

**PROJECT NOTES**

1. **LOCATION**  
INSTALLATION OF NEW RIGID FRAME CULVERT CARRYING US301 OVER WILDLIFE CROSSING AND CHANNEL IN NEW CASTLE COUNTY, DELAWARE.
2. **ELEVATIONS**  
VERTICAL DATUM IS REFERENCED TO NAVD 1988.
3. **DESIGN CRITERIA**  
2007 AASHTO LRFD DESIGN SPECIFICATIONS, INCLUDING 2008 AND 2009 INTERIMS, AND SUPPLEMENTED BY THE DELAWARE DEPARTMENT OF TRANSPORTATION 2005 BRIDGE DESIGN MANUAL, INCLUDING REVISIONS THROUGH 2009.
4. **LOADING**  
LIVE LOAD: AASHTO HL-93 AND DELAWARE LEGAL LOADS.  
FUTURE OVERLAY = 25 P.S.F.  
FILL SOIL = 120 P.C.F.
5. **FOUNDATIONS**  
FOUNDATION DESIGN AND QUANTITIES ARE BASED ON A STUDY OF THE SUBSOIL BORINGS MADE AT THE SITE. THE BORING INFORMATION SHOWN ON THE SOIL BORING SHEET IS BASED ON LIMITED INVESTIGATIONS AND IS IN NO WAY WARRANTED TO BE INDICATIVE OF ACTUAL CONDITIONS THAT MAY BE ENCOUNTERED DURING CONSTRUCTION. SEE SECTION 102.05 OF THE STANDARD SPECIFICATIONS FOR MORE DETAIL. THIS BORING INFORMATION, THE ACCURACY OF WHICH THE STATE DOES NOT GUARANTEE, IS PRESENTED ON THESE PLANS TO THE CONTRACTOR FOR HIS INFORMATION ONLY.  
  
THE CRITICAL APPLIED PRESSURE FOR THE CONTROLLING LOAD CASES FOR THE PEDESTALS AND WINGWALLS ARE 6.66 KSF AND 5.18 KSF RESPECTIVELY WHICH IS LESS THAN THE BEARING RESISTANCES OF 7.09 KSF AND 5.70 KSF RESPECTIVELY.
6. **RIGID FRAME**  
FACTORED BEARING RESISTANCE (STR 1) = 7.09 ksf  
MAXIMUM BEARING PRESSURE (STR 1) = 6.66 ksf  
PHI (BEARING CAPACITY) = 0.45  
  
**WINGWALL:**  
FACTORED BEARING RESISTANCE (STR 1) = 5.70 ksf  
MAXIMUM BEARING PRESSURE (STR 1) = 5.18 ksf  
PHI (BEARING CAPACITY) = 0.45  
MAXIMUM HORIZONTAL FORCE AT FULL HEIGHT (STR 1) = 19.7k  
FACTORED SLIDING RESISTANCE AT FULL HEIGHT (STR 1) = 21.6k  
PHI (SLIDING) = 0.8  
  
FOOTINGS MAY BE ORDERED BY THE ENGINEER TO BE AT ANY ELEVATION OR OF ANY DIMENSION NECESSARY TO PROVIDE PROPER FOUNDATION.
7. **CONCRETE**  
  
ALL CONCRETE PROPERTIES SHALL BE IN ACCORDANCE WITH DIVISION 812 OF THE DELAWARE DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS.  
  
CLASS A - HEADWALLS, PEDESTAL WALLS, AND WINGWALLS (f'c = 4,500 PSI).  
  
CLASS B - WINGWALL FOOTING AND PEDESTAL WALL FOOTING (f'c = 3,000 PSI).  
  
PRECAST RIGID FRAME CULVERT CONCRETE (f'c = 5000 PSI).  
  
ALL EXPOSED EDGES SHALL BE CHAMFERED 3/4" UNLESS NOTED OTHERWISE.
8. **REINFORCING STEEL**  
  
ALL REINFORCING STEEL SHALL BE AASHTO M31 (ASTM A615), GRADE 60 AND UNLESS SPECIFIED OTHERWISE ON THE PLANS SHALL BE PROTECTED WITH FUSION BONDED EPOXY CONFORMING TO AASHTO M284 (ASTM D3963) AND DENOTED WITH A PREFIX 'E' IN THE BAR MARKS.  
  
MINIMUM CONCRETE COVER FOR REINFORCING STEEL SHALL BE:  
PRECAST CULVERT: 2"  
FOUNDATION ELEMENTS: 3"  
OTHER ELEMENTS: AS NOTED
9. **POST-TENSIONING TENDONS AND ANCHOR PLATE**  
LOW RELAXATION POLY PROPYLENE-SHEATHED PRESTRESSING STRAND WITH CORROSION INHIBITOR SHALL CONFORM TO AASHTO M203 (ASTM A416), GRADE 270. STRUCTURAL STEEL FOR ANCHOR PLATES SHALL CONFORM TO AASHTO M270 (ASTM A709), GRADE 36 AND SHALL BE FUSION BONDED EPOXY COATED. THREADS ON TIE RODS SHALL BE CUT TO COARSE SERIES 2A. PAYMENT SHALL BE INCIDENTAL TO ITEM 602522 - PRECAST CONCRETE CULVERT.
10. **THREADED INSERTS**  
PROVIDE THREADED INSERTS AS INDICATED. THREADED INSERTS ARE TO BE INCORPORATED INTO THE PRECAST BOX SEGMENTS BY THE FABRICATOR.

11. **CONSTRUCTION**  
FOR CONSTRUCTION SEQUENCE, SEE DRAWING DT-04.  
  
POST TENSION PRECAST CULVERT SEGMENTS IN ACCORDANCE WITH DETAILS AND NOTES ON DRAWINGS DT-06 AND DT-08.  
  
POST TENSION THE PRECAST SEGMENTS PRIOR TO BACKFILLING AND PRIOR TO ALLOWING TRAFFIC ON THE CULVERT.  
  
TREAT CULVERT SURFACES WITH SILANE SEALER PRIOR TO BACKFILLING.  
  
APPLY WATERPROOFING TO THE JOINTS OF THE PRECAST CULVERT AS INDICATED.  
  
USE EPOXY BONDING COMPOUND BETWEEN PRECAST AND CAST-IN-PLACE ELEMENTS. EPOXY BONDING COMPOUND IS TO BE TYPE 2, GRADE 2 AS DESCRIBED IN ASTM-C881.  
  
DO NOT EXCEED A 2'-0" DIFFERENCE IN FILL ELEVATIONS ON THE SIDES OF THE CULVERT DURING PLACEMENT OF THE BACKFILL.  
  
DO NOT ALLOW WHEELS OF ROLLERS TO COME CLOSER THAN 1'-0" TO FACE OF STRUCTURE DURING COMPACTION OF THE BACKFILL.  
  
PROVIDE MATERIAL AND PERFORM WORK IN ACCORDANCE TO THE DELAWARE DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS AND CONSTRUCTION DETAILS AND CONTRACT SPECIAL PROVISIONS.
12. **CONSTRUCTION JOINTS**  
KEYED CONSTRUCTION JOINTS SHALL BE 2"x4" OR AS NOTED. ALL EXPOSED CONSTRUCTION JOINT EDGES SHALL HAVE 3/4" V-NOTCH.
13. **STABILIZING STRUCTURAL EXCAVATIONS**  
IN LIEU OF A 2:1 SLOPE THE CONTRACTOR MAY USE SHORING FOR ANY EXCAVATIONS EXCEEDING 5 FEET IN HEIGHT. THE COST OF SHORING SHALL BE INCIDENTAL TO ITEM 207000 - EXCAVATION AND BACKFILL FOR STRUCTURES.  
THE CONTRACTOR IS RESPONSIBLE FOR THE STABILITY OF ALL EXCAVATED SLOPES. DIRECT ALL SURFACE RUNOFF AWAY FROM EXCAVATION USING CURBING OR A BARRIER ALONG TOP OF SLOPE. IF REQUIRED, COVER THE EXCAVATED SLOPES WITH PLASTIC TO PROTECT AGAINST INFILTRATION.  
PERFORM EXCAVATION IN ACCORDANCE WITH O. S. H. A. REQUIREMENTS.
14. **UTILITIES**  
BEFORE BEGINNING WORK, THE CONTRACTOR SHALL GIVE NOTIFICATION BY TELEPHONE BY CALLING "MISS UTILITY" AT 1-800-282-8555 A MINIMUM OF 48 HOURS PRIOR TO START OF WORK. VERIFY AND LOCATE ALL UTILITIES PRIOR TO STARTING WORK.  
  
COORDINATE THE REQUIREMENTS FOR PROTECTION OF ANY UTILITY WITH THE UTILITY OWNER PRIOR TO STARTING WORK.  
  
CONDUCT OPERATIONS IN A MANNER WHICH ENSURES THAT THE UTILITIES WILL NOT BE DISTURBED OR ENDANGERED. ANY DAMAGE INCURRED TO THESE UTILITIES OR ANY OTHER UTILITIES, SHOWN OR NOT SHOWN ON THE PLANS, DUE TO THE CONTRACTOR'S OPERATIONS SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE TO THE SATISFACTION OF THE APPROPRIATE UTILITY COMPANY. THE DEPARTMENT DOES NOT ASSUME RESPONSIBILITY FOR REIMBURSEMENT, PARTICIPATION IN DESIGN AND/OR REVISIONS, OR LIABILITY FOR ACCURACY OF TYPE, SIZE AND LOCATION OF ANY UTILITY.  
  
THE CONTRACTOR IS RESPONSIBLE FOR TEMPORARILY SUPPORTING, PROTECTING, OR RELOCATING ANY UTILITIES DURING CONSTRUCTION. WHERE NECESSARY, THE COST FOR THIS WORK WILL BE INCIDENTAL TO THE CONTRACT.
15. **LOAD RATINGS**  
THE LOAD AND RESISTANCE FACTOR METHOD WAS USED TO LOAD RATE THIS STRUCTURE SEE LOAD RATING TABLE, THIS SHEET.
16. **DEL NO. 3/57 STONE MIX**  
USE A MIX OF 50% DEL NO. 3 STONE, ITEM 302011 AND 50% DEL NO. 57 STONE, ITEM 302012. PAYMENT FOR MIXING AND PLACING DEL NO. 3/57 STONE MIX SHALL BE INCIDENTAL TO EACH ITEM.
17. **PRECAST ELEMENT NOTES.**  
SEE DRAWING DT-08.

INDEX OF DRAWINGS		
SHEET NO.	DRAWING NO.	TITLE
581	BR1-444DT-01	PROJECT NOTES & QUANTITIES
582	BR1-444DT-02	GENERAL PLAN AND ELEVATION
583	BR1-444DT-03	CULVERT END EL. VIEWS AND TYPICAL SECTION
584	BR1-444DT-04	STAKE-OUT PLAN
585	BR1-444DT-05	CAST IN PLACE WALL FOUNDATION PLAN
586	BR1-444DT-06	CAST IN PLACE WALL AND SEGMENT PLAN AND ELEVATIONS
587	BR1-444DT-07	WINGWALL FOUNDATION PLAN
588	BR1-444DT-08	PRECAST RIGID FRAME CULVERT DETAILS
589	BR1-444DT-09	HEADWALL DETAILS
590	BR1-444DT-10	WINGWALLS A & B DETAILS
591	BR1-444DT-11	WINGWALLS C & D DETAILS
592	BR1-444DT-12	REINFORCEMENT BAR SCHEDULE 1
593	BR1-444DT-13	REINFORCEMENT BAR SCHEDULE 2
594	BR1-444DT-14	SOIL BORING LOGS

QUANTITIES			
ITEM NO.	ITEM TITLE	UNIT	QUANTITY
207000	EXCAVATION AND BACKFILL FOR STRUCTURES	C. Y.	2413
302011	DEL NO. 3 STONE	TON	155
302012	DEL NO. 57 STONE	TON	337
602001	PORTLAND CEMENT CONCRETE MASONRY, CLASS A	C. Y.	283
602002	PORTLAND CEMENT CONCRETE MASONRY, CLASS B	C. Y.	458
602522	PRECAST CONCRETE CULVERT	L. F.	160.5
604000	BAR REINFORCEMENT, EPOXY COATED	LB	82600
608000	COARSE AGGREGATE FOR FOUNDATION STABILIZATION AND SUBFOUNDATION BACKFILL	TON	835
712021	RIPRAP, R-5	TON	985
712531	CHANNEL BED FILL	C. Y.	69
715001	PERFORATED PIPE UNDERDRAIN, 6"	L. F.	463

**LEGEND**

SHEET NOS. REFERENCE STRUCTURE PLAN SHEETS UNLESS NOTED OTHERWISE

ARCH.	= ARCHITECTURAL	F. F.	= FRONT FACE
B.	= BASELINE	GALV.	= GALVANIZED
B. F. E.	= BOTTOM OF FOOTING ELEVATION	MAX.	= MAXIMUM
BOT.	= BOTTOM	MIN.	= MINIMUM
CL.	= CENTERLINE	NOM.	= NOMINAL
C. I. P.	= CAST-IN-PLACE	N.T.S.	= NOT TO SCALE
CLR.	= CLEAR	P. G. L.	= PROPOSED GRADE LINE
CONC.	= CONCRETE	R. C.	= REINFORCED CONCRETE
CONSTR.	= CONSTRUCTION	R. F.	= REAR FACE
CVR.	= COVER	S. E.	= SUPERELEVATION
DIA.	= DIAMETER	SHLDR.	= SHOULDER
E. F.	= EACH FACE	STA.	= STATION
EL.	= ELEVATION	THICK.	= THICKNESS
E. S.	= EQUAL SPACING	THRD.	= THREADED
		TYP.	= TYPICAL
		W. P.	= WORK POINT

**LOAD RATING SUMMARY**

DESIGN VEHICLE	RATING FACTOR	RATING WEIGHT (TON)	CONTROLLING MEMBER	CONTROLLING POINT	LOAD EFFECT
HL-93 TRUCK (INVENTORY)	1.64	N/A	TOP SLAB	LEFT END	SHEAR
HL-93 TANDEM (INVENTORY)	1.50	N/A	TOP SLAB	LEFT END	SHEAR
HL-93 TRUCK (OPERATING)	2.12	N/A	TOP SLAB	LEFT END	SHEAR
HL-93 TANDEM (OPERATING)	1.95	N/A	TOP SLAB	LEFT END	SHEAR
DE S220 (LEGAL)	2.95	59.07	TOP SLAB	LEFT END	SHEAR
DE S335 (LEGAL)	1.62	56.82	TOP SLAB	LEFT END	SHEAR
DE S437 (LEGAL)	1.62	59.48	TOP SLAB	LEFT END	SHEAR
DE T330 (LEGAL)	2.84	85.17	TOP SLAB	LEFT END	SHEAR
DE T435 (LEGAL)	2.24	78.42	TOP SLAB	LEFT END	SHEAR
DE T540 (LEGAL)	2.19	87.50	TOP SLAB	LEFT END	SHEAR

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

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ADDENDUMS / REVISIONS

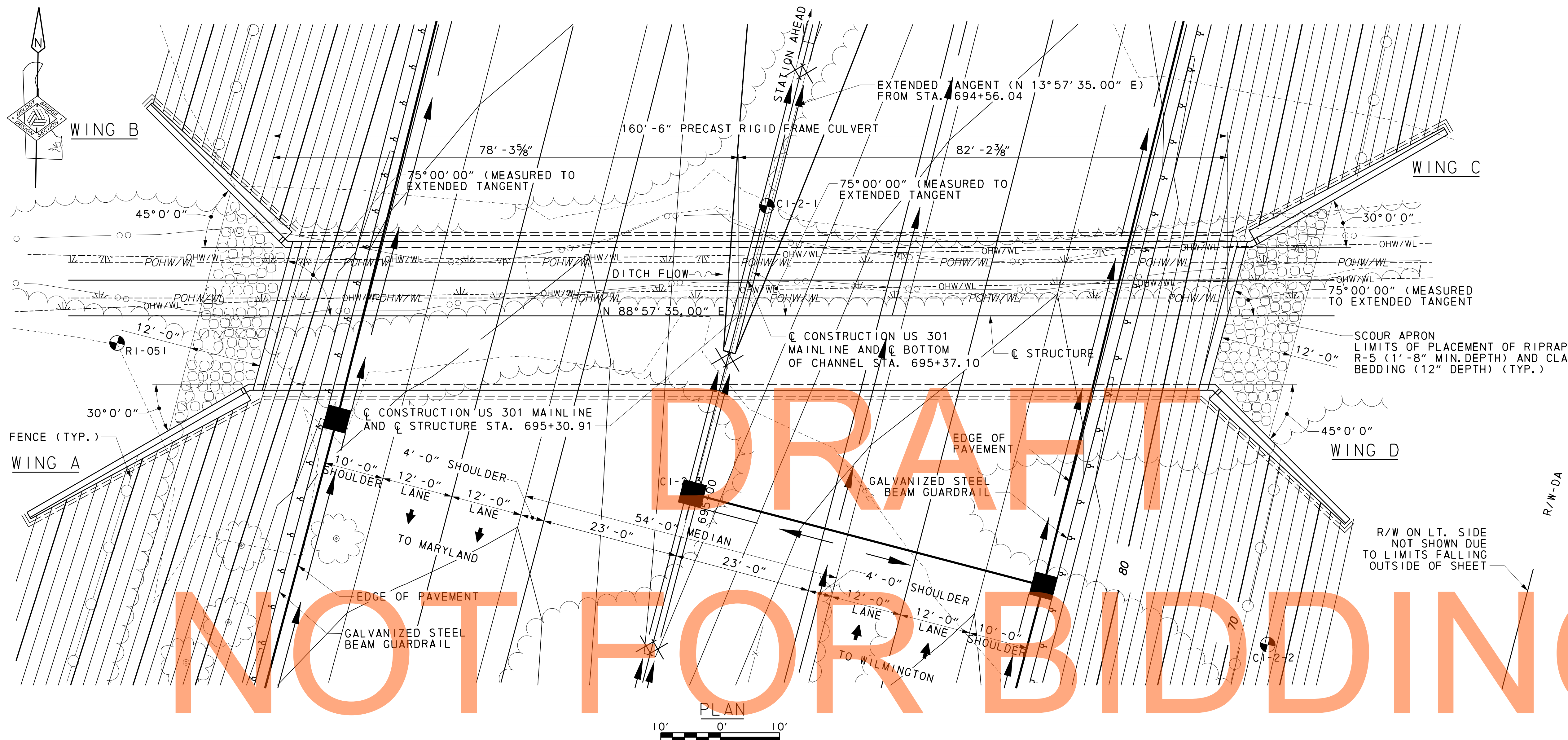
NOT TO SCALE

US 301,  
SR 896 TO SR 1

CONTRACT	BRIDGE NO.	1-444
T200911308	DESIGNED BY:	CCJ
COUNTY	CHECKED BY:	JFM
NEW CASTLE		

**PROJECT NOTES  
AND QUANTITIES**

BR1-444DT-01	SHEET NO.	581
	TOTAL SHTS.	875



**HYDRAULIC DATA**

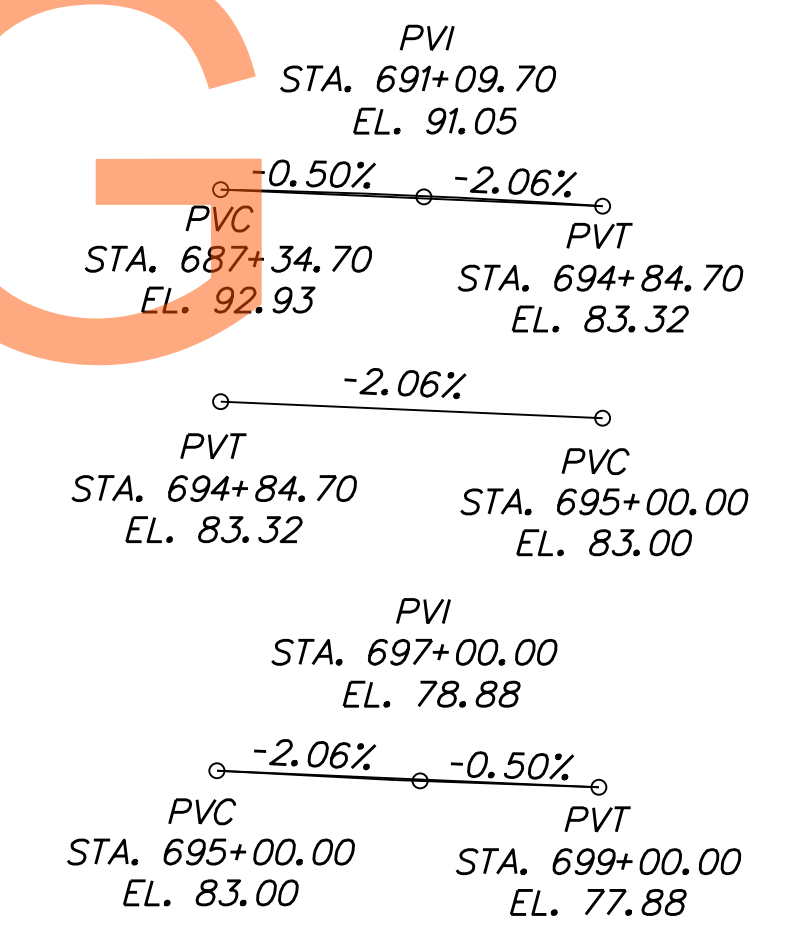
2 YEAR FLOOD ELEVATION = 62.9  
 2 YEAR DESIGN DISCHARGE = 65 C.F.S.  
 10 YEAR FLOOD ELEVATION = 63.4  
 10 YEAR DESIGN DISCHARGE = 130 C.F.S.  
 25 YEAR FLOOD ELEVATION = 63.7  
 25 YEAR DESIGN DISCHARGE = 180 C.F.S.  
 50 YEAR FLOOD ELEVATION = 63.9  
 50 YEAR DESIGN DISCHARGE = 220 C.F.S.  
 DRAINAGE AREA = 0.22 SQ. MILES

**TEST BORINGS**

BORING DESIGNATION	STATION	OFFSET
R1-051	695+00	100' L
C1-2-1	695+50	0'
C1-2-2	695+00	100' R
C1-2-3	695+00	0'

PC STA. 694+56.04  
 PI STA. 703+18.35  
 PT STA. 711+74.02  
 RADIUS: 8000.00  
 DEGREE OF CURVE: 0°42'58.31"  
 ARC LENGTH: 1717.99  
 DELTA: 12°18'15.00"  
 TANGENT LENGTH: 862.31  
 EXTERNAL DISTANCE: 46.34

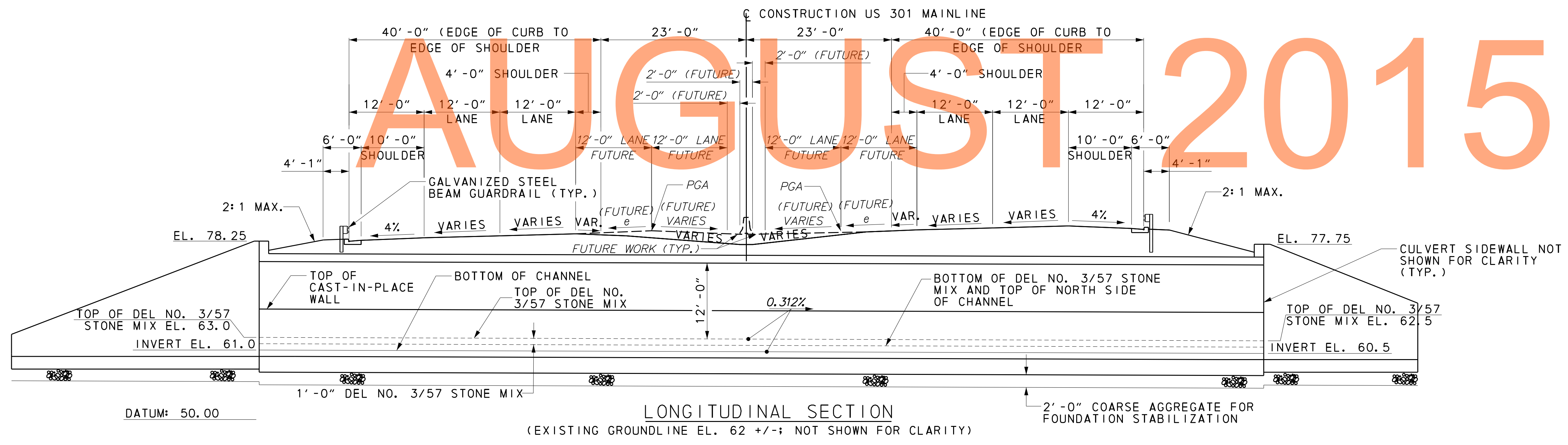
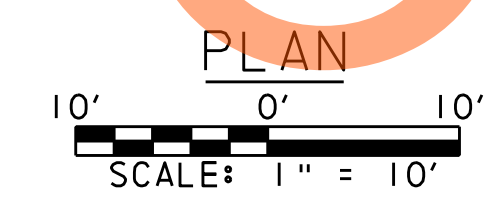
**HORIZONTAL CURVE DATA**



**VERTICAL CURVE DATA US 301**  
NOT TO SCALE

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NOT FOR BIDDING



**LEGEND**

- BORING LOCATION
- 65— PROPOSED CONTOURS, 1' INT.
- 62--- EXISTING CONTOURS, 1' INT.
- ⊕ = BASELINE
- ⊙ = CENTERLINE
- EL. = ELEVATION
- F.F. = FRONT FACE
- INT. = INTERVALS
- MIN. = MINIMUM
- R/W = RIGHT-OF-WAY
- SHLDR. = SHOULDER
- STA. = STATION
- TYP. = TYPICAL
- VERT. = VERTICAL

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ADDENDUMS / REVISIONS


SCALE: AS NOTED

US 301,  
SR 896 TO SR 1

CONTRACT T200911308	BRIDGE NO. 1-444
COUNTY NEW CASTLE	DESIGNED BY: CCJ CHECKED BY: JFM

**GENERAL PLAN AND ELEVATION**

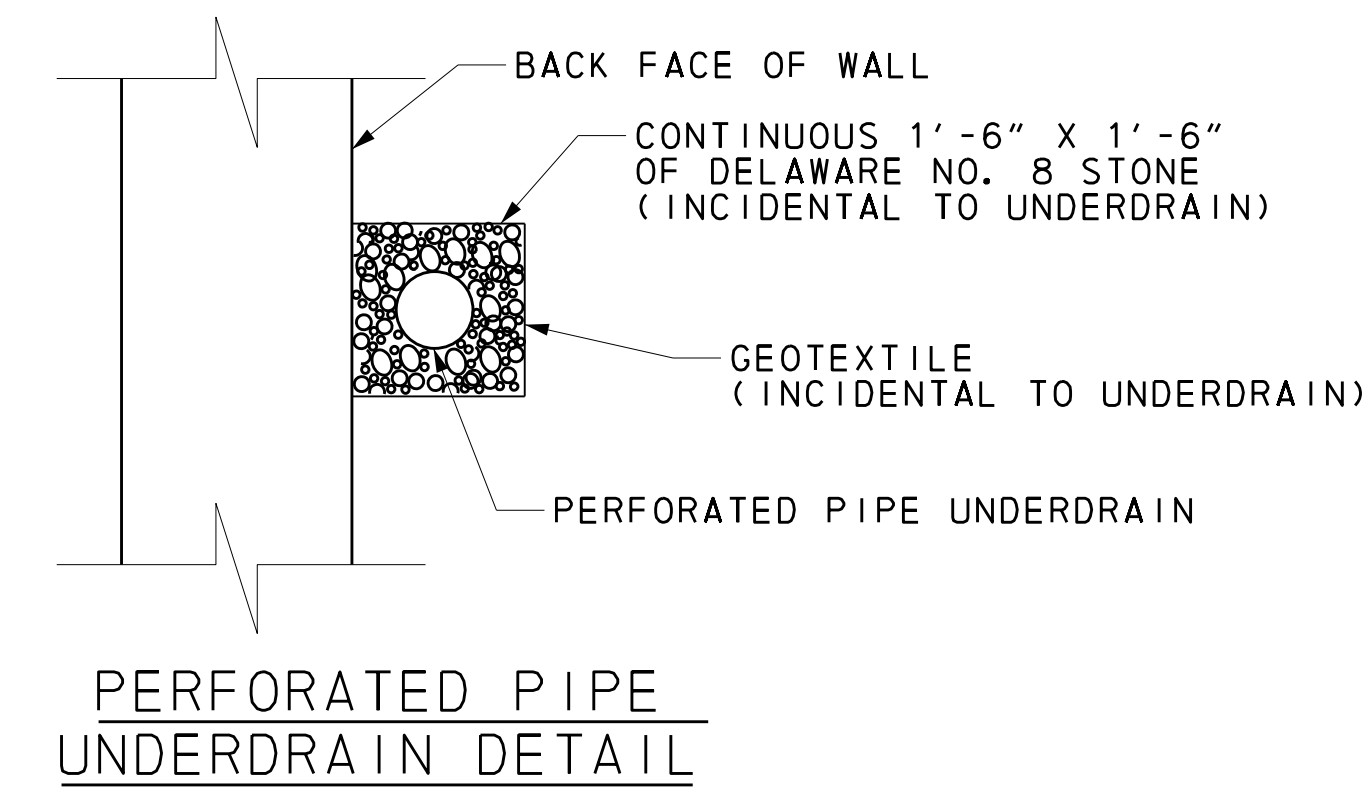
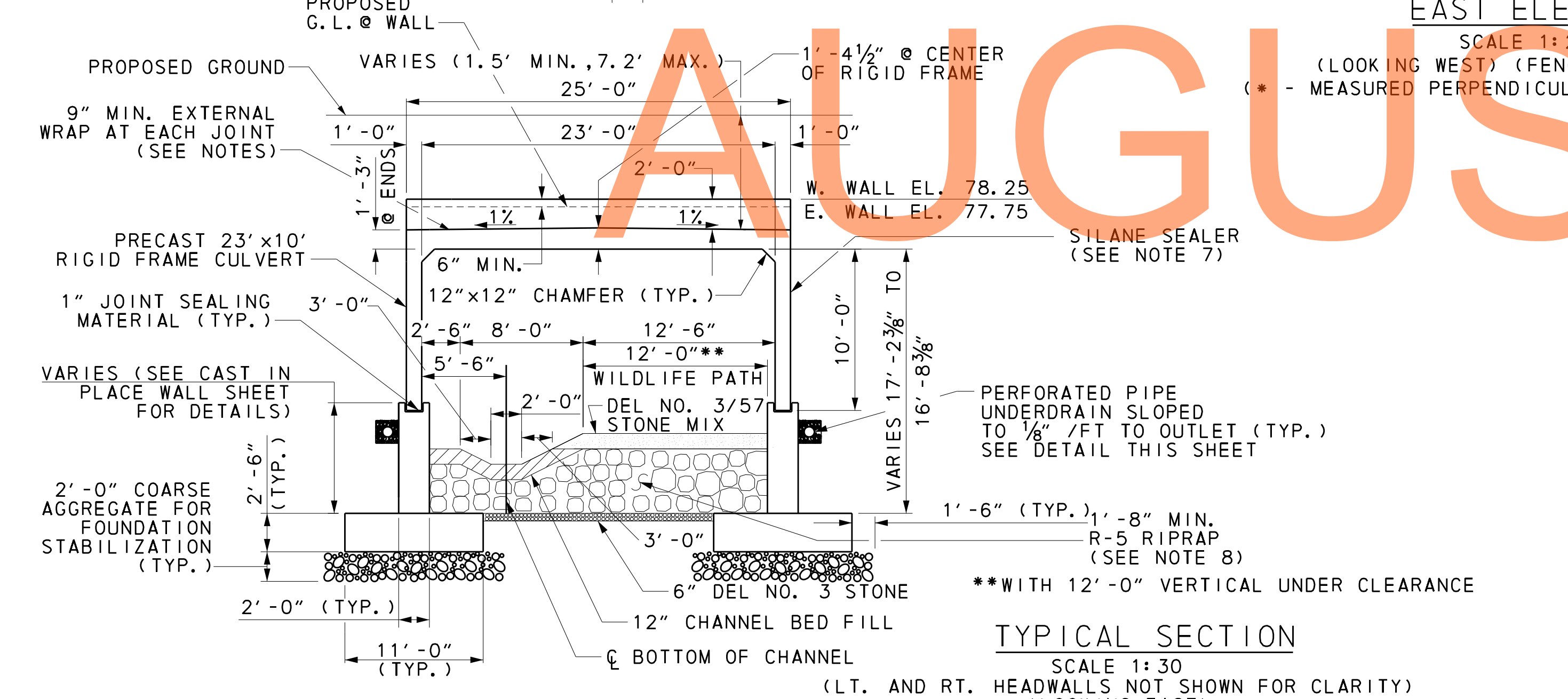
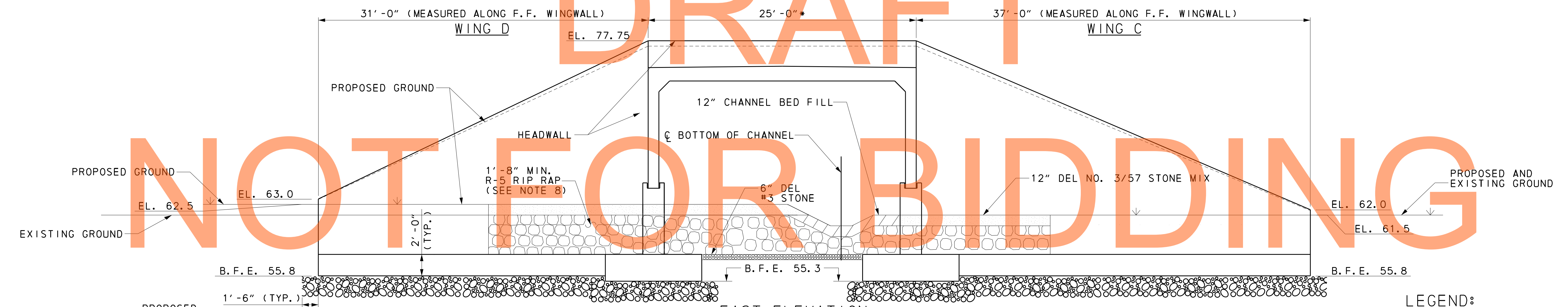
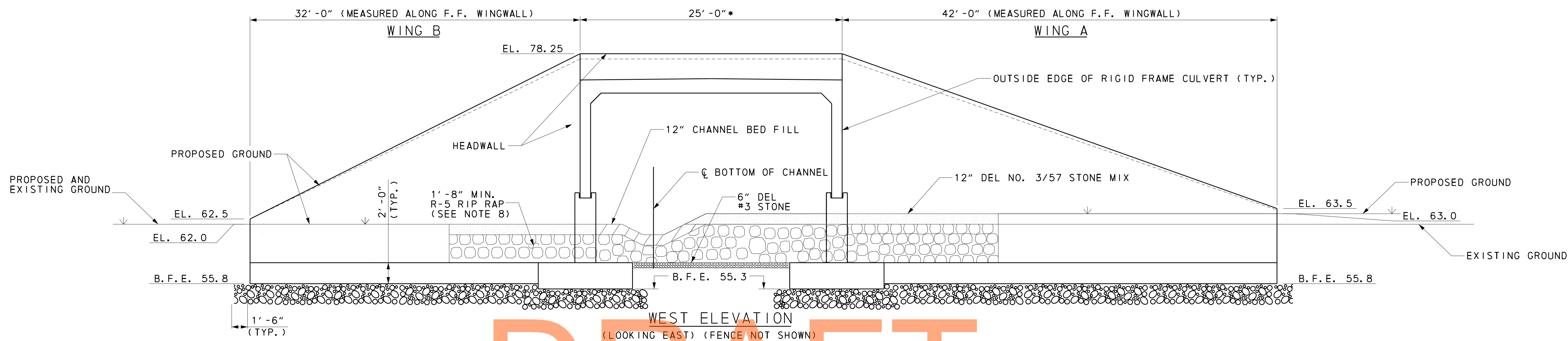
BR1-444DT-02

SHEET NO. 582
TOTAL SHTS. 875

# DRAFT

# NOT FOR BIDDING

# AUGUST 2015

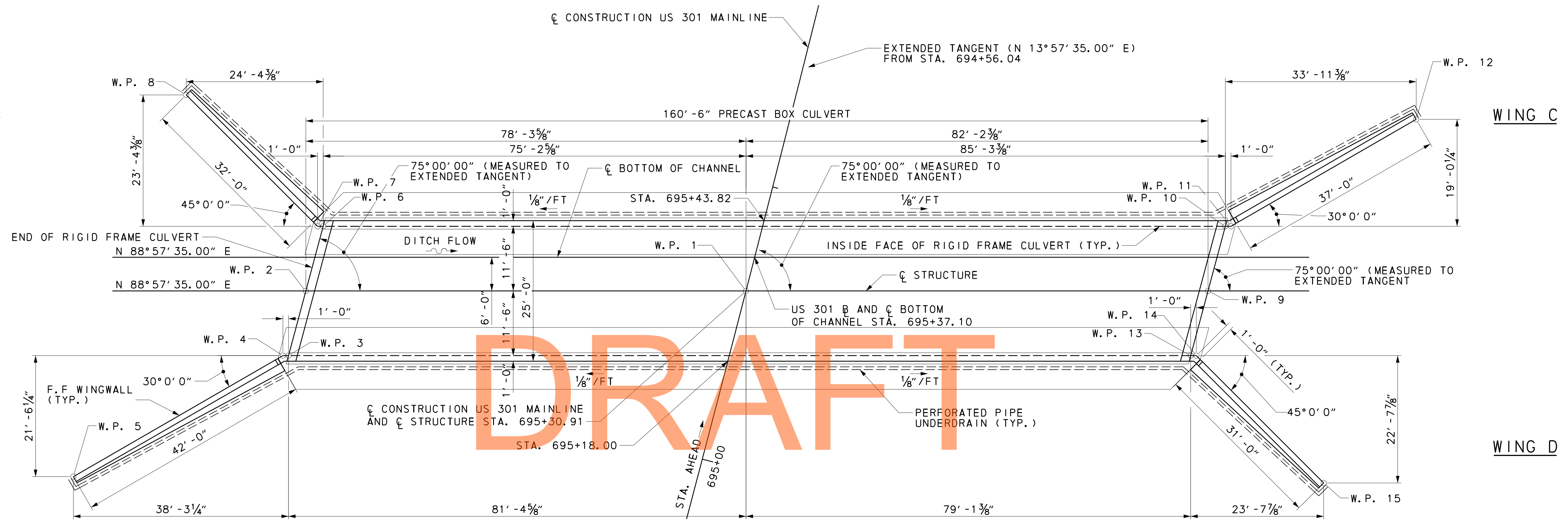
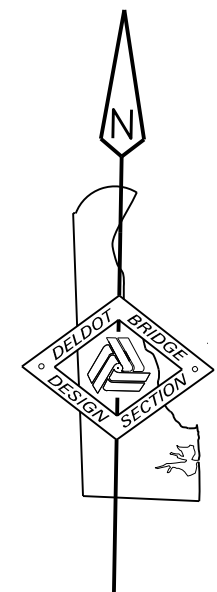


- LEGEND:**
- B = BASELINE
  - B.F.E. = BOTTOM OF FOOTING ELEVATION
  - C.L. = CENTERLINE
  - EL. = ELEVATION
  - EXIST. = EXISTING
  - G.L. = GROUND LINE
  - INT. = INTERVALS
  - MIN. = MINIMUM
  - R/W = RIGHT-OF-WAY
  - SHLDR. = SHOULDER
  - STA. = STATION
  - TYP. = TYPICAL
  - VERT. = VERTICAL

- NOTES:**
1. FOR STAKE OUT PLAN, SEE DRAWING DT-04.
  2. FOR CULVERT HEADWALL DETAILS, SEE DRAWING DT-09.
  3. FOR WINGWALL FOUNDATION PLAN, SEE DRAWING DT-07.
  4. FOR WINGWALL ELEVATION AND SECTION VIEWS, SEE DRAWINGS DT-10 AND DT-11.
  5. FOR WINGWALL REINFORCEMENT BAR SCHEDULE, SEE DRAWINGS DT-12 AND DT-13.
  6. FOR JOINT WRAP DETAILS, SEE DRAWING DT-08.
  7. FOR SILANE SEALER DETAILS, SEE DRAWING DT-08.
  8. FOR CAST-IN-PLACE WALL FOUNDATION PLAN, SEE DRAWING DT-05.
  9. CHOKER RIPRAP VOIDS WITH DE NO. 57 STONE.

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BR1-444DT-03



DRAFT

NOT FOR BIDDING

AUGUST 2016

**CONSTRUCTION SEQUENCE**

1. INSTALL EROSION & SEDIMENT CONTROL DEVICES IN ACCORDANCE WITH CONSTRUCTION PHASING, M.O.T., AND EROSION CONTROL PLANS.
2. IMPLEMENT STREAM DIVERSION AS SPECIFIED IN CONSTRUCTION PHASING, M.O.T., AND EROSION CONTROL PLANS.
3. EXCAVATE AND DEWATER TO BOTTOM OF COARSE AGGREGATE FOR FOUNDATION STABILIZATION AS INDICATED IN STRUCTURE PLANS DRAWING DT-08 & IN ACCORDANCE WITH SECTION 207 OF THE STANDARD SPECIFICATIONS.
4. PLACE COARSE AGGREGATE FOR FOUNDATION STABILIZATION TO THE ELEVATIONS ON STRUCTURE PLAN DRAWING DT-03.
5. CAST PEDESTAL WALLS ACCORDING TO DRAWING DT-05.
6. CAST FOOTINGS FOR WINGWALLS ACCORDING TO DRAWING DT-07.
7. PLACE RIGID FRAME CULVERT IN ACCORDANCE WITH PRECAST CONCRETE CULVERT SPECIAL PROVISIONS & MANUFACTURER'S SPECIFICATIONS. POST TENSION IN ACCORDANCE WITH DRAWINGS DT-06 AND DT-08 AND APPROVED ERECTION PLANS.
8. CONSTRUCT HEADWALLS & WINGWALLS ACCORDING TO STRUCTURE PLAN DRAWINGS DT-09, DT-10, AND DT-11.
9. PLACE RIPRAP, CHANNEL BED FILL AND DEL NO. 3/DEL NO. 57 STONE MIX IN CULVERT AND AT WINGWALLS IN ACCORDANCE WITH STRUCTURE PLAN DRAWING DT-08 AND EROSION AND SEDIMENT CONSTRUCTION SEQUENCE. PRIOR TO PLACING THE DEL NO. 3/57 STONE MIX, FILL THE VOIDS IN THE RIPRAP ABOVE THE DEL NO. 3/57 STONE MIX WITH DEL NO. 3 STONES. THE VOIDS SHALL BE FILLED UNTIL THE PEAKS OF THE RIPRAP ARE BARELY VISIBLE. USE A MIX OF 50% DEL NO. 3 STONE AND 50% DEL NO. 57 STONE AT LOCATIONS WHERE "DEL NO. 3/57 STONE MIX" IS SPECIFIED. SEE PROJECT NOTES FOR PAYMENT.
10. WHEN BACKFILLING RIGID FRAME CULVERT DO NOT LET THE DIFFERENCES IN GROUND ELEVATION ON OTHER SIDE OF RIGID FRAME CULVERT EXCEED 2'.
11. RESTORE STREAM FLOW INTO RIGID FRAME CULVERT.

MEMBRANE WATERPROOFING (SEE DRAWINGS DT-05, DT-10 AND DT-11)			
PROPERTY	TEST	PREFORMED MEMBRANE SHEETS	
		RUBBERIZED ASPHALT TYPE	MODIFIED BITUMEN TYPE
TENSILE STRENGTH, lbs/in (MIN.) (1)(3)	ASTM D 882 (2)	20	20
% ELONGATION AT BREAK, (MIN.) (3)(4)	ASTM D 882 (2)	25	25
PLIABILITY	ASTM D 146 (5)	NO CRACKS	NO CRACKS
THICKNESS, MILS (MIN.) (6)	ASTM D 1000	60	60
SOFTENING POINT, F (MIN.)	ASTM D 36	190	210
PERMEANCE, PERMS (MAX.)	ASTM D 96, METHOD B	0.1	0.1
PUNCTURE RESISTANCE lbs. (MIN.)	ASTM E 154	40	40

NOTES:  
 (1) BREAKING FACTOR IN MACHINE DIRECTION.  
 (2) METHOD A, 1-INCH WIDE STRIP WITH 4-INCH MINIMUM INITIAL SEPARATION AND 4-INCH GAGE LENGTH AT 2 INCHES PER MINUTE. AVERAGE 5 SAMPLES.  
 (3) AT 73.4F ± 3.6F.  
 (4) MACHINE DIRECTION.  
 (5) 180-DEGREE BEND OVER A 1-INCH MANDREL AT-15F.  
 (6) TOTAL THICKNESS OF PREFORMED MEMBRANE SHEET AND POLYETHYLENE FILM OR FABRIC REINFORCEMENT.

WORK POINT COORDINATES				
W. P.	NORTHING	EASTING	CONSTRUCTION US 301 MAINLINE	
			STATION	OFFSET
1	549874.8819	578435.3175	695+30.91	0.00'
2	549873.4603	578357.0264	695+11.17	75.80' L
3	549861.9062	578354.1543	694+99.15	75.87' L
4	549861.8881	578353.1545	694+98.89	76.84' L
5	549839.6940	578316.2761	694+68.21	107.39' L
6	549885.0143	578359.8986	695+23.19	75.71' L
7	549884.9962	578358.8987	695+22.93	76.68' L
8	549907.9321	578335.1144	695+39.91	105.13' L
9	549876.3742	578517.5000	695+51.24	79.62' R
10	549887.9283	578520.3721	695+63.03	79.77' R
11	549887.9464	578521.3719	695+63.27	80.74' R
12	549907.5622	578553.9662	695+89.45	108.04' R
13	549864.8202	578514.6279	695+39.45	79.48' R
14	549864.8383	578515.6277	695+39.70	80.45' R
15	549842.5965	578538.6922	695+23.60	108.05' R

- LEGEND**
- BL = BASELINE
  - CL = CENTERLINE
  - F.F. = FRONT FACE
  - MAX. = MAXIMUM
  - MIN. = MINIMUM
  - STA. = STATION
  - TYP. = TYPICAL
  - W.P. = WORK POINT

**NOTES**

1. FOR CAST IN PLACE PEDESTAL WALL FOOTING PLAN AND WORK POINTS, SEE DRAWING DT-05.

5/20/2016 3:54:24 PM



ADDENDUMS / REVISIONS

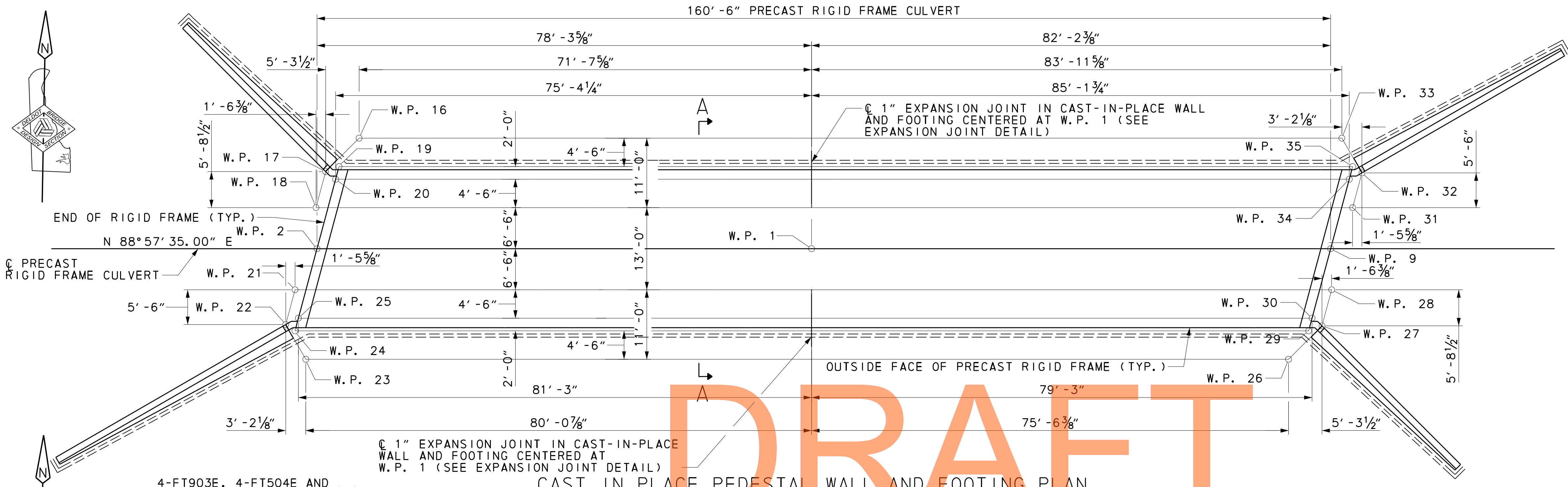
NOT TO SCALE

US 301,  
SR 896 TO SR 1

CONTRACT T200911308	BRIDGE NO. 1-444
COUNTY NEW CASTLE	DESIGNED BY: CCJ CHECKED BY: JFM

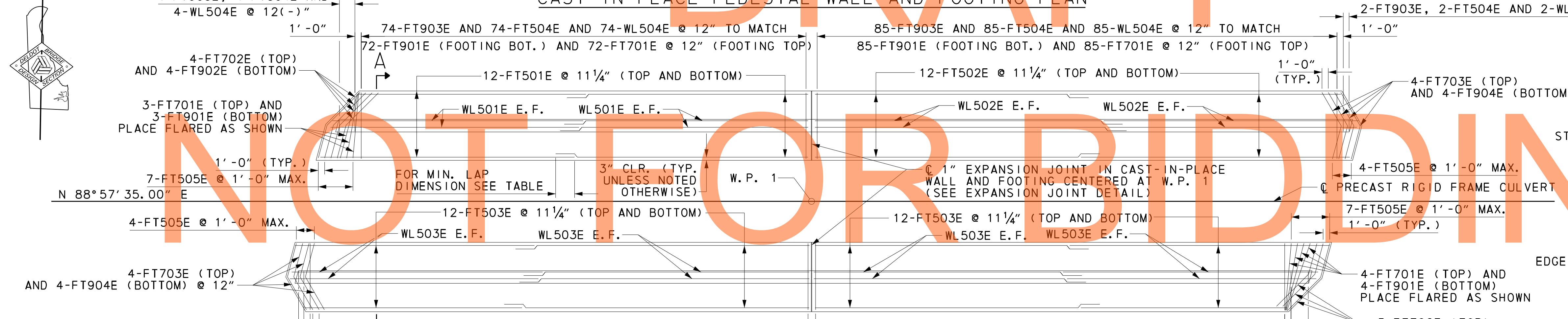
STAKE-OUT PLAN		SHEET NO. 584
		TOTAL SHTS. 875

BR1-444DT-04

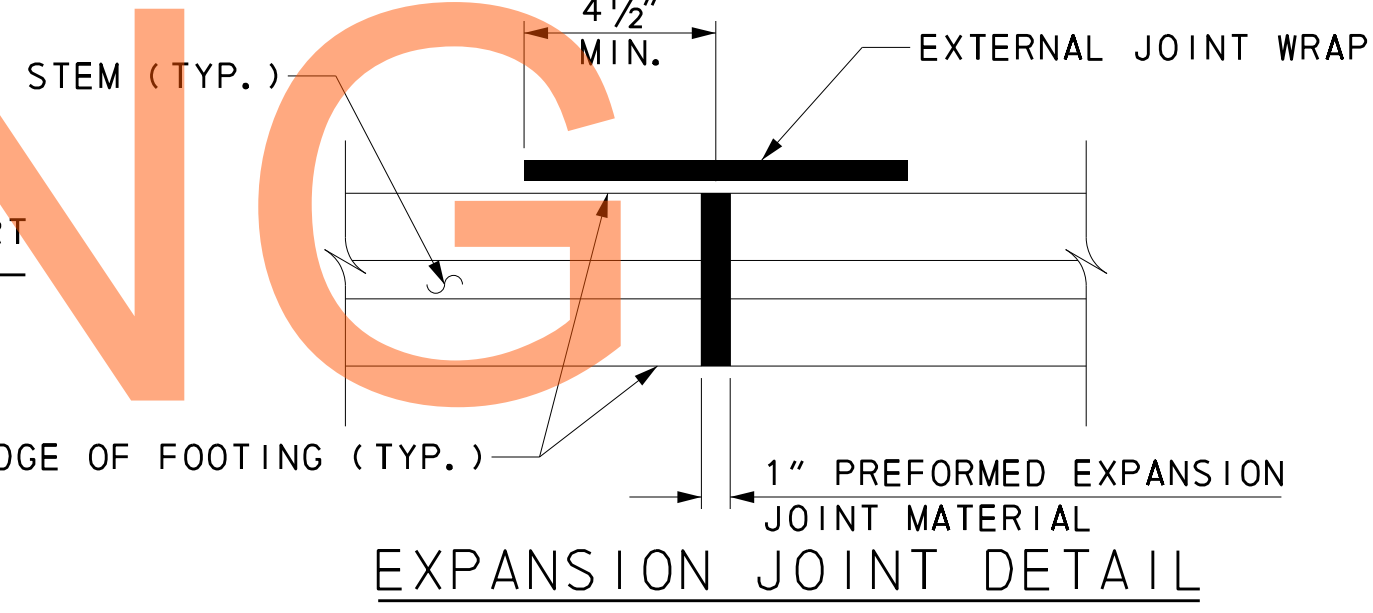


- NOTES:**
- FOR STAKE OUT PLAN AND WORK POINTS NOT SHOWN ON THIS SHEET, SEE DRAWING DT-04.
  - FOR CAST-IN-PLACE WALL ELEVATION, SEE DRAWING DT-06.
  - FOR CAST-IN-PLACE WALL BAR SCHEDULE, SEE DRAWING DT-12.
  - FOR WINGWALL FOUNDATION PLAN, SEE DRAWING DT-07.
  - FOR REBAR PROTRUDING FROM THE ENDS OF THE PEDESTAL INTO THE HEADWALL SEE DRAWING DT-09. NOT SHOWN ON THIS SHEET FOR CLARITY.
  - PLACE 2'-0" WIDE MEMBRANE WATERPROOFING CENTERED AT WALL/FOOTING INTERFACE. LAP SPLICES BY A MINIMUM OF 6". PAYMENT FOR MEMBRANE WATERPROOFING IS INCIDENTAL TO ITEM 602002. FURNISH ADHESIVE-BACKED PREFORMED MEMBRANE SHEET. SEE DRAWING DT-04 FOR MINIMUM REQUIREMENTS.
  - EXTERNAL JOINT WRAP MATERIAL SHALL COMPLY WITH ASTM C877. PAYMENT SHALL BE INCIDENTAL TO WALL AND FOOTING CONSTRUCTION.

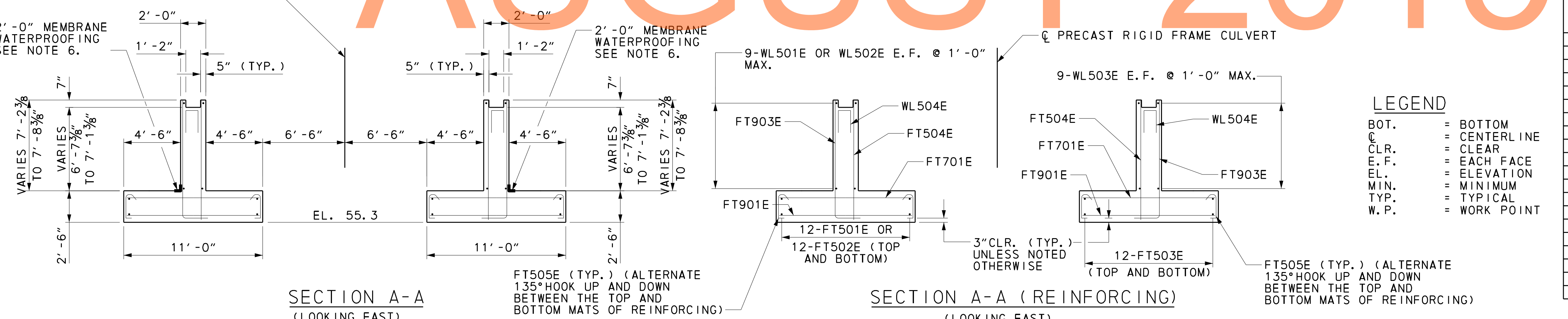
## CAST IN PLACE PEDESTAL WALL AND FOOTING PLAN



BAR NO.	MIN. LAP LENGTH
5	3'-0"



## CAST IN PLACE PEDESTAL WALL AND FOOTING REINFORCING PLAN

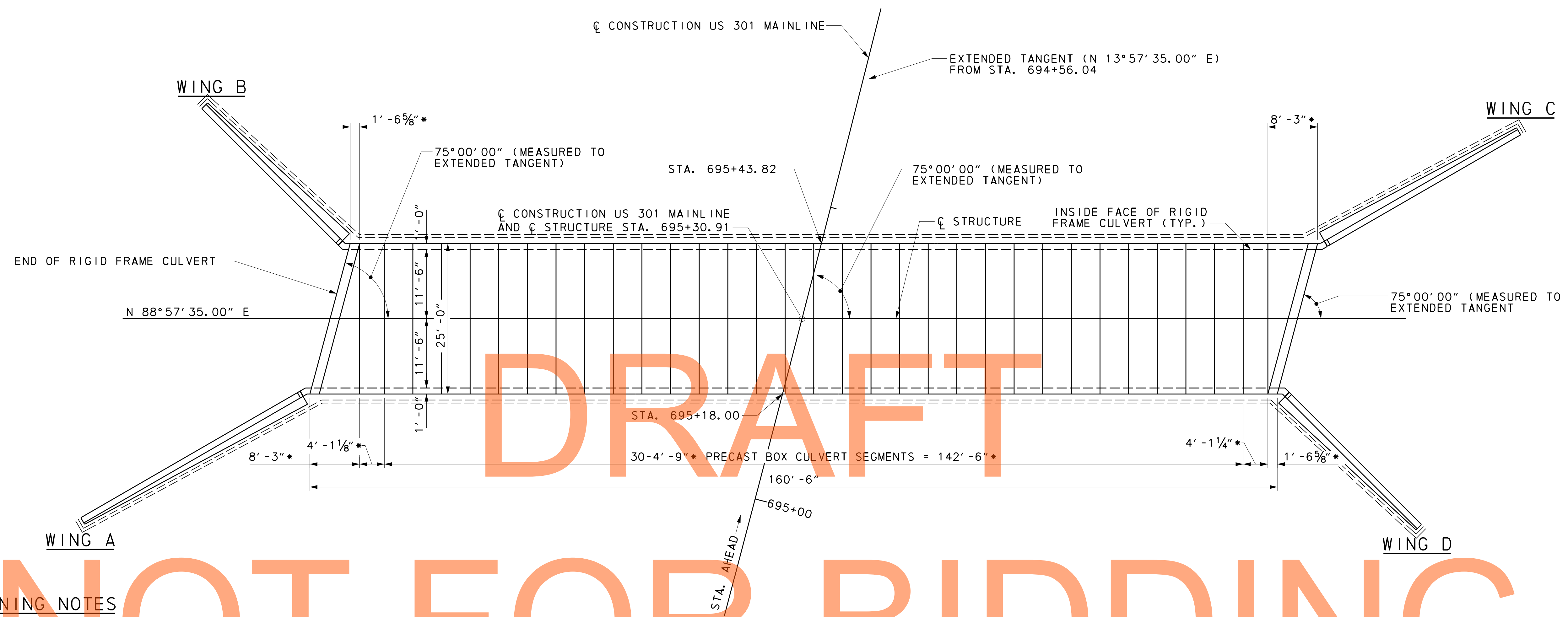
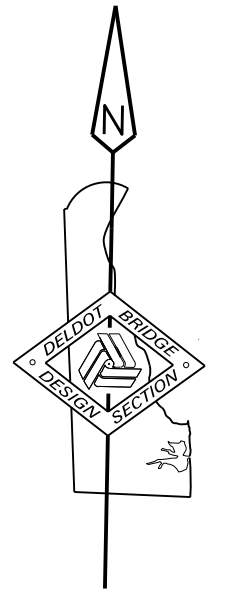


NOT TO SCALE  
(REINFORCING NOT SHOWN FOR CLARITY)  
(NORTH SECTION SHOWN; SOUTH SECTION MIRRORED ABOUT C PRECAST RIGID FRAME CULVERT)

WORK POINT COORDINATES				
W. P.	NORTHING	EASTING	C CONSTRUCTION US 301 MAINLINE	
			STATION	OFFSET
16	549891.0785	578363.3748	695+29.95	73.74' L
17	549885.6903	578358.1789	695+23.44	77.54' L
18	549879.9564	578356.7535	695+17.48	77.58' L
19	549886.5214	578360.2732	695+24.75	75.69' L
20	549884.5120	578359.7737	695+22.66	75.71' L
21	549866.8983	578353.6713	695+03.93	77.52' L
22	549861.3724	578352.2977	694+98.18	77.55' L
23	549855.9310	578355.5724	694+93.62	73.08' L
24	549860.3992	578353.7797	694+97.58	75.88' L
25	549862.4086	578354.2792	694+99.67	75.87' L
26	549858.7561	578511.1516	695+32.81	77.51' R
27	549864.1442	578516.3475	695+39.19	81.31' R
28	549869.8781	578517.7729	695+45.04	81.38' R
29	549863.3131	578514.2532	695+37.91	79.47' R
30	549865.3225	578514.7527	695+39.96	79.49' R
31	549882.9362	578520.8551	695+58.32	81.38' R
32	549888.4621	578522.2287	695+63.96	81.45' R
33	549893.9035	578518.9540	695+68.47	77.02' R
34	549887.2472	578520.2472	695+62.51	79.76' R
35	549889.4353	578520.7467	695+64.56	79.79' R

- LEGEND**
- BOT. = BOTTOM
  - C = CENTERLINE
  - CLR. = CLEAR
  - E.F. = EACH FACE
  - EL. = ELEVATION
  - MIN. = MINIMUM
  - TYP. = TYPICAL
  - W.P. = WORK POINT

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DRAFT

NOT FOR BIDDING

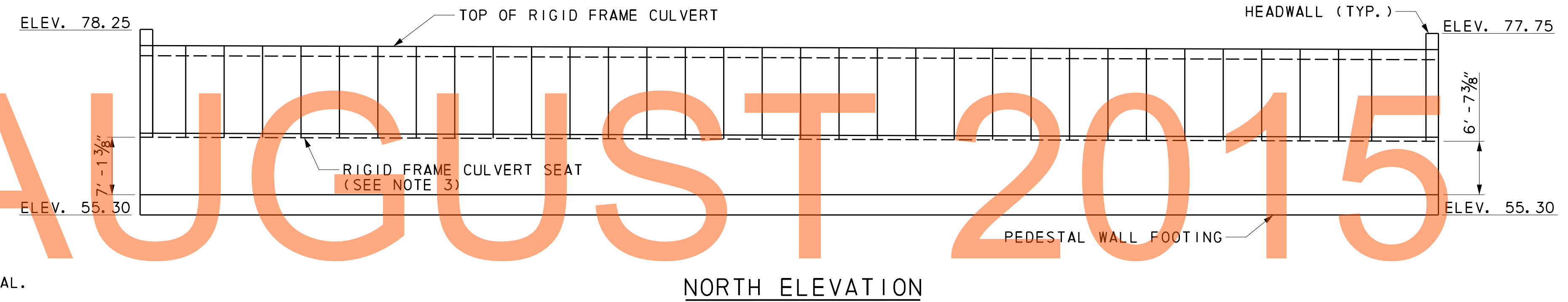
AUGUST 2015

**POST-TENSIONING NOTES**

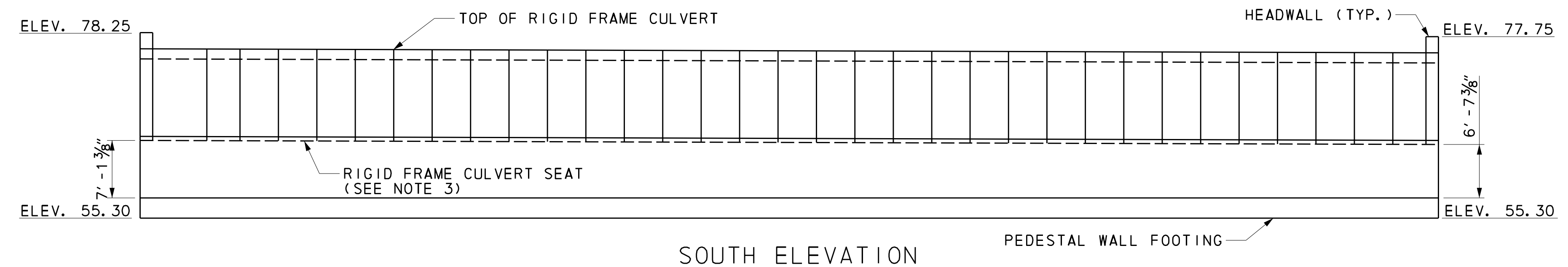
1. SHOP DRAWINGS ARE REQUIRED FOR POST-TENSIONING OPERATIONS AND MATERIALS.
2. PROVIDE 1/2" DIA. STRANDS HAVING A YIELD STRENGTH OF 270 KSI.
3. SNUG FIT ALL JOINTS BEFORE POST TENSIONING.
4. INSTALL STRANDS IN PRECAST SECTIONS. CHECK RAM AREA AND CALIBRATION CURVES OF EQUIPMENT FURNISHED FOR GAGE PRESSURES. MAXIMUM POST-TENSIONING FORCE SHALL BE 28,900 lbs.
5. AFTER STRESSING, GROUT ALL STRAND VOIDS. PLACE GROUT MIX INTO TUBING USING PRESSURE GROUT.
6. USE A MINIMUM OF 4 POST-TENSIONING TENDONS.
7. STRAND LOCATIONS SHALL NOT INTERFERE WITH REINFORCEMENT DETAILS.
8. PROVIDE SEALS OR GASKETS AROUND THE DUCTS AT THE JOINTS TO MAKE THE JOINTS GROUT TIGHT.
9. PRECISE ALIGNMENT OF DUCTS AT JOINTS IS CRITICAL.
10. ALL POST-TENSIONING MUST BE WITNESSED AND APPROVED BY THE ENGINEER.
11. AFTER POST-TENSIONING IS APPROVED, CUT STRANDS TO PROVIDE A MINIMUM OF 2 1/2" CLEAR FROM THE OUTSIDE FACE OF CONCRETE AND COAT RECESS WITH EPOXY BONDING COMPOUND AND FILL WITH NON-SHRINK GROUT.
12. POST-TENSION AND GROUT BEFORE BACKFILLING. ALLOW GROUT TO ACHIEVE MINIMUM STRENGTH BEFORE BACKFILLING.
13. END CHUCKS AND SPLICE CHUCKS MUST BE OF THE REUSABLE TYPE. OPERATORS MUST EXERCISE PROPER PRECAUTIONS WHEN REALIGNING WEDGES AFTER THE RELEASE OF TENDONS AND PRIOR TO RETENSIONING AND RESEATING.
14. KEEP JOINT CLEAN AT POST-TENSIONING STAGE.

**PLAN**

(CAST IN PLACE WALL AND FOOTING NOT SHOWN FOR CLARITY)  
 (\* - INCLUDES FIT-UP AND THICKNESS OF NEOPRENE SPONGE GASKET)



**NORTH ELEVATION**



**SOUTH ELEVATION**

**NOTES**

1. FOR TYPICAL SECTION, SEE DRAWING DT-03.
2. FOR CAST IN PLACE PEDESTAL WALL FOOTING PLAN AND WORK POINTS AND PEDESTAL WALL TYPICAL SECTIONS, SEE DRAWING DT-05.
3. FOR DETAILS OF CONNECTION OF RIGID FRAME TO THE PEDESTAL WALL, SEE DRAWING DT-08.

**LEGEND**

- B = BASELINE
- ELEV. = ELEVATION
- C = CENTERLINE
- STA. = STATION
- TYP. = TYPICAL

8/20/15 9:50:25 AM



ADDENDUMS / REVISIONS	

NOT TO SCALE

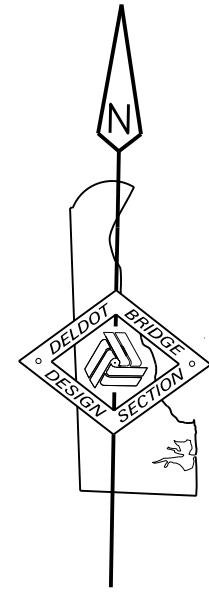
US 301,  
SR 896 TO SR 1

CONTRACT T200911308	BRIDGE NO. <b>1-444</b>
COUNTY NEW CASTLE	DESIGNED BY: CCJ CHECKED BY: JFM

**CAST IN PLACE WALL  
AND SEGMENT PLAN  
AND ELEVATIONS**

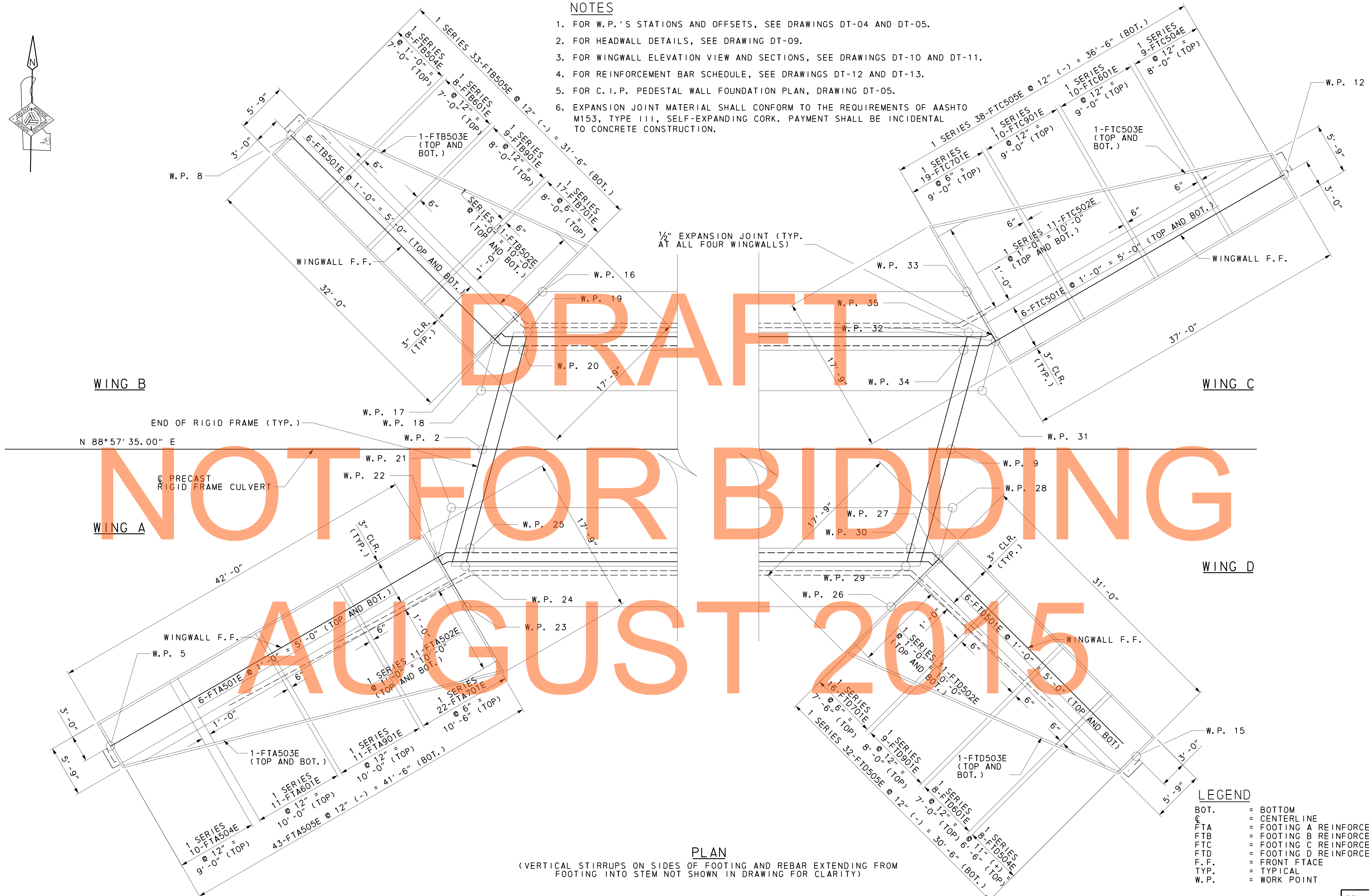
BR1-444DT-06

SHEET NO. 586
TOTAL SHTS. 875



**NOTES**

1. FOR W.P.'S STATIONS AND OFFSETS, SEE DRAWINGS DT-04 AND DT-05.
2. FOR HEADWALL DETAILS, SEE DRAWING DT-09.
3. FOR WINGWALL ELEVATION VIEW AND SECTIONS, SEE DRAWINGS DT-10 AND DT-11.
4. FOR REINFORCEMENT BAR SCHEDULE, SEE DRAWINGS DT-12 AND DT-13.
5. FOR C. I. P. PEDESTAL WALL FOUNDATION PLAN, DRAWING DT-05.
6. EXPANSION JOINT MATERIAL SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M153, TYPE III, SELF-EXPANDING CORK. PAYMENT SHALL BE INCIDENTAL TO CONCRETE CONSTRUCTION.



1/2" EXPANSION JOINT (TYP. AT ALL FOUR WINGWALLS)

WING B

WING C

WING A

WING D

N 88°57'35.00" E

END OF RIGID FRAME (TYP.)

PRECAST RIGID FRAME CULVERT

DRAFT  
NOT FOR BIDDING  
AUGUST 2015

**PLAN**

(VERTICAL STIRRUPS ON SIDES OF FOOTING AND REBAR EXTENDING FROM FOOTING INTO STEM NOT SHOWN IN DRAWING FOR CLARITY)

**LEGEND**

- BOT. = BOTTOM
- C = CENTERLINE
- FTA = FOOTING A REINFORCEMENT
- FTB = FOOTING B REINFORCEMENT
- FTC = FOOTING C REINFORCEMENT
- FTD = FOOTING D REINFORCEMENT
- F.F. = FRONT FACE
- TYP. = TYPICAL
- W.P. = WORK POINT

SDONAMES 9/5/12 2:22 AM



ADDENDUMS / REVISIONS

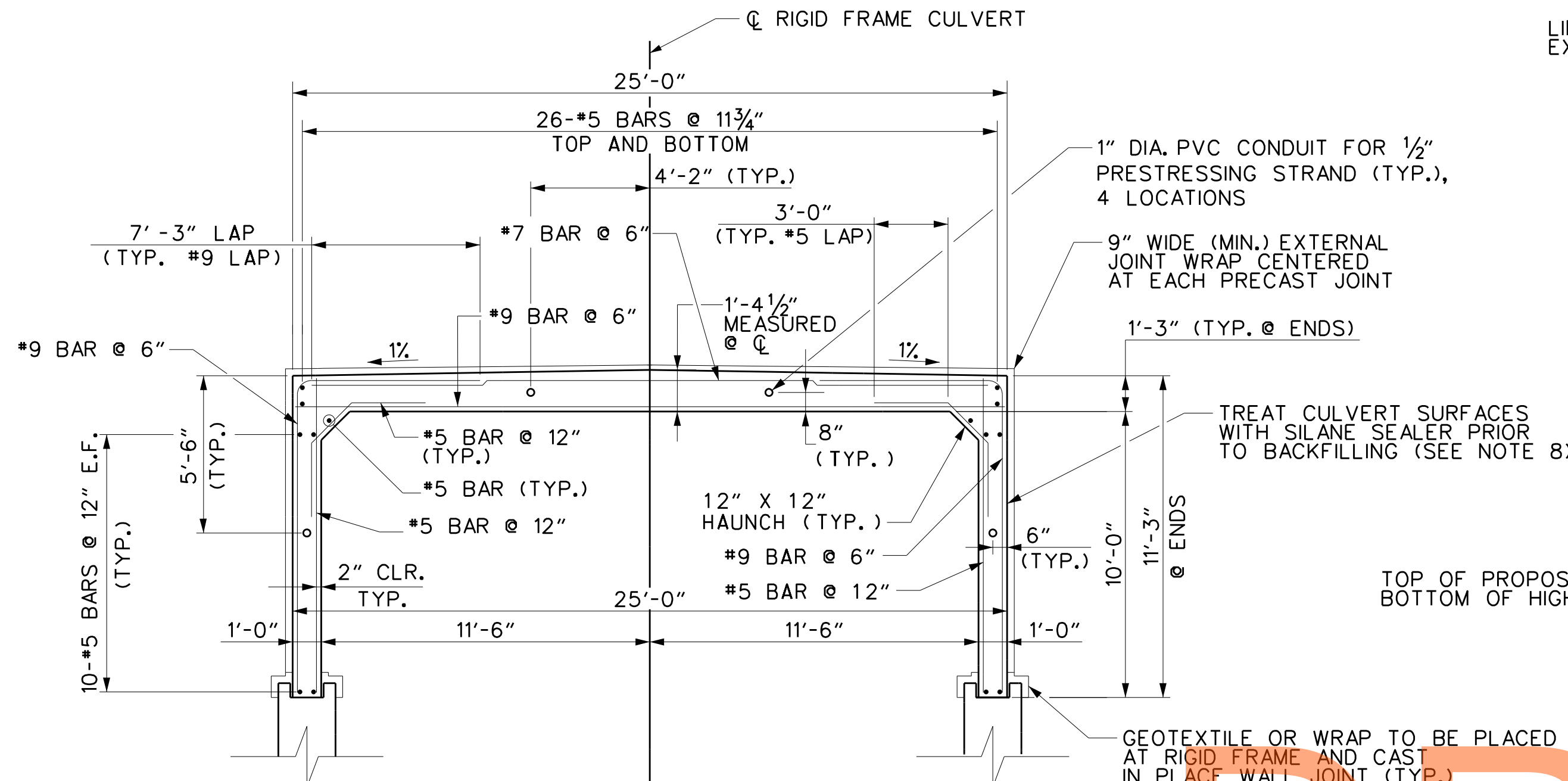
NOT TO SCALE

US 301,  
SR 896 TO SR 1

CONTRACT	BRIDGE NO.	1-444
T200911308	DESIGNED BY:	CCJ
COUNTY	CHECKED BY:	JFM
NEW CASTLE		

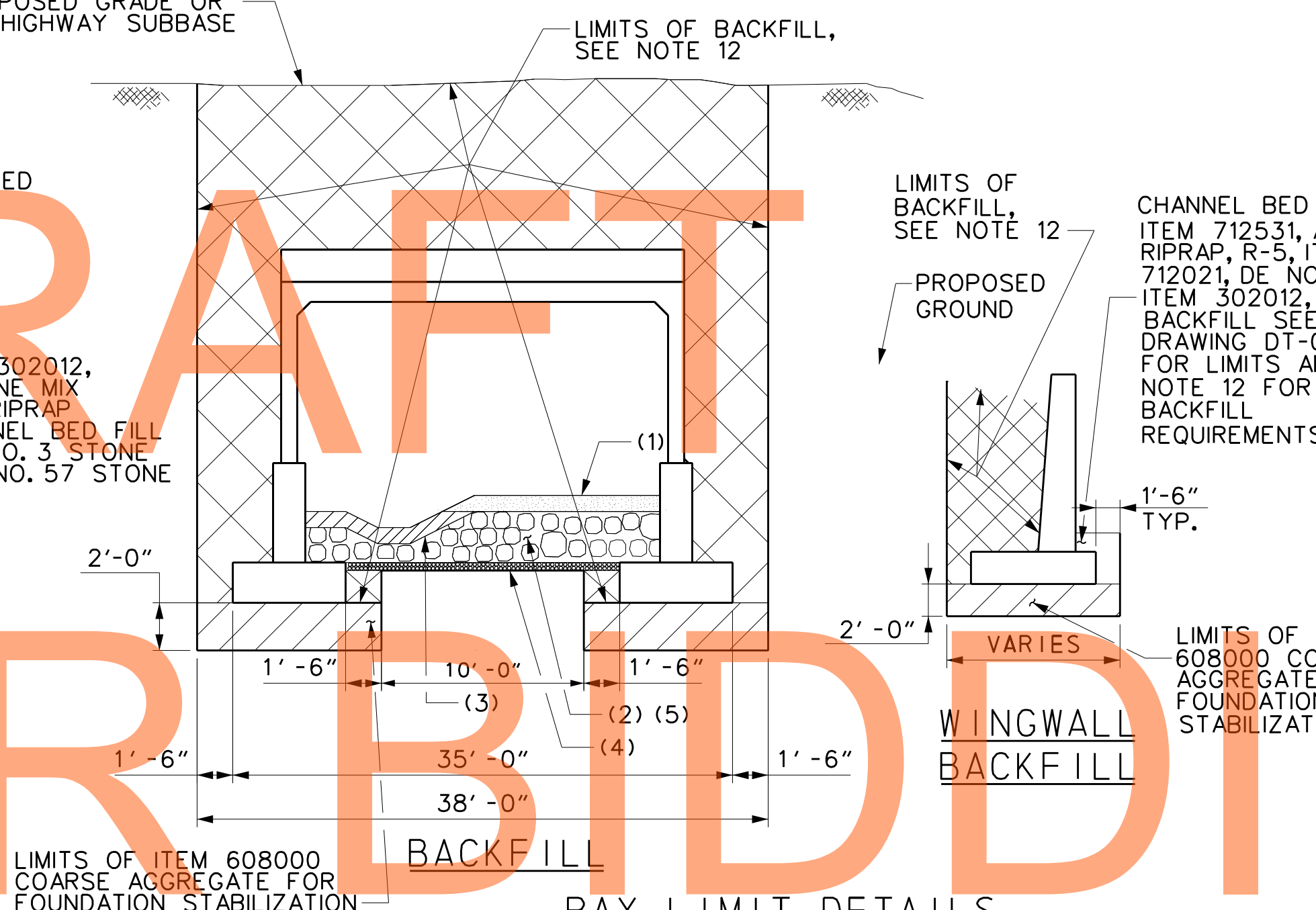
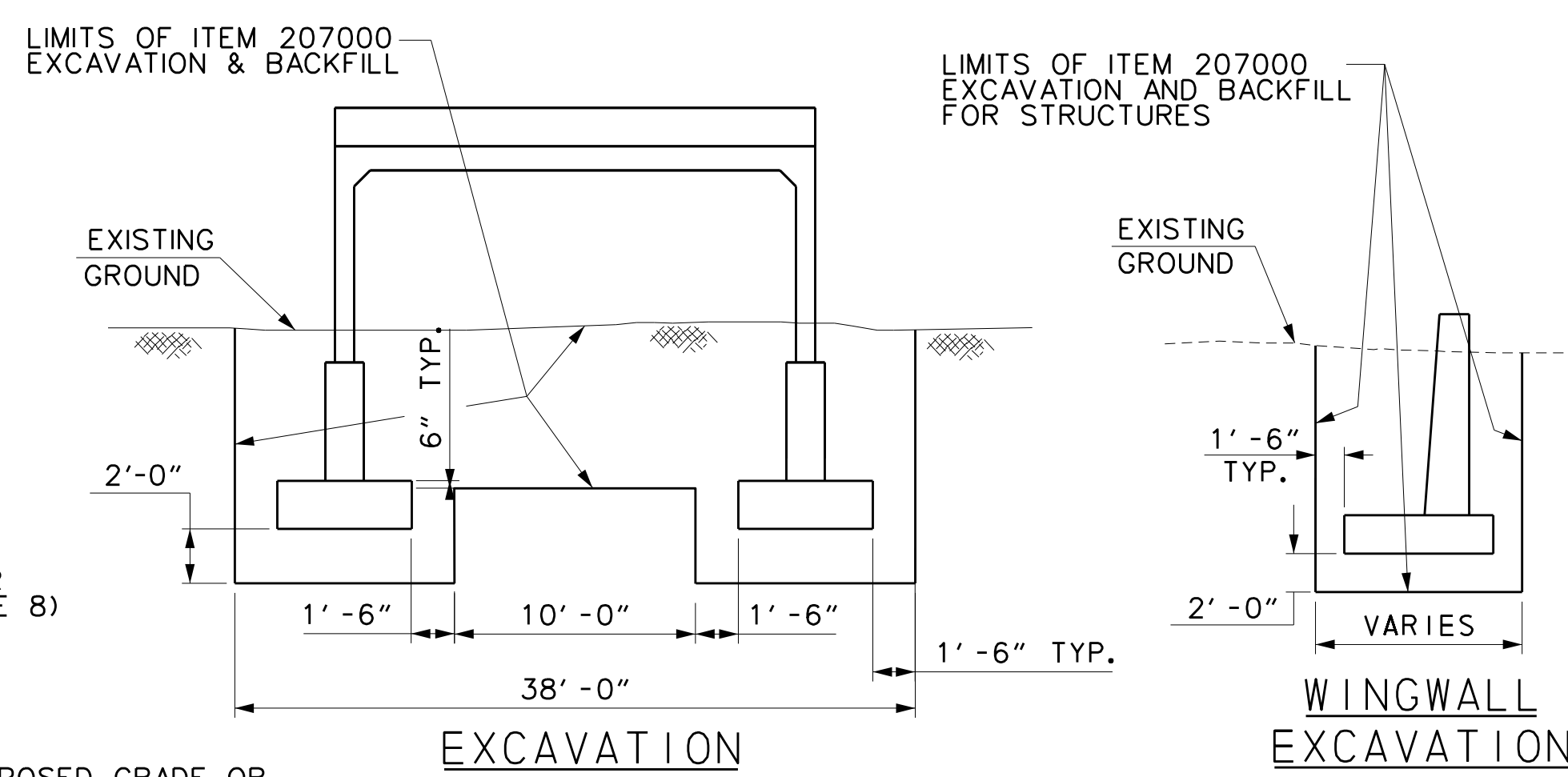
**WINGWALL FOUNDATION PLAN**

BR1-444DT-07
SHEET NO.
587
TOTAL SHTS.
875



NOTE:  
 PAYMENT FOR ALL GROUTING ASSOCIATED WITH PRECAST MEMBERS (INCLUDING MISCELLANEOUS HARDWARE) SHALL BE INCIDENTAL TO ITEM 602522, PRECAST CONCRETE CULVERT.  
 EPOXY-COAT ALL REINFORCEMENT IN PRECAST ELEMENTS.

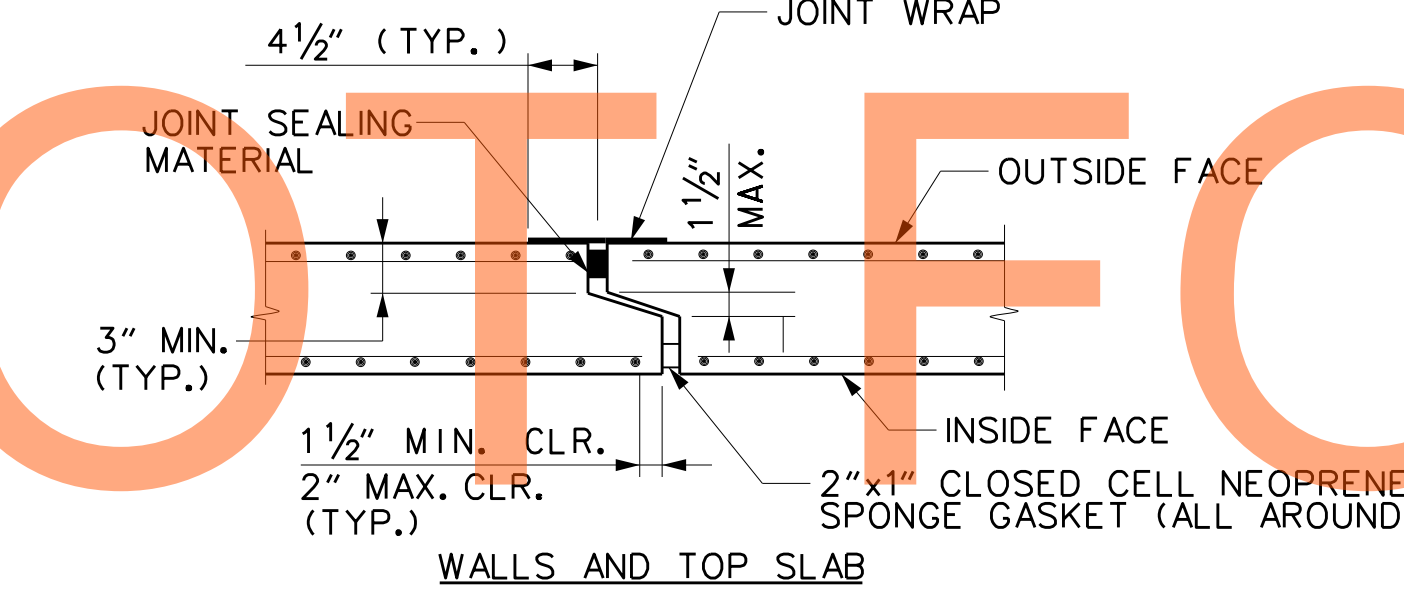
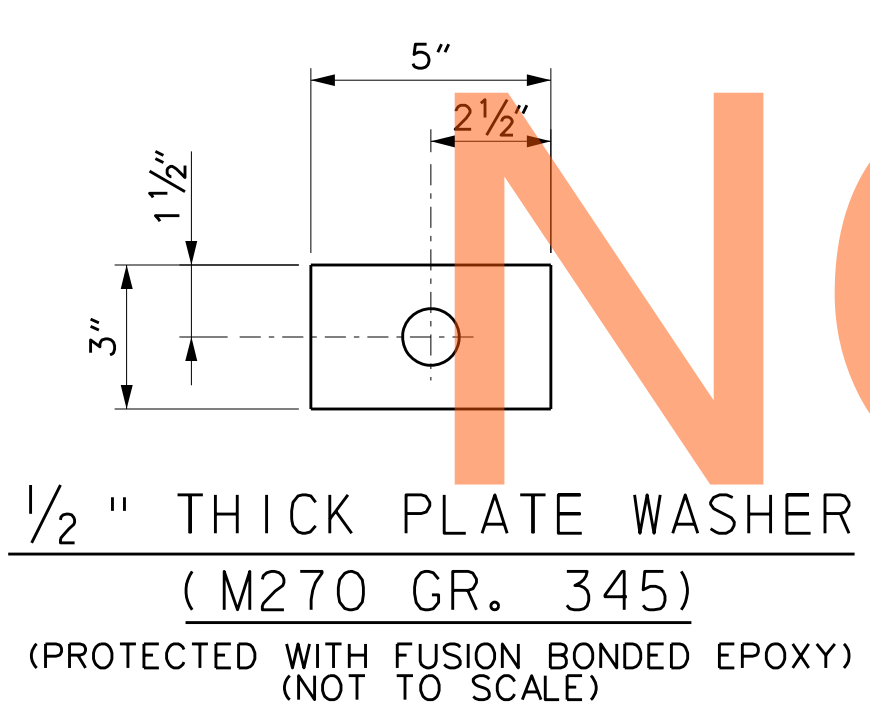
TYPICAL SECTION RIGID FRAME



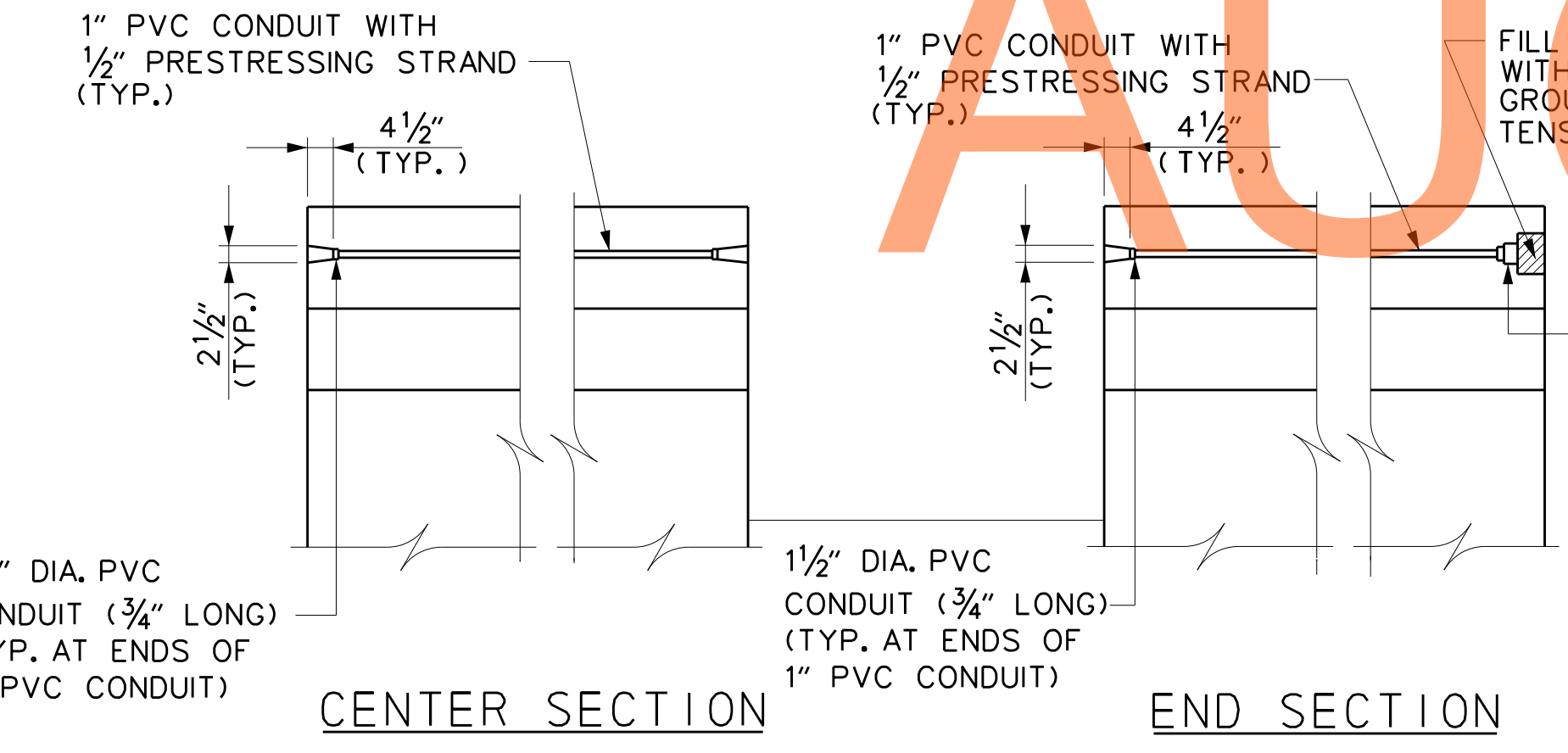
PAY LIMIT DETAILS  
 NOT TO SCALE

PRECAST ELEMENT NOTES

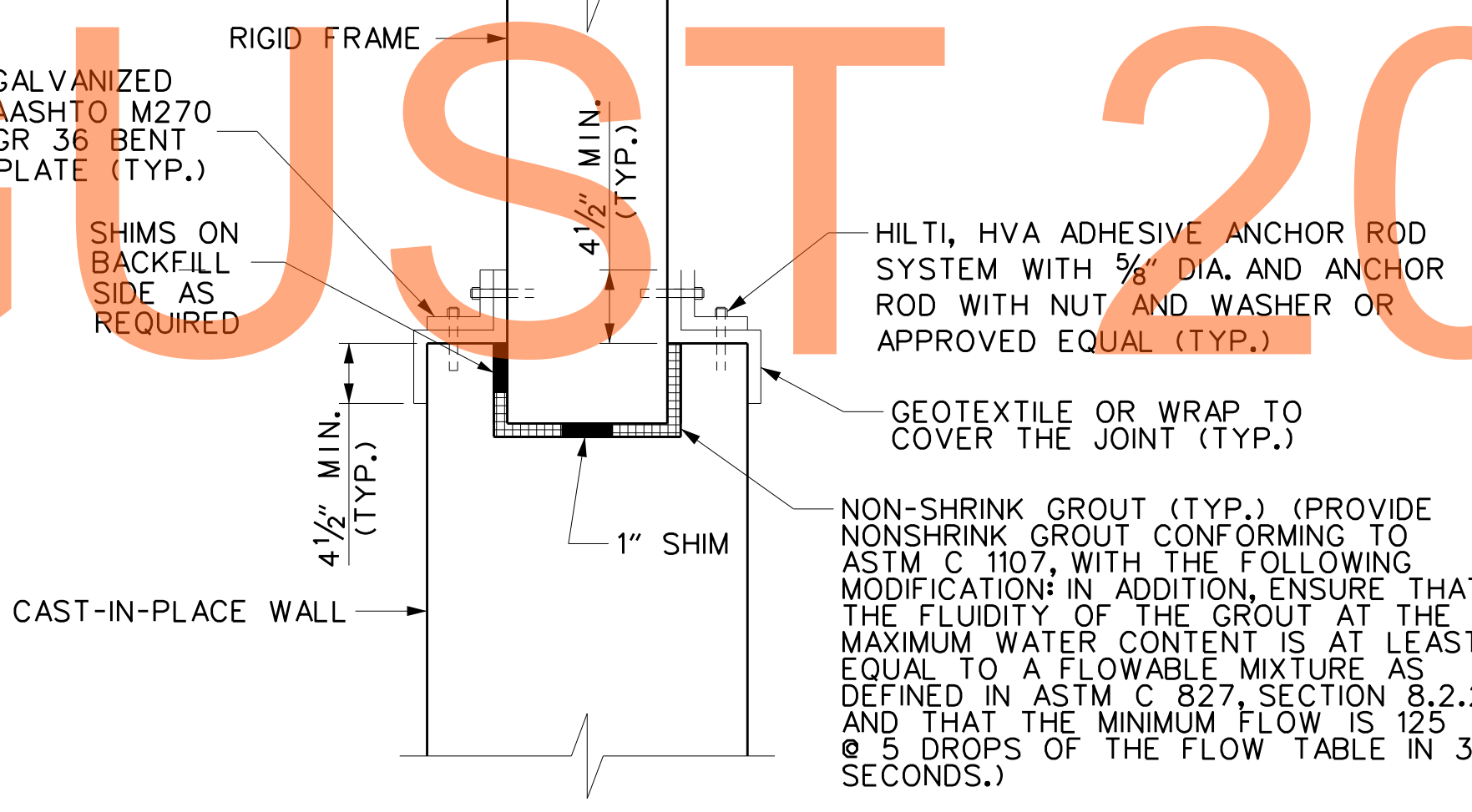
- DESIGN PLANS/ WORKING DRAWINGS  
 INFORMATION PERTAINING TO THE PRECAST REINFORCED CONCRETE RIGID FRAME IS INTENDED TO SERVE AS AN INDICATION OF THE TYPE OF CONSTRUCTION ACCEPTABLE FOR USE. THE CONTRACTOR WILL BE REQUIRED TO PREPARE AND SUBMIT FOR APPROVAL A COMPLETE SET OF DETAILED SHOP DRAWINGS FOR THE PRECAST CONCRETE UNITS THEY PROPOSE TO FURNISH. THE SHOP DRAWINGS SHALL INCLUDE:  
 A. AN OVERALL PLAN SHOWING ALL UNITS TOGETHER AND DETAILS OF EACH TYPE OF UNIT.  
 B. A PLAN VIEW OF REINFORCEMENT FOR ANY IRREGULAR SHAPED SECTIONS (SKEWED, CURVED, ETC.).  
 C. REINFORCING BAR LIST.  
 D. BILL OF MATERIALS INCLUDING ALL ACCESSORIES.  
 E. METHOD AND SEQUENCE OF POST-TENSIONING.
- PRECAST ELEMENTS, ACCESSORIES AND INSTALLATION  
 PAYMENT FOR ITEM 602522 - PRECAST CONCRETE CULVERT SHALL INCLUDE:  
 A. ALL PRECAST ELEMENTS FOR THE RIGID FRAME.  
 B. ALL ASSOCIATED REINFORCEMENT.  
 C. ALL ACCESSORIES (INCLUDING, BUT NOT LIMITED TO, CONCRETE FINISH, POST-TENSIONING TENDONS, CONNECTION PLATES, GROUT, JOINT WRAP, JOINT SEALING MATERIAL, NEOPRENE GASKET, THREADED INSERTS) MENTIONED IN THE FOLLOWING NOTES UNLESS NOTED OTHERWISE.  
 D. DELIVERY AND INSTALLATION OF ALL PRECAST ELEMENTS AND ALL ACCESSORIES.
- MISCELLANEOUS CONCRETE NOTES  
 A. ALL EXPOSED SURFACES SHALL BE PROTECTED WITH A WATER MISICBLE, PENETRATING SILANE SEALER.  
 B. ALL EXPOSED EDGES SHALL BE CHAMFERED 3/4" UNLESS OTHERWISE NOTED.
- RIGID FRAME POST-TENSIONING  
 THE PRECAST RIGID FRAME SECTIONS SHALL BE POST-TENSIONED TOGETHER WITH A MINIMUM OF FOUR POST-TENSIONING TENDONS. THE RIGID FRAME SHALL BE POST-TENSIONED SUCH THAT THE NEOPRENE GASKETS ARE COMPRESSED ALL AROUND AND THERE IS A 1/2" MAXIMUM GAP BETWEEN SECTIONS. MAXIMUM POST-TENSIONING FORCE SHALL BE 28,900 LBS. POST-TENSIONING DETAILS (PLACEMENT, SEQUENCE OF TENSIONING, ETC.) SHALL BE SHOWN IN THE SUBMITTED SHOP DRAWINGS. ALL POCKETS AND DUCTS FOR POST-TENSIONING SHALL BE FILLED WITH NON-SHRINK GROUT.
- JOINTS BETWEEN PRECAST SECTIONS  
 A. NEOPRENE GASKETS SHALL BE PROVIDED AT THE JOINTS BETWEEN ALL PRECAST UNITS IN ORDER TO MAKE THE JOINTS WATERTIGHT. AFTER INSTALLATION, THE GASKETS SHALL BE COMPRESSED SUCH THAT GAPS ARE NOT VISIBLE.  
 B. ALL JOINTS BETWEEN RIGID FRAME SECTIONS SHALL HAVE A SHEAR KEY ALL AROUND.  
 C. THE LOCATIONS OF THE JOINTS IN THE RIGID FRAME SHALL BE DETERMINED BY THE PRECASTER AND SUBMITTED IN THE SHOP DRAWINGS FOR APPROVAL.  
 D. THE REINFORCEMENT SHALL HAVE 2" COVER AT THE END OF EACH SECTION AND MEET OR EXCEED THE MINIMUM AREA OF STEEL PER FOOT DENOTED IN THE PLANS.  
 E. ALL JOINT EXTERIORS SHALL BE COVERED WITH A MINIMUM 9" WIDE WRAP CENTERED ON THE JOINT AS PER THE SPECIAL PROVISIONS.



PRECAST RIGID FRAME SEGMENT JOINT DETAIL



POST TENSIONING COMPONENT DETAIL



RIGID FRAME AND CAST-IN-PLACE JOINT DETAIL

N.T.S.  
 (LEFT SIDE SHOWN; RIGHT SIDE SIMILAR)  
 (REINFORCING NOT SHOWN)

LEGEND

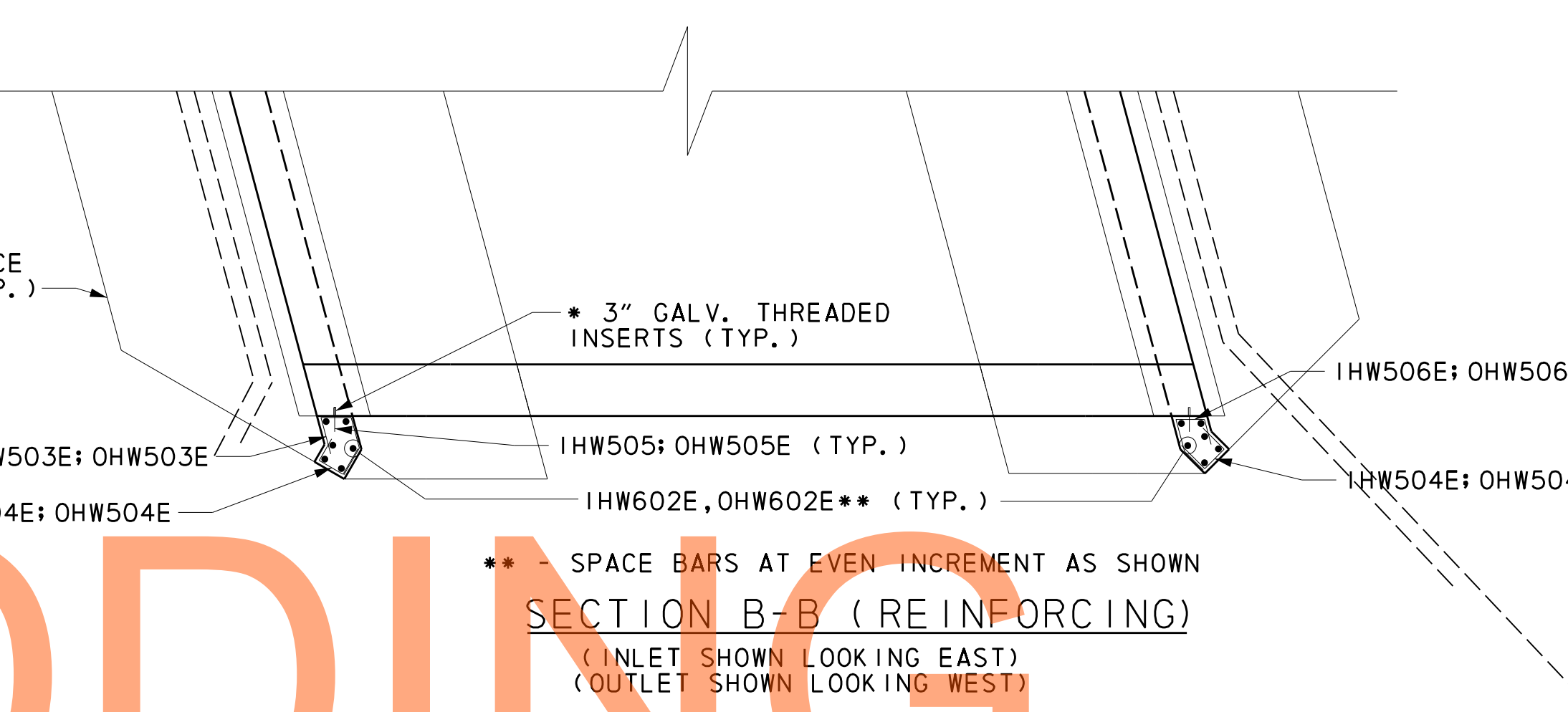
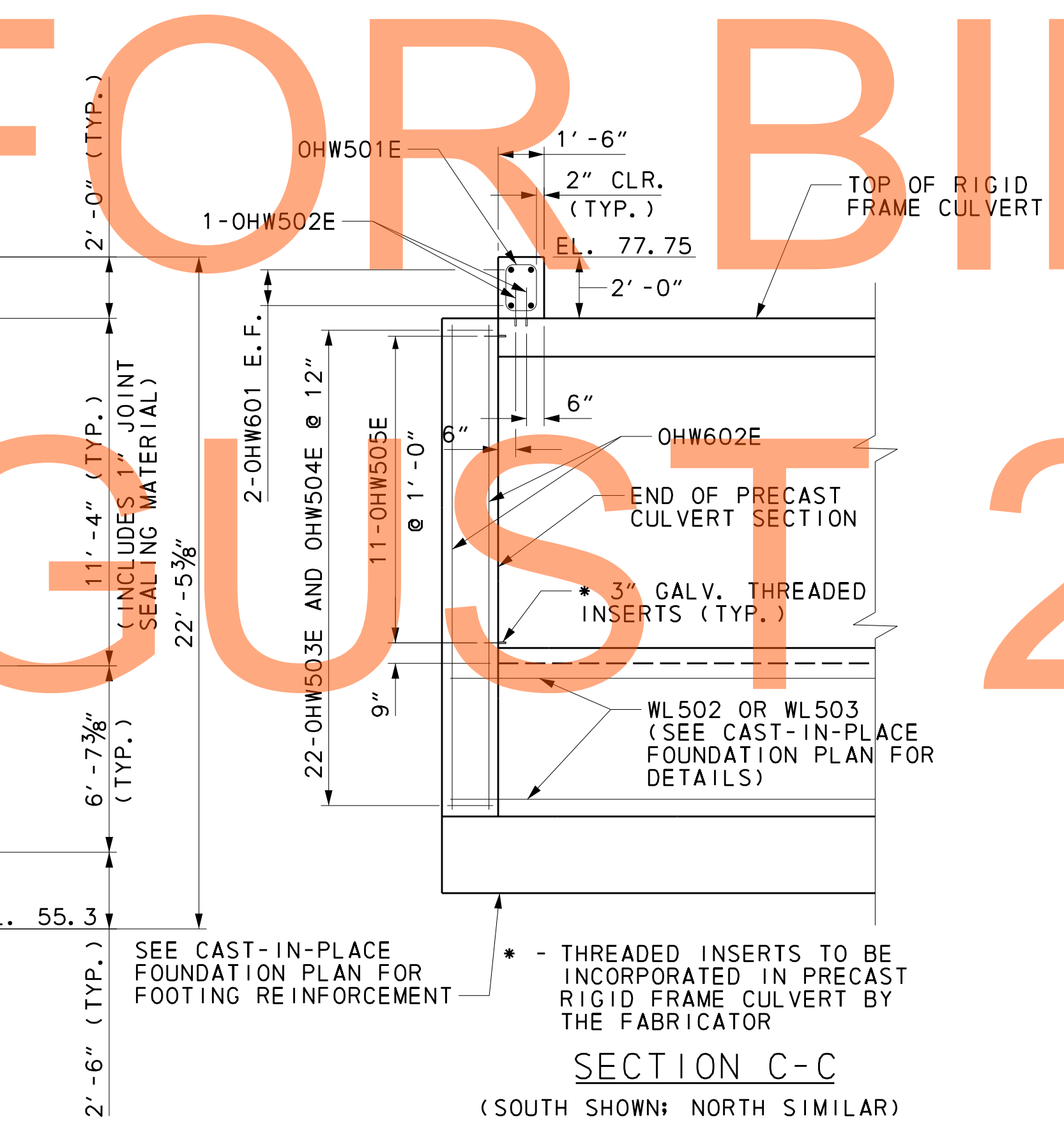
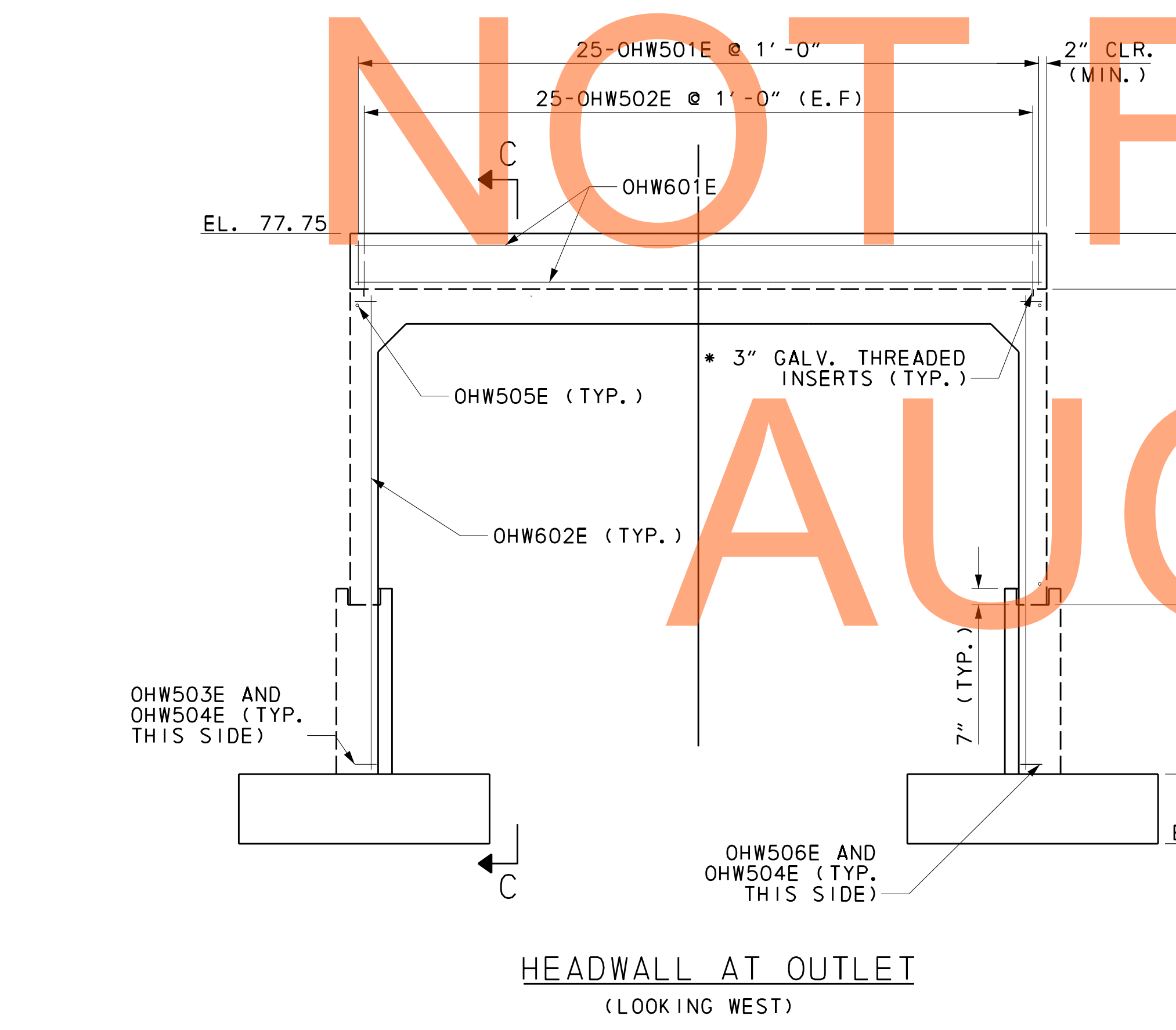
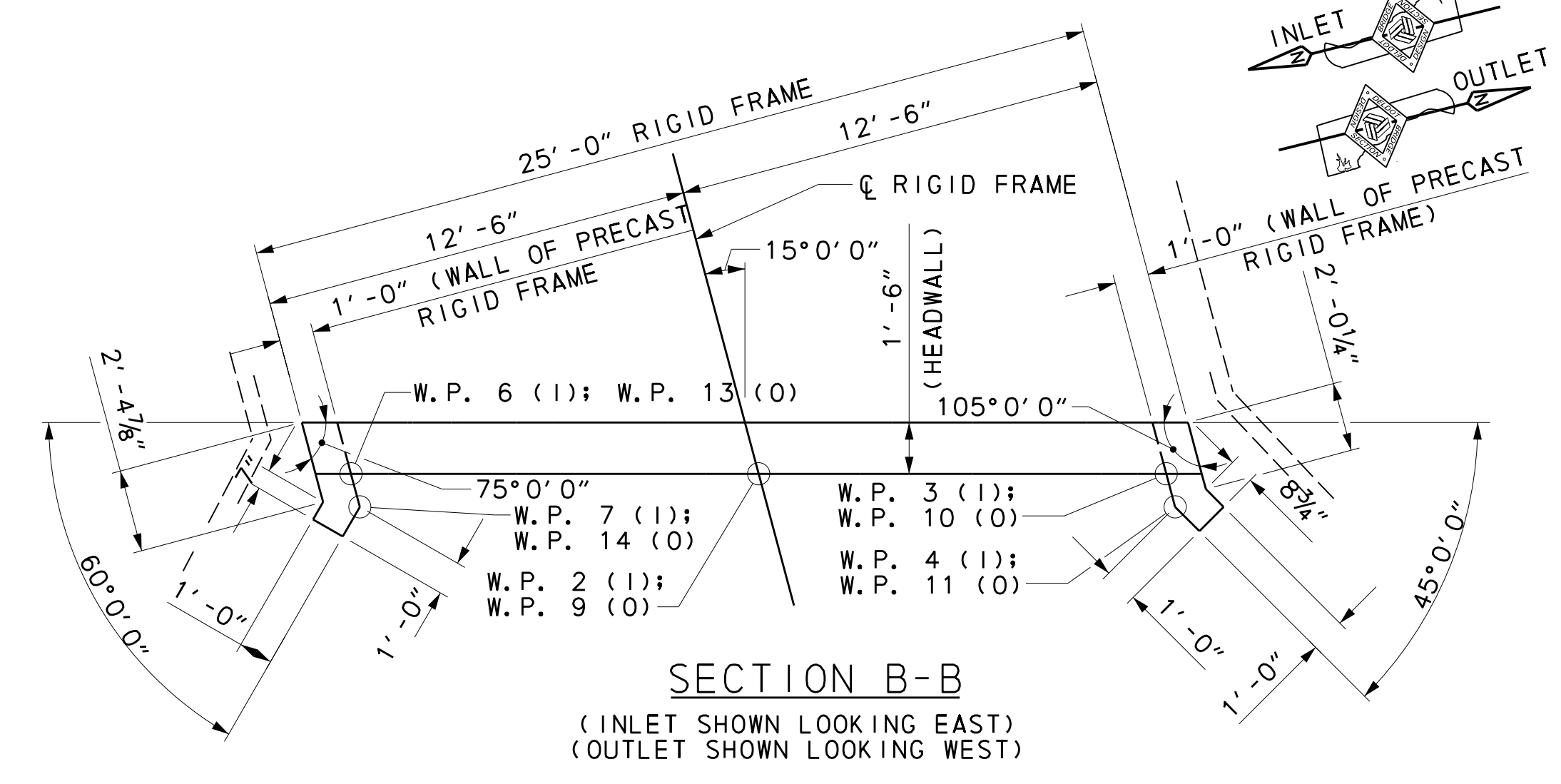
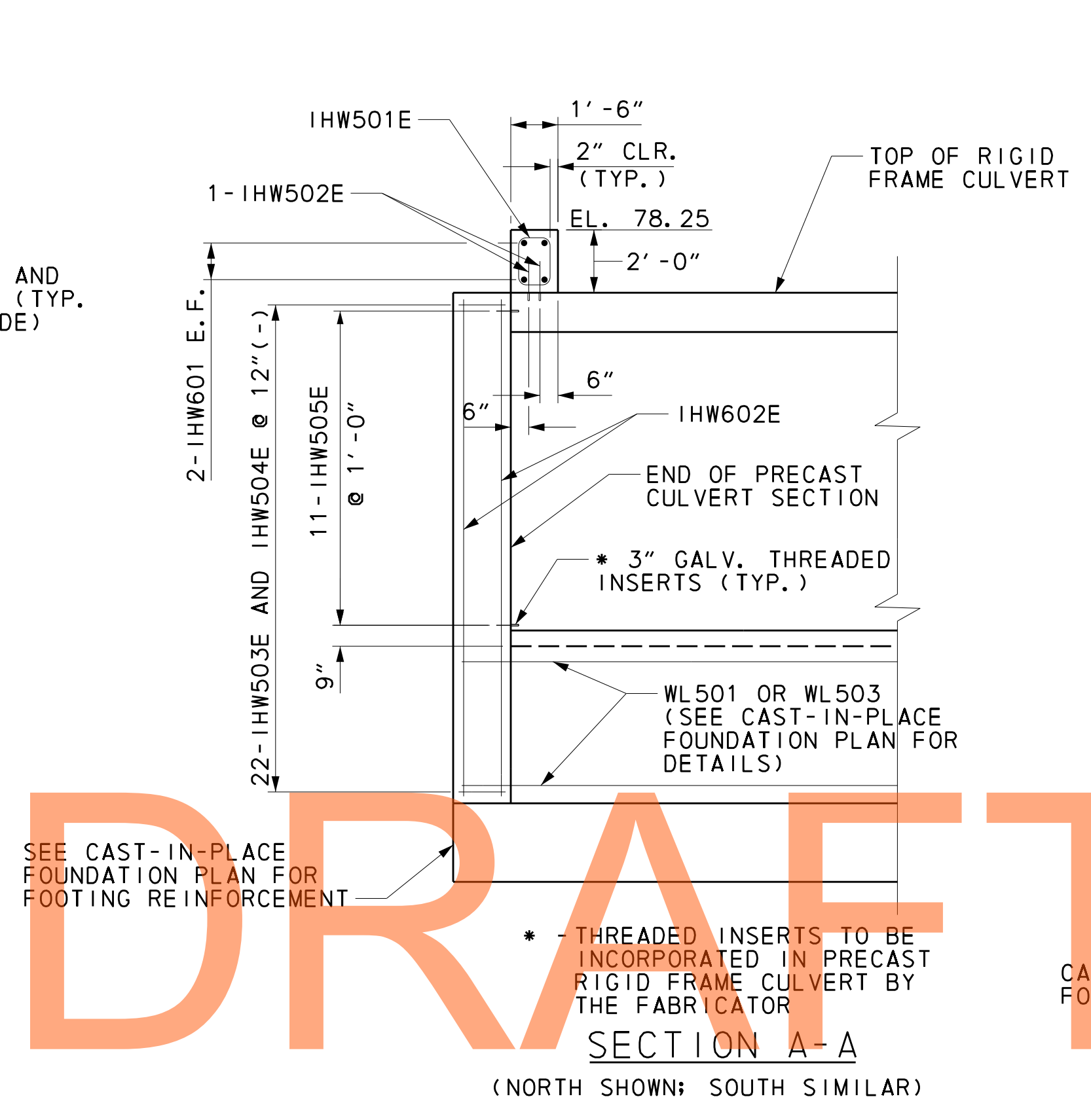
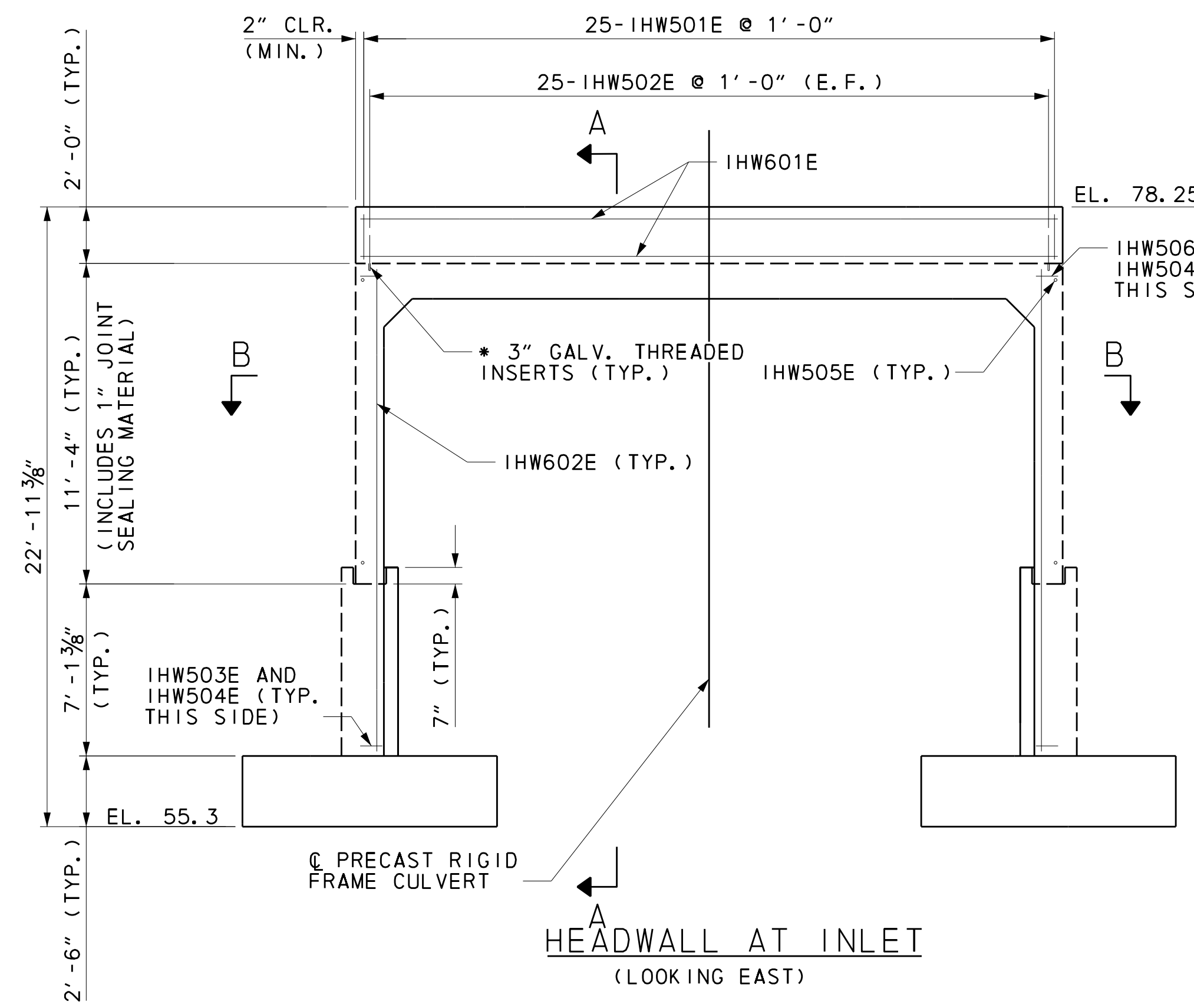
E.F. = EACH FACE  
 MIN. = MINIMUM  
 TYP. = TYPICAL

NOTES

- FOR PROJECT NOTES SEE DRAWING DT-01.
- FOR CONSTRUCTION SEQUENCE, SEE DRAWING DT-04.
- PAYMENT FOR PRECAST CONCRETE RIGID FRAME IS UNDER ITEM 602522, PRECAST CONCRETE CULVERT.
- PRECISE ALIGNMENT OF DUCTS AT JOINTS IS CRITICAL.
- SEE DRAWING DT-06 FOR RIGID FRAME POST TENSIONING NOTES.
- EXPOSED END OF POLYSTRAND SHALL BE REMOVED. FINAL COVER ON THE STRAND SHALL BE 2 INCHES MINIMUM AT ENDS. POCKET SHALL BE FILLED WITH NON-SHRINK GROUT.
- PLACE 9" WIDE JOINT WRAP ALONG THE TOP SLAB AND SIDE JOINTS OF THE PRECAST RIGID FRAME CULVERT. ALSO PLACE 15" WIDE GEOTEXTILE OR WRAP ALONG THE FULL LENGTH OF JOINT AT PRECAST RIGID FRAME CULVERT AND CAST IN PLACE PEDESTAL WALL. PAYMENT FOR JOINT WRAP IS INCIDENTAL TO ITEM 602522.
- PAYMENT FOR SILANE SEALER IS INCIDENTAL TO ITEM 602522.
- PROVIDE THREADED INSERTS IN END PRECAST RIGID FRAME CULVERT SEGMENTS AS INDICATED ON DRAWING DT-09. SPACE INSERTS TO AVOID POST-TENSION REINFORCING STRANDS.
- SUBMIT SHOP DRAWINGS FOR PRECAST ELEMENTS. INCLUDE ALL CULVERT DETAILS, POST-TENSIONING DETAILS AND PROCEDURES, AND HANDLING, TRANSPORTATION, AND CONSTRUCTION PROCEDURES. SUBMIT ERECTION PLAN TO ENGINEER FOR APPROVAL PRIOR TO CONSTRUCTION.
- CHOKE RIPRAP VOIDS WITH DE NO. 57 STONE.
- BACKFILL WITH MATERIAL CONFORMING TO THE REQUIREMENTS OF SUBSECTION 209.04, BORROW TYPE C.

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DRAFT  
NOT FOR BIDDING  
AUGUST 2015

- NOTES:**
- FOR PROJECT NOTES, SEE DRAWING DT-01.
  - FOR CONSTRUCTION SEQUENCE, SEE DRAWING DT-04.
  - FOR REINFORCEMENT BAR SCHEDULE, SEE DRAWING DT-13.
  - FOR HEADWALL W.P.'S, SEE DRAWING DT-04.

**LEGEND:**

BOT	=	BOTTOM
CLR.	=	CLEAR
CONSTR.	=	CONSTRUCTION
E.F.	=	EACH FACE
EL.	=	ELEVATION
GALV.	=	GALVANIZED
F.F.	=	FRONT FACE
I	=	INLET
INV.	=	INVERT
JT.	=	JOINT
MAX.	=	MAXIMUM
MIN.	=	MINIMUM
O	=	OUTLET
PROJ.	=	PROJECT
R.F.	=	REAR FACE
TYP.	=	TYPICAL

SDONAMES 8/5/2011 AM



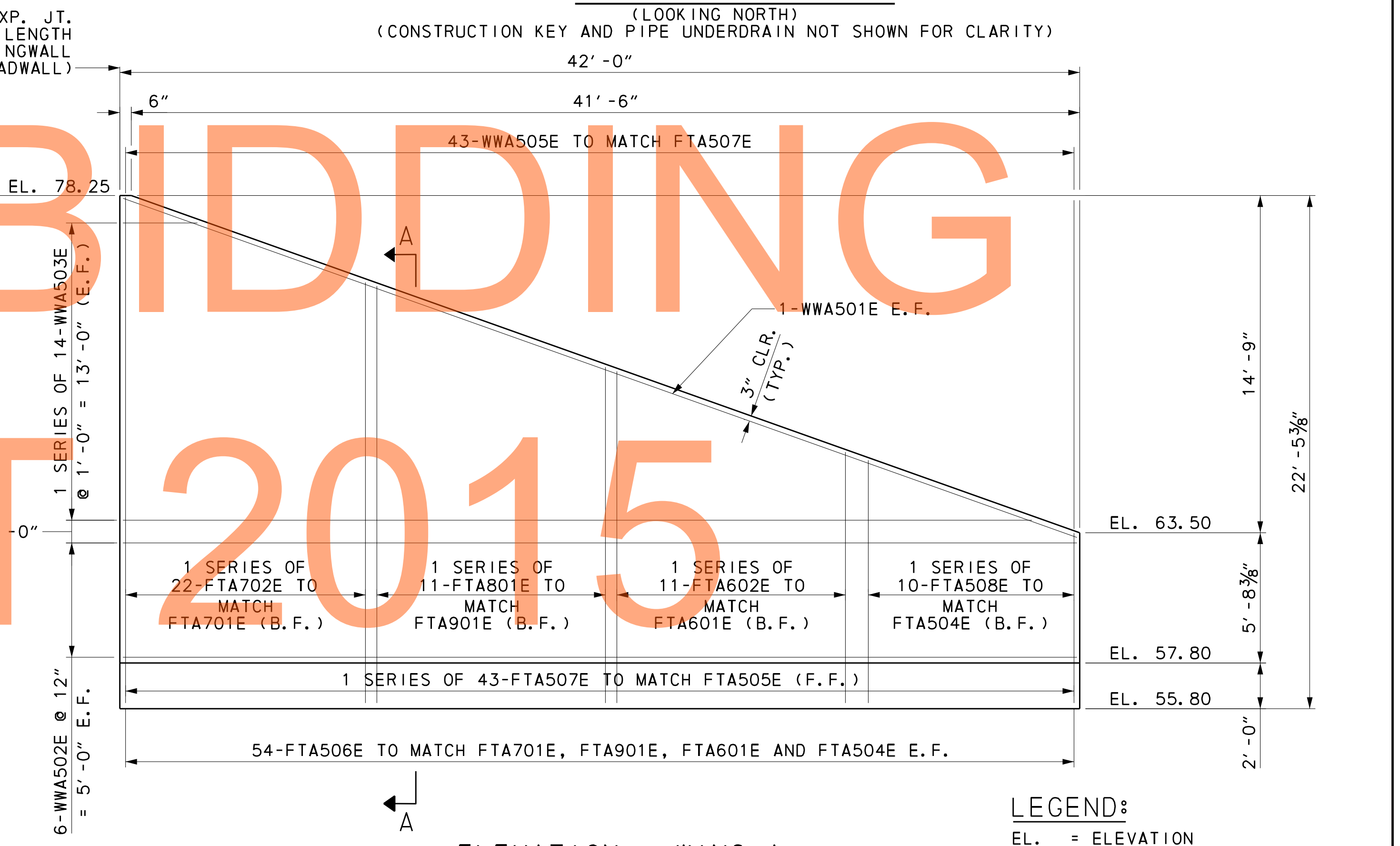
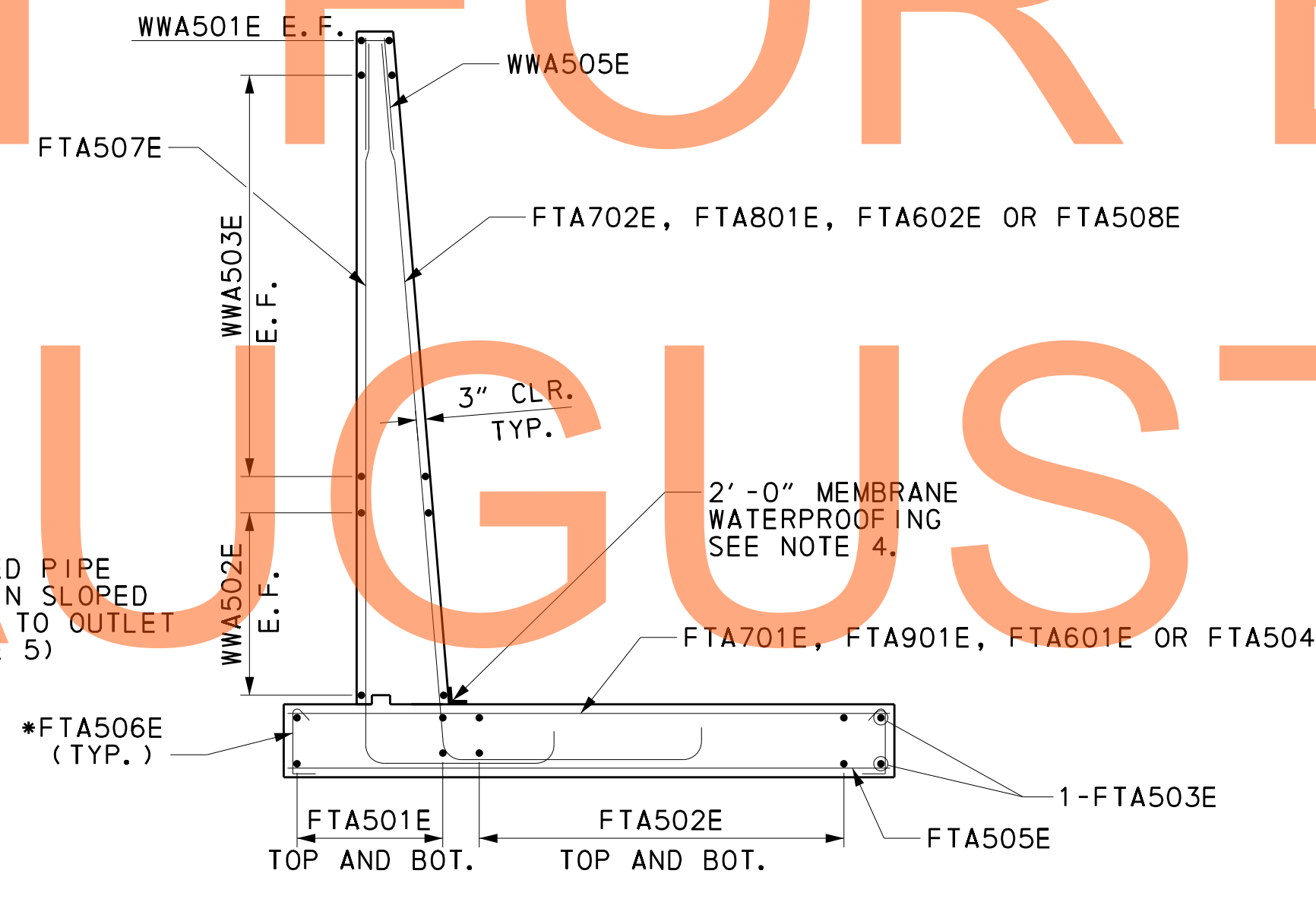
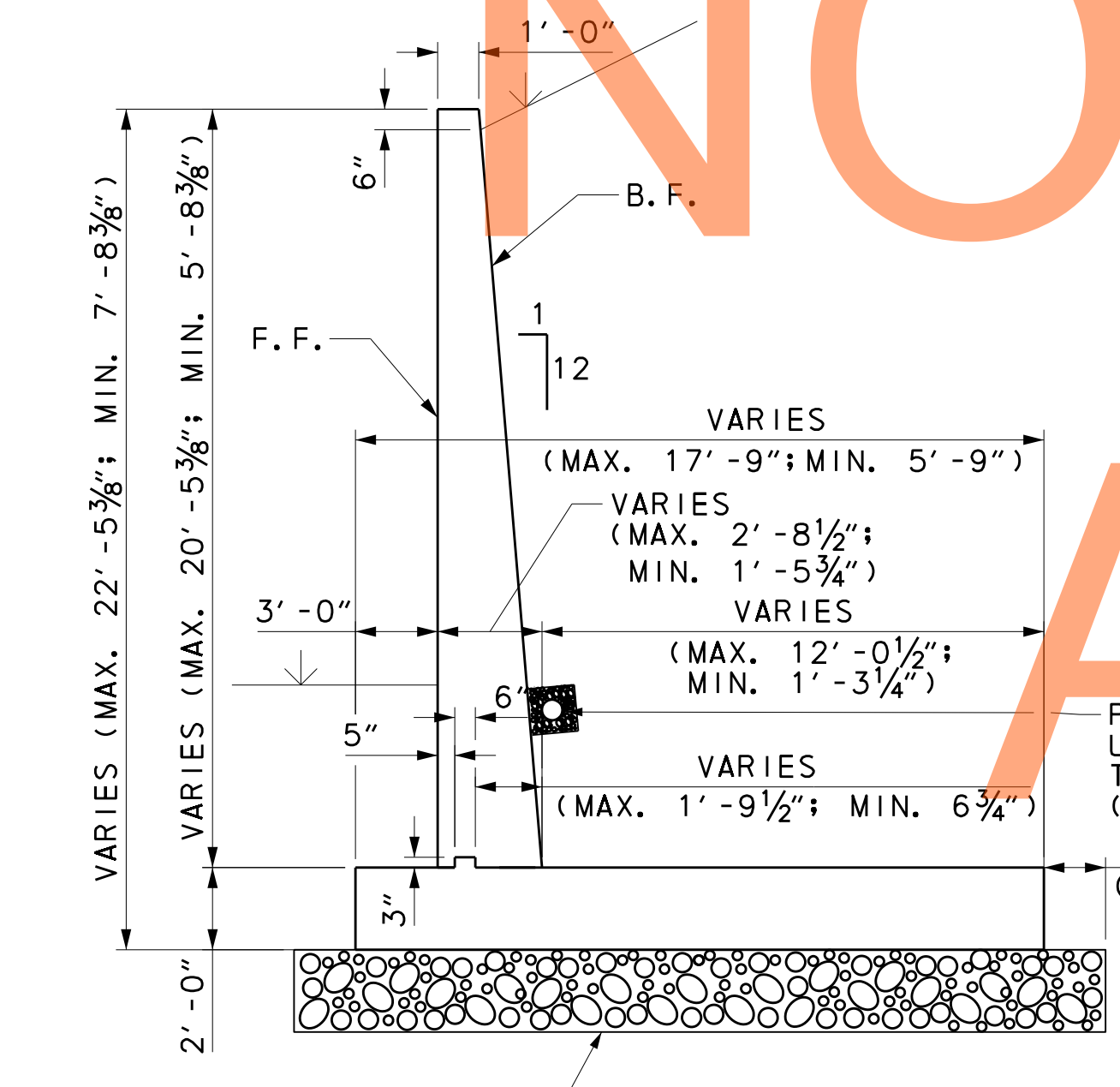
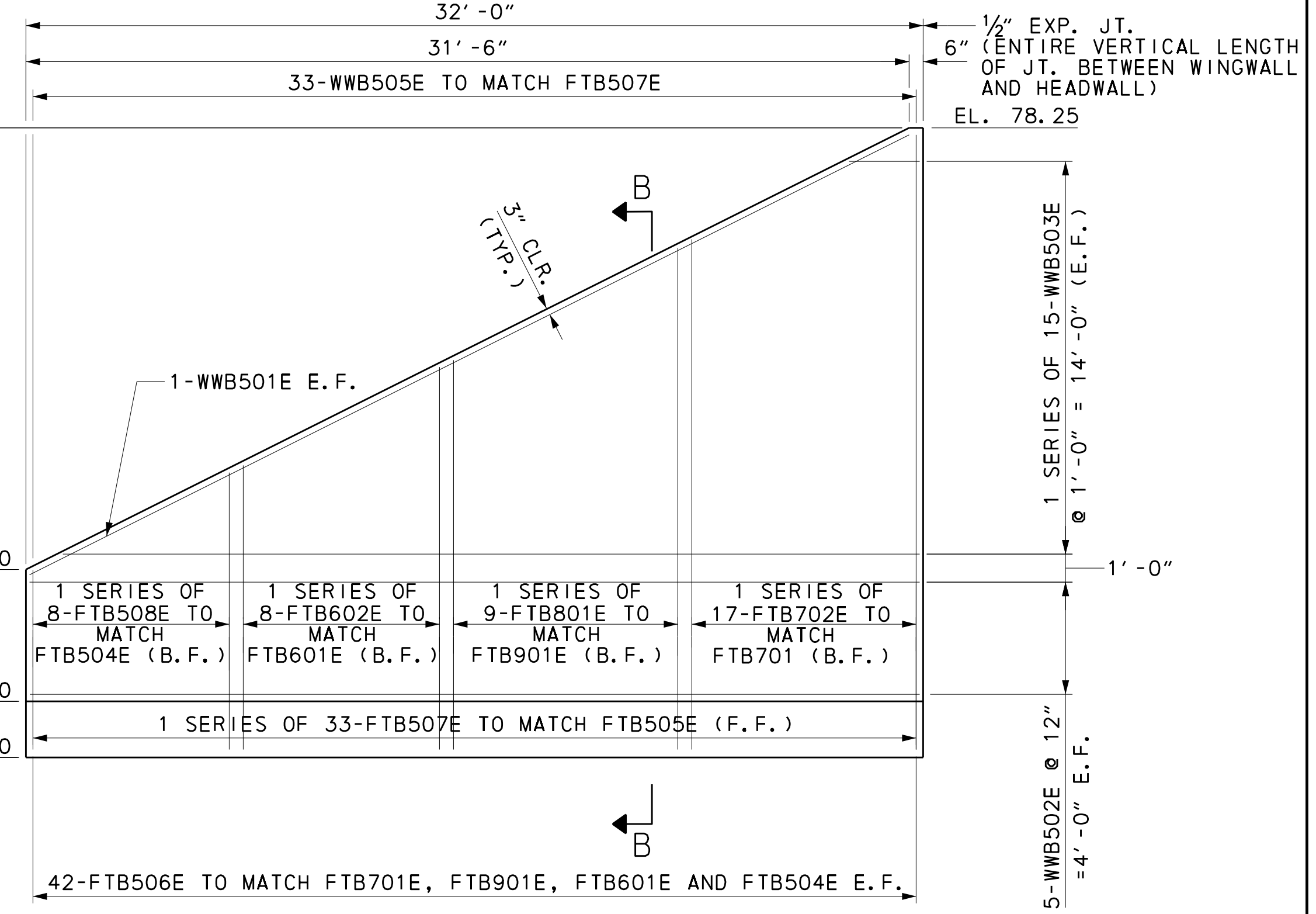
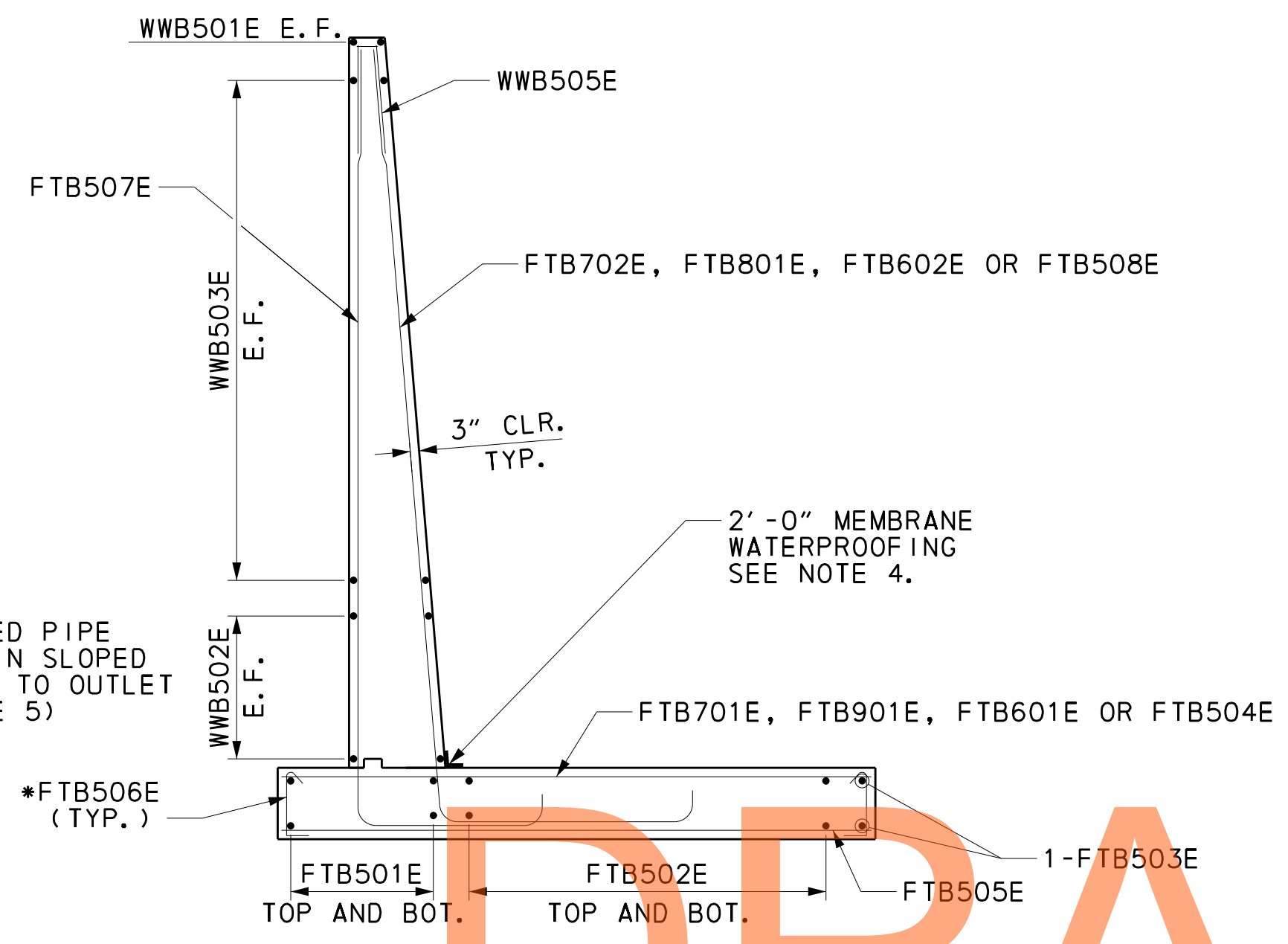
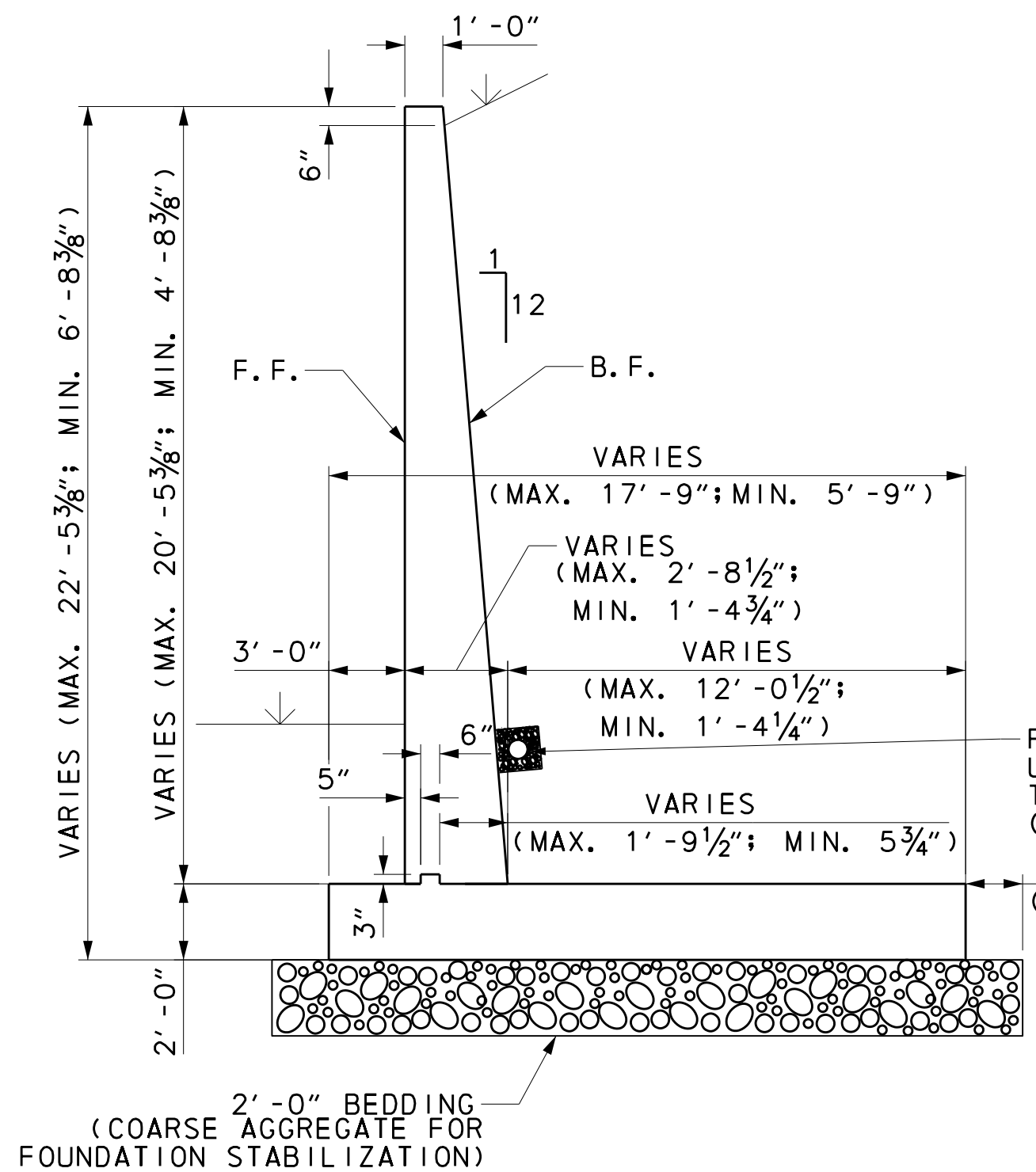
ADDENDUMS / REVISIONS

NOT TO SCALE

US 301,  
SR 896 TO SR 1

CONTRACT	BRIDGE NO.	1-444
T200911308	DESIGNED BY:	CCJ
COUNTY	CHECKED BY:	JFM
NEW CASTLE		

<b>HEADWALL DETAILS</b>	SHEET NO.	589
	TOTAL SHTS.	875
	BR1-444DT-09	



- NOTES:
- FOR WINGWALL FOUNDATION PLAN, SEE DRAWING DT-07.
  - FOR WINGWALL REINFORCEMENT BAR SCHEDULE, SEE DRAWING DT-12.
  - PLACE 2'-0" WIDE MEMBRANE WATERPROOFING CENTERED AT WALL/FOOTING INTERFACE. LAP SPLICES BY A MINIMUM 6".

PAYMENT FOR MEMBRANE WATERPROOFING IS INCIDENTAL TO ITEM 602002. FURNISH ADHESIVE-BACKED PREFORMED MEMBRANE SHEET. SEE DRAWING DT-04 FOR MINIMUM REQUIREMENTS.

4. FOR PERFORATED PIPE UNDERDRAIN DETAIL, SEE DRAWING DT-03.

PERFORATED PIPE UNDERDRAIN	
WINGWALL	INVERT EL. OF OUTLET AT END OF THE WALL
A	63.25
B	62.25

- LEGEND:
- EL. = ELEVATION
  - EXP. = EXPANSION
  - FTA = FOOTING A REINFORCEMENT
  - FTB = FOOTING B REINFORCEMENT
  - JT. = JOINT
  - MAX. = MAXIMUM
  - MIN. = MINIMUM
  - TYP. = TYPICAL
  - WWA = WINGWALL A REINFORCEMENT
  - WWB = WINGWALL B REINFORCEMENT

SDONAMES 8/21/05 AM



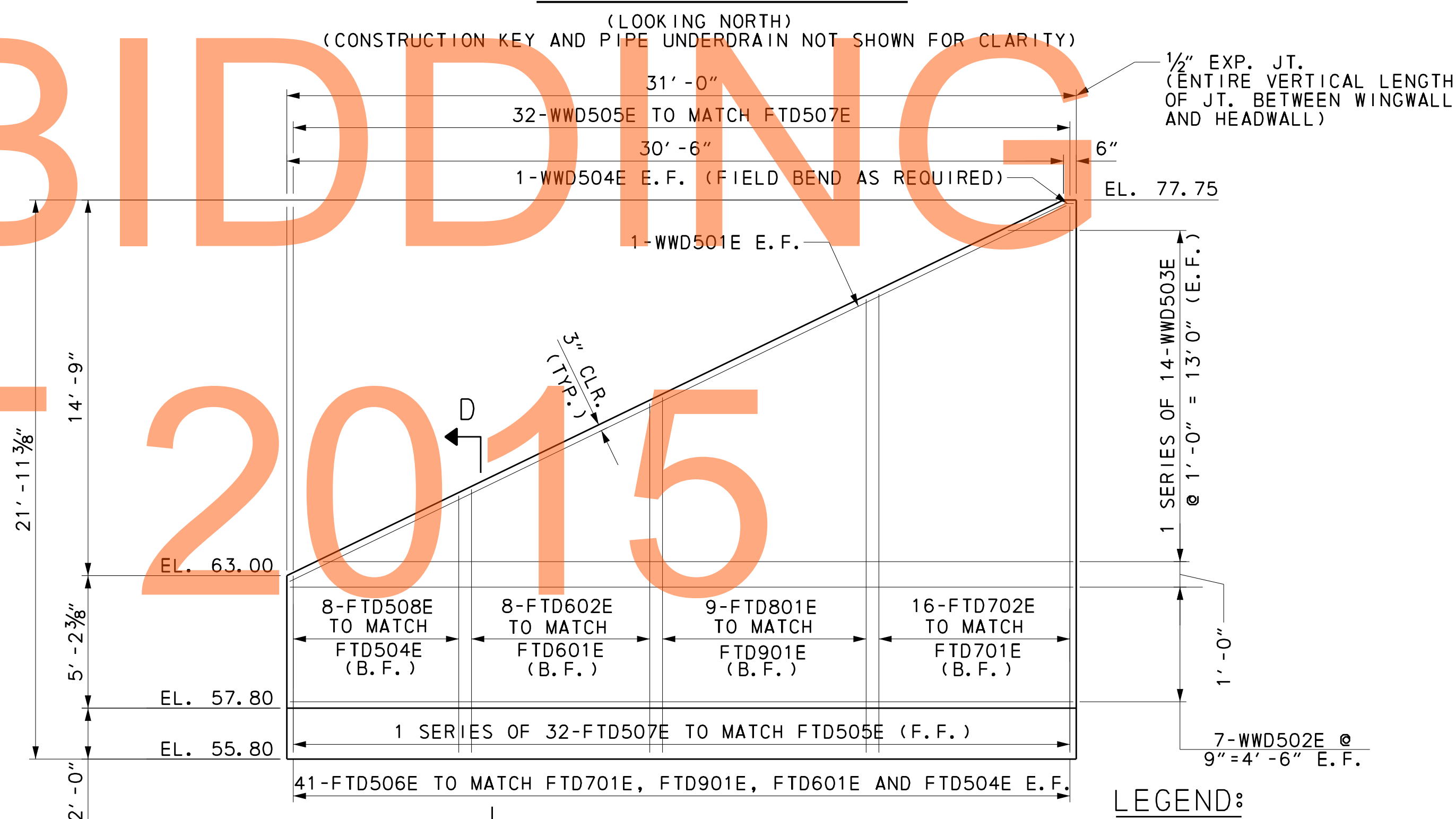
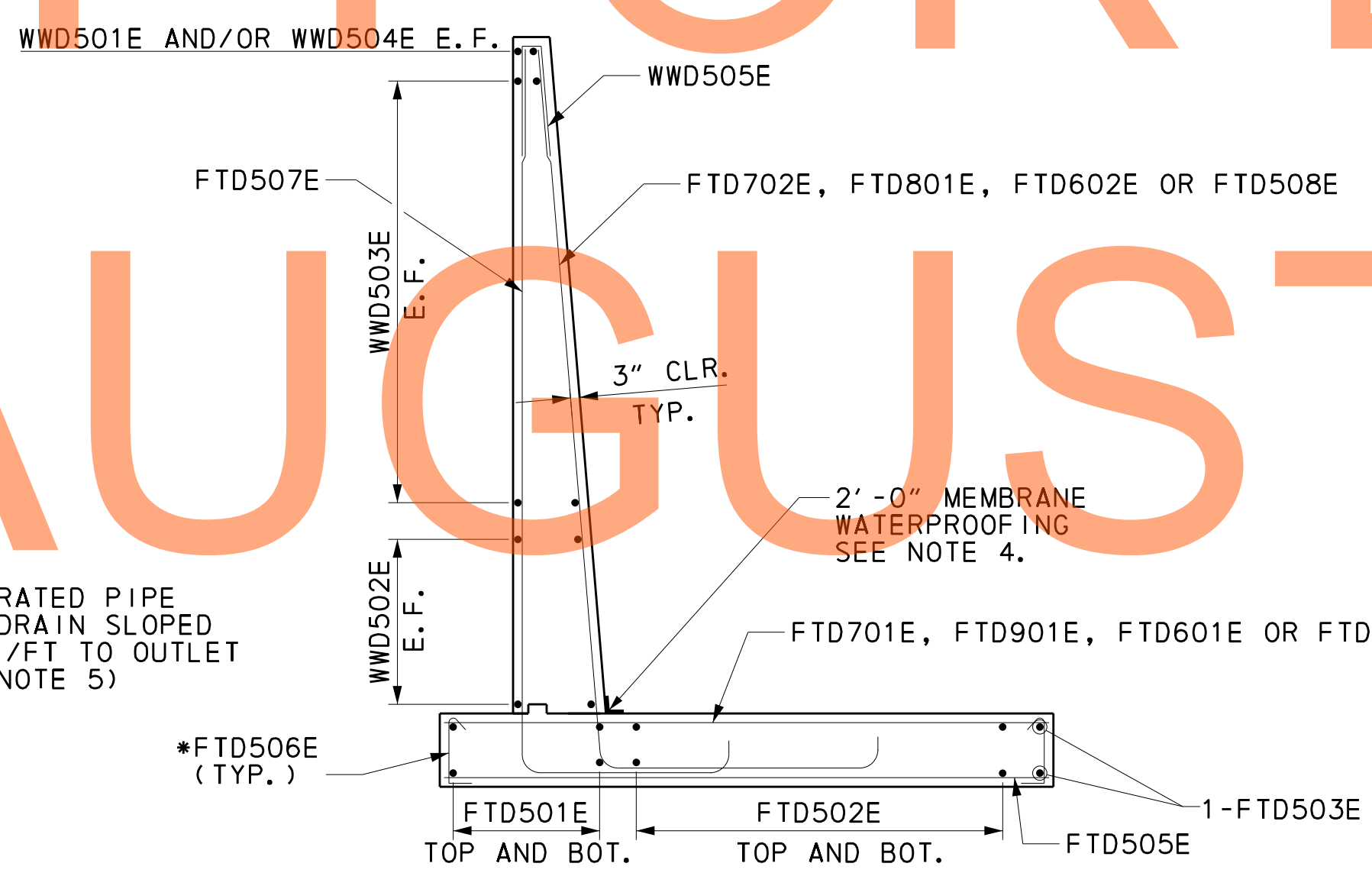
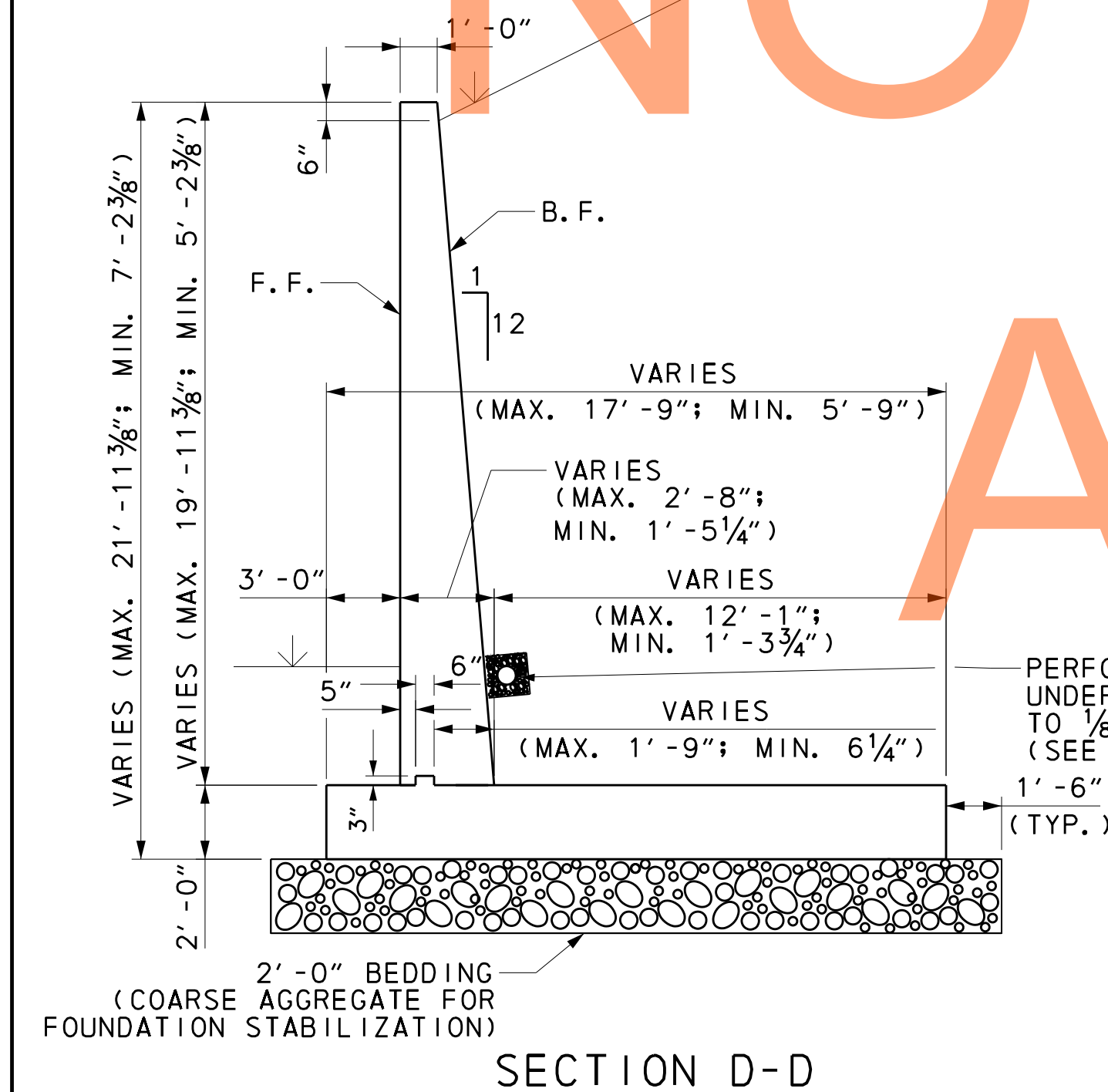
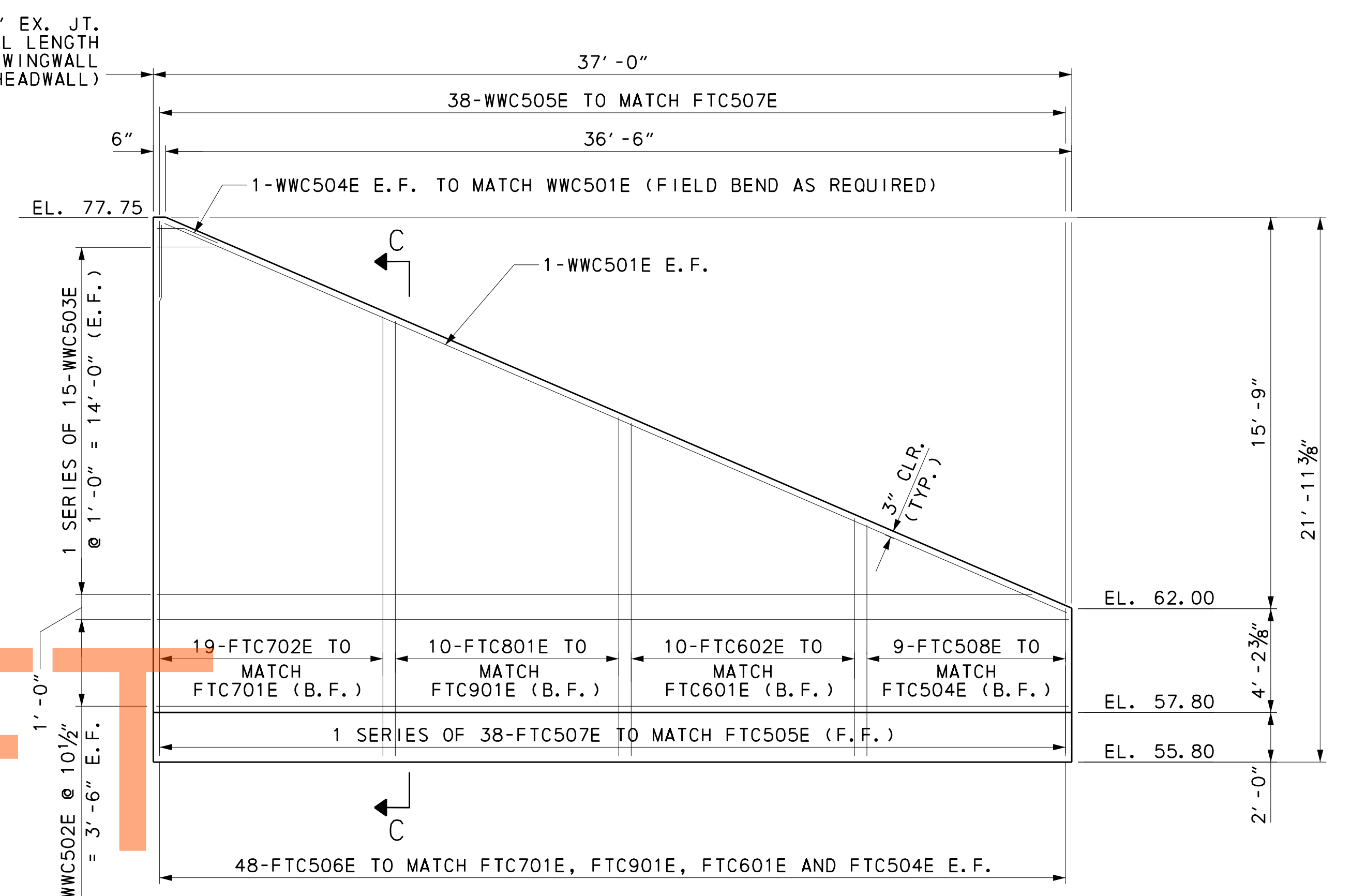
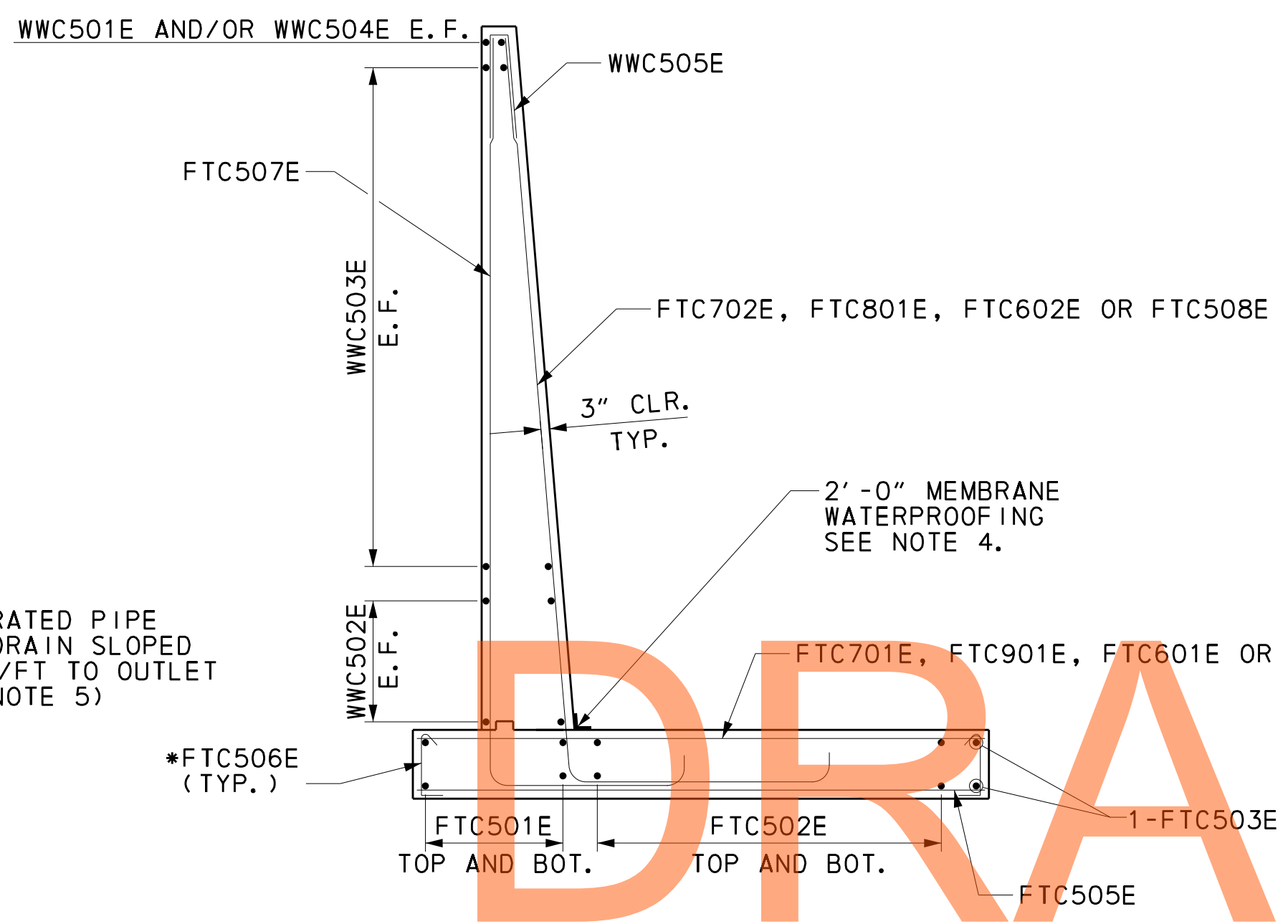
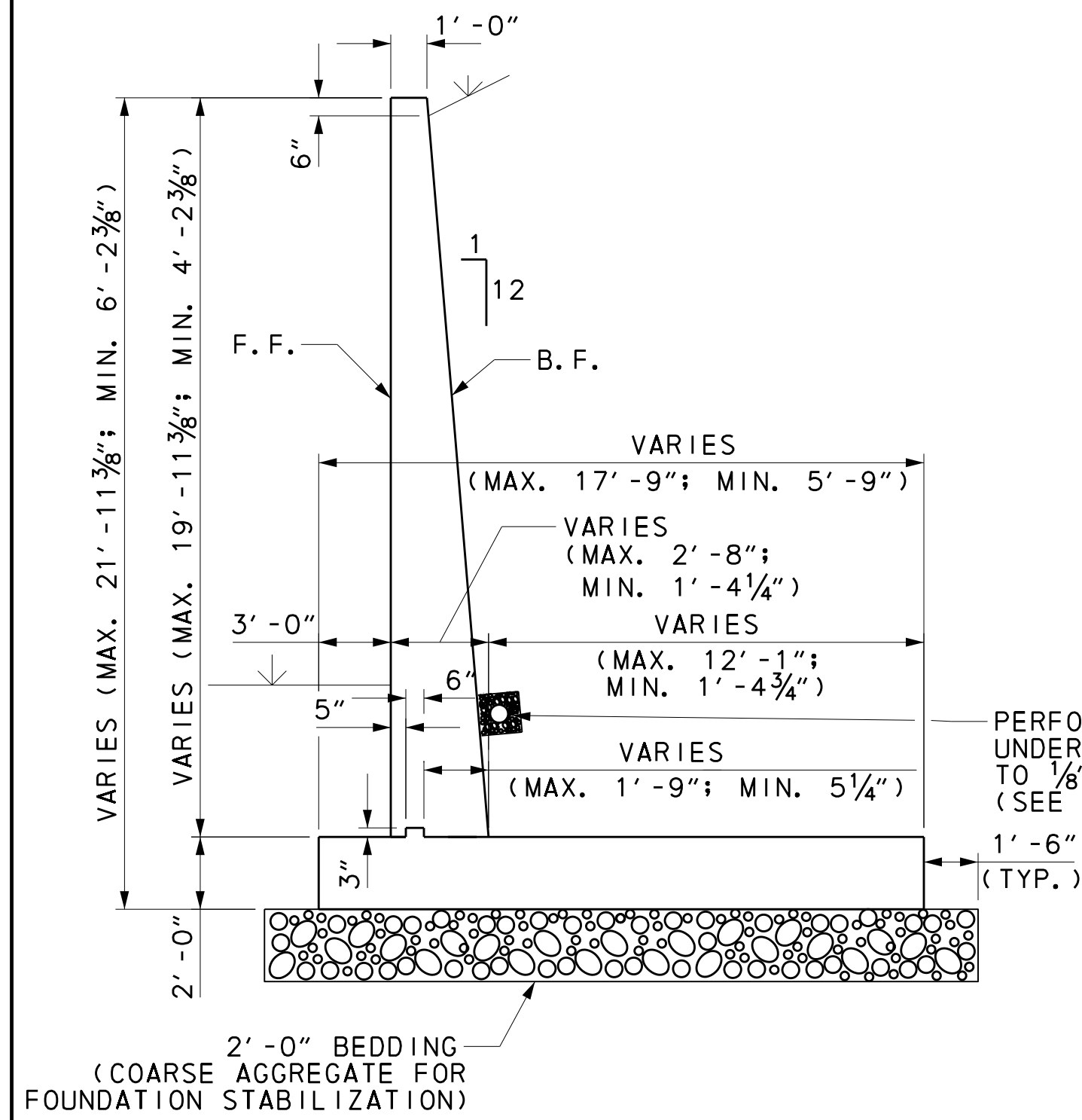
ADDENDUMS / REVISIONS

NOT TO SCALE

US 301,  
SR 896 TO SR 1

CONTRACT	BRIDGE NO.	1-444
T200911308	DESIGNED BY:	CCJ
COUNTY	CHECKED BY:	JFM
NEW CASTLE		

WINGWALLS A & B DETAILS	SHEET NO.	590
	TOTAL SHTS.	875
	BR1-444DT-10	



- NOTES:
- FOR WINGWALL FOUNDATION PLAN, SEE DRAWING DT-07.
  - FOR WINGWALL REINFORCEMENT BAR SCHEDULE, SEE DRAWING DT-13.
  - PLACE 2'-0" WIDE MEMBRANE WATERPROOFING CENTERED AT WALL/FOOTING INTERFACE. LAP SPLICES BY A MINIMUM 6". PAYMENT FOR MEMBRANE WATERPROOFING IS INCIDENTAL TO ITEM 602002. FURNISH ADHESIVE-BACKED PREFORMED MEMBRANE SHEET. SEE DRAWING DT-04 FOR MINIMUM REQUIREMENTS.
  - FOR PERFORATED PIPE UNDERDRAIN DETAIL, SEE DRAWING DT-03.

PERFORATED PIPE UNDERDRAIN	
WINGWALL	INVERT EL. OF OUTLET AT END OF THE WALL
C	61.75
D	62.75

- LEGEND:
- EL. = ELEVATION
  - EXP. = EXPANSION
  - FTC = FOOTING C REINFORCEMENT
  - FTD = FOOTING D REINFORCEMENT
  - JT. = JOINT
  - MAX. = MAXIMUM
  - MIN. = MINIMUM
  - TYP. = TYPICAL
  - WWC = WINGWALL C REINFORCEMENT
  - WWD = WINGWALL D REINFORCEMENT

5/20/2015 9:57:15 AM



ADDENDUMS / REVISIONS

NOT TO SCALE

US 301,  
SR 896 TO SR 1

CONTRACT	BRIDGE NO.	1-444
T200911308	DESIGNED BY:	CCJ
COUNTY	CHECKED BY:	JFM
NEW CASTLE		

WINGWALLS C & D DETAILS	SHEET NO.	591
	TOTAL SHTS.	875
	BR1-444DT-11	

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

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

3 LETTER FOLLOWING 'LOCATION PREFIXES' INDICATES: A - WINGWALL A, B - WINGWALL B, C - WINGWALL C, D - WINGWALL D

Table with columns: SPECIFICATIONS (QTY, SIZE, LENGTH, MARK, TYPE) and BENDING DIMENSIONS (FEET-INCHES /QUARTER INCH) (A, B, C, D, E, F/R, G, H, J, K, O). Rows include items like FT501E STR, FT502E STR, FT503E STR, FT504E STR, FT505E T9, FT701E STR, FT702E STR, FT703E STR, FT901E STR, FT902E STR, FT903E STR, FT904E STR, WL501E STR, WL502E STR, WL503E STR, WL504E STR, FTA501E STR, FTA502E STR, FTA503E STR, FTA504E STR, FTA505E STR, FTA506E T9, FTA507E STR, FTA508E STR.

Table with columns: SPECIFICATIONS (QTY, SIZE, LENGTH, MARK, TYPE) and BENDING DIMENSIONS (FEET-INCHES /QUARTER INCH) (A, B, C, D, E, F/R, G, H, J, K, O). Rows include items like FTA601E STR, FTA602E STR, FTA701E STR, FTA702E STR, FTA801E STR, FTA901E STR, WWA501E STR, WWA502E STR, WWA503E STR, WWA505E STR, FTB501E STR, FTB502E STR, FTB503E STR, FTB504E STR, WWA505E STR, WWA501E STR, WWA502E STR, WWA503E STR, FTB505E STR, FTB506E STR, FTB507E STR, FTB508E STR, FTB509E STR.

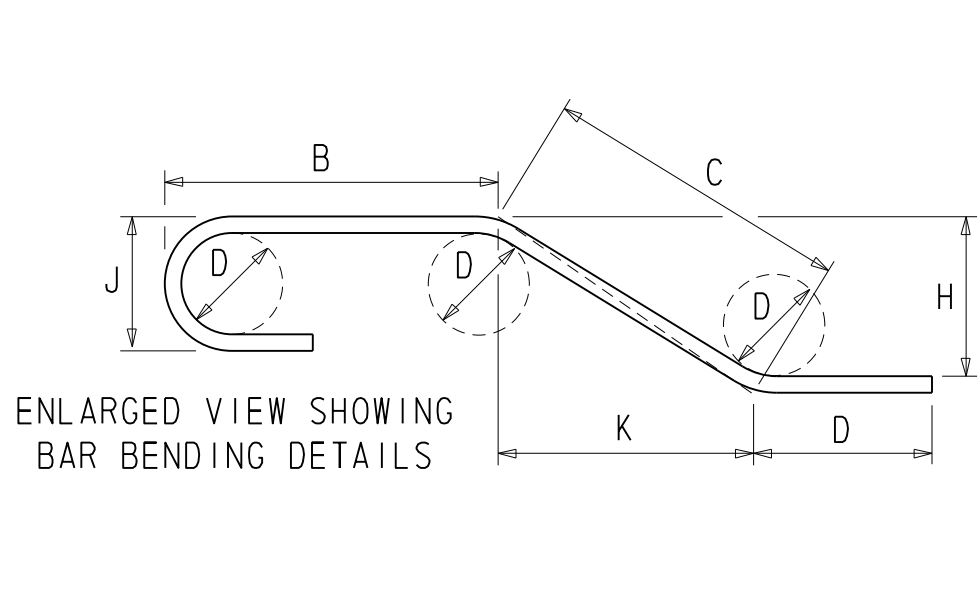
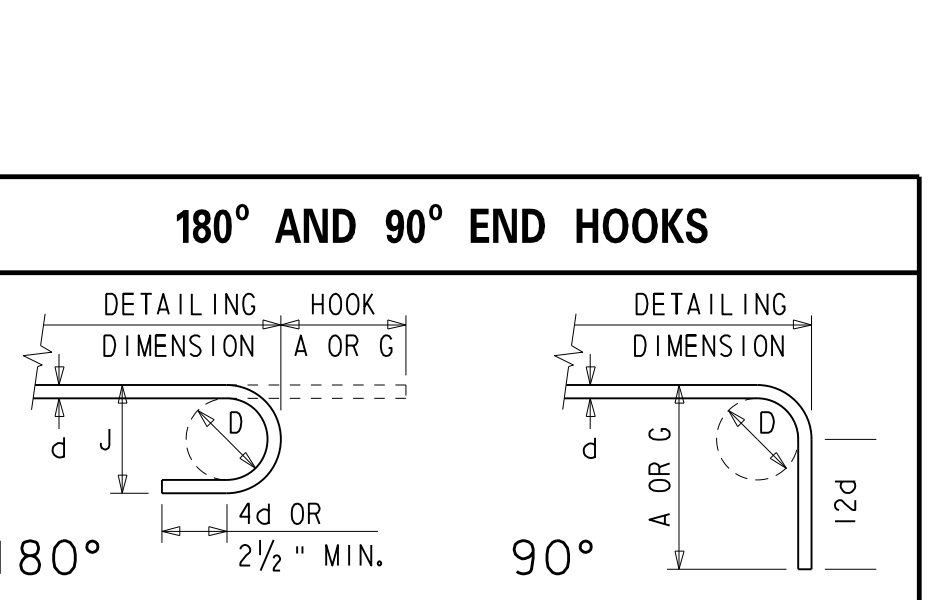
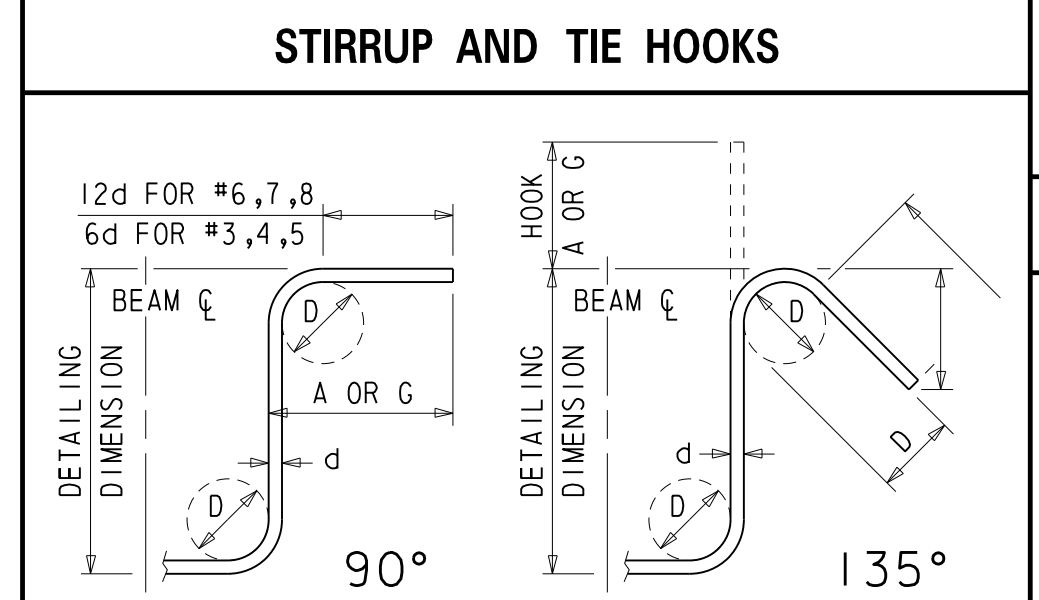
Table with columns: SPECIFICATIONS (QTY, SIZE, LENGTH, MARK, TYPE) and BENDING DIMENSIONS (FEET-INCHES /QUARTER INCH) (A, B, C, D, E, F/R, G, H, J, K, O). Rows include items like FTB505E STR, FTB506E T9, FTB507E STR, FTB508E STR, FTB601E STR, FTB602E STR, FTB701E STR, FTB702E STR, FTB801E STR, FTB901E STR, WWA505E STR, WWA501E STR, WWA502E STR, WWA503E STR, WWA505E STR, WWA501E STR, WWA502E STR, WWA503E STR, WWA505E STR.

NOT FOR BIDDING

Table with columns: BAR SIZE, NOMINAL DIMENSIONS (DIAMETER, AREA, WEIGHT), and END HOOKS (180°, 90°, 90° HOOK, 135° HOOK) with dimensions D, A OR G, J.

NOTES: 1. FIGURES SHOWN IN CIRCLES REPRESENT BAR BEND TYPES. 2. STANDARD BAR BENDS INCLUDE ONLY THOSE TYPES BELOW, INDICATED AS SUCH. 3. ALL DIMENSIONS OUT-TO-OUT, EXCEPT 'A' AND 'C' ON STD. 180° AND 135° HOOKS. 4. 'J' DIMENSIONS ON 180° HOOKS TO BE SHOWN ONLY WHERE NECESSARY TO RESTRICT HOOK SIZE, OTHERWISE STANDARD 'ACI' HOOKS ARE TO BE USED. 5. WHERE 'J' IS NOT SHOWN, 'J' WILL BE KEPT EQUAL TO OR LESS THAN 'H' ON TYPES 3, 5 AND 22. WHERE 'J' CAN EXCEED 'H', IT SHALL BE SHOWN. 6. 'H' DIMENSIONS OF STIRRUPS TO BE SHOWN AS NEEDED TO FIT WITHIN THE CONCRETE. 7. UNLESS OTHERWISE NOTED, DIAMETER 'D' IS THE SAME FOR ALL BENDS AND HOOKS ON A BAR (EXCEPT FOR BEND TYPES 11 AND 13). 8. WHERE SLOPE DIFFERS FROM 45° OFFSET, 'H' AND 'K' MUST BE SHOWN. 9. WHERE BARS ARE TO BE BENT MORE ACCURATELY THAN STANDARD BENDING TOLERANCES, BENDING DIMENSIONS REQUIRING CLOSER FABRICATION SHOULD HAVE LIMITS INDICATED. 10. FOR RECOMMENDED DIAMETER 'D', OF BENDS, HOOKS, ETC., REFER TO TABLE ABOVE, 'CRS1' OR 'ACI' TABLES WHERE APPLICABLE AND REQUIRED. 11. TYPE S1-S6, S11, T1-T3 AND T6-T9 APPLICABLE TO BAR SIZES #3 THROUGH #8.

STANDARD BAR BENDS diagrams showing various bend types (1-32) with dimensions A, B, C, D, E, F, G, H, J, K, O, and isometric views (25-26).



SPECIAL BAR BENDS diagrams showing spiral bar bends (X, HI, HJ, HJ) and other special bends (33-35) with dimensions.



BORING NO. RI-051  
 STA. 695+00 @ 100.00' LT.  
 ELEV. +62.0'

BORING NO. CI-2-3  
 STA. 695+00 @ C.L.  
 ELEV. +61.55'

BORING NO. CI-2-1  
 STA. 695+50.00 @ C.L.  
 ELEV. +60.43'

BORING NO. CI-2-2  
 STA. 695+00.00 @ 100' RT.  
 ELEV. +61.66'



ADDENDUMS / REVISIONS	

NOT TO SCALE

US 301,  
 SR 896 TO SR 1

CONTRACT	BRIDGE NO.	<b>1-444</b>
T200911308	DESIGNED BY:	
COUNTY	CHECKED BY:	
NEW CASTLE		

SOIL BORINGS	SHEET NO.	594
	TOTAL SHTS.	875
	BR1-444DT-14	