

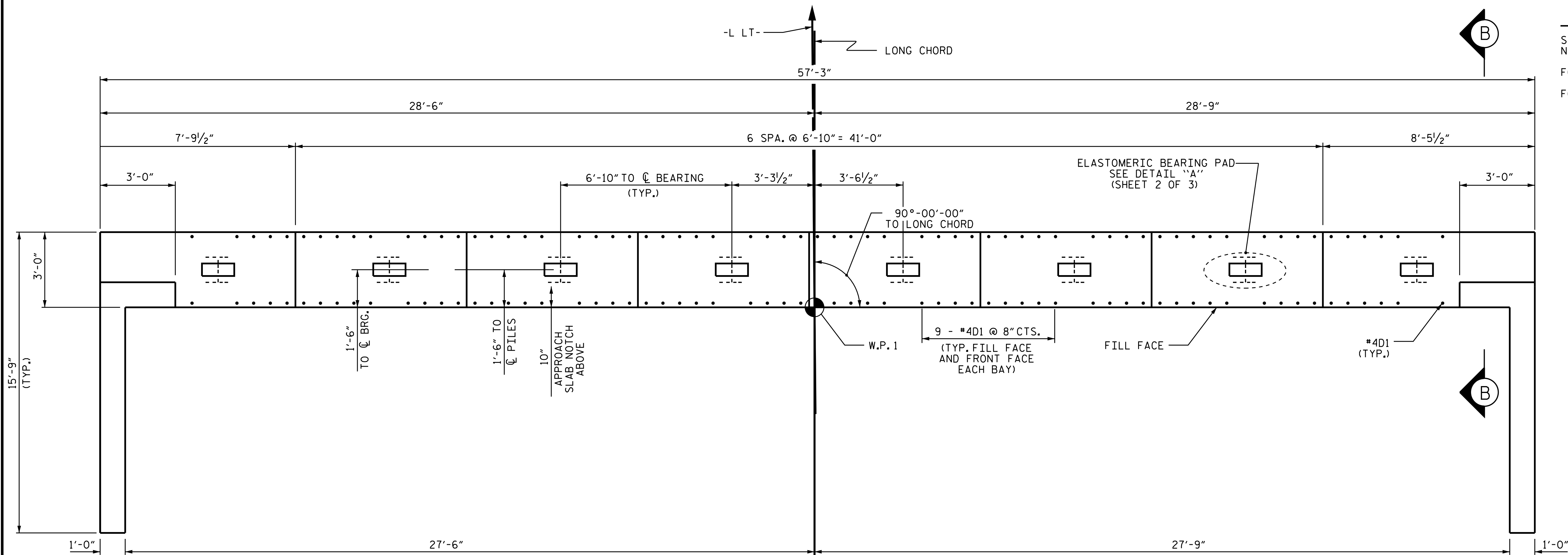
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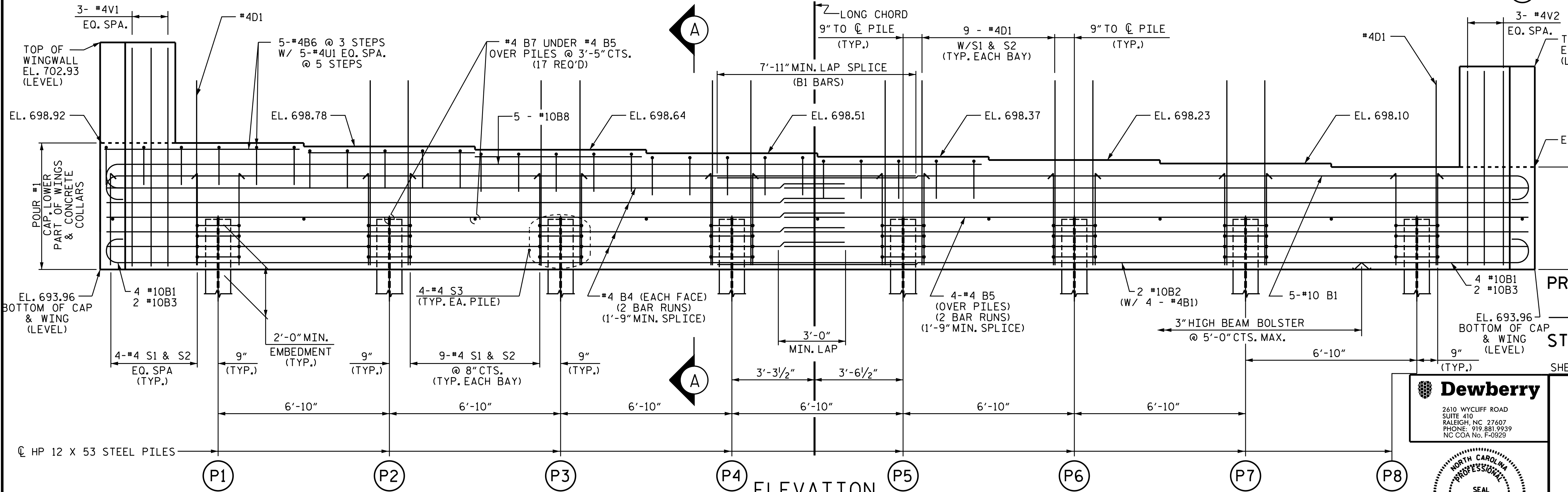
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**NOTES**

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.  
 FOR PILE SPlice DETAILS, SEE SHEET 2 OF 3.  
 FOR WING DETAILS, SEE SHEET 3 OF 3.



**PLAN**



**ELEVATION**

FOR SECTION A-A, SEE SHEET 2 OF 3.  
 CONCRETE COLLARS FOR STEEL PILES NOT SHOWN IN PLAN AND ELEVATION VIEWS FOR CLARITY.  
 SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL", SHEET 2 OF 3.

PROJECT NO. I-5823  
 DAVIE COUNTY  
 STATION: 701+85.00 -L LT-

SHEET 1 OF 3

**Dewberry**  
 2610 WYCLIFF ROAD  
 SUITE 410  
 RALEIGH, NC 27607  
 PHONE: 919.881.9939  
 NC COA No. F-0929

**NORTH CAROLINA PROFESSIONAL ENGINEER**  
 SEAL 030046  
 MATTHEW PAYNE

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

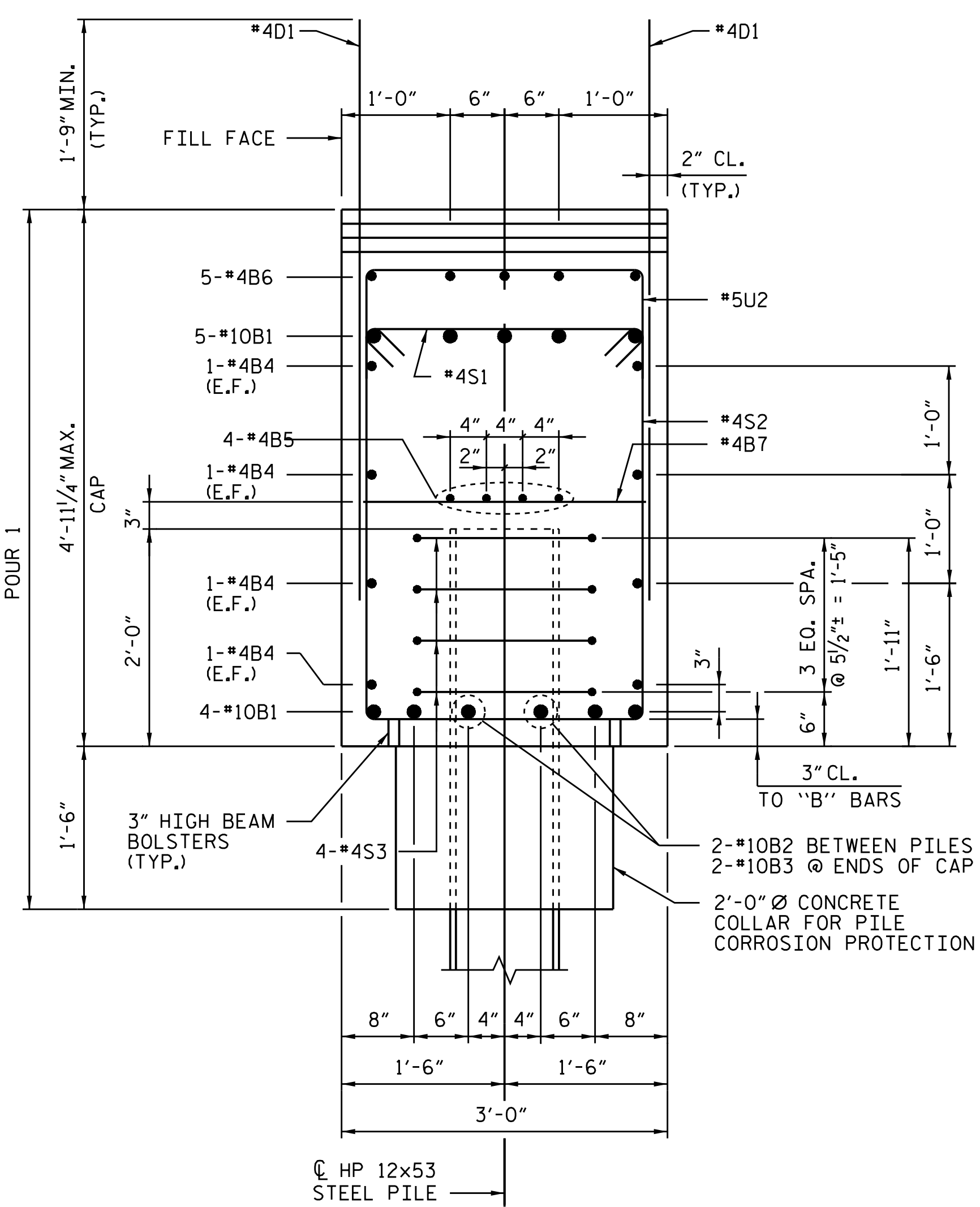
**SUBSTRUCTURE INTEGRAL END BENT NO. 1**

DRAWN BY: D. SMITH DATE: DEC. 18  
 CHECKED BY: M. PAYNE DATE: DEC. 18  
 DESIGN ENGINEER OF RECORD: M. PAYNE DATE: DEC. 18

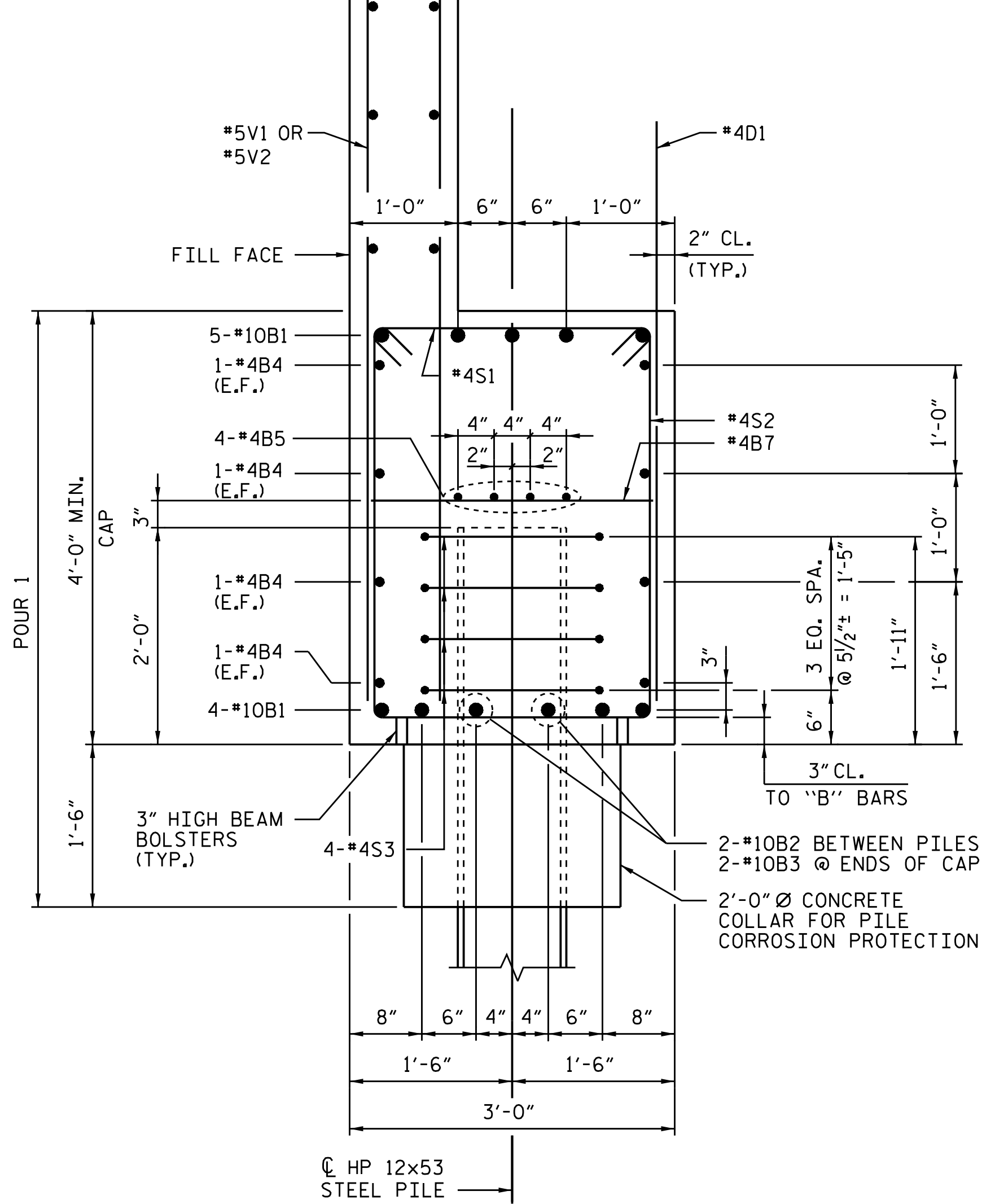
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS	
1			3			S1-22	
2			4			34	

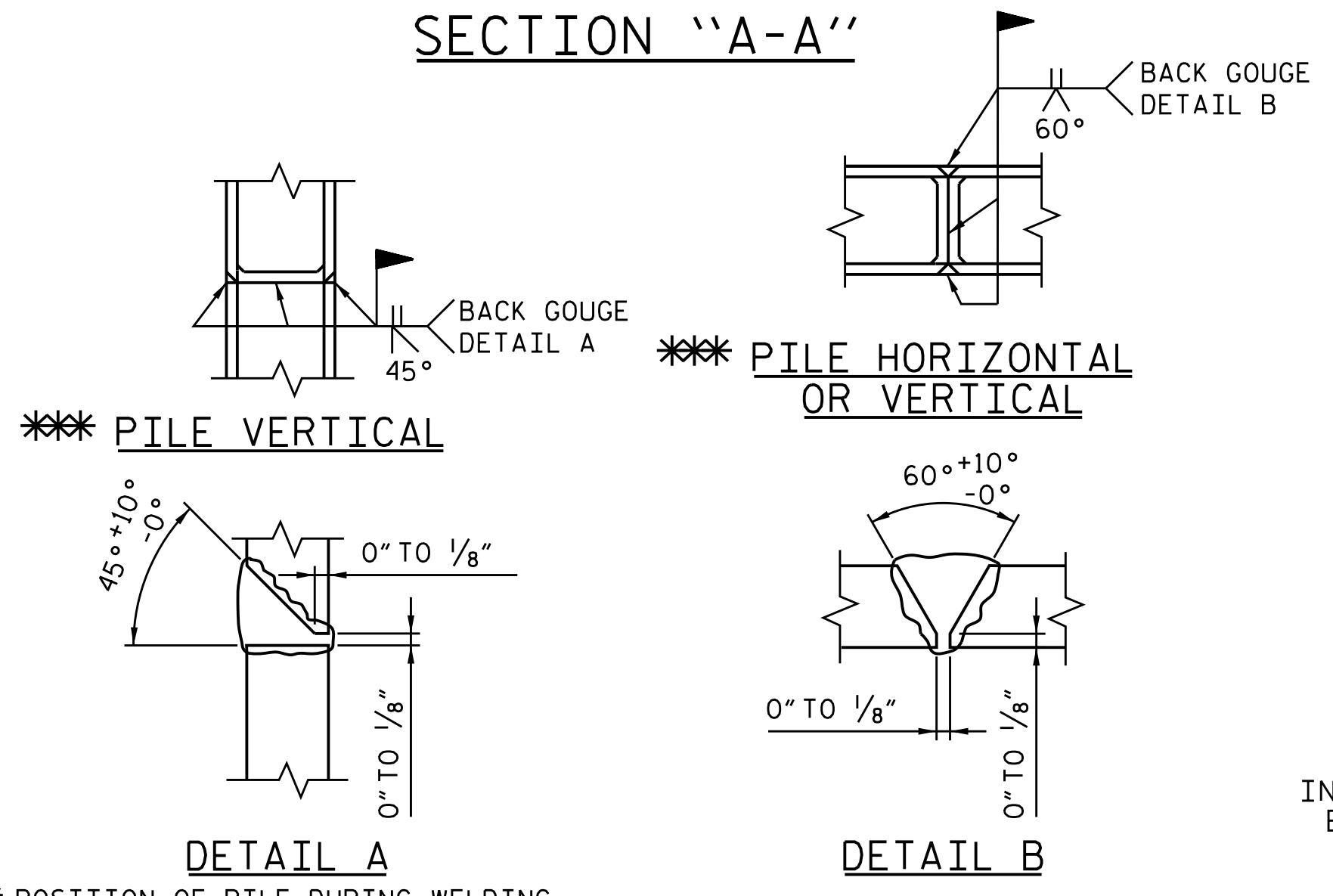
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 \*\*\*\*\*SDON\*\*\*\*\*  
 \*\*\*\*\*USERNAME\*\*\*\*\*



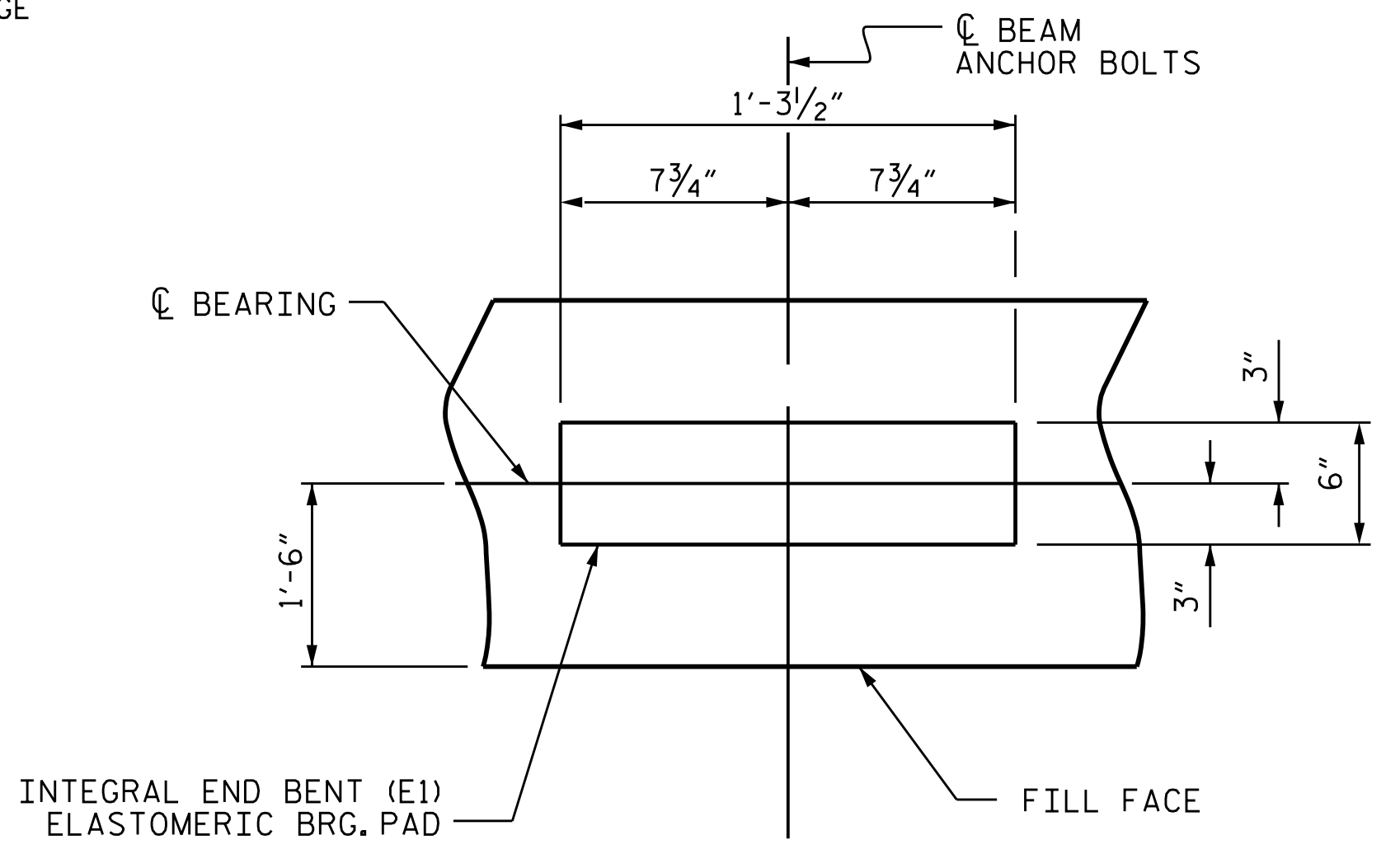
SECTION "A-A"



SECTION "B-B"



PILE SPLICE DETAILS



DETAIL "A"

(END BENT No. 1 SHOWN, END BENT No. 2 SIMILAR BY ROTATION)

BAR TYPES		BILL OF MATERIAL				
		END BENT 1				
BAR NO.	SIZE	TYPE	LENGTH	WEIGHT		
B1	#10	①	33'-10"	2,619		
B2	#10	②	9'-5"	567		
B3	#10	②	5'-0"	86		
B4	#4	STR	29'-3"	313		
B5	#4	STR	29'-4"	157		
B6	#4	STR	6'-6"	66		
B7	#4	STR	2'-8"	31		
B8	#10	①	36'-5"	783		
D1	#4	STR	5'-6"	478		
H1	#5	STR	15'-3"	319		
H2	#5	⑦	14'-1"	236		
H3	#5	⑦	3'-3"	56		
S1	#4	③	3'-7"	170		
S2	#4	④	10'-9"	510		
S3	#4	⑤	6'-6"	139		
U1	#4	⑥	4'-8"	78		
V1	#5	STR	8'-6"	249		
V2	#5	STR	7'-7"	222		
TOTAL REINFORCING STEEL				7,079		
END BENT 1 TOTAL QUANTITIES						
CLASS A CONCRETE						
POUR 1						
(COLLARS, CAP & LOWER WINGWALLS)				38.5		
HP 12x53 STEEL PILES				NO. 8		
				LIN. FT. 280		
PILE DRIVING EQUIPMENT SETUP FOR HP12x53 STEEL PILES				NO. 8		
NOTE: REINFORCING STEEL AND CONCRETE FOR THE UPPER PORTION OF THE WINGS IS INCLUDED IN THE PAY ITEM "REINFORCED CONCRETE DECK SLAB".						

NOTES:  
FOR OTHER NOTES, SEE "FOUNDATION LAYOUT" AND "LOCATION SKETCH".

PROJECT NO. I-5823  
DAVIE COUNTY  
STATION: 701+85.00 -L LT-  
SHEET 2 OF 3

**Dewberry**  
2610 WYCLIFF ROAD  
SUITE 410  
RALEIGH, NC 27607  
PHONE: 919.881.9939  
NC COA No. F-09229

NORTH CAROLINA PROFESSIONAL ENGINEER  
SEAL 030046  
MATTHEW PAYNE

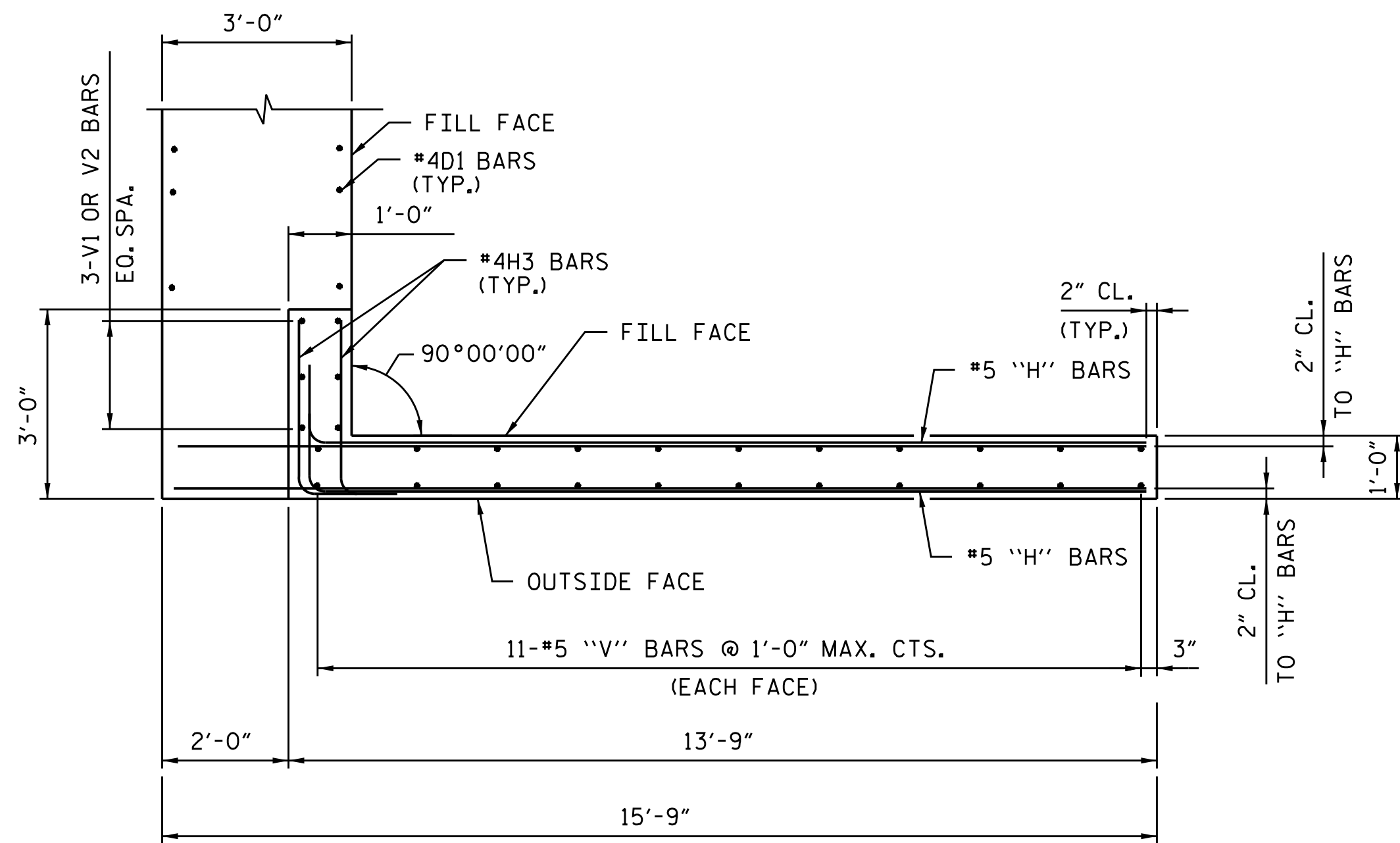
STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
SUBSTRUCTURE  
INTEGRAL END BENT 1  
SECTIONS AND DETAILS

DRAWN BY: D. SMITH DATE: DEC. 18  
CHECKED BY: M. PAYNE DATE: DEC. 18  
DESIGN ENGINEER OF RECORD: M. PAYNE DATE: DEC. 18

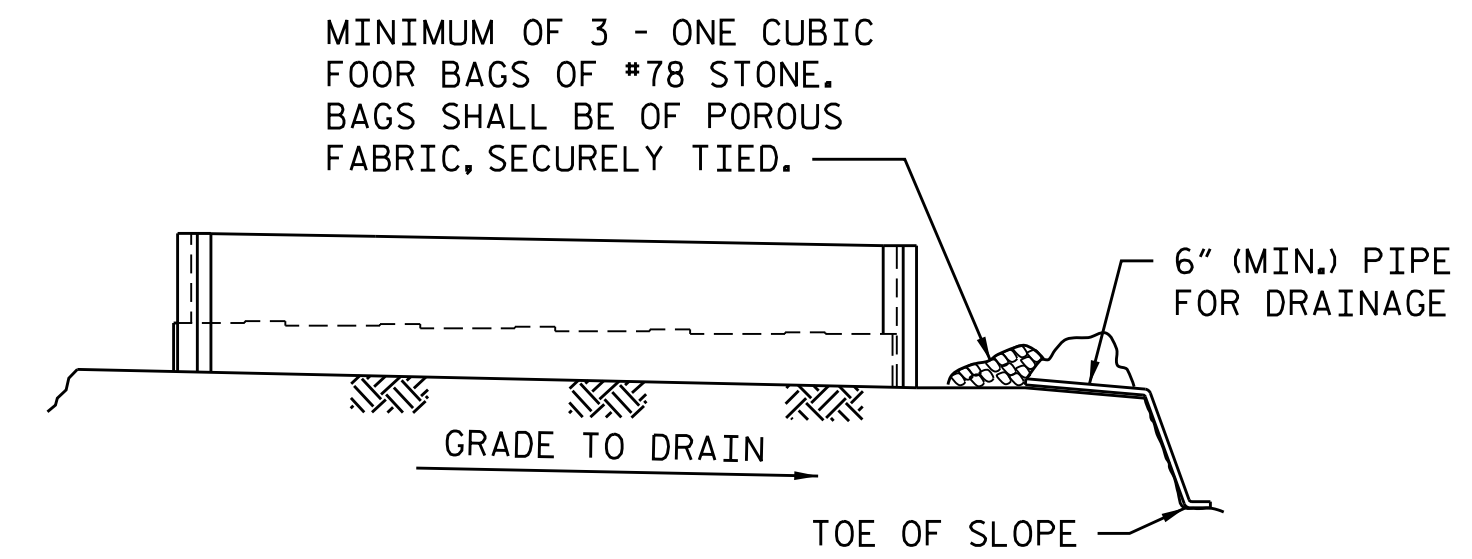
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REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-23	
1			3			TOTAL SHEETS 34	
2			4				

\*\*\*\*\*SYTIME\*\*\*\*\*  
\*\*\*\*\*SDON\*\*\*\*\*  
\*\*\*\*\*USERNAME\*\*\*\*\*



**PLAN W1 OR W2**  
 (WING 1 SHOWN, WING 2 SIMILAR)

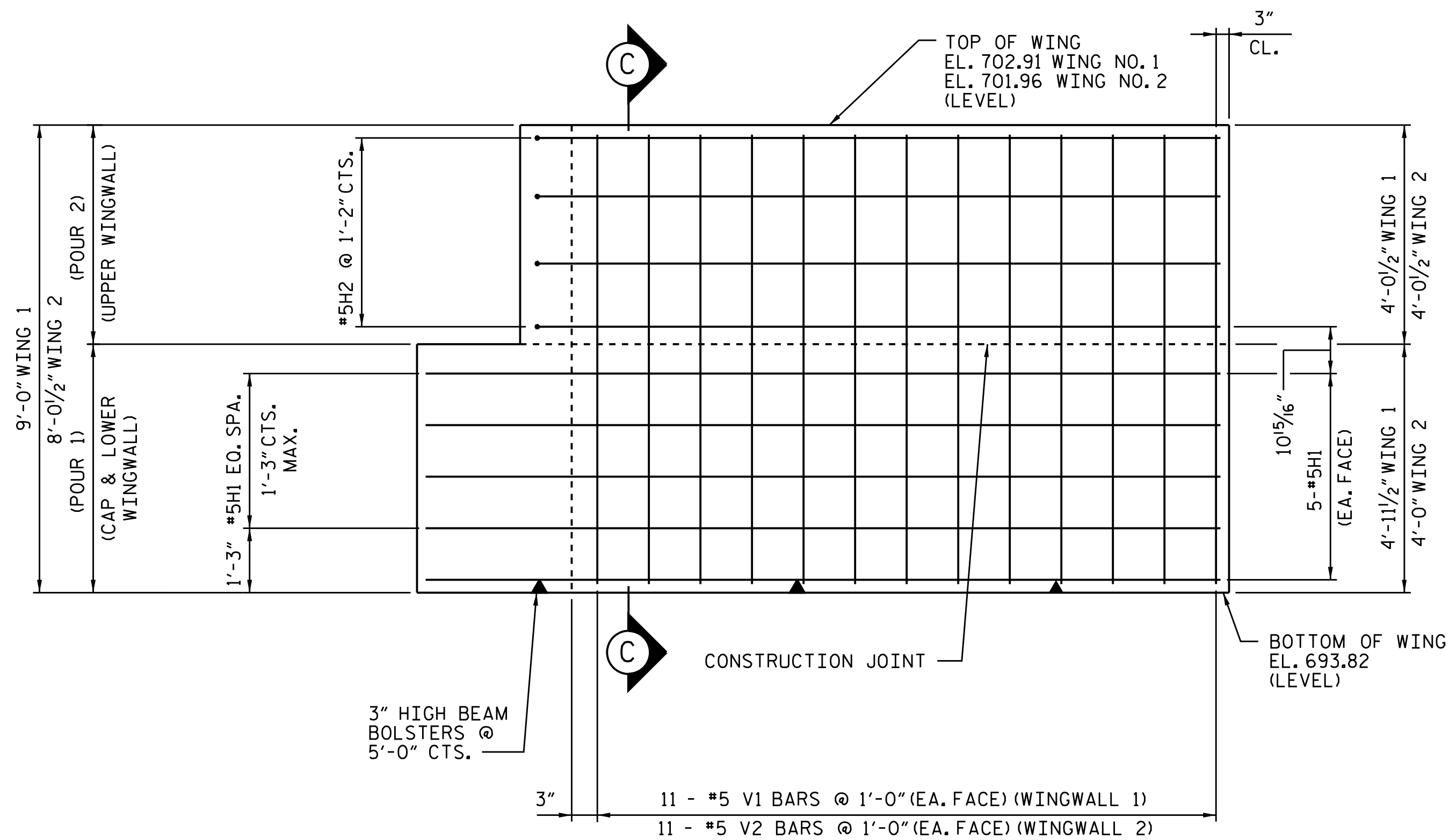


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

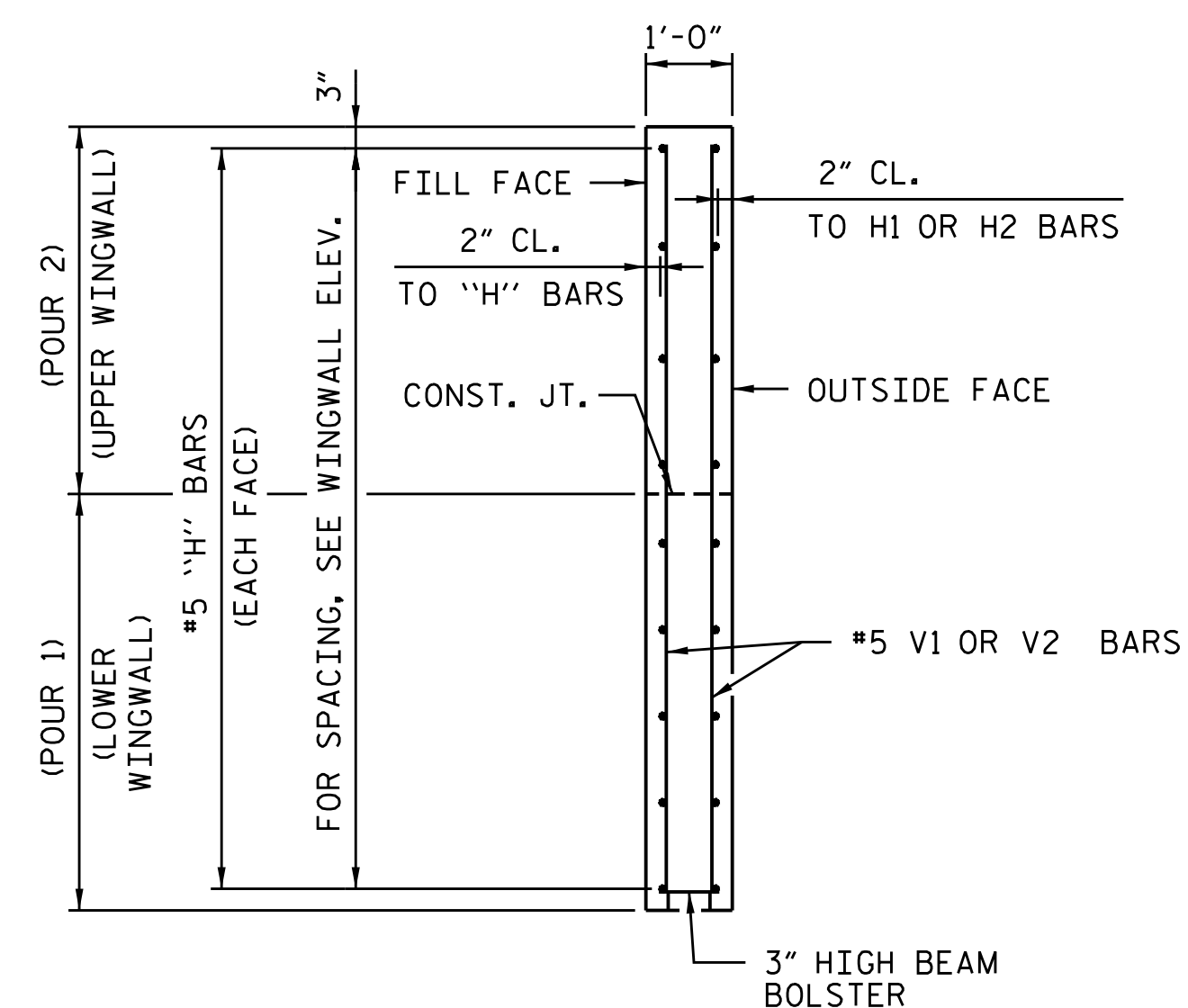
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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

**TEMPORARY DRAINAGE END BENT**



**ELEVATION**



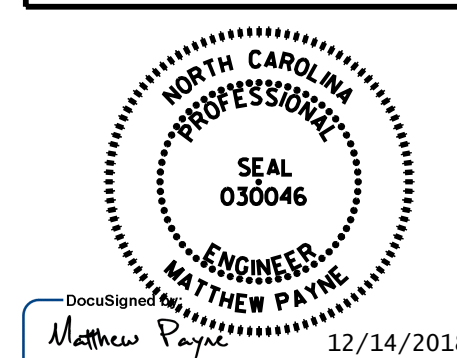
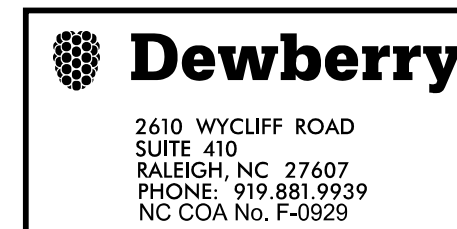
**SECTION C-C**

PROJECT NO. I-5823

DAVIE COUNTY

STATION: 701+85.00 -L LT-

SHEET 3 OF 3



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUBSTRUCTURE  
 INTEGRAL END BENT 1  
 WING WALL DETAILS

DRAWN BY: D. SMITH DATE: DEC. 18  
 CHECKED BY: M. PAYNE DATE: DEC. 18  
 DESIGN ENGINEER OF RECORD: M. PAYNE DATE: DEC. 18

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REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS	
1			3			31	24
2			4			34	

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**NOTES**

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.

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

FOR DRILLED PIERS, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.

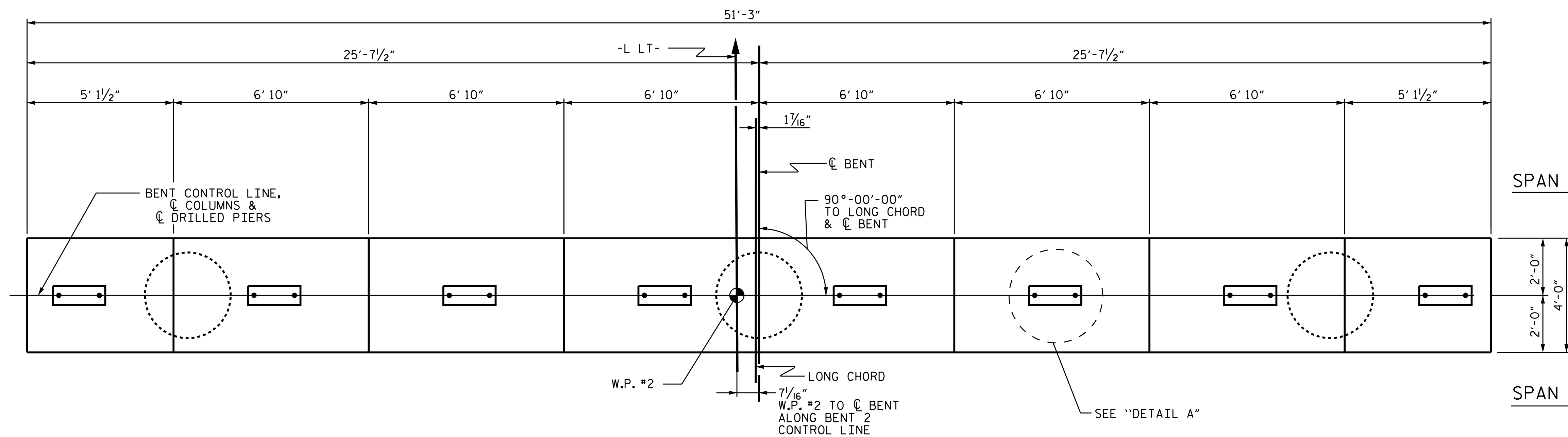
ALL STEEL IN THE DRILLED PIERS IS INCLUDED IN THE PAY ITEMS FOR "REINFORCING STEEL" AND "SPIRAL COLUMN REINFORCING STEEL."

★ INVERT ALTERNATE STIRRUPS.

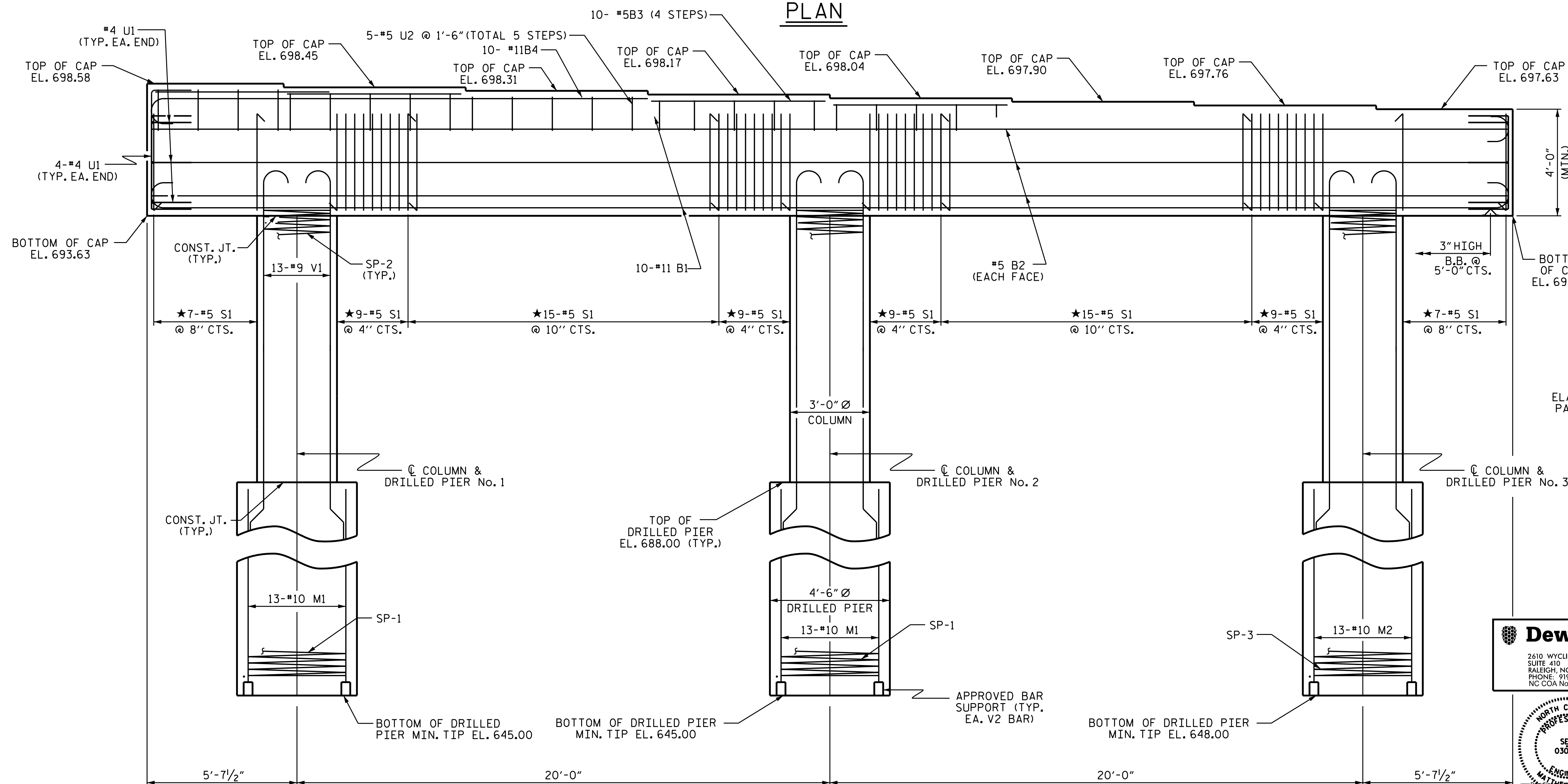
THE LOCATION OF THE CONSTRUCTION JOINT IN THE DRILLED PIERS IS BASED ON AN APPROXIMATE GROUND LINE ELEVATION. IF THE CONSTRUCTION JOINT IS ABOVE THE ACTUAL GROUND LINE ELEVATION, THE CONTRACTOR SHALL PLACE THE CONSTRUCTION JOINT ONE FOOT BELOW THE GROUND LINE.

DRILLED PIERS SHALL BE TERMINATED ONE FOOT ± ABOVE NORMAL WATER SURFACE ELEVATION FOR SHAFTS LOCATED IN WATER.

THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE LONGITUDINAL REINFORCEMENT FOR DRILLED PIERS IS DETAILED WITH 3 FEET OF EXTRA LENGTH.

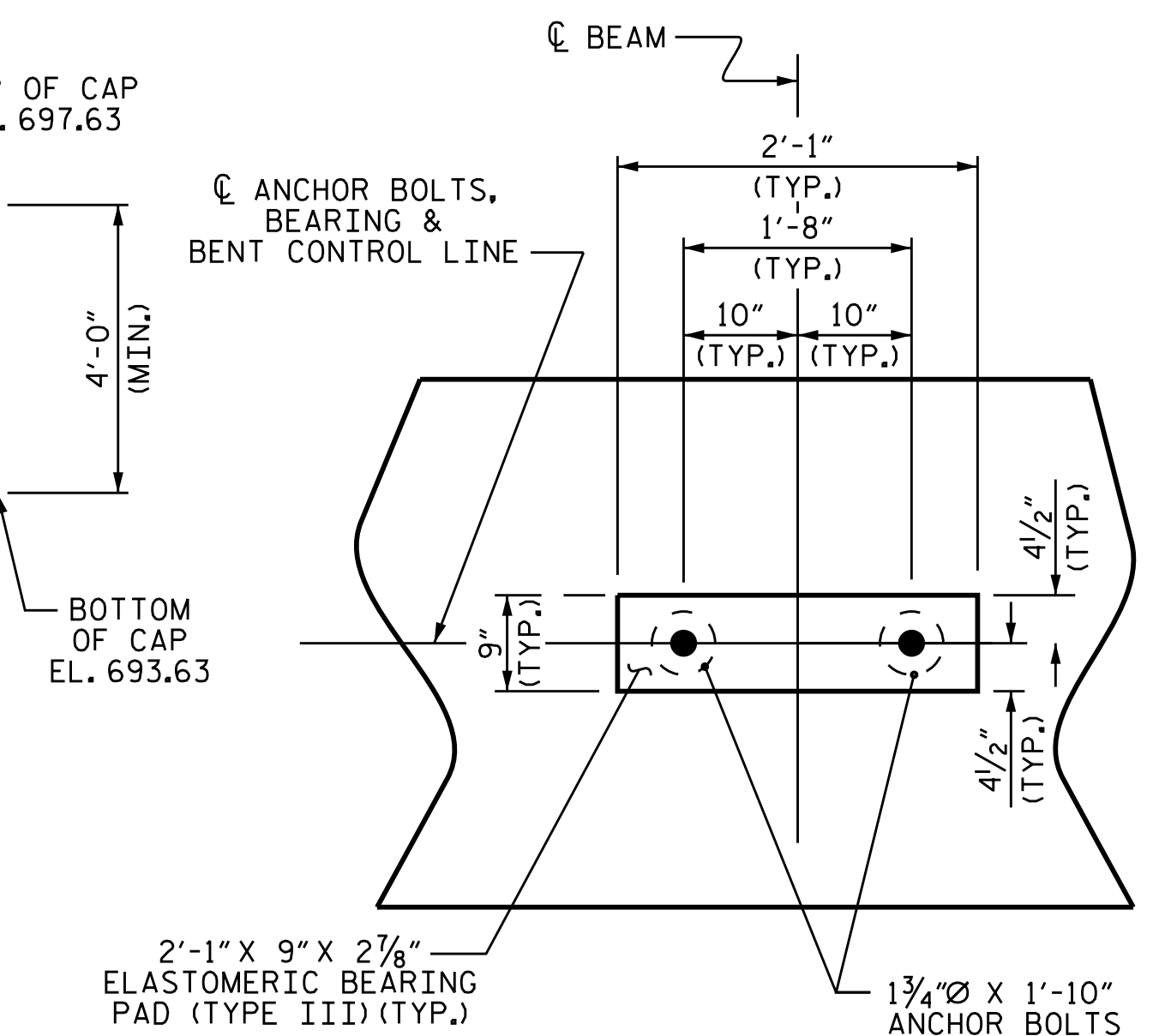


**PLAN**



**ELEVATION**

DIMENSIONS & REINFORCING STEEL ARE TYPICAL FOR EACH COLUMN & DRILLED PIER UNLESS OTHERWISE NOTED.



**DETAIL "A"**

(DIMENSIONS ARE TYPICAL EACH BEARING)

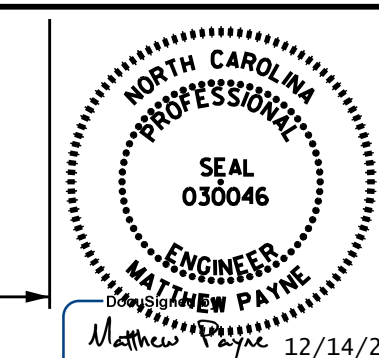
PROJECT NO. I-5823

DAVIE COUNTY

STATION: 701+85.00 -L LT-

SHEET 1 OF 2

**Dewberry**  
2610 WYCLIFF ROAD  
SUITE 410  
RALEIGH, NC 27607  
PHONE: 919.881.9939  
NC COA No. F-0929



STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

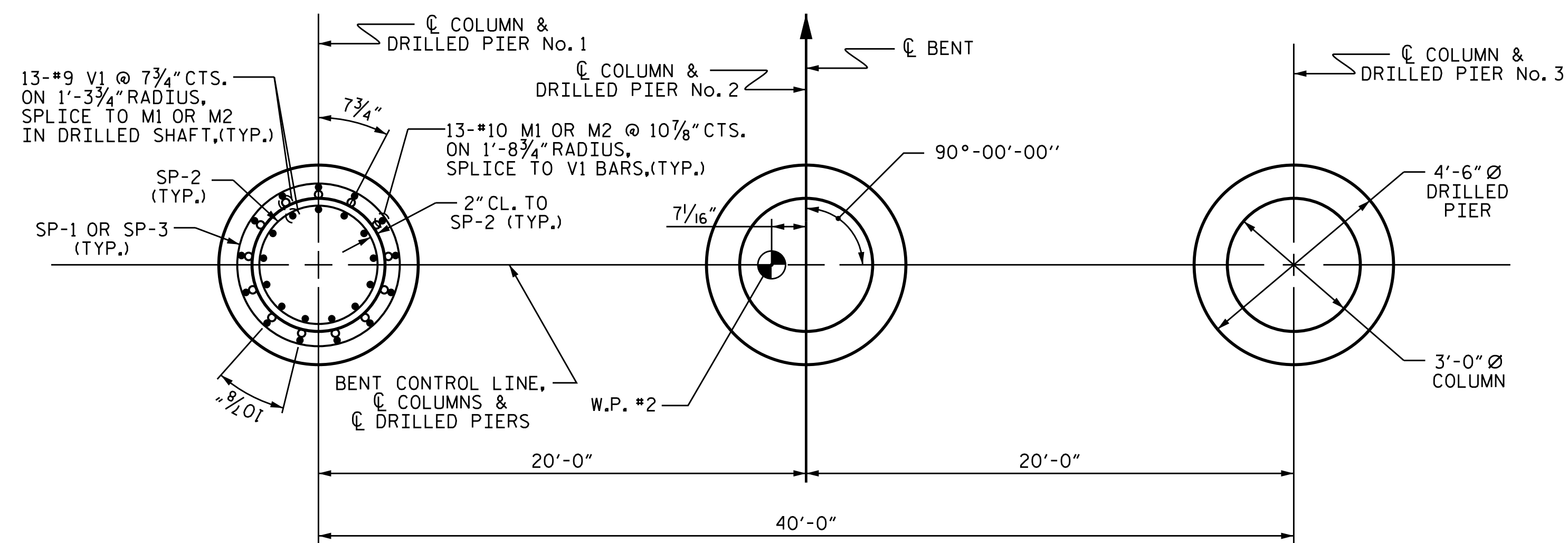
SUBSTRUCTURE  
BENT No. 1

DRAWN BY: D. SMITH DATE: DEC. 18  
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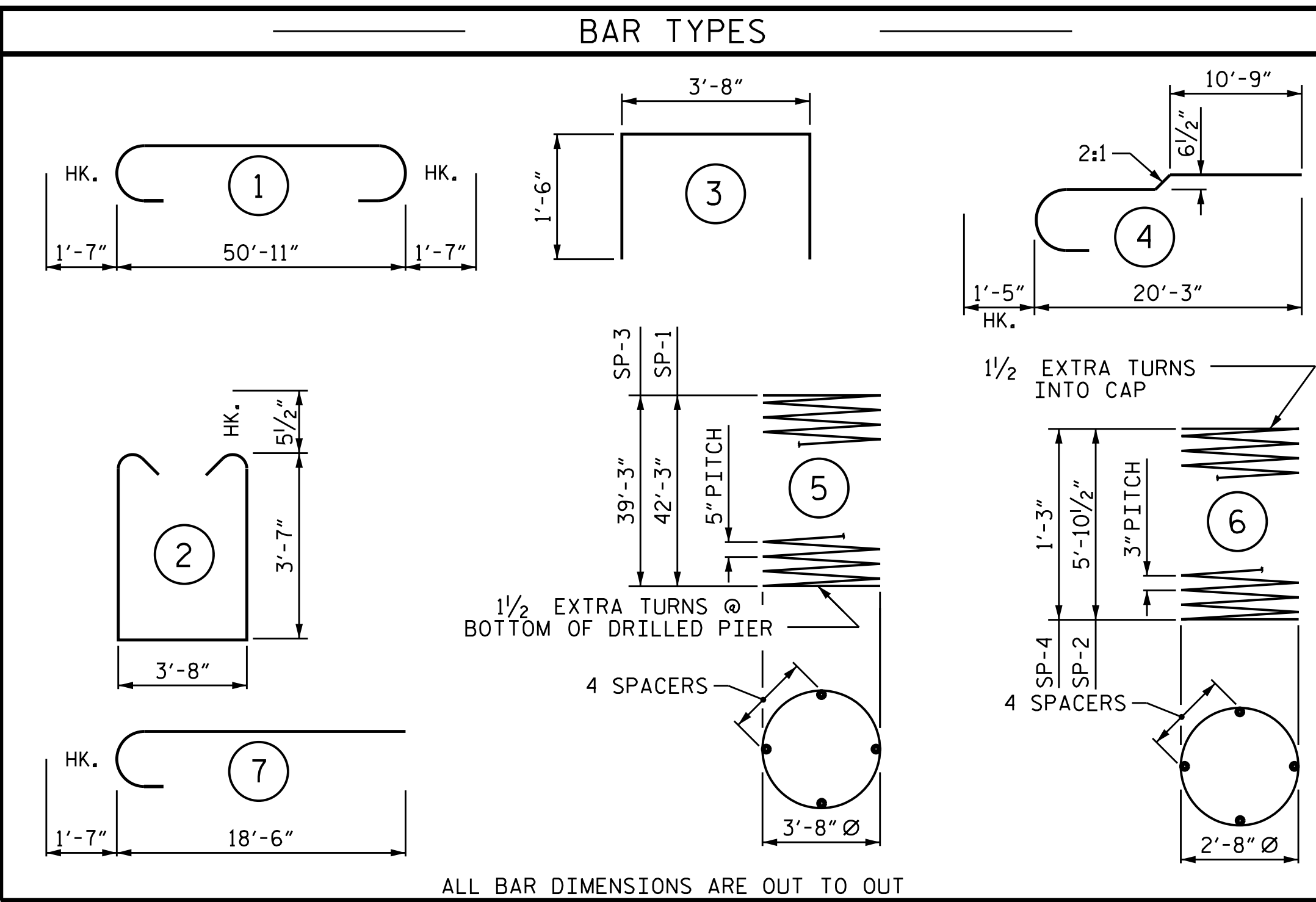
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NO.	BY:	DATE:	NO.	BY:	DATE:	SHEET NO.
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2			4			TOTAL SHEETS 34

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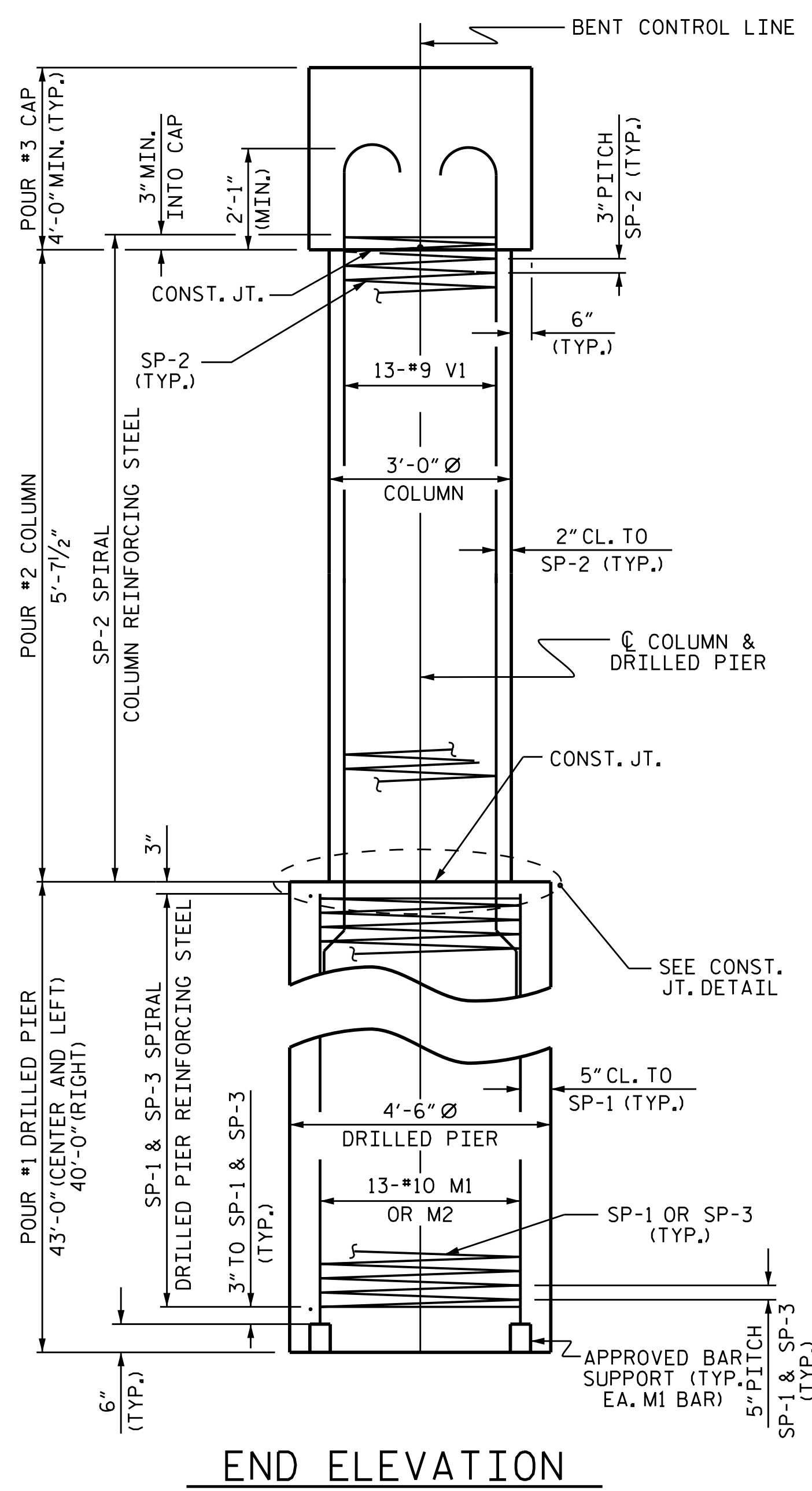


PLAN OF DRILLED PIERS & COLUMNS

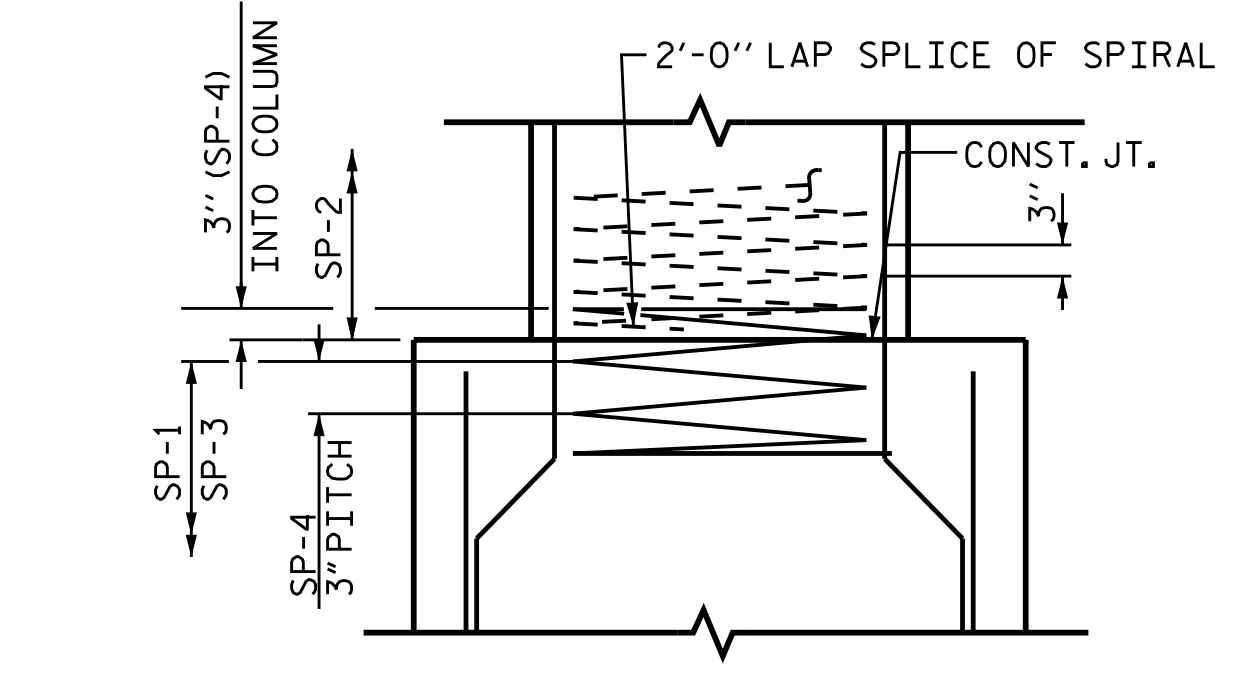


ALL BAR DIMENSIONS ARE OUT TO OUT

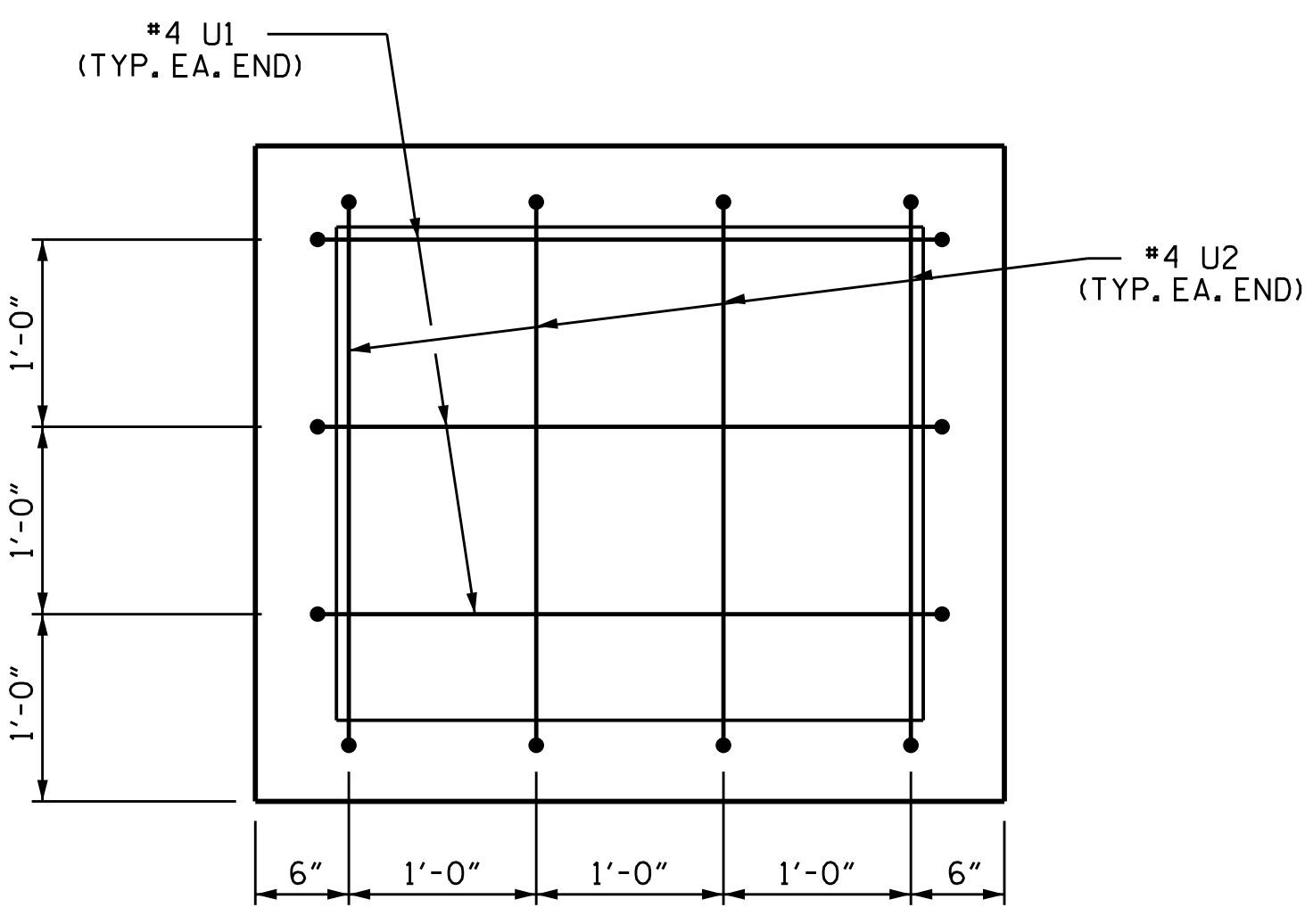
BILL OF MATERIAL FOR ONE BENT					
BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	20	#11	1	54'-11"	5,747
B2	6	#5	STR	50'-11"	319
B3	20	#5	STR	6'-6"	136
B4	10	#11	STR	20'-1"	1,068
S1	80	#5	7	11'-9"	981
U1	14	#4	3	6'-8"	63
U2	25	#5	3	6'-8"	174
V1	39	#9	4	21'-8"	2,874
M1	26	#10	STR	45'-3"	5,059
M2	13	#10	STR	42'-3"	2,362
REINFORCING STEEL (FOR ONE BENT)					18,783 LBS.
SP-1	2	*	5	1178'-6"	2,459
SP-2	3	*	6	209'-8"	421
SP-3	1	*	5	1095'-6"	1,143
SP-4	3	*	6	79'-8"	160
SPIRAL COLUMN REINFORCING STEEL (FOR ONE BENT)					4,183 LBS.
* THE SP-1 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR					
* THE SP-2 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR					
CLASS A CONCRETE BREAKDOWN (FOR ONE BENT)					
POUR #2 (COLUMNS)					4.4 C.Y.
POUR #3 (CAP)					34.0 C.Y.
TOTAL CLASS A CONCRETE					38.4 C.Y.
DRILLED PIERS: (FOR ONE BENT)					
DRILLED PIER CONCRETE POUR #1 (DRILLED PIERS)					74.3 C.Y.
4'-6" Ø DRILLED PIER NOT IN SOIL					28.0 LIN. FT.
4'-6" Ø DRILLED PIER IN SOIL					98.0 LIN. FT.
PERMANENT STEEL CASING FOR 4'-6" Ø DRILLED PIER					51.0 LIN. FT.
CSL TUBES					1,620 LIN. FT.



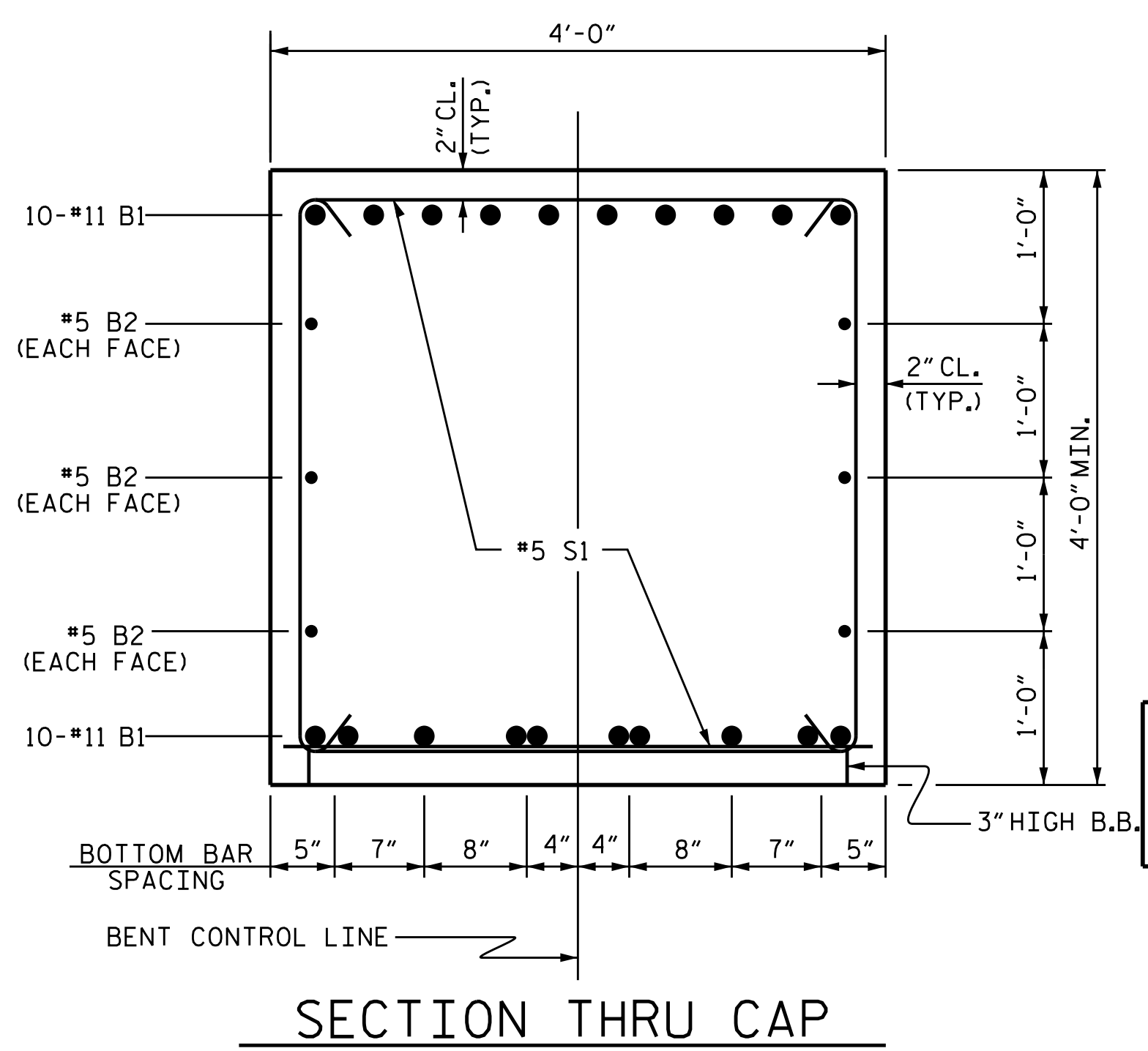
END ELEVATION



CONSTRUCTION JOINT DETAIL



END OF CAP VIEW (TYPICAL BOTH ENDS)



SECTION THRU CAP

PROJECT NO. I-5823  
 DAVIE COUNTY  
 STATION: 701+85.00 -L LT-  
 SHEET 2 OF 2

**Dewberry**  
 2610 WYCLIFF ROAD  
 SUITE 410  
 RALEIGH, NC 27607  
 PHONE: 919.881.9939  
 NC COA No. F-0929

**NORTH CAROLINA PROFESSIONAL ENGINEER**  
 SEAL 030046  
 MATTHEW PAYNE

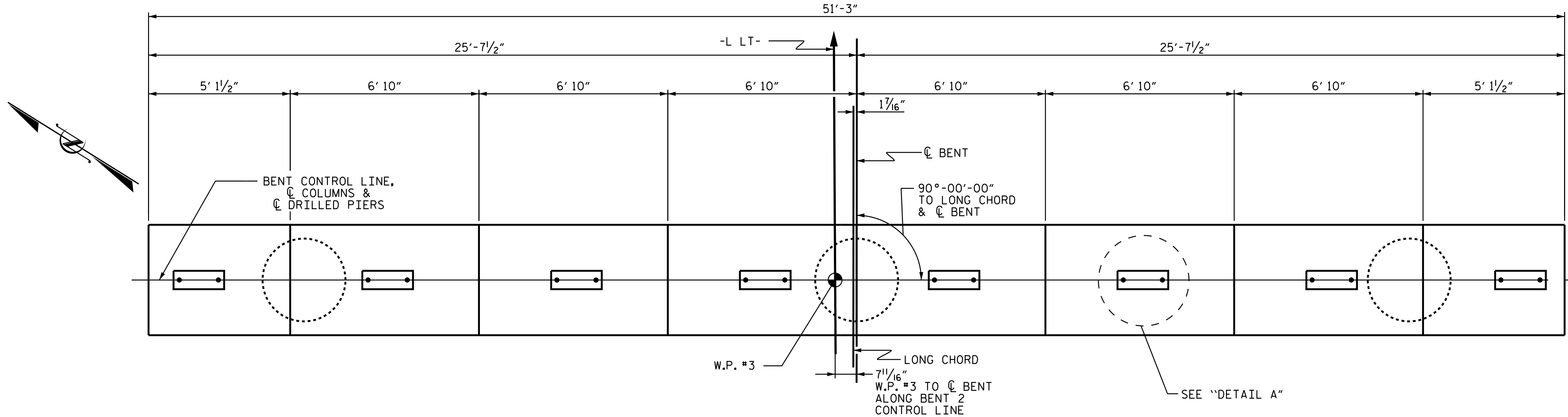
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUBSTRUCTURE  
 BENT No. 1

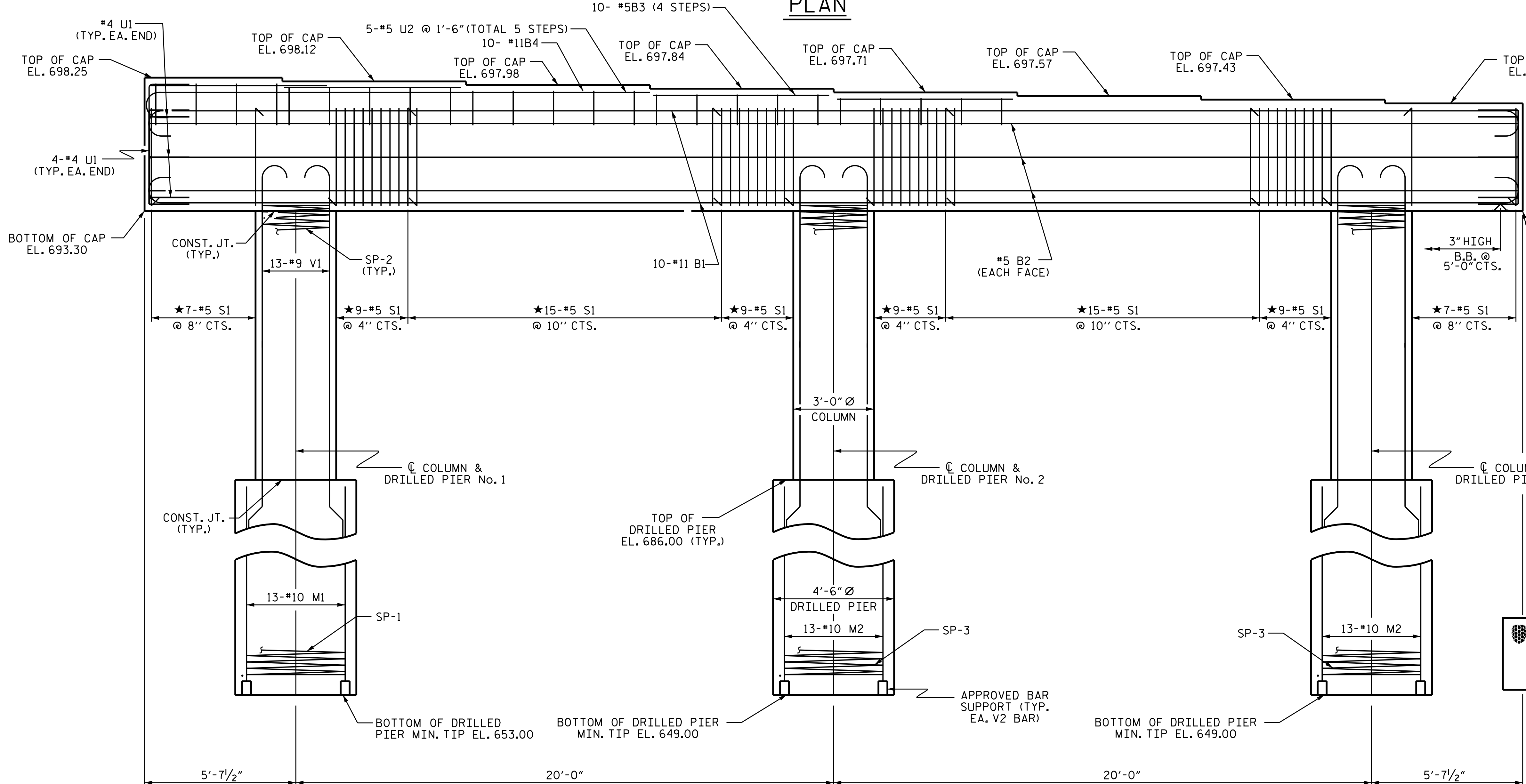
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 CHECKED BY: M. PAYNE DATE: DEC. 18  
 DESIGN ENGINEER OF RECORD: M. PAYNE DATE: DEC. 18

REVISIONS						SHEET NO. S1-26
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 34
2			4			

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 \*\*\*\*\*SYTIME\*\*\*\*\*



**PLAN**



**ELEVATION**

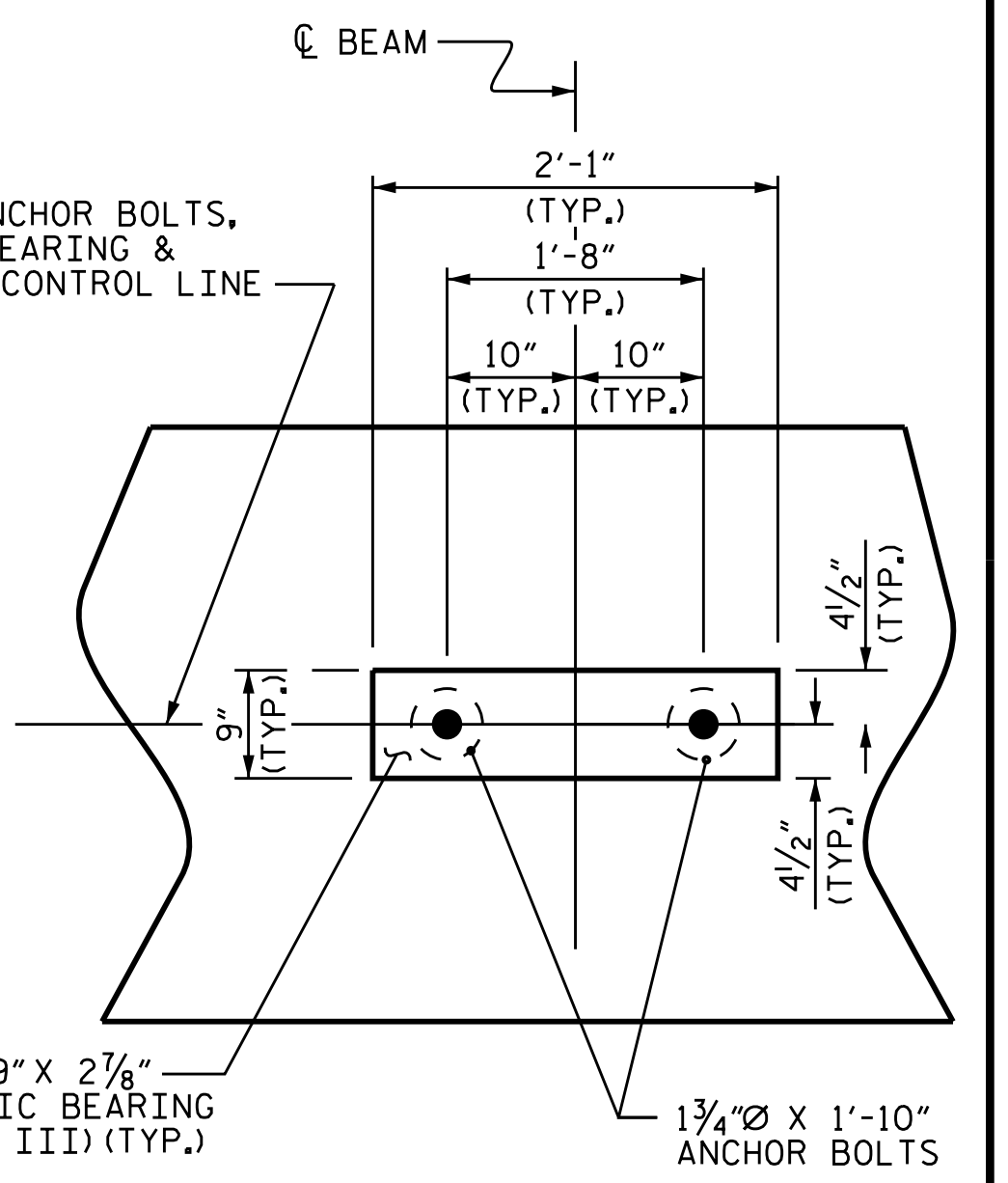
DIMENSIONS & REINFORCING STEEL ARE TYPICAL FOR EACH COLUMN & DRILLED PIER UNLESS OTHERWISE NOTED.

**NOTES**

- STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.
- HOOKS ON "V" BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.
- FOR DRILLED PIERS, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.
- ALL STEEL IN THE DRILLED PIERS IS INCLUDED IN THE PAY ITEMS FOR "REINFORCING STEEL" AND "SPIRAL COLUMN REINFORCING STEEL."
- ★ INVERT ALTERNATE STIRRUPS.
- THE LOCATION OF THE CONSTRUCTION JOINT IN THE DRILLED PIERS IS BASED ON AN APPROXIMATE GROUND LINE ELEVATION. IF THE CONSTRUCTION JOINT IS ABOVE THE ACTUAL GROUND LINE ELEVATION, THE CONTRACTOR SHALL PLACE THE CONSTRUCTION JOINT ONE FOOT BELOW THE GROUND LINE.
- DRILLED PIERS SHALL BE TERMINATED ONE FOOT ± ABOVE NORMAL WATER SURFACE ELEVATION FOR SHAFTS LOCATED IN WATER.
- THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE LONGITUDINAL REINFORCEMENT FOR DRILLED PIERS IS DETAILED WITH 3 FEET OF EXTRA LENGTH.

SPAN C

SPAN B



**DETAIL "A"**

(DIMENSIONS ARE TYPICAL EACH BEARING)

PROJECT NO. I-5823  
 DAVIE COUNTY  
 STATION: 701+85.00 -L LT-  
 SHEET 1 OF 2

**Dewberry**  
 2610 WYCLIFF ROAD  
 SUITE 410  
 RALEIGH, NC 27607  
 PHONE: 919.881.9939  
 NC COA No. F-0929

**PROFESSIONAL ENGINEER**  
 SEAL 030046  
 MATTHEW PAYNE  
 12/14/2018

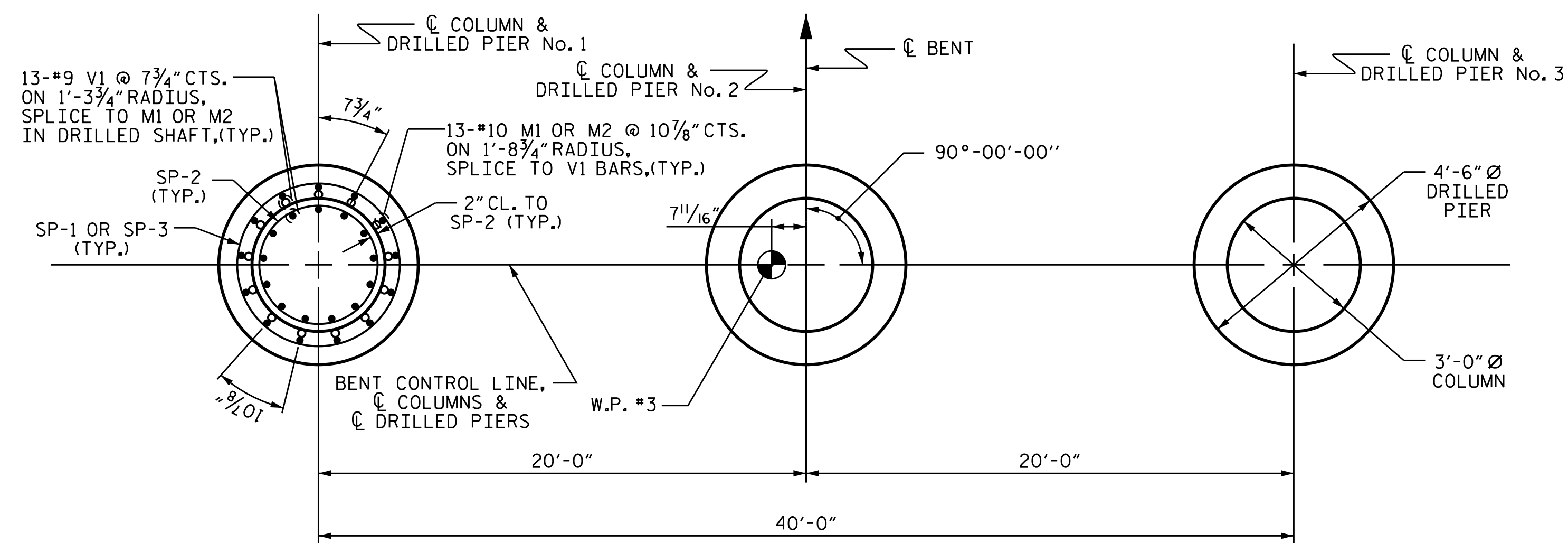
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**SUBSTRUCTURE BENT No. 2**

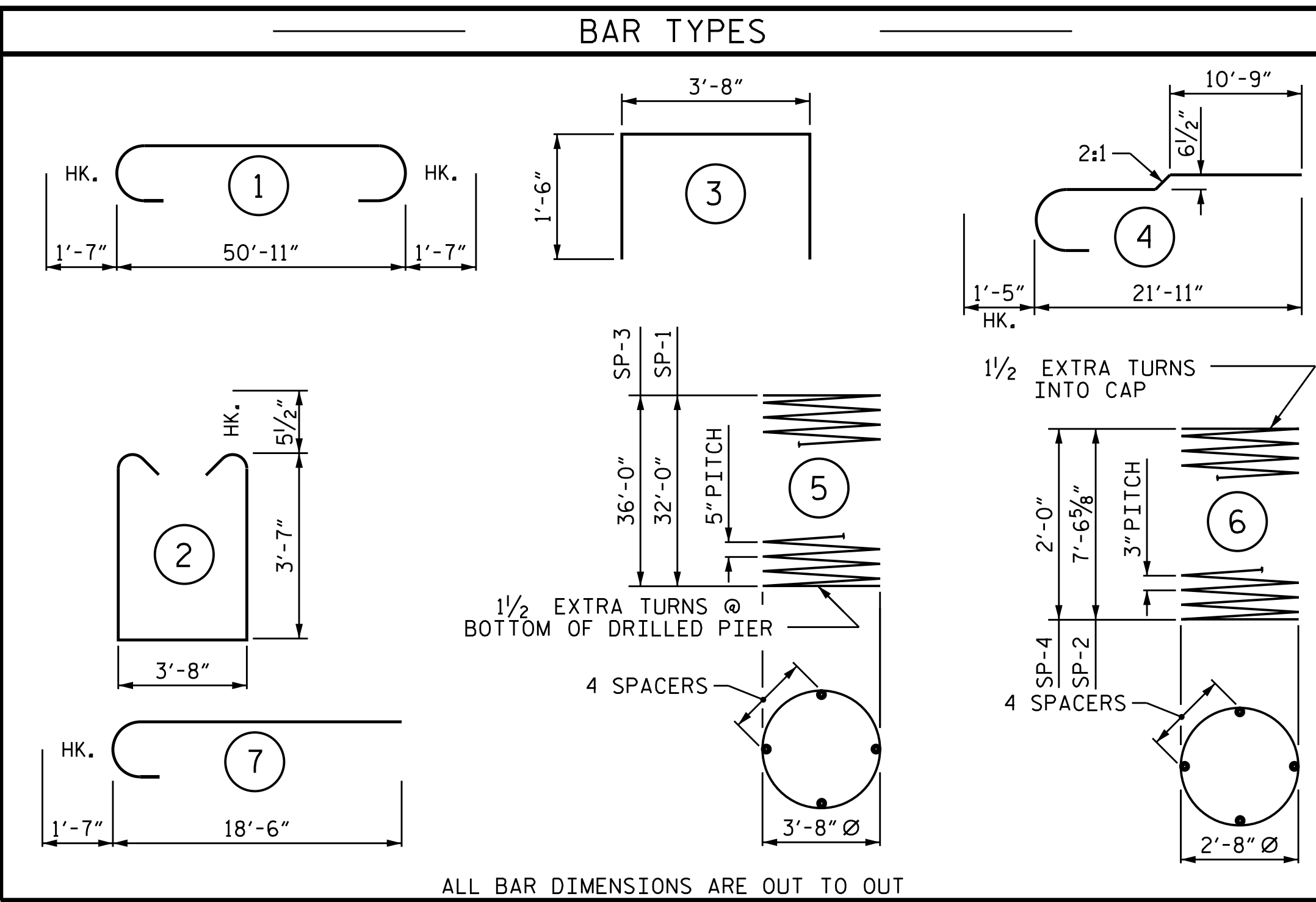
DRAWN BY: D. SMITH DATE: DEC. 18  
 CHECKED BY: M. PAYNE DATE: DEC. 18  
 DESIGN ENGINEER OF RECORD: M. PAYNE DATE: DEC. 18

REVISIONS						SHEET NO. S1-27
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 34
2			4			

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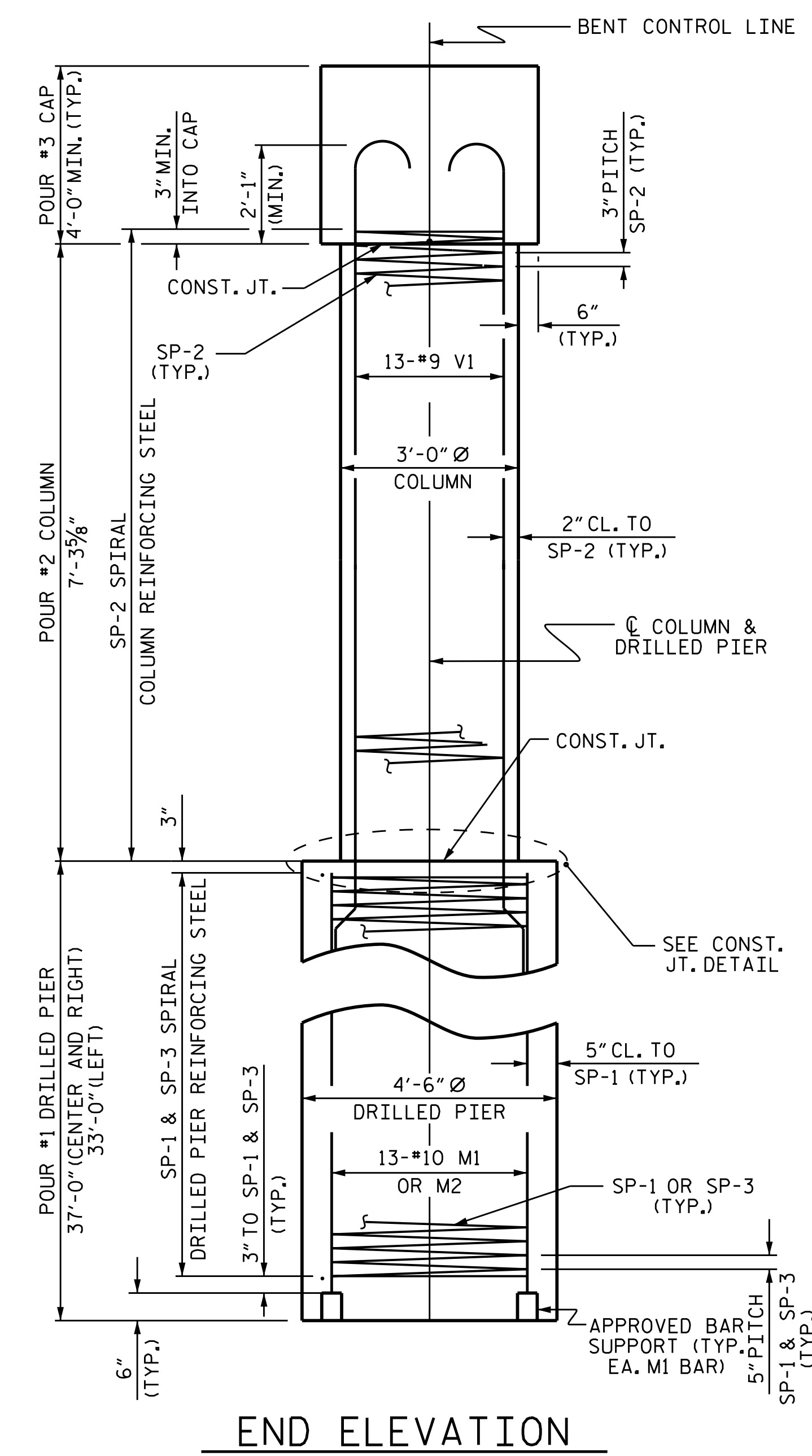


PLAN OF DRILLED PIERS & COLUMNS

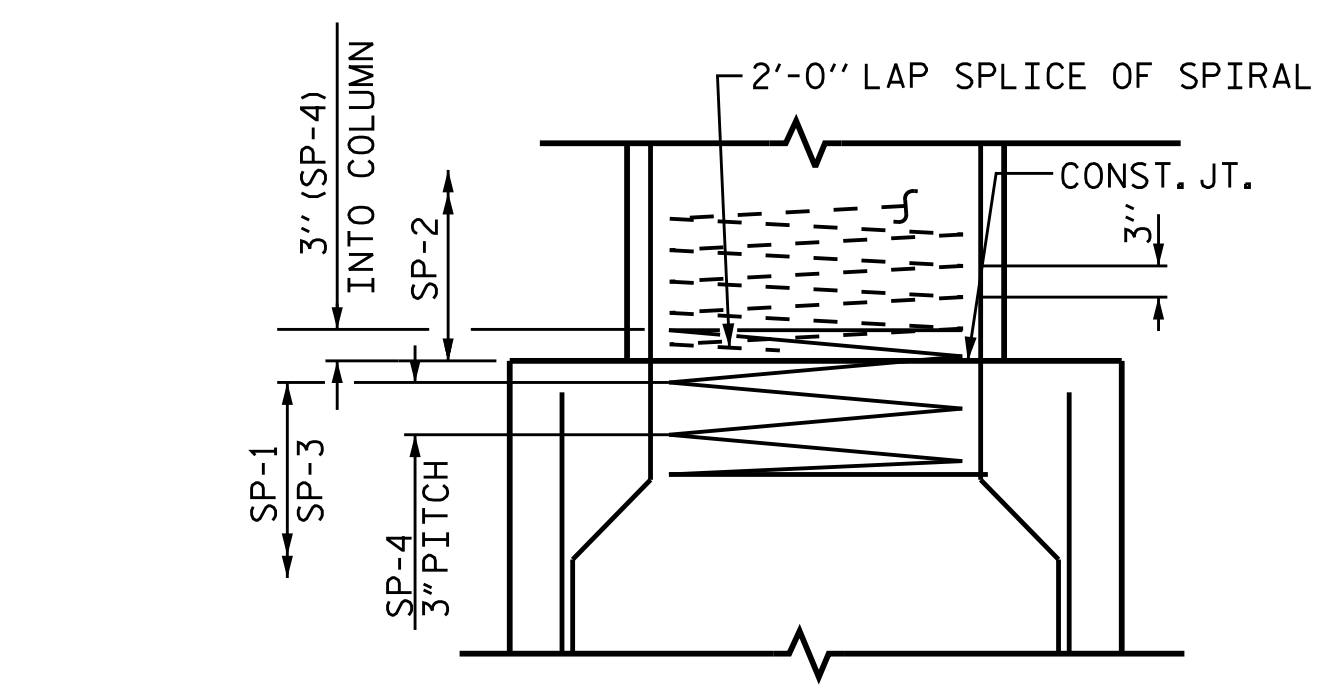


ALL BAR DIMENSIONS ARE OUT TO OUT

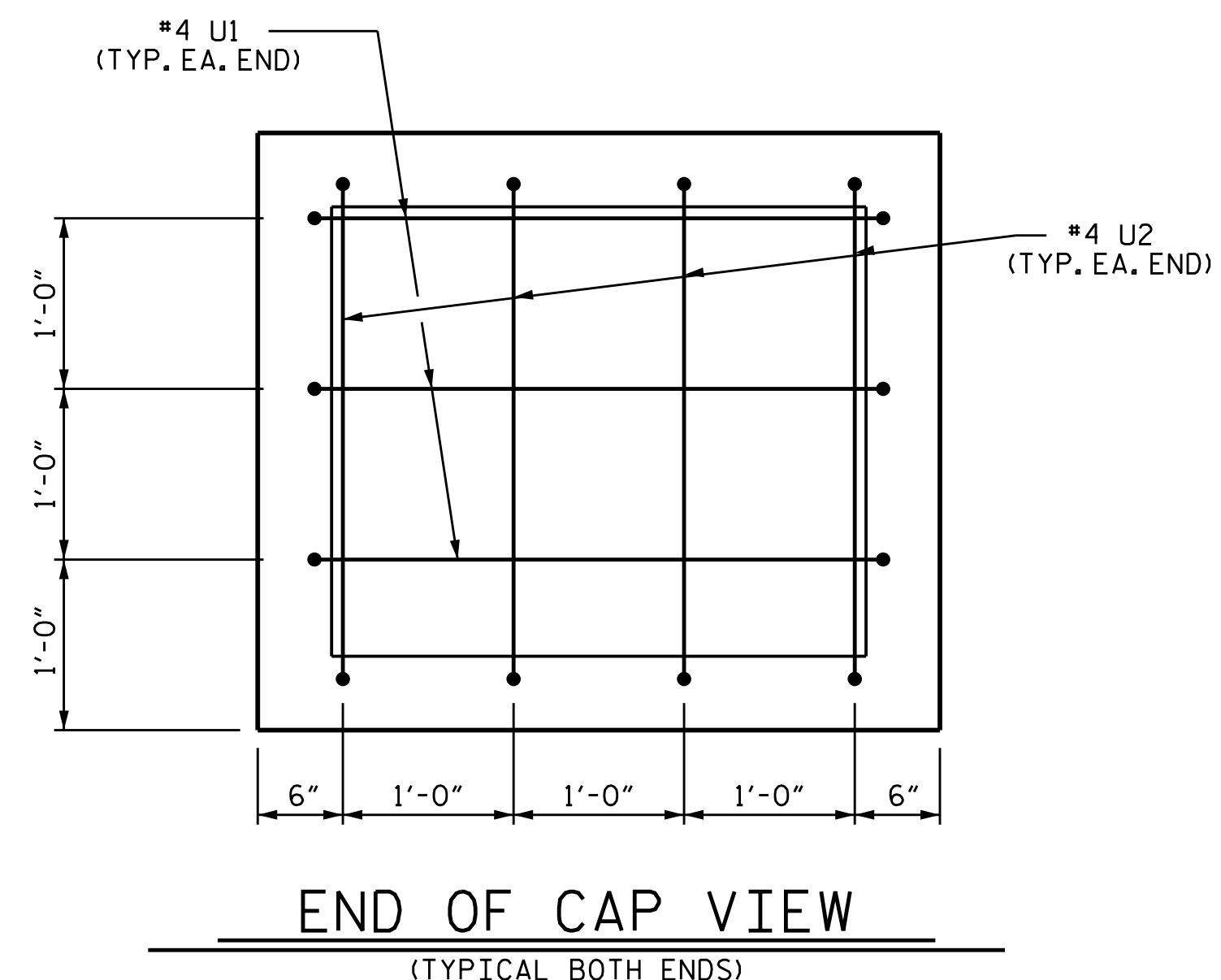
BILL OF MATERIAL FOR ONE BENT					
BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	20	#11	1	54'-1"	5,747
B2	6	#5	STR	50'-11"	319
B3	20	#5	STR	6'-6"	136
B4	10	#11	7	20'-1"	1,068
S1	80	#5	2	11'-9"	981
U1	14	#4	3	6'-8"	63
U2	25	#5	3	6'-8"	174
V1	39	#9	4	23'-4"	3,094
M1	13	#10	STR	35'-3"	1,971
M2	26	#10	STR	39'-3"	4,389
REINFORCING STEEL (FOR ONE BENT)					17,942 LBS.
SPIRAL COLUMN REINFORCING STEEL (FOR ONE BENT)					3,747 LBS.
* THE SP-1 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR					
* THE SP-2 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR					
CLASS A CONCRETE BREAKDOWN (FOR ONE BENT)					
POUR #2 (COLUMNS)					5.7 C.Y.
POUR #3 (CAP)					34.0 C.Y.
TOTAL CLASS A CONCRETE					39.7 C.Y.
DRILLED PIERS: (FOR ONE BENT)					
DRILLED PIER CONCRETE POUR #1 (DRILLED PIERS)					63.0 C.Y.
4'-6" Ø DRILLED PIER NOT IN SOIL					32.0 LIN. FT.
4'-6" Ø DRILLED PIER IN SOIL					75.0 LIN. FT.
PERMANENT STEEL CASING FOR 4'-6" Ø DRILLED PIER					51.0 LIN. FT.
CSL TUBES					524 LIN. FT.



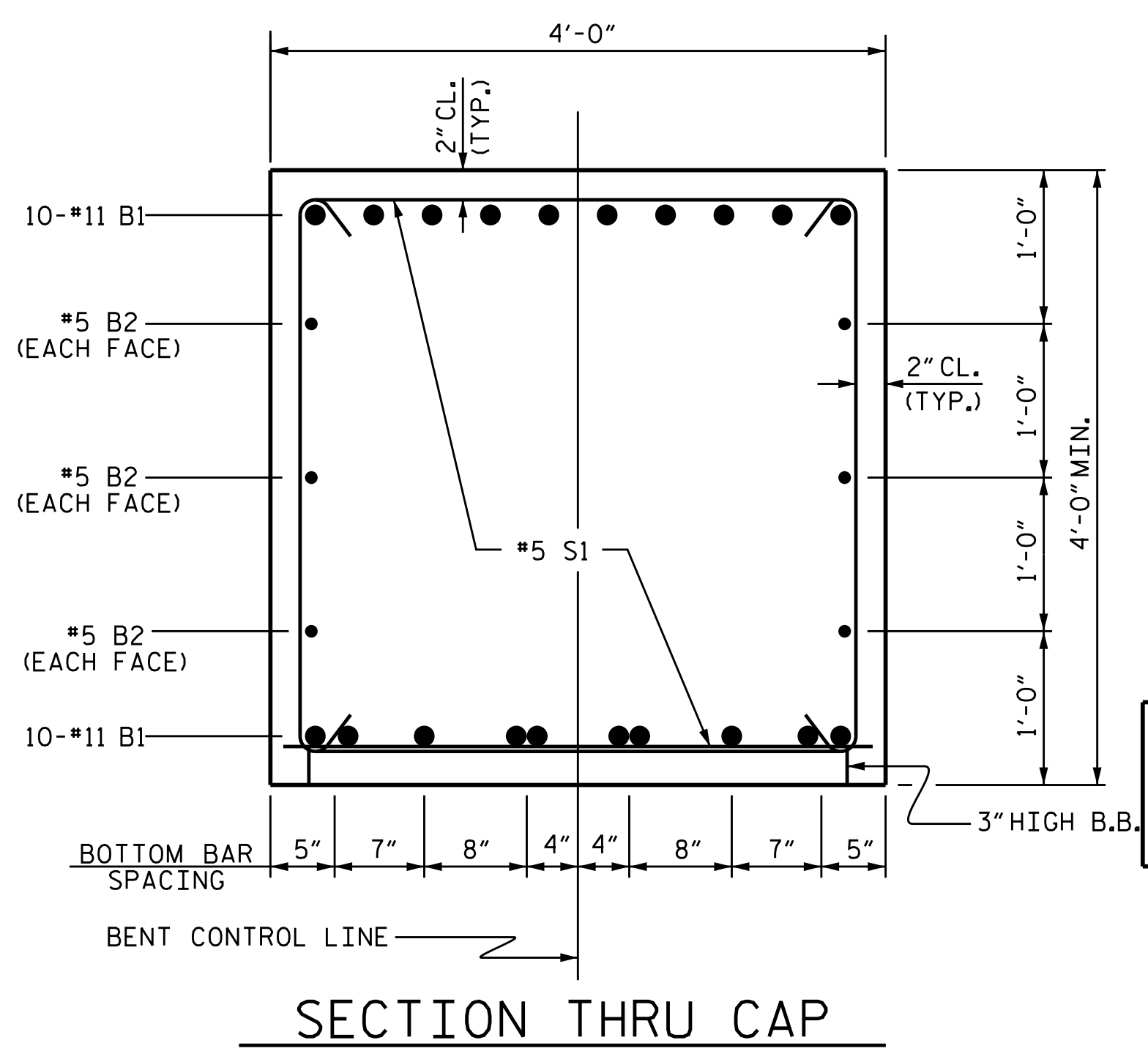
END ELEVATION



CONSTRUCTION JOINT DETAIL



END OF CAP VIEW (TYPICAL BOTH ENDS)



SECTION THRU CAP

**Dewberry**  
 2610 WYCLIFF ROAD  
 SUITE 410  
 RALEIGH, NC 27607  
 PHONE: 919.881.9939  
 NC COA No. F-0929

**NORTH CAROLINA PROFESSIONAL ENGINEER**  
 SEAL 030046  
 MATTHEW PAYNE

DocuSigned by: Matthew Payne 12/14/2018

PROJECT NO. I-5823  
 DAVIE COUNTY  
 STATION: 701+85.00 -L LT-  
 SHEET 2 OF 2

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE BENT No. 2					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO. S1-28	
TOTAL SHEETS 34	

DRAWN BY: D. SMITH DATE: DEC. 18  
 CHECKED BY: M. PAYNE DATE: DEC. 18  
 DESIGN ENGINEER OF RECORD: M. PAYNE DATE: DEC. 18

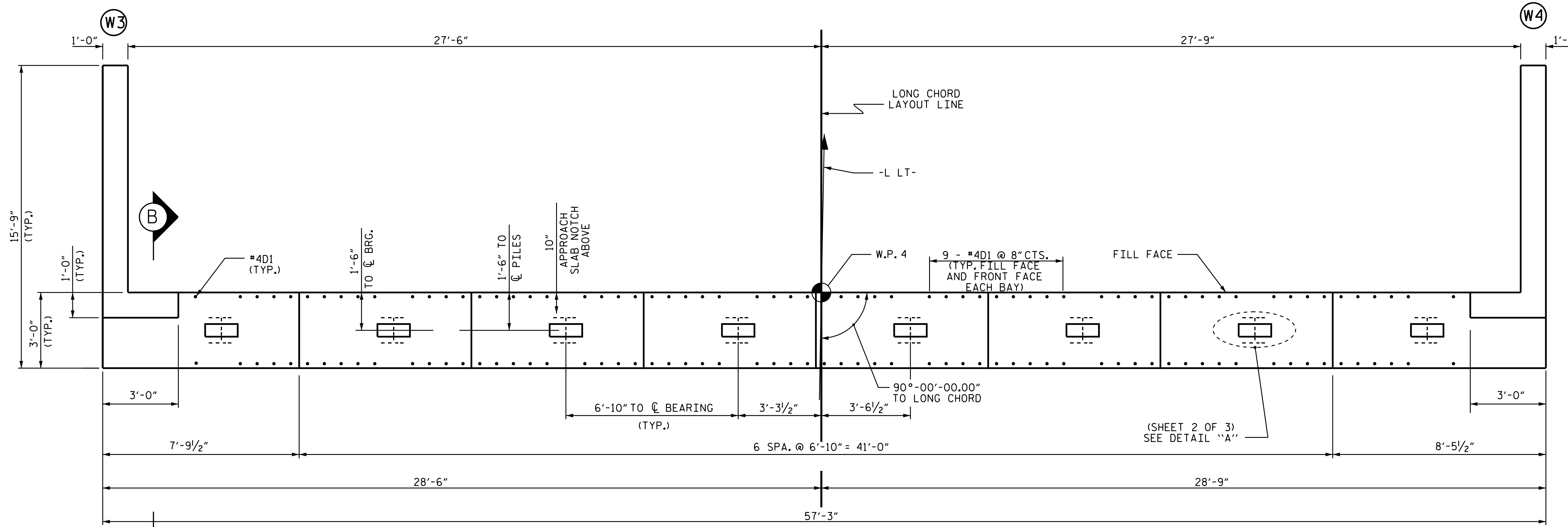
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

\*\*\*\*\*SYTIME\*\*\*\*\*  
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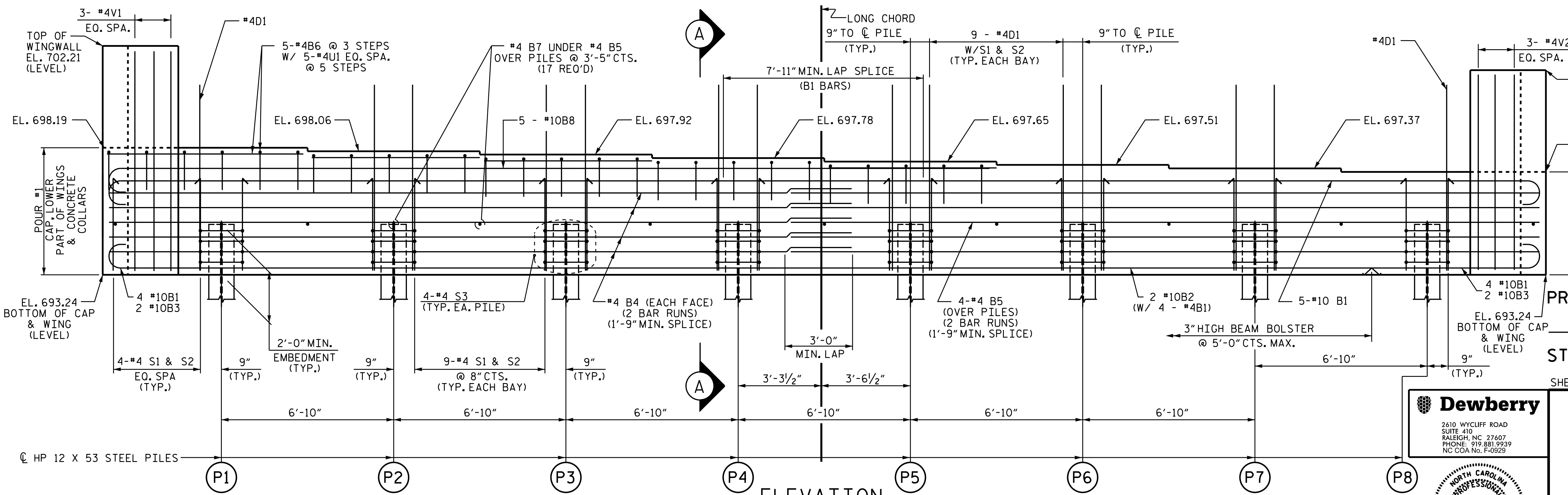


**NOTES**

FOR PILE SPLICE DETAILS, SEE SHEET 2 OF 3.  
FOR WING DETAILS, SEE SHEET 3 OF 3.



**PLAN**



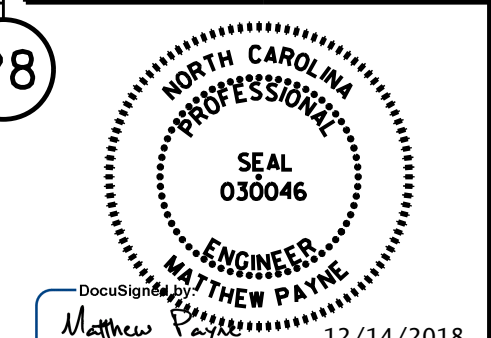
**ELEVATION**

FOR SECTION A-A, SEE SHEET 2 OF 3.  
CONCRETE COLLARS FOR STEEL PILES NOT SHOWN IN PLAN AND ELEVATION VIEWS FOR CLARITY.  
SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL", SHEET 2 OF 3.

PROJECT NO. I-5823  
DAVIE COUNTY  
STATION: 701+85.00 -L LT-

SHEET 1 OF 3

**Dewberry**  
2610 WYCLIFF ROAD  
SUITE 410  
RALEIGH, NC 27607  
PHONE: 919.881.9939  
NC COA No. F-0929



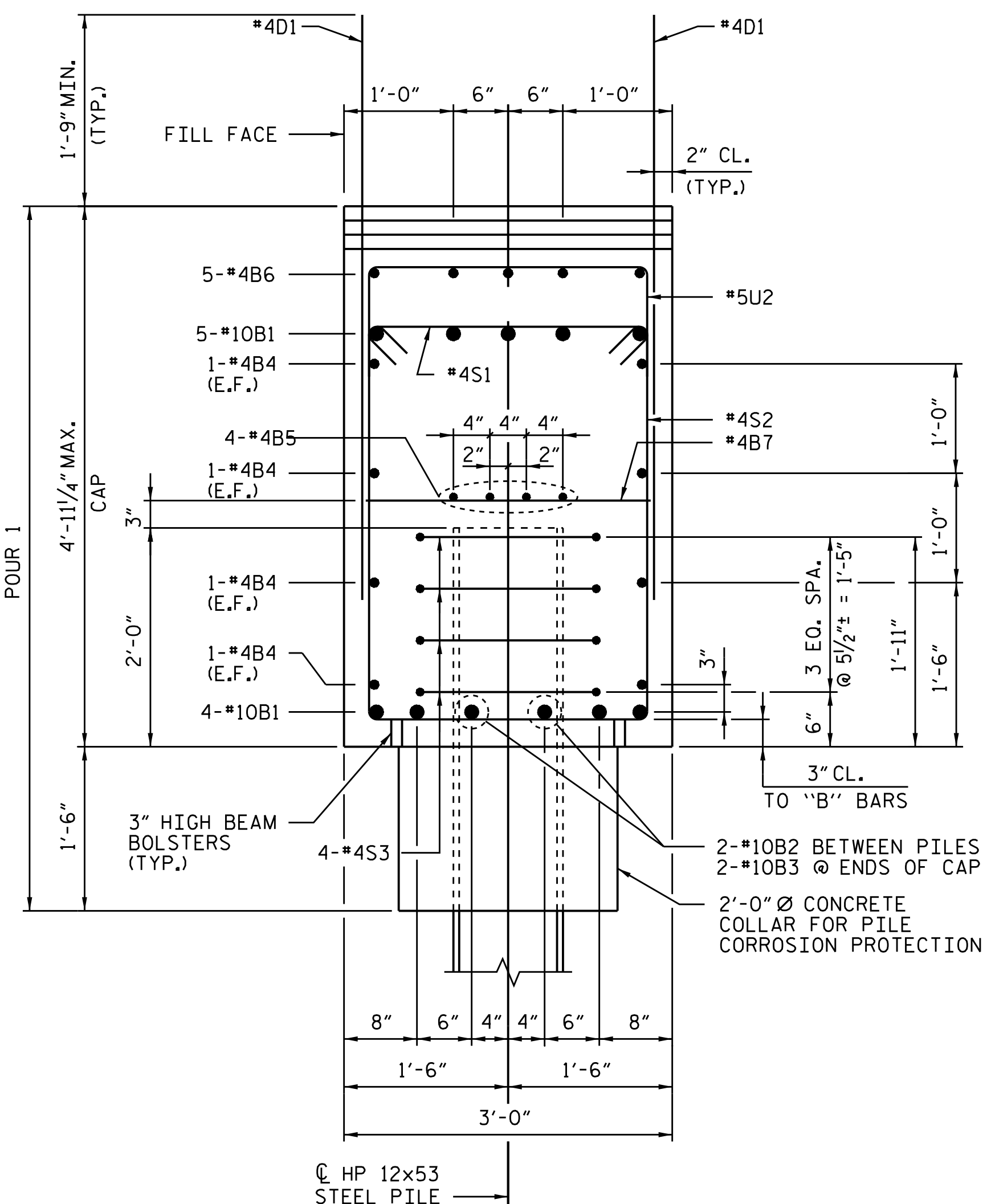
STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

SUBSTRUCTURE  
INTEGRAL  
END BENT No. 2

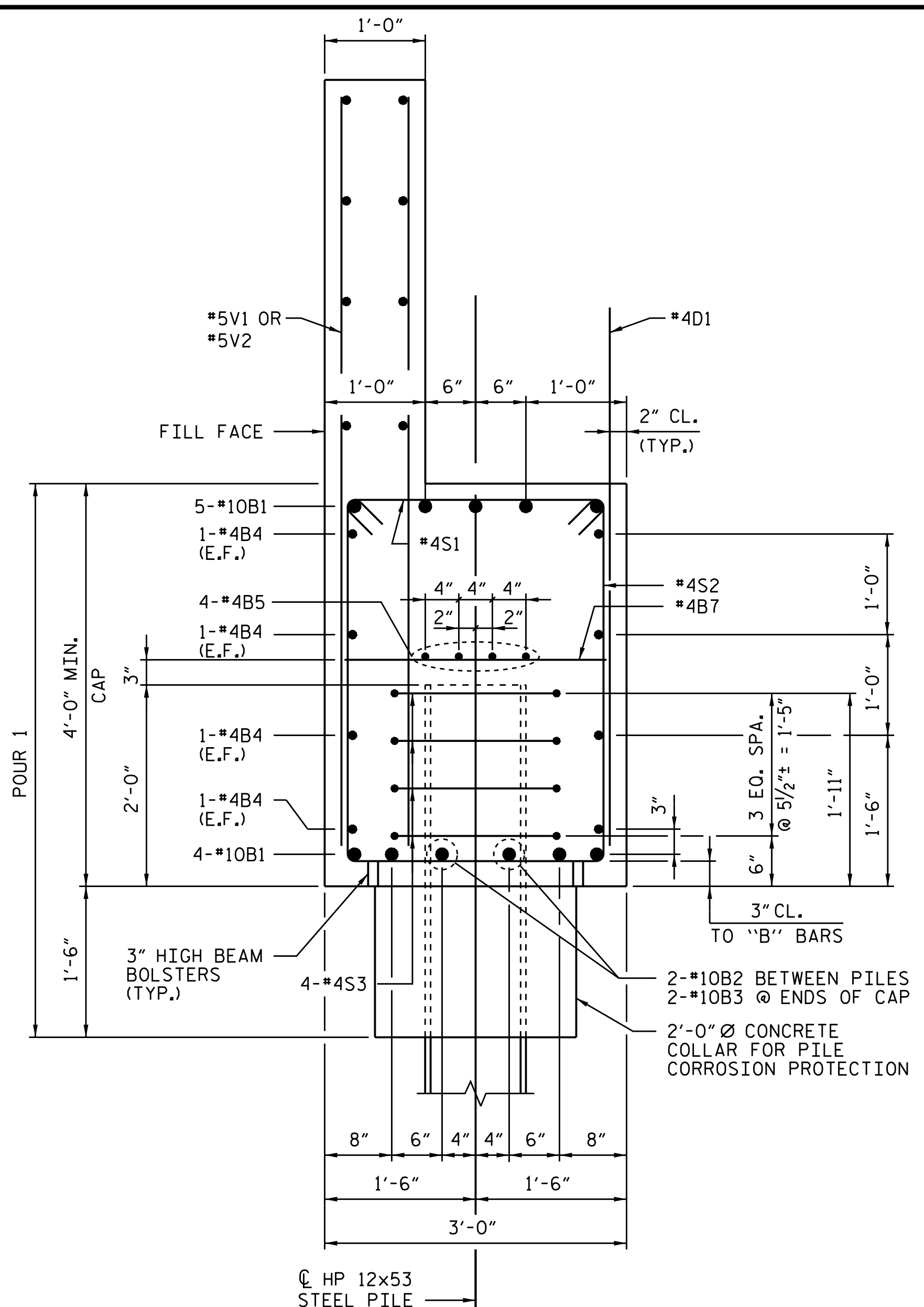
DRAWN BY: D. SMITH DATE: DEC. 18  
CHECKED BY: M. PAYNE DATE: DEC. 18  
DESIGN ENGINEER OF RECORD: M. PAYNE DATE: DEC. 18

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS	
1			3			1	29
2			4			34	

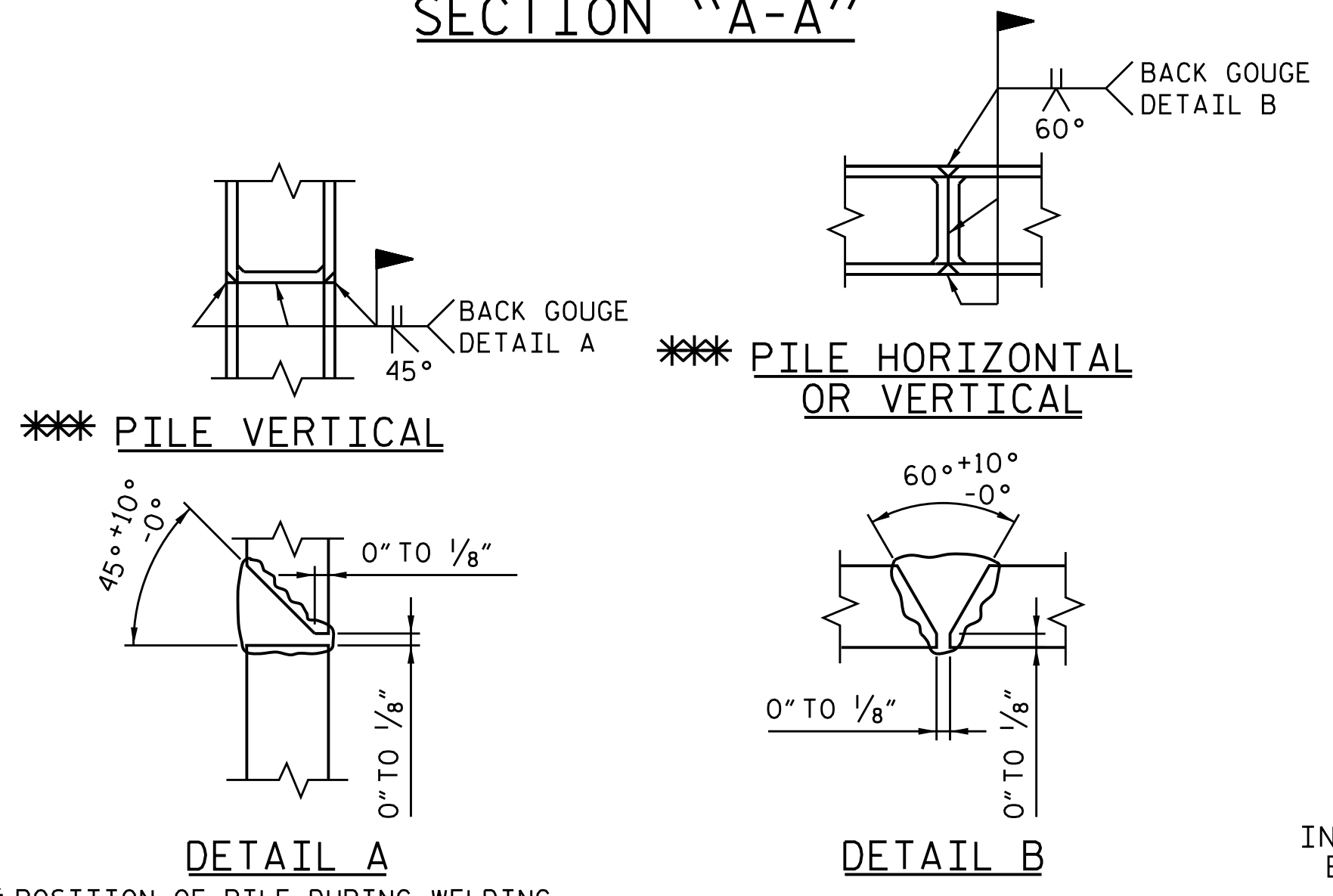
\*\*\*\*\*SYTIME\*\*\*\*\*  
\*\*\*\*\*D\*\*\*\*\*  
\*\*\*\*\*USERNAME\*\*\*\*\*



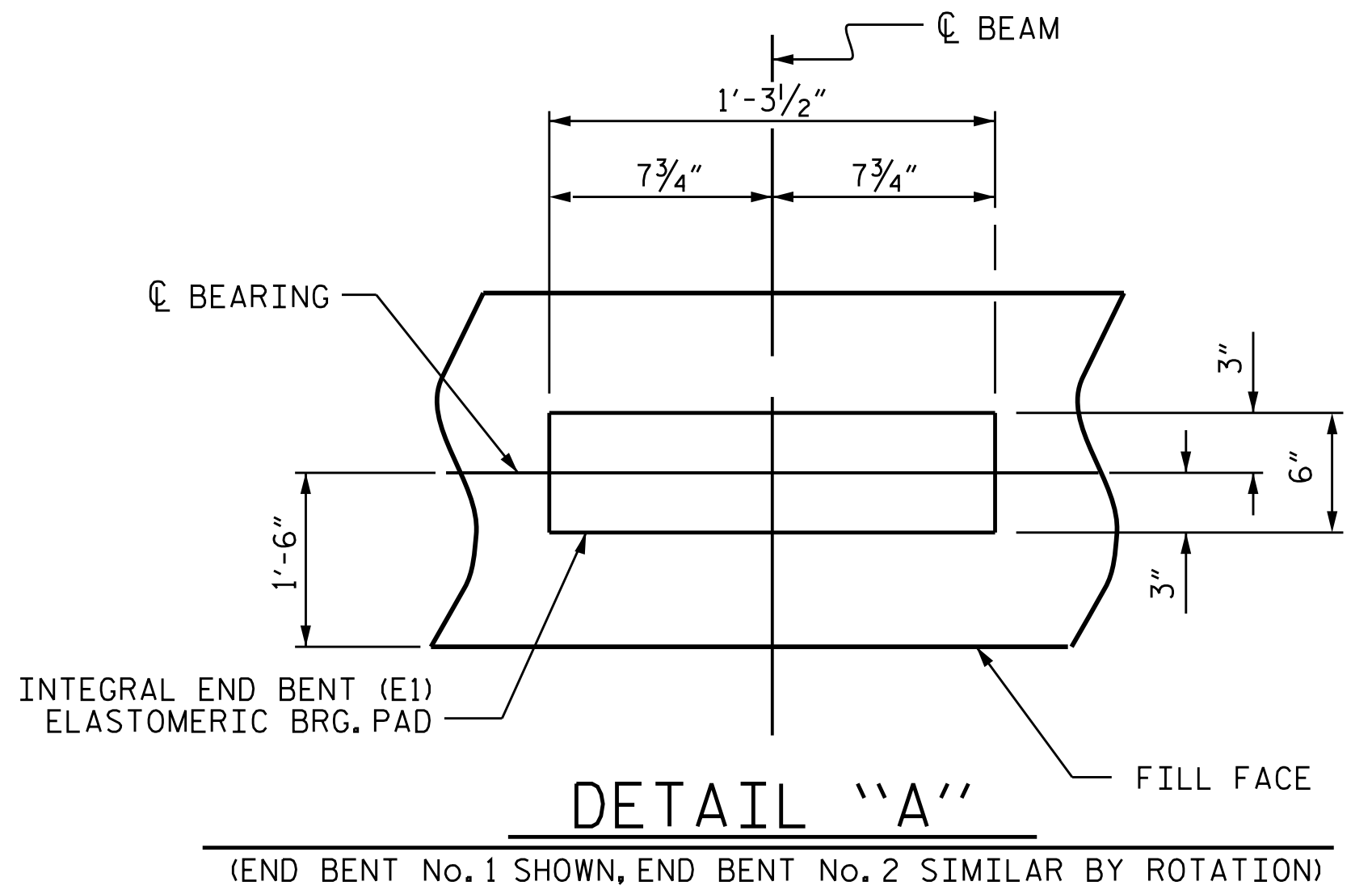
SECTION "A-A"



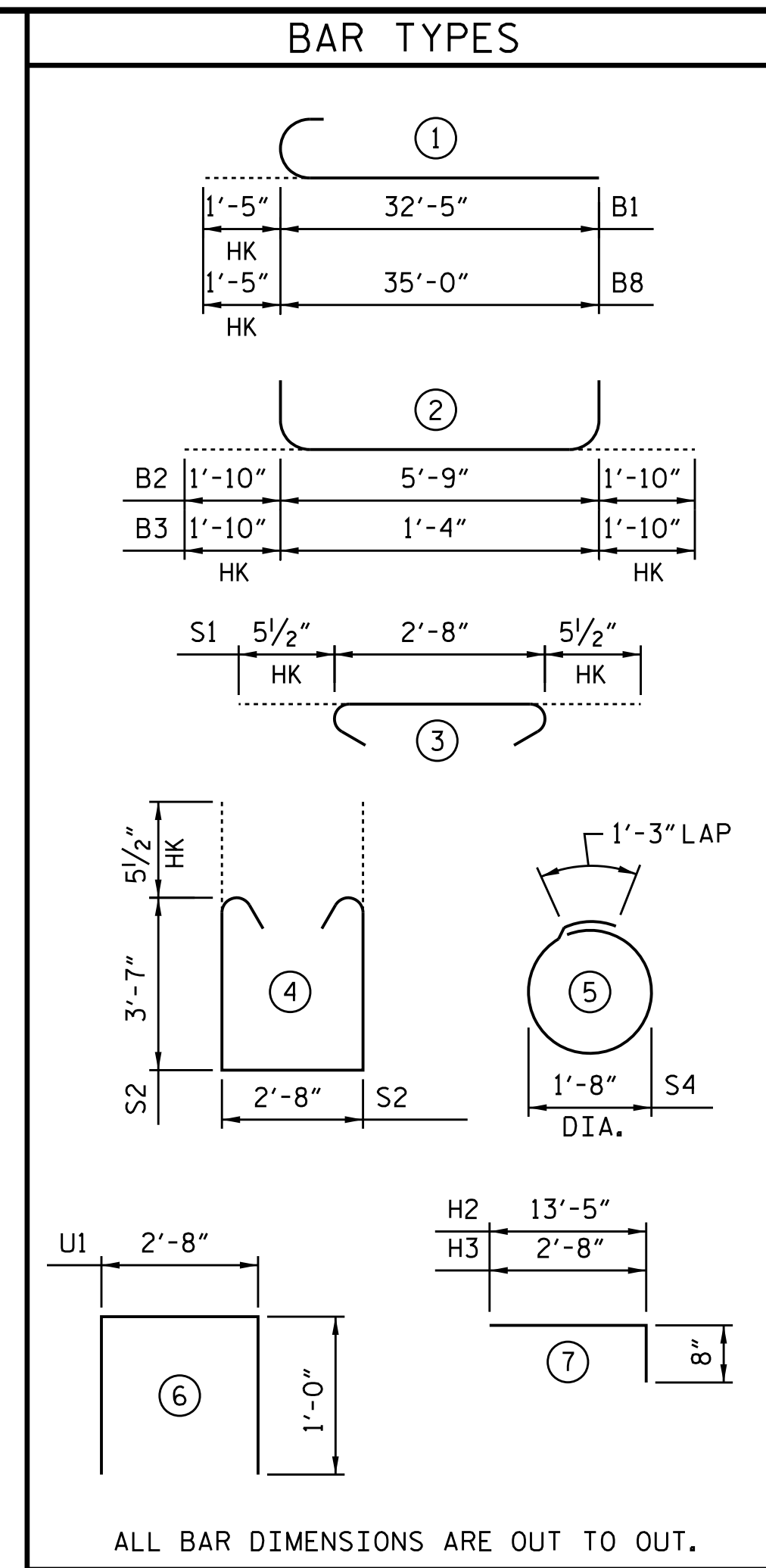
SECTION "B-B"



PILE SPLICE DETAILS



DETAIL "A"



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL					
END BENT 2					
BAR NO.	SIZE	TYPE	LENGTH	WEIGHT	
B1	#10	①	33'-10"	2,619	
B2	#10	②	9'-5"	567	
B3	#10	②	5'-0"	86	
B4	4	STR	29'-3"	313	
B5	8	#4	STR	29'-4"	157
B6	15	#4	STR	6'-6"	66
B7	17	#4	STR	2'-8"	31
B8	5	#10	①	36'-5"	783
D1	130	#4	STR	5'-6"	478
H1	20	#5	STR	15'-3"	319
H2	16	#5	⑦	14'-1"	236
H3	16	#5	⑦	3'-3"	56
S1	71	#4	③	3'-7"	170
S2	71	#4	④	10'-9"	510
S3	32	#4	⑤	6'-6"	139
U1	25	#4	⑥	4'-8"	78
V1	28	#5	STR	8'-6"	249
V2	28	#5	STR	7'-7"	222
TOTAL REINFORCING STEEL				7,079	
END BENT 2 TOTAL QUANTITIES					
CLASS A CONCRETE					
POUR 1					
(COLLARS, CAP & LOWER WINGWALLS)				38.5	
HP 12x53 STEEL PILES				NO.	8
				LIN. FT.	280
PILE DRIVING EQUIPMENT SETUP FOR HP12x53 STEEL PILES				NO.	8
NOTE: REINFORCING STEEL AND CONCRETE FOR THE UPPER PORTION OF THE WINGS IS INCLUDED IN THE PAY ITEM "REINFORCED CONCRETE DECK SLAB".					

NOTES:  
FOR OTHER NOTES, SEE "FOUNDATION LAYOUT" AND "LOCATION SKETCH".

PROJECT NO. I-5823  
DAVIE COUNTY  
STATION: 701+85.00 -L LT-  
SHEET 2 OF 3

**Dewberry**  
2610 WYCLIFF ROAD  
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RALEIGH, NC 27607  
PHONE: 919.881.9939  
NC COA No. F-0929

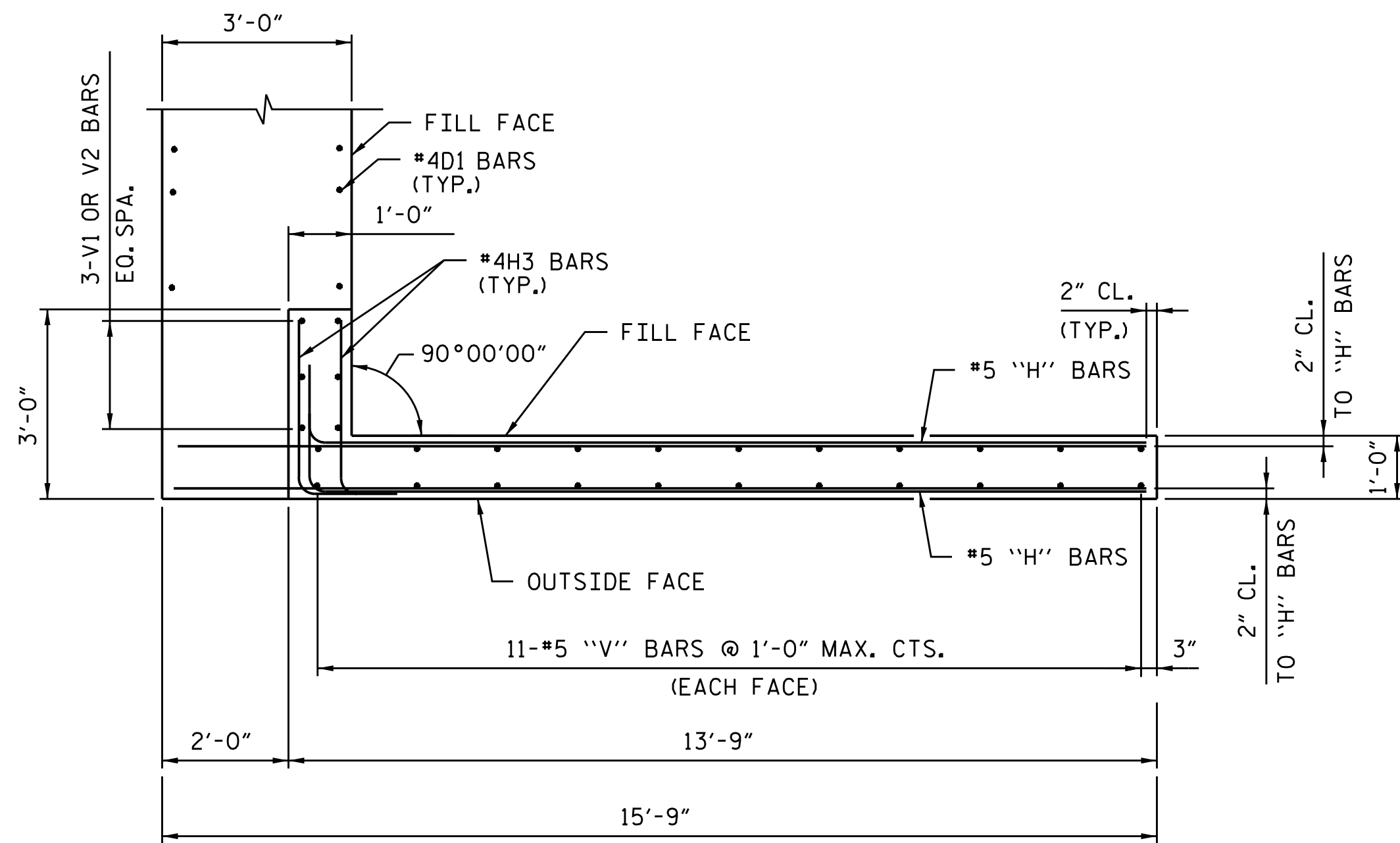
NORTH CAROLINA PROFESSIONAL ENGINEER  
SEAL 030046  
MATTHEW PAYNE

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
SUBSTRUCTURE  
INTEGRAL END BENT 2  
SECTIONS AND DETAILS

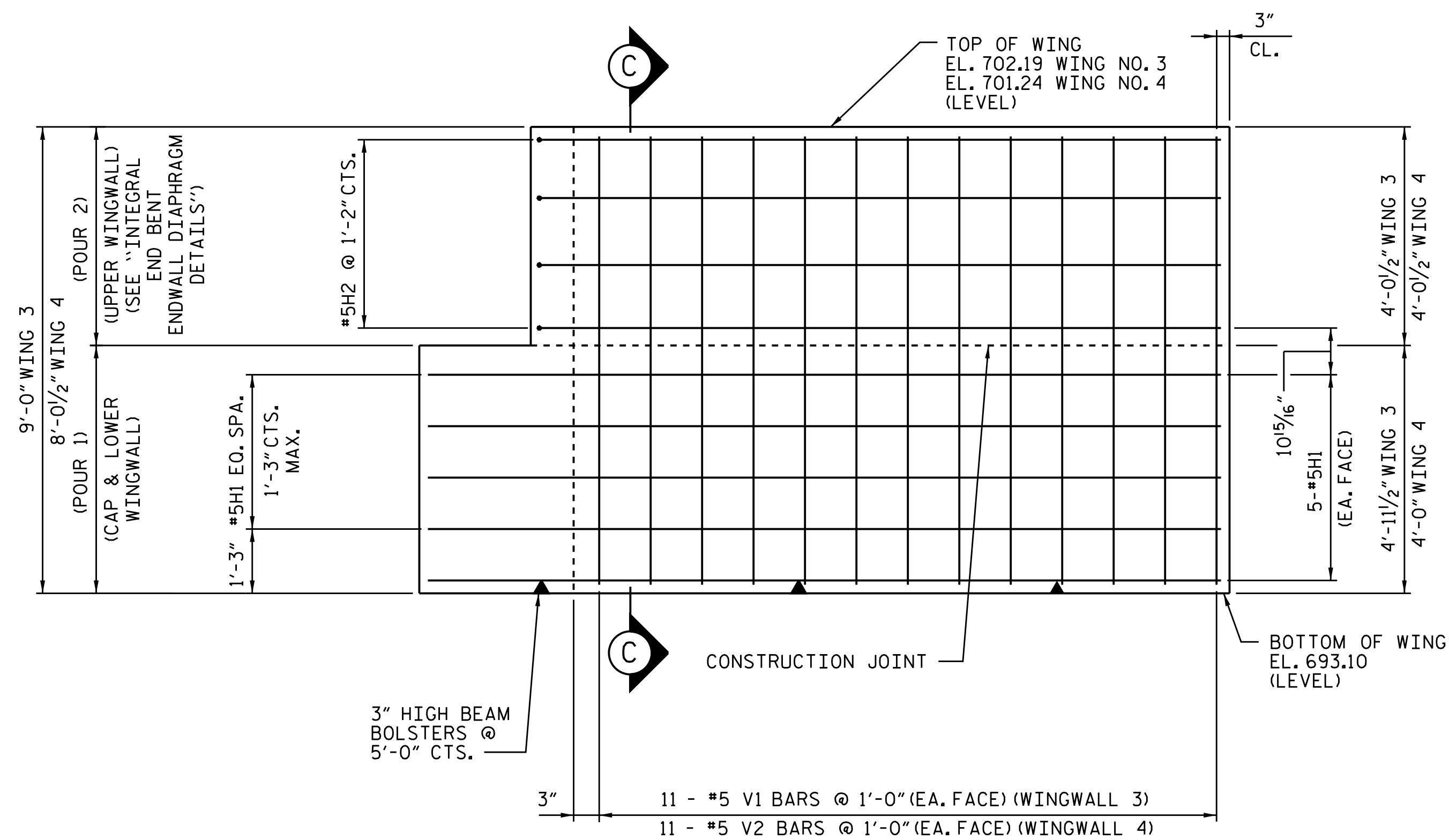
DRAWN BY: D. SMITH DATE: DEC. 18  
CHECKED BY: M. PAYNE DATE: DEC. 18  
DESIGN ENGINEER OF RECORD: M. PAYNE DATE: DEC. 18

REVISIONS						SHEET NO. S1-30
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 34
2			4			

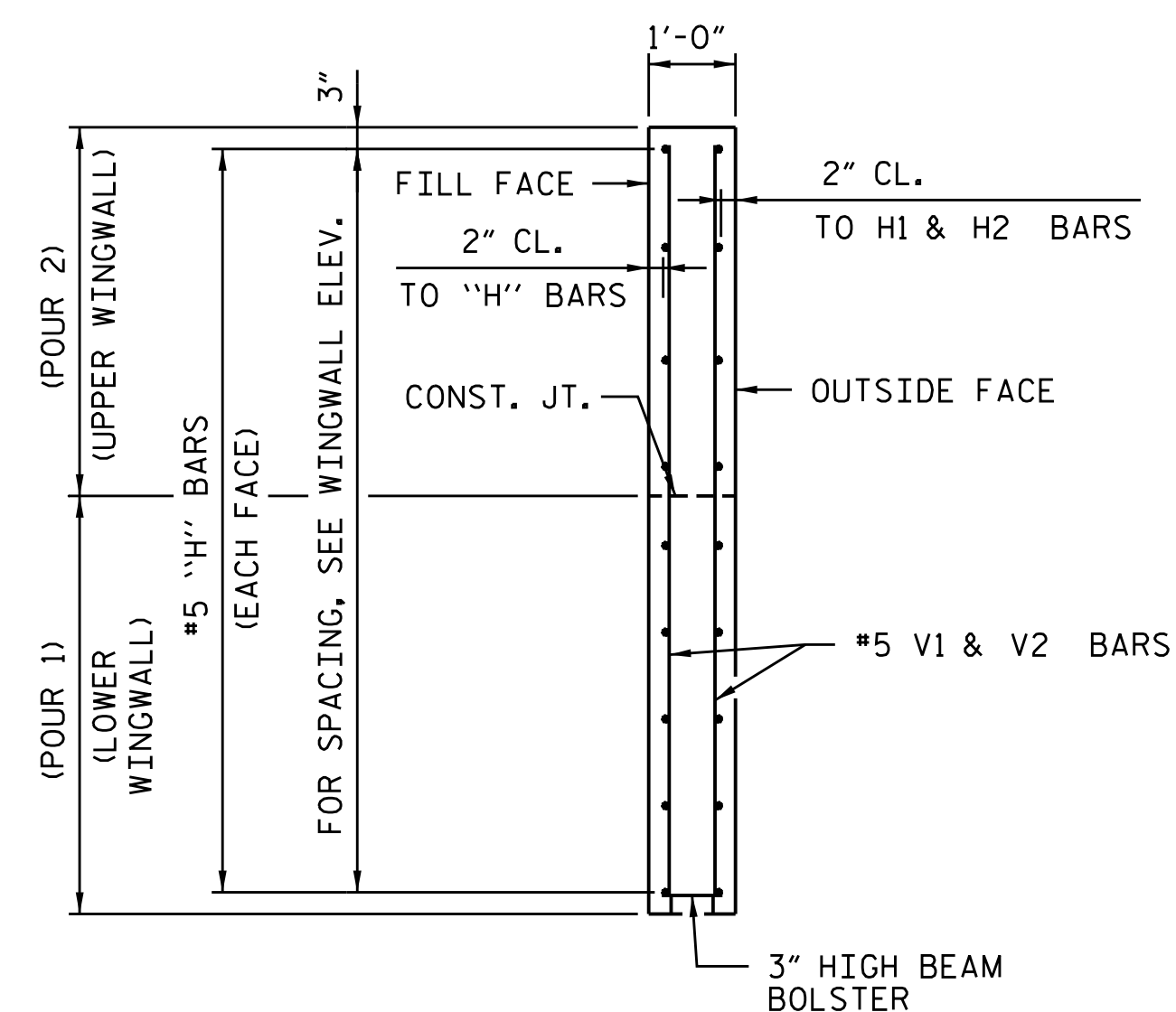
\*\*\*\*\*SYTIME\*\*\*\*\*  
\*\*\*\*\*SDON\*\*\*\*\*  
\*\*\*\*\*USERNAME\*\*\*\*\*



**PLAN W3 OR W4**  
 (WING 4 SHOWN, WING 3 SIMILAR)

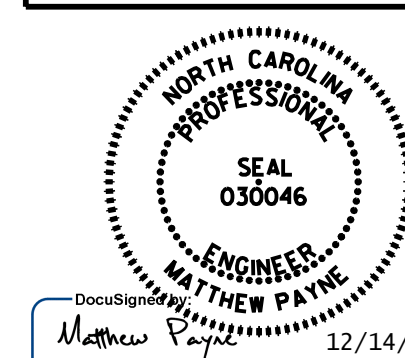
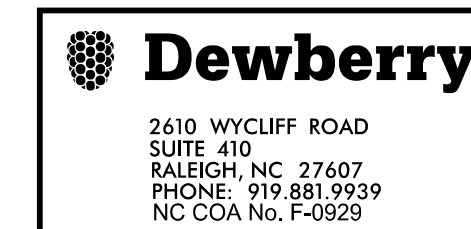


**ELEVATION**



**SECTION C-C**

PROJECT NO. I-5823  
 DAVIE COUNTY  
 STATION: 701+85.00 -L LT-  
 SHEET 3 OF 3



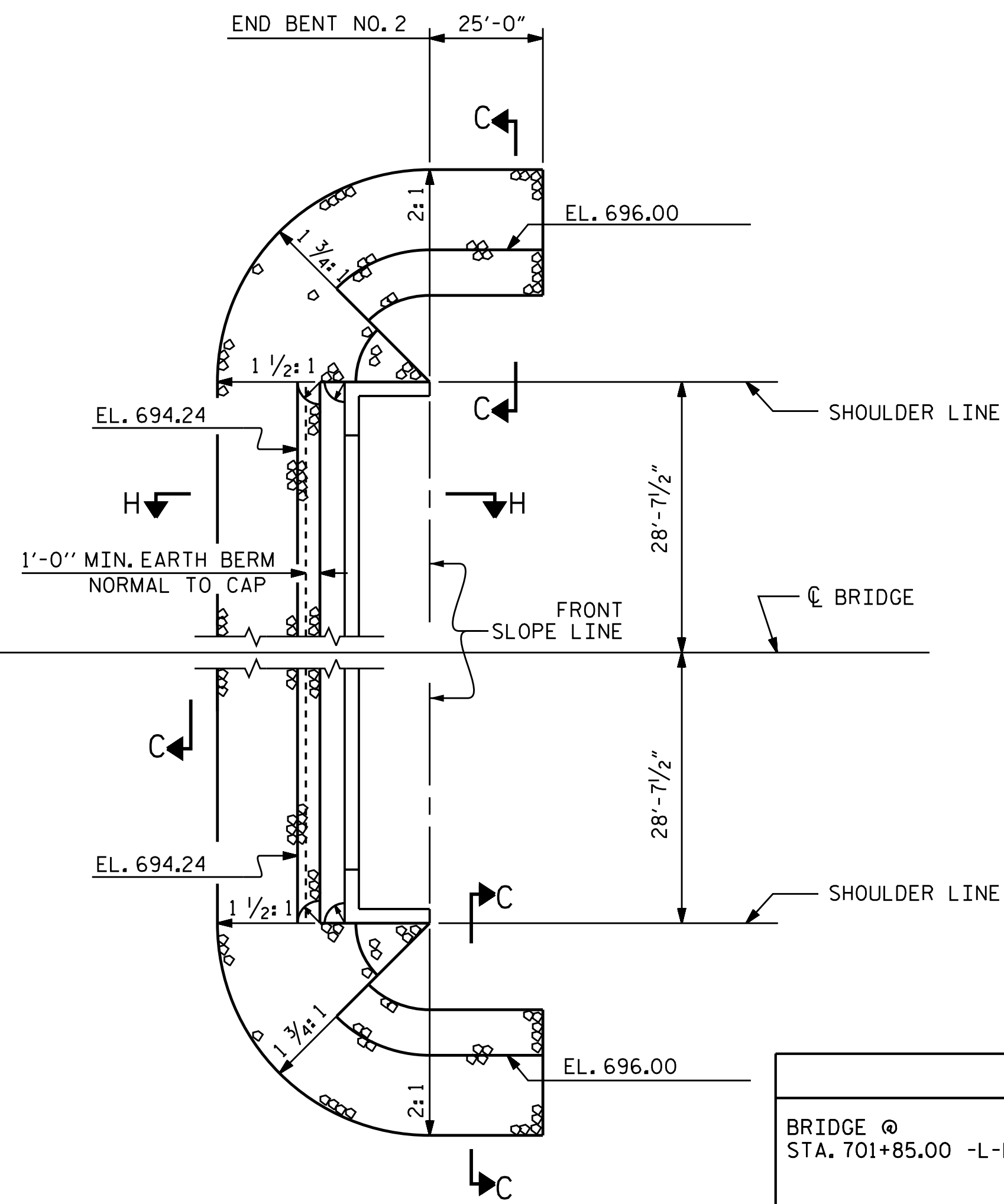
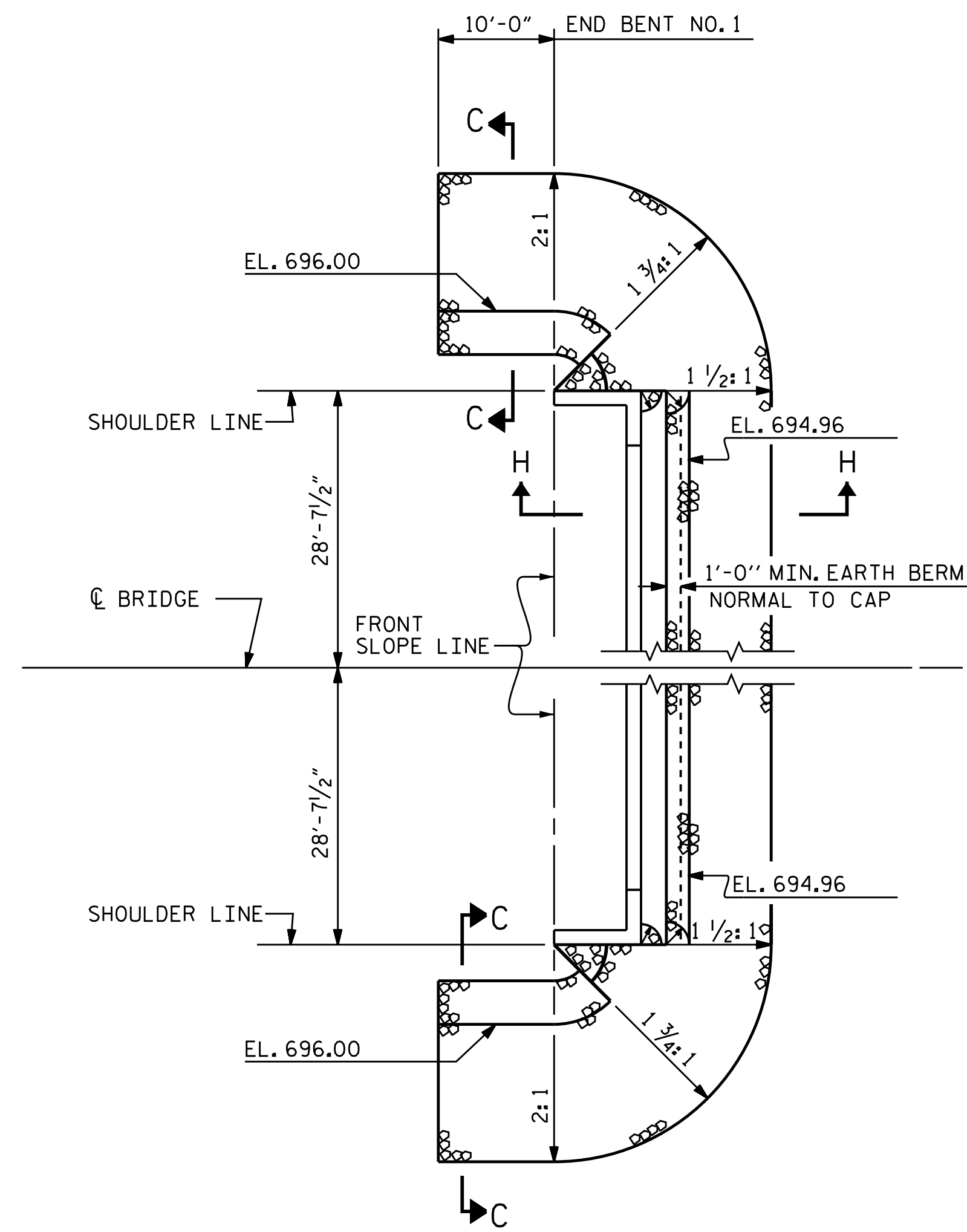
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE INTEGRAL END BENT 2 WING WALL DETAILS					
SHEET NO. S1-31					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

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TOTAL SHEETS 34

DRAWN BY: D. SMITH DATE: DEC. 18  
 CHECKED BY: M. PAYNE DATE: DEC. 18  
 DESIGN ENGINEER OF RECORD: M. PAYNE DATE: DEC. 18

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 \*\*\*\*\*USERNAME\*\*\*\*\*

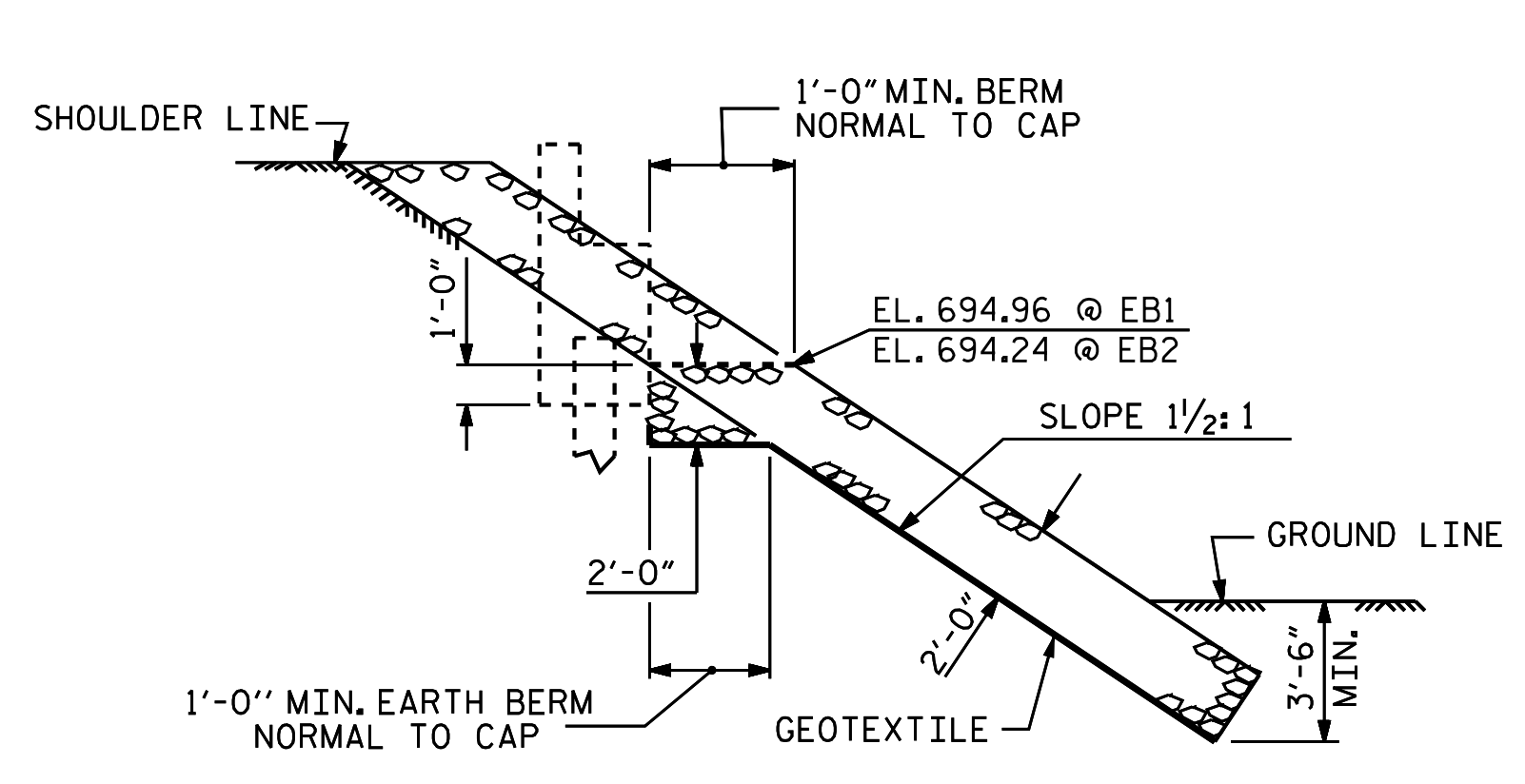


NOTES :  
FOR BERM WIDTH DIMENSIONS, SEE GENERAL DRAWING.

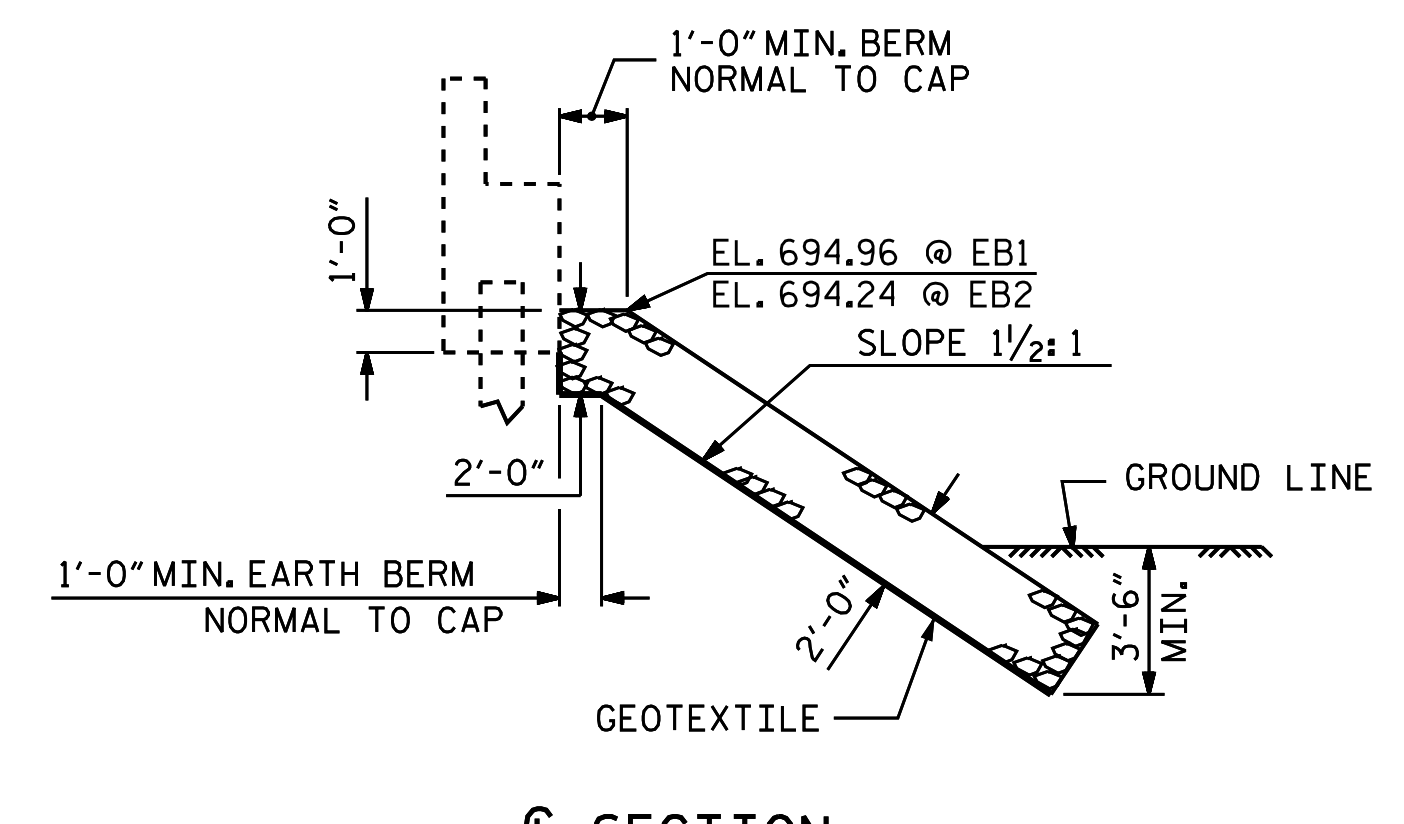
SHOULDER RIP RAP IS HIGHER THAN BERM RIP RAP

BERM RIP RAPPED

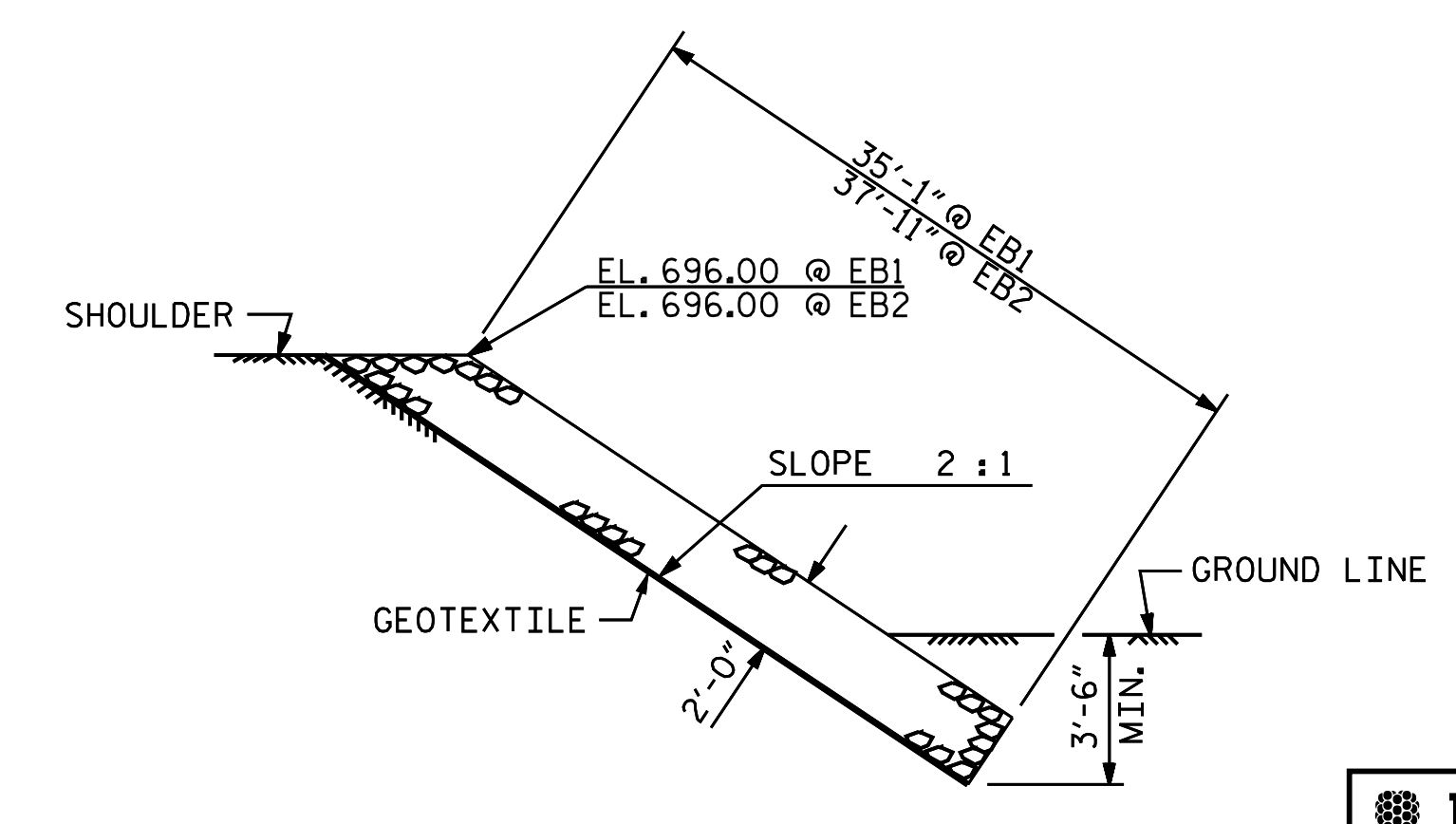
ESTIMATED QUANTITIES		
BRIDGE @ STA. 701+85.00 -L-LT	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	232	258
END BENT 2	417	463



SECTION H-H



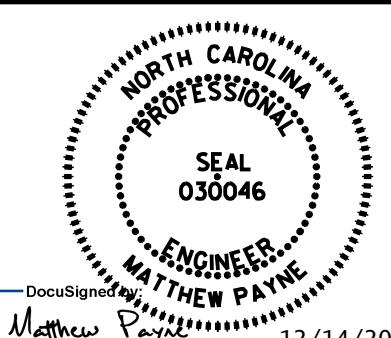
SECTION C-C  
BERM RIP RAPPED



SECTION C-C

PROJECT NO. I-5823  
DAVIE COUNTY  
STATION: 701+85.00 -L LT-

**Dewberry**  
2610 WYCLIFF ROAD  
SUITE 410  
RALEIGH, NC 27607  
PHONE: 919.881.9939  
NC COA No. F-0929



STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
STANDARD  
RIP RAP DETAILS

DRAWN BY : D. SMITH DATE : DEC. 18  
CHECKED BY : M. PAYNE DATE : DEC. 18  
DESIGN ENGINEER OF RECORD: M. PAYNE DATE : DEC. 18

REVISIONS						SHEET NO. S1-32
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 34
2			4			

DOCUMENT NOT CONSIDERED  
FINAL UNLESS ALL  
SIGNATURES COMPLETED

\*\*\*\*\*SYSTEM\*\*\*\*\*  
\*\*\*\*\*USER\*\*\*\*\*  
\*\*\*\*\*USERNAME\*\*\*\*\*

**NOTES**

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

FOR BRIDGE APPROACH FILL INCLUDING GEOTEXTILE, 6" Ø DRAINAGE PIPE, AND SELECT MATERIAL, SEE ROADWAY PLANS.

GEOTEXTILE SHALL BE TYPE 1 IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS SECTION 1056.

SELECT MATERIAL BACKFILL (CLASS V OR CLASS VI) SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS SECTION 1016.

SELECT MATERIAL BACKFILL IS TO BE CONTINUOUS ALONG FILL FACE OF BACKWALL FROM OUTSIDE EDGE TO OUTSIDE EDGE OF APPROACH SLAB.

FOR THE 6" Ø DRAINAGE PIPE OUTLET(S), SEE ROADWAY STANDARD DRAWINGS.

AREA BETWEEN THE WINGWALL AND APPROACH SLAB SHALL BE GRADED TO DRAIN THE WATER AWAY FROM THE FILL FACE OF THE BRIDGE AND SHALL BE PAVED. SEE ROADWAY PLANS.

THE JOINT OPENING AT THE APPROACH SLAB/DECK INTERFACE SHALL BE SAWED NO MORE THAN 12 HOURS AFTER THE APPROACH SLAB IS CAST. THE JOINT SHALL BE CLEANED OF ALL DEBRIS BEFORE THE SEALANT IS APPLIED. THE JOINT SEALER MATERIAL SHALL CONFORM TO THE REQUIREMENTS OF SECTION 1028-3 OF THE STANDARD SPECIFICATIONS.

AT THE CONTRACTORS OPTION, "TYPE A - ALTERNATE APPROACH FILL" IN LIEU OF "TYPE I - STANDARD APPROACH FILL" MAY BE CONSTRUCTED AT NO ADDITIONAL COST TO THE DEPARTMENT. SEE SHEET 2 OF 2 FOR DETAILS AND NOTES.

**BILL OF MATERIAL**

**FOR ONE APPROACH SLAB (2 REQ'D)**

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	25	#4	STR	49'-0"	819
A2	25	#4	STR	49'-0"	819
* B1	98	#5	STR	24'-8"	2,522
B2	98	#6	STR	24'-8"	3,631

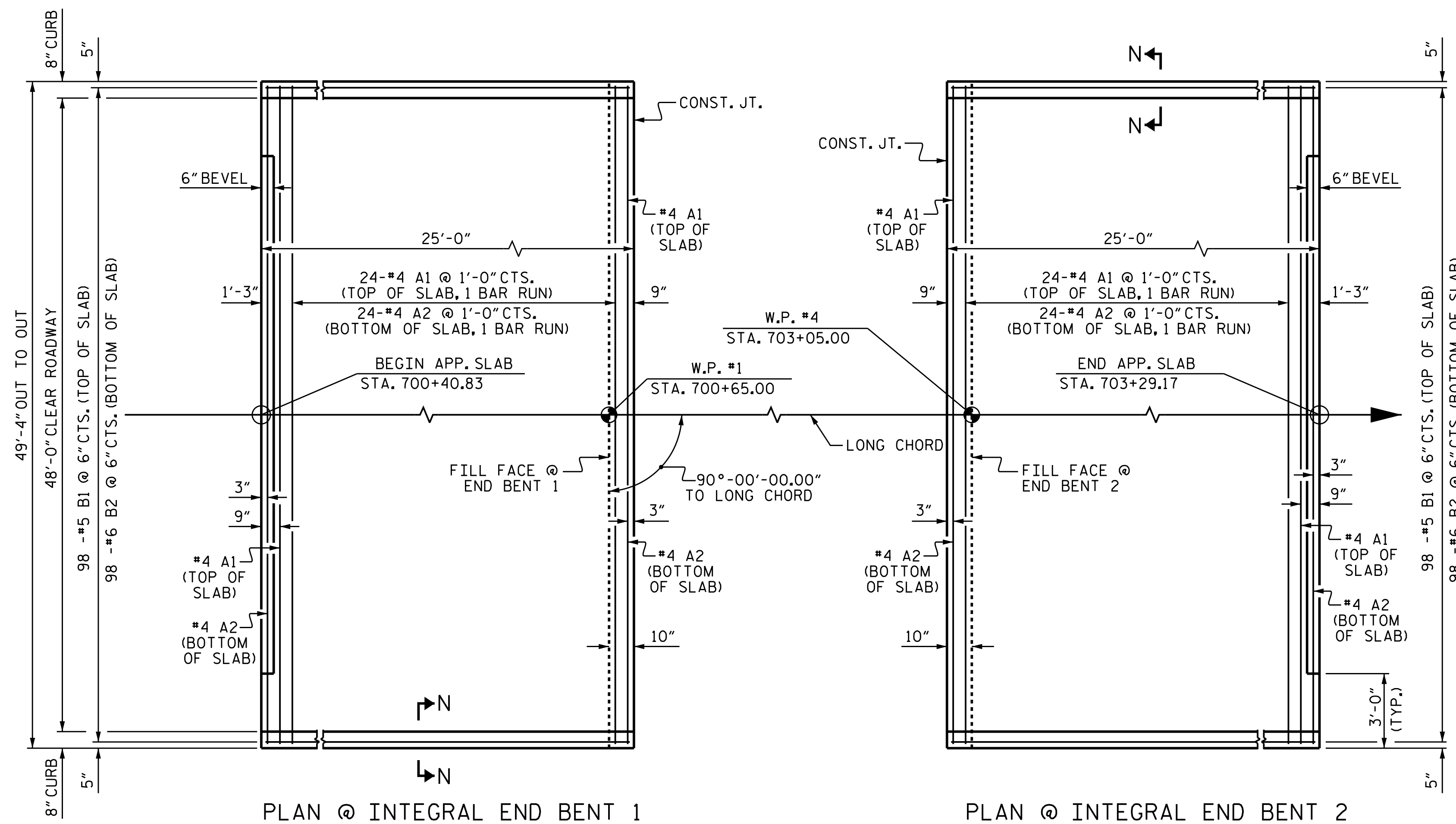
REINFORCING STEEL LBS. 4,450

\* EPOXY COATED REINFORCING STEEL LBS. 3,341

CLASS AA CONCRETE C. Y. 53

**SPLICE LENGTHS**

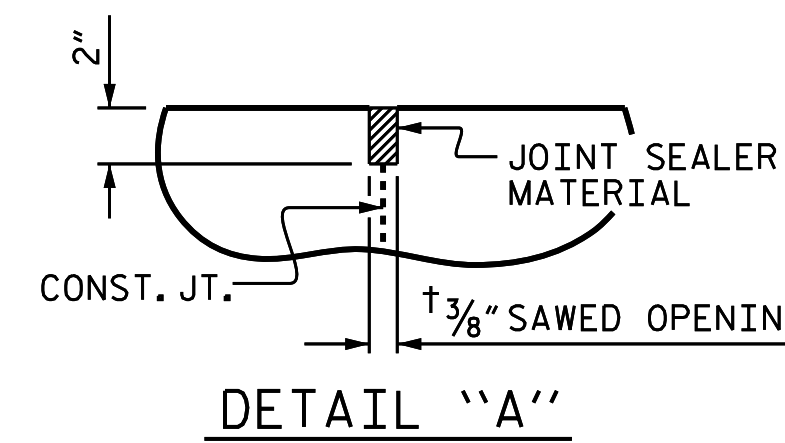
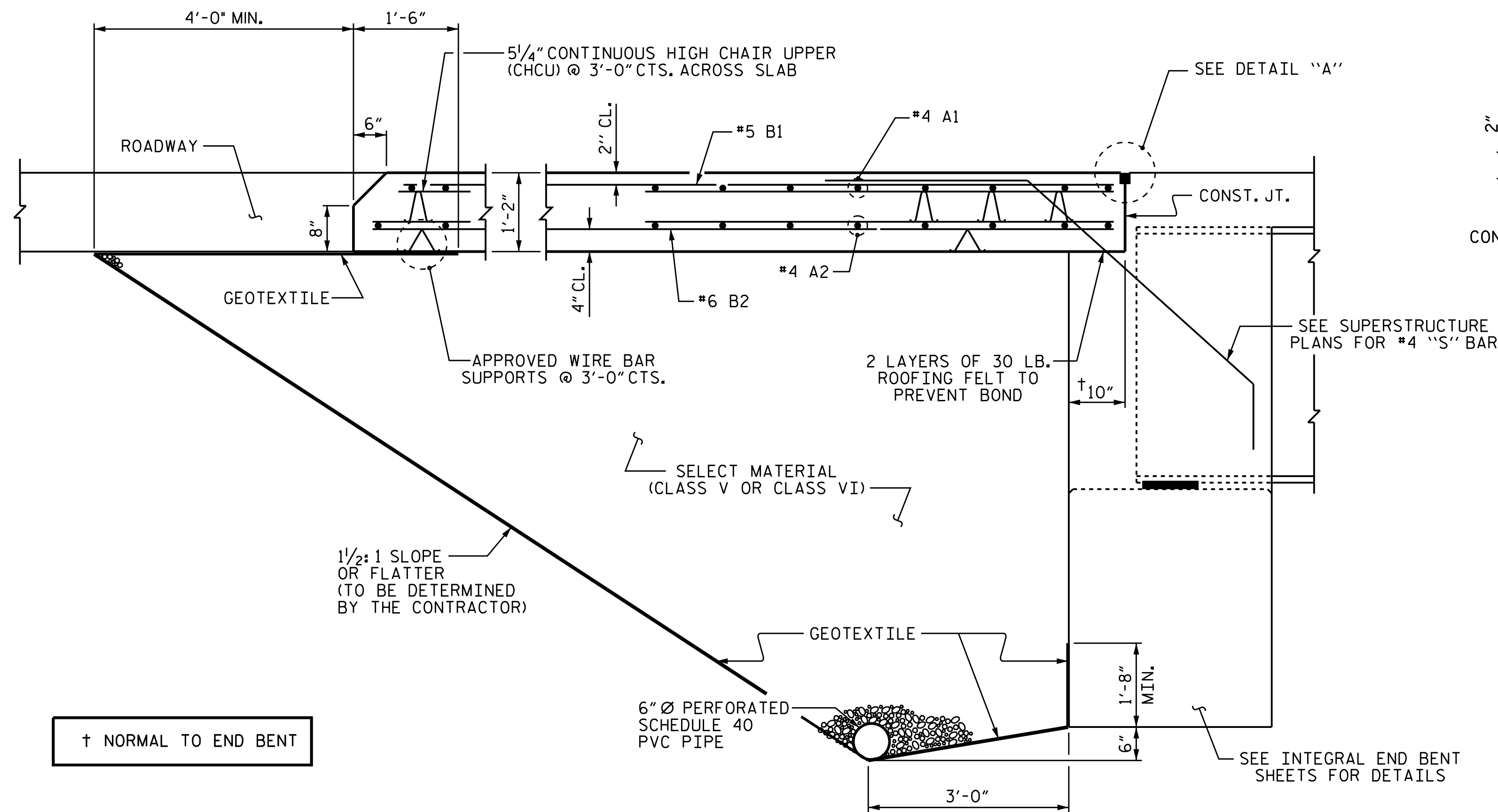
BAR SIZE	EPOXY COATED	UNCOATED
#4	2'-0"	1'-9"
#5	2'-6"	2'-2"
#6	3'-10"	2'-7"



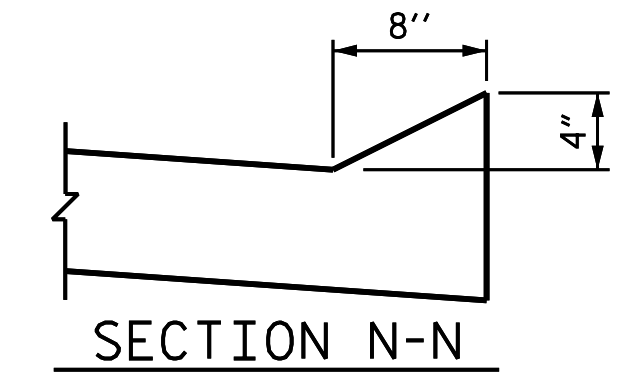
PLAN @ INTEGRAL END BENT 1

PLAN @ INTEGRAL END BENT 2

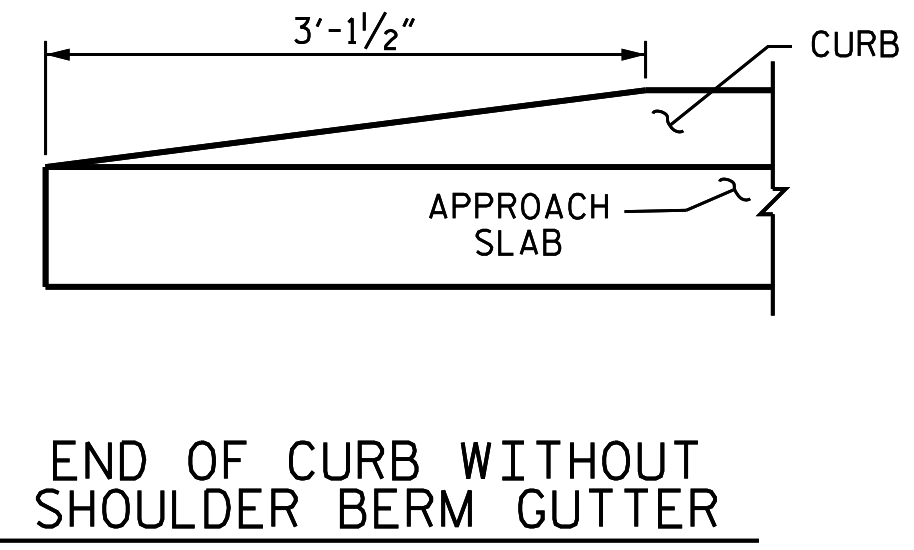
DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS



DETAIL "A"



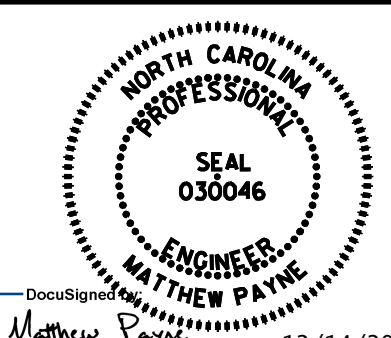
SECTION N-N



END OF CURB WITHOUT SHOULDER BERM GUTTER

PROJECT NO. I-5823  
 DAVIE COUNTY  
 STATION: 701+85.00 -L LT-  
 SHEET 1 OF 2

**Dewberry**  
 2610 WYCLIFF ROAD  
 SUITE 410  
 RALEIGH, NC 27607  
 PHONE: 919.881.9939  
 NC COA No. F-0929



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**BRIDGE APPROACH SLAB FOR INTEGRAL ABUTMENT WITH FLEXIBLE PAVEMENT**

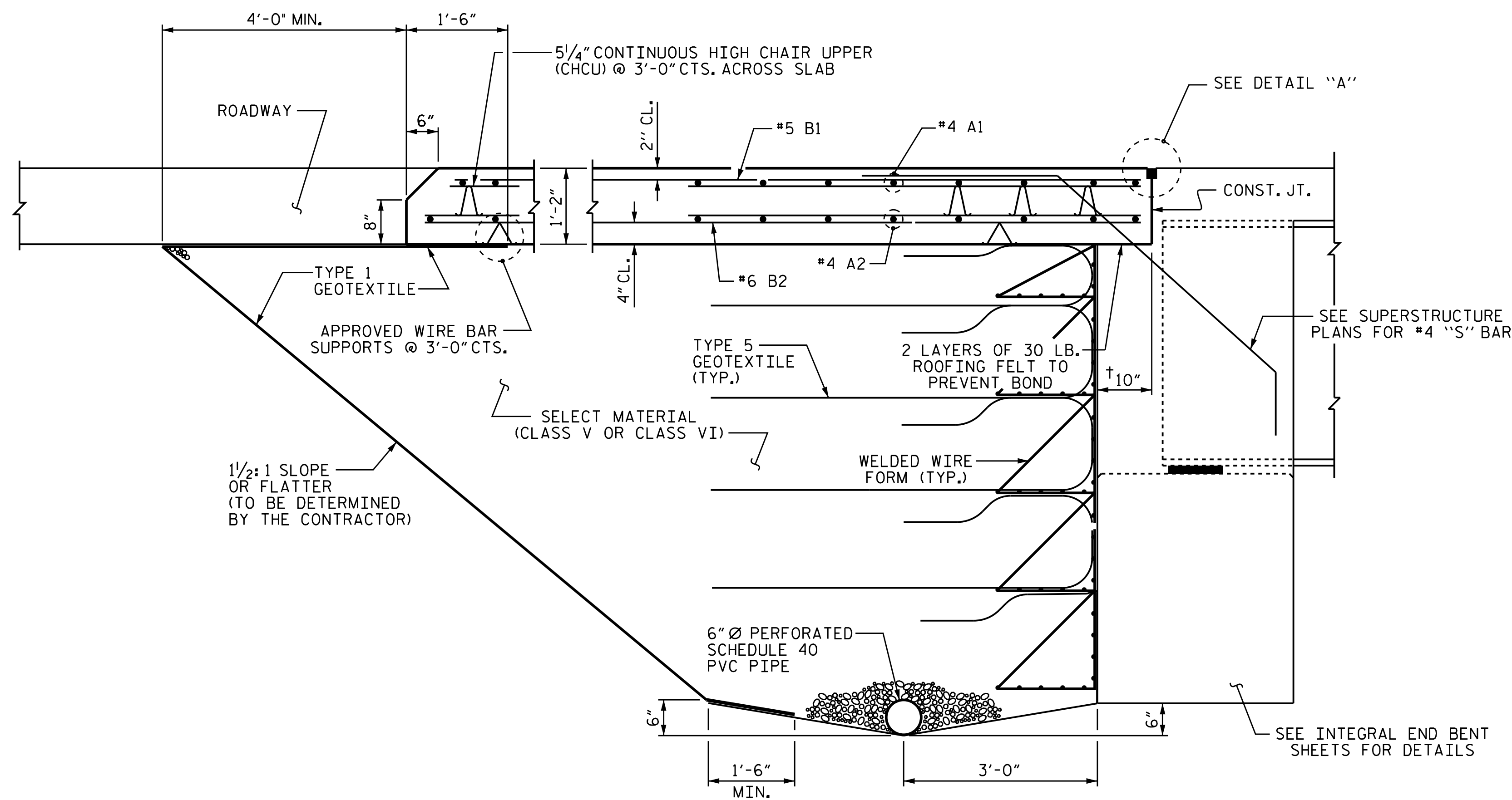
DRAWN BY : D. SMITH DATE : DEC. 18  
 CHECKED BY : M. PAYNE DATE : DEC. 18  
 DESIGN ENGINEER OF RECORD: M. PAYNE DATE : DEC. 18

**SECTION THRU SLAB**  
 (TYPE I - STANDARD APPROACH FILL)

REVISIONS						SHEET NO. S1-33
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 34
2			4			

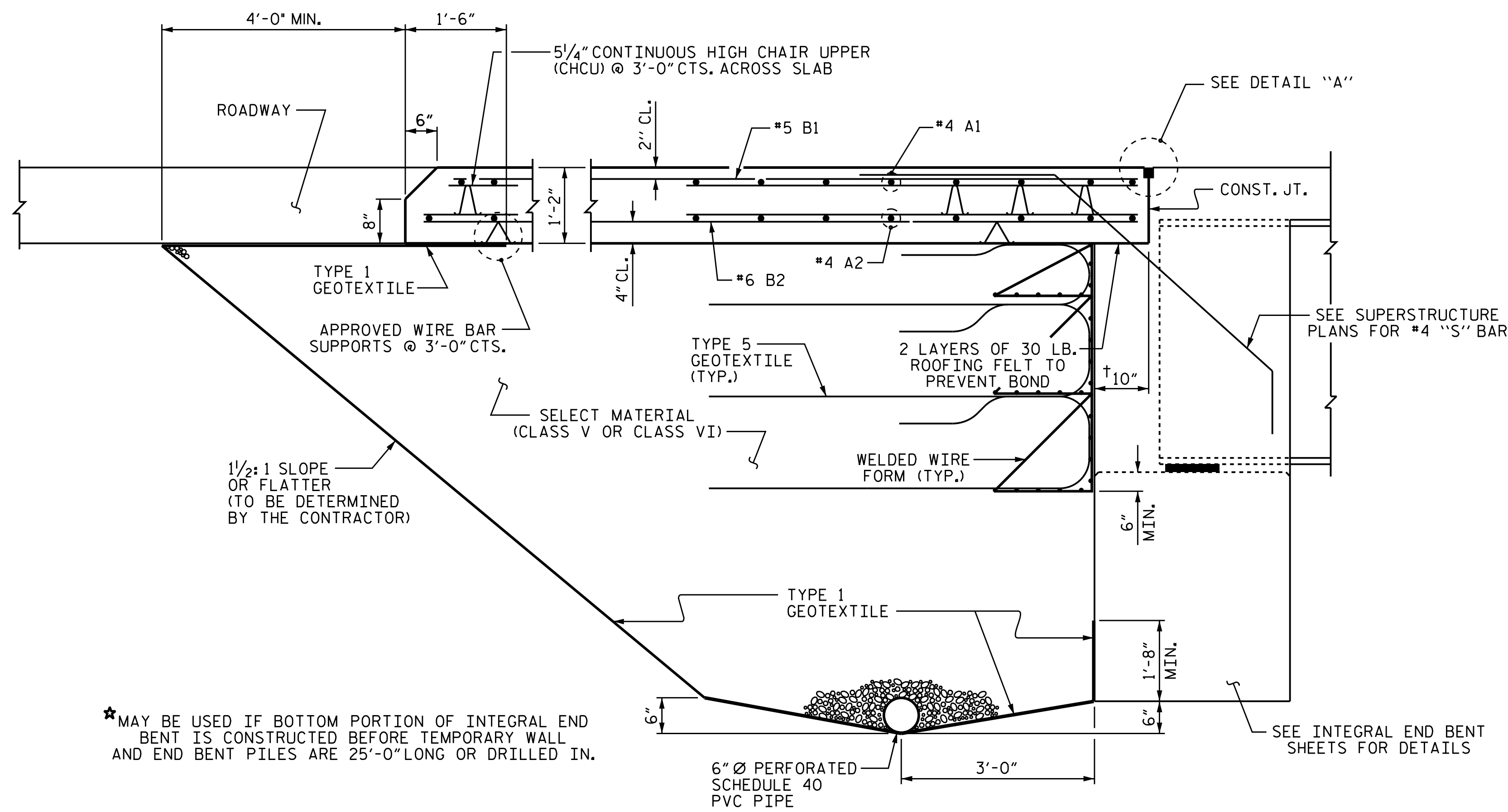
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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 \*\*\*\*\*USERNAME\*\*\*\*\*



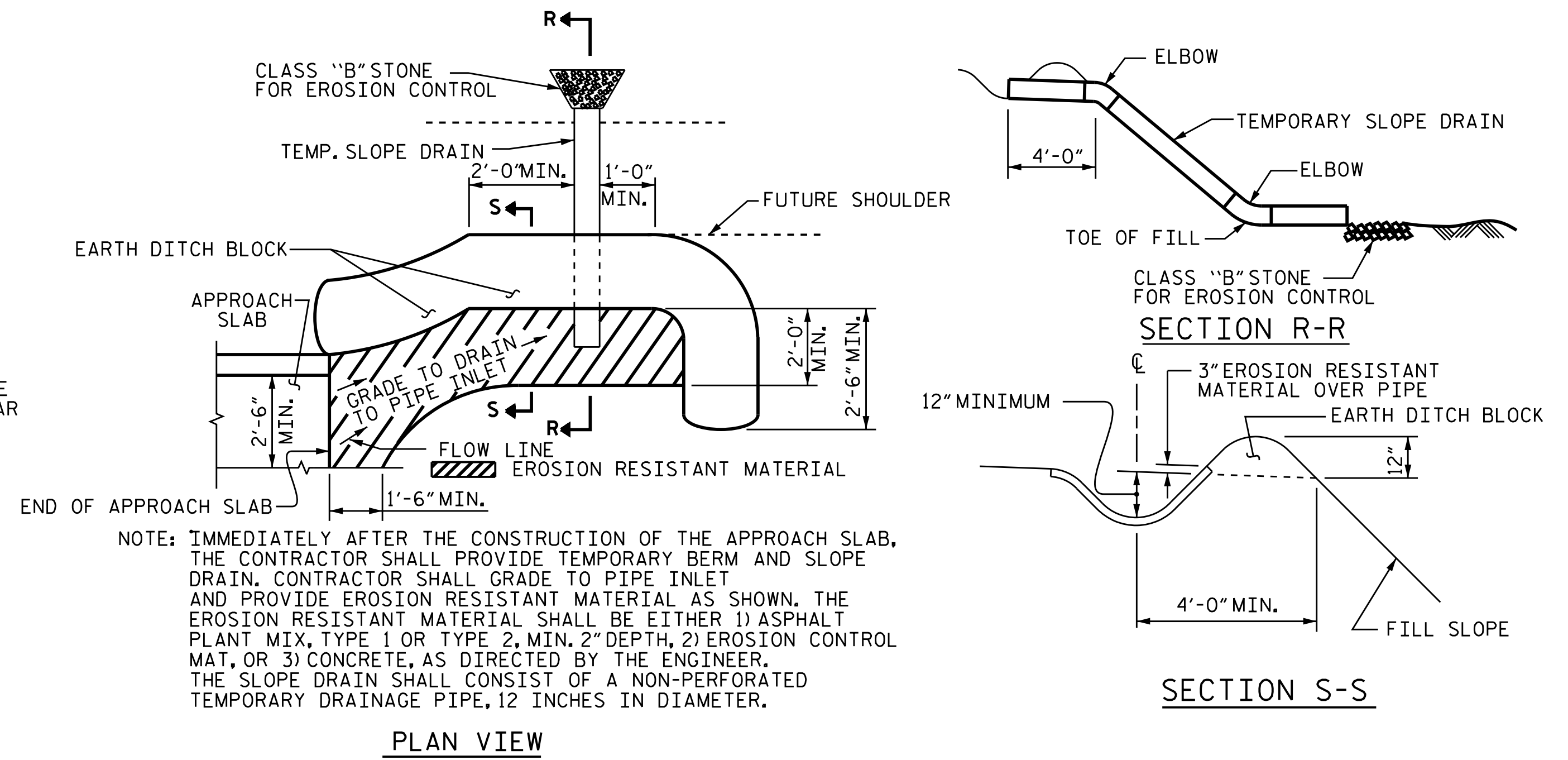
**SECTION THRU SLAB**

(TYPE A - ALTERNATE APPROACH FILL)



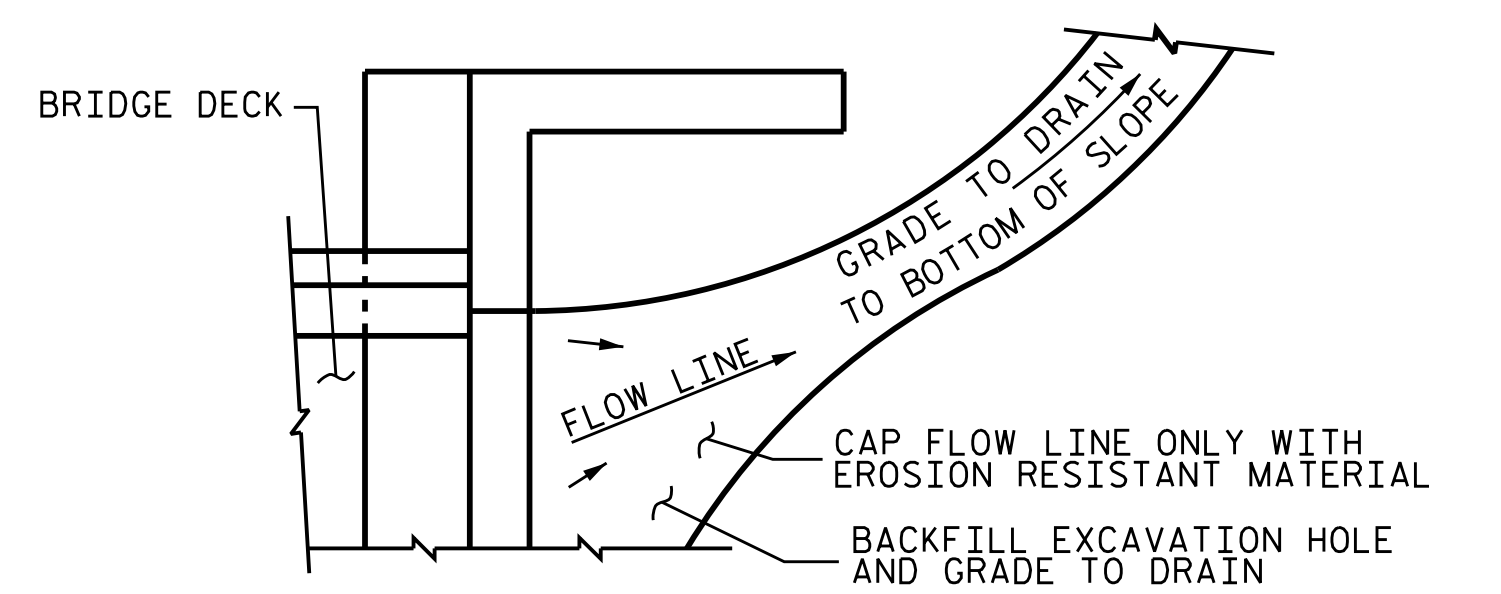
**SECTION THRU SLAB**

(TYPE A - ALTERNATE APPROACH FILL)



**TEMPORARY BERM AND SLOPE DRAIN DETAILS**

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



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**

**NOTES**

- APPROACH SLAB SHALL NOT BE CONSTRUCTED PRIOR TO COMPLETION OF THE BRIDGE DECK.
- FOR TEMPORARY GEOTEXTILE WALL INCLUDING GEOTEXTILE, 6" Ø DRAINAGE PIPE, WELDED WIRE FORM, AND SELECT MATERIAL, SEE ROADWAY PLANS.
- GEOTEXTILE (TYPE 1 OR TYPE 5) SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS SECTION 1056.
- SELECT MATERIAL BACKFILL (CLASS V OR CLASS VI) SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS SECTION 1016.
- SELECT MATERIAL BACKFILL IS TO BE CONTINUOUS ALONG FILL FACE OF BACKWALL FROM OUTSIDE EDGE TO OUTSIDE EDGE OF APPROACH SLAB.
- FOR THE 6" Ø DRAINAGE PIPE OUTLET(S), SEE ROADWAY STANDARD DRAWINGS.
- AREA BETWEEN THE WINGWALL AND APPROACH SLAB SHALL BE GRADED TO DRAIN THE WATER AWAY FROM THE FILL FACE OF THE BRIDGE AND SHALL BE PAVED. SEE ROADWAY PLANS.
- THE JOINT OPENING AT THE APPROACH SLAB/DECK INTERFACE SHALL BE SAWED NO MORE THAN 12 HOURS AFTER THE APPROACH SLAB IS CAST. THE JOINT SHALL BE CLEANED OF ALL DEBRIS BEFORE THE SEALANT IS APPLIED. THE JOINT SEALER MATERIAL SHALL CONFORM TO THE REQUIREMENTS OF SECTION 1028-3 OF THE STANDARD SPECIFICATIONS.

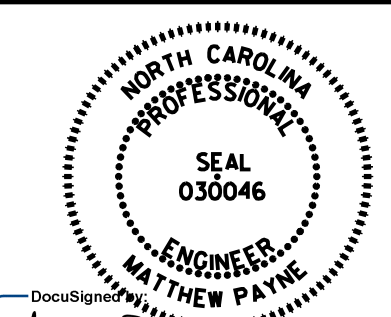
PROJECT NO. I-5823

DAVIE COUNTY

STATION: 701+85.00 -L LT-

SHEET 2 OF 2

**Dewberry**  
2610 WYCLIFF ROAD  
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PHONE: 919.881.9939  
NC COA No. F-0929



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

ASSEMBLED BY : M. PAYNE	DATE : DEC. 18
CHECKED BY : M. PEARSON	DATE : DEC. 18
DRAWN BY : TLA 10/05	REV. 12/21/11 MAA/GM
CHECKED BY : GM 5/06	REV. 6/13 MAA/GM
	REV. 12/17 MAA/THC

USE IF BOTTOM PORTION OF INTEGRAL END BENT IS CONSTRUCTED BEFORE TEMPORARY WALL AND END BENT PILES ARE 25'-0" LONG OR DRILLED IN.

REVISIONS						SHEET NO. S1-34
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 34
2			4			

## 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  $\frac{3}{4}$ " WITH THE FOLLOWING EXCEPTIONS: TOP CORNERS OF CURBS MAY BE ROUNDED TO  $1\frac{1}{2}$ " RADIUS WHICH IS BUILT INTO CURB FORMS; CORNERS OF TRANSVERSE FLOOR EXPANSION JOINTS SHALL BE ROUNDED WITH A  $\frac{1}{4}$ " 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  $\frac{1}{4}$ " 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  $\frac{7}{8}$ "  $\emptyset$  SHEAR STUDS FOR THE  $\frac{3}{4}$ "  $\emptyset$  STUDS SPECIFIED ON THE PLANS. THIS SUBSTITUTION SHALL BE MADE AT THE RATE OF 3 -  $\frac{7}{8}$ "  $\emptyset$  STUDS FOR 4 -  $\frac{3}{4}$ "  $\emptyset$  STUDS, AND STUD SPACING CHANGES SHALL BE MADE AS NECESSARY TO PROVIDE THE SAME EQUIVALENT NUMBER OF  $\frac{7}{8}$ "  $\emptyset$  STUDS ALONG THE BEAM AS SHOWN FOR  $\frac{3}{4}$ "  $\emptyset$  STUDS BASED ON THE RATIO OF 3 -  $\frac{7}{8}$ "  $\emptyset$  STUDS FOR 4 -  $\frac{3}{4}$ "  $\emptyset$  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  $\frac{5}{16}$ " 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  $\frac{1}{16}$ " 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. FINISHES 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.

# ENGLISH

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