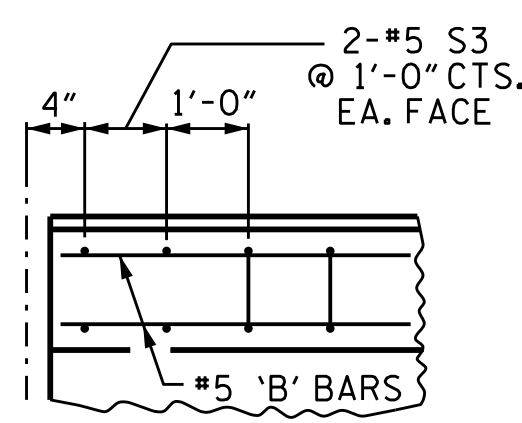
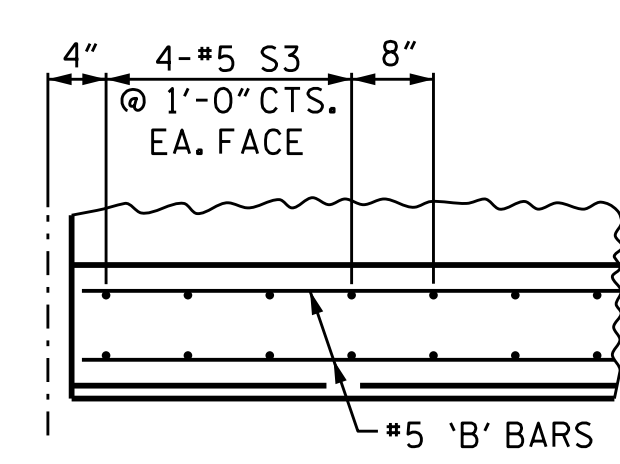


SPAN X, Y AND Z
PLAN OF PARAPET

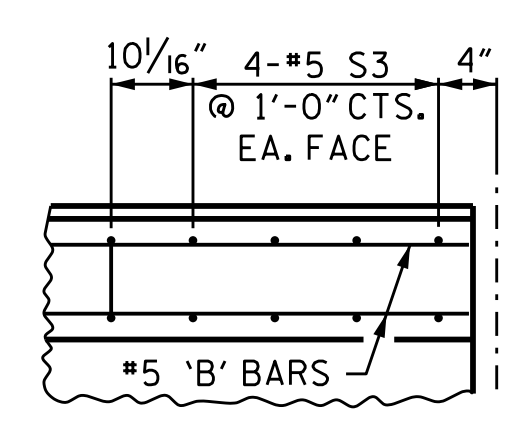
FOR DETAILS OF PARAPET, ENDPOSTS, AND ADDITIONAL REINFORCEMENT, SEE SHEET 14 OF 14. ALL DIMENSIONS ARE TAKEN ALONG THE ARC OF THE OUTSIDE EDGE OF SUPERSTRUCTURE



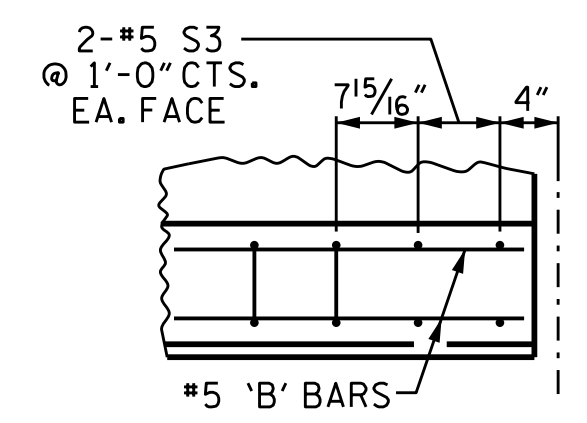
DETAIL 'A'



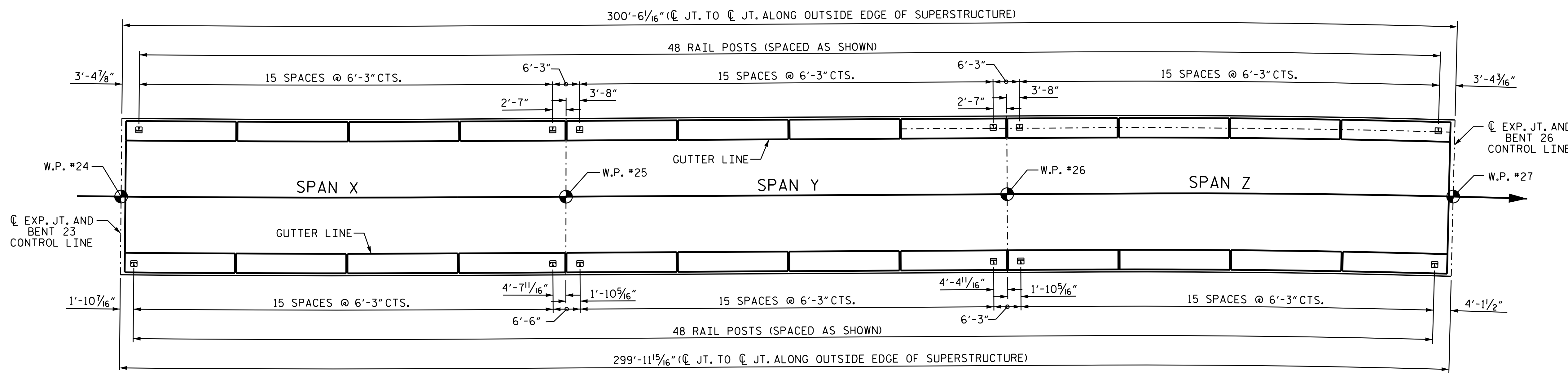
DETAIL 'B'



DETAIL 'C'



DETAIL 'D'

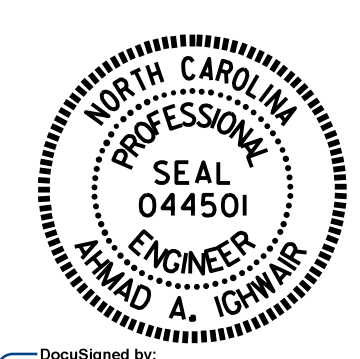


SPAN X, Y AND Z
PLAN OF RAIL POST SPACINGS

ALL DIMENSIONS ARE TAKEN ALONG THE ARC OF THE OUTSIDE EDGE OF SUPERSTRUCTURE

PROJECT NO. B-4863
CARTERET COUNTY
 STATION: 34+75.00 -L-

SHEET 9 OF 14

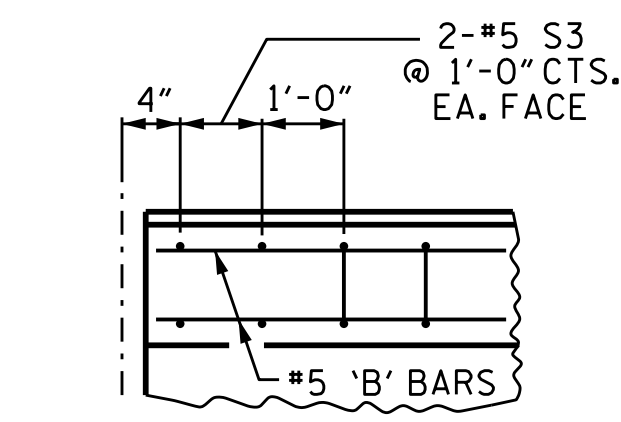


DocuSigned by:
 Ahmad Ighwair
 4894B044C555489
 3/9/2020

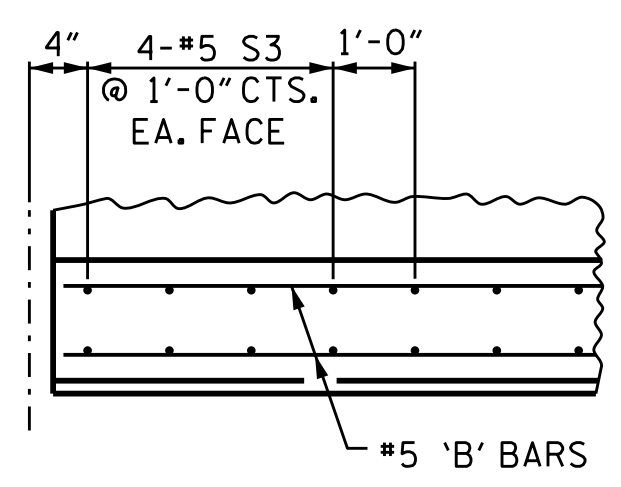
DRAWN BY : B. N. BARODAWALA DATE : 05-18
 CHECKED BY : M.A. ALLEN DATE : 11-18
 DESIGN ENGINEER OF RECORD: A. A. IGHWAIR DATE : 04-19

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

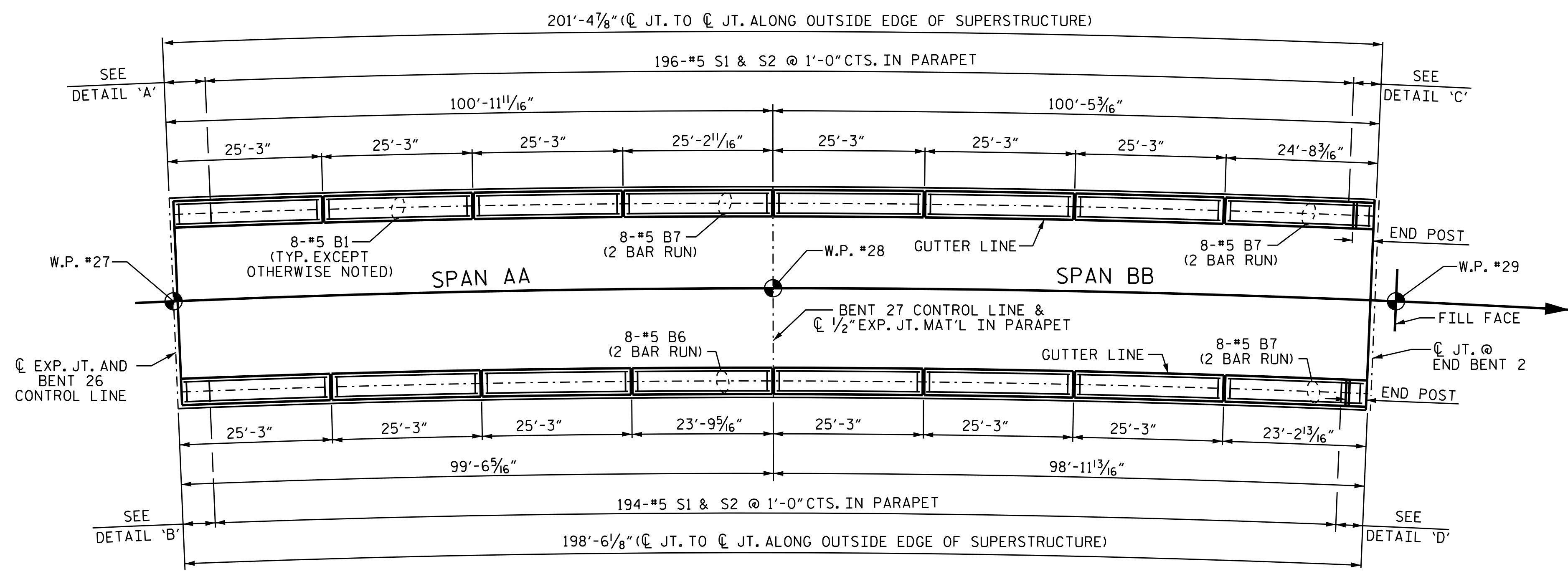
REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-109	
1			3			TOTAL SHEETS 194	
2			4				



DETAIL 'A'



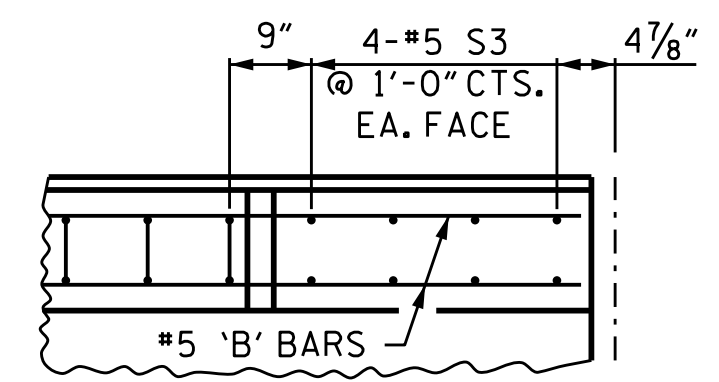
DETAIL 'B'



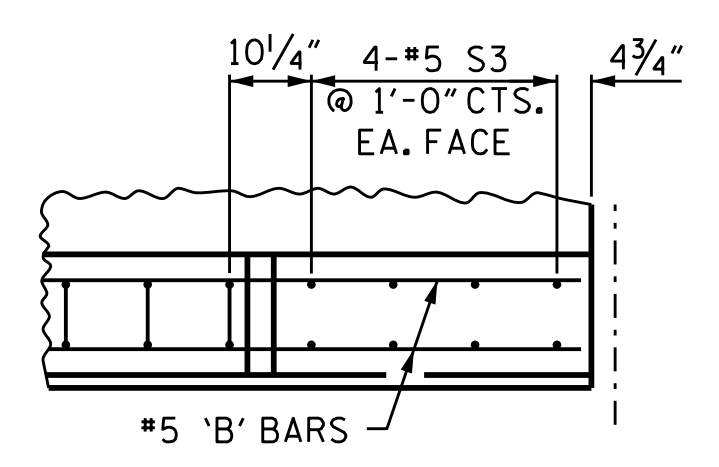
SPAN AA AND BB

PLAN OF PARAPET

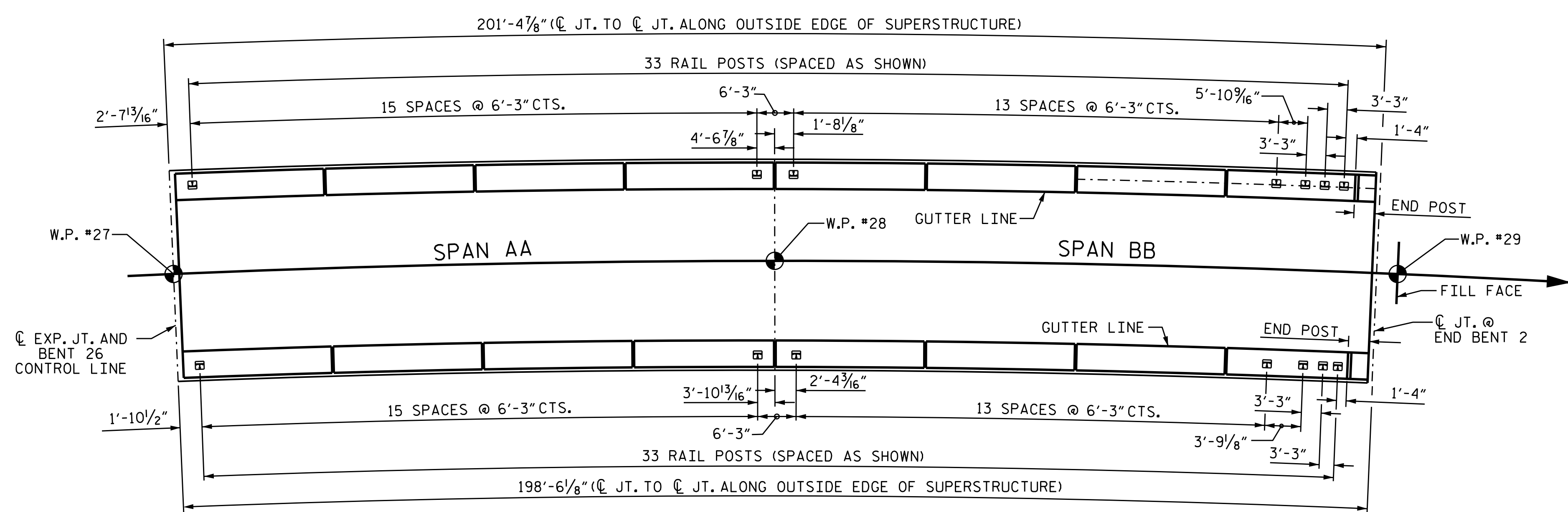
FOR DETAILS OF PARAPET, ENDPOSTS, AND ADDITIONAL REINFORCEMENT, SEE SHEET 14 OF 14. ALL DIMENSIONS ARE TAKEN ALONG THE ARC OF THE OUTSIDE EDGE OF SUPERSTRUCTURE



DETAIL 'C'



DETAIL 'D'



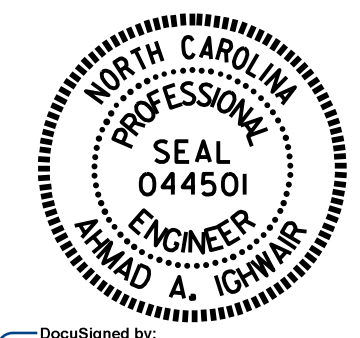
SPAN AA AND BB

PLAN OF RAIL POST SPACINGS

ALL DIMENSIONS ARE TAKEN ALONG THE ARC OF THE OUTSIDE EDGE OF SUPERSTRUCTURE

PROJECT NO. B-4863
CARTERET COUNTY
 STATION: 34+75.00 -L-

SHEET 10 OF 14



DocuSigned by:
 Ahmad Ighwair
 48948044C555489
 3/9/2020

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

CONCRETE PARAPET
 DETAILS AND
 2 BAR METAL RAIL
 POST SPACING

DRAWN BY : B. N. BARODAWALA DATE : 05-18
 CHECKED BY : M.A. ALLEN DATE : 11-18
 DESIGN ENGINEER OF RECORD: A. A. IGHWAIR DATE : 04-19

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-110	
1			3			TOTAL	194
2			4			SHEETS	

NOTES

STRUCTURAL CONCRETE INSERT

- THE STRUCTURAL CONCRETE INSERT ASSEMBLY SHALL CONSIST OF THE FOLLOWING COMPONENTS:
- A. FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 1/2".
 - B. 1 - 3/4" Ø X 1 5/8" BOLT WITH WASHER. BOLT SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLT AND WASHER SHALL BE GALVANIZED. (AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLT AND WASHER MAY BE USED AS AN ALTERNATE FOR THE 3/4" Ø X 1 5/8" GALVANIZED BOLT AND WASHER. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)
 - C. WIRE STRUT SHOWN IN THE CONCRETE INSERT ASSEMBLY DETAIL IS THE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 PSI. AS AN OPTION, A 1/16" Ø WIRE STRUT WITH A MINIMUM TENSILE STRENGTH OF 90,000 PSI IS ACCEPTABLE.

NOTES

METAL RAIL TO END POST CONNECTION

- THE METAL RAIL TO END POST CONNECTION SHALL CONSIST OF THE FOLLOWING COMPONENTS:
- A. 1/2" PLATES SHALL CONFORM TO AASHTO M270 GRADE 36 AND SHALL BE GALVANIZED AFTER FABRICATION.
 - B. 3/4" STRUCTURAL CONCRETE INSERT SHALL HAVE A WORKING LOAD SHEAR CAPACITY OF 4800 LBS. THE FERRULES SHALL ENGAGE A 3/4" Ø X 1 5/8" BOLT WITH 2" O.D. WASHER IN PLACE. THE 3/4" Ø X 1 5/8" BOLT SHALL HAVE N. C. THREADS.
 - C. CAP SCREWS FOR RAIL ATTACHMENT TO ANGLE SHALL CONFORM TO THE REQUIREMENTS OF ASTM F593 ALLOY 305 STAINLESS STEEL. CAP SCREWS TO BE CENTERED IN SLOTS AT 60°F.
 - D. STANDARD CLAMP BARS (SEE METAL RAIL SHEET).
 - E. 1/2" Ø PIPE SLEEVES (IF REQUIRED) TO BE GALVANIZED.

THE COST OF THE STANDARD CLAMP BARS AND CAP SCREWS USED IN THE METAL RAIL TO END POST CONNECTION SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR LINEAR FEET OF 1 OR 2 BAR METAL RAILS.

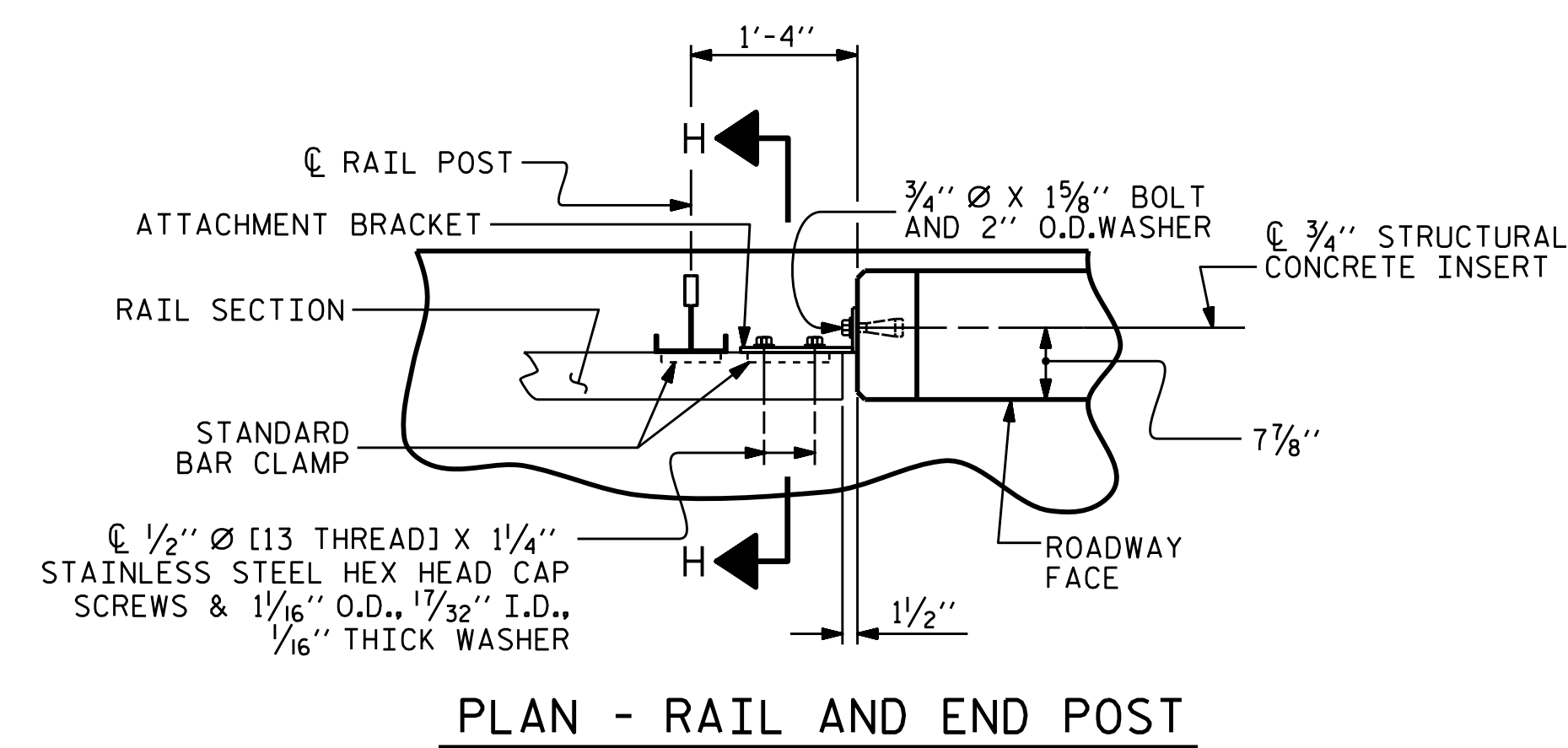
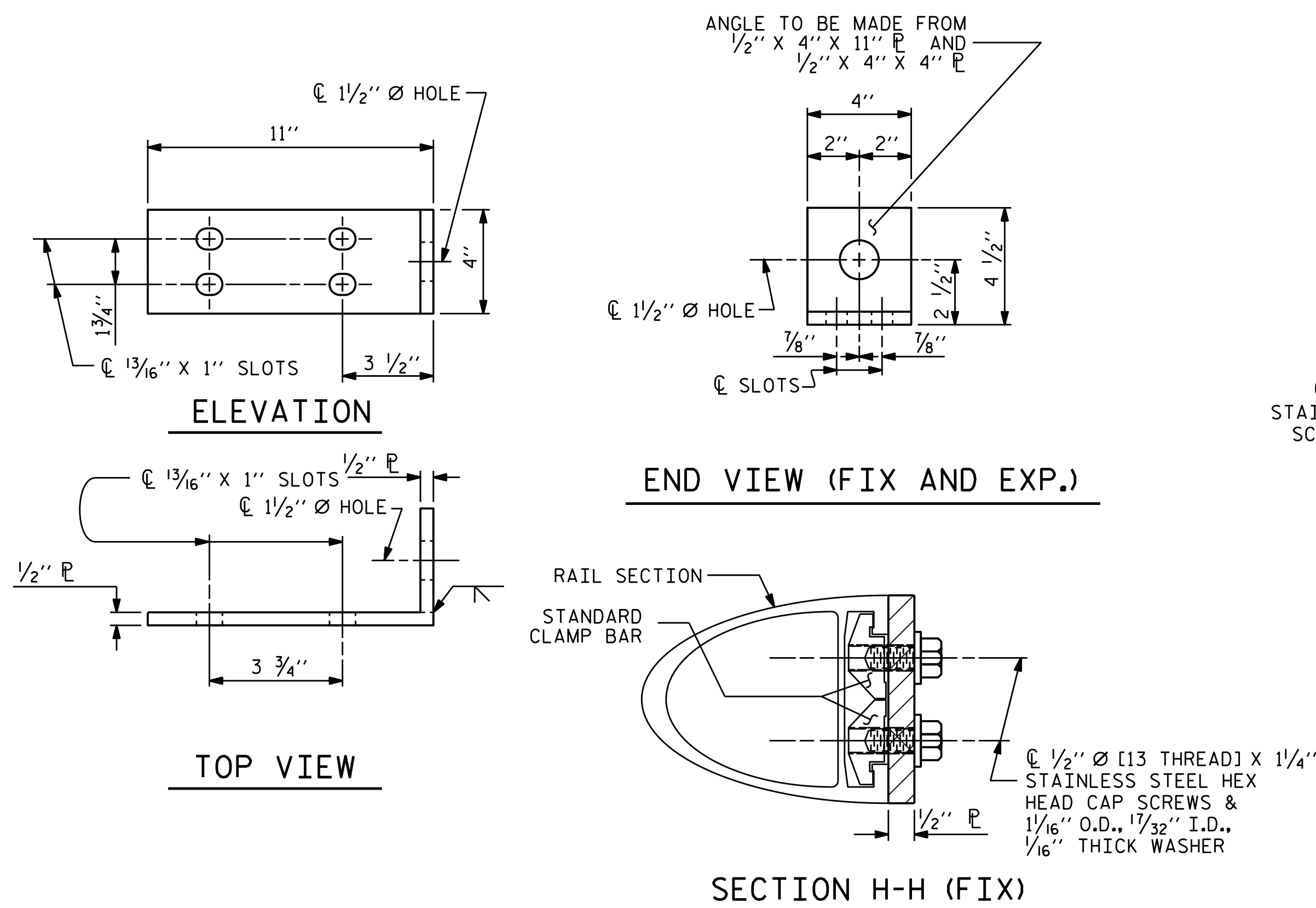
THE 3/4" STRUCTURAL CONCRETE INSERT WITH BOLT SHALL BE ASSEMBLED IN THE SHOP.

THE COST OF THE 3/4" STRUCTURAL CONCRETE INSERT ASSEMBLY, AND THE 1/2" PLATES COMPLETE IN PLACE SHALL BE INCLUDED IN THE VARIOUS PAY ITEMS.

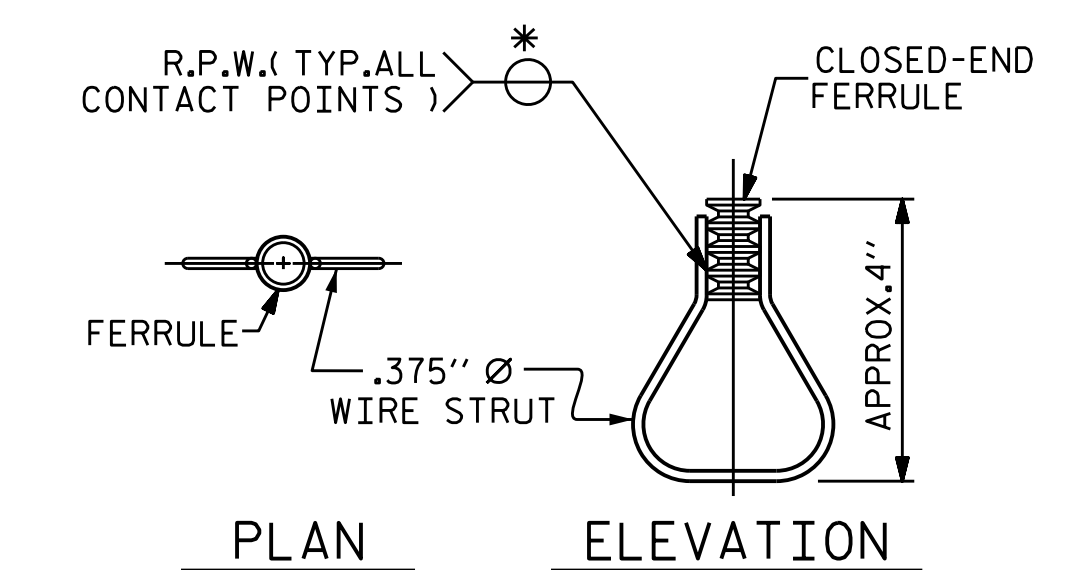
THE CONTRACTOR, AT HIS OPTION, MAY USE AN ADHESIVE BONDING SYSTEM IN LIEU OF THE STRUCTURAL CONCRETE INSERT EMBEDDED IN THE END POST. IF THE ADHESIVE BONDING SYSTEM IS USED, THE 3/4" Ø X 1 5/8" BOLT WITH WASHER SHALL BE REPLACED WITH A 3/4" Ø X 6 1/2" BOLT AND 2" O.D. WASHER. ALL SPECIFICATIONS THAT APPLY TO THE 3/4" Ø X 1 5/8" BOLT SHALL APPLY TO THE 3/4" Ø X 6 1/2" BOLT. FIELD TESTING OF THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED.

FOR RAIL POST SPACING, SEE "2 BAR METAL RAIL POST SPACING" SHEETS.

PLAN OF RAIL POST SPACINGS



PLAN - RAIL AND END POST

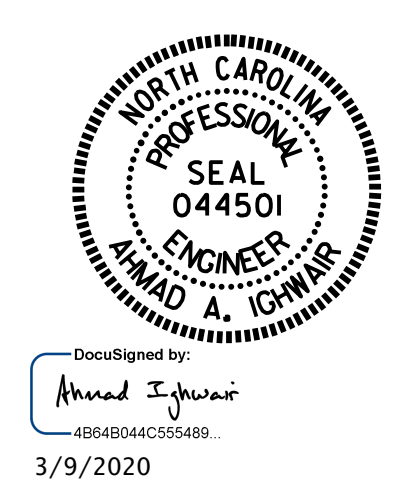


PLAN ELEVATION STRUCTURAL CONCRETE INSERT

* EACH WELDED ATTACHMENT OF WIRE TO FERRULE SHALL DEVELOP THE TENSILE STRENGTH OF THE WIRE.

PROJECT NO. B-4863
CARTERET COUNTY
 STATION: 34+75.00 -L-

SHEET 11 OF 14

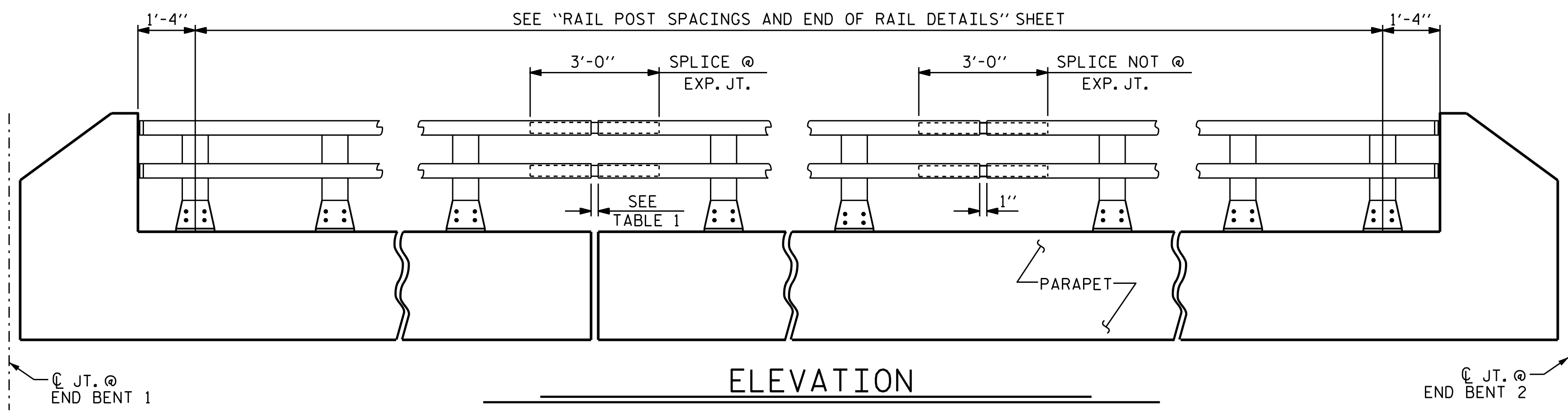


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
STANDARD
 RAIL POST SPACINGS
 AND
 END OF RAIL DETAILS
 FOR TWO BAR METAL RAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-111
1			3			TOTAL SHEETS
2			4			194

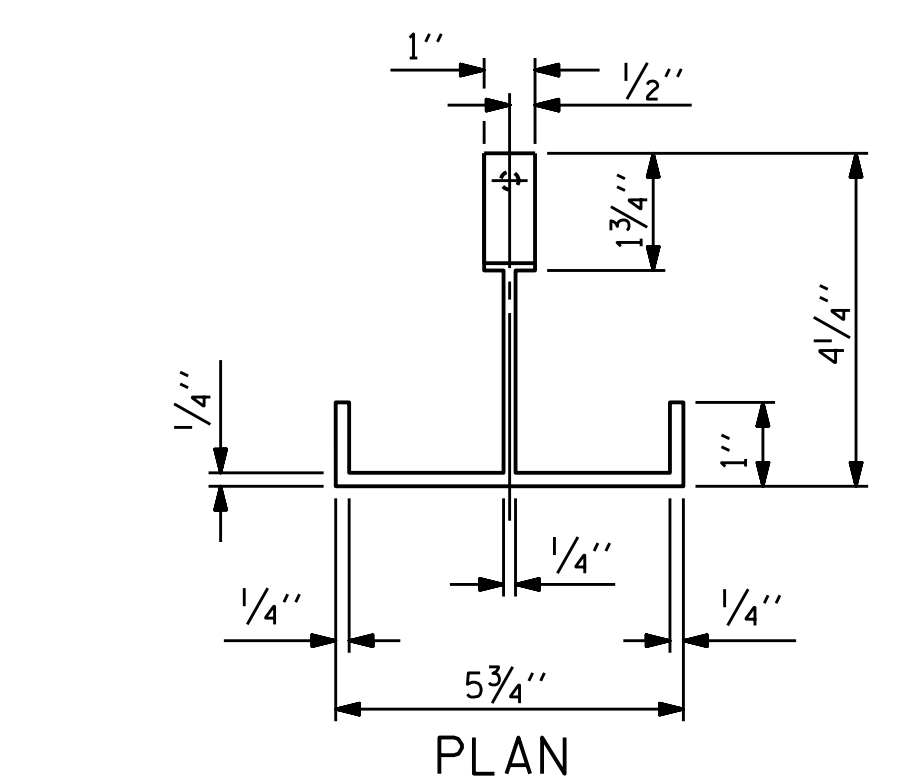
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ASSEMBLED BY : B. N. BARODAWALA	DATE : 6-12-18
CHECKED BY : M. A. ALLEN	DATE : 01-19
DRAWN BY : FCJ	1/88
CHECKED BY : CRK	3/89
REV. 5/1/06	TLA/GM
REV. 10/1/11	MAA/GM
REV. 12/17	MAA/THC

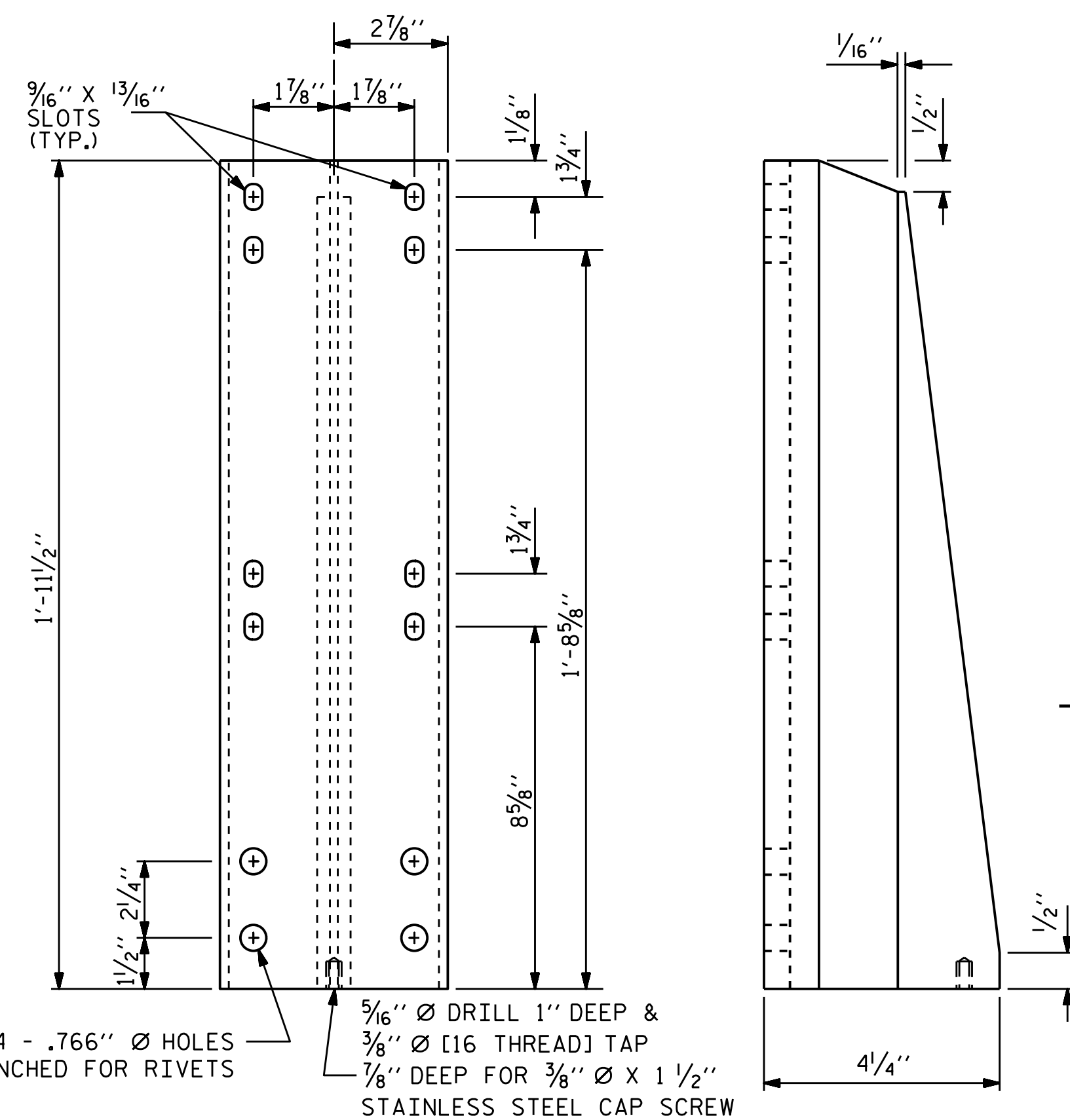


ELEVATION

NOTE : FOR ATTACHMENT OF METAL RAIL TO END POST, SEE STANDARD NO. BMR2.



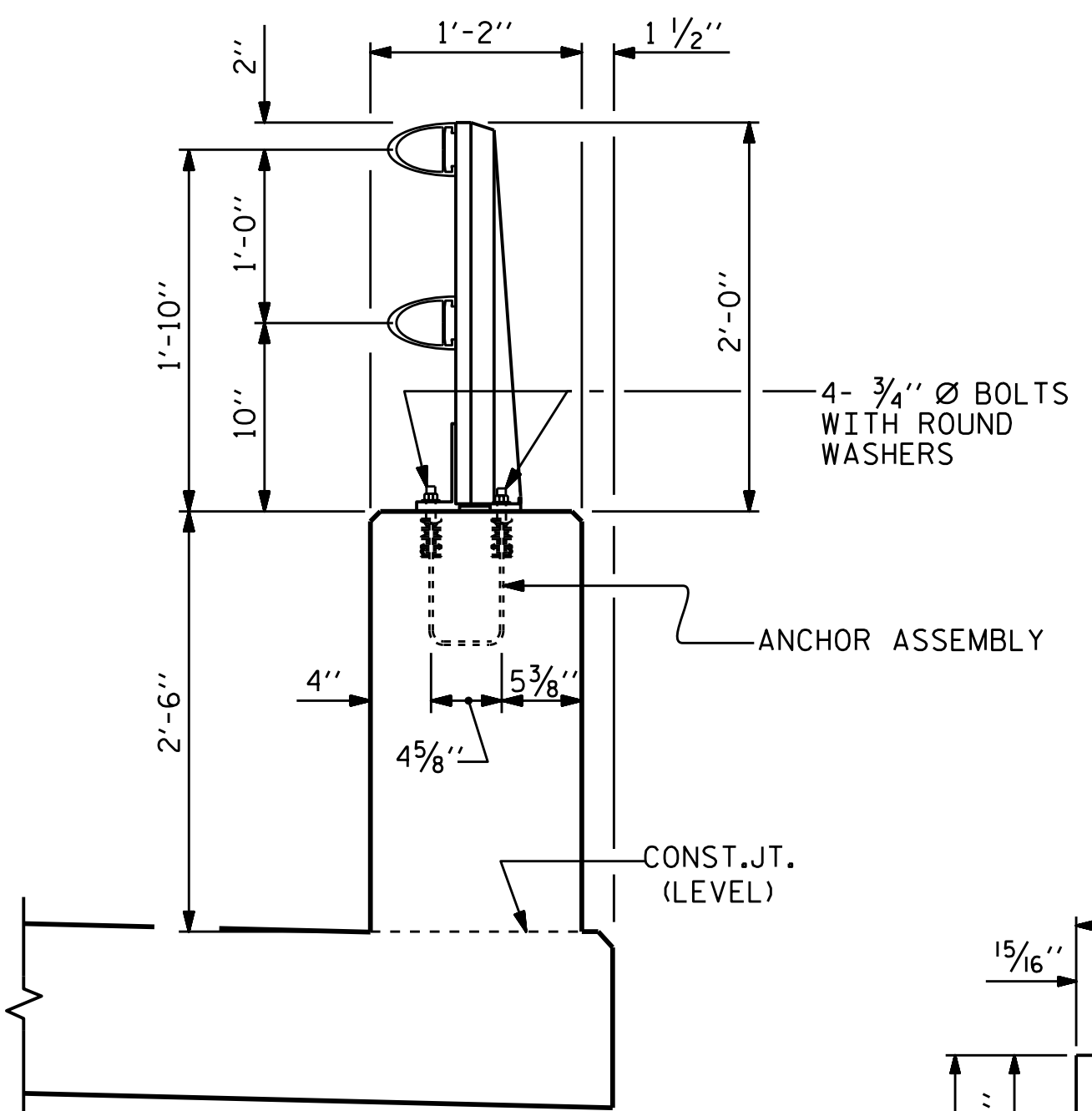
PLAN



FRONT ELEVATION

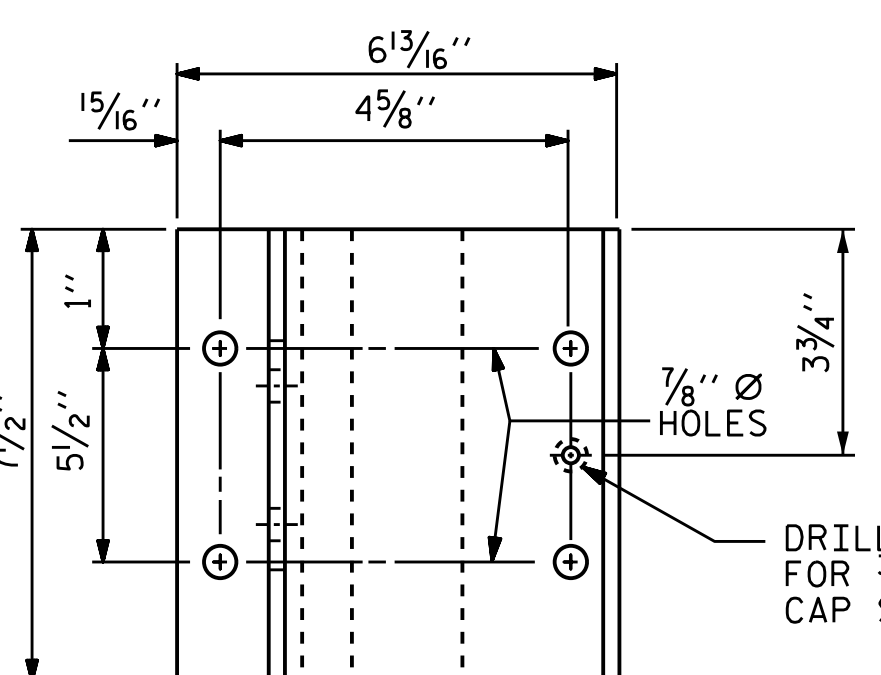
SIDE ELEVATION

DETAILS OF POST

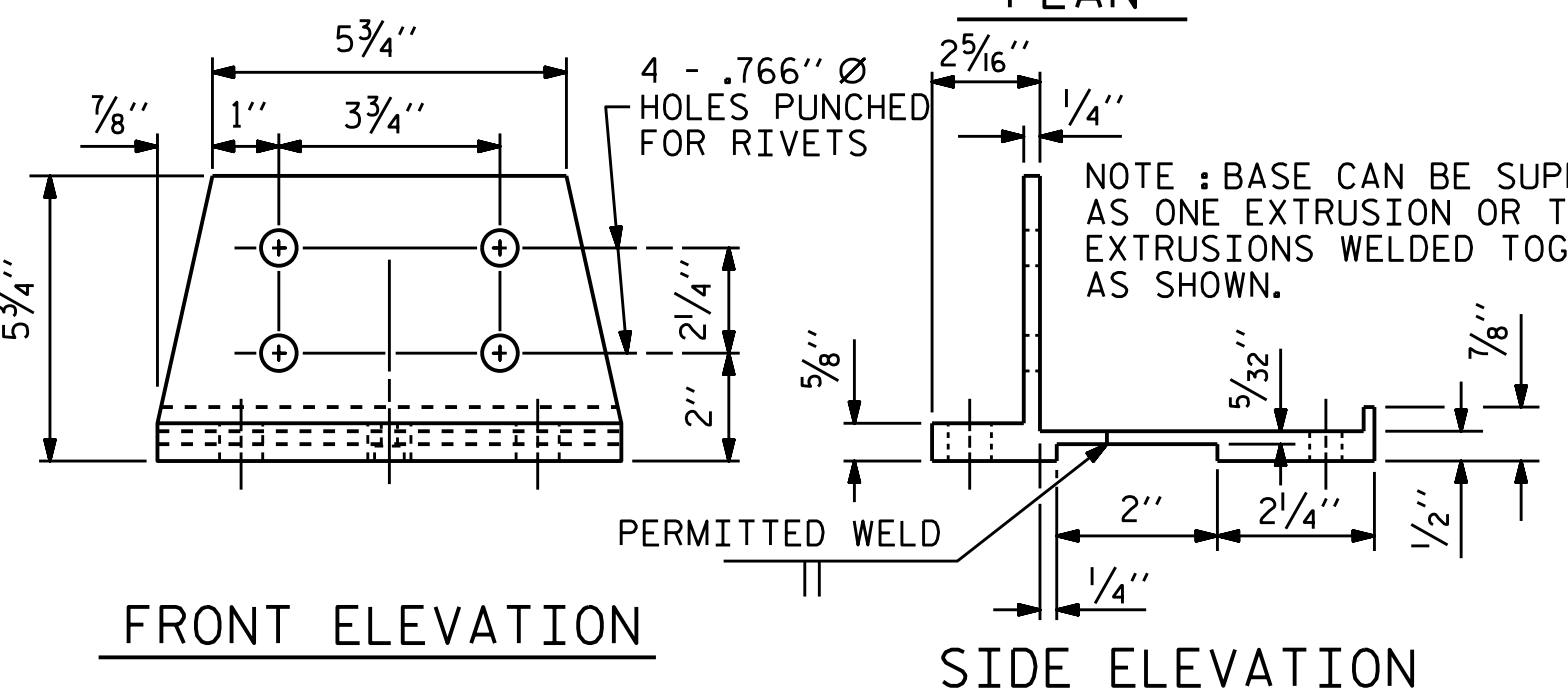


SECTION THRU PARAPET AND RAIL

TABLE 1	
EXP. JT. @	RAIL OPENING
BENT 3	1 3/4"
BENT 6	1 3/4"
BENT 9	1 3/4"
BENT 12	1 3/4"
BENT 15	1 1/2"
BENT 17	1 1/2"
BENT 20	1 1/2"
BENT 23	1 1/2"
BENT 26	1 1/4"



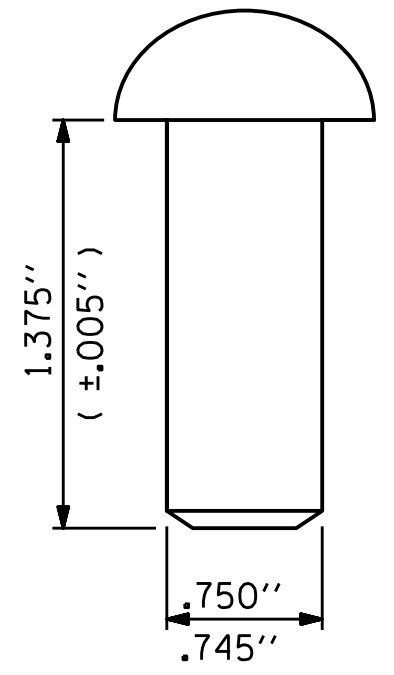
PLAN



FRONT ELEVATION

SIDE ELEVATION

POST BASE DETAILS



RIVET DETAIL

NOTES

ALUMINUM RAILS

MATERIAL FOR POSTS, BASES AND RAILS, EXPANSION BARS AND CLAMP BARS SHALL BE ASTM B-221 ALLOY 6061-T6. MATERIAL FOR RIVETS SHALL BE ASTM B316 ALLOY 6061-T6. RIVETS SHALL BE STANDARD BUTTON HEAD AND CONE POINT COLD DRIVEN AS PER DRAWING. THE BASE OF RAIL POSTS, OR ANY OTHER ALUMINUM SURFACE IN CONTACT WITH CONCRETE SHALL BE THOROUGHLY COATED WITH AN ALUMINUM IMPREGNATED CAULKING COMPOUND OF APPROVED QUALITY. MATERIAL FOR SHIMS TO BE ASTM B209 ALLOY 6061-T6.

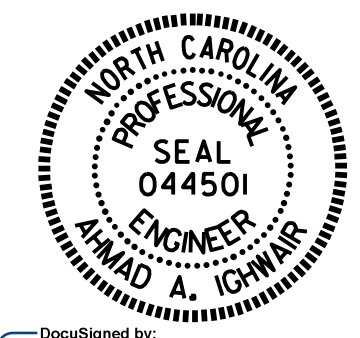
GENERAL NOTES

RAILING SHALL BE CONTINUOUS FROM END POST TO END POST OF BRIDGE. EACH JOINT IN RAIL LENGTH SHALL BE SPLICED AS DETAILED. PANEL LENGTHS OF RAIL SHALL BE ATTACHED TO A MINIMUM OF THREE POSTS. FOR END OF RAIL TO CLEAR FACE OF CONCRETE END POST DIMENSION, SEE STANDARD NO. BMR2. CAP SCREWS SHALL BE ASTM F593 ALLOY 305 STAINLESS STEEL. WASHERS SHALL MEET THE REQUIREMENTS OF ASTM F844 EXCEPT THEY SHALL BE MADE FROM ALLOY 304 STAINLESS STEEL. CERTIFIED MILL REPORTS ARE REQUIRED FOR RAILS AND POSTS. SHOP INSPECTION IS NOT REQUIRED. METAL RAIL POSTS SHALL BE SET NORMAL TO CURB GRADE. METHOD OF MEASUREMENT FOR METAL RAILS: FOR LENGTH OF METAL RAILS TO BE PAID FOR, SEE THE STANDARD SPECIFICATIONS. CURVED RAIL USAGE: WHERE RAILS ARE TO BE USED ON BRIDGES ON HORIZONTAL AND/OR VERTICAL CURVATURE THE CONTRACTOR MAY, AT HIS OPTION, HAVE THE REQUIRED CURVATURE IN THE RAIL FORMED IN THE SHOP OR IN THE FIELD. IN EITHER EVENT, THE RAIL SHALL CONFORM WITHOUT BUCKLING OR KINKING TO THE REQUIRED CURVATURE IN A UNIFORM MANNER ACCEPTABLE TO THE ENGINEER. TO INSURE FUTURE IDENTIFICATION OF THE FABRICATOR, A PERMANENT IDENTIFYING MARK SHALL BE PLACED ON EACH POST. THE METHOD OF MARKING AND LOCATION SHALL BE SUCH THAT IT DOES NOT DETRACT FROM THE APPEARANCE OF THE POST, BUT REMAINS VISIBLE AFTER RAIL PLACEMENT. SHIMS SHALL BE USED AS NECESSARY FOR POST ALIGNMENT. ALLOY 6351-T5 MAY BE SUBSTITUTED FOR ALLOY 6061-T6 WHERE APPLICABLE. MINOR VARIATIONS IN DETAILS OF METAL RAIL WILL BE CONSIDERED. DETAILS OF SUCH VARIATIONS, IF DESIRED, SHALL BE SUBMITTED FOR APPROVAL. GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE PARAPET AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. A CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN PARAPET EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT MIDPOINT OF PARAPET SEGMENTS LESS THAN 20 FEET IN LENGTH AND NO CONTRACTION JOINTS ARE REQUIRED FOR THOSE SEGMENTS LESS THAN 10 FEET IN LENGTH.

PAY LENGTH = 6380.5 LIN. FT.

PROJECT NO. B-4863
CARTERET COUNTY
 STATION: 34+75.00 -L-

SHEET 12 OF 14



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 2 BAR METAL RAIL

ASSEMBLED BY : B. N. BARODAWALA	DATE : 6-12-18
CHECKED BY : M. A. ALLEN	DATE : 01-19
DRAWN BY : EEM	6/94
CHECKED BY : RGW	6/94
REV. 10/1/11	MAA/GM
REV. 6/13	MAA/GM
REV. 12/17	MAA/THC

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-112
1			3			TOTAL SHEETS 194
2			4			

NOTES

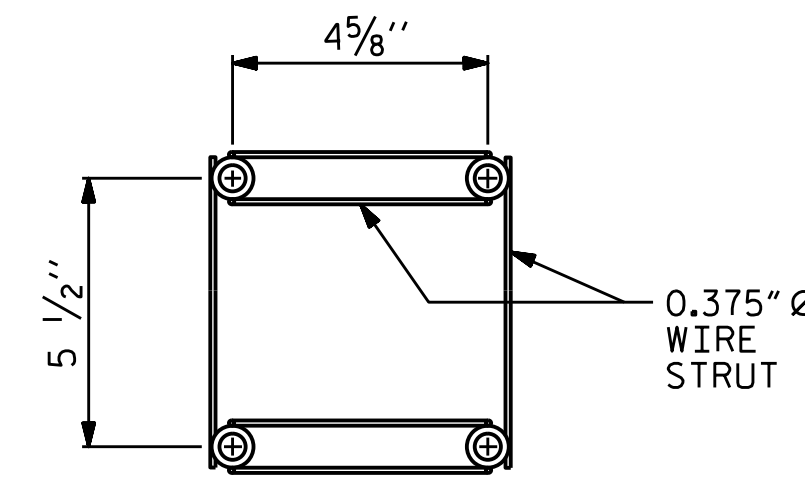
STRUCTURAL CONCRETE ANCHOR ASSEMBLY

THE STRUCTURAL CONCRETE ANCHOR ASSEMBLY SHALL CONSIST OF THE FOLLOWING COMPONENTS :

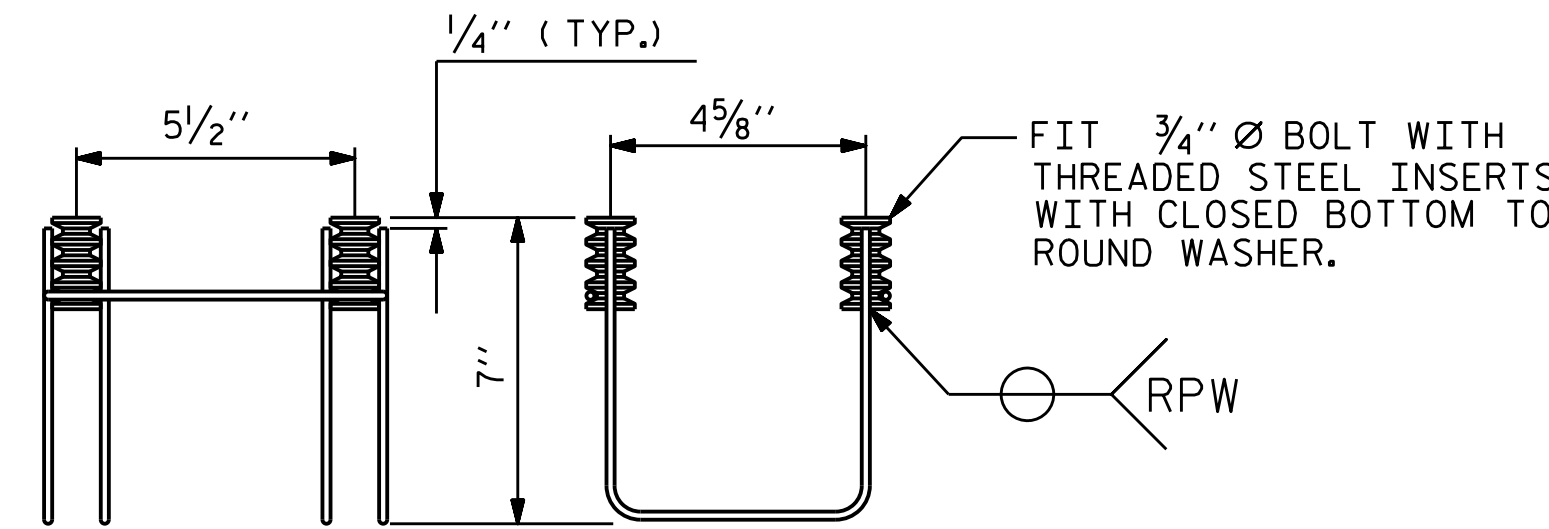
- A. FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 2" FOR 3/4" FERRULES.
- B. 4 - 3/4" Ø X 2 1/2" BOLTS WITH WASHERS. BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLTS AND WASHERS SHALL BE GALVANIZED. AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 3/4" Ø X 2 1/2" GALVANIZED BOLTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.
- C. WIRE STRUT SHOWN IN THE CONCRETE ANCHOR ASSEMBLY DETAIL IS THE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 PSI. AS AN OPTION, A 7/16" Ø WIRE STRUT WITH A MINIMUM TENSILE STRENGTH OF 90,000 PSI IS ACCEPTABLE.
- D. THE METAL RAIL ANCHOR ASSEMBLIES TO BE HOT DIPPED GALVANIZED TO CONFORM TO REQUIREMENTS OF AASHTO M111.
- E. THE COST OF THE METAL RAIL ANCHOR ASSEMBLY WITH BOLTS AND WASHERS COMPLETE IN PLACE SHALL BE INCLUDED IN THE PRICE BID FOR LINEAR FEET OF METAL RAIL.
- F. BOLTS TO BE TIGHTENED ONE-HALF TURN WITH A WRENCH FROM A FINGER-TIGHT POSITION.

THE CONTRACTOR MAY USE ADHESIVELY ANCHORED ANCHOR BOLTS IN PLACE OF THE METAL RAIL ANCHOR ASSEMBLY. LEVEL ONE FIELD TESTING IS REQUIRED, AND THE YIELD LOAD OF THE 3/4" Ø BOLT IS 10 KIPS. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE THE STANDARD SPECIFICATIONS.

WHEN ADHESIVELY ANCHORED ANCHOR BOLTS ARE USED, BOLTS SHALL MEET THE REQUIREMENTS OF ASTM F593 ALLOY 304 STAINLESS STEEL WITH MINIMUM 75,000 PSI ULTIMATE STRENGTH. NUTS SHALL MEET THE REQUIREMENTS OF ASTM F594 ALLOY 304 STAINLESS STEEL AND WASHERS SHALL MEET THE REQUIREMENTS OF ASTM F844 EXCEPT THEY SHALL BE MADE FROM ALLOY 304 STAINLESS STEEL.



PLAN

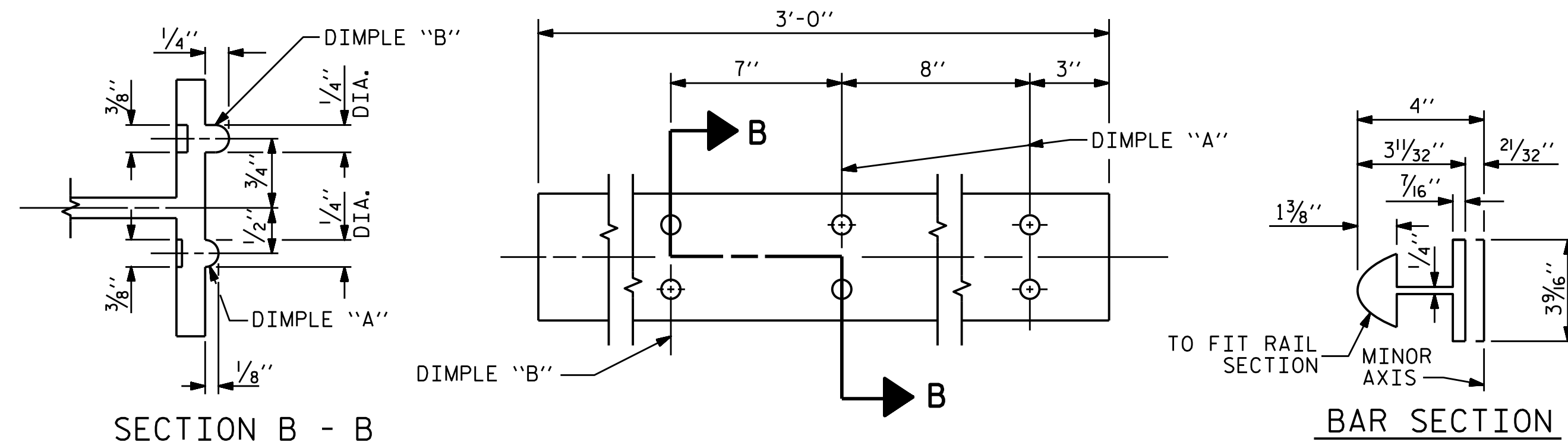


SIDE VIEW

ELEVATION

4-BOLT METAL RAIL ANCHOR ASSEMBLY

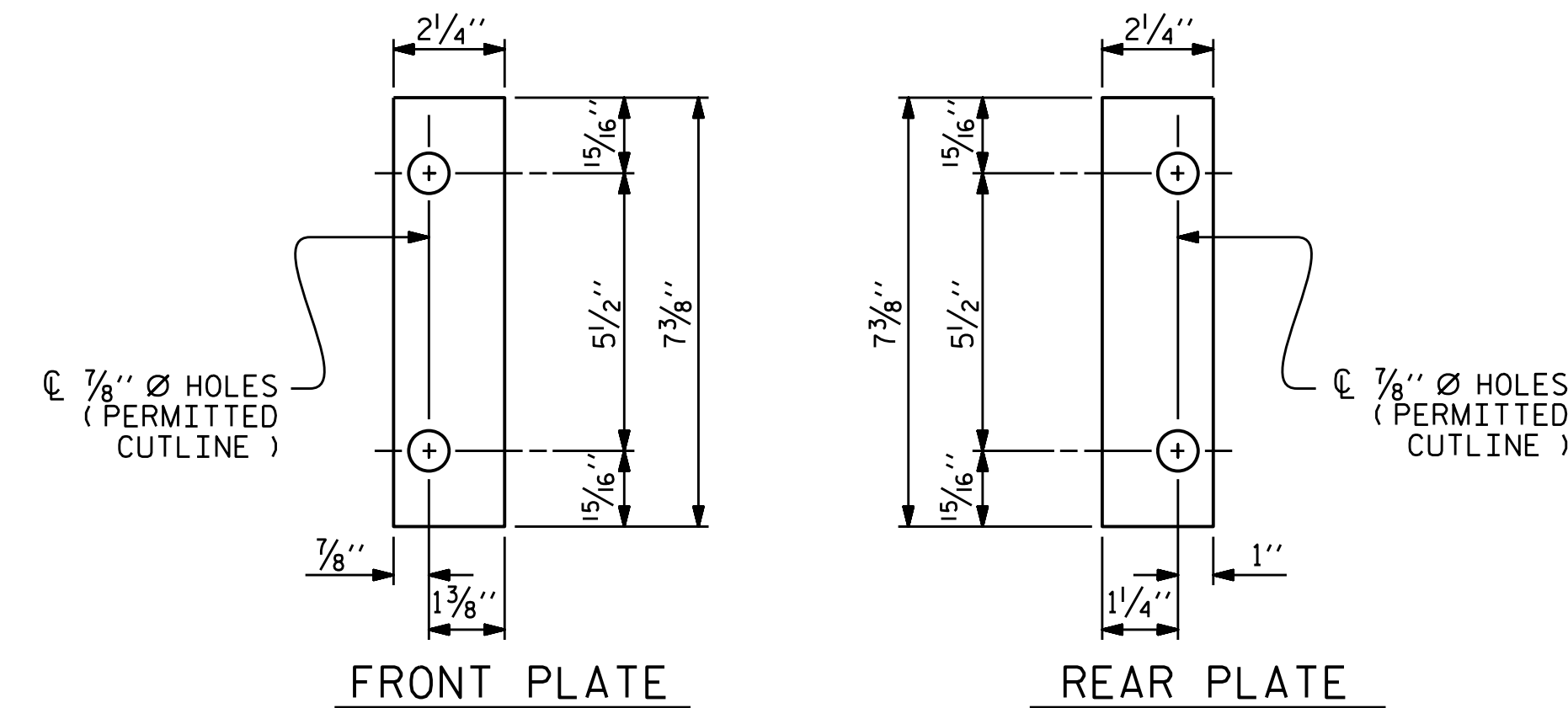
(1018 ASSEMBLIES REQUIRED)



SECTION B - B

EXPANSION BAR DETAILS

BAR SECTION

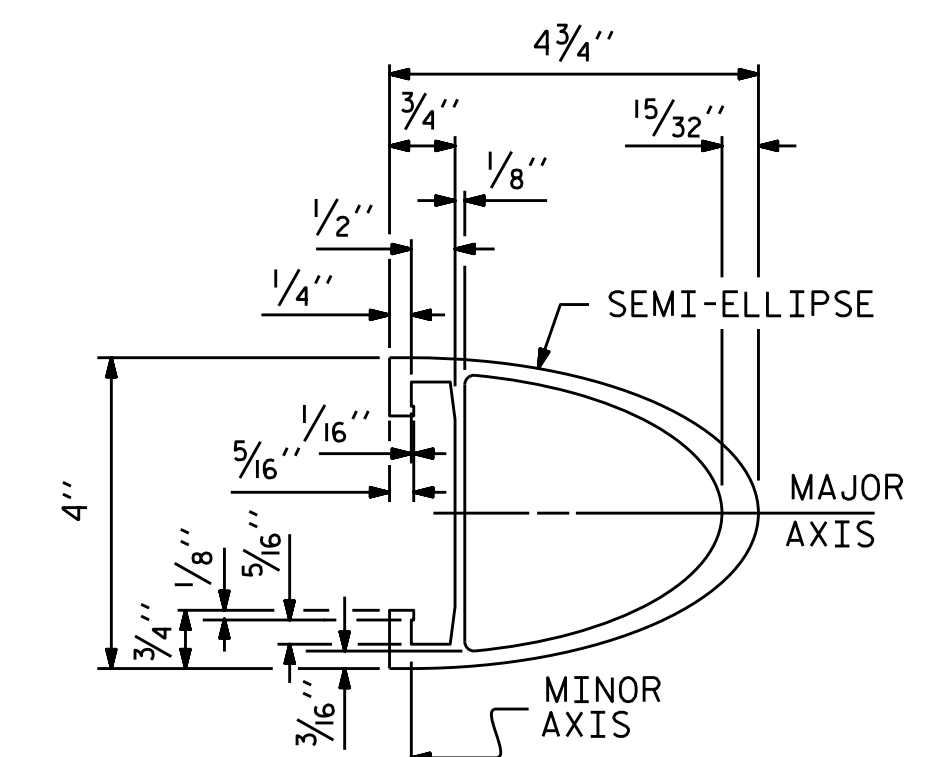


FRONT PLATE

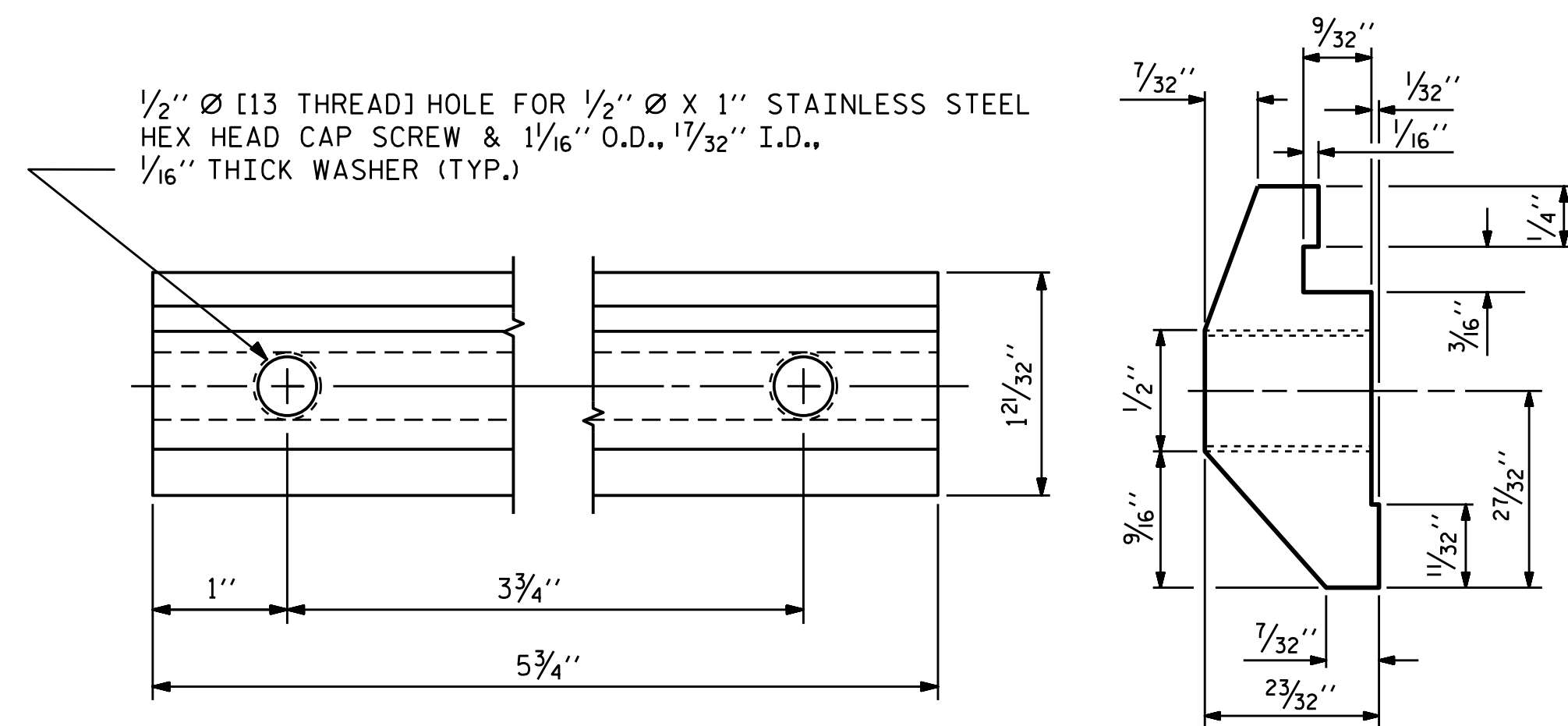
REAR PLATE

SHIM DETAILS

NOTE : SHIMS MAY BE CUT ALONG PERMITTED CUTLINE OR SLOTTED TO EDGE OF PLATE TO FACILITATE PLACEMENT.

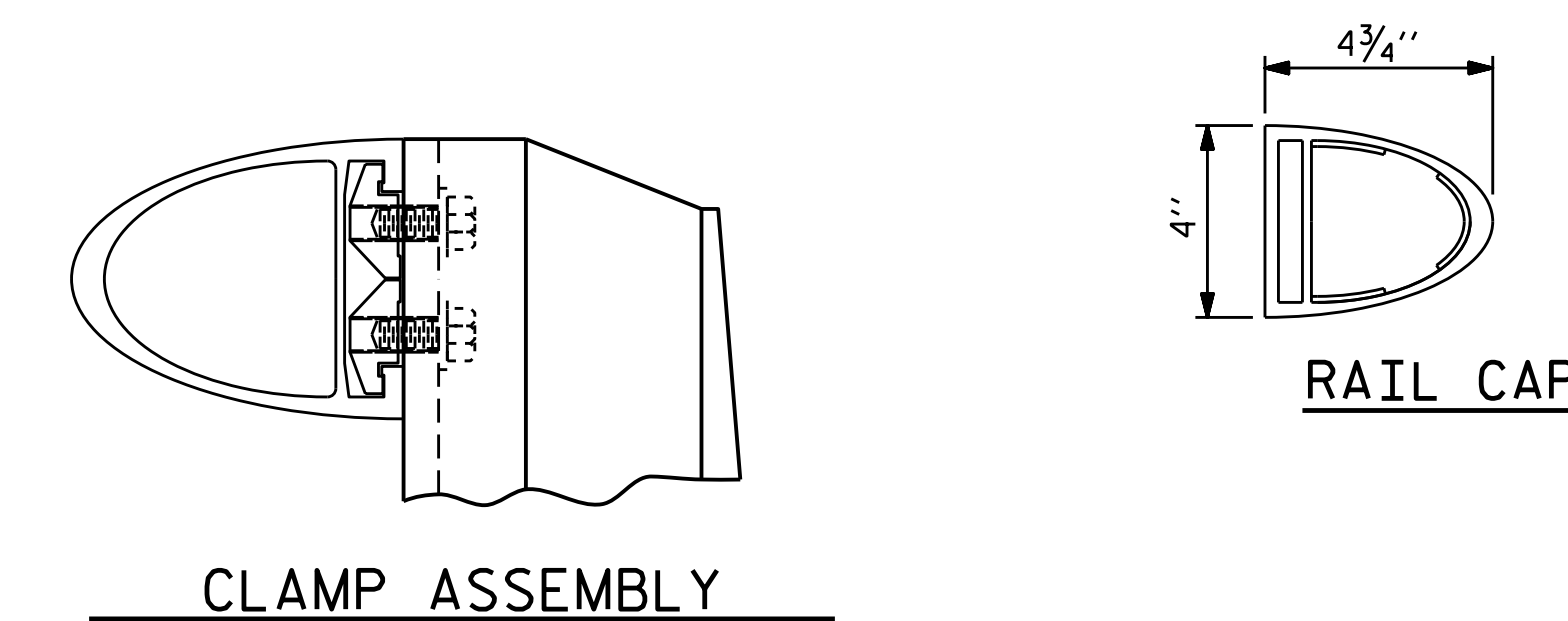


RAIL SECTION



CLAMP BAR DETAIL

(4 REQUIRED PER POST)



RAIL CAP

CLAMP ASSEMBLY

PROJECT NO. B-4863
CARTERET COUNTY
 STATION: 34+75.00 -L-

SHEET 13 OF 14

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 2 BAR METAL RAIL

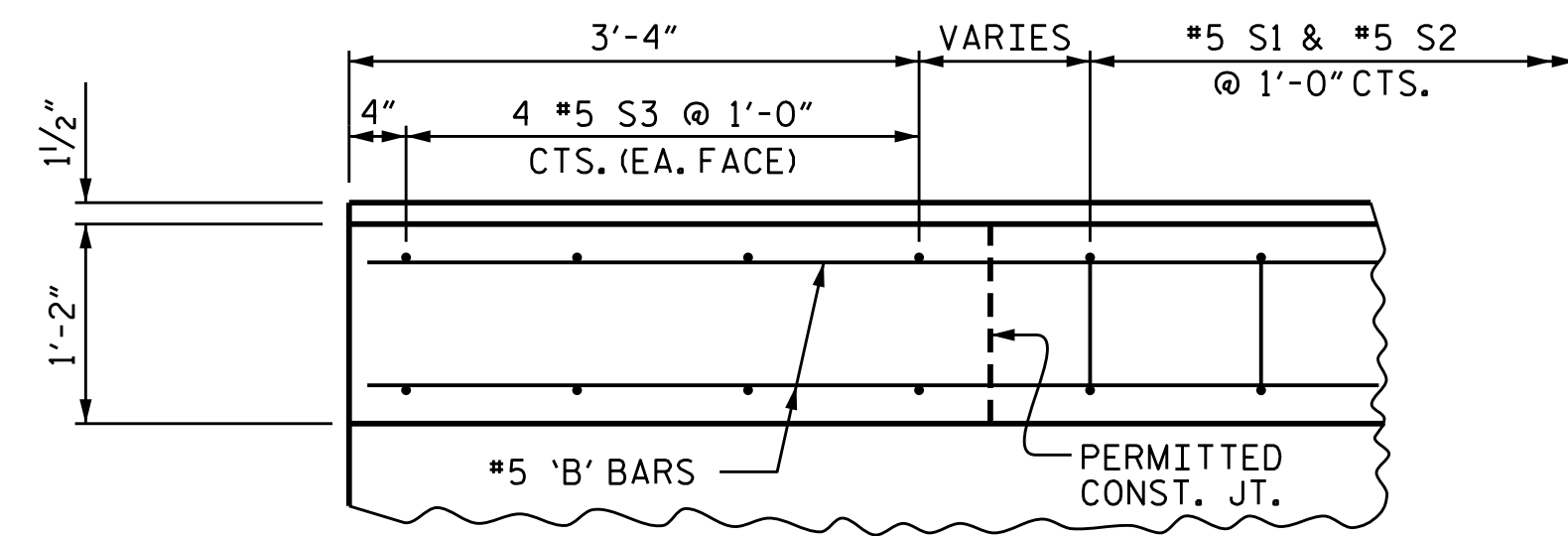


DocuSigned by:
 Ahmad Engineer
 48948044C555489
 3/9/2020

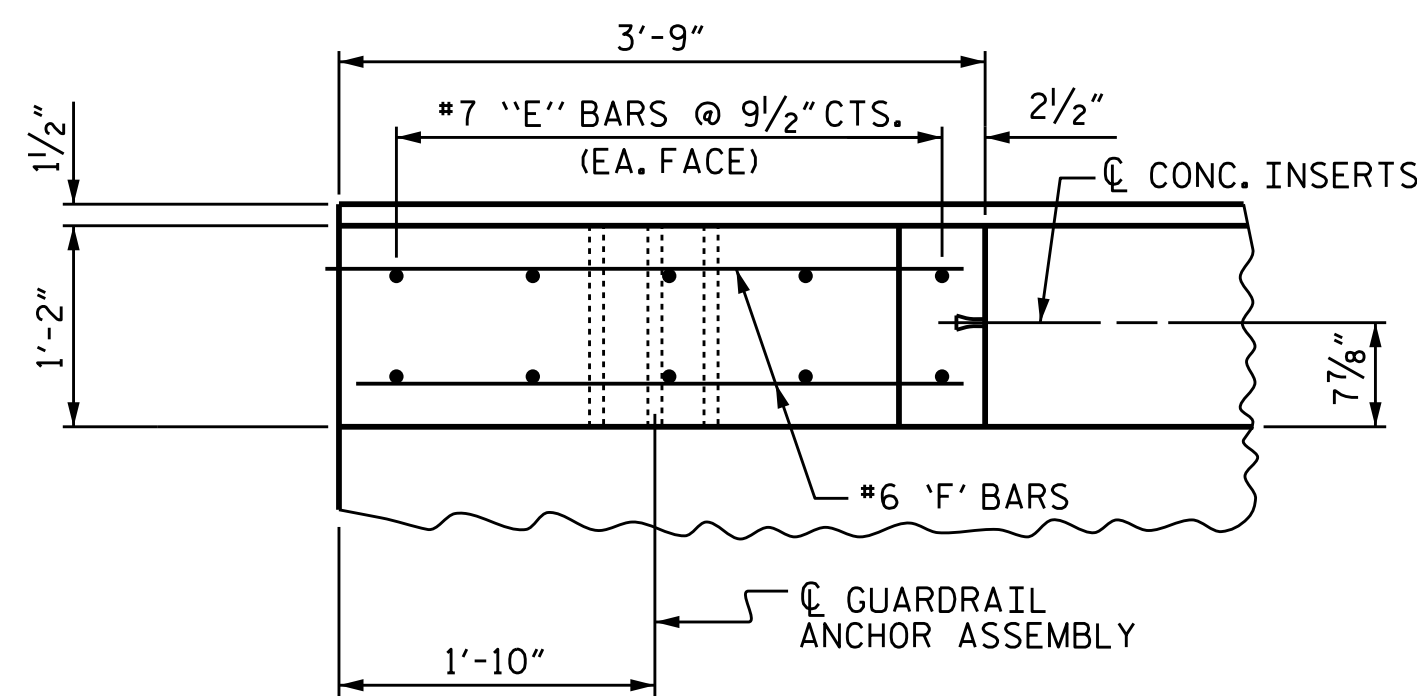
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 FINAL UNLESS ALL
 SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-113
1			3			TOTAL SHEETS
2			4			194

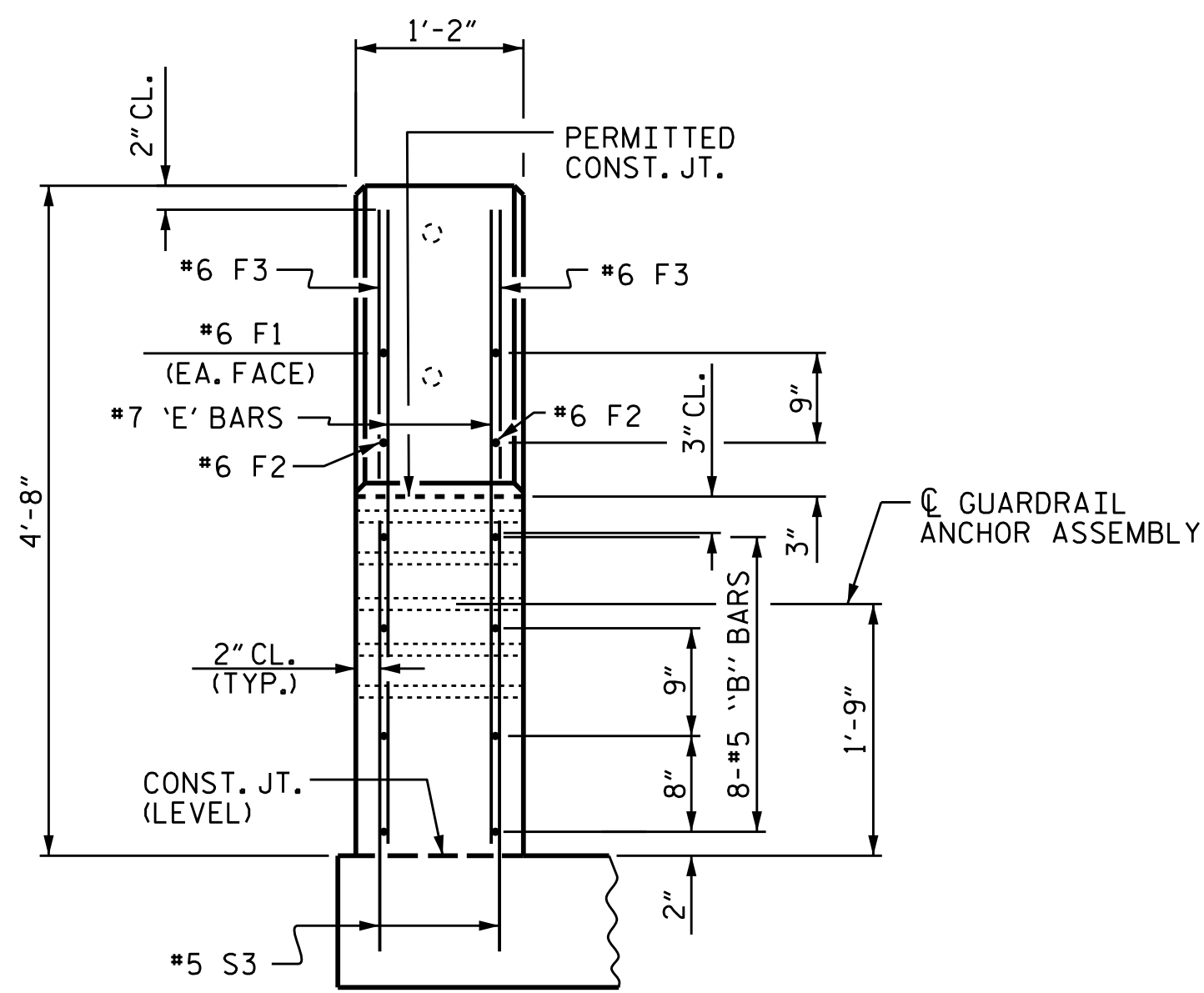
ASSEMBLED BY : B. N. BARODAWALA	DATE : 6-12-18
CHECKED BY : M. A. ALLEN	DATE : 01-19
DRAWN BY : EEM	6/94
CHECKED BY : RGW	6/94
REV. 5/1/06R	KMM/GM
REV. 10/1/11	MAA/GM
REV. 12/17	MAA/THC



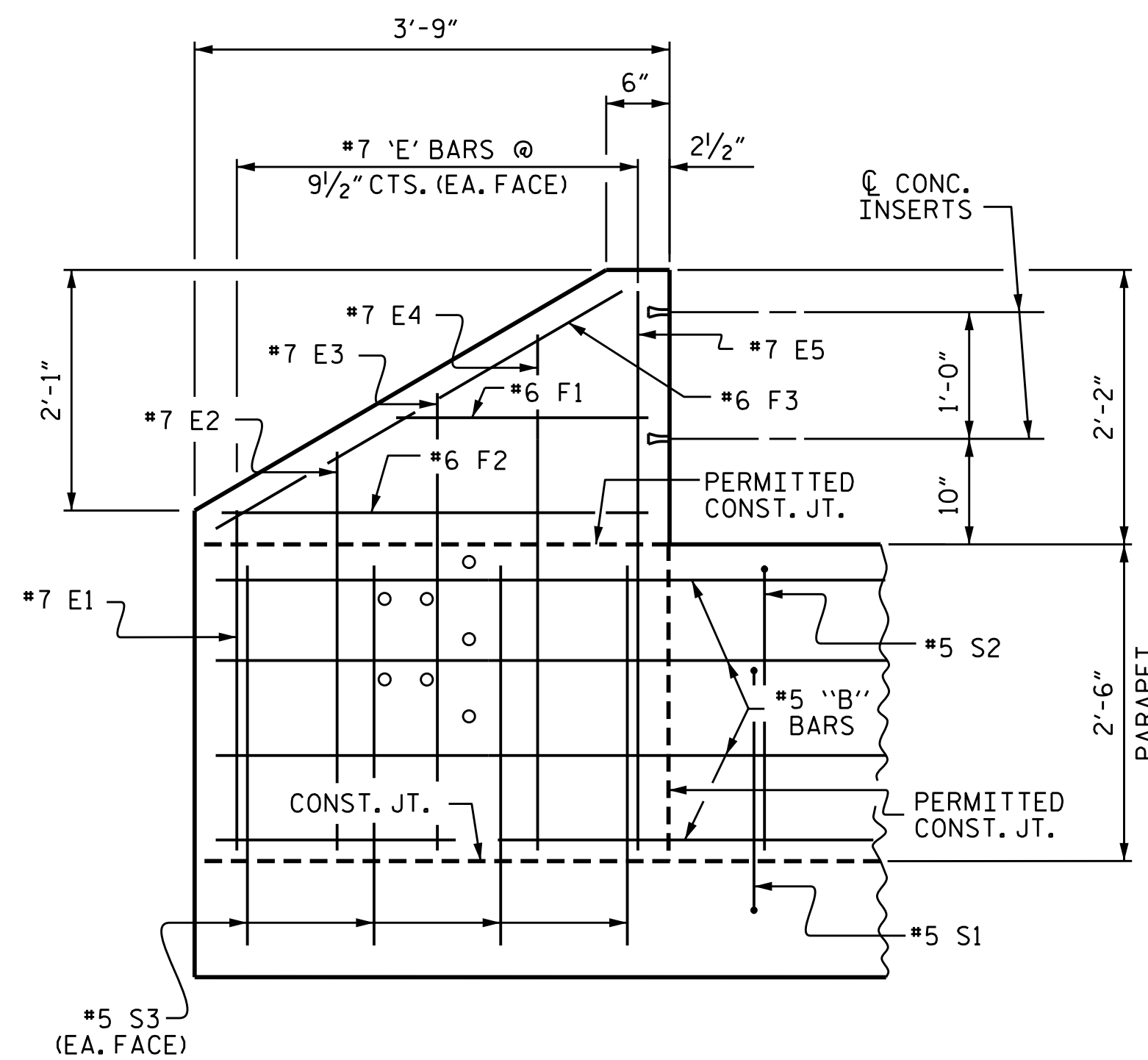
PLAN OF PARAPET



PLAN OF END POST



END VIEW



ELEVATION

PARAPET AND END POST FOR TWO BAR METAL RAIL

NOTES

THE PARAPET IN THE CONTINUOUS UNIT SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE IN THE UNIT HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.

ALL REINFORCING STEEL IN PARAPET AND END POSTS SHALL BE EPOXY COATED.

VERTICAL GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE PARAPET AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. THE CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN PARAPET EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT MIDPOINT OF PARAPET SEGMENTS LESS THAN 20 FEET IN LENGTH AND NO CONTRACTION JOINTS ARE REQUIRED FOR THOSE SEGMENTS LESS THAN 10 FEET IN LENGTH.

THE #5 S1 & #5 S2 BARS MAY BE SHIFTED SLIGHTLY IN ORDER TO MAINTAIN A 2" MINIMUM CLEARANCE TO THE 1/2" EXPANSION JOINT MATERIAL IN PARAPET.

FOR DETAILS OF CONCRETE INSERTS IN END POSTS, SEE "RAIL POST SPACINGS AND END OF RAIL DETAIL" SHEET.

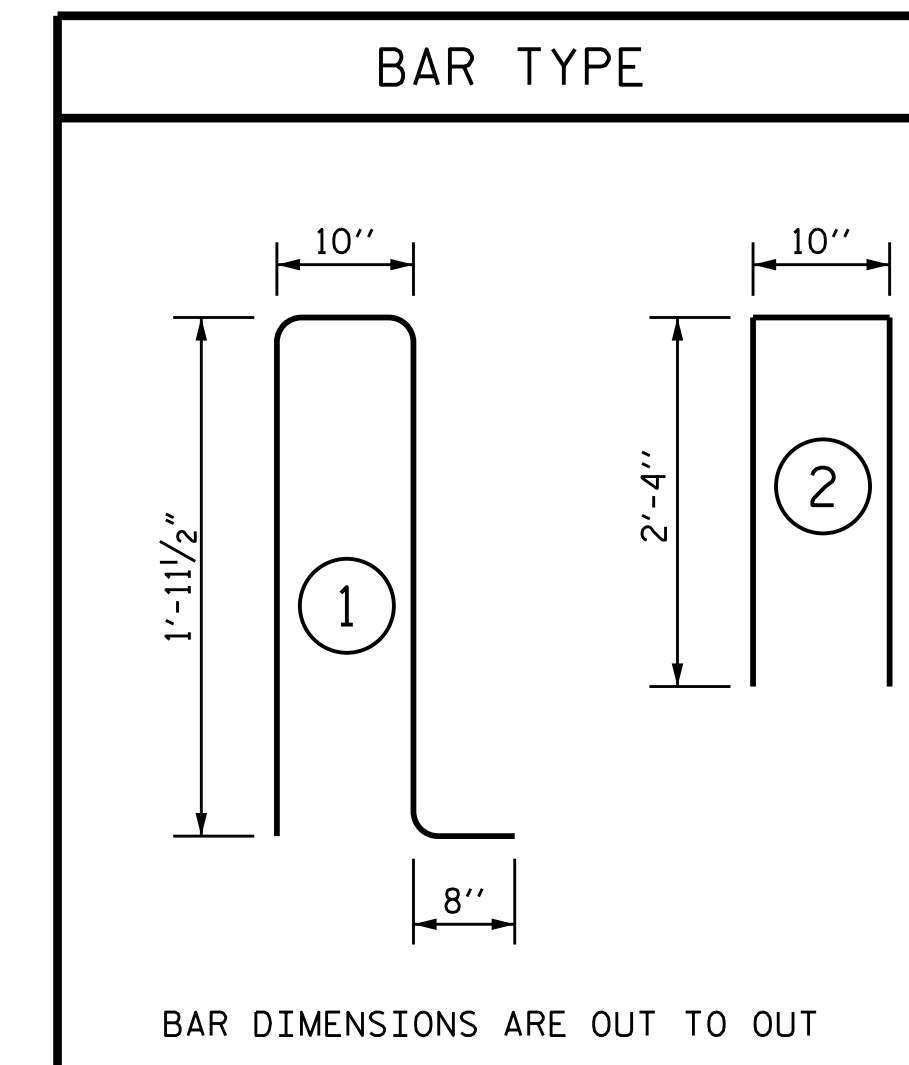
FOR DETAILS OF GUARDRAIL ANCHOR ASSEMBLIES, SEE "GUARDRAIL ANCHORAGE DETAILS FOR METAL RAIL" SHEET.

WHEN FOAM JOINT SEAL IS REQUIRED, THE JOINT IN THE DECK SHALL BE SAWED PRIOR TO THE CASTING OF PARAPET.

THE #5 S3 BARS SHALL BE INSTALLED, USING AN ADHESIVE ANCHORING SYSTEM, AFTER SAWING THE JOINT. THE YIELD LOAD FOR THE #5 S3 BARS IS 18.6 KIPS. FIELD TESTING FOR THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED.

BILL OF MATERIAL

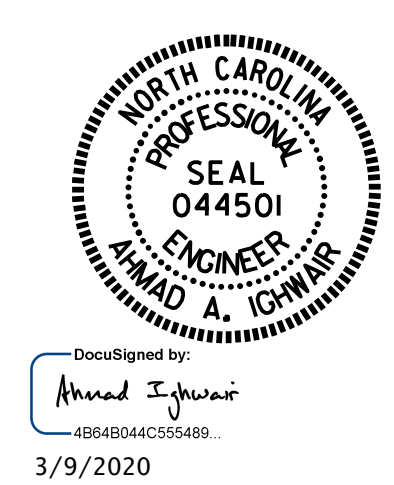
FOR CONCRETE PARAPET AND END POSTS					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*B1	672	#5	STR	24'-10"	17406
*B2	704	#5	STR	25'-7"	18785
*B3	16	#5	STR	29'-1"	485
*B4	128	#5	STR	27'-7"	3682
*B5	24	#5	STR	23'-7"	590
*B6	192	#5	STR	13'-7"	2720
*B7	480	#5	STR	14'-5"	7218
*B8	192	#5	STR	15'-2"	3037
*B9	8	#5	STR	29'-0"	242
*B10	8	#5	STR	20'-10"	174
*E1	8	#7	STR	2'-6"	41
*E2	8	#7	STR	3'-0"	49
*E3	8	#7	STR	3'-6"	57
*E4	8	#7	STR	4'-0"	65
*E5	8	#7	STR	4'-4"	71
*F1	8	#6	STR	1'-10"	22
*F2	8	#6	STR	3'-0"	36
*F3	8	#6	STR	3'-7"	43
*S1	6290	#5	1	5'-5"	35536
*S2	6290	#5	2	5'-6"	36083
*S3	248	#5	STR	3'-0"	776
* EPOXY COATED REINFORCING STEEL					127,118 LBS.
CLASS AA CONCRETE					692.5 C.Y.
TOTAL LIN. FT. OF CONCRETE PARAPET					6396.69 L. F.



PARAPET REINFORCING STEEL	
BAR SIZE	SPLICE LENGTH
#5	3'-5"
#6	4'-4"

PROJECT NO. B-4863
CARTERET COUNTY
 STATION: 34+75.00 -L-

SHEET 14 OF 14



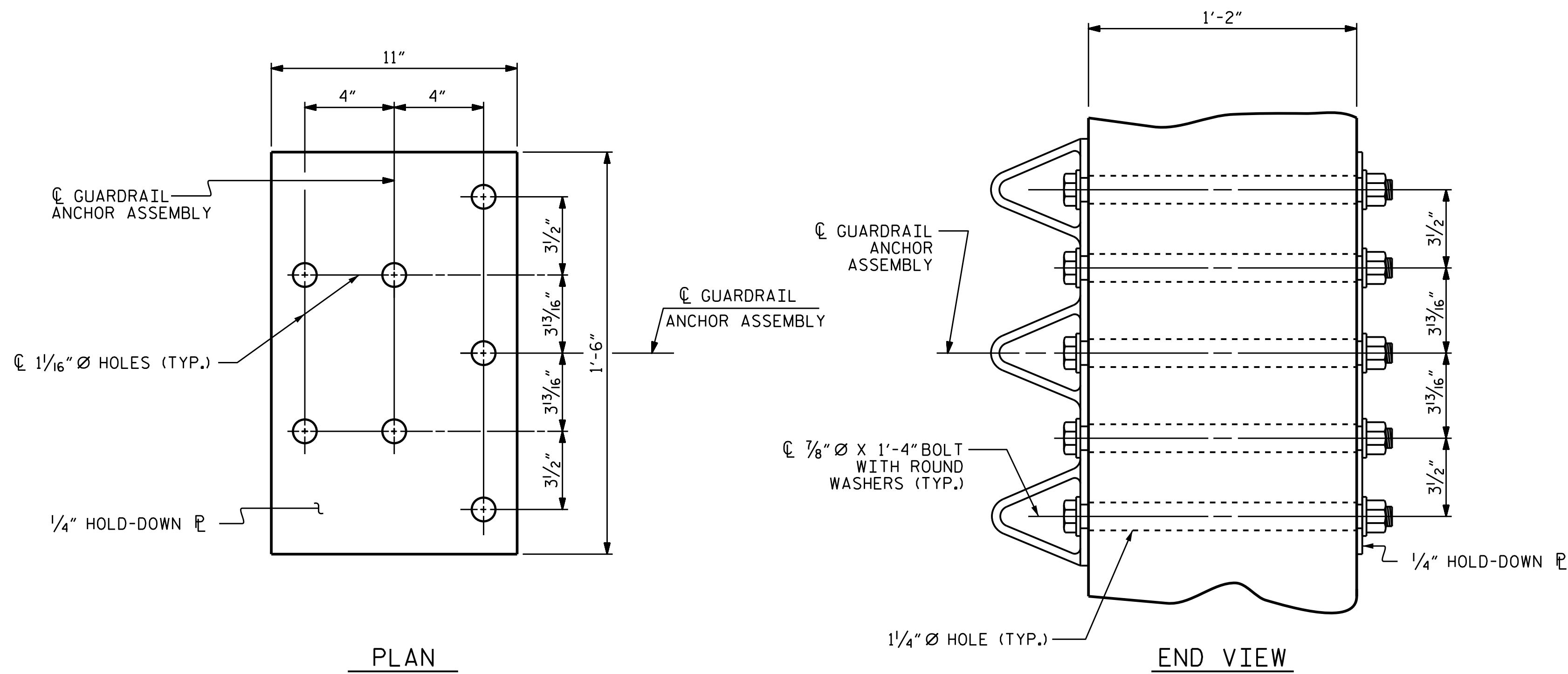
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE
 CONCRETE PARAPET
 DETAILS

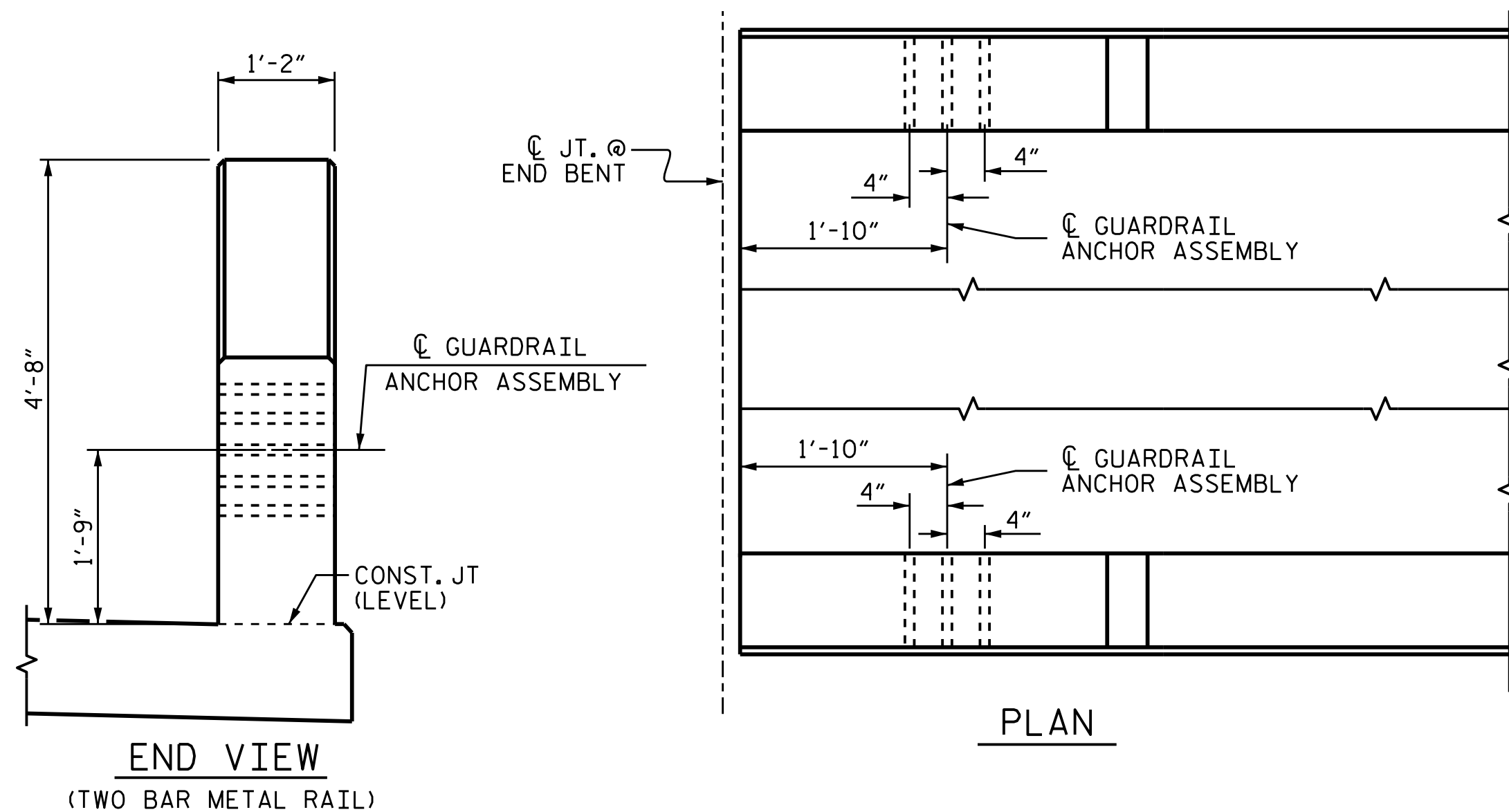
DRAWN BY :	B. N. BARODAWALA	DATE :	05-18
CHECKED BY :	M.A. ALLEN	DATE :	11-18
DESIGN ENGINEER OF RECORD:	A. A. IGHWAIR	DATE :	04-19

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-114
1			3			TOTAL SHEETS
2			4			194



GUARDRAIL ANCHOR ASSEMBLY DETAILS



LOCATION OF GUARDRAIL ANCHOR AT END POST

NOTES

THE GUARDRAIL ANCHOR ASSEMBLY SHALL CONSIST OF A 1/4" HOLD DOWN PLATE AND 7 - 7/8" Ø BOLTS WITH NUTS AND WASHERS.

THE HOLD-DOWN PLATE SHALL CONFORM TO AASHTO M270 GRADE 36. AFTER FABRICATION, THE HOLD-DOWN PLATE SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH AASHTO M111.

BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307 AND NUTS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M291. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED. AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS, NUTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 7/8" Ø GALVANIZED BOLTS, NUTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.

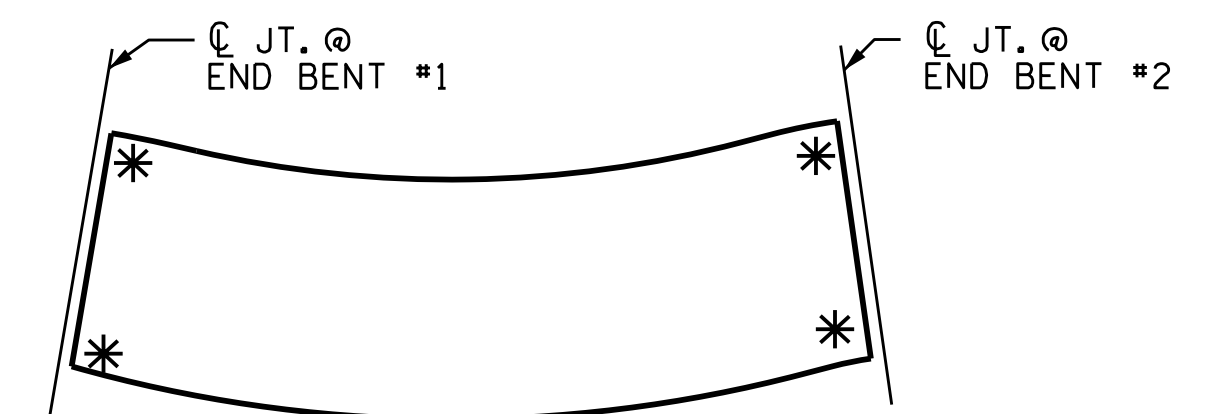
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF THE PARAPET. FOR POINTS OF ATTACHMENT, SEE SKETCH.

AFTER INSTALLATION, THE EXPOSED THREAD OF THE BOLT SHALL BE BURRED WITH A SHARP POINTED TOOL.

THE COST OF THE GUARDRAIL ANCHOR ASSEMBLIES WITH BOLTS, NUTS AND WASHERS COMPLETE IN PLACE, SHALL BE INCLUDED IN THE VARIOUS PAY ITEMS.

THE VERTICAL REINFORCING BARS MAY BE SHIFTED SLIGHTLY IN THE END POST TO CLEAR ASSEMBLY BOLTS.

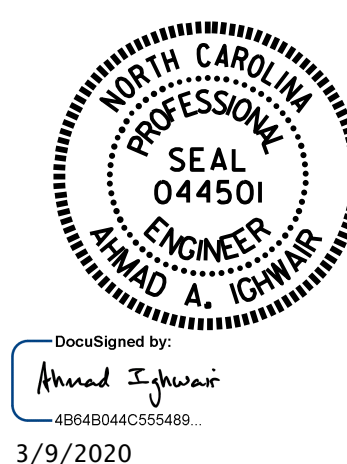
THE 1 1/4" Ø HOLES SHALL BE FORMED OR DRILLED WITH A CORE BIT. IMPACT TOOLS WILL NOT BE PERMITTED. ANY CONCRETE DAMAGED BY THIS WORK SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER.



SKETCH SHOWING POINTS OF ATTACHMENT

* LOCATION OF GUARDRAIL ATTACHMENT

PROJECT NO. B-4863
CARTERET COUNTY
 STATION: 34+75.00 -L-

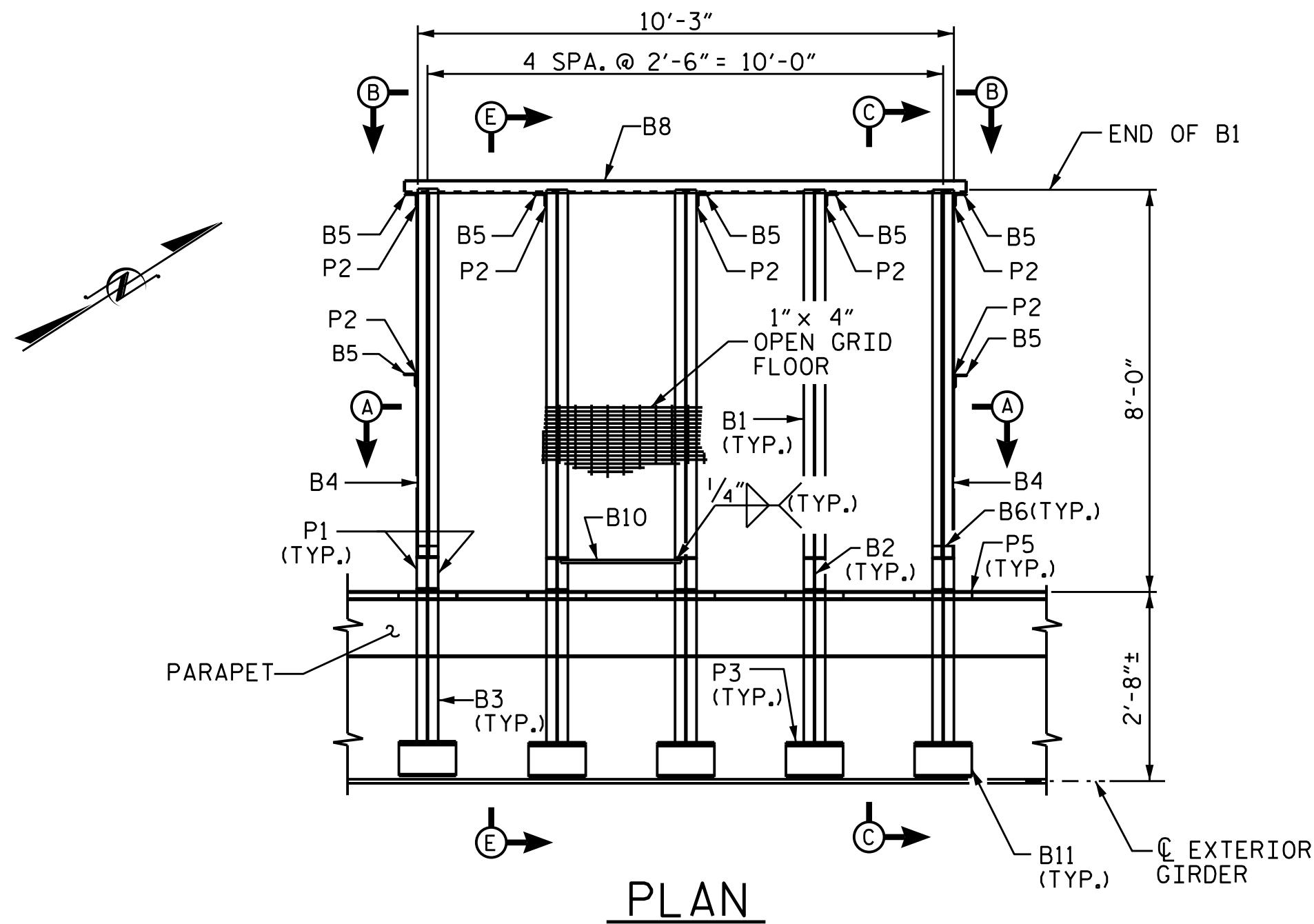


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 GUARDRAIL ANCHORAGE
 DETAILS
 FOR METAL RAILS

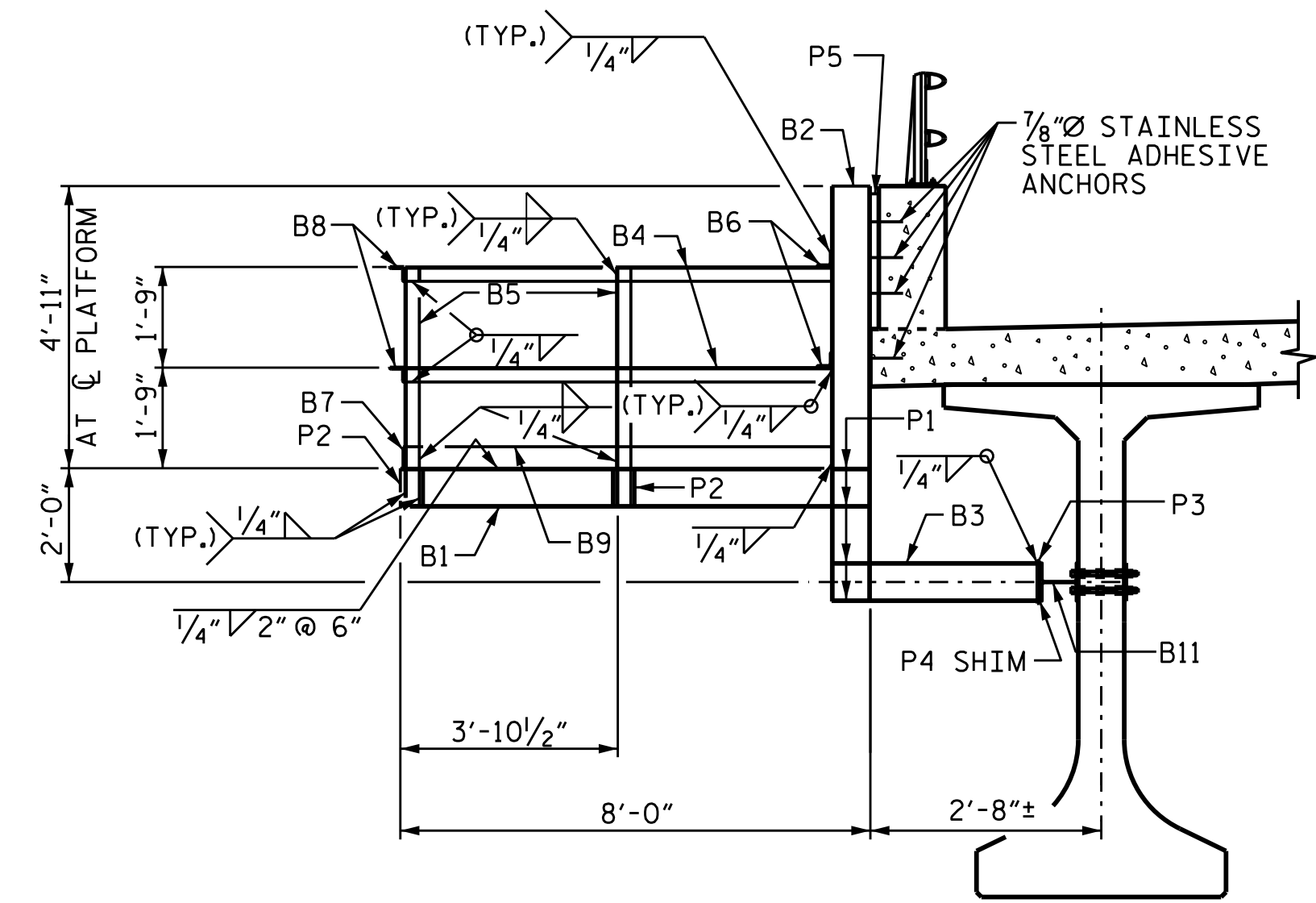
ASSEMBLED BY : B. N. BARODAWALA	DATE : 6-12-18
CHECKED BY : M. A. ALLEN	DATE : 01-19
DRAWN BY : MAA	5/10
REV. 1/15	MAA/TMG
CHECKED BY : GM	5/10
REV. 12/17	MAA/THC
REV. 5/18	MAA/THC

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S1-115
2			4			TOTAL SHEETS 194



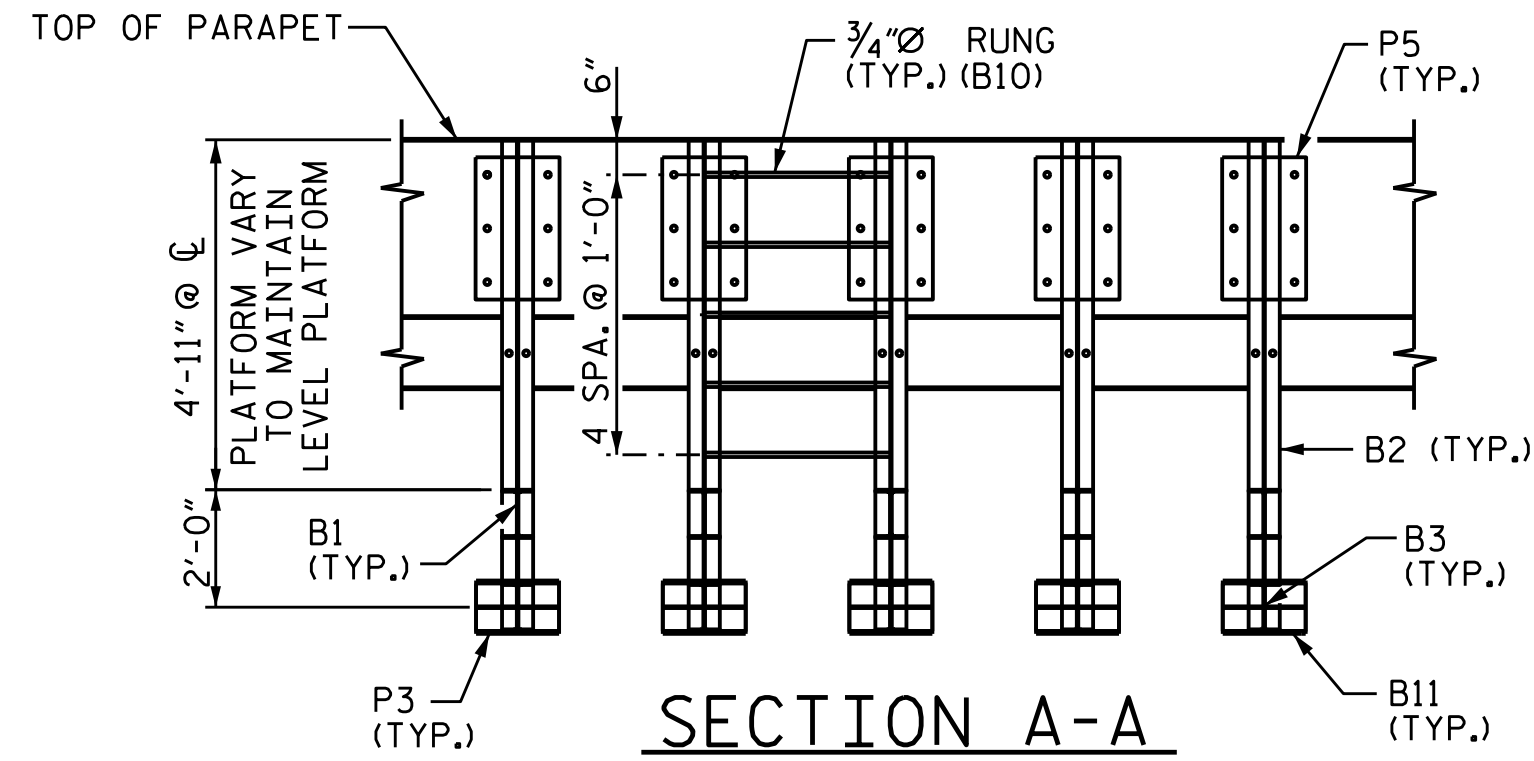
PLAN



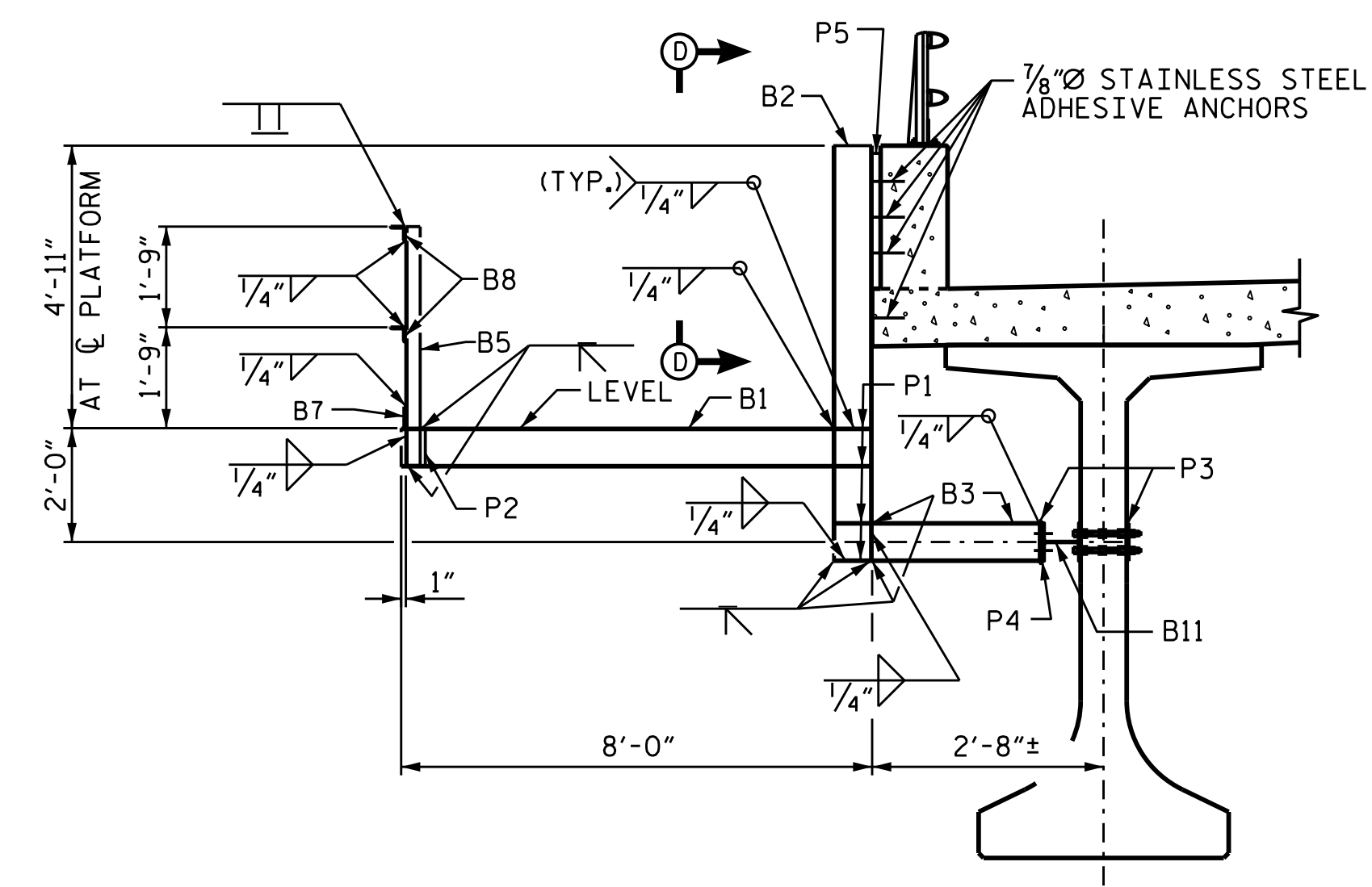
SECTION E-E

NOTES:
 ALL STRUCTURAL STEEL SHALL BE AASHTO M270 GRADE 50.
 ALL STRUCTURAL STEEL SHALL BE GALVANIZED IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS.
 ALL FABRICATION SHALL CONFORM TO THE APPLICABLE SECTION OF THE STANDARD SPECIFICATIONS.
 BAND ALL EDGES OF OPEN GRID FLOOR.
 OPEN GRID FLOOR SHALL BE ATTACHED TO EACH HORIZONTAL FLOOR MEMBER USING AN APPROVED FASTENER.
 OPEN GRID FLOOR SHALL BE GALVANIZED IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS.
 ALL FIELD CONNECTIONS TO BE 7/8" Ø HIGH STRENGTH BOLTS UNLESS OTHERWISE NOTED.
 7/8" Ø ADHESIVE ANCHORS SHALL BE STAINLESS STEEL.
 ADHESIVE ANCHOR SYSTEM SHALL HAVE A MINIMUM PULLOUT STRENGTH OF 50% OF THE YIELD LOAD. A MINIMUM OF EIGHT (8) ANCHORS SHALL BE TESTED. IF ANY ANCHOR FAILS THE CONTRACTOR SHALL AT HIS EXPENSE TEST ALL ANCHORS UNLESS DIRECTED OTHERWISE BY THE ENGINEER.
 FOR SOLAR ARRAY SUPPORT PLATFORM, SEE SPECIAL PROVISIONS.
 FOR DETAILS OF NAVIGATIONAL LIGHTING, SEE NAVIGATIONAL LIGHTING AND CONDUIT SYSTEM PLAN SHEET.

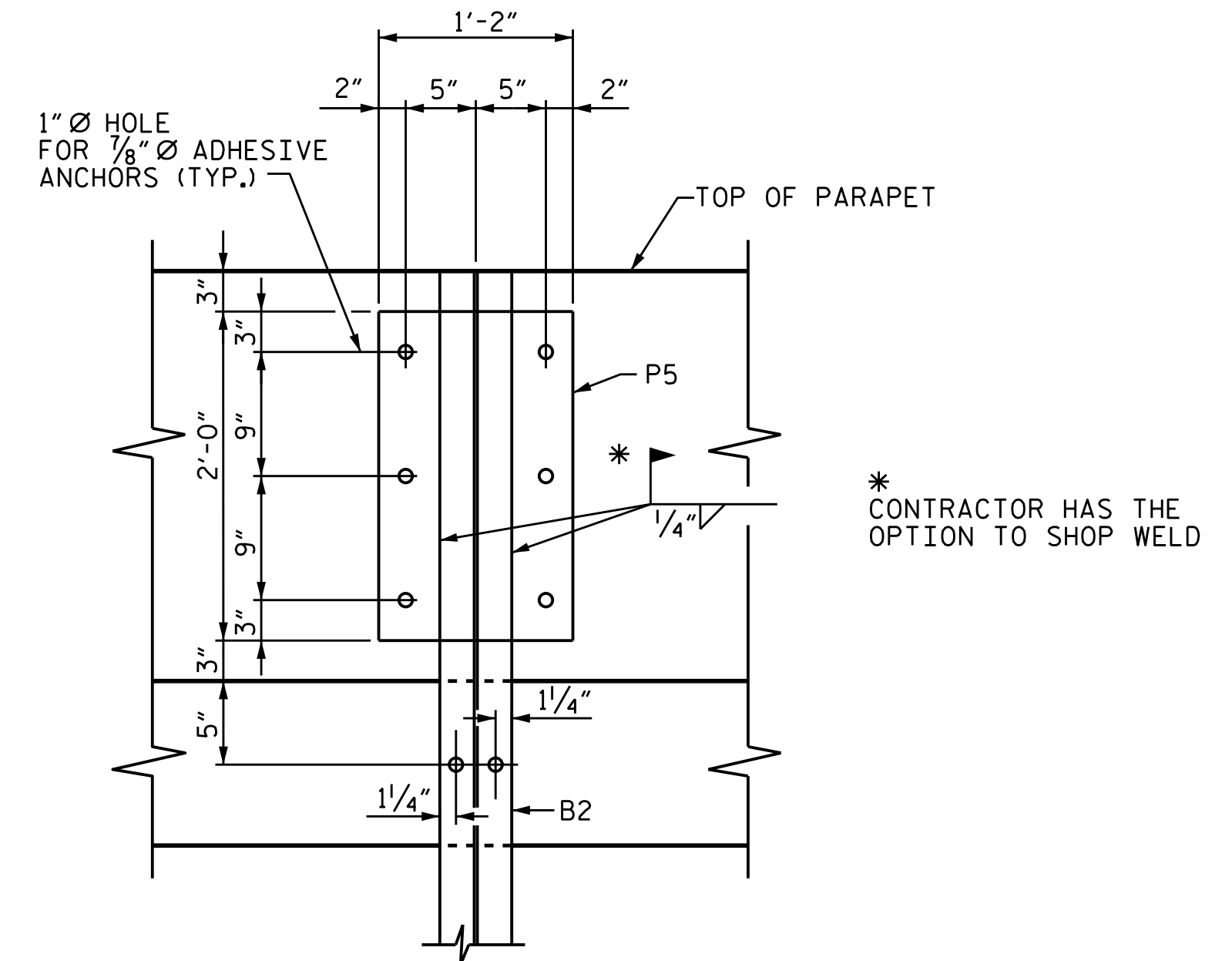
BILL OF MATERIAL		
ITEM	NUMBER	DESCRIPTION
B1	5	W8 x 18
B2	5	W8 x 18
B3	5	W8 x 18
B4	4	L3 x 3 x 1/4
B5	7	L3 x 3 x 1/4
B6	4	L3 x 3 x 1/4
B7	1	P 1/4 x 5
B8	2	L3 x 3 x 1/4
B9	2	P 1/4 x 5
B10	5	3/4" Ø RUNG
B11	5	W8 x 31
P1	40	P 5/16 x 2 1/2 x 7 1/2
P2	7	P 1/4 x 5 x 8
P3	10	P 1/2 x 9 x 14
P4	AS REQ'D	P 3/16 x 8 x 14
P5	5	P 1 3/4 x 14 x 24
1"x4" OPEN GRID FLOOR W/ 3/16" x 3/4" BRG. BARS		
7/8" Ø STAINLESS STEEL ADHESIVE ANCHORS 40 REQ'D.		
7/8" Ø H.S. BOLT W/WASHER & NUTS 20 REQ'D.		



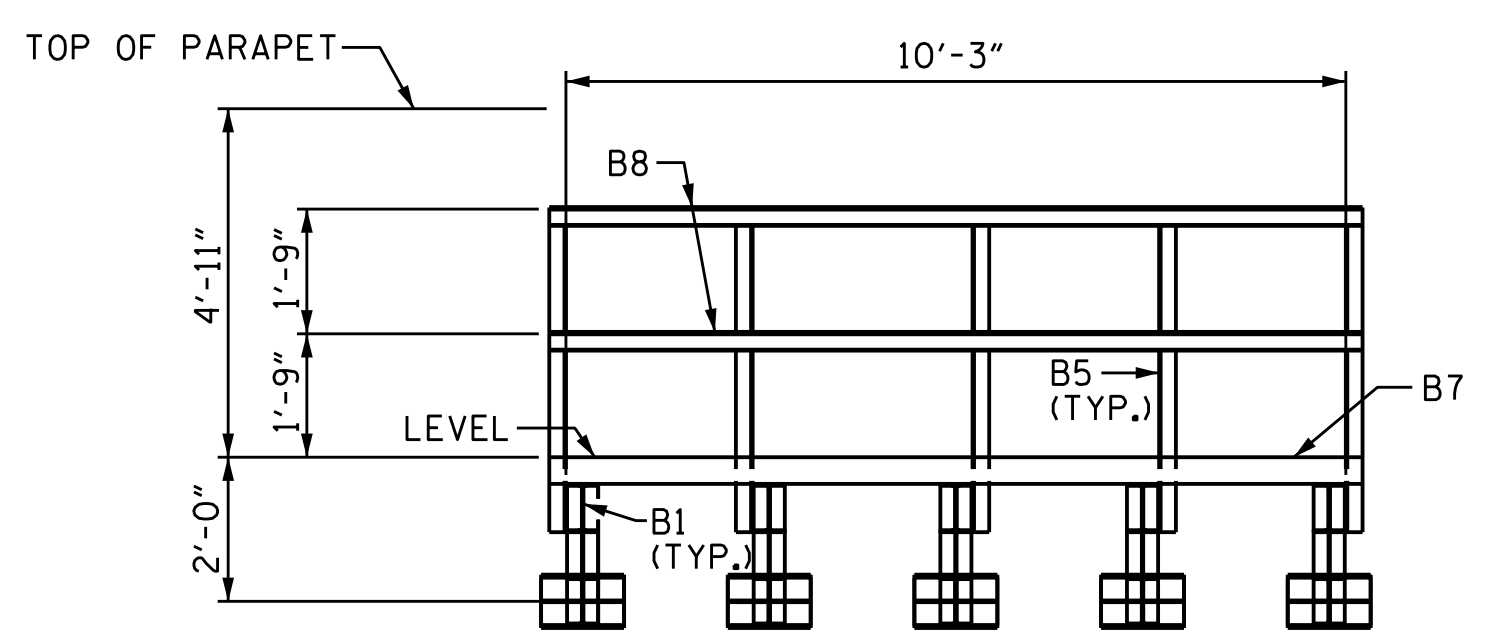
SECTION A-A



SECTION C-C



SECTION D-D



SECTION B-B

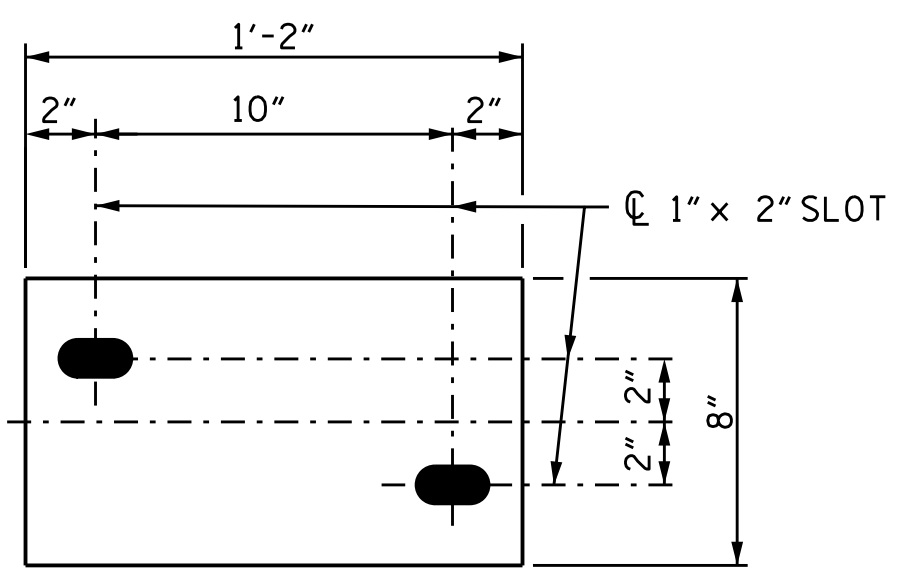


PLATE P4 SHIM DETAIL

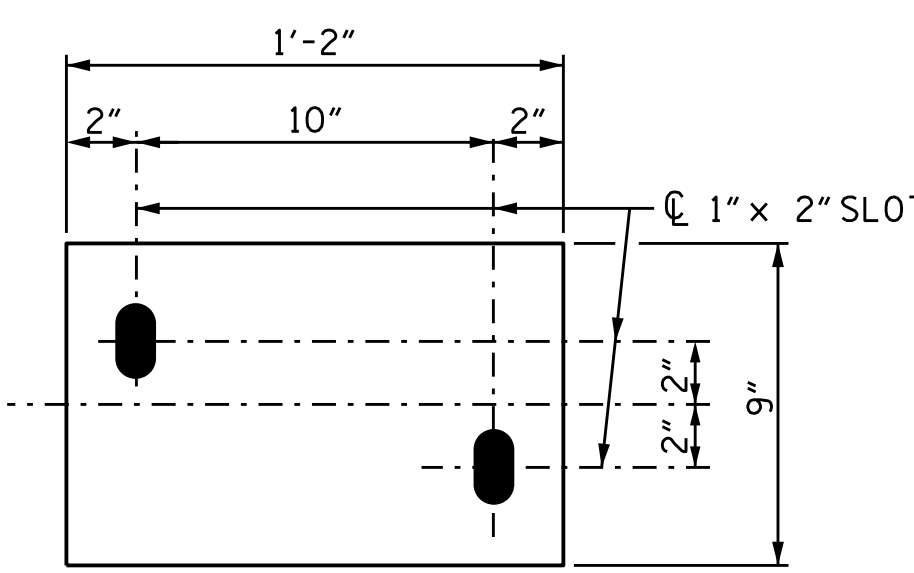
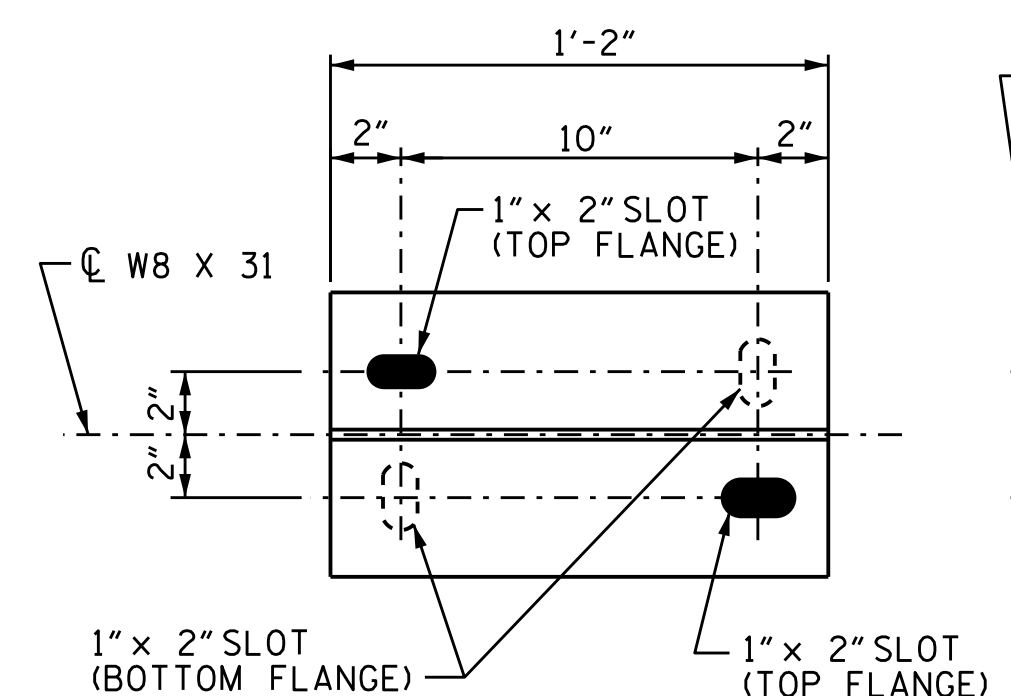
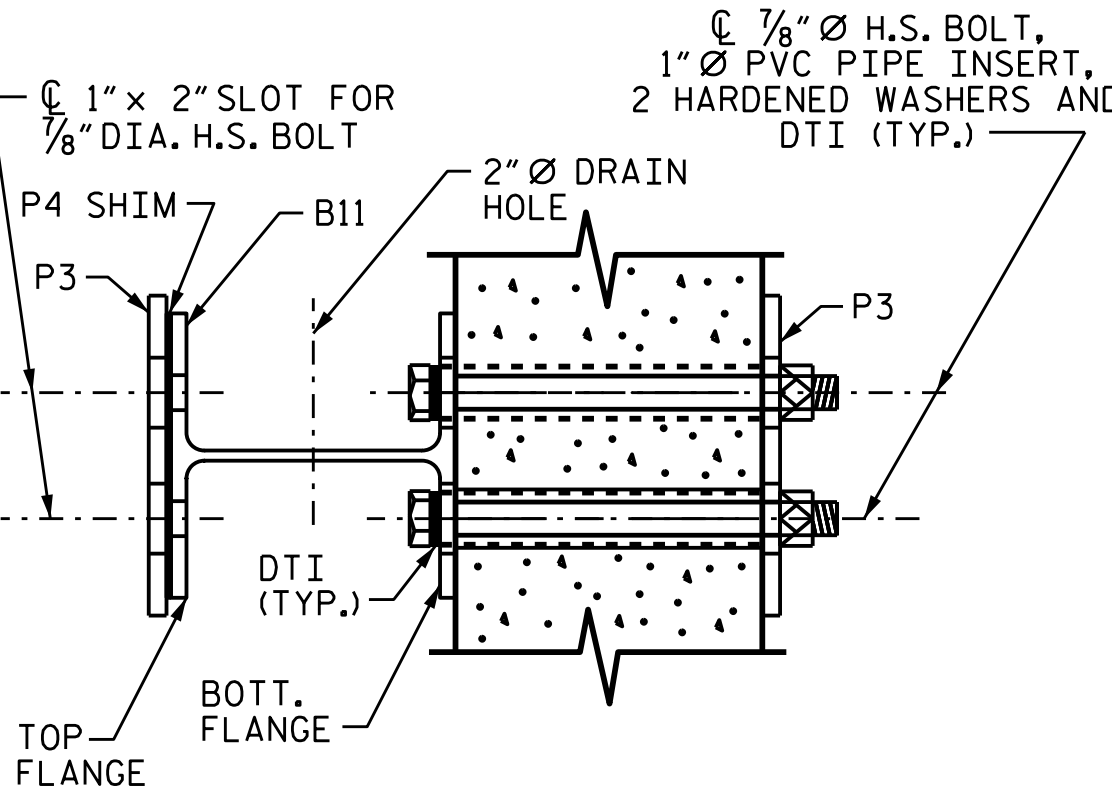


PLATE P3 DETAIL



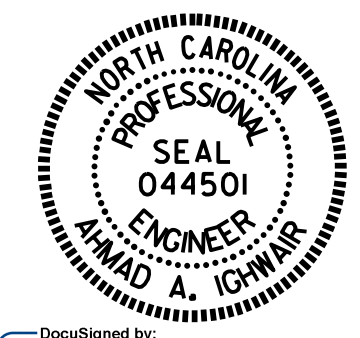
ELEVATION



END VIEW

B11 DETAIL

PROJECT NO. B-4863
 CARTARET COUNTY
 STATION: 34+75.00-L-



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 SOLAR ARRAY PLATFORM

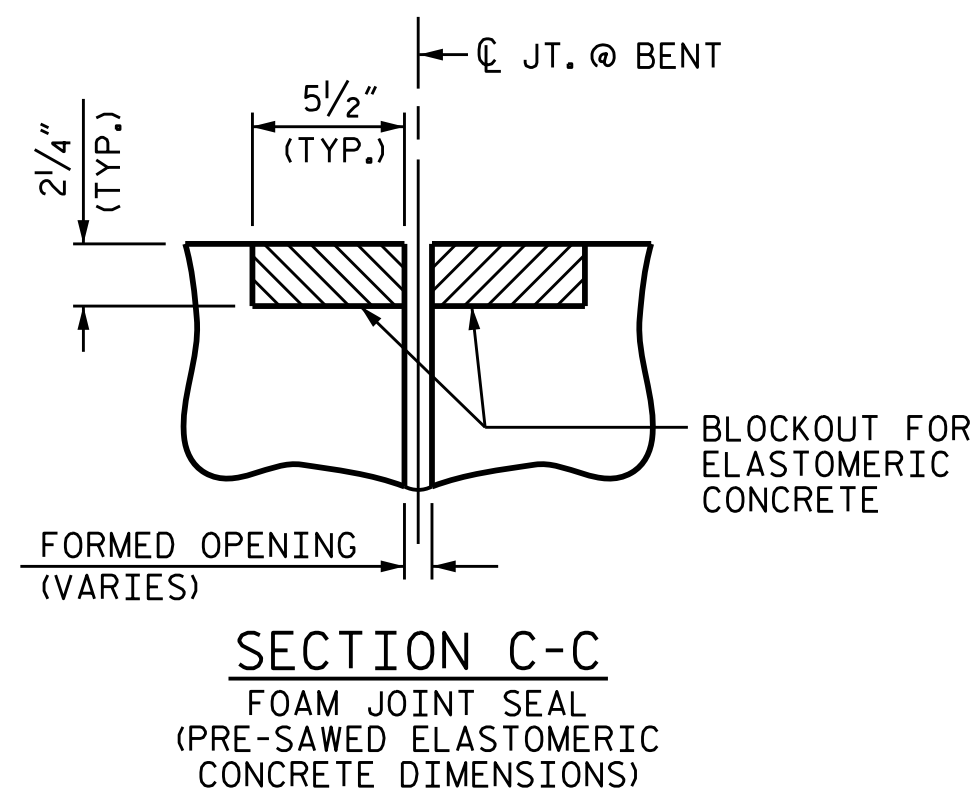
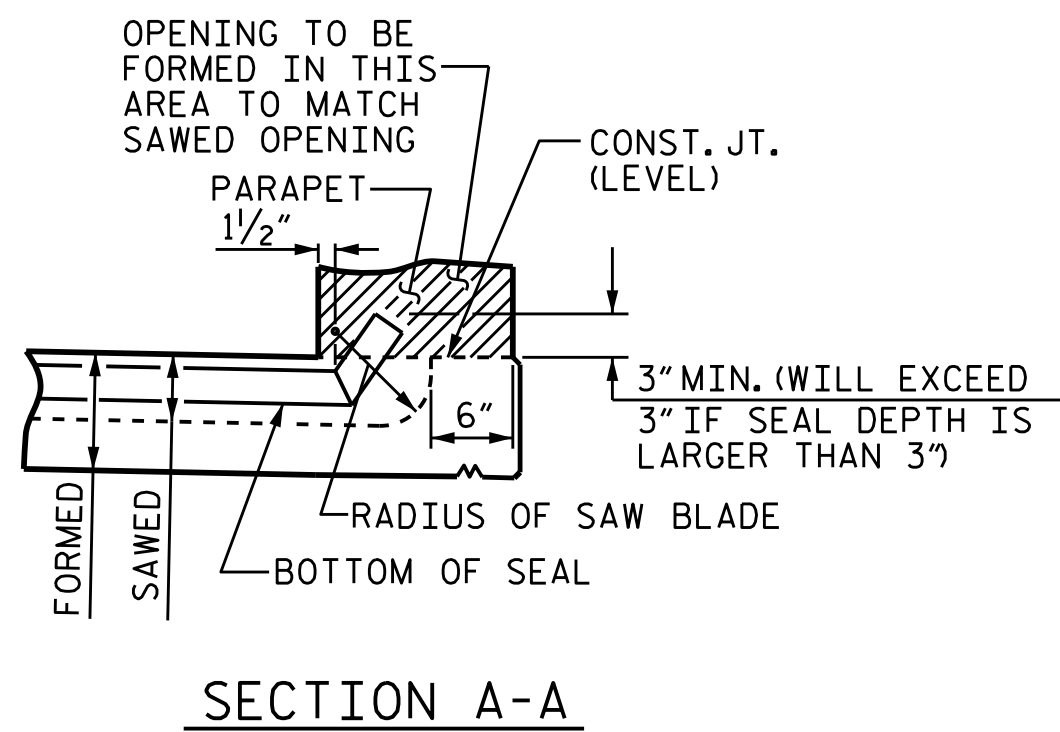
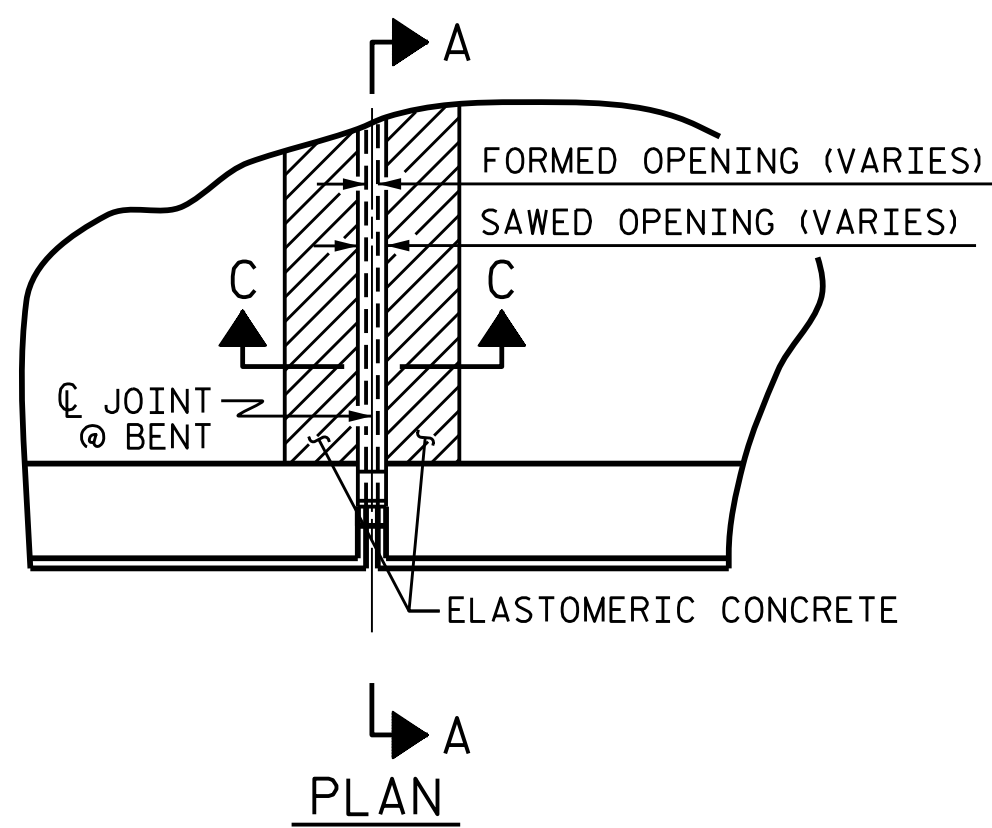
DRAWN BY : B. N. BARODAWALA DATE : 12-19
 CHECKED BY : A. A. IGHWAIR DATE : 12-19
 DESIGN ENGINEER OF RECORD : A. A. IGHWAIR DATE : 12-19

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS				SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

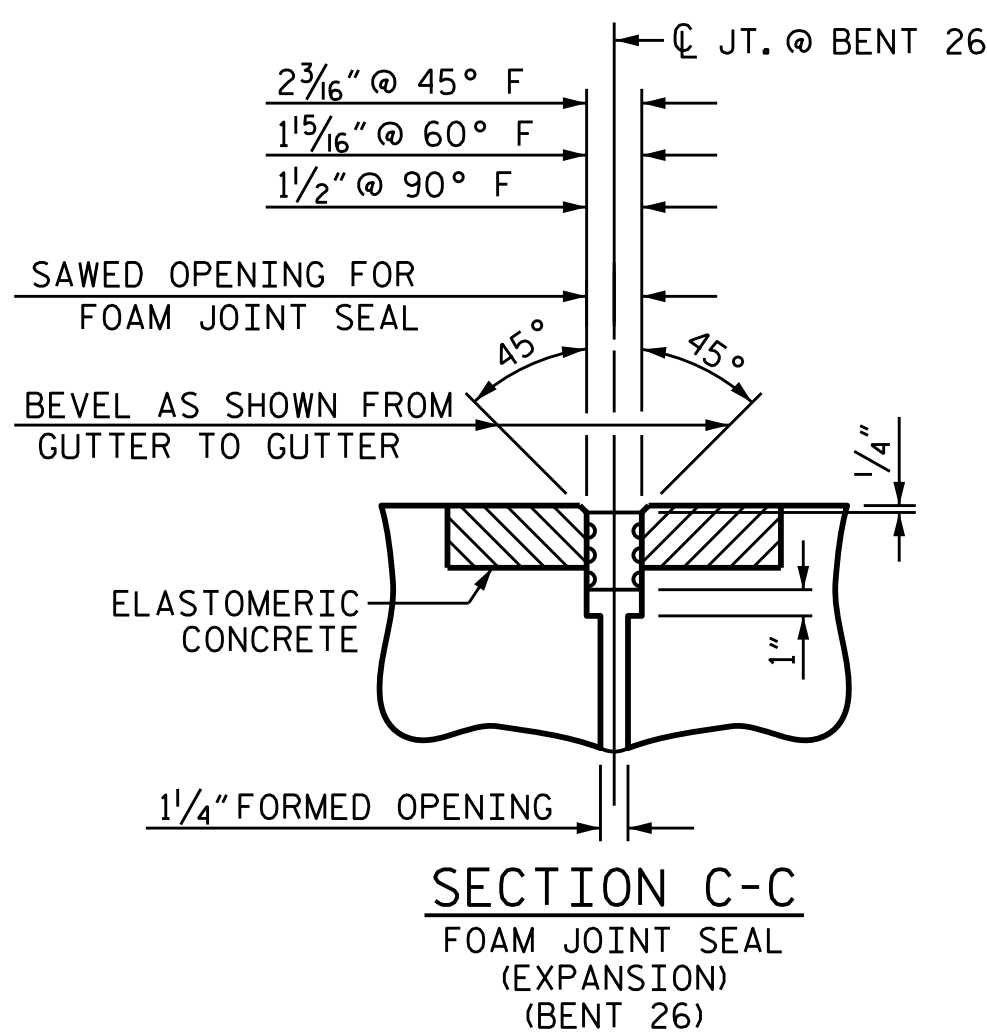
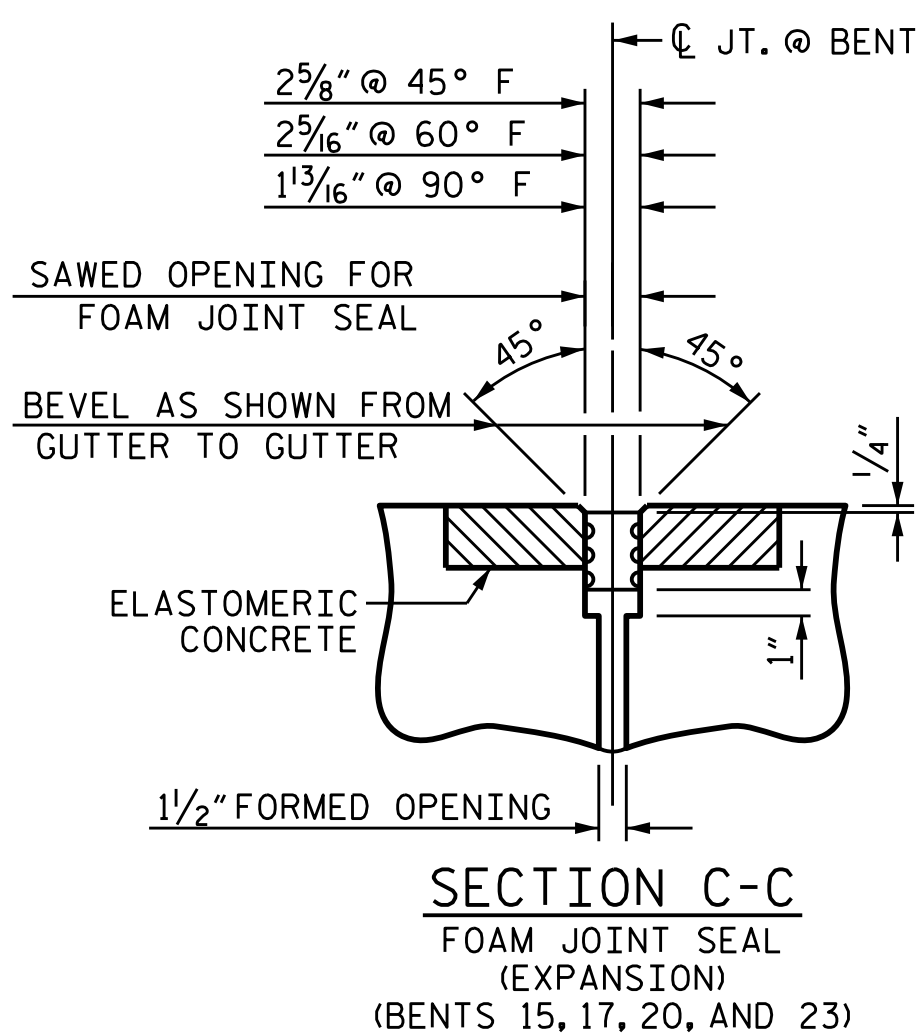
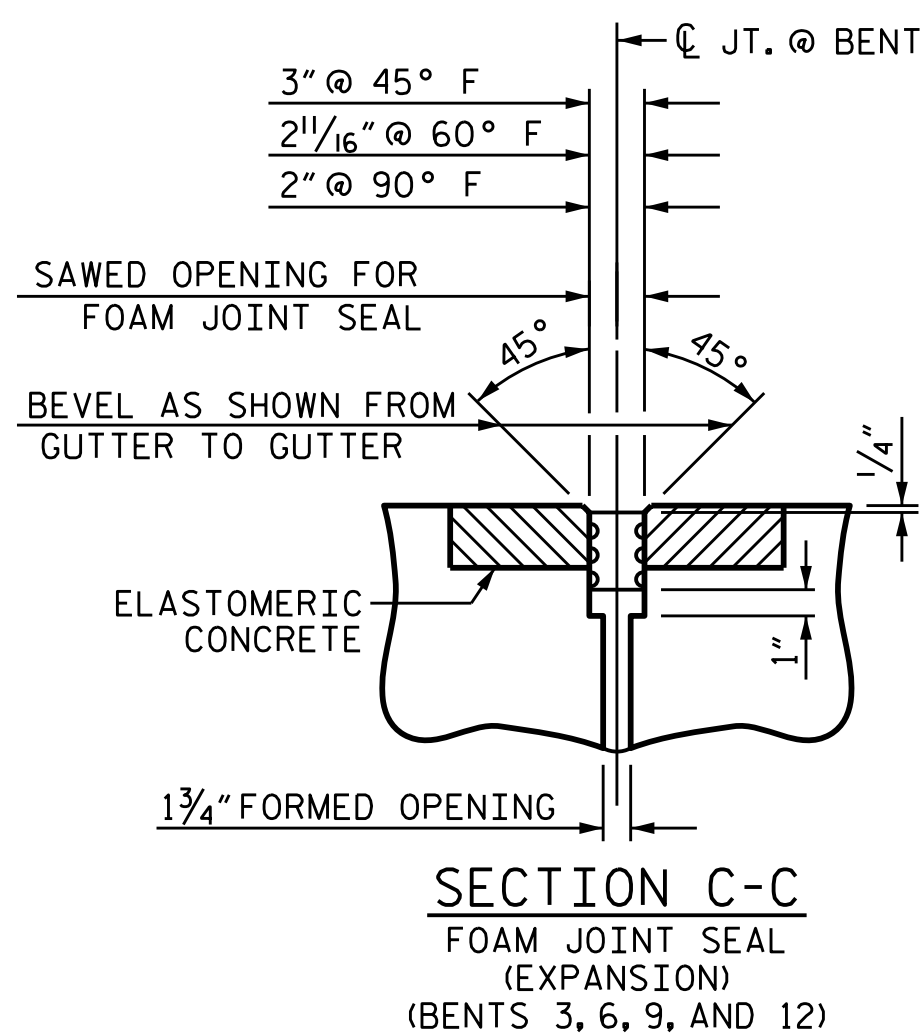
NOTES

THE JOINT SHALL BE SAWED PRIOR TO THE CASTING OF THE PARAPET.
 FOR FOAM JOINT SEALS, SEE SPECIAL PROVISIONS.
 THE NOMINAL UNCOMPRESSED SEAL WIDTH OF THE FOAM JOINT SEAL SHALL BE:
 3/2" AT BENTS 3, 6, 9 & 12
 3" AT BENTS 15, 17, 20 & 22
 2/2" AT BENT 26
 FOR ELASTOMERIC CONCRETE, SEE SPECIAL PROVISIONS.



ELASTOMERIC CONCRETE	
BENT NO.	ELASTOMERIC CONCRETE * (CU. FT.)
3	5.8
6	5.8
9	5.8
12	5.8
15	5.8
17	5.8
20	5.8
23	5.8
26	5.8
TOTAL	52.2

* BASED ON THE MINIMUM BLOCKOUT SHOWN.



JOINT SEAL DETAILS @ BENTS

FOAM JOINT SEAL TO BE CUT, HEAT WELDED AND TURNED UP PARALLEL TO SLOPED FACE OF THE PARAPET.

PROJECT NO. B-4863
CARTERET COUNTY
 STATION: 34+75.00 -L-



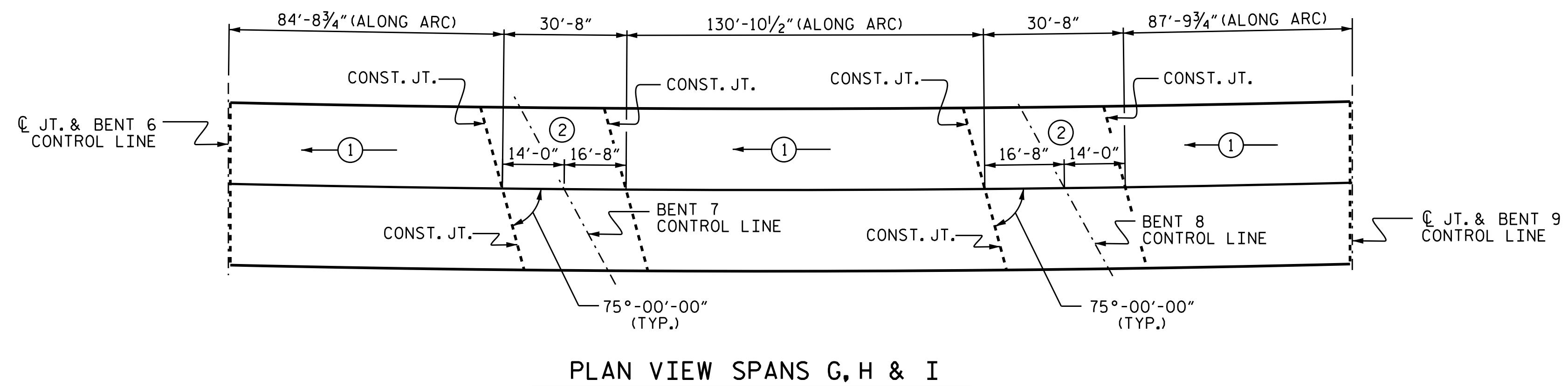
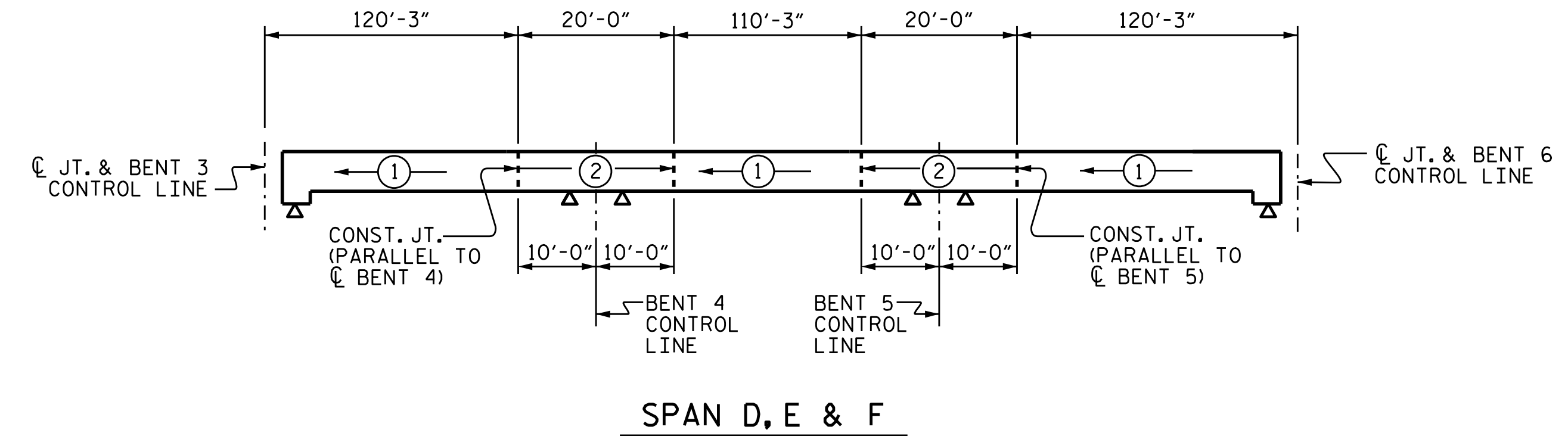
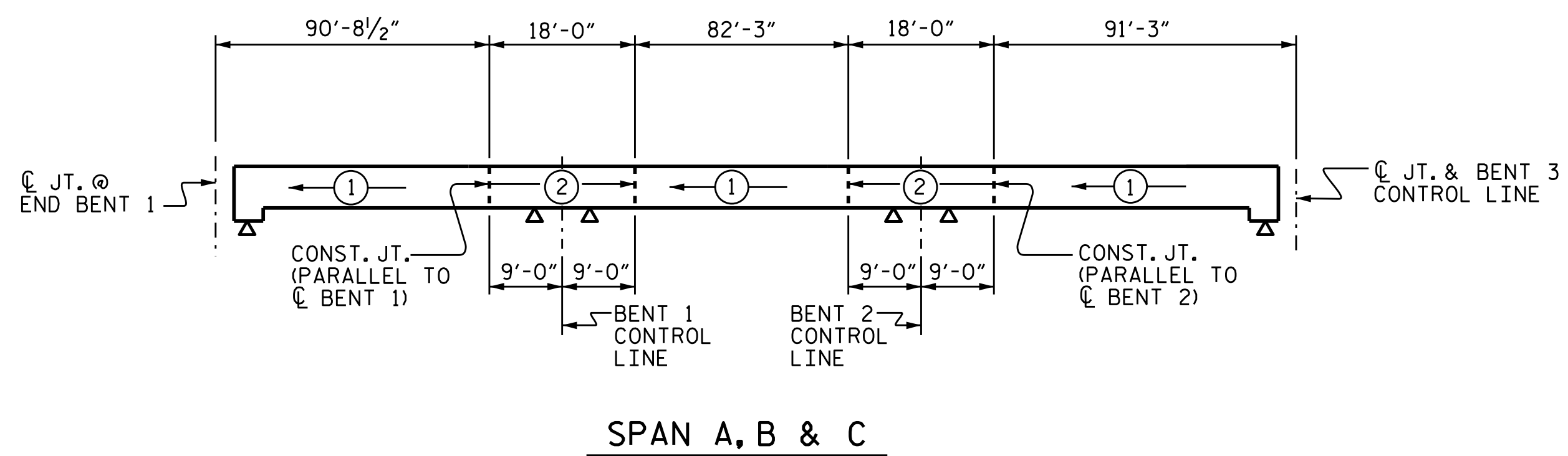
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

FOAM JOINT DETAILS

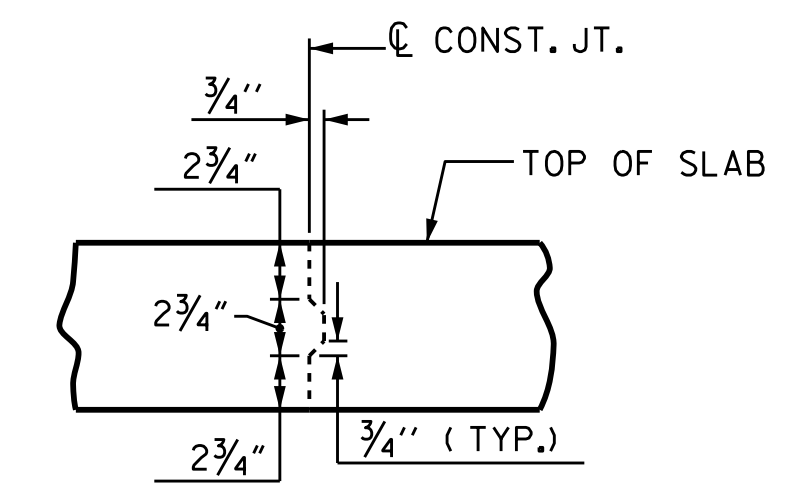
DRAWN BY : M.A. ALLEN DATE : 4/19
 CHECKED BY : B.N. BARODAWALA DATE : 5/19
 DESIGN ENGINEER OF RECORD: A.A. IGHWAIR DATE : 5/19

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS	
1			3			SI-117	
2			4			194	

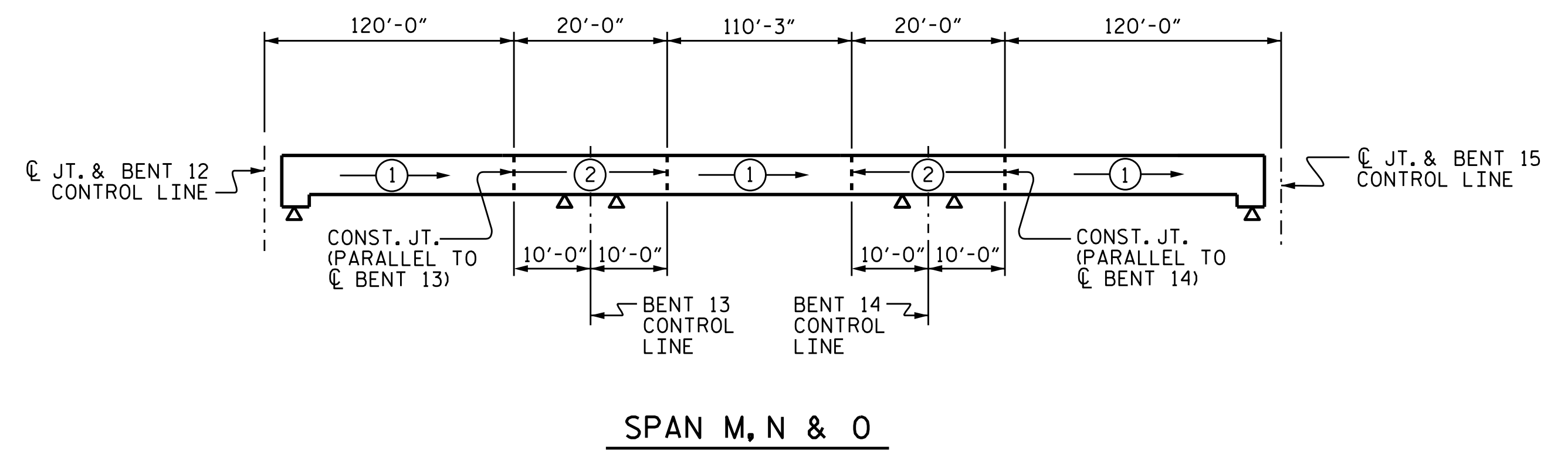
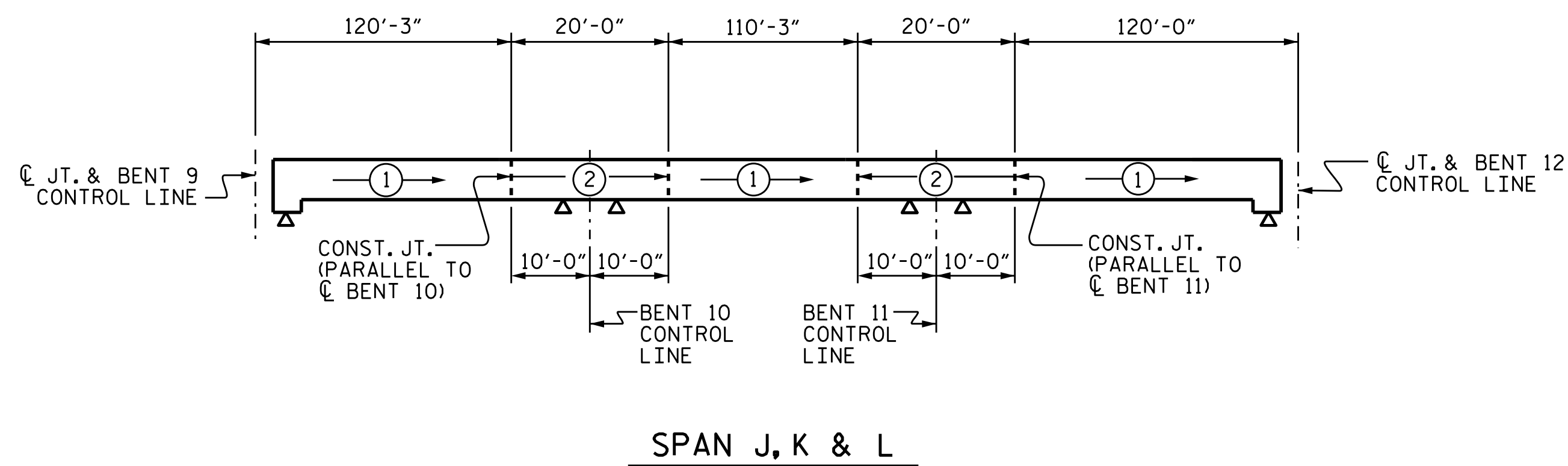
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



INDICATES POUR NUMBER & DIRECTION OF POURS



NOTE: GLASS FIBER REINFORCED POLYMER (GFRP) IN SLAB NOT SHOWN. LONGITUDINAL GLASS FIBER REINFORCED POLYMER (GFRP) SHALL BE CONTINUOUS THRU JOINT.

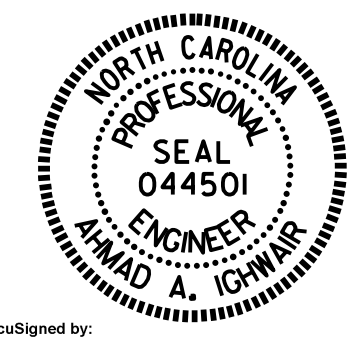


POURING SEQUENCE

POUR ② CANNOT BE STARTED UNTIL BOTH ADJACENT ① POURS REACH A MIN. OF 3000 PSI.

PROJECT NO. B-4863
CARTERET COUNTY
 STATION: 34+75.00 -L-

SHEET 1 OF 2



4/16/2021

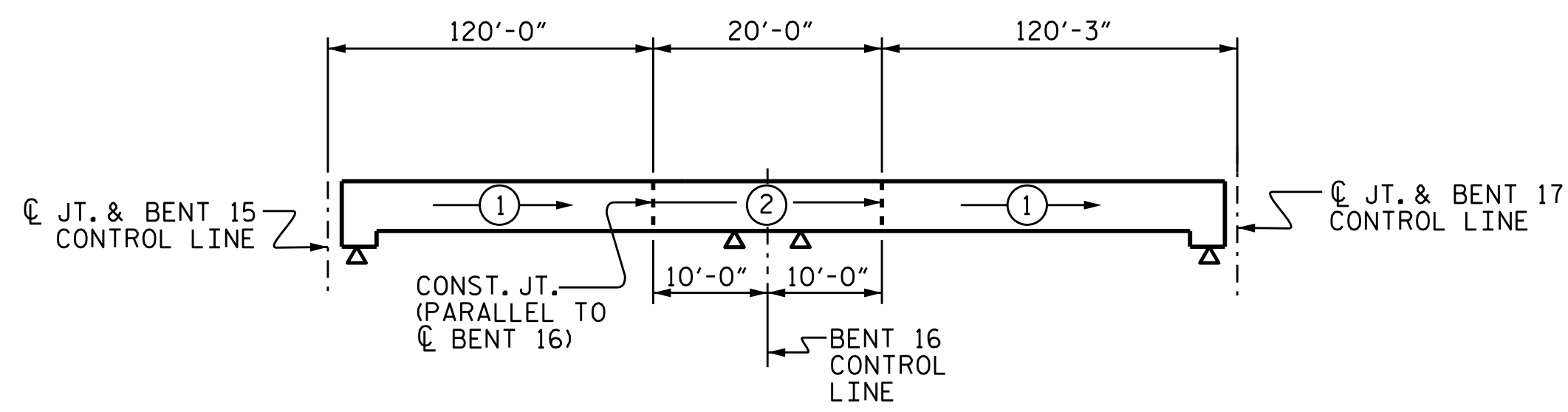
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

POURING SEQUENCE

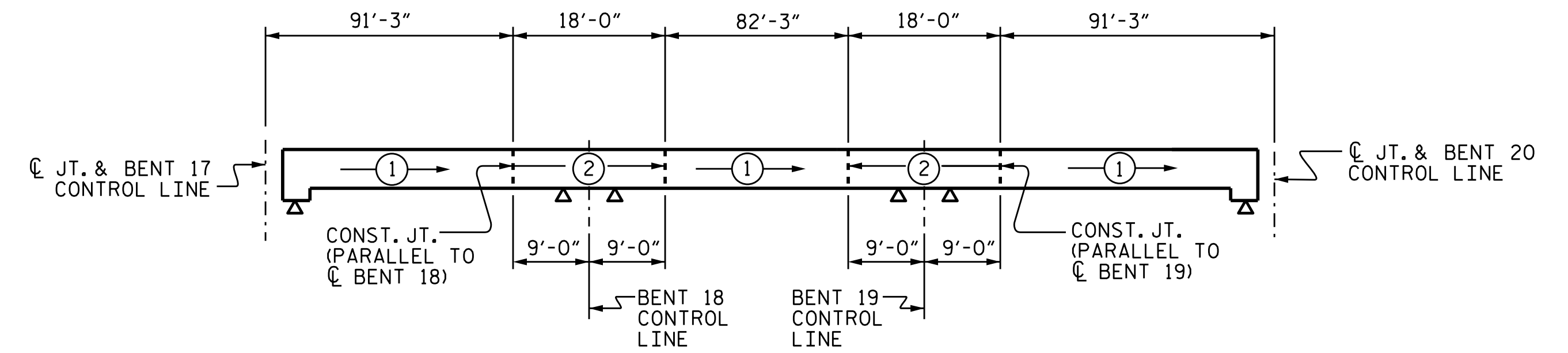
DRAWN BY : B. N. BARODAWALA DATE : 04-21
 CHECKED BY : A. A. IGHWAIR DATE : 04-21
 DESIGN ENGINEER OF RECORD: A. A. IGHWAIR DATE : 04-21

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

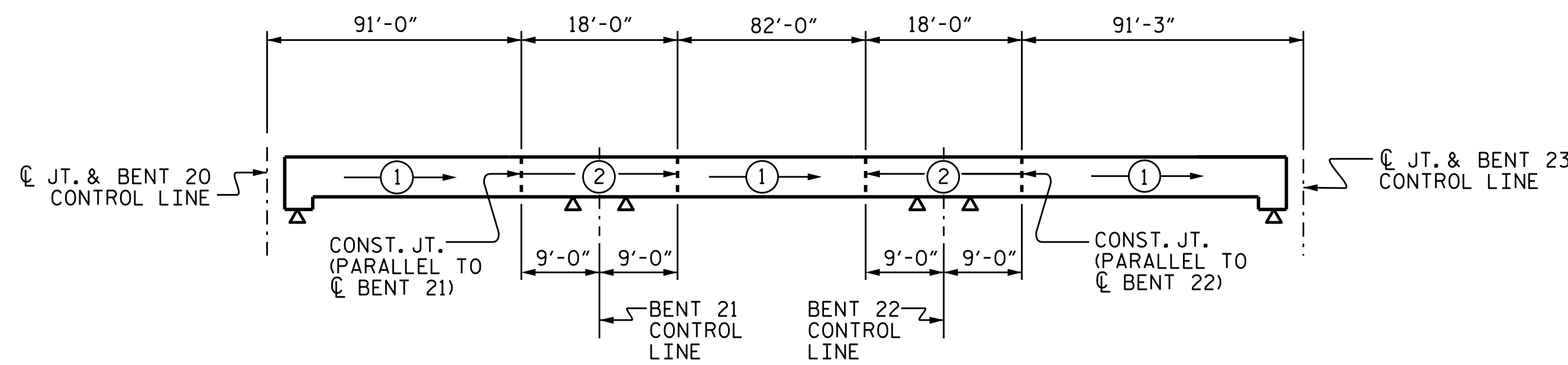
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-118
1			3			TOTAL SHEETS
2			4			194



SPAN P & Q

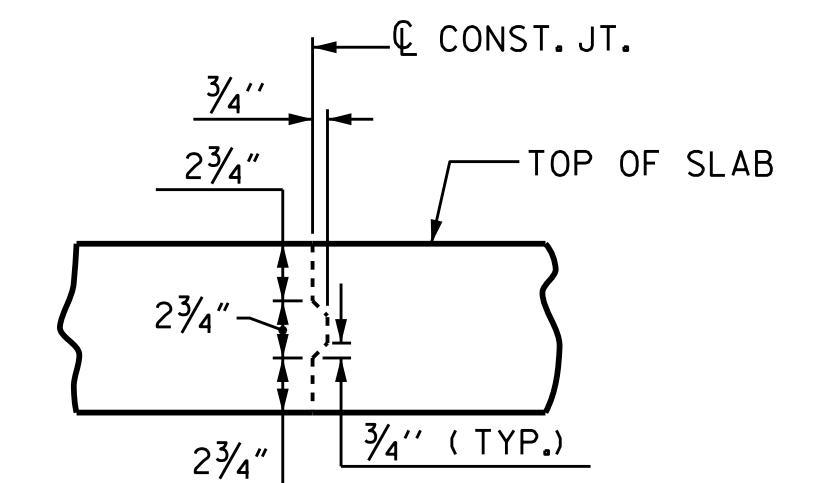


SPAN R, S AND T



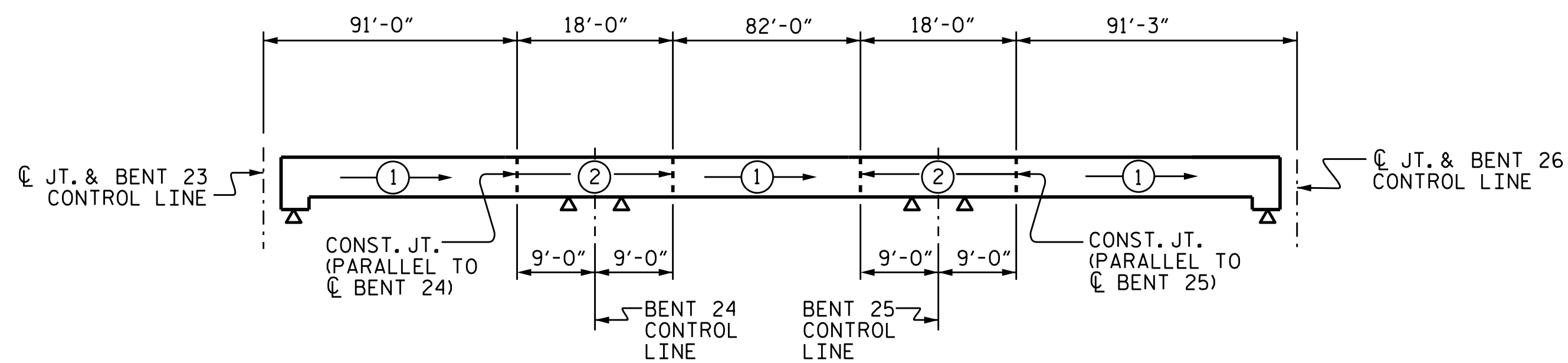
SPAN U, V & W

⊕
INDICATES POUR NUMBER
& DIRECTION OF POURS

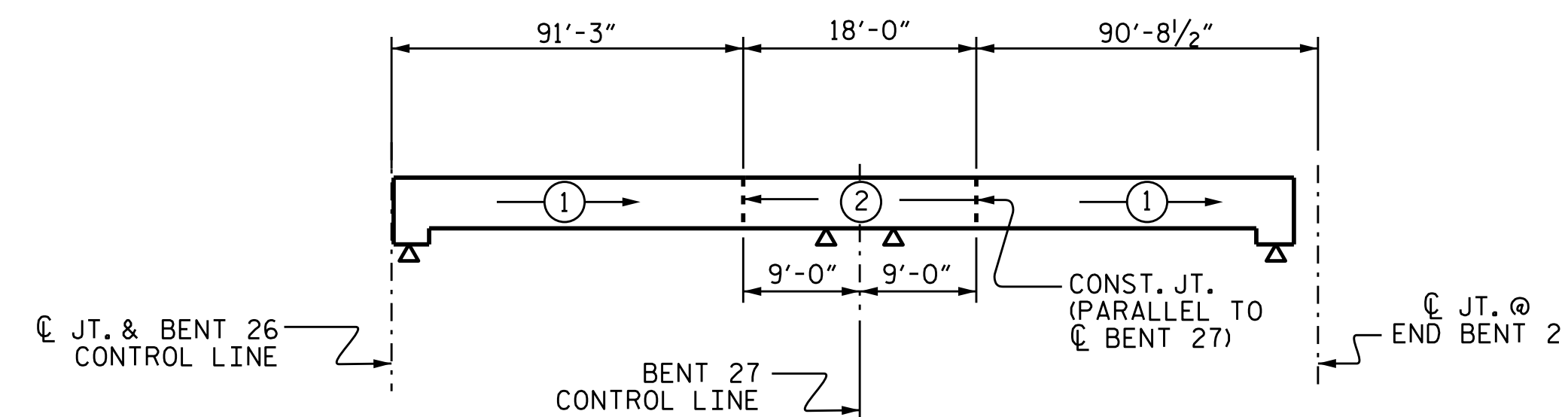


CONSTRUCTION JOINT DETAIL

NOTE: GLASS FIBER REINFORCED POLYMER (GFRP) IN SLAB NOT SHOWN. LONGITUDINAL GLASS FIBER REINFORCED POLYMER (GFRP) SHALL BE CONTINUOUS THRU JOINT.



SPAN X, Y & Z



SPAN AA & BB

POURING SEQUENCE

POUR ② CANNOT BE STARTED UNTIL BOTH ADJACENT ① POURS REACH A MIN. OF 3000 PSI.

PROJECT NO. B-4863
CARTERET COUNTY
 STATION: 34+75.00 -L-

SHEET 2 OF 2



Documented by:
 Ahmad Ighwair
 486480440555489
 4/16/2021

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

POURING SEQUENCE

DRAWN BY: B. N. BARODAWALA DATE: 04-21
 CHECKED BY: A. A. IGHWAIR DATE: 04-21
 DESIGN ENGINEER OF RECORD: A. A. IGHWAIR DATE: 04-21

14-APR-2021 14:58
 S:\DEV\Squad.D\B4863\Plans\FINAL PLANS\B-4863.SMU.BM.dgn
 akpatel

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-119
1			3			TOTAL SHEETS
2			4			194

NOTES

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.

BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING.

THE TOP SURFACE AREAS OF THE END BENT CAPS SHALL BE CURED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS EXCEPT THE MEMBRANE CURING COMPOUND METHOD SHALL NOT BE USED.

THE TOP SURFACE OF THE CAP EXCEPT THE BRIDGE SEAT BUILDUPS SHALL BE SLOPED TRANSVERSELY FROM THE FILL FACE TO THE BACK FACE AT THE RATE OF 2%.

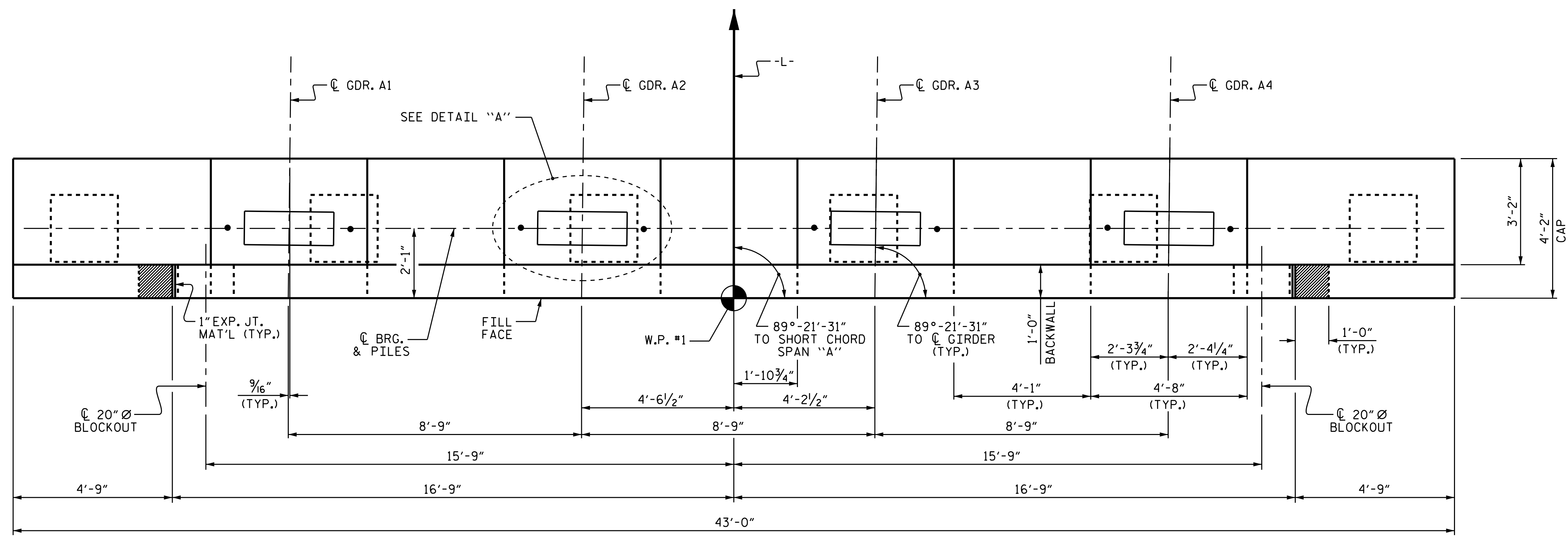
THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE JOINT BETWEEN THE DECK AND THE APPROACH SLAB HAS BEEN SAWED AND THE PARAPET AND END POST ARE CAST IF SLIP FORMING IS USED.

CONCRETE DISPLACED BY CONCRETE PILES AND BLOCKOUTS HAS BEEN DEDUCTED FROM THE CAP CONCRETE QUANTITY.

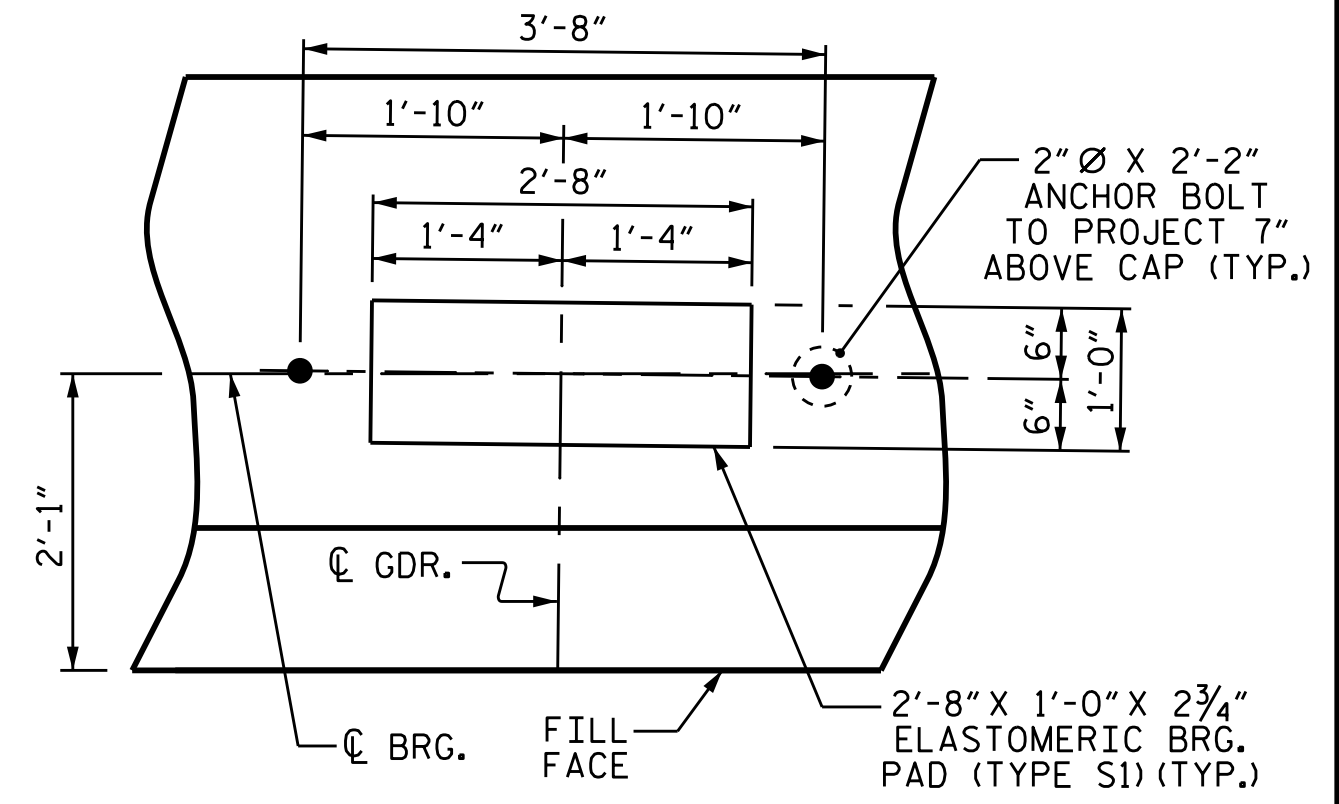
ALL REINFORCING IN THE CAP IS TO BE GLASS FIBER REINFORCED POLYMER (GFRP) BARS. FOR GLASS FIBER REINFORCED POLYMER BARS, SEE SPECIAL PROVISIONS.

CENTER UTILITY IN BLOCKOUT AND FILL ANNULAR SPACE AROUND UTILITY PIPE WITH JOINT FILLER IN ACCORDANCE WITH STANDARD SPECIFICATIONS ARTICLE 1028-1.

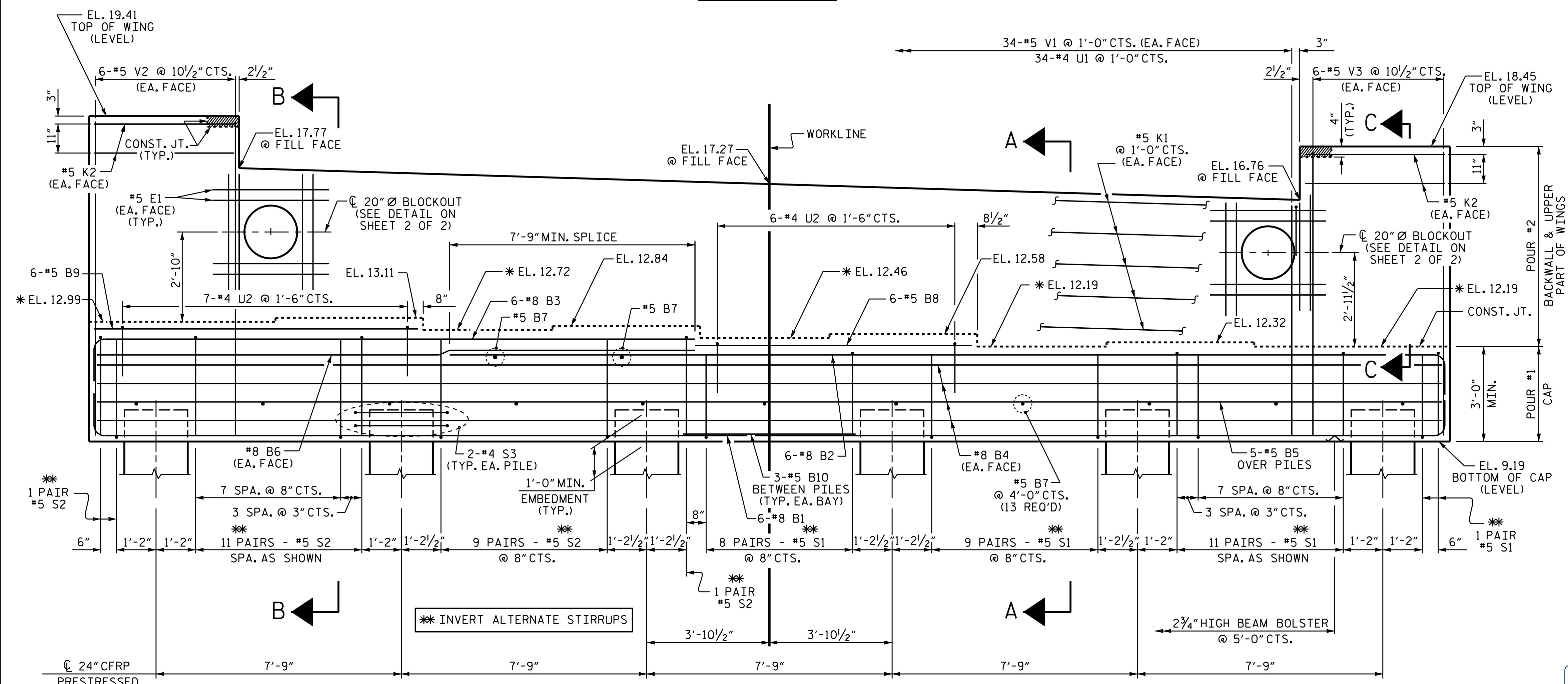
THE CONTRACTOR SHALL PROVIDE FOR INSTALLATION OF THE STRUCTURE DRAINAGE SYSTEM BLOCKOUTS IN THE BACKWALL. REINFORCING IN THE BACKWALL MAY BE SHIFTED OR CUT AS NECESSARY TO PROVIDE FOR THE STRUCTURE DRAINAGE SYSTEM BLOCKOUTS. SEE STRUCTURE DRAINAGE SYSTEM SHEETS FOR DETAILS.



PLAN



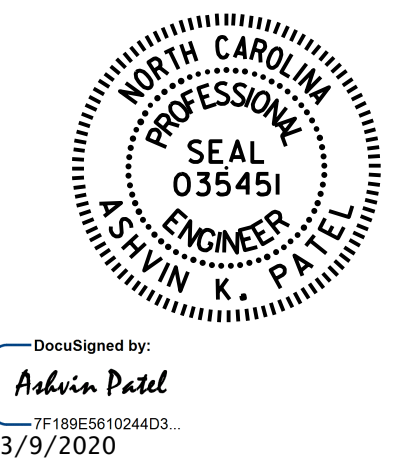
DETAIL "A"
(TYP. @ EACH GDR.)



ELEVATION

PROJECT NO. B-4863
CARTERET COUNTY
 STATION: 34+75.00 -L-

SHEET 1 OF 2



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

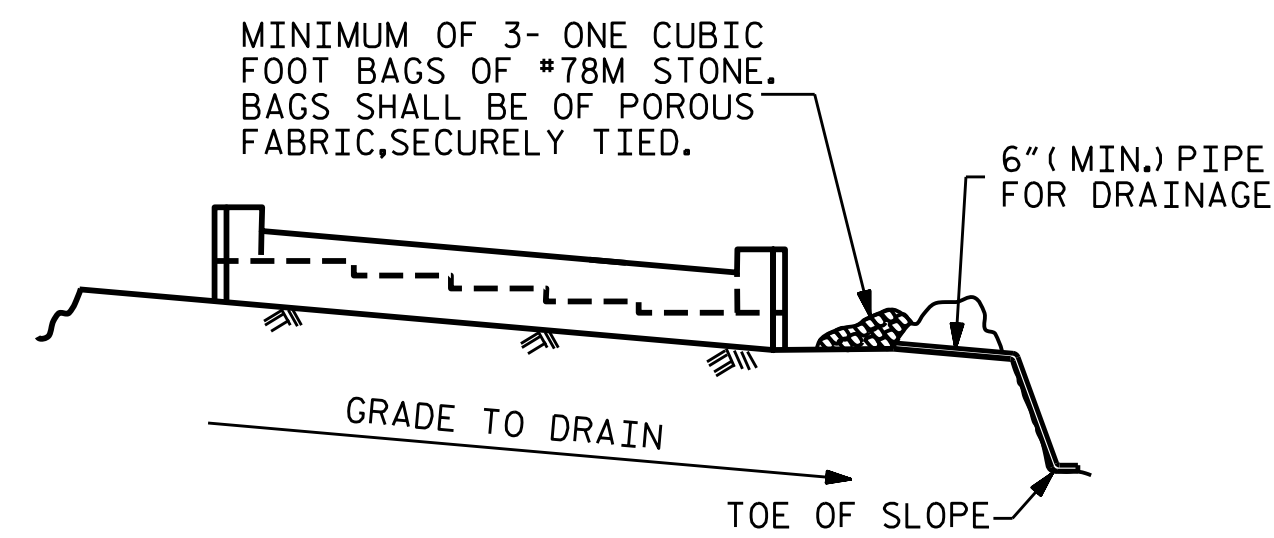
**SUBSTRUCTURE
 END BENT #1**

DRAWN BY : I.L. AVERETTE DATE : 12/2018
 CHECKED BY : A.K. PATEL DATE : 11/2019
 DESIGN ENGINEER OF RECORD : A.K. PATEL DATE : 11/2019

* FOR LOCATION OF ELEVATIONS BETWEEN BRIDGE SEAT BUILD-UPS, SEE SECTION A-A, SHEET 2 OF 2.

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-121
1			3			TOTAL SHEETS
2			4			194

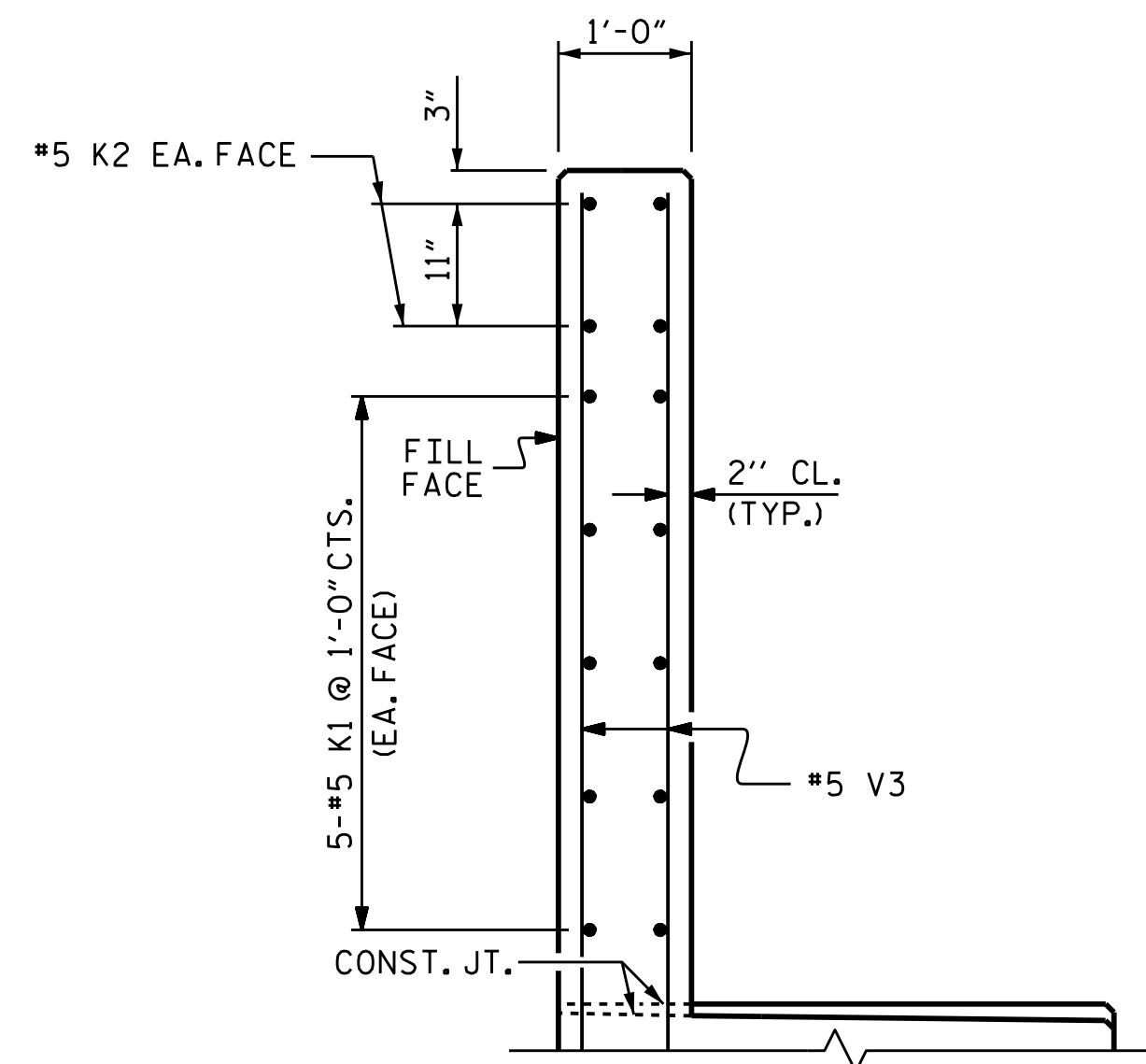


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

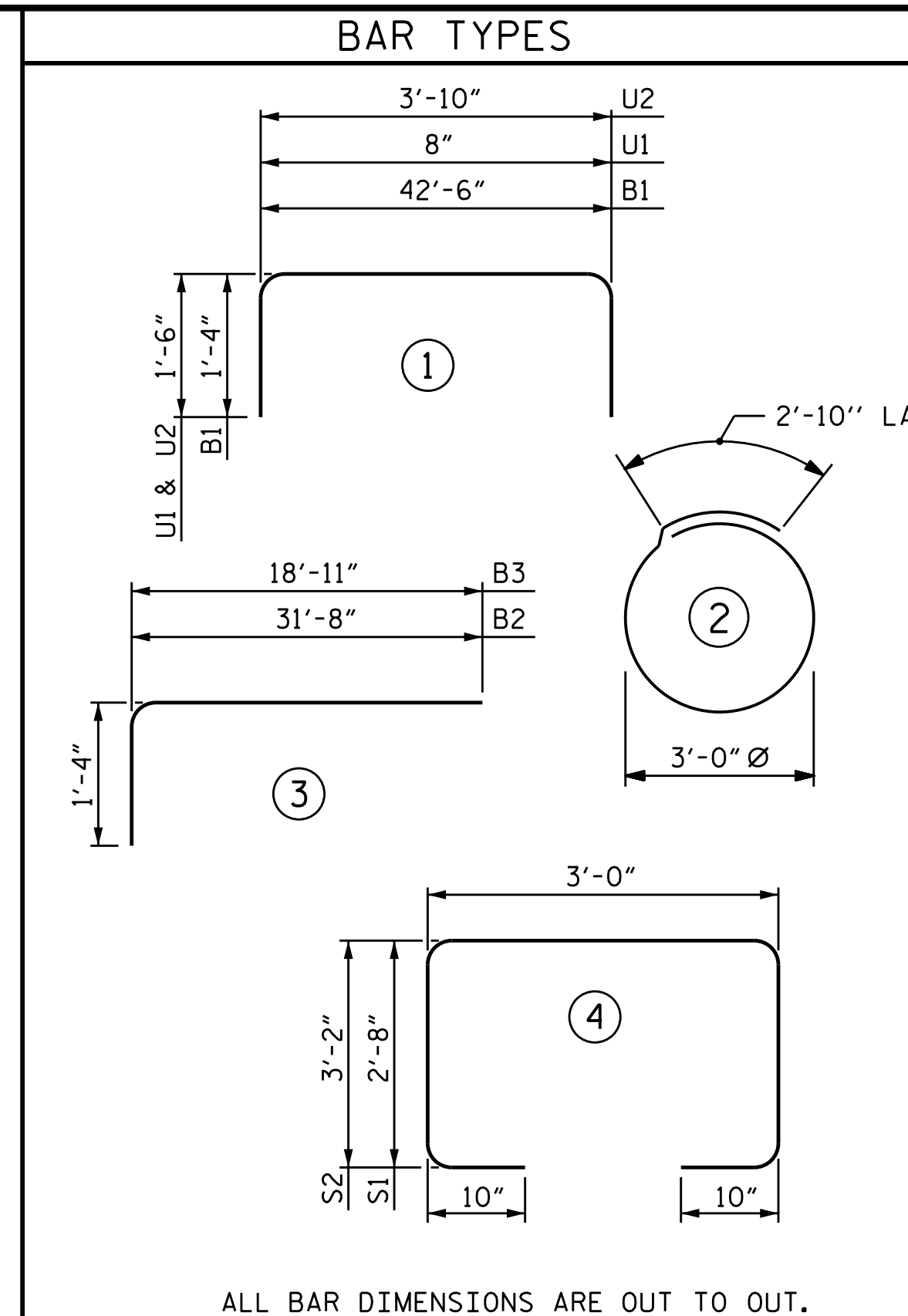
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR EFFECTIVENESS.

NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT



PARTIAL SECTION C-C



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

END BENT #1

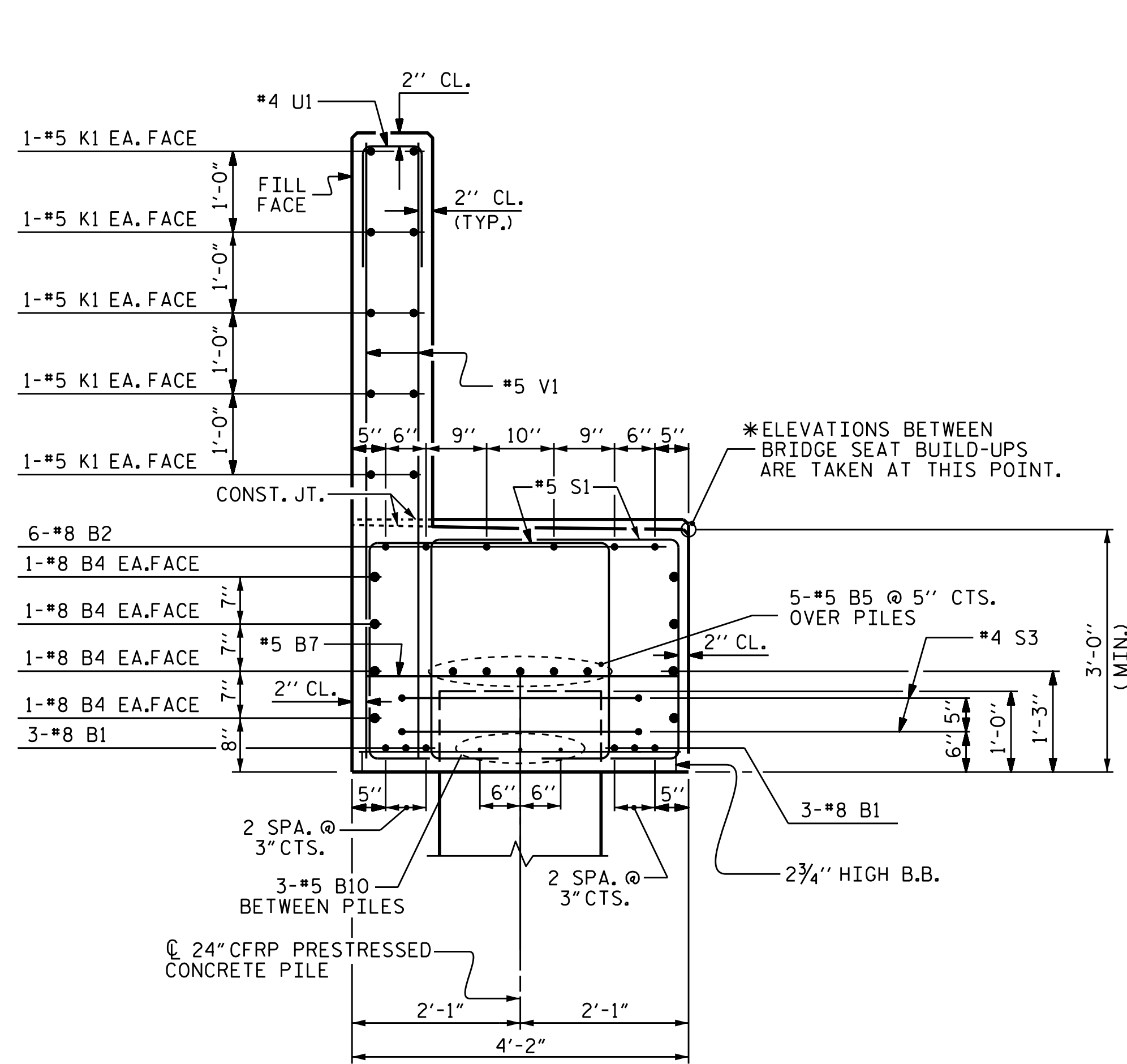
BAR	NO.	SIZE	TYPE	LENGTH	TOTAL LENGTH
B1	6	#8	1	45'-2"	271'-0"
B2	6	#8	3	33'-0"	198'-0"
B3	6	#8	3	20'-3"	121'-6"
B4	8	#8	STR	42'-8"	341'-4"
B5	5	#5	STR	42'-8"	213'-4"
B6	2	#8	STR	18'-11"	37'-10"
B7	13	#5	STR	3'-10"	49'-10"
B8	6	#5	STR	8'-9"	52'-6"
B9	6	#5	STR	10'-2"	61'-0"
B10	15	#5	STR	5'-5"	81'-3"
E1	32	#5	STR	3'-8"	117'-4"
K1	10	#5	STR	42'-8"	426'-8"
K2	8	#5	STR	4'-5"	35'-4"
S1	60	#5	4	10'-0"	600'-0"
S2	46	#5	4	11'-0"	506'-0"
S3	12	#4	2	12'-3"	147'-0"
U1	34	#4	1	3'-8"	124'-8"
U2	13	#4	1	6'-10"	88'-10"
V1	68	#5	STR	7'-3"	493'-0"
V2	12	#5	STR	9'-10"	118'-0"
V3	12	#5	STR	8'-11"	107'-0"

TOTAL LIN. FT. # 4 BARS	360.5
TOTAL LIN. FT. # 5 BARS	2861.2
TOTAL LIN. FT. # 8 BARS	969.7

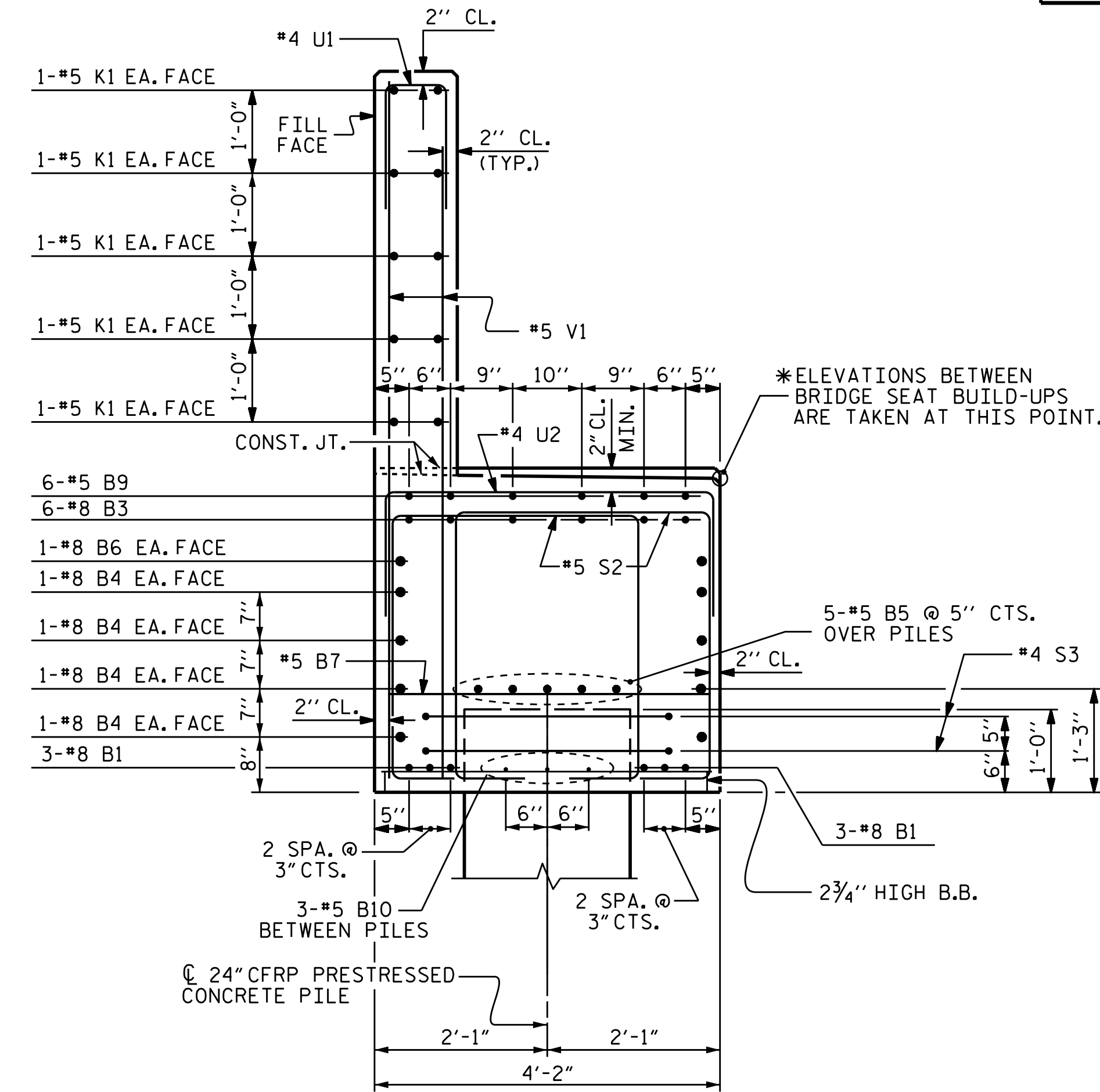
GLASS FIBER REINFORCED POLYMER BARS TOTAL 4191.42 LIN. FT.

CLASS AA CONCRETE BREAKDOWN

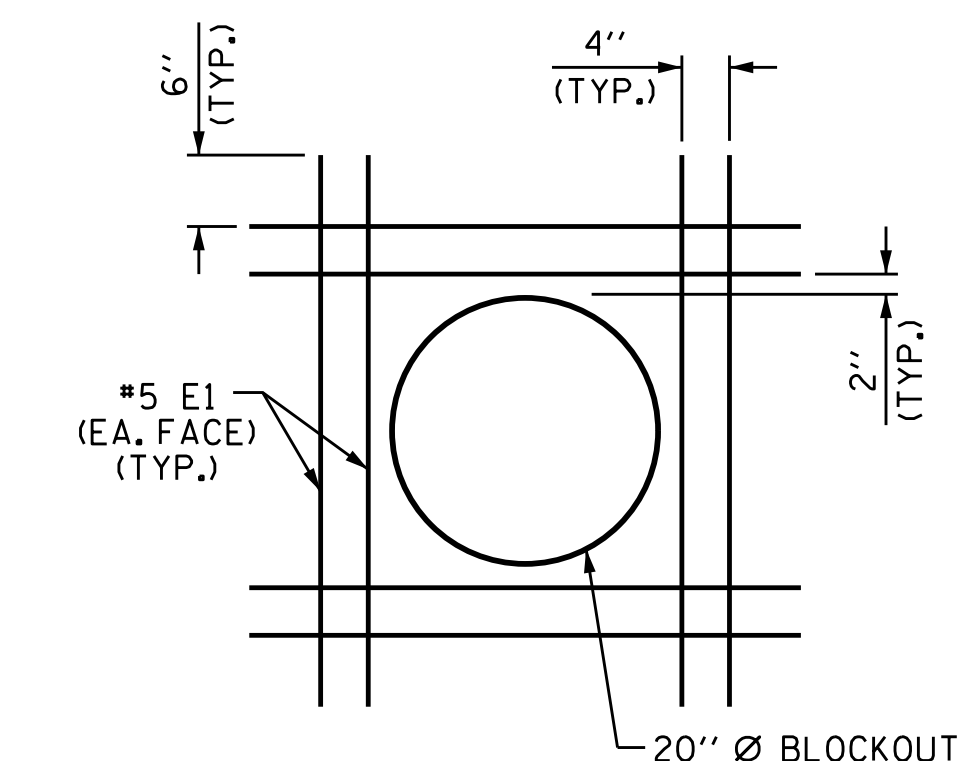
POUR #1 CAP	21.7 C.Y.
POUR #2 BACKWALL & UPPER PART OF WINGS	8.0 C.Y.
TOTAL CLASS AA CONCRETE	29.7 C.Y.



SECTION A-A

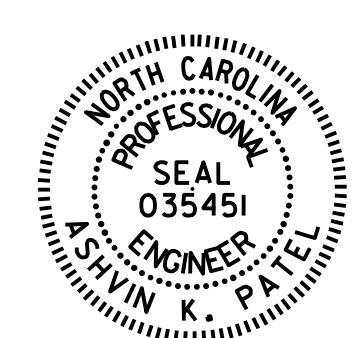


SECTION B-B



DETAIL OF REINFORCING AROUND 16" Ø PIPE

PROJECT NO. B-4863
CARTERET COUNTY
 STATION: 34+75.00 -L-
 SHEET 2 OF 2



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 Ashwin Patel
 7F180E5610244D3
 4/16/2021

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE END BENT #1

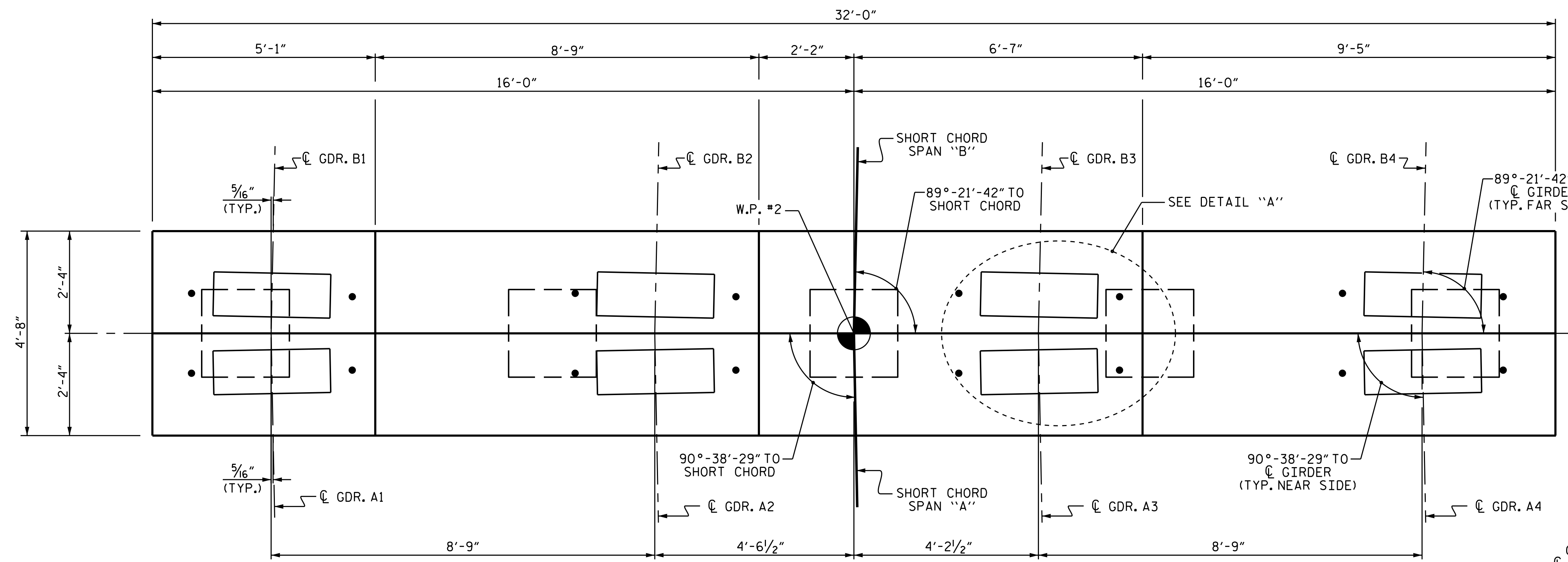
DRAWN BY : I.L. AVERETTE DATE : 12/2018
 CHECKED BY : A.K. PATEL DATE : 11/2019
 DESIGN ENGINEER OF RECORD: A.K. PATEL DATE : 11/2019

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-122
1			3			TOTAL SHEETS 194
2			4			

NOTES

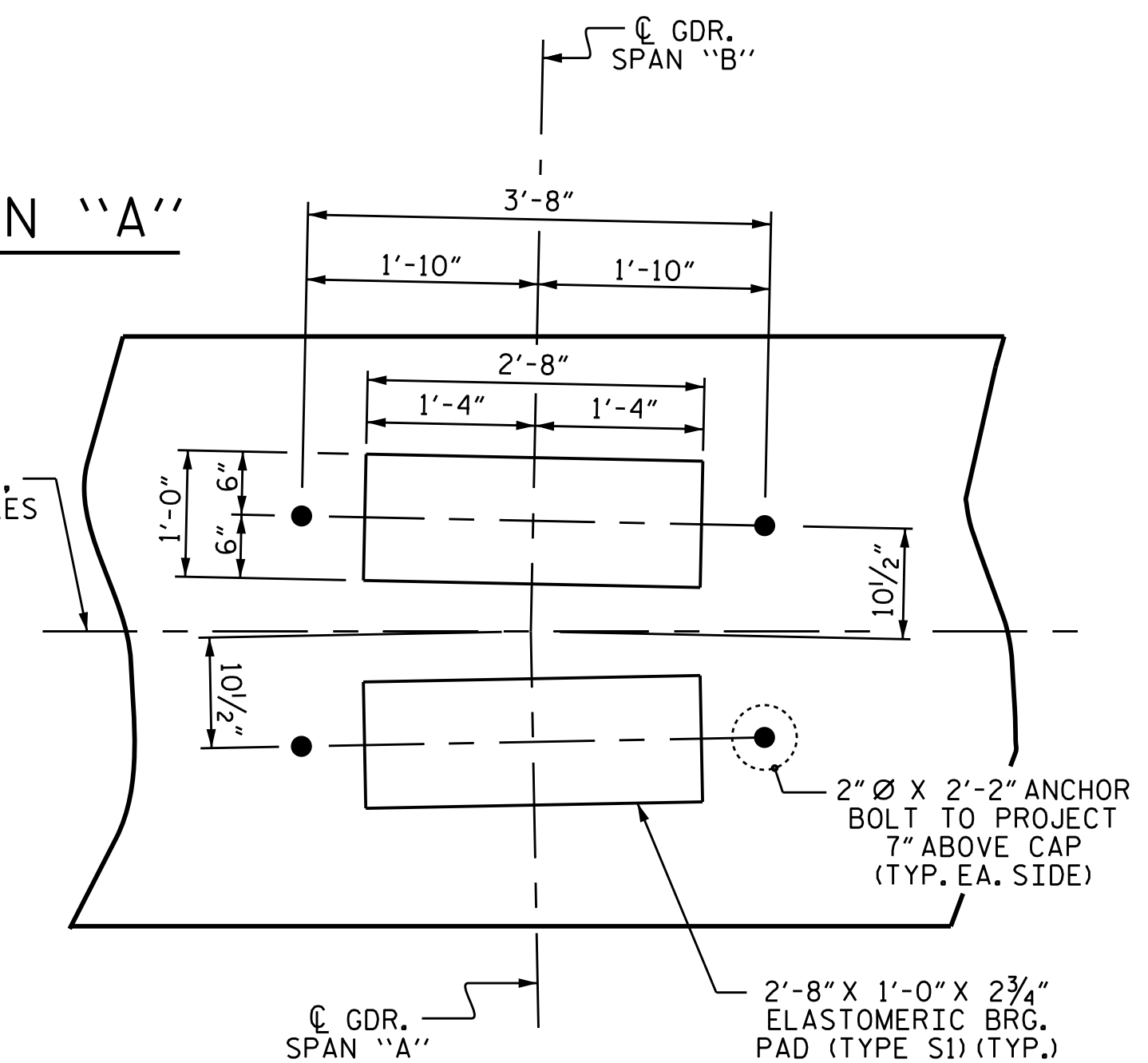
STIRRUPS AND UI BARS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.
 CONCRETE DISPLACED BY CONCRETE PILES HAS BEEN DEDUCTED FROM THE CAP CONCRETE QUANTITY.
 ALL REINFORCING IN THE CAP IS TO BE GLASS FIBER REINFORCED POLYMER (GFRP) BARS. FOR GLASS FIBER REINFORCED POLYMER BARS, SEE SPECIAL PROVISIONS.



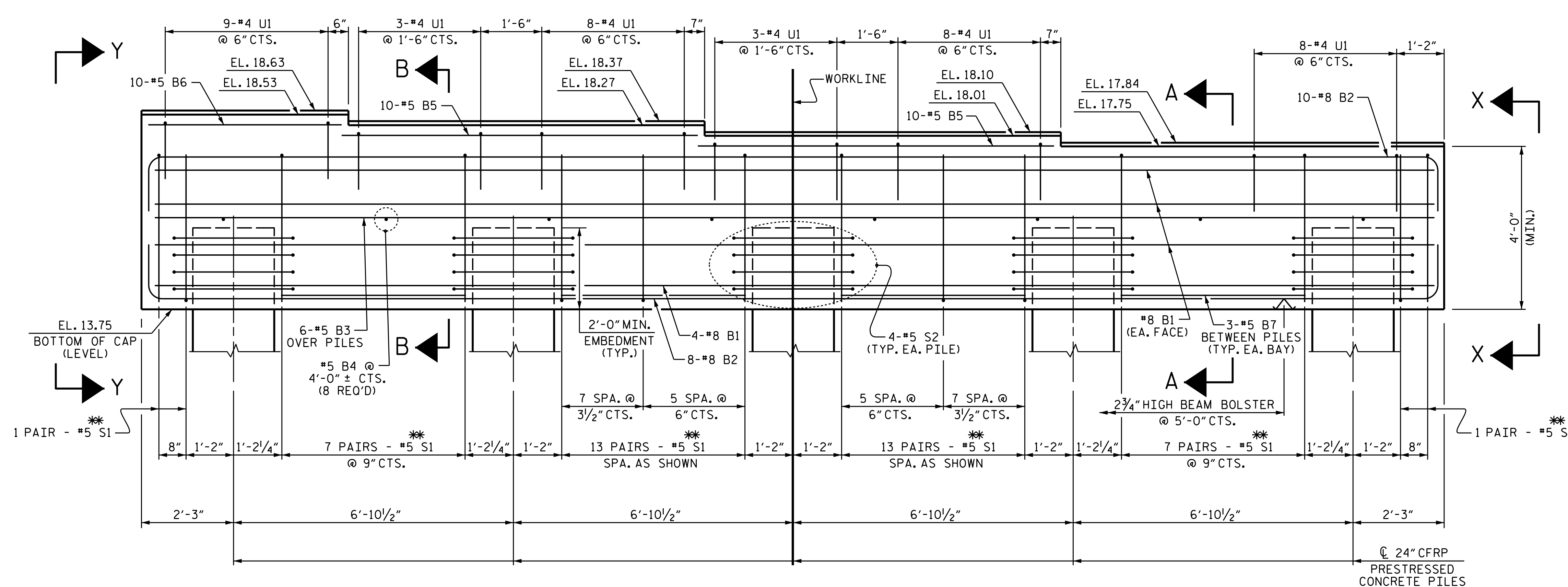
PLAN

SPAN "B"

SPAN "A"



DETAIL "A"
(TYP. @ EACH GDR.)



ELEVATION

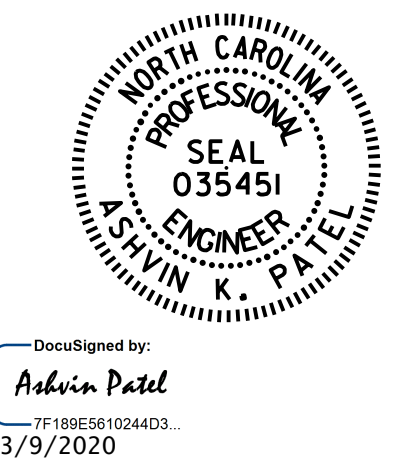
FOR ADDITIONAL REINFORCING BARS IN ENDS OF CAP, SEE VIEW X-X AND VIEW Y-Y ON SHEET 2 OF 2.

*** INVERT ALTERNATE STIRRUPS**

PROJECT NO. B-4863
CARTERET COUNTY
 STATION: 34+75.00 -L-

SHEET 1 OF 2

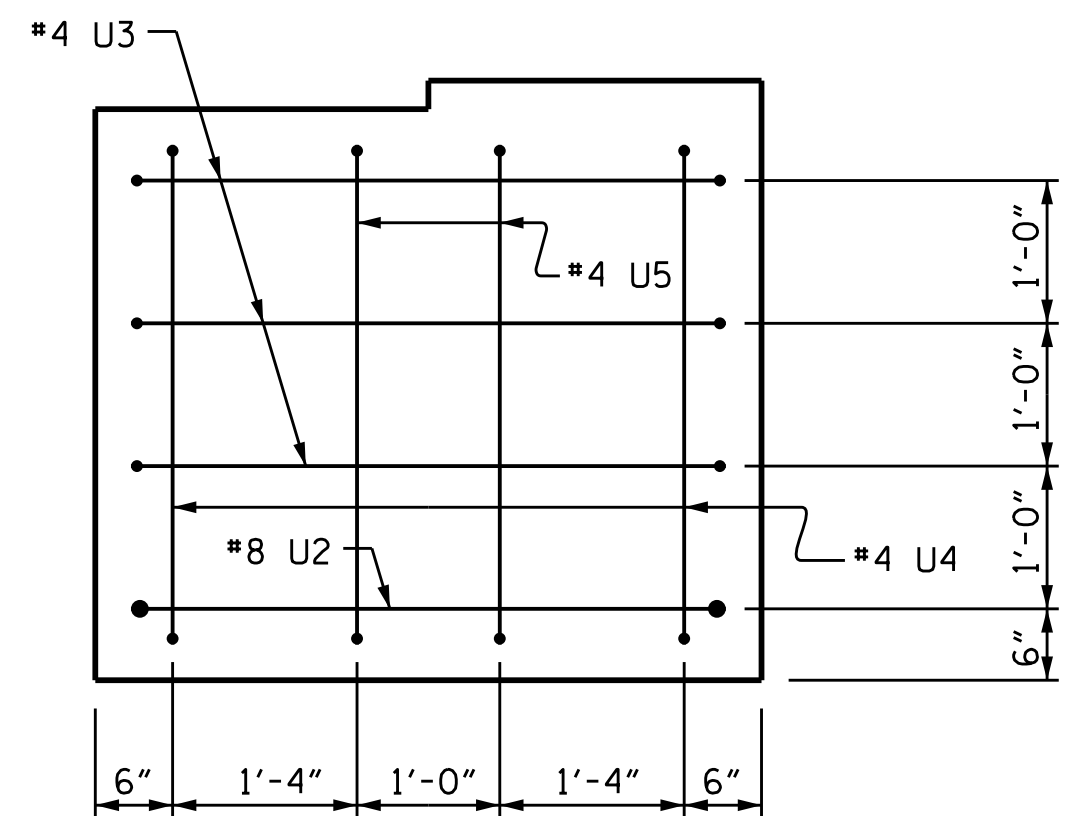
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
SUBSTRUCTURE
BENT #1



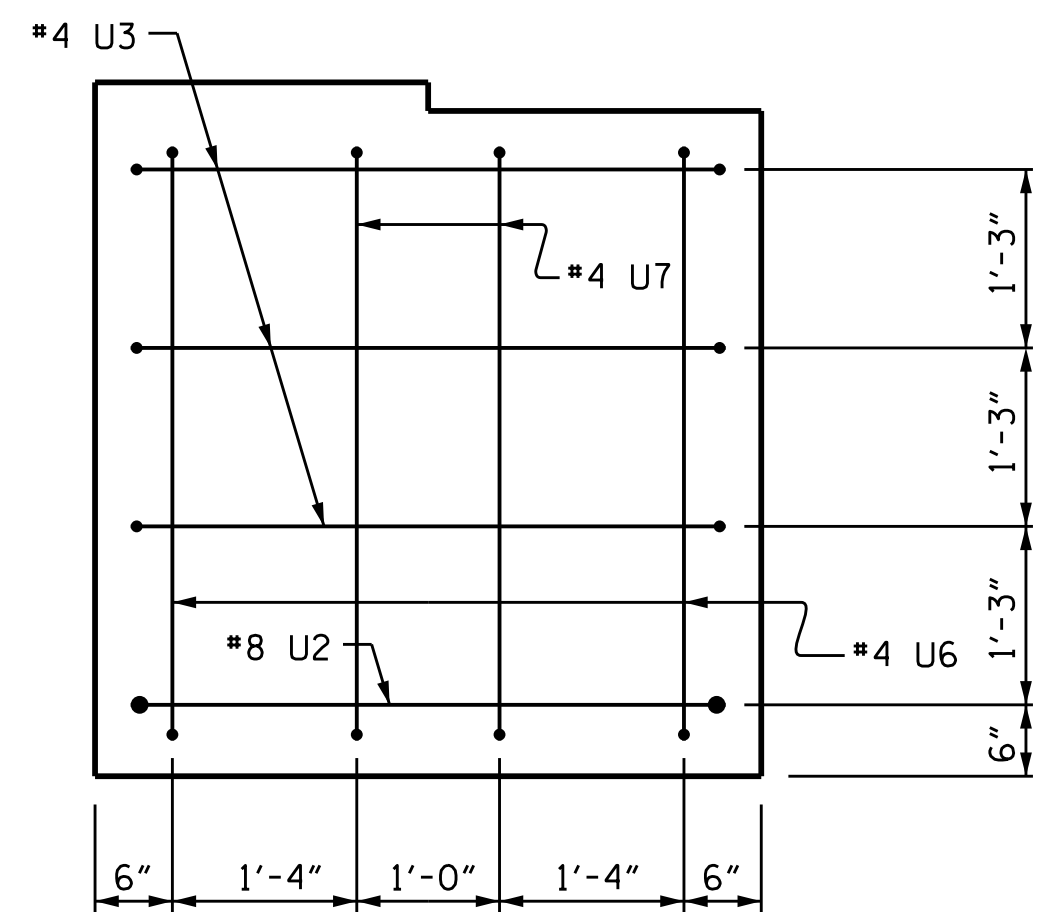
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			S1-123
2			4			194

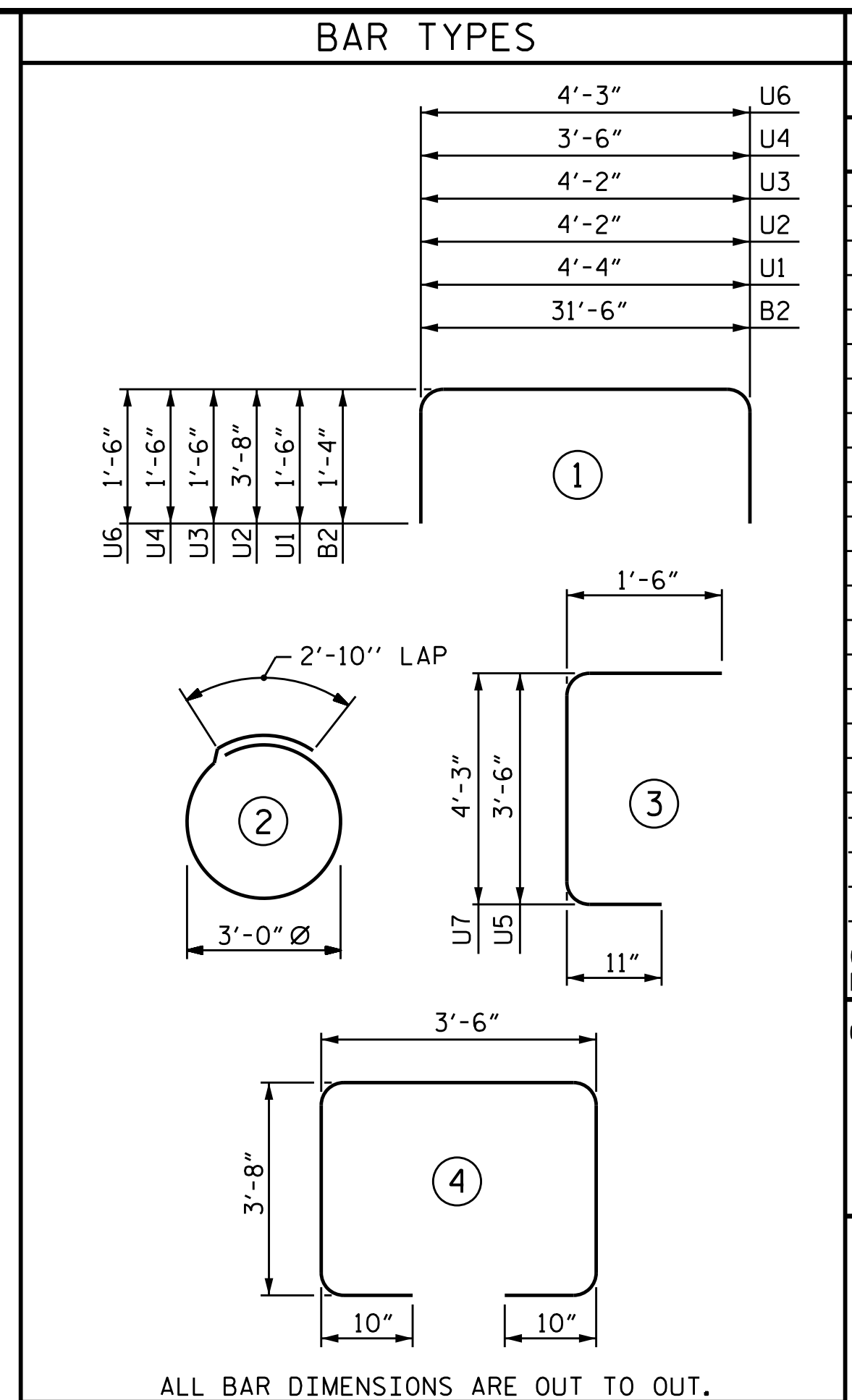
DRAWN BY: T.L. AVERETTE DATE: 02/2019
 CHECKED BY: A.K. PATEL DATE: 12/2019
 DESIGN ENGINEER OF RECORD: A.K. PATEL DATE: 12/2019



VIEW X-X

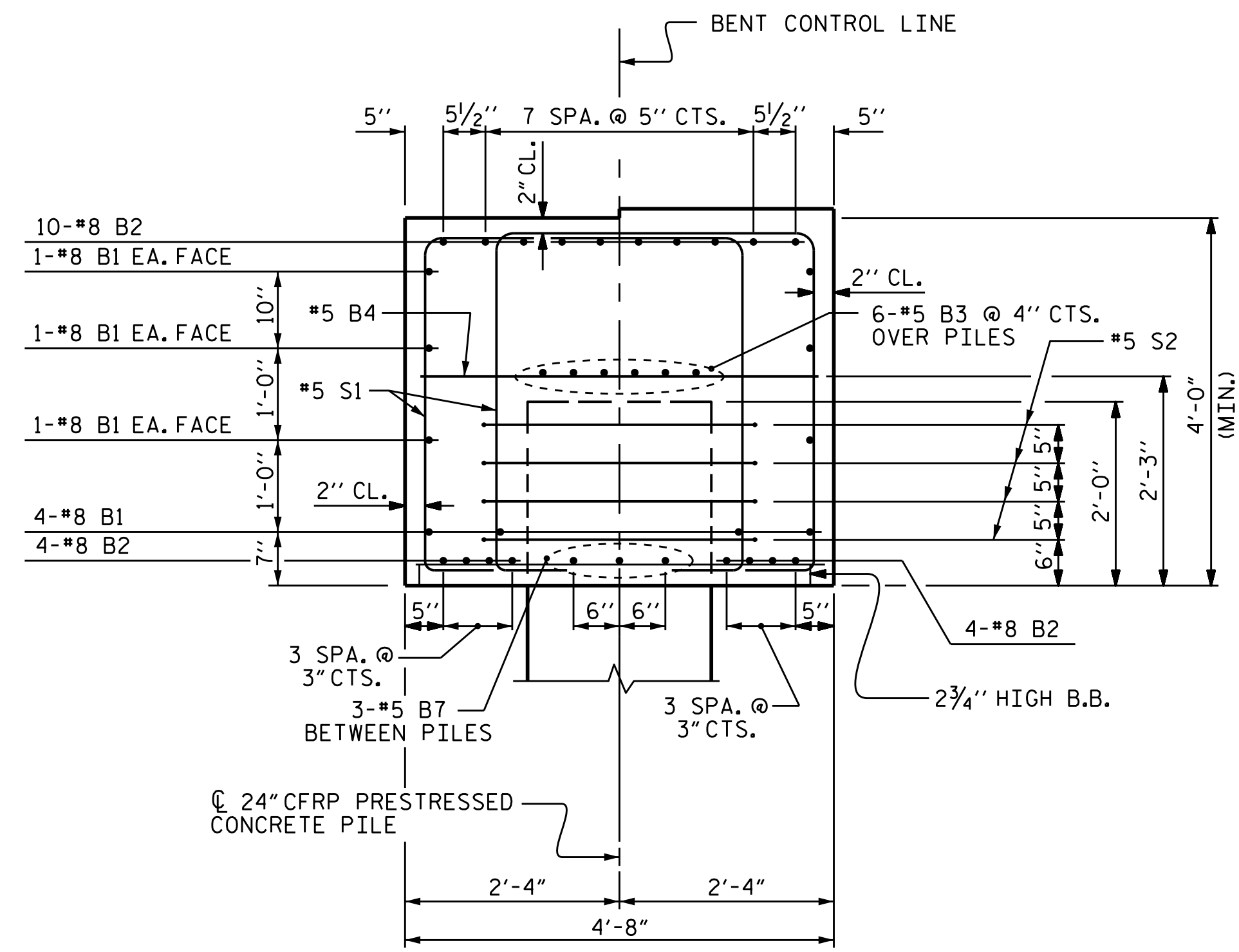


VIEW Y-Y

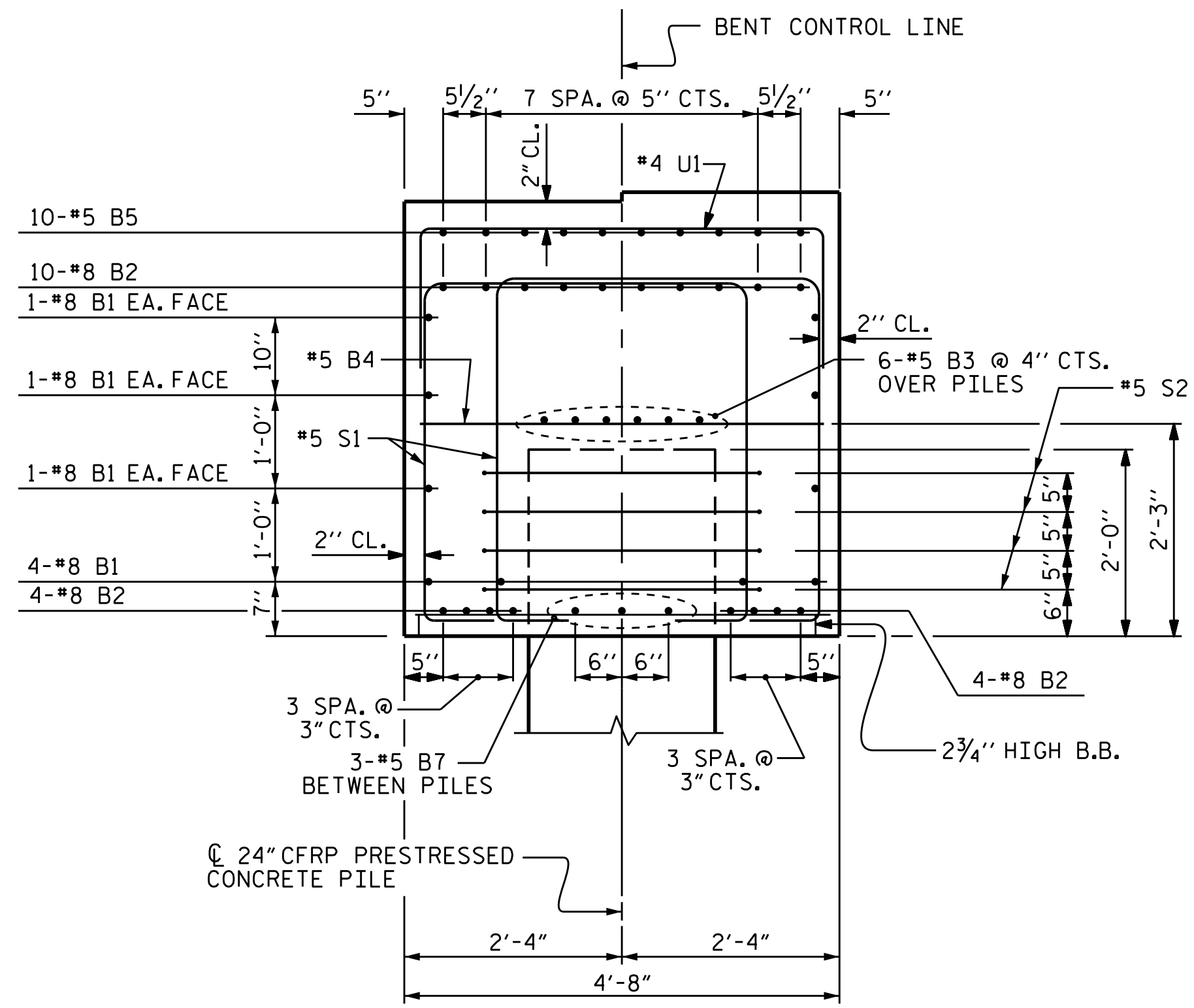


ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL					
BENT #1					
BAR	NO.	SIZE	TYPE	LENGTH	TOTAL LENGTH
B1	10	#8	STR	31'-8"	316'-8"
B2	18	#8	1	34'-2"	615'-0"
B3	6	#5	STR	31'-8"	190'-0"
B4	8	#5	STR	4'-4"	34'-8"
B5	20	#5	STR	8'-9"	175'-0"
B6	10	#5	STR	4'-9"	47'-6"
B7	12	#5	STR	4'-6"	54'-0"
S1	88	#5	4	12'-6"	1100'-0"
S2	20	#5	2	12'-3"	245'-0"
U1	39	#4	1	7'-4"	286'-0"
U2	2	#8	1	11'-6"	23'-0"
U3	6	#4	1	7'-2"	43'-0"
U4	2	#4	1	6'-6"	13'-0"
U5	2	#4	3	5'-11"	11'-10"
U6	2	#4	1	7'-3"	14'-6"
U7	2	#4	3	6'-8"	13'-4"
TOTAL LIN. FT. # 4 BARS					381.7
TOTAL LIN. FT. # 5 BARS					1846.6
TOTAL LIN. FT. # 8 BARS					954.7
GLASS FIBER REINFORCED POLYMER BARS					3182.50 LIN. FT.
CLASS AA CONCRETE BREAKDOWN					
POUR #1 CAP					22.8 C.Y.
TOTAL CLASS AA CONCRETE					22.8 C.Y.



SECTION A-A



SECTION B-B

PROJECT NO. B-4863
CARTERET COUNTY
 STATION: 34+75.00 -L-

SHEET 2 OF 2



Designed by:
 Ashwin Patel
 771806561024403
 4/16/2021

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 BENT #1

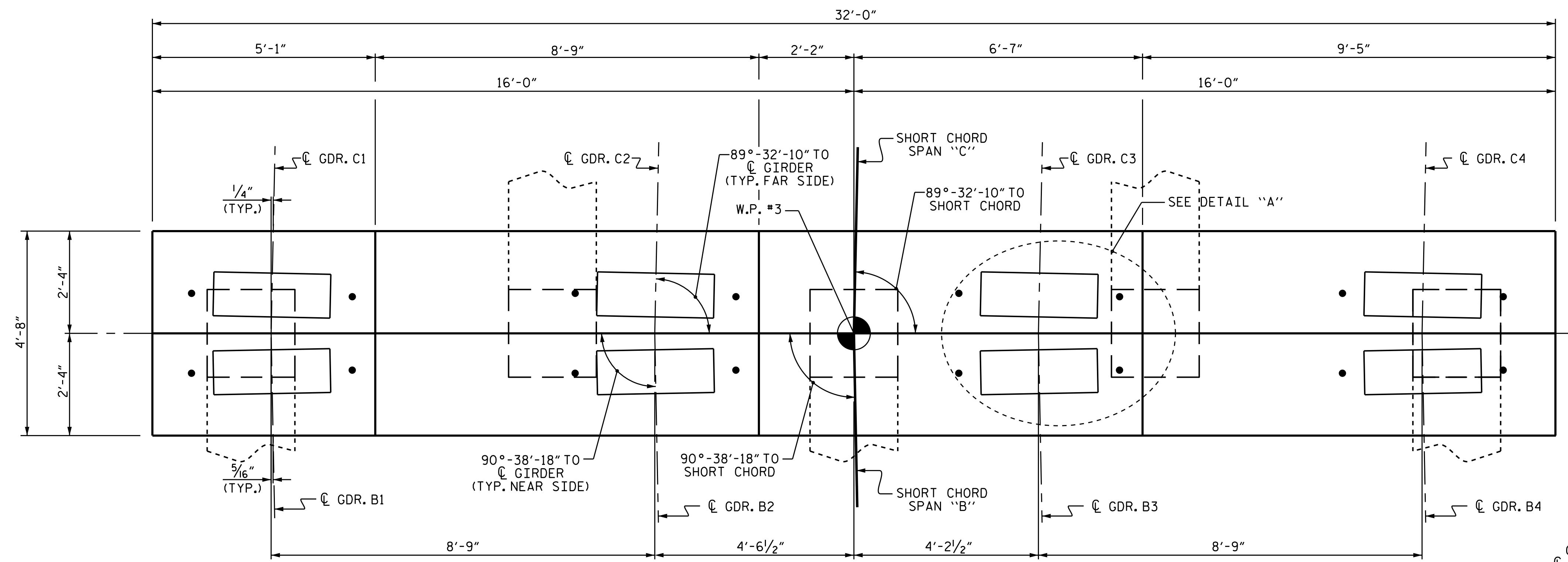
DRAWN BY : I.L. AVERETTE DATE : 02/2019
 CHECKED BY : A.K. PATEL DATE : 12/2019
 DESIGN ENGINEER OF RECORD: A.K. PATEL DATE : 12/2019

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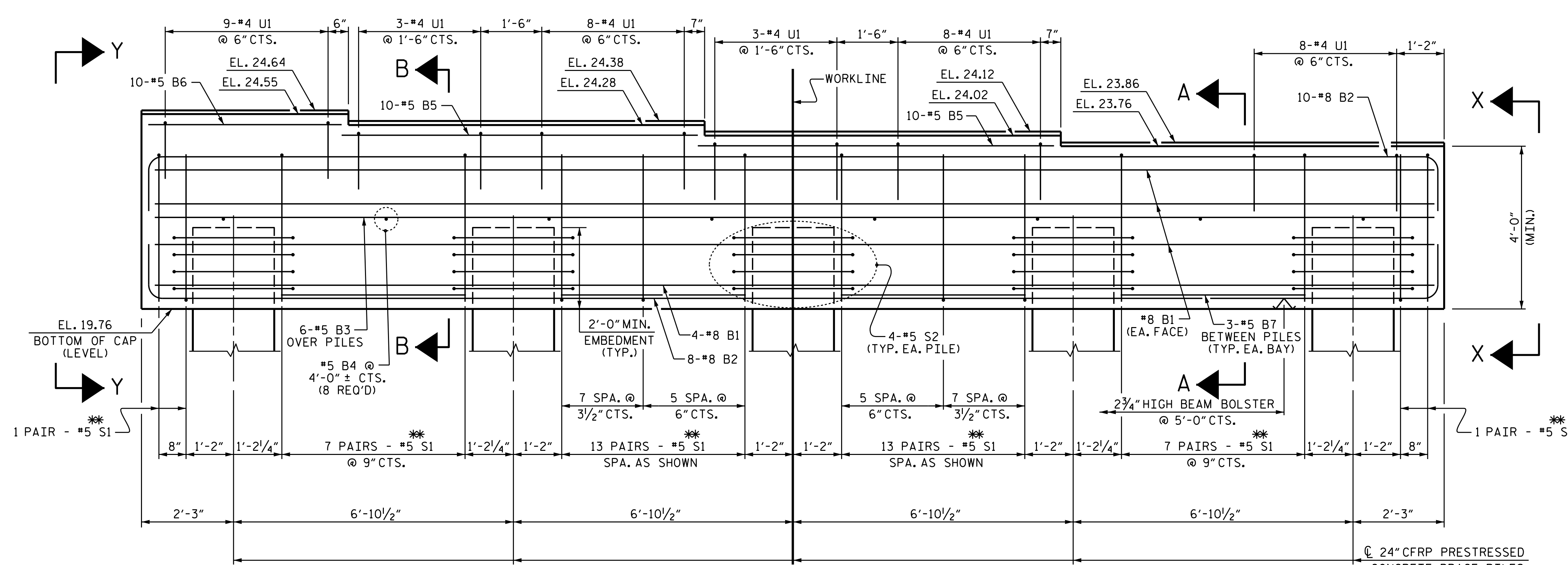
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-124
1			3			TOTAL SHEETS
2			4			194

NOTES

STIRRUPS AND UI BARS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.
 CONCRETE DISPLACED BY CONCRETE PILES HAS BEEN DEDUCTED FROM THE CAP CONCRETE QUANTITY.
 ALL REINFORCING IN THE CAP IS TO BE GLASS FIBER REINFORCED POLYMER (GFRP) BARS. FOR GLASS FIBER REINFORCED POLYMER BARS, SEE SPECIAL PROVISIONS.



PLAN



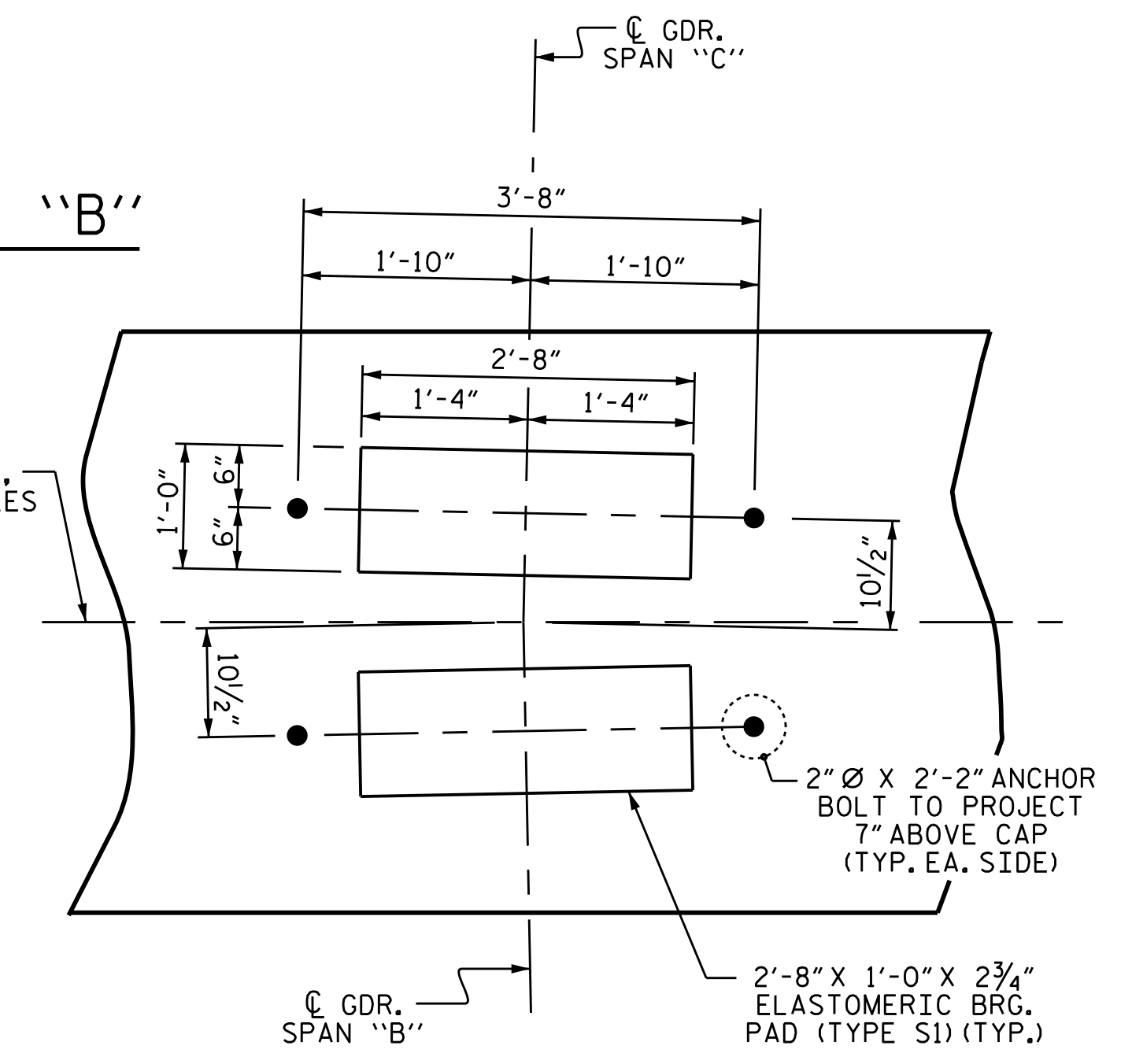
ELEVATION

FOR ADDITIONAL REINFORCING BARS IN ENDS OF CAP, SEE VIEW X-X AND VIEW Y-Y ON SHEET 2 OF 2.

*** INVERT ALTERNATE STIRRUPS**

SPAN "C"

SPAN "B"

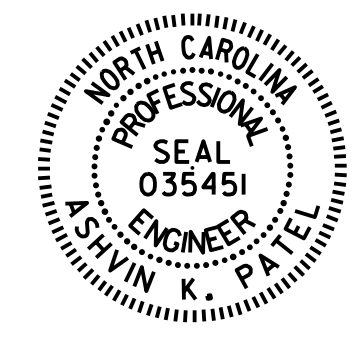


DETAIL "A"
(TYP. @ EACH GDR.)

PROJECT NO. B-4863
CARTERET COUNTY
 STATION: 34+75.00 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
SUBSTRUCTURE
BENT #2

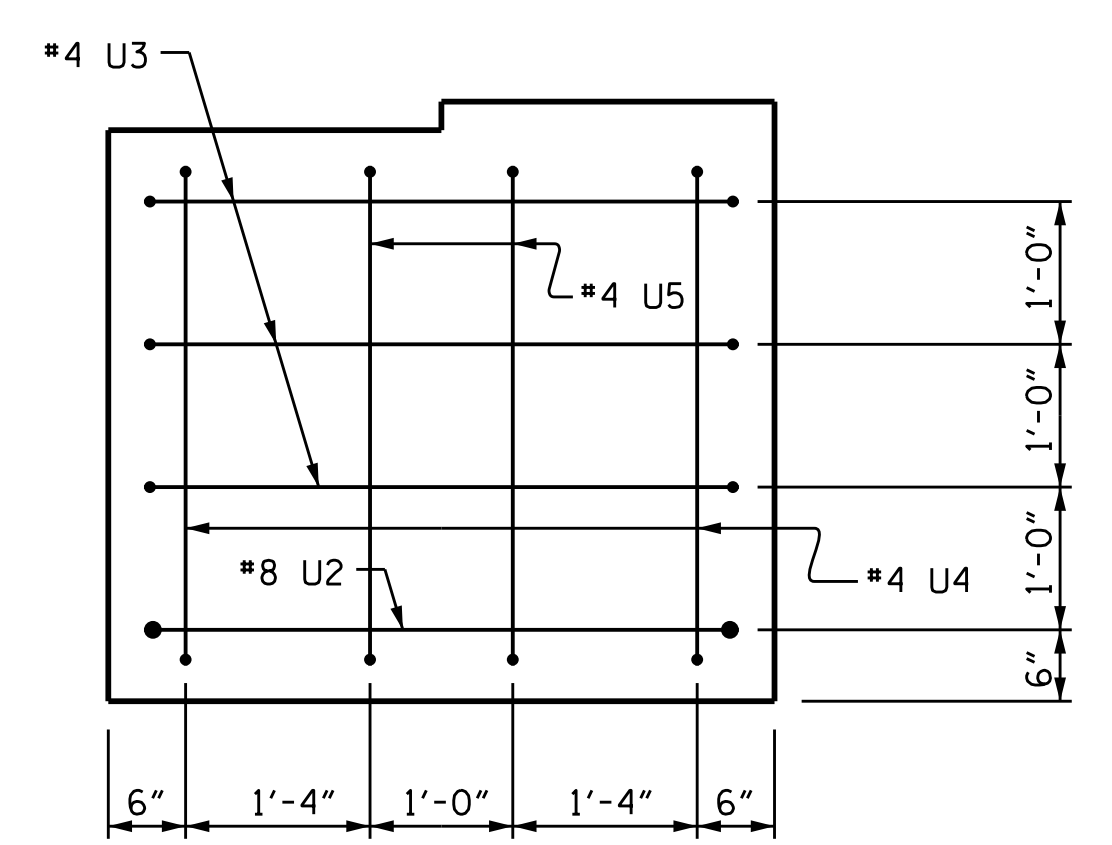


DocuSigned by:
 Ashwin Patel
 7F1805E1004403
 3/9/2020

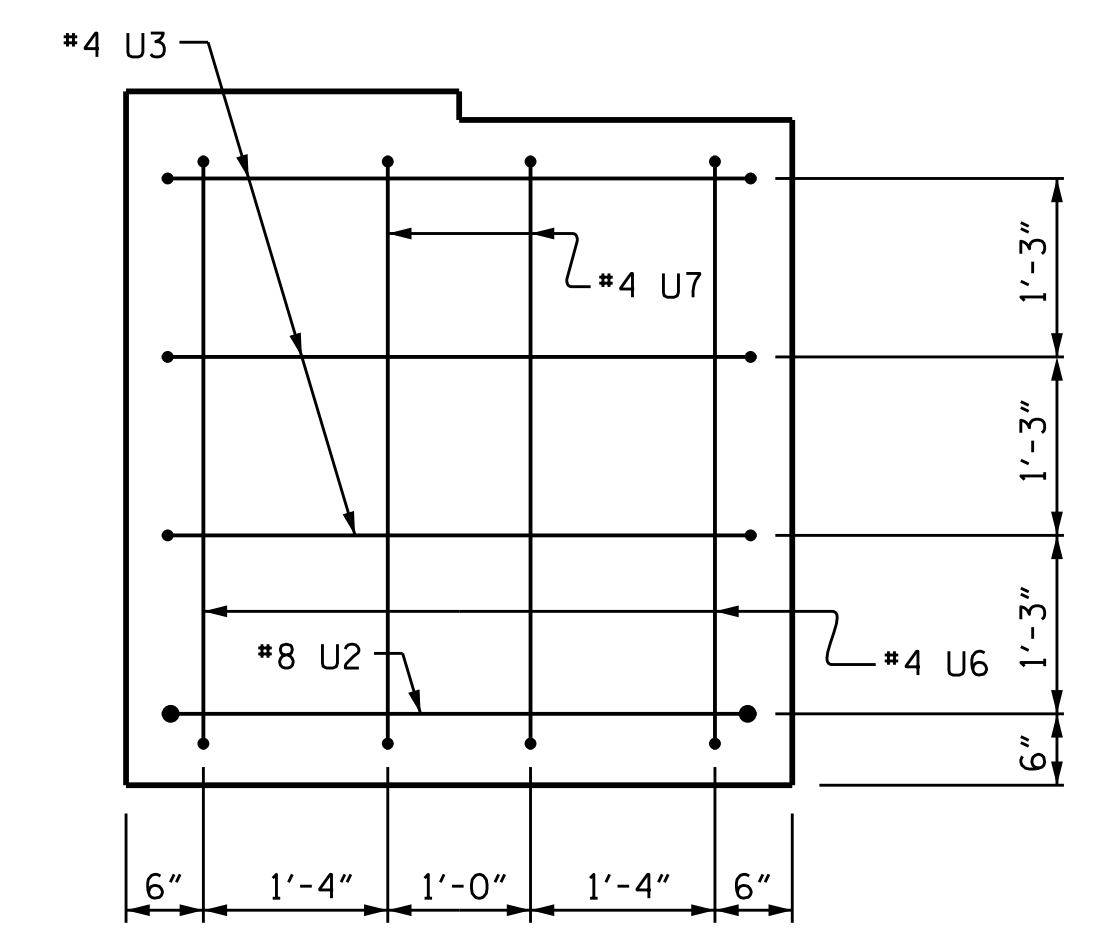
DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			S1-125
2			4			194

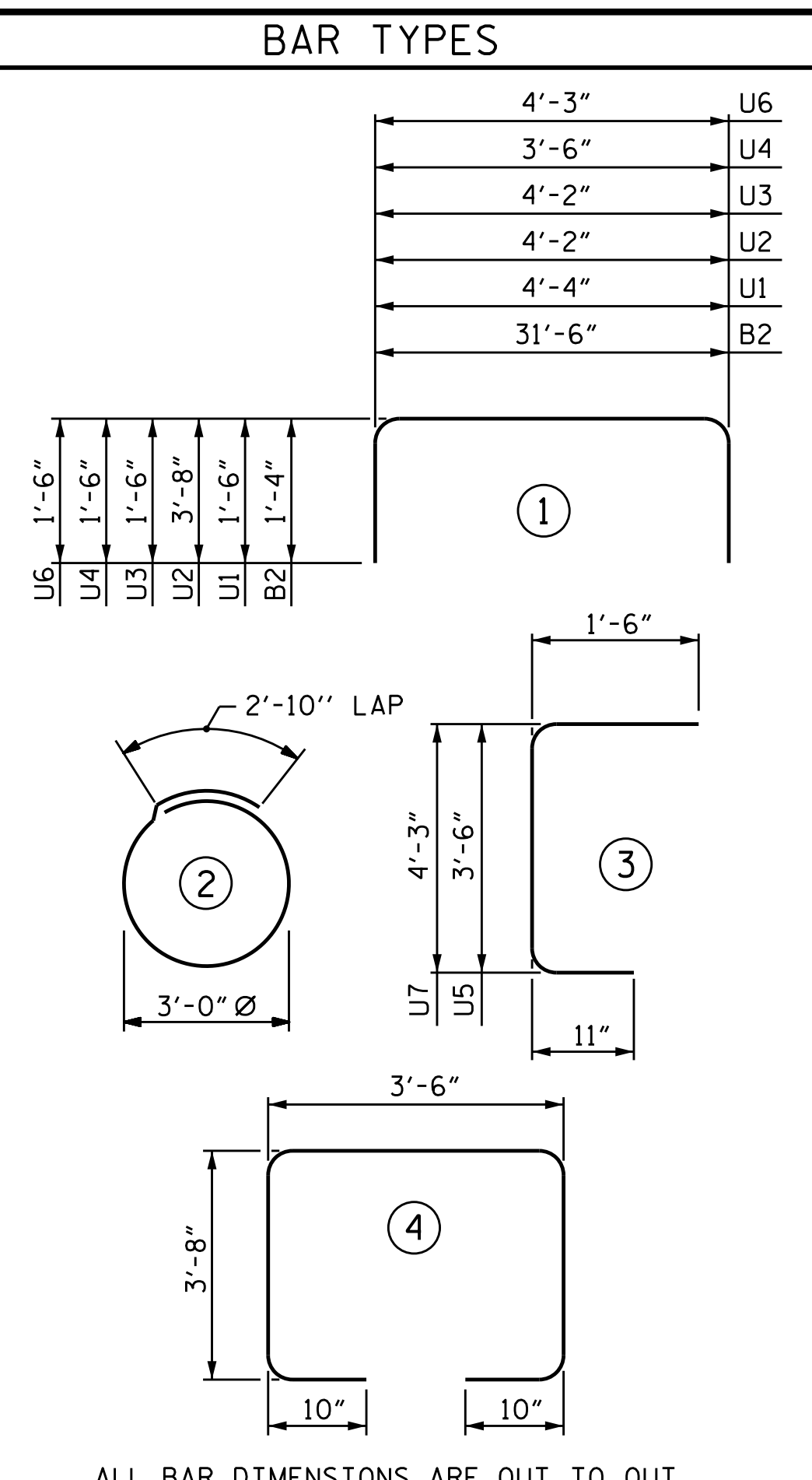
DRAWN BY: T.L. AVERETTE DATE: 02/2019
 CHECKED BY: A.K. PATEL DATE: 12/2019
 DESIGN ENGINEER OF RECORD: A.K. PATEL DATE: 12/2019



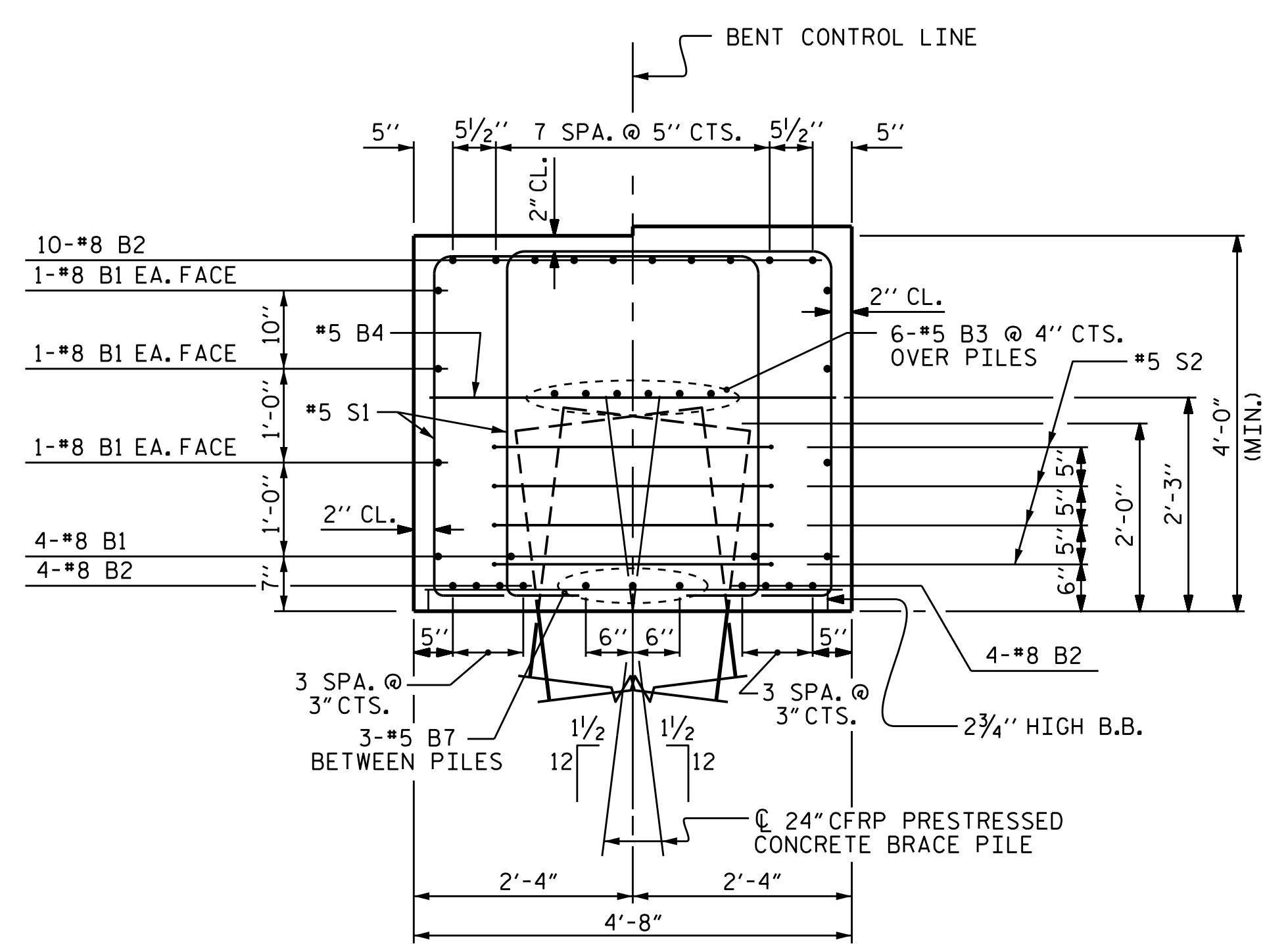
VIEW X-X



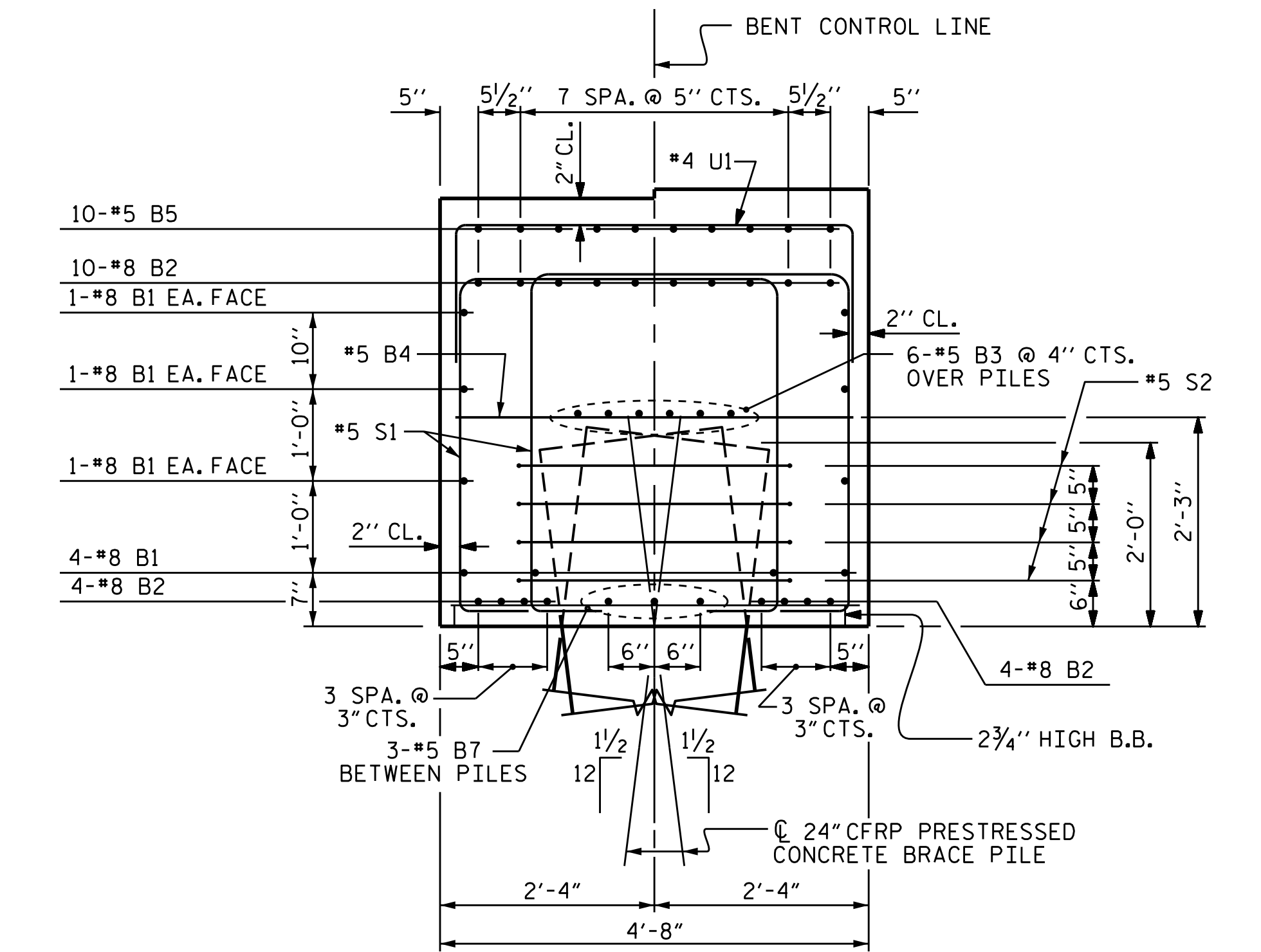
VIEW Y-Y



BILL OF MATERIAL					
BENT #2					
BAR	NO.	SIZE	TYPE	LENGTH	TOTAL LENGTH
B1	10	#8	STR	31'-8"	316'-8"
B2	18	#8		34'-2"	615'-0"
B3	6	#5	STR	31'-8"	190'-0"
B4	8	#5	STR	4'-4"	34'-8"
B5	20	#5	STR	8'-9"	175'-0"
B6	10	#5	STR	4'-9"	47'-6"
B7	12	#5	STR	4'-6"	54'-0"
S1	88	#5		12'-6"	1100'-0"
S2	20	#5		12'-3"	245'-0"
U1	39	#4		7'-4"	286'-0"
U2	2	#8		11'-6"	23'-0"
U3	6	#4		7'-2"	43'-0"
U4	2	#4		6'-6"	13'-0"
U5	2	#4		5'-11"	11'-10"
U6	2	#4		7'-3"	14'-6"
U7	2	#4		6'-8"	13'-4"
TOTAL LIN. FT. # 4 BARS					381.7
TOTAL LIN. FT. # 5 BARS					1846.1
TOTAL LIN. FT. # 8 BARS					954.7
GLASS FIBER REINFORCED POLYMER BARS				3182.50 LIN. FT.	
CLASS AA CONCRETE BREAKDOWN					
POUR #1 CAP					22.8 C.Y.
TOTAL CLASS AA CONCRETE					22.8 C.Y.

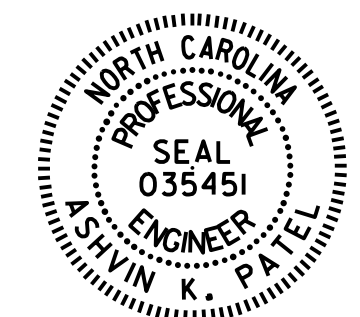


SECTION A-A



SECTION B-B

PROJECT NO. B-4863
CARTERET COUNTY
 STATION: 34+75.00 -L-
 SHEET 2 OF 2



Designed by:
Ashwin Patel
 77180656102403
 4/16/2021

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 BENT #2

DRAWN BY : I.L. AVERETTE DATE : 02/2019
 CHECKED BY : A.K. PATEL DATE : 12/2019
 DESIGN ENGINEER OF RECORD: A.K. PATEL DATE : 12/2019

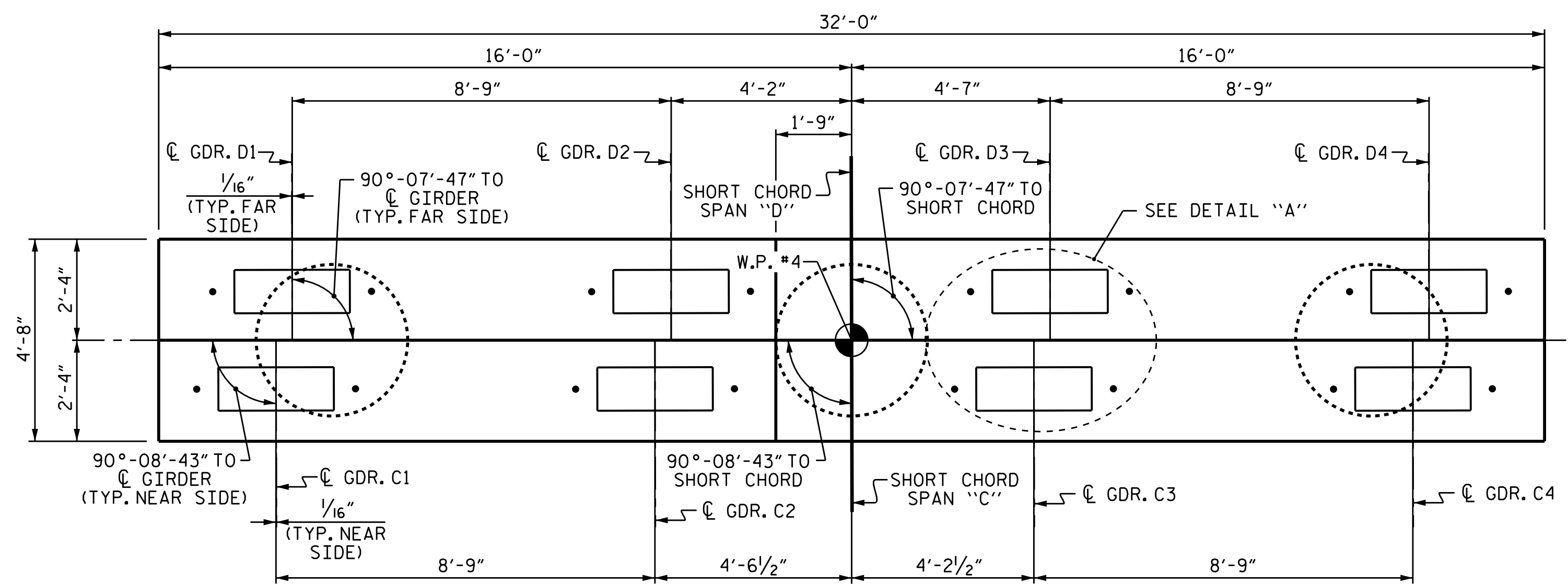
DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO. **S1-126**
 TOTAL SHEETS **194**

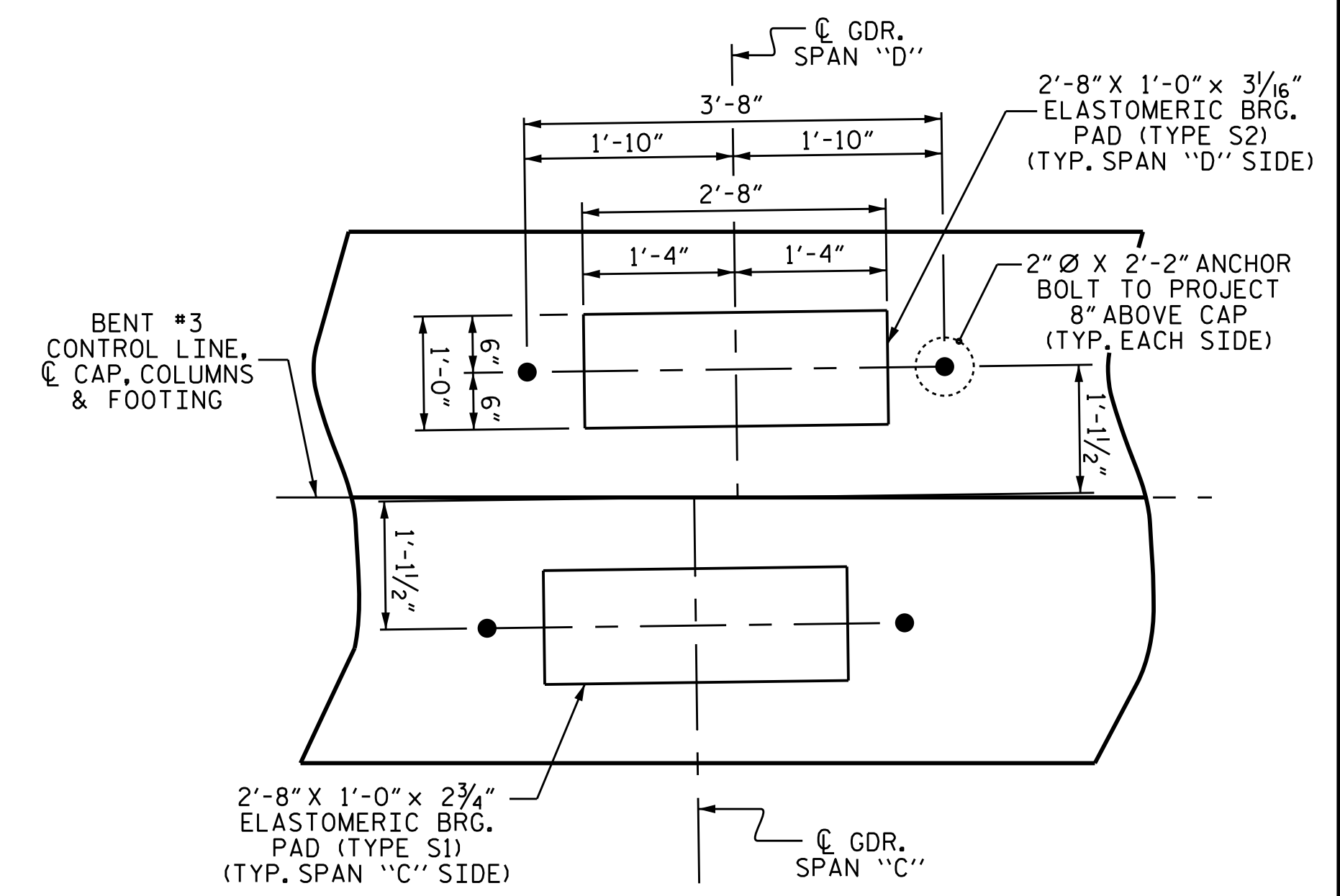
NOTES

STIRRUPS AND UI BARS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.
 HOOKS ON "V" AND "M" BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING BARS.
 CONCRETE DISPLACED BY CONCRETE PILES HAS BEEN DEDUCTED FROM THE FOOTING CONCRETE QUANTITY.
 THE TOP SURFACE AREAS OF THE BENT CAP SHALL BE CURED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS EXCEPT THE MEMBRANE CURING COMPOUND METHOD SHALL NOT BE USED.
 ALL REINFORCING IN THE CAP, COLUMNS AND FOOTING IS TO BE GLASS FIBER REINFORCED POLYMER (GFRP) BARS. FOR GLASS FIBER REINFORCED POLYMER BARS, SEE SPECIAL PROVISIONS.
 * THE FOOTING HAS A DROP OF 2" FROM THE CENTER OF THE FOOTING TO THE EDGE OF THE FOOTING TO ACCOMMODATE DRAINAGE.

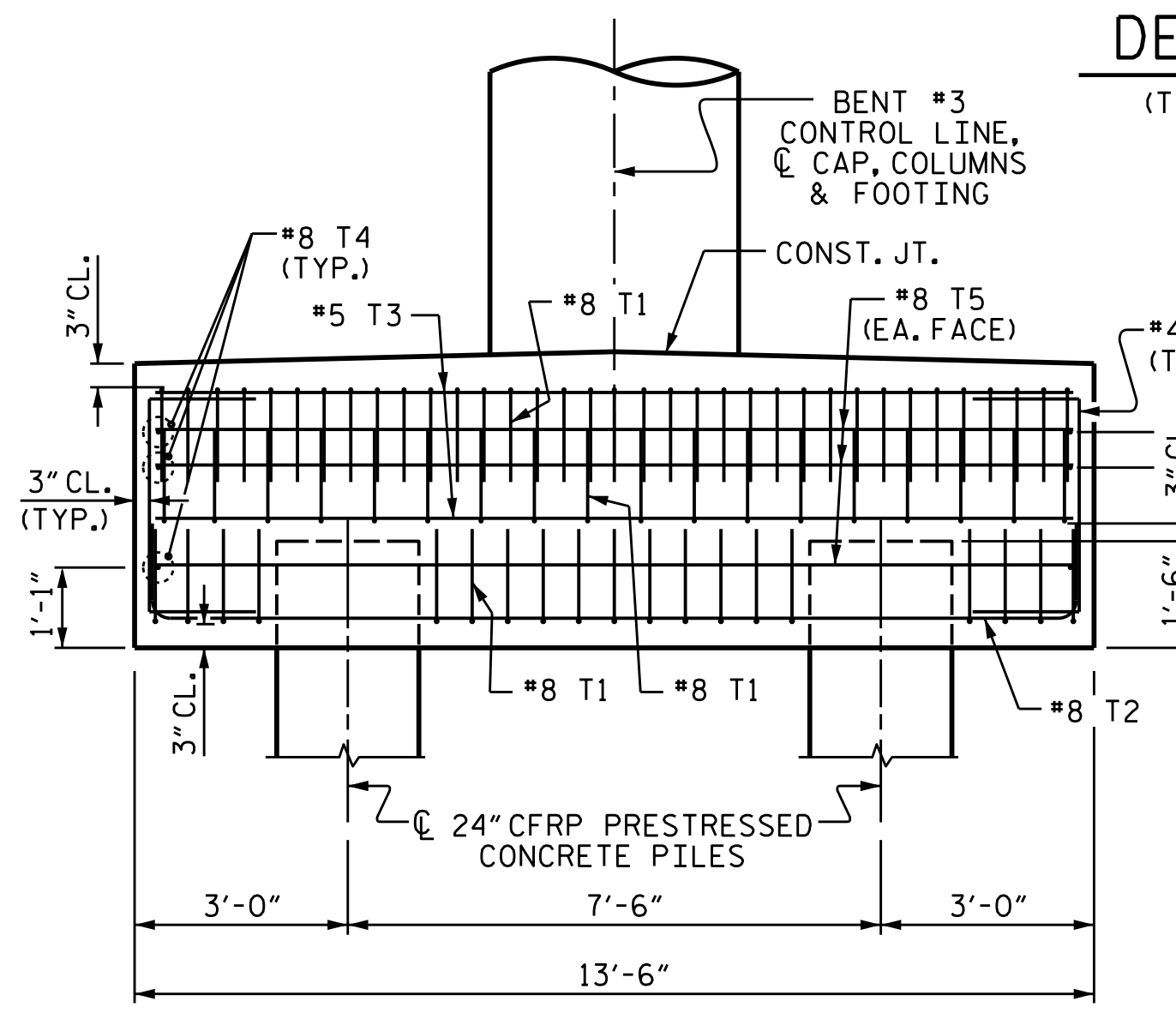


SPAN "D"

SPAN "C"



DETAIL "A"
(TYP. @ EACH GDR.)

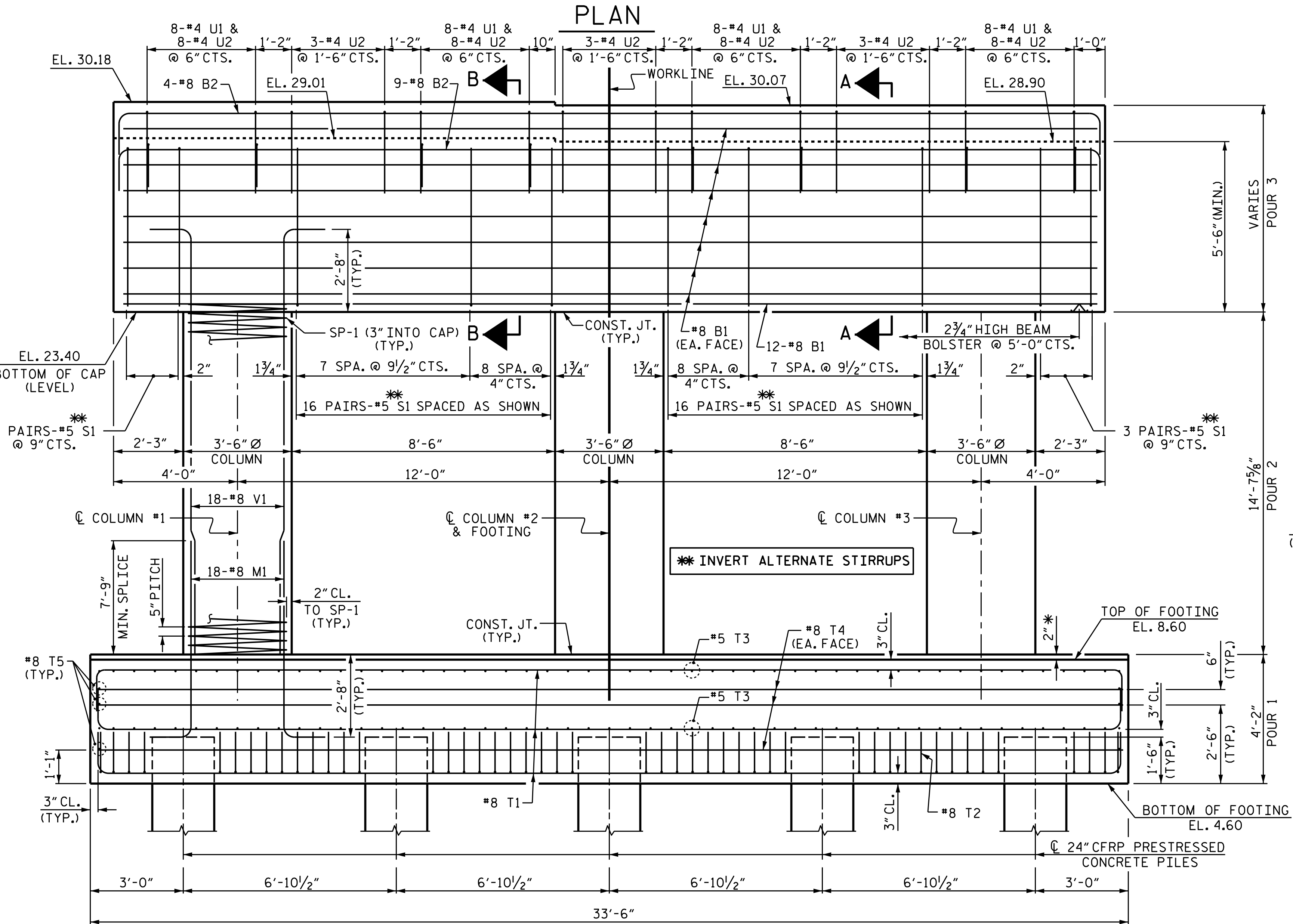


PARTIAL END ELEVATION
SEE ELEVATION FOR COLUMN REINFORCING BARS

PROJECT NO. B-4863
CARTERET COUNTY
 STATION: 34+75.00 -L-

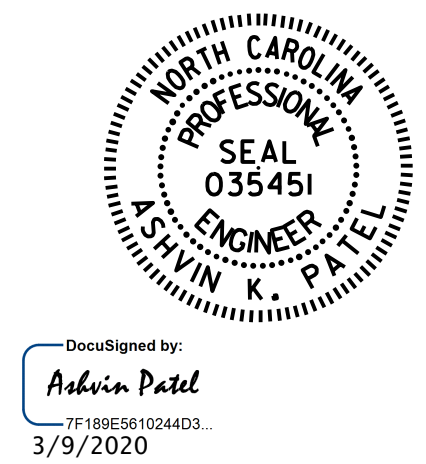
SHEET 1 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 BENT #3



ELEVATION

REINFORCING BAR DIMENSIONS AND DETAILS ARE TYPICAL FOR EACH COLUMN
 FOR ADDITIONAL REINFORCING BARS IN ENDS OF CAP, SEE END VIEW ON SHEET 3 OF 3
 *4 U7 BARS IN FOOTING NOT SHOWN, SEE SHEET 2 OF 3



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

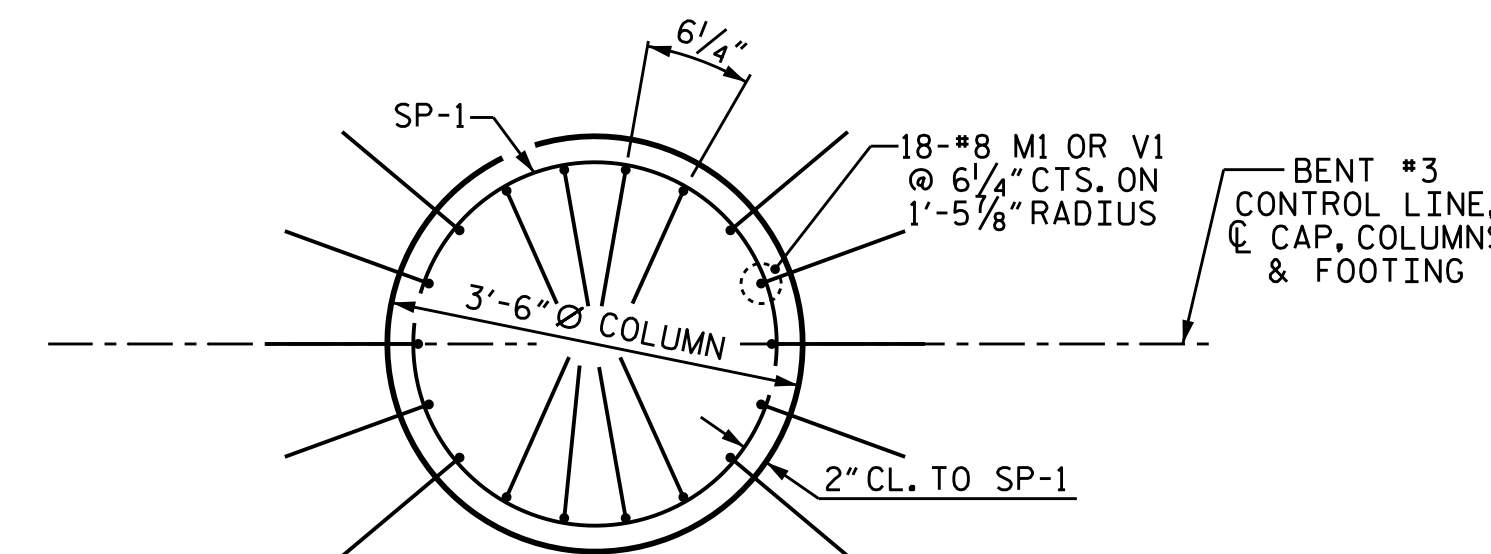
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-127
1			3			TOTAL SHEETS 194
2			4			

DRAWN BY: I.L. AVERETTE DATE: 02/2019
 CHECKED BY: A.K. PATEL DATE: 12/2019
 DESIGN ENGINEER OF RECORD: A.K. PATEL DATE: 12/2019

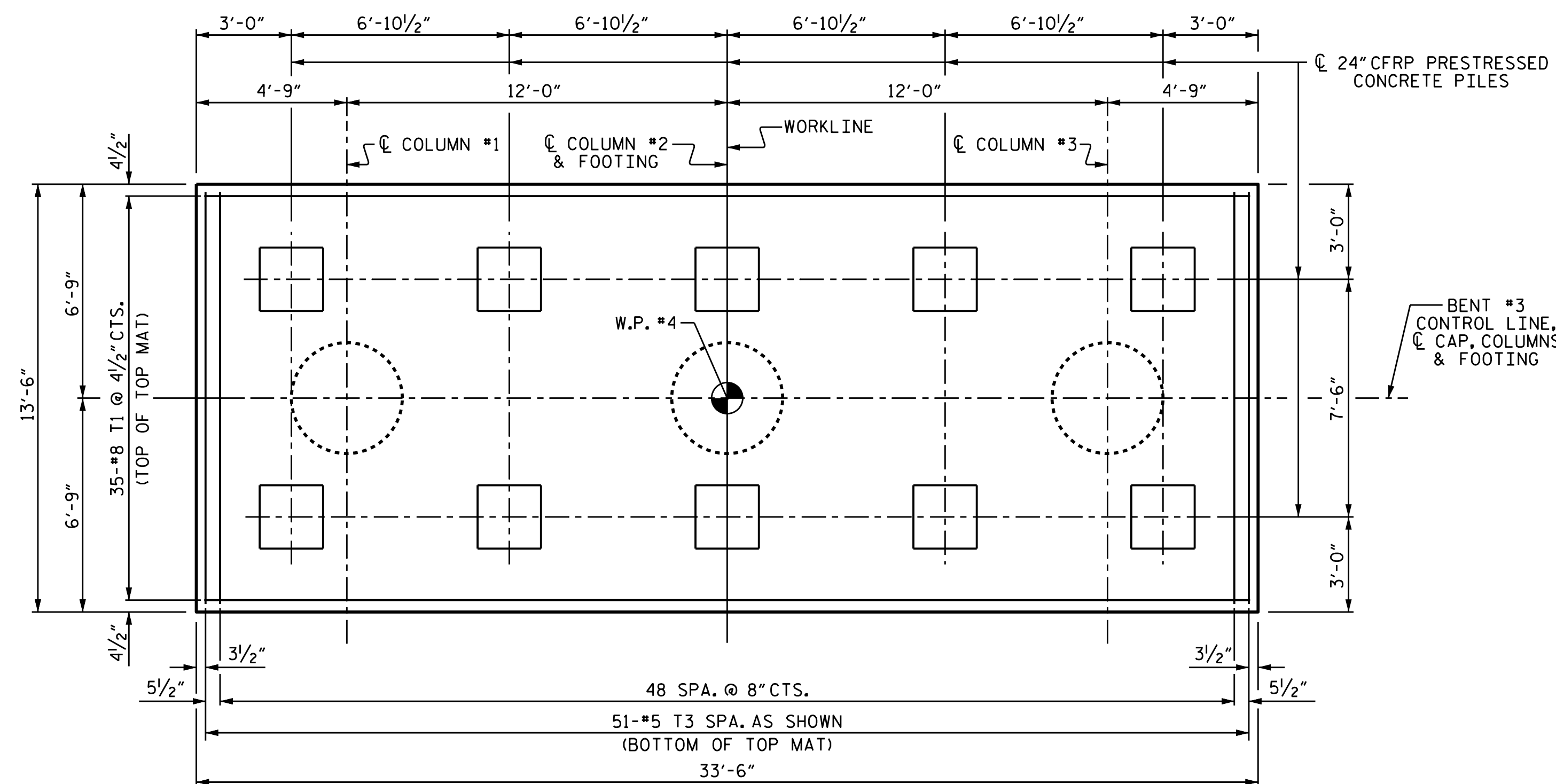
NOTES

FOR #8 T4 AND #8 T5 BARS ON EACH FACE OF FOOTING BETWEEN BOTTOM AND TOP MAT OF REINFORCING BARS, SEE SHEET 1 OF 3.

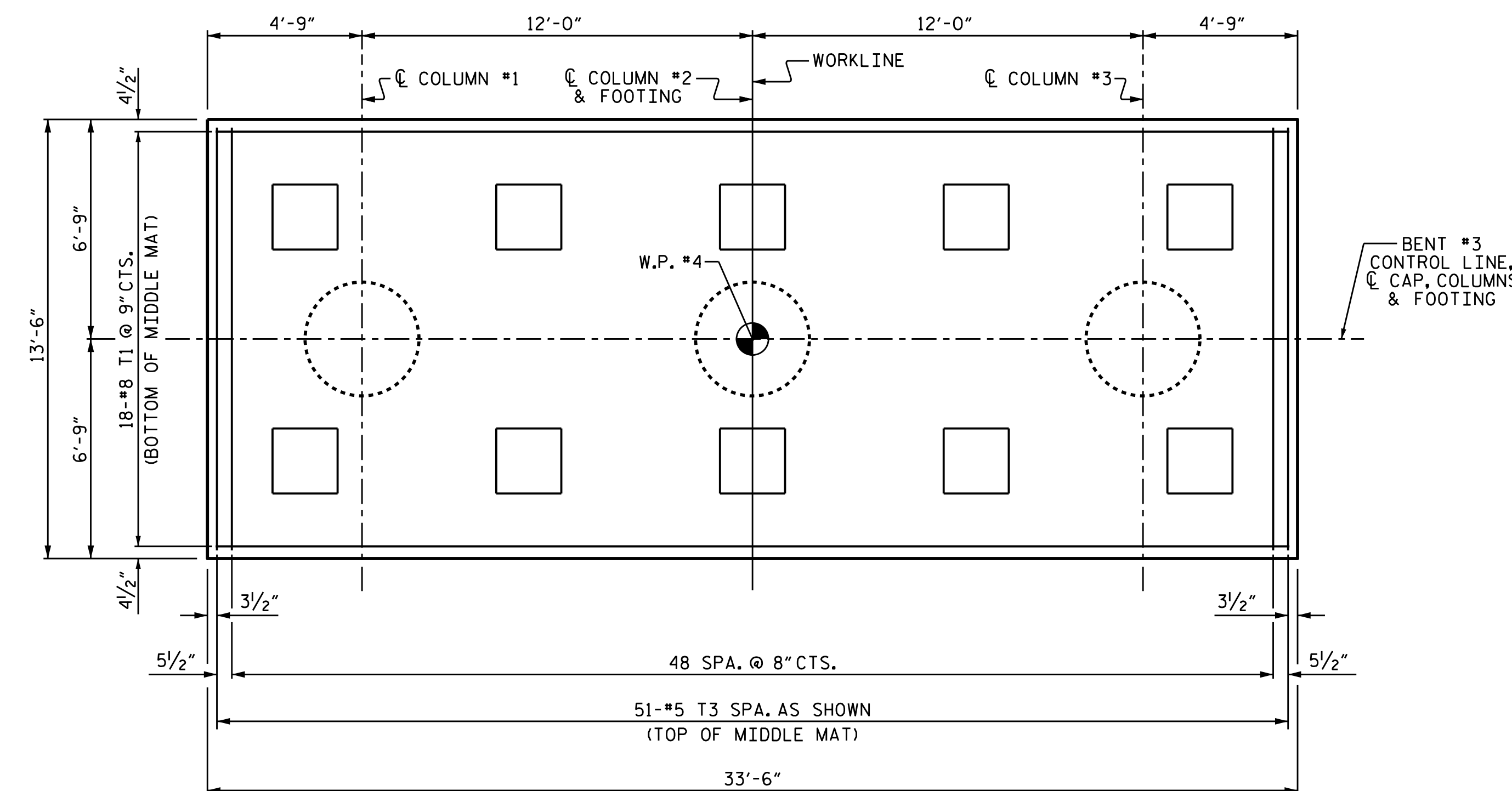
#4 U7 BARS MAY BE SHIFTED SLIGHTLY AS NECESSARY TO AVOID "T" BARS.



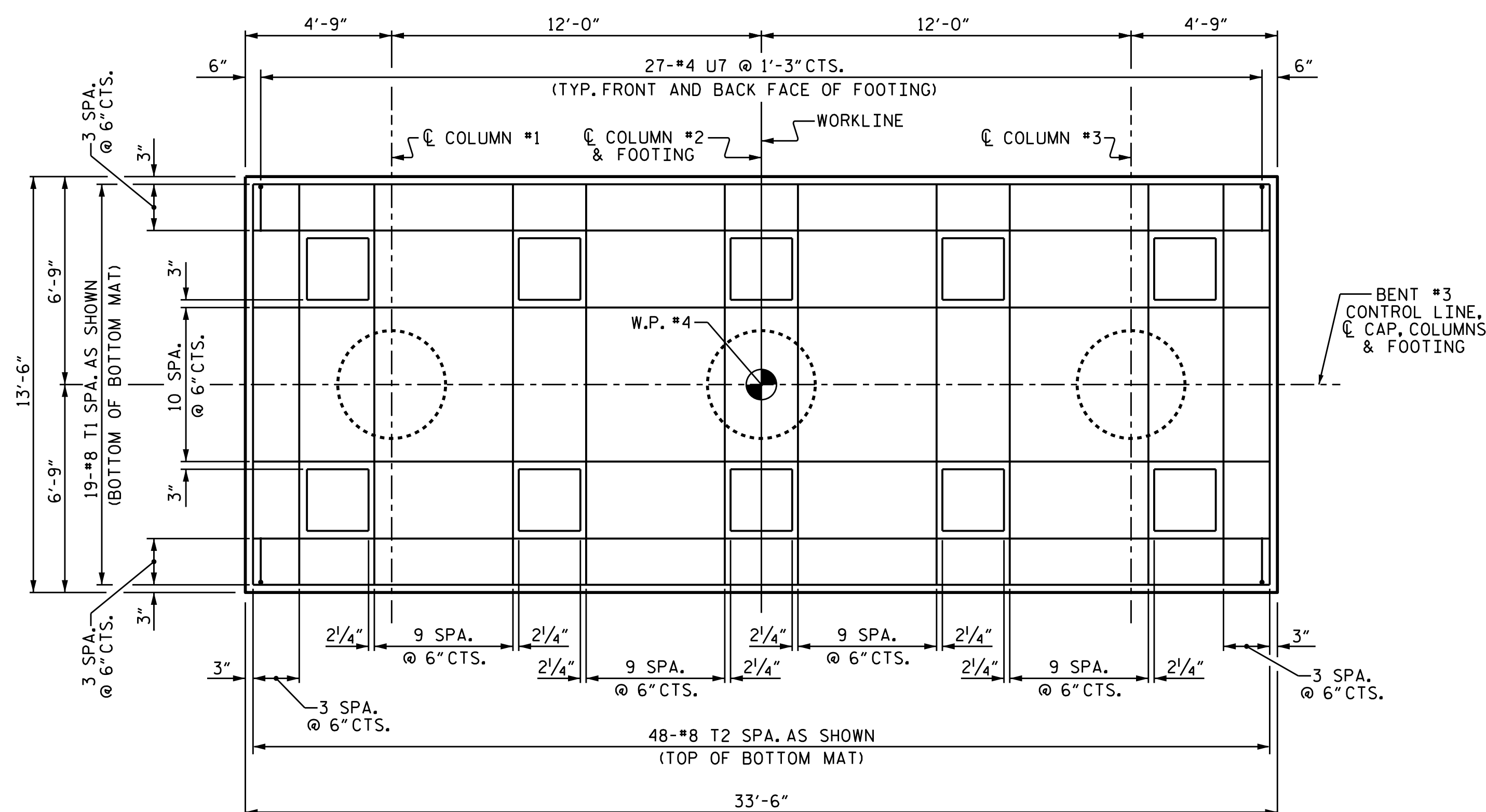
COLUMN REINFORCING DETAILS
TYPICAL FOR EACH COLUMN



PLAN OF COLUMNS & FOOTING
SHOWING TOP MAT OF REINFORCING BARS



PLAN OF COLUMNS & FOOTING
SHOWING MIDDLE MAT OF REINFORCING BARS



PLAN OF COLUMNS & FOOTING
SHOWING BOTTOM MAT OF REINFORCING BARS
AND TEMPERATURE REINFORCEMENT

PROJECT NO. B-4863
CARTERET COUNTY
STATION: 34+75.00 -L-

SHEET 2 OF 3



DocuSigned by:
Ashwin Patel
7F189E56100403
3/9/2020

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

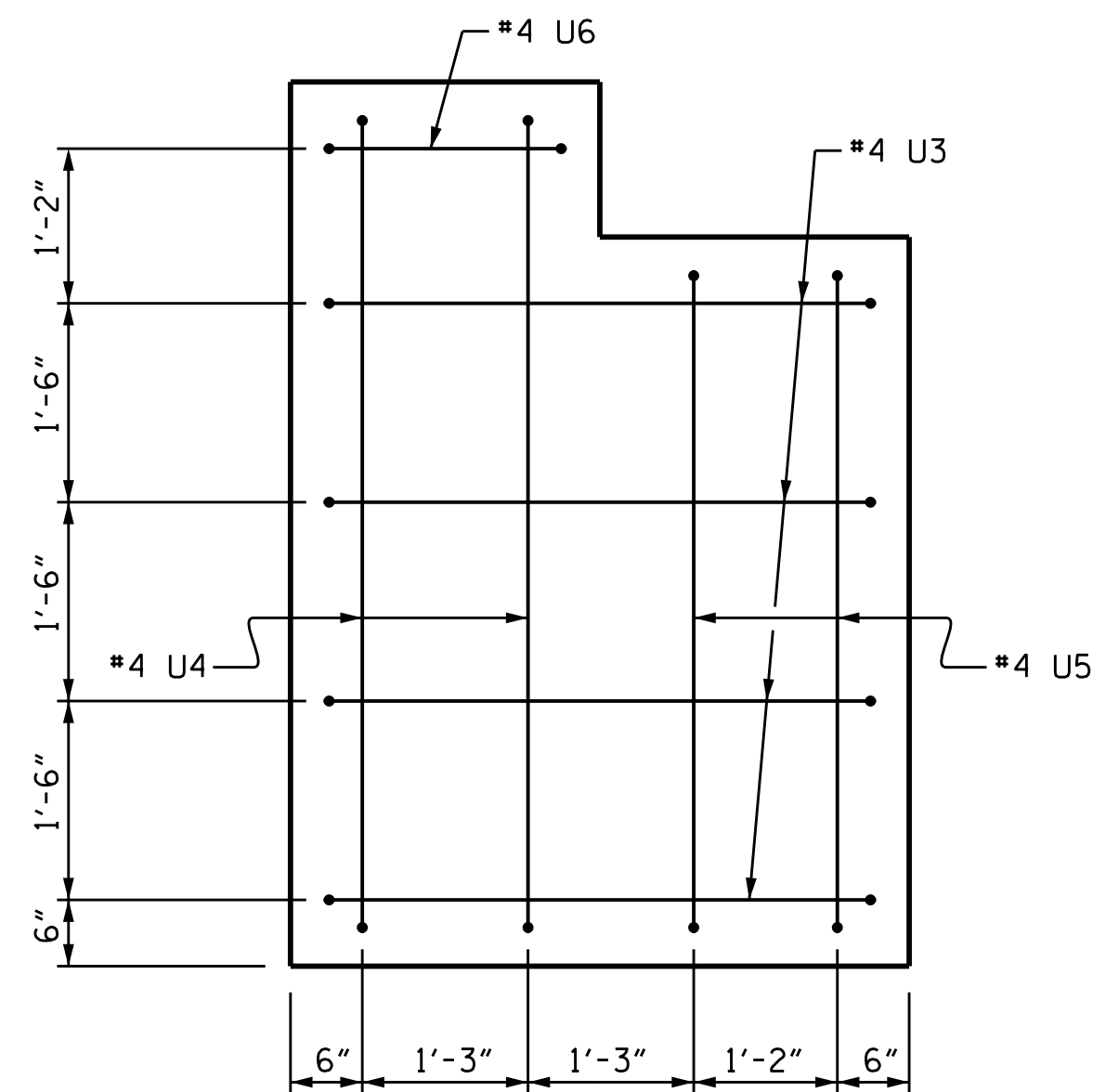
SUBSTRUCTURE

BENT #3

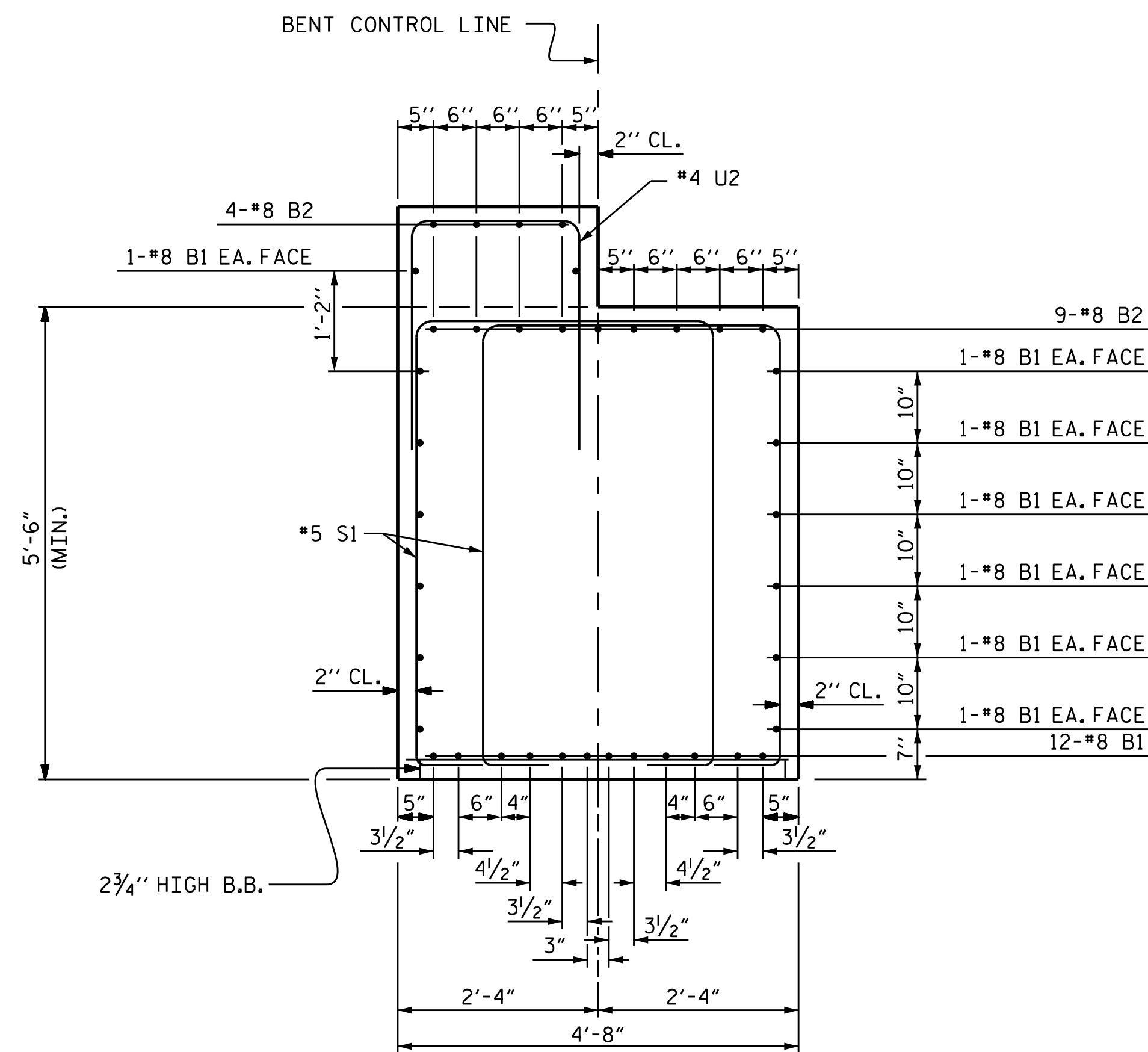
DRAWN BY : I.L. AVERETTE DATE : 02/2019
CHECKED BY : A.K. PATEL DATE : 12/2019
DESIGN ENGINEER OF RECORD: A.K. PATEL DATE : 12/2019

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

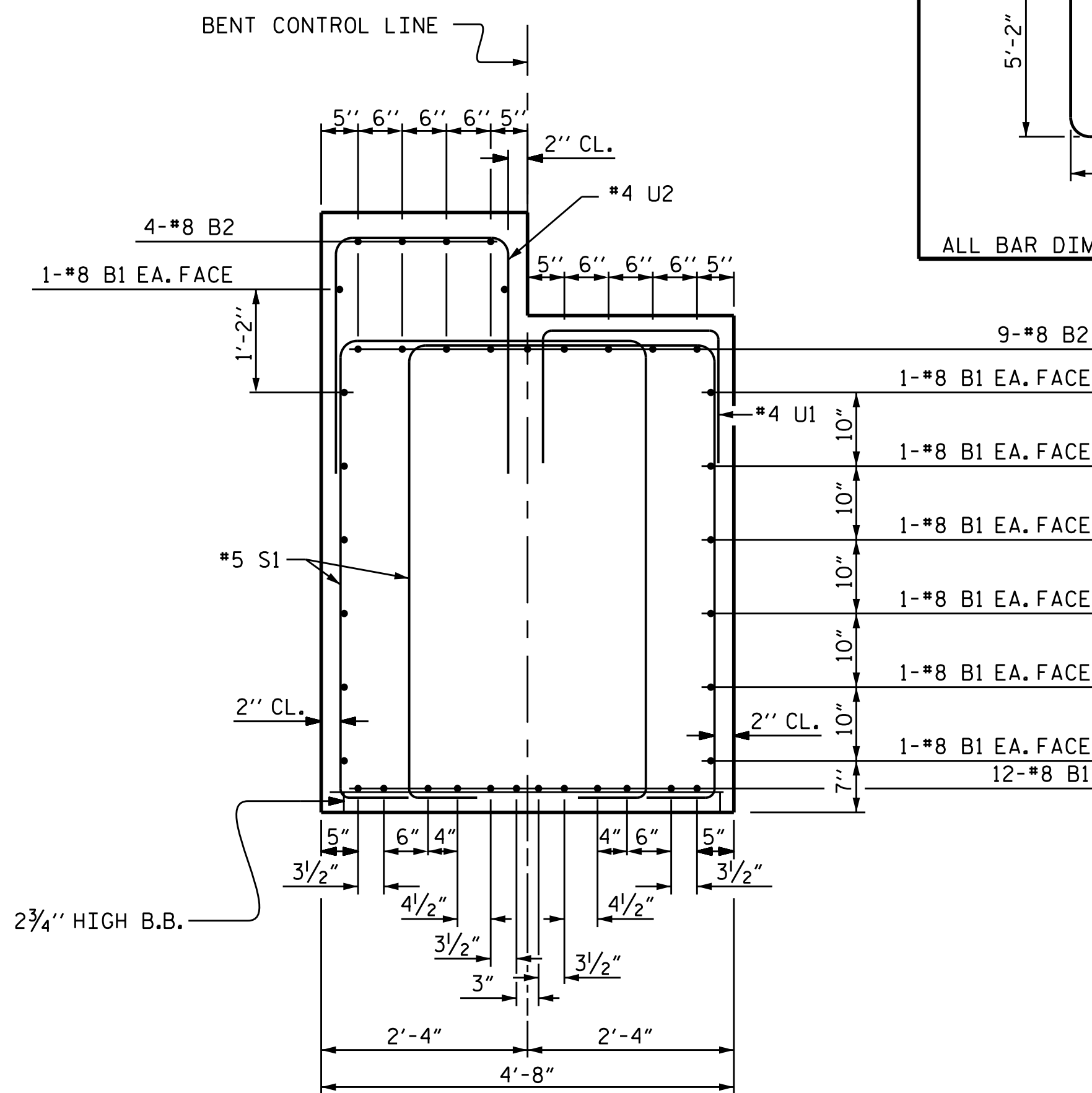
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			S1-128
2			4			194



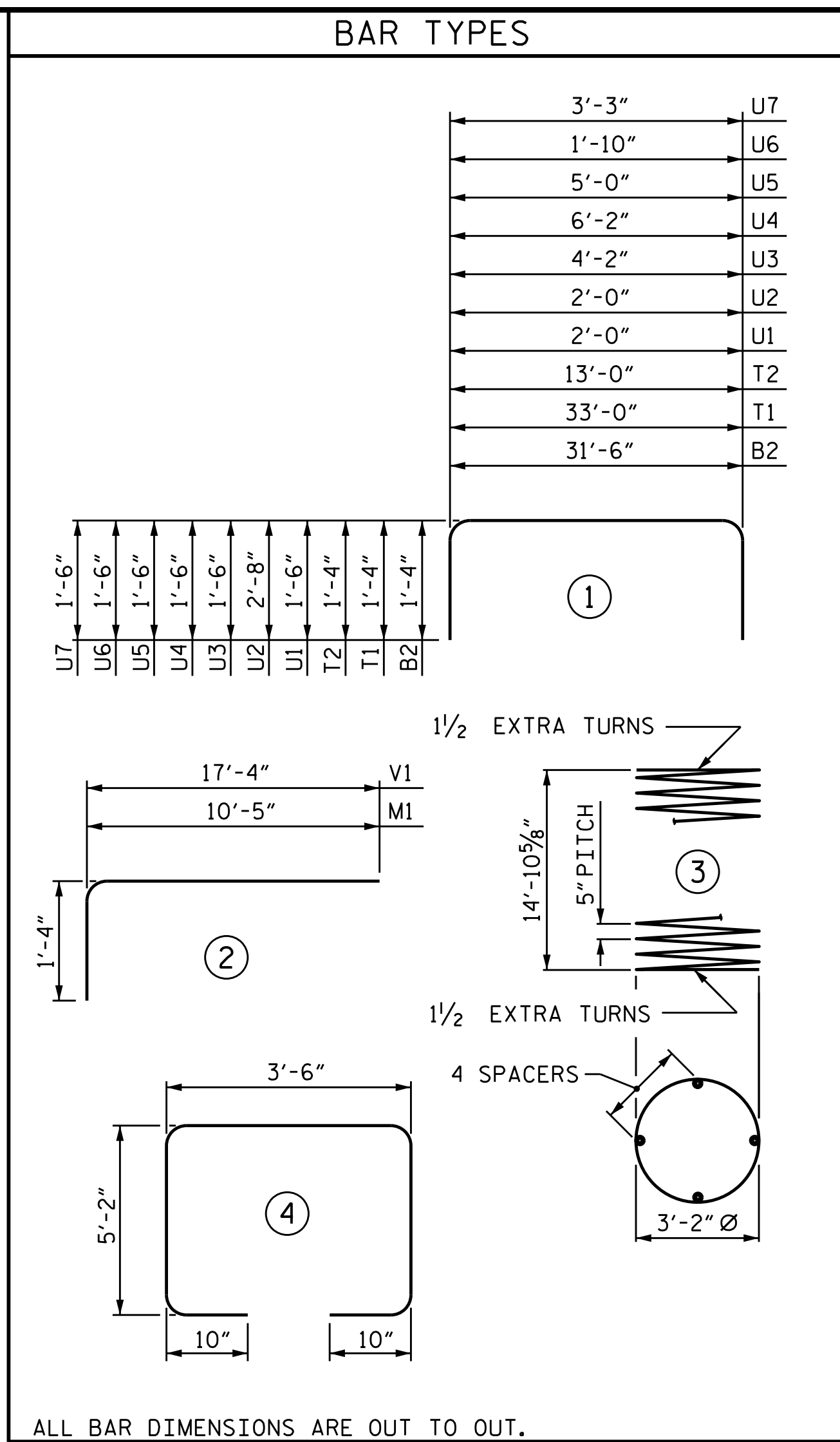
END VIEW
RIGHT END SHOWN, LEFT END SIMILAR



SECTION A-A



SECTION B-B

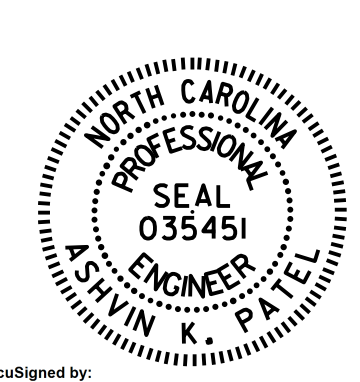


BILL OF MATERIAL

BENT #3					
BAR	NO.	SIZE	TYPE	LENGTH	LENGTH
B1	26	#8	STR	31'-8"	823'-4"
B2	13	#8	1	34'-2"	444'-2"
M1	54	#8	2	11'-9"	634'-6"
S1	76	#5	4	15'-6"	1178'-0"
T1	72	#8	1	35'-8"	2568'-0"
T2	48	#8	1	15'-8"	752'-0"
T3	102	#5	STR	13'-0"	1326'-0"
T4	6	#8	STR	33'-0"	198'-0"
T5	6	#8	STR	13'-0"	78'-0"
U1	32	#4	1	5'-0"	160'-0"
U2	41	#4	1	7'-4"	300'-8"
U3	8	#4	1	7'-2"	57'-4"
U4	4	#4	1	9'-2"	36'-8"
U5	4	#4	1	8'-0"	32'-0"
U6	2	#4	1	4'-10"	9'-8"
U7	54	#4	1	6'-3"	337'-6"
V1	54	#8	2	18'-8"	1008'-0"
SP-1	3	#5	3	379'-8"	1139'-0"

TOTAL LIN. FT. # 4 BARS	933.8
TOTAL LIN. FT. # 5 BARS	3643.0
TOTAL LIN. FT. # 8 BARS	6506.0
GLASS FIBER REINFORCED POLYMER BARS	11082.83 LIN. FT.
CLASS AA CONCRETE BREAKDOWN	
POUR #1 FOOTING	66.2 C.Y.
POUR #2 COLUMNS	15.7 C.Y.
POUR #3 CAP	33.9 C.Y.
TOTAL CLASS AA CONCRETE	115.8 C.Y.

PROJECT NO. B-4863
CARTERET COUNTY
 STATION: 34+75.00 -L-
 SHEET 3 OF 3



Designed by:
 Ashwin Patel
 771806561024403
 4/16/2021

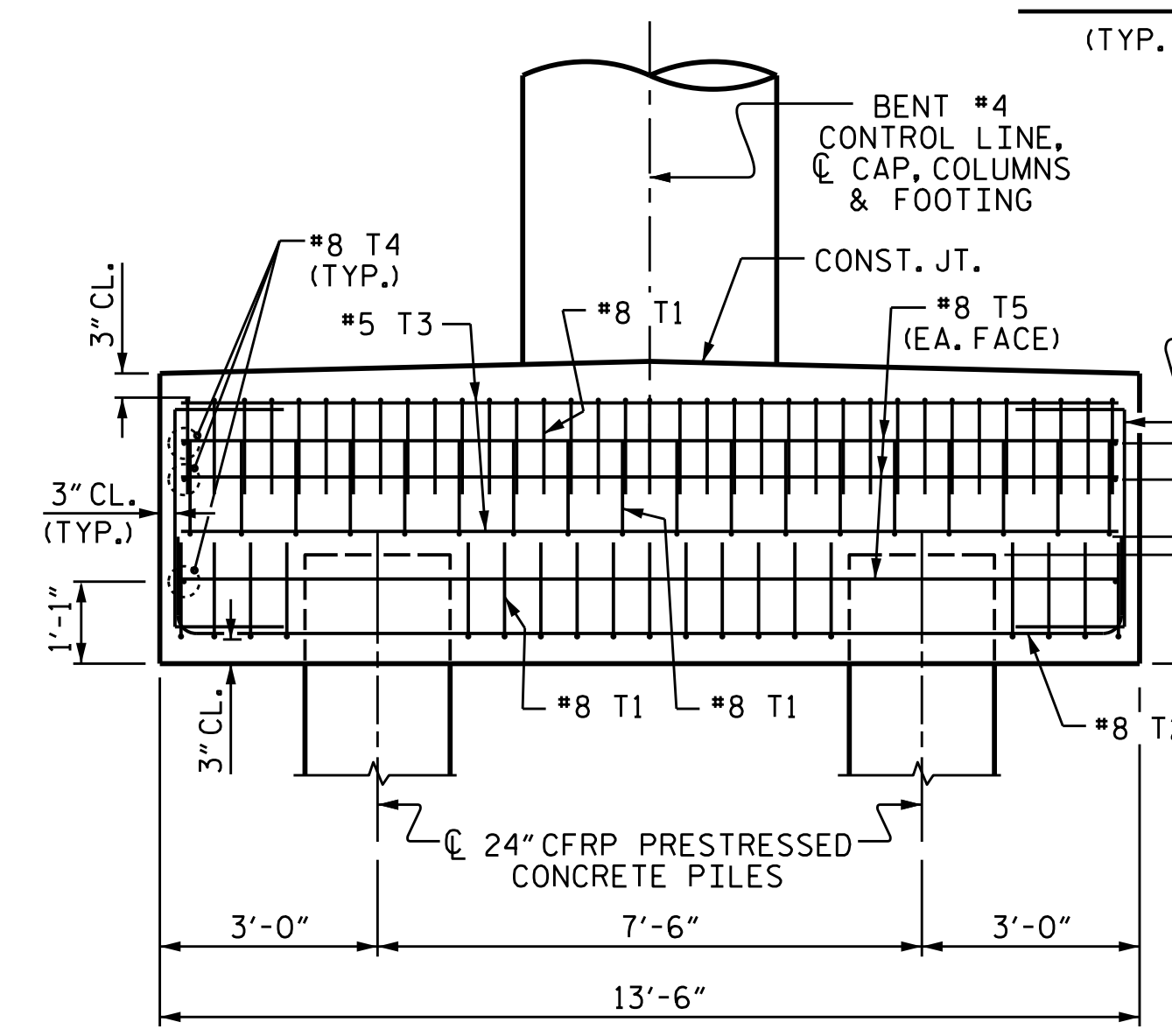
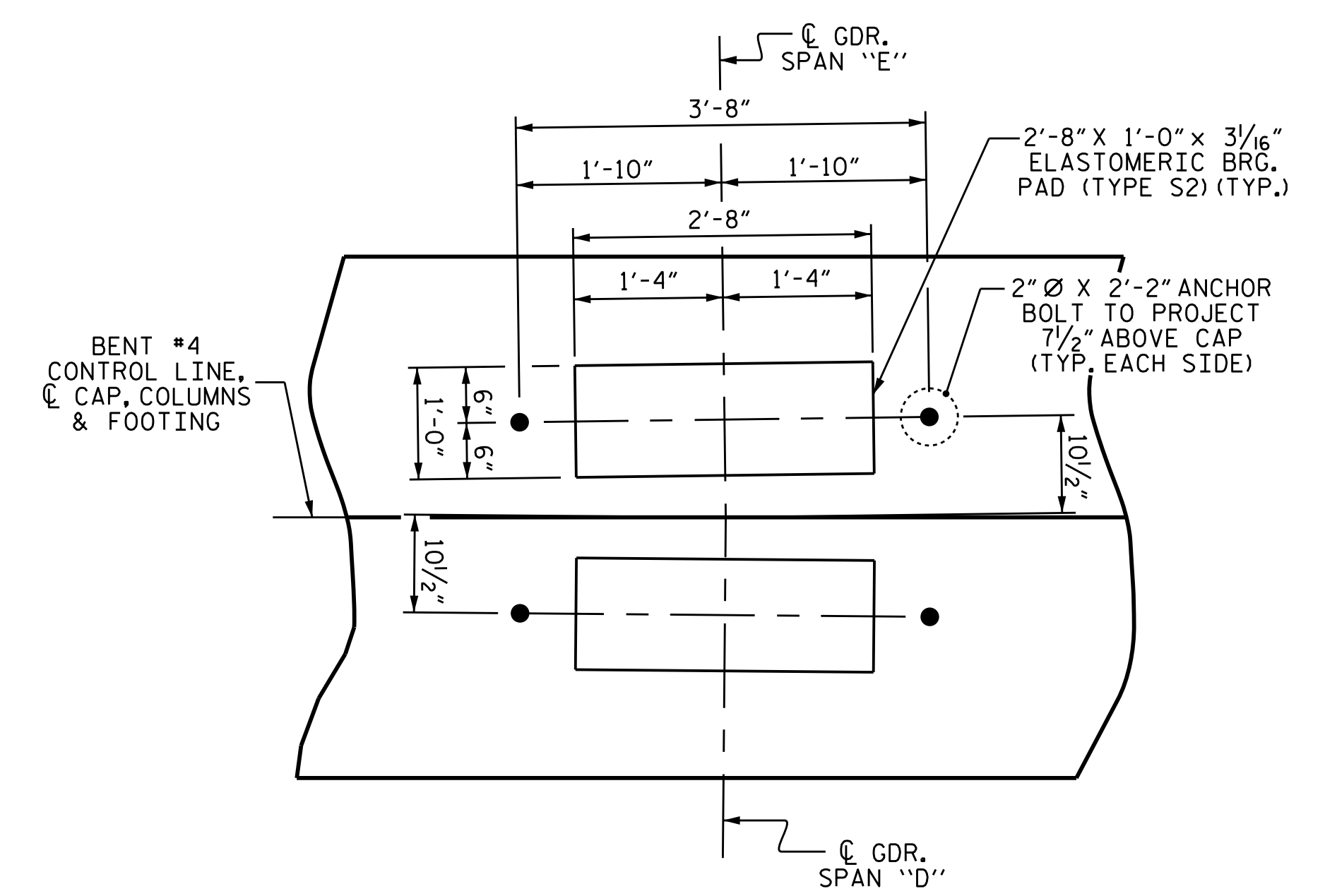
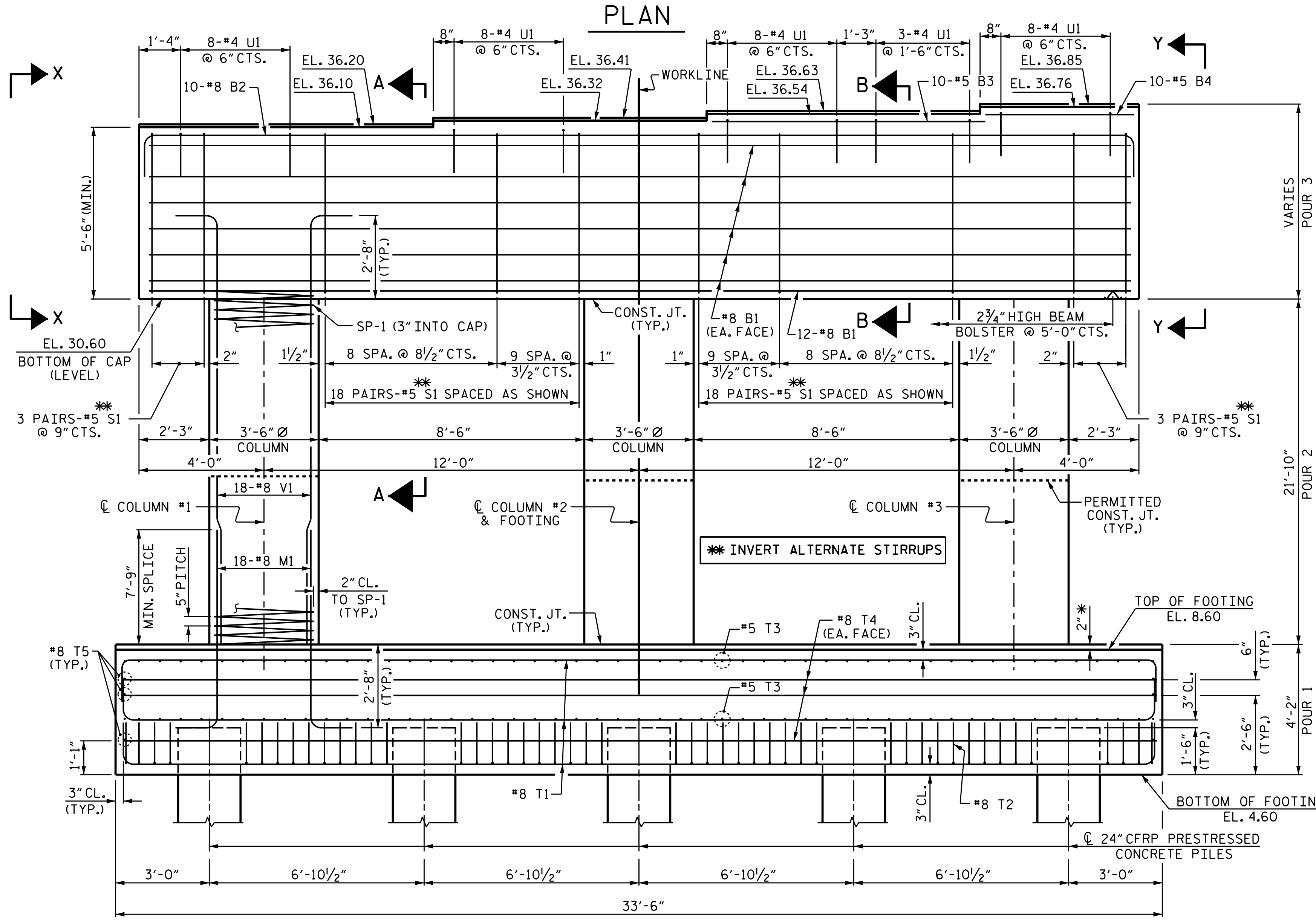
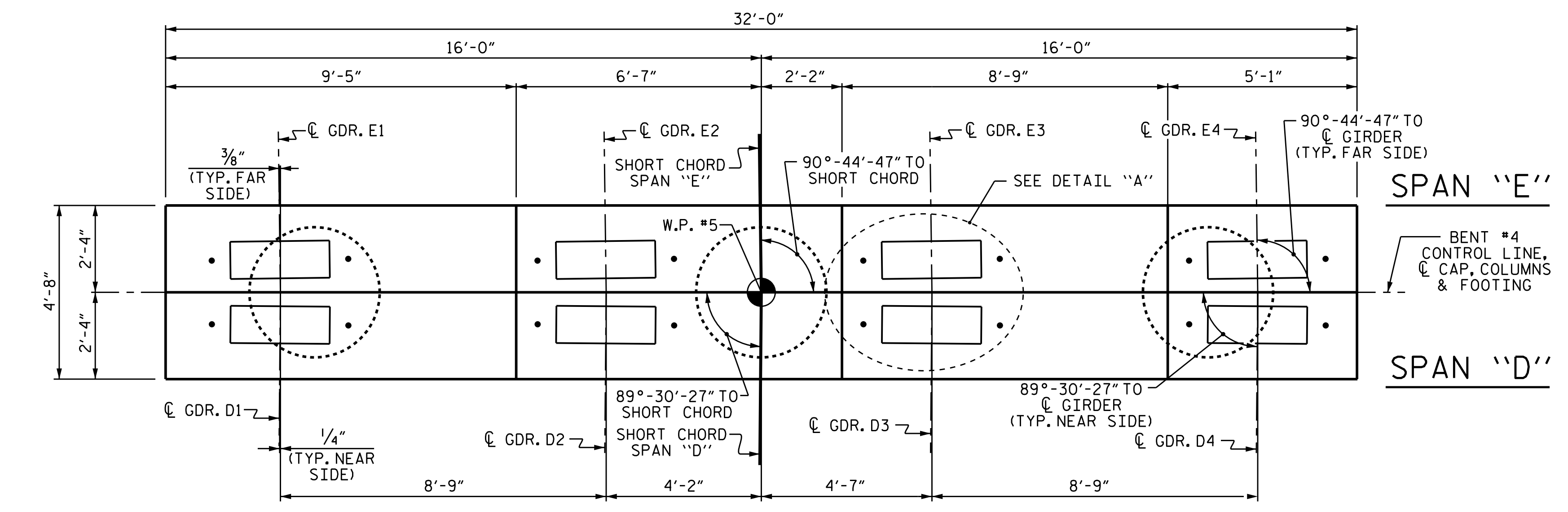
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			S1-129
2			4			194

DRAWN BY : I.L. AVERETTE DATE : 02/2019
 CHECKED BY : A.K. PATEL DATE : 12/2019
 DESIGN ENGINEER OF RECORD: A.K. PATEL DATE : 12/2019

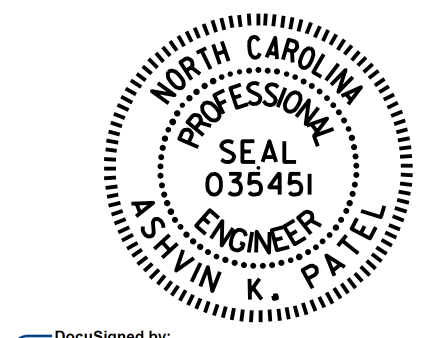
NOTES

STIRRUPS AND U1 BARS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.
 HOOKS ON "V" AND "M" BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING BARS.
 CONCRETE DISPLACED BY CONCRETE PILES HAS BEEN DEDUCTED FROM THE FOOTING CONCRETE QUANTITY.
 ALL REINFORCING IN THE CAP, COLUMNS AND FOOTING IS TO BE GLASS FIBER REINFORCED POLYMER (GFRP) BARS. FOR GLASS FIBER REINFORCED POLYMER BARS, SEE SPECIAL PROVISIONS.
 * THE FOOTING HAS A DROP OF 2" FROM THE CENTER OF THE FOOTING TO THE EDGE OF THE FOOTING TO ACCOMMODATE DRAINAGE.



PROJECT NO. B-4863
 CARTERET COUNTY
 STATION: 34+75.00 -L-

SHEET 1 OF 3



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 BENT #4

DRAWN BY : T.L. AVERETTE DATE : 02/2019
 CHECKED BY : A.K. PATEL DATE : 04/2019
 DESIGN ENGINEER OF RECORD : A.K. PATEL DATE : 04/2019

REINFORCING BAR DIMENSIONS AND DETAILS ARE TYPICAL FOR EACH COLUMN
 FOR ADDITIONAL REINFORCING BARS IN ENDS OF CAP, SEE VIEW X-X AND VIEW Y-Y ON SHEET 3 OF 3
 #4 U5 BARS IN FOOTING NOT SHOWN, SEE SHEET 2 OF 3

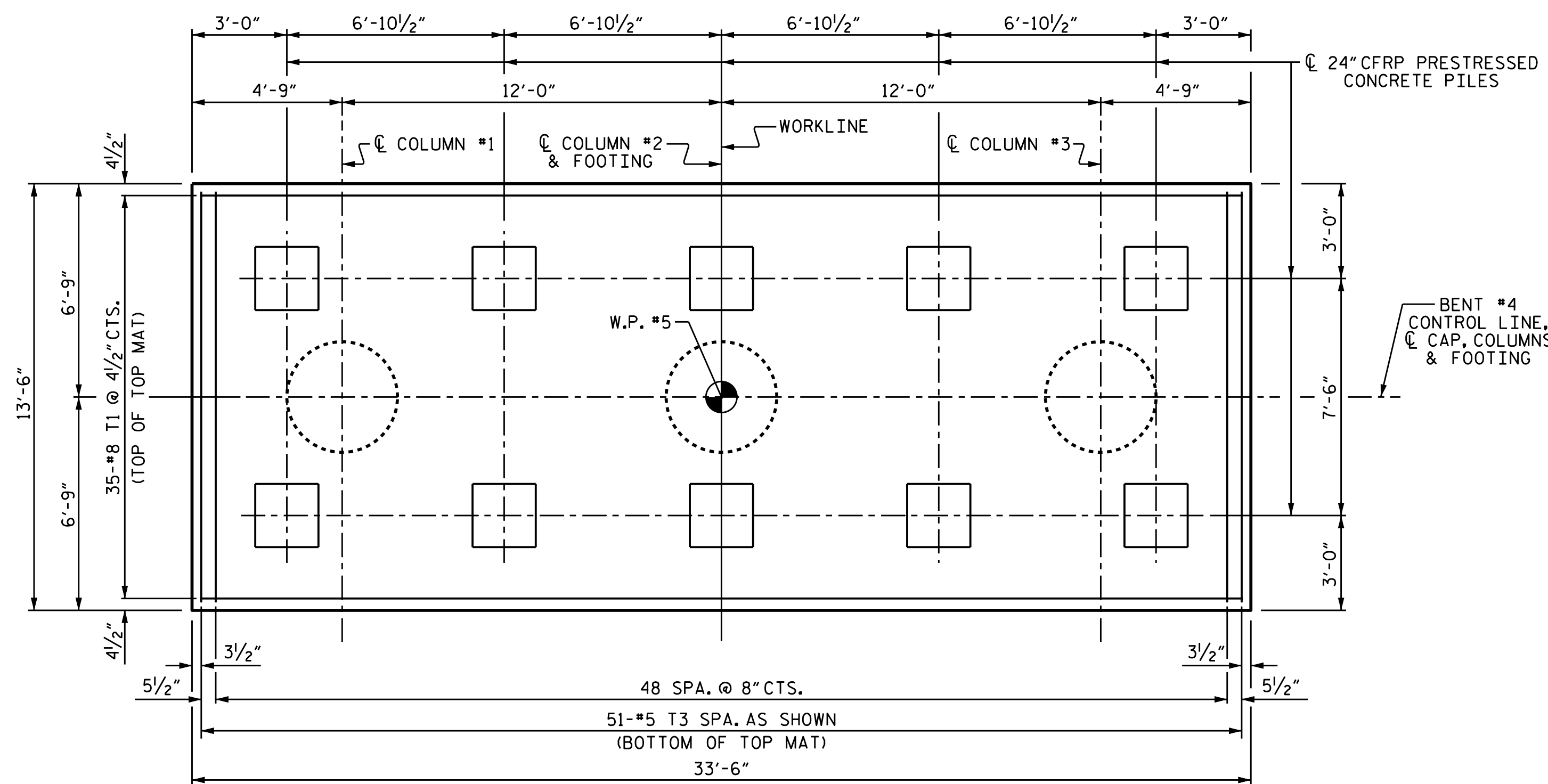
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
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2			4			194

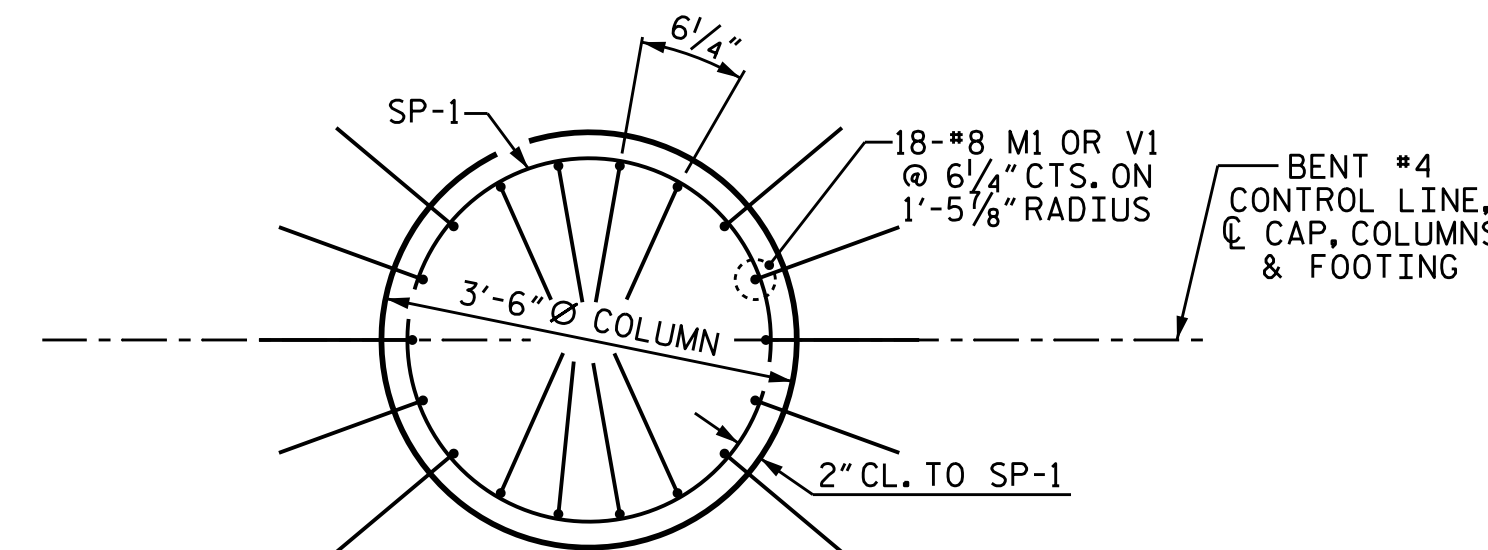
NOTES

FOR #8 T4 AND #8 T5 BARS ON EACH FACE OF FOOTING BETWEEN BOTTOM AND TOP MAT OF REINFORCING BARS, SEE SHEET 1 OF 3.

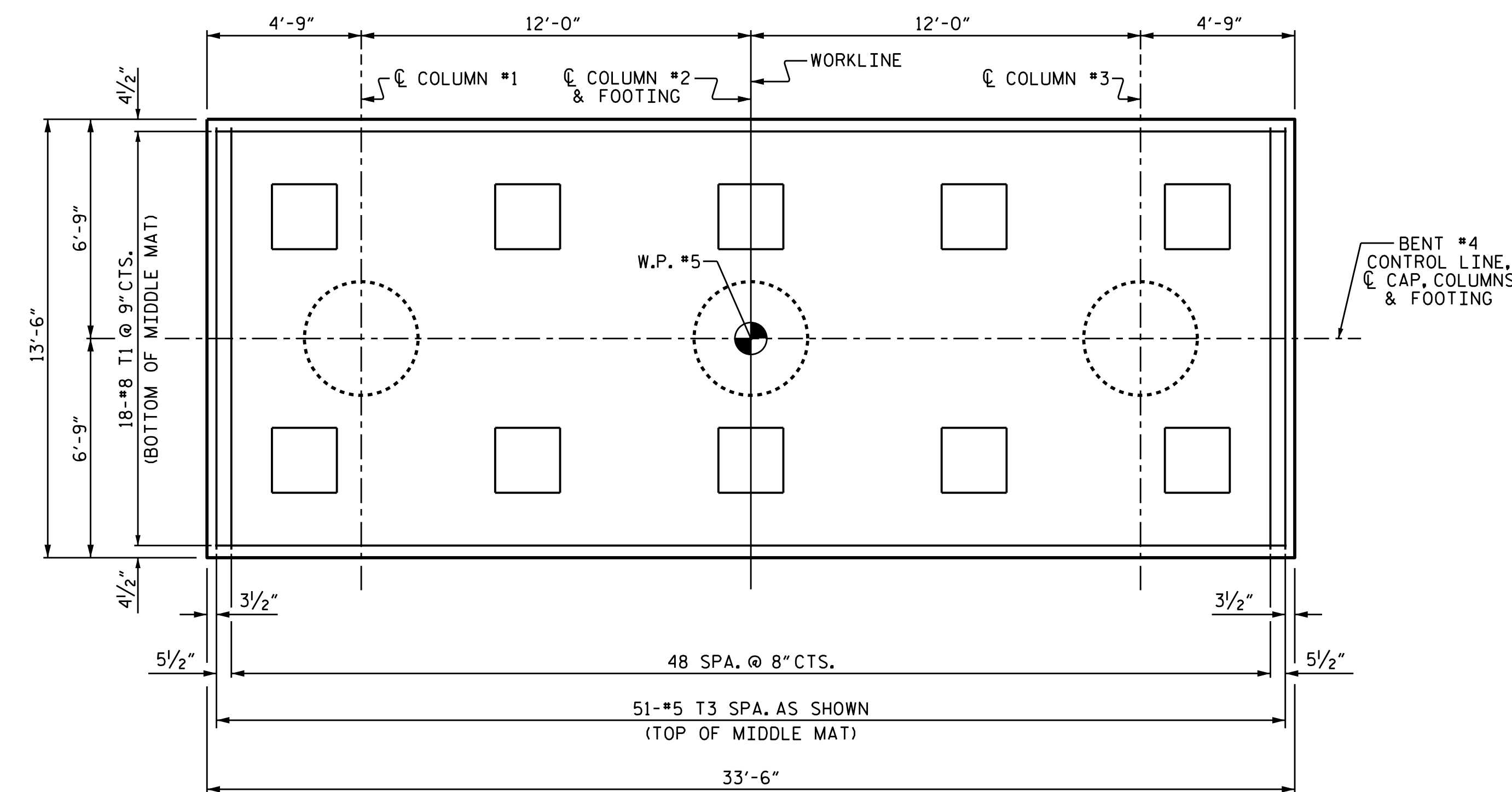
#4 U5 BARS MAY BE SHIFTED SLIGHTLY AS NECESSARY TO AVOID "T" BARS.



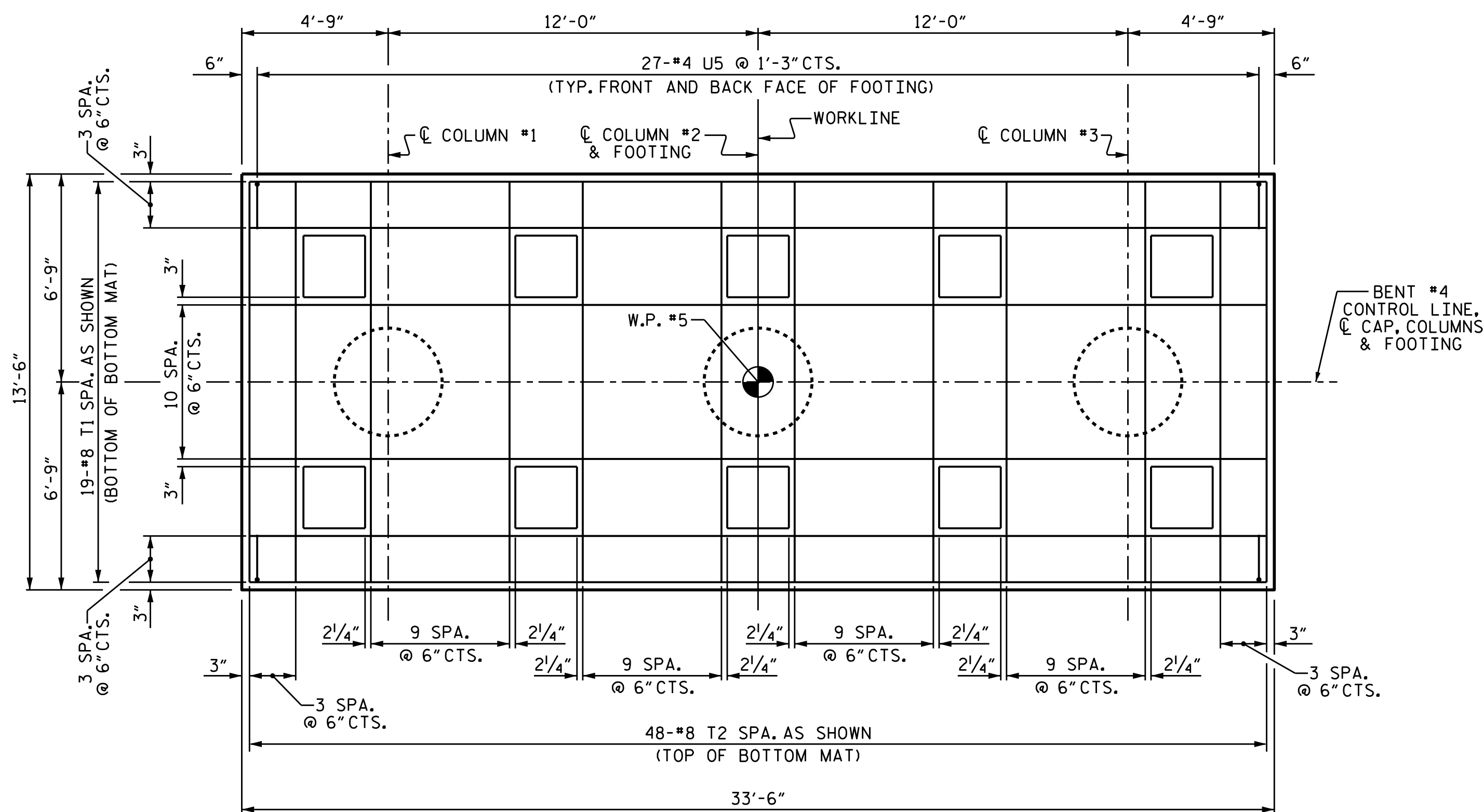
PLAN OF COLUMNS & FOOTING
SHOWING TOP MAT OF REINFORCING BARS



COLUMN REINFORCING DETAILS
TYPICAL FOR EACH COLUMN



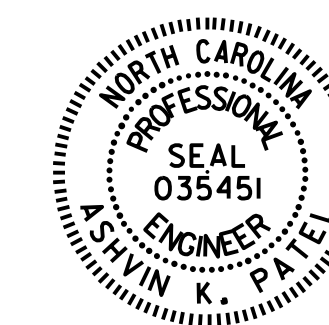
PLAN OF COLUMNS & FOOTING
SHOWING MIDDLE MAT OF REINFORCING BARS



PLAN OF COLUMNS & FOOTING
SHOWING BOTTOM MAT OF REINFORCING BARS
AND TEMPERATURE REINFORCEMENT

PROJECT NO. B-4863
CARTERET COUNTY
STATION: 34+75.00 -L-

SHEET 2 OF 3



DocuSigned by:
Ashwin Patel
7F189E5610244E33
3/9/2020

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

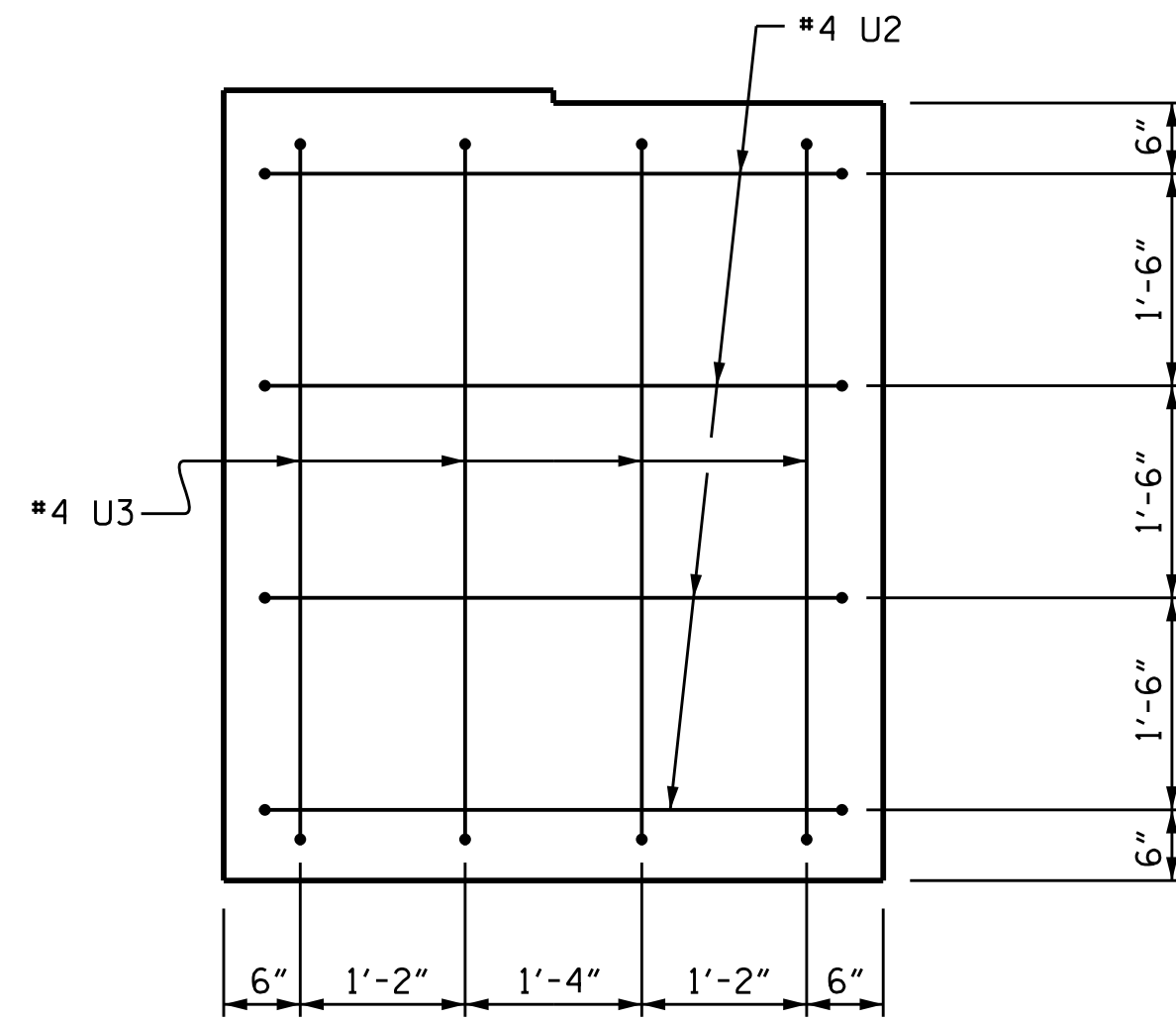
SUBSTRUCTURE

BENT #4

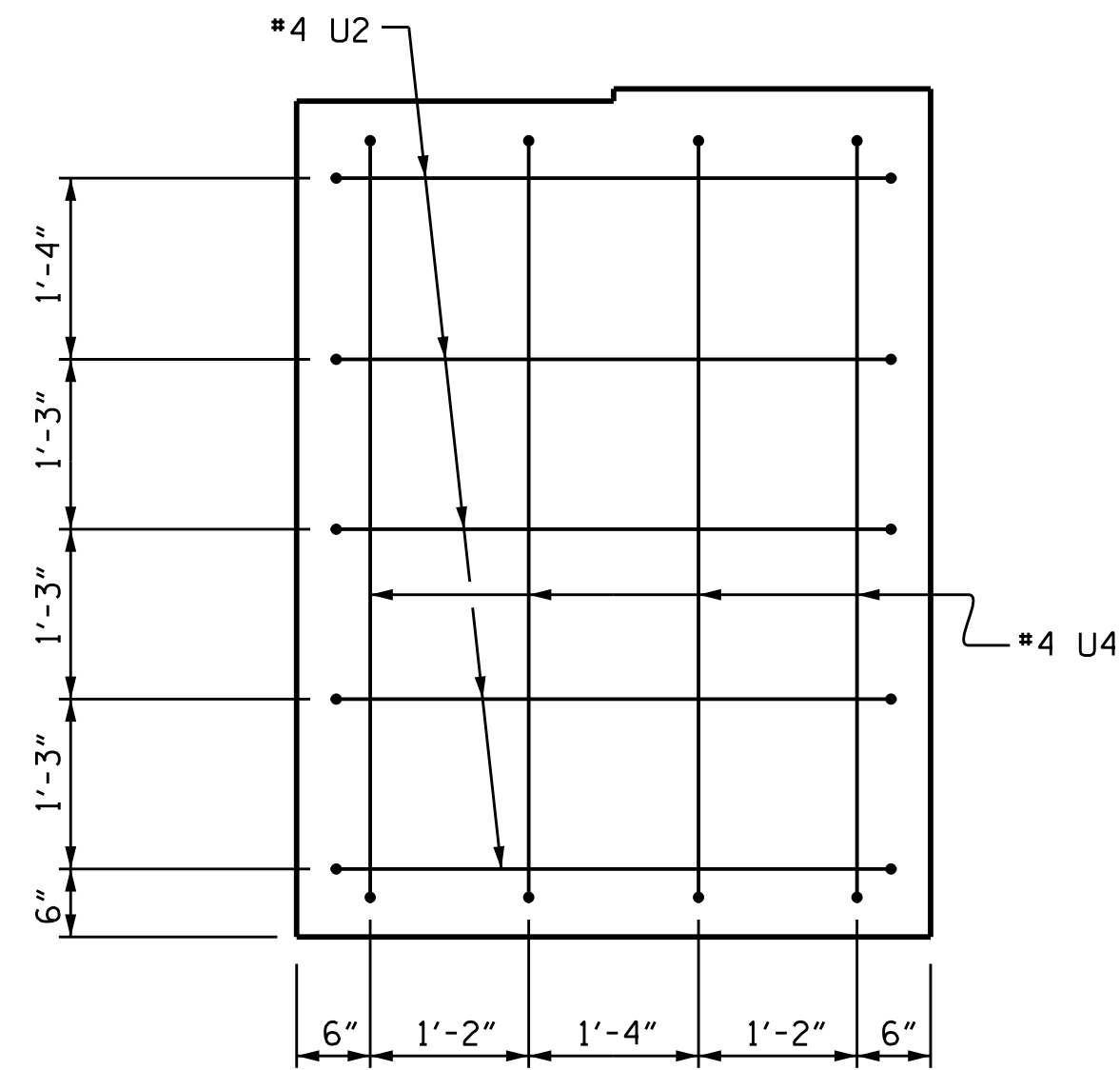
DRAWN BY : I.L. AVERETTE DATE : 02/2019
CHECKED BY : A.K. PATEL DATE : 04/2019
DESIGN ENGINEER OF RECORD: A.K. PATEL DATE : 04/2019

DOCUMENT NOT CONSIDERED
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SIGNATURES COMPLETED

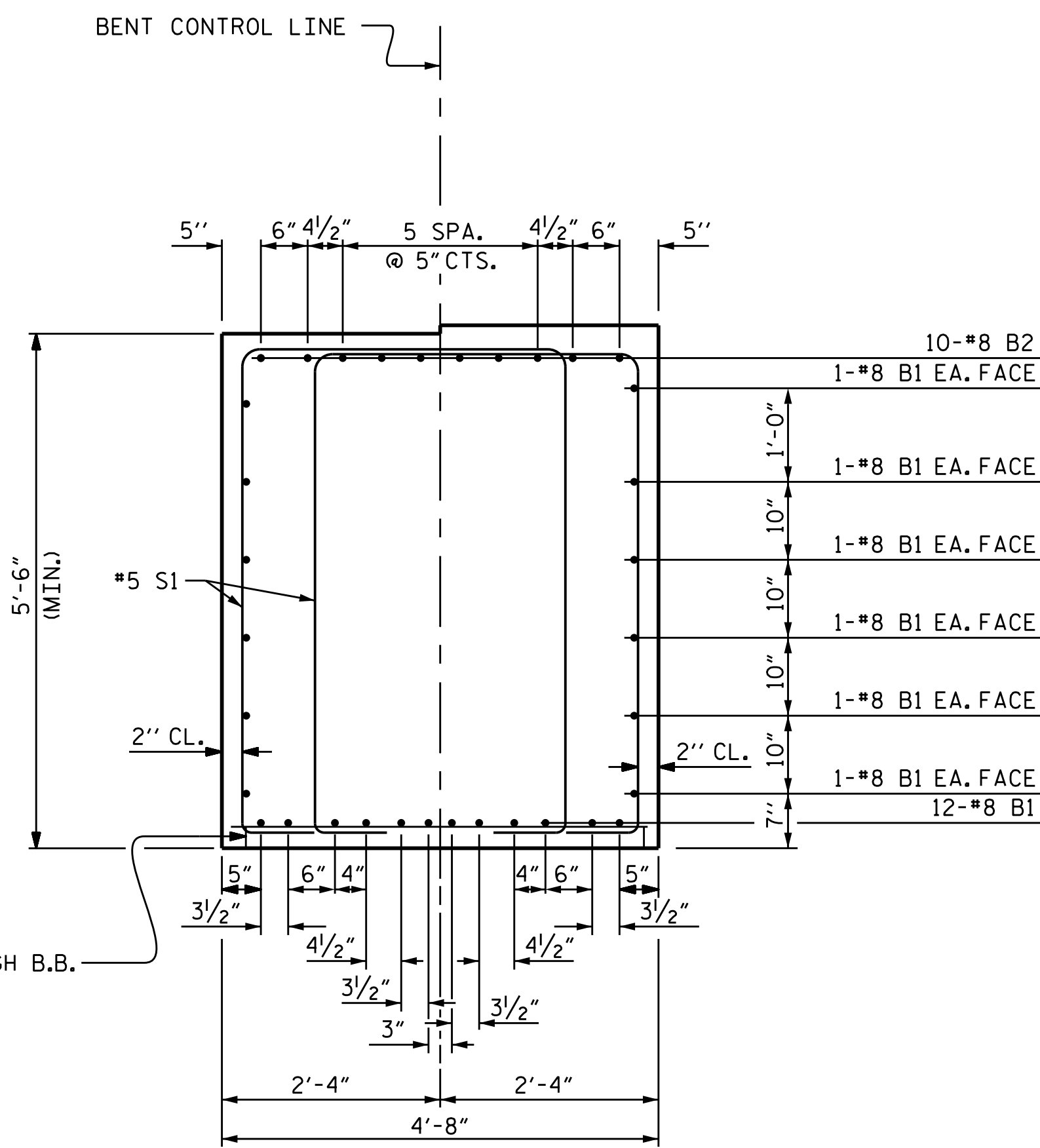
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			S1-131
2			4			194



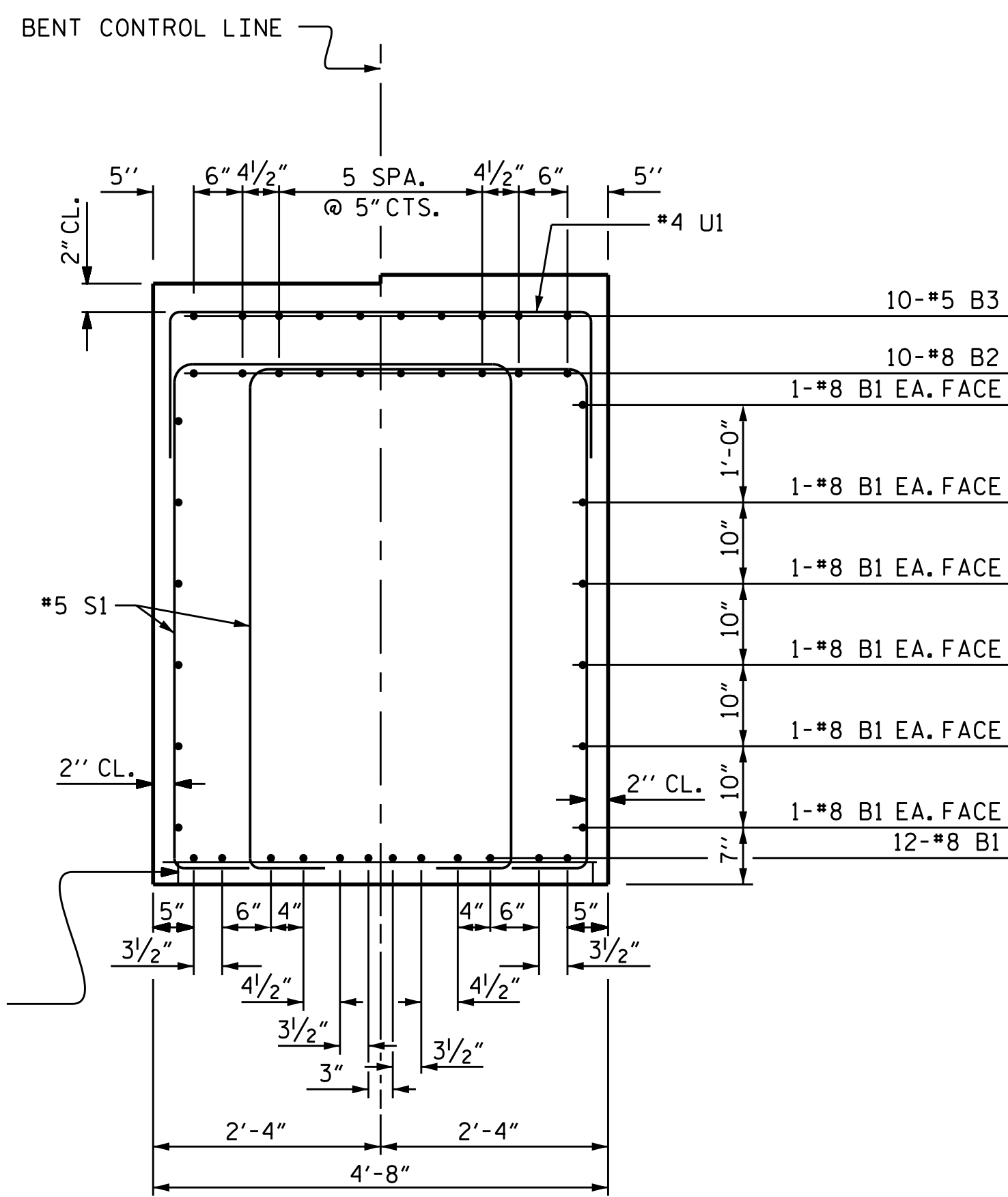
VIEW X-X



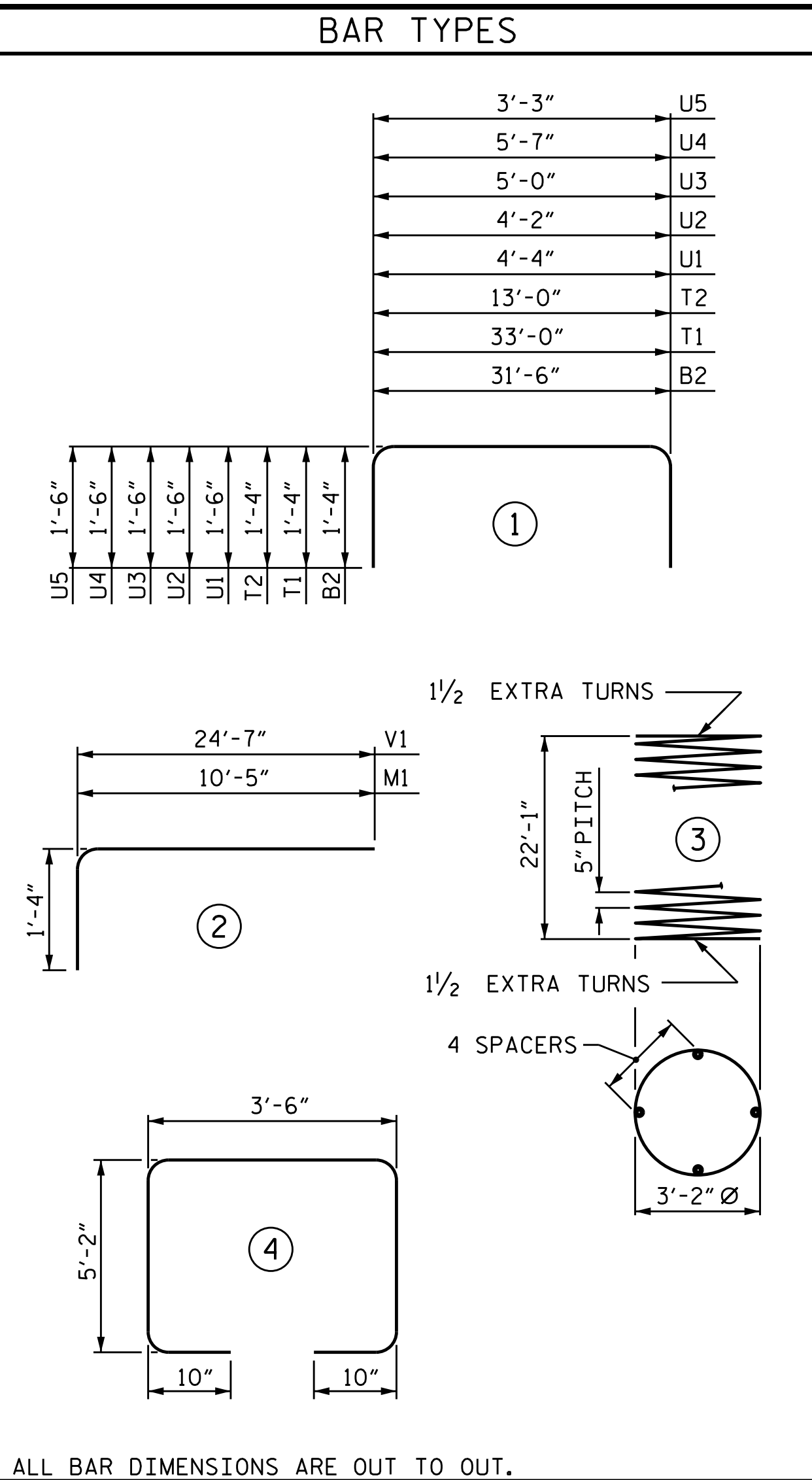
VIEW Y-Y



SECTION A-A



SECTION B-B



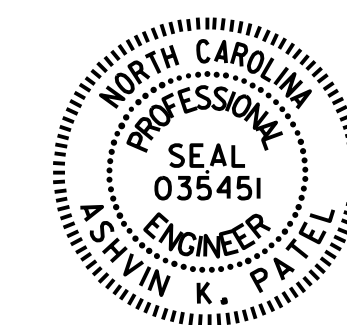
BILL OF MATERIAL					
BENT #4					
BAR	NO.	SIZE	TYPE	LENGTH	TOTAL LENGTH
B1	24	#8	STR	31'-8"	760'-0"
B2	10	#8		34'-2"	341'-8"
B3	10	#5	STR	8'-9"	87'-6"
B4	10	#5	STR	4'-9"	47'-6"
M1	54	#8	2	11'-9"	634'-6"
S1	84	#5	4	15'-6"	1302'-0"
T1	72	#8	1	35'-8"	2568'-0"
T2	48	#8	1	15'-8"	752'-0"
T3	102	#5	STR	13'-0"	1326'-0"
T4	6	#8	STR	33'-0"	198'-0"
T5	6	#8	STR	13'-0"	78'-0"
U1	35	#4	1	7'-4"	256'-8"
U2	9	#4	1	7'-2"	64'-6"
U3	4	#4	1	8'-0"	32'-0"
U4	4	#4	1	8'-7"	34'-4"
U5	54	#4	1	6'-3"	337'-6"
V1	54	#8	2	25'-11"	1399'-6"
SP-1	3	#5	3	549'-1"	1647'-3"
TOTAL LIN. FT. # 4 BARS					693.0
TOTAL LIN. FT. # 5 BARS					4442.2
TOTAL LIN. FT. # 8 BARS					6731.7
GLASS FIBER REINFORCED POLYMER BARS					11866.91 LIN. FT.
CLASS AA CONCRETE BREAKDOWN					
POUR #1 FOOTING					66.2 C.Y.
POUR #2 COLUMNS					23.4 C.Y.
POUR #3 CAP					32.2 C.Y.
TOTAL CLASS AA CONCRETE					121.8 C.Y.

PROJECT NO. B-4863
CARTERET COUNTY
 STATION: 34+75.00 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 BENT #4



Designed by:
 Ashwin Patel
 7F180E5610244D3
 4/16/2021

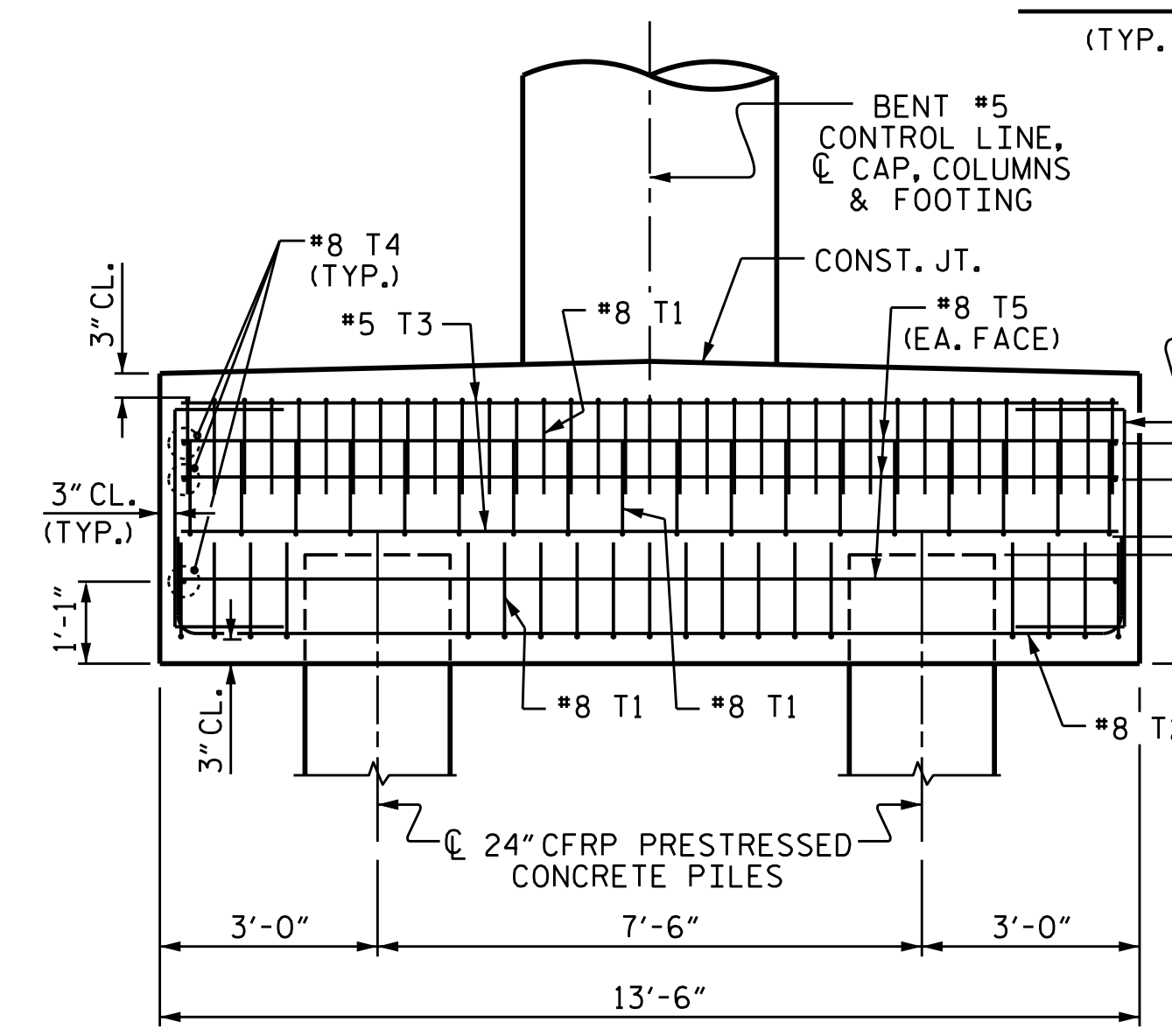
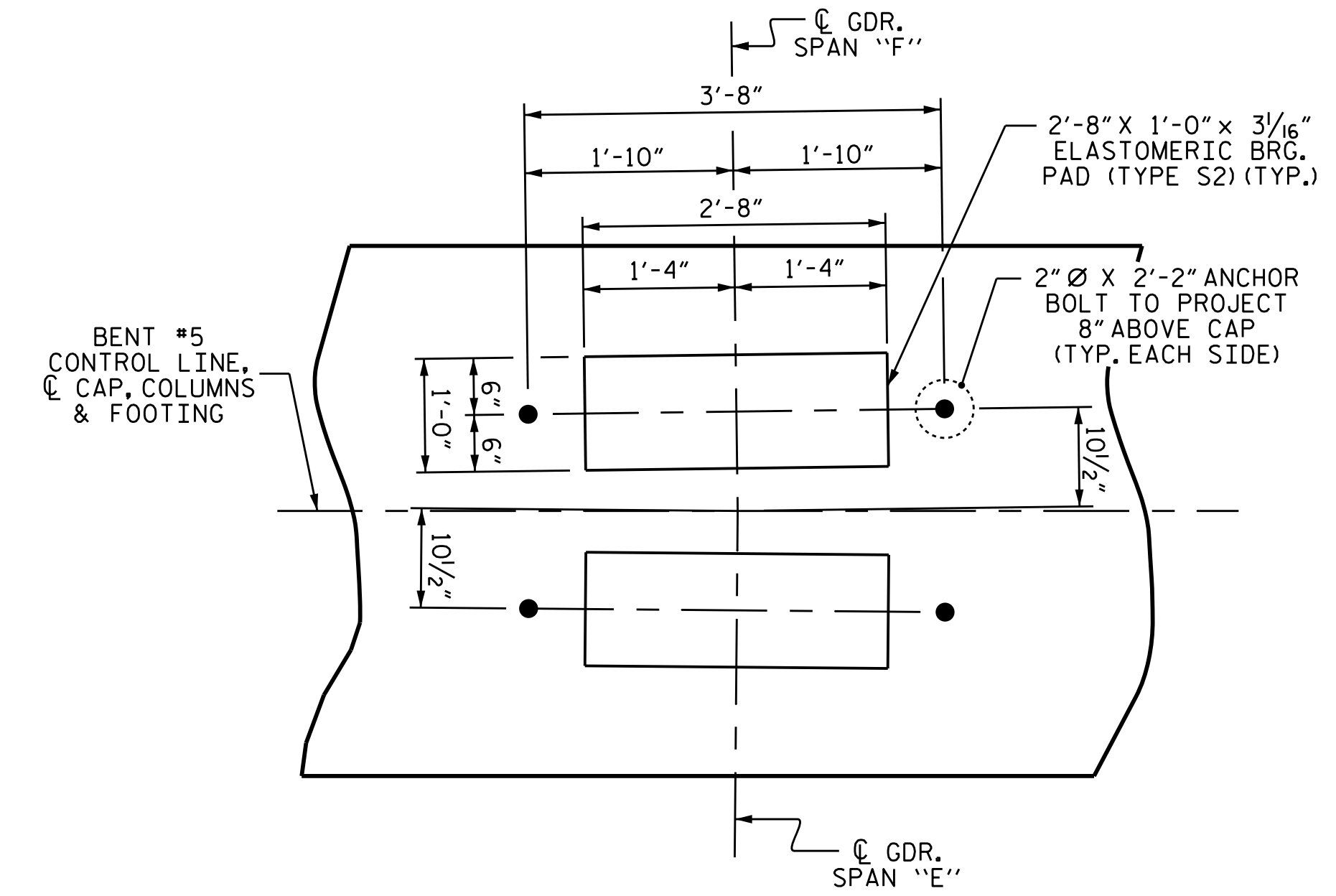
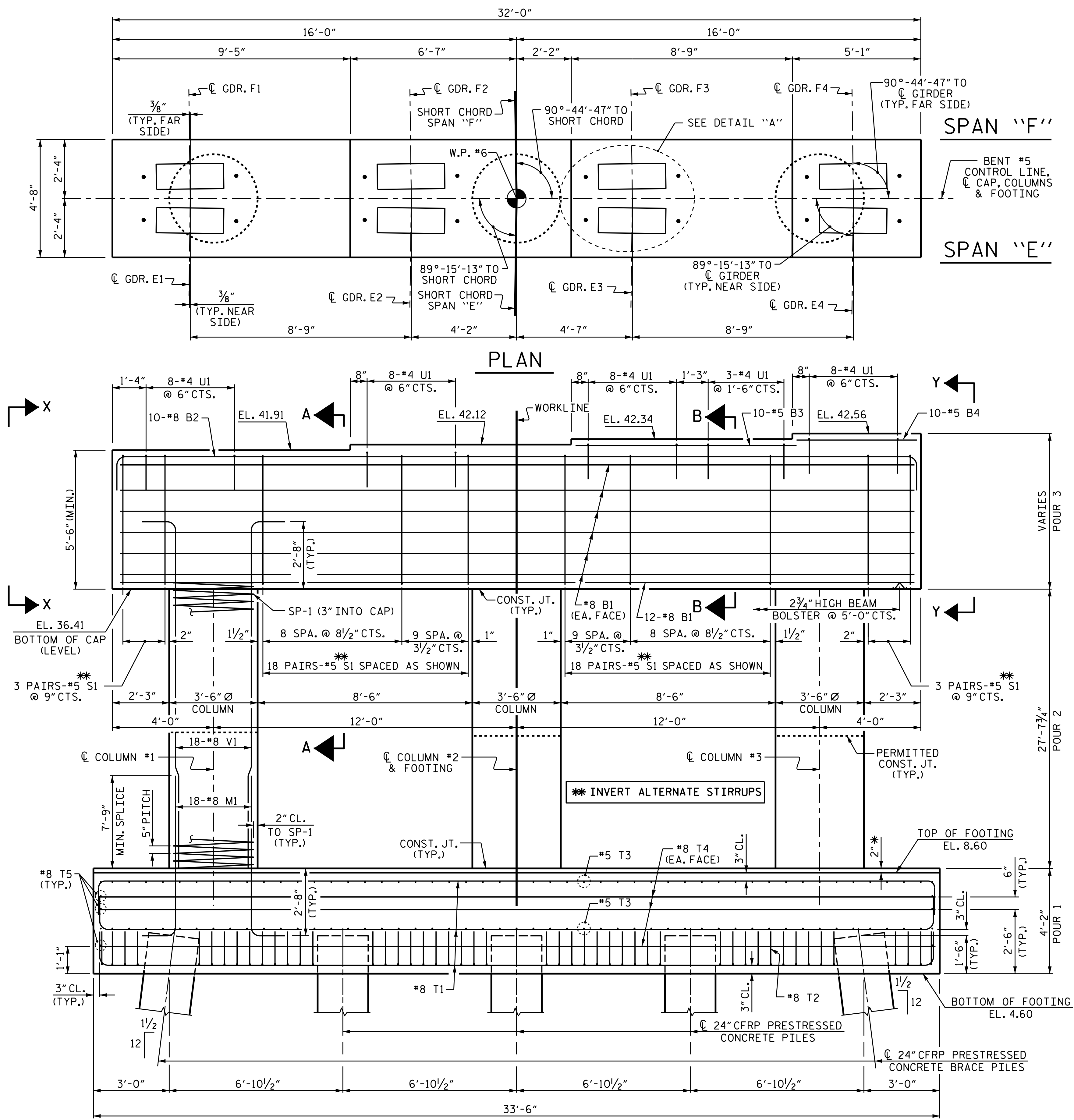
DRAWN BY : I.L. AVERETTE DATE : 02/2019
 CHECKED BY : A.K. PATEL DATE : 04/2019
 DESIGN ENGINEER OF RECORD: A.K. PATEL DATE : 04/2019

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S1-132
2			4			TOTAL SHEETS 194

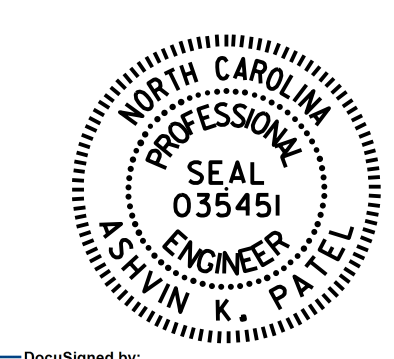
NOTES

STIRRUPS AND U1 BARS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.
 HOOKS ON "V" AND "M" BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING BARS.
 CONCRETE DISPLACED BY CONCRETE PILES HAS BEEN DEDUCTED FROM THE FOOTING CONCRETE QUANTITY.
 ALL REINFORCING IN THE CAP, COLUMNS AND FOOTING IS TO BE GLASS FIBER REINFORCED POLYMER (GFRP) BARS. FOR GLASS FIBER REINFORCED POLYMER BARS, SEE SPECIAL PROVISIONS.
 * THE FOOTING HAS A DROP OF 2" FROM THE CENTER OF THE FOOTING TO THE EDGE OF THE FOOTING TO ACCOMMODATE DRAINAGE.



PROJECT NO. B-4863
CARTERET COUNTY
 STATION: 34+75.00 -L-

PARTIAL END ELEVATION
 SEE ELEVATION FOR COLUMN REINFORCING BARS



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
BENT #5

DRAWN BY : I.L. AVERETTE DATE : 02/2019
 CHECKED BY : A.K. PATEL DATE : 04/2019
 DESIGN ENGINEER OF RECORD : A.K. PATEL DATE : 04/2019

REINFORCING BAR DIMENSIONS AND DETAILS ARE TYPICAL FOR EACH COLUMN
 FOR ADDITIONAL REINFORCING BARS IN ENDS OF CAP, SEE VIEW X-X AND VIEW Y-Y ON SHEET 3 OF 3
 *4 U5 BARS IN FOOTING NOT SHOWN, SEE SHEET 2 OF 3

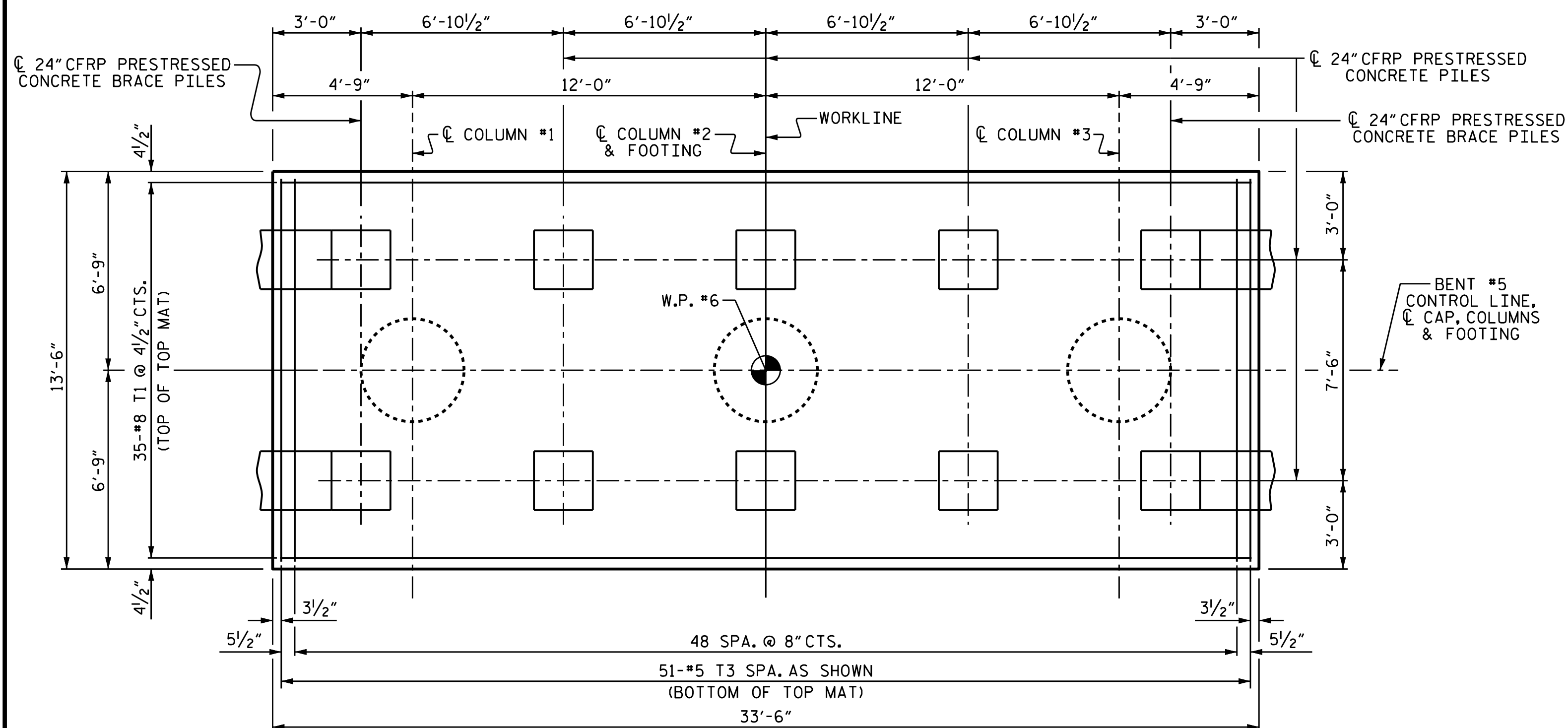
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			S1-133
2			4			194

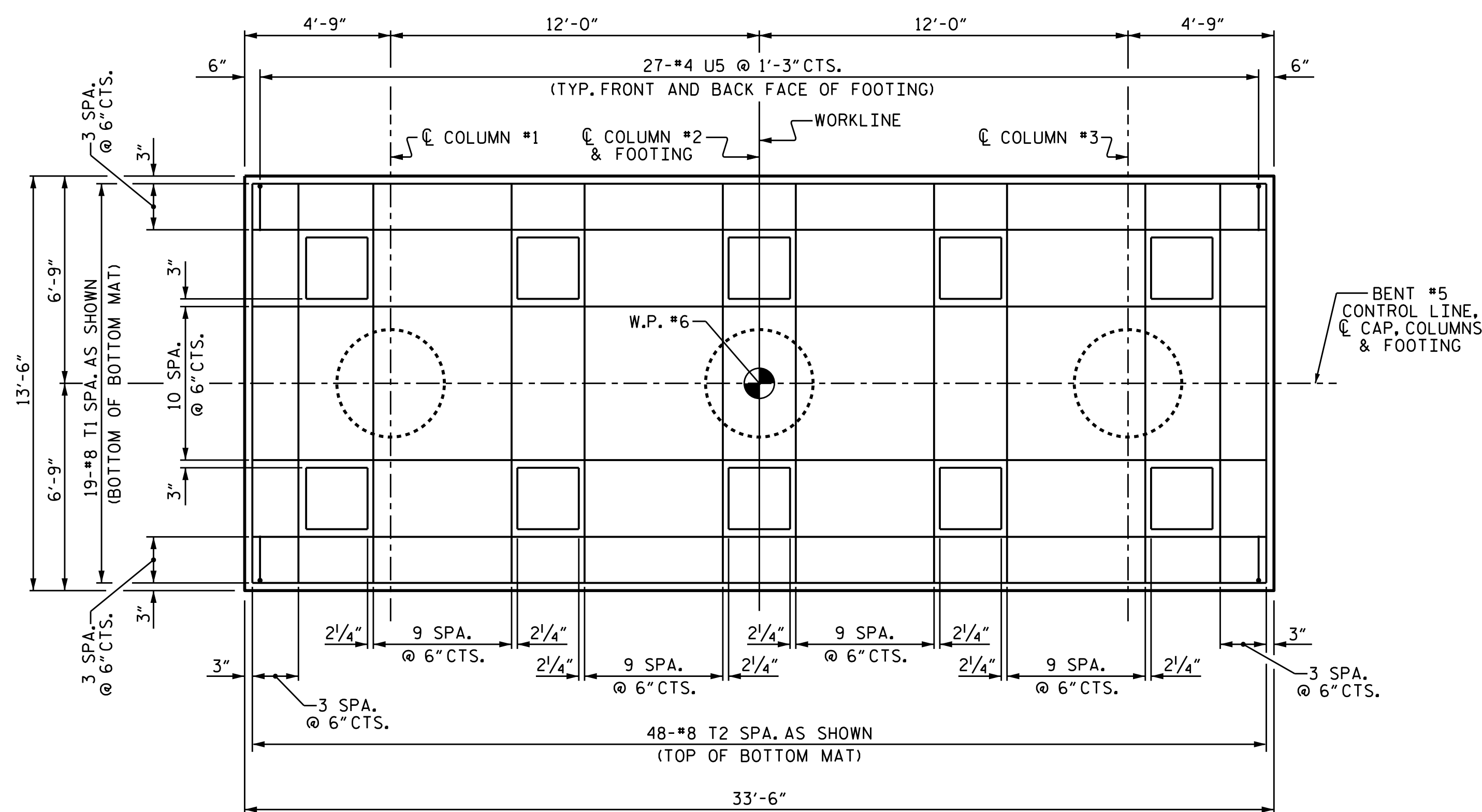
NOTES

FOR #8 T4 AND #8 T5 BARS ON EACH FACE OF FOOTING BETWEEN BOTTOM AND TOP MAT OF REINFORCING BARS, SEE SHEET 1 OF 3.

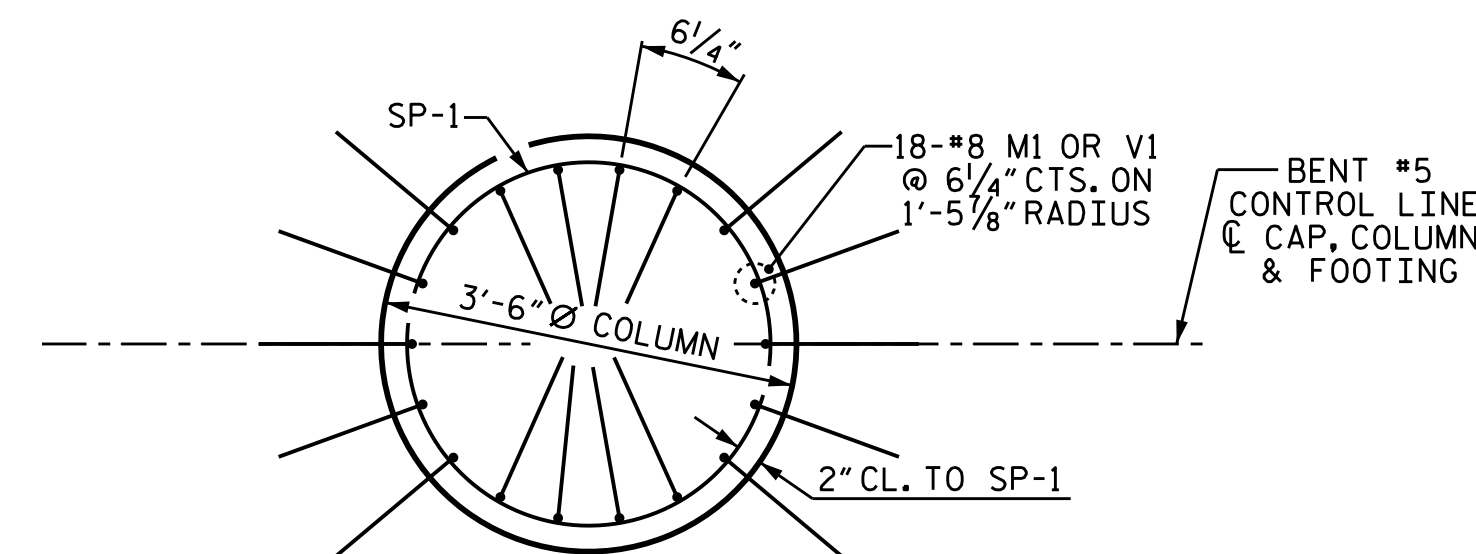
#4 U5 BARS MAY BE SHIFTED SLIGHTLY AS NECESSARY TO AVOID "T" BARS.



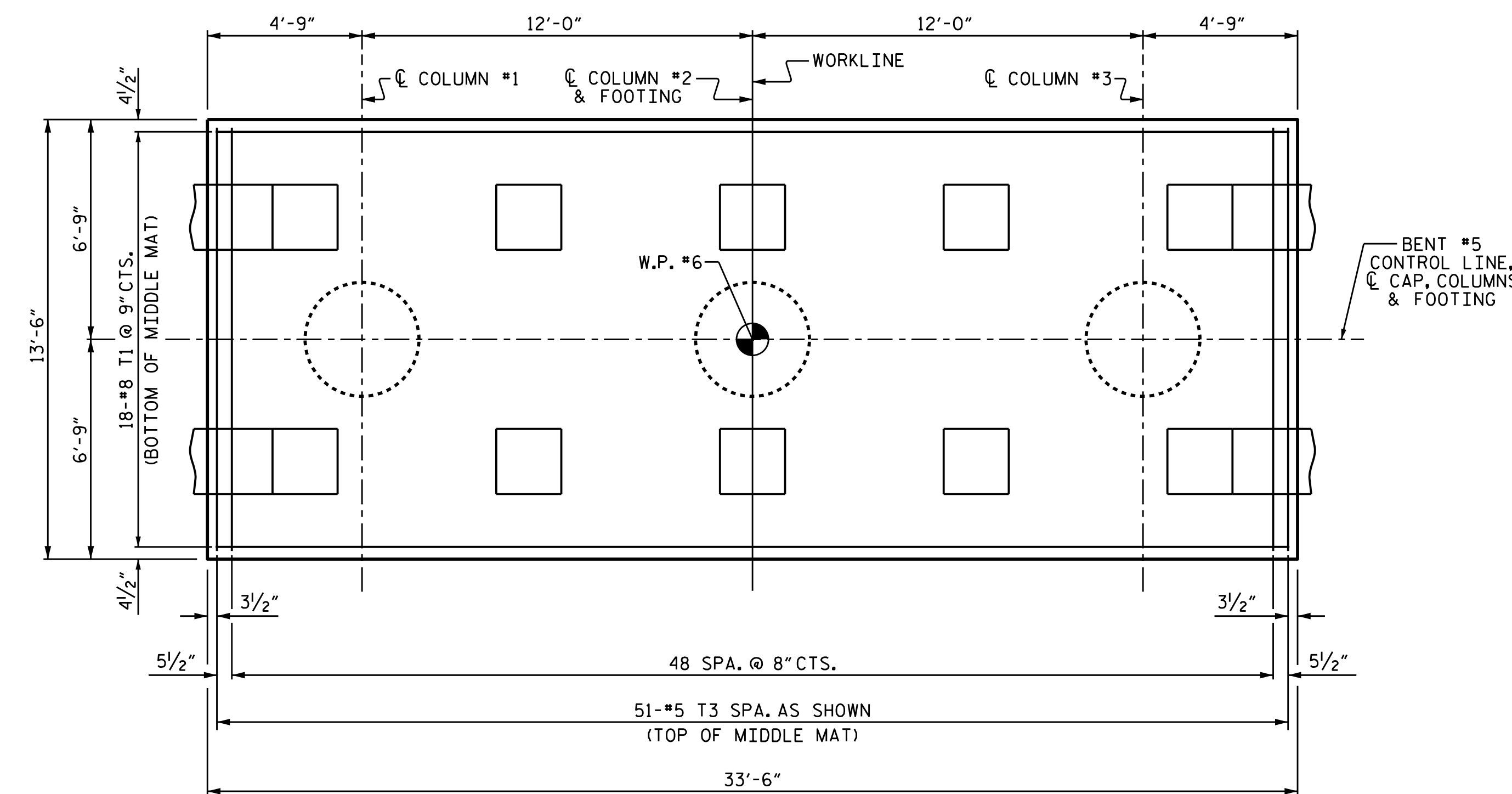
PLAN OF COLUMNS & FOOTING
SHOWING TOP MAT OF REINFORCING BARS



PLAN OF COLUMNS & FOOTING
SHOWING BOTTOM MAT OF REINFORCING BARS
AND TEMPERATURE REINFORCEMENT



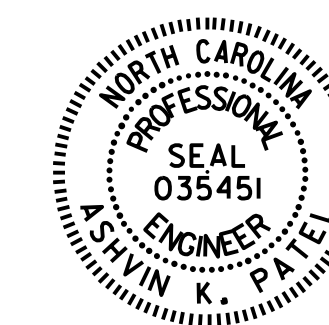
COLUMN REINFORCING DETAILS
TYPICAL FOR EACH COLUMN



PLAN OF COLUMNS & FOOTING
SHOWING MIDDLE MAT OF REINFORCING BARS

PROJECT NO. B-4863
CARTERET COUNTY
STATION: 34+75.00 -L-

SHEET 2 OF 3



DocuSigned by:
Ashwin Patel
7F189E5610244E33
3/9/2020

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

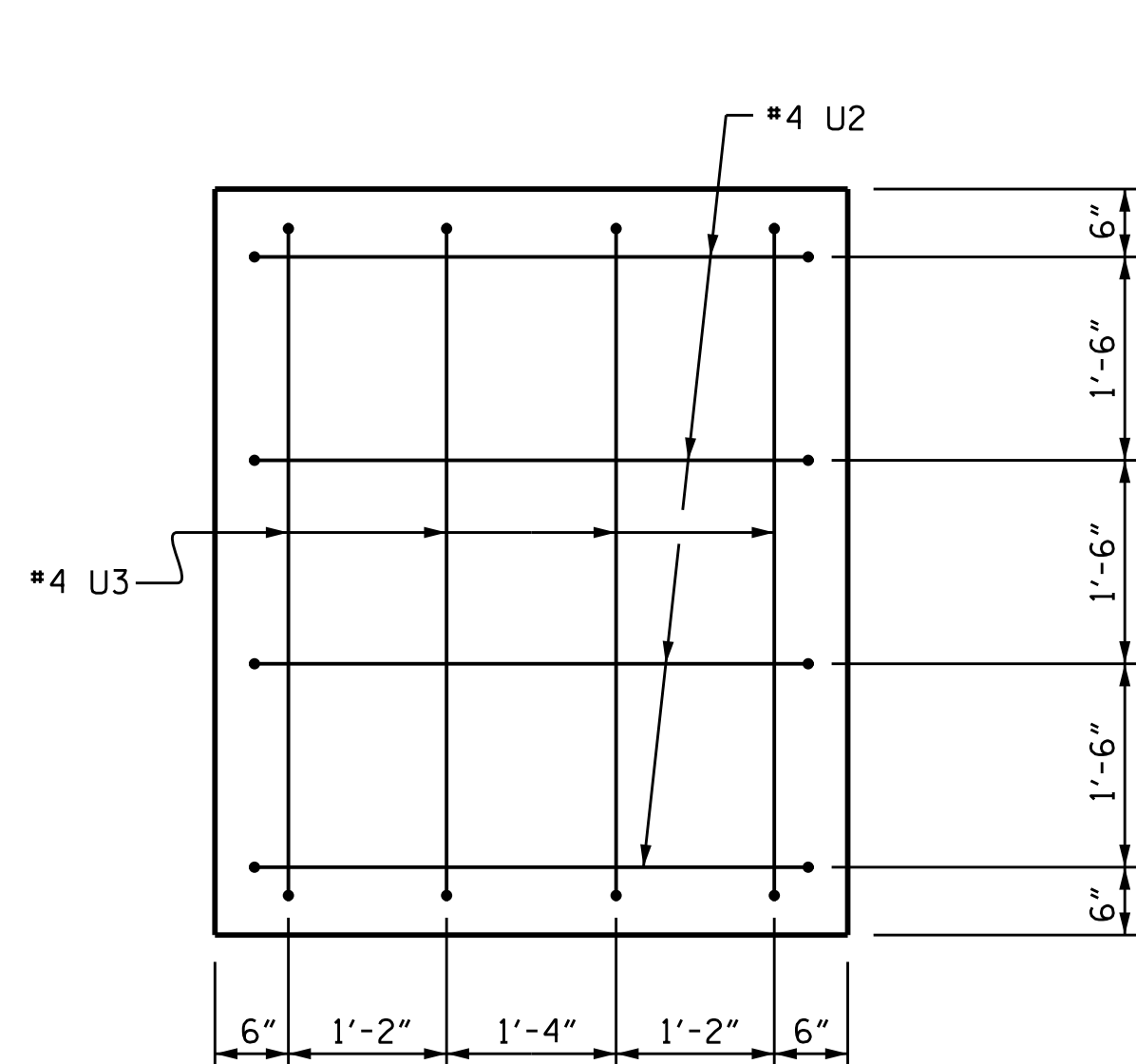
SUBSTRUCTURE

BENT #5

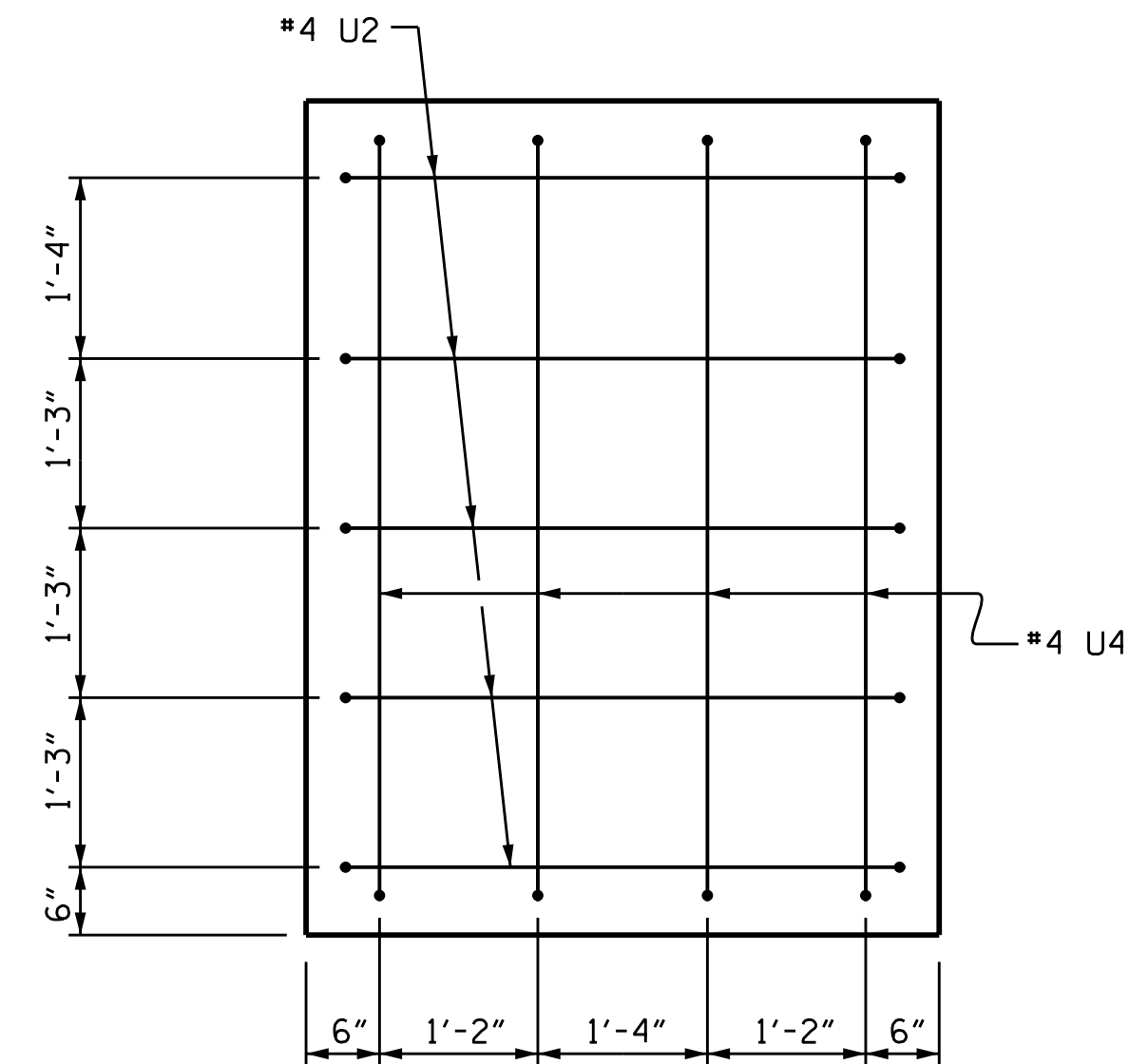
DRAWN BY : I.L. AVERETTE DATE : 02/2019
CHECKED BY : A.K. PATEL DATE : 04/2019
DESIGN ENGINEER OF RECORD : A.K. PATEL DATE : 04/2019

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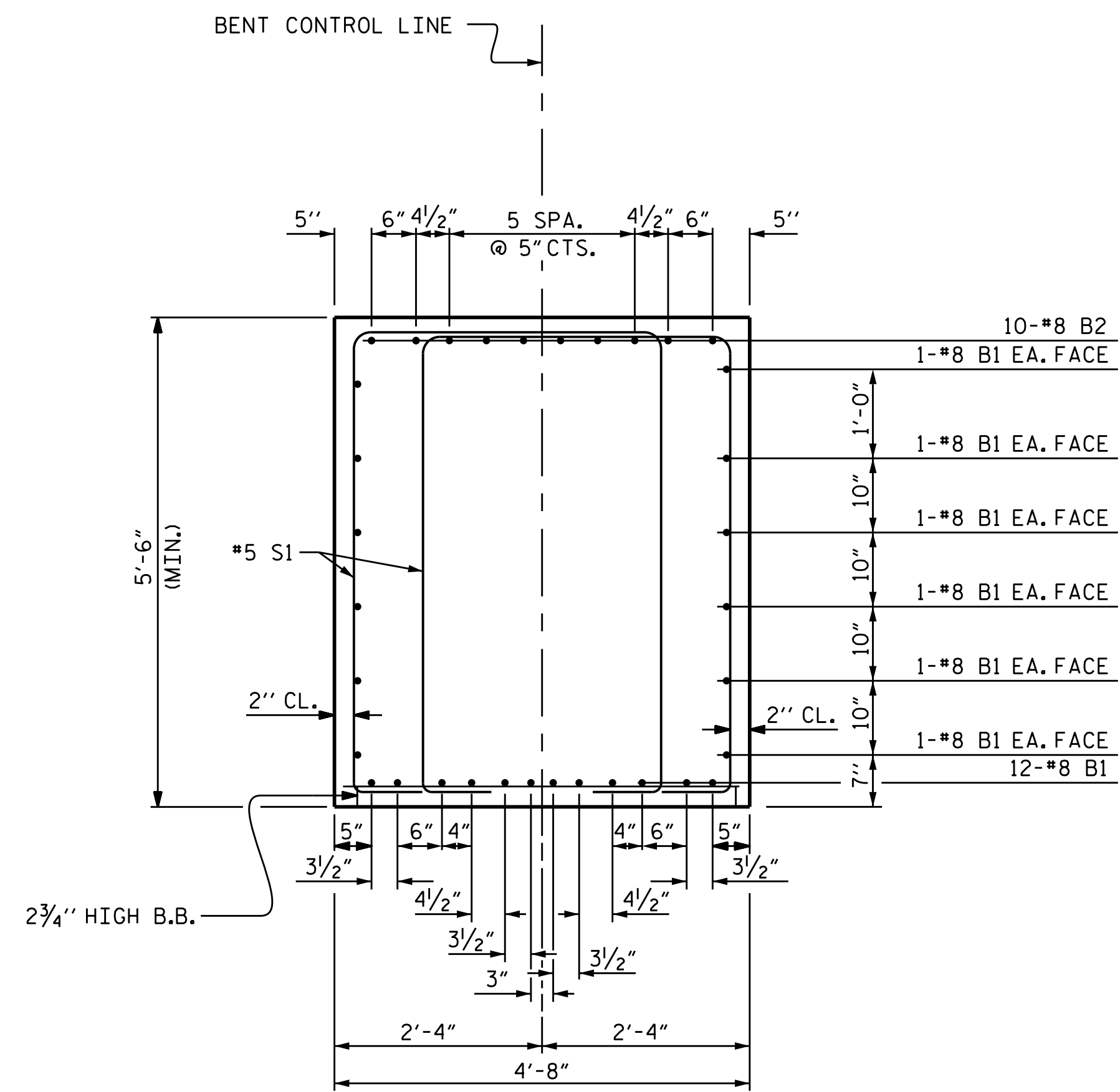
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			S1-134
2			4			194



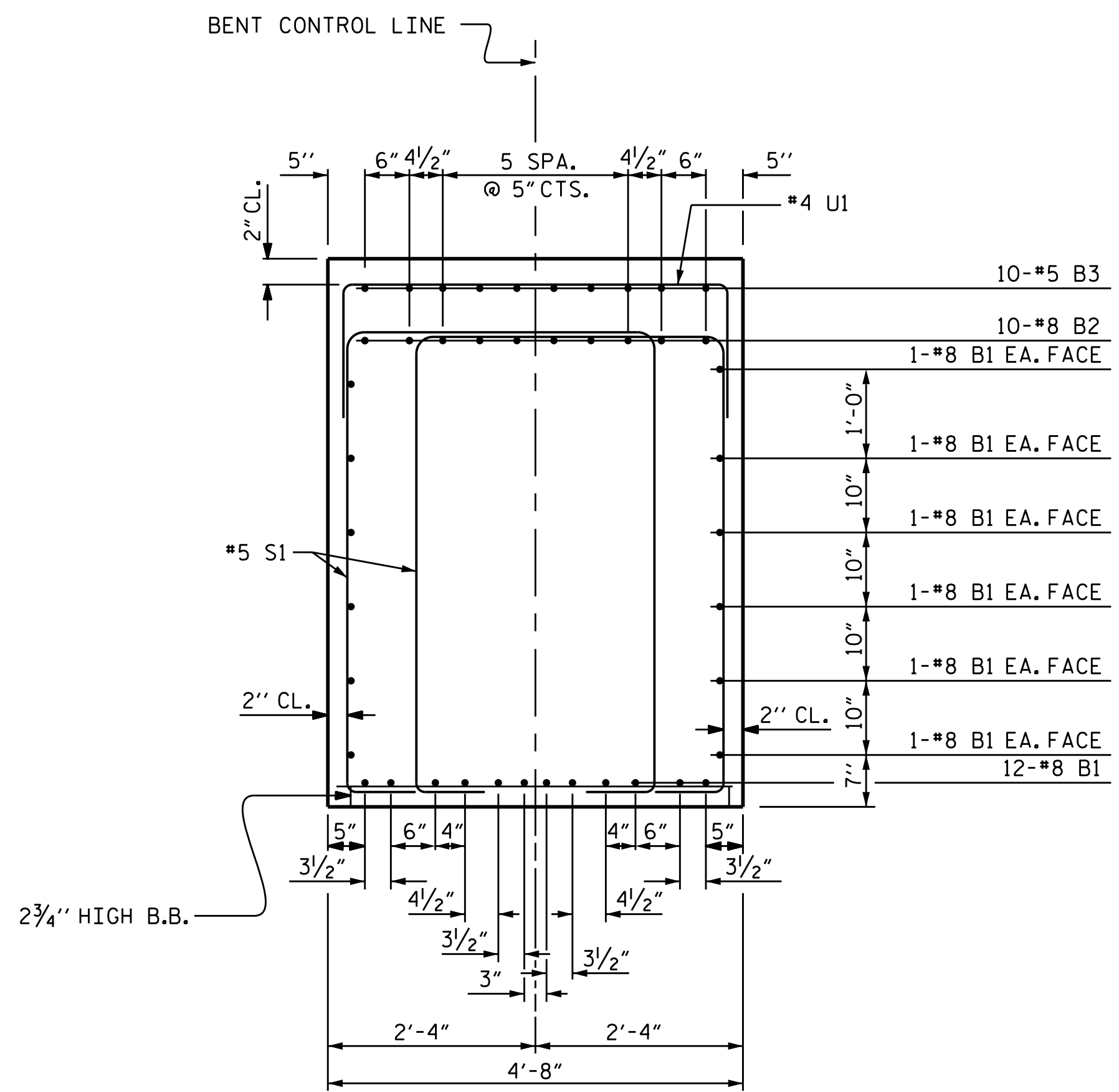
VIEW X-X



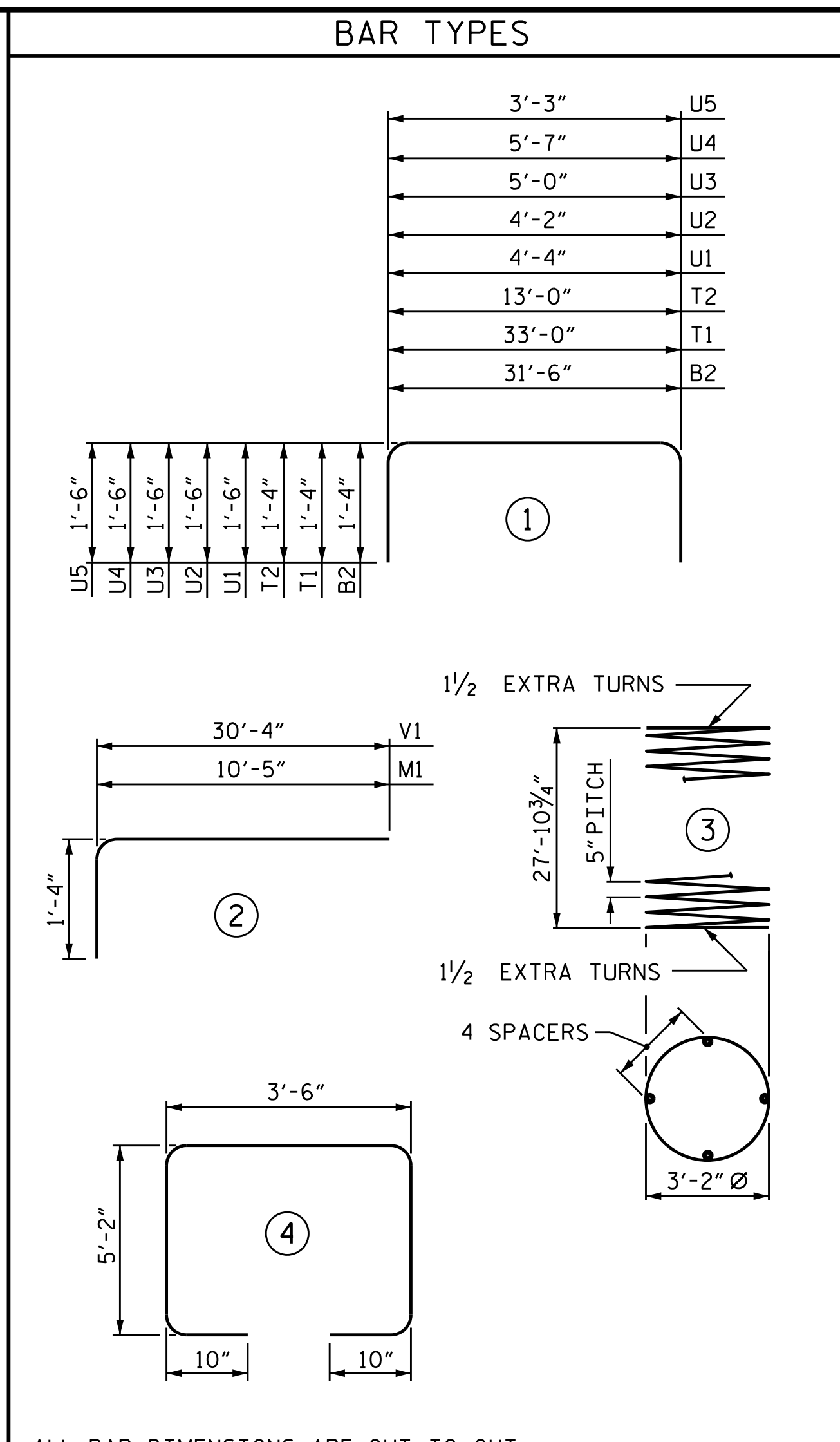
VIEW Y-Y



SECTION A-A



SECTION B-B

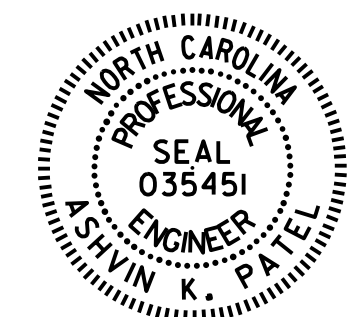


ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

BENT #5					
BAR	NO.	SIZE	TYPE	LENGTH	TOTAL LENGTH
B1	24	#8	STR	31'-8"	760'-0"
B2	10	#8	1	34'-2"	341'-8"
B3	10	#5	STR	8'-9"	87'-6"
B4	10	#5	STR	4'-9"	47'-6"
M1	54	#8	2	11'-9"	634'-6"
S1	84	#5	4	15'-6"	1302'-0"
T1	72	#8	1	35'-8"	2568'-0"
T2	48	#8	1	15'-8"	752'-0"
T3	102	#5	STR	13'-0"	1326'-0"
T4	6	#8	STR	33'-0"	198'-0"
T5	6	#8	STR	13'-0"	78'-0"
U1	35	#4	1	7'-4"	256'-8"
U2	9	#4	1	7'-2"	64'-6"
U3	4	#4	1	8'-0"	32'-0"
U4	4	#4	1	8'-7"	34'-4"
U5	54	#4	1	6'-3"	337'-6"
V1	54	#8	2	31'-8"	1710'-0"
SP-1	3	#5	3	695'-0"	2085'-0"
TOTAL LIN. FT. # 4 BARS					693.0
TOTAL LIN. FT. # 5 BARS					4880.0
TOTAL LIN. FT. # 8 BARS					7042.2
GLASS FIBER REINFORCED POLYMER BARS					12615.17 LIN. FT.
CLASS AA CONCRETE BREAKDOWN					
POUR #1 FOOTING					66.2 C.Y.
POUR #2 COLUMNS					29.6 C.Y.
POUR #3 CAP					32.0 C.Y.
TOTAL CLASS AA CONCRETE					127.8 C.Y.

PROJECT NO. B-4863
CARTERET COUNTY
 STATION: 34+75.00 -L-
 SHEET 3 OF 3



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 BENT #5

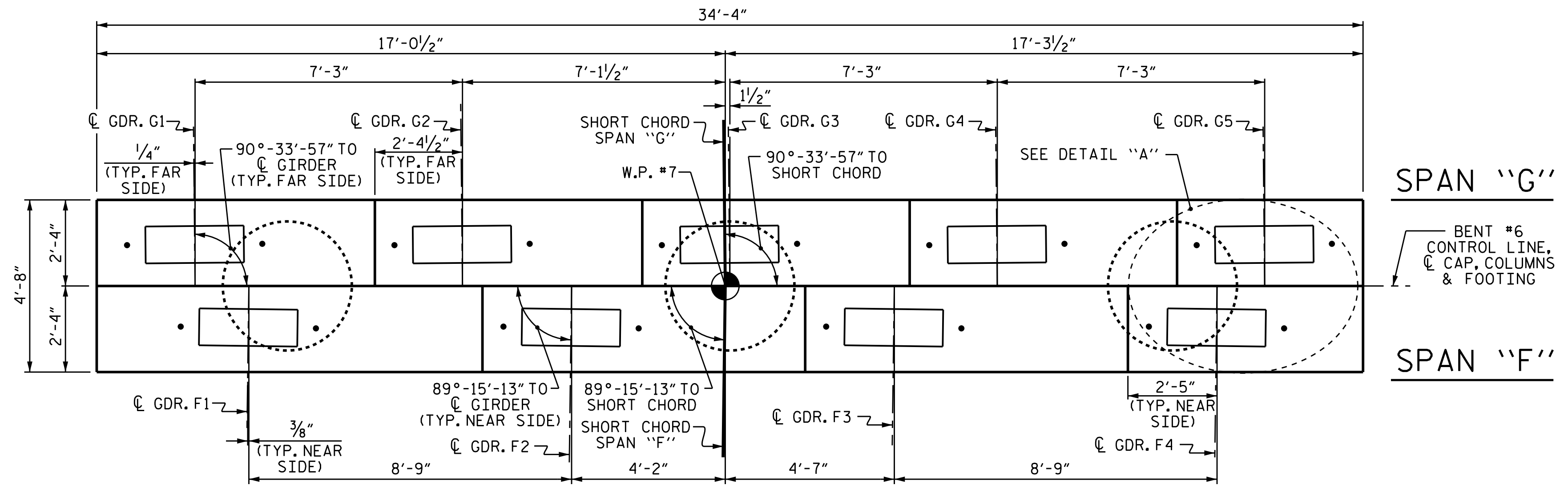
DRAWN BY : I.L. AVERETTE DATE : 02/2019
 CHECKED BY : A.K. PATEL DATE : 04/2019
 DESIGN ENGINEER OF RECORD: A.K. PATEL DATE : 04/2019

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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NO.	BY:	DATE:	NO.	BY:	DATE:	
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2			4			TOTAL SHEETS 194

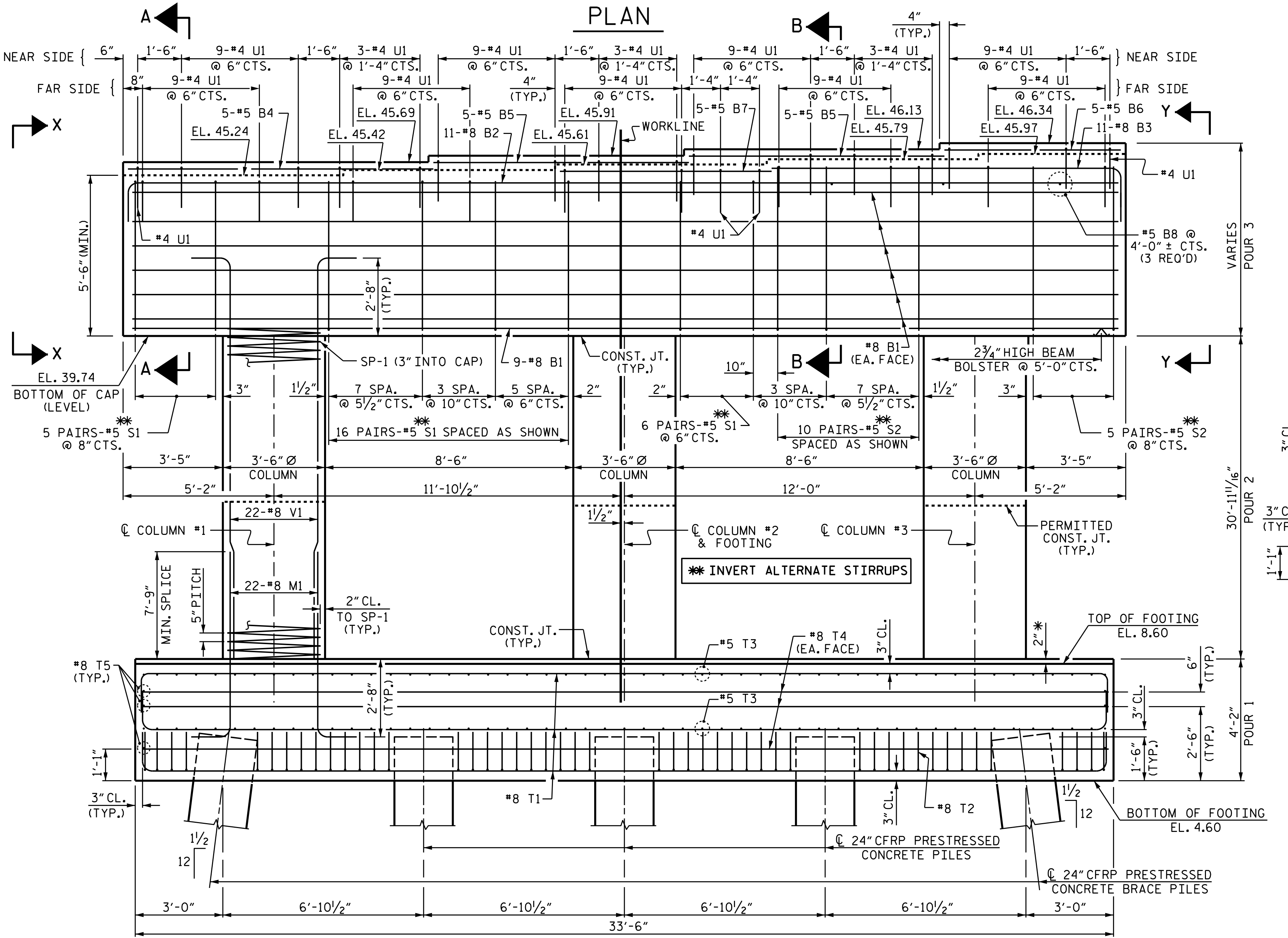
NOTES

STIRRUPS AND UI BARS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.
 HOOKS ON "V" AND "M" BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING BARS.
 CONCRETE DISPLACED BY CONCRETE PILES HAS BEEN DEDUCTED FROM THE FOOTING CONCRETE QUANTITY.
 THE TOP SURFACE AREAS OF THE BENT CAP SHALL BE CURED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS EXCEPT THE MEMBRANE CURING COMPOUND METHOD SHALL NOT BE USED.
 ALL REINFORCING IN THE CAP, COLUMNS AND FOOTING IS TO BE GLASS FIBER REINFORCED POLYMER (GFRP) BARS. FOR GLASS FIBER REINFORCED POLYMER BARS, SEE SPECIAL PROVISIONS.
 * THE FOOTING HAS A DROP OF 2" FROM THE CENTER OF THE FOOTING TO THE EDGE OF THE FOOTING TO ACCOMMODATE DRAINAGE.



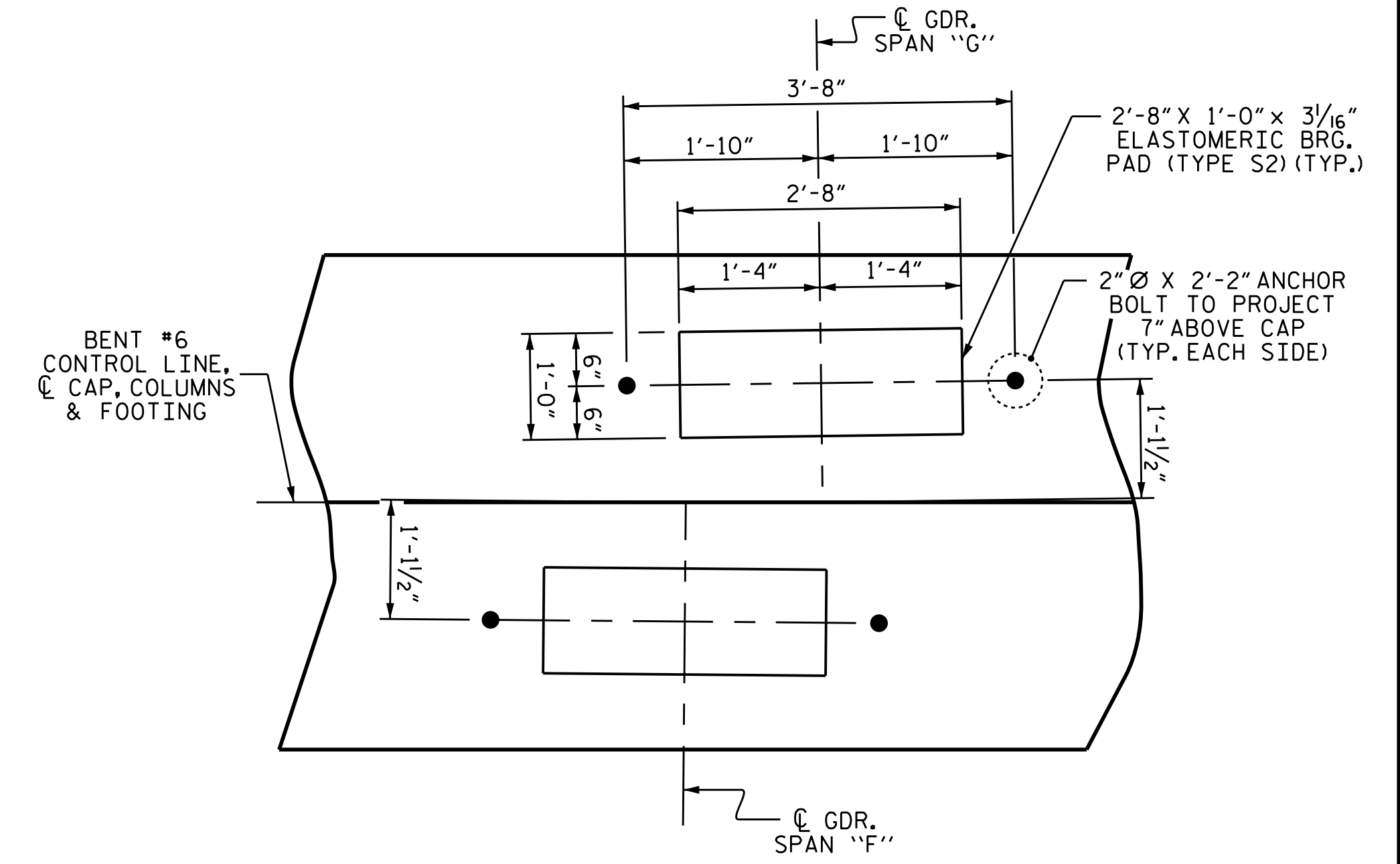
SPAN "G"

SPAN "F"

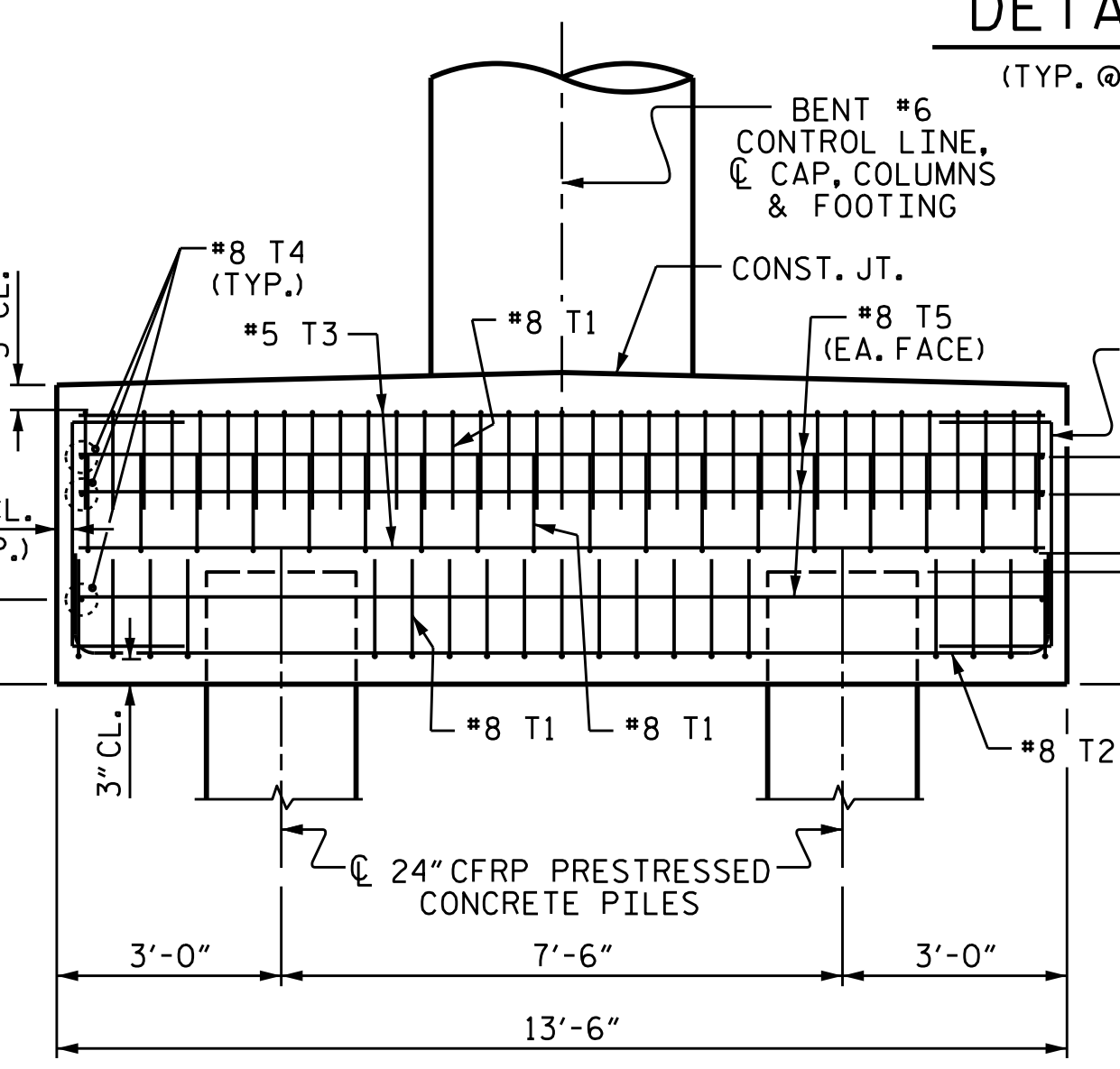


ELEVATION

REINFORCING BAR DIMENSIONS AND DETAILS ARE TYPICAL FOR EACH COLUMN.
 FOR ADDITIONAL REINFORCING BARS IN ENDS OF CAP, SEE VIEW X-X AND VIEW Y-Y ON SHEET 3 OF 3
 *4 U7 BARS IN FOOTING NOT SHOWN, SEE SHEET 2 OF 3



DETAIL "A"



PARTIAL END ELEVATION

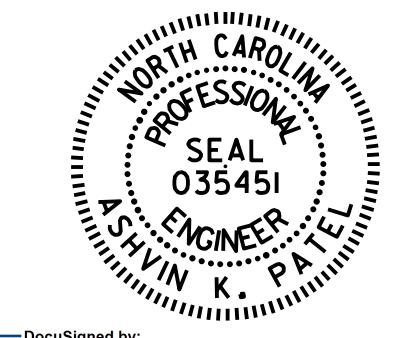
SEE ELEVATION FOR COLUMN REINFORCING BARS

PROJECT NO. B-4863
CARTERET COUNTY
 STATION: 34+75.00 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 BENT #6



DocuSigned by:
 Ashwin Patel
 7F189E5610244E3
 3/9/2020

DRAWN BY: I.L. AVERETTE DATE: 02/2019
 CHECKED BY: A.K. PATEL DATE: 12/2019
 DESIGN ENGINEER OF RECORD: A.K. PATEL DATE: 12/2019

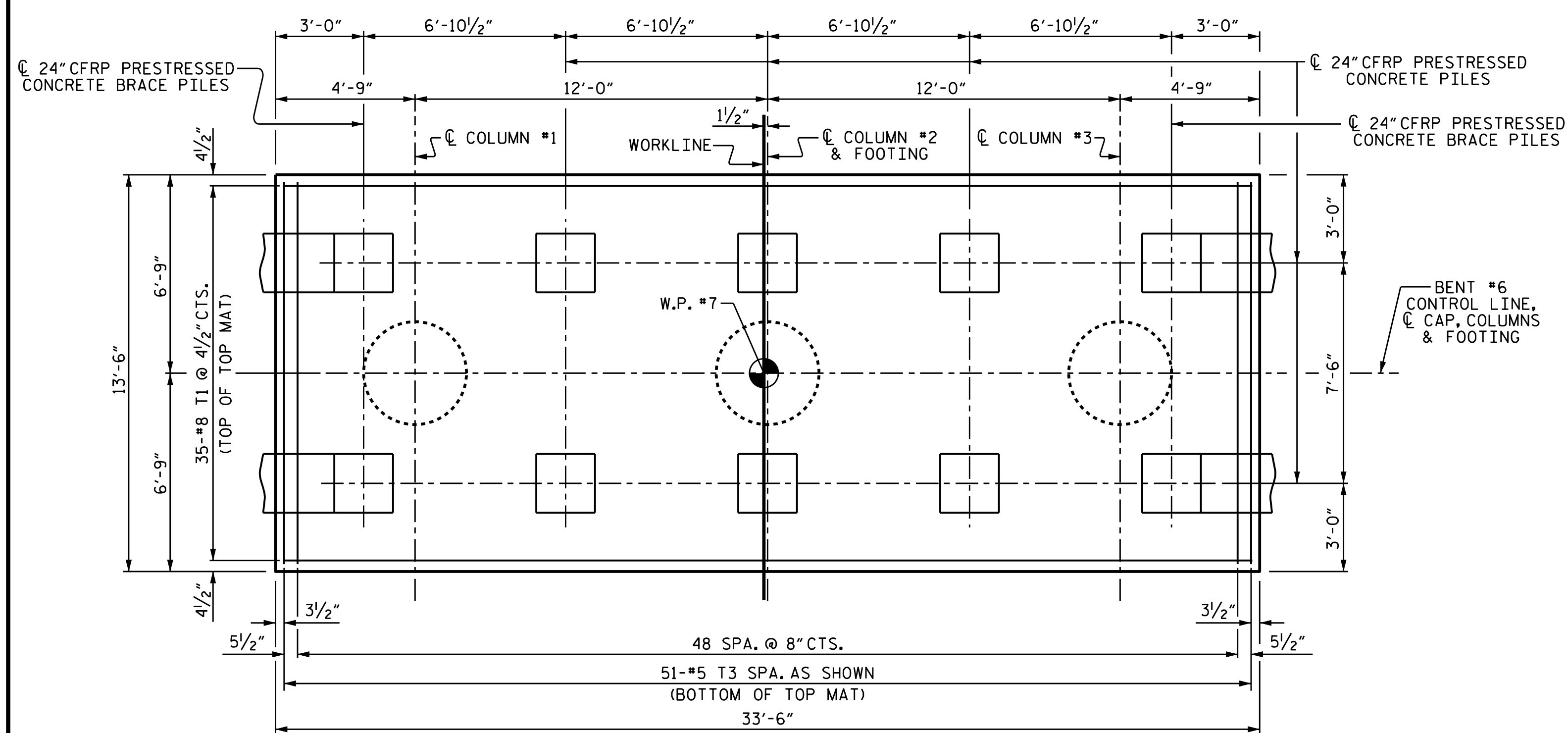
DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS	
1			3			S1-136	
2			4			194	

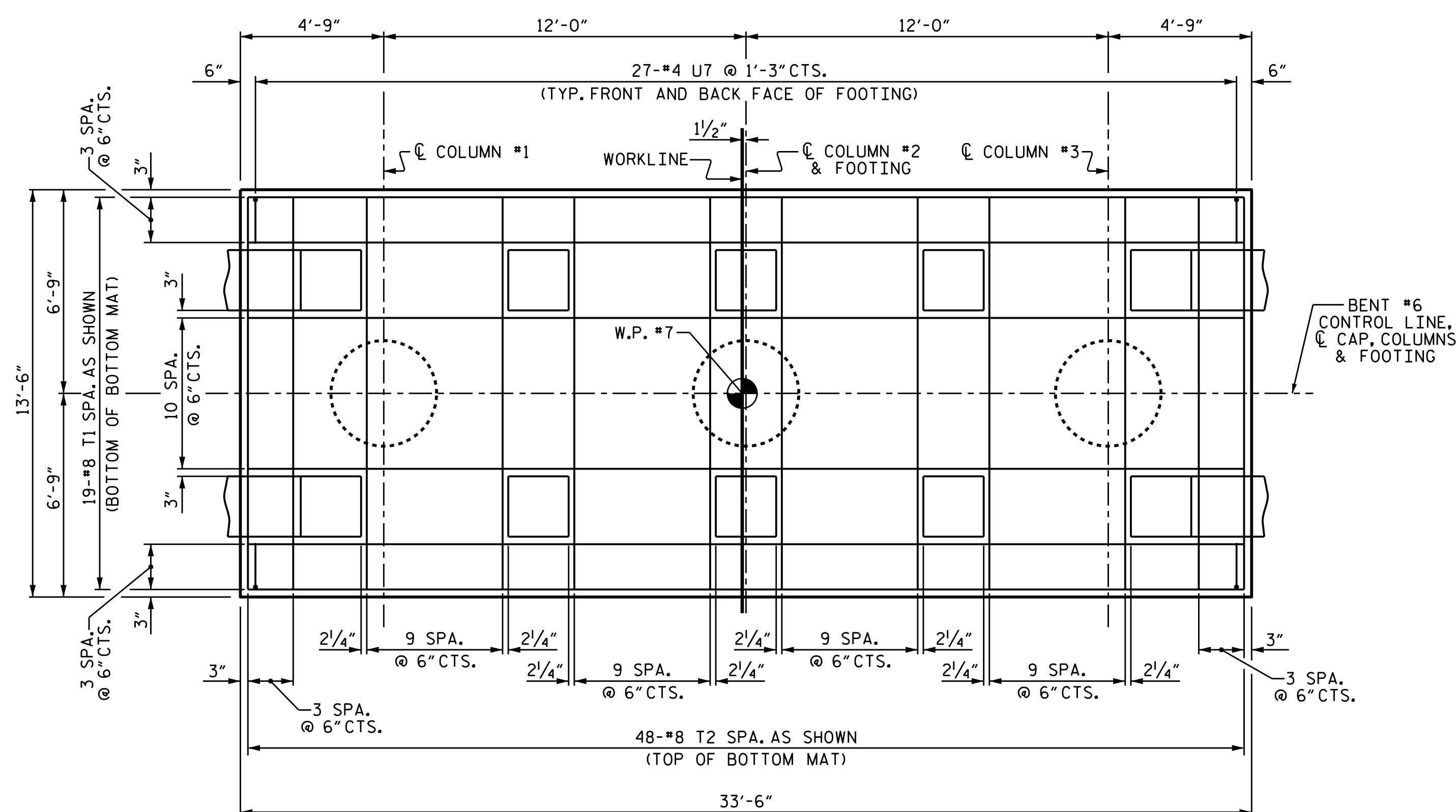
NOTES

FOR #8 T4 AND #8 T5 BARS ON EACH FACE OF FOOTING BETWEEN BOTTOM AND TOP MAT OF REINFORCING BARS, SEE SHEET 1 OF 3.

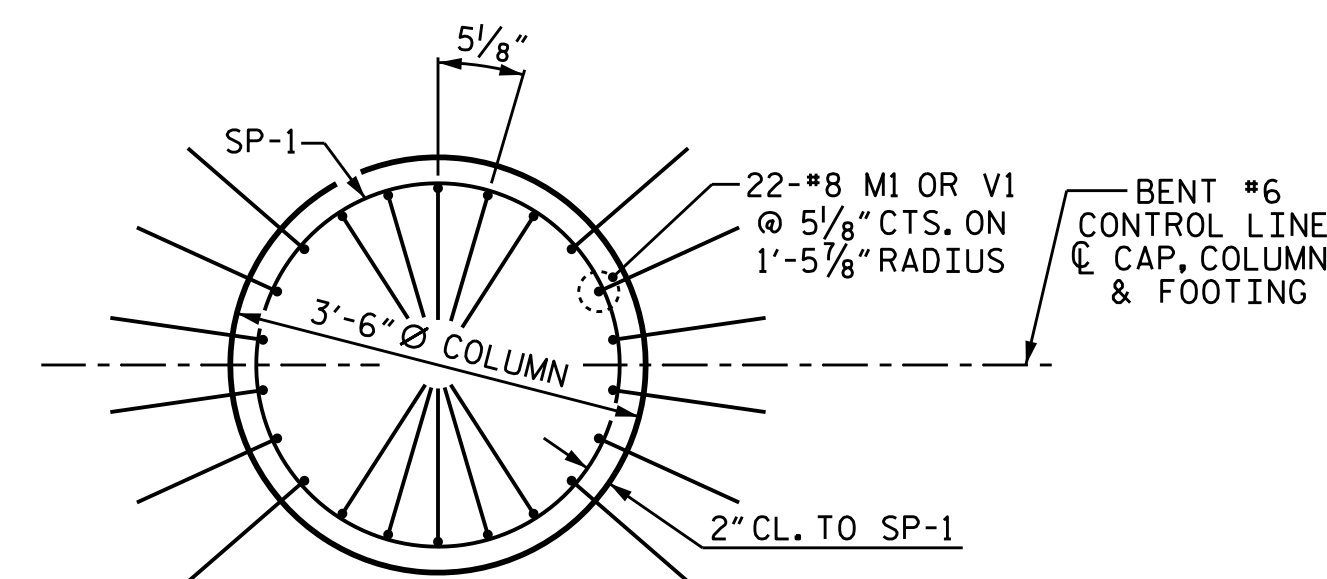
#4 U7 BARS MAY BE SHIFTED SLIGHTLY AS NECESSARY TO AVOID "T" BARS.



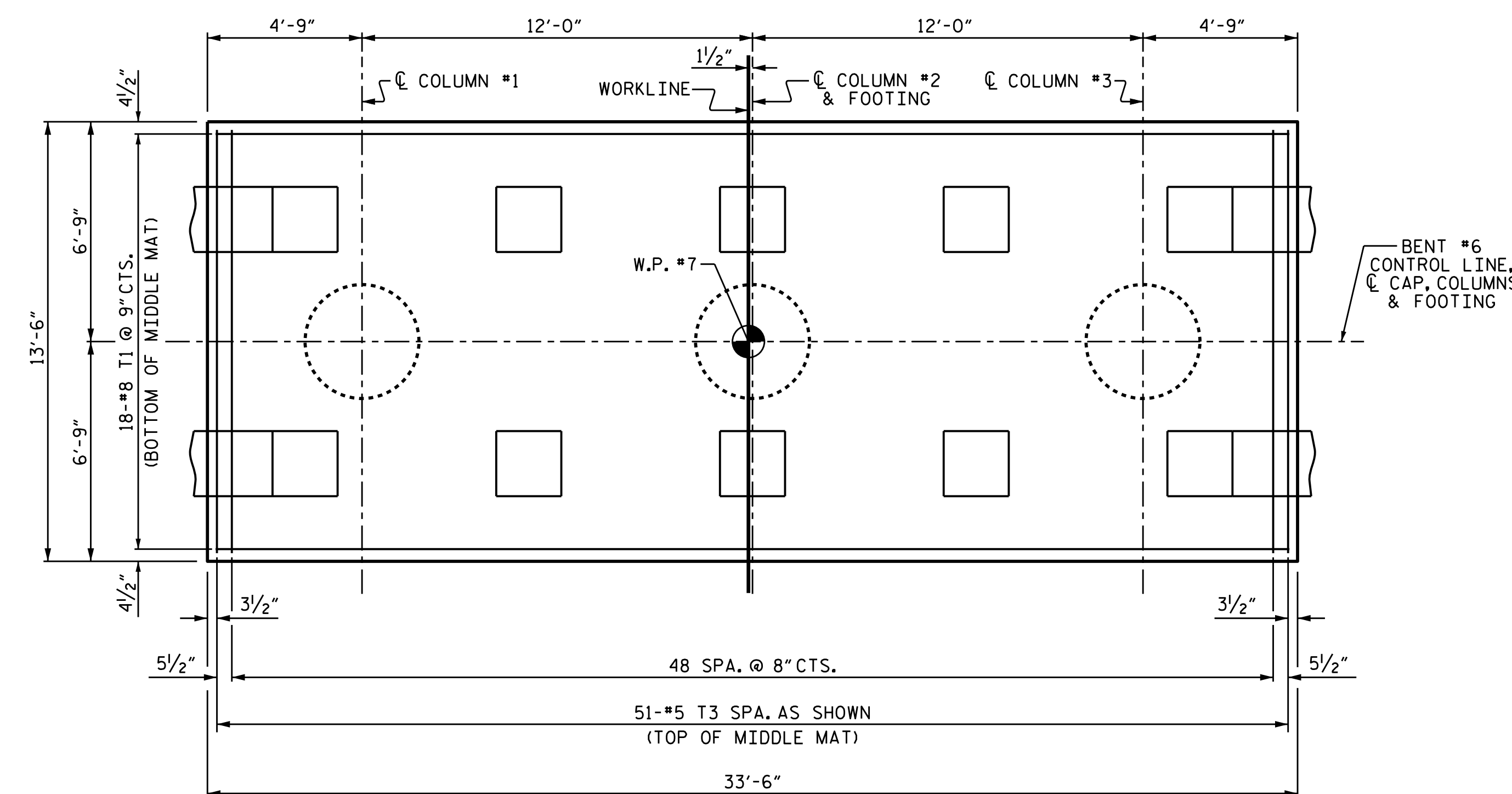
PLAN OF COLUMNS & FOOTING
SHOWING TOP MAT OF REINFORCING BARS



PLAN OF COLUMNS & FOOTING
SHOWING BOTTOM MAT OF REINFORCING BARS
AND TEMPERATURE REINFORCEMENT



COLUMN REINFORCING DETAILS
TYPICAL FOR EACH COLUMN



PLAN OF COLUMNS & FOOTING
SHOWING MIDDLE MAT OF REINFORCING BARS

PROJECT NO. B-4863
CARTERET COUNTY
STATION: 34+75.00 -L-

SHEET 2 OF 3



DocuSigned by:
Ashwin Patel
7F189E5610244E3
3/9/2020

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

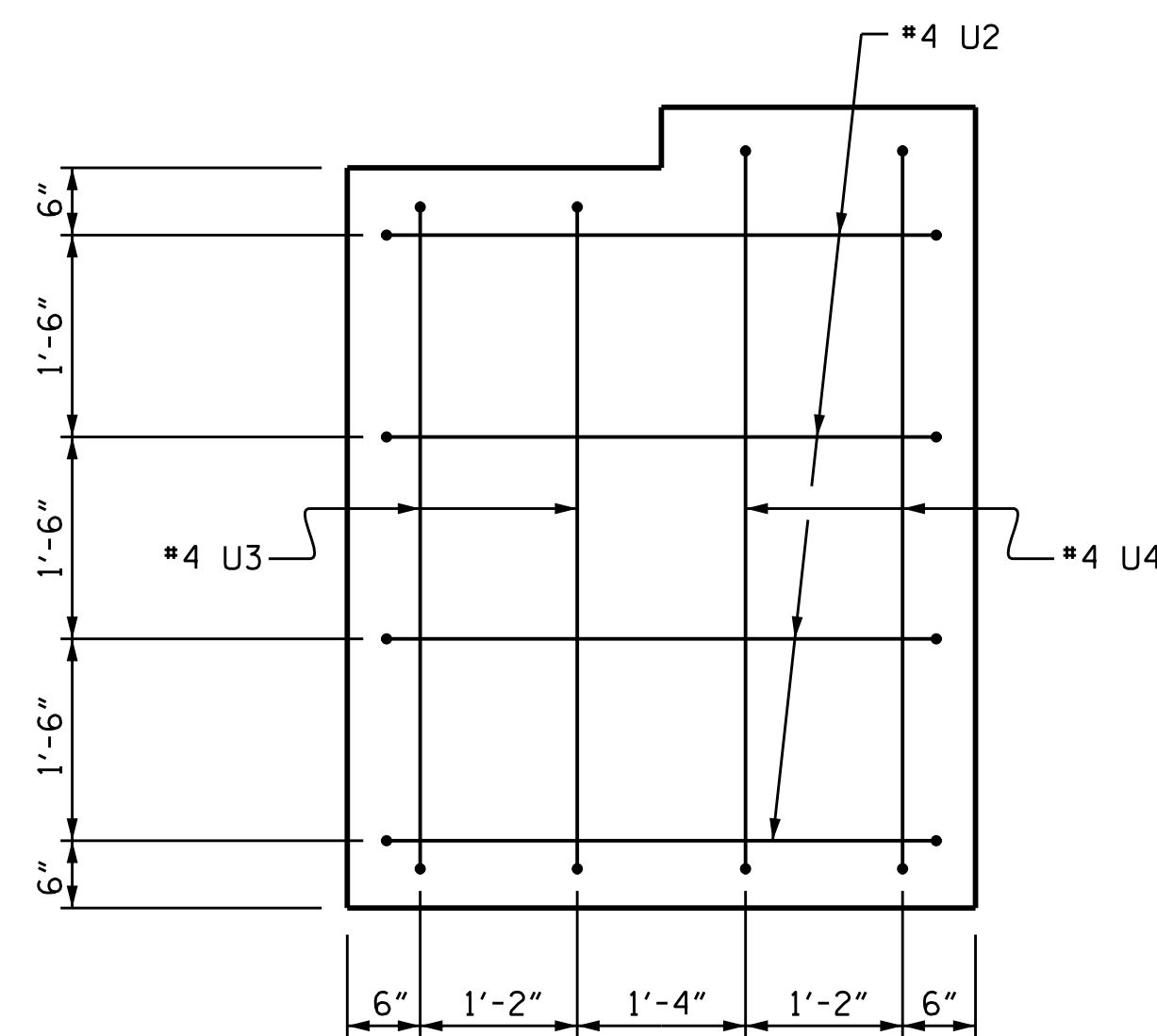
SUBSTRUCTURE

BENT #6

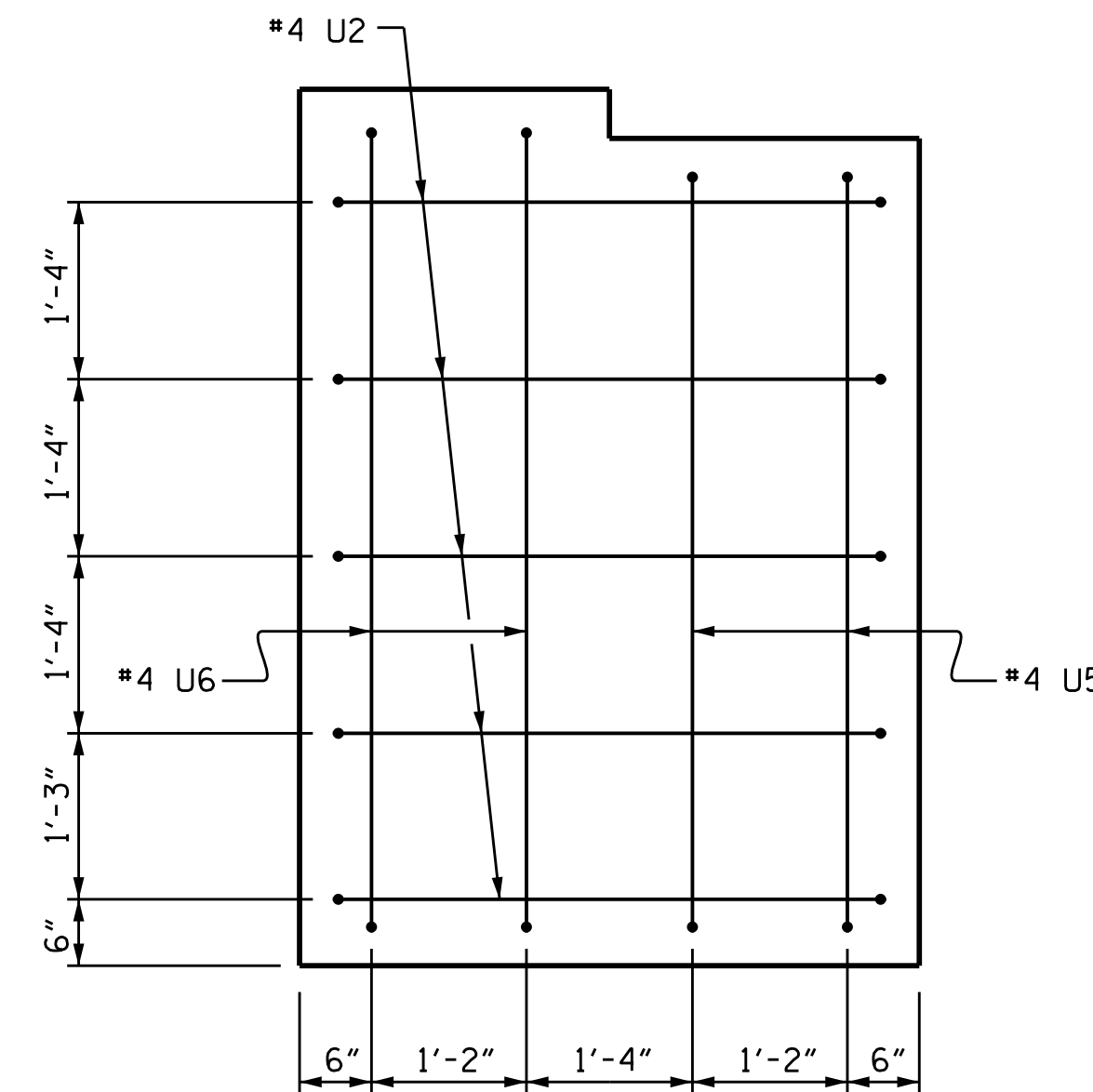
DRAWN BY : I.L. AVERETTE DATE : 02/2019
CHECKED BY : A.K. PATEL DATE : 12/2019
DESIGN ENGINEER OF RECORD: A.K. PATEL DATE : 12/2019

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

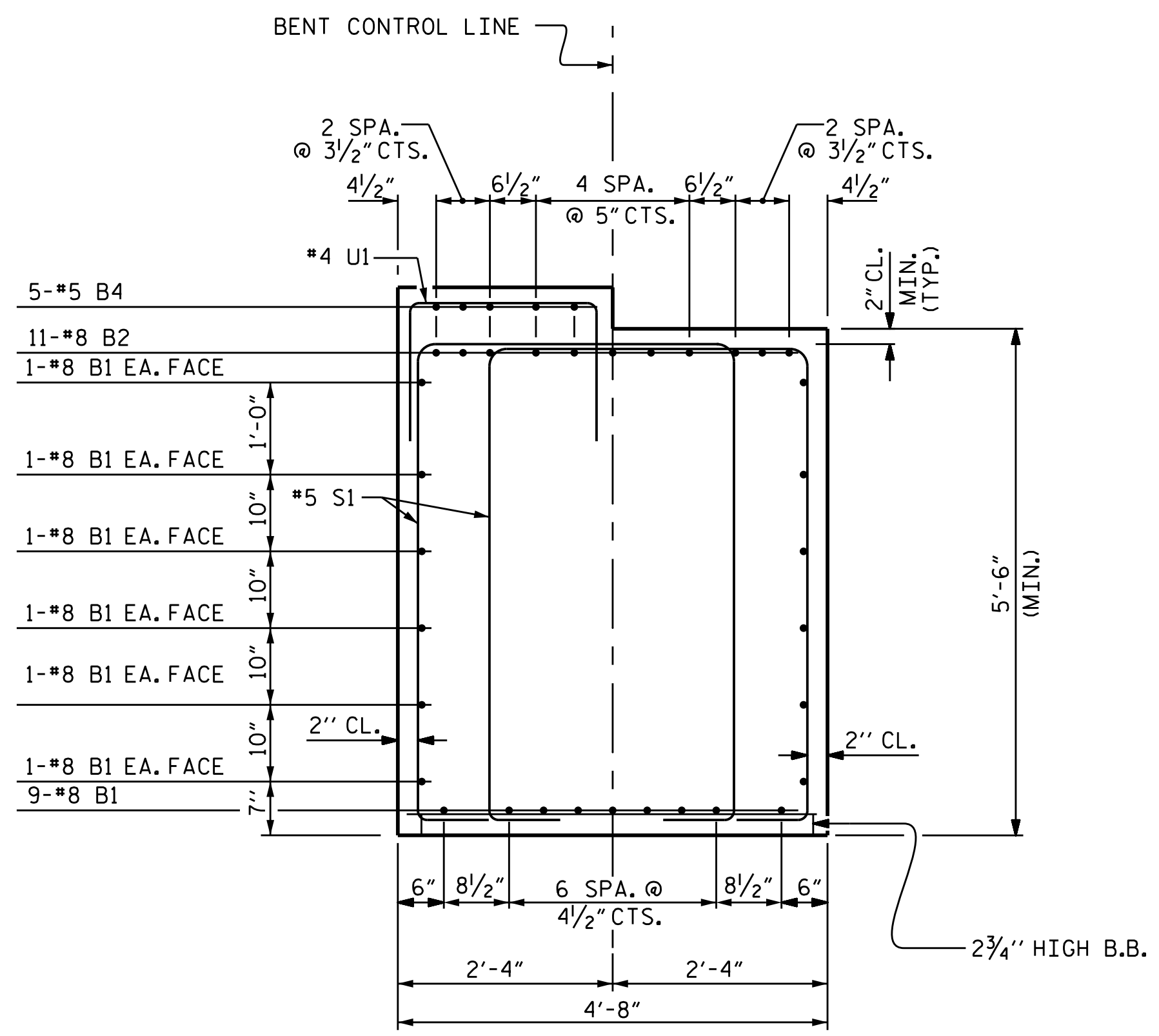
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			S1-137
2			4			194



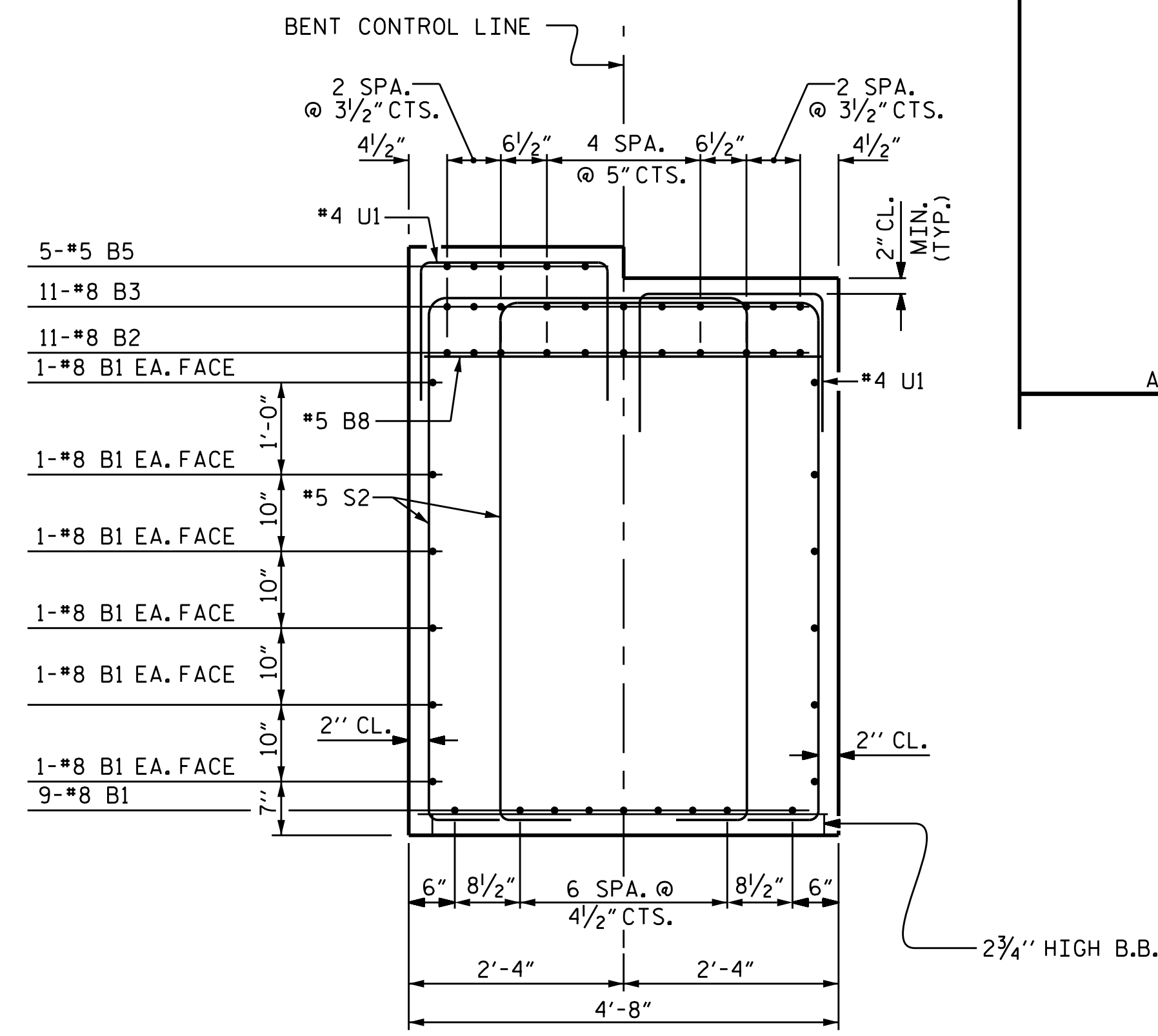
VIEW X-X



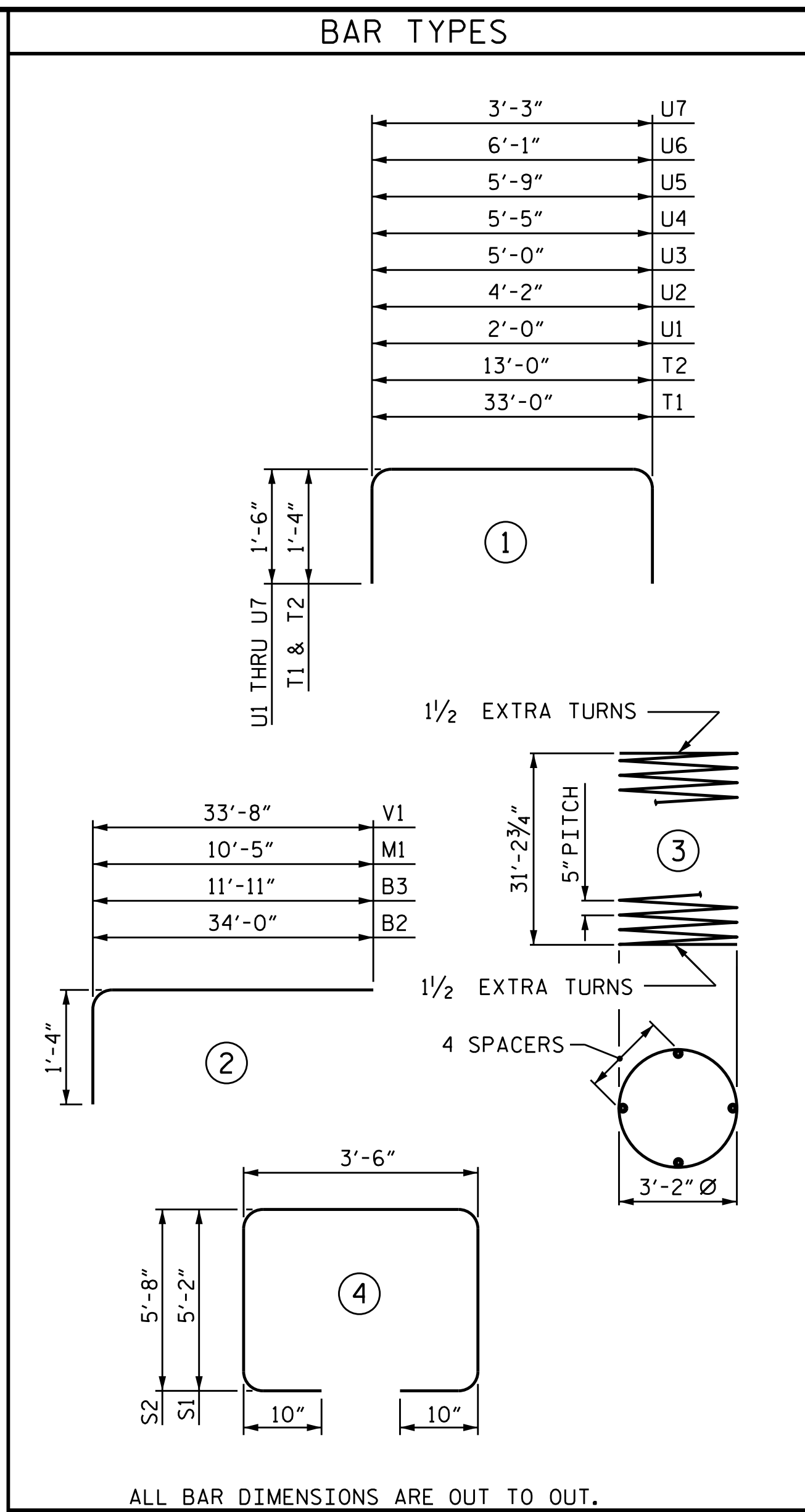
VIEW Y-Y



SECTION A-A



SECTION B-B



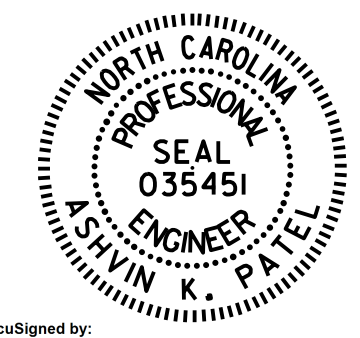
BILL OF MATERIAL					
BENT #6					
BAR	NO.	SIZE	TYPE	LENGTH	LENGTH
B1	21	#8	STR	34'-0"	714'-0"
B2	11	#8	2	35'-4"	388'-8"
B3	11	#8	2	13'-3"	145'-9"
B4	5	#5	STR	10'-5"	52'-1"
B5	10	#5	STR	8'-9"	87'-6"
B6	5	#5	STR	6'-0"	30'-0"
B7	5	#5	STR	7'-3"	36'-3"
B8	3	#5	STR	4'-4"	13'-0"
M1	66	#8	2	11'-9"	775'-6"
S1	54	#5	4	15'-6"	837'-0"
S2	30	#5	4	16'-6"	495'-0"
T1	72	#8	1	35'-8"	2568'-0"
T2	48	#8	1	15'-8"	752'-0"
T3	102	#5	STR	13'-0"	1326'-0"
T4	6	#8	STR	33'-0"	198'-0"
T5	6	#8	STR	13'-0"	78'-0"
U1	94	#4	1	5'-0"	470'-0"
U2	9	#4	1	7'-2"	64'-6"
U3	2	#4	1	8'-0"	16'-0"
U4	2	#4	1	8'-5"	16'-10"
U5	2	#4	1	8'-9"	17'-6"
U6	2	#4	1	9'-1"	18'-2"
U7	54	#4	1	6'-3"	337'-6"
V1	66	#8	2	35'-0"	2310'-0"
SP-1	3	#5	3	773'-6"	2320'-6"

TOTAL LIN. FT. # 4 BARS	940.5
TOTAL LIN. FT. # 5 BARS	5197.3
TOTAL LIN. FT. # 8 BARS	7929.9
GLASS FIBER REINFORCED POLYMER BARS	14067.75 LIN. FT.
CLASS AA CONCRETE BREAKDOWN	
POUR #1 FOOTING	66.2 C.Y.
POUR #2 COLUMNS	33.1 C.Y.
POUR #3 CAP	35.8 C.Y.
TOTAL CLASS AA CONCRETE	135.1 C.Y.

PROJECT NO. B-4863
CARTERET COUNTY
 STATION: 34+75.00 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 BENT #6

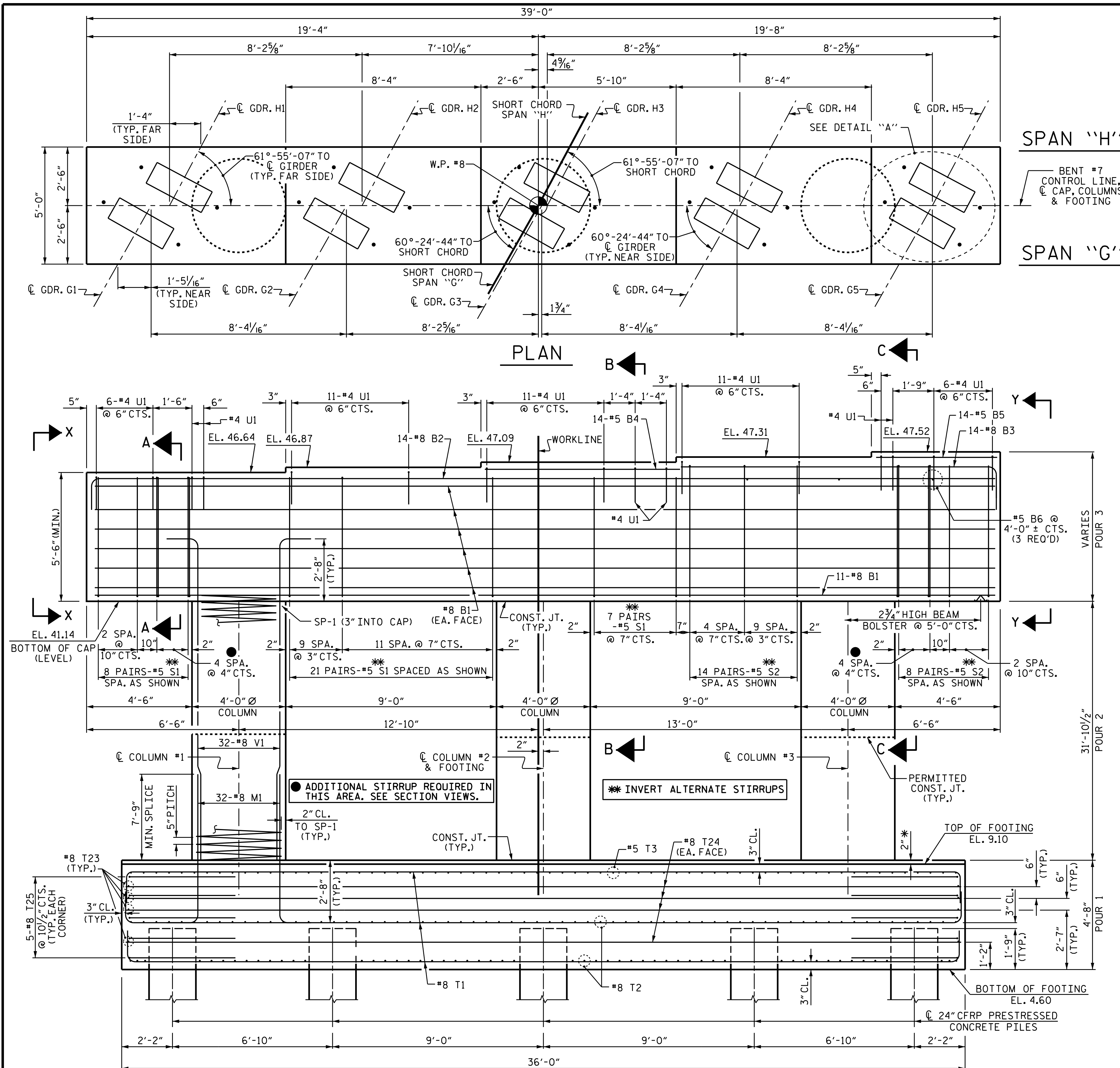


Designed by:
 Ashwin Patel
 771806561024403
 4/16/2021

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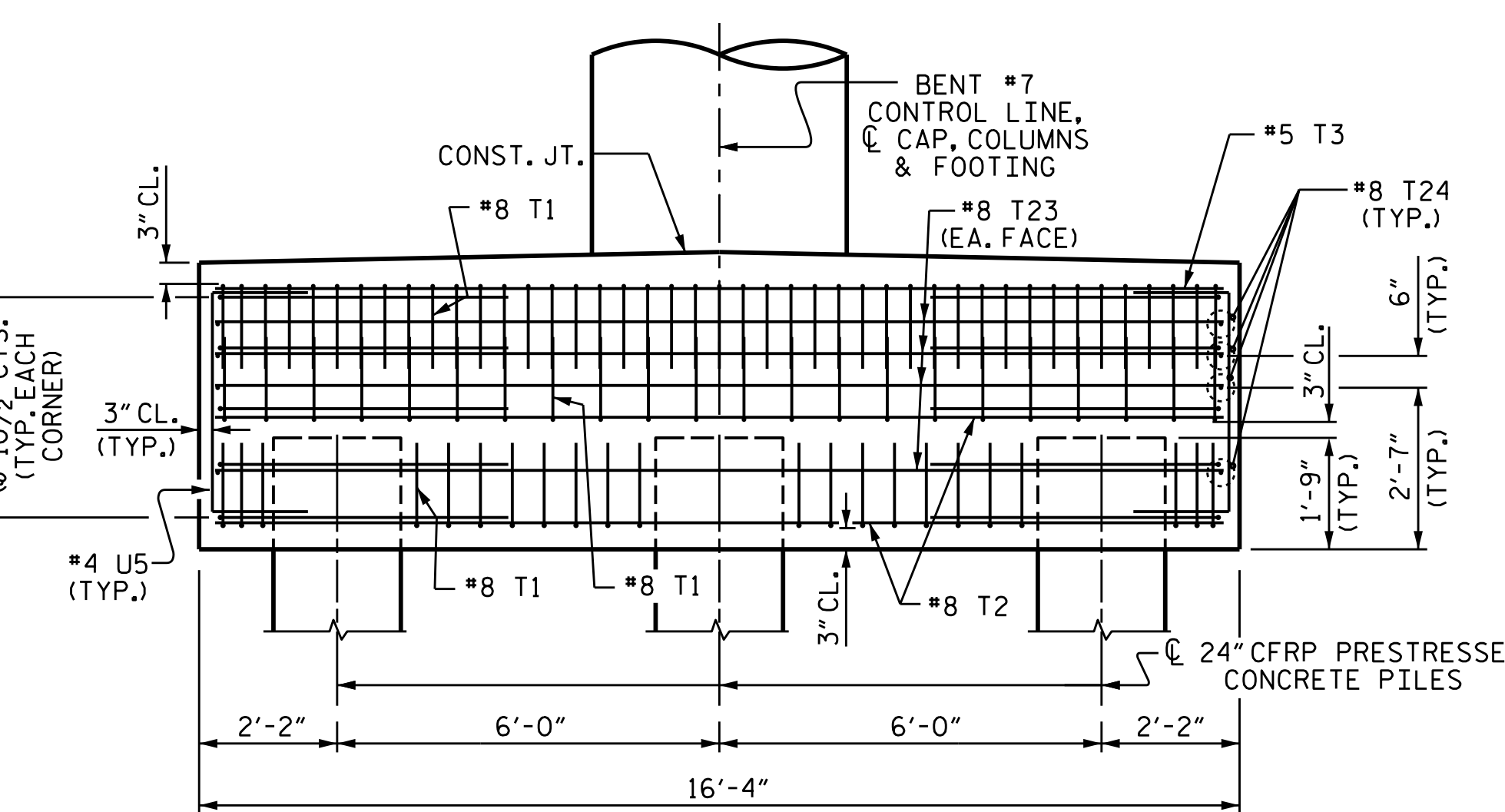
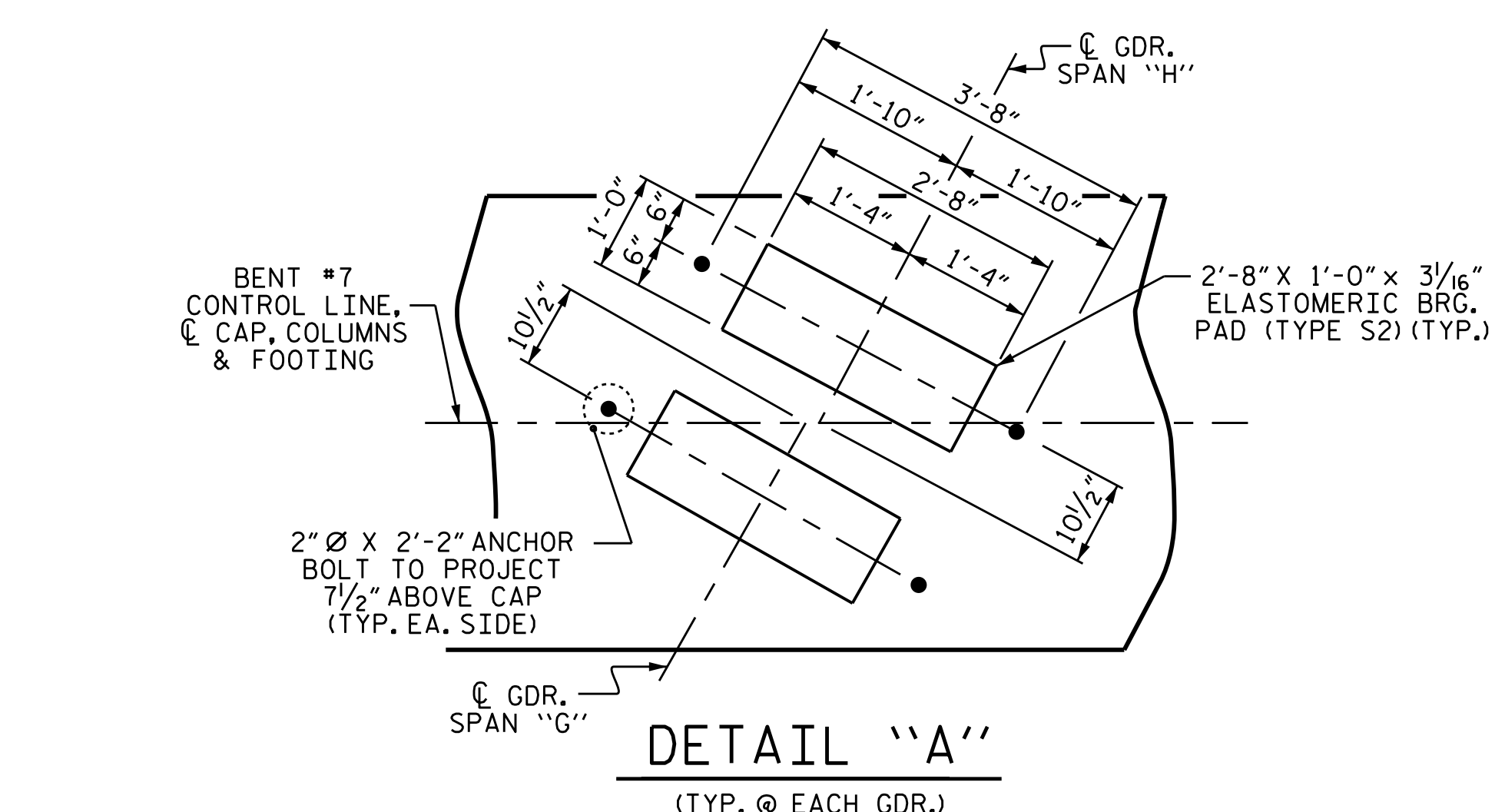
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-138
1			3			TOTAL SHEETS
2			4			194

DRAWN BY : I.L. AVERETTE DATE : 02/2019
 CHECKED BY : A.K. PATEL DATE : 12/2019
 DESIGN ENGINEER OF RECORD: A.K. PATEL DATE : 12/2019



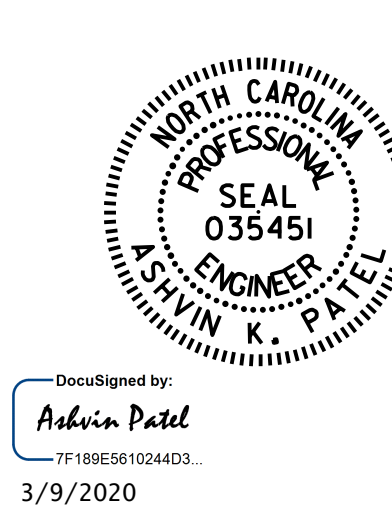
NOTES

STIRRUPS AND U1 BARS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.
 HOOKS ON "V" AND "M" BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING BARS.
 CONCRETE DISPLACED BY CONCRETE PILES HAS BEEN DEDUCTED FROM THE FOOTING CONCRETE QUANTITY.
 ALL REINFORCING IN THE CAP, COLUMNS AND FOOTING IS TO BE GLASS FIBER REINFORCED POLYMER (GFRP) BARS. FOR GLASS FIBER REINFORCED POLYMER BARS, SEE SPECIAL PROVISIONS.
 * THE FOOTING HAS A DROP OF 2" FROM THE CENTER OF THE FOOTING TO THE EDGE OF THE FOOTING TO ACCOMMODATE DRAINAGE.



PARTIAL END ELEVATION
 SEE ELEVATION FOR COLUMN REINFORCING BARS

PROJECT NO. B-4863
CARTERET COUNTY
 STATION: 34+75.00 -L-
 SHEET 1 OF 3



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 BENT #7

DRAWN BY: I.L. AVERETTE DATE: 02/2019
 CHECKED BY: A.K. PATEL DATE: 12/2019
 DESIGN ENGINEER OF RECORD: A.K. PATEL DATE: 12/2019

ELEVATION
 REINFORCING BAR DIMENSIONS AND DETAILS ARE TYPICAL FOR EACH COLUMN
 FOR ADDITIONAL REINFORCING BARS IN ENDS OF CAP, SEE VIEW X-X AND VIEW Y-Y ON SHEET 3 OF 3
 * #4 U5 BARS IN FOOTING NOT SHOWN, SEE SHEET 2 OF 3

DOCUMENT NOT CONSIDERED
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 SIGNATURES COMPLETED

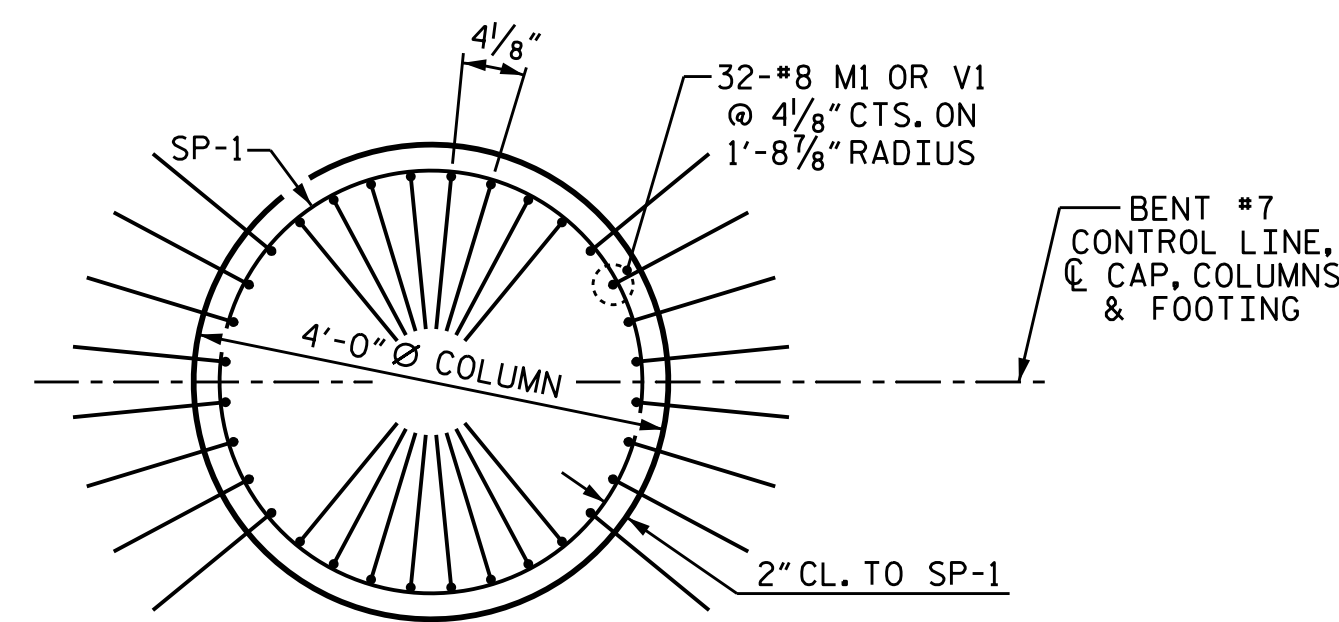
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-139
1			3			TOTAL SHEETS 194
2			4			

NOTES

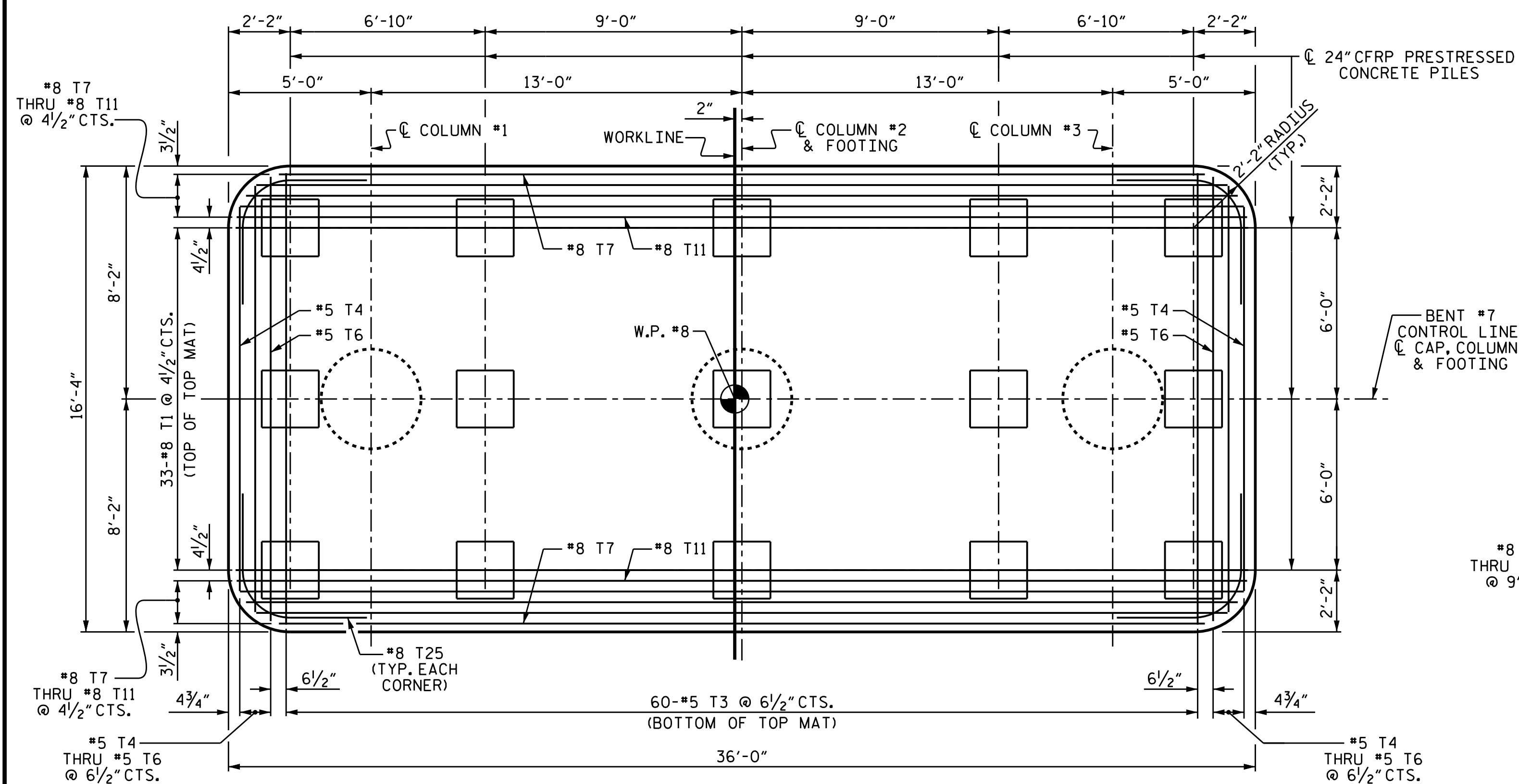
FOR #8 T23 AND #8 T24 BARS ON EACH FACE OF FOOTING BETWEEN BOTTOM AND TOP MAT OF REINFORCING BARS, SEE SHEET 1 OF 3.

FOR #8 T25 CORNER BAR SPACING, SEE SHEET 1 OF 3.

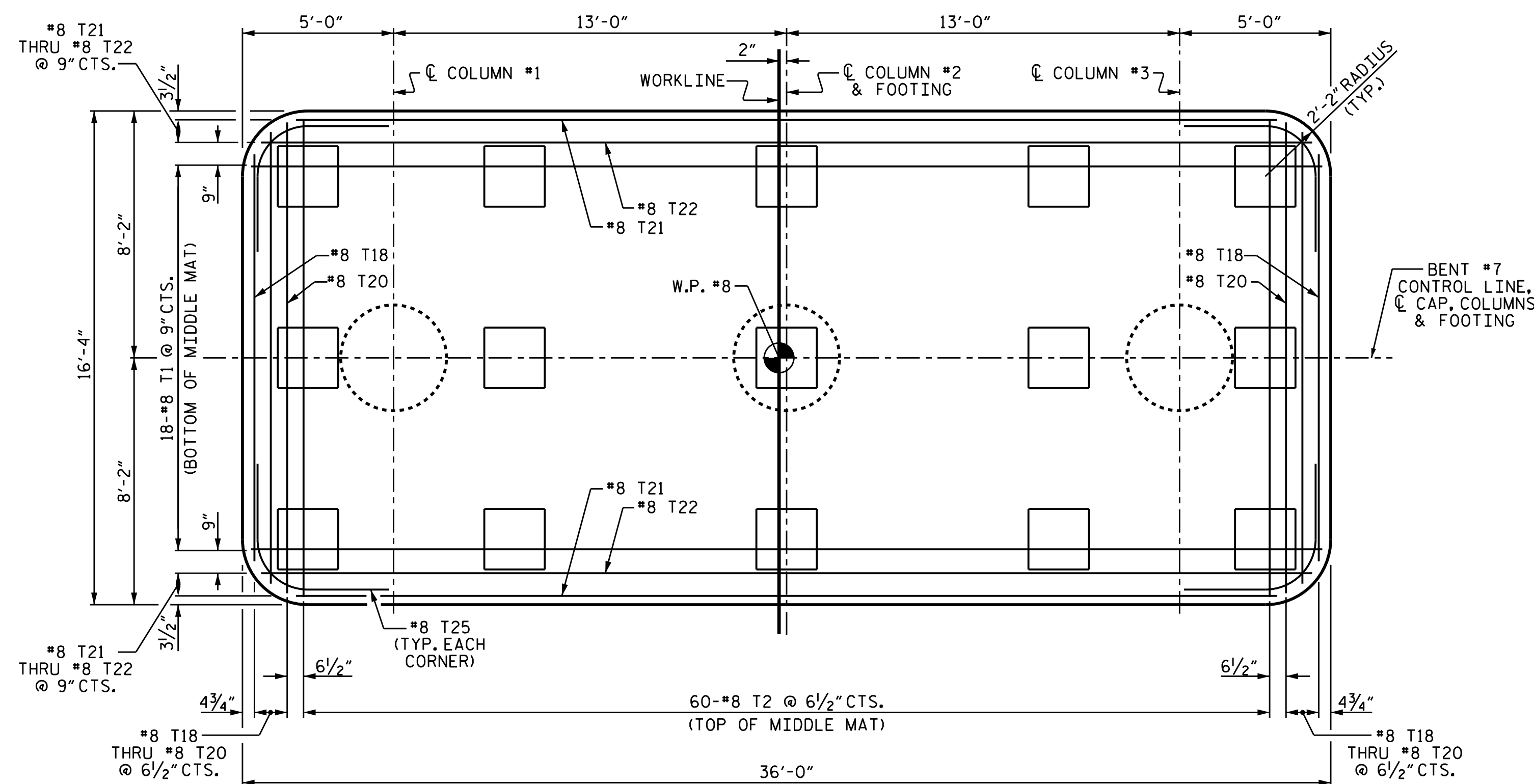
#4 U5 BARS MAY BE SHIFTED SLIGHTLY AS NECESSARY TO AVOID "T" BARS.



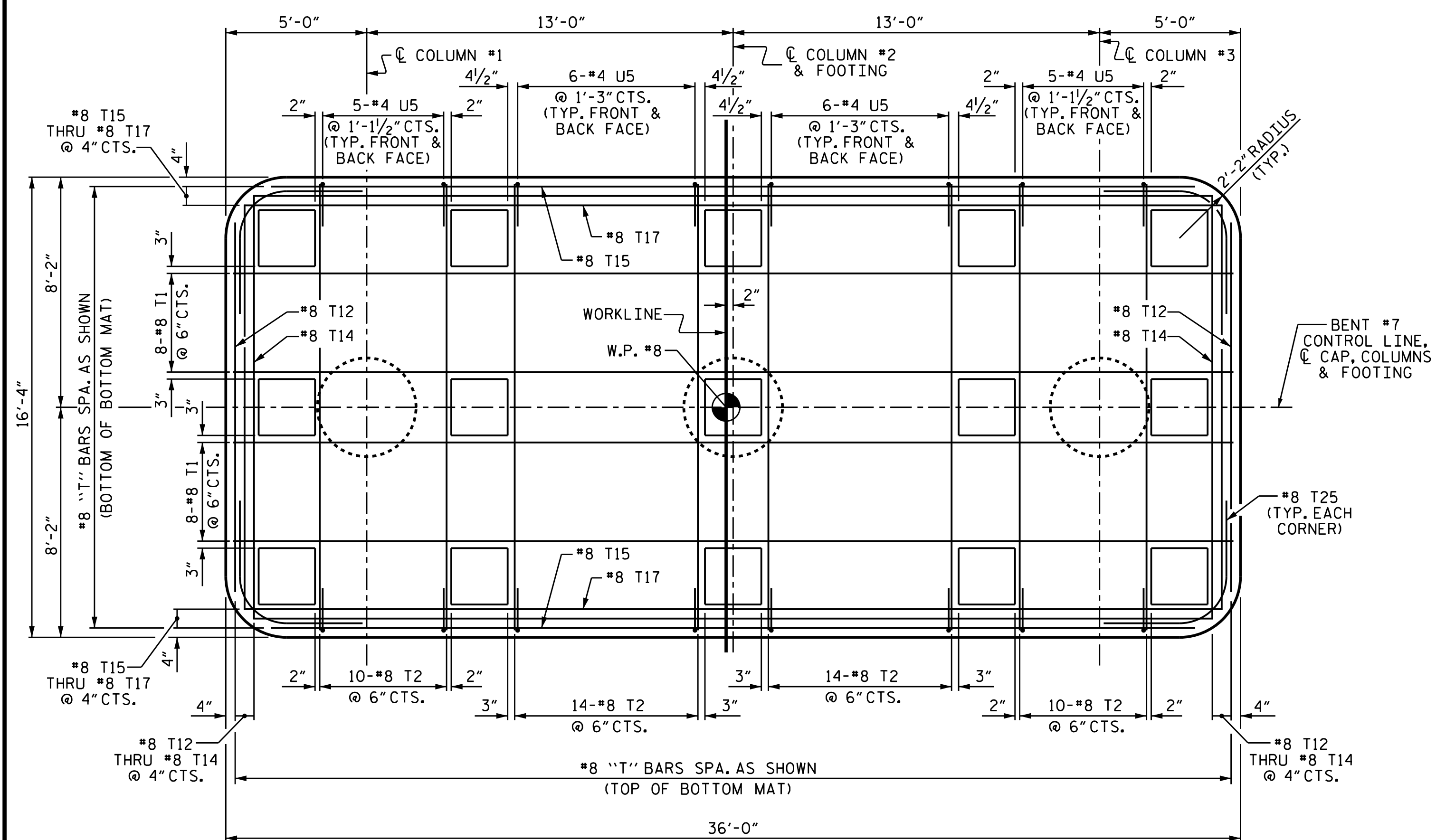
COLUMN REINFORCING DETAILS
TYPICAL FOR EACH COLUMN



PLAN OF COLUMNS & FOOTING
SHOWING TOP MAT OF REINFORCING BARS



PLAN OF COLUMNS & FOOTING
SHOWING MIDDLE MAT OF REINFORCING BARS



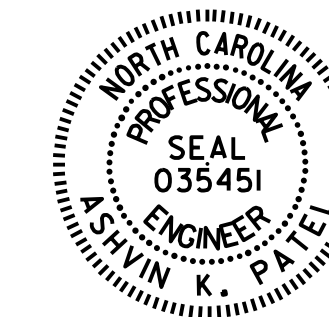
PLAN OF COLUMNS & FOOTING
SHOWING BOTTOM MAT OF REINFORCING BARS
AND TEMPERATURE REINFORCEMENT

PROJECT NO. B-4863
CARTERET COUNTY
STATION: 34+75.00 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
BENT #7

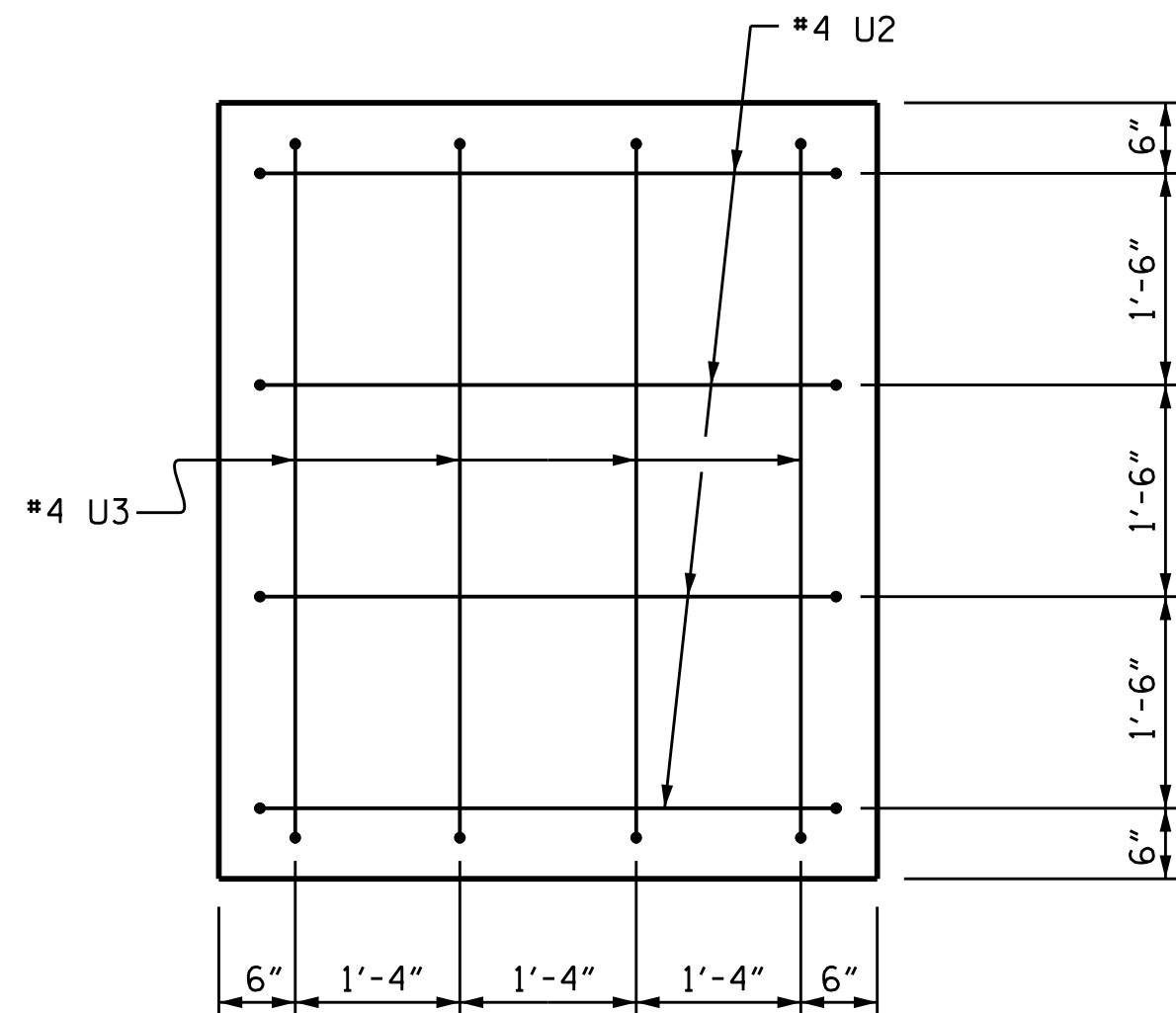


DocuSigned by:
Ashwin Patel
7F189E6E10244E3...
3/9/2020

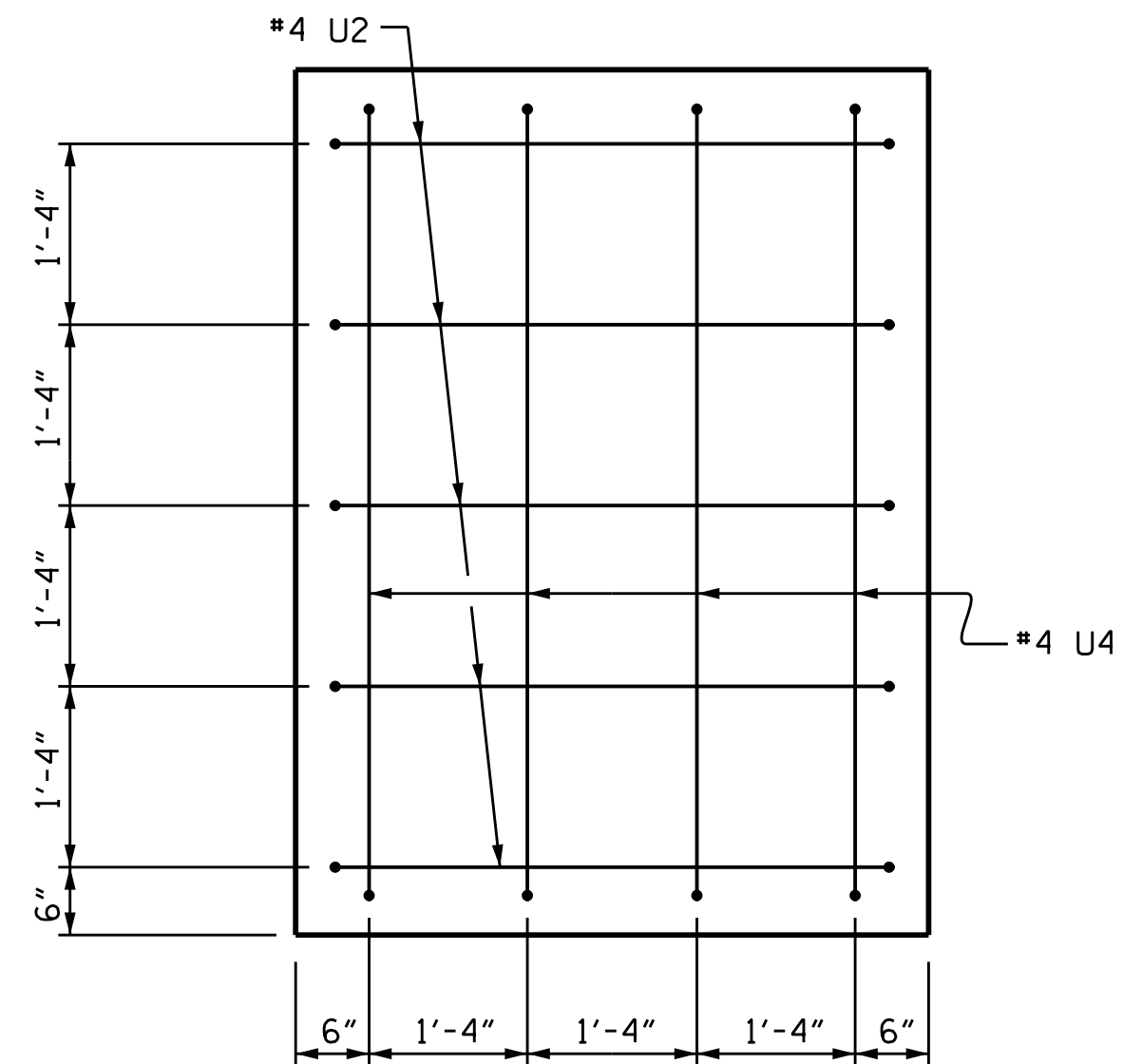
DRAWN BY: I.L. AVERETTE DATE: 02/2019
CHECKED BY: A.K. PATEL DATE: 12/2019
DESIGN ENGINEER OF RECORD: A.K. PATEL DATE: 12/2019

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FINAL UNLESS ALL
SIGNATURES COMPLETED

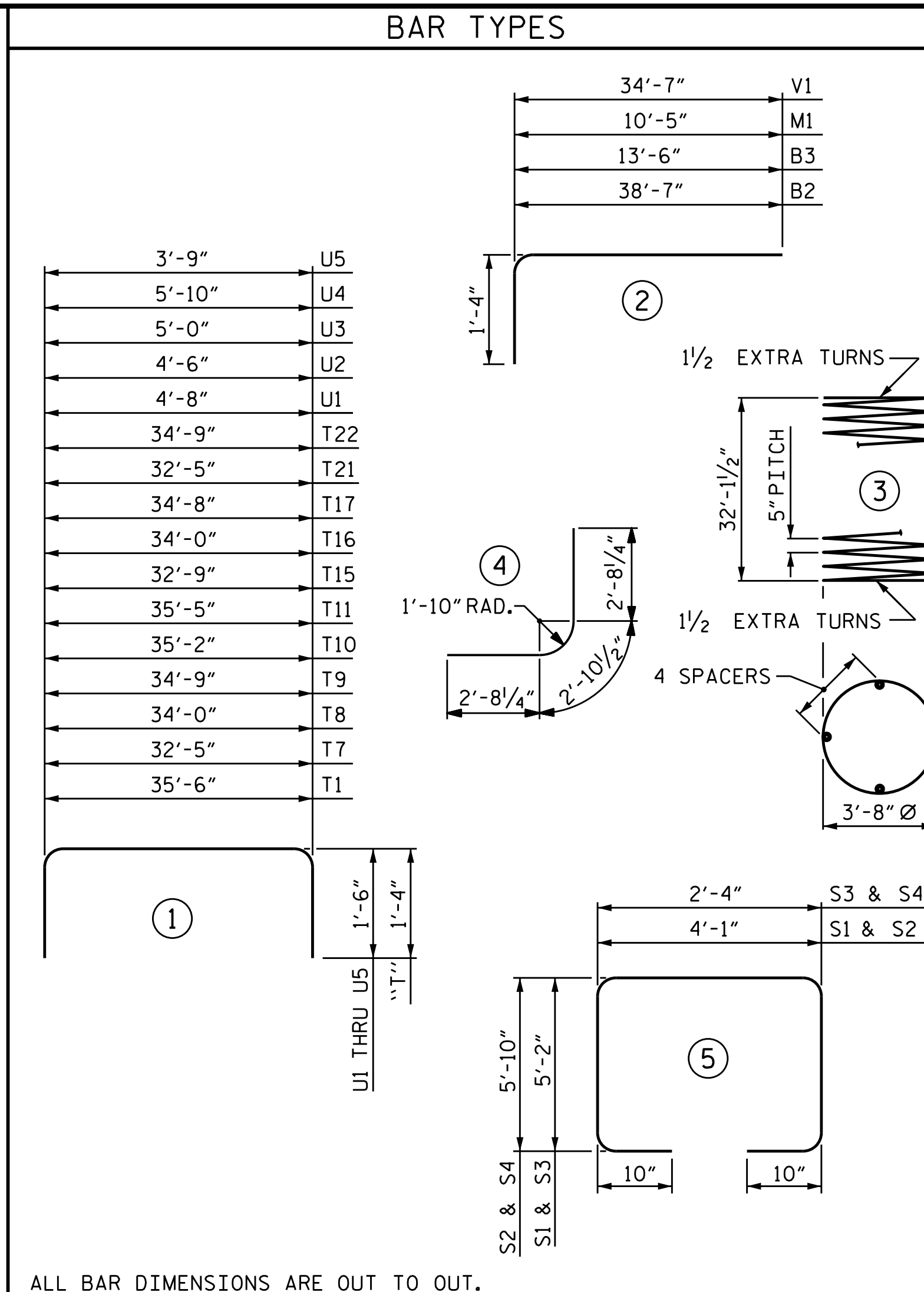
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			S1-140
2			4			194



VIEW X-X

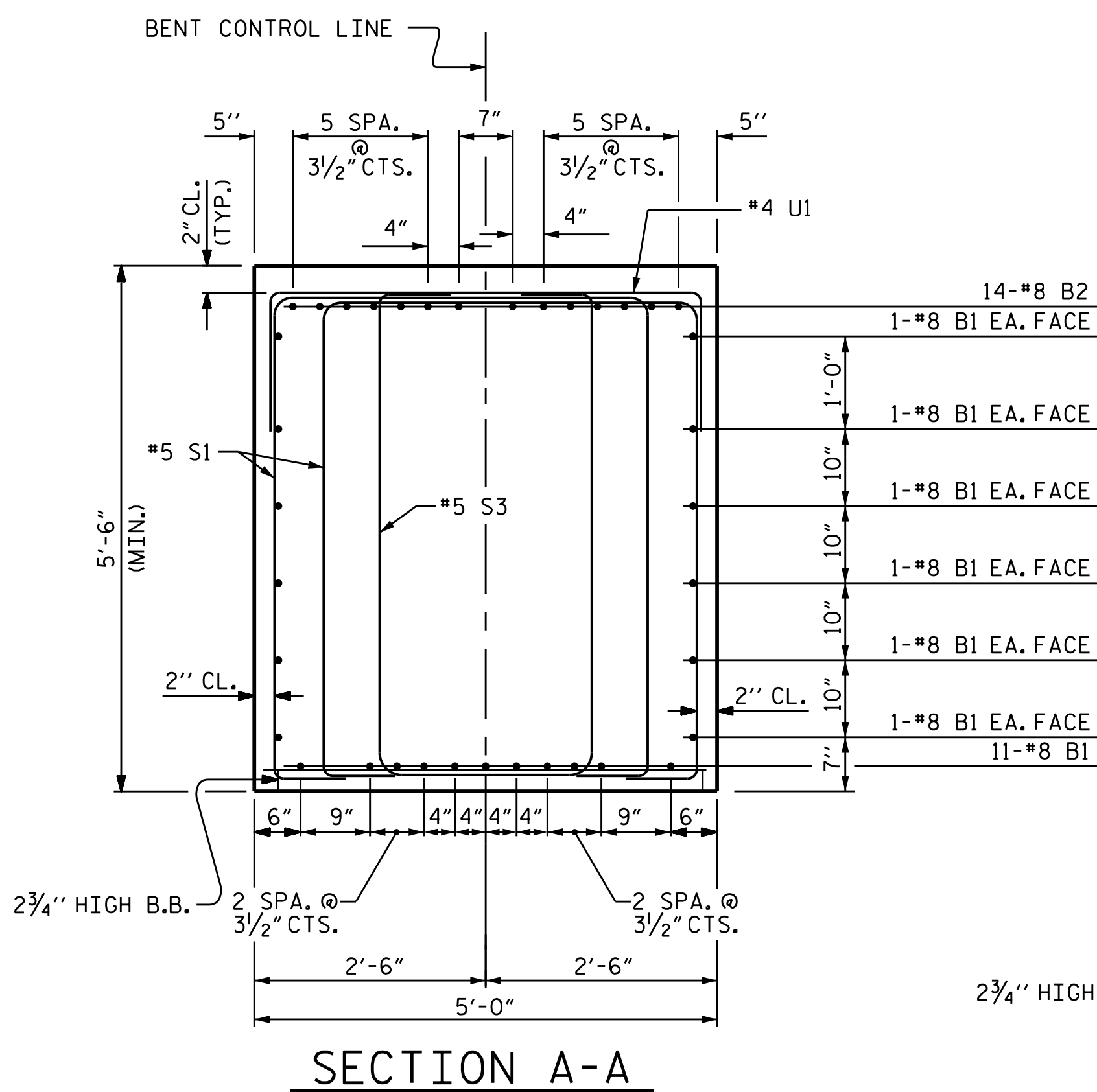


VIEW Y-Y

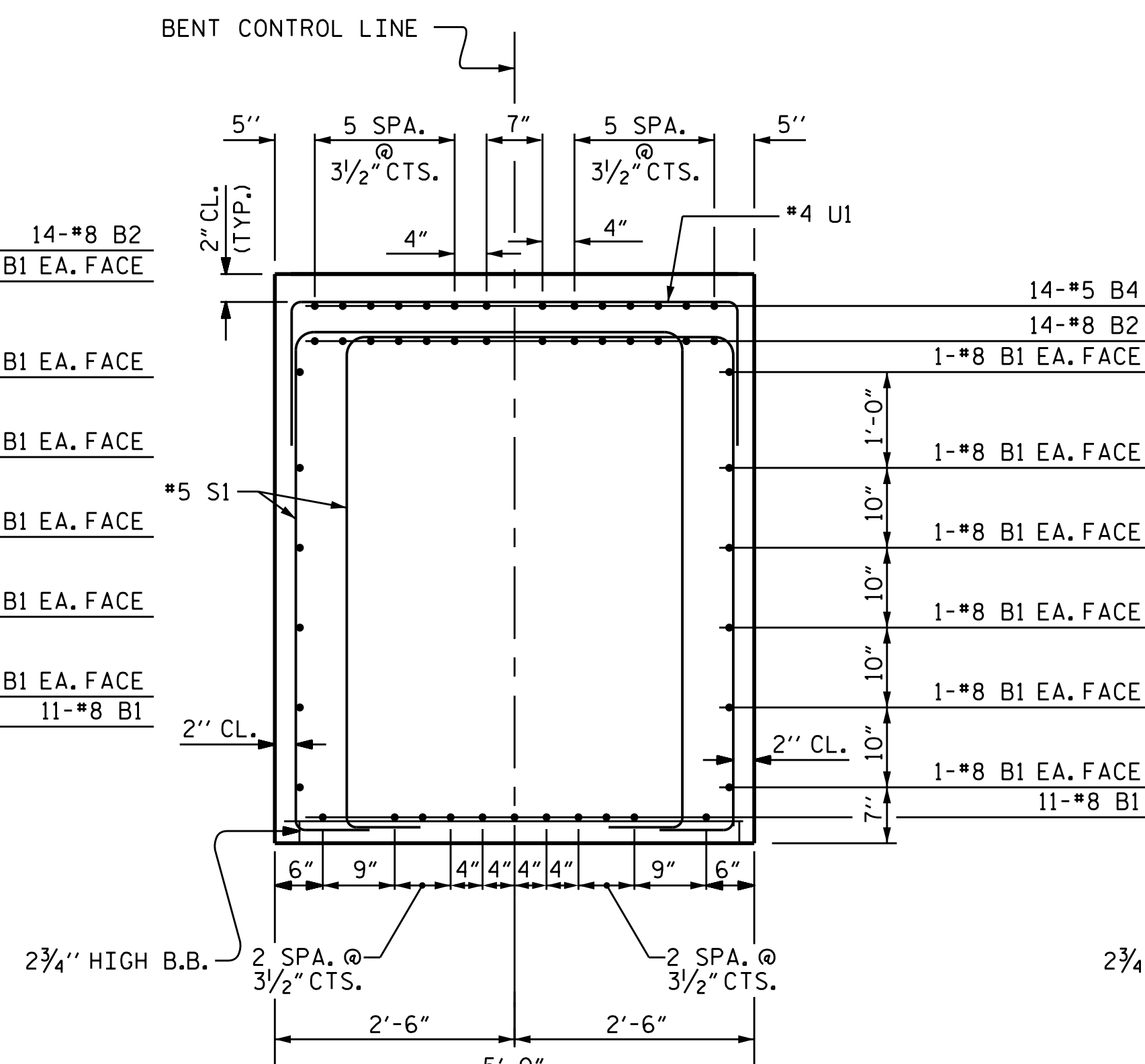


ALL BAR DIMENSIONS ARE OUT TO OUT.

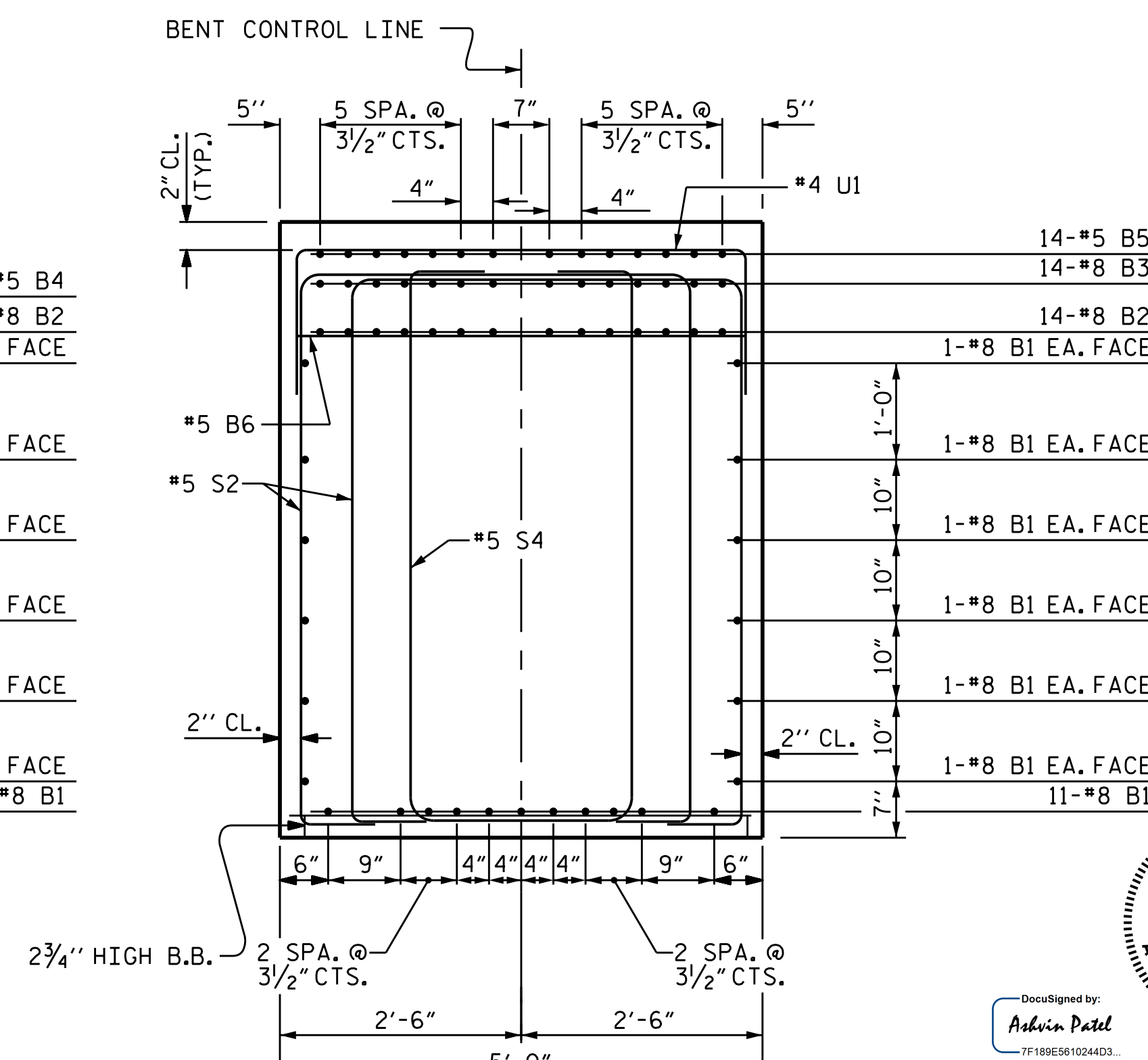
BILL OF MATERIAL											
BENT #7											
BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR NO.	NO.	SIZE	TYPE	LENGTH	LENGTH
B1	23	#8	STR	38'-8"	889'-4"	U1	51	#4	1	7'-8"	391'-0"
B2	14	#8	2	39'-11"	558'-10"	U2	9	#4	1	7'-6"	67'-6"
B3	14	#8	2	14'-10"	207'-8"	U3	4	#4	1	8'-0"	32'-0"
B4	14	#5	STR	8'-4"	116'-8"	U4	4	#4	1	8'-10"	35'-4"
B5	14	#5	STR	5'-2"	72'-4"	U5	44	#4	1	6'-9"	297'-0"
B6	3	#5	STR	4'-8"	14'-0"						
M1	96	#8	2	11'-9"	1128'-0"	V1	96	#8	2	35'-11"	3448'-0"
S1	72	#5	5	16'-1"	1158'-0"	SP-1	3	#5	3	922'-4"	2767'-0"
S2	44	#5	5	17'-5"	766'-4"	TOTAL LIN. FT. # 4 BARS				822.8	
S3	5	#5	5	14'-4"	71'-8"	TOTAL LIN. FT. # 5 BARS				6082.0	
S4	5	#5	5	15'-8"	78'-4"	TOTAL LIN. FT. # 8 BARS				11937.2	
GLASS FIBER REINFORCED POLYMER BARS TOTAL 18842.00 LIN. FT.											
CLASS AA CONCRETE BREAKDOWN											
POUR #1 FOOTING										95.8 C.Y.	
POUR #2 COLUMNS										44.5 C.Y.	
POUR #3 CAP										42.7 C.Y.	
TOTAL CLASS AA CONCRETE										183.0 C.Y.	



SECTION A-A



SECTION B-B



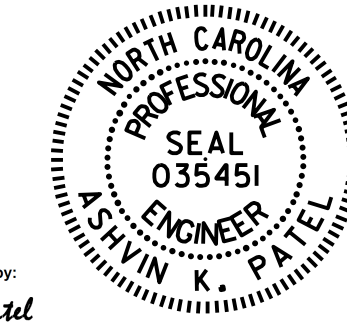
SECTION C-C

PROJECT NO. B-4863
CARTERET COUNTY
 STATION: 34+75.00 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 BENT #7

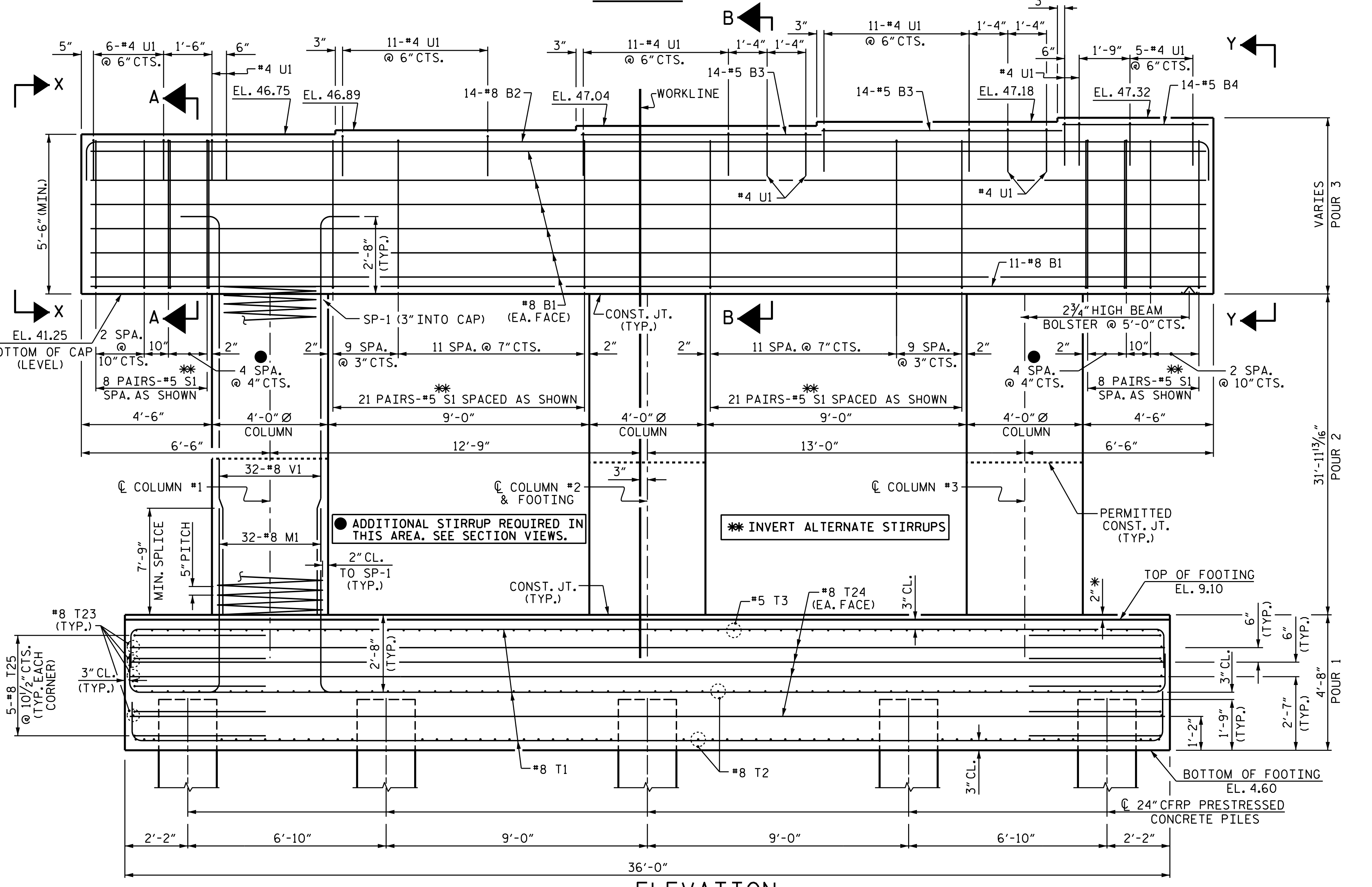
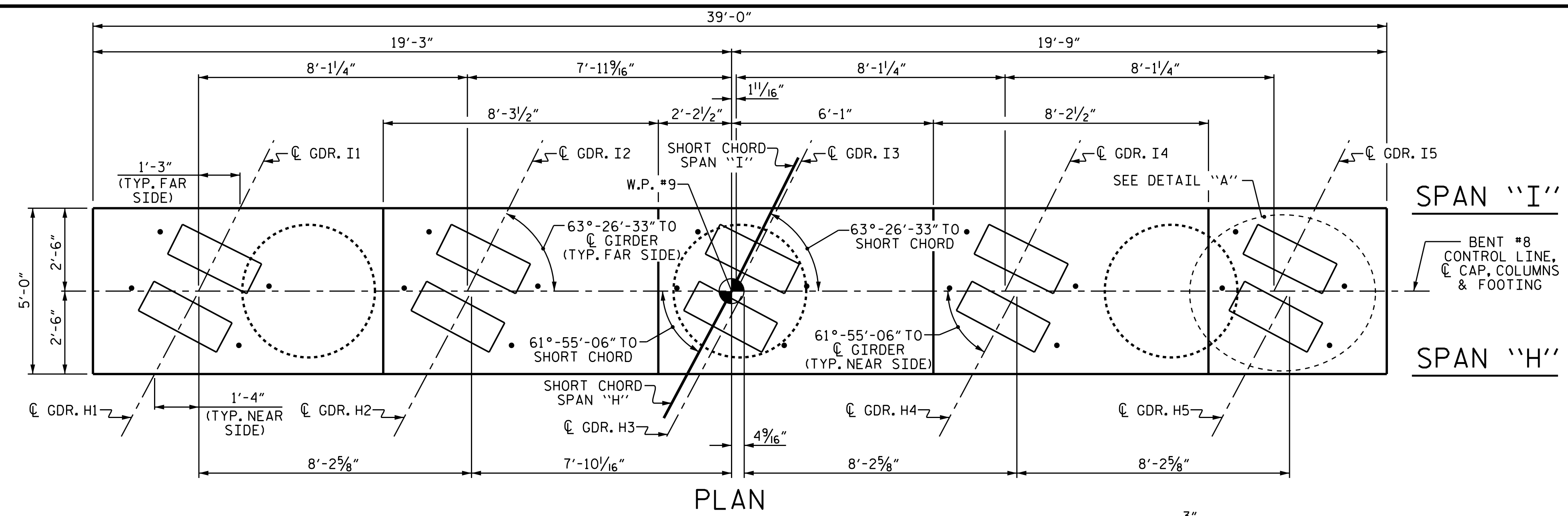


DocuSigned by:
 Ashwin Patel
 7F189E8010244D3
 4/16/2021

DRAWN BY : I.L. AVERETTE DATE : 02/2019
 CHECKED BY : A.K. PATEL DATE : 12/2019
 DESIGN ENGINEER OF RECORD: A.K. PATEL DATE : 12/2019

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 SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-141
1			3			TOTAL SHEETS
2			4			194



NOTES

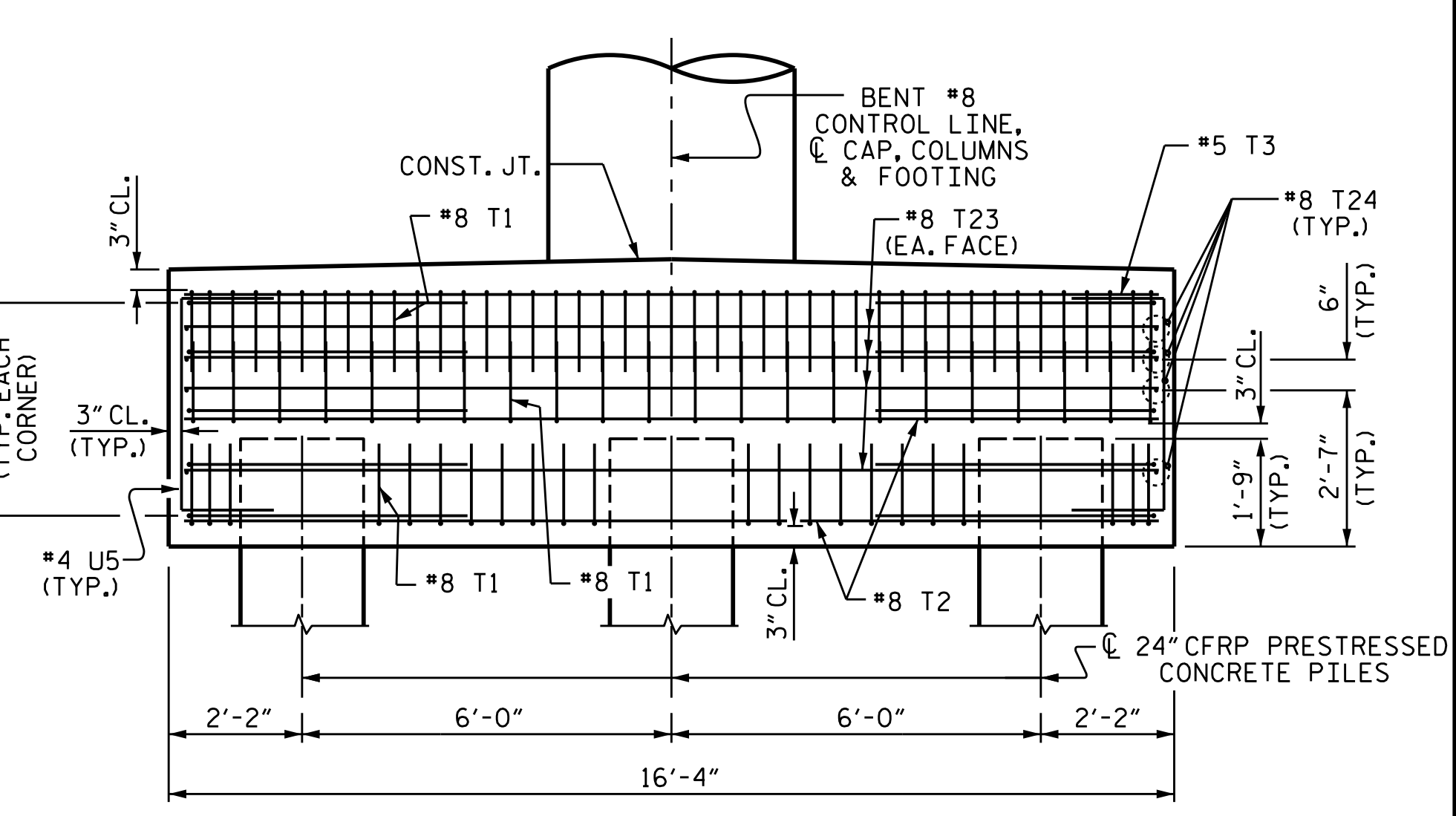
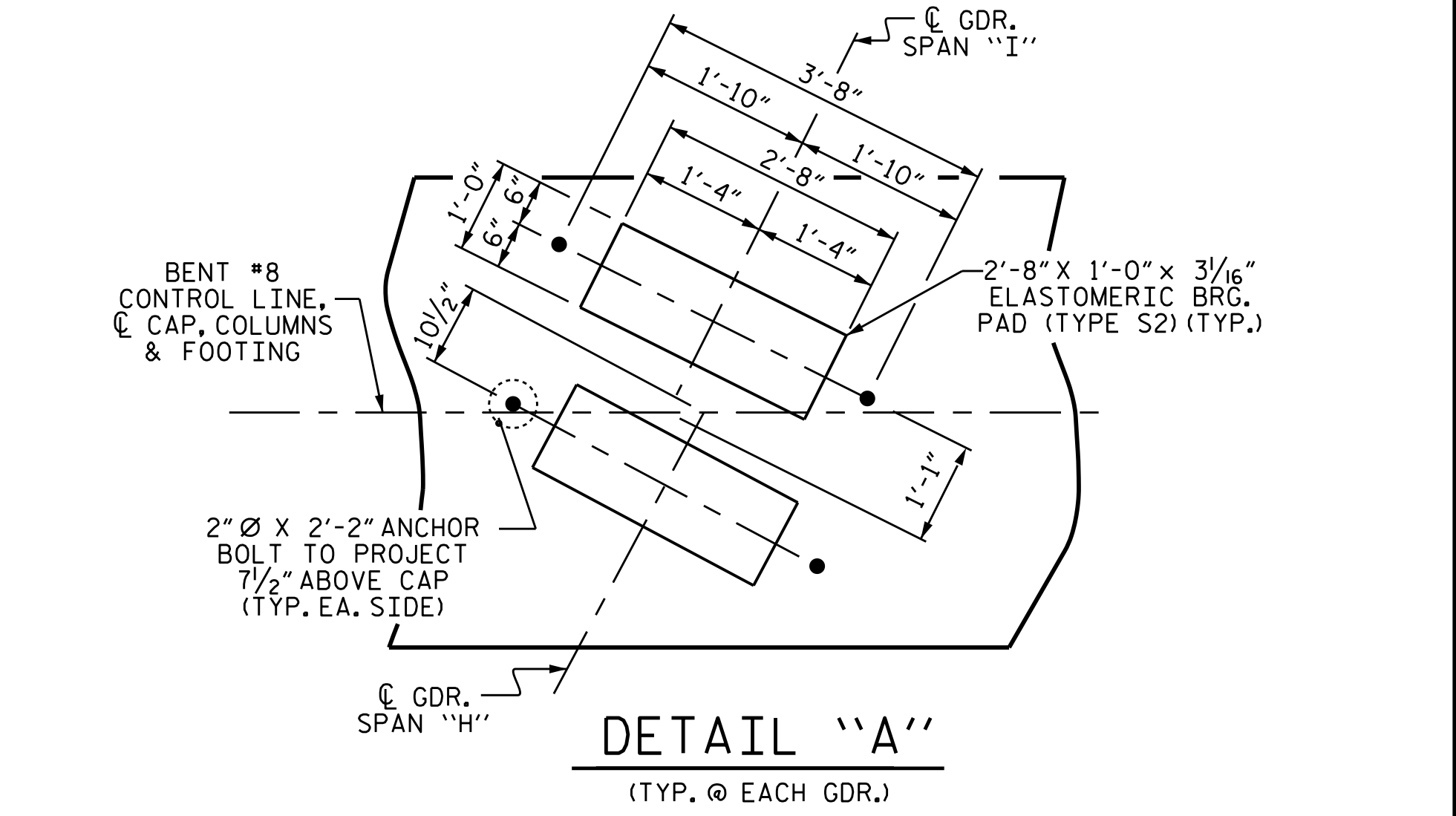
STIRRUPS AND U1 BARS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.

HOOKS ON "V" AND "M" BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING BARS.

CONCRETE DISPLACED BY CONCRETE PILES HAS BEEN DEDUCTED FROM THE FOOTING CONCRETE QUANTITY.

ALL REINFORCING IN THE CAP, COLUMNS AND FOOTING IS TO BE GLASS FIBER REINFORCED POLYMER (GFRP) BARS. FOR GLASS FIBER REINFORCED POLYMER BARS, SEE SPECIAL PROVISIONS.

* THE FOOTING HAS A DROP OF 2" FROM THE CENTER OF THE FOOTING TO THE EDGE OF THE FOOTING TO ACCOMMODATE DRAINAGE.

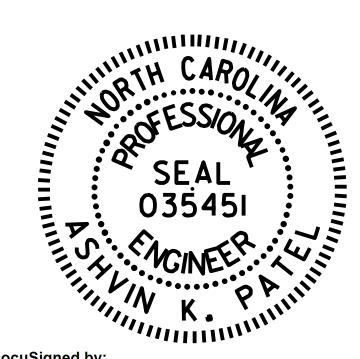


PROJECT NO. B-4863

CARTERET COUNTY

STATION: 34+75.00 -L-

SHEET 1 OF 3



DocuSigned by:
Ashwin Patel
7F189E5610244E3
3/9/2020

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

BENT #8

DRAWN BY: I.L. AVERETTE DATE: 02/2019

CHECKED BY: A.K. PATEL DATE: 12/2019

DESIGN ENGINEER OF RECORD: A.K. PATEL DATE: 12/2019

REINFORCING BAR DIMENSIONS AND DETAILS ARE TYPICAL FOR EACH COLUMN

FOR ADDITIONAL REINFORCING BARS IN ENDS OF CAP, SEE VIEW X-X AND VIEW Y-Y ON SHEET 3 OF 3

*4 U5 BARS IN FOOTING NOT SHOWN, SEE SHEET 2 OF 3

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

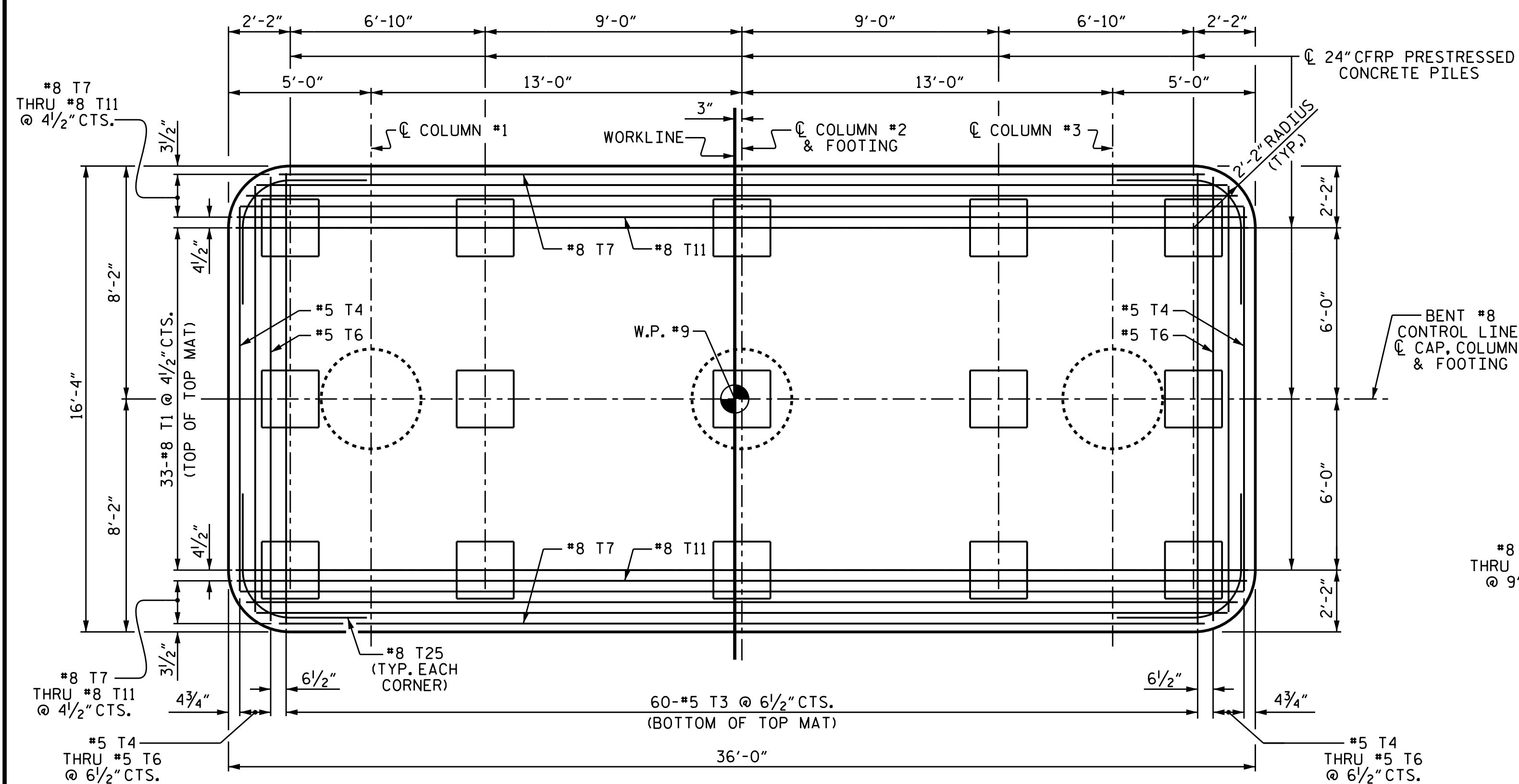
REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-142	
1			3			TOTAL SHEETS 194	
2			4				

NOTES

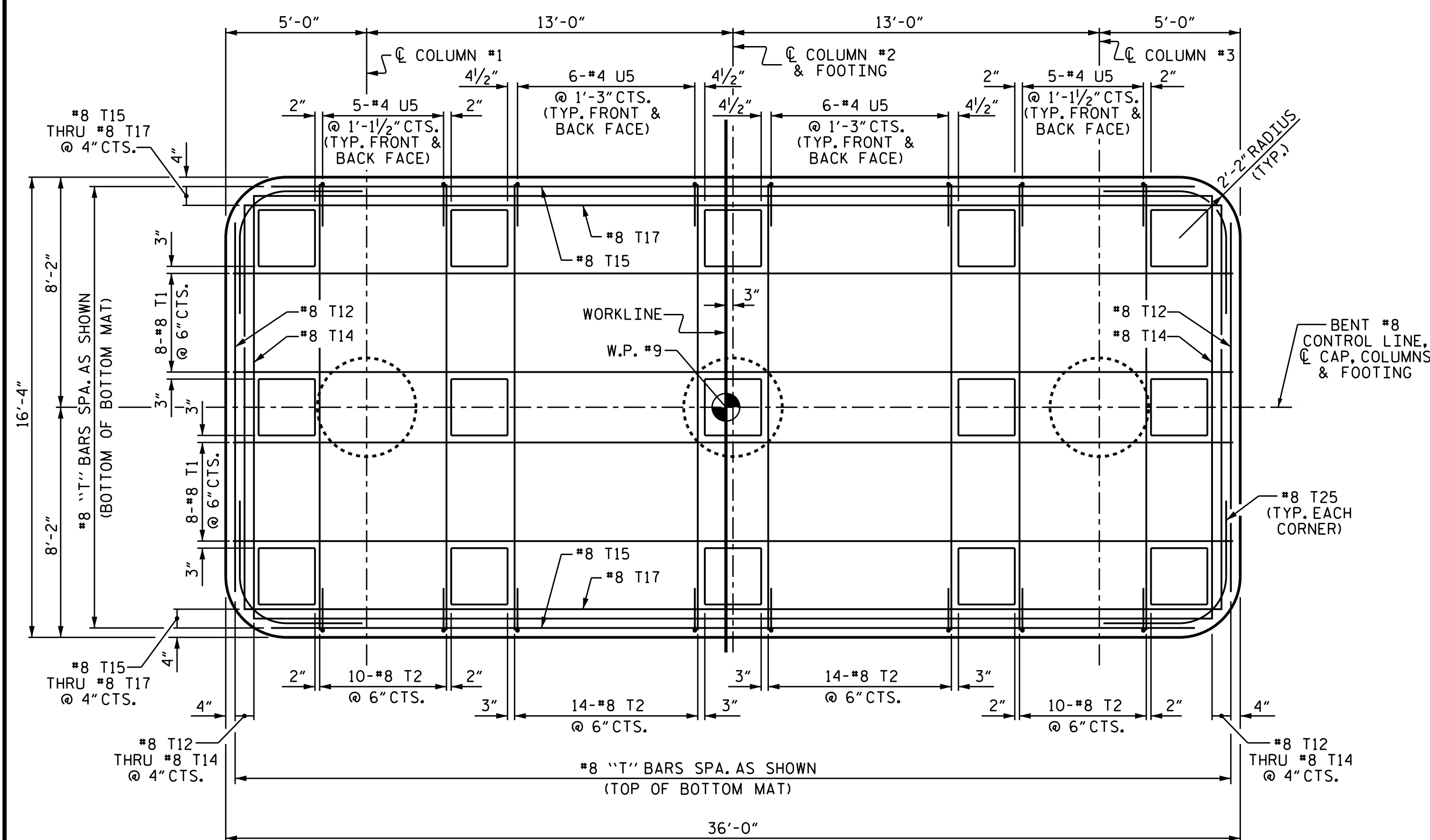
FOR #8 T23 AND #8 T24 BARS ON EACH FACE OF FOOTING BETWEEN BOTTOM AND TOP MAT OF REINFORCING BARS, SEE SHEET 1 OF 3.

FOR #8 T25 CORNER BAR SPACING, SEE SHEET 1 OF 3.

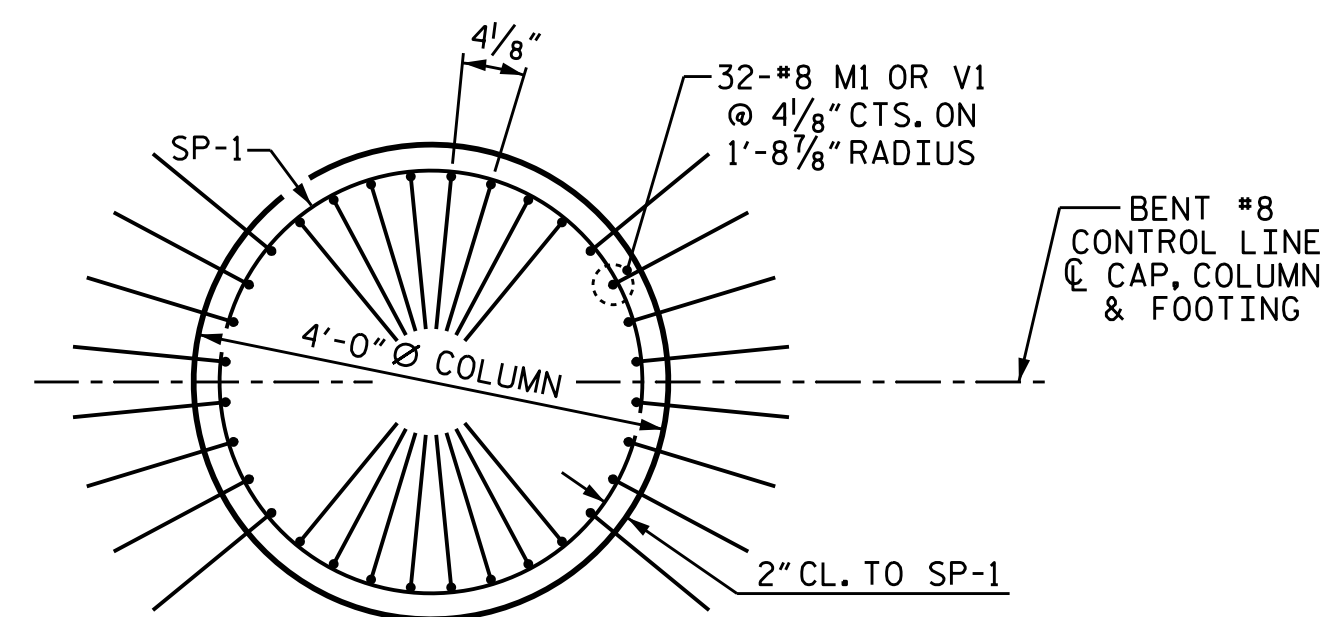
#4 U5 BARS MAY BE SHIFTED SLIGHTLY AS NECESSARY TO AVOID "T" BARS.



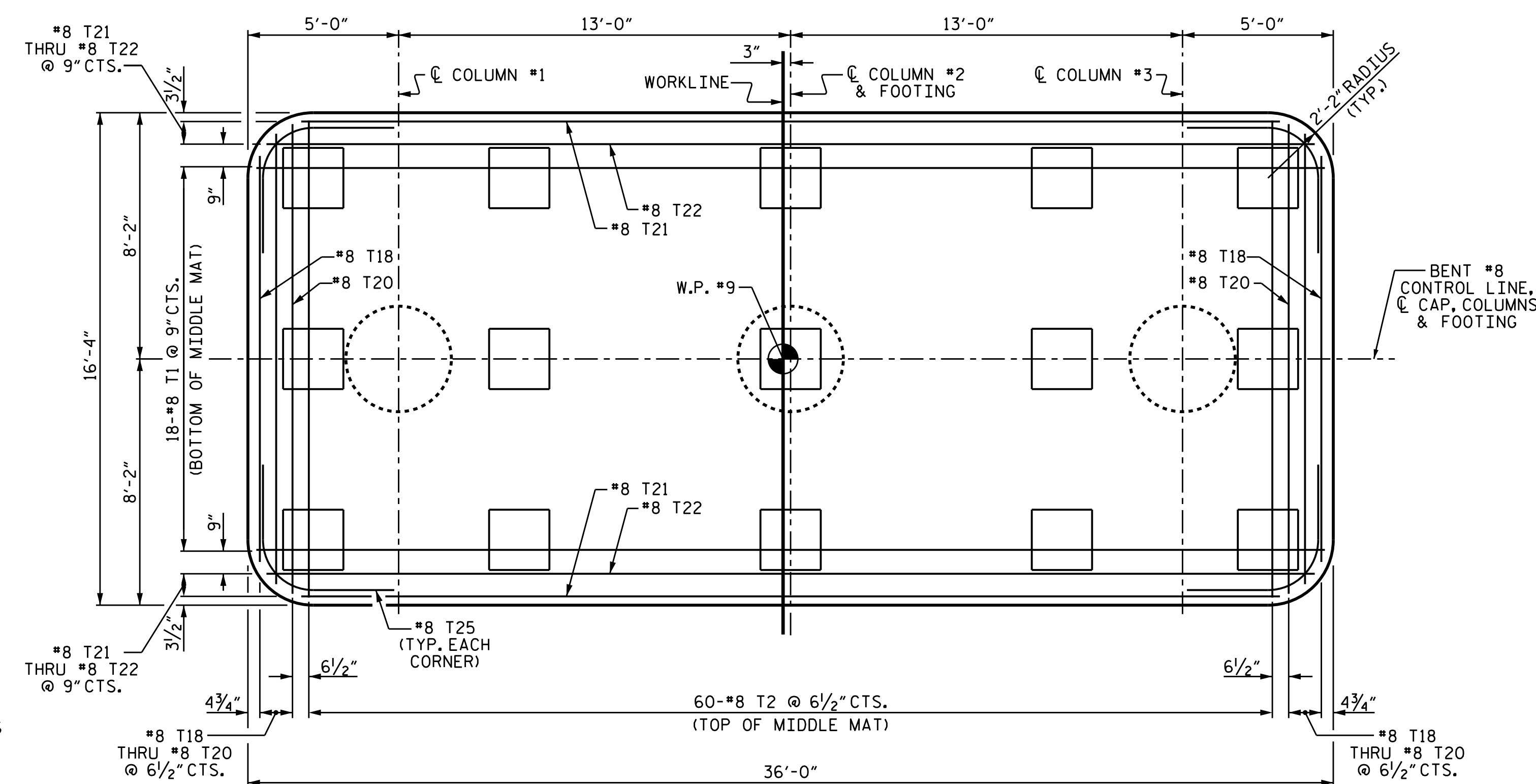
PLAN OF COLUMNS & FOOTING
SHOWING TOP MAT OF REINFORCING BARS



PLAN OF COLUMNS & FOOTING
SHOWING BOTTOM MAT OF REINFORCING BARS
AND TEMPERATURE REINFORCEMENT



COLUMN REINFORCING DETAILS
TYPICAL FOR EACH COLUMN



PLAN OF COLUMNS & FOOTING
SHOWING MIDDLE MAT OF REINFORCING BARS

PROJECT NO. B-4863
CARTERET COUNTY
STATION: 34+75.00 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
BENT #8

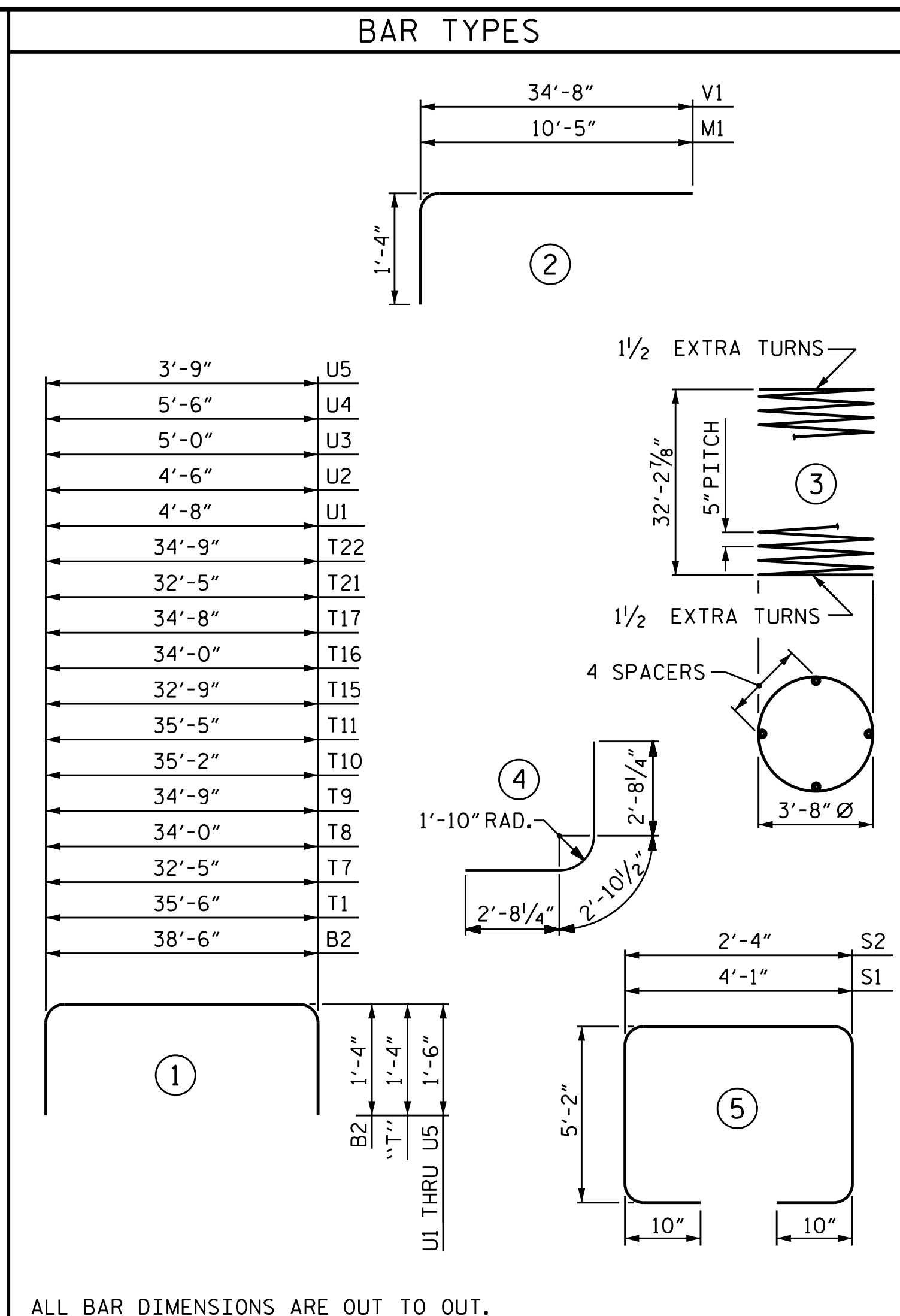
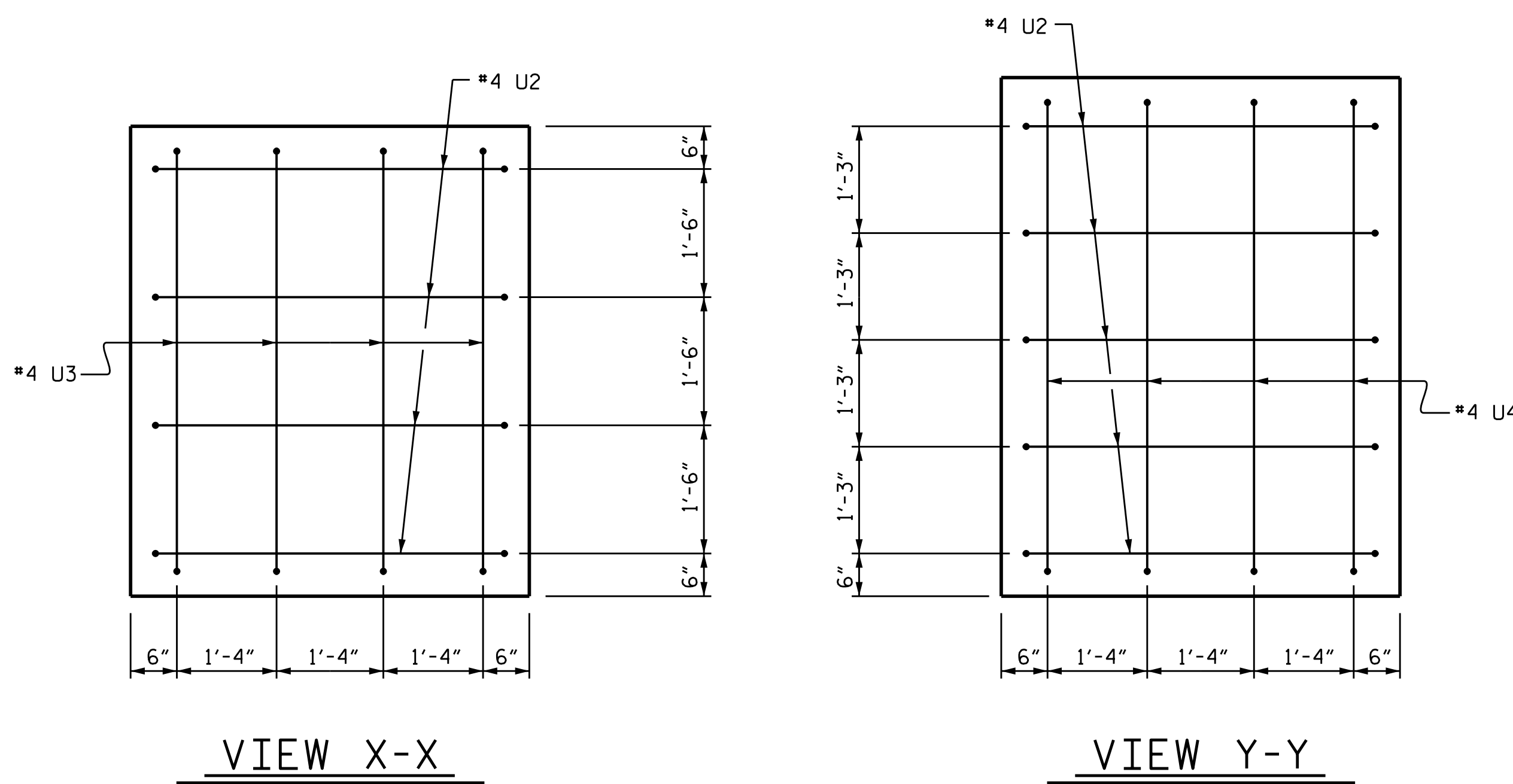


DocuSigned by:
Ashwin Patel
7F189E5E10244E3
3/9/2020

DRAWN BY : I.L. AVERETTE DATE : 02/2019
CHECKED BY : A. K. PATEL DATE : 12/2019
DESIGN ENGINEER OF RECORD: A.K. PATEL DATE : 12/2019

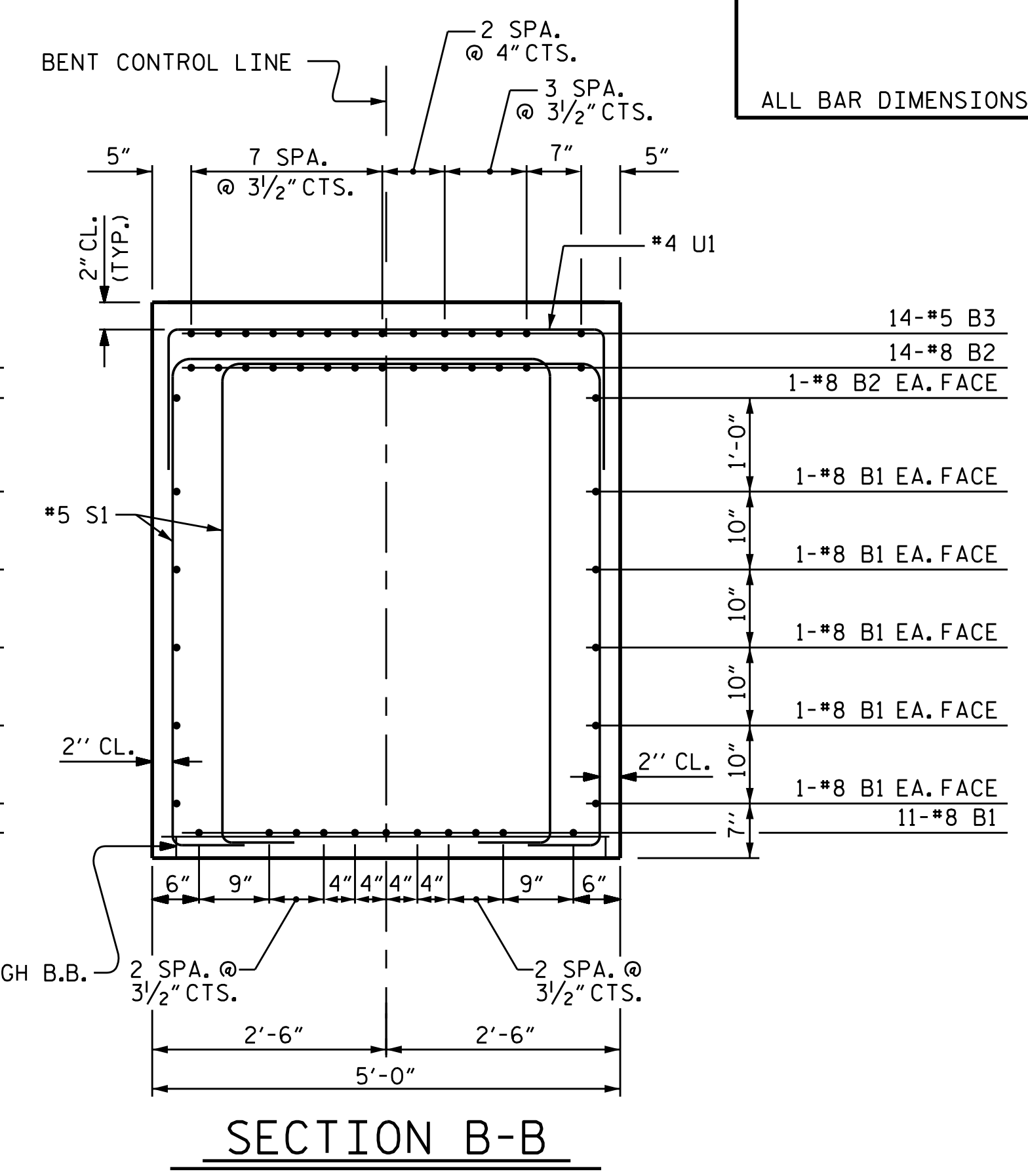
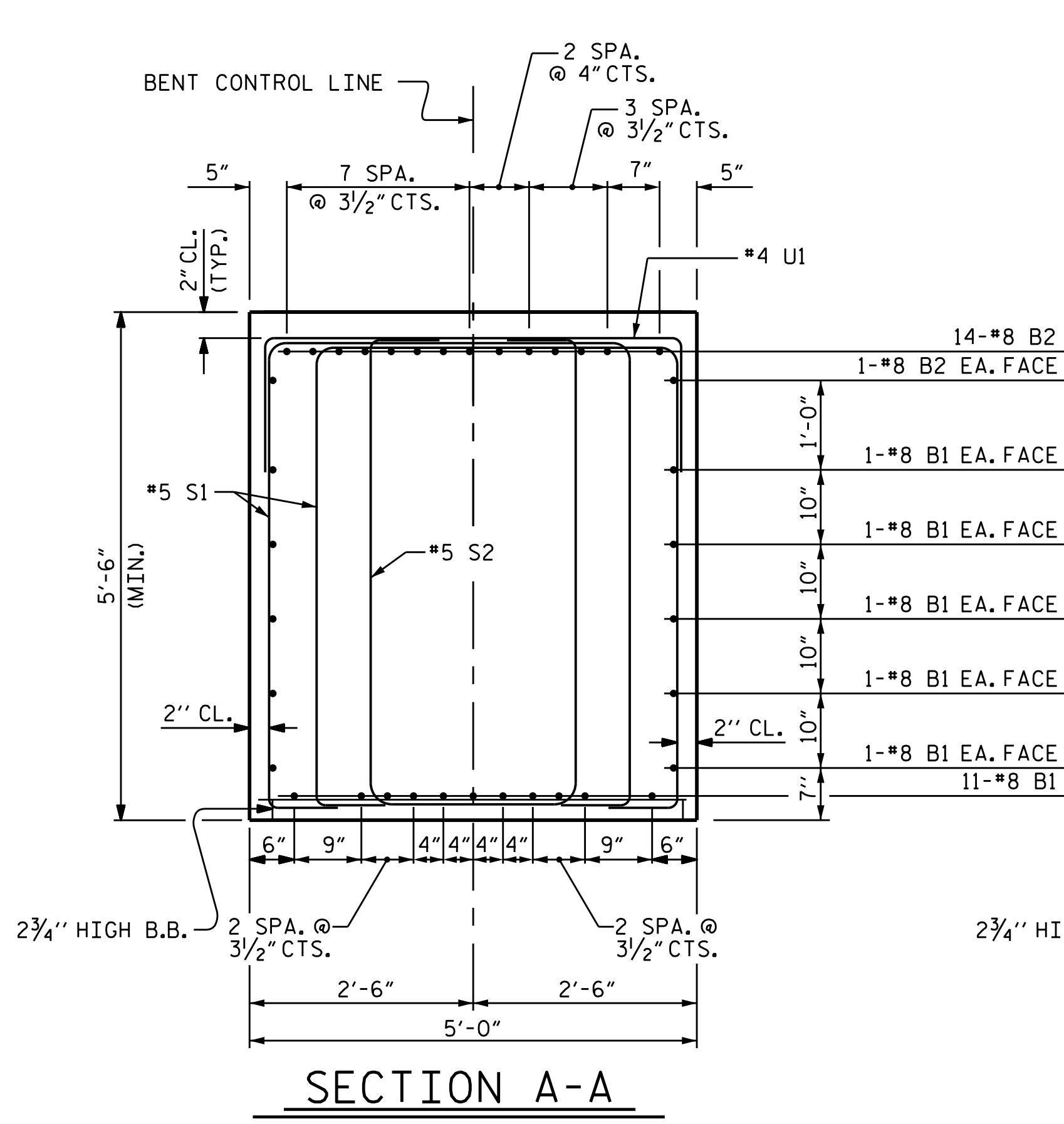
DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			S1-143
2			4			194

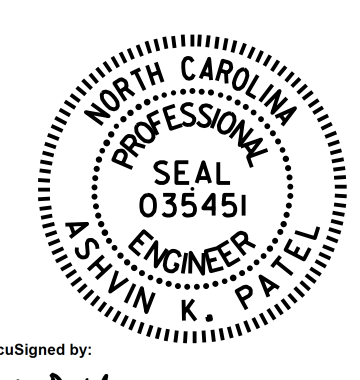


BENT #8

BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR NO.	NO.	SIZE	TYPE	LENGTH	LENGTH
B1	23	#8	STR	38'-8"	889'-4"	T23	8	#8	STR	13'-5"	107'-4"
B2	14	#8	1	41'-2"	576'-4"	T24	8	#8	STR	32'-5"	259'-4"
B3	28	#5	STR	8'-3"	231'-0"	T25	20	#8	4	8'-3"	165'-0"
B4	14	#5	STR	5'-0"	70'-0"						
						U1	52	#4	1	7'-8"	398'-8"
						M1	96	#8	2	11'-9"	1128'-0"
						U2	9	#4	1	7'-6"	67'-6"
						U3	4	#4	1	8'-0"	32'-0"
						S1	116	#5	5	16'-1"	1865'-8"
						S2	10	#5	5	14'-4"	143'-4"
						U4	4	#4	1	8'-6"	34'-0"
						U5	44	#4	1	6'-9"	297'-0"
						T1	67	#8	1	38'-2"	2557'-2"
						T2	108	#8	STR	15'-10"	1710'-0"
						T3	60	#5	STR	15'-10"	950'-0"
						T4	2	#5	STR	13'-5"	26'-10"
						T5	2	#5	STR	14'-11"	29'-10"
						T6	2	#5	STR	15'-6"	31'-0"
						T7	2	#8	1	35'-1"	70'-2"
						T8	2	#8	1	36'-8"	73'-4"
						T9	2	#8	1	37'-5"	74'-10"
						T10	2	#8	1	37'-10"	75'-8"
						T11	2	#8	1	38'-1"	76'-2"
						T12	2	#8	STR	13'-1"	26'-2"
						T13	2	#8	STR	14'-4"	28'-8"
						T14	2	#8	STR	15'-0"	30'-0"
						T15	2	#8	1	35'-5"	70'-10"
						T16	2	#8	1	36'-8"	73'-4"
						T17	2	#8	1	37'-4"	74'-8"
						T18	2	#8	STR	13'-5"	26'-10"
						T19	2	#8	STR	14'-11"	29'-10"
						T20	2	#8	STR	15'-6"	31'-0"
						T21	2	#8	1	35'-1"	70'-2"
						T22	2	#8	1	37'-5"	74'-10"
TOTAL LIN. FT. # 4 BARS 829.2 TOTAL LIN. FT. # 5 BARS 6122.9 TOTAL LIN. FT. # 8 BARS 11755.0 GLASS FIBER REINFORCED POLYMER BARS 18707.08 LIN. FT. CLASS AA CONCRETE BREAKDOWN POUR #1 FOOTING 95.8 C.Y. POUR #2 COLUMNS 44.7 C.Y. POUR #3 CAP 41.6 C.Y. TOTAL CLASS AA CONCRETE 182.1 C.Y.											



PROJECT NO. B-4863
CARTERET COUNTY
 STATION: 34+75.00 -L-
 SHEET 3 OF 3



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 BENT #8

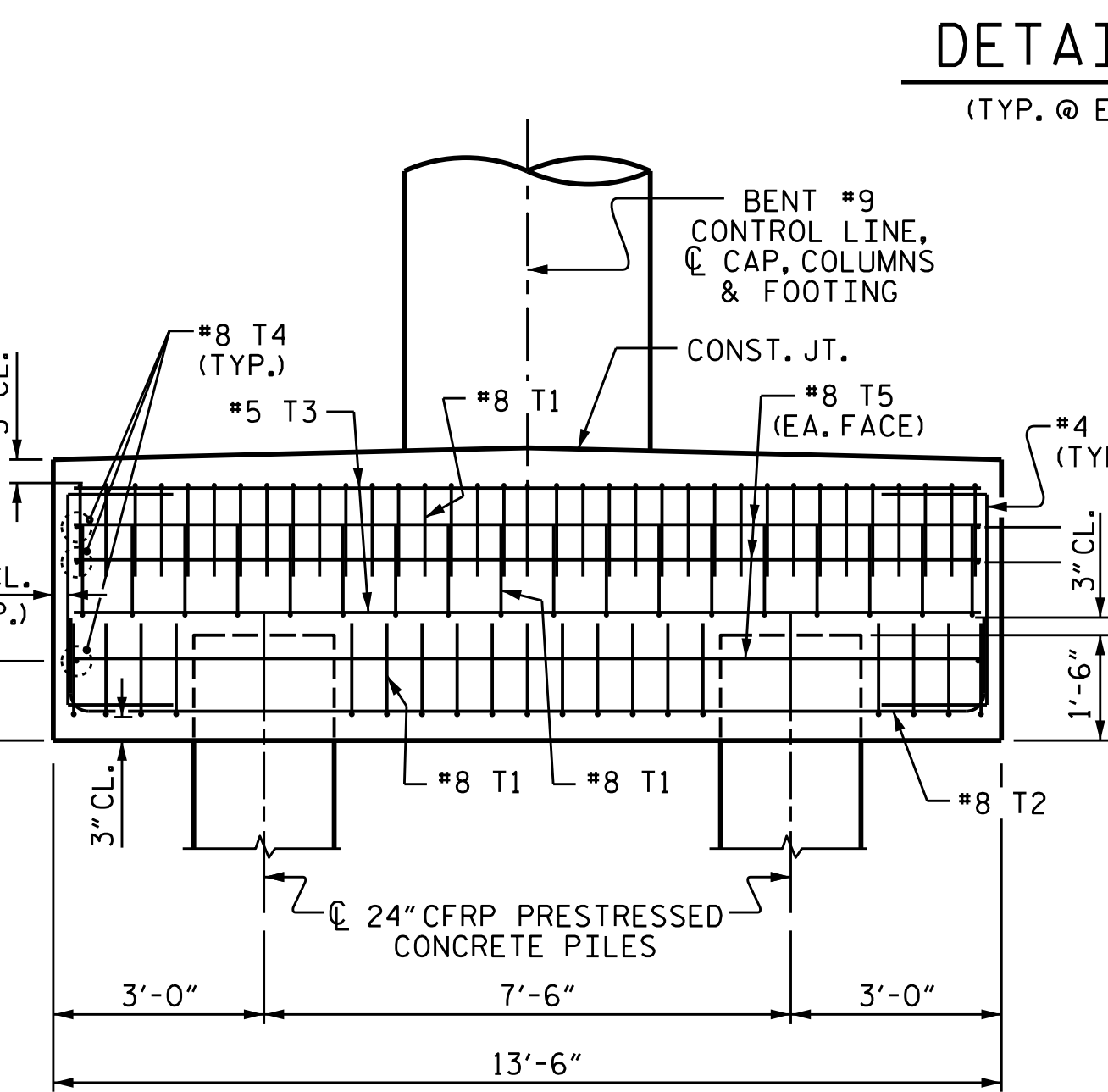
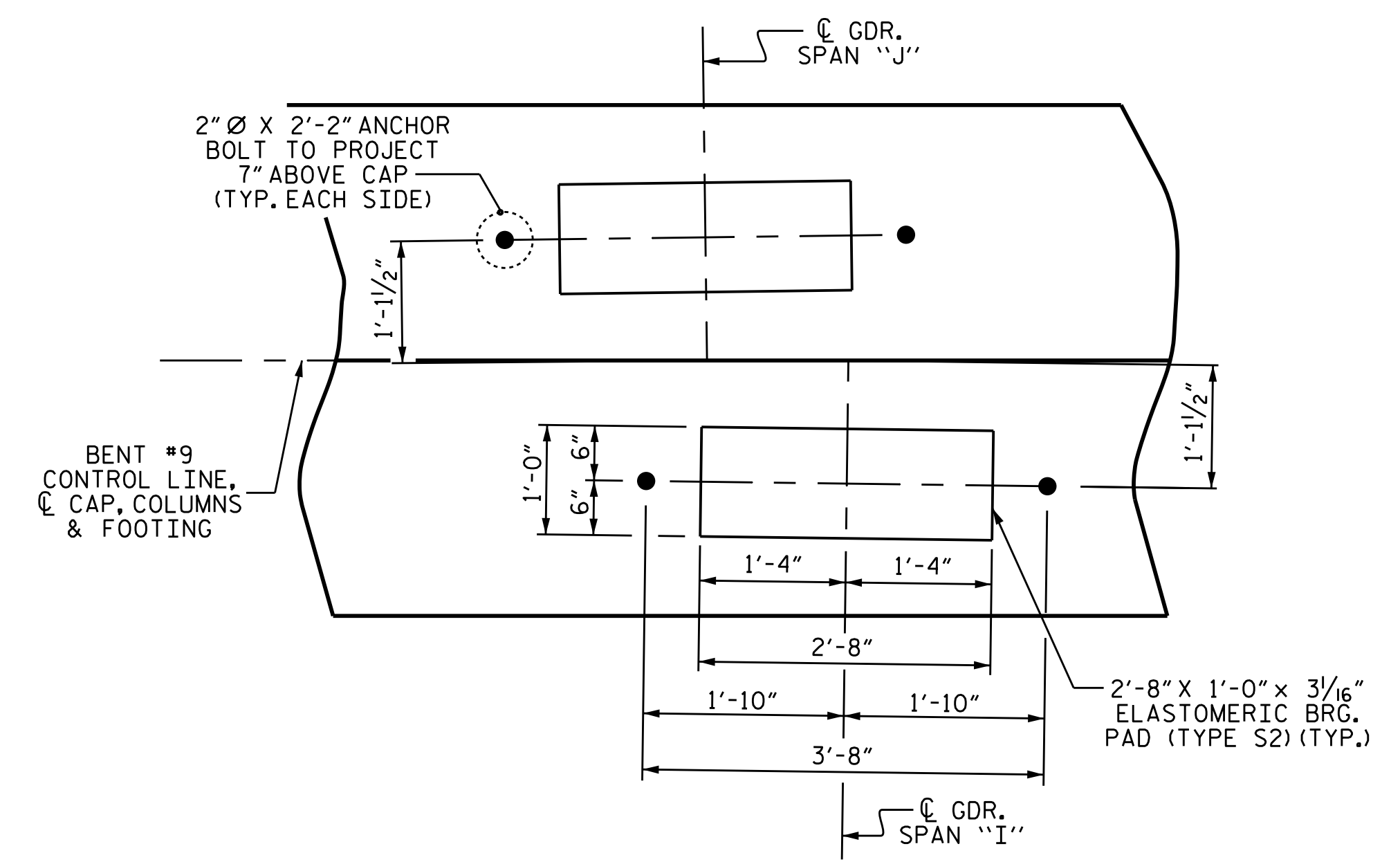
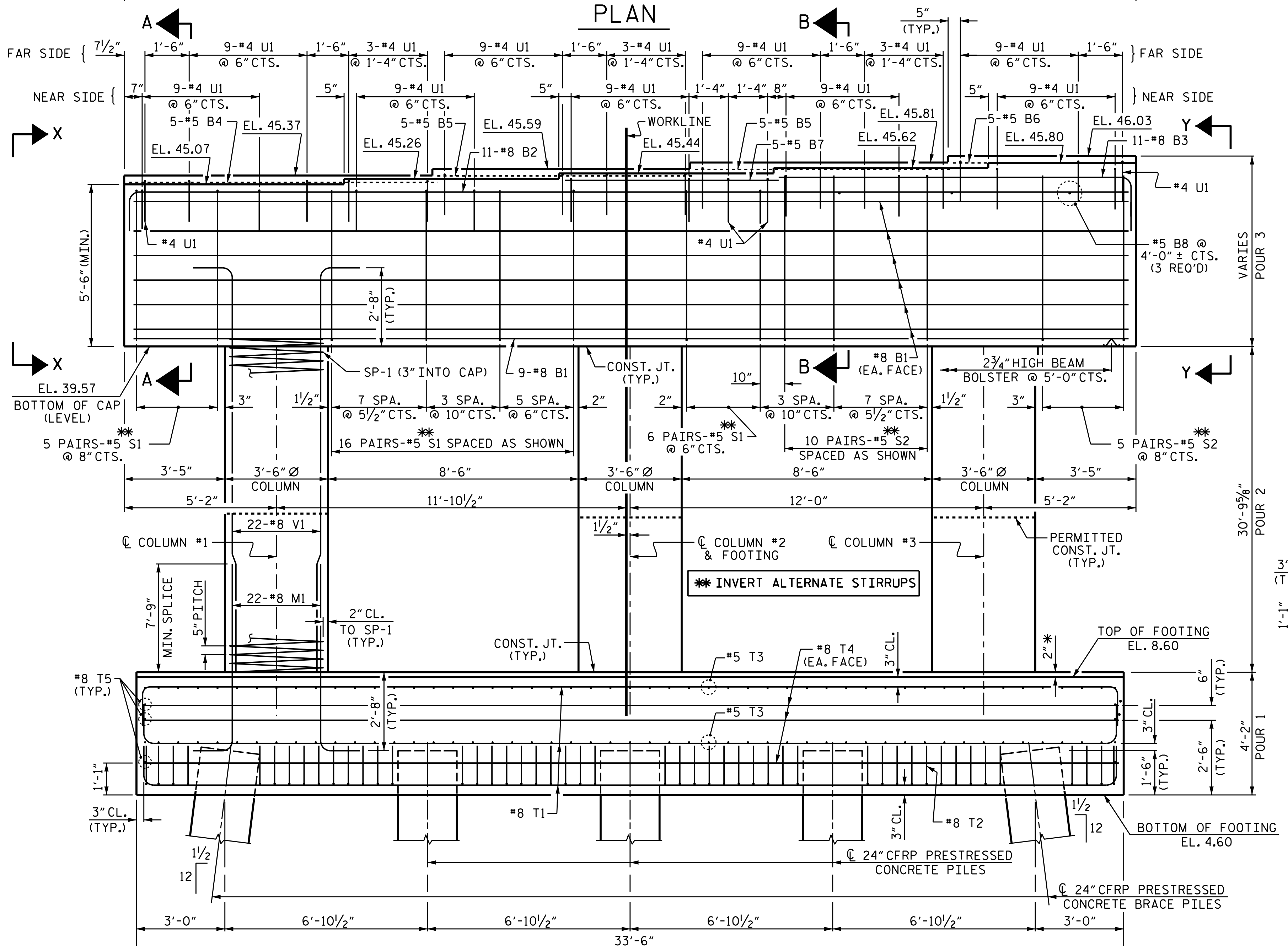
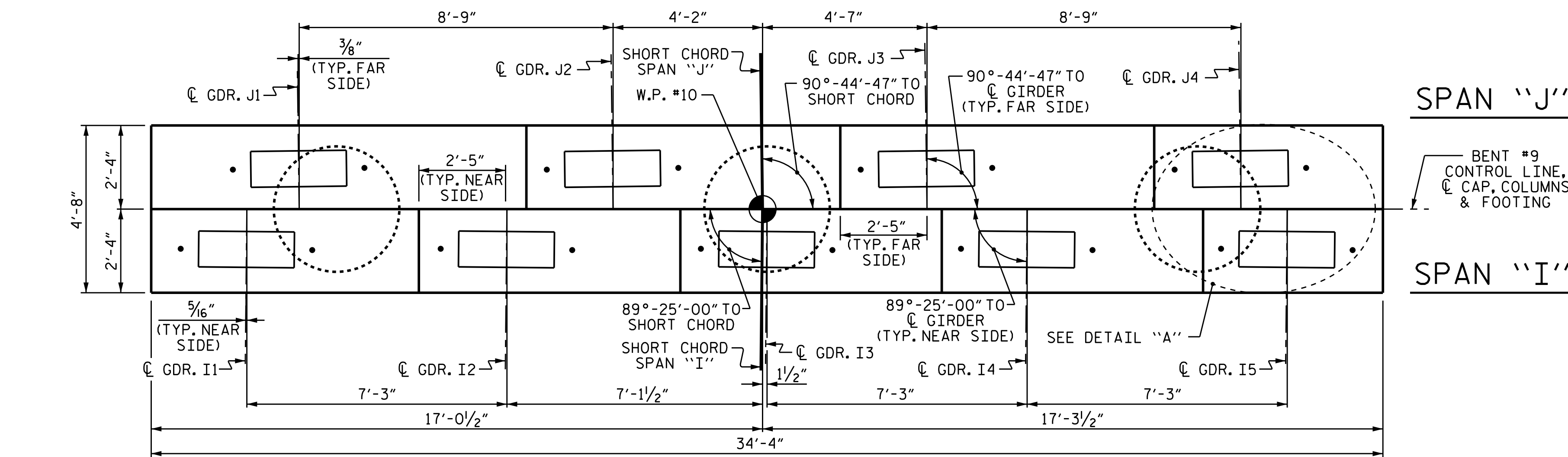
DRAWN BY : I.L. AVERETTE DATE : 02/2019
 CHECKED BY : A.K. PATEL DATE : 12/2019
 DESIGN ENGINEER OF RECORD: A.K. PATEL DATE : 12/2019

REVISIONS						SHEET NO.
1	By:	DATE:	3	By:	DATE:	S1-144
2			4			TOTAL SHEETS 194

08-APR-2021 11:10
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 akpatel

NOTES

STIRRUPS AND U1 BARS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.
 HOOKS ON "V" AND "M" BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING BARS.
 CONCRETE DISPLACED BY CONCRETE PILES HAS BEEN DEDUCTED FROM THE FOOTING CONCRETE QUANTITY.
 THE TOP SURFACE AREAS OF THE BENT CAP SHALL BE CURED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS EXCEPT THE MEMBRANE CURING COMPOUND METHOD SHALL NOT BE USED.
 ALL REINFORCING IN THE CAP, COLUMNS AND FOOTING IS TO BE GLASS FIBER REINFORCED POLYMER (GFRP) BARS. FOR GLASS FIBER REINFORCED POLYMER BARS, SEE SPECIAL PROVISIONS.
 * THE FOOTING HAS A DROP OF 2" FROM THE CENTER OF THE FOOTING TO THE EDGE OF THE FOOTING TO ACCOMMODATE DRAINAGE.



PROJECT NO. B-4863
CARTERET COUNTY
 STATION: 34+75.00 -L-
 SHEET 1 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 BENT #9



DRAWN BY : I.L. AVERETTE DATE : 02/2019
 CHECKED BY : A.K. PATEL DATE : 04/2019
 DESIGN ENGINEER OF RECORD : A.K. PATEL DATE : 04/2019

REINFORCING BAR DIMENSIONS AND DETAILS ARE TYPICAL FOR EACH COLUMN
 FOR ADDITIONAL REINFORCING BARS IN ENDS OF CAP, SEE END VIEW ON SHEET 3 OF 3
 *4 U7 BARS IN FOOTING NOT SHOWN, SEE SHEET 2 OF 3

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 Ashwin Patel
 7f186561024403
 3/9/2020

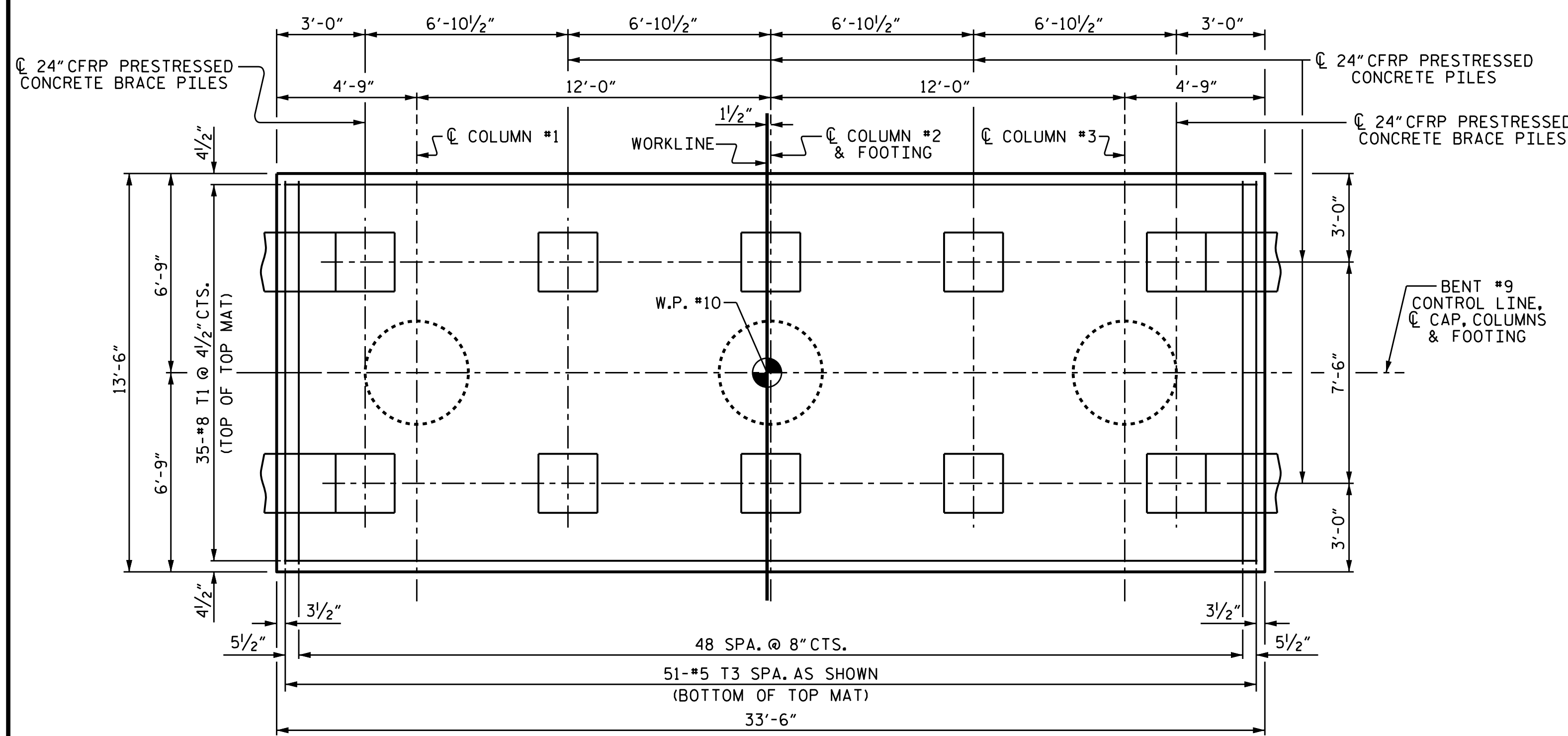
DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

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2			4			194

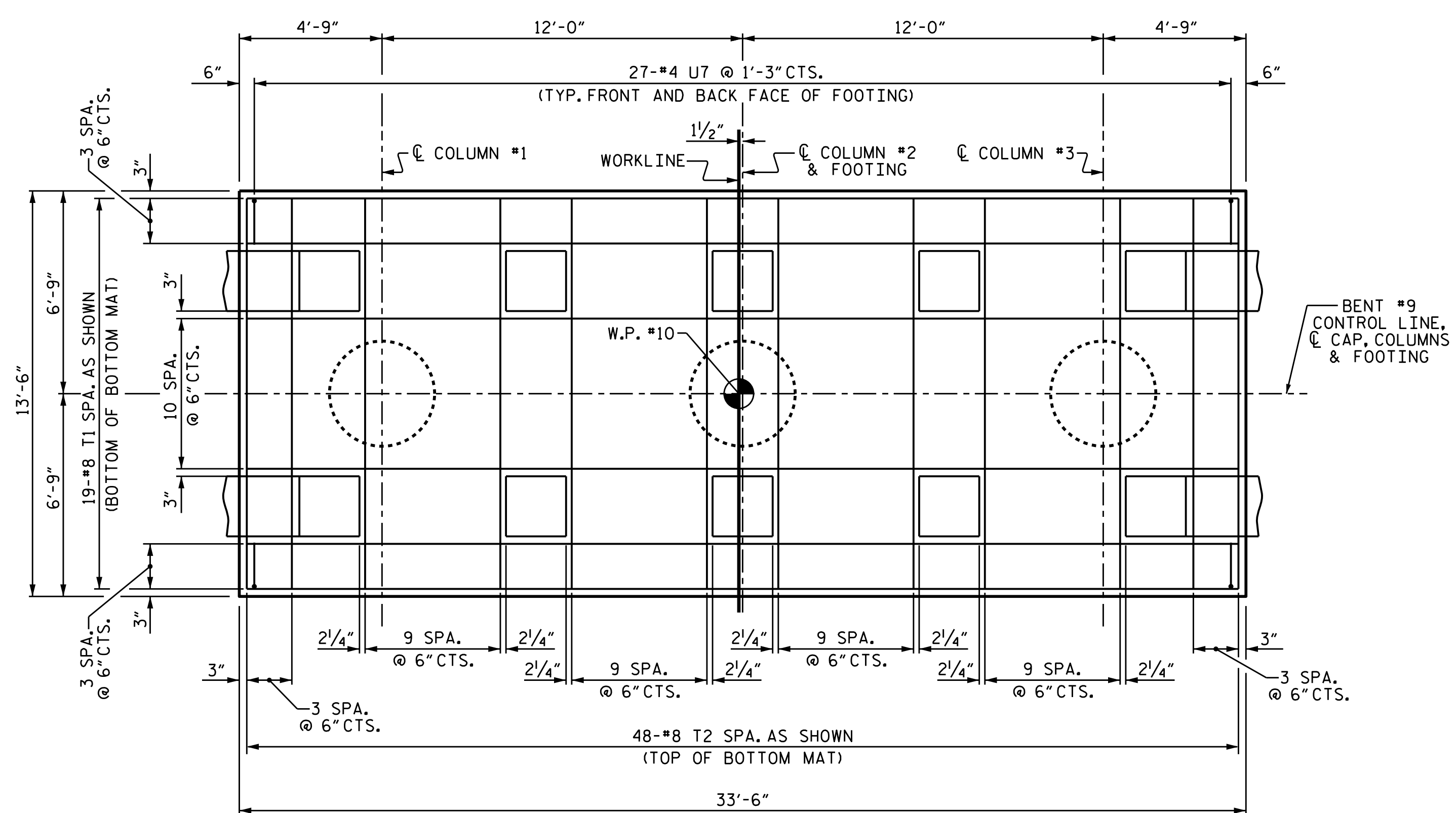
NOTES

FOR #8 T4 AND #8 T5 BARS ON EACH FACE OF FOOTING BETWEEN BOTTOM AND TOP MAT OF REINFORCING BARS, SEE SHEET 1 OF 3.

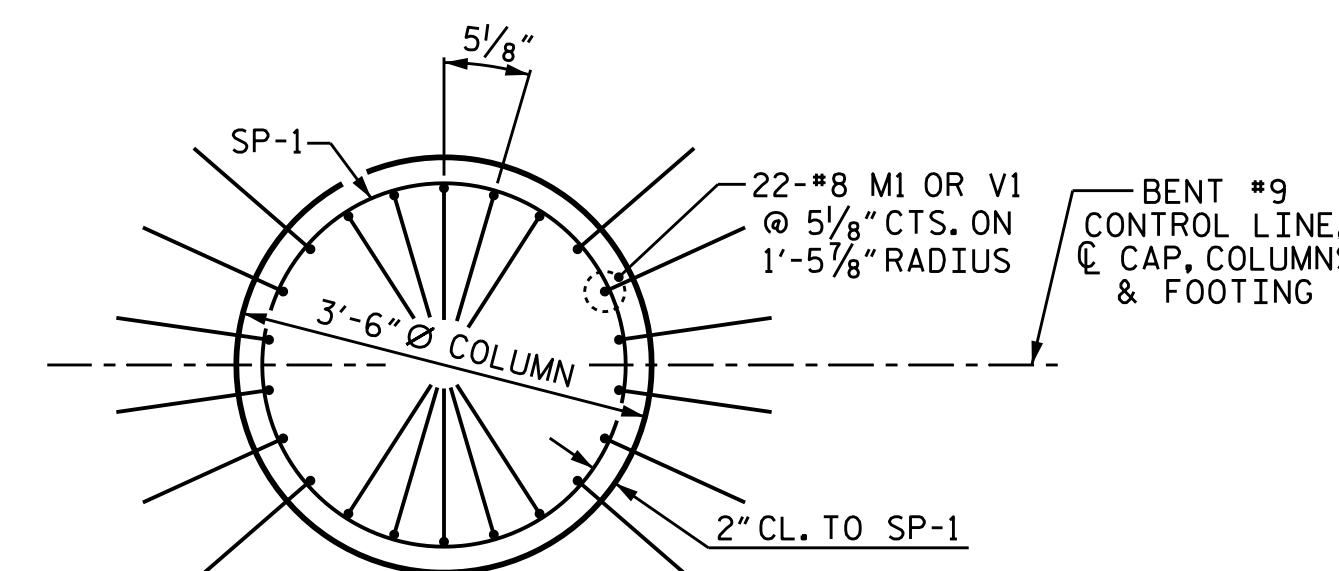
#4 U7 BARS MAY BE SHIFTED SLIGHTLY AS NECESSARY TO AVOID "T" BARS.



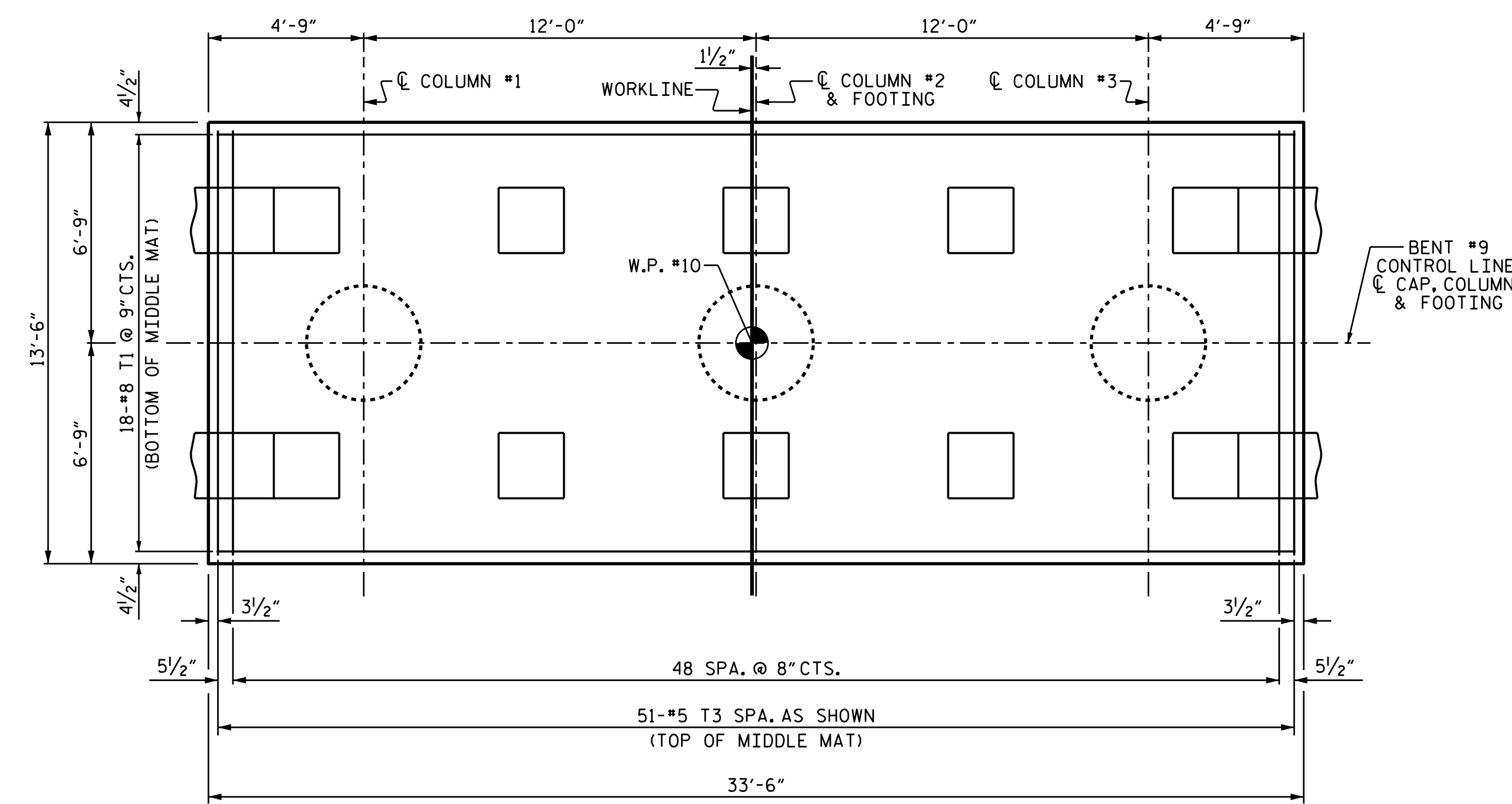
PLAN OF COLUMNS & FOOTING
SHOWING TOP MAT OF REINFORCING BARS



PLAN OF COLUMNS & FOOTING
SHOWING BOTTOM MAT OF REINFORCING BARS AND TEMPERATURE REINFORCEMENT



COLUMN REINFORCING DETAILS
TYPICAL FOR EACH COLUMN



PLAN OF COLUMNS & FOOTING
SHOWING MIDDLE MAT OF REINFORCING BARS

PROJECT NO. B-4863
CARTERET COUNTY
STATION: 34+75.00 -L-

SHEET 2 OF 3



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7F189E5610244E3
3/9/2020

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

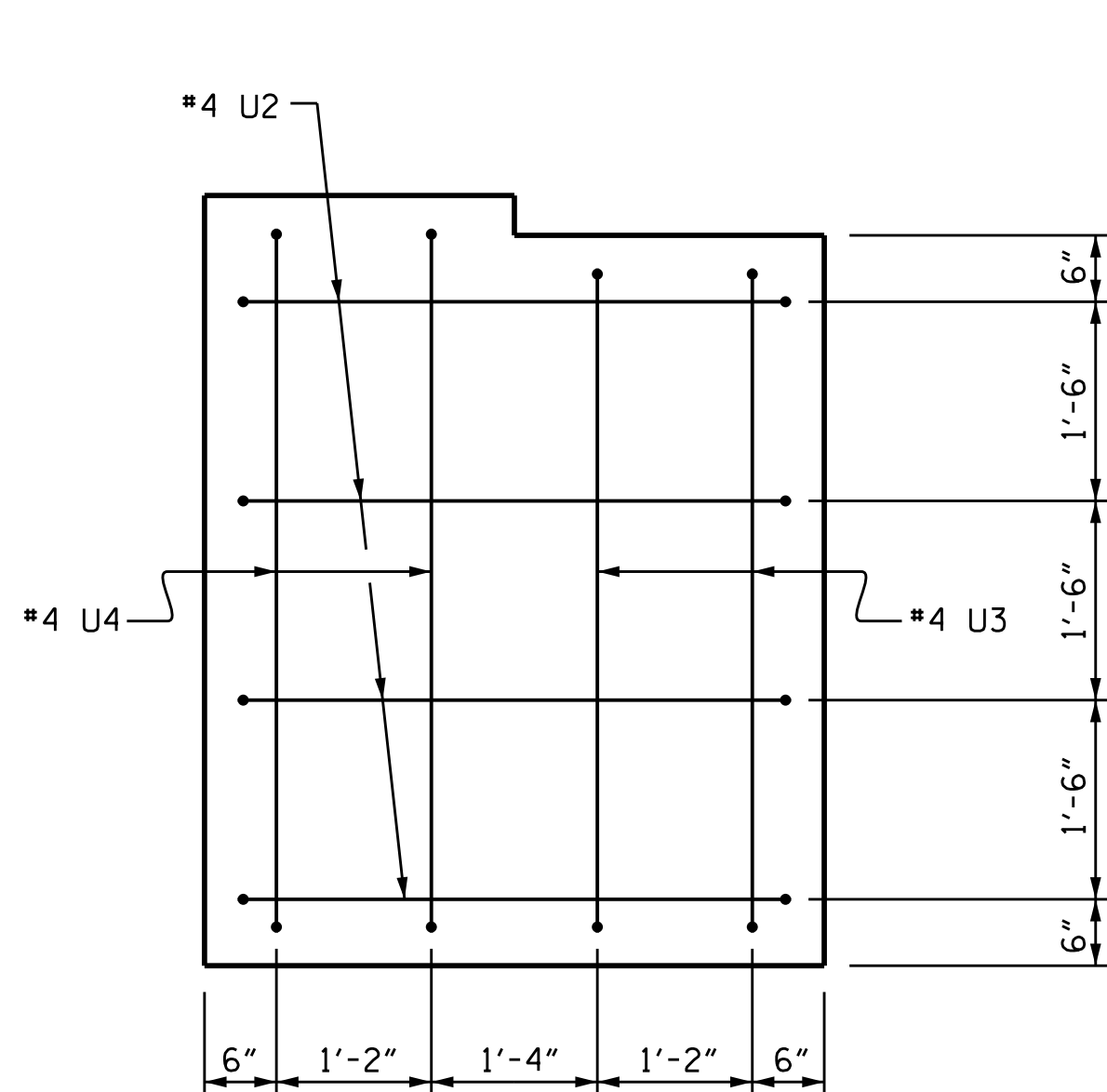
SUBSTRUCTURE

BENT #9

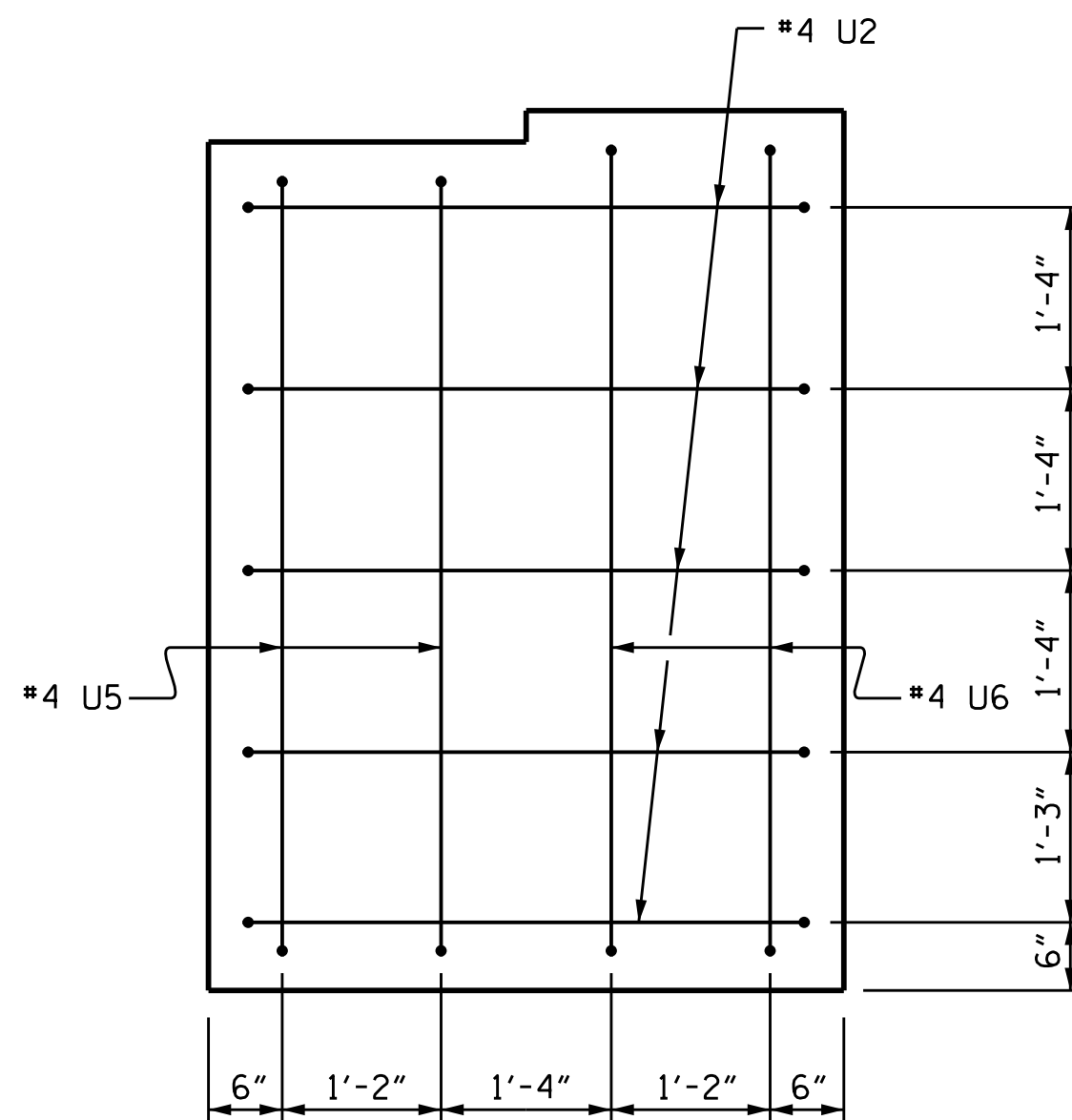
DRAWN BY : T.L. AVERETTE DATE : 02/2019
CHECKED BY : A. K. PATEL DATE : 04/2019
DESIGN ENGINEER OF RECORD: A. K. PATEL DATE : 04/2019

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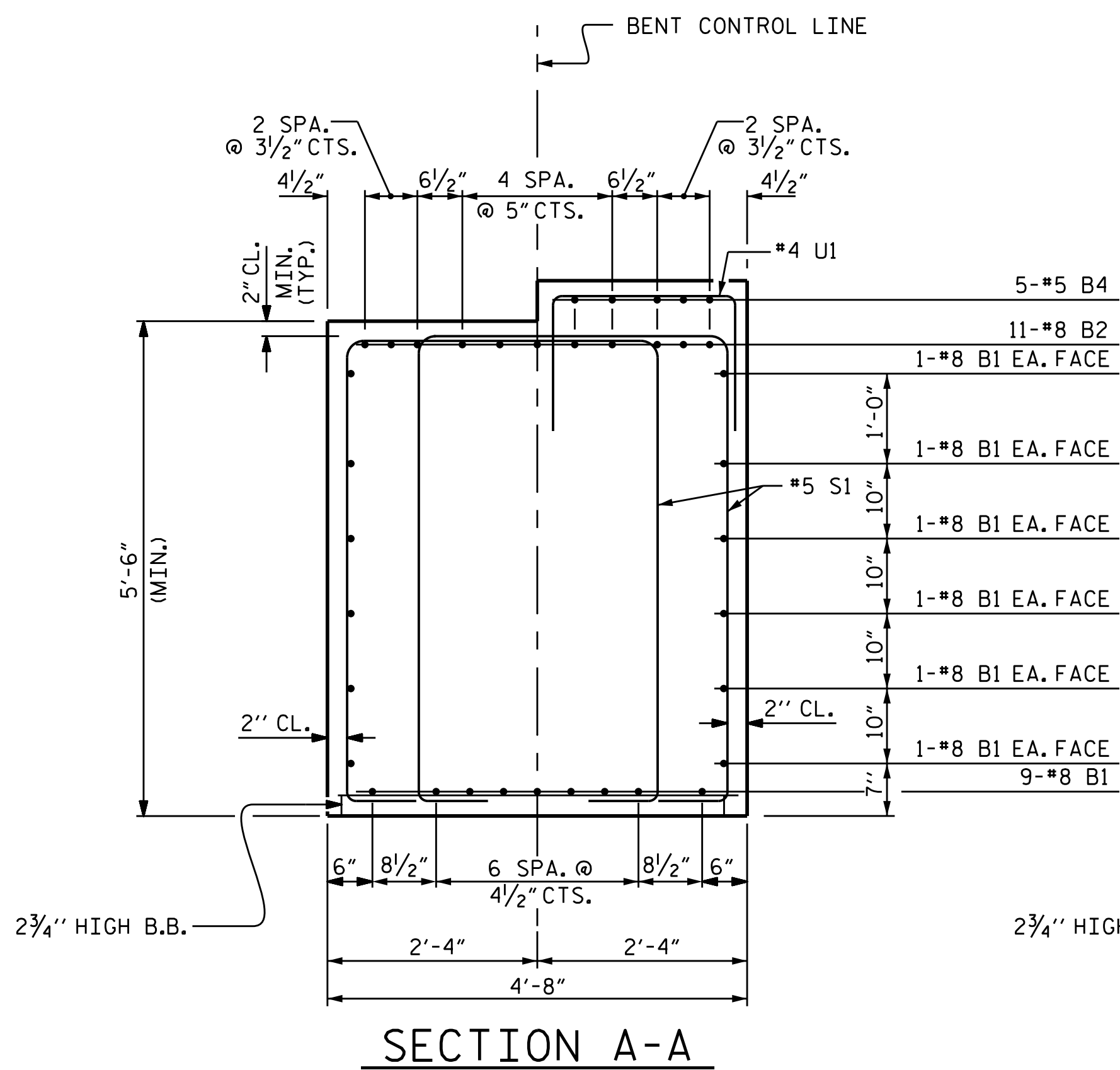
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NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
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2			4			194



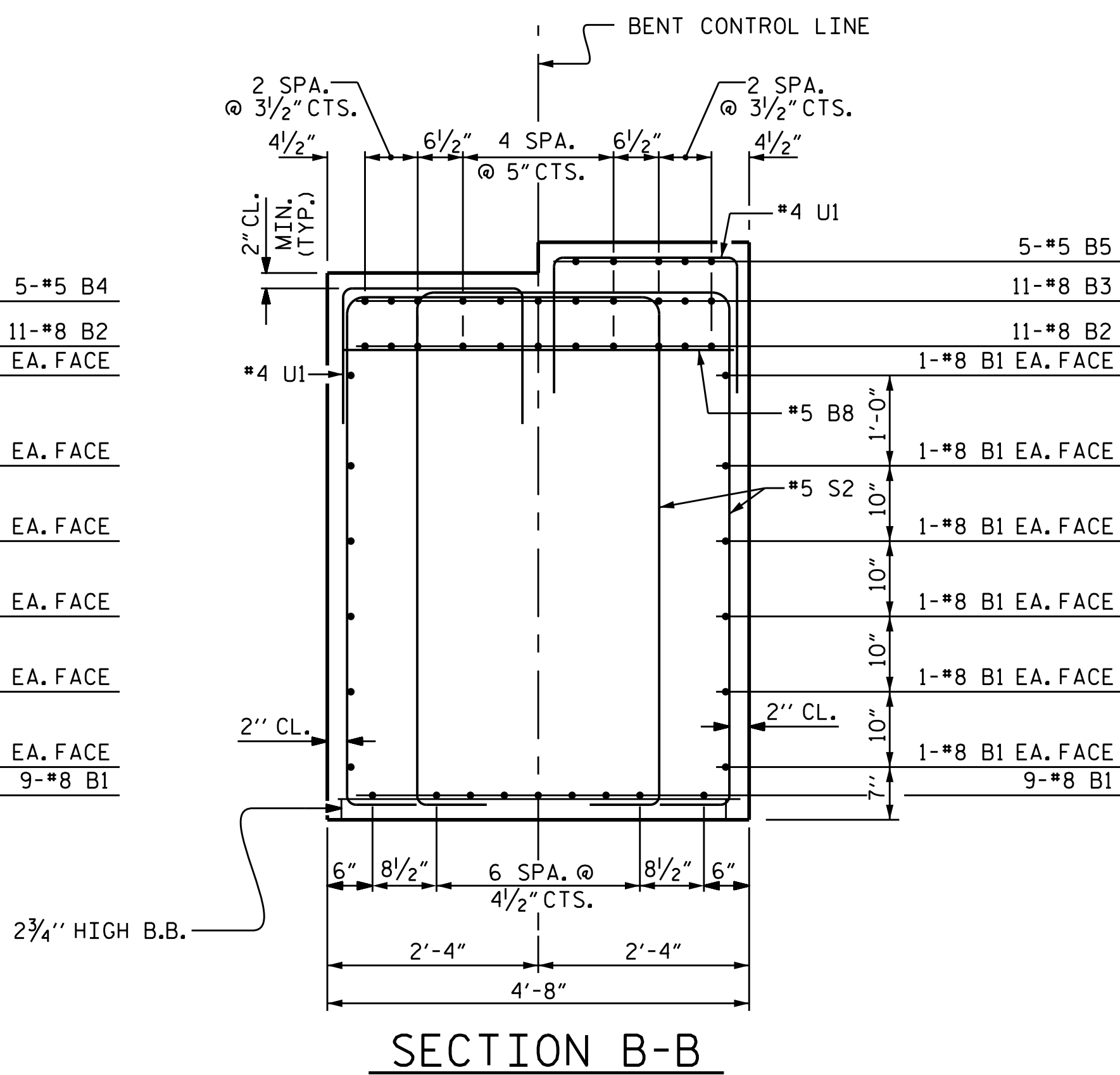
VIEW X-X



VIEW Y-Y

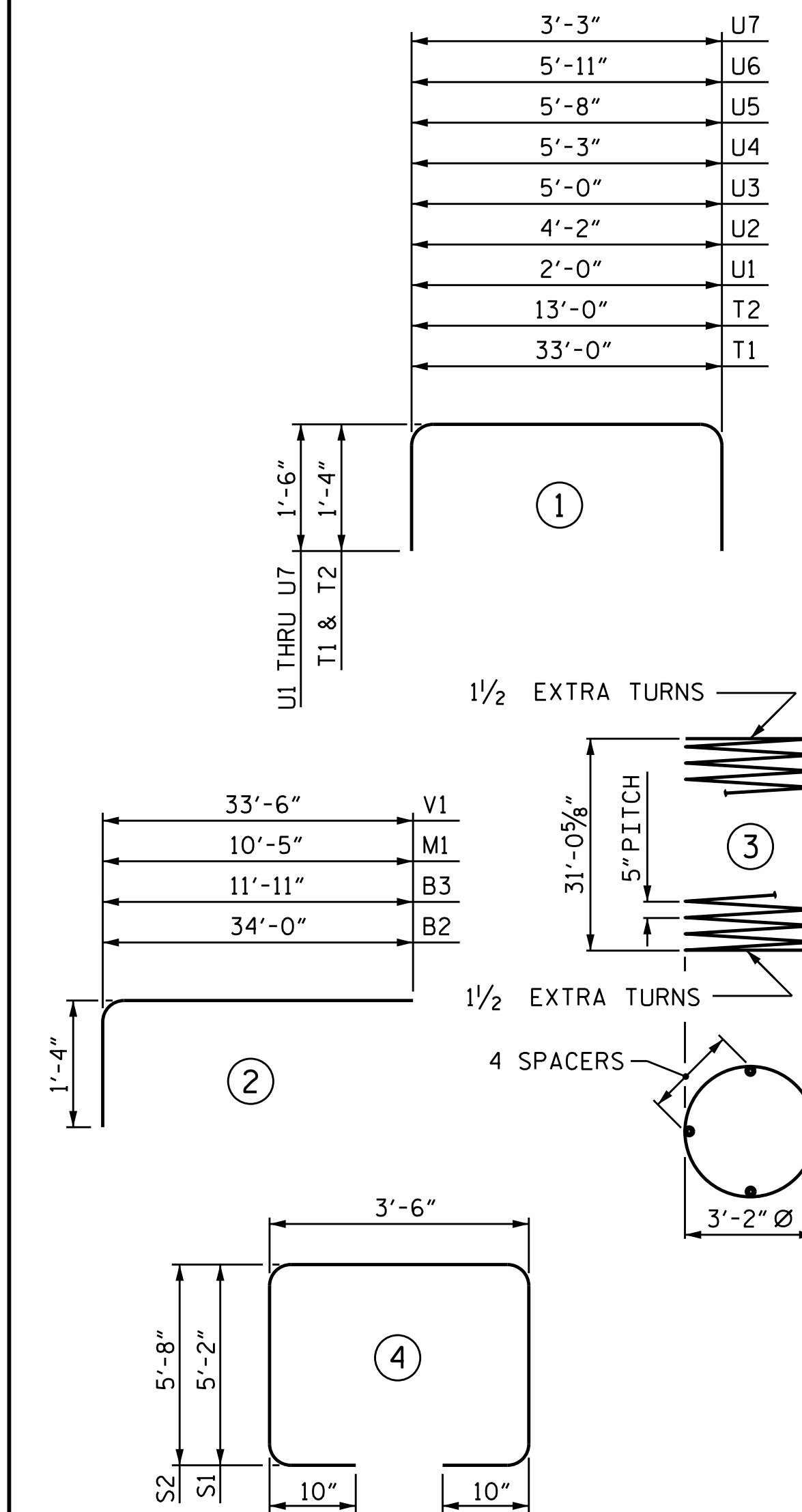


SECTION A-A



SECTION B-B

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

BENT #9

BAR	NO.	SIZE	TYPE	LENGTH	TOTAL LENGTH
B1	21	#8	STR	34'-0"	714'-0"
B2	11	#8	2	35'-4"	388'-8"
B3	11	#8	2	13'-3"	145'-9"
B4	5	#5	STR	10'-5"	52'-1"
B5	10	#5	STR	8'-9"	87'-6"
B6	5	#5	STR	6'-0"	30'-0"
B7	5	#5	STR	7'-3"	36'-3"
B8	3	#5	STR	4'-4"	13'-0"
M1	66	#8	2	11'-9"	775'-6"
S1	54	#5	4	15'-6"	837'-0"
S2	30	#5	4	16'-6"	495'-0"
T1	72	#8	1	35'-8"	2568'-0"
T2	48	#8	1	15'-8"	752'-0"
T3	102	#5	STR	13'-0"	1326'-0"
T4	6	#8	STR	33'-0"	198'-0"
T5	6	#8	STR	13'-0"	78'-0"
U1	94	#4	1	5'-0"	470'-0"
U2	9	#4	1	7'-2"	64'-6"
U3	2	#4	1	8'-0"	16'-0"
U4	2	#4	1	8'-3"	16'-6"
U5	2	#4	1	8'-8"	17'-4"
U6	2	#4	1	8'-11"	17'-10"
U7	54	#4	1	6'-3"	337'-6"
V1	66	#8	2	34'-10"	2299'-0"
SP-1	3	#5	3	769'-7"	2308'-9"
TOTAL LIN. FT. # 4 BARS					939.7
TOTAL LIN. FT. # 5 BARS					5185.6
TOTAL LIN. FT. # 8 BARS					7918.9

GLASS FIBER REINFORCED POLYMER BARS TOTAL 14044.17 LIN. FT.

CLASS AA CONCRETE BREAKDOWN

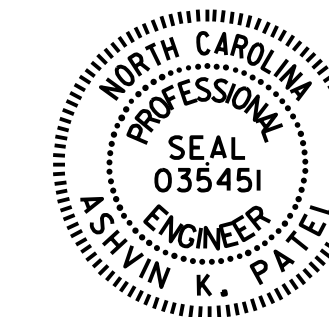
POUR #1	FOOTING	66.2 C.Y.
POUR #2	COLUMNS	33.0 C.Y.
POUR #3	CAP	35.4 C.Y.
TOTAL CLASS AA CONCRETE		134.6 C.Y.

PROJECT NO. B-4863
CARTERET COUNTY
STATION: 34+75.00 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
BENT #9



Designed by:
Ashwin Patel
771806561024403

4/16/2021

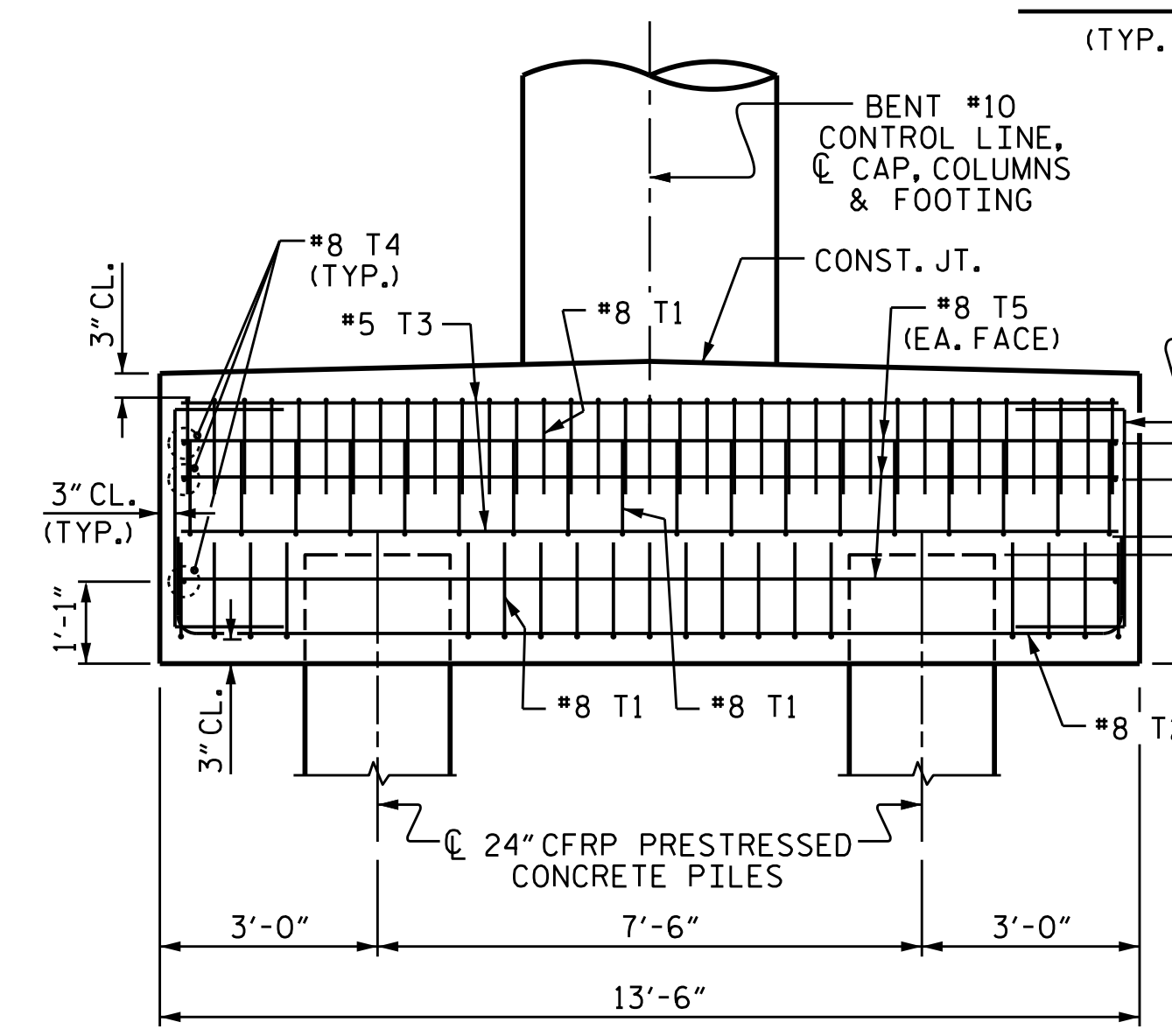
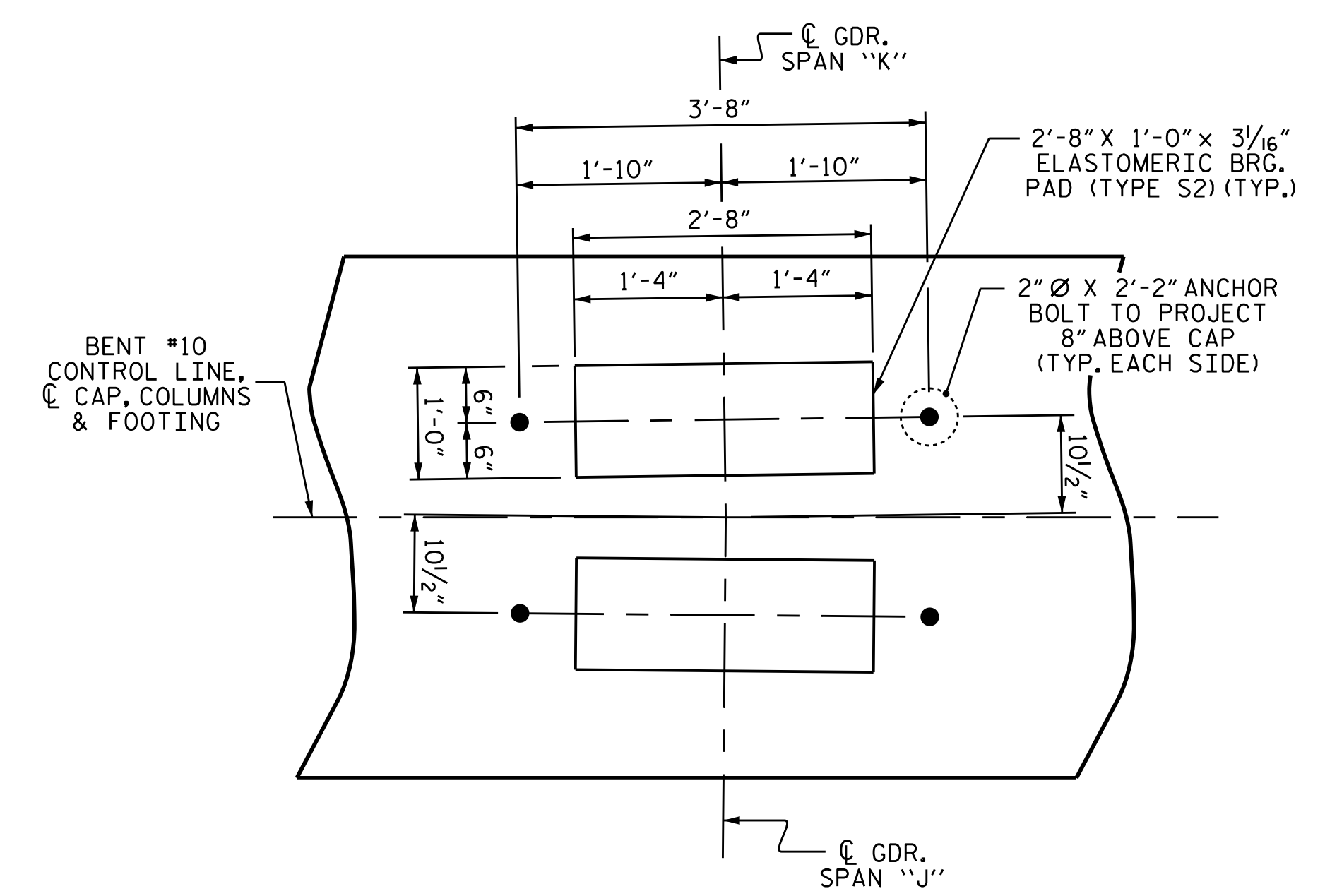
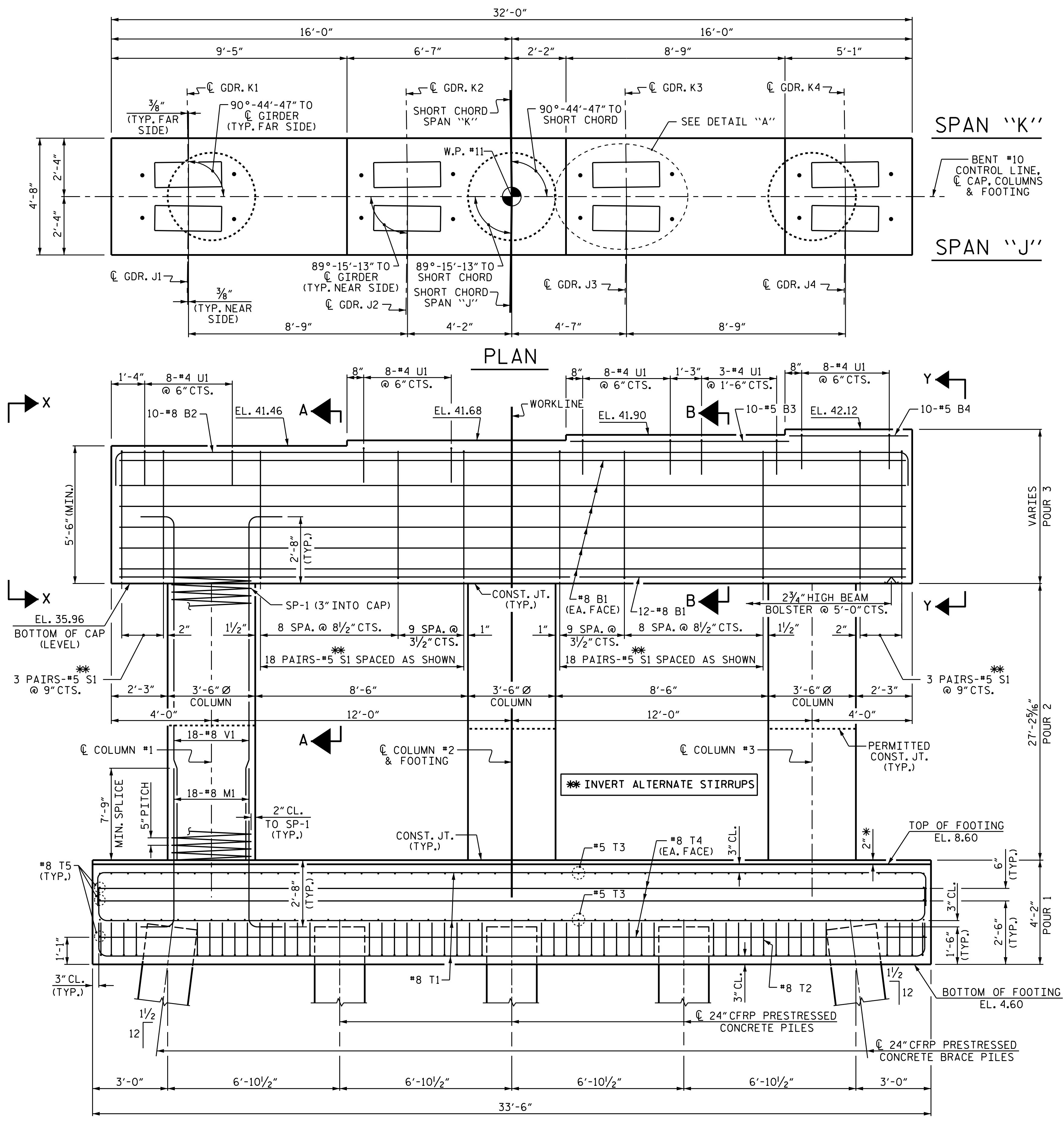
DRAWN BY : I.L. AVERETTE DATE : 02/2019
CHECKED BY : A.K. PATEL DATE : 04/2019
DESIGN ENGINEER OF RECORD: A.K. PATEL DATE : 04/2019

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-147
1			3			TOTAL SHEETS 194
2			4			

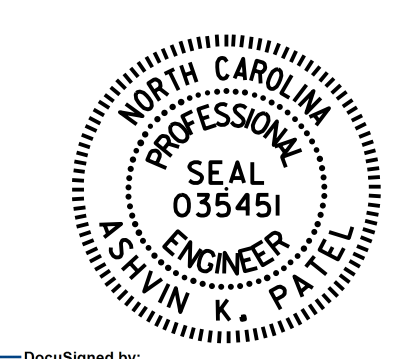
NOTES

STIRRUPS AND U1 BARS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.
 HOOKS ON "V" AND "M" BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING BARS.
 CONCRETE DISPLACED BY CONCRETE PILES HAS BEEN DEDUCTED FROM THE FOOTING CONCRETE QUANTITY.
 ALL REINFORCING IN THE CAP, COLUMNS AND FOOTING IS TO BE GLASS FIBER REINFORCED POLYMER (GFRP) BARS. FOR GLASS FIBER REINFORCED POLYMER BARS, SEE SPECIAL PROVISIONS.
 * THE FOOTING HAS A DROP OF 2" FROM THE CENTER OF THE FOOTING TO THE EDGE OF THE FOOTING TO ACCOMMODATE DRAINAGE.



PROJECT NO. B-4863
 CARTERET COUNTY
 STATION: 34+75.00 -L-

PARTIAL END ELEVATION
 SEE ELEVATION FOR COLUMN REINFORCING BARS



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 3/9/2020

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH						SHEET NO. S1-148	
SUBSTRUCTURE						TOTAL SHEETS 194	
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REVISIONS							
NO.	BY:	DATE:	NO.	BY:	DATE:		
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2			4				

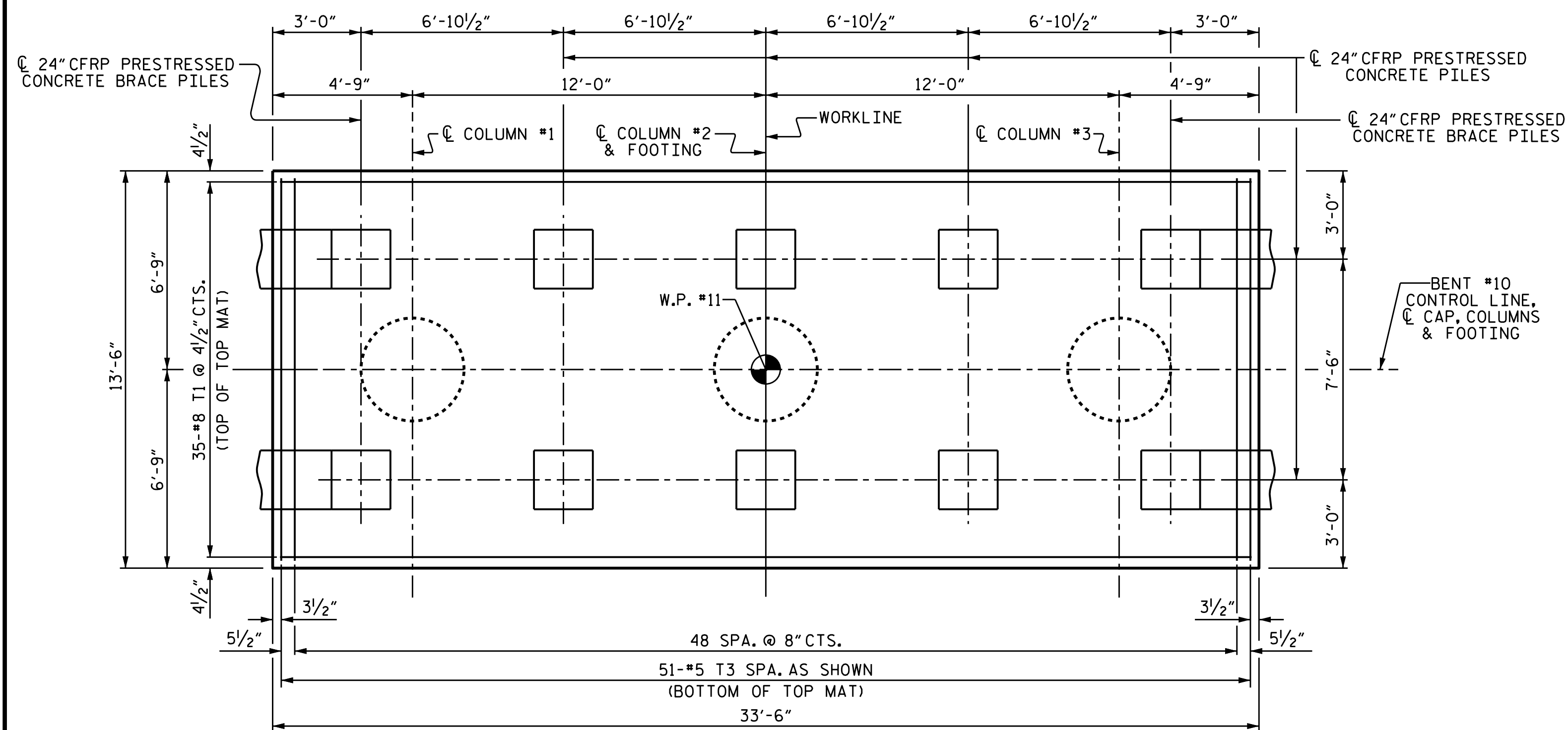
DRAWN BY : I.L. AVERETTE DATE : 02/2019
 CHECKED BY : A.K. PATEL DATE : 04/2019
 DESIGN ENGINEER OF RECORD: A.K. PATEL DATE : 04/2019

REINFORCING BAR DIMENSIONS AND DETAILS ARE TYPICAL FOR EACH COLUMN
 FOR ADDITIONAL REINFORCING BARS IN ENDS OF CAP, SEE END VIEW ON SHEET 3 OF 3
 *4 U5 BARS IN FOOTING NOT SHOWN, SEE SHEET 2 OF 3

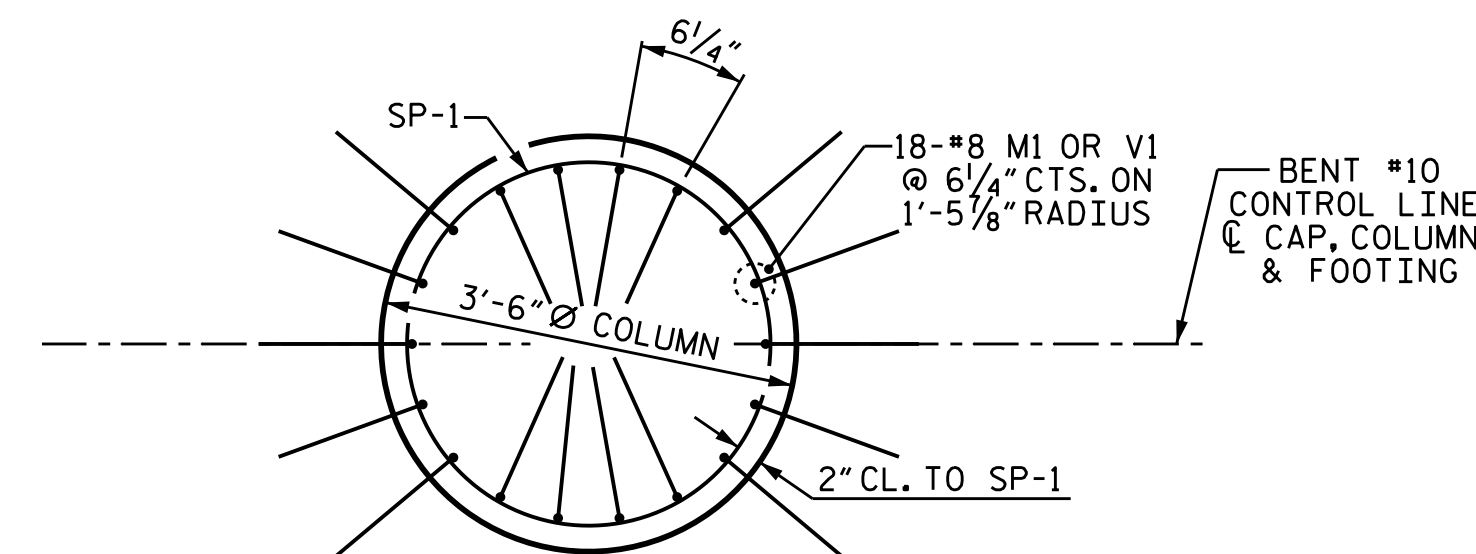
NOTES

FOR #8 T4 AND #8 T5 BARS ON EACH FACE OF FOOTING BETWEEN BOTTOM AND TOP MAT OF REINFORCING BARS, SEE SHEET 1 OF 3.

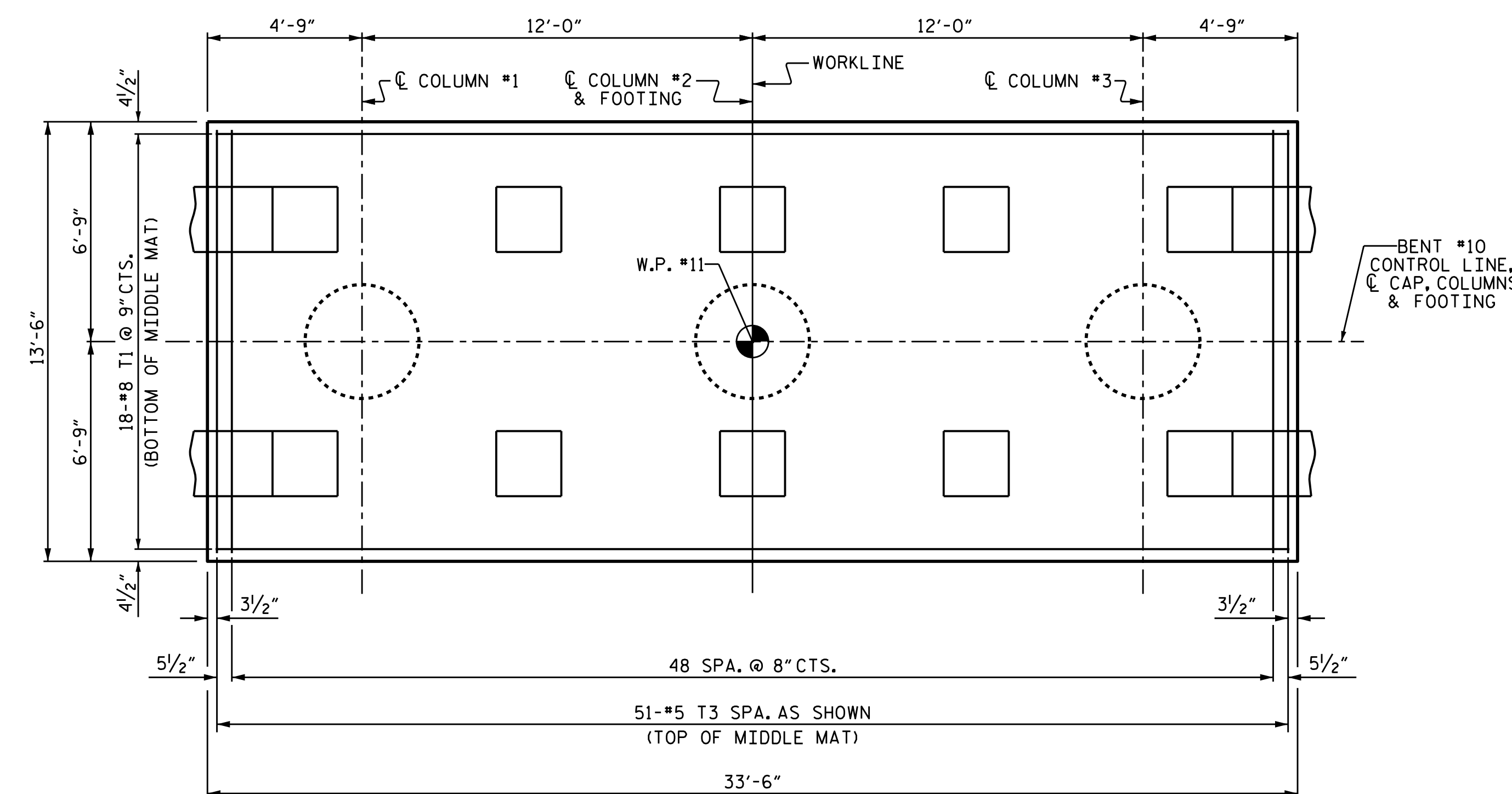
#4 U5 BARS MAY BE SHIFTED SLIGHTLY AS NECESSARY TO AVOID "T" BARS.



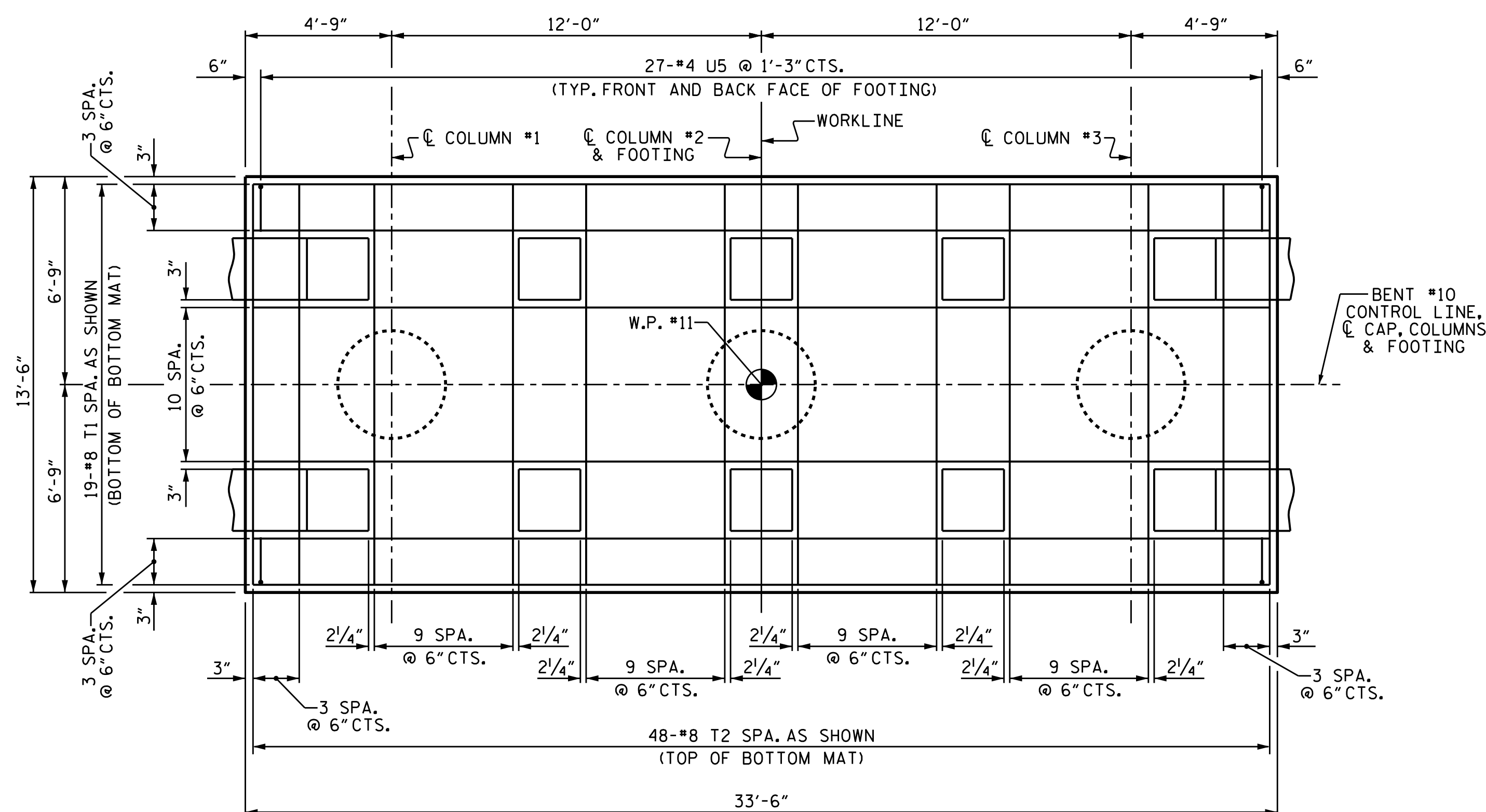
PLAN OF COLUMNS & FOOTING
SHOWING TOP MAT OF REINFORCING BARS



COLUMN REINFORCING DETAILS
TYPICAL FOR EACH COLUMN



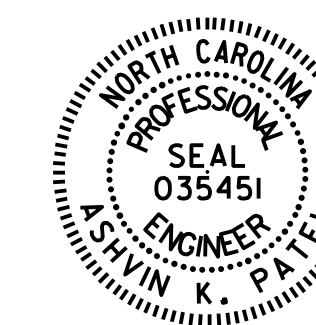
PLAN OF COLUMNS & FOOTING
SHOWING MIDDLE MAT OF REINFORCING BARS



PLAN OF COLUMNS & FOOTING
SHOWING BOTTOM MAT OF REINFORCING BARS
AND TEMPERATURE REINFORCEMENT

PROJECT NO. B-4863
CARTERET COUNTY
STATION: 34+75.00 -L-

SHEET 2 OF 3



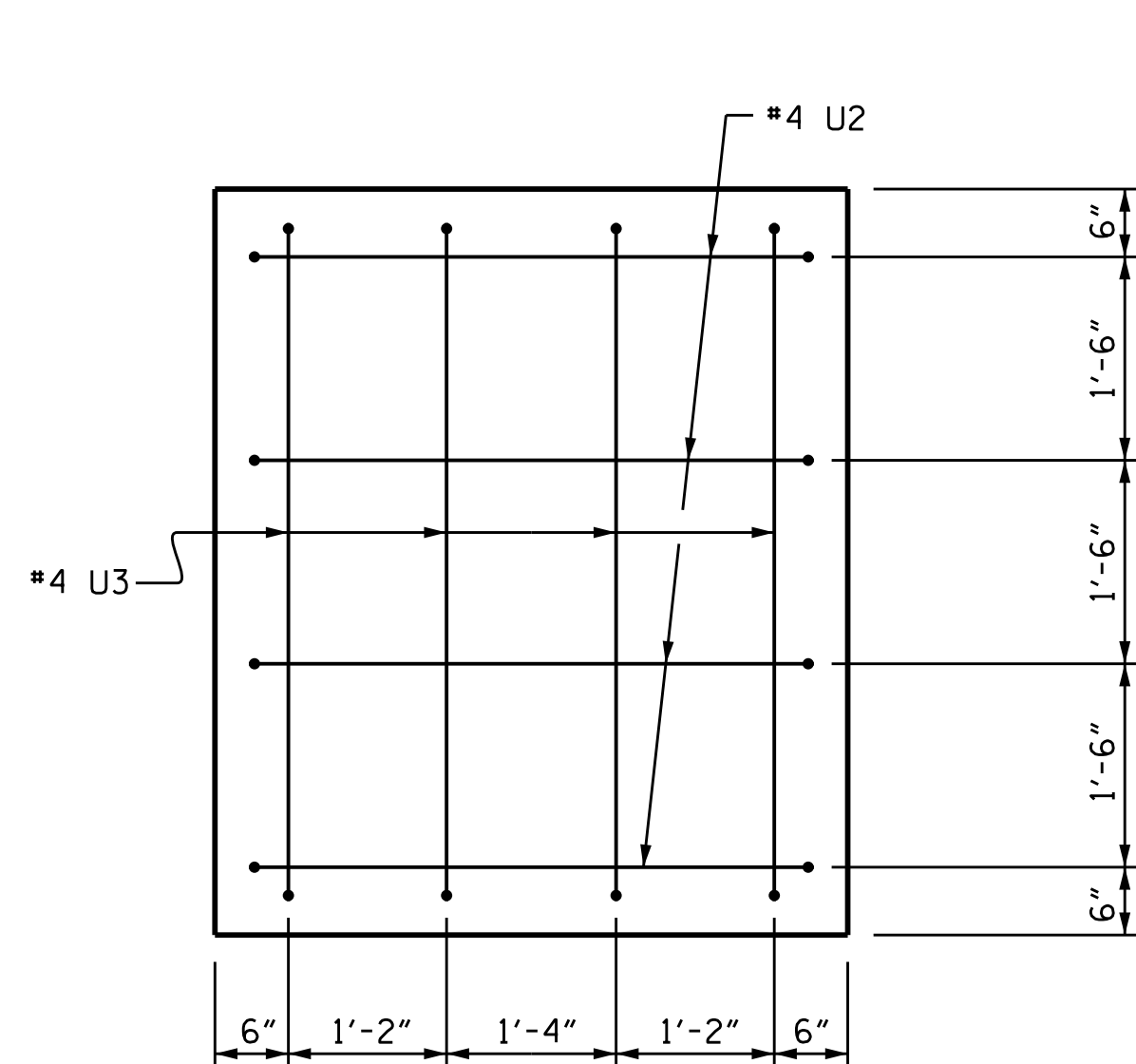
DocuSigned by:
Ashwin Patel
7F189E5610244E3
3/9/2020

STATE OF NORTH CAROLINA					
DEPARTMENT OF TRANSPORTATION					
RALEIGH					
SUBSTRUCTURE					
BENT #10					

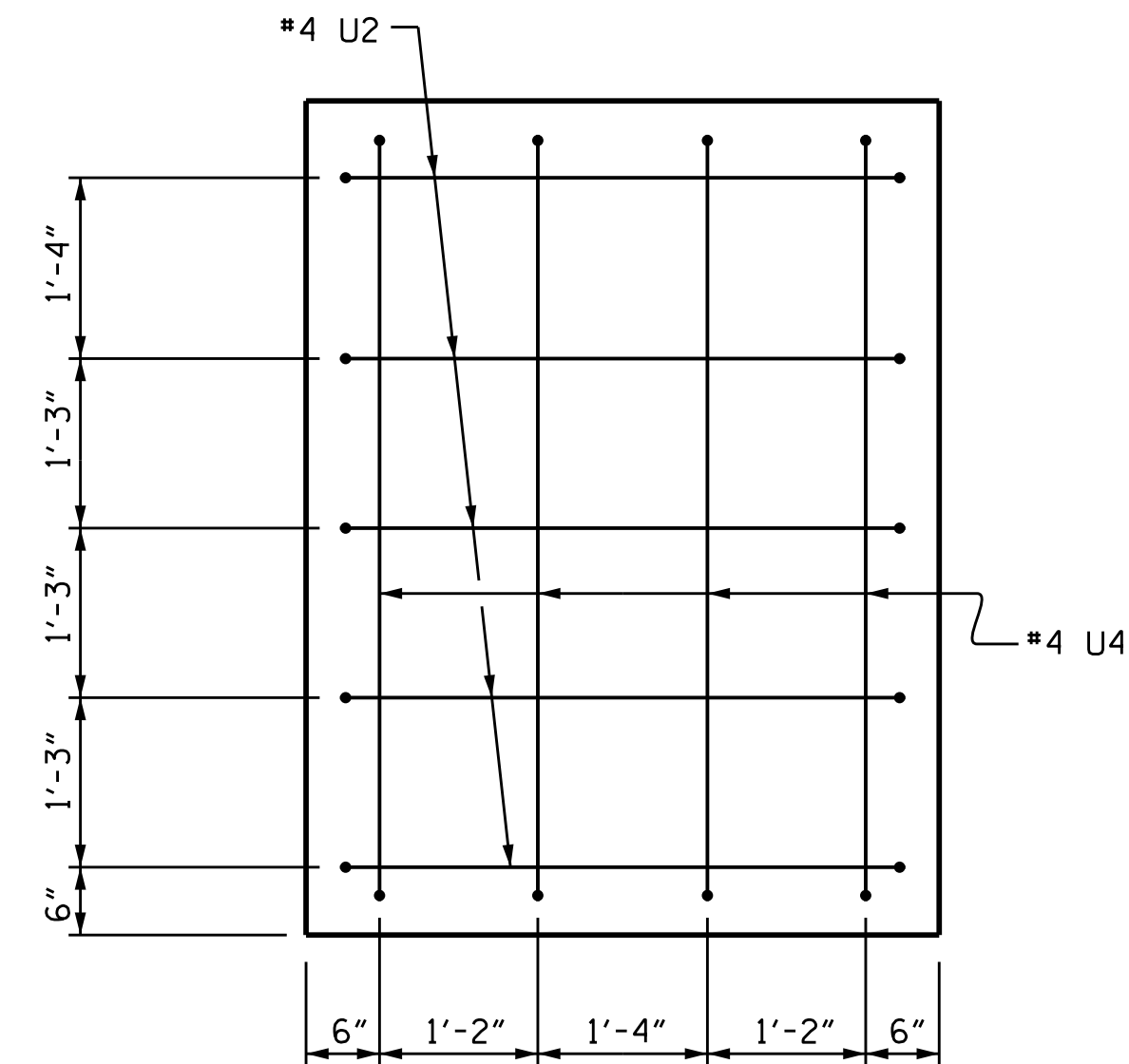
DRAWN BY : I.L. AVERETTE DATE : 02/2019
CHECKED BY : A.K. PATEL DATE : 04/2019
DESIGN ENGINEER OF RECORD: A.K. PATEL DATE : 04/2019

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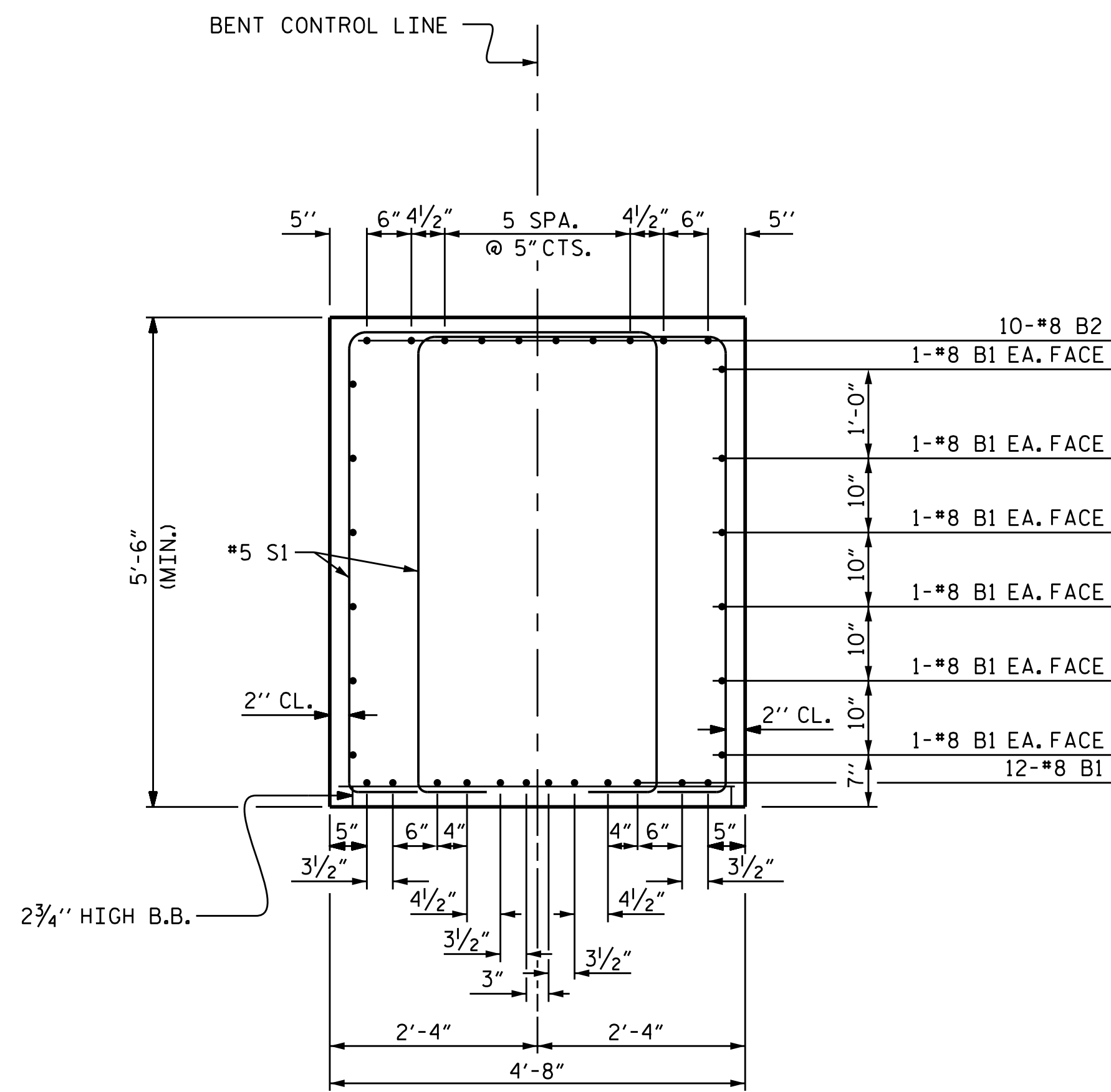
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NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
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2			4			194



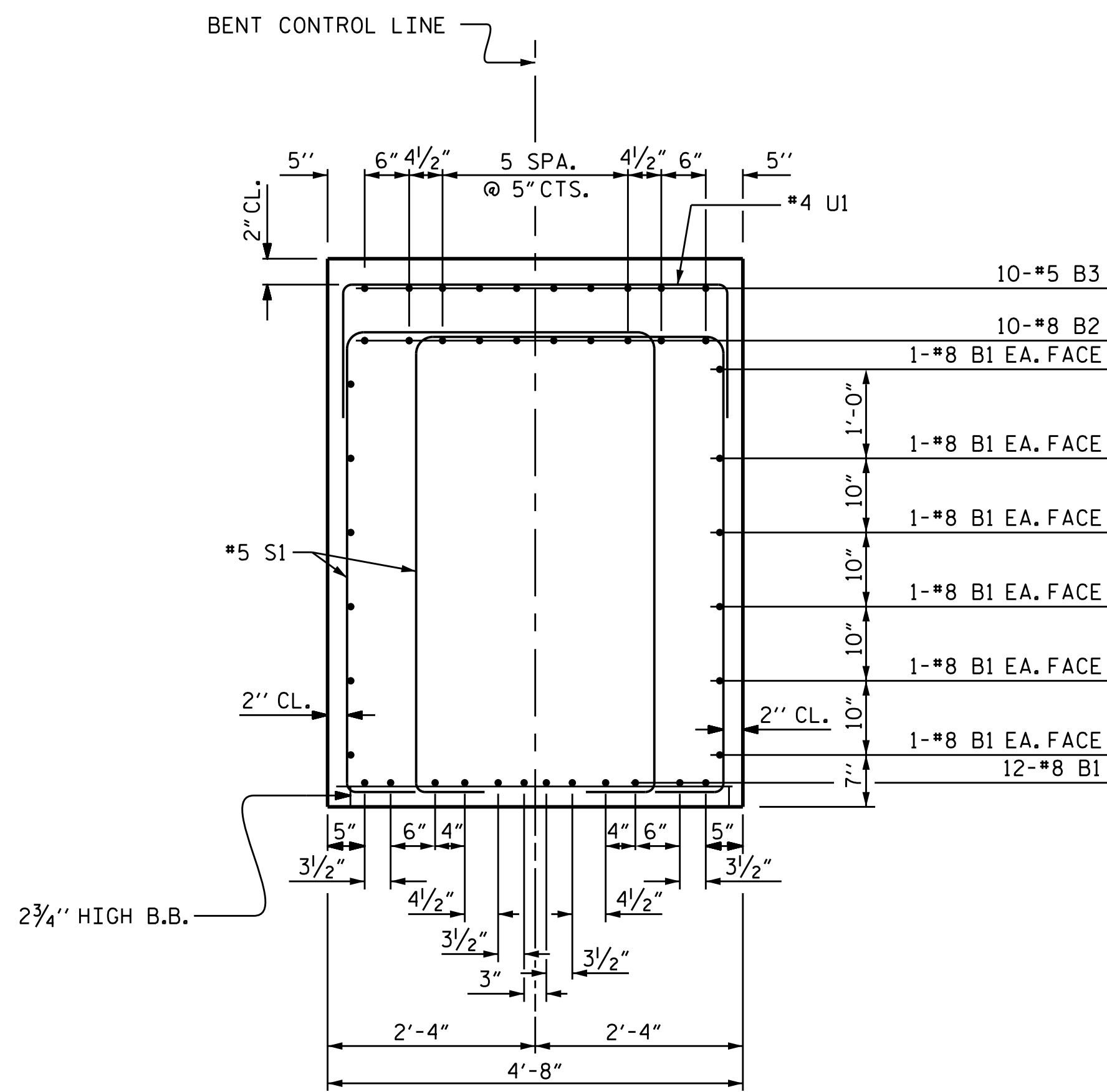
VIEW X-X



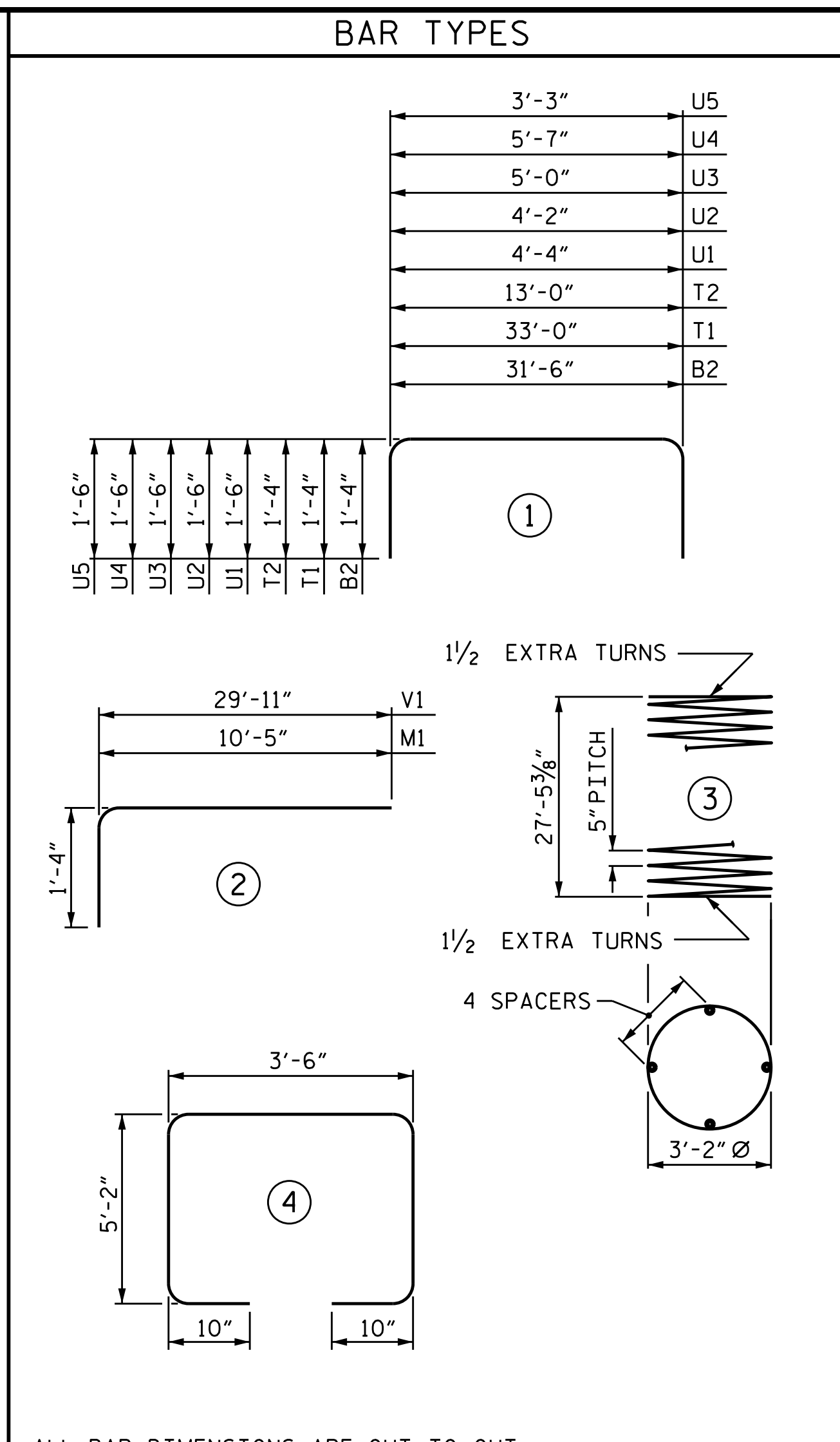
VIEW Y-Y



SECTION A-A



SECTION B-B



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

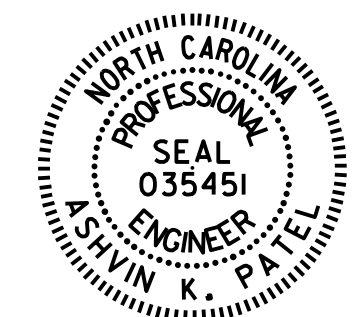
BENT #10

BAR	NO.	SIZE	TYPE	LENGTH	TOTAL LENGTH
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B2	10	#8	STR	34'-2"	341'-8"
B3	10	#5	STR	8'-9"	87'-6"
B4	10	#5	STR	4'-9"	47'-6"
M1	54	#8	2	11'-9"	634'-6"
S1	84	#5	4	15'-6"	1302'-0"
T1	72	#8	1	35'-8"	2568'-0"
T2	48	#8	1	15'-8"	752'-0"
T3	102	#5	STR	13'-0"	1326'-0"
T4	6	#8	STR	33'-0"	198'-0"
T5	6	#8	STR	13'-0"	78'-0"
U1	35	#4	1	7'-4"	256'-8"
U2	9	#4	1	7'-2"	64'-6"
U3	4	#4	1	8'-0"	32'-0"
U4	4	#4	1	8'-7"	34'-4"
U5	54	#4	1	6'-3"	337'-6"
V1	54	#8	2	31'-3"	1687'-6"
SP-1	3	#5	3	684'-9"	2054'-3"

TOTAL LIN. FT. # 4 BARS 693.0
 TOTAL LIN. FT. # 5 BARS 4849.3
 TOTAL LIN. FT. # 8 BARS 7019.7
 GLASS FIBER REINFORCED POLYMER BARS TOTAL 12561.92 LIN. FT.

CLASS AA CONCRETE BREAKDOWN
 POUR #1 FOOTING 66.2 C.Y.
 POUR #2 COLUMNS 29.1 C.Y.
 POUR #3 CAP 32.0 C.Y.
 TOTAL CLASS AA CONCRETE 127.3 C.Y.

PROJECT NO. B-4863
CARTERET COUNTY
 STATION: 34+75.00 -L-
 SHEET 3 OF 3



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 7F180E5610244D3
 4/16/2021

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 BENT #10

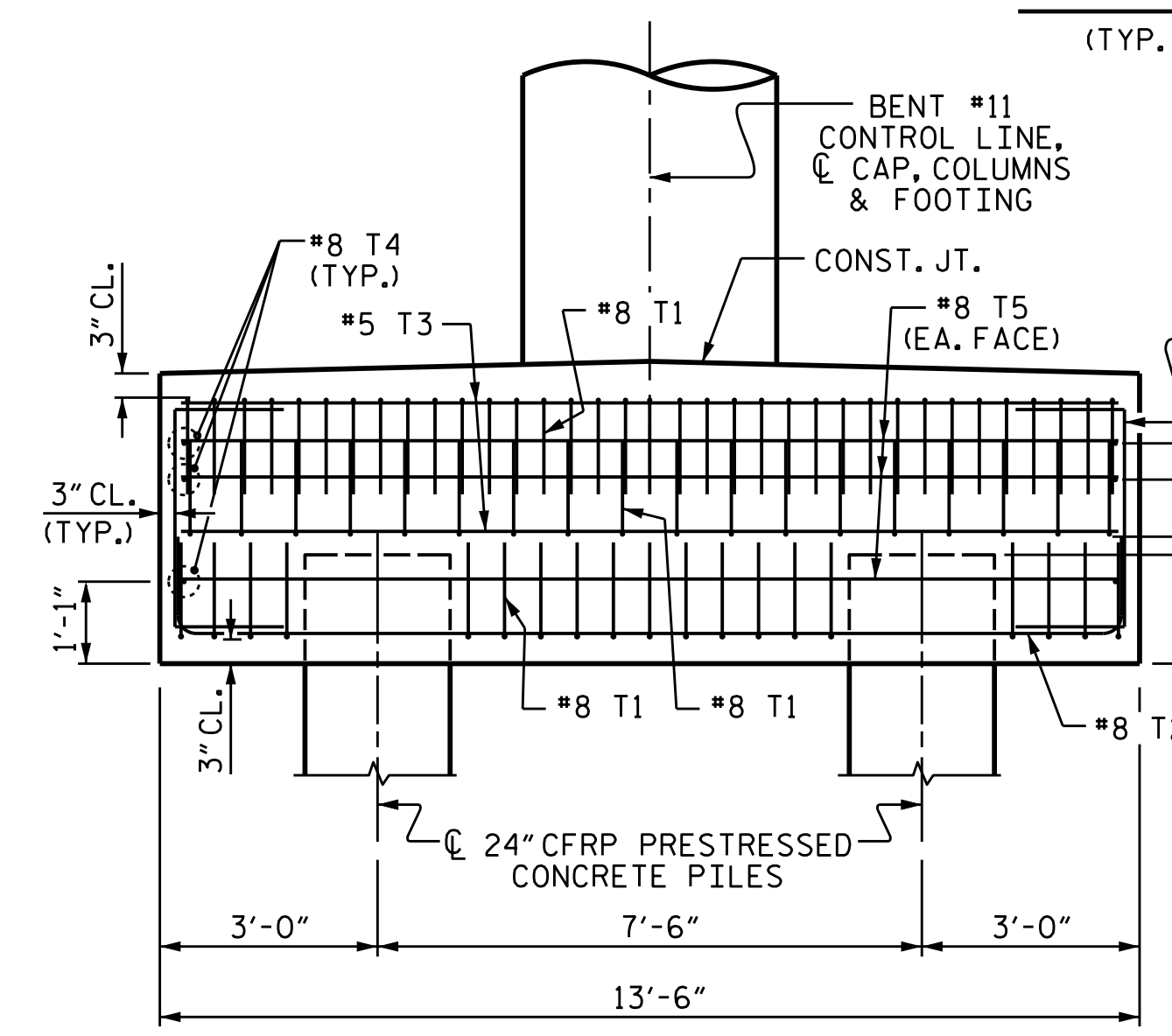
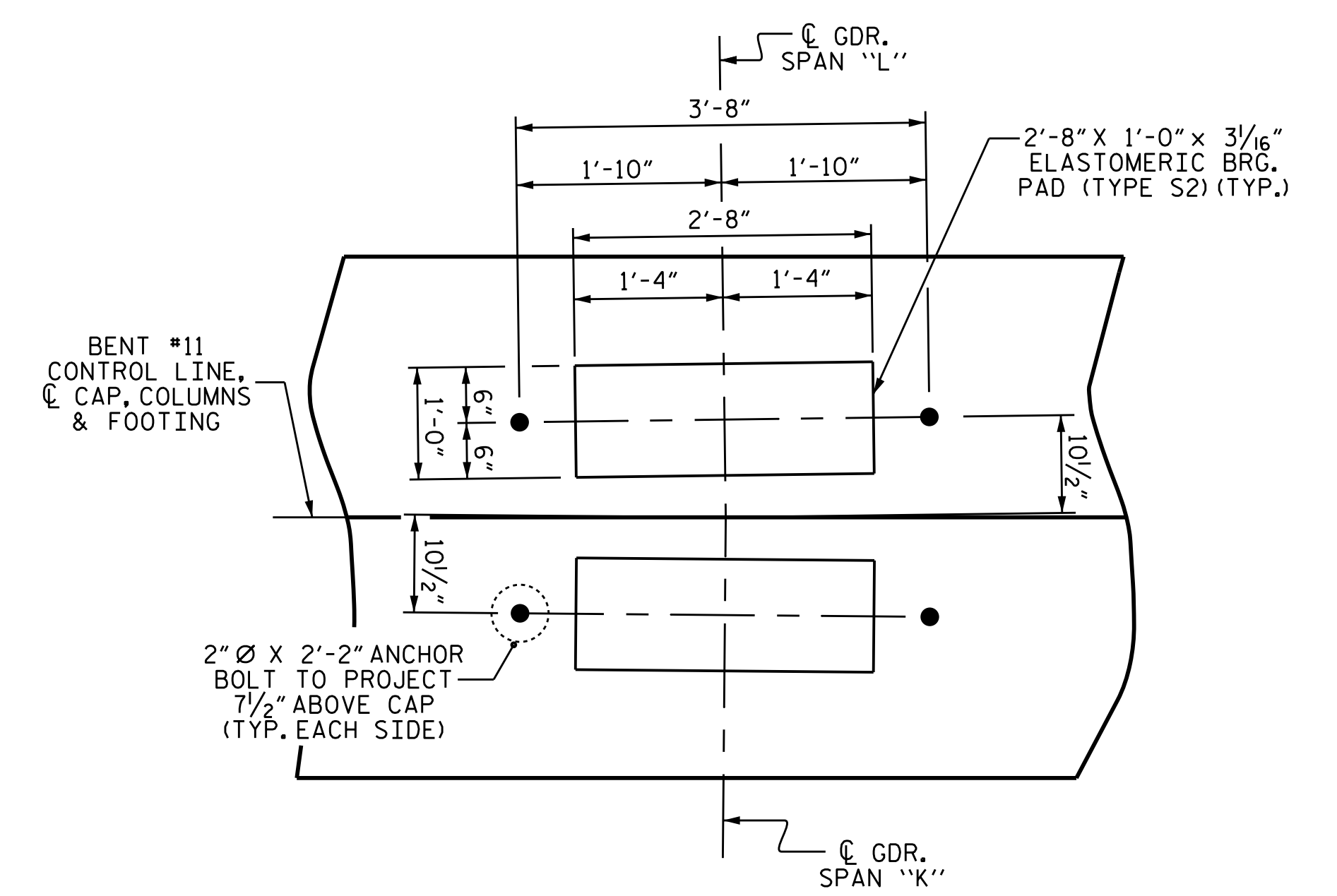
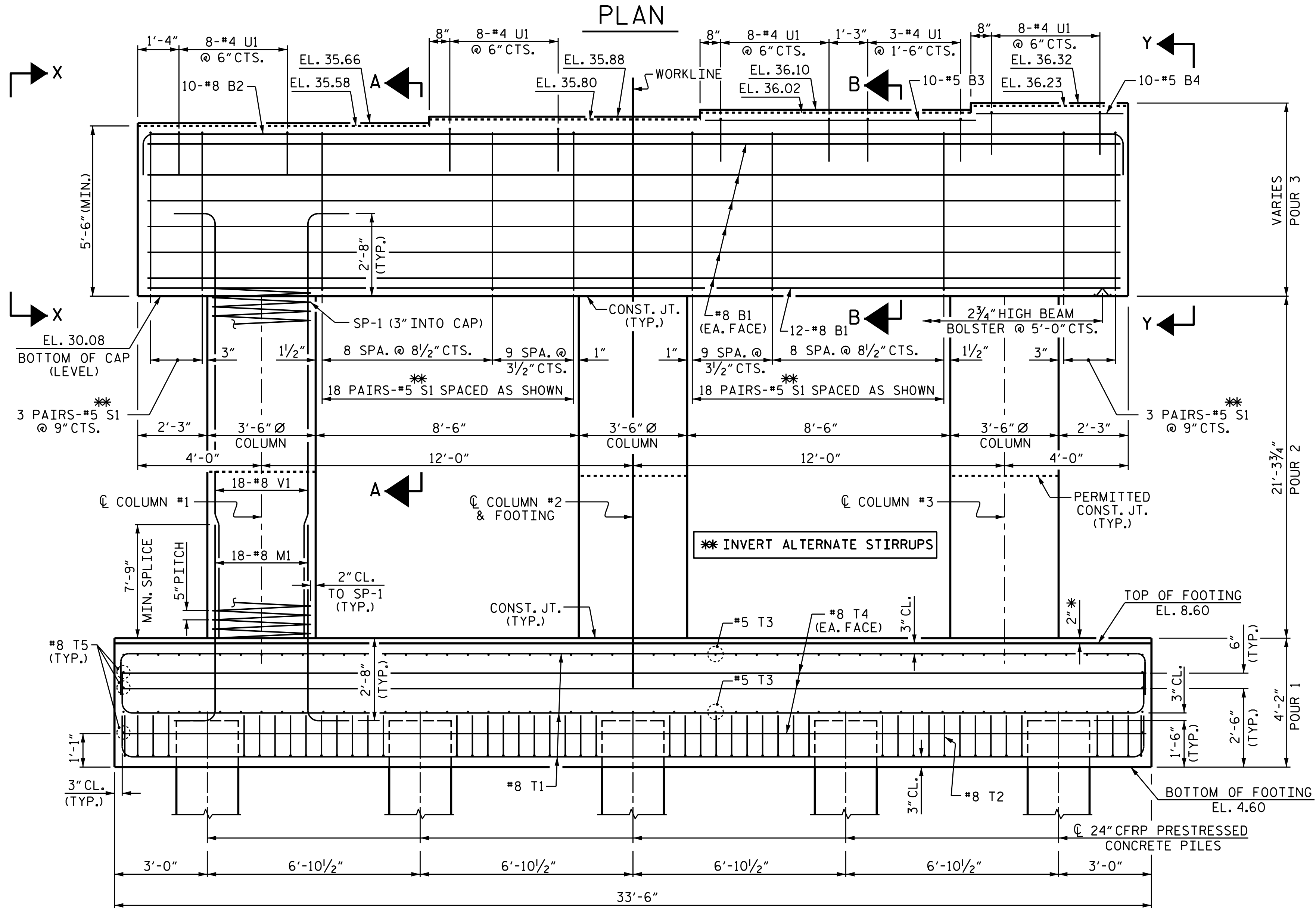
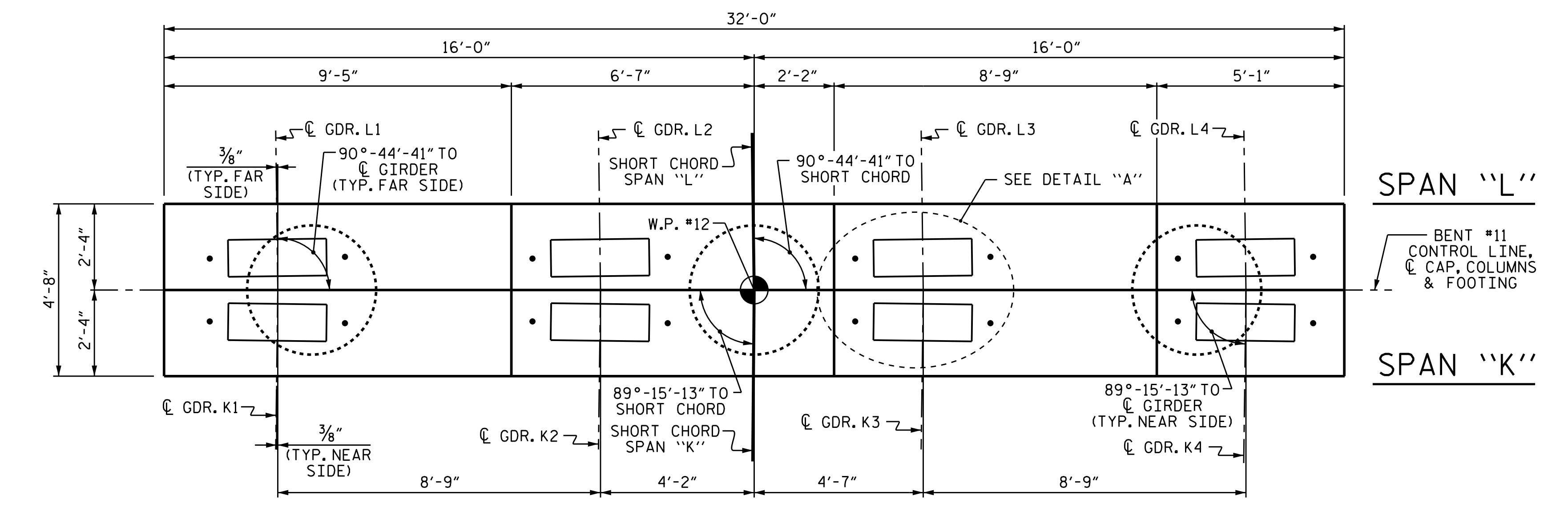
DRAWN BY : I.L. AVERETTE DATE : 02/2019
 CHECKED BY : A.K. PATEL DATE : 04/2019
 DESIGN ENGINEER OF RECORD: A.K. PATEL DATE : 04/2019

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NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
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2			4			194

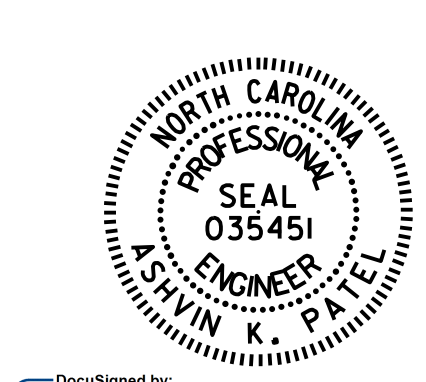
NOTES

STIRRUPS AND U1 BARS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.
 HOOKS ON "V" AND "M" BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING BARS.
 CONCRETE DISPLACED BY CONCRETE PILES HAS BEEN DEDUCTED FROM THE FOOTING CONCRETE QUANTITY.
 ALL REINFORCING IN THE CAP, COLUMNS AND FOOTING IS TO BE GLASS FIBER REINFORCED POLYMER (GFRP) BARS. FOR GLASS FIBER REINFORCED POLYMER BARS, SEE SPECIAL PROVISIONS.
 * THE FOOTING HAS A DROP OF 2" FROM THE CENTER OF THE FOOTING TO THE EDGE OF THE FOOTING TO ACCOMMODATE DRAINAGE.



PROJECT NO. B-4863
CARTERET COUNTY
 STATION: 34+75.00 -L-

SHEET 1 OF 3



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 BENT #11

DRAWN BY : I.L. AVERETTE DATE : 02/2019
 CHECKED BY : A.K. PATEL DATE : 04/2019
 DESIGN ENGINEER OF RECORD: A.K. PATEL DATE : 04/2019

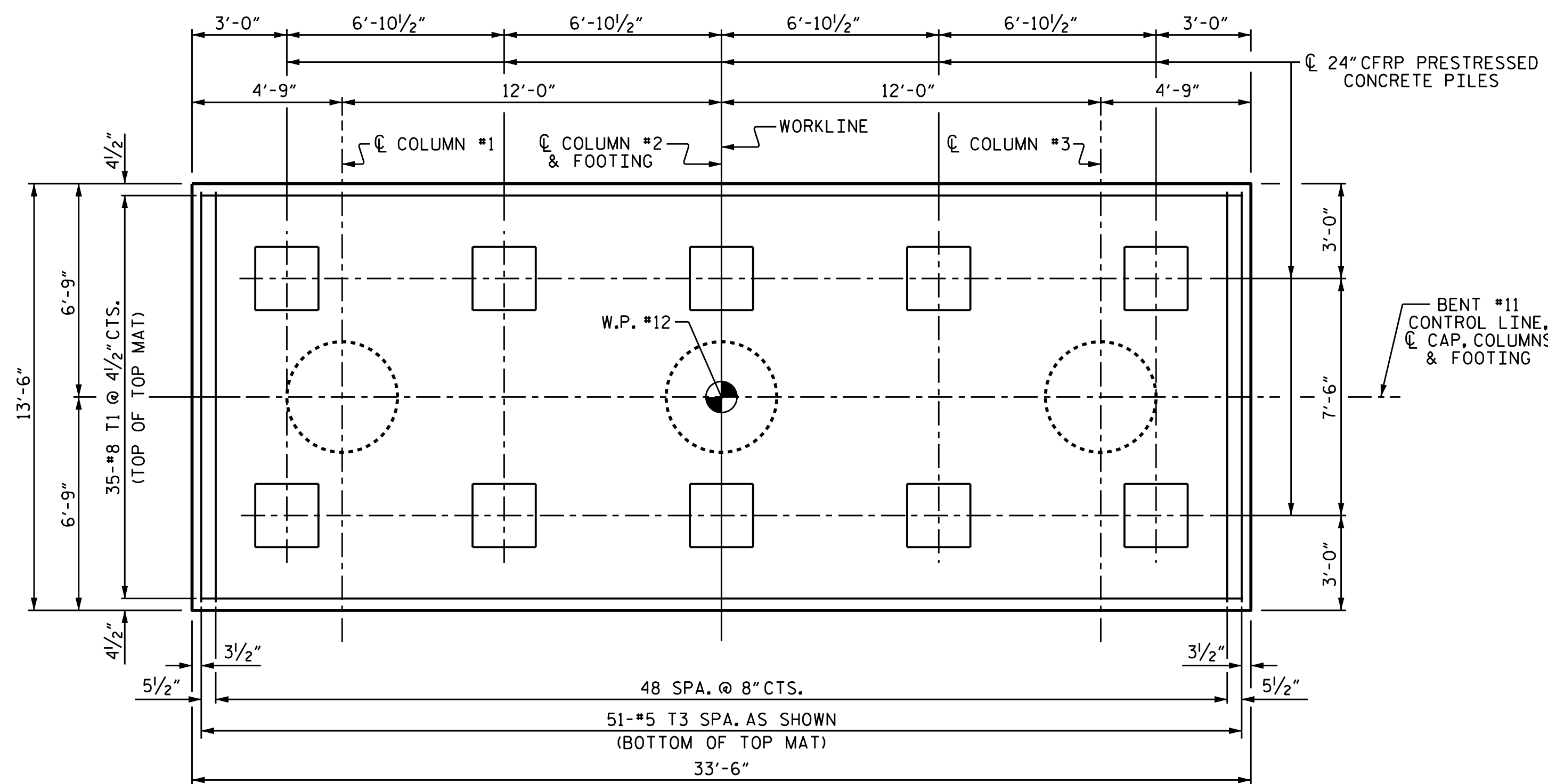
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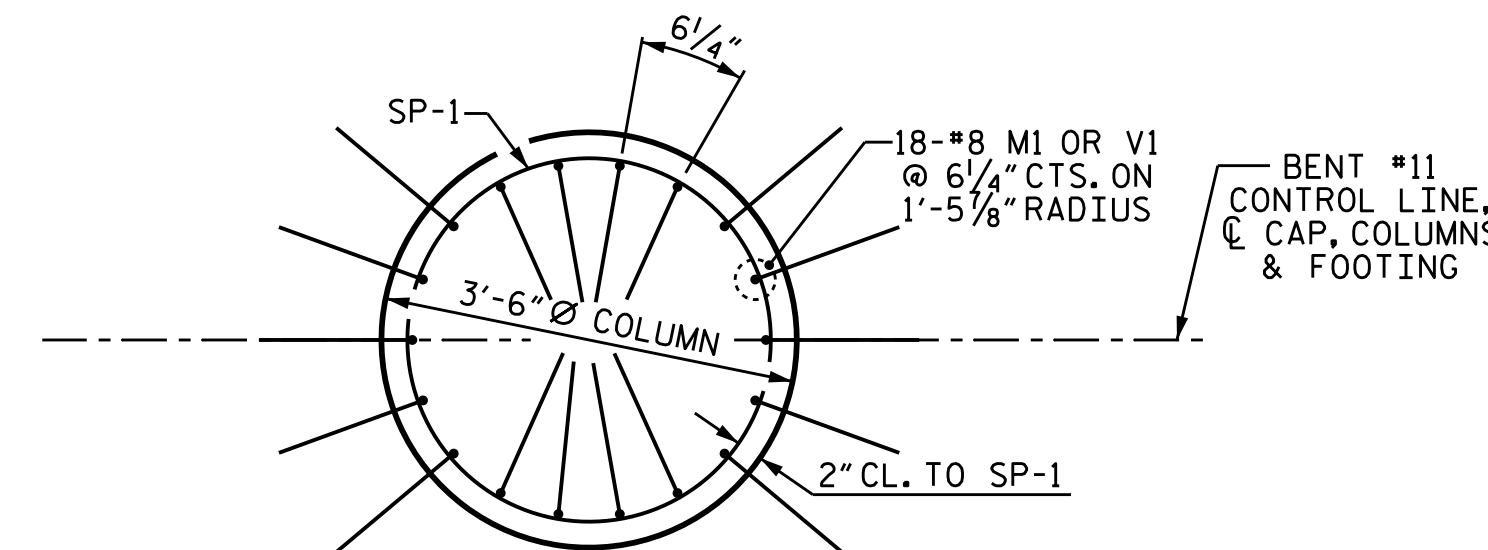
NOTES

FOR #8 T4 AND #8 T5 BARS ON EACH FACE OF FOOTING BETWEEN BOTTOM AND TOP MAT OF REINFORCING BARS, SEE SHEET 1 OF 3.

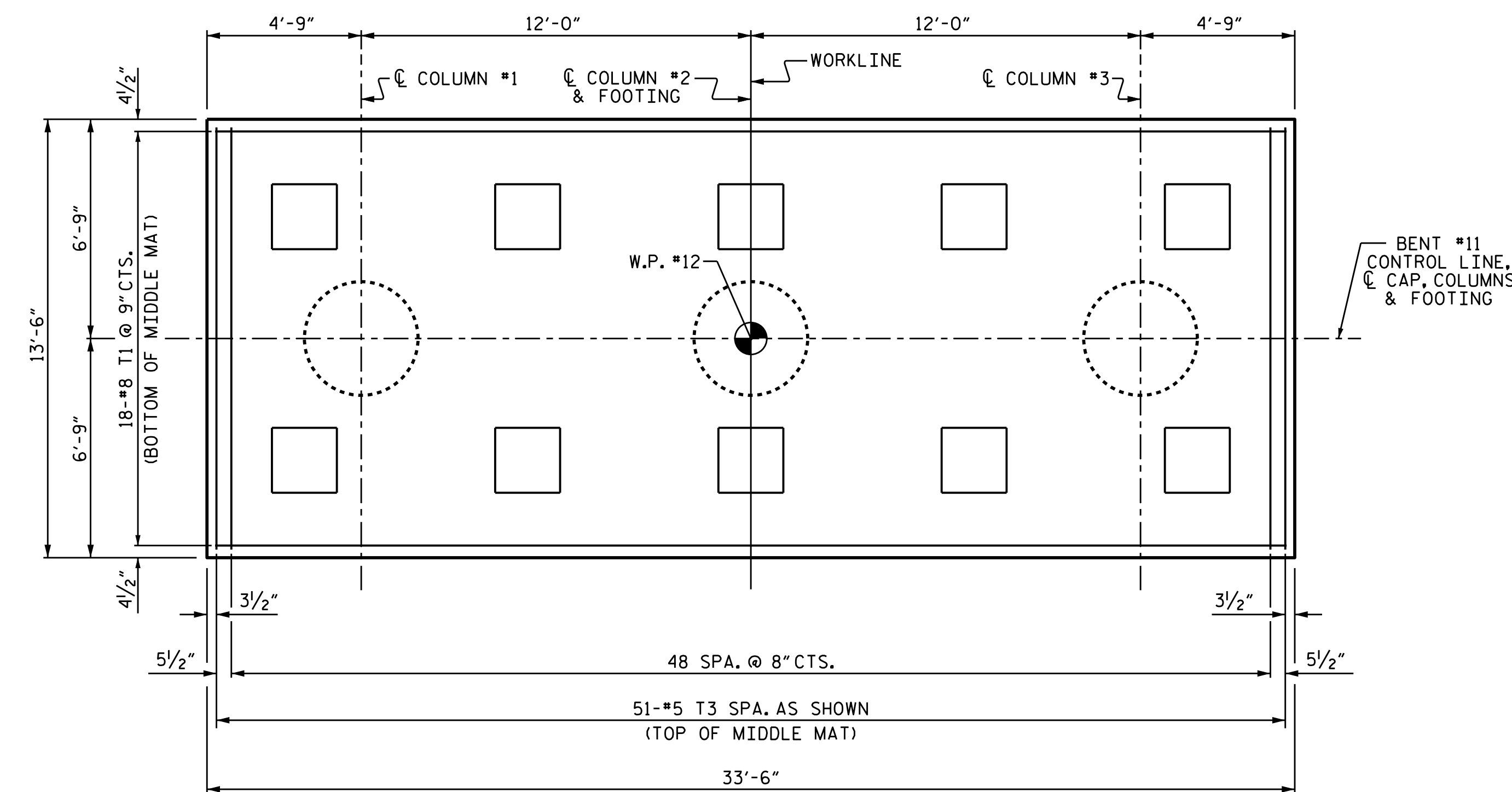
#4 U5 BARS MAY BE SHIFTED SLIGHTLY AS NECESSARY TO AVOID "T" BARS.



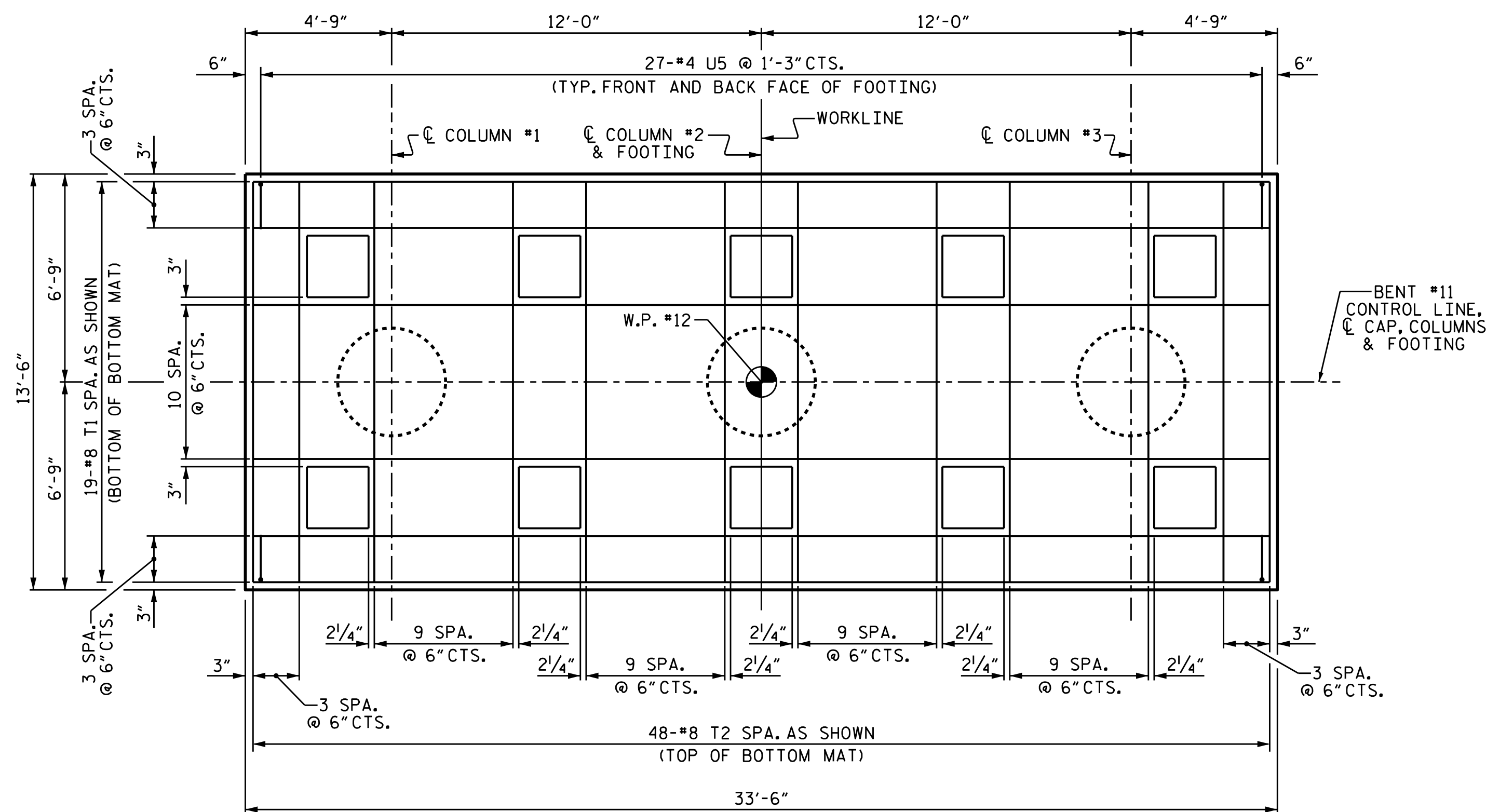
PLAN OF COLUMNS & FOOTING
SHOWING TOP MAT OF REINFORCING BARS



COLUMN REINFORCING DETAILS
TYPICAL FOR EACH COLUMN



PLAN OF COLUMNS & FOOTING
SHOWING MIDDLE MAT OF REINFORCING BARS



PLAN OF COLUMNS & FOOTING
SHOWING BOTTOM MAT OF REINFORCING BARS
AND TEMPERATURE REINFORCEMENT

PROJECT NO. B-4863
CARTERET COUNTY
STATION: 34+75.00 -L-

SHEET 2 OF 3



DocuSigned by:
Ashwin Patel
7F189E5610244E33
3/9/2020

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

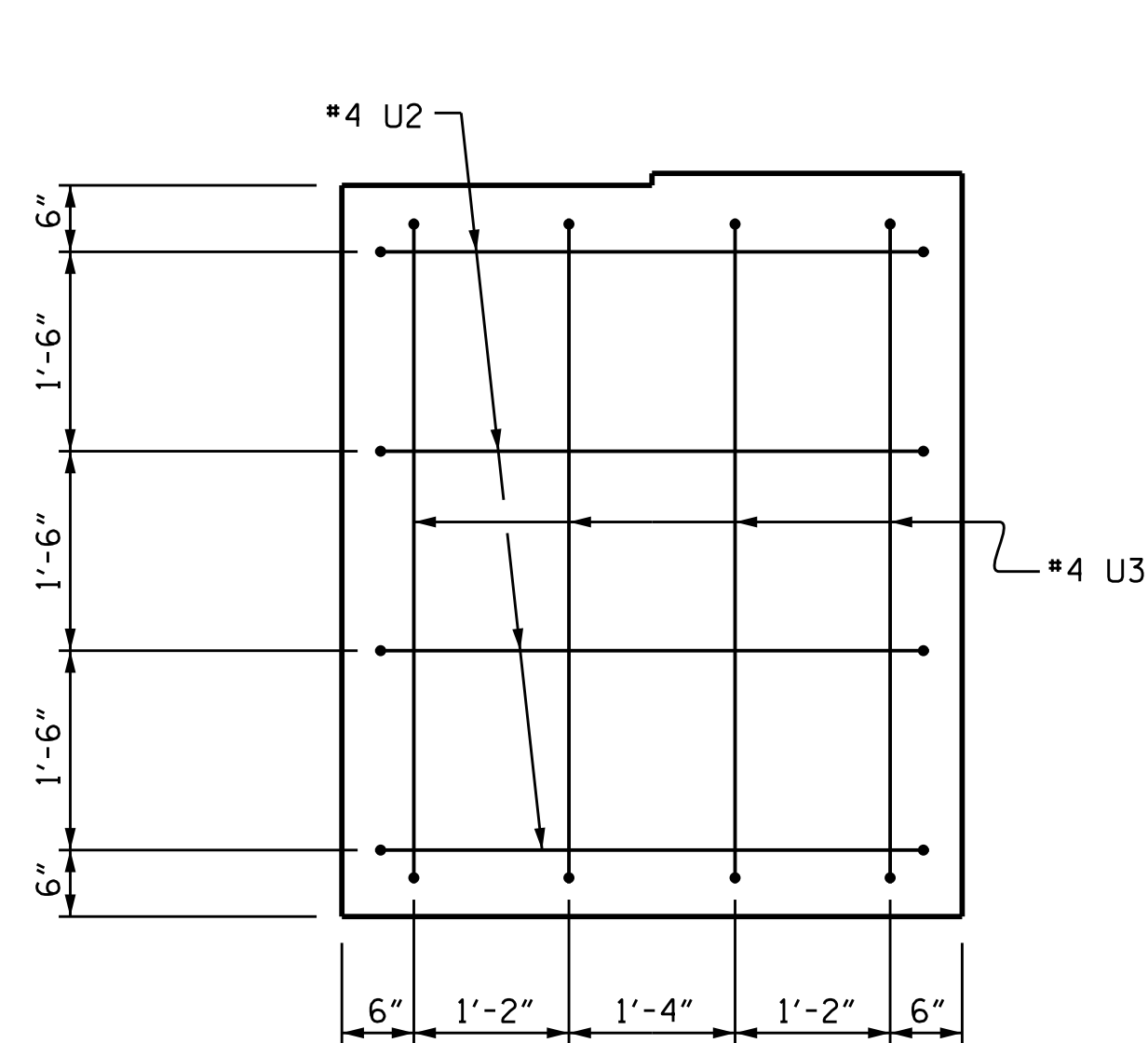
SUBSTRUCTURE

BENT #11

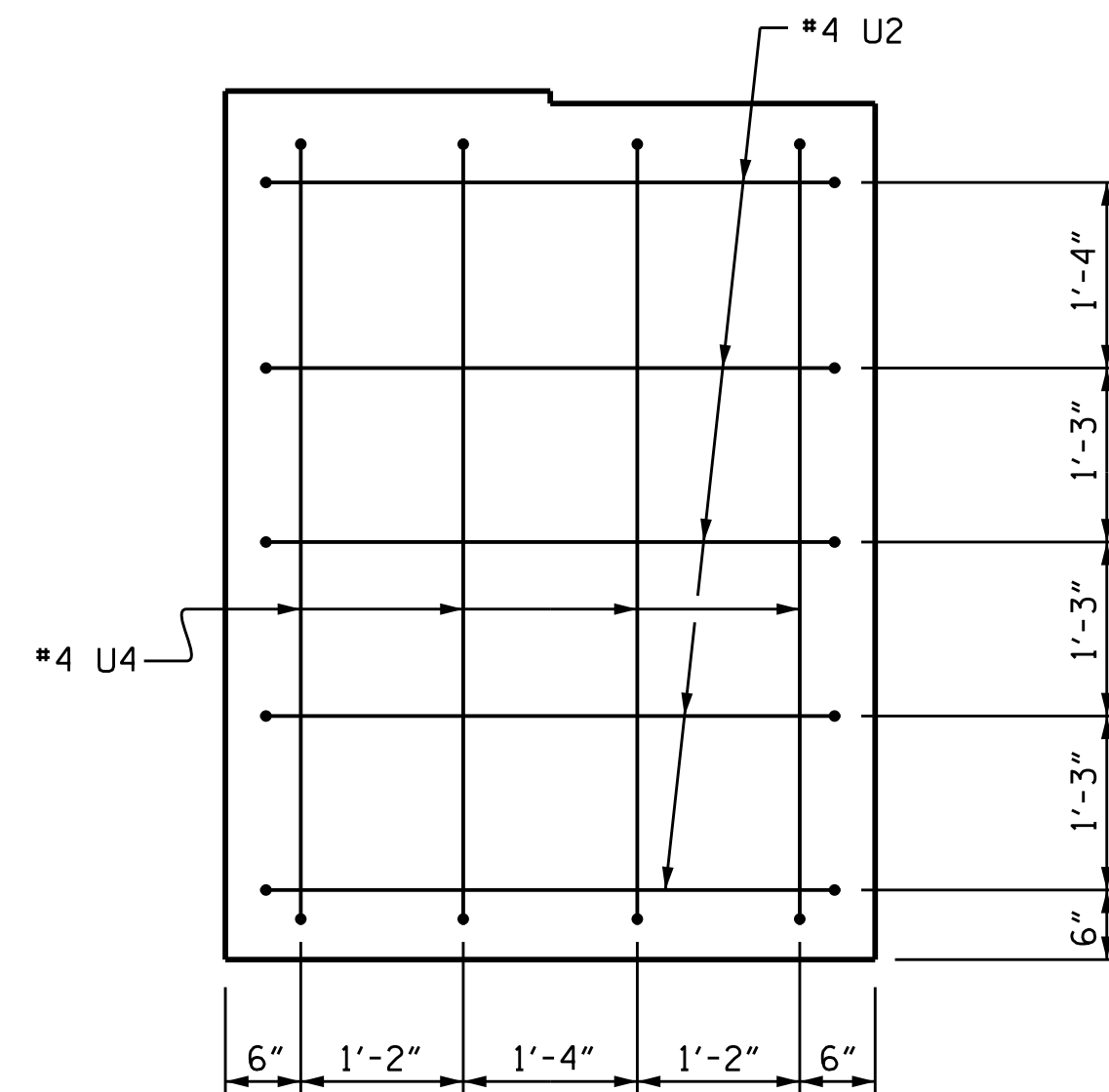
DRAWN BY : I.L. AVERETTE DATE : 02/2019
CHECKED BY : A.K. PATEL DATE : 04/2019
DESIGN ENGINEER OF RECORD: A.K. PATEL DATE : 04/2019

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

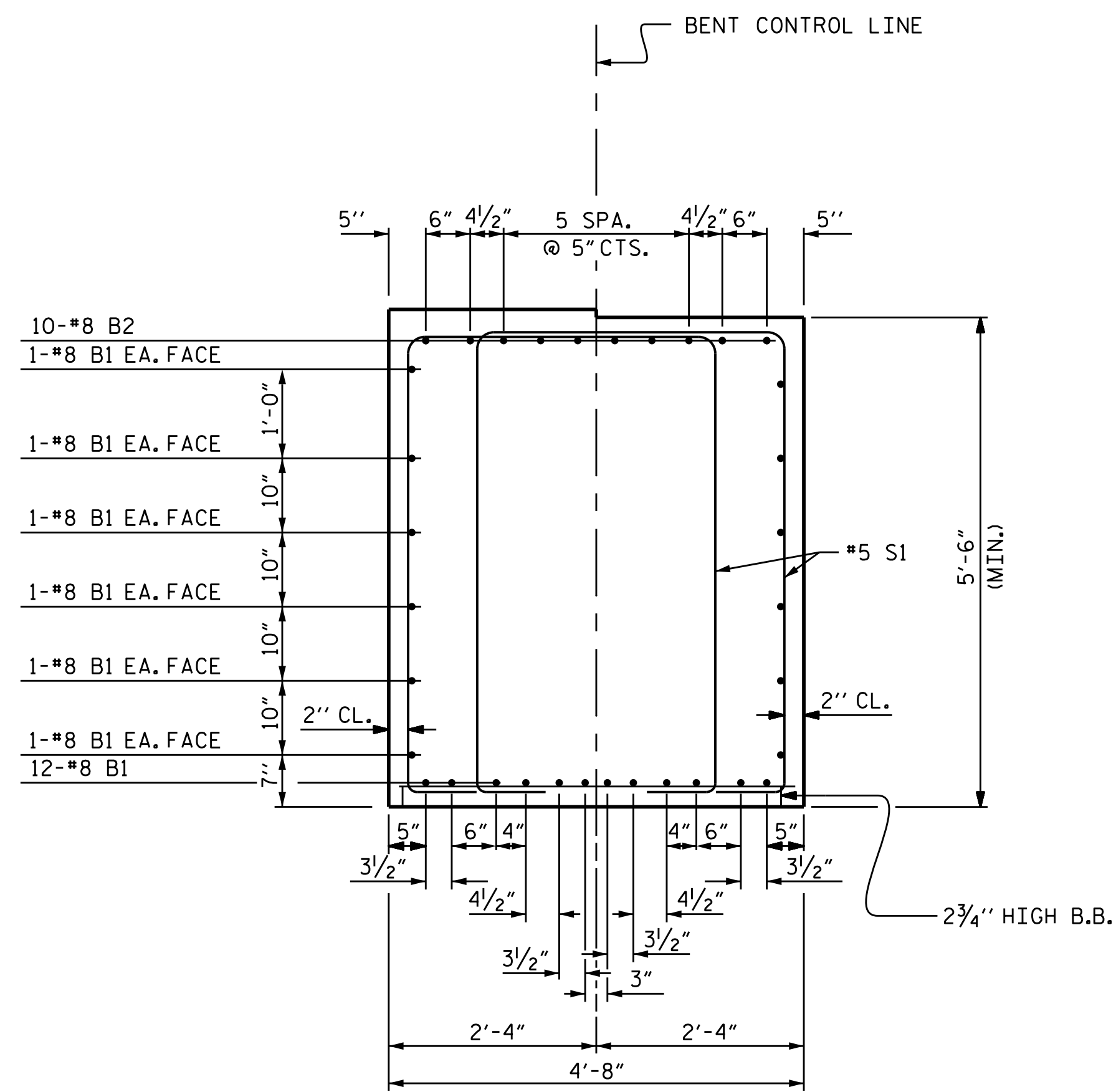
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			S1-152
2			4			194



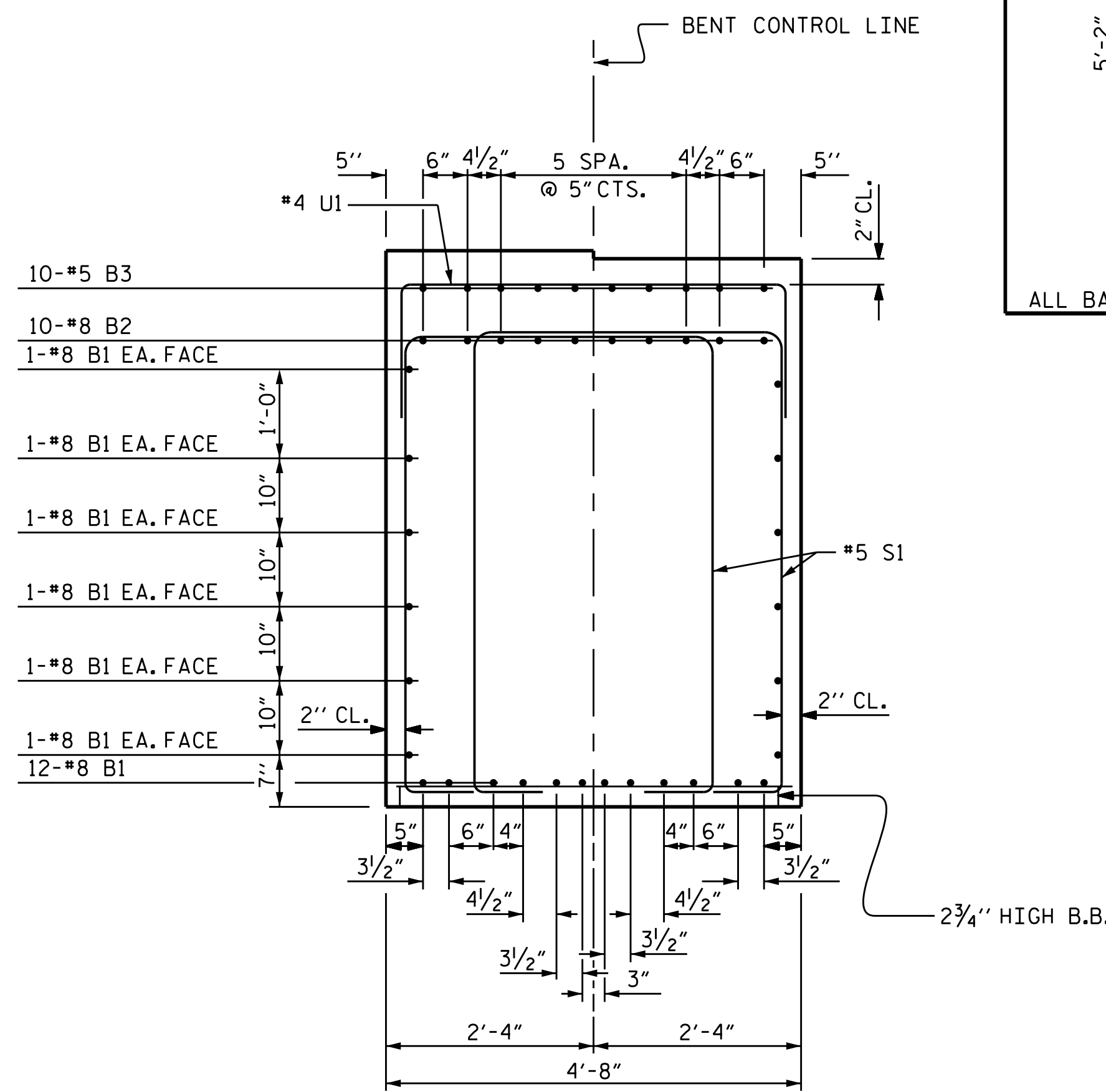
VIEW X-X



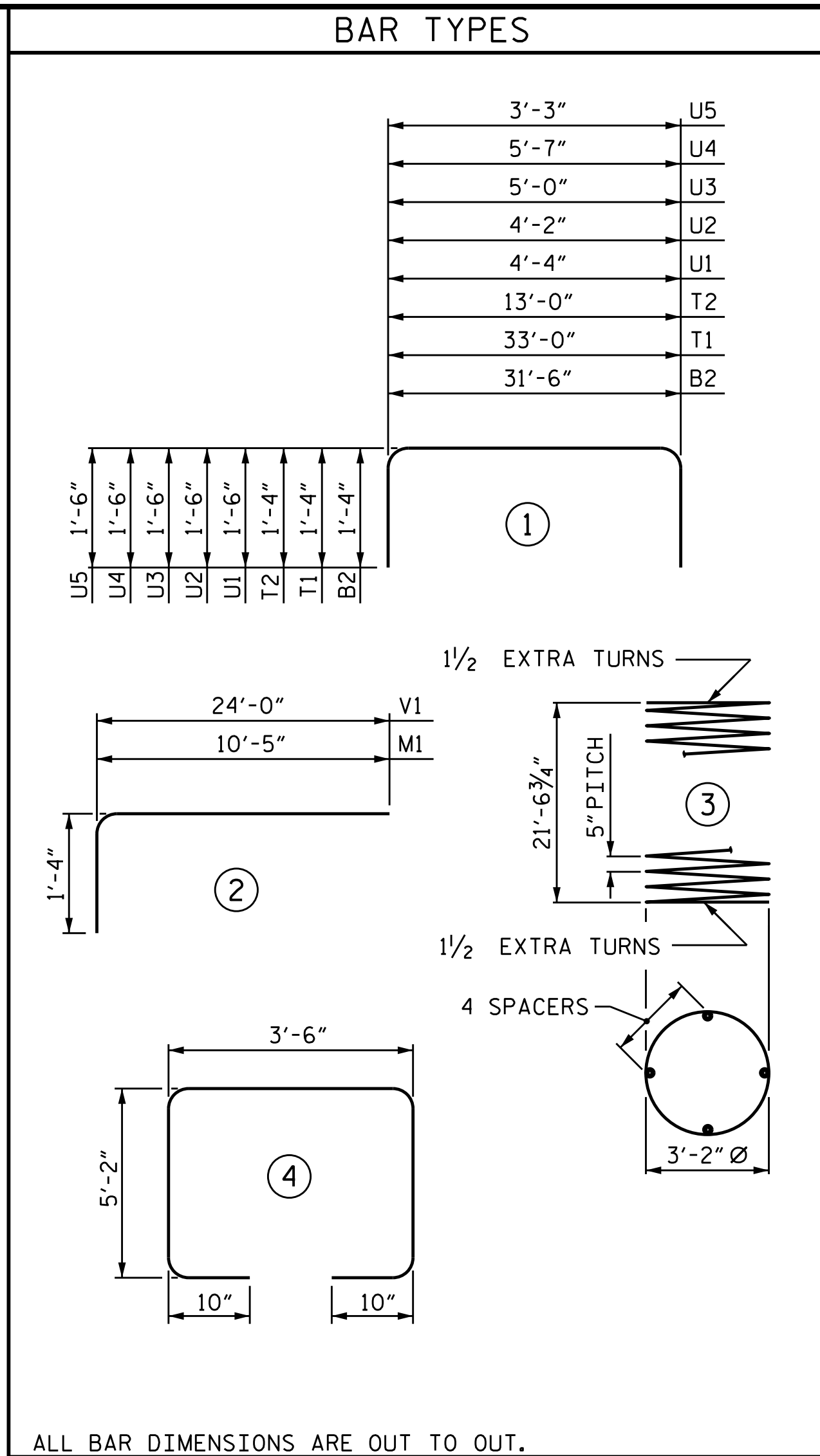
VIEW Y-Y



SECTION A-A



SECTION B-B



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

BENT #11

BAR	NO.	SIZE	TYPE	LENGTH	TOTAL LENGTH
B1	24	#8	STR	31'-8"	760'-0"
B2	10	#8	1	34'-2"	341'-8"
B3	10	#5	STR	8'-9"	87'-6"
B4	10	#5	STR	4'-9"	47'-6"
M1	54	#8	2	11'-9"	634'-6"
S1	84	#5	4	15'-6"	1302'-0"
T1	72	#8	1	35'-8"	2568'-0"
T2	48	#8	1	15'-8"	752'-0"
T3	102	#5	STR	13'-0"	1326'-0"
T4	6	#8	STR	33'-0"	198'-0"
T5	6	#8	STR	13'-0"	78'-0"
U1	35	#4	1	7'-4"	256'-8"
U2	9	#4	1	7'-2"	64'-6"
U3	4	#4	1	8'-0"	32'-0"
U4	4	#4	1	8'-7"	34'-4"
U5	54	#4	1	6'-3"	337'-6"
V1	54	#8	2	25'-4"	1368'-0"
SP-1	3	#5	3	536'-9"	1610'-3"

TOTAL LIN. FT. # 4 BARS 693.0
 TOTAL LIN. FT. # 5 BARS 4405.2
 TOTAL LIN. FT. # 8 BARS 6700.2

GLASS FIBER REINFORCED POLYMER BARS TOTAL 11798.42 LIN. FT.

CLASS AA CONCRETE BREAKDOWN

POUR #1	FOOTING	66.2 C.Y.
POUR #2	COLUMNS	22.8 C.Y.
POUR #3	CAP	32.2 C.Y.

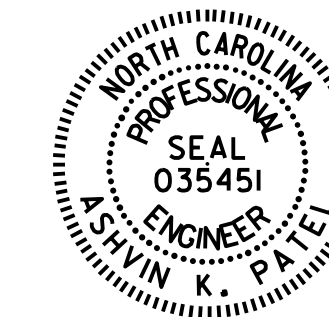
TOTAL CLASS AA CONCRETE 121.2 C.Y.

PROJECT NO. B-4863
CARTERET COUNTY
 STATION: 34+75.00 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 BENT #11



Designed by:
 Ashwin Patel
 771806561024403
 4/16/2021

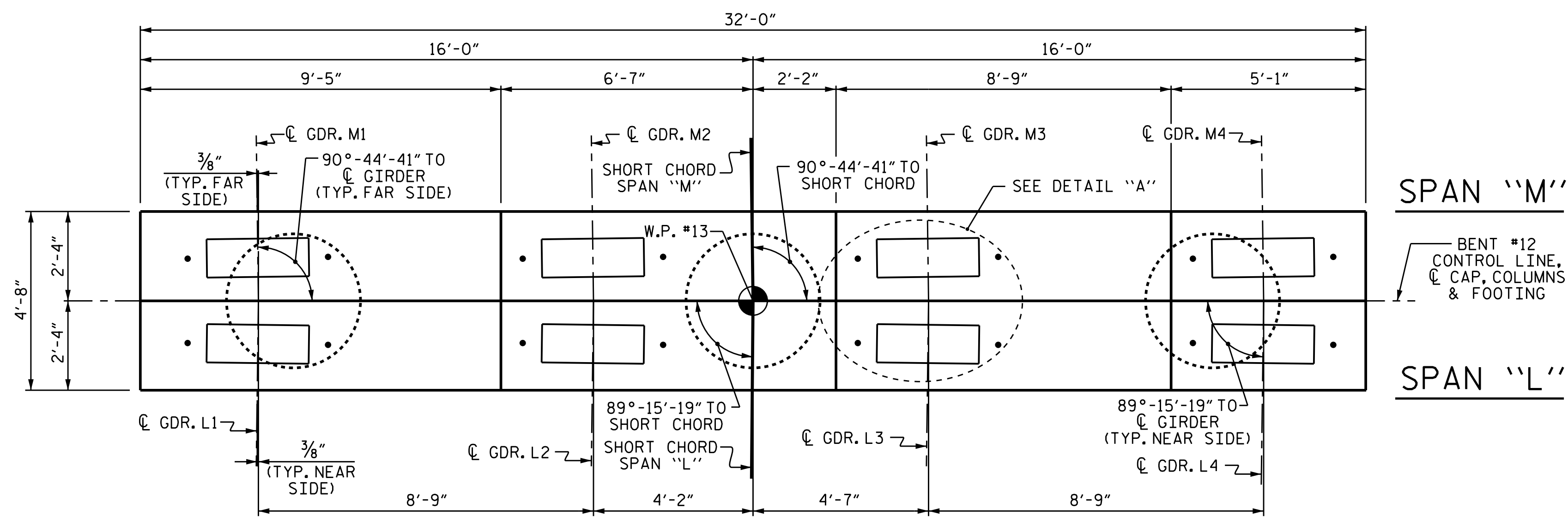
DRAWN BY : I.L. AVERETTE DATE : 02/2019
 CHECKED BY : A.K. PATEL DATE : 04/2019
 DESIGN ENGINEER OF RECORD: A.K. PATEL DATE : 04/2019

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

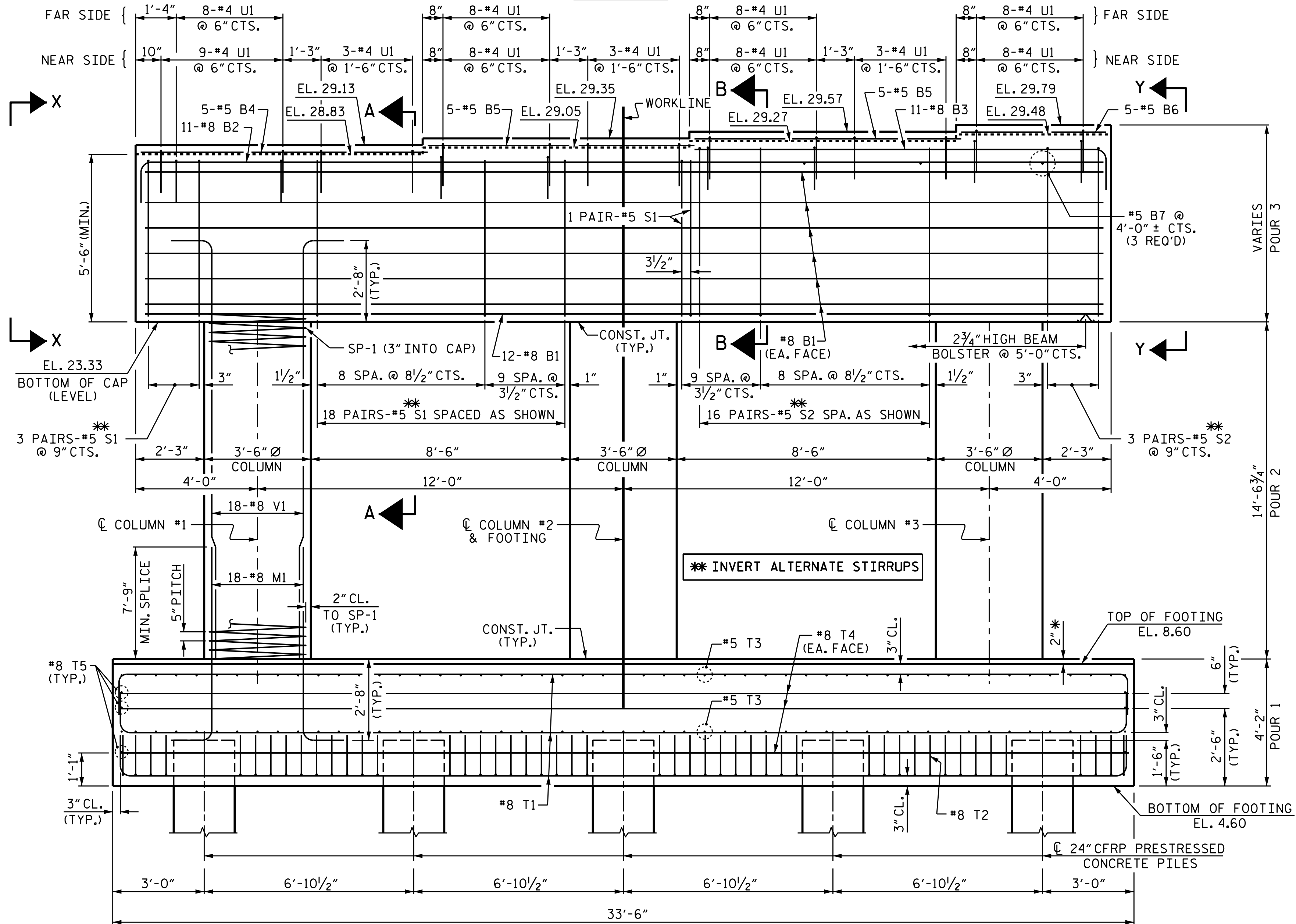
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-153
1			3			TOTAL SHEETS 194
2			4			

NOTES

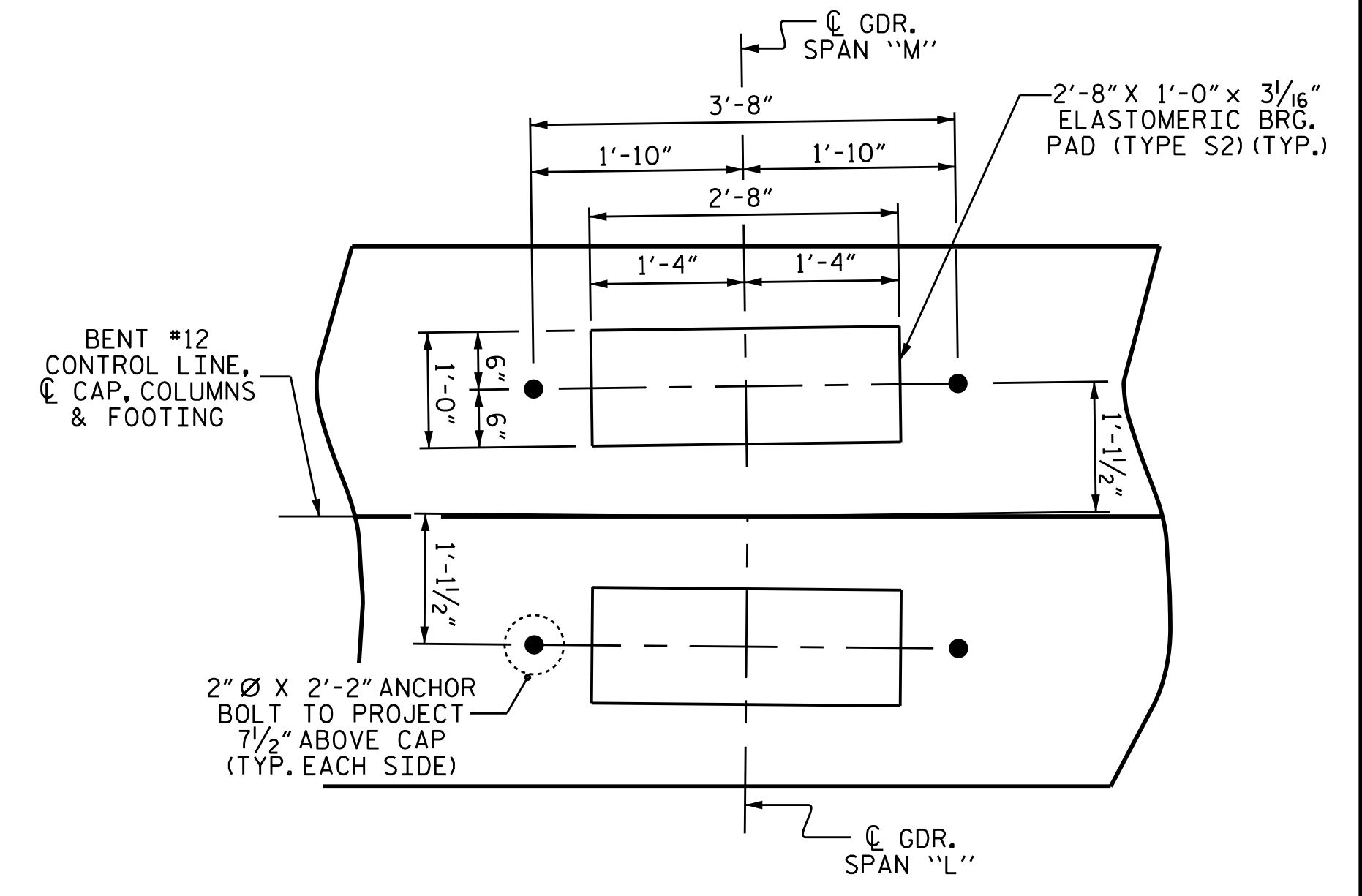
STIRRUPS AND U1 BARS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.
 HOOKS ON "V" AND "M" BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING BARS.
 CONCRETE DISPLACED BY CONCRETE PILES HAS BEEN DEDUCTED FROM THE FOOTING CONCRETE QUANTITY.
 THE TOP SURFACE AREAS OF THE BENT CAP SHALL BE CURED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS EXCEPT THE MEMBRANE CURING COMPOUND METHOD SHALL NOT BE USED.
 ALL REINFORCING IN THE CAP, COLUMNS AND FOOTING IS TO BE GLASS FIBER REINFORCED POLYMER (GFRP) BARS. FOR GLASS FIBER REINFORCED POLYMER BARS, SEE SPECIAL PROVISIONS.
 * THE FOOTING HAS A DROP OF 2" FROM THE CENTER OF THE FOOTING TO THE EDGE OF THE FOOTING TO ACCOMMODATE DRAINAGE.



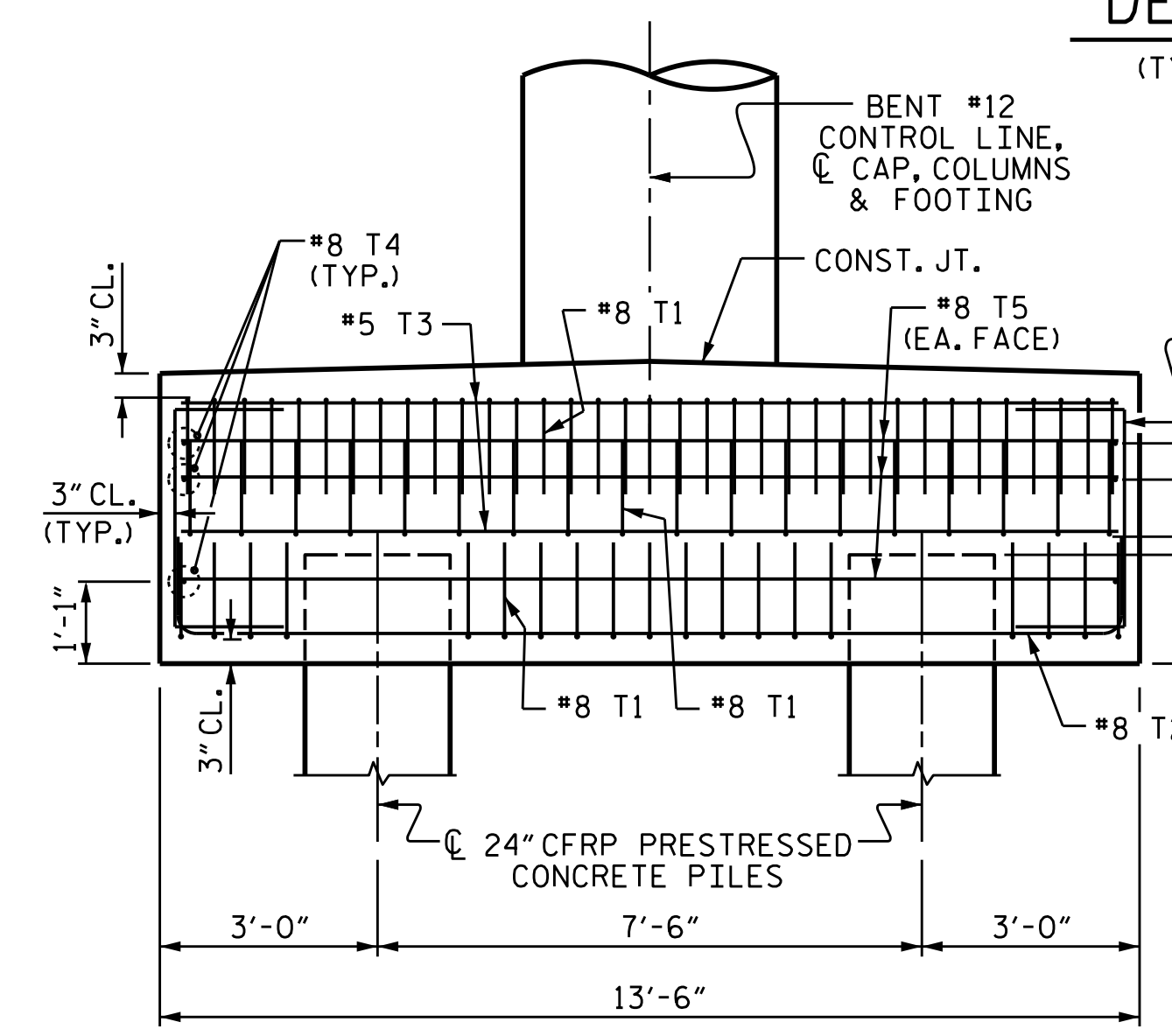
PLAN



ELEVATION



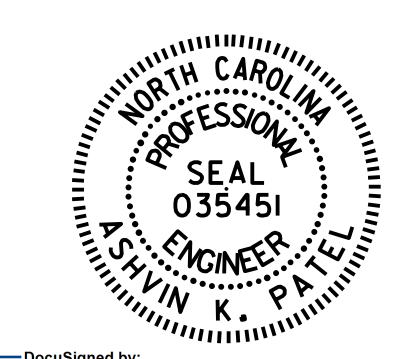
DETAIL "A"



PARTIAL END ELEVATION
SEE ELEVATION FOR COLUMN REINFORCING BARS

PROJECT NO. B-4863
CARTERET COUNTY
 STATION: 34+75.00 -L-

SHEET 1 OF 3



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 Ashwin Patel
 7F189E5E10244E3
 3/9/2020

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 BENT #12

DRAWN BY : I.L. AVERETTE DATE : 02/2019
 CHECKED BY : A.K. PATEL DATE : 04/2019
 DESIGN ENGINEER OF RECORD : A.K. PATEL DATE : 04/2019

REINFORCING BAR DIMENSIONS AND DETAILS ARE TYPICAL FOR EACH COLUMN
 FOR ADDITIONAL REINFORCING BARS IN ENDS OF CAP, SEE END VIEW ON SHEET 3 OF 3
 *4 U7 BARS IN FOOTING NOT SHOWN, SEE SHEET 2 OF 3

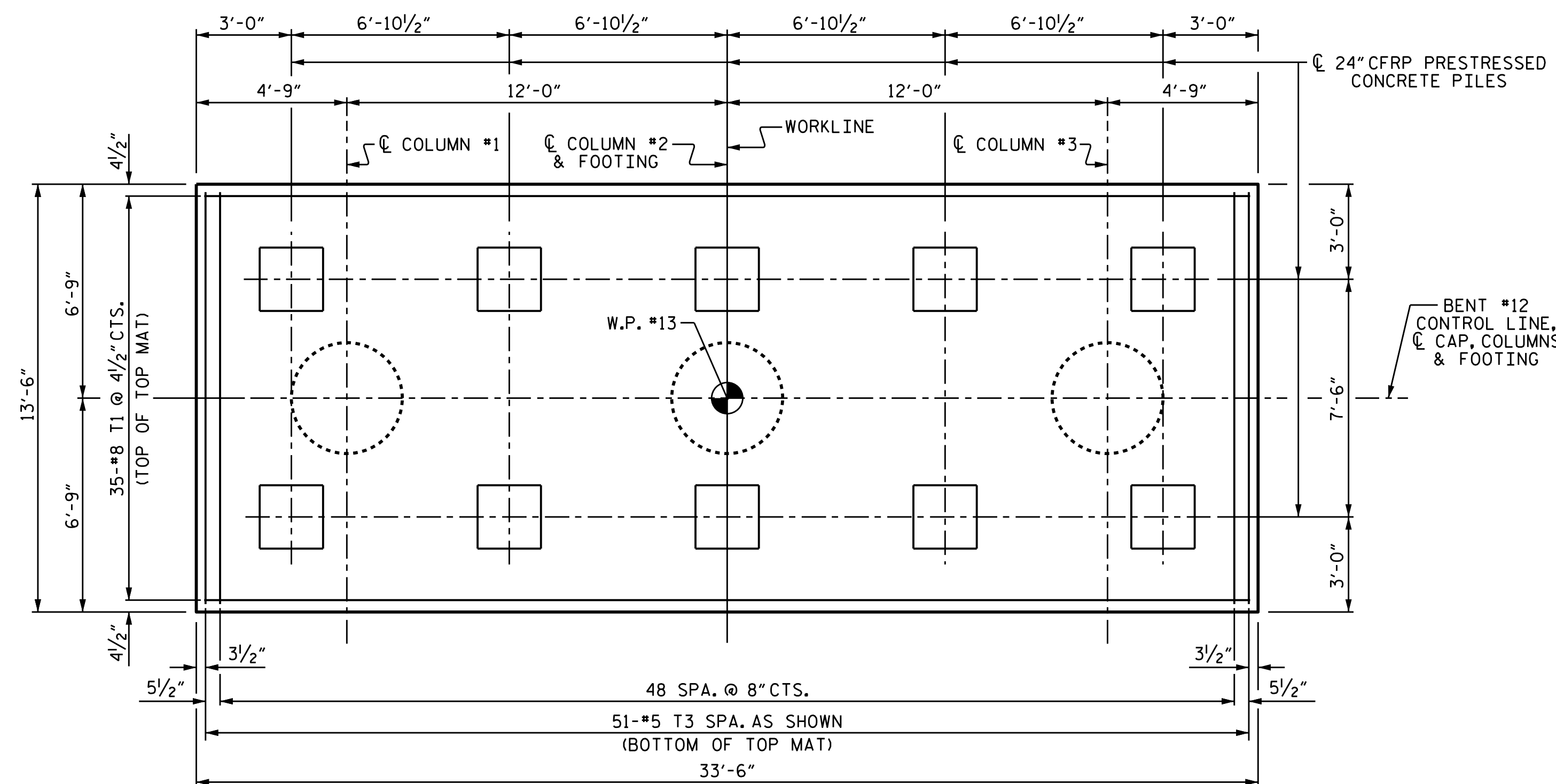
DOCUMENT NOT CONSIDERED
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 SIGNATURES COMPLETED

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-154	
1			3			TOTAL SHEETS	
2			4			194	

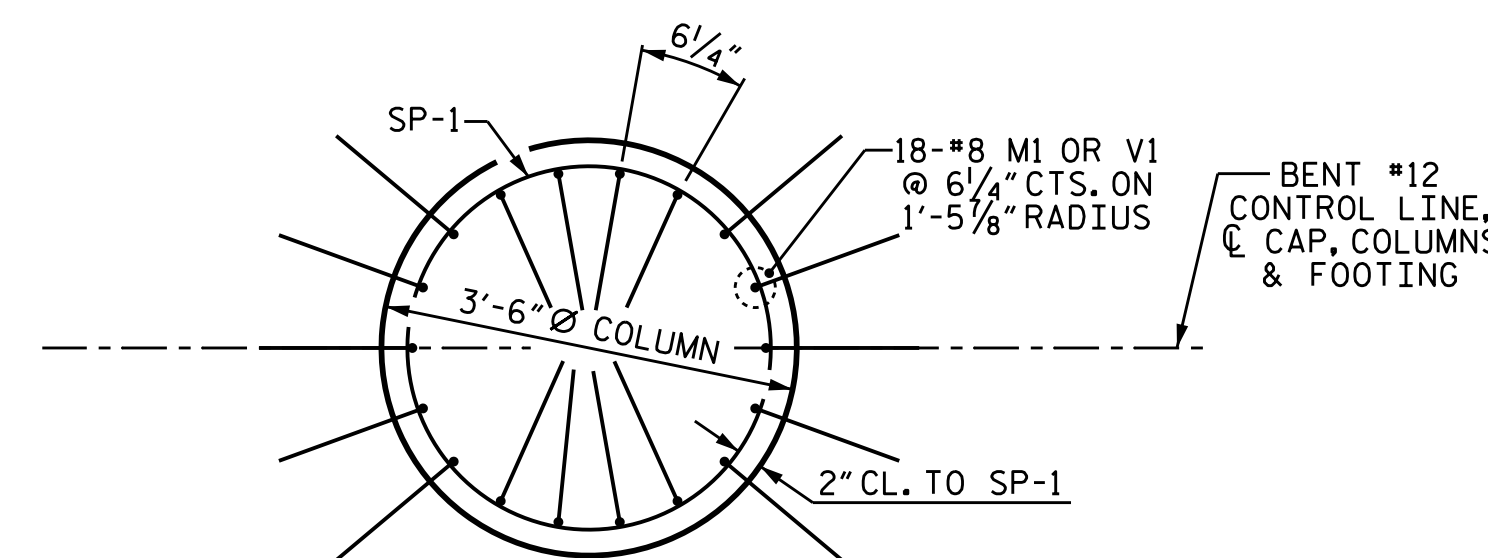
NOTES

FOR #8 T4 AND #8 T5 BARS ON EACH FACE OF FOOTING BETWEEN BOTTOM AND TOP MAT OF REINFORCING BARS, SEE SHEET 1 OF 3.

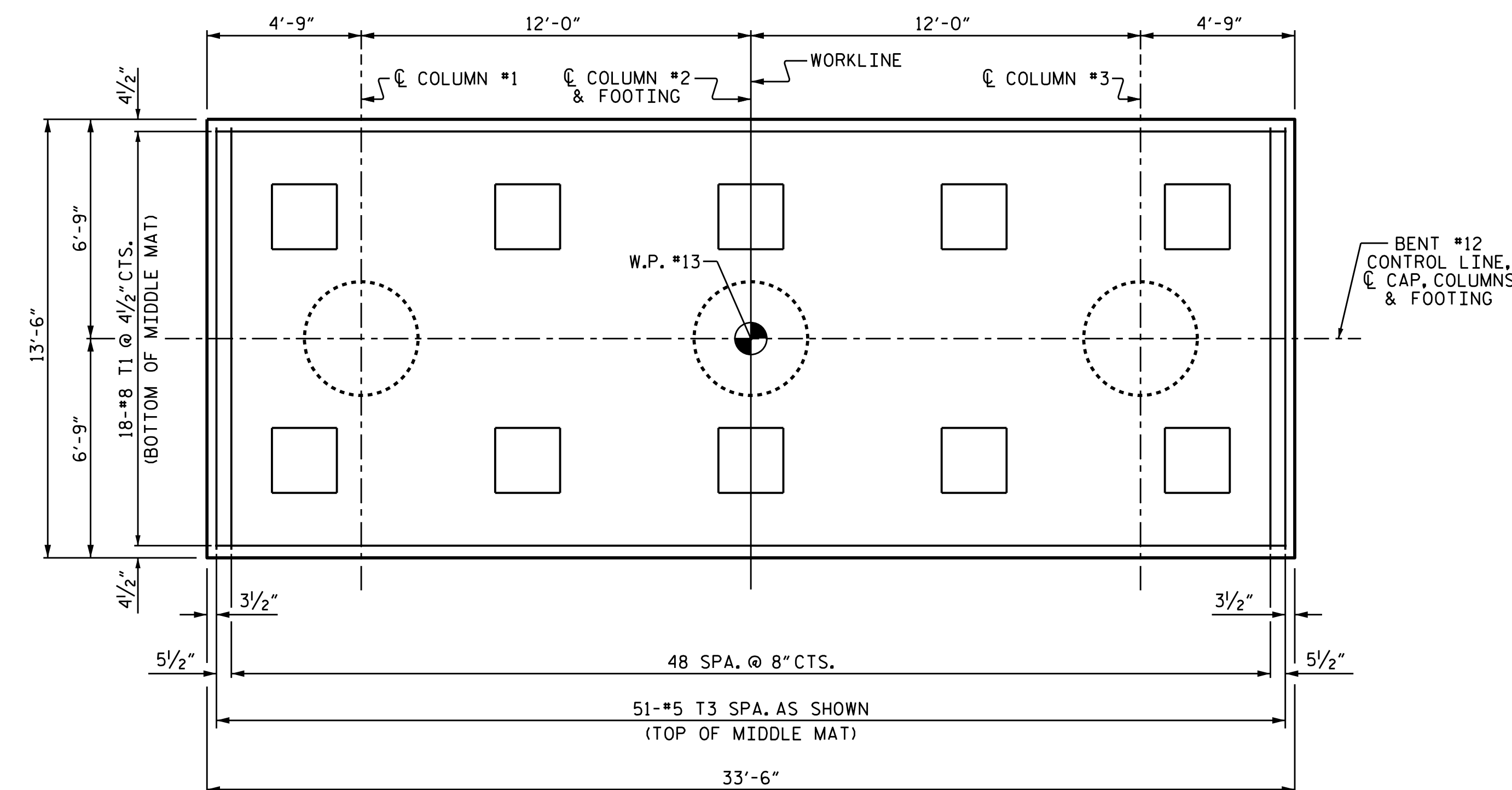
#4 U7 BARS MAY BE SHIFTED SLIGHTLY AS NECESSARY TO AVOID "T" BARS.



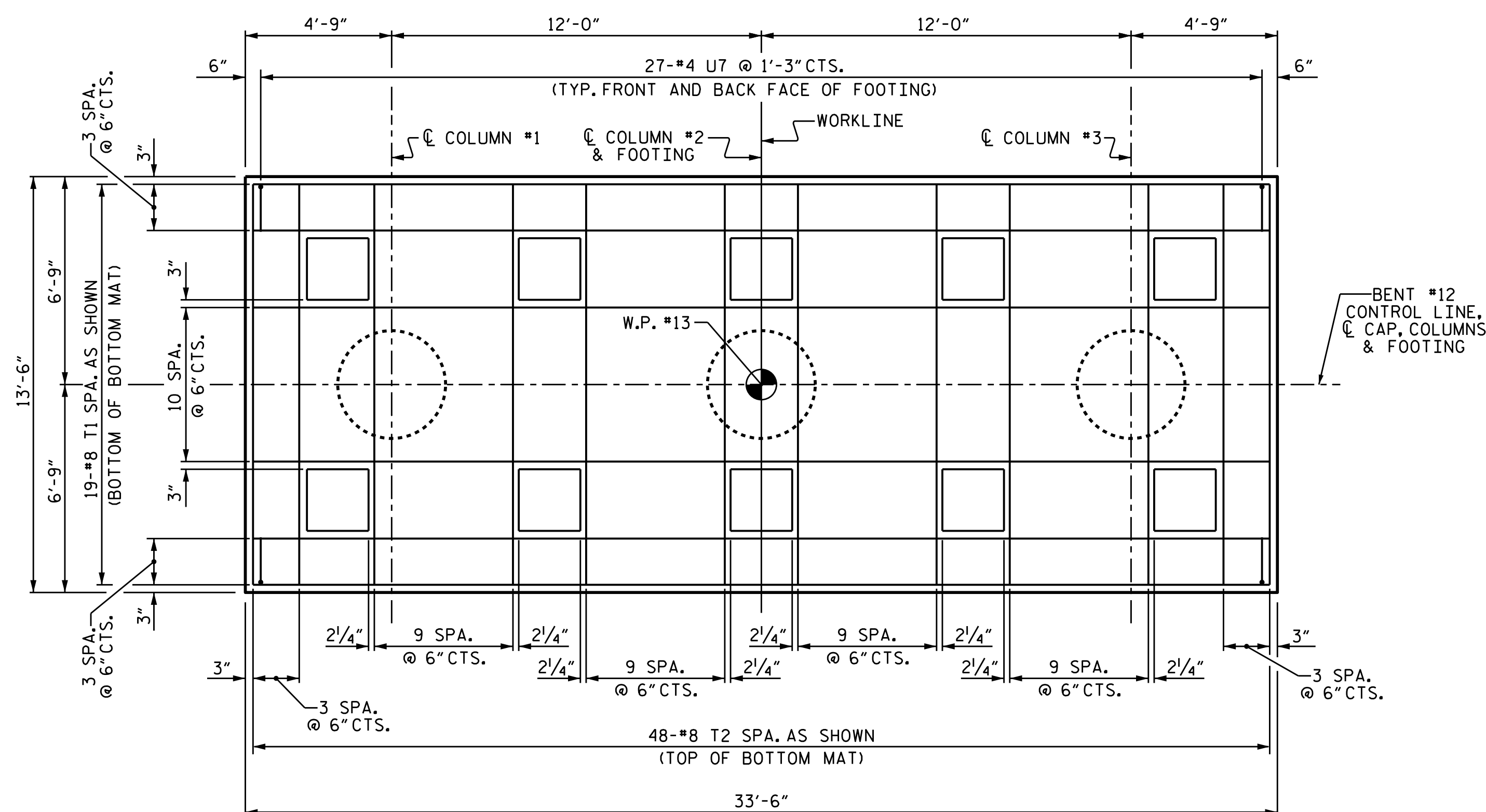
PLAN OF COLUMNS & FOOTING
SHOWING TOP MAT OF REINFORCING BARS



COLUMN REINFORCING DETAILS
TYPICAL FOR EACH COLUMN



PLAN OF COLUMNS & FOOTING
SHOWING MIDDLE MAT OF REINFORCING BARS



PLAN OF COLUMNS & FOOTING
SHOWING BOTTOM MAT OF REINFORCING BARS
AND TEMPERATURE REINFORCEMENT

PROJECT NO. B-4863
CARTERET COUNTY
STATION: 34+75.00 -L-

SHEET 2 OF 3



DocuSigned by:
Ashwin Patel
7F189E5610244E33
3/9/2020

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

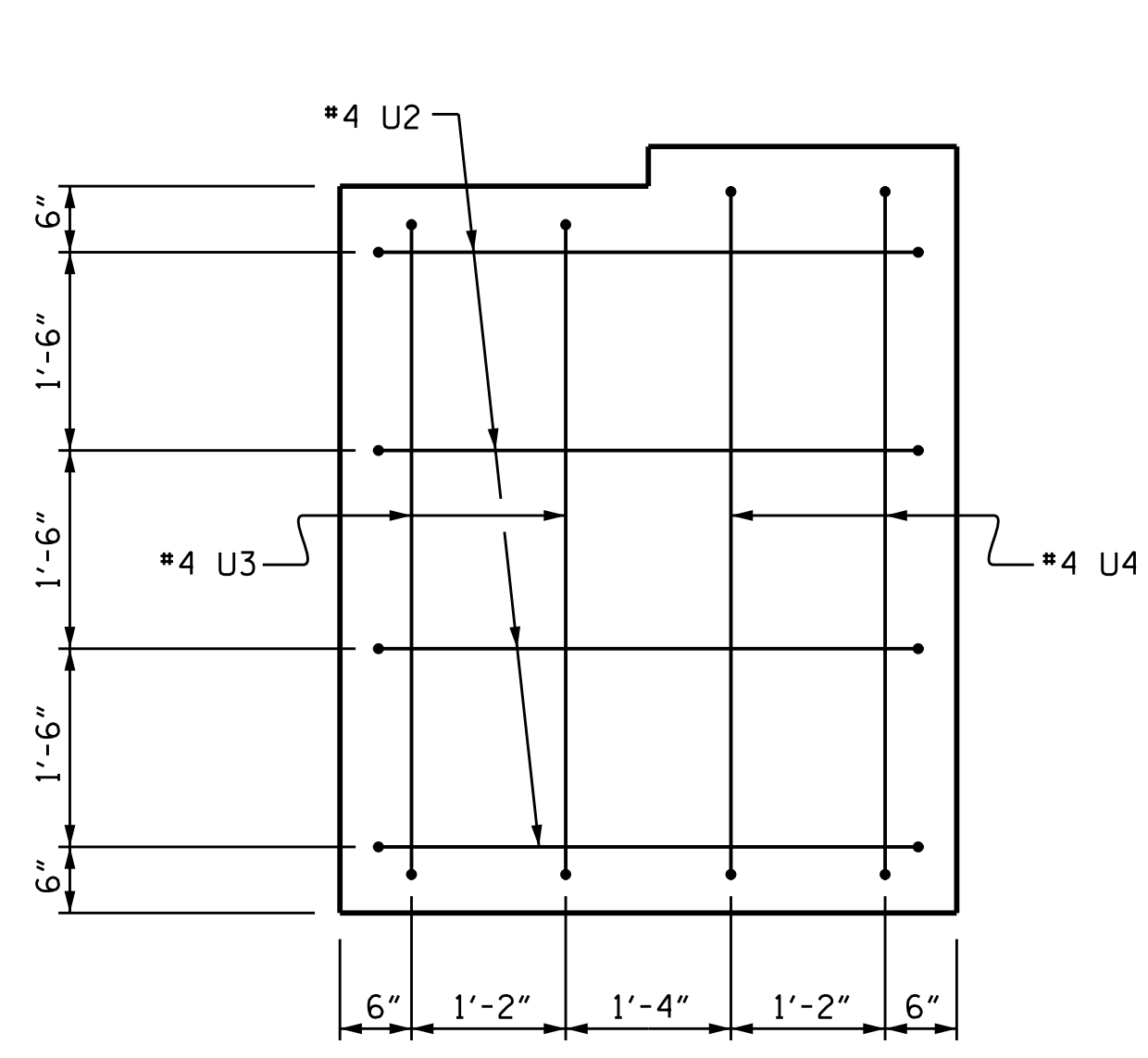
SUBSTRUCTURE

BENT #12

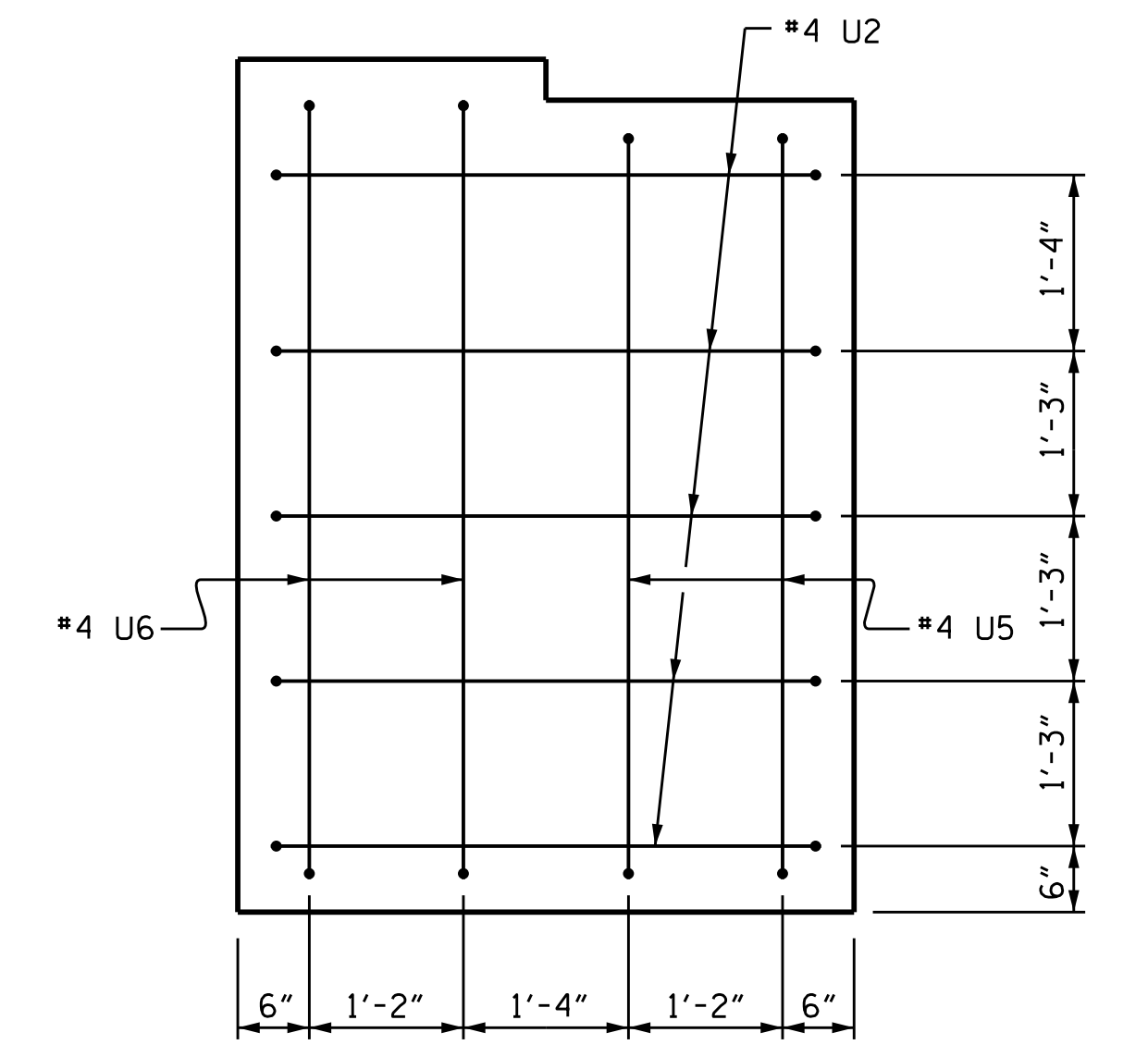
DRAWN BY : I.L. AVERETTE DATE : 02/2019
CHECKED BY : A. K. PATEL DATE : 04/2019
DESIGN ENGINEER OF RECORD: A. K. PATEL DATE : 04/2019

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

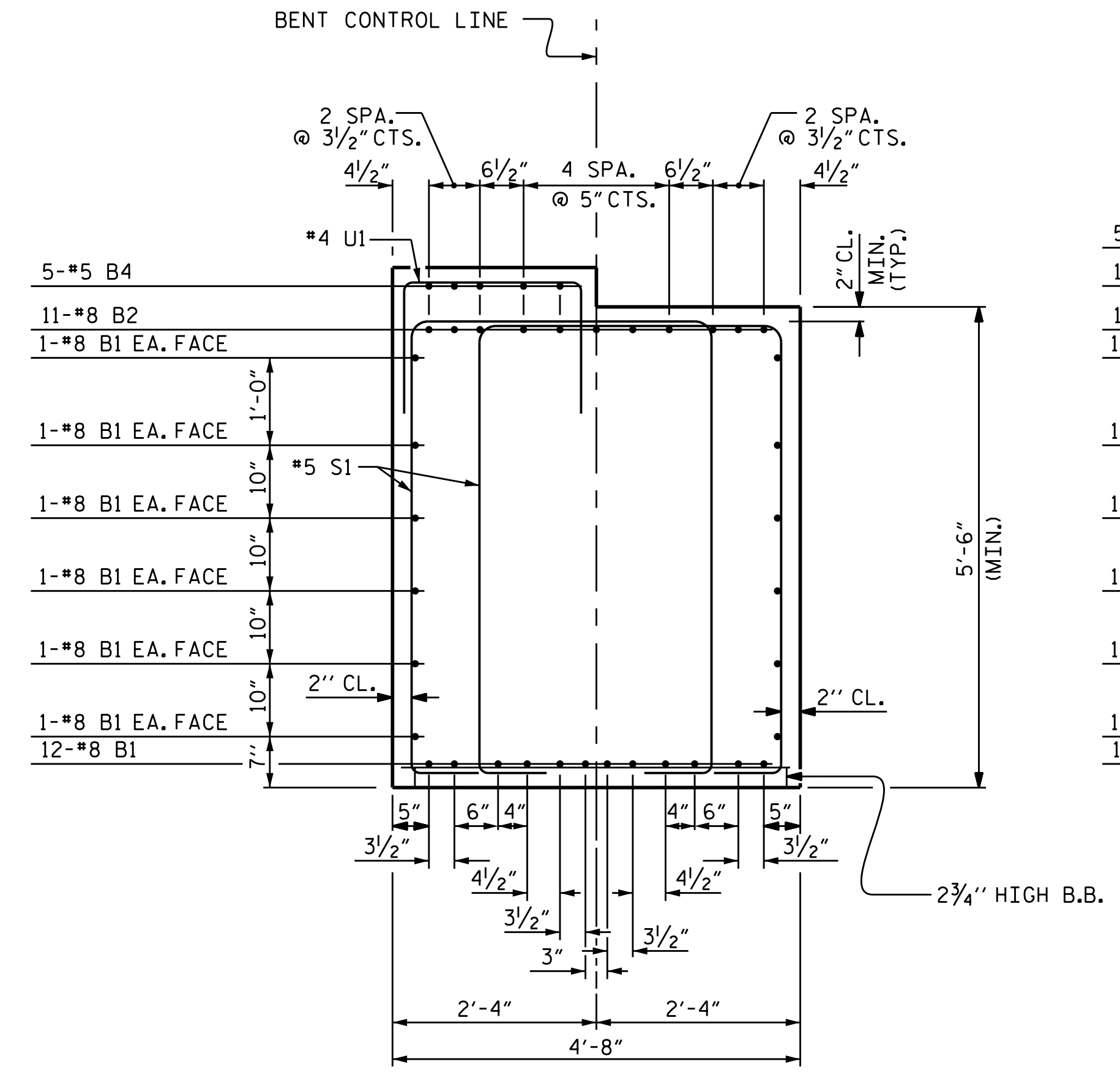
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			S1-155
2			4			194



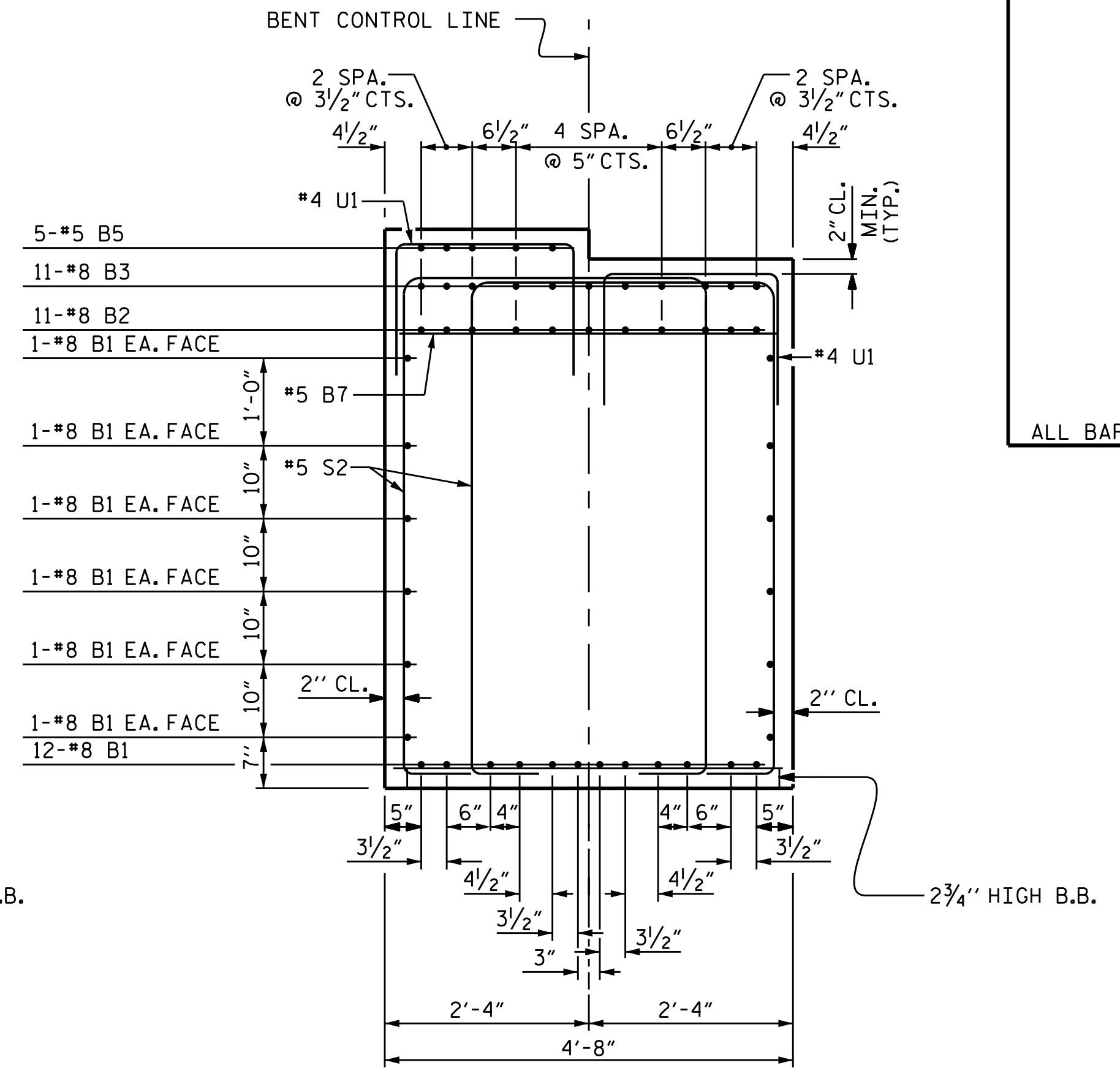
VIEW X-X



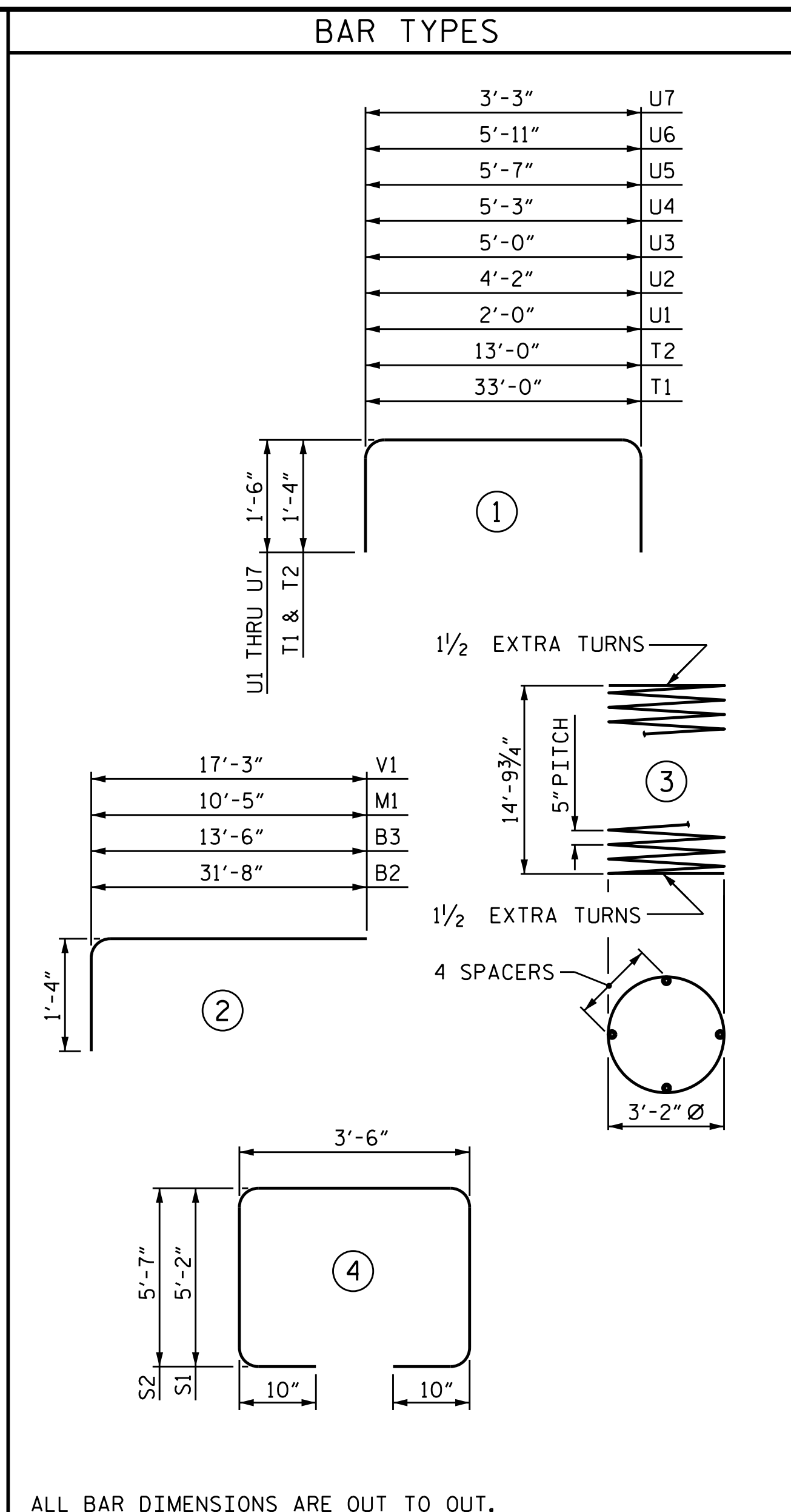
VIEW Y-Y



SECTION A-A



SECTION B-B

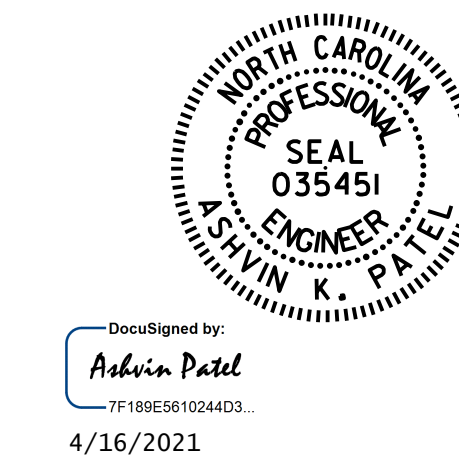


BILL OF MATERIAL					
BENT #12					
BAR	NO.	SIZE	TYPE	LENGTH	TOTAL LENGTH
B1	24	#8	STR	31'-8"	760'-0"
B2	11	#8	2	33'-0"	363'-0"
B3	11	#8	2	14'-10"	163'-2"
B4	5	#5	STR	9'-5"	47'-1"
B5	10	#5	STR	8'-9"	87'-6"
B6	5	#5	STR	4'-9"	23'-9"
B7	3	#5	STR	4'-4"	13'-0"
M1	54	#8	2	11'-9"	634'-6"
S1	46	#5	4	15'-6"	713'-0"
S2	38	#5	4	16'-4"	620'-8"
T1	72	#8	1	35'-8"	2568'-0"
T2	48	#8	1	15'-8"	752'-0"
T3	102	#5	STR	13'-0"	1326'-0"
T4	6	#8	STR	33'-0"	198'-0"
T5	6	#8	STR	13'-0"	78'-0"
U1	74	#4	1	5'-0"	370'-0"
U2	9	#4	1	7'-2"	64'-6"
U3	2	#4	1	8'-0"	16'-0"
U4	2	#4	1	8'-3"	16'-6"
U5	2	#4	1	8'-7"	17'-2"
U6	2	#4	1	8'-11"	17'-10"
U7	54	#4	1	6'-3"	337'-6"
V1	54	#8	2	18'-7"	1003'-6"
SP-1	3	#5	3	378'-1"	1134'-3"
TOTAL LIN. FT. # 4 BARS					839.5
TOTAL LIN. FT. # 5 BARS					3965.2
TOTAL LIN. FT. # 8 BARS					6520.2
GLASS FIBER REINFORCED POLYMER BARS				TOTAL	11324.92 LIN. FT.
CLASS AA CONCRETE BREAKDOWN					
POUR #1	FOOTING				66.2 C.Y.
POUR #2	COLUMNS				15.6 C.Y.
POUR #3	CAP				32.8 C.Y.
TOTAL CLASS AA CONCRETE					114.6 C.Y.

PROJECT NO. B-4863
CARTERET COUNTY
 STATION: 34+75.00 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 BENT #12

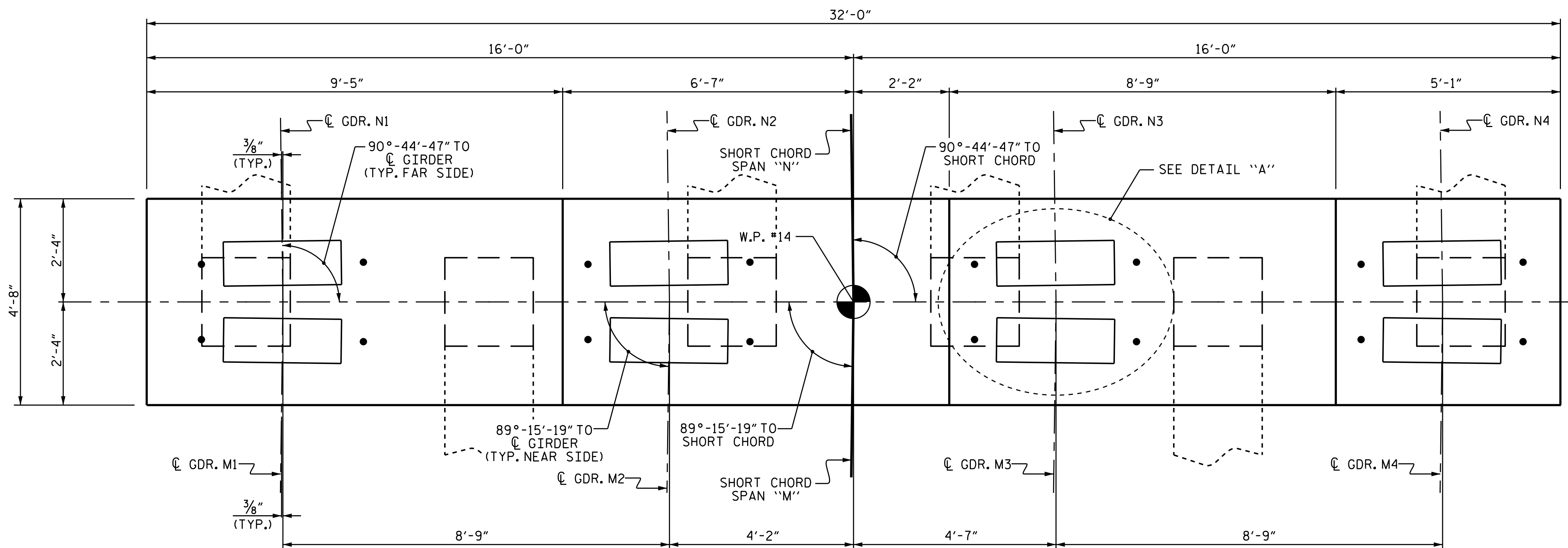


Designed by:
 Ashwin Patel
 7F180E5610244D3
 4/16/2021

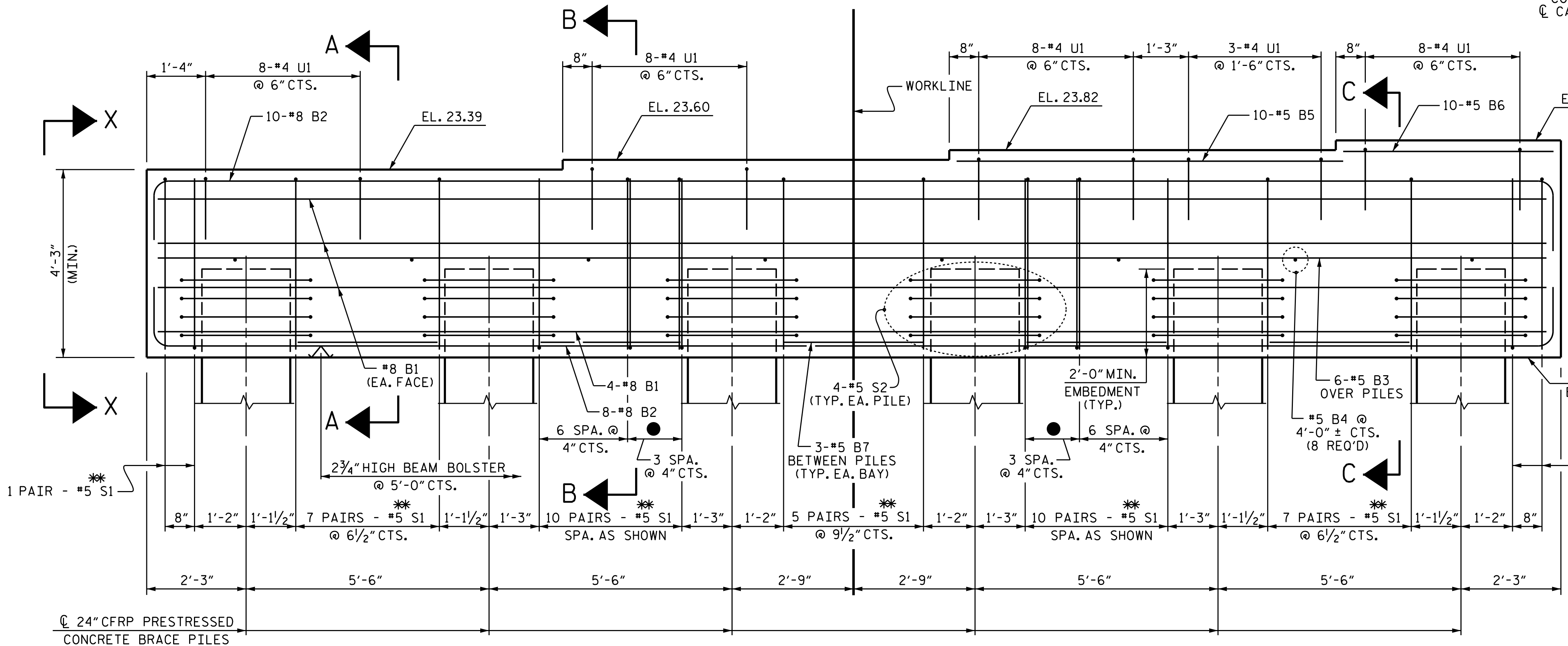
DRAWN BY : I.L. AVERETTE DATE : 02/2019
 CHECKED BY : A.K. PATEL DATE : 04/2019
 DESIGN ENGINEER OF RECORD: A.K. PATEL DATE : 04/2019

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-156
1			3			TOTAL SHEETS
2			4			194



PLAN



ELEVATION

FOR ADDITIONAL REINFORCING BARS IN ENDS OF CAP, SEE VIEW X-X AND VIEW Y-Y ON SHEET 2 OF 2.

- * INVERT ALTERNATE STIRRUPS
- ADDITIONAL STIRRUP REQUIRED IN THIS AREA. SEE SECTION VIEWS.

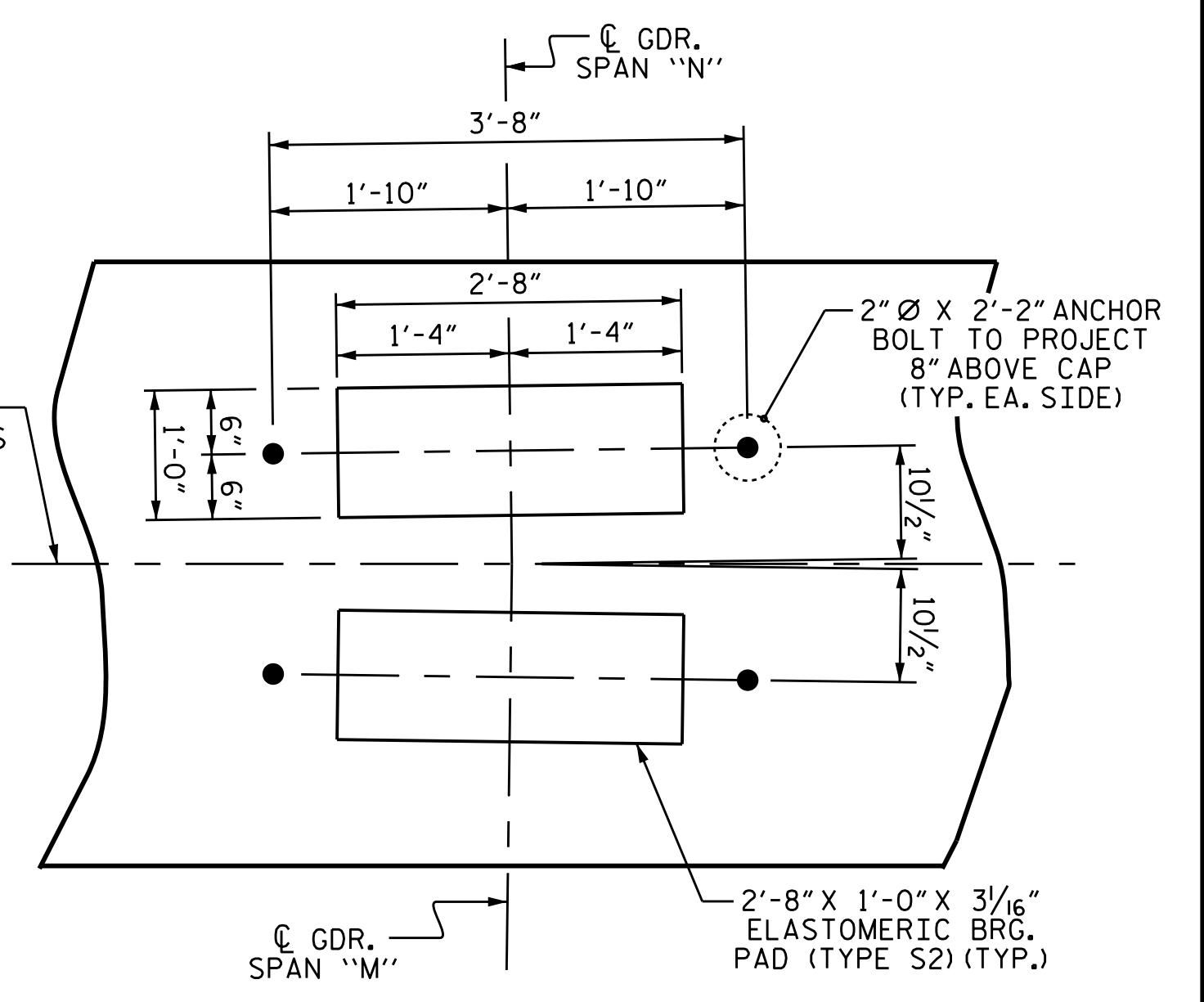
NOTES

STIRRUPS AND U1 BARS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.
 CONCRETE DISPLACED BY CONCRETE PILES HAS BEEN DEDUCTED FROM THE CAP CONCRETE QUANTITY.
 ALL REINFORCING IN THE CAP IS TO BE GLASS FIBER REINFORCED POLYMER (GFRP) BARS. FOR GLASS FIBER REINFORCED POLYMER BARS, SEE SPECIAL PROVISIONS.

SPAN "N"

SPAN "M"

BENT #13 CONTROL LINE, C/C CAP & C/C PILES

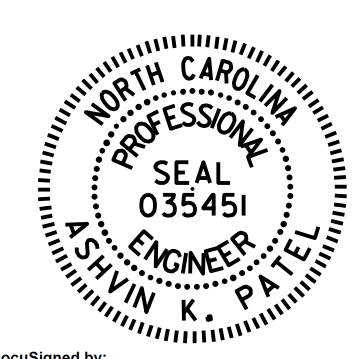


DETAIL "A"

(TYP. @ EACH GDR.)

PROJECT NO. B-4863
CARTERET COUNTY
 STATION: 34+75.00 -L-

SHEET 1 OF 2



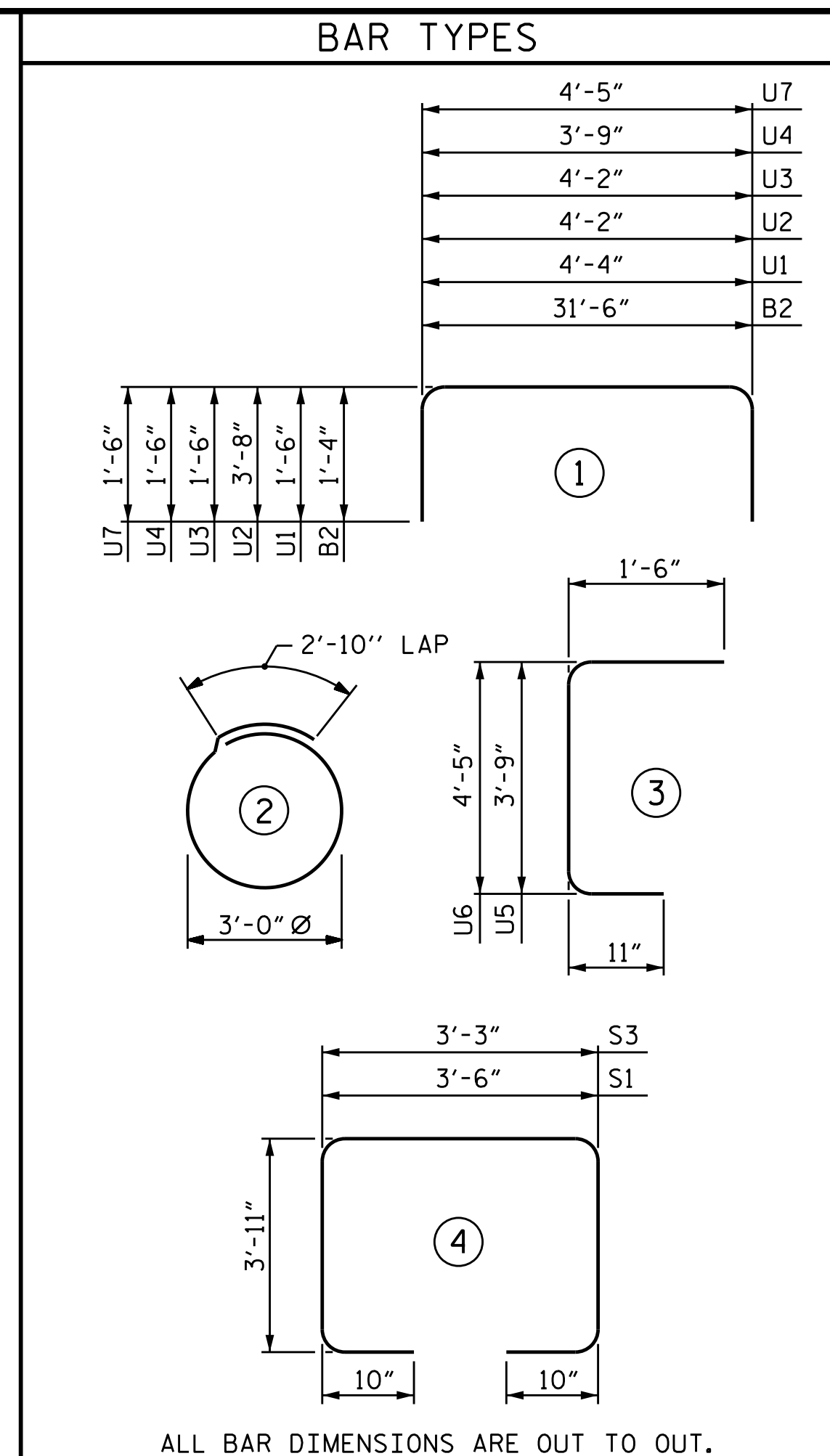
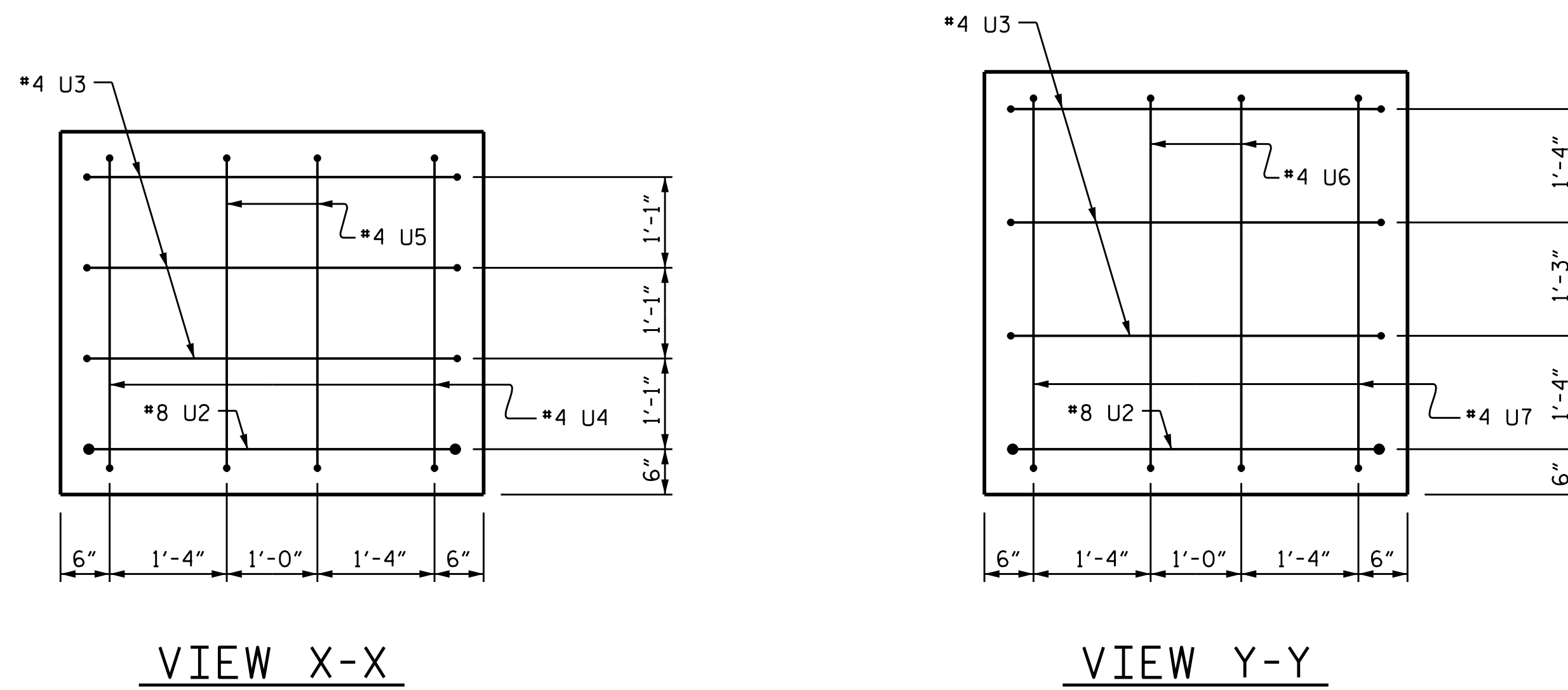
DocuSigned by:
 Ashwin Patel
 7F189E5E10244E3
 3/9/2020

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 BENT #13

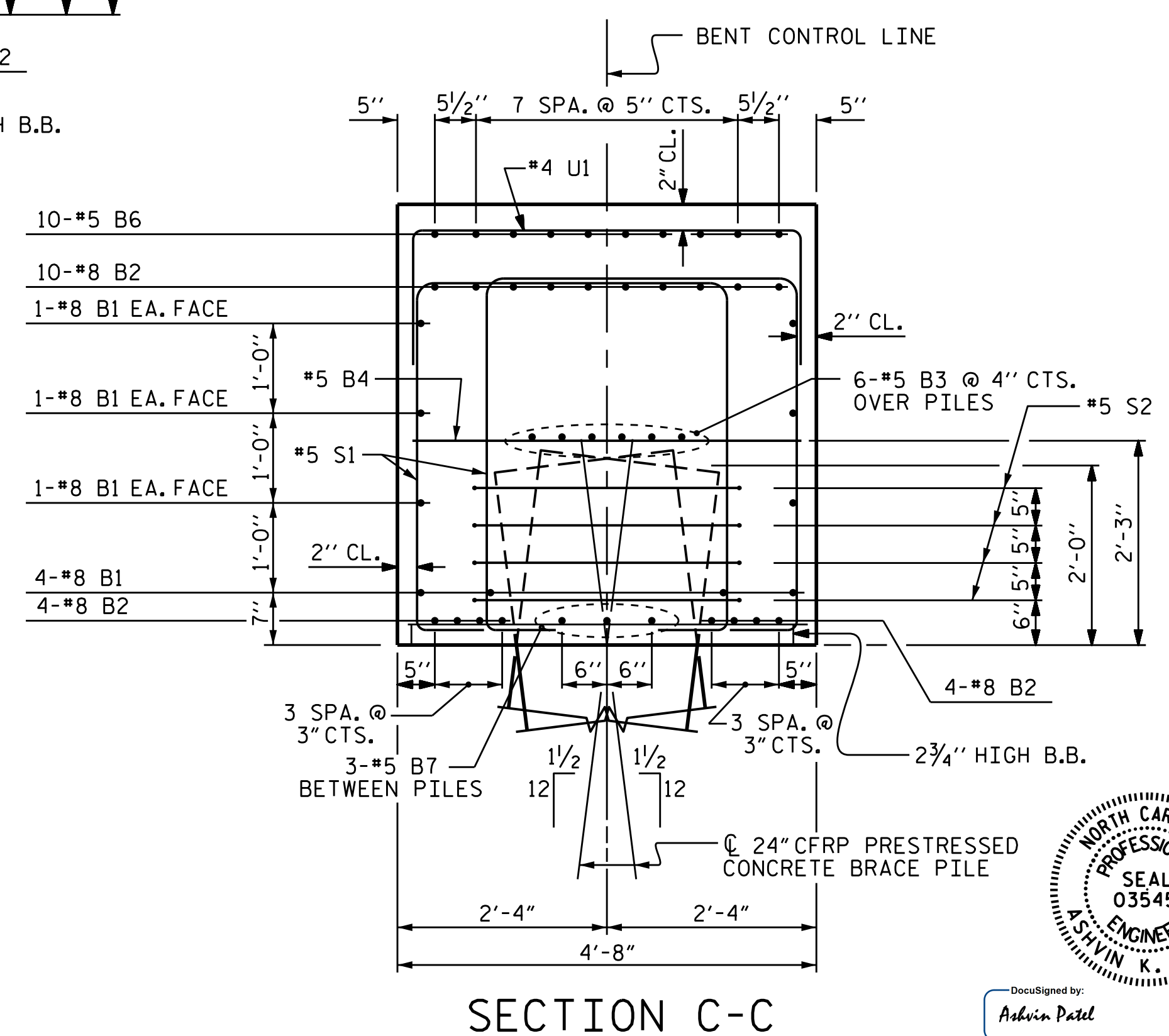
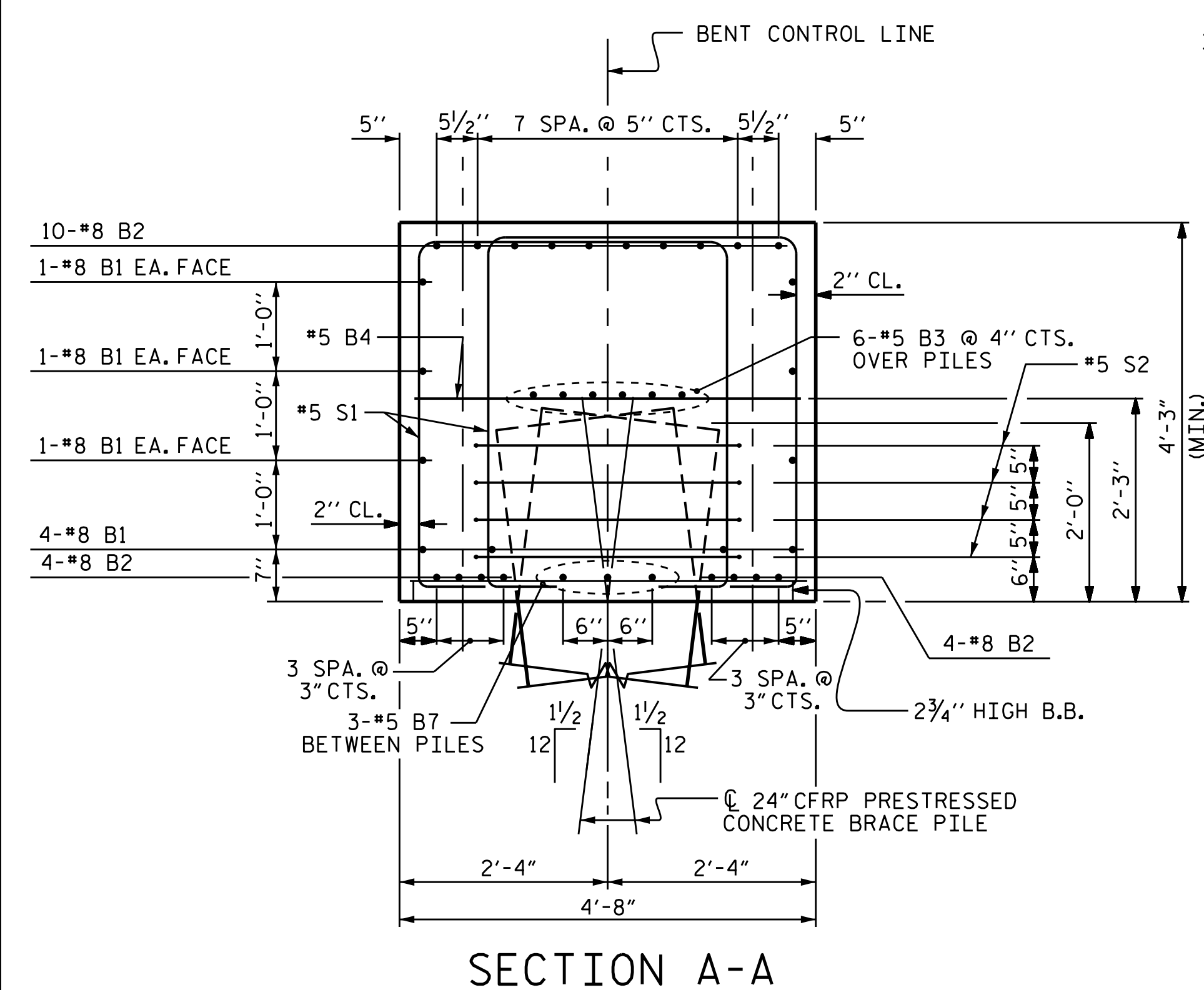
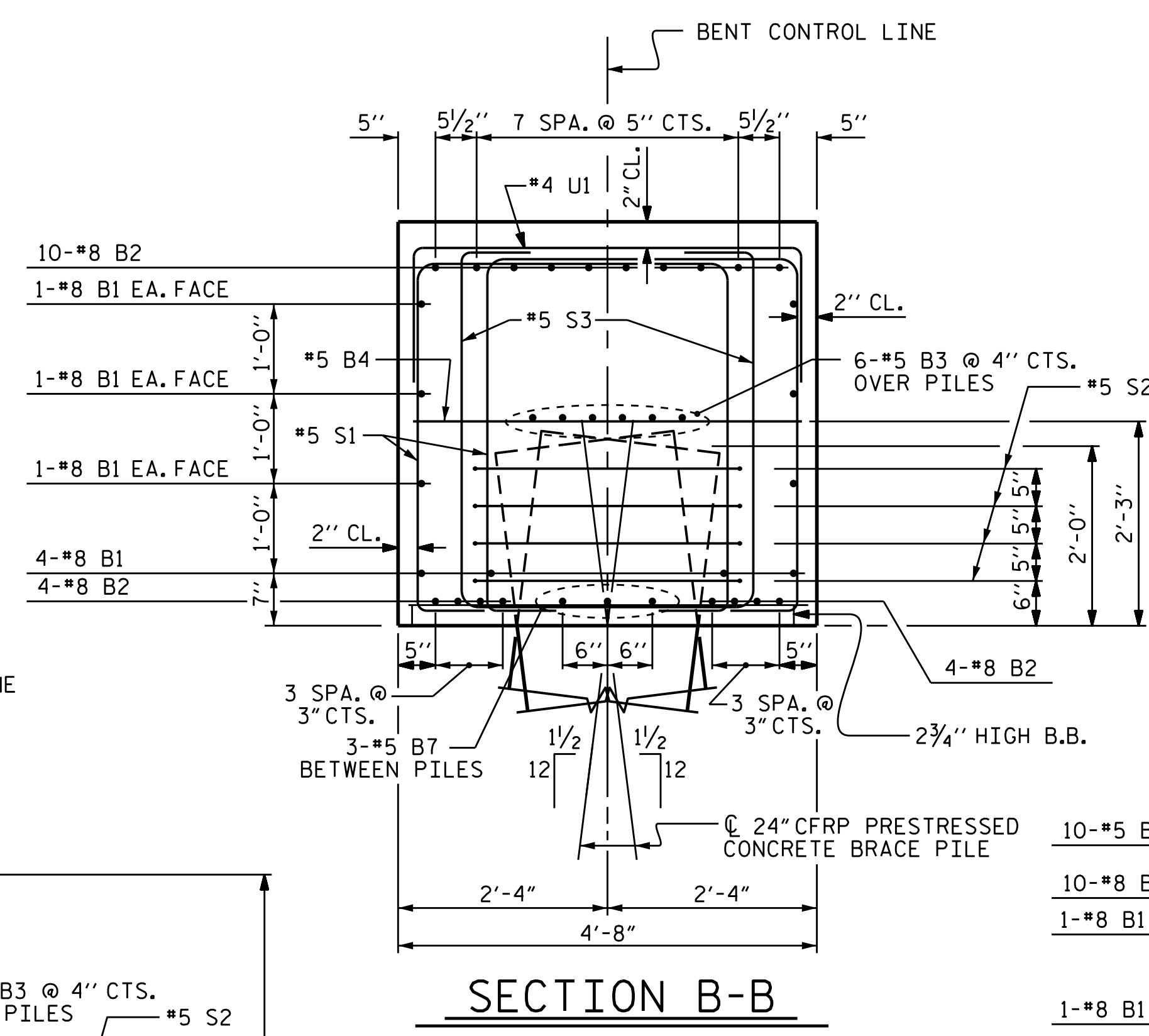
REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-157	
1			3			TOTAL SHEETS	194
2			4				

DRAWN BY : I.L. AVERETTE DATE : 02/2019
 CHECKED BY : A.K. PATEL DATE : 11/2019
 DESIGN ENGINEER OF RECORD: A.K. PATEL DATE : 11/2019

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



BILL OF MATERIAL					
BENT #13					
BAR	NO.	SIZE	TYPE	LENGTH	TOTAL LENGTH
B1	10	#8	STR	31'-8"	316'-8"
B2	18	#8	1	34'-2"	615'-0"
B3	6	#5	STR	31'-8"	190'-0"
B4	8	#5	STR	4'-4"	34'-8"
B5	10	#5	STR	8'-9"	87'-6"
B6	10	#5	STR	4'-9"	47'-6"
B7	15	#5	STR	3'-2"	47'-6"
S1	86	#5	4	13'-0"	1118'-0"
S2	24	#5	2	12'-3"	294'-0"
S3	8	#5	4	12'-9"	102'-0"
U1	35	#4	1	7'-4"	256'-8"
U2	2	#8	1	11'-6"	23'-0"
U3	6	#4	1	7'-2"	43'-0"
U4	2	#4	1	6'-9"	13'-6"
U5	2	#4	3	6'-2"	12'-4"
U6	2	#4	3	6'-10"	13'-8"
U7	2	#4	1	7'-5"	14'-10"
TOTAL LIN. FT. # 4 BARS					354.0
TOTAL LIN. FT. # 5 BARS					1921.2
TOTAL LIN. FT. # 8 BARS					954.7
GLASS FIBER REINFORCED POLYMER BARS				TOTAL	3229.83 LIN. FT.
CLASS AA CONCRETE BREAKDOWN					
POUR #1 CAP					23.3 C.Y.
TOTAL CLASS AA CONCRETE					23.3 C.Y.



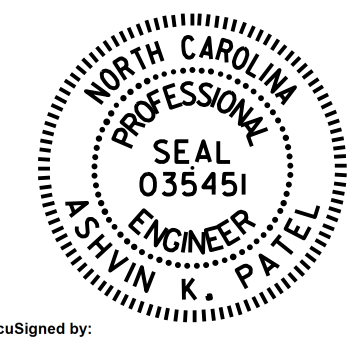
ALL BAR DIMENSIONS ARE OUT TO OUT.

PROJECT NO. B-4863
CARTERET COUNTY
 STATION: 34+75.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 BENT #13



Designed by:
 Ashwin Patel
 77180561024403
 4/16/2021

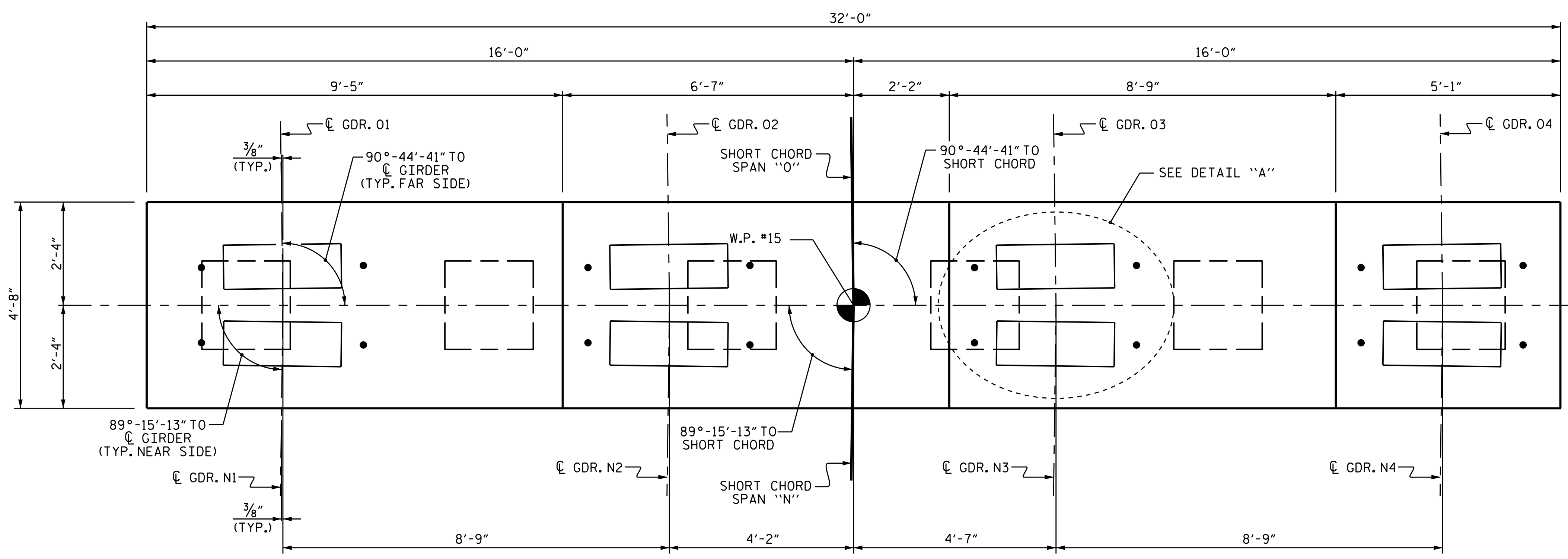
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			S1-158
2			4			194

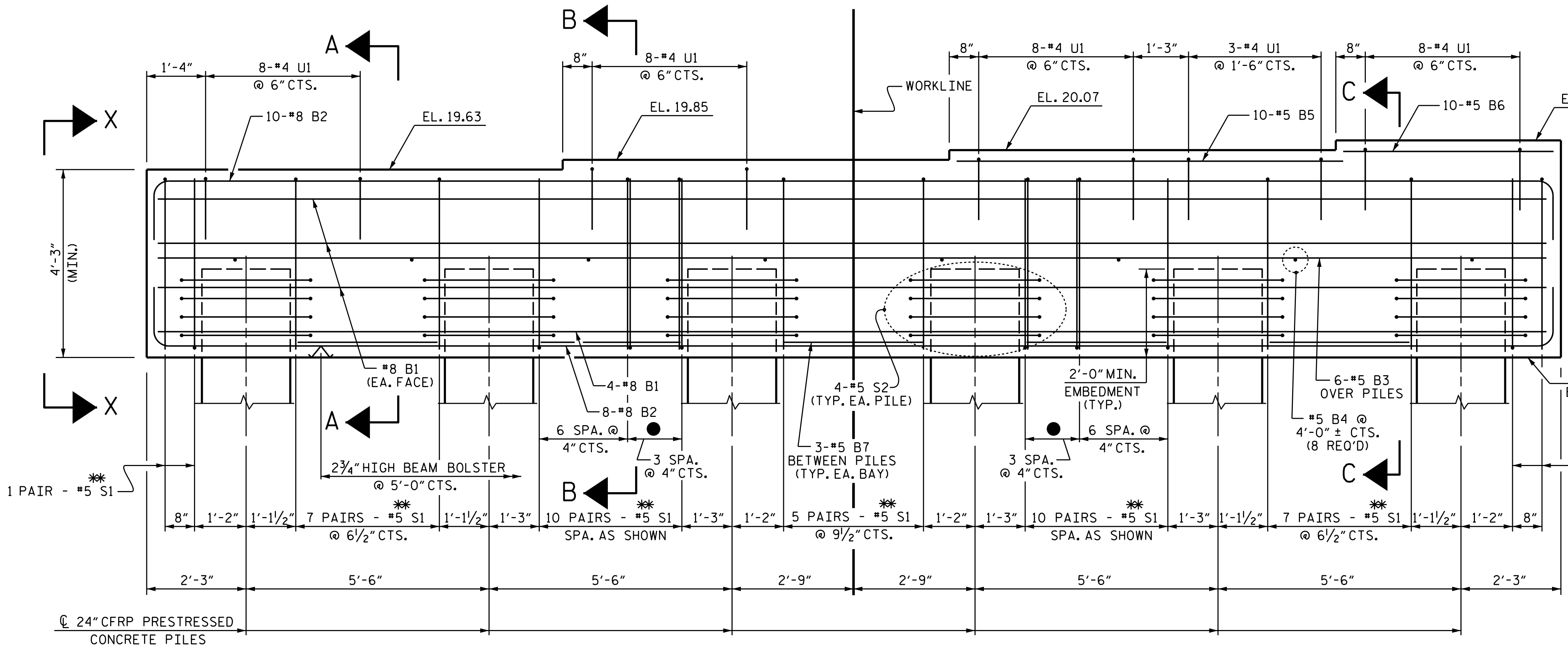
DRAWN BY : I.L. AVERETTE DATE : 02/2019
 CHECKED BY : A.K. PATEL DATE : 11/2019
 DESIGN ENGINEER OF RECORD: A.K. PATEL DATE : 11/2019

NOTES

STIRRUPS AND UI BARS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.
 CONCRETE DISPLACED BY CONCRETE PILES HAS BEEN DEDUCTED FROM THE CAP CONCRETE QUANTITY.
 ALL REINFORCING IN THE CAP IS TO BE GLASS FIBER REINFORCED POLYMER (GFRP) BARS. FOR GLASS FIBER REINFORCED POLYMER BARS, SEE SPECIAL PROVISIONS.



PLAN



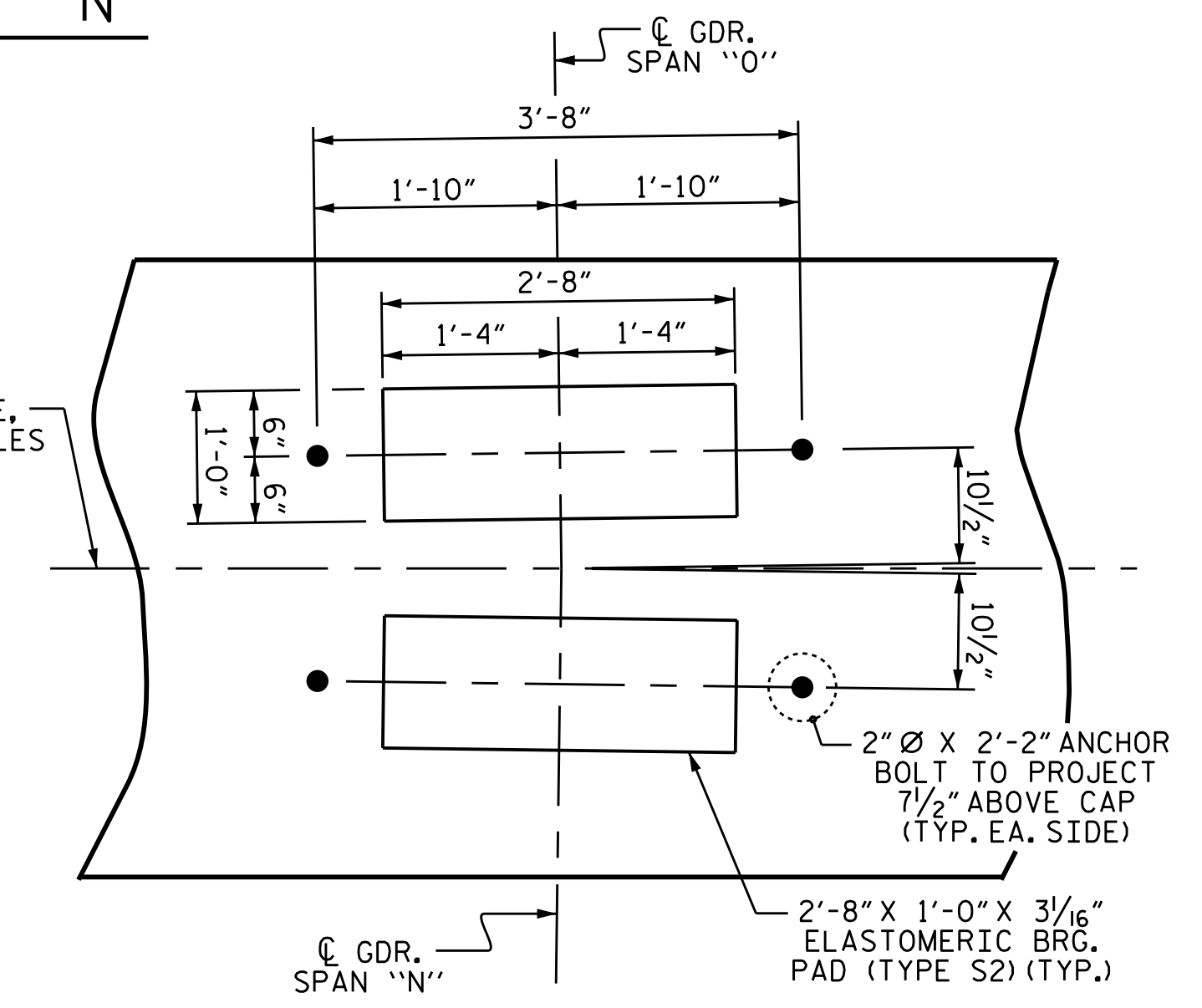
ELEVATION

FOR ADDITIONAL REINFORCING BARS IN ENDS OF CAP, SEE VIEW X-X AND VIEW Y-Y ON SHEET 2 OF 2.

- * INVERT ALTERNATE STIRRUPS
- ADDITIONAL STIRRUP REQUIRED IN THIS AREA. SEE SECTION VIEWS.

SPAN "O"

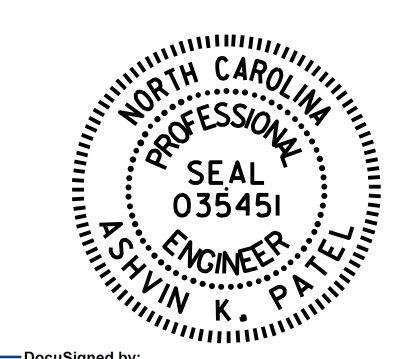
SPAN "N"



DETAIL "A"
(TYP. @ EACH GDR.)

PROJECT NO. B-4863
CARTERET COUNTY
 STATION: 34+75.00 -L-

SHEET 1 OF 2



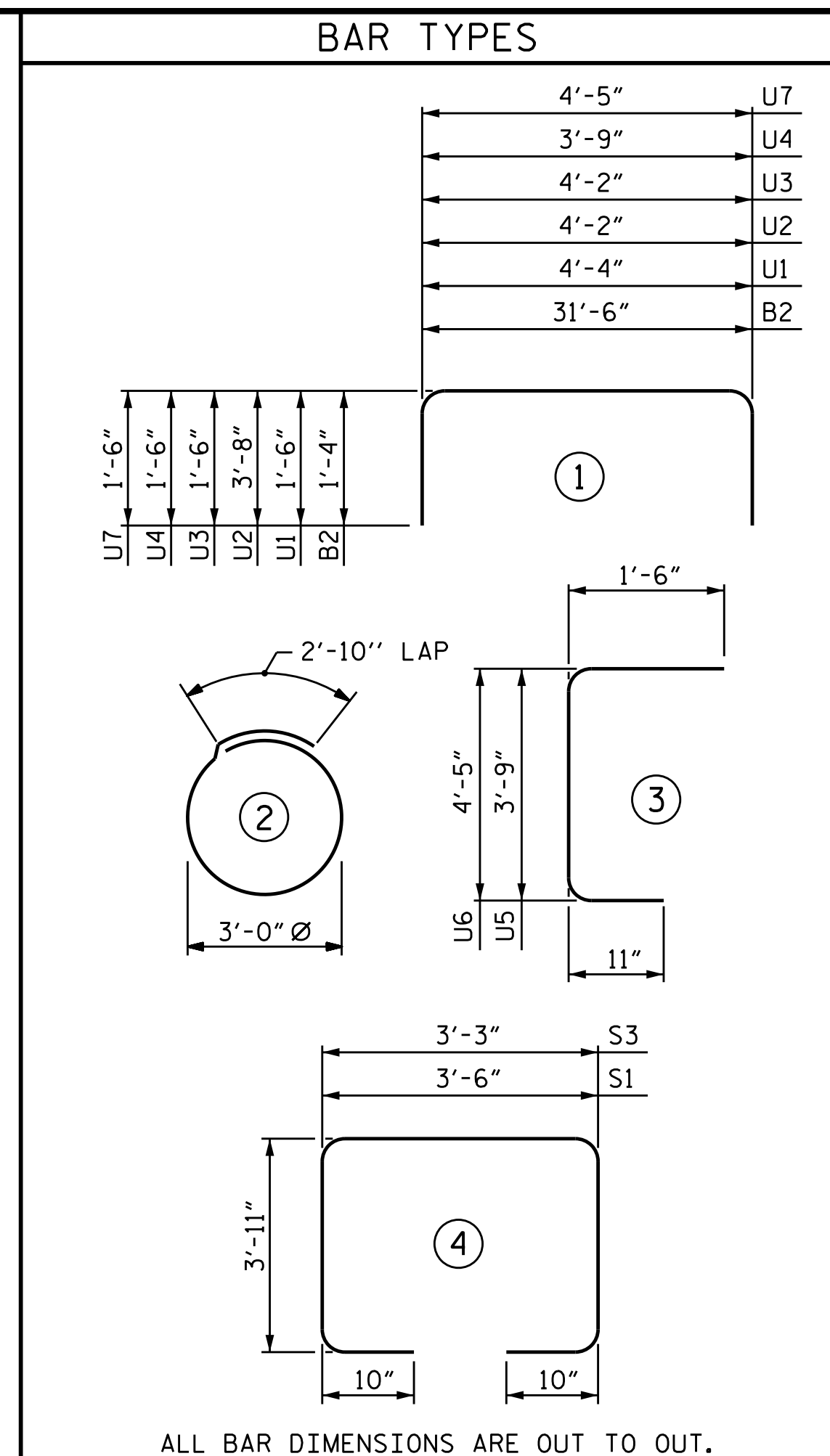
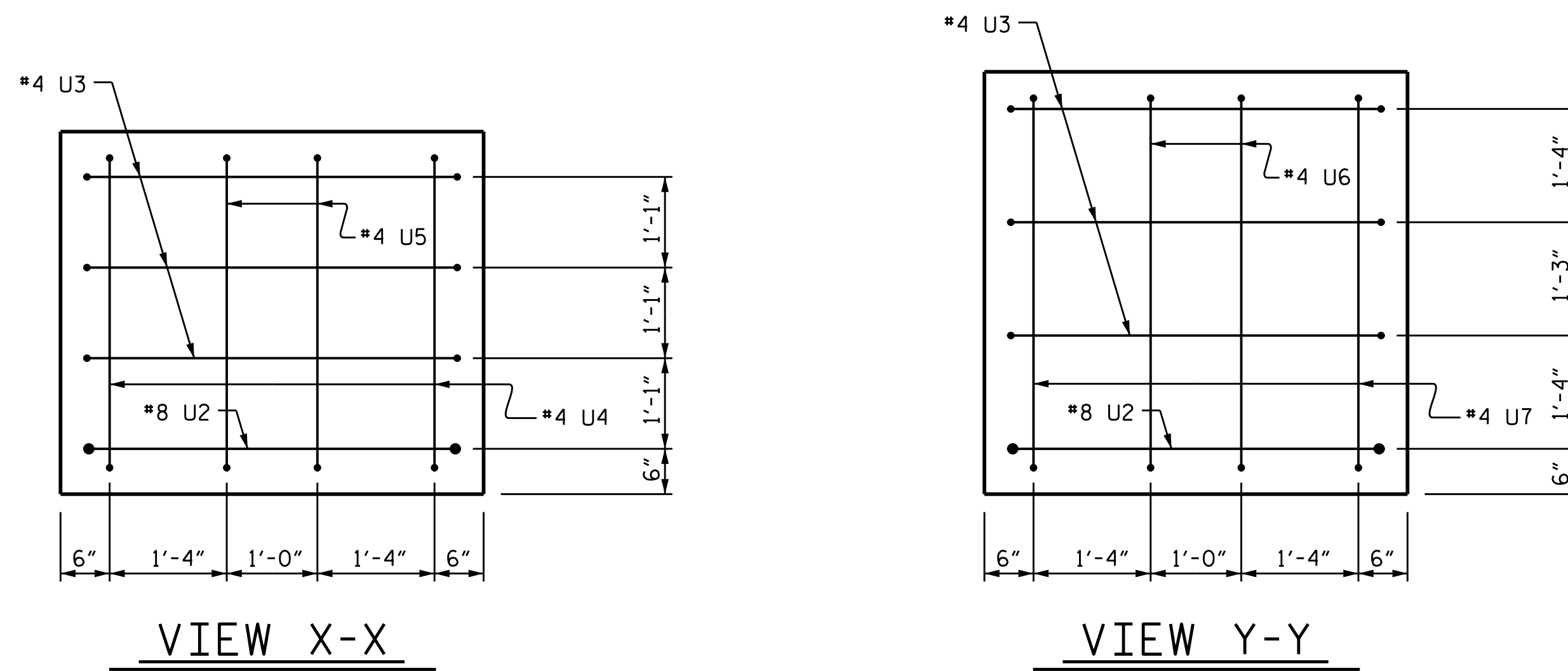
DocuSigned by:
 Ashwin Patel
 7F189E5E10244E3...
 3/9/2020

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 BENT #14

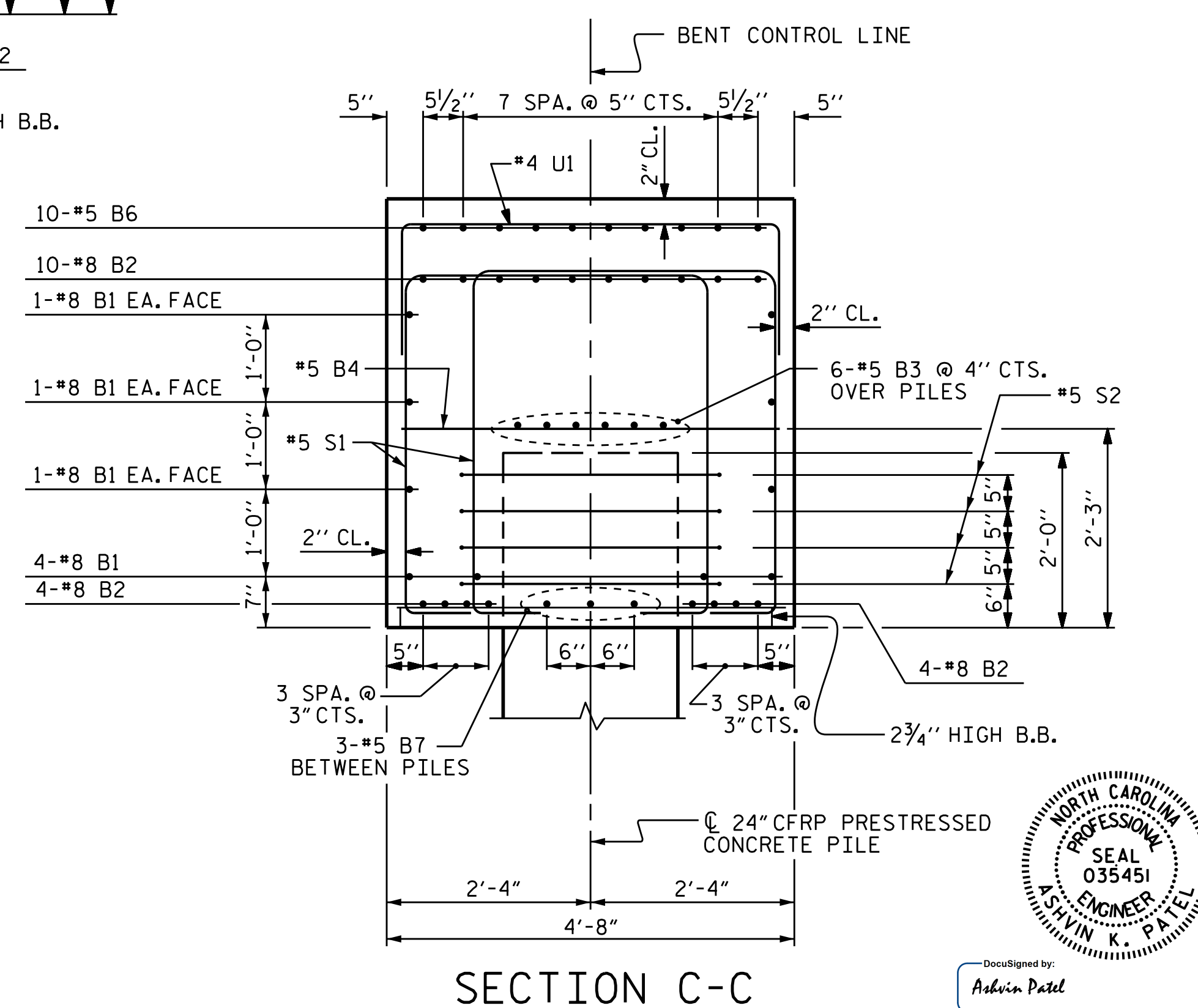
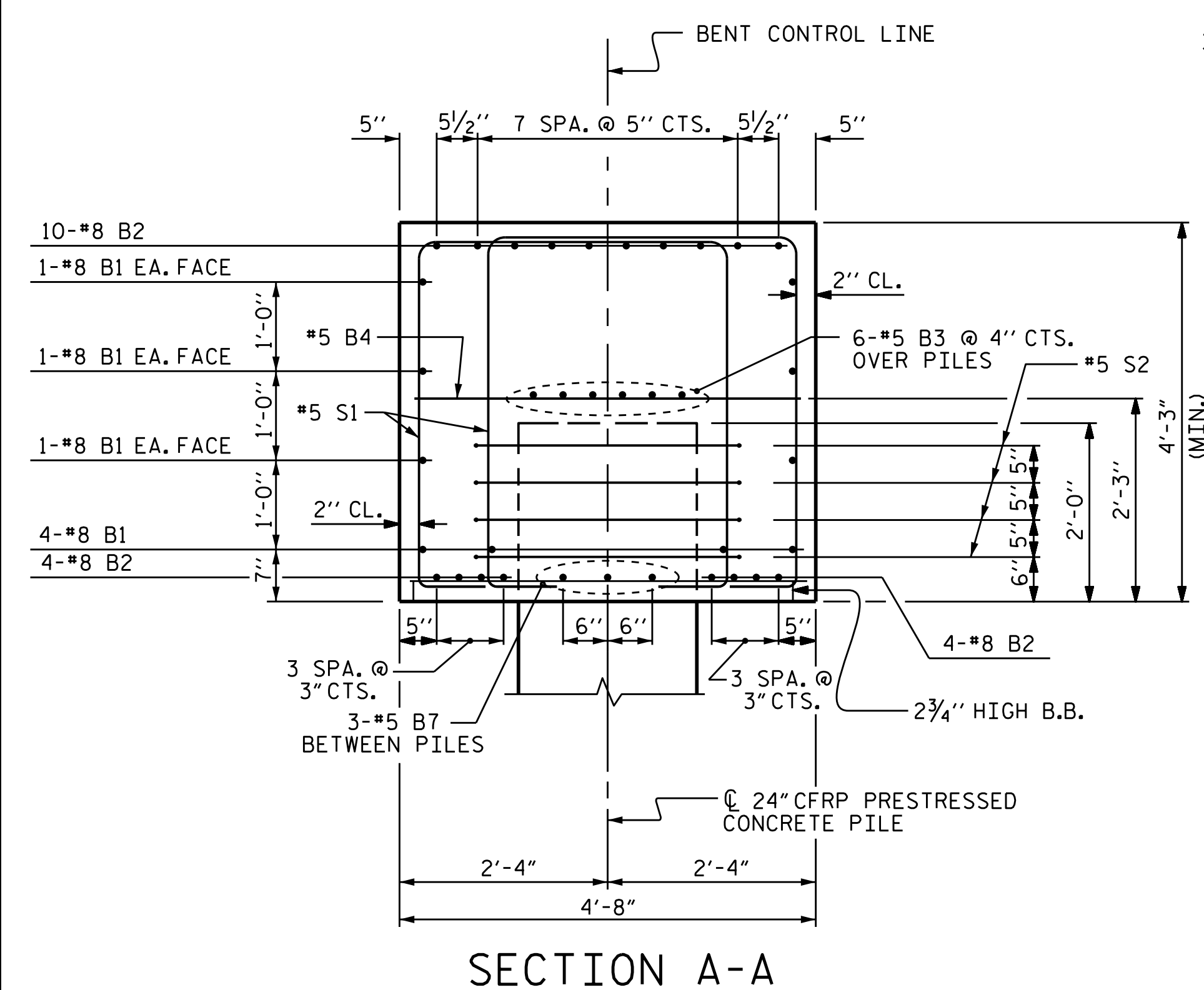
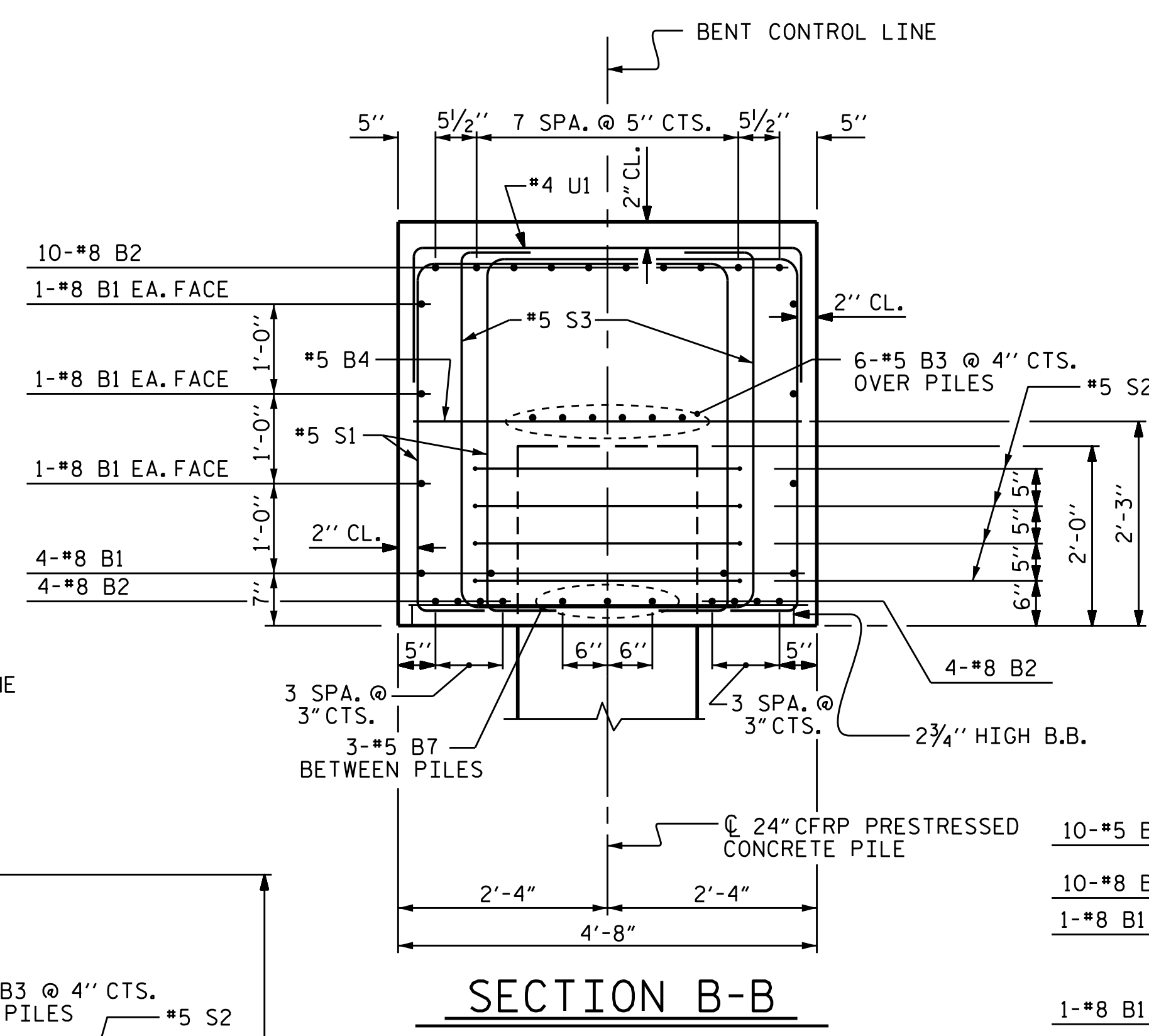
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			S1-159
2			4			194

DRAWN BY : T.L. AVERETTE DATE : 02/2019
 CHECKED BY : A.K. PATEL DATE : 12/2019
 DESIGN ENGINEER OF RECORD: A.K. PATEL DATE : 12/2019

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



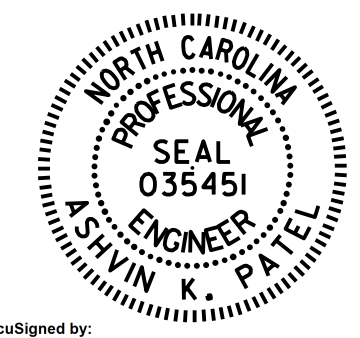
BILL OF MATERIAL					
BENT #14					
BAR	NO.	SIZE	TYPE	LENGTH	TOTAL LENGTH
B1	10	#8	STR	31'-8"	316'-8"
B2	18	#8	1	34'-2"	615'-0"
B3	6	#5	STR	31'-8"	190'-0"
B4	8	#5	STR	4'-4"	34'-8"
B5	10	#5	STR	8'-9"	87'-6"
B6	10	#5	STR	4'-9"	47'-6"
B7	15	#5	STR	3'-2"	47'-6"
S1	86	#5	4	13'-0"	1118'-0"
S2	24	#5	2	12'-3"	294'-0"
S3	8	#5	4	12'-9"	102'-0"
U1	35	#4	1	7'-4"	256'-8"
U2	2	#8	1	11'-6"	23'-0"
U3	6	#4	1	7'-2"	43'-0"
U4	2	#4	1	6'-9"	13'-6"
U5	2	#4	3	6'-2"	12'-4"
U6	2	#4	3	6'-10"	13'-8"
U7	2	#4	1	7'-5"	14'-10"
TOTAL LIN. FT. # 4 BARS					354.0
TOTAL LIN. FT. # 5 BARS					1921.2
TOTAL LIN. FT. # 8 BARS					954.7
GLASS FIBER REINFORCED POLYMER BARS TOTAL 3229.83 LIN. FT.					
CLASS AA CONCRETE BREAKDOWN					
POUR #1 CAP					23.3 C.Y.
TOTAL CLASS AA CONCRETE					23.3 C.Y.



ALL BAR DIMENSIONS ARE OUT TO OUT.

PROJECT NO. B-4863
CARTERET COUNTY
 STATION: 34+75.00 -L-

SHEET 2 OF 2

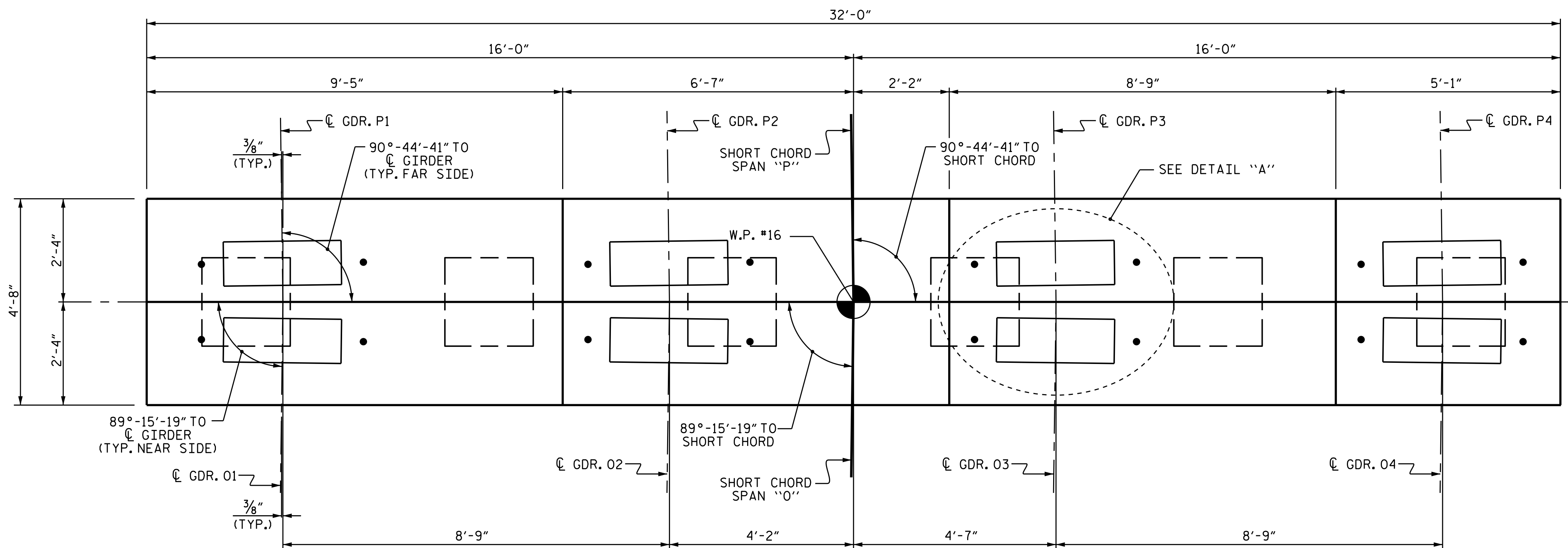


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 BENT #14

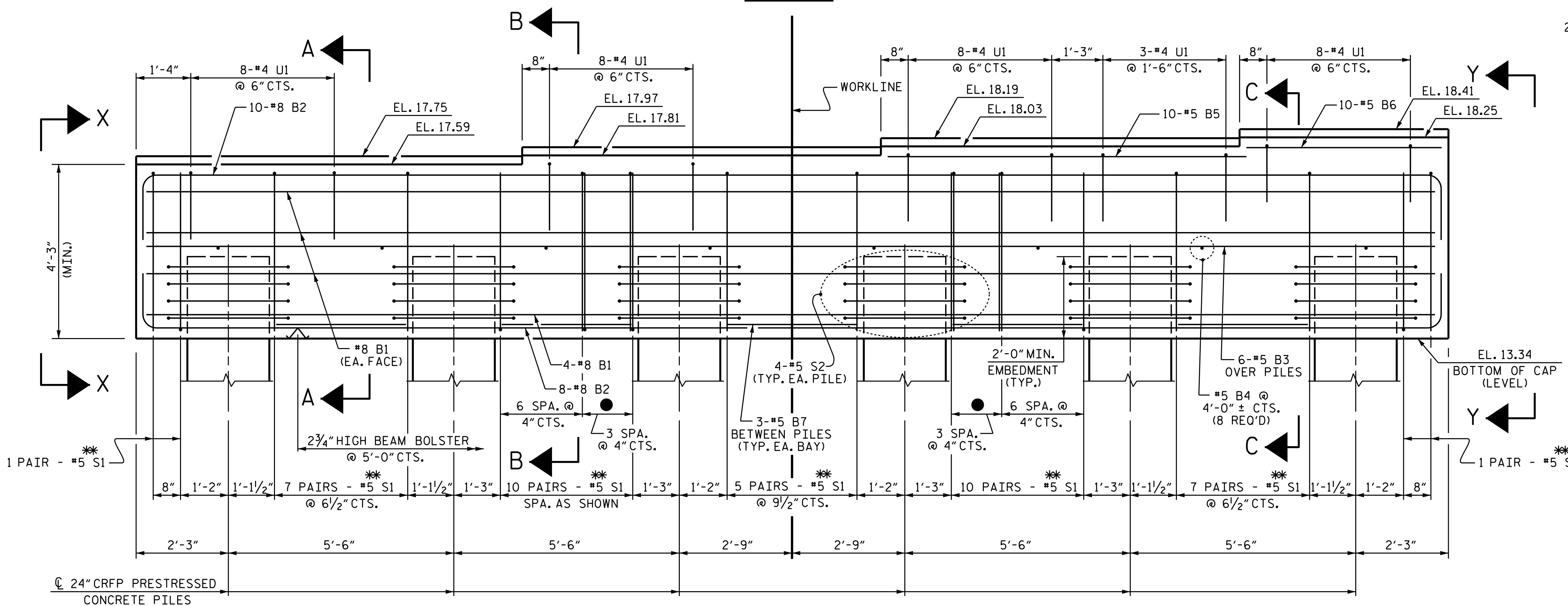
DRAWN BY : I.L. AVERETTE DATE : 02/2019
 CHECKED BY : A.K. PATEL DATE : 12/2019
 DESIGN ENGINEER OF RECORD: A.K. PATEL DATE : 12/2019

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			S1-160
2			4			194



PLAN



ELEVATION

FOR ADDITIONAL REINFORCING BARS IN ENDS OF CAP, SEE VIEW X-X AND VIEW Y-Y ON SHEET 2 OF 2.

- * INVERT ALTERNATE STIRRUPS
- ADDITIONAL STIRRUP REQUIRED IN THIS AREA. SEE SECTION VIEWS.

NOTES

STIRRUPS AND U1 BARS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.

CONCRETE DISPLACED BY CONCRETE PILES HAS BEEN DEDUCTED FROM THE CAP CONCRETE QUANTITY.

THE TOP SURFACE AREAS OF THE BENT CAP SHALL BE CURED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS EXCEPT THE MEMBRANE CURING COMPOUND METHOD SHALL NOT BE USED.

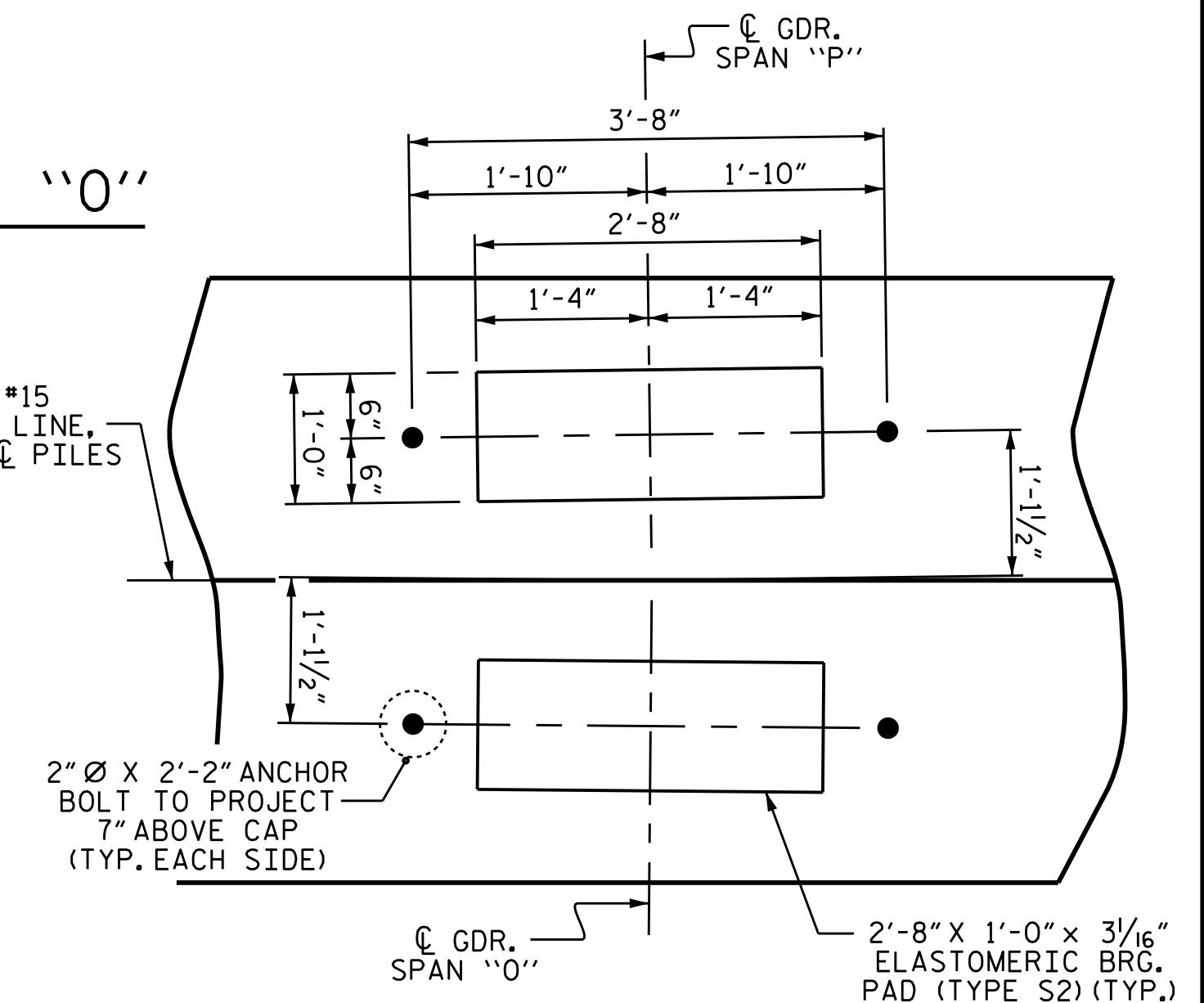
ALL REINFORCING IN THE CAP IS TO BE GLASS FIBER REINFORCED POLYMER (GFRP) BARS, FOR GLASS FIBER REINFORCED POLYMER BARS, SEE SPECIAL PROVISIONS.

SPAN "P"

BENT #15 CONTROL LINE, CAP & PILES

SPAN "O"

BENT #15 CONTROL LINE, CAP & PILES

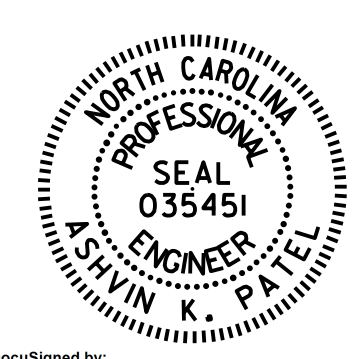


DETAIL "A"

(TYP. @ EACH GDR.)

PROJECT NO. B-4863
CARTERET COUNTY
 STATION: 34+75.00 -L-

SHEET 1 OF 2



DocuSigned by:
 Ashwin Patel
 7F189E5E10244E3
 3/9/2020

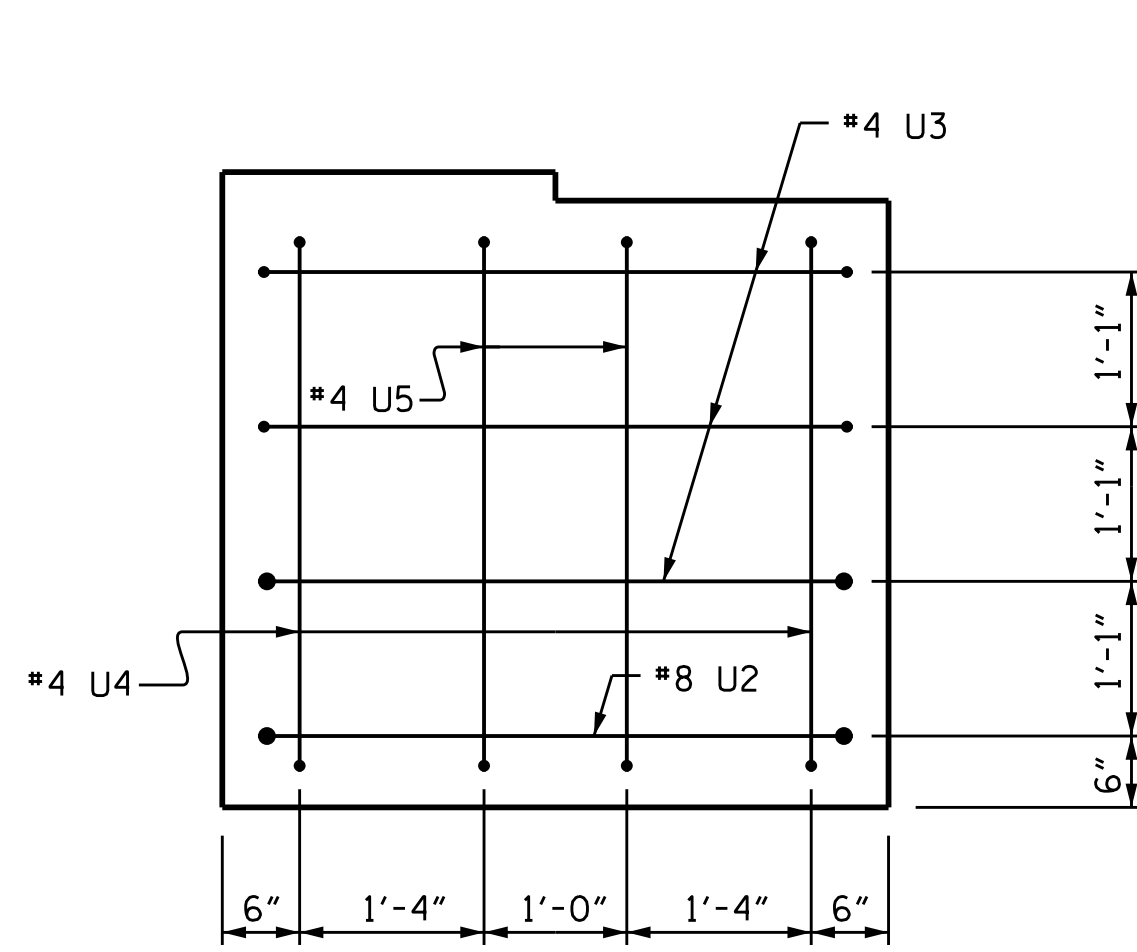
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 BENT #15

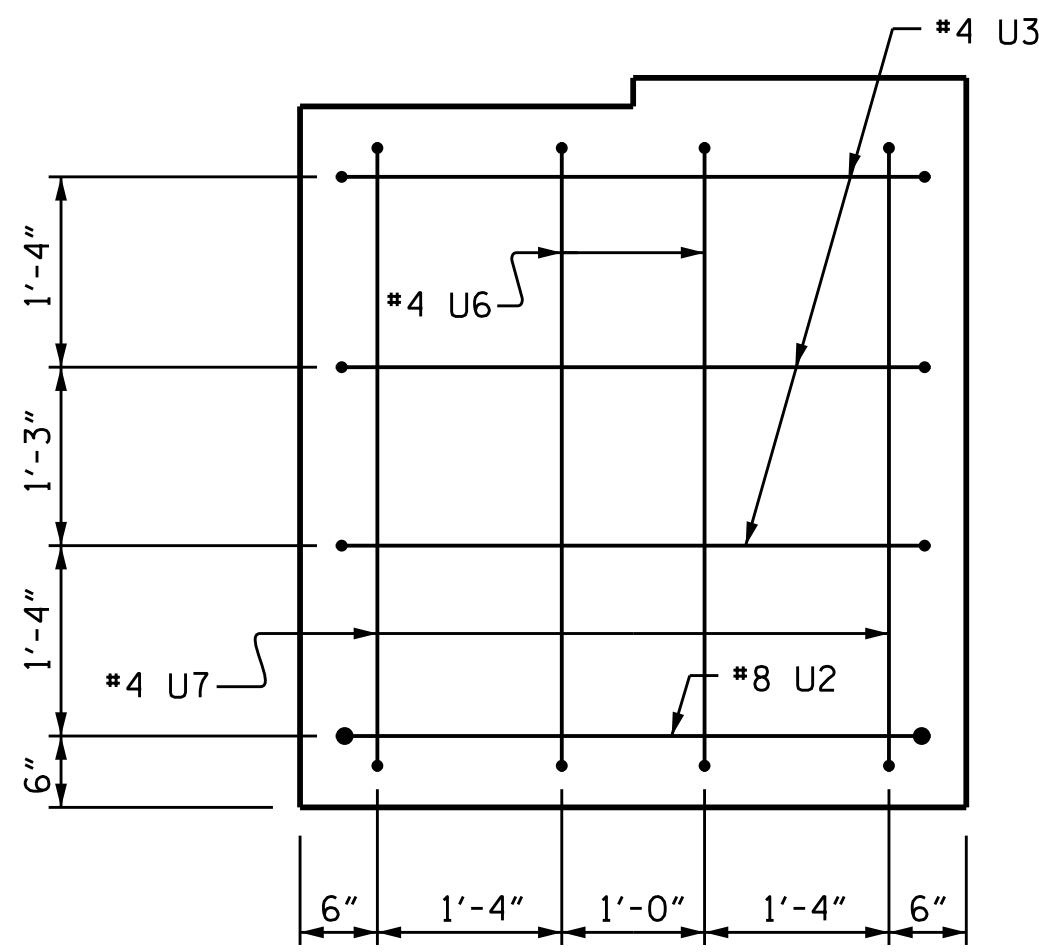
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-161
1			3			TOTAL SHEETS 194
2			4			

DRAWN BY : I.L. AVERETTE DATE : 02/2019
 CHECKED BY : A.K. PATEL DATE : 12/2019
 DESIGN ENGINEER OF RECORD: A.K. PATEL DATE : 12/2019

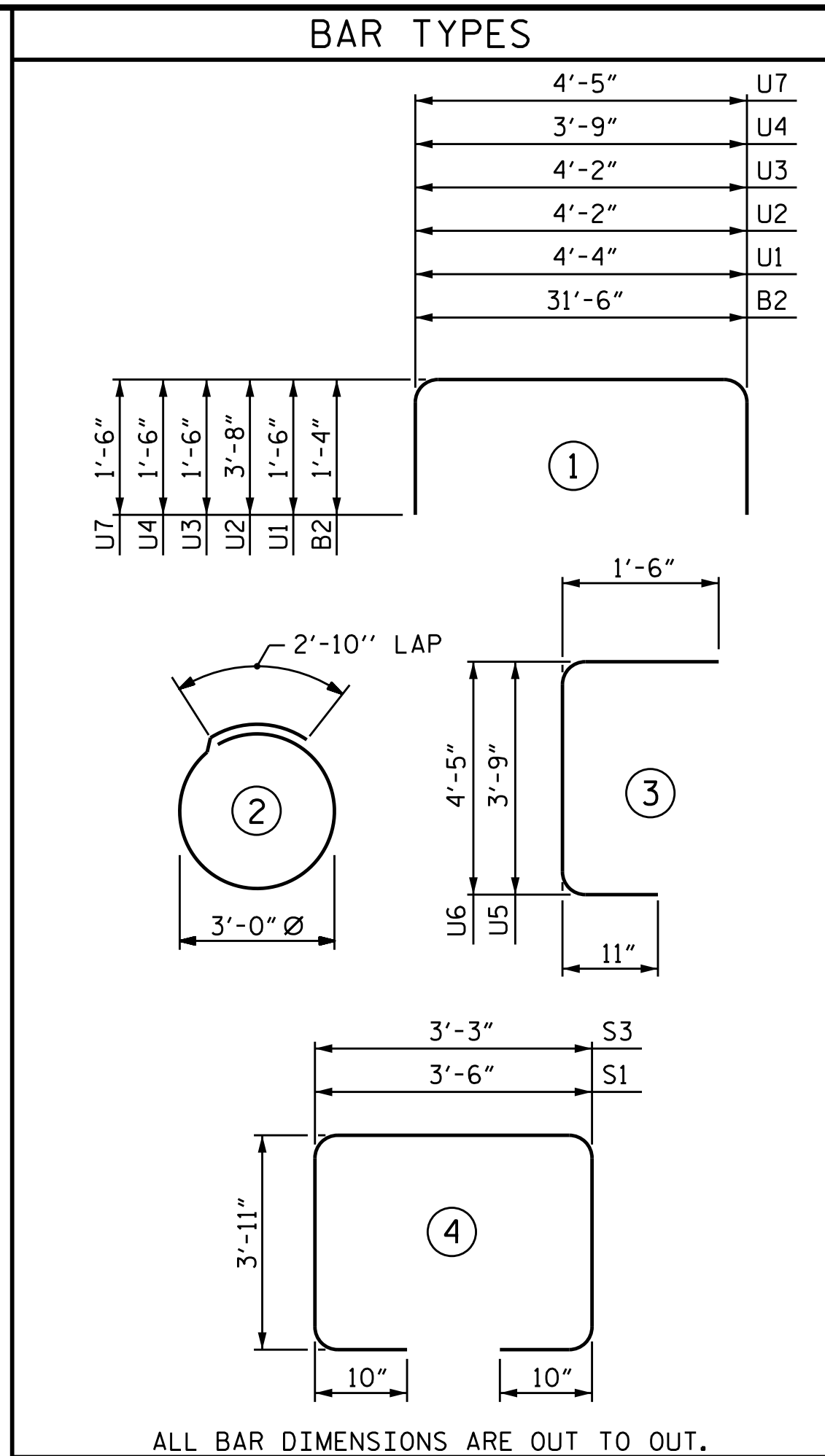
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



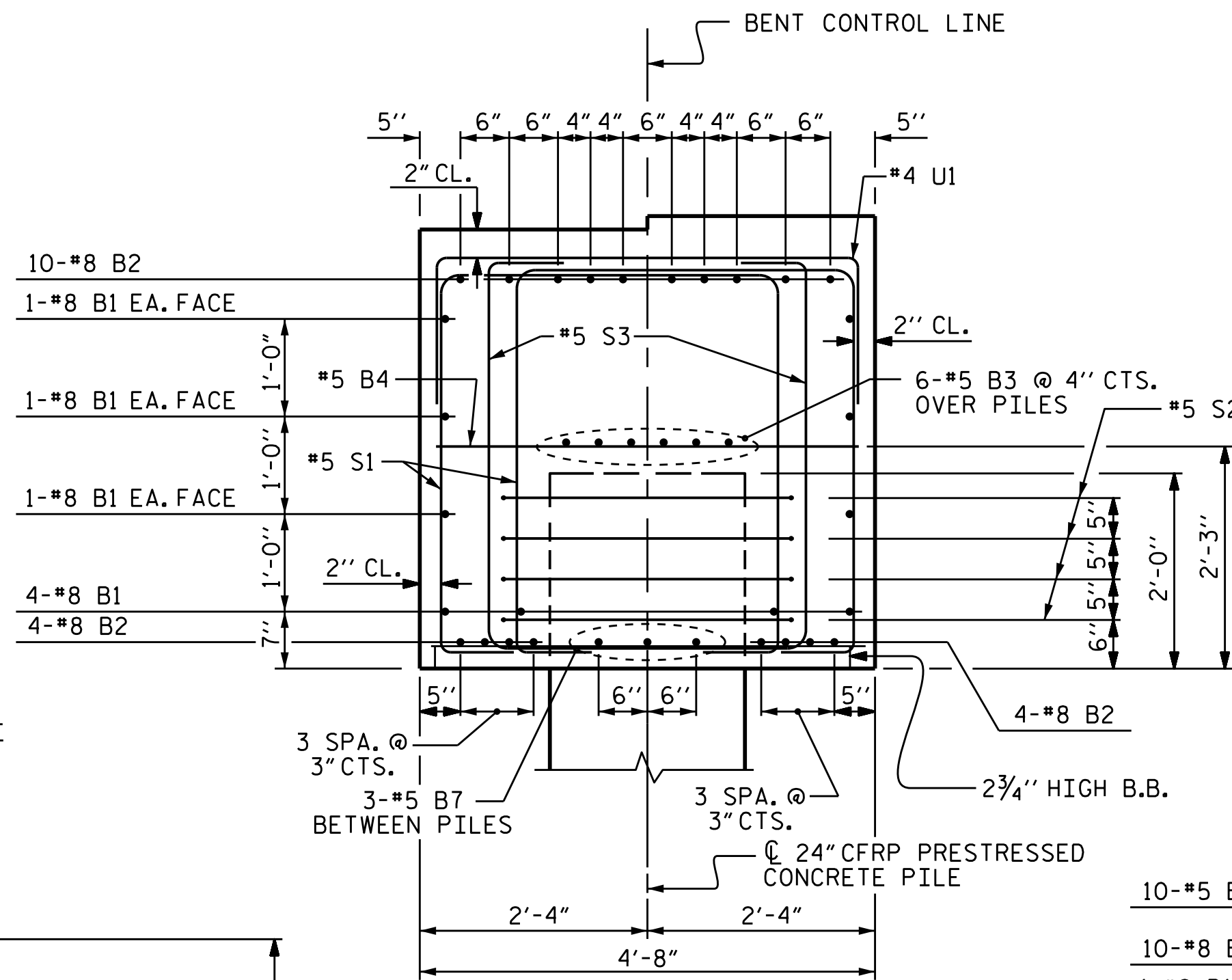
VIEW X-X



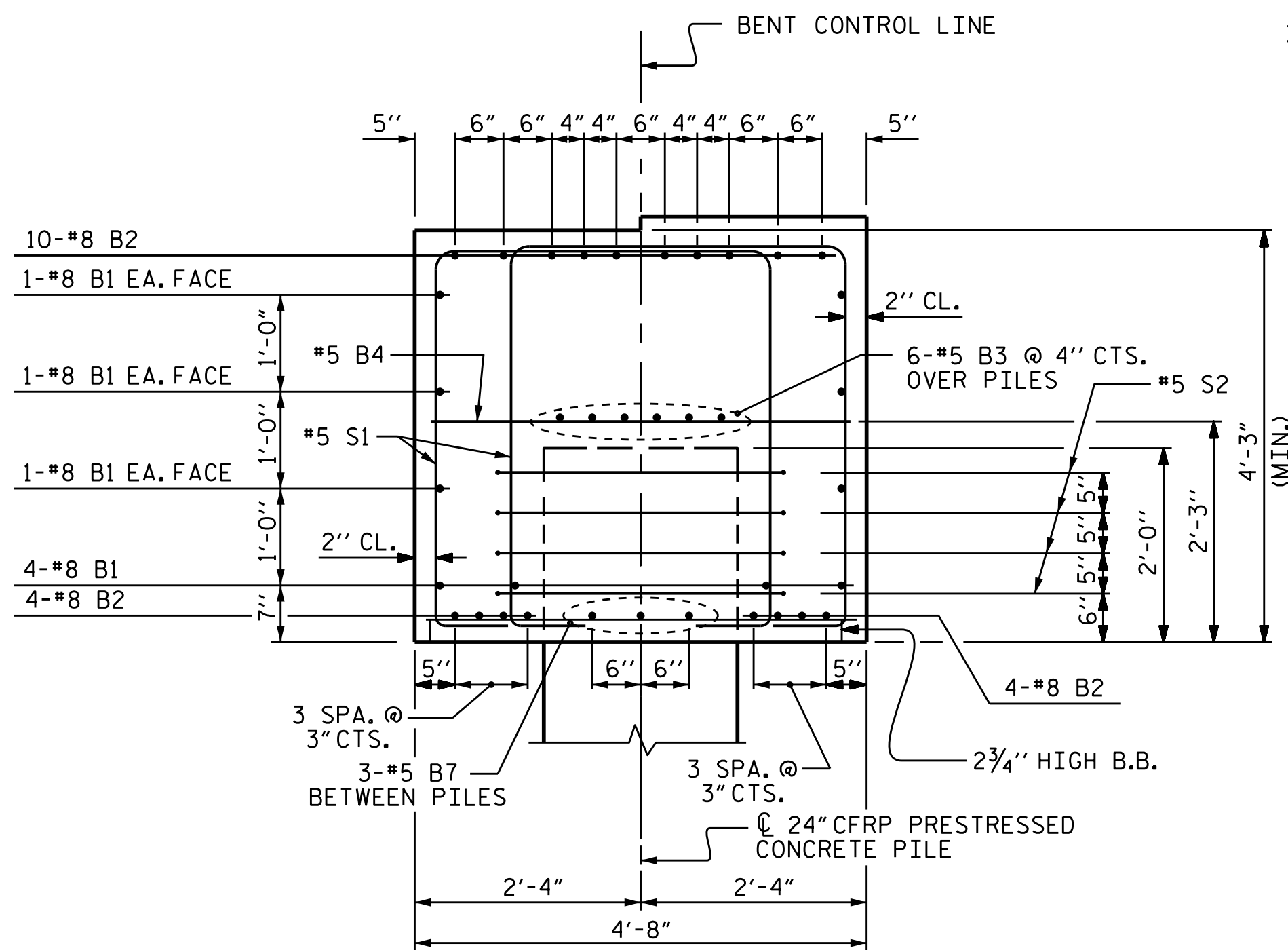
VIEW Y-Y



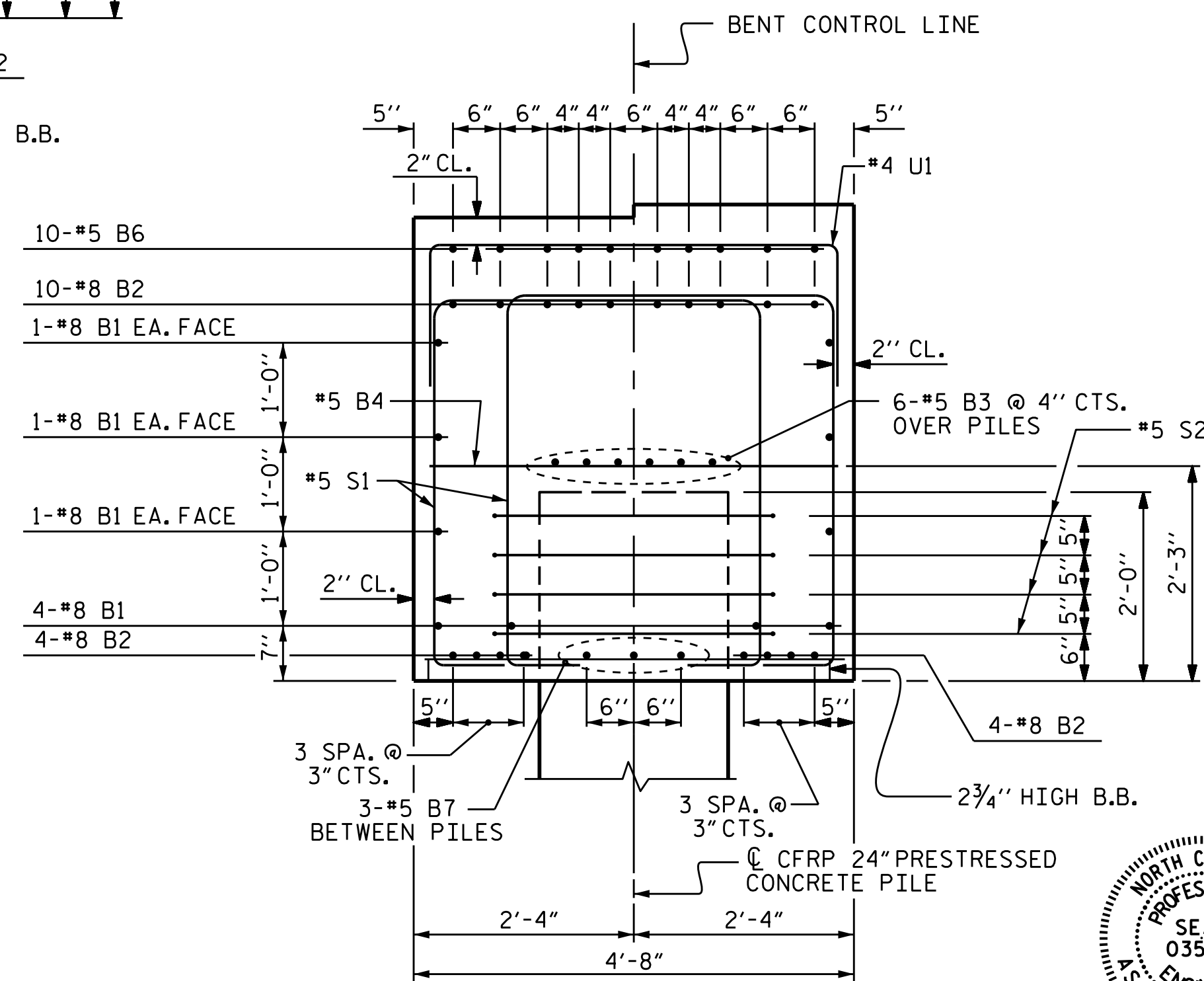
BILL OF MATERIAL				
BENT #15				
BAR NO.	NO.	SIZE	TYPE	TOTAL LENGTH
B1	10	#8	STR	31'-8"
B2	18	#8	1	34'-2"
B3	6	#5	STR	31'-8"
B4	8	#5	STR	4'-4"
B5	10	#5	STR	8'-9"
B6	10	#5	STR	4'-9"
B7	15	#5	STR	3'-2"
S1	86	#5	4	13'-0"
S2	24	#5	2	12'-3"
S3	8	#5	4	12'-9"
U1	35	#4	1	7'-4"
U2	2	#8	1	11'-6"
U3	6	#4	1	7'-2"
U4	2	#4	1	6'-9"
U5	2	#4	3	6'-2"
U6	2	#4	3	6'-10"
U7	2	#4	1	7'-5"
TOTAL LIN. FT. # 4 BARS				354.0
TOTAL LIN. FT. # 5 BARS				1921.2
TOTAL LIN. FT. # 8 BARS				954.7
GLASS FIBER REINFORCED POLYMER BARS TOTAL				3229.83 LIN. FT.
CLASS AA CONCRETE BREAKDOWN				
POUR #1 CAP				24.2 C.Y.
TOTAL CLASS AA CONCRETE				24.2 C.Y.



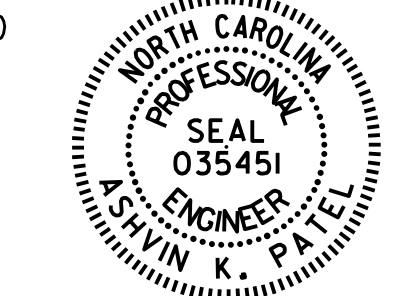
SECTION B-B



SECTION A-A



SECTION C-C

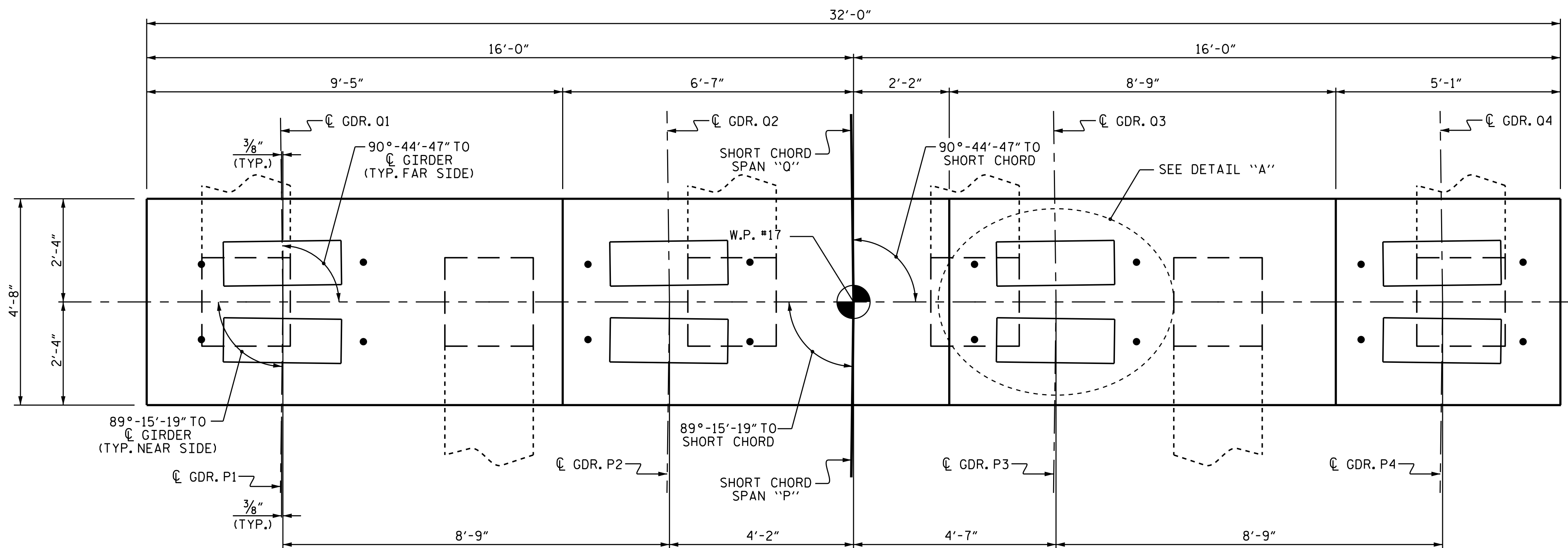


PROJECT NO. B-4863
 CARTERET COUNTY
 STATION: 34+75.00 -L-
 SHEET 2 OF 2

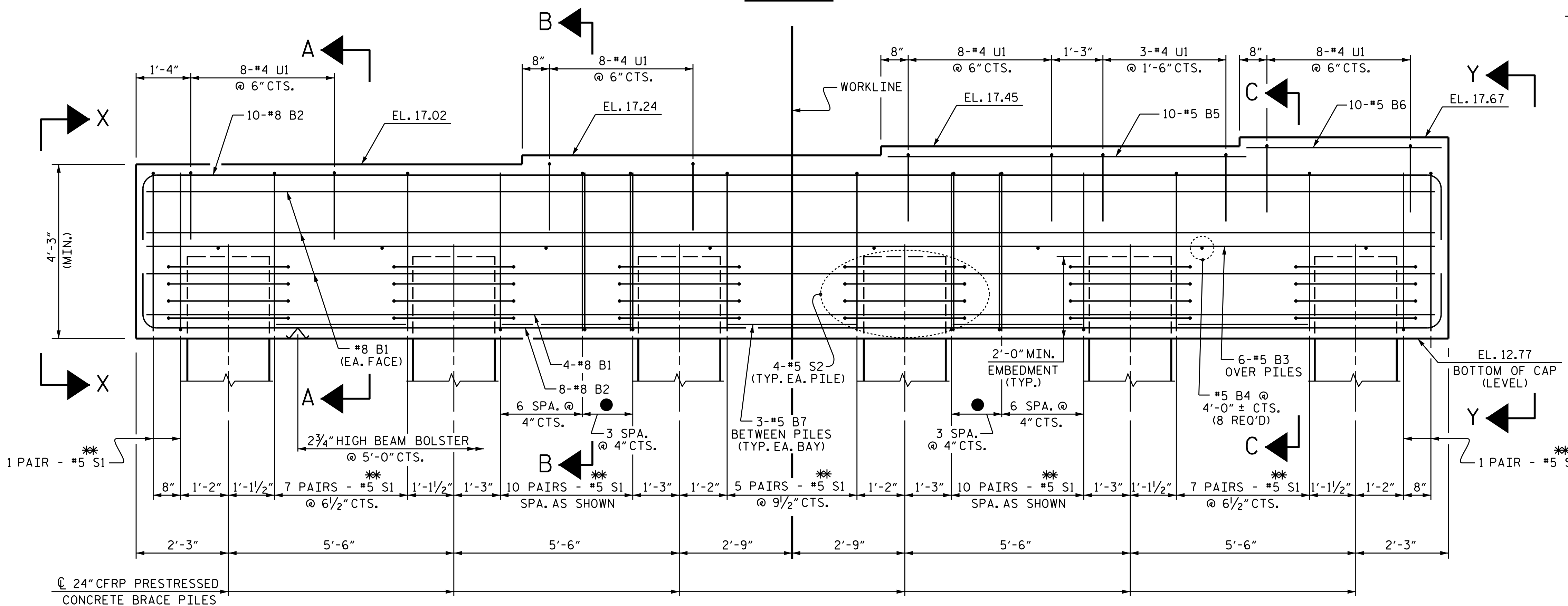
STATE OF NORTH CAROLINA		DEPARTMENT OF TRANSPORTATION		RALEIGH	
SUBSTRUCTURE					
BENT #15					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO.					S1-162
TOTAL SHEETS					194

DRAWN BY: T.L. AVERETTE DATE: 02/2019
 CHECKED BY: A.K. PATEL DATE: 12/2019
 DESIGN ENGINEER OF RECORD: A.K. PATEL DATE: 12/2019

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PLAN



ELEVATION

FOR ADDITIONAL REINFORCING BARS IN ENDS OF CAP, SEE VIEW X-X AND VIEW Y-Y ON SHEET 2 OF 2.

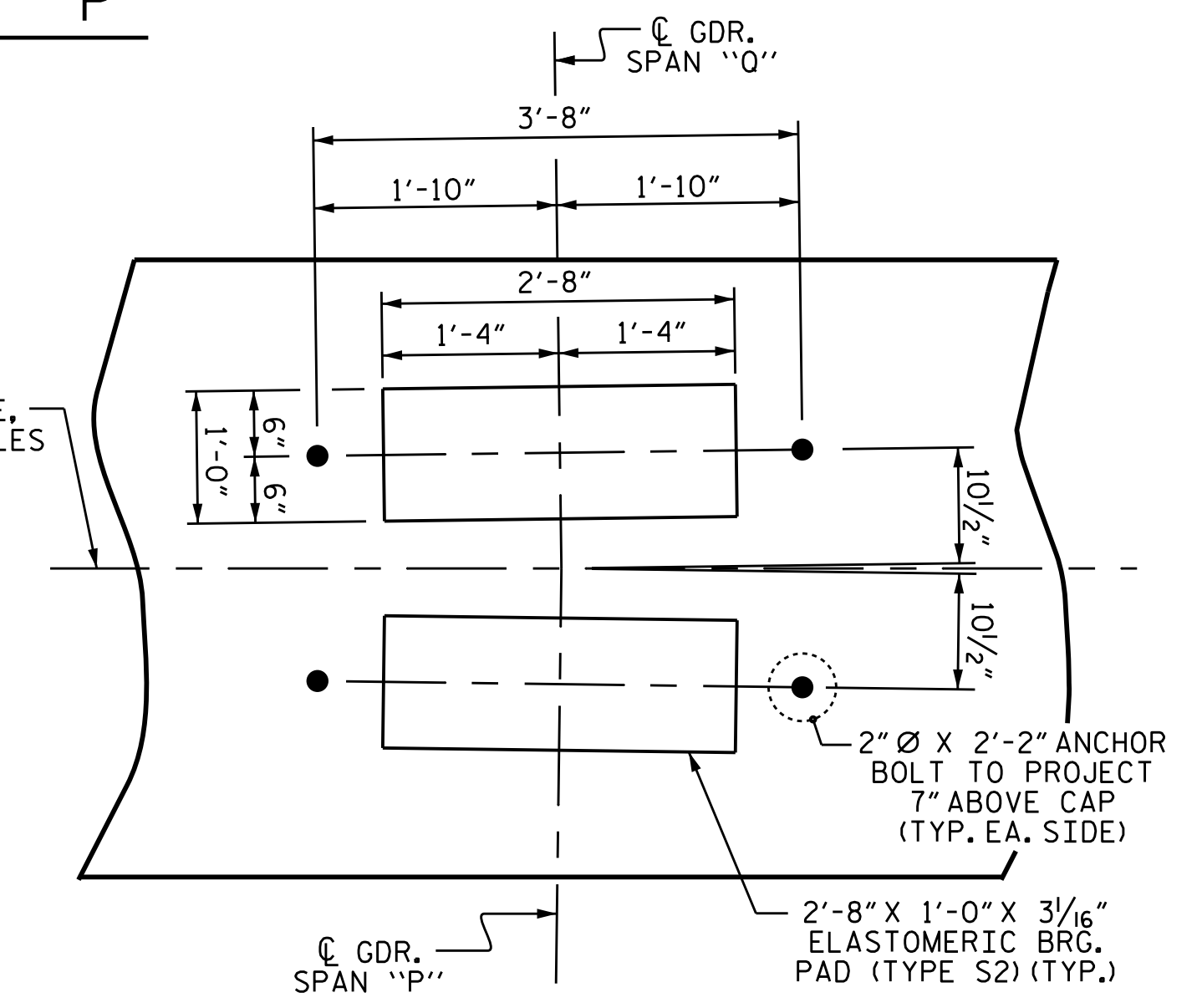
- * INVERT ALTERNATE STIRRUPS
- ADDITIONAL STIRRUP REQUIRED IN THIS AREA. SEE SECTION VIEWS.

NOTES

STIRRUPS AND U1 BARS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.
 CONCRETE DISPLACED BY CONCRETE PILES HAS BEEN DEDUCTED FROM THE CAP CONCRETE QUANTITY.
 ALL REINFORCING IN THE CAP IS TO BE GLASS FIBER REINFORCED POLYMER (GFRP) BARS. FOR GLASS FIBER REINFORCED POLYMER BARS, SEE SPECIAL PROVISIONS.

SPAN "Q"

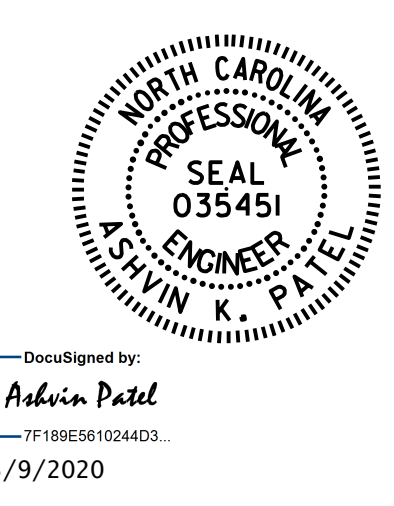
SPAN "P"



DETAIL "A"
(TYP. @ EACH GDR.)

PROJECT NO. B-4863
CARTERET COUNTY
 STATION: 34+75.00 -L-

SHEET 1 OF 2

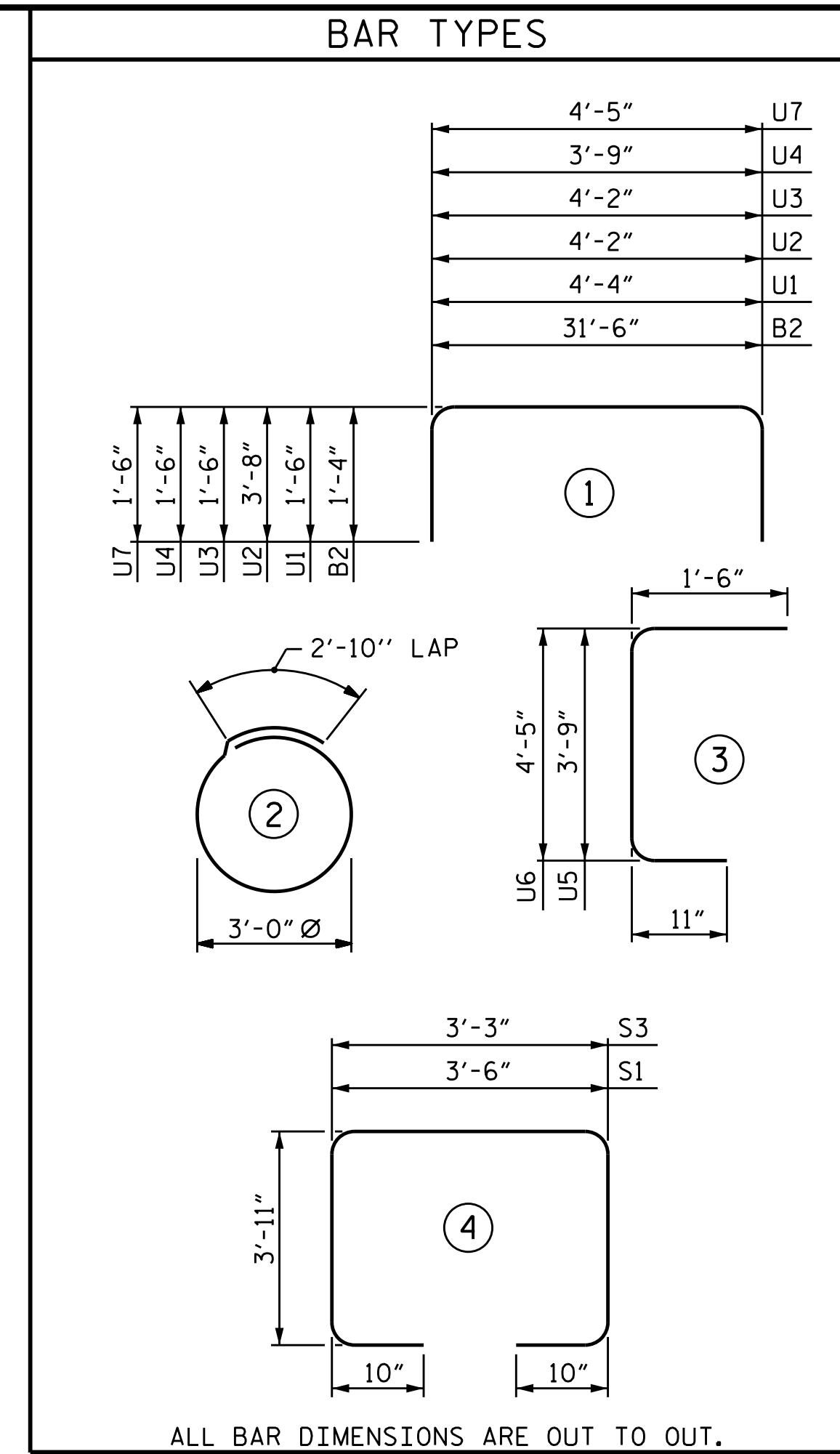
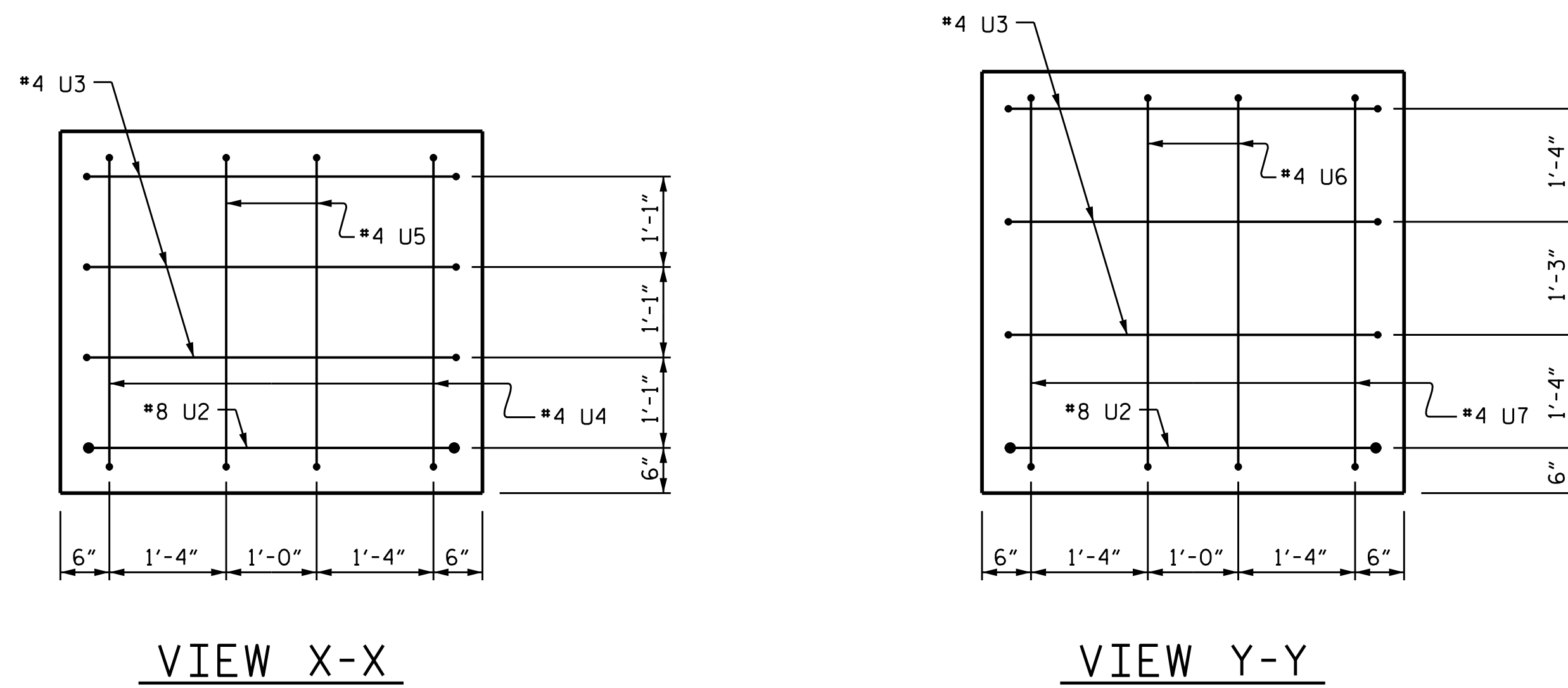


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 BENT #16

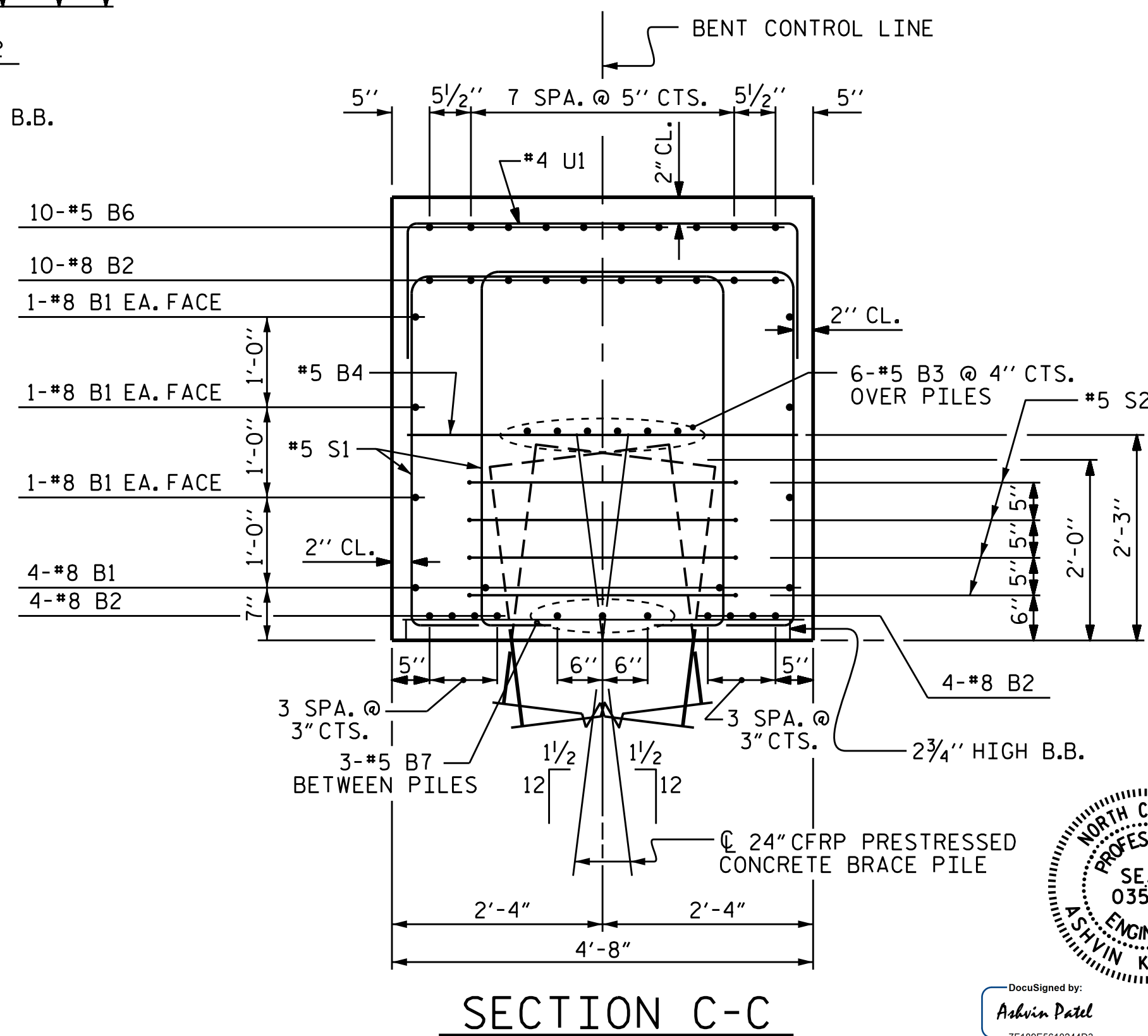
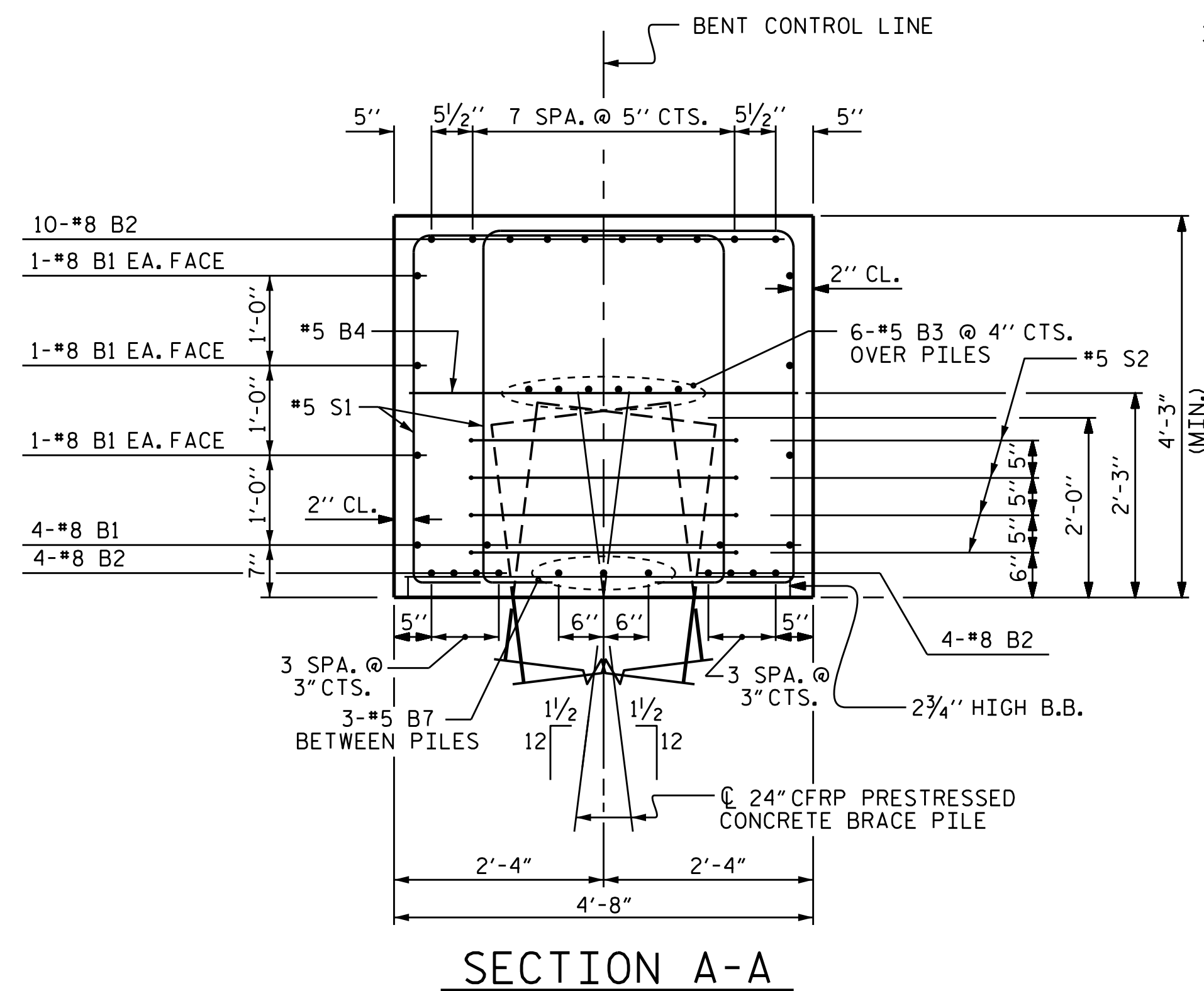
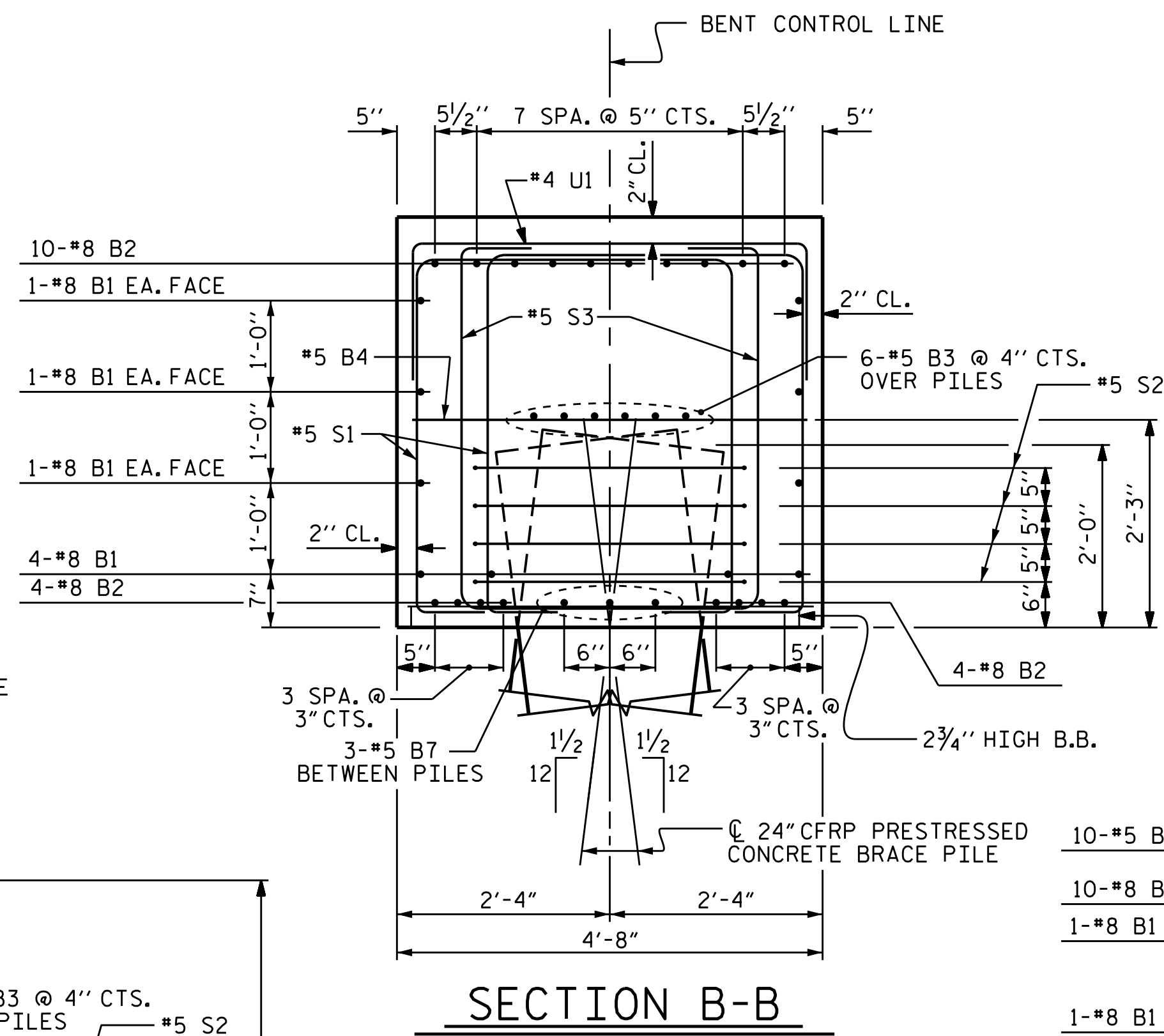
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-163
1			3			TOTAL SHEETS
2			4			194

DRAWN BY : I.L. AVERETTE DATE : 02/2019
 CHECKED BY : A.K. PATEL DATE : 12/2019
 DESIGN ENGINEER OF RECORD: A.K. PATEL DATE : 12/2019

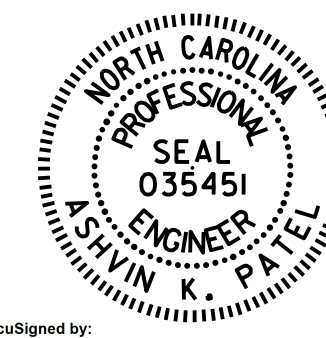
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



BILL OF MATERIAL					
BENT #16					
BAR	NO.	SIZE	TYPE	LENGTH	TOTAL LENGTH
B1	10	#8	STR	31'-8"	316'-8"
B2	18	#8		34'-2"	615'-0"
B3	6	#5	STR	31'-8"	190'-0"
B4	8	#5	STR	4'-4"	34'-8"
B5	10	#5	STR	8'-9"	87'-6"
B6	10	#5	STR	4'-9"	47'-6"
B7	15	#5	STR	3'-2"	47'-6"
S1	86	#5	4	13'-0"	1118'-0"
S2	24	#5	2	12'-3"	294'-0"
S3	8	#5	4	12'-9"	102'-0"
U1	35	#4	1	7'-4"	256'-8"
U2	2	#8	1	11'-6"	23'-0"
U3	6	#4	1	7'-2"	43'-0"
U4	2	#4	1	6'-9"	13'-6"
U5	2	#4	3	6'-2"	12'-4"
U6	2	#4	3	6'-10"	13'-8"
U7	2	#4	1	7'-5"	14'-10"
TOTAL LIN. FT. # 4 BARS					354.0
TOTAL LIN. FT. # 5 BARS					1921.2
TOTAL LIN. FT. # 8 BARS					954.7
GLASS FIBER REINFORCED POLYMER BARS					TOTAL 3229.83 LIN. FT.
CLASS AA CONCRETE BREAKDOWN					
POUR #1 CAP					23.3 C.Y.
TOTAL CLASS AA CONCRETE					23.3 C.Y.



PROJECT NO. B-4863
CARTERET COUNTY
 STATION: 34+75.00 -L-
 SHEET 2 OF 2



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 BENT #16

DRAWN BY : I.L. AVERETTE DATE : 02/2019
 CHECKED BY : A.K. PATEL DATE : 12/2019
 DESIGN ENGINEER OF RECORD: A.K. PATEL DATE : 12/2019

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			194
2			4			

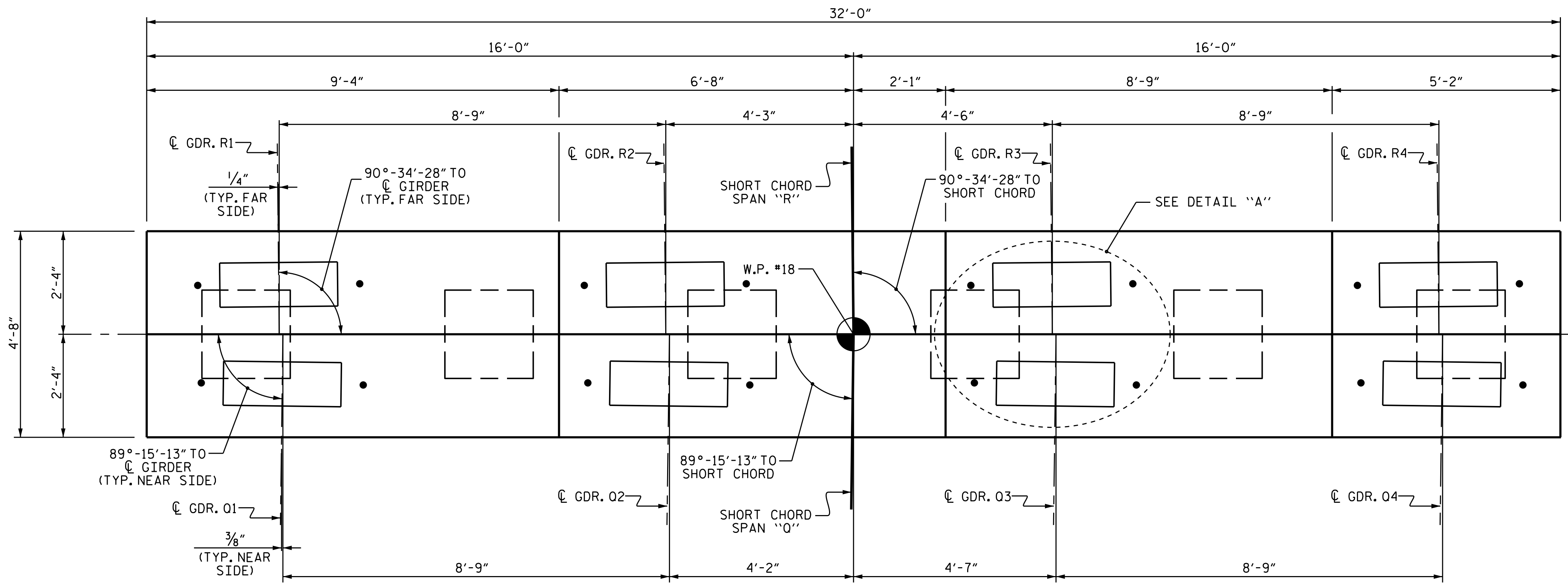
NOTES

STIRRUPS AND U1 BARS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.

CONCRETE DISPLACED BY CONCRETE PILES HAS BEEN DEDUCTED FROM THE CAP CONCRETE QUANTITY.

THE TOP SURFACE AREAS OF THE BENT CAP SHALL BE CURED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS EXCEPT THE MEMBRANE CURING COMPOUND METHOD SHALL NOT BE USED.

ALL REINFORCING IN THE CAP IS TO BE GLASS FIBER REINFORCED POLYMER (GFRP) BARS, FOR GLASS FIBER REINFORCED POLYMER BARS, SEE SPECIAL PROVISIONS.

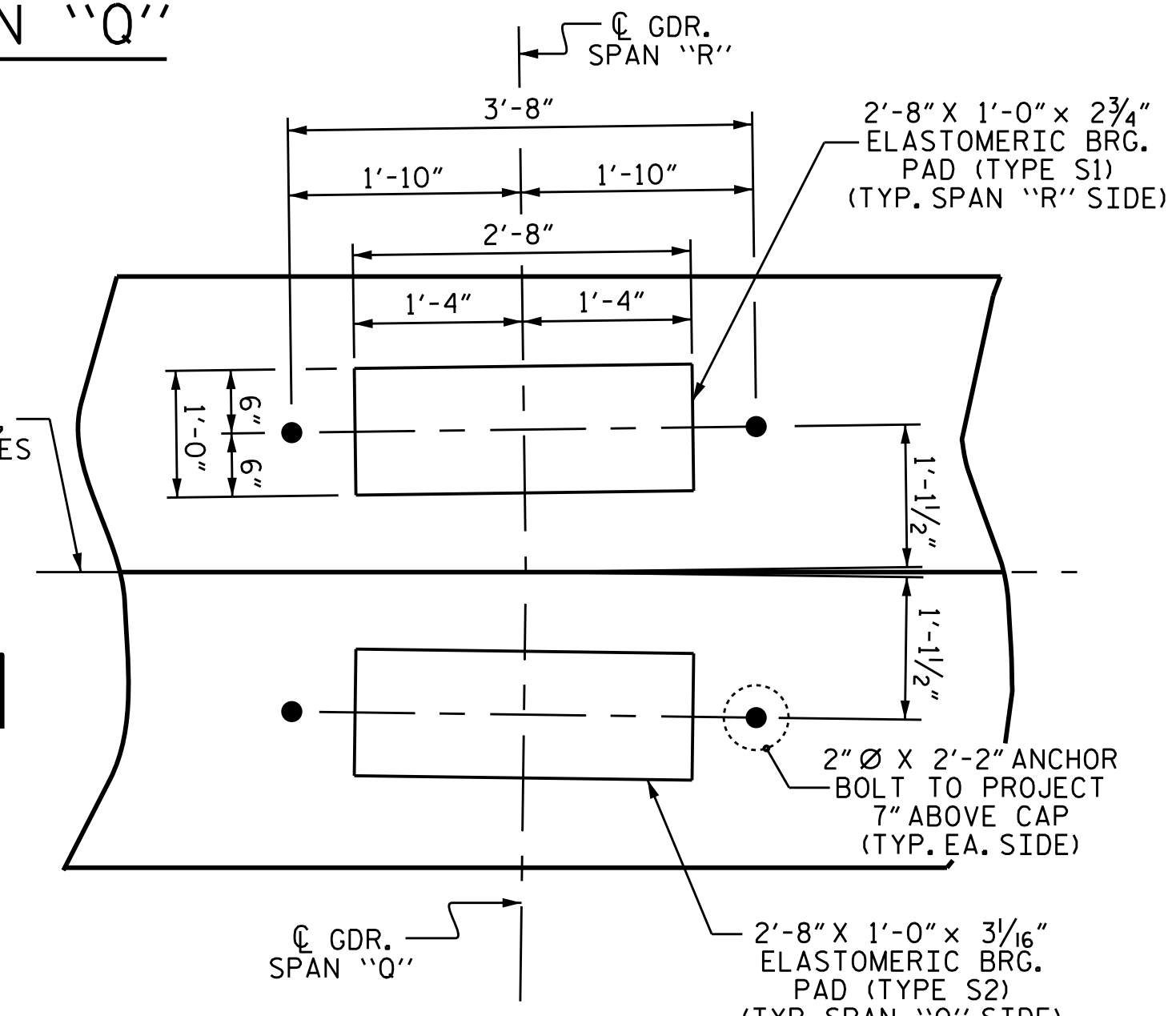


PLAN

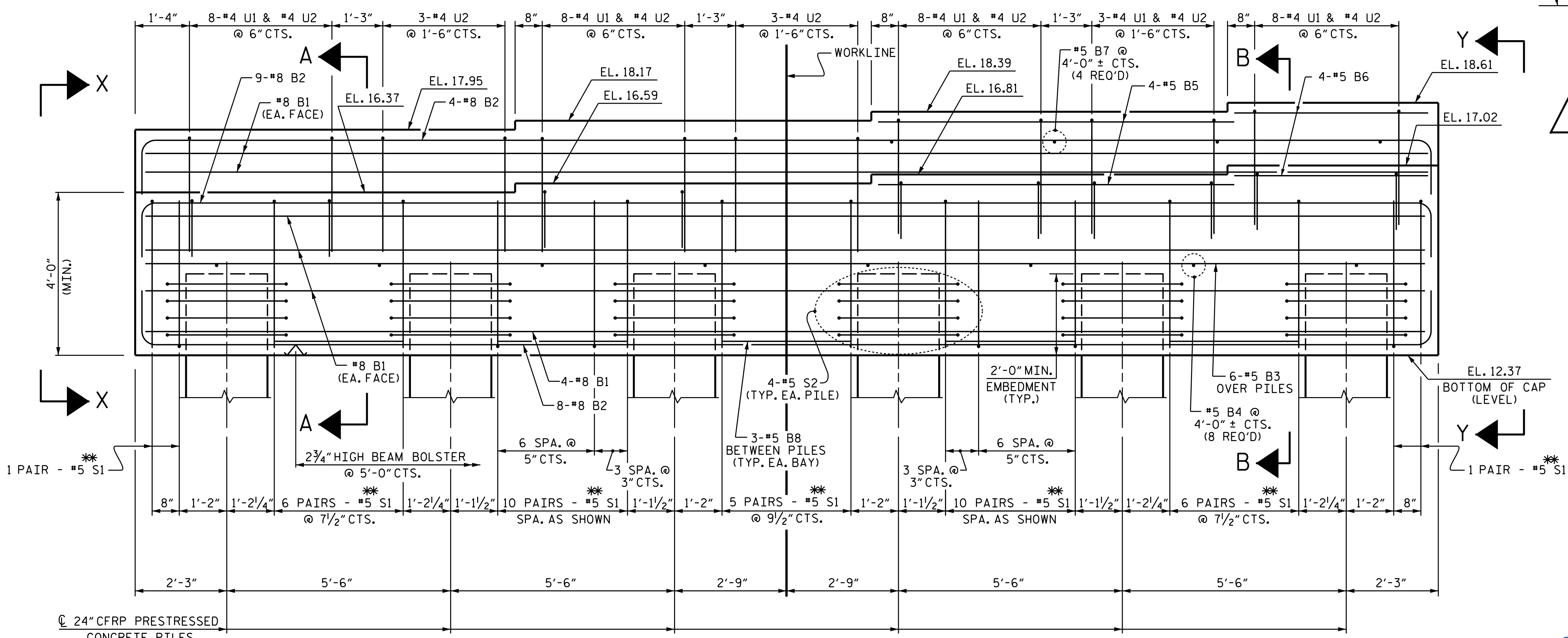
SPAN "R"

SPAN "Q"

BENT #17 CONTROL LINE, @ CAP & @ PILES



DETAIL "A"
(TYP. @ EACH GDR.)



ELEVATION

FOR ADDITIONAL REINFORCING BARS IN ENDS OF CAP, SEE VIEW X-X AND VIEW Y-Y ON SHEET 2 OF 2.

**** INVERT ALTERNATE STIRRUPS**

PROJECT NO. B-4863
CARTERET COUNTY
 STATION: 34+75.00 -L-
 SHEET 1 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
SUBSTRUCTURE
BENT #17

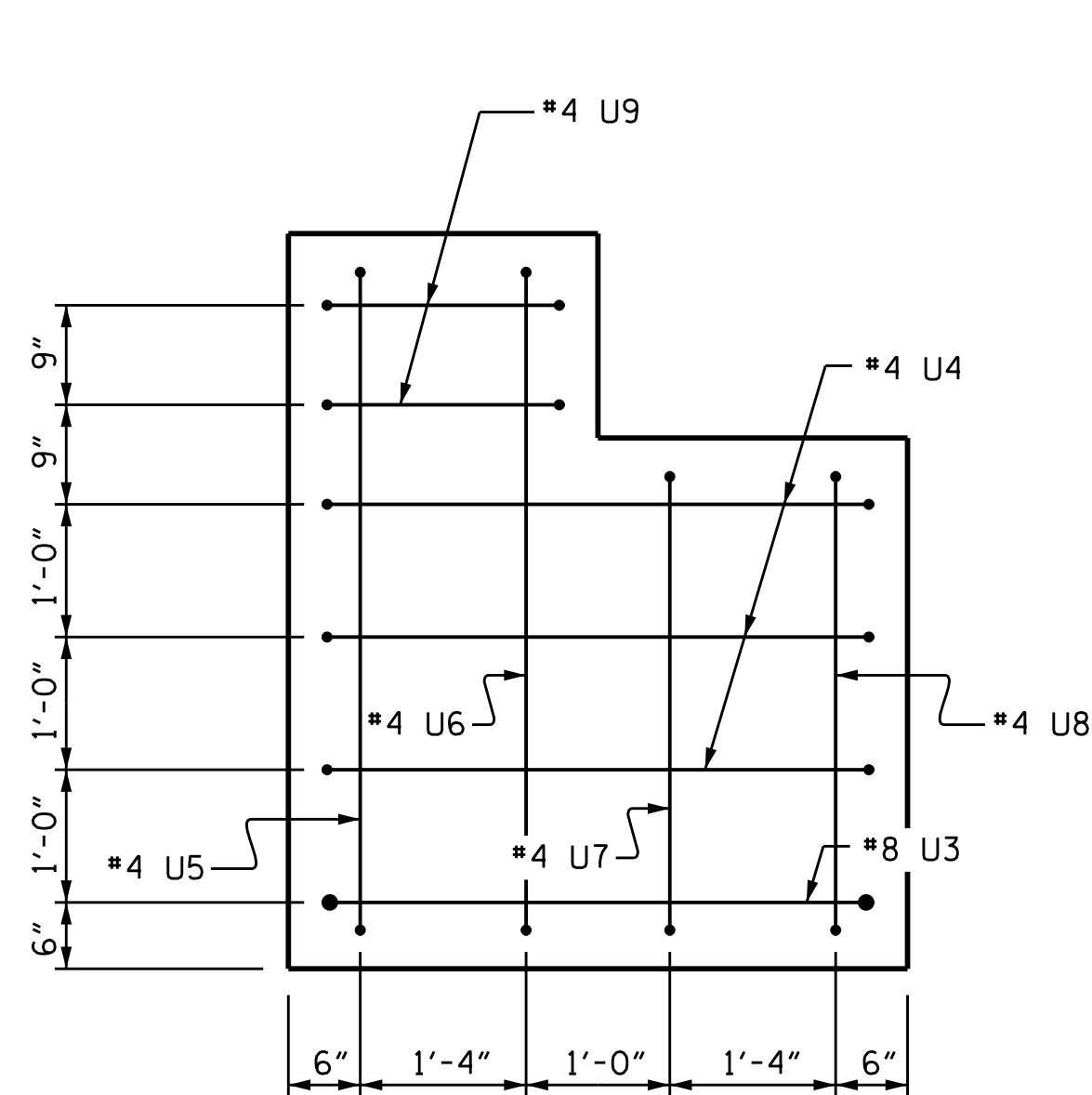


DocuSigned by:
 Ashwin Patel
 7F189E5610244E33
 3/9/2020

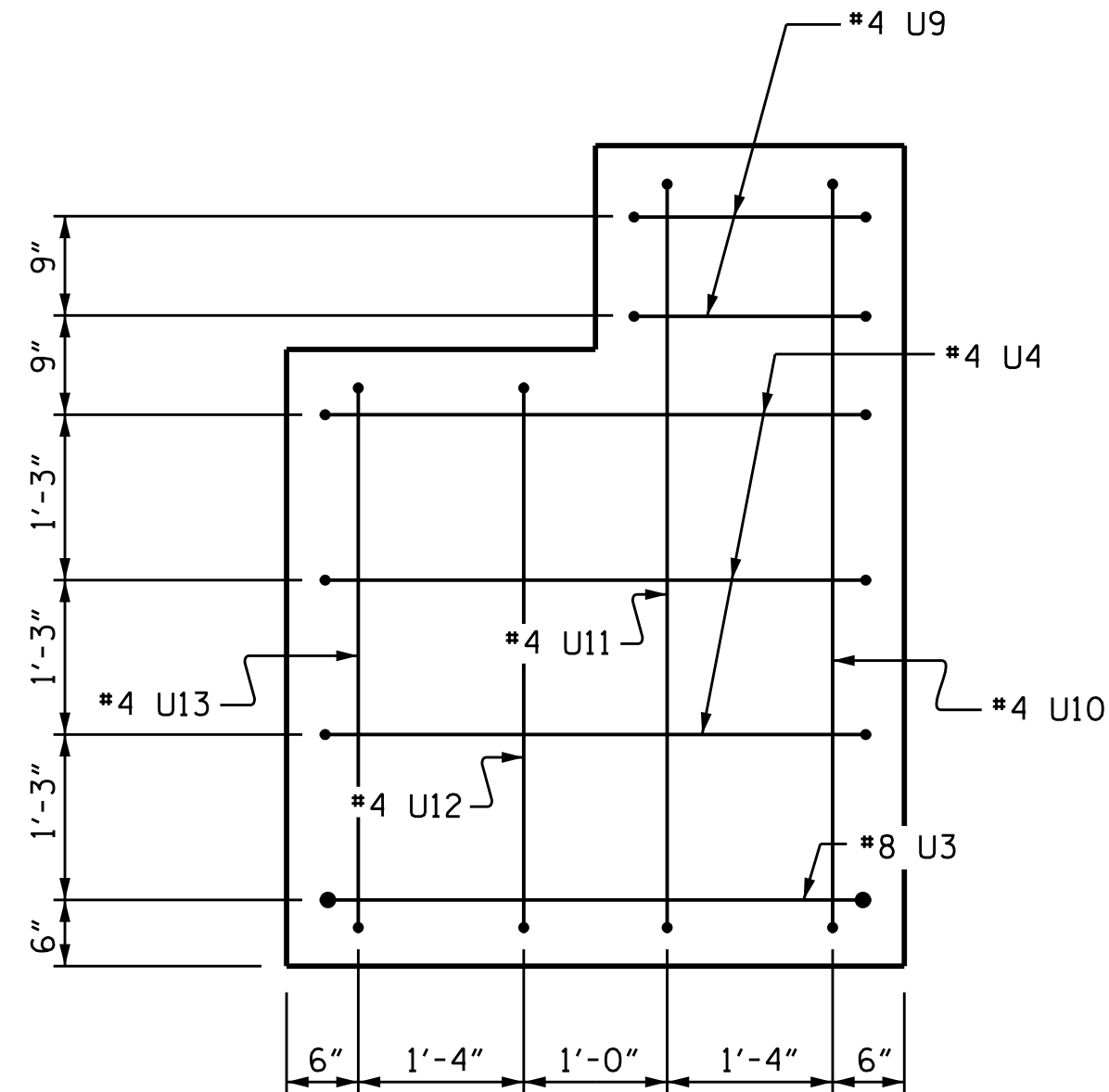
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			S1-165
2			4			194

DRAWN BY : I.L. AVERETTE DATE : 02/2019
 CHECKED BY : A.K. PATEL DATE : 11/2019
 DESIGN ENGINEER OF RECORD: A.K. PATEL DATE : 11/2019

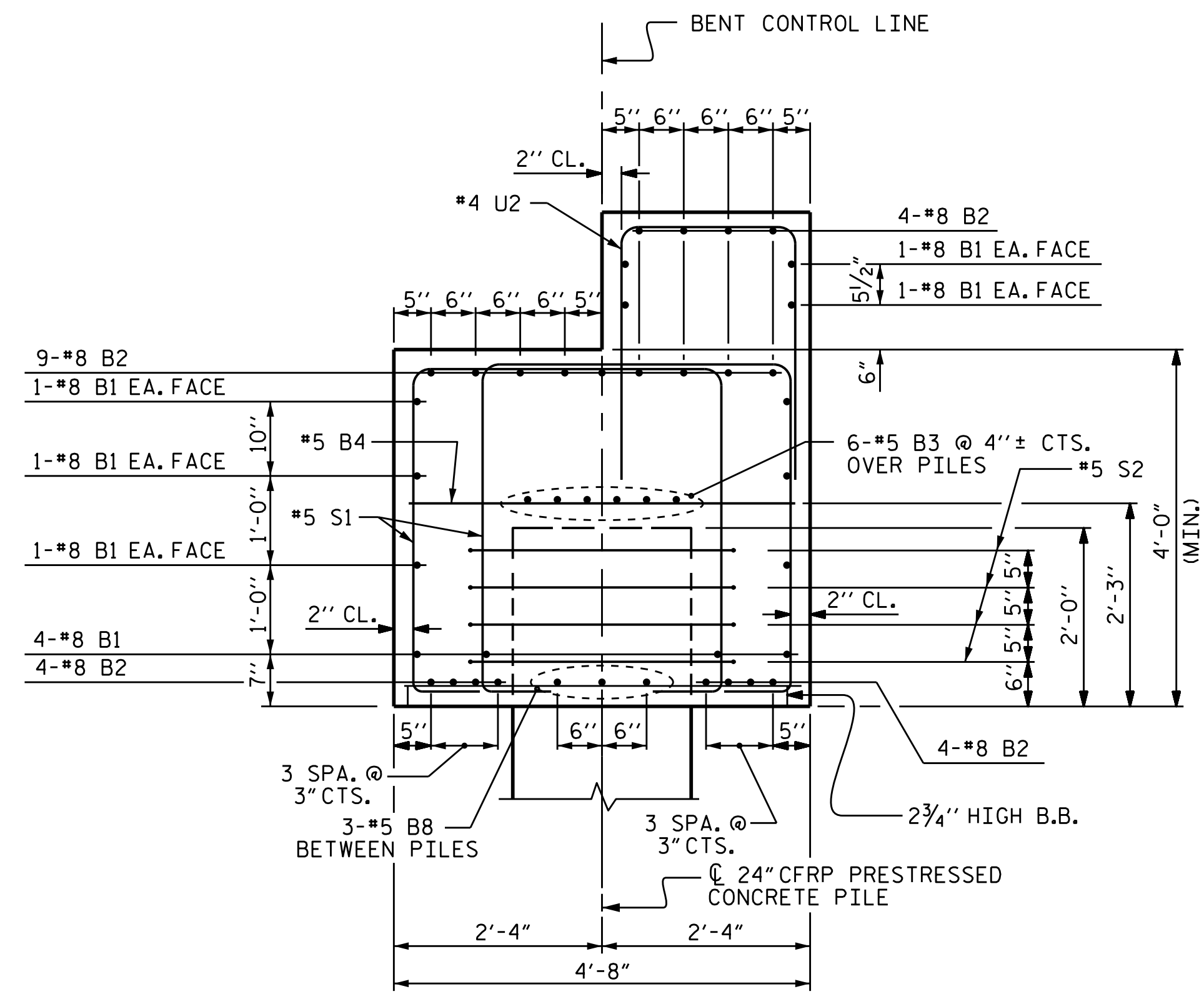
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



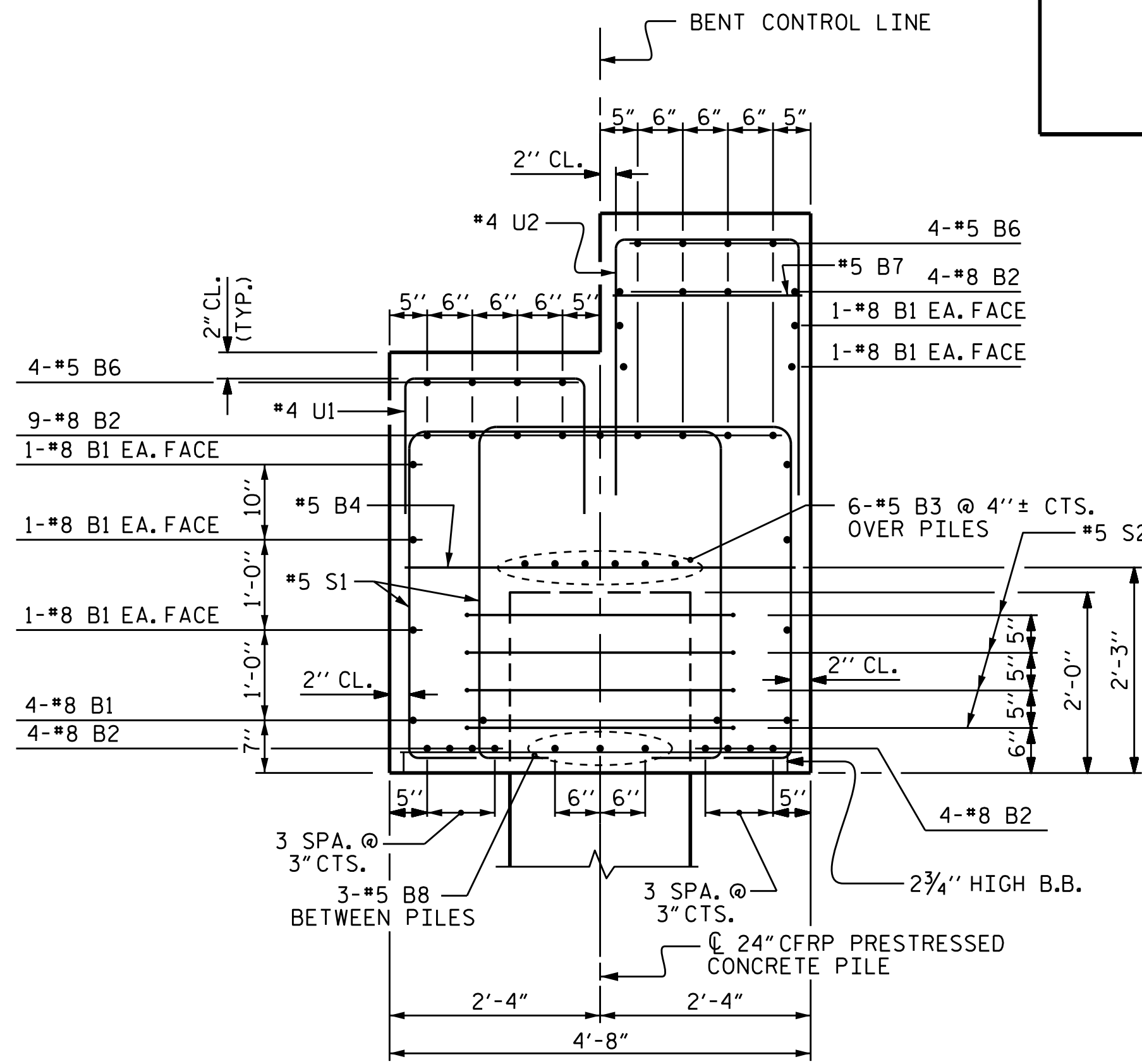
VIEW X-X



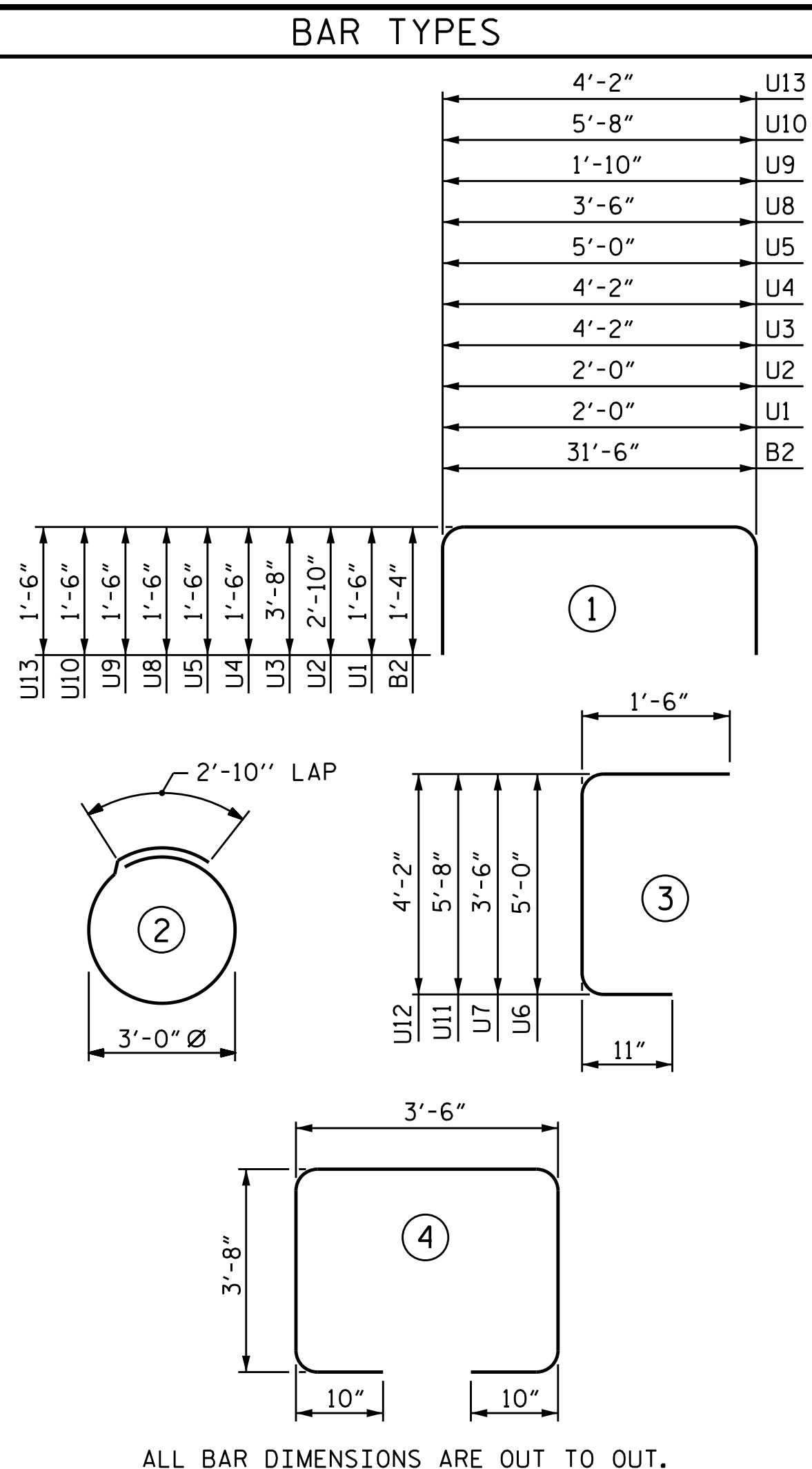
VIEW Y-Y



SECTION A-A



SECTION B-B



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL					
BENT #17					
BAR	NO.	SIZE	TYPE	LENGTH	TOTAL LENGTH
B1	14	#8	STR	31'-8"	443'-4"
B2	21	#8	STR	34'-2"	717'-6"
B3	6	#5	STR	31'-8"	190'-0"
B4	8	#5	STR	4'-4"	34'-8"
B5	8	#5	STR	8'-9"	70'-0"
B6	8	#5	STR	4'-10"	38'-8"
B7	4	#5	STR	2'-0"	8'-0"
B8	15	#5	STR	3'-2"	47'-6"
S1	82	#5	4	12'-6"	1025'-0"
S2	24	#5	2	12'-3"	294'-0"
U1	35	#4	1	5'-0"	175'-0"
U2	41	#4	1	7'-8"	314'-4"
U3	2	#8	1	11'-6"	23'-0"
U4	6	#4	1	7'-2"	43'-0"
U5	1	#4	1	8'-0"	8'-0"
U6	1	#4	3	7'-5"	7'-5"
U7	1	#4	3	5'-11"	5'-11"
U8	1	#4	1	6'-6"	6'-6"
U9	4	#4	1	4'-10"	19'-4"
U10	1	#4	1	8'-8"	8'-8"
U11	1	#4	3	8'-1"	8'-1"
U12	1	#4	3	6'-7"	6'-7"
U13	1	#4	1	7'-2"	7'-2"
TOTAL LIN. FT. # 4 BARS					610.0
TOTAL LIN. FT. # 5 BARS					1707.8
TOTAL LIN. FT. # 8 BARS					1183.8
GLASS FIBER REINFORCED POLYMER BARS TOTAL					3501.67 LIN. FT.
CLASS AA CONCRETE BREAKDOWN					
POUR #1 CAP					26.7 C.Y.
TOTAL CLASS AA CONCRETE					26.7 C.Y.

PROJECT NO. B-4863
CARTERET COUNTY
 STATION: 34+75.00 -L-
 SHEET 2 OF 2



Designed by:
 Ashwin Patel
 771806561024403
 4/16/2021

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 BENT #17

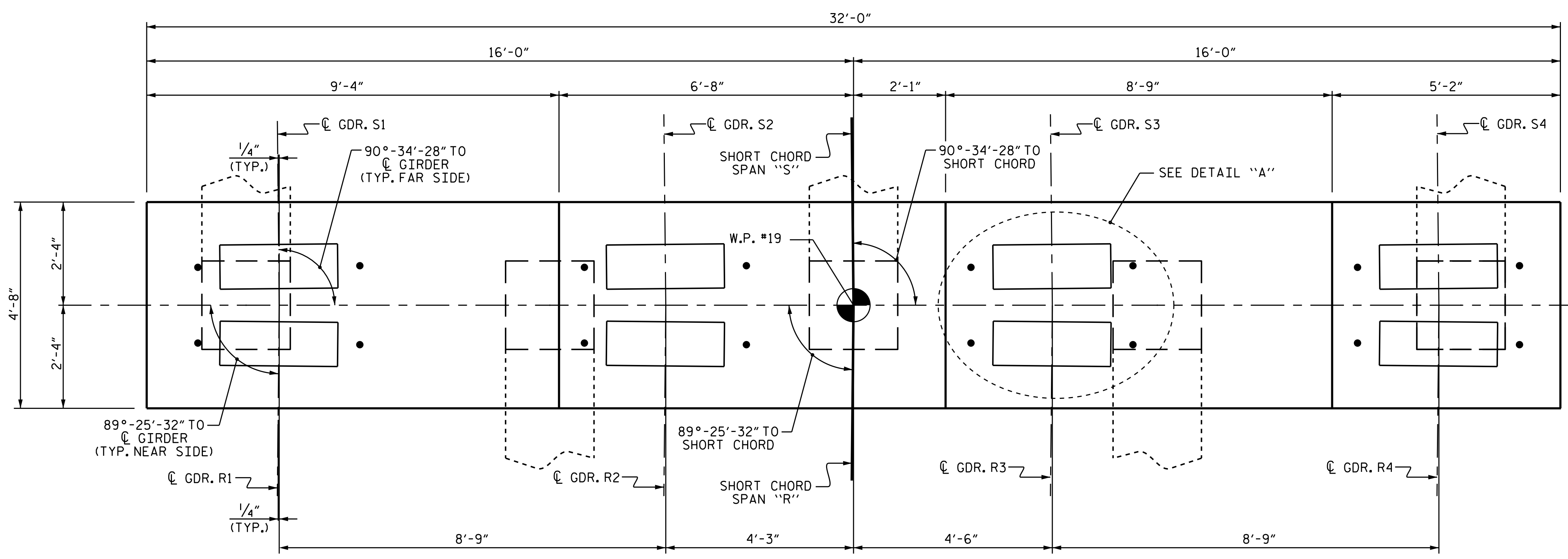
DRAWN BY : T.L. AVERETTE DATE : 02/2019
 CHECKED BY : A.K. PATEL DATE : 11/2019
 DESIGN ENGINEER OF RECORD : A.K. PATEL DATE : 11/2019

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			194
2			4			

NOTES

STIRRUPS AND U1 BARS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.
 CONCRETE DISPLACED BY CONCRETE PILES HAS BEEN DEDUCTED FROM THE CAP CONCRETE QUANTITY.
 ALL REINFORCING IN THE CAP IS TO BE GLASS FIBER REINFORCED POLYMER (GFRP) BARS. FOR GLASS FIBER REINFORCED POLYMER BARS, SEE SPECIAL PROVISIONS.

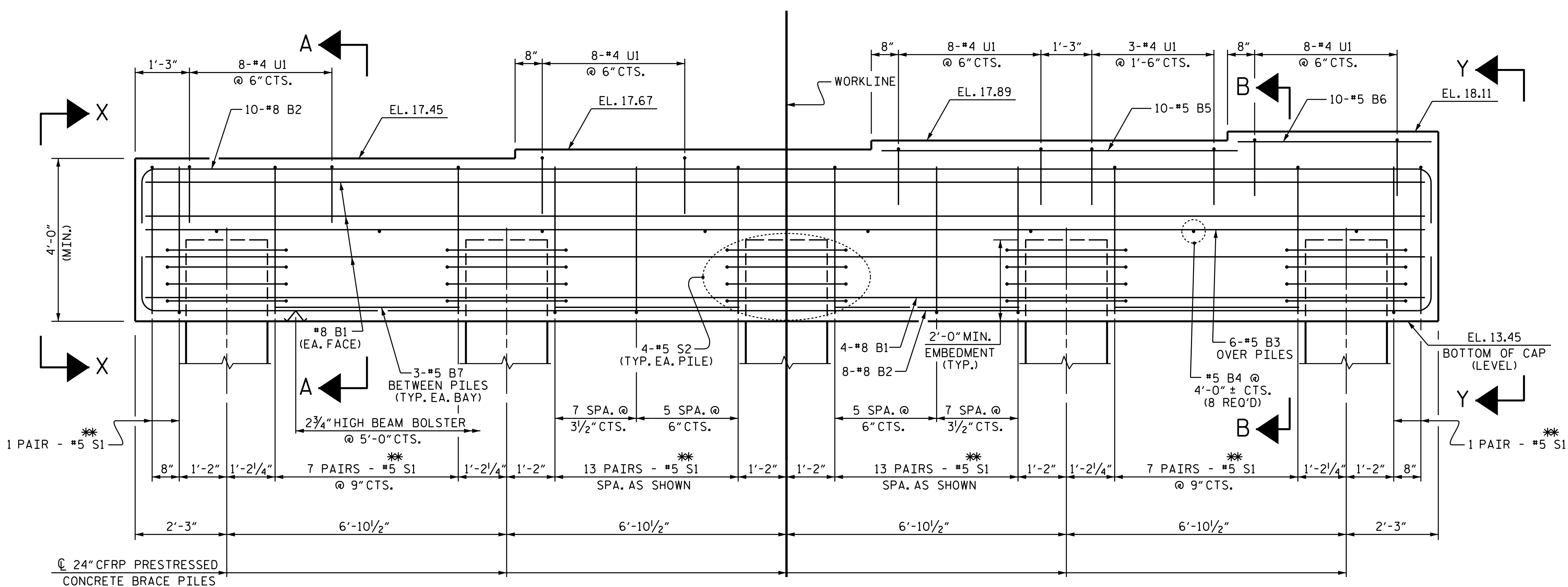


SPAN "S"

SPAN "R"

BENT #18 CONTROL LINE, C/C CAP & C/C PILES

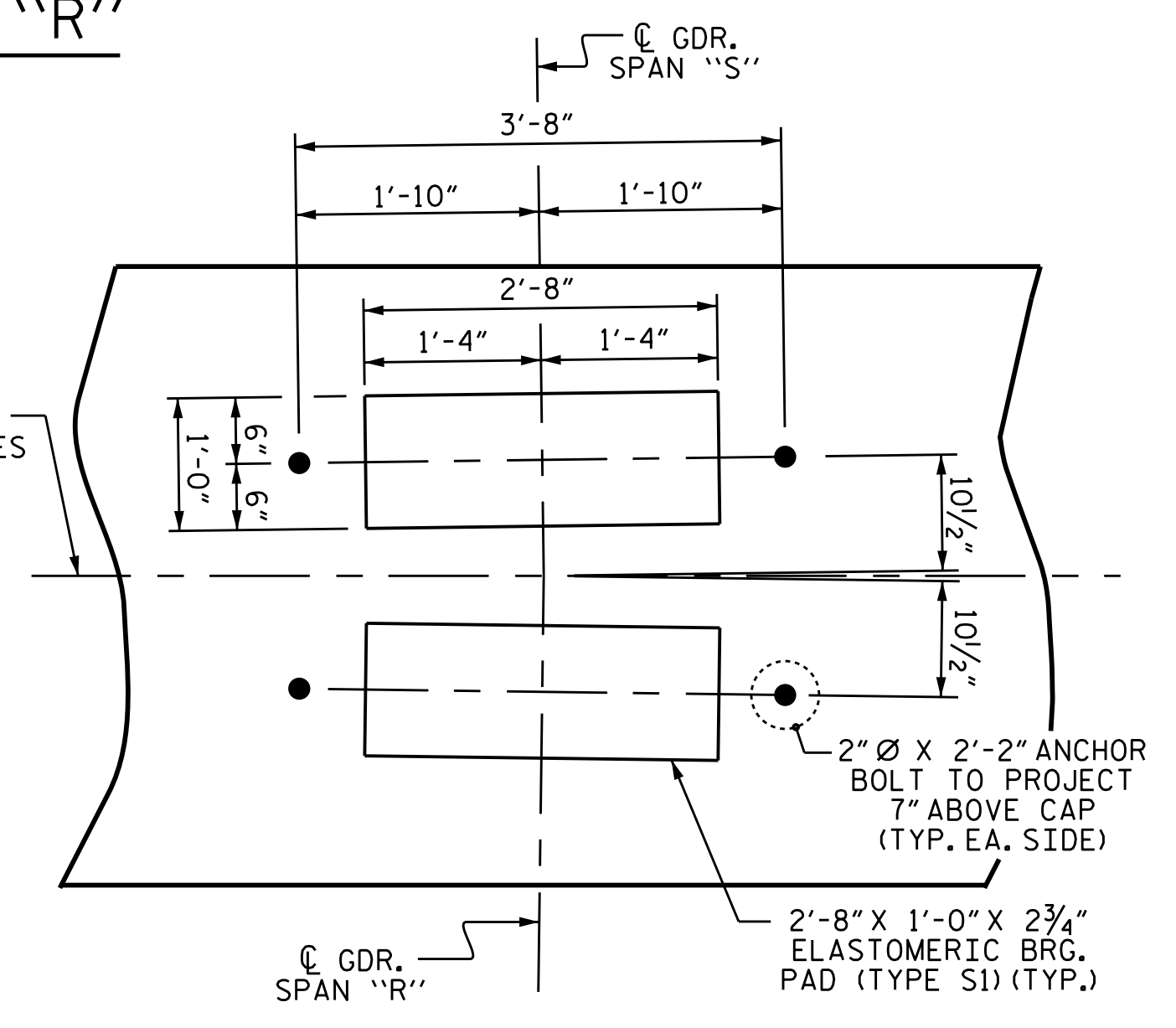
PLAN



ELEVATION

FOR ADDITIONAL REINFORCING BARS IN ENDS OF CAP, SEE VIEW X-X AND VIEW Y-Y ON SHEET 2 OF 2.

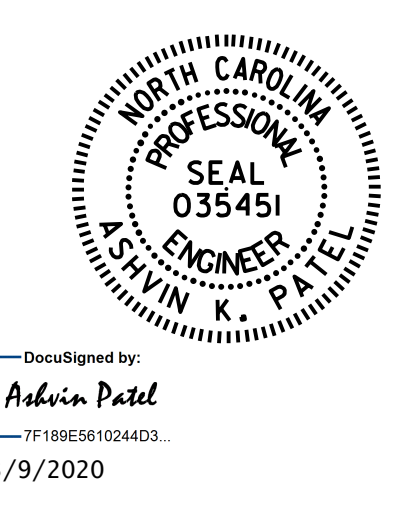
*** INVERT ALTERNATE STIRRUPS**



DETAIL "A"
(TYP. @ EACH GDR.)

PROJECT NO. B-4863
CARTERET COUNTY
 STATION: 34+75.00 -L-

SHEET 1 OF 2

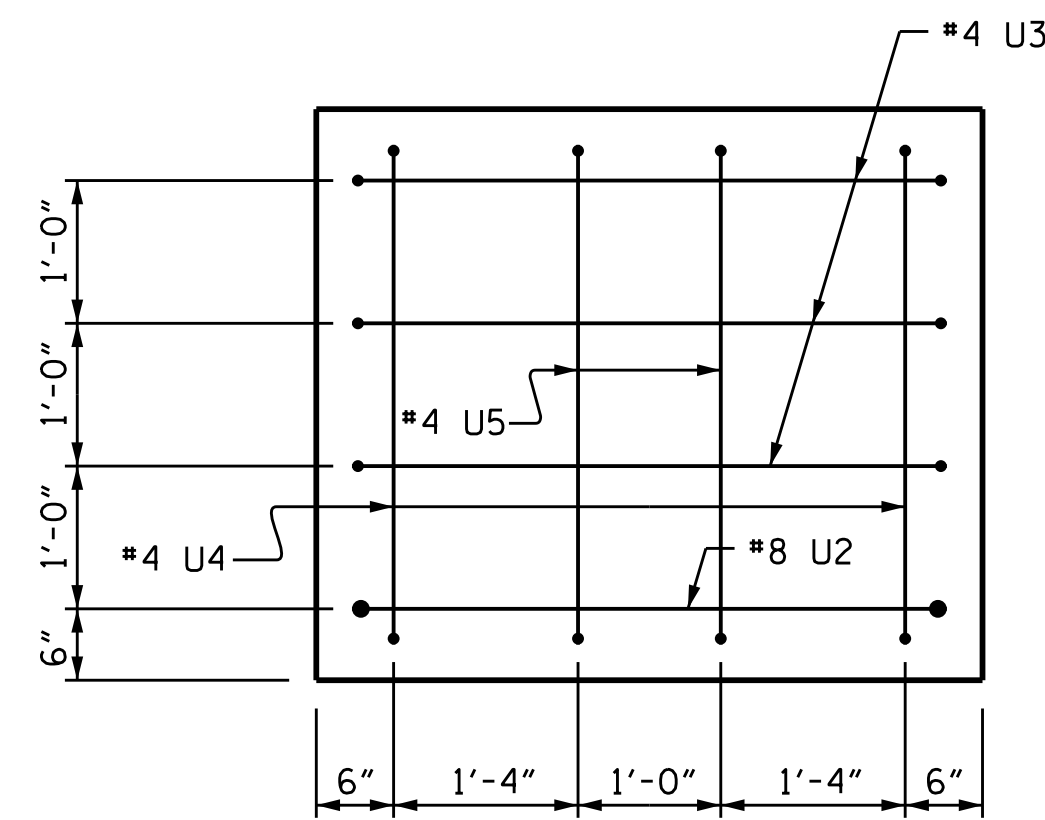


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
SUBSTRUCTURE
BENT #18

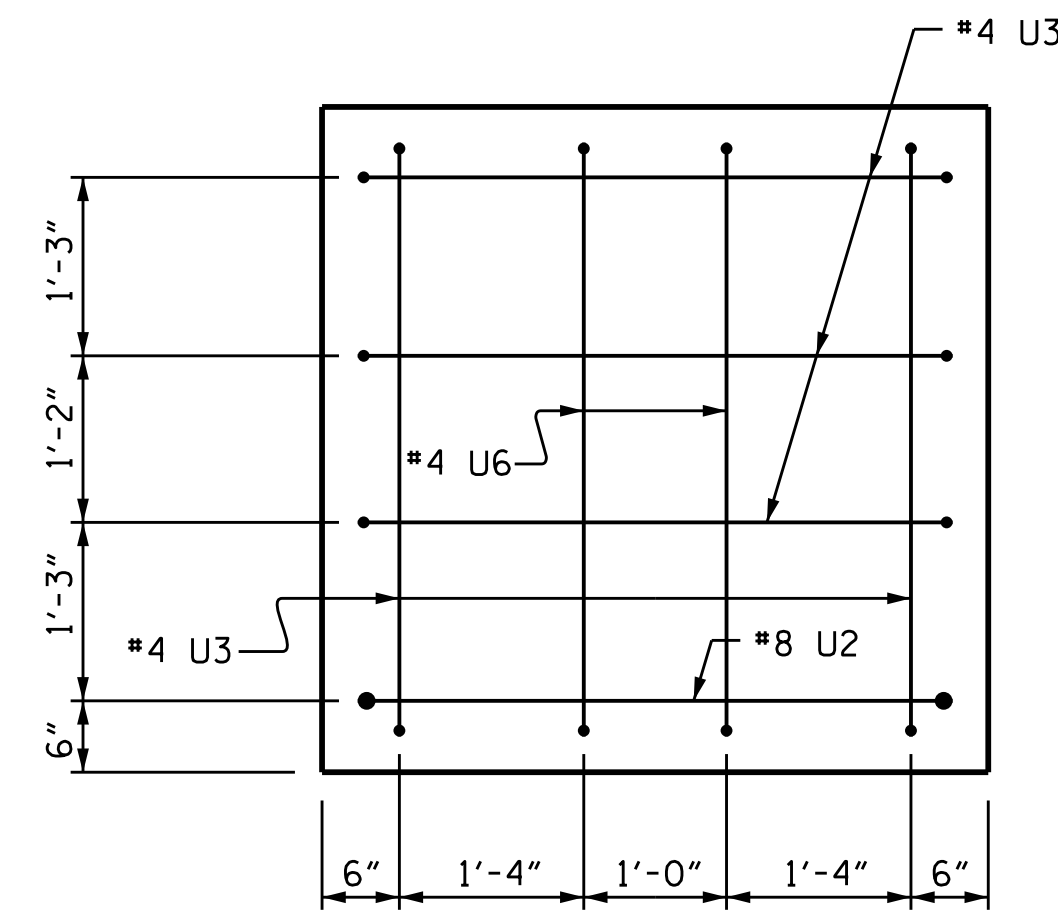
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-167
1			3			TOTAL SHEETS
2			4			194

DRAWN BY : I.L. AVERETTE DATE : 02/2019
 CHECKED BY : A.K. PATEL DATE : 12/2019
 DESIGN ENGINEER OF RECORD: A.K. PATEL DATE : 12/2019

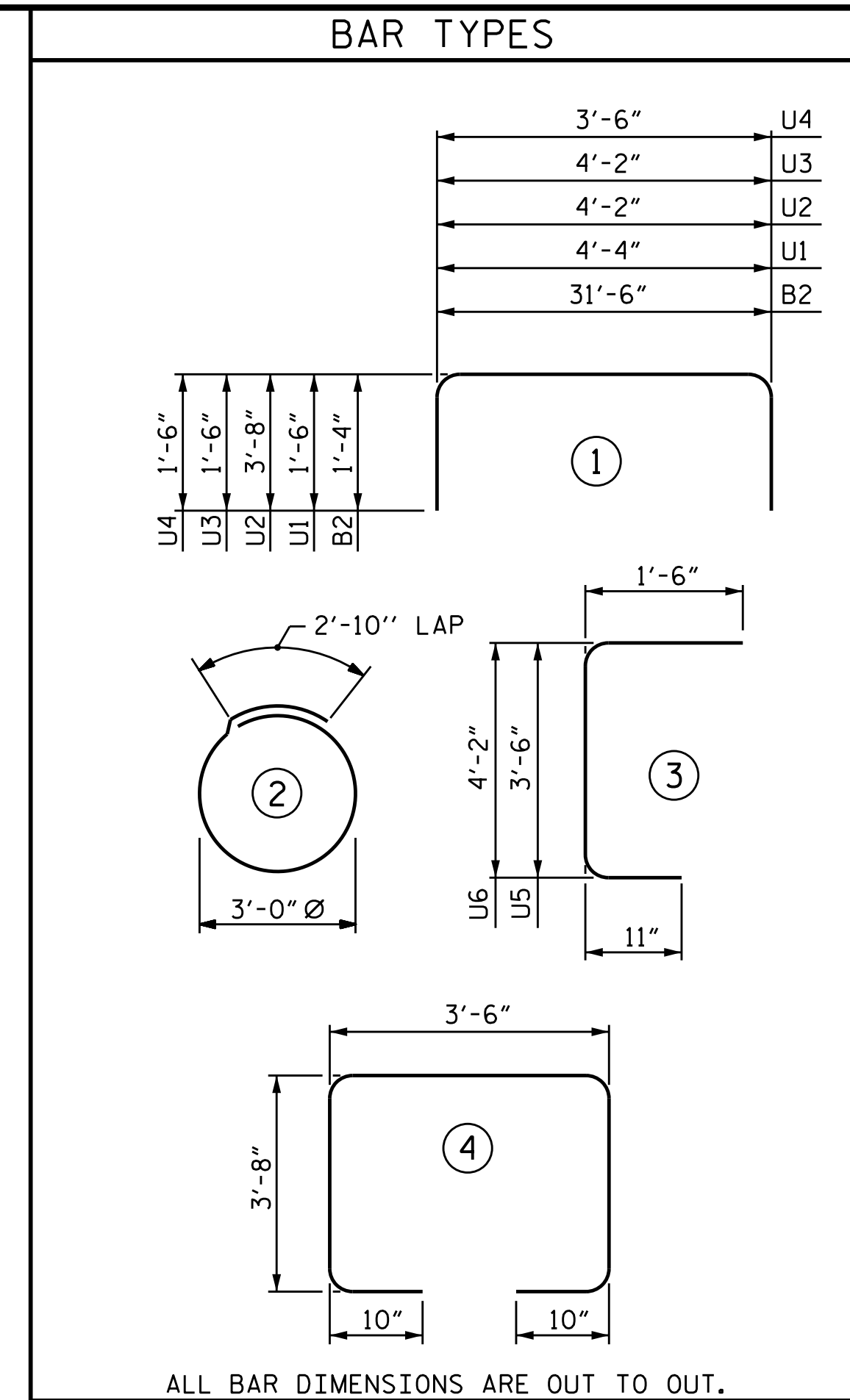
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



VIEW X-X



VIEW Y-Y



BILL OF MATERIAL

BENT #18

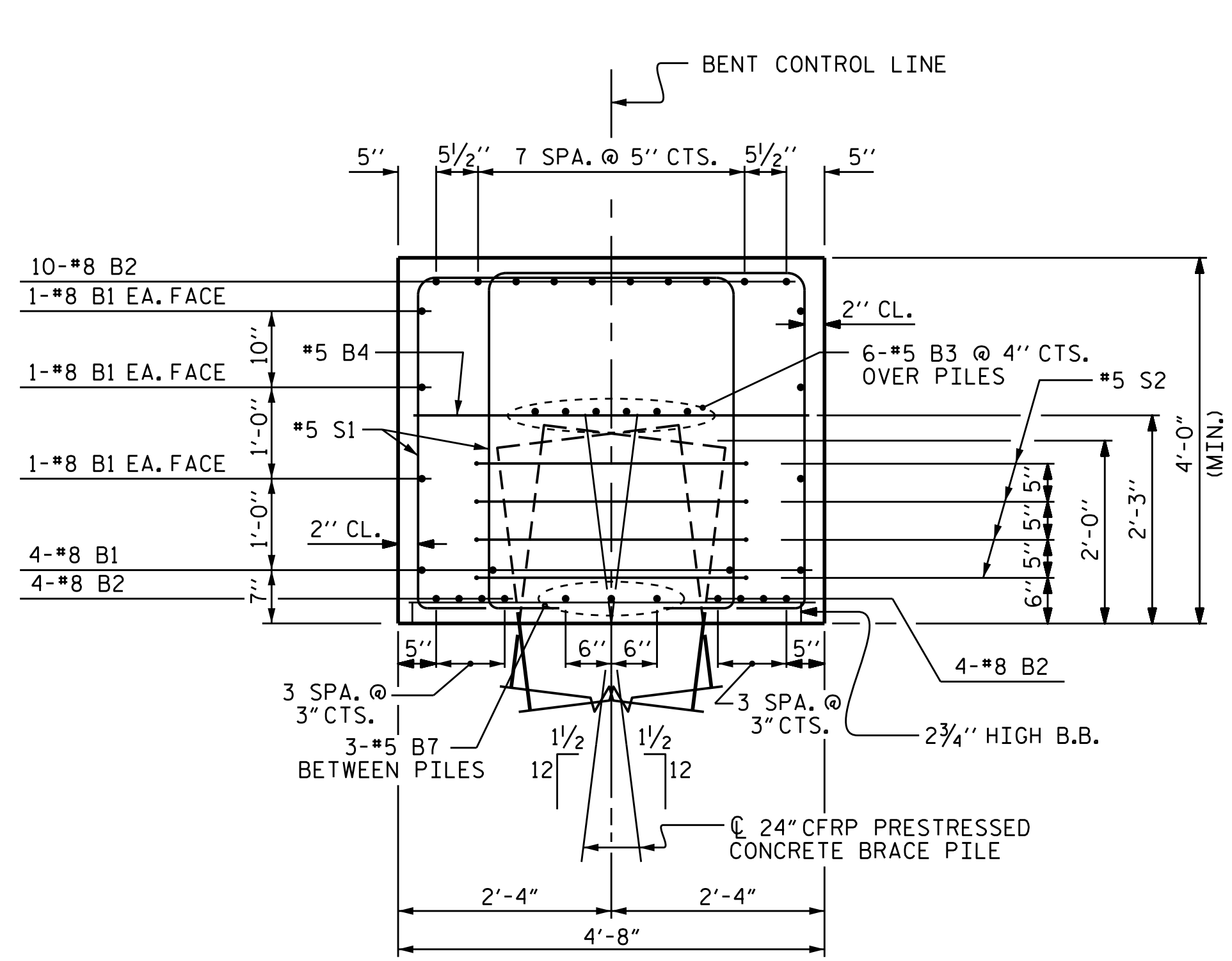
BAR	NO.	SIZE	TYPE	LENGTH	TOTAL LENGTH
B1	10	#8	STR	31'-8"	316'-8"
B2	18	#8	1	34'-2"	615'-0"
B3	6	#5	STR	31'-8"	190'-0"
B4	8	#5	STR	4'-4"	34'-8"
B5	10	#5	STR	8'-9"	87'-6"
B6	10	#5	STR	4'-10"	48'-4"
B7	12	#5	STR	4'-6"	54'-0"
S1	88	#5	4	12'-6"	1100'-0"
S2	20	#5	2	12'-3"	245'-0"
U1	35	#4	1	7'-4"	256'-8"
U2	2	#8	1	11'-6"	23'-0"
U3	8	#4	1	7'-2"	57'-4"
U4	2	#4	1	6'-6"	13'-0"
U5	2	#4	3	5'-11"	11'-10"
U6	2	#4	3	6'-7"	13'-2"

TOTAL LIN. FT. # 4 BARS 352.0
 TOTAL LIN. FT. # 5 BARS 1759.5
 TOTAL LIN. FT. # 8 BARS 954.7

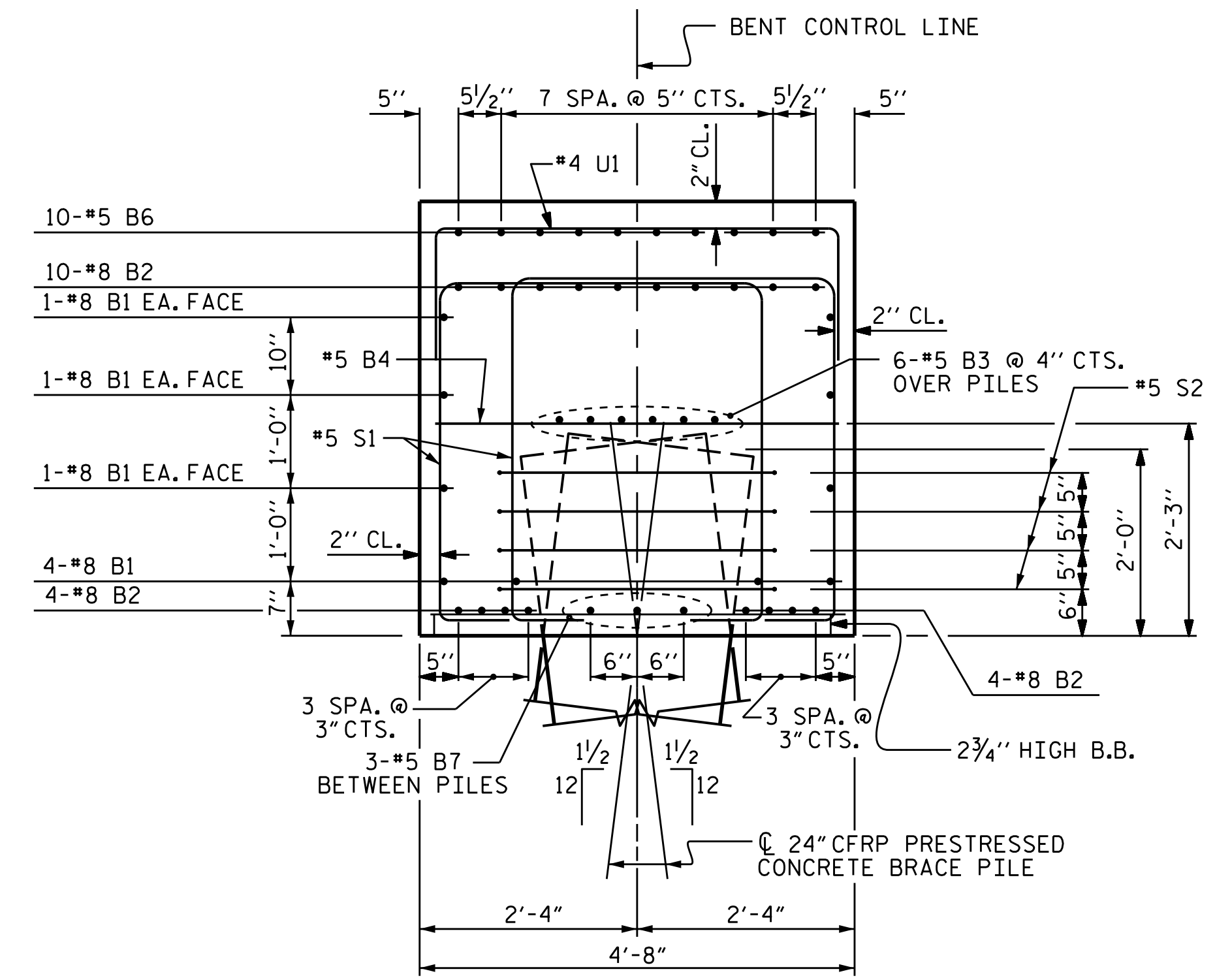
GLASS FIBER REINFORCED POLYMER BARS TOTAL 3066.17 LIN. FT.

CLASS AA CONCRETE BREAKDOWN

POUR #1 CAP 22.2 C.Y.
 TOTAL CLASS AA CONCRETE 22.2 C.Y.



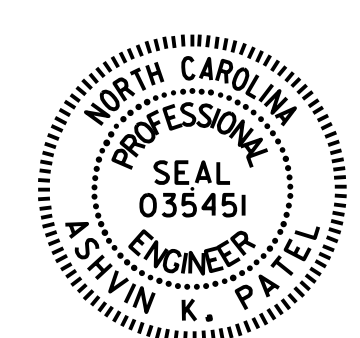
SECTION A-A



SECTION B-B

PROJECT NO. B-4863
 CARTERET COUNTY
 STATION: 34+75.00 -L-

SHEET 2 OF 2



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 BENT #18

DRAWN BY: T.L. AVERETTE DATE: 02/2019
 CHECKED BY: A.K. PATEL DATE: 12/2019
 DESIGN ENGINEER OF RECORD: A.K. PATEL DATE: 12/2019

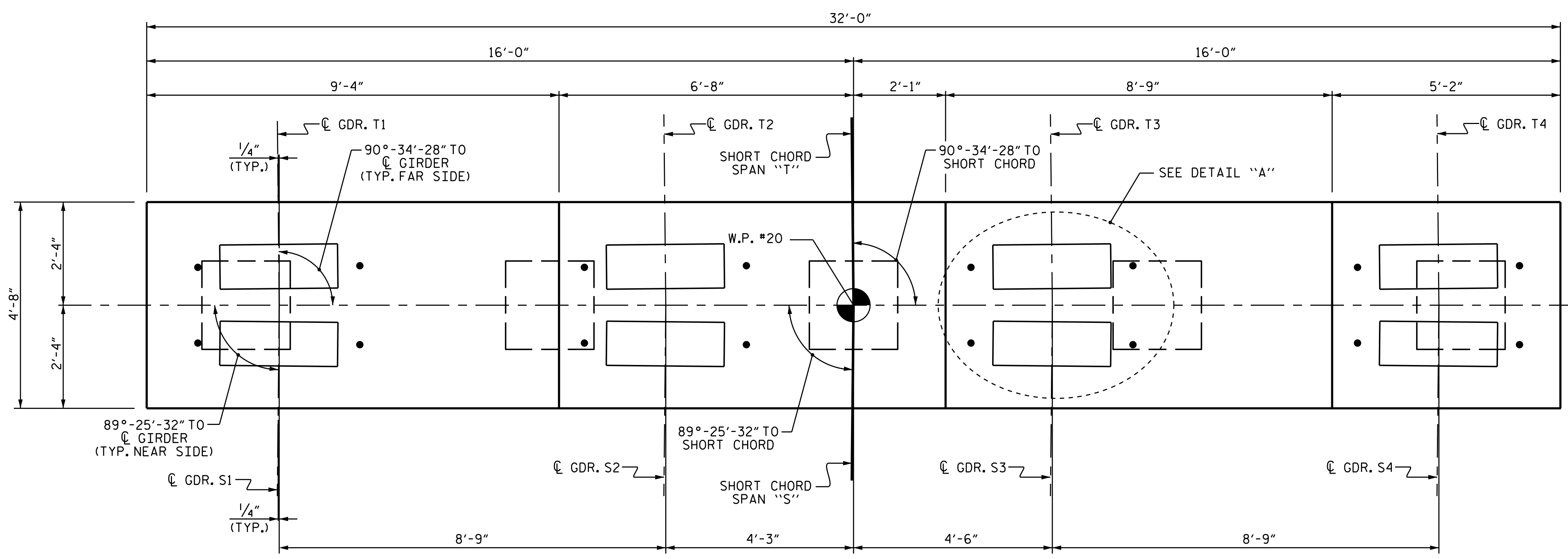
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS		SHEET NO.	
NO.	DATE	NO.	DATE
1		3	
2		4	

S1-168
 TOTAL SHEETS 194

NOTES

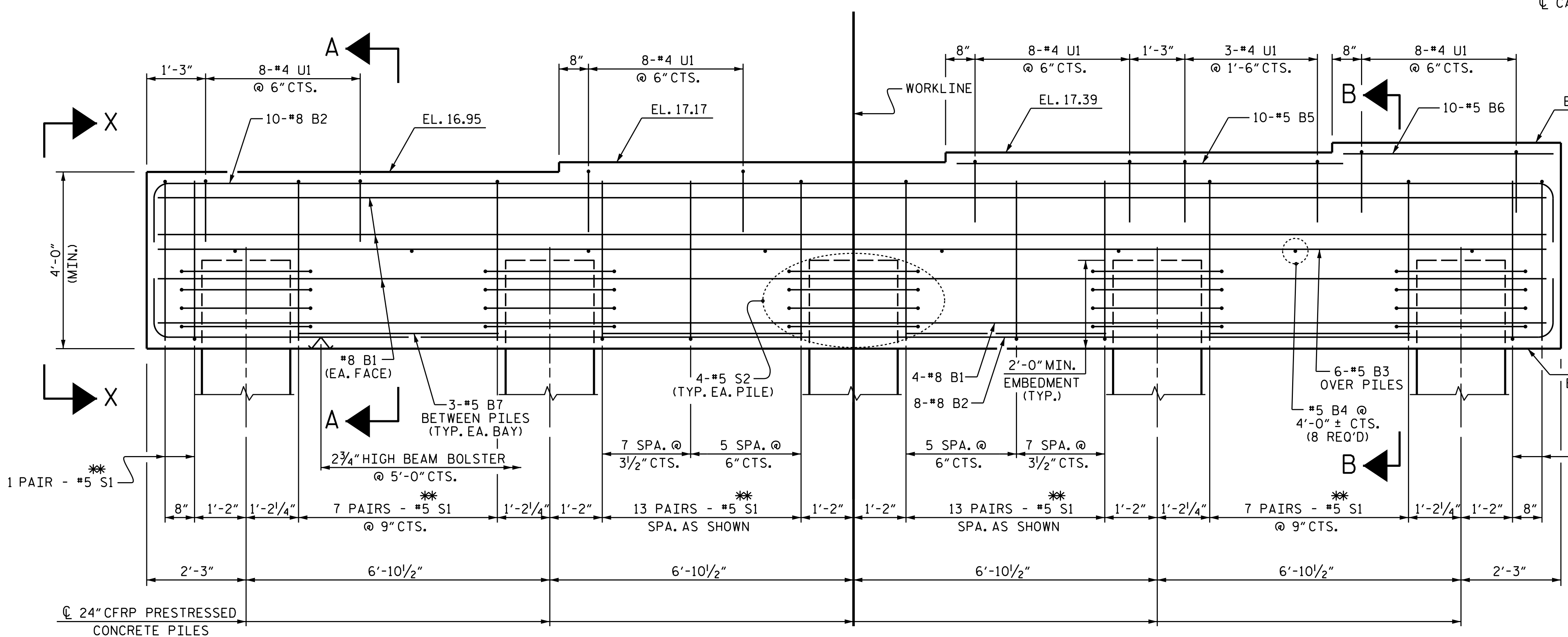
STIRRUPS AND U1 BARS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.
 CONCRETE DISPLACED BY CONCRETE PILES HAS BEEN DEDUCTED FROM THE CAP CONCRETE QUANTITY.
 ALL REINFORCING IN THE CAP IS TO BE GLASS FIBER REINFORCED POLYMER (GFRP) BARS. FOR GLASS FIBER REINFORCED POLYMER BARS, SEE SPECIAL PROVISIONS.



SPAN "T"

SPAN "S"

PLAN



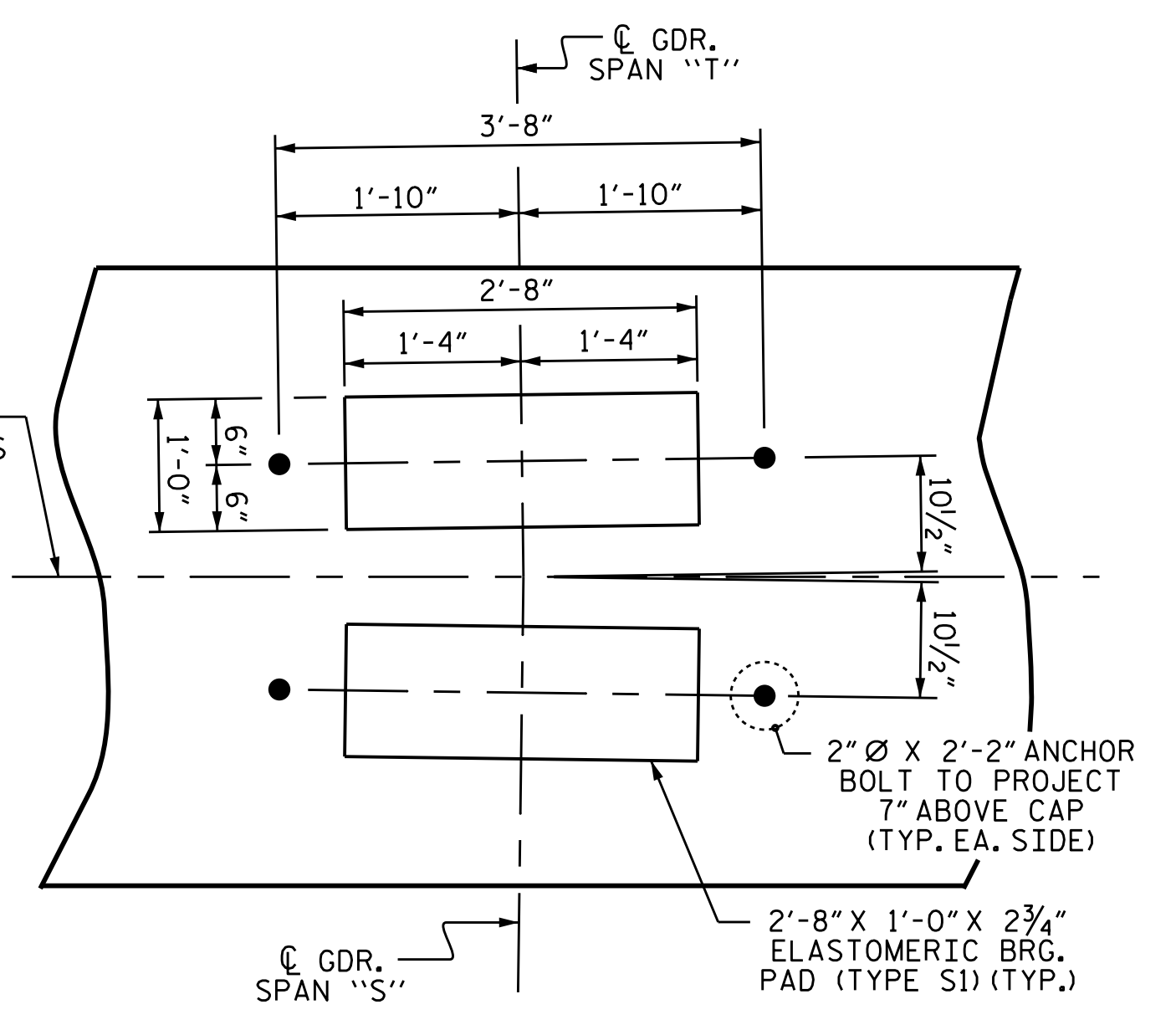
ELEVATION

FOR ADDITIONAL REINFORCING BARS IN ENDS OF CAP, SEE VIEW X-X AND VIEW Y-Y ON SHEET 2 OF 2.

**** INVERT ALTERNATE STIRRUPS**

BENT #19
CONTROL LINE,
CL CAP & CL PILES

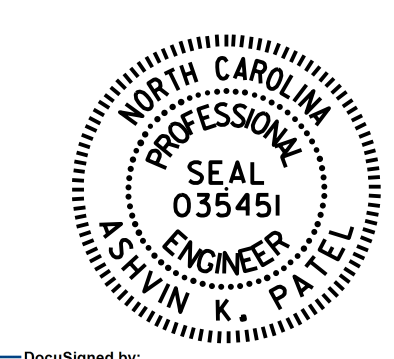
BENT #19
CONTROL LINE,
CL CAP & CL PILES



DETAIL "A"
(TYP. @ EACH GDR.)

PROJECT NO. B-4863
CARTERET COUNTY
 STATION: 34+75.00 -L-

SHEET 1 OF 2



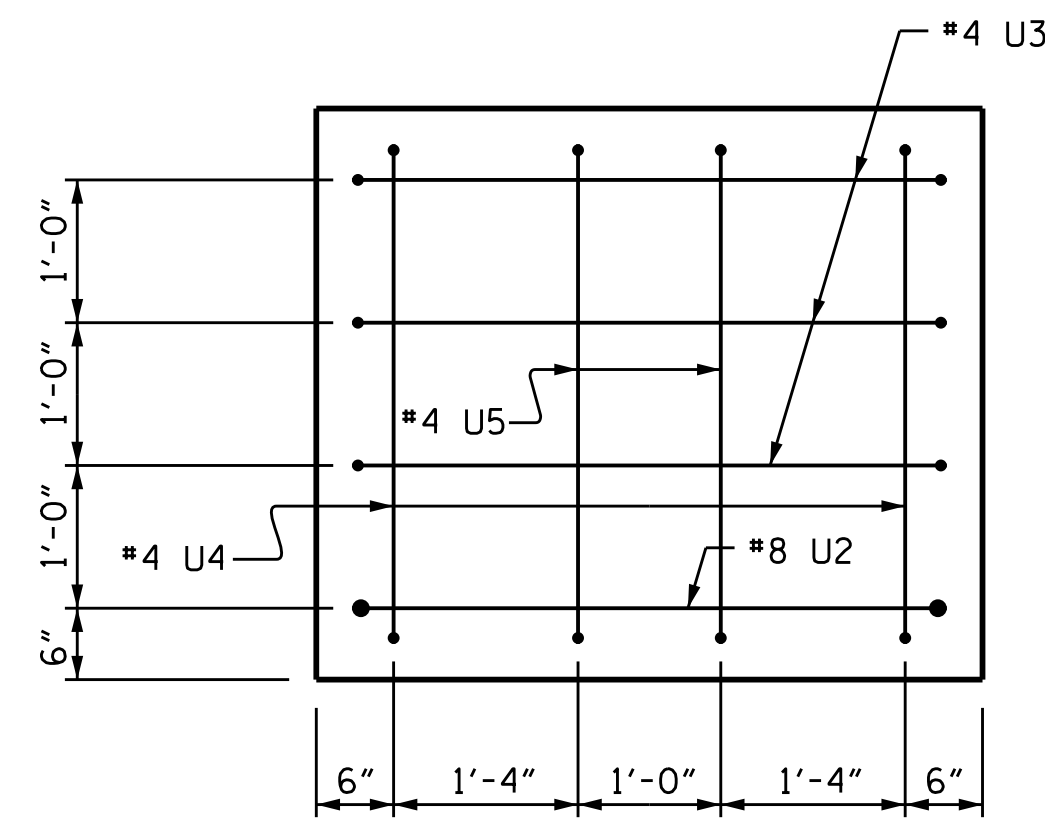
DocuSigned by:
Ashwin Patel
7F189E5E10244D3
3/9/2020

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
SUBSTRUCTURE
BENT #19

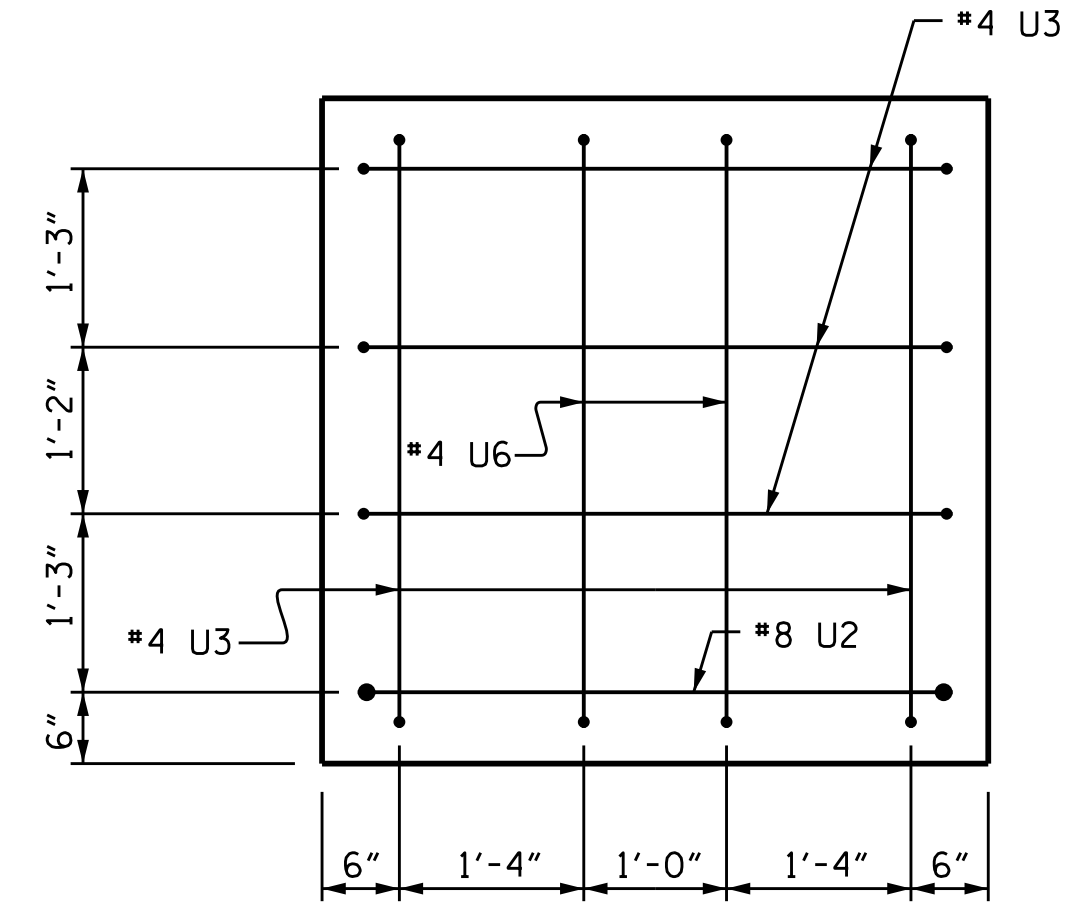
DRAWN BY : I.L. AVERETTE DATE : 02/2019
 CHECKED BY : A.K. PATEL DATE : 12/2019
 DESIGN ENGINEER OF RECORD: A.K. PATEL DATE : 12/2019

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

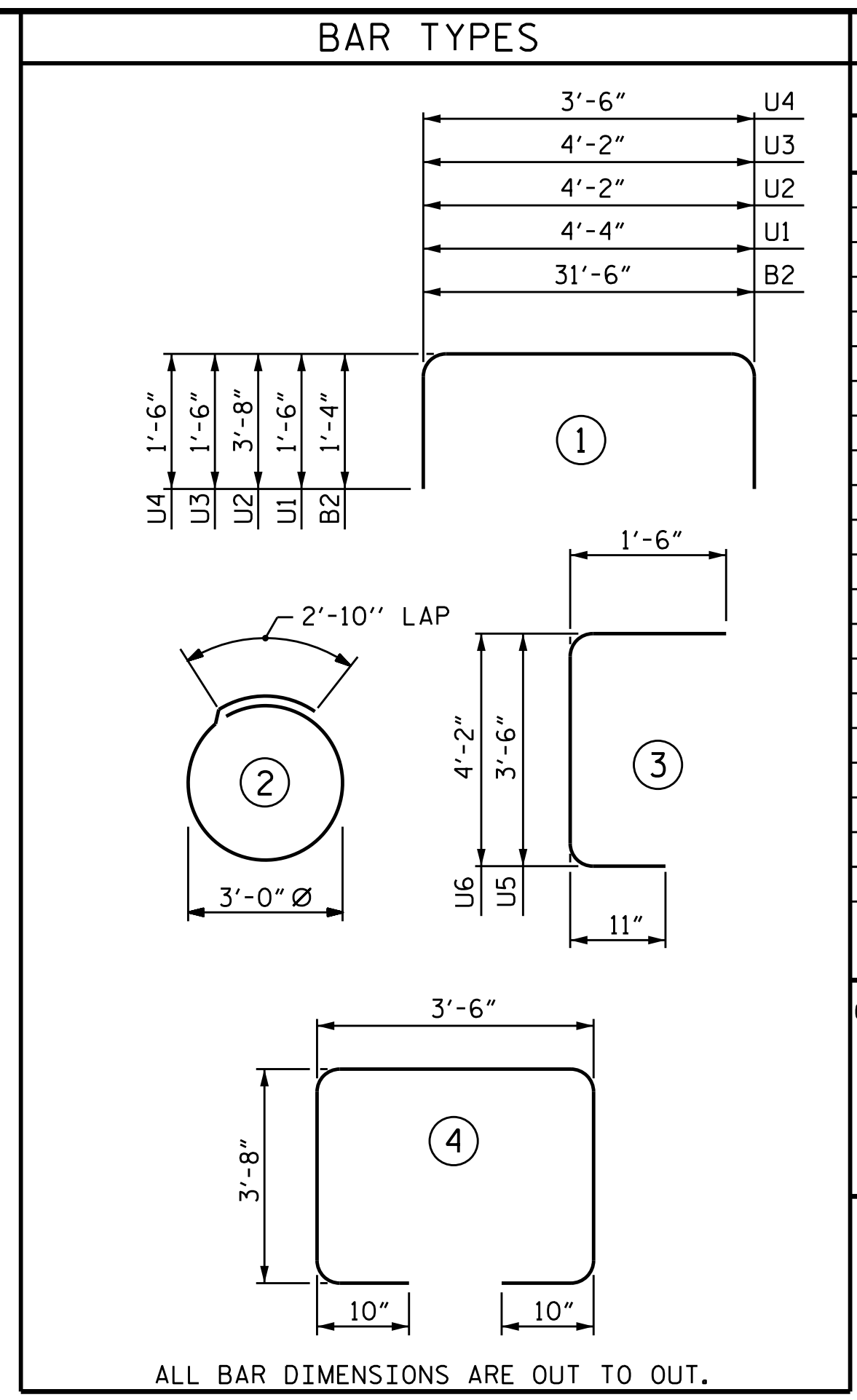
REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-169	
1			3			TOTAL SHEETS	
2			4			194	



VIEW X-X



VIEW Y-Y



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

BENT #19

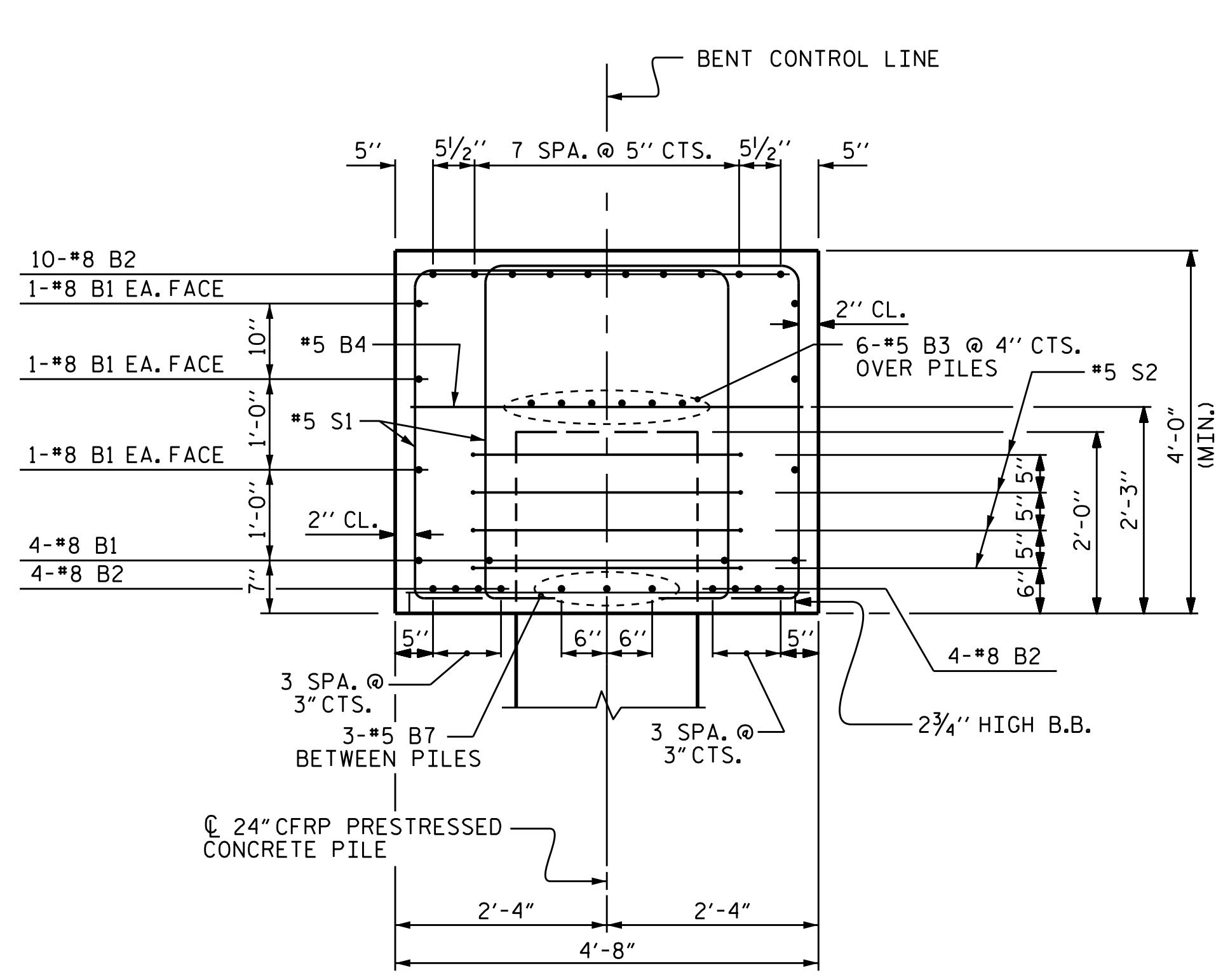
BAR	NO.	SIZE	TYPE	LENGTH	TOTAL LENGTH
B1	10	#8	STR	31'-8"	316'-8"
B2	18	#8	STR	34'-2"	615'-0"
B3	6	#5	STR	31'-8"	190'-0"
B4	8	#5	STR	4'-4"	34'-8"
B5	10	#5	STR	8'-9"	87'-6"
B6	10	#5	STR	4'-10"	48'-4"
B7	12	#5	STR	4'-6"	54'-0"
S1	88	#5	4	12'-6"	1100'-0"
S2	20	#5	2	12'-3"	245'-0"
U1	35	#4	1	7'-4"	256'-8"
U2	2	#8	1	11'-6"	23'-0"
U3	8	#4	1	7'-2"	57'-4"
U4	2	#4	1	6'-6"	13'-0"
U5	2	#4	3	5'-11"	11'-10"
U6	2	#4	3	6'-7"	13'-2"

TOTAL LIN. FT. # 4 BARS	352.0
TOTAL LIN. FT. # 5 BARS	1759.5
TOTAL LIN. FT. # 8 BARS	954.7

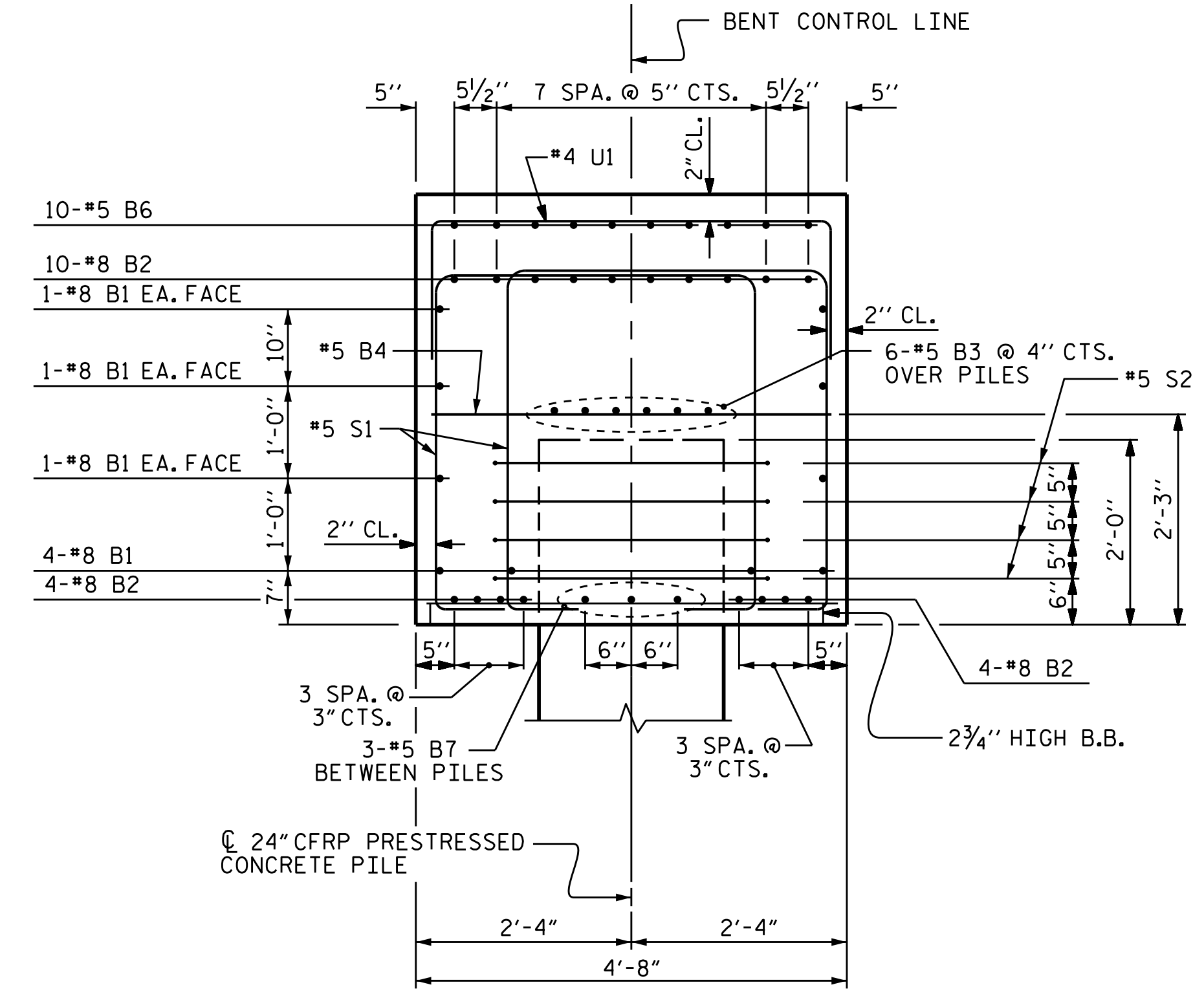
GLASS FIBER REINFORCED POLYMER BARS TOTAL 3066.17 LIN. FT.

CLASS AA CONCRETE BREAKDOWN

POUR #1 CAP	22.2 C.Y.
TOTAL CLASS AA CONCRETE	22.2 C.Y.



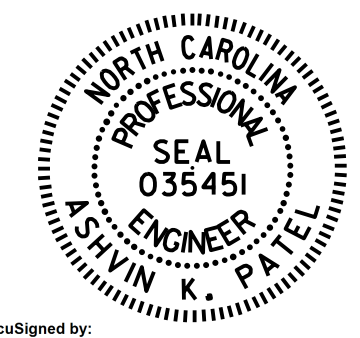
SECTION A-A



SECTION B-B

PROJECT NO. B-4863
CARTERET COUNTY
 STATION: 34+75.00 -L-

SHEET 2 OF 2



Designed by:
 Ashwin Patel
 7F180E5610244D3
 4/16/2021

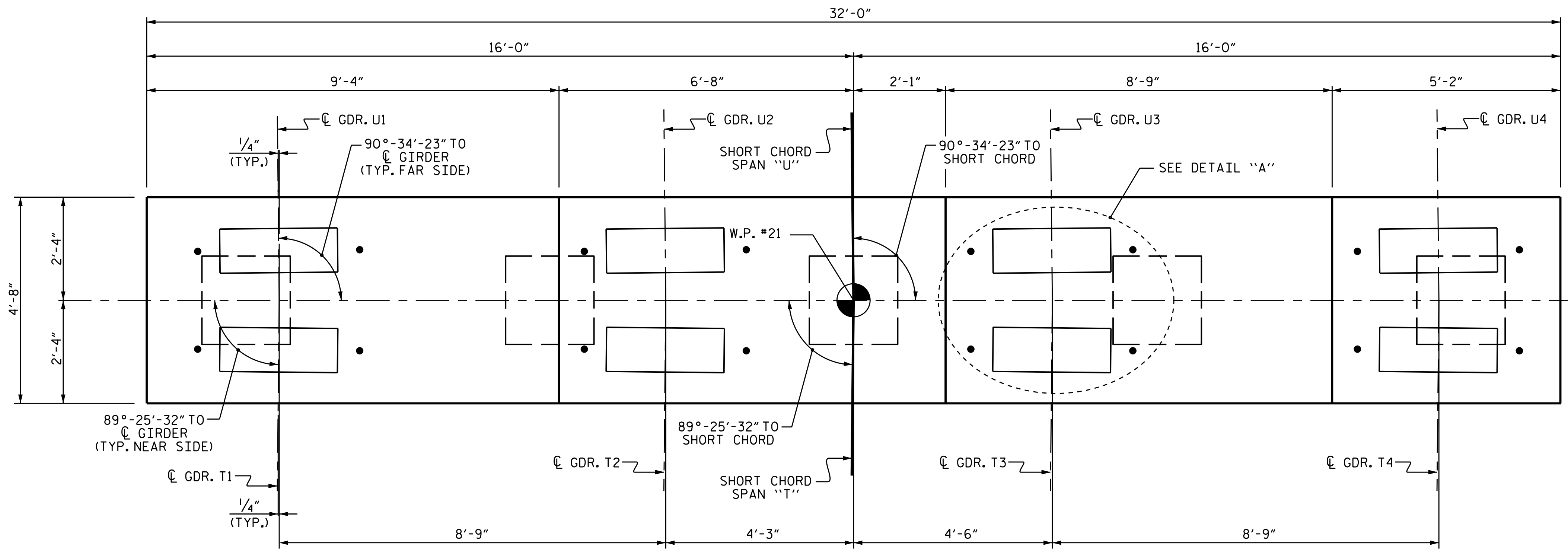
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 BENT #19

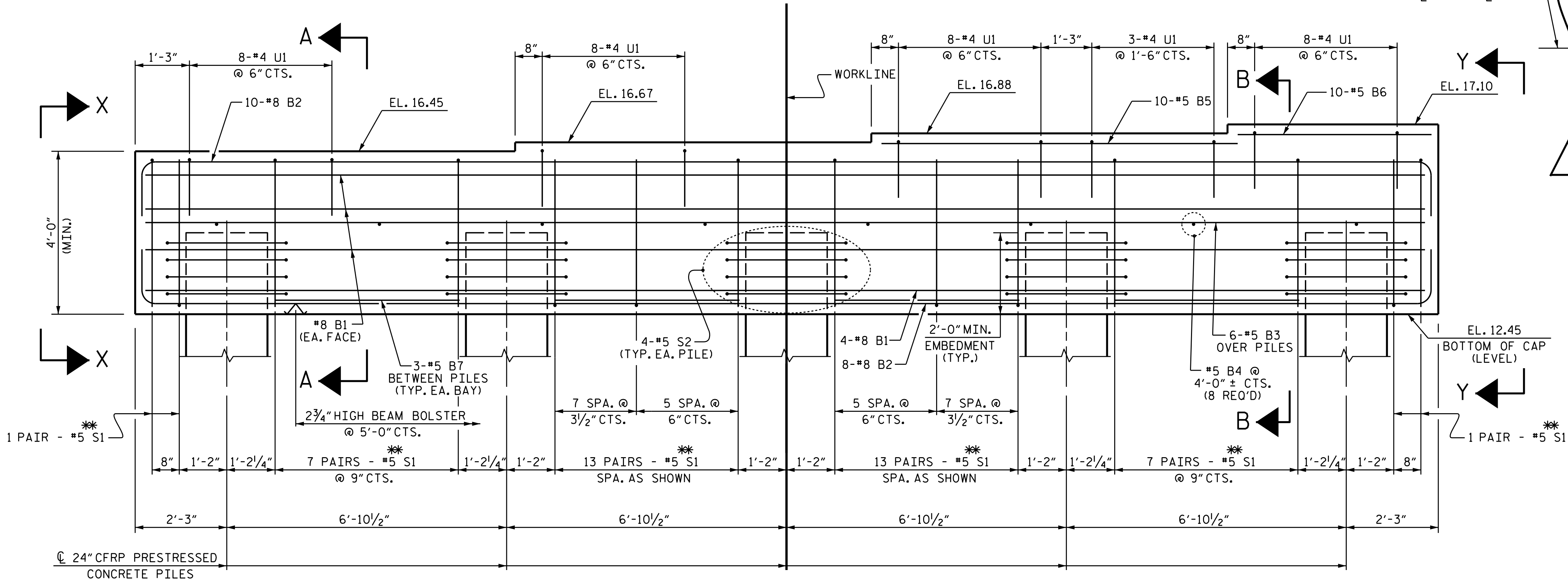
DRAWN BY : T.L. AVERETTE DATE : 02/2019
 CHECKED BY : A.K. PATEL DATE : 12/2019
 DESIGN ENGINEER OF RECORD: A.K. PATEL DATE : 12/2019

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-170
1			3			TOTAL SHEETS 194
2			4			



PLAN



ELEVATION

FOR ADDITIONAL REINFORCING BARS IN ENDS OF CAP, SEE VIEW X-X AND VIEW Y-Y ON SHEET 2 OF 2.

**** INVERT ALTERNATE STIRRUPS**

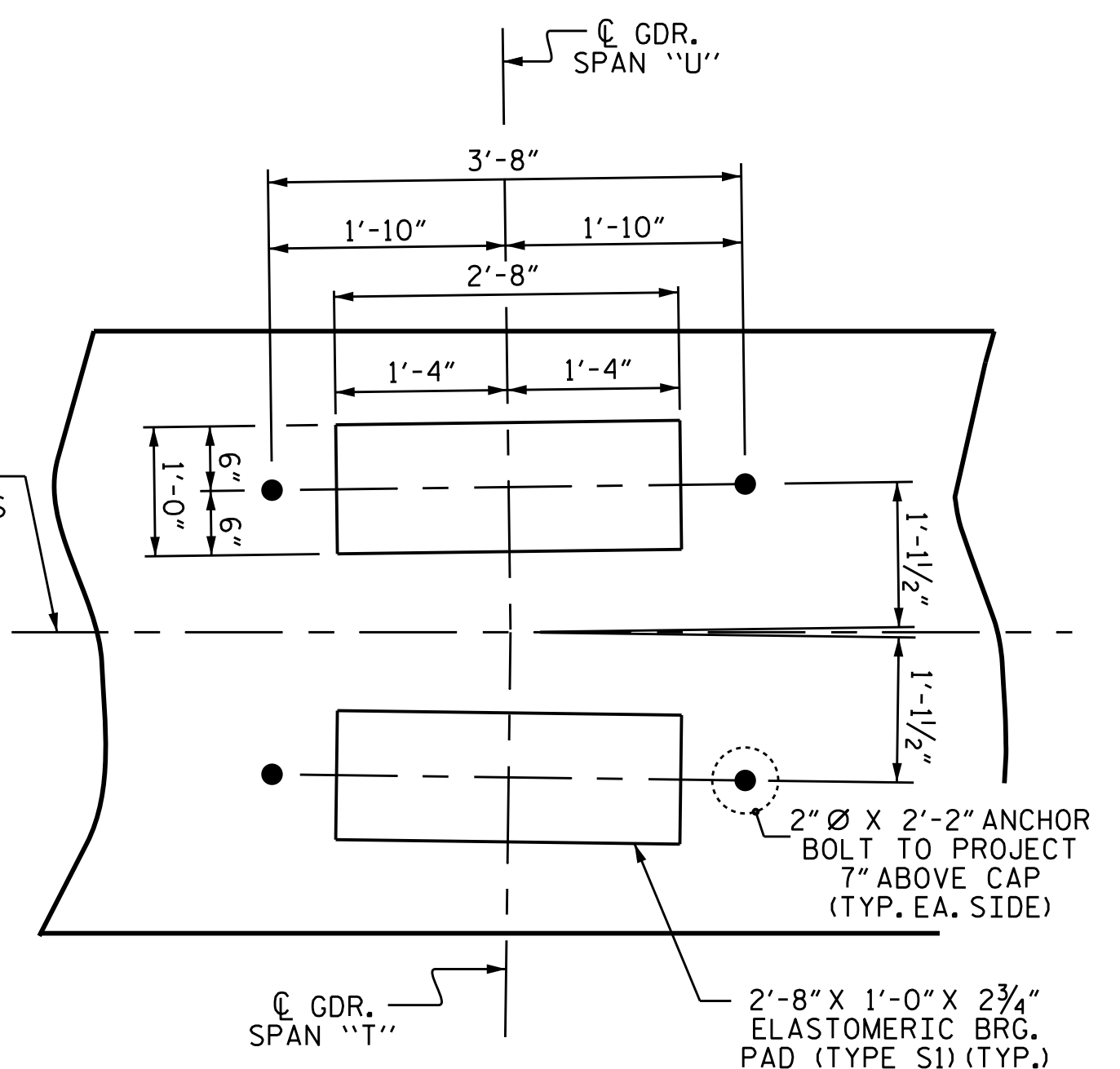
NOTES

STIRRUPS AND U1 BARS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.
 CONCRETE DISPLACED BY CONCRETE PILES HAS BEEN DEDUCTED FROM THE CAP CONCRETE QUANTITY.
 THE TOP SURFACE AREAS OF THE BENT CAP SHALL BE CURED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS EXCEPT THE MEMBRANE CURING COMPOUND METHOD SHALL NOT BE USED.
 ALL REINFORCING IN THE CAP IS TO BE GLASS FIBER REINFORCED POLYMER (GFRP) BARS. FOR GLASS FIBER REINFORCED POLYMER BARS, SEE SPECIAL PROVISIONS.

SPAN "U"

SPAN "T"

BENT #20 CONTROL LINE, C/CAP & C/PILES

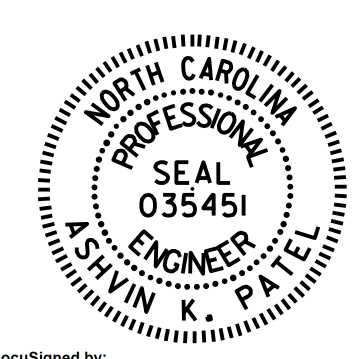


DETAIL "A"

(TYP. @ EACH GDR.)

PROJECT NO. B-4863
CARTERET COUNTY
 STATION: 34+75.00 -L-

SHEET 1 OF 2



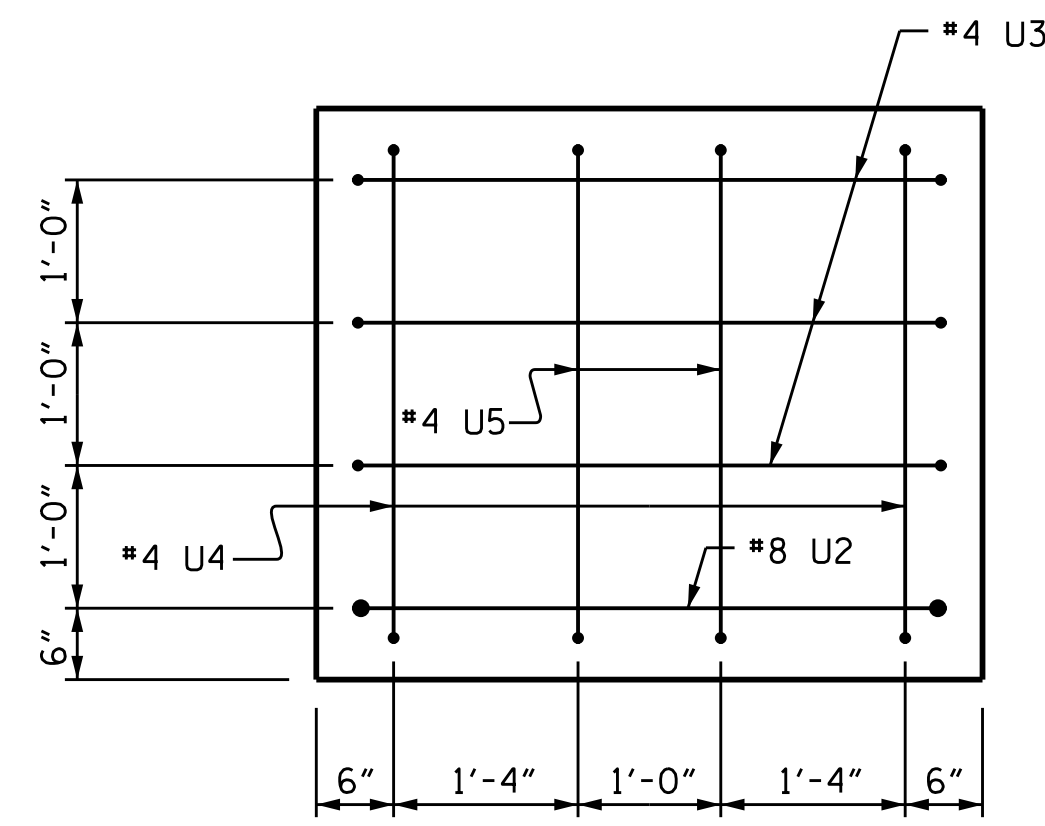
DocuSigned by:
 Ashwin Patel
 7F189E5E10244E3
 3/9/2020

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 BENT #20

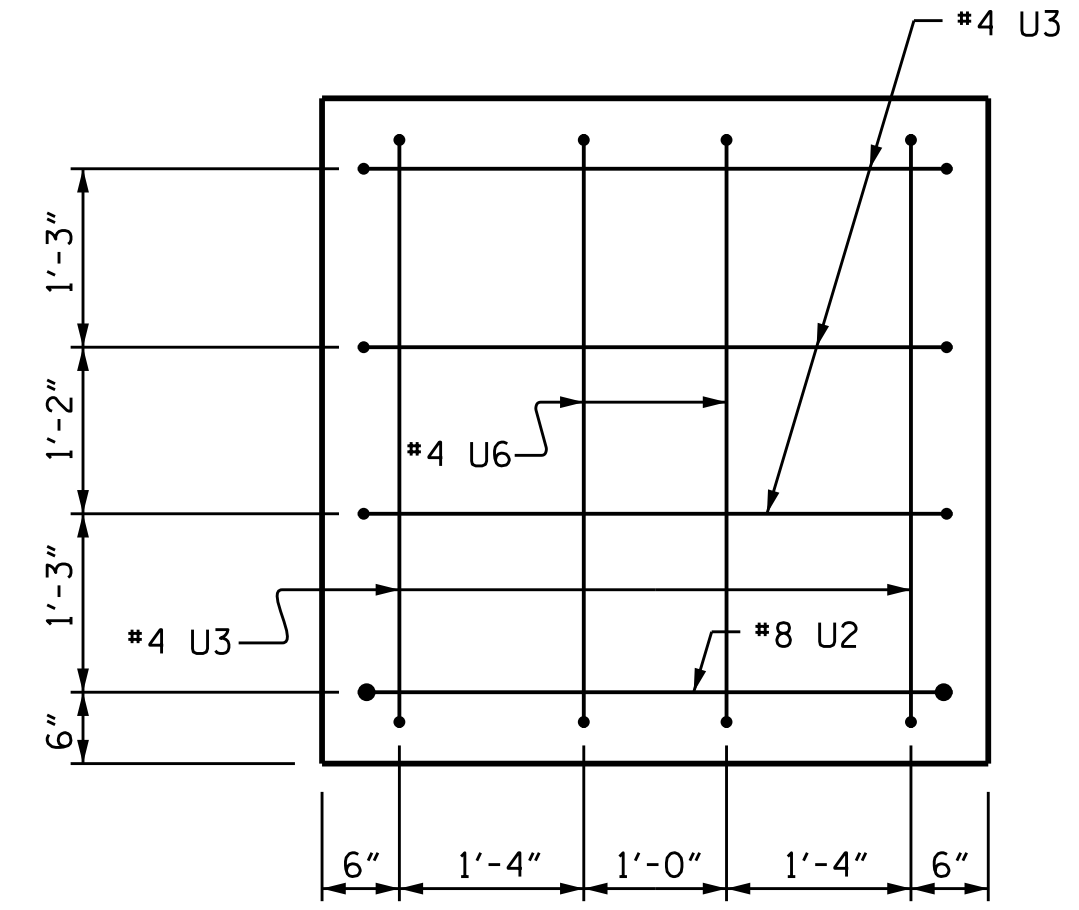
DRAWN BY : I.L. AVERETTE DATE : 02/2019
 CHECKED BY : A.K. PATEL DATE : 12/2019
 DESIGN ENGINEER OF RECORD : A.K. PATEL DATE : 12/2019

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

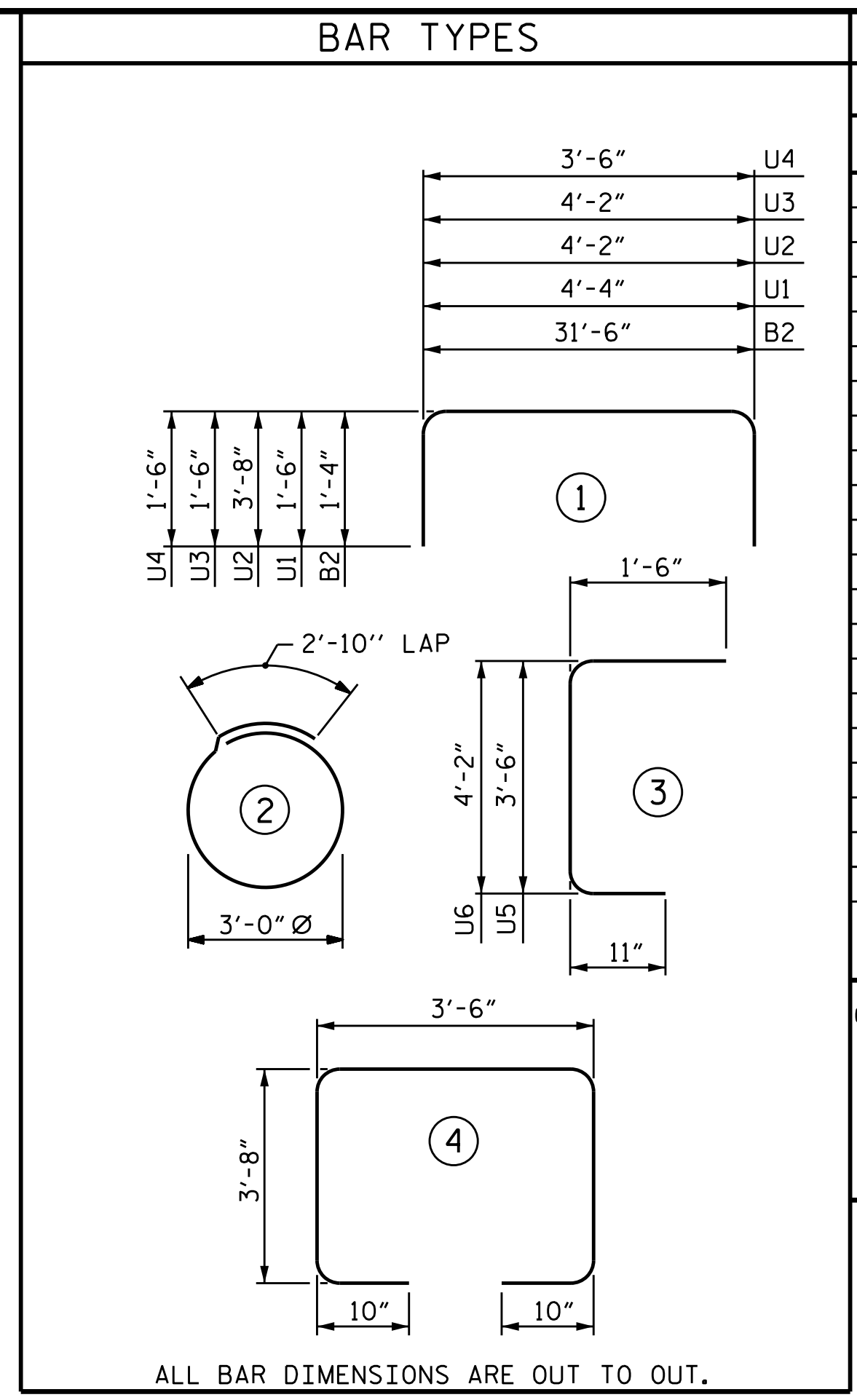
REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS	
1			3			1	171
2			4			194	



VIEW X-X

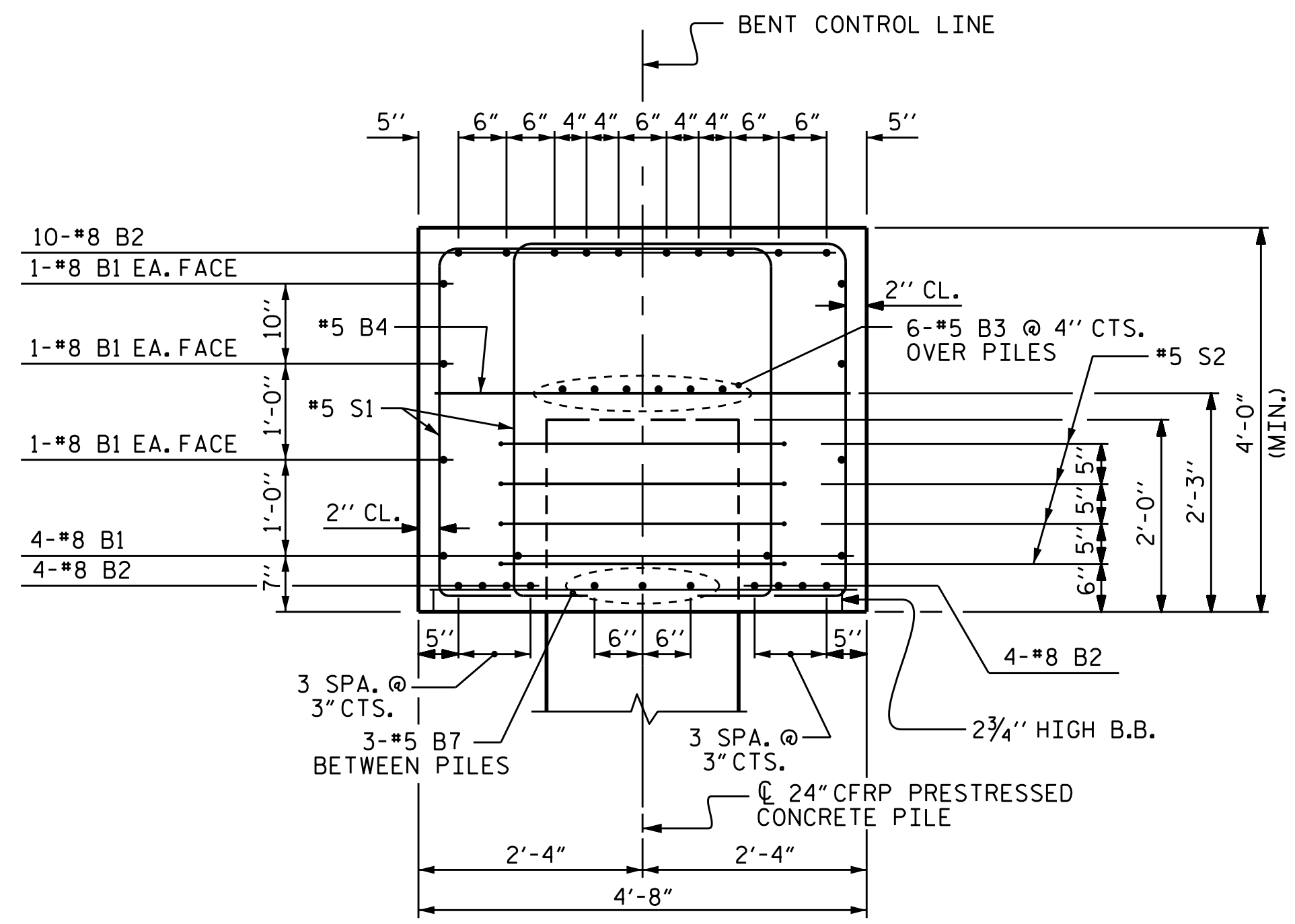


VIEW Y-Y

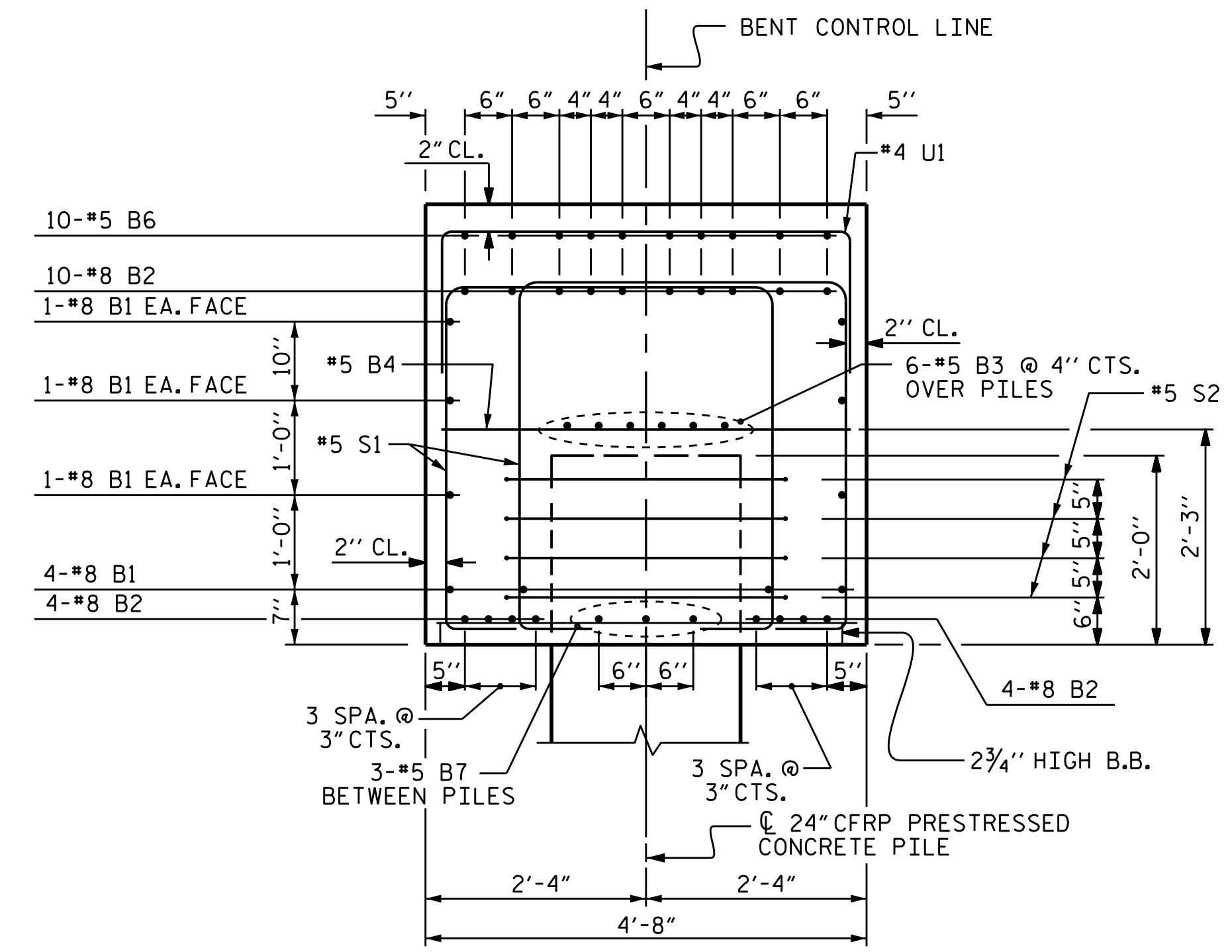


ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL					
BENT #20					
BAR	NO.	SIZE	TYPE	LENGTH	TOTAL LENGTH
B1	10	#8	STR	31'-8"	316'-8"
B2	18	#8		34'-2"	615'-0"
B3	6	#5	STR	31'-8"	190'-0"
B4	8	#5	STR	4'-4"	34'-8"
B5	10	#5	STR	8'-9"	87'-6"
B6	10	#5	STR	4'-10"	48'-4"
B7	12	#5	STR	4'-6"	54'-0"
S1	88	#5		12'-6"	1100'-0"
S2	20	#5		12'-3"	245'-0"
U1	35	#4		7'-4"	256'-8"
U2	2	#8		11'-6"	23'-0"
U3	8	#4		7'-2"	57'-4"
U4	2	#4		6'-6"	13'-0"
U5	2	#4		5'-11"	11'-10"
U6	2	#4		6'-7"	13'-2"
TOTAL LIN. FT. # 4 BARS					352.0
TOTAL LIN. FT. # 5 BARS					1759.5
TOTAL LIN. FT. # 8 BARS					954.7
GLASS FIBER REINFORCED POLYMER BARS TOTAL 3066.17 LIN. FT.					
CLASS AA CONCRETE BREAKDOWN					
POUR #1 CAP					22.2 C.Y.
TOTAL CLASS AA CONCRETE					22.2 C.Y.

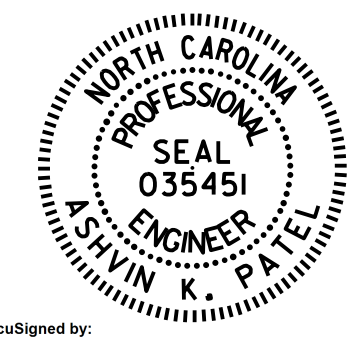


SECTION A-A



SECTION B-B

PROJECT NO. B-4863
CARTERET COUNTY
 STATION: 34+75.00 -L-
 SHEET 2 OF 2



Designed by:
 Ashwin Patel
 7F180E5610244D3
 4/16/2021

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 BENT #20

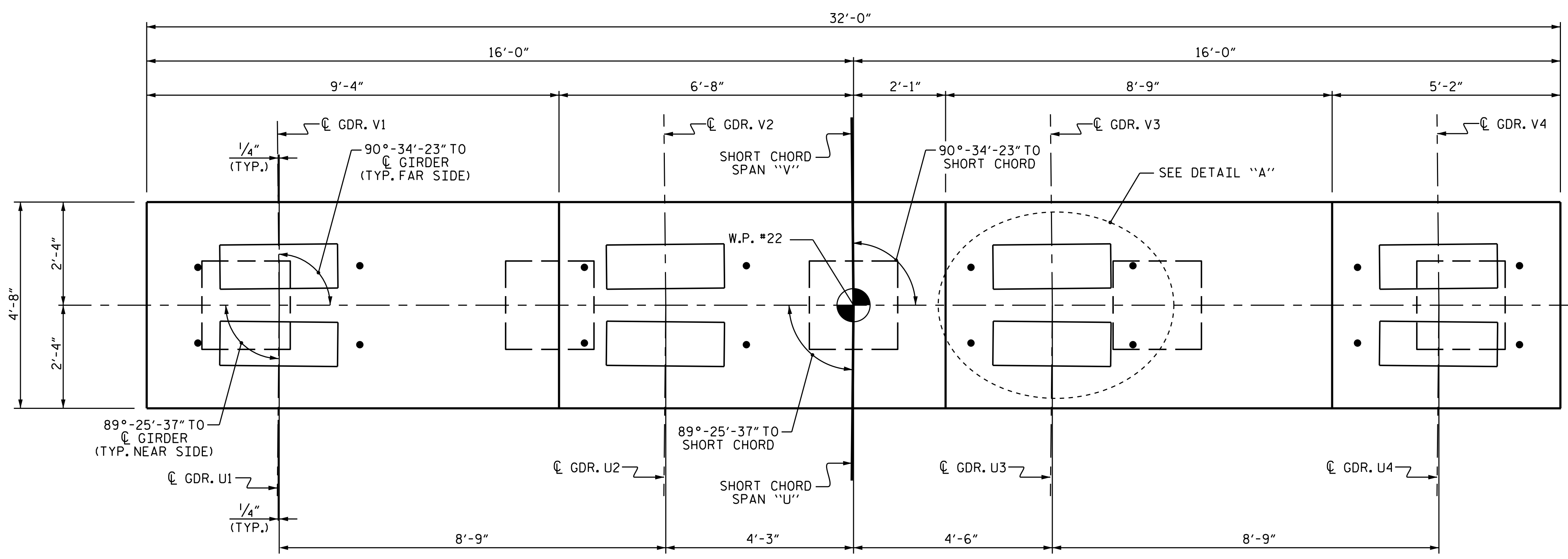
DRAWN BY : I.L. AVERETTE DATE : 02/2019
 CHECKED BY : A.K. PATEL DATE : 12/2019
 DESIGN ENGINEER OF RECORD: A.K. PATEL DATE : 12/2019

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			S1-172
2			4			194

NOTES

STIRRUPS AND U1 BARS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.
 CONCRETE DISPLACED BY CONCRETE PILES HAS BEEN DEDUCTED FROM THE CAP CONCRETE QUANTITY.
 ALL REINFORCING IN THE CAP IS TO BE GLASS FIBER REINFORCED POLYMER (GFRP) BARS. FOR GLASS FIBER REINFORCED POLYMER BARS, SEE SPECIAL PROVISIONS.

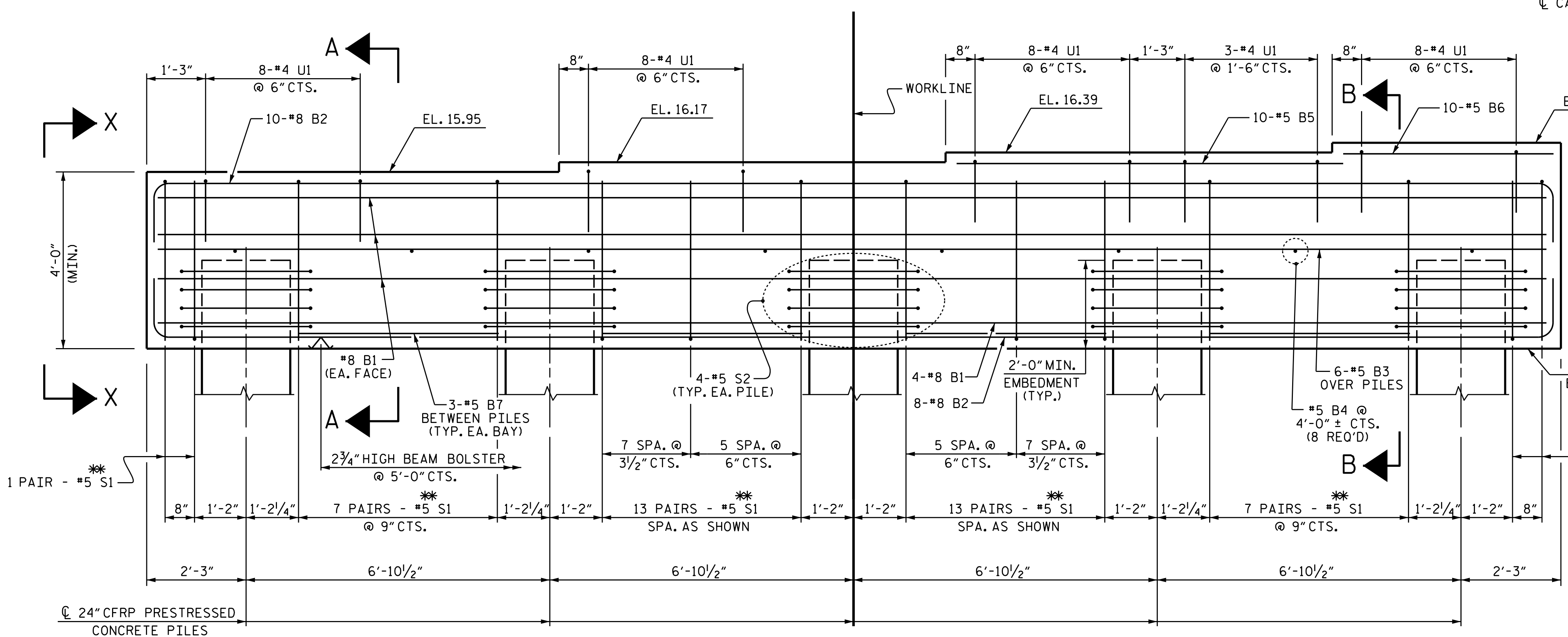


SPAN "V"

SPAN "U"

BENT #21
CONTROL LINE,
CL CAP & CL PILES

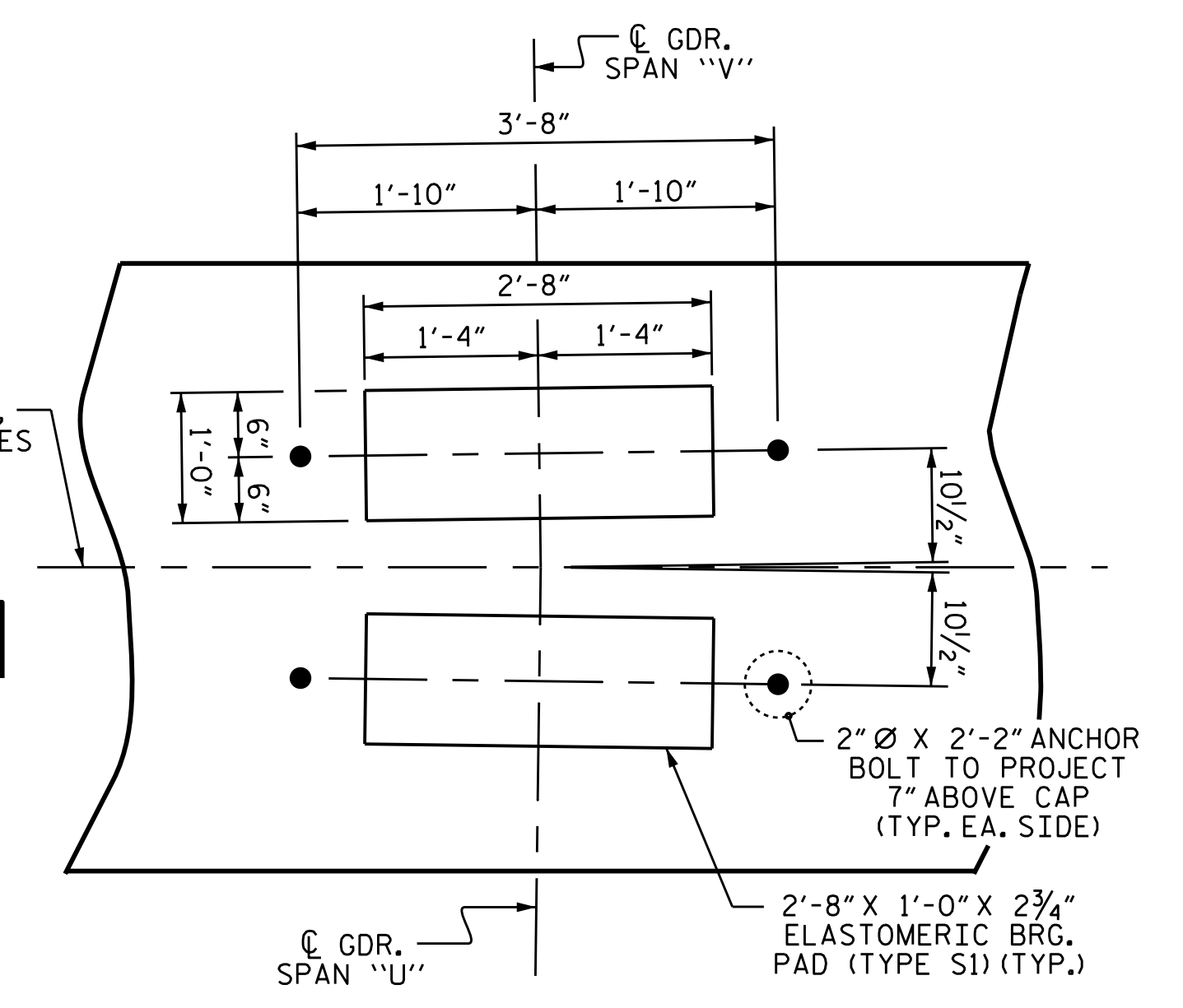
PLAN



ELEVATION

FOR ADDITIONAL REINFORCING BARS IN ENDS OF CAP, SEE VIEW X-X AND VIEW Y-Y ON SHEET 2 OF 2.

**** INVERT ALTERNATE STIRRUPS**

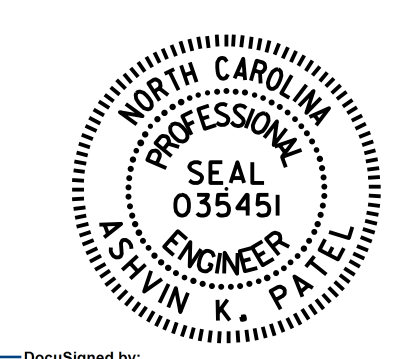


DETAIL "A"

(TYP. @ EACH GDR.)

PROJECT NO. B-4863
CARTERET COUNTY
 STATION: 34+75.00 -L-

SHEET 1 OF 2



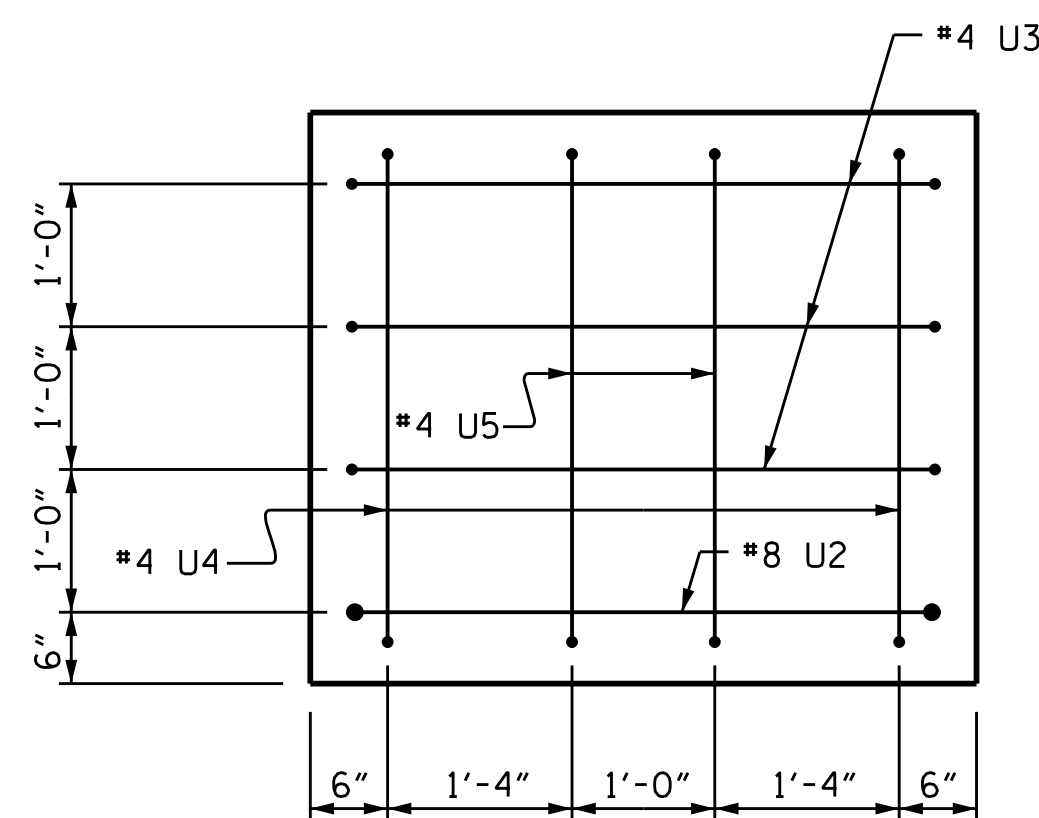
DocuSigned by:
 Ashwin Patel
 7F189E5E10244D3
 3/9/2020

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 BENT #21

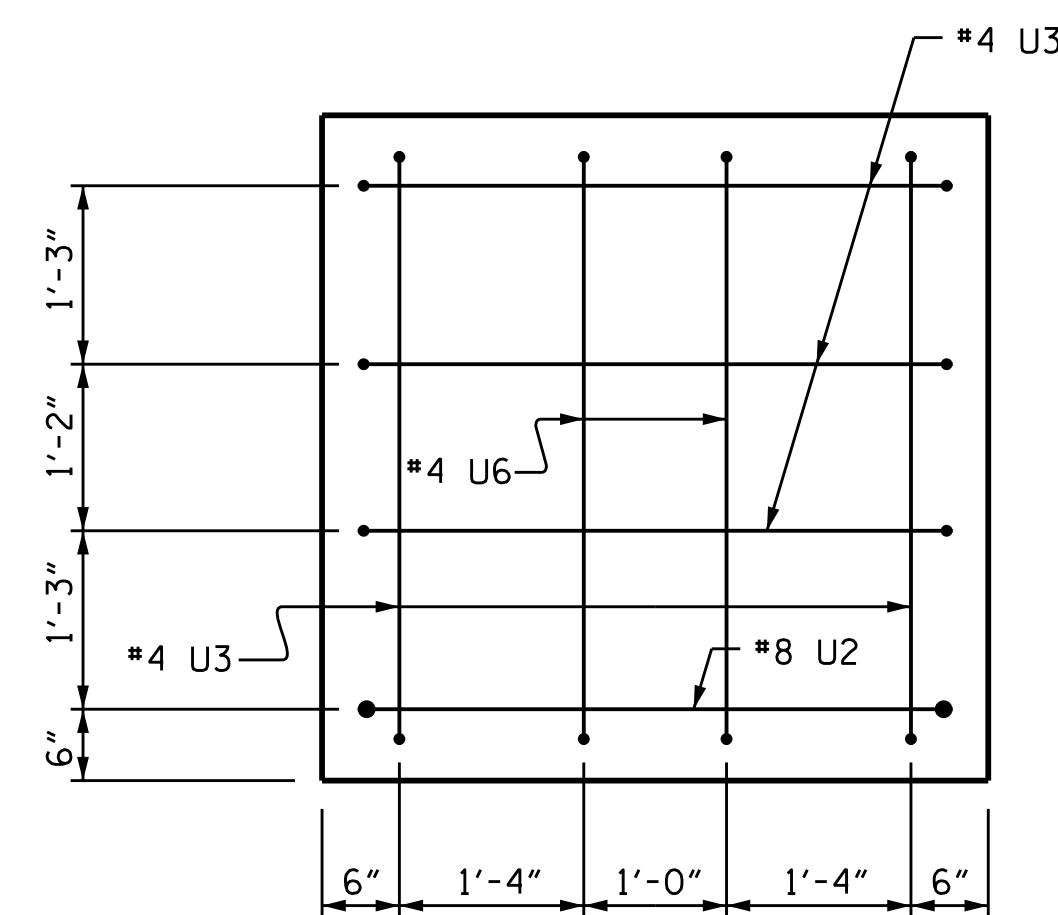
DRAWN BY :	I.L. AVERETTE	DATE :	02/2019
CHECKED BY :	A.K. PATEL	DATE :	12/2019
DESIGN ENGINEER OF RECORD:	A.K. PATEL	DATE :	12/2019

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

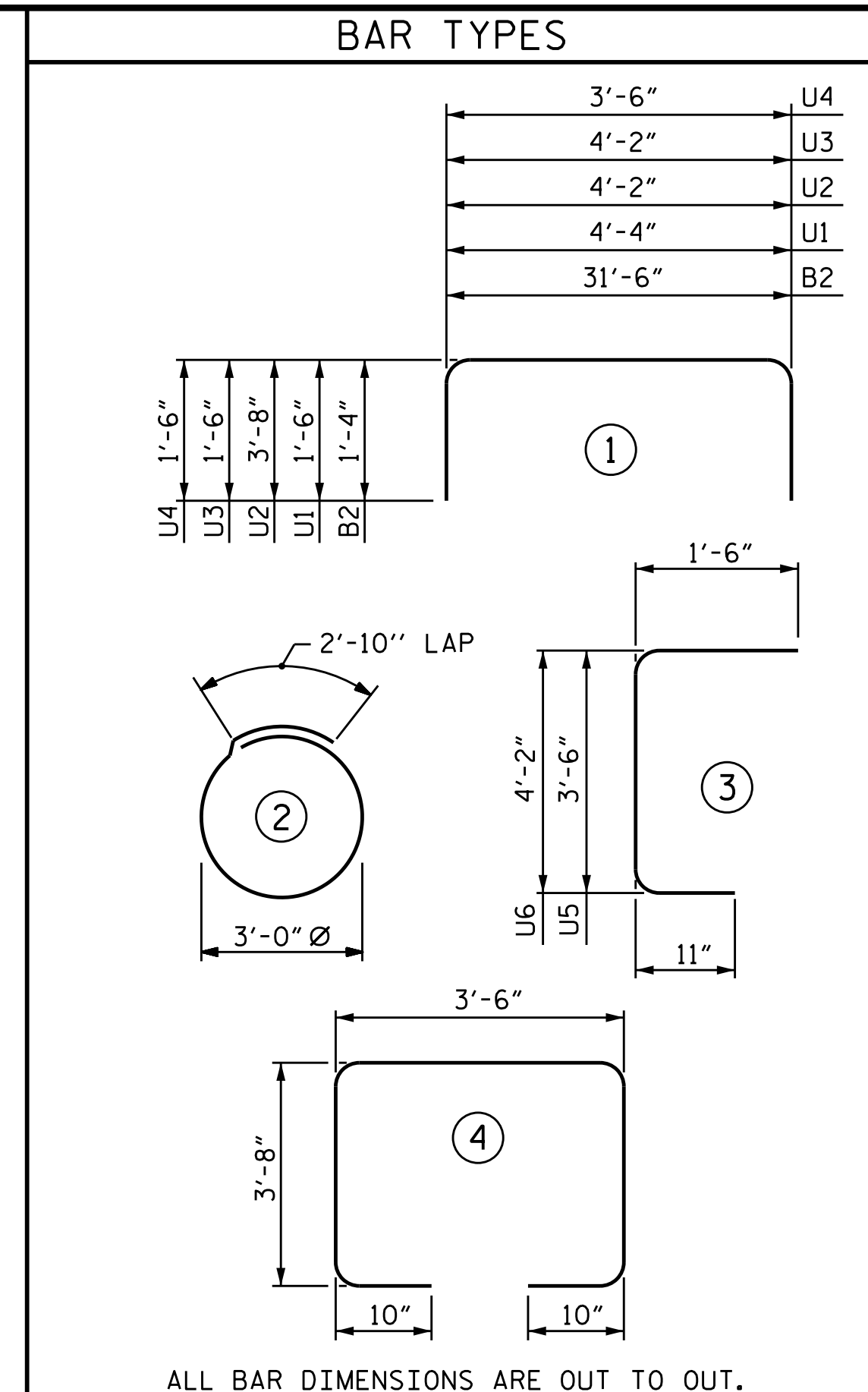
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-173
1			3			TOTAL SHEETS
2			4			194



VIEW X-X



VIEW Y-Y



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

BENT #21

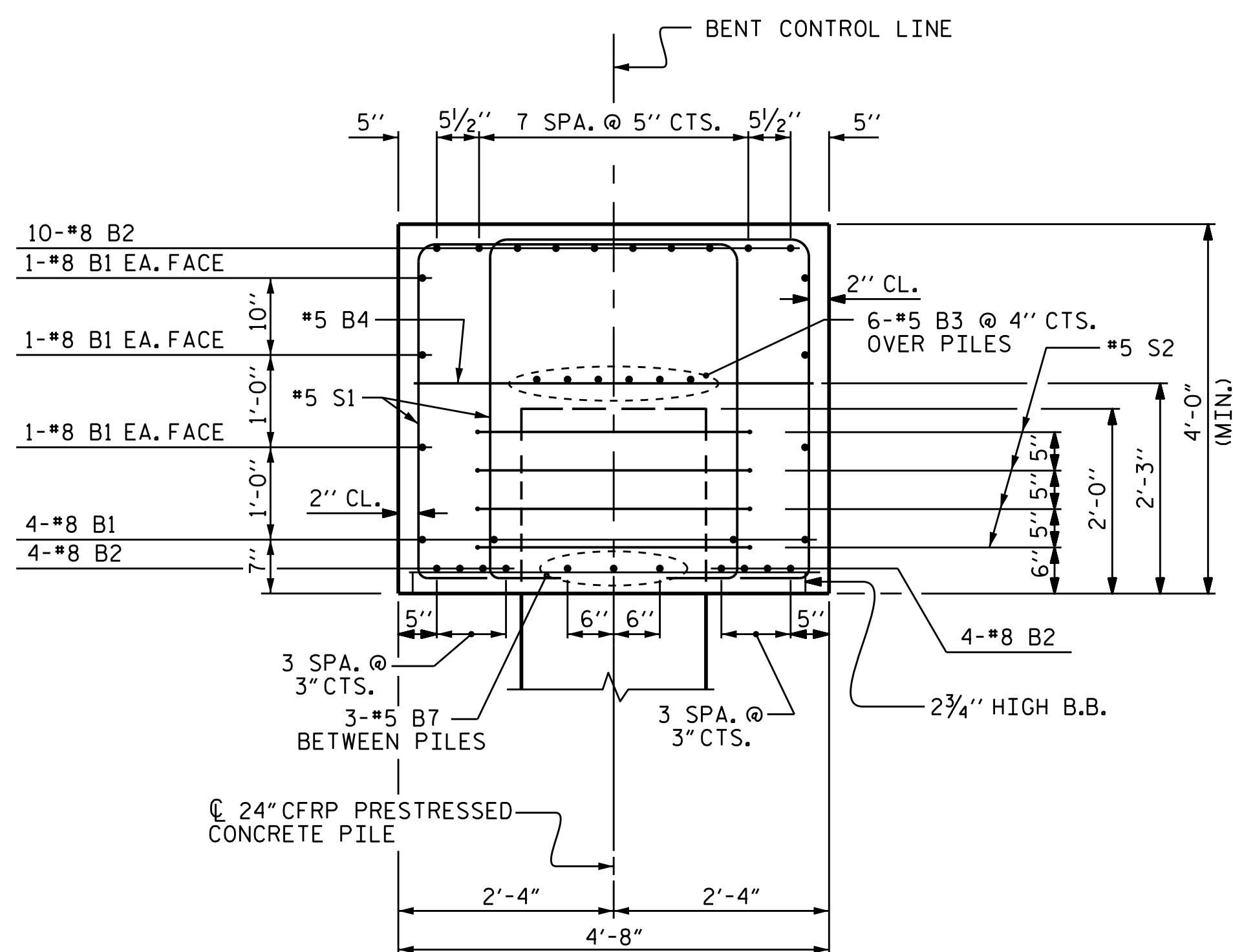
BAR	NO.	SIZE	TYPE	LENGTH	TOTAL LENGTH
B1	10	#8	STR	31'-8"	316'-8"
B2	18	#8	1	34'-2"	615'-0"
B3	6	#5	STR	31'-8"	190'-0"
B4	8	#5	STR	4'-4"	34'-8"
B5	10	#5	STR	8'-9"	87'-6"
B6	10	#5	STR	4'-10"	48'-4"
B7	12	#5	STR	4'-6"	54'-0"
S1	88	#5	4	12'-6"	1100'-0"
S2	20	#5	2	12'-3"	245'-0"
U1	35	#4	1	7'-4"	256'-8"
U2	2	#8	1	11'-6"	23'-0"
U3	8	#4	1	7'-2"	57'-4"
U4	2	#4	1	6'-6"	13'-0"
U5	2	#4	3	5'-11"	11'-10"
U6	2	#4	3	6'-7"	13'-2"

TOTAL LIN. FT. # 4 BARS	352.0
TOTAL LIN. FT. # 5 BARS	1759.5
TOTAL LIN. FT. # 8 BARS	954.7

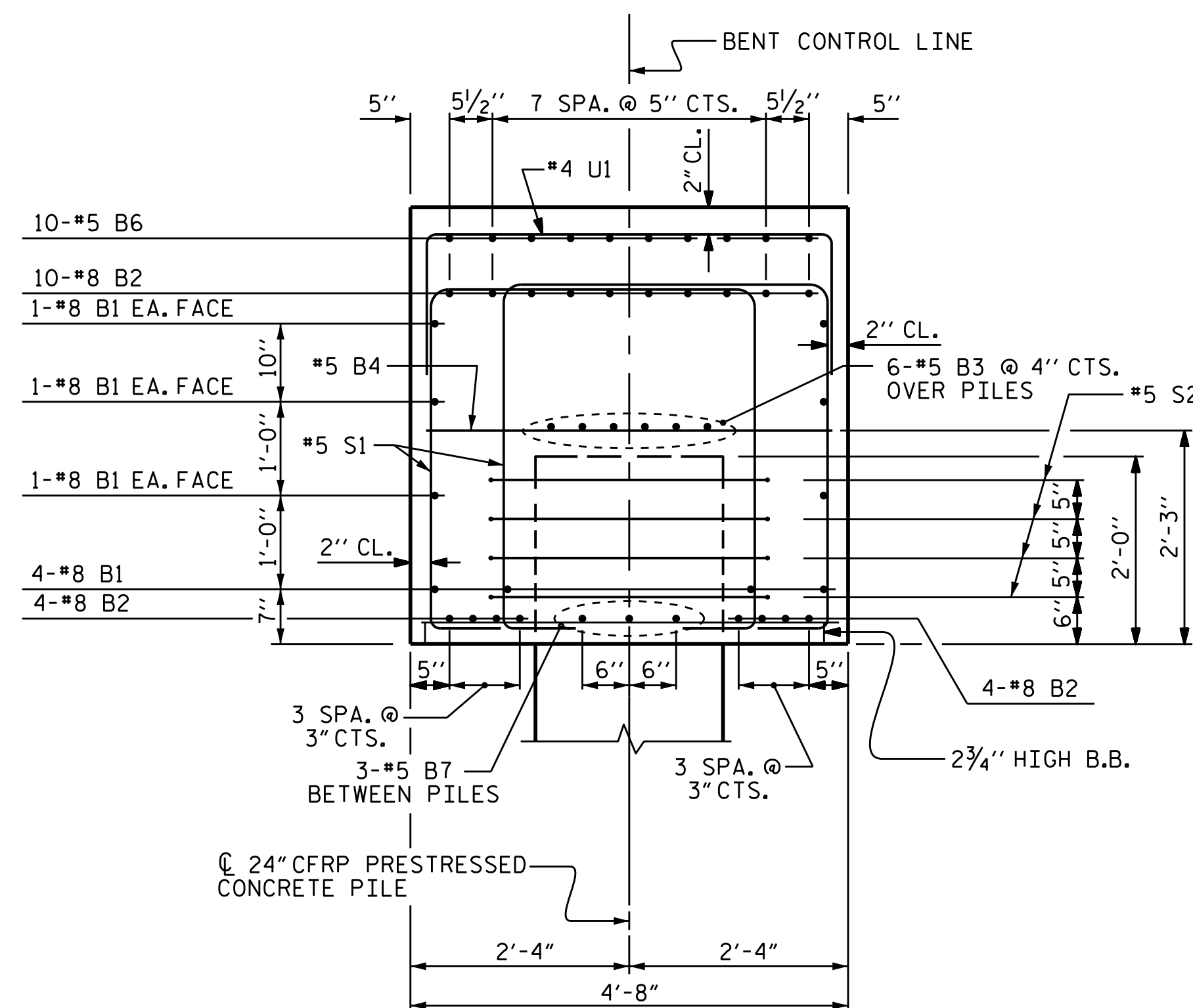
GLASS FIBER REINFORCED POLYMER BARS TOTAL 3066.17 LIN. FT.

CLASS AA CONCRETE BREAKDOWN

POUR #1 CAP	22.2 C.Y.
TOTAL CLASS AA CONCRETE	22.2 C.Y.



SECTION A-A



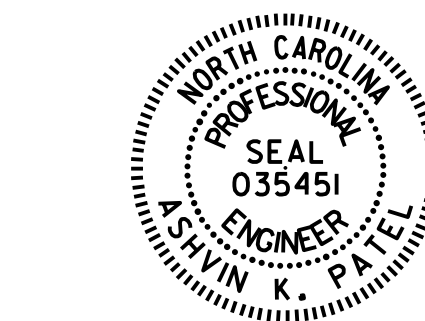
SECTION B-B

PROJECT NO. B-4863
CARTERET COUNTY
 STATION: 34+75.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 BENT #21



Designed by:
 Ashwin Patel
 7F180E5610244D3
 4/16/2021

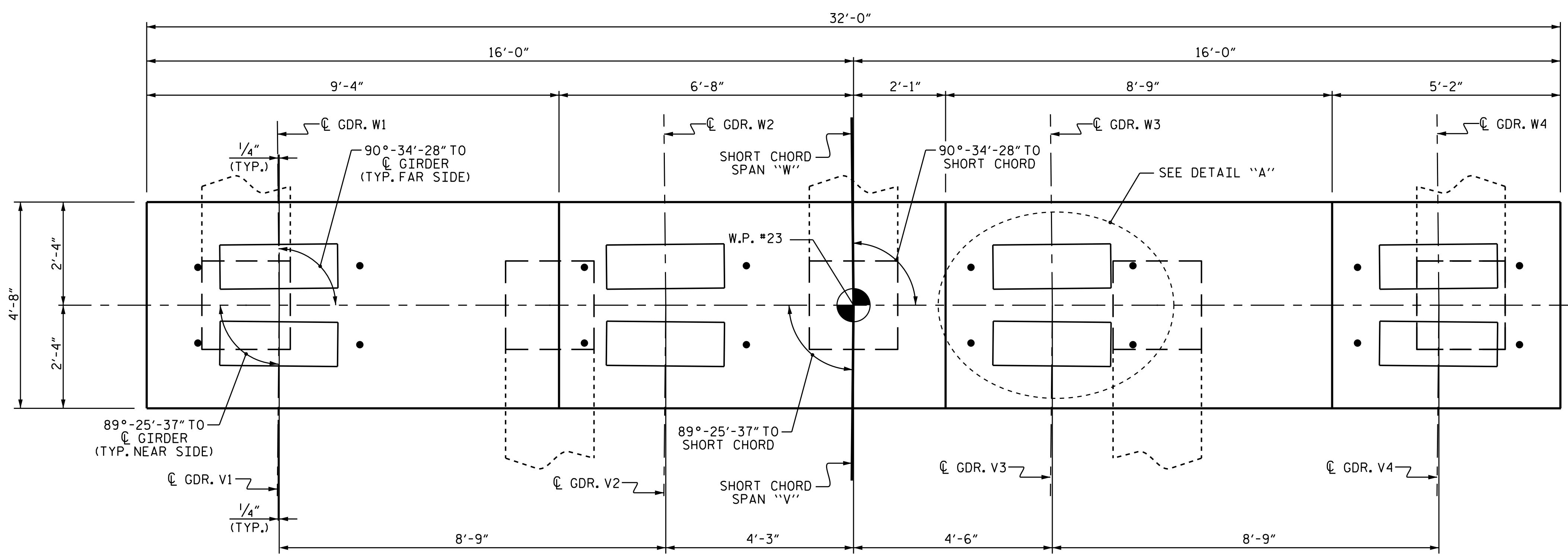
DRAWN BY : T.L. AVERETTE DATE : 02/2019
 CHECKED BY : A.K. PATEL DATE : 12/2019
 DESIGN ENGINEER OF RECORD: A.K. PATEL DATE : 12/2019

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-174
1			3			TOTAL SHEETS
2			4			194

NOTES

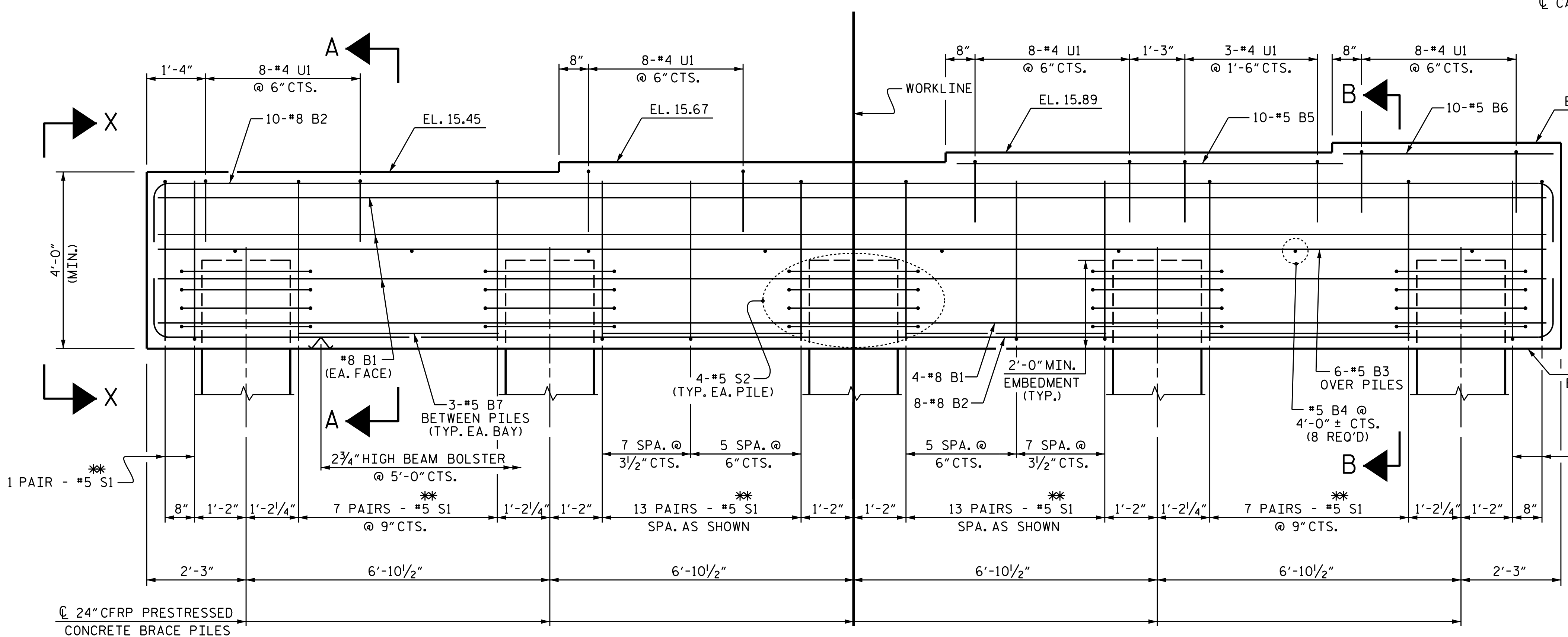
STIRRUPS AND U1 BARS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.
 CONCRETE DISPLACED BY CONCRETE PILES HAS BEEN DEDUCTED FROM THE CAP CONCRETE QUANTITY.
 ALL REINFORCING IN THE CAP IS TO BE GLASS FIBER REINFORCED POLYMER (GFRP) BARS. FOR GLASS FIBER REINFORCED POLYMER BARS, SEE SPECIAL PROVISIONS.



SPAN "W"

SPAN "V"

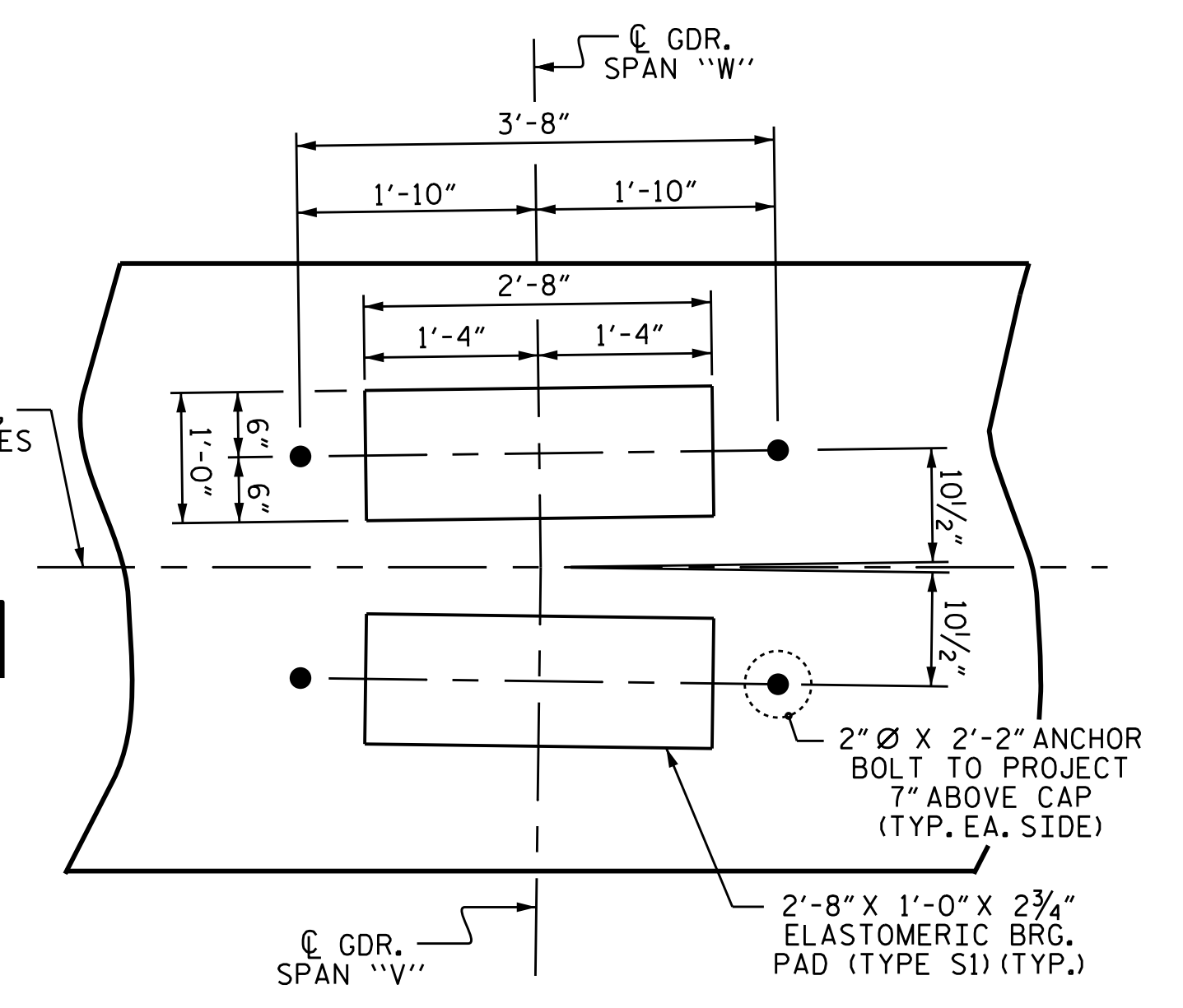
PLAN



ELEVATION

FOR ADDITIONAL REINFORCING BARS IN ENDS OF CAP, SEE VIEW X-X AND VIEW Y-Y ON SHEET 2 OF 2.

*** INVERT ALTERNATE STIRRUPS**

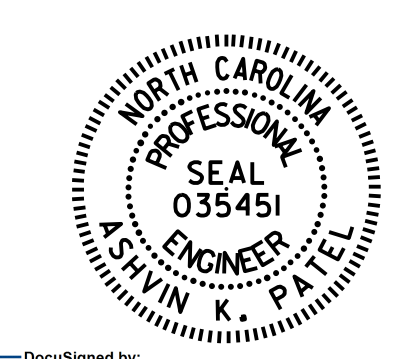


DETAIL "A"

(TYP. @ EACH GDR.)

PROJECT NO. B-4863
CARTERET COUNTY
 STATION: 34+75.00 -L-

SHEET 1 OF 2



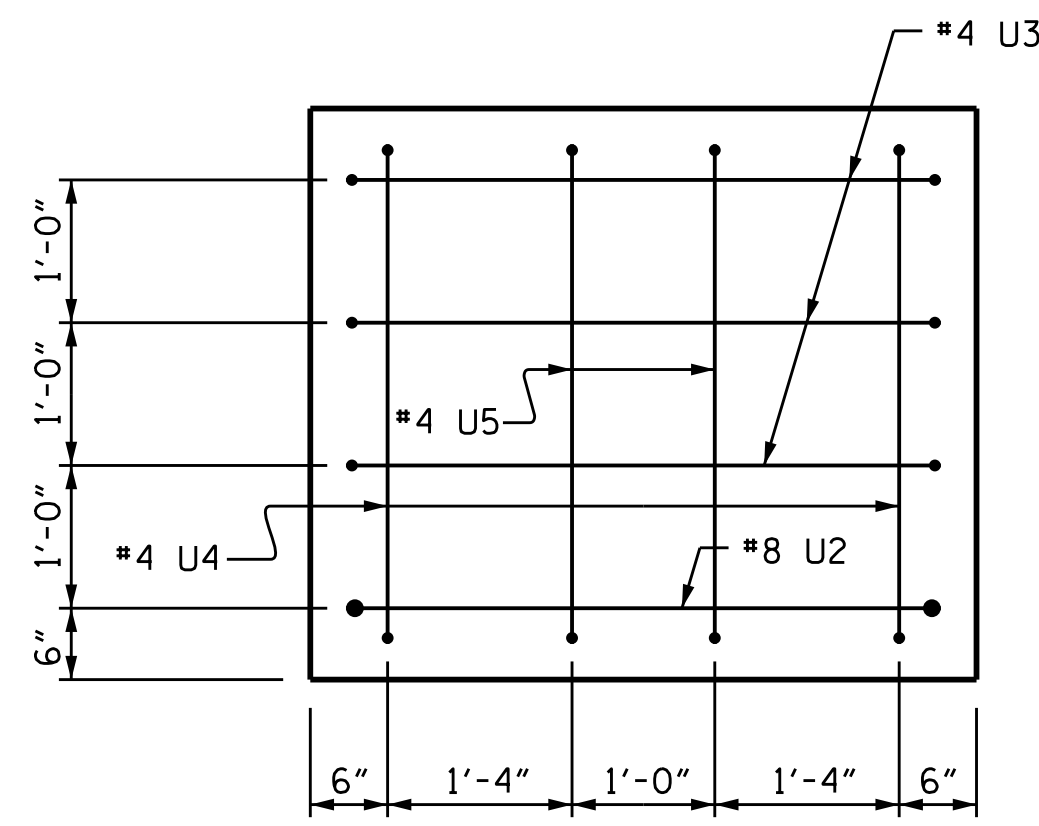
DocuSigned by:
 Ashwin Patel
 7F189E5E10244E3
 3/9/2020

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 BENT #22

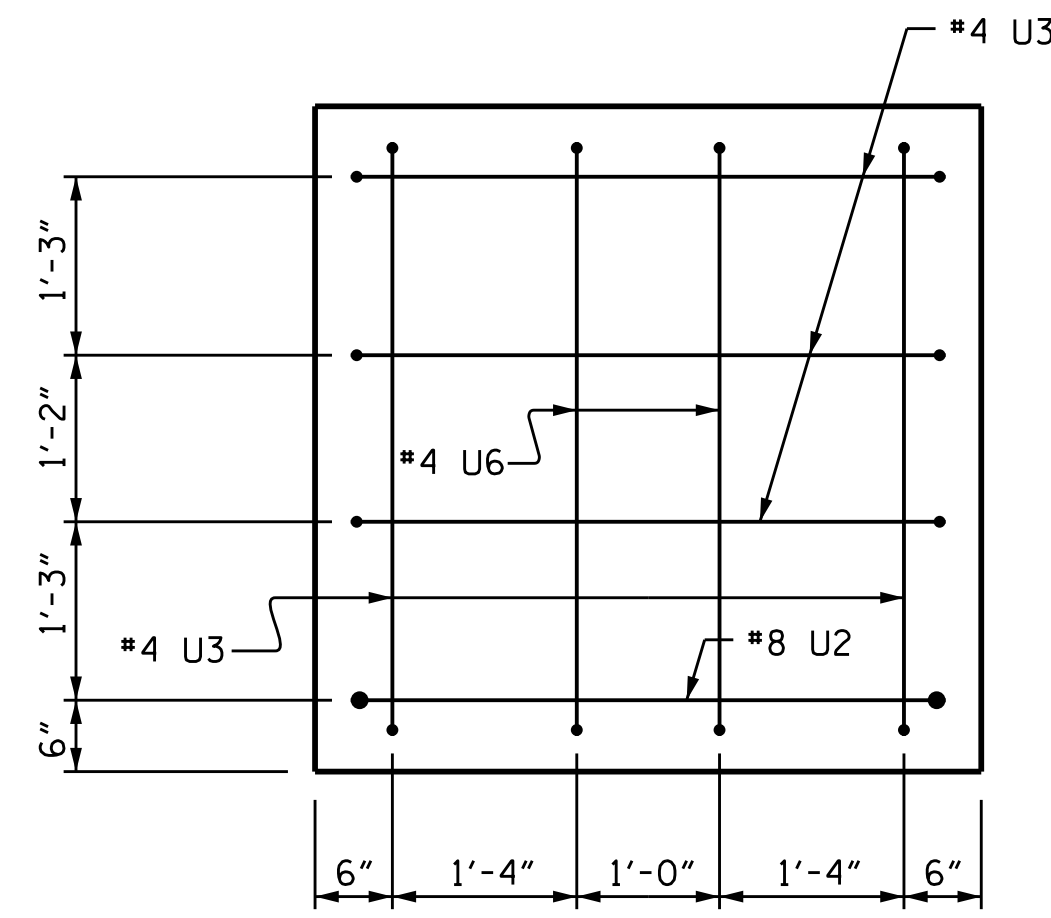
DRAWN BY :	I.L. AVERETTE	DATE :	02/2019
CHECKED BY :	A. K. PATEL	DATE :	12/2019
DESIGN ENGINEER OF RECORD:	A. K. PATEL	DATE :	12/2019

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

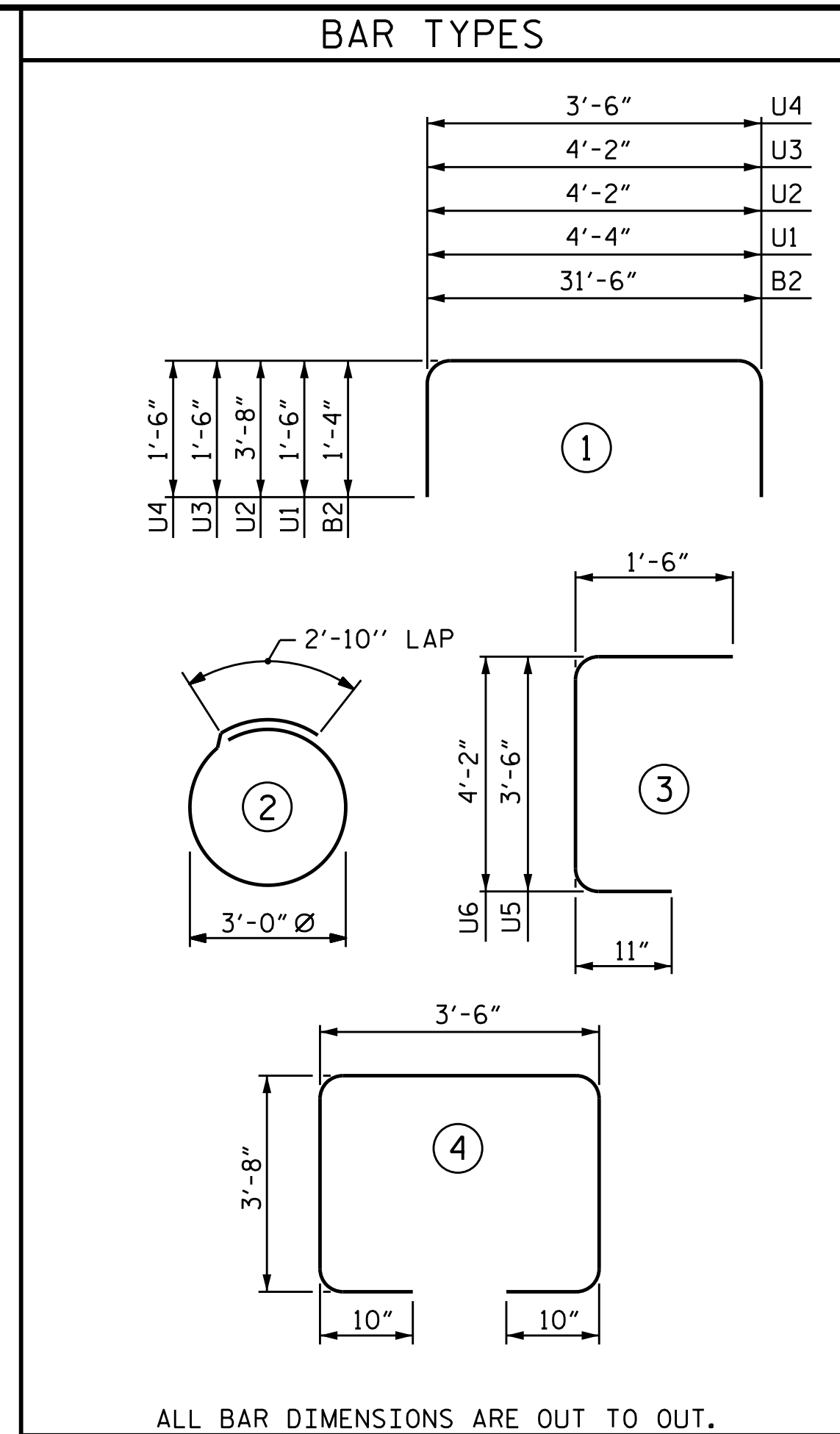
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			S1-175
2			4			194



VIEW X-X



VIEW Y-Y



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

BENT #22

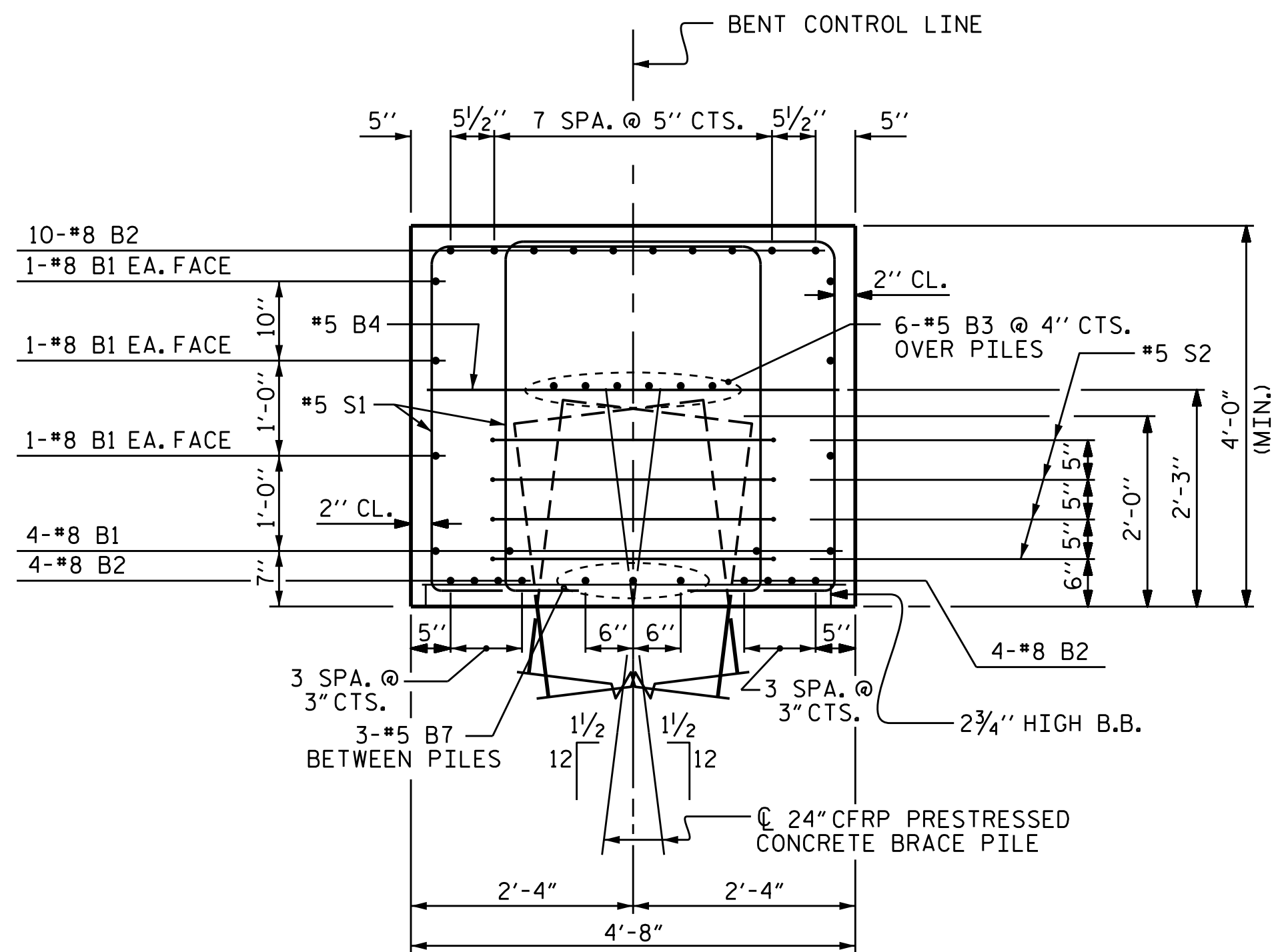
BAR	NO.	SIZE	TYPE	LENGTH	TOTAL LENGTH
B1	10	#8	STR	31'-8"	316'-8"
B2	18	#8	1	34'-2"	615'-0"
B3	6	#5	STR	31'-8"	190'-0"
B4	8	#5	STR	4'-4"	34'-8"
B5	10	#5	STR	8'-9"	87'-6"
B6	10	#5	STR	4'-10"	48'-4"
B7	12	#5	STR	4'-6"	54'-0"
S1	88	#5	4	12'-6"	1100'-0"
S2	20	#5	2	12'-3"	245'-0"
U1	35	#4	1	7'-4"	256'-8"
U2	2	#8	1	11'-6"	23'-0"
U3	8	#4	1	7'-2"	57'-4"
U4	2	#4	1	6'-6"	13'-0"
U5	2	#4	3	5'-11"	11'-10"
U6	2	#4	3	6'-7"	13'-2"

TOTAL LIN. FT. # 4 BARS	352.0
TOTAL LIN. FT. # 5 BARS	1759.5
TOTAL LIN. FT. # 8 BARS	954.7

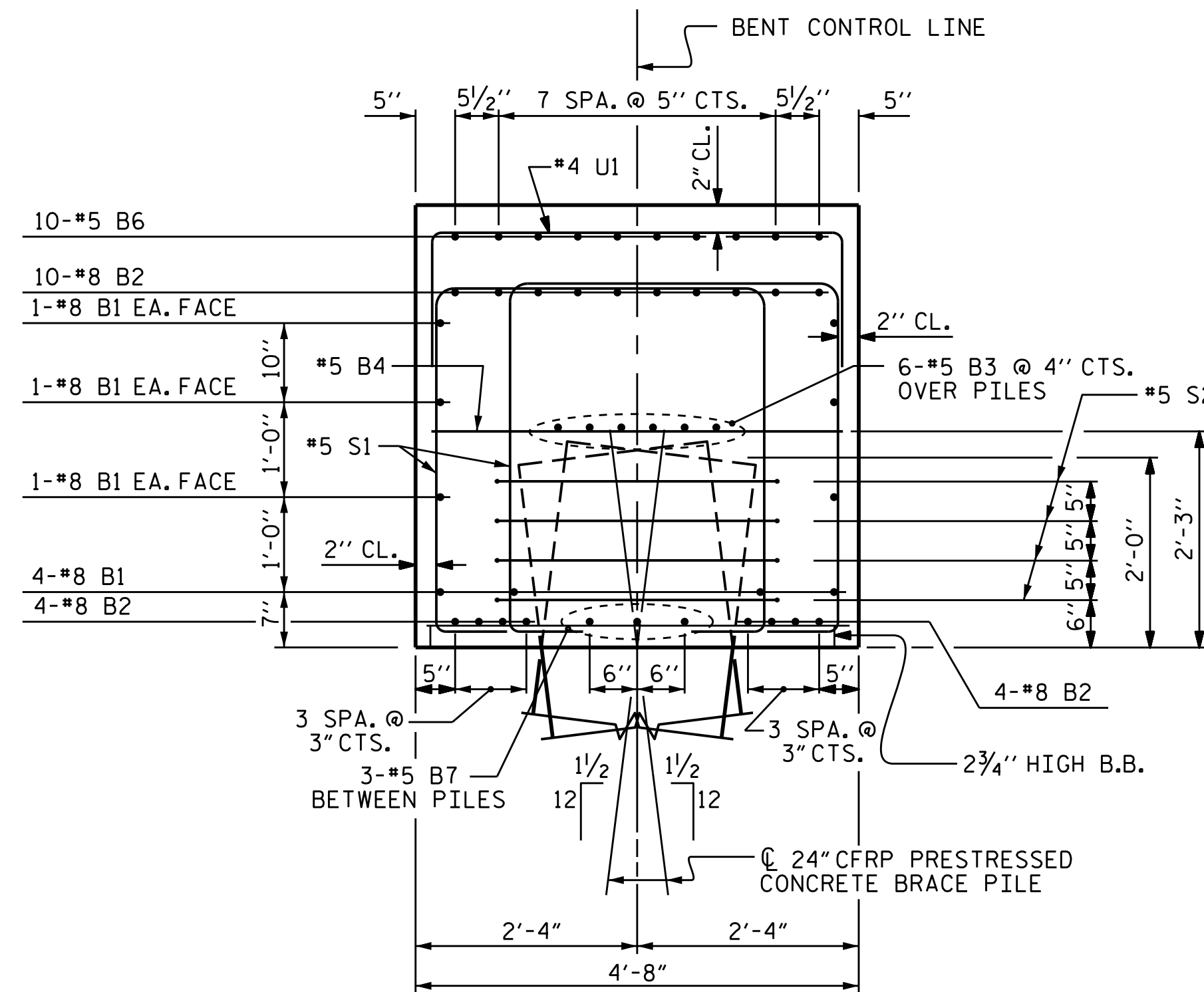
GLASS FIBER REINFORCED POLYMER BARS TOTAL 3066.17 LIN. FT.

CLASS AA CONCRETE BREAKDOWN

POUR #1 CAP	22.2 C.Y.
TOTAL CLASS AA CONCRETE	22.2 C.Y.



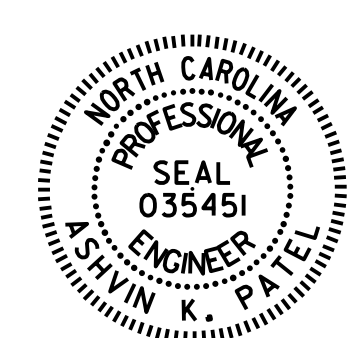
SECTION A-A



SECTION B-B

PROJECT NO. B-4863
CARTERET COUNTY
 STATION: 34+75.00 -L-

SHEET 2 OF 2



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 7F180E5610244D3
 4/16/2021

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 BENT #22

DRAWN BY : T.L. AVERETTE DATE : 02/2019
 CHECKED BY : A.K. PATEL DATE : 12/2019
 DESIGN ENGINEER OF RECORD: A.K. PATEL DATE : 12/2019

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 FINAL UNLESS ALL
 SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-176
1			3			TOTAL SHEETS
2			4			194

13-APR-2021 11:35
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 akpatel

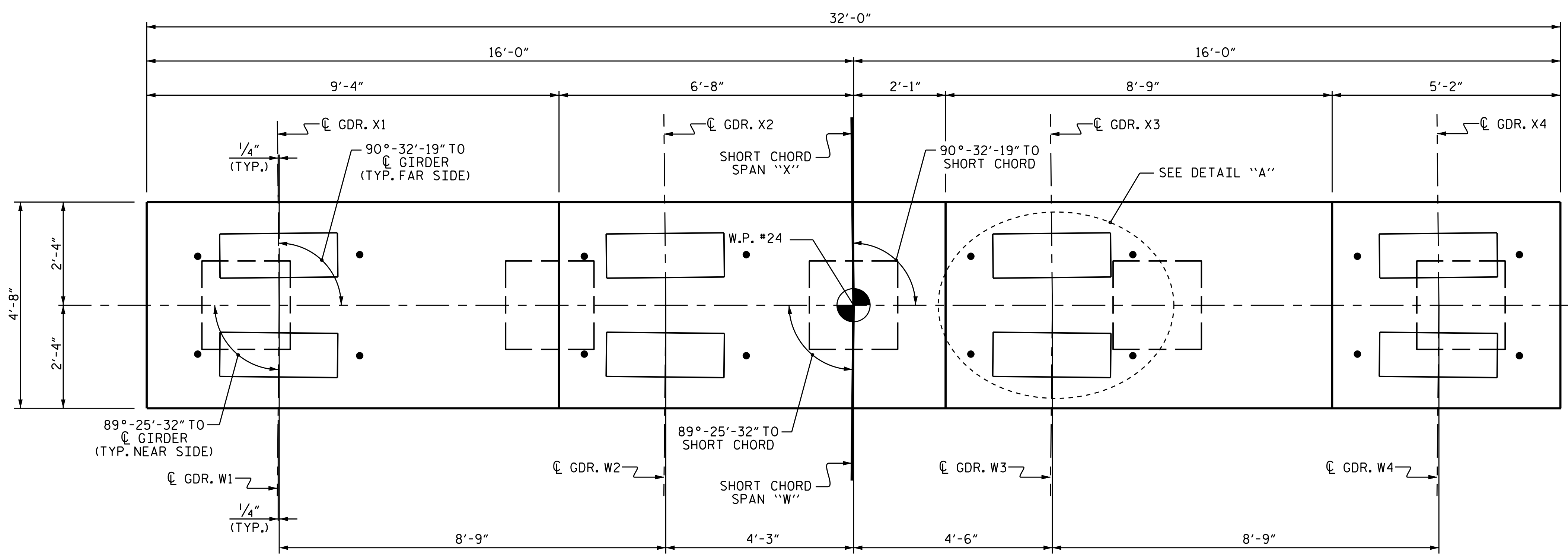
NOTES

STIRRUPS AND UI BARS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.

CONCRETE DISPLACED BY CONCRETE PILES HAS BEEN DEDUCTED FROM THE CAP CONCRETE QUANTITY.

THE TOP SURFACE AREAS OF THE BENT CAP SHALL BE CURED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS EXCEPT THE MEMBRANE CURING COMPOUND METHOD SHALL NOT BE USED.

ALL REINFORCING IN THE CAP IS TO BE GLASS FIBER REINFORCED POLYMER (GFRP) BARS. FOR GLASS FIBER REINFORCED POLYMER BARS, SEE SPECIAL PROVISIONS.

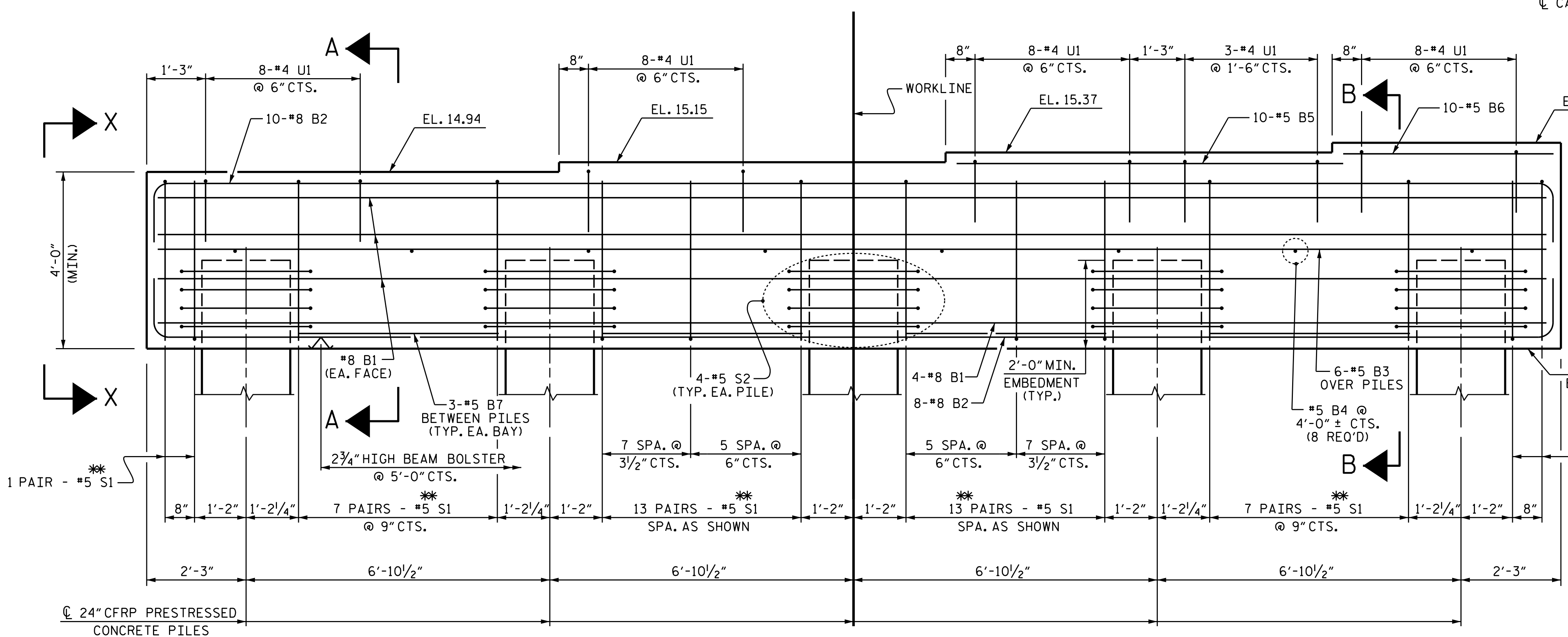


SPAN "X"

SPAN "W"

BENT #23 CONTROL LINE, C/CAP & C/PILES

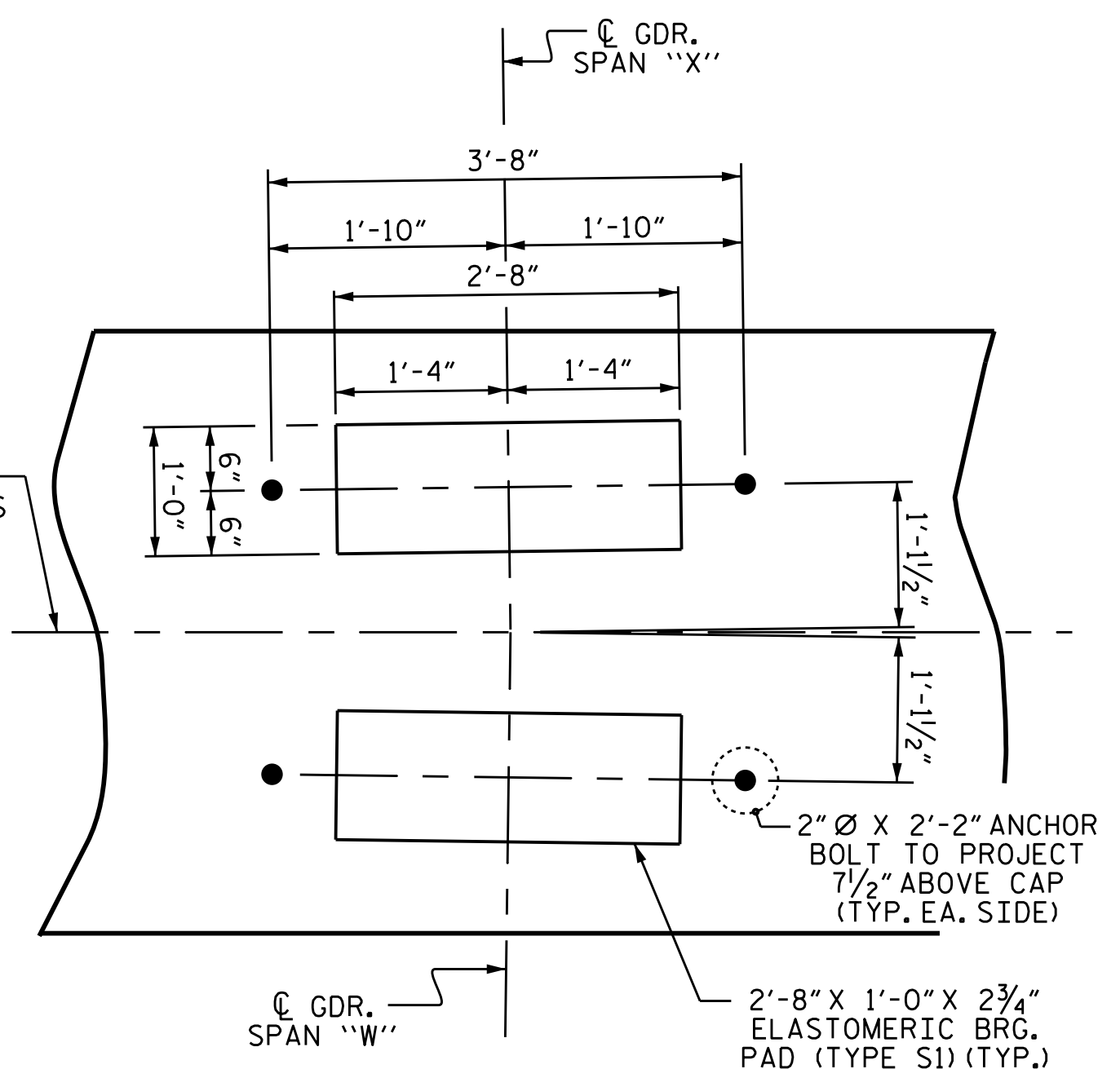
PLAN



ELEVATION

FOR ADDITIONAL REINFORCING BARS IN ENDS OF CAP, SEE VIEW X-X AND VIEW Y-Y ON SHEET 2 OF 2.

**** INVERT ALTERNATE STIRRUPS**

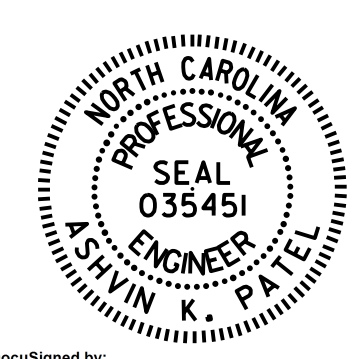


DETAIL "A"

(TYP. @ EACH GDR.)

PROJECT NO. B-4863
CARTERET COUNTY
 STATION: 34+75.00 -L-

SHEET 1 OF 2



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 3/9/2020

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 DEPARTMENT OF TRANSPORTATION
 RALEIGH

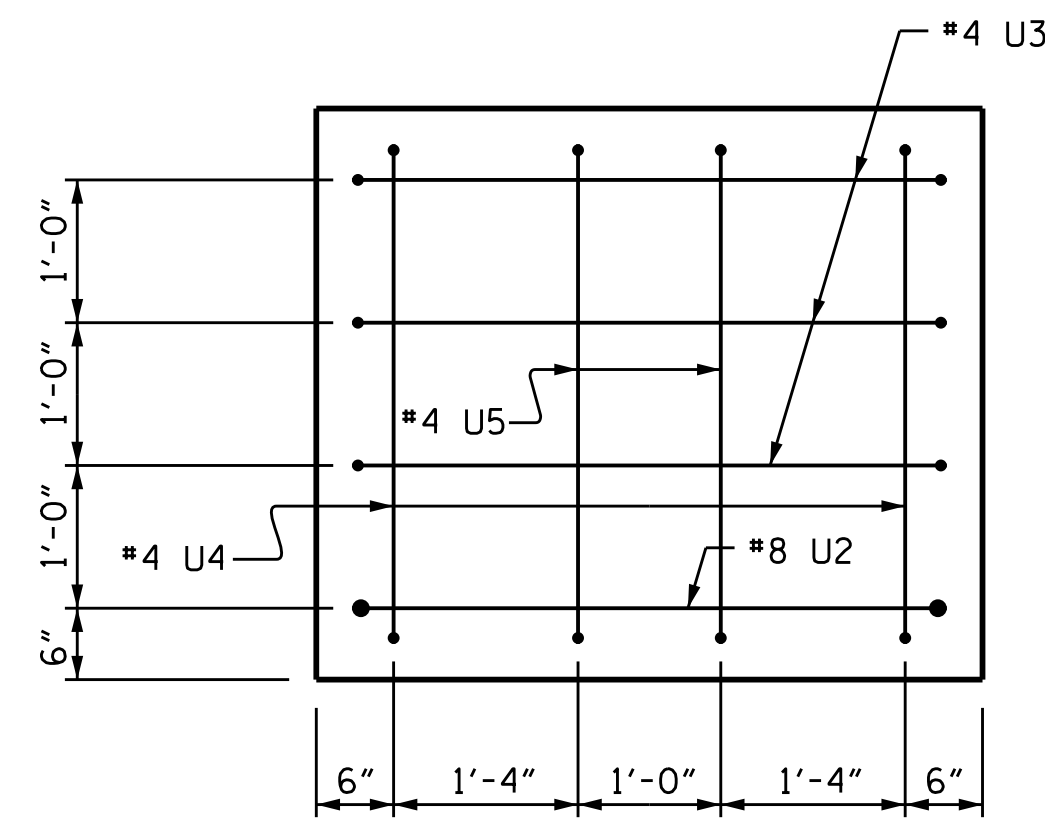
SUBSTRUCTURE

BENT #23

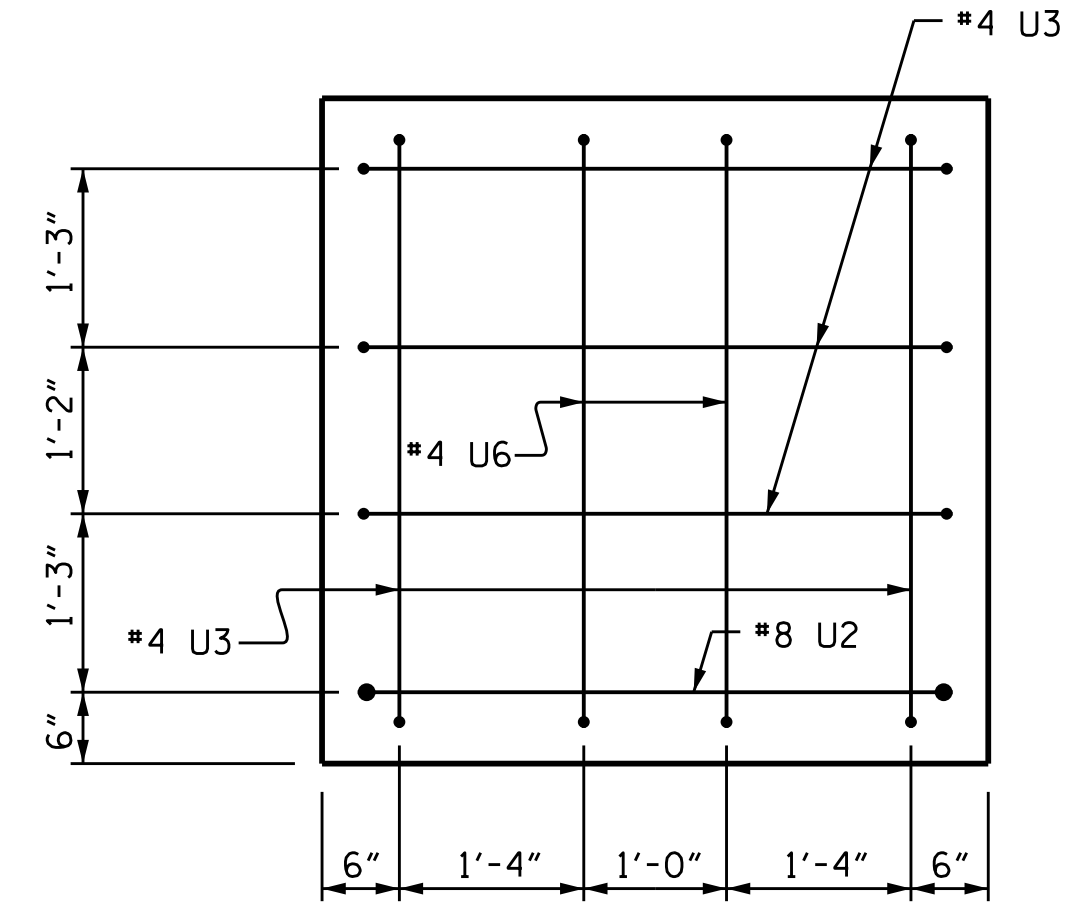
REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-177	
1			3			TOTAL SHEETS	194
2			4				

DRAWN BY : I.L. AVERETTE DATE : 02/2019
 CHECKED BY : A.K. PATEL DATE : 12/2019
 DESIGN ENGINEER OF RECORD: A.K. PATEL DATE : 12/2019

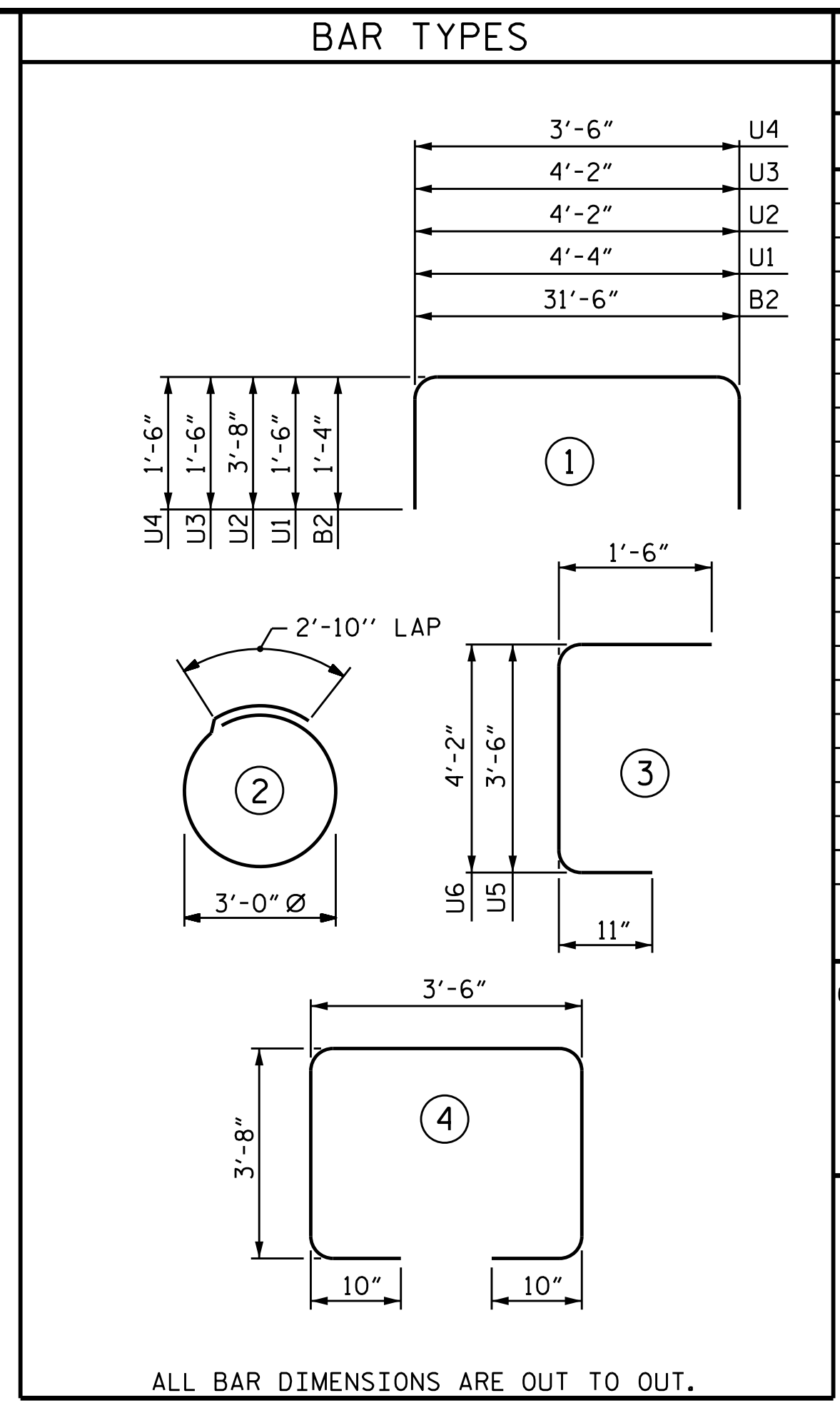
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



VIEW X-X

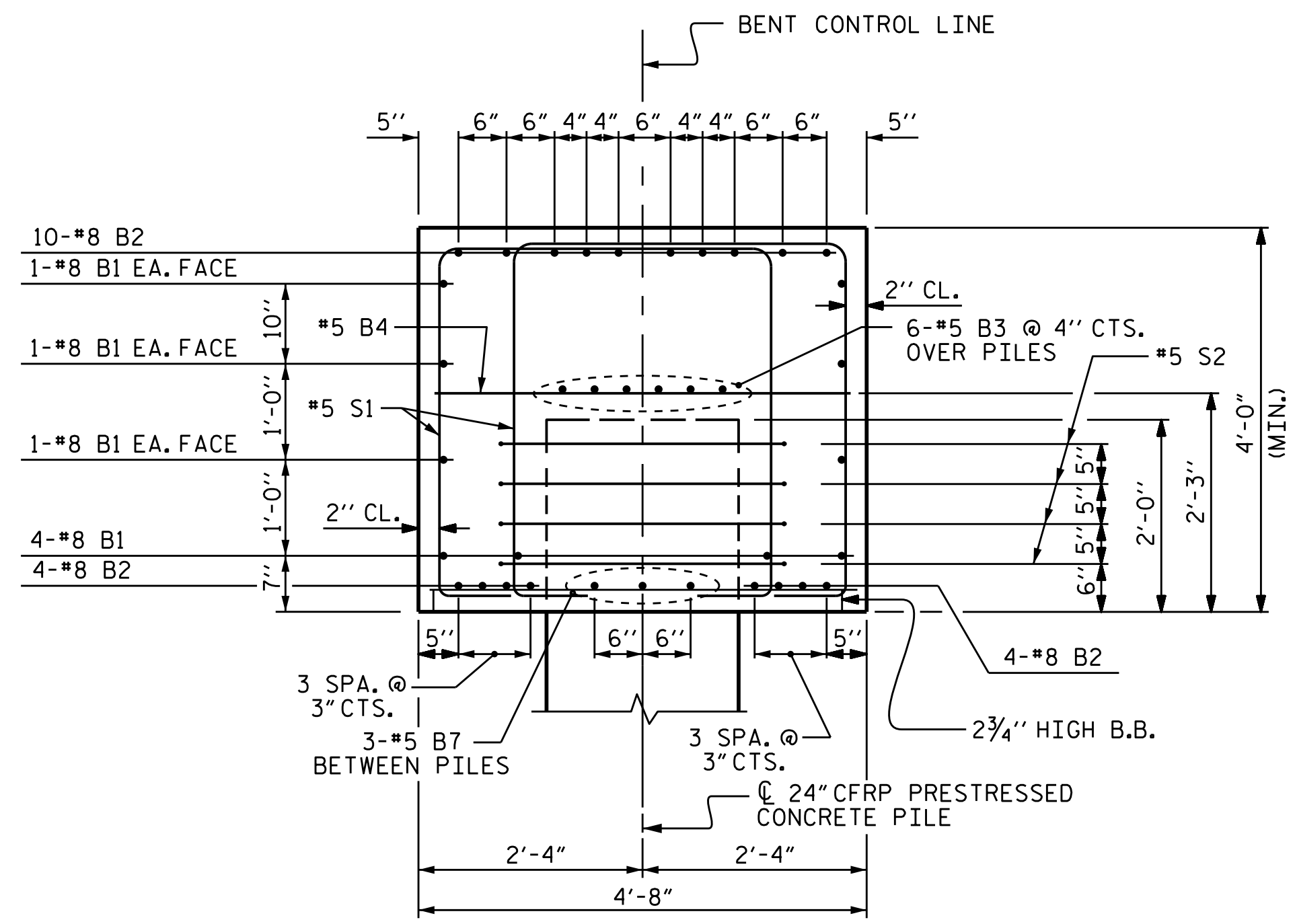


VIEW Y-Y

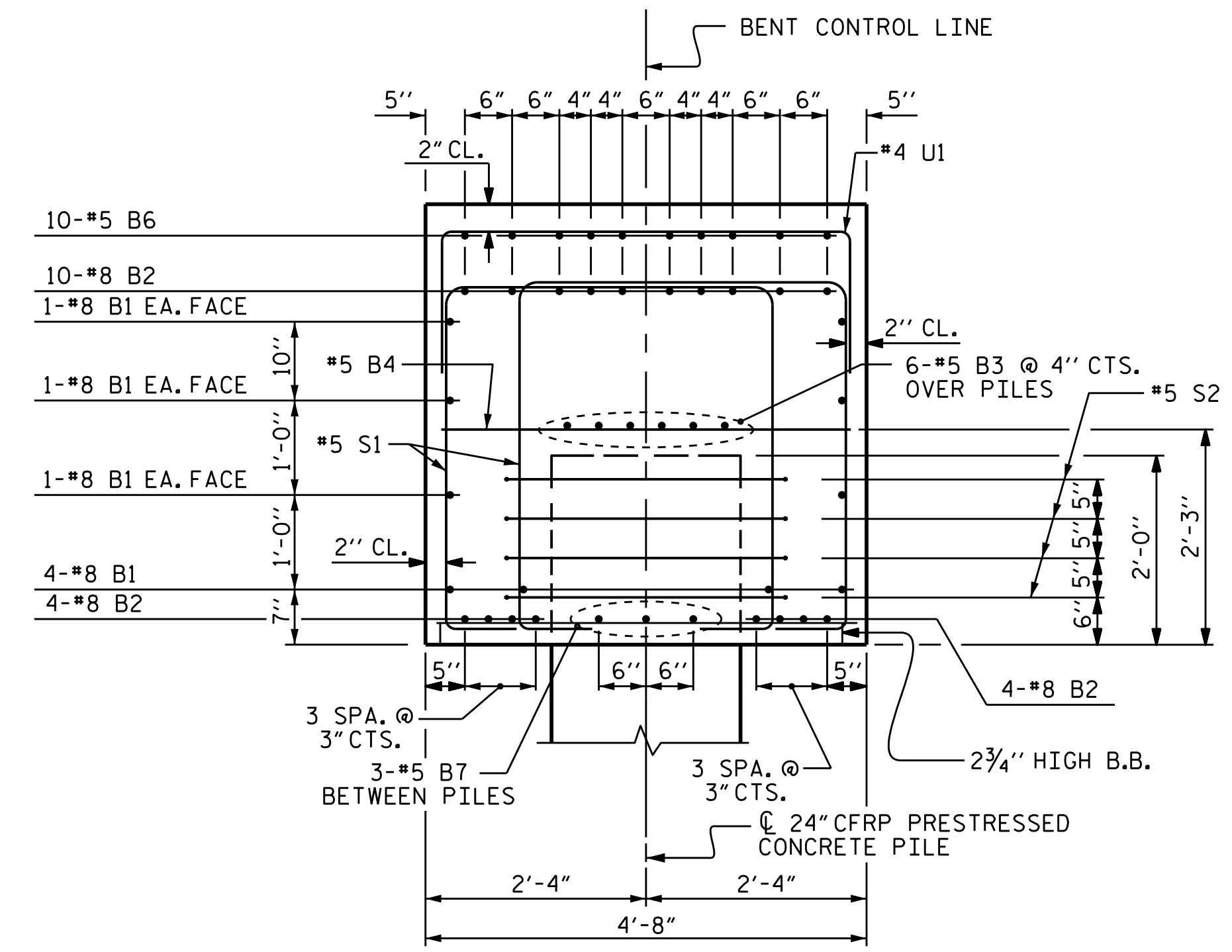


ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL					
BENT #23					
BAR	NO.	SIZE	TYPE	LENGTH	TOTAL LENGTH
B1	10	#8	STR	31'-8"	316'-8"
B2	18	#8		34'-2"	615'-0"
B3	6	#5	STR	31'-8"	190'-0"
B4	8	#5	STR	4'-4"	34'-8"
B5	10	#5	STR	8'-9"	87'-6"
B6	10	#5	STR	4'-10"	48'-4"
B7	12	#5	STR	4'-6"	54'-0"
S1	88	#5		12'-6"	1100'-0"
S2	20	#5		12'-3"	245'-0"
U1	35	#4		7'-4"	256'-8"
U2	2	#8		11'-6"	23'-0"
U3	8	#4		7'-2"	57'-4"
U4	2	#4		6'-6"	13'-0"
U5	2	#4		5'-11"	11'-10"
U6	2	#4		6'-7"	13'-2"
TOTAL LIN. FT. # 4 BARS					352.0
TOTAL LIN. FT. # 5 BARS					1759.5
TOTAL LIN. FT. # 8 BARS					954.7
GLASS FIBER REINFORCED POLYMER BARS					TOTAL 3066.17 LIN. FT.
CLASS AA CONCRETE BREAKDOWN					
POUR #1 CAP					22.2 C.Y.
TOTAL CLASS AA CONCRETE					22.2 C.Y.



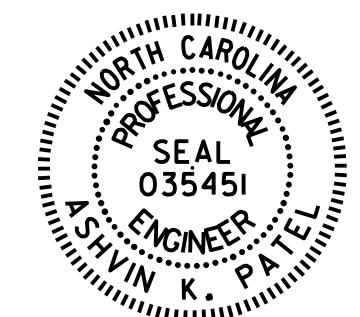
SECTION A-A



SECTION B-B

PROJECT NO. B-4863
 CARTERET COUNTY
 STATION: 34+75.00 -L-

SHEET 2 OF 2
 STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 BENT #23

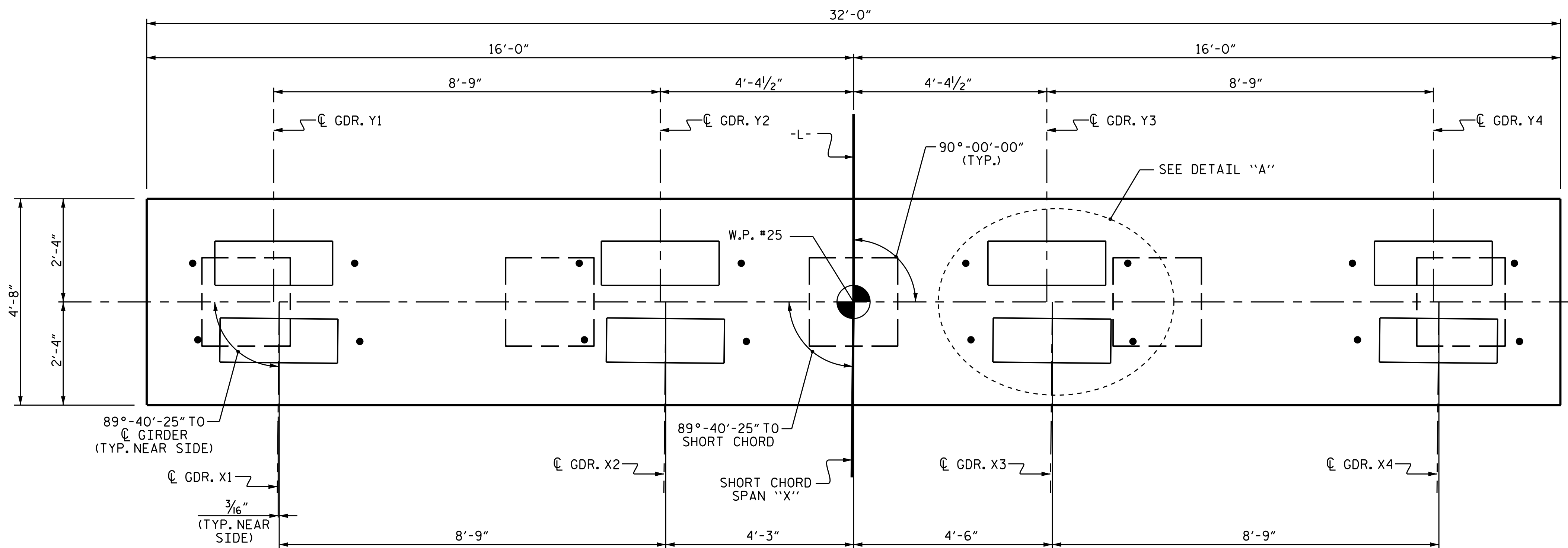


DocuSigned by:
 Ashwin Patel
 7F180E5610244D3
 4/16/2021

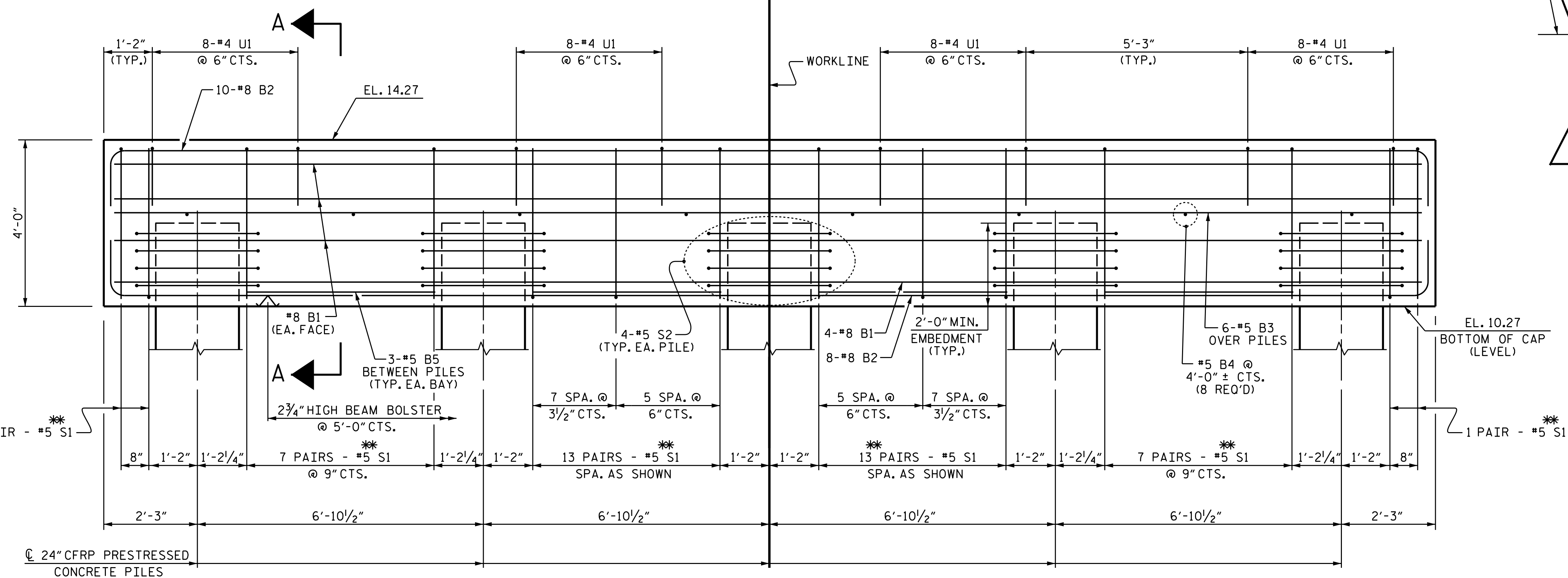
DRAWN BY : I.L. AVERETTE DATE : 02/2019
 CHECKED BY : A.K. PATEL DATE : 12/2019
 DESIGN ENGINEER OF RECORD: A.K. PATEL DATE : 12/2019

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-178
1			3			TOTAL SHEETS
2			4			194



PLAN



ELEVATION

FOR ADDITIONAL REINFORCING BARS IN ENDS OF CAP, SEE END VIEW ON SHEET 2 OF 2.

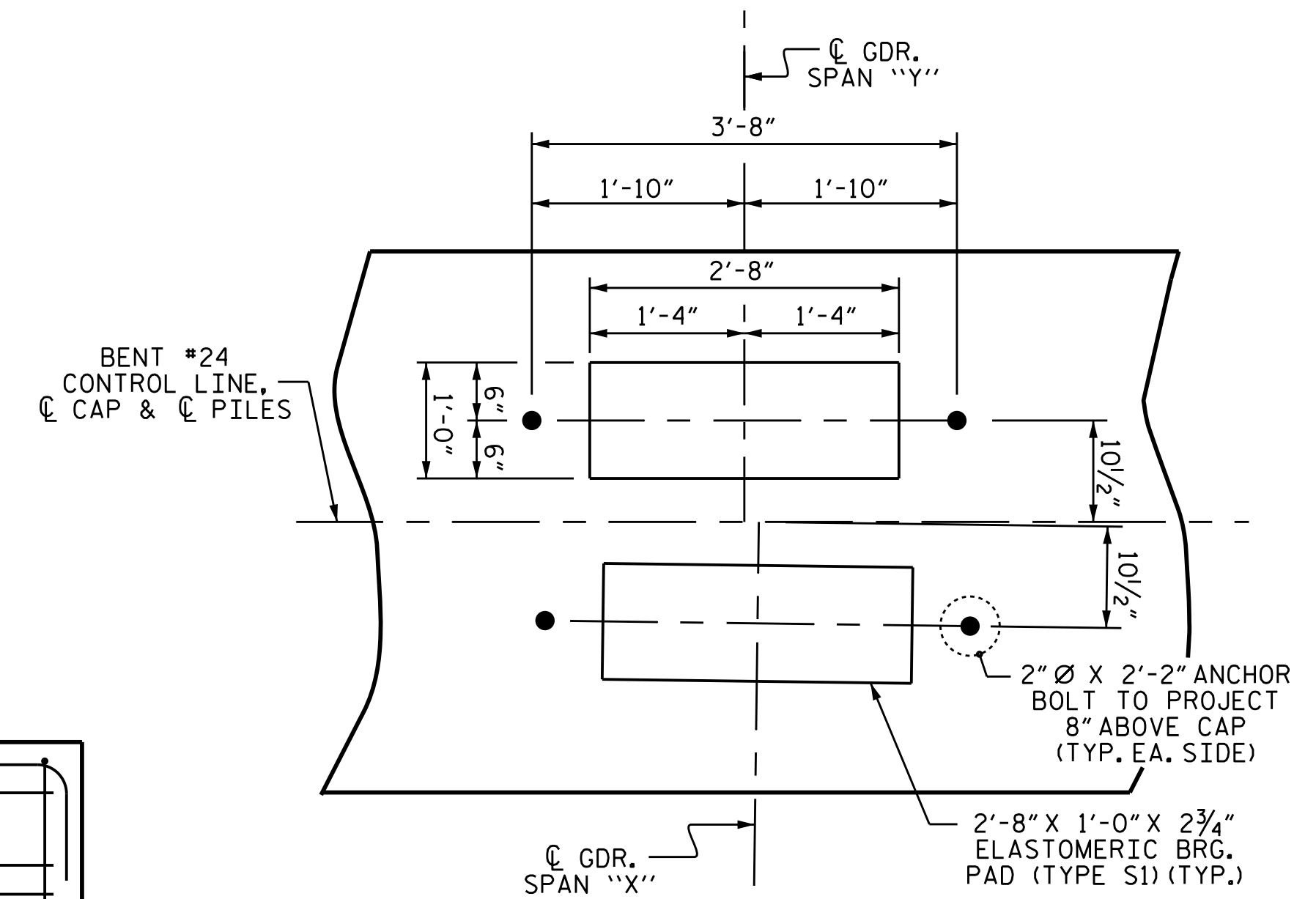
** INVERT ALTERNATE STIRRUPS

NOTES

STIRRUPS AND U1 BARS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.
 CONCRETE DISPLACED BY CONCRETE PILES HAS BEEN DEDUCTED FROM THE CAP CONCRETE QUANTITY.
 ALL REINFORCING IN THE CAP IS TO BE GLASS FIBER REINFORCED POLYMER (GFRP) BARS. FOR GLASS FIBER REINFORCED POLYMER BARS, SEE SPECIAL PROVISIONS.

SPAN "Y"

SPAN "X"

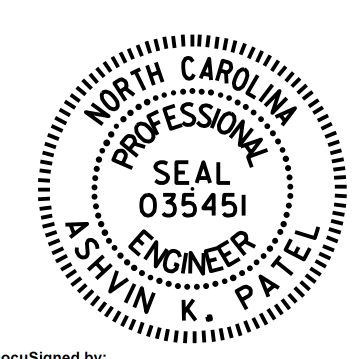


DETAIL "A"

(TYP. @ EACH GDR.)

PROJECT NO. B-4863
 CARTERET COUNTY
 STATION: 34+75.00 -L-

SHEET 1 OF 2



DocuSigned by: Ashwin Patel 7F189E5E10244E3 3/9/2020

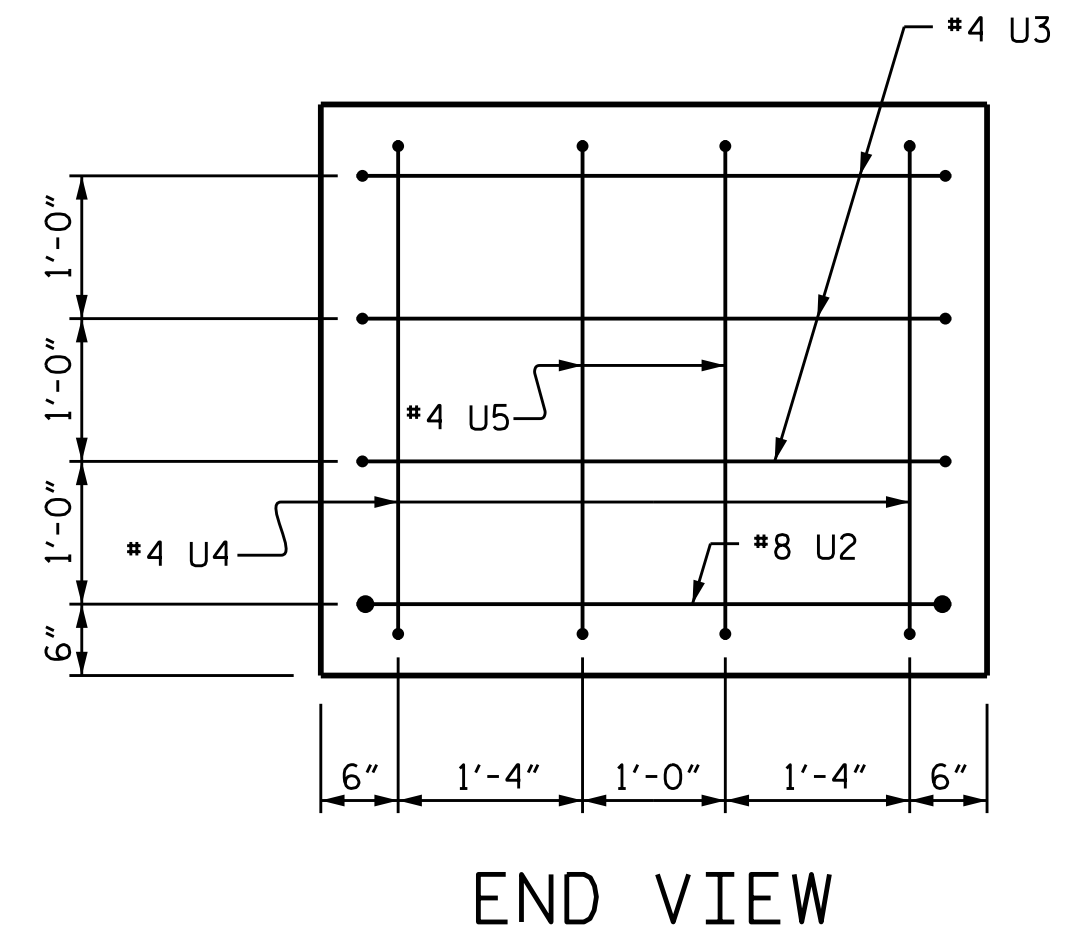
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 BENT #24

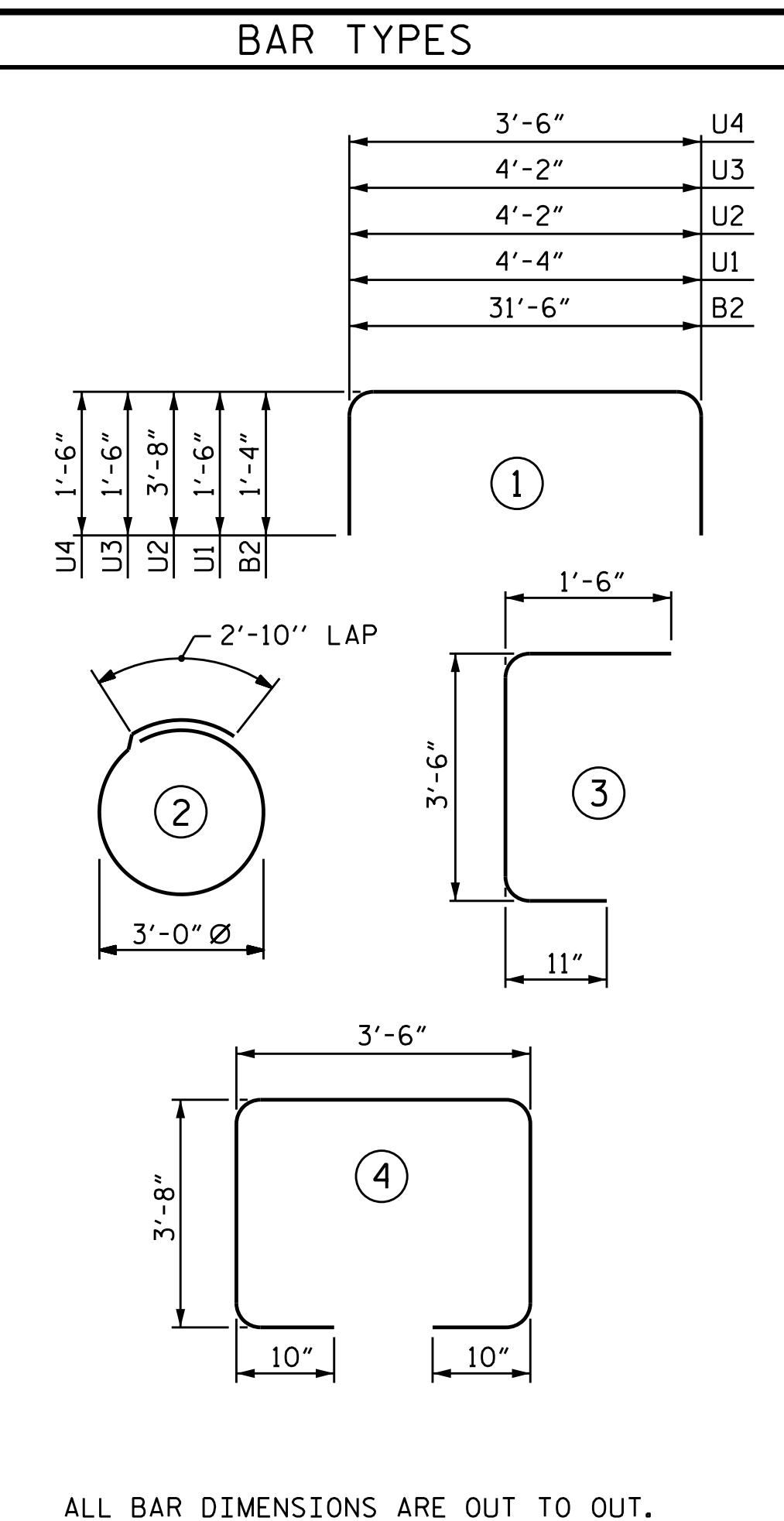
DRAWN BY: I.L. AVERETTE DATE: 02/2019
 CHECKED BY: A.K. PATEL DATE: 12/2019
 DESIGN ENGINEER OF RECORD: A.K. PATEL DATE: 12/2019

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-179	
1			3			TOTAL SHEETS	194
2			4				



END VIEW



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

BENT #24

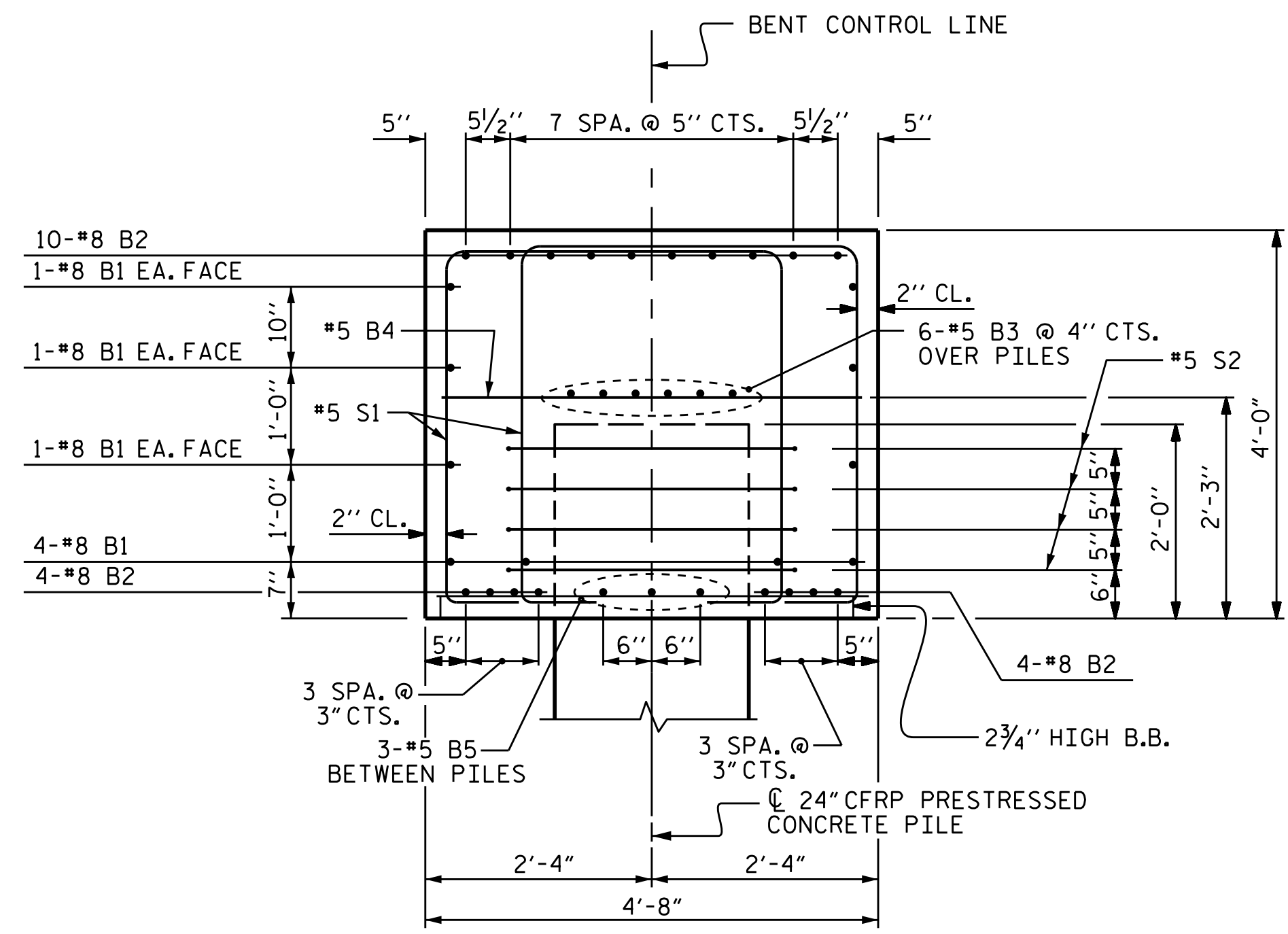
BAR	NO.	SIZE	TYPE	LENGTH	TOTAL LENGTH
B1	10	#8	STR	31'-8"	316'-8"
B2	18	#8	1	34'-2"	615'-0"
B3	6	#5	STR	31'-8"	190'-0"
B4	8	#5	STR	4'-4"	34'-8"
B5	12	#5	STR	4'-6"	54'-0"
S1	88	#5	4	12'-6"	1100'-0"
S2	20	#5	2	12'-3"	245'-0"
U1	32	#4	1	7'-4"	234'-8"
U2	2	#8	1	11'-6"	23'-0"
U3	6	#4	1	7'-2"	43'-0"
U4	4	#4	1	6'-6"	26'-0"
U5	4	#4	3	5'-11"	23'-8"

TOTAL LIN. FT. # 4 BARS	327.3
TOTAL LIN. FT. # 5 BARS	1623.7
TOTAL LIN. FT. # 8 BARS	954.7

GLASS FIBER REINFORCED POLYMER BARS TOTAL 2905.67 LIN. FT.

CLASS AA CONCRETE BREAKDOWN

POUR #1 CAP	20.6 C.Y.
TOTAL CLASS AA CONCRETE	20.6 C.Y.

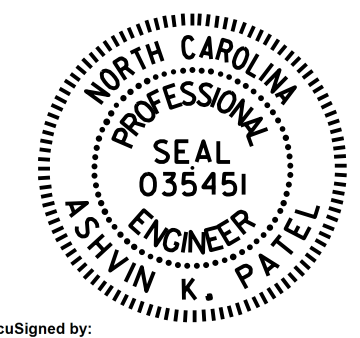


SECTION A-A

PROJECT NO. B-4863
CARTERET COUNTY
 STATION: 34+75.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 BENT #24



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 Ashwin Patel
 7F180E5610244D3
 4/16/2021

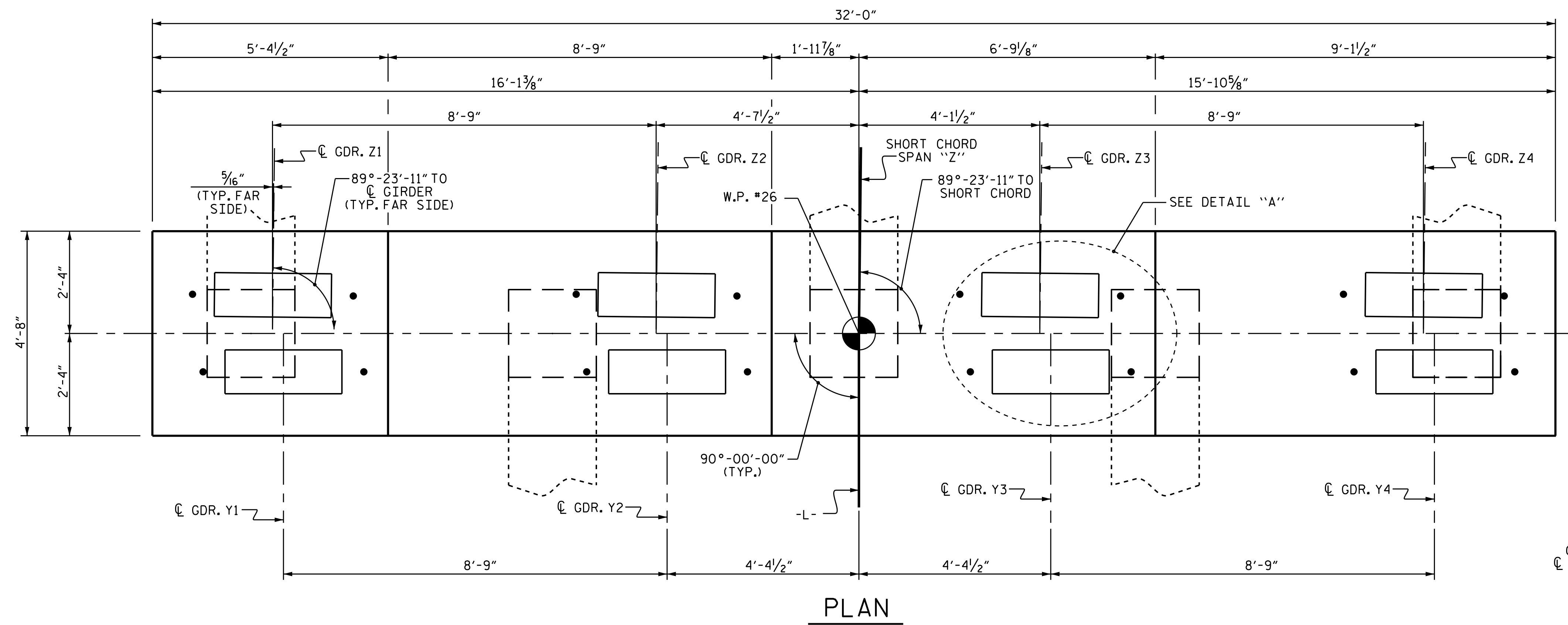
DRAWN BY :	T.L. AVERETTE	DATE :	02/2019
CHECKED BY :	A.K. PATEL	DATE :	12/2019
DESIGN ENGINEER OF RECORD:	A.K. PATEL	DATE :	12/2019

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			S1-180
2			4			194

NOTES

STIRRUPS AND U1 BARS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.
 CONCRETE DISPLACED BY CONCRETE PILES HAS BEEN DEDUCTED FROM THE CAP CONCRETE QUANTITY.
 ALL REINFORCING IN THE CAP IS TO BE GLASS FIBER REINFORCED POLYMER (GFRP) BARS. FOR GLASS FIBER REINFORCED POLYMER BARS, SEE SPECIAL PROVISIONS.

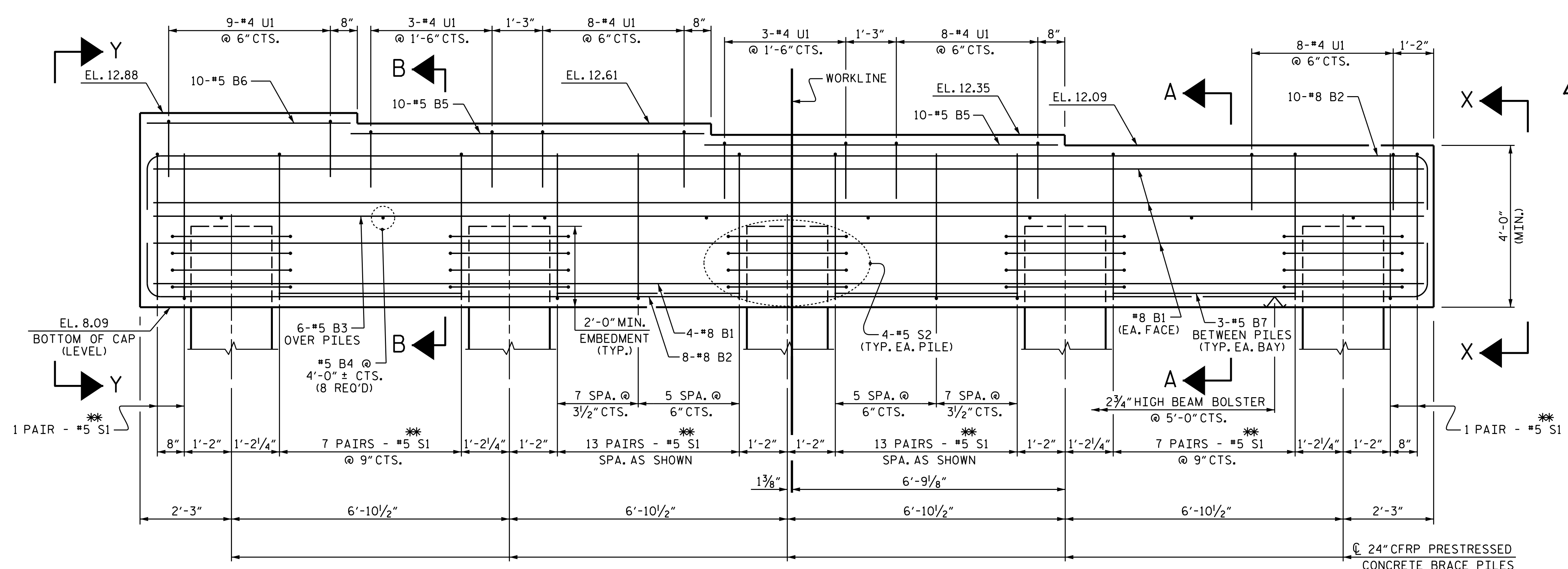
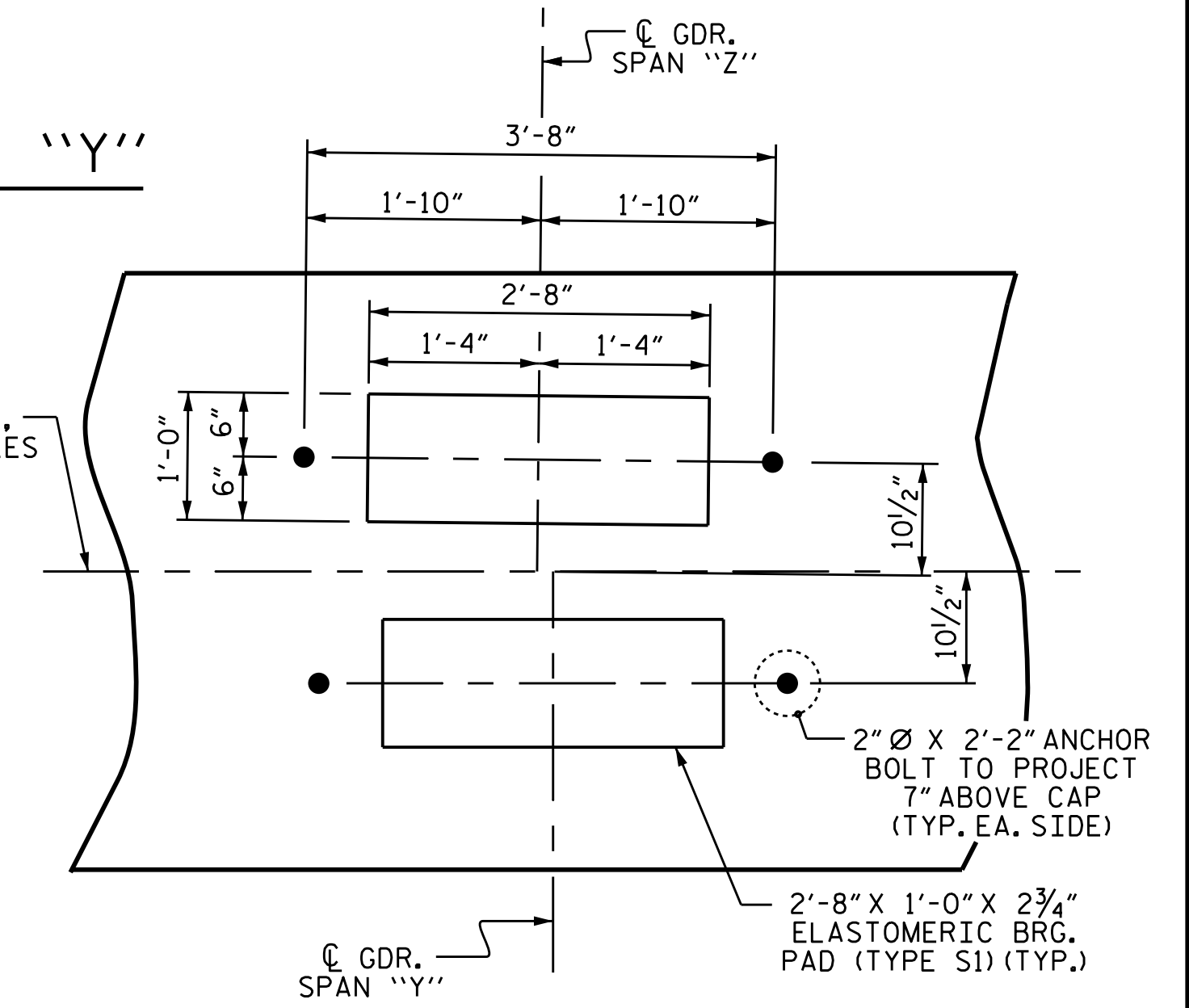


SPAN "Z"

SPAN "Y"

BENT #25 CONTROL LINE, CL CAP & CL PILES

BENT #25 CONTROL LINE, CL CAP & CL PILES



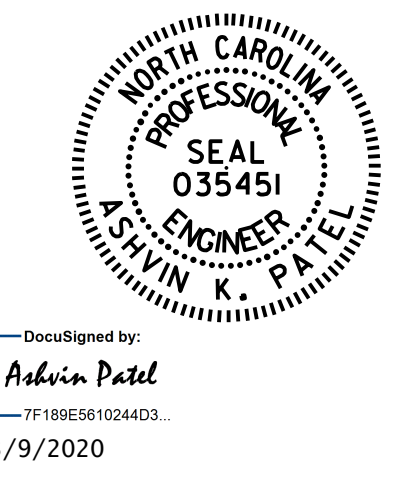
FOR ADDITIONAL REINFORCING BARS IN ENDS OF CAP, SEE VIEW X-X AND VIEW Y-Y ON SHEET 2 OF 2.

**** INVERT ALTERNATE STIRRUPS**

PROJECT NO. B-4863
CARTERET COUNTY
 STATION: 34+75.00 -L-
 SHEET 1 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

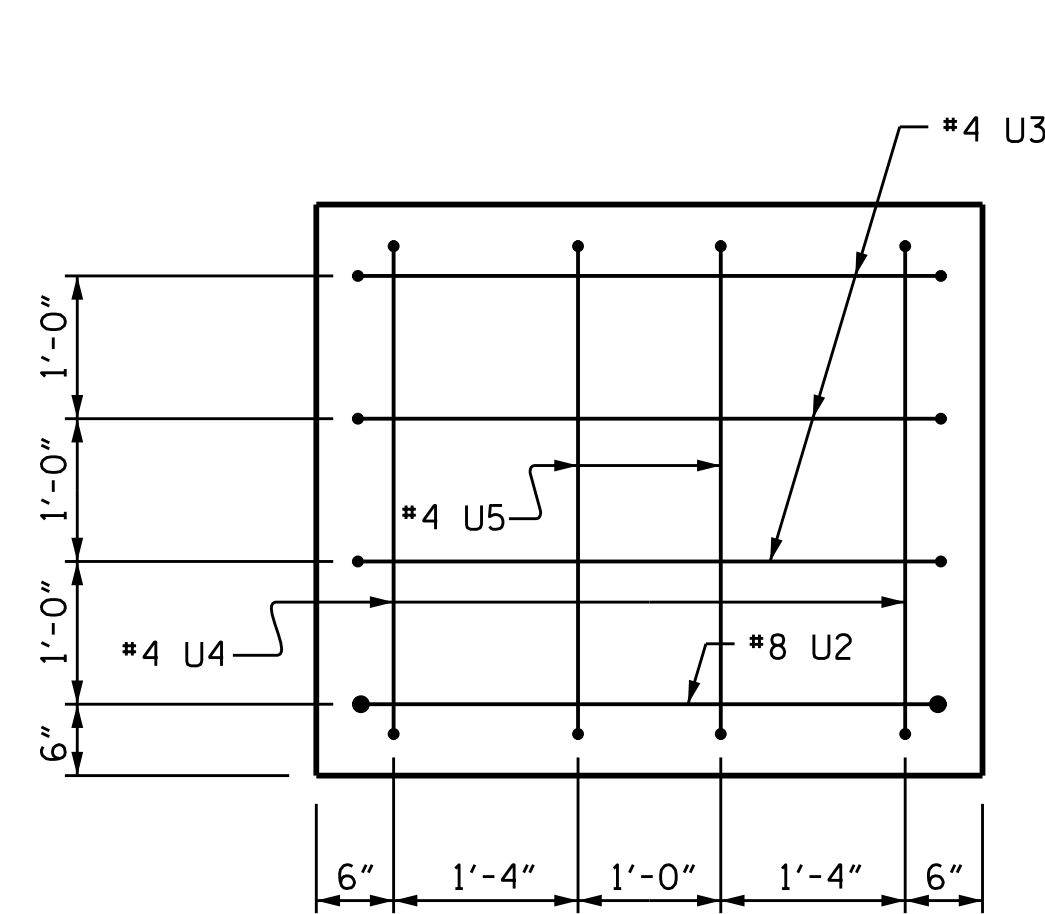
SUBSTRUCTURE
BENT #25



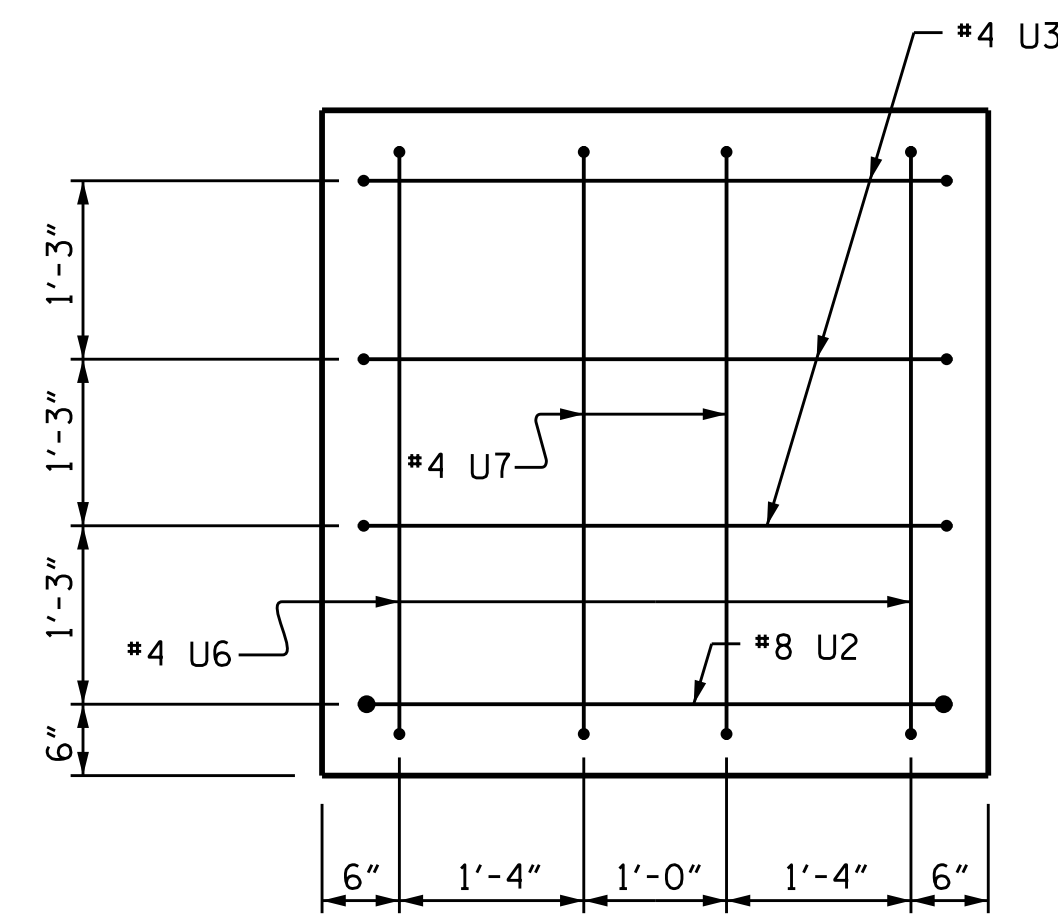
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			S1-181
2			4			194

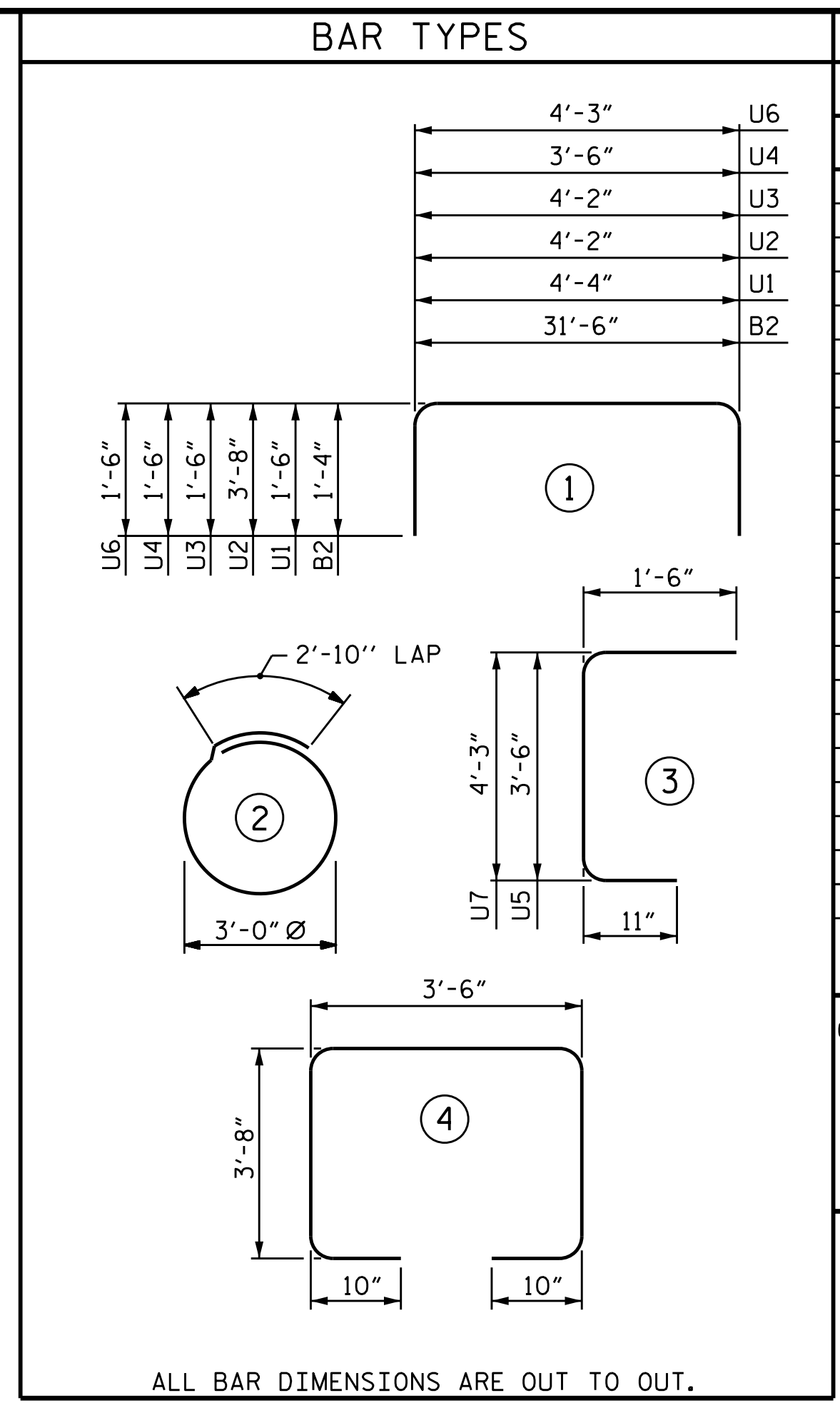
DRAWN BY : I.L. AVERETTE DATE : 02/2019
 CHECKED BY : A.K. PATEL DATE : 12/2019
 DESIGN ENGINEER OF RECORD : A.K. PATEL DATE : 12/2019



VIEW X-X

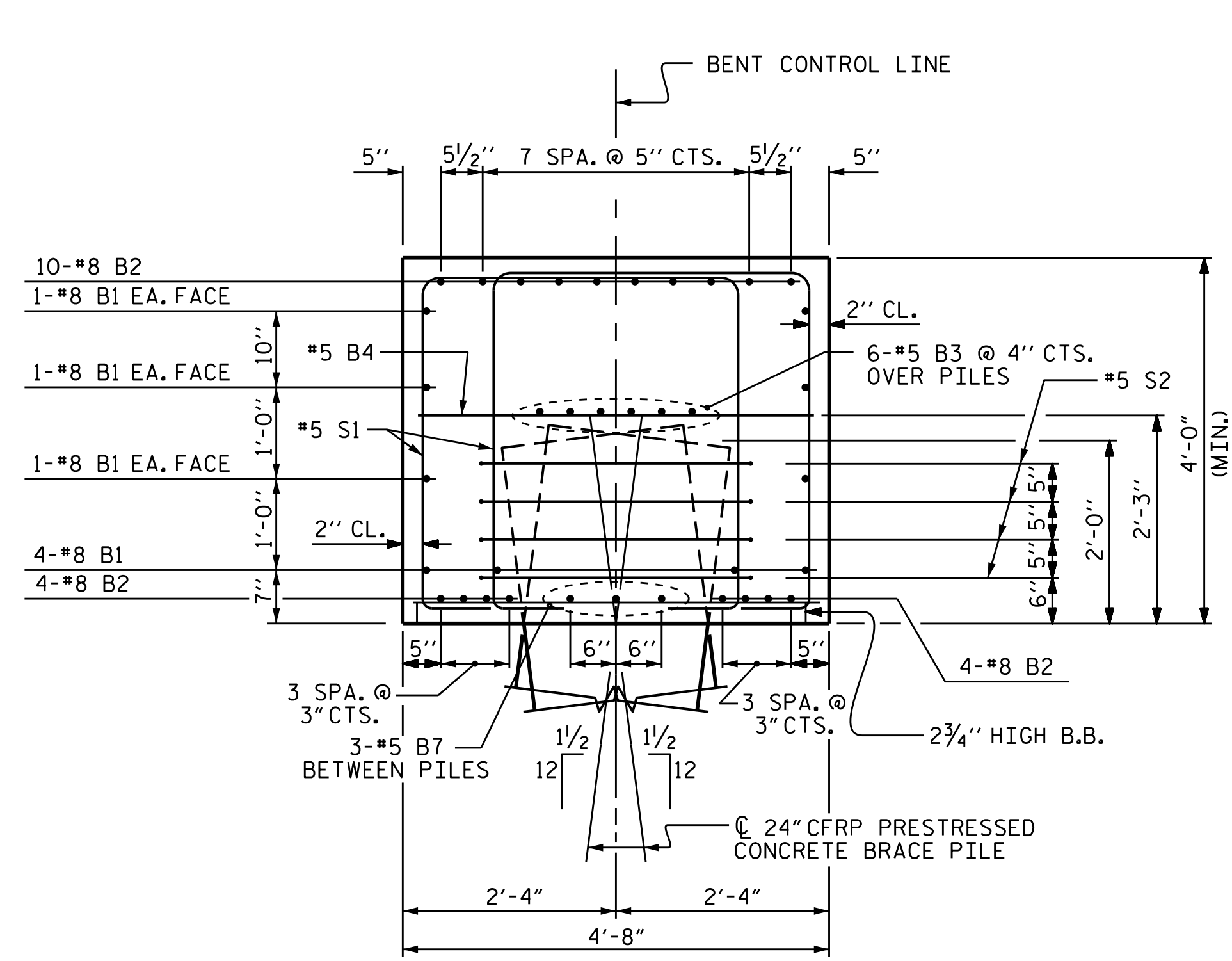


VIEW Y-Y

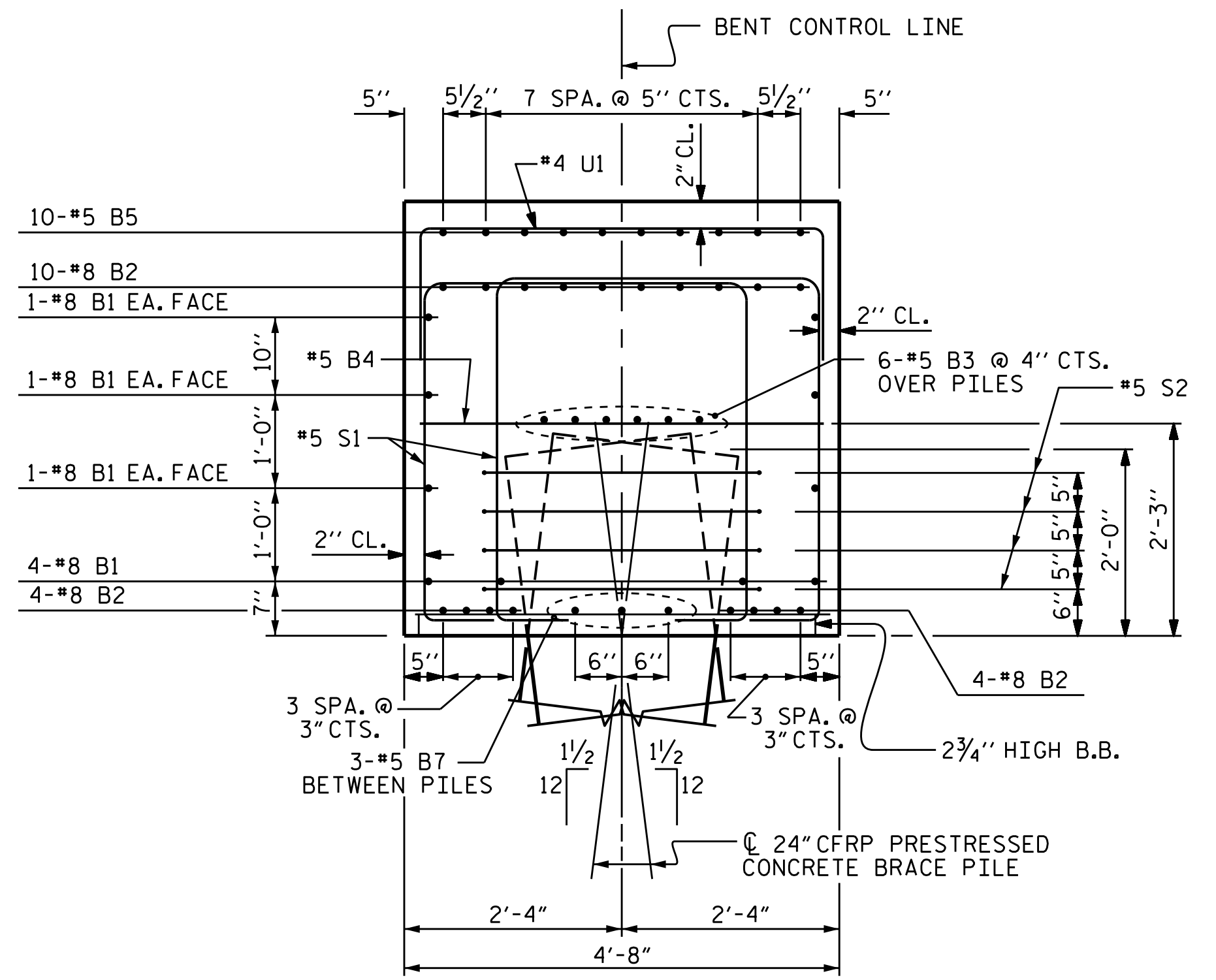


ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL					
BENT #25					
BAR	NO.	SIZE	TYPE	LENGTH	TOTAL LENGTH
B1	10	#8	STR	31'-8"	316'-8"
B2	18	#8	STR	34'-2"	615'-0"
B3	6	#5	STR	31'-8"	190'-0"
B4	8	#5	STR	4'-4"	34'-8"
B5	20	#5	STR	8'-9"	175'-0"
B6	10	#5	STR	5'-0"	50'-0"
B7	12	#5	STR	4'-6"	54'-0"
S1	88	#5	4	12'-6"	1100'-0"
S2	20	#5	2	12'-3"	245'-0"
U1	39	#4	1	7'-4"	286'-0"
U2	2	#8	1	11'-6"	23'-0"
U3	6	#4	1	7'-2"	43'-0"
U4	2	#4	1	6'-6"	13'-0"
U5	2	#4	3	5'-11"	11'-10"
U6	2	#4	1	7'-3"	14'-6"
U7	2	#4	3	6'-8"	13'-4"
TOTAL LIN. FT. # 4 BARS					381.7
TOTAL LIN. FT. # 5 BARS					1848.7
TOTAL LIN. FT. # 8 BARS					954.6
GLASS FIBER REINFORCED POLYMER BARS				TOTAL	3185.00 LIN. FT.
CLASS AA CONCRETE BREAKDOWN					
POUR #1 CAP					22.6 C.Y.
TOTAL CLASS AA CONCRETE					22.6 C.Y.



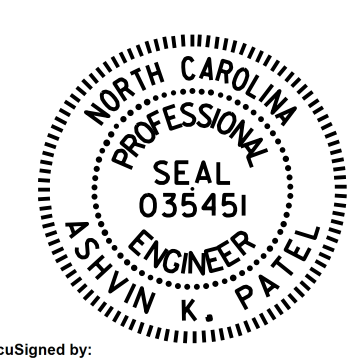
SECTION A-A



SECTION B-B

PROJECT NO. B-4863
CARTERET COUNTY
 STATION: 34+75.00 -L-

SHEET 2 OF 2



Designed by:
 Ashwin Patel
 771806561024403
 4/16/2021

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 BENT #25

DRAWN BY : T.L. AVERETTE DATE : 02/2019
 CHECKED BY : A.K. PATEL DATE : 12/2019
 DESIGN ENGINEER OF RECORD: A.K. PATEL DATE : 12/2019

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-182
1			3			TOTAL SHEETS
2			4			194

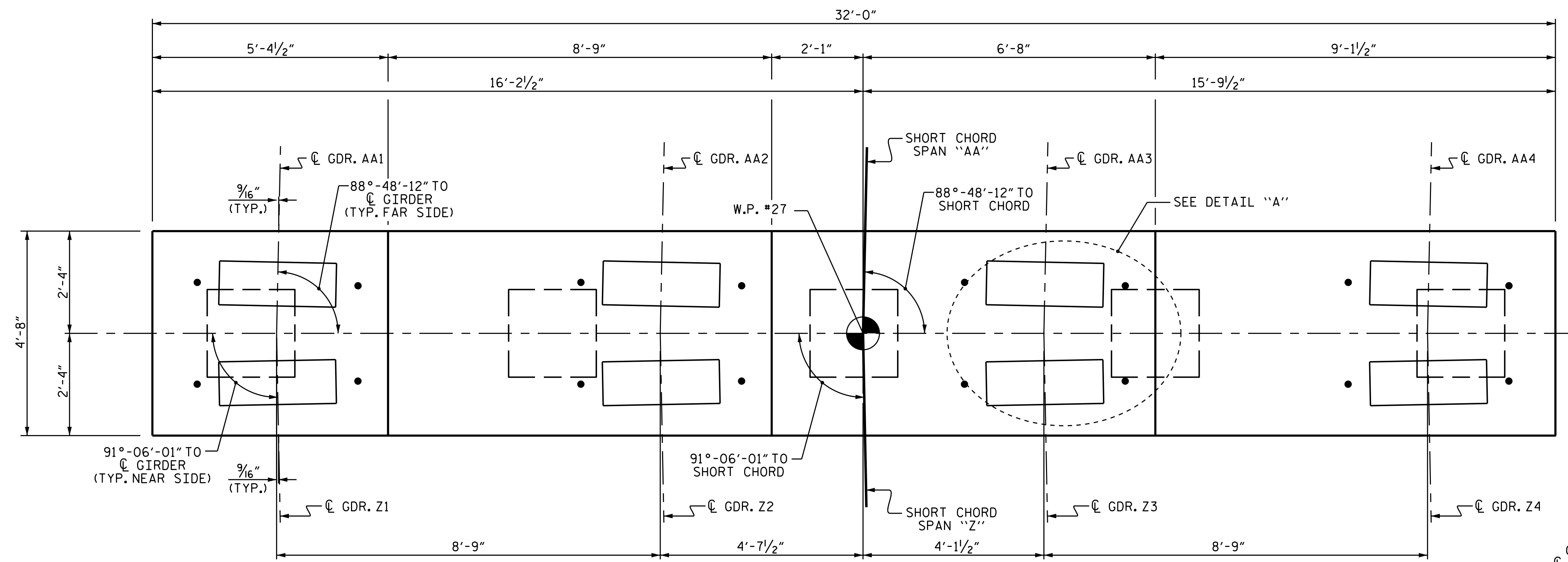
NOTES

STIRRUPS AND UI BARS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.

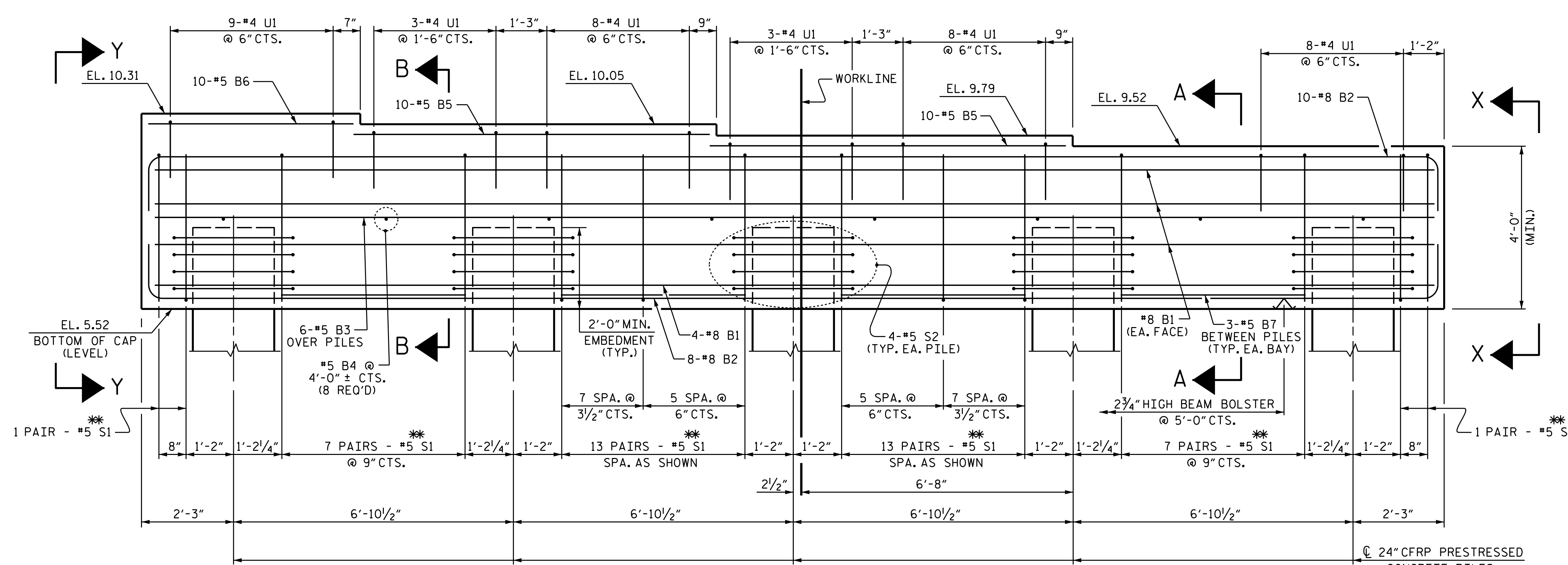
CONCRETE DISPLACED BY CONCRETE PILES HAS BEEN DEDUCTED FROM THE CAP CONCRETE QUANTITY.

THE TOP SURFACE AREAS OF THE BENT CAP SHALL BE CURED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS EXCEPT THE MEMBRANE CURING COMPOUND METHOD SHALL NOT BE USED.

ALL REINFORCING IN THE CAP IS TO BE GLASS FIBER REINFORCED POLYMER (GFRP) BARS. FOR GLASS FIBER REINFORCED POLYMER BARS, SEE SPECIAL PROVISIONS.



PLAN



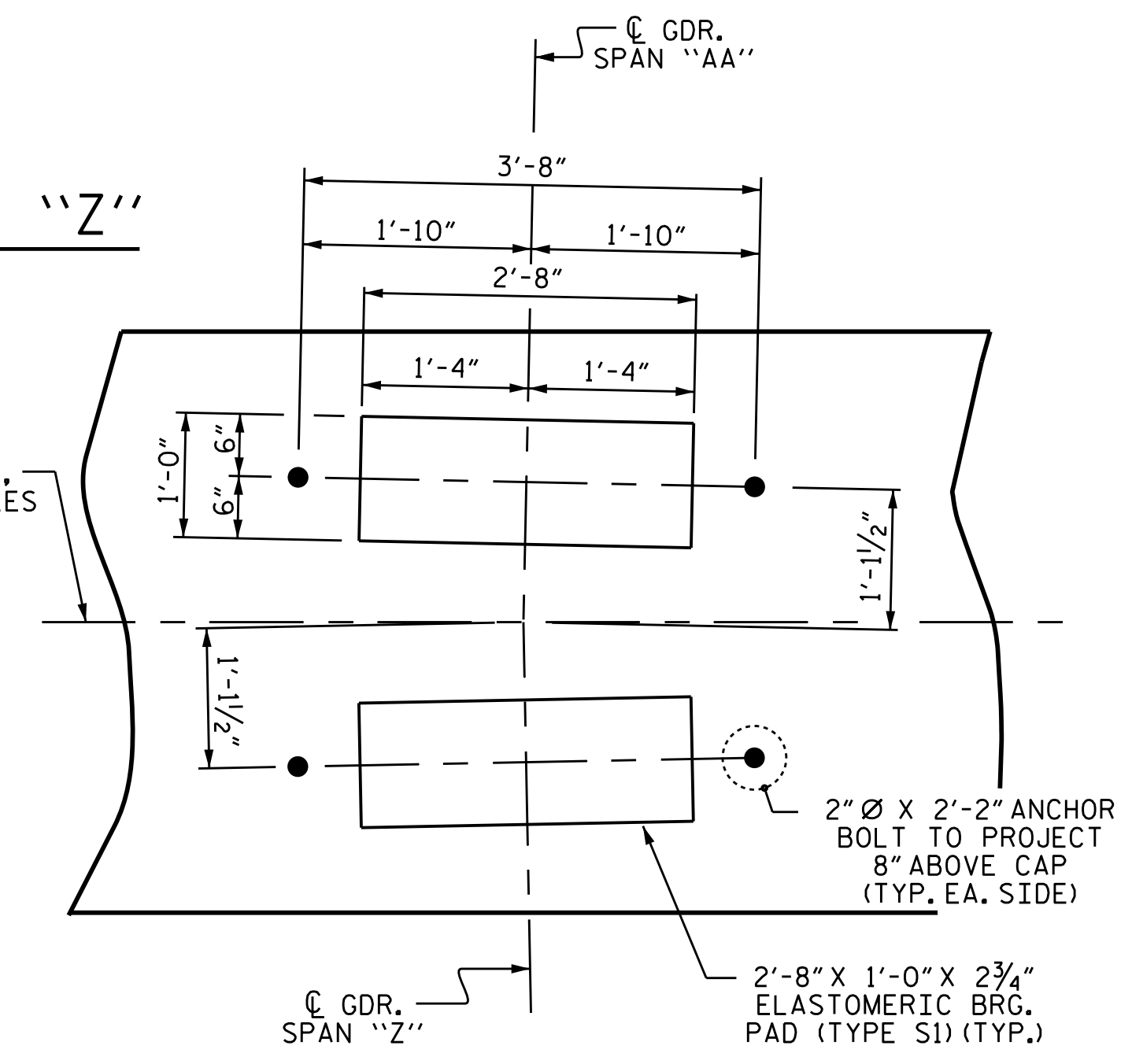
ELEVATION

FOR ADDITIONAL REINFORCING BARS IN ENDS OF CAP, SEE VIEW X-X AND VIEW Y-Y ON SHEET 2 OF 2.

**** INVERT ALTERNATE STIRRUPS**

SPAN "AA"

SPAN "Z"

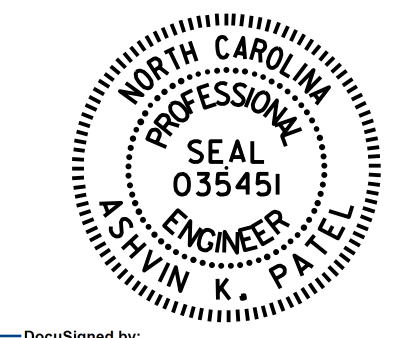


DETAIL "A"
(TYP. @ EACH GDR.)

PROJECT NO. B-4863
CARTERET COUNTY
 STATION: 34+75.00 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 BENT #26

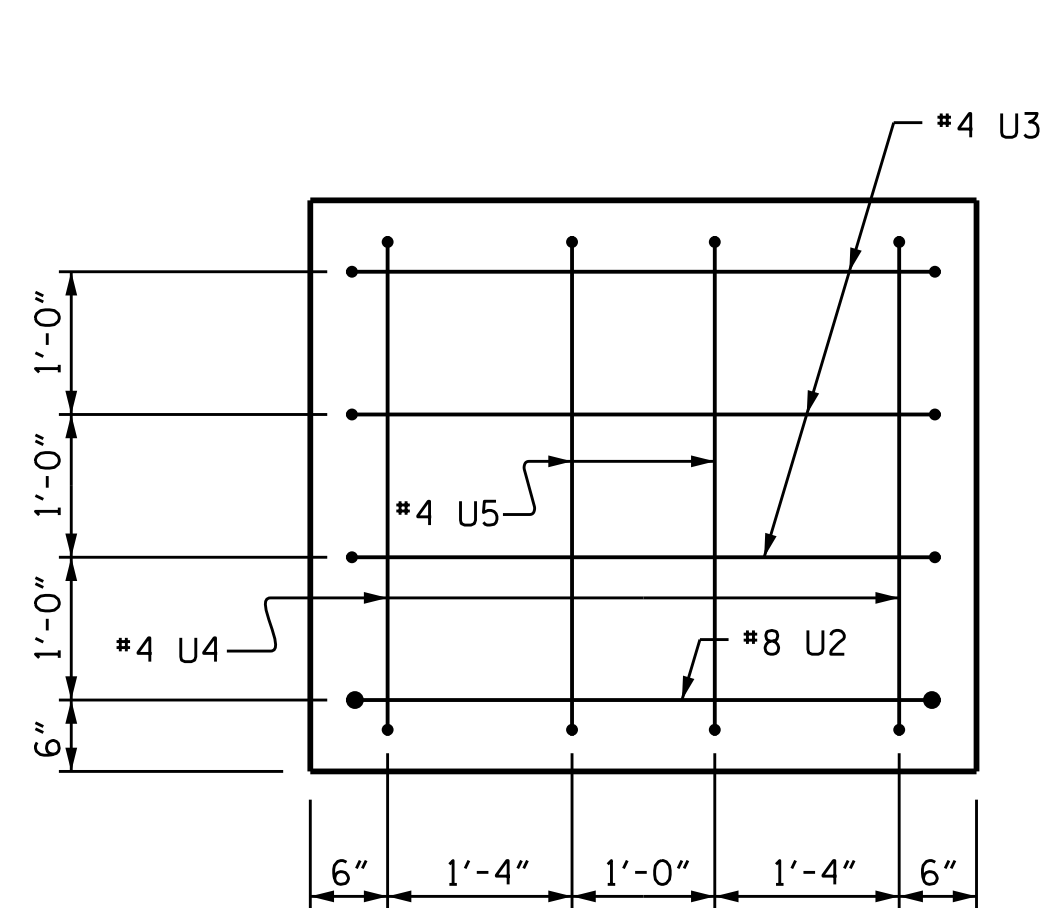


DocuSigned by:
 Ashwin Patel
 7F189E9610244ED3
 3/9/2020

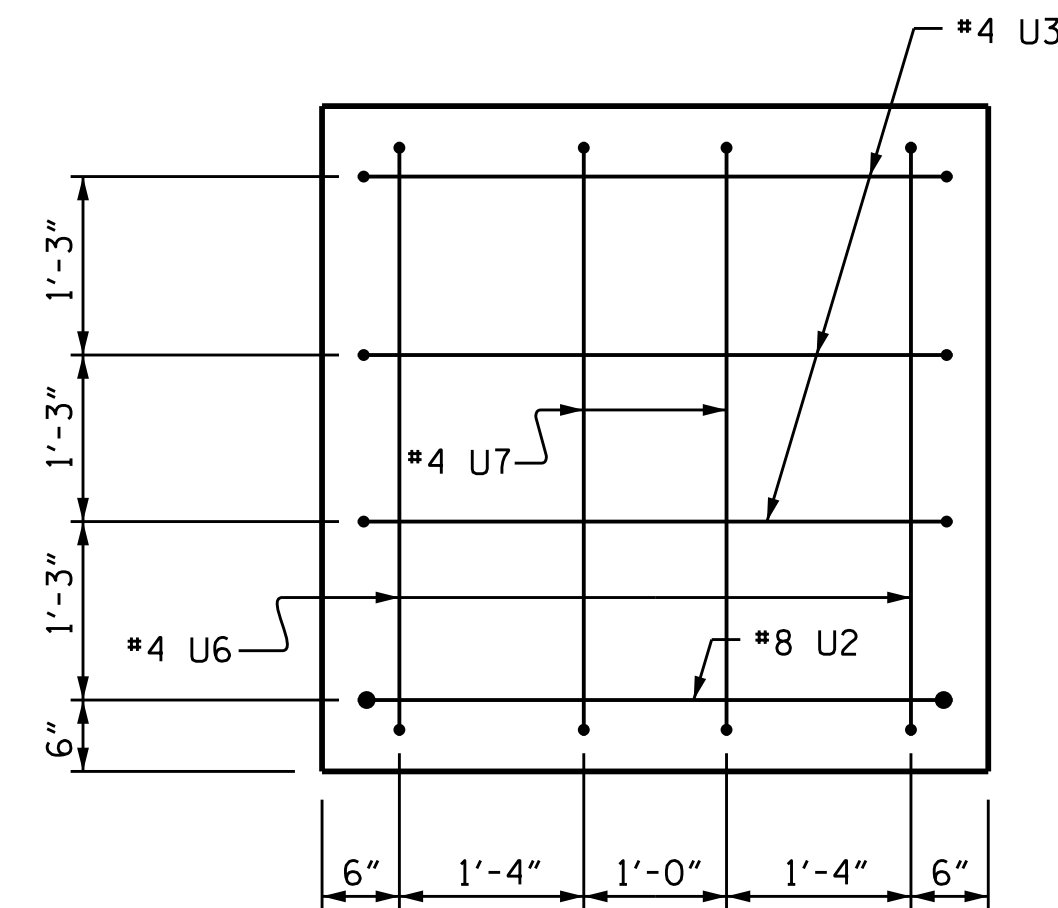
DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			S1-183
2			4			194

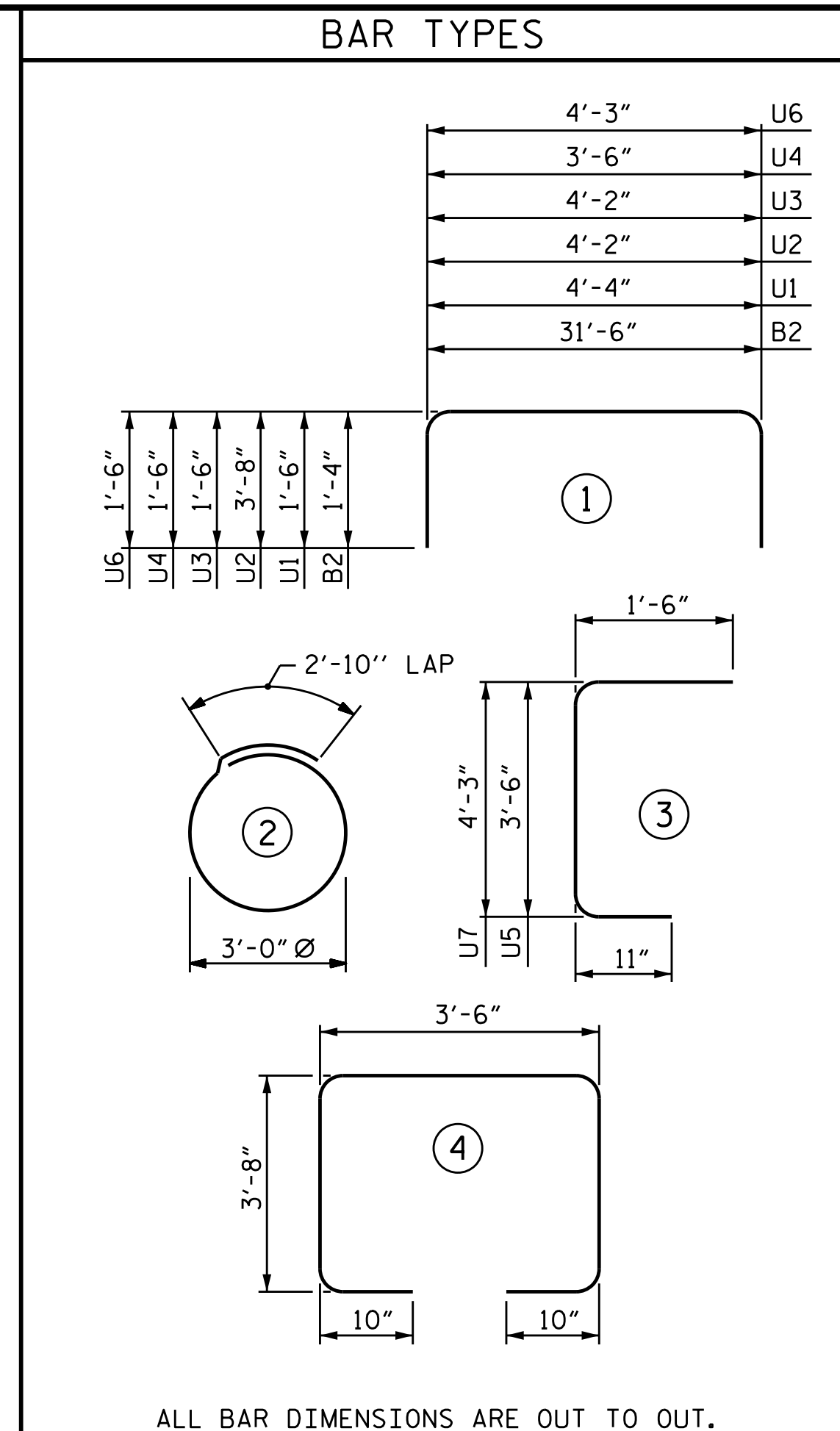
DRAWN BY : T.L. AVERETTE DATE : 02/2019
 CHECKED BY : A.K. PATEL DATE : 12/2019
 DESIGN ENGINEER OF RECORD: A.K. PATEL DATE : 12/2019



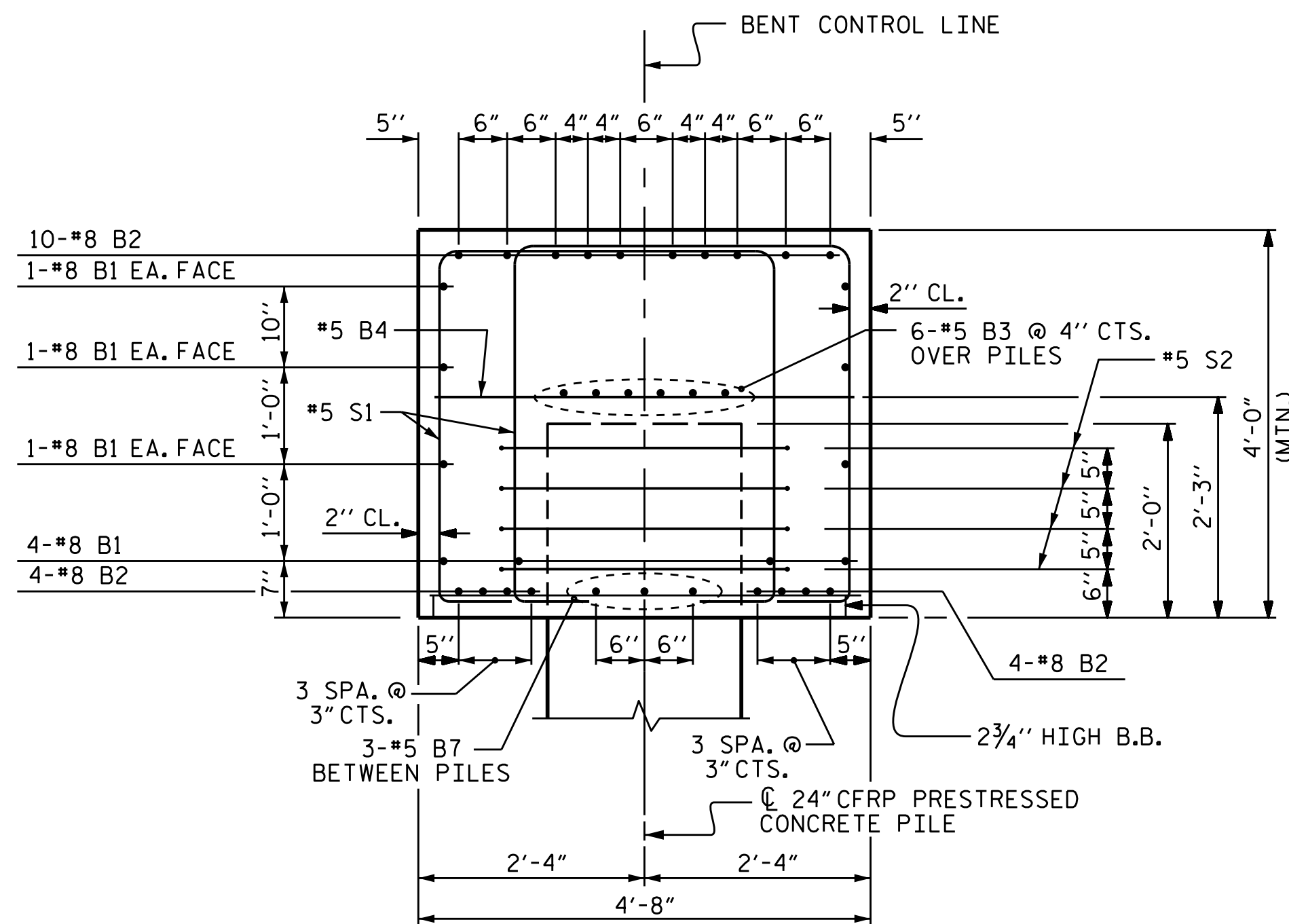
VIEW X-X



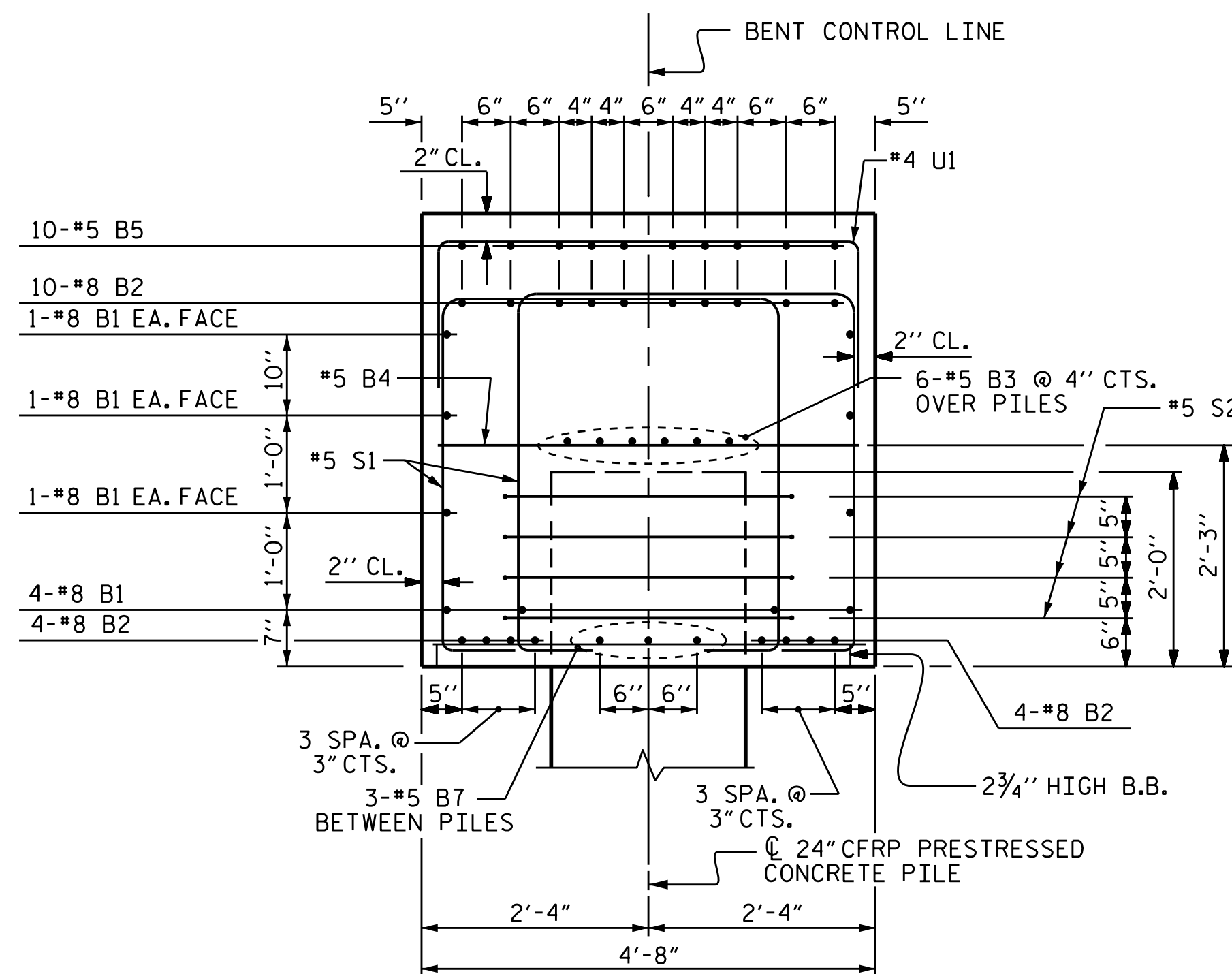
VIEW Y-Y



BILL OF MATERIAL					
BENT #26					
BAR	NO.	SIZE	TYPE	LENGTH	TOTAL LENGTH
B1	10	#8	STR	31'-8"	316'-8"
B2	18	#8	1	34'-2"	615'-0"
B3	6	#5	STR	31'-8"	190'-0"
B4	8	#5	STR	4'-4"	34'-8"
B5	20	#5	STR	8'-9"	175'-0"
B6	10	#5	STR	5'-0"	50'-0"
B7	12	#5	STR	4'-6"	54'-0"
S1	88	#5	4	12'-6"	1100'-0"
S2	20	#5	2	12'-3"	245'-0"
U1	39	#4	1	7'-4"	286'-0"
U2	2	#8	1	11'-6"	23'-0"
U3	6	#4	1	7'-2"	43'-0"
U4	2	#4	1	6'-6"	13'-0"
U5	2	#4	3	5'-11"	11'-10"
U6	2	#4	1	7'-3"	14'-6"
U7	2	#4	3	6'-8"	13'-4"
TOTAL LIN. FT. # 4 BARS					381.7
TOTAL LIN. FT. # 5 BARS					1848.7
TOTAL LIN. FT. # 8 BARS					954.6
GLASS FIBER REINFORCED POLYMER BARS				TOTAL	3185.00 LIN. FT.
CLASS AA CONCRETE BREAKDOWN					
POUR #1 CAP					22.6 C.Y.
TOTAL CLASS AA CONCRETE					22.6 C.Y.

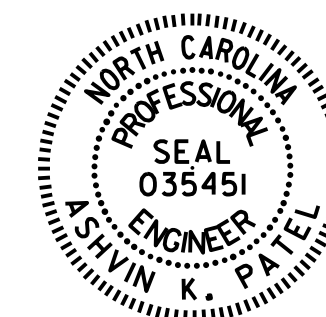


SECTION A-A



SECTION B-B

PROJECT NO. B-4863
CARTERET COUNTY
 STATION: 34+75.00 -L-
 SHEET 2 OF 2



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 BENT #26

DRAWN BY : T.L. AVERETTE DATE : 02/2019
 CHECKED BY : A.K. PATEL DATE : 12/2019
 DESIGN ENGINEER OF RECORD: A.K. PATEL DATE : 12/2019

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

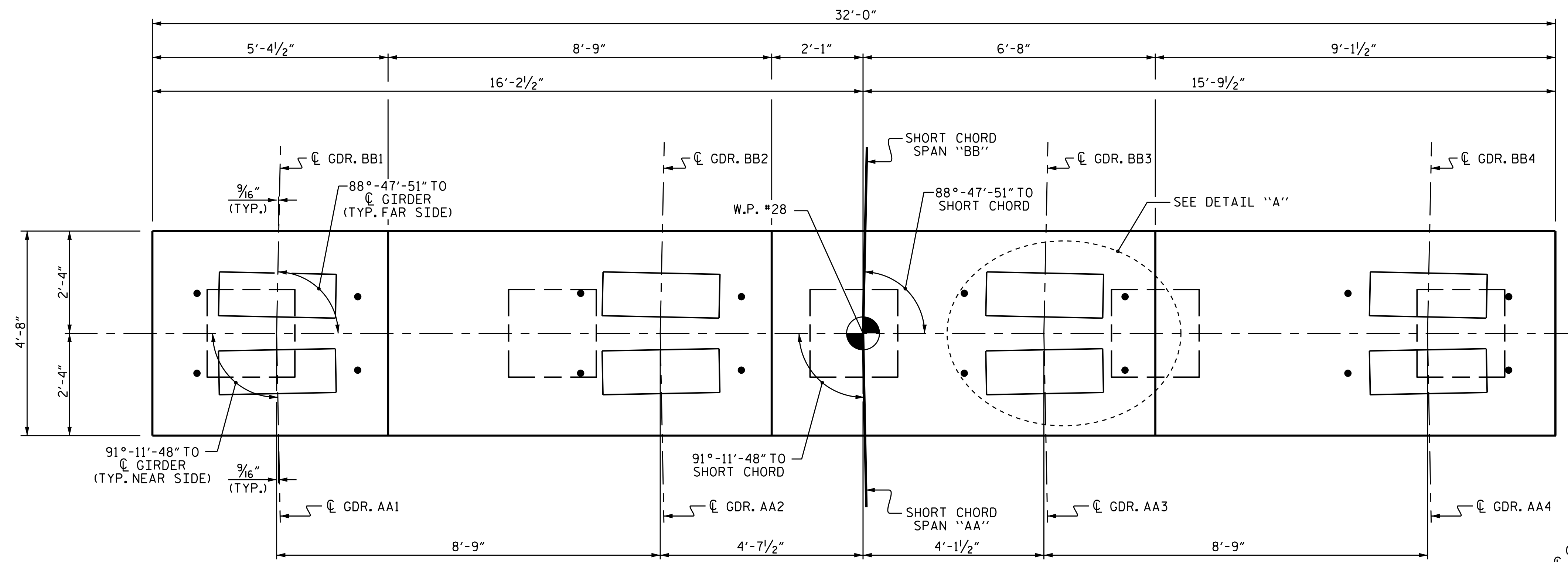
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-184
1			3			TOTAL SHEETS
2			4			194

NOTES

STIRRUPS AND UI BARS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.

CONCRETE DISPLACED BY CONCRETE PILES HAS BEEN DEDUCTED FROM THE CAP CONCRETE QUANTITY.

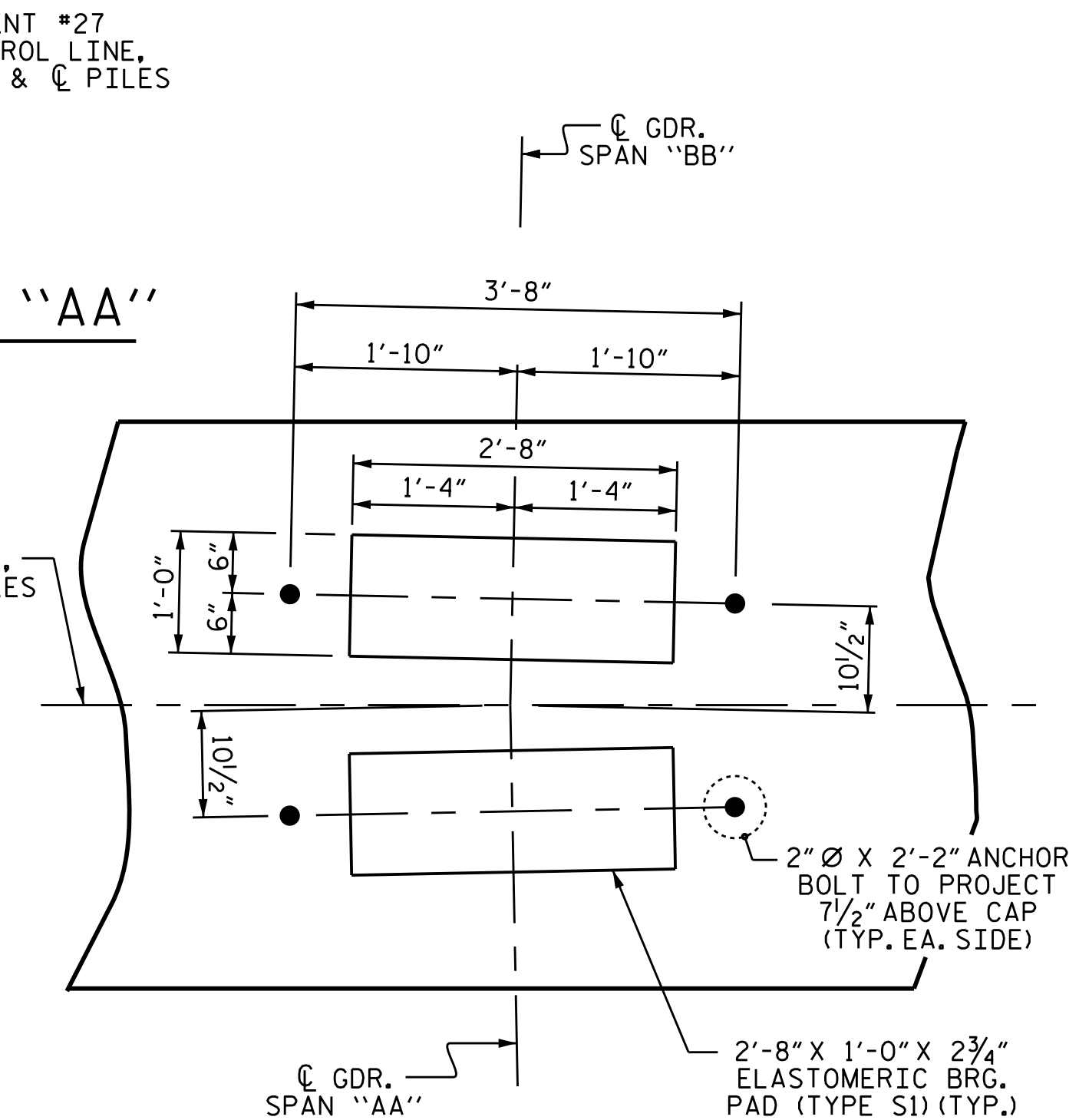
ALL REINFORCING IN THE CAP IS TO BE GLASS FIBER REINFORCED POLYMER (GFRP) BARS. FOR GLASS FIBER REINFORCED POLYMER BARS, SEE SPECIAL PROVISIONS.



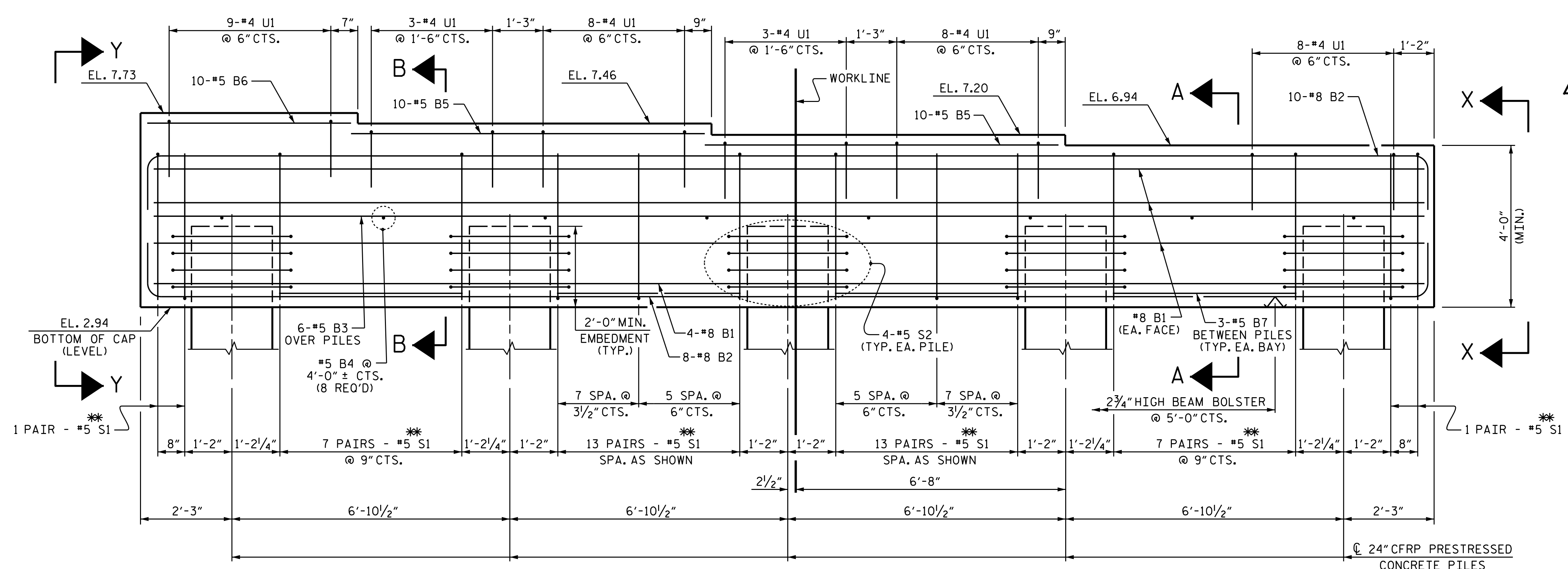
PLAN

SPAN "BB"

SPAN "AA"



DETAIL "A"
(TYP. @ EACH GDR.)



ELEVATION

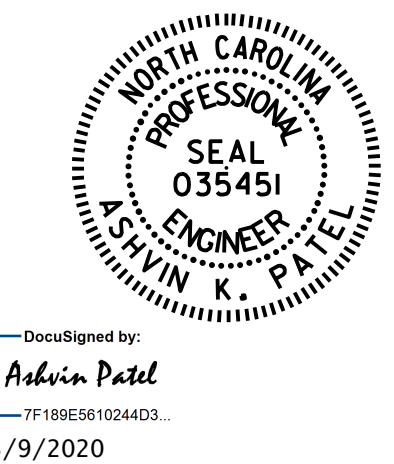
FOR ADDITIONAL REINFORCING BARS IN ENDS OF CAP, SEE VIEW X-X AND VIEW Y-Y ON SHEET 2 OF 2.

*** INVERT ALTERNATE STIRRUPS**

PROJECT NO. B-4863
CARTERET COUNTY
 STATION: 34+75.00 -L-

SHEET 1 OF 2

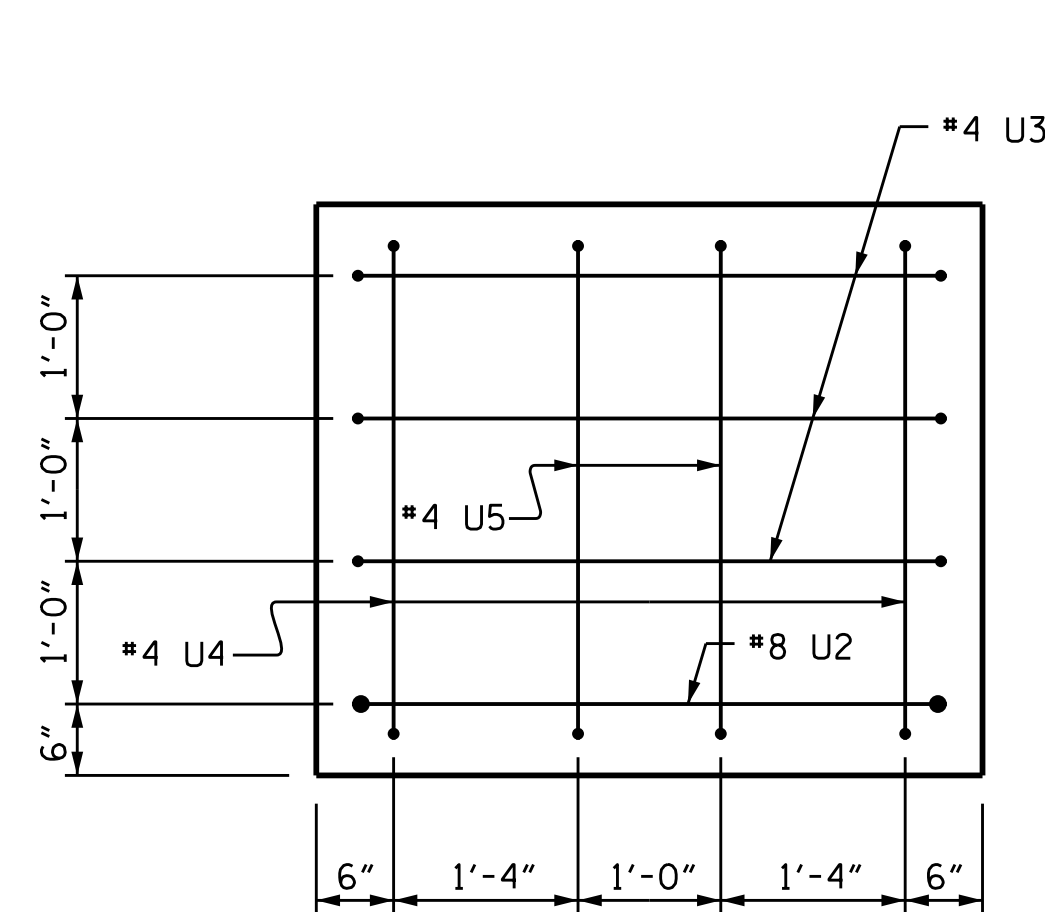
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 BENT #27



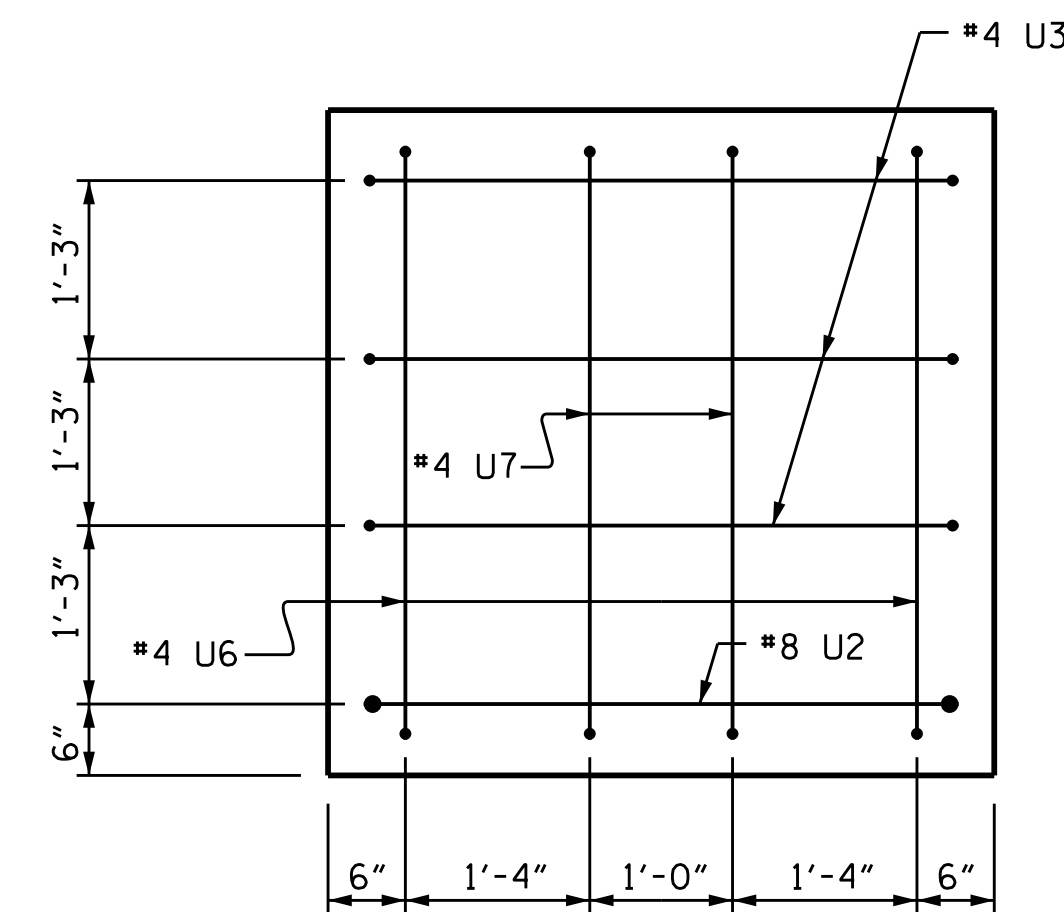
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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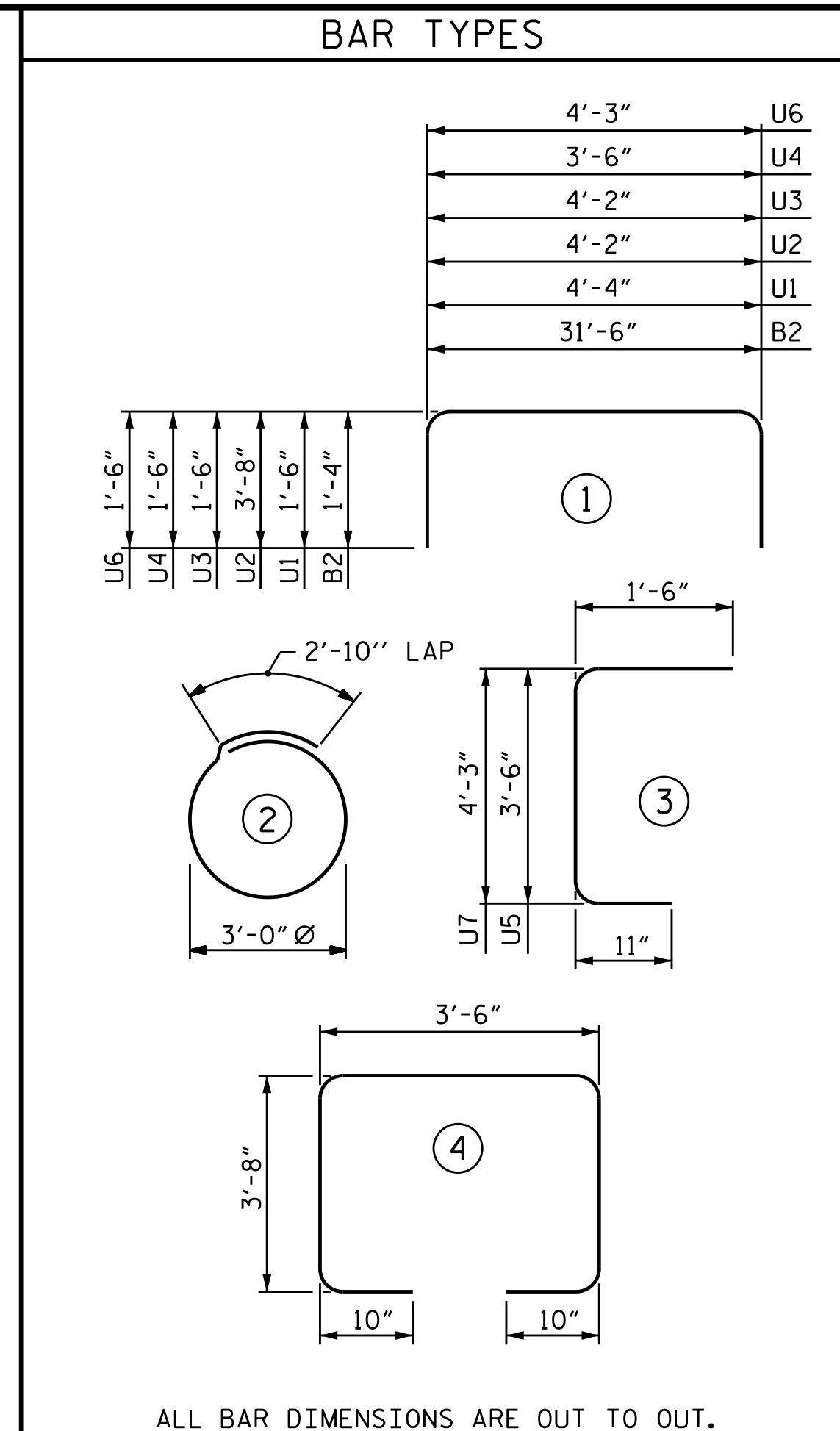
DRAWN BY: I.L. AVERETTE DATE: 02/2019
 CHECKED BY: A.K. PATEL DATE: 12/2019
 DESIGN ENGINEER OF RECORD: A.K. PATEL DATE: 12/2019



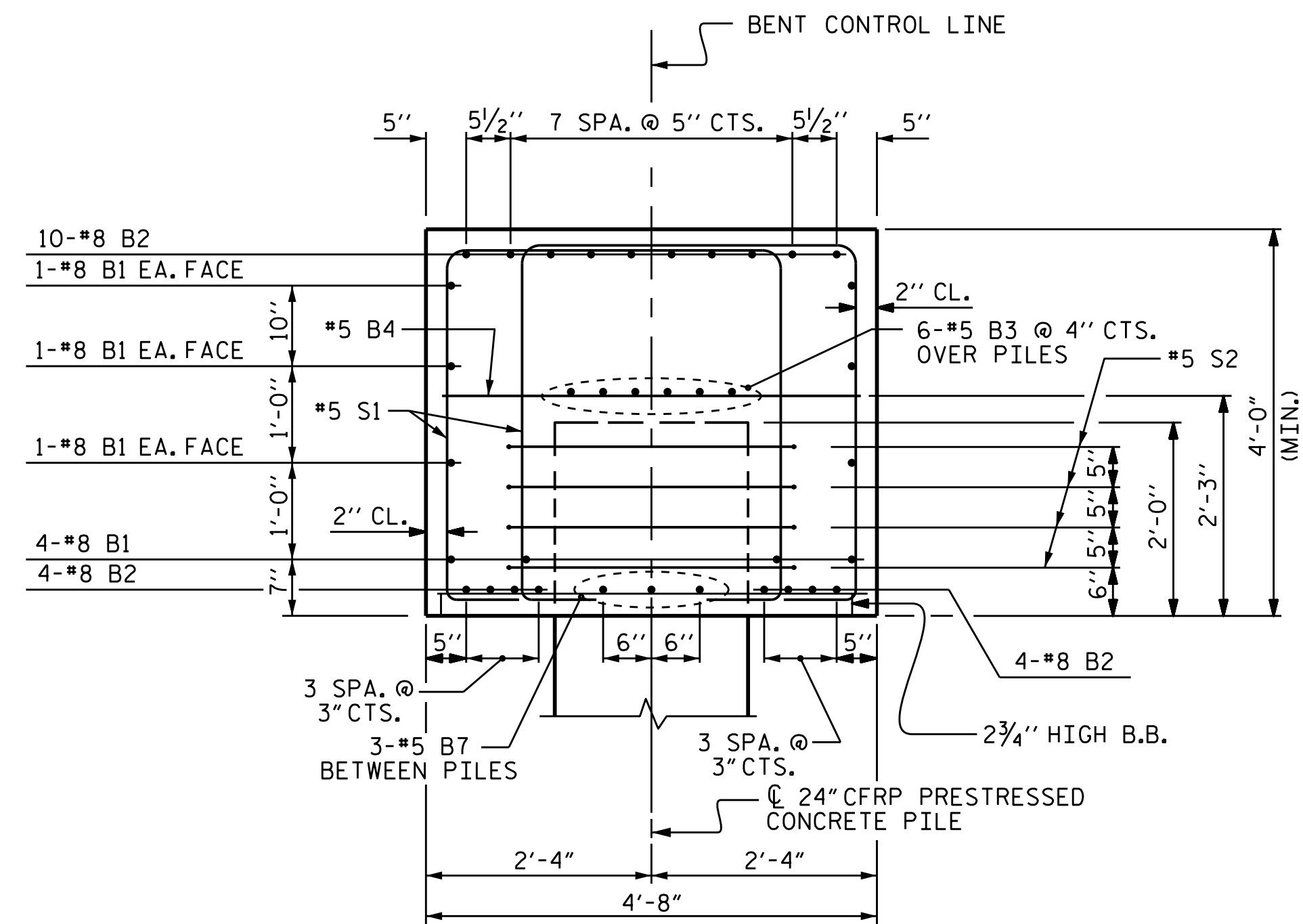
VIEW X-X



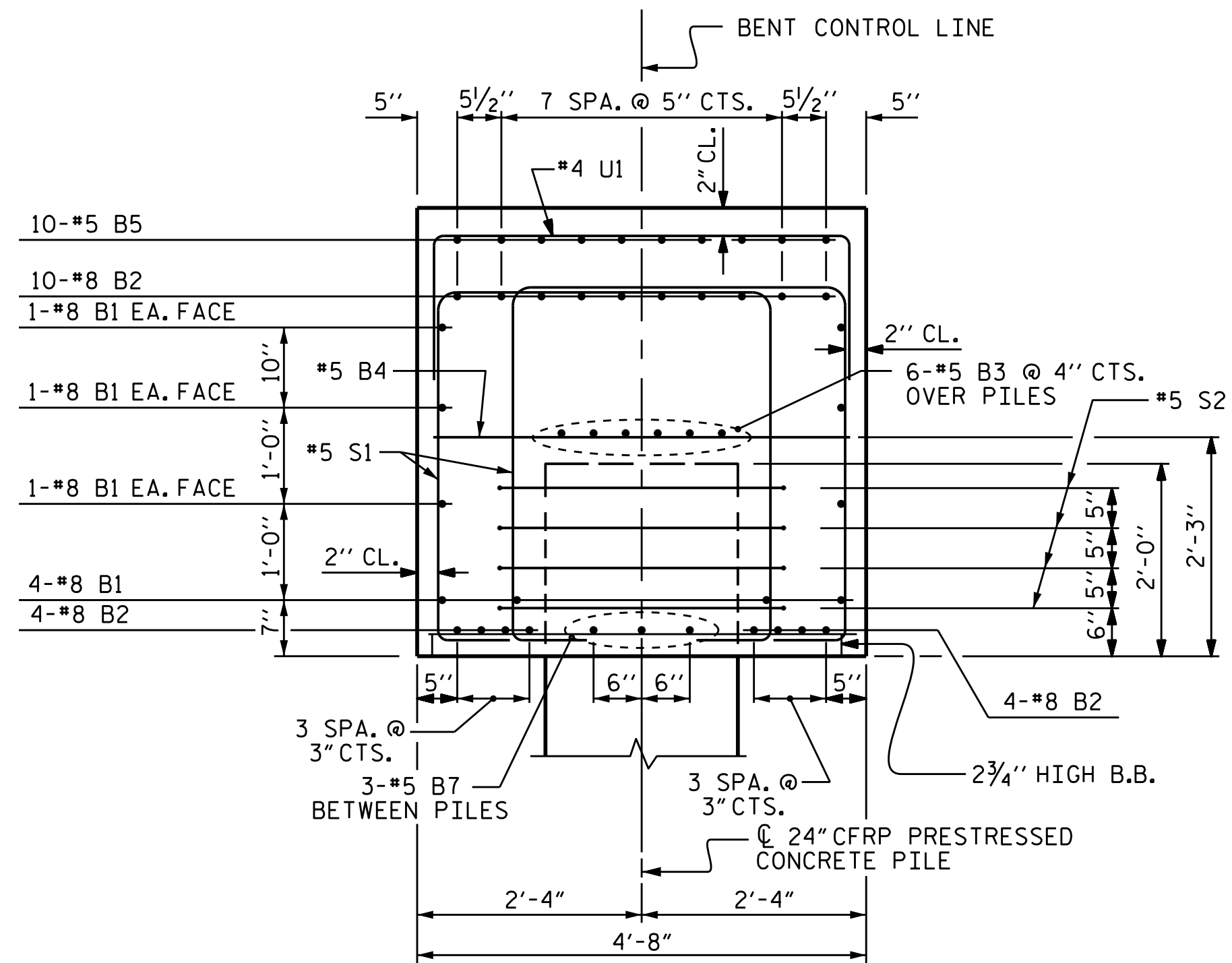
VIEW Y-Y



BILL OF MATERIAL					
BENT #27					
BAR	NO.	SIZE	TYPE	LENGTH	TOTAL LENGTH
B1	10	#8	STR	31'-8"	316'-8"
B2	18	#8		34'-2"	615'-0"
B3	6	#5	STR	31'-8"	190'-0"
B4	8	#5	STR	4'-4"	34'-8"
B5	20	#5	STR	8'-9"	175'-0"
B6	10	#5	STR	5'-0"	50'-0"
B7	12	#5	STR	4'-6"	54'-0"
S1	88	#5		12'-6"	1100'-0"
S2	20	#5		12'-3"	245'-0"
U1	39	#4		7'-4"	286'-0"
U2	2	#8		11'-6"	23'-0"
U3	6	#4		7'-2"	43'-0"
U4	2	#4		6'-6"	13'-0"
U5	2	#4		5'-11"	11'-10"
U6	2	#4		7'-3"	14'-6"
U7	2	#4		6'-8"	13'-4"
TOTAL LIN. FT. # 4 BARS					381.7
TOTAL LIN. FT. # 5 BARS					1848.7
TOTAL LIN. FT. # 8 BARS					954.6
GLASS FIBER REINFORCED POLYMER BARS					TOTAL 3185.00 LIN. FT.
CLASS AA CONCRETE BREAKDOWN					
POUR #1 CAP					22.6 C.Y.
TOTAL CLASS AA CONCRETE					22.6 C.Y.

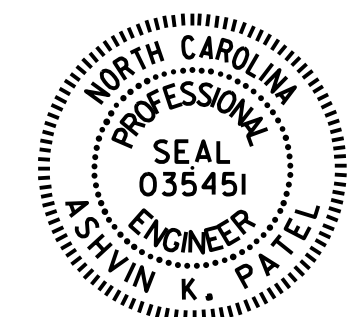


SECTION A-A



SECTION B-B

PROJECT NO. B-4863
CARTERET COUNTY
 STATION: 34+75.00 -L-
 SHEET 2 OF 2



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 BENT #27

DRAWN BY : T.L. AVERETTE DATE : 02/2019
 CHECKED BY : A.K. PATEL DATE : 12/2019
 DESIGN ENGINEER OF RECORD: A.K. PATEL DATE : 12/2019

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-186
1			3			TOTAL SHEETS
2			4			194

13-APR-2021 11:35
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 akpatel

NOTES

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.

BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING.

THE TOP SURFACE AREAS OF THE END BENT CAPS SHALL BE CURED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS EXCEPT THE MEMBRANE CURING COMPOUND METHOD SHALL NOT BE USED.

THE TOP SURFACE OF THE CAP EXCEPT THE BRIDGE SEAT BUILDUPS SHALL BE SLOPED TRANSVERSELY FROM THE FILL FACE TO THE BACK FACE AT THE RATE OF 2%.

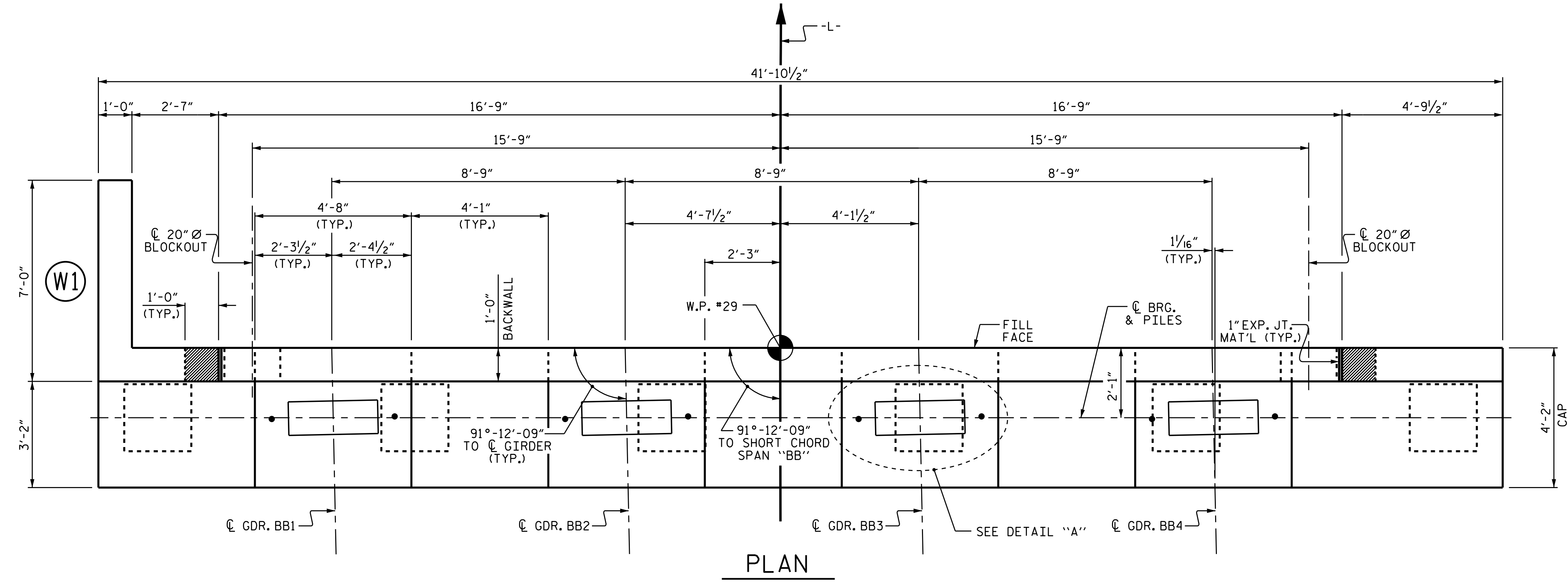
THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE JOINT BETWEEN THE DECK AND THE APPROACH SLAB HAS BEEN SAWED AND THE PARAPET AND END POST ARE CAST IF SLIP FORMING IS USED.

CONCRETE DISPLACED BY CONCRETE PILES AND BLOCKOUTS HAS BEEN DEDUCTED FROM THE CAP CONCRETE QUANTITY.

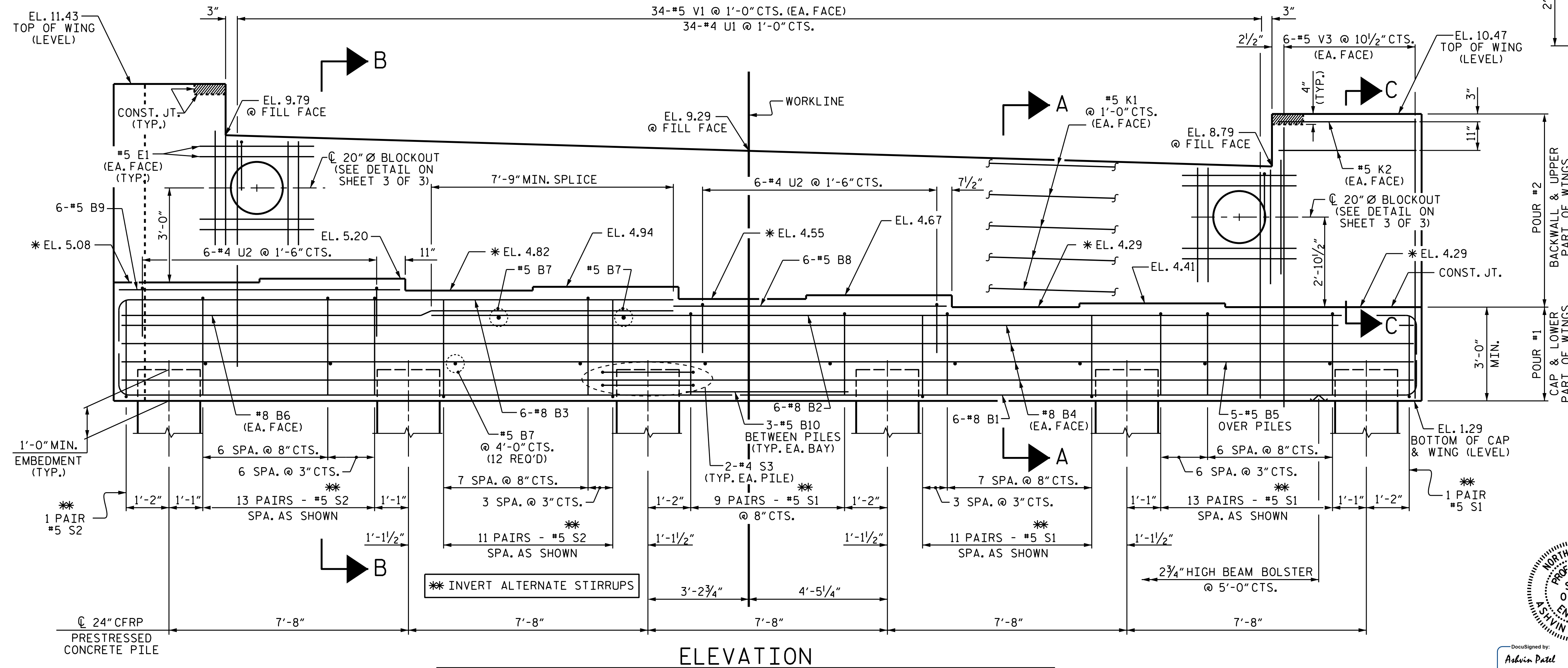
ALL REINFORCING IN THE CAP IS TO BE GLASS FIBER REINFORCED POLYMER (GFRP) BARS. FOR GLASS FIBER REINFORCED POLYMER BARS, SEE SPECIAL PROVISIONS.

CENTER UTILITY IN BLOCKOUT AND FILL ANNULAR SPACE AROUND UTILITY PIPE WITH JOINT FILLER IN ACCORDANCE WITH STANDARD SPECIFICATIONS ARTICLE 1028-1.

THE CONTRACTOR SHALL PROVIDE FOR INSTALLATION OF THE STRUCTURE DRAINAGE SYSTEM BLOCKOUTS IN THE BACKWALL. REINFORCING IN THE BACKWALL MAY BE SHIFTED OR CUT AS NECESSARY TO PROVIDE FOR THE STRUCTURE DRAINAGE SYSTEM BLOCKOUTS. SEE STRUCTURE DRAINAGE SYSTEM SHEETS FOR DETAILS.

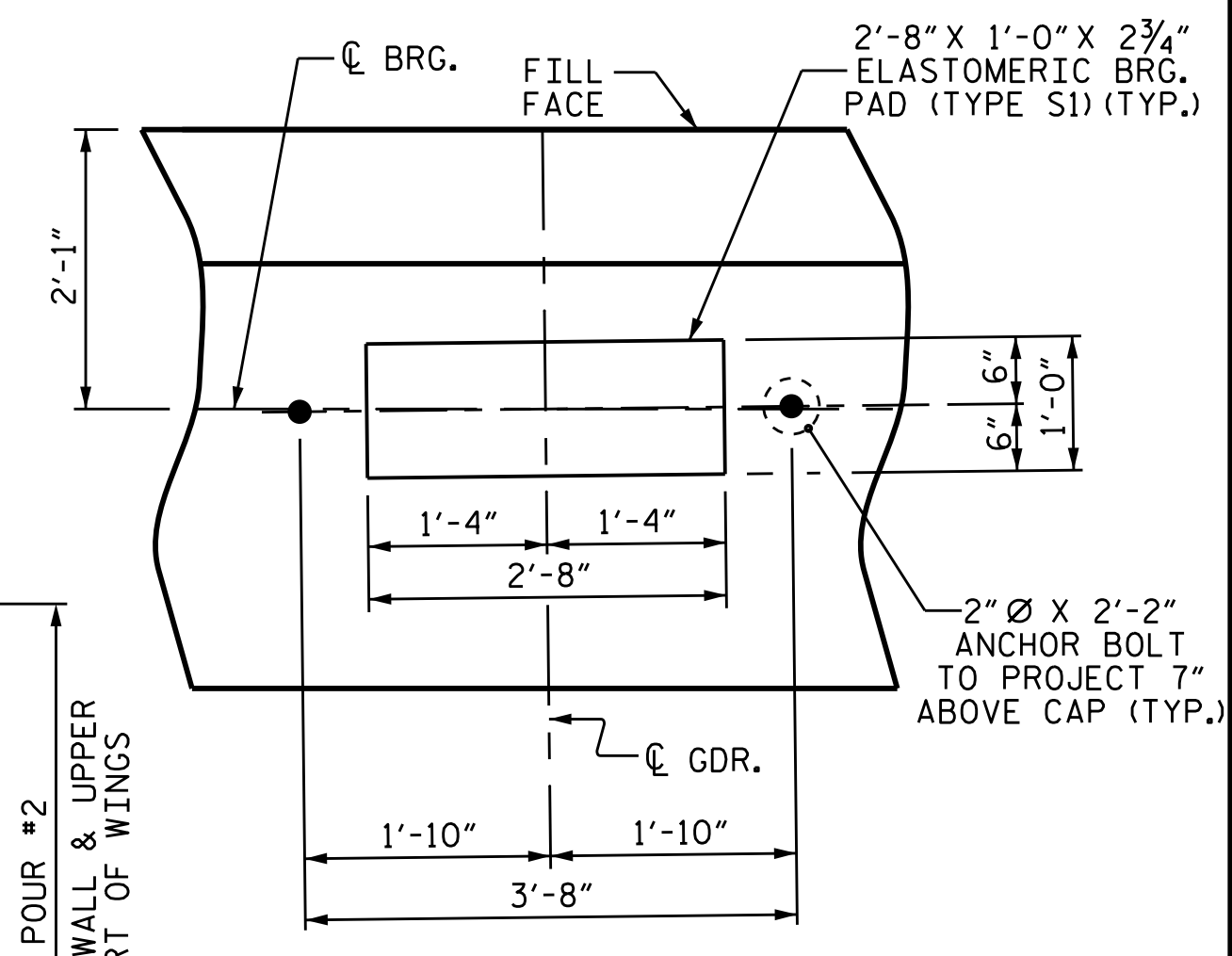


PLAN



ELEVATION

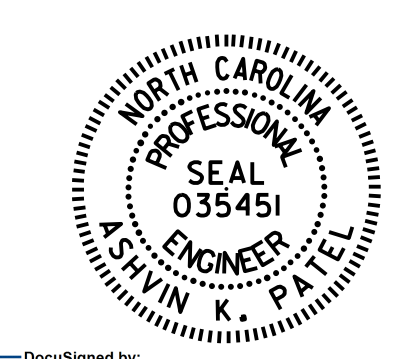
*FOR LOCATION OF ELEVATIONS BETWEEN BRIDGE SEAT BUILD-UPS, SEE SECTION A-A, SHEET 3 OF 3.



DETAIL "A"
(TYP. @ EACH GDR.)

PROJECT NO. B-4863
CARTERET COUNTY
 STATION: 34+75.00 -L-

SHEET 1 OF 3



DocuSigned by:
 Ashwin Patel
 7F189E5610244D3
 3/9/2020

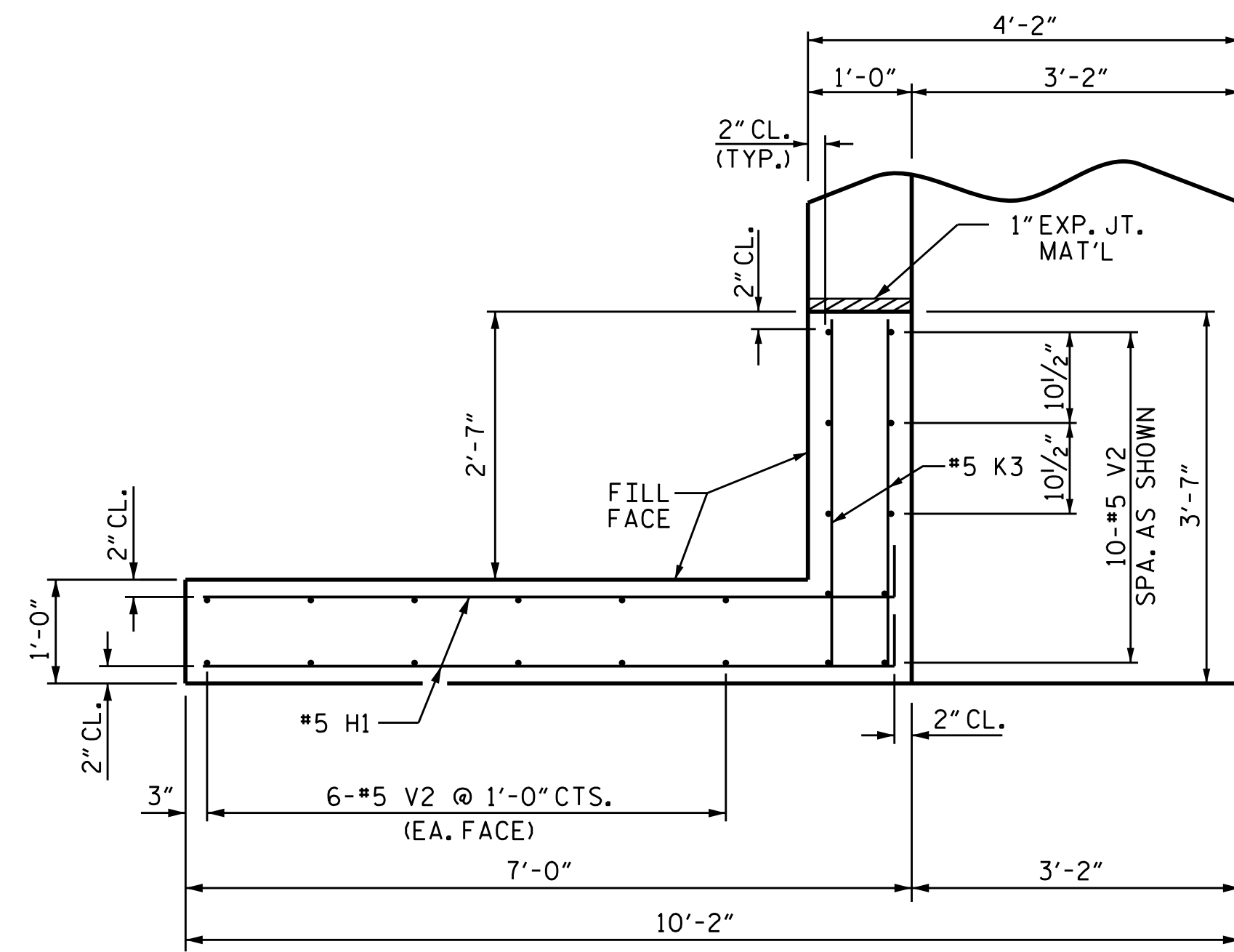
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
END BENT #2

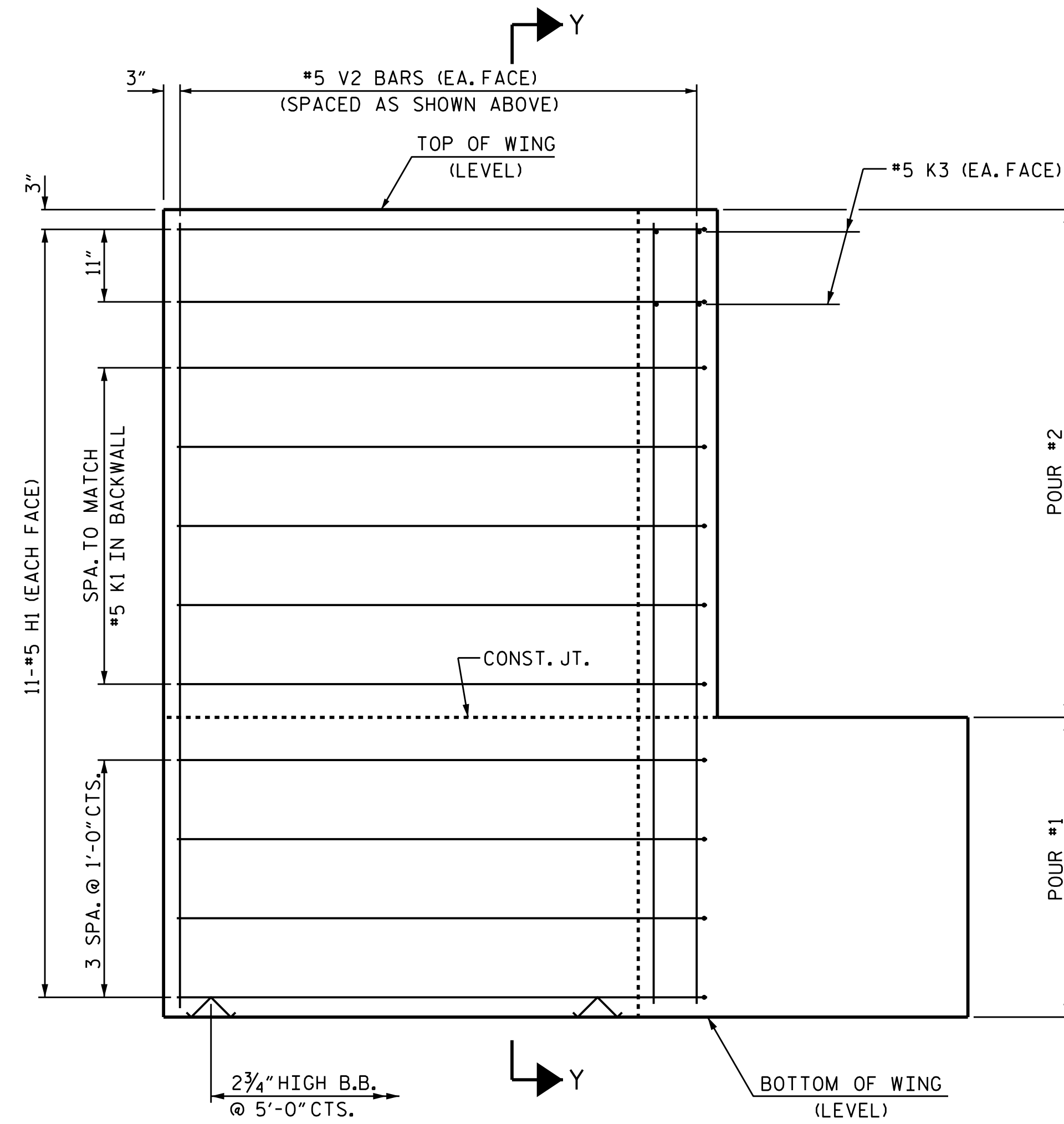
DRAWN BY : I.L. AVERETTE DATE : 12/2018
 CHECKED BY : A.K. PATEL DATE : 11/2019
 DESIGN ENGINEER OF RECORD : A.K. PATEL DATE : 11/2019

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

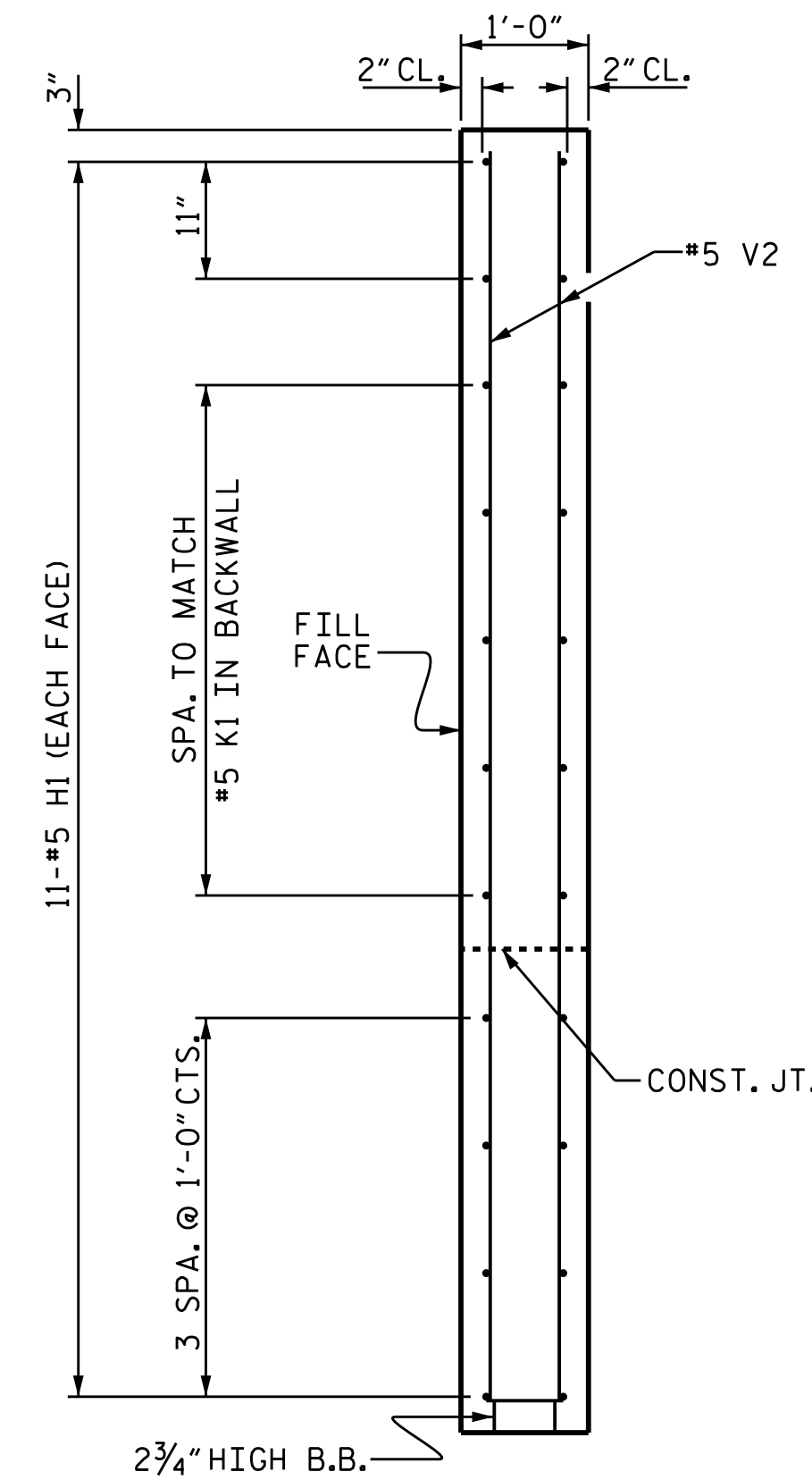
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			S1-187
2			4			194



PLAN OF WING (W1)



ELEVATION OF WING (W1)



SECTION Y-Y

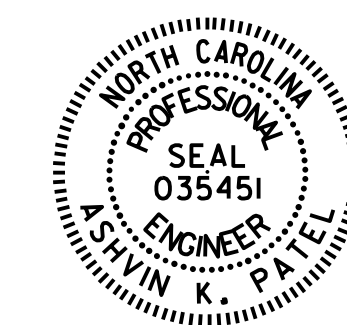
WING DETAILS

DRAWN BY : T.L. AVERETTE DATE : 12/2018
 CHECKED BY : A.K. PATEL DATE : 11/2019
 DESIGN ENGINEER OF RECORD: A.K. PATEL DATE : 11/2019

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 bbarodawala

PROJECT NO. B-4863
CARTERET COUNTY
 STATION: 34+75.00 -L-

SHEET 2 OF 3



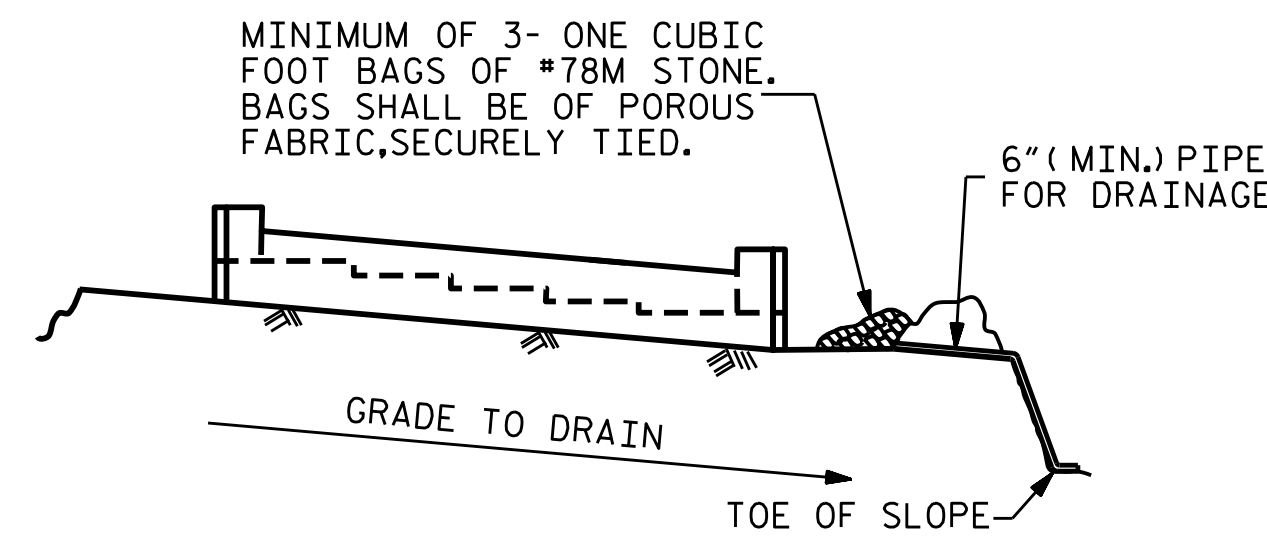
DocuSigned by:
 Ashwin Patel
 7F189E5E10244E33
 3/9/2020

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT #2

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
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2			4			194

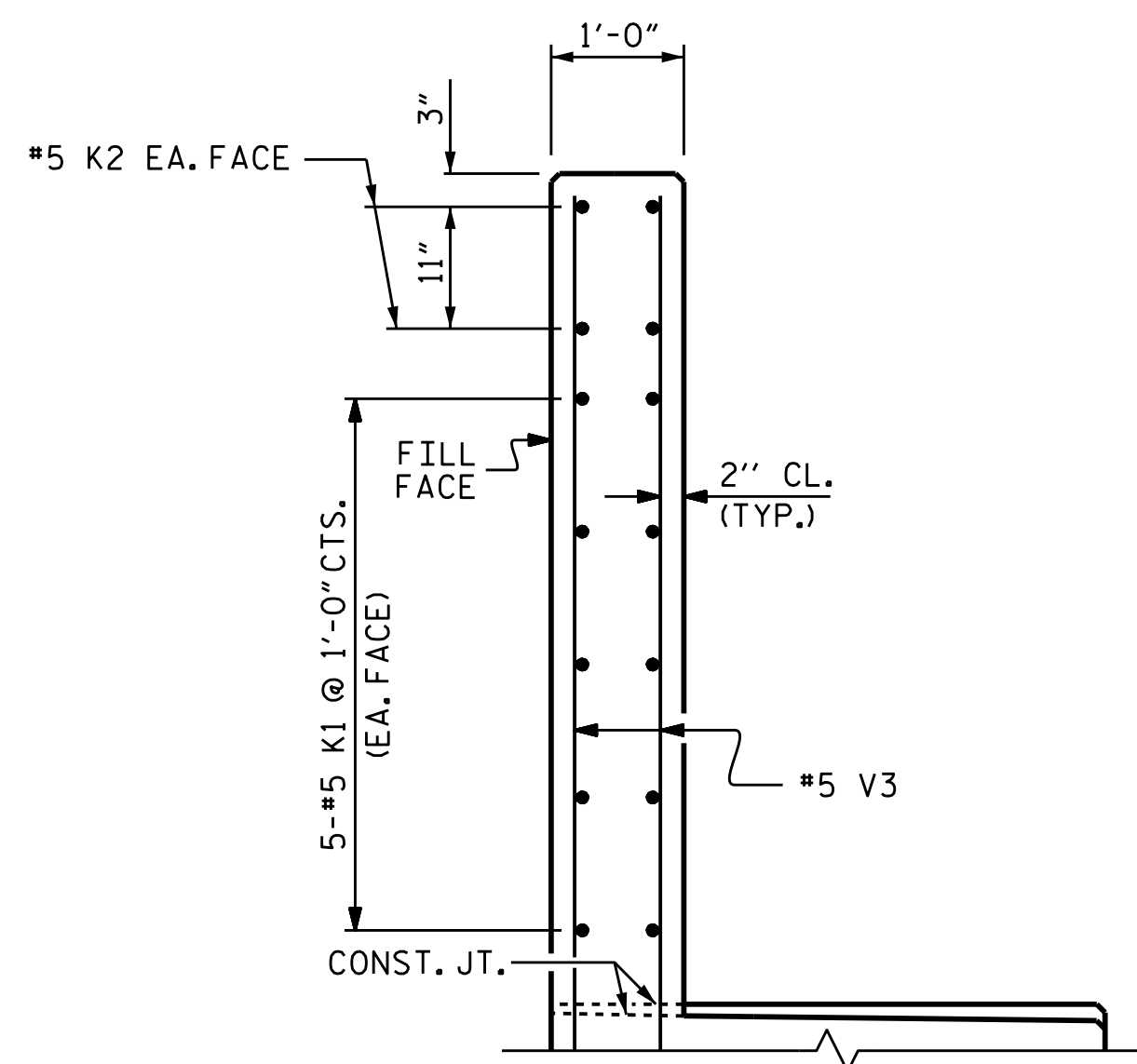


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

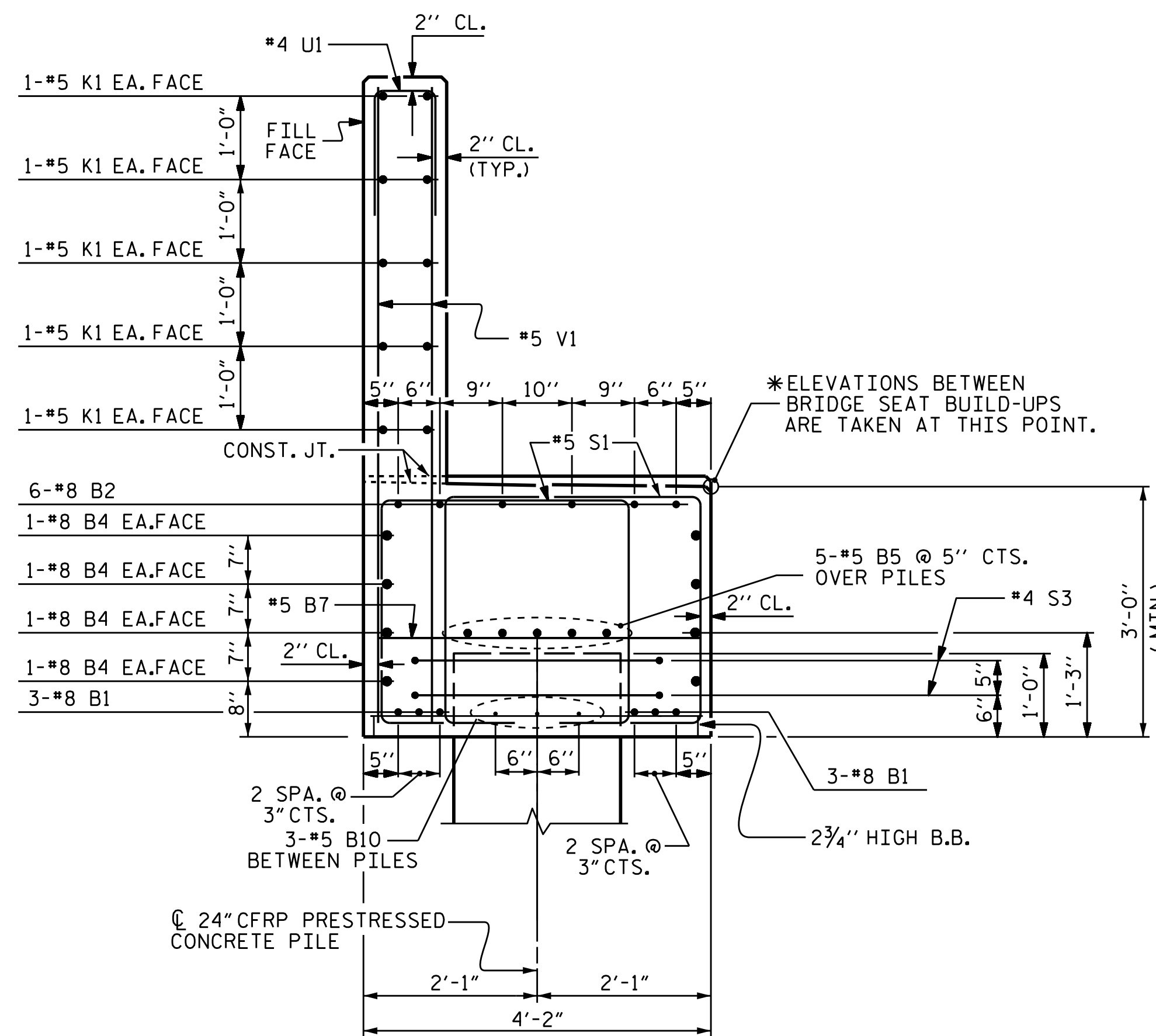
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR EFFECTIVENESS.

NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

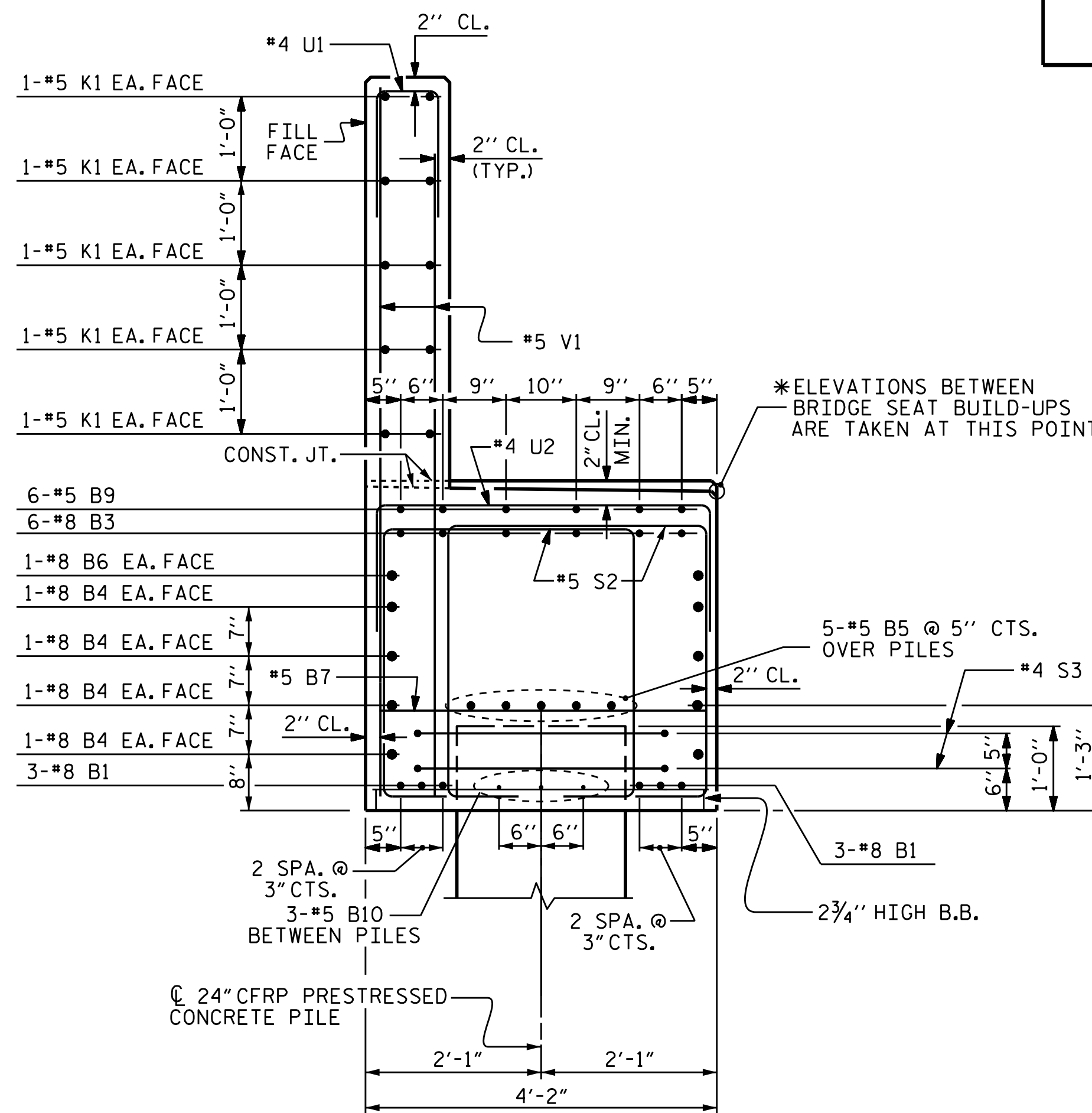
TEMPORARY DRAINAGE AT END BENT



PARTIAL SECTION C-C



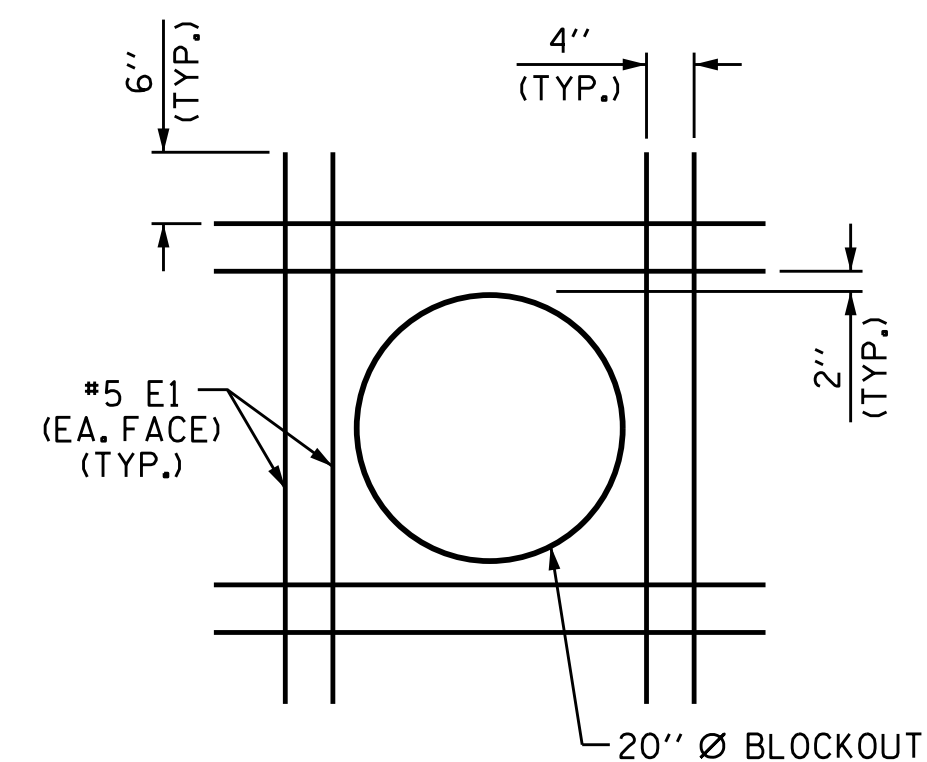
SECTION A-A



SECTION B-B

BAR TYPES		BILL OF MATERIAL			
END BENT #2					
BAR	NO.	SIZE	TYPE	LENGTH	TOTAL LENGTH
B1	6	#8	1	44'-0"	264'-0"
B2	6	#8	3	32'-11"	197'-6"
B3	6	#8	3	19'-1"	114'-6"
B4	8	#8	STR	41'-6"	332'-0"
B5	5	#5	STR	41'-6"	207'-6"
B6	2	#8	STR	17'-9"	35'-6"
B7	12	#5	STR	3'-10"	46'-0"
B8	6	#5	STR	8'-9"	52'-6"
B9	6	#5	STR	9'-0"	54'-0"
B10	15	#5	STR	5'-4"	80'-0"
E1	32	#5	STR	3'-8"	117'-4"
H1	22	#5	3	7'-7"	166'-10"
K1	10	#5	STR	41'-6"	415'-0"
K2	4	#5	STR	4'-5"	17'-8"
K3	4	#5	STR	3'-3"	13'-0"
S1	68	#5	4	10'-0"	680'-0"
S2	50	#5	4	11'-0"	550'-0"
S3	12	#4	2	12'-3"	147'-0"
U1	34	#4	1	3'-8"	124'-8"
U2	12	#4	1	6'-10"	82'-0"
V1	68	#5	STR	7'-1"	481'-8"
V2	22	#5	STR	9'-9"	214'-6"
V3	12	#5	STR	8'-10"	106'-0"
TOTAL LIN. FT. # 4 BARS				353.7	
TOTAL LIN. FT. # 5 BARS				3202.0	
TOTAL LIN. FT. # 8 BARS				943.5	
GLASS FIBER REINFORCED POLYMER BARS				TOTAL	4499.17 LIN. FT.

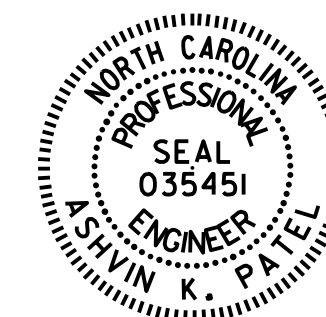
ALL BAR DIMENSIONS ARE OUT TO OUT.



DETAIL OF REINFORCING AROUND 16" Ø PIPE

PROJECT NO. B-4863
CARTERET COUNTY
 STATION: 34+75.00 -L-

SHEET 3 OF 3



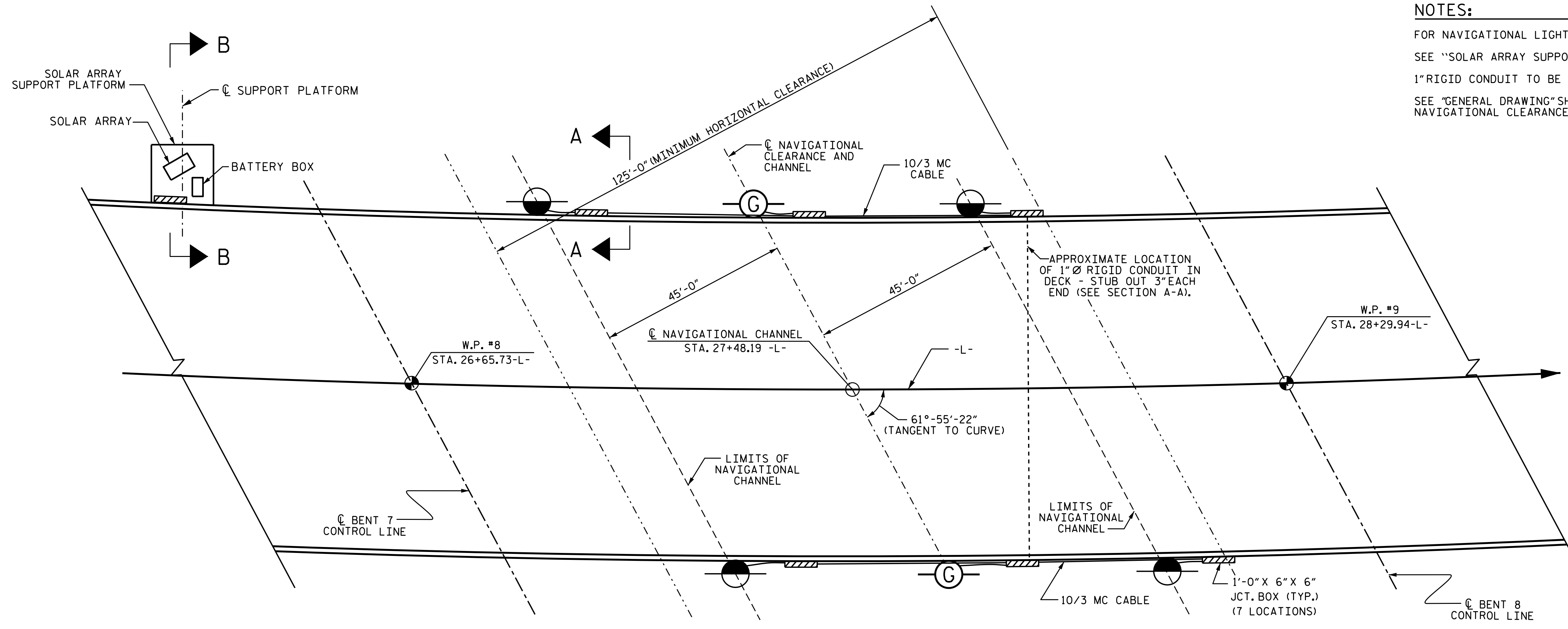
Designed by: Ashwin Patel
 771806561024403
 4/16/2021

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 END BENT #2

DRAWN BY : T.L. AVERETTE DATE : 12/2018
 CHECKED BY : A.K. PATEL DATE : 11/2019
 DESIGN ENGINEER OF RECORD: A.K. PATEL DATE : 11/2019

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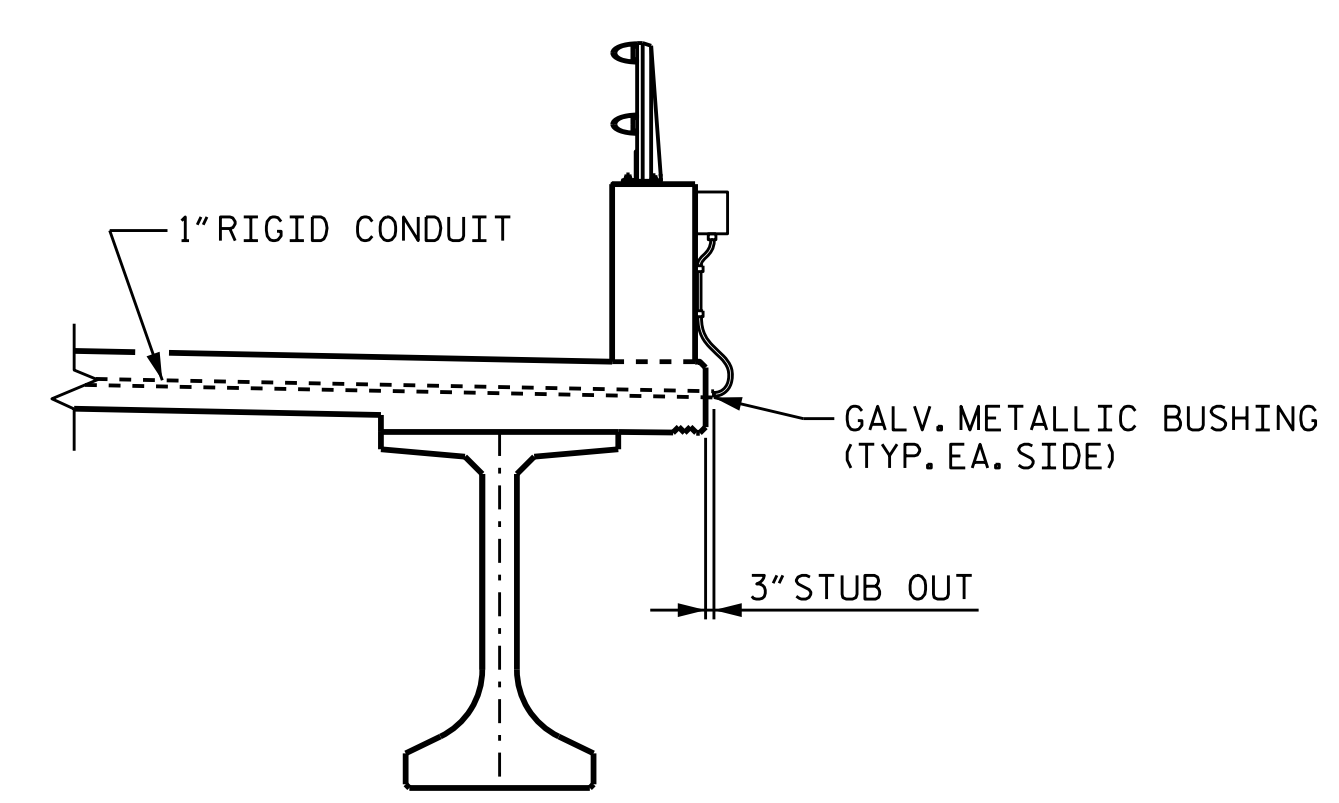
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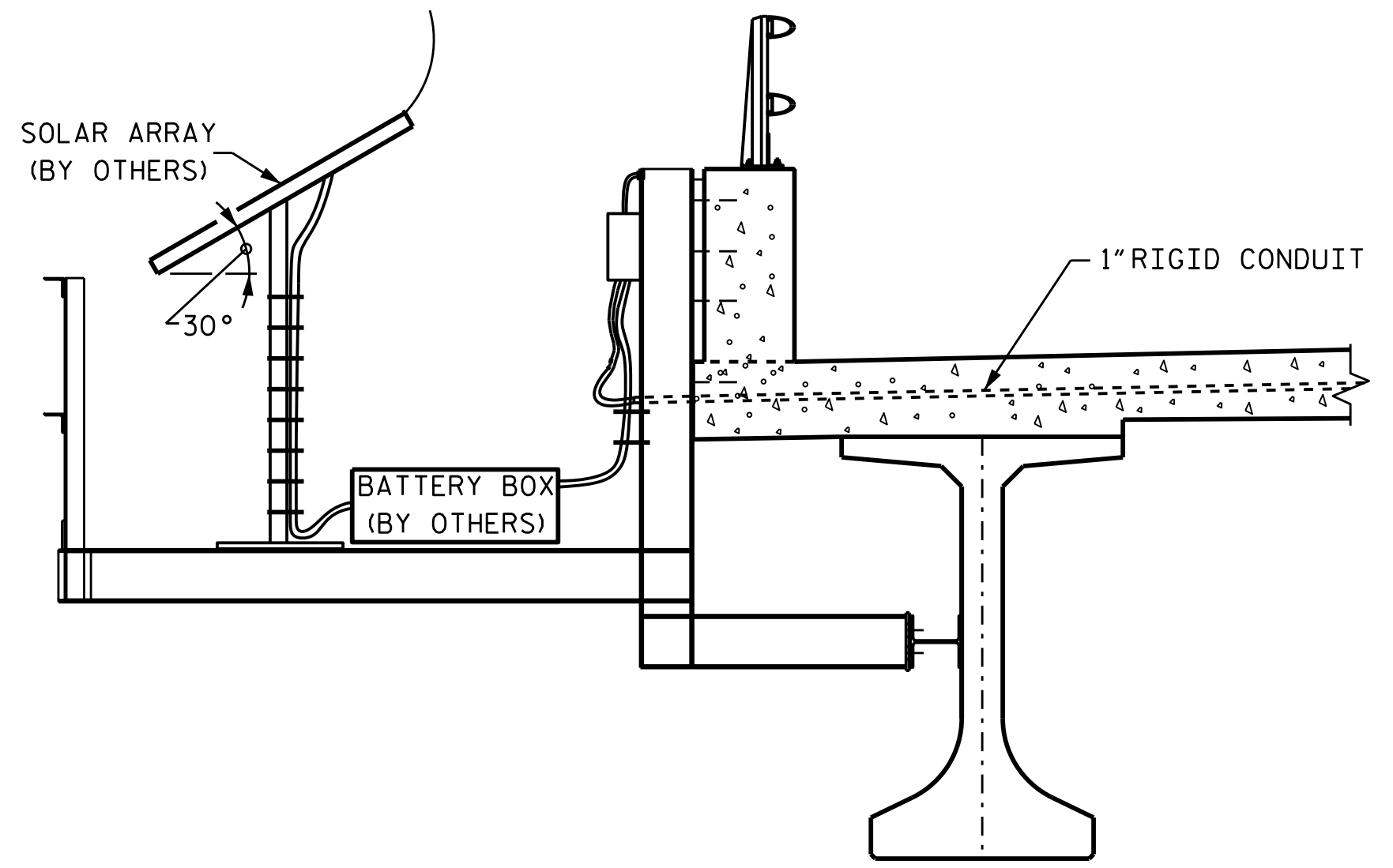
NOTES:
 FOR NAVIGATIONAL LIGHTING SYSTEM, SEE SPECIAL PROVISIONS.
 SEE "SOLAR ARRAY SUPPORT PLATFORM" SHEET FOR ADDITIONAL DETAILS.
 1" RIGID CONDUIT TO BE PLACED DURING SPAN "H" CONSTRUCTION.
 SEE "GENERAL DRAWING" SHEET 2 OF 8 FOR NAVIGATIONAL CHANNEL AND NAVIGATIONAL CLEARANCES.

PLAN

- ⊙ 360° GREEN NAVIGATIONAL LIGHT - CHANNEL CENTERLINE
- 180° RED NAVIGATIONAL LIGHT - CHANNEL MARGIN

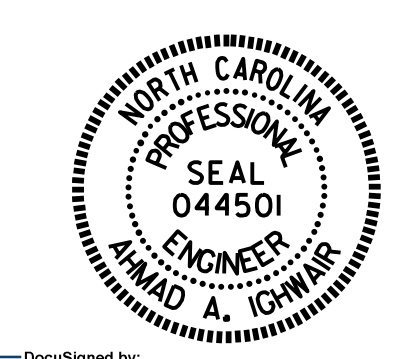


SECTION A-A



SECTION B-B

PROJECT NO. B-4863
CARTERET COUNTY
 STATION: 34+75.00-L-



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 NAVIGATIONAL LIGHTING
 AND
 CONDUIT SYSTEM

DRAWN BY : B. N. BARODAWALA DATE : 07-19
 CHECKED BY : A. A. IGHWAIR P.E. DATE : 08-19
 DESIGN ENGINEER OF RECORD: A. A. IGHWAIR DATE : 08-19

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
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2			4			194

NOTES:

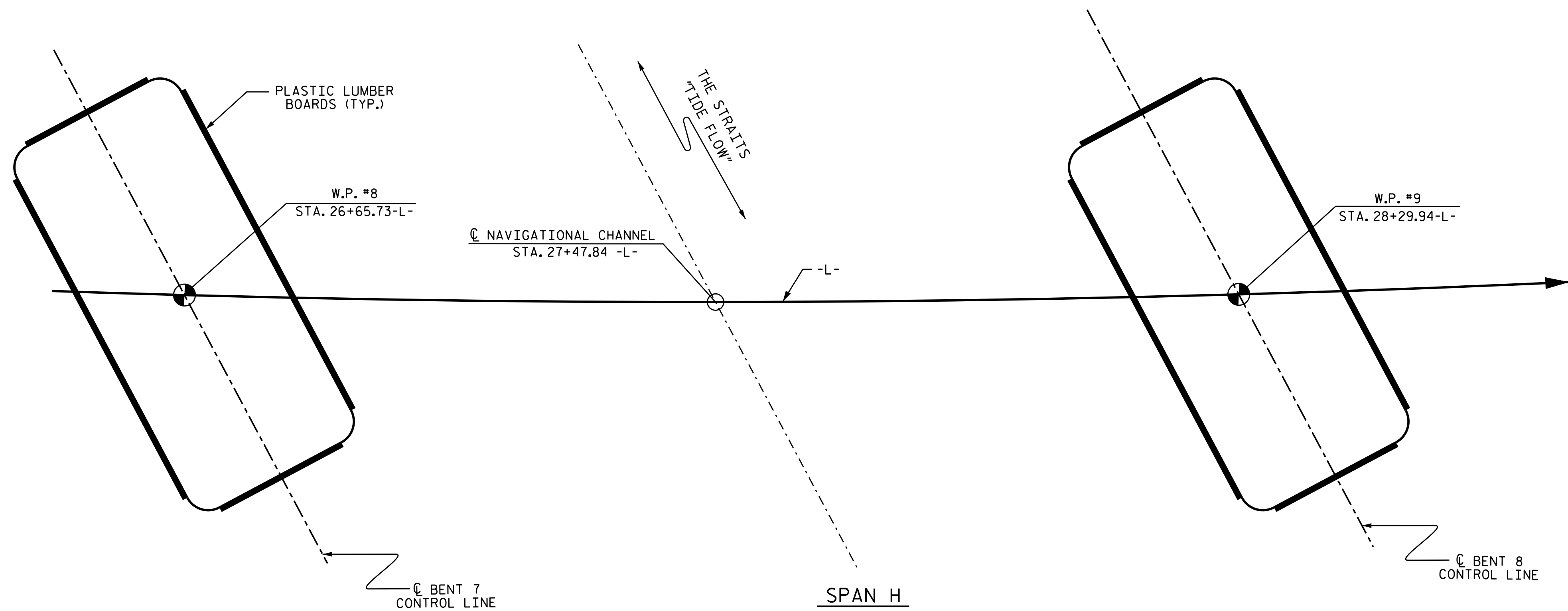
EACH PLASTIC LUMBER BOARD SHALL NOT EXCEED 16'-0" IN LENGTH AND SHALL CONTAIN AT LEAST THREE SETS OF FASTENERS SPACED AT A MAXIMUM OF 5'-0".

THE CONTRACTOR SHALL USE AN ADHESIVE BONDING SYSTEM IN THE BENT FOOTING. USE $\frac{3}{4}$ " \times $6\frac{1}{2}$ " BOLT AND 2" O.D. WASHER. FIELD TESTING OF THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED.

PLASTIC LUMBER DIMENSIONS AND QUANTITIES SHOWN ARE BASED ON NOMINAL LUMBER DIMENSIONS AND MAY VARY DEPENDING ON ACTUAL LUMBER DIMENSIONS.

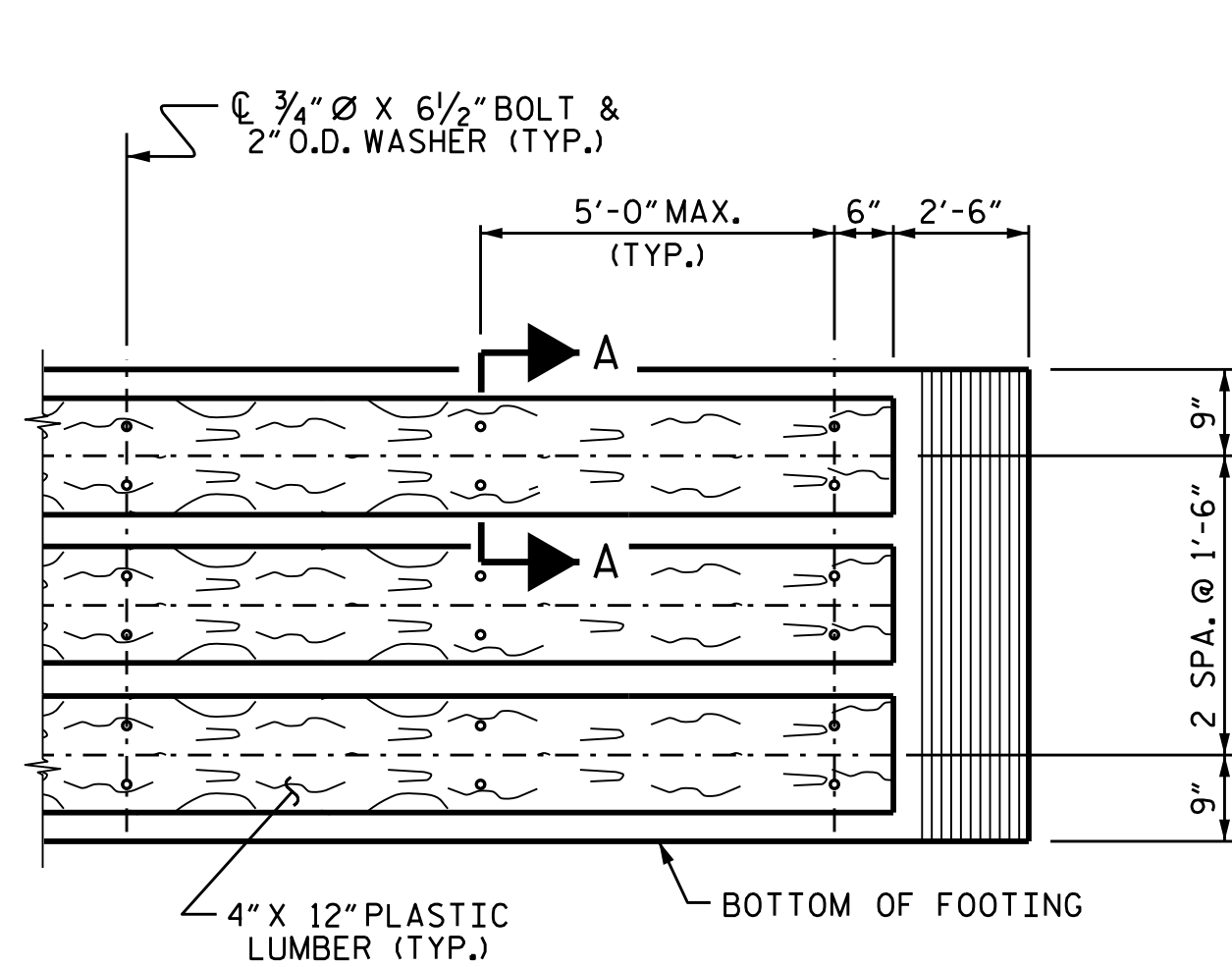
FOR PLASTIC LUMBER BOARD AT CHANNEL BENTS, SEE SPECIAL PROVISIONS.

THE BOLT WITH WASHER SHALL BE STAINLESS STEEL AND SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307.

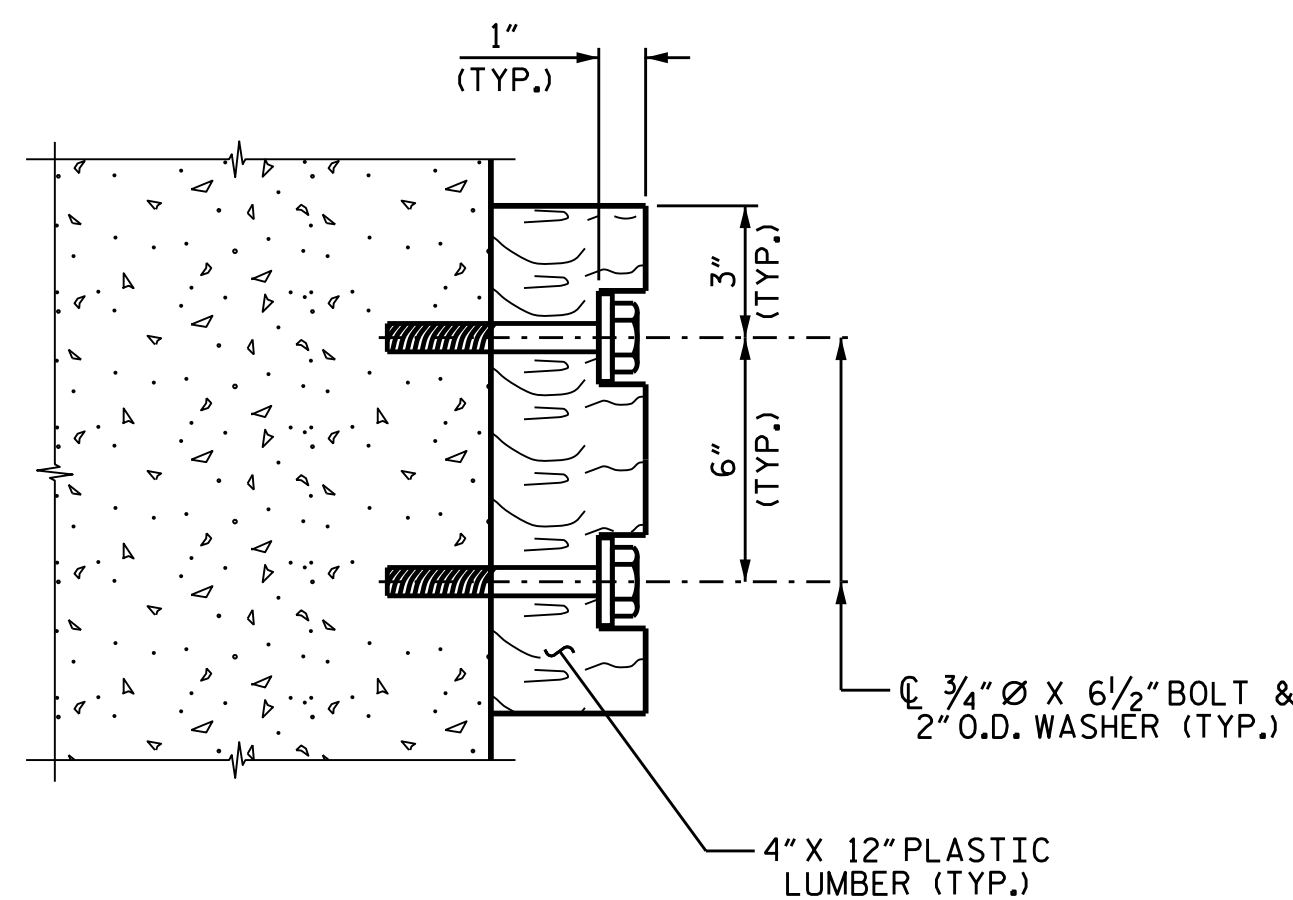


CHANNEL BENT FOOTING LAYOUT

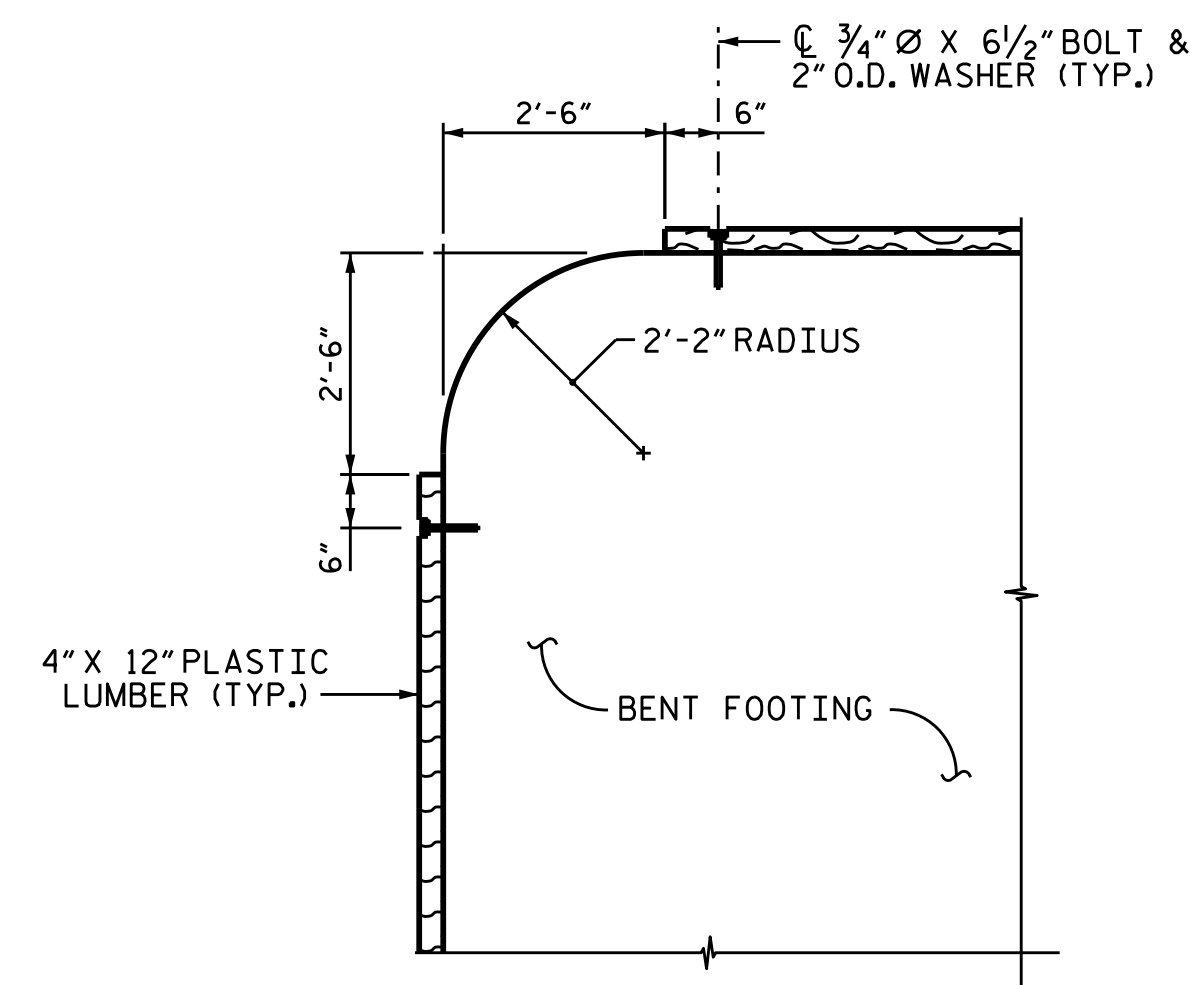
BENT COLUMNS AND PILES NOT SHOWN FOR CLARITY. SEE BENT DRAWINGS FOR SIZE OF FOOTINGS.



ELEVATION



SECTION A-A

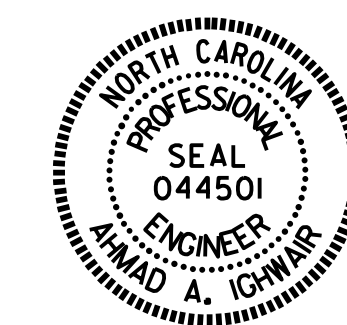


CORNER DETAIL
TYP. AT EACH CORNER

PROJECT NO. B-4863
CARTERET COUNTY
 STATION: 34+75.00-L-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**PLASTIC LUMBER
 FENDER SYSTEM**
 BENT 7 AND BENT 8



DocuSigned by:
 Ahmad Ighwair
 48648044C555489
 3/9/2020

DRAWN BY : B. N. BARODAWALA DATE : 7-19
 CHECKED BY : A. A. IGHWAIR DATE : 8-19
 DESIGN ENGINEER OF RECORD: A. A. IGHWAIR DATE : 8-19

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			S1-192
2			4			194

NOTES

FOR REINFORCED RETAINING WALL BACKFILL SEE REINFORCED RETAINING WALL BACKFILL DETAILS AND SPECIAL PROVISION.

APPROACH SLAB SHALL NOT BE CONSTRUCTED PRIOR TO COMPLETION OF THE BRIDGE DECK.

THE JOINT SHALL BE SAWED PRIOR TO THE CASTING OF THE PARAPET AND END POST.

AREA BETWEEN THE CONCRETE SHEET PILE RETAINING WALL / WINGWALL AND APPROACH SLAB SHALL BE GRADED TO DRAIN THE WATER AWAY FROM THE END BENT CAP AND SHALL BE PAVED. SEE ROADWAY PLAN.

ARC OFFSETS ARE NEGLIGIBLE.

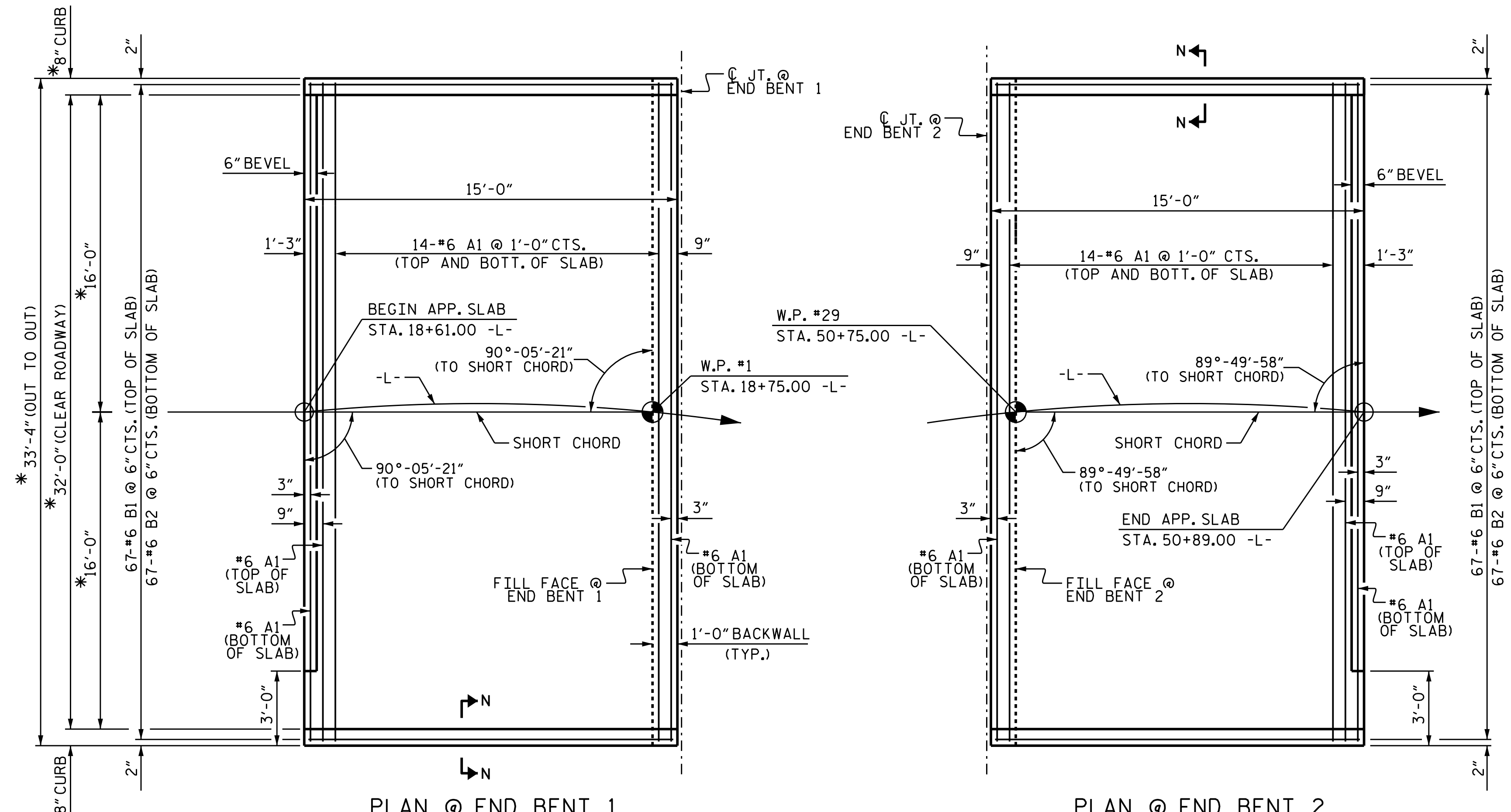
WITH FOAM JOINT SEAL

FOR FOAM JOINT SEALS, SEE SPECIAL PROVISIONS.

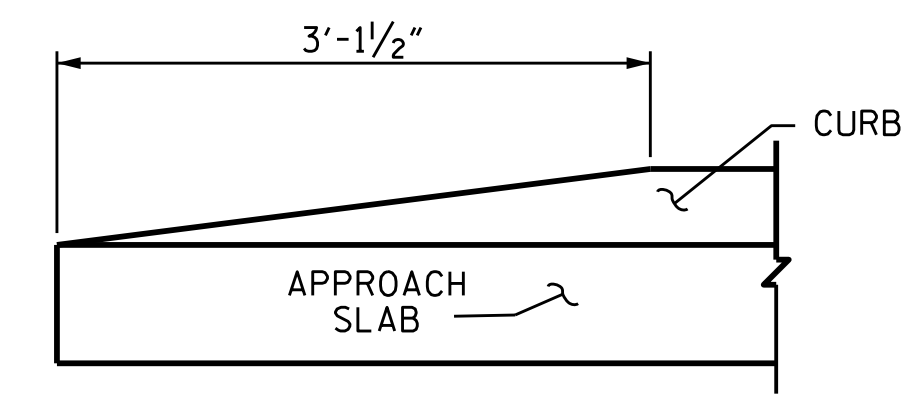
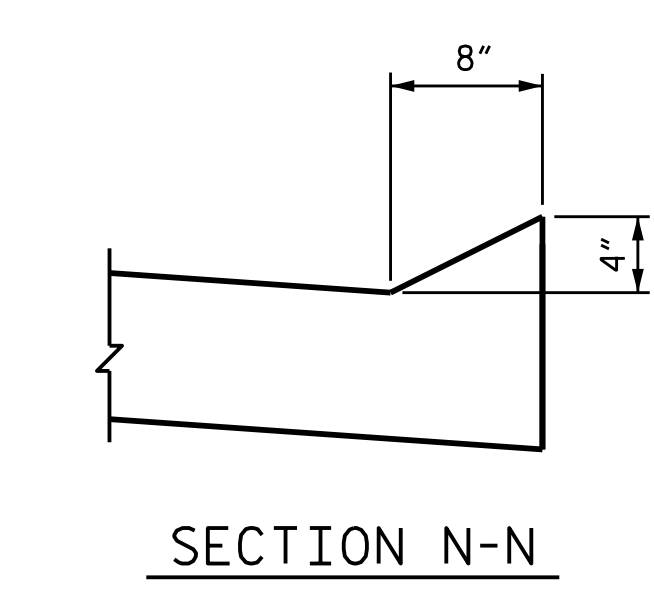
THE NOMINAL UNCOMPRESSED SEAL WIDTH OF THE FOAM JOINT SEAL SHALL BE 2".

FOR ELASTOMERIC CONCRETE, SEE SPECIAL PROVISIONS.

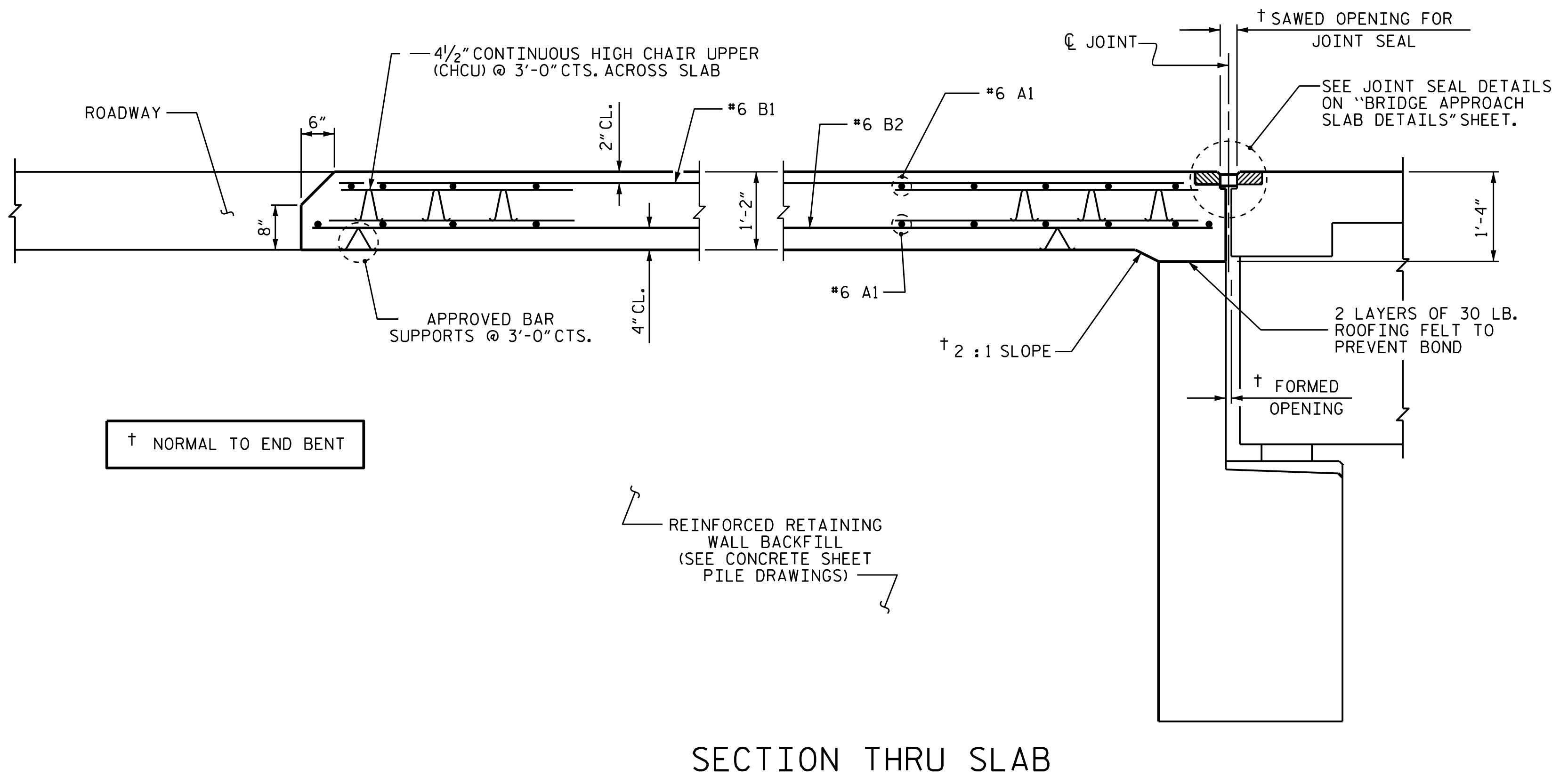
BILL OF MATERIAL					
APPROACH SLAB AT END BENT 1					
BAR	NO.	SIZE	TYPE	LENGTH	L.F.
A1	31	#6	STR	33'-0"	1023'-0"
B1	67	#6	STR	13'-9"	921'-3"
B2	67	#6	STR	14'-8"	982'-8"
GFRP BARS LIN. FT.				2926.92	
CLASS AA CONCRETE				C. Y. 21.7	
APPROACH SLAB AT END BENT 2					
BAR	NO.	SIZE	TYPE	LENGTH	L.F.
A1	31	#6	STR	33'-0"	1023'-0"
B1	67	#6	STR	13'-9"	921'-3"
B2	67	#6	STR	14'-8"	982'-8"
GFRP BARS LIN. FT.				2926.92	
CLASS AA CONCRETE				C. Y. 21.7	



* RADIAL DIMENSIONS



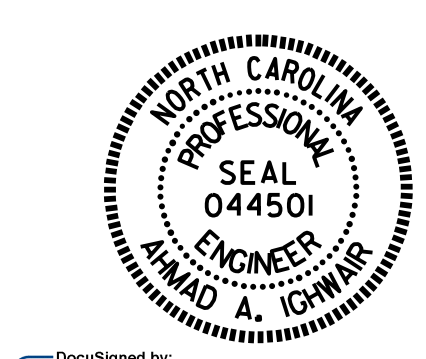
CURB DETAILS



PROJECT NO. B-4863
CARTERET COUNTY
 STATION: 34+75.00 -L-

SHEET 1 OF 2

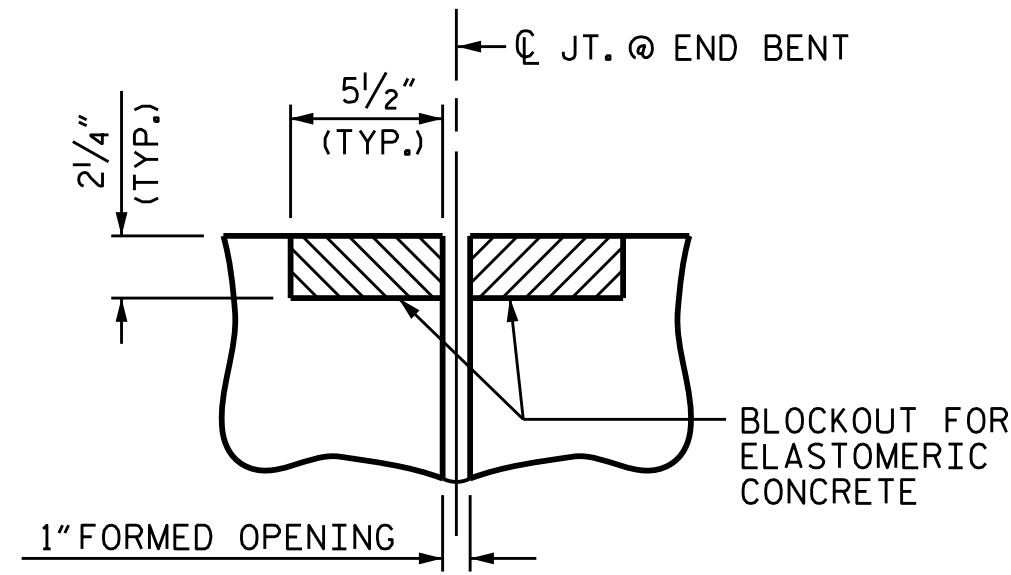
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 BRIDGE APPROACH SLAB
 FOR FLEXIBLE PAVEMENT



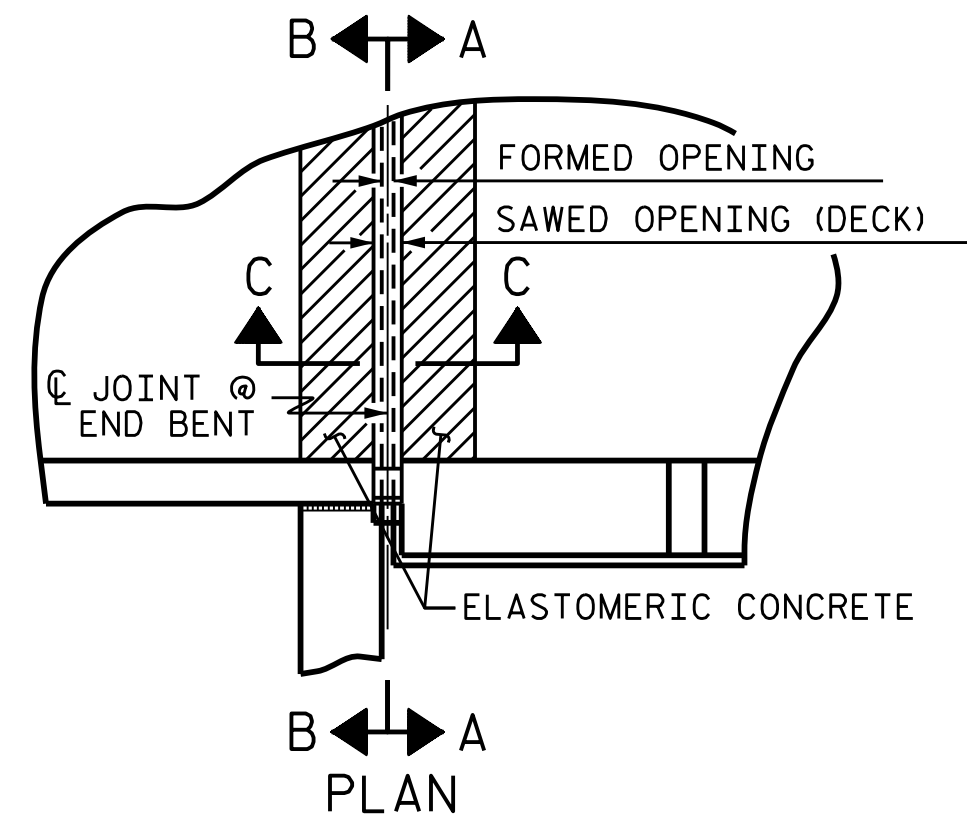
DocuSigned by:
 Ahmad I. Ghawair
 48648044C355489
 3/9/2020

NO.	REVISIONS				SHEET NO.
	BY:	DATE:	NO.	DATE:	
1			3		S1-193 TOTAL SHEETS 194
2			4		

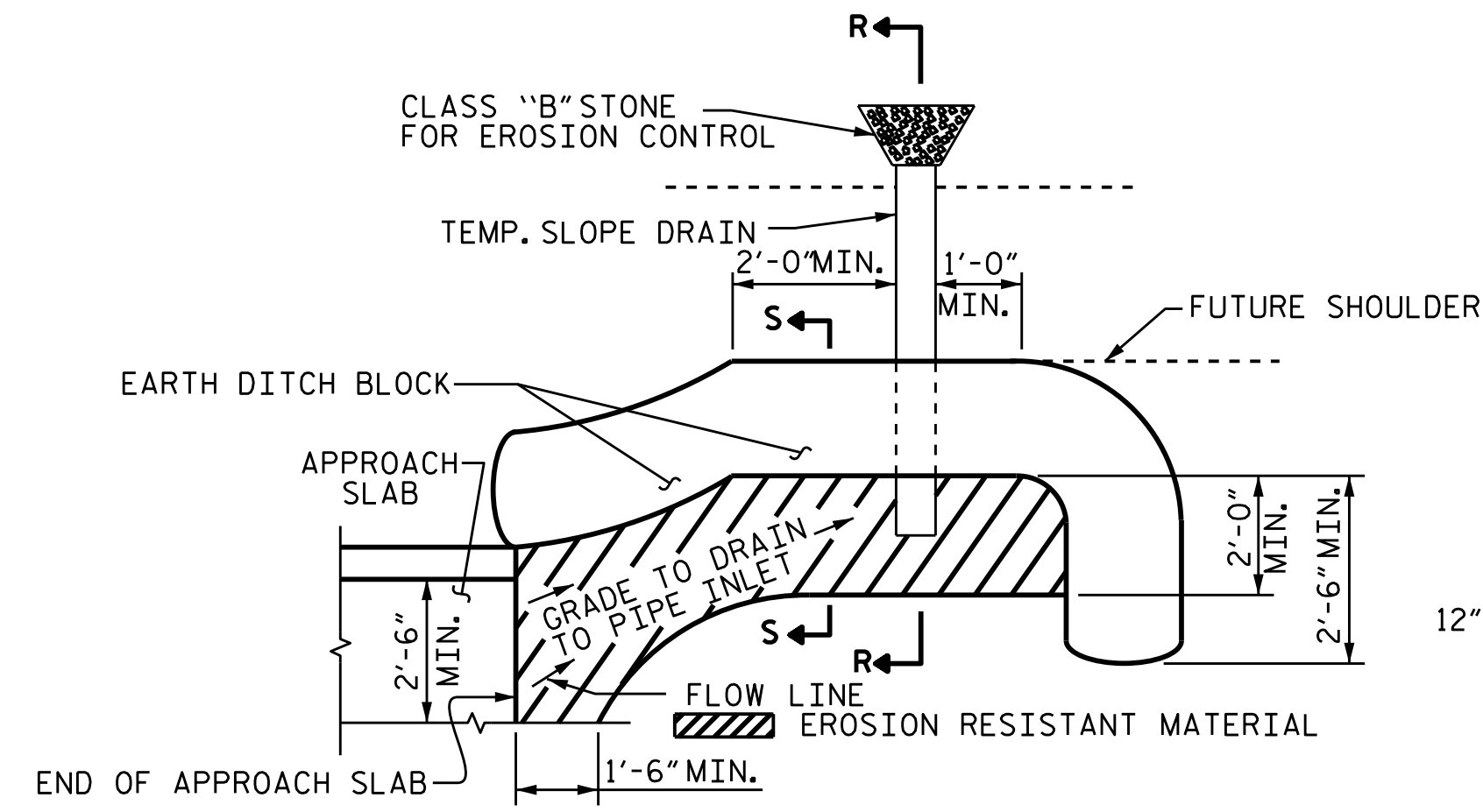
ASSEMBLED BY :	A. A. IGHWAIR	DATE :	01-2020
CHECKED BY :	M. A. ALLEN	DATE :	01-2020
DRAWN BY :	EEM 3/95	REV. 12/21/11	MAA/GM
CHECKED BY :	VAP 3/95	REV. 6/13	MAA/GM
		REV. 12/17	MAA/THC



SECTION C-C
FOAM JOINT SEAL
(PRE-SAWED ELASTOMERIC
CONCRETE DIMENSIONS)

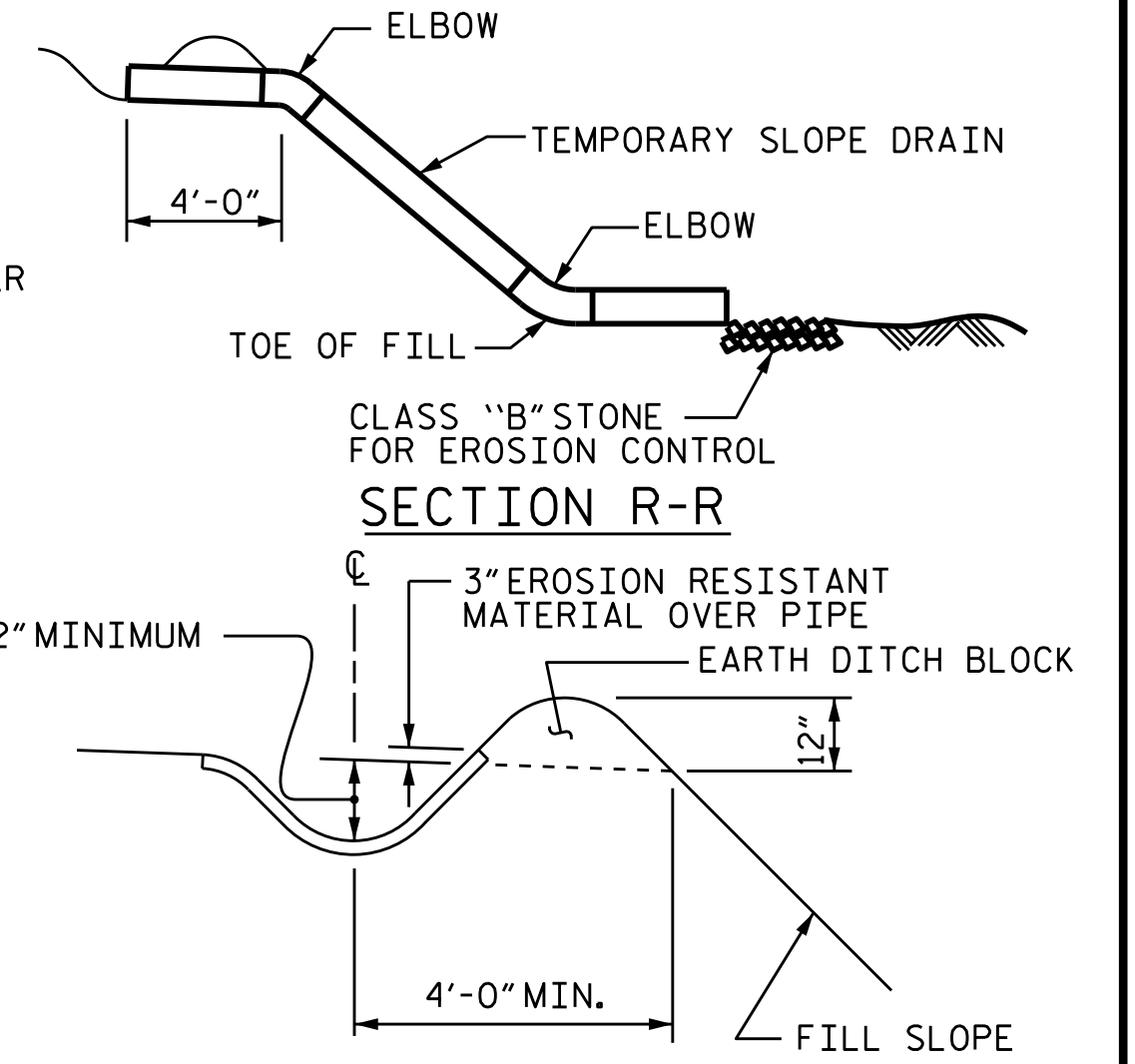


PLAN



PLAN VIEW

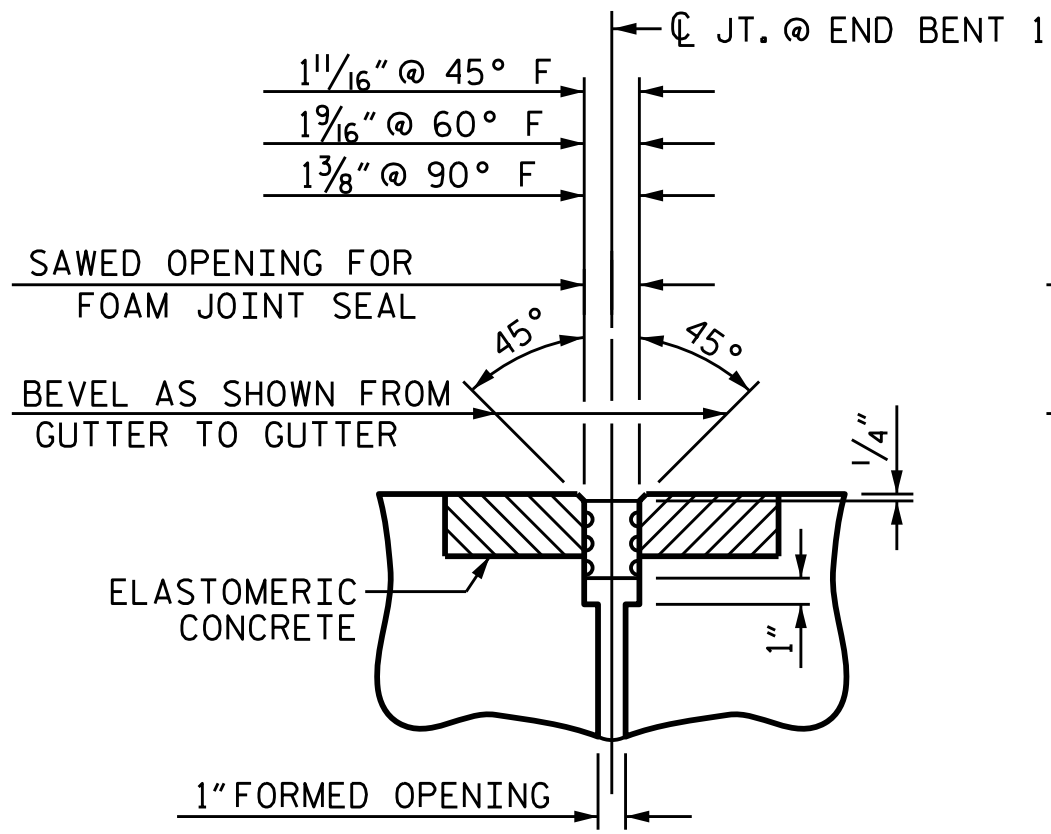
NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN. 2" DEPTH, 2) EROSION CONTROL MAT, OR 3) CONCRETE, AS DIRECTED BY THE ENGINEER. THE SLOPE DRAIN SHALL CONSIST OF A NON-PERFORATED TEMPORARY DRAINAGE PIPE, 12 INCHES IN DIAMETER.



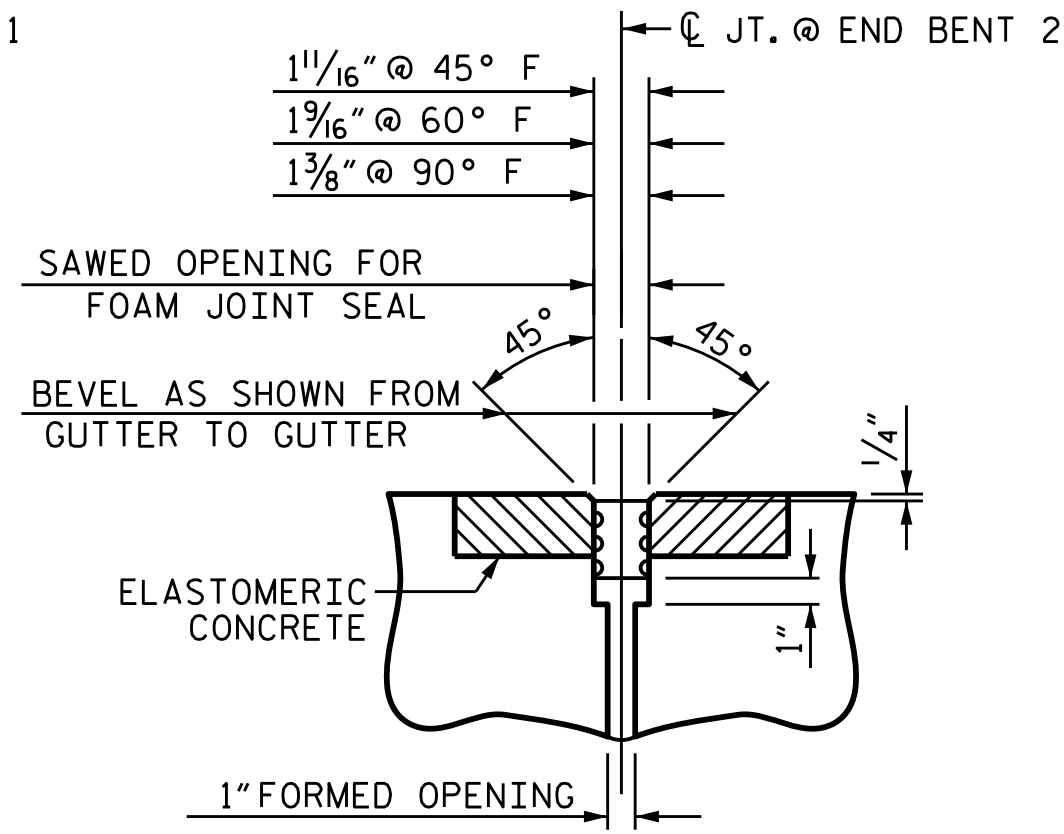
SECTION R-R
SECTION S-S

TEMPORARY BERM AND SLOPE DRAIN DETAILS

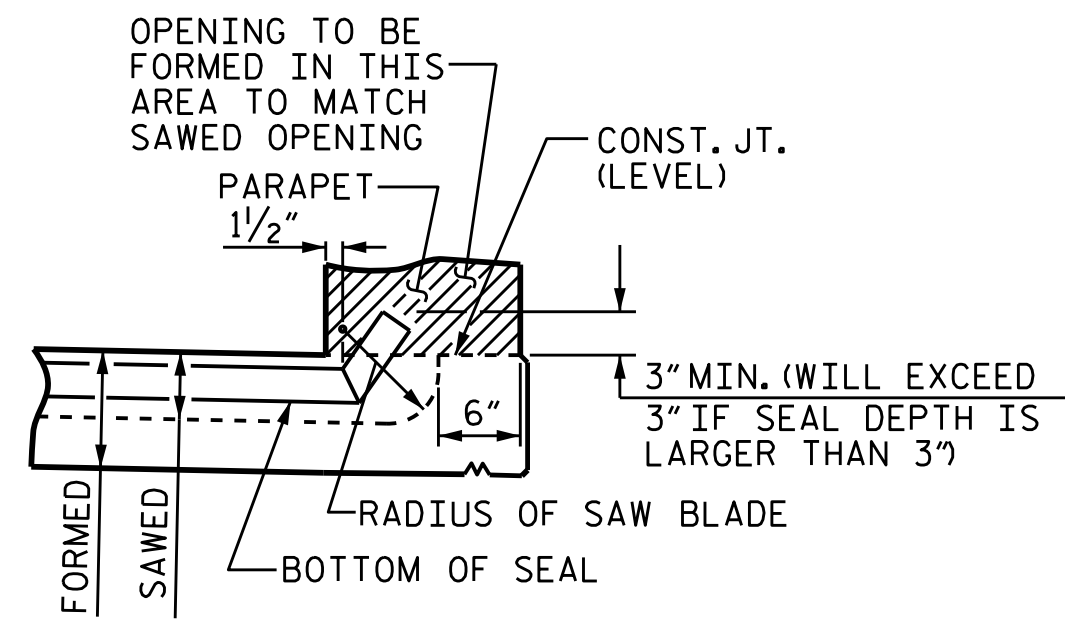
(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



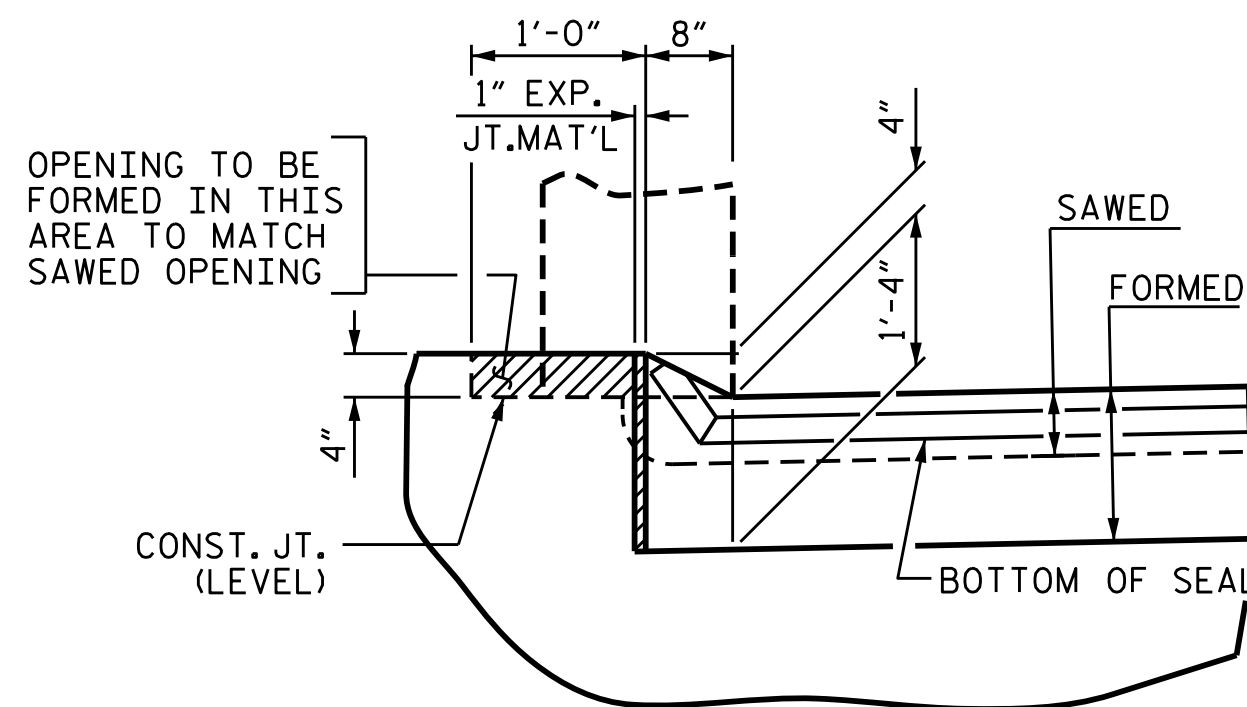
SECTION C-C
FOAM JOINT SEAL
(EXPANSION)



SECTION C-C
FOAM JOINT SEAL
(EXPANSION)



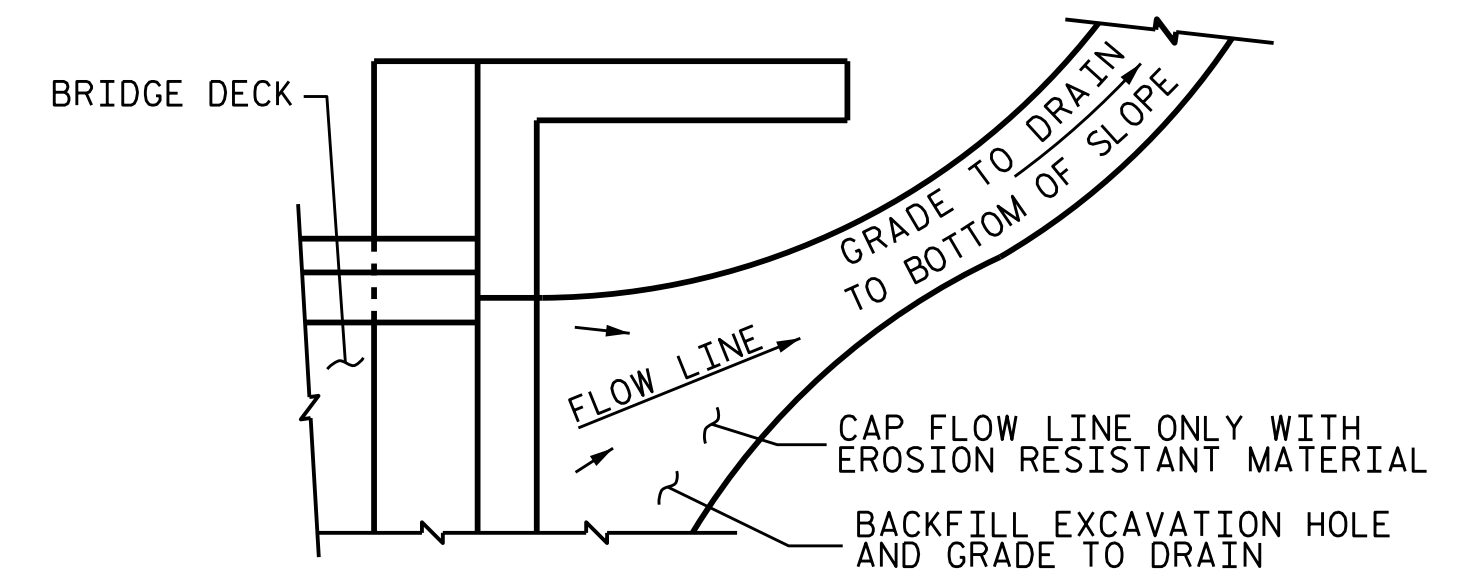
SECTION A-A



SECTION B-B

JOINT SEAL DETAILS @ END BENT

FOAM JOINT SEAL TO BE CUT, HEAT WELDED AND TURNED UP PARALLEL TO SLOPED FACE OF THE PARAPET.
THE JOINT SHALL BE SAWED PRIOR TO THE CASTING OF THE PARAPET.



NOTE: IF THE APPROACH SLAB IS NOT CONSTRUCTED IMMEDIATELY AFTER THE BACKFILLING OF THE END BENT EXCAVATION, GRADE TO DRAIN TO THE BOTTOM OF THE SLOPE AND PROVIDE EROSION RESISTANT MATERIAL, SUCH AS FIBERGLASS ROVING OR AS DIRECTED BY THE ENGINEER TO PREVENT SOIL EROSION AND TO PROTECT THE AREA ADJACENT TO THE STRUCTURE. THE CONTRACTOR WILL BE REQUIRED TO REMOVE THESE MATERIALS PRIOR TO CONSTRUCTION OF THE APPROACH SLAB.

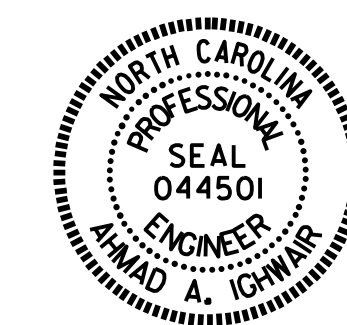
TEMPORARY DRAINAGE DETAIL

ELASTOMERIC CONCRETE	
END BENT NO.	ELASTOMERIC CONCRETE * (CU. FT.)
1	5.5
2	5.5
TOTAL	11.0

* BASED ON THE MINIMUM BLOCKOUT SHOWN.

PROJECT NO. B-4863
CARTERET COUNTY
STATION: 34+75.00 -L-

SHEET 2 OF 2

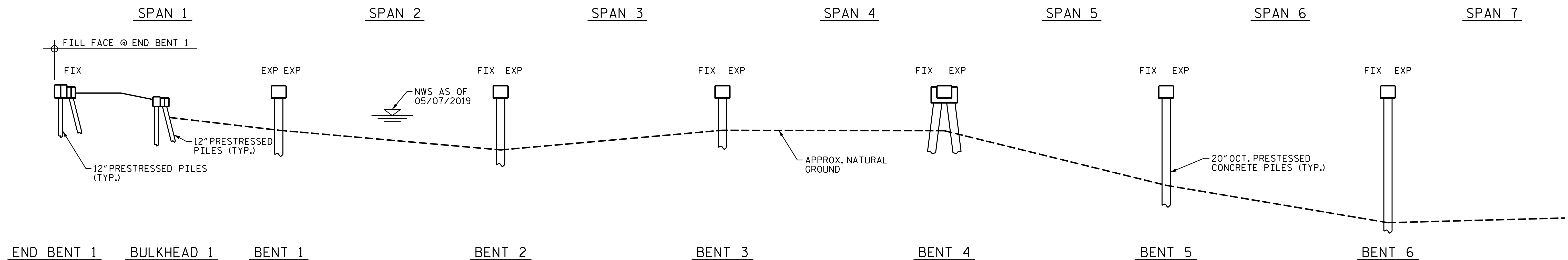


STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
BRIDGE APPROACH
SLAB DETAILS

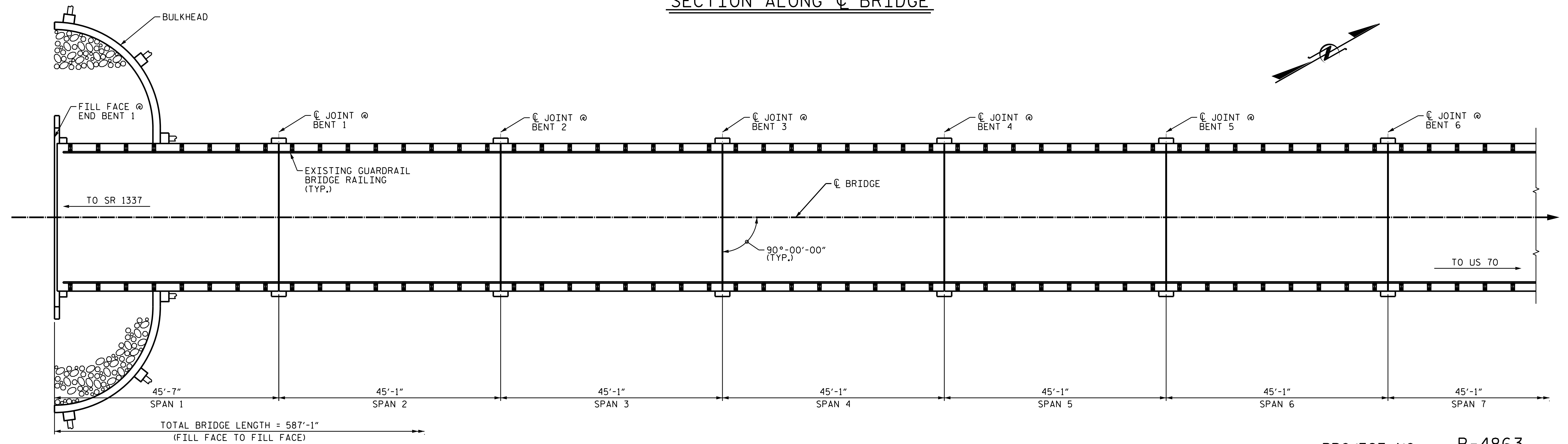
NO.	REVISIONS						SHEET NO.
	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS	
1			3			194	
2			4			194	

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ASSEMBLED BY : A. A. IGHWAIR	DATE : 01-2020
CHECKED BY : M. A. ALLEN	DATE : 01-2020
DRAWN BY : FCJ 11/88	REV. 6/13 MAA/GM
CHECKED BY : ARB 11/88	REV. 12/17 MAA/THC
	REV. 5/18 MAA/THC



SECTION ALONG C BRIDGE



PLAN

NOTES

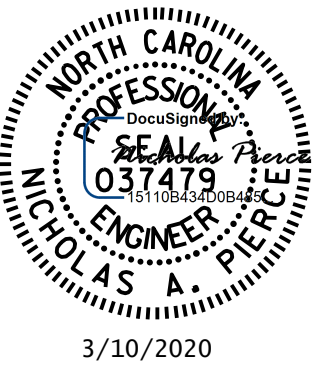
GENERAL DRAWING INFORMATION IS TAKEN FROM THE ORIGINAL PLANS AND THE ROUTINE INSPECTION REPORT DATED 05/07/2019.
 BRIDGE ORIENTATION CONFORMS TO THE EXISTING BRIDGE PLANS.

I HEREBY CERTIFY THAT THIS STRUCTURE WAS REHABILITATED ACCORDING TO THESE PLANS OR AS NOTED HEREIN.

 RESIDENT ENGINEER DATE

SCOPE OF WORK

-REMOVE EXISTING GUARDRAIL BRIDGE RAILING AND INSTALL 4 BAR METAL RAIL WITH CONCRETE END POSTS.



PROJECT NO. B-4863
 CARTERET COUNTY
 BRIDGE NO. 150096

SHEET 1 OF 3

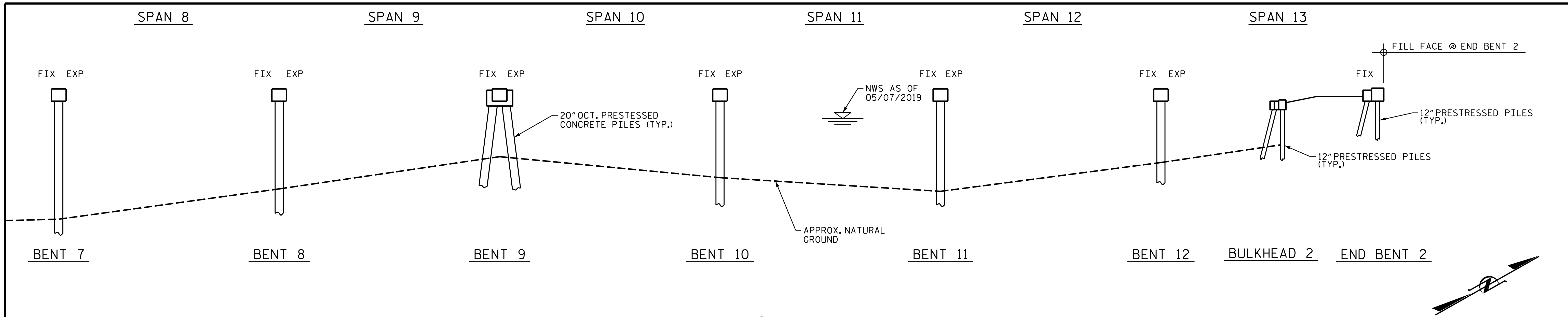
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 FOR BRIDGE OVER
 'THE STRAITS'
 ON SR 1335 BETWEEN
 US 70 AND SR 1337

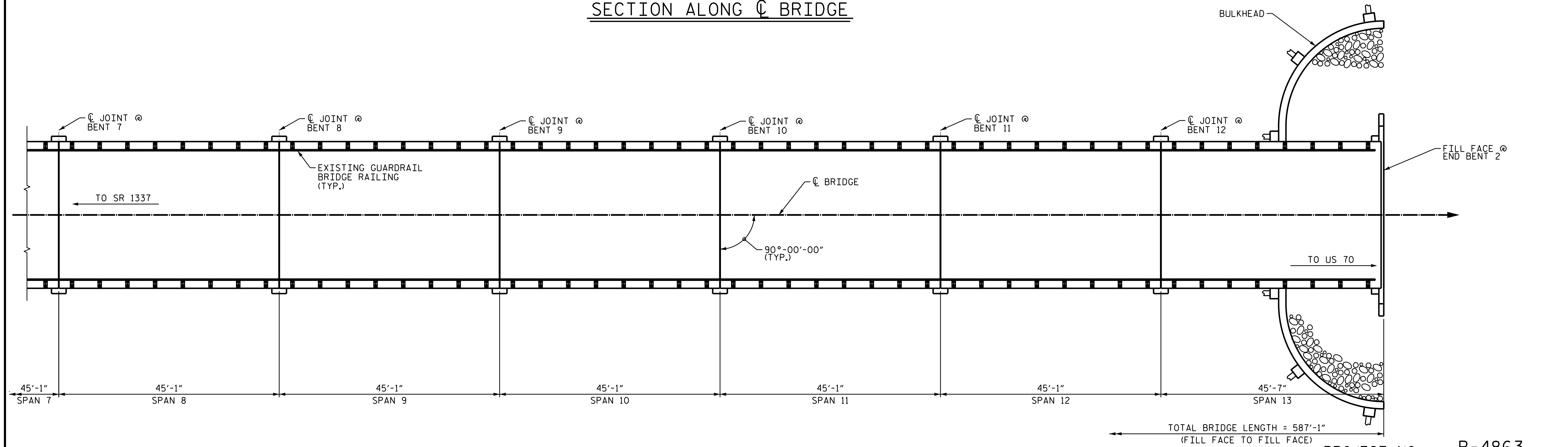
DRAWN BY : N.A. PIERCE DATE : 01/2020
 CHECKED BY : M.A. ALLEN DATE : 02/2020

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-01
1			3			TOTAL SHEETS
2			4			9

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



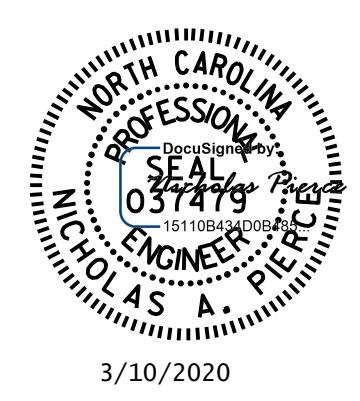
SECTION ALONG C BRIDGE



PLAN

PROJECT NO. B-4863
CARTERET COUNTY
 BRIDGE NO. 150096

SHEET 2 OF 3

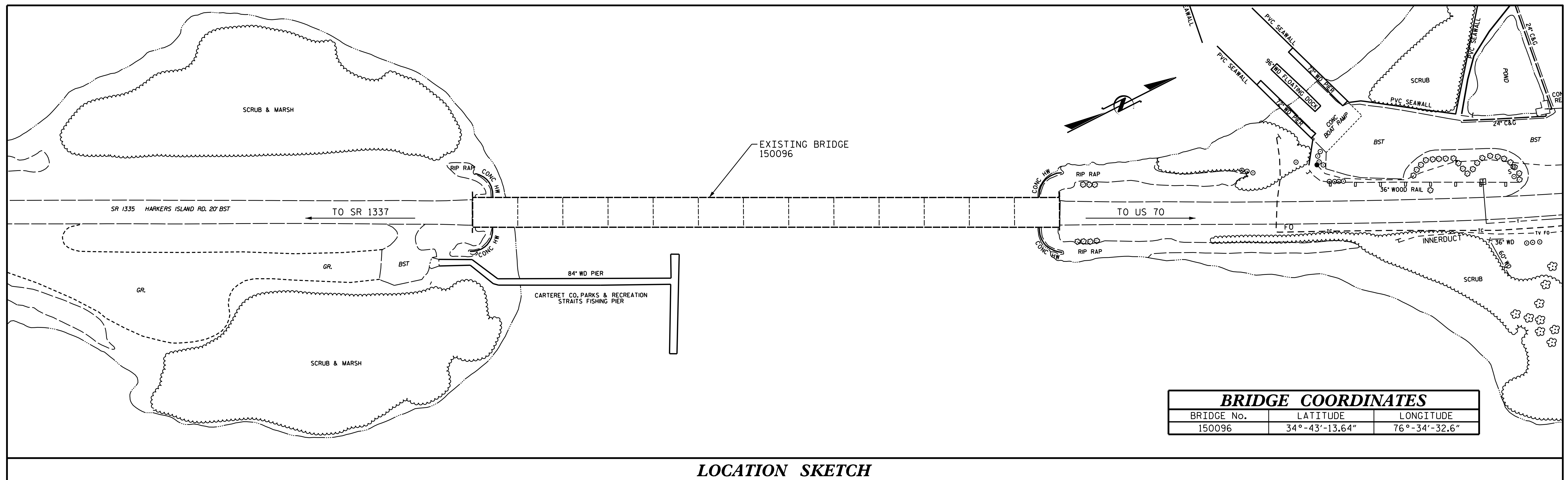


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
 FOR BRIDGE OVER
 'THE STRAITS'
 ON SR 1335 BETWEEN
 US 70 AND SR 1337

DRAWN BY : N.A. PIERCE DATE : 01/2020
 CHECKED BY : M.A. ALLEN DATE : 02/2020

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-02
1			3			TOTAL SHEETS 9
2			4			



BRIDGE COORDINATES		
BRIDGE No.	LATITUDE	LONGITUDE
150096	34°-43'-13.64"	76°-34'-32.6"

LOCATION SKETCH

NOTES

THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT DUE TO THE NATURE OF PRESERVATION PROJECTS, THE EXTENT OF WORK CANNOT ALWAYS BE ACCURATELY DETERMINED PRIOR TO COMMENCEMENT OF WORK. REPAIR LOCATIONS AND ESTIMATES OF QUANTITIES ARE GIVEN WITH THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE ENGINEER SHALL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS.

EXISTING DIMENSIONS AND BRIDGE CONDITION ARE FROM THE BEST INFORMATION AVAILABLE. THE CONTRACTOR SHALL FIELD VERIFY THE INFORMATION SHOWN ON THE PLANS AND NOTIFY THE ENGINEER IF ACTUAL DIMENSIONS AND CONDITIONS DIFFER.

THE CONTRACTOR SHALL HAVE NO CLAIM WHATSOEVER AGAINST THE DEPARTMENT FOR ANY DELAYS OF ADDITIONAL COST INCURRED BASED ON DIFFERENCES BETWEEN WHAT IS SHOWN ON THE PLANS AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

IT IS THE CONTRACTOR'S RESPONSIBILITY TO FOLLOW ALL STATE AND FEDERAL SAFETY REQUIREMENTS.

WORK ON THE BRIDGE(S) SHALL BE PERFORMED SO AS NOT TO ALLOW DEBRIS TO FALL BELOW, EXCEPT WHERE THE CONTRACTOR'S PLAN USE PLATFORMS, NETS, SCREENS OR OTHER PROTECTIVE DEVICES TO CATCH THE MATERIAL. THE CONTRACTOR SHALL SUBMIT PLANS FOR CONSTRUCTION IN ACCORDANCE WITH ARTICLE 402-2 OF THE STANDARD SPECIFICATIONS AND THE PROJECT SPECIAL PROVISIONS.

THE CONTRACTOR SHALL PERFORM ALL WORK WITH CARE SO THAT THE EXISTING STRUCTURE WHICH IS TO REMAIN IN PLACE WILL NOT BE DAMAGED. IF THE CONTRACTOR DAMAGES ANY PART OF THE EXISTING STRUCTURE WHICH IS TO REMAIN IN PLACE, THE DAMAGED AREA SHALL BE REPAIRED OR REPLACED IN A MANNER SATISFACTORY TO THE ENGINEER AT NO ADDITIONAL COST TO THE DEPARTMENT.

THE COST OF THE REMOVAL AND DISPOSAL OF EXISTING GUARDRAIL BRIDGE RAILING SHALL BE COVERED UNDER THE LINEAR FEET BID PRICE OF THE 4 BAR METAL RAIL.

FOR 4 BAR METAL RAIL AND CONCRETE END POSTS, SEE SPECIAL PROVISIONS.

NO ADDITIONAL PAYMENT SHALL BE MADE FOR THE CONCRETE END POSTS AS THIS SHALL BE CONSIDERED INCIDENTAL TO THE CONSTRUCTION OF THE 4 BAR METAL RAIL.

FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SN.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

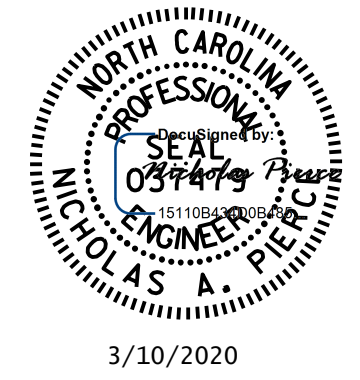
TOTAL BILL OF MATERIAL	
	4 BAR METAL RAIL
	LINEAR FEET
BRIDGE 150096	1158.0
TOTAL	1158.0

PROJECT NO. B-4863
 CARTERET COUNTY
 BRIDGE NO. 150096

SHEET 3 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 FOR BRIDGE OVER
 'THE STRAITS'
 ON SR 1335 BETWEEN
 US 70 AND SR 1337



DRAWN BY : N.A. PIERCE DATE : 01/2020
 CHECKED BY : M.A. ALLEN DATE : 02/2020

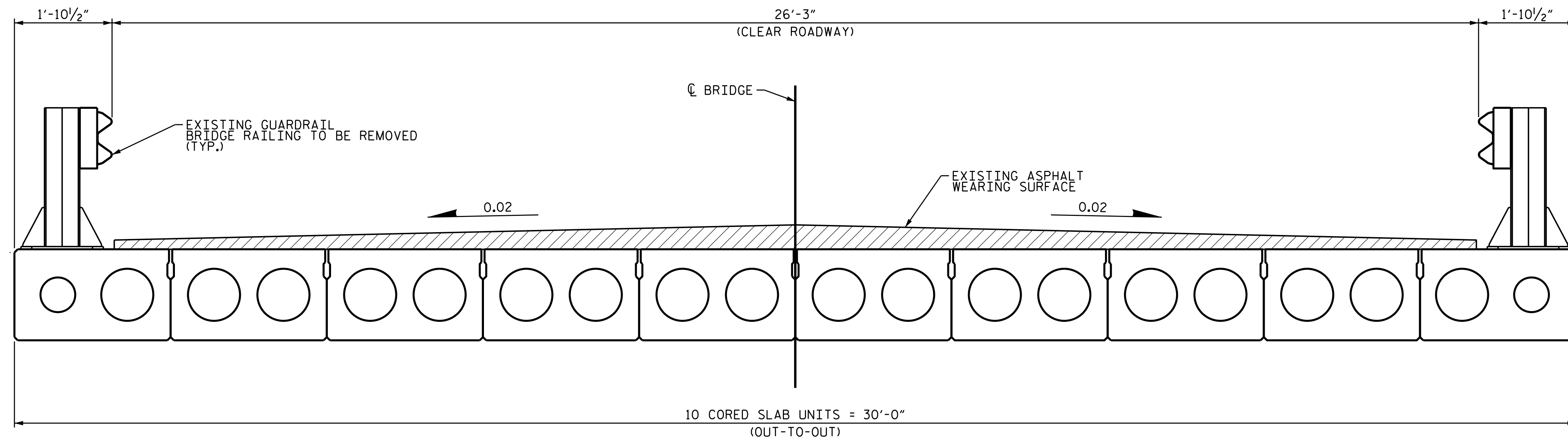
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NO.	BY:	DATE:	NO.	BY:	DATE:	
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2			4			TOTAL SHEETS 9

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

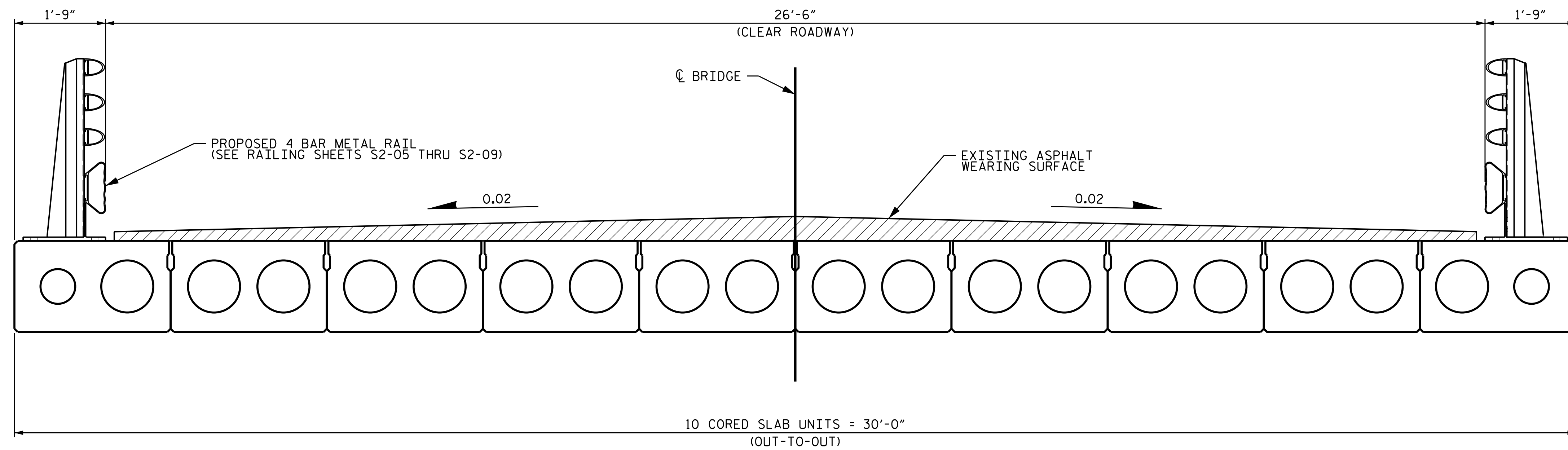
NOTES

CARE SHALL BE TAKEN DURING THE REMOVAL OF THE EXISTING GUARDRAIL BRIDGE RAILING PROCESS NOT TO DAMAGE THE EXISTING EMBEDDED ANCHORING ASSEMBLY FERRULES. THE PROPOSED 4 BAR METAL RAILING SYSTEM WILL REUSE THE EXISTING EMBEDDED ANCHORING ASSEMBLY FERRULES.

IF THE EXISTING EMBEDDED ANCHORING ASSEMBLY FERRULES ARE DAMAGED DURING THE REMOVAL PROCESS, IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO SUBMIT TO THE ENGINEER FOR REVIEW AND APPROVAL A REPAIR PROCEDURE FOR THE DAMAGED AREAS. REPAIRS MADE DUE TO DAMAGE DONE BY THE REMOVAL PROCESS SHALL BE AT THE EXPENSE OF THE CONTRACTOR AND NO ADDITIONAL TIME WILL BE GRANTED IN ORDER TO PERFORM REPAIRS NEEDED.

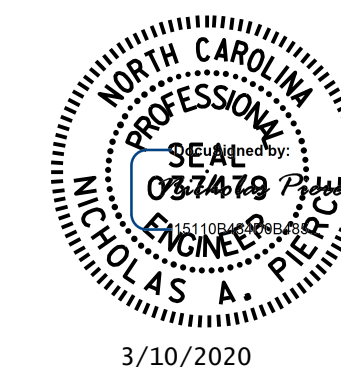


EXISTING TYPICAL SECTION



PROPOSED TYPICAL SECTION

PROJECT NO. B-4863
CARTERET COUNTY
 BRIDGE NO. 150096



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

TYPICAL SECTION

DRAWN BY : N.A. PIERCE DATE : 01/2020
 CHECKED BY : M.A. ALLEN DATE : 02/2020

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

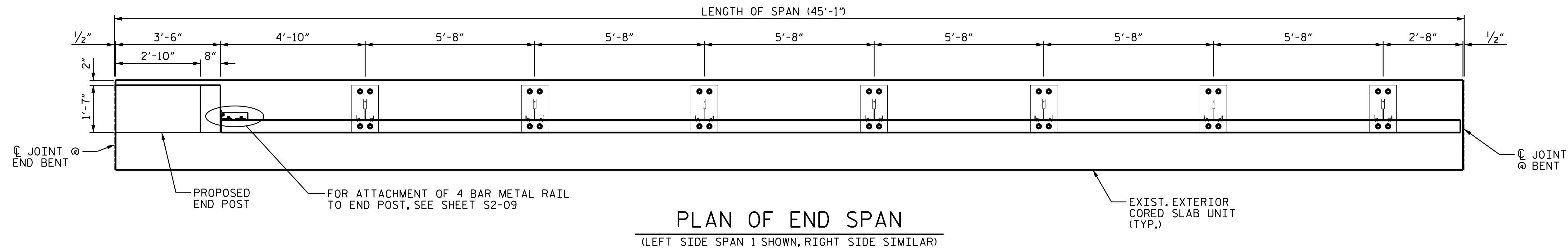
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-04
1			3			TOTAL SHEETS
2			4			9

NOTES

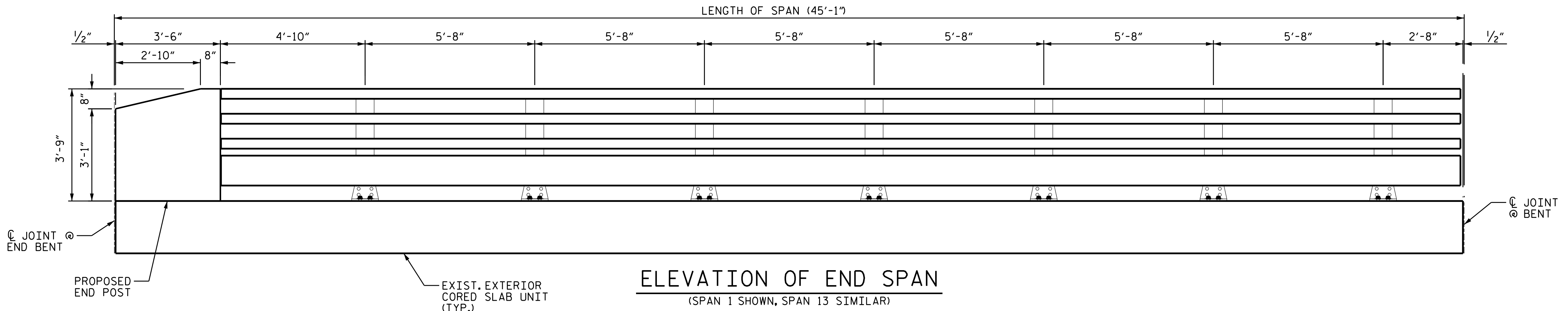
PROPOSED RAIL POST SPACING IS BASED OFF BEST INFORMATION AVAILABLE ON EXISTING GUARDRAIL POSTS. THE CONTRACTOR SHALL FIELD VERIFY THE INFORMATION SHOWN ON THE PLANS AND NOTIFY THE ENGINEER IF ACTUAL DIMENSIONS AND CONDITIONS DIFFER.

FOR INFORMATION ON 4 BAR METAL RAIL AND SPLICES, SEE SHEETS S2-07 THRU S2-09.

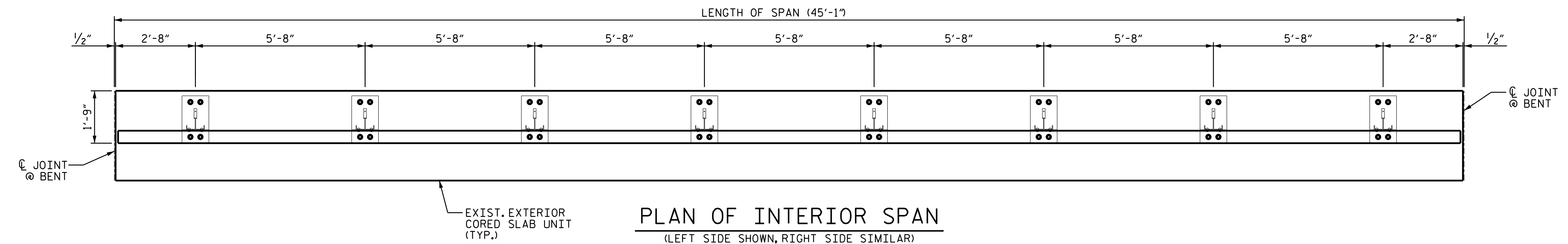
FOR PROPOSED END POSTS, SEE SHEET S2-06.



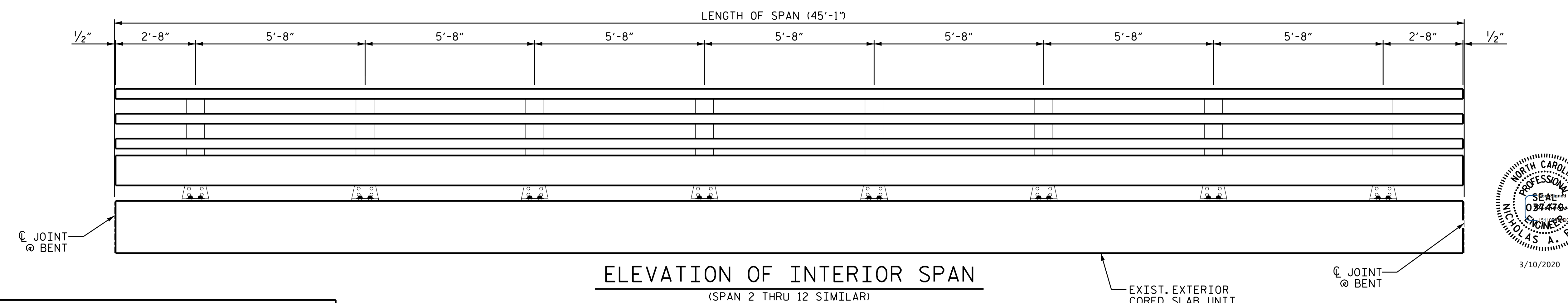
PLAN OF END SPAN
(LEFT SIDE SPAN 1 SHOWN, RIGHT SIDE SIMILAR)



ELEVATION OF END SPAN
(SPAN 1 SHOWN, SPAN 13 SIMILAR)



PLAN OF INTERIOR SPAN
(LEFT SIDE SHOWN, RIGHT SIDE SIMILAR)



ELEVATION OF INTERIOR SPAN
(SPAN 2 THRU 12 SIMILAR)



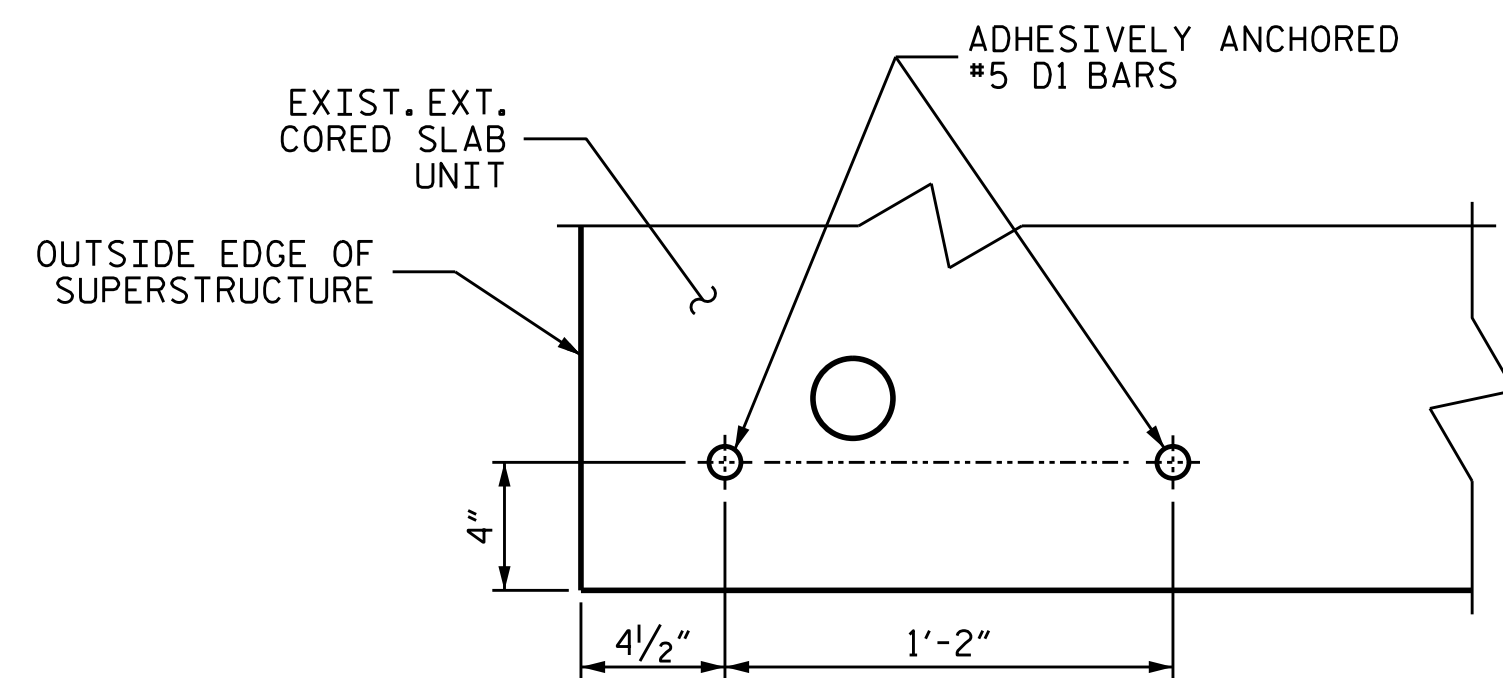
PROJECT NO. B-4863
CARTERET COUNTY
 BRIDGE NO. 150096

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 RAIL POST SPACING

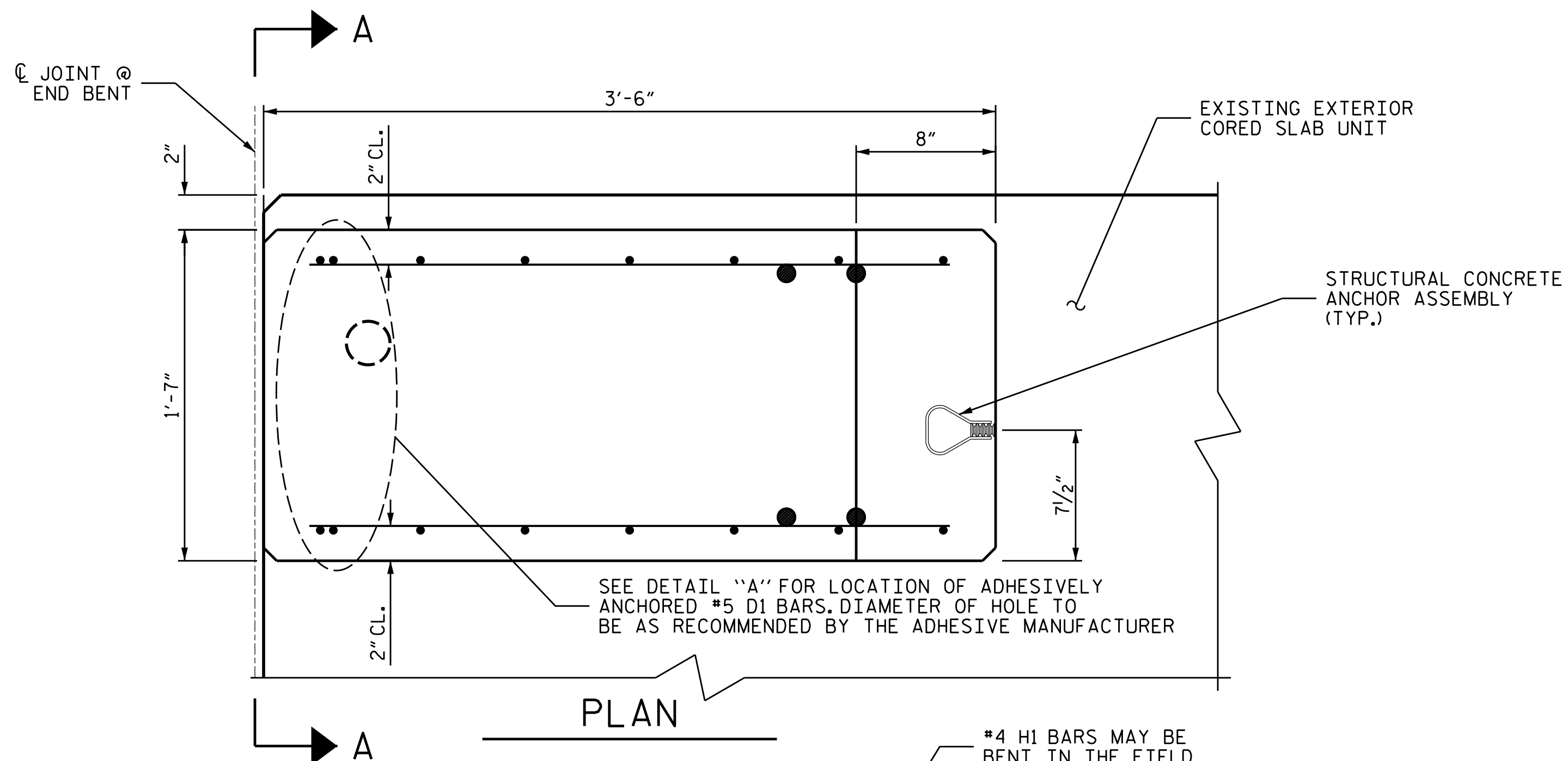
DRAWN BY : R.L.PUTEK DATE : 01/2020
 CHECKED BY : M.A.ALLEN DATE : 02/2020

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-05
1			3			TOTAL SHEETS
2			4			9

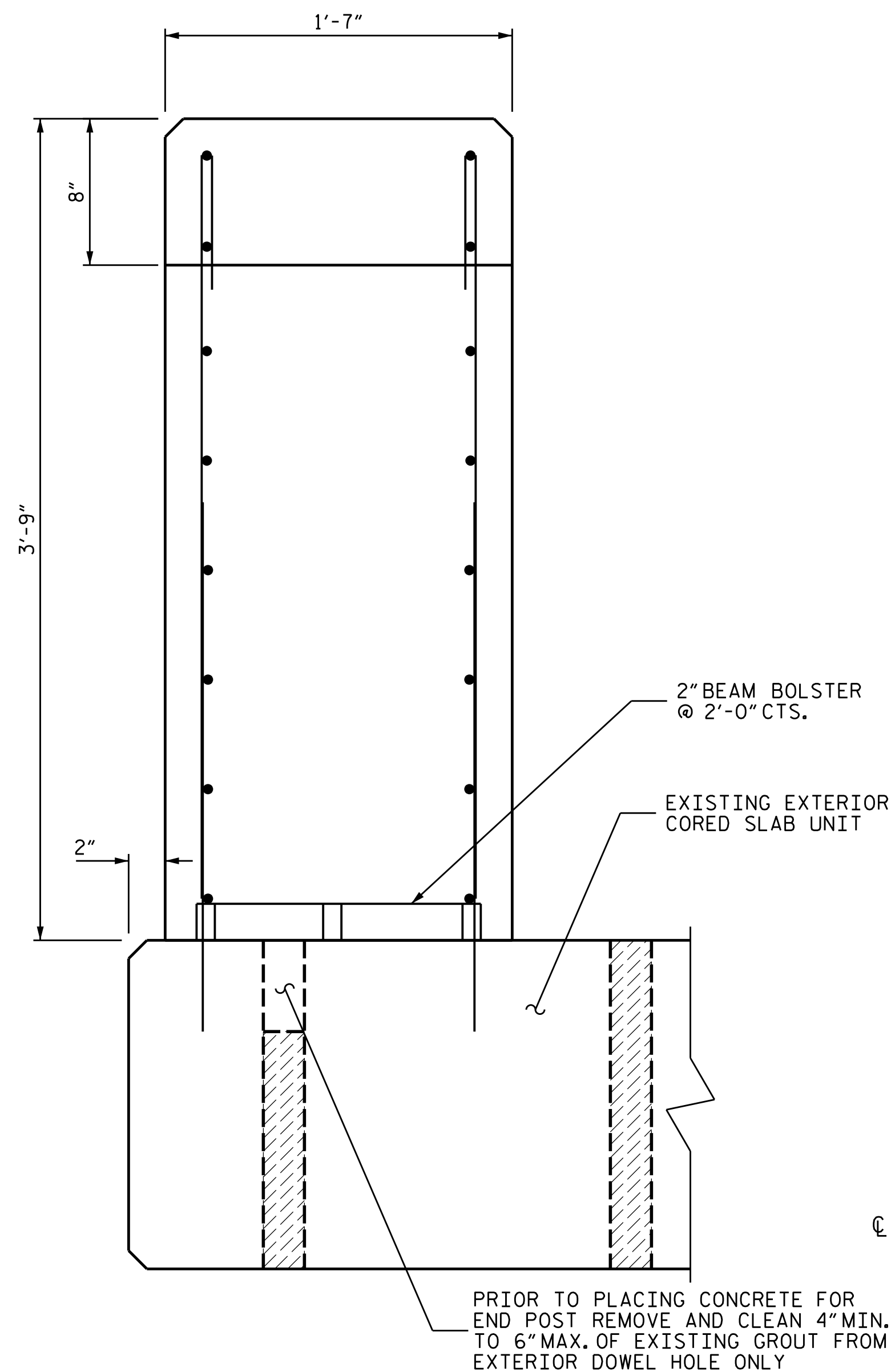
DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED



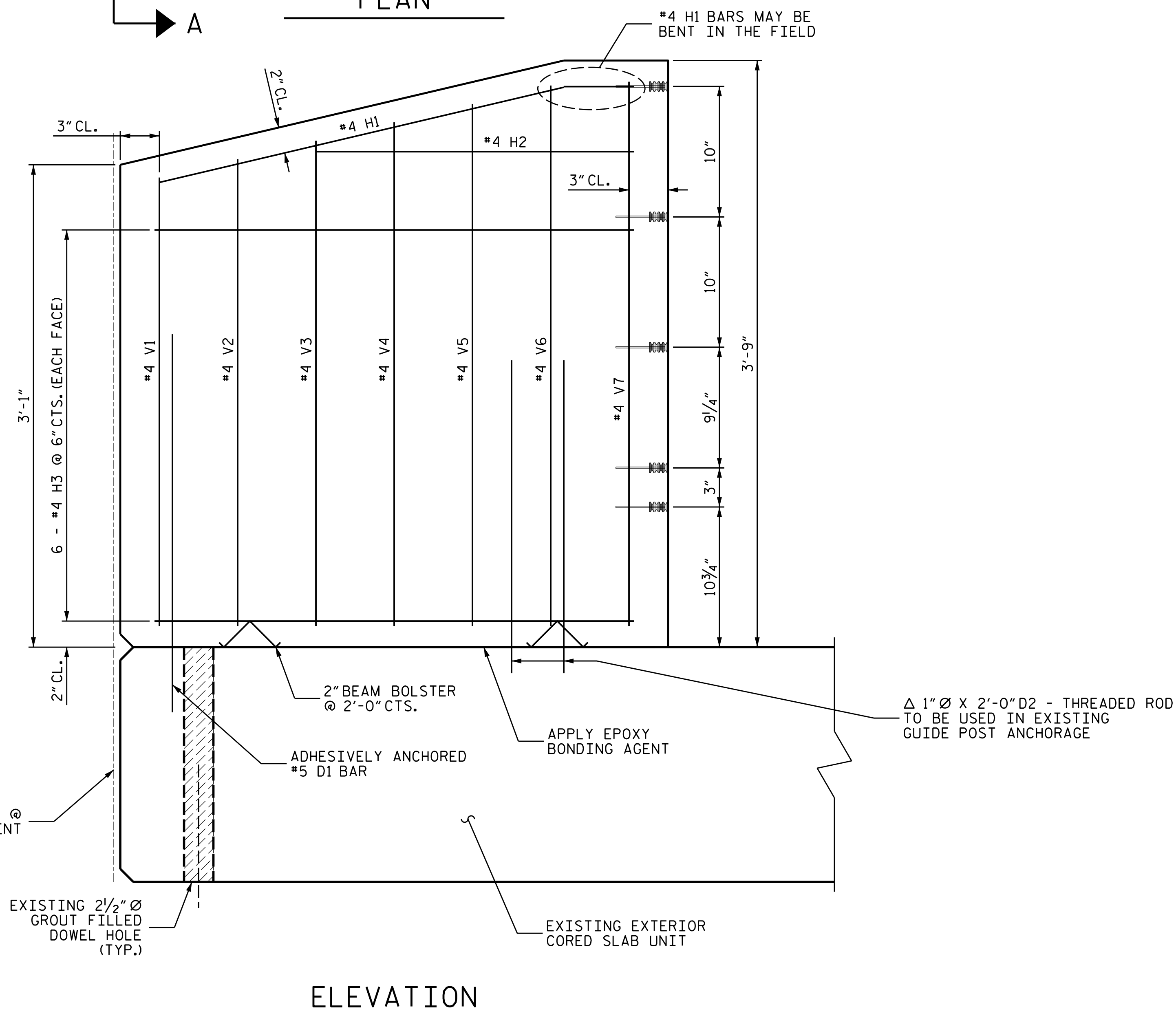
DETAIL "A"
(DIAMETER OF HOLES TO BE AS RECOMMENDED BY THE ADHESIVE MANUFACTURER)



PLAN



SECTION A-A



ELEVATION

(LEFT SIDE SPAN 1 SHOWN, OTHER END SPANS SIMILAR)

BILL OF MATERIAL

FOR ONE END POST 4 REQ'D.

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*D1	2	5	STR.	2'-5"	5
D2	4	Δ	STR.	2'-0"	16
*V1	2	4	STR.	2'-9"	4
*V2	2	4	STR.	2'-11"	4
*V3	2	4	STR.	3'-0"	4
*V4	2	4	STR.	3'-2"	4
*V5	2	4	STR.	3'-3"	4
*V6	2	4	STR.	3'-4"	5
*V7	2	4	STR.	3'-5"	5
*H1	2	4	STR.	3'-1"	4
*H2	2	4	STR.	2'-0"	3
*H3	12	4	STR.	3'-0"	24

* EPOXY COATED REINFORCING STEEL = 66 LBS.

REINFORCING STEEL (1" Ø THREADED ROD) = 16 LBS.

CLASS AA CONCRETE

CLASS AA CONCRETE = 0.71 CU. YDS.

TOTAL LIN. FT. OF CONCRETE END POST = 14.0 LIN. FT.

NOTES

ALL REINFORCING STEEL IN END POSTS SHALL BE EPOXY COATED.

WEIGHT OF 1" Ø THREADED ROD IS BASED ON THE NOMINAL DIAMETER AND WEIGHT PER LINEAR FOOT OF A #7 BAR. THE CONTRACTOR SHALL FIELD VERIFY THREAD COUNT AND TYPE PRIOR TO CONSTRUCTION.

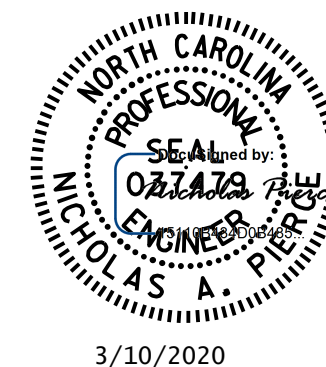
FOR DETAILS OF STRUCTURAL CONCRETE INSERTS IN END POSTS, SEE SHEET S2-09.

THE #5 D1 BARS SHALL BE INSTALLED USING AN ADHESIVE ANCHORING SYSTEM. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE SECTION 420 OF THE STANDARD SPECIFICATIONS.

THE YIELD LOAD FOR THE #5 D1 BARS IS 18.6 KIPS. FIELD TESTING FOR THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED.

NO ADDITIONAL PAYMENT SHALL BE MADE FOR THE CONCRETE END POSTS AS THIS SHALL BE CONSIDERED INCIDENTAL TO THE CONSTRUCTION OF THE 4 BAR METAL RAIL.

PROJECT NO. B-4863
CARTERET COUNTY
BRIDGE NO. 150096



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

CONCRETE END POST

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-06
1			3			TOTAL SHEETS
2			4			9

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DRAWN BY : R.L.PUTEK DATE : 02/2020
CHECKED BY : M.A.ALLEN DATE : 02/2020

NOTES

ALUMINUM RAILS

MATERIAL FOR POSTS, BASES AND RAILS, EXPANSION BARS AND CLAMP BARS SHALL BE ASTM B221 ALLOY 6061-T6.

MATERIAL FOR RIVETS SHALL BE ASTM B316 ALLOY 6061-T6. RIVETS SHALL BE STANDARD BUTTON HEAD AND CONE POINT COLD DRIVEN AS PER DRAWING.

THE BASE OF RAIL POSTS, OR ANY OTHER ALUMINUM SURFACE IN CONTACT WITH CONCRETE SHALL BE THOROUGHLY COATED WITH AN ALUMINUM IMPREGNATED CAULKING COMPOUND OF APPROVED QUALITY.

MATERIAL FOR SHIMS TO BE ASTM B209 ALLOY 6061-T6.

GENERAL NOTES

RAILING SHALL BE CONTINUOUS FROM END POST TO END POST OF BRIDGE. EACH JOINT IN RAIL LENGTH SHALL BE SPICED AS DETAILED. PANEL LENGTHS OF RAIL SHALL BE ATTACHED TO A MINIMUM OF THREE POSTS, PLACE ONE JOINT SPLICE JUST BEYOND THE 3RD RAIL POST FROM EACH END, TYPICALLY 14' FROM THE END, PLACE OTHER JOINTS AS NEEDED.

FOR END OF RAIL TO CLEAR FACE OF CONCRETE END POST DIMENSION, SEE SHEET S2-09.

CAP SCREWS SHALL BE ASTM F593 ALLOY 305 STAINLESS STEEL. WASHERS FOR RAIL ATTACHMENT SHALL MEET THE REQUIREMENTS OF ASTM F844 EXCEPT THEY SHALL BE MADE FROM ALLOY 304 STAINLESS STEEL.

CERTIFIED MILL REPORTS ARE REQUIRED FOR RAILS AND POSTS. SHOP INSPECTION IS NOT REQUIRED.

4 BAR METAL RAIL POSTS SHALL BE SET NORMAL TO CORED SLAB GRADE.

METHOD OF MEASUREMENT FOR METAL RAILS: FOR LENGTH OF METAL RAILS TO BE PAID FOR, SEE THE STANDARD SPECIFICATIONS.

CURVED RAIL USAGE: WHERE RAILS ARE TO BE USED ON BRIDGES ON HORIZONTAL AND/OR VERTICAL CURVATURE THE CONTRACTOR MAY, AT HIS OPTION, HAVE THE REQUIRED CURVATURE IN THE RAIL FORMED IN THE SHOP OR IN THE FIELD. IN EITHER EVENT, THE RAIL SHALL CONFORM WITHOUT BUCKLING OR KINKING TO THE REQUIRED CURVATURE IN A UNIFORM MANNER ACCEPTABLE TO THE ENGINEER.

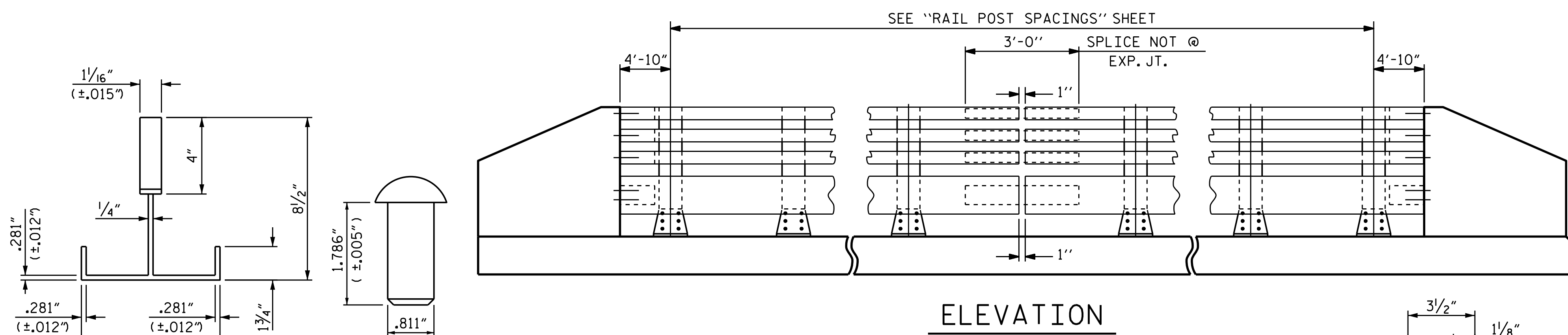
TO INSURE FUTURE IDENTIFICATION OF THE FABRICATOR, A PERMANENT IDENTIFYING MARK SHALL BE PLACED ON EACH POST. THE METHOD OF MARKING AND LOCATION SHALL BE SUCH THAT IT DOES NOT DETRACT FROM THE APPEARANCE OF THE POST, BUT REMAIN VISIBLE AFTER RAIL PLACEMENT.

SHIMS SHALL BE USED AS NECESSARY FOR POST ALIGNMENT.

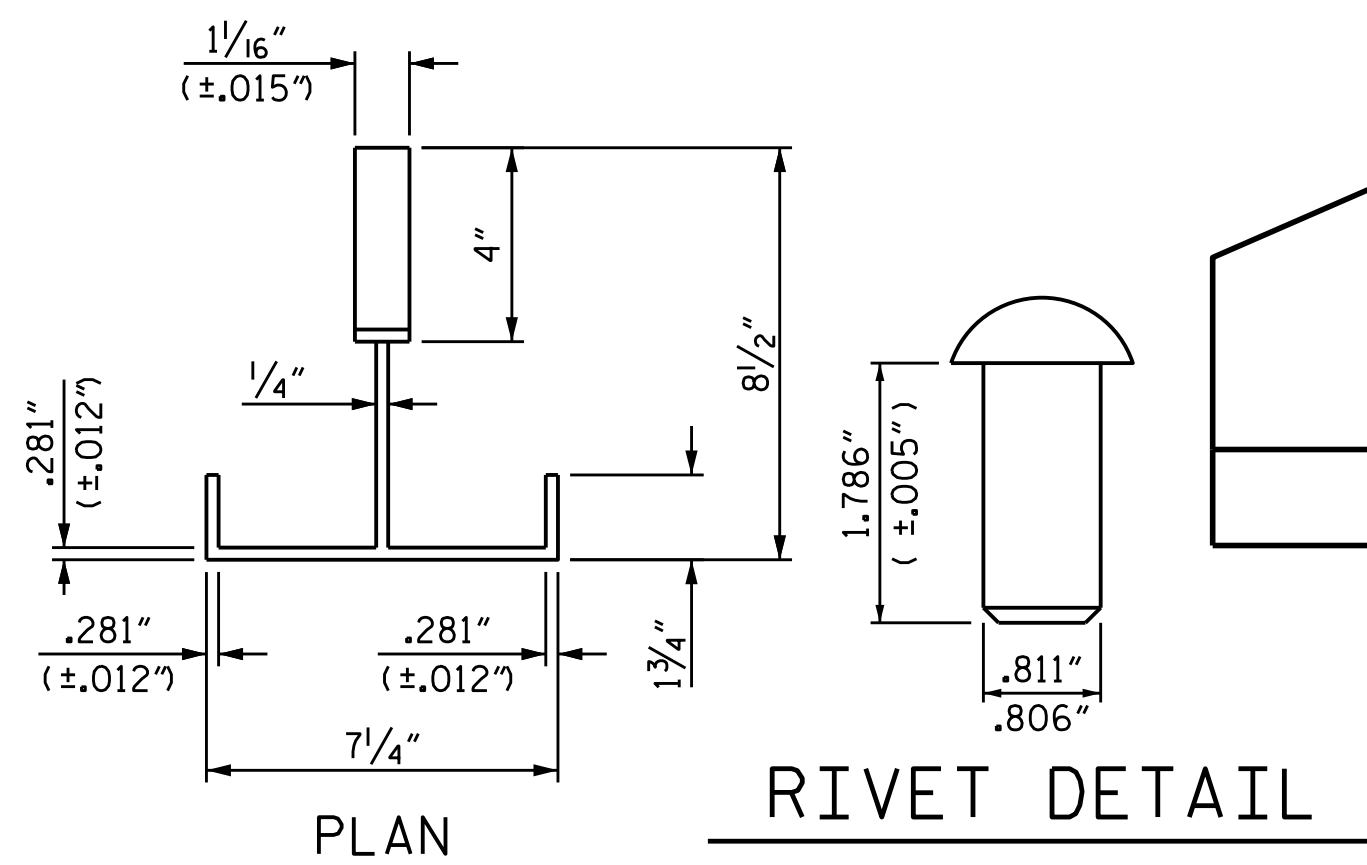
ALLOY 6351-T5 MAY BE SUBSTITUTED FOR ALLOY 6061-T6 WHERE APPLICABLE.

MINOR VARIATIONS IN DETAILS OF METAL RAIL WILL BE CONSIDERED. DETAILS OF SUCH VARIATIONS, IF DESIRED, SHALL BE SUBMITTED FOR APPROVAL.

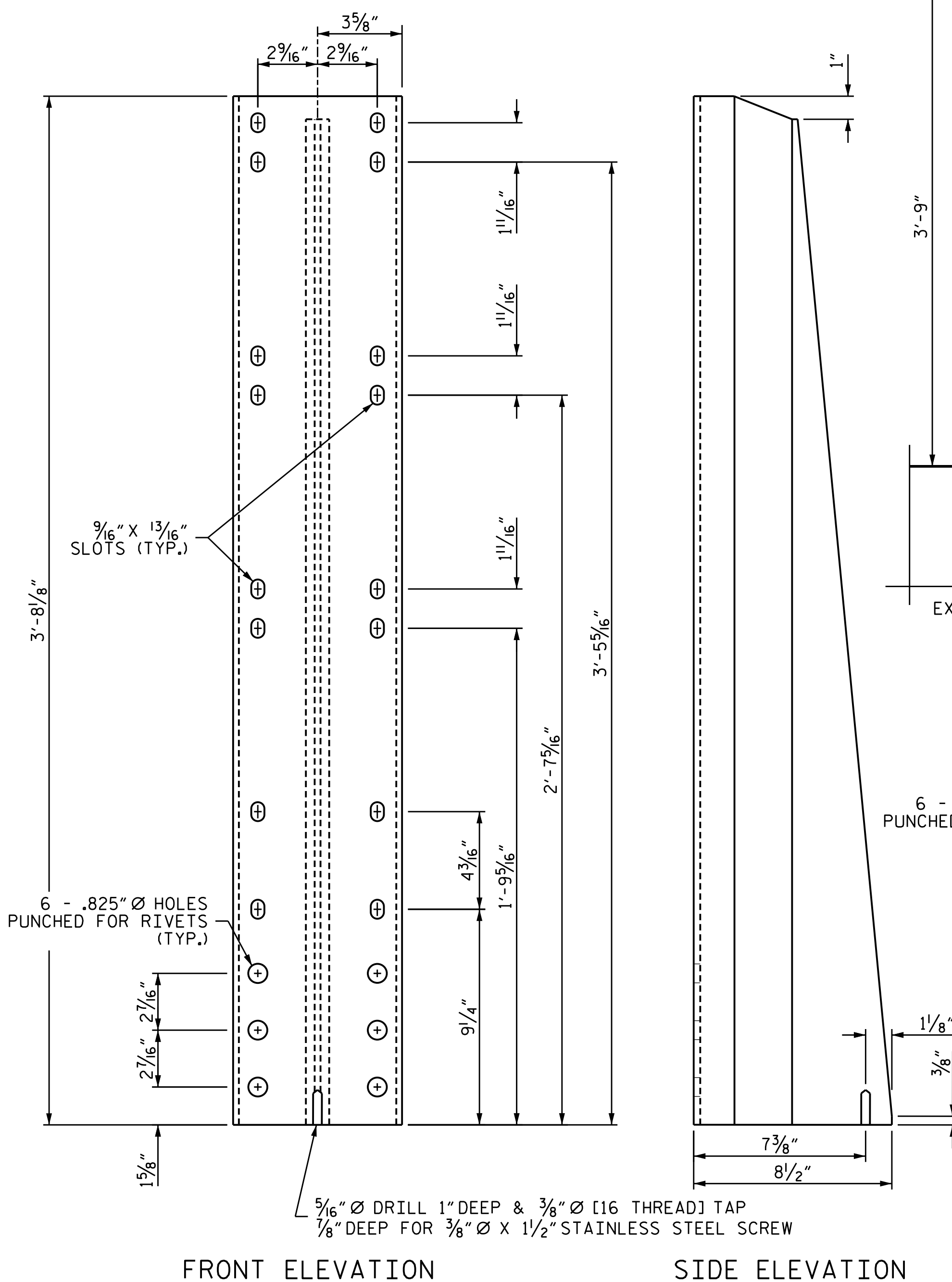
PAY LENGTH = 1158.0 LIN.FT.



ELEVATION



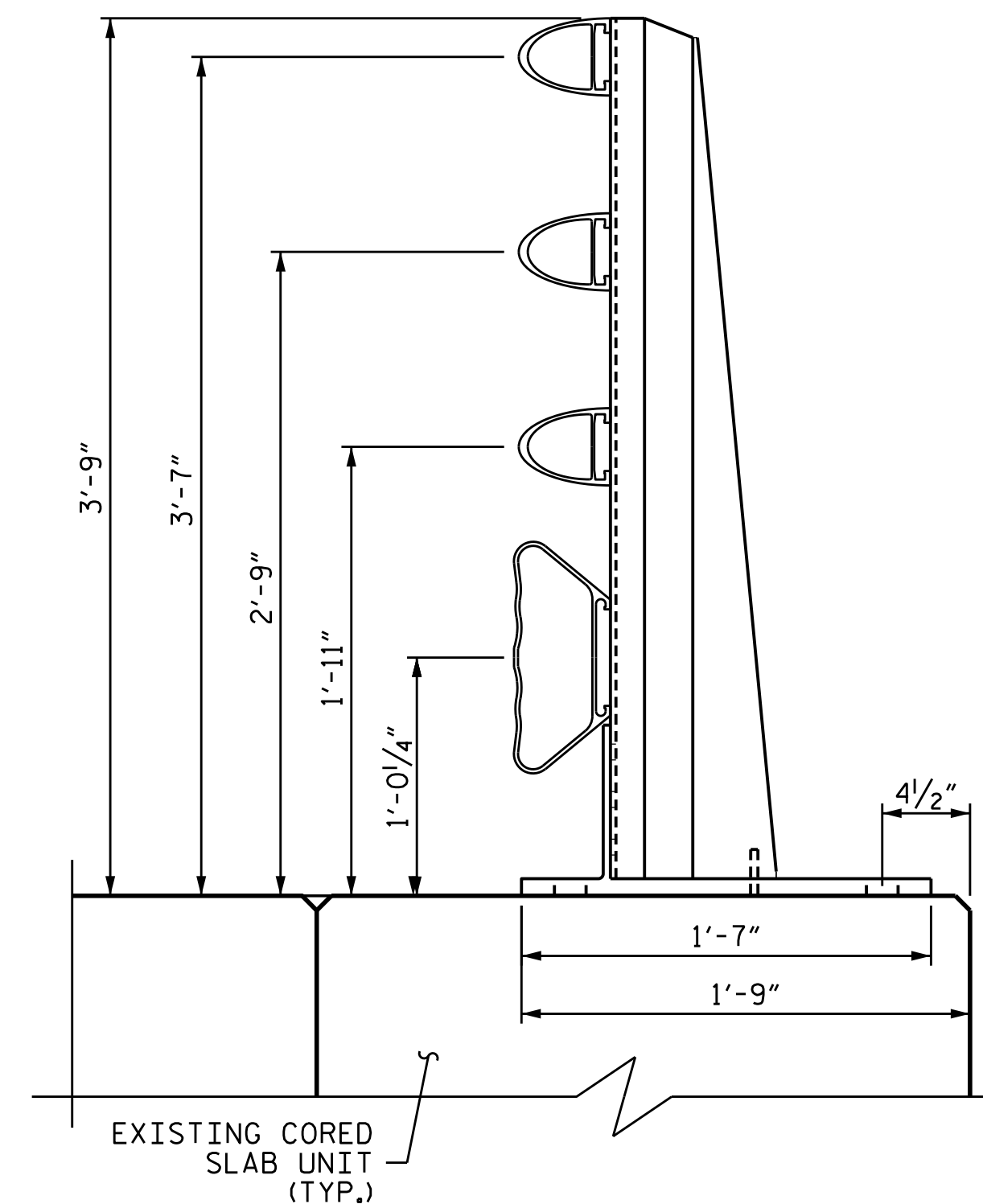
RIVET DETAIL



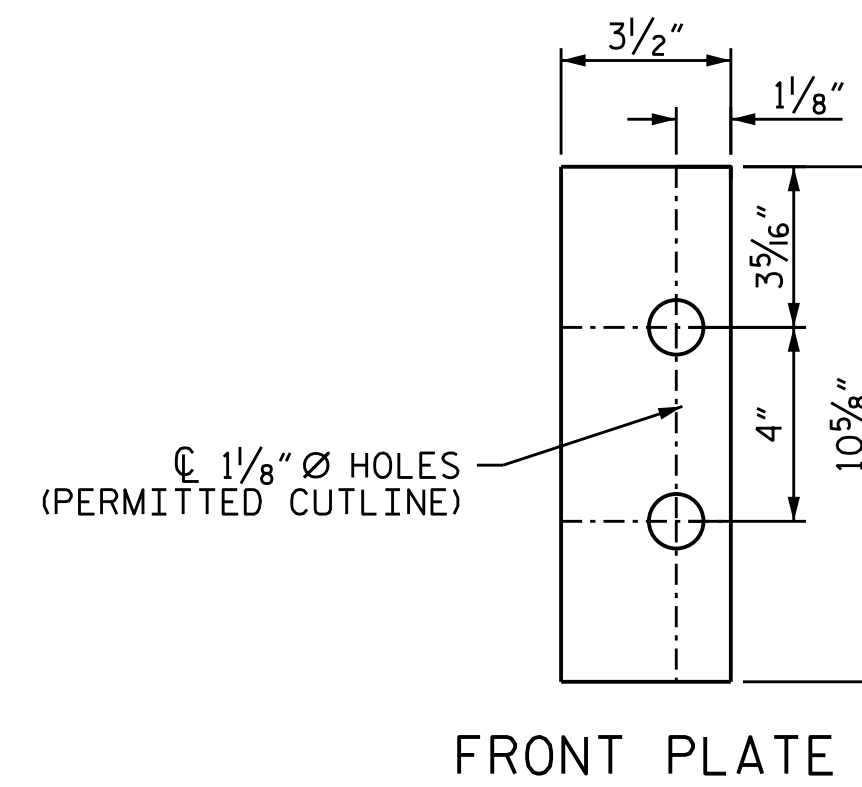
FRONT ELEVATION

SIDE ELEVATION

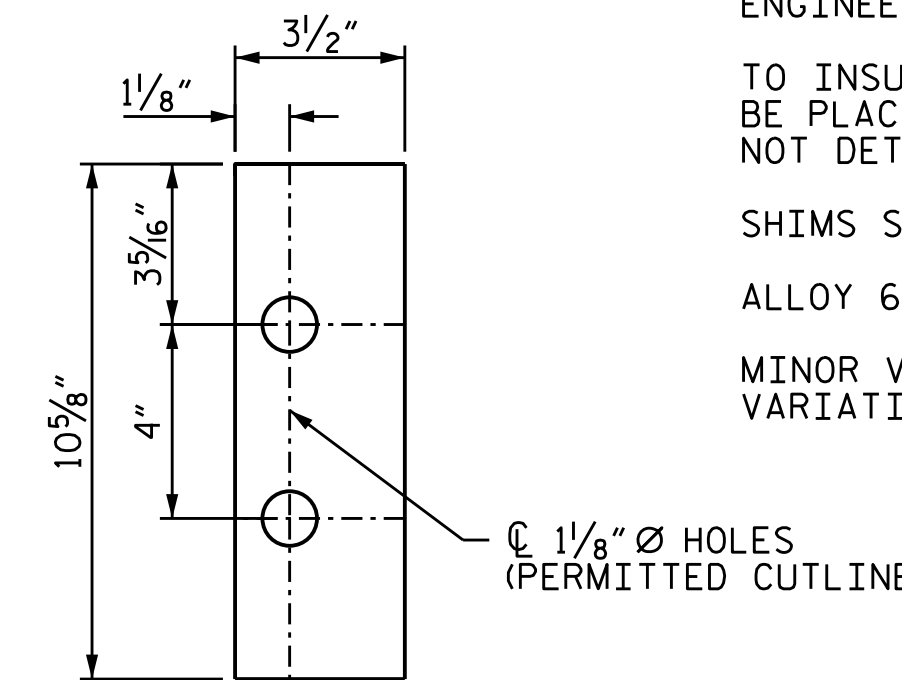
DETAILS OF POST



SECTION THRU RAIL



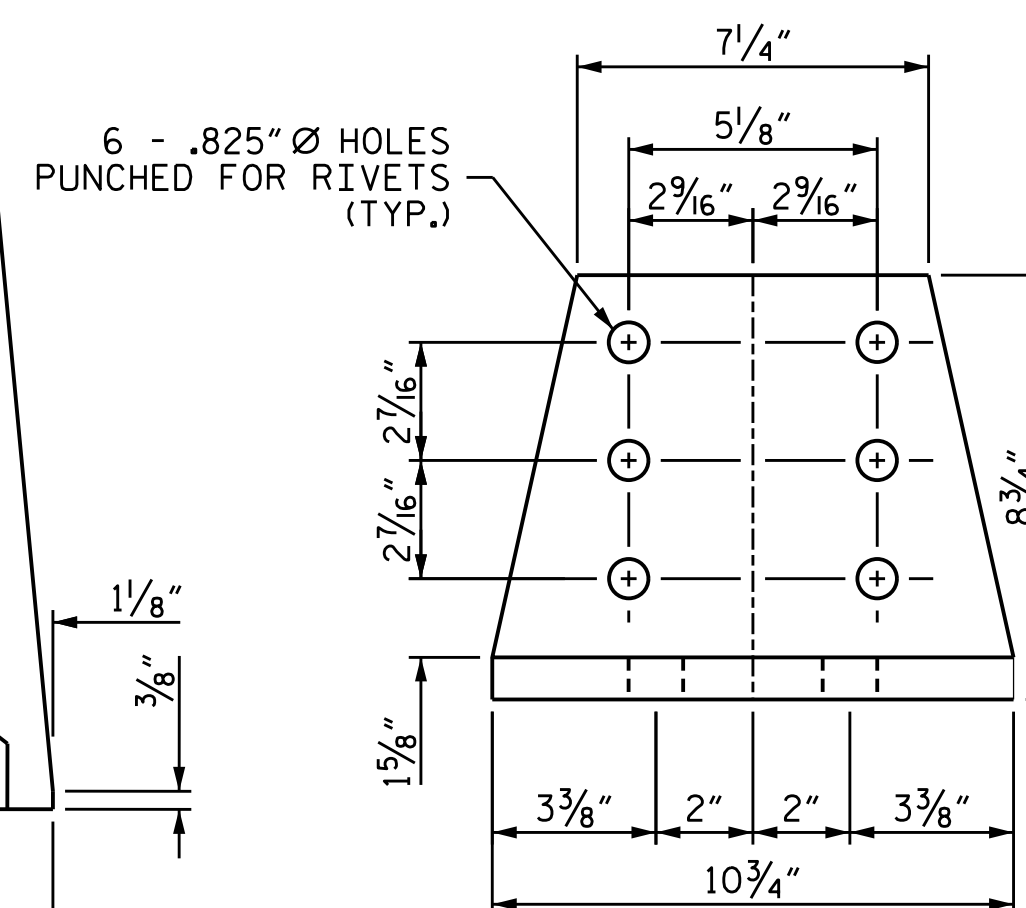
FRONT PLATE



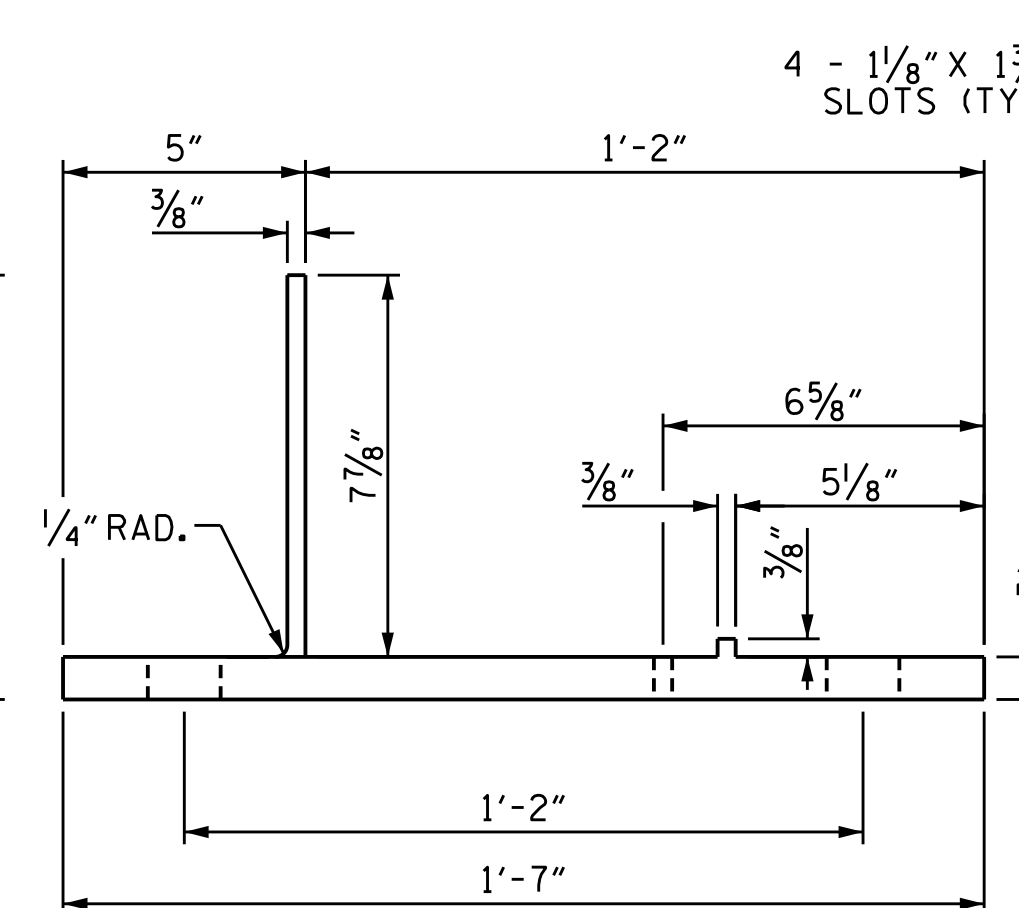
REAR PLATE

SHIM DETAILS

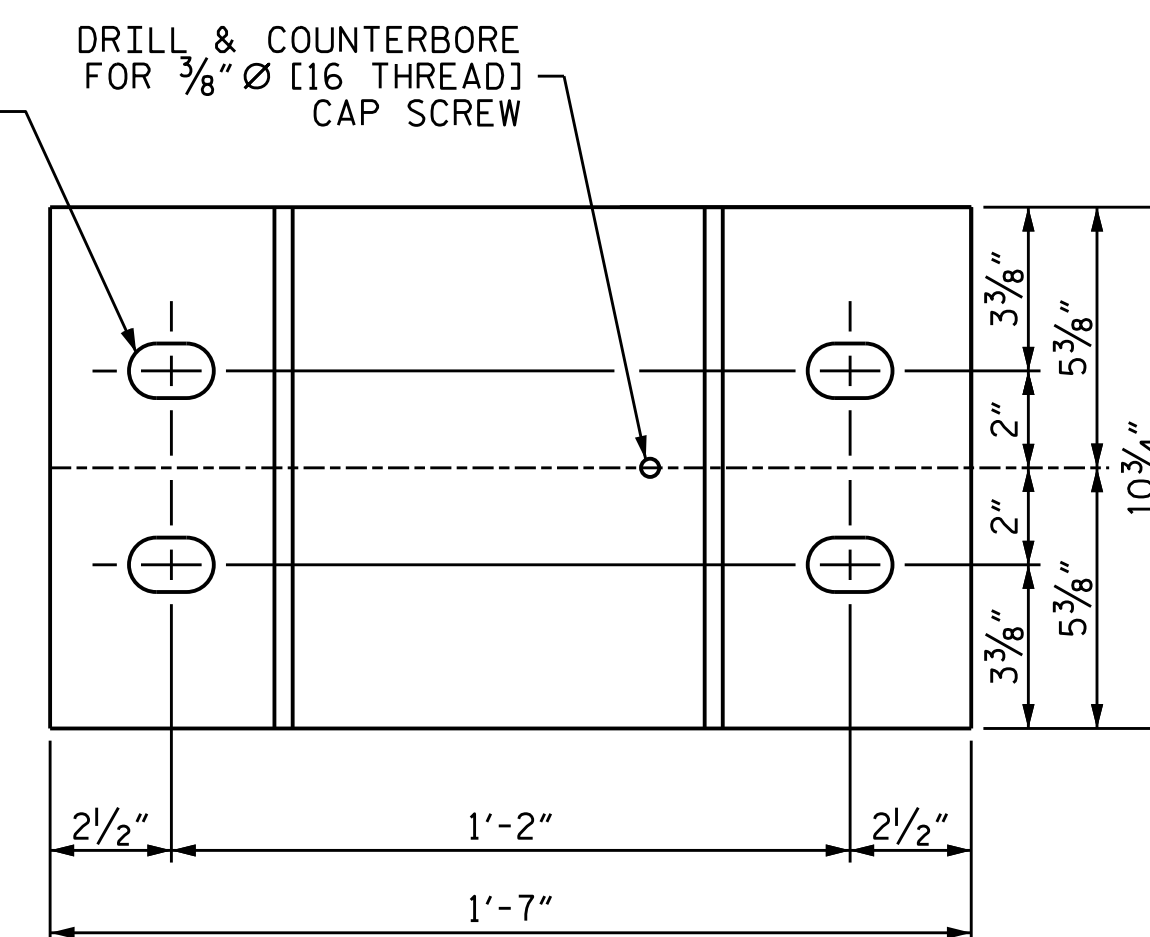
(SHIMS MAY BE CUT ALONG PERMITTED CUTLINE OR SLOTTED TO EDGE OF PLATE TO FACILITATE PLACEMENT)



FRONT ELEVATION



SIDE ELEVATION



PLAN

POST BASE DETAILS

DRAWN BY : R.L.PUTEK DATE : 01/2020
 CHECKED BY : M.A.ALLEN DATE : 02/2020

3/10/2020
 S:\DEV\Squad.D\B4863\Plans\FINAL PLANS\402.013.B4863.SMU.MR01.S2-07.150096.dgn
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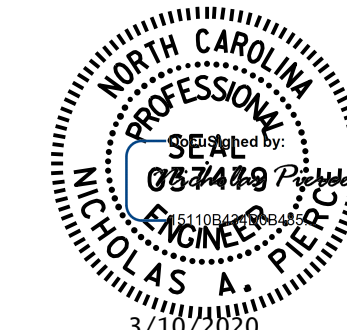
DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

PROJECT NO. B-4863
 CARTERET COUNTY
 BRIDGE NO. 150096

SHEET 1 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

4 BAR METAL RAIL



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-07
1			3			TOTAL SHEETS
2			4			9

NOTES

STRUCTURAL CONCRETE ANCHOR ASSEMBLY

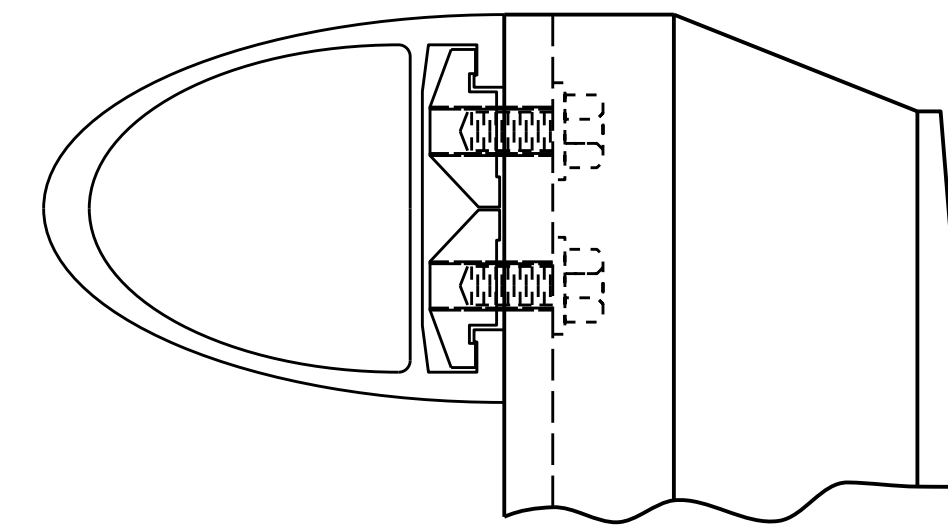
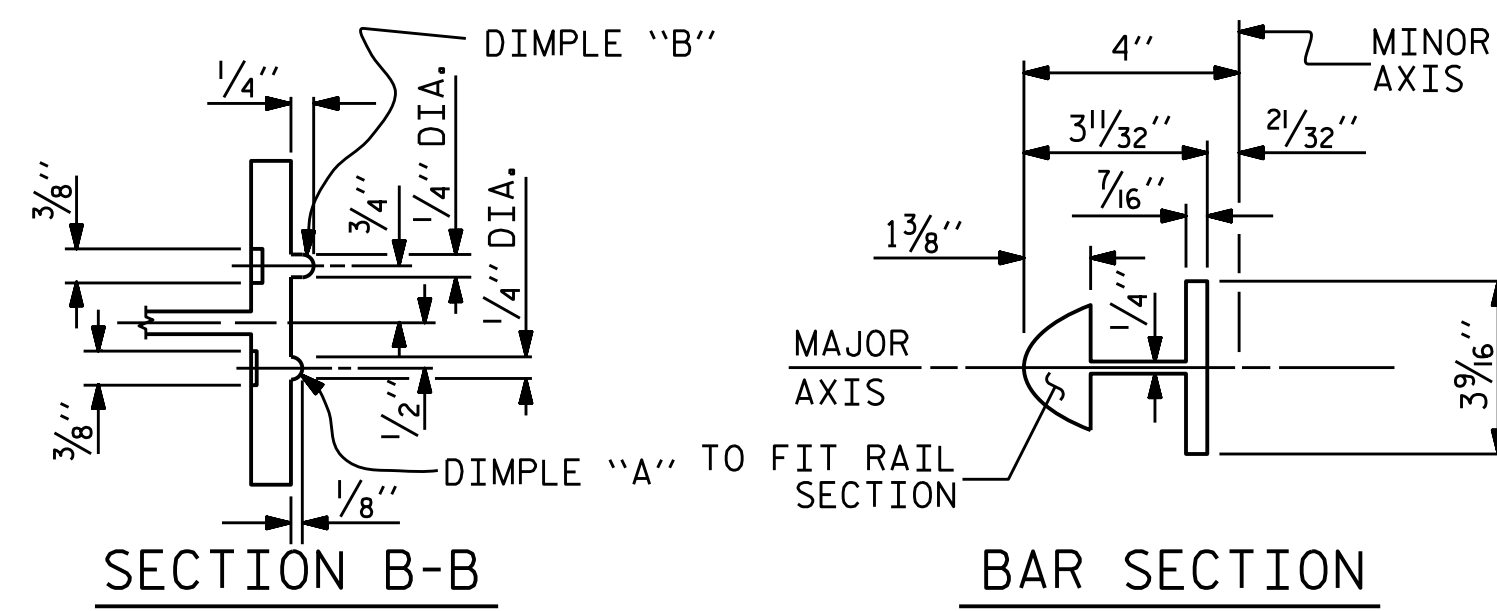
THE STRUCTURAL CONCRETE ANCHOR ASSEMBLY SHALL CONSIST OF THE FOLLOWING COMPONENTS:

EXISTING ANCHORING ASSEMBLY FERRULES HAVE A MINIMUM LENGTH OF THREADS OF 2 1/4" FOR 1" Ø BOLTS.

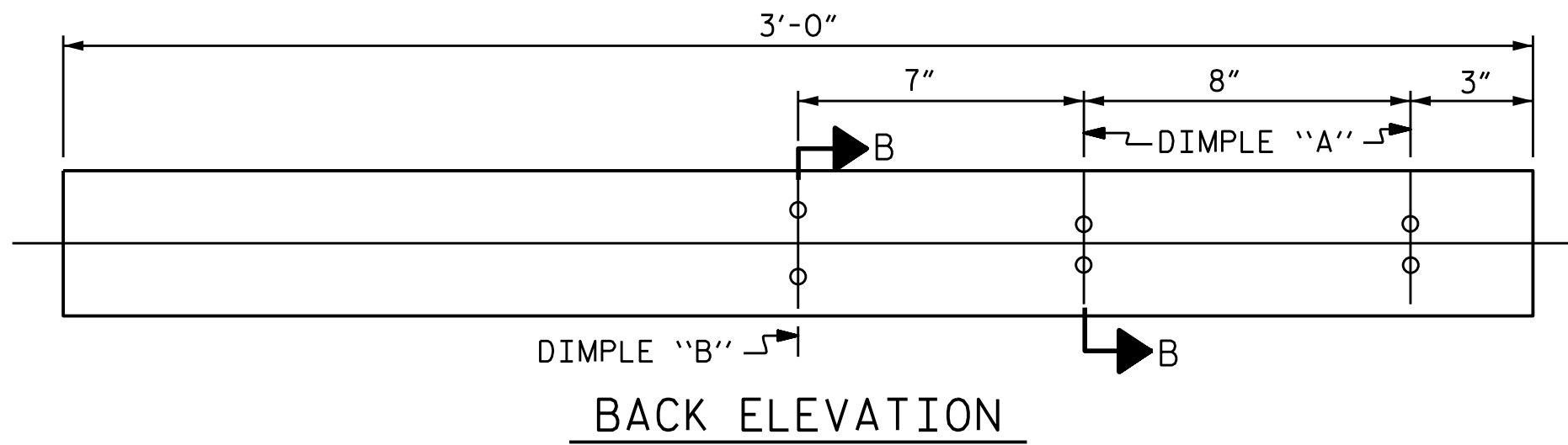
4 - 1" Ø X 2 3/4" BOLTS WITH WASHERS. BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLTS AND WASHERS SHALL BE GALVANIZED. AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 1" Ø X 2 3/4" GALVANIZED BOLTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.

THE COST OF THE ANCHOR BOLTS AND WASHERS COMPLETE IN PLACE SHALL BE INCLUDED IN THE BID PRICE FOR LINEAR FEET OF METAL RAIL.

BOLTS TO BE TIGHTENED ONE-HALF TURN WITH A WRENCH FROM A FINGER-TIGHT POSITION.

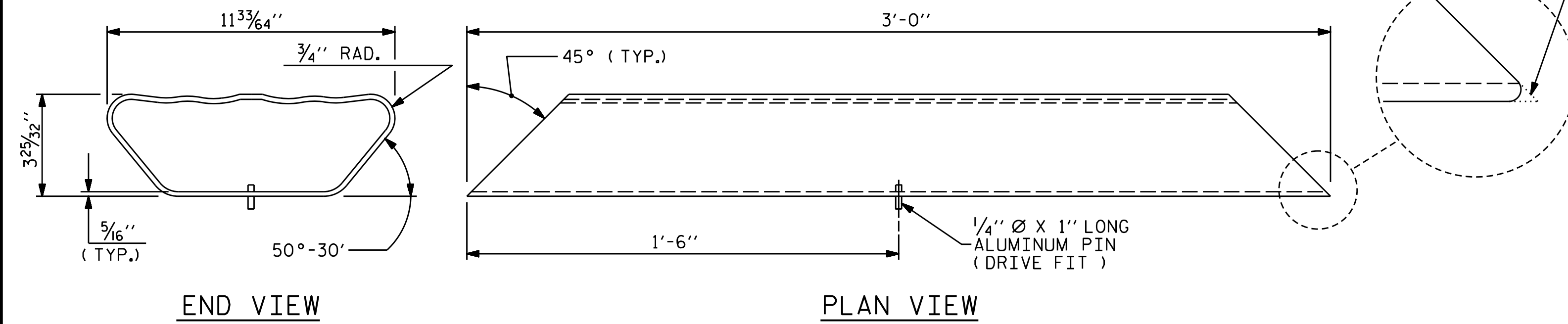


CLAMP ASSEMBLY
TOP RAIL SHOWN
(MIDDLE & BOTTOM RAIL ARE SIMILAR)



BACK ELEVATION

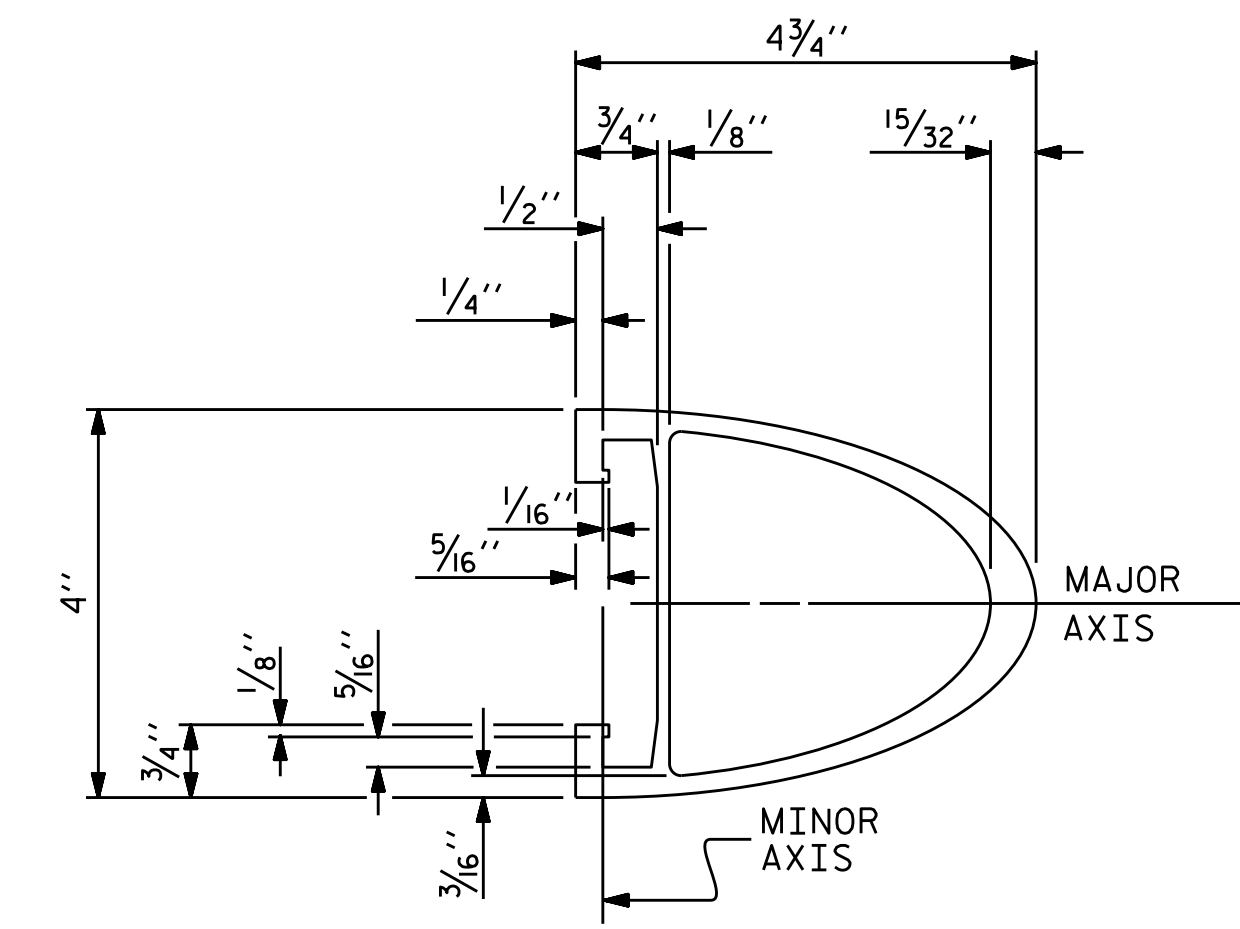
TOP & MIDDLE RAIL EXPANSION BAR



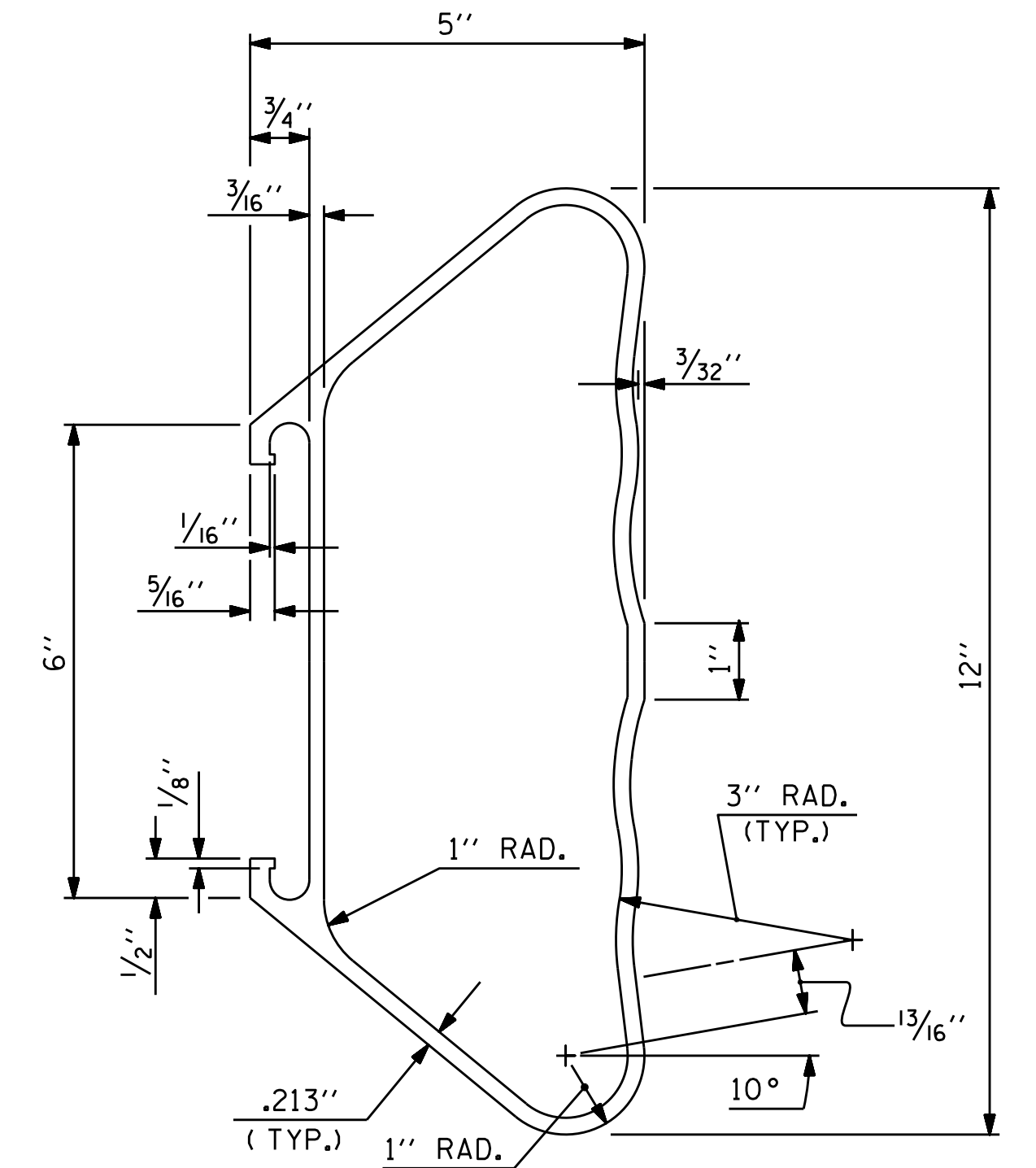
END VIEW

PLAN VIEW

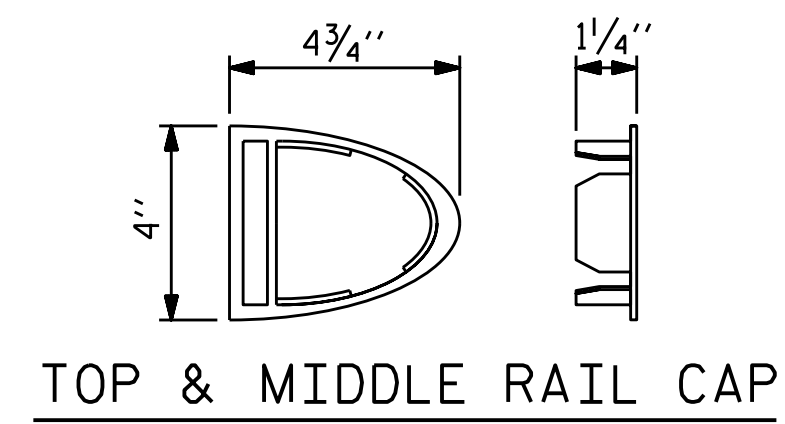
BOTTOM RAIL EXPANSION BAR



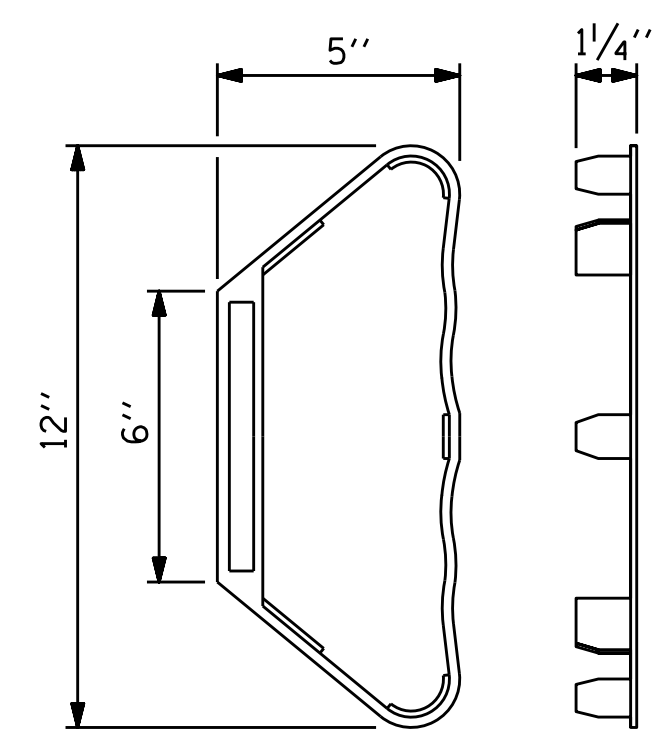
TOP & MIDDLE RAIL SECTIONS



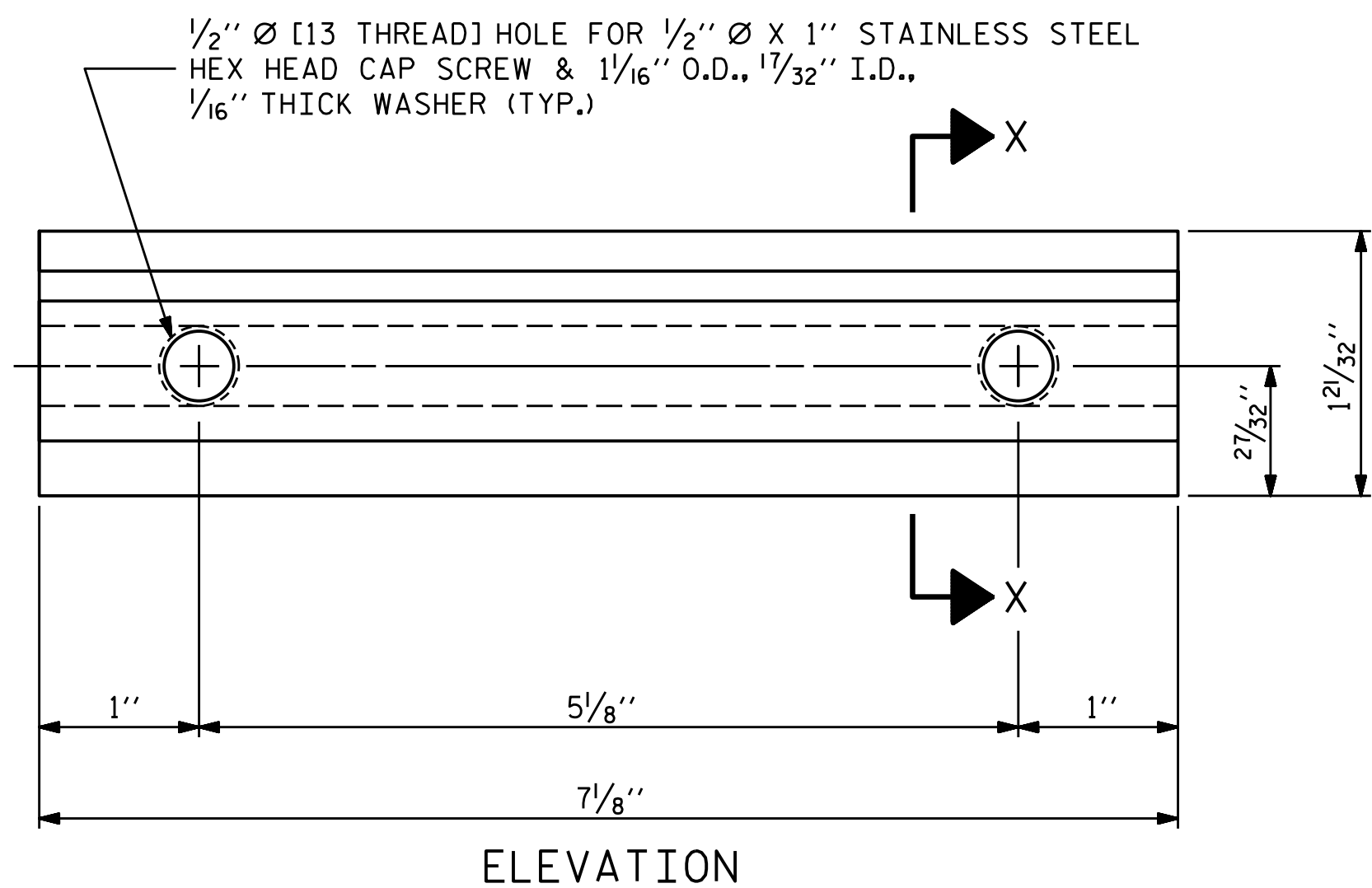
BOTTOM RAIL SECTION



TOP & MIDDLE RAIL CAP

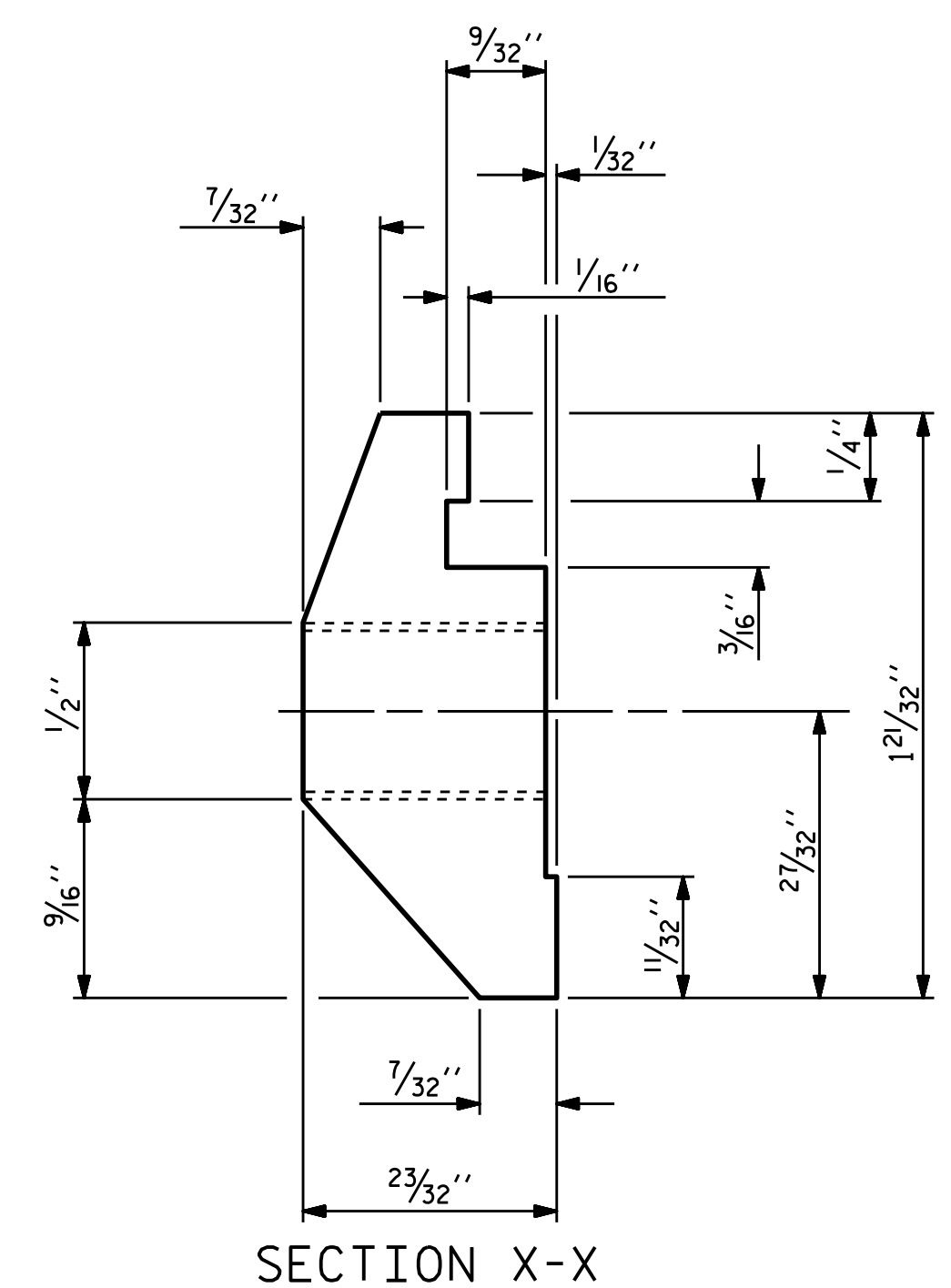


BOTTOM RAIL CAP



ELEVATION

CLAMP BAR DETAIL
(8 REQUIRED PER POST)



SECTION X-X

PROJECT NO. B-4863
CARTERET COUNTY
BRIDGE NO.: 150096

SHEET 2 OF 3



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

4 BAR METAL RAIL

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-08	
1			3			TOTAL SHEETS	
2			4			9	

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ASSEMBLED BY : R.L. PUTEK DATE : 02/2020
CHECKED BY : N.A. PIERCE DATE : 02/2020

NOTES

METAL RAIL TO END POST CONNECTION

- THE METAL RAIL TO END POST CONNECTION SHALL CONSIST OF THE FOLLOWING COMPONENTS:
- $\frac{1}{2}$ " PLATES SHALL CONFORM TO AASHTO M270 GRADE 36 AND SHALL BE GALVANIZED AFTER FABRICATION.
 - $\frac{3}{4}$ " STRUCTURAL CONCRETE INSERT SHALL HAVE A WORKING LOAD SHEAR CAPACITY OF 4800 LBS. THE FERRULES SHALL ENGAGE A $\frac{3}{4}$ " \times $1\frac{5}{8}$ " BOLT WITH 2" O.D. WASHER IN PLACE. THE $\frac{3}{4}$ " \times $1\frac{5}{8}$ " BOLT SHALL HAVE N.C. THREADS.
 - CAP SCREWS FOR RAIL ATTACHMENT TO ANGLE SHALL CONFORM TO THE REQUIREMENTS OF ASTM F593 ALLOY 305 STAINLESS STEEL. CAP SCREWS TO BE CENTERED IN SLOTS AT 60° F. WASHERS FOR RAIL ATTACHMENT SHALL MEET THE REQUIREMENTS OF ASTM F844 EXCEPT THEY SHALL BE MADE FROM ALLOY 304 STAINLESS STEEL.
 - STANDARD CLAMP BARS SHEET S2-08.

THE COST OF THE STANDARD CLAMP BARS AND CAP SCREWS USED IN THE METAL RAIL TO END POST CONNECTION SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR LINEAR FEET OF 3 BAR METAL RAIL.

THE $\frac{3}{4}$ " STRUCTURAL CONCRETE INSERT WITH BOLT SHALL BE ASSEMBLED IN THE SHOP.

THE COST OF THE $\frac{3}{4}$ " STRUCTURAL CONCRETE INSERT ASSEMBLY, AND THE $\frac{1}{2}$ " PLATES COMPLETE IN PLACE SHALL BE INCLUDED IN THE VARIOUS PAY ITEMS.

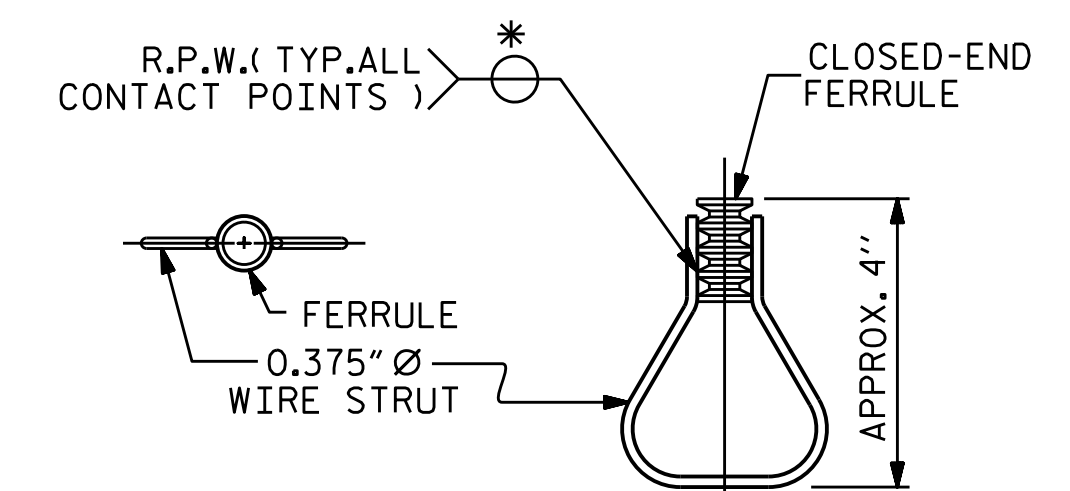
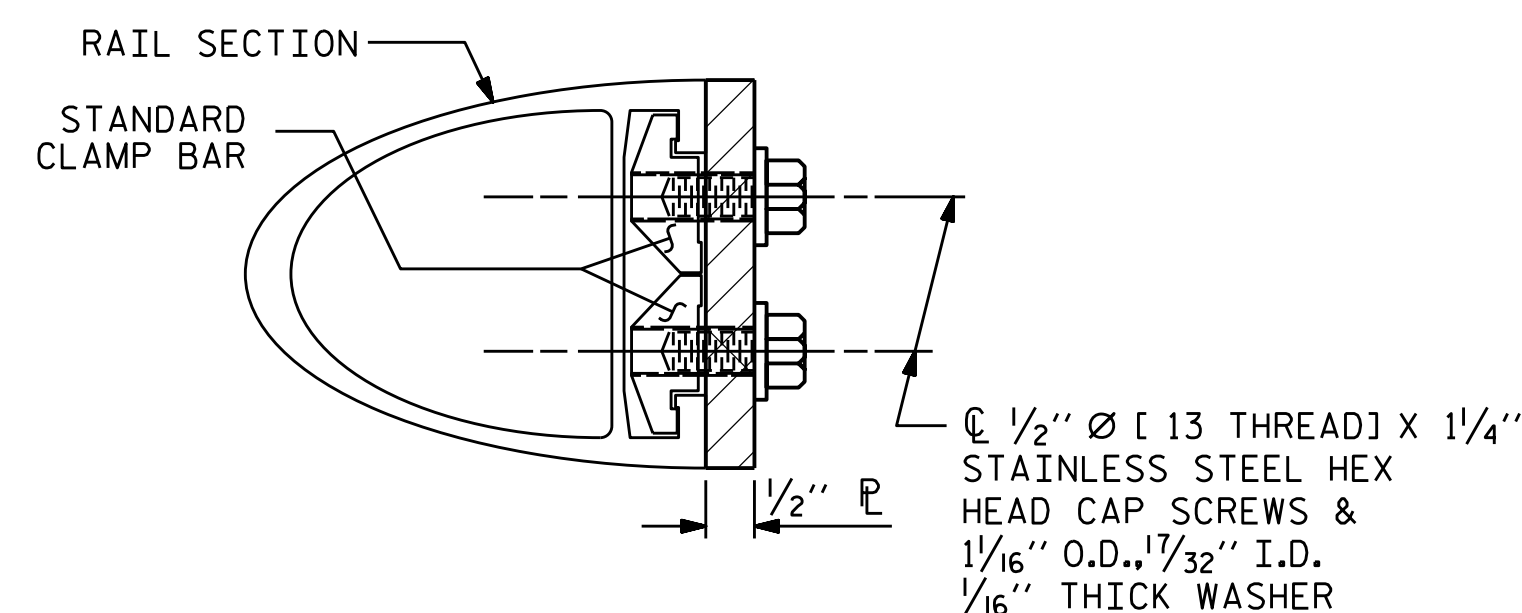
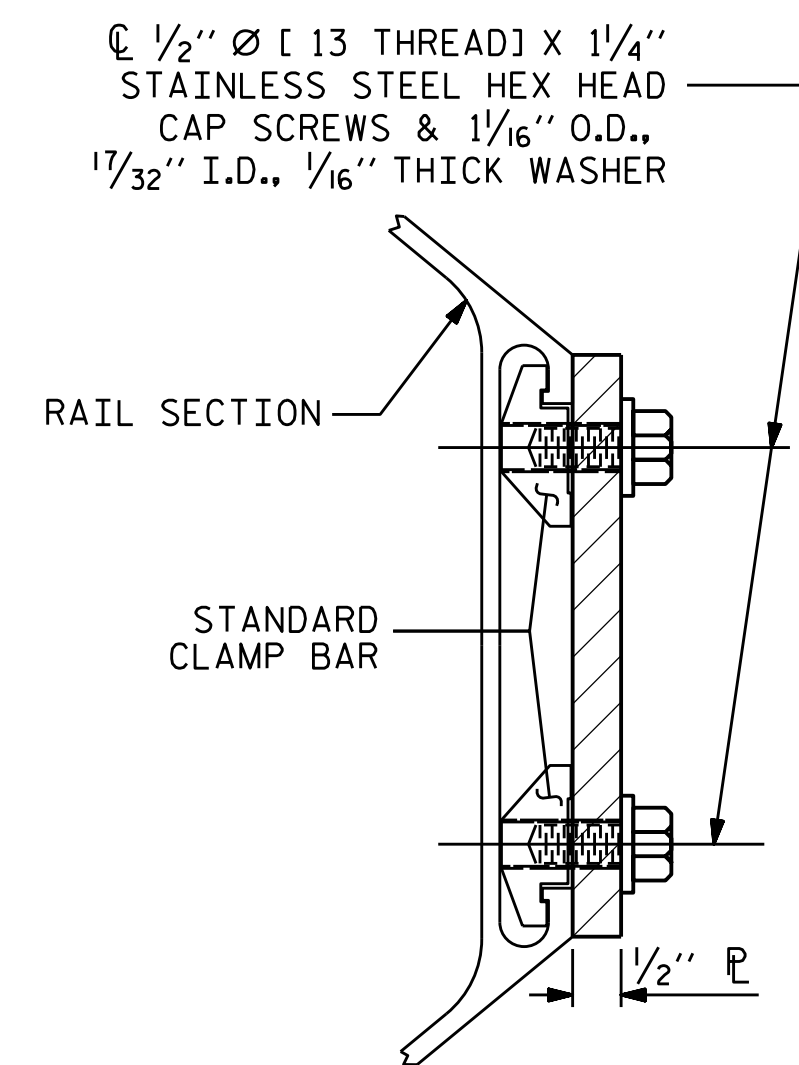
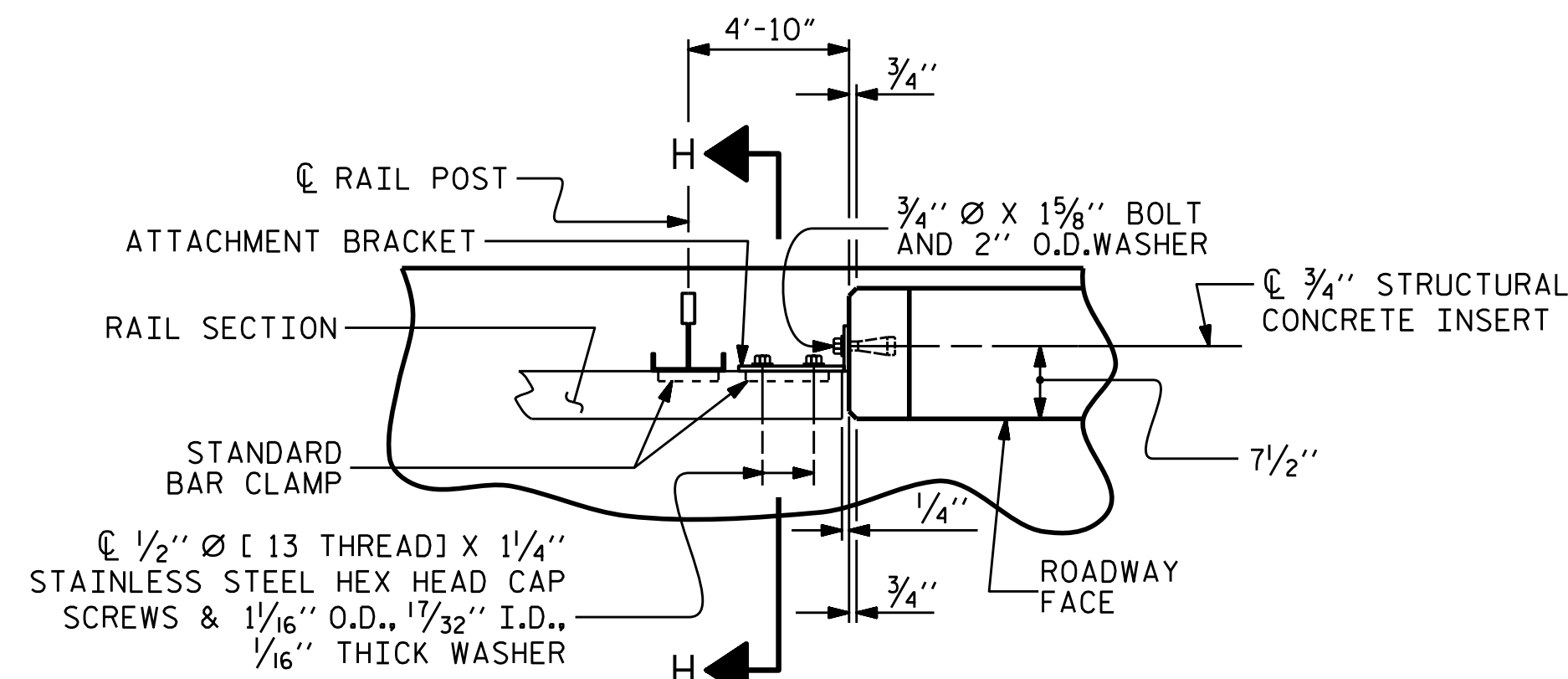
THE CONTRACTOR, AT HIS OPTION, MAY USE AN ADHESIVE BONDING SYSTEM IN LIEU OF THE STRUCTURAL CONCRETE INSERT EMBEDDED IN THE END POST. IF THE ADHESIVE BONDING SYSTEM IS USED, THE $\frac{3}{4}$ " \times $1\frac{5}{8}$ " BOLT WITH WASHER SHALL BE REPLACED WITH A $\frac{3}{4}$ " \times $6\frac{1}{2}$ " BOLT AND 2" O.D. WASHER. ALL SPECIFICATIONS THAT APPLY TO THE $\frac{3}{4}$ " \times $1\frac{5}{8}$ " BOLT SHALL APPLY TO THE $\frac{3}{4}$ " \times $6\frac{1}{2}$ " BOLT. FIELD TESTING OF THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED.

NOTES

STRUCTURAL CONCRETE INSERT

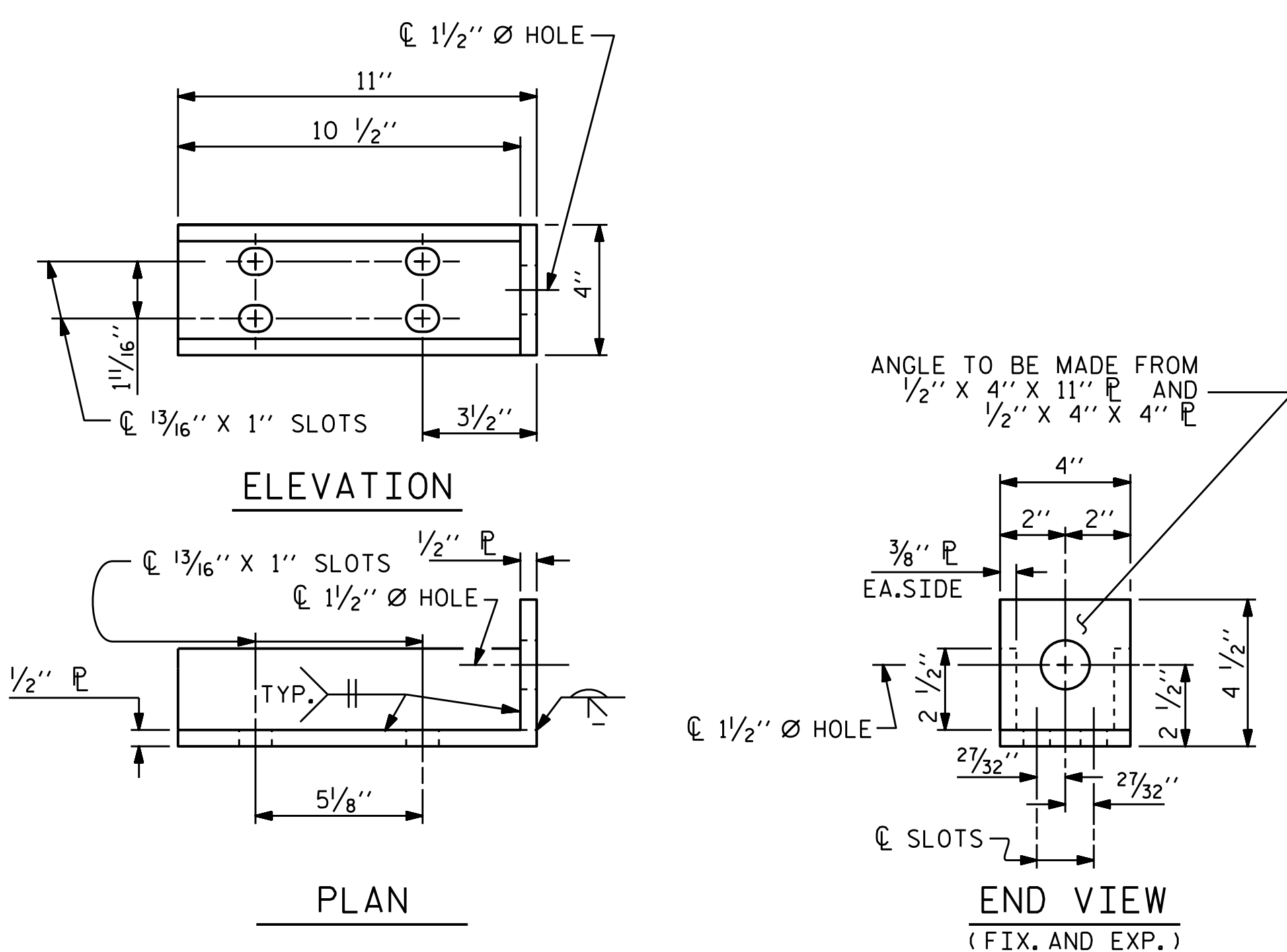
THE STRUCTURAL CONCRETE INSERT ASSEMBLY SHALL CONSIST OF THE FOLLOWING COMPONENTS:

- FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF $1\frac{1}{2}$ ".
- 1 - $\frac{3}{4}$ " \times $1\frac{5}{8}$ " BOLT WITH WASHER, BOLT SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLT AND WASHER SHALL BE GALVANIZED. AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLT AND WASHER MAY BE USED AS AN ALTERNATE FOR THE $\frac{3}{4}$ " \times $1\frac{5}{8}$ " GALVANIZED BOLT AND WASHER, THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.
- WIRE STRUT SHOWN IN THE CONCRETE INSERT ASSEMBLY DETAIL IS THE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 PSI. AS AN OPTION, A $\frac{1}{16}$ " \times WIRE STRUT WITH A MINIMUM TENSILE STRENGTH OF 90,000 PSI IS ACCEPTABLE.

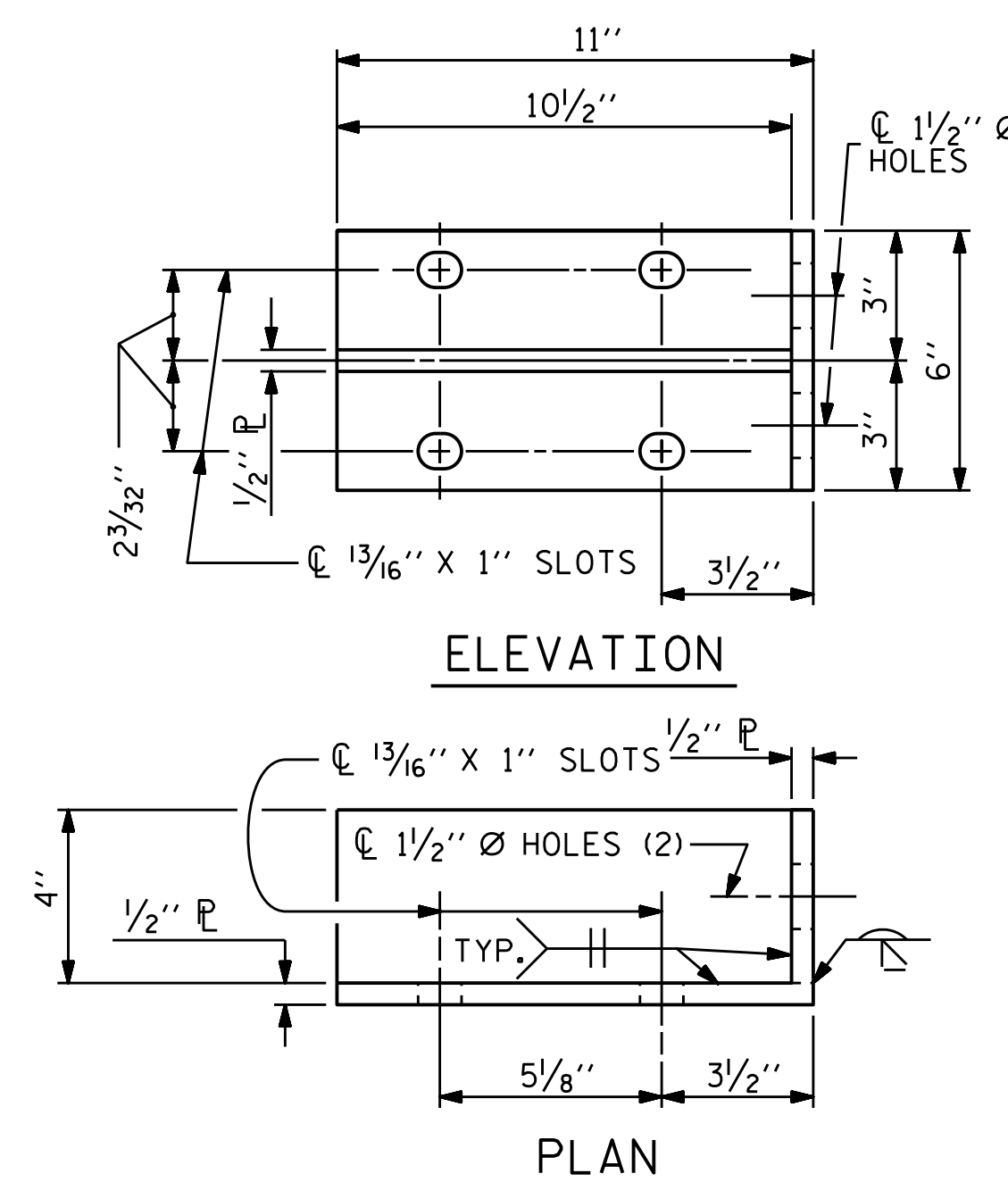


STRUCTURAL CONCRETE INSERT

* EACH WELDED ATTACHMENT OF WIRE TO FERRULE SHALL DEVELOP THE TENSILE STRENGTH OF THE WIRE



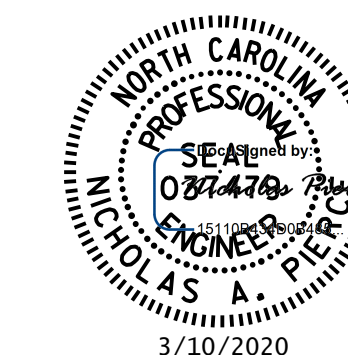
DETAILS FOR ATTACHMENT BRACKET
(TOP & MIDDLE RAILS ONLY)



DETAILS FOR ATTACHMENT BRACKET
(BOTTOM RAIL ONLY)

PROJECT NO. B-4863
CARTERET COUNTY
BRIDGE NO.: 150096

SHEET 3 OF 3



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

4 BAR METAL RAIL

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-09
1			3			TOTAL SHEETS
2			4			9

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ASSEMBLED BY : R.L. PUTEK DATE : 02/2020
CHECKED BY : N.A. PIERCE DATE : 02/2020

STANDARD NOTES

DESIGN DATA:

SPECIFICATIONS - - - - -	A.A.S.H.T.O. (CURRENT)
LIVE LOAD - - - - -	SEE PLANS
IMPACT ALLOWANCE - - - - -	SEE A.A.S.H.T.O.
STRESS IN EXTREME FIBER OF STRUCTURAL STEEL - AASHTO M270 GRADE 36 - -	20,000 LBS. PER SQ. IN.
- AASHTO M270 GRADE 50W - -	27,000 LBS. PER SQ. IN.
- AASHTO M270 GRADE 50 - -	27,000 LBS. PER SQ. IN.
REINFORCING STEEL IN TENSION - GRADE 60 - - -	24,000 LBS. PER SQ. IN.
CONCRETE IN COMPRESSION - - - - -	1,200 LBS. PER SQ. IN.
CONCRETE IN SHEAR - - - - -	SEE A.A.S.H.T.O.
STRUCTURAL TIMBER - TREATED OR UNTREATED EXTREME FIBER STRESS - - -	1,800 LBS. PER SQ. IN.
COMPRESSION PERPENDICULAR TO GRAIN OF TIMBER - - - - -	375 LBS. PER SQ. IN.
EQUIVALENT FLUID PRESSURE OF EARTH - - - - -	30 LBS. PER CU. FT. (MINIMUM)

MATERIAL AND WORKMANSHIP:

EXCEPT AS MAY OTHERWISE BE SPECIFIED ON PLANS OR IN THE SPECIAL PROVISIONS, ALL MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE 2018 "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" OF THE N. C. DEPARTMENT OF TRANSPORTATION.

STEEL SHEET PILING FOR PERMANENT OR TEMPORARY APPLICATIONS SHALL BE HOT ROLLED.

CONCRETE:

UNLESS OTHERWISE REQUIRED ON PLANS, CLASS A CONCRETE SHALL BE USED FOR ALL PORTIONS OF ALL STRUCTURES WITH THE EXCEPTION THAT: CLASS AA CONCRETE SHALL BE USED IN BRIDGE SUPERSTRUCTURES, ABUTMENT BACKWALLS, AND APPROACH SLABS; AND CLASS B CONCRETE SHALL BE USED FOR SLOPE PROTECTION AND RIP RAP.

CONCRETE CHAMFERS:

UNLESS OTHERWISE NOTED ON THE PLANS, ALL EXPOSED CORNERS ON STRUCTURES SHALL BE CHAMFERED 3/4" WITH THE FOLLOWING EXCEPTIONS: TOP CORNERS OF CURBS MAY BE ROUNDED TO 1/2" RADIUS WHICH IS BUILT INTO CURB FORMS; CORNERS OF TRANSVERSE FLOOR EXPANSION JOINTS SHALL BE ROUNDED WITH A 1/4" FINISHING TOOL UNLESS OTHERWISE REQUIRED ON PLANS; AND CORNERS OF EXPANSION JOINTS IN THE ROADWAY FACES AND TOPS OF CURBS AND SIDEWALKS SHALL BE ROUNDED TO A 1/4" RADIUS WITH A FINISHING STONE OR TOOL UNLESS OTHERWISE REQUIRED ON PLANS.

DOWELS:

DOWELS WHEN INDICATED ON PLANS AS FOR CULVERT EXTENSIONS, SHALL BE EMBEDDED AT LEAST 12" INTO THE OLD CONCRETE AND GROUTED INTO PLACE WITH 1:2 CEMENT MORTAR.

ALLOWANCE FOR DEAD LOAD DEFLECTION, SETTLEMENT, ETC. IN CASTING SUPERSTRUCTURES:

BRIDGES SHALL BE BUILT ON THE GRADE OR VERTICAL CURVE SHOWN ON PLANS. SLABS, CURBS AND PARAPETS SHALL CONFORM TO THE GRADE OR CURVE.

ALL DIMENSIONS WHICH ARE GIVEN IN SECTION AND ARE AFFECTED BY DEAD LOAD DEFLECTIONS ARE DIMENSIONS AT CENTER LINE OF BEARING UNLESS OTHERWISE NOTED ON PLANS. IN SETTING FORMS FOR STEEL BEAM BRIDGES AND PRESTRESSED CONCRETE GIRDER BRIDGES, ADJUSTMENTS SHALL BE MADE DUE TO THE DEAD LOAD DEFLECTIONS FOR THE ELEVATIONS SHOWN. WHERE BLOCKS ARE SHOWN OVER BEAMS FOR BUILDING UP TO THE SLAB, THE VERTICAL DIMENSIONS OF THE BLOCKS SHALL BE ADJUSTED BETWEEN BEARINGS TO COMPENSATE FOR DEAD LOAD DEFLECTIONS, VERTICAL CURVE ORDINATE, AND ACTUAL BEAM CAMBER. WHERE BOTTOM OF SLAB IS IN LINE WITH BOTTOM OF TOP FLANGES, DEPTH OF SLAB BETWEEN BEARINGS SHALL BE ADJUSTED TO COMPENSATE FOR DEAD LOAD DEFLECTION, VERTICAL CURVE ORDINATE, AND ACTUAL BEAM CAMBER.

IN SETTING FALSEWORK AND FORMS FOR REINFORCED CONCRETE SPANS, AN ALLOWANCE SHALL BE MADE FOR DEAD LOAD DEFLECTIONS, SETTLEMENT OF FALSEWORK, AND PERMANENT CAMBER WHICH SHALL BE PROVIDED FOR IN ADDITION TO THE ELEVATIONS SHOWN. AFTER REMOVAL OF THE FALSEWORK, THE FINISHED STRUCTURES SHALL CONFORM TO THE PROFILE AND ELEVATIONS SHOWN ON THE PLANS AND CONSTRUCTION ELEVATIONS FURNISHED BY THE ENGINEER.

DETAILED DRAWINGS FOR FALSEWORK OR FORMS FOR BRIDGE SUPERSTRUCTURE AND ANY STRUCTURE OR PARTS OF A STRUCTURE AS NOTED ON THE PLANS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL BEFORE CONSTRUCTION OF THE FALSEWORK OR FORMS IS STARTED.

REINFORCING STEEL:

ALL REINFORCING STEEL SHALL BE DEFORMED. DIMENSIONS RELATIVE TO PLACEMENT OF REINFORCING ARE TO CENTERS OF BARS UNLESS OTHERWISE INDICATED IN THE PLANS. DIMENSIONS ON BAR DETAILS ARE TO CENTERS OF BARS OR ARE OUT TO OUT AS INDICATED ON PLANS.

WIRE BAR SUPPORTS SHALL BE PROVIDED FOR REINFORCING STEEL WHERE INDICATED ON THE PLANS. WHEN BAR SUPPORT PIECES ARE PLACED IN CONTINUOUS LINES, THEY SHALL BE SO PLACED THAT THE ENDS OF THE SUPPORTING WIRES SHALL BE LAPPED TO LOCK LEGS ON ADJOINING PIECES.

STRUCTURAL STEEL:

AT THE CONTRACTOR'S OPTION, HE MAY SUBSTITUTE 1/8" Ø SHEAR STUDS FOR THE 3/4" Ø STUDS SPECIFIED ON THE PLANS. THIS SUBSTITUTION SHALL BE MADE AT THE RATE OF 3 - 1/8" Ø STUDS FOR 4 - 3/4" Ø STUDS, AND STUD SPACING CHANGES SHALL BE MADE AS NECESSARY TO PROVIDE THE SAME EQUIVALENT NUMBER OF 1/8" Ø STUDS ALONG THE BEAM AS SHOWN FOR 3/4" Ø STUDS BASED ON THE RATIO OF 3 - 1/8" Ø STUDS FOR 4 - 3/4" Ø STUDS. STUDS OF THE LENGTH SPECIFIED ON THE PLANS MUST BE PROVIDED. THE MAXIMUM SPACING SHALL BE 2'-0".

EXCEPT AT THE INTERIOR SUPPORTS OF CONTINUOUS BEAMS WHERE THE COVER PLATE IS IN CONTACT WITH BEARING PLATE, THE CONTRACTOR MAY, AT HIS OPTION, SUBSTITUTE FOR THE COVER PLATES DESIGNATED ON THE PLANS COVER PLATES OF THE EQUIVALENT AREA PROVIDED THESE PLATES ARE AT LEAST 3/16" IN THICKNESS AND DO NOT EXCEED A WIDTH EQUAL TO THE FLANGE WIDTH LESS 2" OR A THICKNESS EQUAL TO 2 TIMES THE FLANGE THICKNESS. THE SIZE OF FILLET WELDS SHALL CONFORM TO THE REQUIREMENTS OF THE CURRENT ANSI/AASHTO/AWS "BRIDGE WELDING CODE". ELECTROSLAG WELDING WILL NOT BE PERMITTED.

WITH THE SOLE EXCEPTION OF EDGES AT SURFACES WHICH BEAR ON OTHER SURFACES, ALL SHARP EDGES AND ENDS OF SHAPES AND PLATES SHALL BE SLIGHTLY ROUNDED BY SUITABLE MEANS TO A RADIUS OF APPROXIMATELY 1/16" INCH OR EQUIVALENT FLAT SURFACE AT A SUITABLE ANGLE PRIOR TO PAINTING, GALVANIZING, OR METALLIZING.

HANDRAILS AND POSTS:

METAL STANDARDS AND FACES OF THE CONCRETE END POSTS FOR THE METAL RAIL SHALL BE SET NORMAL TO THE GRADE OF THE CURB, UNLESS OTHERWISE SHOWN ON PLANS. THE METAL RAIL AND TOPS OF CONCRETE POSTS USED WITH THE ALUMINUM RAIL SHALL BE BUILT PARALLEL TO THE GRADE OF THE CURB.

METAL HANDRAILS SHALL BE IN ACCORDANCE WITH THE PLANS. RAILS SHALL BE AS MANUFACTURED FOR BRIDGE RAILING. CASTINGS SHALL BE OF A UNIFORM APPEARANCE. FINIS AND OTHER DEFORMATIONS RESULTING FROM CASTING OR OTHERWISE SHALL BE REMOVED IN A MANNER SO THAT A UNIFORM COLORING OF THE COMPLETED CASTING SHALL BE OBTAINED. CASTINGS WITH DISCOLORATIONS OR OF NON-UNIFORM COLORING WILL NOT BE ACCEPTED. CERTIFIED MILL REPORTS ARE REQUIRED FOR METAL RAILS AND POSTS.

SPECIAL NOTES:

GENERALLY, IN CASE OF DISCREPANCY, THIS STANDARD SHEET OF NOTES SHALL GOVERN OVER THE SPECIFICATIONS, BUT THE REMAINDER OF THE PLANS SHALL GOVERN OVER NOTES HEREON, AND SPECIAL PROVISIONS SHALL GOVERN OVER ALL. SEE SPECIFICATIONS ARTICLE 105-4.

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