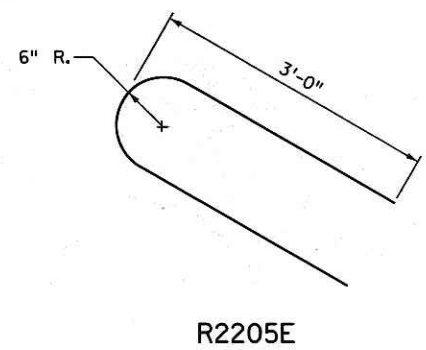
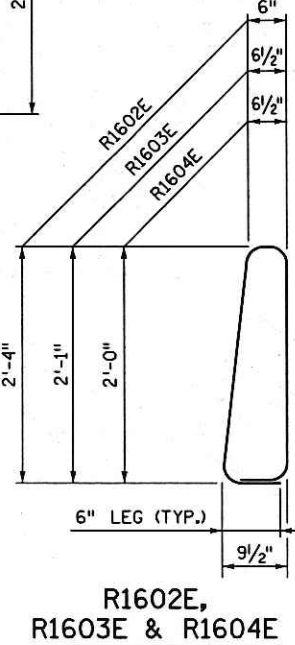
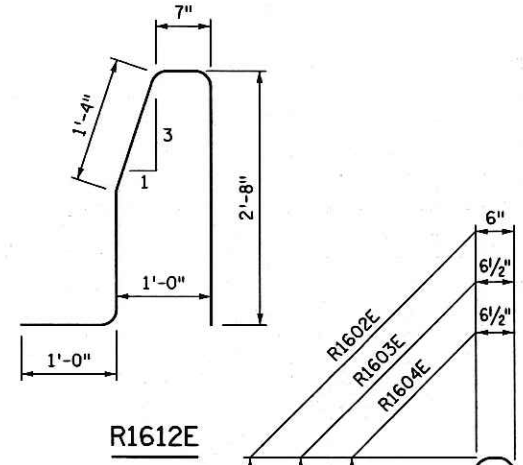
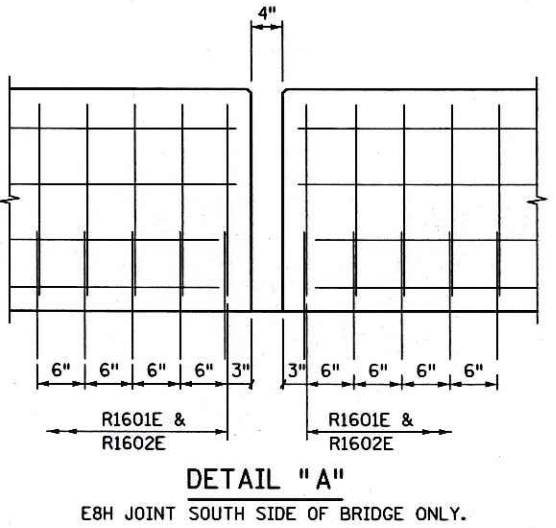
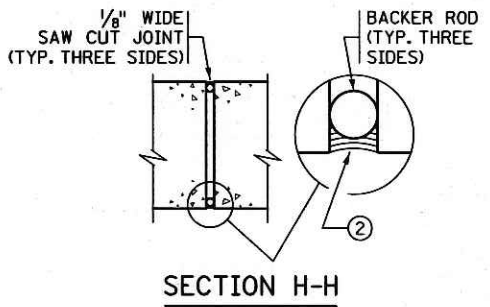
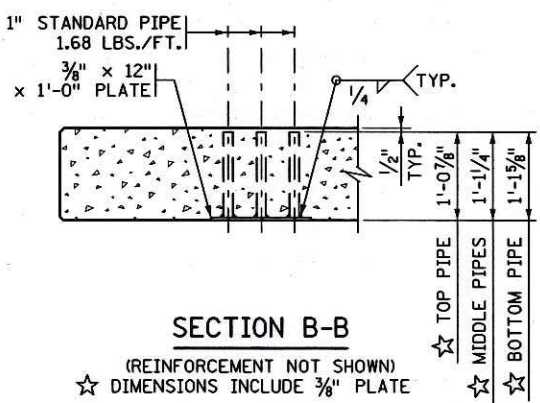


BILL OF REINFORCEMENT FOR TWO BARRIERS

BAR	STAGE 1 NO.	STAGE 2 NO.	LENGTH	SHAPE	LOCATION
R1601E	58	146	7'-4"		APPROACH DOWEL
R1602E	177	265	6'-3"		BARRIER VERTICAL
R1603E	2	2	5'-9"		BARRIER VERTICAL
R1604E	2	2	5'-7"		BARRIER VERTICAL
R2205E	2	2	6'-6"		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"		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.
- PLACE BAR ON TOP OF BOTTOM REINFORCEMENT MAT.
 - SEE SPECIAL PROVISIONS FOR JOINT SEALING REQUIREMENTS.
 - VARIES SEE SHEET NO. 45 & 46 FOR DETAILS.



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)
 WITH INTEGRAL END POST
 (WITHOUT CONCRETE WEARING COURSE)

DES: MDH DR: RLV
 CHK: NJV CHK: DCH
 APPROVED: 2/1/13
 SHEET NO. 54 OF 68 SHEETS

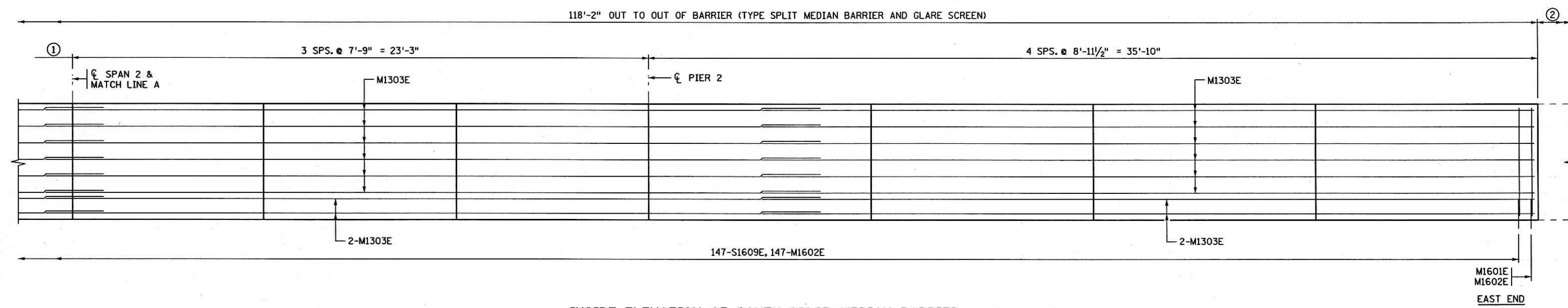
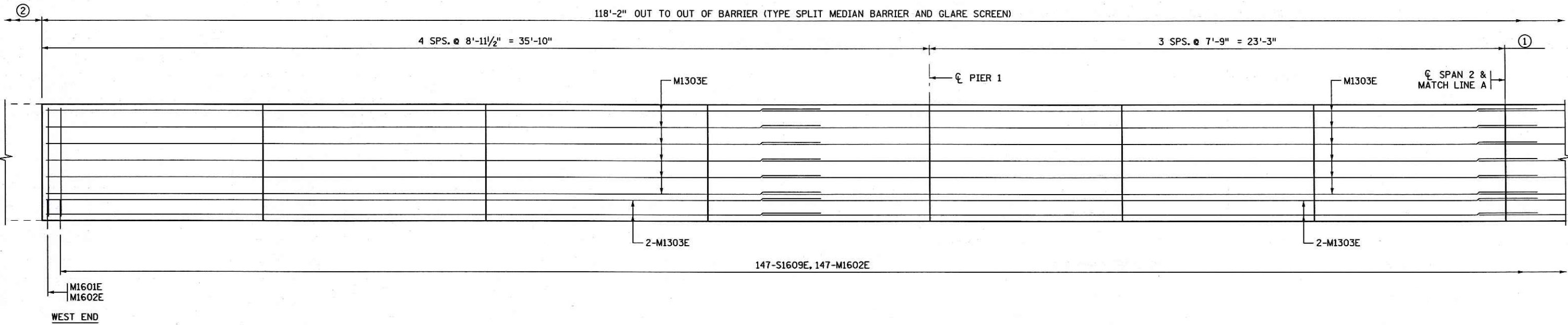
FIG. 5-397.115 MOD

BRIDGE NO. 62037

FILENAME: IP_PWP:dl489447/br62037_sup.dgn

FILENAME: Bridge/Final_Design/6/62037/Cadd-Plan/br62037_sup

TIME: 8:18:51 AM
PLOTTED: 01-FEB-2013

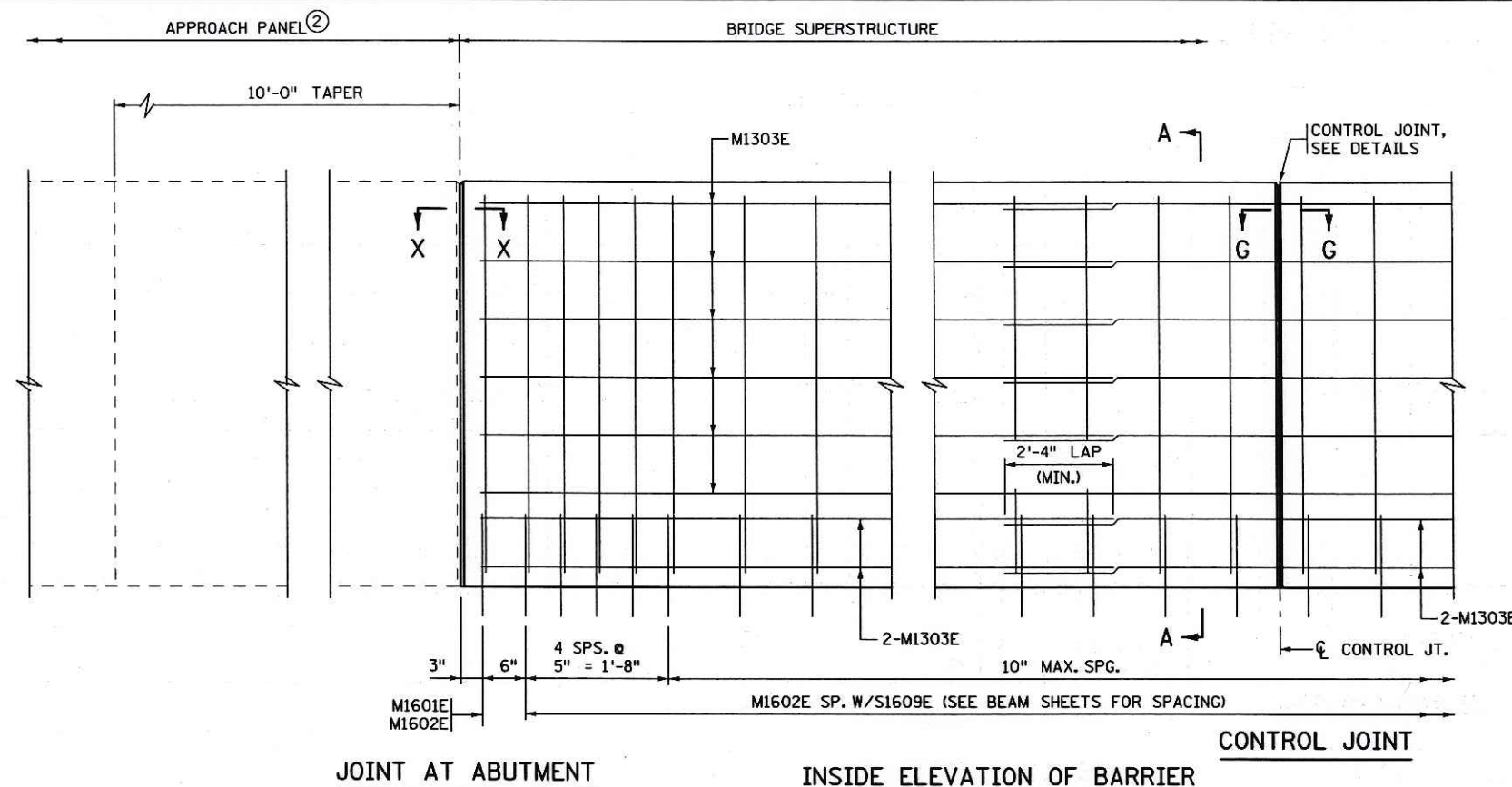


INSIDE ELEVATION OF SOUTH SPLIT MEDIAN BARRIER
 NORTH SPLIT MEDIAN BARRIER TO BE OPPOSITE HAND

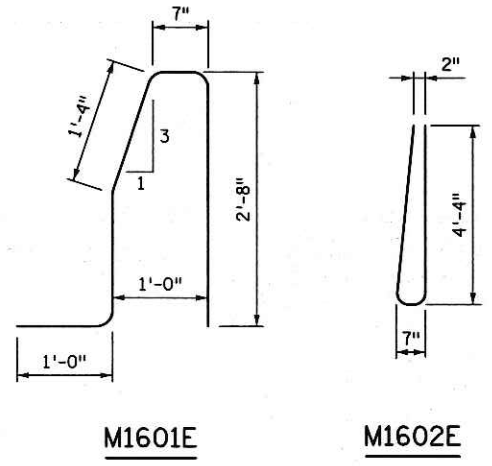
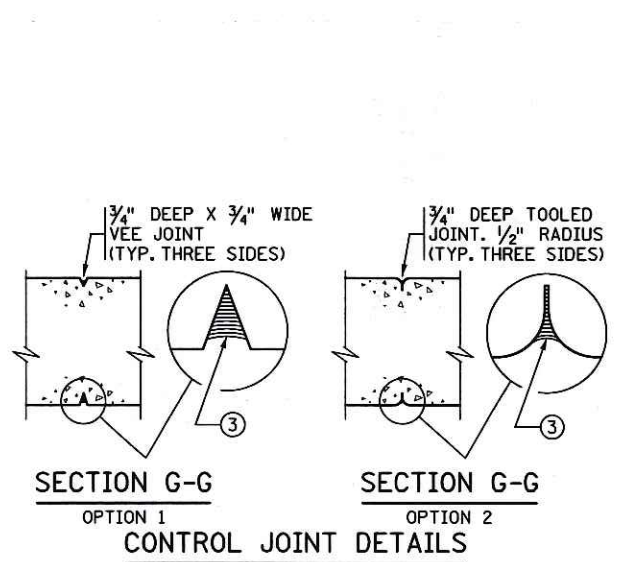
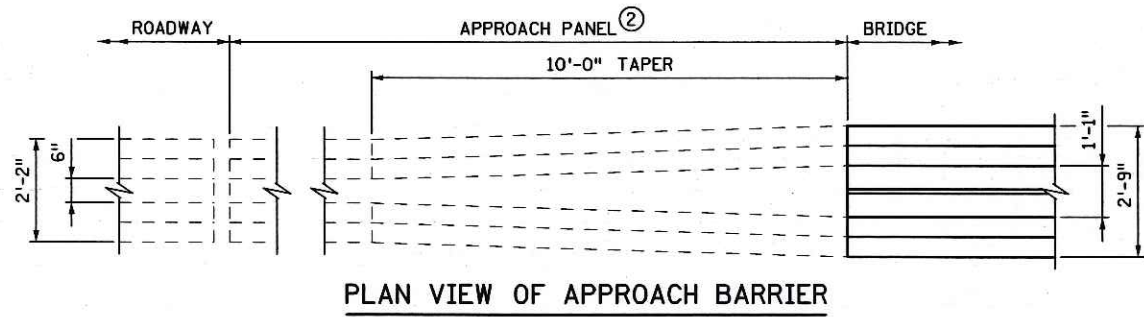
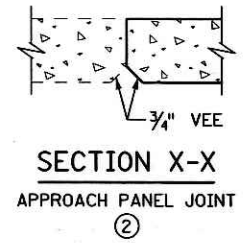
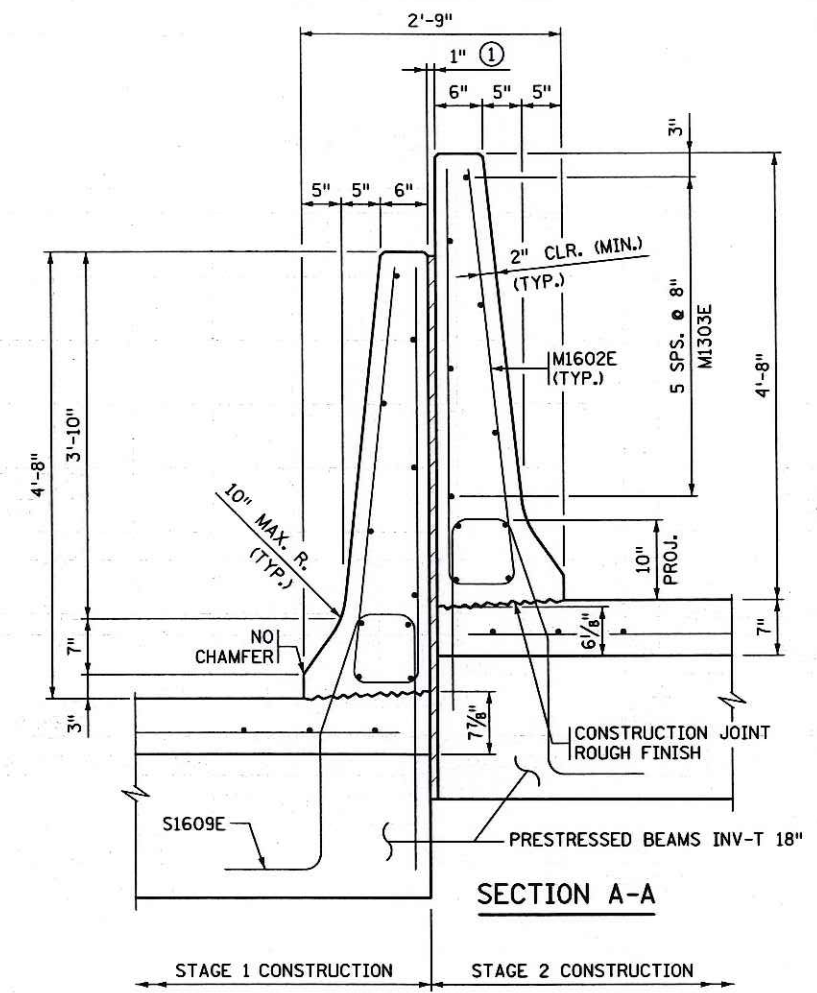
- NOTE:**
- ① CONTROL JOINT SPACING.
 - ② APPROACH PANEL, SEE GRADING PLAN.

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

TIME : 8:48:58 AM
 PLOTTED : 01-FEB-2013
 PATH & FILENAME: Bridge/Final_Design/6/62037/Coad-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"		BARRIER DOWEL
M1602E	148	148	9'-3"		BARRIER VERTICAL
M1303E	40	40	31'-3"		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.

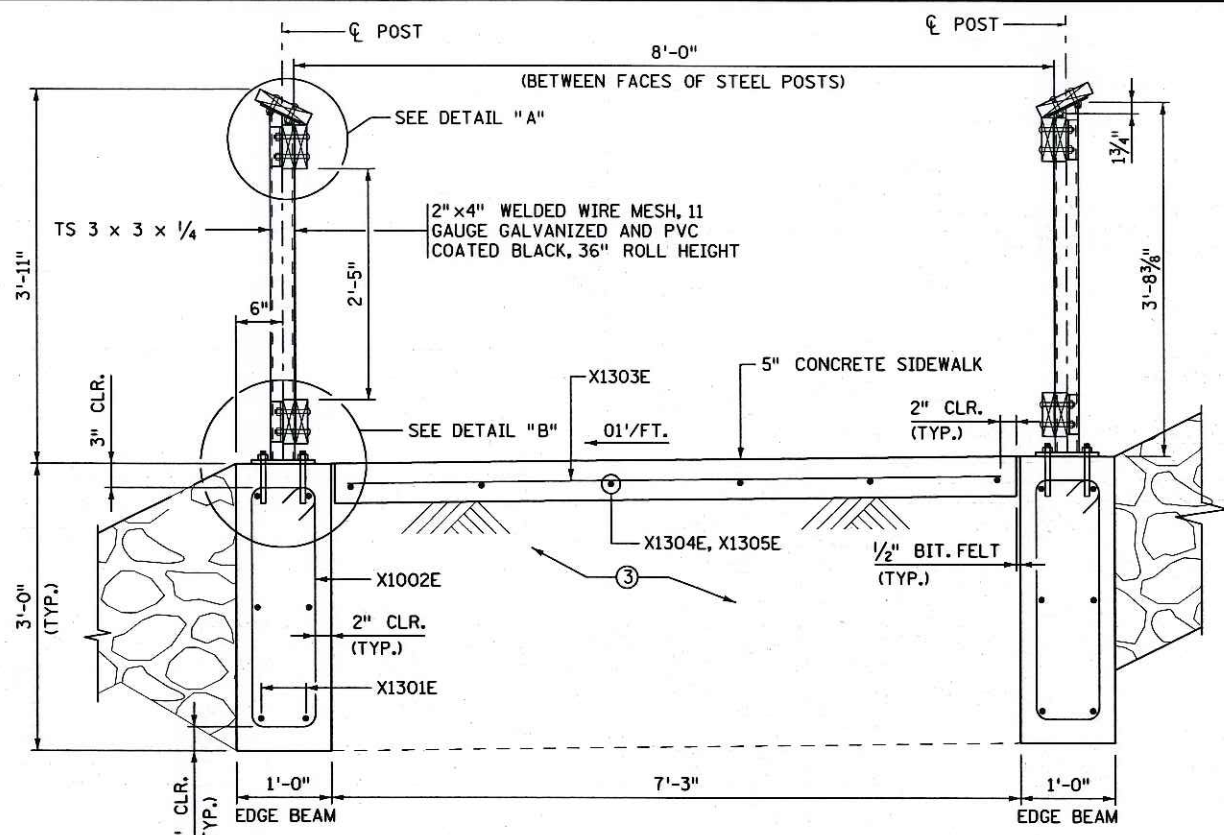
③ SEE SPECIAL PROVISIONS FOR JOINT SEALING REQUIREMENTS.

FIG. 5-397.135 MOD.

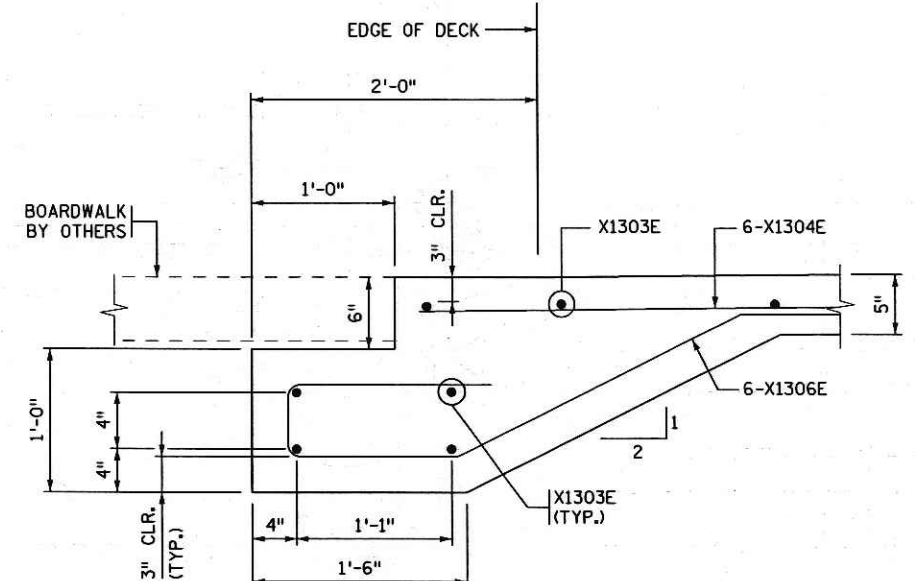
CERTIFIED BY <i>Angel M. Staples</i> LICENSED PROFESSIONAL ENGINEER NAME: ANGEL M. STAPLES LIC. NO. 41656	DATE <i>2/1/13</i> TYPE F (WITHOUT CONCRETE WEARING COURSE)	TITLE: SPLIT MEDIAN BARRIER AND GLARE SCREEN	DES: MDH CHK: NJV	DR: RLW CHK: DCH	APPROVED: <i>2/1/13</i>	BRIDGE NO. 62037
		SHEET NO. 56 OF 68 SHEETS				

FILENAME: IP_PWP-d1489447-br62037_dd.dgn

TIME: 8:19:04 AM
 PLOTTED: 01-FEB-2013
 PATH & FILENAME: Bridge/Final_Design/6/62037/Cadd-Plan/br62037_dd

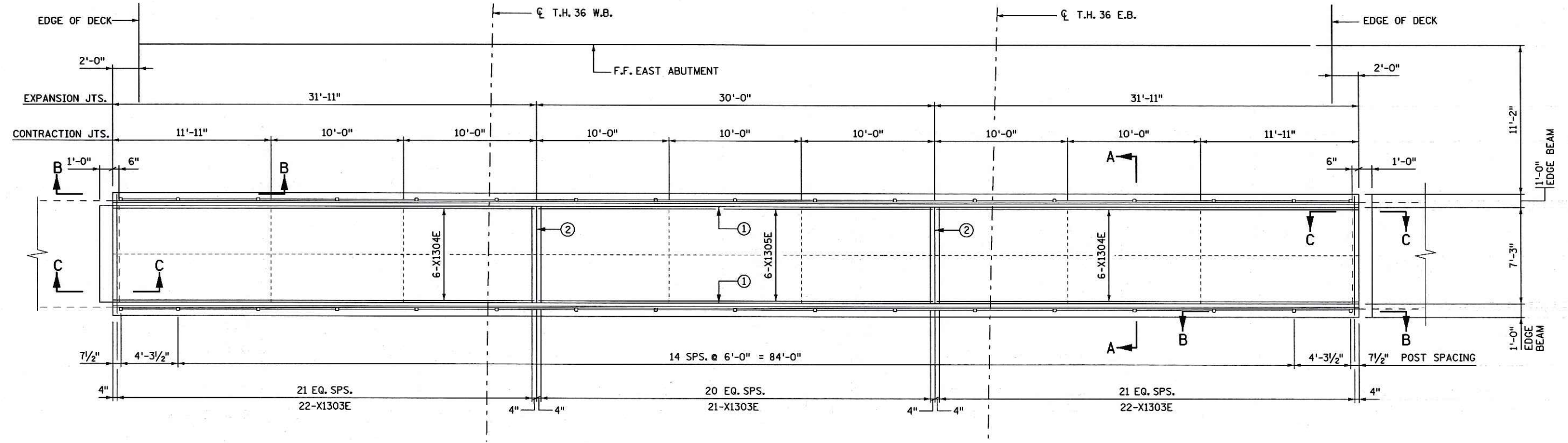


SECTION A-A



SECTION C-C
(SIDEWALK FOOTING)

- NOTES:**
- ALL STRUCTURAL STEEL SHALL COMPLY WITH MDOT SPEC. 3309.
 - ALL TIMBER SHALL COMPLY WITH MDOT SPEC. 3426
 - ALL TIMBER SHALL BE NOMINAL SIZE.
 - THE CONSTRUCTION OF TIMBER SHALL COMPLY WITH MDOT 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 5/8" 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 MDOT SPEC. 3149.2B, MODIFIED SO THAT NO MORE THAN 10% PASSES A NO. 200 SIEVE.



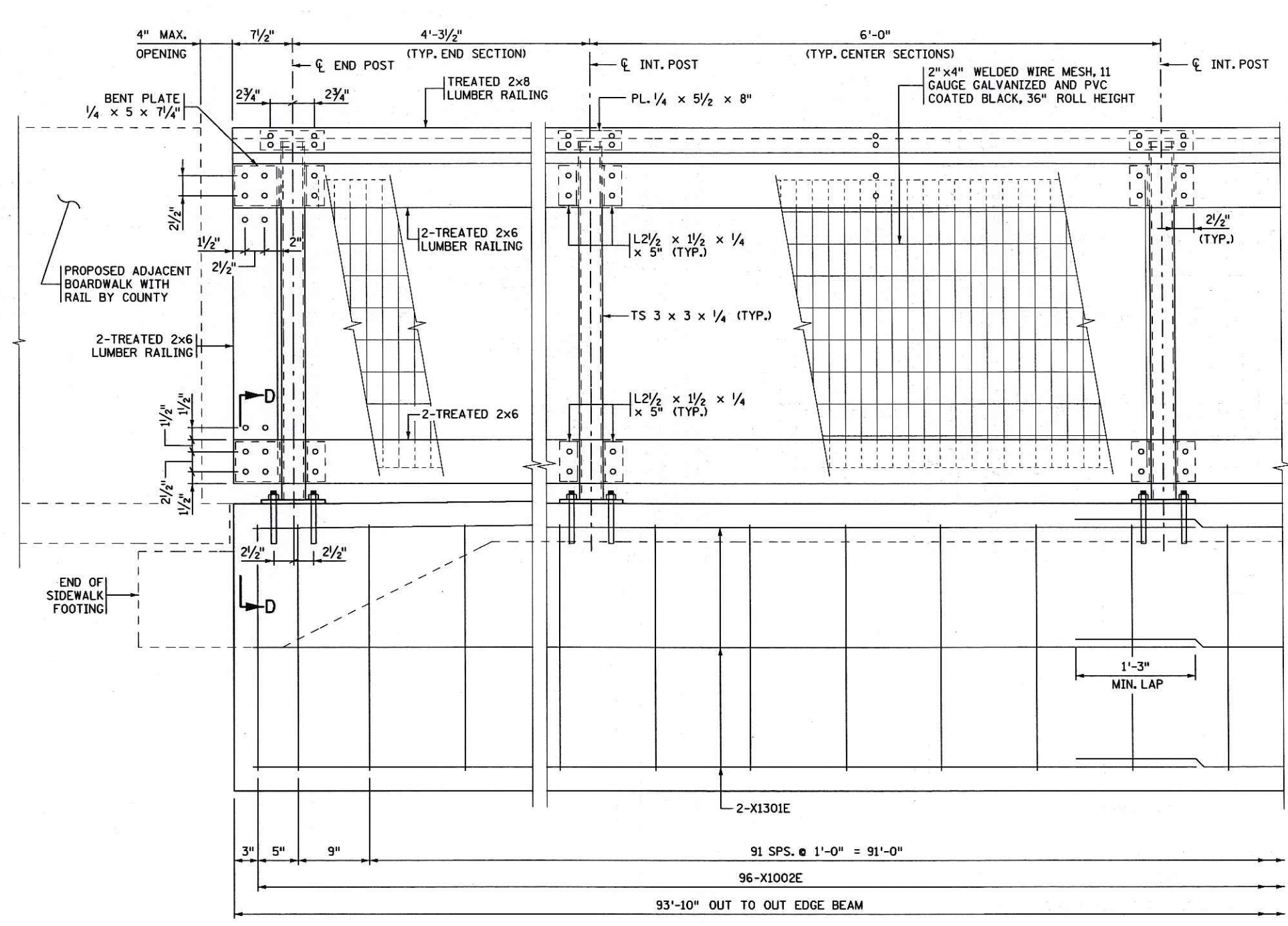
SIDEWALK PLAN

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

TIME : 9:22:14 AM
 PLOTTED : 01-FEB-2013
 PATH & FILENAME: Bridge/Final_Design/6/62037/Cadd-Plan/br62037_d.dgn

FILENAME: IP_PWP-dj489447-br62037_d.dgn

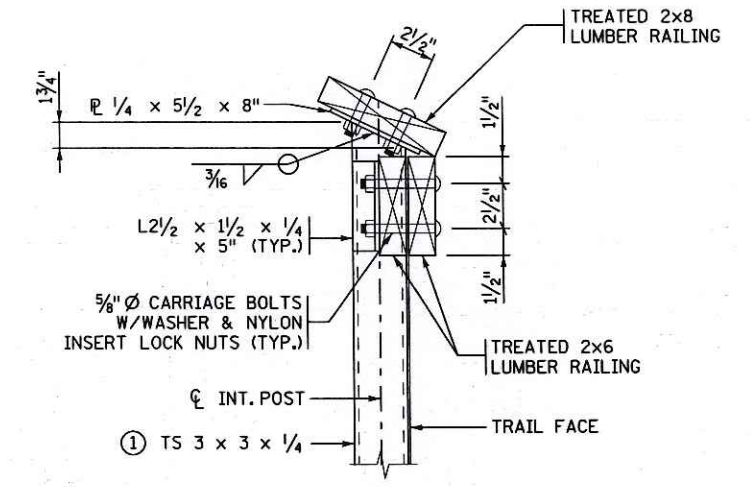
PATH & FILENAME: Bridge/Final_Design/6/62037/Cadd-Plan/br62037_d.dgn



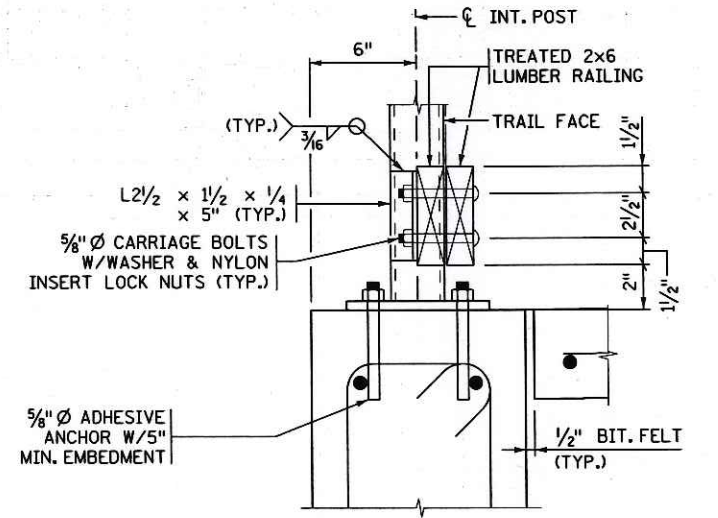
SECTION B-B

NOTE:

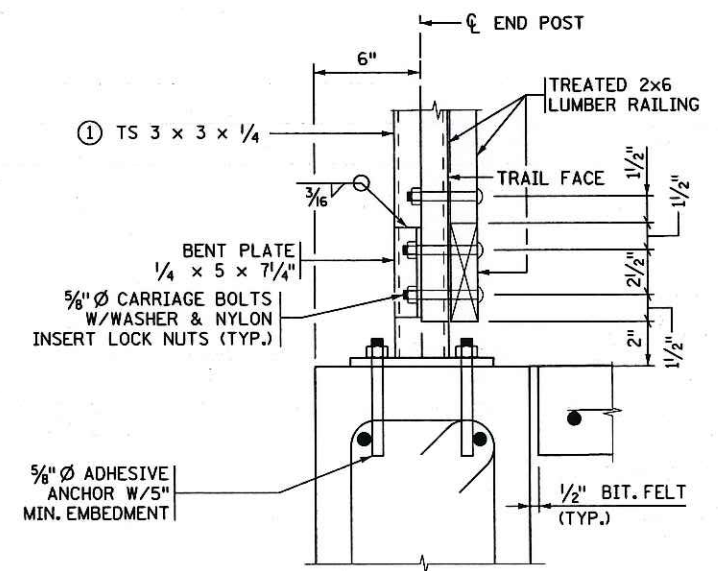
- ① TOP OF POST SHALL HAVE A 30° TAPER ON TOP. SEE "TOP OF POST DETAIL".
- SEE SHEET NO. 57 FOR LOCATION OF DETAIL "A" AND "B" AND SECTION B-B..



DETAIL "A"



DETAIL "B"



SECTION D-D

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

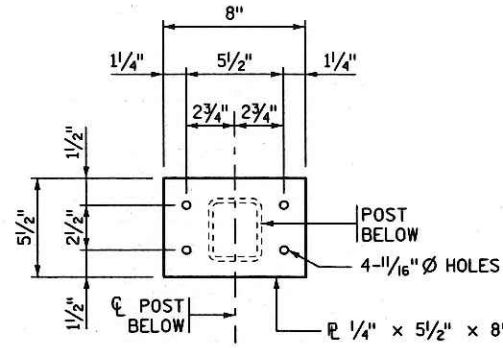
BILL OF REINFORCEMENT FOR PEDESTRIAN SIDEWALK

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

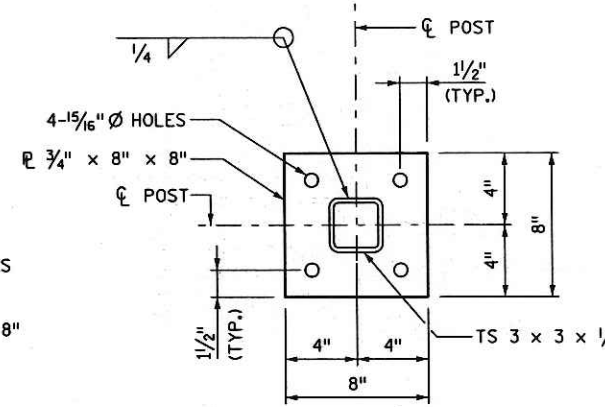
SUMMARY OF QUANTITIES FOR PEDESTRIAN SIDEWALK

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.

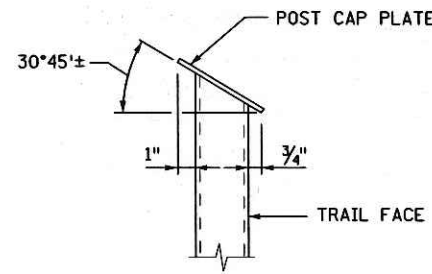
① PAYMENT SHALL BE CONSIDERED INCIDENTAL TO PAY ITEM 5" CONCRETE WALK".



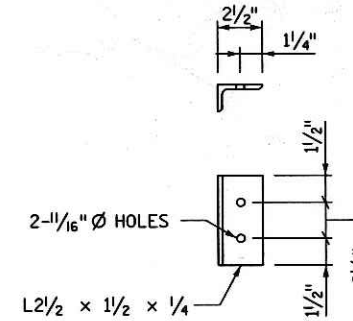
POST CAP PLATE



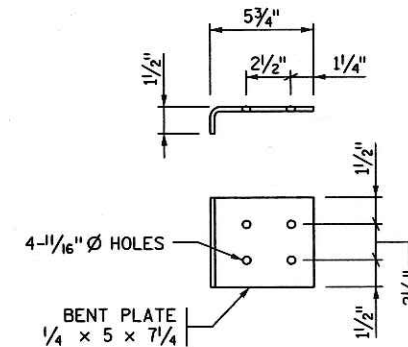
POST BASE PLATE



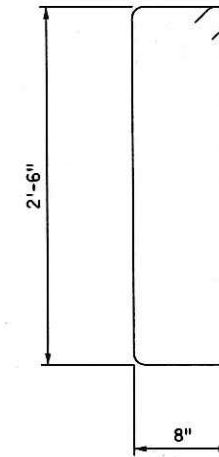
TOP OF POST DETAIL



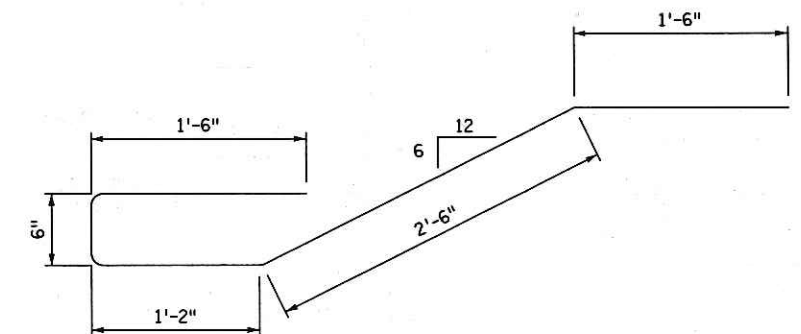
ANGLE AT POST



BENT PLATE AT END POST



X1301E



X1306E

TIME : 9:21:59 AM
 PLOTTED : 01-FEB-2013
 PATH & FILENAME: Bridge/Final_Design/6/62037/Codd-Plan/br62037_dd.dgn

FILENAME: IP_PWP-dl489447 br62037_dd.dgn

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

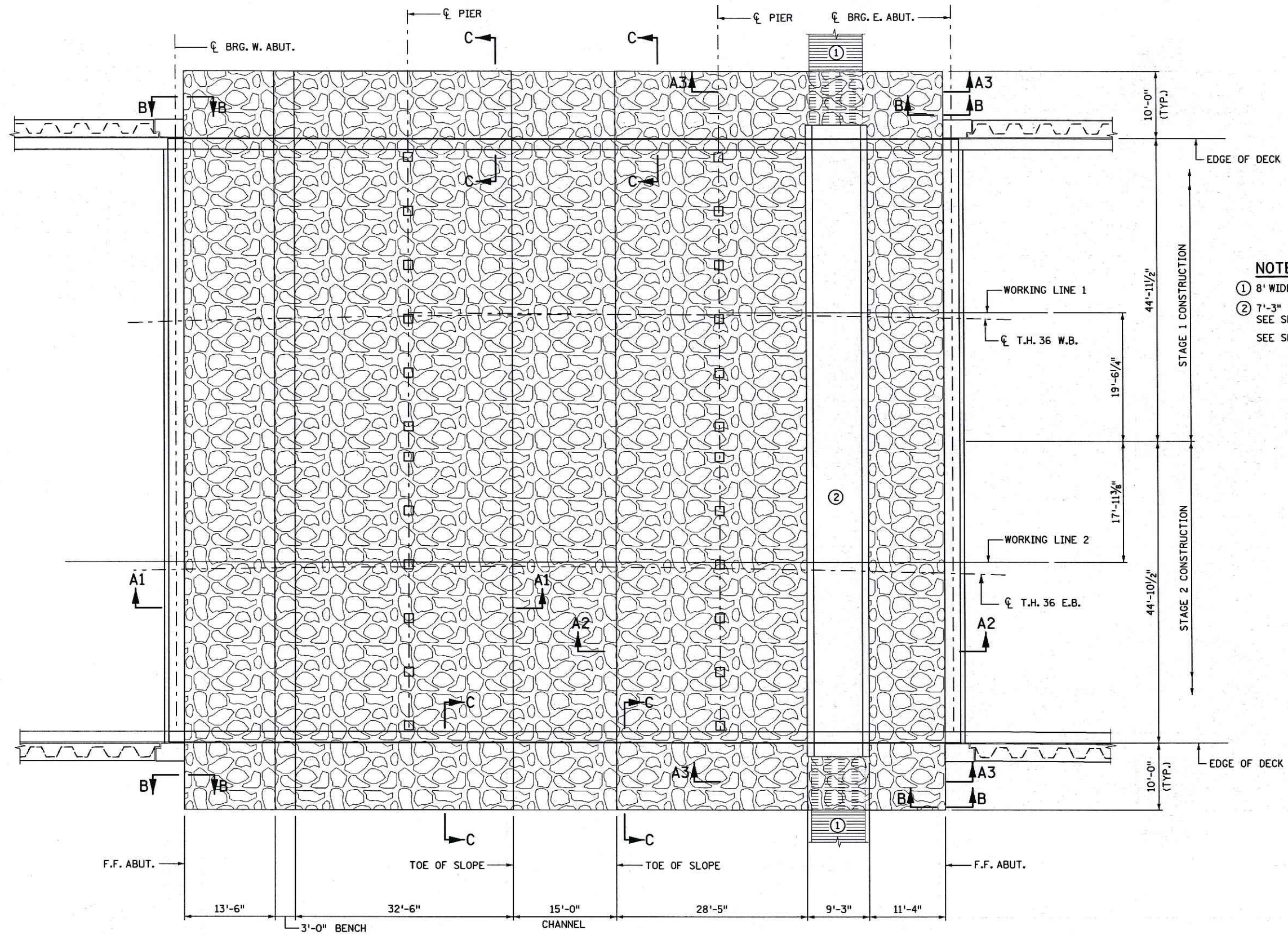
TITLE: CONCRETE WALK WITH PEDESTRIAN RAILING

DES: MDH DR: RLV APPROVED: *2/1/13*
 CHK: NJV CHK: DCH
 SHEET NO. 59 OF 68 SHEETS

BRIDGE NO. 62037

TIME : 8:19:26 AM
 PLOTTED : 01-FEB-2013
 PATH & FILENAME: Bridge/Final_Design/6/62037/Cadd-Plan/br62037_dd

FILENAME: IP_PWP-dl489447-br62037_dd.dgn



- 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.

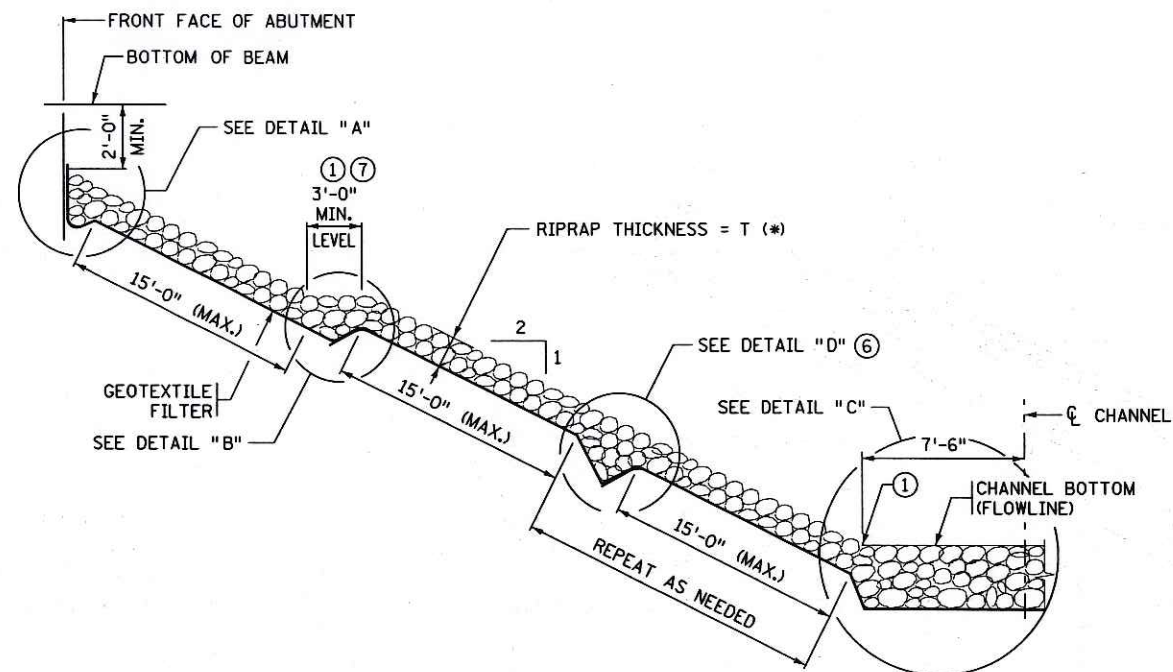
RIPRAP SLOPE PLAN

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

TIME : 8/9:32 AM
 PLOTTED : 01-FEB-2013
 PATH & FILENAME: Bridge/Final_Design/6/62037/Cadd-Plan/br62037.dwg

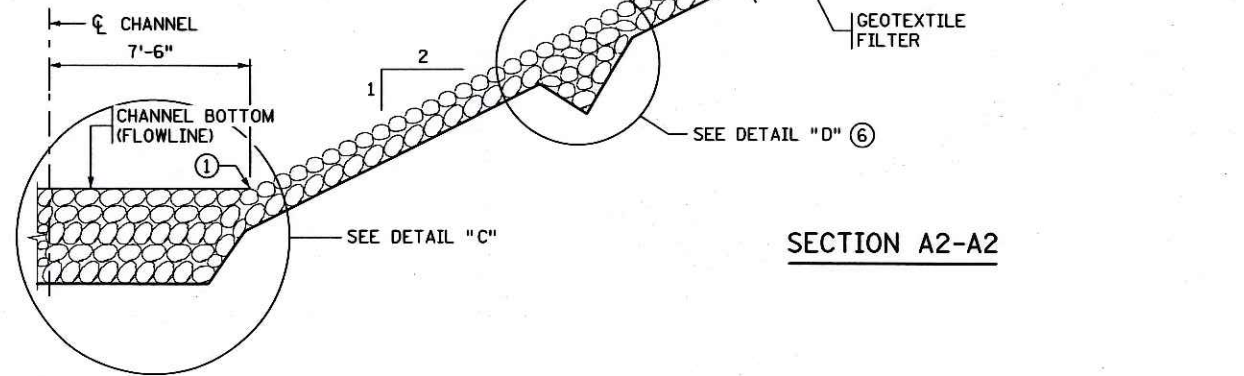
FILENAME: IP_PWP-dl489447-br62037-dd.dgn

PATH & FILENAME: Bridge/Final_Design/6/62037/Cadd-Plan/br62037.dwg

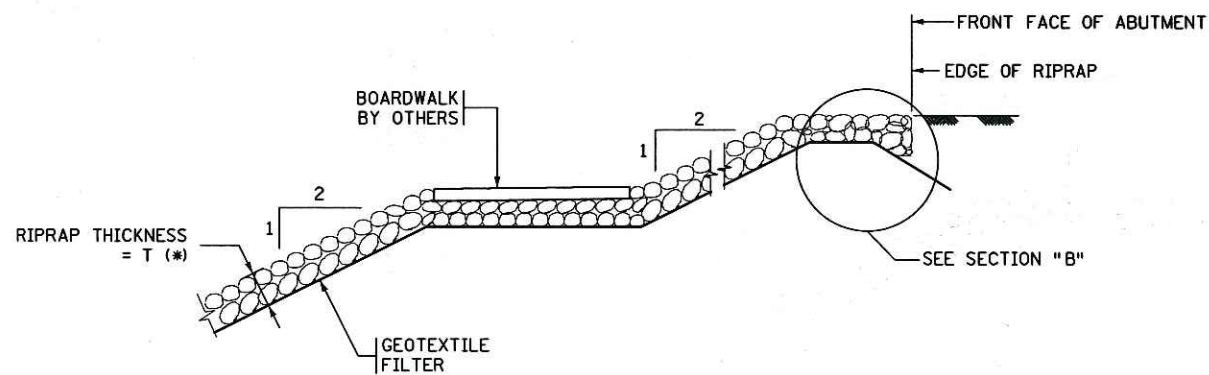


SECTION A1-A1
(PASSAGE BENCH WITH EXTENSION)

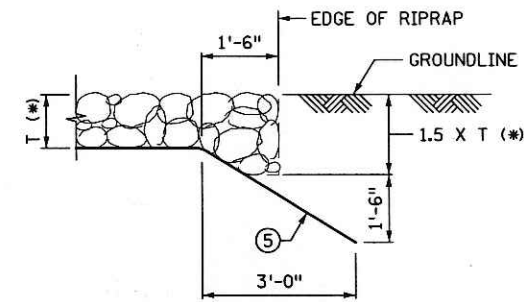
FOR SIDEWALK DETAILS
 SEE SHEET NO.S 57 & 58



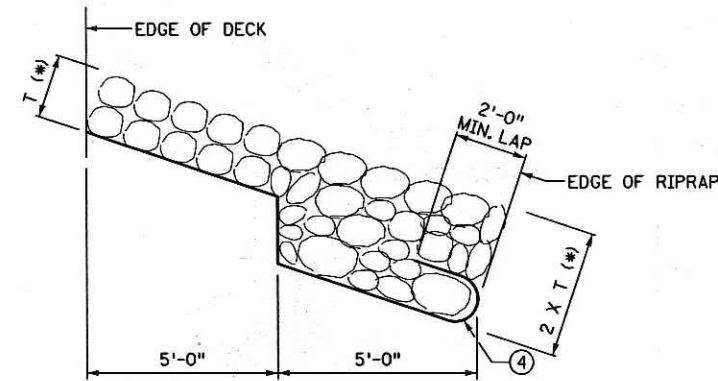
SECTION A2-A2



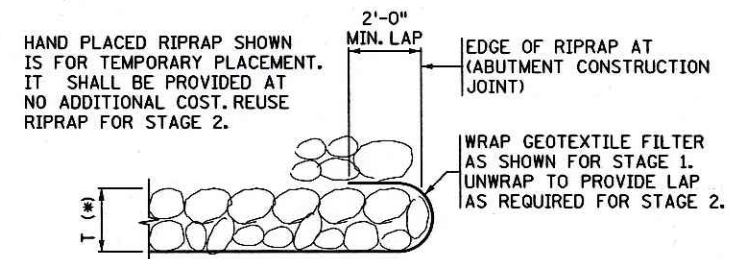
SECTION A3-A3



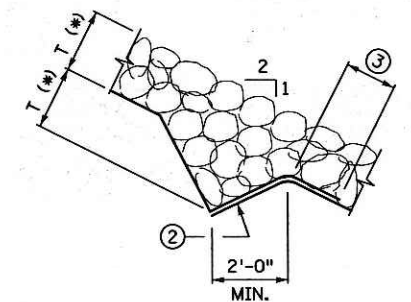
SECTION B-B



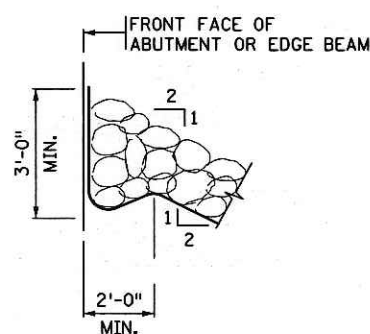
SECTION C-C



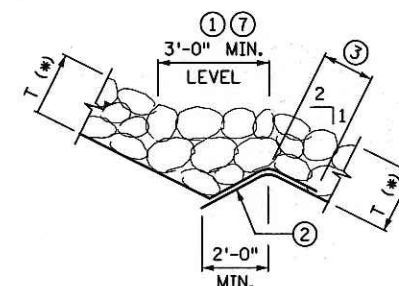
SECTION E-E



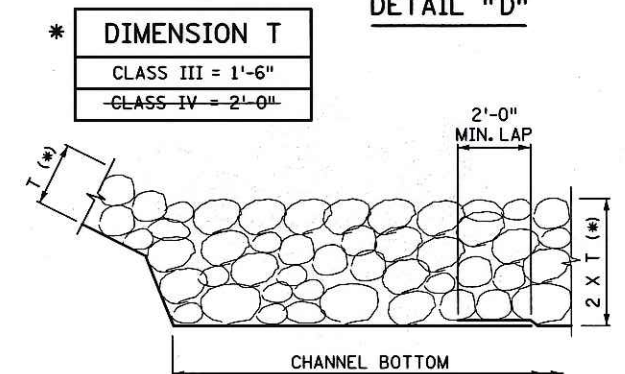
DETAIL "D"



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 MCDOT 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 GROUNDLINES OUTSIDE OF BRIDGE.

SEE SHEET NO. 60 FOR LOCATION OF SECTIONS.

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

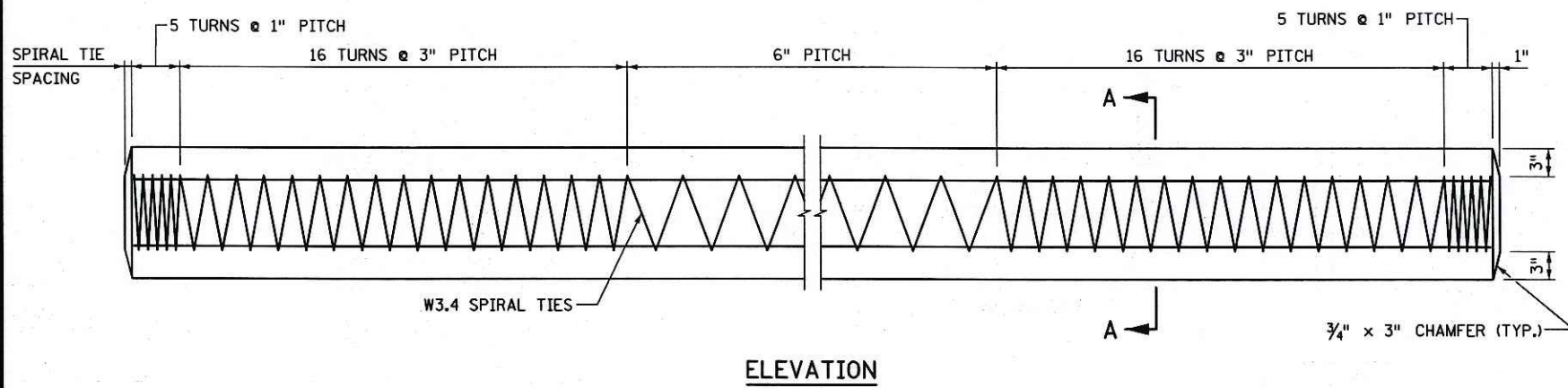
TITLE: **RIPRAP SLOPE WITH GEOTEXTILE FILTER (SLOPES 1:2 AND FLATTER)**

DES: NJV DR: RLV APPROVED: 2/1/13
 CHK: AMS CHK: DCH
 SHEET NO. 61 OF 68 SHEETS

BRIDGE NO. 62037

TIME : 8:49:39 AM
 PLOTTED : 01-FEB-2013
 PATH & FILENAME: Bridge/Final_Design/6/162037/Cadd-Plan/br62037_dd

FILENAME: IP_PWP.dwg/489447/br62037_dd.dgn

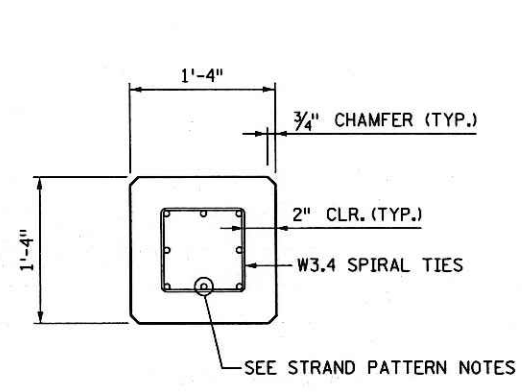


ELEVATION

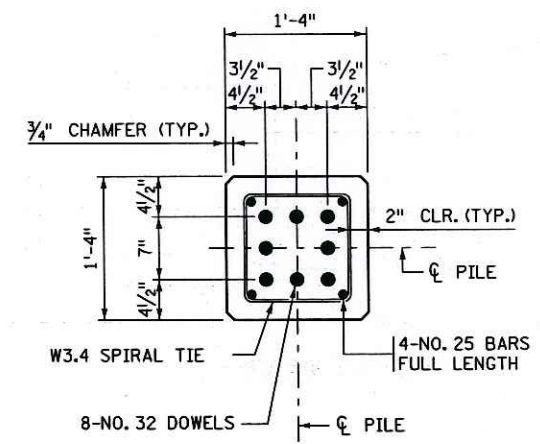
STRAND PATTERN NOTES:

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.

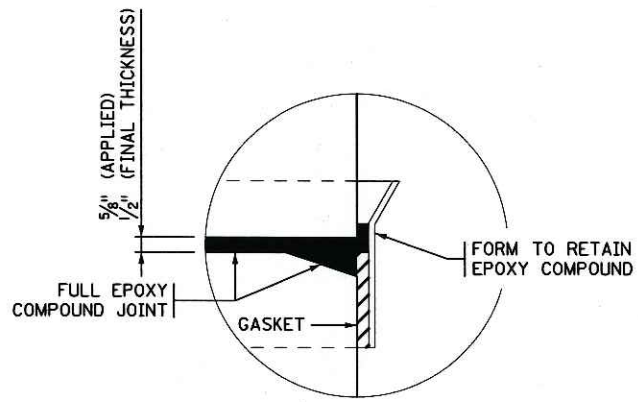
② PILE SPLICE SHALL BE CONSIDERED INCIDENTAL TO PAY ITEM "16" SQUARE PRECAST PILE.



SECTION A-A



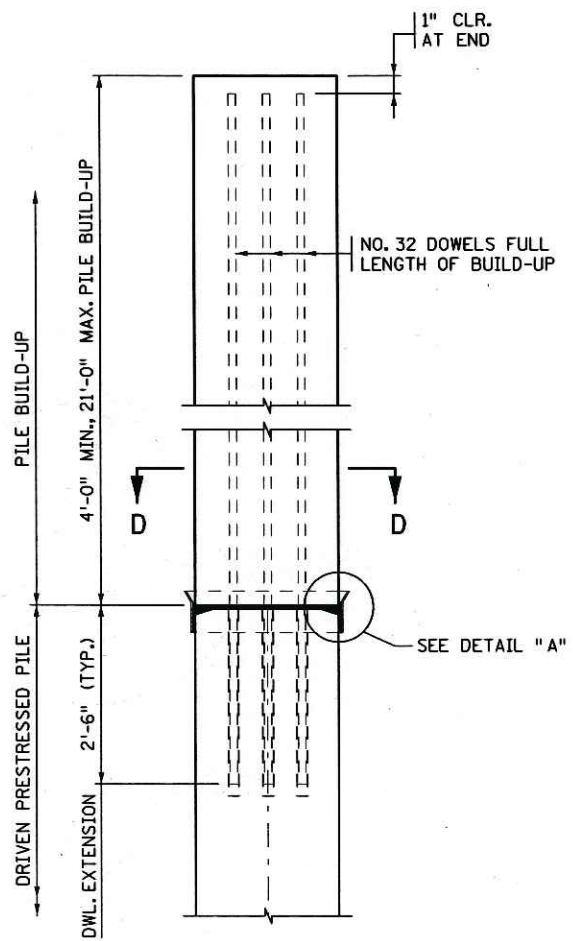
SECTION D-D
 (SEE NONDRIVABLE UNFORSEEN REINFORCED PRECAST SPLICE DETAILS)



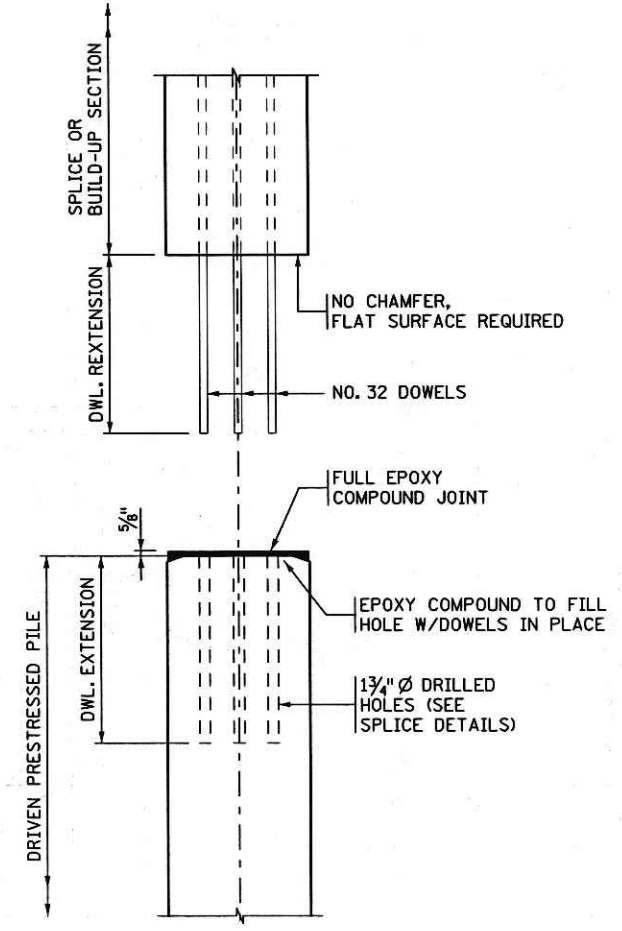
DETAIL "A" ① ②

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



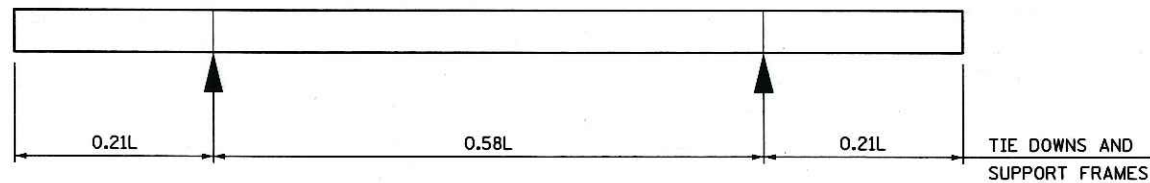
TYPICAL SPLICE BEFORE BONDING

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

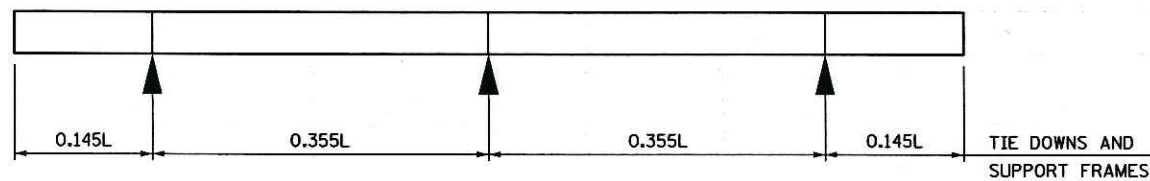
TITLE: **SQUARE PRESTRESSED CONCRETE PILE DETAILS**

DES: NJV DR: RLV APPROVED: *2/1/13*
 CHK: MDH CHK: DCH
 SHEET NO. 62 OF 68 SHEETS

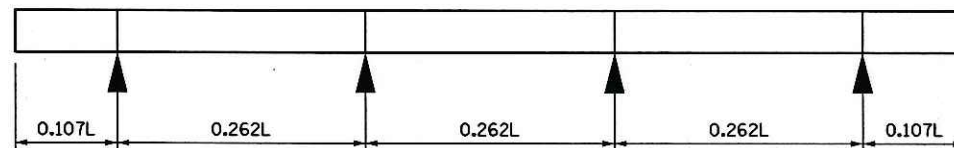
BRIDGE NO. 62037



2-POINT SUPPORT

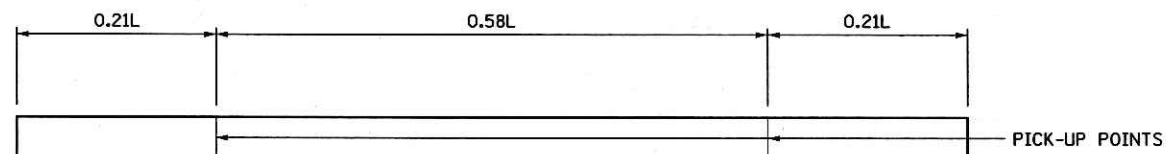


3-POINT SUPPORT



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.

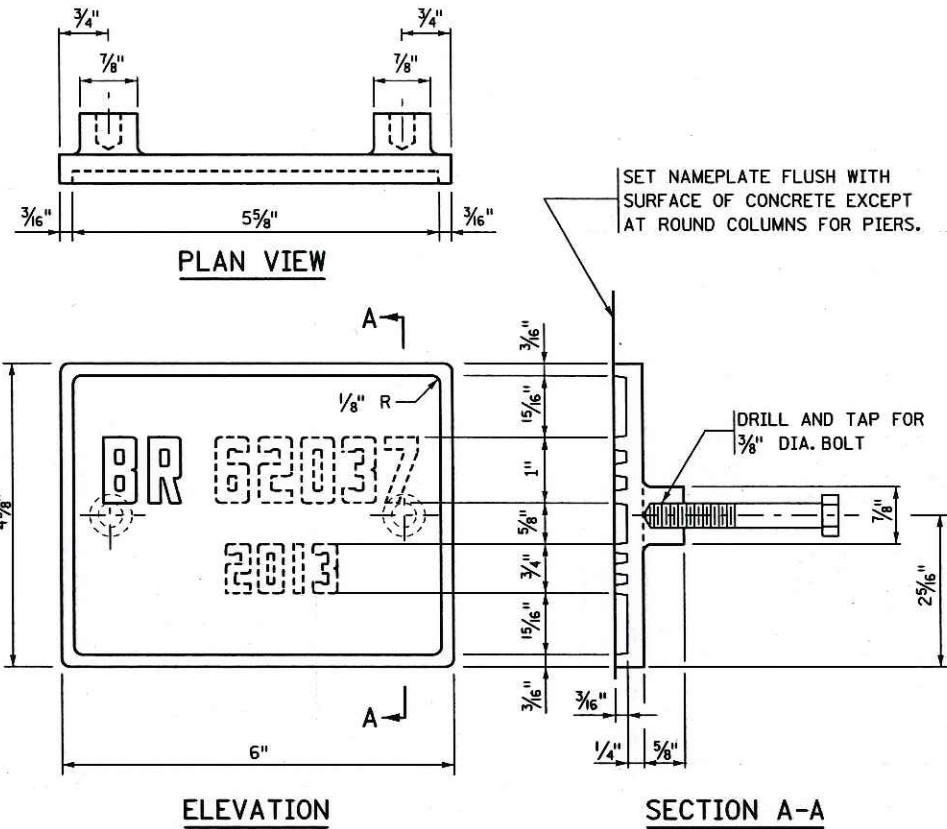
PRESTRESSING STEEL:
PRESTRESSING STEEL SHALL BE SEVEN-WIRE STRAND, GRADE 270, LOW-RELAXATION
STRAND (LRS).

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.

TIME : 8:19:45 AM
PLOTTED : 01-FEB-2013
PATH & FILENAME: Bridge/Final_Design/6/62037/Cadd-Plan/br62037_dd

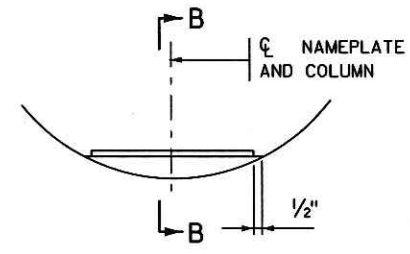
FILENAME: IP_PWP-dl489447-br62037_dd.dgn

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



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

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

Daniel M. Hargreaves
STATE BRIDGE ENGINEER

STATE OF MINNESOTA
DEPARTMENT OF TRANSPORTATION

BRIDGE NAMEPLATE
(FOR NEW BRIDGES)

REVISION

DETAIL NO.

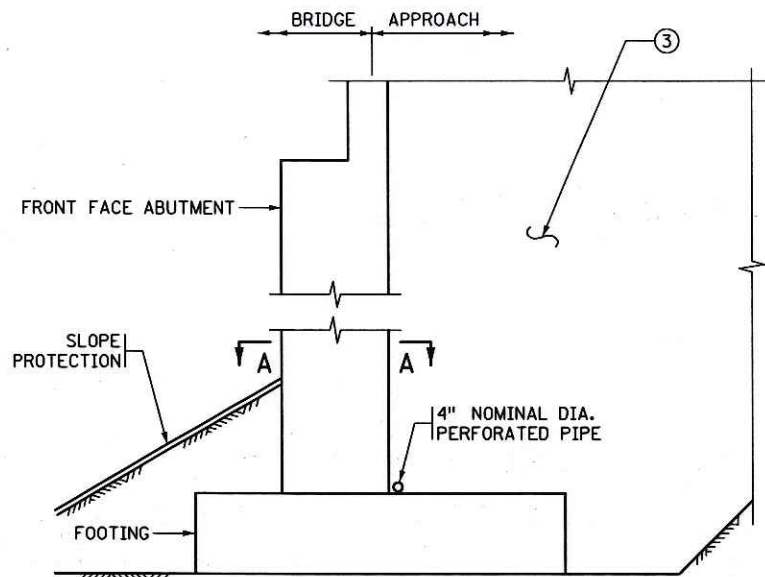
B101

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

TITLE: **DETAILS**

DES: NJV DR: RLV APPROVED: *2/1/13*
CHK: MDH CHK: DCH
SHEET NO. 64 OF 68 SHEETS

BRIDGE NO. 62037

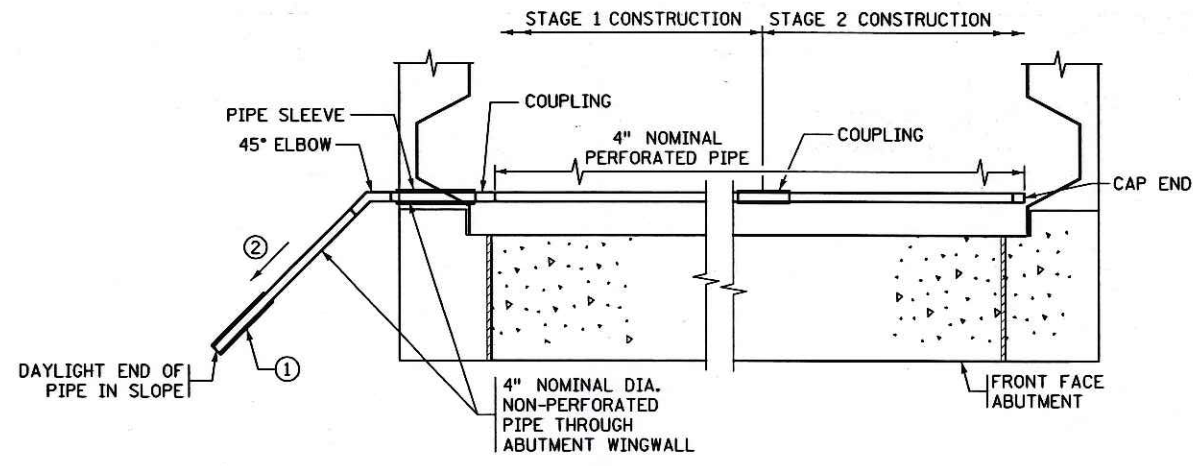


SECTION THROUGH PARAPET AND SEMI INTEGRAL ABUTMENTS

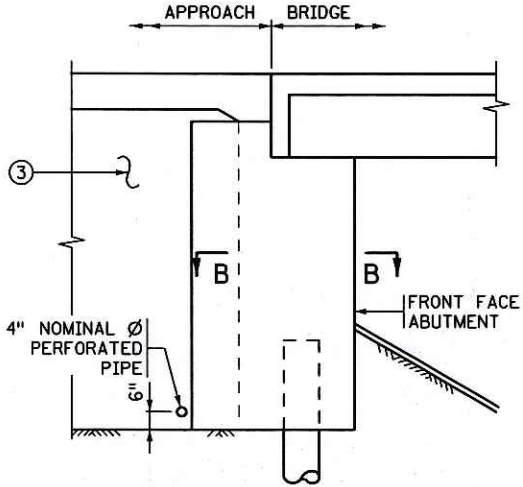
SUMMARY OF QUANTITIES FOR DRAINAGE SYSTEM	
4" DIA. PERFORATED PIPE	180 LIN. FT.
4" DIA. NON-PERFORATED PIPE	30 LIN. FT.
45° ELBOW	2 EACH
4" DIA. END CAP	2 EACH
4" DIA. COUPLING	4 EACH
PIPE SLEEVE	2 EACH
PRECAST CONCRETE HEADWALL	2 EACH

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)".

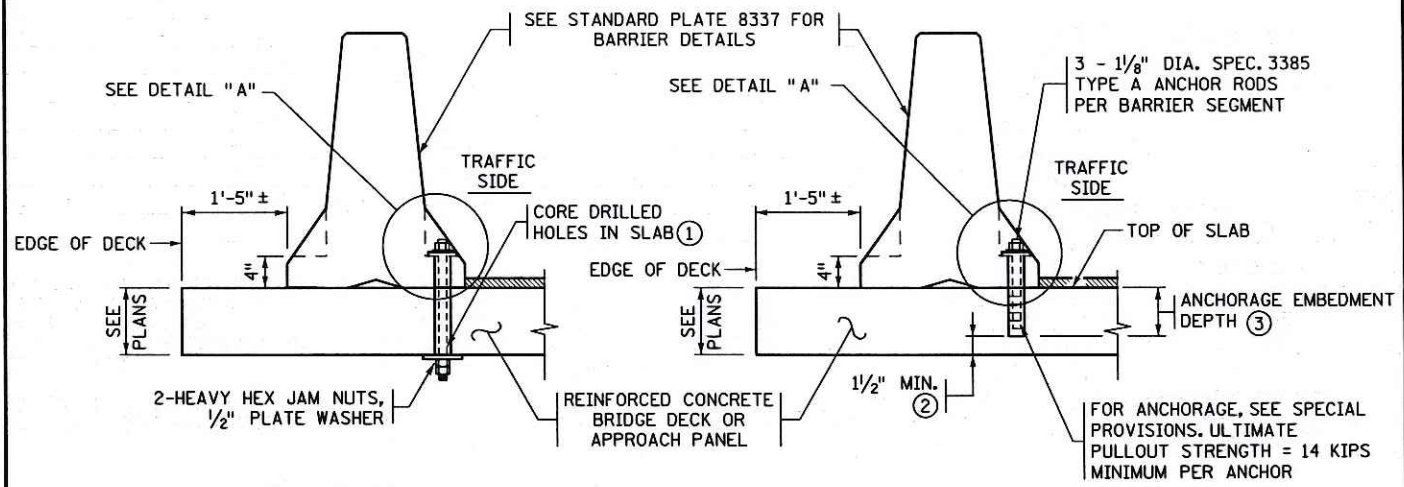


SECTION B-B



SECTION THROUGH ABUTMENT

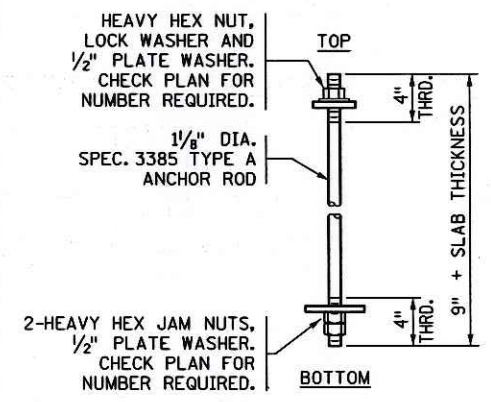
- NOTES:**
- ALL PIPE SHALL COMPLY WITH MnDOT SPEC. 3245.
 - WRAP PERFORATED PIPE WITH GEOTEXTILE AS PER MnDOT SPEC. 3733, TYPE 1. ATTACH TO PIPE AS PER MnDOT SPEC. 2502.
 - ① PRECAST CONCRETE HEADWALL WITH RODENT SCREEN. SEE STANDARD PLATE 3131 FOR DETAILS.
 - ② 1/8" PER FT. MINIMUM SLOPE.
 - ③ MATERIAL 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)



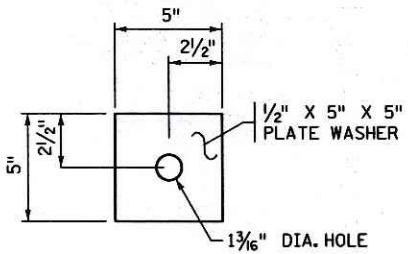
OPTION 1
DO NOT USE ON NEW DECK

OPTION 2

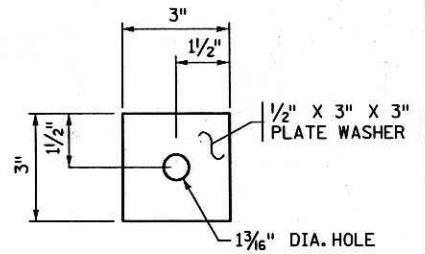
ANCHORAGE DETAILS
REINFORCEMENT NOT SHOWN



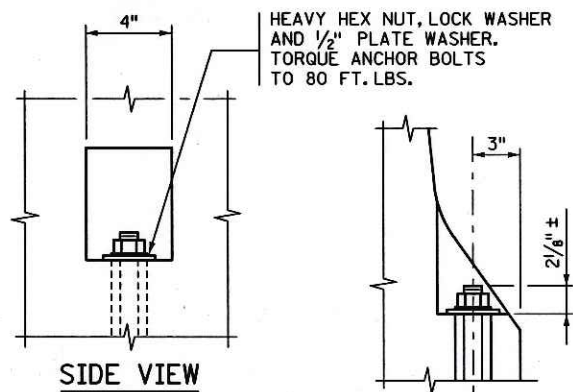
OPTION 1 ANCHOR
(3 PER BARRIER SEGMENT)



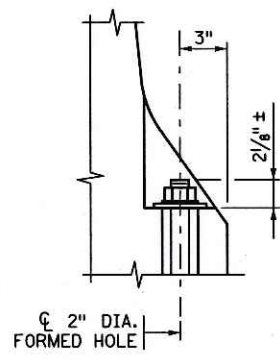
BOTTOM PLATE WASHER
(ONLY USED FOR OPTION 1)



TOP PLATE WASHER



SIDE VIEW



DETAIL "A"

- 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 5/2" 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: MARCH 26, 2009

Daniel J. Morgan
STATE BRIDGE ENGINEER

STATE OF MINNESOTA
DEPARTMENT OF TRANSPORTATION

DRAINAGE SYSTEM

REVISED
10-22-2009

DETAIL NO.

B910
MOD.

APPROVED: DECEMBER 21, 2011

Nancy D. Sauerberger
STATE BRIDGE ENGINEER

STATE OF MINNESOTA
DEPARTMENT OF TRANSPORTATION
TEMPORARY PORTABLE PRECAST CONCRETE
BARRIER ANCHORAGE
(TEMPORARY USAGE IN LIMITED BARRIER DISPLACEMENT AREAS)

REVISED
05-24-2012

DETAIL NO.

B920

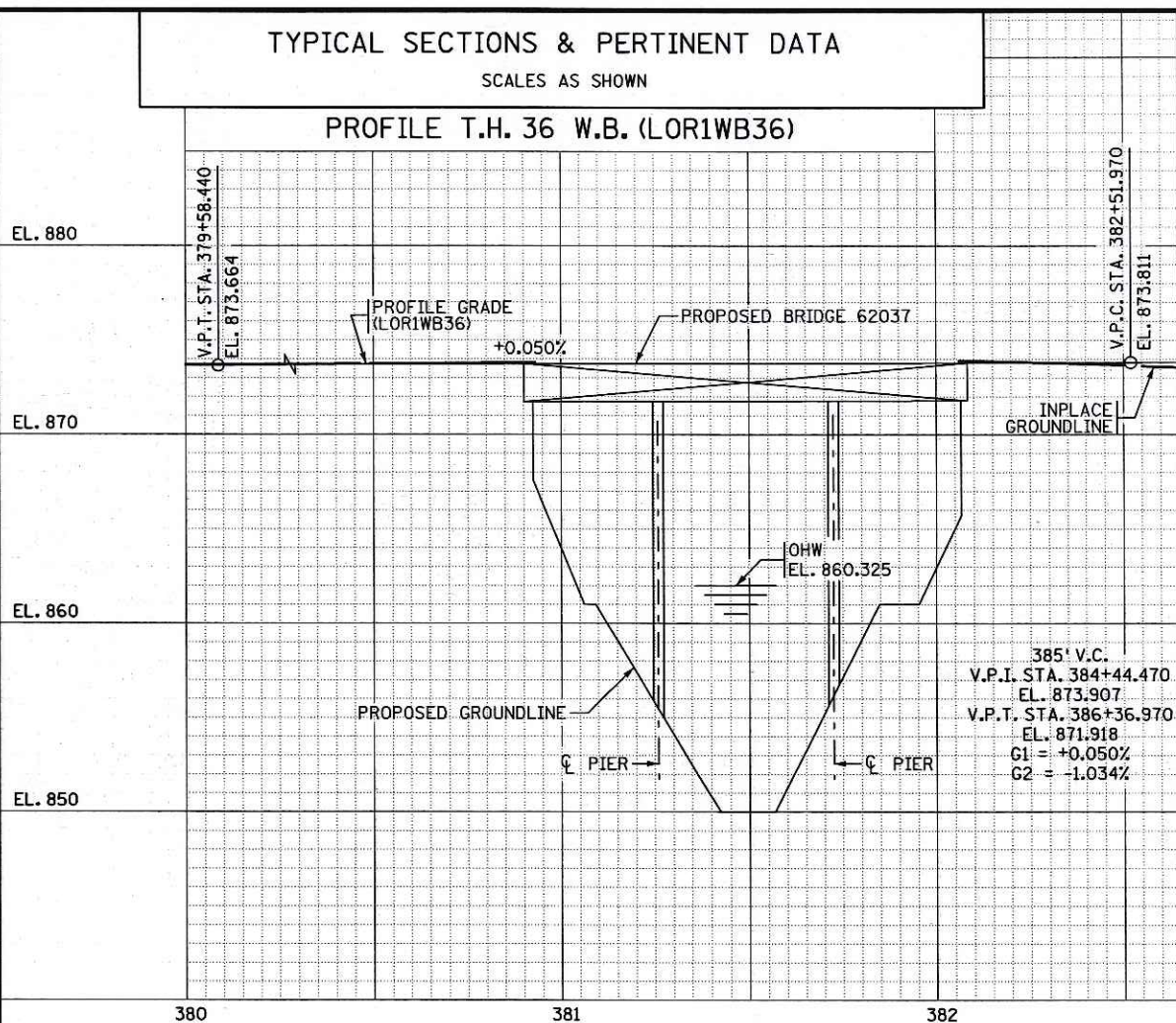
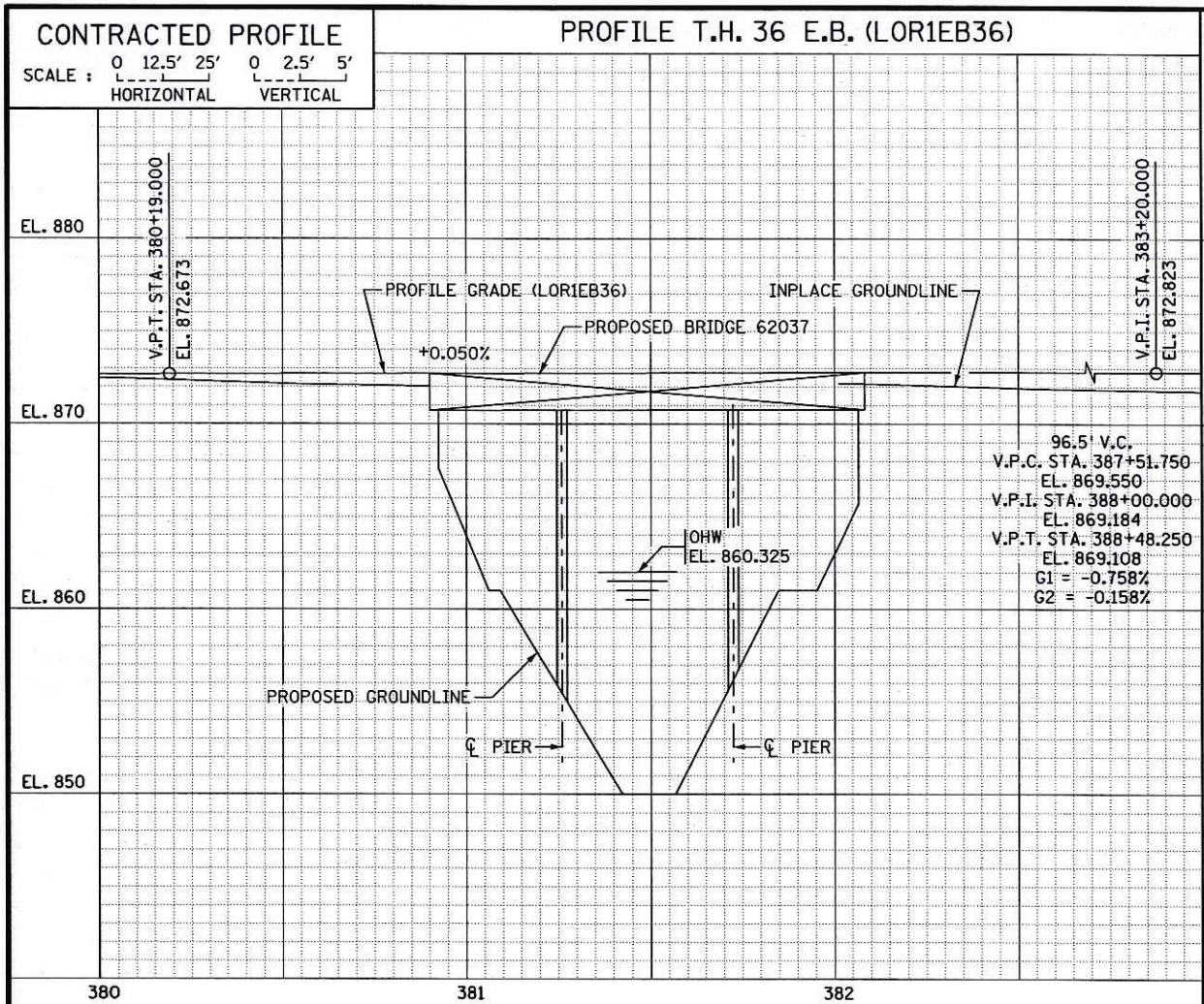
CERTIFIED BY *Angel M. Staples* 2/1/13
LICENSED PROFESSIONAL ENGINEER DATE
NAME: ANGEL M. STAPLES LIC. NO. 41656

TITLE:
DETAILS

DES: NJV DR: RLV APPROVED: 2/1/13
CHK: MDH CHK: DCH
SHEET NO. 65 OF 68 SHEETS

BRIDGE NO.
62037

TIME: 8:19:59 AM PLOTTED: 01-FEB-2013 PATH & FILENAME: Bridge/Final_Design/6/62037/Cadd-Plan/br62037_dd



LOCATION ENGINEER'S OBSERVATIONS AT BRIDGE SITE

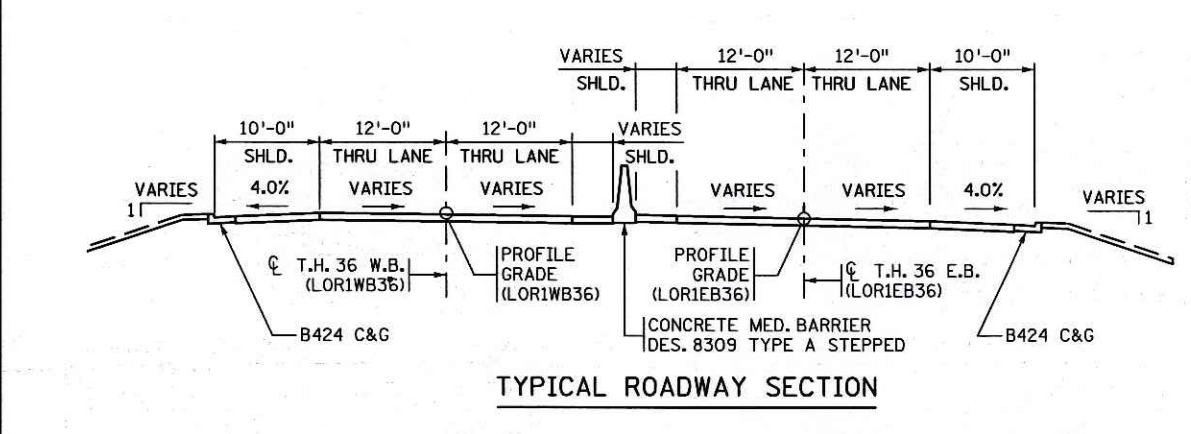
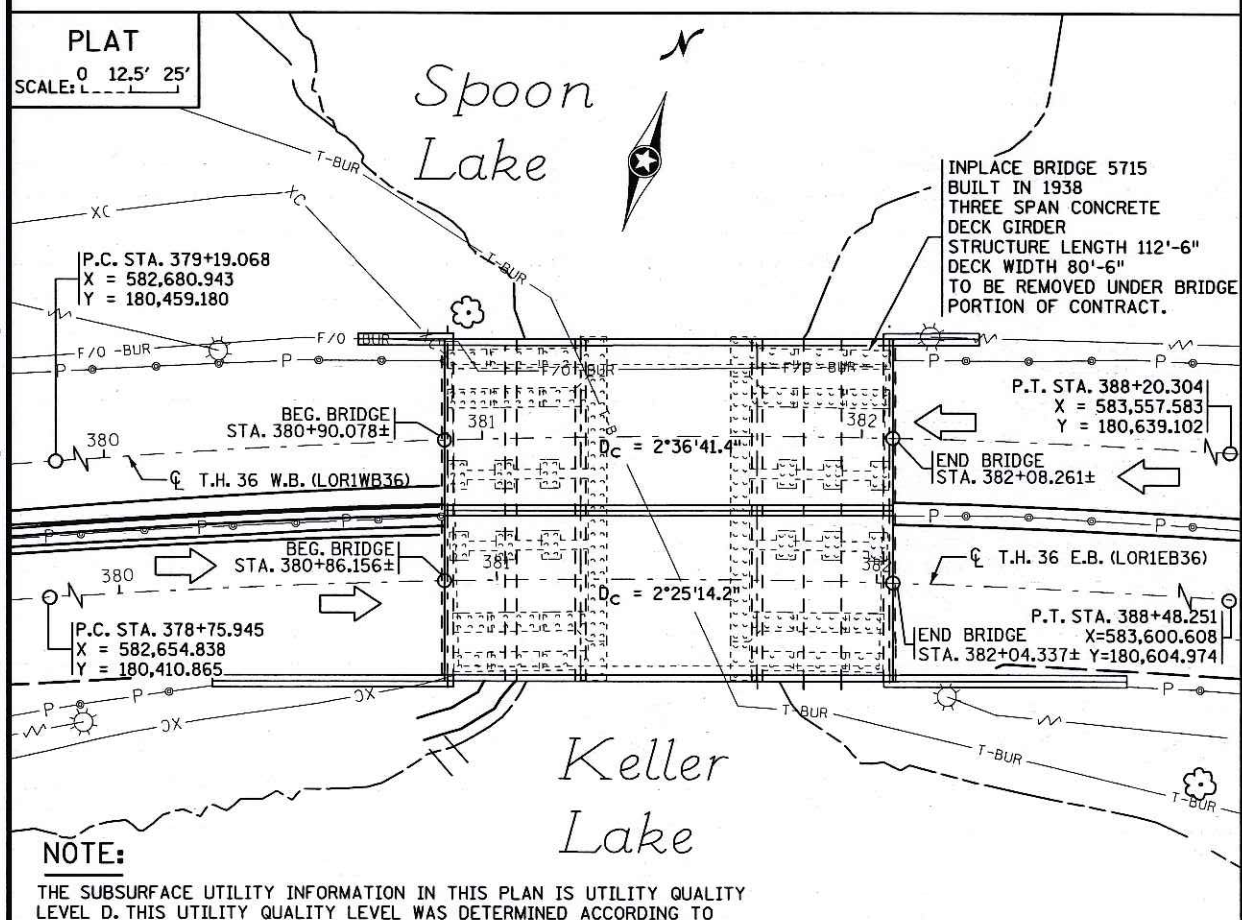
- SPECIAL FEATURES: WATERFALLS, DAMS, FLOODS, ICE, DEBRIS, SLIDING BANKS, RECREATIONAL BOATING.
- OTHER BRIDGES OR CULVERTS OVER THE SAME STREAM (PARTICULARLY STRUCTURES WHICH CARRY HIGH WATER WITHOUT OVERFLOW OF ROADWAY): GIVEN LOCATION, TYPE, LENGTH, HEIGHT ABOVE HIGH WATER, CROSS-SECTIONAL AREA ETC.
- 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^{MS}, 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 OT YR. FREQ.)
(1) MOST LIKELY IN VERTICAL DATUM NGVD 29.



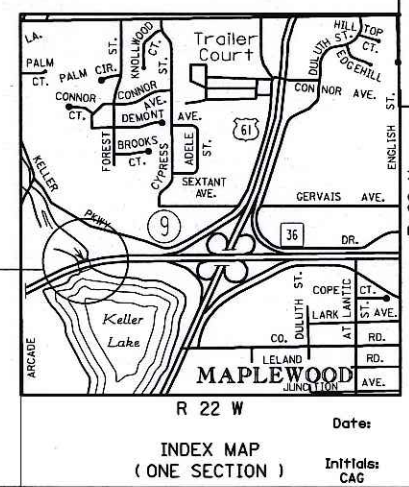
SCOUR CONFIRMATION RECOMMENDATION
DATE: 01-10-12

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

BRIDGE SURVEY SHEETS MADE FROM:
SURVEY TIN shp6200a.tin
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

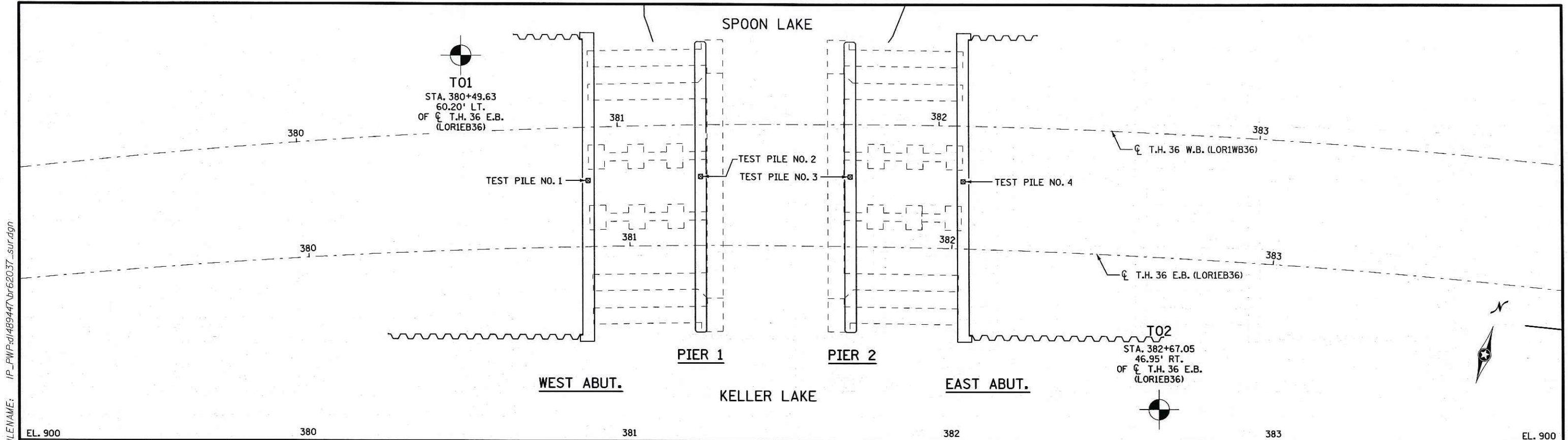
SEC 9 T 29 N R 22 W
COUNTY: RAMSEY
CITY: MAPLEWOOD

BRIDGE NO. **62037**

TIME: 8:20:42 AM
 PLOTTED: 01-FEB-2013
 PATH & FILENAME: Bridge\Final_Design\6162037\Cadd\Plan\br62037_sur.dgn

2/11/13

TIME : 8:20:18 AM
 PLOTTED : 01-FEB-2013
 PATH & FILENAME: Bridge/Final_Design/6/62037/Cadd/Plan/br62037_sur



EL. 900	380	381	382	383	EL. 900
EL. 875	<p>T01 Elevation 874.5</p> <p>SPT 60N Coh (psf)</p>				EL. 875
EL. 850	<p>18 Sand with a little Gravel and a few seams of plastic Sandy Loam, brown to dark brown, damp to moist</p> <p>13 plastic Sandy Loam with a few pebbles, brown and wet</p> <p>5 slightly plastic Sandy Loam with a few pebbles and a seam of plastic Silt Loam, light gray and very moist</p> <p>7 Loamy Sand with a little Gravel and a streak of highly organic plastic Loam, light gray with black, wet</p> <p>6 plastic Sandy Loam with a few pebbles, light gray and wet</p> <p>1 Loamy Sand, light grays and wet</p> <p>1 well-decomposed Peat, black and damp</p> <p>9 plastic Sandy Loam, light gray and wet</p> <p>4 Loamy Sand with a little Gravel, light gray and wet</p> <p>4 Sandy Clay Loam with a few pebbles, light gray and very moist</p> <p>14 slightly plastic Silt Loam, light gray, very moist to wet</p> <p>10 Sand with a little Gravel and a few layers of Coarse Sand, gray to gray-brown, saturated</p> <p>29</p> <p>21</p> <p>19</p> <p>21</p> <p>26</p> <p>26</p> <p>24</p> <p>16</p> <p>29</p> <p>32</p> <p>34</p> <p>45</p> <p>30</p> <p>45</p> <p>29</p> <p>32</p> <p>39</p> <p>51</p> <p>58</p> <p>54</p> <p>33</p>				EL. 850
EL. 825	<p>TEST PILE 65' LONG</p> <p>TEST PILE 65' LONG</p>				EL. 825
EL. 800	<p>TEST PILE 65' LONG</p> <p>TEST PILE 65' LONG</p>				EL. 800
EL. 775	<p>TEST PILE 65' LONG</p> <p>TEST PILE 65' LONG</p>				EL. 775
EL. 750	<p>TEST PILE 65' LONG</p> <p>TEST PILE 65' LONG</p>				EL. 750
<p>Multiple blow counts shown on single line represent 6 in. or partial penetration values</p>					

EXISTING GROUND PROFILE
 47' LT. - - - -
 T.H. 36 E.B. - - - -
 47' RT. - - - -

21113