

NOT FOR BIDDING
AUGUST 2015

ITEM NO.	ITEM NAME	UNITS	QUANTITY
202000	Excavation and Embankment	CY	1,898
202505	Settlement Platform	EACH	4
202518	Settlement Monument	EACH	2
207000	Excavation and Backfill for Structures	CY	1,495
302011	Delaware No. 3 Stone	TON	8
302012	Delaware No. 57 Stone	TON	87
602003	Portland Cement Concrete Masonry, Abutment Footing, Class A	CY	67
602006	Portland Cement Concrete Masonry, Pier Footing, Class B	CY	795
602007	Portland Cement Concrete Masonry, Pier Above Footing, Class A	CY	318
602013	Portland Cement Concrete Masonry, Superstructure, Class D	CY	983
602014	Portland Cement Concrete Masonry, Approach Slab, Class D	CY	158
602015	Portland Cement Concrete Masonry, Abutment Above Footing, Class A	CY	48
602017	Portland Cement Concrete Masonry, Parapet, Class A	CY	210
602772	Mechanically Stabilized Earth Walls	LS	1
602777	Portland Cement Concrete Masonry, Post Tensioned Pier Cap, 8000 psi	CY	655
603000	Bar Reinforcement	LB	223,700
604000	Bar Reinforcement, Epoxy Coated	LB	385,385
605001	Steel Structures	LB	1,157,000
605512	Prefabricated Expansion Joint System 4"	LF	104
605587	High-Load Multi-Rotational Bearings	EACH	33
605606	Temporary Bridge Support System	LS	1
605691	High Performance Steel	LB	235,470
618062	Steel H Piles, HP 14x73	LF	7,498
618065	Steel H Test Piles, HP 14x73	LF	995
619042	Install Steel H Piles, HP 14x73	LF	7,498
619045	Install Steel H Test Piles, HP 14x73	LF	995
619501	Production Pile Restrike	EACH	3
619502	Test Pile Restrike	EACH	3
619519	Dynamic Pile Testing by Contractor	EACH	30
619539	Signal Matching Analysis by Contractor	EACH	30
623514	Post-Tensioning Strand System	LB	75,695
760015	Rumble Strips, Concrete, Shallow Depth	LF	1,637

NOTES:

1. ITEM 202000 IS REPRESENTED AS FOLLOWS:
 - o ON DRAWING EW-02: 1246 CY UNDER TYPE C MATERIAL REQUIRED, "TYPE C BACKFILL FOR STRUCTURES"; AND
 - o ON DRAWING EW-03: 652 CY UNDER TYPE C MATERIAL REQUIRED, "TYPE C BACKFILL FOR STRUCTURES".
2. ITEM 207000 IS REPRESENTED AS FOLLOWS:
 - o ON DRAWING EW-02: 324 CY UNDER EXCAVATION AVAILABLE FOR EMBANKMENT, "PLUS EXCAVATION AND BACKFILLING FOR STRUCTURES"; AND
 - o ON DRAWING EW-03: 215 CY UNDER EXCAVATION AVAILABLE FOR EMBANKMENT, "PLUS EXCAVATION AND BACKFILLING FOR STRUCTURES"; AND
 - o ON DRAWING EW-03: 956 CY UNDER EXCAVATION AVAILABLE FOR EMBANKMENT, "PLUS EXCAVATION AND BACKFILLING FOR STRUCTURES".

M:\31653-000\Contract\IB\CADD\Bridge\Br_No433\QSO1\br1-433.dgn
7/30/2015 3:22:09 PM



ADDENDUMS / REVISIONS

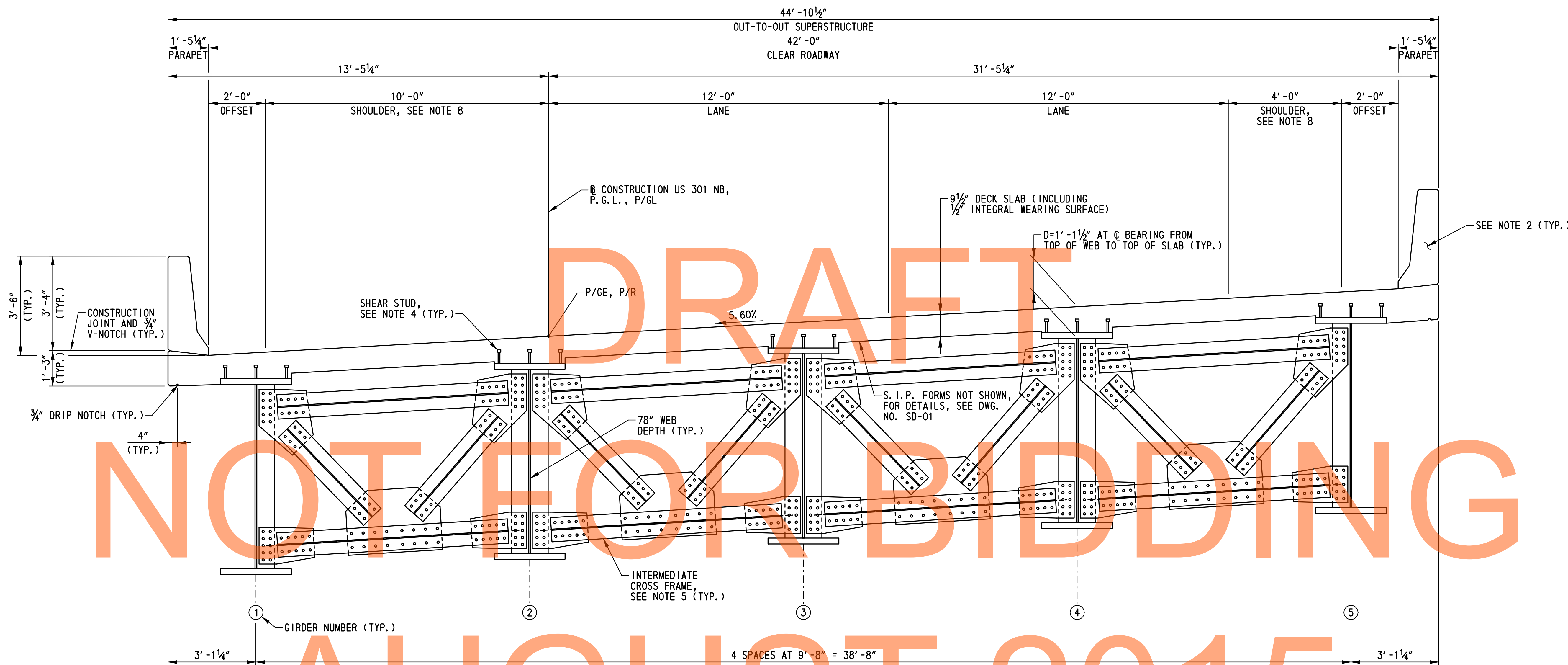
NOT TO SCALE

US 301 &
SR 1 INTERCHANGE

CONTRACT	BRIDGE NO.	1-433
T200911302	DESIGNED BY:	W.T.R.
COUNTY	CHECKED BY:	B.K.B.
NEW CASTLE		

QUANTITY SUMMARY

BR1-3 QS-01
SHEET NO.
204
TOTAL SHTS.
491



SUPERSTRUCTURE TYPICAL SECTION

SCALE: 1/2" = 1'-0"

DRAFT
NOT FOR BIDDING
AUGUST 2015

NOTES:

1. ALL DIMENSIONS SHOWN MEASURED RADIAL TO THE @ CONSTRUCTION US 301 NB.
2. PARAPETS SHALL NOT BE SLIP FORMED. FOR PARAPET AND PARAPET REINFORCEMENT DETAILS, SEE DWG. NOS. DK-01 THRU DK-04.
3. FOR DECK SLAB REINFORCEMENT DETAILS, SEE DWG. NOS. DK-01 THRU DK-04.
4. FOR SHEAR STUD DETAILS AND SPACING, SEE DWG. NOS. SD-01 AND BM-02.
5. FOR CONNECTION PLATE AND CROSS FRAME DETAILS (INTERMEDIATE, PIER AND ABUTMENT) AND SPACING, SEE DWG. NOS. BM-03 AND FR-01.
6. FOR GIRDER ELEVATION, SEE DWG. NO. BM-02.
7. FOR SUPERSTRUCTURE DETAILS, SEE DWG. NO. SD-01.
8. RUMBLE STRIPS SHALL BE LOCATED IN THE DECK SLAB AT EACH SHOULDER. FOR RUMBLE STRIP DETAIL, SEE DWG. NO. DT-01.

ADDENDUMS / REVISIONS

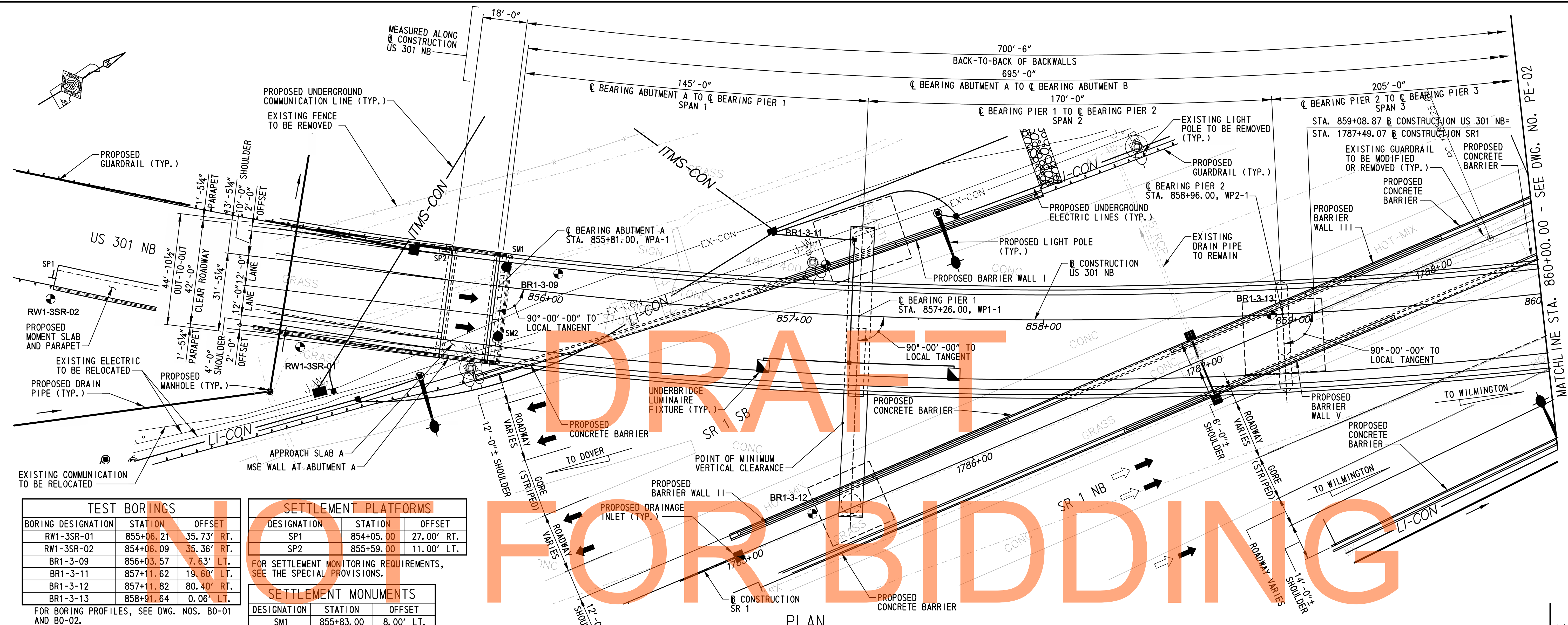
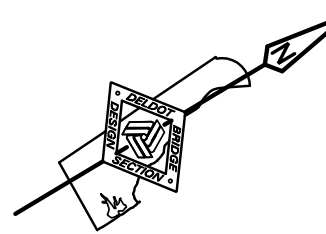
SCALE: AS SHOWN

US 301 &
SR 1 INTERCHANGE

CONTRACT	BRIDGE NO.	1-433
T200911302	DESIGNED BY:	B.K.B.
COUNTY	CHECKED BY:	W.A.G.
NEW CASTLE		

**SUPERSTRUCTURE
TYPICAL SECTION**

BR1-3 TS-01
SHEET NO.
205
TOTAL SHTS.
491



TEST BORINGS		
BORING DESIGNATION	STATION	OFFSET
RW1-3SR-01	855+06.21	35.73' RT.
RW1-3SR-02	854+06.09	35.36' RT.
BR1-3-09	856+03.57	7.63' LT.
BR1-3-11	857+11.62	19.60' LT.
BR1-3-12	857+11.82	80.40' RT.
BR1-3-13	858+91.64	0.06' LT.

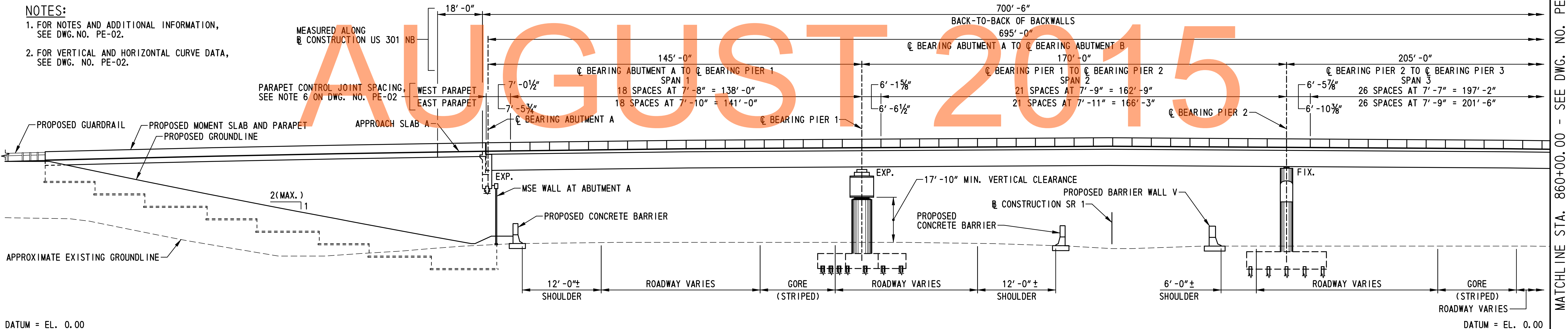
FOR BORING PROFILES, SEE DWG. NOS. B0-01 AND B0-02.

SETTLEMENT PLATFORMS		
DESIGNATION	STATION	OFFSET
SP1	854+05.00	27.00' RT.
SP2	855+59.00	11.00' LT.

FOR SETTLEMENT MONITORING REQUIREMENTS, SEE THE SPECIAL PROVISIONS.

SETTLEMENT MONUMENTS		
DESIGNATION	STATION	OFFSET
SM1	855+83.00	8.00' LT.
SM2	855+83.00	20.00' RT.

- NOTES:**
- FOR NOTES AND ADDITIONAL INFORMATION, SEE DWG. NO. PE-02.
 - FOR VERTICAL AND HORIZONTAL CURVE DATA, SEE DWG. NO. PE-02.



ELEVATION
SCALE: 1" = 20' - 0"



ADDENDUMS / REVISIONS	

SCALE: AS SHOWN

US 301 & SR 1 INTERCHANGE

CONTRACT	BRIDGE NO.	1-433
T200911302	DESIGNED BY:	B.K.B.
NEW CASTLE	CHECKED BY:	S.E.K.

GENERAL PLAN AND ELEVATION - 1	
SHEET NO.	206
TOTAL SHTS.	491

M:\31653-000\CONTRACT 18\CADD\Bridges\Bridges\No433\PE01_Lbr1-433.dgn 7/27/2015 10:50:53 AM

MATCHLINE STA. 860+00.00 - SEE DWG. NO. PE-02

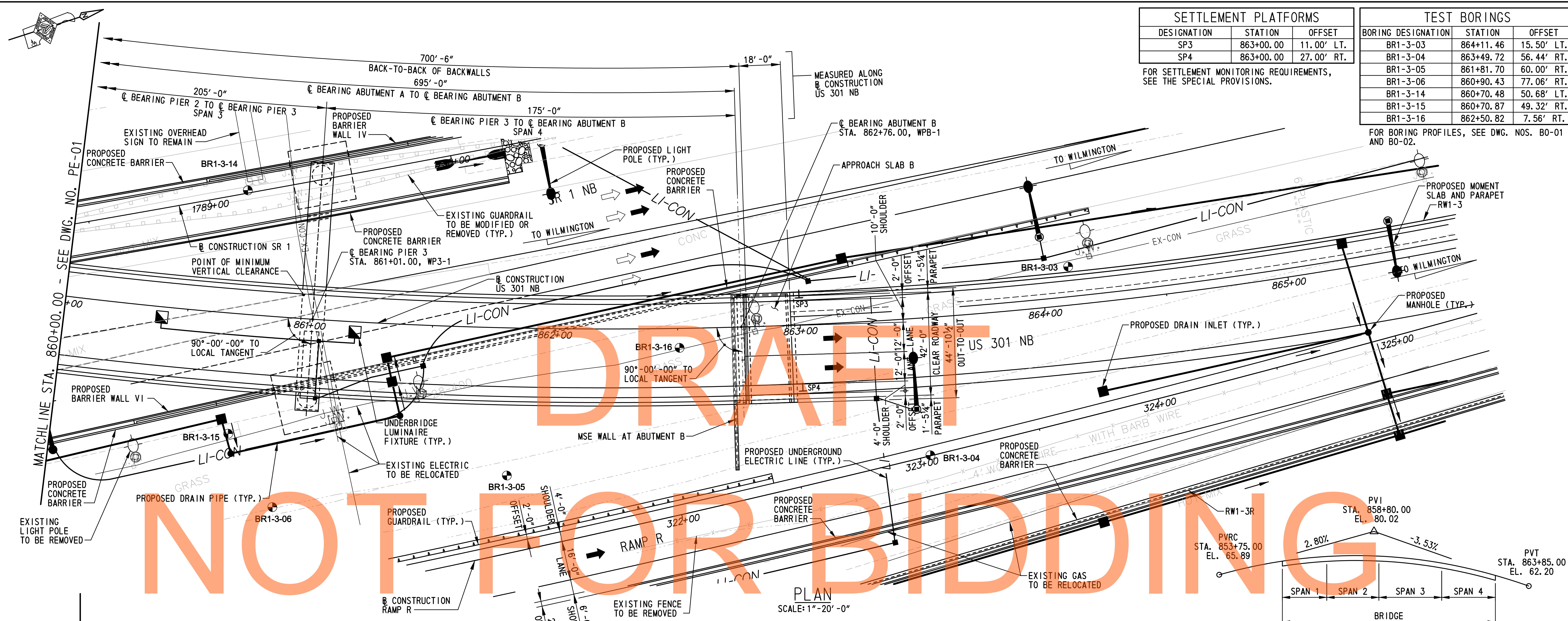
MATCHLINE STA. 860+00.00 - SEE DWG. NO. PE-02

SETTLEMENT PLATFORMS		
DESIGNATION	STATION	OFFSET
SP3	863+00.00	11.00' LT.
SP4	863+00.00	27.00' RT.

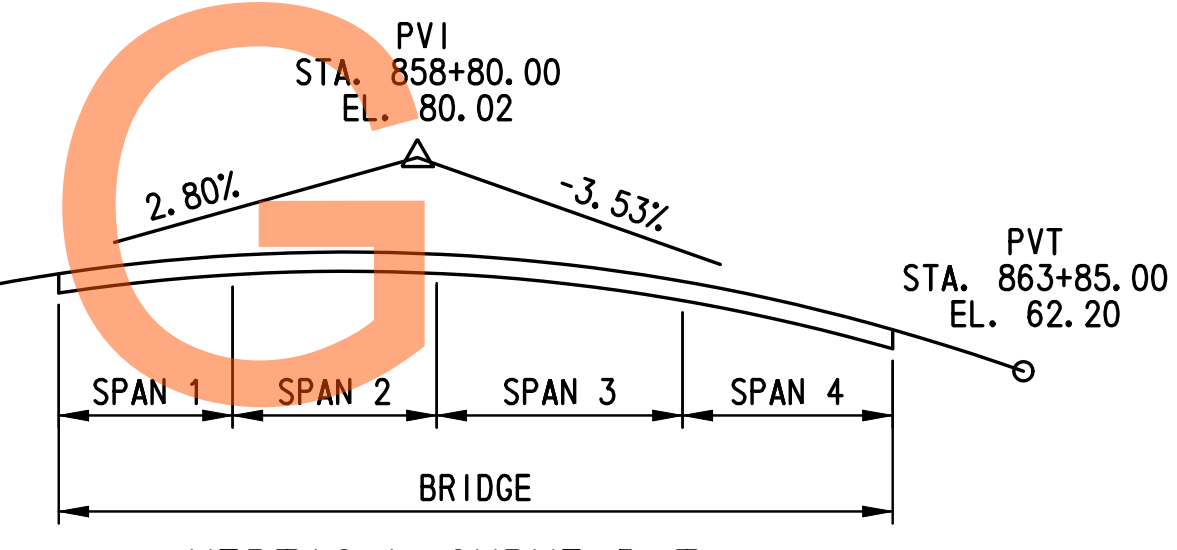
TEST BORINGS		
BORING DESIGNATION	STATION	OFFSET
BR1-3-03	864+11.46	15.50' LT.
BR1-3-04	863+49.72	56.44' RT.
BR1-3-05	861+81.70	60.00' RT.
BR1-3-06	860+90.43	77.06' RT.
BR1-3-14	860+70.48	50.68' LT.
BR1-3-15	860+70.87	49.32' RT.
BR1-3-16	862+50.82	7.56' RT.

FOR SETTLEMENT MONITORING REQUIREMENTS, SEE THE SPECIAL PROVISIONS.

FOR BORING PROFILES, SEE DWG. NOS. B0-01 AND B0-02.



PLAN SCALE: 1" = 20' - 0"



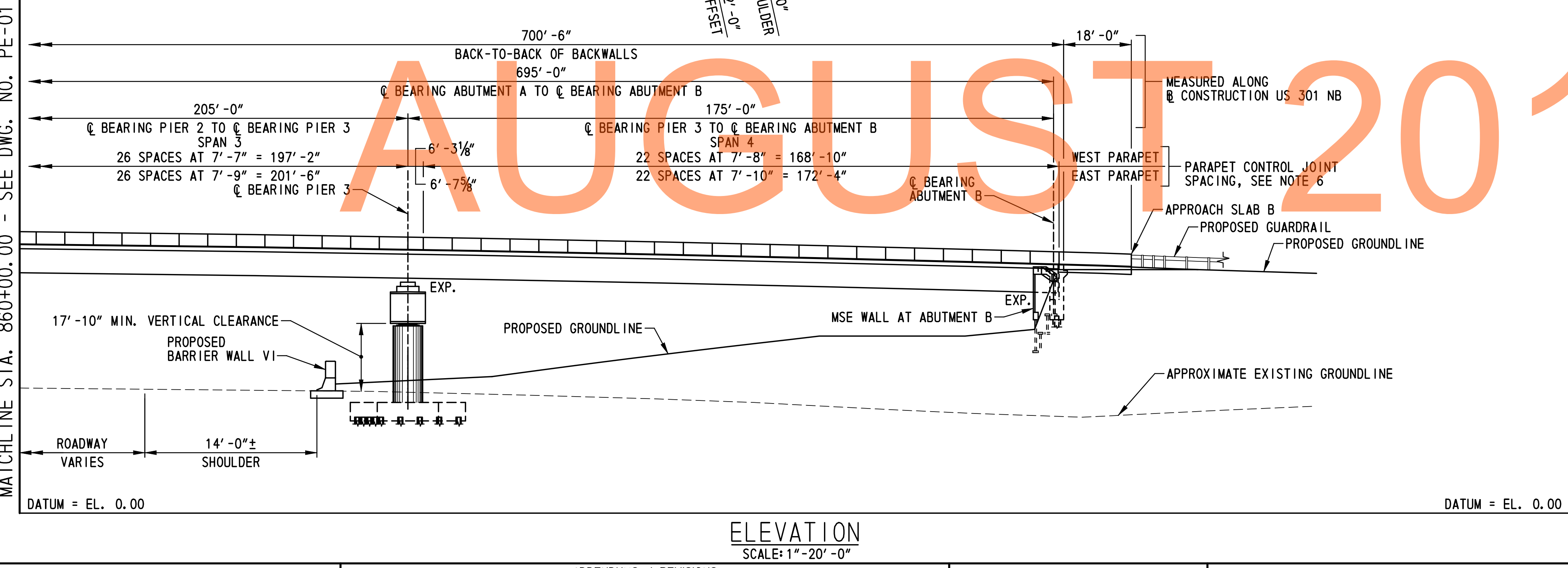
VERTICAL CURVE DATA US 301 NB

HORIZONTAL CURVE DATA

US 301 NB		SR 1	
P. I. STA. 858+61.08	$\Delta = 64^\circ - 28' - 15.54''$	P. I. STA. 1795+26.46	$\Delta = 6^\circ - 55' - 48.34''$
$\Delta_c = 3^\circ - 07' - 51.30''$	$R = 1830.00'$	$\Delta_c = 0^\circ - 29' - 42.03''$	$R = 11574.74'$
$T = 1154.00'$	$L = 2059.17'$	$T = 700.85'$	$L = 1400.00'$
$E = 333.47'$	P. C. STA. 847+07.08	$E = 21.20'$	P. C. STA. 1788+25.60
	P. T. STA. 867+66.25		P. T. STA. 1802+25.60

NOTES:

- FOR MSE WALL AT ABUTMENT A AND B DEVELOPED ELEVATIONS, SEE DWG. NOS. AB-02 AND AB-04.
- EXISTING AND PROPOSED CONTOURS NOT SHOWN IN PLAN FOR CLARITY. FOR EXISTING AND PROPOSED CONTOURS, SEE DWG. NO. GR-01.
- FOR DRAIN INLET, DRAIN PIPE AND MANHOLE INFORMATION, SEE DWG. NOS. CP-02 AND CP-03.
- FOR UNDERPASS LUMINAIRE FIXTURE AND LIGHTING POLE INFORMATION, SEE DWG. NOS. LI-01, LI-02, LI-13, LI-14, LI-16 AND LI-17.
- FOR CONCRETE BARRIER AND BARRIER WALL INFORMATION, SEE DWG. NOS. DT-04, DT-05 AND DT-23 THRU DT-31.
- PARAPET CONTROL JOINT SPACING MEASURED ALONG FRONT FACE OF PARAPET. FOR PARAPET CONTROL JOINT DETAILS, SEE DWG. NO. SD-01. REFLECTORS SHALL BE INSTALLED ALONG EACH PARAPET. SEE DWG. NO. DT-05 FOR DETAILS.



ELEVATION SCALE: 1" = 20' - 0"

M:\31653-000\CONTRACT 18\CADD\Bridges\Bridg-18\433\PE02-br1-433.dgn 7/27/2015 10:52:58 AM

ADDENDUMS / REVISIONS

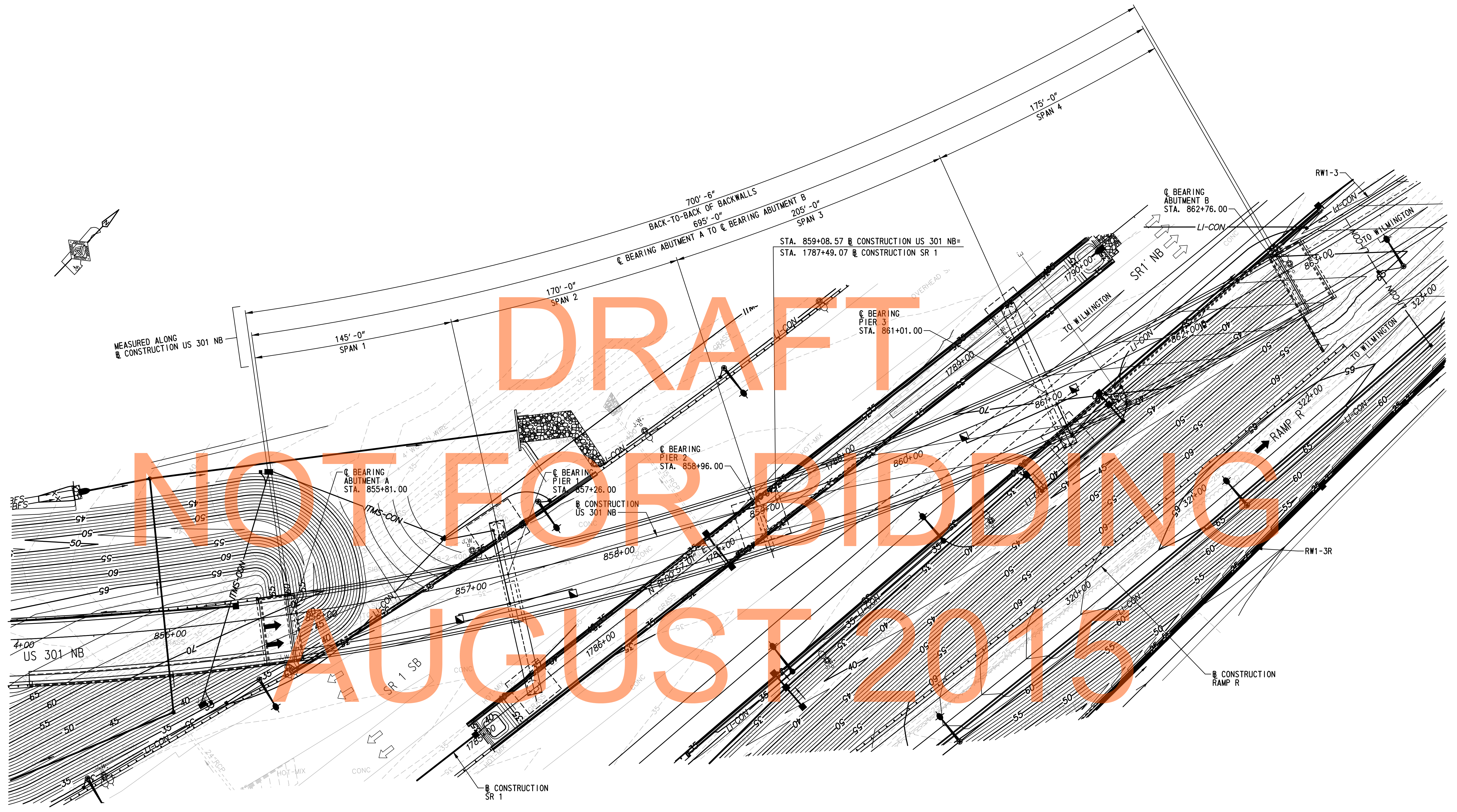
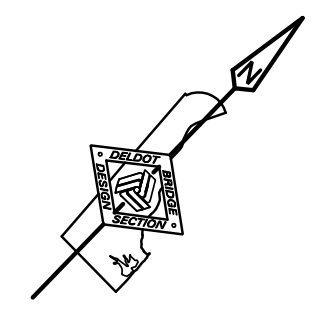
SCALE: AS SHOWN

US 301 & SR 1 INTERCHANGE

CONTRACT	T200911302	BRIDGE NO.	1-433
COUNTY	NEW CASTLE	DESIGNED BY:	B.K.B.
		CHECKED BY:	S.E.K.

GENERAL PLAN AND ELEVATION - 2

BR1-3 PE-02	SHEET NO.	207
	TOTAL SHTS.	491



DRAFT
NOT FOR BIDDING
AUGUST 2015

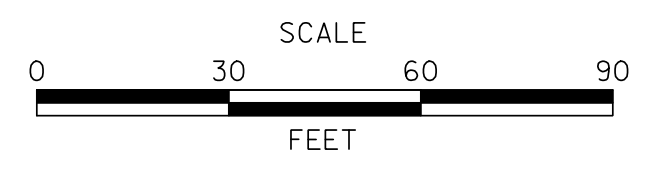
PLAN
SCALE: 1"=30'-0"

NOTE:
FOR ADDITIONAL INFORMATION, SEE DWG. NOS. PE-01 AND PE-02.

M:\31653-000\CONTRACT\IB\CADD\Bridges\BR_No433\GR01_Lbr1-433.dgn
7/27/2015 4:27:50 PM



ADDENDUMS / REVISIONS	

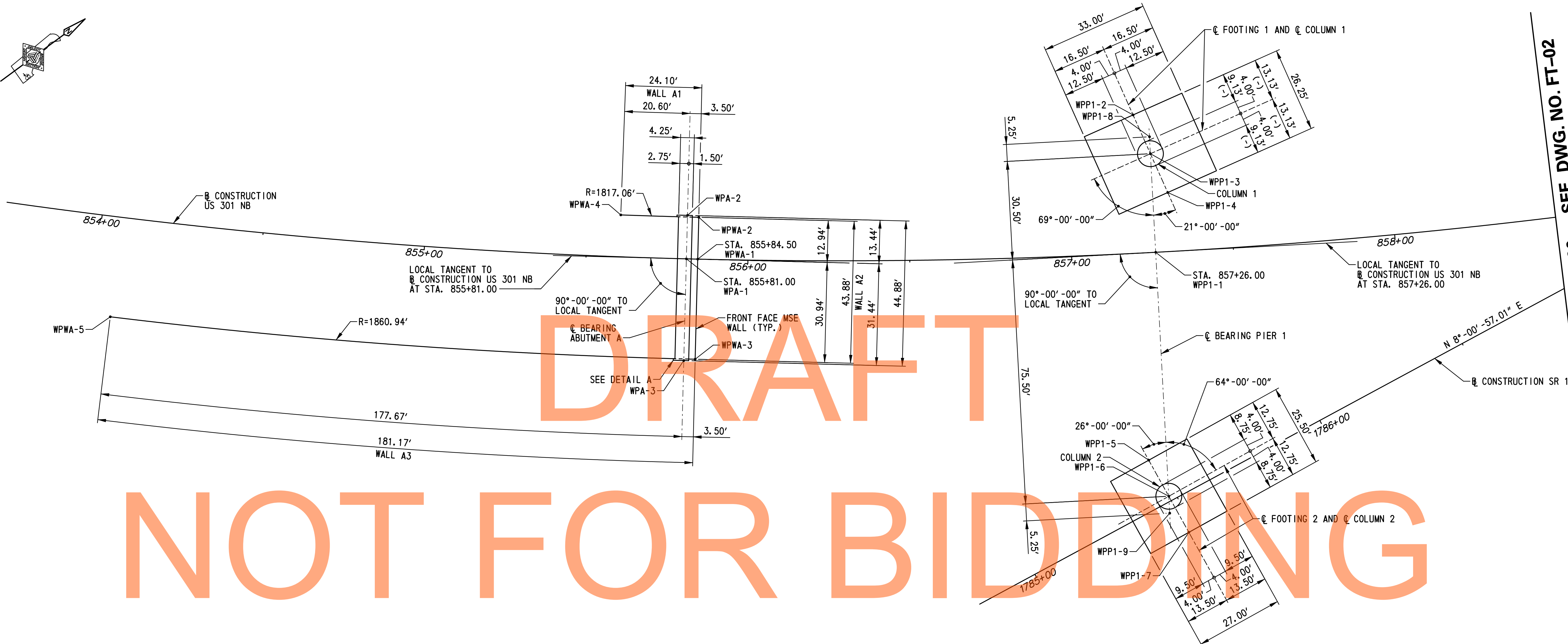
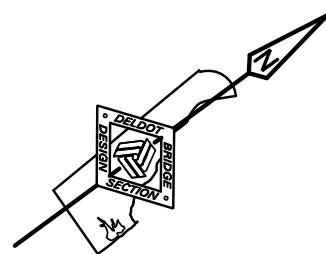


**US 301 &
SR 1 INTERCHANGE**

CONTRACT T200911302	BRIDGE NO. 1-433
COUNTY NEW CASTLE	DESIGNED BY: B.K.B. CHECKED BY: W.A.G.

GRADING PLAN

BR1-3 GR-01
SHEET NO. 208
TOTAL SHTS. 491



MATCHLINE STA. 858 + 50.00 - SEE DWG. NO. FT-02

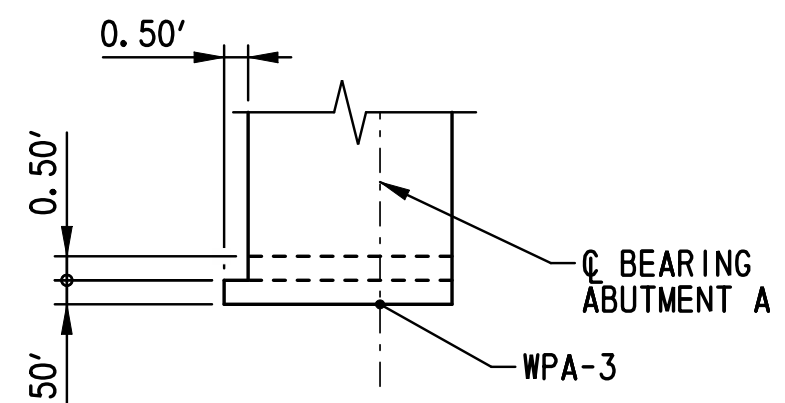
DRAFT

NOT FOR BIDDING

GEOMETRIC AND FOOTING LAYOUT PLAN
SCALE: 1/4" = 1'-0"

AUGUST 2015

WORKING POINT COORDINATES		
WORKING POINT	COORDINATES	
	NORTHING	EASTING
WPA-1	556848.0077	590163.0919
WPA-2	556856.2576	590152.4832
WPA-3	556828.7094	590187.9083
WPWA-1	556850.7727	590165.2378
WPWA-2	556858.7147	590155.0249
WPWA-3	556831.7809	590189.6600
WPWA-4	556839.7575	590140.1392
WPWA-5	556694.1745	590071.9187
WPP1-1	556965.8760	590247.4783
WPP1-2	556985.4376	590209.1729
WPP1-3	556982.6348	590221.9951
WPP1-4	556979.8319	590234.8173
WPP1-5	556926.0181	590297.9140
WPP1-6	556924.3913	590310.5598
WPP1-7	556922.7645	590323.2056
WPP1-8	556985.5195	590217.6086
WPP1-9	556921.5066	590314.9462



DETAIL A
SCALE: 1/4" = 1'-0"

NOTE:
DETAIL A SHOWN AT EAST END OF ABUTMENT A. WEST END OF ABUTMENT A SIMILAR.

HORIZONTAL CURVE DATA

US 301 NB
 P. I. STA. 858+61.08
 $\Delta = 64^\circ - 28' - 15.54''$
 $D_c = 3^\circ - 07' - 51.30''$
 R = 1830.00'
 T = 1154.00'
 L = 2059.17'
 E = 333.47'
 P. C. STA. 847+07.08
 P. T. STA. 867+66.25

- NOTES:**
- FOR PILE LAYOUT PLANS, SEE DWG. NOS. PL-01 THRU PL-03.
 - THE FRONT FACE OF MSE WALLS A1 AND A3 ARE CONCENTRIC TO THE CONSTRUCTION US 301 NB.

M:\31653-000\CONTRACT 1B\CADD\Bridges\B-1-No433\FT01_Lbr1-433.dgn 7/23/2015 4:23:41 PM



ADDENDUMS / REVISIONS	

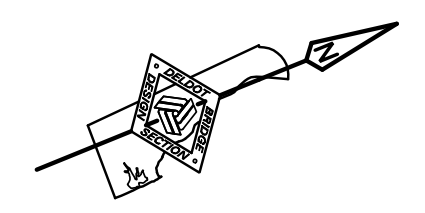
SCALE: AS SHOWN

US 301 & SR 1 INTERCHANGE

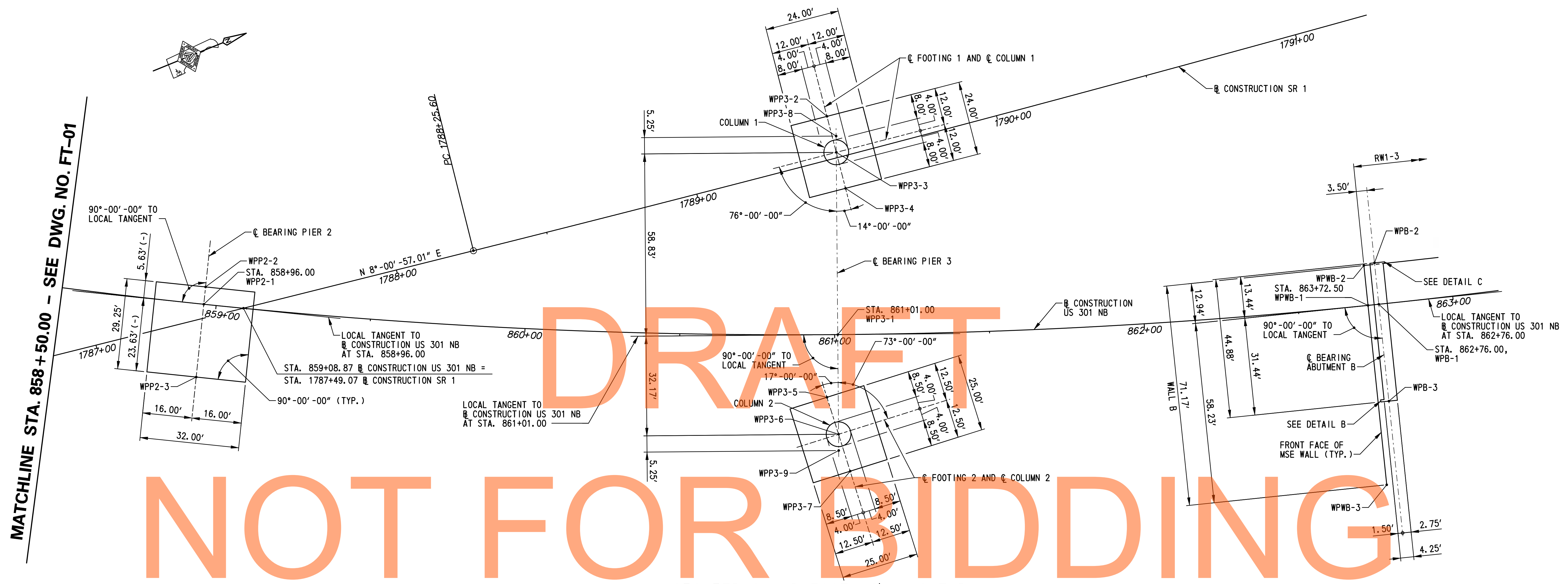
CONTRACT	BRIDGE NO.	1-433
T200911302	DESIGNED BY:	B.K.B.
COUNTY	CHECKED BY:	S.E.K.
NEW CASTLE		

GEOMETRIC AND FOOTING LAYOUT PLAN - 1

BR1-3 FT-01
SHEET NO.
209
TOTAL SHTS.
491



MATCHLINE STA. 858 + 50.00 - SEE DWG. NO. FT-01



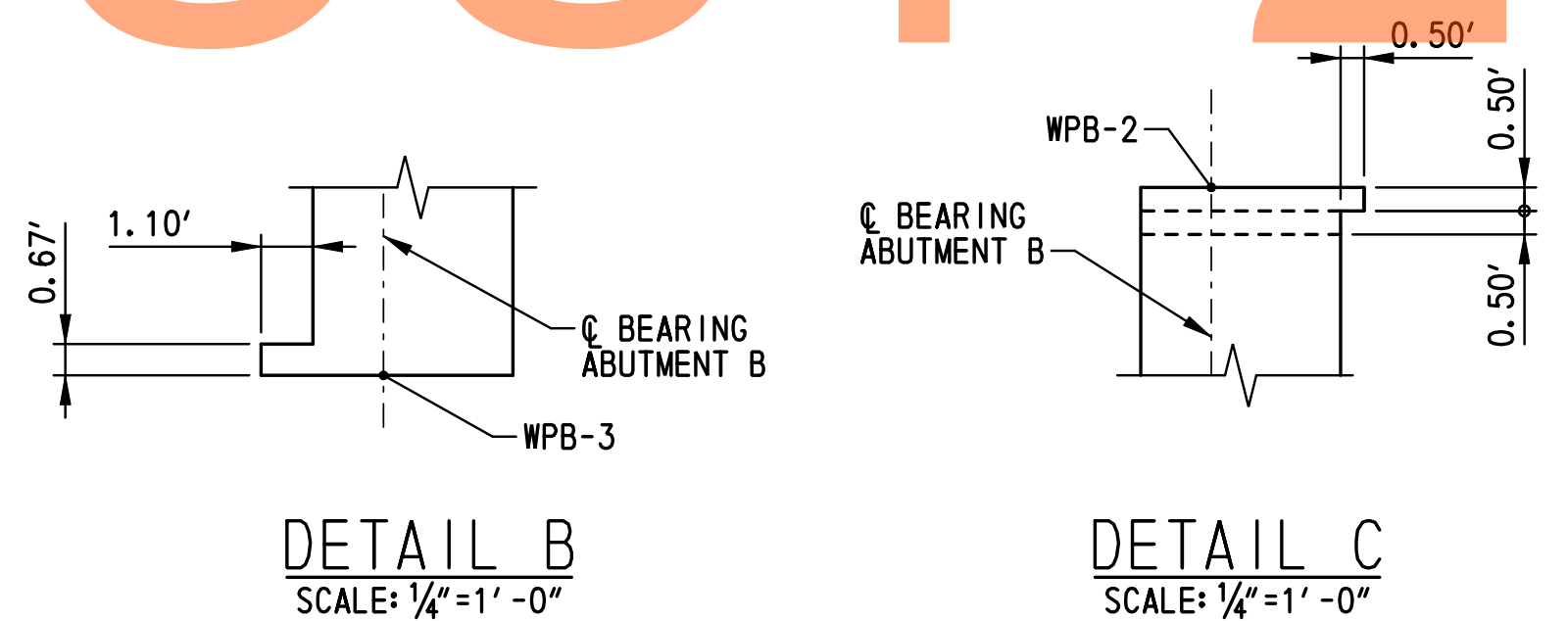
DRAFT

NOT FOR BIDDING

GEOMETRIC AND FOOTING LAYOUT PLAN
SCALE: 1/4" = 1'-0"

WORKING POINT COORDINATES		
WORKING POINT	COORDINATES	
	NORTHING	EASTING
WPP2-1	557112.0451	590334.1607
WPP2-2	557114.6865	590329.1945
WPP2-3	557100.9509	590355.0189
WPP3-1	557298.0442	590420.0991
WPP3-2	557321.2770	590353.4984
WPP3-3	557319.6921	590365.3933
WPP3-4	557318.1072	590377.2881
WPP3-5	557287.2085	590437.5492
WPP3-6	557286.2083	590450.0091
WPP3-7	557285.2081	590462.4690
WPP3-8	557321.6239	590360.5116
WPP3-9	557284.2766	590454.8908
WPB-1	557463.5955	590476.6184
WPB-2	557467.3246	590463.7072
WPB-3	557454.8723	590506.8200
WPWB-1	557460.2339	590475.6439
WPWB-2	557463.8239	590463.2145
WPWB-3	557444.0760	590531.5864

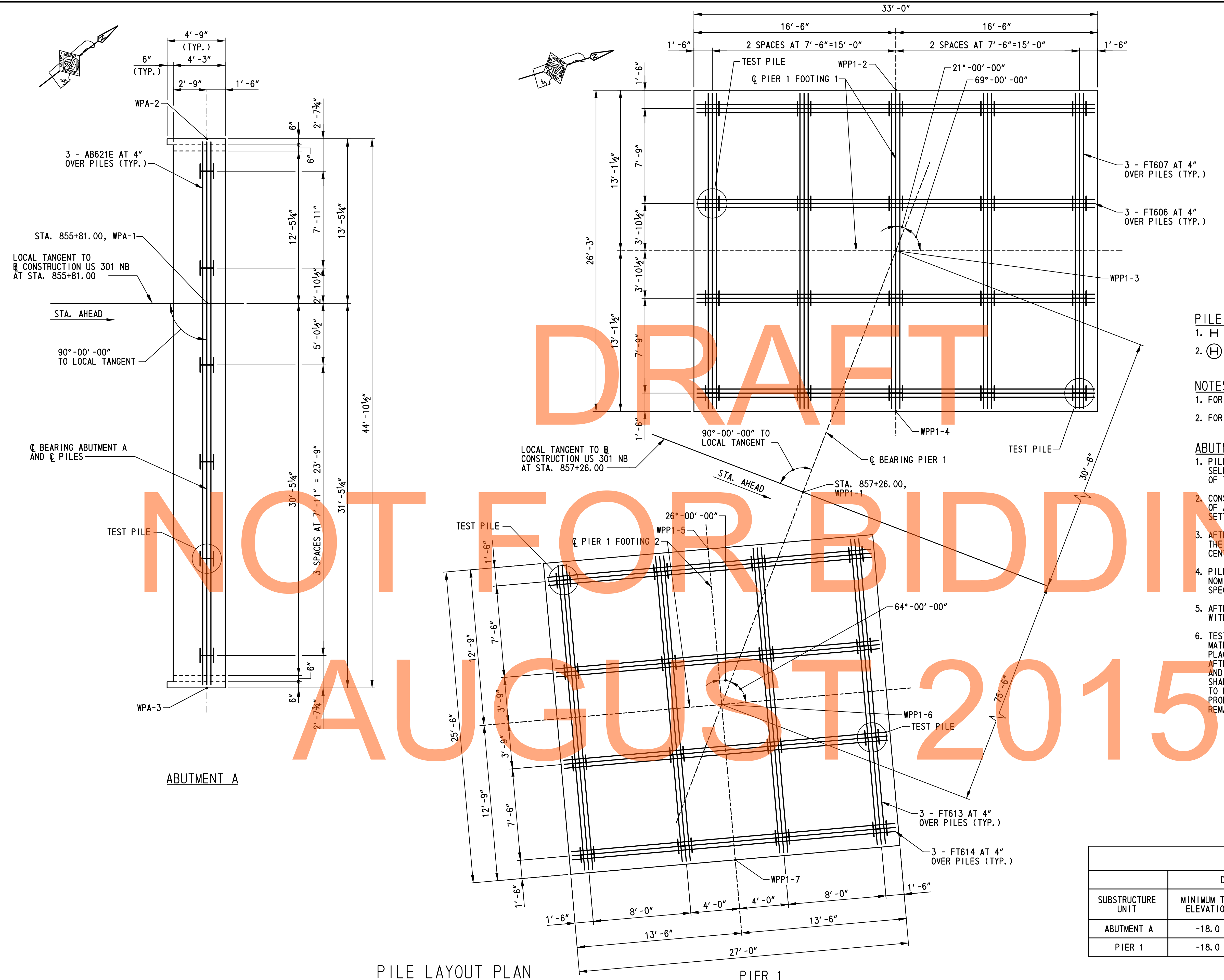
HORIZONTAL CURVE DATA	
US 301 NB	SR 1
P. I. STA. 858+61.08	P. I. STA. 1795+26.46
Δ = 64°-28'-15.54"	Δ = 6°-55'-48.35"
Dc = 3°-07'-51.30"	Dc = 0°-29'-42.03"
R = 1830.00'	R = 11574.74'
T = 1154.00'	T = 700.85'
L = 2059.17'	L = 1400.00'
E = 333.47'	E = 21.20'
P. C. STA. 847+07.08	P. C. STA. 1788+25.60
P. T. STA. 867+66.25	P. T. STA. 1802+25.60



NOTE:
FOR PILE LAYOUT PLANS, SEE DWG. NOS. PL-01 THRU PL-03.

M:\21653-000\CONTRACT 18\CADD\Bridges\B-1-No433\FT02_brl-433.dgn 7/23/2015 12:53:10 PM

M:\31653\000\Contract\IB\CADD\Bridges\Br-1\433\PL-01-br1-433.dgn
 2/2/2015 9:28:04 AM



ABUTMENT A PILE DRIVING INFORMATION	
PILE SIZE AND TYPE:	HP 14x73
ACTUAL BEARING OBTAINED:	
HAMMER TYPE:	
PILE HAMMER ENERGY:	50,000 LB-FT TO 90,000 LB-FT
SPECIAL DRIVING CONDITIONS AND COMMENTS:	

PIER 1 PILE DRIVING INFORMATION	
PILE SIZE AND TYPE:	HP 14x73
ACTUAL BEARING OBTAINED:	
HAMMER TYPE:	
PILE HAMMER ENERGY:	50,000 LB-FT TO 90,000 LB-FT
SPECIAL DRIVING CONDITIONS AND COMMENTS:	

- PILE LEGEND:**
- 1. H DENOTES PLUMB HP 14x73 STEEL PILE.
 - 2. (H) DENOTES LOCATION OF PLUMB HP 14x73 STEEL PILE, DYNAMIC PILE TESTING AND SIGNAL MATCHING ANALYSIS.
- NOTES:**
- 1. FOR PILE NOTES, SEE DWG. NO. PL-03.
 - 2. FOR ABUTMENT PILE CASING DETAILS, SEE DWG. NO. PL-03.

- ABUTMENT PILE INSTALLATION SEQUENCE OF CONSTRUCTION:**
1. PILE CASING SHALL BE INSTALLED DURING INSTALLATION OF THE MSE WALL SELECT BACKFILL AND REINFORCEMENT TO THE ELEVATION OF THE BOTTOM OF THE ABUTMENT STEM.
 2. CONSTRUCT MSE WALLS, INCLUDING WIRE FACED MSE WALLS AT REAR FACES OF ABUTMENT STEMS AND BACKWALLS TO THE REQUIRED ELEVATIONS. A SETTLEMENT WAITING PERIOD OF 60 DAYS IS REQUIRED AFTER THIS CONSTRUCTION.
 3. AFTER COMPLETION OF THE SETTLEMENT WAITING PERIOD AS DETERMINED BY THE ENGINEER BASED ON THE INSTRUMENTATION, THE PILES SHALL BE SET AND CENTERED IN THE CASING.
 4. PILES SHALL BE INSTALLED TO THE MINIMUM TIP ELEVATION AND REQUIRED NOMINAL RESISTANCE SPECIFIED. FOR PILE RESTRIKE REQUIREMENTS, SEE SPECIAL PROVISIONS.
 5. AFTER PILE INSTALLATION/DRIVING IS COMPLETE, THE CASING SHALL BE FILLED WITH SAND.
 6. TEST PILES MAY BE DRIVEN PRIOR TO PLACING EMBANKMENT AND SURCHARGE MATERIAL. RESTRIKES OF THESE TEST PILES SHALL BE PERFORMED PRIOR TO PLACING EMBANKMENT IN ACCORDANCE WITH ITEM 619502-TEST PILE RESTRIKE. AFTER THE EMBANKMENT HAS BEEN PLACED, SETTLEMENT HAS BEEN ACHIEVED AND THE SUBSTRUCTURE HAS BEEN RELEASED BY THE ENGINEER, THE TEST PILE SHALL BE ACTING AS A PRODUCTION PILE AND IT SHALL BE RE-STRUCK PRIOR TO PLACING ANY OTHER PRODUCTION PILES WITH PAYMENT UNDER ITEM 619501 - PRODUCTION PILE RESTRIKE. ONCE THE TEST PILE HAS BEEN ACCEPTED, THE REMAINING PRODUCTION PILES MAY BE INSTALLED.

PILE TIP DATA				
SUBSTRUCTURE UNIT	DESIGN DATA		ACTUAL FIELD DATA	
	MINIMUM TIP ELEVATION	ESTIMATED TIP ELEVATION	AVERAGE ACTUAL MINIMUM TIP ELEVATION	AVERAGE ACTUAL MAXIMUM TIP ELEVATION
ABUTMENT A	-18.0	-41.0		
PIER 1	-18.0	-46.0		

PILE LAYOUT PLAN
SCALE: 1/4"=1'-0"



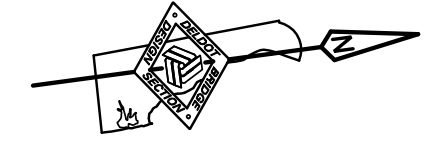
ADDENDUMS / REVISIONS

SCALE: AS SHOWN

US 301 & SR 1 INTERCHANGE

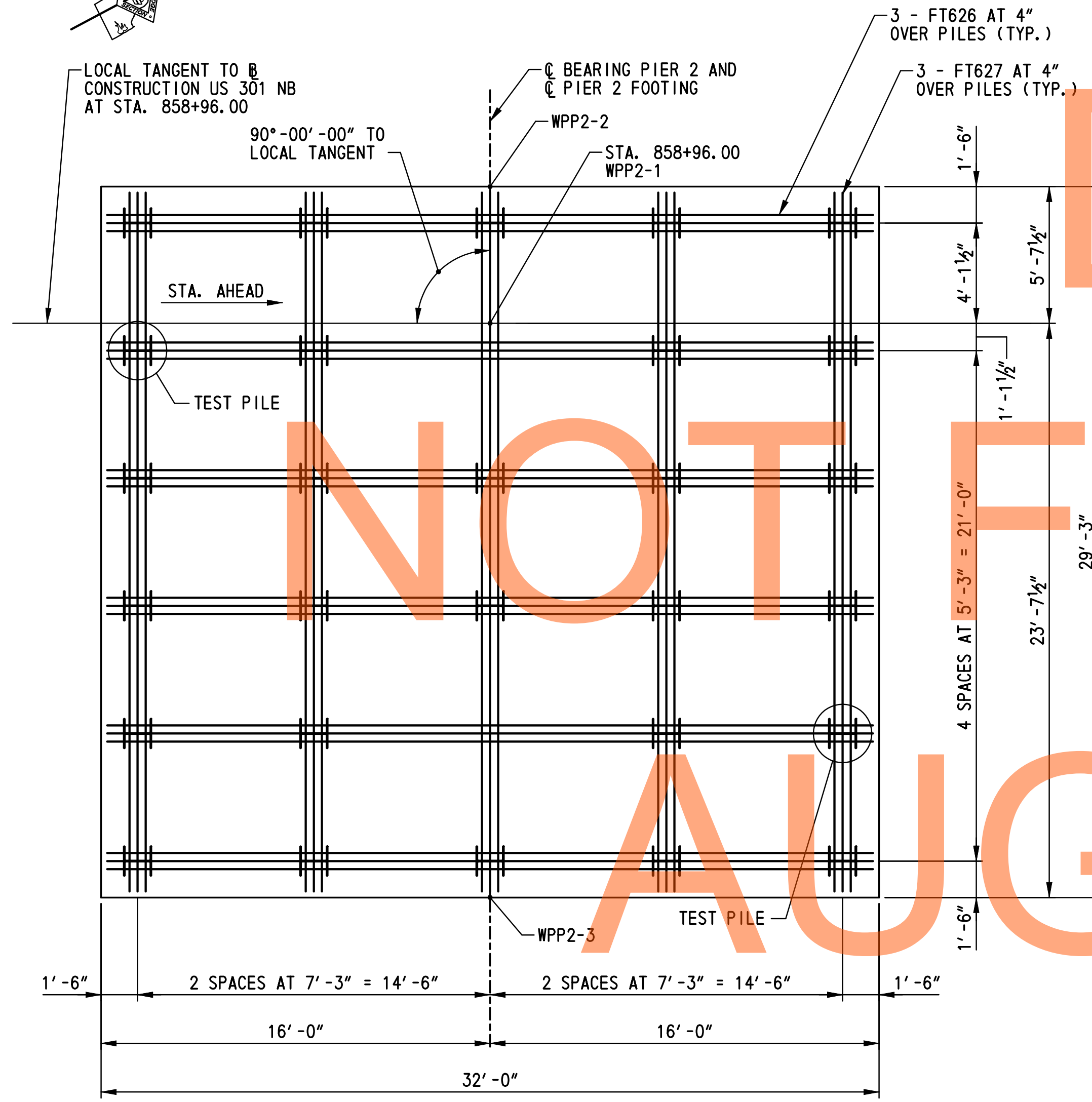
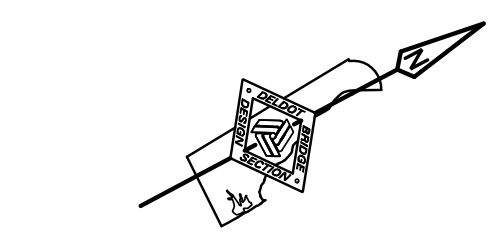
CONTRACT	BRIDGE NO.	1-433
T200911302	DESIGNED BY:	W.T.R.,L.F.E.
COUNTY	CHECKED BY:	B.K.B.
NEW CASTLE		

PILE LAYOUT PLAN - 1	SHEET NO.	211
	TOTAL SHTS.	491
	BR-3 PL-01	



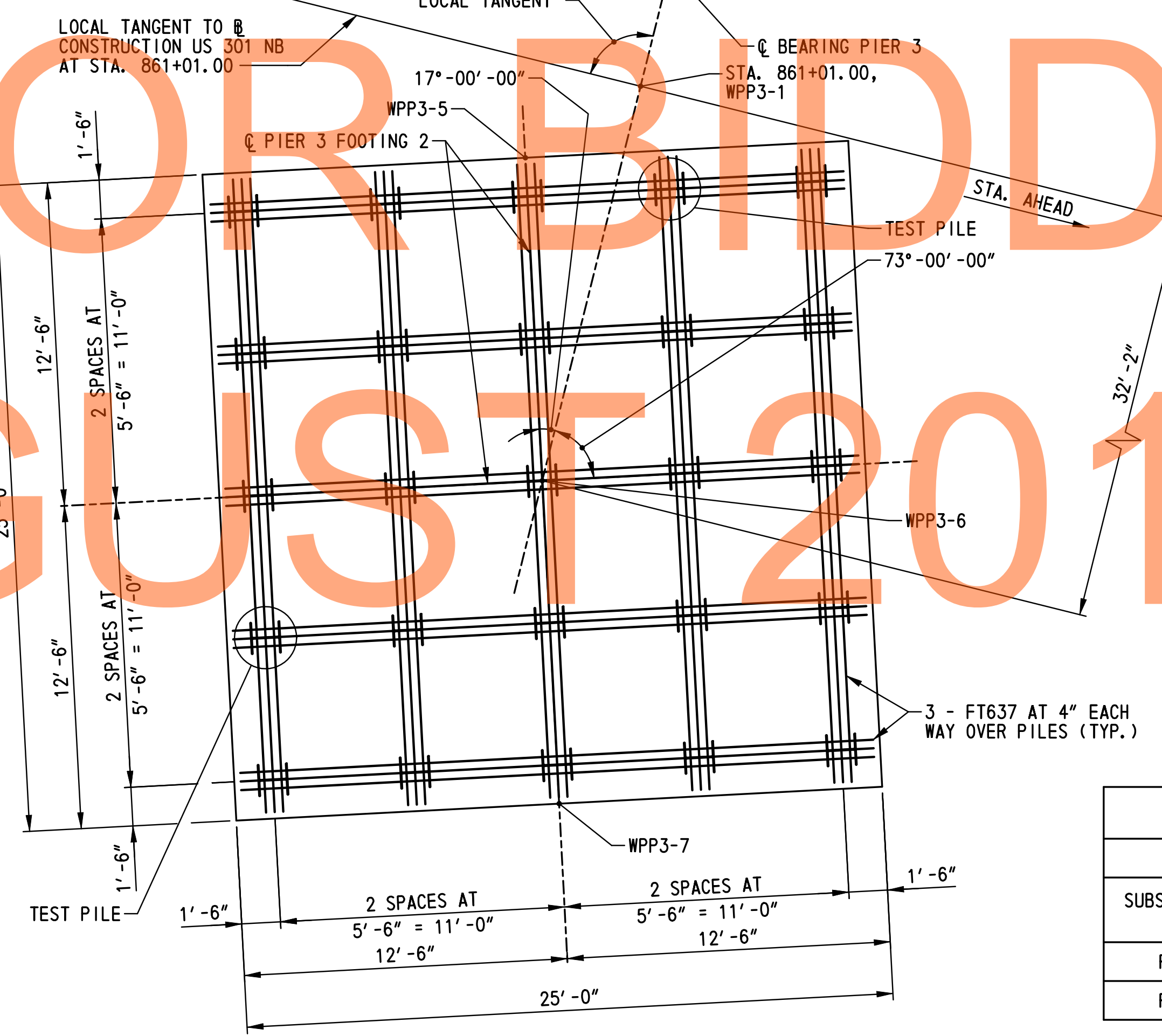
PIER 2 PILE DRIVING INFORMATION	
PILE SIZE AND TYPE:	HP 14x73
ACTUAL BEARING OBTAINED:	
HAMMER TYPE:	
PILE HAMMER ENERGY:	50,000 LB-FT TO 90,000 LB-FT
SPECIAL DRIVING CONDITIONS AND COMMENTS:	

PIER 3 PILE DRIVING INFORMATION	
PILE SIZE AND TYPE:	HP 14x73
ACTUAL BEARING OBTAINED:	
HAMMER TYPE:	
PILE HAMMER ENERGY:	50,000 LB-FT TO 90,000 LB-FT
SPECIAL DRIVING CONDITIONS AND COMMENTS:	



PIER 2

DRAFT
NOT FOR BUILDING
AUGUST 2015



PIER 3

PILE LAYOUT PLAN
SCALE: 1/4" = 1'-0"

PILE LEGEND:
 1. DENOTES PLUMB HP 14x73 STEEL PILE.
 2. DENOTES LOCATION OF PLUMB HP 14x73 STEEL PILE, DYNAMIC PILE TESTING AND SIGNAL MATCHING ANALYSIS.

NOTE:
 1. FOR PILE NOTES, SEE DWG. NO. PL-03.

SUBSTRUCTURE UNIT	DESIGN DATA		ACTUAL FIELD DATA	
	MINIMUM TIP ELEVATION	ESTIMATED TIP ELEVATION	AVERAGE ACTUAL MINIMUM TIP ELEVATION	AVERAGE ACTUAL MAXIMUM TIP ELEVATION
PIER 2	-18.0	-37.0		
PIER 3	-18.0	-42.0		

M:\31653\000\Contract\IB\CADD\Bridges\BR-No433\PL02-br1-433.dgn
 2/2/2015 9:28:06 AM

ADDENDUMS / REVISIONS

SCALE: AS SHOWN

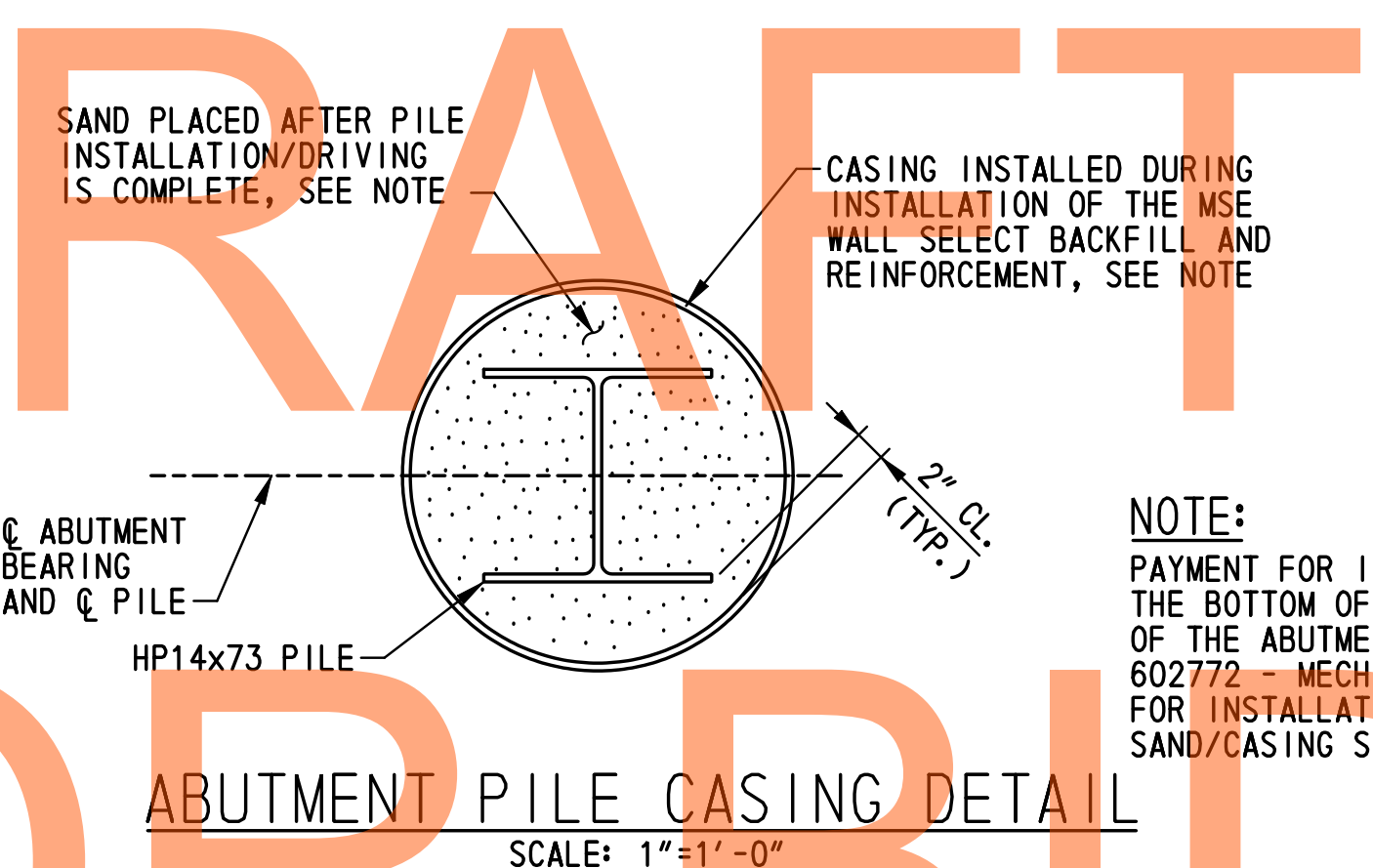
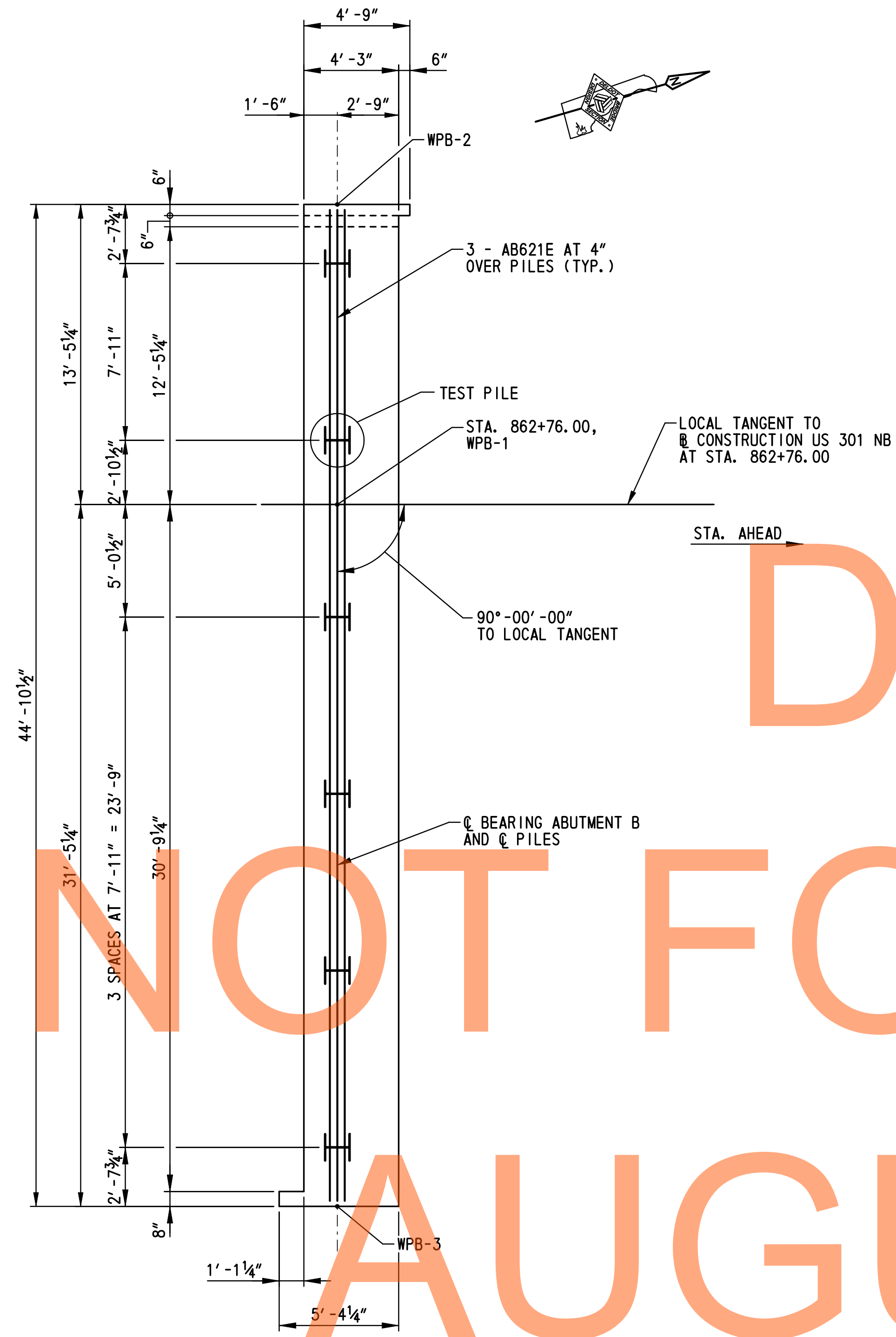
US 301 & SR 1 INTERCHANGE

CONTRACT	T200911302	BRIDGE NO.	1-433
COUNTY	NEW CASTLE	DESIGNED BY:	W.T.R./L.F.E.
		CHECKED BY:	B.K.B.

BR1-3
PL-02

PILE RESISTANCE		
SUBSTRUCTURE UNIT	FACTORED RESISTANCE (TONS)	NOMINAL RESISTANCE (TONS)
ABUTMENT A	145	225
PIER 1	160	250
PIER 2	145	225
PIER 3	145	225
ABUTMENT B	160	250

ABUTMENT B PILE DRIVING INFORMATION	
PILE SIZE AND TYPE:	HP 14x73
ACTUAL BEARING OBTAINED:	
HAMMER TYPE:	
PILE HAMMER ENERGY:	50,000 LB-FT TO 90,000 LB-FT
SPECIAL DRIVING CONDITIONS AND COMMENTS:	



ABUTMENT PILE INSTALLATION SEQUENCE OF CONSTRUCTION:

- PILE CASING SHALL BE INSTALLED DURING INSTALLATION OF THE MSE WALL SELECT BACKFILL AND REINFORCEMENT TO THE ELEVATION OF THE BOTTOM OF THE ABUTMENT STEM.
- CONSTRUCT MSE WALLS, INCLUDING TEMPORARY SUPPORT OF EMBANKMENT AT REAR FACES OF ABUTMENT STEMS AND BACKWALLS TO THE REQUIRED ELEVATIONS. A SETTLEMENT WAITING PERIOD OF 60 DAYS IS REQUIRED AFTER THIS CONSTRUCTION.
- AFTER COMPLETION OF THE SETTLEMENT WAITING PERIOD AS DETERMINED BY THE ENGINEER BASED ON THE INSTRUMENTATION, THE PILES SHALL BE SET AND CENTERED IN THE CASING.
- PILES SHALL BE INSTALLED TO THE MINIMUM TIP ELEVATION AND REQUIRED NOMINAL RESISTANCE SPECIFIED. FOR PILE RESTRIKE REQUIREMENTS, SEE SPECIAL PROVISIONS.
- AFTER PILE INSTALLATION/DRIVING IS COMPLETE, THE CASING SHALL BE FILLED WITH SAND.
- TEST PILES MAY BE DRIVEN PRIOR TO PLACING EMBANKMENT AND SURCHARGE MATERIAL. RESTRIKES OF THESE TEST PILES SHALL BE PERFORMED PRIOR TO PLACING EMBANKMENT IN ACCORDANCE WITH ITEM 619502-TEST PILE RESTRIKE. AFTER THE EMBANKMENT HAS BEEN PLACED, SETTLEMENT HAS BEEN ACHIEVED AND THE SUBSTRUCTURE HAS BEEN RELEASED BY THE ENGINEER, THE TEST PILE SHALL BE ACTING AS A PRODUCTION PILE AND IT SHALL BE RE-STRUCK PRIOR TO PLACING ANY OTHER PRODUCTION PILES WITH PAYMENT UNDER ITEM 619501 - PRODUCTION PILE RESTRIKE. ONCE THE TEST PILE HAS BEEN ACCEPTED, THE REMAINING PRODUCTION PILES MAY BE INSTALLED.

PILE LEGEND:

- H DENOTES PLUMB HP 14x73 STEEL PILE.
- (H) DENOTES LOCATION OF PLUMB HP 14x73 STEEL PILE, DYNAMIC PILE TESTING AND SIGNAL MATCHING ANALYSIS.

PILE NOTES:

- THE FACTORED RESISTANCES OF THE HP14x73 STEEL PILING ARE SHOWN IN THE TABLE ON THIS SHEET. PILES SHALL BE DRIVEN AND TESTED IN CONFORMANCE WITH THE SPECIAL PROVISION FOR DYNAMIC PILE TESTING TO THE NOMINAL RESISTANCES SHOWN IN THE TABLE ON THIS SHEET.
- PILES SHALL BE DRIVEN TO THE DRIVING CRITERIA DEVELOPED FROM DYNAMIC PILE TESTING AND AS SPECIFIED BY THE ENGINEER TO ACHIEVE THE NOMINAL RESISTANCES SHOWN IN THE TABLE ON THIS SHEET AND TO THE SPECIFIED MINIMUM TIP ELEVATION. PILES MEETING THE AFOREMENTIONED CRITERIA WILL BE CONSIDERED SATISFACTORY.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR SUBMITTING A WAVE EQUATION ANALYSIS AND ALL OTHER INCIDENTALS IN ACCORDANCE WITH THE SPECIAL PROVISIONS. THE WAVE EQUATION ANALYSIS AND DYNAMIC PILE TESTING MUST BE SIGNED AND SEALED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF DELAWARE IN ACCORDANCE WITH THE SPECIAL PROVISIONS. UPON COMPLETION OF THE DYNAMIC PILE TESTING THE CONTRACTOR SHALL SUBMIT A SIGNAL MATCHING ANALYSIS TO THE ENGINEER FOR REVIEW AND APPROVAL IN ACCORDANCE WITH THE SPECIAL PROVISIONS.
- ALL TEST PILES SHALL BE 10 FEET LONGER THAN THE PILE LENGTH COMPUTED FROM THE PILE TIP DATA TABLE. PILE LENGTHS FOR ORDERING PURPOSES SHALL BE DETERMINED BY THE TEST PILES. DYNAMIC PILE TESTING AND SIGNAL MATCHING ANALYSIS SHALL BE COMPLETED BY THE CONTRACTOR IN ACCORDANCE WITH THE SPECIAL PROVISIONS. TEST AND PRODUCTION PILE RESTRIKES WILL BE PAID FOR AS FOLLOWS:
 - ALL TEST PILES WILL BE RESTRUCK AFTER A WAITING PERIOD OF AT LEAST 48 HOURS. TEST PILE RESTRIKES SHALL BE INCIDENTAL TO THE INITIAL INSTALLATION OF THE PILE PROVIDED THEY ARE REQUESTED WITHIN FIVE WORKING DAYS FROM THE COMPLETION OF THE INITIAL DRIVE. IF RESTRIKES ARE REQUESTED AFTER FIVE WORKING DAYS FROM THE COMPLETION OF THE INITIAL DRIVE THEN THE TEST PILE RESTRIKE SHALL BE PAID FOR IN ACCORDANCE WITH THE SPECIAL PROVISIONS.
 - IF DIRECTED BY THE ENGINEER TO RESTRIKE A PRODUCTION PILE, THE RESTRIKE OF THE PRODUCTION PILE SHALL BE PAID SEPARATELY UNDER ITEM NO. 619501 - PRODUCTION PILE RESTRIKE.

THE DEPARTMENT RESERVES THE RIGHT TO PERFORM DYNAMIC PILE TESTING OF RESTRIKES.

- SEE DWG. NOS. PE-01 AND PE-02 FOR SETTLEMENT PLATFORM AND MONUMENT LOCATIONS. READINGS ON THE SETTLEMENT PLATFORMS SHALL BE MADE AFTER THE INITIAL INSTALLATION OF THE RISER AND CASING PIPES AND INSTALLATION RECORD SHEETS ARE APPROVED BY THE ENGINEER AND PRIOR TO FILL PLACEMENT. DURING FILL PLACEMENT, READINGS ON ALL SETTLEMENT PLATFORMS SHALL BE TAKEN AT A MINIMUM OF 3 CALENDAR DAY INTERVALS. AFTER COMPLETION OF THE FILL AND SURCHARGE PLACEMENT, INSTALL SETTLEMENT MONUMENTS IF INDICATED ON THE BRIDGE PLANS AND TAKE INITIAL READINGS. READINGS ON ALL SETTLEMENT MONITORING DEVICES SHALL THEN BE TAKEN AT A MINIMUM OF 3 CALENDAR DAY INTERVALS. IF THE SETTLEMENT HAS CEASED ON ALL MONITORED SETTLEMENT MONITORING DEVICES IN THE VICINITY OF THE SUBSTRUCTURE UNIT BY CALENDAR DAY 6, THAT IS THREE READINGS, AFTER THE COMPLETION OF THE FILL, SURCHARGE AND SETTLEMENT MONUMENT PLACEMENT, THE SUBSTRUCTURE WILL BE RELEASED BY THE ENGINEER FOR REMOVAL OF THE SURCHARGE AND INSTALLATION OF PRODUCTION PILES WITHIN THREE WORKING DAYS OF RECEIPT OF SETTLEMENT MONITORING RESULTS. AFTER COMPLETION OF THE ABUTMENT AND MSE WALL PANEL PLACEMENT, THE CONTRACTOR SHALL ESTABLISH REFERENCE POINTS TO MONITOR SETTLEMENT ON TOP OF THE ABUTMENT SEAT AND EITHER ON TOP OF THE MSE WALL PANELS OR ON TOP OF THE MSE WALL LEVELING PAD AT POINTS WITHIN FIVE FEET OF ALL ENDS AND CORNERS AND AT THE CENTER OF BRIDGES AND THE CENTERLINE OF US301. AFTER THE CONCRETE ABUTMENTS HAVE BEEN CONSTRUCTED AND THE MSE WALL PANELS HAVE BEEN PLACED, READINGS ON ALL SETTLEMENT MONITORING DEVICES AND REFERENCE POINTS SHALL CONTINUE TO BE TAKEN AT A MINIMUM OF 30-DAY INTERVALS FOR THE NEXT 6 MONTHS OR AS DIRECTED BY THE ENGINEER. SEE SPECIAL PROVISIONS FOR ADDITIONAL SETTLEMENT MONITORING REQUIREMENTS.

PILE LAYOUT PLAN
SCALE: 1/4"=1'-0"

ABUTMENT PILE CASING DETAIL
SCALE: 1"=1'-0"

PILE TIP DATA				
SUBSTRUCTURE UNIT	DESIGN DATA		ACTUAL FIELD DATA	
	MINIMUM TIP ELEVATION	ESTIMATED TIP ELEVATION	AVERAGE ACTUAL MINIMUM TIP ELEVATION	AVERAGE ACTUAL MAXIMUM TIP ELEVATION
ABUTMENT B	-18.0	-41.0		

M:\31653\000\CONTRACT\B\CADD\Bridg\BR-No433\PL03_brl-433.dgn 2/2/2015 2:46:57 PM

ADDENDUMS / REVISIONS

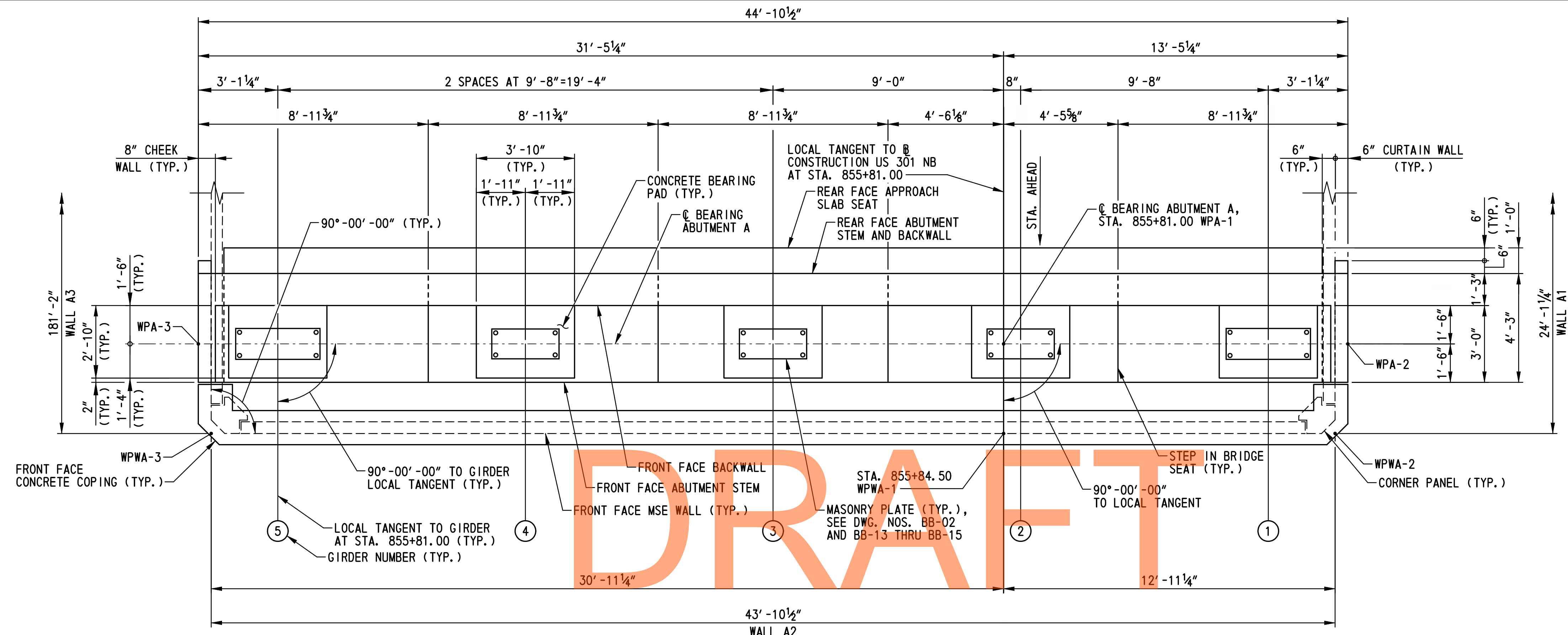
SCALE: AS SHOWN

US 301 & SR 1 INTERCHANGE

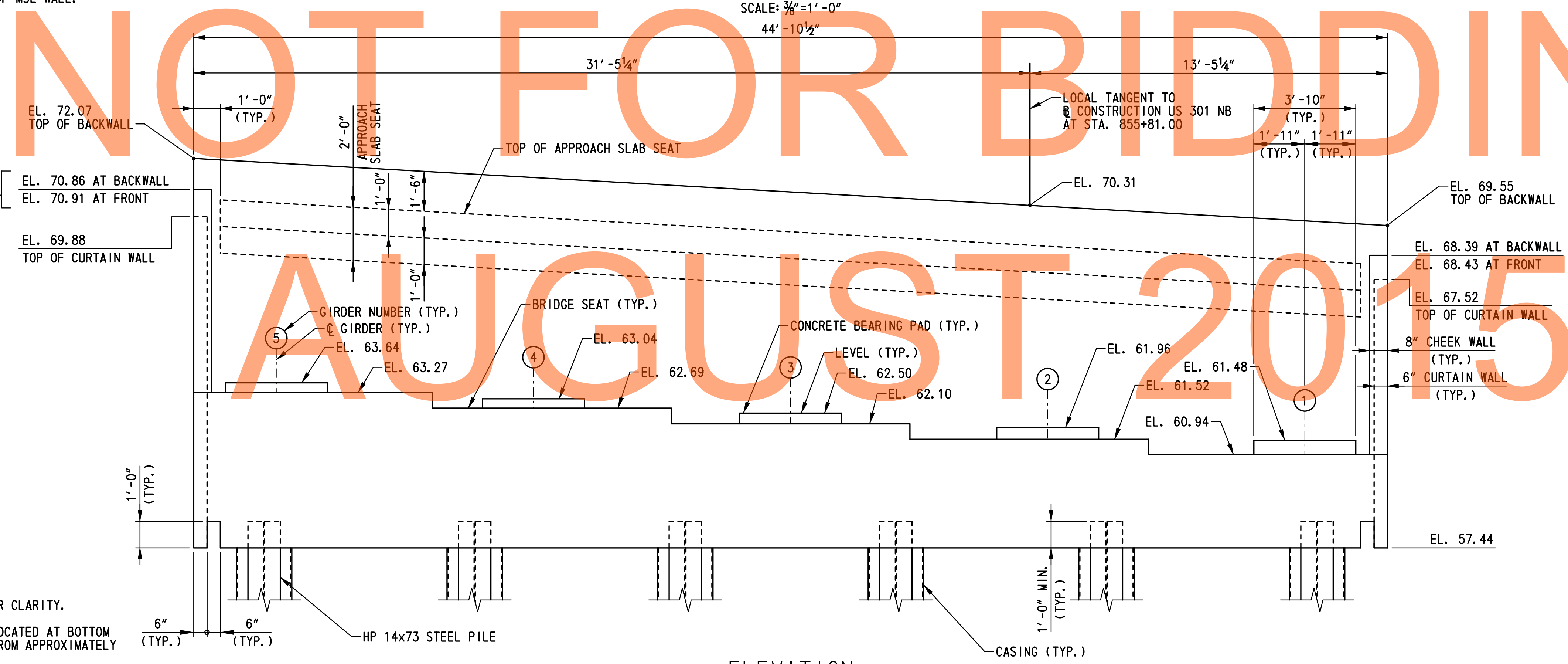
CONTRACT	BRIDGE NO.	1-433
T200911302	DESIGNED BY:	W.T.R./L.F.E.
COUNTY	CHECKED BY:	B.K.B.
NEW CASTLE		

PILE LAYOUT PLAN - 3

BR1-3 PL-03
SHEET NO.
213
TOTAL SHTS.
491



PLAN NOTE:
 DIMENSIONS SHOWN FOR MSE WALL ARE MEASURED WORKING POINT TO WORKING POINT ALONG FRONT FACE OF MSE WALL.



ELEVATION NOTES:

- MSE WALL NOT SHOWN FOR CLARITY.
- PROPOSED GROUNDLINE LOCATED AT BOTTOM OF MSE WALL, VARIES FROM APPROXIMATELY EL. 38.00 TO 57.00.
- APPROXIMATE EXISTING GROUNDLINE LOCATED AT BOTTOM OF MSE WALL, VARIES FROM APPROXIMATELY EL. 29.00 TO 35.00.

- NOTES:**
- FOR PILE LAYOUT PLAN, SEE DWG. NO. PL-01.
 - FOR MSE WALL DEVELOPED ELEVATION, SEE DWG. NO. AB-02.
 - FOR ABUTMENT A REINFORCEMENT DETAILS, SEE DWG. NOS. AB-07 THRU AB-09.
 - FOR ABUTMENT AND MSE WALL SECTIONS, SEE DWG. NOS. AB-05 AND AB-06.
 - 2-PLY MEMBRANE WATERPROOFING SHALL CONFORM TO THE FOLLOWING REQUIREMENTS:

TEST PROPERTY	TEST METHOD	SPECIFICATION LIMITS
GRAB TENSILE STRENGTH, LB/IN. @ 12 IN./MINUTE RATE OF LOADING, MIN.	D 5034	70
PLIABILITY, 180° BEND, 1 IN. MANDREL @ 20°F	D 146	UNAFFECTED
RESISTANCE TO PUNCTURE, LB MIN.	E 154 (SQUARE MOUNTING FRAME METHOD)	40
PERMEANCE, PERM (Kg/Pa * s * m ²), MAX.	E 96, METHOD B	0.1
WEIGHT, oz/yd ² MIN.	D 3776	40
PRIMER	-	AS SPECIFIED BY THE MANUFACTURER

THE ADHESIVE SIDE OF THE MEMBRANE SHALL BE PROTECTED WITH A SPECIAL RELEASE PAPER THAT CAN BE EASILY REMOVED FOR INSTALLATION. COST OF 2-PLY MEMBRANE WATERPROOFING SHALL BE INCIDENTAL TO ITEM 602015 - PORTLAND CEMENT CONCRETE MASONRY, ABUTMENT ABOVE FOOTING, CLASS A.

M:\31653-000\CONTRACT\B\CADD\Bridg\B-No433\AB01_Lbr1-433.dgn
 2/20/2015 9:44:34 AM



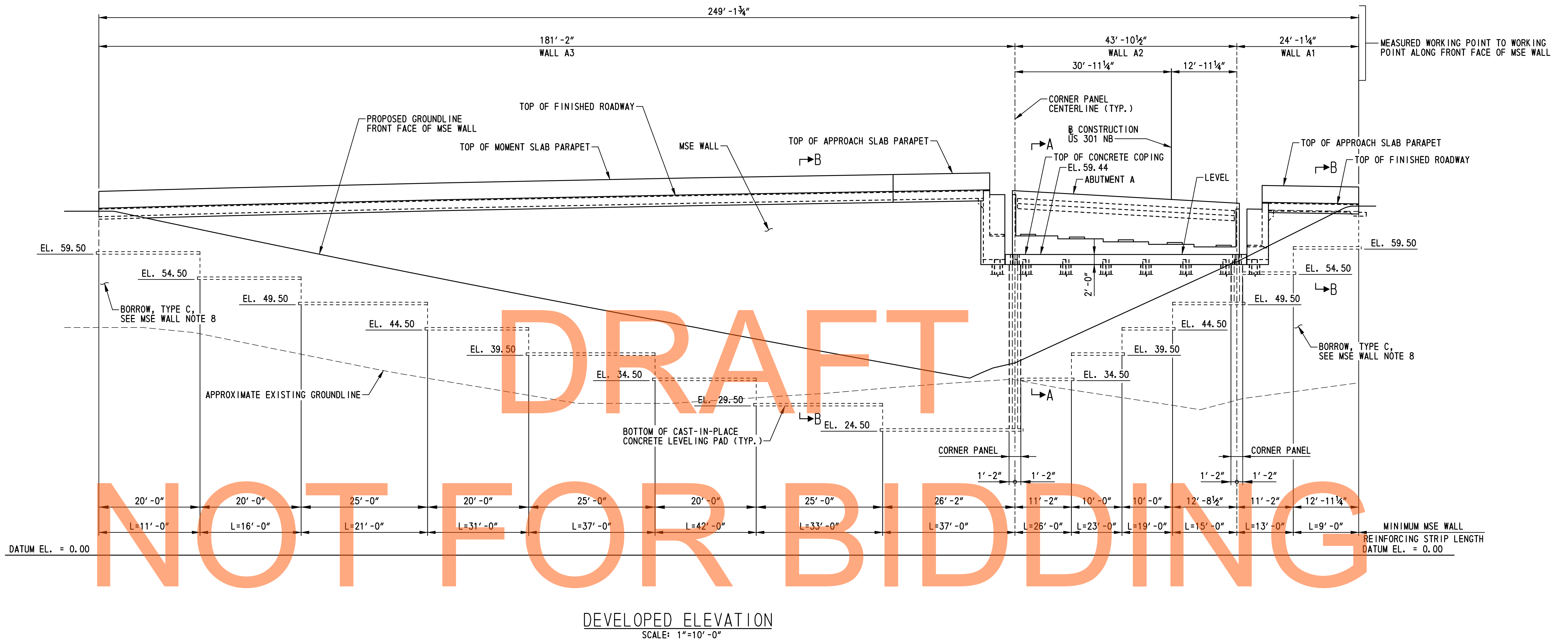
ADDENDUMS / REVISIONS

SCALE: AS SHOWN

US 301 & SR 1 INTERCHANGE

CONTRACT	BRIDGE NO.	1-433
T200911302	DESIGNED BY:	B.K.B.
COUNTY	CHECKED BY:	W.A.G.
NEW CASTLE		

ABUTMENT A PLAN AND ELEVATION		BR1-3 AB-01
SHEET NO.		214
TOTAL SHTS.		491



DEVELOPED ELEVATION
SCALE: 1"=10'-0"

MSE WALL NOTES:

- DESIGN CRITERIA**
2007 AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, INCLUDING 2008 AND 2009 INTERIM SPECIFICATIONS, THE 2005 DELDOT BRIDGE DESIGN MANUAL AND THE FEDERAL HIGHWAY ADMINISTRATION PUBLICATION NO. FHWA-NH-00-043, "MECHANICALLY STABILIZED EARTH WALLS AND REINFORCING SOIL SLOPES DESIGN AND CONSTRUCTION GUIDE".
- CONCRETE**
ALL CONCRETE PROPERTIES SHALL BE IN ACCORDANCE WITH SECTION 812 OF THE DELAWARE DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS.
CLASS A - MSE WALL PANELS AND MSE WALL COPING (f'c = 4,500 PSI).
CLASS B - MSE WALL LEVELING PADS (f'c = 3,000 PSI).
ALL EXPOSED EDGES SHALL BE CHAMFERED 3/4" UNLESS NOTED OTHERWISE.
- REINFORCING STEEL**
ALL REINFORCING STEEL SHALL BE AASHTO M 31 (ASTM A 615), GRADE 60 AND SHALL BE PROTECTED WITH FUSION BONDED EPOXY, CONFORMING TO AASHTO M 284 (ASTM A 775).
MINIMUM CONCRETE COVER FOR REINFORCING STEEL SHALL BE 2" UNLESS NOTED OTHERWISE.
- ARCHITECTURAL FINISH**
THE COMPONENTS OF THE MSE WALLS SHALL HAVE THE ARCHITECTURAL TREATMENT AS SPECIFIED IN THE SPECIAL PROVISION FOR ITEM 602772.
- REINFORCING STRIPS**
REINFORCING STRIPS SHALL BE LOCATED TO CLEAR THE PILE CASING WITH 2" MINIMUM CLEARANCE AND A MAXIMUM 15 DEGREE SKEW.
- COPING**
THE MSE WALL COPING SHALL BE A PRECAST CONCRETE COPING INSTALLED IN CONFORMANCE WITH THE PROPRIETARY WALL MANUFACTURER'S RECOMMENDATIONS. FOR LOCATIONS ALONG THE MSE WALL WHERE A PRECAST CONCRETE COPING CANNOT BE UTILIZED A CAST-IN-PLACE CONCRETE COPING INSTALLED IN CONFORMANCE WITH THE PROPRIETARY MSE WALL MANUFACTURER'S RECOMMENDATION MAY BE UTILIZED.
- LEVELING PAD**
THE LEVELING PAD STEPS MAY BE LOCATED AT THE DISCRETION OF THE PROPRIETARY WALL MANUFACTURER PROVIDED THAT THE MINIMUM EMBEDMENT IS MAINTAINED IN ACCORDANCE WITH THE SPECIFIED DESIGN CRITERIA. ANY CHANGES TO THE STEP LOCATIONS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL.
- BACKFILL AND FOUNDATION SOILS**
MSE WALL BACKFILL SHALL CONSIST OF SELECT BACKFILL AND MEET THE REQUIREMENTS PROVIDED IN THE SPECIAL PROVISIONS. FOR ADDITIONAL REQUIREMENTS OF MSE WALL BACKFILL AND FOUNDATION SOILS, SEE THE SOIL PROPERTIES TABLE ON THIS SHEET. THE VERTICAL LIMIT OF BORROW, TYPE C SHALL BE FROM THE EXISTING GROUNDLINE TO THE BOTTOM OF THE LEVELING PAD. THE HORIZONTAL LIMIT OF BORROW, TYPE C SHALL BE FROM 4'-0" IN FRONT OF THE MSE WALL TO 1'-0" BEHIND THE END OF THE MSE WALL REINFORCEMENT. PAYMENT FOR BORROW, TYPE C WILL BE MADE UNDER ITEM NO. 202000 - EXCAVATION AND EMBANKMENT.
- INTERNAL STABILITY**
THE INTERNAL STABILITY OF THE MSE WALL SHALL BE DESIGNED BY THE PROPRIETARY WALL MANUFACTURER USING THE SOIL PROPERTIES PROVIDED AT EACH MSE WALL LOCATION. THE INTERNAL STABILITY CALCULATIONS SHALL BE SIGNED AND SEALED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF DELAWARE AS INDICATED IN THE PROJECT SPECIFICATIONS.
- QUARANTINE PERIOD**
A QUARANTINE PERIOD OF APPROXIMATELY 60-DAYS IS REQUIRED AFTER CONSTRUCTION OF THE FULL HEIGHT OF THE MSE WALL IS ACHIEVED. THE ENGINEER SHALL APPROVE THE COMPLETION OF THE QUARANTINE PERIOD PRIOR TO PILE INSTALLATION OR THE CONSTRUCTION OF ANY BRIDGE OR ROADWAY ELEMENTS.
- SETTLEMENT REQUIREMENTS**
THE CONTRACTOR AND MSE WALL MANUFACTURER SHALL DESIGN AND CONSTRUCT THE FINAL WALL FACING SUCH THAT THE FINAL WALL FACING IS AT THE REQUIRED ELEVATIONS AFTER SETTLEMENT IS ACHIEVED. THE ANTICIPATED SETTLEMENT IS 4 INCHES AT THE FACE OF WALL.
- SERVICE LIFE**
ALL MSE WALL COMPONENTS SHALL BE DESIGNED FOR A MINIMUM SERVICE LIFE OF 100 YEARS.
- WALL SYSTEM**
ONLY ONE MSE WALL SYSTEM SHALL BE USED ON THIS PROJECT.
- TEMPORARY SUPPORT OF EMBANKMENT**
TEMPORARY SUPPORT OF EMBANKMENT IS REQUIRED AT THE REAR FACE OF BOTH ABUTMENT STEMS AND BACKWALLS TO ALLOW THE UNDERLYING SOILS TO PRECONSOLIDATE UNDER THE FINAL REQUIRED SOIL PRESSURE PRIOR TO PILE INSTALLATION. THE LIMITS OF THE TEMPORARY SUPPORT OF EMBANKMENT SHALL BE THE FULL ABUTMENT HEIGHT OVER THE FULL ABUTMENT LENGTH. THE TEMPORARY SUPPORT OF EMBANKMENT SHALL BE DESIGNED BY THE MSE WALL DESIGNER TO RESIST THE FULL HORIZONTAL EARTH PRESSURE AND HORIZONTAL SOIL PRESSURE DUE TO SURCHARGE OF SOIL AND THE CONTRACTOR'S EQUIPMENT AND MATERIALS. ALL MSE WALL REINFORCING STRIPS SHALL BE DESIGNED FOR A MINIMUM SERVICE LIFE OF 100 YEARS. THE DESIGN OF THE TEMPORARY SUPPORT OF EMBANKMENT SHALL BE COMPATIBLE WITH THE ABUTMENT ANCHORS SHOWN ON DWG. NOS. AB-05 AND AB-06. PAYMENT FOR CONSTRUCTION OF THE TEMPORARY SUPPORT OF EMBANKMENT WILL BE MADE UNDER ITEM 602772 - MECHANICALLY STABILIZED EARTH WALLS. SEE THE SPECIAL PROVISIONS FOR ADDITIONAL INFORMATION AND REQUIREMENTS.

SOIL TYPE	UNIT WEIGHT (PCF)	DRAINED ANGLE OF FRICTION (DEGREES)	UNDRAINED SHEAR STRENGTH (PSF)
SELECT BACKFILL	125	34 (MIN.)	0
FOUNDATION SOIL (BORROW, TYPE C)	120	32	0
FOUNDATION SOIL (ABUTMENT A)	120	30	0
FOUNDATION SOIL (ABUTMENT B)	120	30	0

NOTES:

- FOR SECTIONS A-A AND B-B, SEE DWG. NO. AB-06.
- FOR ABUTMENT A PLAN AND ELEVATION, SEE DWG. NO. AB-01.
- FOR ADDITIONAL INFORMATION ON MSE WALL, SEE DWG. NO. FT-01.

M:\31653-000\CONTRACT\B\CADD\Bridg\B-1-433.dgn



ADDENDUMS / REVISIONS	

SCALE: AS SHOWN

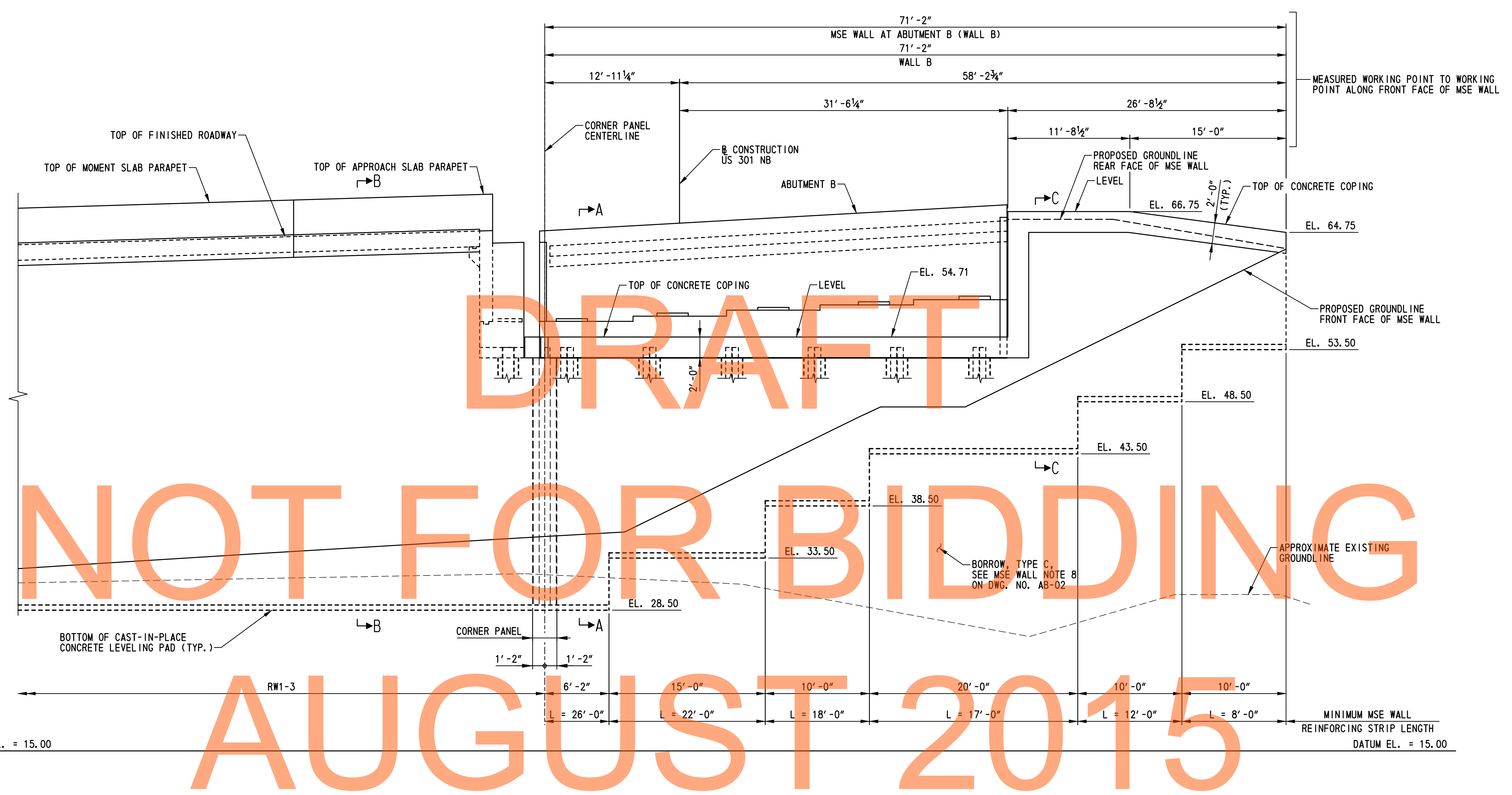
US 301 &
SR 1 INTERCHANGE

CONTRACT	BRIDGE NO.	1-433
T200911302	DESIGNED BY:	B.K.B.
COUNTY	CHECKED BY:	W.A.G.
NEW CASTLE		

MSE WALL AT
ABUTMENT A

BR1-3 AB-02
SHEET NO.
215
TOTAL SHTS.
491

DRAFT



NOT FOR BIDDING

AUGUST 2015

DEVELOPED ELEVATION
SCALE: 1/4" = 1' - 0"

- NOTES:**
1. FOR SECTIONS A-A, B-B AND C-C, SEE DWG. NO. AB-06.
 2. FOR ABUTMENT B PLAN AND ELEVATION, SEE DWG. NO. AB-03.
 3. FOR ADDITIONAL INFORMATION ON MSE WALL, SEE DWG. NO. FT-02.
 4. FOR MSE WALL NOTES AND SOIL PROPERTIES, SEE DWG. NO. AB-02.

M:\31653\000\Contract\IB\CADD\Bridges\Bridges\No433\AB04-br1-433.dgn 2/2/2015 9:52:22 AM



ADDENDUMS / REVISIONS	

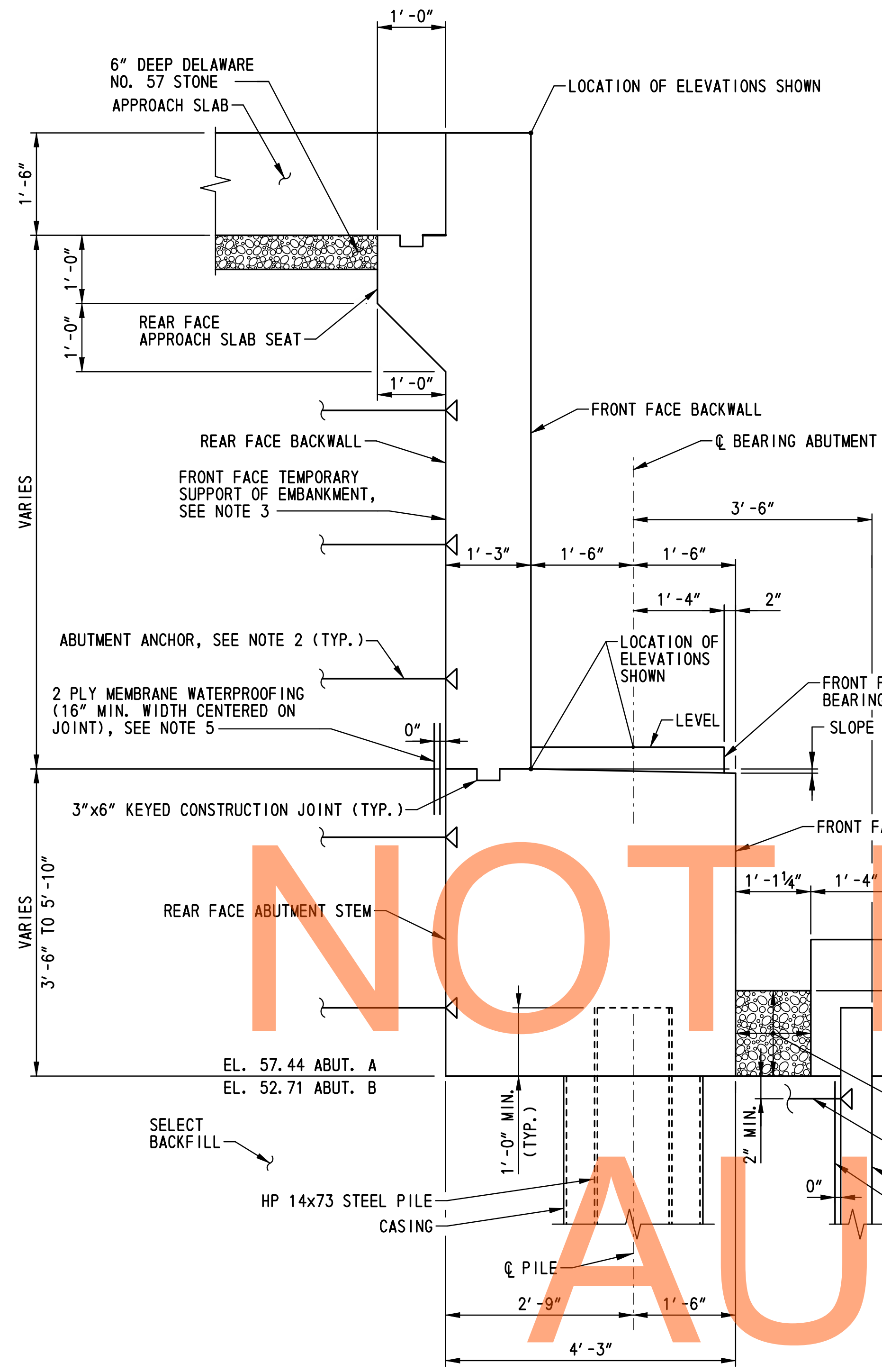
SCALE: AS SHOWN

US 301 &
SR 1 INTERCHANGE

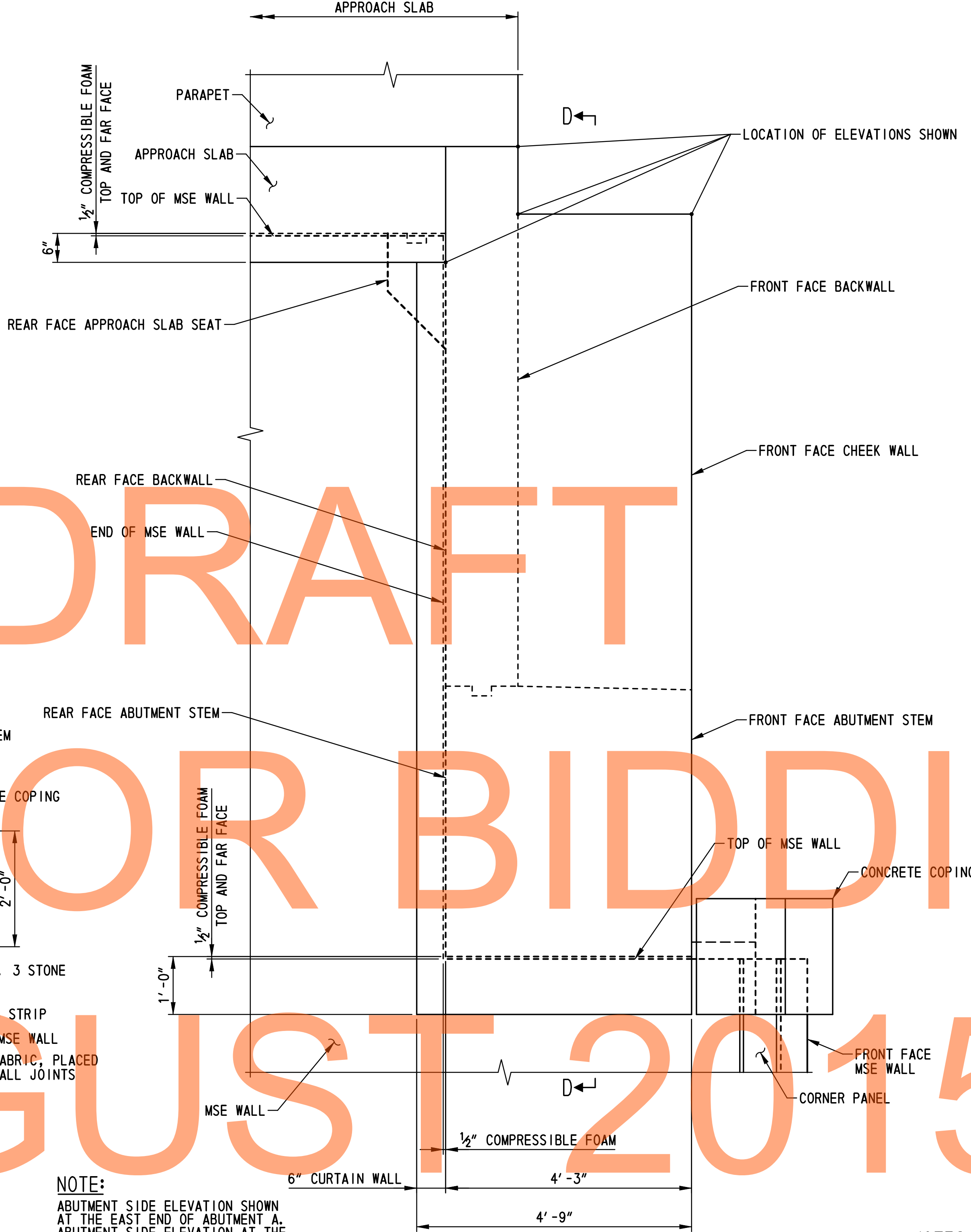
CONTRACT	BRIDGE NO.	1-433
T200911302	DESIGNED BY:	B.K.B.
COUNTY	CHECKED BY:	W.A.G.
NEW CASTLE		

MSE WALL AT
ABUTMENT B

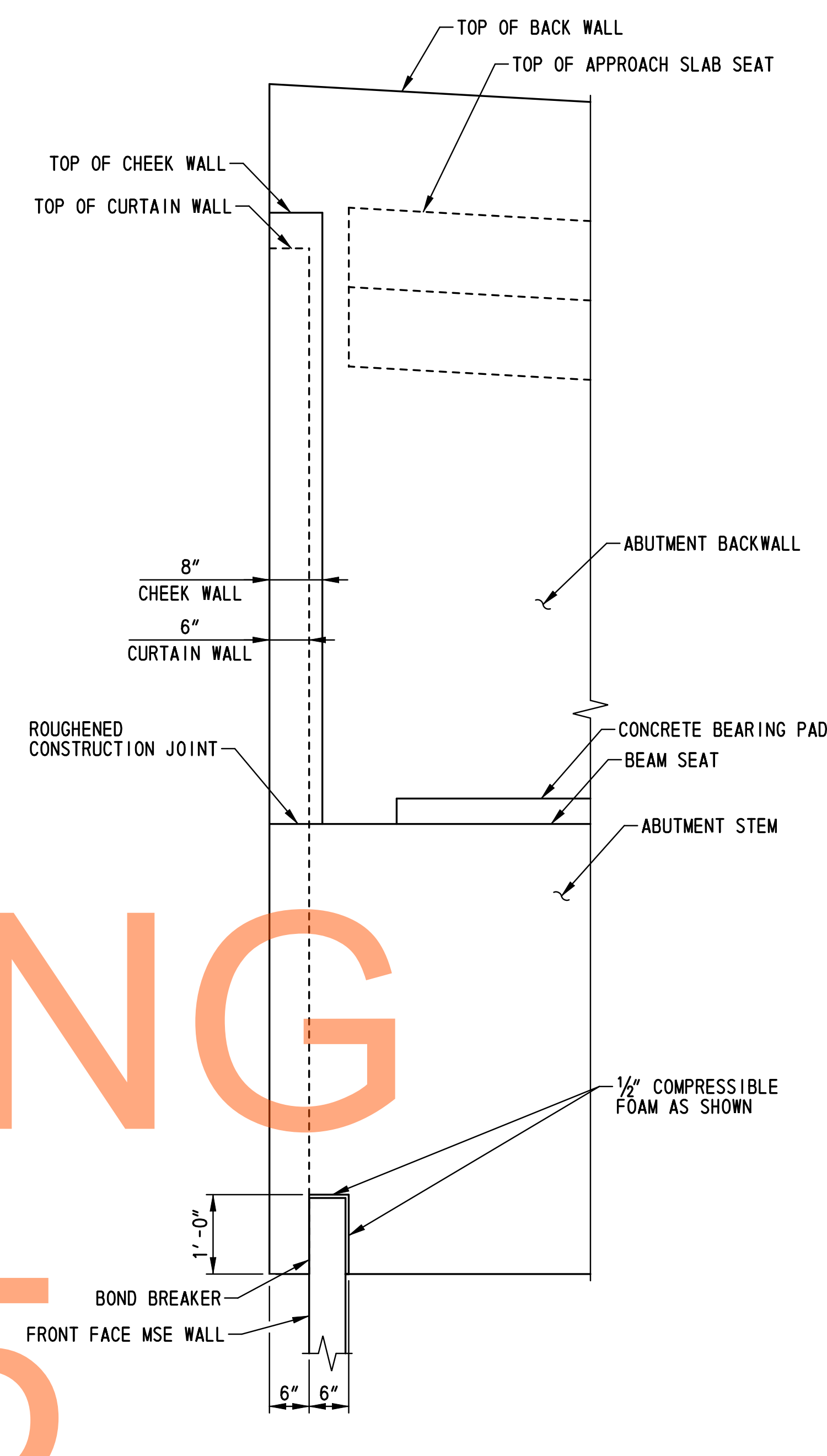
BR1-3 AB-04
SHEET NO.
217
TOTAL SHTS.
491



TYPICAL ABUTMENT SECTION
SCALE: 3/4"=1'-0"



ABUTMENT SIDE ELEVATION
SCALE: 3/4"=1'-0"



SECTION D-D
SCALE: 3/4"=1'-0"

NOTE:
ABUTMENT SIDE ELEVATION SHOWN AT THE EAST END OF ABUTMENT A. ABUTMENT SIDE ELEVATION AT THE WEST END OF BOTH ABUTMENT A AND ABUTMENT B ARE SIMILAR.

- NOTES:
- FOR PILE LAYOUT PLANS, SEE DWG. NOS. PL-01 AND PL-03.
 - PROVIDE ABUTMENT ANCHORS IN SELECT BACKFILL. SEE ABUTMENT ANCHOR DETAIL ON DWG. NO. AB-06. ABUTMENT ANCHORS SHALL BE DESIGNED FOR A MINIMUM FACTORED HORIZONTAL FORCE OF 1.90 KIPS PER FOOT OF ABUTMENT WIDTH AT ABUTMENT A AND 2.20 KIPS PER FOOT OF ABUTMENT WIDTH AT ABUTMENT B. THE POINT OF APPLICATION OF FORCES SHALL BE AT THE CENTER OF BEARINGS. DESIGN OF THE ABUTMENT ANCHORS SHALL BE COMPATIBLE WITH THE TEMPORARY SUPPORT OF EMBANKMENT DESIGN. PAYMENT FOR ABUTMENT ANCHORS WILL BE INCIDENTAL TO ITEM NO. 602772 - MECHANICALLY STABILIZED EARTH WALLS.
 - FOR TEMPORARY SUPPORT OF EMBANKMENT INFORMATION, SEE MSE WALL NOTE 14 ON DWG. NO. AB-02.
 - FOR MSE WALL NOTES AND SOIL PROPERTIES, SEE DWG. NO. AB-02.
 - MEMBRANE WATERPROOFING SHALL BE INCIDENTAL TO ITEM 602015 - PORTLAND CEMENT CONCRETE MASONRY, ABUTMENT ABOVE FOOTING, CLASS A. FOR MEMBRANE WATERPROOFING REQUIREMENTS, SEE DWG. NO. AB-01.

M:\31653-000\CONTRACT\B\CADD\Bridg\B-No433\AB05.br1-433.dgn
 2/20/2015 9:57:42 AM



ADDENDUMS / REVISIONS	

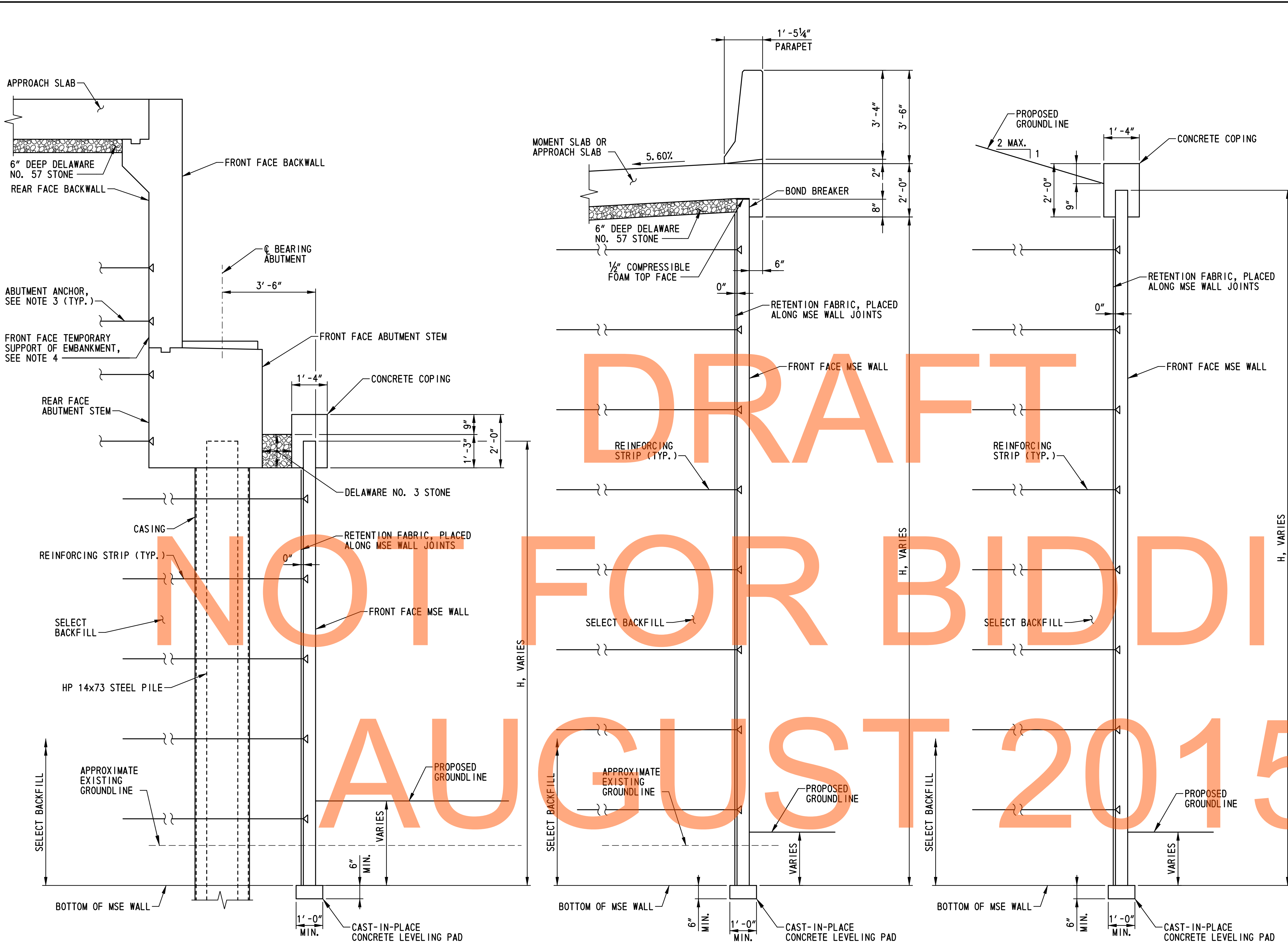
SCALE: AS SHOWN

US 301 &
SR 1 INTERCHANGE

CONTRACT	BRIDGE NO.	1-433
T200911302	DESIGNED BY:	B.K.B.
COUNTY	CHECKED BY:	W.A.G.
NEW CASTLE		

ABUTMENT AND MSE
WALL SECTIONS - 1

BR1-3 AB-05	SHEET NO.	218
	TOTAL SHTS.	491

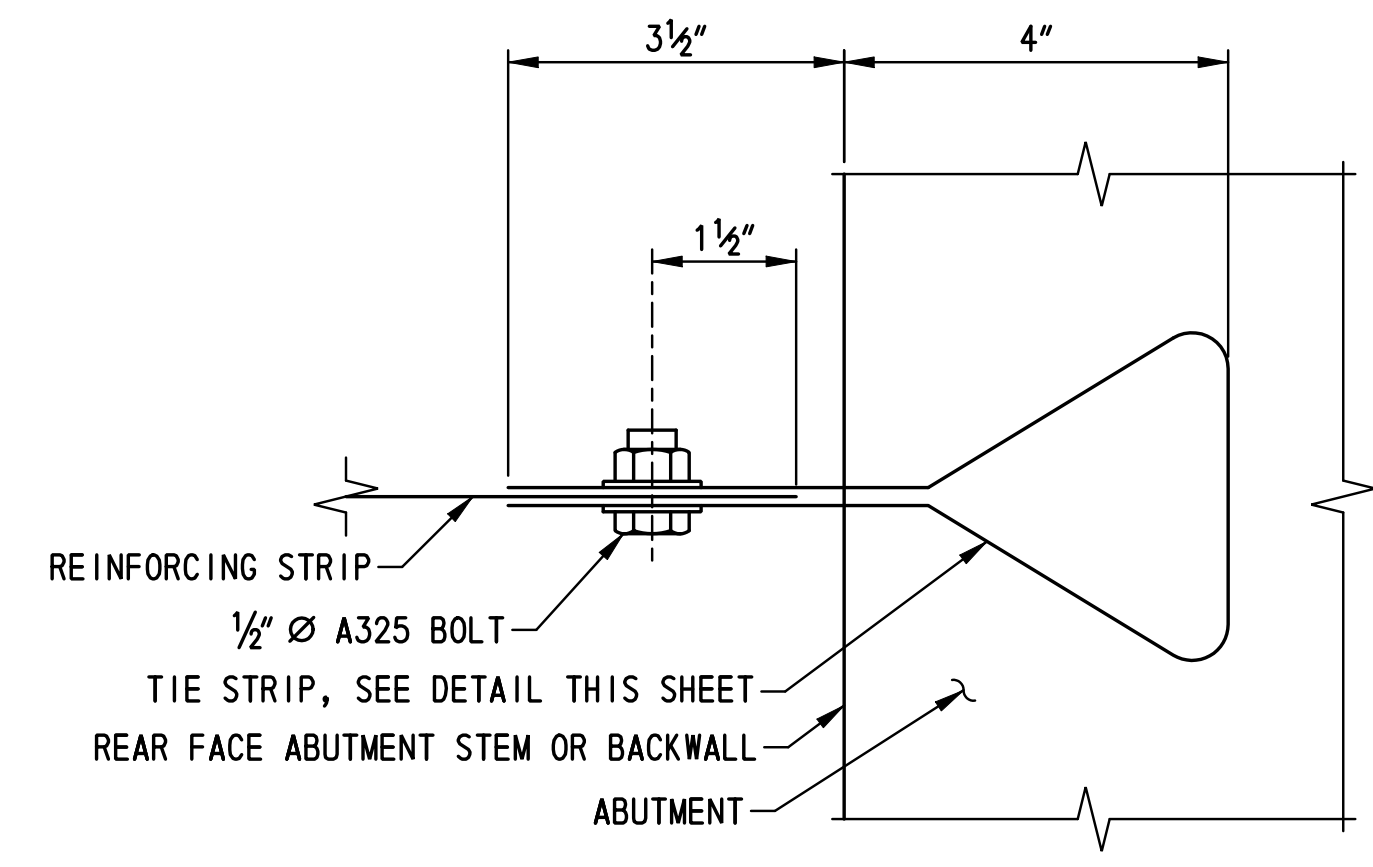


SECTION A-A
SCALE: 1/2" = 1'-0"

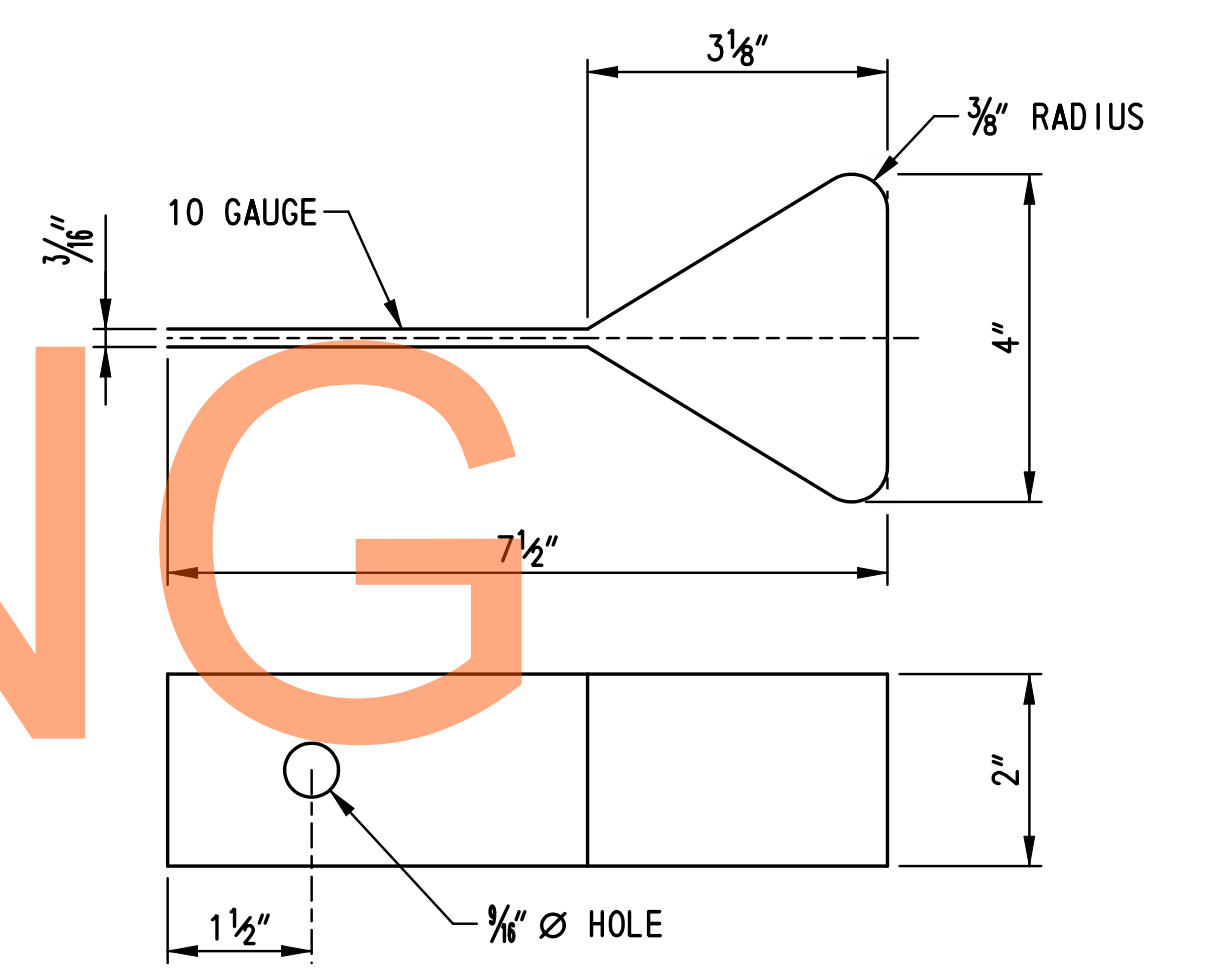
SECTION B-B
SCALE: 1/2" = 1'-0"

SECTION C-C
SCALE: 1/2" = 1'-0"

- ABUTMENT ANCHOR NOTES:**
1. THE ABUTMENT ANCHOR SHOWN CONSISTING OF A TIE STRIP ATTACHED TO A REINFORCING STRIP MAY BE MODIFIED PER THE MSE WALL MANUFACTURER'S RECOMMENDATIONS. ANY CHANGES TO THE ABUTMENT ANCHOR DETAIL SHOWN SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL.
 2. THE ATTACHMENT OF THE ABUTMENT ANCHOR TO THE TEMPORARY SUPPORT OF EMBANKMENT LOCATED AT THE REAR FACE OF THE ABUTMENT STEMS AND BACKWALLS IS NOT SHOWN. THIS ATTACHMENT SHALL BE MADE PER THE MSE WALL MANUFACTURER'S RECOMMENDATIONS AND A DETAIL SUBMITTED TO THE ENGINEER FOR APPROVAL.



ABUTMENT ANCHOR DETAIL
NOT TO SCALE



TIE STRIP DETAIL
NOT TO SCALE

- NOTES:**
1. FOR LOCATION OF SECTIONS A-A, B-B AND C-C, SEE DWG. NOS. AB-02 AND AB-04.
 2. FOR PILE LAYOUT PLANS, SEE DWG. NOS. PL-01 AND PL-03.
 3. PROVIDE ABUTMENT ANCHORS IN SELECT BACKFILL. SEE ABUTMENT ANCHOR DETAIL ON THIS SHEET. ABUTMENT ANCHORS SHALL BE DESIGNED FOR A MINIMUM FACTORED HORIZONTAL FORCE OF 1.90 KIPS PER FOOT OF ABUTMENT WIDTH AT ABUTMENT A AND 2.20 KIPS PER FOOT OF ABUTMENT WIDTH AT ABUTMENT B. THE POINT OF APPLICATION OF FORCES SHALL BE AT THE CENTER OF BEARINGS. DESIGN OF THE ABUTMENT ANCHORS SHALL BE COMPATIBLE WITH THE TEMPORARY SUPPORT OF EMBANKMENT DESIGN. PAYMENT FOR ABUTMENT ANCHORS WILL BE INCIDENTAL TO ITEM NO. 602772 - MECHANICALLY STABILIZED EARTH WALLS.
 4. FOR TEMPORARY SUPPORT OF EMBANKMENT INFORMATION, SEE MSE WALL NOTE 14 ON DWG. NO. AB-02.
 5. FOR MSE WALL NOTES AND SOIL PROPERTIES, SEE DWG. NO. AB-02.

DRAFT
NOT FOR BIDDING
AUGUST 2015

M:\31653\000\Contract\1B\CADD\Bridges\Bridg\No433\AB06.br1-433.dgn 2/2/2015 9:56:21 PM

ADDENDUMS / REVISIONS	

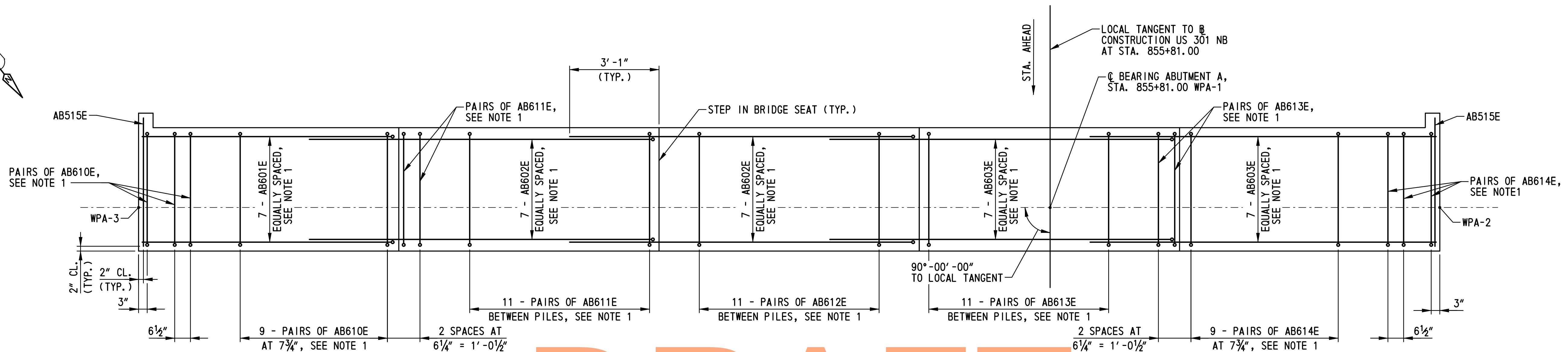
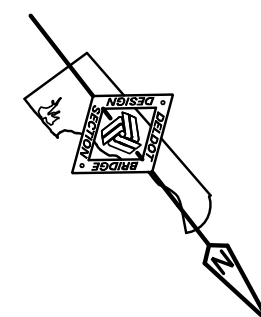
SCALE: AS SHOWN

**US 301 &
SR 1 INTERCHANGE**

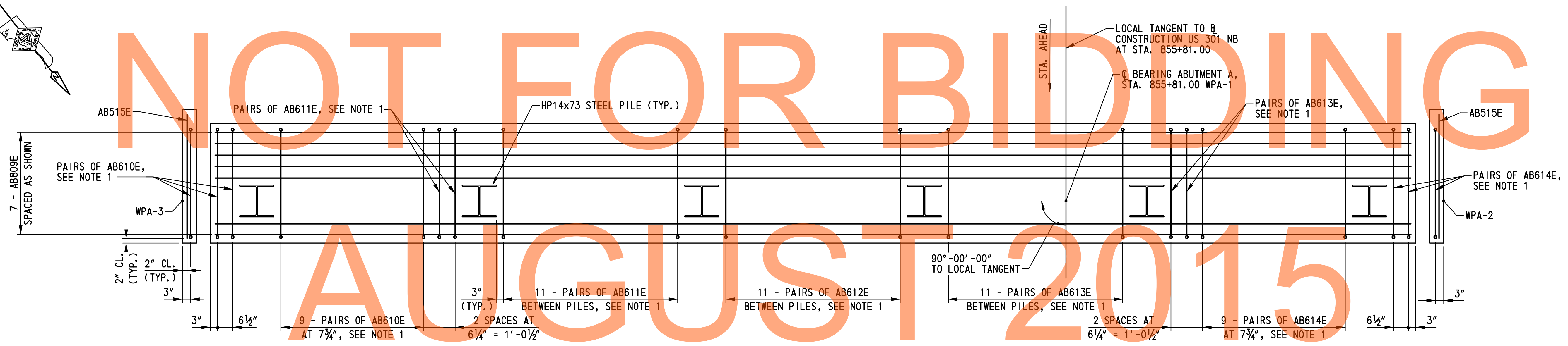
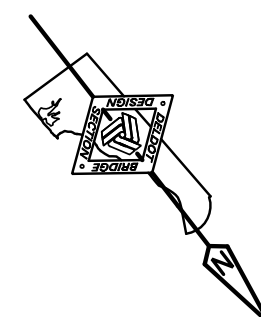
CONTRACT	BRIDGE NO.	1-433
T200911302	DESIGNED BY:	B.K.B.
COUNTY	CHECKED BY:	W.A.G.
NEW CASTLE		

**ABUTMENT AND MSE
WALL SECTIONS - 2**

BR1-3 AB-06
SHEET NO.
219
TOTAL SHTS.
491



DRAFT
 ABUTMENT A STEM TOP MAT REINFORCEMENT PLAN
 SCALE: 1/2" = 1' - 0"



ABUTMENT A STEM BOTTOM MAT REINFORCEMENT PLAN
 SCALE: 1/2" = 1' - 0"

- NOTES:**
1. SPACE REINFORCING STEEL AS NECESSARY TO CLEAR ANCHOR BOLTS. FOR ADDITIONAL INFORMATION, SEE DWG. NOS. BB-14, BB-15 AND AB-09.
 2. FOR ADDITIONAL REINFORCEMENT DETAILS, SEE DWG. NOS. AB-08 AND AB-09.
 3. REINFORCING STEEL OVER PILES NOT SHOWN FOR CLARITY. FOR ADDITIONAL INFORMATION, SEE DWG. NO. PL-01.

M:\31653\000\Contract\IB\CADD\Bridges\BR_No+33\AB07_br1-433.dgn
 2/2/2015 9:58:46 AM



ADDENDUMS / REVISIONS	

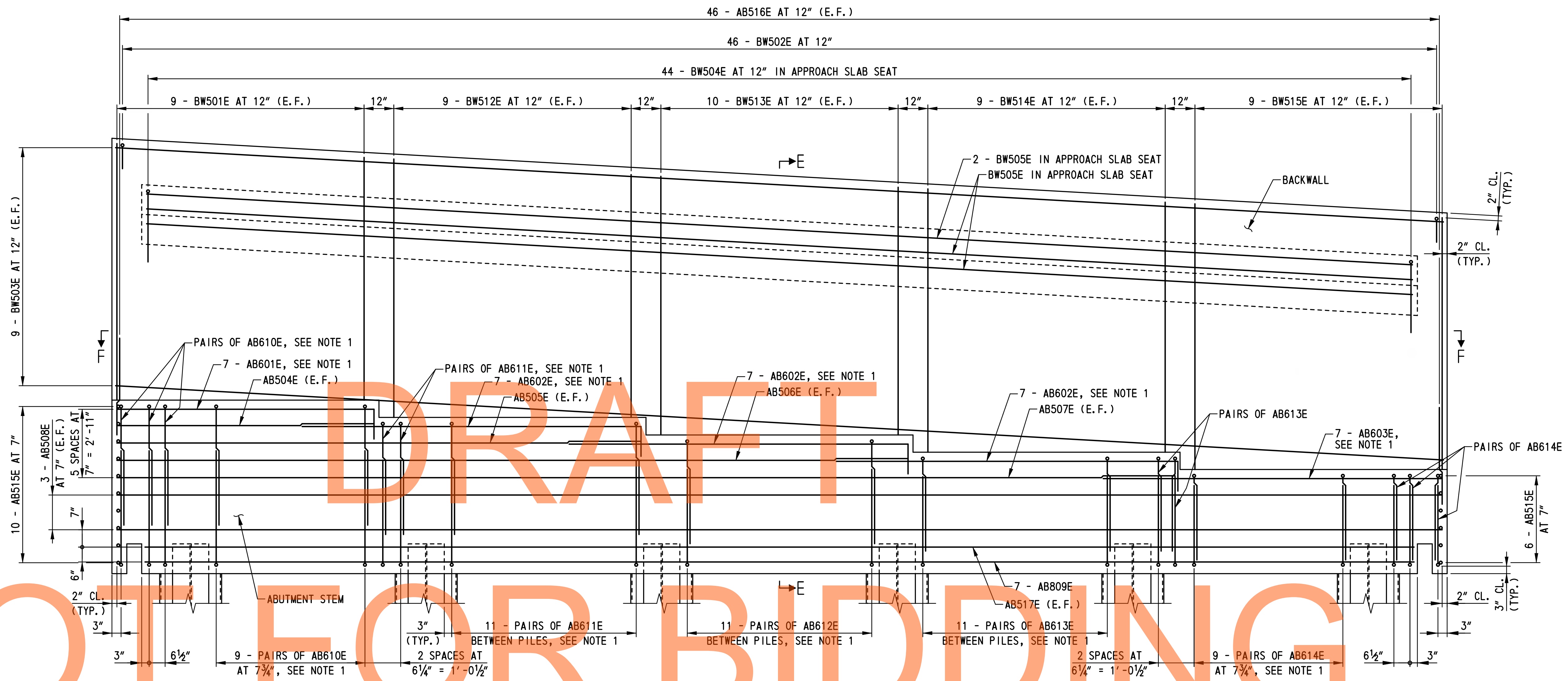
SCALE: AS SHOWN

US 301 &
SR 1 INTERCHANGE

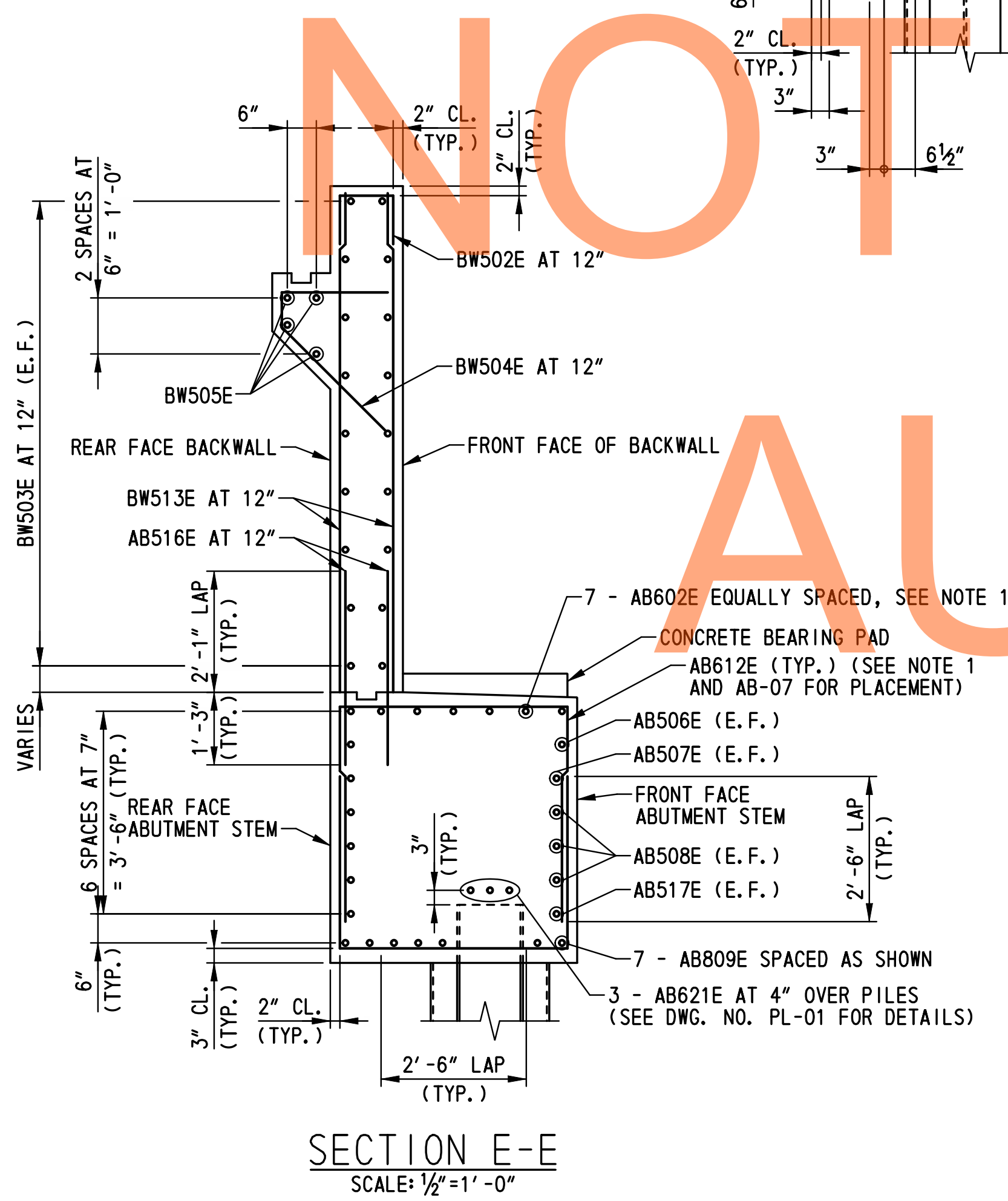
CONTRACT	BRIDGE NO.	1-433
T200911302	DESIGNED BY:	B.K.B.
COUNTY	CHECKED BY:	W.A.G.
NEW CASTLE		

**ABUTMENT A
REINFORCEMENT
DETAILS - 1**

BR1-3 AB-07
SHEET NO.
220
TOTAL SHTS.
491



ABUTMENT A REINFORCEMENT ELEVATION
SCALE: 1/2" = 1'-0"



SECTION E-E
SCALE: 1/2" = 1'-0"

- NOTES:**
1. SPACE REINFORCING STEEL AS NECESSARY TO CLEAR ANCHOR BOLTS. FOR ADDITIONAL INFORMATION, SEE DWG. NOS. BB-14, BB-15 AND AB-09.
 2. FOR ADDITIONAL REINFORCEMENT DETAILS, SEE DWG. NOS. AB-07 AND AB-09.
 3. REINFORCING STEEL OVER PILES NOT SHOWN FOR CLARITY. FOR ADDITIONAL INFORMATION, SEE DWG. NO. PL-01.
 4. FOR SECTION F-F, SEE DWG. NO. AB-09.
 5. CHEEK WALLS, CURTAIN WALLS AND CONCRETE BEARING PADS NOT SHOWN IN ELEVATION FOR CLARITY. FOR REINFORCEMENT IN CHEEK WALLS, CURTAIN WALLS AND CONCRETE BEARING PADS, SEE DWG. NO. AB-09.

M:\31653-000\Contract\1B\CADD\Bridges\B_r-No433\AB08-br1-433.dgn 2/2/2015 9:21:41 AM



ADDENDUMS / REVISIONS	

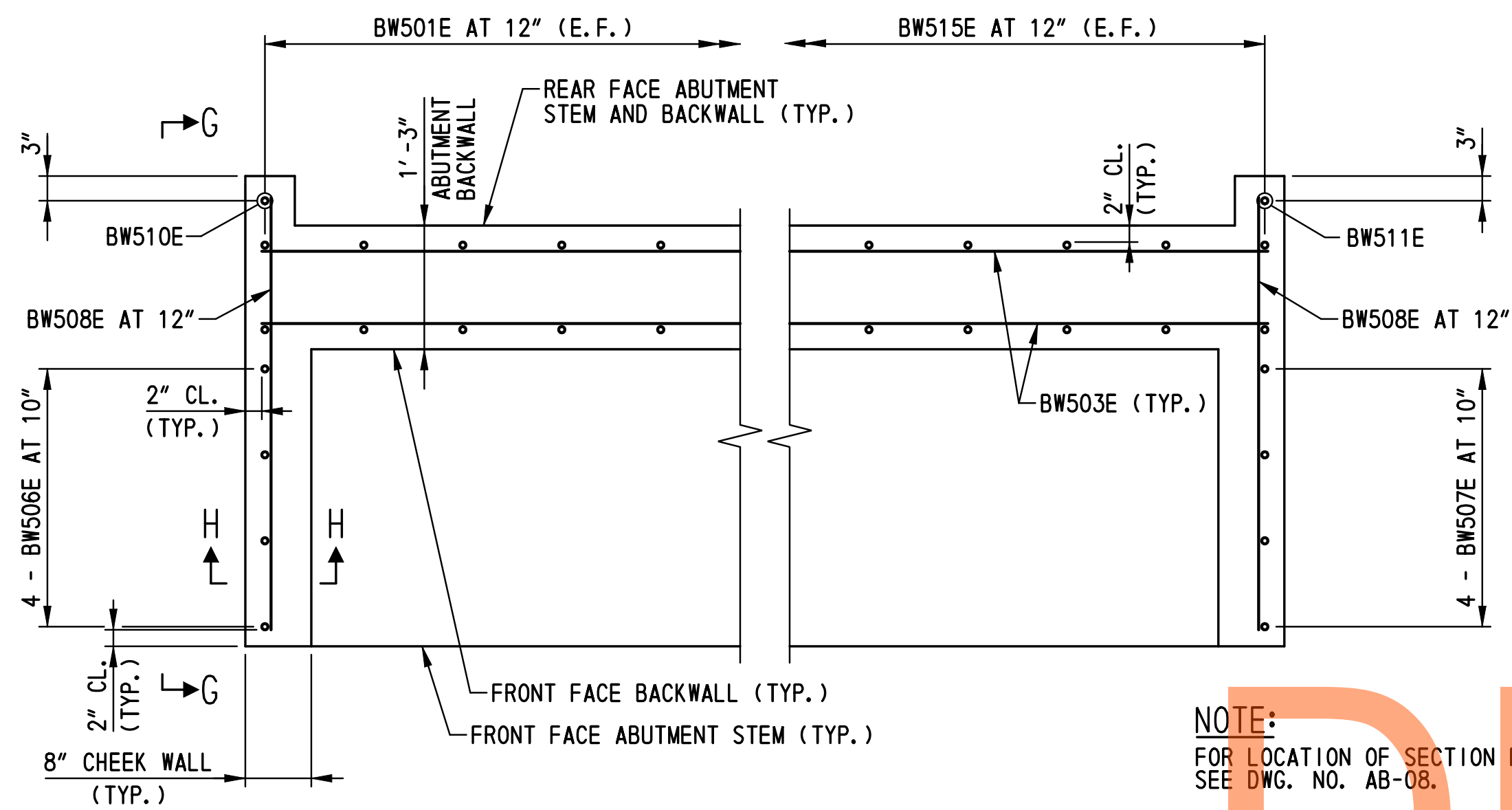
SCALE: AS SHOWN

US 301 &
SR 1 INTERCHANGE

CONTRACT	BRIDGE NO.	1-433
T200911302	DESIGNED BY:	B.K.B.
COUNTY	CHECKED BY:	W.A.G.
NEW CASTLE		

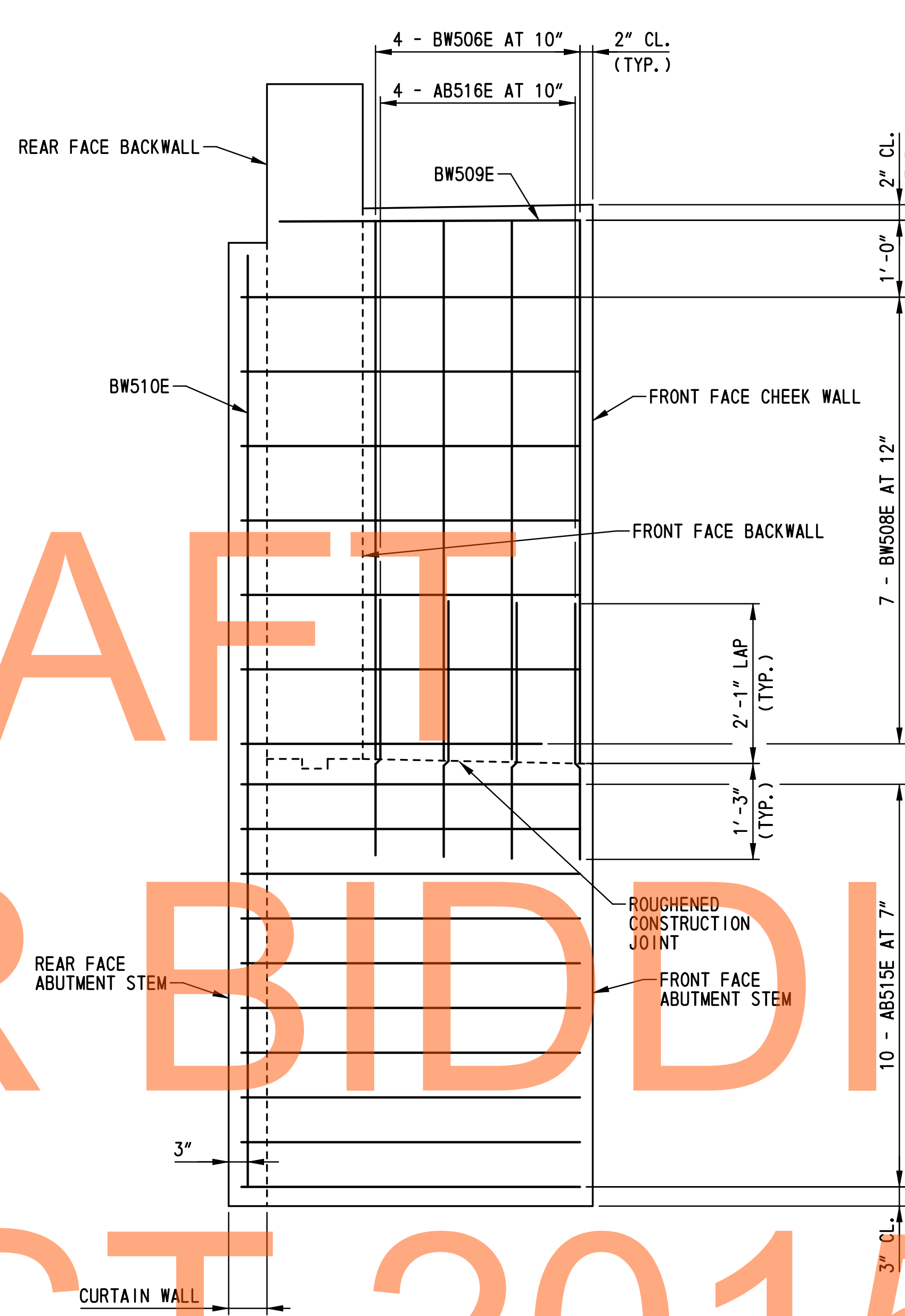
**ABUTMENT A
REINFORCEMENT
DETAILS - 2**

BR1-3 AB-08
SHEET NO.
221
TOTAL SHTS.
491

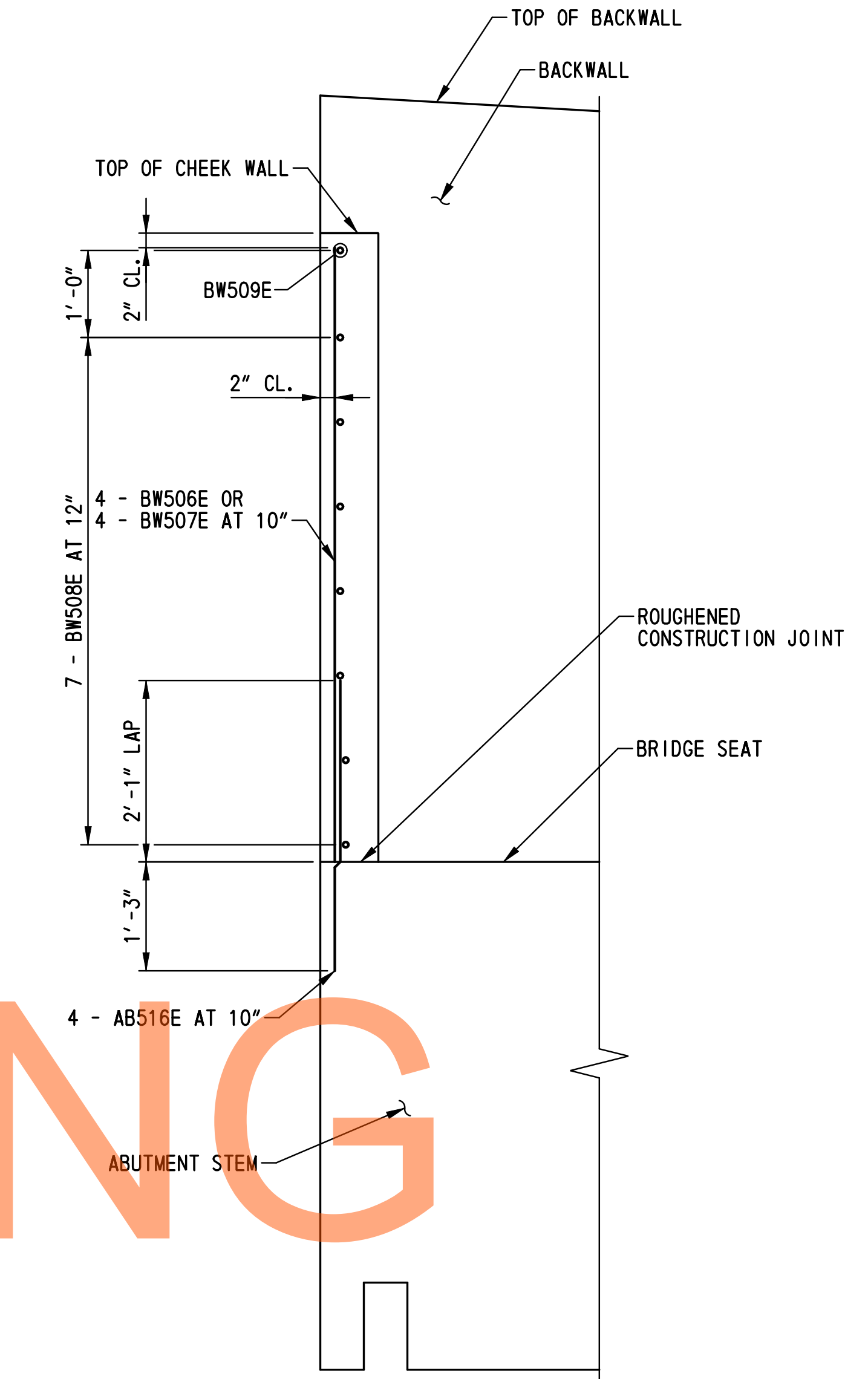


SECTION F-F
SCALE: 3/4"=1'-0"

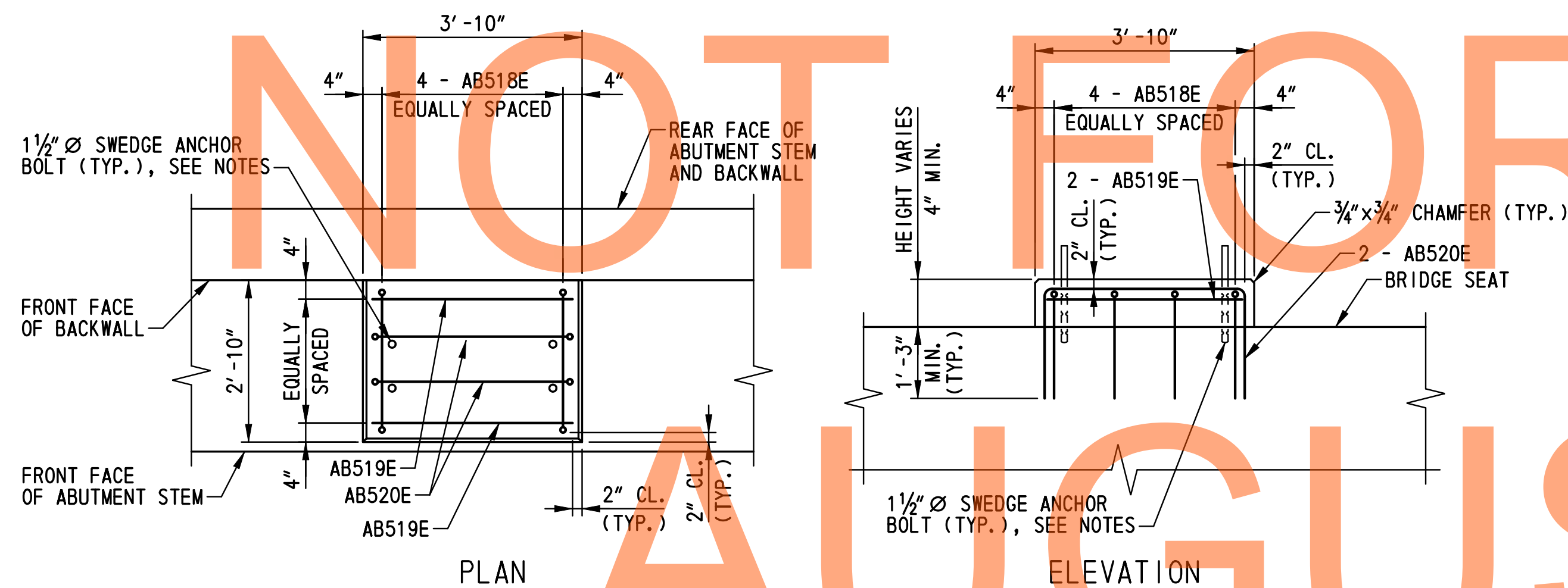
NOTE:
FOR LOCATION OF SECTION F-F,
SEE DWG. NO. AB-08.



VIEW G-G
SCALE: 3/4"=1'-0"



SECTION H-H
SCALE: 3/4"=1'-0"



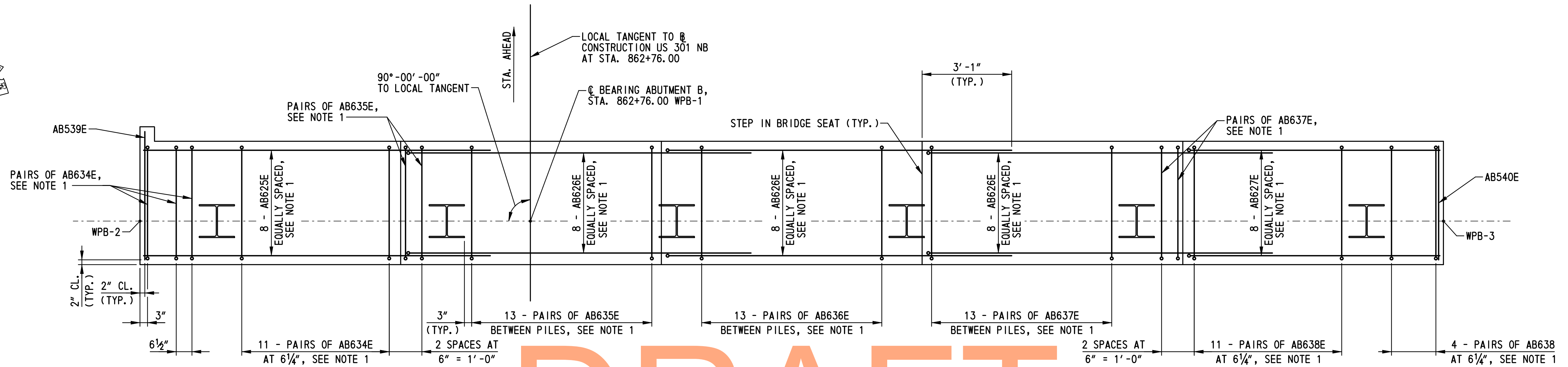
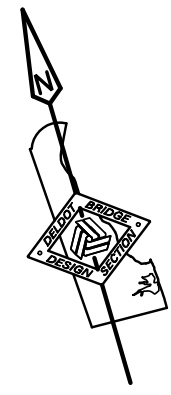
PLAN
ABUTMENT A CONCRETE BEARING PAD DETAILS
SCALE: 1/2"=1'-0"

DRAFT
NOT FOR BIDDING
AUGUST 2015

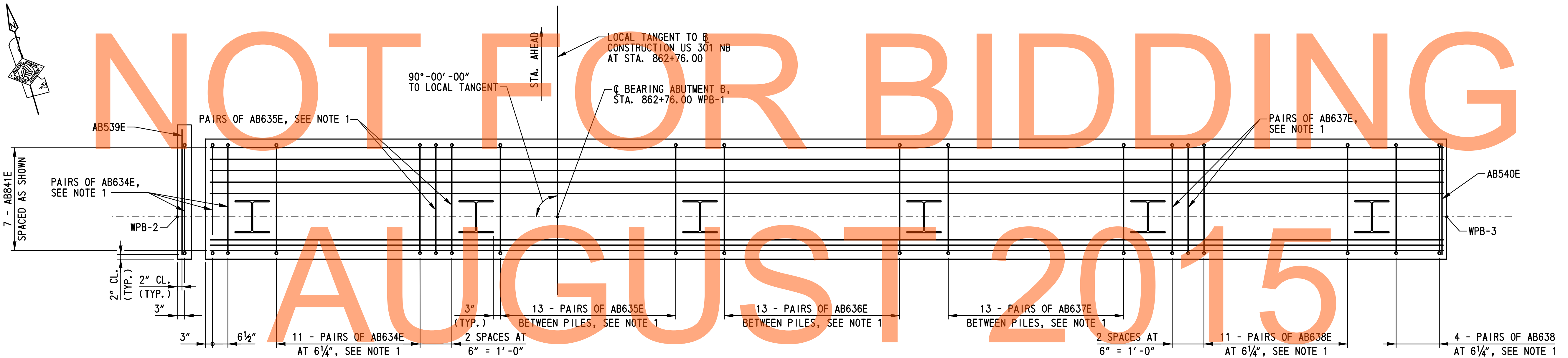
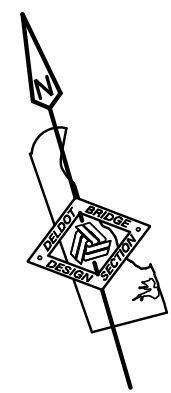
NOTES:

1. FOR ANCHOR BOLT DETAIL, DIMENSIONS AND LOCATIONS, SEE DWG. NOS. BB-01, BB-02 AND BB-13 THRU BB-15.
2. ANCHOR BOLTS SHALL BE CAST IN PLACE. A TEMPORARY CASTING TEMPLATE SHALL BE USED TO ENSURE THE ANCHOR BOLTS ARE PROPERLY ALIGNED AND PLUMB. THE TEMPLATE SHALL BE REMOVED AFTER THE CONCRETE HAS SET.
3. SPACE REINFORCING STEEL AS NECESSARY TO CLEAR ANCHOR BOLTS.
4. REINFORCEMENT IN ABUTMENT STEM AND BACKWALL NOT SHOWN IN VIEW G-G AND SECTION H-H FOR CLARITY.
5. EAST CHEEK WALL SHOWN IN VIEW G-G AND SECTION H-H, WEST CHEEK WALL SIMILAR.

M:\31653\000\Contract\IB\CADD\Bridges\BR_No433\AB08_brl-433.dgn 2/2/2015 9:42:28 AM



ABUTMENT B STEM TOP MAT REINFORCEMENT PLAN
SCALE: 1/2" = 1'-0"



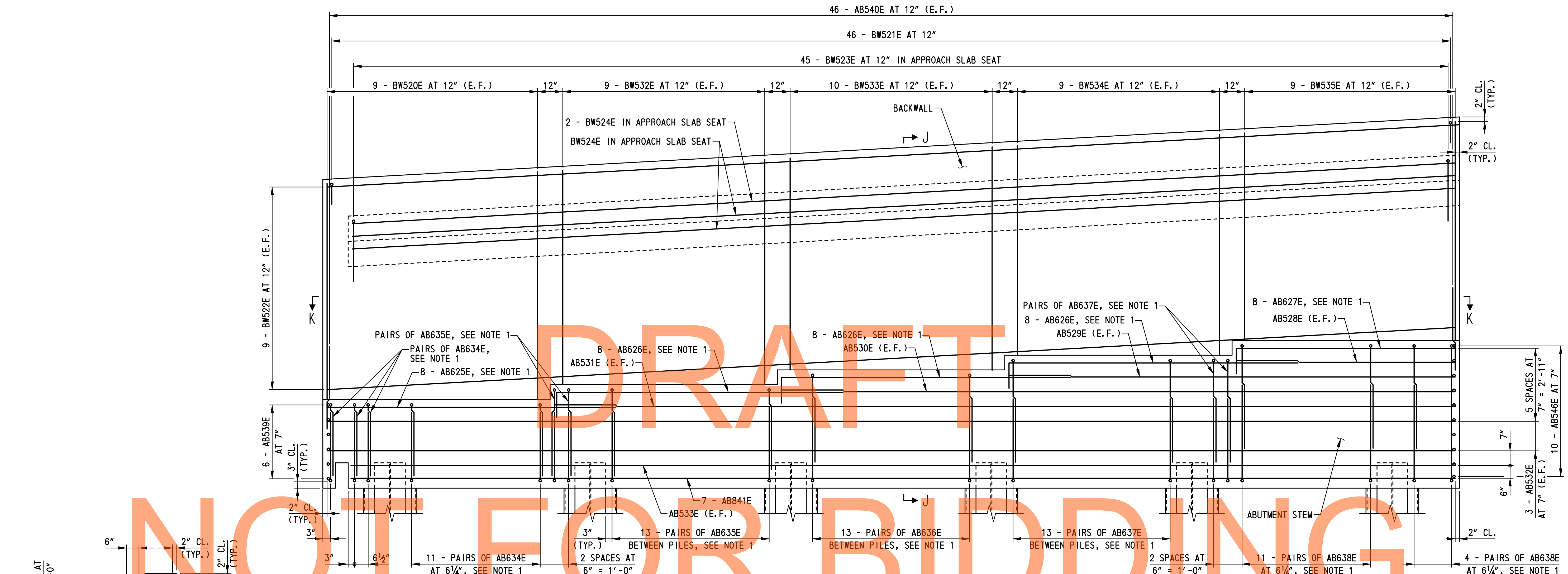
ABUTMENT B STEM BOTTOM MAT REINFORCEMENT PLAN
SCALE: 1/2" = 1'-0"

NOTES:

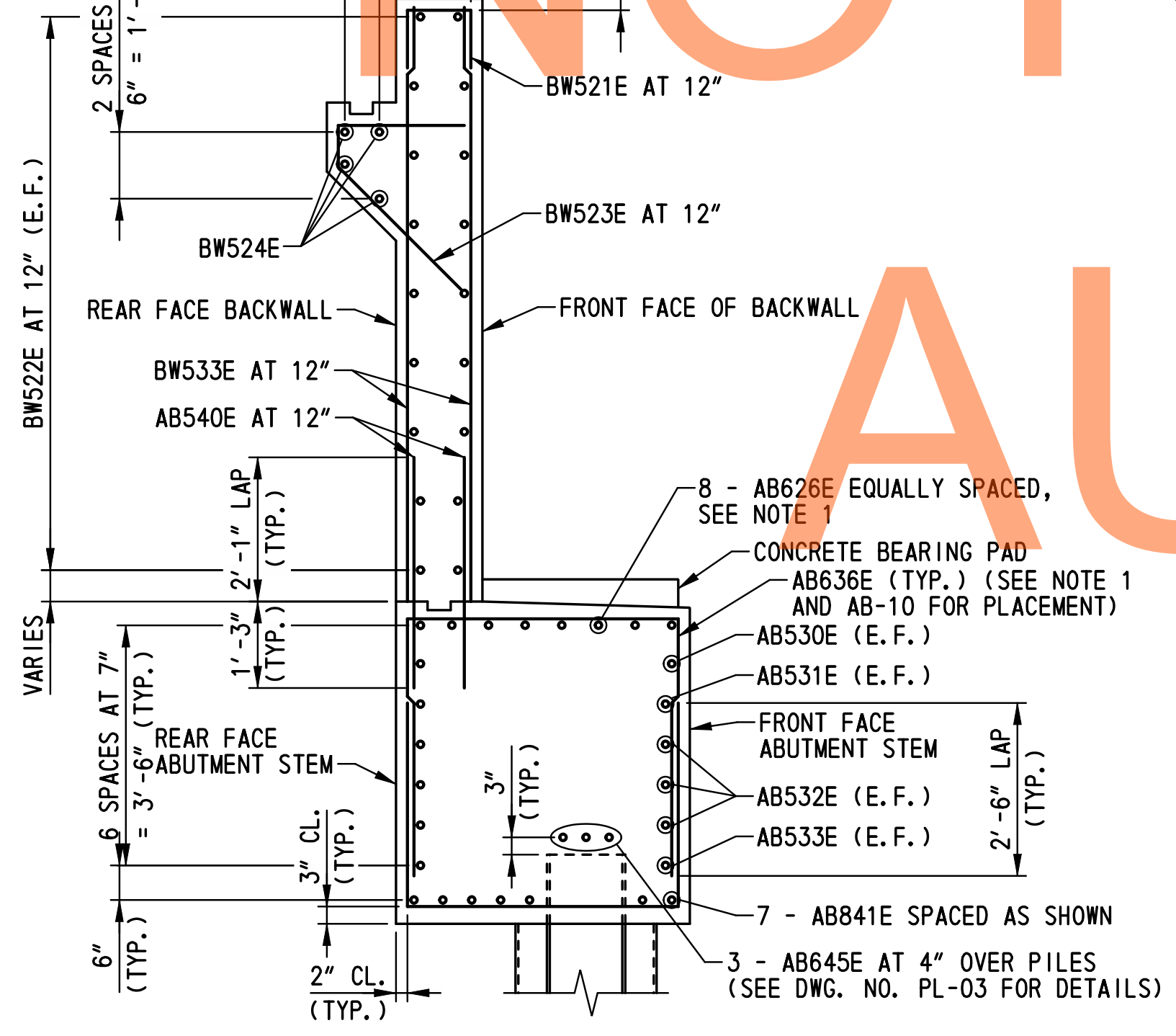
1. SPACE REINFORCING STEEL AS NECESSARY TO CLEAR ANCHOR BOLTS. FOR ADDITIONAL INFORMATION, SEE DWG. NOS. BB-14, BB-15 AND AB-11.
2. FOR ADDITIONAL REINFORCEMENT DETAILS, SEE DWG. NOS. AB-11 AND AB-12.
3. REINFORCING STEEL OVER PILES NOT SHOWN FOR CLARITY. FOR ADDITIONAL INFORMATION, SEE DWG. NO. PL-03.

M:\31653\000\Contract\IB\CADD\Bridges\BR_No433\AB10_brl-433.dgn 2/2/2015 9:58:07 AM

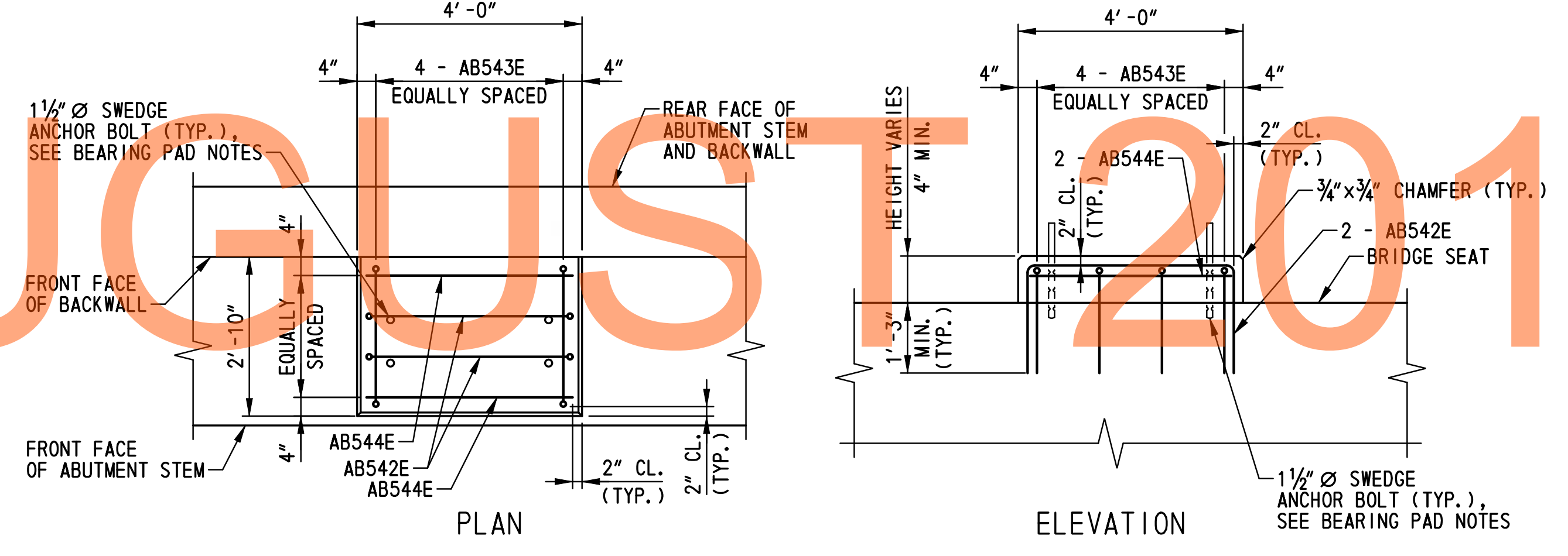
M:\31653-000\Contract\IB\CADD\Bridges\BR_No433\AB11_brl-433.dgn
 2/2/2015 9:59:52 AM



ABUTMENT B REINFORCEMENT ELEVATION
SCALE: 1/2" = 1'-0"



SECTION J-J
SCALE: 1/2" = 1'-0"



ABUTMENT B CONCRETE BEARING PAD DETAILS
SCALE: 1/2" = 1'-0"

- BEARING PAD NOTES:**
- FOR ANCHOR BOLT DETAIL, DIMENSIONS AND LOCATIONS, SEE DWG. NOS. BB-01, BB-02 AND BB-13 THRU BB-15.
 - ANCHOR BOLTS SHALL BE CAST IN PLACE. A TEMPORARY CASTING TEMPLATE SHALL BE USED TO ENSURE THE ANCHOR BOLTS ARE PROPERLY ALIGNED AND PLUMB. THE TEMPLATE SHALL BE REMOVED AFTER THE CONCRETE HAS SET.
 - SPACE REINFORCING STEEL AS NECESSARY TO CLEAR ANCHOR BOLTS.

- NOTES:**
- SPACE REINFORCING STEEL AS NECESSARY TO CLEAR ANCHOR BOLTS. FOR ADDITIONAL INFORMATION, SEE DWG. NOS. BB-13 THRU BB-15 AND ABUTMENT B CONCRETE BEARING PAD DETAILS ON THIS DRAWING.
 - FOR ADDITIONAL REINFORCEMENT DETAILS, SEE DWG. NOS. AB-10 AND AB-12.
 - REINFORCING STEEL OVER PILES NOT SHOWN FOR CLARITY. FOR ADDITIONAL INFORMATION, SEE DWG. NO. PL-03.
 - FOR SECTION K-K, SEE DWG. NO. AB-12.
 - CHEEK WALLS, CURTAIN WALLS AND CONCRETE BEARING PADS NOT SHOWN FOR CLARITY IN ELEVATION. FOR REINFORCEMENT IN CHEEK WALLS AND CURTAIN WALLS, SEE DWG. NO. AB-12. FOR REINFORCEMENT IN CONCRETE BEARING PADS, SEE DETAIL ON THIS SHEET.

ADDENDUMS / REVISIONS

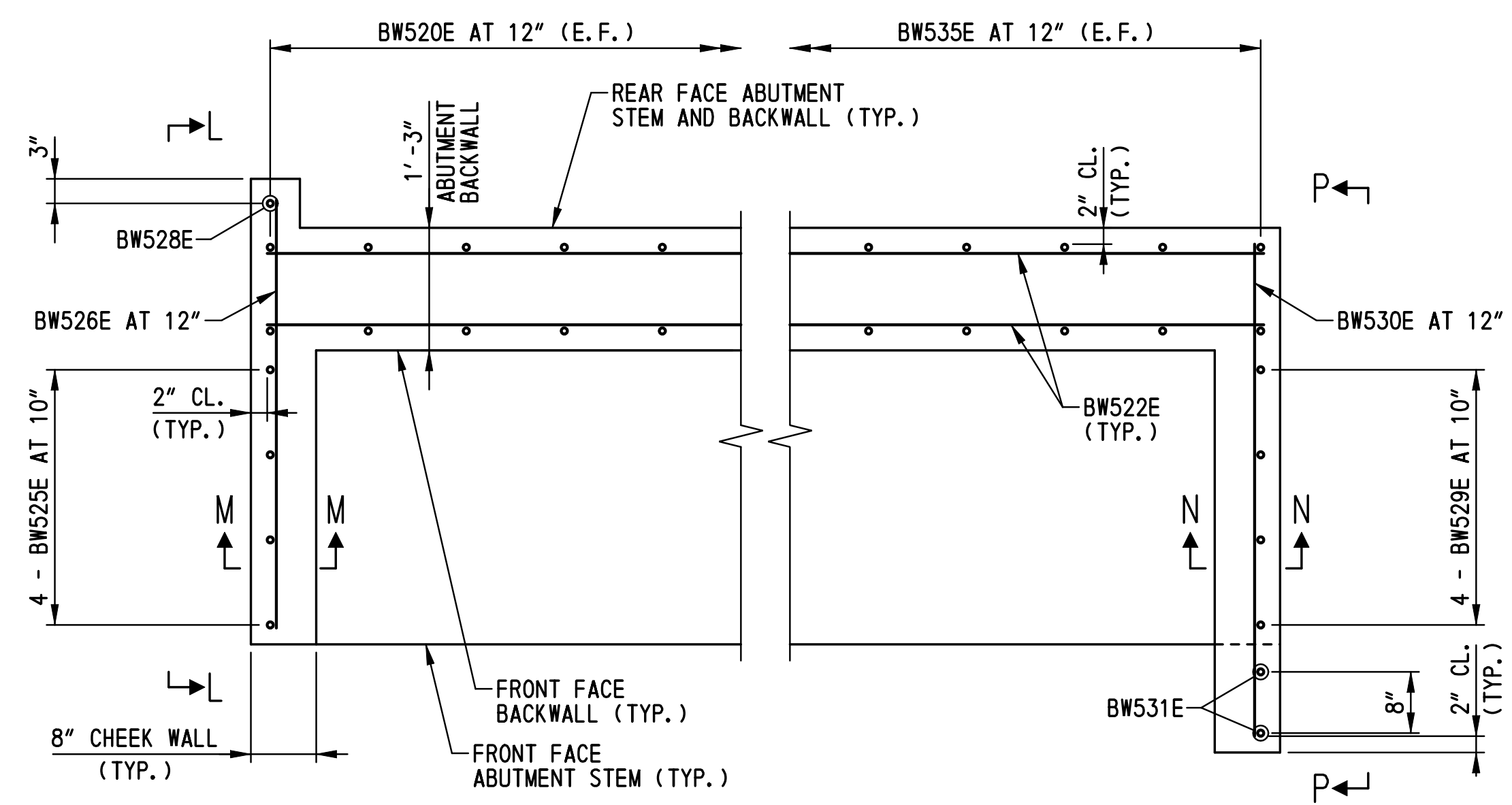
SCALE: AS SHOWN

**US 301 &
SR 1 INTERCHANGE**

CONTRACT T200911302	BRIDGE NO. 1-433
COUNTY NEW CASTLE	DESIGNED BY: B.K.B. CHECKED BY: W.A.G.

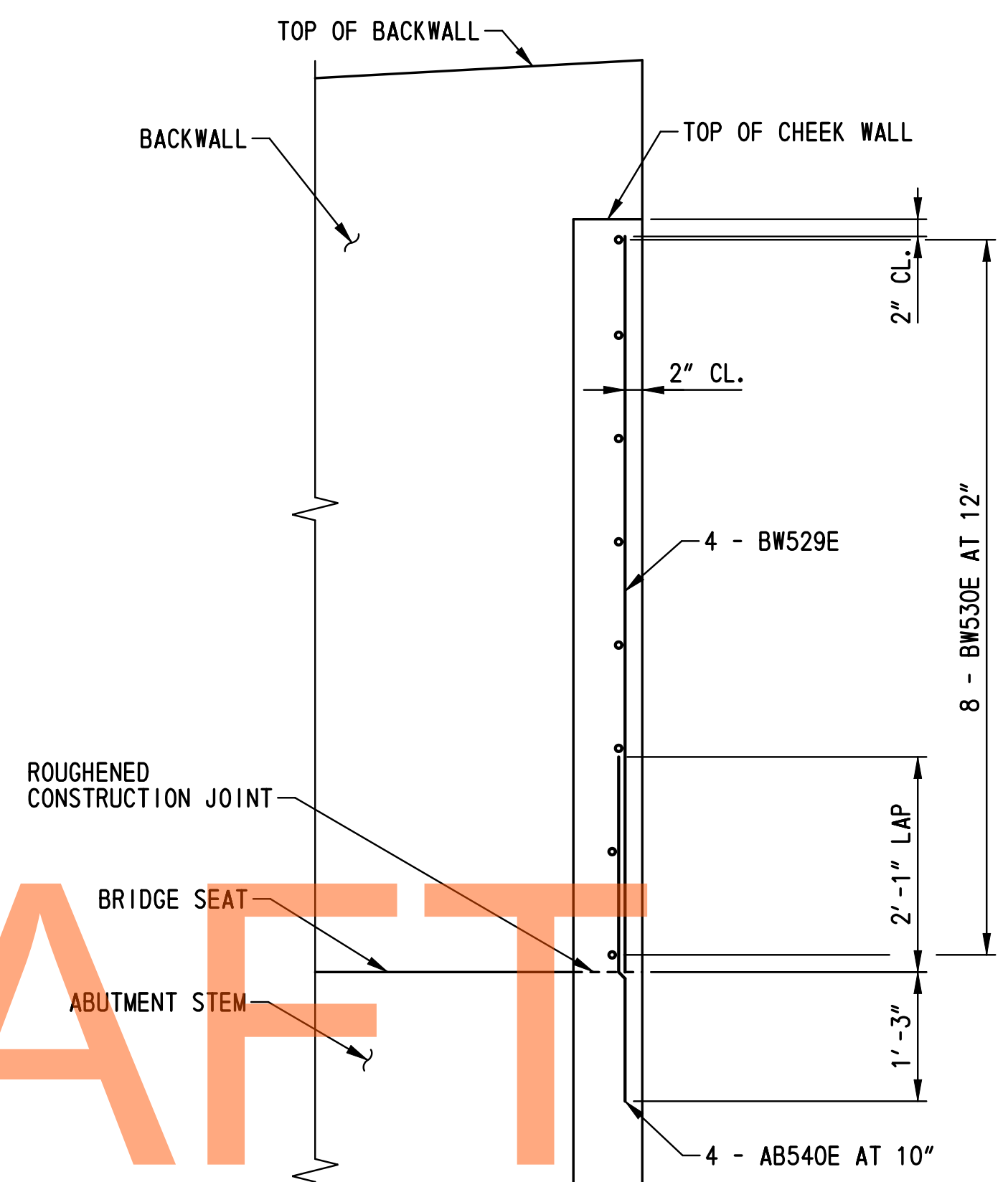
**ABUTMENT B
REINFORCEMENT
DETAILS - 2**

BR1-3 AB-11
SHEET NO. 224
TOTAL SHTS. 491



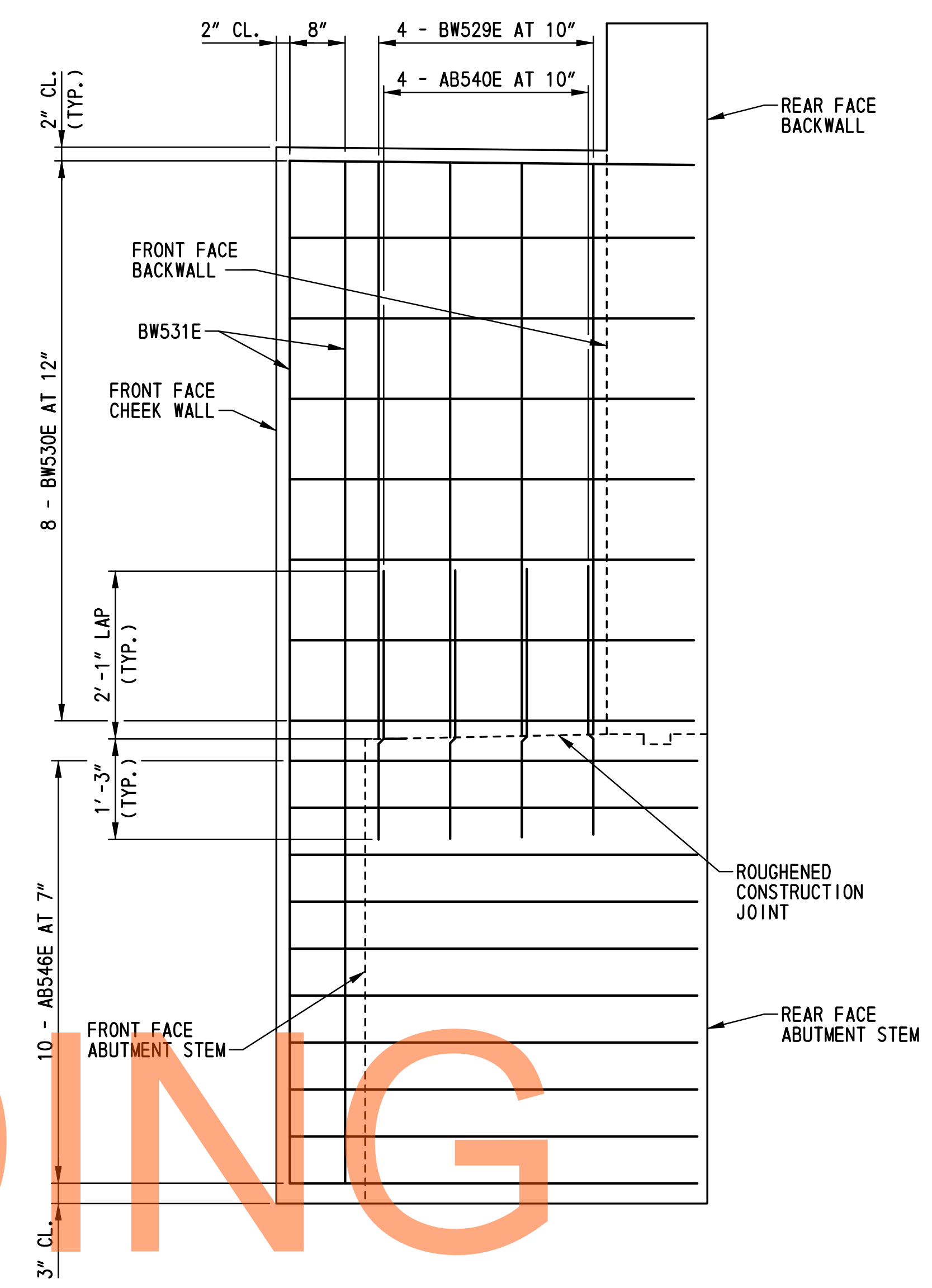
SECTION K-K
SCALE: 3/4" = 1' - 0"

NOTE:
FOR LOCATION OF SECTION K-K,
SEE DWG. NO. AB-11.

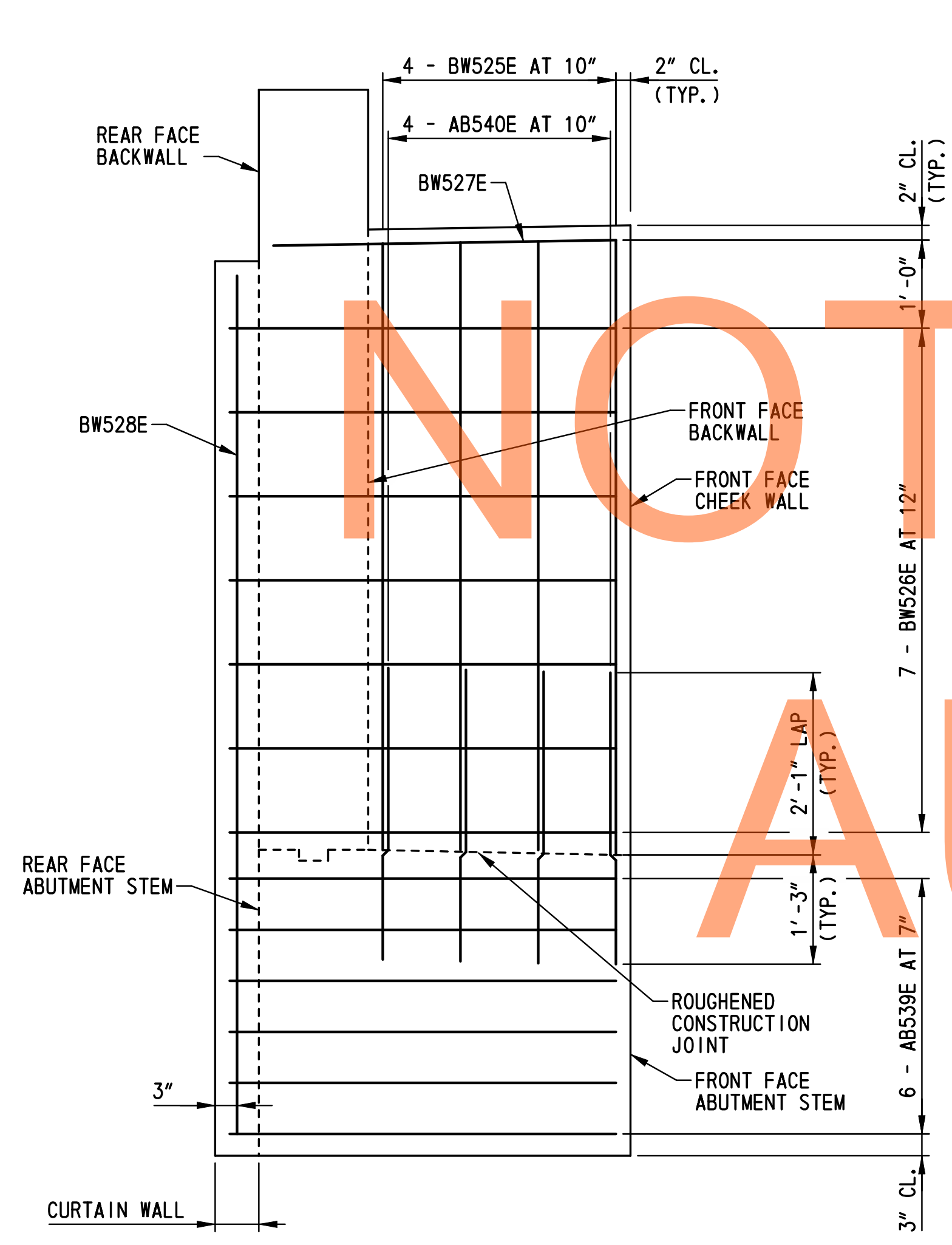


SECTION N-N
SCALE: 3/4" = 1' - 0"

NOTE:
REINFORCEMENT IN ABUTMENT STEM AND
BACKWALL NOT SHOWN FOR CLARITY.

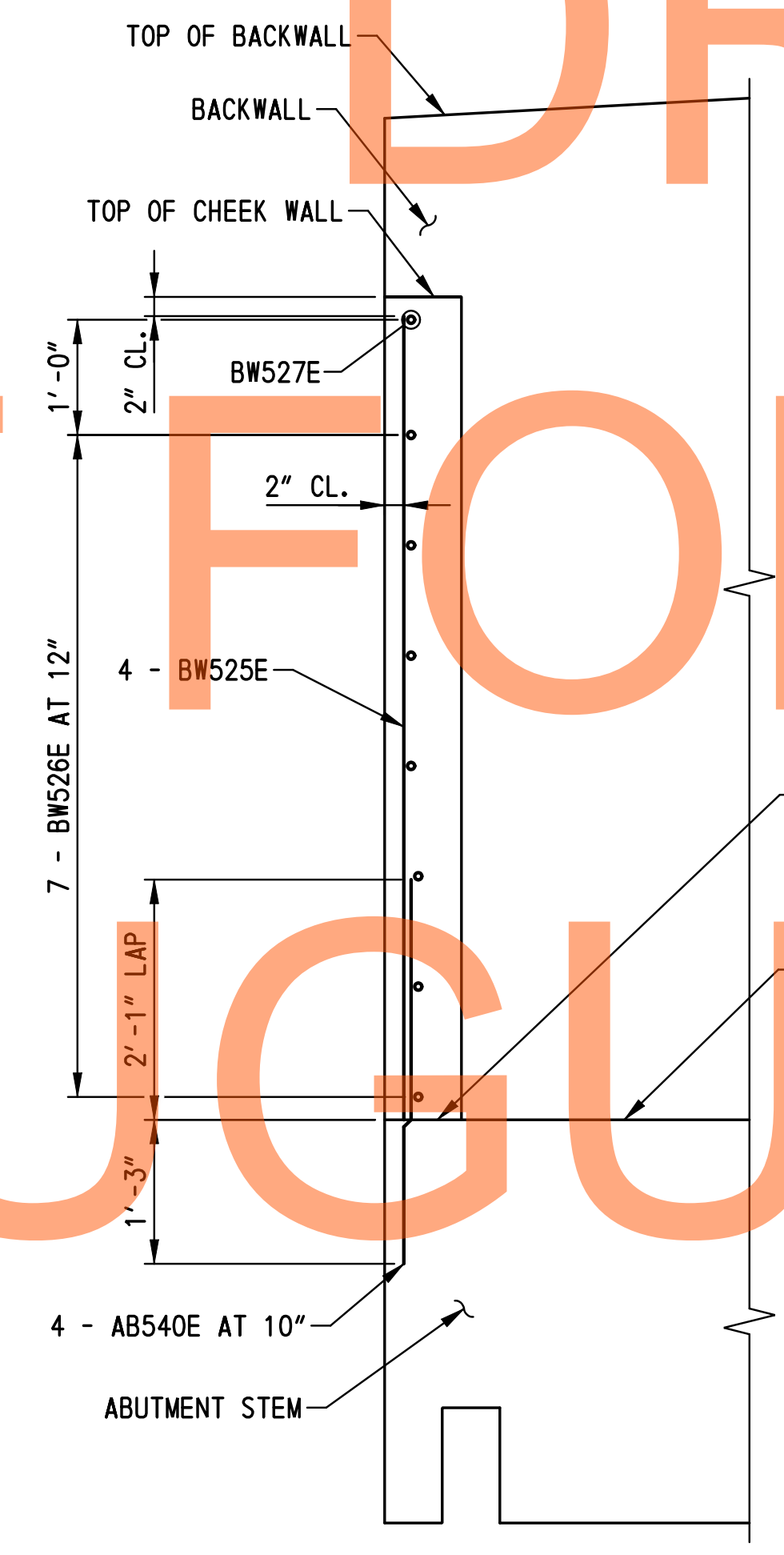


VIEW P-P
SCALE: 3/4" = 1' - 0"



VIEW L-L
SCALE: 3/4" = 1' - 0"

NOTE:
REINFORCEMENT IN ABUTMENT STEM AND
BACKWALL NOT SHOWN FOR CLARITY.



SECTION M-M
SCALE: 3/4" = 1' - 0"

DRAFT
NOT FOR BIDDING
AUGUST 2015

M:\31653-000\Contract\IB\CADD\Bridges\B-10433\AB12_brl-433.dgn
2/2/2015 9:58:05 AM



ADDENDUMS / REVISIONS	

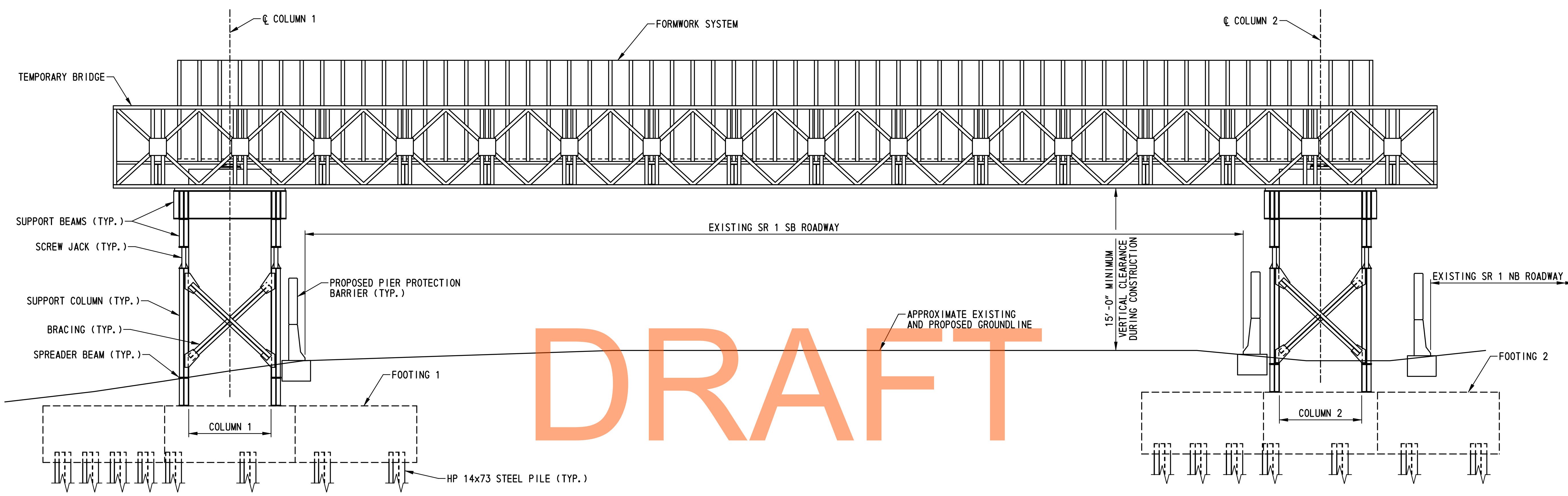
SCALE: AS SHOWN

US 301 &
SR 1 INTERCHANGE

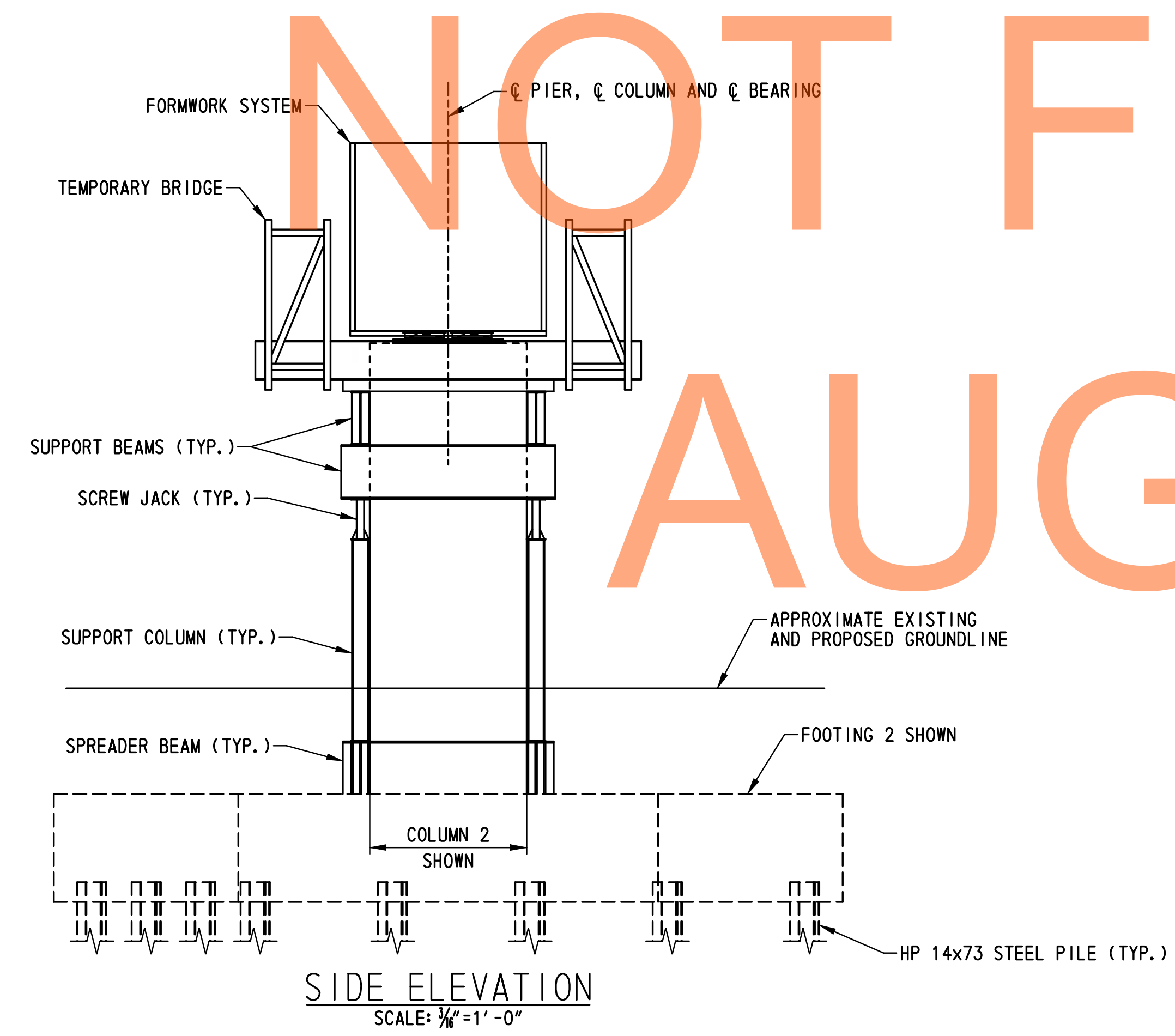
CONTRACT	BRIDGE NO.	1-433
T200911302	DESIGNED BY:	B.K.B.
COUNTY	CHECKED BY:	W.A.G.
NEW CASTLE		

**ABUTMENT B
REINFORCEMENT
DETAILS - 3**

BR1-3 AB-12
SHEET NO.
225
TOTAL SHTS.
491



DRAFT



SIDE ELEVATION
SCALE: 3/16" = 1' - 0"

ELEVATION
SCALE: 3/16" = 1' - 0"

NOTE TO CONTRACTOR:

THE SUGGESTED PIER CONSTRUCTION SEQUENCE SHOWN IS ONLY ONE FEASIBLE METHOD FOR A PIER WITH A CAST IN PLACE POST TENSIONED CONCRETE PIER CAP. THE CONTRACTOR MAY PROPOSE THE USE OF A PRECAST POST TENSIONED CONCRETE PIER CAP. SEE THE SPECIAL PROVISIONS FOR ADDITIONAL INFORMATION ON THE PRECAST POST TENSIONED CONCRETE PIER CAP. THE CONTRACTOR IS RESPONSIBLE FOR THE ENTIRE CONSTRUCTION OF THE BRIDGE. THE CONTRACTOR SHALL SUBMIT DRAWINGS SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF DELAWARE, ILLUSTRATING FULLY THE PROPOSED METHOD OF PIER CONSTRUCTION INCLUDING TEMPORARY BRIDGE SUPPORT SYSTEM FOR SUPPORT OF BOTH THE PIER 1 AND PIER 3 POST TENSIONED PIER CAPS DURING CONSTRUCTION. THE DRAWINGS SHALL SHOW DETAILS OF ALL TEMPORARY SHORING, FALSEWORK, BRACING, GUYS, DEAD-MEN, LIFTING DEVICES, HOLD-DOWN DEVICES ETC., AND ATTACHMENTS TO THE PROPOSED BRIDGE MEMBERS. THE DRAWINGS SHALL ALSO INCLUDE THE SEQUENCE OF CONSTRUCTION, LOCATION OF CRANES, CRANE CAPACITIES, LOCATION OF LIFTING POINTS ON THE VARIOUS MEMBERS OF THE TEMPORARY BRIDGE SUPPORT SYSTEM INCLUDING THE TEMPORARY BRIDGE, FORMWORK SYSTEM AND REINFORCING STEEL CAGE AND WEIGHT OF MEMBERS. THE DRAWINGS SHALL BE COMPLETE IN DETAIL FOR ALL ANTICIPATED STAGES AND CONDITIONS DURING CONSTRUCTION. CALCULATIONS SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF DELAWARE ARE REQUIRED TO DEMONSTRATE THAT ALLOWABLE STRESSES ARE NOT EXCEEDED AND THAT MEMBER CAPACITIES AND FINAL GEOMETRY WILL BE CORRECT. THE MINIMUM VERTICAL CLEARANCE FROM SR 1 NB OR SR 1 SB SHALL BE NO LESS THAN 15'-0" DURING THE CONSTRUCTION OF THE PIER. AT NO TIME SHALL ACTIVE TRAFFIC ON SR 1 NB OR SR 1 SB BE LOCATED UNDER THE TEMPORARY BRIDGE SUPPORT SYSTEM INCLUDING THE TEMPORARY BRIDGE, FORMWORK AND REINFORCING STEEL CAGE WHILE BEING HELD OR LIFTED BY CRANES DURING THE CONSTRUCTION SEQUENCE. PAYMENT FOR CONSTRUCTION OF TEMPORARY BRIDGE SUPPORT SYSTEM WILL BE MADE UNDER ITEM NO. 605606 - TEMPORARY BRIDGE SUPPORT SYSTEM. SEE THE SPECIAL PROVISIONS FOR ADDITIONAL INFORMATION. MAINTENANCE OF TRAFFIC REQUIREMENTS DURING PIER CONSTRUCTION TO BE REFERENCED IN FUTURE SUBMISSIONS.

SUGGESTED PIER 1 AND 3 CONSTRUCTION SEQUENCE:

1. CONSTRUCT FOOTINGS AND COLUMNS.
2. PLACE POST TENSIONED PIER CAP BEARINGS INTO PLACE.
3. INSTALL SPREADER BEAMS ON FOOTINGS.
4. INSTALL SUPPORT COLUMNS AND SCREW JACKS.
5. INSTALL BRACING.
6. INSTALL SUPPORT BEAMS.
7. LIFT TEMPORARY SUPPORT BRIDGE INTO PLACE.
8. ASSEMBLE POST TENSIONED PIER CAP FORMWORK.
9. LIFT POST TENSIONED PIER CAP FORMWORK INTO PLACE.
10. ASSEMBLE POST TENSIONED PIER CAP REINFORCING STEEL INCLUDING POST TENSIONING SYSTEM.
11. LIFT POST TENSIONED PIER CAP REINFORCING STEEL INTO PLACE INCLUDING POST TENSIONING SYSTEM.
12. POUR POST TENSIONED PIER CAP CONCRETE.
13. PERFORM STAGE 1 POST TENSIONING STRESSING WHEN CONCRETE HAS ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 6,000 PSI AND PRIOR TO REMOVAL OF FALSEWORK. SEE DWG. NOS. PR-07 AND PR-17 FOR DETAILED POST TENSIONING STRESSING SEQUENCE REQUIREMENTS.
14. REMOVE POST TENSIONED PIER CAP FORMWORK.
15. REMOVE TEMPORARY SUPPORT BRIDGE.
16. REMOVE SUPPORT BEAMS, SCREW JACKS, SUPPORT COLUMNS, BRACING AND SPREADER BEAMS.
17. PERFORM STAGE 2 POST TENSIONING STRESSING AFTER THE STEEL SUPERSTRUCTURE HAS BEEN ERECTED AND BEFORE APPLYING ANY VEHICULAR LIVE LOAD ON THE BRIDGE WHEN CONCRETE HAS ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 8,000 PSI. SEE DWG. NOS. PR-07 AND PR-17 FOR DETAILED POST TENSION STRESSING SEQUENCE REQUIREMENTS.

M:\31653\000\Contract\IB\CADD\Bridges\Bridges\No433\PR01\br1-433.dgn 2/2/2015 9:59:50 AM



ADDENDUMS / REVISIONS	

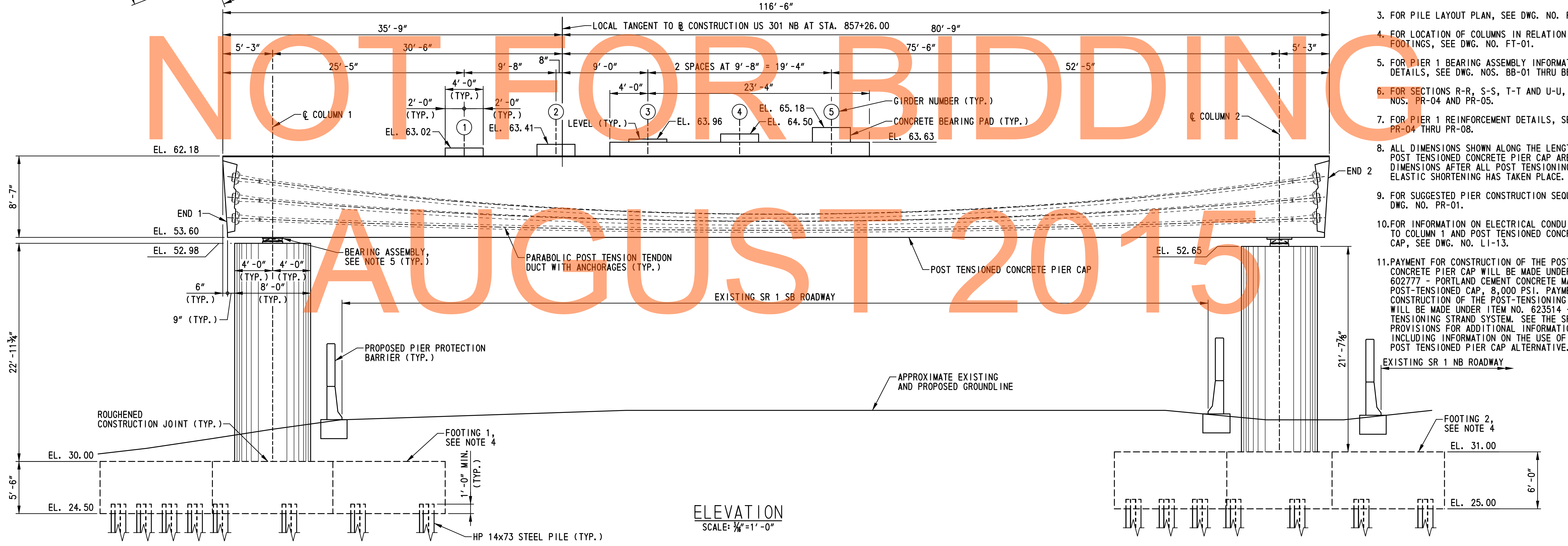
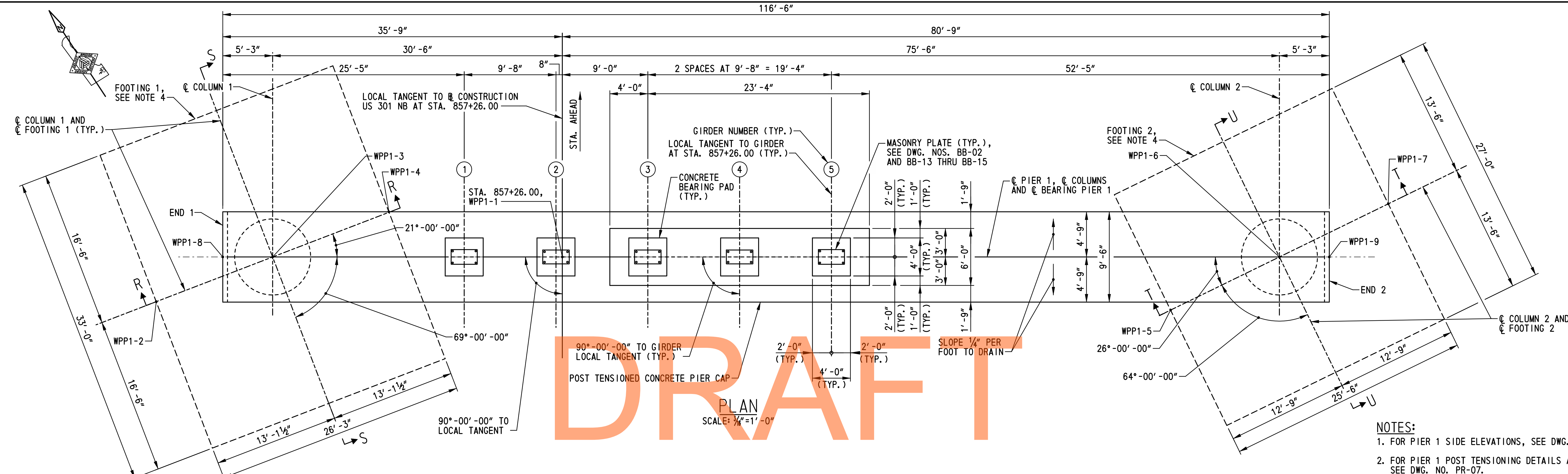
SCALE: AS SHOWN

US 301 & SR 1 INTERCHANGE

CONTRACT	BRIDGE NO.	1-433
T200911302	DESIGNED BY:	B.K.B., L.F.E.
COUNTY	CHECKED BY:	W.A.G.
NEW CASTLE		

PIER 1 AND 3 CONSTRUCTION SEQUENCE

BR1-3 PR-01
SHEET NO.
226
TOTAL SHTS.
491



- NOTES:**
1. FOR PIER 1 SIDE ELEVATIONS, SEE DWG. NO. PR-03.
 2. FOR PIER 1 POST TENSIONING DETAILS AND LAYOUT, SEE DWG. NO. PR-07.
 3. FOR PILE LAYOUT PLAN, SEE DWG. NO. PL-01.
 4. FOR LOCATION OF COLUMNS IN RELATION TO THE FOOTINGS, SEE DWG. NO. FT-01.
 5. FOR PIER 1 BEARING ASSEMBLY INFORMATION AND DETAILS, SEE DWG. NOS. BB-01 THRU BB-07.
 6. FOR SECTIONS R-R, S-S, T-T AND U-U, SEE DWG. NOS. PR-04 AND PR-05.
 7. FOR PIER 1 REINFORCEMENT DETAILS, SEE DWG. NOS. PR-04 THRU PR-08.
 8. ALL DIMENSIONS SHOWN ALONG THE LENGTH OF THE POST TENSIONED CONCRETE PIER CAP ARE FINAL DIMENSIONS AFTER ALL POST TENSIONING AND ELASTIC SHORTENING HAS TAKEN PLACE.
 9. FOR SUGGESTED PIER CONSTRUCTION SEQUENCE, SEE DWG. NO. PR-01.
 10. FOR INFORMATION ON ELECTRICAL CONDUIT ATTACHED TO COLUMN 1 AND POST TENSIONED CONCRETE PIER CAP, SEE DWG. NO. L1-13.
 11. PAYMENT FOR CONSTRUCTION OF THE POST-TENSIONED CONCRETE PIER CAP WILL BE MADE UNDER ITEM NO. 602777 - PORTLAND CEMENT CONCRETE MASONRY, POST-TENSIONED CAP, 8,000 PSI. PAYMENT FOR CONSTRUCTION OF THE POST-TENSIONING STRANDS WILL BE MADE UNDER ITEM NO. 623514 - POST-TENSIONING STRAND SYSTEM. SEE THE SPECIAL PROVISIONS FOR ADDITIONAL INFORMATION INCLUDING INFORMATION ON THE USE OF A PRECAST POST TENSIONED PIER CAP ALTERNATIVE.

NOT FOR BIDDING

AUGUST 2015

M:\31653\000\CONTRACT\B\CADD\Bridges\B-No433\PR02_brl-433.dgn
 5/2/2015 10:21:06 AM

ADDENDUMS / REVISIONS	

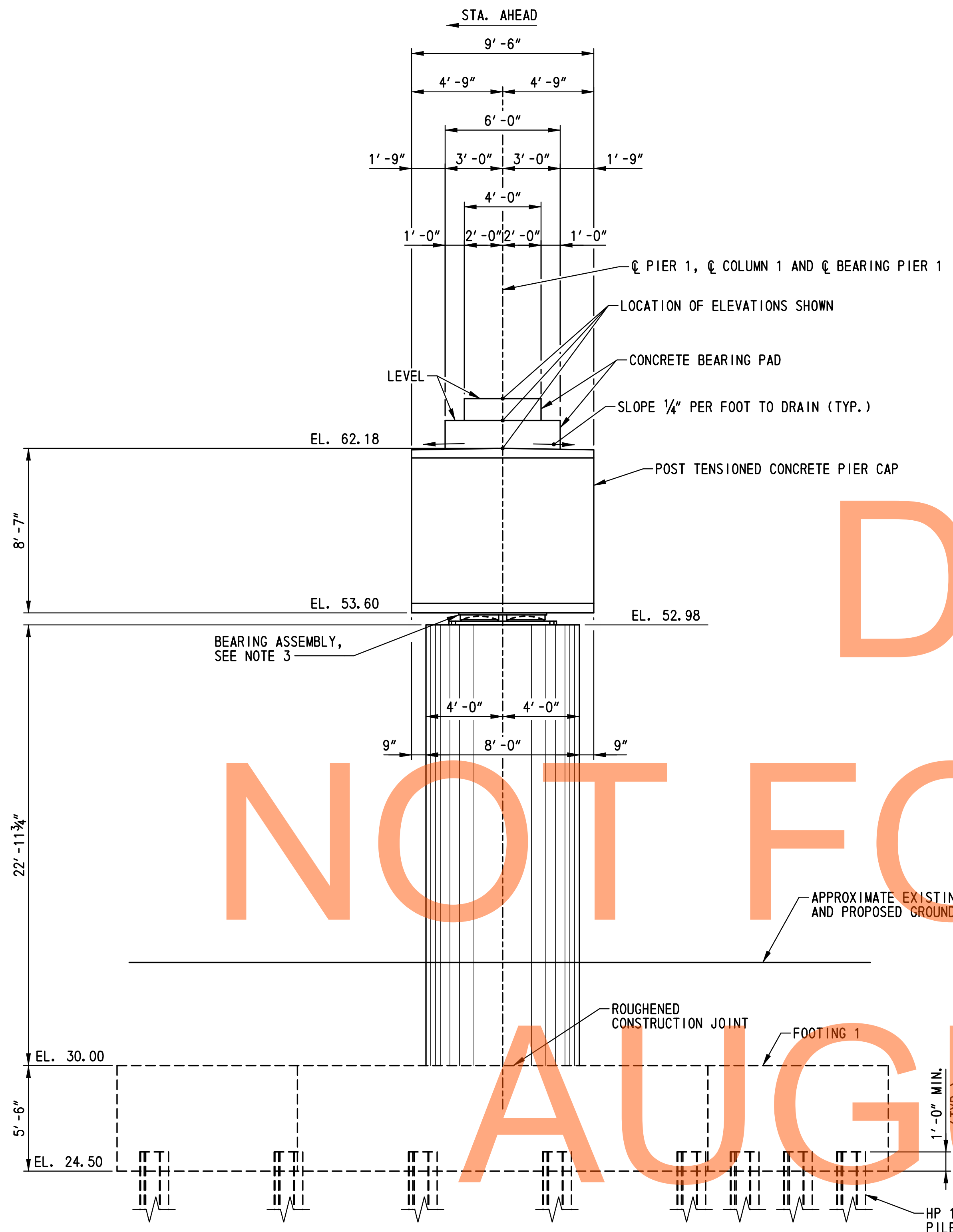
SCALE: AS SHOWN

US 301 & SR 1 INTERCHANGE

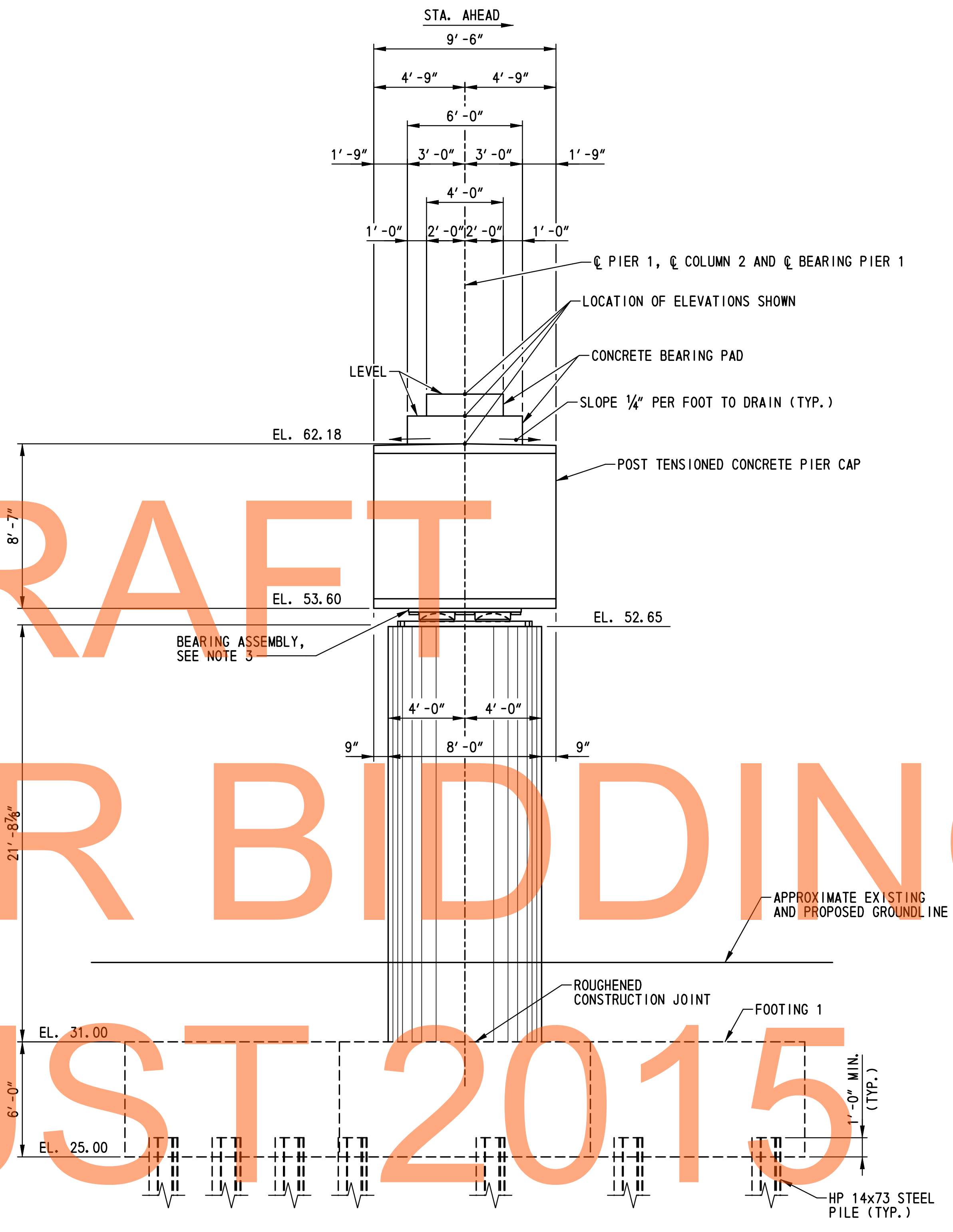
CONTRACT	BRIDGE NO.	1-433
T200911302	DESIGNED BY:	W.T.R., L.F.E.
COUNTY	CHECKED BY:	W.A.G.
NEW CASTLE		

PIER 1 PLAN AND ELEVATION

BR1-3 PR-02
SHEET NO.
227
TOTAL SHTS.
491



SIDE ELEVATION - COLUMN 1, FOOTING 1
SCALE: 1/4"=1'-0"



SIDE ELEVATION - COLUMN 2, FOOTING 2
SCALE: 1/4"=1'-0"

- NOTES:**
1. FOR PLAN AND ELEVATION, SEE DWG. NO. PR-02.
 2. FOR PILE LAYOUT PLAN, SEE DWG. NO. PL-01.
 3. FOR PIER 1 BEARING ASSEMBLY INFORMATION AND DETAILS, SEE DWG. NOS. BB-01 THRU BB-07.
 4. FOR PIER 1 REINFORCEMENT DETAILS, SEE DWG. PR-04 THRU PR-08.
 5. FOR SUGGESTED PIER CONSTRUCTION SEQUENCE, SEE DWG. NO. PR-01.
 6. PAYMENT FOR CONSTRUCTION OF THE POST-TENSIONED CONCRETE PIER CAP WILL BE MADE UNDER ITEM NO. 602777 - PORTLAND CEMENT CONCRETE MASONRY, POST-TENSIONED CAP, 8,000 PSI. PAYMENT FOR CONSTRUCTION OF THE POST-TENSIONING STRANDS WILL BE MADE UNDER ITEM NO. 623514 - POST-TENSIONING STRAND SYSTEM. SEE THE SPECIAL PROVISIONS FOR ADDITIONAL INFORMATION INCLUDING INFORMATION ON THE USE OF A PRECAST POST TENSIONED PIER CAP ALTERNATIVE.

M:\31653\000\CONTRACT 18\CAD\Drawings\BR-No433\PR03_brl-433.dgn
 2/27/2015 10:25:53 AM



ADDENDUMS / REVISIONS	

SCALE: AS SHOWN

US 301 &
SR 1 INTERCHANGE

CONTRACT	BRIDGE NO.	1-433
T200911302	DESIGNED BY:	W.T.R., L.F.E.
COUNTY	CHECKED BY:	W.A.G.
NEW CASTLE		

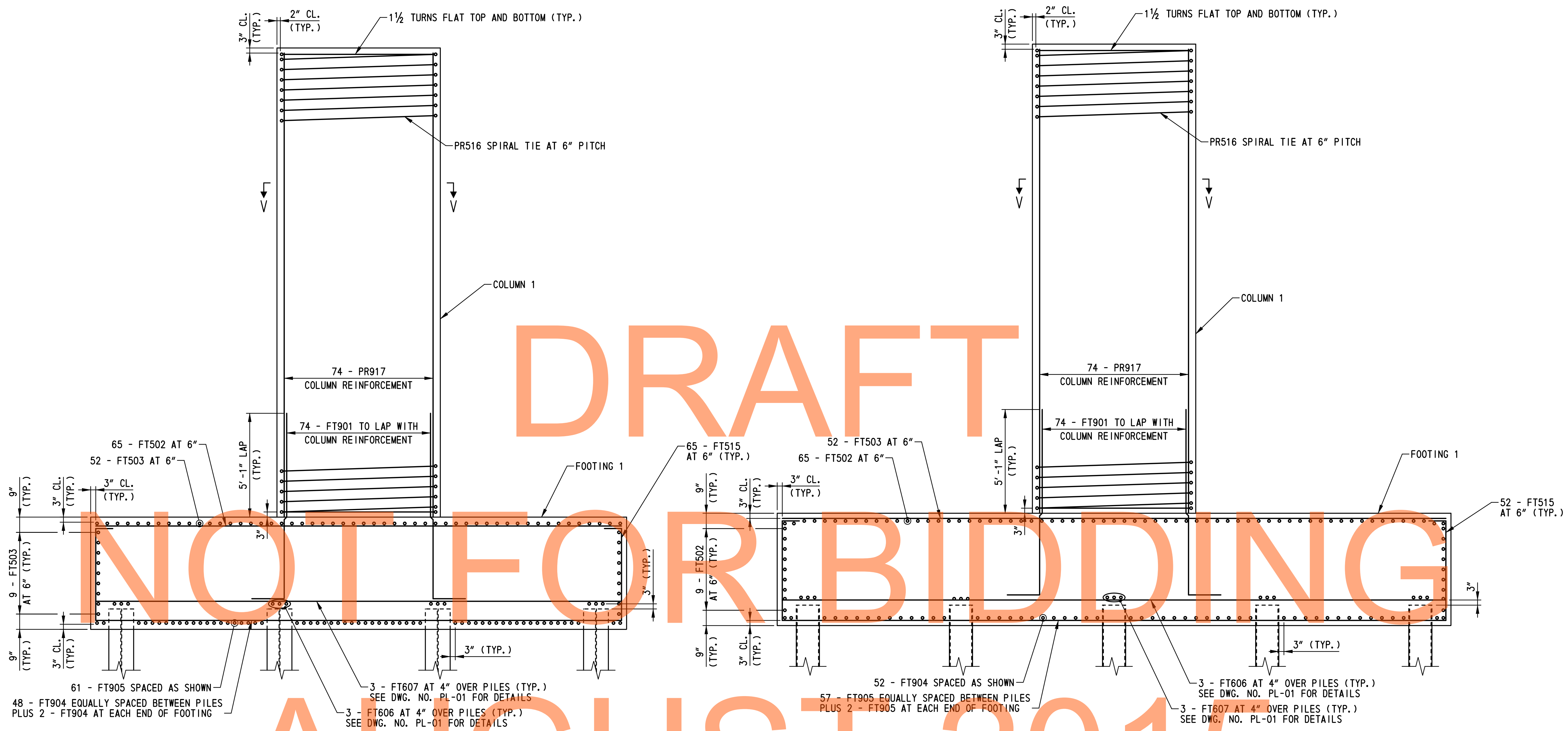
PIER 1
SIDE ELEVATION

BR1-3 PR-03
SHEET NO.
228
TOTAL SHTS.
491

DRAFT

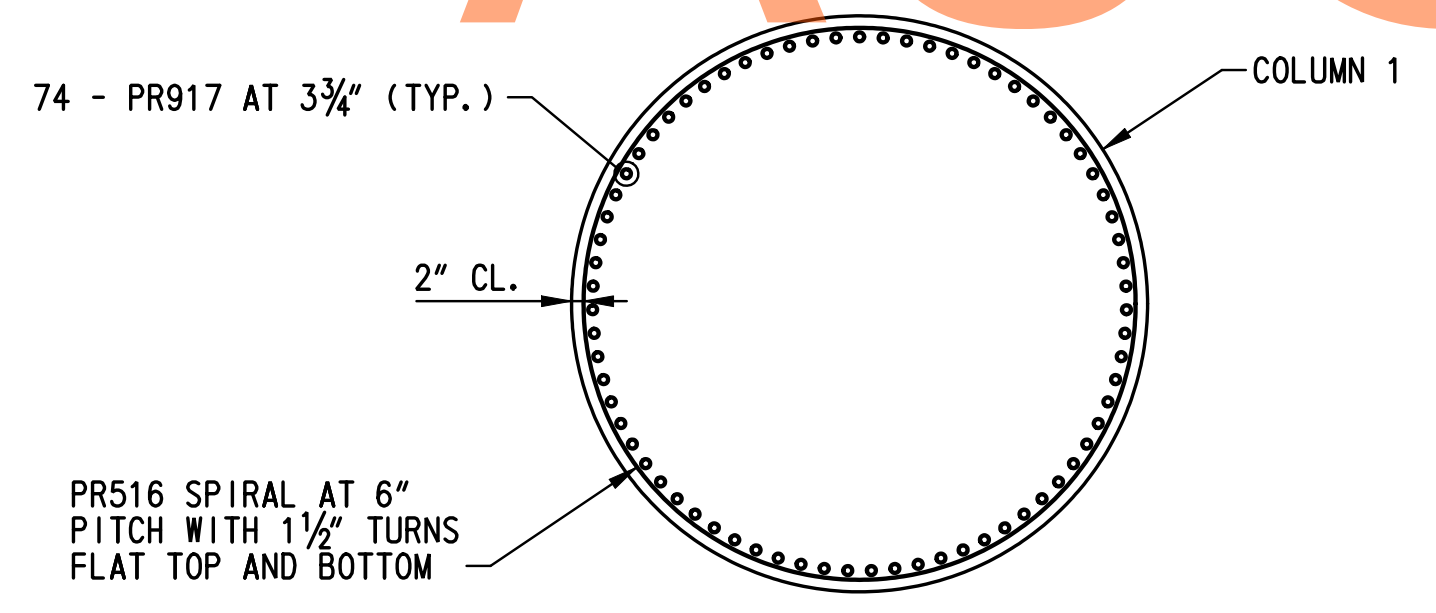
NOT FOR BIDDING

AUGUST 2015



SECTION R-R
SCALE: 3/8" = 1'-0"

SECTION S-S
SCALE: 3/8" = 1'-0"



SECTION V-V
SCALE: 3/8" = 1'-0"

- NOTES:
1. FOR LOCATION OF SECTIONS R-R AND S-S, SEE DWG. NO. PR-02.
 2. FOR ADDITIONAL REINFORCEMENT DETAILS, SEE DWG. NOS. PR-05 THRU PR-08.

M:\31653\000\Contract\IB\CADD\Bridges\BR-No433\PRO4-br1-433.dgn
 2/2/2015 9:40:16 AM



ADDENDUMS / REVISIONS	

SCALE: AS SHOWN

US 301 &
SR 1 INTERCHANGE

CONTRACT	BRIDGE NO.	1-433
T200911302	DESIGNED BY:	B.K.B.
COUNTY	CHECKED BY:	W.A.G.
NEW CASTLE		

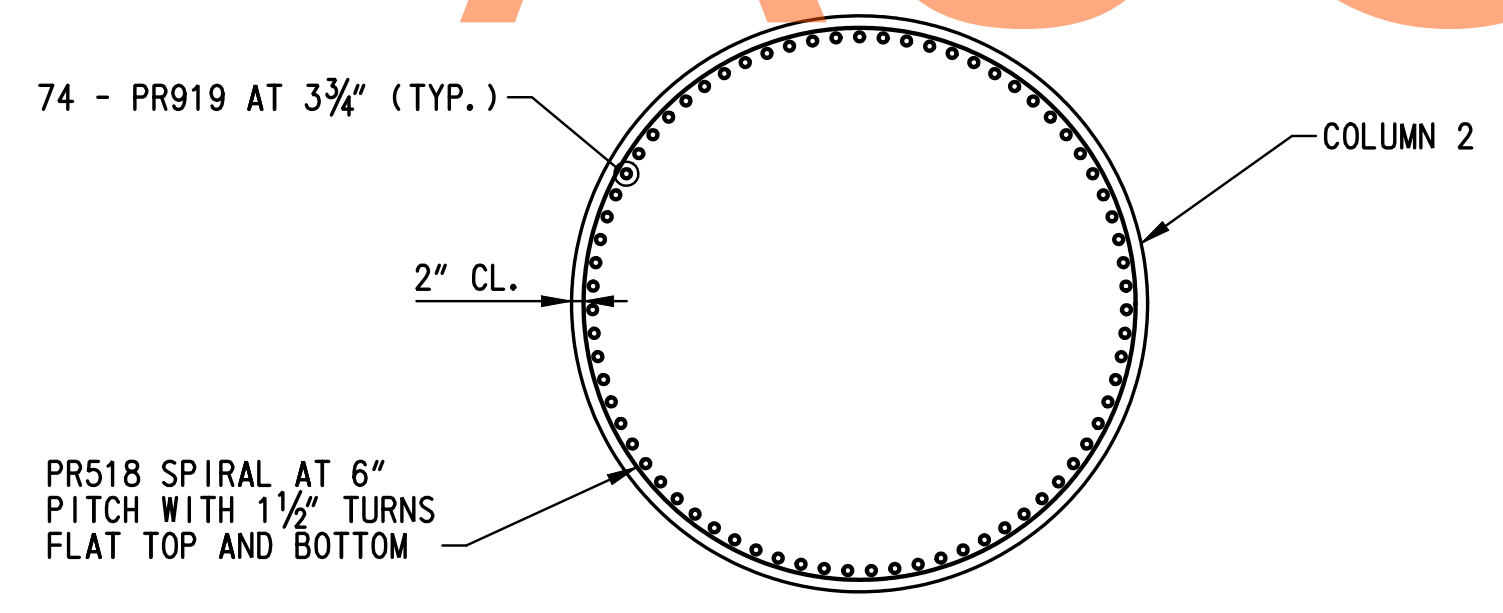
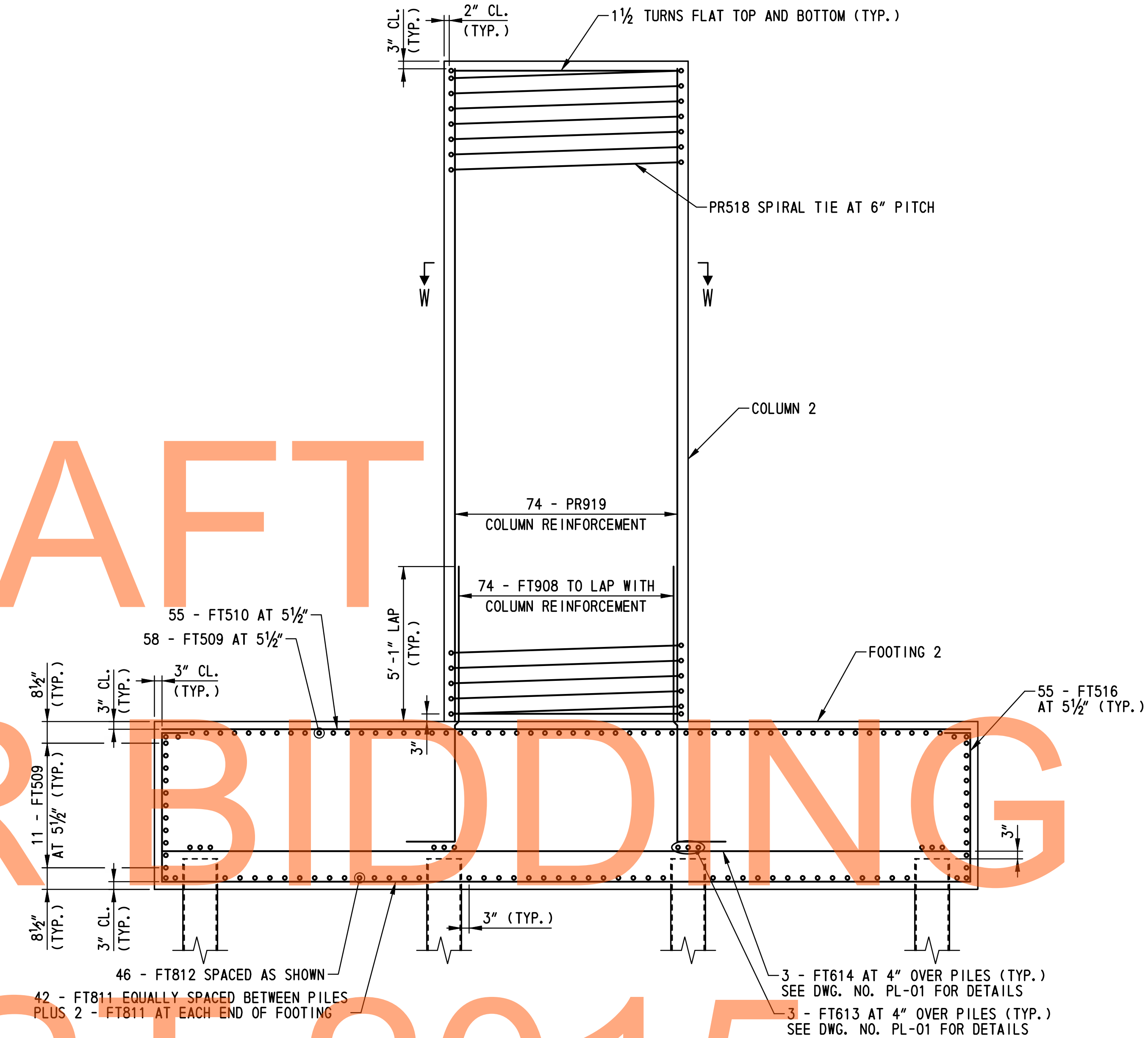
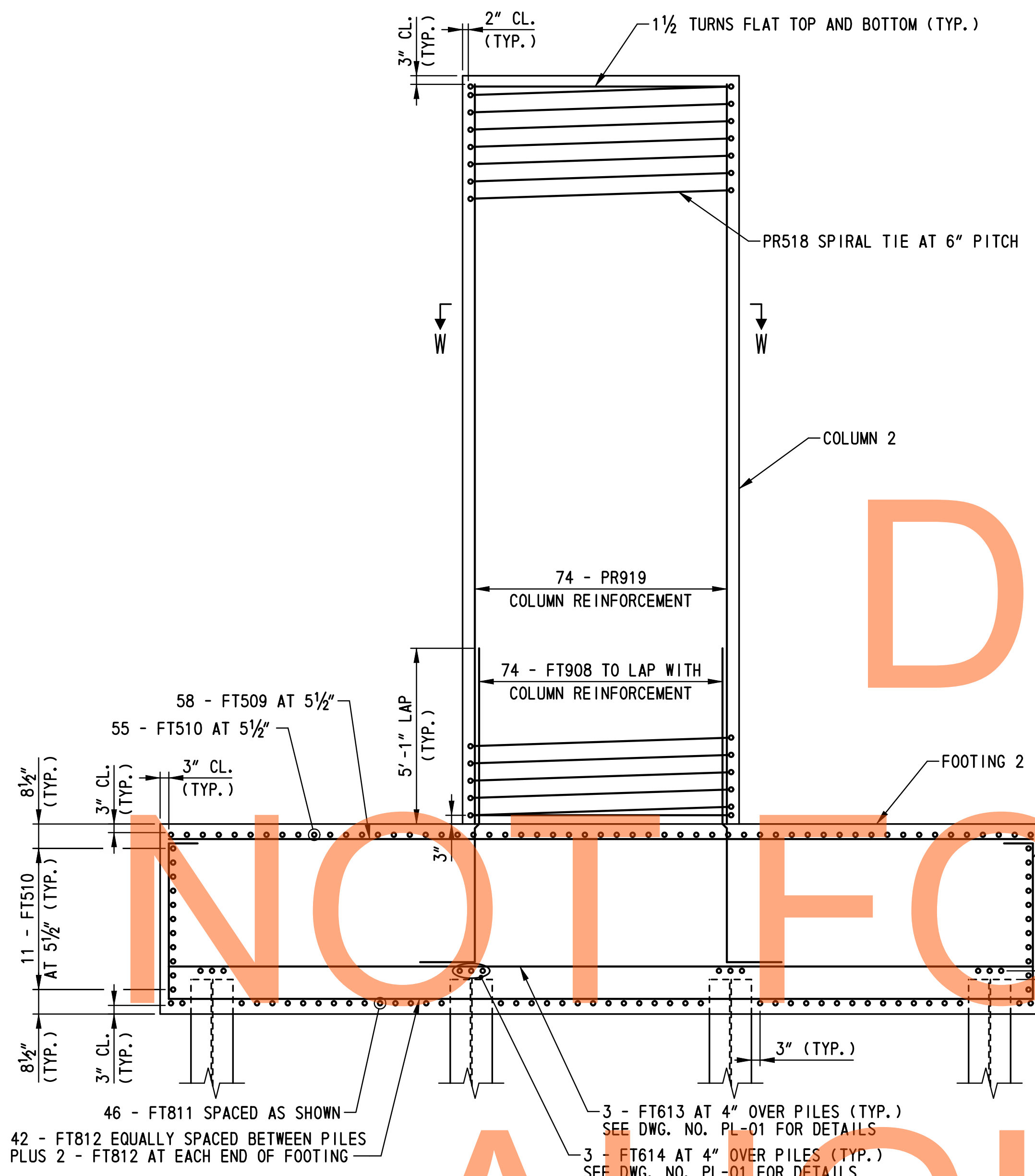
PIER 1
REINFORCEMENT
DETAILS - 1

BR1-3 PR-04
SHEET NO.
229
TOTAL SHTS.
491

DRAFT

NOT FOR BIDDING

AUGUST 2015



- NOTES:**
- FOR LOCATION OF SECTIONS T-T AND U-U, SEE DWG. NO. PR-02.
 - FOR ADDITIONAL REINFORCEMENT DETAILS, SEE DWG. NOS. PR-04, PR-06 THRU PR-08.

M:\31653\000\Contract\1B\CADD\Bridges\BR_1-433\PROJ\br1-433.dgn
 2/2/2015 9:41:10 AM



ADDENDUMS / REVISIONS	

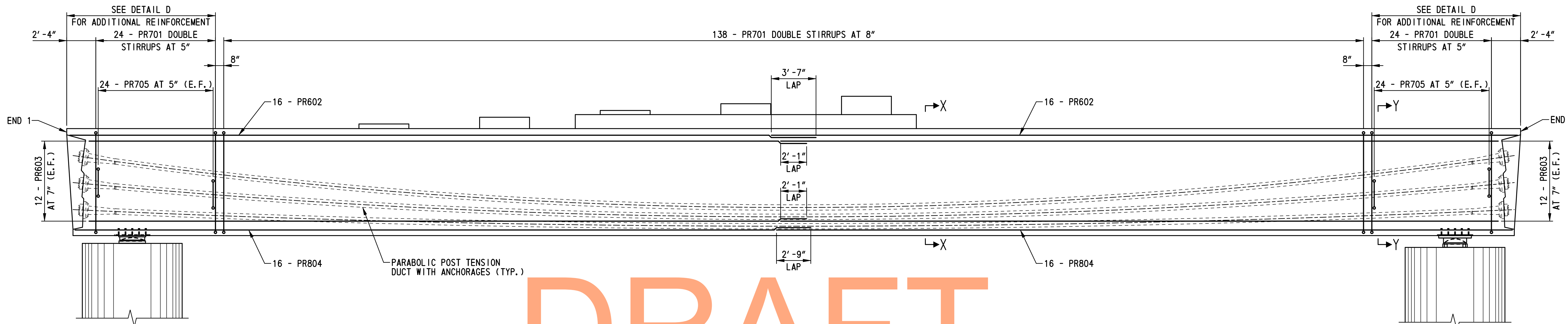
SCALE: AS SHOWN

US 301 &
SR 1 INTERCHANGE

CONTRACT	BRIDGE NO.	1-433
T200911302	DESIGNED BY:	B.K.B.
COUNTY	CHECKED BY:	W.A.G.
NEW CASTLE		

**PIER 1
REINFORCEMENT
DETAILS - 2**

BR1-3 PR-05
SHEET NO.
230
TOTAL SHTS.
491



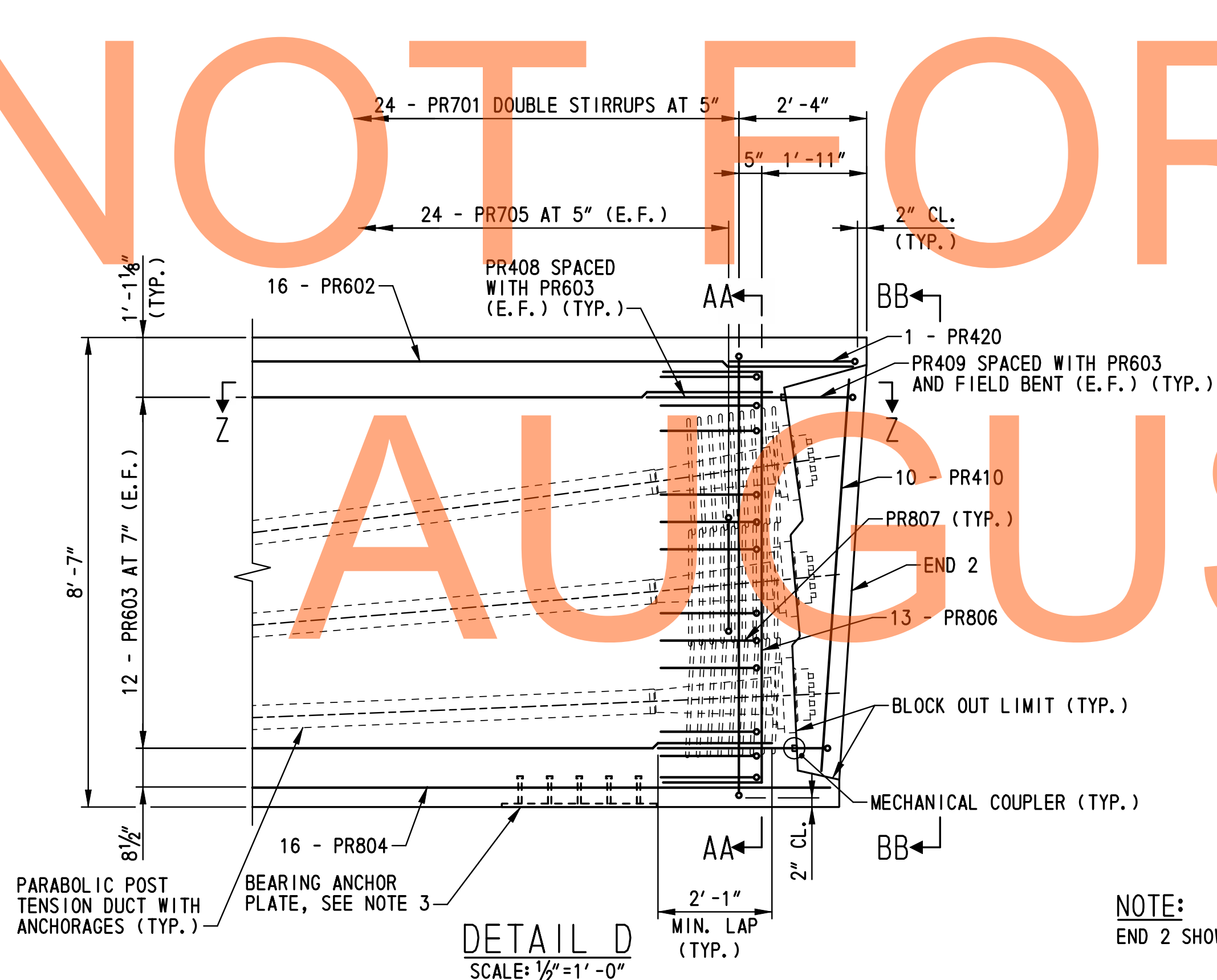
DRAFT

PIER CAP REINFORCEMENT ELEVATION

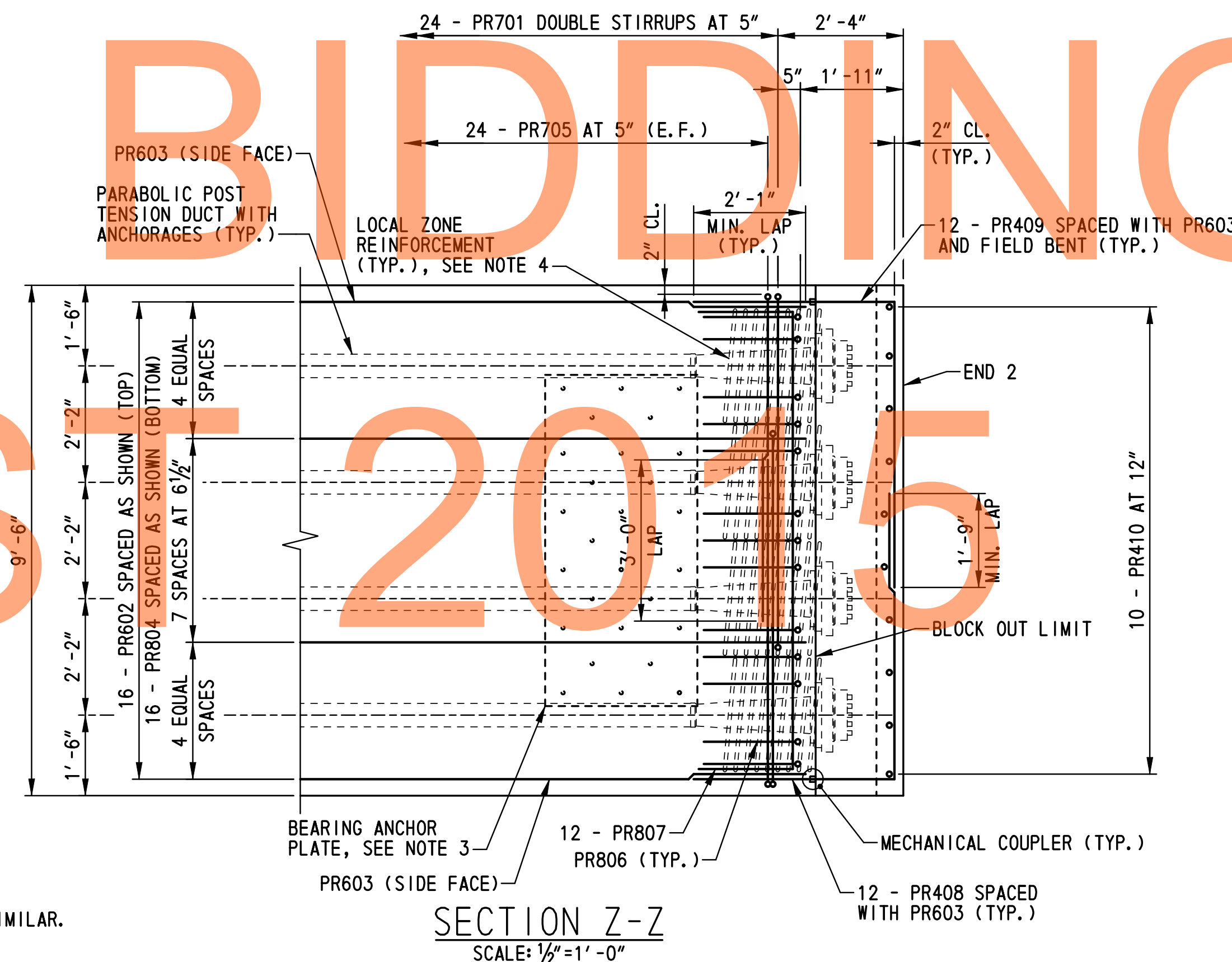
SCALE: 1/4"=1'-0"

NOT FOR BIDDING

AUGUST 2015

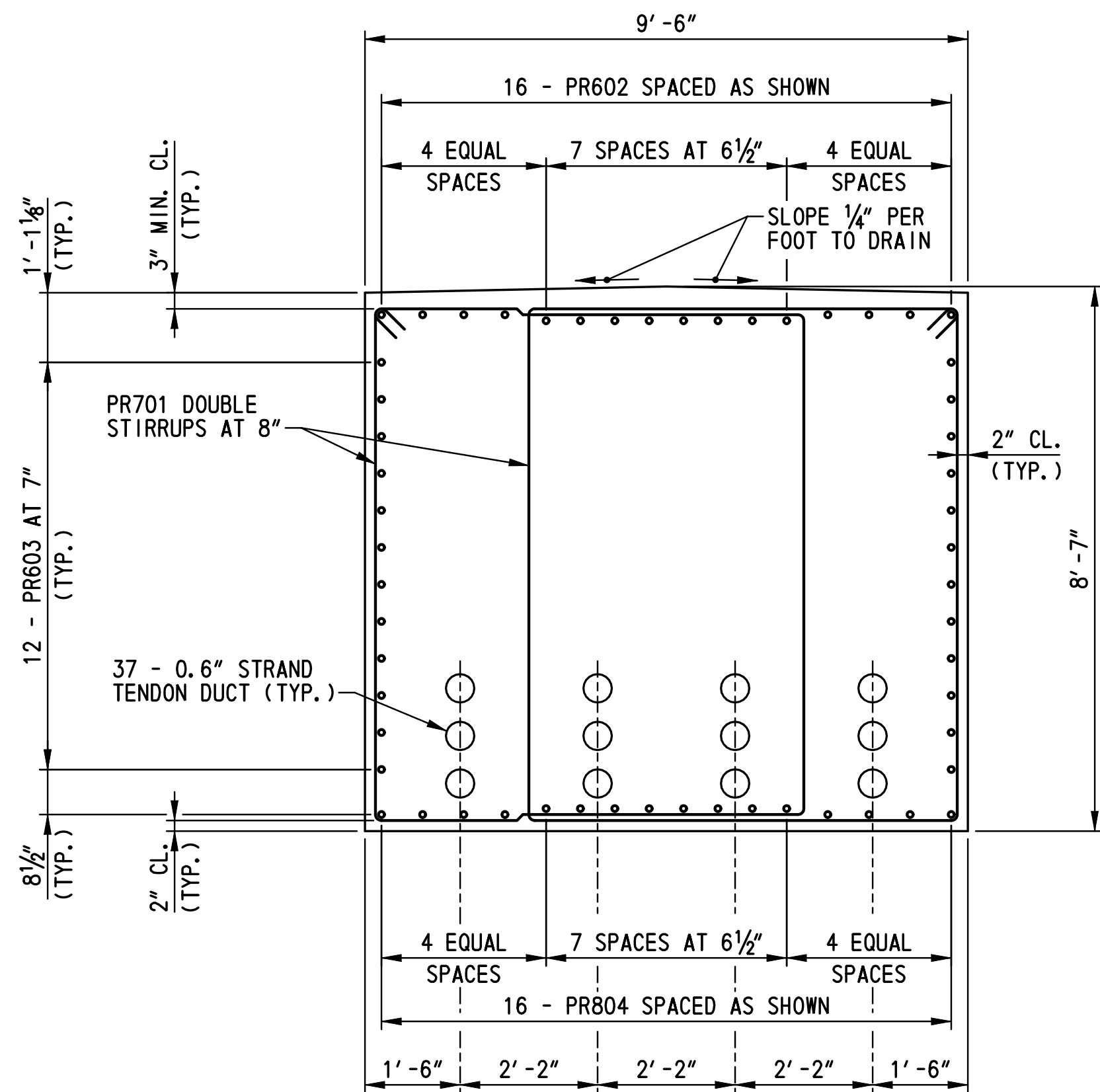


NOTE:
END 2 SHOWN; END 1 SIMILAR.

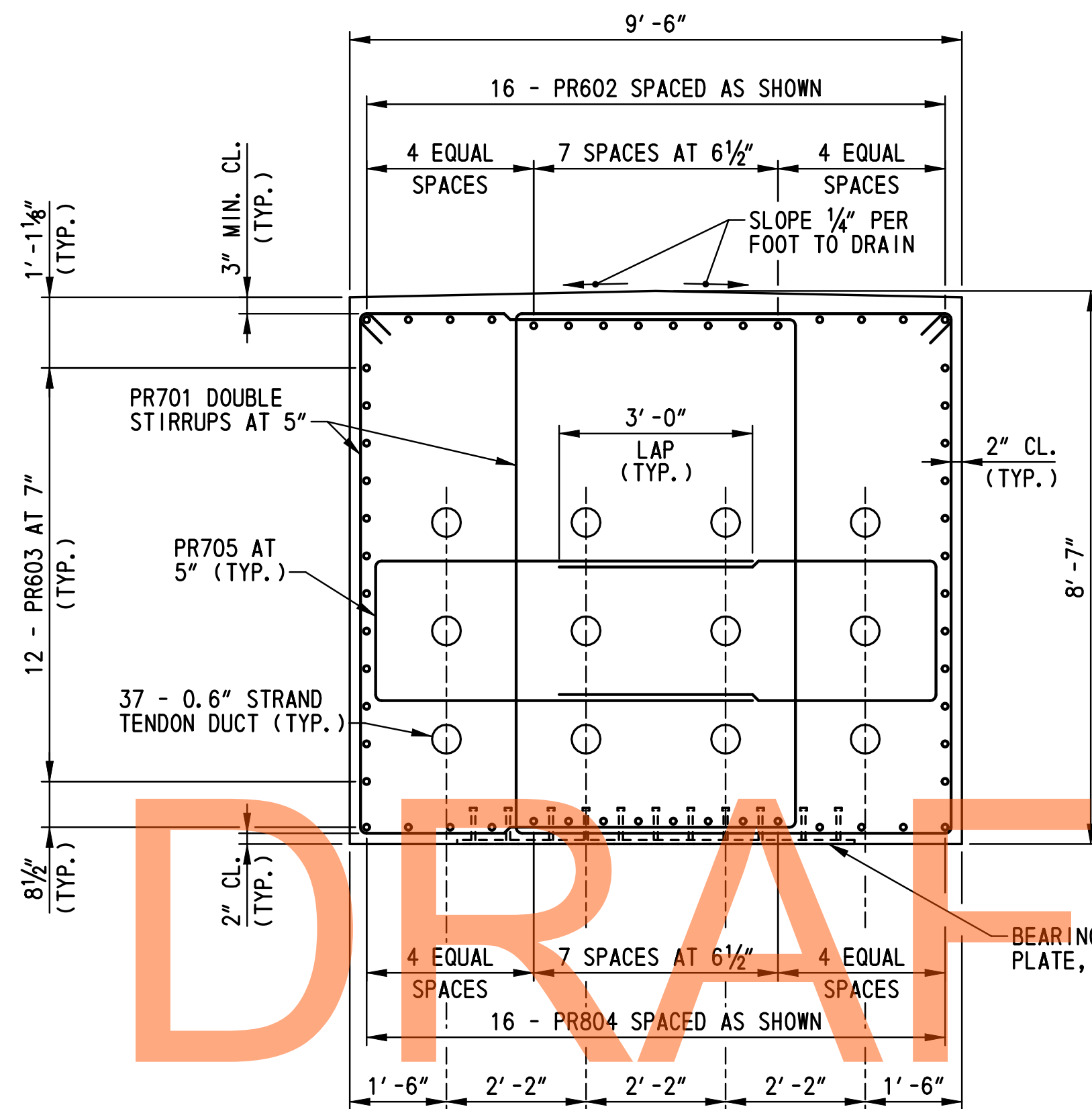


- NOTES:**
- FOR SECTIONS X-X, Y-Y AND AA-AA AND VIEW BB-BB, SEE DWG. NO. PR-07.
 - FOR ADDITIONAL REINFORCEMENT DETAILS, SEE DWG. NOS. PR-04, PR-05, PR-07 AND PR-08.
 - THE BEARING ANCHOR PLATE IS A COMPONENT OF THE BEARING ASSEMBLY. THE POST TENSIONED CONCRETE PIER CAP SHALL BE CONSTRUCTED AROUND THE BEARING ANCHOR PLATE. FOR SUGGESTED PIER CONSTRUCTION SEQUENCE, SEE DWG. NO. PR-01. FOR PIER 1 BEARING ASSEMBLY INFORMATION AND DETAILS, SEE DWG. NOS. BB-01 THRU BB-07.
 - LOCAL ZONE REINFORCEMENT SHALL BE DESIGNED BY POST TENSIONING SYSTEM SUPPLIER. ALL WORK SHALL BE INCIDENTAL TO ITEM 623514 - POST-TENSIONING STRAND SYSTEM.
 - FOR POST-TENSIONING SYSTEM DETAILS INCLUDING DUCT TYPE, MATERIALS AND OTHER COMPONENTS, SEE SPECIAL PROVISION ITEM 623514 - POST-TENSIONING STRAND SYSTEM.

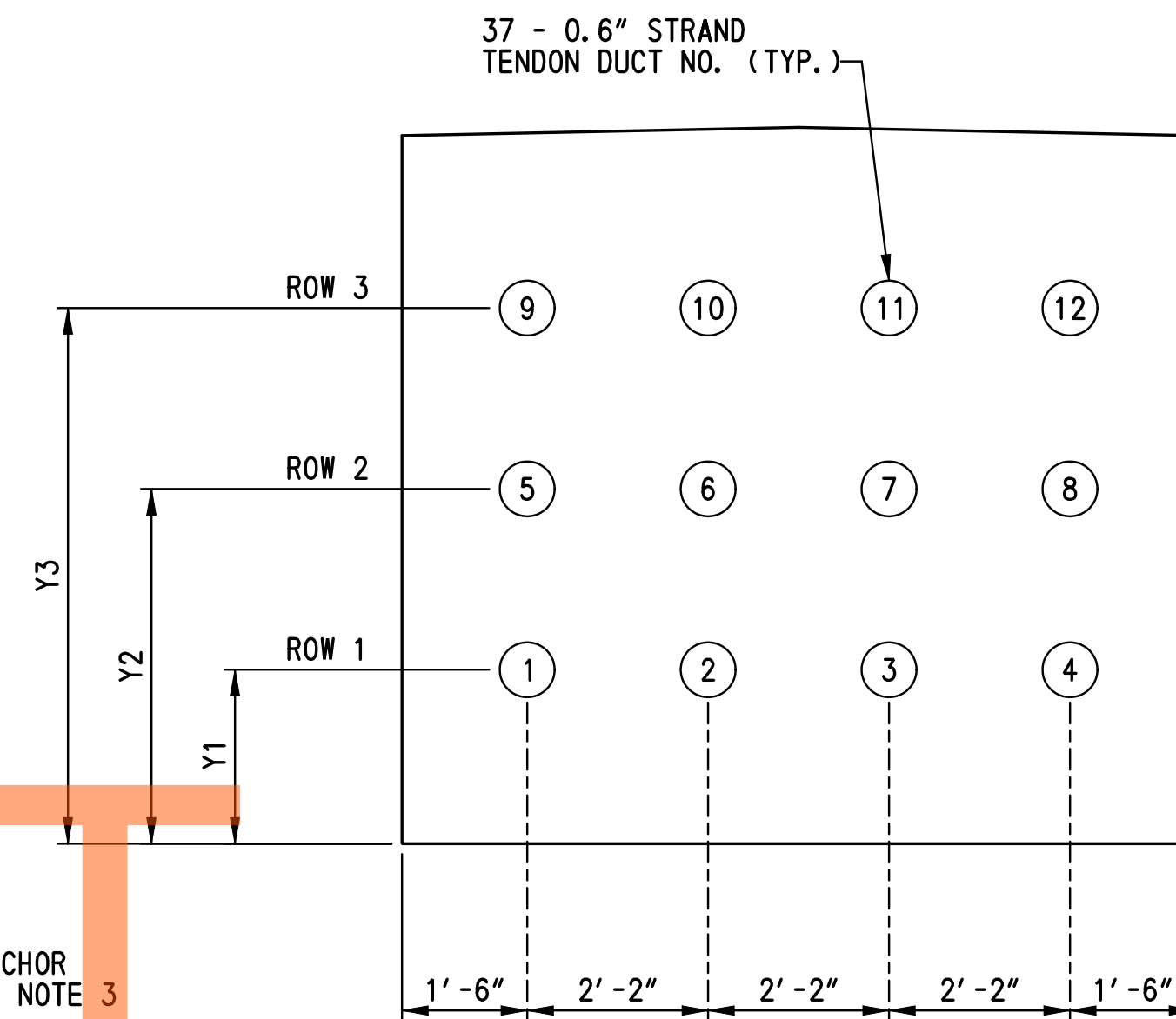
M:\71653\000\CONTRACT\BRIDGE\BRIDGE\No433\PR06_brl-433.dgn
 7/7/2015 3:47:06 PM



SECTION X-X
SCALE: 1/2"=1'-0"



SECTION Y-Y
SCALE: 1/2"=1'-0"

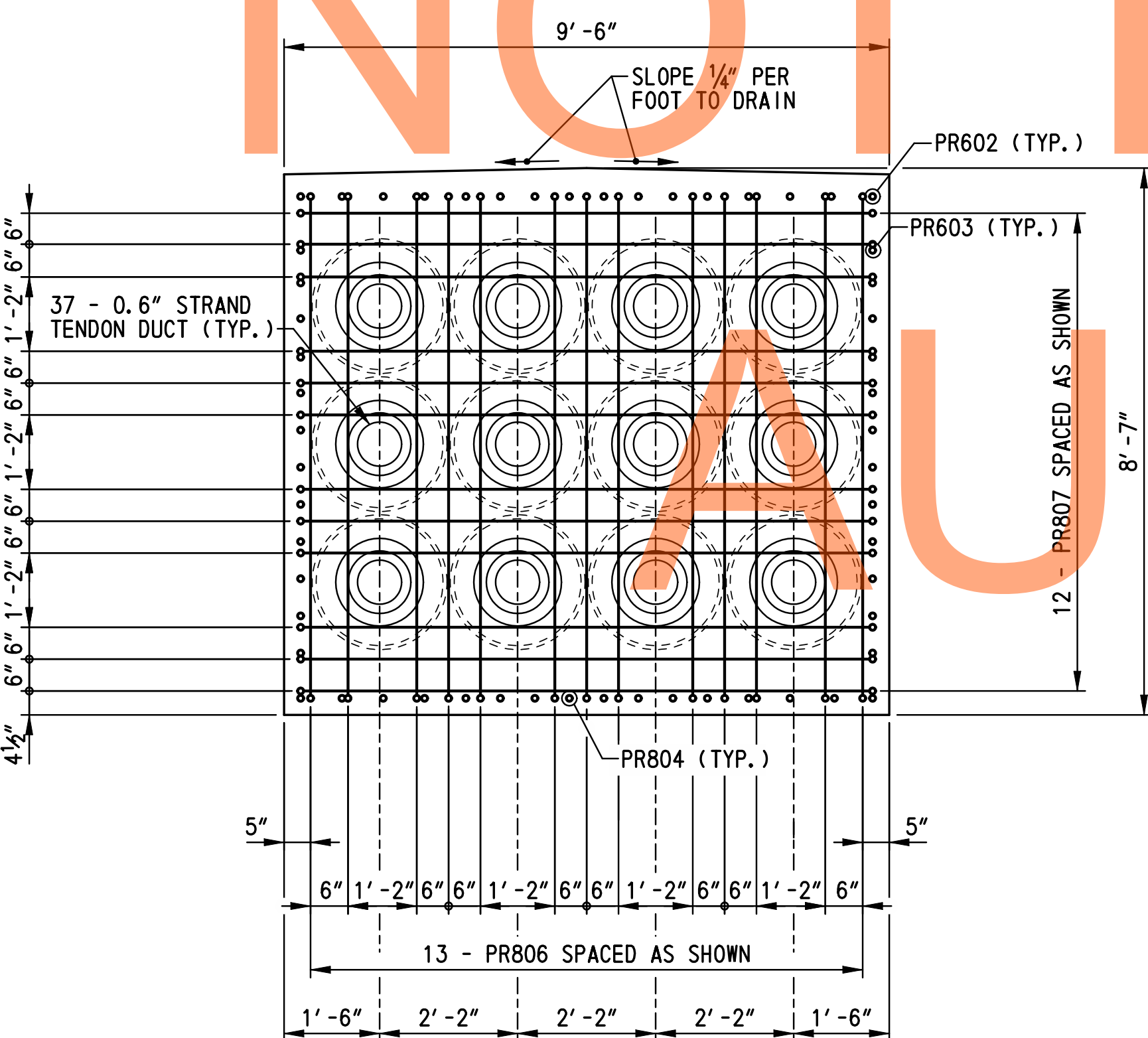


TENDON DUCT LAYOUT
SCALE: 1/2"=1'-0"

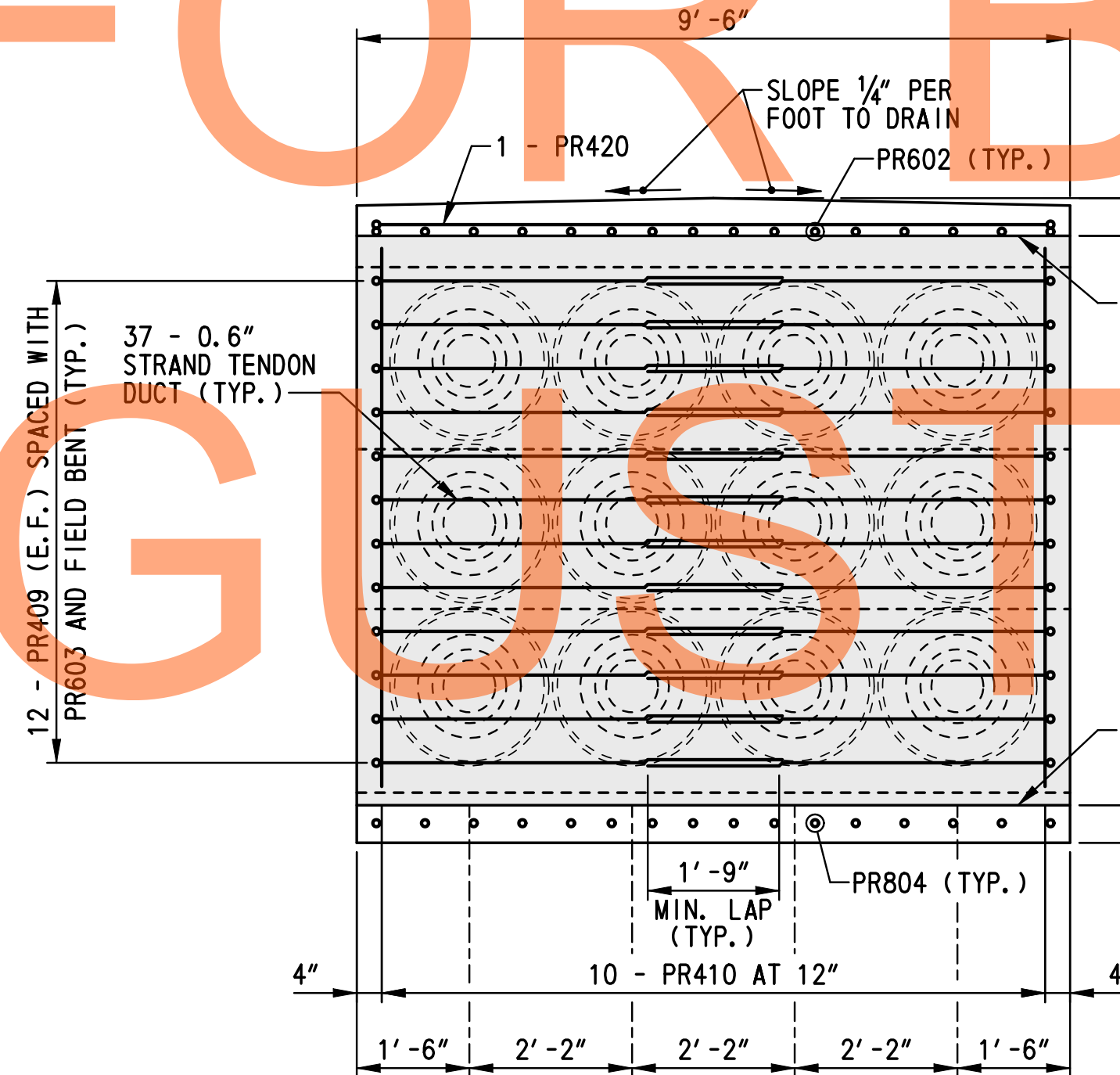
- TENDON STRESSING SEQUENCE:**
- STAGE 1 POST TENSIONING STRESSING WHEN CONCRETE HAS ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 6,000 PSI AND PRIOR TO REMOVAL OF FALSEWORK SHALL BE COMPLETED IN THE FOLLOWING ORDER:
 - TENDONS 1 AND 3 SIMULTANEOUSLY (END 1 STRESSED)
 - TENDONS 2 AND 4 SIMULTANEOUSLY (END 1 STRESSED)
 - TENDONS 5 AND 7 SIMULTANEOUSLY (END 2 STRESSED)
 - TENDONS 6 AND 8 SIMULTANEOUSLY (END 2 STRESSED)
 - TENDONS 9 AND 11 SIMULTANEOUSLY (END 1 STRESSED)
 - TENDONS 10 AND 12 SIMULTANEOUSLY (END 1 STRESSED)
 - STAGE 2 POST TENSIONING STRESSING AFTER THE STEEL SUPERSTRUCTURE HAS BEEN ERECTED AND BEFORE APPLYING ANY LIVE LOAD ON THE BRIDGE WHEN CONCRETE HAS ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 8,000 PSI SHALL BE COMPLETED IN THE FOLLOWING ORDER:
 - TENDONS 9 AND 11 SIMULTANEOUSLY (END 1 STRESSED)
 - TENDONS 10 AND 12 SIMULTANEOUSLY (END 1 STRESSED)

- NOTES:**
- FOR ADDITIONAL REINFORCEMENT DETAILS, SEE DWG. NOS. PR-04 THRU PR-06 AND PR-08.
 - FOR LOCATION OF SECTIONS X-X, Y-Y AND AA-AA AND VIEW BB-BB, SEE DWG. NO. PR-06.
 - THE BEARING ANCHOR PLATE IS A COMPONENT OF THE BEARING ASSEMBLY. THE POST TENSIONED CONCRETE PIER CAP SHALL BE CONSTRUCTED AROUND THE BEARING ANCHOR PLATE. FOR SUGGESTED PIER CONSTRUCTION SEQUENCE, SEE DWG. NO. PR-01. FOR PIER 1 BEARING ASSEMBLY INFORMATION AND DETAILS, SEE DWG. NOS. BB-01 THRU BB-07.
 - LOCAL ZONE REINFORCEMENT SHALL BE DESIGNED BY POST TENSIONING SYSTEM SUPPLIER. ALL WORK SHALL BE INCIDENTAL TO ITEM 623514 - POST-TENSIONING STRAND SYSTEM.

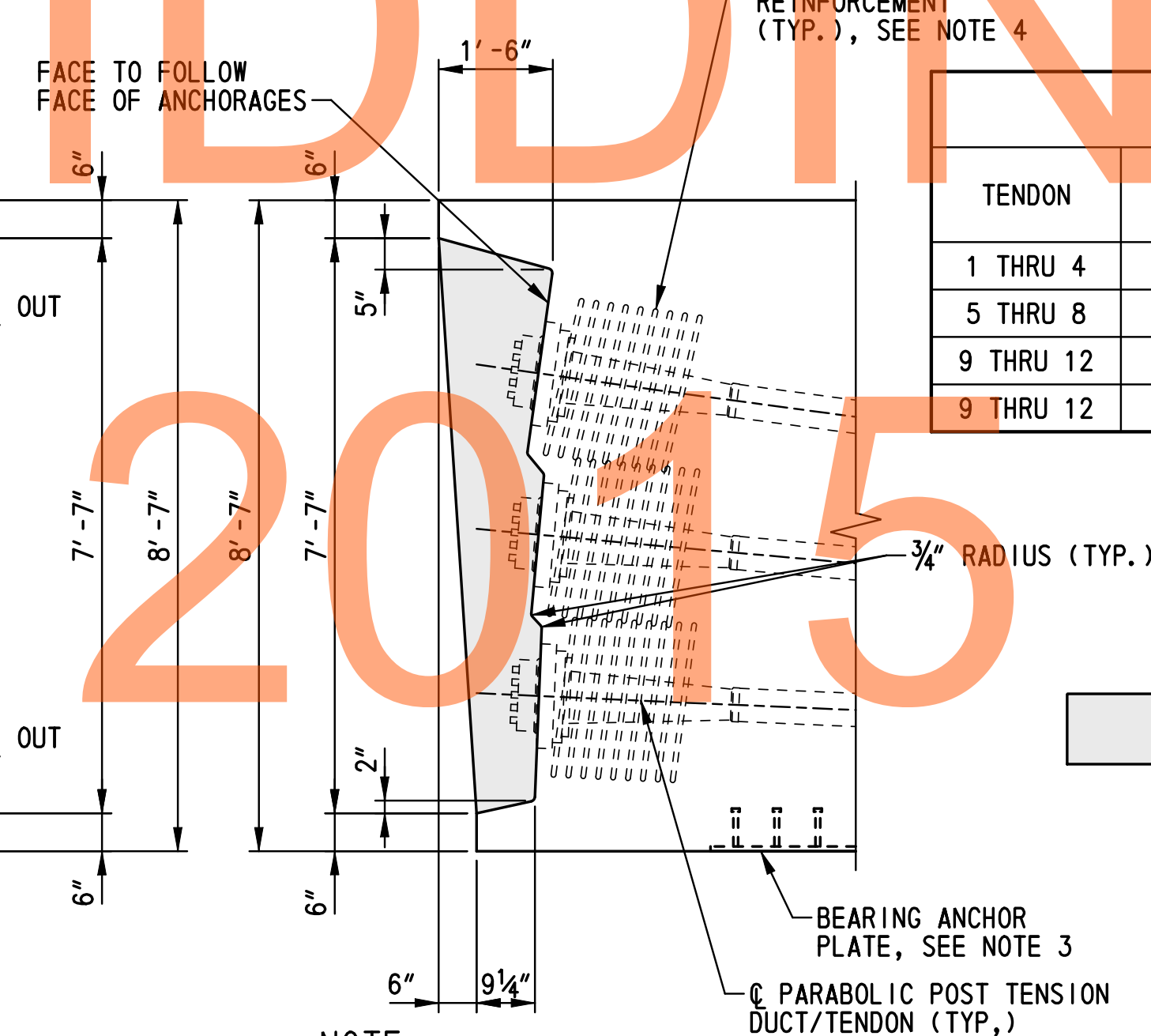
TENDON DUCT LAYOUT			
LOCATION	Y1	Y2	Y3
END	2'-1"	4'-3"	6'-5"
QUARTERSPAN	1'-11"	2'-2 1/4"	3'-3 1/2"
MIDSPAN	9"	1'-6"	2'-3"



SECTION AA-AA
SCALE: 1/2"=1'-0"



VIEW BB-BB
SCALE: 1/2"=1'-0"



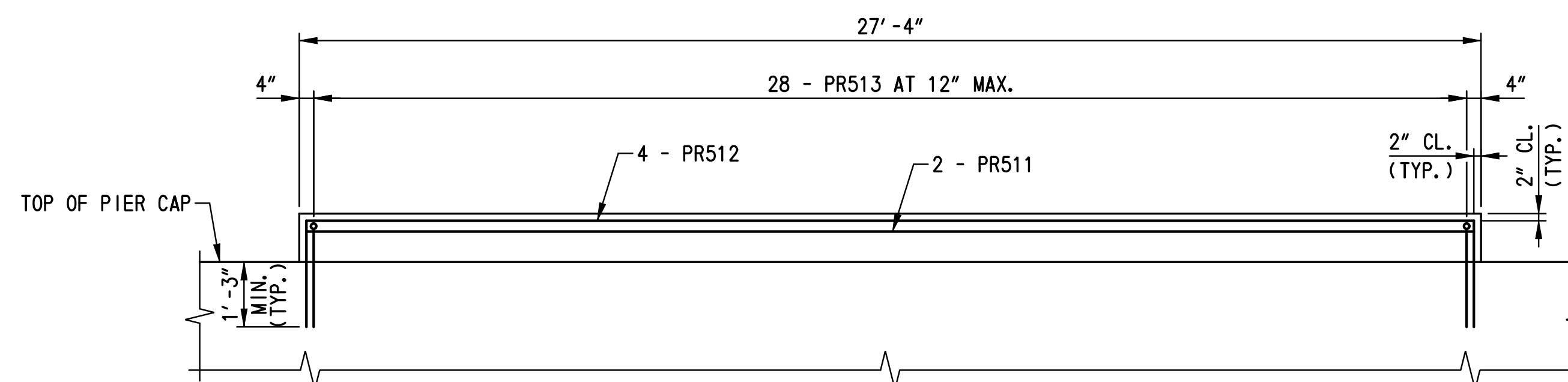
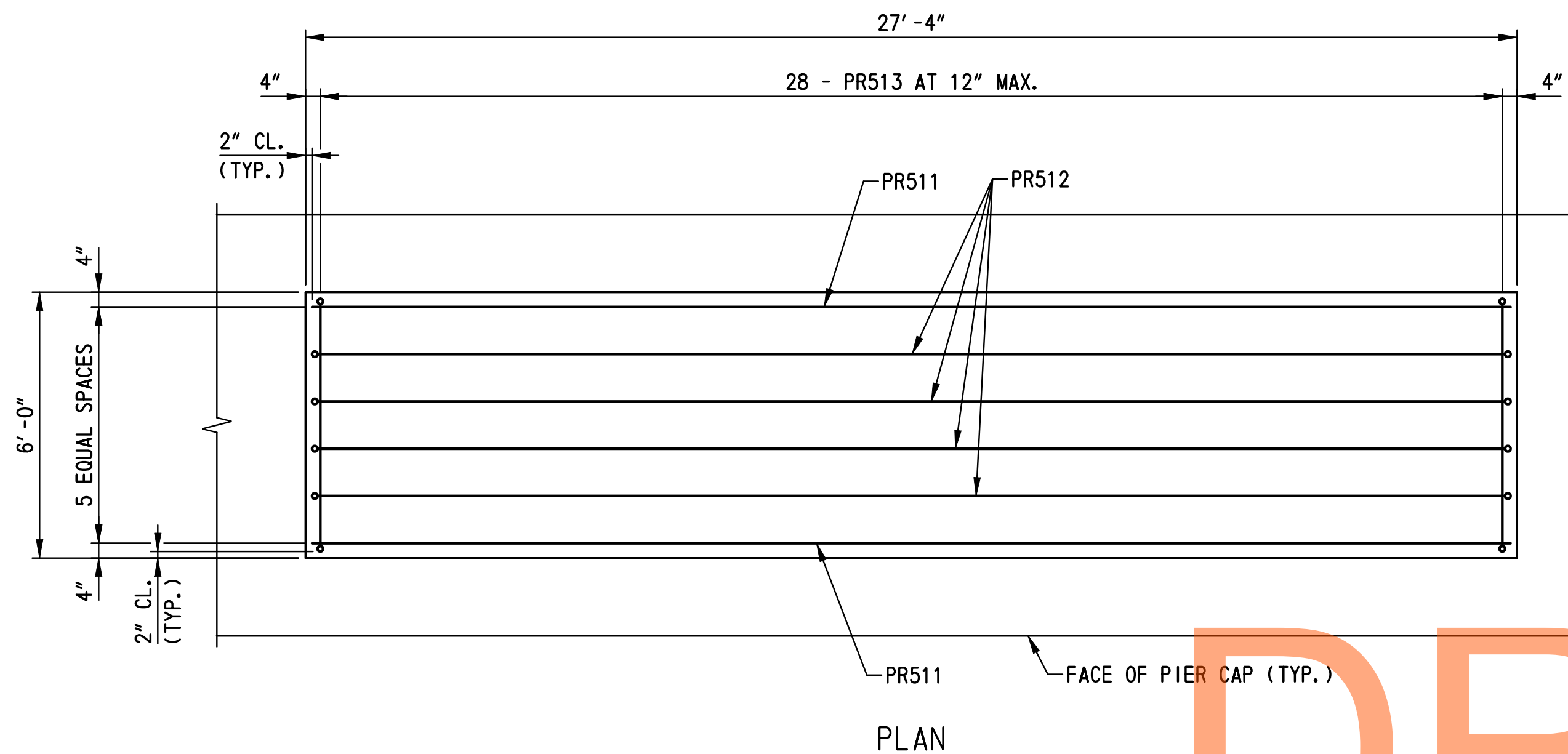
NOTE:
DIMENSIONS SHOWN ARE MEASURED ALONG C/P PIER CAP.

BLOCK OUT DETAIL
SCALE: 1/2"=1'-0"

TENDON DUCT SCHEDULE				
TENDON	STRAND DIAMETER	NUMBER OF STRAND PER TENDON	JACKING FORCE PER TENDON	POST TENSION STAGE
1 THRU 4	0.6"	37	1626 K	1
5 THRU 8	0.6"	37	-	1
9 THRU 12	0.6"	37	976 K	1
9 THRU 12	0.6"	37	1626 K	2

AREA SHOWN TO BE BLOCKED OUT, FILLED WITH NONSHRINK GROUT AND COATED WITH METHACRYLATE SEALER AFTER COMPLETION OF STAGE 2 POST TENSIONING. THE CONTRACTOR SHALL SUBMIT THE NONSHRINK GROUT MIX DESIGN TO THE ENGINEER FOR APPROVAL. GROUT SHALL BE PUMPED BY MEANS OF INJECTION PIPES FROM THE BOTTOM OF THE BLOCK OUT. NONSHRINK GROUT SHALL BE INCIDENTAL TO ITEM 623514 - POST-TENSIONING STRAND SYSTEM. METHACRYLATE SEALER SHALL BE INCIDENTAL TO ITEM 602777 - PORTLAND CEMENT CONCRETE MASONRY, POST TENSIONED PIER CAP, 8,000 PSI. SEE SPECIAL PROVISIONS.

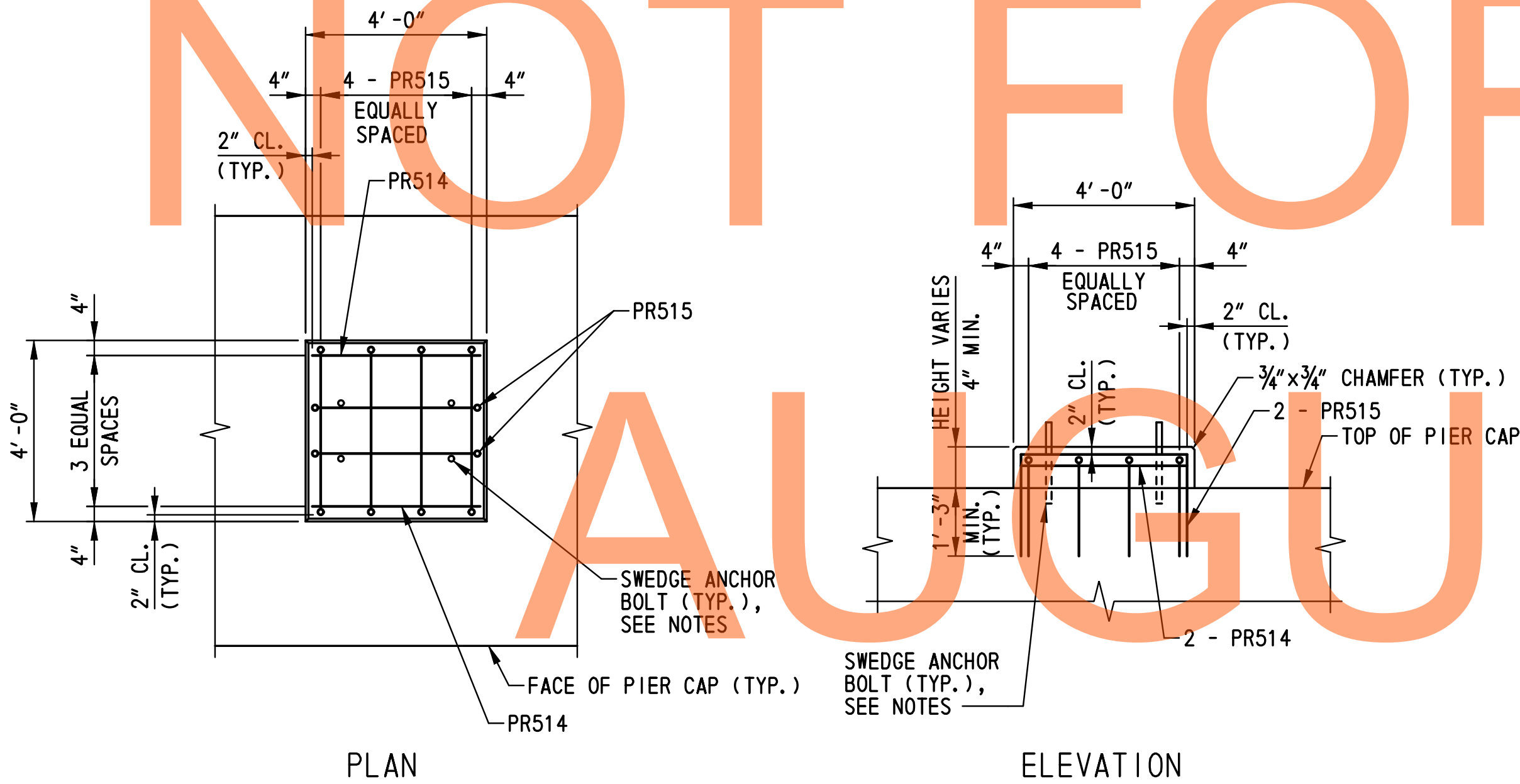
M:\31653\000\CONTRACT\B\CADD\Bridg\B-No433\PR07_brl-433.dgn 2/2/2015 10:27:52 AM



NOTE:
 ANCHOR BOLTS AND SMALLER CONCRETE BEARING PADS NOT SHOWN FOR CLARITY. SEE CONCRETE BEARING PAD REINFORCEMENT DETAILS - 2 AND NOTES FOR ADDITIONAL INFORMATION.

CONCRETE BEARING PAD REINFORCEMENT DETAILS - 1
 SCALE: 3/8" = 1' - 0"

DRAFT
 NOT FOR BIDDING
 AUGUST 2015



CONCRETE BEARING PAD REINFORCEMENT DETAILS - 2
 SCALE: 3/8" = 1' - 0"

- NOTES:**
1. FOR ANCHOR BOLT DETAIL, DIMENSIONS AND LOCATIONS, SEE DWG. NOS. BB-01, BB-02 AND BB-13 THRU BB-15.
 2. ANCHOR BOLTS SHALL BE CAST IN PLACE. A TEMPORARY CASTING TEMPLATE SHALL BE USED TO ENSURE THE ANCHOR BOLTS ARE PROPERLY ALIGNED AND PLUMB. THE TEMPLATE SHALL BE REMOVED AFTER THE CONCRETE HAS SET.
 3. SPACE REINFORCING STEEL AS NECESSARY TO CLEAR ANCHOR BOLTS.
 4. FOR ADDITIONAL REINFORCEMENT DETAILS, SEE DWG. NOS. PR-03 THRU PR-07.

M:\31653\000\Contract\IB\CADD\Bridges\BR-No433\PROB-br1-433.dgn
 2/2/2015 9:42:18 AM



ADDENDUMS / REVISIONS	

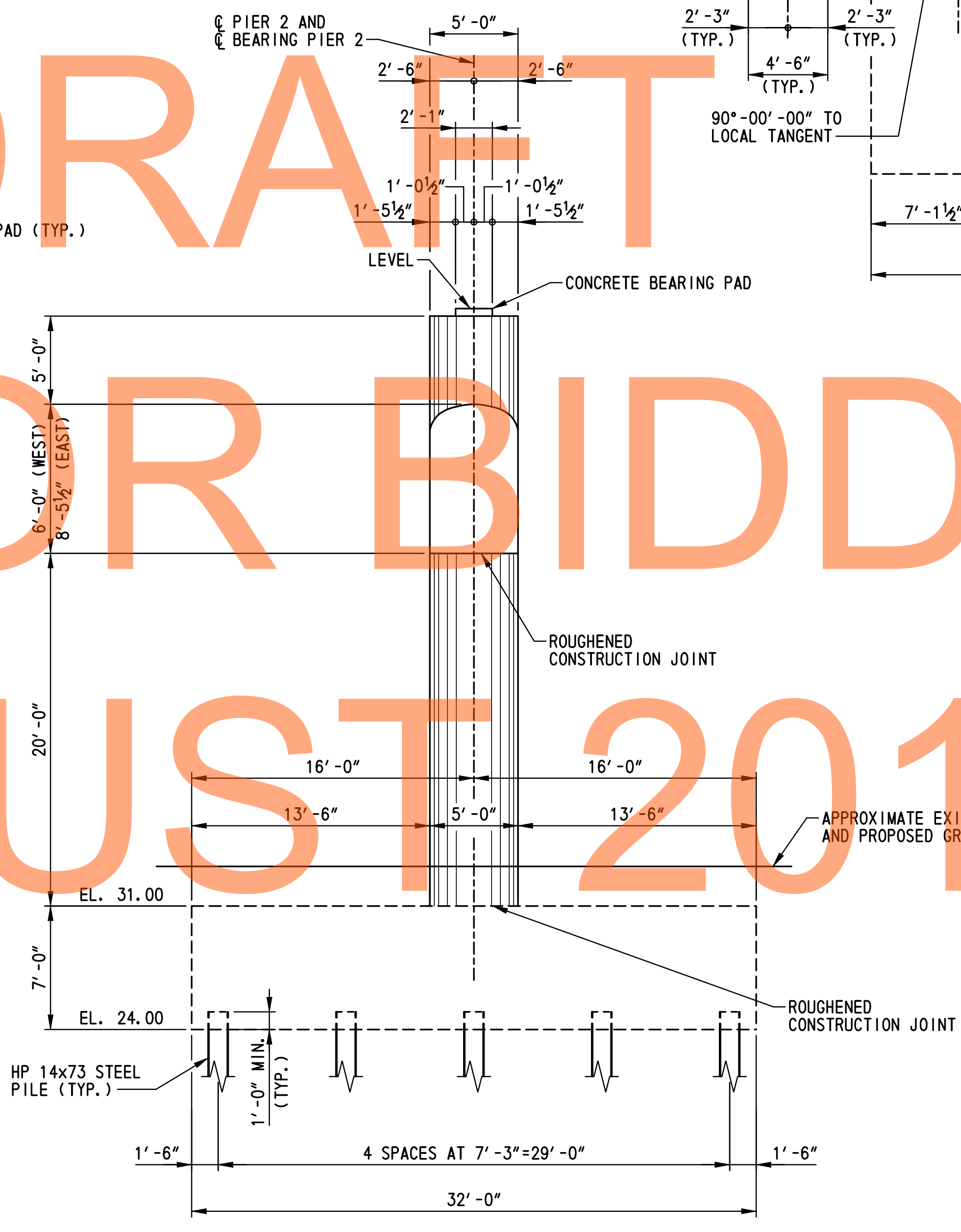
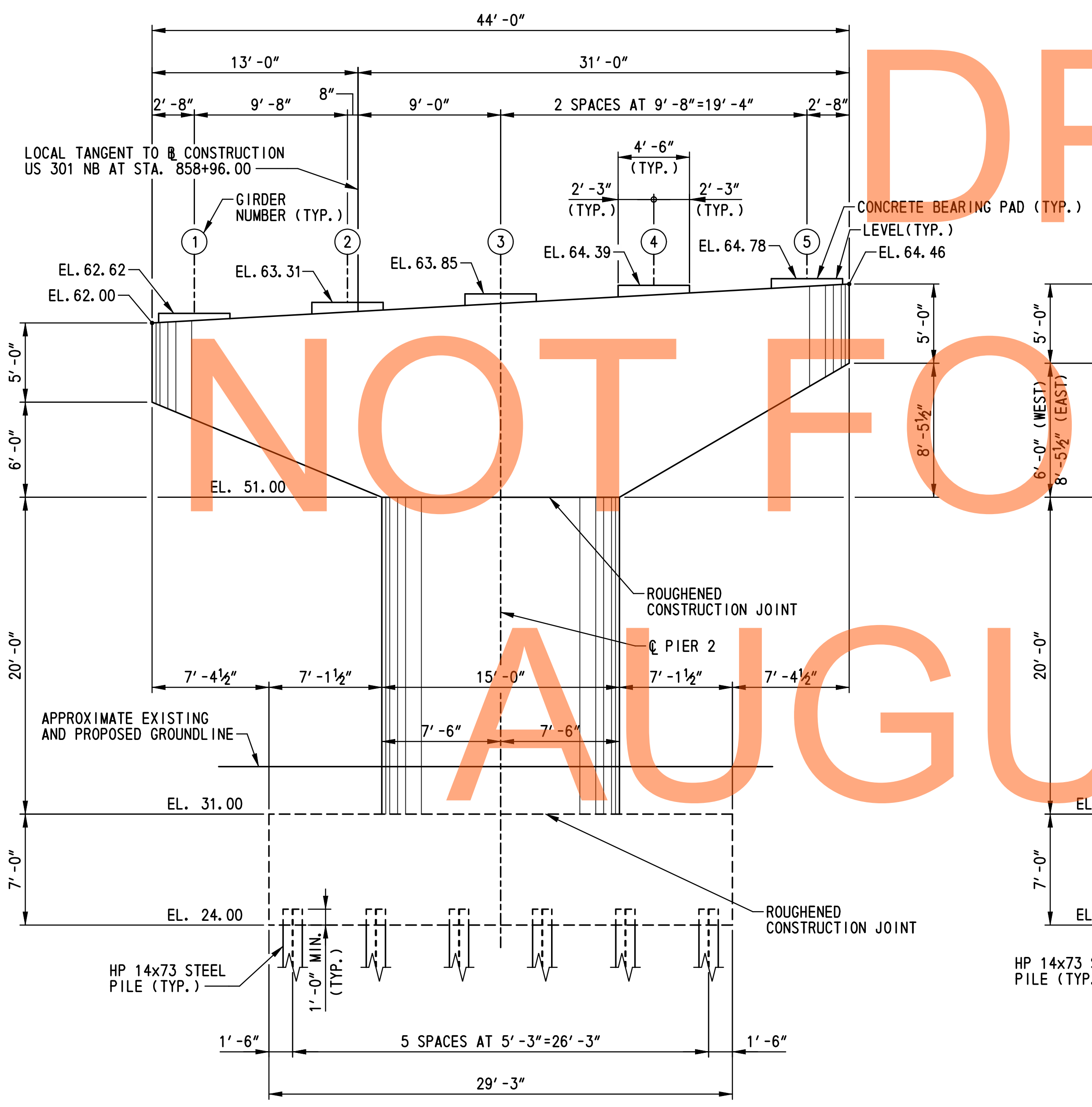
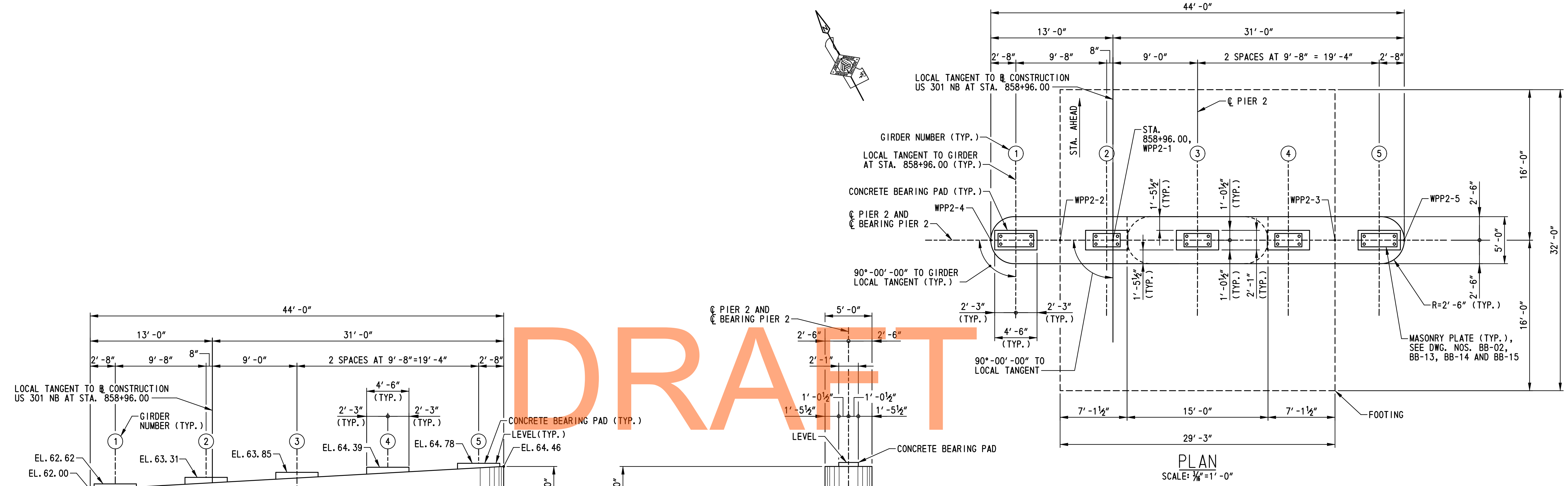
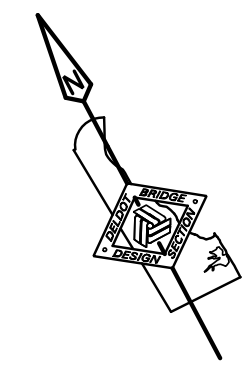
SCALE: AS SHOWN

US 301 &
 SR 1 INTERCHANGE

CONTRACT	BRIDGE NO.	1-433
T200911302	DESIGNED BY:	B.K.B.
COUNTY	CHECKED BY:	W.A.G.
NEW CASTLE		

PIER 1
 REINFORCEMENT
 DETAILS - 5

BR1-3 PR-08
SHEET NO.
233
TOTAL SHTS.
491



PLAN
SCALE: 1/8" = 1'-0"

ELEVATION
SCALE: 1/8" = 1'-0"

SIDE ELEVATION
SCALE: 1/8" = 1'-0"

- NOTES:
1. FOR PILE LAYOUT PLAN, SEE DWG. NO. PL-02.
 2. FOR PIER 2 REINFORCEMENT DETAILS, SEE DWG. NOS. PR-10 AND PR-11.

M:\31653\000\Contract\IB\CADD\Bridges\Bridges\No433\PROJ\br1-433.dgn
 2/2/2015 9:22:42 AM



ADDENDUMS / REVISIONS	

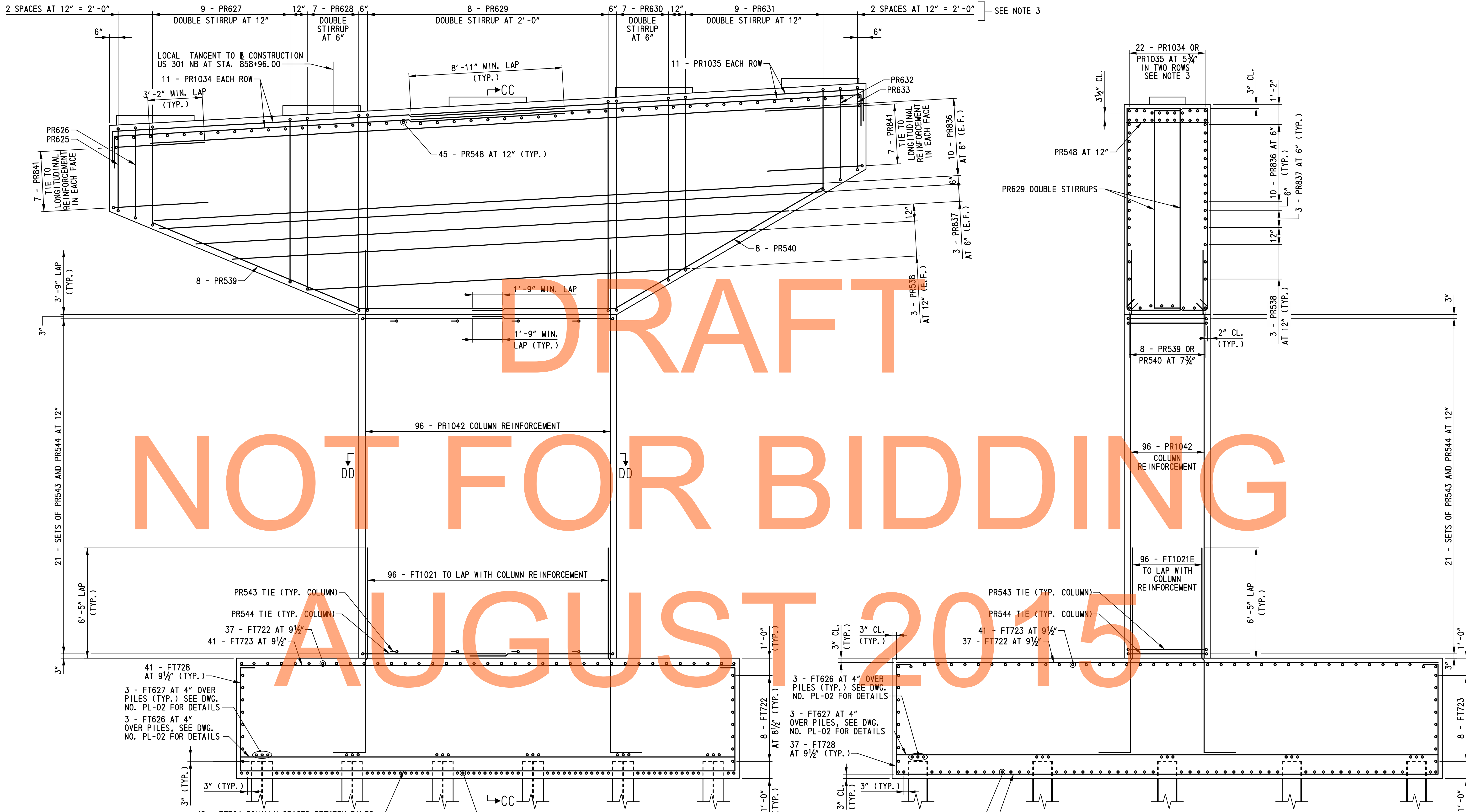
SCALE: AS SHOWN

US 301 &
SR 1 INTERCHANGE

CONTRACT	BRIDGE NO.	1-433
T200911302	DESIGNED BY:	B.K.B.
COUNTY	CHECKED BY:	X.X.X.
NEW CASTLE		

PIER 2
PLAN AND ELEVATIONS

BR1-3 PR-09
SHEET NO.
234
TOTAL SHTS.
491



DRAFT

NOT FOR BIDDING

AUGUST 2015

- NOTES:**
- FOR CONCRETE BEARING PAD REINFORCING DETAILS, SEE DWG. NO. PR-11.
 - FOR SECTION DD-DD, SEE DWG. NO. PR-11.
 - SPACE REINFORCING STEEL AS NECESSARY TO CLEAR ANCHOR BOLTS. FOR ADDITIONAL INFORMATION, SEE DWG. NOS. PR-11, BB-01, BB-02, BB-13, BB-14 AND BB-16.
 - ALTERNATE 90 DEGREE AND 135 DEGREE HOOK OF PR543 IN EACH LAYER OF COLUMN.

ELEVATION
SCALE: 3/8"=1'-0"

SECTION CC-CC
SCALE: 3/8"=1'-0"



ADDENDUMS / REVISIONS	

SCALE: AS SHOWN

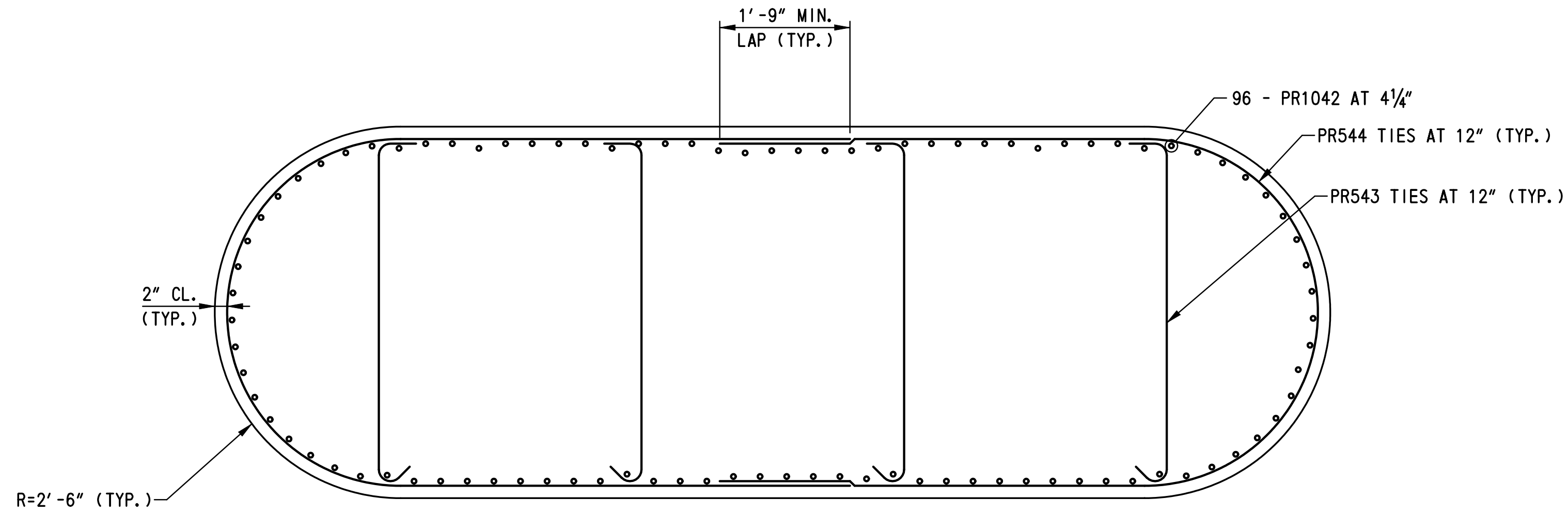
**US 301 &
SR 1 INTERCHANGE**

CONTRACT T200911302	BRIDGE NO. 1-433	
COUNTY NEW CASTLE	DESIGNED BY: B.K.B.	
	CHECKED BY: W.A.G.	

**PIER 2
REINFORCEMENT
DETAILS - 1**

BRI-3 PR-10
SHEET NO. 235
TOTAL SHTS. 491

M:\31653\000\Contract\BACADD\Bridges\Bridges\No433\PR10.bri-1-433.dgn 2/2/2015 9:45:10 AM



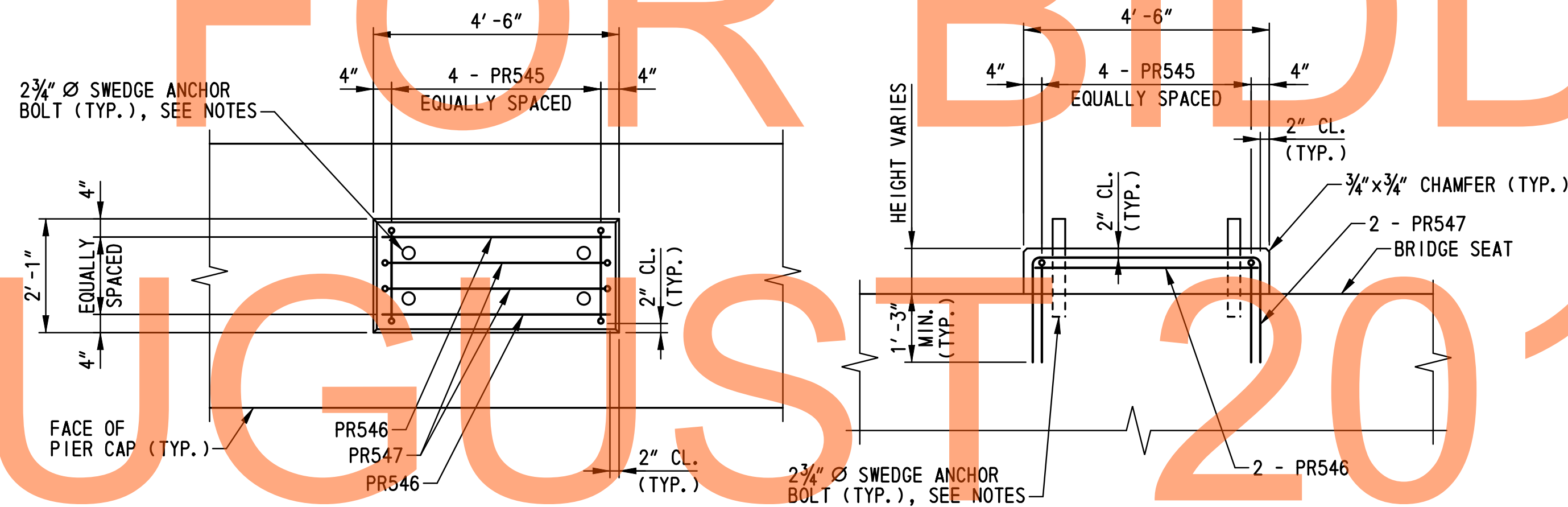
DRAFT

NOTES:

1. ALTERNATE 90 DEGREE AND 135 DEGREE HOOK OF PR543 TIES IN EACH LAYER.
2. FOR LOCATION OF SECTION DD-DD, SEE DWG. NO. PR-10.

SECTION DD-DD
SCALE: 3/4" = 1' - 0"

NOT FOR BIDDING



PLAN ELEVATION
CONCRETE BEARING PAD DETAILS
SCALE: 1/2" = 1' - 0"

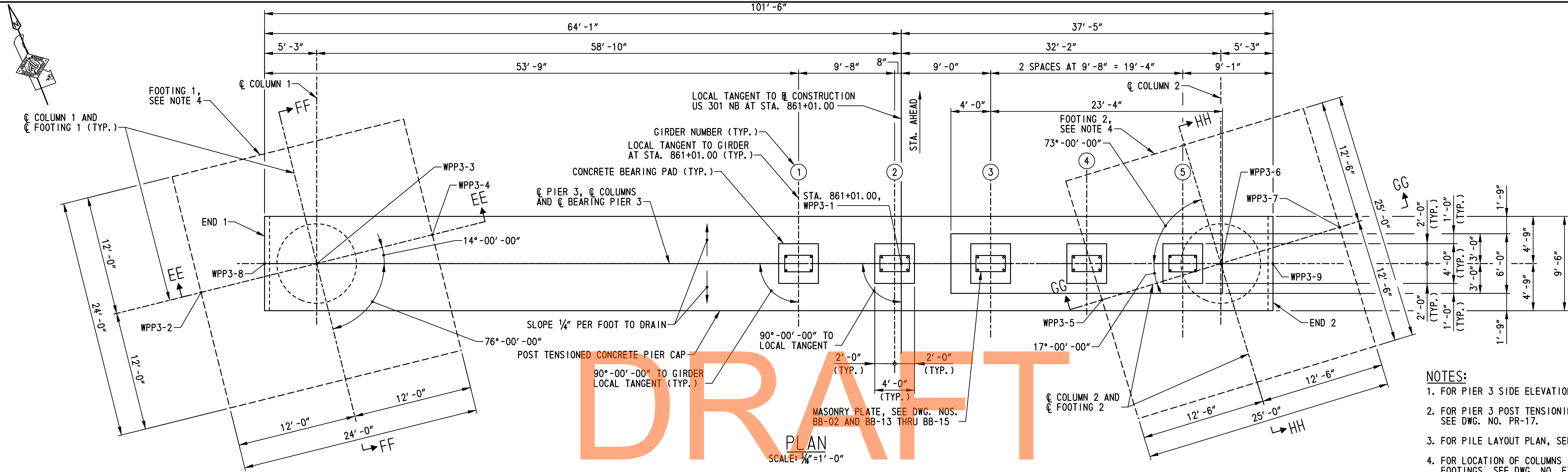
NOTES:

1. FOR ANCHOR BOLT DETAIL, DIMENSIONS AND LOCATIONS, SEE DWG. NOS. BB-01, BB-02, BB-13, BB-14 AND BB-16.
2. ANCHOR BOLTS SHALL BE CAST IN PLACE. A TEMPORARY CASTING TEMPLATE SHALL BE USED TO ENSURE THE ANCHOR BOLTS ARE PROPERLY ALIGNED AND PLUMB. THE TEMPLATE SHALL BE REMOVED AFTER THE CONCRETE HAS SET.
3. SPACE REINFORCING STEEL AS NECESSARY TO CLEAR ANCHOR BOLTS.

NOTE:

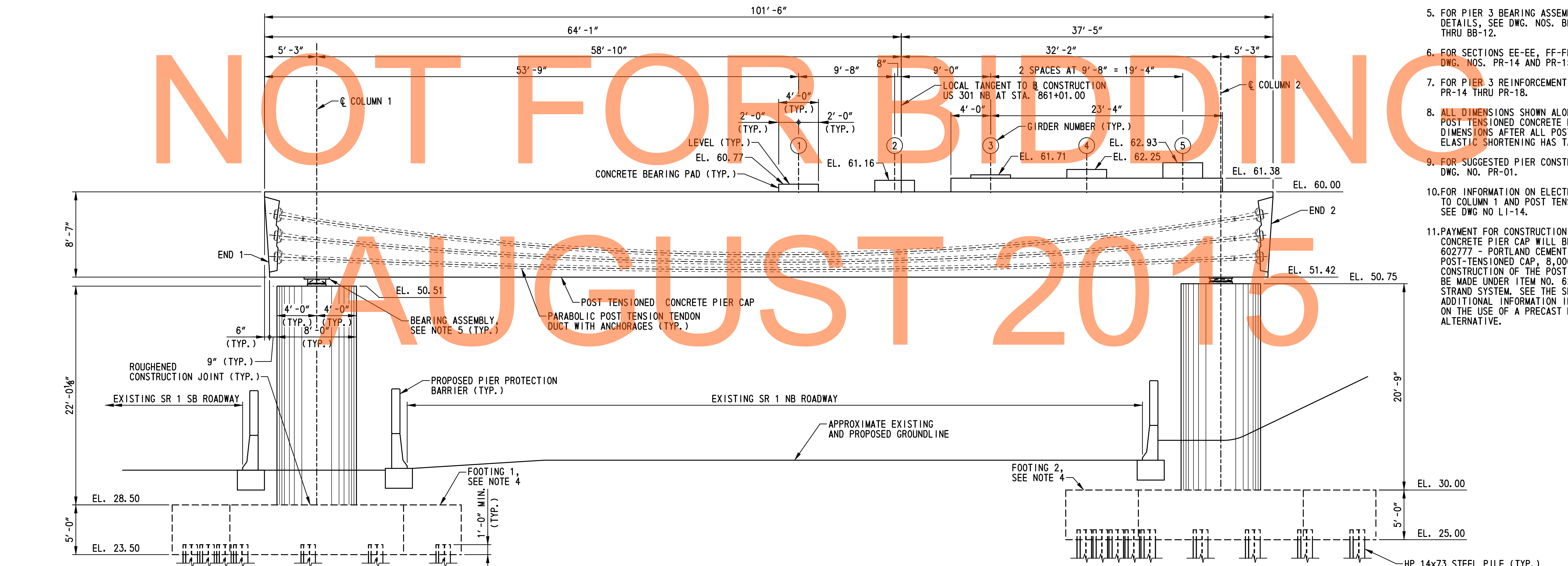
FOR ADDITIONAL REINFORCEMENT DETAILS, SEE DWG. NO. PR-10.

M:\31653\000\Contract\IB\CADD\Bridges\Br-10433\PR11_bri-433.dgn 2/2/2015 9:45:52 AM



- NOTES:**
1. FOR PIER 3 SIDE ELEVATIONS, SEE DWG. NO. PR-13.
 2. FOR PIER 3 POST TENSIONING DETAILS AND LAYOUT, SEE DWG. NO. PR-17.
 3. FOR PILE LAYOUT PLAN, SEE DWG. NO. PL-02.
 4. FOR LOCATION OF COLUMNS IN RELATION TO THE FOOTINGS, SEE DWG. NO. FT-02.
 5. FOR PIER 3 BEARING ASSEMBLY INFORMATION AND DETAILS, SEE DWG. NOS. BB-01, BB-02 AND BB-08 THRU BB-12.
 6. FOR SECTIONS EE-EE, FF-FF, GG-GG AND HH-HH, SEE DWG. NOS. PR-14 AND PR-15.
 7. FOR PIER 3 REINFORCEMENT DETAILS, SEE DWG NOS. PR-14 THRU PR-18.
 8. ALL DIMENSIONS SHOWN ALONG THE LENGTH OF THE POST TENSIONED CONCRETE PIER CAP ARE FINAL DIMENSIONS AFTER ALL POST TENSIONING AND ELASTIC SHORTENING HAS TAKEN PLACE.
 9. FOR SUGGESTED PIER CONSTRUCTION SEQUENCE, SEE DWG. NO. PR-01.
 10. FOR INFORMATION ON ELECTRICAL CONDUIT ATTACHED TO COLUMN 1 AND POST TENSIONED CONCRETE PIER CAP, SEE DWG NO L1-14.
 11. PAYMENT FOR CONSTRUCTION OF THE POST-TENSIONED CONCRETE PIER CAP WILL BE MADE UNDER ITEM NO. 602777 - PORTLAND CEMENT CONCRETE MASONRY, POST-TENSIONED CAP, 8,000 PSI. PAYMENT FOR CONSTRUCTION OF THE POST-TENSIONING STRANDS WILL BE MADE UNDER ITEM NO. 623514 - POST-TENSIONING STRAND SYSTEM. SEE THE SPECIAL PROVISIONS FOR ADDITIONAL INFORMATION INCLUDING INFORMATION ON THE USE OF A PRECAST POST TENSIONED PIER CAP ALTERNATIVE.

NOT FOR BIDDING



ELEVATION
SCALE: 1/4" = 1'-0"

M:\31653\000\CONTRACT\B\CADD\Bridges\B-No433\PR12_brl-433.dgn
 2/2/2015 10:44:10 AM



ADDENDUMS / REVISIONS	

SCALE: AS SHOWN

US 301 &
SR 1 INTERCHANGE

CONTRACT	BRIDGE NO.	1-433
T200911302	DESIGNED BY:	W.T.R., L.F.E.
COUNTY	CHECKED BY:	W.A.G.
NEW CASTLE		

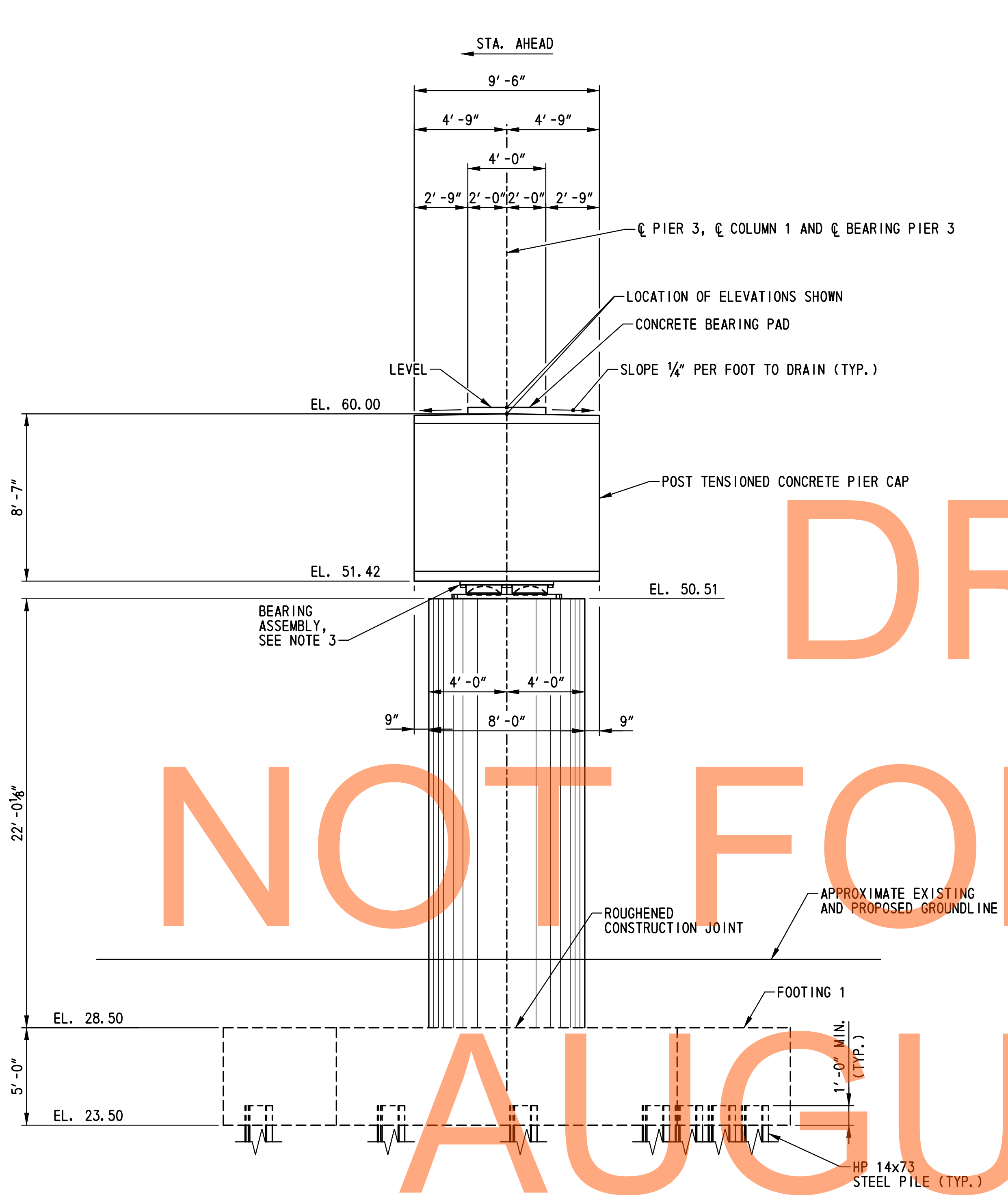
**PIER 3
PLAN AND ELEVATION**

BR1-3 PR-12
SHEET NO.
237
TOTAL SHTS.
491

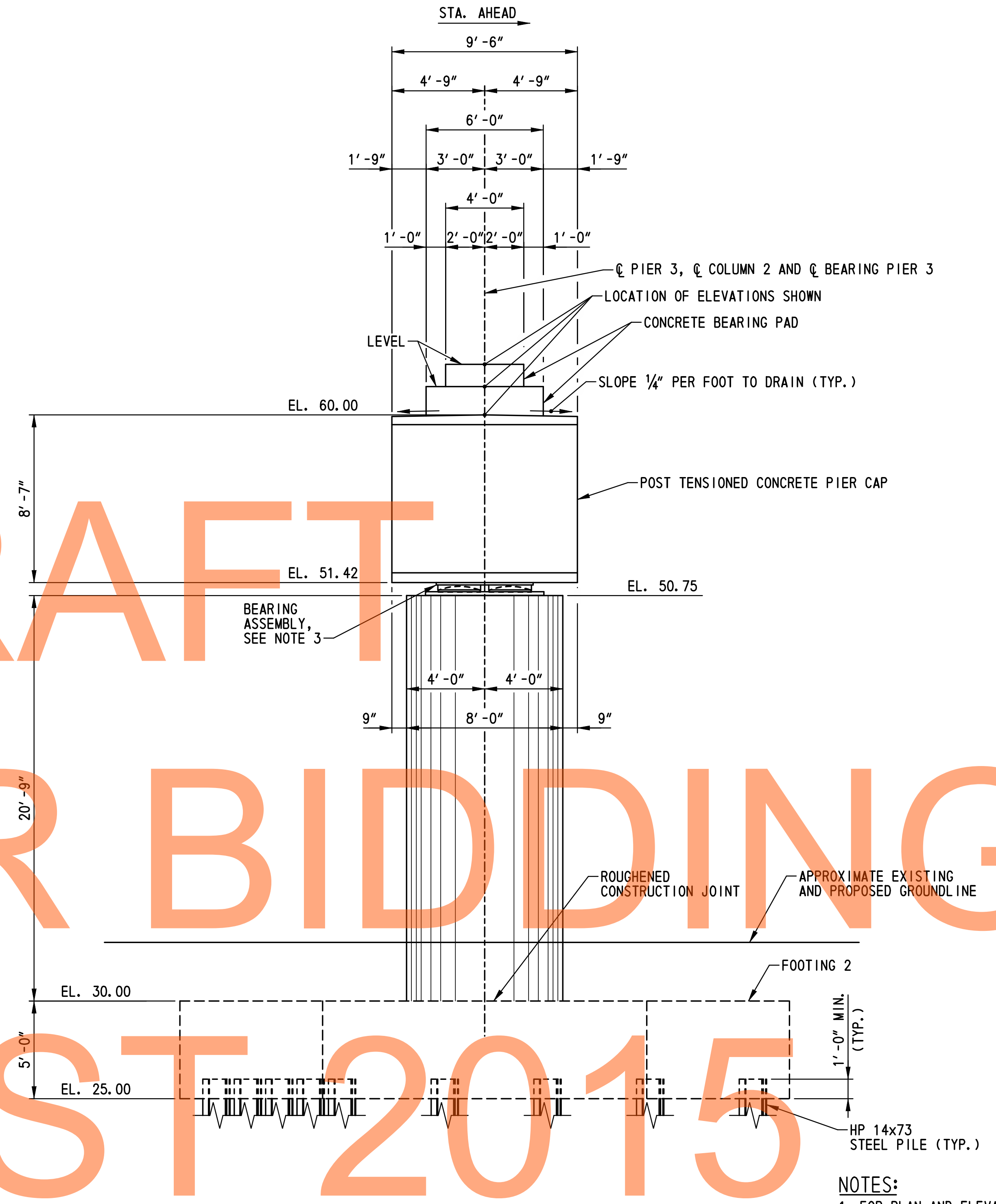
DRAFT

NOT FOR BIDDING

AUGUST 2015



SIDE ELEVATION - COLUMN 1, FOOTING 1
SCALE: 1/4"=1'-0"



SIDE ELEVATION - COLUMN 2, FOOTING 2
SCALE: 1/4"=1'-0"

- NOTES:
1. FOR PLAN AND ELEVATION, SEE DWG. NO. PR-12.
 2. FOR PILE LAYOUT PLAN, SEE DWG. NO. PL-02.
 3. FOR PIER 3 BEARING ASSEMBLY INFORMATION AND DETAILS, SEE DWG. NOS. BB-01, BB-02 AND BB-08 THRU BB-12.
 4. FOR PIER 3 REINFORCEMENT DETAILS, SEE DWG. NO. PR-14 THRU PR-18.
 5. FOR SUGGESTED CONSTRUCTION SEQUENCE, SEE DWG. NO. PR-01.
 6. PAYMENT FOR CONSTRUCTION OF THE POST-TENSIONED CONCRETE PIER CAP WILL BE MADE UNDER ITEM NO. 602777 - PORTLAND CEMENT CONCRETE MASONRY, POST-TENSIONED CAP, 8,000 PSI. PAYMENT FOR CONSTRUCTION OF THE POST-TENSIONING STRANDS WILL BE MADE UNDER ITEM NO. 623514 - POST-TENSIONING STRAND SYSTEM. SEE THE SPECIAL PROVISIONS FOR ADDITIONAL INFORMATION INCLUDING INFORMATION ON THE USE OF A PRECAST POST TENSIONED PIER CAP ALTERNATIVE.

M:\31653\000\CONTRACT 18\ACADD\Bridges\B-1\No433\PR13_brl-433.dgn
 5/27/2015 10:55:05 AM



ADDENDUMS / REVISIONS	

SCALE: AS SHOWN

US 301 &
SR 1 INTERCHANGE

CONTRACT	BRIDGE NO.	1-433
T200911302	DESIGNED BY:	W.T.R., L.F.E.
COUNTY	CHECKED BY:	W.A.G.
NEW CASTLE		

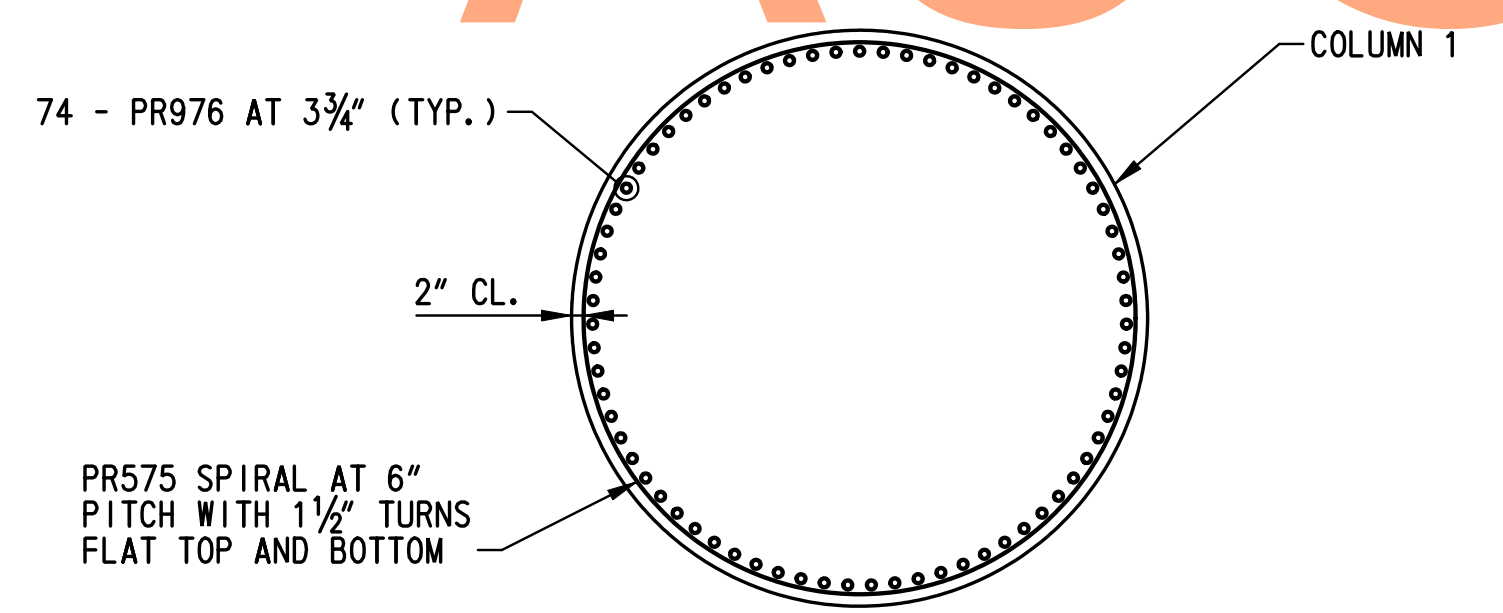
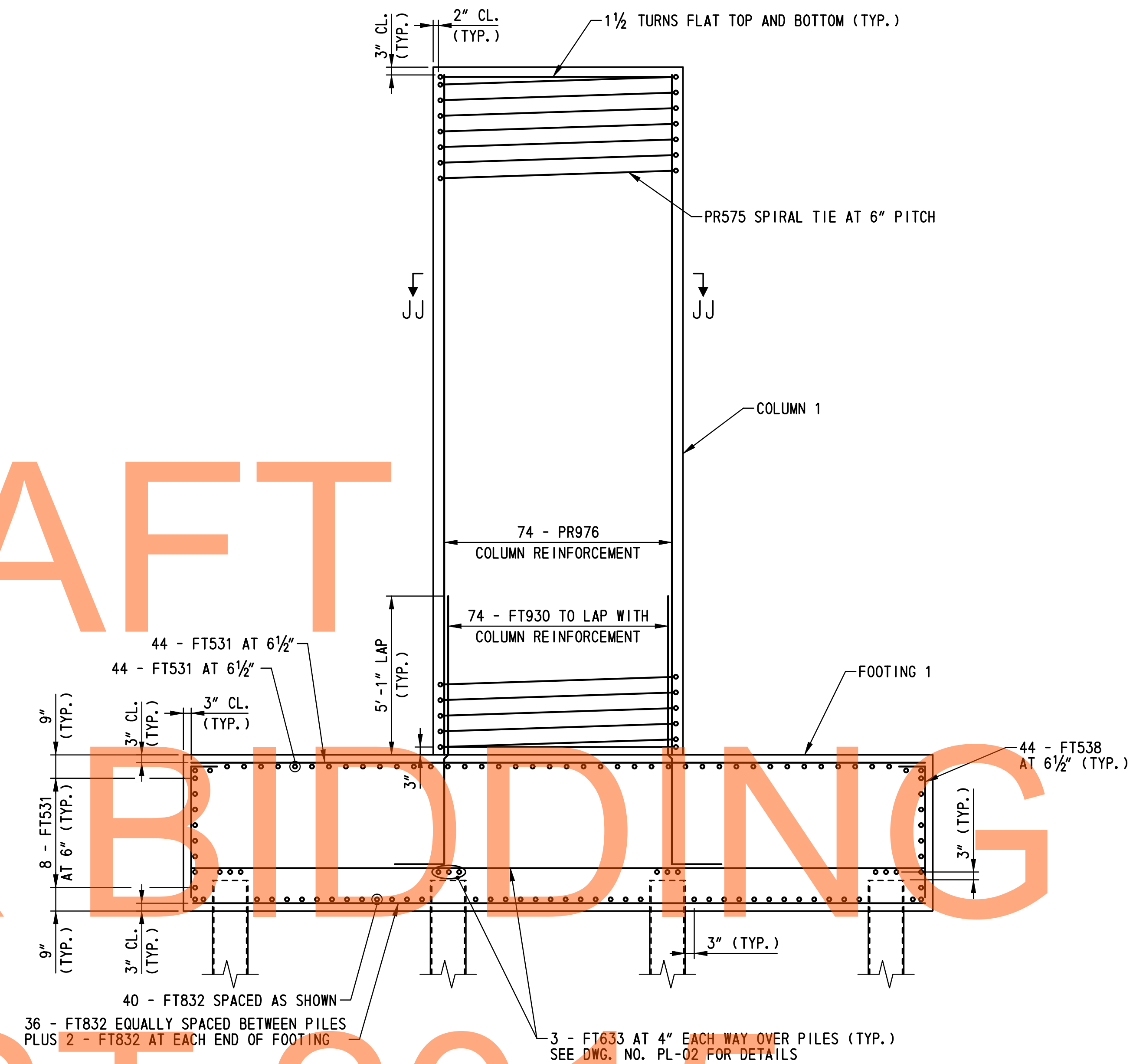
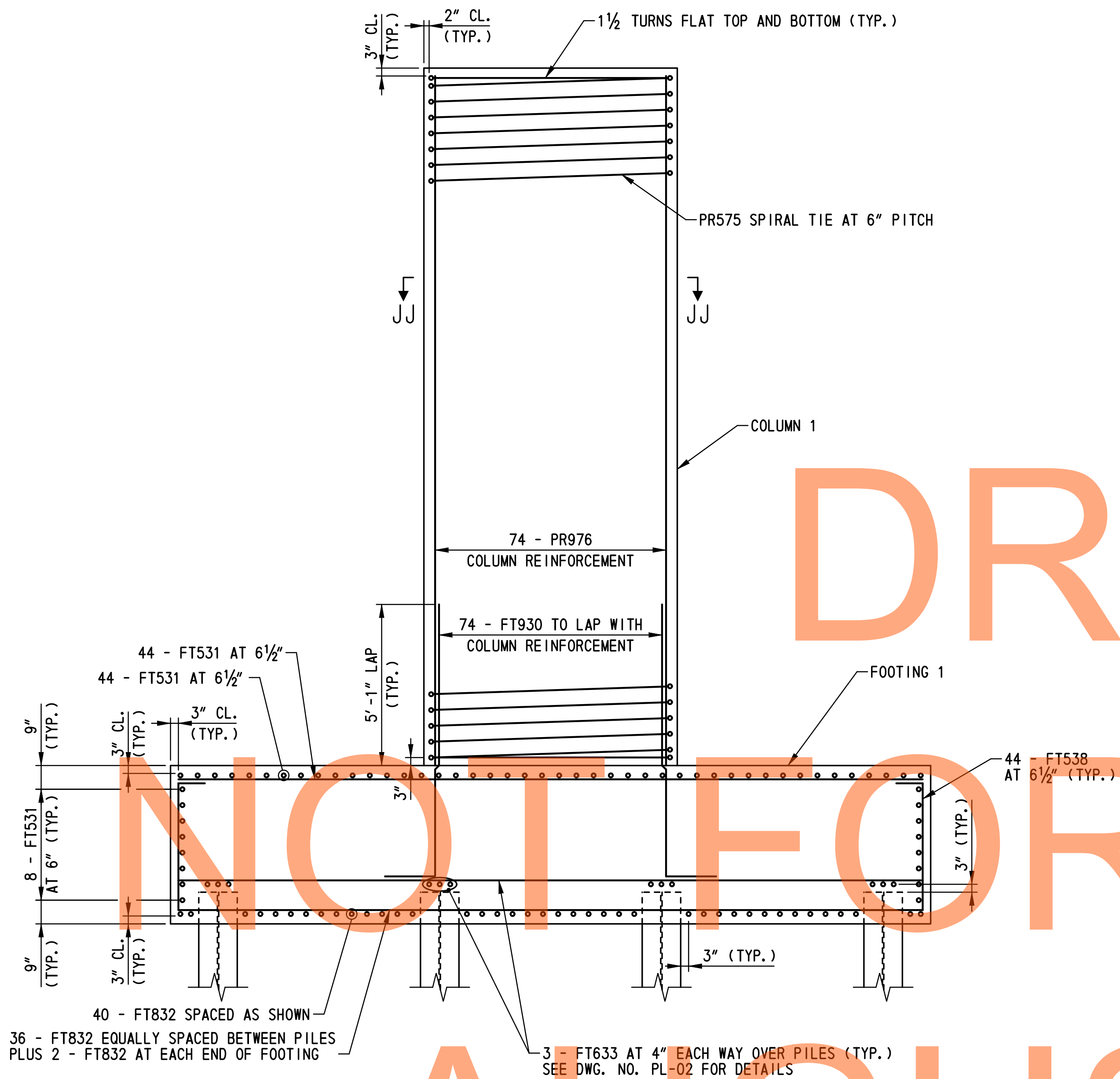
PIER 3
SIDE ELEVATIONS

BRI-3 PR-13
SHEET NO.
238
TOTAL SHTS.
491

DRAFT

NOT FOR BIDDING

AUGUST 2015



- NOTES:**
- FOR LOCATION OF SECTIONS EE-EE AND FF-FF, SEE DWG. NO. PR-12.
 - FOR ADDITIONAL REINFORCEMENT DETAILS, SEE DWG. NO. PR-15 THRU PR-18.

M:\31653\000\Contract\IB\CADD\Bridges\BR_No433\PR14_brf1-433.dgn
 2/2/2015 9:44:15 AM



ADDENDUMS / REVISIONS	

SCALE: AS SHOWN

US 301 &
SR 1 INTERCHANGE

CONTRACT	BRIDGE NO.	1-433
T200911302	DESIGNED BY:	B.K.B.
COUNTY	CHECKED BY:	W.A.G.
NEW CASTLE		

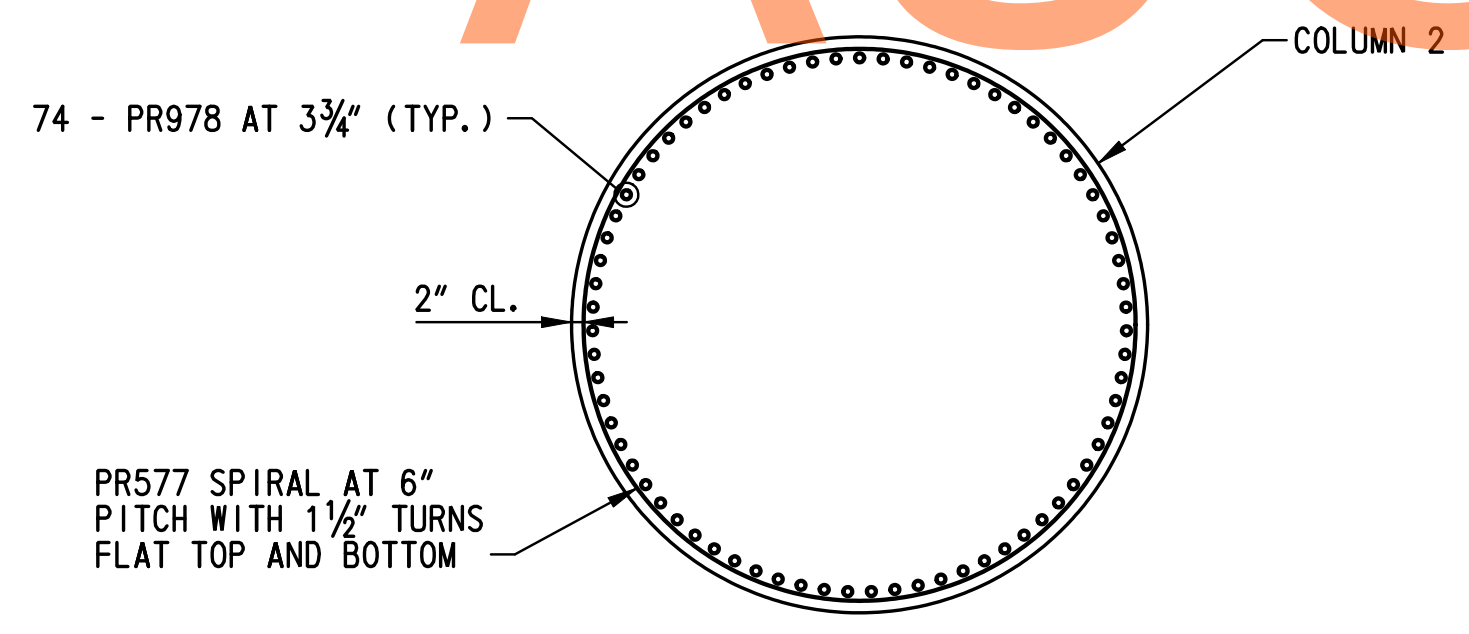
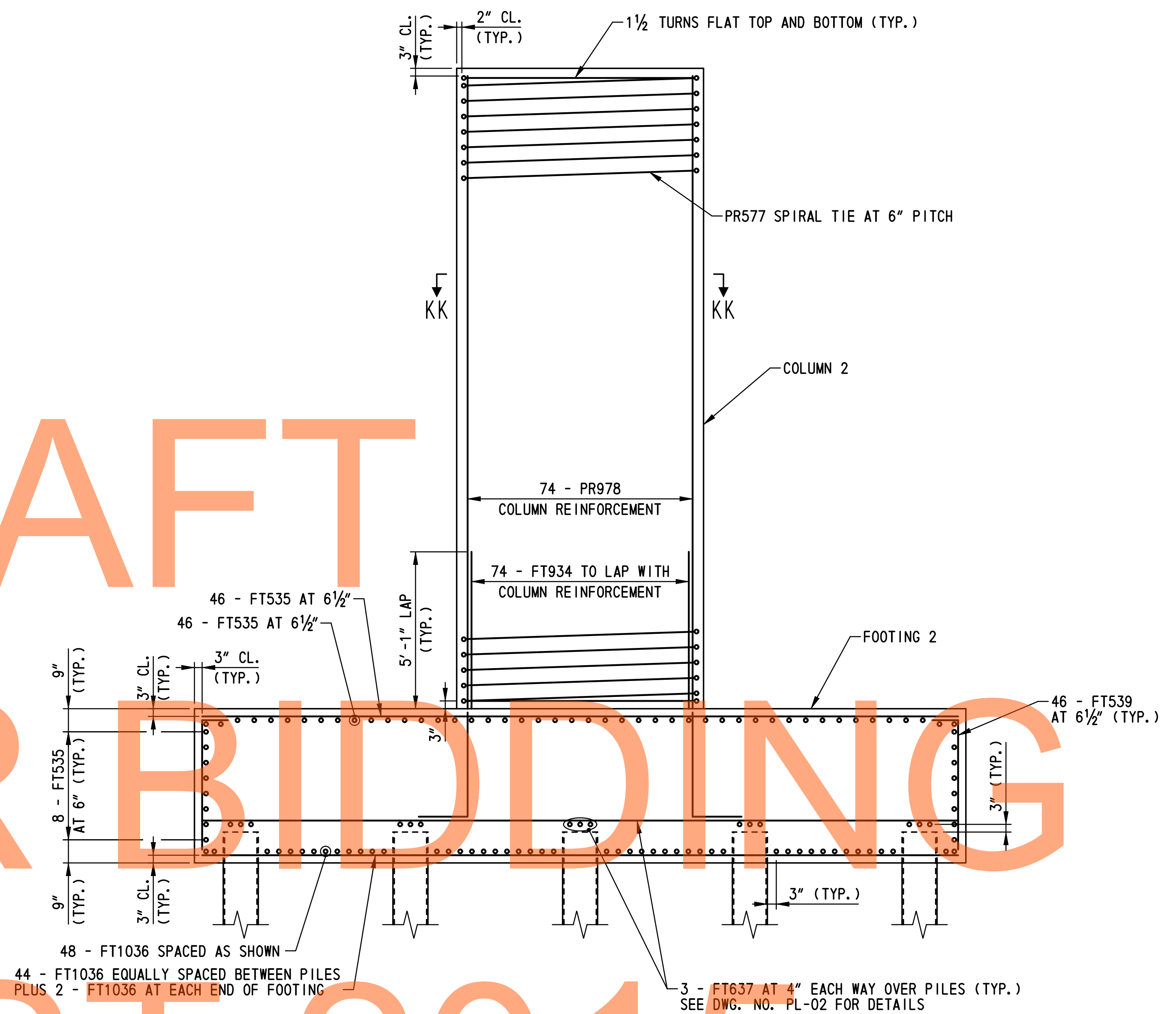
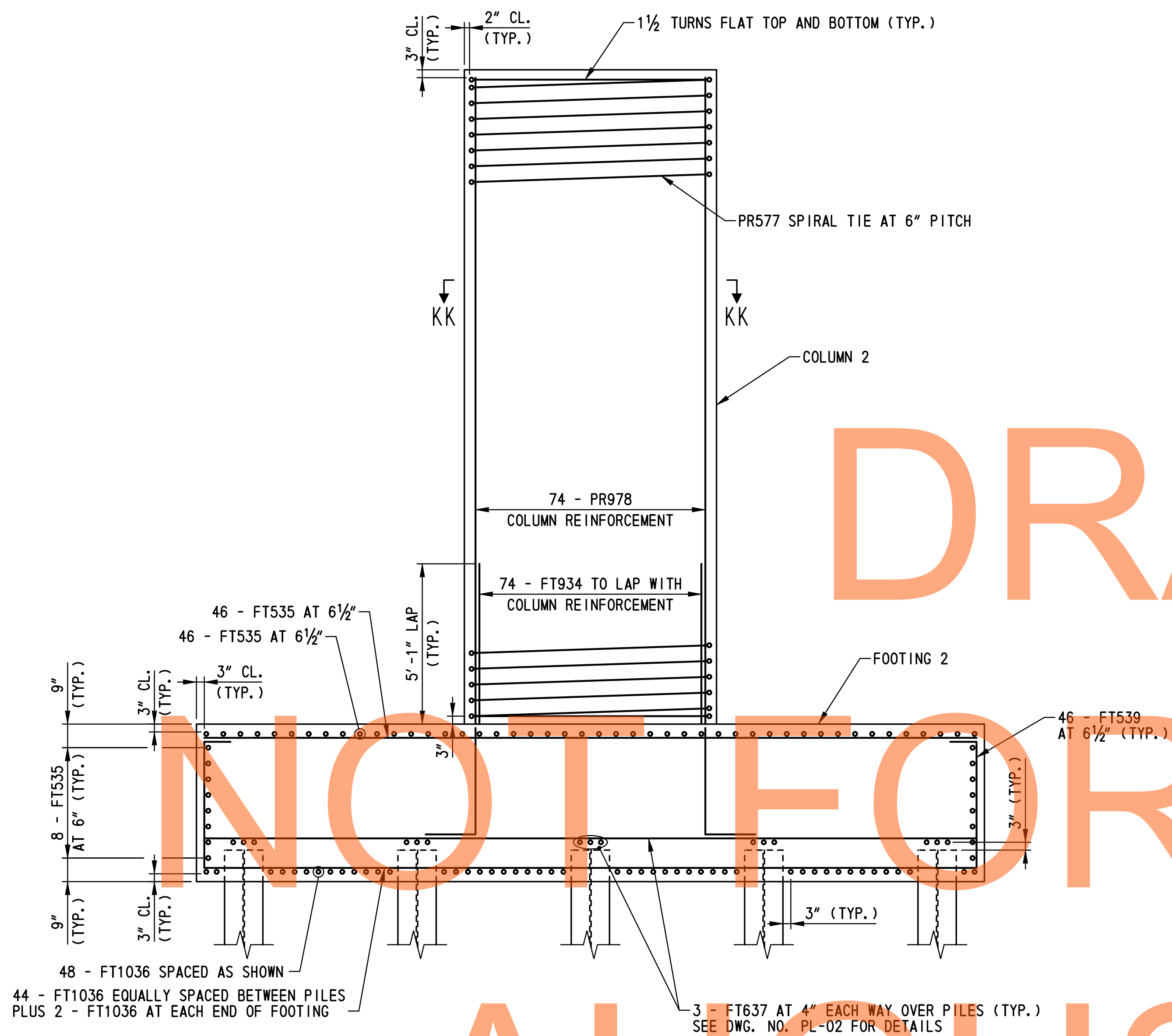
PIER 3
REINFORCEMENT
DETAILS - 1

BR1-3 PR-14
SHEET NO.
239
TOTAL SHTS.
491

DRAFT

NOT FOR BIDDING

AUGUST 2015



- NOTES:**
- FOR LOCATION OF SECTIONS GG-GG AND HH-HH, SEE DWG. NO. PR-12.
 - FOR ADDITIONAL REINFORCEMENT DETAILS, SEE DWG. NOS. PR-14, PR-16 AND PR-18.

M:\31653\000\Contract\IB\CADD\Bridges\BR_No433\PR15_brl-433.dgn
 2/2/2015 9:45:19 AM



ADDENDUMS / REVISIONS

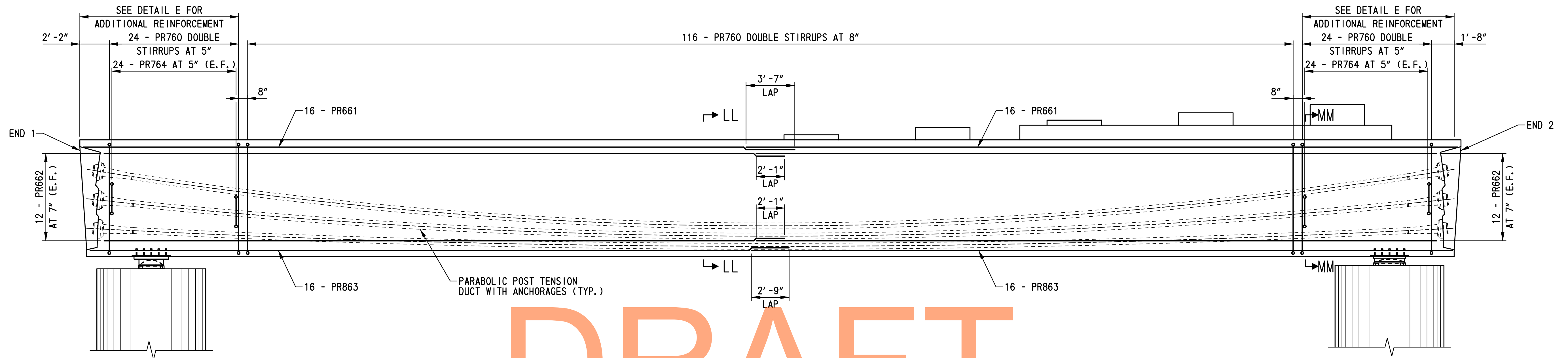
SCALE: AS SHOWN

US 301 &
SR 1 INTERCHANGE

CONTRACT	BRIDGE NO.	1-433
T200911302	DESIGNED BY:	B.K.B.
COUNTY	CHECKED BY:	W.A.G.
NEW CASTLE		

PIER 3
REINFORCEMENT
DETAILS - 2

BR1-3 PR-15
SHEET NO.
240
TOTAL SHTS.
491

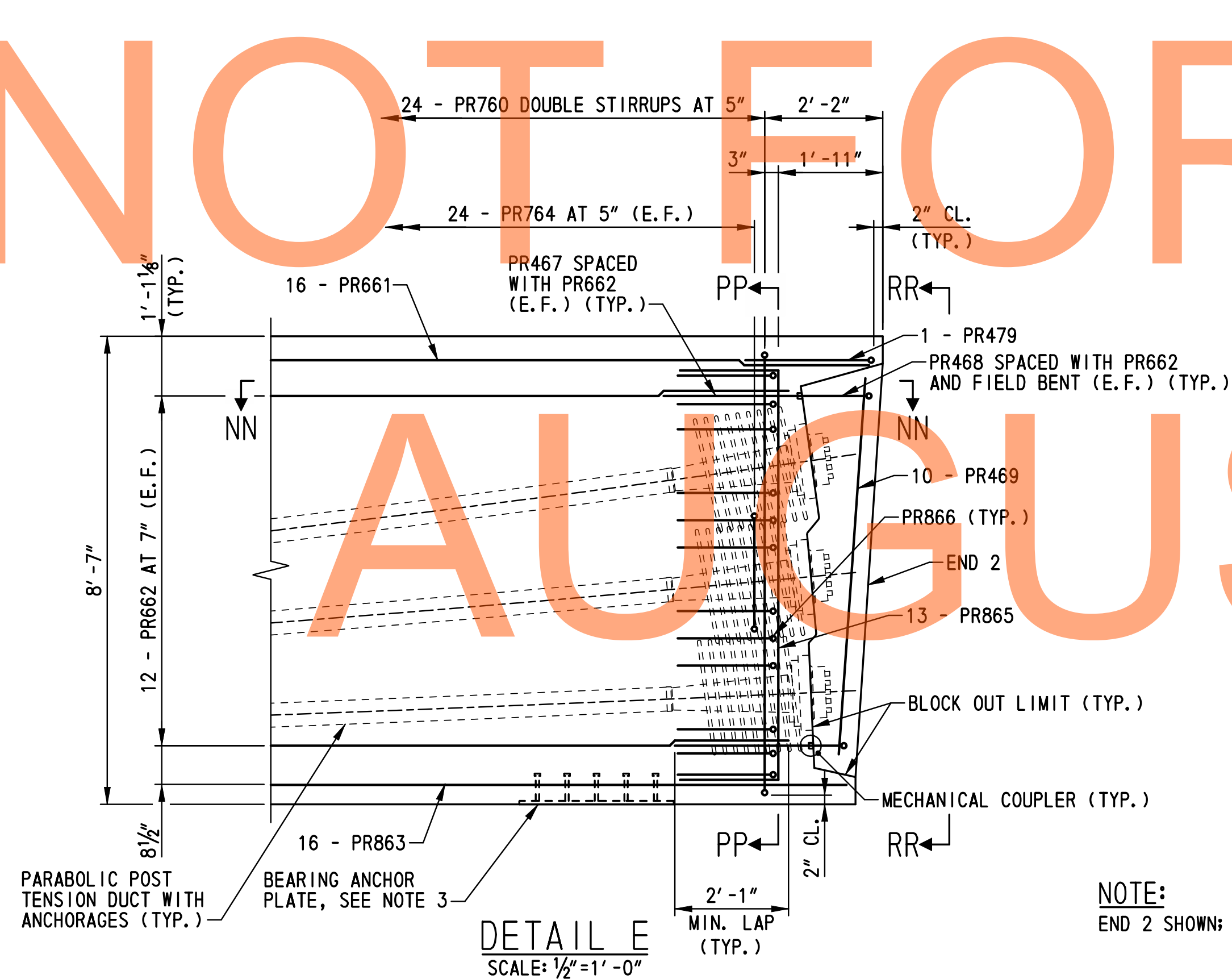


DRAFT

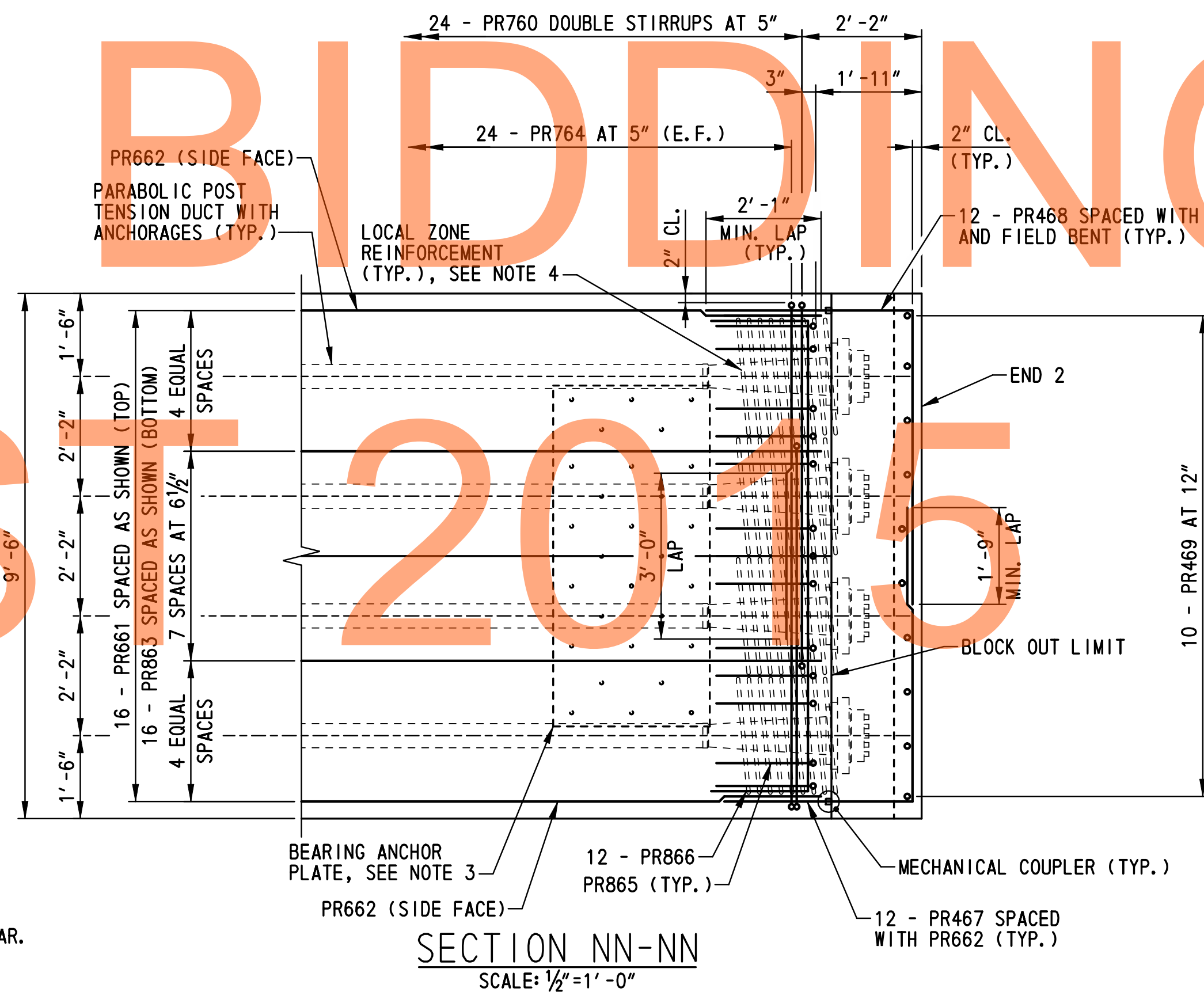
PIER CAP REINFORCEMENT ELEVATION

SCALE: 1/4" = 1' - 0"

NOT FOR BIDDING



NOTE:
END 2 SHOWN; END 1 SIMILAR.



- NOTES:**
- FOR SECTIONS LL-LL, MM-MM AND PP-PP AND VIEW RR-RR, SEE DWG. NO. PR-17.
 - FOR ADDITIONAL REINFORCEMENT DETAILS, SEE DWG. NOS. PR-14, PR-15, PR-17 AND PR-18.
 - THE BEARING ANCHOR PLATE IS A COMPONENT OF THE BEARING ASSEMBLY. THE POST TENSIONED CONCRETE PIER CAP SHALL BE CONSTRUCTED AROUND THE BEARING ANCHOR PLATE. FOR SUGGESTED PIER CONSTRUCTION SEQUENCE, SEE DWG. NO. PR-01. FOR PIER 3 BEARING ASSEMBLY INFORMATION AND DETAILS, SEE DWG. NOS. BB-01, BB-02 AND BB-08 THRU BB-12.
 - LOCAL ZONE REINFORCEMENT SHALL BE DESIGNED BY POST TENSIONING SYSTEM SUPPLIER. ALL WORK SHALL BE INCIDENTAL TO ITEM 623514 - POST-TENSIONING STRAND SYSTEM.
 - FOR POST-TENSIONING SYSTEM DETAILS INCLUDING DUCT TYPE, MATERIALS AND OTHER COMPONENTS, SEE SPECIAL PROVISION ITEM 623514 - POST-TENSIONING STRAND SYSTEM.

M:\71653\000\CONTRACT_IB\CADD\Bridg\BR_No433\PR16_bri-433.dgn
 5/7/2015 3:55:50 PM



ADDENDUMS / REVISIONS	

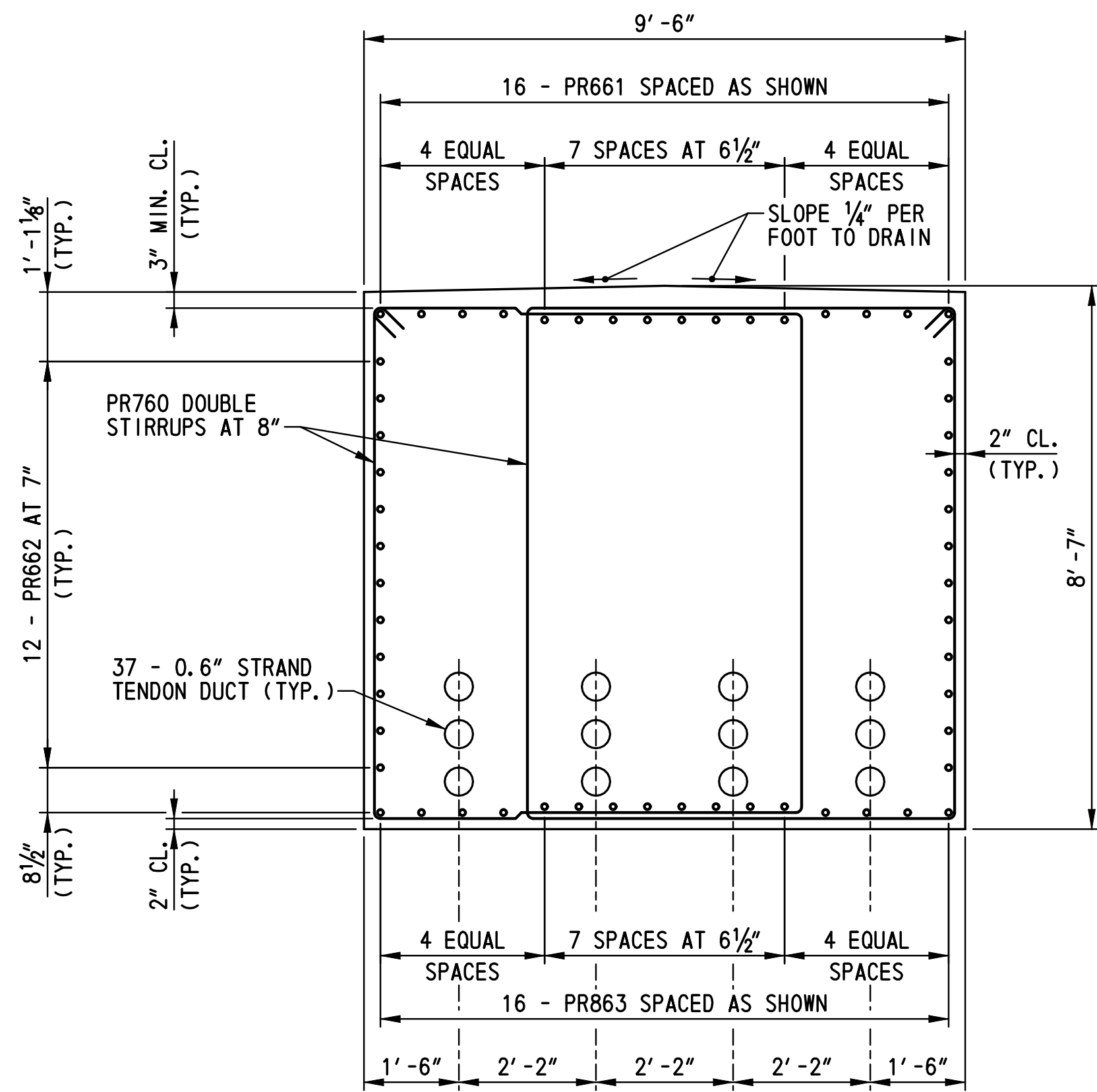
SCALE: AS SHOWN

**US 301 &
SR 1 INTERCHANGE**

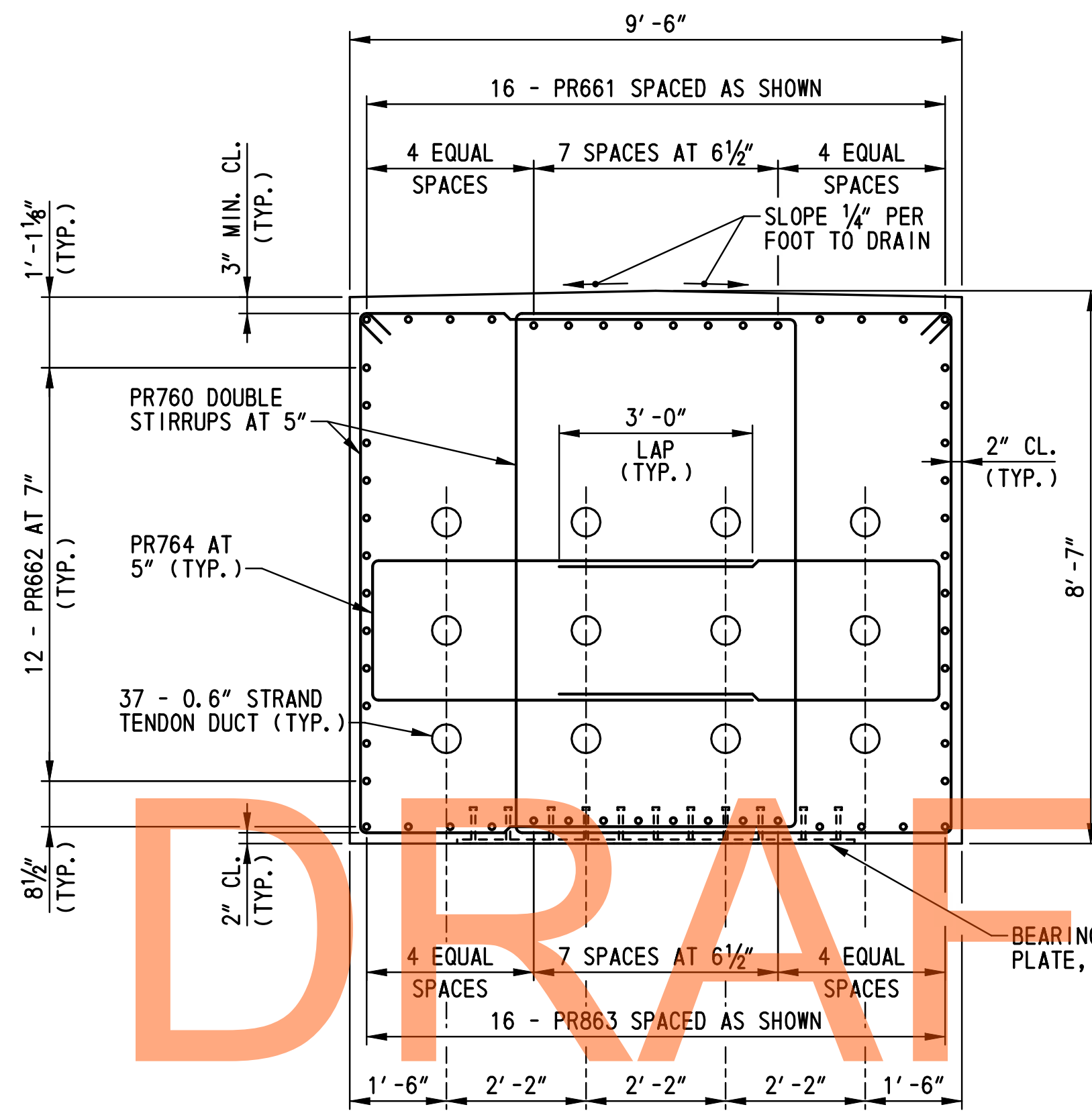
CONTRACT	BRIDGE NO.	1-433
T200911302	DESIGNED BY:	B.K.B., L.F.E.
COUNTY	CHECKED BY:	W.A.G.
NEW CASTLE		

**PIER 3
REINFORCEMENT
DETAILS - 3**

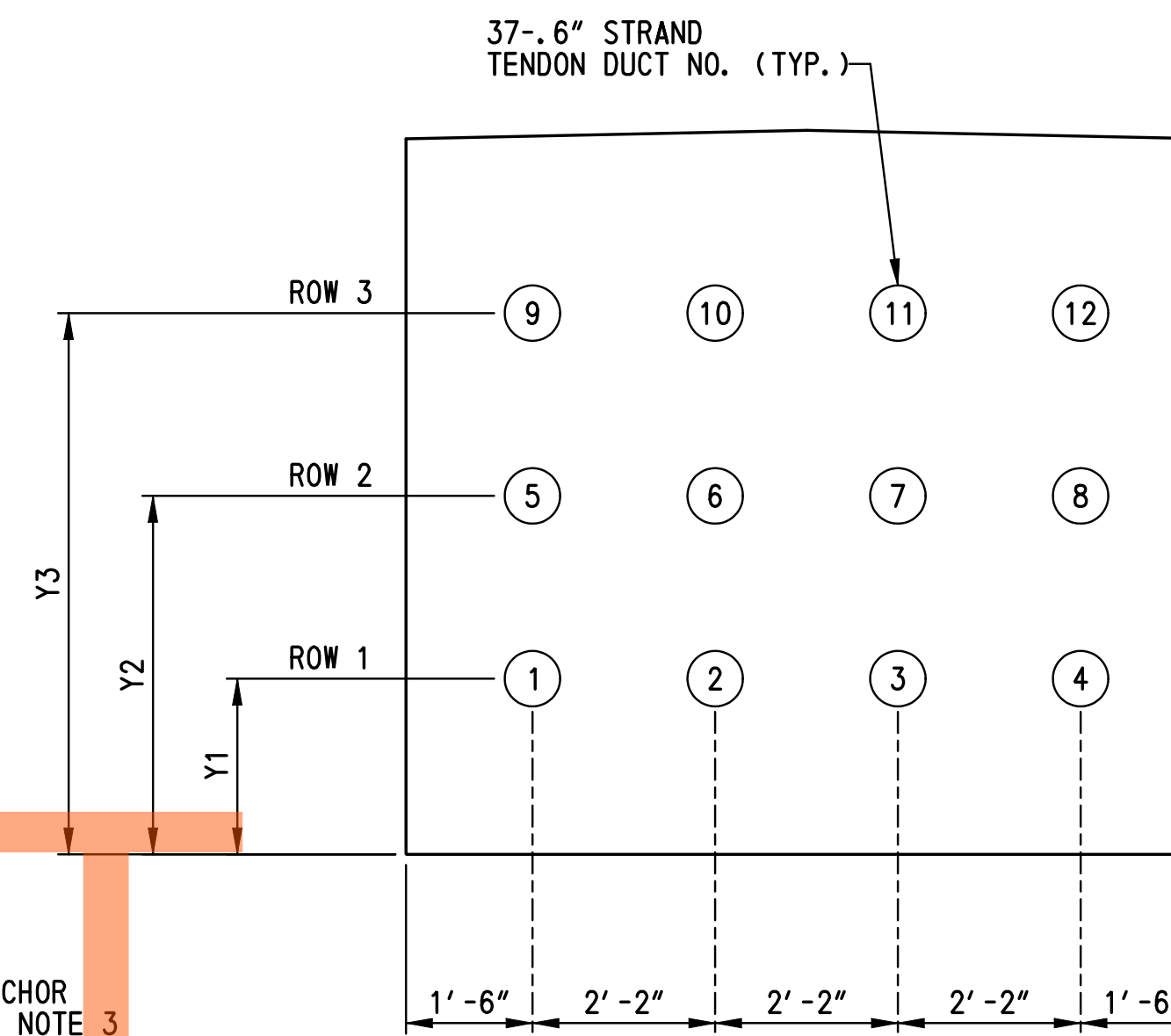
BR-3 PR-16
SHEET NO.
TOTAL SHTS.
491



SECTION LL-LL
SCALE: 1/2" = 1'-0"



SECTION MM-MM
SCALE: 1/2" = 1'-0"



DUCT/TENDON LAYOUT
SCALE: 1/2" = 1'-0"

TENDON STRESSING SEQUENCE:

1. STAGE 1 POST TENSIONING STRESSING WHEN CONCRETE HAS ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 6,000 PSI AND PRIOR TO REMOVAL OF FALSEWORK SHALL BE COMPLETED IN THE FOLLOWING ORDER:

- A. TENDONS 1 AND 3 SIMULTANEOUSLY (END 1 STRESSED)
- B. TENDONS 2 AND 4 SIMULTANEOUSLY (END 1 STRESSED)
- C. TENDONS 5 AND 7 SIMULTANEOUSLY (END 2 STRESSED)
- D. TENDONS 6 AND 8 SIMULTANEOUSLY (END 2 STRESSED)
- E. TENDONS 9 AND 11 SIMULTANEOUSLY (END 1 STRESSED)
- F. TENDONS 10 AND 12 SIMULTANEOUSLY (END 1 STRESSED)

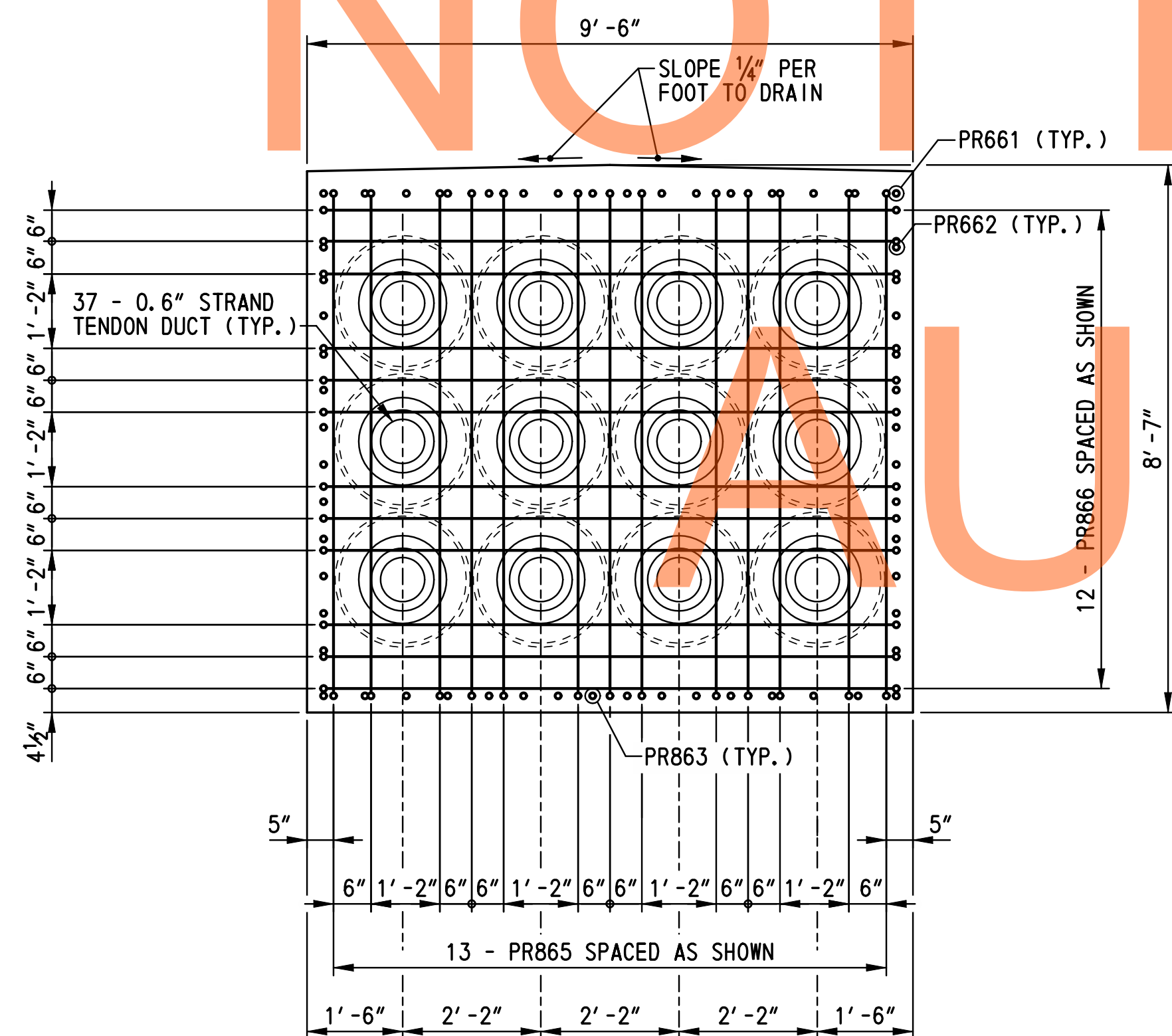
2. STAGE 2 POST TENSIONING STRESSING AFTER THE STEEL SUPERSTRUCTURE HAS BEEN ERECTED AND BEFORE APPLYING ANY LIVE LOAD ON THE BRIDGE WHEN CONCRETE HAS ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 8,000 PSI SHALL BE COMPLETED IN THE FOLLOWING ORDER:

- A. TENDONS 9 AND 11 SIMULTANEOUSLY (END 1 STRESSED)
- B. TENDONS 10 AND 12 SIMULTANEOUSLY (END 1 STRESSED)

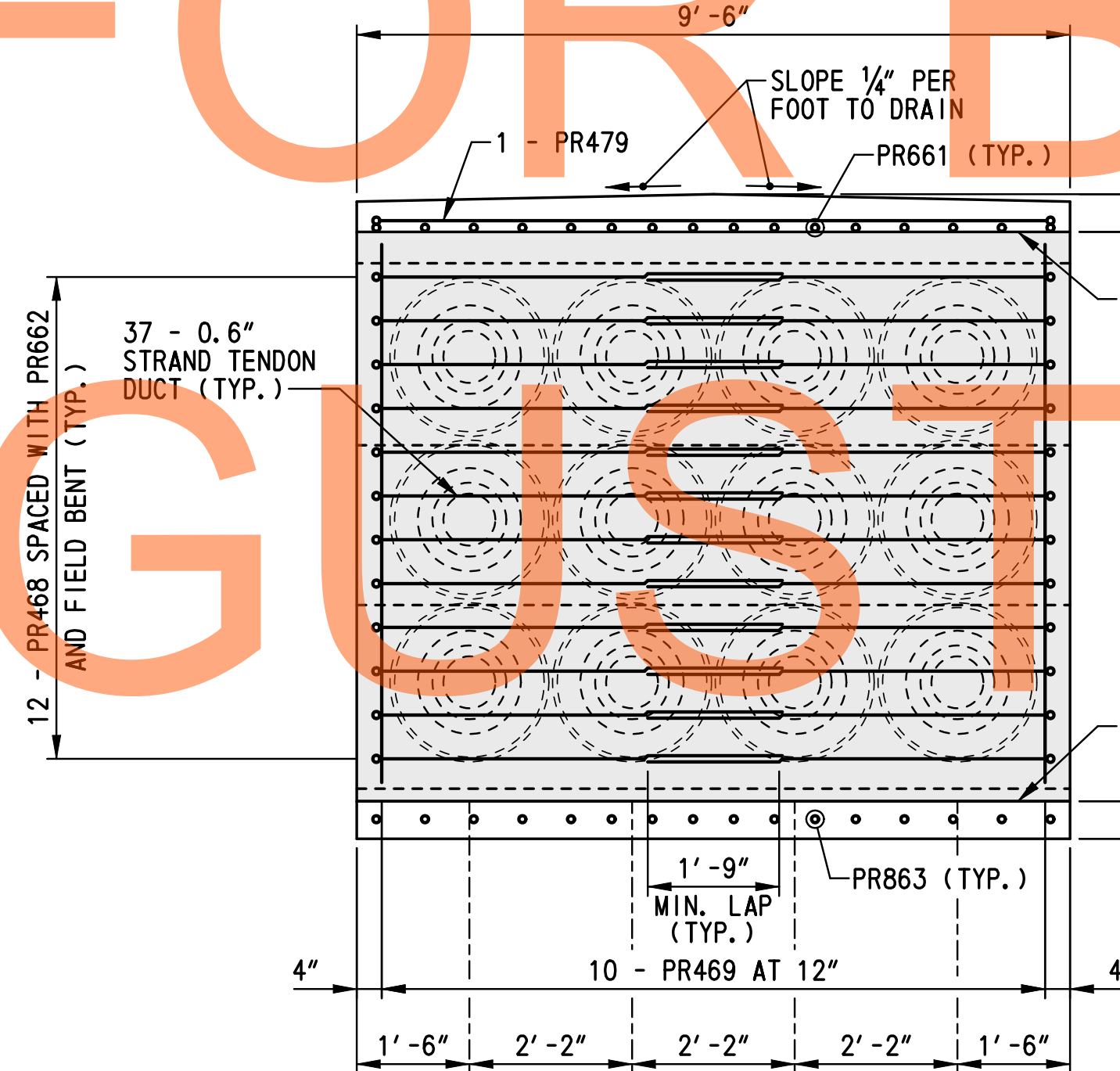
NOTES:

- 1. FOR ADDITIONAL REINFORCEMENT DETAILS, SEE DWG. NOS. PR-14 THRU PR-16 AND PR-18.
- 2. FOR LOCATION OF SECTIONS LL-LL, MM-MM AND PP-PP AND VIEW RR-RR, SEE DWG. NO. PR-16.
- 3. THE BEARING ANCHOR PLATE IS A COMPONENT OF THE BEARING ASSEMBLY. THE POST TENSIONED CONCRETE PIER CAP SHALL BE CONSTRUCTED AROUND THE BEARING ANCHOR PLATE. FOR SUGGESTED PIER CONSTRUCTION SEQUENCE, SEE DWG. NO. PR-01. FOR PIER 3 BEARING ASSEMBLY INFORMATION AND DETAILS, SEE DWG. NOS. BB-01, BB-02 AND BB-08 THRU BB-12.
- 4. LOCAL ZONE REINFORCEMENT SHALL BE DESIGNED BY POST TENSIONING SYSTEM SUPPLIER. ALL WORK SHALL BE INCIDENTAL TO ITEM 623514 - POST-TENSIONING STRAND SYSTEM.

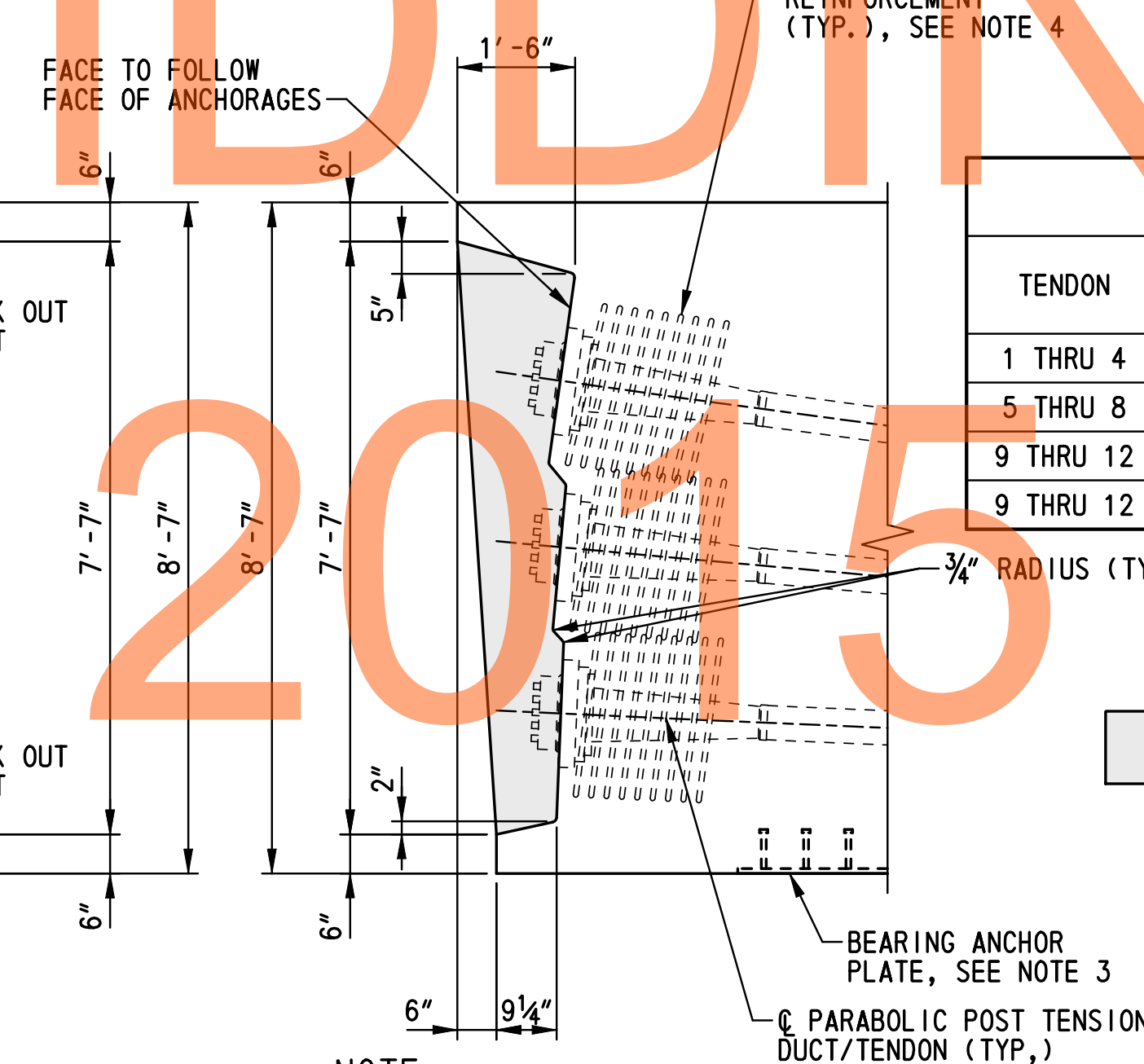
NOT FOR BIDDING



SECTION PP-PP
SCALE: 1/2" = 1'-0"



VIEW RR-RR
SCALE: 1/2" = 1'-0"



NOTE:
DIMENSIONS SHOWN ARE MEASURED ALONG C/P PIER CAP.

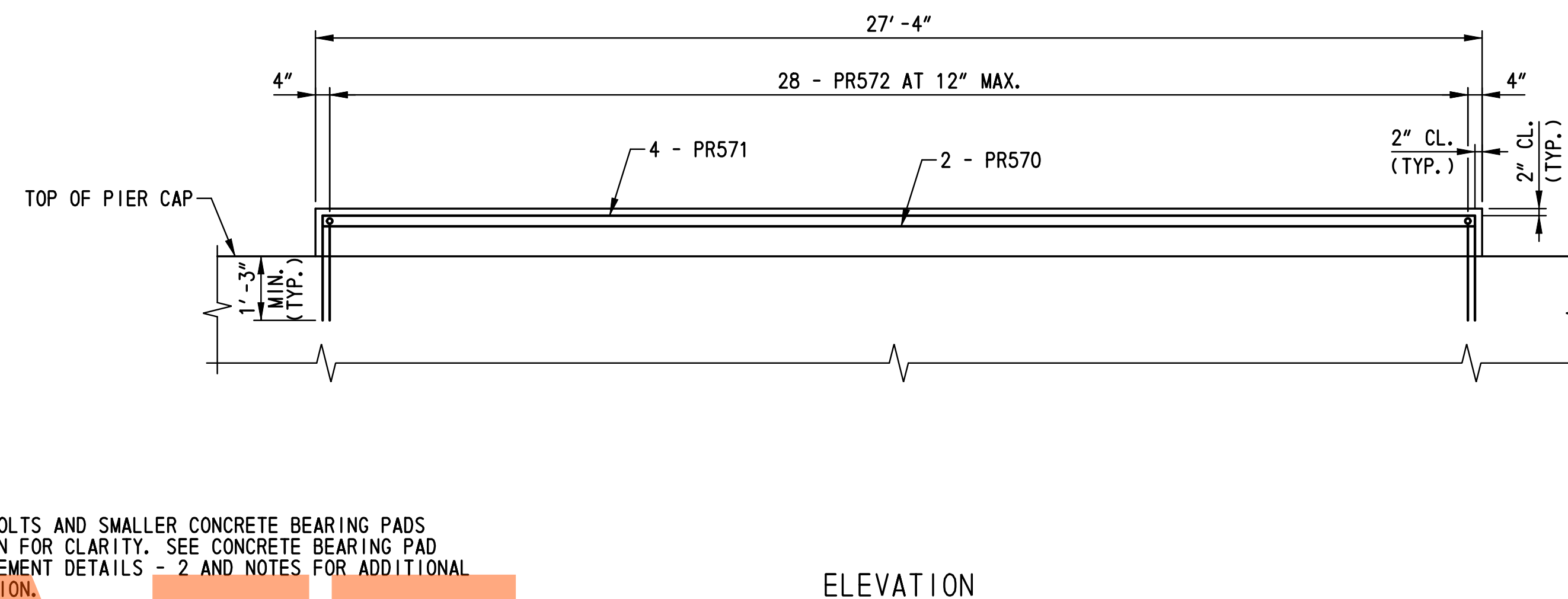
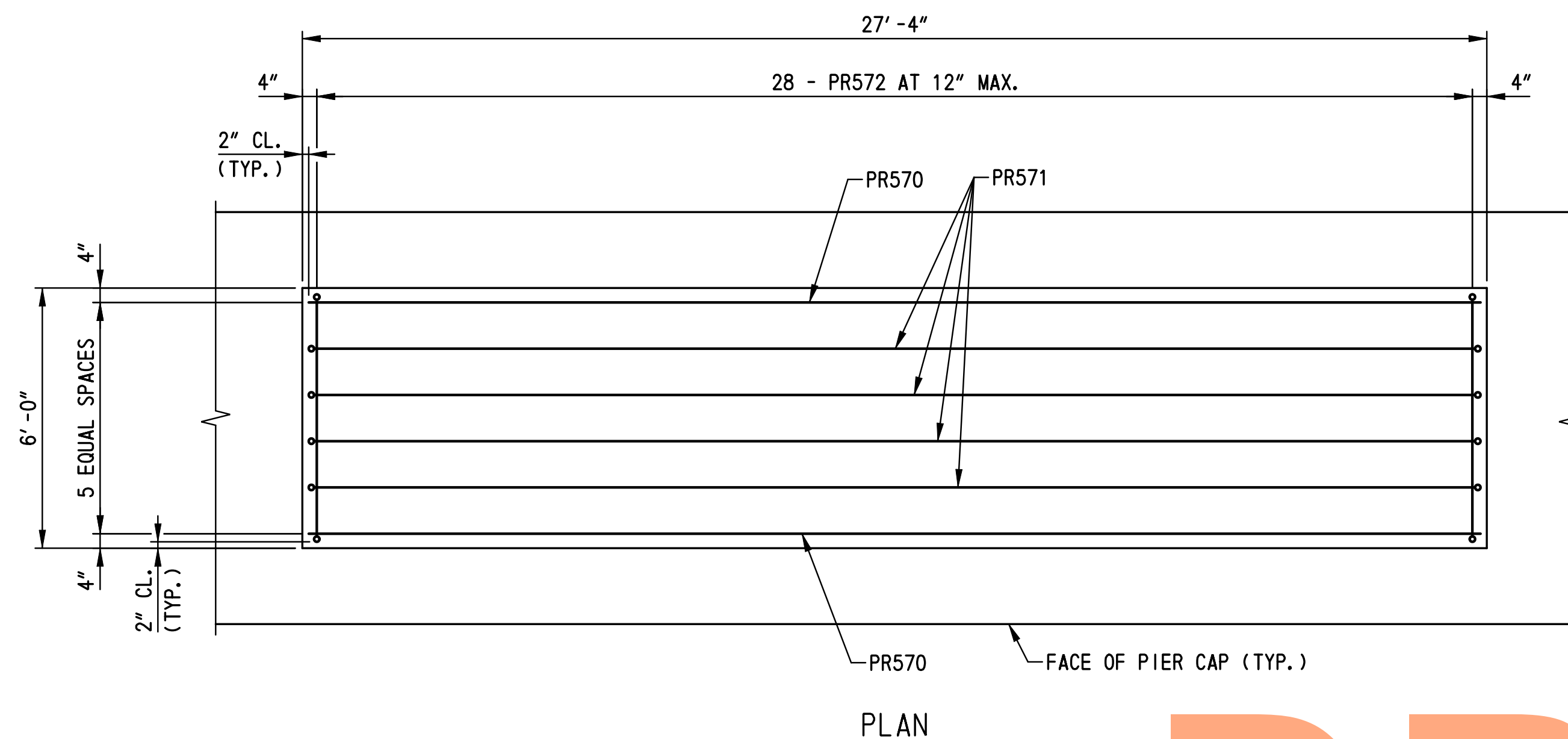
BLOCK OUT DETAIL
SCALE: 1/2" = 1'-0"

TENDON DUCT LAYOUT			
LOCATION	Y1	Y2	Y3
END	2'-1"	4'-3"	6'-5"
QUARTERSPAN	1'-11"	2'-2 1/4"	3'-3 1/2"
MIDSPAN	9'	1'-6"	2'-3"

TENDON DUCT SCHEDULE					
TENDON	STRAND DIAMETER	NUMBER OF STRAND PER TENDON	JACKING FORCE PER TENDON		POST TENSION STAGE
			END 1	END 2	
1 THRU 4	0.6"	37	1626 K	-	1
5 THRU 8	0.6"	37	-	1626 K	1
9 THRU 12	0.6"	37	976 K	-	1
9 THRU 12	0.6"	37	1626 K	-	2

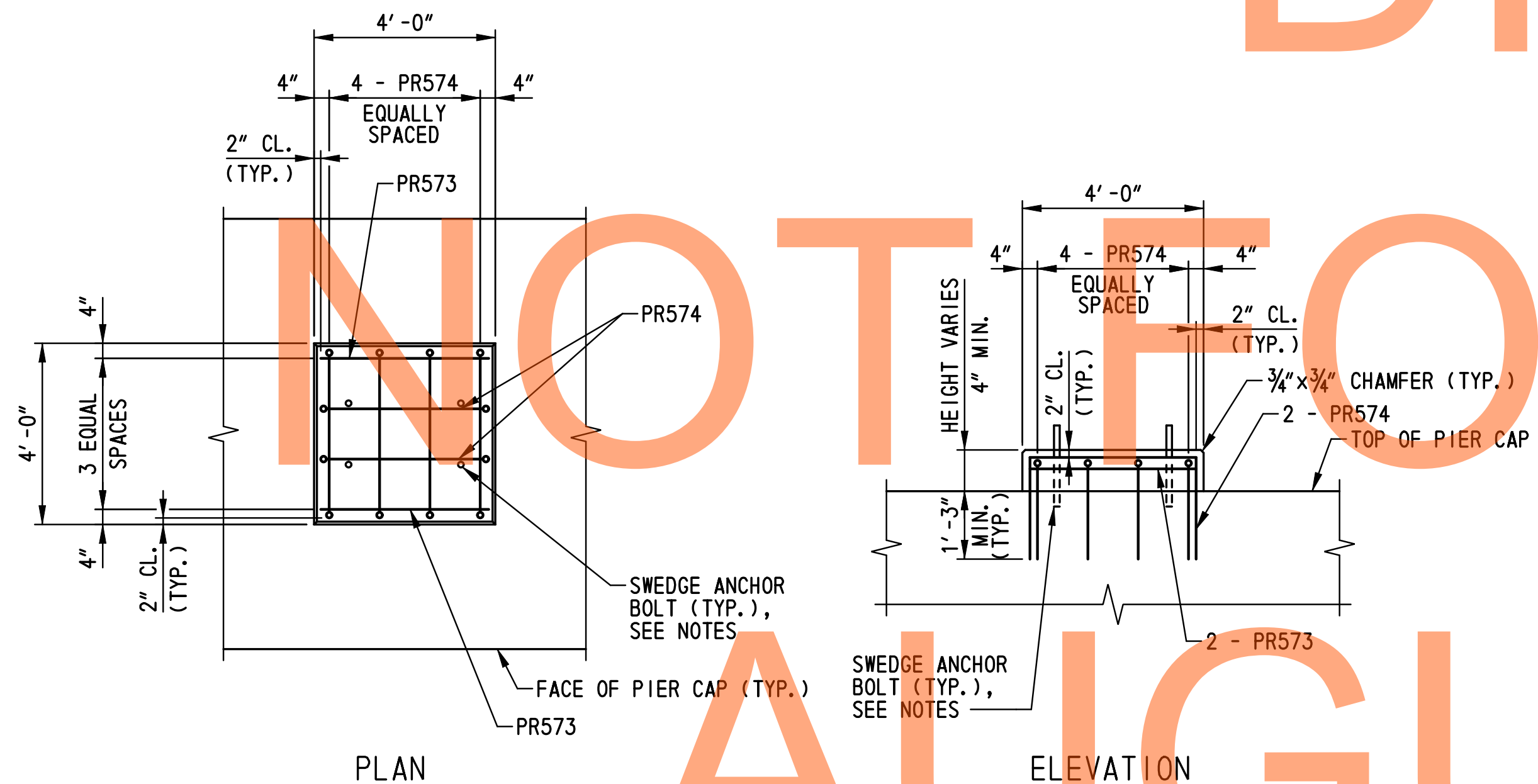
AREA SHOWN TO BE BLOCKED OUT, FILLED WITH NONSHRINK GROUT AND COATED WITH METHACRYLATE SEALER AFTER COMPLETION OF STAGE 2 POST TENSIONING. THE CONTRACTOR SHALL SUBMIT THE NONSHRINK GROUT MIX DESIGN TO THE ENGINEER FOR APPROVAL. GROUT SHALL BE PUMPED BY MEANS OF INJECTION PIPES FROM THE BOTTOM OF THE BLOCK OUT. NONSHRINK GROUT SHALL BE INCIDENTAL TO ITEM 623514 - POST-TENSIONING STRAND SYSTEM. METHACRYLATE SEALER SHALL BE INCIDENTAL TO ITEM 602777 - PORTLAND CEMENT CONCRETE MASONRY, POST TENSIONED PIER CAP, 8,000 PSI. SEE SPECIAL PROVISIONS.

M:\31653\000\CONTRACT\1B\CADD\Bridg\B-1433\PR17_brl-433.dgn 2/2/2015 12:00:50 PM



NOTE:
ANCHOR BOLTS AND SMALLER CONCRETE BEARING PADS NOT SHOWN FOR CLARITY. SEE CONCRETE BEARING PAD REINFORCEMENT DETAILS - 2 AND NOTES FOR ADDITIONAL INFORMATION.

CONCRETE BEARING PAD REINFORCEMENT DETAILS - 1
SCALE: 3/8" = 1' - 0"



CONCRETE BEARING PAD REINFORCEMENT DETAILS - 2
SCALE: 3/8" = 1' - 0"

DRAFT
NOT FOR BIDDING
AUGUST 2015

NOTES:

1. FOR ANCHOR BOLT DETAIL DIMENSIONS AND LOCATIONS, SEE DWG. NOS. BB-01, BB-02 AND BB-13 THRU BB-15.
2. ANCHOR BOLTS SHALL BE CAST IN PLACE. A TEMPORARY CASTING TEMPLATE SHALL BE USED TO ENSURE THE ANCHOR BOLTS ARE PROPERLY ALIGNED AND PLUMB. THE TEMPLATE SHALL BE REMOVED AFTER THE CONCRETE HAS SET.
3. SPACE REINFORCING STEEL AS NECESSARY TO CLEAR ANCHOR BOLTS.
4. FOR ADDITIONAL REINFORCEMENT DETAILS, SEE DWG. NOS. PR-13 THRU PR-17.

M:\31653\000\Contract\IB\CADD\Bridges\BR-No433\PR18_brl-433.dgn 2/2/2015 9:47:10 AM



ADDENDUMS / REVISIONS	

SCALE: AS SHOWN

US 301 &
SR 1 INTERCHANGE

CONTRACT	BRIDGE NO.	1-433
T200911302	DESIGNED BY:	B.K.B.
COUNTY	CHECKED BY:	W.A.G.
NEW CASTLE		

PIER 3
REINFORCEMENT
DETAILS - 5

BR1-3 PR-18
SHEET NO.
243
TOTAL SHTS.
491

① ANY MARK NUMBER WITH SUFFIX 'E' DENOTES EPOXY COATED REINFORCING STEEL.

② ALL MARK 'LOCATION PREFIXES' SHALL CONSIST OF TWO LETTERS AND ARE AS FOLLOWS: AB = ABUTMENT, AS = APPROACH SLAB, BC = BOX CULVERT, BW = BACKWALL, CL = COLUMN, DK = DECK, DL = DOWEL, FT = FOOTING, HW = HEADWALL, MS = MISC. BARS, PA = PARAPET, PR = PIER, SC = SHEETPILE CAP, SL = SLAB, TW = TOEWALL, WL = WALL (UNIQUE LOCATION), WW = WINGWALL

Table with columns: SPECIFICATIONS (QTY, SIZE, LENGTH, MARK, TYPE), BENDING DIMENSIONS (FEET-INCHES /QUARTER INCH) (A, B, C, D, E, F/R, G, H, J, K, O). Rows include PIER 1 and PIER 2 items.

Table with columns: SPECIFICATIONS (QTY, SIZE, LENGTH, MARK, TYPE), BENDING DIMENSIONS (FEET-INCHES /QUARTER INCH) (A, B, C, D, E, F/R, G, H, J, K, O). Rows include items 1 through 45.

Table with columns: SPECIFICATIONS (QTY, SIZE, LENGTH, MARK, TYPE), BENDING DIMENSIONS (FEET-INCHES /QUARTER INCH) (A, B, C, D, E, F/R, G, H, J, K, O). Rows include PIER 3 items 328 through 184.

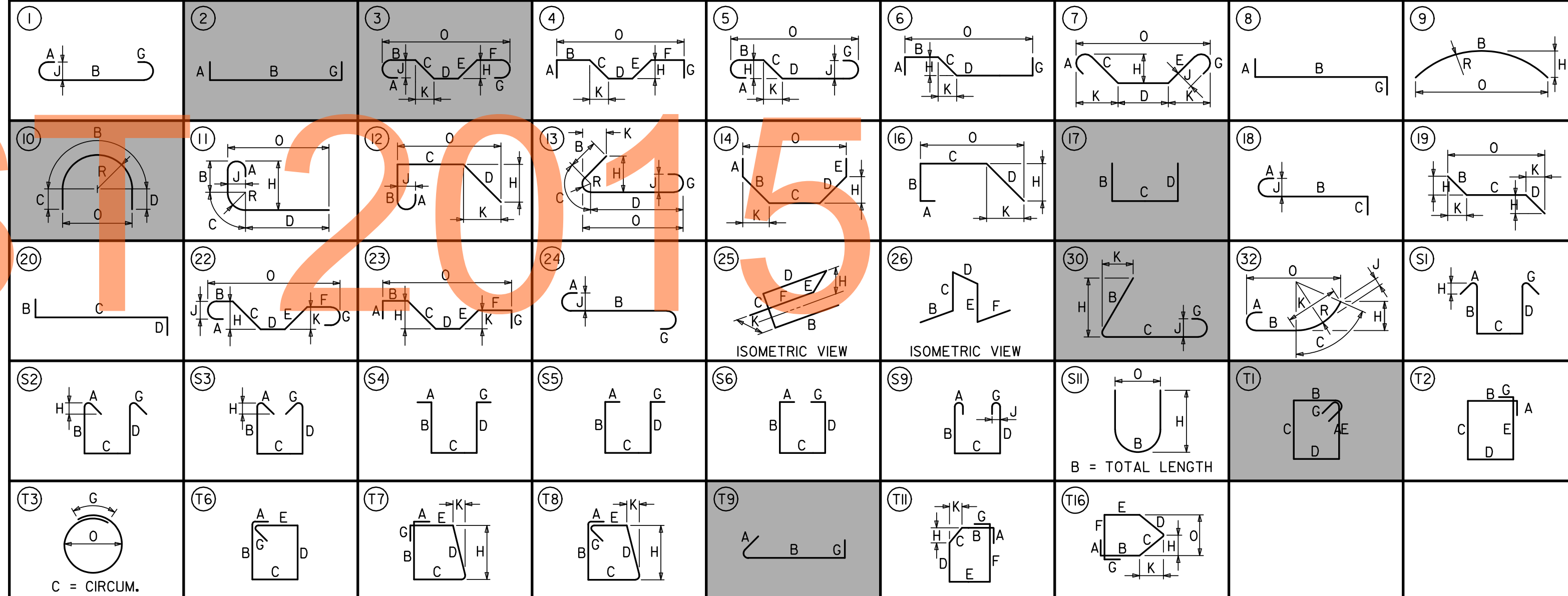
NOT FOR BIDDING

ASTM STANDARD ENGLISH REINFORCING BARS

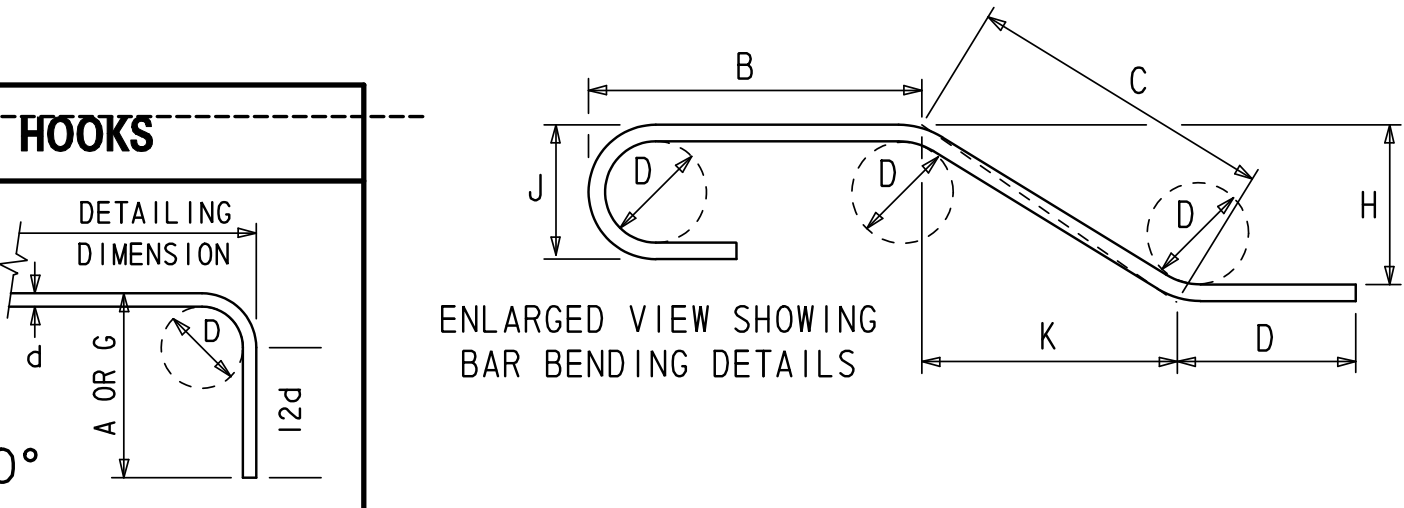
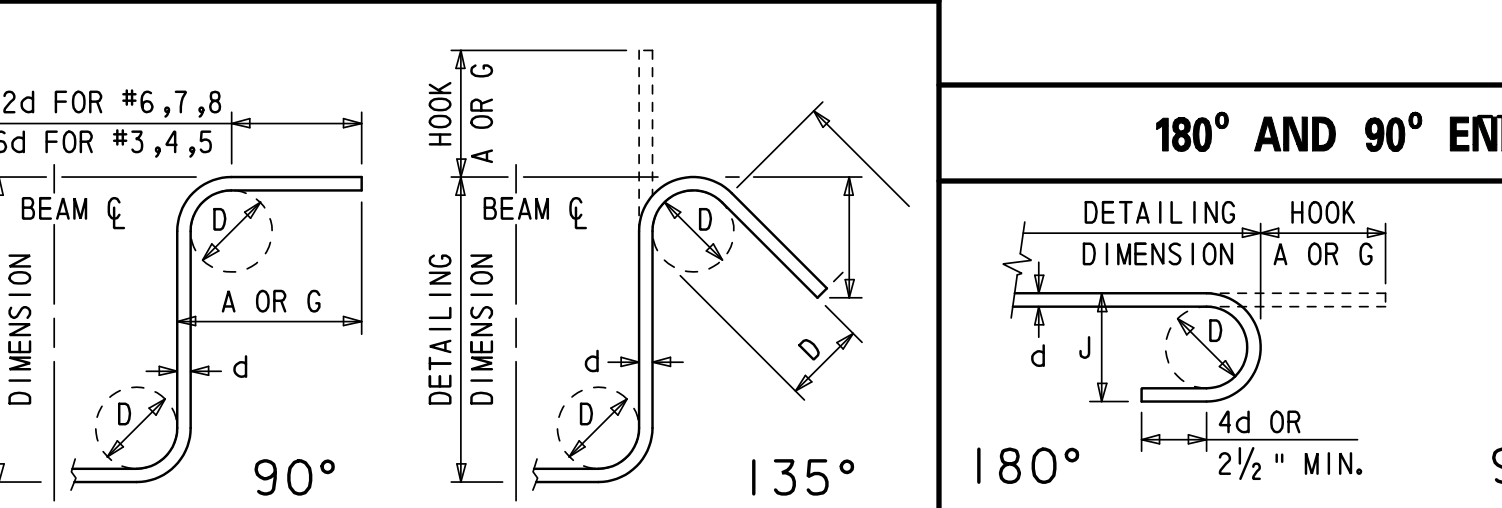
Table with columns: BAR SIZE, NOMINAL DIMENSIONS (DIAMETER, AREA, WEIGHT), 180° HOOKS, 90° HOOKS, 135° HOOK. Rows list bar sizes 3 through 18.

- NOTES: 1. FIGURES SHOWN IN CIRCLES REPRESENT BAR BEND TYPES. 2. STANDARD BAR BENDS INCLUDE ONLY THOSE TYPES BELOW, INDICATED AS SUCH. 3. ALL DIMENSIONS OUT-TO-OUT, EXCEPT "A" AND "C" ON STD. 180° AND 135° HOOKS. ... 11. TYPE S1-S6, S11, T1-T3 AND T6-T9 APPLICABLE TO BAR SIZES #3 THROUGH #8.

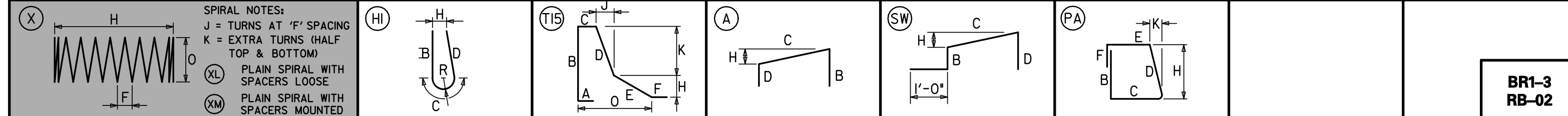
STANDARD BAR BENDS



STIRRUP AND TIE HOOKS



SPECIAL BAR BENDS



ADDENDUMS / REVISIONS

NOT TO SCALE

US 301 & SR 1 INTERCHANGE

CONTRACT T200911302 BRIDGE NO. 1-433 COUNTY NEW CASTLE DESIGNED BY: W.T.R. CHECKED BY: B.K.B.

PIER REINFORCEMENT LIST SHEET NO. 245 TOTAL SHTS. 491

\\N:\653-000\CONTRACT\18\CAD\Bridg\SR-1\433\RB02.dwg 11/20/2015 11:52:11 AM

HIGH LOAD MULTI-ROTATIONAL BEARING NOTES

INSTALLATION NOTES:

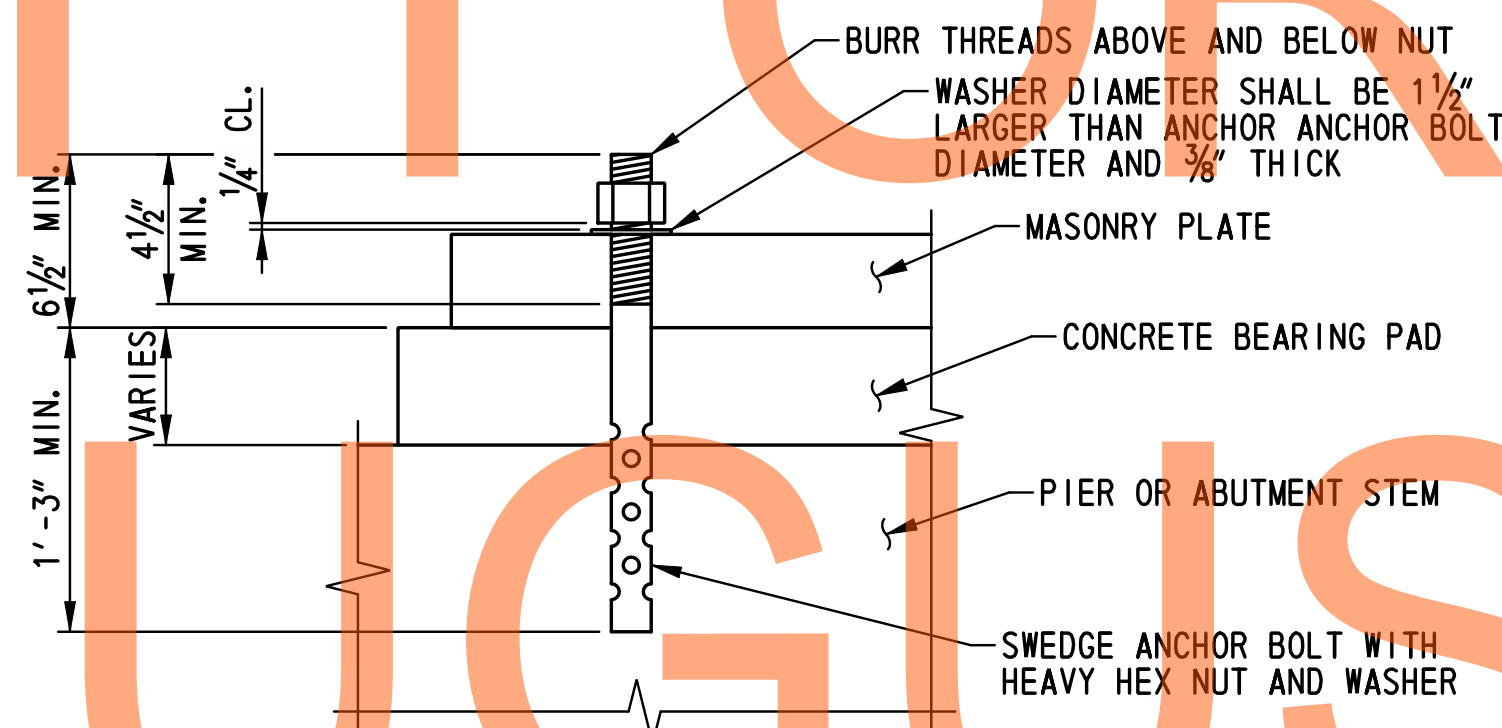
1. CONTRACTOR IS RESPONSIBLE FOR ANY DISCREPANCY IN THE BEARING ELEVATIONS.
2. CONDUCT HANDLING AND INSTALLATION OF HIGH LOAD MULTI-ROTATIONAL BEARINGS IN SUCH A MANNER AS TO PROTECT THE BEARINGS. IN ADDITION, PARTICULAR ATTENTION IS TO BE GIVEN TO PROTECTING ALL SLIDING SURFACES OF BEARINGS AND ANY PROTECTIVE COATINGS ON BEARINGS. HIGH LOAD MULTI-ROTATIONAL BEARINGS ARE TO BE SUPPLIED WITH REQUIRED PROTECTIVE COATINGS AS NOTED IN SHOP NOTES. BEARINGS MAY NOT BE DISASSEMBLED FOR ANY FURTHER COATING APPLICATION OR COATING TOUCH-UP AT JOB SITE.
3. USE EDGE PROTECTORS OR NYLON SLINGS WHEN HANDLING HIGH LOAD MULTI-ROTATIONAL BEARINGS IN ORDER TO PROTECT THE PROTECTIVE COATINGS ON THE BEARINGS. TO AVOID DAMAGING PROTECTIVE COATING ON BEARINGS, DO NOT POSITION HIGH LOAD MULTI-ROTATIONAL BEARINGS BY MEANS OF STRIKING.
4. IN THE EVENT OF DAMAGE TO PROTECTIVE COATINGS, MAKE REPAIRS AS QUICKLY AS POSSIBLE IN ORDER TO AVOID MOISTURE INDUCED COATING FAILURE. PROPERLY PREPARE STEEL SURFACES IN AREA OF DAMAGED COATINGS BY REMOVING ALL LOOSE COATINGS AND RUST AND BY PROVIDING REQUIRED STEEL PROFILE FOR COATING ADHERENCE. PERFORM RECOATING WITHIN 8 HOURS OF STEEL PREPARATION.
5. PROTECT THE PURE WOVEN PTFE FIBER PADS AND STAINLESS STEEL SURFACES FROM DIRT, DEBRIS, WELD SPATTER, BLASTING SAND/GRIT, GRINDING PARTICLES, PAINT, PAINT OVERSPRAY, AND ANY OTHER FOREIGN MATTER. AVOID EXPOSURE OF PTFE FIBER PADS TO DIRECT SUNLIGHT TO PREVENT ULTRA-VIOLET RAY DAMAGE TO PTFE FIBER PADS.
6. BLOCK GIRDERS AT EXPANSION BEARINGS DURING ERECTION IN ORDER TO: (A) PROTECT THE BEARINGS FROM IMPACT AND/OR ECCENTRIC LOADS, (B) STABILIZE THE GIRDER, AND (C) INSURE PROPER BRIDGE/GIRDER ALIGNMENT.
7. REMOVE BANDING WHICH SECURES BEARING AS A UNIT ONLY AFTER BEARING IS SET IN PLACE AND PRIOR TO POSITIONING SOLE PLATE FOR GIRDER INSTALLATION. THESE BEARINGS MAY NOT BE DISASSEMBLED AT THE JOB SITE UNDER ANY CIRCUMSTANCES WITHOUT THE APPROVAL OF THE ENGINEER AND THE APPROVAL OR PRESENCE OF THE MANUFACTURER'S REPRESENTATIVE.
8. WHEN WELDING THE SOLE PLATE TO GIRDER FLANGE, ENSURE THAT SURFACES CONTACTING THE PTFE SURFACES DO NOT EXCEED 250°F, TO AVOID DAMAGING THE PTFE.

SHOP NOTES:

1. WOVEN FABRIC POLYTETRAFLUOROETHYLENE (PTFE) SHALL BE MADE FROM ORIENTED MULTI-FILAMENT PTFE FIBERS. PTFE RESIN SHALL BE 100 PERCENT PURE NEW MATERIAL AND SHALL COMPLY WITH D 4894 OR D 4895. TENSILE STRENGTH SHALL BE AT LEAST 24,000 PSI ELONGATION AT BREAK SHALL BE 75% USING THE D 2256 TEST METHOD. NO RECLAIMED MATERIAL SHALL BE USED. FINISHED PTFE SHALL BE RESISTANT TO ACIDS, ALKALIS AND PETROLEUM PRODUCTS, STABLE AT TEMPERATURES FROM -360°F TO +500°F, NON-FLAMMABLE, AND NON-ABSORBING OF WATER.
2. THE PTFE FIBER PAD THAT MATES WITH THE STAINLESS STEEL CONVEX PLATE SHALL COVER THE ENTIRE SPHERICAL PORTION OF THE CONCAVE PLATE. THE PTFE FIBER PAD THAT MATES WITH THE BEVELED SOLE PLATE SHALL COVER THE ENTIRE SURFACE OF THE TOP OF THE CONCAVE PLATE.
3. STAINLESS STEEL SHEETS ARE TO BE WELDED TO THE SOLE PLATES AND GUIDE BARS USING THE TUNGSTEN INERT GAS (TIG) PROCESS. STAINLESS STEEL SHEETS ARE TO BE WELDED AROUND THE ENTIRE PERIPHERY OF THE STAINLESS STEEL SHEET.
4. SHOP PAINT ALL STEEL SURFACES EXPOSED TO THE ATMOSPHERE IN ACCORDANCE WITH SECTION 826 EXCEPT STAINLESS STEEL SURFACES AND SURFACES TO BE WELDED. MASK CONTACT SURFACES AS REQUIRED.
5. BEARINGS ARE TO BE MARKED FOR IDENTIFICATION AND ORIENTATION. BEARINGS SHALL HAVE MATCH MARKS INDICATING NORMAL POSITION OF THE BEARING AT 60°F.
6. BEARINGS ARE TO BE SECURED AS AN ENTIRE UNIT AND WRAPPED IN PLASTIC TO PROTECT THE BEARINGS FROM MOISTURE AND DUST.
7. ALL WELDING SHALL BE IN CONFORMANCE WITH SECTION 826.
8. ALL BEARINGS SHALL BE TESTED IN CONFORMANCE WITH SECTION 18.1.5, 2004 AASHTO LRFD BRIDGE CONSTRUCTION SPECIFICATIONS INCLUDING 2006, 2007, 2008 AND 2009 INTERIMS.

NOT FOR BIDDING

AUGUST 2015



ANCHOR BOLT DETAIL
SCALE: 1"=1'-0"

HIGH LOAD MULTI-ROTATIONAL BEARING MATERIALS	
COMPONENT	SPECIFICATIONS
MASONRY, CONCAVE, AND SOLE PLATES	A 709, GRADE 50 STRUCTURAL STEEL < 4" THICK A 572, GRADE 42 STRUCTURAL STEEL > 4" THICK
CONVEX PLATES	A 167 OR A 264, 16 MICRO-INCHES RMS FINISH OR LESS
STAINLESS STEEL SHEETS	10 GAGE, CONFORMING TO A 167 OR A 264, TYPE 304, #8 MIRROR FINISH
PTFE SURFACE	WOVEN FABRIC MADE FROM PURE PTFE SEE BEARING NOTES FOR ADDITIONAL INFORMATION
GUIDE BARS	A 709, GRADE 50 STRUCTURAL STEEL
CAP SCREWS	A 574
ANCHOR PLATE	A 709, GALVANIZED GRADE 50 STRUCTURAL STEEL

NOTES:

1. ANCHOR BOLTS FOR THE PIER 1 AND PIER 3 BEARINGS WHICH CONNECT THE POST TENSIONED PIER CAP TO THE COLUMNS SHALL BE UNPAINTED ASTM F 1554, GRADE 105 GALVANIZED STEEL.
2. ANCHOR BOLTS FOR BEARINGS WHICH CONNECT THE SUPERSTRUCTURE TO THE SUBSTRUCTURE SHALL BE UNPAINTED ASTM F 1554, GRADE 55 GALVANIZED STEEL.
3. PLATE WASHERS SHALL BE UNPAINTED ASTM A 709, GRADE 36 GALVANIZED STEEL.
4. NUTS SHALL BE UNPAINTED ASTM A 563 GALVANIZED STEEL.
5. ANCHOR BOLTS SHALL BE CAST IN PLACE. A TEMPORARY CASTING TEMPLATE SHALL BE USED TO ENSURE THE ANCHOR BOLTS ARE PROPERLY ALIGNED AND PLUMB. THE TEMPLATE SHALL BE REMOVED AFTER THE CONCRETE HAS SET.

M:\31653\000\Contract\IB\CADD\Bridges\Bridges\No433\BB01_brf1-433.dgn 2/2/2015 9:24:07 AM



ADDENDUMS / REVISIONS

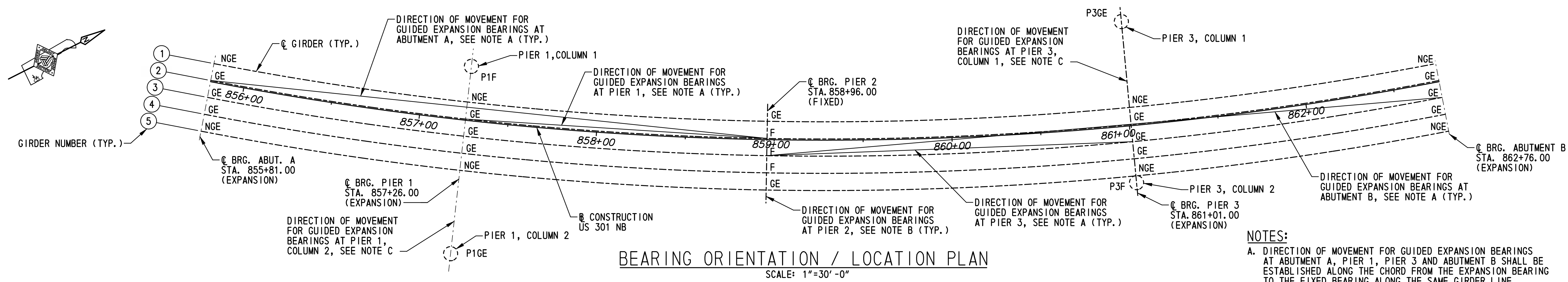
NOT TO SCALE

**US 301 &
SR 1 INTERCHANGE**

CONTRACT	BRIDGE NO.	1-433
T200911302	DESIGNED BY: W.T.R.	
COUNTY	CHECKED BY: B.K.B.	
NEW CASTLE		

BEARING NOTES

BR1-3 BB-01
SHEET NO.
246
TOTAL SHTS.
491



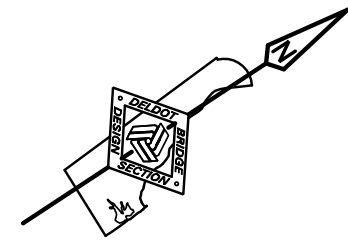
- NOTES:**
- DIRECTION OF MOVEMENT FOR GUIDED EXPANSION BEARINGS AT ABUTMENT A, PIER 1, PIER 3 AND ABUTMENT B SHALL BE ESTABLISHED ALONG THE CHORD FROM THE EXPANSION BEARING TO THE FIXED BEARING ALONG THE SAME GIRDER LINE.
 - DIRECTION OF MOVEMENT FOR GUIDED EXPANSION BEARINGS AT PIER 2 SHALL BE ESTABLISHED ALONG THE CENTER LINE OF BEARING AT PIER 2.
 - DIRECTION OF MOVEMENT FOR GUIDED EXPANSION BEARINGS AT PIER 1, COLUMN 2 AND PIER 3, COLUMN 1 SHALL BE ESTABLISHED ALONG THE CENTERLINE OF BEARING AT PIER 1 AND 3, RESPECTIVELY.

- BEARING SCHEDULE NOTES:**
- THE MAXIMUM ALLOWABLE BEARING PRESSURE ON THE PTFE FIBER PAD IS 3,500 PSI.
 - THE MAXIMUM ALLOWABLE COEFFICIENT OF FRICTION IS 0.045. THIS VALUE IS BASED ON THE MAXIMUM ALLOWABLE BEARING PRESSURE FOR THE PTFE FIBER PAD.
 - THE MAXIMUM ALLOWABLE BEARING PRESSURE ON CONCRETE IS 1,050 PSI.
 - THE MINIMUM GUIDE BAR CLEARANCE EACH SIDE IS 1/16".
 - FRICTIONAL RESISTANCE OF THE BEARINGS SLIDING SURFACES HAS NOT BEEN INCLUDED IN THE SPECIFIED HORIZONTAL LOADS.
 - FIXED AND EXPANSION BEARINGS HAVE BEEN DESIGNED TO PROVIDE A MINIMUM HORIZONTAL LOAD CAPACITY GREATER THAN OR EQUAL TO THE LARGER OF THE SEISMIC DESIGN LOAD OR THE RESULTANT OF THE TRANSVERSE AND LONGITUDINAL LOADS.
 - TRANSVERSE INDICATES THE DIRECTION PERPENDICULAR TO THE BASELINE OF CONSTRUCTION. LONGITUDINAL INDICATES THE DIRECTION TANGENT TO THE BASE LINE OF CONSTRUCTION.
 - EXPANSION BEARINGS HAVE BEEN DESIGNED WITH A 1" CONSTRUCTION TOLERANCE FOR THE EXPANSION OF THE BEARING. THIS TOLERANCE IS IN ADDITION TO THE THERMAL MOVEMENT INDICATED IN THE BEARING SCHEDULE.
 - FIXED AND EXPANSION BEARINGS HAVE BEEN DESIGNED FOR A MINIMUM ROTATION OF 0.02 RADIAN WHICH INCLUDES A CONSTRUCTION TOLERANCE OF 0.01 RADIAN.
 - SEISMIC AND THE RESULTANT OF LONGITUDINAL AND TRANSVERSE LOADS ARE NOT TO BE APPLIED SIMULTANEOUSLY.
 - MISC. LOADS ARE THE FACTORED VERTICAL LOADS FROM THE MOMENT DUE TO THE SPACING BETWEEN THE BEARINGS LOCATED ON THE PIER COLUMNS.

- BEARING SCHEDULE LEGEND:**
- (X) = GIRDER NUMBER
 - P1F = PIER 1, COLUMN 1 FIXED, SEE DWG. NOS. BB-03 AND BB-04 FOR DETAILS.
 - P1GE = PIER 1, COLUMN 2 GUIDED EXPANSION, SEE DWG. NOS. BB-05 THRU BB-07 FOR DETAILS.
 - P3GE = PIER 3, COLUMN 1 GUIDED EXPANSION, SEE DWG. NOS. BB-08 THRU BB-10 FOR DETAILS.
 - P3F = PIER 3, COLUMN 2 FIXED, SEE DWG. NOS. BB-11 AND BB-12 FOR DETAILS.
 - GE = GUIDED EXPANSION, SEE DWG. NOS. BB-13 AND BB-14 FOR DETAILS.
 - NGE = NON-GUIDED EXPANSION, SEE DWG. NO. BB-15 FOR DETAILS.
 - F = FIXED, SEE DWG. NO. BB-16 FOR DETAILS.
 - DL = DEAD LOAD
 - LL = LIVE LOAD
 - W = WIND ON STRUCTURE
 - WL = WIND ON LIVE LOAD
 - K = KIPS
 - N/A = NOT APPLICABLE

BEARING LOCATION		HIGH LOAD MULTI-ROTATIONAL BEARING SCHEDULE																																												
		ABUTMENT A ② ③ ④		PIER 1 ② ③ ④		PIER 2 ① ⑤		PIER 3 ② ③ ④		ABUTMENT B ② ③ ④		ABUTMENT A ① ⑤		PIER 1 ① ⑤		PIER 3 ① ⑤		ABUTMENT B ① ⑤		PIER 2 ② ③ ④		PIER 1 COLUMN 1		PIER 3 COLUMN 1		PIER 3 COLUMN 2																				
BEARING TYPE	QUANTITY	GE	3	GE	3	GE	2	GE	3	GE	3	NGE	2	NGE	2	NGE	2	FIXED	3	P1F	1	P1GE	1	P3GE	1	P3F	1																			
AASHTO STRENGTH I	VERTICAL DESIGN LOAD	DL	150 K	464 K	491 K	591 K	179 K	165 K	444 K	583 K	197 K	508 K	1151 K	866 K	752 K	1479 K	LL	158 K MAX. -14 K MIN.	303 K MAX. -36 K MIN.	331 K MAX. -64 K MIN.	332 K MAX. -21 K MIN.	162 K MAX. -18 K MIN.	169 K MAX. -35 K MIN.	307 K MAX. -55 K MIN.	341 K MAX. -51 K MIN.	184 K MAX. -39 K MIN.	325 K MAX. -37 K MIN.	415 K MAX. 0 K MIN.	256 K MAX. 0 K MIN.	202 K MAX. 0 K MIN.	547 K MAX. 0 K MIN.	MISC.	N/A	N/A	N/A	N/A	N/A	N/A	95 K	219 K	391 K	72 K				
	HORIZONTAL DESIGN LOAD	TRANSVERSE	13 K	13 K	47 K	13 K	13 K	16 K	42 K	55 K	19 K	13 K	154 K	132 K	93 K	151 K	LONGITUDINAL	15 K	44 K	54 K	57 K	17 K	16 K	42 K	55 K	19 K	54 K	63 K	38 K	33 K	97 K															
		LONGITUDINAL	15 K	44 K	54 K	57 K	17 K	16 K	42 K	55 K	19 K	54 K	63 K	38 K	33 K	97 K																														
AASHTO STRENGTH II	VERTICAL DESIGN LOAD	DL	150 K	464 K	491 K	600 K	179 K	165 K	444 K	583 K	197 K	508 K	1151 K	866 K	752 K	1479 K	LL	122 K MAX. -11 K MIN.	234 K MAX. -28 K MIN.	255 K MAX. -49 K MIN.	256 K MAX. -16 K MIN.	125 K MAX. -14 K MIN.	130 K MAX. -27 K MIN.	237 K MAX. -42 K MIN.	263 K MAX. -39 K MIN.	142 K MAX. -30 K MIN.	251 K MAX. -29 K MIN.	320 K MAX. 0 K MIN.	198 K MAX. 0 K MIN.	156 K MAX. 0 K MIN.	422 K MAX. 0 K MIN.	MISC.	N/A	N/A	N/A	N/A	N/A	N/A	82 K	190 K	343 K	63 K				
	HORIZONTAL DESIGN LOAD	TRANSVERSE	10 K	10 K	47 K	10 K	10 K	16 K	42 K	55 K	19 K	10 K	150 K	128 K	89 K	146 K	LONGITUDINAL	15 K	44 K	49 K	57 K	17 K	16 K	42 K	55 K	19 K	49 K	55 K	33 K	29 K	85 K															
		LONGITUDINAL	15 K	44 K	49 K	57 K	17 K	16 K	42 K	55 K	19 K	49 K	55 K	33 K	29 K	85 K																														
AASHTO STRENGTH III	VERTICAL DESIGN LOAD	DL	150 K	464 K	491 K	600 K	179 K	165 K	444 K	583 K	197 K	508 K	1151 K	866 K	752 K	1479 K	LL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	MISC.	N/A	N/A	N/A	N/A	N/A	N/A	103 K	249 K	432 K	85 K			
	HORIZONTAL DESIGN LOAD	TRANSVERSE	21 K	0	47 K	55 K	26 K	16 K	42 K	55 K	19 K	55 K	183 K	161 K	122 K	179 K	LONGITUDINAL	15 K	44 K	77 K	57 K	17 K	16 K	42 K	55 K	19 K	76 K	83 K	55 K	47 K	119 K															
		LONGITUDINAL	15 K	44 K	77 K	57 K	17 K	16 K	42 K	55 K	19 K	76 K	83 K	55 K	47 K	119 K																														
AASHTO STRENGTH IV	VERTICAL DESIGN LOAD	DL	176 K	546 K	578 K	705 K	211 K	194 K	522 K	686 K	231 K	598 K	1363 K	1030 K	894 K	1749 K	LL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	MISC.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	82 K	190 K	343 K	63 K
	HORIZONTAL DESIGN LOAD	TRANSVERSE	0	0	47 K	0	0	16 K	42 K	55 K	19 K	0	150 K	128 K	89 K	146 K	LONGITUDINAL	15 K	44 K	31 K	57 K	17 K	16 K	42 K	55 K	19 K	31 K	55 K	33 K	29 K	146 K															
		LONGITUDINAL	15 K	44 K	31 K	57 K	17 K	16 K	42 K	55 K	19 K	31 K	55 K	33 K	29 K	146 K																														
AASHTO STRENGTH V	VERTICAL DESIGN LOAD	DL	150 K	464 K	491 K	600 K	179 K	165 K	444 K	583 K	197 K	508 K	1151 K	866 K	752 K	1479 K	LL	122 K MAX. -11 K MIN.	174 K MAX. -21 K MIN.	255 K MAX. -49 K MIN.	256 K MAX. -16 K MIN.	125 K MAX. -14 K MIN.	130 K MAX. -27 K MIN.	237 K MAX. -42 K MIN.	263 K MAX. -39 K MIN.	142 K MAX. -30 K MIN.	251 K MAX. -29 K MIN.	320 K MAX. 0 K MIN.	198 K MAX. 0 K MIN.	156 K MAX. 0 K MIN.	422 K MAX. 0 K MIN.	MISC.	N/A	N/A	N/A	N/A	N/A	N/A	101 K	236 K	417 K	78 K				
	HORIZONTAL DESIGN LOAD	TRANSVERSE	19 K	23 K	47 K	33 K	21 K	16 K	42 K	55 K	19 K	32 K	160 K	138 K	99 K	156 K	LONGITUDINAL	15 K	44 K	68 K	57 K	17 K	16 K	42 K	55 K	19 K	67 K	71 K	44 K	38 K	106 K															
		LONGITUDINAL	15 K	44 K	68 K	57 K	17 K	16 K	42 K	55 K	19 K	67 K	71 K	44 K	38 K	106 K																														
AASHTO SERVICE I	VERTICAL DESIGN LOAD	DL	118 K	364 K	385 K	470 K	141 K	129 K	348 K	458 K	154 K	399 K	909 K	686 K	596 K	1166 K	LL	90 K MAX. -8 K MIN.	174 K MAX. -21 K MIN.	189 K MAX. -37 K MIN.	190 K MAX. -12 K MIN.	93 K MAX. -10 K MIN.	97 K MAX. -20 K MIN.	176 K MAX. -32 K MIN.	195 K MAX. -29 K MIN.	105 K MAX. -23 K MIN.	186 K MAX. -21 K MIN.	237 K MAX. 0 K MIN.	147 K MAX. 0 K MIN.	115 K MAX. 0 K MIN.	313 K MAX. 0 K MIN.	MISC.	N/A	N/A	N/A	N/A	N/A	N/A	179 K	416 K	744 K	138 K				
	HORIZONTAL DESIGN LOAD	TRANSVERSE	15 K	23 K	47 K	26 K	16 K	16 K	42 K	55 K	19 K	26 K	159 K	136 K	98 K	155 K	LONGITUDINAL	15 K	44 K	60 K	57 K	17 K	16 K	42 K	55 K	19 K	59 K	122 K	75 K	65 K	186 K															
		LONGITUDINAL	15 K	44 K	60 K	57 K	17 K	16 K	42 K	55 K	19 K	59 K	122 K	75 K	65 K	186 K																														
SEISMIC	HORIZONTAL DESIGN LOAD	41 K	113 K	123 K	142 K	47 K	41 K	113 K	142 K	47 K	123 K	257 K	190 K	164 K	331 K																															
THERMAL MOVEMENT (MAXIMUM ONE WAY LONGITUDINAL MOVEMENT, NOT INCLUDING 1" CONSTRUCTION TOLERANCE)		1.5"	0.8"	N/A	1.0"	1.8"	1.5"	0.9"	1.0"	1.8"	N/A	N/A	1.2"	1.1"	N/A																															

M:\31653\000\Contract\1B\CADD\Bridges\Bridges\No433\BB02_bf1-433.dgn
 2/2/2015 10:15:26 AM



FIXED BEARING PLAN
SCALE: 3"=1'-0"

- NOTES:**
1. FOR ADDITIONAL INFORMATION AND MATERIAL SPECIFICATIONS, SEE DWG. NO. BB-01.
 2. ANCHOR BOLTS, NUTS AND PLATE WASHERS NOT SHOWN FOR CLARITY. FOR ANCHOR BOLT DETAIL, SEE DWG. NO. BB-01.
 3. ANCHOR STUDS AND POST TENSIONED CONCRETE PIER CAP NOT SHOWN FOR CLARITY. FOR ANCHOR PLATE PLAN, SEE DWG. NO. BB-04.

M:\31653\000\Contract\IB\CADD\Bridges\Bridges\No433\BB03_brl-433.dgn
 2/2/2015 10:12:00 AM

ADDENDUMS / REVISIONS	

SCALE: AS SHOWN

US 301 & SR 1 INTERCHANGE

CONTRACT	BRIDGE NO.	1-433
T200911302	DESIGNED BY:	W.T.R.
COUNTY	CHECKED BY:	B.K.B.
NEW CASTLE		

**PIER 1
FIXED BEARING
DETAILS - 1**

BR1-3 BB-03
SHEET NO.
248
TOTAL SHTS.
491