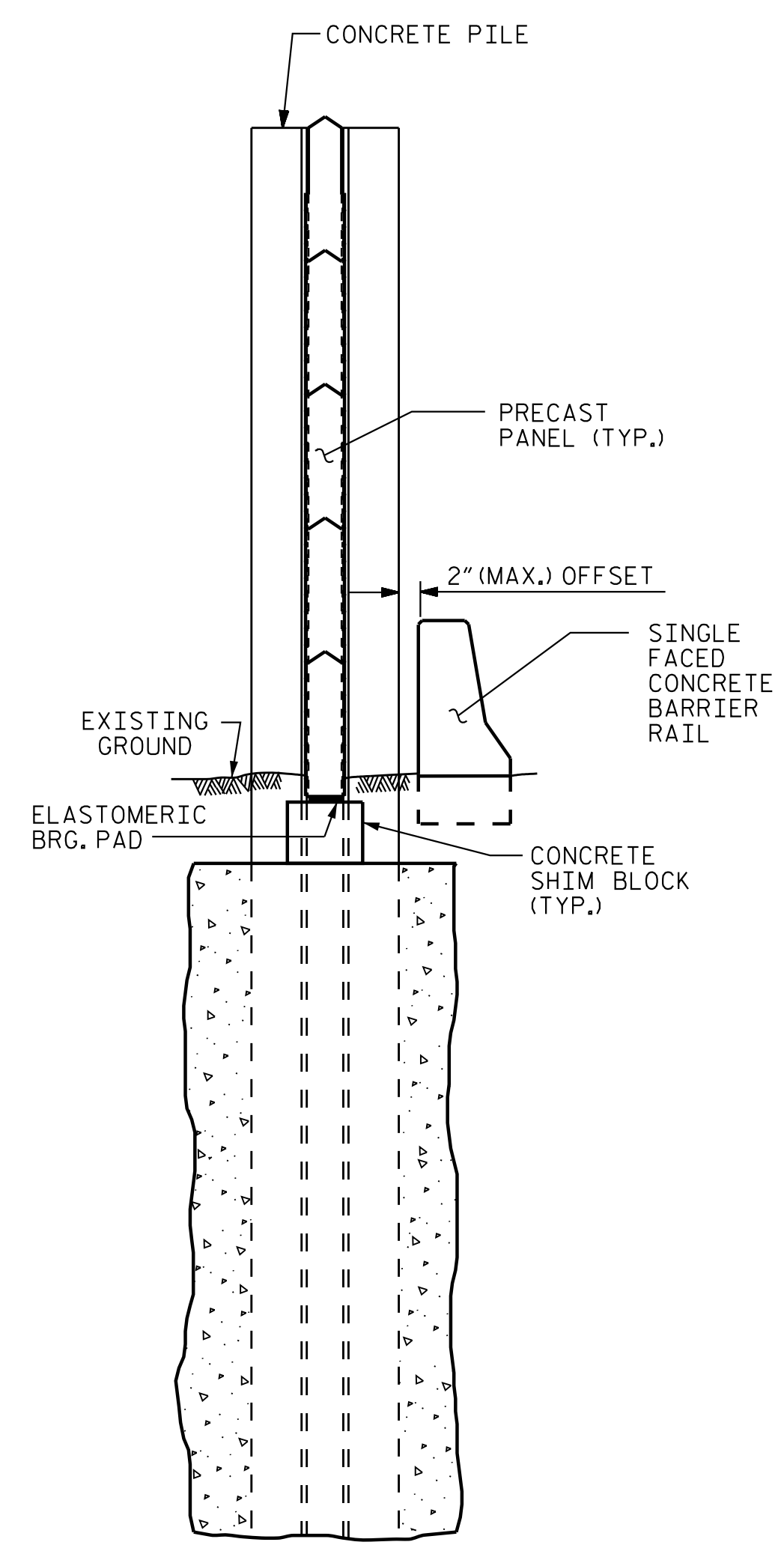
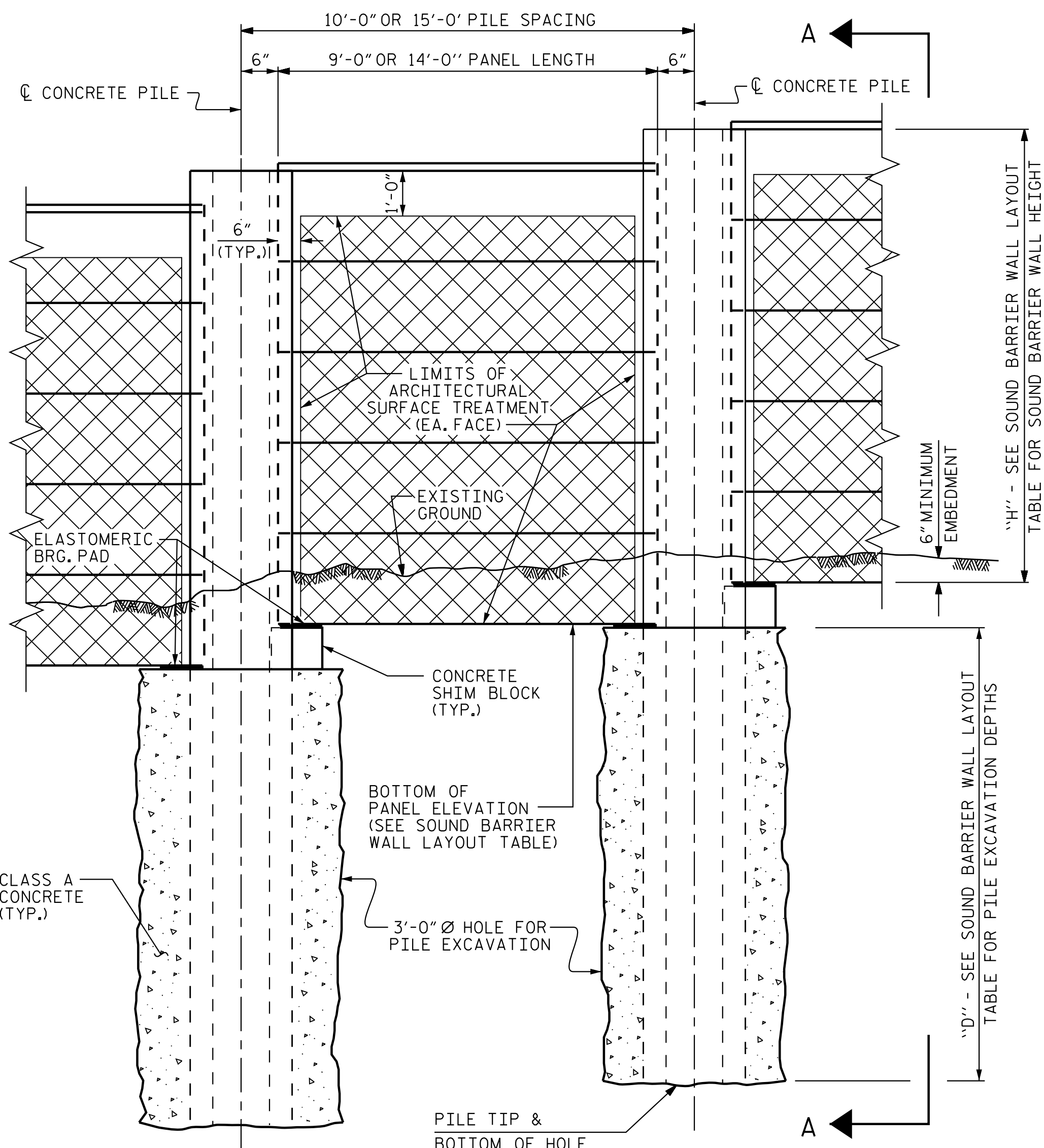


**NOTES**

- FOR SOUND BARRIER WALL, SEE SPECIAL PROVISIONS.
- CONSTRUCT SOUND BARRIER WALL TO LINES AND GRADES SHOWN ON THE ROADWAY PLANS.
- PROVIDE PANELS WITH A FLAT BOTTOM.
- VERIFY THE LOCATION OF UNDERGROUND UTILITIES BEFORE DRILLING HOLES TO ENSURE SUFFICIENT CLEARANCE IS AVAILABLE.
- ADJUST PILE EXCAVATION ELEVATIONS TO MAINTAIN 6" MINIMUM EMBEDMENT OF THE BOTTOM PANEL, EXCEPT AT REMOVABLE PANEL LOCATIONS.
- USE CLASS AA FOR PANELS AND CLASS A CONCRETE PILE EXCAVATION BACKFILL, IN ACCORDANCE WITH ARTICLE 1000-4 OF THE STANDARD SPECIFICATIONS.
- AT THE CONTRACTOR'S OPTION, USE 10'-0" OR 15'-0" PILE SPACINGS. STANDARD PRECAST CONCRETE PANELS MAY BE USED WITH THE 10'-0" AND 15'-0" PILE SPACING.
- FOR SOUND BARRIER WALL STATIONS, OFFSETS, AND WALL ENVELOPE, SEE ROADWAY PLANS.
- PLACE 1" Ø BACKER RODS FULL HEIGHT ON EACH SIDE OF THE PRECAST PANELS, SET AND SEAL THE BACKER ROD IN PLACE WITH SEALANT THAT CONFORMS WITH ARTICLE 1028-3 OF THE STANDARD SPECIFICATIONS.
- FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.
- FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.
- FOR ADDITIONAL SOUND BARRIER WALL DETAILS, SEE ROADWAY DRAWINGS.
- SOUND ABSORPTIVE WALL PANELS SHALL BE INSTALLED AT LOCATIONS SPECIFIED IN PANEL LAYOUT TABLES. FOR ADDITIONAL DETAILS, SEE SPECIAL PROVISIONS.
- LIGHTWEIGHT SOUND ABSORPTIVE WALL PANELS SHALL BE INSTALLED AT BRIDGE LOCATION. FOR LIGHTWEIGHT WALL PANELS AND PILES AT BRIDGE SITE, SEE BRIDGE PLANS FOR INSTALLATION DETAILS AND PILE TYPE/SPACING. FOR ADDITIONAL DETAILS, SEE SPECIAL PROVISIONS.
- INSTALLATION OF REMOVABLE SOUND BARRIER WALL IS REQUIRED AT SPECIFIC WALL LOCATIONS, SEE SHEET 4 FOR DETAILS.
- BARRIER RAIL NOT SHOWN IN ELEVATION VIEW FOR CLARITY. FOR BACKFILL TREATMENT AT BARRIER RAIL, SEE "SOUND WALL BACKFILL DETAIL"
- AT THE CONTRACTOR'S OPTION, USE CONTINUOUS FLIGHT AUGER PILES IN LIEU OF PILE EXCAVATION FOR SOUND BARRIER WALL FOUNDATION. SEE "CONTINUOUS FLIGHT AUGER PILES FOR SOUND BARRIER WALLS" SPECIAL PROVISION.



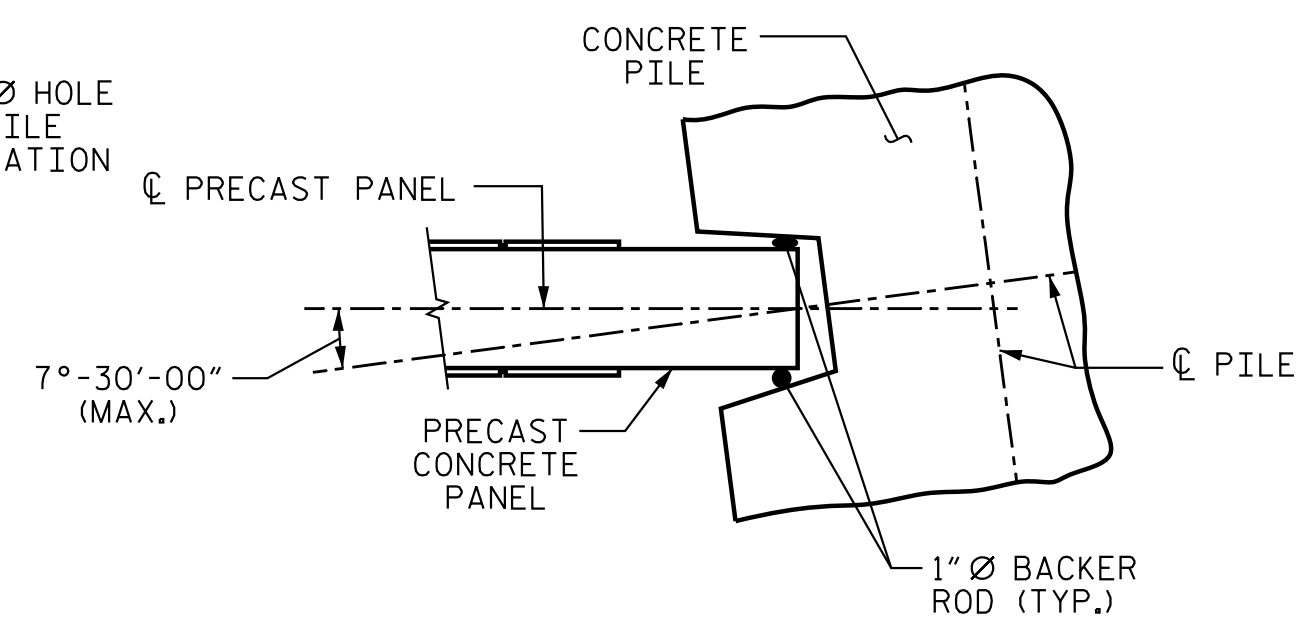
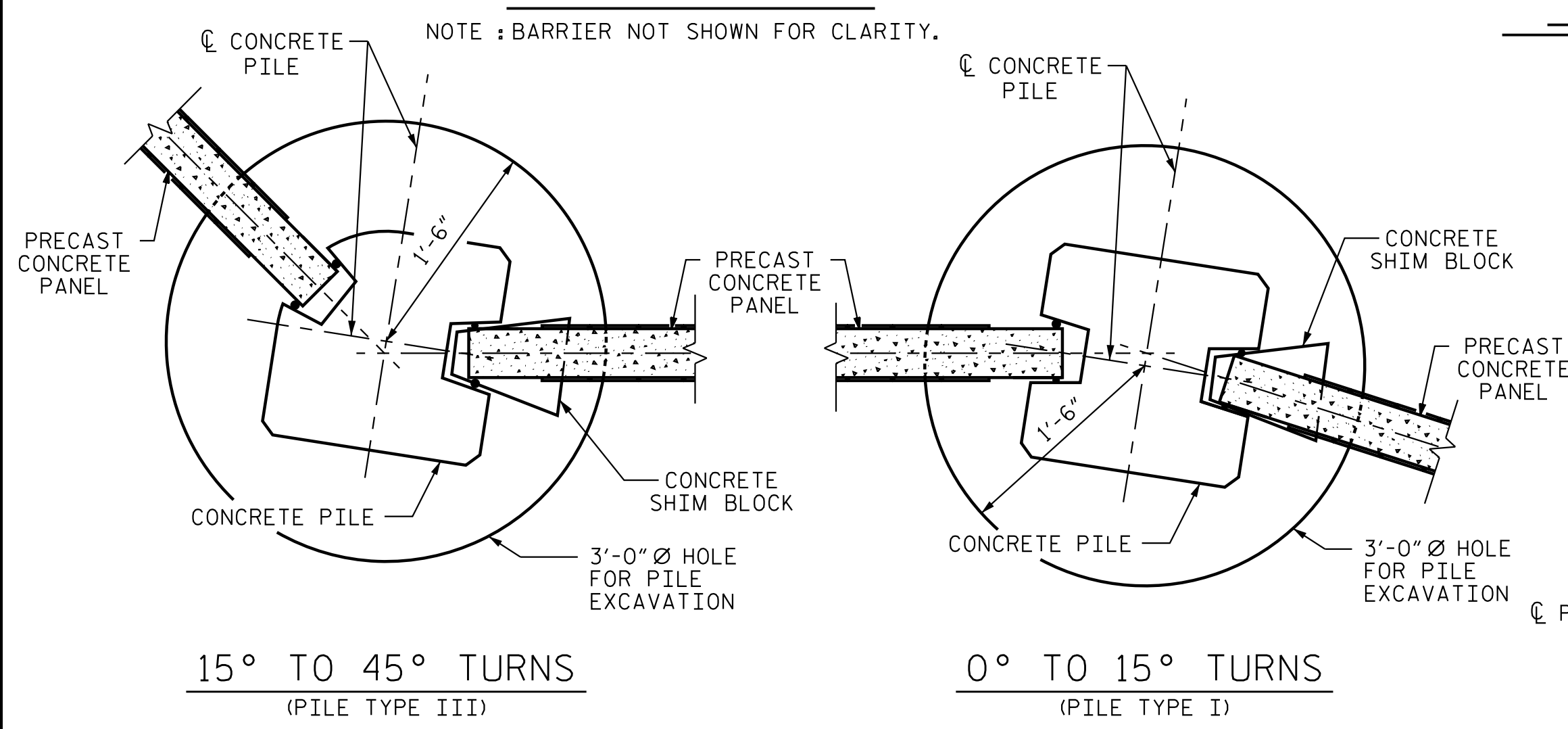
**SOUND WALL BACKFILL DETAIL**

**PILE REINFORCING STEEL**  
 EXPOSURE CATEGORY D DESIGN WIND PRESSURE = 62 PSF (0' < H ≤ 14'); 71 PSF (14' < H ≤ 25')

PILE TYPE I				PILE TYPE III			
PILE SPACING	MAXIMUM WALL HEIGHT (H)	VERTICAL REINFORCING STEEL	TIES	PILE SPACING	MAXIMUM WALL HEIGHT (H)	VERTICAL REINFORCING STEEL	TIES
10'-0"	H ≤ 25'	4 - #8 EA. FACE	#4 @ 9"CTS.	10'-0"	H ≤ 25'	3 - #9 SHORT FACE 4 - #9 LONG FACE	#4 @ 9"CTS.
	H ≤ 20'	4 - #8 EA. FACE	#4 @ 9"CTS.		15'-0"	H ≤ 20'	3 - #8 SHORT FACE 4 - #8 LONG FACE
15'-0"	20' < H ≤ 25'	4 - #10 EA. FACE	#4 @ 9"CTS.	15'-0"		20' < H ≤ 25'	3 - #11 SHORT FACE 4 - #11 LONG FACE

PILE TYPE II				PILE TYPE III ALT.			
PILE SPACING	MAXIMUM WALL HEIGHT (H)	VERTICAL REINFORCING STEEL	TIES	PILE SPACING	MAXIMUM WALL HEIGHT (H)	VERTICAL REINFORCING STEEL	TIES
10'-0"	H ≤ 25'	4 - #6 EA. FACE	#4 @ 9"CTS.	10'-0"	H ≤ 25'	3 - #9 SHORT FACE 4 - #9 LONG FACE	#4 @ 9"CTS.
	H ≤ 20'	4 - #6 EA. FACE	#4 @ 9"CTS.		15'-0"	H ≤ 20'	3 - #9 SHORT FACE 4 - #9 LONG FACE
15'-0"	20' < H ≤ 25'	4 - #7 EA. FACE	#4 @ 9"CTS.	15'-0"		20' < H ≤ 25'	3 - #11 SHORT FACE 4 - #11 LONG FACE



**BILL OF MATERIAL**

SOUND ABSORPTIVE BARRIER WALL **	93,961 S.F.
SOUND BARRIER WALL (TOTAL)	178,826 S.F.
ARCHITECTURAL SURFACE TREATMENT *	329,271 S.F.
QUANTITIES PROVIDED ARE APPROXIMATE AND ARE FOR BID PURPOSES ONLY.	

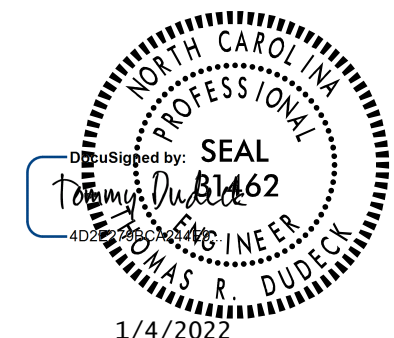
  

**ARCHITECTURAL SURFACE TREATMENT**

TEXTURE OPTION:	DRY STACK
STAIN OPTION:	FEDERAL COLOR 30450

\* PANEL COLOR AT BRIDGE LOCATION SHALL MATCH FEDERAL COLOR 30450, AS APPROVED BY ENGINEER. ARCHITECTURAL SURFACE TREATMENT IS REQUIRED FOR SOUND ABSORPTIVE BARRIER WALL.

\*\* SOUND ABSORPTIVE BARRIER WALL QUANTITY SHOWN DOES NOT INCLUDE SOUND BARRIER WALL AT BRIDGE LOCATIONS. SEE BRIDGE PLANS FOR ADDITIONAL DETAILS AND PAYMENT.



PROJECT NO. R-3300B  
 PENDER COUNTY  
 STATION: 623+71.35 -L1-

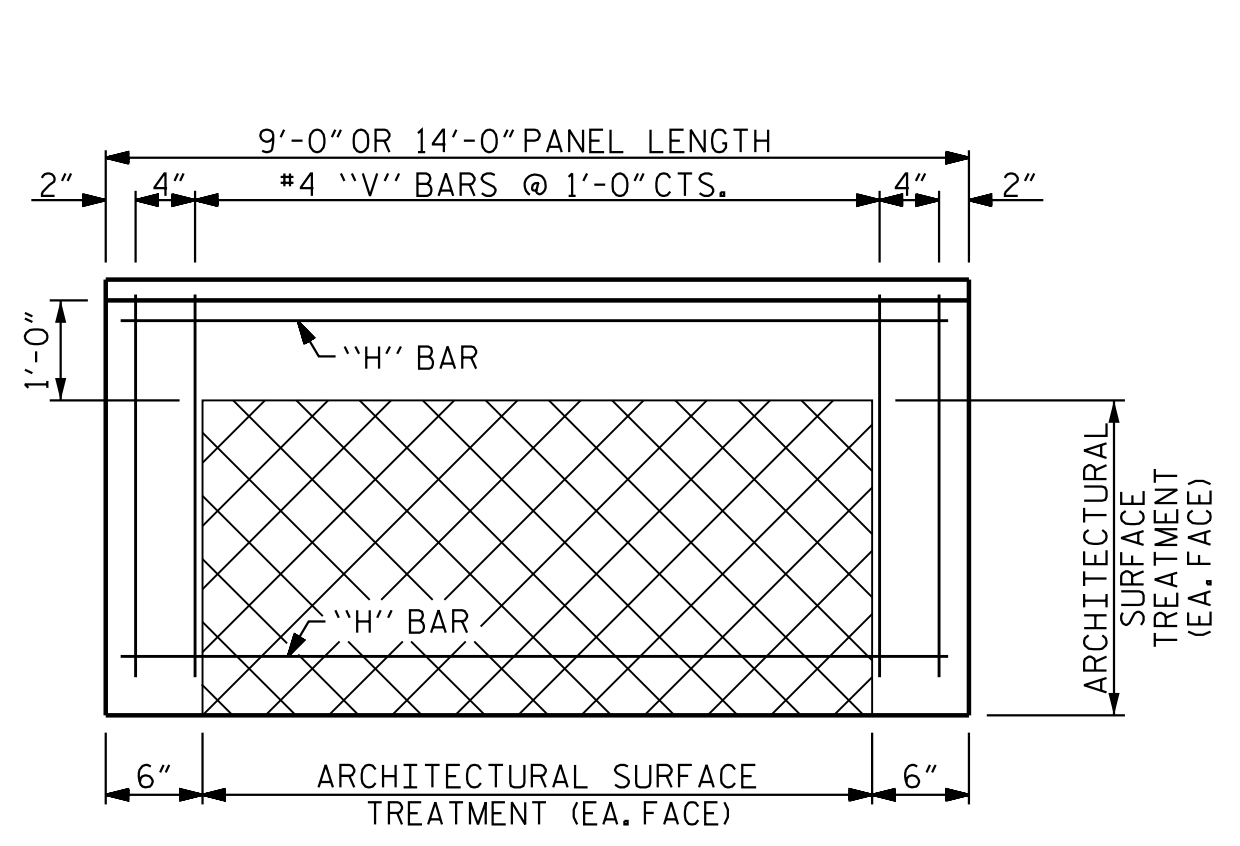
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 STANDARD  
 SOUND BARRIER WALL

REVISIONS						SHEET NO. SW9&11- 1
NO.	BY:	DATE:	NO.	BY:	DATE:	
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2			4			

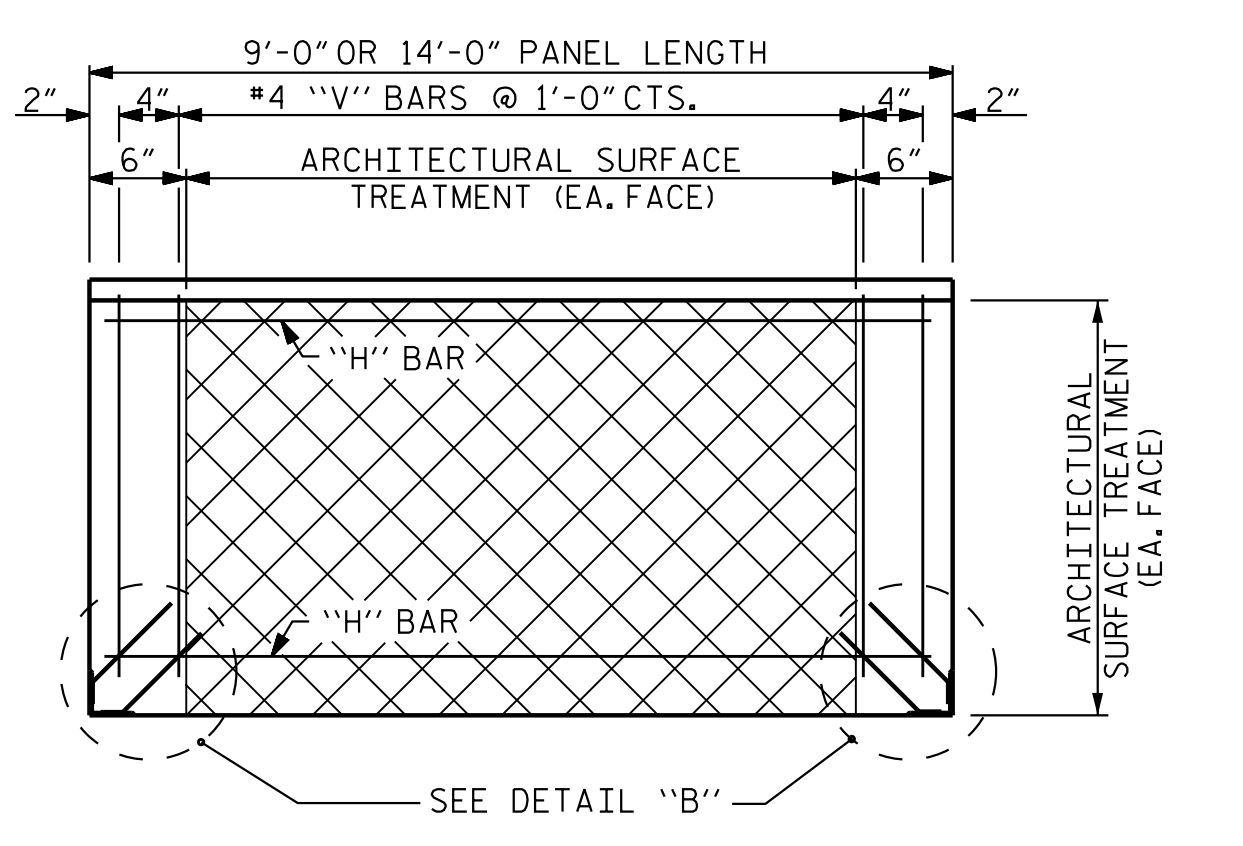
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DESIGNED BY: V. T. THOMPSON DATE: 01/15/20  
 CHECKED BY: T. R. DUDECK DATE: 05/08/20  
 ENGINEER OF RECORD: T. R. DUDECK DATE: 10/27/21

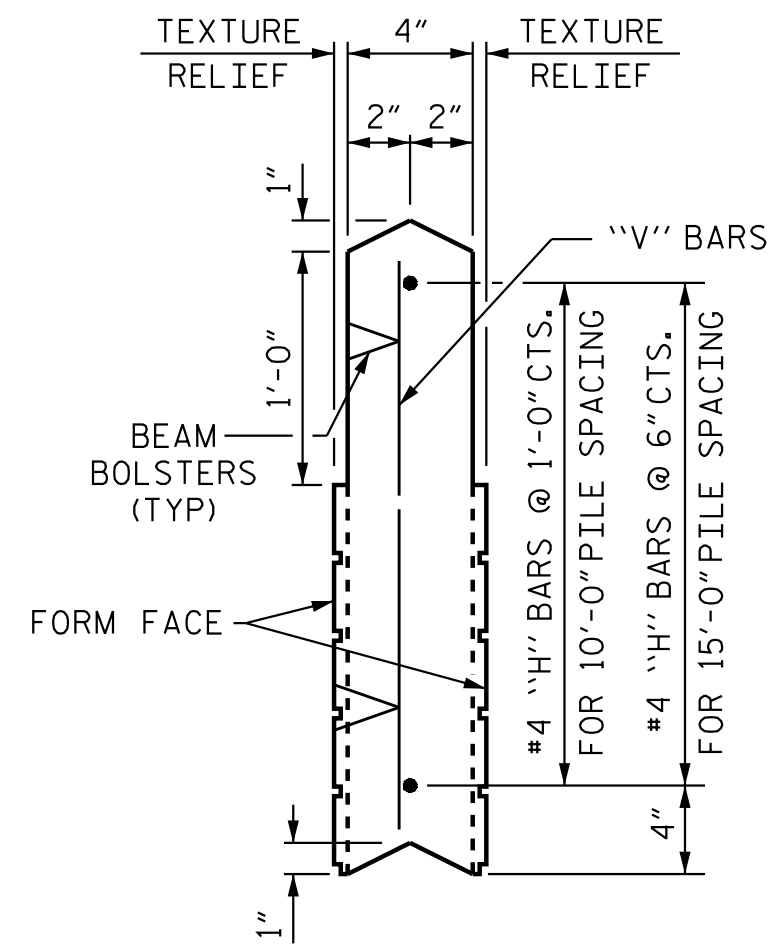
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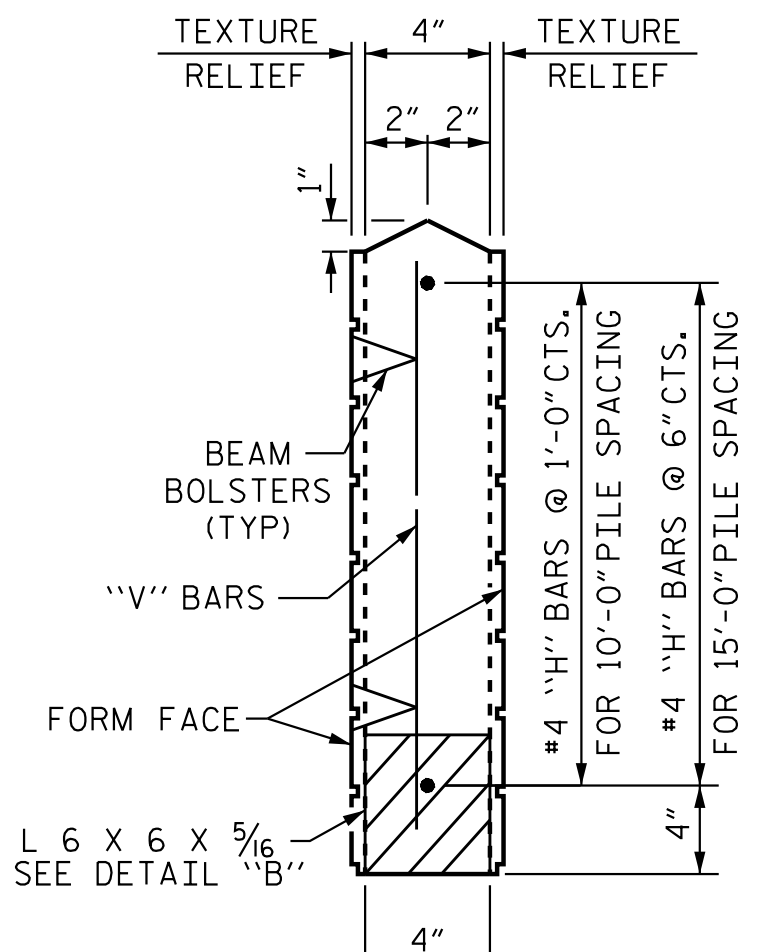
FRONT ELEVATION OF UPPER PRECAST PANEL



FRONT ELEVATION OF BOTTOM PRECAST PANEL

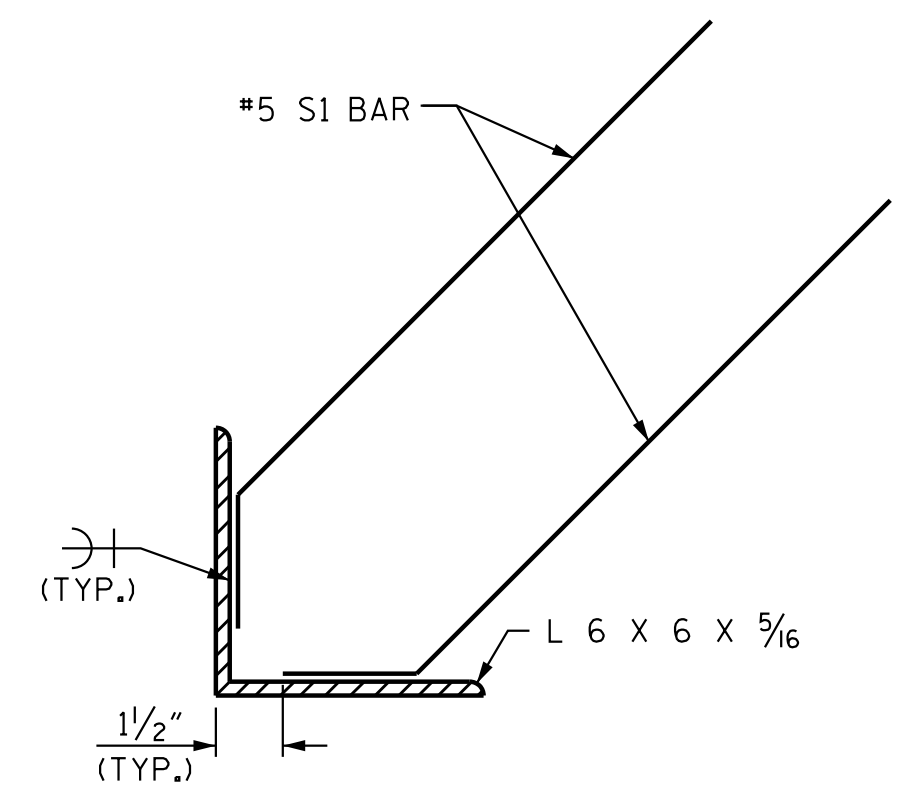


UPPER PANEL



BOTTOM PANEL

SECTION THROUGH PRECAST PANELS



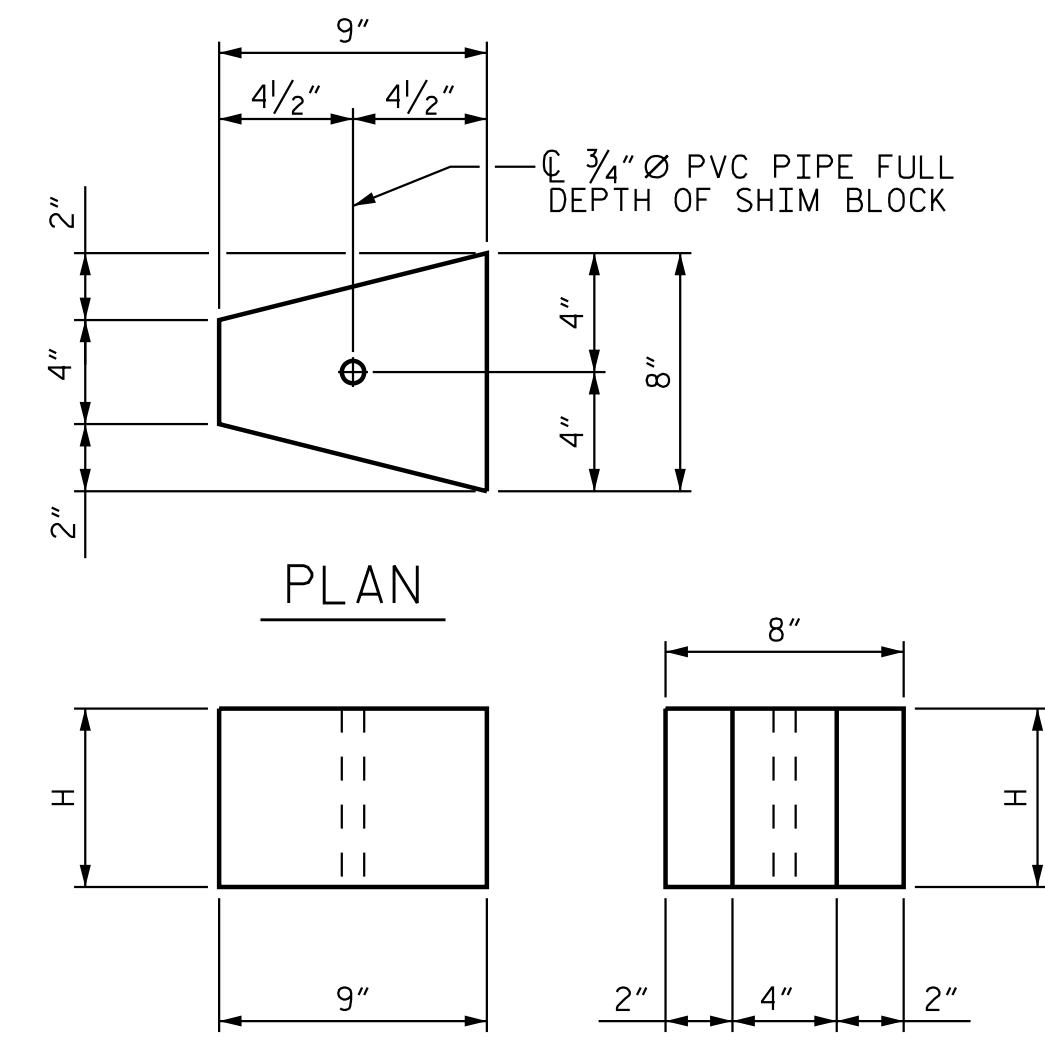
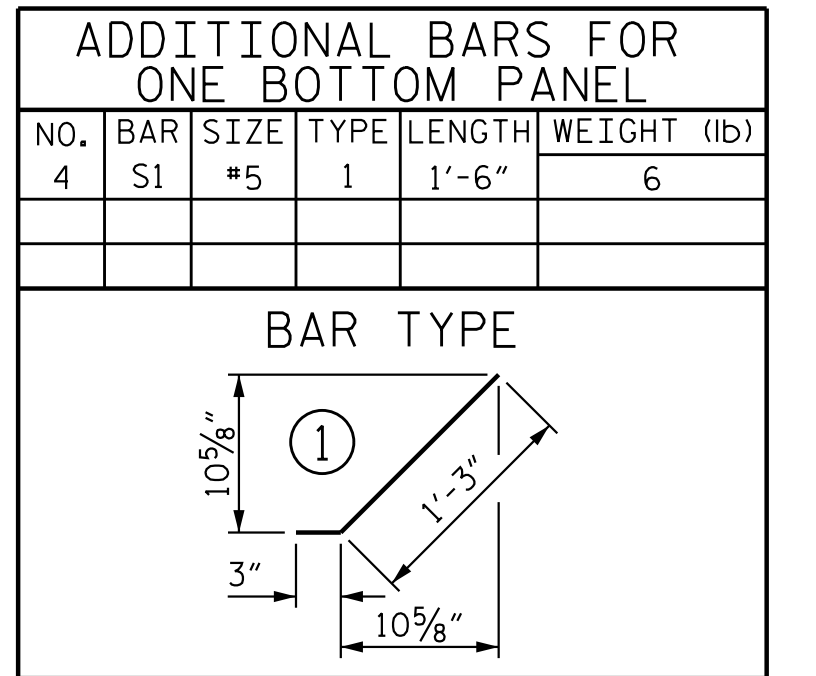
DETAIL "B"

QUANTITIES FOR ONE PRECAST PANEL (FOR 10'-0" PILE SPACING)

PANEL HEIGHT	CLASS AA CONCRETE C.Y.	BAR TYPES											
		HORIZONTAL						VERTICAL					
		NO.	BAR	SIZE	TYPE	LENGTH	WEIGHT (lb)	NO.	BAR	SIZE	TYPE	LENGTH	WEIGHT (lb)
2'-0"	0.22	3	H1	#4	STR	8'-8"	17	11	V1	#4	STR	1'-8"	12
3'-0"	0.33	4	H2	#4	STR	8'-8"	23	11	V2	#4	STR	2'-8"	20
4'-0"	0.44	5	H3	#4	STR	8'-8"	29	11	V3	#4	STR	3'-8"	27

QUANTITIES FOR ONE PRECAST PANEL (FOR 15'-0" PILE SPACING)

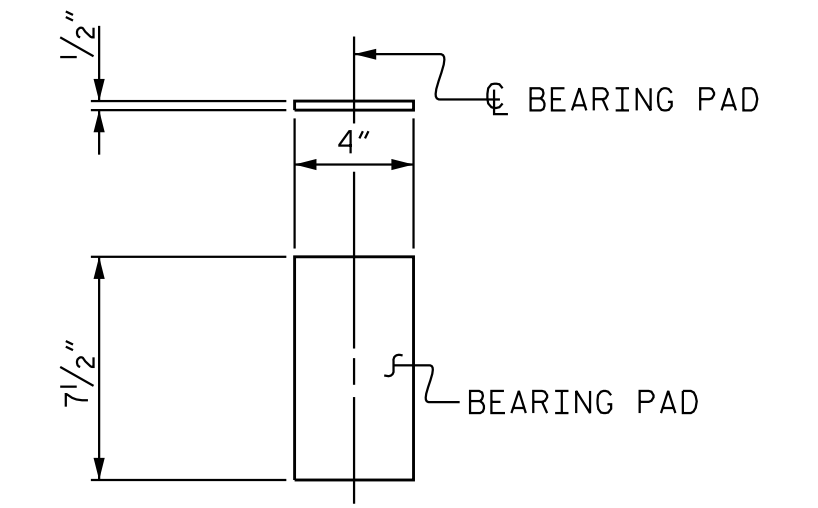
PANEL HEIGHT	CLASS AA CONCRETE C.Y.	BAR TYPES											
		HORIZONTAL						VERTICAL					
		NO.	BAR	SIZE	TYPE	LENGTH	WEIGHT (lb)	NO.	BAR	SIZE	TYPE	LENGTH	WEIGHT (lb)
3'-0"	0.52	8	H1	#4	STR	13'-8"	73	16	V1	#4	STR	2'-8"	29
4'-0"	0.69	9	H2	#4	STR	13'-8"	82	16	V2	#4	STR	3'-8"	39
5'-0"	0.86	11	H3	#4	STR	13'-8"	101	16	V3	#4	STR	4'-8"	50
6'-0"	1.04	12	H4	#4	STR	13'-8"	110	16	V4	#4	STR	5'-8"	61



ELEVATION END

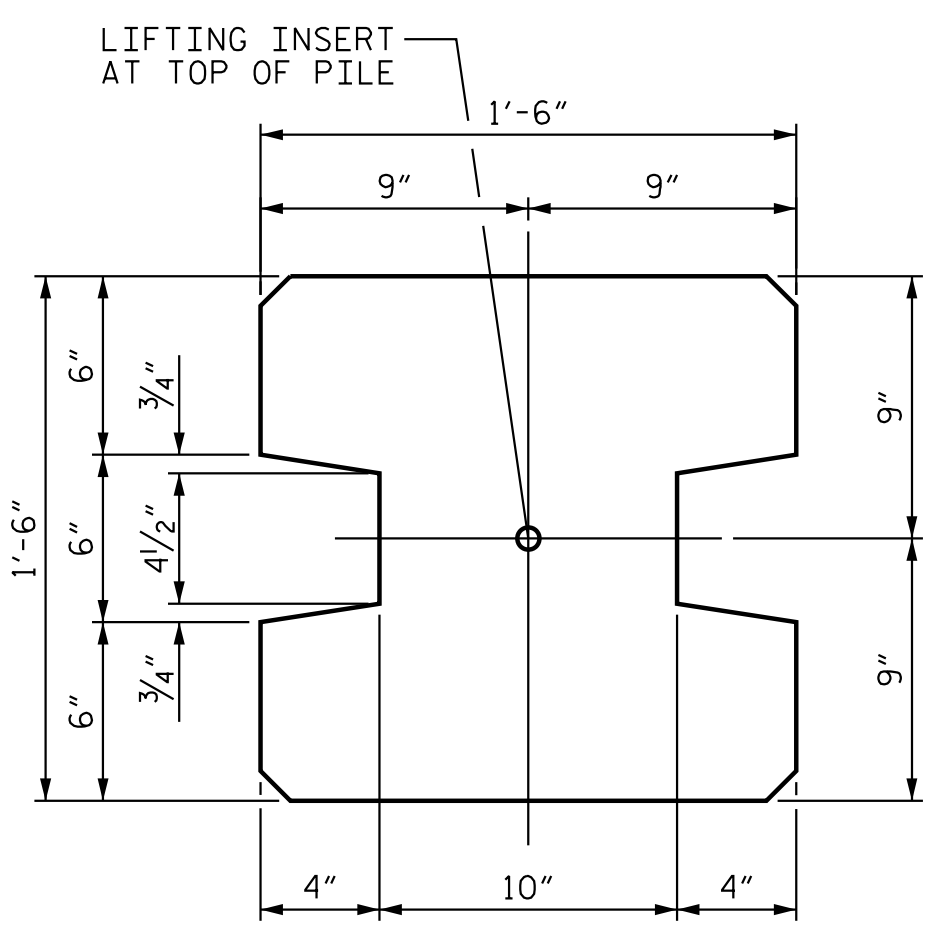
CONCRETE SHIM BLOCK

H = 3", 6" or 1'-0"

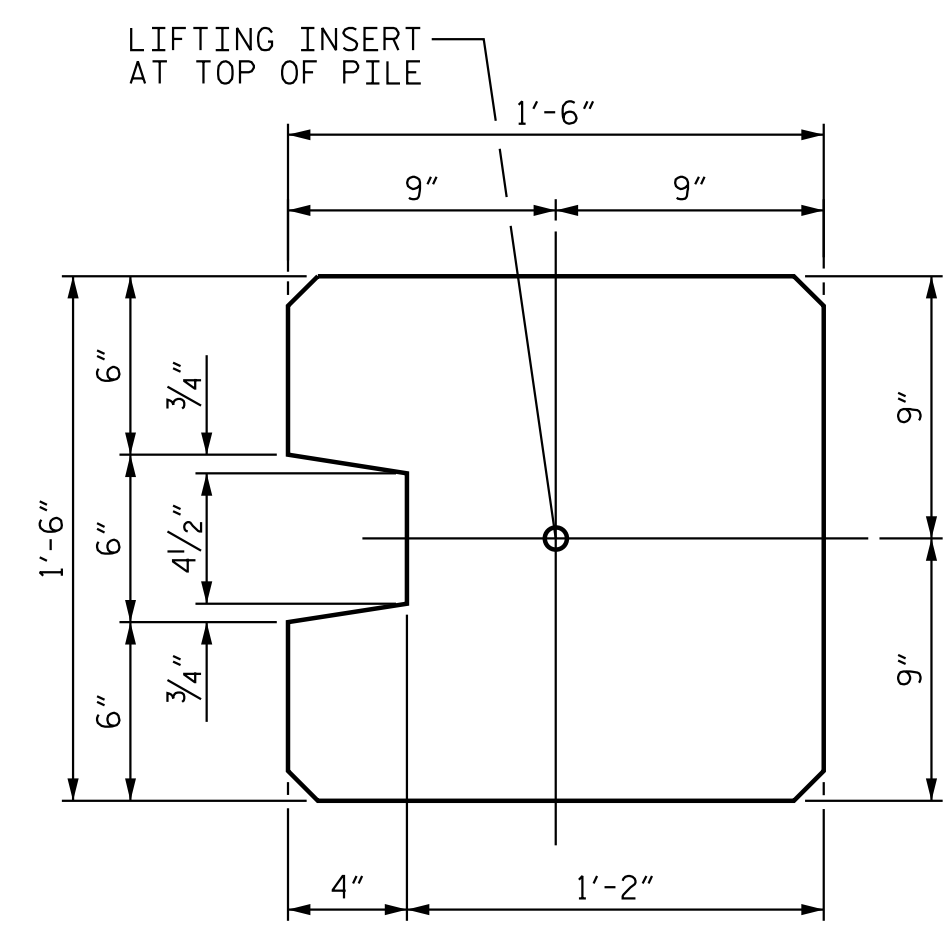


ELASTOMERIC BEARING DETAILS

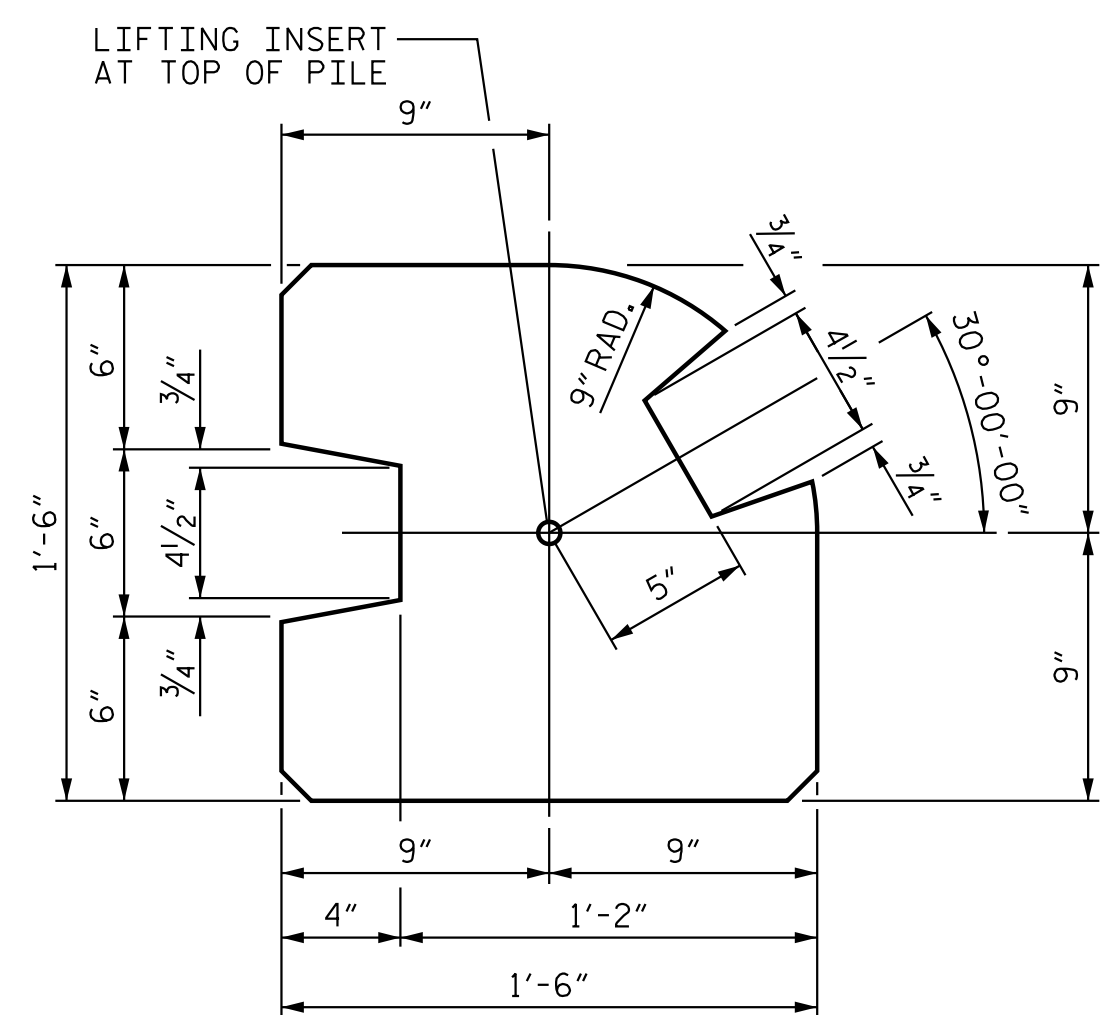
ELASTOMER IN BEARINGS SHALL BE 50 DUROMETER HARDNESS.



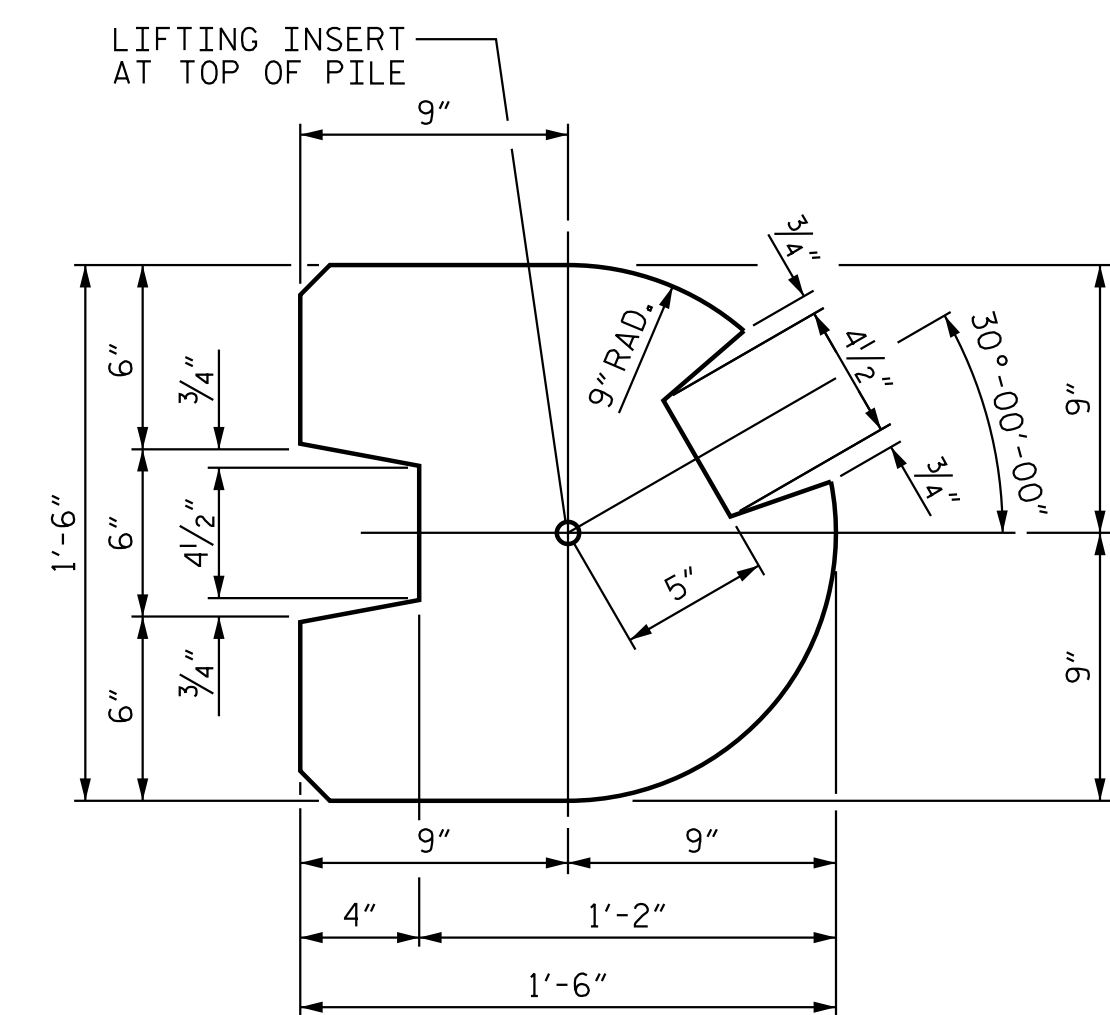
TYPE - I (AREA = 1.9444 SQ. FT.)



TYPE - II (AREA = 2.0903 SQ. FT.)



TYPE - III (AREA = 1.8336 SQ. FT.)



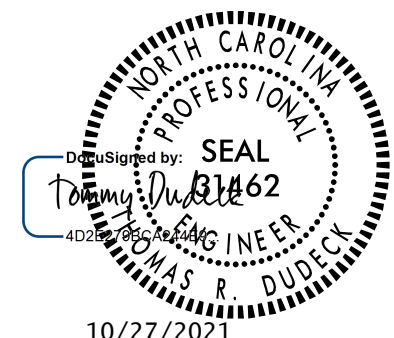
TYPE - III (ALT.) (AREA = 1.7163 SQ. FT.)

PILE DETAIL (ALL CORNERS TO BE CHAMFERED 1")

PROJECT NO. R-3300B  
 PENDER COUNTY  
 STATION: 623+71.35 -L1-

SHEET 2 OF 10

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 STANDARD  
 SOUND BARRIER WALL  
 DETAILS



10/27/2021

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2			4			

STD. NO. SBW2

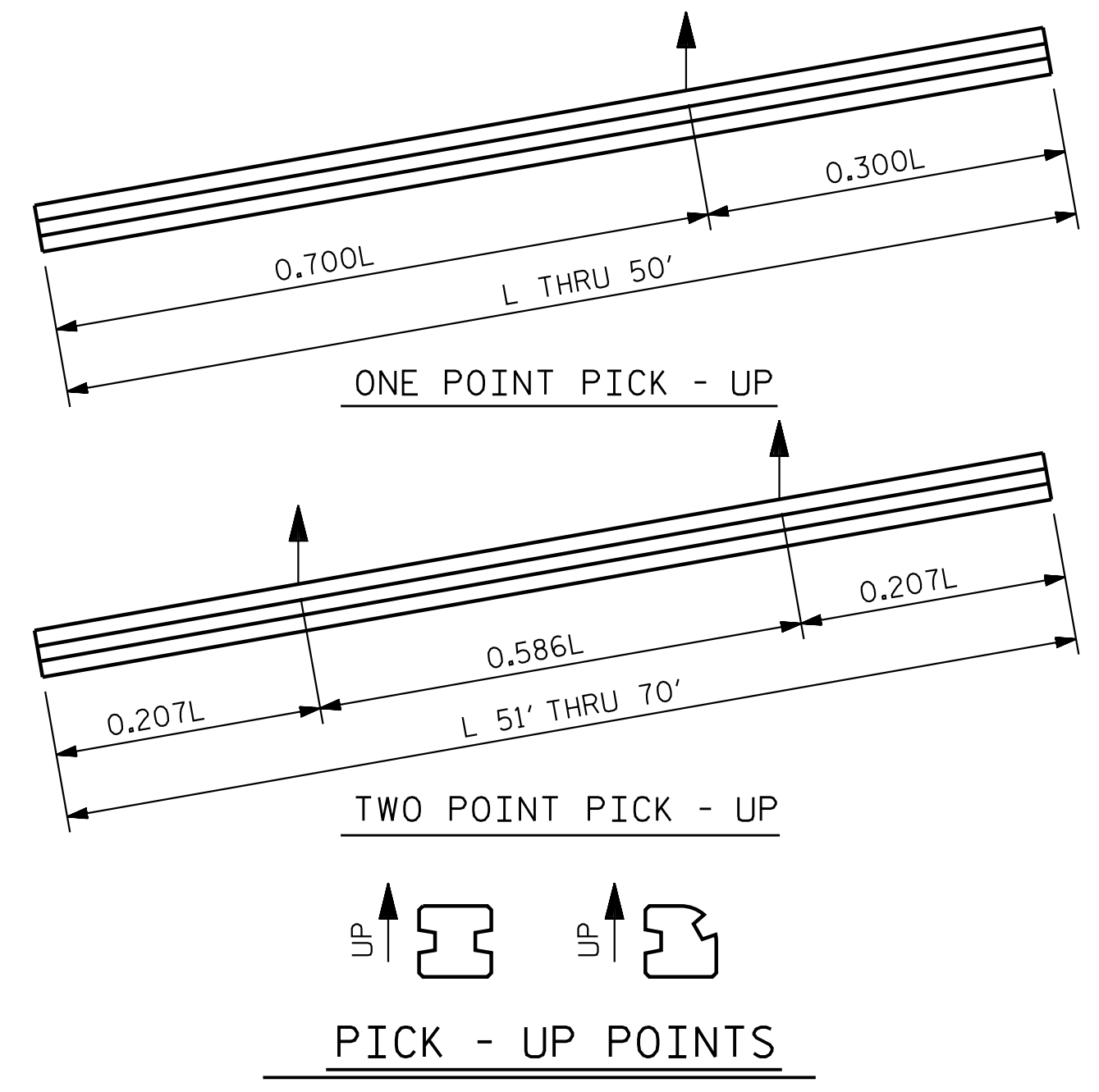
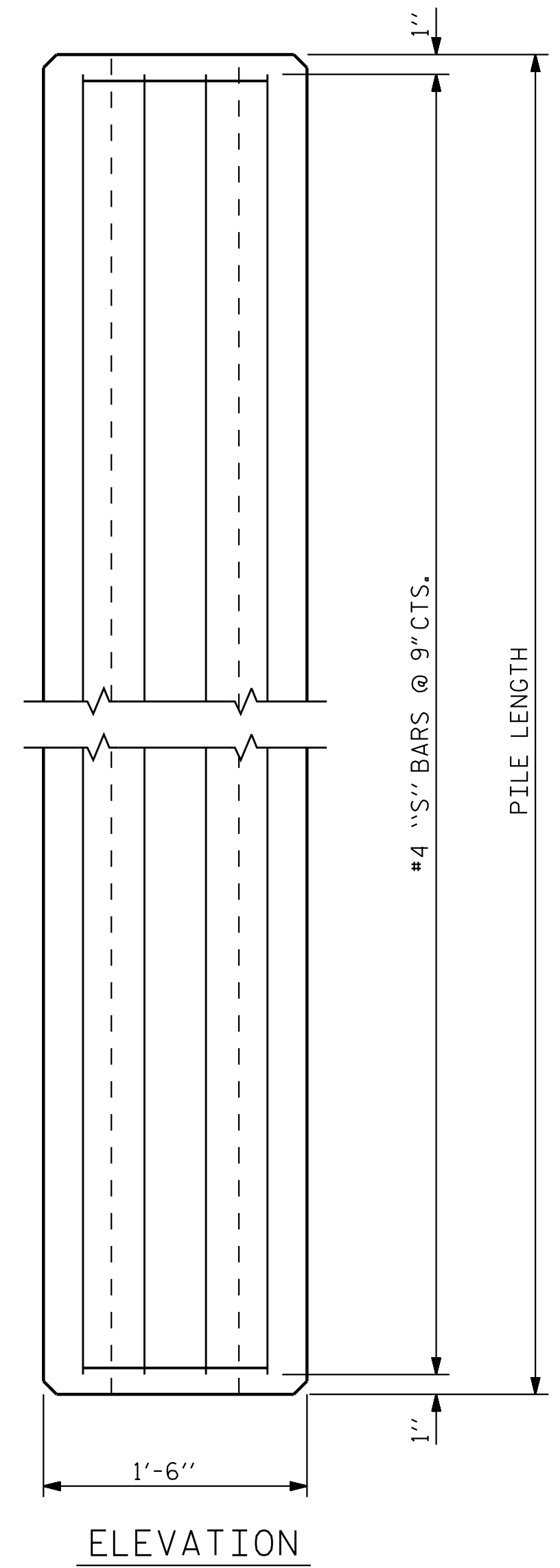
10/27/2021 jpe@elle U:\Structures\Noise Walls\8&11\Dr\af\ing\R3300B\_SMU\_SBW9&11.2.dgn

ASSEMBLED BY : V. T. THOMPSON DATE : 05/07/20  
 CHECKED BY : T. R. DUDECK DATE : 05/08/20  
 DRAWN BY : MAA 6/11  
 CHECKED BY : CM 6/11

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DESIGN ENGINEER OF RECORD: T. R. DUDECK DATE : 10/27/21

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**QUANTITIES FOR ONE PRECAST CONCRETE PILE**

LENGTH	APPROX. PILE WT. TONS	ONE PICK-UP POINT		TWO PICK-UP POINT	
		0.300L	0.700L	0.207L	0.586L
10'-0"	1.56	3'-0"	7'-0"		
15'-0"	2.35	4'-6"	10'-6"		
20'-0"	3.14	6'-0"	14'-0"		
25'-0"	3.93	7'-6"	17'-6"		
30'-0"	4.70	9'-0"	21'-0"		
35'-0"	5.49	10'-6"	24'-6"		
40'-0"	6.28	12'-0"	28'-0"		
45'-0"	7.05	13'-6"	31'-6"		
50'-0"	7.84	15'-0"	35'-0"		
55'-0"	8.63			11'-4 1/2"	32'-3"
60'-0"	9.42			12'-5"	35'-2"
65'-0"	10.21			13'-5 1/2"	38'-1"
70'-0"	11.00			14'-6"	41'-0"

**NOTES**

CONCRETE DESIGN DATA :  $f'_c = 5,000$  PSI

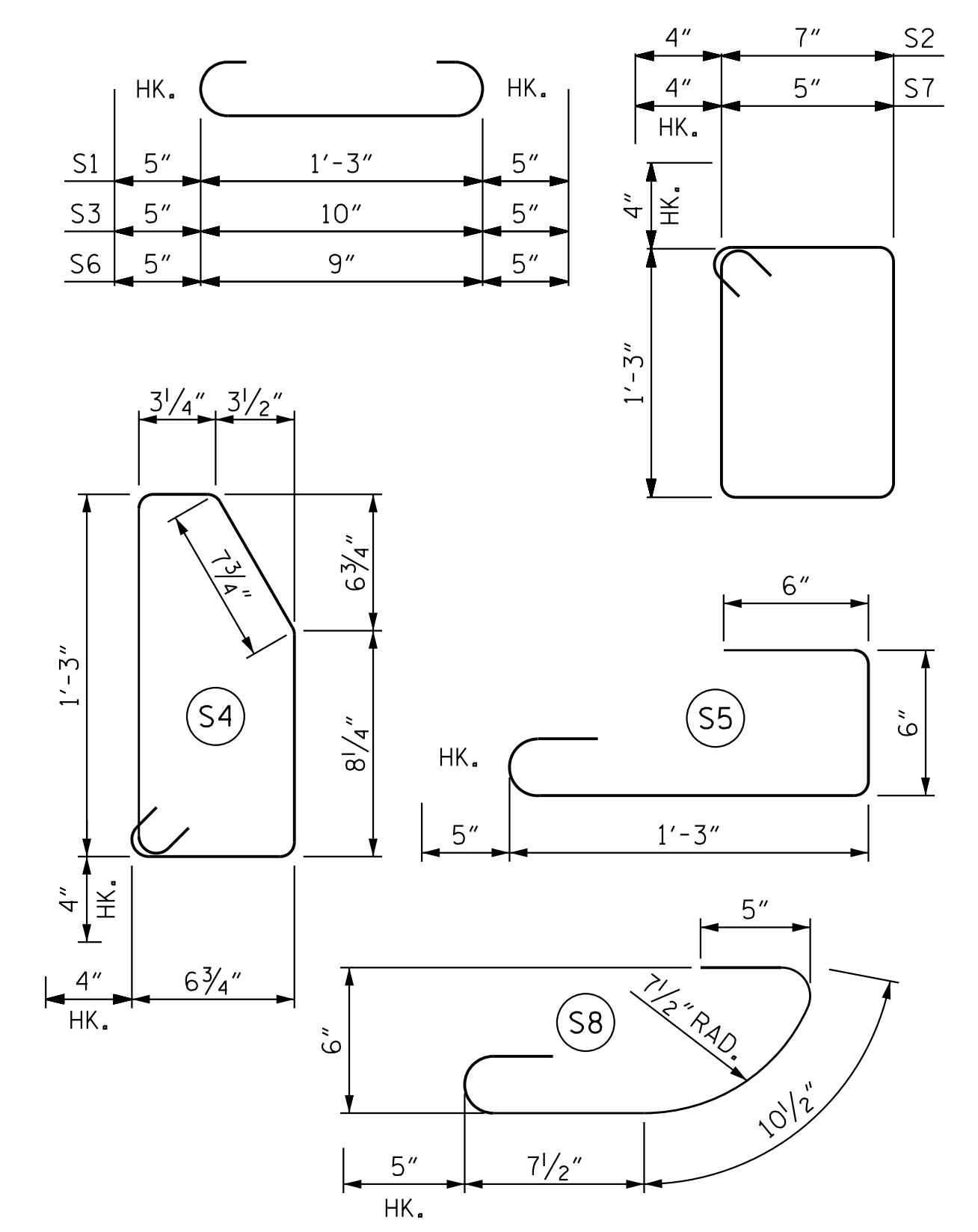
PROPOSED DEVICES FOR LIFTING PILES, RECESS DETAILS, AND PATCHING MATERIAL SHALL BE DETAILED IN SHOP DRAWINGS. AFTER ATTACHMENTS HAVE BEEN REMOVED, OPENINGS SHALL BE REPAIRED SUCH THAT THE APPEARANCE OF THE PILE IS UNIFORM.

WHERE CAST-IN-PLACE LIFTING DEVICES ARE NOT USED, PICK-UP POINTS TO BE INDICATED WITH A BLACK MARK 2" WIDE.

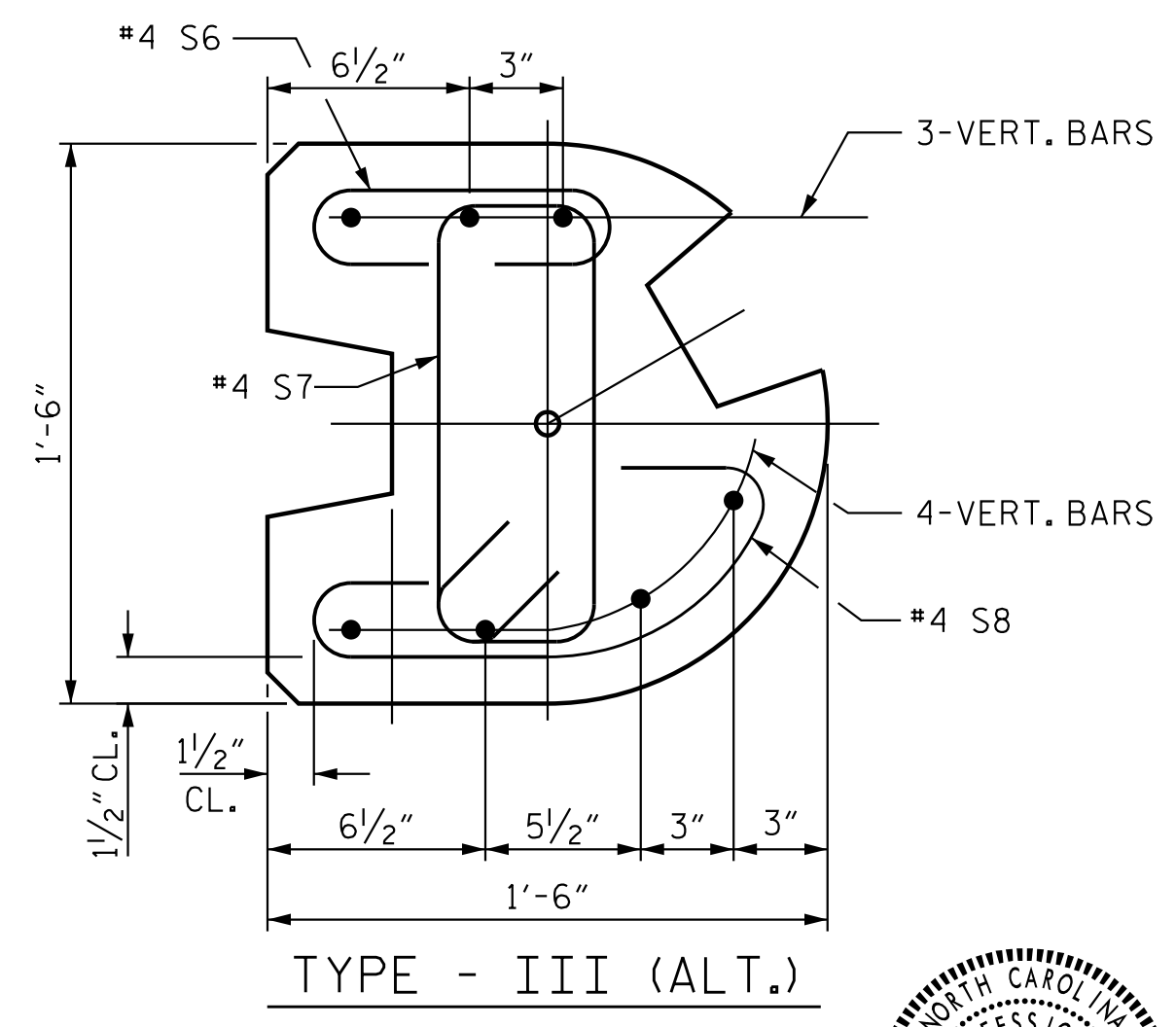
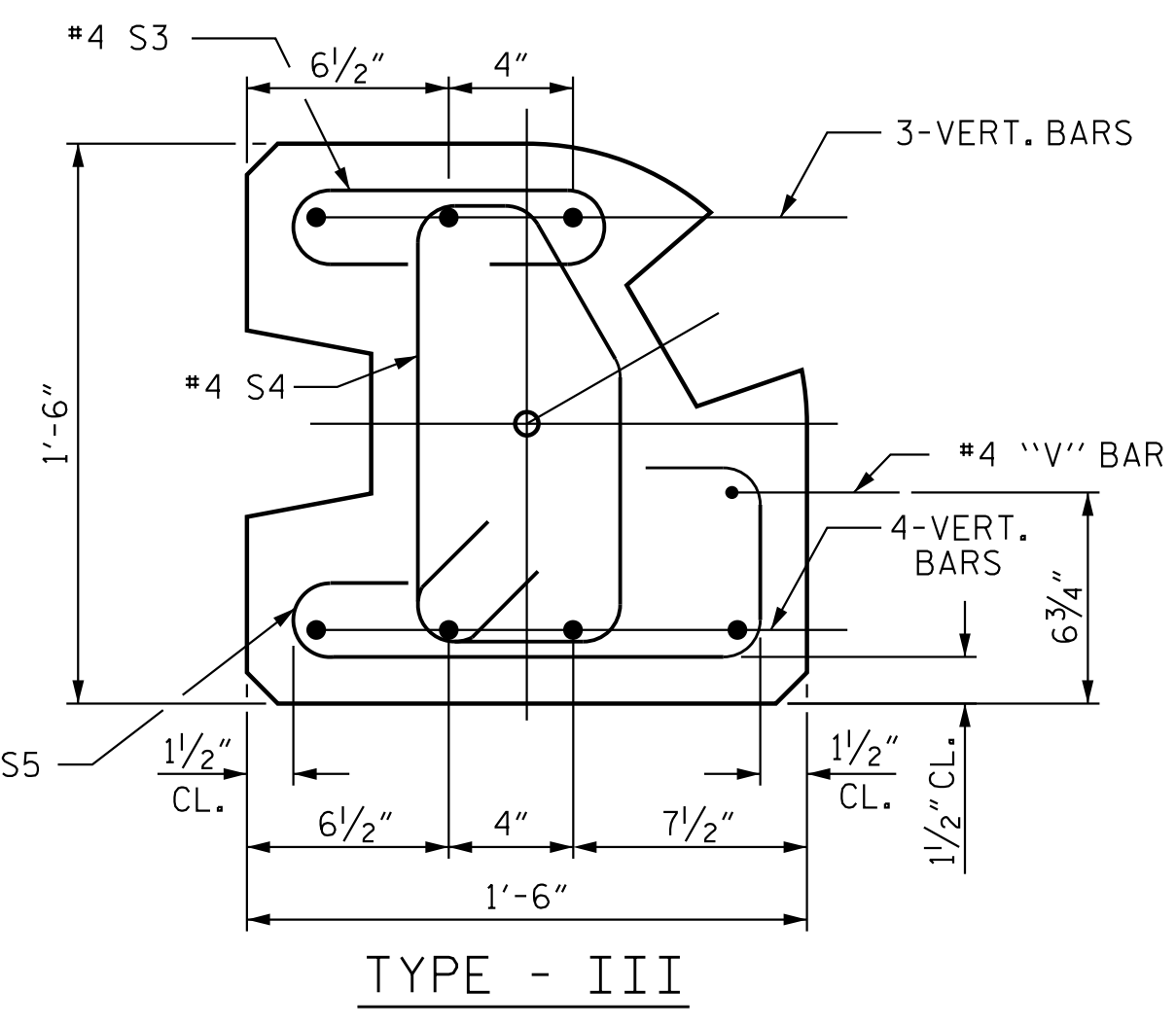
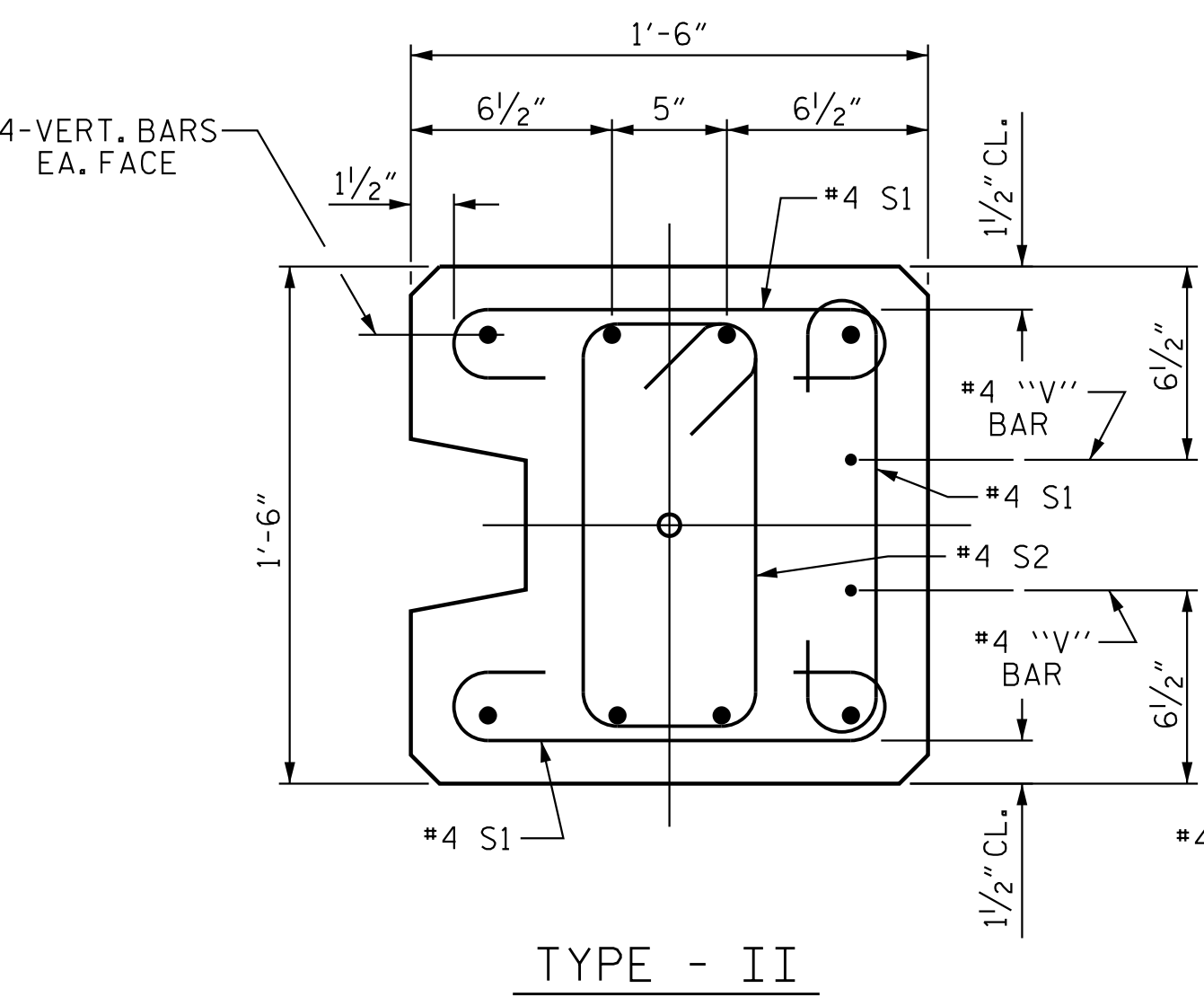
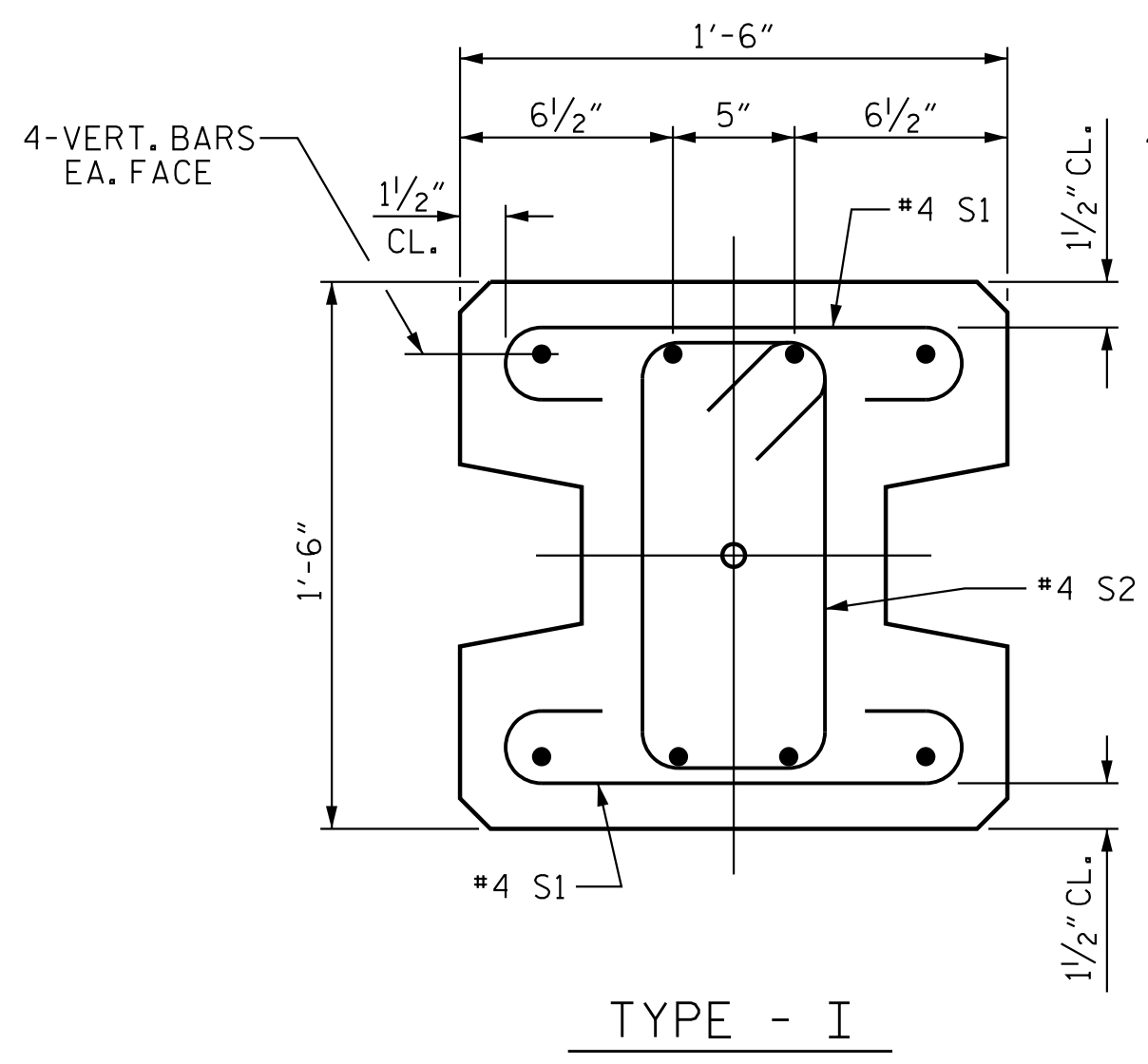
THE SLIP-FORM METHOD OF CASTING PILES WILL NOT BE PERMITTED.

ALL CORNERS TO BE CHAMFERED 1".

**BAR TYPES**



ALL BAR DIMENSIONS ARE OUT TO OUT.



**PILE DETAIL**

FOR VERTICAL BAR PILE REINFORCING, SEE SHEET 1 OF 3

PROJECT NO. R-3300B  
PENDER COUNTY  
 STATION: 623+71.35 -L1-  
 SHEET 3 OF 10

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**STANDARD  
 SOUND BARRIER WALL  
 DETAILS**

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	SW9&11-3
1			3			TOTAL SHEETS 10
2			4			

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ASSEMBLED BY : V. T. THOMPSON DATE : 05/07/20  
 CHECKED BY : T. R. DUDECK DATE : 05/08/20

DRAWN BY : MAA 6/11 REV. 1/15/14 RWW/TMG  
 CHECKED BY : GM 6/11 REV. 12/17 MAA/THC

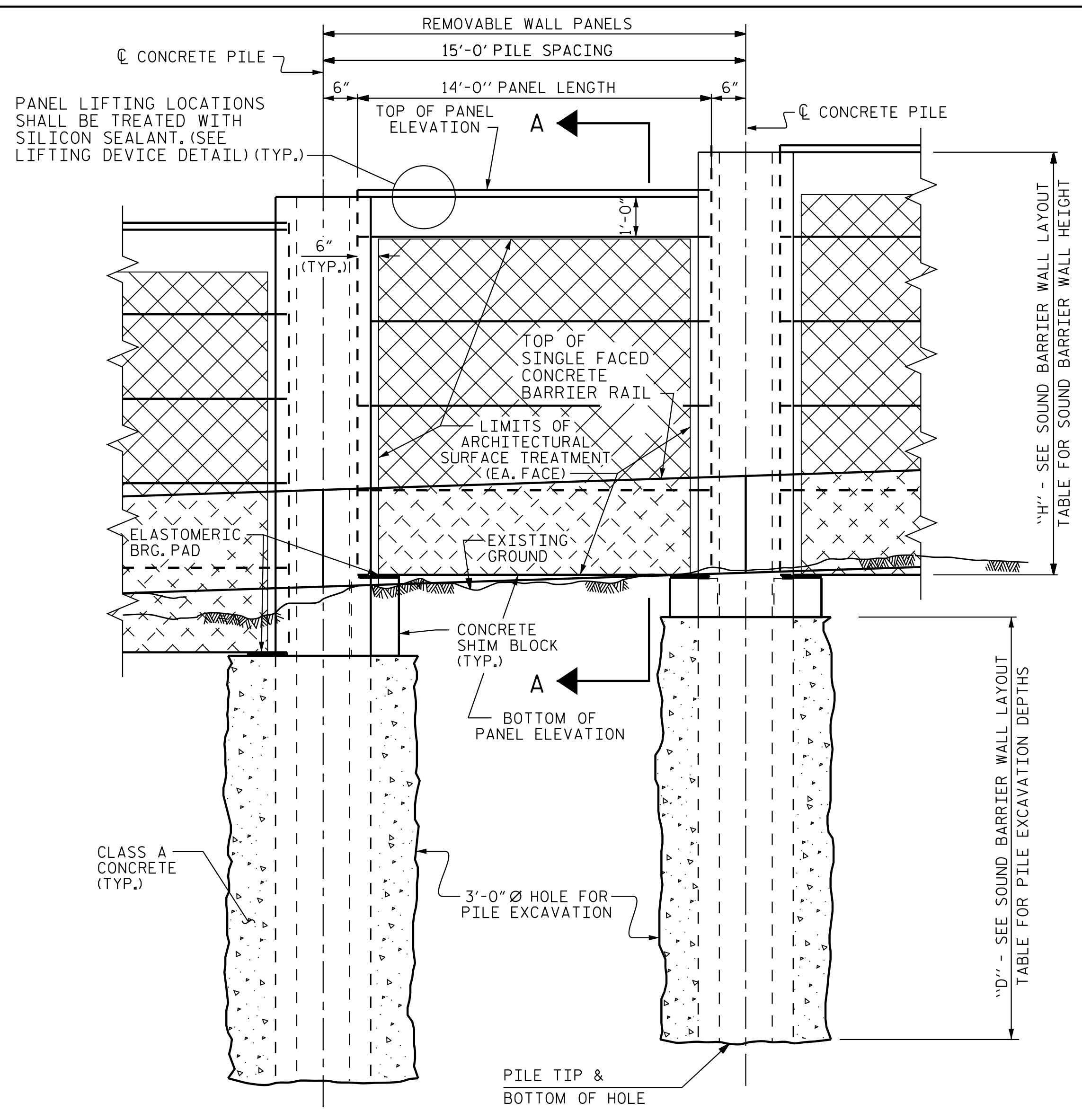
DESIGN ENGINEER OF RECORD: T. R. DUDECK DATE : 10/27/21

10/27/2021

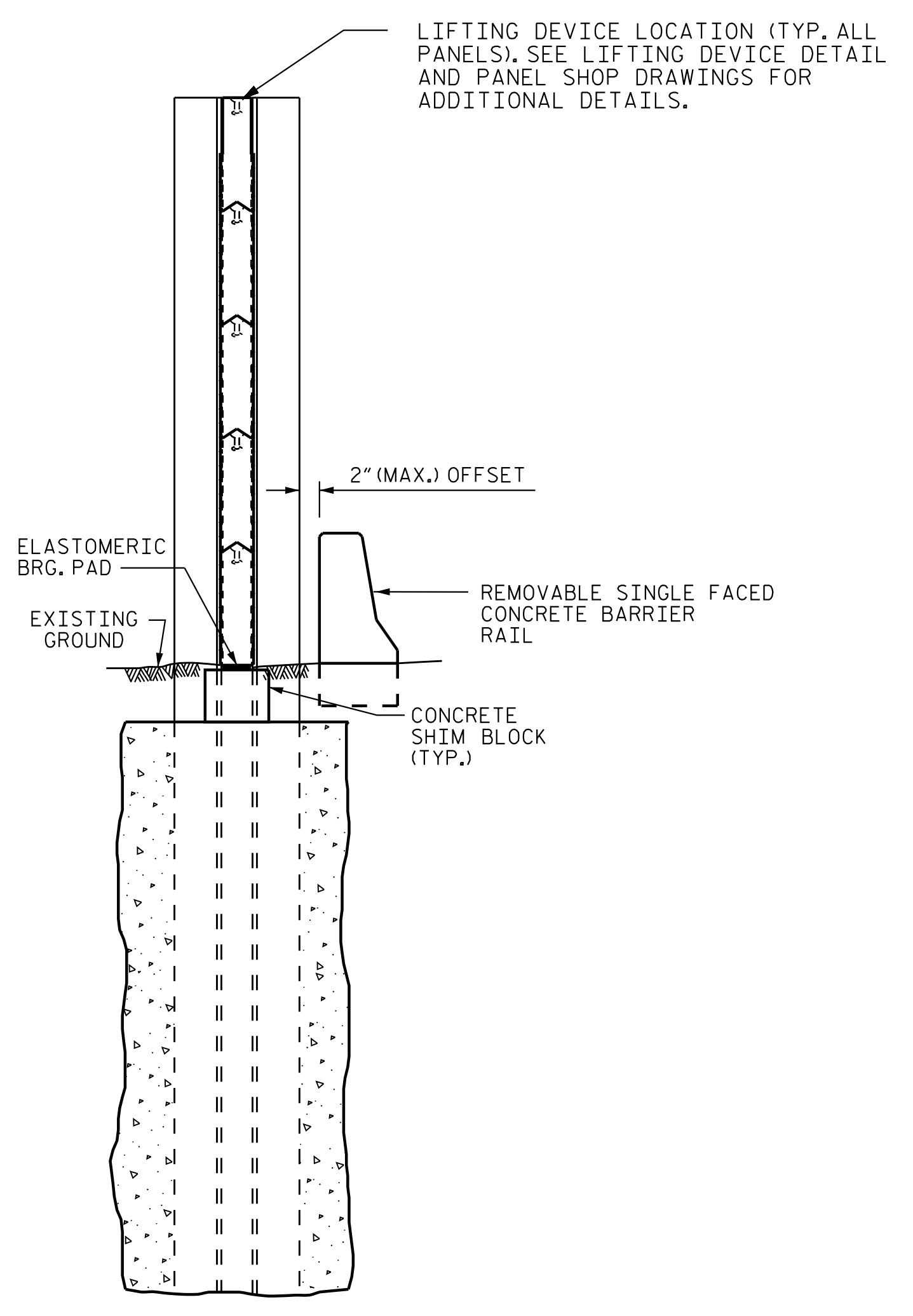
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**NOTES**

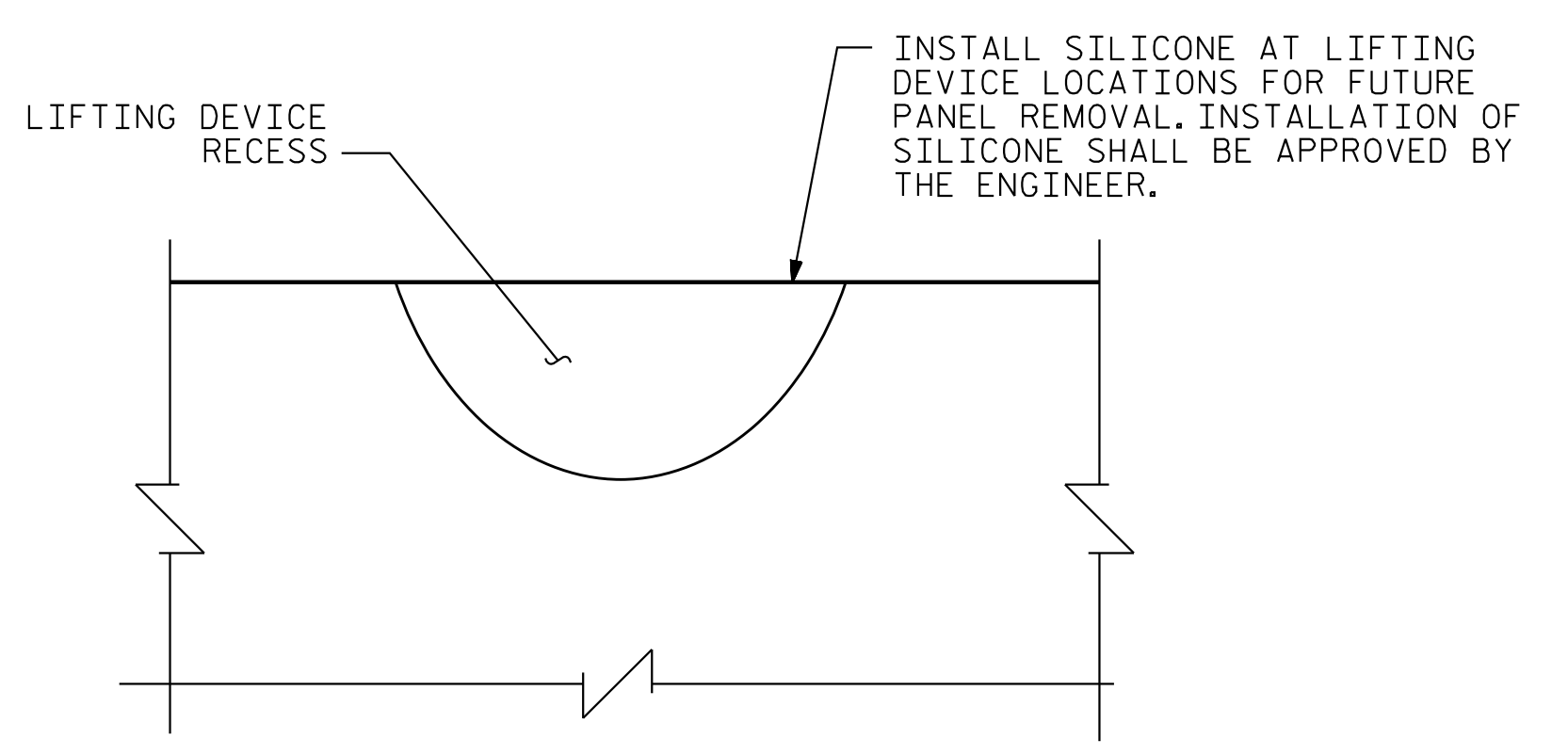
- REMOVABLE PRECAST PANELS SHALL BE INSTALLED TO PROVIDE FUTURE MAINTENANCE ACCESS AT LOCATIONS SPECIFIED BELOW IN THE REMOVABLE PANEL LOCATION TABLE.
- REMOVABLE PRECAST PANELS SHALL BE INSTALLED TO THE GROUND LINE WITHOUT THE BOTTOM OF THE WALL BECOMING EMBEDDED.
- MAXIMUM PANEL HEIGHT FOR REMOVABLE WALL PANELS SHALL BE 3.0 FEET.
- LIFTING DEVICE RECESSES SHALL BE FILLED WITH SILICON FOR FUTURE REMOVAL OF PRECAST PANEL UNITS.
- SEAL ALL RECESSED OPENINGS FOR LIFTING WITH AN APPROVED LOW MODULUS SILICONE SEALANT AS APPROVED BY THE ENGINEER.
- BARRIER IN FRONT OF REMOVABLE PANEL SHALL BE CONSTRUCTED FOR FUTURE TEMPORARY REMOVAL AS DIRECTED BY THE ENGINEER.
- COST OF REMOVABLE PANELS IS CONSIDERED INCIDENTAL TO SOUND BARRIER WALL PAYMENT.



**ELEVATION - REMOVABLE SOUND BARRIER WALL PANELS**



**SECTION A-A**



**LIFTING DEVICE DETAIL**

SEE PRECAST PANEL SHOP DRAWINGS FOR ADDITIONAL DETAILS.

REMOVABLE PANEL LOCATIONS	ACCESS	STATION -L1-	
		FIRST PILE	SECOND PILE
#1		634+92.88	635+08.26
#2		645+95.97	646+10.97
#3		674+87.19	675+02.02

ALL PANELS PLACED BETWEEN PILES SHOWN IN TABLE, WILL BE REMOVABLE.

PROJECT NO. R-3300B  
PENDER COUNTY  
STATION: 623+71.35 -L1-

SHEET 4 OF 10

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
**SOUND BARRIER WALL  
REMOVABLE PANEL**



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License No. F-0672

DRAWN BY : V. T. THOMPSON DATE : 01/15/20  
CHECKED BY : T. R. DUDECK DATE : 05/08/20  
DESIGN ENGINEER OF RECORD: T. R. DUDECK DATE : 10/27/21

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			NO.	BY:	DATE:	
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10/27/2021 10:27:20Z jpe@stc U:\Structures\Noise Walls\8&1\NDr\of\ing\R3300B.SMU\_SBW8&1L.5.dgn

PILE	STA. -L1-	BOTT. OF PANEL ELEV.	TOP OF WALL ELEV.	WALL HEIGHT "H" (FT.)	EXCAVATION DEPTH "D" (FT.)	PILE LENGTH (FT.)	OFFSET - L1- RT. (FT.)	PILE SPACING (FT.)	WALL AREA (FT <sup>2</sup> )
1	623+71.35	49.00	74.00	25.00	39.00	64.00	77.54	10.00	250
2	623+81.67	49.00	74.00	25.00	39.00	64.00	77.29	15.00	375
3	623+97.15	49.00	74.00	25.00	39.00	64.00	76.84	15.00	375
4	624+12.63	49.00	74.00	25.00	39.00	64.00	76.29	15.00	375
5	624+28.10	49.00	74.00	25.00	39.00	64.00	75.76	15.00	375
6	624+43.57	49.00	74.00	25.00	39.00	64.00	75.37	15.00	375
7	624+59.04	49.00	74.00	25.00	39.00	64.00	75.03	15.00	375
8	624+74.51	49.00	74.00	25.00	39.00	64.00	74.72	15.00	375
9	624+89.98	50.00	74.00	24.00	39.00	63.00	74.46	15.00	360
10	625+05.45	50.00	74.00	24.00	39.00	63.00	74.24	15.00	360
11	625+20.91	50.00	74.00	24.00	39.00	63.00	74.05	15.00	360
12	625+36.38	50.00	74.00	24.00	39.00	63.00	73.91	15.00	360
13	625+51.85	50.00	74.00	24.00	39.00	63.00	73.80	15.00	360
14	625+67.31	50.00	74.00	24.00	39.00	63.00	73.70	15.00	360
15	625+82.78	50.00	74.00	24.00	39.00	63.00	73.63	15.00	360
16	625+98.24	49.00	74.00	25.00	39.00	64.00	73.58	15.00	375
17	626+13.70	49.00	74.00	25.00	39.00	64.00	73.56	15.00	375
18	626+29.17	49.00	74.00	25.00	39.00	64.00	73.55	15.00	375
19	626+44.63	49.00	74.00	25.00	39.00	64.00	73.57	15.00	375
20	626+60.10	49.00	74.00	25.00	39.00	64.00	73.58	15.00	375
21	626+75.56	49.00	74.00	25.00	39.00	64.00	73.59	15.00	375
22	626+91.03	49.00	74.00	25.00	39.00	64.00	73.60	10.00	250
23	627+01.34	49.00	74.00	25.00	39.00	64.00	73.60	15.00	375
24	627+16.80	49.00	74.00	25.00	39.00	64.00	73.61	15.00	375
25	627+32.27	49.00	74.00	25.00	39.00	64.00	73.61	15.00	375
26	627+47.73	49.00	74.00	25.00	39.00	64.00	73.61	15.00	375
27	627+63.19	49.00	73.00	24.00	39.00	63.00	73.60	15.00	360
28	627+78.66	49.00	73.00	24.00	39.00	63.00	73.60	15.00	360
29	627+94.12	49.00	73.00	24.00	39.00	63.00	73.59	15.00	360
30	628+09.59	49.00	73.00	24.00	39.00	63.00	73.58	15.00	360
31	628+25.05	49.00	73.00	24.00	39.00	63.00	73.57	15.00	360
32	628+40.52	49.00	73.00	24.00	39.00	63.00	73.55	15.00	360
33	628+55.98	48.00	73.00	25.00	39.00	64.00	73.53	15.00	375
34	628+71.44	48.00	73.00	25.00	39.00	64.00	73.51	15.00	375
35	628+86.91	48.00	73.00	25.00	39.00	64.00	73.49	15.00	375
36	629+02.37	48.00	73.00	25.00	39.00	64.00	73.47	15.00	375
37	629+17.84	48.00	73.00	25.00	39.00	64.00	73.44	15.00	375
38	629+33.30	48.00	73.00	25.00	39.00	64.00	73.37	15.00	375
39	629+48.76	48.00	73.00	25.00	39.00	64.00	72.96	15.00	375
40	629+59.05	48.00	73.00	25.00	39.00	64.00	72.58	10.00	250
41	629+74.50	48.00	73.00	25.00	39.00	64.00	72.02	15.00	375
42	629+89.94	48.00	73.00	25.00	39.00	64.00	71.44	15.00	375
43	630+05.38	48.00	73.00	25.00	39.00	64.00	70.87	15.00	375
44	630+20.81	48.00	73.00	25.00	39.00	64.00	70.28	15.00	375
45	630+36.24	48.00	73.00	25.00	39.00	64.00	69.69	15.00	375
46	630+51.66	48.00	73.00	25.00	39.00	64.00	69.10	15.00	375
47	630+67.09	48.00	73.00	25.00	39.00	64.00	68.50	15.00	375
48	630+82.50	48.00	73.00	25.00	39.00	64.00	67.90	15.00	375
49	630+97.92	48.00	73.00	25.00	39.00	64.00	67.29	15.00	375
50	631+13.32	48.00	73.00	25.00	39.00	64.00	66.67	15.00	375

PILE	STA. -L1-	BOTT. OF PANEL ELEV.	TOP OF WALL ELEV.	WALL HEIGHT "H" (FT.)	EXCAVATION DEPTH "D" (FT.)	PILE LENGTH (FT.)	OFFSET - L1- RT. (FT.)	PILE SPACING (FT.)	WALL AREA (FT <sup>2</sup> )
51	631+28.73	48.00	73.00	25.00	39.00	64.00	66.05	15.00	375
52	631+44.13	48.00	73.00	25.00	39.00	64.00	65.43	15.00	375
53	631+59.53	48.00	73.00	25.00	39.00	64.00	64.80	15.00	375
54	631+74.92	48.00	73.00	25.00	39.00	64.00	64.17	10.00	250
55	631+85.18	48.00	73.00	25.00	39.00	64.00	63.74	15.00	375
56	632+00.56	48.00	73.00	25.00	39.00	64.00	63.10	15.00	375
57	632+15.94	48.00	73.00	25.00	39.00	64.00	62.45	15.00	375
58	632+31.32	48.00	73.00	25.00	39.00	64.00	61.80	15.00	375
59	632+46.70	48.00	72.00	24.00	39.00	63.00	61.45	15.00	360
60	632+62.08	48.00	72.00	24.00	39.00	63.00	61.45	15.00	360
61	632+77.47	48.00	72.00	24.00	39.00	63.00	61.46	15.00	360
62	632+92.86	48.00	72.00	24.00	39.00	63.00	61.46	15.00	360
63	633+08.24	48.00	72.00	24.00	39.00	63.00	61.46	10.00	240
64	633+18.50	48.00	72.00	24.00	39.00	63.00	61.47	10.00	240
65	633+28.76	47.00	72.00	25.00	39.00	64.00	61.47	15.00	375
66	633+44.14	48.00	72.00	24.00	39.00	63.00	61.47	15.00	360
67	633+59.53	47.00	72.00	25.00	39.00	64.00	61.48	15.00	375
68	633+74.92	47.00	72.00	25.00	38.00	63.00	61.48	10.00	250
69	633+85.17	47.00	72.00	25.00	38.00	63.00	61.49	15.00	375
70	634+00.56	47.00	72.00	25.00	38.00	63.00	61.49	15.00	375
71	634+15.95	47.00	72.00	25.00	38.00	63.00	61.49	15.00	375
72	634+31.33	47.00	72.00	25.00	38.00	63.00	61.50	15.00	375
73	634+46.72	47.00	72.00	25.00	38.00	63.00	61.50	15.00	375
74	634+62.10	47.00	72.00	25.00	38.00	63.00	61.51	15.00	375
75	634+77.49	47.00	72.00	25.00	38.00	63.00	61.51	15.00	375
76	634+92.88	48.00	72.00	24.00	38.00	62.00	61.52	15.00	360
77	635+08.26	47.00	71.00	24.00	38.00	62.00	61.52	15.00	360
78	635+23.65	47.00	71.00	24.00	38.00	62.00	61.53	15.00	360
79	635+39.04	46.00	71.00	25.00	38.00	63.00	61.53	15.00	375
80	635+54.42	46.00	71.00	25.00	38.00	63.00	61.54	15.00	375
81	635+69.81	46.00	71.00	25.00	38.00	63.00	61.54	15.00	375
82	635+85.19	46.00	71.00	25.00	38.00	63.00	61.54	15.00	375
83	636+00.58	46.00	71.00	25.00	38.00	63.00	61.55	15.00	375
84	636+15.97	46.00	71.00	25.00	38.00	63.00	61.55	15.00	375
85	636+31.35	46.00	70.00	24.00	38.00	62.00	61.64	15.00	360
86	636+46.74	46.00	70.00	24.00	38.00	62.00	61.78	15.00	360
87	636+62.10	46.00	70.00	24.00	23.00	47.00	61.88	15.00	360
88	636+77.45	45.00	70.00	25.00	23.00	48.00	61.94	15.00	375
89	636+92.79	45.00	70.00	25.00	23.00	48.00	61.97	15.00	375
90	637+08.11	45.00	70.00	25.00	23.00	48.00	61.96	15.00	375
91	637+18.31	45.00	70.00	25.00	23.00	48.00	61.95	10.00	250
92	637+33.60	45.00	70.00	25.00	23.00	48.00	61.90	15.00	375
93	637+48.87	45.00	70.00	25.00	23.00	48.00	61.84	15.00	375
94	637+64.12	45.00	70.00	25.00	23.00	48.00	61.76	15.00	375
95	637+79.36	45.00	69.00	24.00	35.00	59.00	61.67	15.00	360
96	637+94.58	44.00	69.00	25.00	35.00	60.00	61.57	15.00	375
97	638+09.79	44.00	69.00	25.00	35.00	60.00	61.47	15.00	375
98	638+19.91	44.00	69.00	25.00	35.00	60.00	61.40	10.00	250
99	638+35.09	44.00	69.00	25.00	35.00	60.00	61.31	15.00	375
100	638+50.25	44.00	69.00	25.00	35.00	60.00	61.22	15.00	375

← ACCESS PANEL #1

← BEGIN SOUND ABSORPTIVE PANELS

### SOUND BARRIER WALL LAYOUT

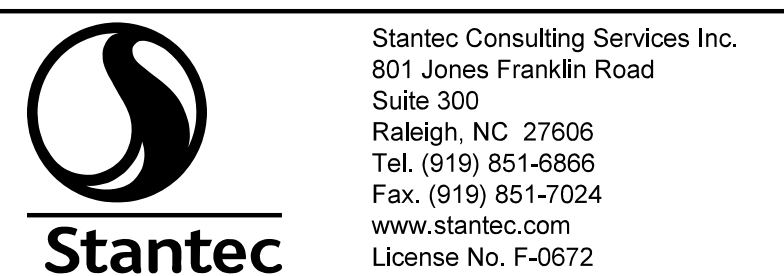
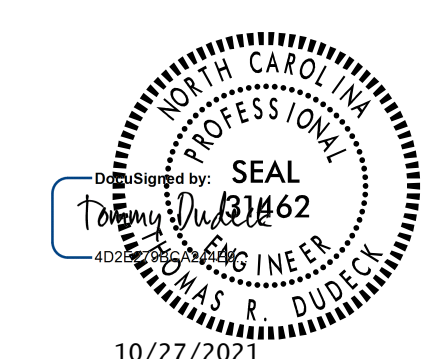
STATIONS AND OFFSETS REFERENCED FROM -L1- TO CENTERLINE OF PILE.

PROJECT NO. R-3300B  
PENDER COUNTY  
 STATION: 623+71.35 -L1-

SHEET 5 OF 10

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

## SOUND BARRIER WALL LAYOUT



DRAWN BY : V. T. THOMPSON DATE : 04/28/20  
 CHECKED BY : T. R. DUDECK DATE : 05/08/20  
 DESIGN ENGINEER OF RECORD: T. R. DUDECK DATE : 10/27/21

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	SW9&11-5
1			3			TOTAL SHEETS
2			4			10

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

10/27/2021  
jpe@stc  
U:\Structures\Noise Walls\8&11\Dr-Of-fing\R3300B-SMU-SBW8&11.dgn

PILE	STA. -L1-	BOTT. OF PANEL ELEV.	TOP OF WALL ELEV.	WALL HEIGHT "H" (FT.)	EXCAVATION DEPTH "D" (FT.)	PILE LENGTH (FT.)	OFFSET - L1- RT. (FT.)	PILE SPACING (FT.)	WALL AREA (FT <sup>2</sup> )
101	638+65.39	43.00	68.00	25.00	35.00	60.00	61.14	15.00	375
102	638+80.52	43.00	68.00	25.00	35.00	60.00	61.07	15.00	375
103	638+95.63	43.00	68.00	25.00	35.00	60.00	61.03	15.00	375
104	639+10.73	43.00	68.00	25.00	35.00	60.00	61.01	15.00	375
105	639+25.81	42.00	67.00	25.00	35.00	60.00	61.01	15.00	375
106	639+40.87	42.00	67.00	25.00	35.00	60.00	61.05	15.00	375
107	639+55.92	42.00	67.00	25.00	35.00	60.00	61.12	10.00	250
108	639+65.95	42.00	67.00	25.00	35.00	60.00	61.19	15.00	375
109	639+80.97	42.00	67.00	25.00	35.00	60.00	61.33	15.00	375
110	639+95.97	42.00	66.00	24.00	35.00	59.00	61.42	15.00	360
111	640+10.97	41.00	66.00	25.00	18.00	43.00	61.42	15.00	375
112	640+25.97	41.00	66.00	25.00	18.00	43.00	61.42	15.00	375
113	640+40.97	41.00	66.00	25.00	18.00	43.00	61.42	15.00	375
114	640+55.97	41.00	66.00	25.00	18.00	43.00	61.42	15.00	375
115	640+70.97	41.00	66.00	25.00	18.00	43.00	61.42	15.00	375
116	640+85.97	41.00	66.00	25.00	18.00	43.00	61.42	15.00	375
117	641+00.97	41.00	66.00	25.00	18.00	43.00	61.42	15.00	375
118	641+15.97	41.00	66.00	25.00	18.00	43.00	61.42	15.00	375
119	641+30.97	41.00	66.00	25.00	17.00	42.00	61.42	15.00	375
120	641+45.97	41.00	66.00	25.00	17.00	42.00	61.42	15.00	375
121	641+60.97	41.00	66.00	25.00	17.00	42.00	61.42	15.00	375
122	641+75.97	41.00	66.00	25.00	17.00	42.00	61.42	15.00	375
123	641+90.97	41.00	66.00	25.00	17.00	42.00	61.42	15.00	375
124	642+05.97	41.00	66.00	25.00	17.00	42.00	61.42	15.00	375
125	642+20.97	41.00	66.00	25.00	17.00	42.00	61.42	15.00	375
126	642+35.97	41.00	66.00	25.00	17.00	42.00	61.42	15.00	375
127	642+50.97	41.00	66.00	25.00	17.00	42.00	61.42	15.00	375
128	642+65.97	41.00	66.00	25.00	17.00	42.00	61.42	15.00	375
129	642+80.97	41.00	66.00	25.00	17.00	42.00	61.42	15.00	375
130	642+95.97	41.00	66.00	25.00	17.00	42.00	61.42	15.00	375
131	643+10.97	41.00	66.00	25.00	17.00	42.00	61.42	15.00	375
132	643+25.97	41.00	66.00	25.00	17.00	42.00	61.42	15.00	375
133	643+40.97	41.00	66.00	25.00	17.00	42.00	61.42	15.00	375
134	643+55.97	41.00	66.00	25.00	17.00	42.00	61.42	15.00	375
135	643+70.97	41.00	66.00	25.00	17.00	42.00	61.42	15.00	375
136	643+85.97	41.00	66.00	25.00	17.00	42.00	61.42	15.00	375
137	644+00.97	41.00	66.00	25.00	17.00	42.00	61.42	15.00	375
138	644+15.97	41.00	66.00	25.00	17.00	42.00	61.42	15.00	375
139	644+30.97	41.00	66.00	25.00	17.00	42.00	61.42	15.00	375
140	644+45.97	41.00	66.00	25.00	17.00	42.00	61.42	15.00	375
141	644+60.97	41.00	66.00	25.00	17.00	42.00	61.42	15.00	375
142	644+75.97	41.00	66.00	25.00	17.00	42.00	61.42	15.00	375
143	644+90.97	41.00	66.00	25.00	17.00	42.00	61.42	15.00	375
144	645+05.97	42.00	66.00	24.00	17.00	41.00	61.42	15.00	360
145	645+20.97	42.00	66.00	24.00	17.00	41.00	61.42	15.00	360
146	645+35.97	42.00	66.00	24.00	17.00	41.00	61.42	15.00	360
147	645+50.97	42.00	66.00	24.00	17.00	41.00	61.42	15.00	360
148	645+65.97	42.00	66.00	24.00	17.00	41.00	61.42	15.00	360
149	645+80.97	41.00	66.00	25.00	17.00	42.00	61.42	15.00	375
150	645+95.97	42.00	66.00	24.00	17.00	41.00	61.42	15.00	360

← ACCESS PANEL #2

PILE	STA. -L1-	BOTT. OF PANEL ELEV.	TOP OF WALL ELEV.	WALL HEIGHT "H" (FT.)	EXCAVATION DEPTH "D" (FT.)	PILE LENGTH (FT.)	OFFSET -L1- RT. (FT.)	PILE SPACING (FT.)	WALL AREA (FT <sup>2</sup> )
151	646+10.97	41.00	66.00	25.00	17.00	42.00	61.42	15.00	375
152	646+25.97	41.00	66.00	25.00	17.00	42.00	61.42	15.00	375
153	646+40.97	41.00	66.00	25.00	17.00	42.00	61.42	15.00	375
154	646+55.97	41.00	66.00	25.00	17.00	42.00	61.42	15.00	375
155	646+70.97	41.00	66.00	25.00	17.00	42.00	61.42	15.00	375
156	646+85.97	41.00	66.00	25.00	17.00	42.00	61.42	15.00	375
157	647+00.97	41.00	66.00	25.00	17.00	42.00	61.42	15.00	375
158	647+15.97	41.00	66.00	25.00	17.00	42.00	61.42	15.00	375
159	647+30.97	41.00	66.00	25.00	17.00	42.00	61.42	15.00	375
160	647+45.97	41.00	65.00	24.00	19.00	43.00	61.42	10.00	240
161	647+55.97	41.00	65.00	24.00	19.00	43.00	61.42	10.00	240
162	647+65.97	41.00	65.00	24.00	19.00	43.00	61.42	15.00	360
163	647+80.97	41.00	65.00	24.00	19.00	43.00	61.42	15.00	360
164	647+95.97	40.00	65.00	25.00	19.00	44.00	61.42	15.00	375
165	648+10.97	40.00	65.00	25.00	19.00	44.00	61.42	15.00	375
166	648+25.97	40.00	65.00	25.00	19.00	44.00	61.42	15.00	375
167	648+40.97	40.00	65.00	25.00	19.00	44.00	61.42	15.00	375
168	648+55.97	40.00	65.00	25.00	19.00	44.00	61.42	15.00	375
169	648+70.97	40.00	65.00	25.00	19.00	44.00	61.42	15.00	375
170	648+85.97	40.00	65.00	25.00	19.00	44.00	61.42	15.00	375
171	649+00.97	40.00	65.00	25.00	19.00	44.00	61.42	15.00	375
172	649+15.97	40.00	65.00	25.00	19.00	44.00	61.42	15.00	375
173	649+30.97	40.00	65.00	25.00	19.00	44.00	61.42	15.00	375
174	649+45.97	40.00	65.00	25.00	19.00	44.00	61.42	15.00	375
175	649+60.97	40.00	65.00	25.00	19.00	44.00	61.42	15.00	375
176	649+75.97	40.00	65.00	25.00	19.00	44.00	61.42	15.00	375
177	649+90.97	40.00	65.00	25.00	22.00	47.00	61.42	15.00	375
178	650+05.97	40.00	65.00	25.00	22.00	47.00	61.42	15.00	375
179	650+20.97	40.00	65.00	25.00	22.00	47.00	61.42	15.00	375
180	650+35.97	40.00	65.00	25.00	22.00	47.00	61.42	10.00	250
181	650+45.97	40.00	65.00	25.00	22.00	47.00	61.42	10.00	250
182	650+55.97	40.00	65.00	25.00	22.00	47.00	61.42	15.00	375
183	650+70.97	40.00	65.00	25.00	22.00	47.00	61.42	15.00	375
184	650+85.97	40.00	65.00	25.00	22.00	47.00	61.42	15.00	375
185	651+00.97	40.00	65.00	25.00	22.00	47.00	61.42	15.00	375
186	651+15.97	40.00	65.00	25.00	22.00	47.00	61.42	15.00	375
187	651+30.97	40.00	65.00	25.00	22.00	47.00	61.42	15.00	375
188	651+45.97	40.00	65.00	25.00	22.00	47.00	61.42	15.00	375
189	651+60.97	40.00	65.00	25.00	22.00	47.00	61.42	15.00	375
190	651+75.97	40.00	65.00	25.00	22.00	47.00	61.42	15.00	375
191	651+90.97	40.00	65.00	25.00	22.00	47.00	61.41	15.00	375
192	652+05.97	41.00	66.00	25.00	22.00	47.00	61.41	15.00	375
193	652+20.97	41.00	66.00	25.00	22.00	47.00	61.41	15.00	375
194	652+35.97	41.00	66.00	25.00	22.00	47.00	61.41	15.00	375
195	652+50.97	42.00	67.00	25.00	22.00	47.00	61.41	15.00	375
196	652+65.97	42.00	67.00	25.00	22.00	47.00	61.42	15.00	375
197	652+80.97	42.00	67.00	25.00	22.00	47.00	61.45	15.00	375
198	652+95.94	43.00	68.00	25.00	22.00	47.00	61.47	15.00	375
199	653+10.91	43.00	68.00	25.00	22.00	47.00	61.46	15.00	375
200	653+25.86	43.00	68.00	25.00	22.00	47.00	61.45	15.00	375

### SOUND BARRIER WALL LAYOUT

STATIONS AND OFFSETS REFERENCED FROM -L1- TO CENTERLINE OF PILE.

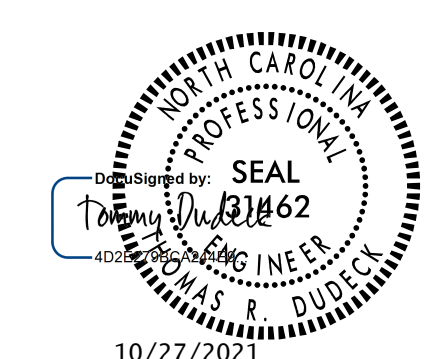
PROJECT NO. R-3300B  
PENDER COUNTY  
STATION: 623+71.35 -L1-

SHEET 6 OF 10

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

## SOUND BARRIER WALL LAYOUT

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	SW9&11-6
1			3			TOTAL SHEETS 10
2			4			



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Stantec Consulting Services Inc.  
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Suite 300  
Raleigh, NC 27606  
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Fax. (919) 851-7024  
www.stantec.com  
License No. F-0672

DRAWN BY : V. T. THOMPSON DATE : 04/28/20  
CHECKED BY : T. R. DUDECK DATE : 05/08/20  
DESIGN ENGINEER OF RECORD: T. R. DUDECK DATE : 10/27/21

I:\Projects\Noise Walls\8&11\Dr-fing\N3300B-SMU-SBW&L1-7.dgn 10/27/2021 jpe@le

PILE	STA. -L1-	BOTT. OF PANEL ELEV.	TOP OF WALL ELEV.	WALL HEIGHT "H" (FT.)	EXCAVATION DEPTH "D" (FT.)	PILE LENGTH (FT.)	OFFSET -L1- RT. (FT.)	PILE SPACING (FT.)	WALL AREA (FT <sup>2</sup> )
201	653+40.79	44.00	69.00	25.00	22.00	47.00	61.43	15.00	375
202	653+55.71	44.00	69.00	25.00	22.00	47.00	61.40	15.00	375
203	653+70.62	44.00	69.00	25.00	22.00	47.00	61.37	15.00	375
204	653+85.51	45.00	70.00	25.00	22.00	47.00	61.35	15.00	375
205	654+00.39	45.00	70.00	25.00	22.00	47.00	61.33	15.00	375
* * 206	654+15.25	45.00	64.00	19.00	22.00	41.00	61.31	15.00	285
207	654+30.10	46.00	71.00	25.00	22.00	47.00	61.32	15.00	375
208	654+44.94	46.00	71.00	25.00	22.00	47.00	61.33	15.00	375
209	654+59.76	47.00	72.00	25.00	22.00	47.00	61.37	15.00	375
210	654+74.59	47.00	72.00	25.00	22.00	47.00	61.41	15.00	375
211	654+89.42	47.00	72.00	25.00	22.00	47.00	61.40	15.00	375
212	655+04.25	48.00	73.00	25.00	22.00	47.00	61.38	15.00	375
213	655+19.07	48.00	73.00	25.00	22.00	47.00	61.37	15.00	375
214	655+33.90	48.00	73.00	25.00	22.00	47.00	61.36	15.00	375
215	655+48.73	49.00	74.00	25.00	22.00	47.00	61.35	15.00	375
216	655+63.55	49.00	74.00	25.00	17.00	42.00	61.35	15.00	375
217	655+78.38	49.00	74.00	25.00	17.00	42.00	61.34	15.00	375
218	655+93.21	50.00	75.00	25.00	17.00	42.00	61.40	15.00	375
219	656+08.04	50.00	75.00	25.00	17.00	42.00	61.33	15.00	375
220	656+22.86	50.00	75.00	25.00	17.00	42.00	61.33	15.00	375
221	656+37.69	50.00	75.00	25.00	17.00	42.00	61.33	15.00	375
222	656+52.52	50.00	75.00	25.00	17.00	42.00	61.34	15.00	375
223	656+67.35	51.00	75.00	24.00	17.00	41.00	61.34	15.00	360
224	656+82.17	51.00	75.00	24.00	17.00	41.00	61.35	15.00	360
225	656+97.00	51.00	75.00	24.00	17.00	41.00	61.35	15.00	360
226	657+11.83	51.00	75.00	24.00	17.00	41.00	61.36	15.00	360
227	657+26.66	52.00	74.00	22.00	17.00	39.00	61.37	15.00	330
228	657+41.48	52.00	73.00	21.00	17.00	38.00	61.39	15.00	315
229	657+56.31	52.00	72.00	20.00	15.00	35.00	61.40	15.00	300
230	657+71.14	53.00	71.00	18.00	15.00	33.00	61.26	15.00	270
231	657+85.93	53.00	70.00	17.00	15.00	32.00	60.21	15.00	255
* 232	658+00.73	57.50	70.00	12.50	-	12.50	-	15.00	-
233	-	57.50	70.00	12.50	-	12.50	-	15.00	-
234	-	57.50	70.00	12.50	-	12.50	-	15.00	-
235	-	57.50	70.00	12.50	-	12.50	-	15.00	-
236	-	57.50	71.00	13.50	-	13.50	-	15.00	-
237	-	57.50	71.00	13.50	-	13.50	-	15.00	-
238	-	57.50	71.00	13.50	-	13.50	-	15.00	-
239	-	57.50	71.00	13.50	-	13.50	-	15.00	-
240	-	57.50	72.00	14.50	-	14.50	-	15.00	-
241	-	57.50	72.00	14.50	-	14.50	-	6.10	-
* 242	659+40.29	54.00	73.00	19.00	15.00	27.50	60.23	15.00	285
243	659+55.09	54.00	74.00	20.00	15.00	27.50	61.32	15.00	300
244	659+69.88	54.00	75.00	21.00	15.00	28.50	61.41	15.00	315
245	659+84.70	54.00	76.00	22.00	15.00	28.50	61.41	15.00	330
246	659+99.53	54.00	77.00	23.00	15.00	28.50	61.41	15.00	345
247	660+14.36	54.00	78.00	24.00	15.00	28.50	61.41	15.00	360
248	660+29.18	54.00	79.00	25.00	15.00	29.50	61.41	15.00	375
249	660+44.01	54.00	79.00	25.00	15.00	29.50	61.41	15.00	375
250	660+58.84	54.00	79.00	25.00	15.00	34.00	61.41	15.00	375

PILE	STA. -L1-	BOTT. OF PANEL ELEV.	TOP OF WALL ELEV.	WALL HEIGHT "H" (FT.)	EXCAVATION DEPTH "D" (FT.)	PILE LENGTH (FT.)	OFFSET -L1- RT. (FT.)	PILE SPACING (FT.)	WALL AREA (FT <sup>2</sup> )
251	660+73.67	54.00	79.00	25.00	15.00	35.00	61.41	15.00	375
252	660+88.49	54.00	79.00	25.00	15.00	36.00	61.42	15.00	375
253	661+03.32	54.00	79.00	25.00	15.00	37.00	61.42	15.00	375
254	661+18.15	54.00	79.00	25.00	15.00	38.00	61.42	15.00	375
255	661+32.97	54.00	79.00	25.00	17.00	41.00	61.42	15.00	375
256	661+47.80	54.00	79.00	25.00	17.00	42.00	61.42	15.00	375
257	661+62.63	54.00	79.00	25.00	17.00	42.00	61.42	15.00	375
258	661+77.46	54.00	78.00	24.00	17.00	42.00	61.42	15.00	360
259	661+92.28	54.00	78.00	24.00	17.00	42.00	61.42	15.00	360
260	662+07.11	54.00	78.00	24.00	17.00	42.00	61.42	15.00	360
261	662+21.94	53.00	78.00	25.00	17.00	42.00	61.42	15.00	375
262	662+36.77	53.00	78.00	25.00	17.00	42.00	61.42	15.00	375
263	662+51.59	53.00	78.00	25.00	17.00	42.00	61.42	15.00	375
264	662+66.42	53.00	78.00	25.00	17.00	42.00	61.42	15.00	375
265	662+81.25	53.00	78.00	25.00	17.00	42.00	61.42	15.00	375
266	662+96.07	52.00	78.00	26.00	17.00	41.00	61.42	15.00	390
267	663+10.90	52.00	78.00	26.00	17.00	41.00	61.42	15.00	390
268	663+25.73	52.00	77.00	25.00	17.00	41.00	61.42	15.00	375
269	663+40.56	52.00	77.00	25.00	17.00	42.00	61.42	15.00	375
270	663+55.38	52.00	77.00	25.00	17.00	42.00	61.42	15.00	375
271	663+70.21	52.00	77.00	25.00	17.00	42.00	61.42	15.00	375
272	663+85.04	52.00	76.00	24.00	17.00	42.00	61.42	15.00	360
273	663+99.86	51.00	76.00	25.00	17.00	42.00	61.42	15.00	375
274	664+14.69	51.00	76.00	25.00	17.00	43.00	61.42	15.00	375
275	664+29.52	51.00	76.00	25.00	17.00	43.00	61.42	15.00	375
276	664+44.35	51.00	76.00	25.00	17.00	42.00	61.42	15.00	375
277	664+59.17	51.00	76.00	25.00	17.00	42.00	61.42	15.00	375
278	664+74.00	50.00	76.00	26.00	17.00	42.00	61.42	15.00	390
279	664+88.83	50.00	76.00	26.00	17.00	42.00	61.42	15.00	390
280	665+03.65	50.00	75.00	25.00	17.00	41.00	61.42	15.00	375
281	665+18.48	50.00	75.00	25.00	17.00	42.00	61.42	15.00	375
282	665+33.31	50.00	75.00	25.00	17.00	42.00	61.42	15.00	375
283	665+48.14	50.00	75.00	25.00	17.00	42.00	61.42	15.00	375
284	665+62.97	49.00	74.00	25.00	17.00	42.00	61.42	15.00	375
285	665+77.80	49.00	74.00	25.00	17.00	42.00	61.42	15.00	375
286	665+92.63	49.00	74.00	25.00	17.00	43.00	61.42	15.00	375
287	666+07.46	49.00	74.00	25.00	17.00	43.00	61.42	15.00	375
288	666+22.29	49.00	74.00	25.00	17.00	42.00	61.42	15.00	375
289	666+37.12	49.00	74.00	25.00	17.00	42.00	61.42	15.00	375
290	666+51.95	49.00	74.00	25.00	17.00	42.00	61.42	15.00	375
291	666+66.78	48.00	73.00	25.00	18.00	43.00	61.42	15.00	375
292	666+81.61	48.00	73.00	25.00	18.00	43.00	61.42	15.00	375
293	666+96.44	48.00	73.00	25.00	18.00	43.00	61.42	10.00	250
294	667+11.27	48.00	73.00	25.00	18.00	43.00	61.42	10.00	250
295	667+26.10	48.00	73.00	25.00	18.00	43.00	61.42	15.00	375
296	667+40.93	48.00	73.00	25.00	18.00	43.00	61.42	15.00	375
297	667+55.76	48.00	73.00	25.00	18.00	43.00	61.42	15.00	375
298	667+70.59	48.00	73.00	25.00	18.00	43.00	61.42	15.00	375
299	667+85.42	48.00	73.00	25.00	18.00	43.00	61.42	15.00	375
300	667+100.25	48.00	73.00	25.00	18.00	43.00	61.42	15.00	375

### SOUND BARRIER WALL LAYOUT

STATIONS AND OFFSETS REFERENCED FROM -L1- TO CENTERLINE OF PILE.

\* DENOTES LOCATION OF STEEL PILE LOCATED AT END OF BRIDGE APPROACH SLAB. FOR STEEL PILE PLACEMENT AT BRIDGE LOCATION, SEE BRIDGE PLANS.

\*\* CONTRACTOR NOTE: SIGN ABOVE STRUCTURE.

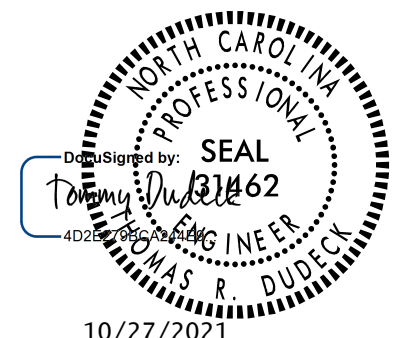
PROJECT NO. R-3300B  
PENDER COUNTY  
 STATION: 623+71.35 -L1-

SHEET 7 OF 10



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DRAWN BY : V. T. THOMPSON DATE : 04/28/20  
 CHECKED BY : T. R. DUDECK DATE : 05/08/20  
 DESIGN ENGINEER OF RECORD : T. R. DUDECK DATE : 10/27/21



10/27/2021

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

### SOUND BARRIER WALL LAYOUT

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	SW9&11-7
1			3			TOTAL SHEETS
2			4			10

lpc@elle

10/27/2021

U:\Structures\Noise Walls\8&11\Dr-off\ing\R3300B\_SML\_SBW8&11\_B.dgn

PILE	STA. -L1-	BOTT. OF PANEL ELEV.	TOP OF WALL ELEV.	WALL HEIGHT "H" (FT.)	EXCAVATION DEPTH "D" (FT.)	PILE LENGTH (FT.)	OFFSET - L1- RT. (FT.)	PILE SPACING (FT.)	WALL AREA (FT <sup>2</sup> )
301	668+10.08	48.00	73.00	25.00	22.00	47.00	61.42	15.00	375
302	668+19.97	48.00	73.00	25.00	22.00	47.00	61.42	10.00	250
303	668+29.85	48.00	73.00	25.00	22.00	47.00	61.42	10.00	250
304	668+44.68	48.00	73.00	25.00	22.00	47.00	61.42	15.00	375
305	668+59.51	48.00	73.00	25.00	22.00	47.00	61.42	15.00	375
306	668+74.33	48.00	73.00	25.00	22.00	47.00	61.42	15.00	375
307	668+89.16	48.00	73.00	25.00	22.00	47.00	61.42	15.00	375
308	669+03.99	48.00	73.00	25.00	22.00	47.00	61.42	15.00	375
309	669+18.82	48.00	73.00	25.00	22.00	47.00	61.42	15.00	375
310	669+33.64	48.00	73.00	25.00	22.00	47.00	61.42	15.00	375
311	669+48.47	48.00	73.00	25.00	22.00	47.00	61.42	15.00	375
312	669+63.30	48.00	73.00	25.00	22.00	47.00	61.42	15.00	375
313	669+78.13	48.00	73.00	25.00	22.00	47.00	61.42	15.00	375
314	669+92.95	49.00	73.00	24.00	22.00	47.00	61.42	15.00	360
315	670+07.78	49.00	73.00	24.00	22.00	47.00	61.42	15.00	360
316	670+22.61	49.00	74.00	25.00	22.00	47.00	61.42	15.00	375
317	670+37.43	49.00	74.00	25.00	22.00	47.00	61.42	15.00	375
318	670+52.26	49.00	74.00	25.00	22.00	47.00	61.42	15.00	375
319	670+67.09	49.00	74.00	25.00	22.00	47.00	61.42	15.00	375
320	670+81.92	49.00	74.00	25.00	22.00	47.00	61.42	15.00	375
321	670+96.74	49.00	74.00	25.00	22.00	47.00	61.42	15.00	375
322	671+11.57	49.00	74.00	25.00	22.00	46.00	61.42	15.00	375
323	671+26.40	49.00	74.00	25.00	22.00	46.00	61.42	15.00	375
324	671+41.22	49.00	74.00	25.00	22.00	47.00	61.42	15.00	375
325	671+56.05	49.00	74.00	25.00	22.00	47.00	61.42	15.00	375
326	671+70.88	49.00	74.00	25.00	22.00	47.00	61.42	15.00	375
327	671+85.71	49.00	74.00	25.00	22.00	47.00	61.42	15.00	375
328	672+00.53	50.00	74.00	24.00	22.00	47.00	61.42	15.00	360
329	672+15.36	50.00	74.00	24.00	22.00	47.00	61.42	15.00	360
330	672+30.19	50.00	75.00	25.00	22.00	47.00	61.42	15.00	375
331	672+45.02	50.00	75.00	25.00	22.00	47.00	61.42	15.00	375
332	672+59.84	50.00	75.00	25.00	22.00	47.00	61.42	15.00	375
333	672+74.67	50.00	75.00	25.00	22.00	47.00	61.42	15.00	375
334	672+89.50	50.00	75.00	25.00	22.00	47.00	61.42	15.00	375
335	672+99.38	50.00	75.00	25.00	22.00	47.00	61.42	10.00	250
336	673+09.27	50.00	75.00	25.00	22.00	46.00	61.42	10.00	250
337	673+24.09	50.00	75.00	25.00	22.00	46.00	61.42	15.00	375
338	673+38.92	50.00	75.00	25.00	22.00	47.00	61.42	15.00	375
339	673+53.75	50.00	75.00	25.00	22.00	47.00	61.42	15.00	375
340	673+68.58	50.00	75.00	25.00	22.00	47.00	61.42	15.00	375
341	673+83.40	50.00	75.00	25.00	22.00	47.00	61.42	15.00	375
342	673+98.23	51.00	75.00	24.00	22.00	47.00	61.42	15.00	360
343	674+13.06	51.00	75.00	24.00	22.00	47.00	61.42	15.00	360
344	674+27.88	51.00	75.00	24.00	22.00	47.00	61.42	15.00	360
345	674+42.71	51.00	75.00	24.00	22.00	47.00	61.42	15.00	360
346	674+57.54	51.00	76.00	25.00	22.00	47.00	61.42	15.00	375
347	674+72.37	51.00	76.00	25.00	22.00	47.00	61.42	15.00	375
348	674+87.19	51.00	76.00	25.00	22.00	47.00	61.42	15.00	375
349	675+02.02	52.00	76.00	24.00	22.00	47.00	61.42	15.00	360
350	675+16.85	51.00	76.00	25.00	22.00	46.00	61.42	15.00	375

←ACCESS PANEL #3

\*\*

PILE	STA. -L1-	BOTT. OF PANEL ELEV.	TOP OF WALL ELEV.	WALL HEIGHT "H" (FT.)	EXCAVATION DEPTH "D" (FT.)	PILE LENGTH (FT.)	OFFSET - L1- RT. (FT.)	PILE SPACING (FT.)	WALL AREA (FT <sup>2</sup> )
351	675+31.67	51.00	76.00	25.00	22.00	46.00	61.42	15.00	375
352	675+46.50	51.00	76.00	25.00	22.00	46.00	61.42	15.00	375
353	675+61.33	51.00	76.00	25.00	22.00	46.00	61.42	15.00	375
354	675+76.16	51.00	76.00	25.00	22.00	47.00	61.42	15.00	375
355	675+90.98	51.00	76.00	25.00	22.00	47.00	61.42	15.00	375
356	676+05.81	51.00	76.00	25.00	19.00	44.00	61.42	15.00	375
357	676+20.64	52.00	76.00	24.00	19.00	44.00	61.42	15.00	360
358	676+35.46	52.00	76.00	24.00	19.00	44.00	61.42	15.00	360
359	676+50.29	52.00	77.00	25.00	19.00	44.00	61.42	15.00	375
360	676+65.12	52.00	77.00	25.00	19.00	44.00	61.42	15.00	375
361	676+79.95	52.00	77.00	25.00	19.00	44.00	61.42	15.00	375
362	676+94.77	52.00	77.00	25.00	19.00	44.00	61.42	15.00	375
363	677+09.60	52.00	77.00	25.00	19.00	44.00	61.42	15.00	375
364	677+19.49	52.00	77.00	25.00	19.00	44.00	61.42	15.00	375
365	677+34.31	52.00	77.00	25.00	19.00	43.00	61.42	15.00	375
366	677+49.14	52.00	77.00	25.00	19.00	43.00	61.42	15.00	375
367	677+63.97	52.00	77.00	25.00	19.00	44.00	61.42	15.00	375
368	677+78.79	52.00	77.00	25.00	19.00	44.00	61.42	15.00	375
369	677+93.62	52.00	77.00	25.00	19.00	44.00	61.42	15.00	375
370	678+08.45	52.00	77.00	25.00	19.00	44.00	61.42	15.00	375
371	678+23.28	53.00	77.00	24.00	19.00	44.00	61.42	15.00	360
372	678+38.10	53.00	77.00	24.00	19.00	44.00	61.42	15.00	360
373	678+52.93	53.00	77.00	24.00	19.00	44.00	61.42	15.00	360
374	678+67.76	53.00	78.00	25.00	19.00	44.00	61.42	15.00	375
375	678+82.58	53.00	78.00	25.00	19.00	44.00	61.42	15.00	375
376	678+97.41	53.00	78.00	25.00	19.00	44.00	61.42	15.00	375
377	679+12.24	53.00	78.00	25.00	19.00	44.00	61.42	15.00	375
378	679+27.07	53.00	78.00	25.00	19.00	44.00	61.42	15.00	375
379	679+41.89	53.00	78.00	25.00	19.00	43.00	61.42	15.00	375
380	679+56.72	53.00	78.00	25.00	19.00	43.00	61.42	15.00	375
381	679+71.55	53.00	78.00	25.00	19.00	43.00	61.42	15.00	375
382	679+86.38	53.00	78.00	25.00	19.00	44.00	61.42	15.00	375
383	680+01.20	53.00	78.00	25.00	19.00	44.00	61.42	15.00	375
384	680+16.03	53.00	78.00	25.00	19.00	44.00	61.42	15.00	375
385	680+30.86	53.00	78.00	25.00	19.00	44.00	61.42	15.00	375
386	680+45.68	53.00	78.00	25.00	19.00	44.00	61.42	15.00	375
387	680+60.51	53.00	72.00	19.00	19.00	44.00	61.42	15.00	285
388	680+75.34	53.00	78.00	25.00	19.00	44.00	61.42	15.00	375
389	680+90.17	53.00	78.00	25.00	19.00	44.00	61.42	15.00	375
390	681+04.99	53.00	78.00	25.00	19.00	44.00	61.42	15.00	375
391	681+19.82	53.00	78.00	25.00	19.00	44.00	61.42	15.00	375
392	681+34.65	53.00	78.00	25.00	19.00	44.00	61.42	15.00	375
393	681+49.47	53.00	78.00	25.00	19.00	44.00	61.42	15.00	375
394	681+64.30	53.00	78.00	25.00	19.00	44.00	61.42	15.00	375
395	681+79.13	53.00	78.00	25.00	19.00	38.00	61.42	15.00	375
396	681+93.96	53.00	78.00	25.00	31.00	56.00	61.42	15.00	375
397	682+08.78	53.00	78.00	25.00	31.00	56.00	61.42	15.00	375
398	682+23.61	53.00	78.00	25.00	31.00	56.00	61.42	15.00	375
399	682+38.44	53.00	78.00	25.00	31.00	56.00	61.42	15.00	375
400	682+53.26	53.00	78.00	25.00	31.00	56.00	61.42	15.00	375

←END SOUND ABSORPTIVE PANELS

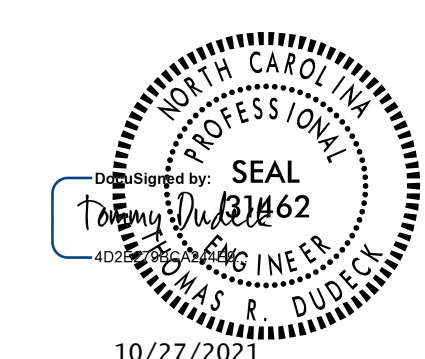
PROJECT NO. R-3300B  
PENDER COUNTY  
STATION: 623+71.35 -L1-

SHEET 8 OF 10

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

## SOUND BARRIER WALL LAYOUT

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	SW9&11- 8
1			3			TOTAL SHEETS 10
2			4			



10/27/2021  
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License No. F-0672

### SOUND BARRIER WALL LAYOUT

STATIONS AND OFFSETS REFERENCED FROM -L1- TO CENTERLINE OF PILE.

\*\* CONTRACTOR NOTE: SIGN ABOVE STRUCTURE

DRAWN BY : V. T. THOMPSON DATE : 04/28/20  
CHECKED BY : T. R. DUDECK DATE : 05/08/20  
DESIGN ENGINEER OF RECORD: T. R. DUDECK DATE : 10/27/21



I:\gei\file 10/27/2021 U:\Structures\Noise Walls\9&11\Dr-Off\fig\RS3300B-SMU-SBW9&11-9.dgn

PILE	STA. -L1-	BOTT. OF PANEL ELEV.	TOP OF WALL ELEV.	WALL HEIGHT "H" (FT.)	EXCAVATION DEPTH "D" (FT.)	PILE LENGTH (FT.)	OFFSET - L1- RT. (FT.)	PILE SPACING (FT.)	WALL AREA (FT <sup>2</sup> )
401	682+68.09	53.00	77.00	24.00	31.00	56.00	61.42	15.00	360
402	682+82.92	53.00	77.00	24.00	31.00	56.00	61.42	15.00	360
403	682+97.75	53.00	77.00	24.00	31.00	56.00	61.42	15.00	360
404	683+12.57	53.00	77.00	24.00	31.00	56.00	61.42	15.00	360
405	683+27.40	53.00	77.00	24.00	31.00	56.00	61.42	15.00	360
406	683+42.23	53.00	77.00	24.00	31.00	56.00	61.42	15.00	360
407	683+57.06	52.00	77.00	25.00	31.00	56.00	61.42	15.00	375
408	683+71.88	52.00	77.00	25.00	31.00	56.00	61.42	15.00	375
409	683+86.71	52.00	77.00	25.00	31.00	55.00	61.42	15.00	375
410	684+01.54	52.00	77.00	25.00	31.00	55.00	61.42	15.00	375
411	684+16.36	52.00	77.00	25.00	31.00	55.00	61.42	15.00	375
412	684+31.19	52.00	77.00	25.00	31.00	55.00	61.42	15.00	375
413	684+46.02	52.00	77.00	25.00	31.00	55.00	61.42	15.00	375
414	684+60.85	52.00	77.00	25.00	31.00	55.00	61.42	15.00	375
415	684+75.67	52.00	77.00	25.00	31.00	56.00	61.42	15.00	375
416	684+90.50	52.00	77.00	25.00	19.00	44.00	61.42	15.00	375
417	685+05.33	52.00	77.00	25.00	19.00	44.00	61.42	15.00	375
418	685+20.15	52.00	77.00	25.00	19.00	44.00	61.42	15.00	375
419	685+34.98	52.00	77.00	25.00	19.00	44.00	61.42	15.00	375
420	685+49.81	52.00	77.00	25.00	19.00	44.00	61.42	15.00	375
421	685+64.64	52.00	77.00	25.00	19.00	44.00	61.42	15.00	375
422	685+79.46	52.00	77.00	25.00	19.00	44.00	61.42	15.00	375
423	685+94.29	52.00	77.00	25.00	19.00	44.00	61.42	15.00	375
424	686+09.12	52.00	77.00	25.00	19.00	44.00	61.42	15.00	375
425	686+23.94	52.00	77.00	25.00	19.00	44.00	61.42	15.00	375
426	686+38.77	52.00	77.00	25.00	19.00	44.00	61.42	15.00	375
427	686+48.66	52.00	77.00	25.00	19.00	44.00	61.42	10.00	250
428	686+63.48	52.00	77.00	25.00	19.00	44.00	61.42	15.00	375
429	686+78.31	52.00	77.00	25.00	19.00	44.00	61.42	15.00	375
430	686+93.14	52.00	77.00	25.00	19.00	44.00	61.42	15.00	375
431	687+07.97	52.00	77.00	25.00	19.00	44.00	61.42	15.00	375
432	687+22.79	52.00	77.00	25.00	19.00	44.00	61.42	15.00	375
433	687+37.62	53.00	77.00	24.00	19.00	44.00	61.42	15.00	360
434	687+52.45	53.00	77.00	24.00	19.00	44.00	61.42	15.00	360
435	687+67.27	53.00	77.00	24.00	19.00	44.00	61.42	15.00	360
436	687+82.10	53.00	77.00	24.00	19.00	44.00	61.42	15.00	360
437	687+96.93	53.00	77.00	24.00	19.00	44.00	61.42	15.00	360
438	688+11.76	53.00	77.00	24.00	19.00	44.00	61.42	15.00	360
439	688+26.58	53.00	77.00	24.00	19.00	44.00	61.42	15.00	360
440	688+41.41	53.00	77.00	24.00	19.00	44.00	61.42	15.00	360
441	688+56.24	53.00	77.00	24.00	19.00	43.00	61.42	15.00	360
442	688+71.07	53.00	77.00	24.00	19.00	43.00	61.42	15.00	360
443	688+85.89	53.00	77.00	24.00	19.00	43.00	61.42	15.00	360
444	689+00.72	53.00	77.00	24.00	19.00	43.00	61.42	15.00	360
445	689+15.55	53.00	77.00	24.00	19.00	43.00	61.42	15.00	360
446	689+30.37	53.00	77.00	24.00	19.00	43.00	61.42	15.00	360
447	689+45.20	53.00	77.00	24.00	19.00	43.00	61.42	15.00	360
448	689+60.03	53.00	77.00	24.00	19.00	43.00	61.42	15.00	360
449	689+74.86	53.00	77.00	24.00	19.00	43.00	61.42	15.00	360
450	689+89.68	53.00	77.00	24.00	19.00	43.00	61.42	15.00	360

PILE	STA. -L1-	BOTT. OF PANEL ELEV.	TOP OF WALL ELEV.	WALL HEIGHT "H" (FT.)	EXCAVATION DEPTH "D" (FT.)	PILE LENGTH (FT.)	OFFSET - L1- RT. (FT.)	PILE SPACING (FT.)	WALL AREA (FT <sup>2</sup> )
451	690+04.51	53.00	77.00	24.00	19.00	43.00	61.42	15.00	360
452	690+19.34	53.00	76.00	23.00	19.00	43.00	61.42	15.00	345
453	690+34.16	52.00	76.00	24.00	19.00	43.00	61.42	15.00	360
454	690+48.99	52.00	76.00	24.00	19.00	43.00	61.39	15.00	360
455	690+63.82	52.00	75.00	23.00	19.00	43.00	61.35	15.00	345
456	690+78.66	52.00	75.00	23.00	19.00	43.00	61.40	15.00	345
457	690+93.52	52.00	75.00	23.00	19.00	43.00	61.40	15.00	345
458	691+08.38	52.00	75.00	23.00	19.00	43.00	61.40	15.00	345
459	691+23.27	51.00	74.00	23.00	19.00	43.00	61.38	15.00	345
460	691+38.16	51.00	74.00	23.00	19.00	42.00	61.38	15.00	345
461	691+53.08	51.00	73.00	22.00	19.00	43.00	61.40	15.00	330
462	691+68.00	51.00	73.00	22.00	19.00	43.00	61.43	15.00	330
463	691+82.94	51.00	73.00	22.00	19.00	42.00	61.45	15.00	330
464	691+97.90	50.00	73.00	23.00	19.00	42.00	61.46	15.00	345
465	692+12.87	50.00	73.00	23.00	19.00	42.00	61.46	15.00	345
466	692+27.85	50.00	72.00	22.00	19.00	42.00	61.45	15.00	330
467	692+42.85	50.00	72.00	22.00	19.00	42.00	61.42	15.00	330
468	692+57.85	49.00	71.00	22.00	19.00	42.00	61.42	15.00	330
469	692+72.85	49.00	71.00	22.00	19.00	41.00	61.42	15.00	330
470	692+87.85	49.00	71.00	22.00	19.00	41.00	61.42	15.00	330
471	693+02.85	49.00	70.00	21.00	19.00	41.00	61.42	15.00	315
472	693+17.85	49.00	70.00	21.00	19.00	42.00	61.42	15.00	315
473	693+32.85	48.00	70.00	22.00	16.00	39.00	61.42	15.00	330
474	693+47.85	48.00	69.00	21.00	16.00	38.00	61.42	15.00	315
475	693+62.85	48.00	69.00	21.00	16.00	38.00	61.42	15.00	315
476	693+77.85	48.00	69.00	21.00	16.00	38.00	61.42	10.00	210
477	693+92.85	48.00	68.00	20.00	16.00	38.00	61.42	15.00	300
478	693+97.85	48.00	68.00	20.00	16.00	38.00	61.42	15.00	300
479	694+12.85	48.00	68.00	20.00	16.00	37.00	61.42	15.00	300
480	694+27.85	47.00	67.00	20.00	16.00	37.00	61.42	15.00	300
481	694+42.85	47.00	67.00	20.00	16.00	38.00	61.42	15.00	300
482	694+57.85	47.00	66.00	19.00	16.00	37.00	61.42	15.00	285
483	694+72.85	47.00	66.00	19.00	16.00	37.00	61.42	15.00	285
484	694+87.85	47.00	65.00	18.00	16.00	37.00	61.42	15.00	270
485	694+97.85	47.00	65.00	18.00	16.00	36.00	61.42	15.00	270
486	695+12.85	47.00	65.00	18.00	16.00	36.00	61.42	15.00	270
487	695+27.85	47.00	64.00	17.00	16.00	36.00	61.42	15.00	255
488	695+42.85	47.00	64.00	17.00	16.00	36.00	61.42	15.00	255
489	695+57.85	47.00	63.00	16.00	16.00	36.00	61.42	15.00	240
490	695+72.85	47.00	63.00	16.00	16.00	35.00	61.42	15.00	240
491	695+87.85	46.00	63.00	17.00	16.00	35.00	61.42	15.00	255
492	696+02.85	46.00	62.00	16.00	16.00	34.00	61.42	15.00	240
493	696+17.85	46.00	62.00	16.00	16.00	34.00	61.42	15.00	240
494	696+32.85	46.00	62.00	16.00	14.00	32.00	61.42	15.00	240
495	696+47.85	46.00	62.00	16.00	14.00	31.00	61.42	15.00	240
496	696+62.85	46.00	61.00	15.00	14.00	31.00	61.42	15.00	225
497	696+77.85	46.00	61.00	15.00	14.00	30.00	61.42	15.00	225
498	696+92.85	46.00	61.00	15.00	14.00	30.00	61.42	15.00	225
499	697+07.85	46.00	61.00	15.00	14.00	31.00	61.42	15.00	225
500	697+22.85	46.00	61.00	15.00	14.00	30.00	61.42	15.00	225

### SOUND BARRIER WALL LAYOUT

STATIONS AND OFFSETS REFERENCED FROM -L1- TO CENTERLINE OF PILE.

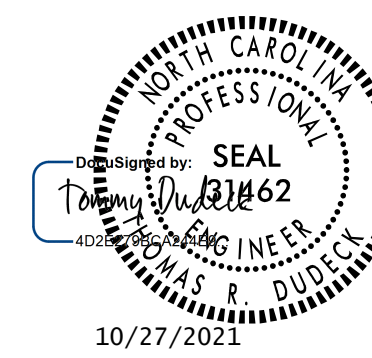
PROJECT NO.       R-3300B        
      PENDER       COUNTY  
STATION:       623+71.35 -L1-      

SHEET 9 OF 10



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DRAWN BY :       V. T. THOMPSON       DATE :       04/28/20        
CHECKED BY :       T. R. DUDECK       DATE :       05/08/20        
DESIGN ENGINEER OF RECORD:       T. R. DUDECK       DATE :       10/27/21      



STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

## SOUND BARRIER WALL LAYOUT

NO.	REVISIONS						SHEET NO. SW9&11-9 TOTAL SHEETS 10
	BY:	DATE:	NO.	BY:	DATE:		
1			3				
2			4				

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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10/27/2021

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PILE	STA. -L1-	BOTT. OF PANEL ELEV.	TOP OF WALL ELEV.	WALL HEIGHT "H" (FT.)	EXCAVATION DEPTH "D" (FT.)	PILE LENGTH (FT.)	OFFSET - L1- RT. (FT.)	PILE SPACING (FT.)	WALL AREA (FT <sup>2</sup> )
501	697+37.85	47.00	61.00	14.00	14.00	29.00	61.42	15.00	210
502	697+52.85	47.00	61.00	14.00	14.00	29.00	61.42	15.00	210
503	697+67.85	47.00	62.00	15.00	14.00	29.00	61.42	15.00	225
504	697+82.85	47.00	62.00	15.00	14.00	29.00	61.42	15.00	225
505	697+97.85	47.00	62.00	15.00	14.00	29.00	61.42	15.00	225
506	698+12.85	47.00	62.00	15.00	14.00	29.00	61.42	15.00	225
507	698+27.85	47.00	61.00	14.00	14.00	29.00	61.42	15.00	210
508	698+42.85	47.00	61.00	14.00	14.00	29.00	61.42	10.00	140
509	698+57.85	47.00	61.00	14.00	14.00	28.00	61.42	15.00	210
510	698+72.85	47.00	61.00	14.00	14.00	28.00	61.42	15.00	210
511	698+87.85	47.00	61.00	14.00	14.00	29.00	61.42	15.00	210
512	699+02.85	47.00	61.00	14.00	14.00	29.00	61.42	15.00	210
513	699+17.85	48.00	61.00	13.00	14.00	29.00	61.42	15.00	195
514	699+32.85	48.00	61.00	13.00	14.00	29.00	61.42	15.00	195
515	699+47.85	48.00	61.00	13.00	14.00	28.00	61.42	15.00	195
516	699+62.85	48.00	61.00	13.00	14.00	28.00	61.42	15.00	195
517	699+77.85	48.00	61.00	13.00	14.00	28.00	61.42	10.00	130
518	699+87.85	48.00	61.00	13.00	14.00	28.00	61.42		

### SOUND BARRIER WALL LAYOUT

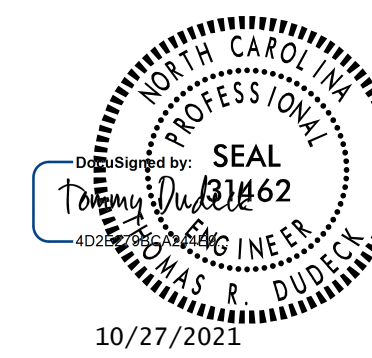
STATIONS AND OFFSETS REFERENCED FROM -L1- TO CENTERLINE OF PILE.

PROJECT NO. R-3300B  
PENDER COUNTY  
STATION: 623+71.35 -L1-

SHEET 10 OF 10

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

### SOUND BARRIER WALL LAYOUT



10/27/2021

DOCUMENT NOT CONSIDERED  
FINAL UNLESS ALL  
SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	SW9&11-10
1			3			TOTAL SHEETS
2			4			10



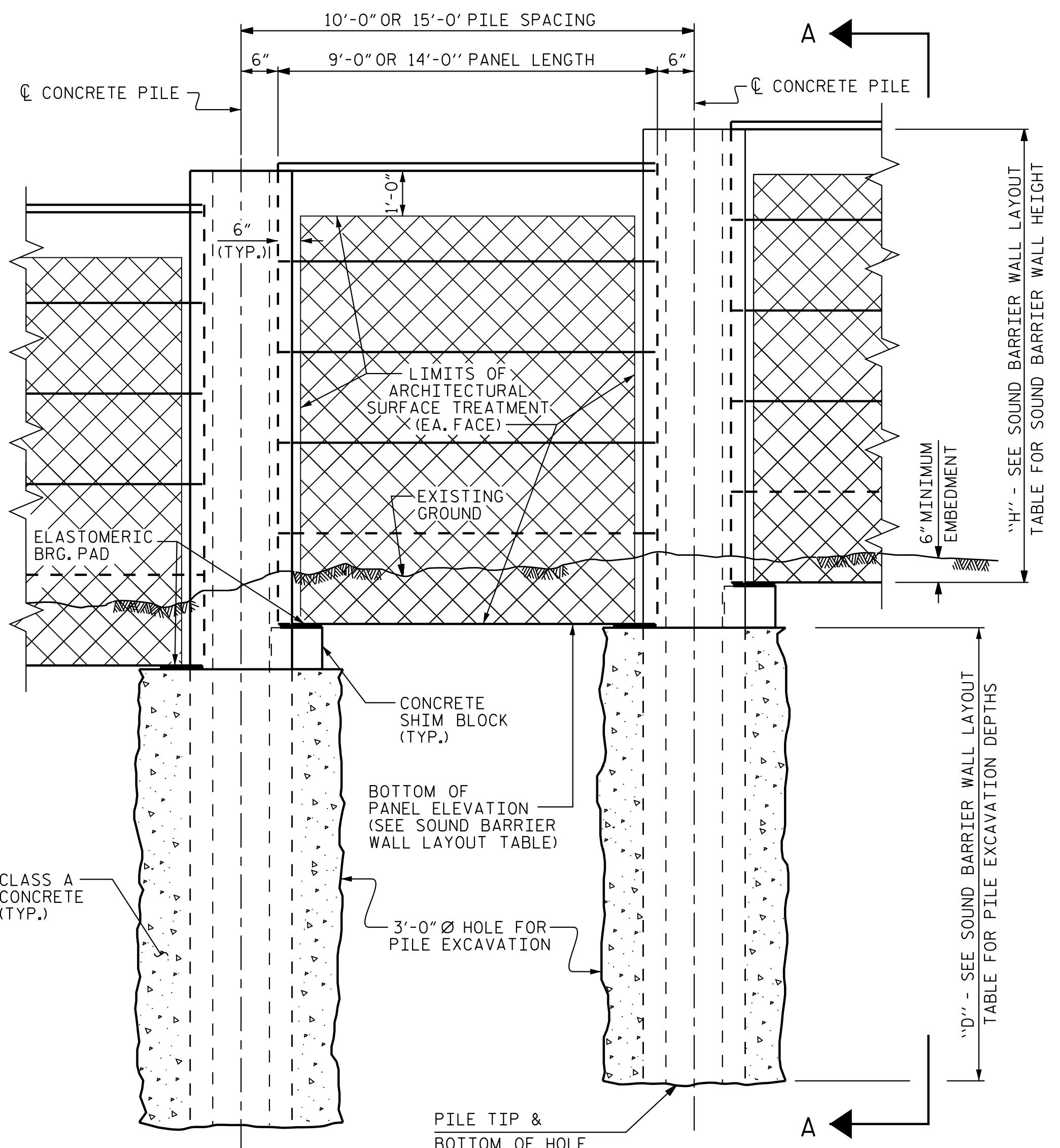
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DRAWN BY : V. T. THOMPSON DATE : 04/28/20  
CHECKED BY : T. R. DUDECK DATE : 05/08/20

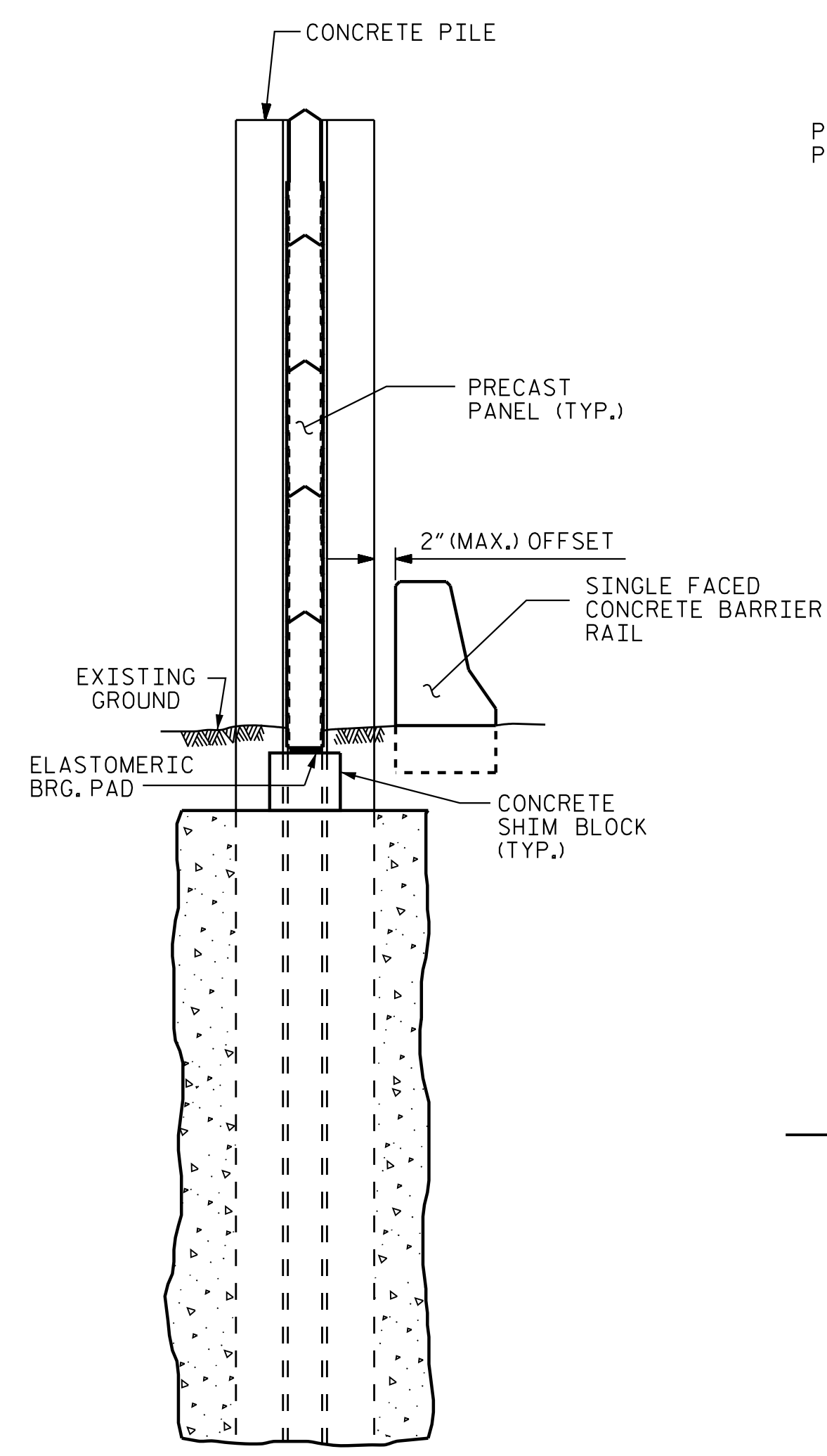
DESIGN ENGINEER OF RECORD: T. R. DUDECK DATE : 10/27/21

**NOTES**

- FOR SOUND BARRIER WALL, SEE SPECIAL PROVISIONS.
- CONSTRUCT SOUND BARRIER WALL TO LINES AND GRADES SHOWN ON THE ROADWAY PLANS.
- PROVIDE PANELS WITH A FLAT BOTTOM.
- VERIFY THE LOCATION OF UNDERGROUND UTILITIES BEFORE DRILLING HOLES TO ENSURE SUFFICIENT CLEARANCE IS AVAILABLE.
- ADJUST PILE EXCAVATION ELEVATIONS TO MAINTAIN 6" MINIMUM EMBEDMENT OF THE BOTTOM PANEL, EXCEPT AT REMOVABLE PANEL LOCATIONS.
- USE CLASS AA FOR PANELS AND CLASS A CONCRETE PILE EXCAVATION BACKFILL, IN ACCORDANCE WITH ARTICLE 1000-4 OF THE STANDARD SPECIFICATIONS.
- AT THE CONTRACTOR'S OPTION, USE 10'-0" OR 15'-0" PILE SPACINGS. STANDARD PRECAST CONCRETE PANELS MAY BE USED WITH THE 10'-0" AND 15'-0" PILE SPACING.
- FOR SOUND BARRIER WALL STATIONS, OFFSETS, AND WALL ENVELOPE, SEE ROADWAY PLANS.
- PLACE 1" Ø BACKER RODS FULL HEIGHT ON EACH SIDE OF THE PRECAST PANELS. SET AND SEAL THE BACKER ROD IN PLACE WITH SEALANT THAT CONFORMS WITH ARTICLE 1028-3 OF THE STANDARD SPECIFICATIONS.
- FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.
- FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.
- FOR ADDITIONAL SOUND BARRIER WALL DETAILS, SEE ROADWAY DRAWINGS.
- SOUND ABSORPTIVE WALL PANELS SHALL BE INSTALLED AT LOCATIONS SPECIFIED IN PANEL LAYOUT TABLES. FOR ADDITIONAL DETAILS, SEE SPECIAL PROVISIONS.
- LIGHTWEIGHT SOUND ABSORPTIVE WALL PANELS SHALL BE INSTALLED AT BRIDGE LOCATION. FOR LIGHTWEIGHT WALL PANELS AND PILES AT BRIDGE SITE, SEE BRIDGE PLANS FOR INSTALLATION DETAILS AND PILE TYPE/SPACING. FOR ADDITIONAL DETAILS, SEE SPECIAL PROVISIONS.
- INSTALLATION OF REMOVABLE SOUND BARRIER WALL IS REQUIRED AT SPECIFIC WALL LOCATIONS, SEE SHEET 4 FOR DETAILS.
- BARRIER RAIL NOT SHOWN IN ELEVATION VIEW FOR CLARITY. FOR BACKFILL TREATMENT AT BARRIER RAIL, SEE "SOUND WALL BACKFILL DETAIL"
- AT THE CONTRACTOR'S OPTION, USE CONTINUOUS FLIGHT AUGER PILES IN LIEU OF PILE EXCAVATION FOR SOUND BARRIER WALL FOUNDATION. SEE "CONTINUOUS FLIGHT AUGER PILES FOR SOUND BARRIER WALLS" SPECIAL PROVISION.



**ELEVATION**



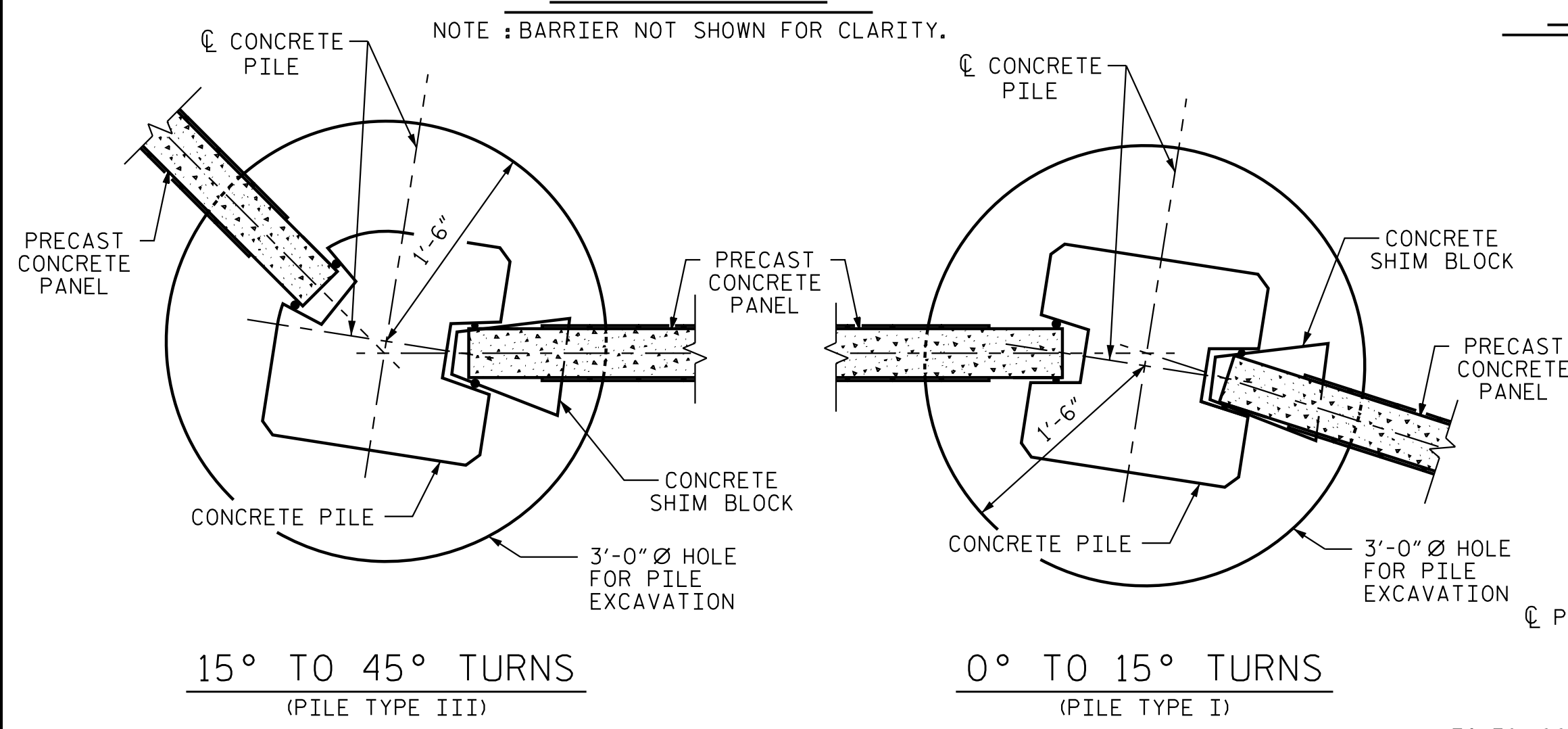
**SECTION A-A**

**SOUND WALL BACKFILL DETAIL**

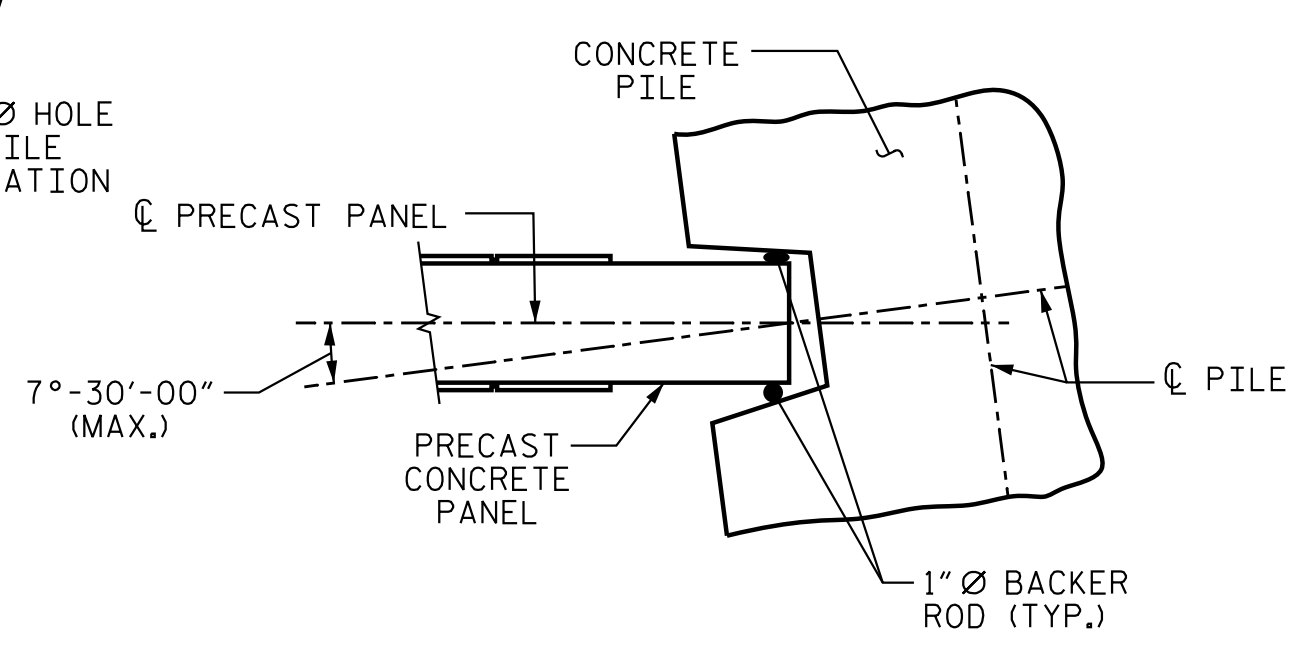
PILE REINFORCING STEEL							
EXPOSURE CATEGORY D DESIGN WIND PRESSURE = 62 PSF (0' < H ≤ 14'); 71 PSF (14' < H ≤ 25')							
PILE TYPE I				PILE TYPE III			
PILE SPACING	MAXIMUM WALL HEIGHT (H)	VERTICAL REINFORCING STEEL	TIES	PILE SPACING	MAXIMUM WALL HEIGHT (H)	VERTICAL REINFORCING STEEL	TIES
10'-0"	H ≤ 25'	4 - #8 EA. FACE	#4 @ 9"CTS.	10'-0"	H ≤ 25'	3 - #9 SHORT FACE 4 - #9 LONG FACE	#4 @ 9"CTS.
	H ≤ 20'	4 - #8 EA. FACE	#4 @ 9"CTS.		15'-0"	H ≤ 20'	3 - #8 SHORT FACE 4 - #8 LONG FACE
15'-0"	20' < H ≤ 25'	4 - #10 EA. FACE	#4 @ 9"CTS.	15'-0"		20' < H ≤ 25'	3 - #11 SHORT FACE 4 - #11 LONG FACE

PILE TYPE II				PILE TYPE III ALT.			
PILE SPACING	MAXIMUM WALL HEIGHT (H)	VERTICAL REINFORCING STEEL	TIES	PILE SPACING	MAXIMUM WALL HEIGHT (H)	VERTICAL REINFORCING STEEL	TIES
10'-0"	H ≤ 25'	4 - #6 EA. FACE	#4 @ 9"CTS.	10'-0"	H ≤ 25'	3 - #9 SHORT FACE 4 - #9 LONG FACE	#4 @ 9"CTS.
	H ≤ 20'	4 - #6 EA. FACE	#4 @ 9"CTS.		15'-0"	H ≤ 20'	3 - #9 SHORT FACE 4 - #9 LONG FACE
15'-0"	20' < H ≤ 25'	4 - #7 EA. FACE	#4 @ 9"CTS.	15'-0"		20' < H ≤ 25'	3 - #11 SHORT FACE 4 - #11 LONG FACE



**TYPICAL WALL TURN DETAILS**



**PILE ROTATION LIMIT FOR WALL TURN**

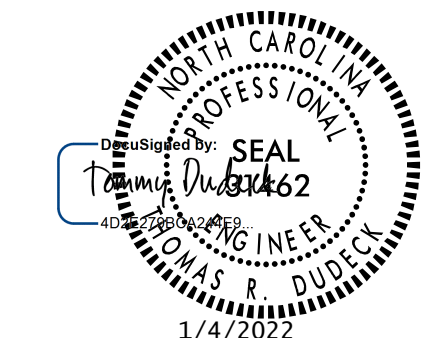
(ROTATE THE CONCRETE PILE ±7°-30'-00" TO ACCOMMODATE WALL TURN.)

BILL OF MATERIAL	
SOUND ABSORPTIVE BARRIER WALL **	91,231 S.F.
SOUND BARRIER WALL	91,231 S.F.
ARCHITECTURAL SURFACE TREATMENT *	169,636 S.F.
QUANTITIES PROVIDED ARE APPROXIMATE AND ARE FOR BID PURPOSES ONLY.	
ARCHITECTURAL SURFACE TREATMENT	
TEXTURE OPTION:	DRY STACK
STAIN OPTION:	FEDERAL COLOR 30450

- \* PANEL COLOR AT BRIDGE LOCATION SHALL MATCH FEDERAL COLOR 30450, AS APPROVED BY ENGINEER. ARCHITECTURAL SURFACE TREATMENT IS REQUIRED FOR SOUND ABSORPTIVE BARRIER WALL.
- \*\* SOUND ABSORPTIVE BARRIER WALL QUANTITY SHOWN DOES NOT INCLUDE SOUND BARRIER WALL AT BRIDGE LOCATIONS. SEE BRIDGE PLANS FOR ADDITIONAL DETAILS AND PAYMENT.

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PENDER COUNTY  
STATION: 638+10.79 -L1-

SHEET 1 OF 7  
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RALEIGH  
STANDARD  
SOUND BARRIER WALL



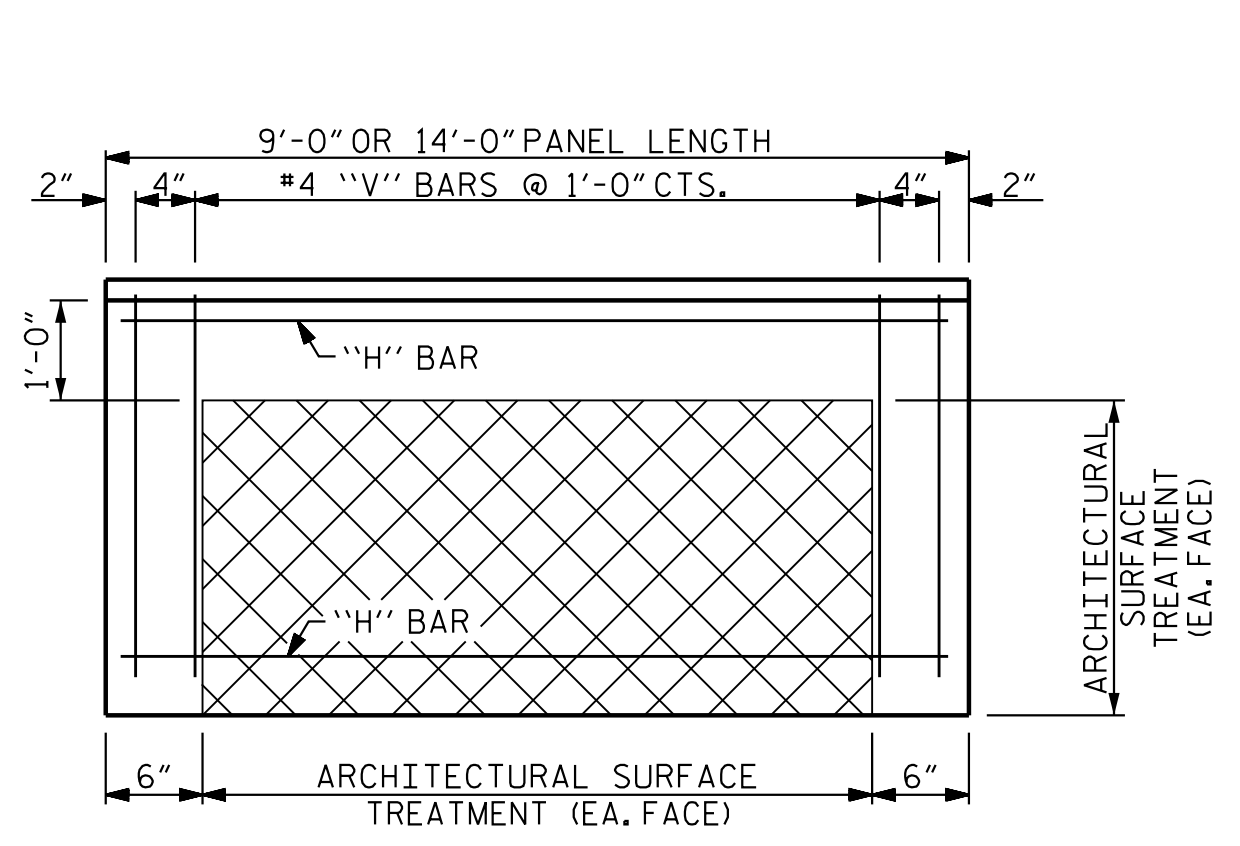
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1			3			TOTAL SHEETS 7
2			4			

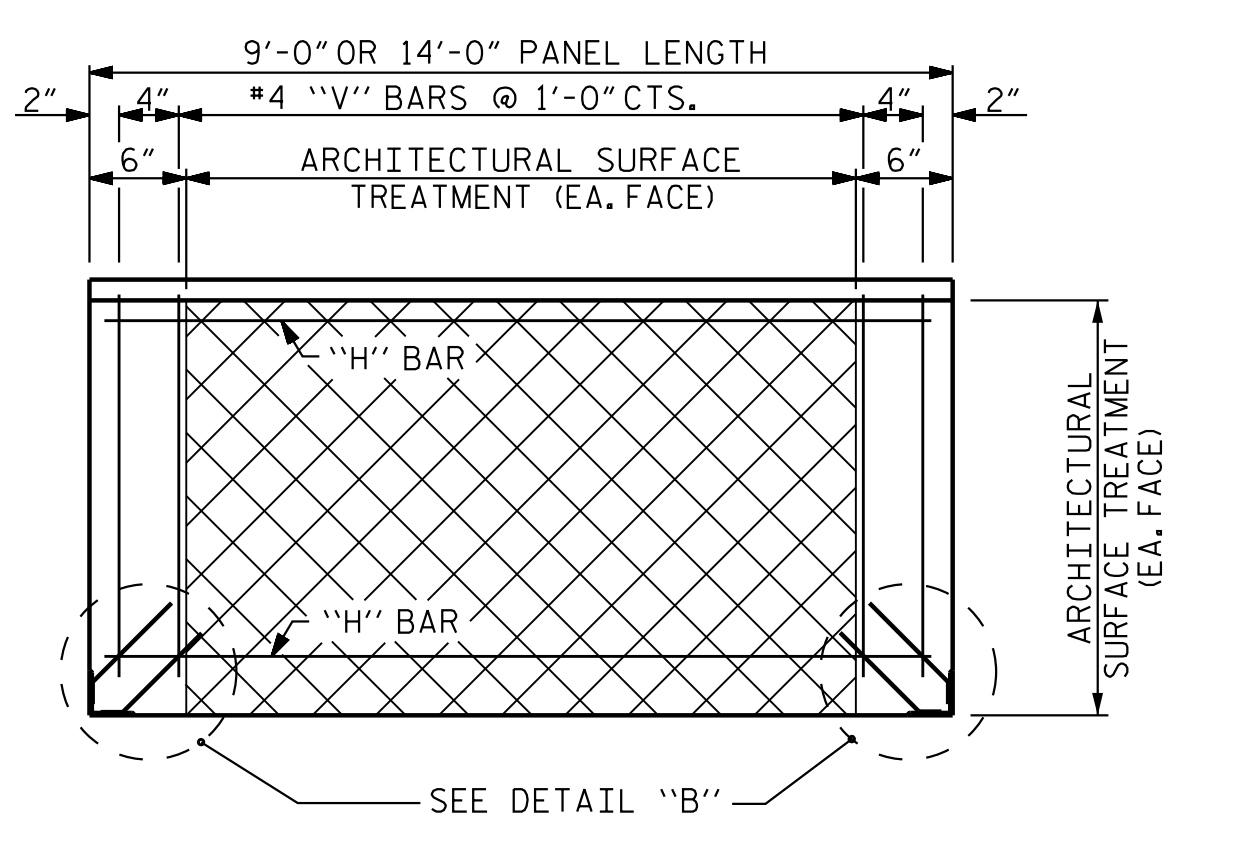
1/4/2022 jgelle U:\Structures\Noise Walls\0-Dr-offing\R3300B\_SML\_SBW10.Ldgn

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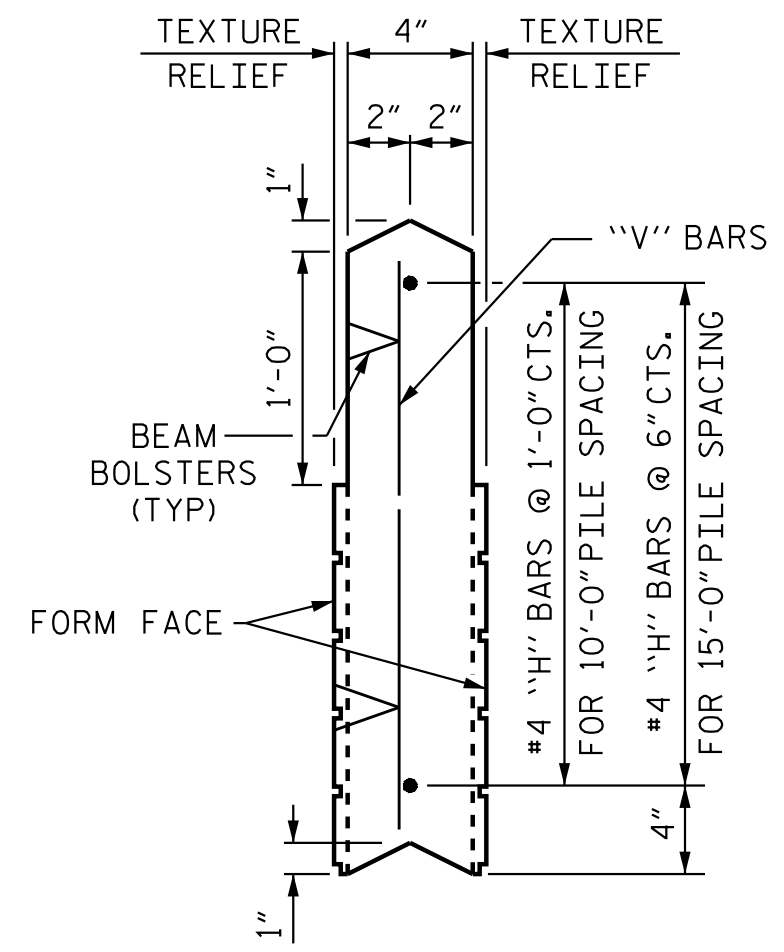
DRAWN BY: V. T. THOMPSON DATE: 04/28/20  
CHECKED BY: T. R. DUDECK DATE: 05/08/20  
DESIGN ENGINEER OF RECORD: T. R. DUDECK DATE: 10/27/21



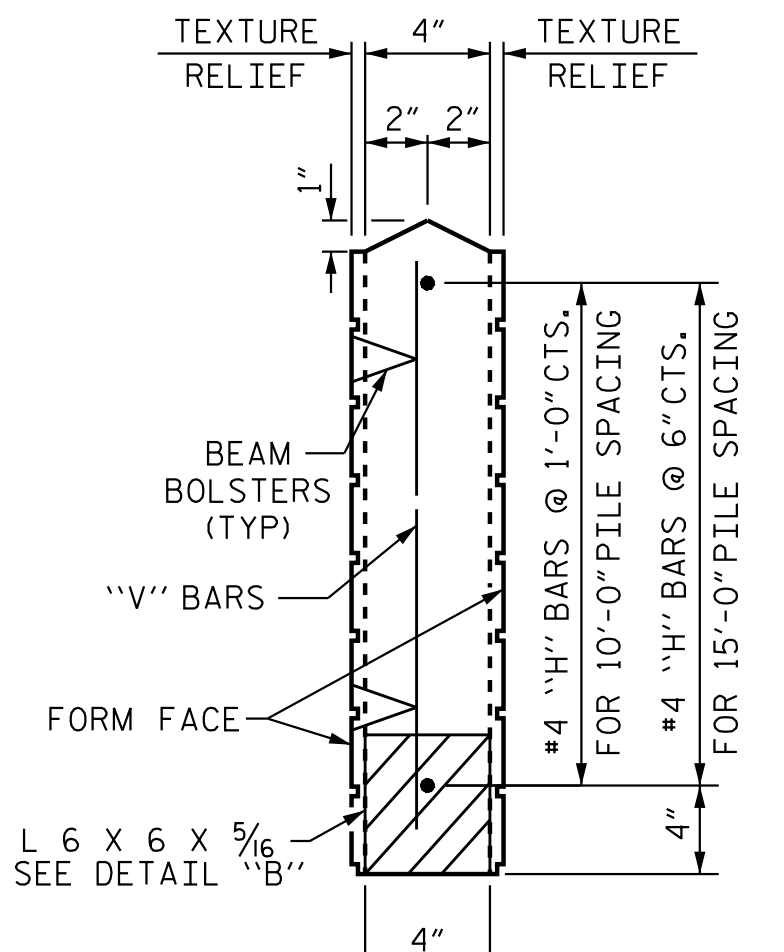
FRONT ELEVATION OF UPPER PRECAST PANEL



FRONT ELEVATION OF BOTTOM PRECAST PANEL

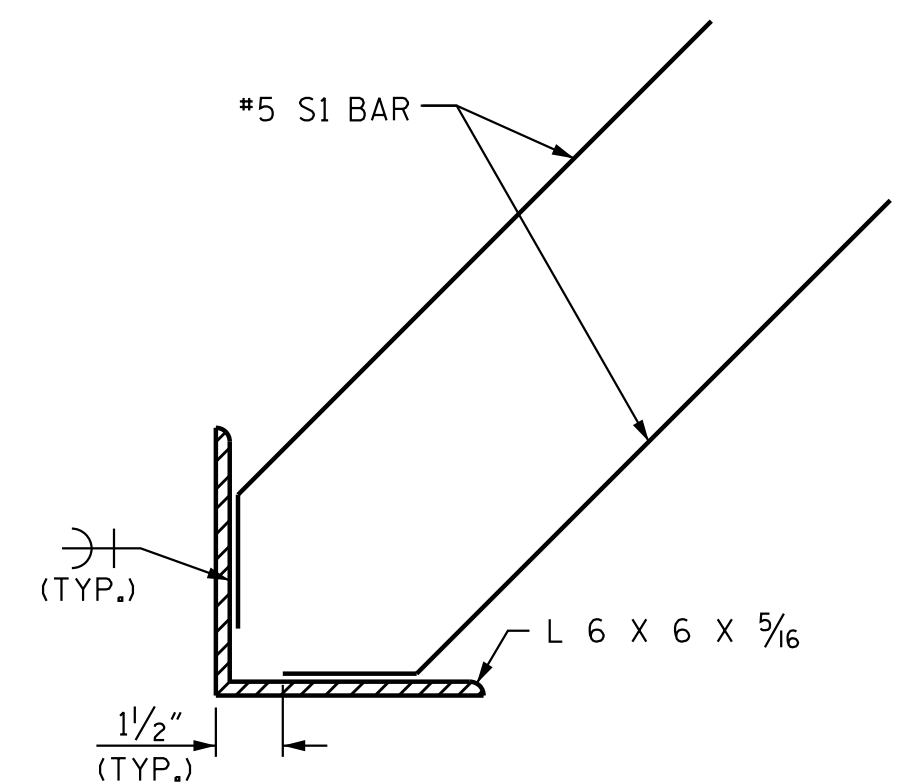


UPPER PANEL



BOTTOM PANEL

SECTION THROUGH PRECAST PANELS



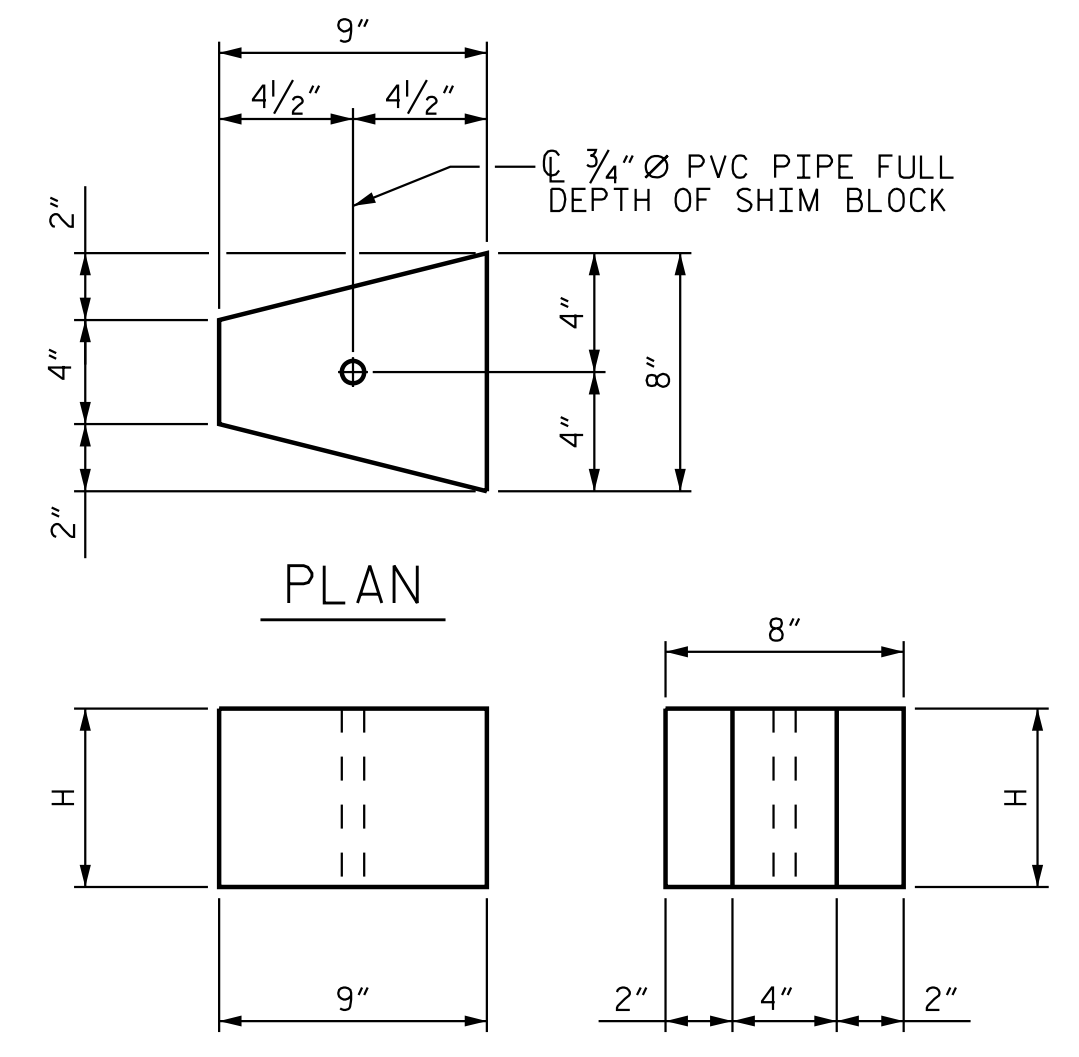
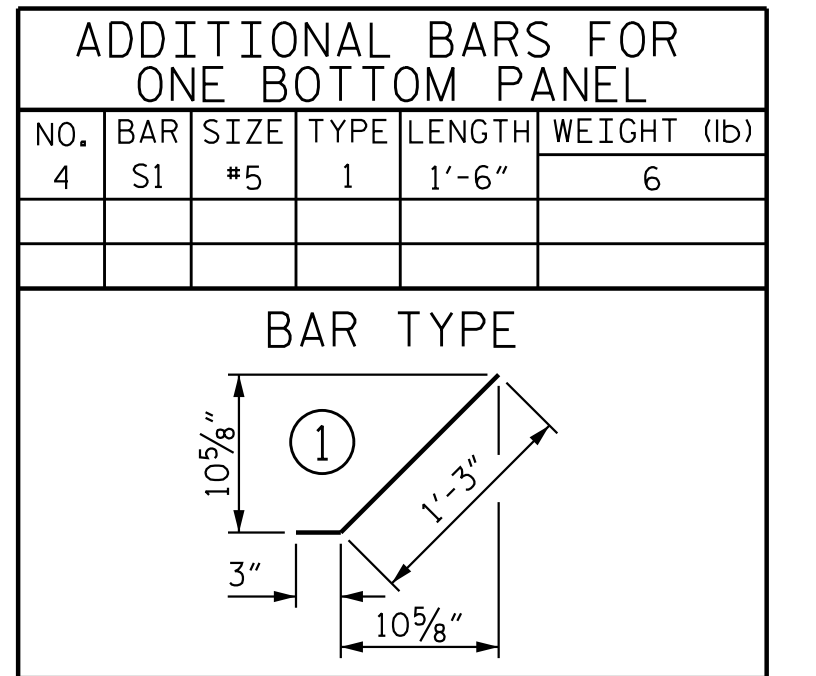
DETAIL "B"

QUANTITIES FOR ONE PRECAST PANEL (FOR 10'-0" PILE SPACING)

PANEL HEIGHT	CLASS AA CONCRETE C.Y.	BAR TYPES											
		HORIZONTAL						VERTICAL					
		NO.	BAR	SIZE	TYPE	LENGTH	WEIGHT (lb)	NO.	BAR	SIZE	TYPE	LENGTH	WEIGHT (lb)
2'-0"	0.22	3	H1	#4	STR	8'-8"	17	11	V1	#4	STR	1'-8"	12
3'-0"	0.33	4	H2	#4	STR	8'-8"	23	11	V2	#4	STR	2'-8"	20
4'-0"	0.44	5	H3	#4	STR	8'-8"	29	11	V3	#4	STR	3'-8"	27

QUANTITIES FOR ONE PRECAST PANEL (FOR 15'-0" PILE SPACING)

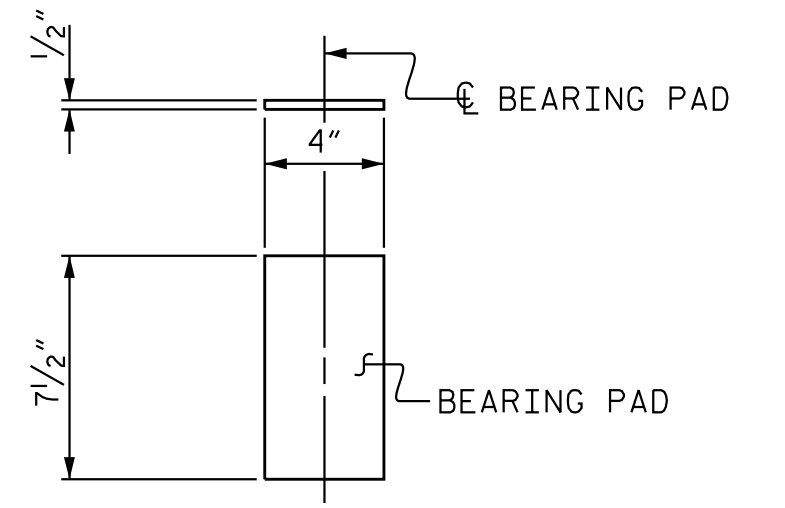
PANEL HEIGHT	CLASS AA CONCRETE C.Y.	BAR TYPES											
		HORIZONTAL						VERTICAL					
		NO.	BAR	SIZE	TYPE	LENGTH	WEIGHT (lb)	NO.	BAR	SIZE	TYPE	LENGTH	WEIGHT (lb)
3'-0"	0.52	8	H1	#4	STR	13'-8"	73	16	V1	#4	STR	2'-8"	29
4'-0"	0.69	9	H2	#4	STR	13'-8"	82	16	V2	#4	STR	3'-8"	39
5'-0"	0.86	11	H3	#4	STR	13'-8"	101	16	V3	#4	STR	4'-8"	50
6'-0"	1.04	12	H4	#4	STR	13'-8"	110	16	V4	#4	STR	5'-8"	61



ELEVATION END

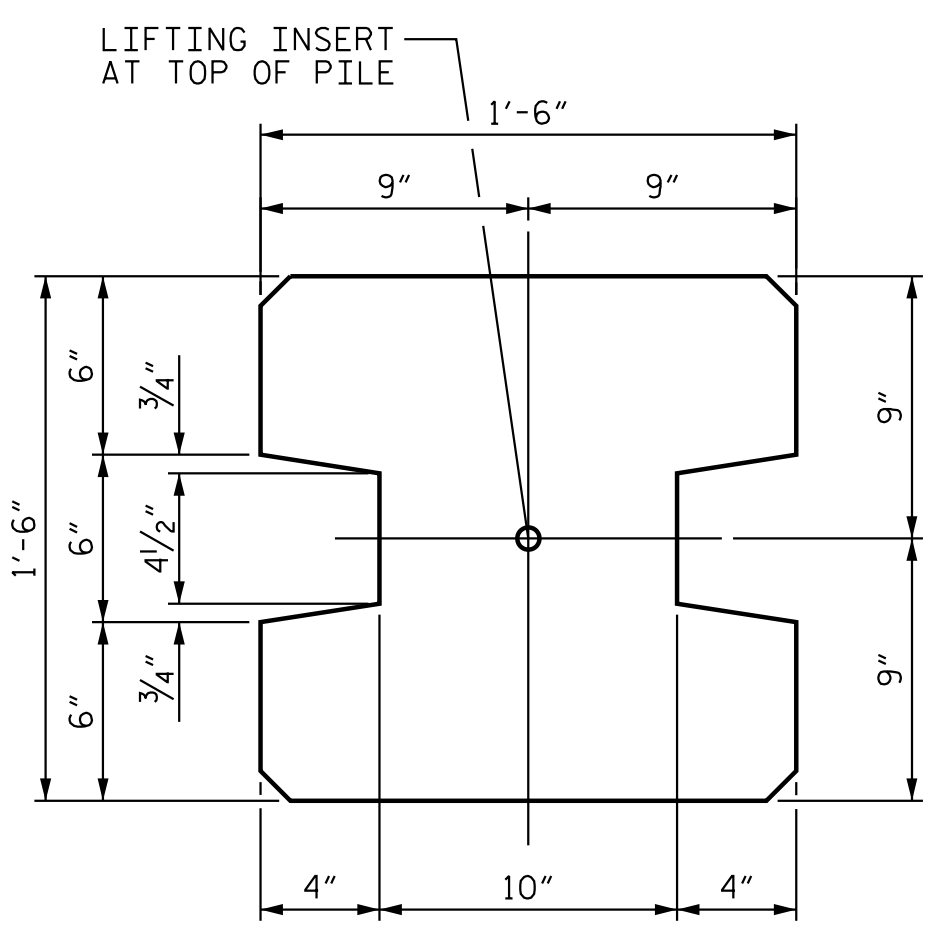
CONCRETE SHIM BLOCK

H = 3", 6" or 1'-0"

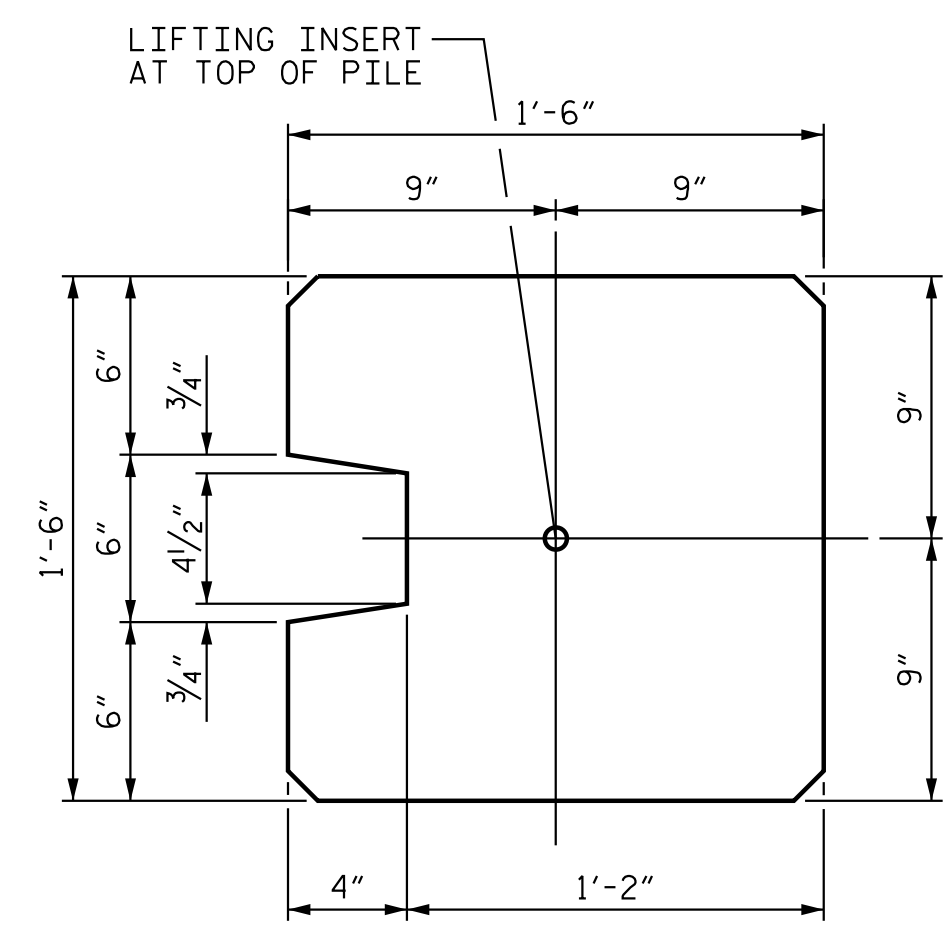


ELASTOMERIC BEARING DETAILS

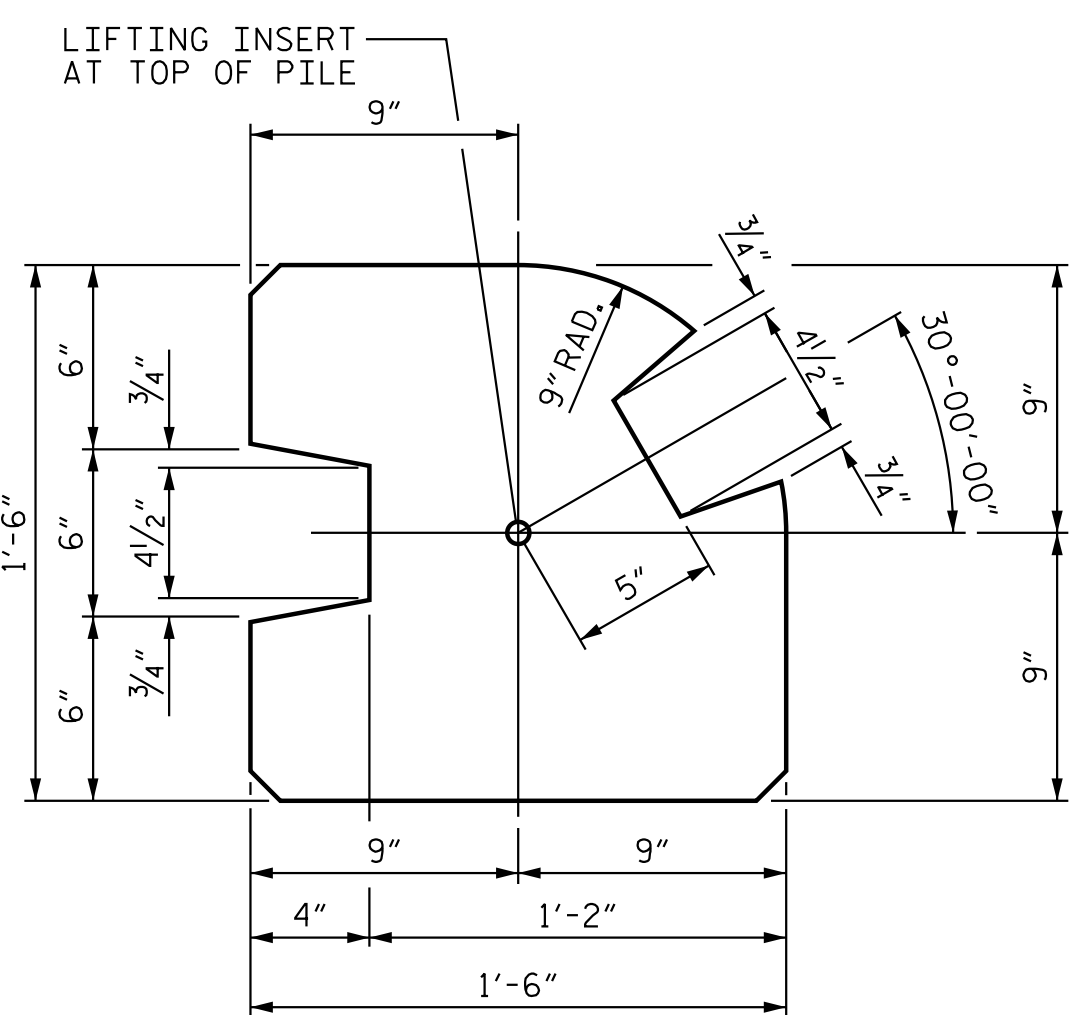
ELASTOMER IN BEARINGS SHALL BE 50 DUROMETER HARDNESS.



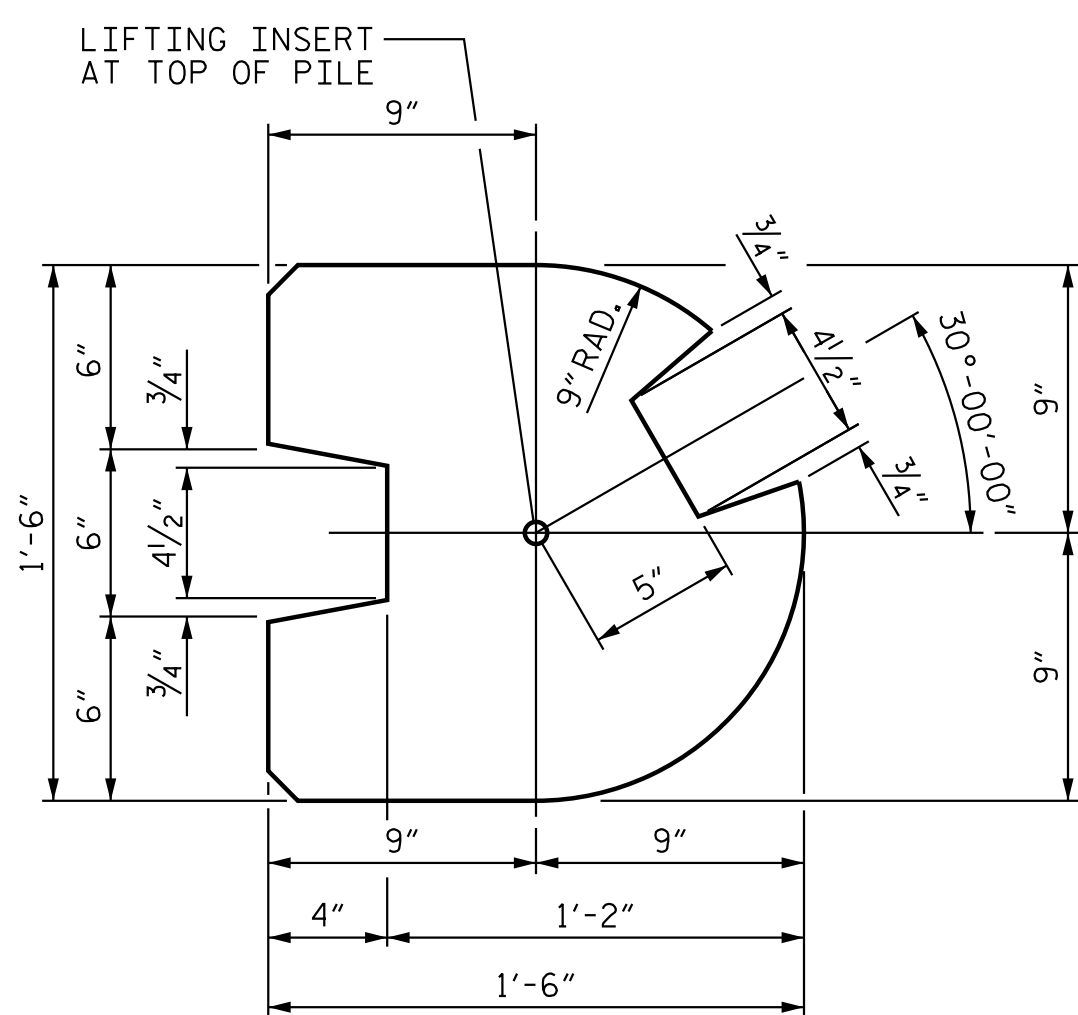
TYPE - I (AREA = 1.9444 SQ. FT.)



TYPE - II (AREA = 2.0903 SQ. FT.)



TYPE - III (AREA = 1.8336 SQ. FT.)



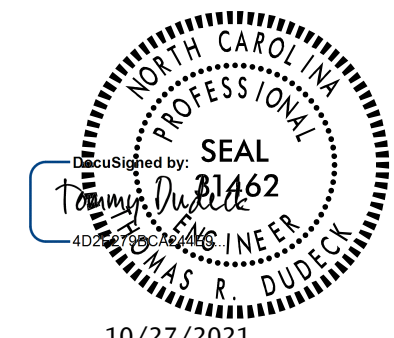
TYPE - III (ALT.) (AREA = 1.7163 SQ. FT.)

PILE DETAIL (ALL CORNERS TO BE CHAMFERED 1")

PROJECT NO. R-3300B  
 PENDER COUNTY  
 STATION: 638+10.79 -L1-

SHEET 2 OF 7

STATE OF NORTH CAROLINA  
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 STANDARD  
 SOUND BARRIER WALL  
 DETAILS



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1			3			TOTAL SHEETS 7
2			4			

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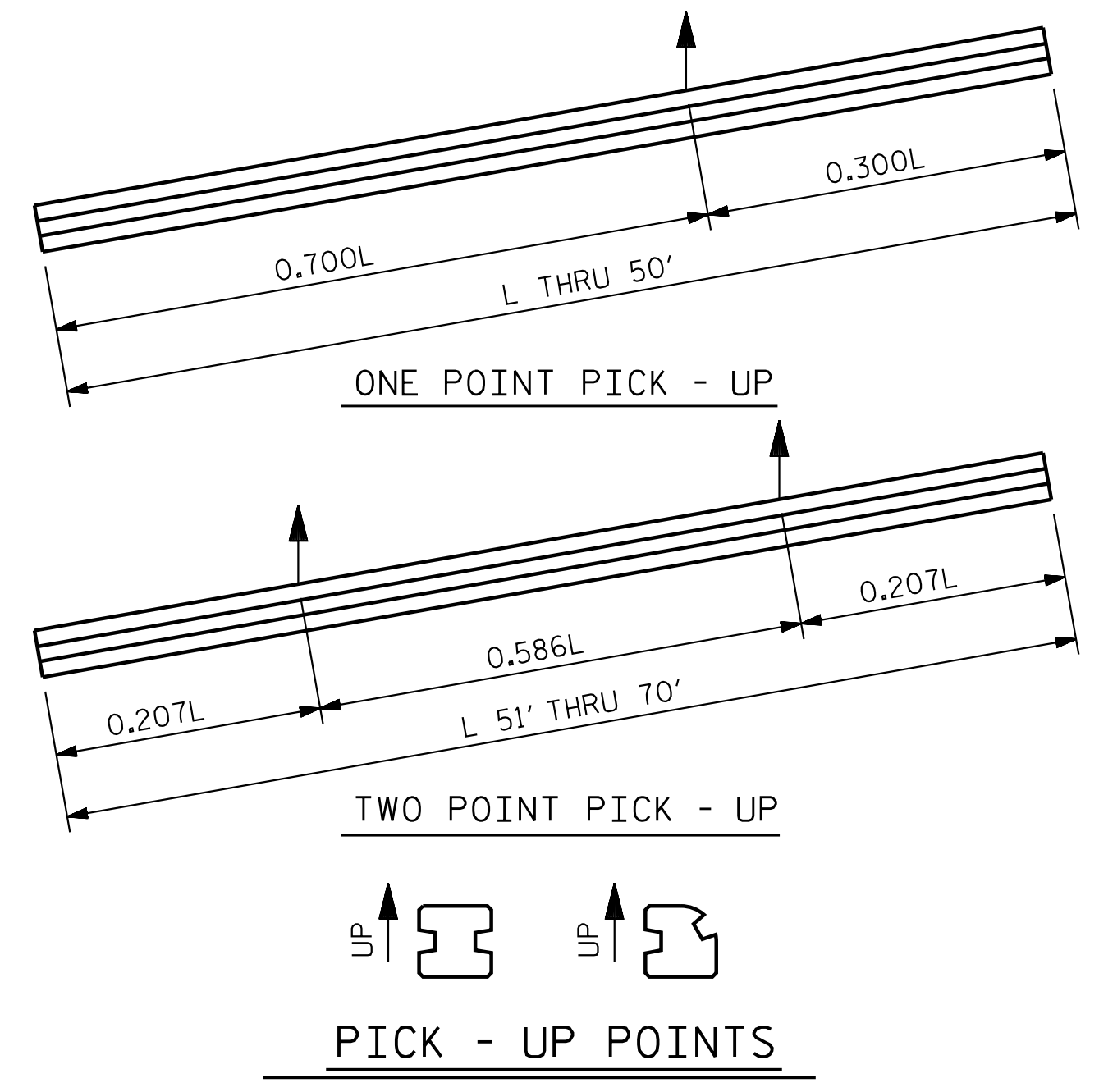
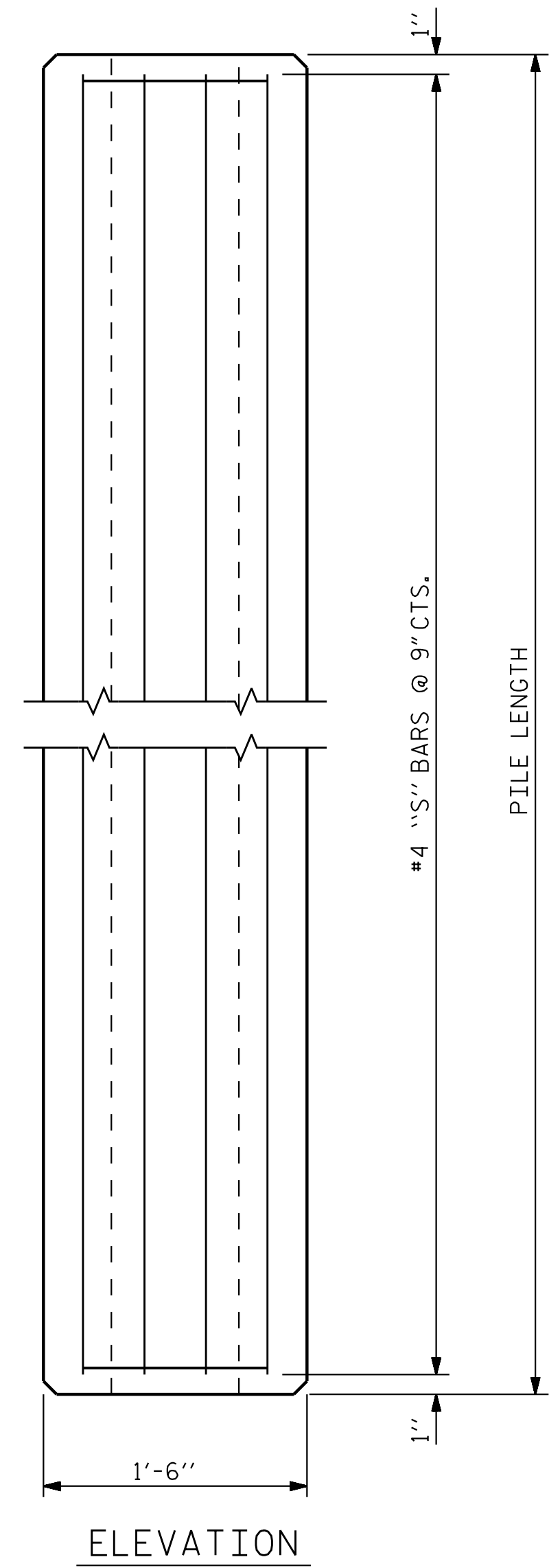
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ASSEMBLED BY : V. T. THOMPSON DATE : 04/28/20  
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 CHECKED BY : CM 6/11

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**QUANTITIES FOR ONE PRECAST CONCRETE PILE**

LENGTH	APPROX. PILE WT. TONS	ONE PICK-UP POINT		TWO PICK-UP POINT	
		0.300L	0.700L	0.207L	0.586L
10'-0"	1.56	3'-0"	7'-0"		
15'-0"	2.35	4'-6"	10'-6"		
20'-0"	3.14	6'-0"	14'-0"		
25'-0"	3.93	7'-6"	17'-6"		
30'-0"	4.70	9'-0"	21'-0"		
35'-0"	5.49	10'-6"	24'-6"		
40'-0"	6.28	12'-0"	28'-0"		
45'-0"	7.05	13'-6"	31'-6"		
50'-0"	7.84	15'-0"	35'-0"		
55'-0"	8.63			11'-4 1/2"	32'-3"
60'-0"	9.42			12'-5"	35'-2"
65'-0"	10.21			13'-5 1/2"	38'-1"
70'-0"	11.00			14'-6"	41'-0"

**NOTES**

CONCRETE DESIGN DATA :  $f'_c = 5,000$  PSI

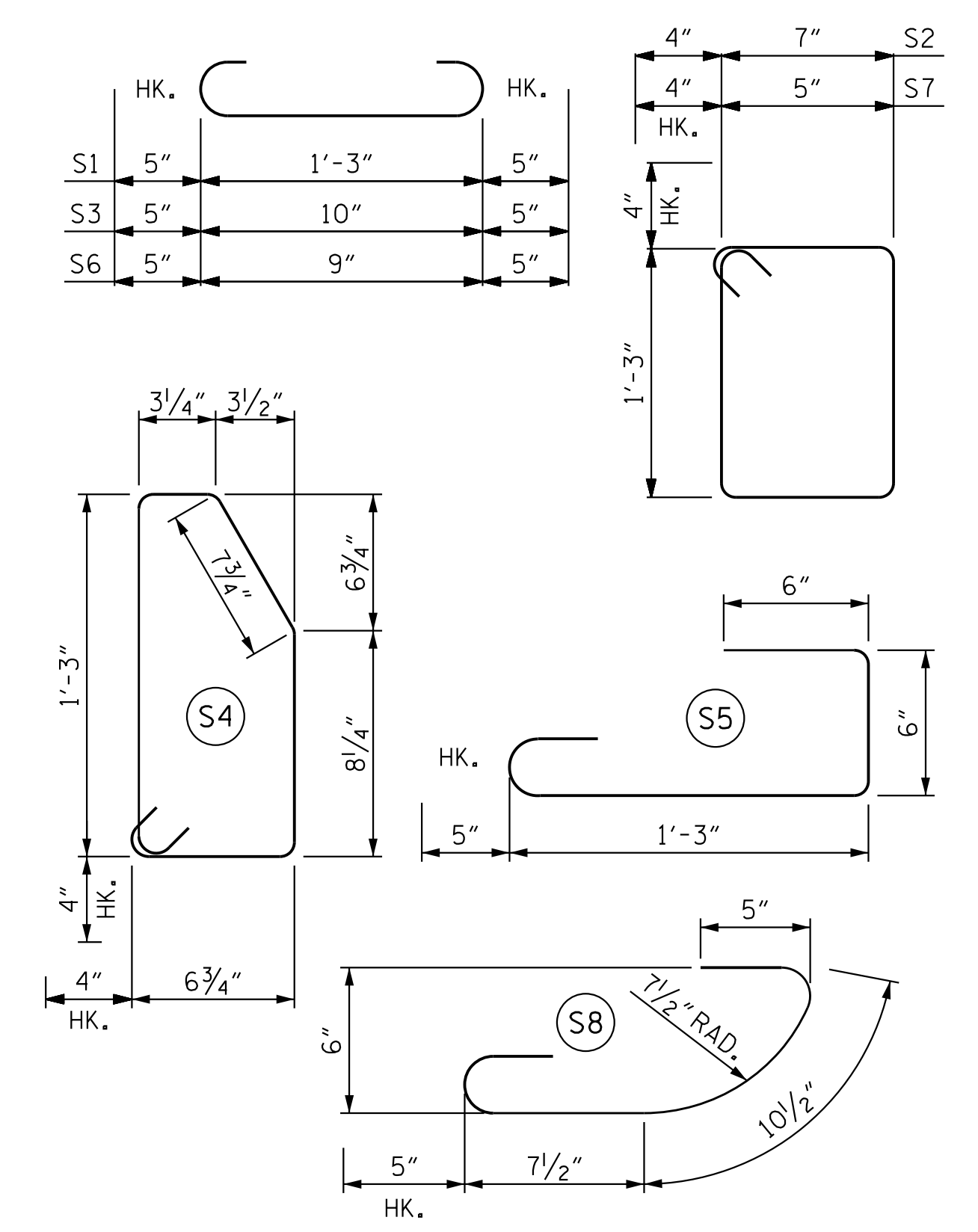
PROPOSED DEVICES FOR LIFTING PILES, RECESS DETAILS, AND PATCHING MATERIAL SHALL BE DETAILED IN SHOP DRAWINGS. AFTER ATTACHMENTS HAVE BEEN REMOVED, OPENINGS SHALL BE REPAIRED SUCH THAT THE APPEARANCE OF THE PILE IS UNIFORM.

WHERE CAST-IN-PLACE LIFTING DEVICES ARE NOT USED, PICK-UP POINTS TO BE INDICATED WITH A BLACK MARK 2" WIDE.

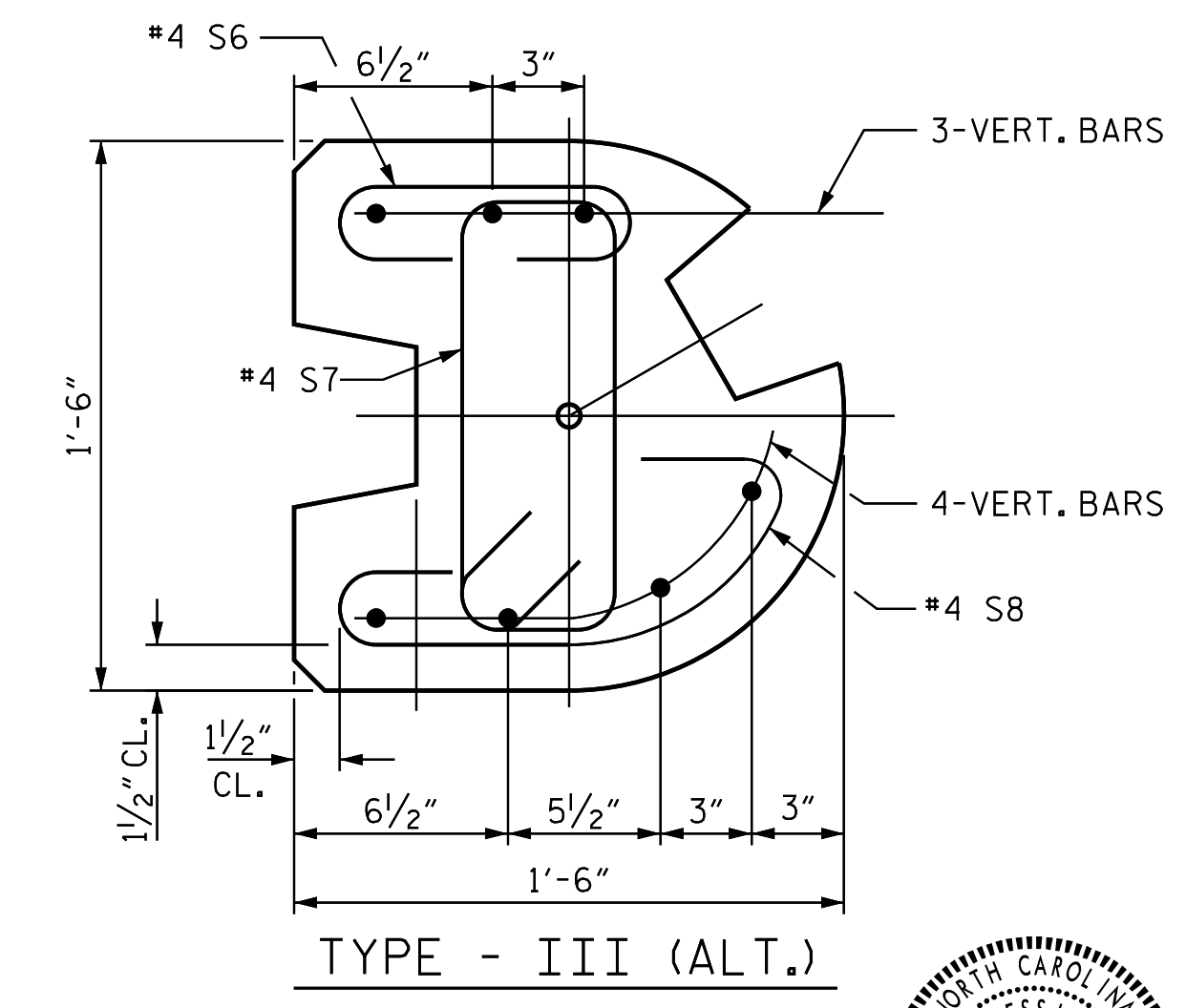
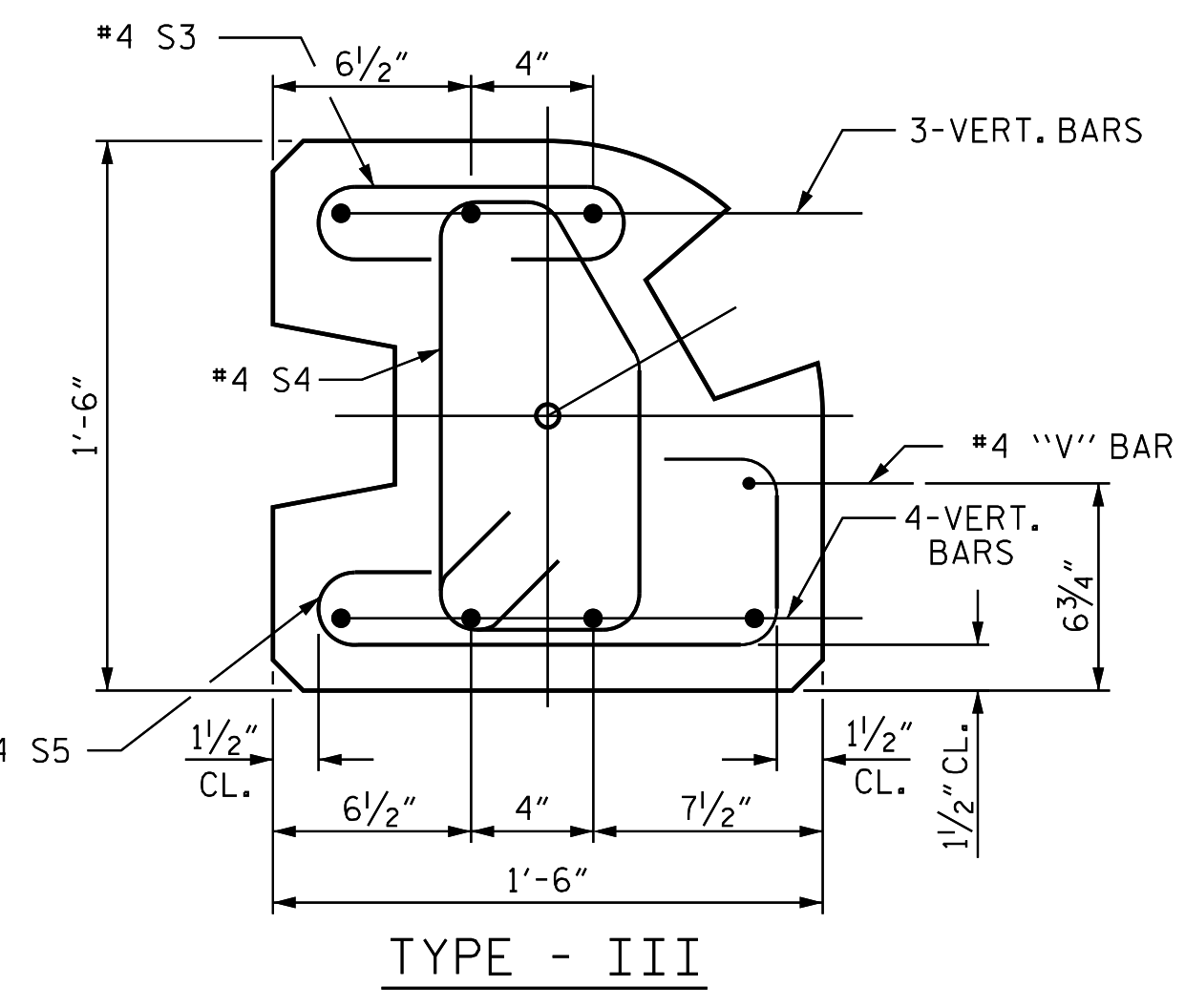
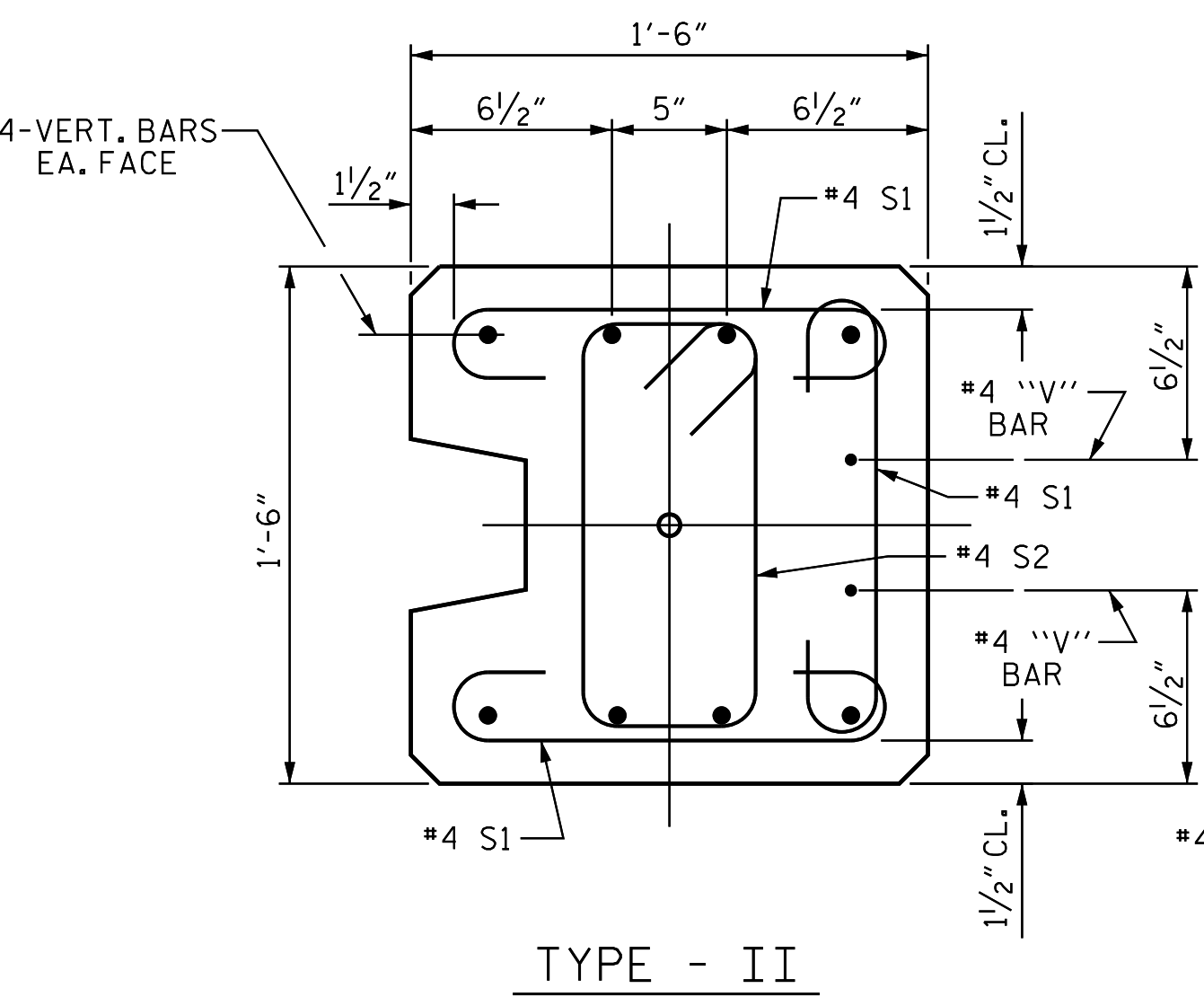
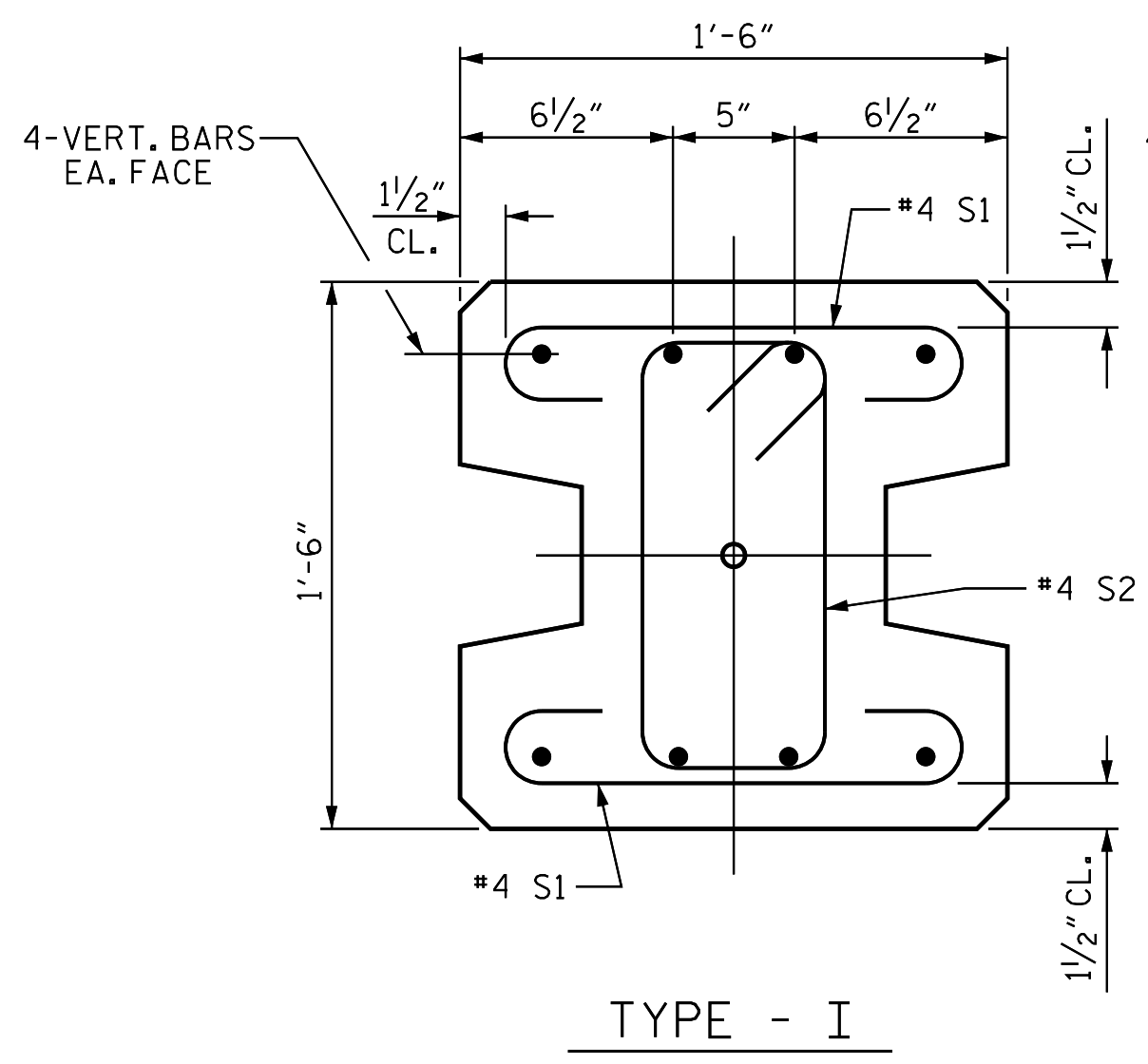
THE SLIP-FORM METHOD OF CASTING PILES WILL NOT BE PERMITTED.

ALL CORNERS TO BE CHAMFERED 1".

**BAR TYPES**



ALL BAR DIMENSIONS ARE OUT TO OUT.



**PILE DETAIL**

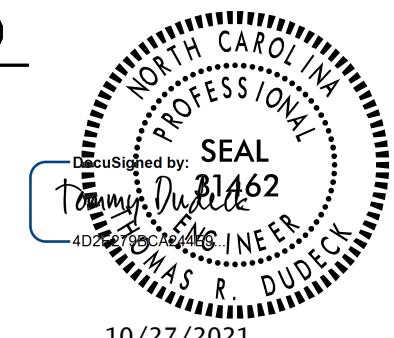
FOR VERTICAL BAR PILE REINFORCING SEE SHEET 1 OF 7.

PROJECT NO. R-3300B  
PENDER COUNTY  
 STATION: 638+10.79 -L1-

SHEET 3 OF 7

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**STANDARD  
 SOUND BARRIER WALL  
 DETAILS**



10/27/2021

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2			4			

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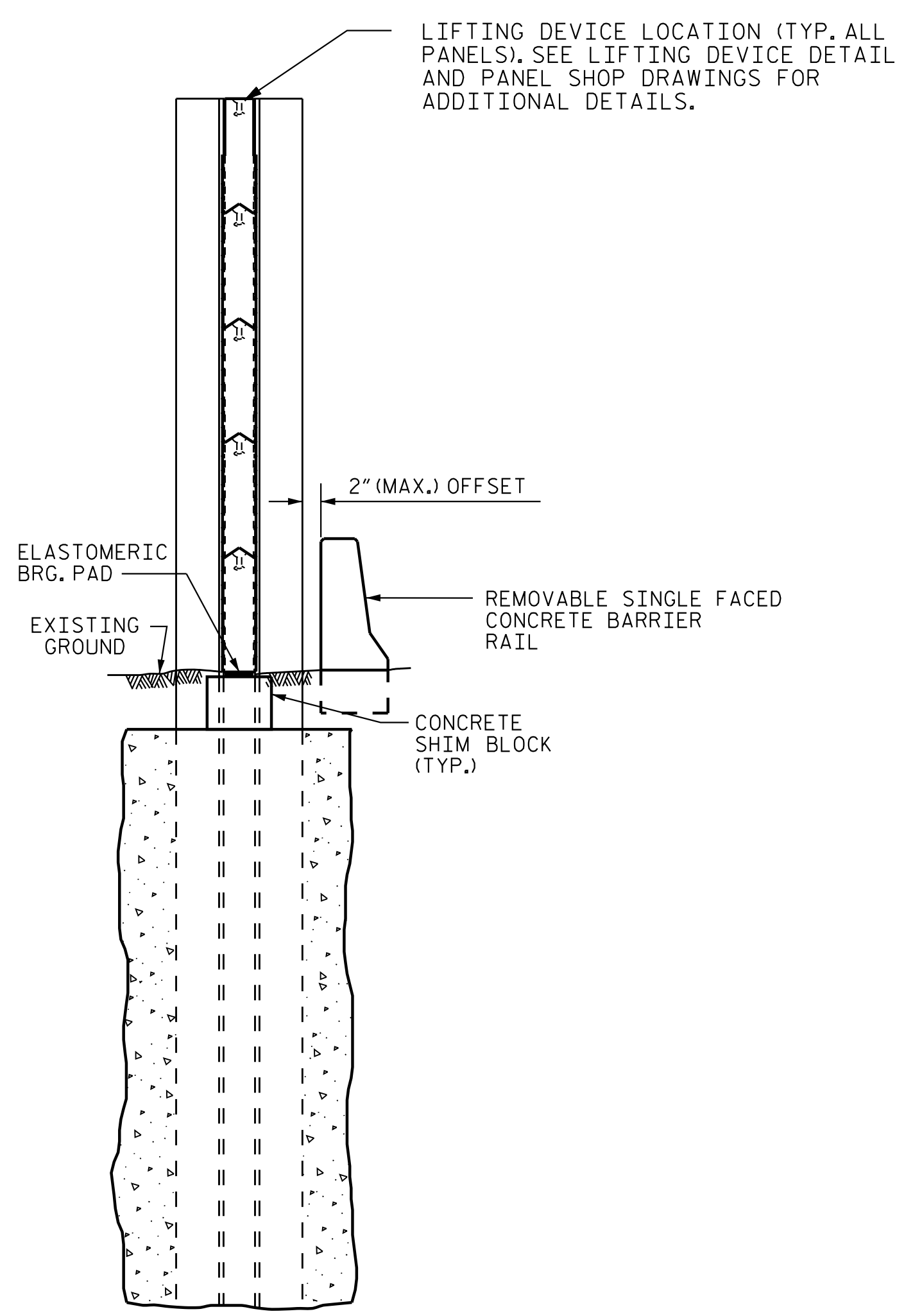
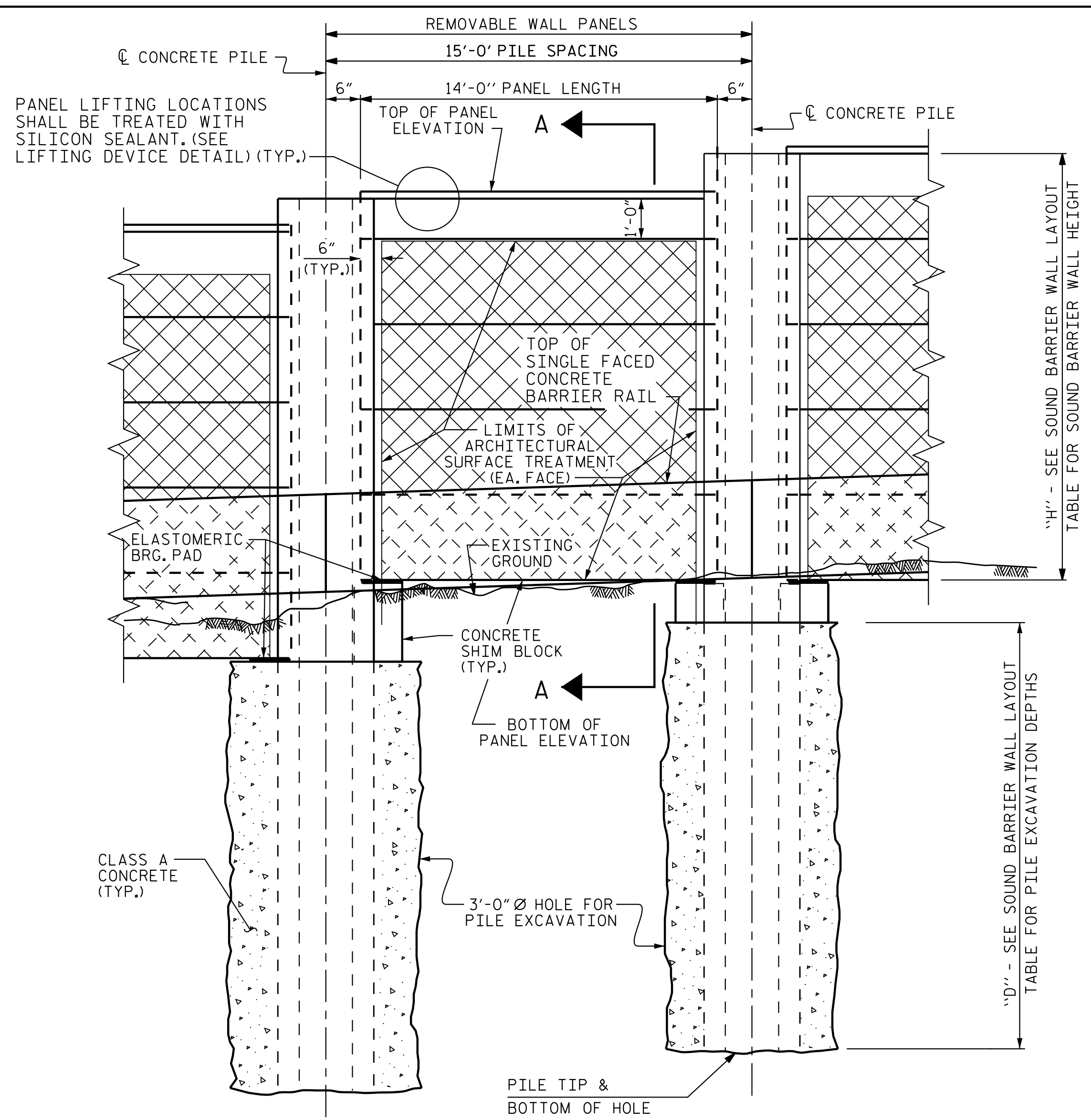
ASSEMBLED BY : V. T. THOMPSON DATE : 04/28/20  
 CHECKED BY : T. R. DUDECK DATE : 05/08/20

DRAWN BY : MAA 6/11 REV. 1/15/14 RWW/TMG  
 CHECKED BY : GM 6/11 REV. 12/17 MAA/THC

DESIGN ENGINEER OF RECORD: T. R. DUDECK DATE : 10/27/21

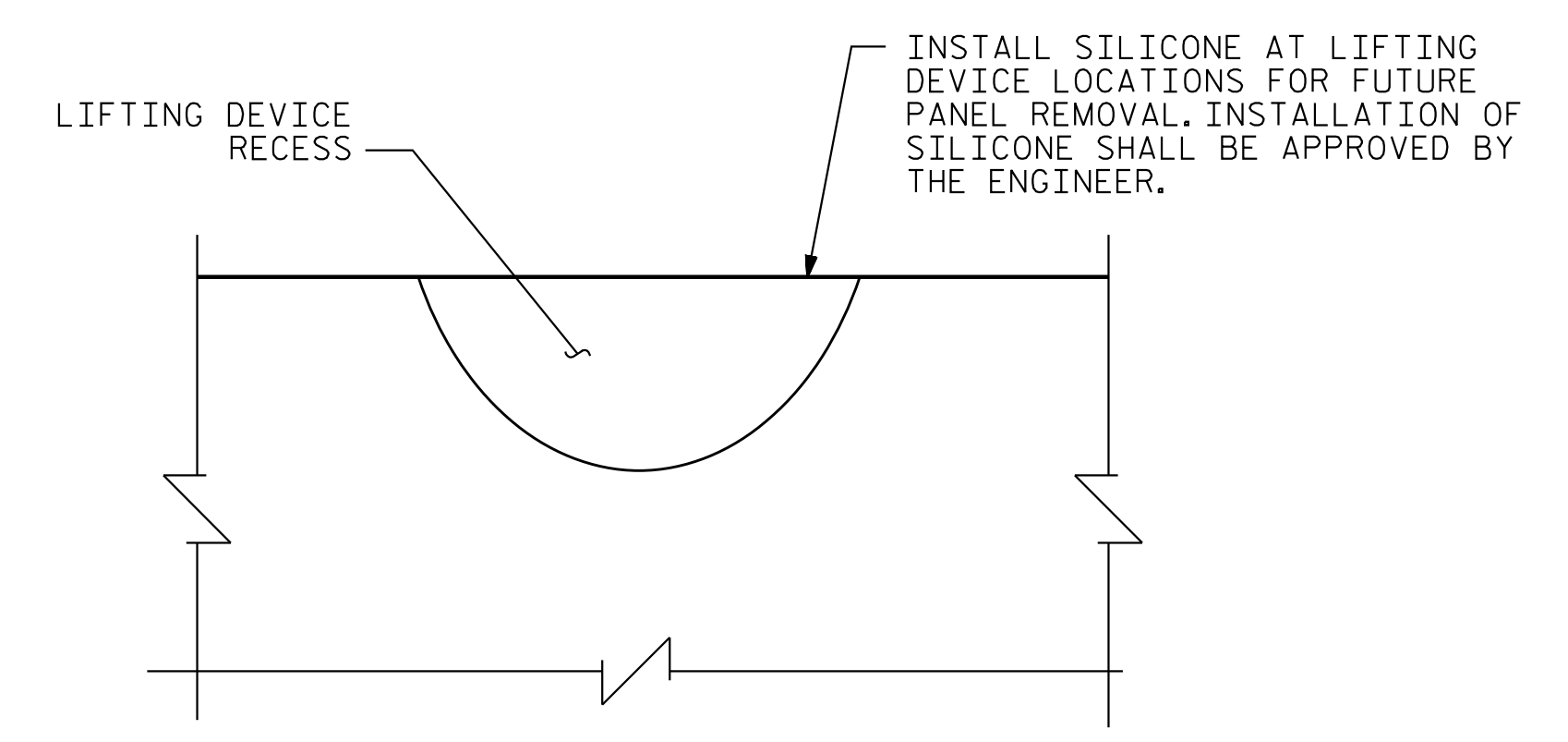
**NOTES**

- REMOVABLE PRECAST PANELS SHALL BE INSTALLED TO PROVIDE FUTURE MAINTENANCE ACCESS AT LOCATIONS SPECIFIED BELOW IN THE REMOVABLE PANEL LOCATION TABLE.
- REMOVABLE PRECAST PANELS SHALL BE INSTALLED TO THE GROUND LINE WITHOUT THE BOTTOM OF THE WALL BECOMING EMBEDDED.
- MAXIMUM PANEL HEIGHT FOR REMOVABLE WALL PANELS SHALL BE 3.0 FEET.
- LIFTING DEVICE RECESSES SHALL BE FILLED WITH SILICON FOR FUTURE REMOVAL OF PRECAST PANEL UNITS.
- SEAL ALL RECESSED OPENINGS FOR LIFTING WITH AN APPROVED LOW MODULUS SILICONE SEALANT AS APPROVED BY THE ENGINEER.
- BARRIER IN FRONT OF REMOVABLE PANEL SHALL BE CONSTRUCTED FOR FUTURE TEMPORARY REMOVAL AS DIRECTED BY THE ENGINEER.
- COST OF REMOVABLE PANELS IS CONSIDERED INCIDENTAL TO SOUND BARRIER WALL PAYMENT.



**ELEVATION - REMOVABLE SOUND BARRIER WALL PANELS**

**SECTION A-A**



**LIFTING DEVICE DETAIL**

SEE PRECAST PANEL SHOP DRAWINGS FOR ADDITIONAL DETAILS.

REMOVABLE PANEL LOCATIONS	ACCESS	STATION	
		FIRST PILE	SECOND PILE
#1		645+99.61	646+14.61

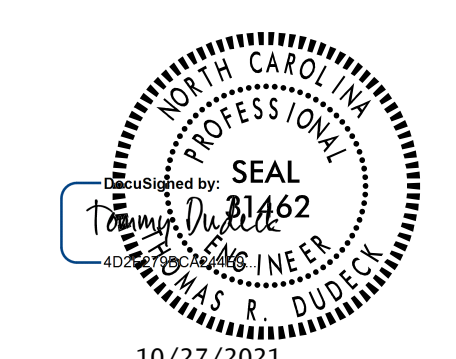
ALL PANELS PLACED BETWEEN PILES SHOWN IN TABLE, WILL BE REMOVABLE.

PROJECT NO. R-3300B  
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STATION: 638+10.79 -L1-

SHEET 4 OF 7

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**SOUND BARRIER WALL  
REMOVABLE PANEL**



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CHECKED BY : T. R. DUDECK DATE : 05/08/20  
DESIGN ENGINEER OF RECORD: T. R. DUDECK DATE : 10/27/21

10/27/2021

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Table with 10 columns: PILE, STA. -L1-, BOTT. OF PANEL ELEV., TOP OF WALL ELEV., WALL HEIGHT "H" (FT.), EXCAVATION DEPTH "D" (FT.), PILE LENGTH (FT.), OFFSET - L1- LT. (FT.), PILE SPACING (FT.), WALL AREA (FT²). Rows 1-50.

Table with 10 columns: PILE, STA. -L1-, BOTT. OF PANEL ELEV., TOP OF WALL ELEV., WALL HEIGHT "H" (FT.), EXCAVATION DEPTH "D" (FT.), PILE LENGTH (FT.), OFFSET - L1- RT. (FT.), PILE SPACING (FT.), WALL AREA (FT²). Rows 51-100.

← ACCESS PANEL #1

\* \*

SOUND BARRIER WALL LAYOUT

STATIONS AND OFFSETS REFERENCED FROM -L1- TO CENTERLINE OF PILE.

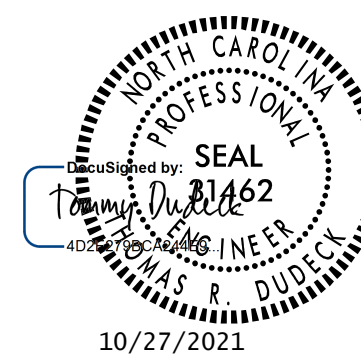
\* \* CONTRACTOR NOTE: SIGN ABOVE STRUCTURE

PROJECT NO. R-3300B
PENDER COUNTY
STATION: 638+10.79 -L1-

SHEET 5 OF 7

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SOUND BARRIER WALL LAYOUT



10/27/2021

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Table with 6 columns: NO., BY:, DATE:, NO., BY:, DATE:, SHEET NO. SW10-5, TOTAL SHEETS 7.



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CHECKED BY: T. R. DUDECK DATE: 05/08/20
DESIGN ENGINEER OF RECORD: T. R. DUDECK DATE: 10/27/21

10/27/2021
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10/27/2021 jpe/elle

LA:\Structures\Noise Walls\10-Dr-off+Ing\B3300B\_SML\_SBW10\_6.dgn

PILE	STA. -L1-	BOTT. OF PANEL ELEV.	TOP OF WALL ELEV.	WALL HEIGHT "H" (FT.)	EXCAVATION DEPTH "D" (FT.)	PILE LENGTH (FT.)	OFFSET -L1- RT. (FT.)	PILE SPACING (FT.)	WALL AREA (FT <sup>2</sup> )
101	652+99.65	42.00	66.00	24.00	26.00	52.00	61.42	15.00	360
102	653+14.69	42.00	67.00	25.00	27.00	52.00	61.42	15.00	375
103	653+29.74	42.00	67.00	25.00	27.00	52.00	61.42	15.00	375
104	653+44.81	42.00	67.00	25.00	27.00	52.00	61.42	15.00	375
105	653+59.90	43.00	67.00	24.00	26.00	52.00	61.42	15.00	360
106	653+75.00	43.00	68.00	25.00	27.00	52.00	61.42	15.00	375
107	653+90.11	43.00	68.00	25.00	27.00	52.00	61.42	15.00	375
108	654+05.24	43.00	68.00	25.00	27.00	52.00	61.42	15.00	375
109	654+20.39	44.00	68.00	24.00	26.00	52.00	61.42	15.00	360
110	654+35.54	44.00	69.00	25.00	27.00	52.00	61.42	15.00	375
111	654+50.72	44.00	69.00	25.00	27.00	52.00	61.42	15.00	375
112	654+65.90	44.00	69.00	25.00	27.00	52.00	61.42	15.00	375
113	654+81.07	45.00	70.00	25.00	27.00	52.00	61.42	15.00	375
114	654+96.25	45.00	70.00	25.00	27.00	52.00	61.42	15.00	375
115	655+11.43	45.00	70.00	25.00	27.00	52.00	61.42	15.00	375
116	655+26.60	46.00	71.00	25.00	27.00	52.00	61.42	15.00	375
117	655+41.78	46.00	71.00	25.00	27.00	52.00	61.42	15.00	375
118	655+56.96	46.00	71.00	25.00	27.00	52.00	61.42	15.00	375
119	655+72.13	47.00	72.00	25.00	27.00	52.00	61.42	15.00	375
120	655+87.31	47.00	72.00	25.00	27.00	52.00	61.42	15.00	375
121	656+02.49	47.00	72.00	25.00	27.00	52.00	61.42	15.00	375
122	656+17.67	48.00	73.00	25.00	27.00	52.00	61.42	15.00	375
123	656+32.84	48.00	73.00	25.00	27.00	52.00	61.42	15.00	375
124	656+48.02	48.00	73.00	25.00	27.00	52.00	61.42	15.00	375
125	656+63.20	48.00	73.00	25.00	27.00	52.00	61.42	15.00	375
126	656+78.37	49.00	73.00	24.00	26.00	52.00	61.42	15.00	360
127	656+93.55	49.00	73.00	24.00	26.00	52.00	61.42	15.00	360
128	657+08.73	49.00	72.00	23.00	25.00	52.00	61.42	15.00	345
129	657+23.91	49.00	71.00	22.00	24.00	52.00	61.42	15.00	330
130	657+39.08	50.00	70.00	20.00	22.00	52.00	61.42	15.00	300
131	657+54.26	50.00	69.00	19.00	21.00	52.00	61.42	15.00	285
132	657+69.44	50.00	68.00	18.00	20.00	52.00	61.42	15.00	270
133	657+84.57	50.00	67.00	17.00	19.00	52.00	61.42	15.00	255
* 134	657+99.69	54.50	67.00	12.50	-	-	-	15.00	188
135	-	54.50	67.00	12.50	-	-	-	15.00	-
136	-	54.50	67.00	12.50	-	-	-	15.00	-
137	-	54.50	67.00	12.50	-	-	-	15.00	-
138	-	54.50	67.00	12.50	-	-	-	15.00	-
139	-	54.50	68.00	13.50	-	-	-	15.00	-
140	-	54.50	68.00	13.50	-	-	-	15.00	-
141	-	54.50	68.00	13.50	-	-	-	15.00	-
* 142	-	54.50	68.00	13.50	-	-	-	15.00	-
* 143	659+42.37	54.50	69.00	14.50	-	-	-	6.10	76
144	659+52.45	52.00	69.00	17.00	19.00	52.00	61.42	15.00	188
145	659+67.58	52.00	70.00	18.00	20.00	52.00	61.42	10.00	180
146	659+82.75	52.00	71.00	19.00	21.00	52.00	61.42	15.00	285
147	659+97.93	52.00	72.00	20.00	22.00	52.00	61.42	15.00	300
148	660+13.11	52.00	73.00	21.00	23.00	52.00	61.42	15.00	315
149	660+28.28	52.00	74.00	22.00	24.00	52.00	61.42	15.00	330
150	660+43.46	52.00	75.00	23.00	25.00	52.00	61.42	15.00	345

PILE	STA. -L1-	BOTT. OF PANEL ELEV.	TOP OF WALL ELEV.	WALL HEIGHT "H" (FT.)	EXCAVATION DEPTH "D" (FT.)	PILE LENGTH (FT.)	OFFSET -L1- RT. (FT.)	PILE SPACING (FT.)	WALL AREA (FT <sup>2</sup> )
151	660+58.64	52.00	76.00	24.00	26.00	52.00	61.42	15.00	360
152	660+73.81	52.00	76.00	24.00	26.00	52.00	61.42	15.00	360
153	660+88.99	52.00	76.00	24.00	26.00	52.00	61.42	15.00	360
154	661+04.17	52.00	76.00	24.00	26.00	52.00	61.42	15.00	360
155	661+19.34	52.00	76.00	24.00	26.00	52.00	61.42	15.00	360
156	661+34.52	52.00	76.00	24.00	26.00	52.00	61.42	15.00	360
157	661+49.70	52.00	76.00	24.00	26.00	52.00	61.42	15.00	360
158	661+64.88	52.00	76.00	24.00	26.00	52.00	61.42	15.00	360
159	661+80.05	52.00	76.00	24.00	26.00	52.00	61.42	15.00	360
160	661+95.23	52.00	76.00	24.00	26.00	52.00	61.42	15.00	360
161	662+10.41	52.00	76.00	24.00	26.00	52.00	61.42	15.00	360
162	662+25.58	51.00	76.00	25.00	27.00	52.00	61.42	15.00	375
163	662+40.76	51.00	76.00	25.00	27.00	52.00	61.42	15.00	375
164	662+55.94	51.00	76.00	25.00	27.00	52.00	61.42	15.00	375
165	662+71.11	51.00	76.00	25.00	27.00	52.00	61.42	15.00	375
166	662+86.29	51.00	76.00	25.00	27.00	52.00	61.42	15.00	375
167	663+01.47	51.00	76.00	25.00	27.00	52.00	61.42	15.00	375
168	663+16.64	51.00	75.00	24.00	26.00	52.00	61.42	15.00	360
169	663+31.82	51.00	75.00	24.00	26.00	52.00	61.42	15.00	360
170	663+47.00	50.00	75.00	25.00	27.00	52.00	61.42	15.00	375
171	663+62.18	50.00	75.00	25.00	27.00	52.00	61.42	15.00	375
172	663+77.35	50.00	75.00	25.00	27.00	52.00	61.42	15.00	375
173	663+92.53	50.00	75.00	25.00	27.00	52.00	61.42	15.00	375
174	664+07.71	50.00	75.00	25.00	27.00	52.00	61.42	15.00	375
175	664+22.88	49.00	74.00	25.00	27.00	52.00	61.42	15.00	375
176	664+38.06	49.00	74.00	25.00	27.00	52.00	61.42	15.00	375
177	664+53.24	49.00	74.00	25.00	27.00	52.00	61.42	15.00	375
178	664+68.41	49.00	74.00	25.00	27.00	52.00	61.42	15.00	375
179	664+83.59	49.00	74.00	25.00	27.00	52.00	61.42	15.00	375
180	664+98.77	49.00	73.00	24.00	26.00	52.00	61.42	15.00	360
181	665+13.95	48.00	73.00	25.00	27.00	52.00	61.42	15.00	375
182	665+29.12	48.00	73.00	25.00	27.00	52.00	61.42	15.00	375
183	665+44.30	48.00	73.00	25.00	27.00	52.00	61.42	15.00	375
184	665+59.48	48.00	73.00	25.00	27.00	52.00	61.42	15.00	375
185	665+74.65	48.00	73.00	25.00	27.00	52.00	61.42	15.00	375
186	665+89.83	47.00	72.00	25.00	27.00	52.00	61.42	15.00	375
187	666+05.01	47.00	72.00	25.00	27.00	52.00	61.42	15.00	375
188	666+20.18	47.00	72.00	25.00	27.00	52.00	61.42	15.00	375
189	666+35.36	47.00	72.00	25.00	27.00	52.00	61.42	15.00	375
190	666+50.54	47.00	72.00	25.00	27.00	52.00	61.42	15.00	375
191	666+65.72	47.00	71.00	24.00	26.00	52.00	61.42	15.00	360
192	666+80.89	47.00	71.00	24.00	26.00	52.00	61.42	15.00	360
193	666+96.07	46.00	71.00	25.00	27.00	52.00	61.42	15.00	375
194	667+11.25	46.00	71.00	25.00	27.00	52.00	61.42	15.00	375
195	667+26.42	46.00	71.00	25.00	27.00	52.00	61.42	15.00	375
196	667+41.60	46.00	71.00	25.00	27.00	52.00	61.42	15.00	375
197	667+56.78	46.00	71.00	25.00	27.00	52.00	61.42	15.00	375
198	667+71.96	46.00	71.00	25.00	27.00	52.00	61.42	15.00	375
199	667+87.13	46.00	71.00	25.00	27.00	52.00	61.42	15.00	375
200	668+02.31	46.00	71.00	25.00	27.00	52.00	61.42	15.00	375

### SOUND BARRIER WALL LAYOUT

STATIONS AND OFFSETS REFERENCED FROM -L1- TO CENTERLINE OF PILE.

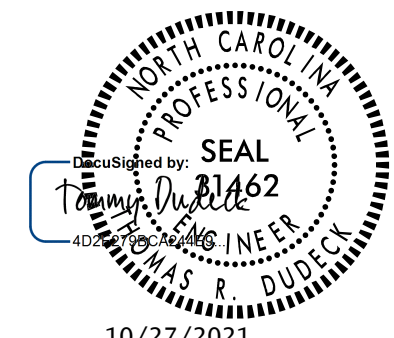
\* DENOTES LOCATION OF STEEL PILE LOCATED AT END OF BRIDGE APPROACH SLAB. FOR STEEL PILE PLACEMENT AT BRIDGE LOCATION, SEE BRIDGE PLANS.

PROJECT NO.        R-3300B  
       PENDER COUNTY  
STATION:        638+10.79 -L1-

SHEET 6 OF 7

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

## SOUND BARRIER WALL LAYOUT



DRAWN BY:        V. T. THOMPSON        DATE:        04/28/20  
CHECKED BY:        T. R. DUDECK        DATE:        05/08/20  
DESIGN ENGINEER OF RECORD:        T. R. DUDECK        DATE:        10/27/21

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED		REVISIONS				SHEET NO. SW10-6
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 7
2			4			



jpgfile

10/27/2021

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PILE	STA. -L1-	BOTT. OF PANEL ELEV.	TOP OF WALL ELEV.	WALL HEIGHT "H" (FT.)	EXCAVATION DEPTH "D" (FT.)	PILE LENGTH (FT.)	OFFSET - L1- RT. (FT.)	PILE SPACING (FT.)	WALL AREA (FT²)
201	668+17.49	46.00	71.00	25.00	27.00	52.00	61.42	15.00	375
202	668+32.66	46.00	71.00	25.00	27.00	52.00	61.42	15.00	375
203	668+47.84	46.00	71.00	25.00	27.00	52.00	61.42	15.00	375
204	668+63.02	46.00	71.00	25.00	27.00	52.00	61.42	15.00	375
205	668+78.19	46.00	71.00	25.00	27.00	52.00	61.42	15.00	375
206	668+93.37	46.00	71.00	25.00	27.00	52.00	61.42	15.00	375
207	669+08.55	46.00	71.00	25.00	27.00	52.00	61.42	15.00	375
208	669+23.73	46.00	71.00	25.00	27.00	52.00	61.42	15.00	375
209	669+38.90	46.00	71.00	25.00	27.00	52.00	61.42	15.00	375
210	669+54.08	46.00	71.00	25.00	27.00	52.00	61.42	15.00	375
211	669+69.26	46.00	71.00	25.00	27.00	52.00	61.42	15.00	375
212	669+84.43	46.00	71.00	25.00	27.00	52.00	61.42	15.00	375
213	669+99.61	46.00	71.00	25.00	27.00	52.00	61.42	15.00	375
214	670+14.79	46.00	71.00	25.00	27.00	52.00	61.42	15.00	375
215	670+29.97	46.00	71.00	25.00	27.00	52.00	61.42	15.00	375
216	670+45.14	47.00	71.00	24.00	26.00	52.00	61.42	15.00	360
217	670+60.32	47.00	71.00	24.00	26.00	52.00	61.42	15.00	360
218	670+75.50	47.00	71.00	24.00	26.00	52.00	61.42	15.00	360
219	670+90.67	47.00	71.00	24.00	26.00	52.00	61.42	15.00	360
220	671+05.85	47.00	71.00	24.00	26.00	52.00	61.42	15.00	360
221	671+21.03	47.00	72.00	25.00	27.00	52.00	61.42	15.00	375
222	671+36.21	47.00	72.00	25.00	27.00	52.00	61.42	15.00	375
223	671+51.38	47.00	72.00	25.00	27.00	52.00	61.42	15.00	375
224	671+66.56	47.00	72.00	25.00	27.00	52.00	61.42	15.00	375
225	671+81.74	47.00	72.00	25.00	27.00	52.00	61.42	15.00	375
226	671+96.91	47.00	72.00	25.00	27.00	52.00	61.42	15.00	375
227	672+12.09	47.00	72.00	25.00	27.00	52.00	61.42	15.00	375
228	672+27.27	47.00	72.00	25.00	27.00	52.00	61.42	10.00	250
229	672+37.39	47.00	72.00	25.00	27.00	52.00	61.42	15.00	375
230	672+52.56	47.00	72.00	25.00	27.00	52.00	61.42	15.00	375
231	672+67.74	48.00	72.00	24.00	26.00	52.00	61.42	15.00	360
232	672+82.92	48.00	72.00	24.00	26.00	52.00	61.42	15.00	360
233	672+98.09	48.00	72.00	24.00	26.00	52.00	61.42	15.00	360
234	673+08.21	48.00	72.00	24.00	26.00	52.00	61.42	10.00	240
235	673+18.33	48.00	72.00	24.00	26.00	52.00	61.42	10.00	240
236	673+33.51	48.00	73.00	25.00	27.00	52.00	61.42	15.00	375
237	673+48.68	48.00	73.00	25.00	27.00	52.00	61.42	15.00	375
238	673+63.86	48.00	73.00	25.00	27.00	52.00	61.42	15.00	375
239	673+79.04	48.00	73.00	25.00	27.00	52.00	61.42	15.00	375
240	673+94.22	48.00	73.00	25.00	27.00	52.00	61.42	15.00	375
241	674+09.39	48.00	73.00	25.00	27.00	52.00	61.42	15.00	375
242	674+24.57	48.00	73.00	25.00	27.00	52.00	61.42	15.00	375
243	674+39.75	48.00	73.00	25.00	27.00	52.00	61.42	15.00	375
244	674+54.92	48.00	73.00	25.00	27.00	52.00	61.42	15.00	375
245	674+70.10	49.00	73.00	24.00	26.00	52.00	61.42	15.00	360
246	674+85.28	49.00	73.00	24.00	26.00	52.00	61.42	15.00	360
247	675+00.46	49.00	73.00	24.00	26.00	52.00	61.42	15.00	360
248	675+15.63	49.00	73.00	24.00	26.00	52.00	61.42	15.00	360
249	675+30.81	49.00	73.00	24.00	26.00	52.00	61.42	15.00	360
250	675+45.99	49.00	74.00	25.00	27.00	52.00	61.42	15.00	375

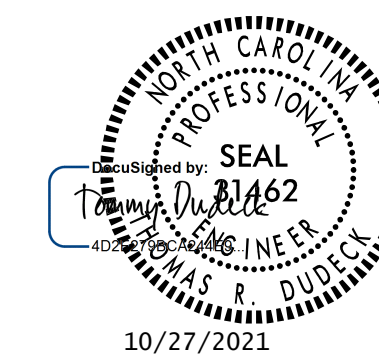
PILE	STA. -L1-	BOTT. OF PANEL ELEV.	TOP OF WALL ELEV.	WALL HEIGHT "H" (FT.)	EXCAVATION DEPTH "D" (FT.)	PILE LENGTH (FT.)	OFFSET -L1- RT. (FT.)	PILE SPACING (FT.)	WALL AREA (FT²)
251	675+61.16	49.00	74.00	25.00	27.00	52.00	61.42	15.00	375
252	675+76.34	49.00	74.00	25.00	27.00	52.00	61.42	15.00	375
253	675+91.52	49.00	74.00	25.00	27.00	52.00	61.42	15.00	375
254	676+06.69	49.00	74.00	25.00	27.00	52.00	61.42	15.00	375
255	676+21.87	49.00	74.00	25.00	27.00	52.00	61.42	15.00	375
256	676+37.05	49.00	74.00	25.00	27.00	52.00	61.42	15.00	375
257	676+52.23	49.00	74.00	25.00	27.00	52.00	61.42	15.00	375
258	676+67.40	50.00	74.00	24.00	26.00	52.00	61.42	15.00	360
259	676+82.58	50.00	74.00	24.00	26.00	52.00	61.42	15.00	360
260	676+97.75	50.00	74.00	24.00	26.00	52.00	61.42	10.00	240

PROJECT NO.  R-3300B   
 \_\_\_\_\_ PENDER \_\_\_\_\_ COUNTY  
 STATION:  638+10.79 -L1-

SHEET 7 OF 7

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SOUND BARRIER WALL  
 LAYOUT



10/27/2021

SOUND BARRIER WALL LAYOUT

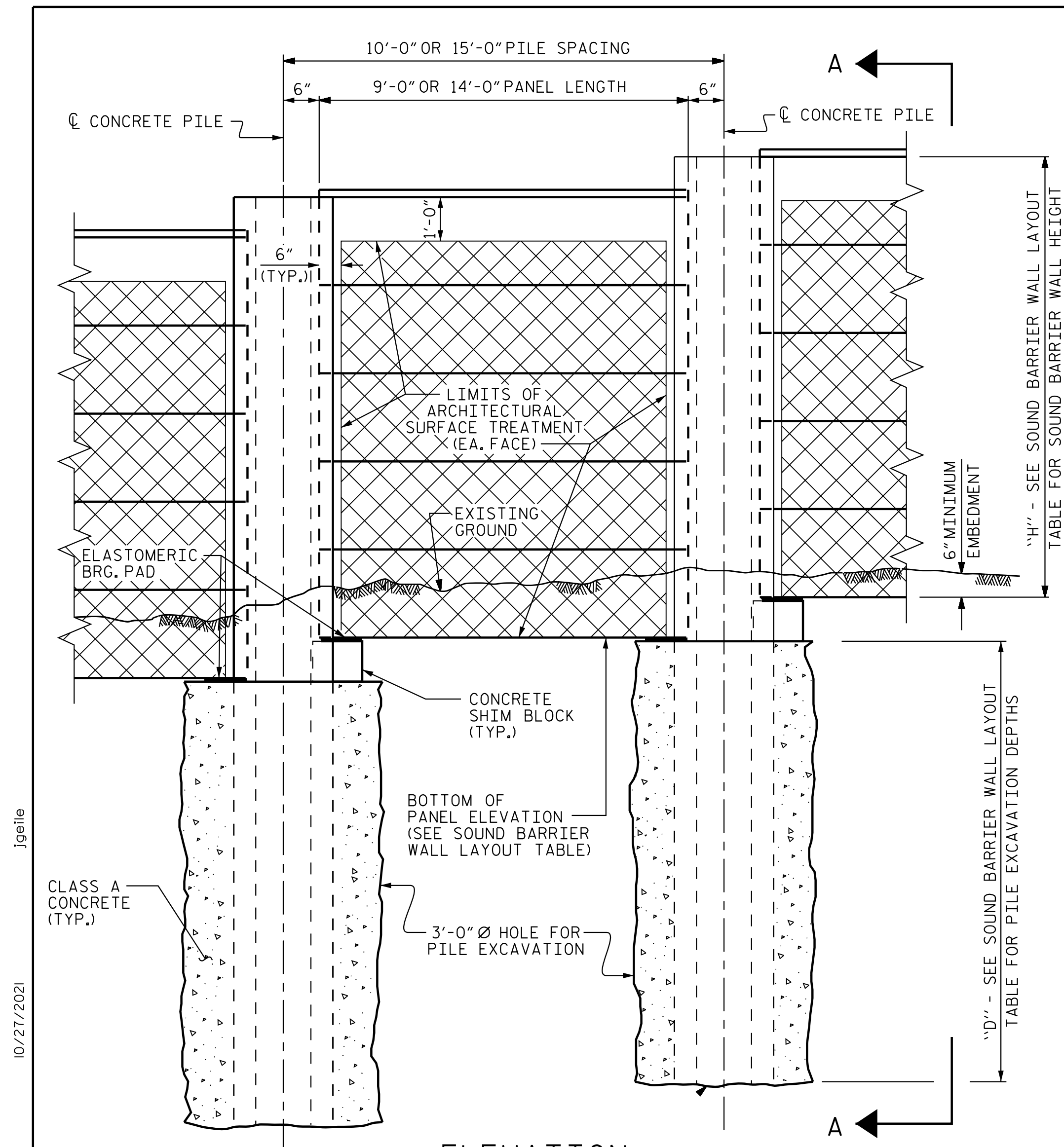
STATIONS AND OFFSETS REFERENCED FROM -L1- TO CENTERLINE OF PILE.

DOCUMENT NOT CONSIDERED  
 FINAL UNLESS ALL  
 SIGNATURES COMPLETED

REVISIONS						SHEET NO. SW10-7	TOTAL SHEETS 7
NO.	BY:	DATE:	NO.	BY:	DATE:		
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2			4				

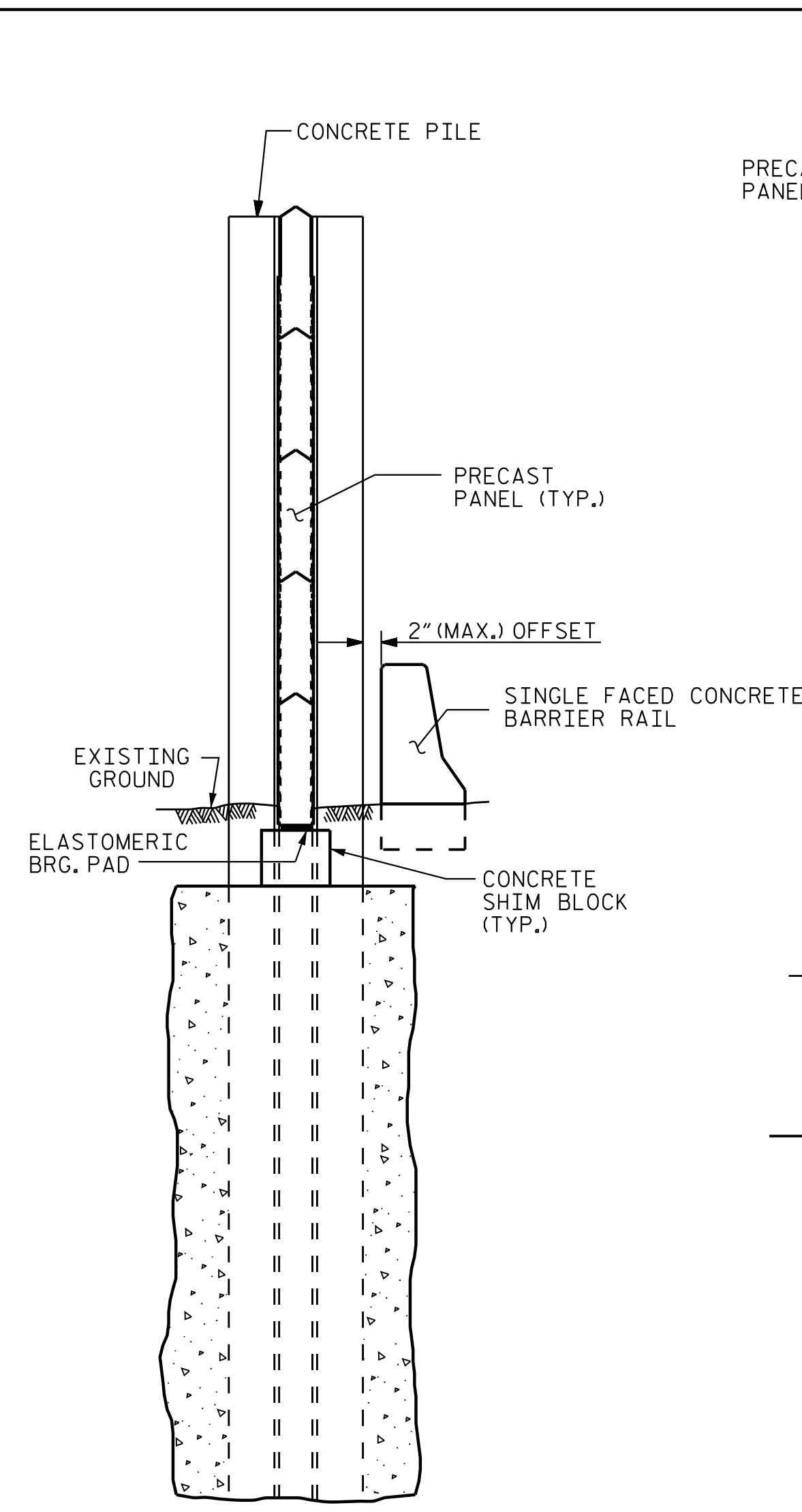
**Stantec**  
 Stantec Consulting Services Inc.  
 801 Jones Franklin Road  
 Suite 300  
 Raleigh, NC 27606  
 Tel. (919) 851-6866  
 Fax. (919) 851-7024  
 www.stantec.com  
 License No. F-0672

DRAWN BY :  V. T. THOMPSON  DATE :  04/28/20   
 CHECKED BY :  T. R. DUDECK  DATE :  05/08/20   
 DESIGN ENGINEER OF RECORD :  T. R. DUDECK  DATE :  10/27/21

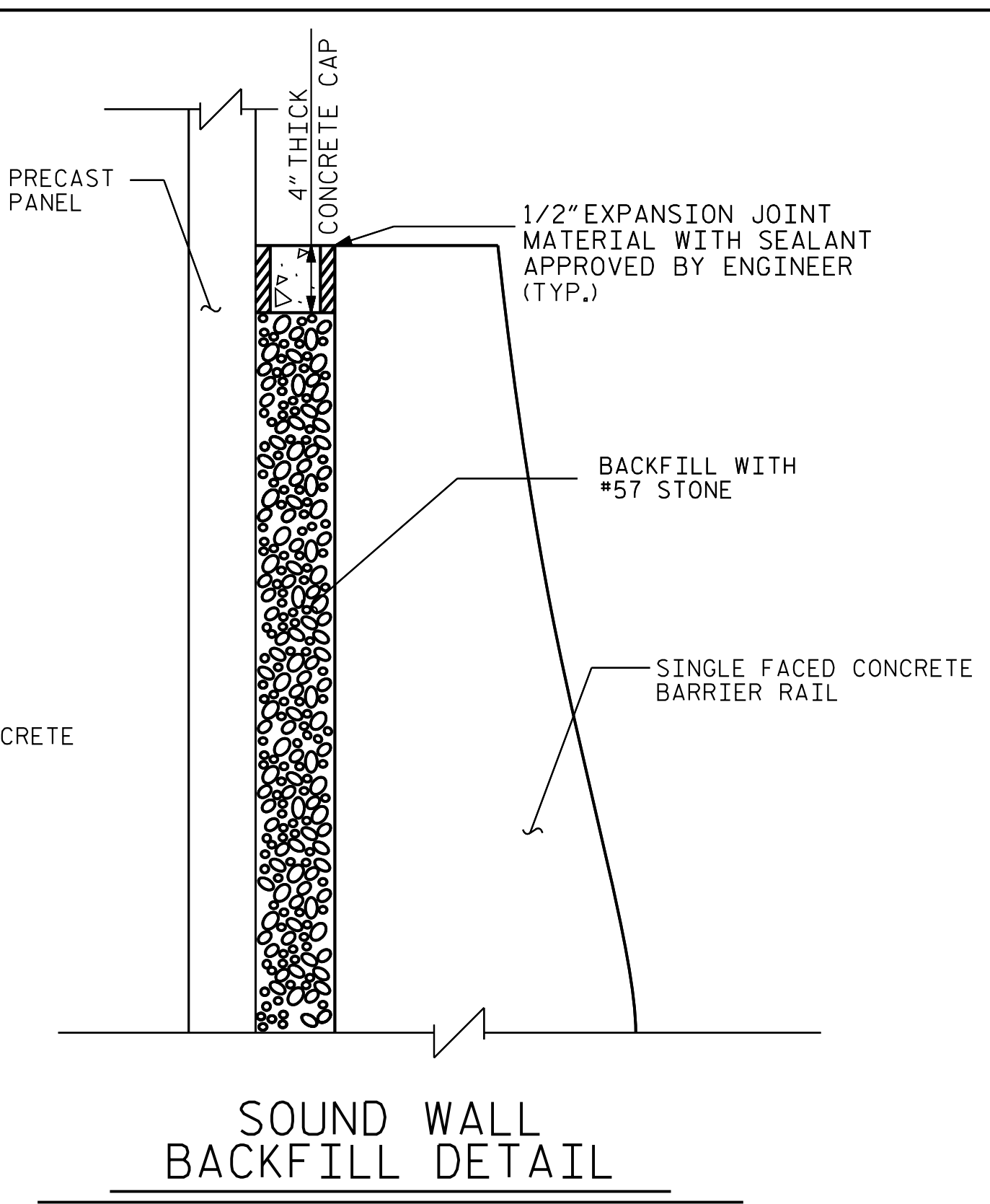


**ELEVATION**

NOTE: BARRIER NOT SHOWN FOR CLARITY.

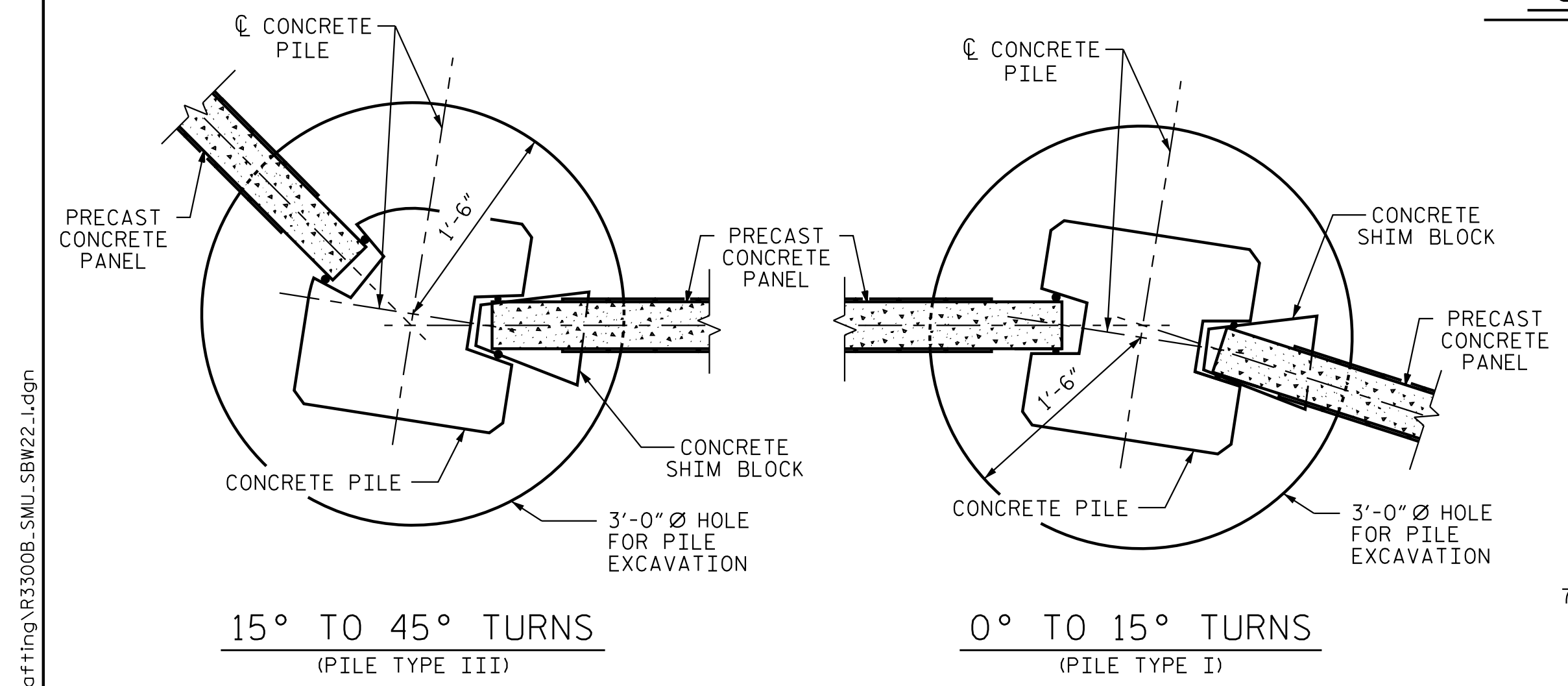


**SECTION A-A**

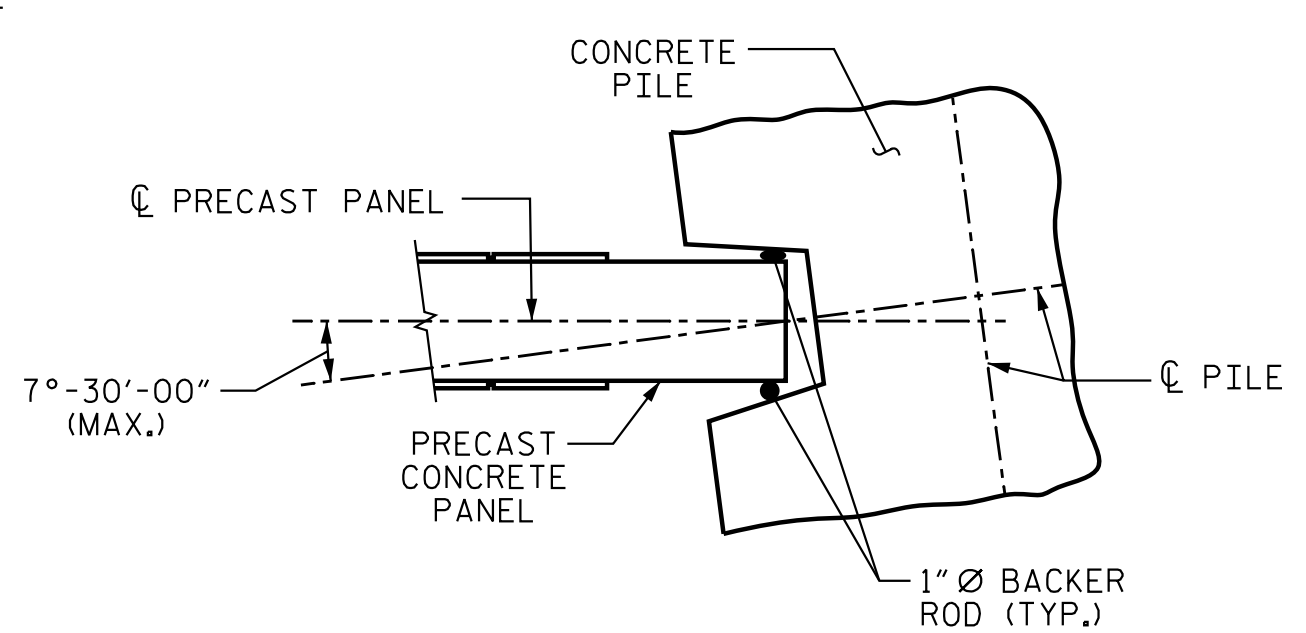


**SOUND WALL BACKFILL DETAIL**

PILE REINFORCING STEEL							
EXPOSURE CATEGORY D DESIGN WIND PRESSURE = 62 PSF (0' < H ≤ 14'); 71 PSF (14' < H ≤ 25')							
PILE TYPE I				PILE TYPE III			
PILE SPACING	MAXIMUM WALL HEIGHT (H)	VERTICAL REINFORCING STEEL	TIES	PILE SPACING	MAXIMUM WALL HEIGHT (H)	VERTICAL REINFORCING STEEL	TIES
10'-0"	H ≤ 25'	4 - #8 EA. FACE	#4 @ 9"CTS.	10'-0"	H ≤ 25'	3 - #9 SHORT FACE 4 - #9 LONG FACE	#4 @ 9"CTS.
	H ≤ 20'	4 - #8 EA. FACE	#4 @ 9"CTS.		15'-0"	H ≤ 20'	3 - #8 SHORT FACE 4 - #8 LONG FACE
15'-0"	20' < H ≤ 25'	4 - #10 EA. FACE	#4 @ 9"CTS.	15'-0"		20' < H ≤ 25'	3 - #11 SHORT FACE 4 - #11 LONG FACE
	PILE TYPE II				PILE TYPE III ALT.		
PILE SPACING	MAXIMUM WALL HEIGHT (H)	VERTICAL REINFORCING STEEL	TIES	PILE SPACING	MAXIMUM WALL HEIGHT (H)	VERTICAL REINFORCING STEEL	TIES
10'-0"	H ≤ 25'	4 - #6 EA. FACE	#4 @ 9"CTS.	10'-0"	H ≤ 25'	3 - #9 SHORT FACE 4 - #9 LONG FACE	#4 @ 9"CTS.
	H ≤ 20'	4 - #6 EA. FACE	#4 @ 9"CTS.		15'-0"	H ≤ 20'	3 - #9 SHORT FACE 4 - #9 LONG FACE
15'-0"	20' < H ≤ 25'	4 - #7 EA. FACE	#4 @ 9"CTS.	15'-0"		20' < H ≤ 25'	3 - #11 SHORT FACE 4 - #11 LONG FACE



**TYPICAL WALL TURN DETAILS**



**PILE ROTATION LIMIT FOR WALL TURN**

(ROTATE THE CONCRETE PILE ±7°-30'-00" TO ACCOMMODATE WALL TURN.)

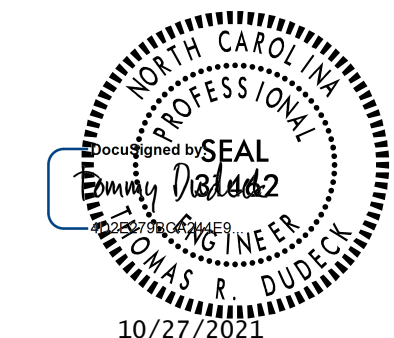
BILL OF MATERIAL	
SOUND BARRIER WALL	10,055 S.F.
ARCHITECTURAL SURFACE TREATMENT	17,784 S.F.
QUANTITIES PROVIDED ARE APPROXIMATE AND ARE FOR BID PURPOSES ONLY.	
ARCHITECTURAL SURFACE TREATMENT	
TEXTURE OPTION:	DRY STACK
STAIN OPTION:	FEDERAL COLOR 30450

**NOTES**

- FOR SOUND BARRIER WALL, SEE SPECIAL PROVISIONS.
- CONSTRUCT SOUND BARRIER WALL TO LINES AND GRADES SHOWN ON THE ROADWAY PLANS.
- PROVIDE PANELS WITH A FLAT BOTTOM.
- VERIFY THE LOCATION OF UNDERGROUND UTILITIES BEFORE DRILLING HOLES TO ENSURE SUFFICIENT CLEARANCE IS AVAILABLE.
- ADJUST PILE EXCAVATION ELEVATIONS TO MAINTAIN 6" MINIMUM EMBEDMENT OF THE BOTTOM PANEL.
- USE CLASS AA FOR PANELS AND CLASS A CONCRETE PILE EXCAVATION BACKFILL, IN ACCORDANCE WITH ARTICLE 1000-4 OF THE STANDARD SPECIFICATIONS.
- AT THE CONTRACTOR'S OPTION, USE 10'-0" OR 15'-0" PILE SPACINGS. STANDARD PRECAST CONCRETE PANELS MAY BE USED WITH THE 10'-0" AND 15'-0" PILE SPACING.
- FOR SOUND BARRIER WALL STATIONS, OFFSETS, AND WALL ENVELOPE, SEE ROADWAY PLANS.
- FOR ADDITIONAL SOUND BARRIER WALL DETAILS, SEE ROADWAY DRAWINGS.
- PLACE 1" Ø BACKER RODS FULL HEIGHT ON EACH SIDE OF THE PRECAST PANELS. SET AND SEAL THE BACKER ROD IN PLACE WITH SEALANT THAT CONFORMS WITH ARTICLE 1028-3 OF THE STANDARD SPECIFICATIONS.
- FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.
- FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.
- BARRIER RAIL NOT SHOWN FOR CLARITY, FOR BACKFILL TREATMENT AT BARRIER RAIL, SEE "SOUND WALL BACKFILL DETAIL"
- AT THE CONTRACTOR'S OPTION, USE CONTINUOUS FLIGHT AUGER PILES IN LIEU OF PILE EXCAVATION FOR SOUND BARRIER WALL FOUNDATION, SEE "CONTINUOUS FLIGHT AUGER PILES FOR SOUND BARRIER WALLS" SPECIAL PROVISION.

PROJECT NO. R-3300B  
 PENDER COUNTY  
 STATION: 47+26.28 -Y19-

SHEET 1 OF 5  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 STANDARD  
 SOUND BARRIER WALL



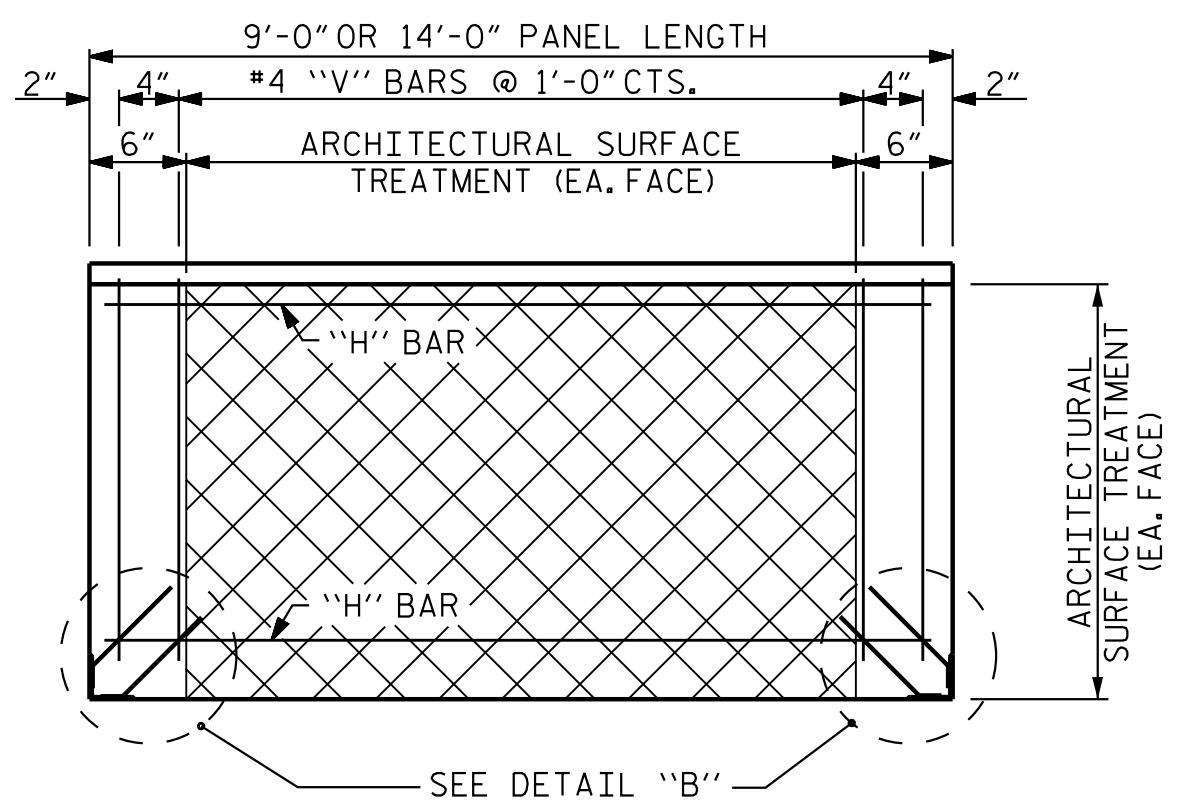
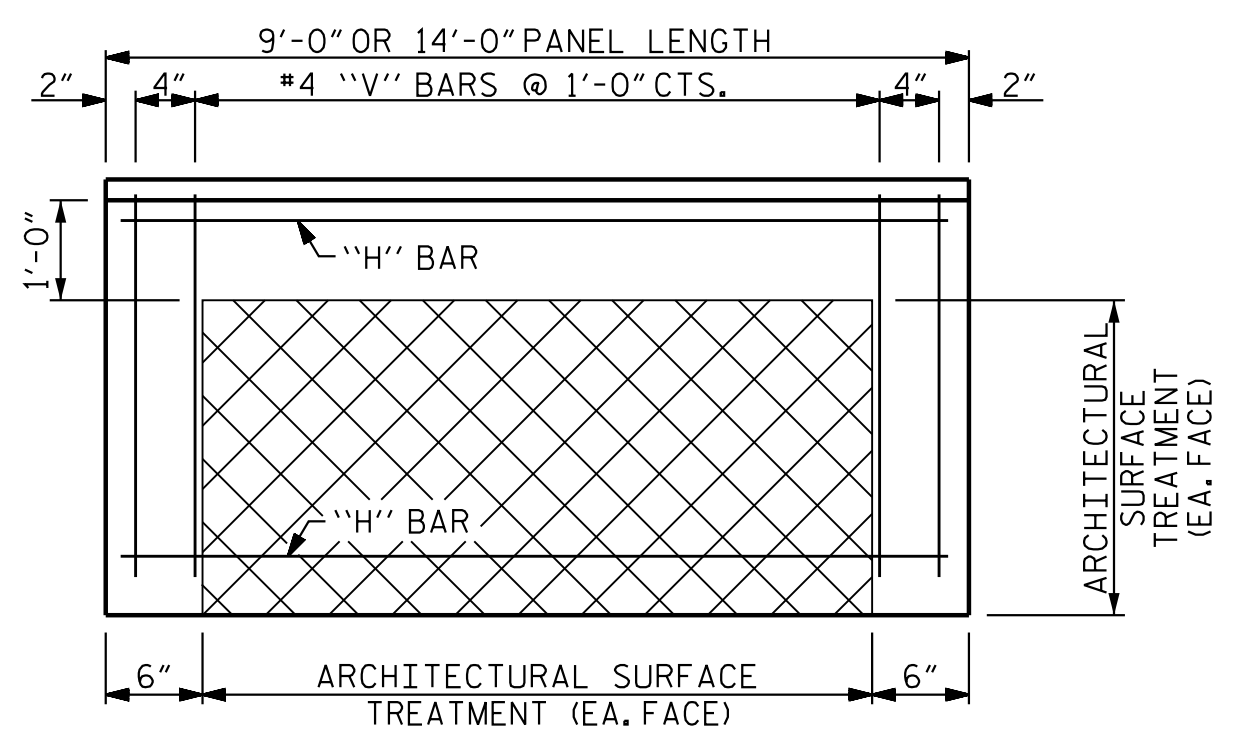
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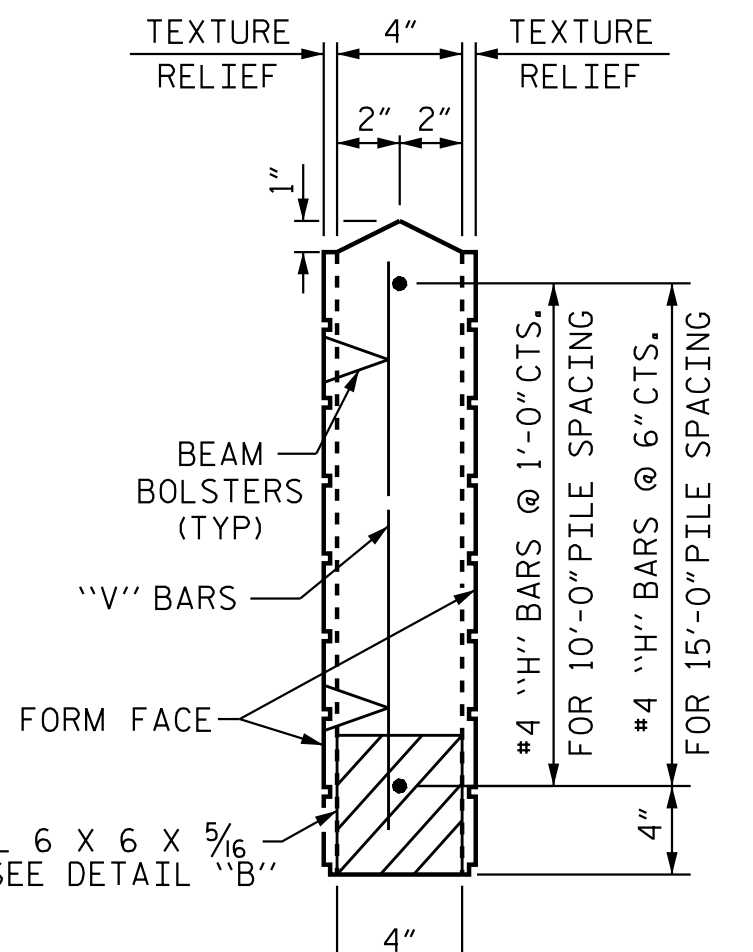
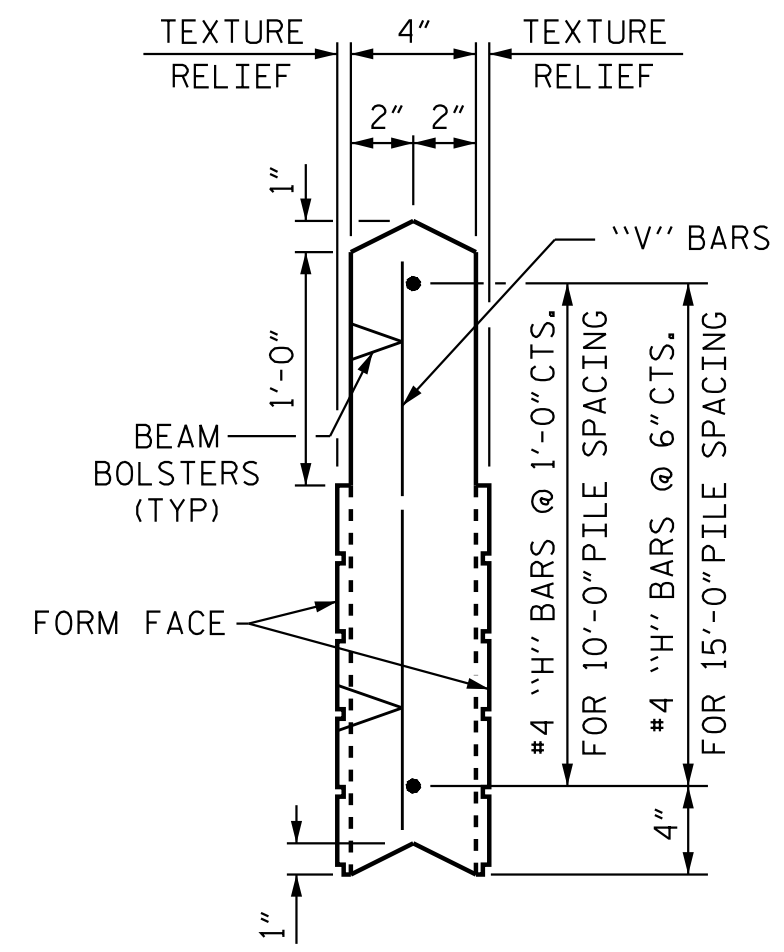
DRAWN BY: V. T. THOMPSON DATE: 01/15/20  
 CHECKED BY: T. R. DUDECK DATE: 05/10/20  
 DESIGN ENGINEER OF RECORD: T. R. DUDECK DATE: 10/27/21

10/27/2021  
 10/27/2021  
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FRONT ELEVATION OF UPPER PRECAST PANEL

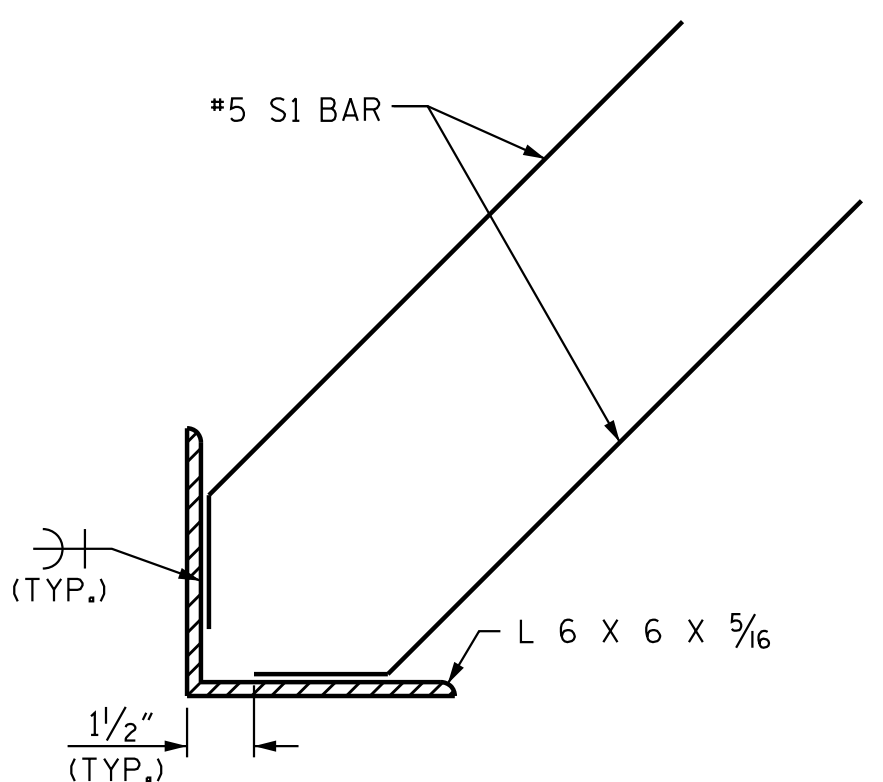
FRONT ELEVATION OF BOTTOM PRECAST PANEL



UPPER PANEL

BOTTOM PANEL

SECTION THROUGH PRECAST PANELS



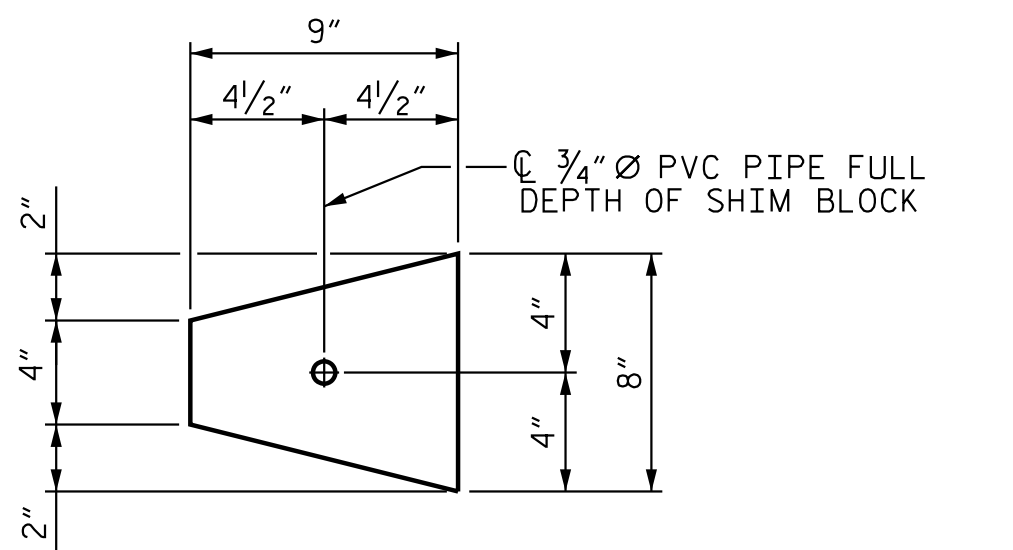
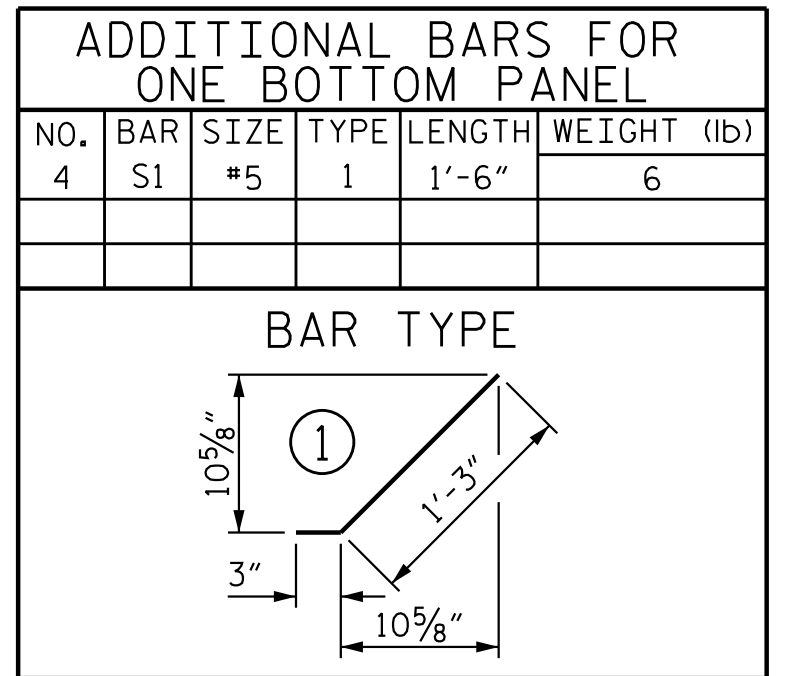
DETAIL "B"

QUANTITIES FOR ONE PRECAST PANEL (FOR 10'-0" PILE SPACING)

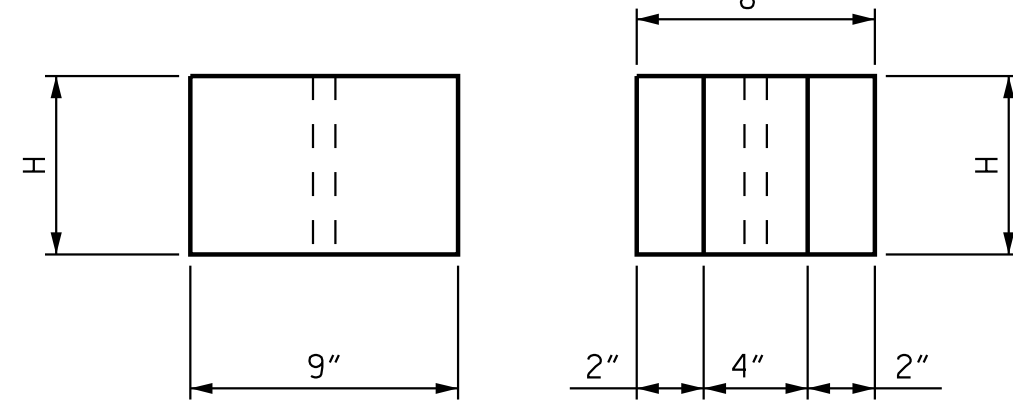
PANEL HEIGHT	CLASS AA CONCRETE C.Y.	BAR TYPES											
		HORIZONTAL						VERTICAL					
		NO.	BAR	SIZE	TYPE	LENGTH	WEIGHT (lb)	NO.	BAR	SIZE	TYPE	LENGTH	WEIGHT (lb)
2'-0"	0.22	3	H1	#4	STR	8'-8"	17	11	V1	#4	STR	1'-8"	12
3'-0"	0.33	4	H2	#4	STR	8'-8"	23	11	V2	#4	STR	2'-8"	20
4'-0"	0.44	5	H3	#4	STR	8'-8"	29	11	V3	#4	STR	3'-8"	27

QUANTITIES FOR ONE PRECAST PANEL (FOR 15'-0" PILE SPACING)

PANEL HEIGHT	CLASS AA CONCRETE C.Y.	BAR TYPES											
		HORIZONTAL						VERTICAL					
		NO.	BAR	SIZE	TYPE	LENGTH	WEIGHT (lb)	NO.	BAR	SIZE	TYPE	LENGTH	WEIGHT (lb)
3'-0"	0.52	8	H1	#4	STR	13'-8"	73	16	V1	#4	STR	2'-8"	29
4'-0"	0.69	9	H2	#4	STR	13'-8"	82	16	V2	#4	STR	3'-8"	39
5'-0"	0.86	11	H3	#4	STR	13'-8"	101	16	V3	#4	STR	4'-8"	50
6'-0"	1.04	12	H4	#4	STR	13'-8"	110	16	V4	#4	STR	5'-8"	61



PLAN

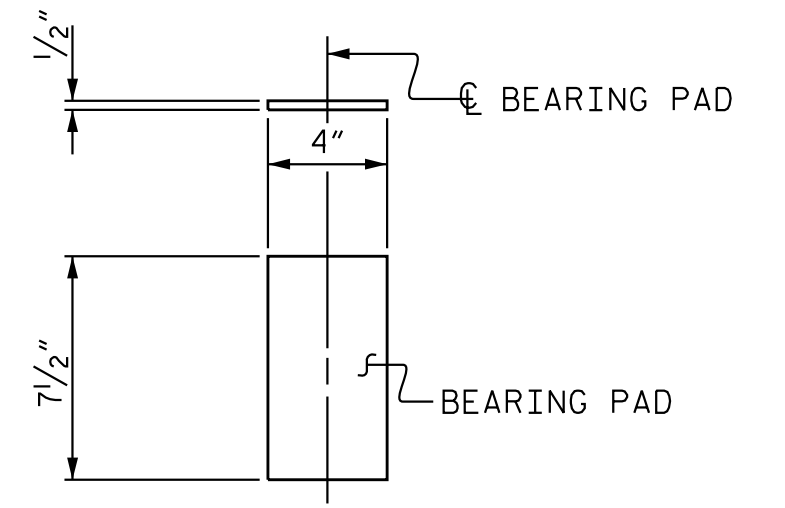


ELEVATION

END

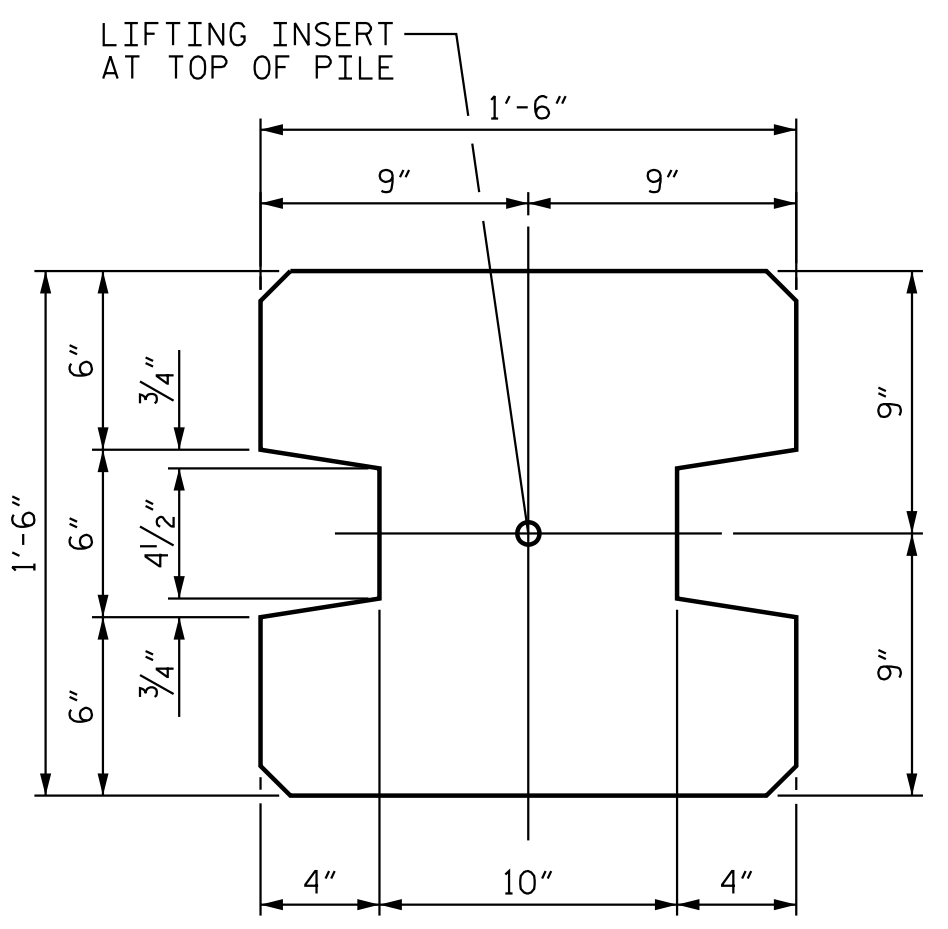
CONCRETE SHIM BLOCK

H = 3', 6" or 1'-0"

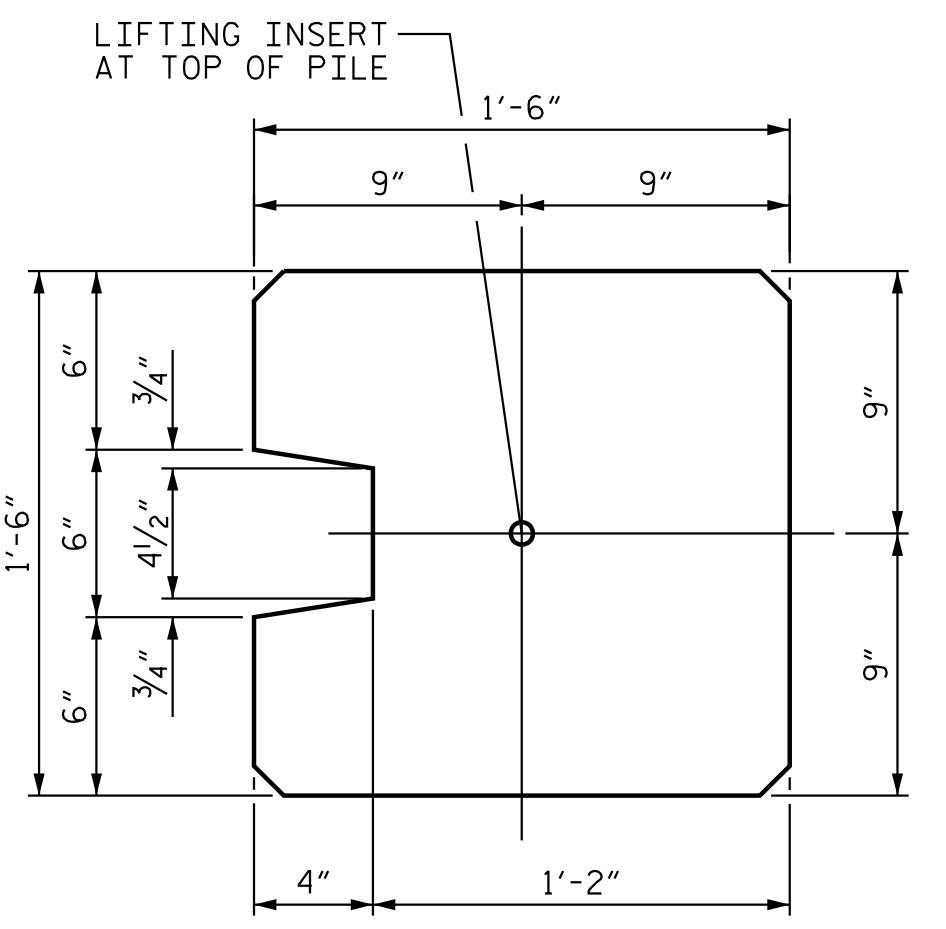


ELASTOMERIC BEARING DETAILS

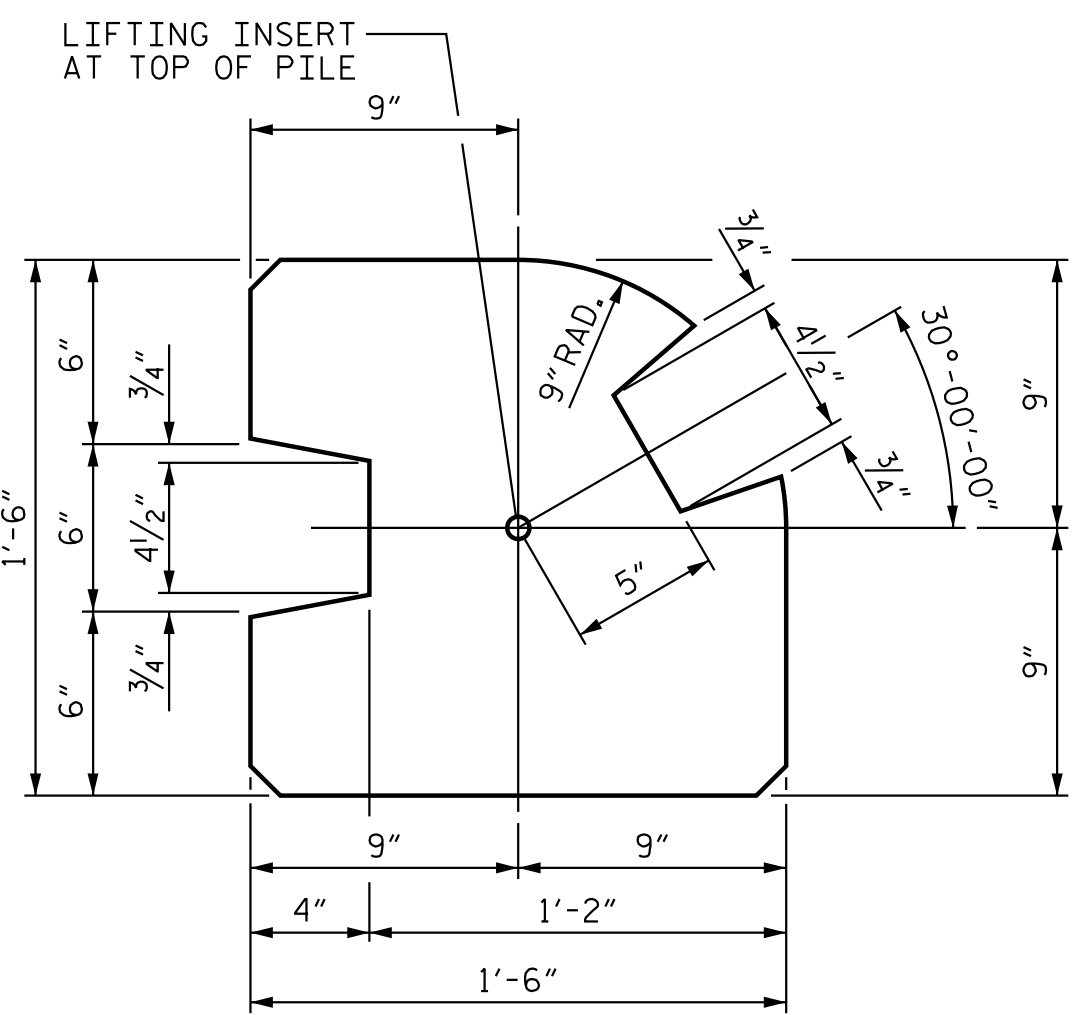
ELASTOMER IN BEARINGS SHALL BE 50 DUROMETER HARDNESS.



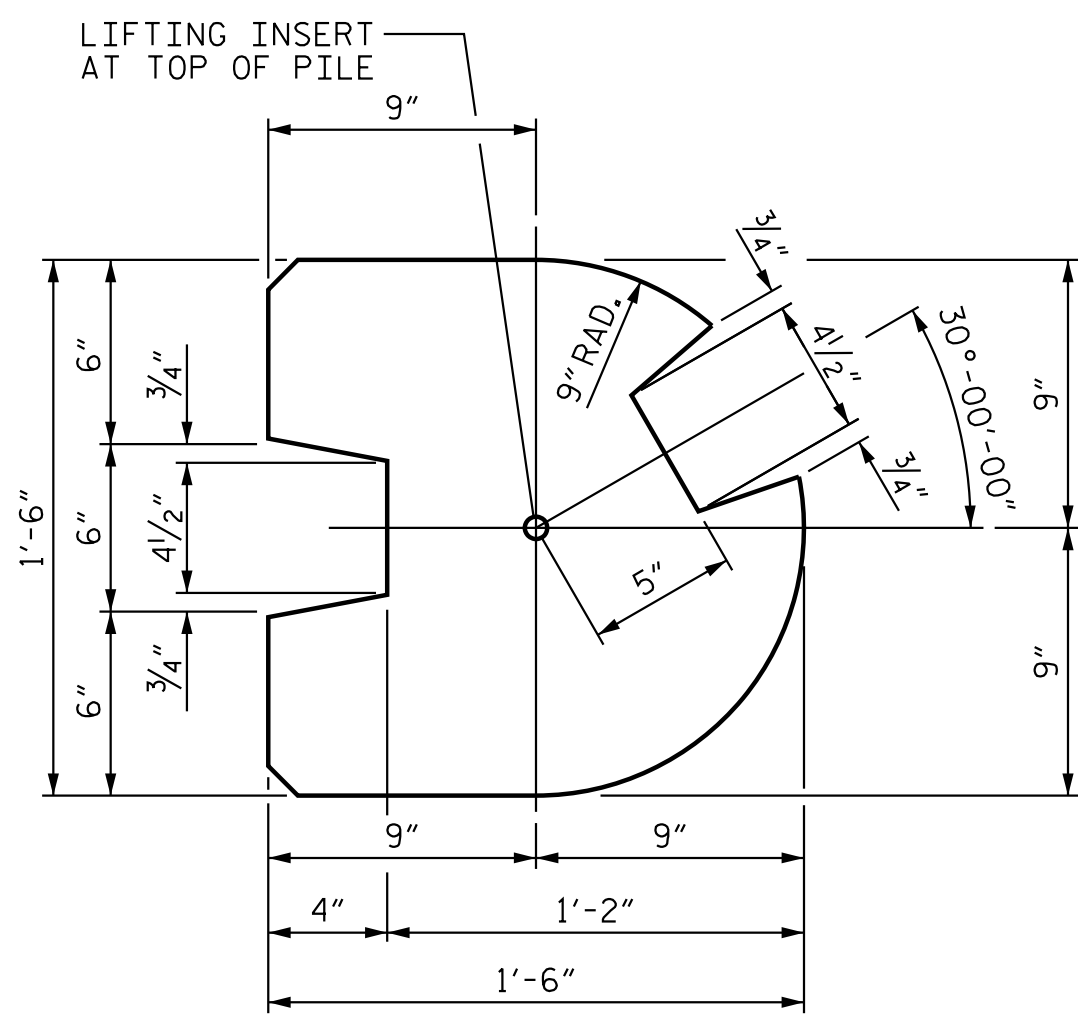
TYPE - I (AREA = 1.9444 SQ. FT.)



TYPE - II (AREA = 2.0903 SQ. FT.)



TYPE - III (AREA = 1.8336 SQ. FT.)



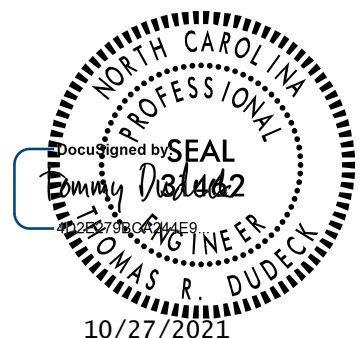
TYPE - III (ALT.) (AREA = 1.7163 SQ. FT.)

PILE DETAIL (ALL CORNERS TO BE CHAMFERED 1")

PROJECT NO. R-3300B  
 PENDER COUNTY  
 STATION: 47+26.28 -Y19-

SHEET 2 OF 5

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 STANDARD  
 SOUND BARRIER WALL  
 DETAILS



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2			4			

STD. NO. SBW2

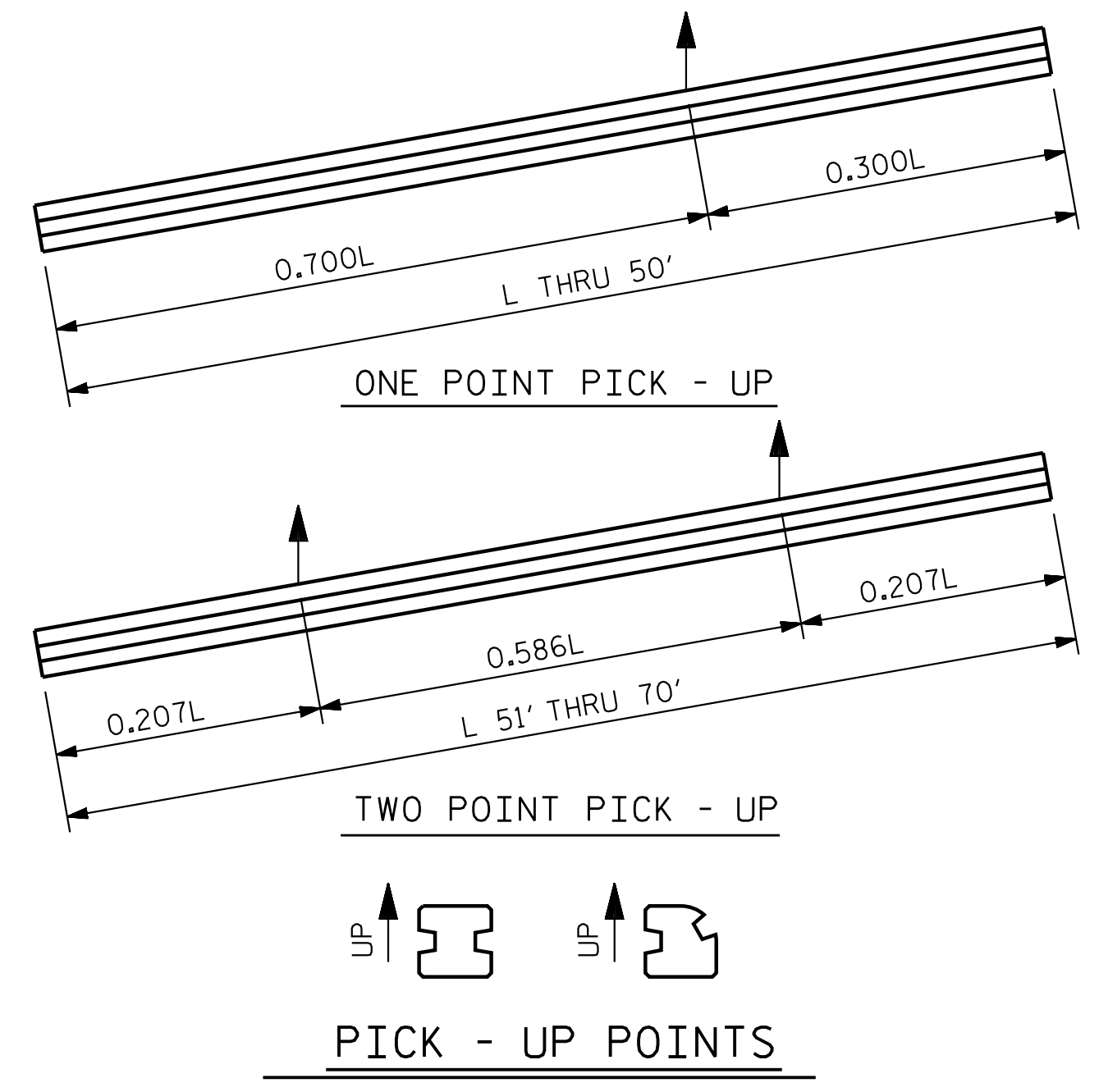
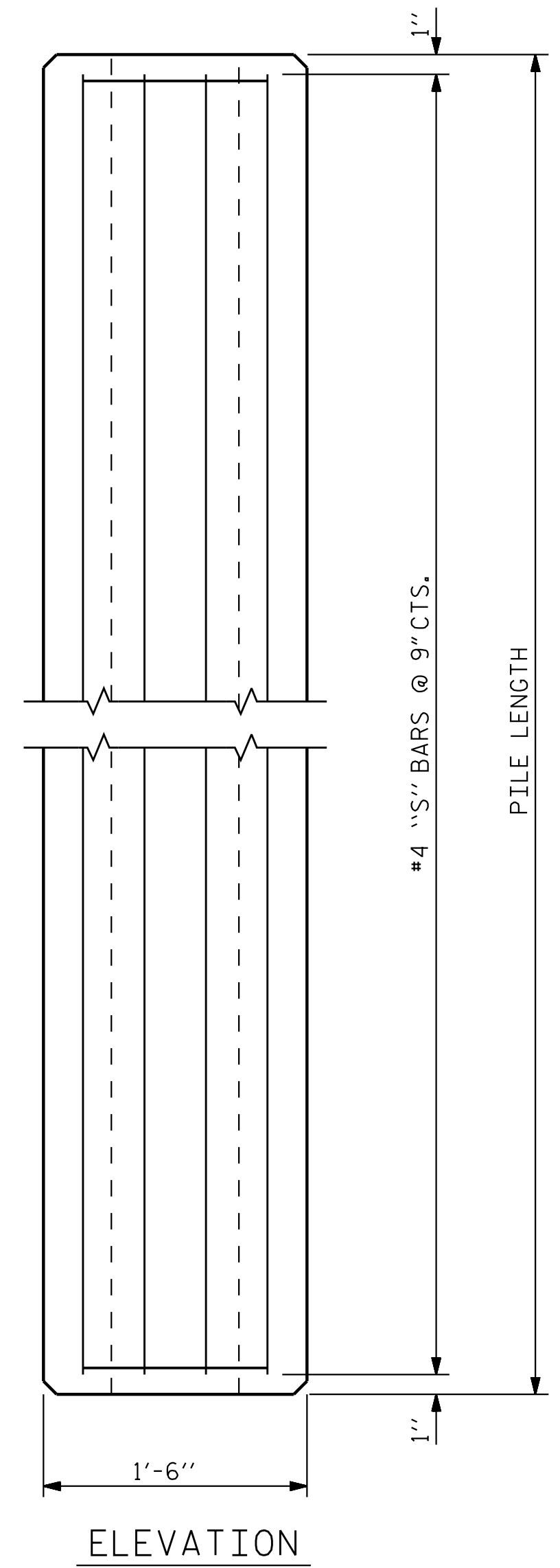
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ASSEMBLED BY : V. T. THOMPSON DATE : 5/06/20  
 CHECKED BY : T. R. DUDECK DATE : 5/08/20  
 DRAWN BY : MAA 6/11  
 CHECKED BY : CM 6/11

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**QUANTITIES FOR ONE PRECAST CONCRETE PILE**

LENGTH	APPROX. PILE WT. TONS	ONE PICK-UP POINT		TWO PICK-UP POINT	
		0.300L	0.700L	0.207L	0.586L
10'-0"	1.56	3'-0"	7'-0"		
15'-0"	2.35	4'-6"	10'-6"		
20'-0"	3.14	6'-0"	14'-0"		
25'-0"	3.93	7'-6"	17'-6"		
30'-0"	4.70	9'-0"	21'-0"		
35'-0"	5.49	10'-6"	24'-6"		
40'-0"	6.28	12'-0"	28'-0"		
45'-0"	7.05	13'-6"	31'-6"		
50'-0"	7.84	15'-0"	35'-0"		
55'-0"	8.63			11'-4 1/2"	32'-3"
60'-0"	9.42			12'-5"	35'-2"
65'-0"	10.21			13'-5 1/2"	38'-1"
70'-0"	11.00			14'-6"	41'-0"

**NOTES**

CONCRETE DESIGN DATA :  $f'_c = 5,000$  PSI

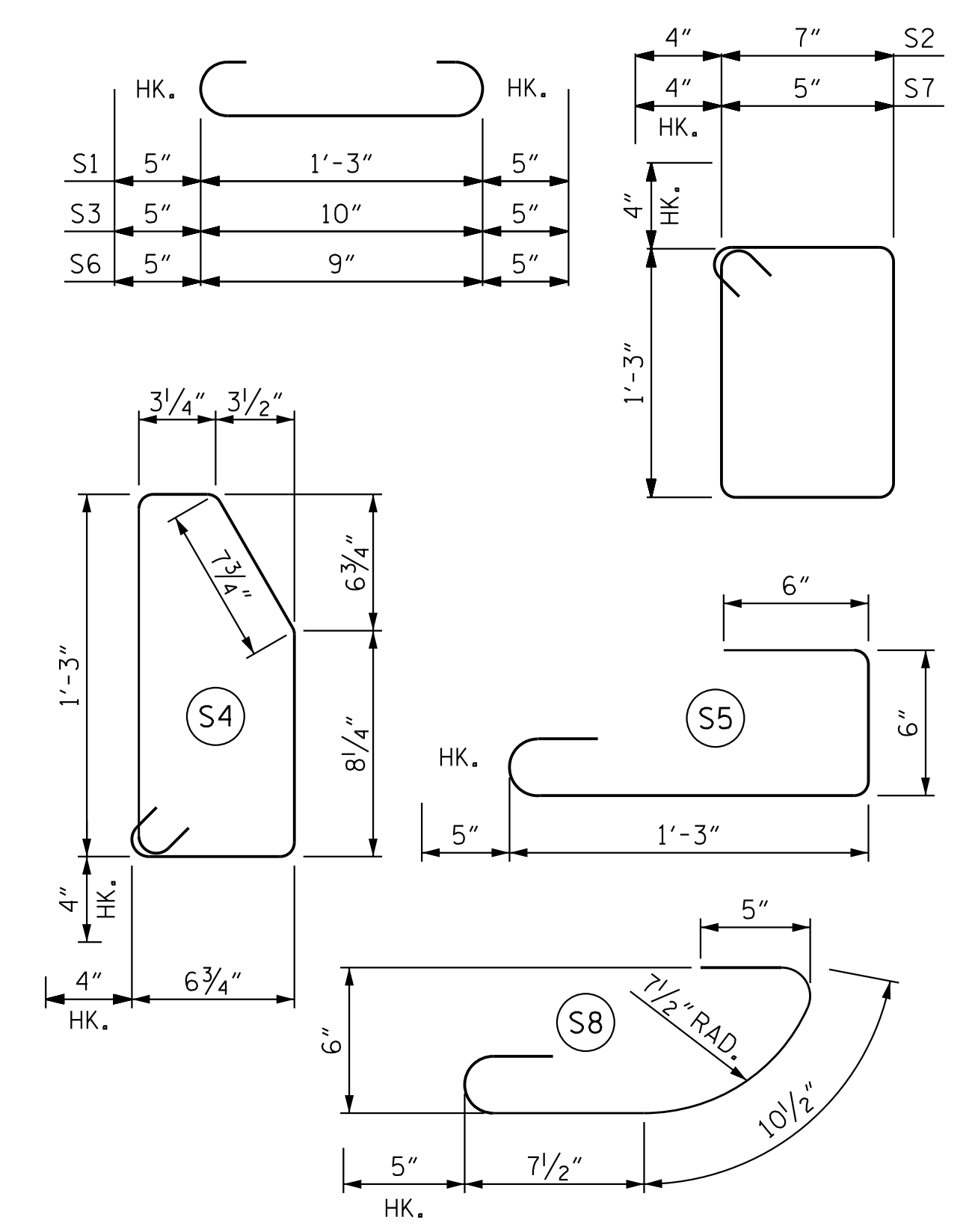
PROPOSED DEVICES FOR LIFTING PILES, RECESS DETAILS, AND PATCHING MATERIAL SHALL BE DETAILED IN SHOP DRAWINGS. AFTER ATTACHMENTS HAVE BEEN REMOVED, OPENINGS SHALL BE REPAIRED SUCH THAT THE APPEARANCE OF THE PILE IS UNIFORM.

WHERE CAST-IN-PLACE LIFTING DEVICES ARE NOT USED, PICK-UP POINTS TO BE INDICATED WITH A BLACK MARK 2" WIDE.

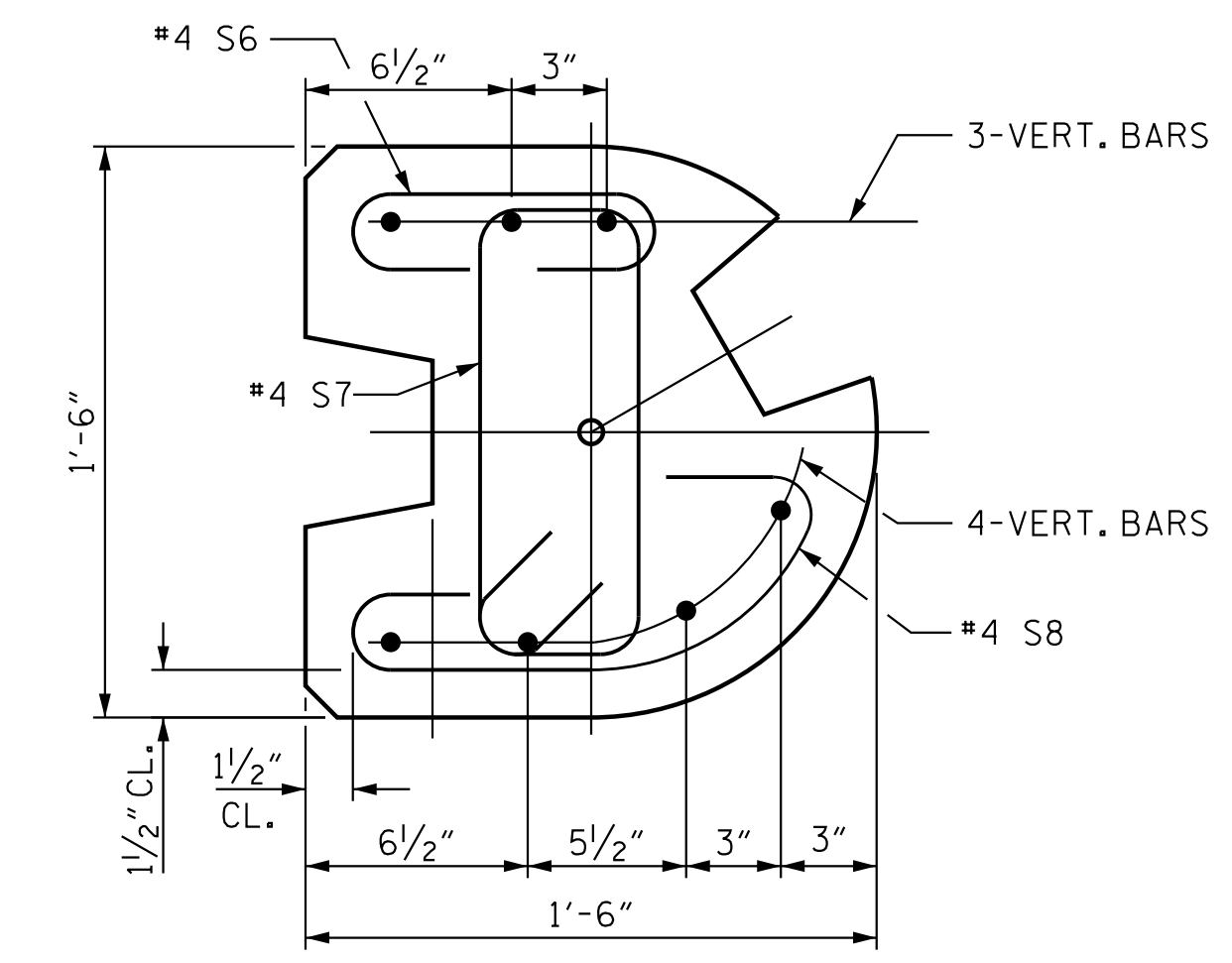
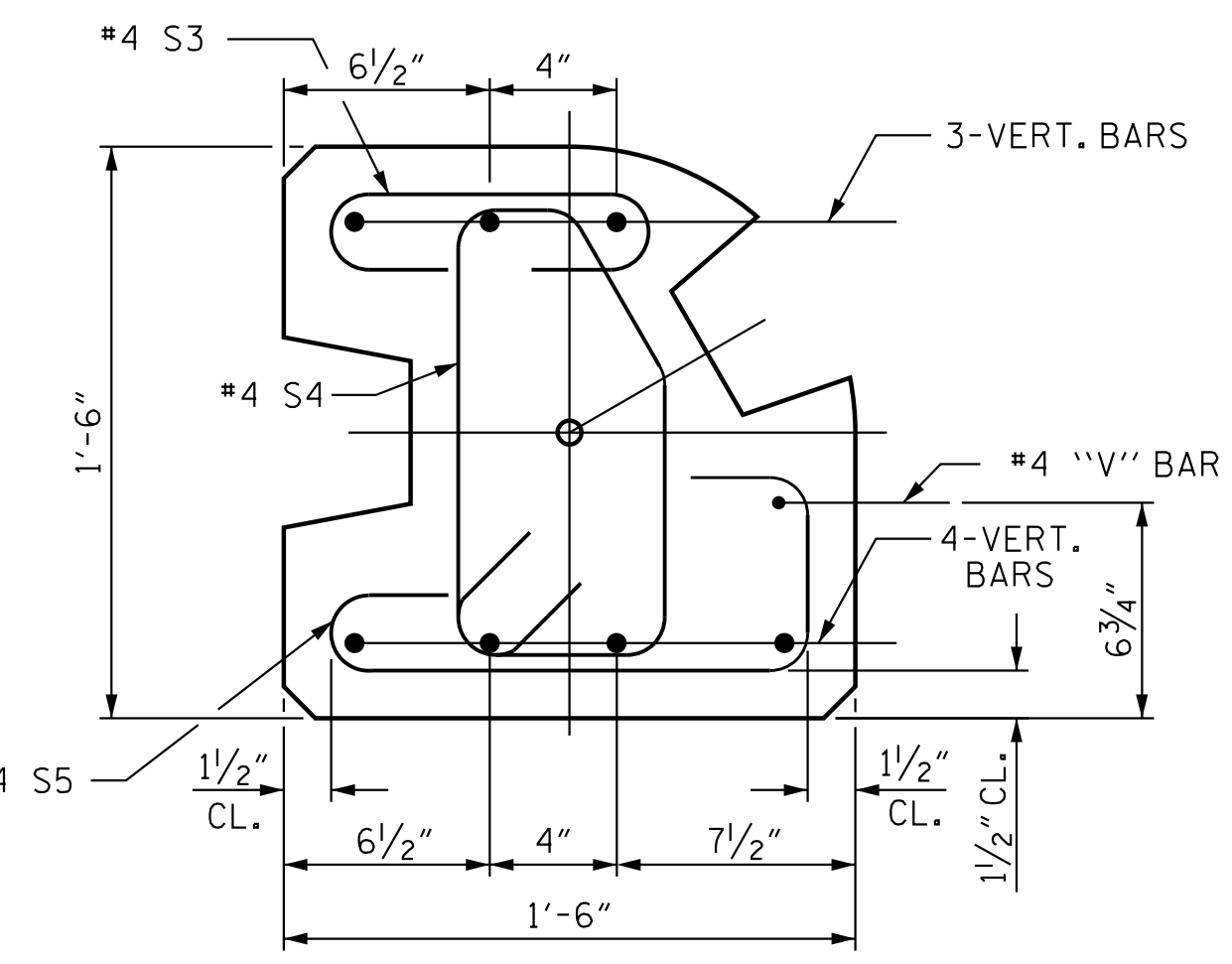
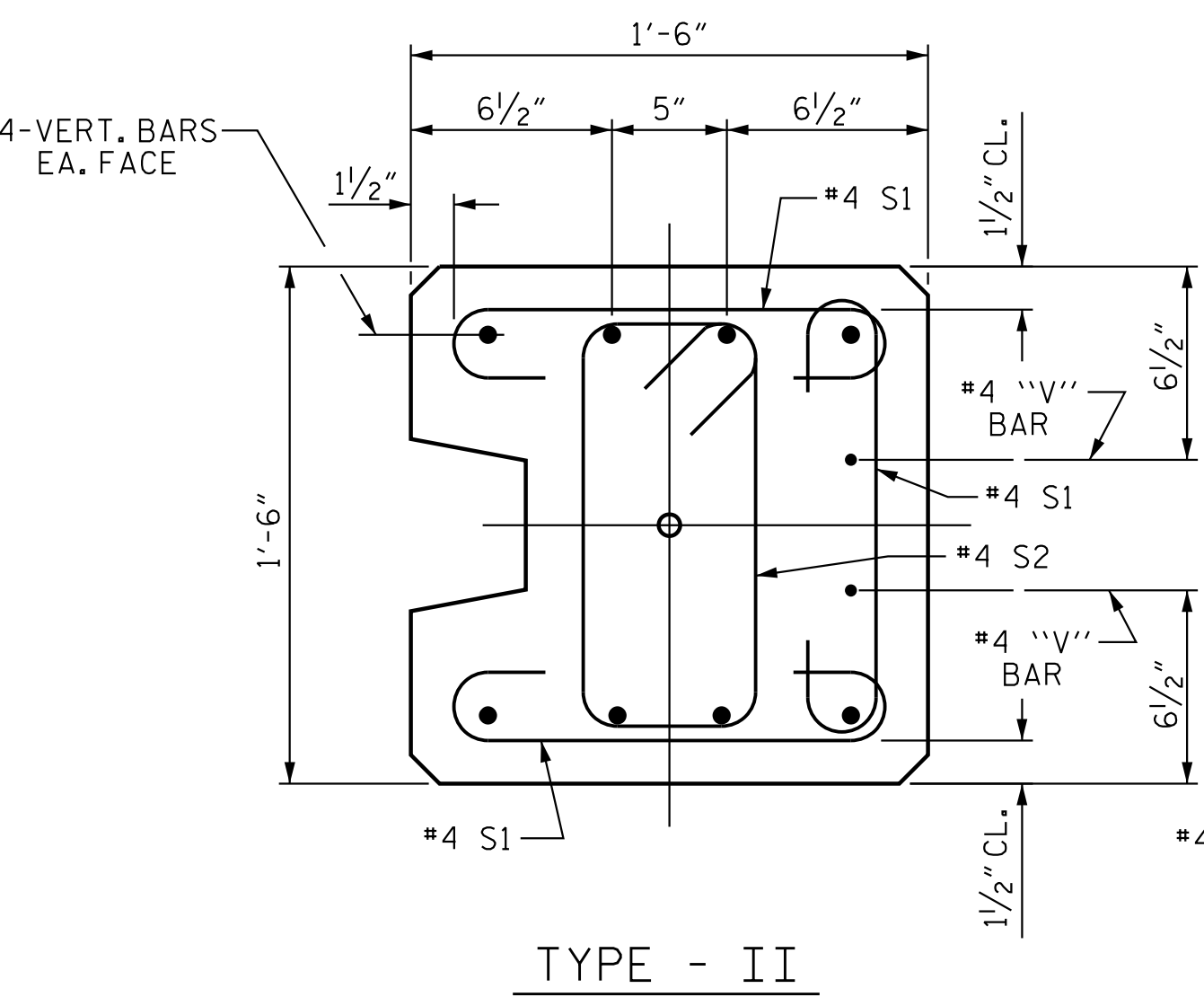
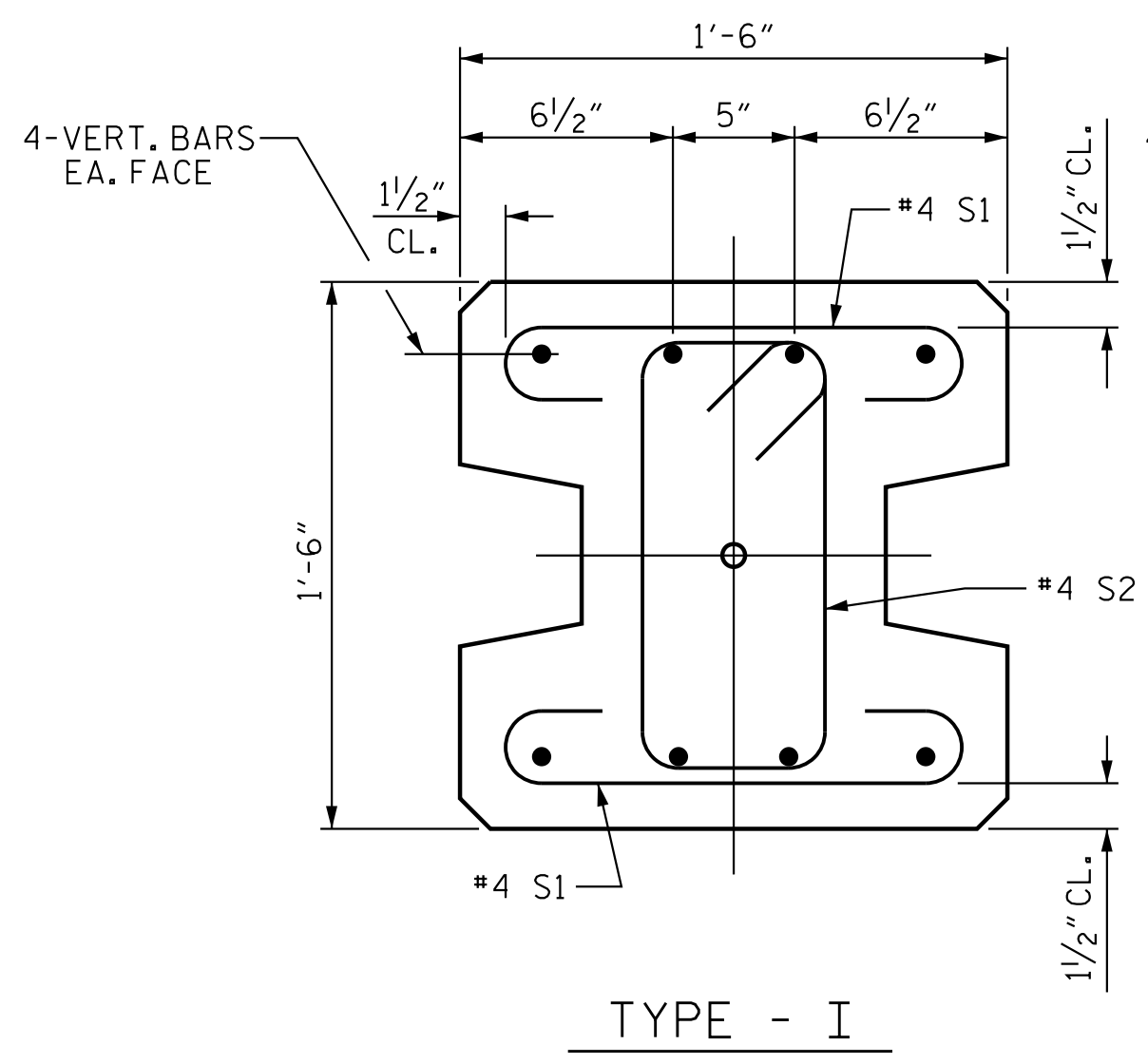
THE SLIP-FORM METHOD OF CASTING PILES WILL NOT BE PERMITTED.

ALL CORNERS TO BE CHAMFERED 1".

**BAR TYPES**



ALL BAR DIMENSIONS ARE OUT TO OUT.



**PILE DETAIL**

FOR VERTICAL BAR PILE REINFORCING SEE SHEET 1 OF 5

PROJECT NO. R-3300B  
PENDER COUNTY  
 STATION: 47+26.28 -Y19-  
 SHEET 3 OF 5

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**STANDARD  
 SOUND BARRIER WALL  
 DETAILS**

REVISIONS						SHEET NO. SW22-3
NO.	BY:	DATE:	NO.	BY:	DATE:	
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ASSEMBLED BY : V. T. THOMPSON DATE : 05/06/20  
 CHECKED BY : T. R. DUDECK DATE : 05/10/20

DRAWN BY : MAA 6/11 REV. 1/15/14 RWW/TMG  
 CHECKED BY : GM 6/11 REV. 12/17 MAA/THC

DESIGN ENGINEER OF RECORD: T. R. DUDECK DATE : 10/27/21

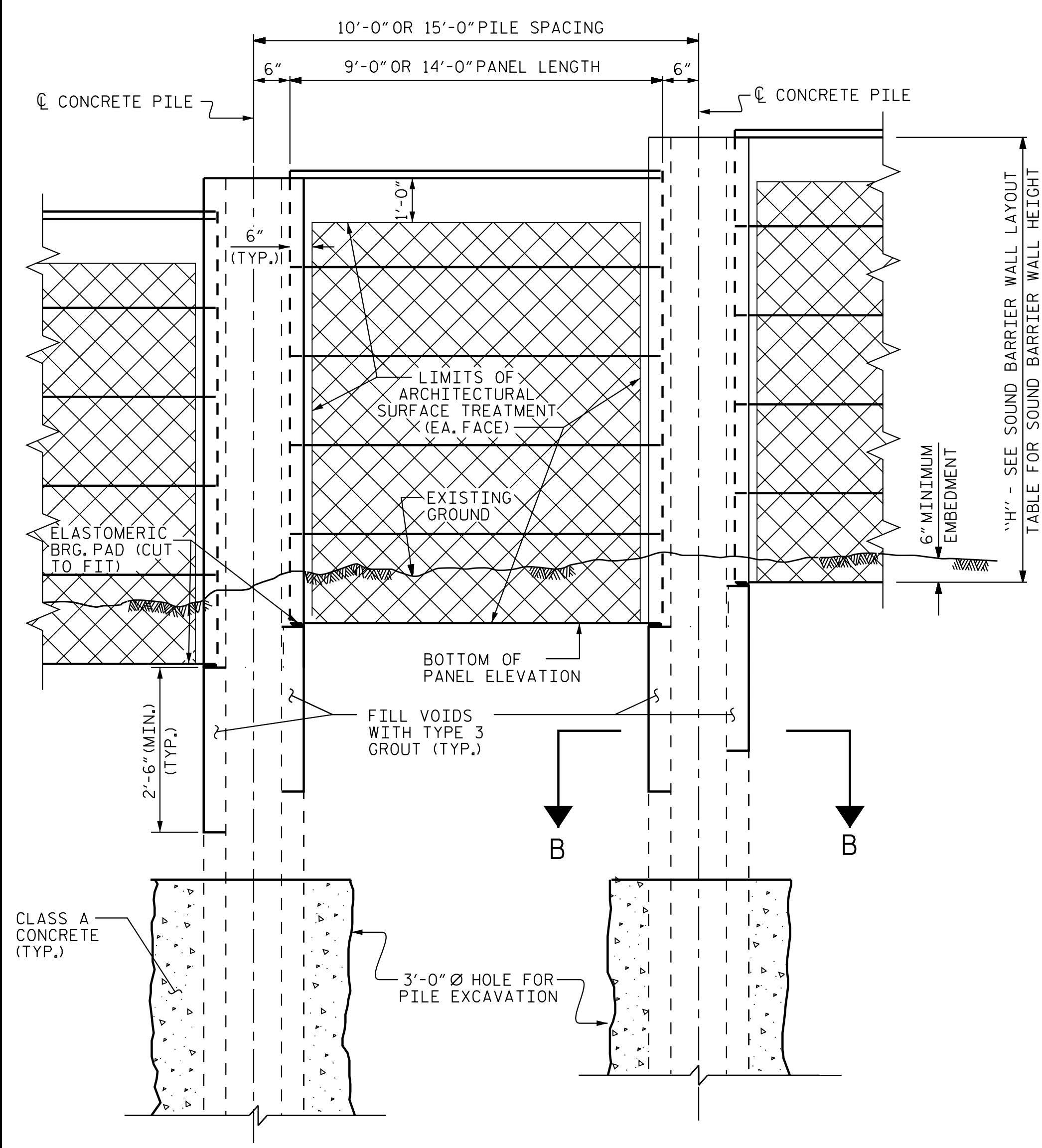
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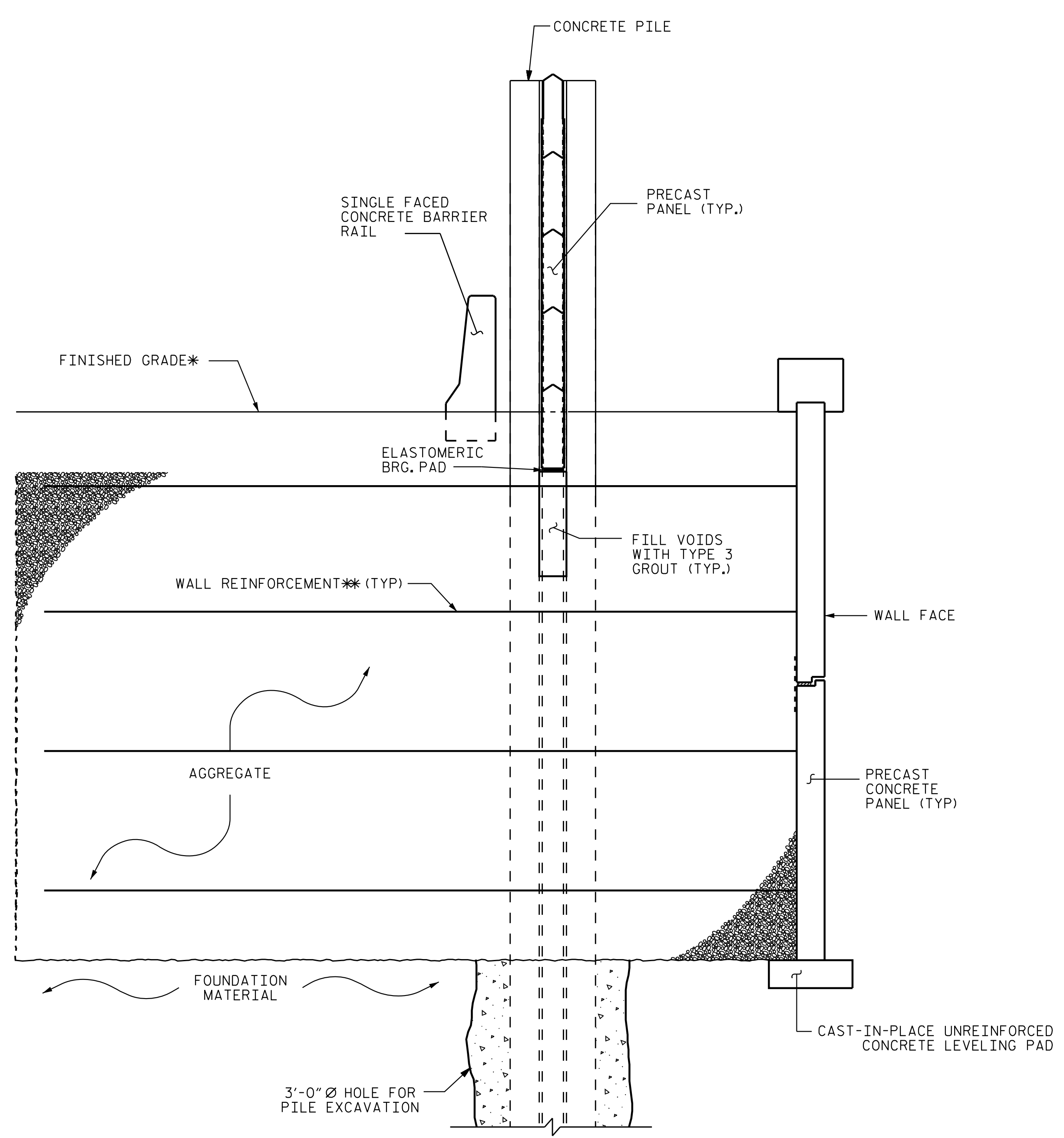
**NOTES**

FOR RETAINING WALL, SEE GEOTECHNICAL PLANS.  
 FOR SOUND BARRIER WALL, SEE SPECIAL PROVISIONS.  
 FOR TYPE 3 GROUT, SEE STANDARD SPECIFICATIONS.  
 SEE TABLE PILE REINFORCING STEEL AT RETAINING WALL 2 FOR REINFORCING OF PILES WITHIN RETAINING WALL ENVELOPE.

RETAINING WALL 2 ENVELOPE	STATION -Y19-	
	BEGIN WALL 47+85.00	END WALL 50+20.00



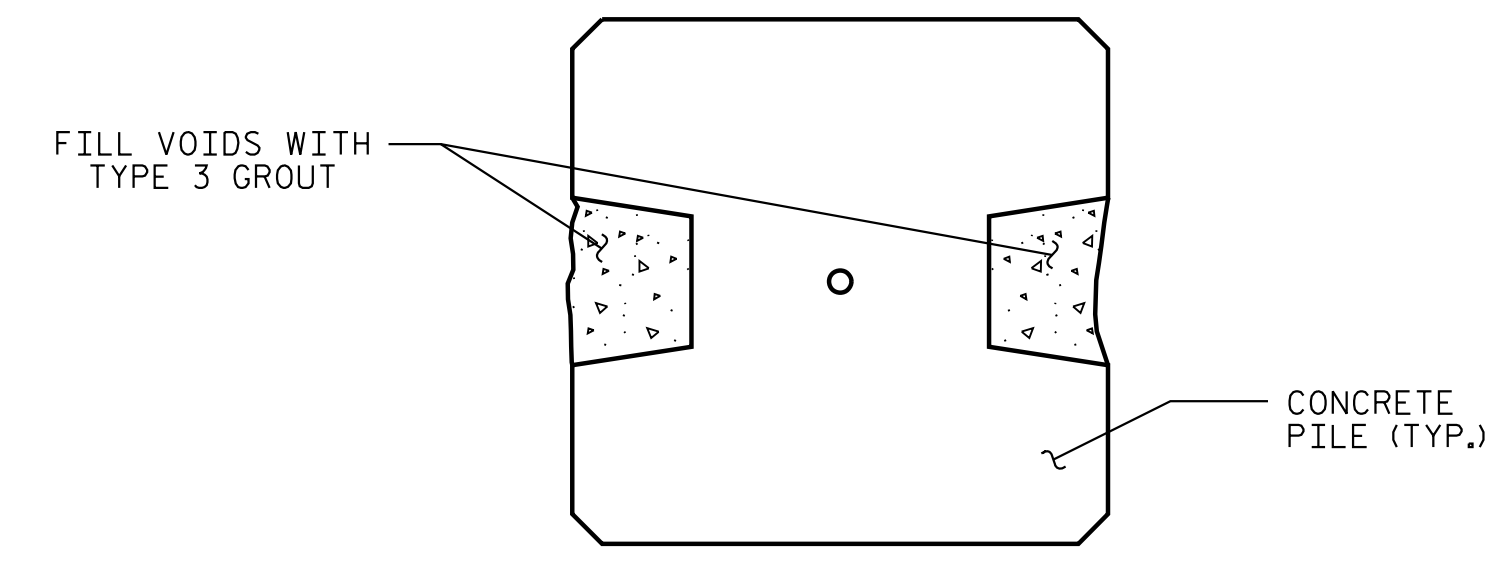
**ELEVATION**



**MSE WALL WITH PRECAST PANELS - TYPICAL SECTION**

\*\*SEE ROADWAY PLANS FOR FINISHED GRADE DETAILS.  
 \*\*SEE MSE RETAINING WALLS PROVISION AND IF APPLICABLE, MSE WALL NOTES FOR EMBEDMENT AND REINFORCEMENT LENGTH REQUIREMENTS.

PILE REINFORCING STEEL AT RETAINING WALL 2							
EXPOSURE CATEGORY D DESIGN WIND PRESSURE = 62 PSF (0' < H ≤ 14'); 71 PSF (14' < H ≤ 25')							
PILE TYPE I				PILE TYPE III			
PILE SPACING	MAXIMUM WALL HEIGHT (H)	VERTICAL REINFORCING STEEL	TIES	PILE SPACING	MAXIMUM WALL HEIGHT (H)	VERTICAL REINFORCING STEEL	TIES
15'-0"	H ≤ 20'	4 - #10 EA. FACE	#4 @ 9"CTS.	15'-0"	H ≤ 20'	3 - #11 SHORT FACE 4 - #11 LONG FACE	#4 @ 9"CTS.
PILE TYPE II				PILE TYPE III ALT.			
PILE SPACING	MAXIMUM WALL HEIGHT (H)	VERTICAL REINFORCING STEEL	TIES	PILE SPACING	MAXIMUM WALL HEIGHT (H)	VERTICAL REINFORCING STEEL	TIES
15'-0"	H ≤ 20'	4 - #7 EA. FACE	#4 @ 9"CTS.	15'-0"	H ≤ 20'	3 - #11 SHORT FACE 4 - #11 LONG FACE	#4 @ 9"CTS.

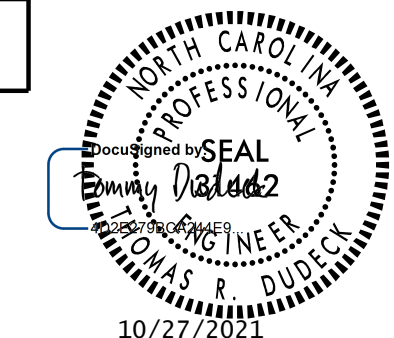


**SECTION B-B**

PROJECT NO. R-3300B  
PENDER COUNTY  
 STATION: 47+85.00 -Y19-

SHEET 4 OF 5

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**SOUND BARRIER WALL  
 AT RETAINING WALL 2**



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PILE	STA. -Y19-	BOTT. OF PANEL ELEV.	TOP OF WALL ELEV.	WALL HEIGHT "H" (FT.)	EXCAVATION DEPTH "D" (FT.)	PILE LENGTH (FT.)	OFFSET -Y19- RT. (FT.)	PILE SPACING (FT.)	WALL AREA (FT <sup>2</sup> )
1	47+26.20	42.00	61.00	19.00	15.00	34.00	191.69	15.00	285
2	47+26.73	42.00	61.00	19.00	15.00	34.00	176.70	15.00	285
3	47+27.27	42.00	62.00	20.00	15.00	35.00	161.71	15.00	300
4	47+27.80	43.00	62.00	19.00	15.00	34.00	146.72	15.00	285
5	47+28.34	43.00	63.00	20.00	14.00	34.00	131.73	15.00	300
6	47+28.88	43.00	63.00	20.00	14.00	34.00	116.74	15.00	300
7	47+29.41	44.00	64.00	20.00	14.00	34.00	101.75	15.00	300
8	47+29.95	44.00	64.00	20.00	14.00	34.00	86.76	15.00	300
9	47+30.48	45.00	65.00	20.00	14.00	34.00	71.77	15.00	300
10	47+31.02	45.00	65.00	20.00	14.00	34.00	56.78	15.00	300
11	47+34.03	46.00	66.00	20.00	14.00	34.00	42.08	15.00	300
12	47+43.84	46.00	66.00	20.00	14.00	34.00	30.73	15.00	300
13	47+57.93	46.00	66.00	20.00	14.00	34.00	25.60	15.00	300
14	47+72.80	46.00	66.00	20.00	14.00	34.00	23.60	15.00	300
15	47+87.78	46.00	66.00	20.00	20.00	40.00	22.92	15.00	300
16	48+02.78	46.00	66.00	20.00	20.00	40.00	22.92	15.00	300
17	48+17.78	46.00	66.00	20.00	20.00	40.00	22.92	15.00	300
18	48+32.78	46.00	65.00	19.00	20.00	39.00	22.92	15.00	285
19	48+47.78	46.00	65.00	19.00	20.00	39.00	22.92	15.00	285
20	48+62.78	46.00	65.00	19.00	20.00	39.00	22.92	15.00	285
21	48+77.78	45.00	65.00	20.00	20.00	40.00	22.92	15.00	300
22	48+92.78	45.00	65.00	20.00	20.00	40.00	22.92	15.00	300
23	49+07.78	45.00	65.00	20.00	20.00	40.00	22.92	15.00	300
24	49+22.78	45.00	65.00	20.00	20.00	40.00	22.92	15.00	300
25	49+37.78	45.00	65.00	20.00	20.00	40.00	22.92	15.00	300
26	49+52.78	45.00	64.00	19.00	20.00	39.00	22.92	15.00	285
27	49+67.78	45.00	64.00	19.00	19.00	38.00	22.92	15.00	285
28	49+82.78	45.00	64.00	19.00	18.00	37.00	22.92	15.00	285
29	49+97.78	45.00	64.00	19.00	18.00	37.00	22.92	15.00	285
30	50+12.78	45.00	64.00	19.00	18.00	37.00	22.92	10.00	190
31	50+22.78	45.00	64.00	19.00	14.00	33.00	22.92	15.00	285
32	50+37.78	45.00	63.00	18.00	14.00	32.00	22.92	15.00	270
33	50+52.78	44.00	63.00	19.00	13.00	32.00	22.92	15.00	285
34	50+67.78	44.00	63.00	19.00	14.00	33.00	22.92	15.00	285
35	50+82.78	44.00	63.00	19.00	14.00	33.00	22.92	10.00	190
36	50+92.78	44.00	63.00	19.00	14.00	33.00	22.92		

### SOUND BARRIER WALL LAYOUT

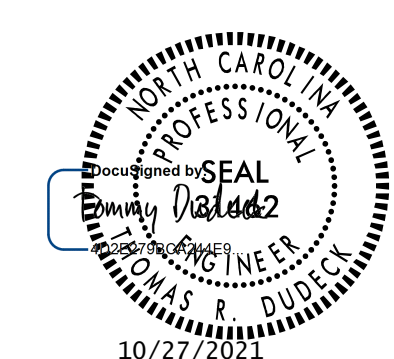
STATIONS AND OFFSETS REFERENCED FROM -Y19- TO CENTERLINE OF PILE.

**PRELIMINARY PLANS**  
DO NOT USE FOR CONSTRUCTION

PROJECT NO. R-3300B  
 PENDER  COUNTY  
 STATION: 47+26.28 -Y19-

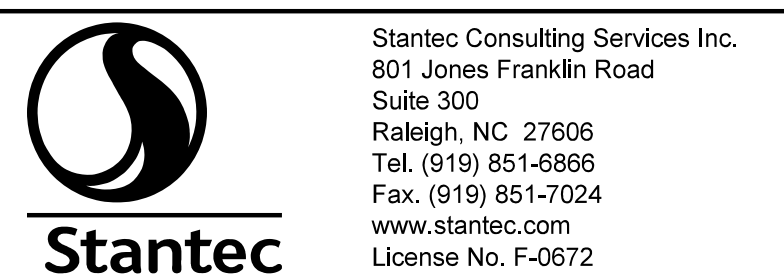
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 STANDARD  
 SOUND BARRIER WALL  
 LAYOUT



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DRAWN BY : V. T. THOMPSON DATE : 05/07/20  
 CHECKED BY : T. R. DUDECK DATE : 05/10/20  
 DESIGN ENGINEER OF RECORD : T. R. DUDECK DATE : 10/27/21

GEOTECHNICAL ENGINEER

SEAL  
048207  
ENGINEER  
STEPHEN C. CROCKETT

ENGINEER

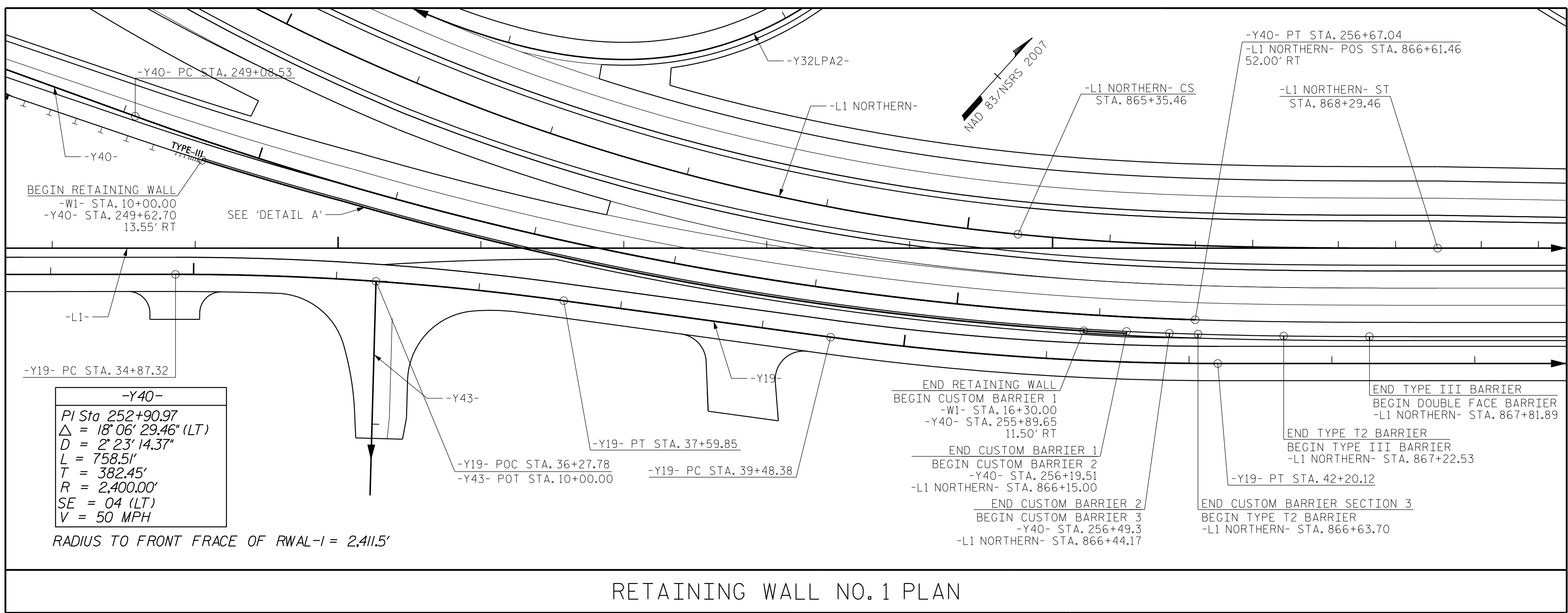
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DocuSigned by:  
*Stephen C Crockett* 11/16/2021

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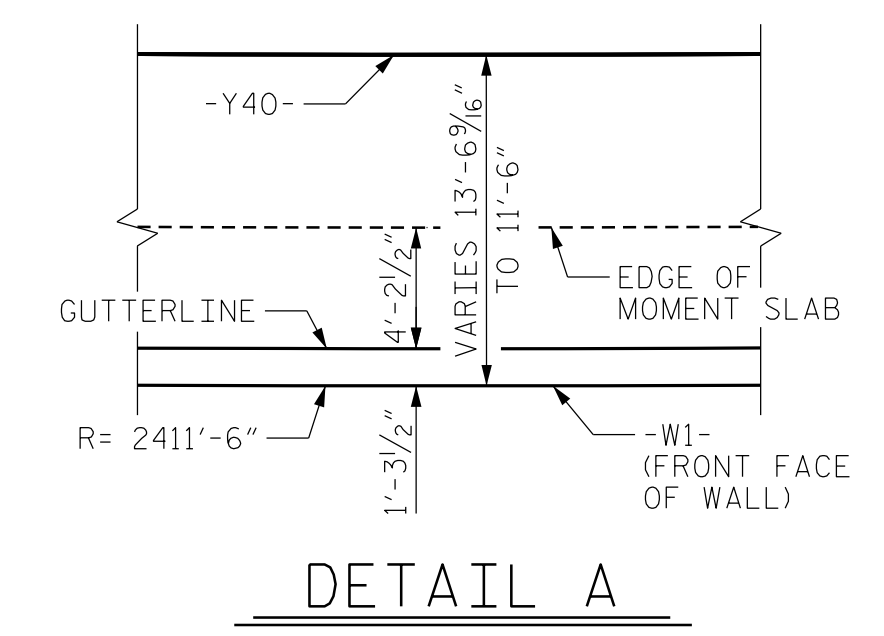
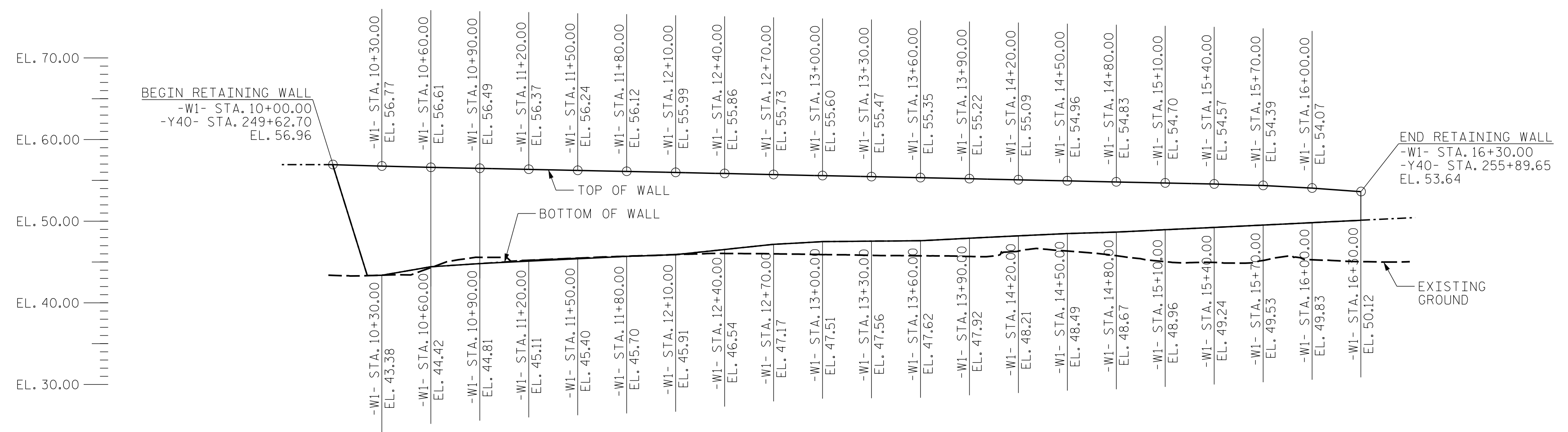
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NOTES:  
 FOR MSE WALL NOTES, SEE SHEET W-4.  
 FOR MOMENT SLAB DETAILS, SEE SHEETS W-5 & W-6.  
 FOR LEVELING PAD DETAILS, SEE SHEET W-4.  
 FOR CUSTOM BARRIERS 1 THRU 3, SEE SHEETS W-5 & W-6.  
 FOR TYPE T2 & TYPE III BARRIER DETAILS, SEE ROADWAY STANDARD DRAWINGS.

ESTIMATED MSE WALL QUANTITY (SQUARE FEET)	
MSE RETAINING WALL NO. 1	5,990 SF



**RETAINING WALL NO. 1 ELEVATION**

FRONT FACE OF WALL SHOWN (SEE DETAIL A)  
 MOMENT SLAB ABOVE WALL NOT SHOWN FOR CLARITY  
 TOP OF WALL ELEVATIONS WERE DETERMINED USING AN EMBEDMENT OF 2" INTO MOMENT SLAB FOR MSE WALL WITH PRECAST PANELS  
 THE WALL ENVELOPE DOES NOT ACCURATELY DEPICT THE ACTUAL FACE OF THE WALL

PREPARED BY: S. C. CROCKETT      DATE: 4/22/20  
 REVIEWED BY: J. R. HAMM      DATE: 4/24/20

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 CARY, NC 27513  
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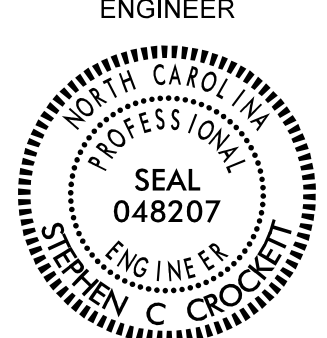
NORTH CAROLINA  
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 DIVISION OF HIGHWAYS

**GEOTECHNICAL ENGINEERING UNIT**

PROJECT NO.: R-3300B  
 PENDER COUNTY  
 STATION: -Y40- 249+62.70  
 SHEET 1 OF 8

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	
1			3			W-1
2			4			

GEOTECHNICAL ENGINEER



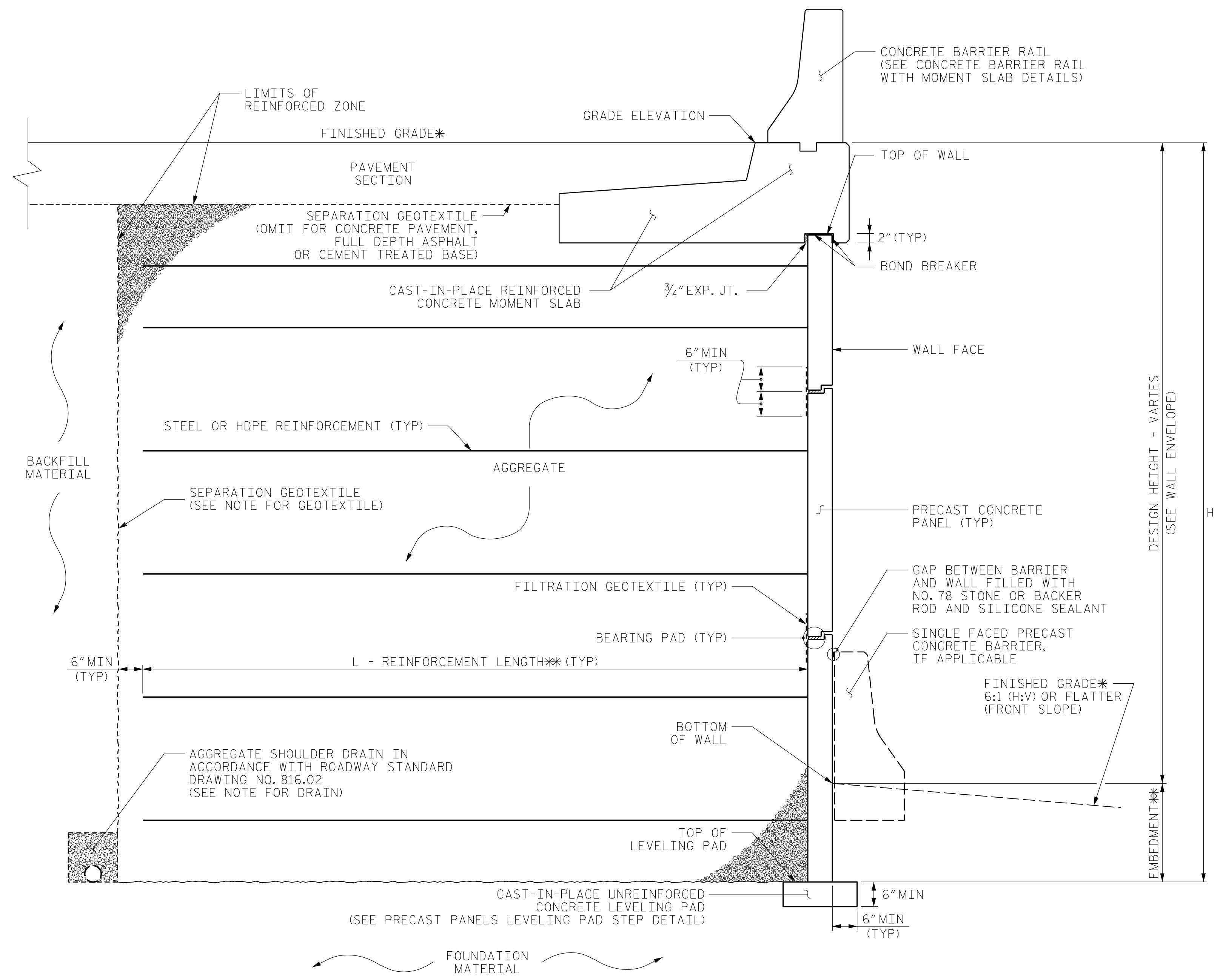
SEAL  
048207  
ENGINEER  
STEPHEN C. CROCKETT

ENGINEER

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DocuSigned by: *Stephen C Crockett* 11/16/2021

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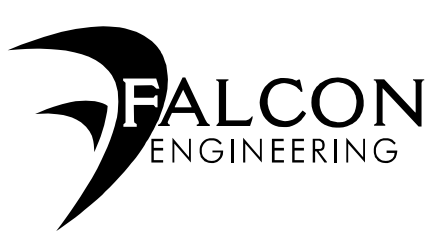


**MSE WALL WITH PRECAST PANELS - TYPICAL SECTION**

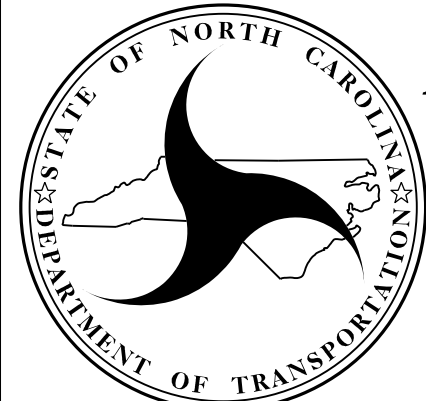
\*SEE ROADWAY PLANS FOR FINISHED GRADE DETAILS.  
\*\*SEE MSE RETAINING WALLS PROVISION AND IF APPLICABLE, MSE WALL NOTES FOR EMBEDMENT AND REINFORCEMENT LENGTH REQUIREMENTS.

PROJECT NO.: R-3300B  
 PENDER COUNTY  
 STATION: -Y40- 249+62.70  
 SHEET 2 OF 8

PREPARED BY: S. CROCKETT      DATE: 4/22/20  
 REVIEWED BY: J. HAMM         DATE: 4/24/20



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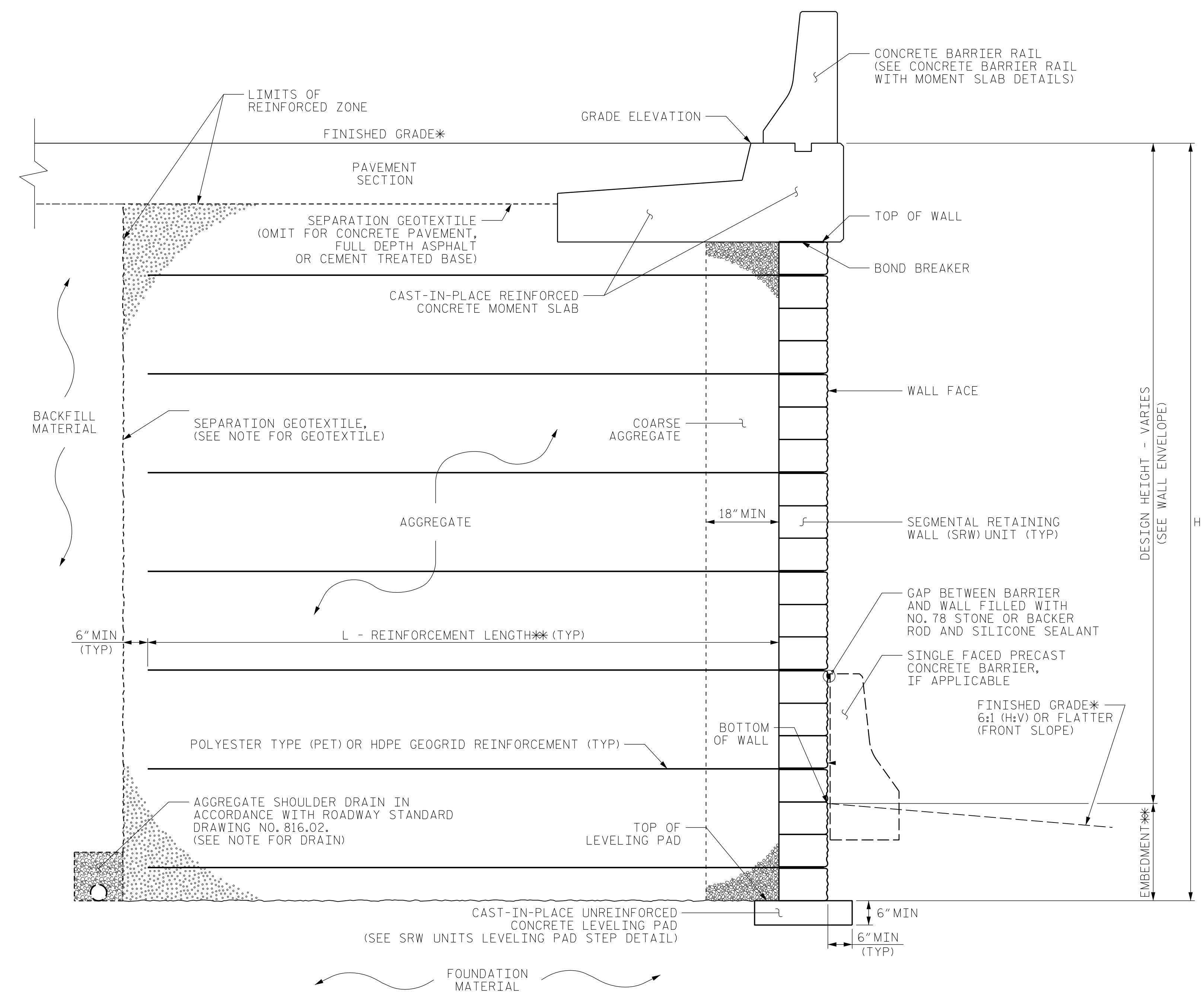
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NO.	BY	DATE	NO.	BY	DATE
1			3		
2			4		

SHEET NO. W-2



GEOTECHNICAL ENGINEER  SEAL 048207 ENGINEER STEPHEN C. CROCKETT	ENGINEER    _____ SIGNATURE      DATE
Documented by: <u>Stephen C. Crockett</u> 11/16/2021 SIGNATURE      DATE	
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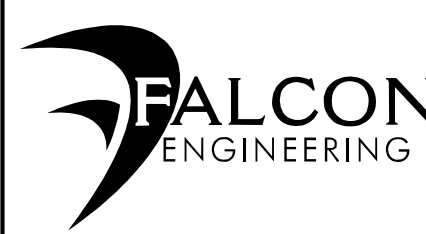


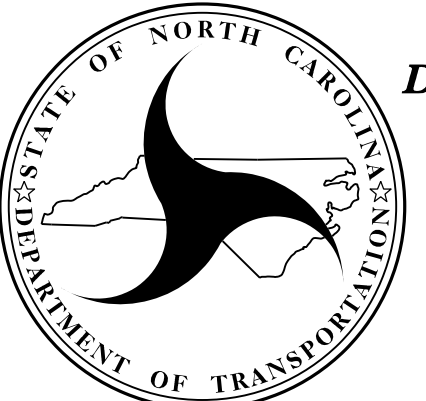
**MSE WALL WITH SRW UNITS - TYPICAL SECTION**

\*SEE ROADWAY PLANS FOR FINISHED GRADE DETAILS.  
 \*\*SEE MSE RETAINING WALLS PROVISION AND IF APPLICABLE, MSE WALL NOTES FOR EMBEDMENT AND REINFORCEMENT LENGTH REQUIREMENTS.

PROJECT NO.: R-3300B  
 PENDER COUNTY  
 STATION: -Y40- 249+62.70  
 SHEET 3 OF 8

PREPARED BY: S. CROCKETT	DATE: 4/22/20
REVIEWED BY: J. HAMM	DATE: 4/24/20


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REVISIONS						SHEET NO. W-3
NO.	BY	DATE	NO.	BY	DATE	
1			3			
2			4			

**NOTES:**

FOR MECHANICALLY STABILIZED EARTH (MSE) RETAINING WALLS, SEE MECHANICALLY STABILIZED EARTH RETAINING WALLS PROVISION.

FOR SINGLE FACED PRECAST CONCRETE BARRIER, SEE ROADWAY PLANS AND SECTION 857 OF THE STANDARD SPECIFICATIONS.

A CONCRETE BARRIER RAIL WITH MOMENT SLAB IS REQUIRED ABOVE RETAINING WALL NO.1. SEE PLANS FOR CONCRETE BARRIER RAIL WITH MOMENT SLAB DETAILS.

AT THE CONTRACTOR'S OPTION, USE AN MSE WALL SYSTEM WITH SEGMENTAL RETAINING WALL (SRW) UNITS THAT MEET ARTICLE 1040-4 OF THE STANDARD SPECIFICATIONS FOR RETAINING WALL NO.1. WITH SEGMENTAL RETAINING WALL UNITS (SRW) UNITS THAT MEET ARTICLE 1040-4 OF THE STANDARD SPECIFICATIONS.

AT THE CONTRACTOR'S OPTION, USE FINE AGGREGATE IN THE REINFORCED ZONE OF RETAINING WALL NO.1.

A SEPARATION GEOTEXTILE IS REQUIRED AT THE BACK OF THE REINFORCED ZONE FOR RETAINING WALL NO.1.

A DRAIN IS REQUIRED FOR RETAINING WALL NO.1.

BEFORE BEGINNING MSE WALL DESIGN FOR RETAINING WALL NO.1, SURVEY WALL LOCATION AND SUBMIT A REVISED WALL PROFILE VIEW (WALL ENVELOPE) FOR REVIEW. DO NOT START WALL DESIGN OR CONSTRUCTION UNTIL THE REVISED WALL ENVELOPE IS ACCEPTED.

DESIGN RETAINING WALL NO.1 FOR THE FOLLOWING:

- 1) H = DESIGN HEIGHT + EMBEDMENT
- 2) DESIGN LIFE = 100 YEARS
- 3) MAXIMUM FACTORED VERTICAL PRESSURE ON FOUNDATION MATERIAL = 4,010 PSF
- 4) MINIMUM REINFORCEMENT LENGTH (L) = 0.85H OR 6 FT, WHICHEVER IS LONGER
- 5) REINFORCED ZONE AGGREGATE PARAMETERS:

AGGREGATE TYPE*	UNIT WEIGHT (γ) PCF	FRICTION ANGLE (φ) DEGREES	COHESION (c) PSF
COARSE	110	38	0
FINE	115	34	0

\*SEE MSE RETAINING WALLS PROVISION FOR COARSE AND FINE AGGREGATE MATERIAL REQUIREMENTS.

6) IN-SITU ASSUMED MATERIAL PARAMETERS:

MATERIAL TYPE	UNIT WEIGHT (γ) PCF	FRICTION ANGLE (φ) DEGREES	COHESION (c) PSF
BACKFILL	120	30	0
FOUNDATION	115	28	0

DESIGN RETAINING WALL NO.1 FOR A LIVE LOAD (TRAFFIC) SURCHARGE.

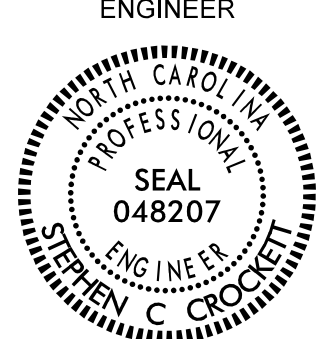
FOUNDATIONS FOR SIGNS OR LIGHTING WILL BE LOCATED BEHIND RETAINING WALL NO.1 AND MAY INTERFERE WITH REINFORCEMENT. BEFORE BEGINNING MSE WALL CONSTRUCTION, SUBMIT PROPOSED CONSTRUCTION METHODS FOR THESE FOUNDATIONS FOR APPROVAL.

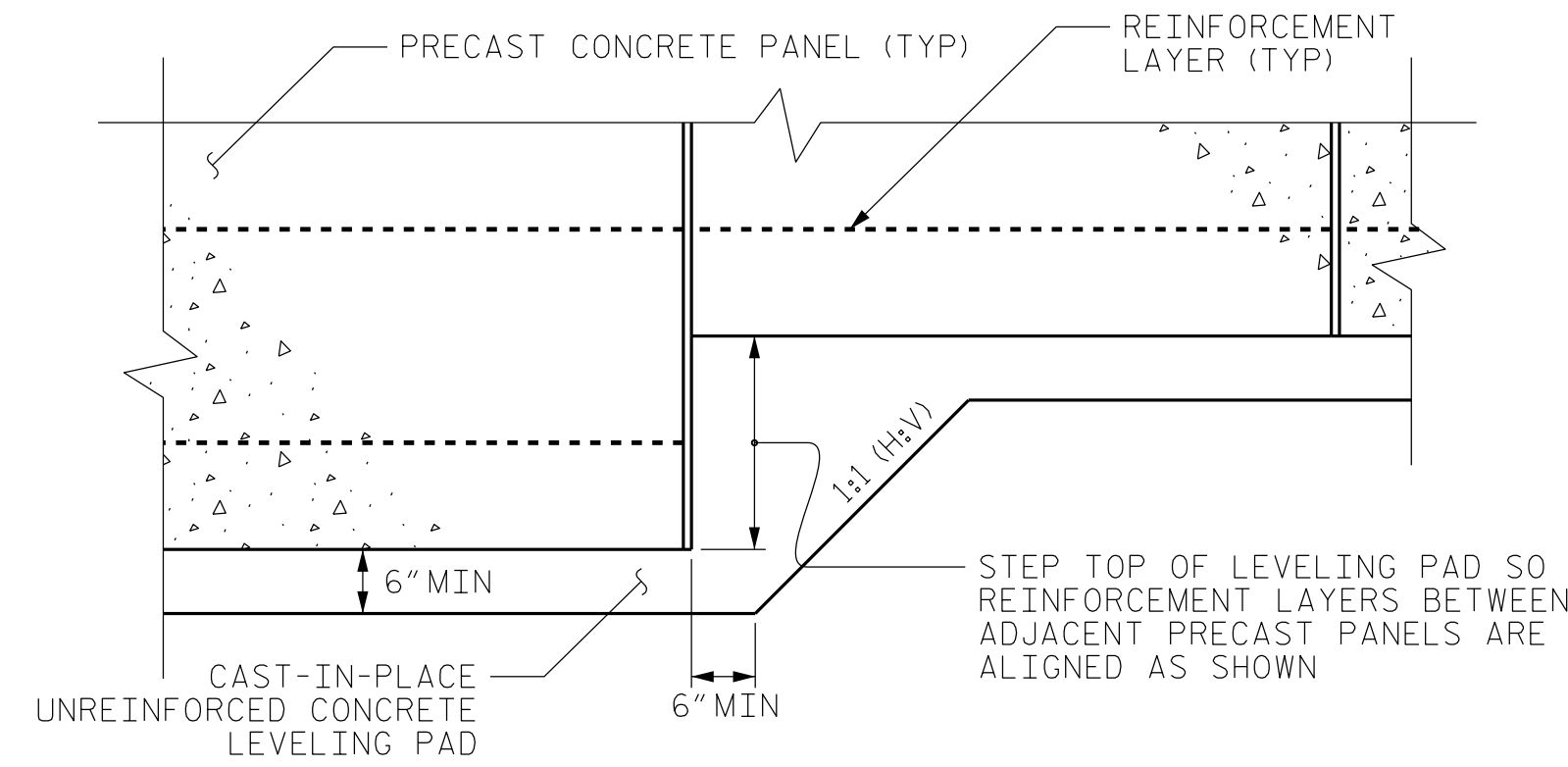
EXISTING OR FUTURE OBSTRUCTIONS SUCH AS FOUNDATIONS, GUARDRAIL, FENCE OR HANDRAIL POSTS, PAVEMENTS, PIPES, INLETS OR UTILITIES MAY INTERFERE WITH REINFORCEMENT FOR RETAINING WALL NO.1.

DO NOT PLACE LEVELING PAD CONCRETE, AGGREGATE OR REINFORCEMENT FOR RETAINING WALL NO.1 UNTIL EXCAVATION DIMENSIONS AND FOUNDATION MATERIAL ARE APPROVED.

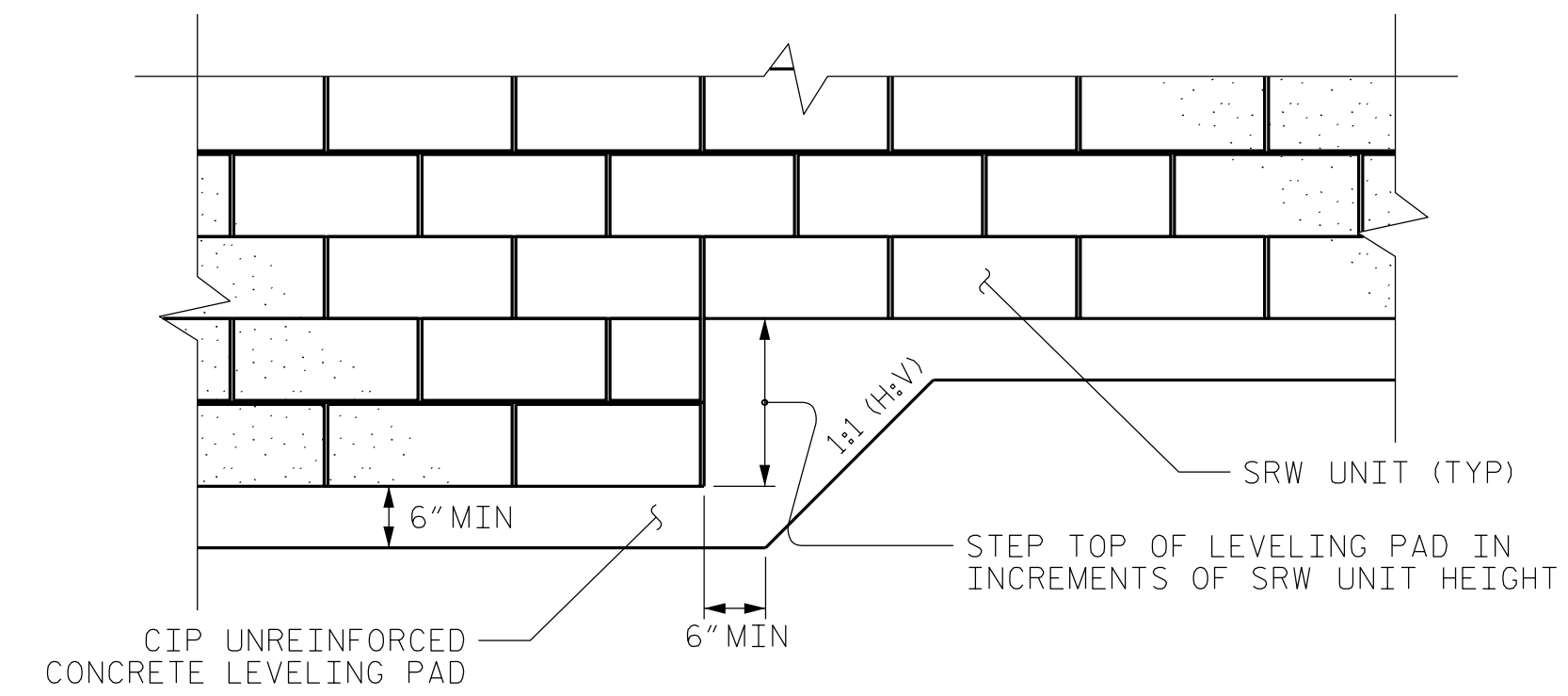
"TEMPORARY SHORING" MAY BE REQUIRED FOR RETAINING WALL NO.1 IN ACCORDANCE WITH THE TEMPORARY SHORING PROVISION. SEE ROADWAY PLANS.

AT THE CONTRACTOR'S OPTION, "TEMPORARY SHORING FOR WALL CONSTRUCTION" MAY BE USED TO CONSTRUCT RETAINING WALL NO.1. SEE MSE RETAINING WALLS PROVISION FOR TEMPORARY SHORING FOR WALL CONSTRUCTION.

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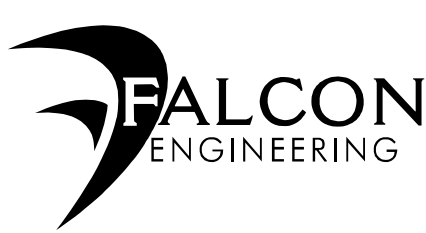
PRECAST PANELS  
LEVELING PAD STEP DETAIL

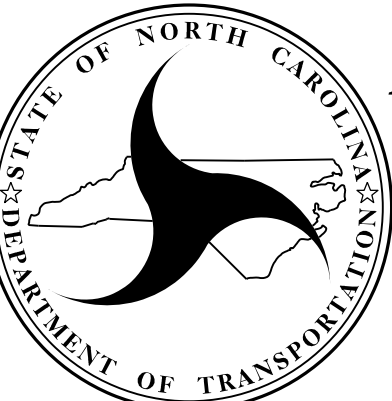


SRW UNITS LEVELING PAD STEP DETAIL

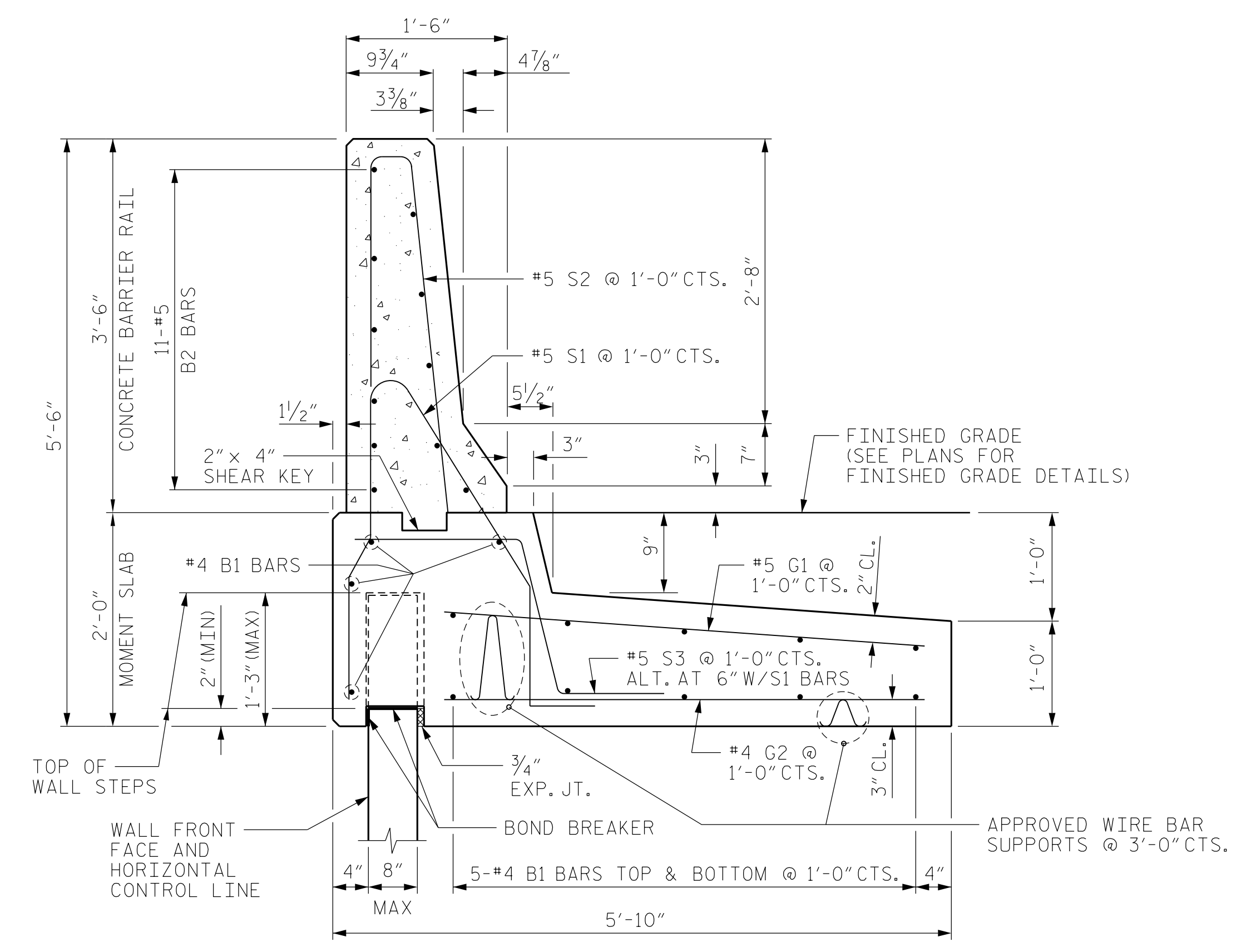
PROJECT NO.: R-3300B  
 PENDER COUNTY  
 STATION: -Y40- 249+62.70  
 SHEET 4 OF 8

PREPARED BY: S. CROCKETT	DATE: 4/22/20
REVIEWED BY: J. HAMM	DATE: 4/24/20

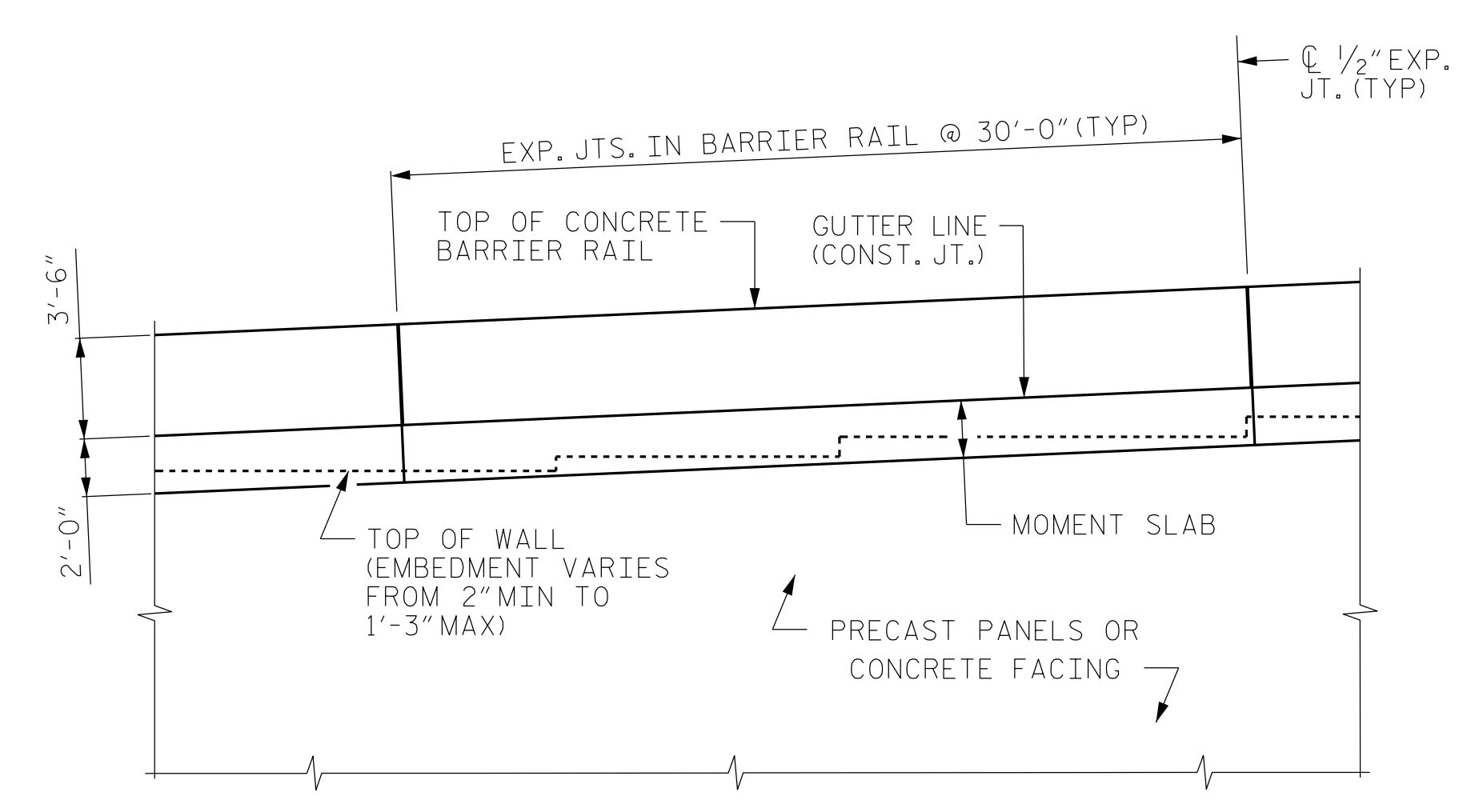
  
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REVISIONS						SHEET NO. W-4
NO.	BY	DATE	NO.	BY	DATE	
1			3			
2			4			



CONCRETE BARRIER RAIL WITH MOMENT SLAB



CONCRETE BARRIER RAIL WITH MOMENT SLAB - PARTIAL ELEVATION

NOTES:

FOR CONCRETE BARRIER RAIL WITH MOMENT SLAB, SEE SECTION 460 OF THE STANDARD SPECIFICATIONS.

CONCRETE BARRIER RAIL WITH MOMENT SLAB SHALL BE A MINIMUM OF 15' IN LENGTH.

EXPANSION JOINTS SHALL BE PLACED IN THE BARRIER RAIL AND MOMENT SLAB AT A MAXIMUM SPACING OF 30'.

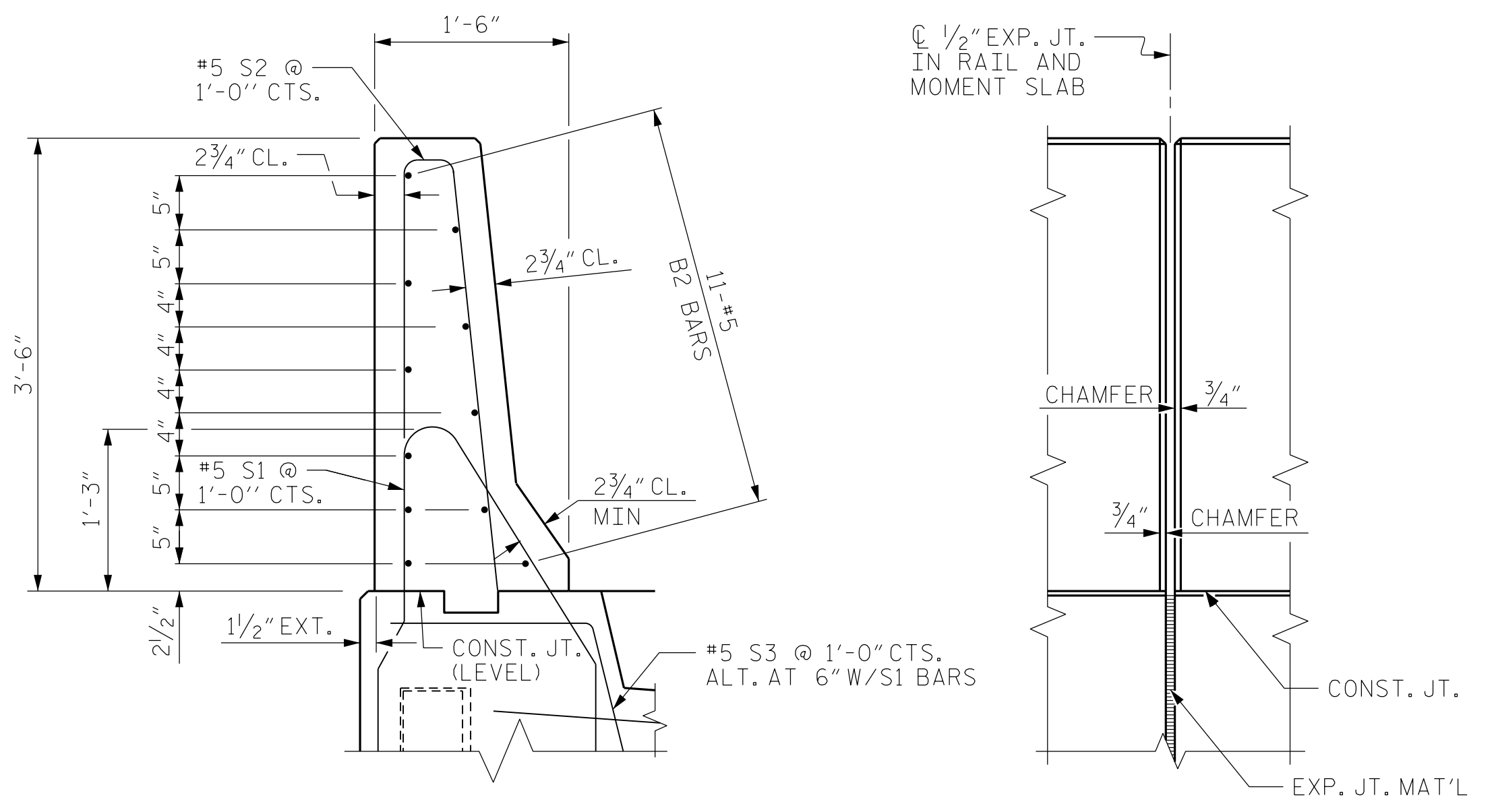
GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED SURFACES OF THE BARRIER RAIL AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. A CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN BARRIER RAIL EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT MID-POINT OF BARRIER RAIL SEGMENTS LESS THAN 20' IN LENGTH.

THE BARRIER RAIL SHALL NOT BE CAST UNTIL THE MOMENT SLAB HAS ATTAINED AN AGE OF THREE CURING DAYS OR A MINIMUM COMPRESSIVE STRENGTH OF 2,000 PSI. IN ADDITION, NO FILL MATERIAL, ASPHALT, OR CONSTRUCTION EQUIPMENT IS ALLOWED ON THE MOMENT SLAB PRIOR TO SATISFYING THE MINIMUM CONCRETE CURING AND STRENGTH REQUIREMENTS.

ALL REINFORCING STEEL IN THE BARRIER RAIL SHALL BE EPOXY COATED.

IF EXISTING OR FUTURE OBSTRUCTIONS SUCH AS FOUNDATIONS, BARRIERS, PIPES, INLETS OR UTILITIES WILL INTERFERE WITH CONCRETE BARRIER RAIL WITH MOMENT SLAB OR CONCRETE FACING FOR RETAINING WALL WILL BE THICKER THAN 8", CONCRETE BARRIER RAIL WITH MOMENT SLAB DETAILS SHALL BE REVISED AND SUBMITTED FOR APPROVAL.

CONCRETE BARRIER RAIL WITH MOMENT SLAB	
TOTAL NUMBER OF 30'-0" SECTIONS =	21 UNITS
PAY LENGTH =	630 LIN FT



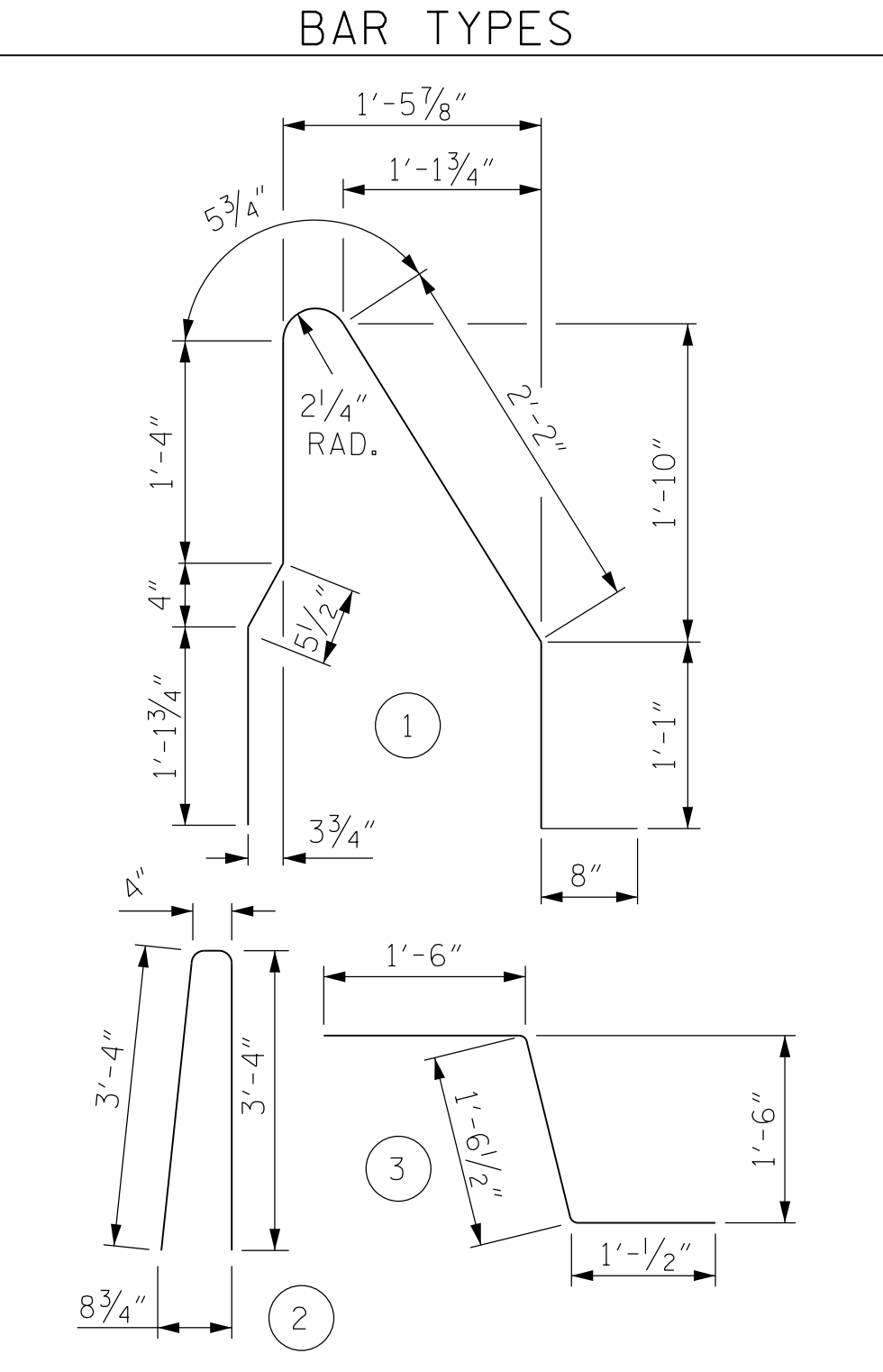
SECTION THRU RAIL

ELEV. @ EXP. JOINTS

BARRIER RAIL DETAILS

STRUCTURE ENGINEER	ENGINEER
DocuSigned by: Trevor Ennis	11/16/2021
SIGNATURE	DATE

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ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL					
FOR ONE 30'-0" SECTION OF CONCRETE BARRIER RAIL WITH MOMENT SLAB					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	14	#4	STR	29'-7"	277
* B2	11	#5	STR	29'-7"	339
G1	31	#5	STR	4'-4"	140
G2	31	#4	STR	4'-4"	90
* S1	31	#5	1	7'-4"	237
* S2	31	#5	2	7'-0"	226
S3	30	#5	3	4'-1"	128
REINFORCING STEEL					635 LB
* EPOXY COATED REINFORCING STEEL					802 LB
CLASS AA CONCRETE BARRIER RAIL					4.1 CY
CLASS A CONCRETE MOMENT SLAB					9.1 CY
CONCRETE BARRIER RAIL WITH MOMENT SLAB					30 LIN FT

PROJECT NO.: R-3300B  
 PENDER COUNTY  
 STATION: -Y40- 249+62.70  
 SHEET 5 OF 8

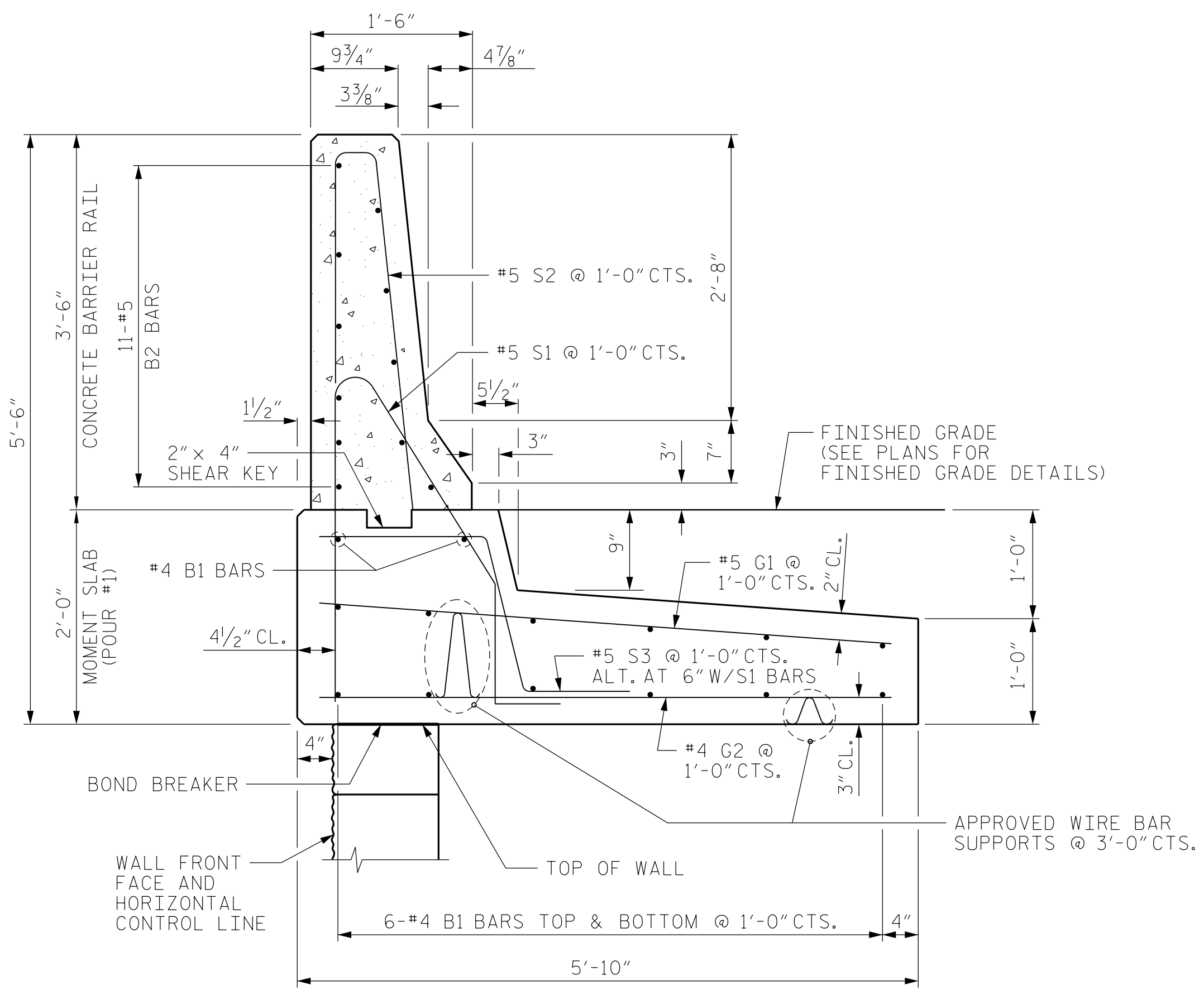
PREPARED BY: S. CROCKETT	DATE: 4/22/20
REVIEWED BY: J. HAMM	DATE: 4/24/20

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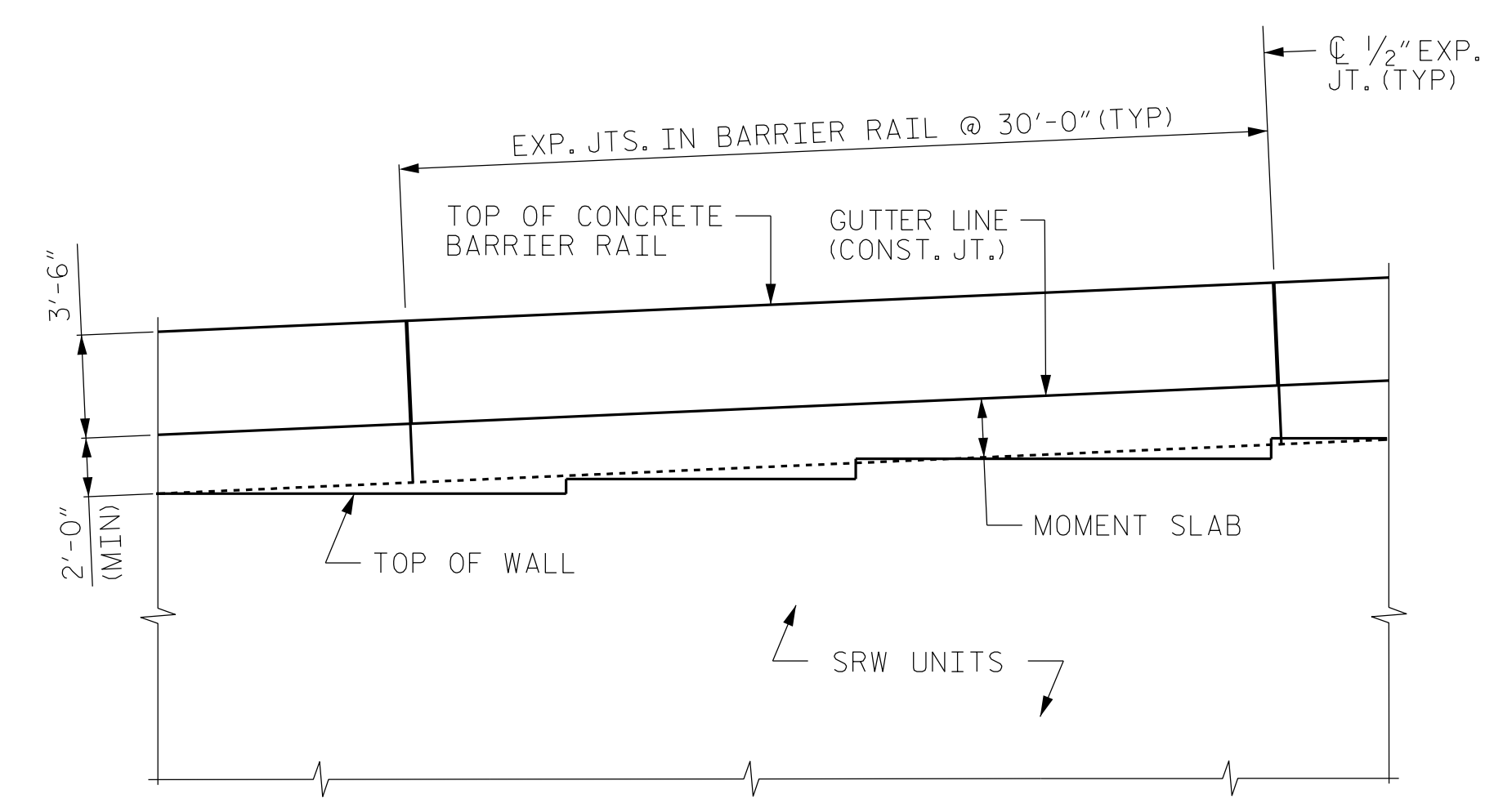
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CONCRETE BARRIER RAIL WITH MOMENT SLAB FOR PRECAST PANELS AND CONCRETE FACING					
REVISIONS					
NO.	BY	DATE	NO.	BY	DATE
1			3		
2			4		

SHEET NO. W-5



CONCRETE BARRIER RAIL WITH MOMENT SLAB



CONCRETE BARRIER RAIL WITH MOMENT SLAB - PARTIAL ELEVATION

NOTES:

FOR CONCRETE BARRIER RAIL WITH MOMENT SLAB, SEE SECTION 460 OF THE STANDARD SPECIFICATIONS.

CONCRETE BARRIER RAIL WITH MOMENT SLAB SHALL BE A MINIMUM OF 15' IN LENGTH.

EXPANSION JOINTS SHALL BE PLACED IN THE BARRIER RAIL AND MOMENT SLAB AT A MAXIMUM SPACING OF 30'.

GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED SURFACES OF THE BARRIER RAIL AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. A CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN BARRIER RAIL EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT MID-POINT OF BARRIER RAIL SEGMENTS LESS THAN 20' IN LENGTH.

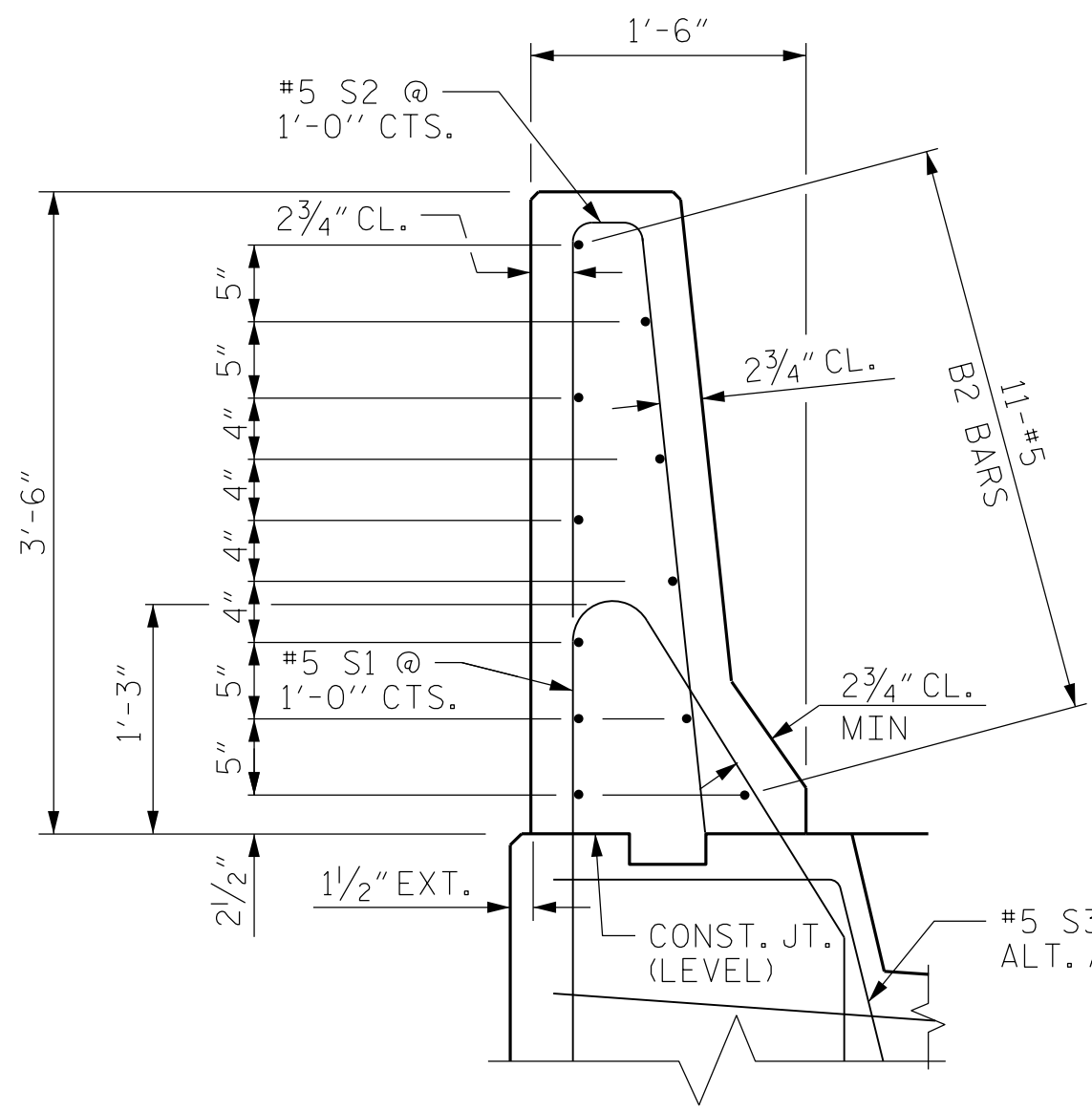
THE BARRIER RAIL SHALL NOT BE CAST UNTIL THE MOMENT SLAB HAS ATTAINED AN AGE OF THREE CURING DAYS OR A MINIMUM COMPRESSIVE STRENGTH OF 2,000 PSI. IN ADDITION, NO FILL MATERIAL, ASPHALT, OR CONSTRUCTION EQUIPMENT IS ALLOWED ON THE MOMENT SLAB PRIOR TO SATISFYING THE MINIMUM CONCRETE CURING AND STRENGTH REQUIREMENTS.

ALL REINFORCING STEEL IN THE BARRIER RAIL SHALL BE EPOXY COATED.

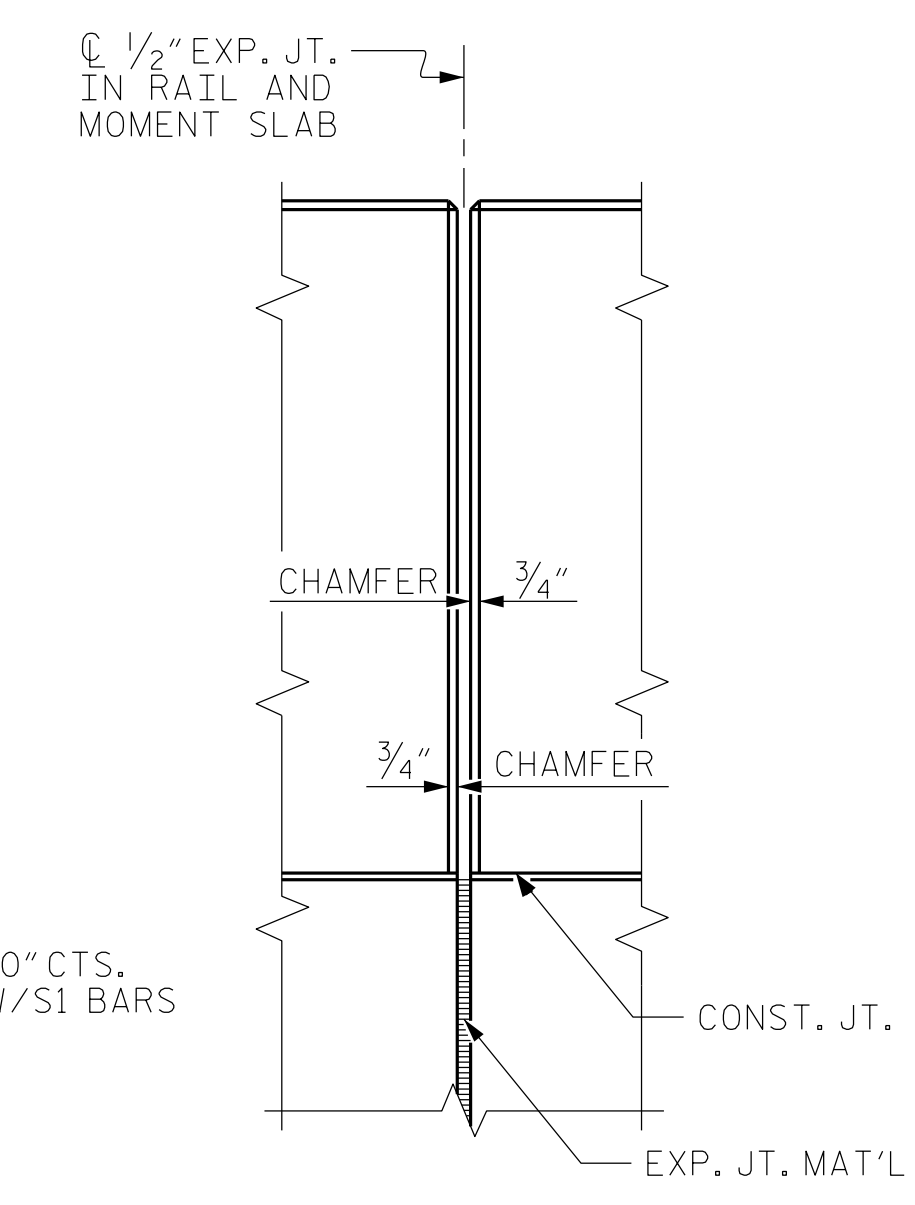
IF STEPS ARE REQUIRED AT TOP OF WALL, DETAILS SHOWING INTERFACE BETWEEN BOTTOM OF MOMENT SLAB AND STEPS SHALL BE SUBMITTED FOR APPROVAL.

IF EXISTING OR FUTURE OBSTRUCTIONS SUCH AS FOUNDATIONS, BARRIERS, PIPES, INLETS OR UTILITIES WILL INTERFERE WITH CONCRETE BARRIER RAIL WITH MOMENT SLAB, CONCRETE BARRIER RAIL WITH MOMENT SLAB DETAILS SHALL BE REVISED AND SUBMITTED FOR APPROVAL.

CONCRETE BARRIER RAIL WITH MOMENT SLAB	
TOTAL NUMBER OF 30'-0" SECTIONS =	21 UNITS
PAY LENGTH =	630 LIN FT



SECTION THRU RAIL



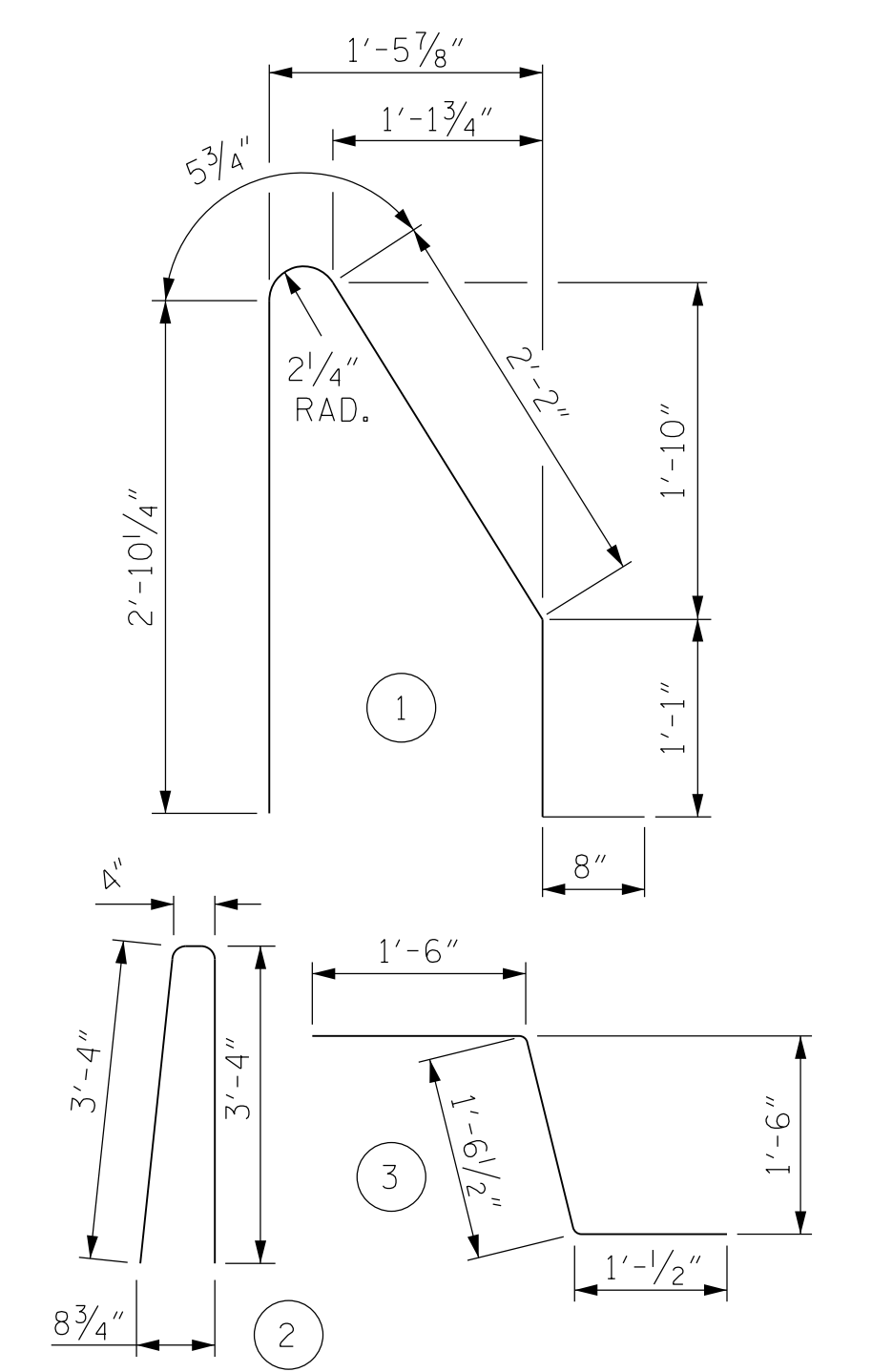
ELEV. @ EXP. JOINTS

BARRIER RAIL DETAILS

STRUCTURE ENGINEER	ENGINEER
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SIGNATURE	DATE

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BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

FOR ONE 30'-0" SECTION OF CONCRETE BARRIER RAIL WITH MOMENT SLAB					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	14	#4	STR	29'-7"	277
* B2	11	#5	STR	29'-7"	339
G1	31	#5	STR	5'-6"	178
G2	31	#4	STR	5'-6"	114
* S1	31	#5	1	7'-3"	234
* S2	31	#5	2	7'-0"	226
S3	30	#5	3	4'-1"	128
REINFORCING STEEL					697 LB
* EPOXY COATED REINFORCING STEEL					799 LB
CLASS AA CONCRETE BARRIER RAIL					4.1 CY
CLASS A CONCRETE MOMENT SLAB					9.1 CY
CONCRETE BARRIER RAIL WITH MOMENT SLAB					30 LIN FT

PROJECT NO.: R-3300B  
 PENDER COUNTY  
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 SHEET 6 OF 8

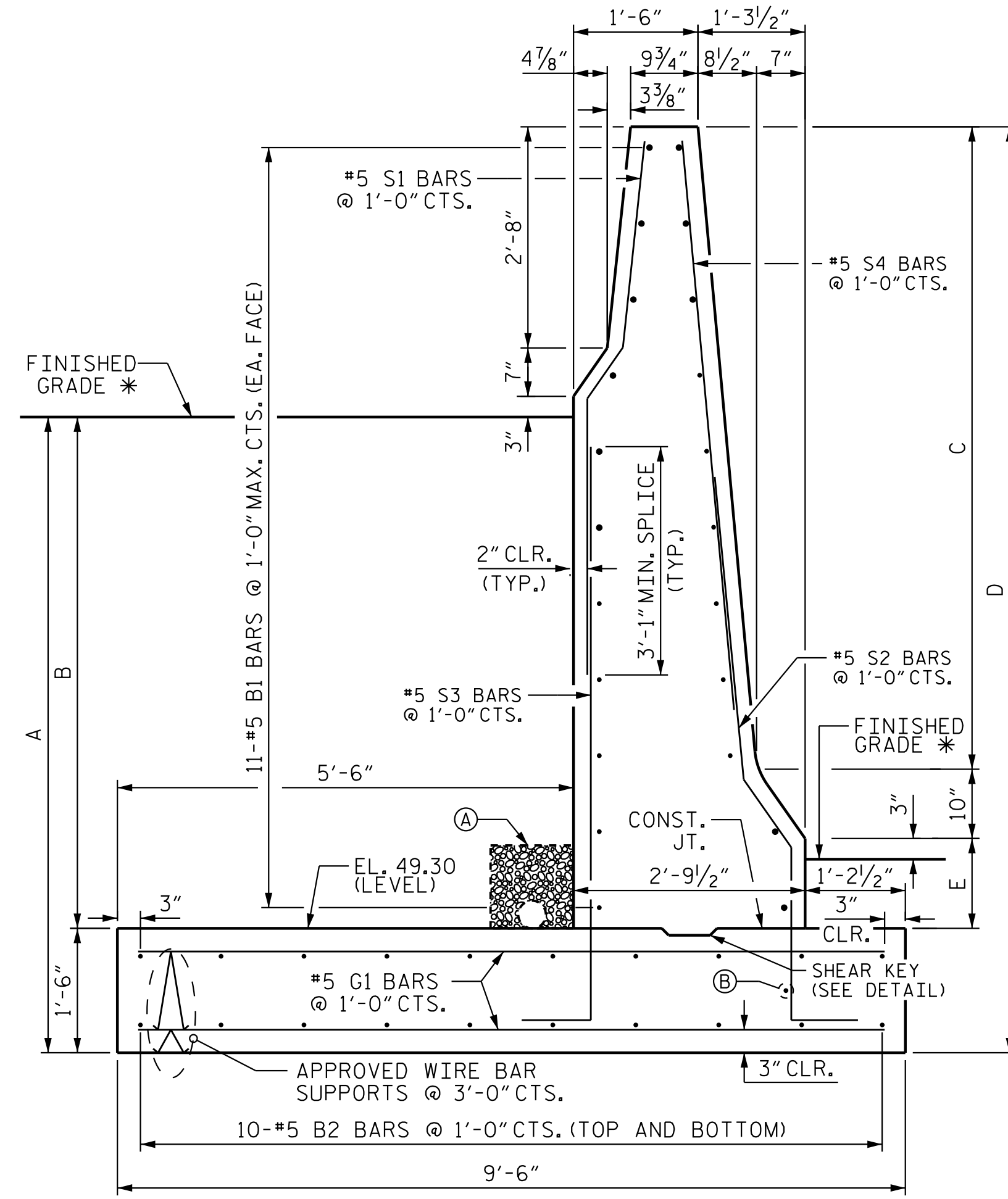
PREPARED BY: S. CROCKETT	DATE: 4/22/20
REVIEWED BY: J. HAMM	DATE: 4/22/20

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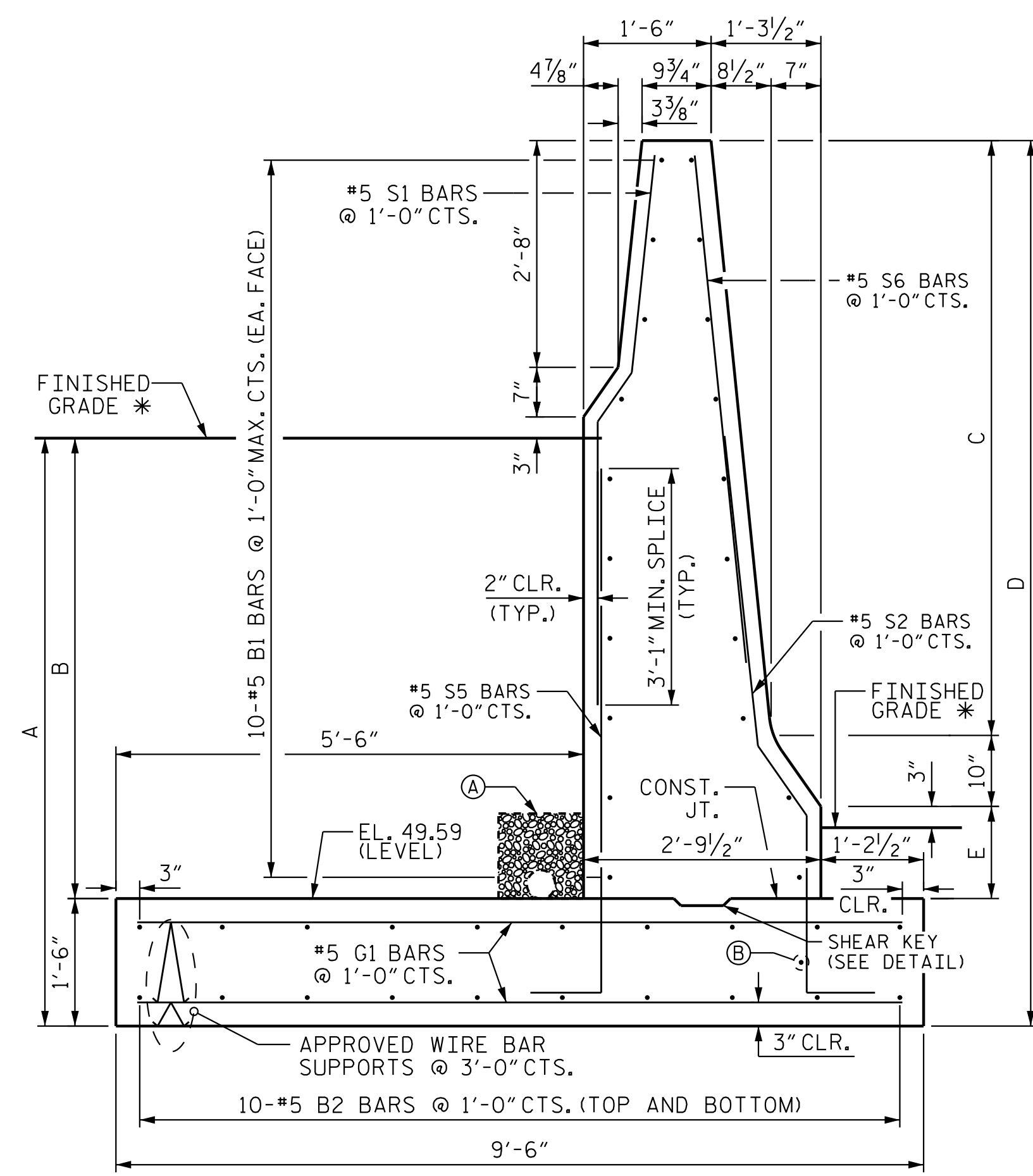
CONCRETE BARRIER RAIL WITH MOMENT SLAB FOR SEGMENTAL RETAINING WALL (SRW) UNITS					
REVISIONS					
NO.	BY	DATE	NO.	BY	DATE
1			3		
2			4		

SHEET NO. W-6



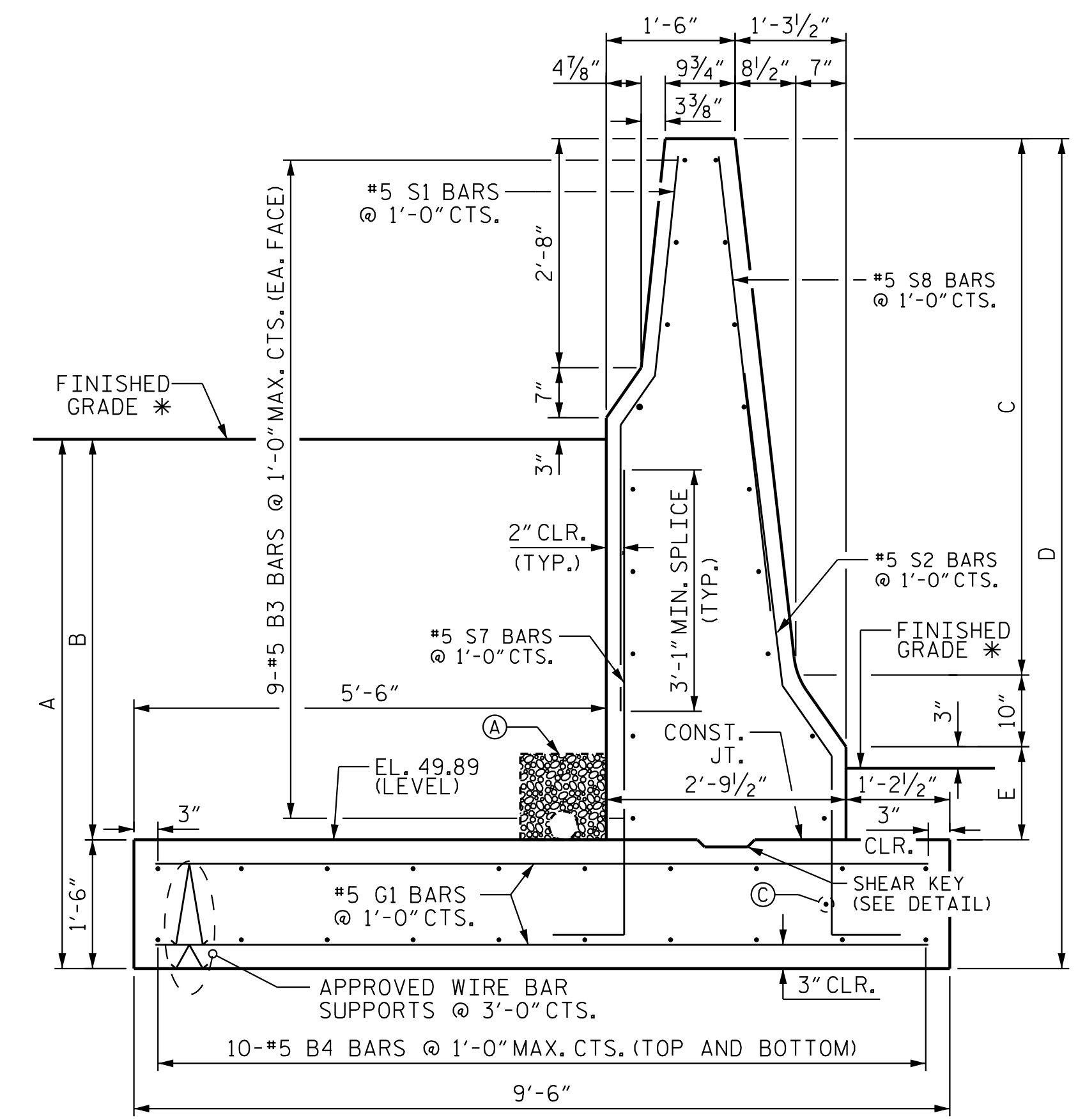
**CUSTOM BARRIER 1 SECTION**

SEE RETAINING WALL NO.1 AND ROADWAY DRAWINGS FOR LOCATIONS



**CUSTOM BARRIER 2 SECTION**

SEE RETAINING WALL NO.1 AND ROADWAY DRAWINGS FOR LOCATIONS



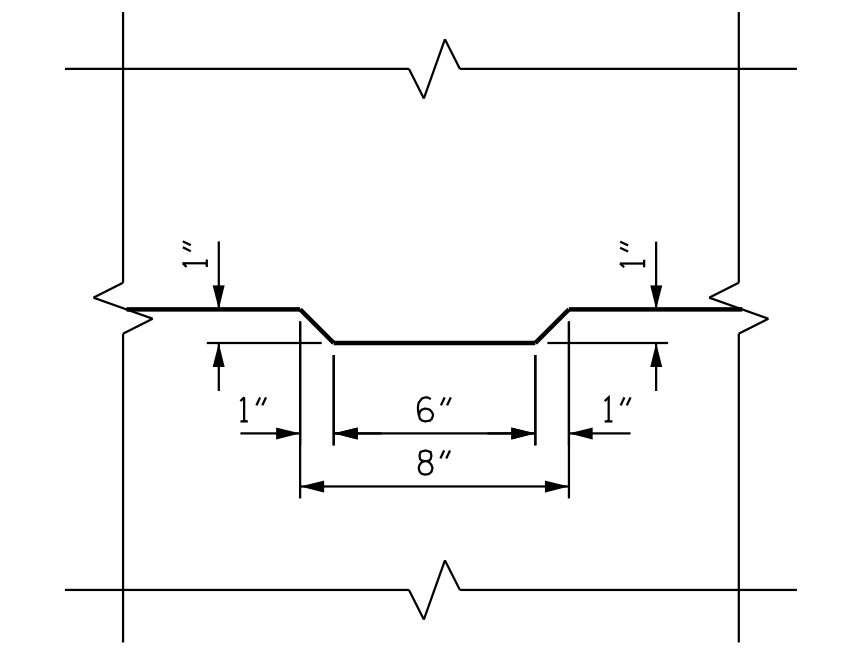
**CUSTOM BARRIER 3 SECTION**

SEE RETAINING WALL NO.1 AND ROADWAY DRAWINGS FOR LOCATIONS

VARIABLE BARRIER DIMENSIONS AT BEGIN & END OF SECTIONS						
	LOCATION	A	B	C	D	E
CUSTOM BARRIER SECTION 1	BEGIN	7'-8 <sup>5</sup> / <sub>16</sub> "	6'-2 <sup>5</sup> / <sub>16</sub> "	7'-9 <sup>5</sup> / <sub>16</sub> "	11'-2 <sup>5</sup> / <sub>16</sub> "	1'-1"
	END	7'-2 <sup>1</sup> / <sub>2</sub> "	5'-8 <sup>1</sup> / <sub>2</sub> "	6'-11 <sup>5</sup> / <sub>16</sub> "	10'-8 <sup>1</sup> / <sub>2</sub> "	1'-4 <sup>9</sup> / <sub>16</sub> "
CUSTOM BARRIER SECTION 2	BEGIN	6'-10 <sup>5</sup> / <sub>16</sub> "	5'-4 <sup>5</sup> / <sub>16</sub> "	6'-11 <sup>5</sup> / <sub>16</sub> "	10'-4 <sup>5</sup> / <sub>16</sub> "	1'-1"
	END	6'-5 <sup>3</sup> / <sub>16</sub> "	4'-11 <sup>3</sup> / <sub>16</sub> "	6'-2 <sup>5</sup> / <sub>8</sub> "	9'-11 <sup>3</sup> / <sub>16</sub> "	1'-4 <sup>9</sup> / <sub>16</sub> "
CUSTOM BARRIER SECTION 3	BEGIN	6'-1 <sup>3</sup> / <sub>16</sub> "	4'-7 <sup>5</sup> / <sub>8</sub> "	6'-2 <sup>5</sup> / <sub>8</sub> "	9'-7 <sup>9</sup> / <sub>16</sub> "	1'-1"
	END	5'-7 <sup>9</sup> / <sub>16</sub> "	4'-1 <sup>9</sup> / <sub>16</sub> "	5'-5 <sup>3</sup> / <sub>4</sub> "	9'-1 <sup>9</sup> / <sub>16</sub> "	1'-3 <sup>1</sup> / <sub>16</sub> "

**NOTES:**

- SUBMIT CHANGES TO STEEL PLACEMENT OR SIZE TO THE ENGINEER.
- 1/2" EXPANSION JOINT SHALL BE PLACED BETWEEN BARRIER SECTIONS.
- ALL REINFORCING STEEL IN BARRIER RAIL SHALL BE EPOXY COATED.
- CONCRETE IN WALL FOOTING SHALL BE CLASS A CONCRETE. CONCRETE IN BARRIER RAIL SHALL BE CLASS AA CONCRETE.
- FOR CONCRETE BARRIER RAIL, SEE SECTION 460 OF THE STANDARD SPECIFICATIONS.
- GROOVING CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED SURFACES OF THE BARRIER RAIL AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. A CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN BARRIER RAIL EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT MID-POINT OF BARRIER RAIL SEGMENTS LESS THAN 20' IN LENGTH.
- FOR PAYMENT OF BARRIER RAIL, SEE ROADWAY DRAWINGS.
- \* SEE ROADWAY PLANS FOR FINISHED GRADE DETAILS
- Ⓐ AGGREGATE SHOULDER DRAIN SHALL BE CONSTRUCTED IN ACCORDANCE WITH ROADWAY STANDARD DRAWING NO. 816.02. DRAIN SHALL BE TIED TO DRAIN AT END OF MSE WALL WITH 2 90-DEGREE BENDS AND END CAP AT END OF CUSTOM BARRIER WALL. DRAIN SHALL BE CONSTRUCTED TO OUTLET TO BEGINNING OF MSE WALL.
- Ⓑ #5 B2 BAR PLACED AS SHOWN FOR PLACEMENT OF REINFORCEMENT
- Ⓒ #5 B4 BAR PLACED AS SHOWN FOR PLACEMENT OF REINFORCEMENT



**SHEAR KEY DETAIL**

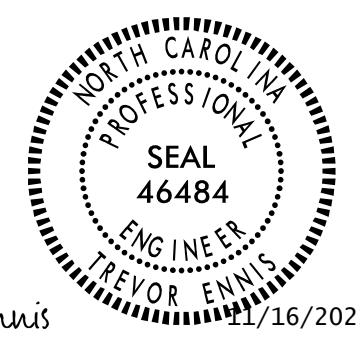
PROJECT NO. R-3300B  
PENDER COUNTY  
 STATION: 249+62.70 -Y40-

SHEET 1 OF 2

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

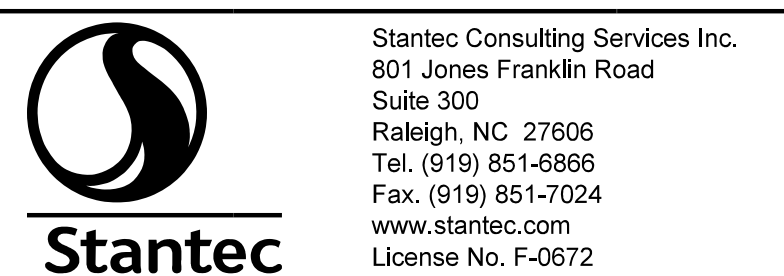
**CUSTOM BARRIER DETAILS**

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			W-7
2			4			



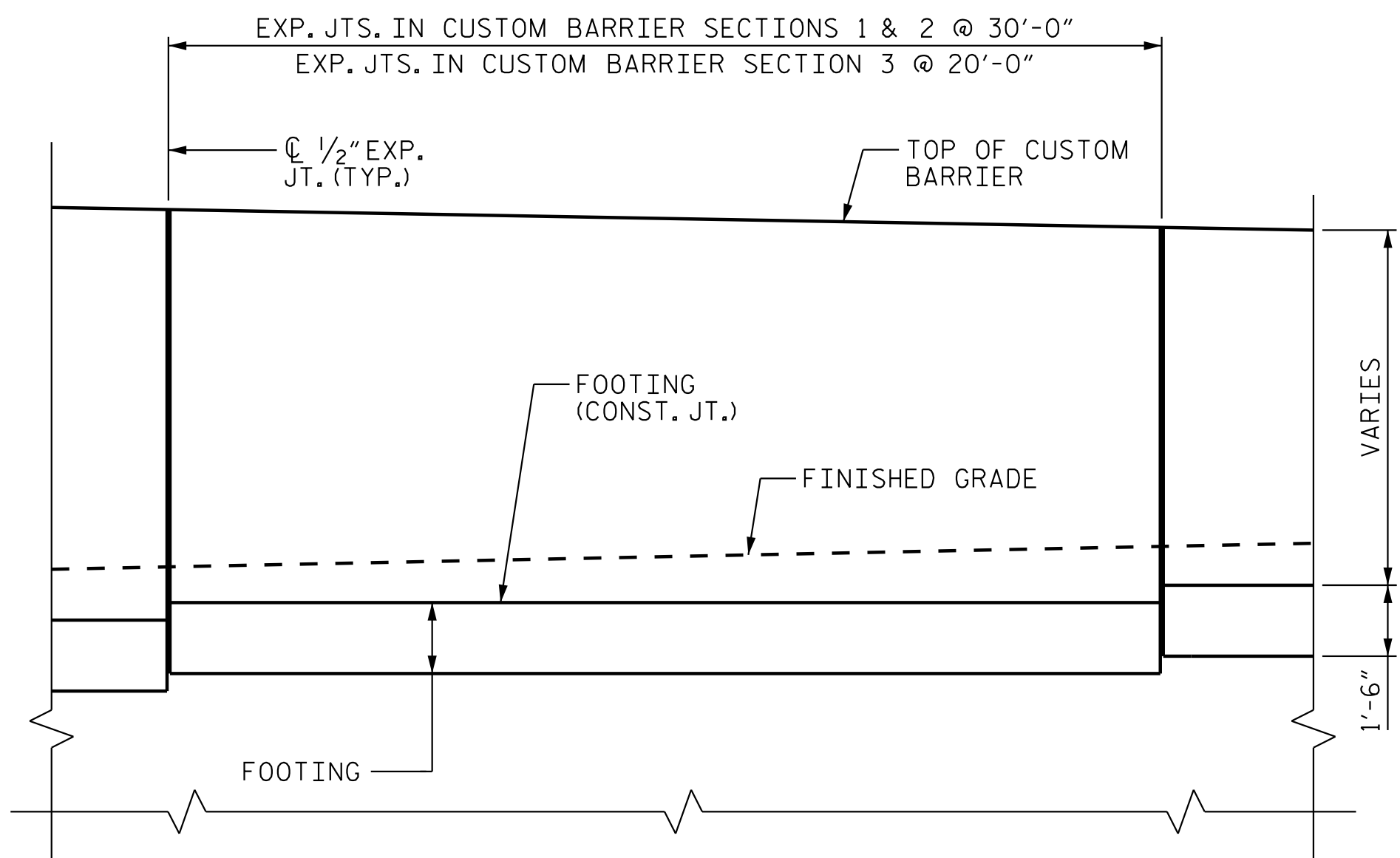
Designed by: Trevor Ennis 11/16/2021

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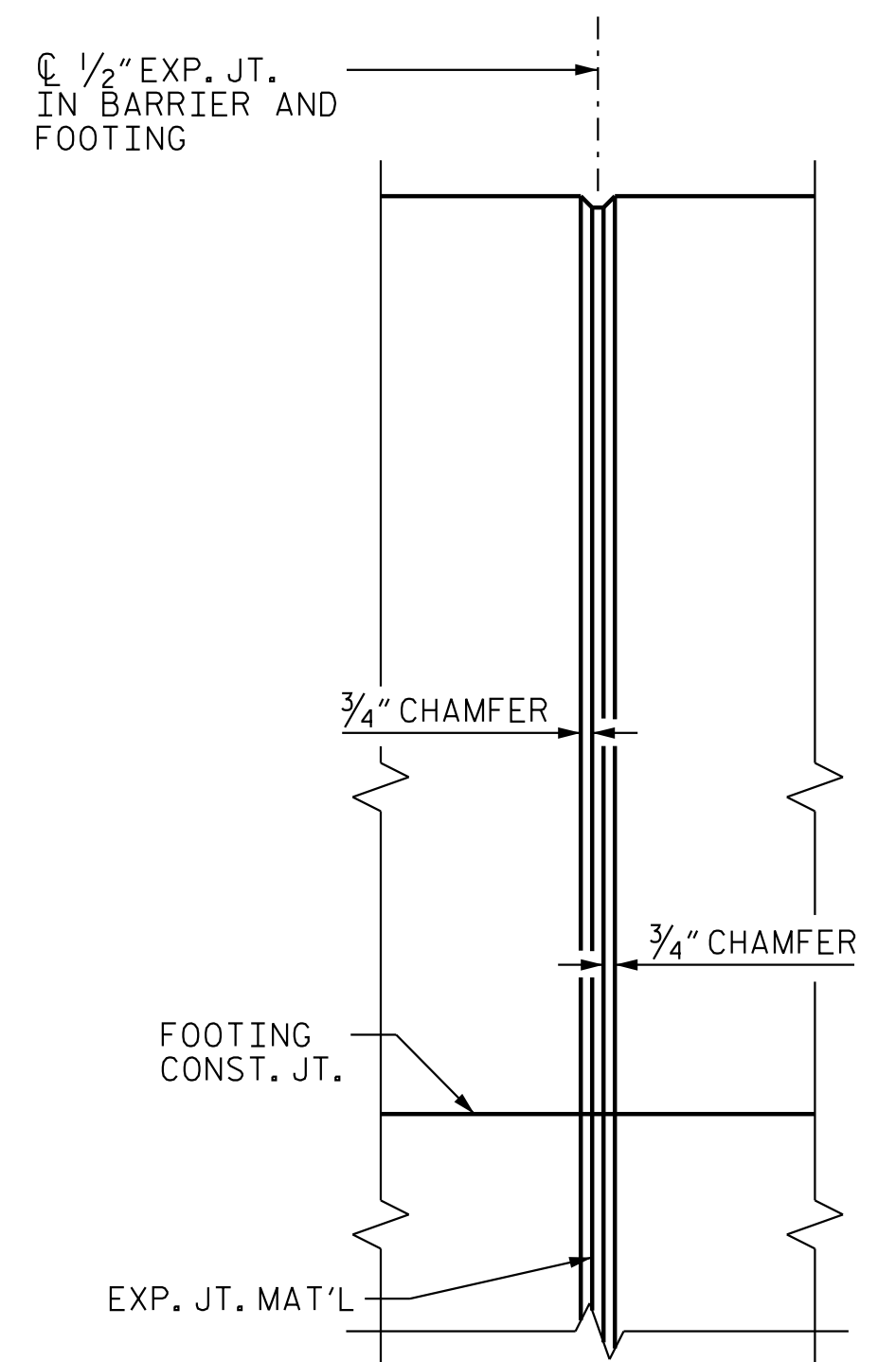


DRAWN BY: T. N. ENNIS DATE: 05/05/20  
 CHECKED BY: T. R. DUDECK DATE: 05/05/20  
 DESIGN ENGINEER OF RECORD: T. N. ENNIS DATE: 11/11/21

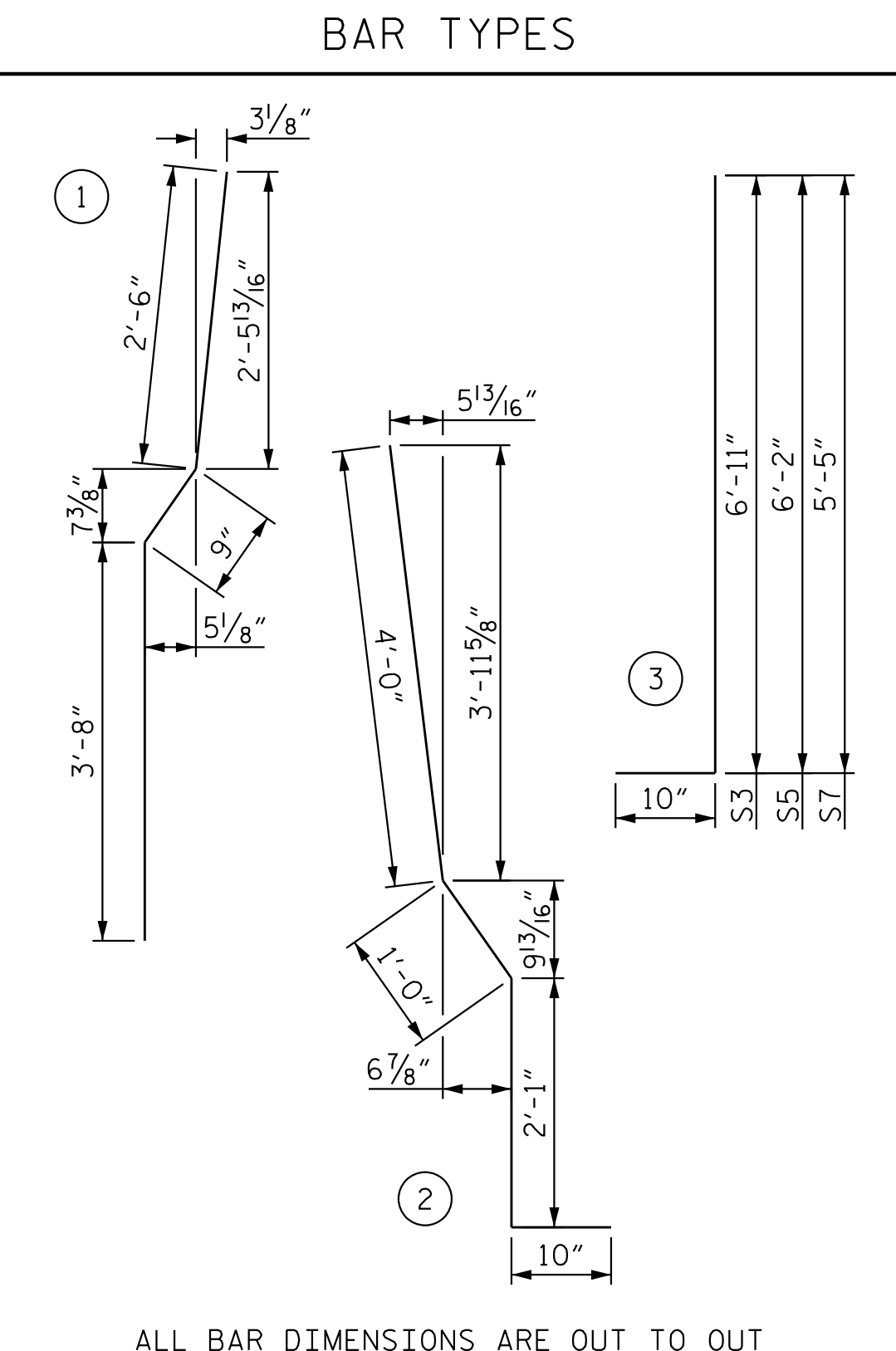
U:\Structures\Retaining Walls\Retaining Wall No. 1\Drawings\3300B\_SML\_CB01\_01.dgn 11/16/2021  
 TEnnis



CUSTOM BARRIER RAIL PARTIAL ELEVATION

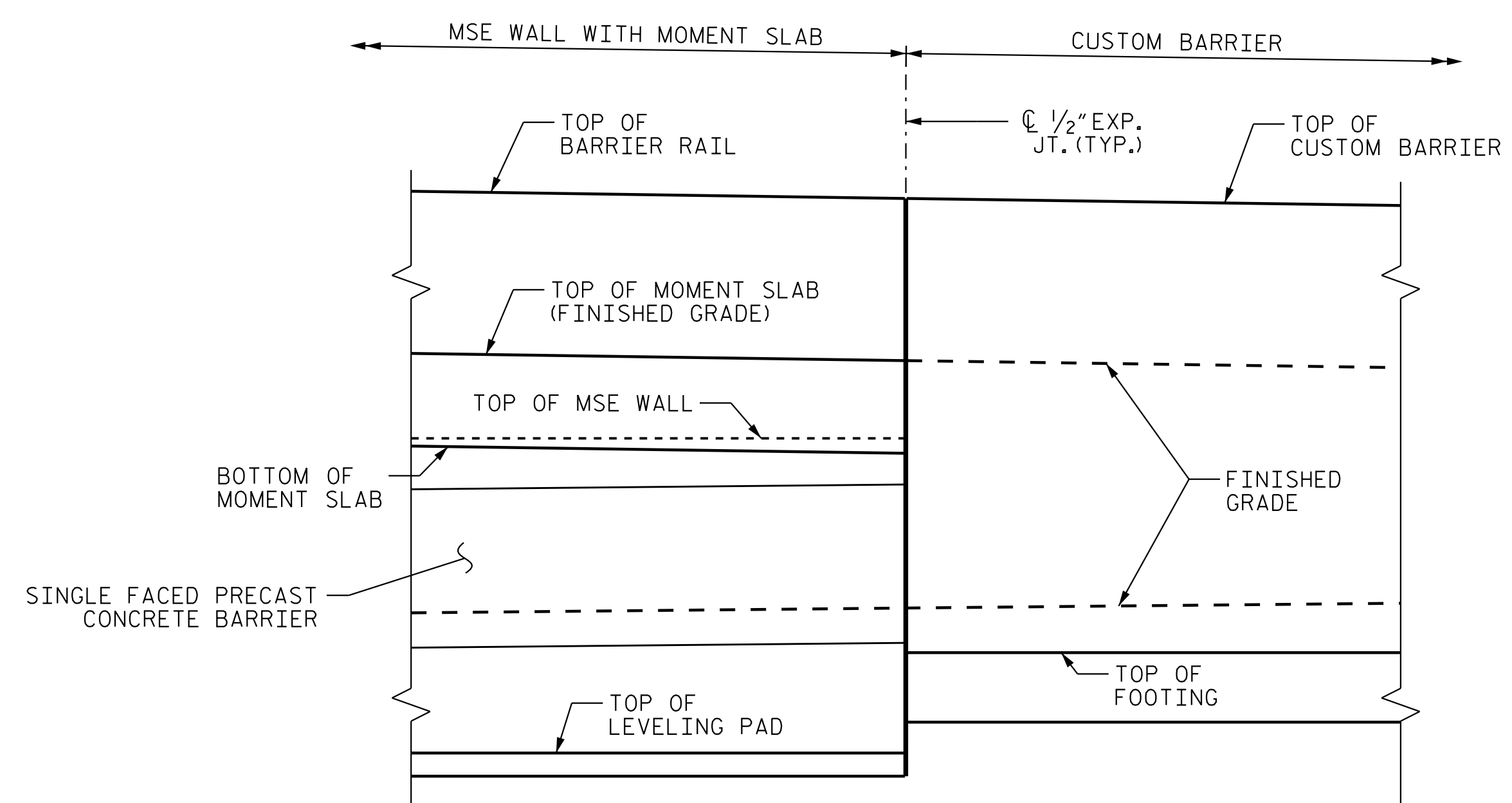


ELEV. @ EXP. JOINTS  
CUSTOM BARRIER DETAILS



ALL BAR DIMENSIONS ARE OUT TO OUT

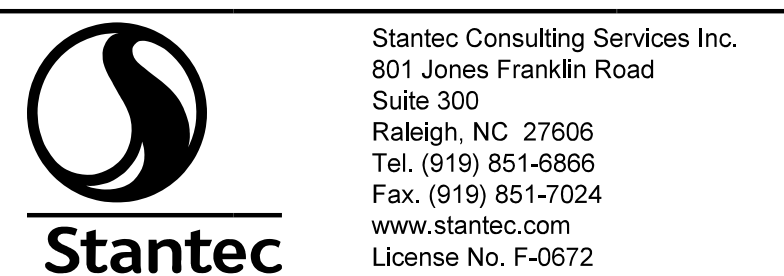
BILL OF MATERIAL					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* B1	42	#5	STR	29'-7"	1296
B2	42	#5	STR	29'-7"	1296
* B3	18	#5	STR	19'-7"	368
B4	21	#5	STR	19'-7"	429
G1	166	#5	STR	9'-2"	1587
* S1	83	#5	1	6'-11"	599
* S2	83	#5	2	7'-11"	685
* S3	31	#5	3	7'-9"	251
* S4	31	#5	STR	6'-11"	224
* S5	31	#5	3	7'-0"	226
* S6	31	#5	STR	6'-0"	194
* S7	21	#5	3	6'-3"	137
* S8	21	#5	STR	5'-4"	117
PLAIN REINFORCING STEEL					3,312 LB
* EPOXY COATED REINFORCING STEEL					4,097 LB
CLASS AA CONCRETE					90.4 CY



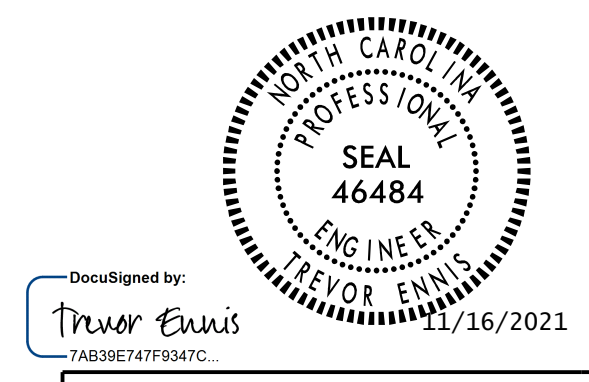
END MSE WALL & BEGIN CUSTOM BARRIER PARTIAL ELEVATION

CUSTOM BARRIER RAIL	
PAY LENGTH =	80 LIN FT

Ternnis 11/16/2021 \\S:\Structures\Retaining Walls\Retaining Wall\No. 1\Drawings\R3300B.SMU.CB01.02.dgn



DRAWN BY: T. N. ENNIS DATE: 05/21/20  
 CHECKED BY: T. R. DUDECK DATE: 05/21/20  
 DESIGN ENGINEER OF RECORD: T. N. ENNIS DATE: 11/11/20

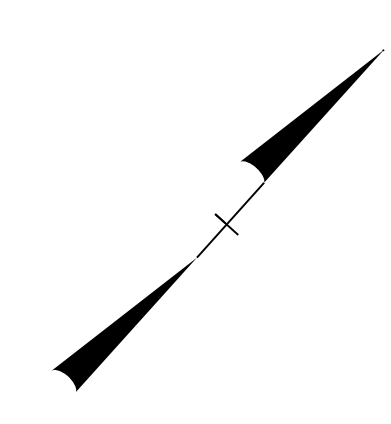
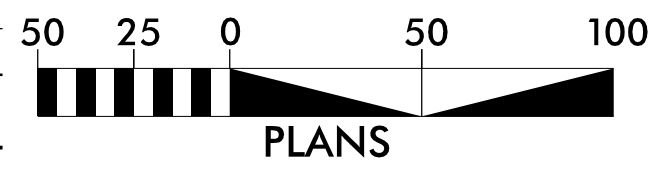
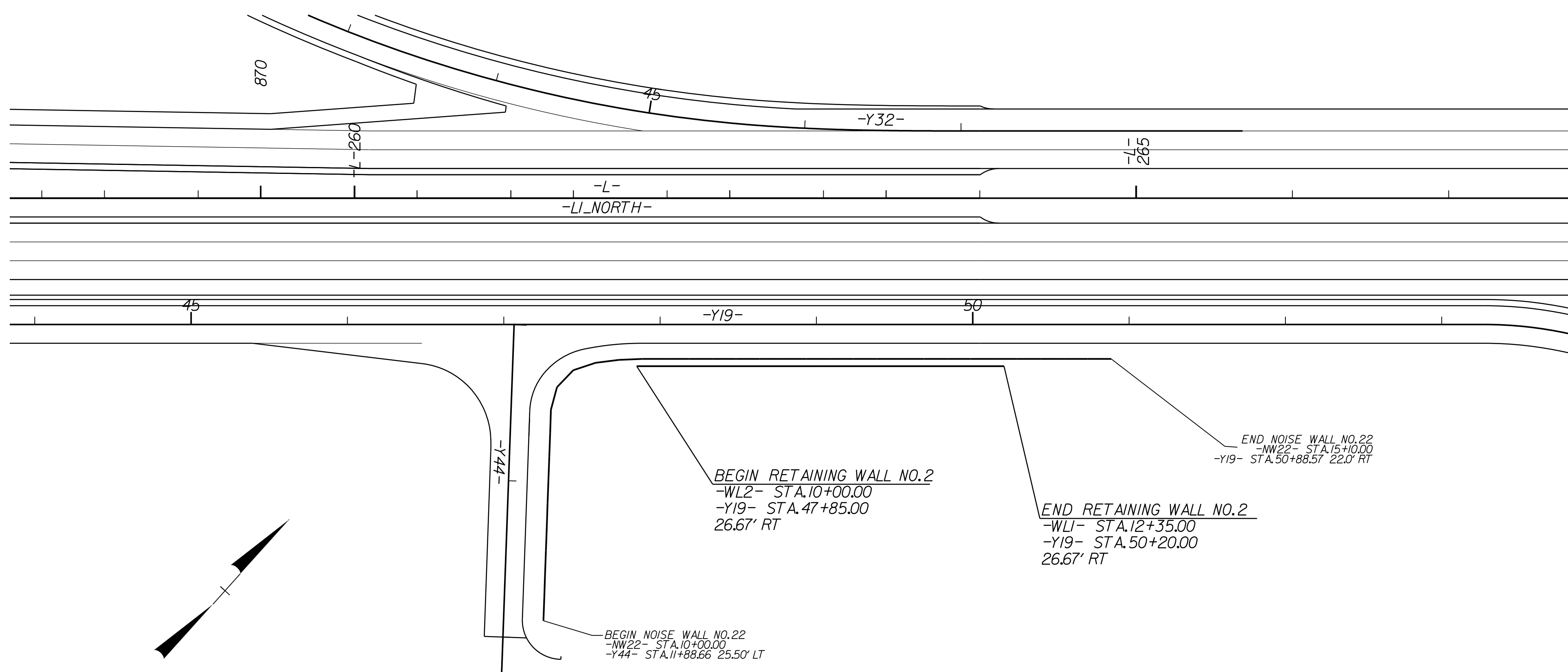


DocuSigned by: Trevor Ennis 11/16/2021 7AB39E747F9347C

PROJECT NO. R-3300B  
 PENDER COUNTY  
 STATION: 249+62.70 -Y40-

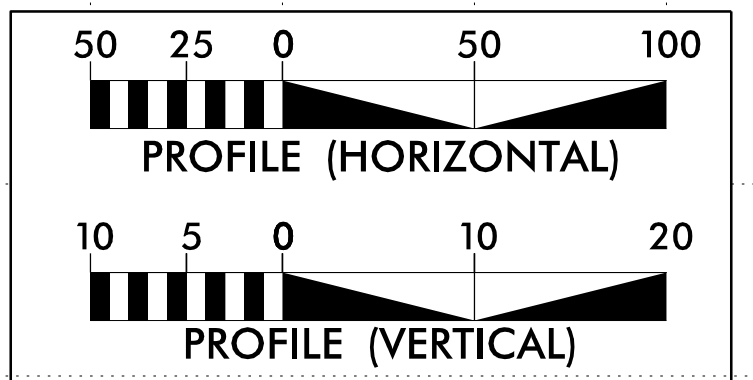
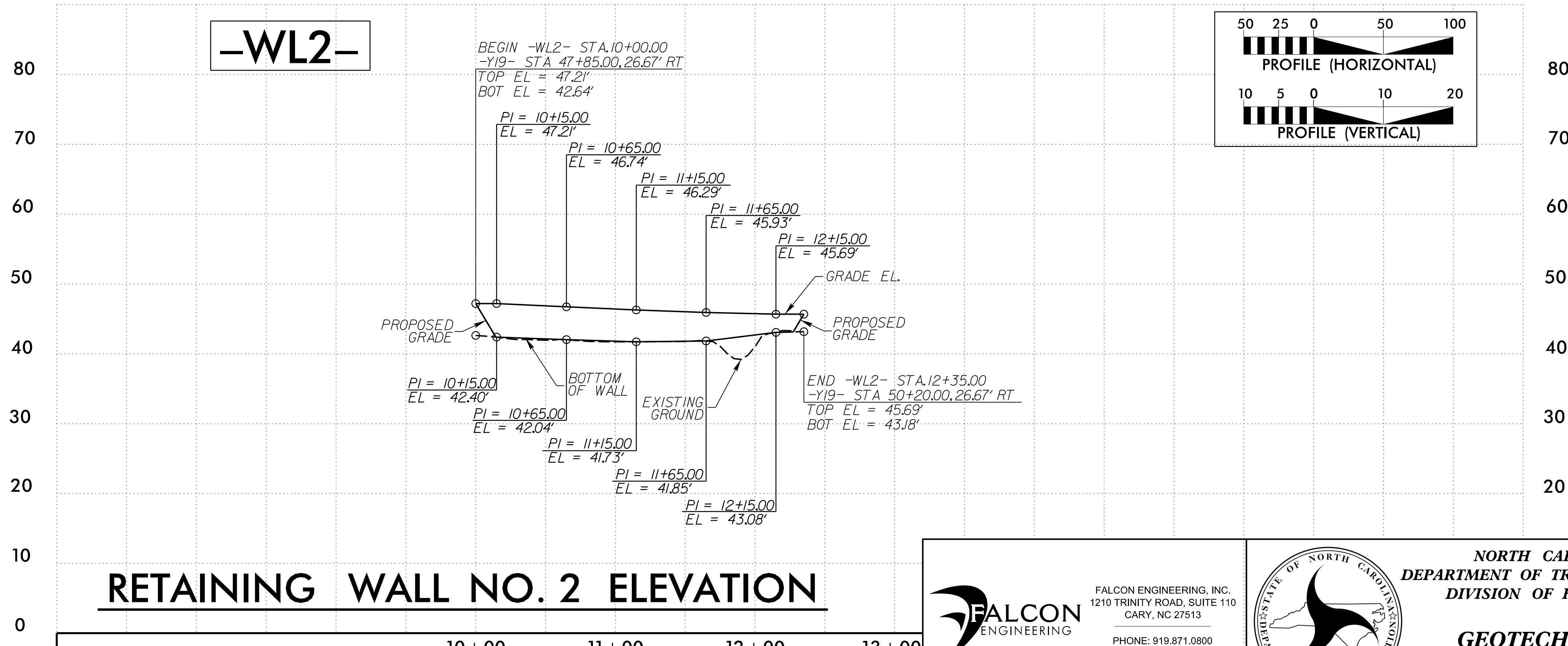
SHEET 2 OF 2

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
CUSTOM BARRIER DETAILS					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED					SHEET NO. W-8



### RETAINING WALL NO. 2 PLAN

GEOTECHNICAL ENGINEER  
 ENGINEER  
  
 Designed by: Stephen C. Crockett 11/16/2021  
 SIGNATURE DATE SIGNATURE DATE  
**DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED**



### RETAINING WALL NO. 2 ELEVATION

ESTIMATED MSE WALL QUANTITY (SQUARE FEET)	
MSE RETAINING WALL NO. 2	1,290 SF

PROJECT NO.: R-3300B  
 PENDER COUNTY  
 STATION: -Y19- 47+85.00  
 SHEET 1 OF 4

PREPARED BY: S. C. CROCKETT DATE: 4/29/20  
 REVIEWED BY: J. R. HAMM DATE: 4/30/20

FALCON ENGINEERING, INC.  
 1210 TRINITY ROAD, SUITE 110  
 CARY, NC 27513  
 PHONE: 919.871.0800  
 www.falconengineers.com

NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 DIVISION OF HIGHWAYS  
**GEOTECHNICAL ENGINEERING UNIT**

REVISIONS						SHEET NO. W-9
NO.	BY	DATE	NO.	BY	DATE	
1			3			
2			4			

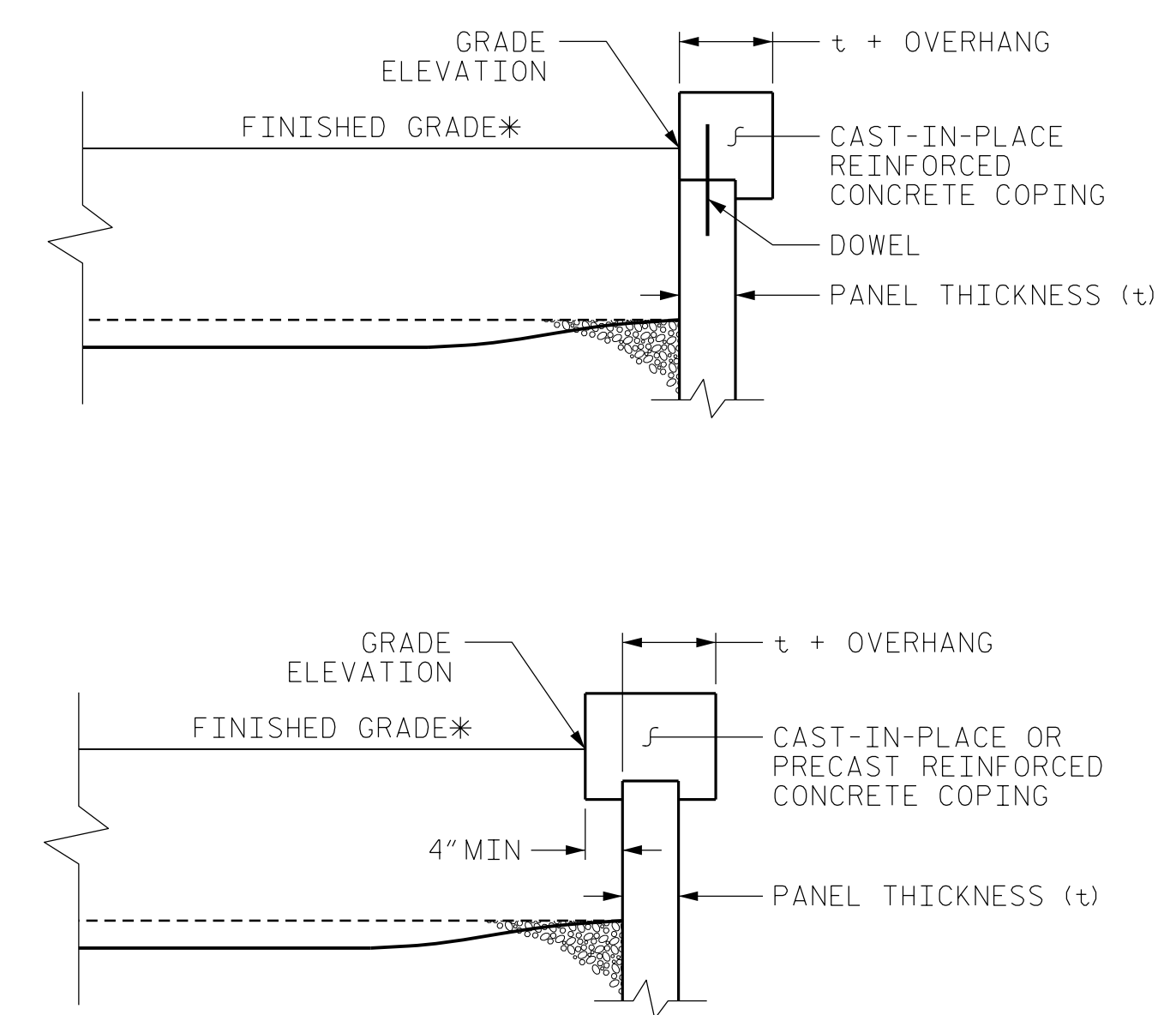
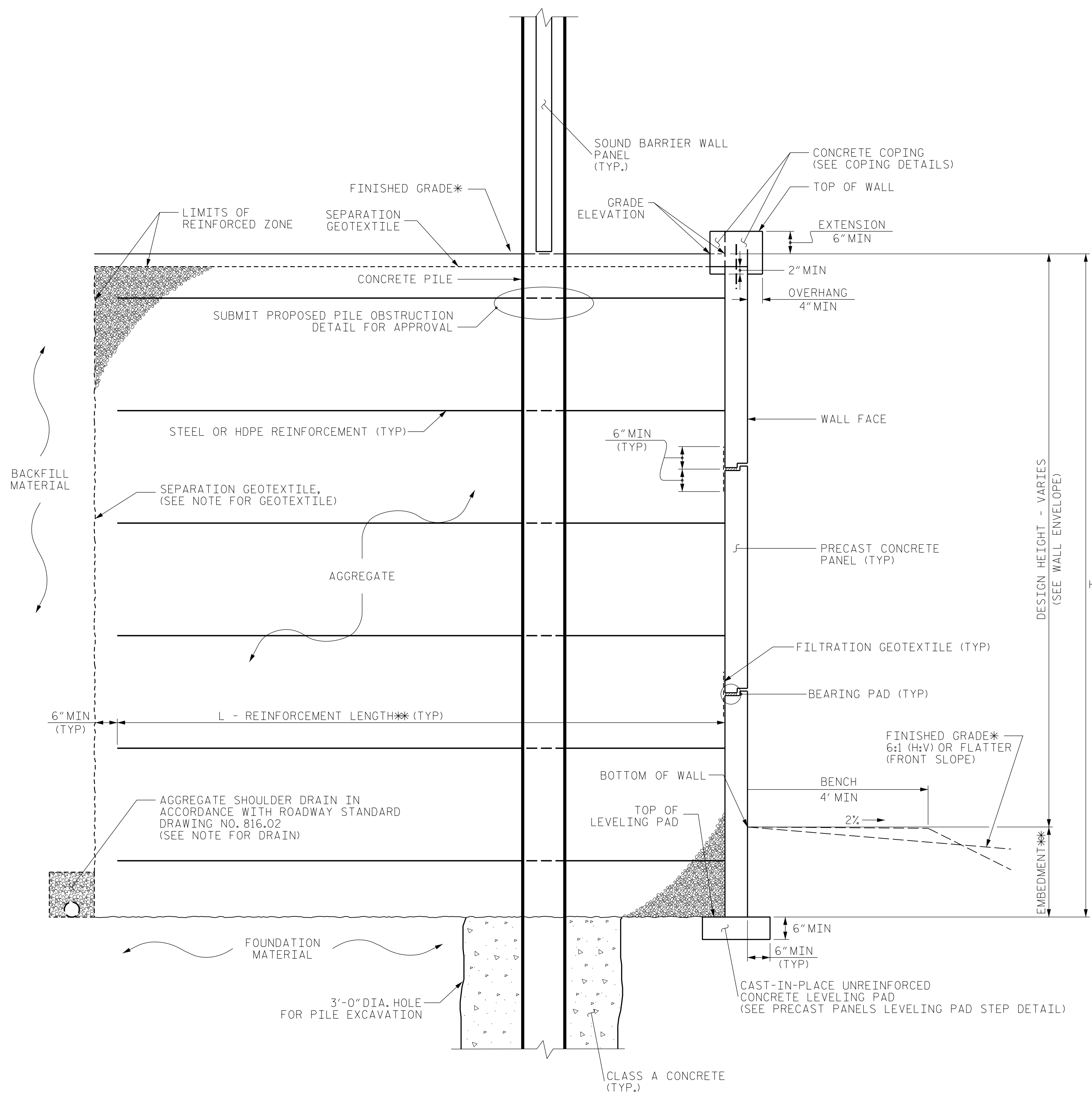
GEOTECHNICAL ENGINEER

ENGINEER

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DocuSigned by: *Stephen C. Crockett* 11/16/2021

**DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED**



**COPING DETAILS**

AT THE CONTRACTOR'S OPTION, CONNECT COPING TO PANELS WITH DOWELS OR EXTEND COPING DOWN BACK OF PANELS.  
\*SEE ROADWAY PLANS FOR FINISHED GRADE DETAILS.

**MSE WALL WITH PRECAST PANELS - TYPICAL SECTION**

\*SEE COPING DETAILS AND PLANS FOR FINISHED GRADE DETAILS.  
\*\*SEE MSE RETAINING WALLS PROVISION AND IF APPLICABLE, MSE WALL NOTES FOR EMBEDMENT AND REINFORCEMENT LENGTH REQUIREMENTS.  
FOR SOUND BARRIER WALL FOUNDATION, SEE SOUND BARRIER WALL NO. 22 PLANS

PROJECT NO.: R-3300B  
 PENDER COUNTY  
 STATION: -Y19- 47+85.00  
 SHEET 2 OF 4

PREPARED BY: S. CROCKETT	DATE: 4/29/20
REVIEWED BY: J. HAMM	DATE: 4/30/20

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 1210 TRINITY ROAD, SUITE 110  
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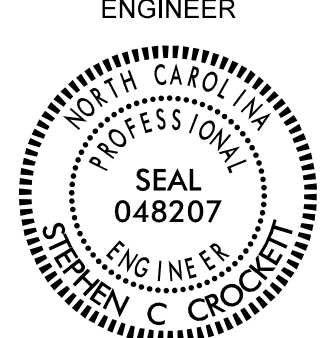
**NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 DIVISION OF HIGHWAYS**

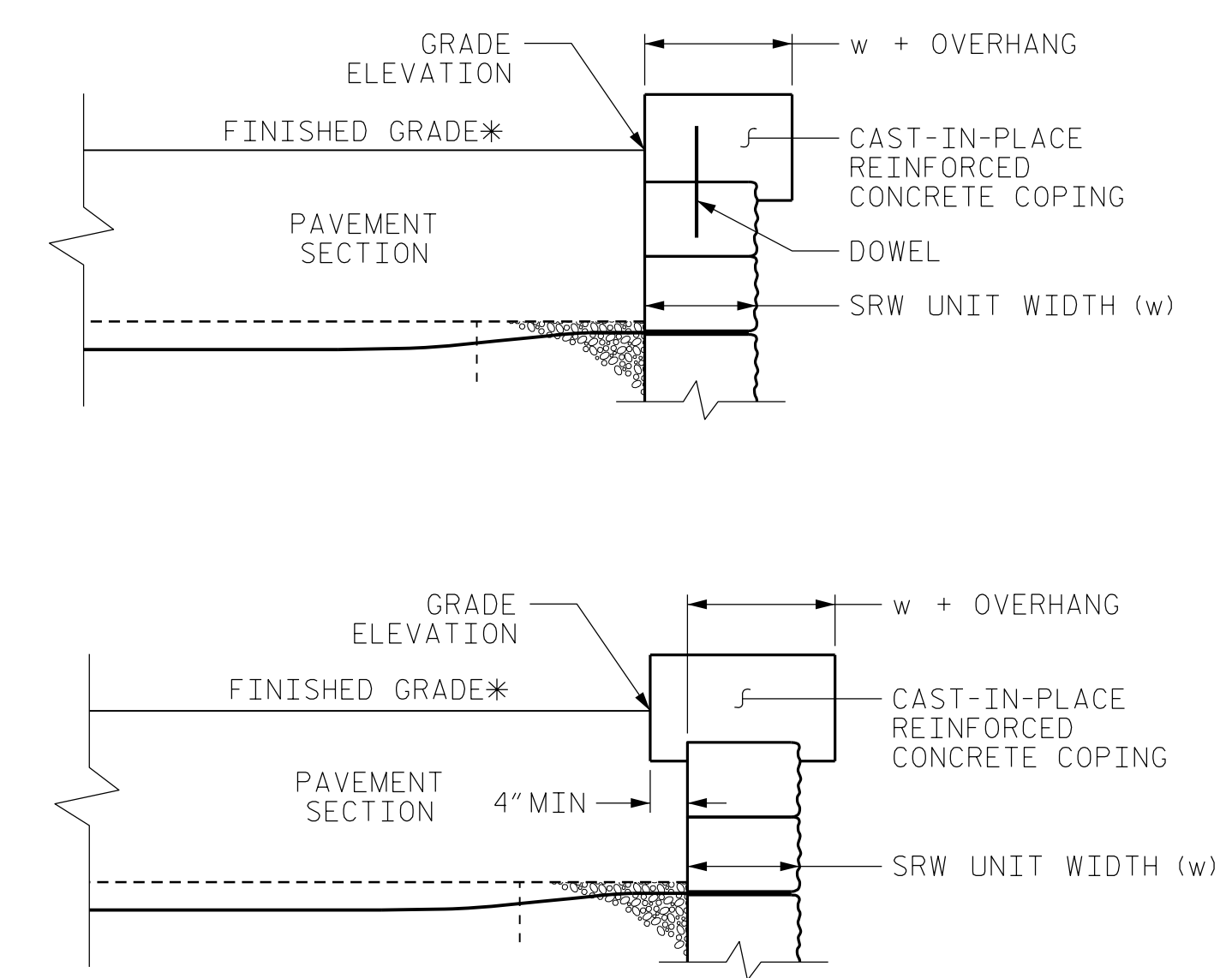
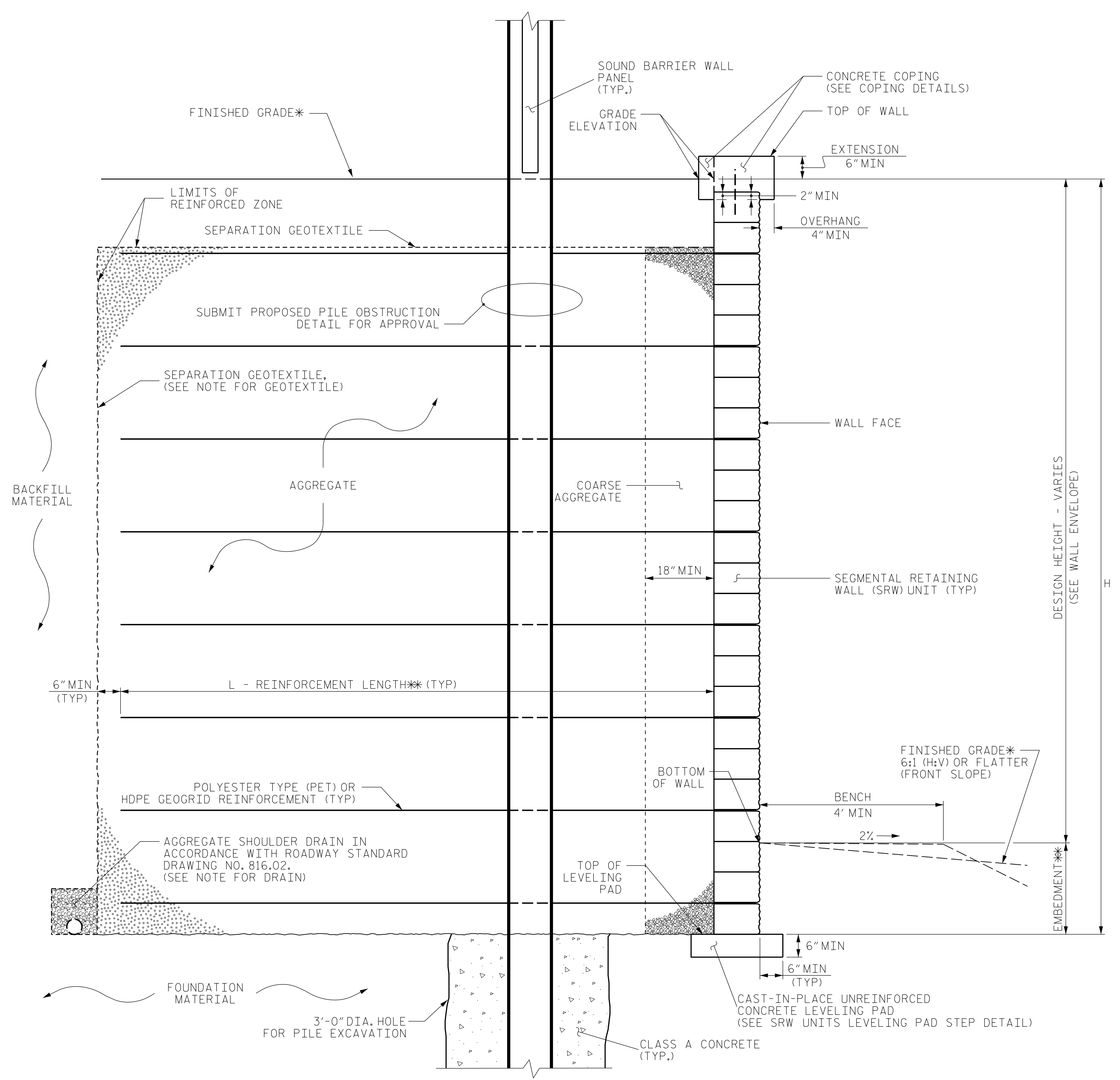
**GEOTECHNICAL  
 ENGINEERING UNIT**

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

SHEET NO. W-10



GEOTECHNICAL ENGINEER  SEAL 048207 ENGINEER STEPHEN C. CROCKETT	ENGINEER  _____ DATE _____
Documented by: 11/16/2021 Stephen C. Crockett SIGNATURE DATE	SIGNATURE DATE
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>	



**COPING DETAILS**

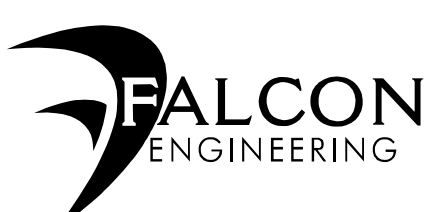
AT THE CONTRACTOR'S OPTION, CONNECT COPING TO SRW UNITS WITH DOWELS OR EXTEND COPING DOWN BACK OF SRW UNITS.  
\*SEE ROADWAY PLANS FOR FINISHED GRADE DETAILS.

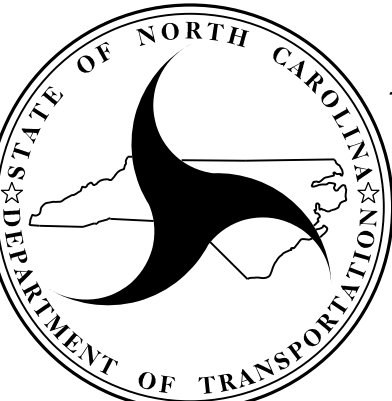
**MSE WALL WITH SRW UNITS - TYPICAL SECTION**

\*SEE COPING DETAILS AND PLANS FOR FINISHED GRADE OR END BENT SLOPE DETAILS.  
\*\*SEE MSE RETAINING WALLS PROVISION AND IF APPLICABLE, MSE WALL NOTES FOR EMBEDMENT AND REINFORCEMENT LENGTH REQUIREMENTS.

PROJECT NO.: R-3300B  
 PENDER COUNTY  
 STATION: -Y19- 47+85.00  
 SHEET 3 OF 4

PREPARED BY: S. CROCKETT	DATE: 4/29/20
REVIEWED BY: J. HAMM	DATE: 4/30/20

  
 FALCON ENGINEERING, INC.  
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 NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 DIVISION OF HIGHWAYS  
**GEOTECHNICAL  
ENGINEERING UNIT**

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

SHEET NO. W-11

**NOTES:**

FOR MECHANICALLY STABILIZED EARTH (MSE) RETAINING WALLS, SEE MECHANICALLY STABILIZED EARTH RETAINING WALLS PROVISION.  
 AT THE CONTRACTOR'S OPTION, USE AN MSE WALL SYSTEM WITH SEGMENTAL RETAINING WALL (SRW) UNITS THAT MEET ARTICLE 1040-4 OF THE STANDARD SPECIFICATIONS FOR RETAINING WALL NO. 2.  
 AT THE CONTRACTOR'S OPTION, USE FINE AGGREGATE IN THE REINFORCED ZONE OF RETAINING WALL NO. 2.  
 A SEPARATION GEOTEXTILE IS REQUIRED AT THE BACK OF THE REINFORCED ZONE FOR RETAINING WALL NO. 2.  
 A DRAIN IS REQUIRED FOR RETAINING WALL NO. 2.

CONSTRUCT FOUNDATIONS FOR SOUND BARRIER WALL NO. 22 PRIOR TO CONSTRUCTION OF RETAINING WALL NO. 2. BACKFILL SOUND BARRIER WALL FOUNDATIONS WITH CONCRETE BELOW TOP OF LEVELING PAD ELEVATION.

BEFORE BEGINNING MSE WALL DESIGN FOR RETAINING WALL NO. 2, SURVEY WALL LOCATION AND SUBMIT A REVISED WALL PROFILE VIEW (WALL ENVELOPE) FOR REVIEW. DO NOT START WALL DESIGN OR CONSTRUCTION UNTIL THE REVISED WALL ENVELOPE IS ACCEPTED.  
 DESIGN RETAINING WALL NO. 2 FOR THE FOLLOWING:  
 1) H = DESIGN HEIGHT + EMBEDMENT  
 2) DESIGN LIFE = 100 YEARS  
 3) MAXIMUM FACTORED VERTICAL PRESSURE ON FOUNDATION MATERIAL = 1590 PSF  
 4) MINIMUM REINFORCEMENT LENGTH (L) = 0.9H OR 6 FT, WHICHEVER IS LONGER  
 5) REINFORCED ZONE AGGREGATE PARAMETERS:

AGGREGATE TYPE*	UNIT WEIGHT ( $\gamma$ ) PCF	FRICTION ANGLE ( $\phi$ ) DEGREES	COHESION (c) PSF
COARSE	110	38	0
FINE	115	34	0

\*SEE MSE RETAINING WALLS PROVISION FOR COARSE AND FINE AGGREGATE MATERIAL REQUIREMENTS.

7) IN-SITU ASSUMED MATERIAL PARAMETERS:

MATERIAL TYPE	UNIT WEIGHT ( $\gamma$ ) PCF	FRICTION ANGLE ( $\phi$ ) DEGREES	COHESION (c) PSF
BACKFILL	120	30	0
FOUNDATION	115	28	0

EXISTING OR FUTURE OBSTRUCTIONS SUCH AS FOUNDATIONS, GUARDRAIL, FENCE OR HANDRAIL POSTS, PAVEMENTS, PIPES, INLETS OR UTILITIES MAY INTERFERE WITH REINFORCEMENT FOR RETAINING WALL NO. 2.

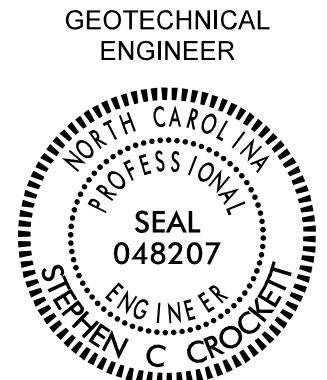
FOUNDATIONS FOR SOUND BARRIER WALL NO. 2 LOCATED BEHIND RETAINING WALL NO. 2 WILL INTERFERE WITH REINFORCEMENT FOR RETAINING WALL NO. 2. SEE "FOUNDATION LAYOUT" SHEET FOR FOUNDATION LOCATIONS.

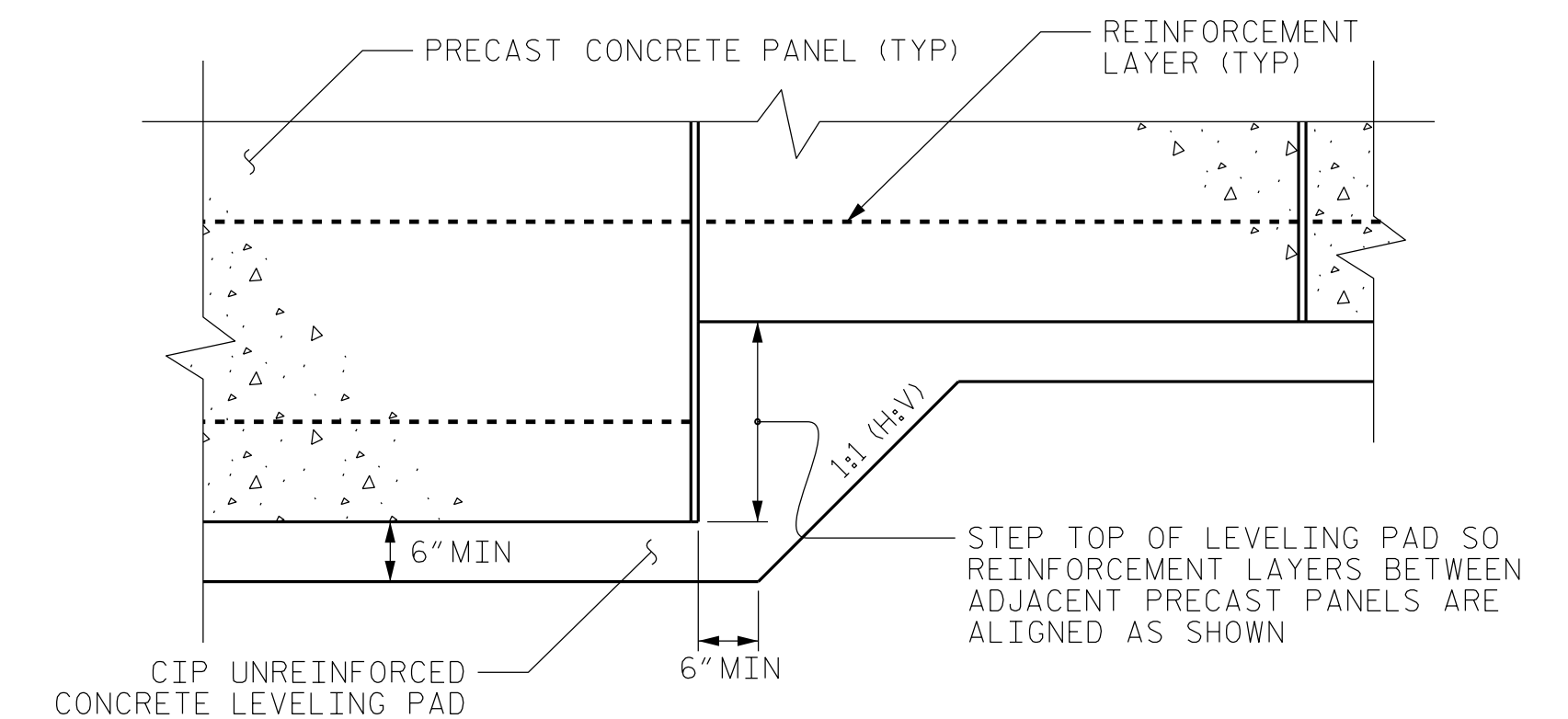
DO NOT PLACE LEVELING PAD CONCRETE, AGGREGATE OR REINFORCEMENT FOR RETAINING WALL NO. 2 UNTIL EXCAVATION DIMENSIONS AND FOUNDATION MATERIAL ARE APPROVED.

"TEMPORARY SHORING" MAY BE REQUIRED FOR RETAINING WALL NO. 2 IN ACCORDANCE WITH THE TEMPORARY SHORING PROVISION. SEE ROADWAY PLANS.

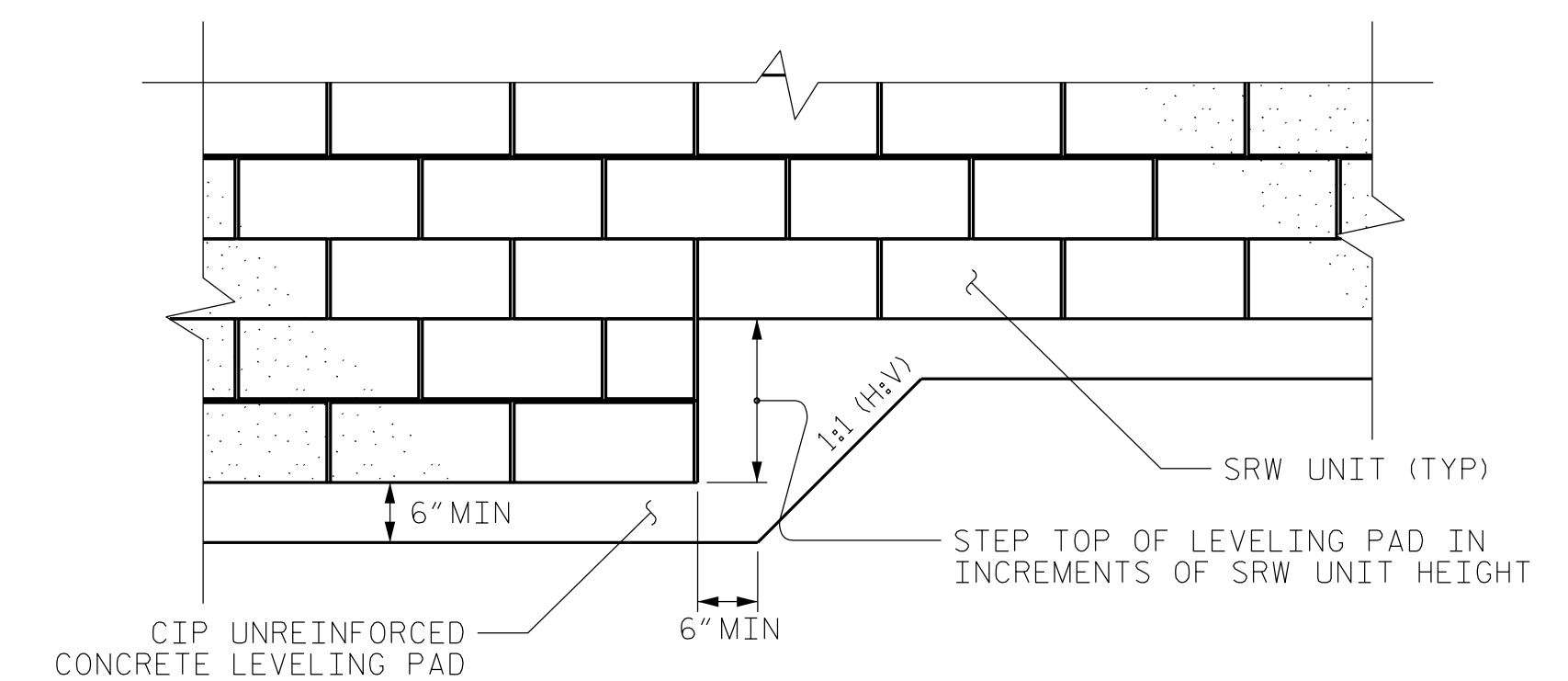
AT THE CONTRACTOR'S OPTION, "TEMPORARY SHORING FOR WALL CONSTRUCTION" MAY BE USED TO CONSTRUCT RETAINING WALL NO. 2. SEE MSE RETAINING WALLS PROVISION FOR TEMPORARY SHORING FOR WALL CONSTRUCTION.

DESIGN RETAINING WALL NO. 2 FOR A LATERAL LOAD FROM FOUNDATIONS OF SOUND BARRIER WALL LOCATED BEHIND THE MSE WALL APPLIED AS A FACTORED UNIFORM PRESSURE OF 550 PSF OR 700 PSF TO THE BACK OF PANELS OR SRW UNITS FOR SOUND BARRIER WALL PILE SPACING OF 10 FT AND 15 FT RESPECTIVELY.

GEOTECHNICAL ENGINEER  11/16/2021 Stephen C. Crockett SIGNATURE DATE	ENGINEER     SIGNATURE DATE
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>	



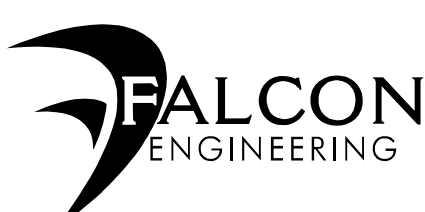
PRECAST PANELS  
LEVELING PAD STEP DETAIL

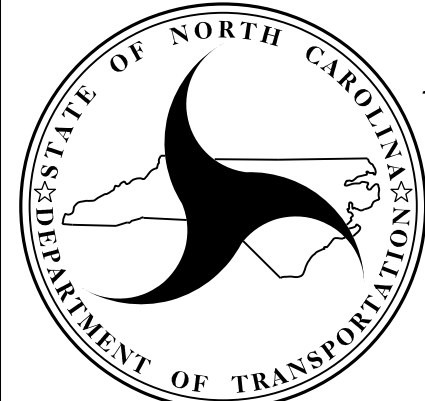


SRW UNITS LEVELING PAD STEP DETAIL

PROJECT NO.: R-3300B  
 PENDER COUNTY  
 STATION: -Y19- 47+85.00  
 SHEET 4 OF 4

PREPARED BY: S. CROCKETT	DATE: 4/29/20
REVIEWED BY: J. HAMM	DATE: 4/30/20

  
 FALCON ENGINEERING, INC.  
 1210 TRINITY ROAD, SUITE 110  
 CARY, NC 27513  
 PHONE: 919.871.0800  
 www.falconengineers.com

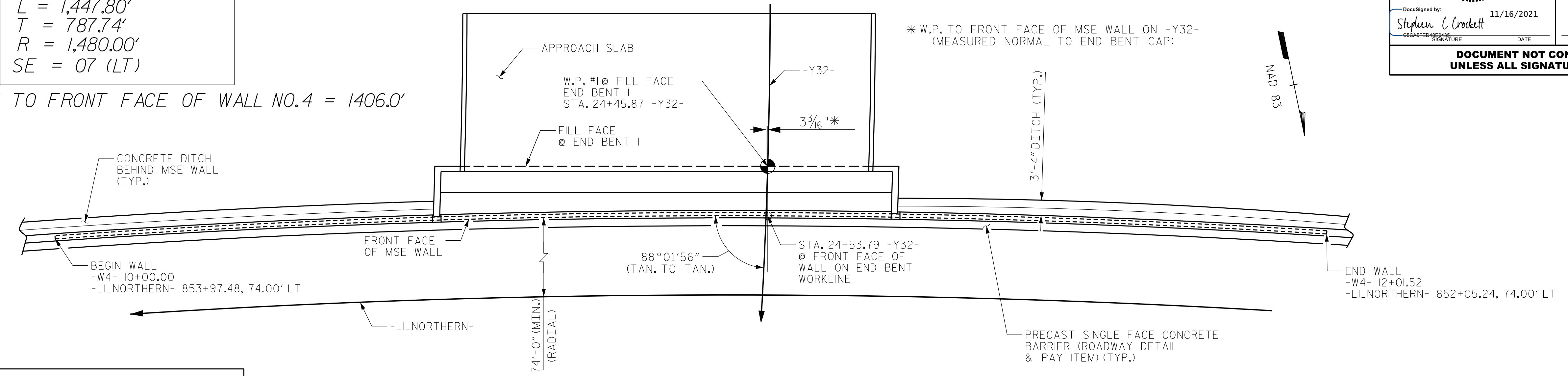
  
**NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
DIVISION OF HIGHWAYS**  
  
**GEOTECHNICAL  
ENGINEERING UNIT**

**RETAINING WALL NO. 2  
MSE WALL WITH PANELS, BACK  
SLOPE, AND PILE SLEEVES, NOTES  
AND LEVELING PAD STEP DETAIL**

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	
1			3			W-12
2			4			

**-L1\_NORTHERN-**  
 PI Sta 858+75.41  
 $\Delta = 56^{\circ}02'57.00''$  (LT)  
 $D = 3^{\circ}52'16.8''$   
 $L = 1,447.80'$   
 $T = 787.74'$   
 $R = 1,480.00'$   
 $SE = 07$  (LT)

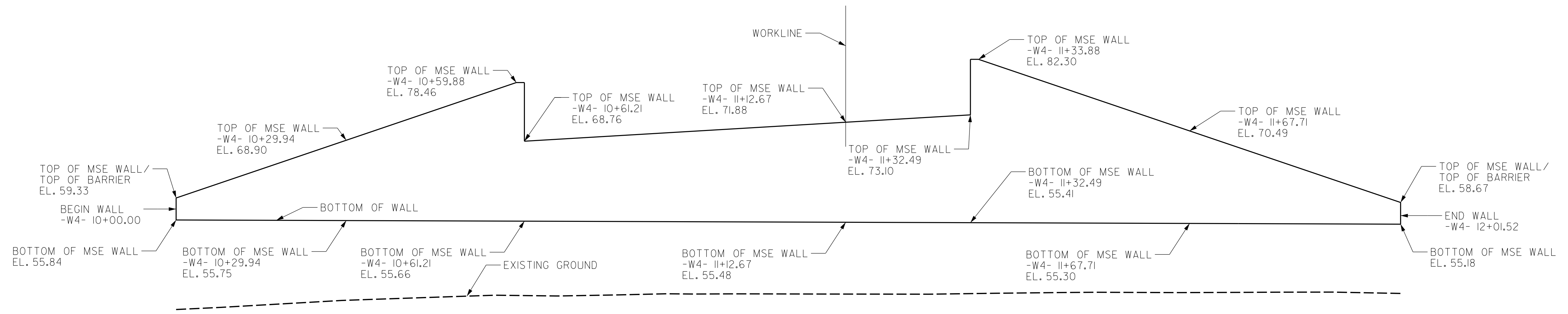
RADIUS TO FRONT FACE OF WALL NO.4 = 1406.0'



GEOTECHNICAL ENGINEER  Documented by: <i>Stephen C. Crockett</i> 11/16/2021 SIGNATURE DATE	ENGINEER SIGNATURE DATE
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ESTIMATED MSE WALL QUANTITIES (SQUARE FEET)	
MSE RETAINING WALL NO. 4	3,530 SF

RETAINING WALL NO. 4 PLAN - END BENT 1 MSE WALL



RETAINING WALL NO. 4 ENVELOPE - END BENT 1 MSE WALL

THE WALL ENVELOPE DOES NOT ACCURATELY DEPICT THE ACTUAL FACE OF THE WALL  
 DIMENSIONS OF WALL TAKEN ALONG FRONT FACE OF MSE WALL  
 FACING DOWNSTATION ON -Y32-

PROJECT NO.: R-3300B  
 PENDER COUNTY  
 STATION: 25+28.04 -Y32-, 852+98.21 -L1-  
 SHEET 1 OF 7

PREPARED BY: S. CROCKETT	DATE: 5/5/20
REVIEWED BY: J. HAMM	DATE: 5/5/20

**FALCON ENGINEERING**  
 FALCON ENGINEERING, INC.  
 1210 TRINITY ROAD, SUITE 110  
 CARY, NC 27513  
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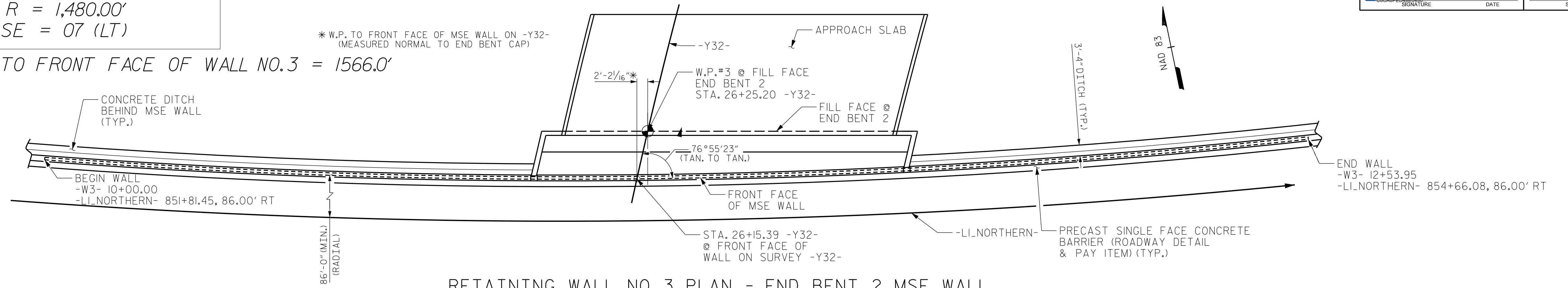
**NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 DIVISION OF HIGHWAYS**  
**GEOTECHNICAL  
 ENGINEERING UNIT**

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	
1			3			W-13
2			4			

**RETAINING WALL NO. 4  
 END BENT 1 MSE ABUTMENT WALL  
 WALL PLAN AND ENVELOPE**

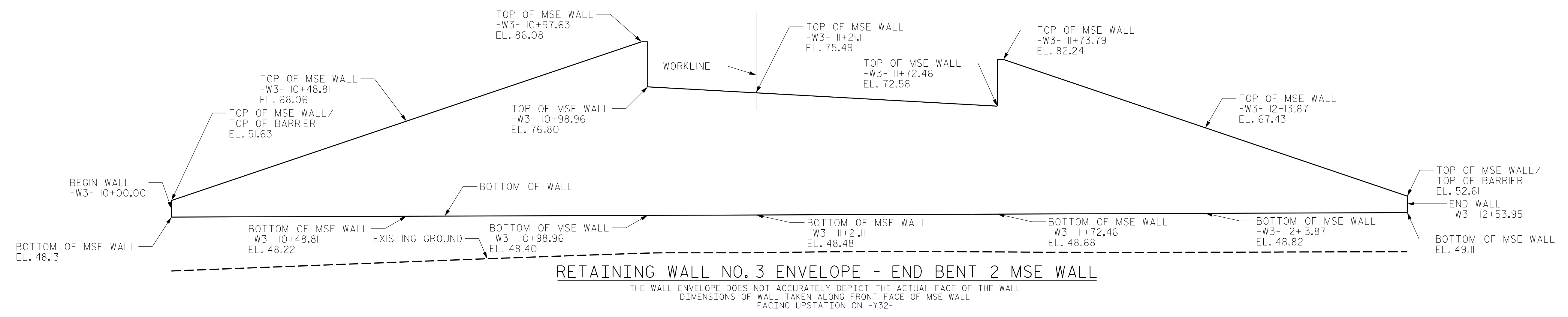
-L1\_NORTHERN-  
 PI Sta 858+75.41  
 $\Delta = 56^{\circ}02'57.00"$  (LT)  
 $D = 3^{\circ}52'16.81"$   
 $L = 1,447.80'$   
 $T = 787.74'$   
 $R = 1,480.00'$   
 $SE = 07$  (LT)

RADIUS TO FRONT FACE OF WALL NO.3 = 1566.0'



RETAINING WALL NO. 3 PLAN - END BENT 2 MSE WALL

ESTIMATED MSE WALL QUANTITIES (SQUARE FEET)	
MSE RETAINING WALL NO. 3	6,560 SF



RETAINING WALL NO. 3 ENVELOPE - END BENT 2 MSE WALL

THE WALL ENVELOPE DOES NOT ACCURATELY DEPICT THE ACTUAL FACE OF THE WALL DIMENSIONS OF WALL TAKEN ALONG FRONT FACE OF MSE WALL FACING UPSTATION ON -Y32-

GEOTECHNICAL ENGINEER

ENGINEER

SEAL 048207

DESIGNED BY: Stephen C. Crockett 11/16/2021

SIGNATURE DATE SIGNATURE DATE

PROJECT NO.: R-3300B  
 PENDER COUNTY  
 STATION: 25+28.04 -Y32-, 852+98.21 -L1-  
 SHEET 2 OF 7

PREPARED BY: S. CROCKETT DATE: 5/5/20  
 REVIEWED BY: J. HAMM DATE: 5/5/20

**FALCON ENGINEERING**

FALCON ENGINEERING, INC.  
 1210 TRINITY ROAD, SUITE 110  
 CARY, NC 27513

PHONE: 919.871.0800  
 www.falconengineers.com

**NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS**

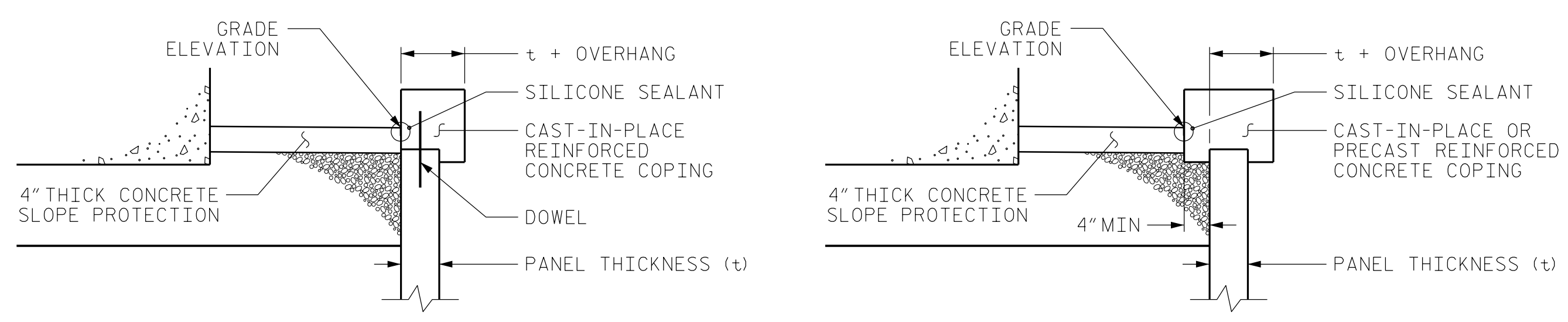
**GEOTECHNICAL ENGINEERING UNIT**

RETAINING WALL NO. 3  
 END BENT 2 MSE ABUTMENT WALL  
 WALL PLAN AND ENVELOPE

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

SHEET NO. W-14

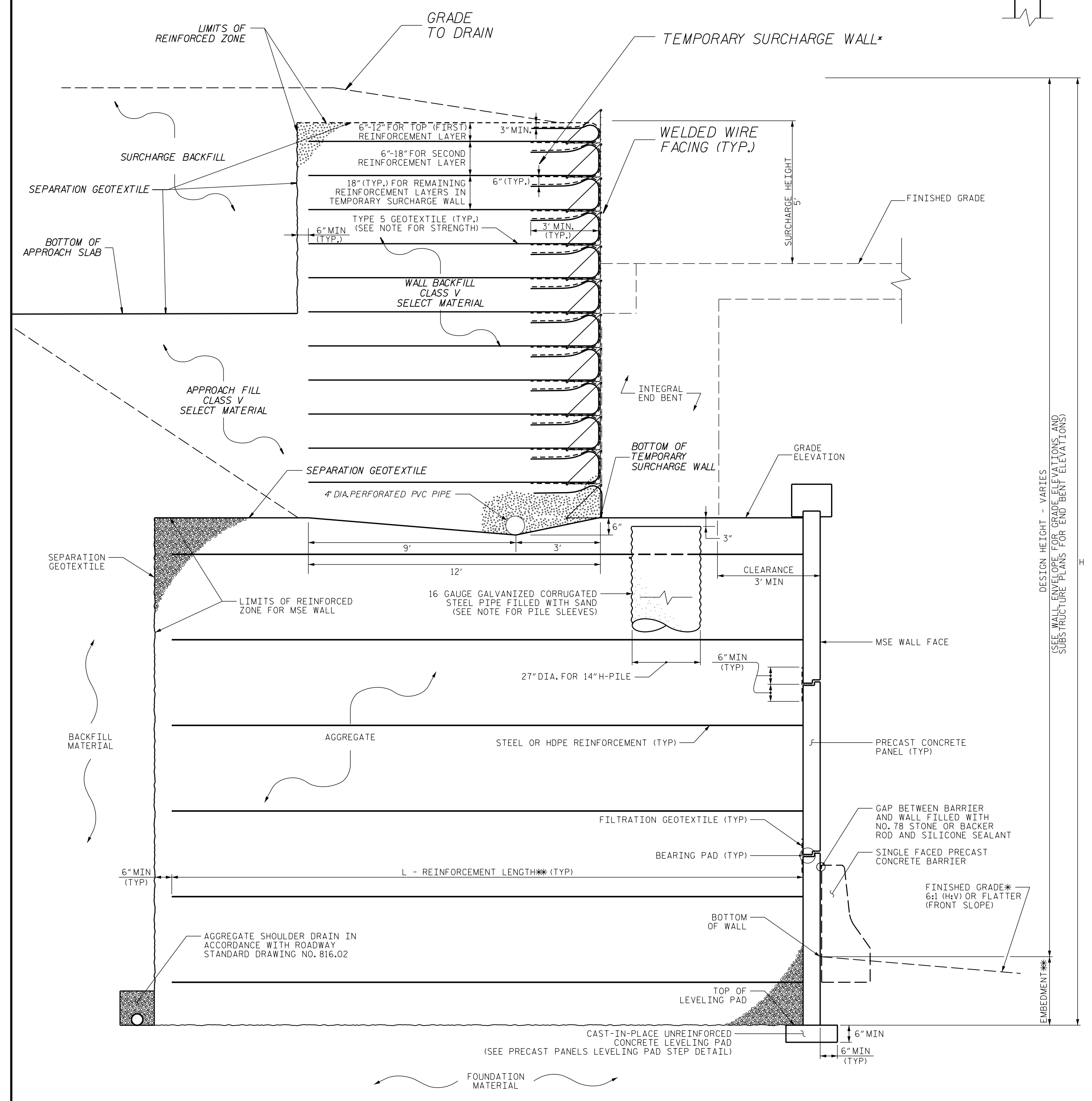
ESTIMATED TEMPORARY SURCHARGE WALL QUANTITIES (SQUARE FEET)	
TEMPORARY SURCHARGE WALL NO. 3	520 SF
TEMPORARY SURCHARGE WALL NO. 4	500 SF



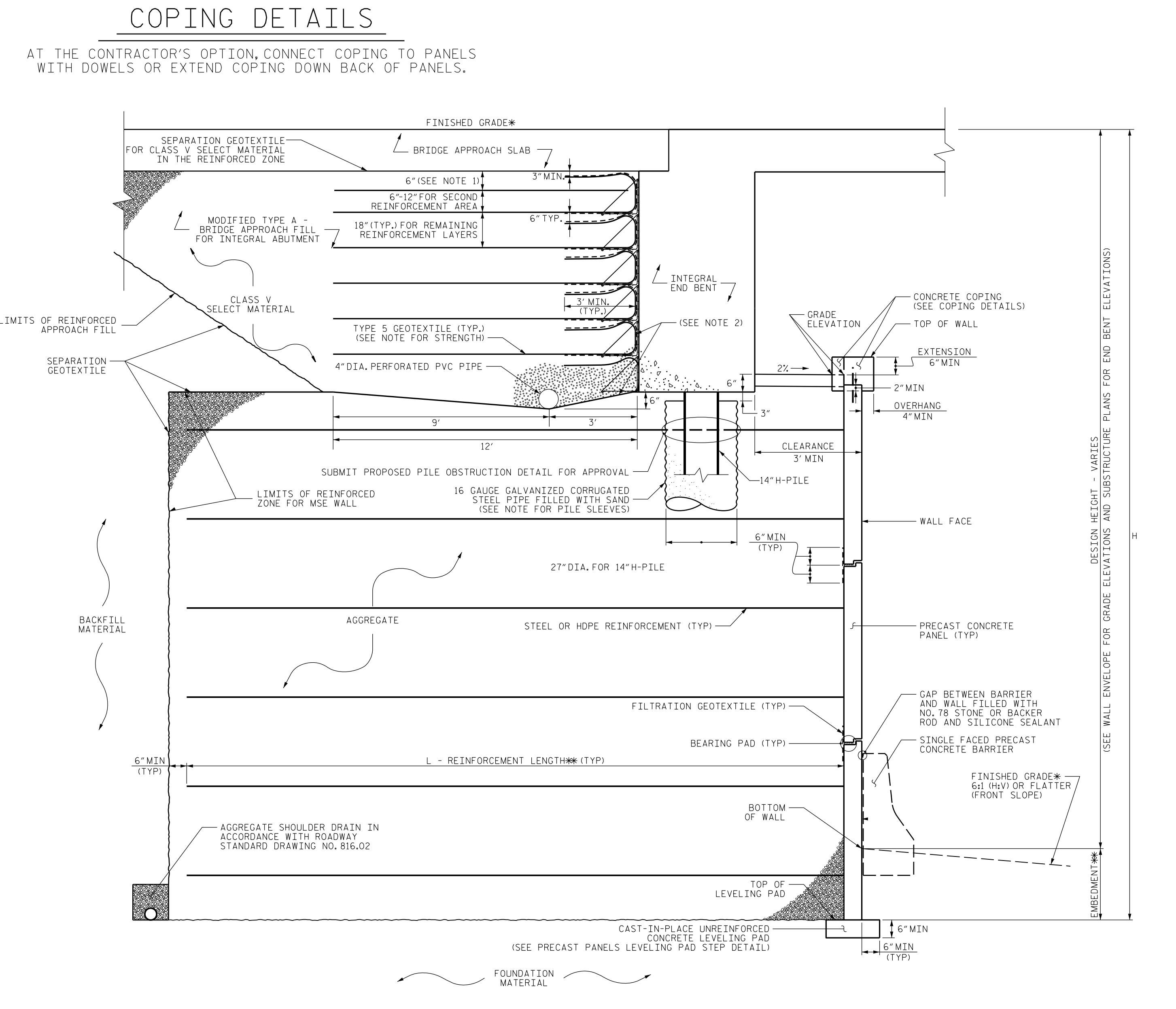
ENGINEER

DocuSigned by: *Stephen C. Crockett* 11/16/2021

DATE: \_\_\_\_\_ SIGNATURE: \_\_\_\_\_ DATE: \_\_\_\_\_



MSE ABUTMENT WALL WITH TEMPORARY SURCHARGE WALL - TYPICAL SECTION DURING WAITING PERIOD  
 \*SEE TEMPORARY SURCHARGE WALL SPECIAL PROVISION



MSE ABUTMENT WALL WITH PRECAST PANELS - TYPICAL SECTION FOR FINAL CONSTRUCTION  
 \*SEE ROADWAY PLANS FOR FINISHED GRADE DETAILS.  
 \*SEE RETAINING WALLS PROVISION AND IF APPLICABLE, MSE WALL NOTES FOR EMBEDMENT AND REINFORCEMENT LENGTH REQUIREMENTS.  
 NOTE 1: PLACE TOP (FIRST) REINFORCEMENT LAYER 6" BELOW TOP OF WALL REGARDLESS OF VERTICAL SPACING FOR UNDERLYING REINFORCEMENT LAYERS. IT IS NOT NECESSARY TO WRAP THE TOP LAYER OF GEOTEXTILE REINFORCEMENT AT THE WALL FACE.  
 NOTE 2: TYPE 5 GEOTEXTILE WRAPS AROUND (IN FRONT OF) WELDED WIRE FACING FOR BOTTOM LAYER. TYPE 5 GEOTEXTILE WRAPS INSIDE (BEHIND) WELDED WIRE FENCING FOR ALL REMAINING LAYERS.

PROJECT NO.: R-3300B  
 PENDER COUNTY  
 STATION: 25+28.04 -Y32-, 852+98.21 -L1-  
 SHEET 3 OF 7

PREPARED BY: S. CROCKETT	DATE: 5/5/20
REVIEWED BY: J. HAMM	DATE: 5/5/20

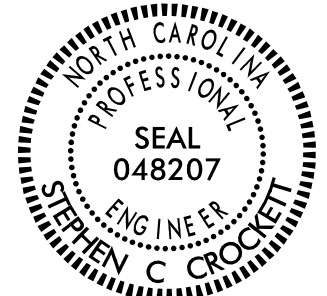
**FALCON ENGINEERING**

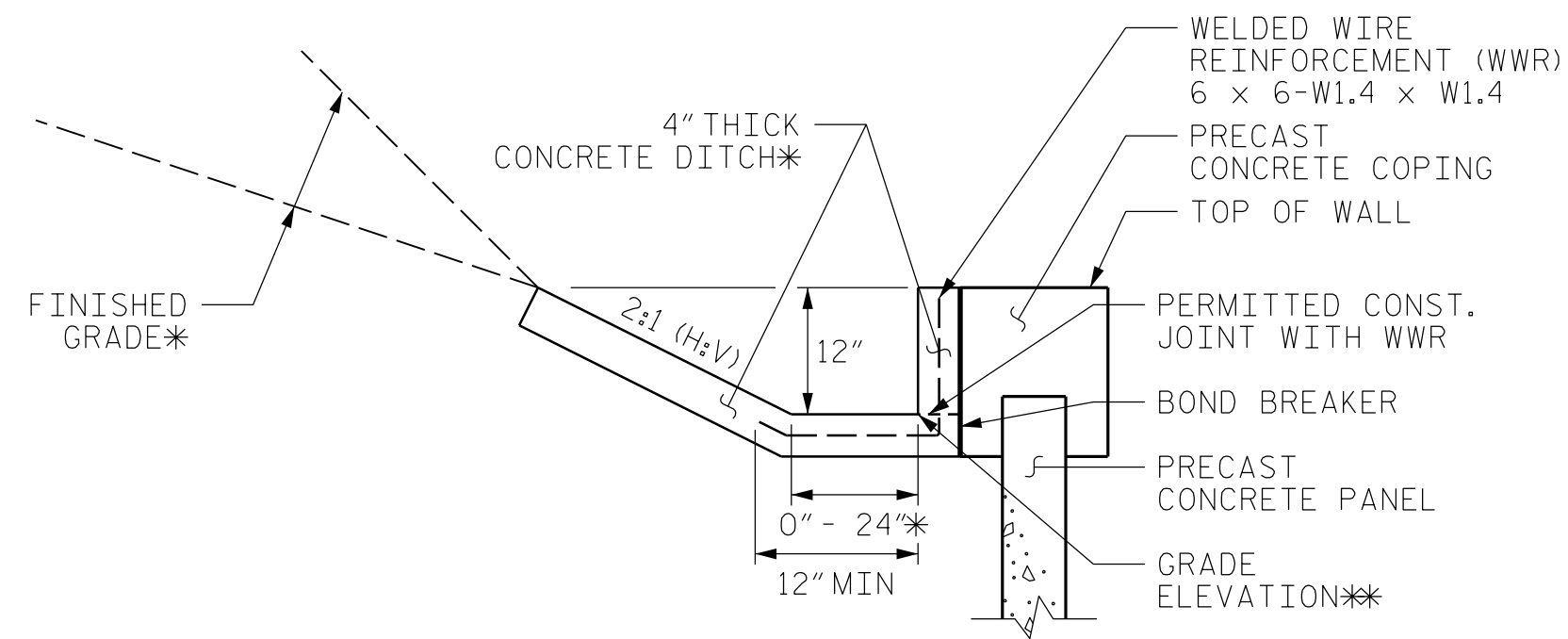
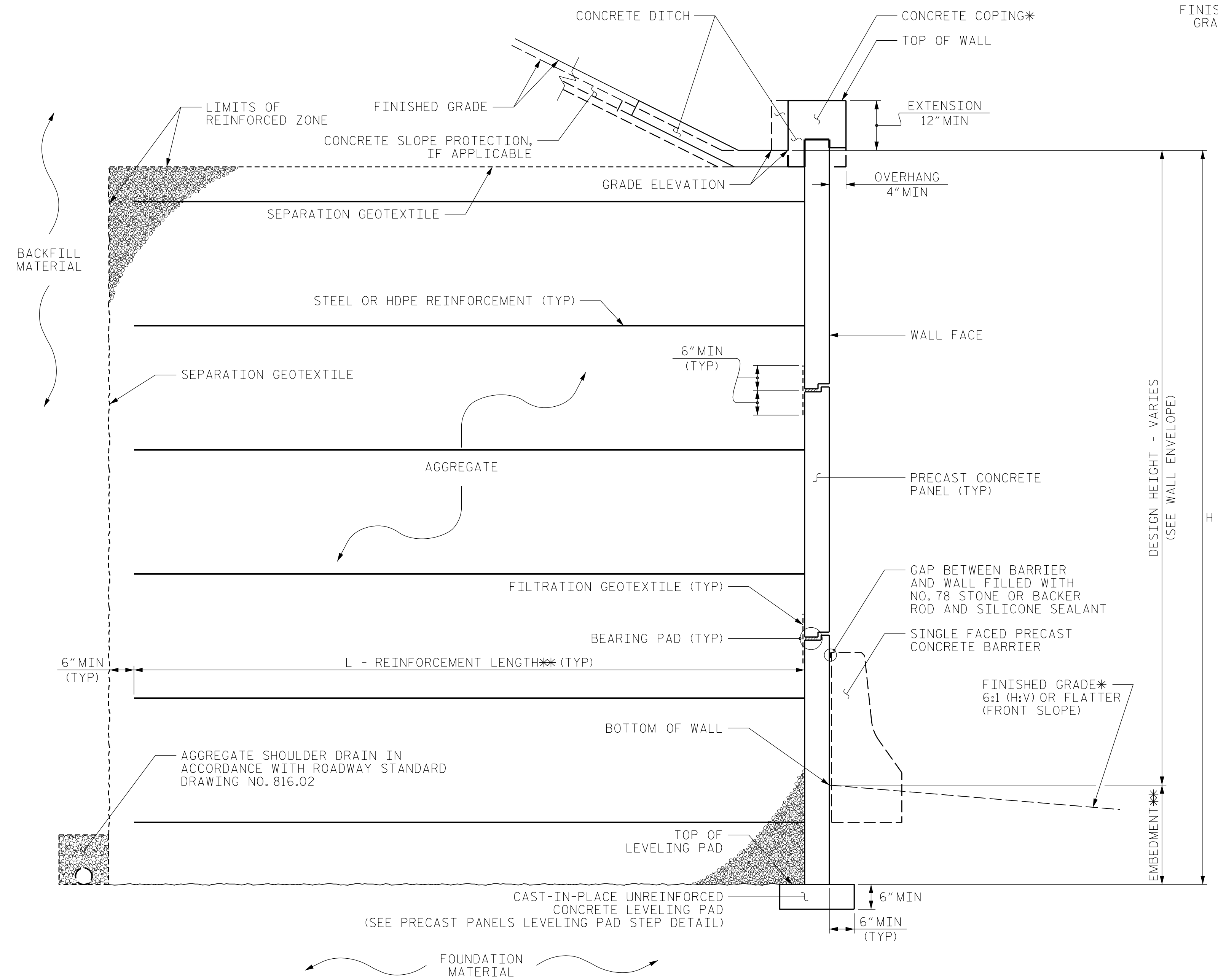
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 1210 TRINITY ROAD, SUITE 110  
 CARY, NC 27513  
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NORTH CAROLINA  
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 DIVISION OF HIGHWAYS

**GEOTECHNICAL  
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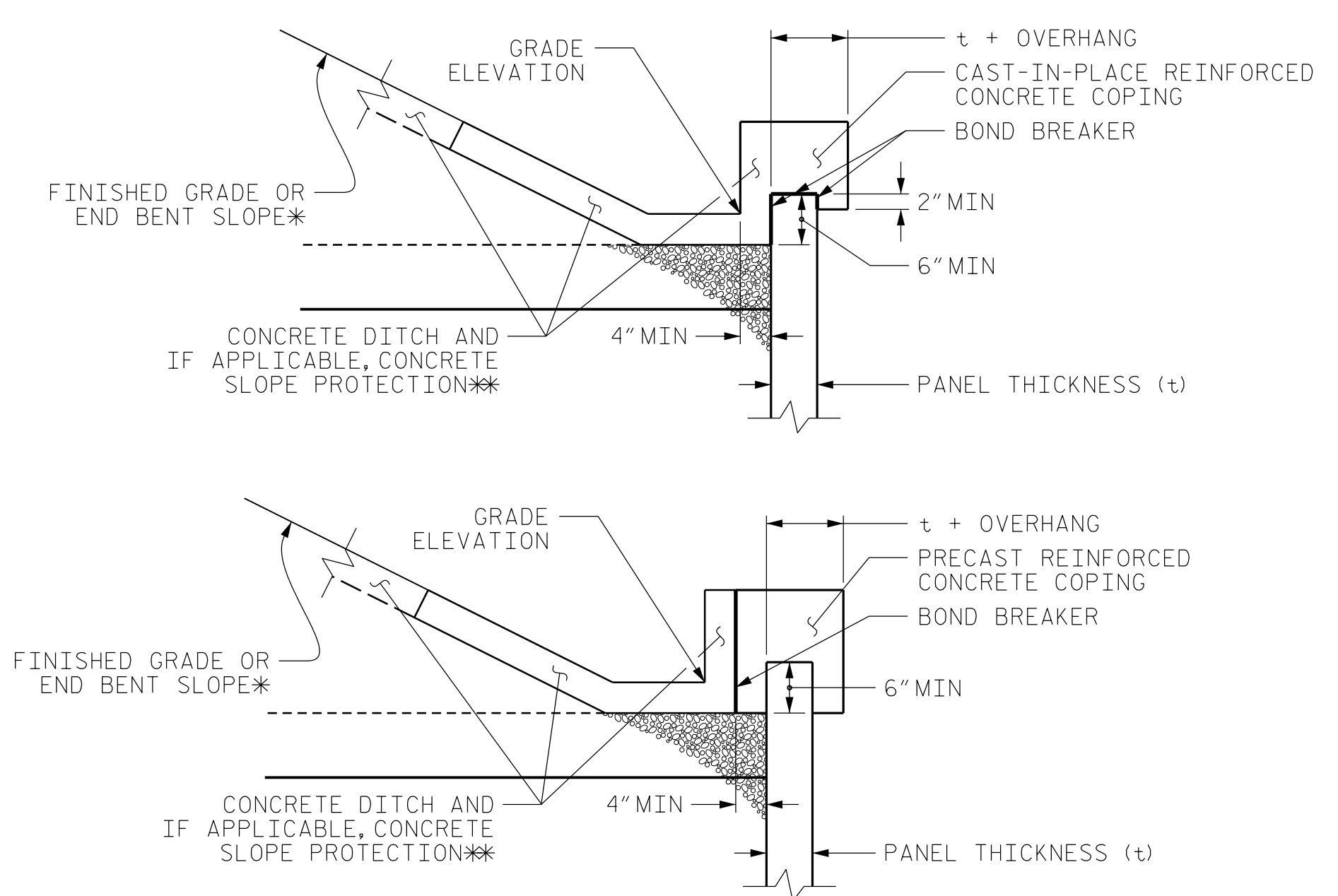
REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	
1			3			W-15
2			4			

GEOTECHNICAL ENGINEER  SEAL 048207 ENGINEER STEPHEN C. CROCKETT	ENGINEER  _____ SIGNATURE _____ DATE
DocuSigned by: Stephen C. Crockett 11/16/2021	_____ SIGNATURE _____ DATE



### CONCRETE DITCH BEHIND WALL WITH CONCRETE COPING

\*SEE ROADWAY PLANS FOR CONCRETE DITCH AND FINISHED GRADE DETAILS.  
 \*\*SEE WALL ENVELOPE FOR GRADE ELEVATIONS.  
 FOR CONCRETE DITCHES, SEE SECTION 850 OF THE STANDARD SPECIFICATIONS.



### COPING DETAILS

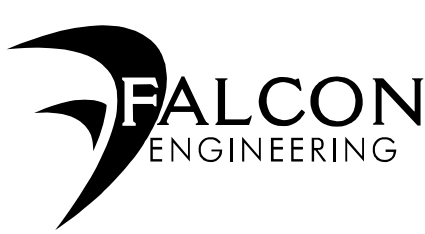
\*SEE PLANS FOR FINISHED GRADE OR END BENT SLOPE DETAILS.  
 \*\*SEE CONCRETE DITCH BEHIND WALL DETAILS.

## MSE WALL WITH PRECAST PANELS AND BACKSLOPE - TYPICAL SECTION

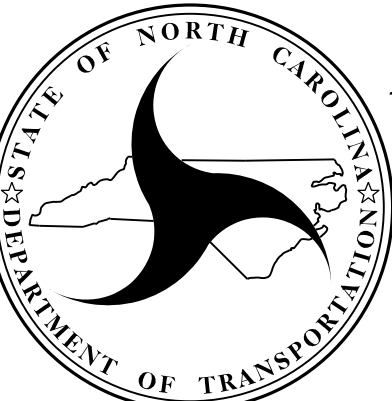
\*SEE COPING DETAILS AND PLANS FOR FINISHED GRADE DETAILS.  
 \*\*SEE MSE RETAINING WALLS PROVISION AND IF APPLICABLE, MSE WALL NOTES FOR EMBEDMENT AND REINFORCEMENT LENGTH REQUIREMENTS.

PROJECT NO.: R-3300B  
 PENDER COUNTY  
 STATION: 25+28.04 -Y32-, 852+98.21 -L1-  
 SHEET 4 OF 7

PREPARED BY: S. CROCKETT	DATE: 5/5/20
REVIEWED BY: J. HAMM	DATE: 5/5/20



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**GEOTECHNICAL ENGINEERING UNIT**

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

SHEET NO. W-16

**NOTES:**

FOR MECHANICALLY STABILIZED EARTH (MSE) RETAINING WALLS, SEE MECHANICALLY STABILIZED EARTH RETAINING WALLS PROVISION.  
 FOR TEMPORARY SURCHARGE WALL SEE TEMPORARY SURCHARGE WALL (SPECIAL) PROVISION.  
 FOR MODIFIED TYPE A BRIDGE APPROACH FILL FOR INTEGRAL ABUTMENT, SEE ALTERNATE BRIDGE APPROACH FILLS FOR INTEGRAL ABUTMENTS (SPECIAL) PROVISION AND ROADWAY DETAIL DRAWING NO. 422.03.  
 FOR SINGLE FACED PRECAST CONCRETE BARRIER, SEE ROADWAY PLANS AND SECTION 857 OF THE STANDARD SPECIFICATIONS.  
 AT THE CONTRACTOR'S OPTION, USE FINE AGGREGATE IN THE REINFORCED ZONE OF RETAINING WALLS NO. 3&4.  
 A SEPARATION GEOTEXTILE IS REQUIRED AT THE BACK OF THE REINFORCED ZONE FOR RETAINING WALLS NO. 3&4.  
 A DRAIN IS REQUIRED FOR RETAINING WALLS NO. 3&4.  
 PILE SLEEVES ARE REQUIRED AROUND PILES FOR END BENT NO.1 LOCATED AT -Y32- STATION 24+45.87 AND END BENT NO.2 LOCATED AT -Y32- STATION 26+25.20.  
 BEFORE BEGINNING MSE WALL DESIGN FOR RETAINING WALLS NO. 3&4, SURVEY WALL LOCATION AND SUBMIT A REVISED WALL PROFILE VIEW (WALL ENVELOPE) FOR REVIEW. DO NOT START WALL DESIGN OR CONSTRUCTION UNTIL THE REVISED WALL ENVELOPE IS ACCEPTED.

DESIGN RETAINING WALL NO.3 FOR THE FOLLOWING:  
 1) H = DESIGN HEIGHT + EMBEDMENT  
 2) DESIGN LIFE = 100 YEARS  
 3) MAXIMUM FACTORED VERTICAL PRESSURE ON FOUNDATION MATERIAL = 8,660 PSF  
 4) MINIMUM REINFORCEMENT LENGTH (L) = 0.8H OR 6 FT, WHICHEVER IS LONGER  
 5) REINFORCED ZONE AGGREGATE PARAMETERS:

AGGREGATE TYPE*	UNIT WEIGHT ( $\gamma$ ) PCF	FRICTION ANGLE ( $\phi$ ) DEGREES	COHESION (c) PSF
COARSE	110	38	0
FINE	115	34	0
*SEE MSE RETAINING WALLS PROVISION FOR COARSE AND FINE AGGREGATE MATERIAL REQUIREMENTS.			

6) IN-SITU ASSUMED MATERIAL PARAMETERS:

MATERIAL TYPE	UNIT WEIGHT ( $\gamma$ ) PCF	FRICTION ANGLE ( $\phi$ ) DEGREES	COHESION (c) PSF
BACKFILL	120	30	0
FOUNDATION	115	28	0

DESIGN RETAINING WALL NO.4 FOR THE FOLLOWING:  
 1) H = DESIGN HEIGHT + EMBEDMENT  
 2) DESIGN LIFE = 100 YEARS  
 3) MAXIMUM FACTORED VERTICAL PRESSURE ON FOUNDATION MATERIAL = 5,910 PSF  
 4) MINIMUM REINFORCEMENT LENGTH (L) = 0.85H OR 6 FT, WHICHEVER IS LONGER  
 5) REINFORCED ZONE AGGREGATE PARAMETERS:

AGGREGATE TYPE*	UNIT WEIGHT ( $\gamma$ ) PCF	FRICTION ANGLE ( $\phi$ ) DEGREES	COHESION (c) PSF
COARSE	110	38	0
FINE	115	34	0
*SEE MSE RETAINING WALLS PROVISION FOR COARSE AND FINE AGGREGATE MATERIAL REQUIREMENTS.			

6) IN-SITU ASSUMED MATERIAL PARAMETERS:

MATERIAL TYPE	UNIT WEIGHT ( $\gamma$ ) PCF	FRICTION ANGLE ( $\phi$ ) DEGREES	COHESION (c) PSF
BACKFILL	120	30	0
FOUNDATION	115	28	0

TOTAL SETTLEMENT AT THE TALLEST PORTION OF RETAINING WALL NO.3 IS PROJECTED TO BE 12 INCHES. SETTLEMENT AT EACH END OF THE WALL IS ANTICIPATED TO BE MINIMAL. DESIGN FOR DIFFERENTIAL SETTLEMENT OVER THE TAPERING PORTION OF THE WALL TO APPROACH THE TOTAL PROJECTED SETTLEMENT.

TOTAL SETTLEMENT AT THE TALLEST PORTION OF RETAINING WALL NO.4 IS PROJECTED TO BE 10 INCHES. SETTLEMENT AT EACH END OF THE WALL IS ANTICIPATED TO BE MINIMAL. DESIGN FOR DIFFERENTIAL SETTLEMENT OVER THE TAPERING PORTION OF THE WALL TO APPROACH THE TOTAL PROJECTED SETTLEMENT.

DESIGN RETAINING WALLS NO. 3&4 FOR A LIVE LOAD (TRAFFIC) SURCHARGE.

EXISTING OR FUTURE OBSTRUCTIONS SUCH AS FOUNDATIONS, GUARDRAIL, FENCE OR HANDRAIL POSTS, PAVEMENTS, PIPES, INLETS OR UTILITIES MAY INTERFERE WITH REINFORCEMENT FOR RETAINING WALLS NO. 3&4.

FOUNDATIONS FOR END BENT NO.1 LOCATED AT -Y32- STATION 24+45.87 AND END BENT NO.2 LOCATED AT -Y32- STATION 26+25.20 WILL INTERFERE WITH REINFORCEMENT FOR RETAINING WALLS NO. 3&4. SEE "FOUNDATION LAYOUT" SHEET FOR FOUNDATION LOCATIONS.

DESIGN RETAINING WALLS NO. 3&4 FOR A LATERAL LOAD FROM FOUNDATIONS LOCATED BEHIND THE MSE WALL APPLIED AS A FACTORED UNIFORM PRESSURE OF 200 PSF TO THE BACK OF PANELS.

INSTALL PILE SLEEVES FOR END BENT NO.1 LOCATED AT -Y32- STATION 24+45.87 AND END BENT NO.2 LOCATED AT -Y32- STATION 26+25.20 WHILE CONSTRUCTING RETAINING WALLS NO. 3&4, OBSERVE A 4 MONTH WAITING PERIOD AFTER CONSTRUCTING THE MSE ABUTMENT WALL AND THE TEMPORARY WALL SURCHARGE. THEN, INSTALL PILES THROUGH THE CORRUGATED STEEL PIPES AND FILL PIPES WITH LOOSE UNCOMPACTED SAND BEFORE CONSTRUCTING END BENT CAPS.

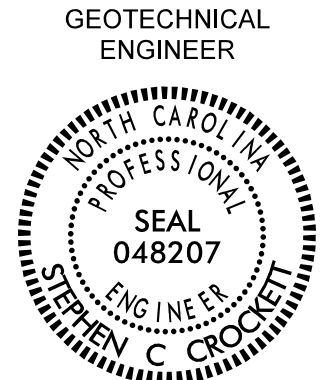
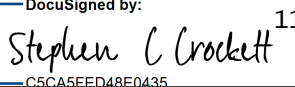
DO NOT PLACE LEVELING PAD CONCRETE, AGGREGATE OR REINFORCEMENT FOR RETAINING WALLS NO. 3&4 UNTIL EXCAVATION DIMENSIONS AND FOUNDATION MATERIAL ARE APPROVED.

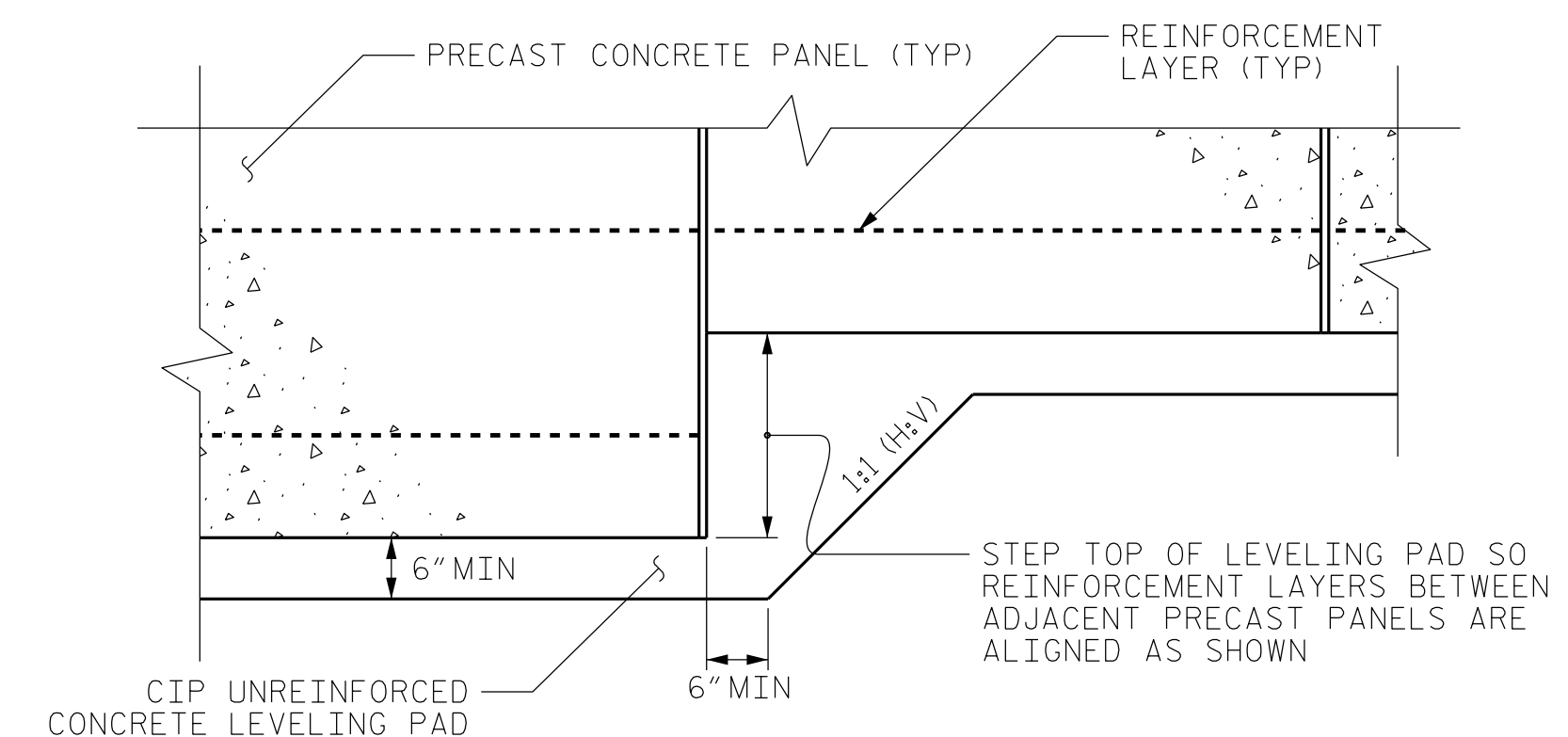
FOR SURCHARGE HEIGHTS AND WAITING PERIODS, SEE ROADWAY PLANS.

FOR THE REINFORCEMENT OF BRIDGE APPROACH FILLS USE TYPE 5 GEOTEXTILE WITH A WIDE WIDTH ULTIMATE TENSILE STRENGTH OF 5000 lb/ft IN THE MACHINE DIRECTION.

EXCAVATE THE TEMPORARY SURCHARGE WALL TO THE BOTTOM OF APPROACH SLAB ELEVATION AFTER COMPLETION OF WAITING PERIODS SO THAT THE REMAINING TEMPORARY SURCHARGE WALL SHALL BE USED AS MODIFIED TYPE A BRIDGE APPROACH FILL.

PREPARED BY: S. CROCKETT	DATE: 5/5/20
REVIEWED BY: J. HAMM	DATE: 5/5/20

GEOTECHNICAL ENGINEER  SEAL 048207 ENGINEER STEPHEN C. CROCKETT	ENGINEER
DocuSigned by:  SIGNATURE	11/16/2021 DATE

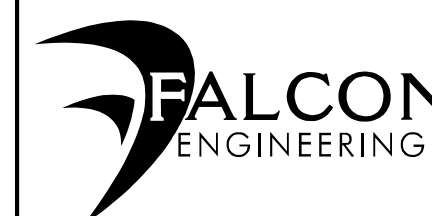


PRECAST PANELS  
LEVELING PAD STEP DETAIL

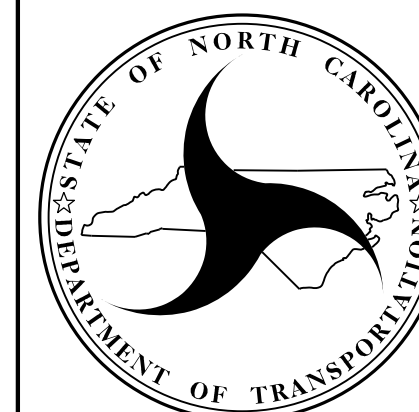
PROJECT NO.: R-3300B  
 PENDER COUNTY  
 STATION: 25+28.04 -Y32-, 852+98.21 -L1-  
 SHEET 5 OF 7

**RETAINING WALL NO. 3&4  
NOTES, COPING DETAILS,  
CONCRETE DITCH DETAILS,  
AND LEVEL PAD STEP DETAIL**

REVISIONS						SHEET NO. W-17
NO.	BY	DATE	NO.	BY	DATE	
1			3			
2			4			



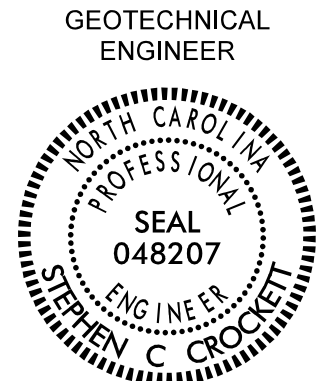
FALCON ENGINEERING, INC.  
 1210 TRINITY ROAD, SUITE 110  
 CARY, NC 27513  
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 www.falconengineers.com

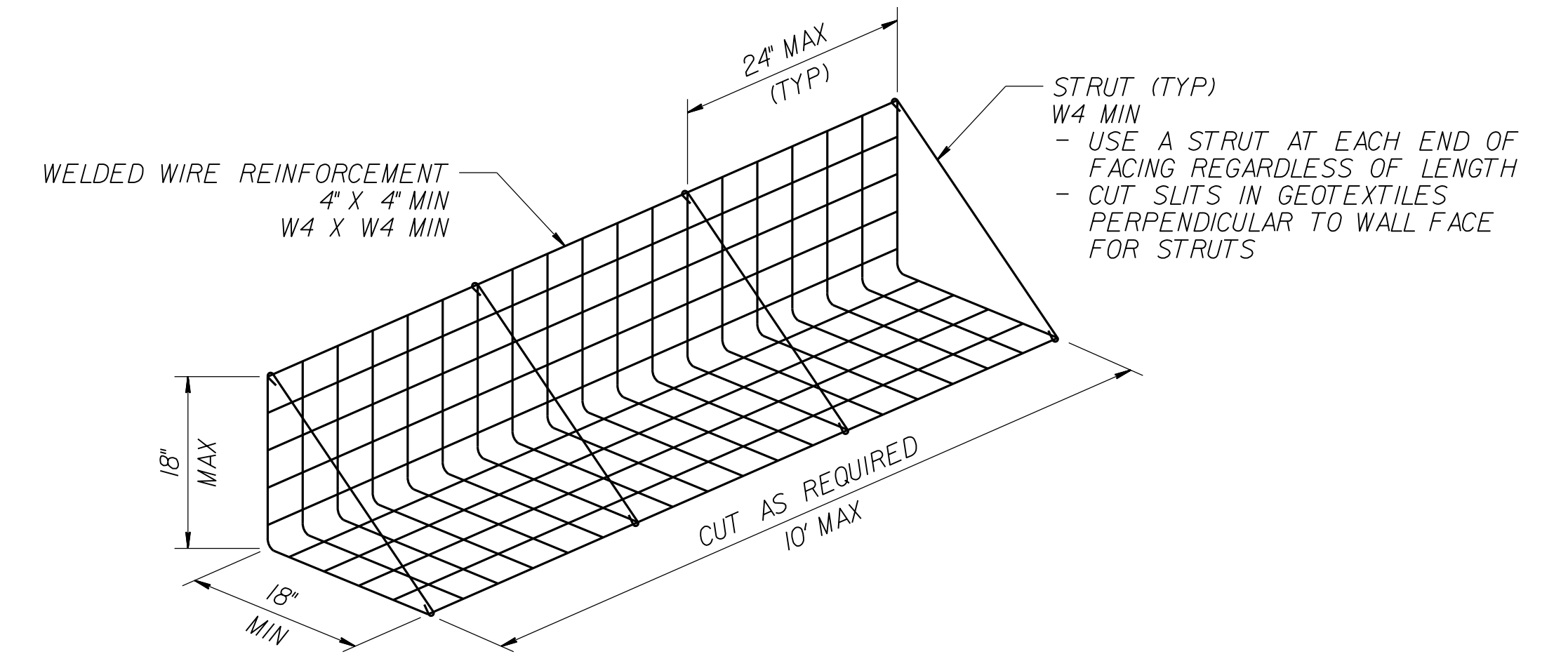


**NORTH CAROLINA  
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DIVISION OF HIGHWAYS**  
  
**GEOTECHNICAL  
ENGINEERING UNIT**

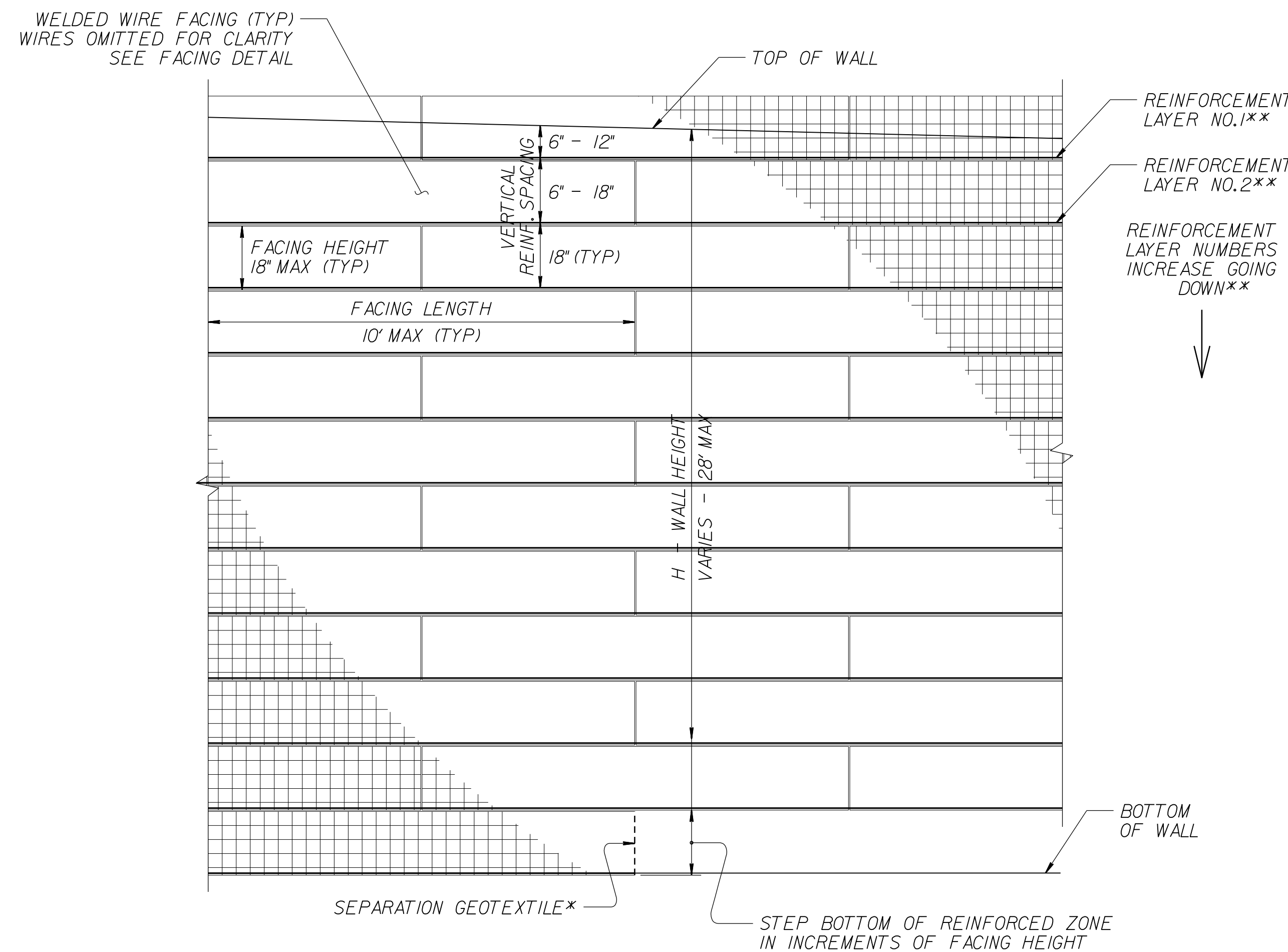
**NOTES:**

1. USE TEMPORARY SURCHARGE WALLS AS NOTED IN THE PLANS.
2. USE CLASS V SELECT MATERIAL IN THE REINFORCED ZONE OF THE TEMPORARY SURCHARGE WALL WITH GEOTEXTILE REINFORCEMENT.
3. USE TYPE 5 GEOTEXTILE WITH A WIDE WIDTH ULTIMATE TENSILE STRENGTH OF 5000 lb/ft IN THE MACHINE DIRECTION
4. EMBEDMENT IS NOT REQUIRED FOR STANDARD TEMPORARY WALLS ON STRUCTURES DETERMINED BY THE ENGINEER
5. AT THE CONTRACTOR'S OPTION, REINFORCEMENT MAY BE INSTALLED WITH THE MD PARALLEL TO THE WALL FACE IF BOTH OF THE FOLLOWING CONDITIONS OCCUR:
  - W (REINFORCEMENT ROLL WIDTH) ≥ (MINIMUM REQUIRED REINFORCEMENT LENGTH) + 4.5' AND
  - REINFORCEMENT STRENGTH IN CD ≥ MINIMUM REQUIRED REINFORCEMENT STRENGTH IN MD.
6. DO NOT PLACE SHORING BACKFILL OR REINFORCEMENT UNTIL EXCAVATION DIMENSIONS AND FOUNDATION MATERIAL ARE APPROVED.
7. DO NOT SPLICE OR OVERLAP REINFORCEMENT SO SEAMS ARE PARALLEL TO THE WALL FACE.
8. CONTACT THE ENGINEER WHEN EXISTING OR FUTURE OBSTRUCTIONS SUCH AS FOUNDATIONS, PAVEMENTS, PIPES, INLETS OR UTILITIES WILL INTERFERE WITH REINFORCEMENT.
9. FOR TEMPORARY SURCHARGE WALLS WITH INTERIOR ANGLES LESS THAN 90 DEGREES, WRAP GEOSYNTHETICS AT ACUTE CORNERS AS DIRECTED BY THE ENGINEER.

GEOTECHNICAL ENGINEER  SEAL 048207 ENGINEER STATE OF NORTH CAROLINA STEPHEN C. CROCKETT	ENGINEER     DATE: 11/16/2021 SIGNATURE: <i>Stephen C. Crockett</i>
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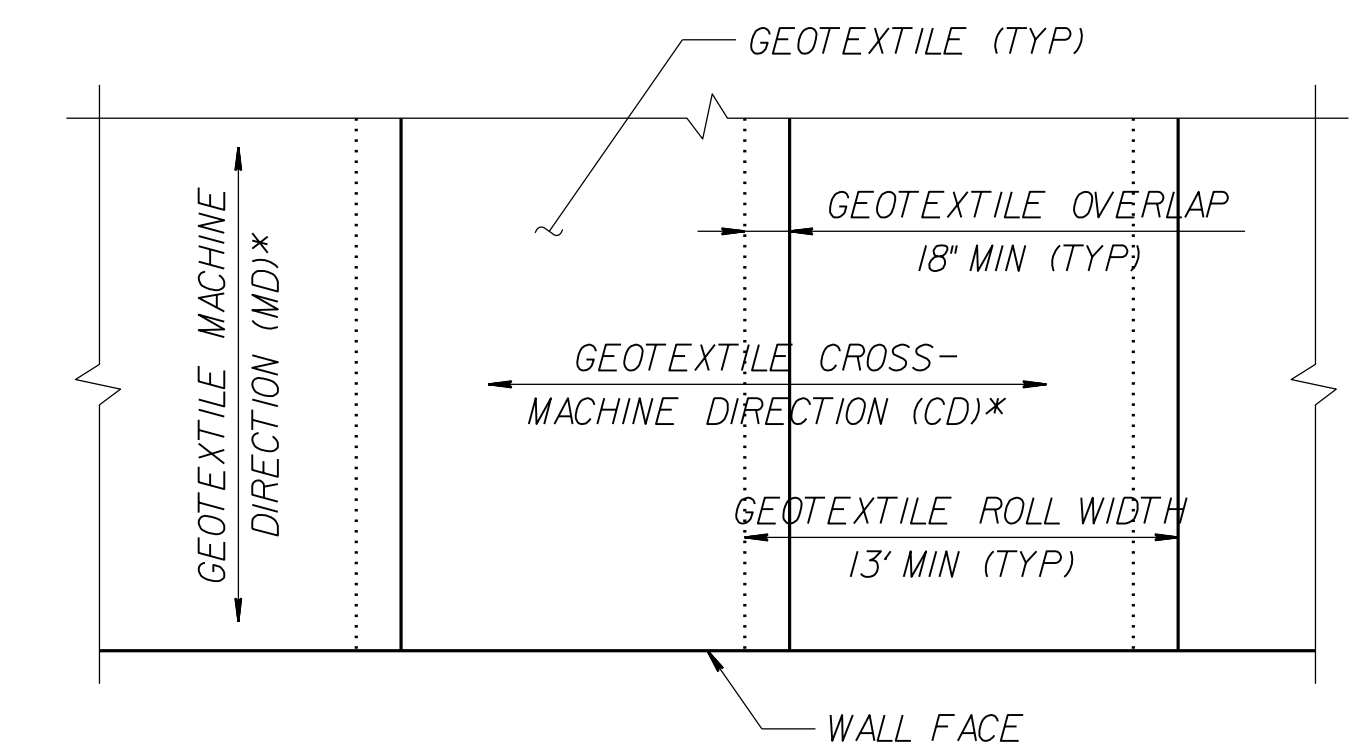


**FACING DETAIL**



**TEMPORARY SURCHARGE WALL – PARTIAL ELEVATION**

\*SEE GEOSYNTHETIC PLACEMENT DETAILS.  
 \*\*SEE REINFORCEMENT LENGTH AS SPECIFIED ON W-12

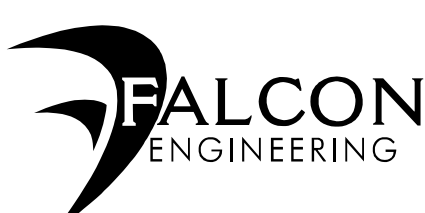


**GEOTEXTILE PLACEMENT DETAIL**

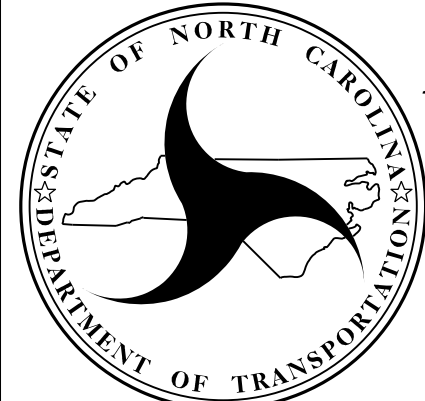
(PLAN VIEW)  
 (100% COVERAGE MIN FOR GEOTEXTILE REINFORCEMENT)  
 \*SEE NOTE 5

PROJECT NO.: R-3300B  
 PENDER COUNTY  
 STATION: 25+28.04 -Y32-, 852+98.21 -L1-  
 SHEET 6 OF 7

PREPARED BY: S. CROCKETT	DATE: 5/5/20
REVIEWED BY: J. HAMM	DATE: 5/5/20



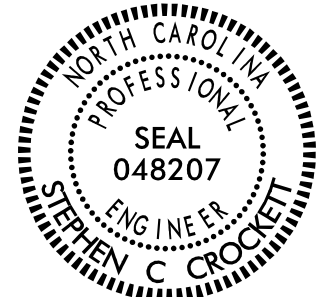
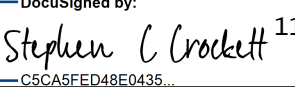
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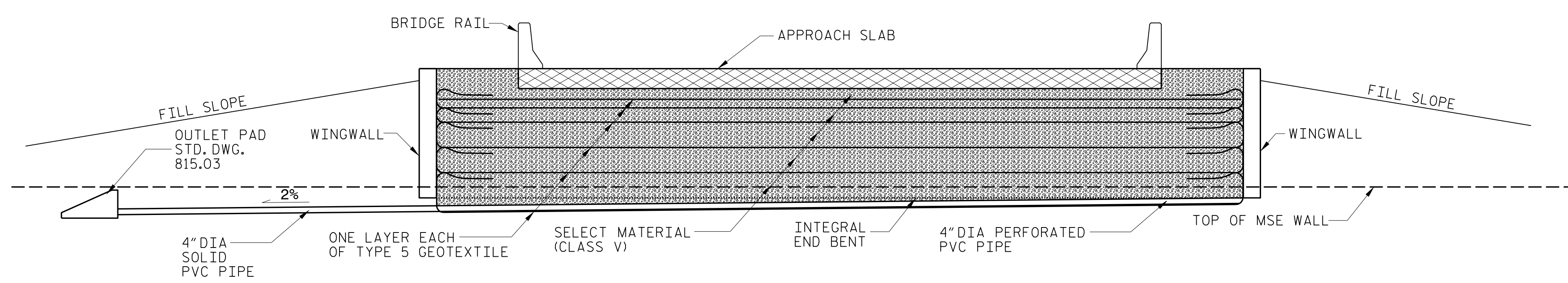


NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
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**GEOTECHNICAL  
 ENGINEERING UNIT**

REVISIONS						SHEET NO. W-18
NO.	BY	DATE	NO.	BY	DATE	
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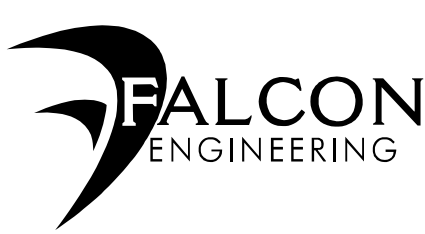
GEOTECHNICAL ENGINEER  SEAL 048207 ENGINEER STEPHEN C. CROCKETT	ENGINEER
DocuSigned by:  11/16/2021 SIGNATURE DATE	SIGNATURE DATE



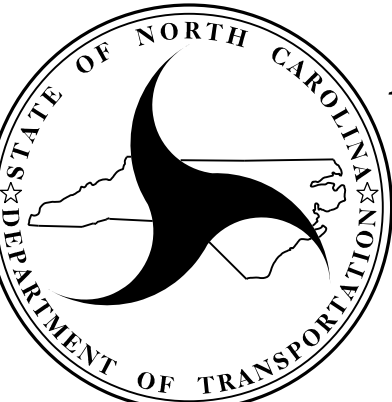
MODIFIED TYPE A BRIDGE APPROACH FILL FOR INTEGRAL ABUTMENT TYPICAL SECTION

PROJECT NO.: R-3300B  
 PENDER COUNTY  
 STATION: 25+28.04 -Y32-, 852+98.21 -L1-  
 SHEET 7 OF 7

PREPARED BY: S. CROCKETT	DATE: 5/5/20
REVIEWED BY: J. HAMM	DATE: 5/5/20



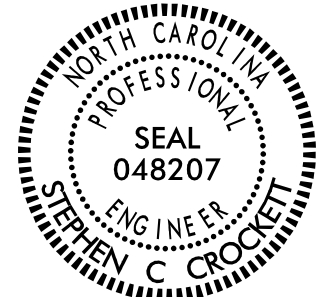
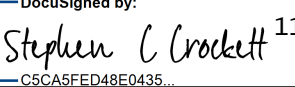
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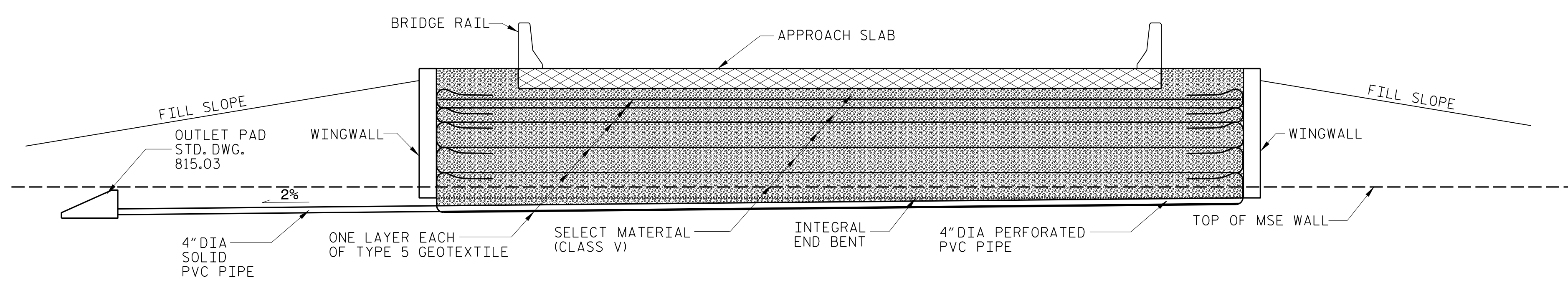


NORTH CAROLINA  
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 DIVISION OF HIGHWAYS  
**GEOTECHNICAL  
 ENGINEERING UNIT**

MODIFIED TYPE A BRIDGE APPROACH FILL FOR INTEGRAL ABUTMENT TYPICAL SECTION					
REVISIONS					
NO.	BY	DATE	NO.	BY	DATE
1			3		
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SHEET NO. W-19

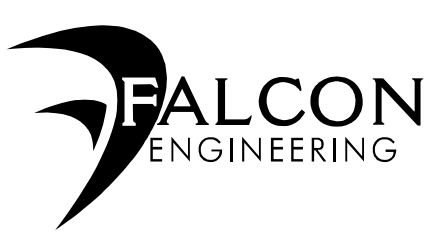
GEOTECHNICAL ENGINEER  SEAL 048207 ENGINEER STEPHEN C. CROCKETT	ENGINEER
DocuSigned by:  11/16/2021 SIGNATURE DATE	SIGNATURE DATE



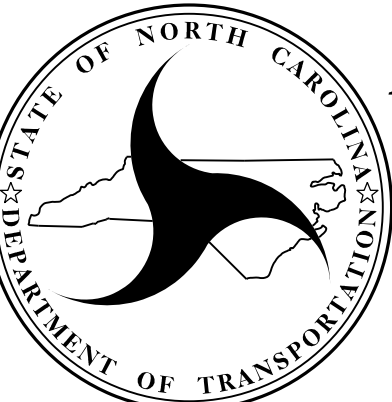
MODIFIED TYPE A BRIDGE APPROACH FILL FOR INTEGRAL ABUTMENT TYPICAL SECTION

PROJECT NO.: R-3300B  
 PENDER COUNTY  
 STATION: 25+28.04 -Y32-, 852+98.21 -L1-  
 SHEET 7 OF 7

PREPARED BY: S. CROCKETT	DATE: 5/5/20
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MODIFIED TYPE A BRIDGE APPROACH FILL FOR INTEGRAL ABUTMENT TYPICAL SECTION					
REVISIONS					
NO.	BY	DATE	NO.	BY	DATE
1			3		
2			4		

SHEET NO. W-19