

### LOAD RATING SUMMARY

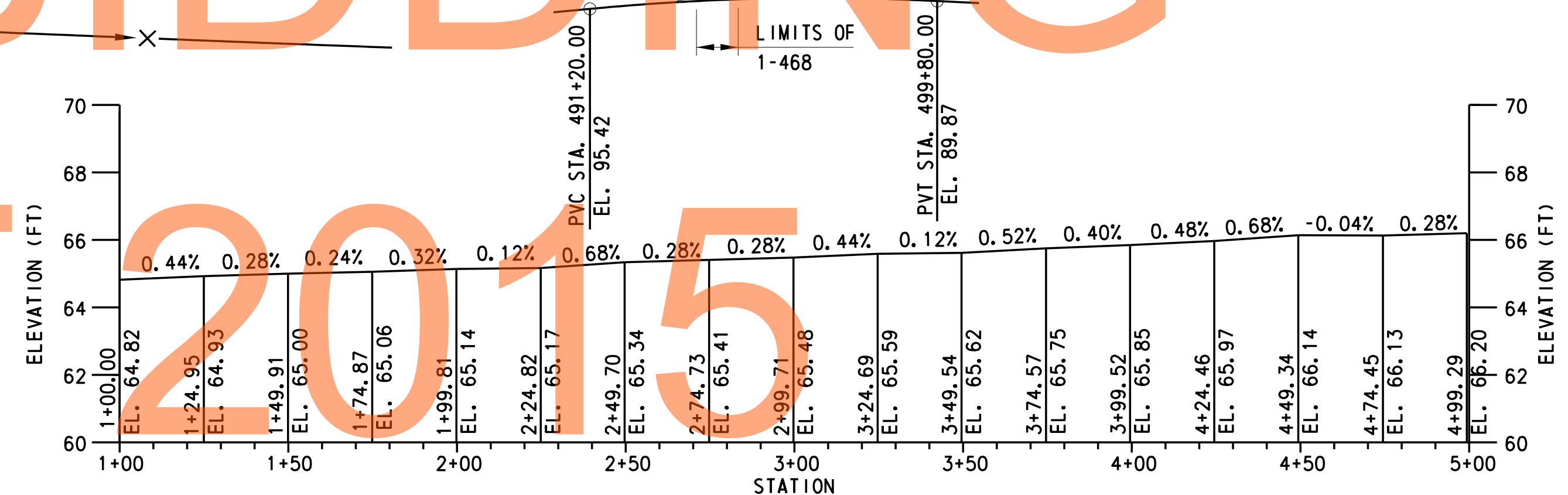
DESIGN VEHICLE	RATING FACTOR	RATING WEIGHT (TONS)	CONTROLLING MEMBER	CONTROLLING POINT	LOAD EFFECT
HL-93 TRUCK (INVENTORY)	1.14	N/A	EXTERIOR BEAM	105	LONG. RE INF. MAX. EFFECTS MAX. MOMENT W/ CONCURRENT SHEAR
HL-93 TANDEM (INVENTORY)	1.33	N/A	EXTERIOR BEAM	105	LONG. RE INF. MAX. EFFECTS MAX. MOMENT W/ CONCURRENT SHEAR
HL-93 TRUCK TRAIN (INVENTORY)	N/A	N/A	N/A	N/A	N/A
HS-20 (INVENTORY)	1.45	52.16	EXTERIOR BEAM	106	LONG. RE INF. MIN EFFECTS MAX. SHEAR W/ CONCURRENT MOMENT
HL-93 TRUCK (OPERATING)	1.47	N/A	EXTERIOR BEAM	105	LONG. RE INF. MAX. EFFECTS MAX. MOMENT W/ CONCURRENT SHEAR
HL-93 TANDEM (OPERATING)	1.70	N/A	EXTERIOR BEAM	105	LONG. RE INF. MAX. EFFECTS MAX. MOMENT W/ CONCURRENT SHEAR
HL-93 TRUCK TRAIN (OPERATING)	N/A	N/A	N/A	N/A	N/A
HS-20 (OPERATING)	1.82	65.67	EXTERIOR BEAM	106	LONG. RE INF. MIN EFFECTS MAX. SHEAR W/ CONCURRENT MOMENT
DE S220 (LEGAL)	2.36	47.26	EXTERIOR BEAM	106	LONG. RE INF. MIN. EFFECTS MAX. SHEAR W/ CONCURRENT MOMENT
DE S335 (LEGAL)	1.34	46.83	EXTERIOR BEAM	105	CONC. STRESS MAX. EFFECTS DL+PS+LL BOT. OF BEAM
DE S437 (LEGAL)	1.27	46.66	EXTERIOR BEAM	105	CONC. STRESS MAX. EFFECTS DL+PS+LL BOT. OF BEAM
DE T330 (LEGAL)	1.80	53.86	EXTERIOR BEAM	105	CONC. STRESS MAX. EFFECTS DL+PS+LL BOT. OF BEAM
DE T435 (LEGAL)	1.57	54.78	EXTERIOR BEAM	105	CONC. STRESS MAX. EFFECTS DL+PS+LL BOT. OF BEAM
DE T540 (LEGAL)	1.38	55.26	EXTERIOR BEAM	105	CONC. STRESS MAX. EFFECTS DL+PS+LL BOT. OF BEAM

NOTE: LOAD RATING DOES INCLUDE FUTURE WEARING SURFACE AS NOTED IN THE PLANS.

### LEGEND

- - SETTLEMENT PLATFORMS
- ▲ - SETTLEMENT MONUMENTS

### US 301 GEOMETRY



NORFOLK SOUTHERN RAILROAD - PROFILE OF EXISTING TOP OF RAIL

NOT TO SCALE

### CROSS REFERENCE NOTES:

1. FOR SETTLEMENT PLATFORM AND MONUMENT STATIONS AND OFFSETS, SEE DWG. 1-468 DT-2.
  2. FOR SETTLEMENT PLATFORM DETAIL, SEE DWG. 1-468 DT-2.
- NOTES:**
1. ABUTMENTS 1, ABUTMENTS 2 AND SUPERSTRUCTURE TO BE BUILT UNDER CONTRACT T200911303.
  2. ABUTMENT 2 MSE WALL TO BE BUILT UNDER CONTRACT T200911301.
  3. THE ELEVATION OF EXISTING TOP-OF-RAIL PROFILE SHALL BE VERIFIED BEFORE BEGINNING CONSTRUCTION. ALL DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE CHIEF ENGINEER BRIDGES AND STRUCTURES.

PA-CADD2\60049040-US301\STRUCTURE\PLANS\FINAL\B2-INS\BR2-1 CONTRACT - 2A\PE01-B2-INS.DGN



ADDENDUMS / REVISIONS



**US 301  
LEVELS ROAD  
TO SUMMIT BRIDGE ROAD**

CONTRACT	T200911303
COUNTY	NEW CASTLE
BRIDGE NO.	1-468N&S
DESIGNED BY:	ADH
CHECKED BY:	DHG

**US 301 MAINLINE OVER  
NORFOLK SOUTHERN  
RAILROAD  
BRIDGE PLAN  
AND ELEVATION**

SHEET NO.	265
TOTAL SHTS.	1256

1-468 PE-1

**GENERAL NOTES**

**1. DESIGN SPECIFICATIONS:**

AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 4TH EDITION, 2007, INCLUDING 2008 AND 2009 INTERIM REVISIONS, AND AS SUPPLEMENTED BY DELAWARE DEPARTMENT OF TRANSPORTATION BRIDGE DESIGN MANUAL, MAY 2005, INCLUDING LATEST REVISIONS.

PROVIDE MATERIALS AND PERFORM WORK IN ACCORDANCE WITH THE DELAWARE DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS AND CONSTRUCTION DETAILS, AASHTO/AWS D1.5M/D1.5 BRIDGE WELDING CODE, AND CONTRACT SPECIAL PROVISIONS.

LIVE LOAD DISTRIBUTION TO BEAMS IS BASED UPON AASHTO DISTRIBUTION FACTORS.

**2. LOADING:**

UNIT WEIGHTS OF MATERIALS SHALL BE IN ACCORDANCE WITH THE DELAWARE DESIGN MANUAL.

FUTURE OVERLAY ALLOWANCE SHALL BE 25 LBS/SO FT.

STEEL BRIDGE DECK FORMS WHICH STAY IN PLACE (INCLUDING CONCRETE IN FORM CORRUGATIONS) SHALL BE 15 LBS/SO FT.

VEHICLE LIVE LOAD SHALL BE AASHTO HL-93 DESIGN VEHICLE, WHICH CONSISTS OF A DESIGN TRUCK OR TANDEM WITH DYNAMIC LOAD ALLOWANCE AND A LANE LOAD. RATINGS SHALL USE ALL DELAWARE LEGAL LOADS SPECIFIED IN THE BRIDGE DESIGN MANUAL.

BARRIER HAS BEEN DESIGNED FOR TEST LEVEL FOUR (TL-4).

FATIGUE DESIGN IS BASED ON THE FOLLOWING: ADTT 3,045 (2030 ONE-DIRECTIONAL).

FOR THERMAL LOADS, CONSIDER THE MODERATE TEMPERATURE RANGE AS STIPULATED IN THE AASHTO LRFD DESIGN SPECIFICATIONS, THE NORMAL TEMPERATURE SHALL BE CONSIDERED TO BE 68F.

FOR SEISMIC LOADS, CONSIDER SEISMIC PERFORMANCE ZONE 1, WITH A SITE CLASS = D AND IMPORTANCE CATEGORY - ESSENTIAL.

SEISMIC FORCES WERE CONSIDERED FOR ACCELERATION COEFFICIENT OF 0.08.

**3. PORTLAND CEMENT CONCRETE:**

PORTLAND CEMENT CONCRETE FOR CAST-IN-PLACE ELEMENTS SHALL BE AS FOLLOWS: (28 DAY COMPRESSIVE STRENGTH)

- ITEM NO. 602003 (CLASS A, F'c=4500 PSI) - ABUTMENT FOOTING
- ITEM NO. 602013 (CLASS D, F'c=4500 PSI) - DECK AND DIAPHRAGMS
- ITEM NO. 602014 (CLASS D, F'c=4500 PSI) - APPROACH SLAB, MOMENT SLAB AND SLEEPER SLAB
- ITEM NO. 602015 (CLASS A, F'c=4500 PSI) - ABUTMENT ABOVE FOOTING, CHEEKWALL AND BACKWALL
- ITEM NO. 602017 (CLASS A, F'c=4500 PSI) - BARRIER

RAKE FINISH ALL HORIZONTAL CONSTRUCTION JOINTS, EXCEPT AS INDICATED.

CONSTRUCT DECK SLAB TRANSVERSE CONSTRUCTION JOINTS PARALLEL TO BRIDGE CENTERLINE OF BEARING.

PLACE CHEEKWALL AND BACKWALL CONCRETE AFTER BEAMS HAVE BEEN SET IN POSITION.

DECK SLAB THICKNESS INCLUDES 1/2" INTEGRAL WEARING SURFACE.

MIX REQUIREMENTS SHALL CONFORM TO SECTION 812 OF THE DELAWARE DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS.

ALL EXPOSED CORNERS OF CONCRETE SHALL BE CHAMFERED WITH 3/4" X 3/4" MILLED CHAMFER STRIPS UNLESS NOTED OTHERWISE, EXCEPT ON UNEXPOSED FOOTINGS OR WHERE INDICATED BY THE NOTATION ON THE PLANS, "DO NOT CHAMFER".

NO SLIP-FORMING OF BARRIERS IS PERMITTED, UNLESS NOTED OTHERWISE.

**4. BAR REINFORCEMENT:**

REINFORCING STEEL SHALL CONFORM TO AASHTO M31 (ASTM A615), GRADE 60.

PROVIDE 2" CONCRETE COVER ON REINFORCEMENT BARS, EXCEPT AS NOTED.

FUSION-BONDED EPOXY COATED REINFORCING STEEL SHALL CONFORM TO AASHTO M284 (ASTM D3963), AND SHALL BE DENOTED WITH A SUFFIX "E" IN THE BAR MARKS.

DO NOT WELD GRADE 60 REINFORCING STEEL, UNLESS NOTED OTHERWISE.

**5. PRESTRESSED CONCRETE DESIGN:**

THE PRECAST CONCRETE GIRDERS ARE DESIGNED AS NONCOMPOSITE FOR ALL DEAD LOADS EXCEPT THE BARRIERS AND FUTURE WEARING SURFACE. THE PRECAST GIRDERS ARE DESIGNED AS COMPOSITE FOR LIVE LOADS AS WELL AS THE BARRIER AND FUTURE WEARING SURFACE DEAD LOADS.

**PRESTRESSED CONCRETE:**

THE MINIMUM COMPRESSIVE STRENGTH FOR PRESTRESSED CONCRETE AT THE AGE OF 28 DAYS SHALL BE f'c = 8,000 PSI. THE MINIMUM COMPRESSIVE STRENGTH AT THE TRANSFER OF PRESTRESS SHALL BE f'c1 =6,400 PSI.

**PRESTRESSED STEEL:**

PRETENSIONING STEEL FOR BEAMS SHALL CONSIST OF HIGH STRENGTH 7-WIRE LOW RELAXATION STRANDS, WITH NOMINAL 0.60 INCH DIAMETER CONFORMING TO THE REQUIREMENTS OF AASHTO M203 (ASTM A416) GRADE 270. EACH 0.60 INCH DIAMETER STRAND SHALL BE PRETENSIONED TO 43,943 LBS. (0.75 Fpu).

AFTER ESTIMATED LOSSES OF 22,760 PSI, THE FINAL EFFECTIVE PRESTRESS FORCE PER STRAND IS 39,004 LBS.

FABRICATOR TO CHECK STABILITY DURING ERECTION.

**6. SERVICEABILITY:**

LIVE LOAD DEFLECTION SHALL BE LIMITED TO L/800.

FOR REINFORCEMENT DISTRIBUTION REQUIREMENTS, CONSIDER CLASS 2 EXPOSURE CRITERIA FOR DECKS.

**7. CONSTRUCTION JOINTS:**

KEYED CONSTRUCTION JOINTS SHALL BE 2" X 4" OR AS NOTED. ALL EXPOSED CONSTRUCTION JOINT EDGES SHALL HAVE A 3/4" V-NOTCH, UNLESS NOTED OTHERWISE.

**8. STRUCTURAL EXCAVATIONS:**

EXCAVATION REQUIRED TO ATTAIN THE GRADE FOR INSTALLATION OF MSE WALLS SHALL BE INCIDENTAL TO ITEM NO. 602772 - MECHANICALLY STABILIZED EARTH WALLS.

**9. STRUCTURAL BACKFILL:**

MSE WALL BACKFILL SHALL BE AS SPECIFIED ON THE PLANS.

**10. TEMPORARY RAILROAD CLEARANCES:**

A MINIMUM VERTICAL CLEARANCE OF 22'-0" ABOVE TOP OF HIGHEST RAIL SHALL BE MAINTAINED AT ALL TIMES.

A MINIMUM HORIZONTAL CLEARANCE OF 15'-0" FROM CENTERLINE OF TRACK SHALL BE MAINTAINED AT ALL TIMES.

CONTRACTOR TO COORDINATE ALL WORK WITH NORFOLK SOUTHERN RAILROAD IN ACCORDANCE WITH NORFOLK SOUTHERN SPECIAL PROVISIONS FOR PROTECTION OF RAILWAY INTERESTS.

**11. UTILITIES:**

COORDINATE ALL WORK RELATED TO PUBLIC AND PRIVATE UTILITIES IN ACCORDANCE WITH SECTION 107.04 OF THE STANDARD SPECIFICATIONS.

VERIFY AND LOCATE ALL EXISTING UTILITIES PRIOR TO STARTING WORK. CONDUCT OPERATIONS IN A MANNER WHICH ENSURES THAT THE UTILITIES WILL NOT BE DISTURBED OR ENDANGERED AND ASSUME FULL RESPONSIBILITY FOR ANY DAMAGE TO UTILITIES DURING CONSTRUCTION. THE DEPARTMENT DOES NOT ASSUME RESPONSIBILITY FOR REIMBURSEMENT, PARTICIPATION IN DESIGN AND/OR REVISION, OR LIABILITY FOR ACCURACY OF TYPE, SIZE AND LOCATION OF ANY UTILITY.

**INDEX OF DRAWINGS**

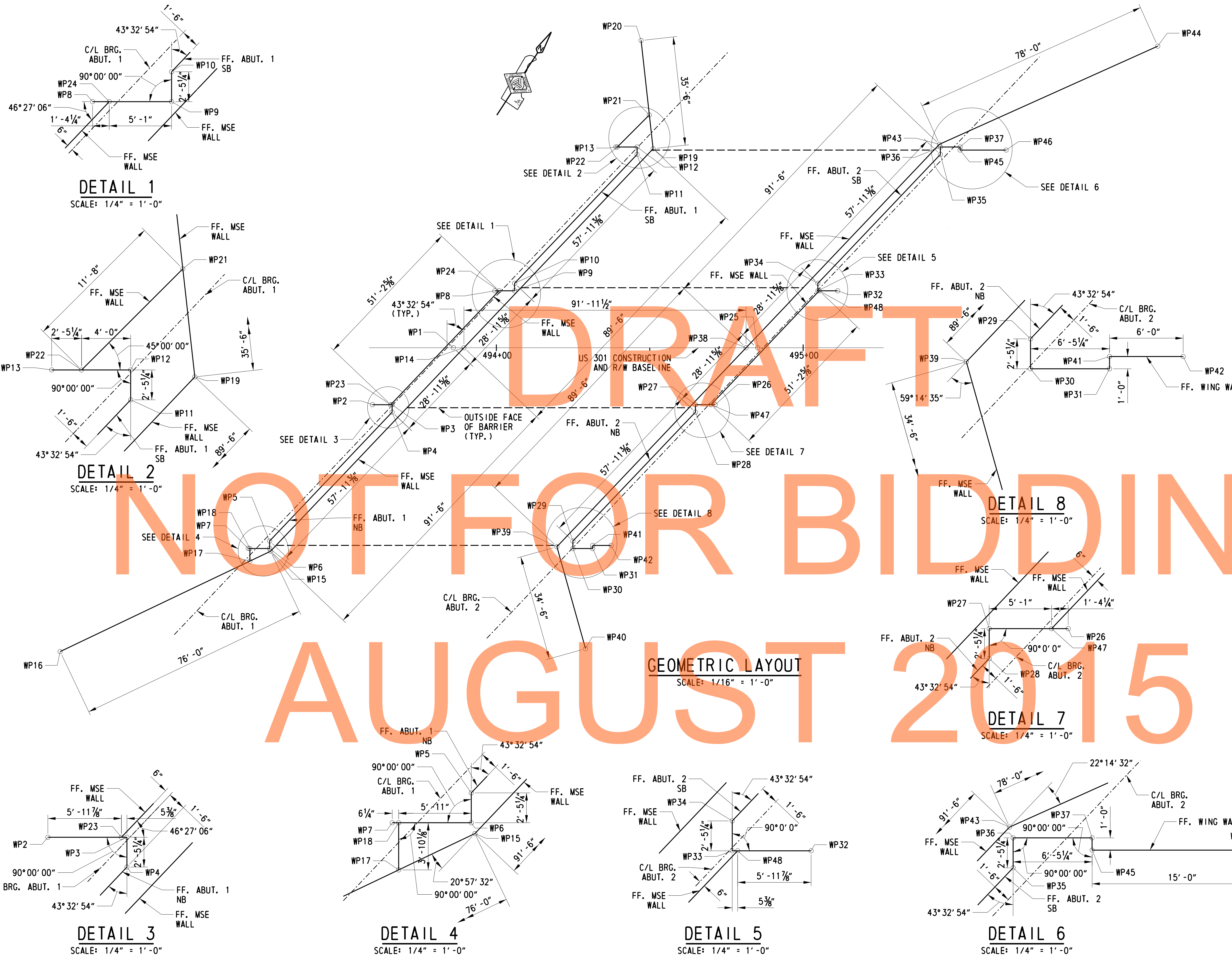
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268	1-468 TS-1	TYPICAL SECTION AND QUANTITIES
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270	1-468 PL-2	PILE DETAILS AND NOTES
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304	1-468 BO-1	TEST BORINGS

NOT FOR BIDDING  
AUGUST 2015

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<p><b>DELAWARE DEPARTMENT OF TRANSPORTATION</b></p>	ADDENDUMS / REVISIONS		<p><b>US 301 LEVELS ROAD TO SUMMIT BRIDGE ROAD</b></p>	CONTRACT	BRIDGE NO.	<b>1-468N&amp;S</b>	<p><b>US 301 MAINLINE OVER NORFOLK SOUTHERN RAILROAD GENERAL NOTES AND INDEX OF DRAWINGS</b></p>	SHEET NO.
	T20091303				DESIGNED BY: ADH			266
	COUNTY				CHECKED BY: DHG	TOTAL SHTS.		
	NEW CASTLE					1256		

1-468 GN-1



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

**DETAIL 2**  
SCALE: 1/4" = 1'-0"

**DETAIL 8**  
SCALE: 1/4" = 1'-0"

**GEOMETRIC LAYOUT**  
SCALE: 1/16" = 1'-0"

**DETAIL 7**  
SCALE: 1/4" = 1'-0"

**DETAIL 3**  
SCALE: 1/4" = 1'-0"

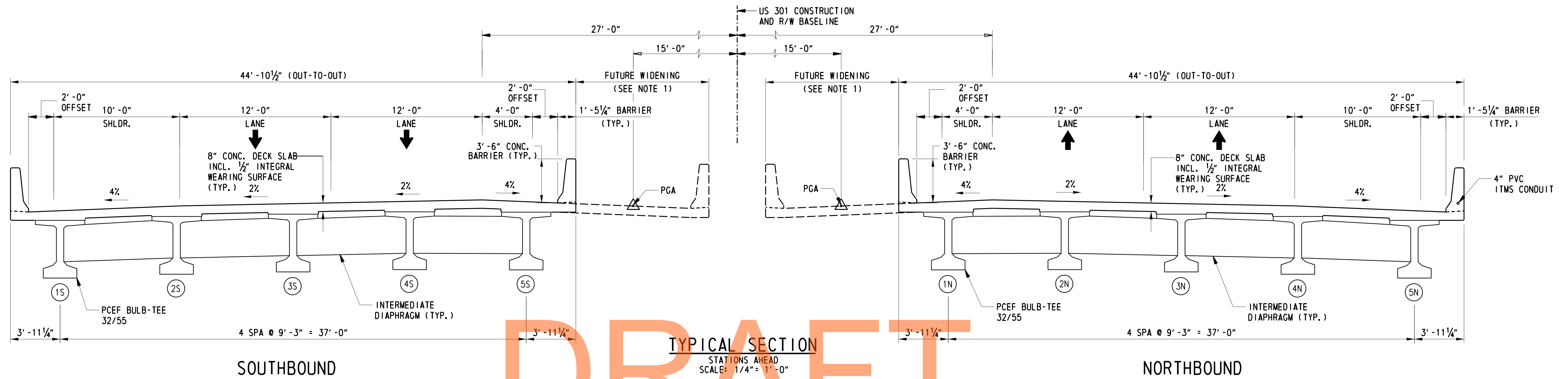
**DETAIL 4**  
SCALE: 1/4" = 1'-0"

**DETAIL 5**  
SCALE: 1/4" = 1'-0"

**DETAIL 6**  
SCALE: 1/4" = 1'-0"

WORKING POINTS				
WORK PT.	STATION	OFFSET	COORDINATES	
			NORTHING	EASTING
WP1	493+85.99	0.00	542748.7173	571919.4709
WP2	493+59.59	18.56	542718.6728	571907.6882
WP3	493+66.03	18.56	542722.2235	571913.0580
WP4	493+66.03	21.00	542720.1902	571914.4024
WP5	493+26.10	63.00	542663.1362	571904.2655
WP6	493+26.10	65.44	542661.1030	571905.6099
WP7	493+19.67	65.44	542657.5524	571900.2402
WP8	493+99.51	-18.56	542771.6604	571920.5140
WP9	494+05.95	-18.56	542775.2110	571925.8837
WP10	494+05.95	-21.00	542777.2443	571924.5393
WP11	494+45.88	-63.00	542834.2983	571934.6762
WP12	494+45.88	-65.44	542836.3315	571933.3318
WP13	494+39.44	-65.44	542832.7809	571927.9620
WP14	493+89.44	0.00	542750.6197	571922.3480
WP15	493+26.40	66.32	542660.5306	571906.3417
WP16	492+57.80	99.03	542595.4088	571867.1606
WP17	493+20.19	69.28	542654.6342	571902.7941
WP18	493+20.19	65.44	542657.8397	571900.6746
WP19	494+51.10	-64.87	542838.7397	571938.0045
WP20	494+47.18	-100.15	542866.0066	571915.2720
WP21	494+50.12	-73.68	542845.5515	571932.3254
WP22	494+41.88	-65.44	542834.1253	571929.9953
WP23	493+65.59	18.56	542721.9795	571912.6890
WP24	494+00.88	-18.56	542772.4111	571921.6493
WP25	494+84.85	0.00	542803.2443	572001.9347
WP26	494+71.33	18.56	542780.3011	572000.8916
WP27	494+64.89	18.56	542776.7505	571995.5218
WP28	494+64.89	21.00	542774.7173	571996.8662
WP29	494+24.96	63.00	542717.6632	571986.7293
WP30	494+24.96	65.44	542715.6300	571988.0738
WP31	494+31.40	65.44	542719.1806	571993.4435
WP32	495+11.25	-18.56	542833.2887	572013.7173
WP33	495+04.81	-18.56	542829.7381	572008.3476
WP34	495+04.81	-21.00	542831.7713	572007.0031
WP35	495+44.74	-63.00	542888.8253	572017.1400
WP36	495+44.74	-65.44	542890.8585	572015.7956
WP37	495+51.17	-65.44	542894.4091	572021.1654
WP38	494+81.40	0.00	542801.3418	571999.0575
WP39	494+19.74	64.87	542713.2219	571983.4011
WP40	494+29.07	98.08	542690.6644	572009.5050
WP41	494+31.40	64.44	542720.0148	571992.8920
WP42	494+37.40	64.44	542723.3241	571997.8968
WP43	495+44.44	-66.32	542891.4309	572015.0638
WP44	496+15.58	-98.30	542957.3490	572056.7628
WP45	495+51.17	-64.44	542893.5750	572021.7170
WP46	495+66.17	-64.44	542901.8483	572034.2291
WP47	494+69.96	18.56	542779.5504	571999.7563
WP48	495+05.25	-18.56	542829.9821	572008.7166

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**ESTIMATED BRIDGE QUANTITIES**

ITEM NO.	DESCRIPTION	UNIT	NORTHBOUND QUANTITIES	SOUTHBOUND QUANTITIES	TOTAL
202505	SETTLEMENT PLATFORM	EA.	1	1	2
202518	SETTLEMENT MONUMENT	EA.	1	1	2
302012	DELAWARE NO. 57 STONE	TON	86	86	172
602003	PORTLAND CEMENT CONCRETE MASONRY, ABUTMENT FOOTING, CLASS A	CY	102	105	207
602013	PORTLAND CEMENT CONCRETE MASONRY, SUPERSTRUCTURE, CLASS D	CY	180	180	360
602014	PORTLAND CEMENT CONCRETE MASONRY, APPROACH SLAB, CLASS D	CY	194	194	388
602015	PORTLAND CEMENT CONCRETE MASONRY, ABUTMENT, ABOVE FOOTING, CLASS A	CY	34	35	69
602017	PORTLAND CEMENT CONCRETE MASONRY, PARAPET, CLASS A	CY	49	49	98
602772	MECHANICALLY STABILIZED EARTH WALLS	LS	-	-	-
604000	BAR REINFORCEMENT, EPOXY COATED	LBS	103,320	103,810	207,130
605511	PREFABRICATED EXPANSION JOINT SYSTEM, 3"	LF	125	125	250
618041 (ALTERNATE)	FURNISH CAST-IN-PLACE CONCRETE PILES, 14"	LF	1,200	1,195	2,395

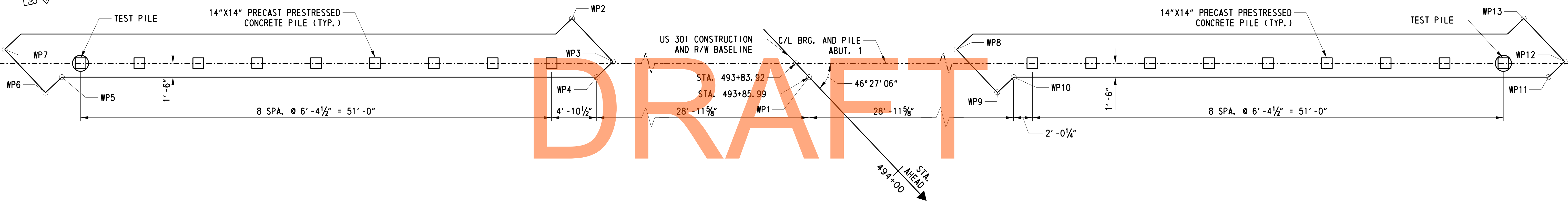
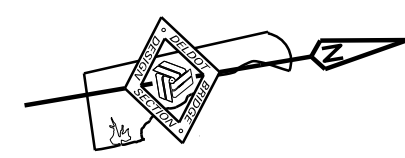
**ESTIMATED BRIDGE QUANTITIES**

ITEM NO.	DESCRIPTION	UNIT	NORTHBOUND QUANTITIES	SOUTHBOUND QUANTITIES	TOTAL
618046 (ALTERNATE)	FURNISH CAST-IN-PLACE CONCRETE TEST PILES, 14"	LF	170	170	340
618081	FURNISH PRECAST PRESTRESSED CONCRETE PILE, 14"x14"	LF	1,312	1,307	2,619
618091	FURNISH PRECAST PRESTRESSED CONCRETE TEST PILE, 14"x14"	LF	184	184	368
619021 (ALTERNATE)	INSTALL CAST-IN-PLACE CONCRETE PILES, 14"	LF	1,200	1,195	2,395
619025 (ALTERNATE)	INSTALL CAST-IN-PLACE CONCRETE TEST PILES, 14"	LF	170	170	340
619061	INSTALL PRECAST PRESTRESSED CONCRETE PILE, 14"x14"	LF	1,312	1,307	2,619
619067	INSTALL PRECAST PRESTRESSED CONCRETE TEST PILE, 14"x14"	LF	184	184	368
619501	PRODUCTION PILE RESTRIKE	EA	2	2	4
619502	TEST PILE RESTRIKE	EA DY	2	2	4
619519	DYNAMIC PILE TESTING BY CONTRACTOR	EA	2	2	4
619539	SIGNAL MATCHING ANALYSIS BY CONTRACTOR	EA	2	2	4
623000	PRESTRESSED REINFORCED CONCRETE MEMBERS	LS	-	-	-

**CROSS REFERENCE NOTE:**  
 1. FOR CONDUIT DETAILS, SEE DWG. DT-07.  
 2. FOR DEPTH OF DECK AT CENTER LINE OF BEARING, SEE DWG. PA-1.

**NOTE:**  
 1. CROSS SLOPE OF FUTURE LANE SLOPES AT 2% DOWN TO PGA. THE CURRENT FASCIA BEAM HAUNCH WOULD NEED TO BE INCREASED TO ACCOUNT FOR CHANGE IN ELEVATION OF DECK SLAB.

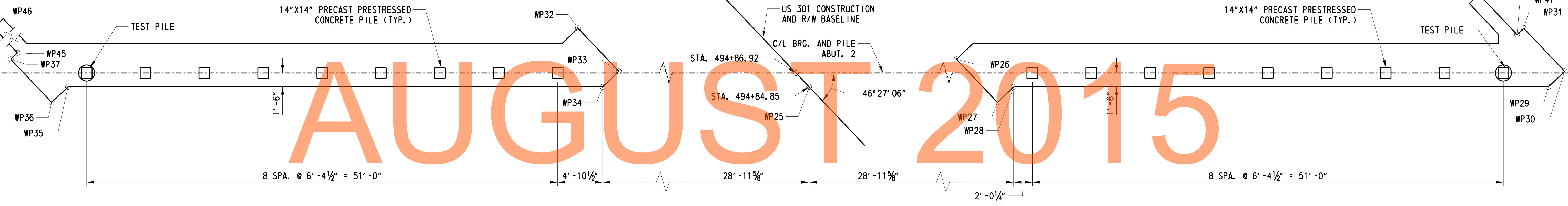
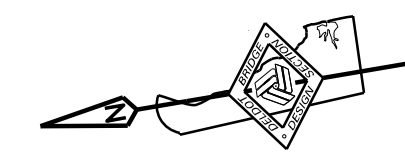
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**ABUTMENT 1 PILE PLAN**

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

NOT FOR BIDDING  
AUGUST 2015



**ABUTMENT 2 PILE PLAN**

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

**CROSS REFERENCE NOTE:**  
1. FOR PILE DETAILS AND NOTES, SEE DWG. 1-468 PL-2.

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**DELAWARE  
DEPARTMENT OF TRANSPORTATION**

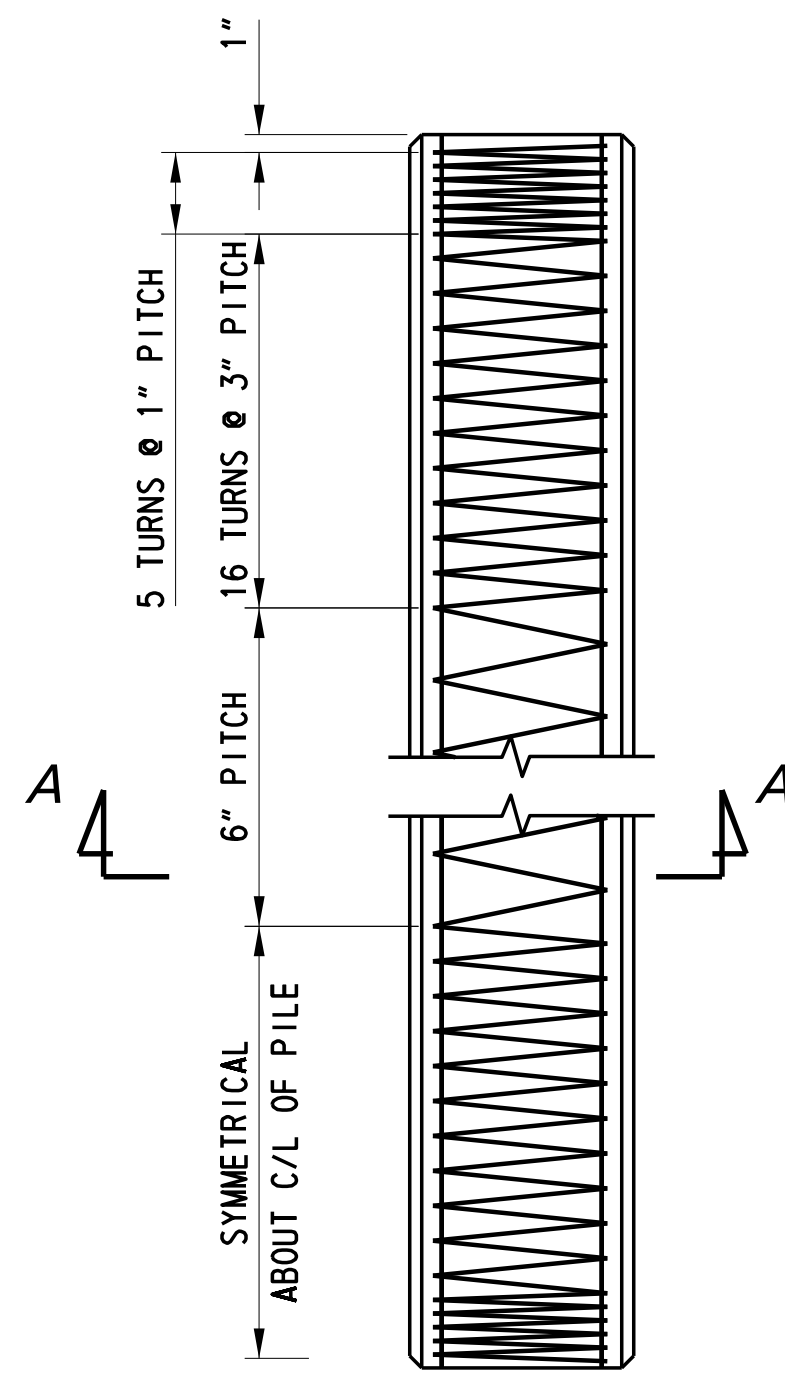
ADDENDUMS / REVISIONS	

**US 301  
LEVELS ROAD  
TO SUMMIT BRIDGE ROAD**

CONTRACT	BRIDGE NO.	<b>1-468N&amp;S</b>
T200911303	DESIGNED BY:	ADH
COUNTY	CHECKED BY:	DHG
NEW CASTLE		

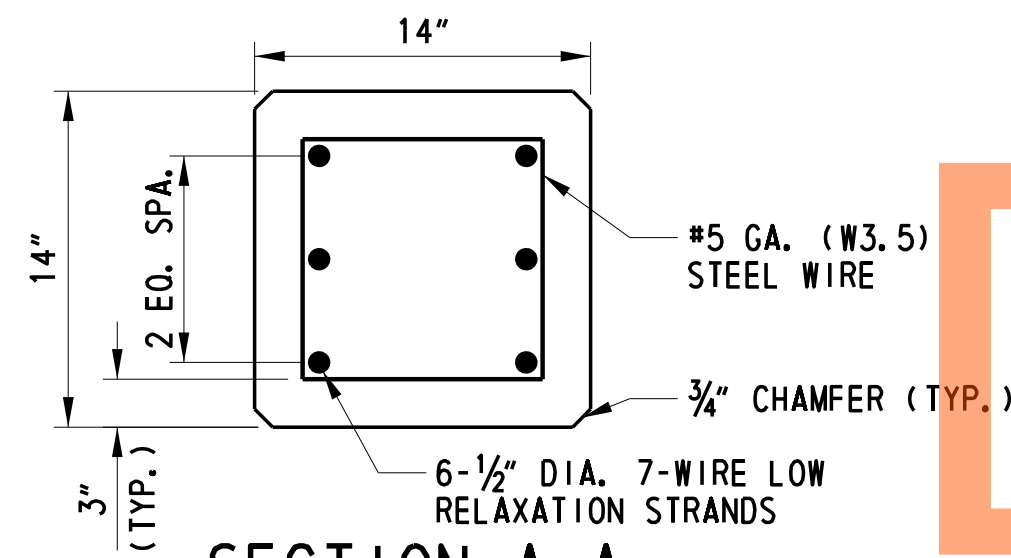
**US 301 MAINLINE OVER  
NORFOLK SOUTHERN  
RAILROAD  
ABUTMENTS 1 AND 2 -  
PILE PLAN**

1-468 PL-1
SHEET NO.
269
TOTAL SHTS.
1256



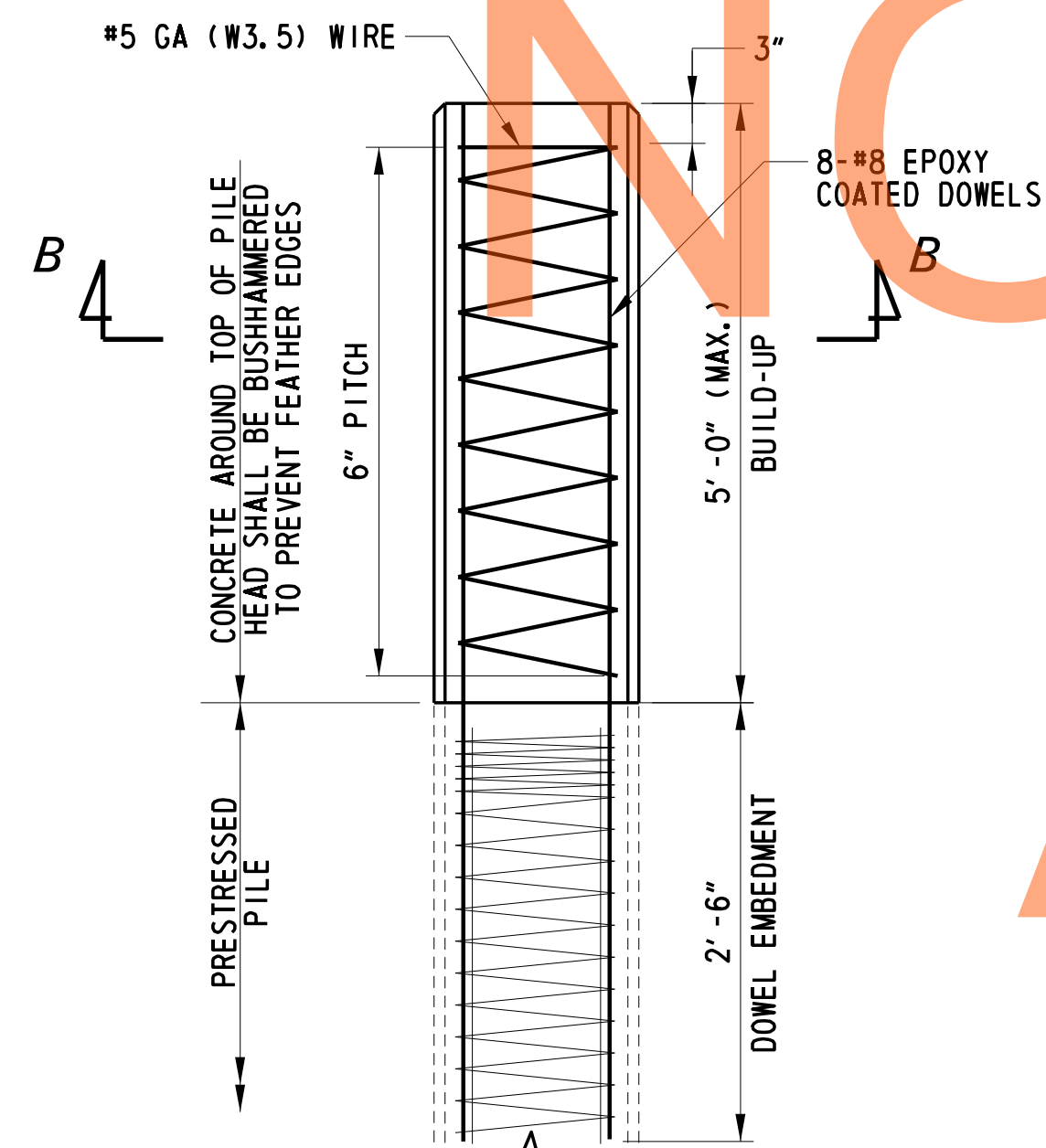
**PRESTRESSED CONCRETE PILE**

SCALE: 1" = 1'-0"



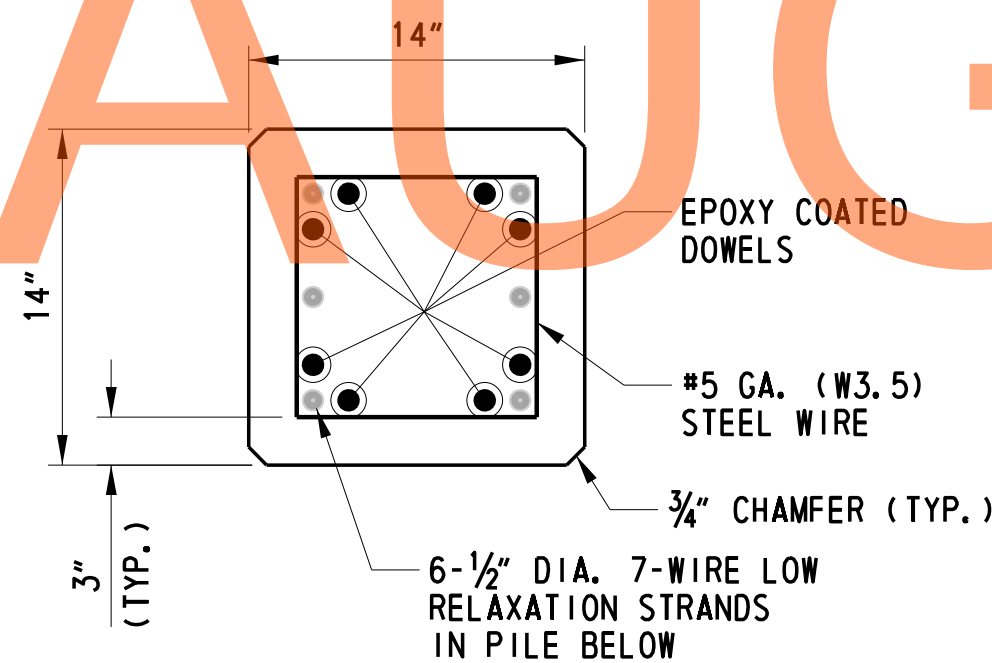
**SECTION A-A**

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



**PILE BUILD-UP  
DETAIL**

SCALE: 1" = 1'-0"



**SECTION B-B**

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

**PILE NOTES:**

- PILES SHALL BE 14"x14" PRECAST PRESTRESSED CONCRETE PILES. PILES SHALL NOT BE COATED. PILES SHALL BE CASED.
  - THE MINIMUM COMPRESSIVE STRENGTH FOR THE PRESTRESSED CONCRETE PILES AT THE AGE OF 28 DAYS SHALL BE  $f'c=6000$  PSI. THE MINIMUM COMPRESSIVE STRENGTH AT TIME OF TRANSFER OF PRESTRESS SHALL BE  $f'c=4800$  PSI.
  - ALL PRESTRESSING STRANDS SHALL MEET THE REQUIREMENTS OF ASTM 416, GRADE 270, LOW RELAXATION. 1/2" DIAMETER STRANDS SHALL HAVE AN ULTIMATE STRENGTH OF 41,300 LBS.
  - SPIRAL TIES SHALL BE #5 GAGE STEEL WIRE CONFORMING TO THE REQUIREMENTS OF AASHTO M32 (ASTM A82).
  - THE SPLICING OF PRESTRESSED PRECAST CONCRETE PILES SHALL NOT BE PERMITTED.
  - REINFORCING STRAPS SHALL BE PROVIDED FOR THE ABUTMENT STEM AND BACKWALL TO RESIST THE LONGITUDINAL FORCES ON THE SUPERSTRUCTURE.
  - PILE CASINGS SHALL BE INSTALLED AT THE PROPOSED PILE LOCATIONS DURING THE ABUTMENT MSE WALL CONSTRUCTION.
  - A MINIMUM QUARANTINE PERIOD OF 30 DAYS IS REQUIRED AFTER THE CONSTRUCTION OF THE FULL HEIGHT OF THE FILL AT THE ABUTMENTS IS ACHIEVED.
  - PILES MAY NOT BE DRIVEN UNTIL AFTER COMPLETION OF THE QUARANTINE PERIOD.
  - TEST PILES MAY BE DRIVEN PRIOR TO PLACING MSE WALL BACKFILL. RESTRIKES OF THESE TEST PILES SHALL BE PERFORMED PRIOR TO PLACING ANY EMBANKMENT IN ACCORDANCE WITH ITEM 619502-TEST PILE RESTRIKE. TEST PILES BEHIND MSE WALLS SHALL THEN BE CASED PRIOR TO PLACING EMBANKMENT. AFTER THE SETTLEMENT HAS BEEN ACHIEVED AND THE SUBSTRUCTURE HAS BEEN RELEASED BY THE ENGINEER, PRODUCTION PILES MAY BE INSTALLED. AT THIS POINT, THE TEST PILE SHALL BE ACTING AS A PRODUCTION PILE AND IT SHALL BE RE-STRUCK AS DIRECTED BY THE ENGINEER PRIOR TO PLACING ANY OTHER PRODUCTION PILES WITH PAYMENT UNDER ITEM 619501- PRODUCTION PILE RESTRIKE.
  - THE ENGINEER SHALL APPROVE THE COMPLETION OF THE QUARANTINE PERIOD, BASED ON RESULTS OF INSTRUMENTATION.
  - SEE THE SPECIAL PROVISIONS 202505 AND 202518 FOR SETTLEMENT MONITORING REQUIREMENTS.
  - ALL PILES SHALL BE DRIVEN TO THE NOMINAL PILE DRIVING RESISTANCE LISTED IN THE PILE INSTALLATION DATA TABLE.
  - TEST PILES SHALL BE 10 FEET LONGER THAN PRODUCTION PILES AS INDICATED ON PILE INSTALLATION DATA TABLE.
  - THE CONTRACTOR SHALL BE RESPONSIBLE FOR SUBMITTING A WAVE EQUATION ANALYSIS AND ALL OTHER INCIDENTALS IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS. THE WAVE EQUATION AND HIGH-STRAIN DYNAMIC PILE TESTING MUST BE SIGNED AND STAMPED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF DELAWARE IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.
  - UPON COMPLETION OF THE HIGH-STRAIN DYNAMIC PILE TESTING THE CONTRACTOR SHALL SUBMIT A SIGNAL MATCHING ANALYSIS TO THE ENGINEER FOR REVIEW AND APPROVAL IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.
  - DELDOT STANDARD SPECIFICATION 619.11(a)(6) SHALL BE MODIFIED BY REFERENCE TO SPECIAL PROVISIONS 619519 & 619539.
  - PILE LENGTHS FOR ORDERING PURPOSES SHALL BE DETERMINED BY TEST PILES. A MINIMUM OF ONE (1) PILE PER SUBSTRUCTURE, AS SHOWN ON THE PLANS, SHALL BE DYNAMICALLY TESTED WITH SIGNAL MATCHING ANALYSIS BY THE CONTRACTOR IN ACCORDANCE WITH SPECIAL PROVISION 619519 AND 619539. TEST AND PRODUCTION PILE RE-STRIKES WILL BE PAID AS FOLLOWS:
    - ALL TEST PILE(S) 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 TEST PILE RESTRIKES ARE REQUESTED AFTER THE FIVE WORKING DAYS FROM THE COMPLETION OF THE INITIAL DRIVE THEN THE TEST PILE RESTRIKE SHALL BE PAID AS NOTED IN SPECIAL PROVISION 619502.
    - IF DIRECTED BY THE ENGINEER TO RESTRIKE A PRODUCTION PILE, THE RESTRIKE OF THE PRODUCTION PILE SHALL BE PAID SEPARATELY UNDER ITEM NO. 619501.
  - THE DEPARTMENT RESERVES THE RIGHT TO PERFORM DYNAMIC TESTING OF RESTRIKES.
  - PROVIDE 1 1/2" DIAMETER PREFORMED HOLES IN PILE HEAD AT THE DOWEL LOCATIONS. DOWELS SHALL BE GROUTED INTO PLACE WITH AN APPROVED EPOXY GROUT. PRIOR TO THE GROUTING PROCEDURE, PREFORMED HOLES SHALL REMAIN PLUGGED TO ENSURE THAT WATER AND FOREIGN MATERIAL DOES NOT ENTER THE PREFORMED HOLES.
  - MINIMUM COMPRESSIVE STRENGTH OF EPOXY GROUT SHALL BE  $f'c=6000$  PSI.
  - THE COMPRESSIVE STRENGTH OF THE PILE BUILD-UP SHALL BE  $f'c=6000$  PSI.
  - DOWEL HOLES SHALL BE POSITIONED TO MAINTAIN A 1" CLEAR DISTANCE FROM ALL PRESTRESSING STRANDS IN THE PILE.
- ADDITIONAL NOTES FOR CAST-IN-PLACE ALTERNATE:**
- A CONTRACTOR'S ALTERNATE OF USING 14" CAST-IN-PLACE CONCRETE PILES (14" MONOTUBES) IS ALLOWED. ASSUME A ONE TO ONE PILE SUBSTITUTION.
  - MONOTUBE SHELLS SHALL HAVE A 3 GAUGE THICKNESS, AN 8 IN TIP WITH A CLOSED CONICAL POINT, 14 IN BUTT AND 15 FT Y TAPER AT 0.40 IN/FT.
  - THE ESTIMATED TIP ELEVATION SHALL BE 12 FT.
  - A NOMINAL PILE DRIVING RESISTANCE OF 333 KIPS SHALL BE OBTAINED.

**PICK-UP NOTES:**

- UNLESS SPECIAL LIFTING DEVICES ARE ATTACHED FOR PICK-UP, PICK-UP POINTS SHALL BE PLAINLY MARKED ON ALL PILES AFTER REMOVAL OF THE FORMS. THE PILE SHALL BE SUPPORTED ONLY AT THE INDICATED PICK-UP POINTS WHILE BEING STORED OR HANDLED.
- THE USE OF PROPER RIGGING IS REQUIRED TO INSURE THAT THE PICK-UP POINTS REMAIN IN A STRAIGHT LINE DURING LIFTING AND WHEN POSITIONING THE PILE FOR DRIVING.
- THE USE OF SPECIAL EMBEDDED OR ATTACHED LIFTING DEVICES, THE USE OF OTHER PICK-UP LOCATIONS OR ANY OTHER METHOD OF PICK-UP SHALL BE SUBJECT TO THE APPROVAL OF THE ENGINEER.

**PILE INSTALLATION DATA**

SUBSTRUCTURE UNIT	DESIGN DATA		ACTUAL FIELD DATA	
	NOMINAL PILE DRIVING RESISTANCE (K.I.P)	ESTIMATED PILE TIP ELEVATION	AVERAGE MINIMUM TIP ELEVATION	AVERAGE MAXIMUM TIP ELEVATION
ABUTMENT 1	333	5 FT		
ABUTMENT 2	333	5 FT		

**ABUTMENT 1 PILE DRIVING INFORMATION**

PILE SIZE AND TYPE:
ACTUAL BEARING OBTAINED:
HAMMER TYPE:
PILE HAMMER ENERGY:
SPECIAL DRIVING CONDITIONS AND COMMENTS:

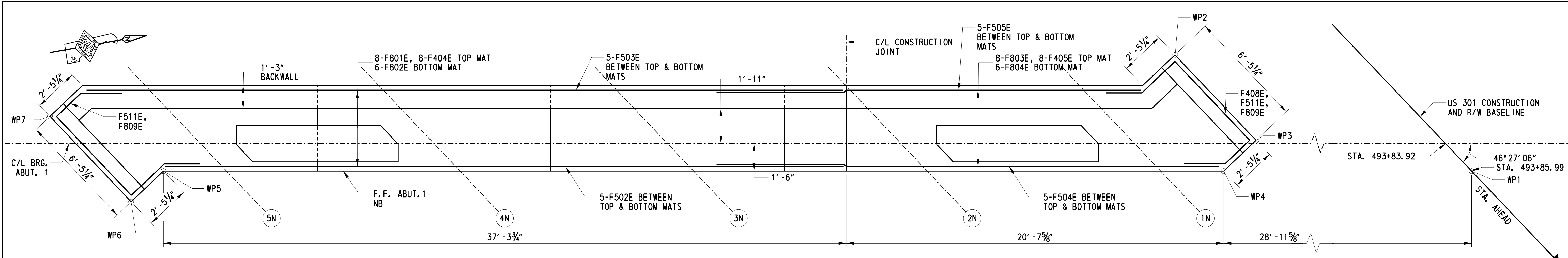
**ABUTMENT 2 PILE DRIVING INFORMATION**

PILE SIZE AND TYPE:
ACTUAL BEARING OBTAINED:
HAMMER TYPE:
PILE HAMMER ENERGY:
SPECIAL DRIVING CONDITIONS AND COMMENTS:

**CROSS REFERENCE NOTE:**

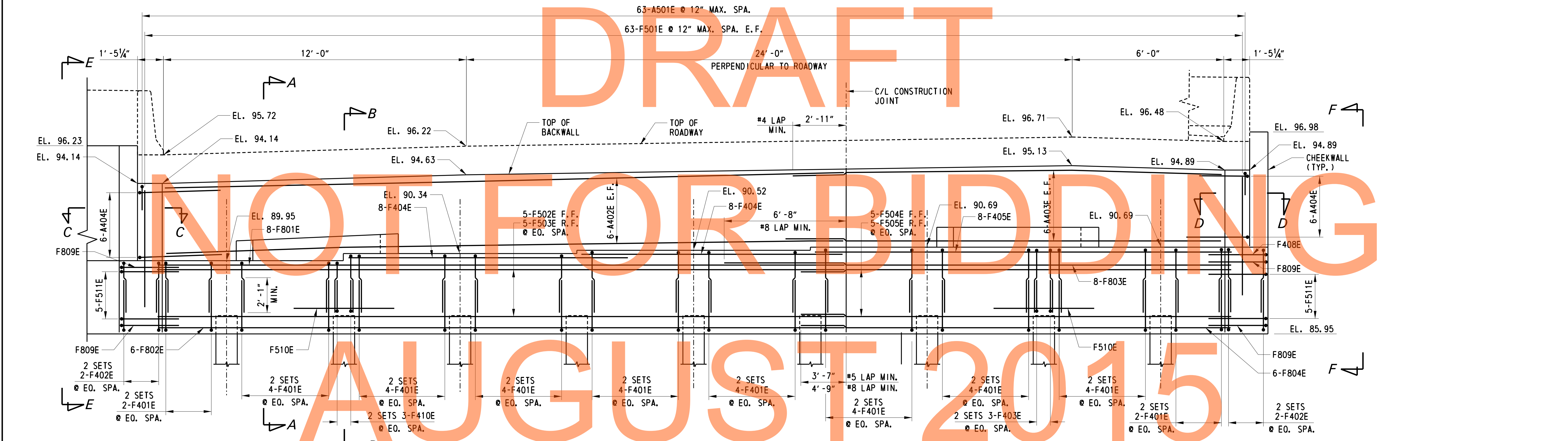
- FOR PILE CASING DETAIL, SEE DWG. 1-468 AB-5.

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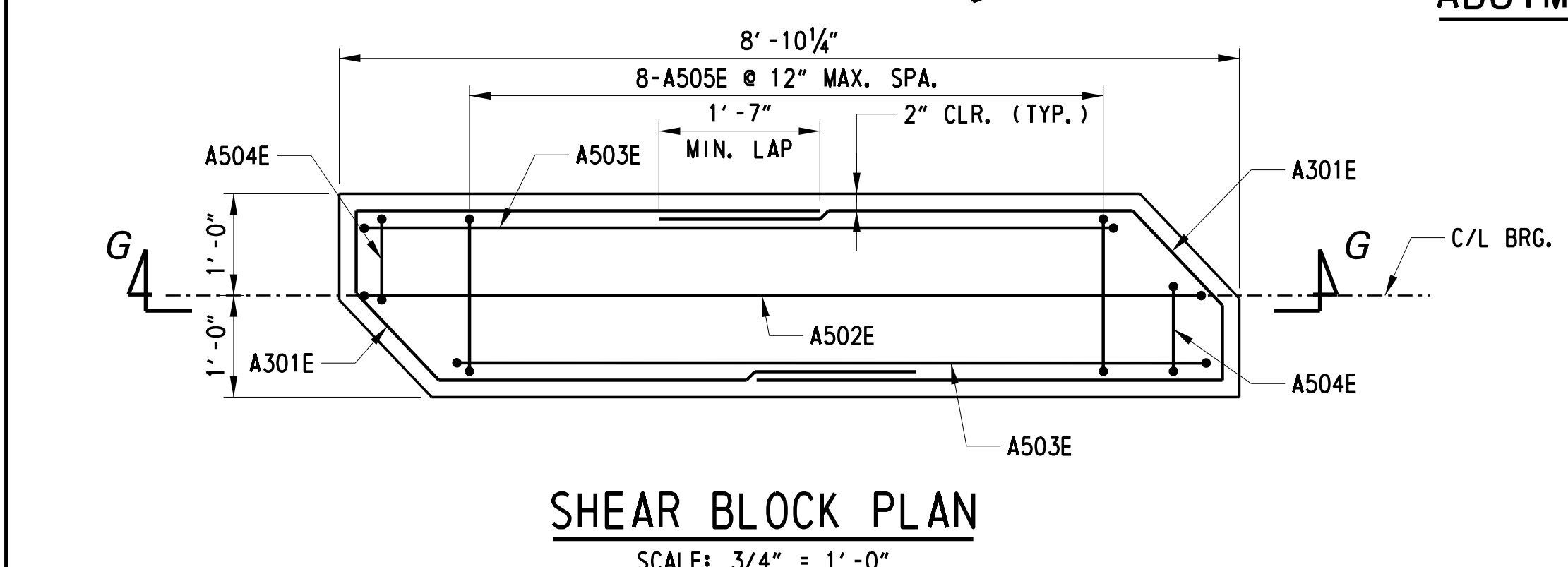
**ABUTMENT 1 PLAN - NORTHBOUND**

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



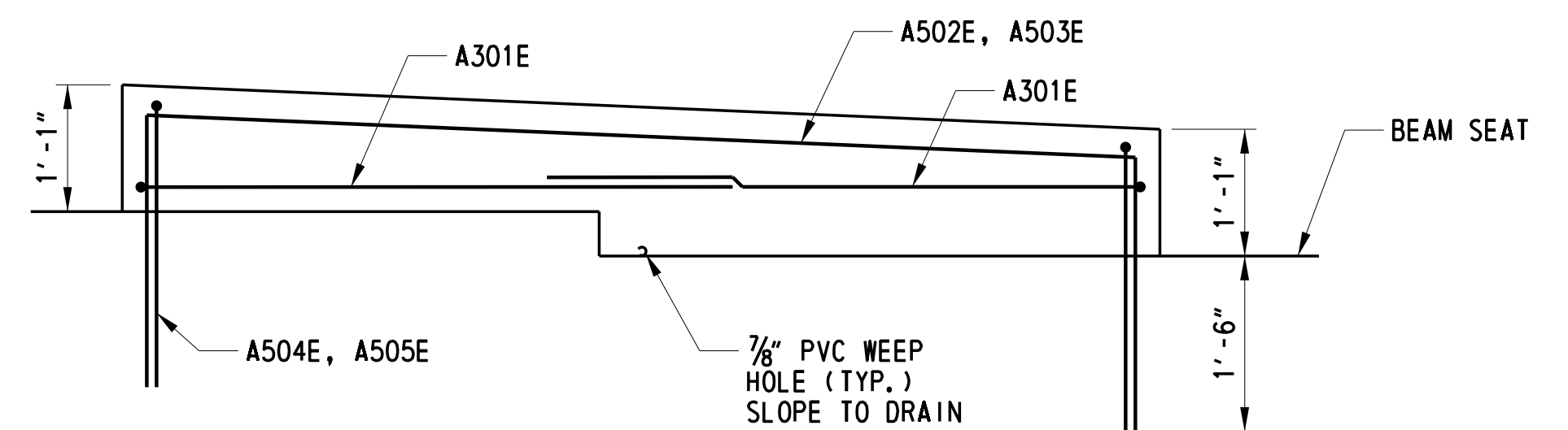
**ABUTMENT 1 ELEVATION - NORTHBOUND**

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



**SHEAR BLOCK PLAN**

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



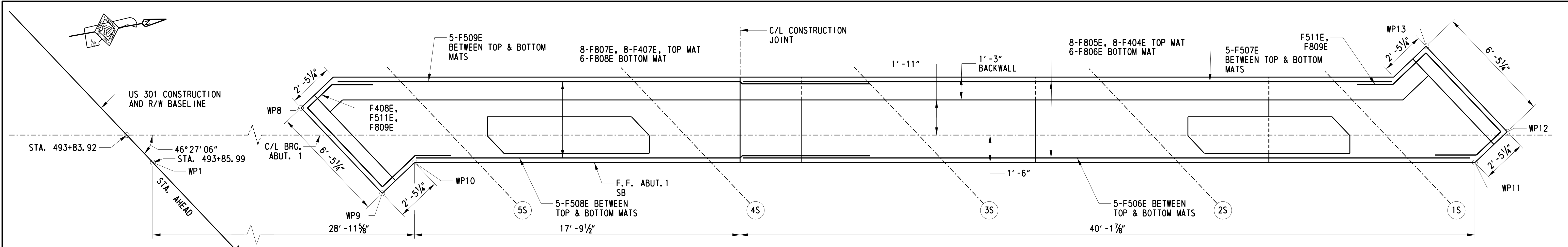
**SECTION G-G**

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

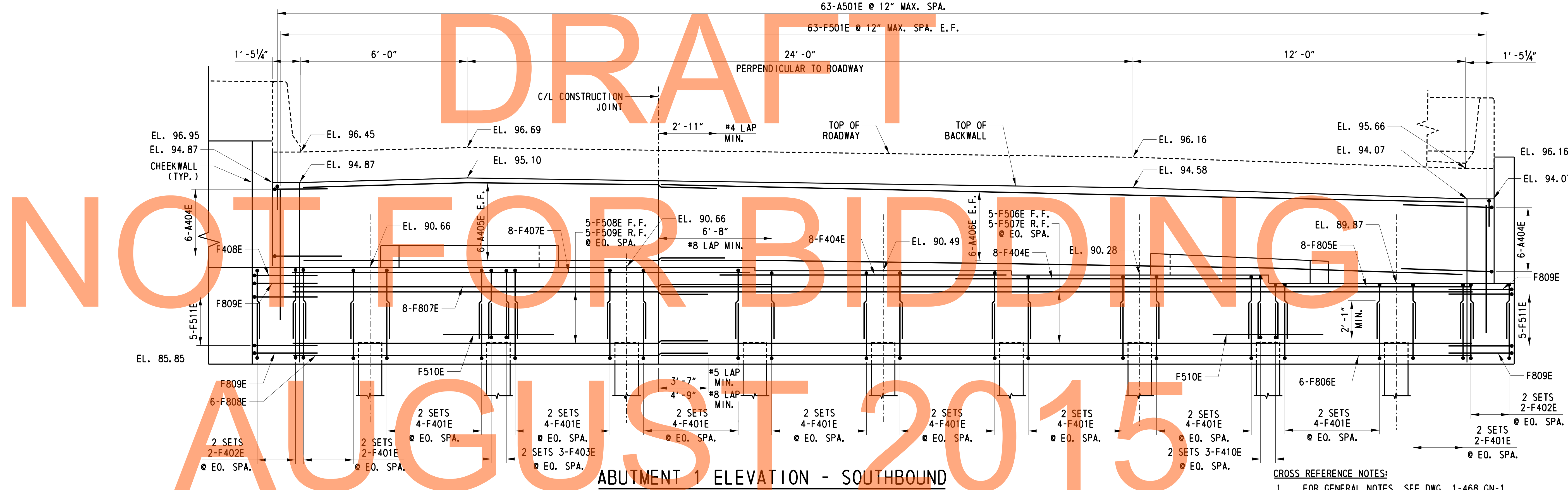
- CROSS REFERENCE NOTES:**
- FOR GENERAL NOTES, SEE DWG. 1-468 GN-1.
  - FOR SECTIONS AND DETAILS, SEE DWG. 1-468 AB-5.
  - FOR MEDIAN AND WINGWALL ELEVATIONS, SEE DWG. 1-468 WW-1 AND 1-468 WW-2.
  - FOR REINFORCEMENT SCHEDULE, SEE DWG. 1-468 BR-1.
- NOTES:**
- MSE WALL AND COPING NOT SHOWN FOR CLARITY.
  - ABUTMENT SEAT STEPS MID-WAY BETWEEN GIRDERS.
  - ONLY TRANSVERSE FOOTING REINFORCEMENT IS SHOWN IN PLAN VIEW FOR CLARITY.
  - PILE CASINGS NOT SHOWN FOR CLARITY.

ADDENDUMS / REVISIONS

CONTRACT	BRIDGE NO.	<b>1-468N&amp;S</b>
T200911303	DESIGNED BY:	ADH
COUNTY	CHECKED BY:	DHG
NEW CASTLE		



**ABUTMENT 1 PLAN - SOUTHBOUND**  
SCALE: 3/8" = 1'-0"

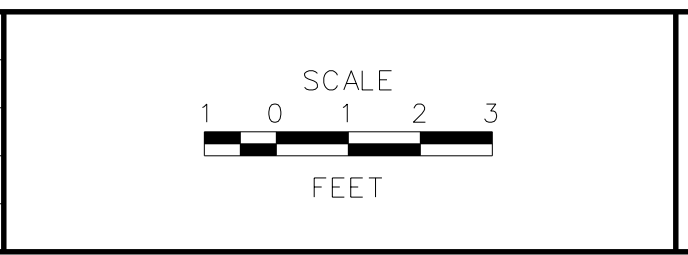


**ABUTMENT 1 ELEVATION - SOUTHBOUND**  
SCALE: 3/8" = 1'-0"

- CROSS REFERENCE NOTES:**
- FOR GENERAL NOTES, SEE DWG. 1-468 GN-1.
  - FOR SECTIONS AND DETAILS, SEE DWG. 1-468 AB-5.
  - FOR MEDIAN AND WINGWALL ELEVATIONS, SEE DWG. 1-468 WW-1 AND 1-468 WW-2.
  - FOR REINFORCEMENT SCHEDULE, SEE DWG. 1-468 BR-2.
  - FOR SHEAR BLOCK DETAILS, SEE DWG. 1-468 AB-1.
- NOTES:**
- MSE WALL AND COPING NOT SHOWN FOR CLARITY.
  - ABUTMENT SEAT STEPS MID-WAY BETWEEN GIRDERS.
  - ONLY TRANSVERSE FOOTING REINFORCEMENT IS SHOWN IN PLAN VIEW FOR CLARITY.
  - PILE CASINGS NOT SHOWN FOR CLARITY.

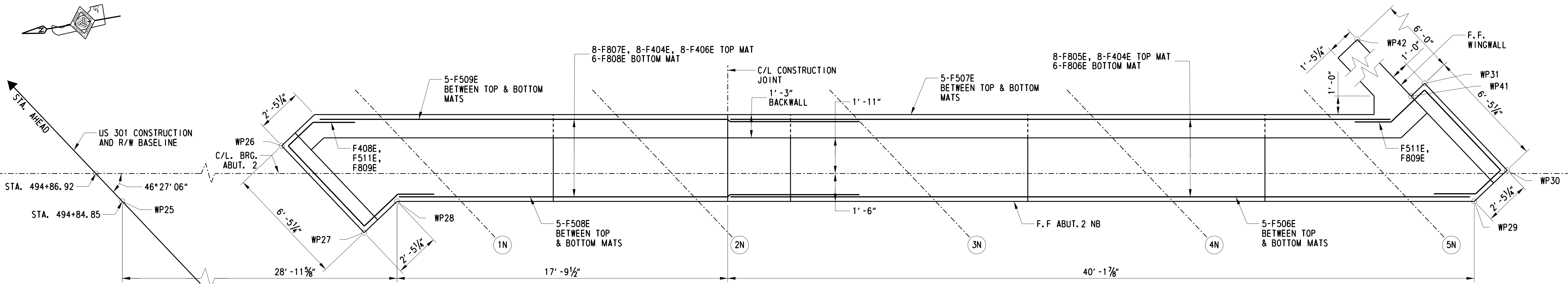
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ADDENDUMS / REVISIONS

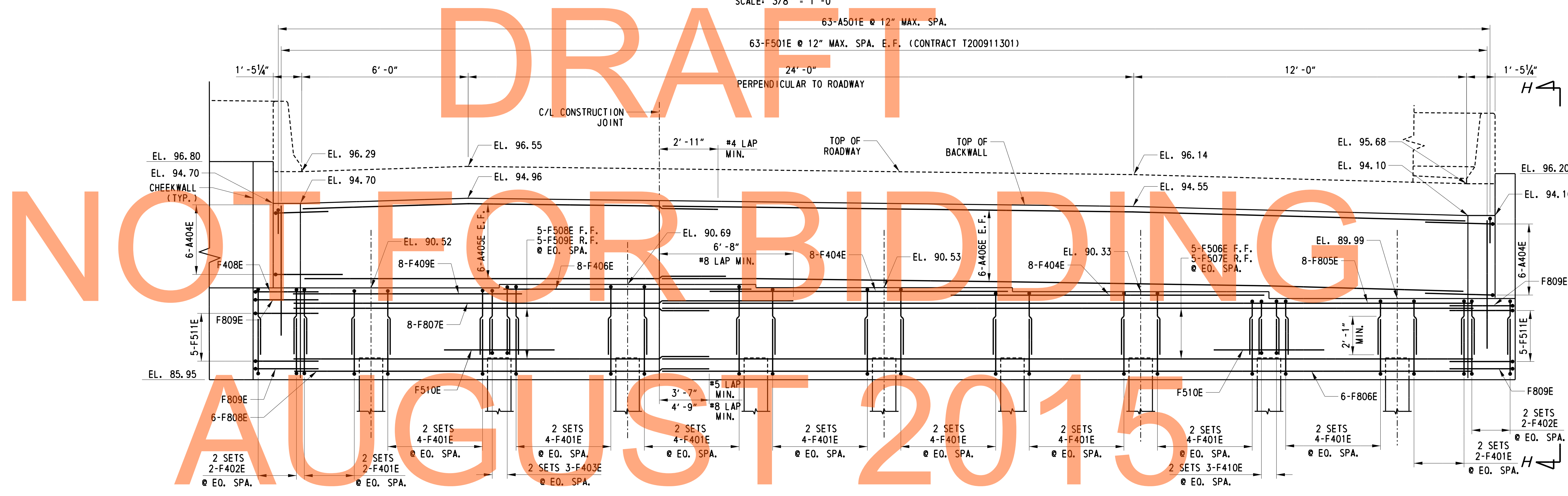


CONTRACT	BRIDGE NO.	<b>1-468N&amp;S</b>
T20091303	DESIGNED BY:	ADH
COUNTY	CHECKED BY:	DHG
NEW CASTLE		





**ABUTMENT 2 PLAN - NORTHBOUND**  
SCALE: 3/8" = 1'-0"

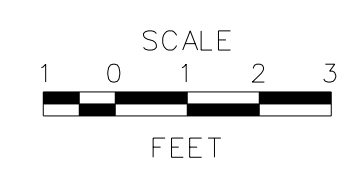


**ABUTMENT 2 ELEVATION - NORTHBOUND**  
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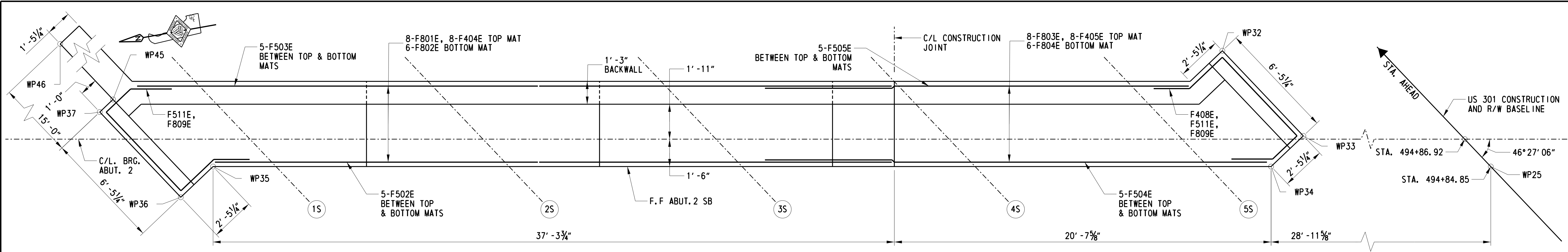
- CROSS REFERENCE NOTES:**
- FOR GENERAL NOTES, SEE DWG. 1-468 GN-1.
  - FOR SECTIONS AND DETAILS, SEE DWG. 1-468 AB-5 AND 1-468 AB-6.
  - FOR MEDIAN AND WINGWALL ELEVATIONS, SEE DWG. 1-468 WW-1 AND 1-468 WW-2.
  - FOR REINFORCEMENT SCHEDULE, SEE DWG. 1-468 BR-1.
- NOTES:**
- MSE WALL AND COPING NOT SHOWN FOR CLARITY.
  - ABUTMENT SEAT STEPS MID-WAY BETWEEN GIRDERS.
  - ONLY TRANSVERSE FOOTING REINFORCEMENT IS SHOWN IN PLAN VIEW FOR CLARITY.
  - PILE CASINGS NOT SHOWN FOR CLARITY.
  - WINGWALL REINFORCEMENT NOT SHOWN FOR CLARITY.

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ADDENDUMS / REVISIONS

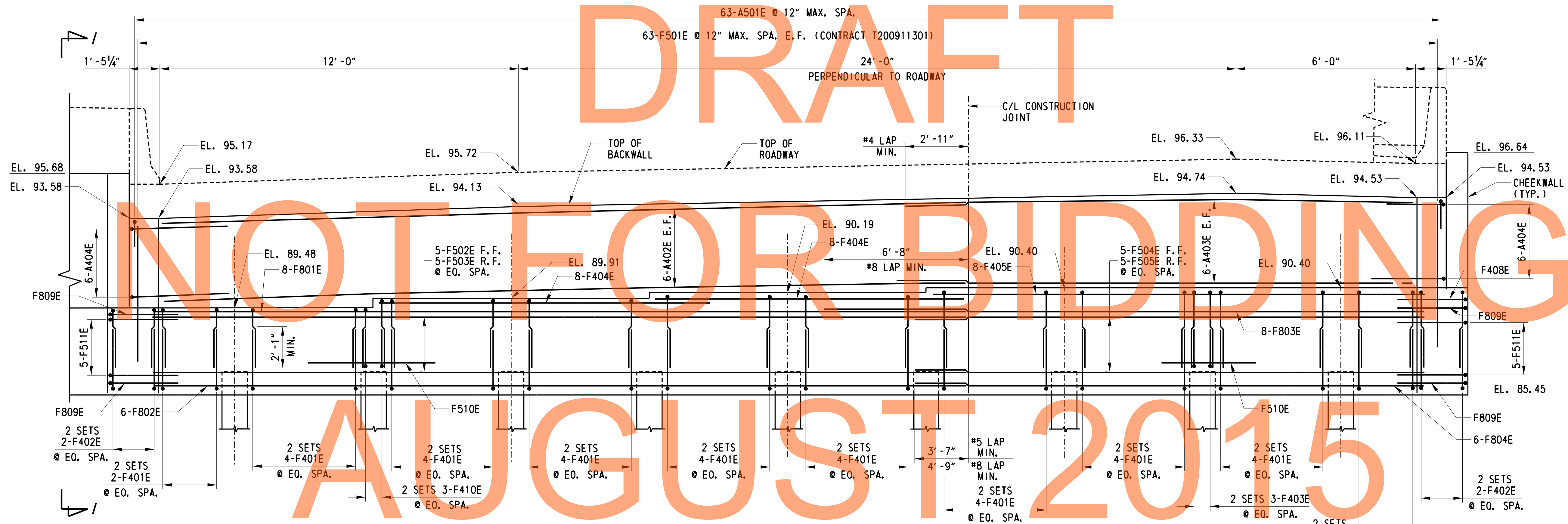


CONTRACT	T20091303
COUNTY	NEW CASTLE
BRIDGE NO.	<b>1-468N&amp;S</b>
DESIGNED BY:	ADH
CHECKED BY:	DHG



**ABUTMENT 2 PLAN - SOUTHBOUND**

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



**ABUTMENT 2 ELEVATION - SOUTHBOUND**

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

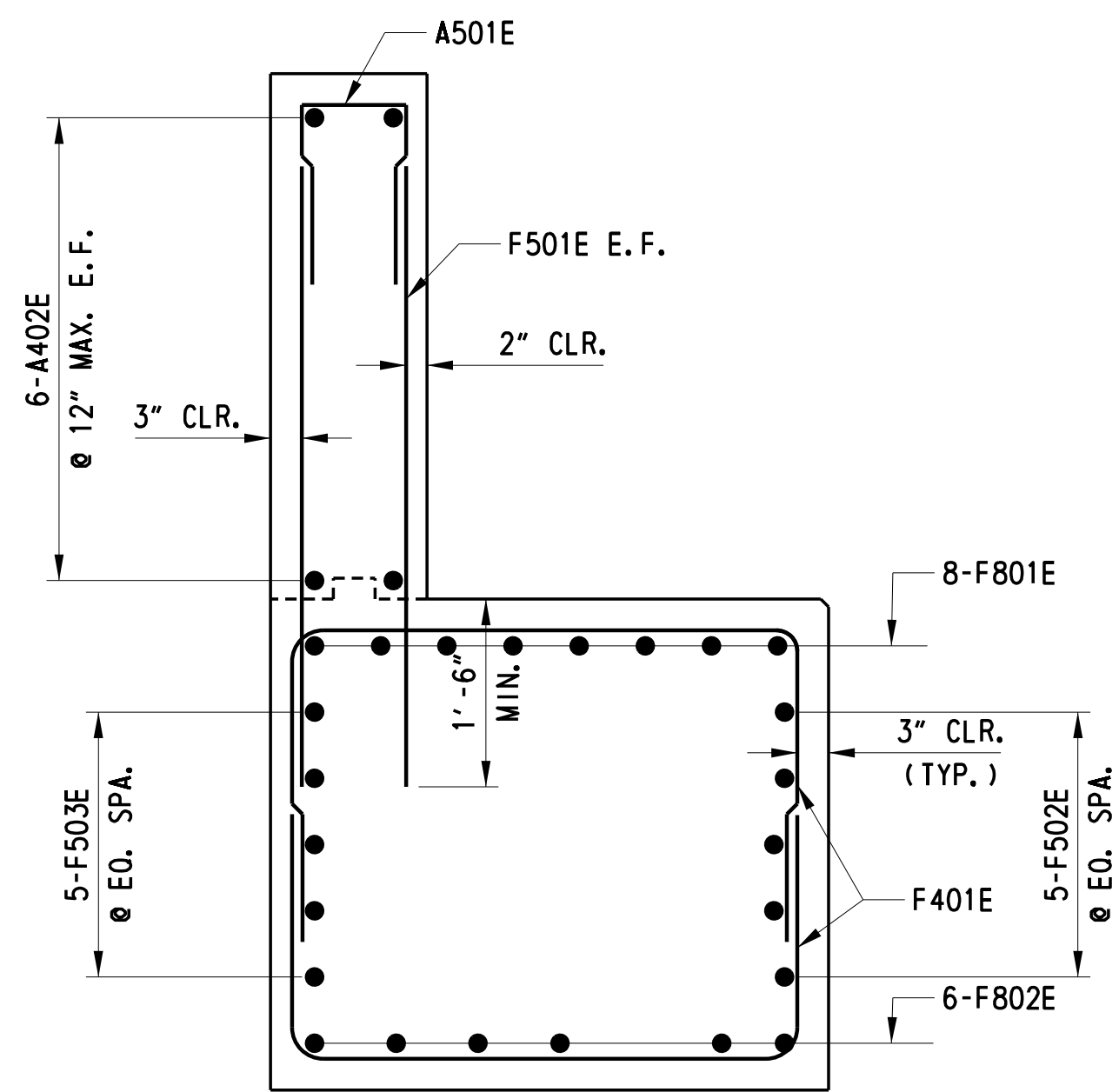
**CROSS REFERENCE NOTES:**

1. FOR GENERAL NOTES, SEE DWG. 1-468 GN-1.
  2. FOR SECTIONS AND DETAILS, SEE DWG. 1-468 AB-5 AND 1-468 AB-6.
  3. FOR MEDIAN AND WINGWALL ELEVATIONS, SEE DWG. 1-468 WW-1 AND 1-468 WW-2.
  4. FOR REINFORCEMENT SCHEDULE, SEE DWG. 1-468 BR-2.
- NOTES:**
1. MSE WALL AND COPING NOT SHOWN FOR CLARITY.
  2. ABUTMENT SEAT STEPS MID-WAY BETWEEN GIRDERS.
  3. ONLY TRANSVERSE FOOTING REINFORCEMENT IS SHOWN IN PLAN VIEW FOR CLARITY.
  4. PILE CASINGS NOT SHOWN FOR CLARITY.
  5. WINGWALL REINFORCEMENT NOT SHOWN FOR CLARITY.

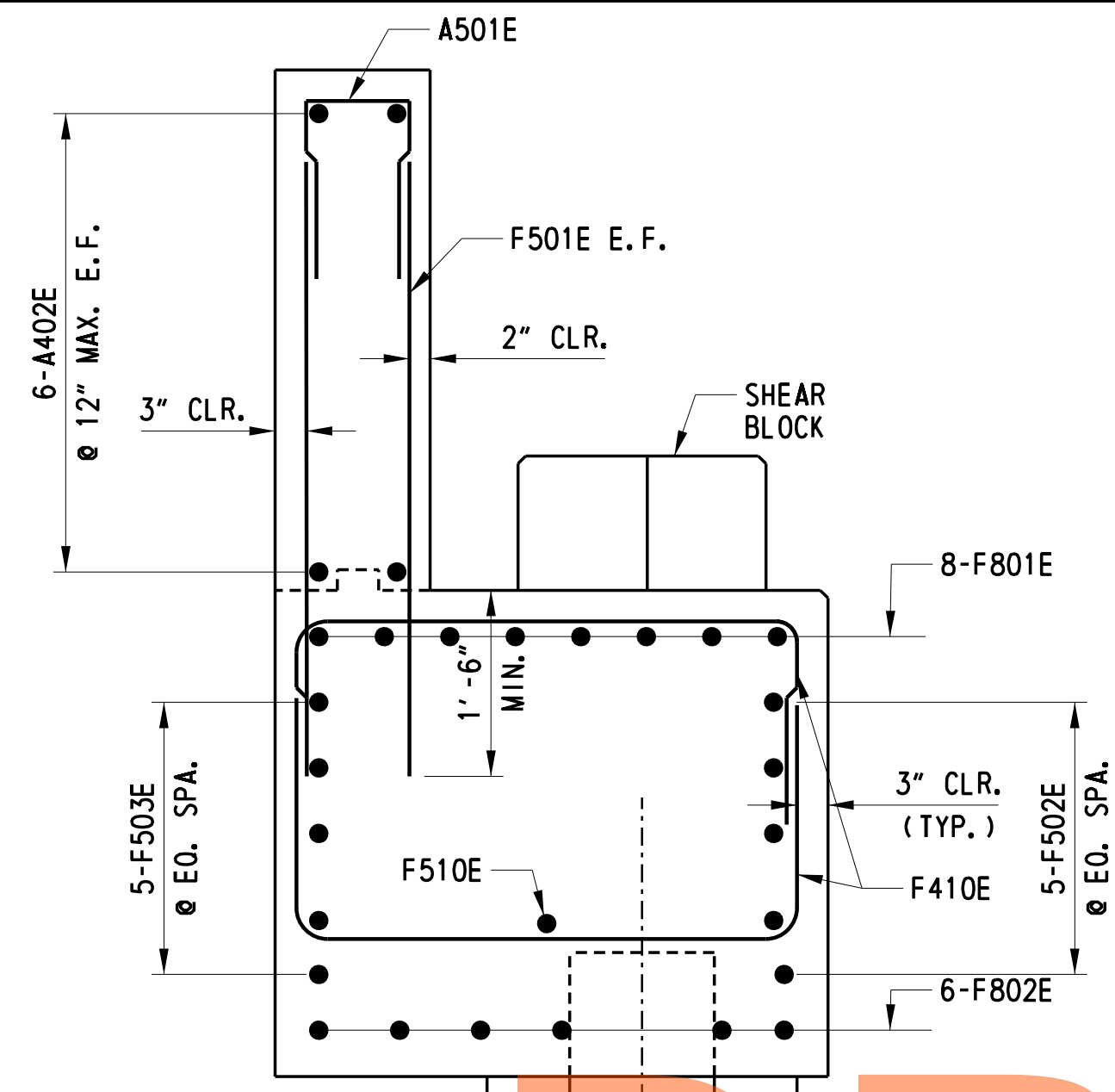
1-468 AB-4

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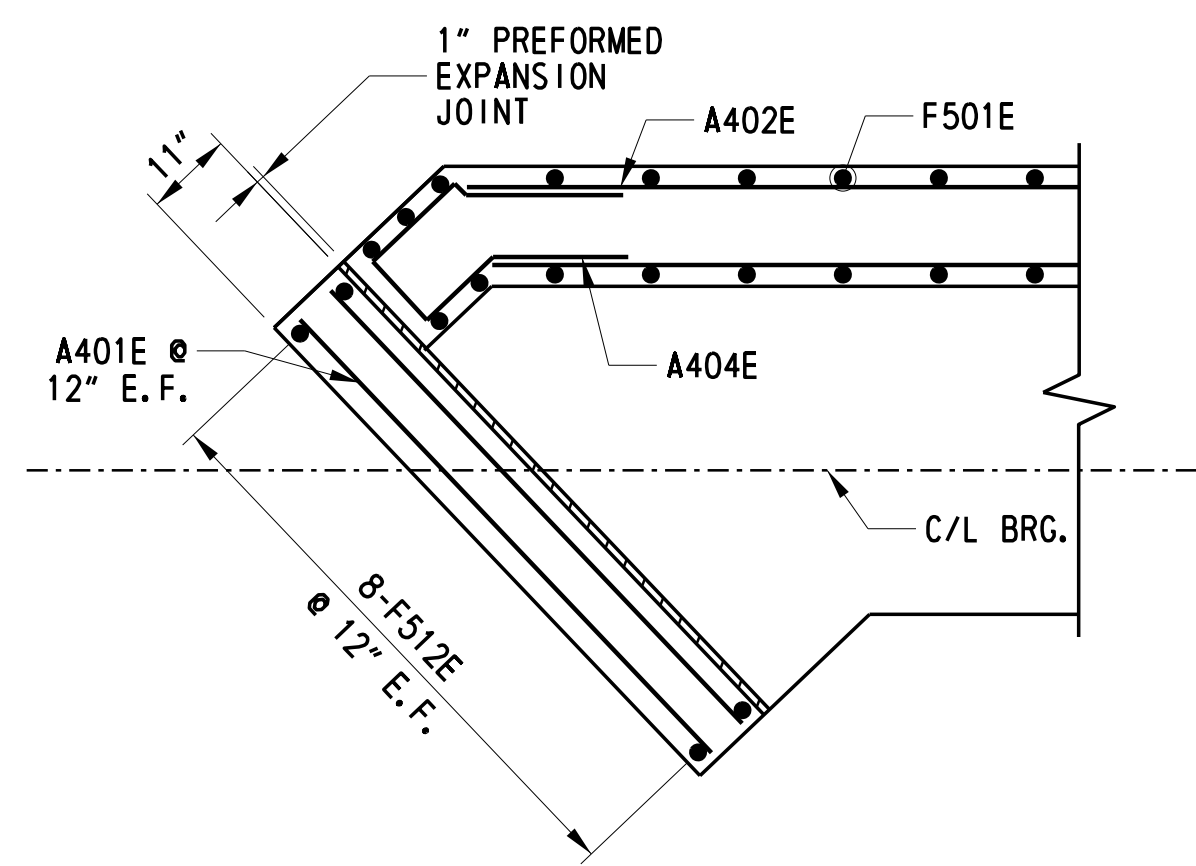
<p><b>DELAWARE DEPARTMENT OF TRANSPORTATION</b></p>	<p>ADDENDUMS / REVISIONS</p> <table border="1" style="width: 100%; height: 40px;"> <tr><td> </td><td> </td></tr> </table>			<p>SCALE</p> <p>FEET</p>	<p><b>US 301 LEVELS ROAD TO SUMMIT BRIDGE ROAD</b></p>	CONTRACT	BRIDGE NO.	<p><b>1-468N&amp;S</b></p>	<p><b>US 301 MAINLINE OVER NORFOLK SOUTHERN RAILROAD ABUTMENT 2 SB - PLAN AND REINFORCEMENT</b></p>	SHEET NO.
T20091303	DESIGNED BY: ADH	274								
				COUNTY	CHECKED BY: DHG			TOTAL SHTS.		
				NEW CASTLE			1256			



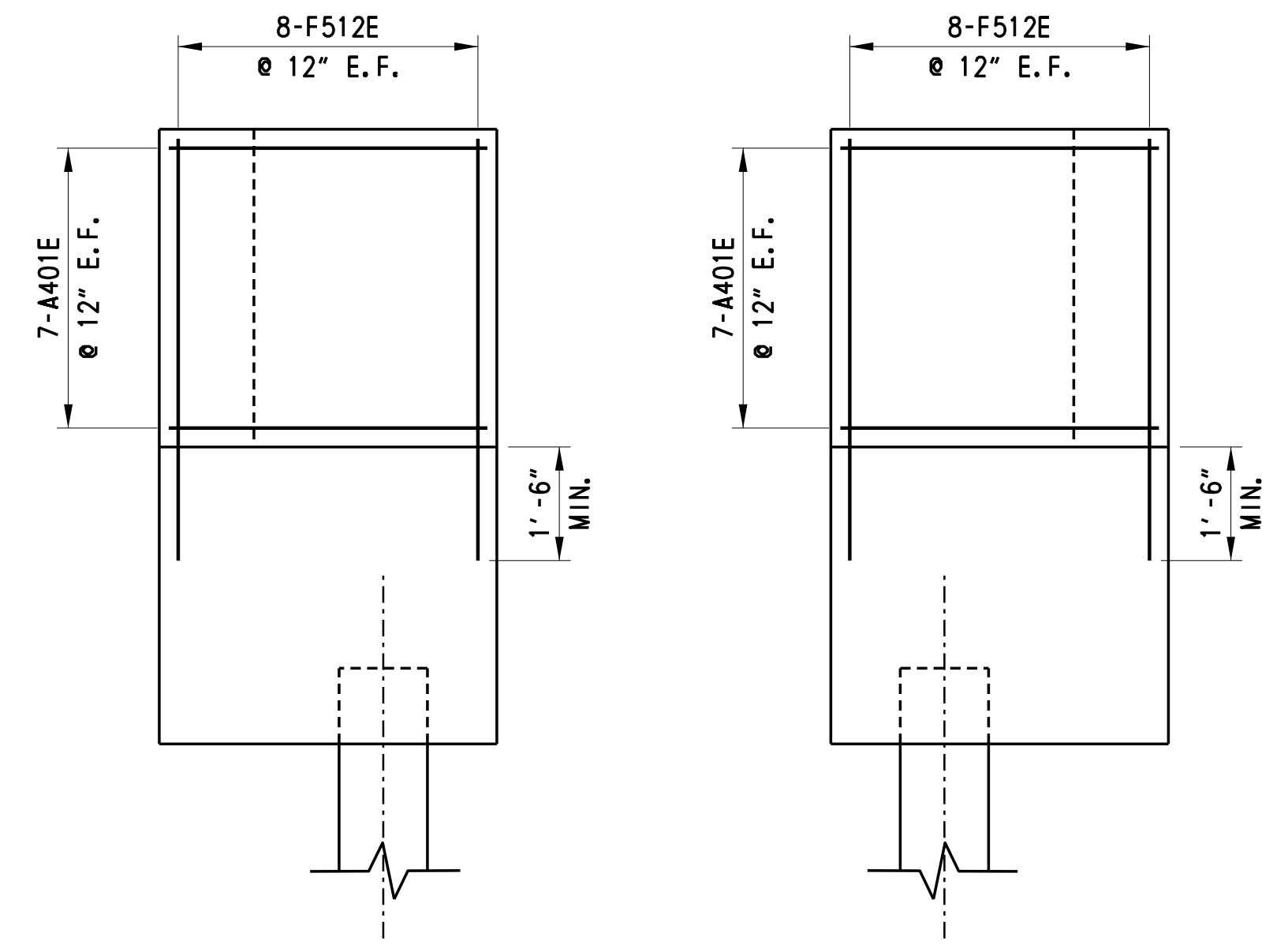
**SECTION A-A**  
SCALE: 3/4" = 1'-0"



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

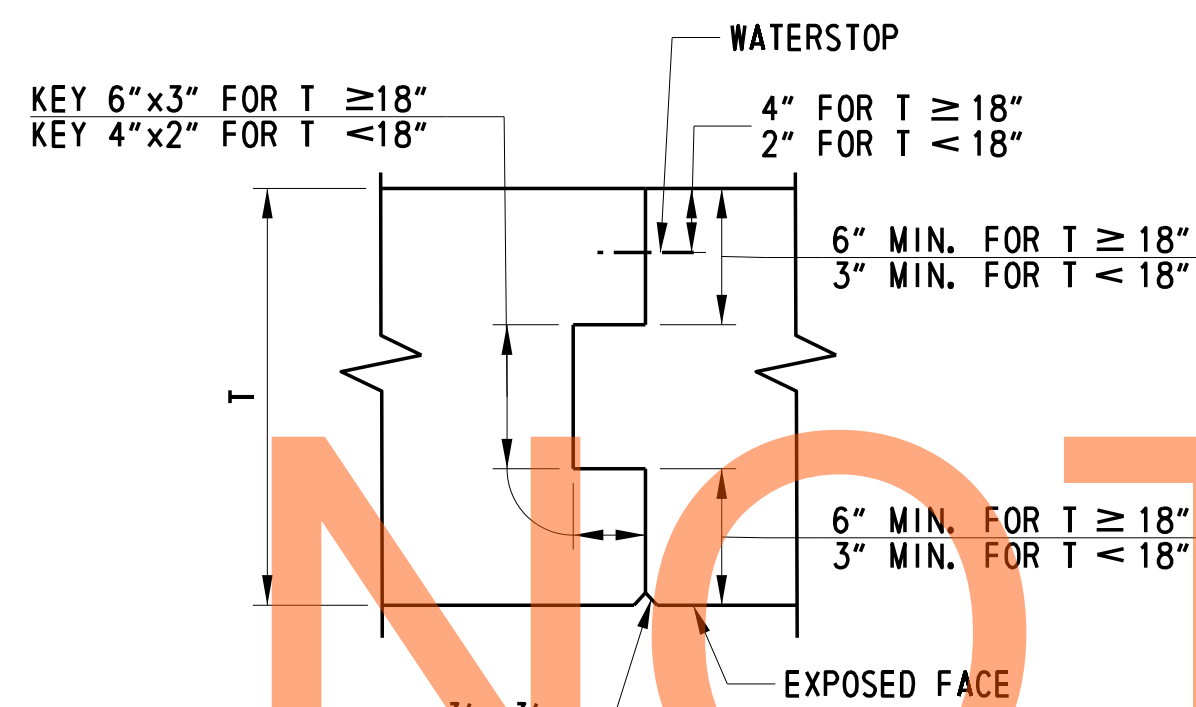


**SECTION C-C**  
SCALE: 1/2" = 1'-0"

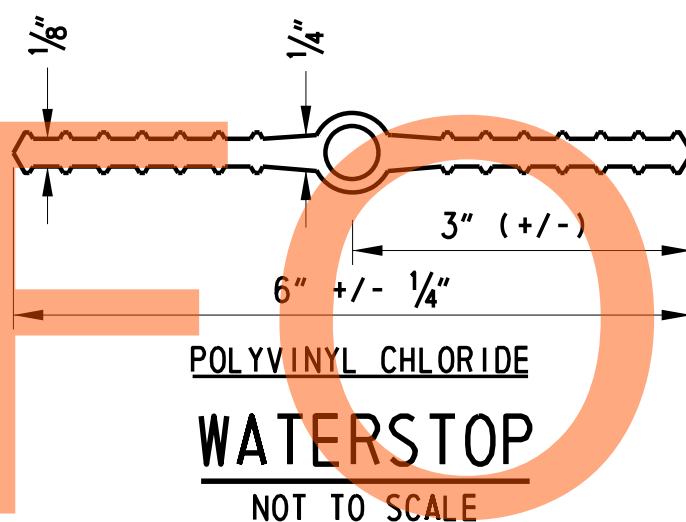


**VIEW E-E**  
SCALE: 1/2" = 1'-0"

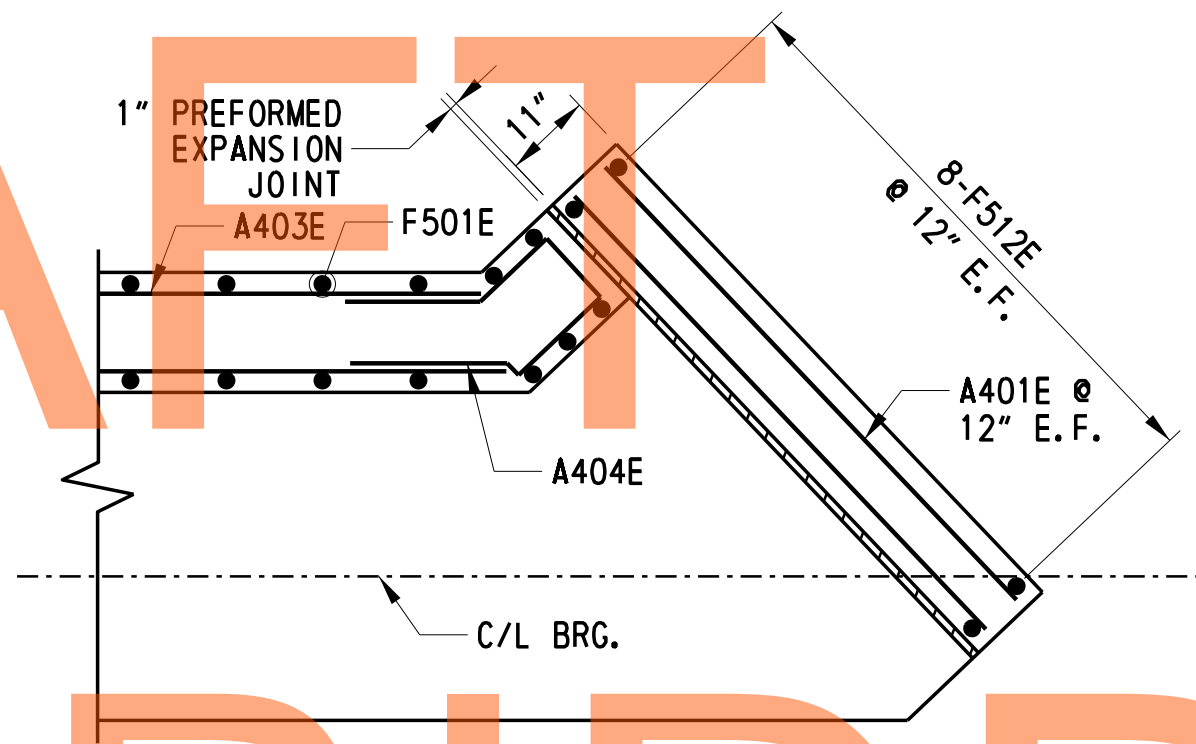
**VIEW F-F**  
SCALE: 1/2" = 1'-0"



**CONSTRUCTION JOINTS**  
SCALE: 1 1/2" = 1'-0"



**WATERSTOP**  
NOT TO SCALE



**SECTION D-D**  
SCALE: 1/2" = 1'-0"

**CROSS REFERENCE NOTES:**

- FOR GENERAL NOTES, SEE DWG. 1-468 GN-1.
- FOR ABUTMENT REINFORCEMENT, SEE DWG. 1-468 AB-1 TO 1-468 AB-4.
- FOR ABUTMENT REINFORCEMENT SCHEDULE, SEE DWG. 1-468 BR-1 AND 1-468 BR-2.
- FOR MEDIAN & WINGWALL ELEVATIONS, SEE DWG. 1-468 WW-1 AND 1-468 WW-2.

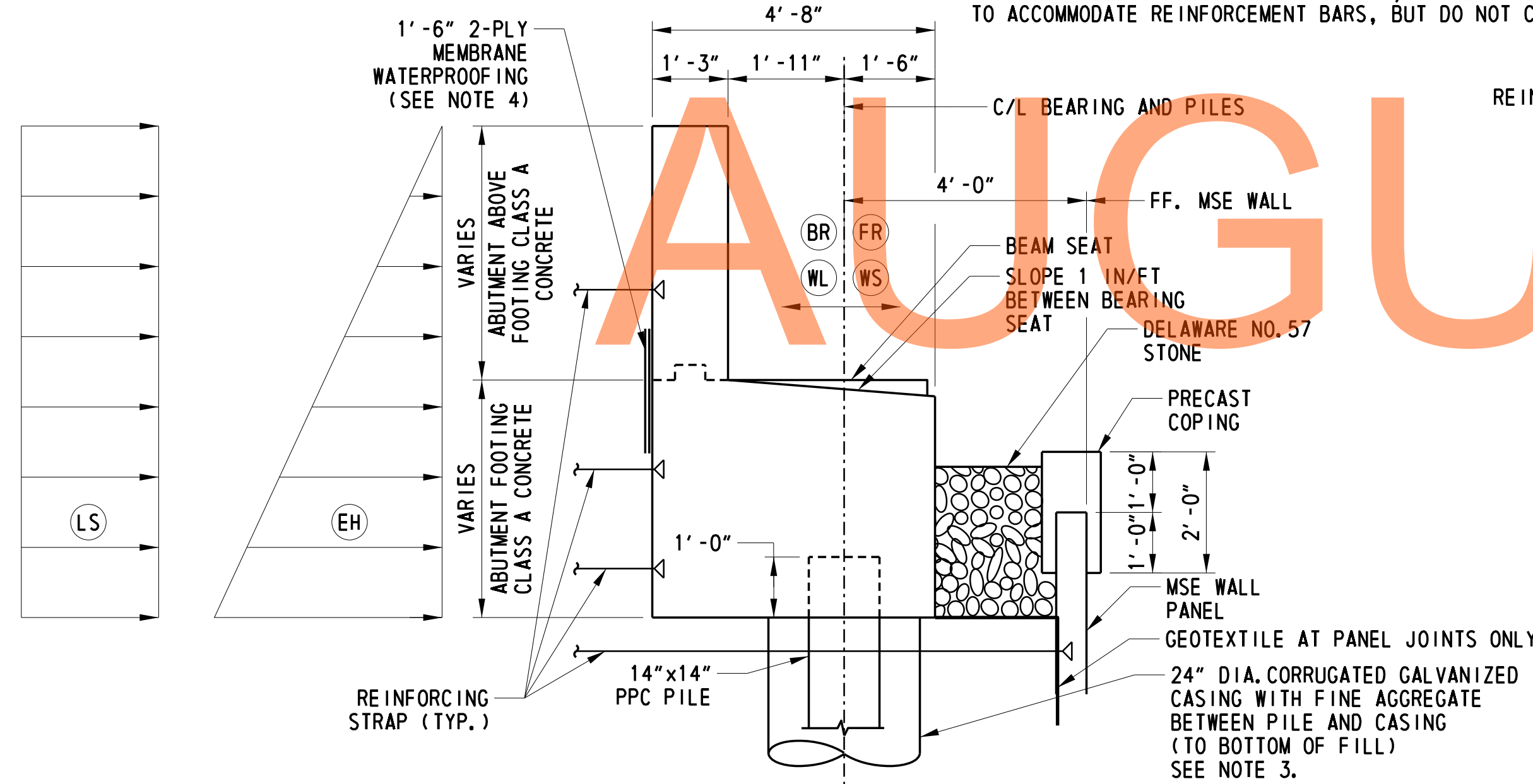
**ABUTMENT LATERAL LOADS:**

- CONTRACTOR SHALL DESIGN THE REINFORCING STRAPS IN THE ABUTMENT STEM AND BACKWALL TO RESIST LATERAL LOADS "EH", "BR", "FR", "WL", "LS" AND "WS".
- LOAD "EH" IS THE HORIZONTAL EARTH PRESSURE EXERTED ON THE ABUTMENT.
- LOAD "BR" IS THE HORIZONTAL LOAD DUE TO BREAKING FORCE ON THE SUPERSTRUCTURE.
- LOAD "FR" IS THE HORIZONTAL LOAD DUE TO THE FRICTION BETWEEN THE APPROACH SLABS AND BACKWALL AS A RESULT OF BRIDGE EXPANSION AND CONTRACTION.
- LOAD "WL" IS THE HORIZONTAL LOAD DUE TO THE WIND ON LIVE LOAD ON THE SUPERSTRUCTURE.
- LOAD "WS" IS THE HORIZONTAL LOAD DUE TO THE WIND ON STRUCTURE.
- LOAD "LS" IS THE ADDITIONAL HORIZONTAL SOIL PRESSURE DUE TO 3FT OF SOIL SURCHARGE IN ACCORDANCE WITH AASHTO 3.11.6.4. CONTRACTOR IS RESPONSIBLE FOR PROVIDING MSE WALL DESIGNER WITH OTHER CONSTRUCTION LOADS WHICH WILL BE IN EXCESS OF 3FT OF SOIL SURCHARGE.

**NOTES:**

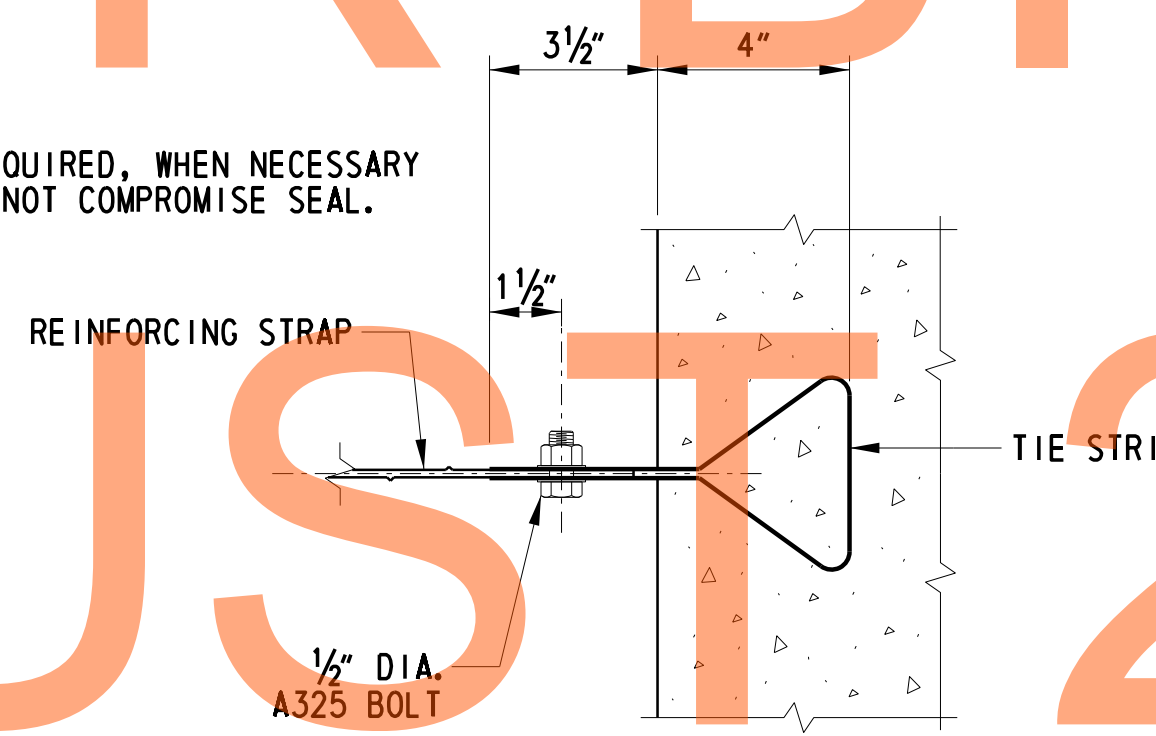
- STOP KEYED JOINTS IN TOP OF EXPOSED WALL FLUSH TO A DEPTH OF 12".
- STOP WATERSTOP 12" FROM TOP OF WALL.
- FINE AGGREGATE SHALL BE IN ACCORDANCE WITH SECTION 804 OF THE STANDARD SPECIFICATIONS. THIS ITEM SHALL BE INCIDENTAL TO THE PILE INSTALLATION.
- THE WATERPROOFING MEMBRANE SHALL BE INCIDENTAL TO ITEM 602015.

**TYPICAL ABUTMENT SECTION**

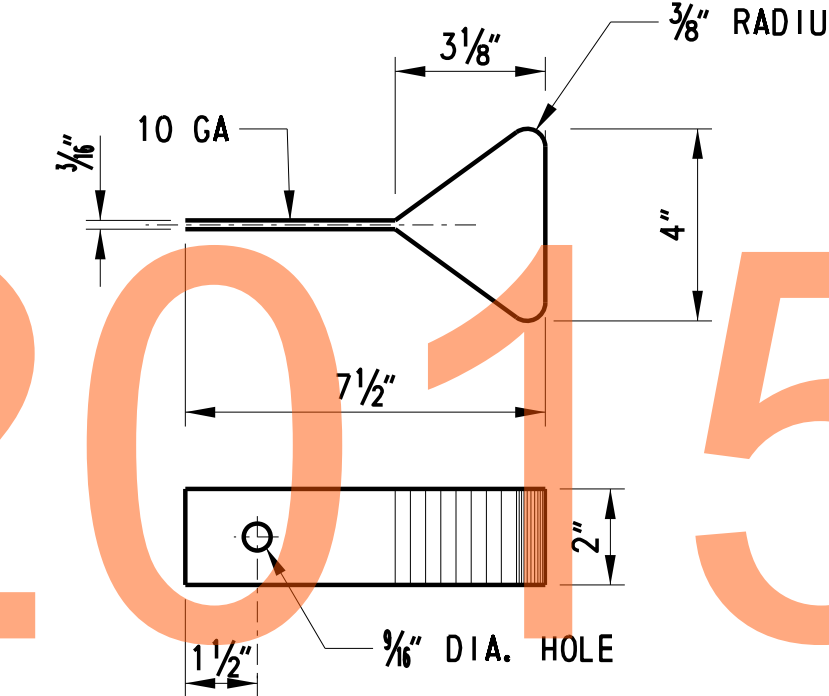


**TYPICAL ABUTMENT SECTION**  
SCALE: 1/2" = 1'-0"

**NOTE:**  
PROVIDE HOLES OR SLOTS IN WATERSTOP, AS REQUIRED, WHEN NECESSARY TO ACCOMMODATE REINFORCEMENT BARS, BUT DO NOT COMPROMISE SEAL.



**ABUTMENT STRAP ANCHOR DETAIL**  
NOT TO SCALE

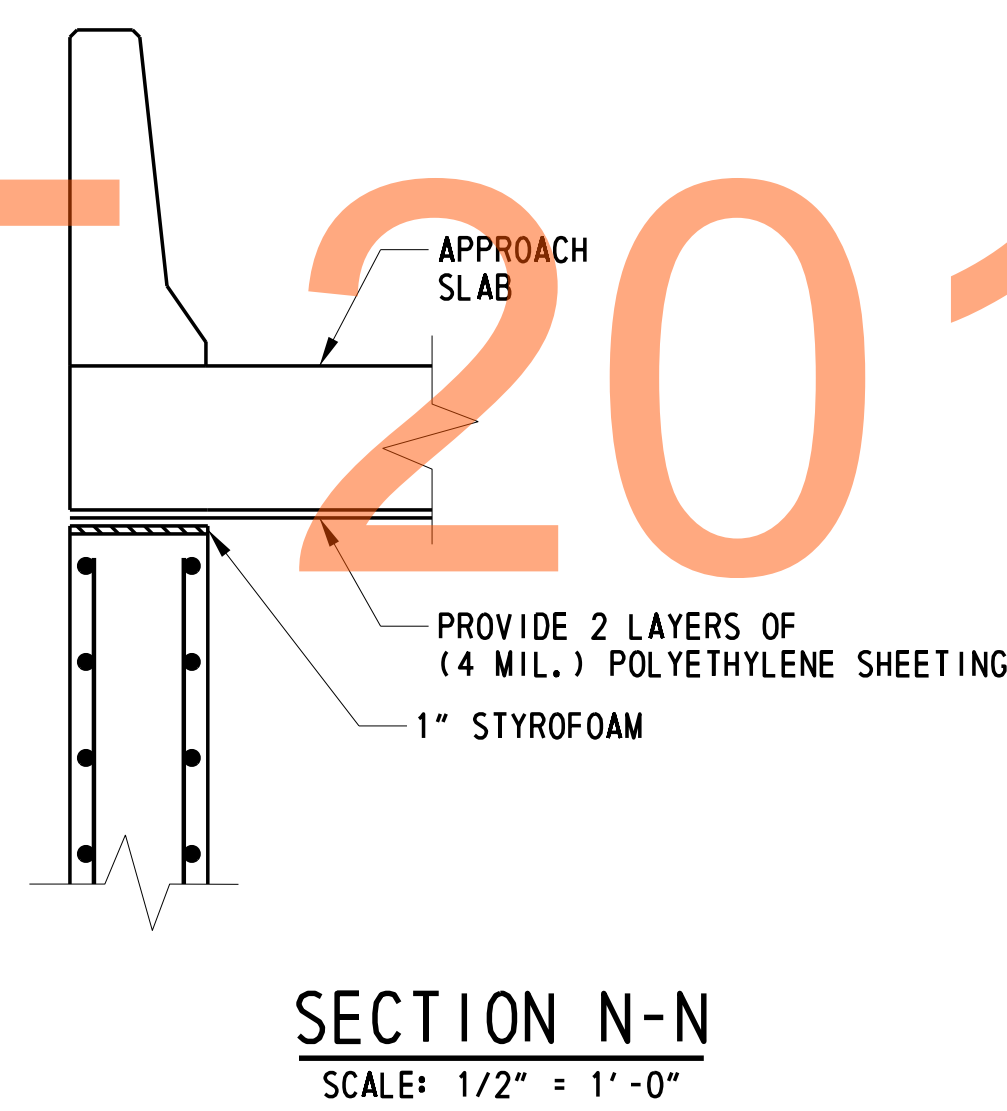
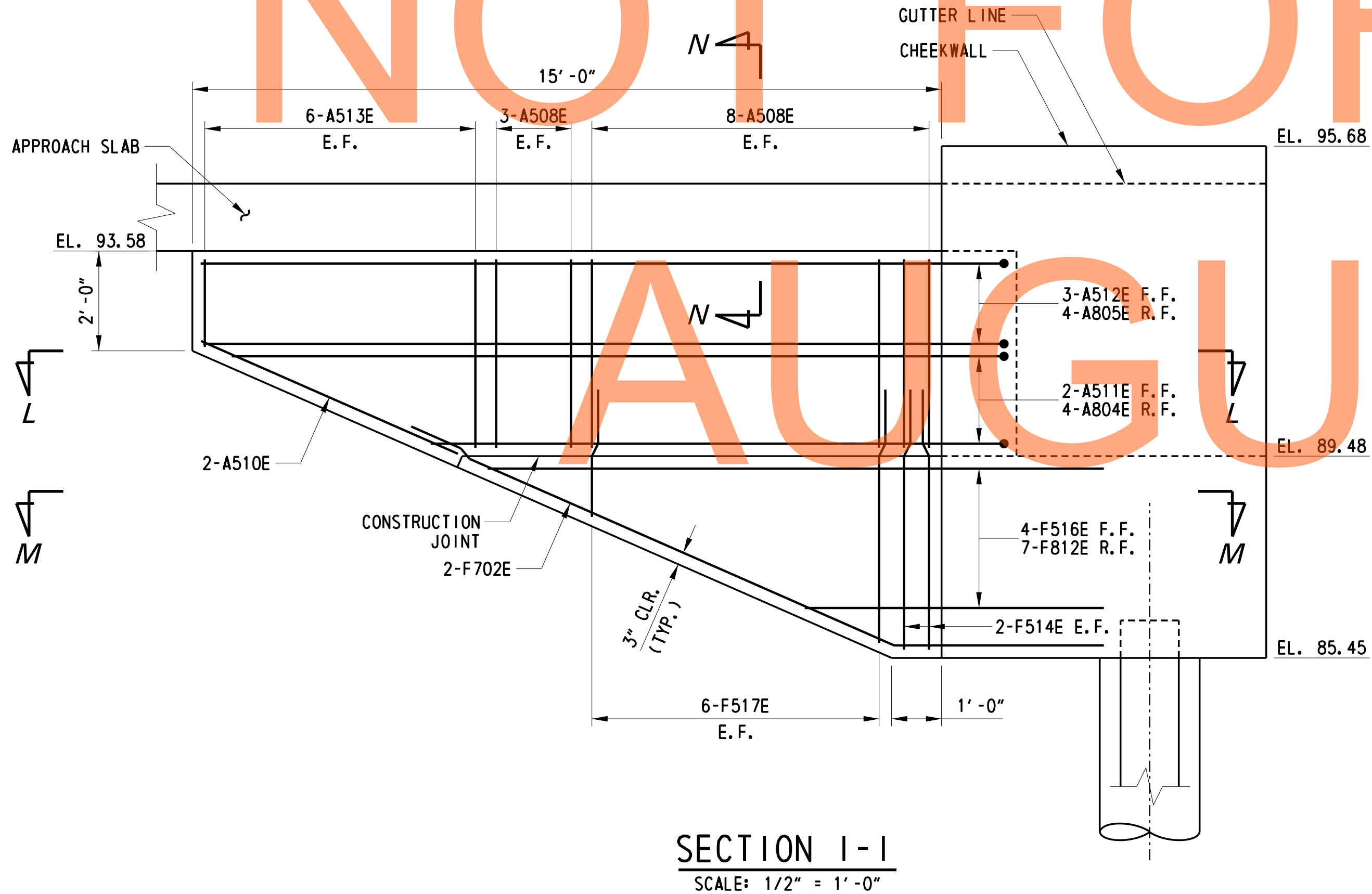
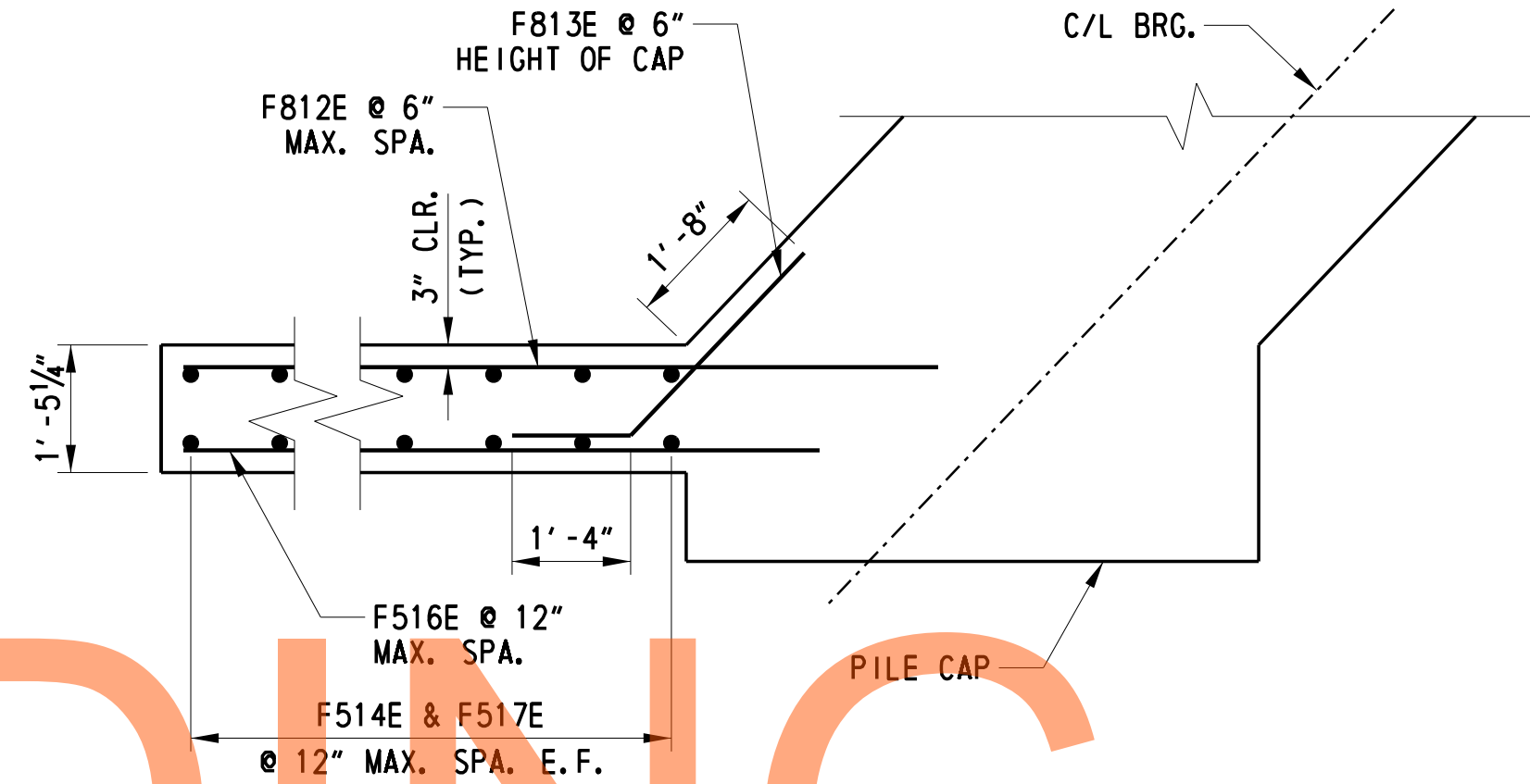
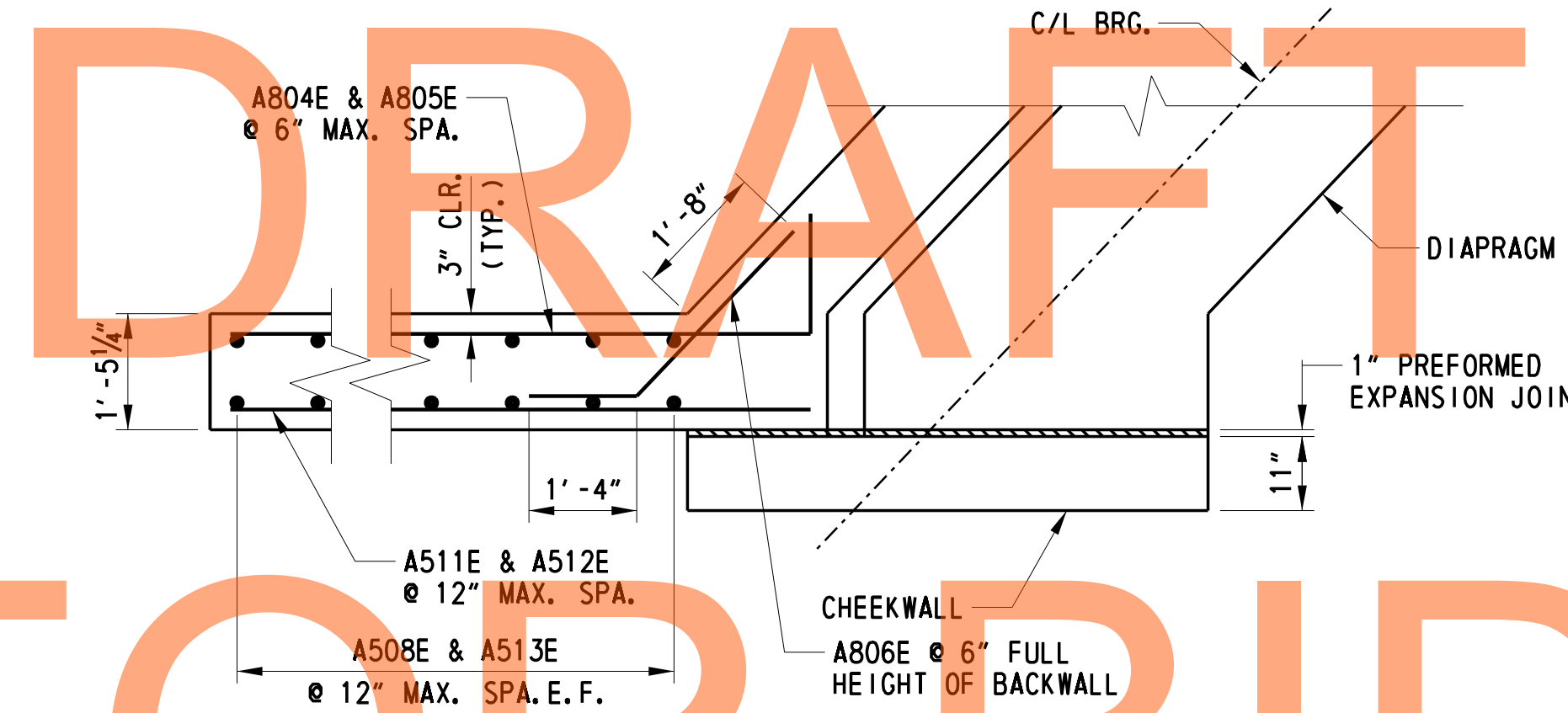
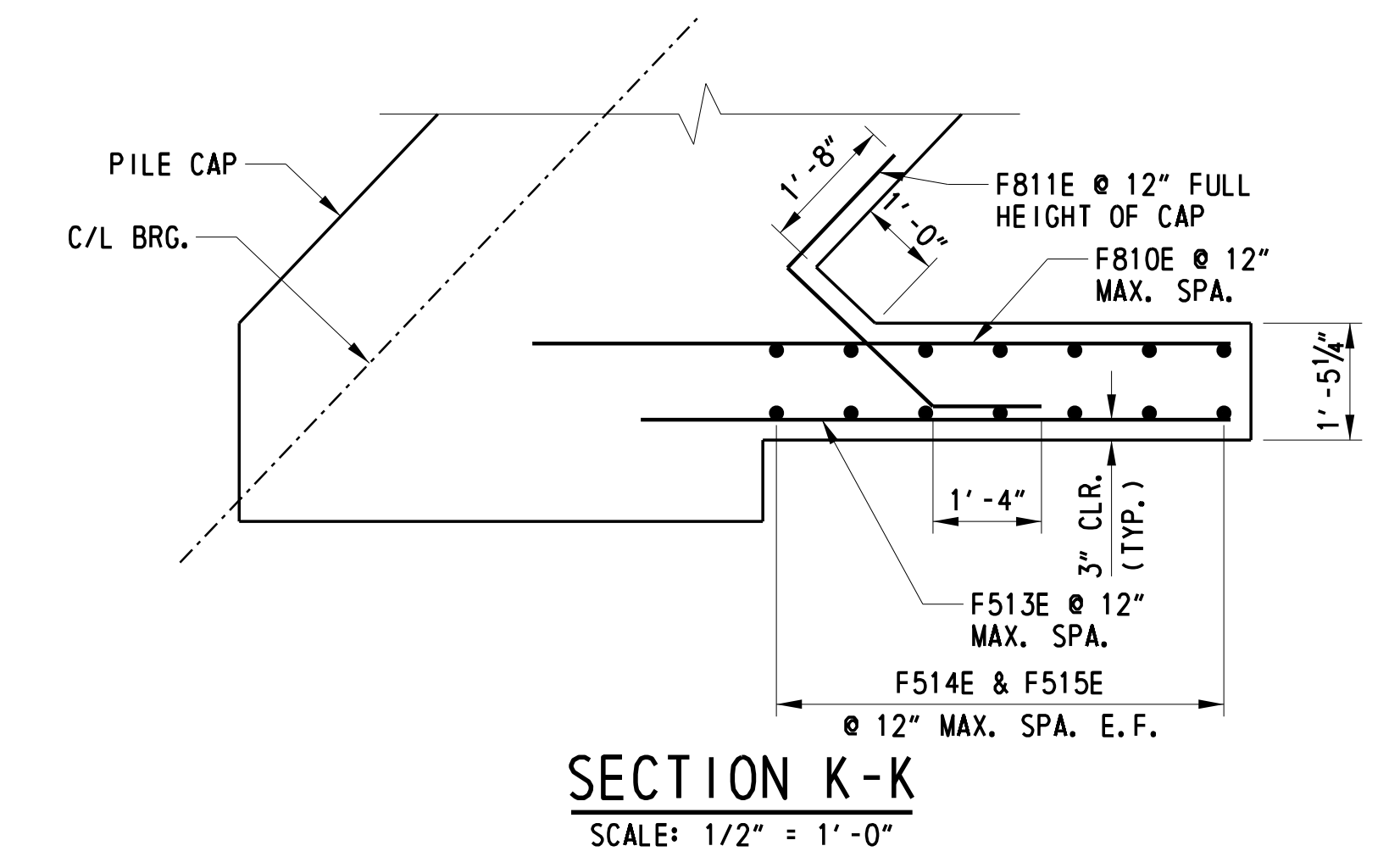
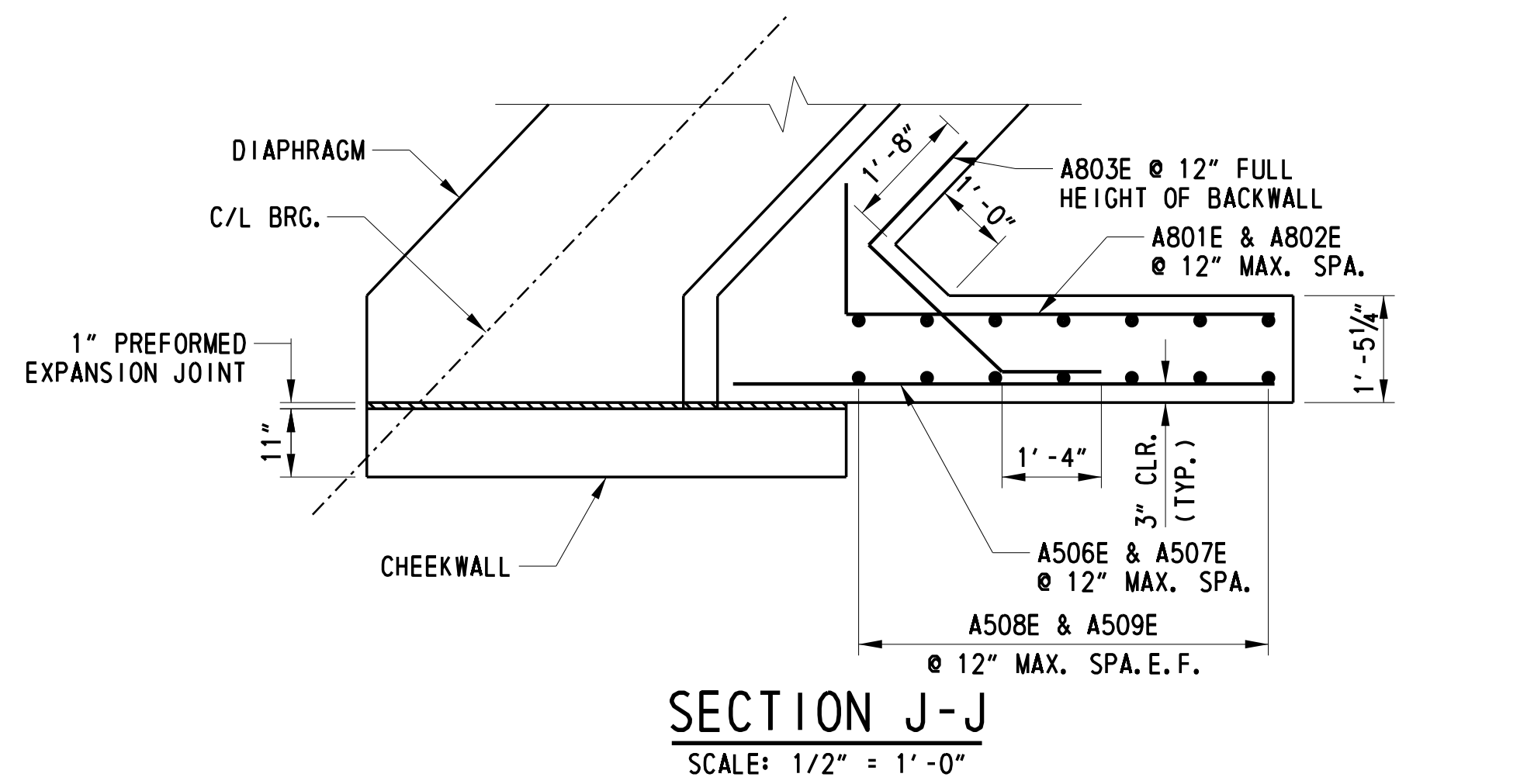
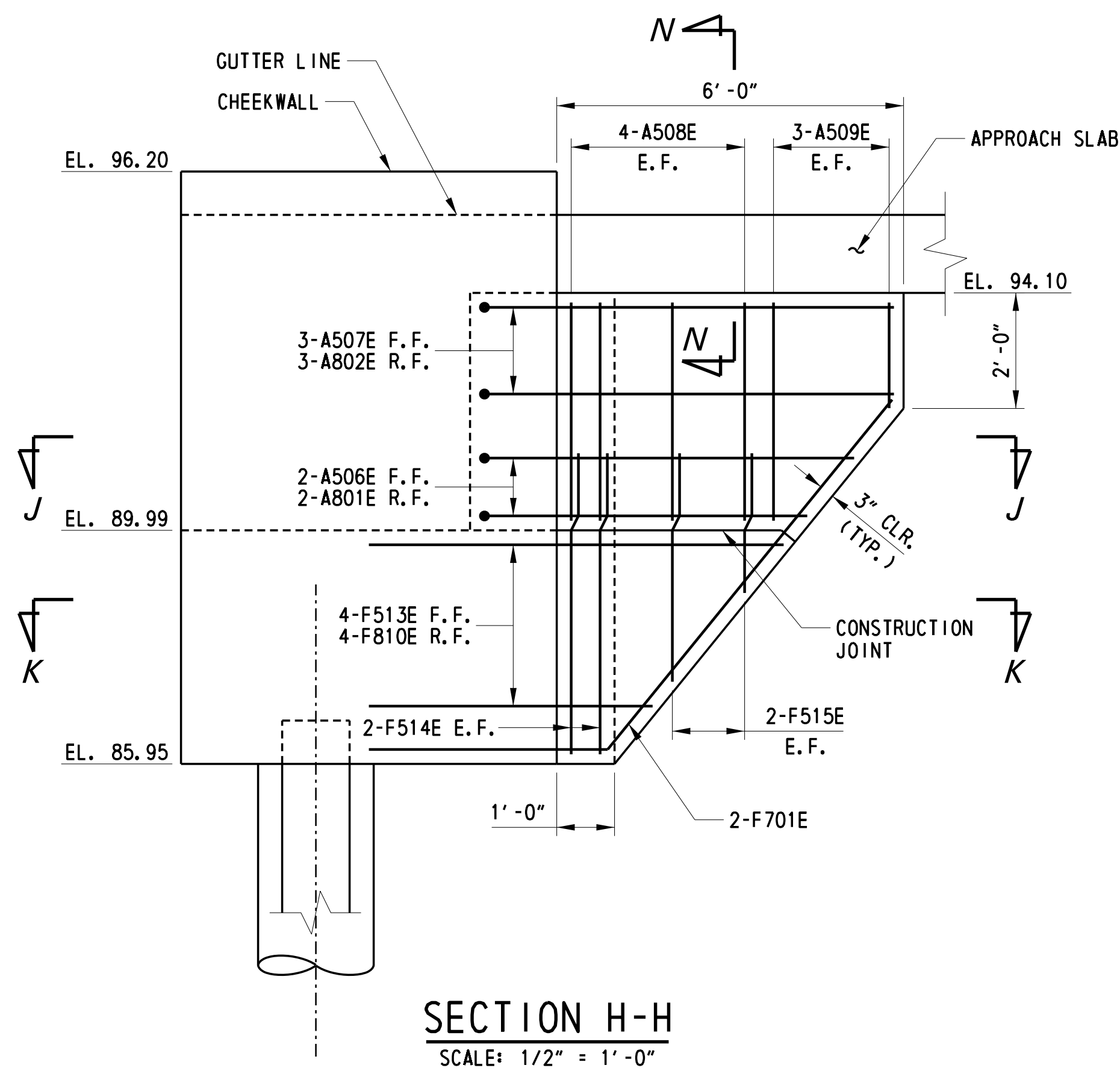


**TIE STRIP DETAIL**  
NOT TO SCALE

ABUTMENT 1 LATERAL LOADS	
TYPE	SERVICE LOAD (KIPS/FT)
EH	1.29 KIP/FT
FR	1.21 KIP/FT
WL	0.05 KIP/FT
WS	0.29 KIP/FT
LS	0.44 KIP/FT

ABUTMENT 2 LATERAL LOADS	
TYPE	SERVICE LOAD (KIPS/FT)
EH	1.29 KIP/FT
FR	1.21 KIP/FT
WL	0.07 KIP/FT
WS	0.38 KIP/FT
LS	0.44 KIP/FT
BR	0.51 KIP/FT

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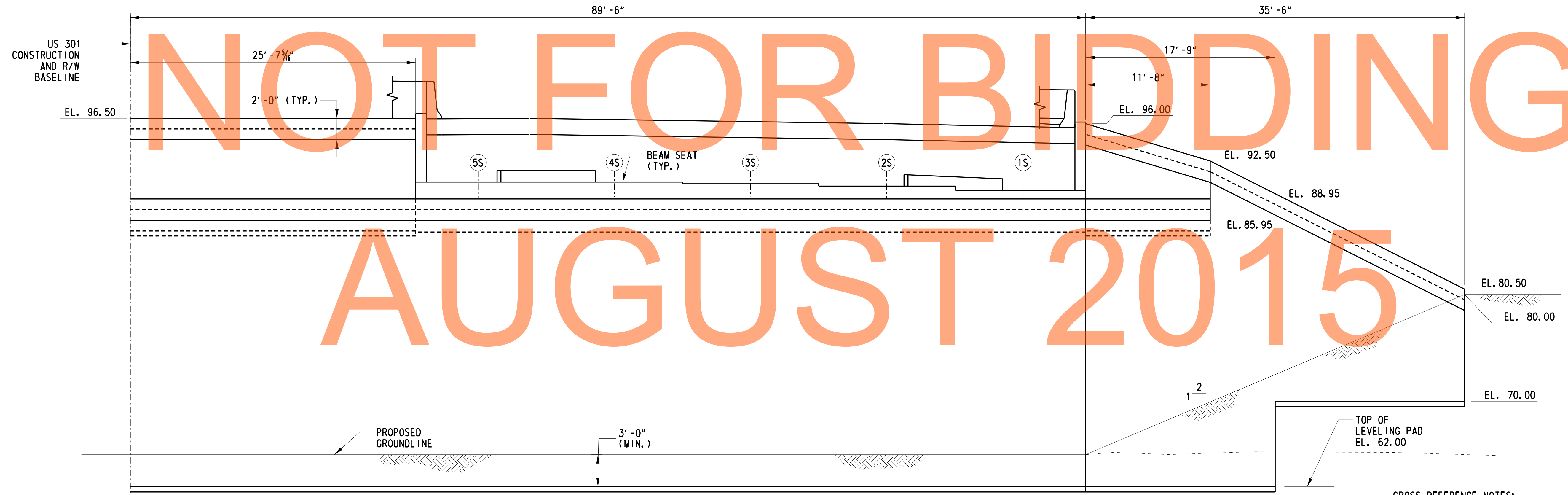
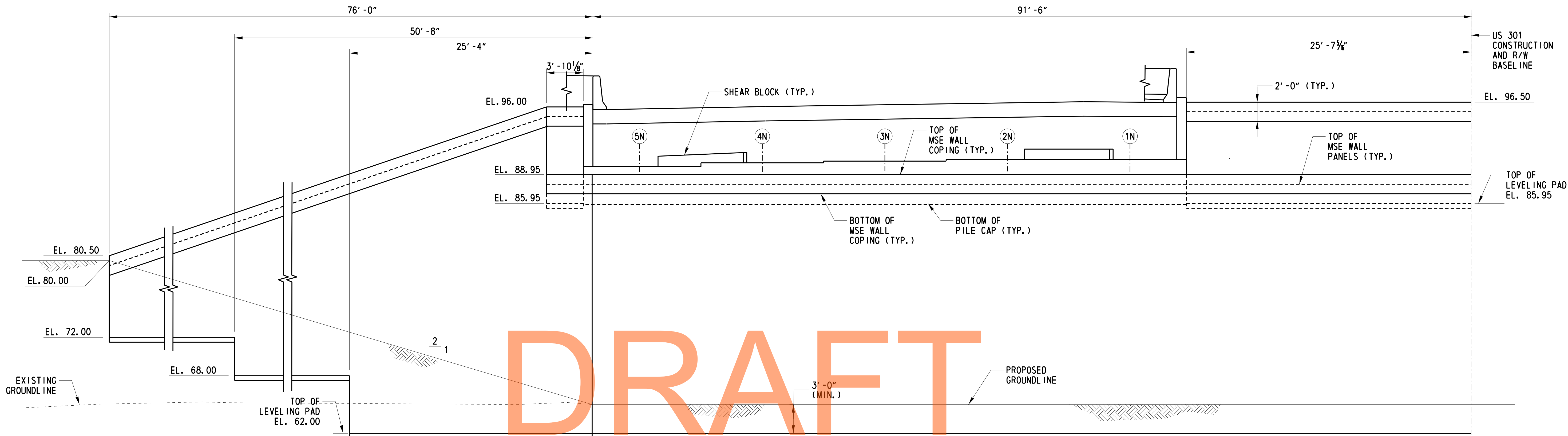
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- NOTE:**
- ABUTMENT PILE CAP AND BACKWALL REINFORCEMENT NOT SHOWN FOR CLARITY.
- CROSS REFERENCE NOTES:**
- FOR GENERAL NOTES, SEE DWG. 1-468 GN-1.
  - FOR ABUTMENT SECTIONS AND DETAILS, SEE DWG. 1-468 AB-5.
  - FOR ABUTMENT REINFORCEMENT SCHEDULE, SEE DWG. 1-468 BR-1 AND 1-468 BR-2.

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<b>DELAWARE DEPARTMENT OF TRANSPORTATION</b>	ADDENDUMS / REVISIONS		<b>US 301 LEVELS ROAD TO SUMMIT BRIDGE ROAD</b>	CONTRACT T20091303	BRIDGE NO. <b>1-468N&amp;S</b>	<b>US 301 MAINLINE OVER NORFOLK SOUTHERN RAILROAD ABUTMENT 2 - WINGWALL SECTIONS</b>	SHEET NO. 276
				COUNTY NEW CASTLE	DESIGNED BY: ADH		CHECKED BY: DHG

1-468 AB-6

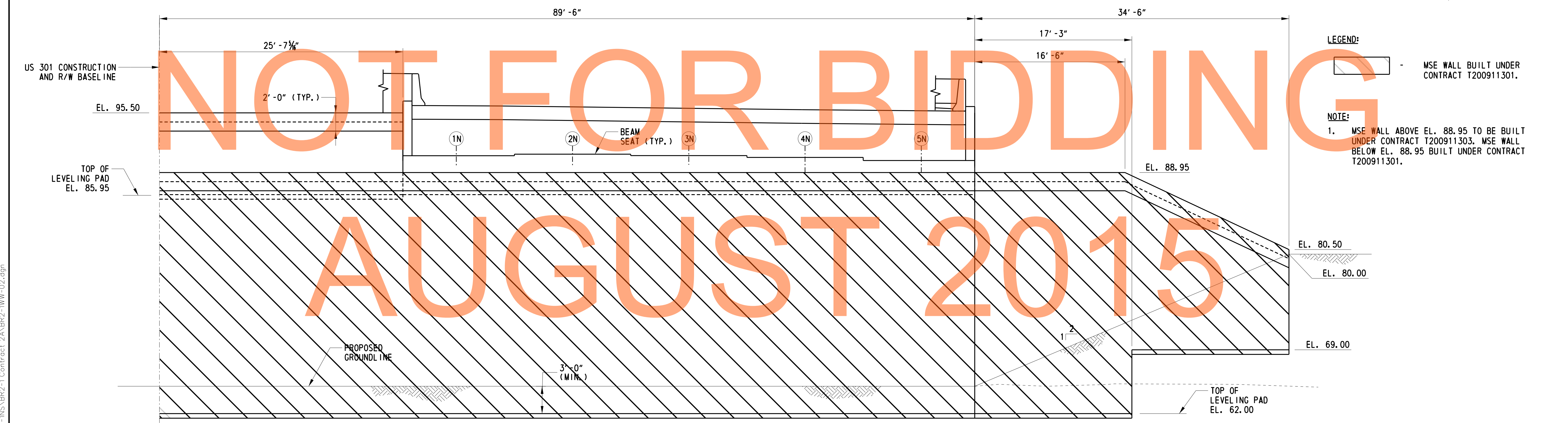
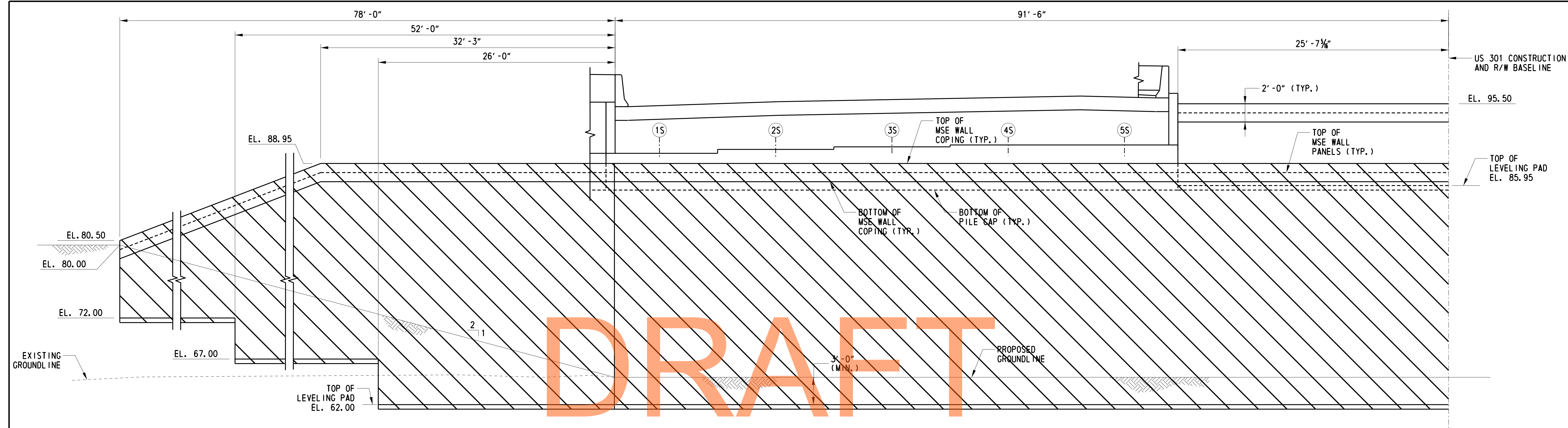



**MEDIAN AND WINGWALL ELEVATIONS - ABUTMENT 1**  
SCALE: 3/16" = 1'-0"

- CROSS REFERENCE NOTES:**
- FOR GENERAL NOTES, SEE DWG. 1-468 GN-1.
  - FOR GEOMETRIC LAYOUT, SEE DWG. 1-468 GG-1.
  - FOR ABUTMENT PLAN AND ELEVATION, SEE DWG. 1-468 AB-1 TO 1-468 AB-4.
  - FOR MSE WALL SECTIONS AND DETAILS, SEE DWG. 1-468 WW-3.

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<p><b>DELAWARE DEPARTMENT OF TRANSPORTATION</b></p>	ADDENDUMS / REVISIONS		<p align="center">SCALE</p> <p align="center">FEET</p>	<p align="center"><b>US 301 LEVELS ROAD TO SUMMIT BRIDGE ROAD</b></p>	CONTRACT	BRIDGE NO.	<p align="center"><b>US 301 MAINLINE OVER NORFOLK SOUTHERN RAILROAD MEDIAN AND WINGWALL ELEVATIONS - ABUTMENT 1</b></p>	SHEET NO.
	T20091303	1-468N&S			277			
	COUNTY	DESIGNED BY: ADH			TOTAL SHTS.			
	NEW CASTLE	CHECKED BY: DHG			1256			



**LEGEND:**  
 MSE WALL BUILT UNDER CONTRACT T200911301.

**NOTE:**  
 1. MSE WALL ABOVE EL. 88.95 TO BE BUILT UNDER CONTRACT T200911303. MSE WALL BELOW EL. 88.95 BUILT UNDER CONTRACT T200911301.

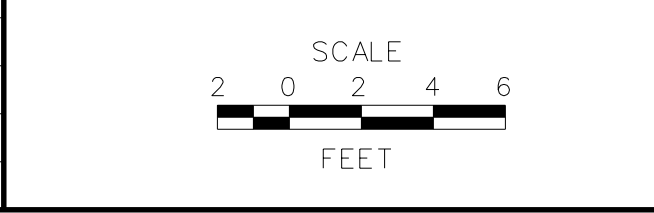
- CROSS REFERENCE NOTES:**
- FOR GENERAL NOTES, SEE DWG. 1-468 GN-1.
  - FOR GEOMETRIC LAYOUT, SEE DWG. 1-468 GC-1.
  - FOR ABUTMENT PLAN AND ELEVATION, SEE DWG. 1-468 AB-1 TO 1-468 AB-4.
  - FOR MSE WALL SECTIONS AND DETAILS, SEE DWG. 1-468 WW-3.

**MEDIAN AND WINGWALL ELEVATIONS - ABUTMENT 2**  
 SCALE: 3/16" = 1'-0"

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ADDENDUMS / REVISIONS

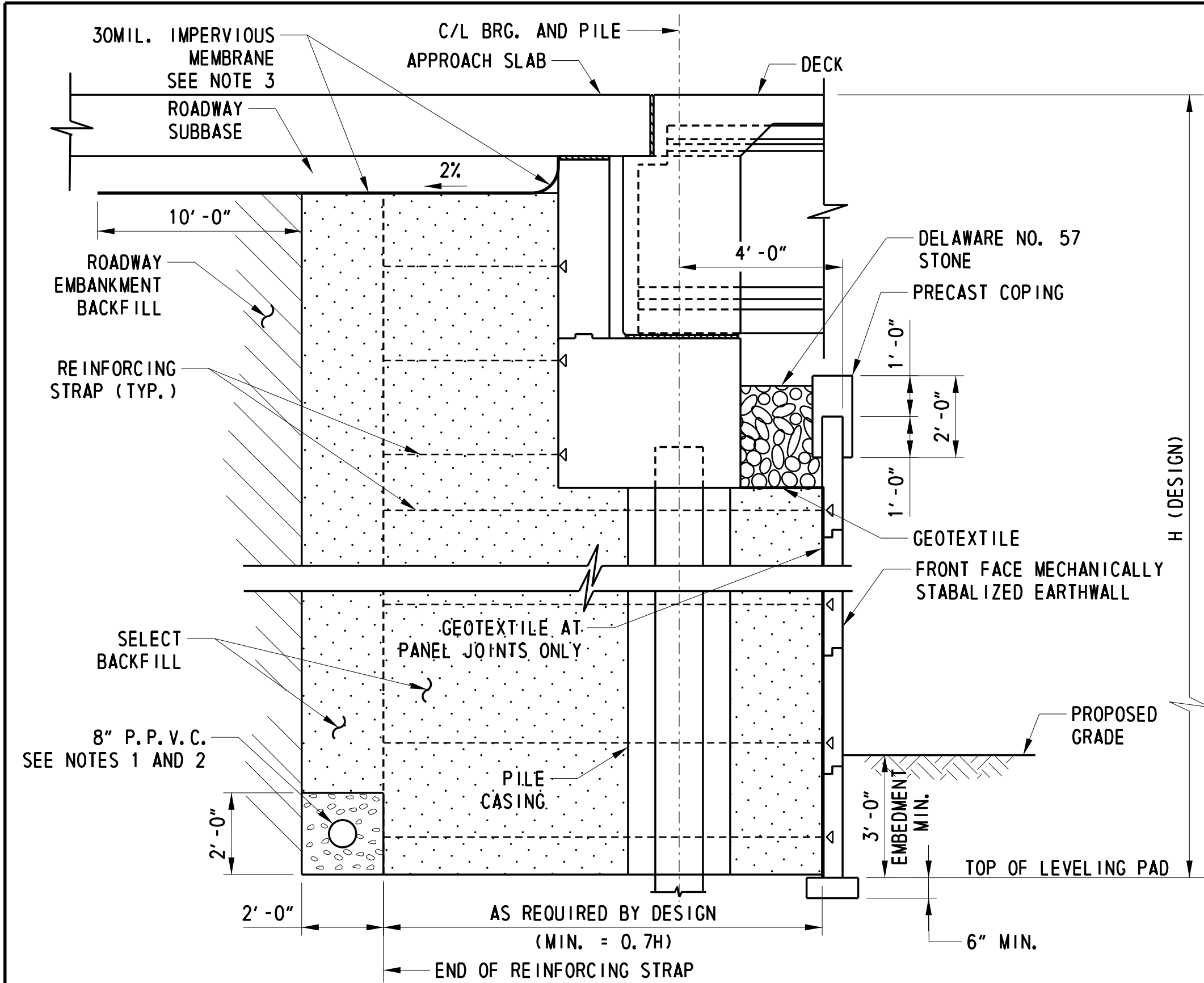


**US 301 LEVELS ROAD TO SUMMIT BRIDGE ROAD**

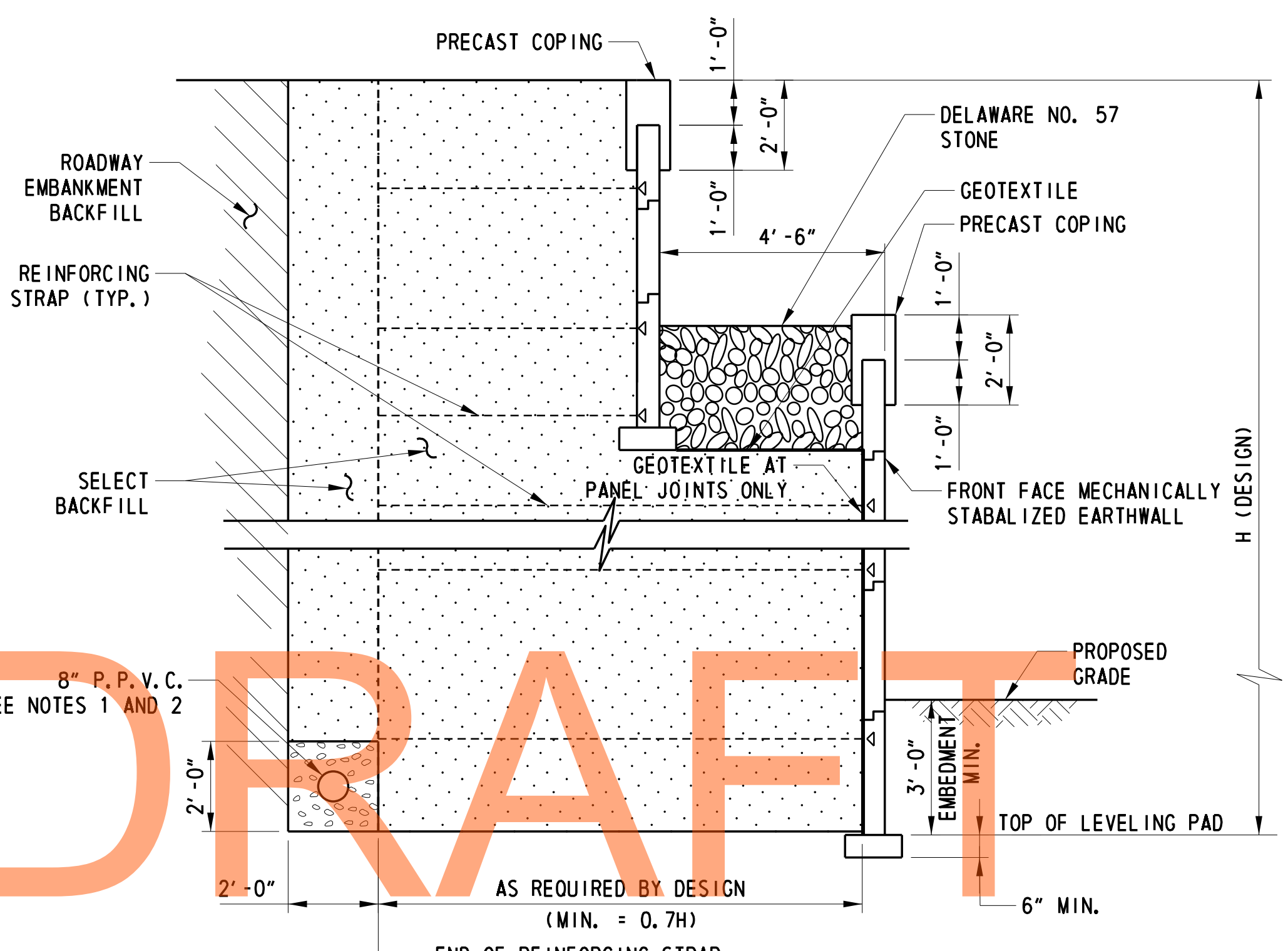
CONTRACT	BRIDGE NO.	<b>1-468N&amp;S</b>
T200911303	DESIGNED BY:	ADH
COUNTY	CHECKED BY:	DHG
NEW CASTLE		

**US 301 MAINLINE OVER NORFOLK SOUTHERN RAILROAD MEDIAN AND WINGWALL ELEVATIONS - ABUTMENT 2**

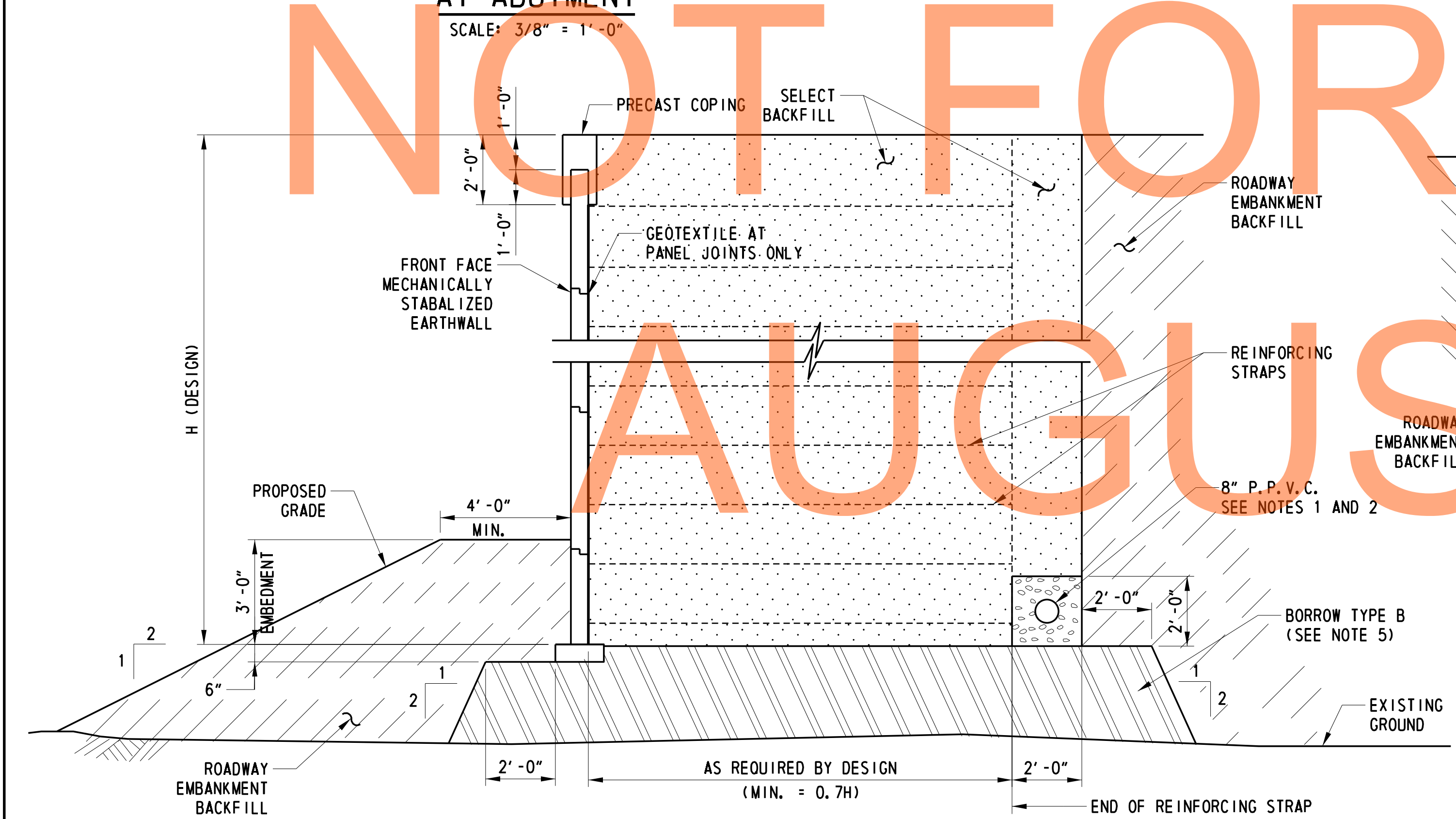
1-468 WW-2
SHEET NO.
278
TOTAL SHTS.
1256



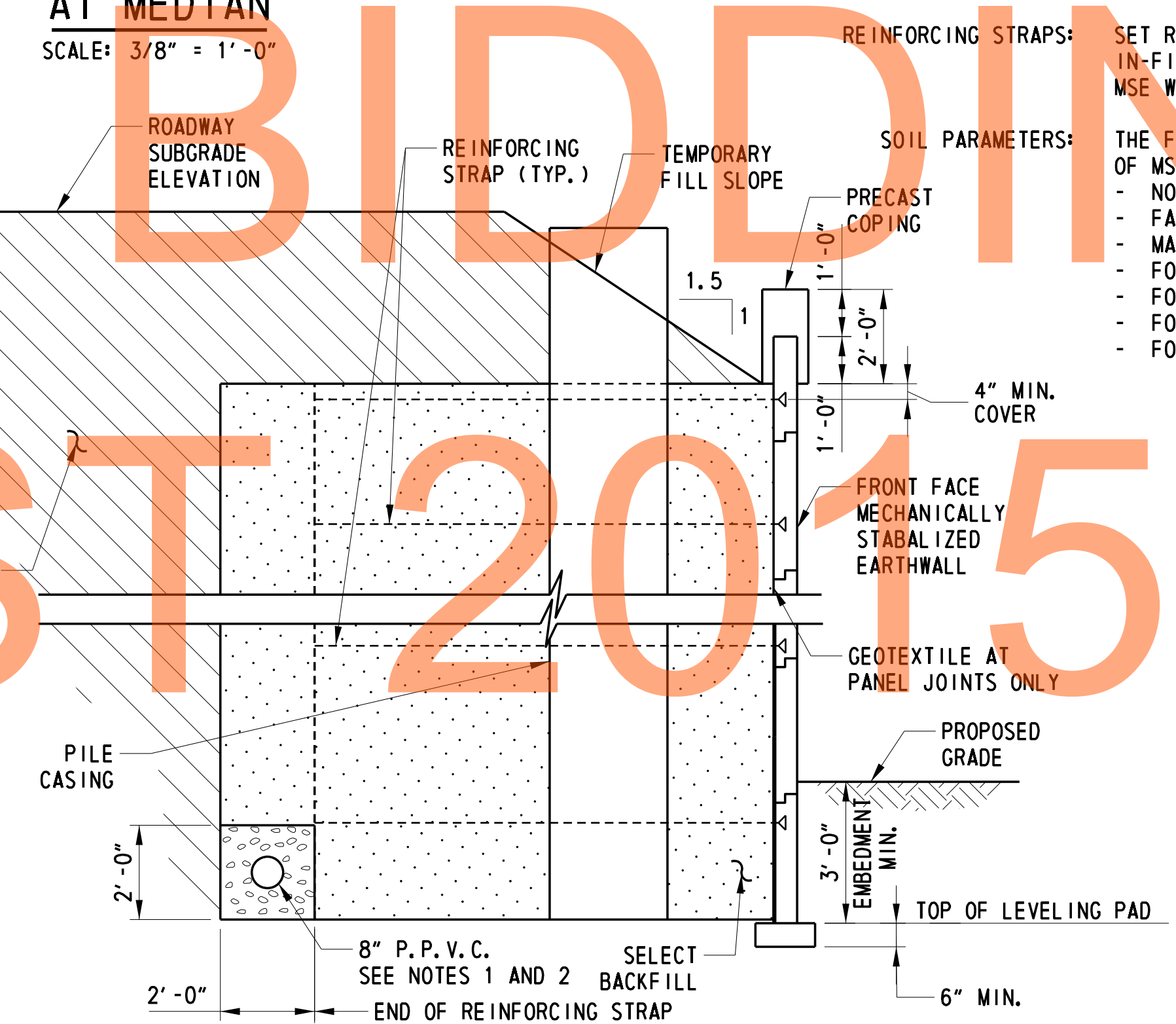
**TYPICAL MSE WALL SECTION AT ABUTMENT**  
SCALE: 3/8" = 1'-0"



**TYPICAL MSE WALL SECTION AT MEDIAN**  
SCALE: 3/8" = 1'-0"



**TYPICAL MSE WALL SECTION WINGWALL ON FILL**  
SCALE: 3/8" = 1'-0"



**FILL PLACEMENT DURING QUARANTINE PERIOD**  
SCALE: 3/8" = 1'-0"

**MSE WALL NOTES:**

**SPECIFICATIONS:** PROPRIETARY MSE WALLS SHALL BE DESIGNED IN ACCORDANCE WITH THE FOLLOWING:  
 - AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 4TH EDITION WITH ALL CURRENT REVISIONS.  
 - FEDERAL HIGHWAY ADMINISTRATION PUBLICATION NOS. FHWA-NHI-10-024 AND FHWA-NHI-10-025, "DESIGN AND CONSTRUCTION OF MECHANICALLY STABILIZED EARTH WALLS AND REINFORCED SOIL SLOPES", VOLUME I AND VOLUME II.

CONCRETE DESIGN SHALL BE PERFORMED USING THE LOAD AND RESISTANCE FACTOR DESIGN METHOD.

**CONCRETE:** LEVELING PAD CONCRETE SHALL BE 3,000 PSI. MIX REQUIREMENTS SHALL CONFORM TO SECTION 812 OF THE DELAWARE DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS.

**CHAMFERS:** ALL EXPOSED CORNERS OF CONCRETE SHALL BE CHAMFERED WITH 3/4" x 3/4" MILLED CHAMFER STRIPS, UNLESS OTHERWISE NOTED, EXCEPT ON UNEXPOSED FOOTINGS OR WHERE INDICATED BY THE FOLLOWING NOTATION ON THE PLANS: "DO NOT CHAMFER".

**REINFORCING STEEL:** REINFORCING STEEL SHALL CONFORM TO AASHTO M31 (ASTM A 615), GRADE 60. ALL SPLICES, NOT SHOWN, SHALL BE LAPPED AS PER THE LRFD BRIDGE DESIGN SPECIFICATIONS. MINIMUM COVER FOR ANY BAR SHALL BE 2" UNLESS OTHERWISE NOTED.

FOR TIES AND STIRRUPS, STANDARD ACI BENDING TOLERANCES ARE MODIFIED TO PLUS (+) ZERO INCHES, MINUS (-) NORMAL ACI BENDING TOLERANCE.

**LEVELING PAD:** THE PROPRIETARY WALL MANUFACTURER MAY RELOCATE THE LEVELING PAD STEPS AT THEIR DISCRETION PROVIDED THAT THE MINIMUM EMBEDMENT IS MAINTAINED. ANY CHANGE TO THE STEP LOCATIONS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL.

**ROADWAY LIMITS:** THE PROPRIETARY WALL MANUFACTURER SHALL ASSURE THAT PROPOSED PROPRIETARY WALL COMPONENTS ARE POSITIONED SUCH THAT THE DESIGNATED ROADWAY LIMITS ARE NOT ENCRoACHED UPON.

**COORDINATION:** CONTRACTOR AND PROPRIETARY WALL MANUFACTURER SHALL COORDINATE LOCATIONS OF INLETS AND PIPES WITH LOCATIONS OF PROPRIETARY WALL TIE BACK SYSTEM.

**SERVICE LIFE:** ALL RETAINING WALL COMPONENTS SHALL BE DESIGNED FOR A MINIMUM SERVICE LIFE OF 100 YEARS.

**WALL SYSTEM:** RETAINING WALL TYPE SHALL BE MECHANICALLY STABILIZED EARTH (MSE) WALLS. NO OTHER WALL TYPE MAY BE SUBSTITUTED.

**MSE WALL BACKFILL:** MSE WALL BACKFILL SHALL BE SELECT BACKFILL IN ACCORDANCE WITH SPECIAL PROVISION 602772 WITH MINIMUM ANGLE OF INTERNAL FRICTION OF 34 DEGREES AND A MOIST UNIT WEIGHT OF 125 LB/FT<sup>3</sup>.

**REINFORCING STRAPS:** SET REINFORCING STRAPS TO CLEAR PILE CASING, 2" MIN. CLEARANCE. MAXIMUM IN-FIELD SKEW OF 15 DEGREES. IF GREATER SKEW ANGLE IS REQUIRED, CONTACT MSE WALL FIELD REPRESENTATIVE PRIOR TO INSTALLATION.

**SOIL PARAMETERS:** THE FOLLOWING ARE RECOMMENDED SOIL PARAMETERS TO BE USED FOR THE DESIGN OF MSE ABUTMENT AND WINGWALLS:  
 - NOMINAL BEARING RESISTANCE = 16.6 KIP/FT  
 - FACTORED BEARING RESISTANCE = 10.8 KIP/FT  
 - MAXIMUM ANTICIPATED SETTLEMENT = 4.5 IN  
 - FOR RETAINED SOIL, MOIST UNIT WEIGHT = 120 LB/FT<sup>3</sup>  
 - FOR RETAINED SOIL, ANGLE OF INTERNAL FRICTION = 30 DEGREES  
 - FOR FOUNDATION SOIL, MOIST UNIT WEIGHT = 120 LB/FT<sup>3</sup>  
 - FOR FOUNDATION SOIL, ANGLE OF INTERNAL FRICTION = 30 DEGREES

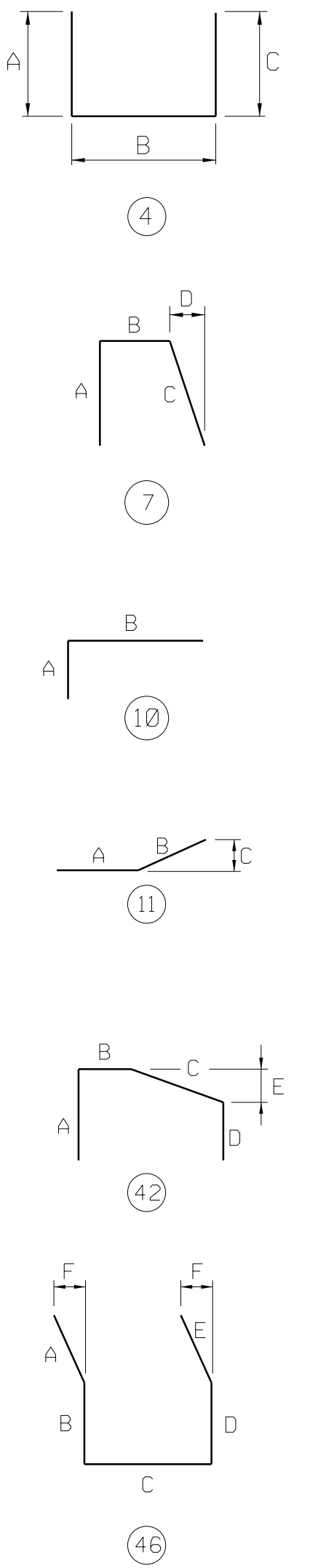
- NOTES:**
- DRAIN PERFORATED POLYVINYL CHLORIDE PIPE (P.P.V.C.) TO DAYLIGHT.
  - SURROUND P.P.V.C. WITH A CONTINUOUS 2'-0"x2'-0" OF DELAWARE NO. 57 STONE ENCLOSED IN GEOTEXTILE.
  - SLOPE MEMBRANE A MINIMUM OF 2% AWAY FROM BACKWALL.
  - CONTRACTOR TO PROVIDE PROTECTION TO THE PILE CASING DURING QUARANTINE PERIOD TO PREVENT MATERIAL FROM ENTERING CASING.
  - BORROW TYPE B SHALL BE INCIDENTAL TO ITEM 602772.

- CROSS REFERENCE NOTES:**
- FOR GENERAL NOTES, SEE DWG. 1-468 GN-1.
  - FOR MEDIAN & WINGWALL ELEVATION, SEE DWG. 1-468 WW-1 TO 1-468 WW-2.
  - FOR GEOMETRIC LAYOUT, SEE DWG. 1-468 CG-1.

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REINFORCING BAR SCHEDULE

NORTHBOUND ABUTMENT 1 AND 2 BAR SCHEDULE														NORTHBOUND ABUTMENT 1 AND 2 BAR SCHEDULE																	
MARK	LENGTH	NO. BARS	TYPE	A	B	C	D	E	F	G	H	I	J	K	REMARKS	MARK	LENGTH	NO. BARS	TYPE	A	B	C	D	E	F	G	H	I	J	K	REMARKS
A301E	11' - 2 3/4"	4	42	4' - 7"	9"	1' - 3 3/4"	4' - 7"	11 1/2"								F801E	VARIES	8	STR											VARY EA. BY 6"	
A401E	6' - 0"	56	STR													F801E	41' - 4" TO 37' - 10"														
A402E	41' - 4"	12	STR													F802E	VARIES	6	STR											VARY EA. BY 9"	
A403E	20' - 4"	12	STR													F802E	41' - 4" TO 37' - 7"														
A404E	8' - 9 3/8"	24	46	2' - 7"	1' - 3"	1' - 3 3/4"	1' - 1"	2' - 7"	1' - 9 3/8"							F803E	VARIES	8	STR											VARY EA. BY 6"	
A405E	25' - 1"	12	STR													F803E	27' - 3" TO 23' - 9"														
A406E	36' - 7"	12	STR													F804E	VARIES	6	STR											VARY EA. BY 9"	
A501E	6' - 0"	126	4	2' - 7"	10"	2' - 7"										F804E	25' - 4" TO 21' - 7"													VARY EA. BY 6"	
A502E	13' - 1"	2	4	2' - 5"	8' - 3"	2' - 5"										F805E	VARIES	8	STR											VARY EA. BY 6"	
A503E	12' - 4"	4	4	2' - 5"	7' - 6"	2' - 5"										F805E	39' - 9" TO 36' - 3"													VARY EA. BY 9"	
A504E	5' - 8"	4	4	2' - 5"	10"	2' - 5"										F806E	VARIES	6	STR											VARY EA. BY 9"	
A505E	6' - 5"	16	4	2' - 5"	1' - 7"	2' - 5"										F806E	39' - 9" TO 36' - 0"													VARY EA. BY 6"	
A506E	VARIES	2	STR													F807E	VARIES	8	STR											VARY EA. BY 6"	
A507E	6' - 5" TO 5' - 8"															F807E	28' - 10" TO 25' - 4"														
A508E	7' - 3"	3	STR													F808E	VARIES	6	STR											VARY EA. BY 9"	
A509E	3' - 9"	8	STR													F808E	26' - 11" TO 23' - 2"													VARY EA. BY 9"	
A509E	VARIES	6	STR													F809E	19' - 10"	8	46	4' - 9"	2' - 3"	6' - 0"	2' - 1"	4' - 9"	3' - 3 1/4"					VARY EA. BY 9"	
A801E	VARIES	2	10	1' - 4"	VARIES											F810E	VARIES	4	STR												
A801E	6' - 7" TO 5' - 10"				5' - 3" TO 4' - 6"											F810E	7' - 0" TO 4' - 9"														
A802E	7' - 1"	3	10	1' - 4"	5' - 9"											F811E	5' - 11 1/2"	4	7	1' - 11"	2' - 8 1/2"	1' - 4"	11 1/2"								
A803E	5' - 11 1/2"	5	7	1' - 11"	2' - 8 1/2"	1' - 4"	11 1/2"																								
F401E	10' - 10"	144	4	3' - 4"	4' - 2"	3' - 4"																									
F402E	12' - 7"	16	4	3' - 4"	5' - 11"	3' - 4"																									
F403E	10' - 0"	12	4	2' - 11"	4' - 2"	2' - 11"																									
F404E	14' - 10"	32	STR																												
F405E	VARIES	8	STR																											VARY EA. BY 7"	
F405E	19' - 8" TO 23' - 9"																														
F406E	12' - 5"	8	STR																												
F408E	16' - 2"	2	46	2' - 11"	2' - 3"	6' - 0"	2' - 1"	2' - 11"	2' - 0"																						
F409E	VARIES	8	STR																											VARY EA. BY 7"	
F409E	11' - 0" TO 15' - 1"																														
F410E	9' - 2"	12	4	2' - 6"	4' - 2"	2' - 6"																									
F501E	6' - 0"	252	STR																												
F502E	37' - 5"	5	STR																												
F503E	41' - 4"	5	STR																												
F504E	24' - 2"	5	STR																												
F505E	20' - 3"	5	STR																												
F506E	39' - 9"	5	STR																												
F507E	35' - 9"	5	STR																												
F508E	21' - 9"	5	STR																												
F509E	25' - 8"	5	STR																												
F510E	5' - 6"	4	STR																												
F511E	15' - 6"	20	46	2' - 7"	2' - 3"	6' - 0"	2' - 1"	2' - 7"	1' - 9 3/8"																						
F512E	7' - 8"	64	STR																												
F513E	VARIES	4	STR																											VARY EA. BY 9"	
F513E	5' - 5" TO 3' - 2"																														
F514E	6' - 5"	4	STR																												
F515E	VARIES	4	STR																											VARY 2 EA. BY 1' - 6"	
F515E	5' - 3" TO 3' - 9"																														
F701E	10' - 10"	2	11	3' - 1"	7' - 9"	6' - 0"																									



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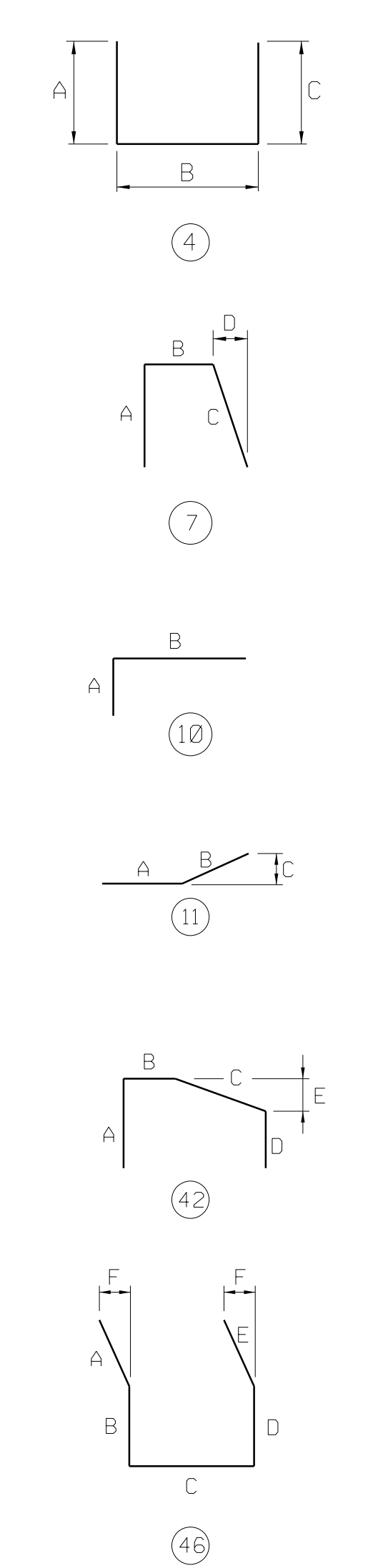
REINFORCING BAR SCHEDULE

SOUTHBOUND ABUTMENT 1 AND 2 BAR SCHEDULE														SOUTHBOUND ABUTMENT 1 AND 2 BAR SCHEDULE																						
MARK	LENGTH	NO. BARS	TYPE	A	B	C	D	E	F	G	H	I	J	K	REMARKS	MARK	LENGTH	NO. BARS	TYPE	A	B	C	D	E	F	G	H	I	J	K	REMARKS					
A301E	11'-2 3/4"	4	42	4'-7"	9"	1'-3 3/4"	4'-7"	11 1/2"									F801E	VARIES	8	STR											VARY EA. BY 6"					
A401E	6'-0"	56	STR														F801E	41'-4" TO 37'-10"																		
A402E	41'-4"	12	STR														F802E	VARIES	6	STR												VARY EA. BY 9"				
A403E	20'-4"	12	STR														F802E	41'-4" TO 37'-7"																		
A404E	8'-9 3/4"	24	46	2'-7"	1'-3"	1'-3 3/4"	1'-1"	2'-7"	1'-9 3/8"								F803E	VARIES	8	STR												VARY EA. BY 6"				
A405E	25'-1"	12	STR														F803E	27'-3" TO 23'-9"																		
A406E	36'-7"	12	STR														F804E	VARIES	6	STR												VARY EA. BY 9"				
A501E	6'-0"	126	4	2'-7"	10"	2'-7"											F804E	25'-4" TO 21'-7"														VARY EA. BY 6"				
A502E	13'-1"	2	4	2'-5"	8'-3"	2'-5"											F805E	VARIES	8	STR													VARY EA. BY 6"			
A503E	12'-4"	4	4	2'-5"	7'-6"	2'-5"											F805E	39'-9" TO 36'-3"															VARY EA. BY 9"			
A504E	5'-8"	4	4	2'-5"	10"	2'-5"											F806E	VARIES	6	STR													VARY EA. BY 9"			
A505E	6'-5"	16	4	2'-5"	1'-7"	2'-5"											F806E	39'-9" TO 36'-0"															VARY EA. BY 6"			
A508E	3'-9"	22	STR														F807E	VARIES	8	STR														VARY EA. BY 9"		
A510E	5'-11"	2	STR														F807E	28'-10" TO 25'-4"																VARY EA. BY 6"		
A511E	VARIES	2	STR														F808E	VARIES	6	STR														VARY EA. BY 9"		
A512E	14'-0" TO 11'-10"																F808E	26'-11" TO 23'-2"																VARY EA. BY 9"		
A513E	16'-3"	3	STR														F809E	19'-10"	8	46	4'-9"	2'-3"	6'-0"	2'-1"	4'-9"	3'-3 1/4"							VARY EA. BY 1'-2"			
A804E	VARIES	4	10	1'-4"	VARIES												F812E	VARIES	7	STR														VARY EA. BY 1'-2"		
A805E	16'-5" TO 12'-11"				15'-1" TO 11'-7"												F813E	12'-0" TO 5'-0"	7	11	3'-1"	1'-4"	11 1/2"													
A806E	17'-7"	4	10	1'-4"	16'-3"																															
A806E	4'-5"	8	11	3'-1"	1'-4"	11 1/2"																														
F401E	10'-10"	144	4	3'-4"	4'-2"	3'-4"																														
F402E	12'-7"	16	4	3'-4"	5'-11"	3'-4"																														
F403E	10'-0"	12	4	2'-11"	4'-2"	2'-11"																														
F404E	14'-10"	32	STR																																	
F405E	VARIES	8	STR																																VARY EA. BY 7"	
F407E	19'-8" TO 23'-9"																																			VARY EA. BY 7"
F408E	16'-2"	2	46	2'-11"	2'-3"	6'-0"	2'-1"	2'-11"	2'-0"																											
F410E	9'-2"	12	4	2'-6"	4'-2"	2'-6"																														
F501E	6'-0"	252	STR																																	
F502E	37'-5"	5	STR																																	
F503E	41'-4"	5	STR																																	
F504E	24'-2"	5	STR																																	
F505E	20'-3"	5	STR																																	
F506E	39'-9"	5	STR																																	
F507E	35'-9"	5	STR																																	
F508E	21'-9"	5	STR																																	
F509E	25'-8"	5	STR																																	
F510E	5'-6"	4	STR																																	
F511E	15'-6"	20	46	2'-7"	2'-3"	6'-0"	2'-1"	2'-7"	1'-9 3/8"																											
F512E	7'-8"	64	STR																																	
F514E	6'-5 1/2"	4	STR																																	
F516E	VARIES	4	STR																																VARY EA. BY 2'-0"	
F517E	10'-7" TO 4'-7"																																			VARY 2 EA. BY 5"
F517E	VARIES 6'-3" TO 4'-2"	12	STR																																	
F702E	13'-11"	2	11	3'-1"	10'-10"	4'-6"																														

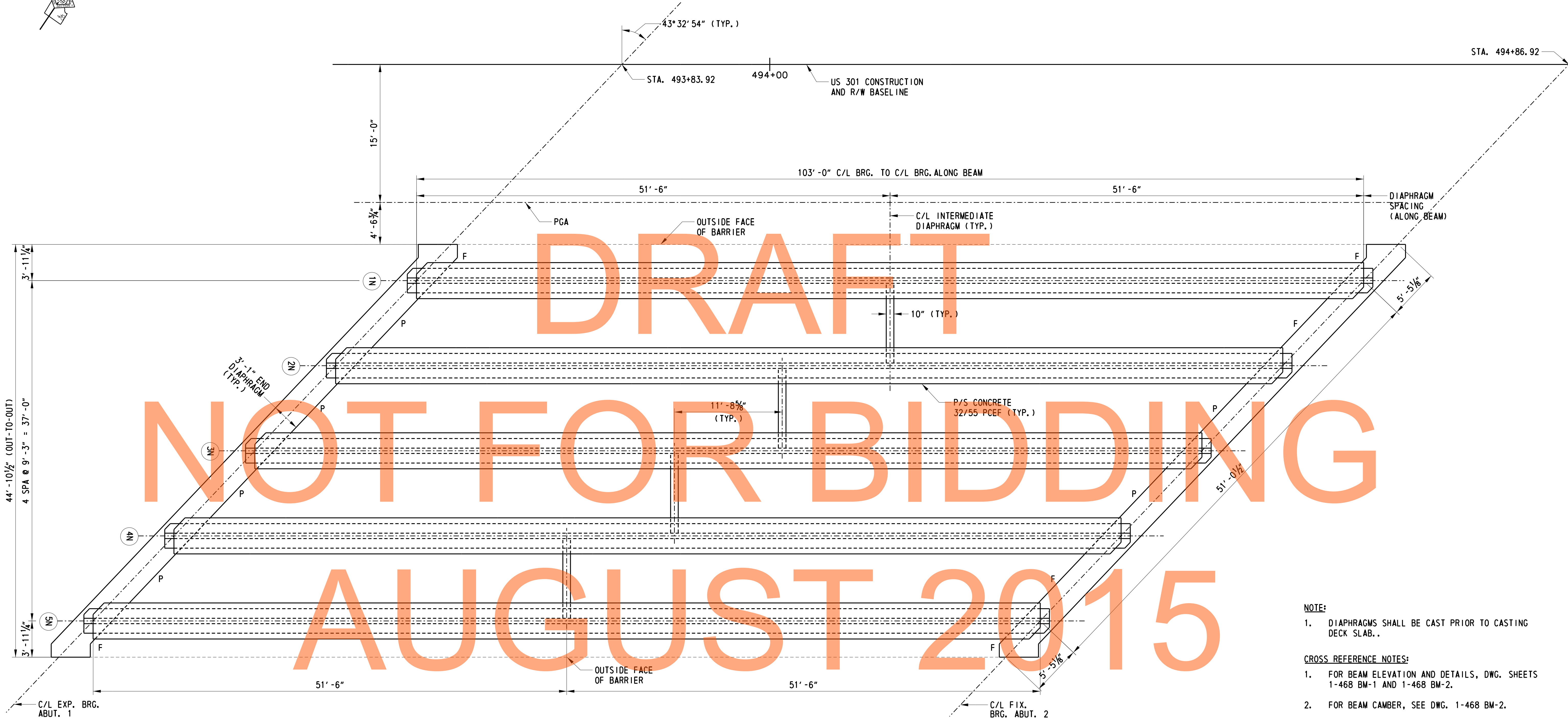
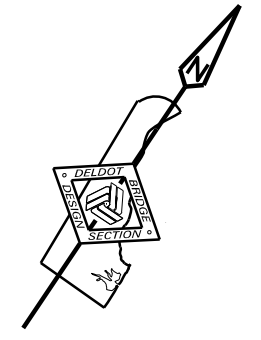
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**FRAMING PLAN - NORTHBOUND**  
SCALE: 3/16" = 1'-0"

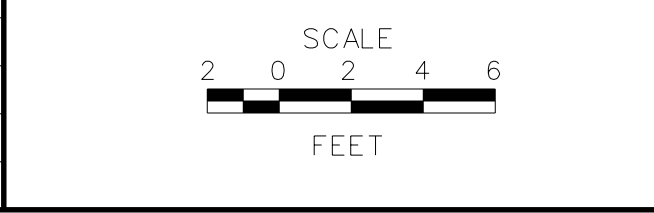
- NOTE:**
- DIAPHRAGMS SHALL BE CAST PRIOR TO CASTING DECK SLAB.
- CROSS REFERENCE NOTES:**
- FOR BEAM ELEVATION AND DETAILS, DWG. SHEETS 1-468 BM-1 AND 1-468 BM-2.
  - FOR BEAM CAMBER, SEE DWG. 1-468 BM-2.
  - FOR CONCRETE DIAPHRAGM DETAILS, SEE DWG. 1-468 DPH-1 AND 1-468 DPH-2.
  - FOR DECK SECTION, SEE DWG. 1-468 PA-1.

**LEGEND:**  
P PARTIAL DEPTH END DIAPHRAGM  
F FULL DEPTH END DIAPHRAGM

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**DELAWARE  
DEPARTMENT OF TRANSPORTATION**

ADDENDUMS / REVISIONS

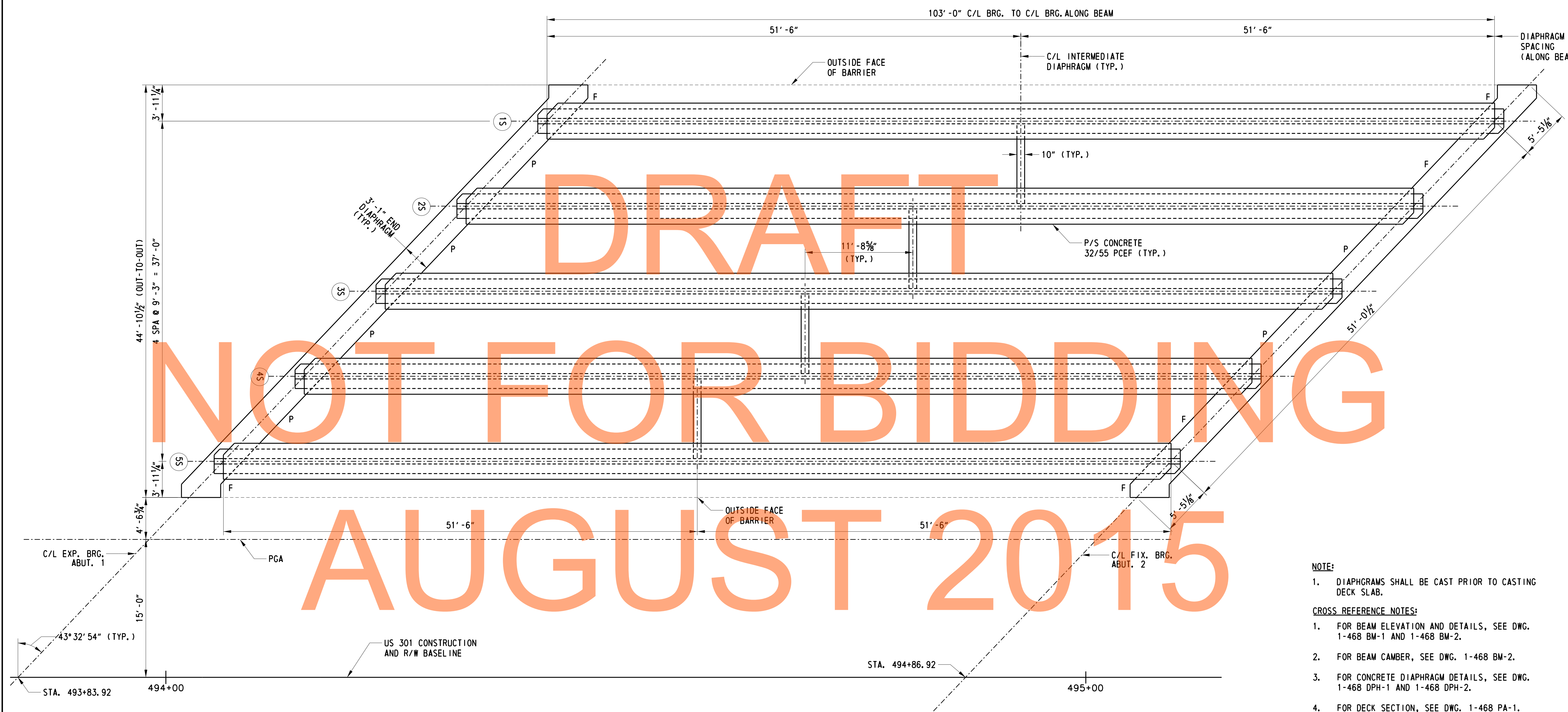
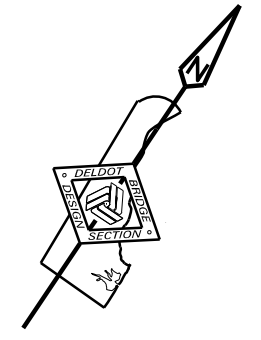


**US 301  
LEVELS ROAD  
TO SUMMIT BRIDGE ROAD**

CONTRACT	BRIDGE NO.	<b>1-468N&amp;S</b>
T20091303	DESIGNED BY:	ADH
COUNTY	CHECKED BY:	DHG
NEW CASTLE		

**US 301 MAINLINE OVER  
NORFOLK SOUTHERN  
RAILROAD  
FRAMING PLAN -  
NORTHBOUND**

1-468 FR-1
SHEET NO.
282
TOTAL SHTS.
1256



DRAFT  
NOT FOR BIDDING  
AUGUST 2015

- NOTE:**
- DIAPHRAGMS SHALL BE CAST PRIOR TO CASTING DECK SLAB.
- CROSS REFERENCE NOTES:**
- FOR BEAM ELEVATION AND DETAILS, SEE DWG. 1-468 BM-1 AND 1-468 BM-2.
  - FOR BEAM CAMBER, SEE DWG. 1-468 BM-2.
  - FOR CONCRETE DIAPHRAGM DETAILS, SEE DWG. 1-468 DPH-1 AND 1-468 DPH-2.
  - FOR DECK SECTION, SEE DWG. 1-468 PA-1.

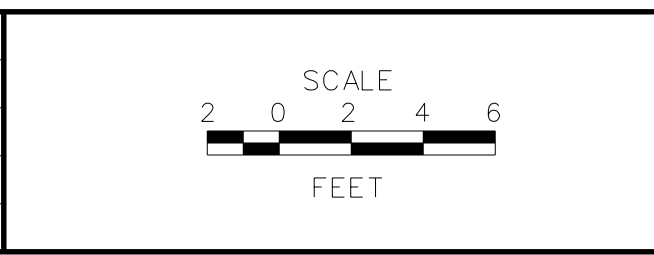
**LEGEND:**  
 P PARTIAL DEPTH END DIAPHRAGM  
 F FULL DEPTH END DIAPHRAGM

**FRAMING PLAN - SOUTHBOUND**  
 SCALE: 3/16" = 1'-0"

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**DELAWARE  
DEPARTMENT OF TRANSPORTATION**

ADDENDUMS / REVISIONS	

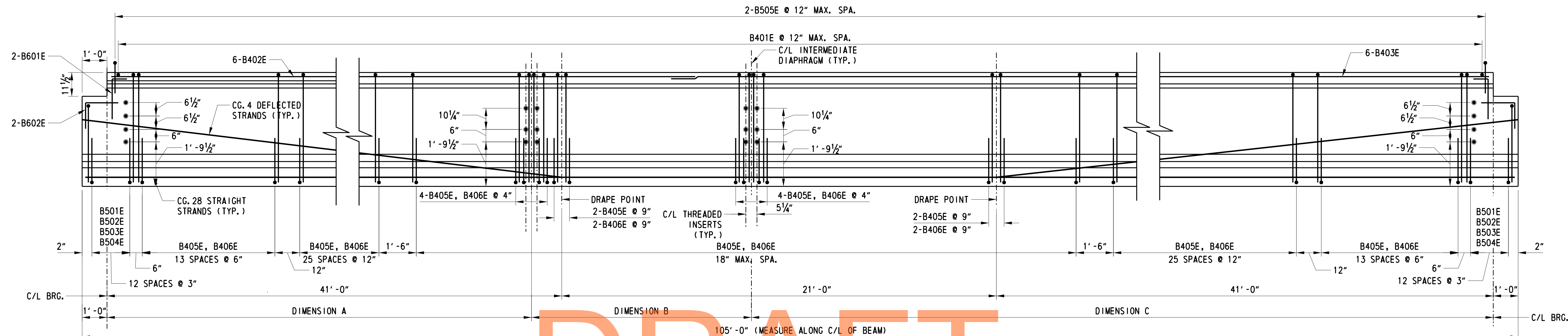


**US 301  
LEVELS ROAD  
TO SUMMIT BRIDGE ROAD**

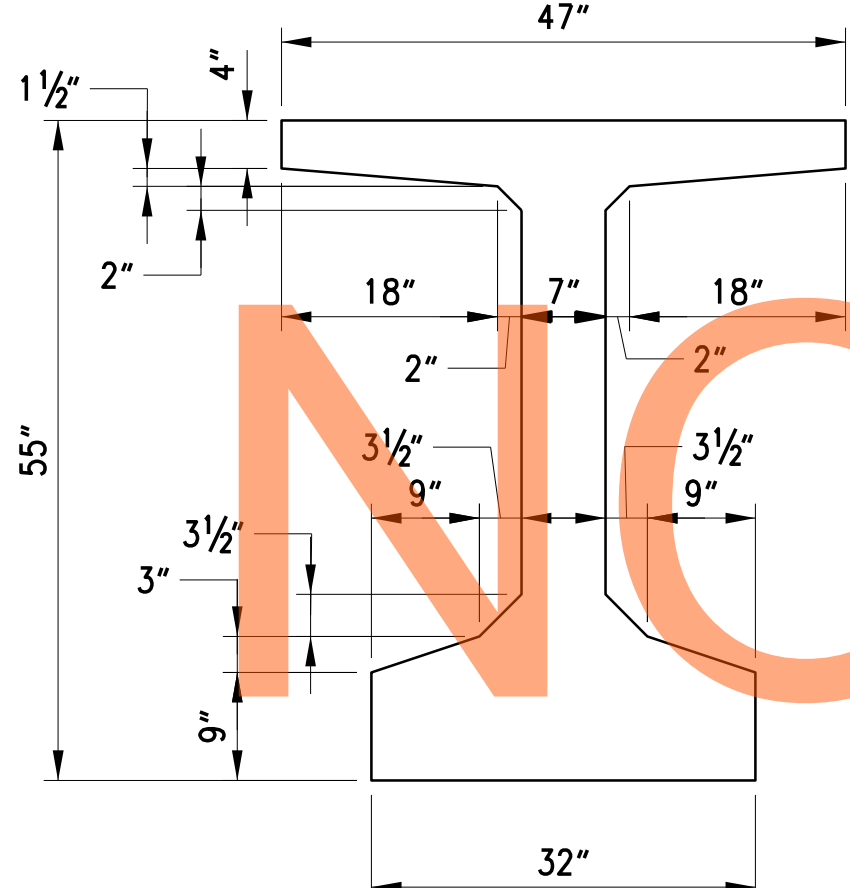
CONTRACT	BRIDGE NO.	<b>1-468N&amp;S</b>
T20091303	DESIGNED BY:	ADH
COUNTY	CHECKED BY:	DHG
NEW CASTLE		

**US 301 MAINLINE OVER  
NORFOLK SOUTHERN  
RAILROAD  
FRAMING PLAN -  
SOUTHBOUND**

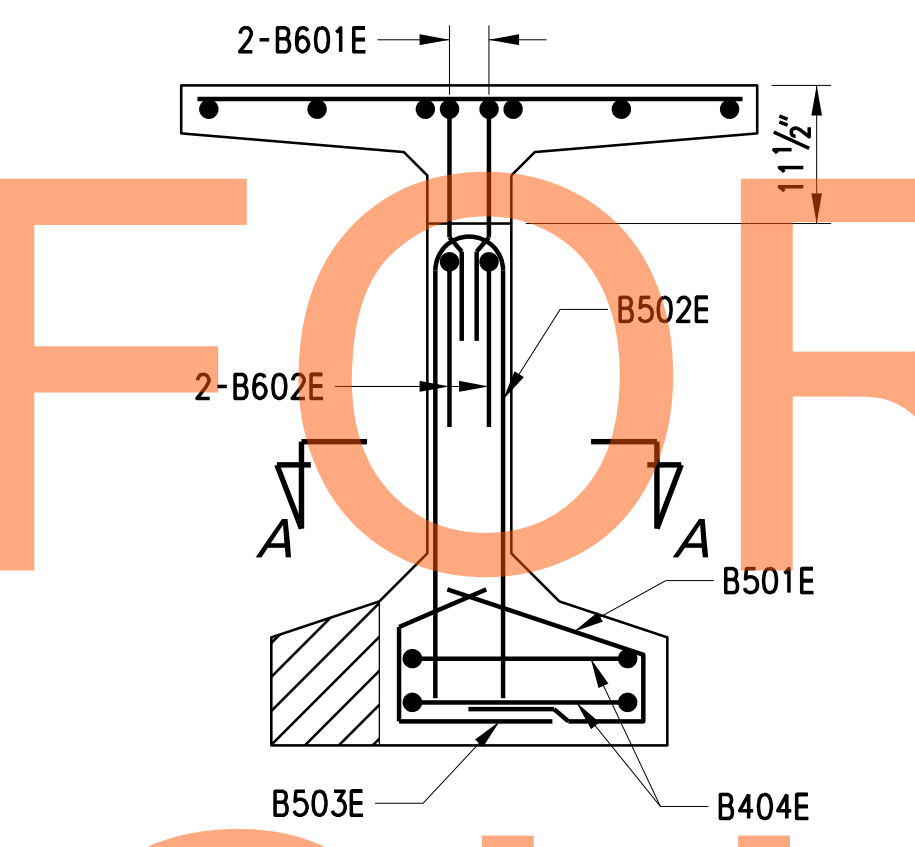
1-468 FR-2
SHEET NO.
283
TOTAL SHTS.
1256



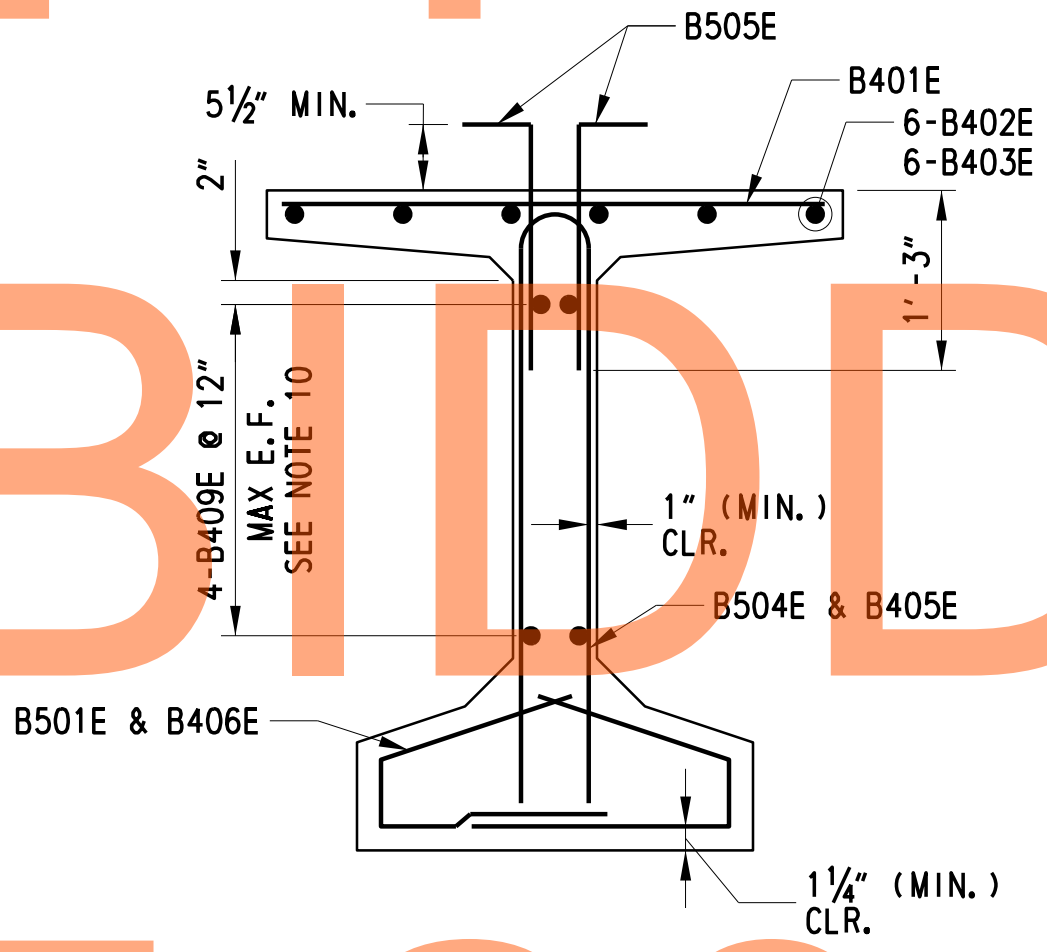
**BEAM ELEVATION**  
SCALE: 1/2" = 1'-0"



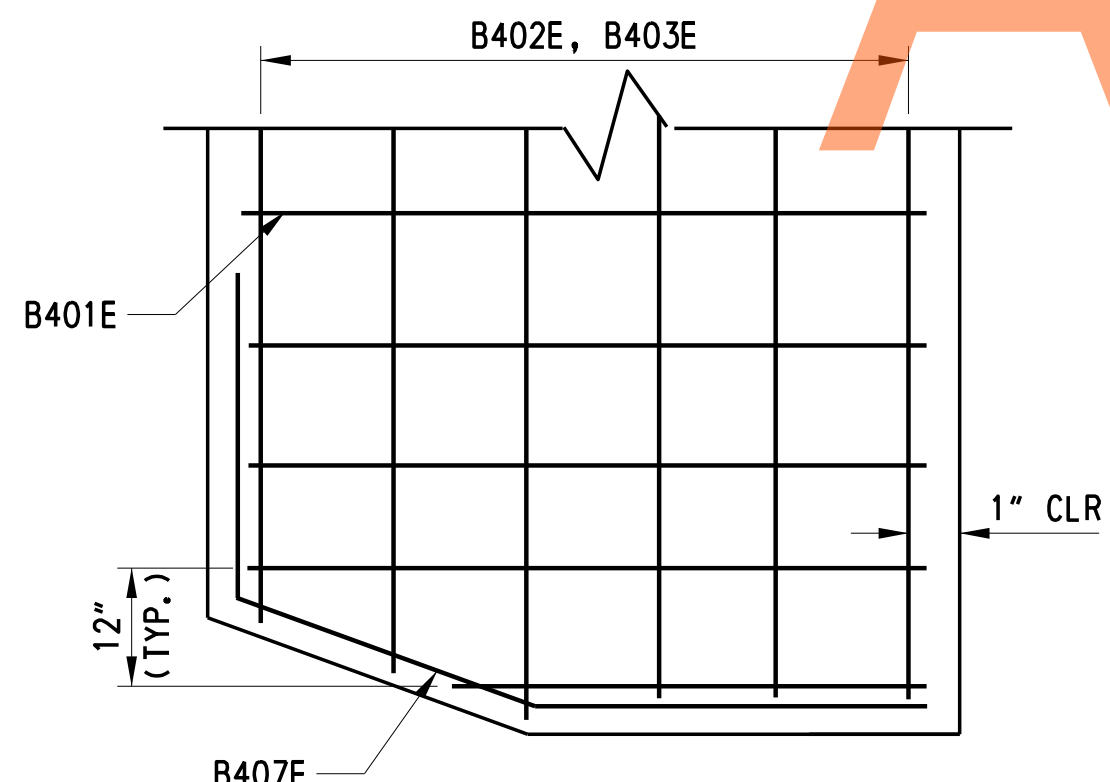
**TYPICAL SECTION**  
SCALE: 3/4" = 1'-0"



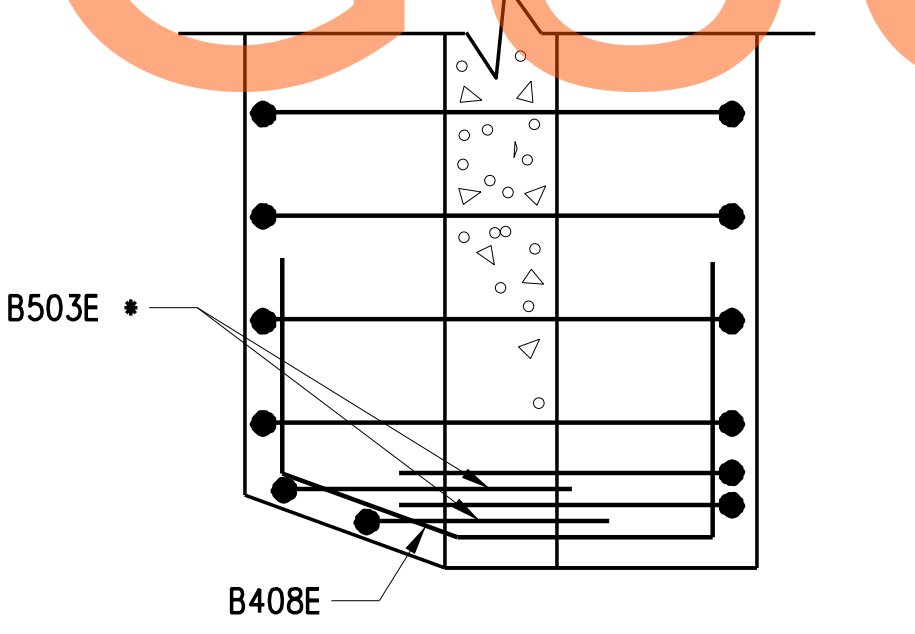
**NOTCH END REINFORCEMENT**  
SCALE: 3/4" = 1'-0"



**TYPICAL REINFORCEMENT**  
SCALE: 3/4" = 1'-0"



**PLAN - TOP FLANGE**  
SCALE: 1" = 1'-0"



**SECTION A-A - BOTTOM FLANGE**  
SCALE: 1" = 1'-0"

\* MODIFY REINFORCEMENT BARS TO ACCOMMODATE CLIPPED FLANGE.

GIRDERS	DIMENSIONS		
	A	B	C
1N, 5N, 1S, 5S	51' - 6"	-	51' - 6"
2N & 2S	48' - 6 7/8"	11' - 8 5/8"	42' - 8 1/2"
3N & 3S	45' - 7 5/8"	11' - 8 5/8"	45' - 7 5/8"
4N & 4S	42' - 8 1/2"	11' - 8 5/8"	48' - 6 7/8"

- CROSS REFERENCE NOTES:**
- FOR GENERAL NOTES, SEE DWG. 1-468 GN-1.
  - FOR FRAMING PLAN, SEE DWG. 1-468 FR-1 AND 1-468 FR-2.
  - FOR ADDITIONAL BEAM DETAILS, SEE DWG. 1-468 BM-2.
  - FOR PERMANENT STEEL BRIDGE DECK FORM DETAILS, SEE DWG. 1-468 BM-2.
  - FOR DIAPHRAGM SECTION AND DETAILS, SEE DWG. 1-468 DPH-1 AND 1-468 DPH-2.
  - FOR TYPICAL SECTION, SEE DWG. 1-468 TS-1.
  - FOR CAMBER TABLE, SEE DWG. 1-468 BM-2.

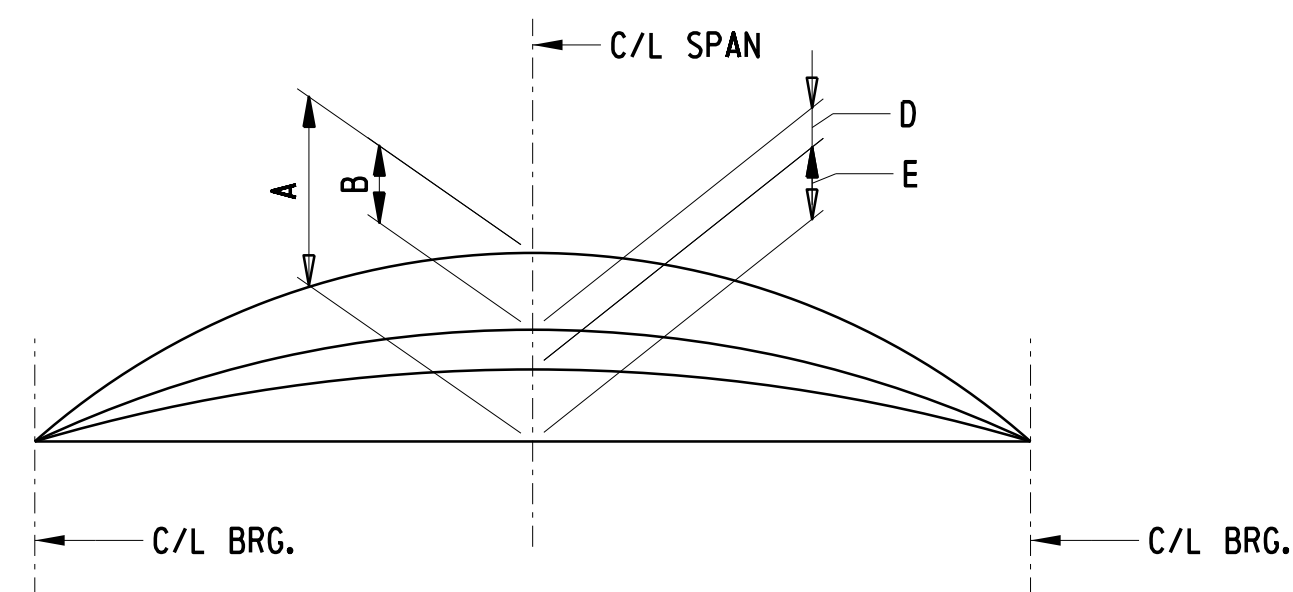
- NOTES:**
- ALL BEAMS ARE 32/55 PCEF.
  - ALL MILD STEEL REINFORCEMENT IN BEAMS SHALL BE EPOXY COATED.
  - GIRDER LENGTH IN CASTING BED SHALL BE DETERMINED AND DEPICTED IN SHOP DRAWINGS TO COMPENSATE FOR GRADE SHORTENING DUE TO PRESTRESS EFFECTS.
  - TOP SURFACE OF ALL GIRDERS SHALL BE ROUGH FINISHED TO A FULL AMPLITUDE OF 1/4" AND SCRUBBED TRANSVERSELY WITH A COARSE WIRE BRUSH TO REMOVE ALL LAITANCE AND TO PRODUCE A ROUGHENED SURFACE FOR BONDING.
  - NO CLEAR COVER LESS THAN THAT SHOWN ON THESE PLANS WILL BE ACCEPTED.
  - DO NOT PLACE PRESTRESSING STRANDS AT CORNER LOCATION IN BOTTOM ROW.
  - END ZONE REINFORCEMENT MAY BE INCREASED BY FABRICATOR TO REFLECT FABRICATOR'S EXPERIENCE AND/OR TO CONTROL CRACKING.
  - FABRICATOR TO CHECK STABILITY FOR HANDLING AND TRANSPORTING OF THE MEMBER.
  - OMIT DIAPHRAGM THREADED INSERTS ON OUTSIDE FACE OF FASCIA BEAMS.
  - LONGITUDINAL REINFORCEMENT THE FULL LENGTH OF WEB. OMIT AT STRAND DRAPE POINTS TO MAINTAIN PROPER CLEARANCE. REINFORCEMENT NOT SHOWN IN ELEVATION FOR CLARITY.

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ADDENDUMS / REVISIONS

CONTRACT	T20091303
COUNTY	NEW CASTLE
BRIDGE NO.	1-468N&S
DESIGNED BY:	ADH
CHECKED BY:	DHG

1-468 BM-1	
SHEET NO.	284
TOTAL SHTS.	1256



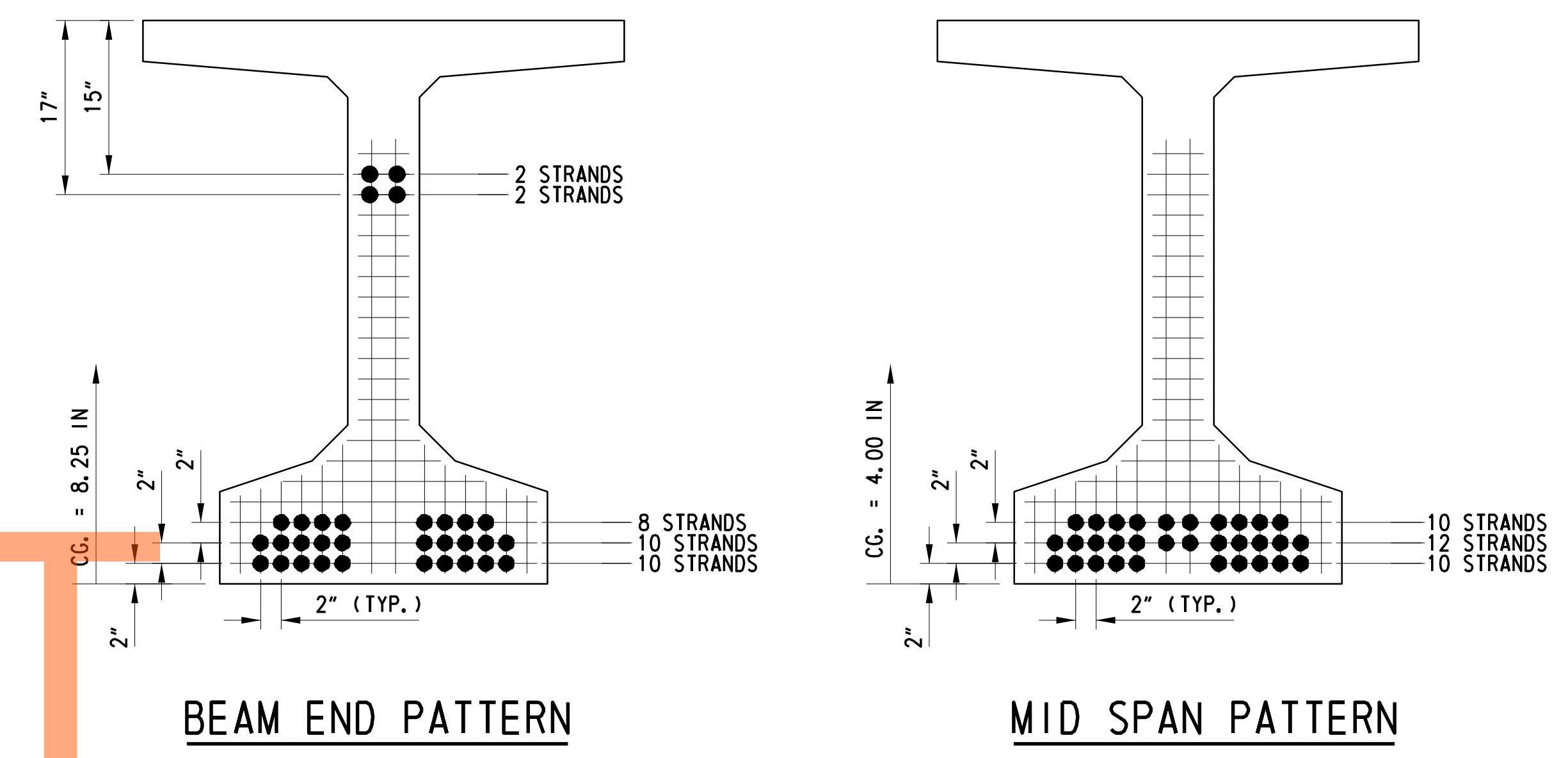
**BEAM CAMBER DIAGRAM**  
NTS

CAMBER					
BEAM	A (IN)	B (IN)	C (IN)	D (IN)	E (IN)
1N, 1S, 5N, 5S	5.716	-2.645	3.071	-1.404	1.667
2N - 4N & 2S - 4S	5.716	-2.645	3.071	-1.571	1.500

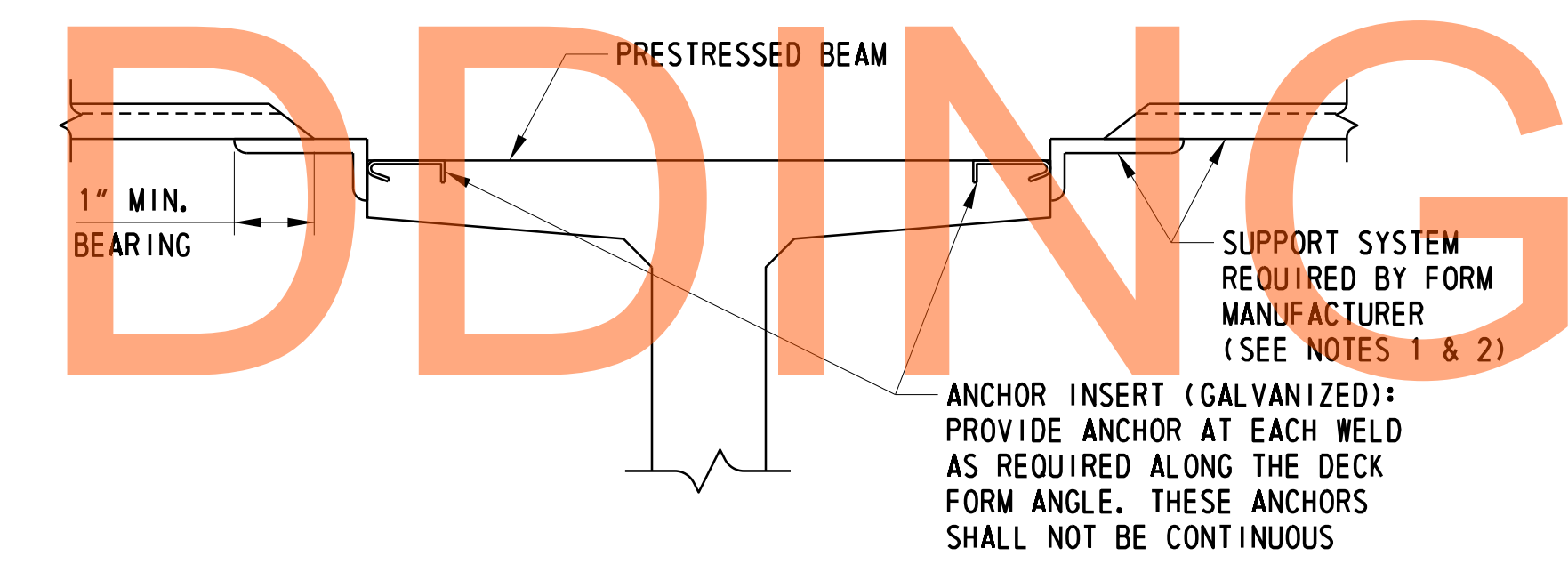
**LEGEND:**

- A DENOTES CAMBER DUE TO PRESTRESS AT ERECTION, CREEP FACTOR MULTIPLIER = 1.8.
- B DENOTES DEFLECTION DUE TO GIRDER DEAD LOAD AT ERECTION, CREEP MULTIPLIER = 1.85.
- C A+B
- D DENOTES DEFLECTION DUE TO SLAB, BARRIERS AND DIAPHRAGMS. (DOES NOT INCLUDE FUTURE WEARING SURFACE)
- E DENOTES NET CAMBER, C+D.

PRESTRESSING DATA	
LOCATION	ALL BEAMS
BEAM SIZE, I-BEAM	32x55
INITIAL PRESTRESSING FORCE PER BEAM 0.60 DIA. LOW RELAXATION STRANDS	1406.20 K lps
NUMBER OF STRANDS	32
CONCRETE STRENGTH AT STRAND RELEASE (f'c)	6.40 ksi
CONCRETE STRENGTH AT 28 DAYS f'c	8.00 ksi



**DRAPING PATTERN**  
SCALE: 1" = 1'-0"



**FORM ANCHOR DETAIL**  
SCALE: 1" = 1'-0"

**CROSS REFERENCE NOTES:**

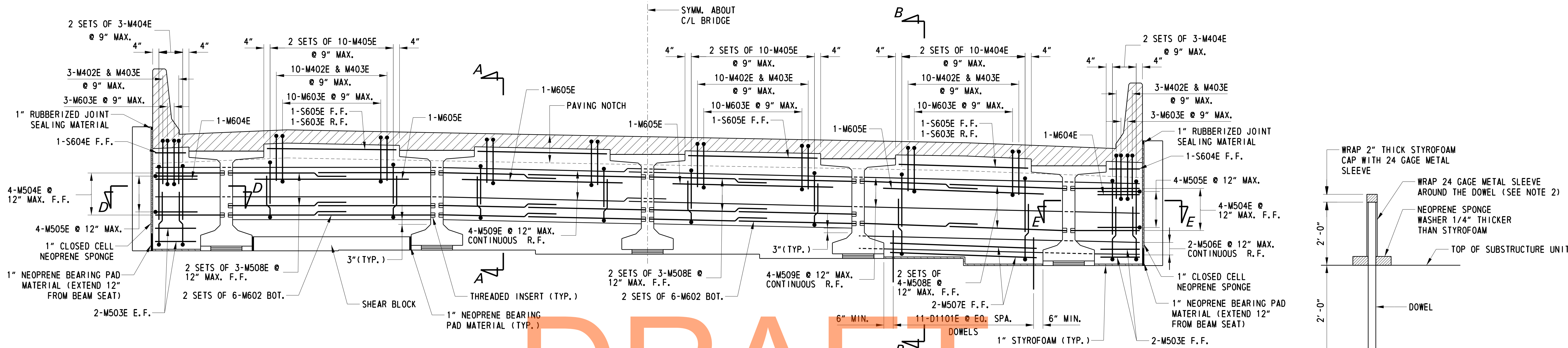
1. FOR GENERAL NOTES, SEE DWG. 1-468 GN-1.
2. FOR FRAMING PLAN, SEE DWG. 1-468 FR-1 AND 1-468 FR-2.
3. FOR BEAM ELEVATION AND TYPICAL SECTION, SEE DWG. 1-468 BM-1.

**NOTES:**

1. PERMANENT STEEL BRIDGE DECK FORMS AND SUPPORTS SHALL BE PROVIDED CONFORMING TO THE REQUIREMENTS OF SECTION 602 OF THE DELDOT STANDARD SPECIFICATIONS AND AS SHOWN IN THE BDM.
2. ANY PERMANENTLY EXPOSED FORM METAL WHERE THE GALVANIZED COATING HAS BEEN DAMAGED SHALL BE THOROUGHLY CLEANED, WIRE BRUSHED AND PAINTED WITH TWO COATS OF ZINC DUST-ZINC OXIDE PAINT, NO COLOR ADDED, TO THE SATISFACTION OF THE ENGINEER. MINOR HEAT DISCOLORATION IN AREAS OF WELDS NEED NOT BE TOUCHED UP.
3. THE MAXIMUM CORRUGATION DEPTH AND WIDTH SHALL BE SUCH THAT THE TOTAL DEAD LOAD OF THE FORM AND CONCRETE IN THE FORM DOES NOT EXCEED 15 LBS/FT<sup>2</sup>.
4. VARY THICKNESS OF CONCRETE HAUNCH TO COMPENSATE FOR ANY INACCURACIES IN BEAM CAMBER.
5. CAMBER VALUES ARE THEORETICAL VALUES AND MAY VARY WITH ACTUAL CONCRETE STRENGTH (AGE), VARIOUS PRESTRESSING CONDITIONS, CREEP FACTOR AND PRESTRESS LOSSES. CONTRACTOR TO VERIFY THESE VALUES IN THE FIELD.

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AUGUST 2015

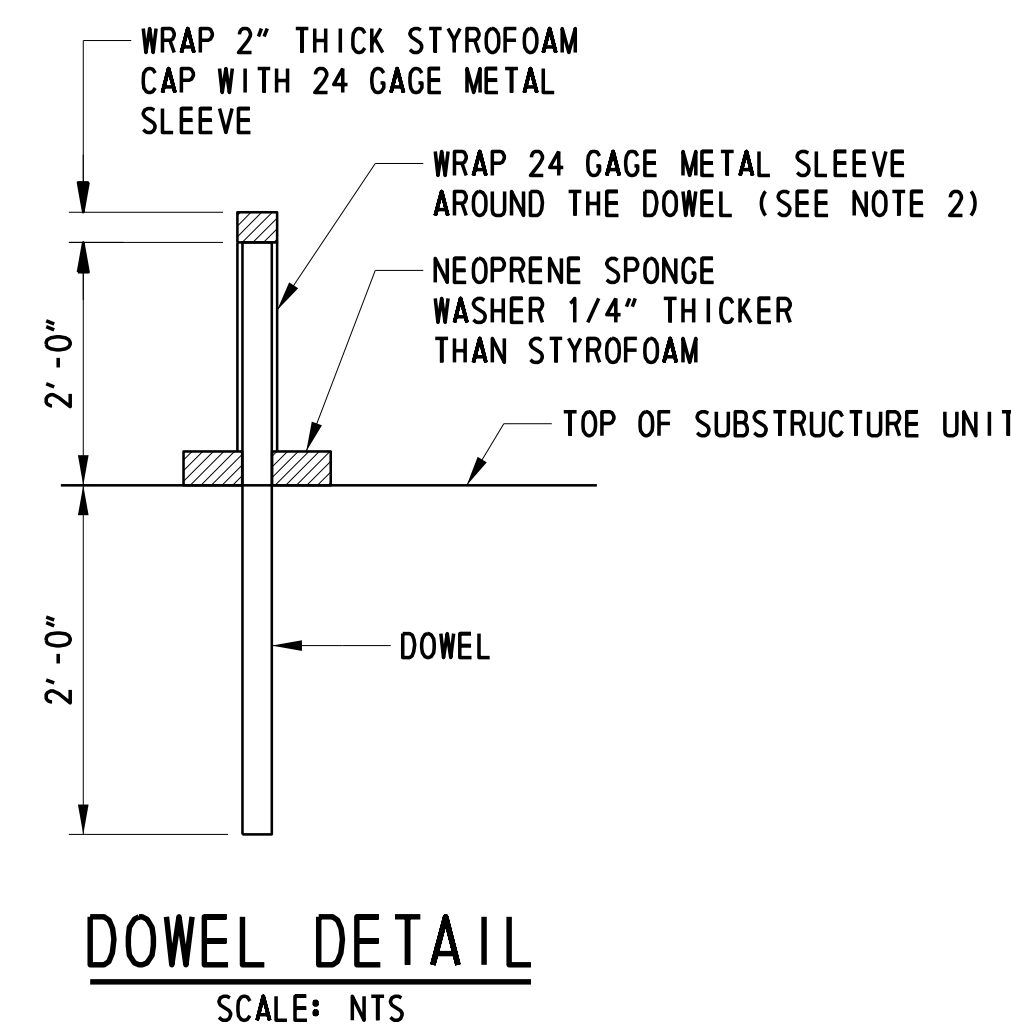
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**PARTIAL-DEPTH DIAPHRAGM W/ SHEAR BLOCK**  
(BAYS 1 & 4)

**PARTIAL-DEPTH DIAPHRAGM**  
(BAYS 2 & 3)  
ABUTMENT 2 PARTIAL DEPTH DIAPHRAGM  
REINFORCEMENT SAME AS ABUTMENT 1

**FULL-DEPTH DIAPHRAGM**  
(BAYS 1 & 4)



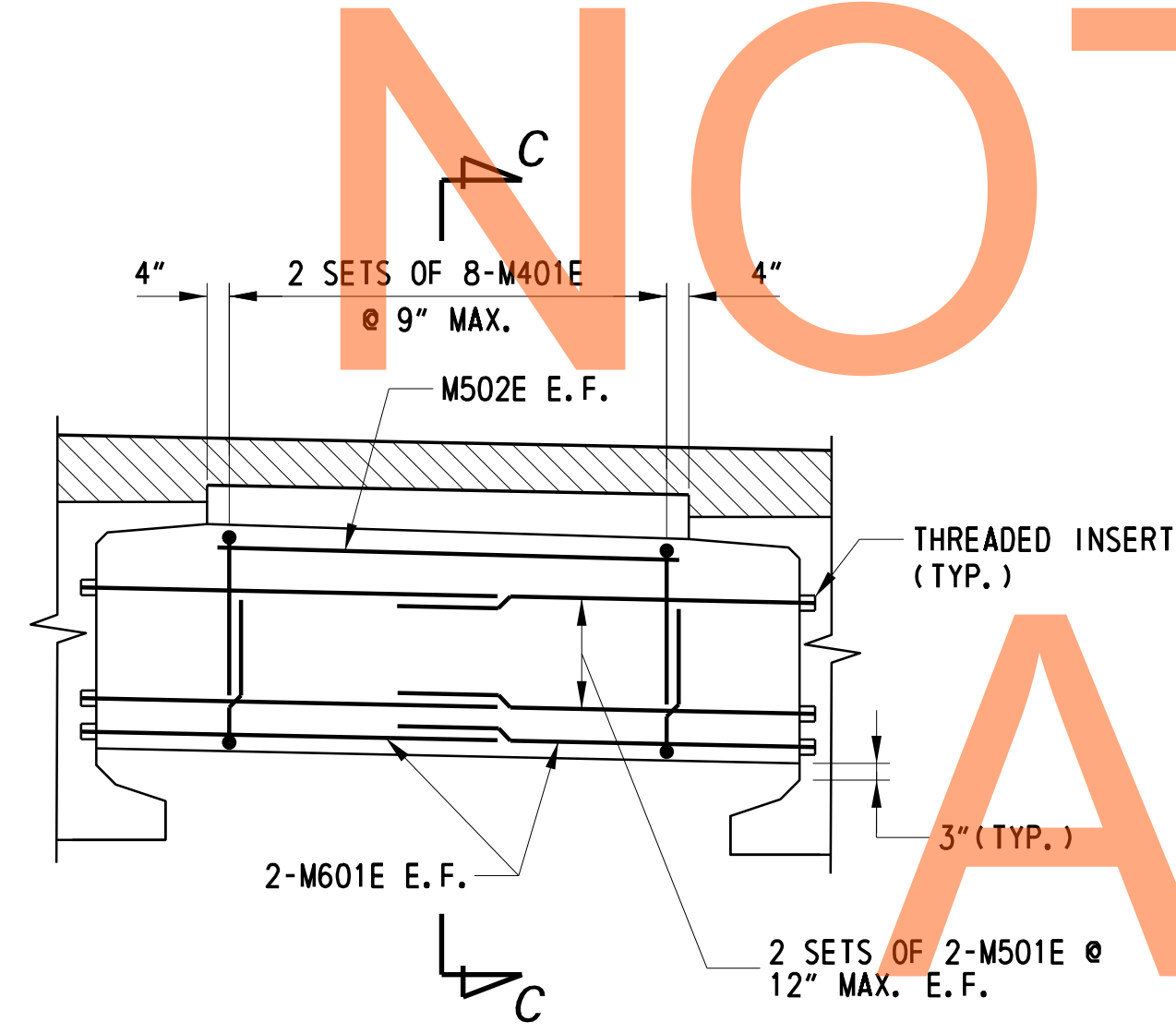
**DOWEL DETAIL**  
SCALE: NTS

**NOTE:**  
S603E & M509E ARE CONTINUOUS  
ALONG R.F. OF DIAPHRAGM AND LAP AT  
MIDSPAN OF BRIDGE.

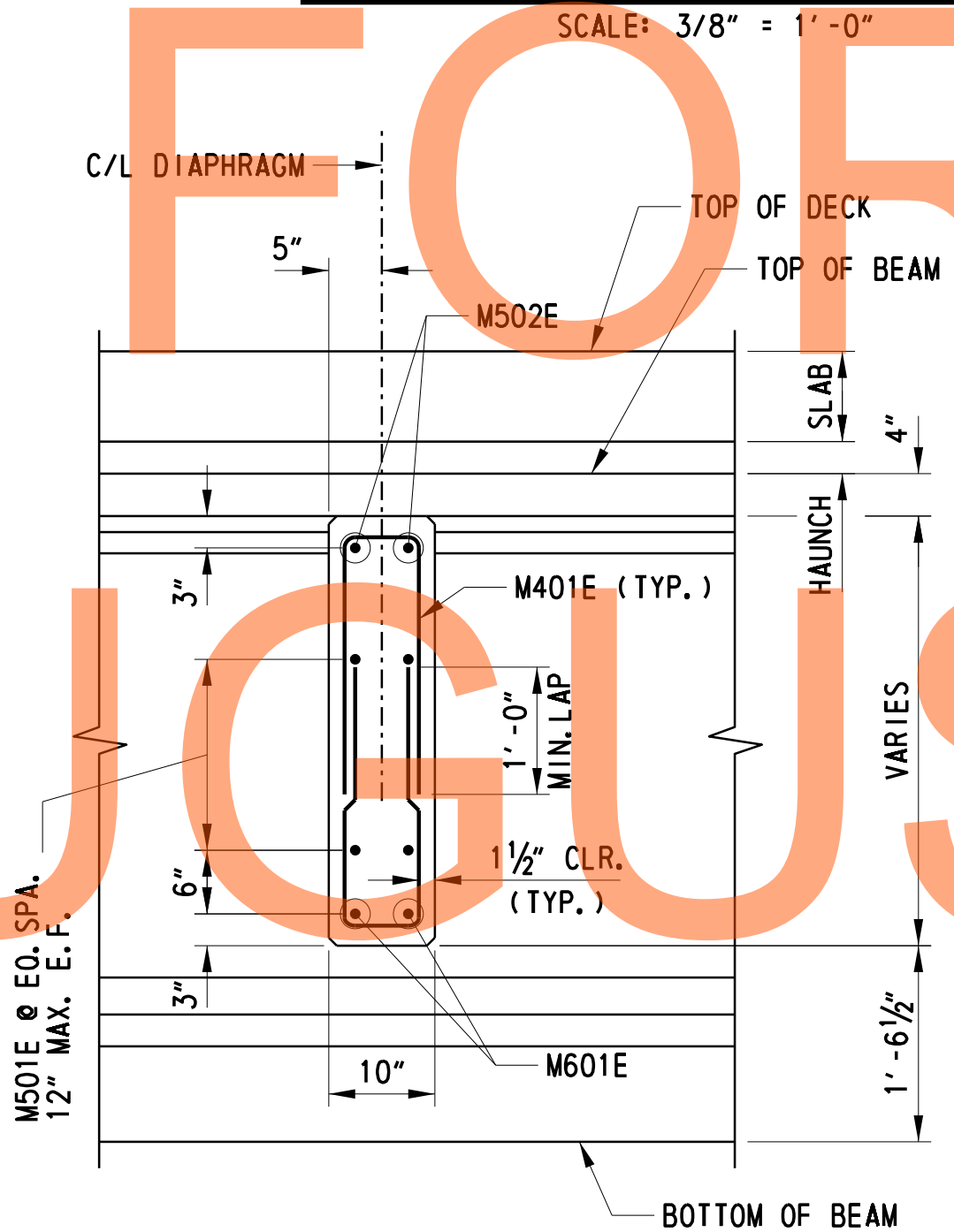
**ABUTMENT 1 (EXP.)**

**ABUTMENT 2 (FIXED)**

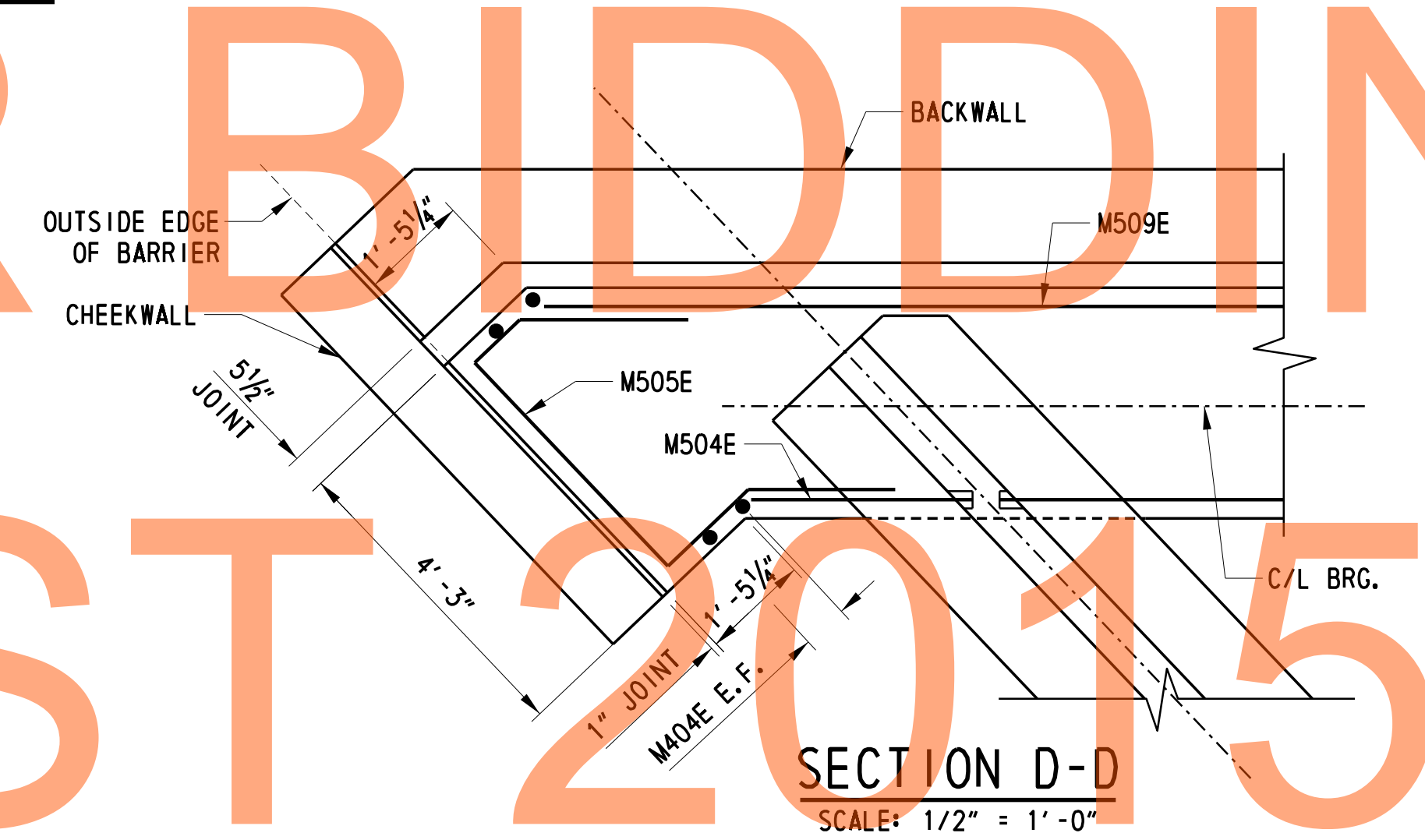
**TYPICAL DIAPHRAGM SECTION**  
SCALE: 3/8" = 1'-0"



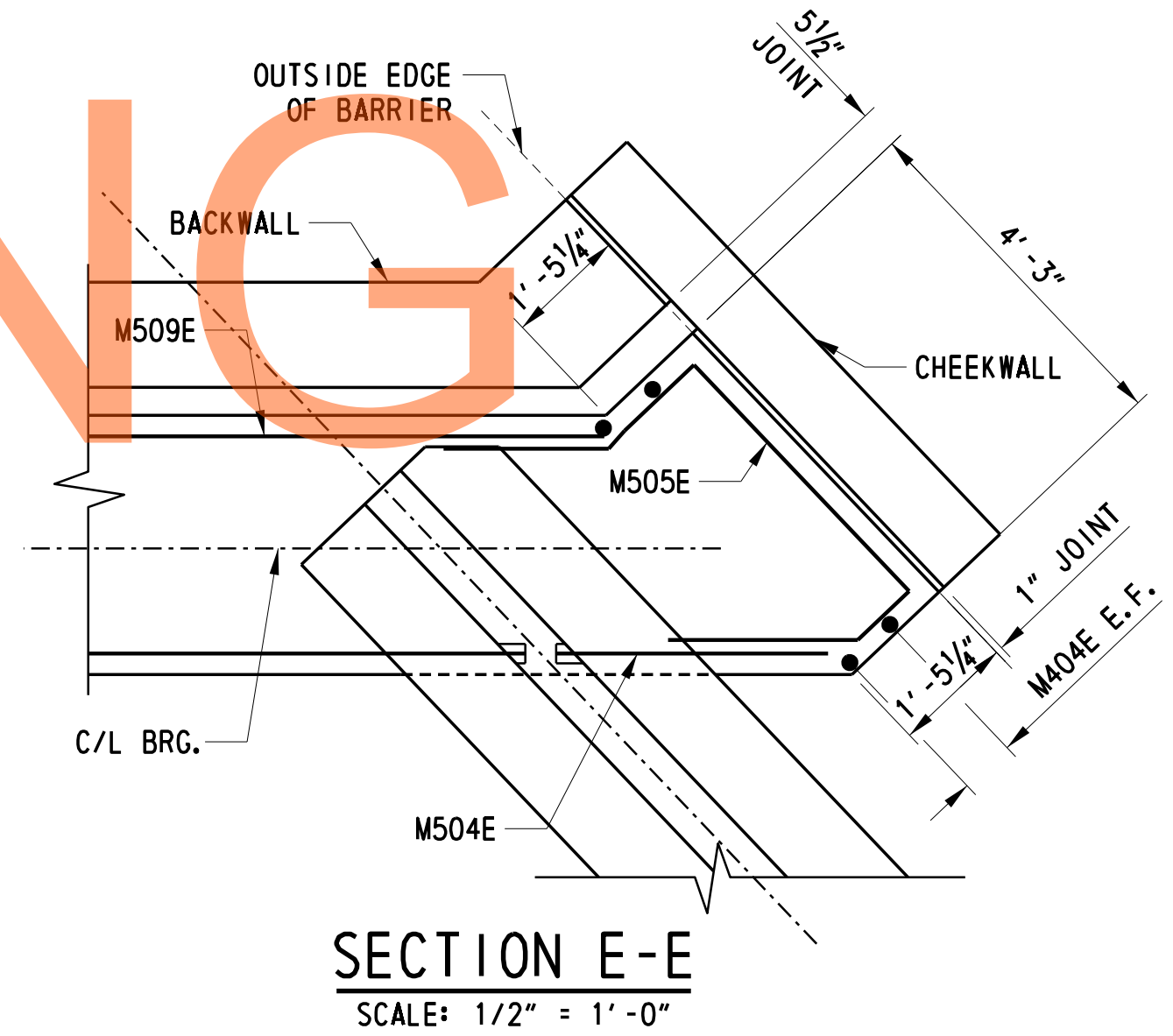
**INTERMEDIATE DIAPHRAGM**  
SCALE: 3/8" = 1'-0"



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



**SECTION D-D**  
SCALE: 1/2" = 1'-0"



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

- NOTES:**
1. INSERTS FOR DEFORMED BARS SHALL BE ONE SIZE SMALLER. THE MINIMUM LENGTH OF INSERT IS 3".
  2. BITUMINOUS TAR PAPER OR SCHEDULE 40 P.V.C. PIPE ARE PERMITTED TO BE USED AS ALTERNATE BOND BREAKER MATERIALS IN LIEU OF THE METAL SLEEVE. OTHER BOND BREAKER MATERIALS MAY BE USED WITH THE APPROVAL OF THE ENGINEER. DO NOT USE ALUMINUM SLEEVES.
  3. MINIMUM LAP SPLICE LENGTHS:  
2'-7" #5 BARS  
3'-1" #6 BARS

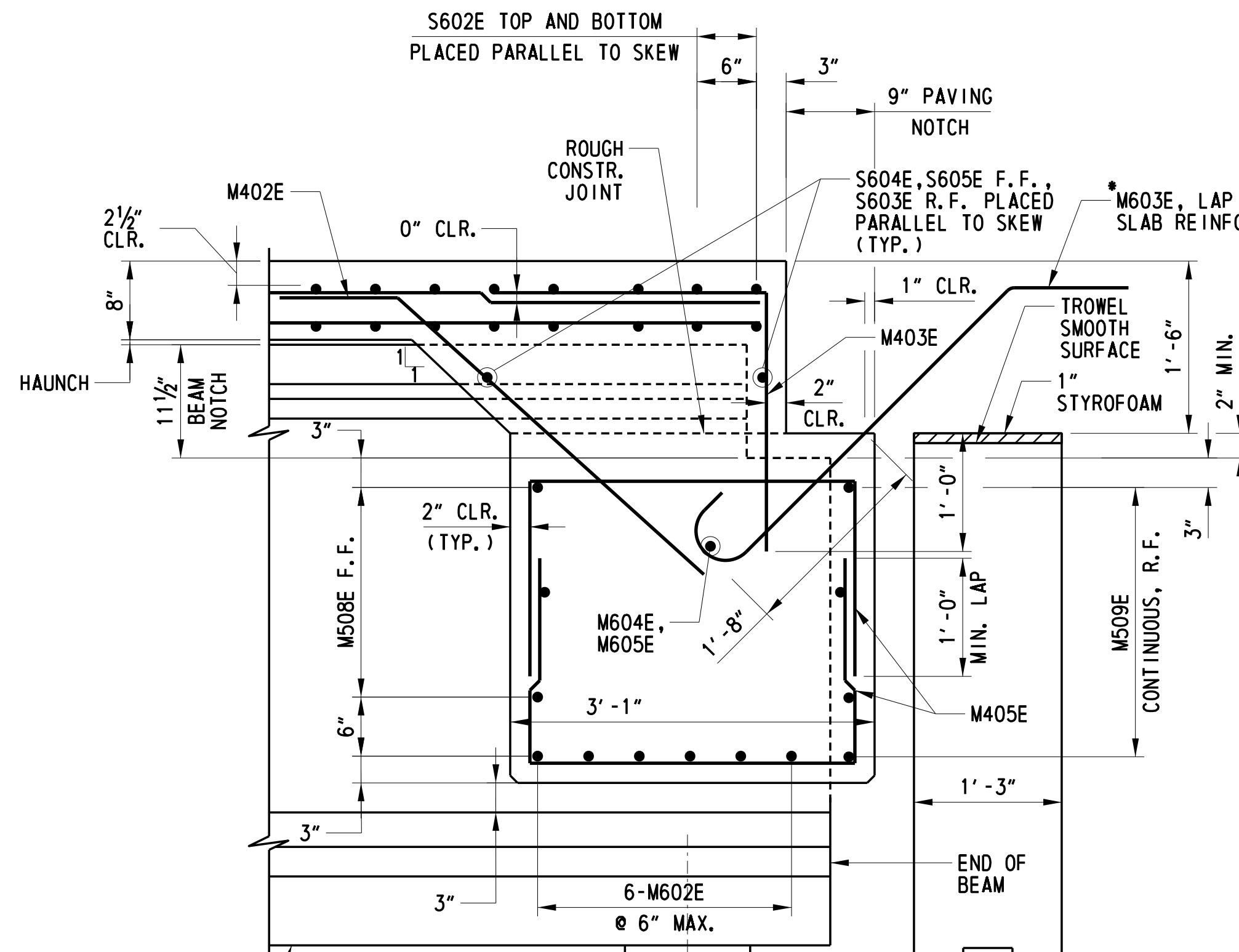
- CROSS REFERENCE NOTES:**
1. FOR SHEAR BLOCK DETAILS, SEE DWG. 1-468 AB-1.
  2. FOR SECTION A-A AND B-B, SEE DWG. 1-468 DPH-2.

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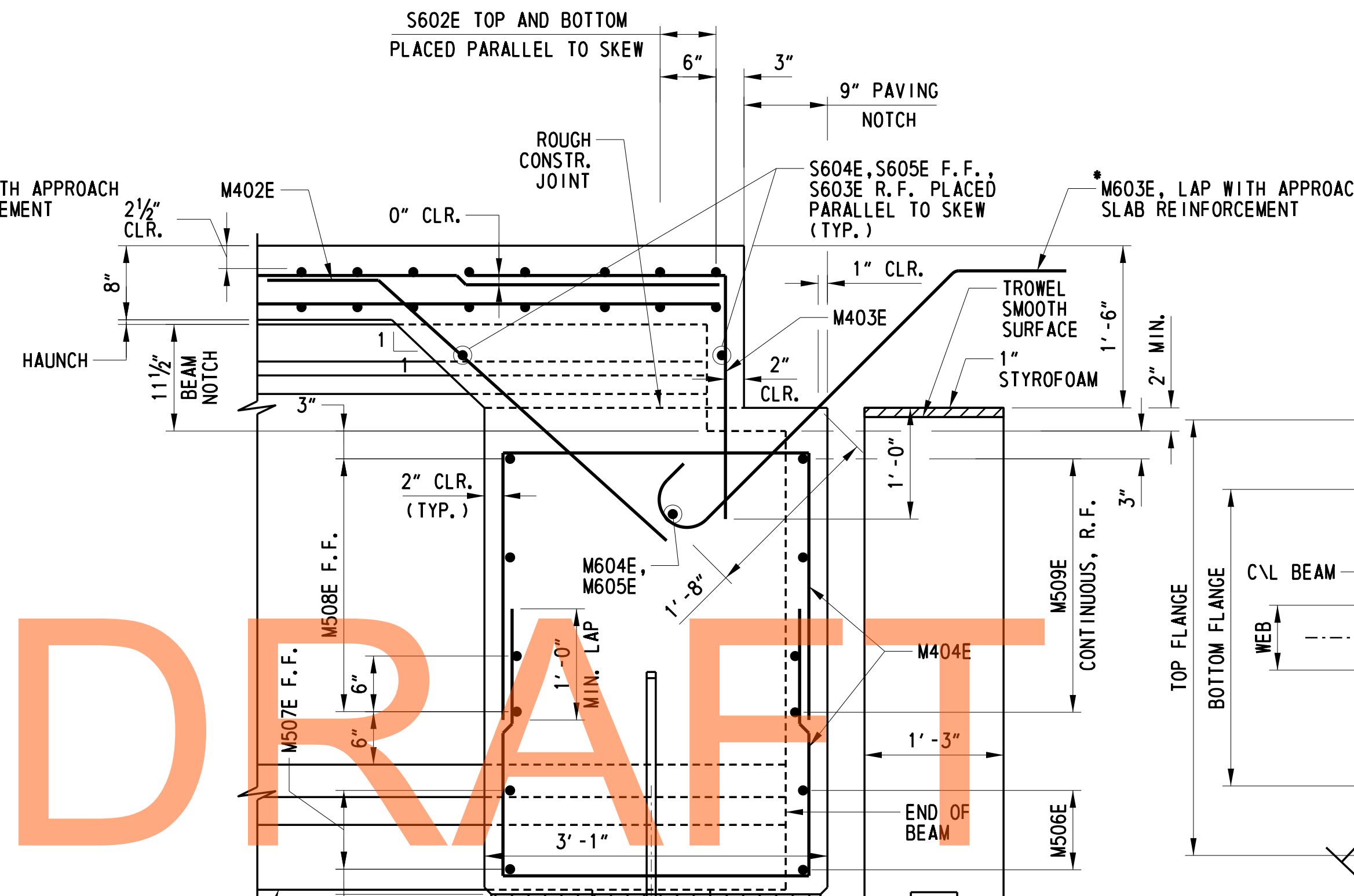
ADDENDUMS / REVISIONS

CONTRACT	T20091303
COUNTY	NEW CASTLE
BRIDGE NO.	1-468N&S
DESIGNED BY:	ADH
CHECKED BY:	DHG

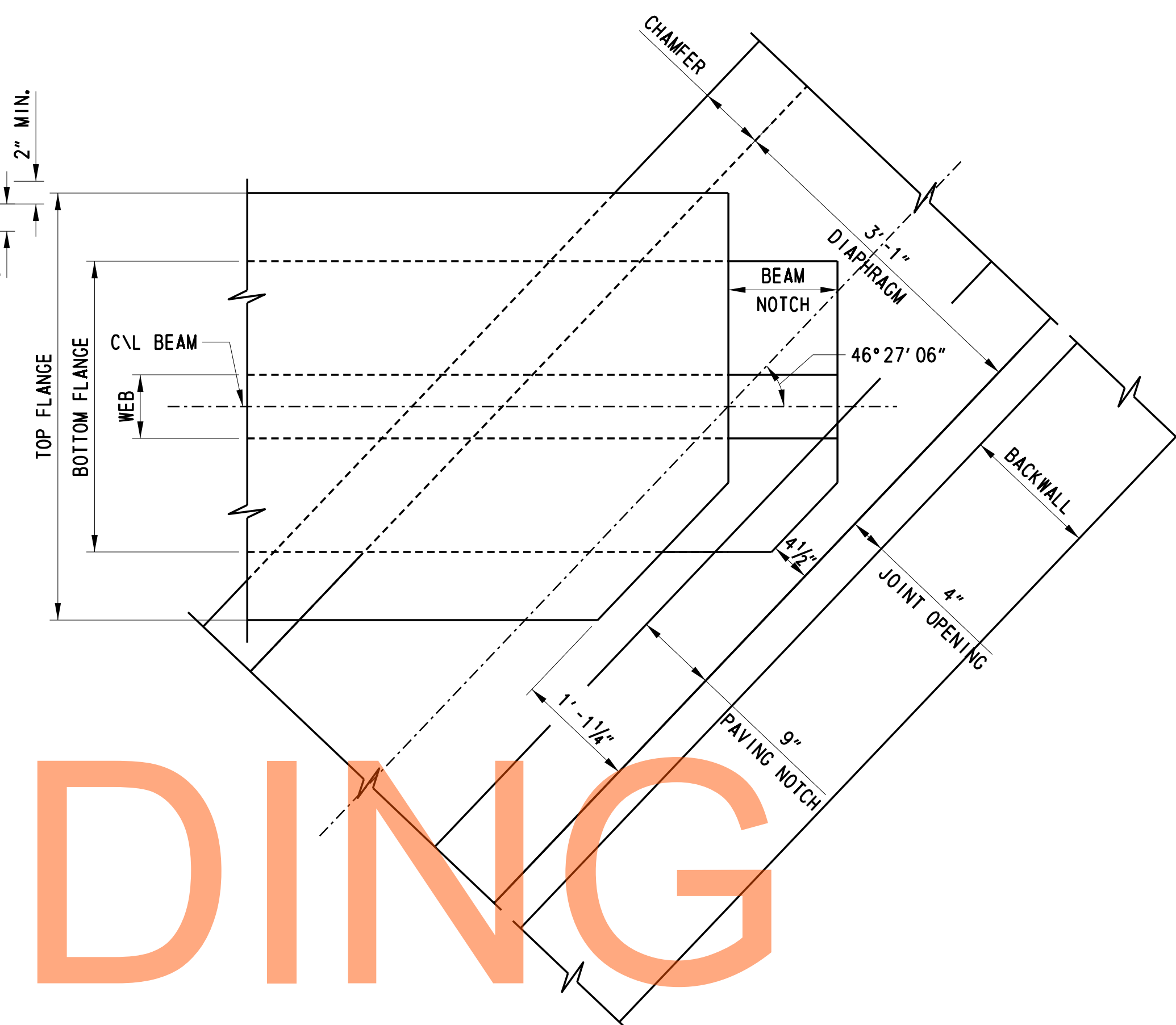
SHEET NO.	286
TOTAL SHTS.	1256



**SECTION A-A**  
**PARTIAL-DEPTH DIAPHRAGM**  
**(FIXED AND EXPANSION)**  
 SCALE: 1" = 1'-0"



**SECTION B-B**  
**FULL-DEPTH DIAPHRAGM**  
**(FIXED)**  
 SCALE: 1" = 1'-0"



**PLAN - END OF BEAM**  
 SCALE: 1" = 1'-0"

\*APPROACH SLAB NOT SHOWN FOR CLARITY.

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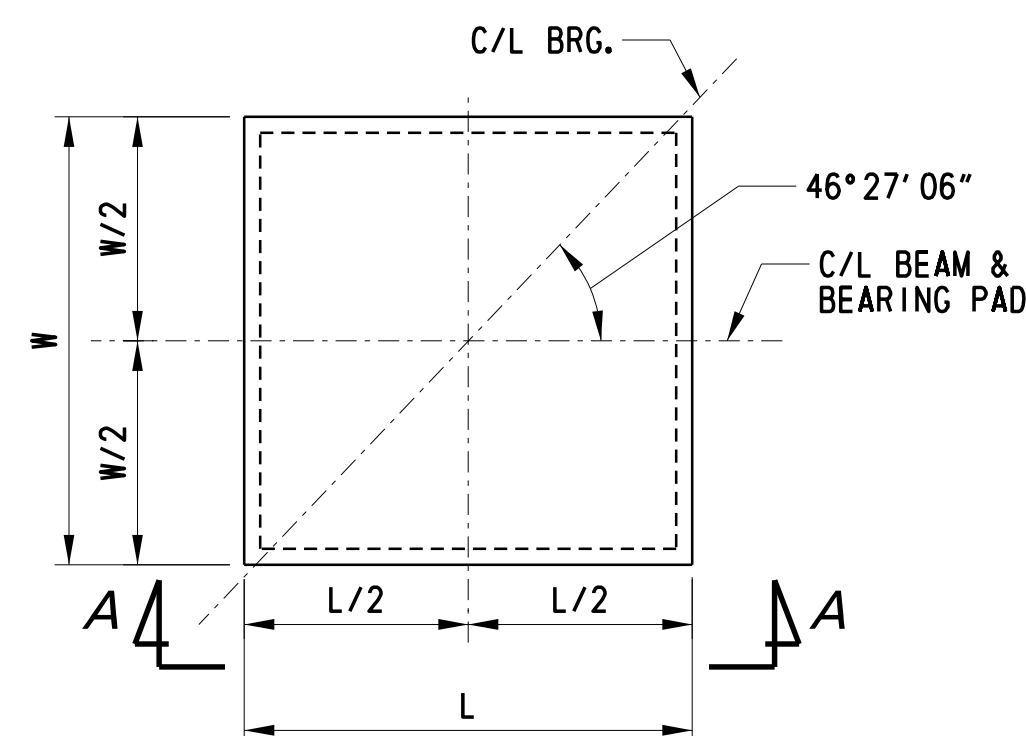
AUGUST 2015

**NOTES:**

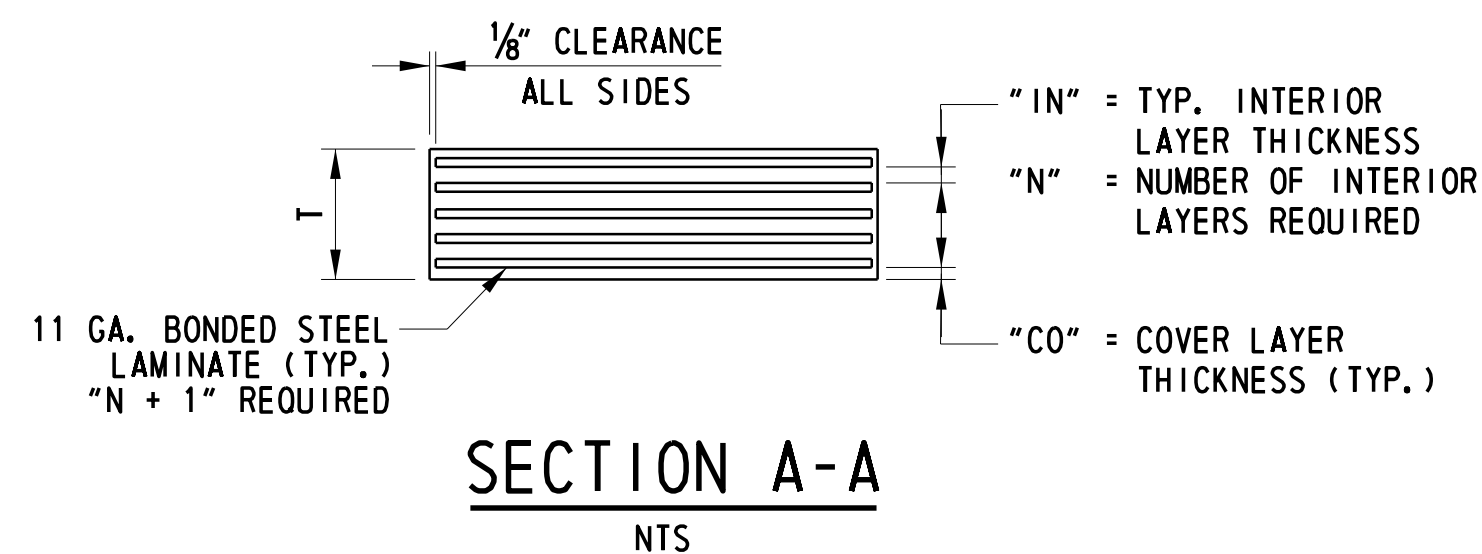
1. INSERTS SHALL BE ONE SIZE SMALLER FOR DEFORMED BARS. THE MINIMUM LENGTH OF INSERT IS 3".

**CROSS REFERENCE NOTES:**

1. FOR APPROACH SLAB DETAILS, SEE DWG. 1-468 PA-1.



**BEARING PAD PLAN**  
NTS



**SECTION A-A**  
NTS

BEARING PAD DATA									
LOCATION	QUANTITY	L (IN)	W (IN)	T (IN)	IN (IN)	N	N+1	CO (IN)	COMPRESSION AREA (IN <sup>2</sup> )
ABUT 1 (EXPANSION)	10	17	18	5.208	0.625	6	7	0.3125	306
ABUT 2 (FIXED)	10	16	18	4.464	0.625	5	6	0.3125	288

UNFACTORED BEAM REACTIONS			
LOCATION		DEAD LOAD (kip)	LIVE LOAD (kip)
ABUT 1 (EXP.)	EXTERIOR BEAM	135.90	95.55
	INTERIOR BEAM	139.10	101.75
ABUT 2 (FIXED)	EXTERIOR BEAM	141.10	95.55
	INTERIOR BEAM	144.30	101.75

**LAMINATED ELASTOMERIC BEARING PAD NOTES:**

- SMOOTH CUT AND DEBURR METAL SHIMS.
- GRIT BLAST AND DEGREASE METAL SHIMS.
- ALL BEARINGS ARE TO BE MOLDED TO DESIGN DIMENSIONS. CUTTING TO SIZE AFTER FABRICATION IS PROHIBITED.
- HOLES ARE NOT PERMITTED IN THE ELASTOMERIC BEARINGS.
- PROVIDE NEOPRENE 50 +/-5 DUROMETER.
- PROVIDE MINIMUM LOW-TEMPERATURE NEOPRENE, GRADE 3.
- VULCANIZE PATCH PIN GROOVES.

**NOTE:**

- LAMINATED ELASTOMERIC PADS SHALL BE INCIDENTAL TO ITEM 623000.

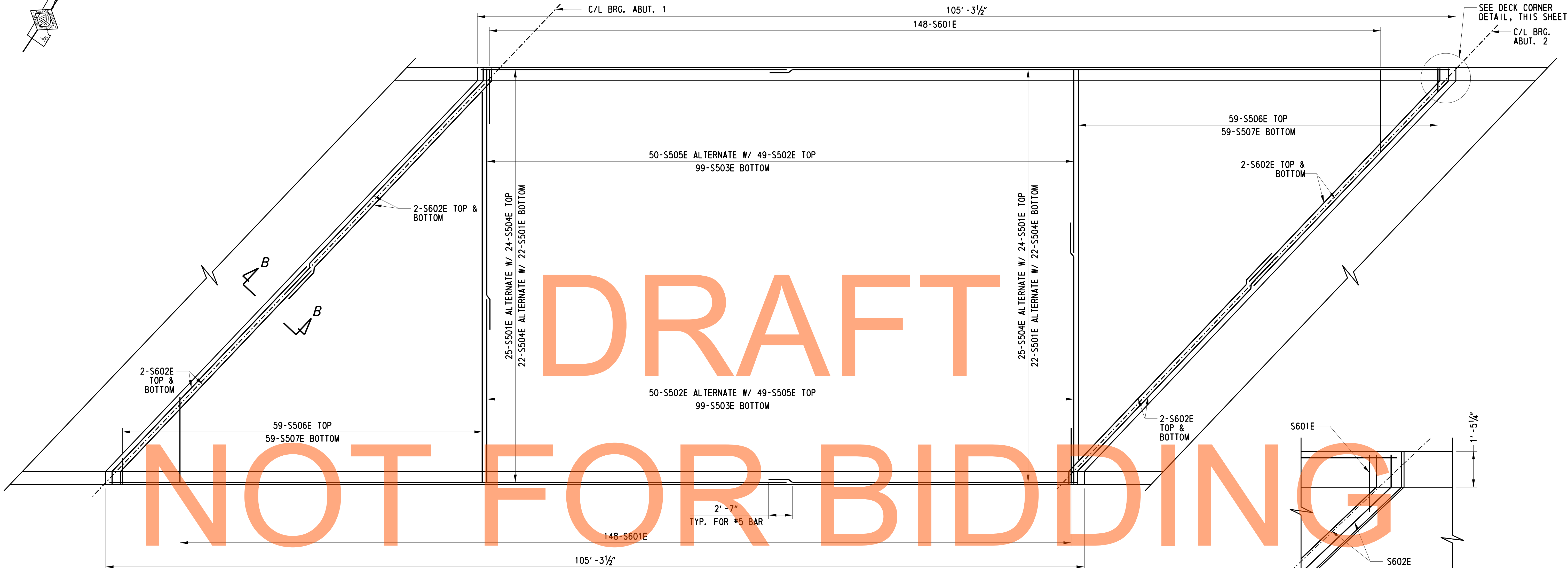
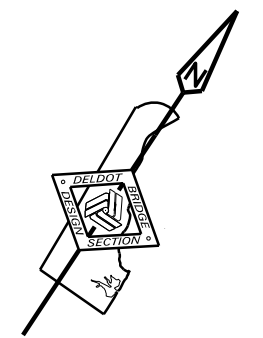
**CROSS REFERENCE NOTES:**

- FOR FRAMING PLAN, SEE DWG. 1-468 FR-1 AND 1-468 FR-2.
- FOR BEAM ELEVATION AND TYPICAL SECTIONS, SEE DWG. 1-468 BM-1 AND 1-468 BM-2.

DRAFT  
NOT FOR BIDDING  
AUGUST 2015

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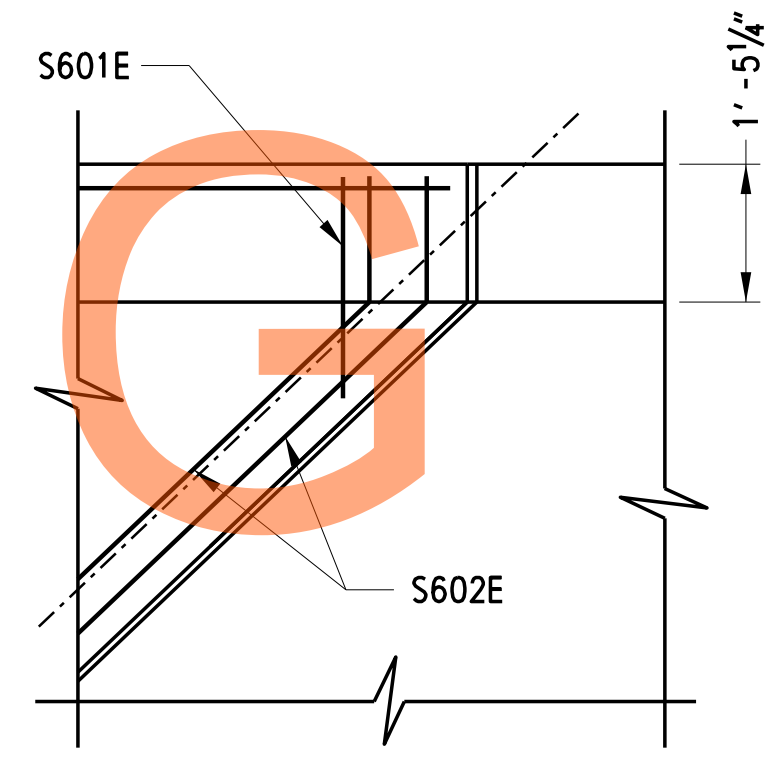


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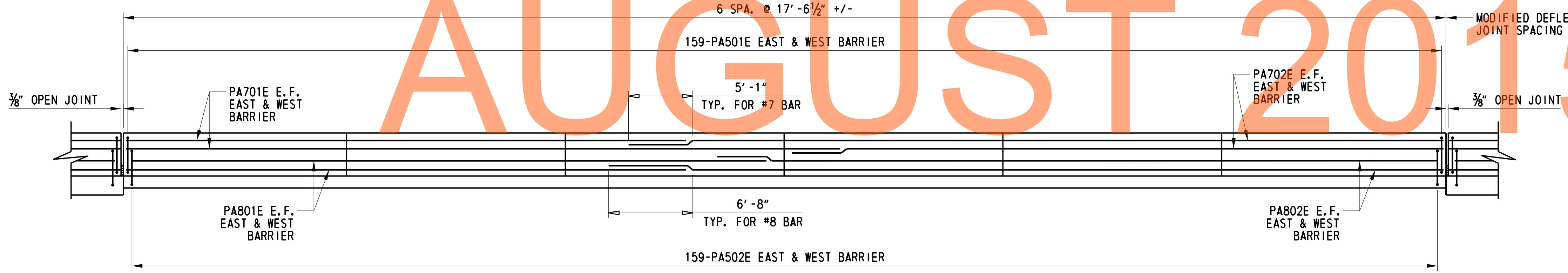
NOT FOR BIDDING

AUGUST 2015

**BRIDGE DECK REINFORCEMENT PLAN - NORTHBOUND**  
SCALE: 3/16" = 1'-0"



**DECK CORNER DETAIL**  
SCALE: 1/2" = 1'-0"



**ELEVATION - DECK AND BARRIER REINFORCEMENT**  
SCALE: 3/16" = 1'-0"

- CROSS REFERENCE NOTES:**
1. FOR GENERAL NOTES, SEE DWG. 1-468 GN-1.
  2. FOR TYPICAL DECK & BARRIER SECTION, SEE DWG. 1-468 PA-1.
  3. FOR REINFORCEMENT SCHEDULE, SEE DWG. 1-468 BR-3.
  4. FOR MODIFIED DEFLECTION CONTROL JOINT, SEE DWG. 1-468 PA-1.
  5. FOR SECTION B-B, SEE DWG. 1-468 PA-1.

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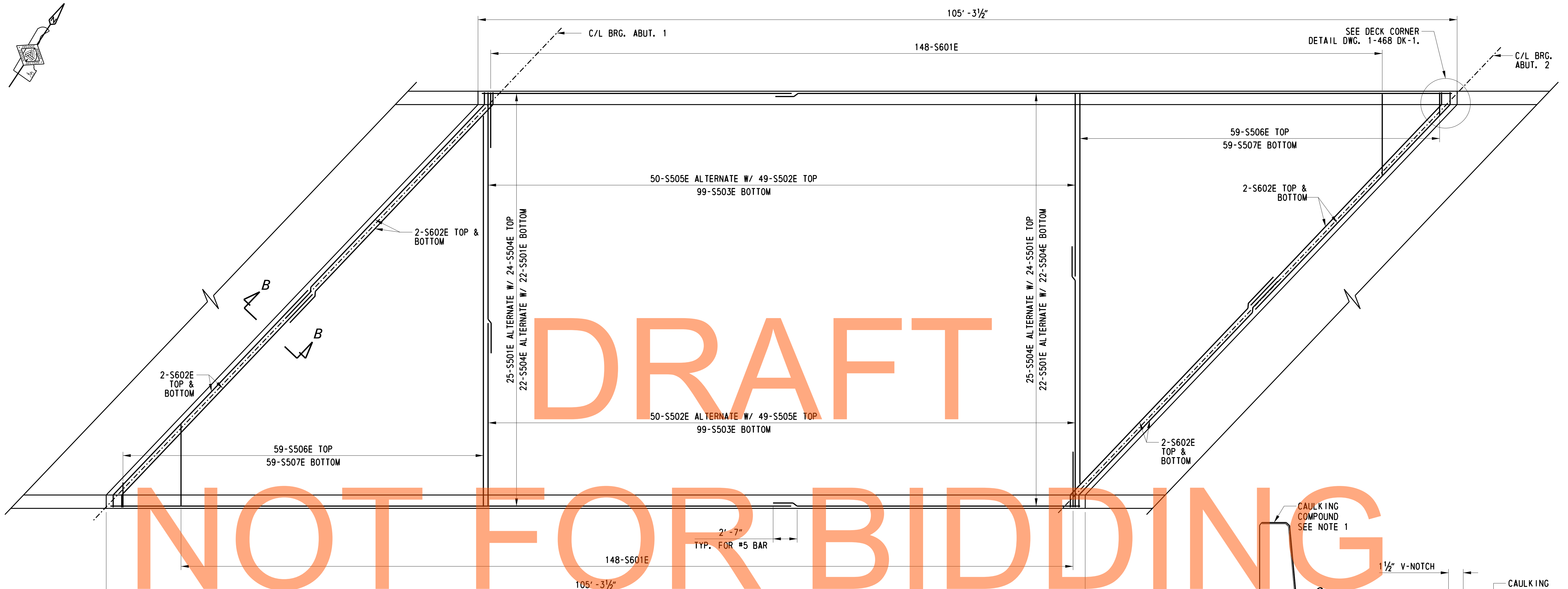
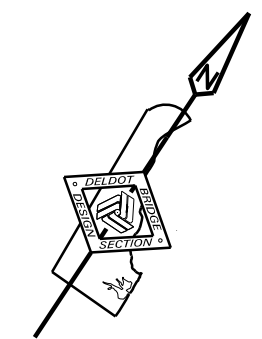
ADDENDUMS / REVISIONS	

**US 301  
LEVELS ROAD  
TO SUMMIT BRIDGE ROAD**

CONTRACT	BRIDGE NO.	<b>1-468N&amp;S</b>
T200911303	DESIGNED BY:	ADH
COUNTY	CHECKED BY:	DHG
NEW CASTLE		

**US 301 MAINLINE OVER  
NORFOLK SOUTHERN  
RAILROAD  
BRIDGE DECK  
REINFORCEMENT - NB**

1-468 DK-1
SHEET NO.
289
TOTAL SHTS.
1256

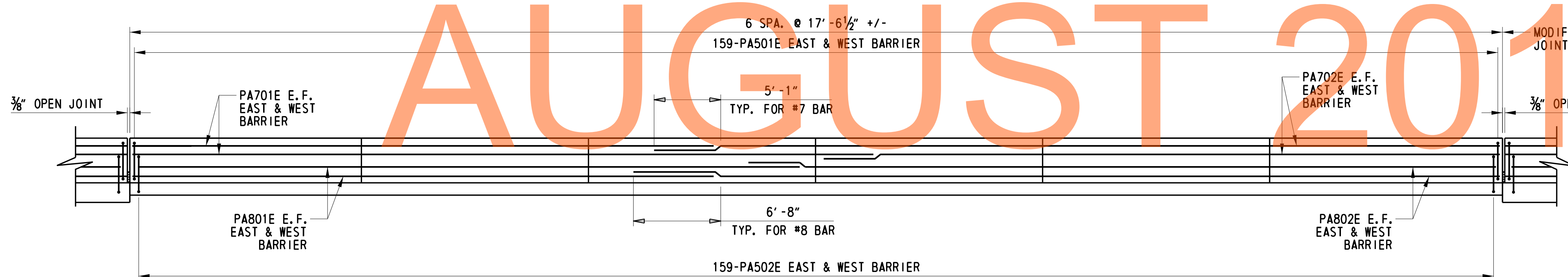


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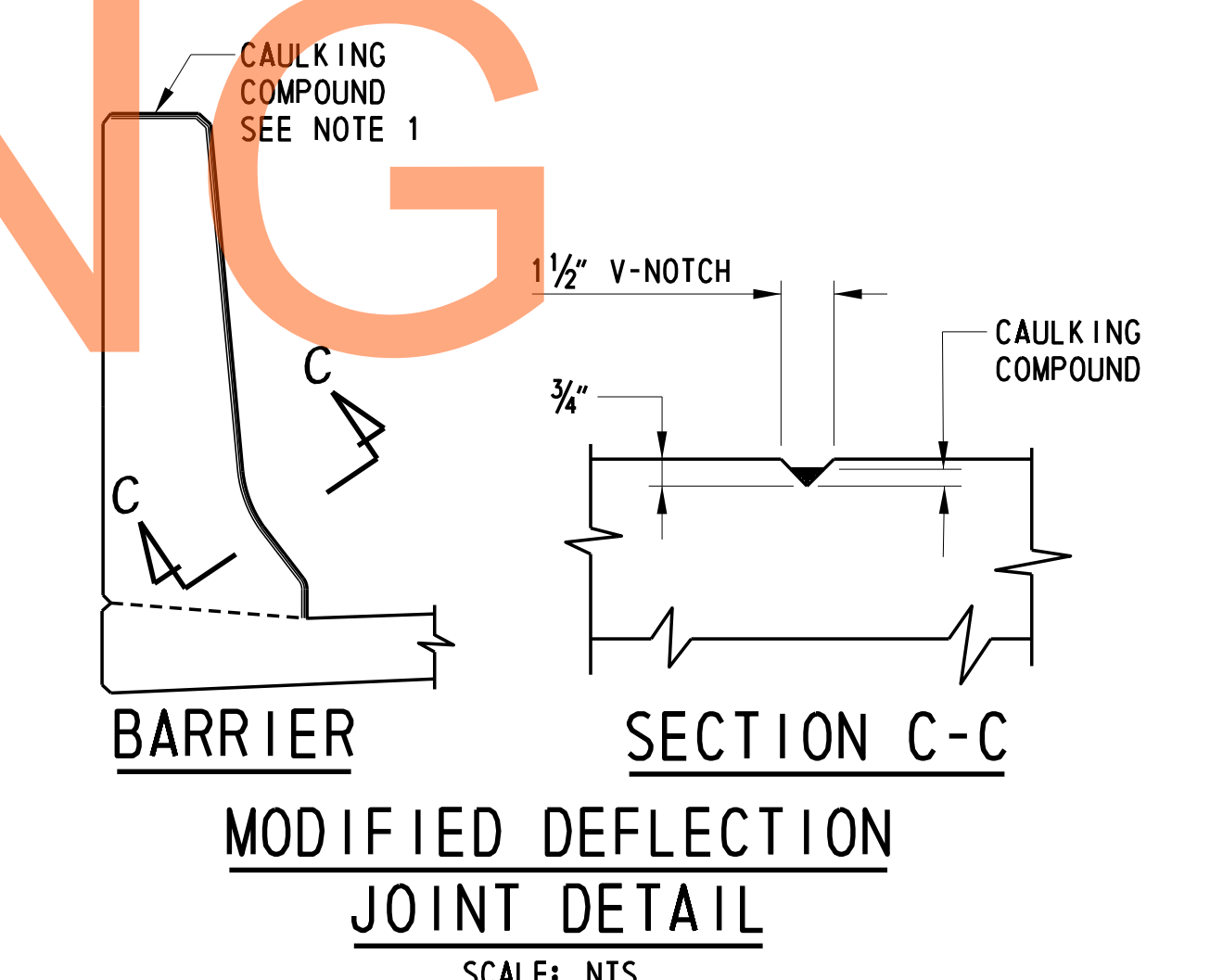
NOT FOR BIDDING

AUGUST 2015

**BRIDGE DECK REINFORCEMENT PLAN - SOUTHBOUND**  
SCALE: 3/16" = 1'-0"



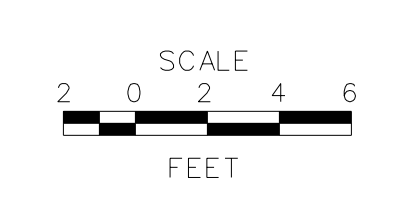
**ELEVATION - DECK AND BARRIER REINFORCEMENT**  
SCALE: 3/16" = 1'-0"



- NOTE:**
1. CAULKING COMPOUND SHALL CONFORM TO THE REQUIREMENTS OF ASTM C834 OR C920.
- CROSS REFERENCE NOTES:**
1. FOR GENERAL NOTES, SEE DWG. 1-468 GN-1.
  2. FOR TYPICAL DECK AND BARRIER SECTION, SEE DWG. 1-468 PA-1.
  3. FOR REINFORCEMENT SCHEDULE, SEE DWG. 1-468 BR-2.
  4. FOR SECTION B-B, SEE DWG. 1-468 PA-1.

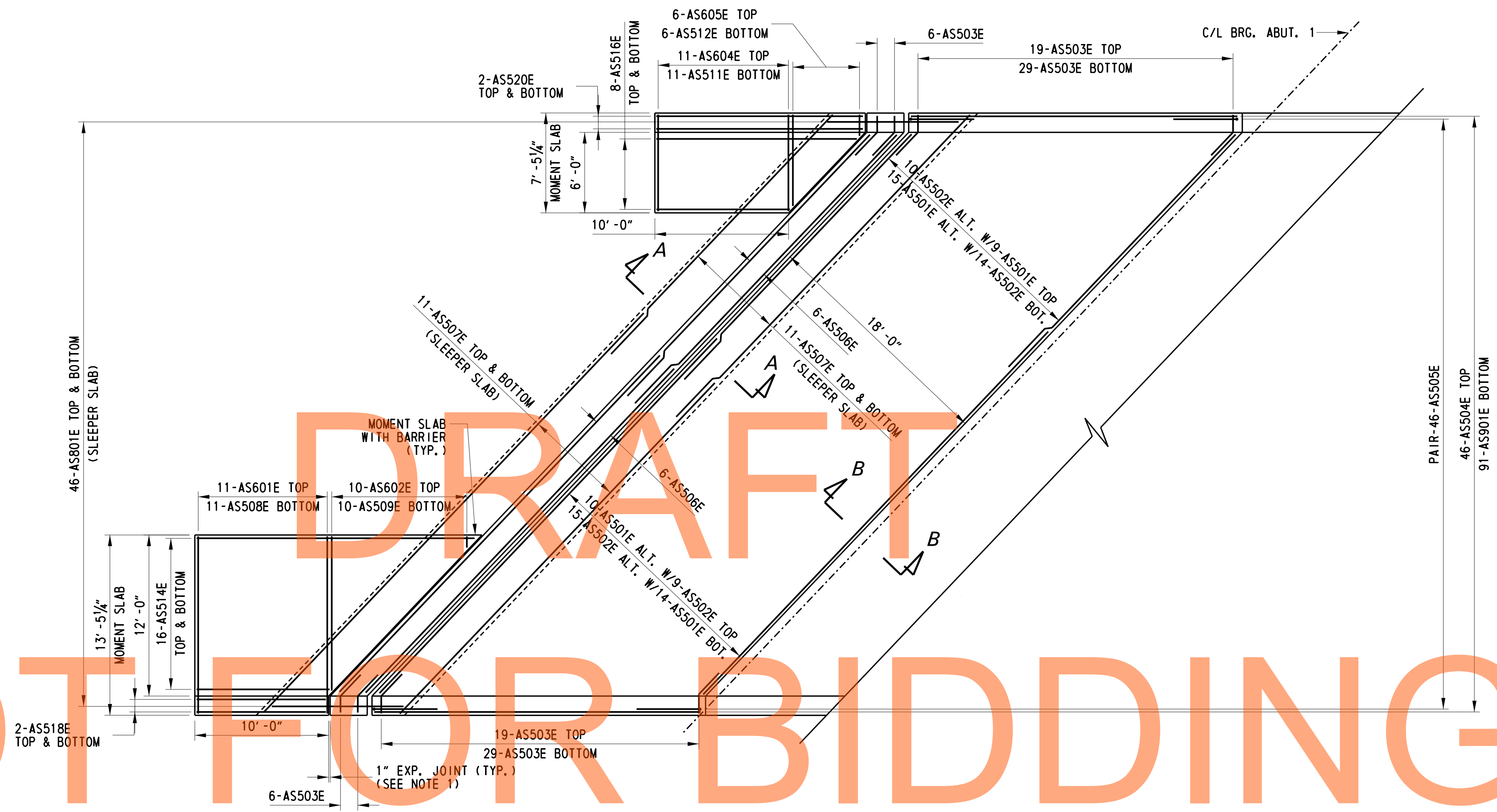
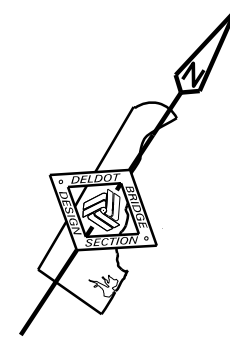
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ADDENDUMS / REVISIONS	

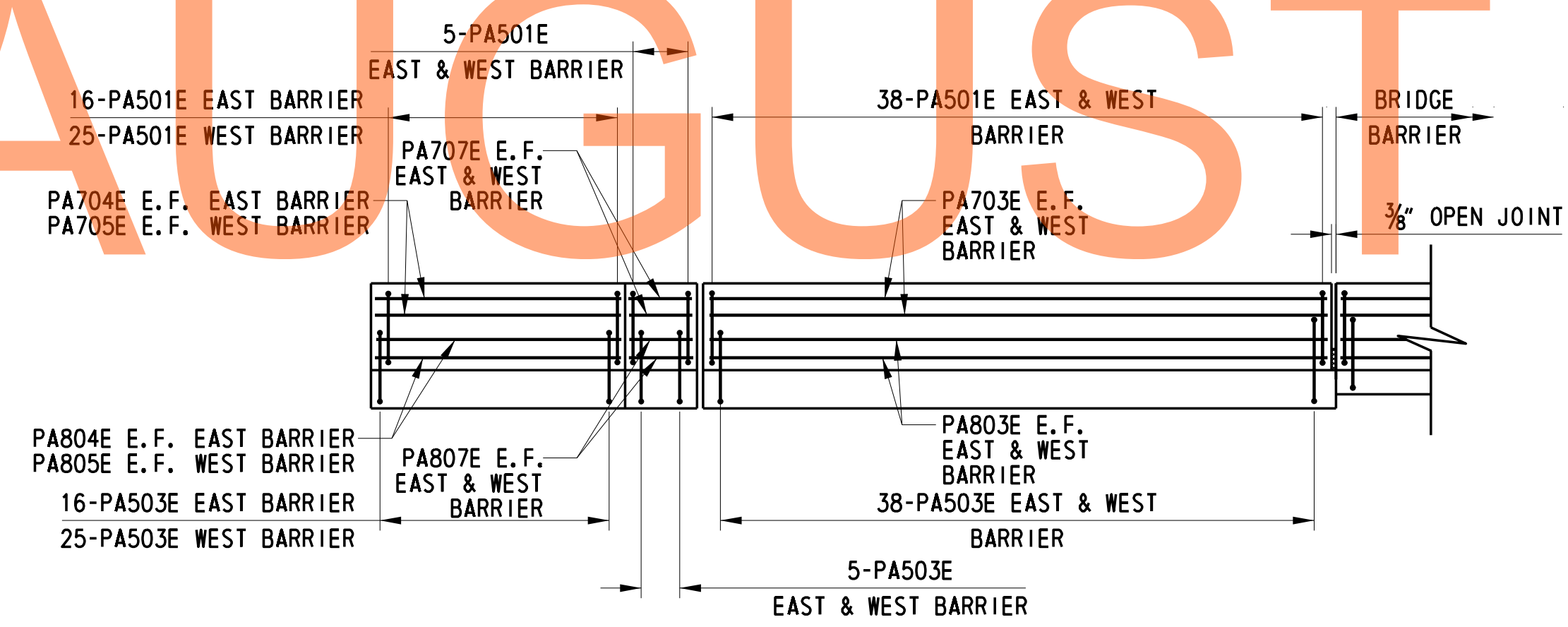


CONTRACT	BRIDGE NO.	<b>1-468N&amp;S</b>
T20091303	DESIGNED BY:	ADH
COUNTY	CHECKED BY:	DHG
NEW CASTLE		

1-468 DK-2
SHEET NO.
290
TOTAL SHTS.
1256



BRIDGE APPROACH SLAB REINFORCEMENT PLAN - SLAB 1 NORTHBOUND  
SCALE: 3/16" = 1'-0"



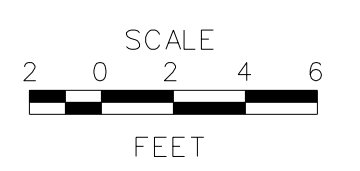
ELEVATION - BRIDGE APPROACH SLAB BARRIER REINFORCEMENT  
SCALE: 3/16" = 1'-0"

- NOTE:**  
1. FOR JOINT DETAIL SEE DELDOT ROADWAY STANDARD P-1.
- CROSS REFERENCE NOTES:**  
1. FOR GENERAL NOTES, SEE DWG. 1-468 GN-1.  
2. FOR DECK PLAN, SEE DWG. 1-468 DK-1.  
3. FOR REINFORCEMENT BAR SCHEDULE, SEE DWG. 1-468 BR-4.  
4. FOR SECTIONS A-A AND B-B, SEE DWG. 1-468 PA-1.

G:\60049040\_US301N\Structure\Plans\FINAL\_VB2-INS\_BR2-1\_Contract\_ZA\BR2-1AS-01.dgn



ADDENDUMS / REVISIONS

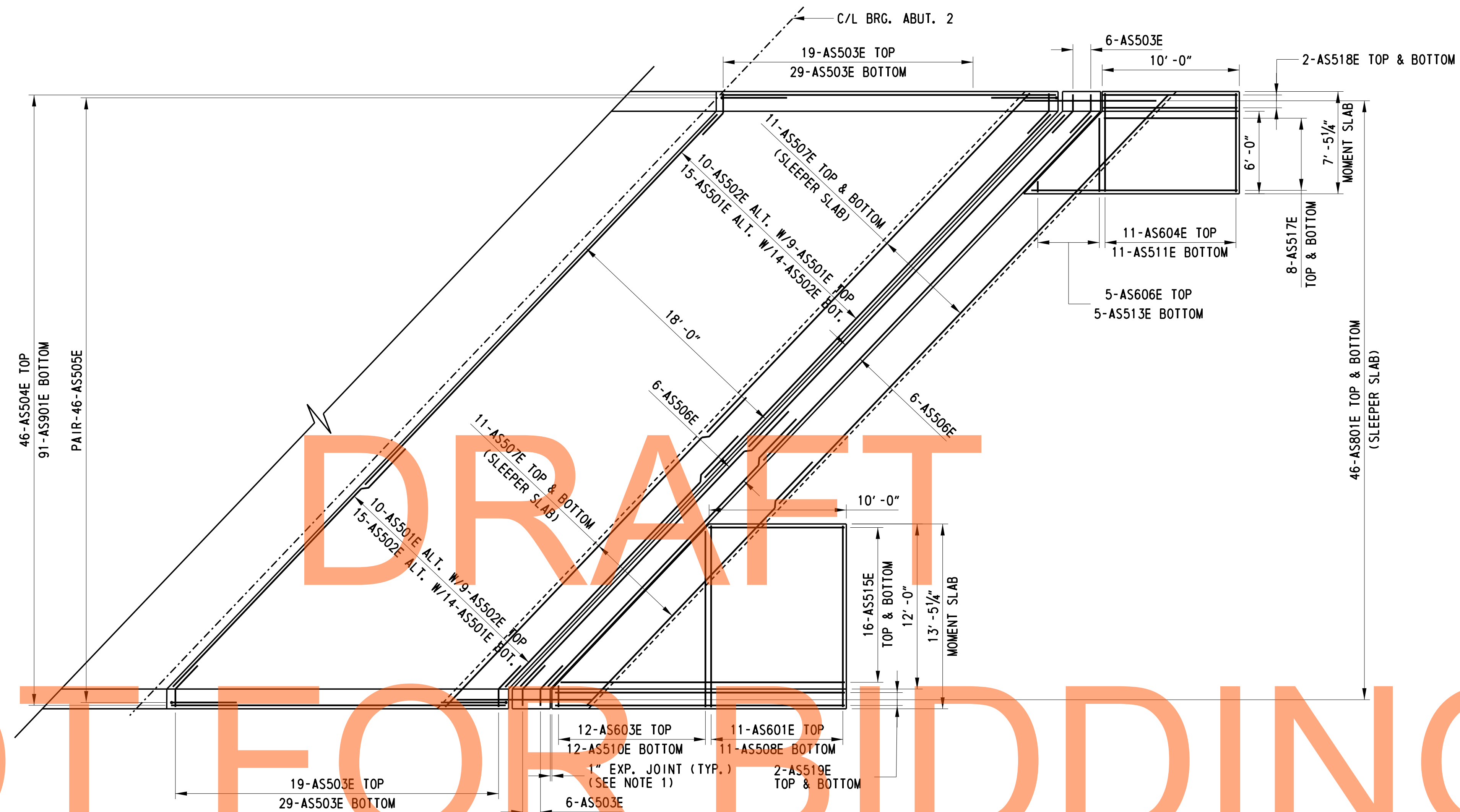
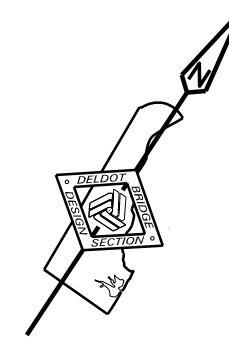


**US 301  
LEVELS ROAD  
TO SUMMIT BRIDGE ROAD**

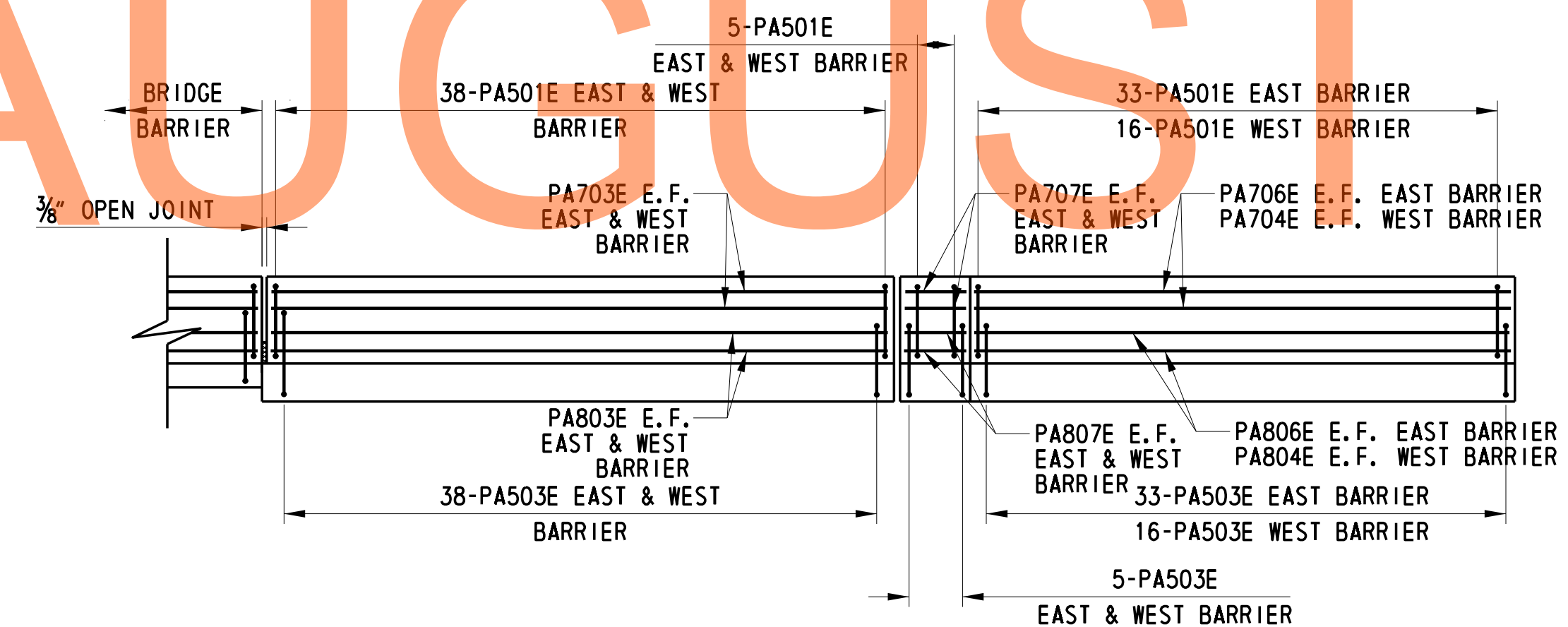
CONTRACT	BRIDGE NO.	<b>1-468N&amp;S</b>
T20091303	DESIGNED BY:	ADH
COUNTY	CHECKED BY:	DHG
NEW CASTLE		

**US 301 MAINLINE OVER  
NORFOLK SOUTHERN  
RAILROAD  
BRIDGE APPROACH SLAB  
REINFORCEMENT - SLAB 1 NB**

1-468 AS-1
SHEET NO.
291
TOTAL SHTS.
1256



BRIDGE APPROACH SLAB REINFORCEMENT PLAN - SLAB 2 NORTHBOUND  
SCALE: 3/16" = 1'-0"



ELEVATION - BRIDGE APPROACH SLAB BARRIER REINFORCEMENT  
SCALE: 3/16" = 1'-0"

- NOTE:**  
1. FOR JOINT DETAIL SEE DELDOT ROADWAY STANDARD P-1.
- CROSS REFERENCE NOTES:**  
1. FOR GENERAL NOTES, SEE DWG. 1-468 GN-1.  
2. FOR DECK PLAN, SEE DWG. 1-468 DK-1.  
3. FOR REINFORCEMENT BAR SCHEDULE, SEE DWG. 1-468 BR-4.  
4. FOR SECTIONS A-A AND B-B, SEE DWG. 1-468 PA-1.

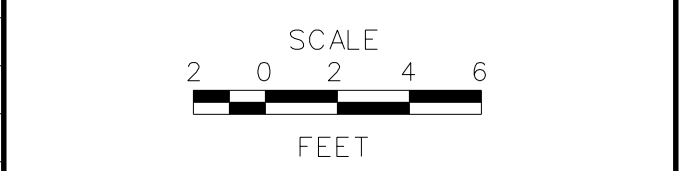
DRAFT

NOT FOR BIDDING

AUGUST 2015

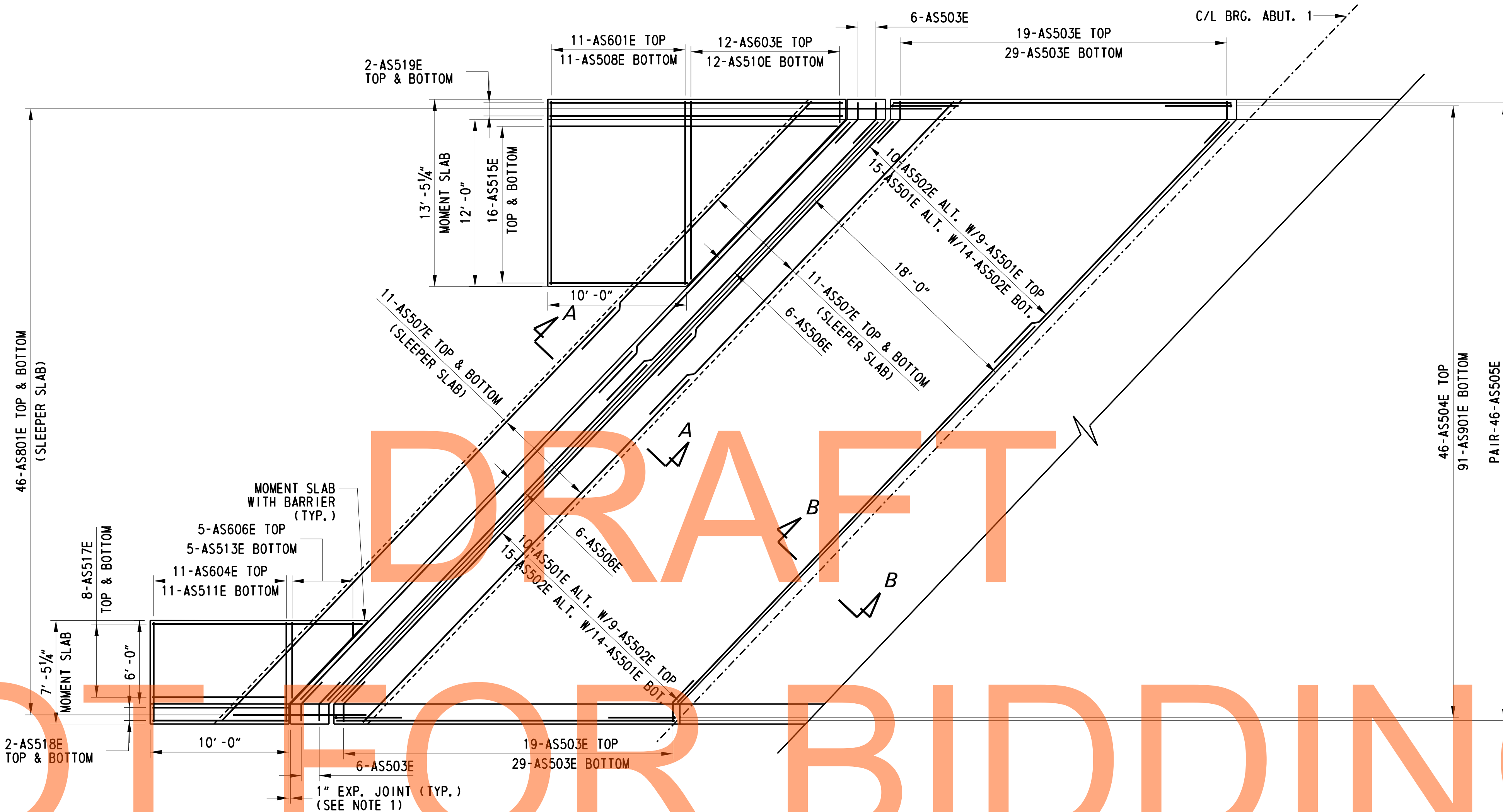
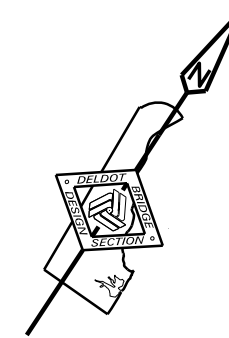
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ADDENDUMS / REVISIONS	

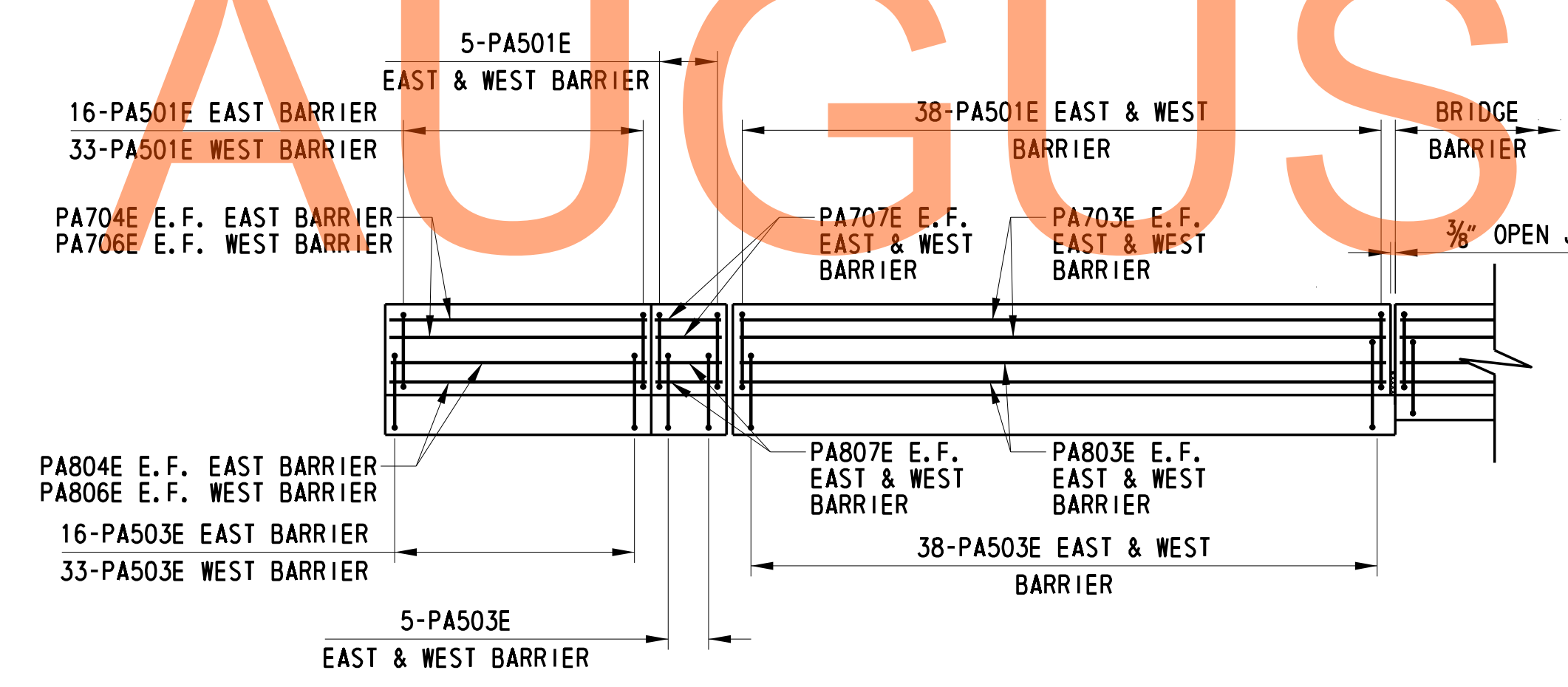


CONTRACT	BRIDGE NO.	<b>1-468N&amp;S</b>
T20091303	DESIGNED BY:	ADH
COUNTY	CHECKED BY:	DHG
NEW CASTLE		

1-468 AS-2
SHEET NO.
292
TOTAL SHTS.
1256



**BRIDGE APPROACH SLAB REINFORCEMENT PLAN - SLAB 1 SOUTHBOUND**  
SCALE: 3/16" = 1'-0"



**ELEVATION - BRIDGE APPROACH SLAB BARRIER REINFORCEMENT**  
SCALE: 3/16" = 1'-0"

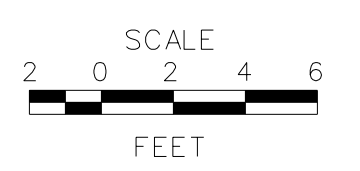
DRAFT  
NOT FOR BIDDING  
AUGUST 2015

- NOTE:**  
1. FOR JOINT DETAIL SEE DELDOT ROADWAY STANDARD P-1.
- CROSS REFERENCE NOTES:**  
1. FOR GENERAL NOTES, SEE DWG. 1-468 GN-1.  
2. FOR DECK PLAN, SEE DWG. 1-468 DK-2.  
3. FOR REINFORCEMENT BAR SCHEDULE, SEE DWG. 1-468 BR-4.  
4. FOR SECTIONS A-A AND B-B, SEE DWG. 1-468 PA-1.

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ADDENDUMS / REVISIONS

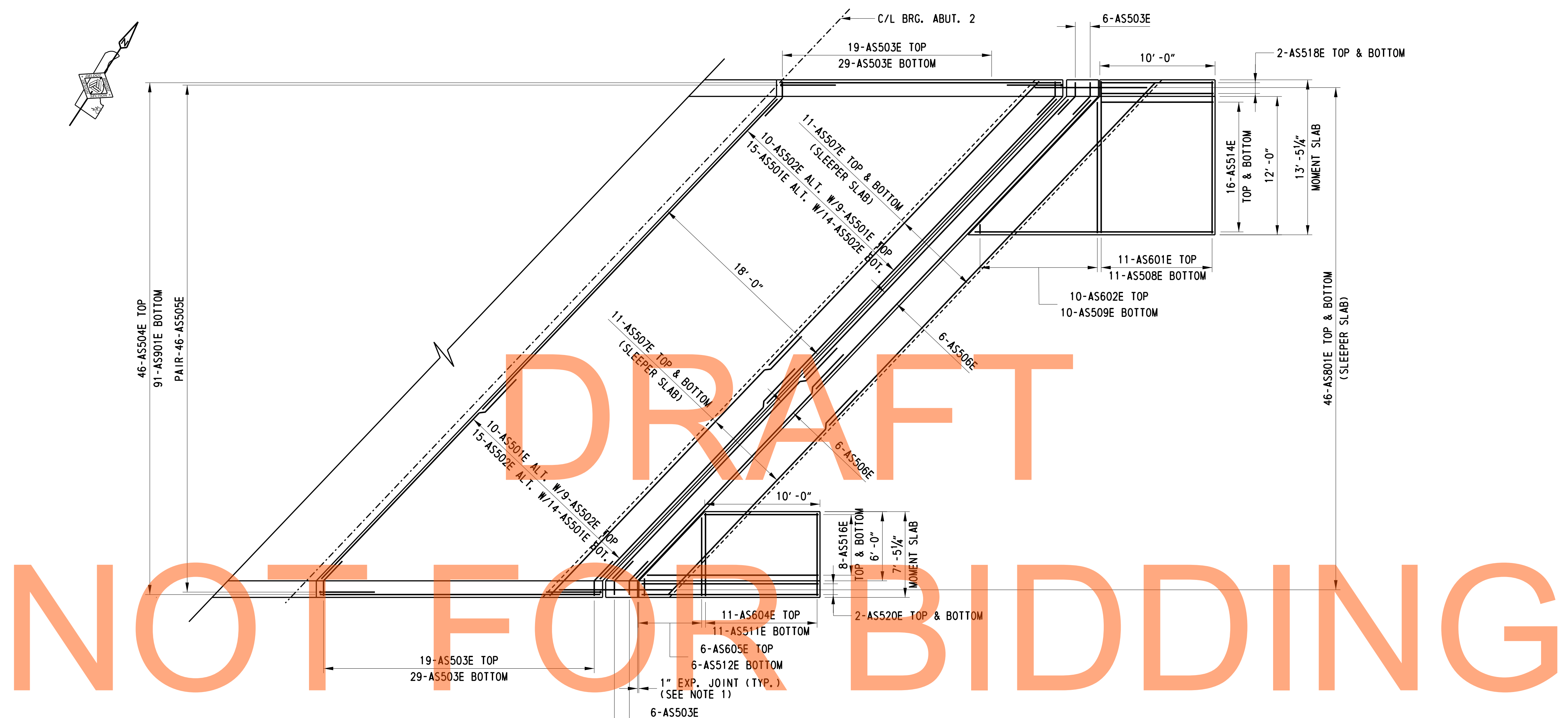


**US 301  
LEVELS ROAD  
TO SUMMIT BRIDGE ROAD**

CONTRACT	BRIDGE NO.	<b>1-468N&amp;S</b>
T20091303	DESIGNED BY:	ADH
COUNTY	CHECKED BY:	DHG
NEW CASTLE		

**US 301 MAINLINE OVER  
NORFOLK SOUTHERN  
RAILROAD  
BRIDGE APPROACH SLAB  
REINFORCEMENT - SLAB 1 SB**

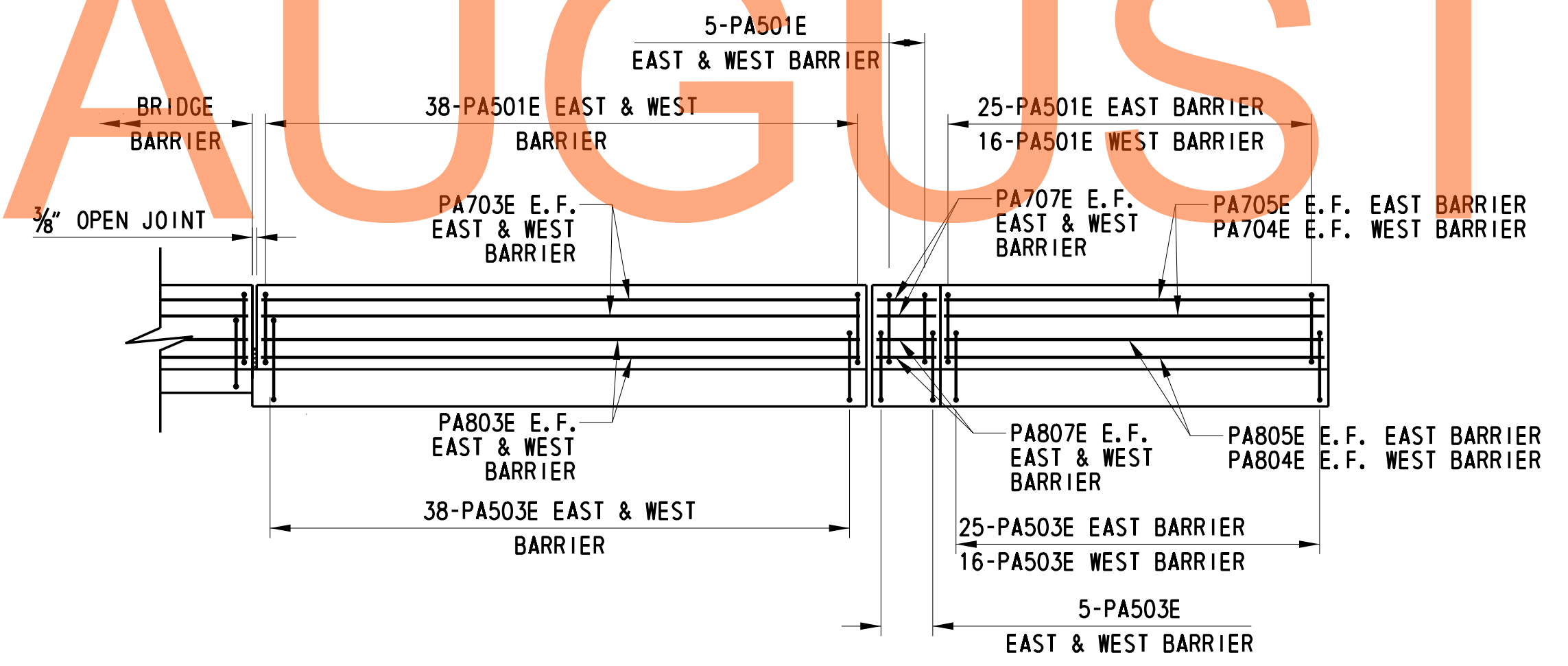
1-468 AS-3
SHEET NO.
293
TOTAL SHTS.
1256



BRIDGE APPROACH SLAB REINFORCEMENT PLAN - SLAB 2 SOUTHBOUND

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

AUGUST 2015



ELEVATION - BRIDGE APPROACH SLAB BARRIER REINFORCEMENT

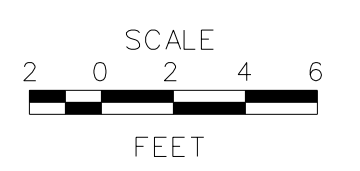
SCALE: 3/16" = 1' - 0"

- NOTE:**  
 1. FOR JOINT DETAIL SEE DELDOT ROADWAY STANDARD P-1.
- CROSS REFERENCE NOTES:**  
 1. FOR GENERAL NOTES, SEE DWG. 1-468 GN-1.  
 2. FOR DECK PLAN, SEE DWG. 1-468 DK-2.  
 3. FOR REINFORCEMENT BAR SCHEDULE, SEE DWG. 1-468 BR-4.  
 4. FOR SECTIONS A-A AND B-B, SEE DWG. 1-468 PA-1.

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ADDENDUMS / REVISIONS

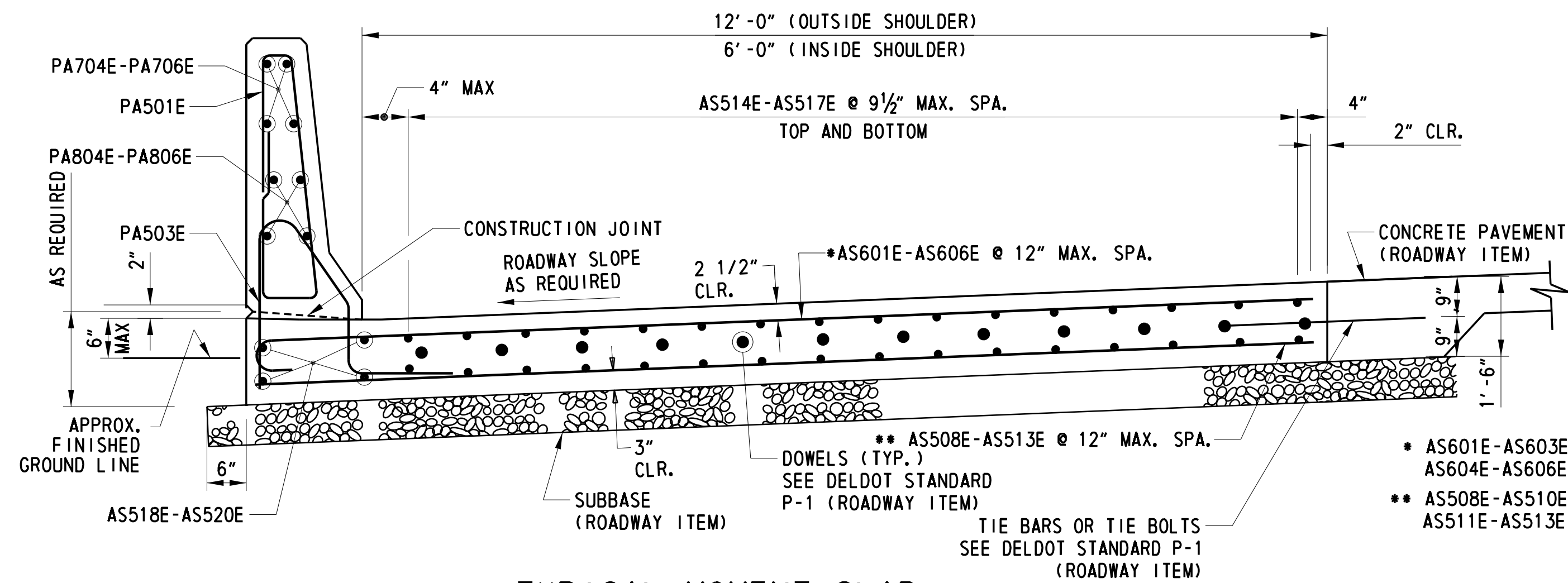


**US 301  
LEVELS ROAD  
TO SUMMIT BRIDGE ROAD**

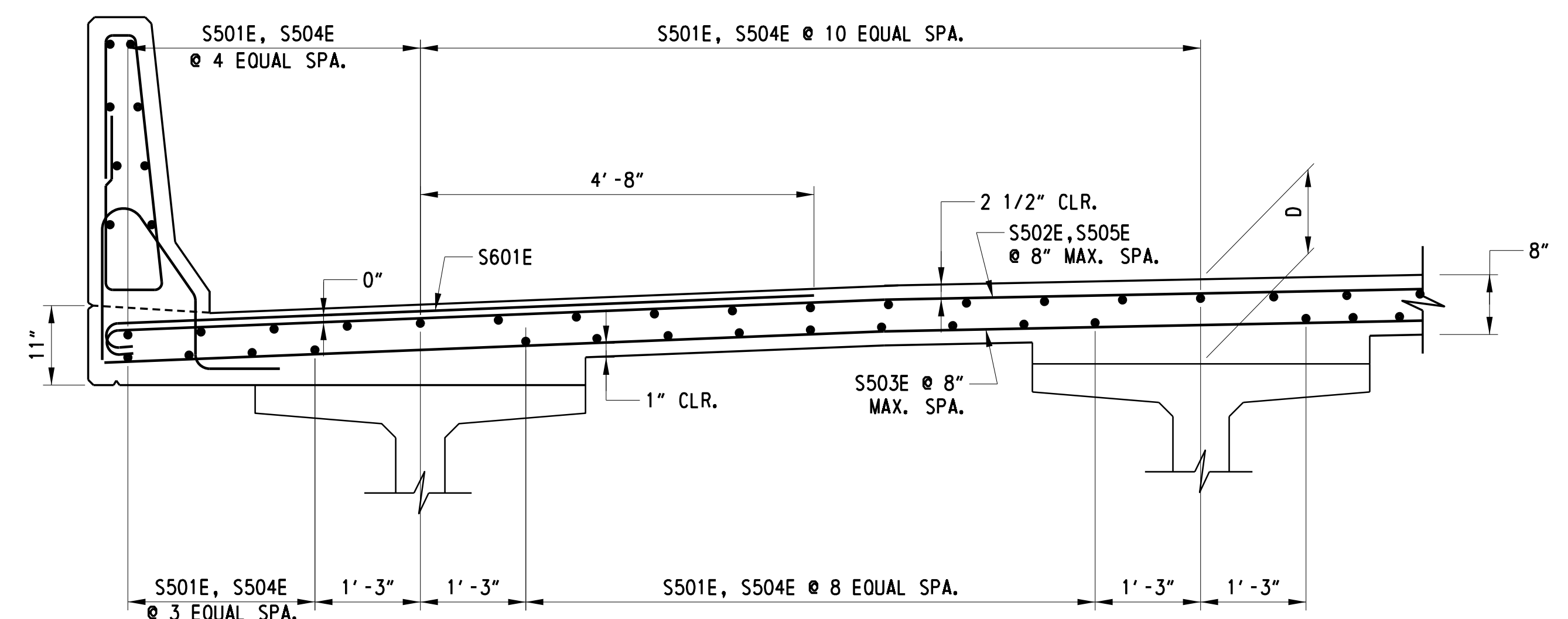
CONTRACT	BRIDGE NO.	<b>1-468N&amp;S</b>
T20091303	DESIGNED BY:	ADH
COUNTY	CHECKED BY:	DHG
NEW CASTLE		

**US 301 MAINLINE OVER  
NORFOLK SOUTHERN  
RAILROAD  
BRIDGE APPROACH SLAB  
REINFORCEMENT - SLAB 2 SB**

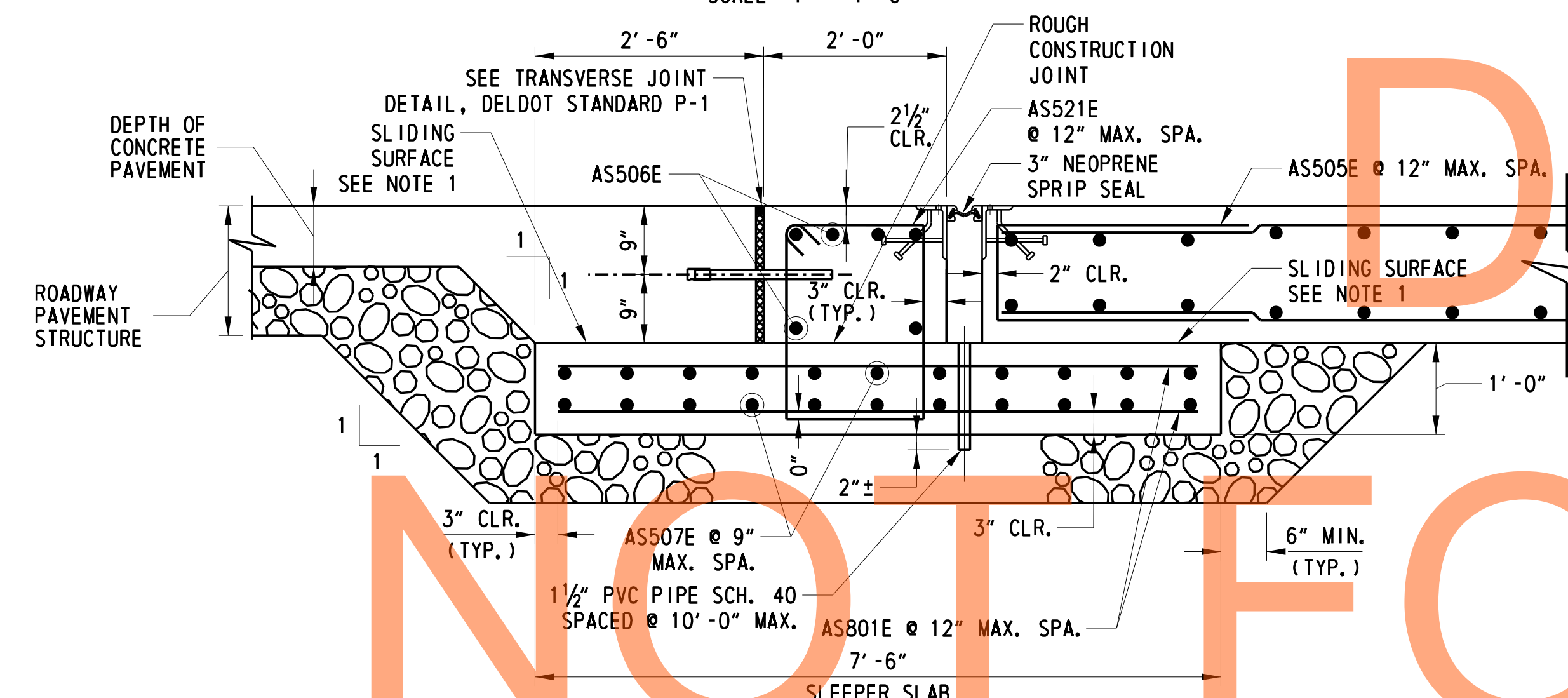
1-468 AS-4
SHEET NO.
294
TOTAL SHTS.
1256



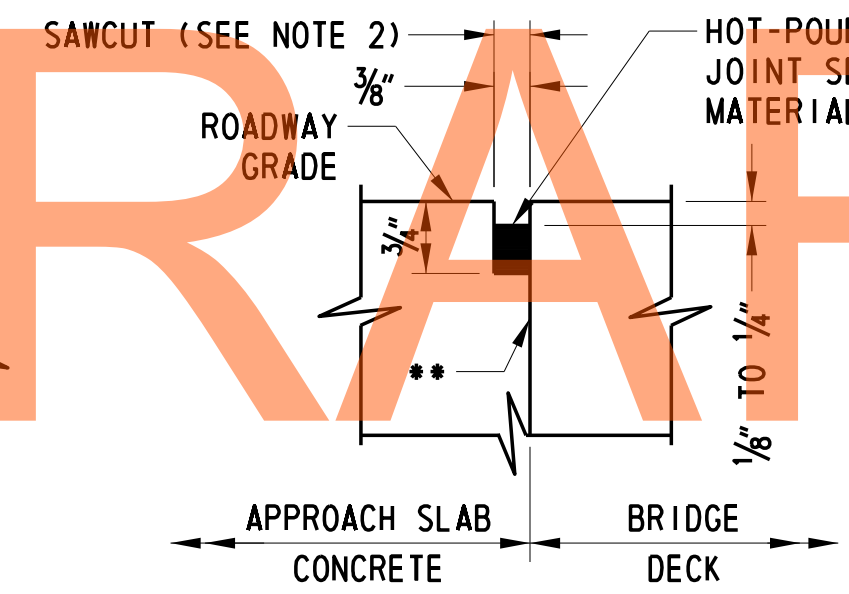
**TYPICAL MOMENT SLAB**  
SCALE: 1" = 1'-0"



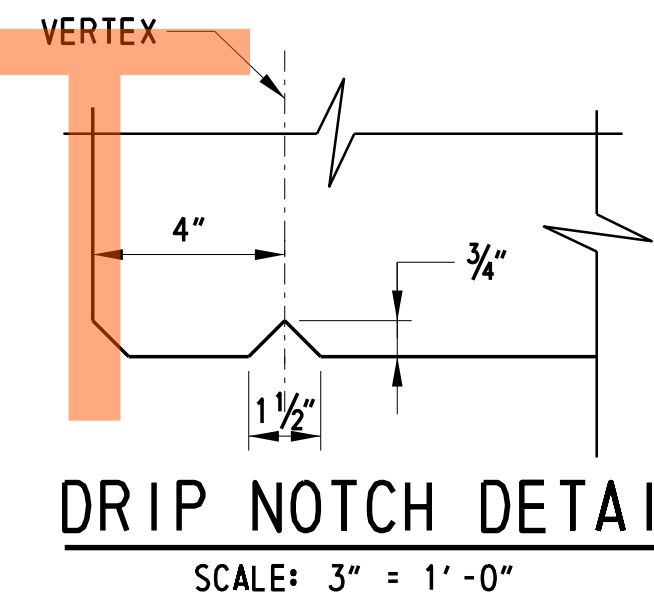
**TYPICAL DECK REINFORCEMENT SECTION**  
SCALE: 3/4" = 1'-0"



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

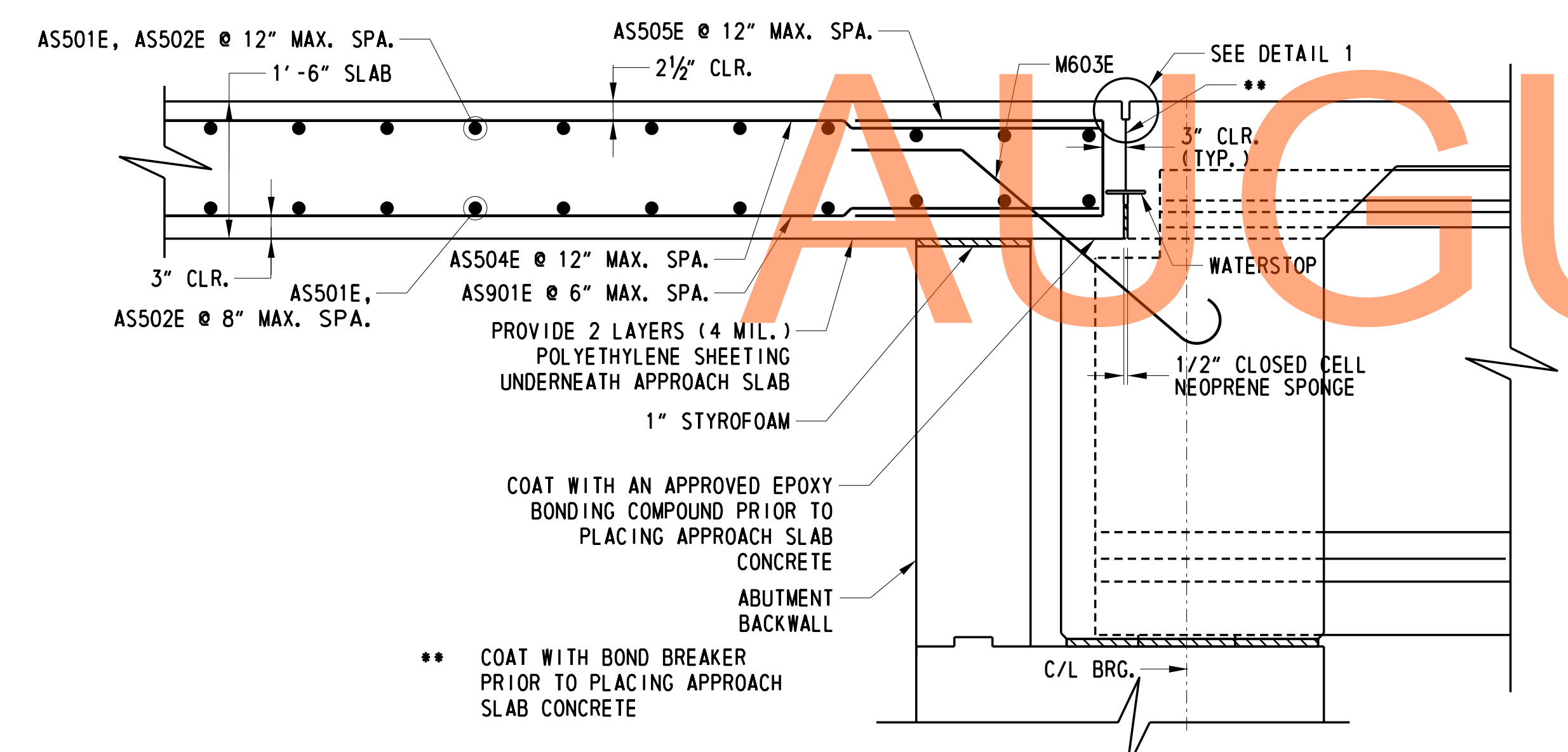


**DETAIL 1**  
SCALE: 6" = 1'-0"

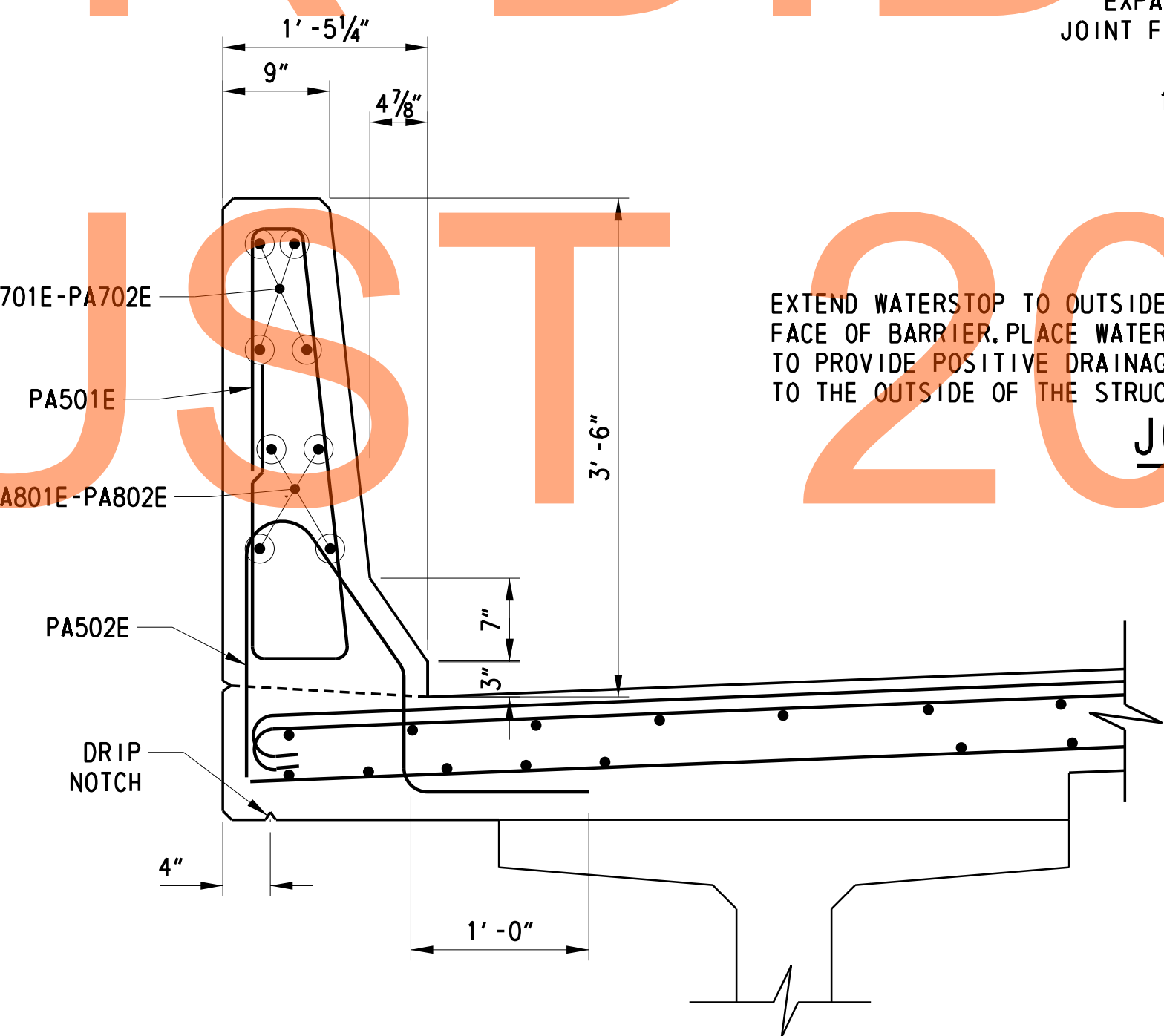


**DRIP NOTCH DETAIL**  
SCALE: 3" = 1'-0"

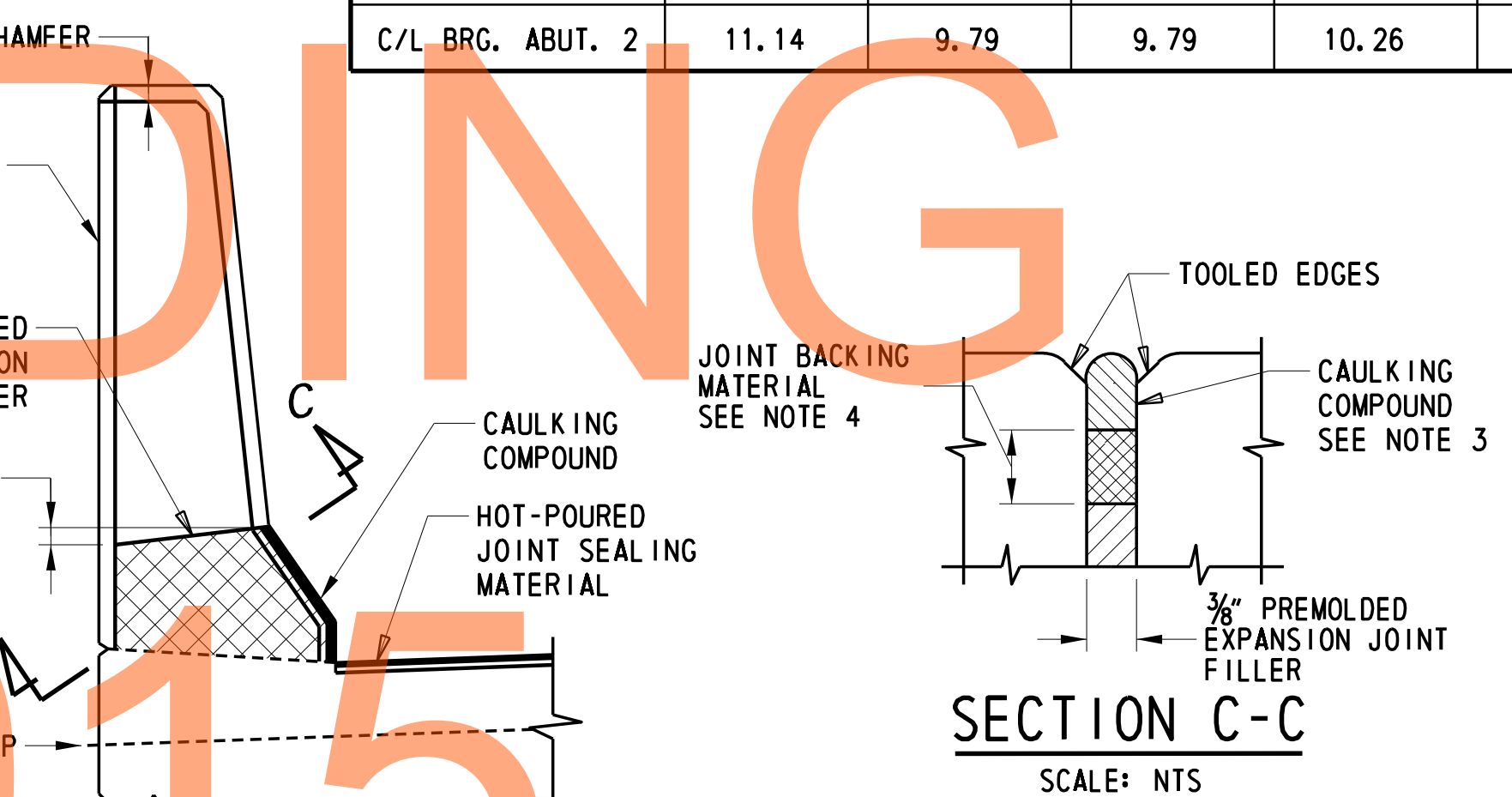
SLAB THICKNESS "D" AT C/L OF BRGS. (IN)					
BEAM NO.	1S	2S	3S	4S	5S
C/L BRG. ABUT. 1	10.42	10.26	10.27	10.63	10.42
C/L BRG. ABUT. 2	10.42	10.26	9.79	10.15	10.42
BEAM NO.	1N	2N	3N	4N	5N
C/L BRG. ABUT. 1	10.42	10.75	10.51	10.26	10.42
C/L BRG. ABUT. 2	11.14	9.79	9.79	10.26	10.42



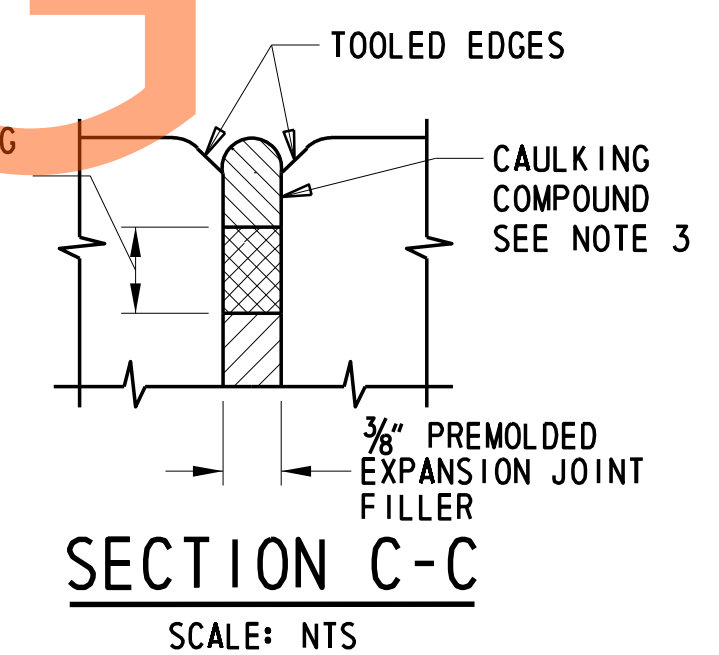
**SECTION B-B**  
SCALE: 3/4" = 1'-0"



**TYPICAL BARRIER REINFORCEMENT SECTION**  
SCALE: 1" = 1'-0"



**JOINT SEAL AND WATERSTOP TERMINATION DETAIL**  
SCALE: NTS



**SECTION C-C**  
SCALE: NTS

- CROSS REFERENCE NOTES:**
- FOR DECK REINFORCING PLAN, SEE DWG. 1-468 DK-1 AND 1-468 DK-2.
  - FOR APPROACH SLAB AND MOMENT SLAB REINFORCING PLAN SEE DWG. 1-468 AS-1 THROUGH 1-468 AS-4.
  - FOR REINFORCEMENT SCHEDULE, SEE DWG. 1-468 BR-2 AND 1-468 BR-3.
  - FOR EXPANSION JOINT DETAILS, SEE DWG. 1-468 EX-1.
- NOTES:**
- TROWEL SMOOTH AND PLACE 2 LAYERS OF 4 MIL. POLYETHYLENE SHEETING AS BOND BREAKER.
  - WATER BLAST OPENING IMMEDIATELY FOLLOWING SAW CUTTING OPERATION TO REMOVE ANY RESIDUAL SLURRY BEFORE IT DRIES.
  - CAULKING COMPOUND SHALL CONFORM TO THE REQUIREMENTS OF ASTM C834 OR C920.
  - JOINT BACKING MATERIAL SHALL CONFORM TO THE REQUIREMENTS OF ASTM D5249.

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# REINFORCING BAR SCHEDULE

## NORTHBOUND DECK BAR SCHEDULE

MARK	LENGTH	NO. BARS	TYPE	A	B	C	D	E	F	G	H	I	J	K	REMARKS
S501E	60'-0"	93	STR												
S502E	28'-5"	99	14	7"	27'-10"		5"								
S503E	23'-8"	198	STR												
S504E	48'-0"	93	STR												
S505E	19'-11"	99	14	7"	19'-4"		5"								
S506E	VARIES	118	14	7"	VARIES		5"								VARY "B" 2 EA BY 8 1/2" (-)
	43'-2" TO				42'-7" TO										
	2'-6"				1'-11"										
S507E	VARIES	118	STR												VARY 2 EA BY 8 1/2" (-)
	42'-7" TO														
	1'-11"														
S601E	9'-1 1/4"	296	14	8"	8'-5 1/4"		6"								
S602E	33'-9"	16	11	32'-6"	1'-3"	10 1/2"									
S603E	32'-6"	4	STR												
S604E	2'-3"	4	STR												
S605E	6'-10"	8	STR												
PA501E	7'-3 3/8"	318	28	2'-9 1/4"	3"	1 5/8"	2 3/4"	2'-9 1/2"	3 1/8"	5 1/8"				3 1/2"	
PA502E	5'-0 1/8"	318	43	1'-0 1/8"	7"	9 1/8"	1'-6"	1"	9"	7"	3"			10"	
PA701E	60'-0"	8	STR												
PA702E	51'-0"	8	STR												
PA801E	51'-8"	8	STR												
PA802E	60'-0"	8	STR												

## SOUTHBOUND DECK BAR SCHEDULE

MARK	LENGTH	NO. BARS	TYPE	A	B	C	D	E	F	G	H	I	J	K	REMARKS
S501E	60'-0"	93	STR												
S502E	28'-5"	99	14	7"	27'-10"		5"								
S503E	23'-8"	198	STR												
S504E	48'-0"	93	STR												
S505E	19'-11"	99	14	7"	19'-4"		5"								
S506E	VARIES	118	14	7"	VARIES		5"								VARY "B" 2 EA BY 8 1/2" (-)
	43'-2" TO				42'-7" TO										
	2'-6"				1'-11"										
S507E	VARIES	118	STR												VARY 2 EA BY 8 1/2" (-)
	42'-7" TO														
	1'-11"														
S601E	9'-1 1/4"	296	14	8"	8'-5 1/4"		6"								
S602E	33'-9"	16	11	32'-6"	1'-3"	10 1/2"									
S603E	32'-6"	4	STR												
S604E	2'-3"	4	STR												
S605E	6'-10"	8	STR												
PA501E	7'-3 3/8"	318	28	2'-9 1/4"	3"	1 5/8"	2 3/4"	2'-9 1/2"	3 1/8"	5 1/8"				3 1/2"	
PA502E	5'-0 1/8"	318	43	1'-0 1/8"	7"	9 1/8"	1'-6"	1"	9"	7"	3"			10"	
PA701E	60'-0"	8	STR												
PA702E	51'-0"	8	STR												
PA801E	51'-8"	8	STR												
PA802E	60'-0"	8	STR												

DRAFT

NOT FOR BIDDING

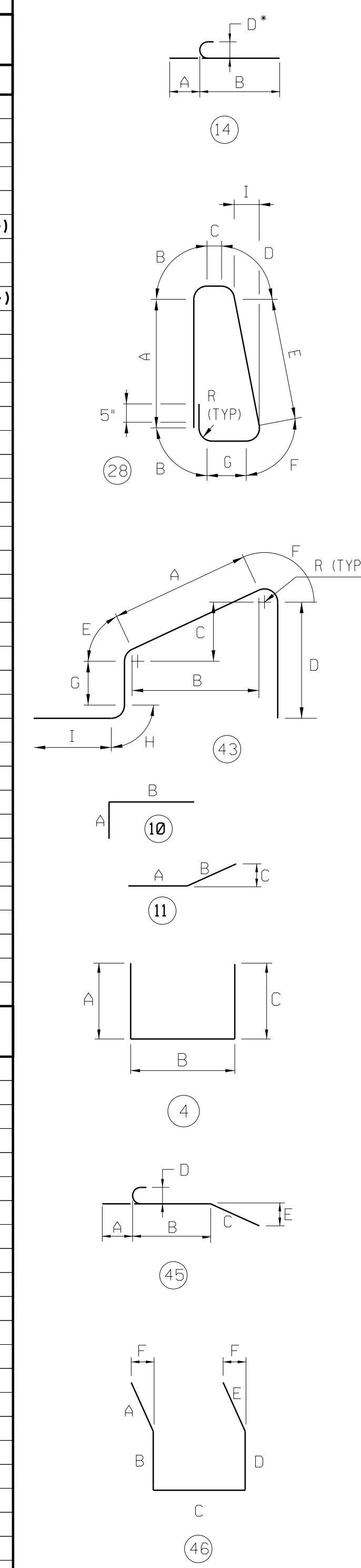
AUGUST 2015

## NORTHBOUND DIAPHRAGM BAR SCHEDULE

M401E	4'-1"	64	4	1'-9"	7"	1'-9"									
M402E	4'-7"	92	11	1'-0"	3'-7"	2'-7"									
M403E	4'-7"	92	10	2'-1"	2'-6"										
M404E	7'-9"	64	4	2'-6"	2'-9"	2'-6"									
M405E	5'-9"	120	4	1'-6"	2'-9"	1'-6"									
M501E	6'-5"	32	STR												
M502E	5'-0"	8	STR												
M503E	2'-7"	12	11	1'-3"	1'-4"	10 5/8"									
M504E	3'-2"	16	STR												
M505E	9'-11"	16	46	1'-4"	1'-4"	4'-5"	8"	2'-2"	10 5/8"	1'-6"					
M506E	16'-0"	4	STR												
M507E	8'-6"	4	STR												
M508E	7'-8"	52	STR												
M509E	32'-3"	16	STR												
M601E	6'-2"	16	STR												
M602E	7'-11"	72	STR												
M603E	5'-2"	92	45	8"	3'-6"	1'-0"	6"	8 1/2"							
M604E	2'-0"	4	STR												
M605E	8'-0"	8	STR												

## SOUTHBOUND DIAPHRAGM BAR SCHEDULE

M401E	4'-1"	64	4	1'-9"	7"	1'-9"									
M402E	4'-7"	92	11	1'-0"	3'-7"	2'-7"									
M403E	4'-7"	92	10	2'-1"	2'-6"										
M404E	7'-9"	64	4	2'-6"	2'-9"	2'-6"									
M405E	5'-9"	120	4	1'-6"	2'-9"	1'-6"									
M501E	6'-5"	32	STR												
M502E	5'-0"	8	STR												
M503E	2'-7"	12	11	1'-3"	1'-4"	10 5/8"									
M504E	3'-2"	16	STR												
M505E	9'-11"	16	46	1'-4"	1'-4"	4'-5"	8"	2'-2"	10 5/8"	1'-6"					
M506E	16'-0"	4	STR												
M507E	8'-6"	4	STR												
M508E	7'-8"	52	STR												
M509E	32'-3"	16	STR												
M601E	6'-2"	16	STR												
M602E	7'-11"	72	STR												
M603E	5'-2"	92	45	8"	3'-6"	1'-0"	6"	8 1/2"							
M604E	2'-0"	4	STR												
M605E	8'-0"	8	STR												



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**DELAWARE DEPARTMENT OF TRANSPORTATION**

ADDENDUMS / REVISIONS


**US 301 LEVELS ROAD TO SUMMIT BRIDGE ROAD**

CONTRACT	BRIDGE NO.	<b>1-468N&amp;S</b>
T200911303	DESIGNED BY:	ADH
COUNTY	CHECKED BY:	DHG
NEW CASTLE		

**US 301 MAINLINE OVER NORFOLK SOUTHERN RAILROAD DECK REINFORCEMENT SCHEDULE**

SHEET NO.	296
TOTAL SHTS.	1256

1-468 BR-3



REINFORCING BAR SCHEDULE

NORTHBOUND APPROACH SLAB BAR SCHEDULE

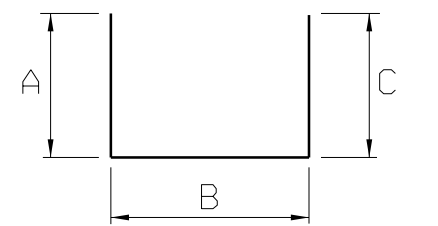
SOUTHBOUND APPROACH SLAB BAR SCHEDULE

MARK	LENGTH	NO. BARS	TYPE	A	B	C	D	E	F	G	H	I	J	K	REMARKS	MARK	LENGTH	NO. BARS	TYPE	A	B	C	D	E	F	G	H	I	J	K	REMARKS	
AS501E	41' - 4"	96	STR													AS501E	41' - 4"	96	STR													
AS502E	20' - 3"	96	STR													AS502E	20' - 3"	96	STR													
AS503E	3' - 10 <sup>1</sup> / <sub>4</sub> "	216	11	1' - 3 <sup>1</sup> / <sub>4</sub> "	2' - 7"	1' - 9"										AS503E	3' - 10 <sup>1</sup> / <sub>4</sub> "	216	11	1' - 3 <sup>1</sup> / <sub>4</sub> "	2' - 7"	1' - 9"										
AS504E	24' - 6"	92	STR													AS504E	24' - 6"	92	STR													
AS505E	6' - 2 <sup>1</sup> / <sub>2</sub> "	184	4	2' - 7"	1' - 0 <sup>1</sup> / <sub>2</sub> "	2' - 7"										AS505E	6' - 2 <sup>1</sup> / <sub>2</sub> "	184	4	2' - 7"	1' - 0 <sup>1</sup> / <sub>2</sub> "	2' - 7"										
AS506E	30' - 9"	24	STR													AS506E	30' - 9"	24	STR													
AS507E	32' - 6"	88	STR													AS507E	32' - 6"	88	STR													
AS508E	13' - 1"	22	STR													AS508E	13' - 1"	22	STR													
AS509E	VARIABLES	10	STR												VARY EA. BY 1' - 0 <sup>1</sup> / <sub>2</sub> "	AS509E	VARIABLES	10	STR												VARY EA. BY 1' - 0 <sup>1</sup> / <sub>2</sub> "	
AS510E	10' - 7 <sup>1</sup> / <sub>2</sub> " TO 1' - 3"														VARY EA. BY 11 <sup>3</sup> / <sub>4</sub> "	AS510E	10' - 7 <sup>1</sup> / <sub>2</sub> " TO 1' - 3"														VARY EA. BY 11 <sup>3</sup> / <sub>4</sub> "	
AS511E	7' - 1"	22	STR													AS511E	7' - 1"	22	STR													
AS512E	VARIABLES	6	STR												VARY EA. BY 11 <sup>1</sup> / <sub>2</sub> "	AS512E	VARIABLES	6	STR													VARY EA. BY 11 <sup>1</sup> / <sub>2</sub> "
AS513E	6' - 0 <sup>1</sup> / <sub>2</sub> " TO 1' - 3"														VARY EA. BY 10 <sup>3</sup> / <sub>4</sub> "	AS513E	6' - 0 <sup>1</sup> / <sub>2</sub> " TO 1' - 3"														VARY EA. BY 10 <sup>3</sup> / <sub>4</sub> "	
AS514E	4' - 10" TO 1' - 3"														VARY 2 EA. BY 8 <sup>1</sup> / <sub>2</sub> "(+)	AS514E	4' - 10" TO 1' - 3"														VARY 2 EA. BY 8 <sup>1</sup> / <sub>2</sub> "(+)	
AS515E	20' - 8" TO 9' - 11"														VARY 2 EA. BY 8 <sup>1</sup> / <sub>2</sub> "(+)	AS515E	20' - 8" TO 9' - 11"														VARY 2 EA. BY 8 <sup>1</sup> / <sub>2</sub> "(+)	
AS516E	20' - 8" TO 9' - 11"														VARY 2 EA. BY 8 <sup>1</sup> / <sub>2</sub> "	AS516E	20' - 8" TO 9' - 11"														VARY 2 EA. BY 8 <sup>1</sup> / <sub>2</sub> "	
AS517E	14' - 10 <sup>1</sup> / <sub>2</sub> " TO 9' - 11"														VARY 2 EA. BY 8 <sup>1</sup> / <sub>2</sub> "	AS517E	14' - 10 <sup>1</sup> / <sub>2</sub> " TO 9' - 11"														VARY 2 EA. BY 8 <sup>1</sup> / <sub>2</sub> "	
AS518E	9' - 8"	8	STR													AS518E	9' - 8"	8	STR													
AS519E	21' - 0"	4	STR													AS519E	21' - 0"	4	STR													
AS520E	15' - 4"	4	STR													AS520E	15' - 4"	4	STR													
AS521E	8' - 1"	118	25	2' - 1"	1' - 6"	3 <sup>3</sup> / <sub>4</sub> "	2 <sup>1</sup> / <sub>2</sub> "									AS521E	8' - 1"	118	25	2' - 1"	1' - 6"	3 <sup>3</sup> / <sub>4</sub> "	2 <sup>1</sup> / <sub>2</sub> "									
AS601E	13' - 9"	22	14	8"	13' - 1"		6"									AS601E	13' - 9"	22	14	8"	13' - 1"		6"									
AS602E	VARIABLES	10	14	8"	VARIABLES		6"								VARY EA. BY 1' - 0 <sup>1</sup> / <sub>2</sub> "	AS602E	VARIABLES	10	14	8"	VARIABLES		6"									VARY EA. BY 1' - 0 <sup>1</sup> / <sub>2</sub> "
AS603E	11' - 3 <sup>1</sup> / <sub>2</sub> " TO 1' - 11"														VARY "B" BY 11 <sup>3</sup> / <sub>4</sub> "	AS603E	11' - 3 <sup>1</sup> / <sub>2</sub> " TO 1' - 11"														VARY "B" BY 11 <sup>3</sup> / <sub>4</sub> "	
AS604E	VARIABLES	12	14	8"	VARIABLES		6"									AS604E	VARIABLES	12	14	8"	VARIABLES		6"									
AS605E	12' - 8 <sup>1</sup> / <sub>4</sub> " TO 1' - 11"														VARY "B" BY 11 <sup>1</sup> / <sub>2</sub> "	AS605E	12' - 8 <sup>1</sup> / <sub>4</sub> " TO 1' - 11"														VARY "B" BY 11 <sup>1</sup> / <sub>2</sub> "	
AS606E	VARIABLES	6	14	8"	VARIABLES		6"									AS606E	VARIABLES	6	14	8"	VARIABLES		6"									
AS607E	6' - 8 <sup>1</sup> / <sub>2</sub> " TO 1' - 11"														VARY EA. BY 10 <sup>3</sup> / <sub>4</sub> "	AS607E	6' - 8 <sup>1</sup> / <sub>2</sub> " TO 1' - 11"														VARY EA. BY 10 <sup>3</sup> / <sub>4</sub> "	
AS801E	9' - 10"	184	STR													AS801E	9' - 10"	184	STR													
AS901E	24' - 6"	182	STR													AS901E	24' - 6"	182	STR													
PA501E	7' - 1 <sup>1</sup> / <sub>8</sub> "	262	28	2' - 9 <sup>1</sup> / <sub>4</sub> "	3"	1 <sup>5</sup> / <sub>8</sub> "	2 <sup>3</sup> / <sub>4</sub> "	2' - 9 <sup>1</sup> / <sub>2</sub> "	3 <sup>1</sup> / <sub>8</sub> "	5 <sup>1</sup> / <sub>8</sub> "						PA501E	7' - 1 <sup>1</sup> / <sub>8</sub> "	262	28	2' - 9 <sup>1</sup> / <sub>4</sub> "	3"	1 <sup>5</sup> / <sub>8</sub> "	2 <sup>3</sup> / <sub>4</sub> "	2' - 9 <sup>1</sup> / <sub>2</sub> "	3 <sup>1</sup> / <sub>8</sub> "	5 <sup>1</sup> / <sub>8</sub> "						
PA503E	6' - 2 <sup>1</sup> / <sub>8</sub> "	262	43	1' - 0 <sup>1</sup> / <sub>8</sub> "	7"	9 <sup>1</sup> / <sub>8</sub> "	2' - 1"	1"	9"	1' - 2"	3"	3 <sup>1</sup> / <sub>2</sub> "	10"			PA503E	6' - 2 <sup>1</sup> / <sub>8</sub> "	262	43	1' - 0 <sup>1</sup> / <sub>8</sub> "	7"	9 <sup>1</sup> / <sub>8</sub> "	2' - 1"	1"	9"	1' - 2"	3"	3 <sup>1</sup> / <sub>2</sub> "	10"			
PA703E	24' - 6"	16	STR													PA703E	24' - 6"	16	STR													
PA704E	9' - 8"	8	STR													PA704E	9' - 8"	8	STR													
PA705E	15' - 4"	4	STR													PA705E	15' - 4"	4	STR													
PA706E	21' - 0"	4	STR													PA706E	21' - 0"	4	STR													
PA707E	2' - 5"	16	STR													PA707E	2' - 5"	16	STR													
PA803E	24' - 6"	16	STR													PA803E	24' - 6"	16	STR													
PA804E	9' - 8"	8	STR													PA804E	9' - 8"	8	STR													
PA805E	15' - 4"	4	STR													PA805E	15' - 4"	4	STR													
PA806E	21' - 0"	4	STR													PA806E	21' - 0"	4	STR													
PA807E	2' - 5"	16	STR													PA807E	2' - 5"	16	STR													

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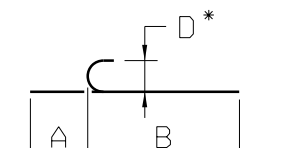
AUGUST 2015



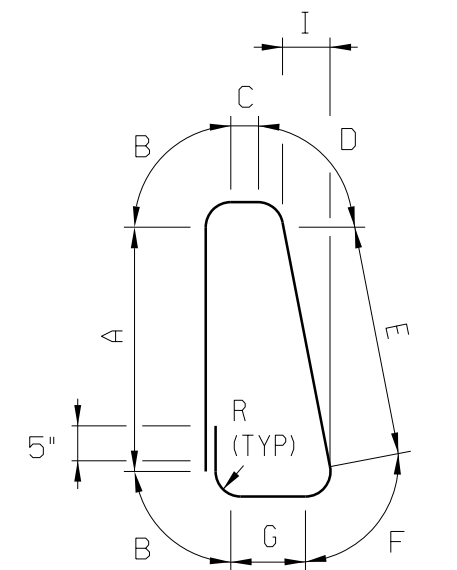
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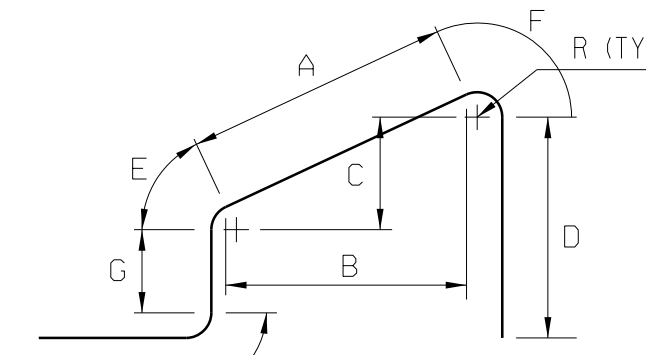
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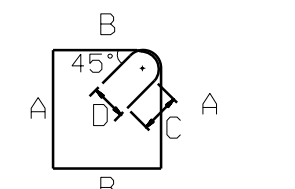
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(28)



(43)



(25)

ADDENDUMS / REVISIONS



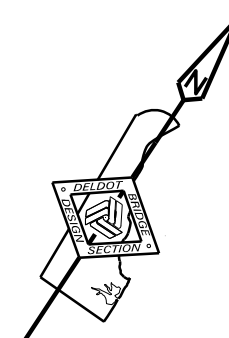
US 301 LEVELS ROAD TO SUMMIT BRIDGE ROAD

CONTRACT	BRIDGE NO.	1-468N&S
T200911303	DESIGNED BY:	ADH
COUNTY	CHECKED BY:	DHG
NEW CASTLE		

US 301 MAINLINE OVER NORFOLK SOUTHERN RAILROAD APPROACH SLAB REINFORCEMENT SCHEDULE

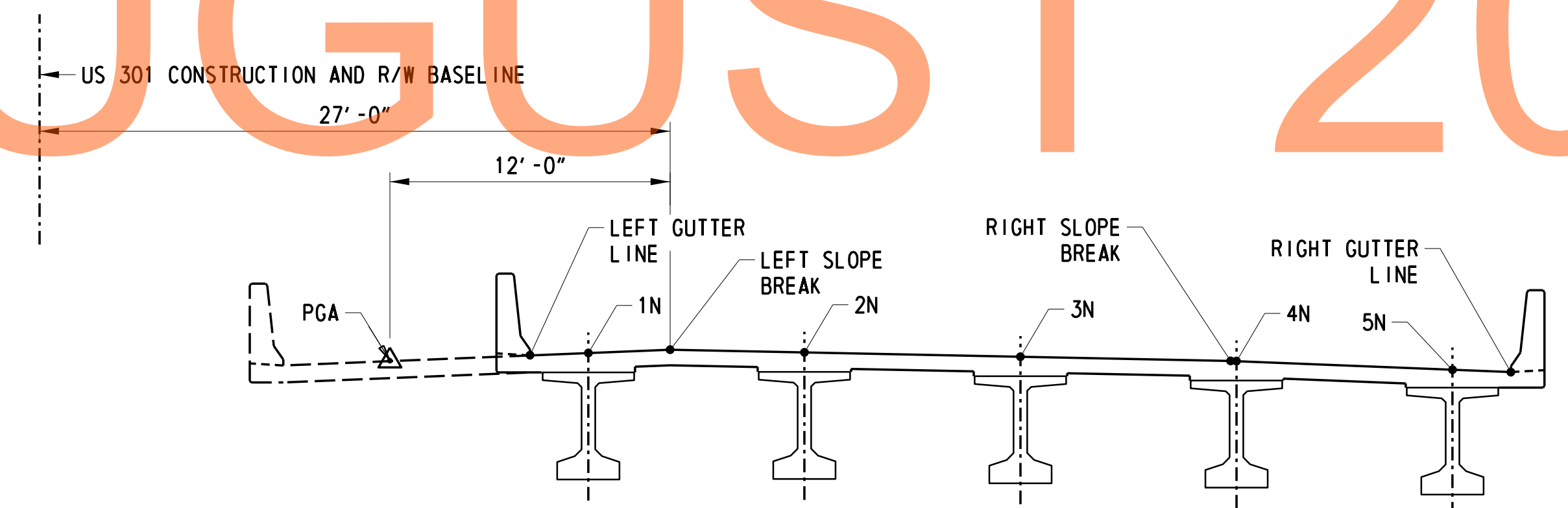
SHEET NO.	297
TOTAL SHTS.	1256

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**FINISHED BRIDGE DECK ELEVATIONS - NORTHBOUND**  
SCALE: 3/16" = 1' - 0"



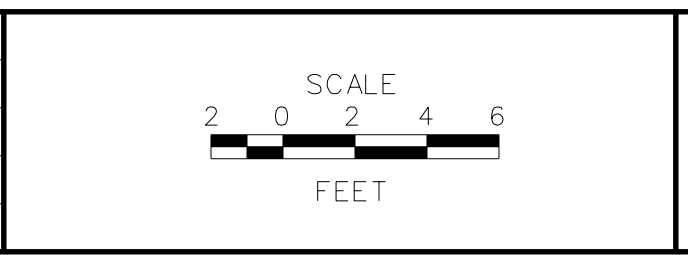
**TYPICAL SECTION - NORTHBOUND**  
SCALE: 3/16" = 1' - 0"

- CROSS REFERENCE NOTES:**
1. FOR VERTICAL CURVE DATA, SEE DWG. 1-468 PE-1.
  2. FOR CROSS SLOPES, SEE DWG. 1-468 TS-1.

G:\60049040-US301\Structure\Plans\FINAL\B2-INS\BR2-1 Contract 2A\BR2-FD-02.dgn

**DELAWARE DEPARTMENT OF TRANSPORTATION**

ADDENDUMS / REVISIONS

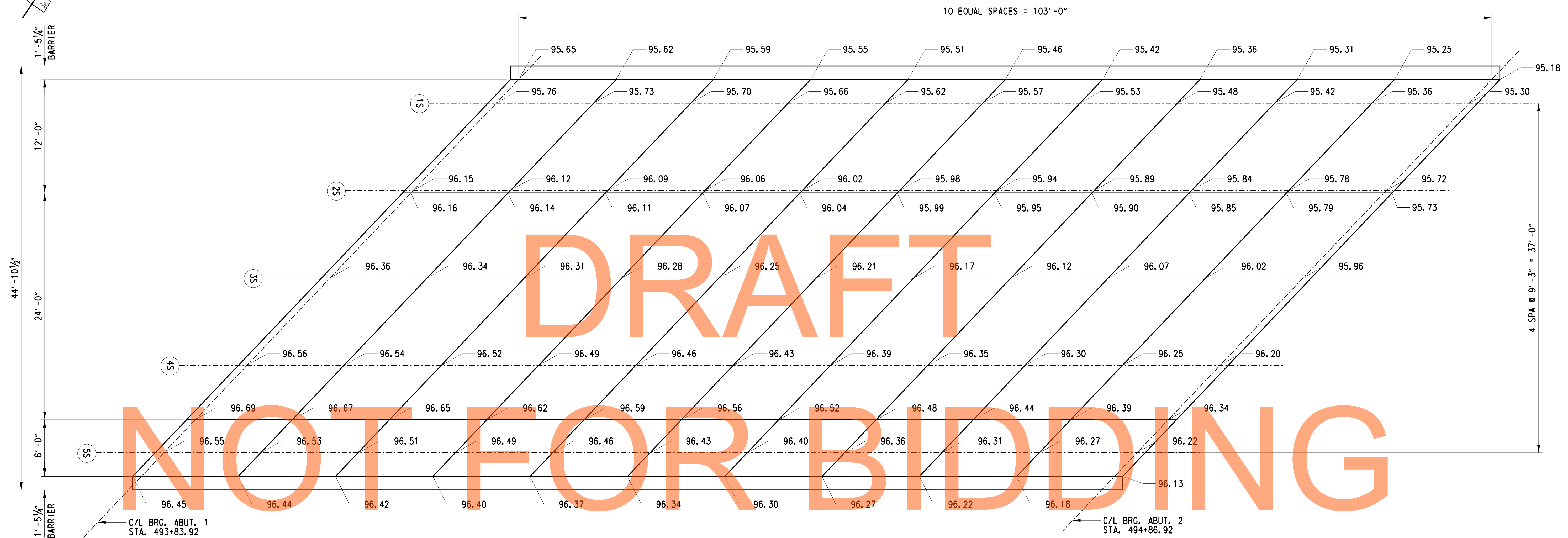
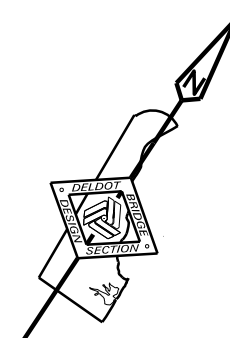


**US 301 LEVELS ROAD TO SUMMIT BRIDGE ROAD**

CONTRACT T200911303	BRIDGE NO. <b>1-468N&amp;S</b>
COUNTY NEW CASTLE	DESIGNED BY: ADH
	CHECKED BY: DHG

**US 301 MAINLINE OVER NORFOLK SOUTHERN RAILROAD FINISHED DECK ELEVATIONS - NORTHBOUND**

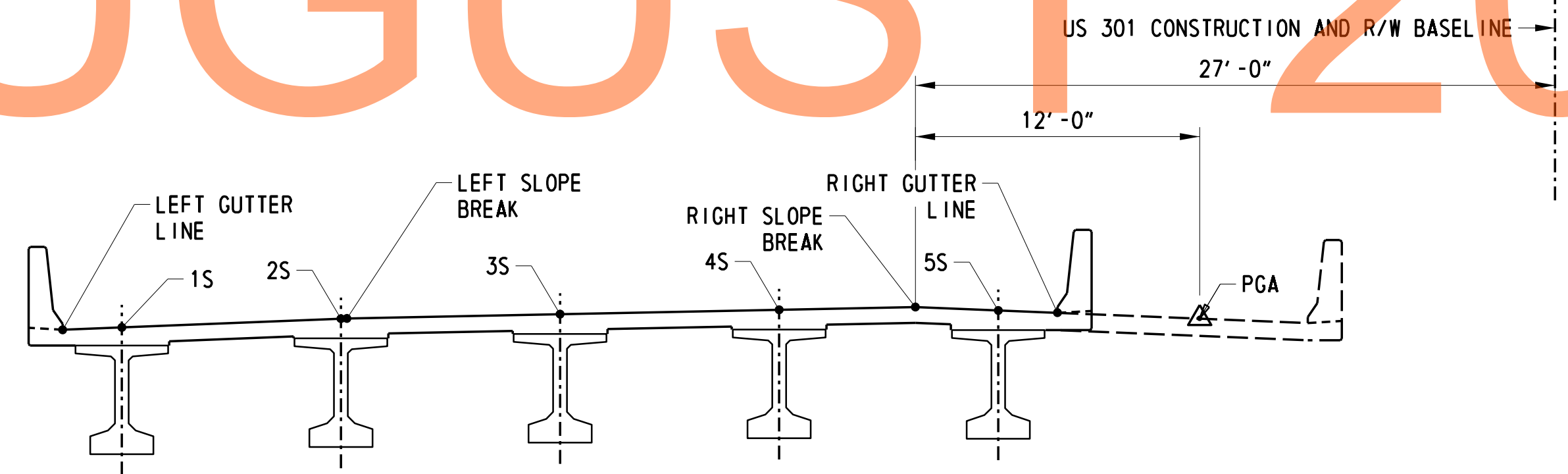
1-468 FD-1
SHEET NO. 298
TOTAL SHTS. 1256



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**FINISHED BRIDGE DECK ELEVATIONS - SOUTHBOUND**

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



**TYPICAL SECTION - SOUTHBOUND**

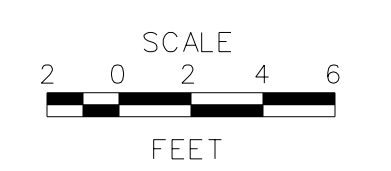
SCALE: 3/16" = 1'-0"

- CROSS REFERENCE NOTES:**
1. FOR VERTICAL CURVE DATA, SEE DWG. 1-468 PE-1.
  2. FOR CROSS SLOPES, SEE DWG. 1-468 TS-1.

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ADDENDUMS / REVISIONS	

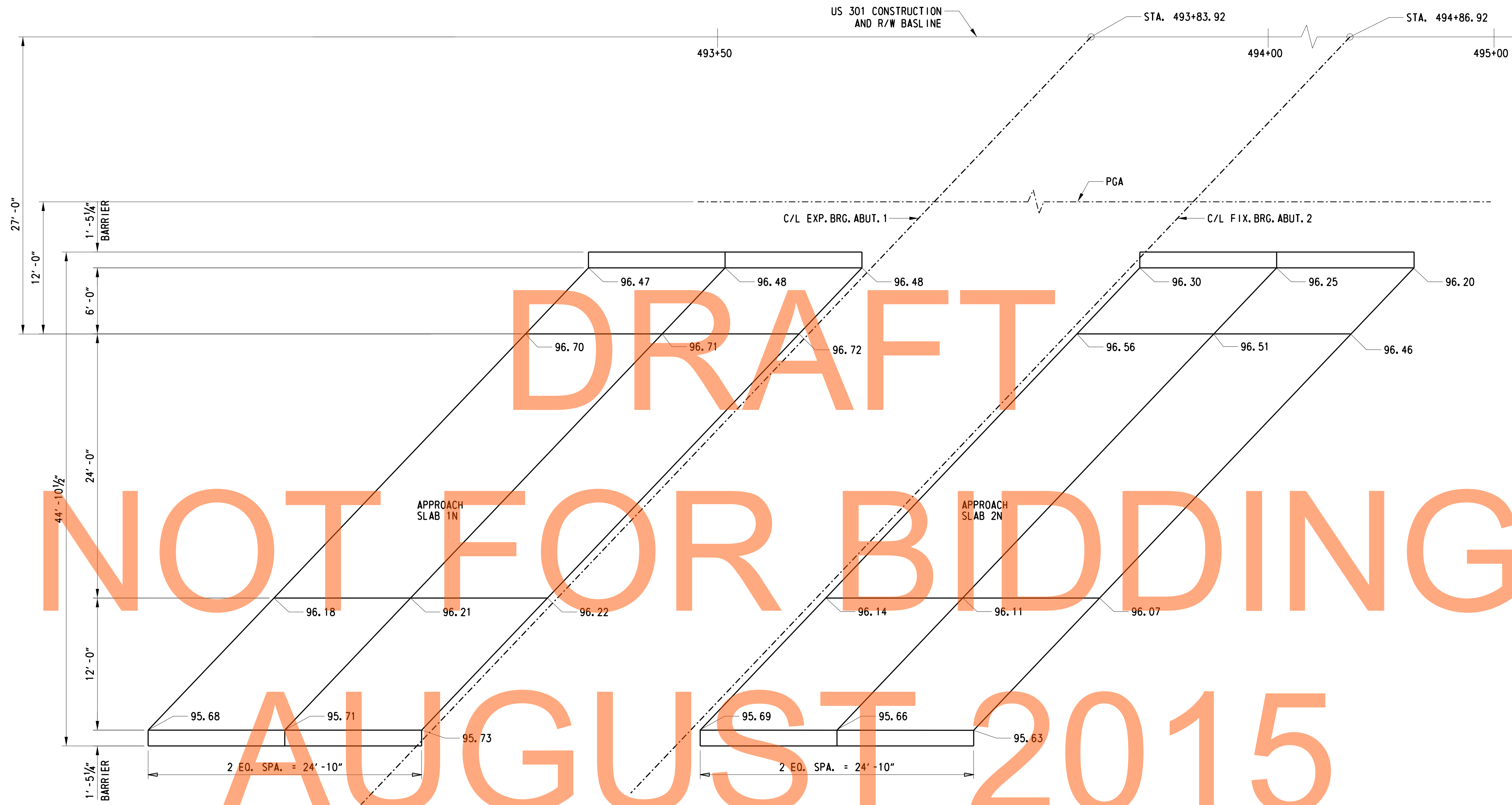


**US 301  
LEVELS ROAD  
TO SUMMIT BRIDGE ROAD**

CONTRACT T20091303	BRIDGE NO. <b>1-468N&amp;S</b>	
COUNTY NEW CASTLE	DESIGNED BY: ADH	CHECKED BY: DHG

**US 301 MAINLINE OVER  
NORFOLK SOUTHERN  
RAILROAD  
FINISHED DECK  
ELEVATIONS - SOUTHBOUND**

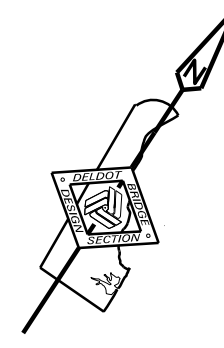
1-468 FD-2	SHEET NO.
	299
	TOTAL SHTS.
	1256



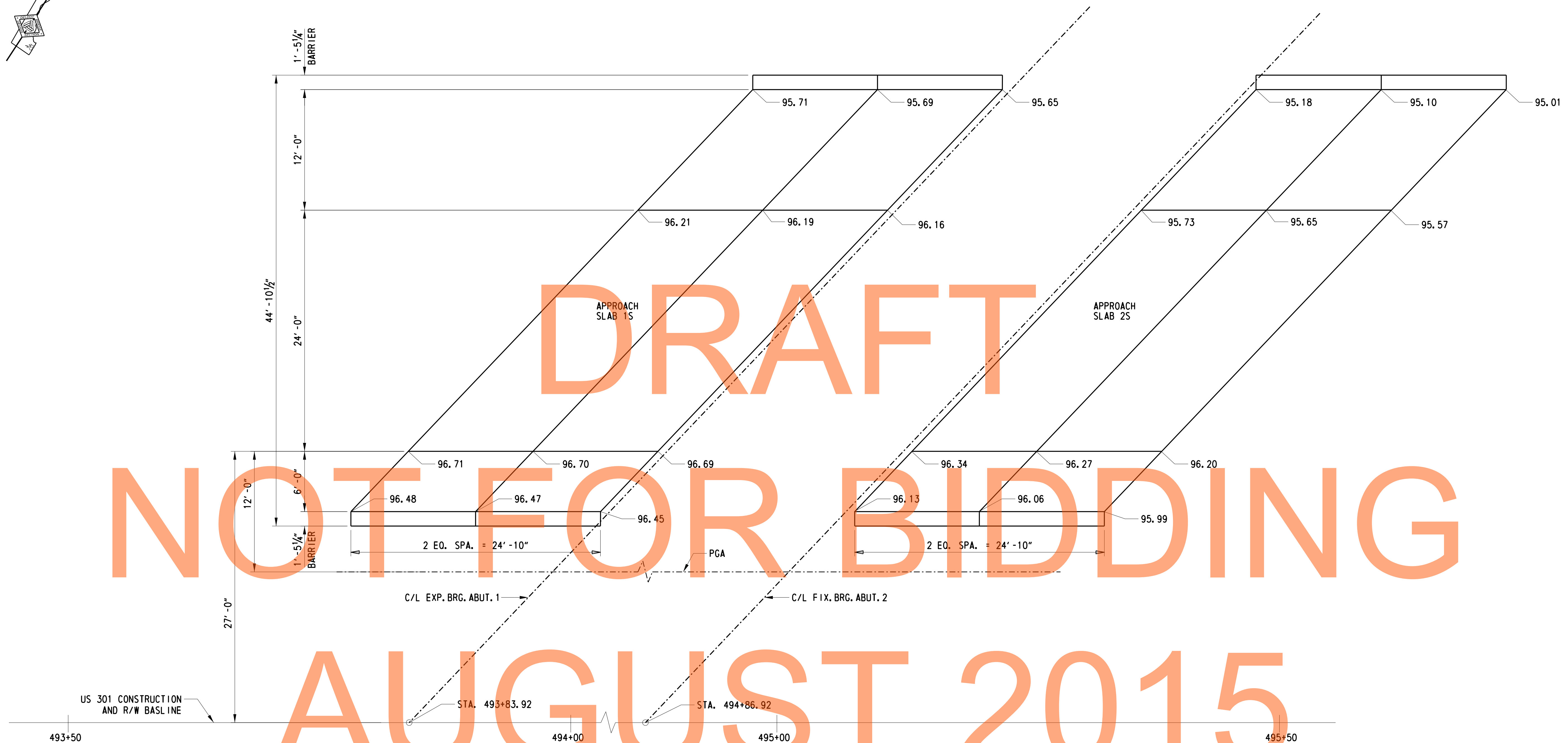
**APPROACH SLABS - NORTHBOUND**  
SCALE: 3/16" = 1'-0"

- CROSS REFERENCE NOTES:**
1. FOR VERTICAL CURVE DATA, SEE DWG. 1-468 PE-1.
  2. FOR CROSS SLOPES, SEE DWG. 1-468 TS-1.

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**APPROACH SLABS - SOUTHBOUND**

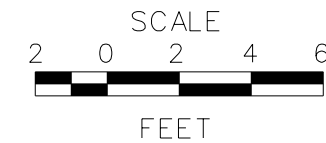
SCALE: 3/16" = 1'-0"

- CROSS REFERENCE NOTES:**
1. FOR VERTICAL CURVE DATA, SEE DWG. 1-468 PE-1.
  2. FOR CROSS SLOPES, SEE DWG. 1-468 TS-1.

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ADDENDUMS / REVISIONS	

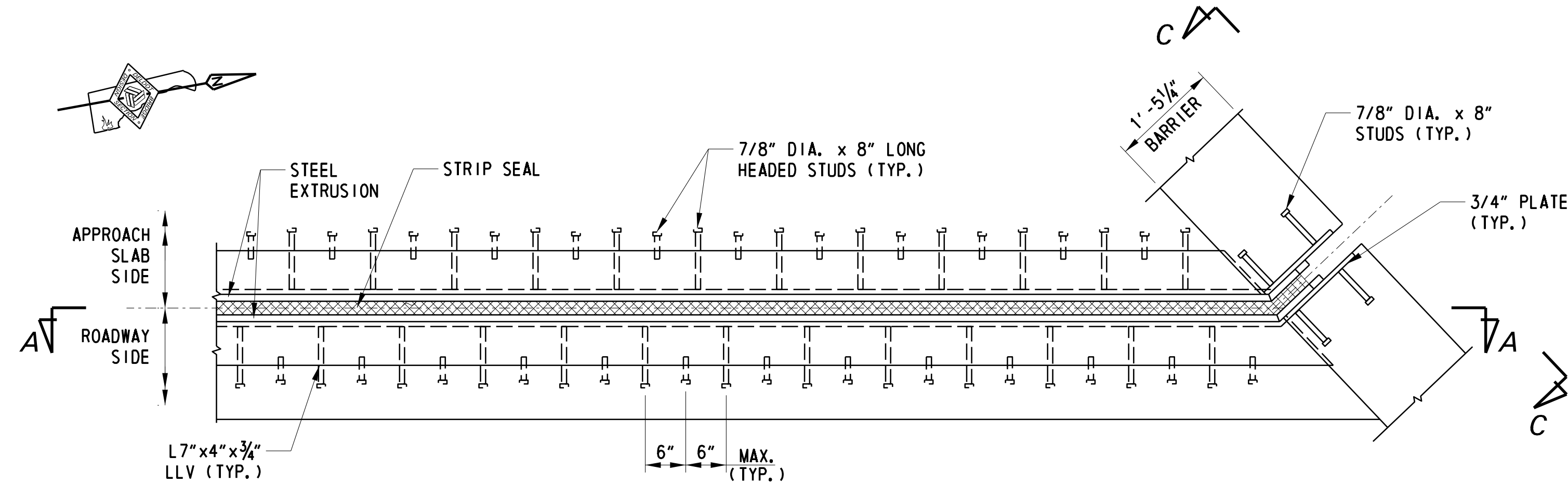


**US 301  
LEVELS ROAD  
TO SUMMIT BRIDGE ROAD**

CONTRACT	BRIDGE NO.	<b>1-468N&amp;S</b>
T20091303	DESIGNED BY:	ADH
COUNTY	CHECKED BY:	DHG
NEW CASTLE		

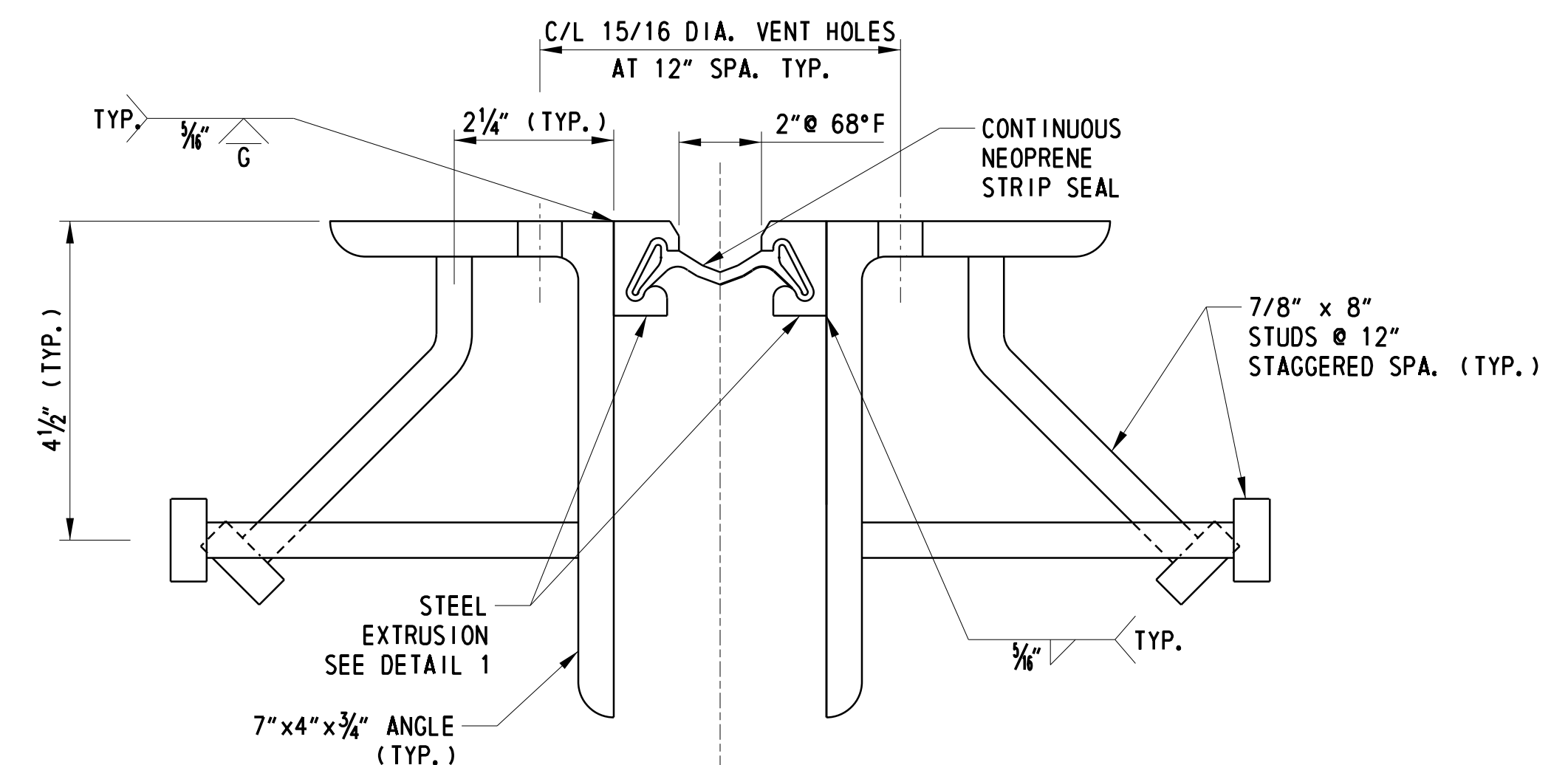
**US 301 MAINLINE OVER  
NORFOLK SOUTHERN  
RAILROAD  
FINISHED APPROACH  
SLAB ELEVATIONS - SB**

1-468 FD-4
SHEET NO.
301
TOTAL SHTS.
1256



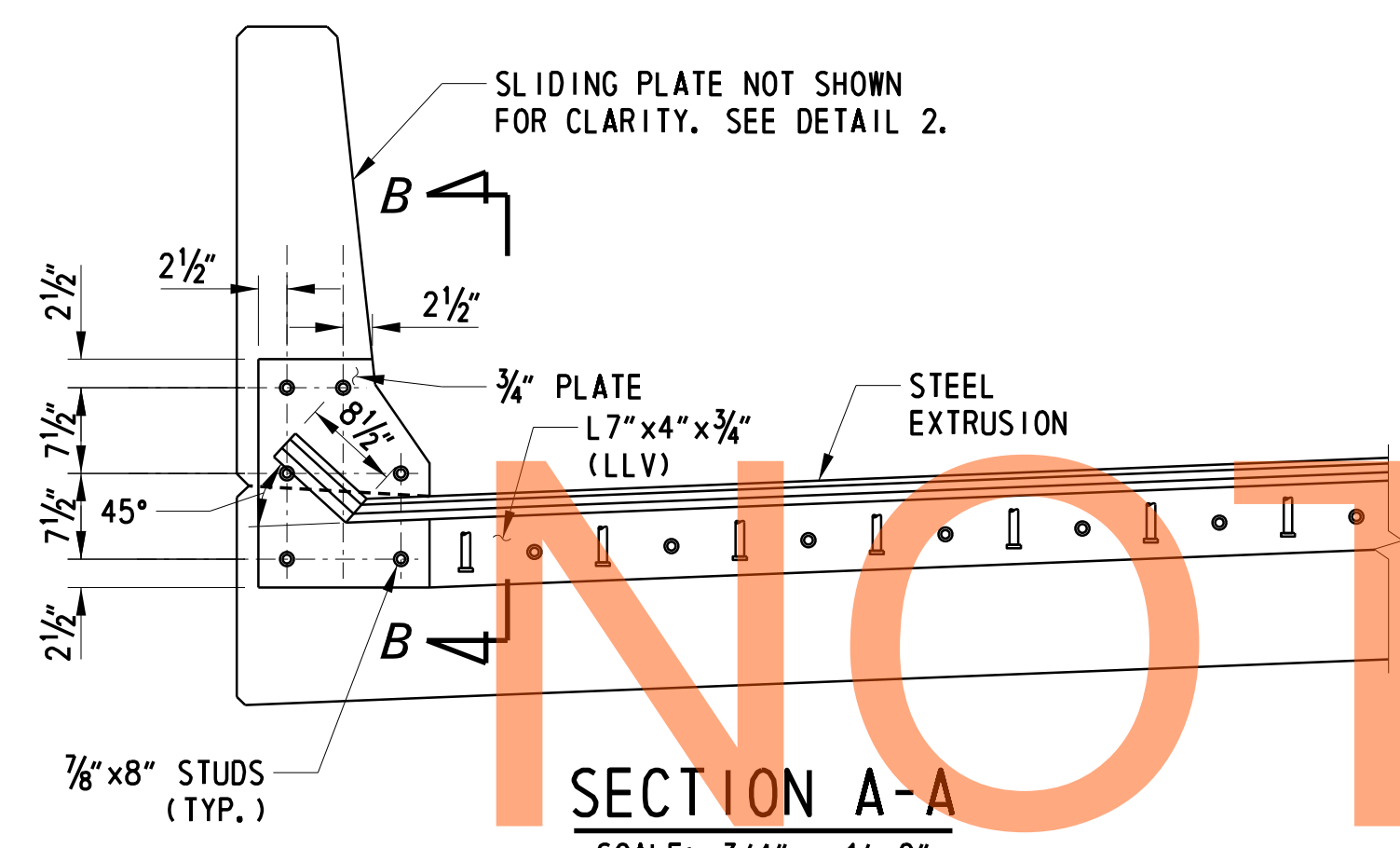
**PLAN**

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



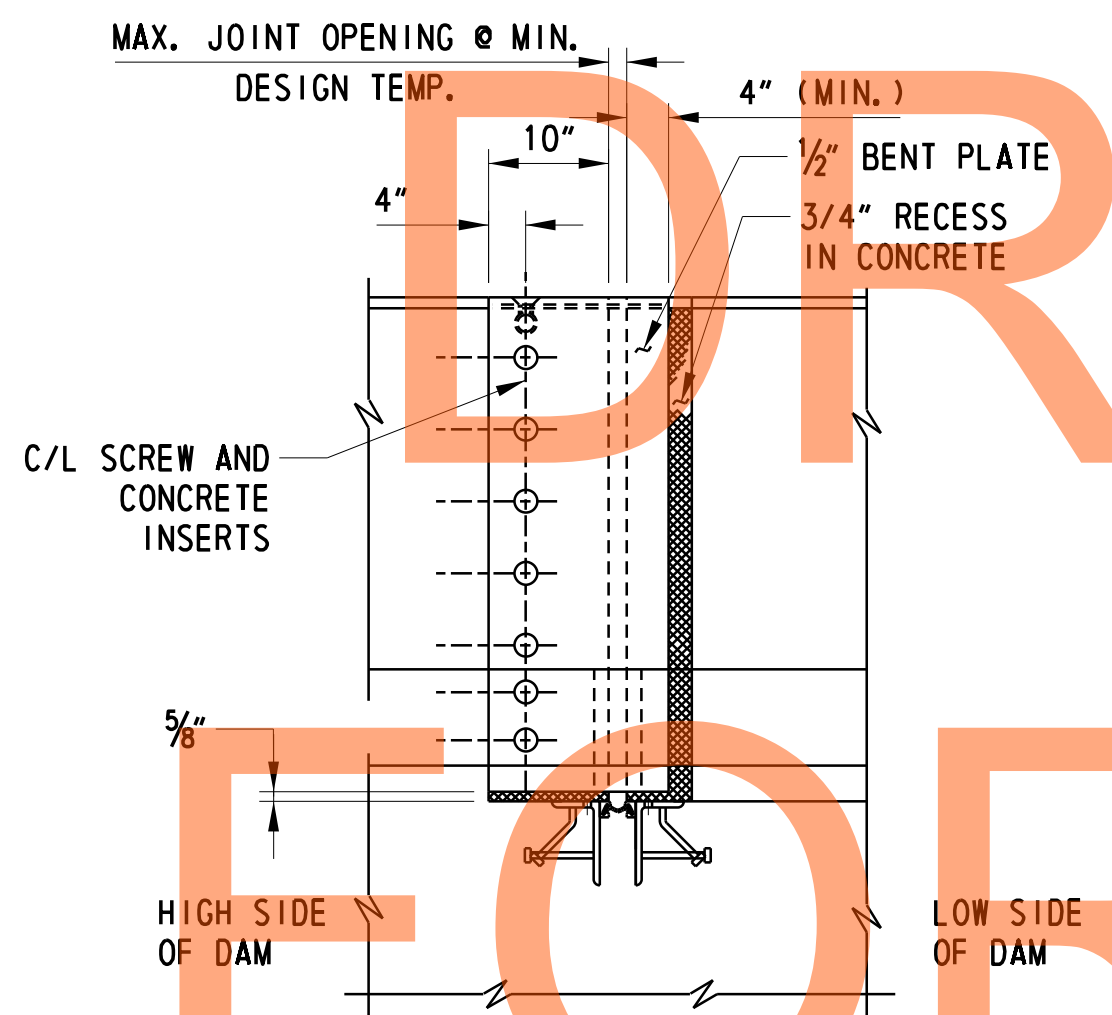
**PREFABRICATED EXPANSION JOINT SYSTEM 3"**

NTS



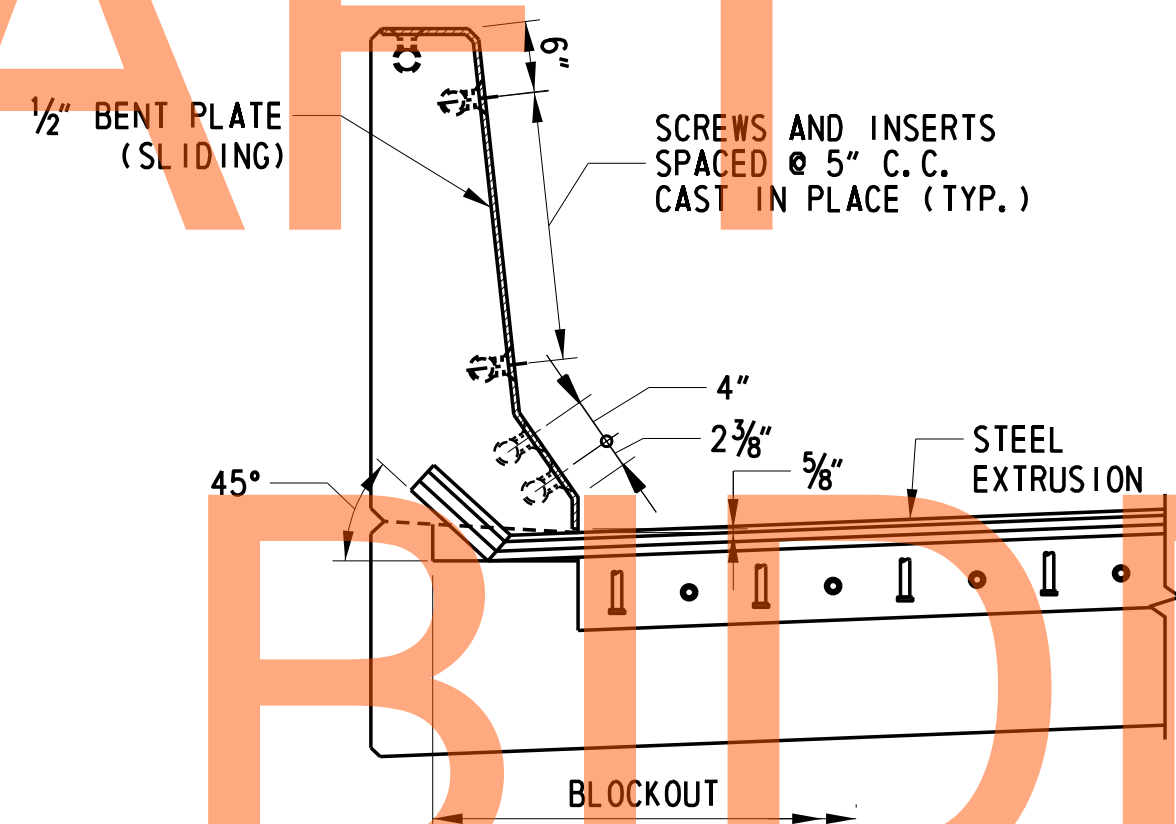
**SECTION A-A**

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



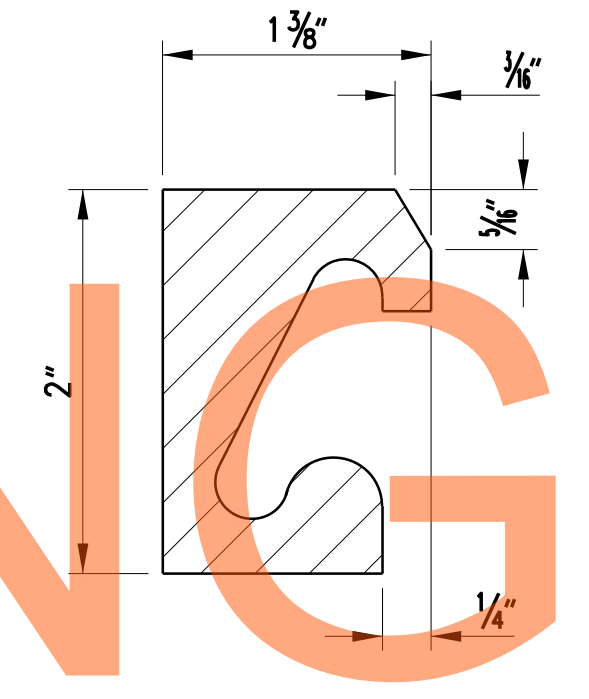
**SECTION B-B**

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



**DETAIL 2**

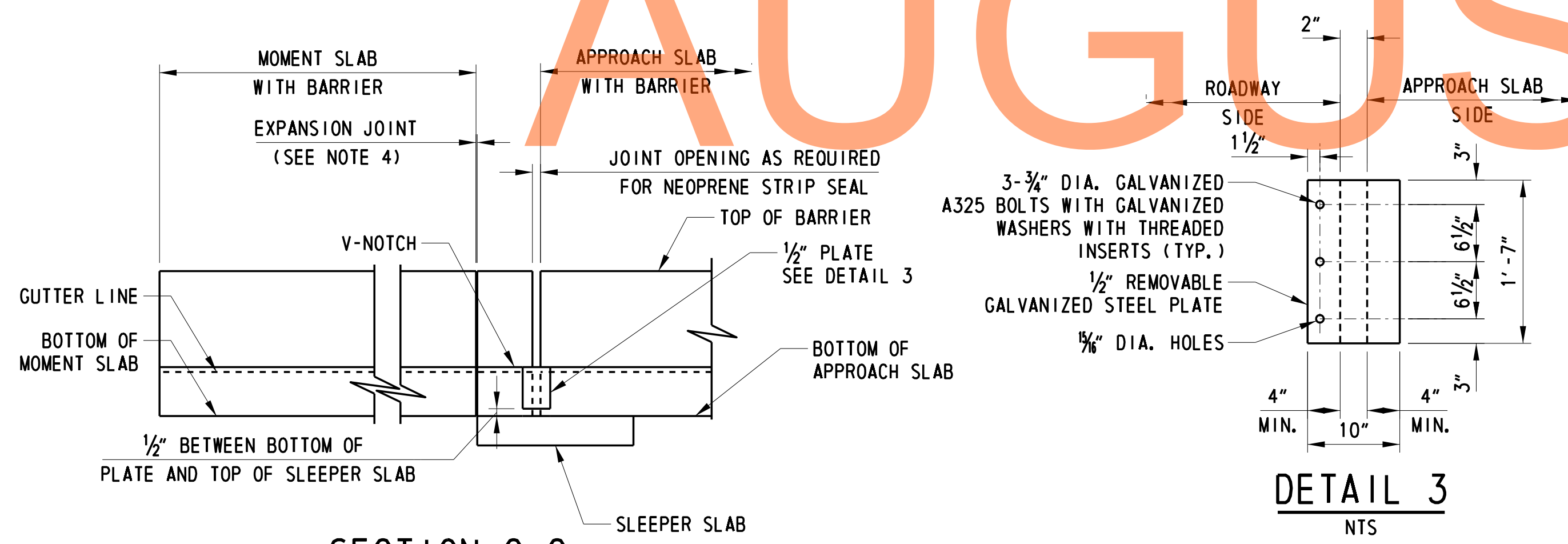
SCALE: 3/4" = 1'-0"



**DETAIL 1**

NTS

\* FORM CONCRETE RECESS AREA IN BARRIER AND GRIND TO PROVIDE SMOOTH SURFACE. APPLY ONE COAT OF ASPHALT CEMENT PAINT WA-1 OR PERFORMANCE GRADED ASPHALT CEMENT PG 64-22 TO ALLOW BENT SLIDING PLATE TO MOVE FREELY WITHOUT FRICTION.



**SECTION C-C**

NTS

**DETAIL 3**

NTS

**NOTES:**

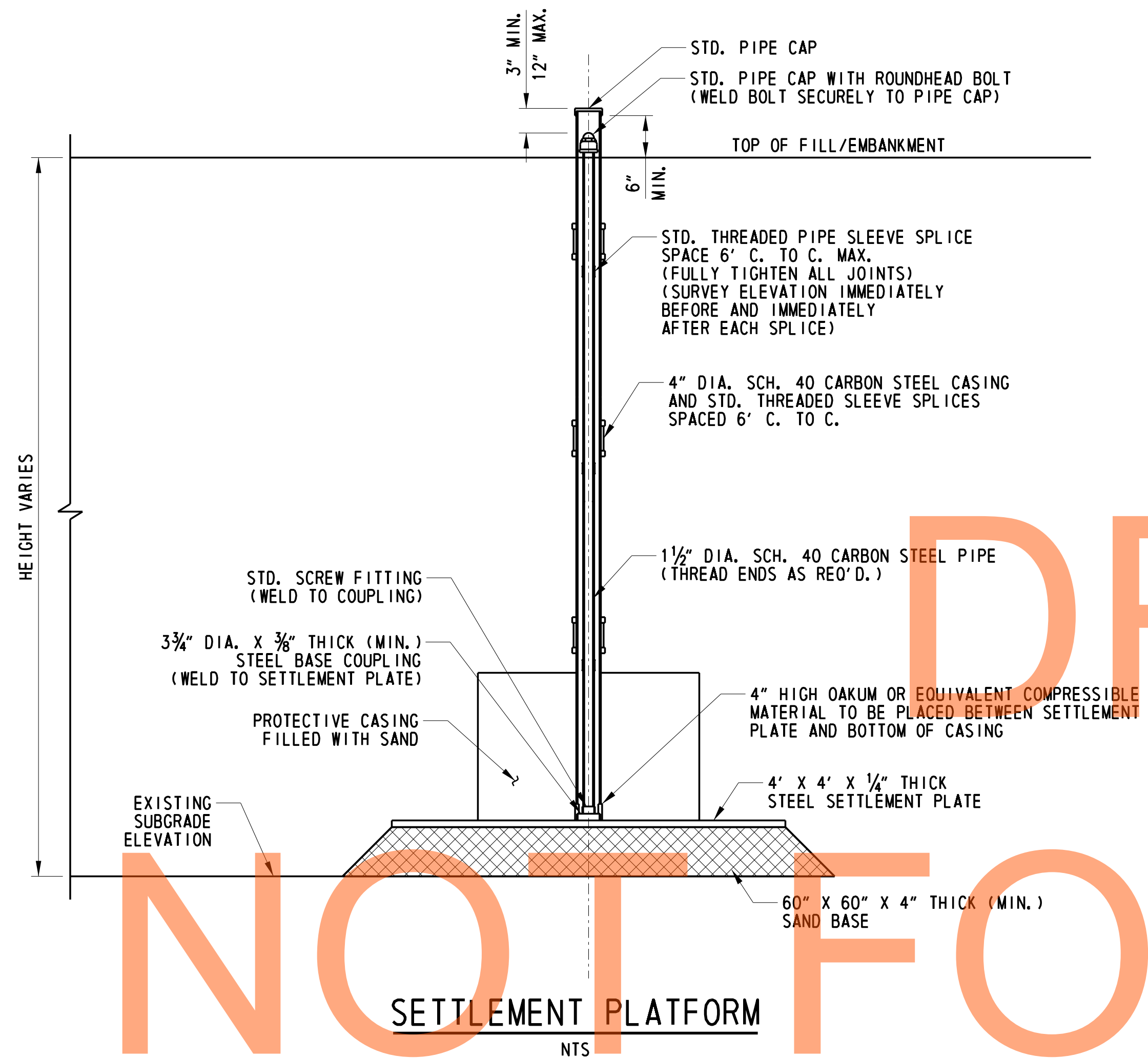
1. STRUCTURAL STEEL FOR DECK JOINTS SHALL CONFORM TO AASHTO M270, GRADE 36.
2. STEEL EXTRUSIONS FOR DECK JOINTS SHALL CONFORM TO AASHTO M270, GRADE 36.
3. THE NEOPRENE STRIP SEAL SHALL BE PROVIDED CONTINUOUS THROUGHOUT THE LIMITS OF THE DECK. SPLICING OF THE NEOPRENE STRIP SEAL IS NOT PERMITTED.
4. COST FOR MATERIALS, FABRICATION AND INSTALLATION OF STRIP SEAL EXPANSION JOINTS, 3" MOVEMENT CLASSIFICATION, WITH STEEL ELEMENTS INCLUDING STUDS AND STEEL EXTRUSIONS, SHALL BE PAID FOR UNDER ITEM 605511.
5. EXPANSION JOINT PLAN IS SHOWN AT APPROACH SLAB.

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ADDENDUMS / REVISIONS

CONTRACT	T20091303
COUNTY	NEW CASTLE
BRIDGE NO.	1-468N&S
DESIGNED BY:	ADH
CHECKED BY:	DHG

SETTLEMENT PLATFORM	STATION	OFFSET	SETTLEMENT MONUMENT	STATION	OFFSET
SP-1-468-1	493+33.57	39.00' RT	SM-1-468-1	493+28.81	44.00' RT
SP-1-468-2	494+07.64	39.00' LT	SM-1-468-2	494+11.09	44.00' LT
SP-1-468-3	494+63.17	39.00' RT	SM-1-468-3	494+59.73	44.00' RT
SP-1-468-4	495+37.24	39.00' LT	SM-1-468-4	495+42.24	44.00' LT



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**CROSS REFERENCE NOTE:**

- FOR LOCATION OF SETTLEMENT PLATFORMS AND MONUMENTS, SEE DWG. 1-468 PE-1.

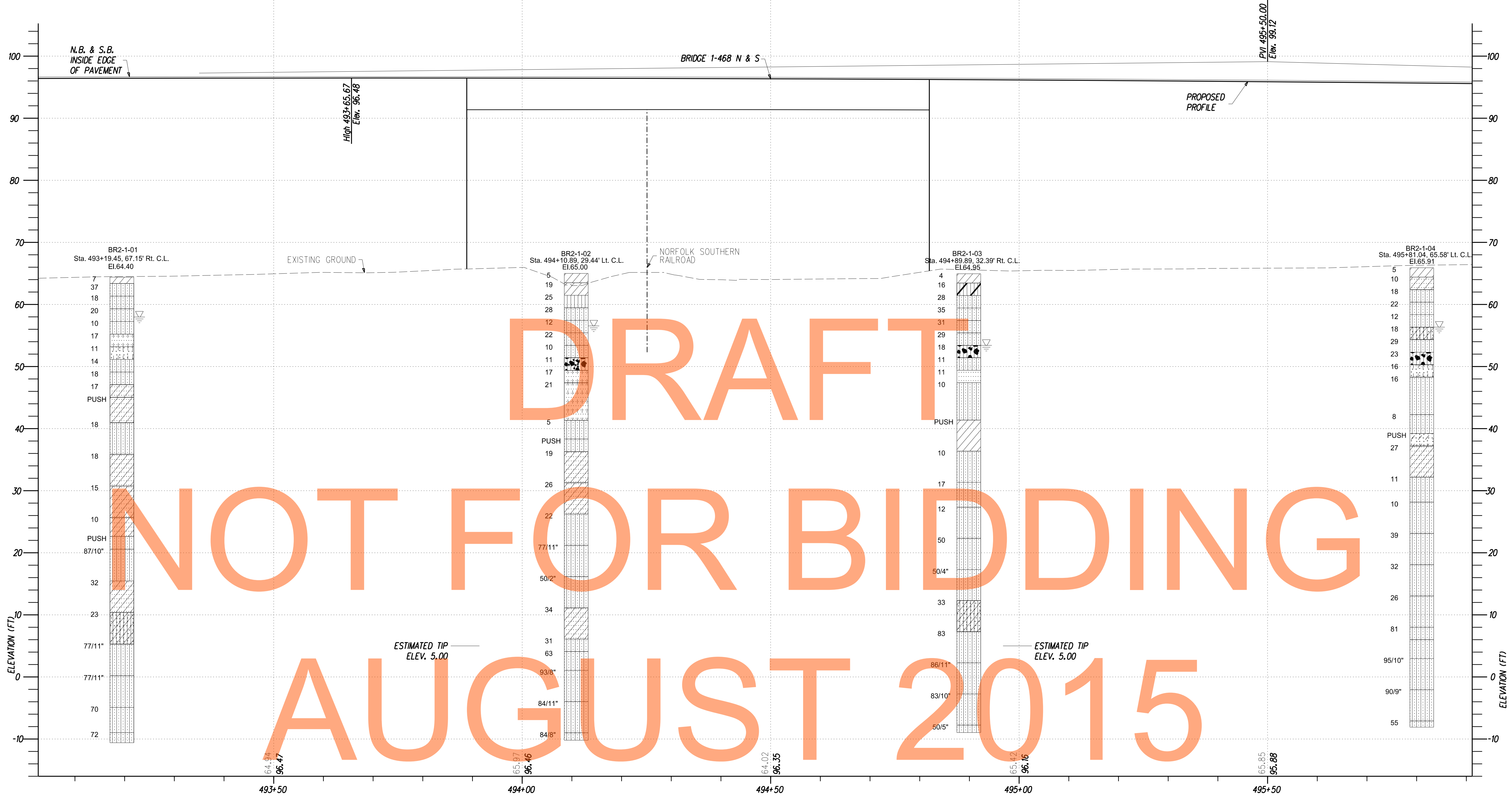
**NOTE:**

- THE BASE OF THE SETTLEMENT PLATFORM SHALL BE PLACED ON THE TOP OF THE EXISTING SUBGRADE.
- 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, 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. AFTER THE FILL HAS BEEN COMPLETED AND TWO (2) SECCESIVE READINGS OF EACH DEVICE HAS RECORDED LESS THAN OR EQUAL TO 0.1", THE IMMEDIATE SETTLEMENT WILL BE DEEMED COMPLETE AND THE GEOTECHNICAL ENGINEER CAN RELEASE THE SUBSTRUCTURE FOR INSTALLATION OF PRODUCTION PILES. AFTER COMPLETION OF THE MSE WALL PANEL PLACEMENT, THE CONTRACTOR SHALL ESTABLISH REFERENCE POINTS TO MONITOR SETTLEMENT 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 SUBSTRUCTURE HAS BEEN RELEASED, 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.

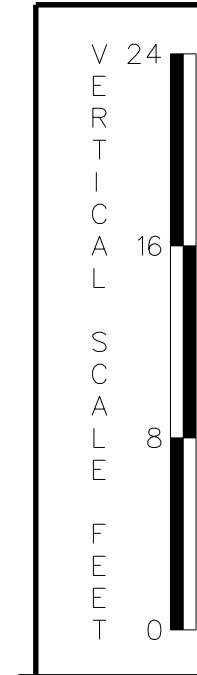
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<b>DELAWARE DEPARTMENT OF TRANSPORTATION</b>	ADDENDUMS / REVISIONS		<b>US 301 LEVELS ROAD TO SUMMIT BRIDGE ROAD</b>	CONTRACT	BRIDGE NO.	<b>1-468N&amp;S</b>	<b>US 301 MAINLINE OVER NORFOLK SOUTHERN RAILROAD SETTLEMENT PLATFORM DETAIL</b>	SHEET NO.
				T200911303	DESIGNED BY: ADH	303		
				COUNTY	CHECKED BY: DHG	TOTAL SHTS.		
				NEW CASTLE		1256		

1-468 DT-2



KEY TO SYMBOLS			
SYMBOL DESCRIPTION	SYMBOL DESCRIPTION	SYMBOL DESCRIPTION	SYMBOL DESCRIPTION
<b>STRATA SYMBOLS</b>			
LOW PLASTICITY CLAY	WELL GRADED GRAVEL WITH SILT	POORLY GRADED SAND WITH SILT	WELL GRADED SAND
SILTY SAND	SILTY LOW PLASTICITY CLAY	CLAYEY SAND	POORLY GRADED SAND WITH CLAY
WELL GRADED SAND WITH SILT	SILTY GRAVEL	POORLY GRADED CLAYEY SILTY SAND	<b>MISC. SYMBOLS</b>
		SILTY SAND	WATER TABLE DURING DRILLING



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