

BEGIN WALL STATION	END WALL STATION	SLOPE	MAX. WALL HEIGHT (ft)	PILE EXCAVATION DEPTHS, "D" (ft)		
				S = 10ft	S = 15ft	S = 20ft
-NW5A- 10+15	-NW5A- 11+65	6:1	22	8	9	10
-NW5A- 11+65	-NW5A- 12+65	6:1	30	9	10	11
-NW5A- 12+65	-NW5A- 16+65	6:1	30	9	11	12
-NW5A- 16+65	-NW5A- 17+70	2:1	28	11	13	14
-NW5A- 17+70	-NW5A- 18+85	2:1	28	12	14	15
-NW5A- 18+85	-NW5A- 20+65	2:1	26	12	13	15
-NW5A- 20+65	-NW5A- 21+70	2:1	22	10	11	12
-NW5A- 21+70	-NW5A- 22+60	6:1	20	8	9	10
-NW5A- 22+60	-NW5A- 23+60	2:1	21	10	12	13
-NW5A- 23+60	-NW5A- 24+35	6:1	23	8	9	10
-NW5B- 24+50	-NW5B- 25+40	6:1	24	8	9	10
-NW5B- 25+40	-NW5B- 28+85	2:1	20	9	10	12
-NW5B- 28+85	-NW5B- 36+20	2:1	20	9	10	11
-NW5B- 36+20	-NW5B- 38+10	2:1	18	10	11	12
-NW5B- 38+10	-NW5B- 43+10	2:1	21	10	12	13

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", 15'-0", OR 20'-0" PILE SPACINGS. STANDARD PRECAST CONCRETE PANELS MAY BE USED WITH THE 10'-0" AND 15'-0" PILE SPACING. FOR 20'-0" PILE SPACING, PANELS DESIGNED AND MANUFACTURED BY A THIRD PARTY VENDOR SHALL BE USED.

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.

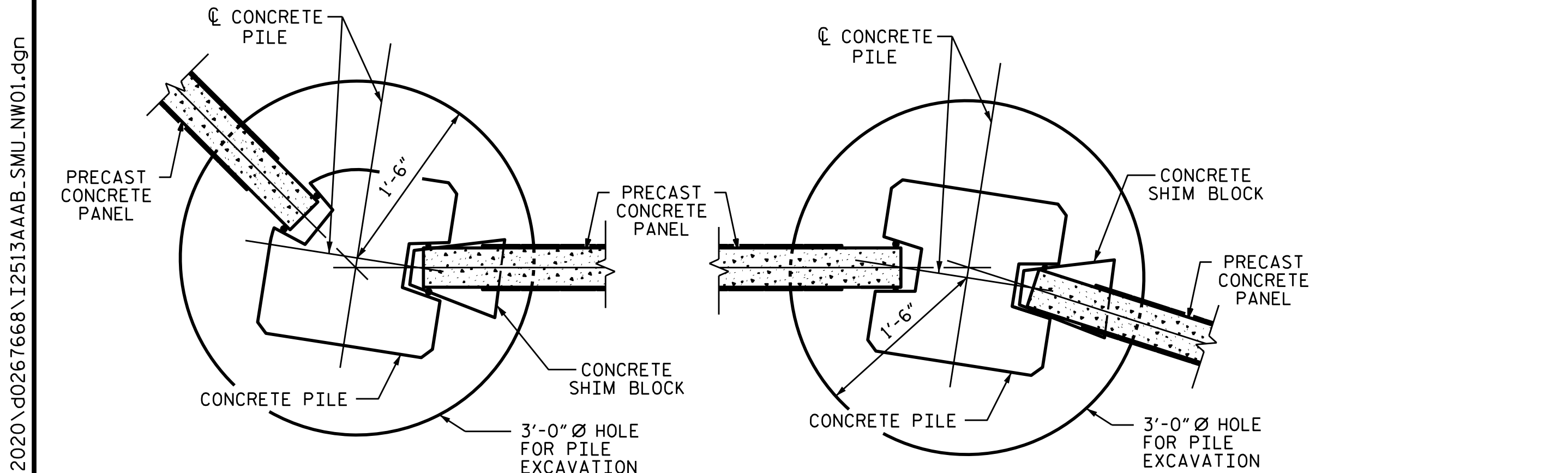
FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR APPLICATION OF SOUND BARRIER WALL COATING, SEE SPECIAL PROVISIONS.

PILE REINFORCING STEEL DESIGN WIND PRESSURE = 40 PSF							
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	#3 @ 1'-4" CTS.	10'-0"	H ≤ 25'	3 - #9 SHORT FACE 4 - #9 LONG FACE	#3 @ 1'-4" CTS.
	20' < H ≤ 25'	4 - #10 EA. FACE	#3 @ 1'-4" CTS.		20' < H ≤ 25'	3 - #11 SHORT FACE 4 - #11 LONG FACE	#3 @ 1'-4" CTS.
15'-0"	H ≤ 20'	4 - #8 EA. FACE	#3 @ 1'-4" CTS.	15'-0"	H ≤ 20'	3 - #9 SHORT FACE 4 - #9 LONG FACE	#3 @ 1'-4" CTS.
	20' < H ≤ 25'	4 - #10 EA. FACE	#3 @ 1'-4" CTS.		20' < H ≤ 25'	3 - #11 SHORT FACE 4 - #11 LONG FACE	#3 @ 1'-4" CTS.
20'-0"	H ≤ 20'	4 - #9 EA. FACE	#3 @ 1'-4" CTS.	20'-0"	H ≤ 20'	3 - #10 SHORT FACE 4 - #10 LONG FACE	#3 @ 1'-4" CTS.
	20' < H ≤ 25'	4 - #11 EA. FACE	#3 @ 1'-4" 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
10'-0"	H ≤ 25'	4 - #6 EA. FACE	#3 @ 1'-4" CTS.	10'-0"	H ≤ 25'	3 - #9 SHORT FACE 4 - #9 LONG FACE	#3 @ 1'-4" CTS.
	20' < H ≤ 25'	4 - #7 EA. FACE	#3 @ 1'-4" CTS.		20' < H ≤ 25'	3 - #11 SHORT FACE 4 - #11 LONG FACE	#3 @ 1'-4" CTS.
15'-0"	H ≤ 20'	4 - #6 EA. FACE	#3 @ 1'-4" CTS.	15'-0"	H ≤ 20'	3 - #9 SHORT FACE 4 - #9 LONG FACE	#3 @ 1'-4" CTS.
	20' < H ≤ 25'	4 - #7 EA. FACE	#3 @ 1'-4" CTS.		20' < H ≤ 25'	3 - #11 SHORT FACE 4 - #11 LONG FACE	#3 @ 1'-4" CTS.
20'-0"	H ≤ 20'	4 - #6 EA. FACE	#3 @ 1'-4" CTS.	20'-0"	H ≤ 20'	3 - #10 SHORT FACE 4 - #10 LONG FACE	#3 @ 1'-4" CTS.
	20' < H ≤ 25'	4 - #8 EA. FACE	#3 @ 1'-4" CTS.				



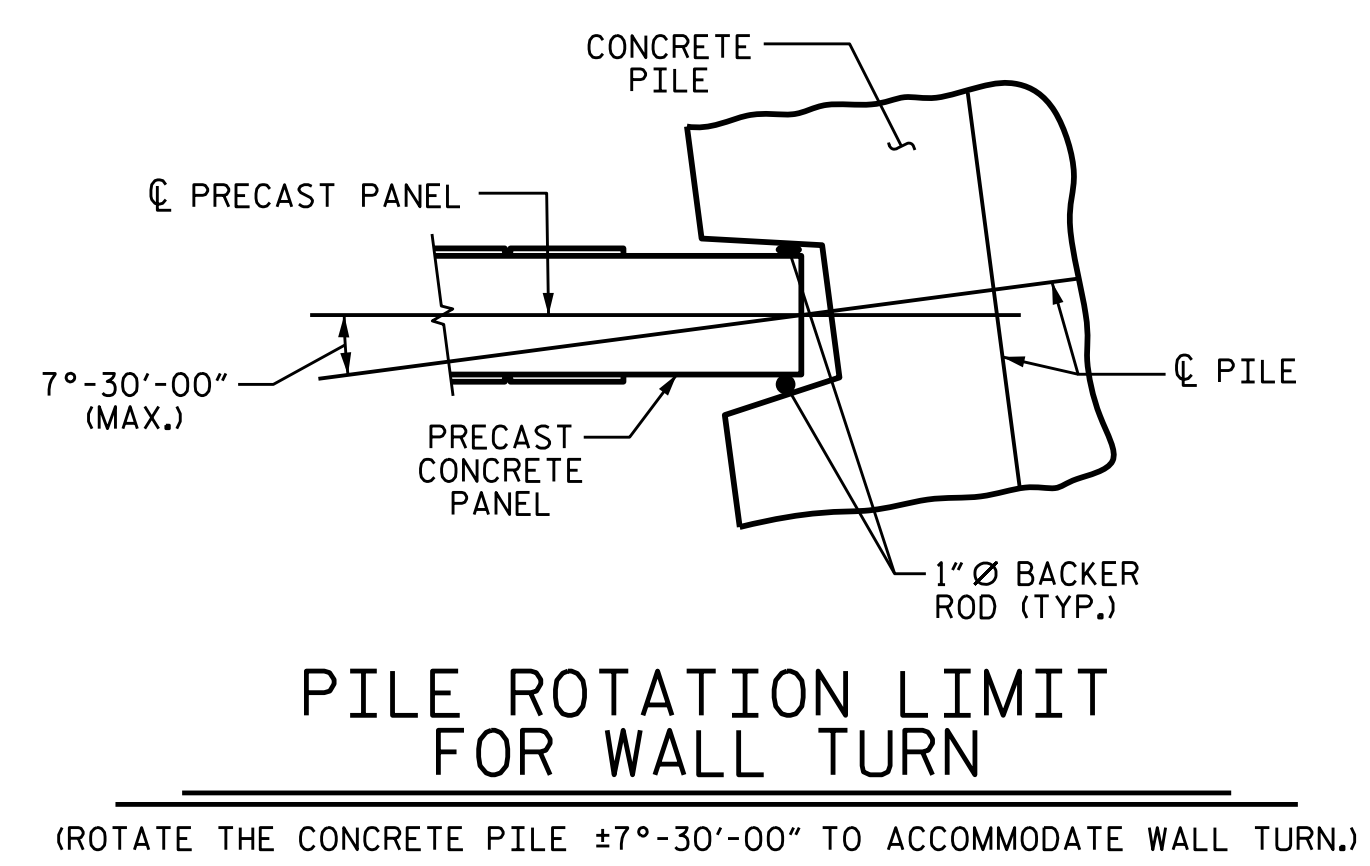
TYPICAL WALL TURN DETAILS

15° TO 45° TURNS (PILE TYPE III)

0° TO 15° TURNS (PILE TYPE I)

BILL OF MATERIAL (NW5A)	
SOUND BARRIER WALL	34,985 S.F.
ARCHITECTURAL SURFACE TREATMENT	58,152 S.F.
APPLICATION OF SOUND BARRIER WALL COATING	LUMP SUM
QUANTITIES PROVIDED ARE APPROXIMATE AND ARE FOR BID PURPOSES ONLY.	
ARCHITECTURAL SURFACE TREATMENT	
TEXTURE OPTION:	DRYSTACK
STAIN OPTION:	FED. COLORS # 26420/36373/36173/26081

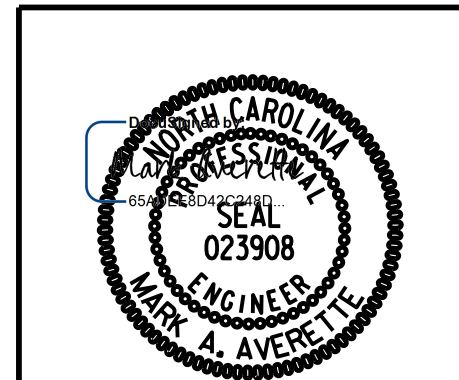
BILL OF MATERIAL (NW5B)	
SOUND BARRIER WALL	33,440 S.F.
ARCHITECTURAL SURFACE TREATMENT	53,208 S.F.
APPLICATION OF SOUND BARRIER WALL COATING	LUMP SUM
QUANTITIES PROVIDED ARE APPROXIMATE AND ARE FOR BID PURPOSES ONLY.	
ARCHITECTURAL SURFACE TREATMENT	
TEXTURE OPTION:	DRYSTACK
STAIN OPTION:	FED. COLORS # 26420/36373/36173/26081



WGI

5640 Dillard Drive, Suite 200
Cary, NC 27518

LICENSURE NO. C-4434



PROJECT NO. I-2513AA/AB
BUNCOMBE COUNTY
 STATION: 63+46.57 -Y-
10+00.00 -NW5A-

SHEET 1 OF 5

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

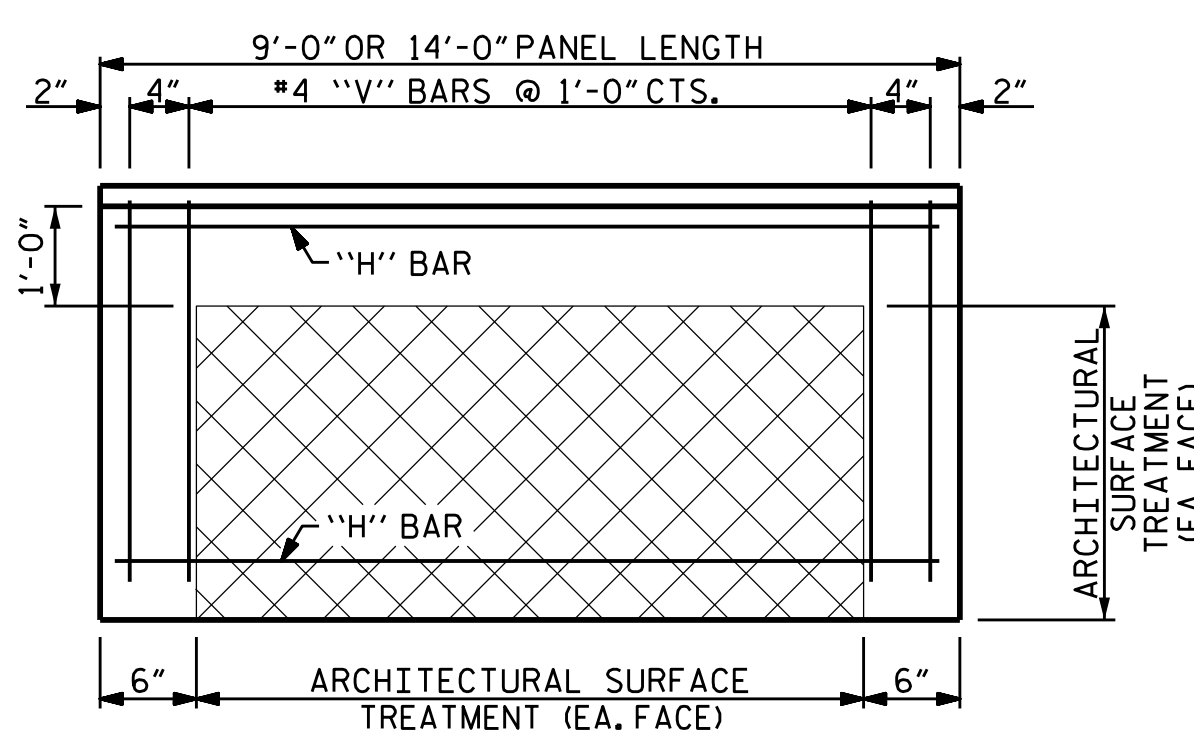
**SOUND BARRIER WALL
 -NW5A- AND -NW5B-**

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	NW-1
1			3			TOTAL SHEETS
2			4			5

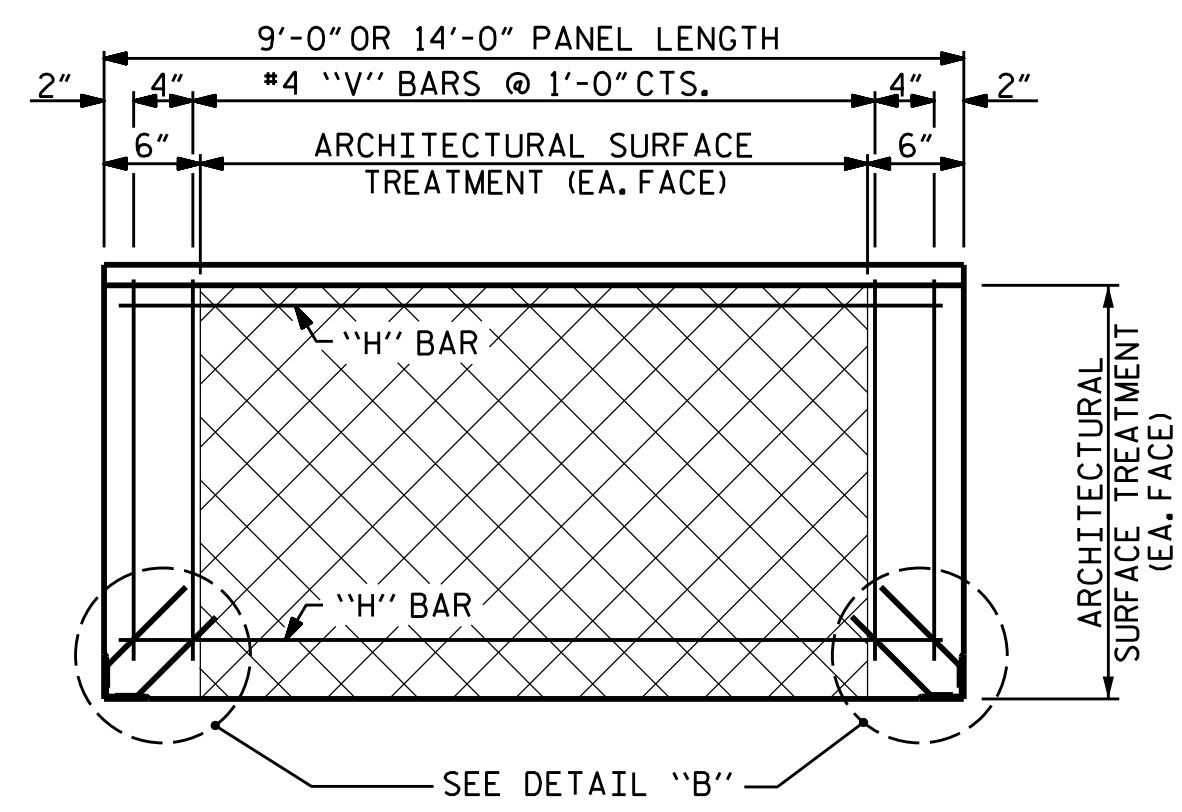
DRAWN BY: T. BANKOVICH DATE: 7-23
 CHECKED BY: M.A. AVERETTE DATE: 7-23
 DESIGN ENGINEER OF RECORD: M.A. AVERETTE DATE: 7-23

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

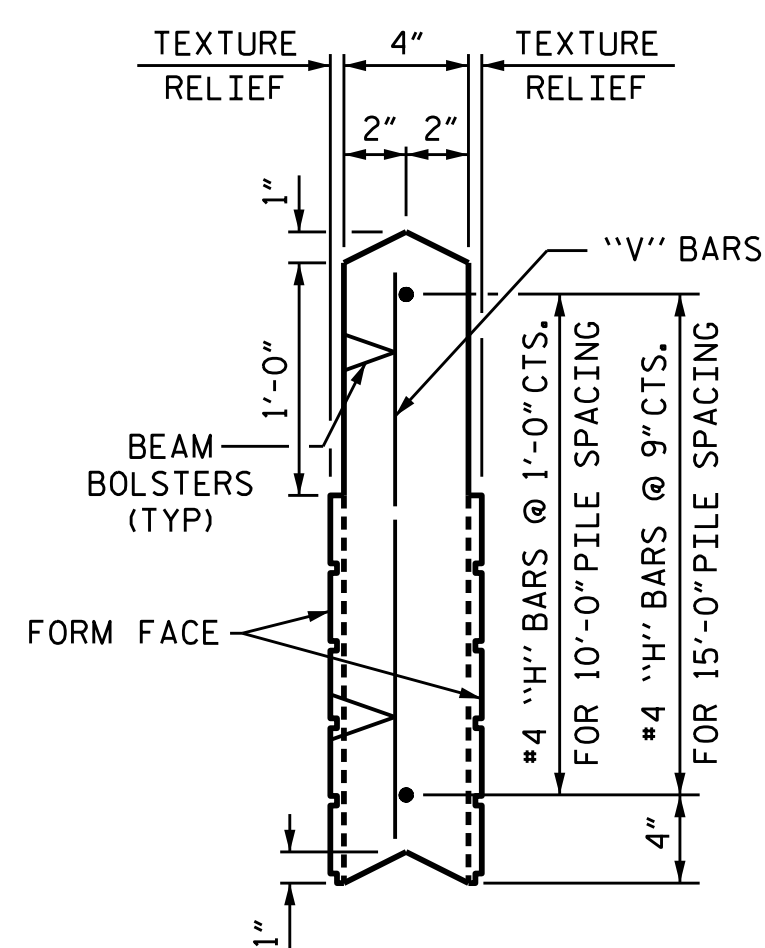
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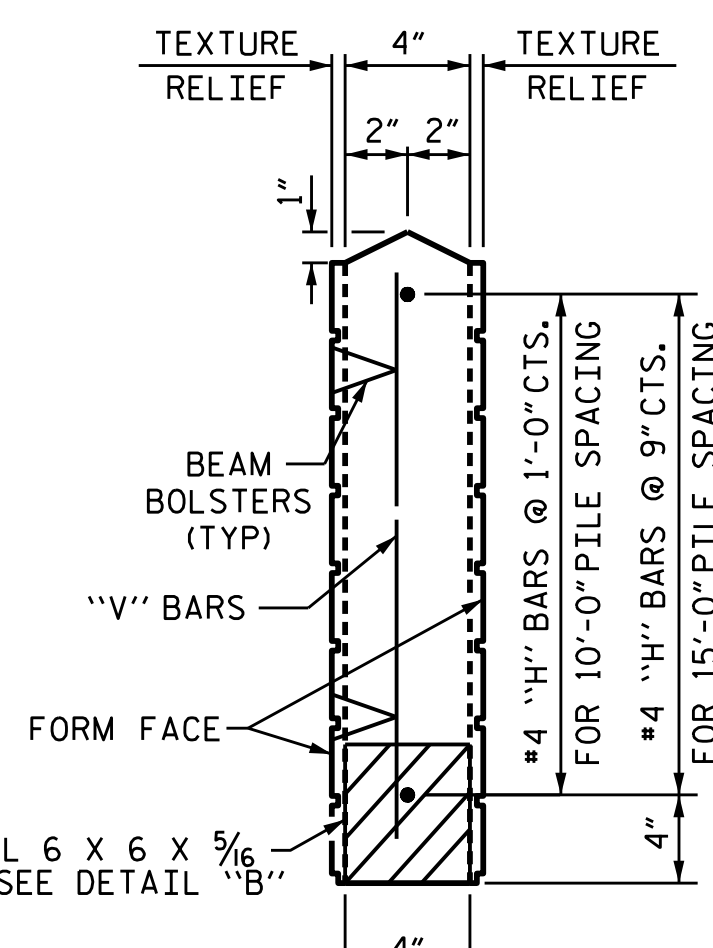
FRONT ELEVATION OF UPPER PRECAST PANEL



FRONT ELEVATION OF BOTTOM PRECAST PANEL

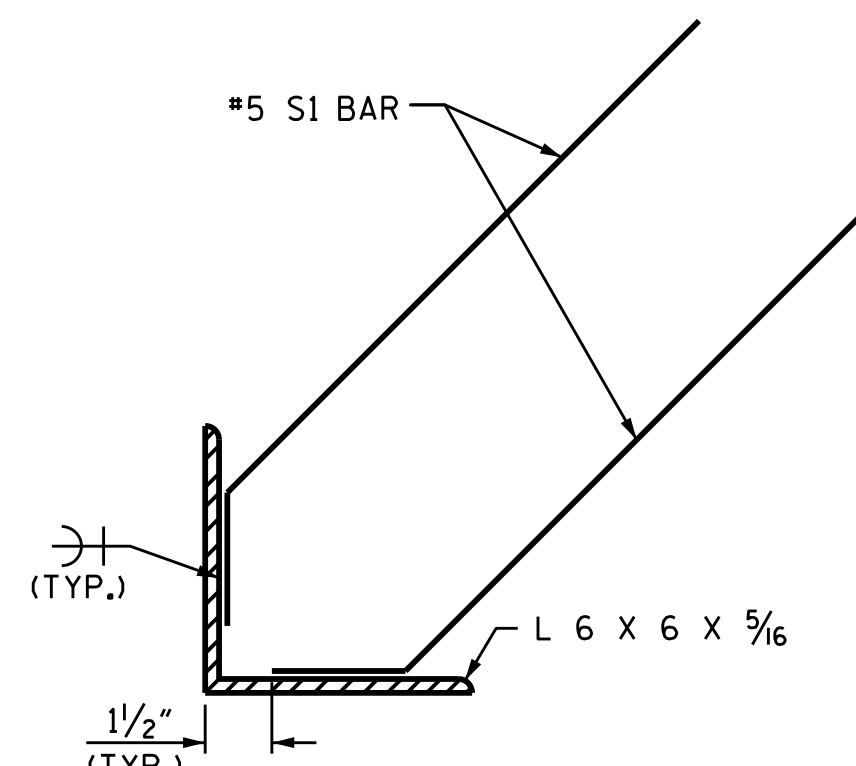


UPPER PANEL

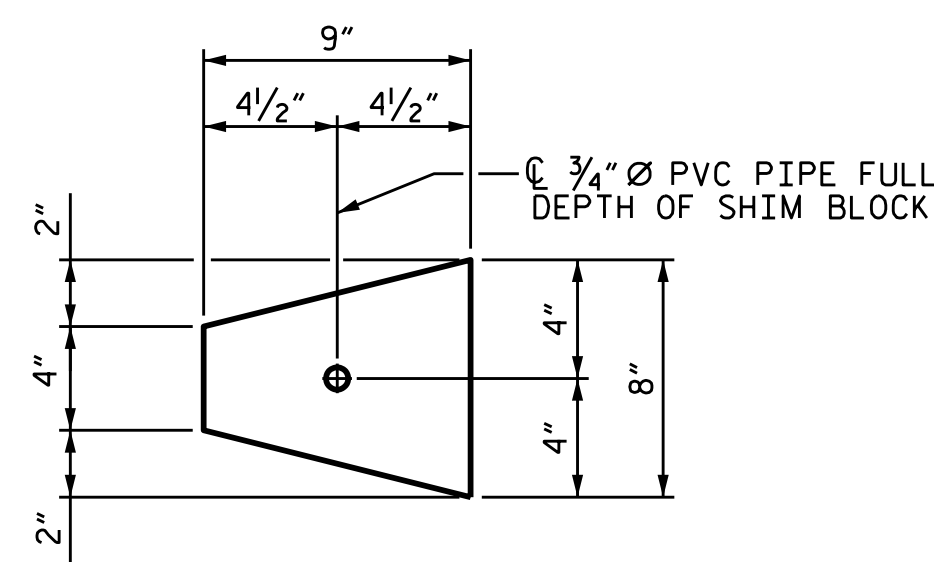


BOTTOM PANEL

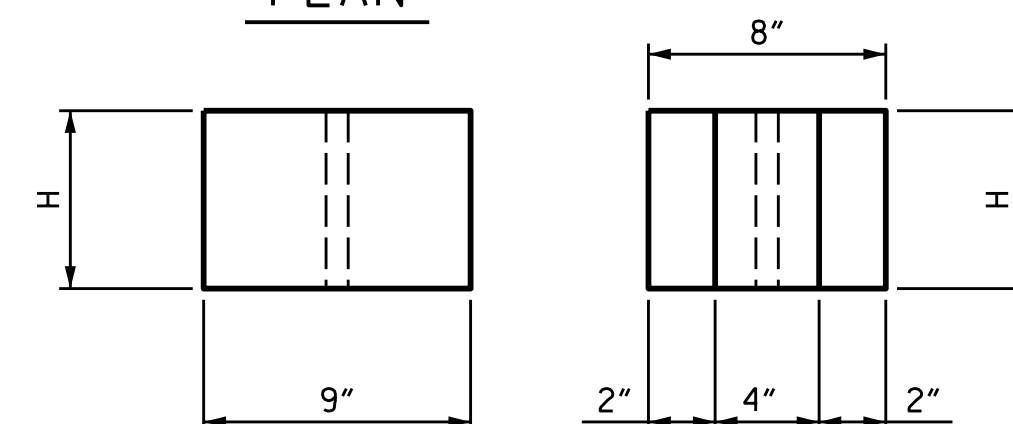
SECTION THROUGH PRECAST PANELS



DETAIL "B"



PLAN



ELEVATION

END

CONCRETE SHIM BLOCK

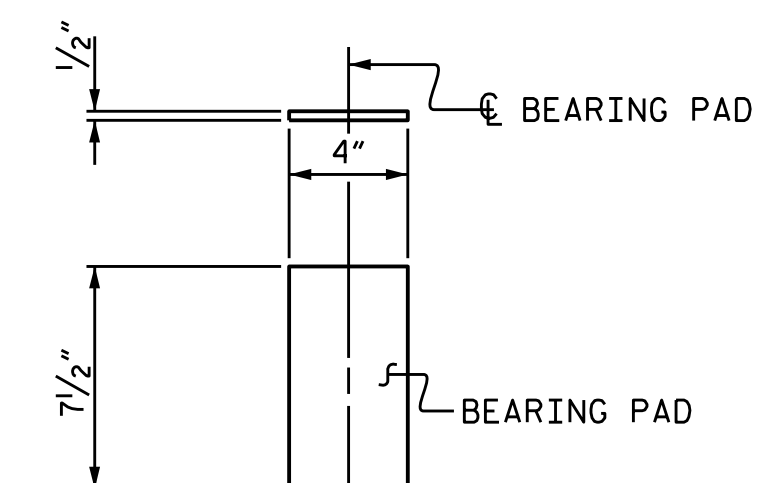
H = 3", 6" or 1'-0"

ADDITIONAL BARS FOR ONE BOTTOM PANEL					
NO.	BAR	SIZE	TYPE	LENGTH	WEIGHT (lb)
4	SI	#5	1	1'-6"	6

BAR TYPE					

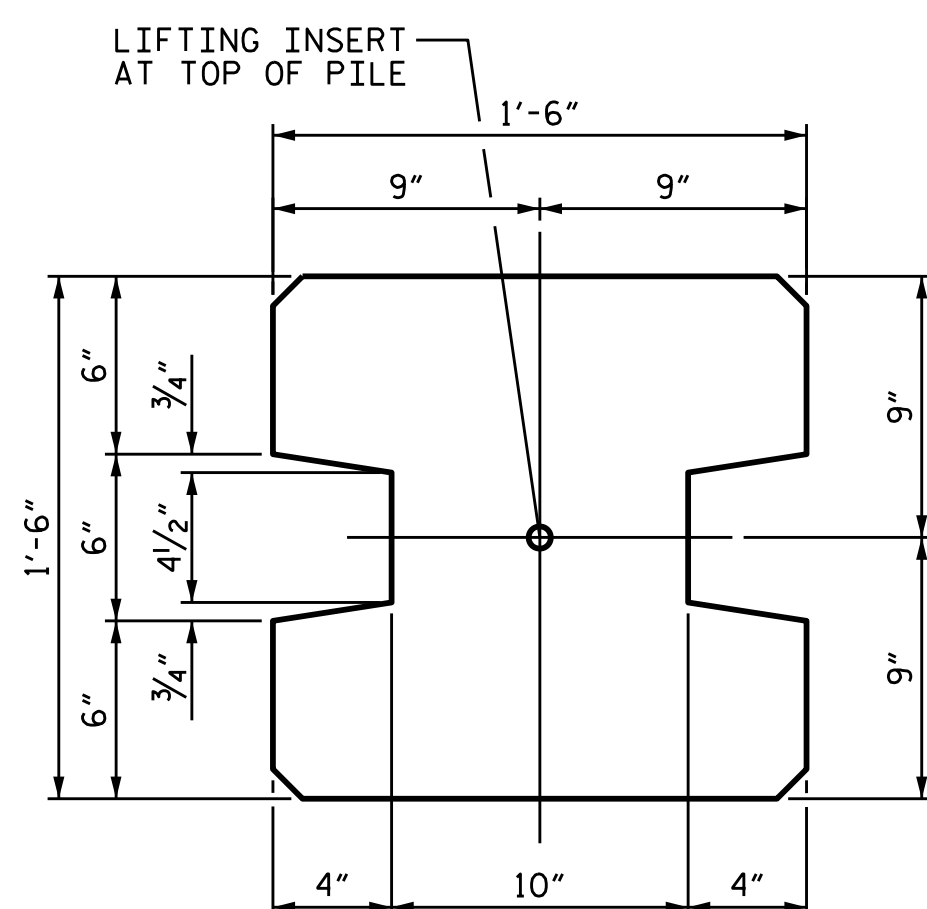
QUANTITIES FOR ONE PRECAST PANEL (FOR 10'-0" PILE SPACING)													
PANEL HEIGHT	CLASS AA CONCRETE	BAR TYPES											
		HORIZONTAL					VERTICAL						
C.Y.	NO.	BAR	SIZE	TYPE	LENGTH	WEIGHT (lb)	NO.	BAR	SIZE	TYPE	LENGTH	WEIGHT (lb)	
2'-0"	0.22	3	H1	#4	STR	8'-8"	17	11	V1	#4	STR	1'-8"	12
3'-0"	0.33	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	BAR TYPES											
		HORIZONTAL					VERTICAL						
C.Y.	NO.	BAR	SIZE	TYPE	LENGTH	WEIGHT (lb)	NO.	BAR	SIZE	TYPE	LENGTH	WEIGHT (lb)	
3'-0"	0.52	5	H1	#4	STR	13'-8"	46	16	V1	#4	STR	2'-8"	29
4'-0"	0.69	6	H2	#4	STR	13'-8"	55	16	V2	#4	STR	3'-8"	39
5'-0"	0.86	7	H3	#4	STR	13'-8"	64	16	V3	#4	STR	4'-8"	50
6'-0"	1.04	8	H4	#4	STR	13'-8"	73	16	V4	#4	STR	5'-8"	61

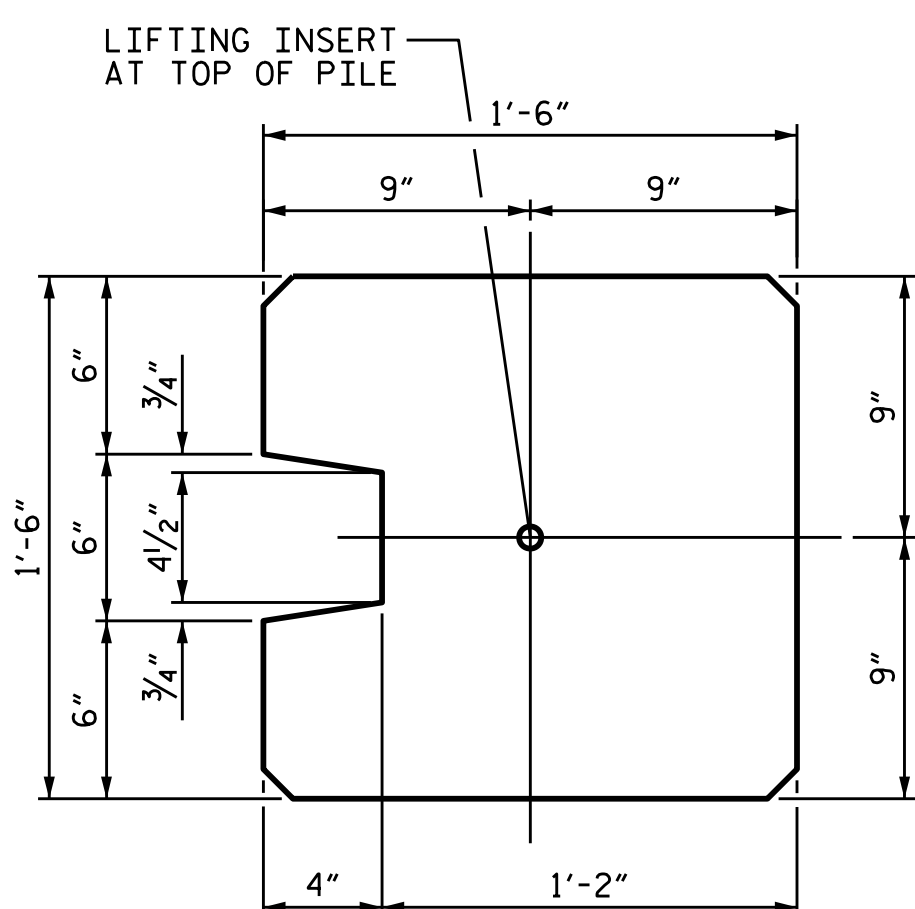


ELASTOMERIC BEARING DETAILS

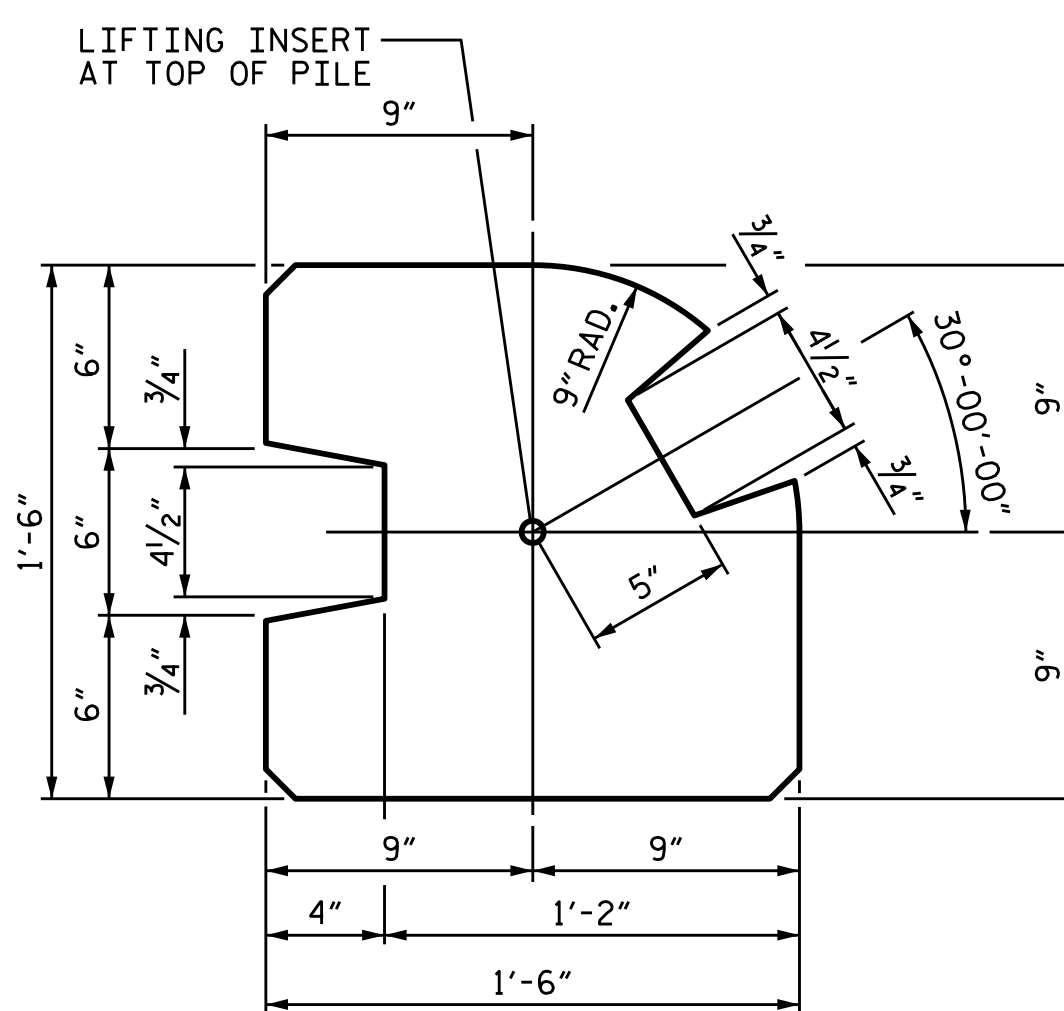
ELASTOMER IN BEARINGS SHALL BE 50 DUROMETER HARDNESS.



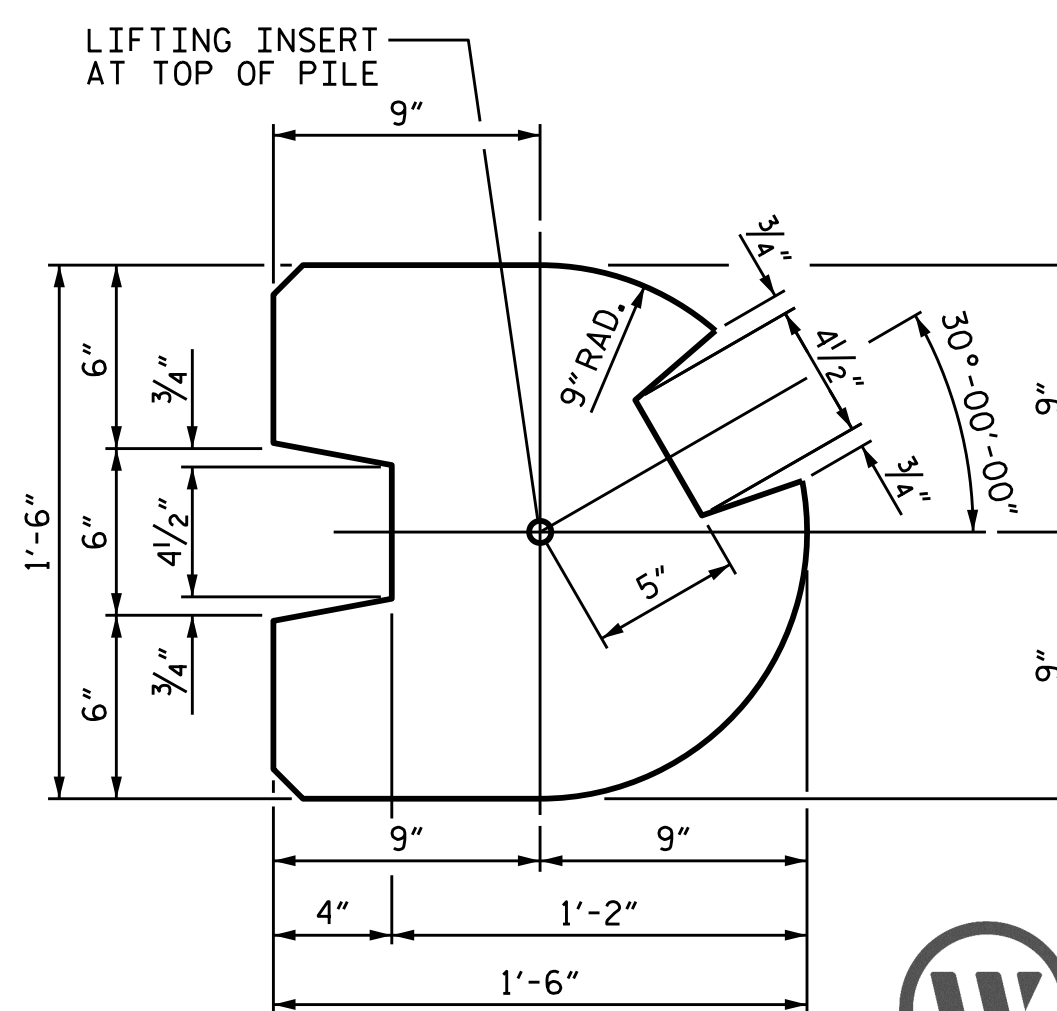
TYPE - I
(AREA = 1.9444 SQ. FT.)



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



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



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

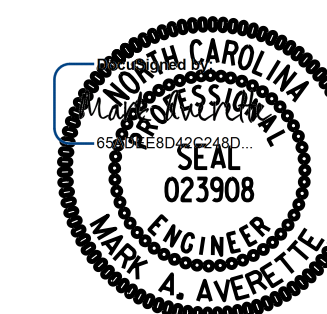
PILE DETAIL

(ALL CORNERS TO BE CHAMFERED 1")

PROJECT NO. I-2513AA/AB
BUNCOMBE COUNTY
 STATION: 63+46.57 -Y-
10+00.00 -NW5A-
 SHEET 2 OF 5

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SOUND BARRIER WALL
 DETAILS
 -NW5A- AND -NW5B-**



12/14/2023 | 9:46 AM

DRAWN BY: T. BANKOVICH DATE: 7-23
 CHECKED BY: M.A. AVERETTE DATE: 7-23
 DESIGN ENGINEER OF RECORD: M.A. AVERETTE DATE: 7-23

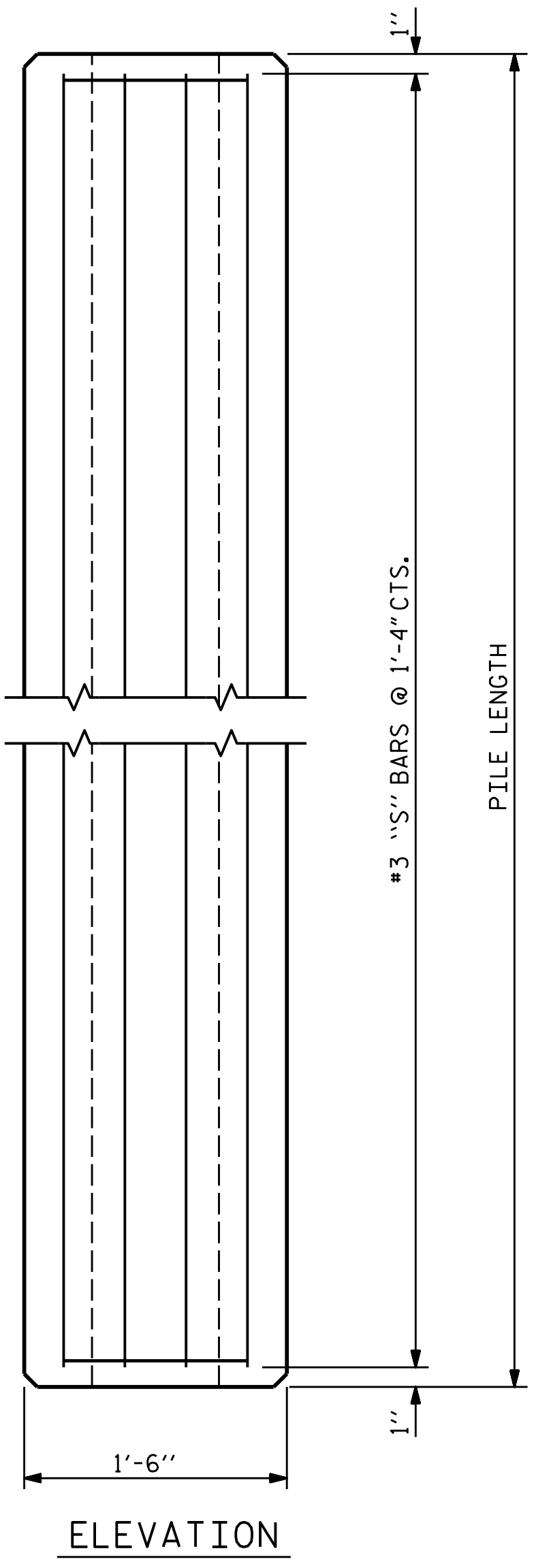
DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED

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

TOTAL SHEETS: 5

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12/14/2023 11:38:41 AM c:\pwworking\cecom_ds21_na_2020\d0267668\I2513AAAAB_SMU_NW03.dgn



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"

NOTES

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

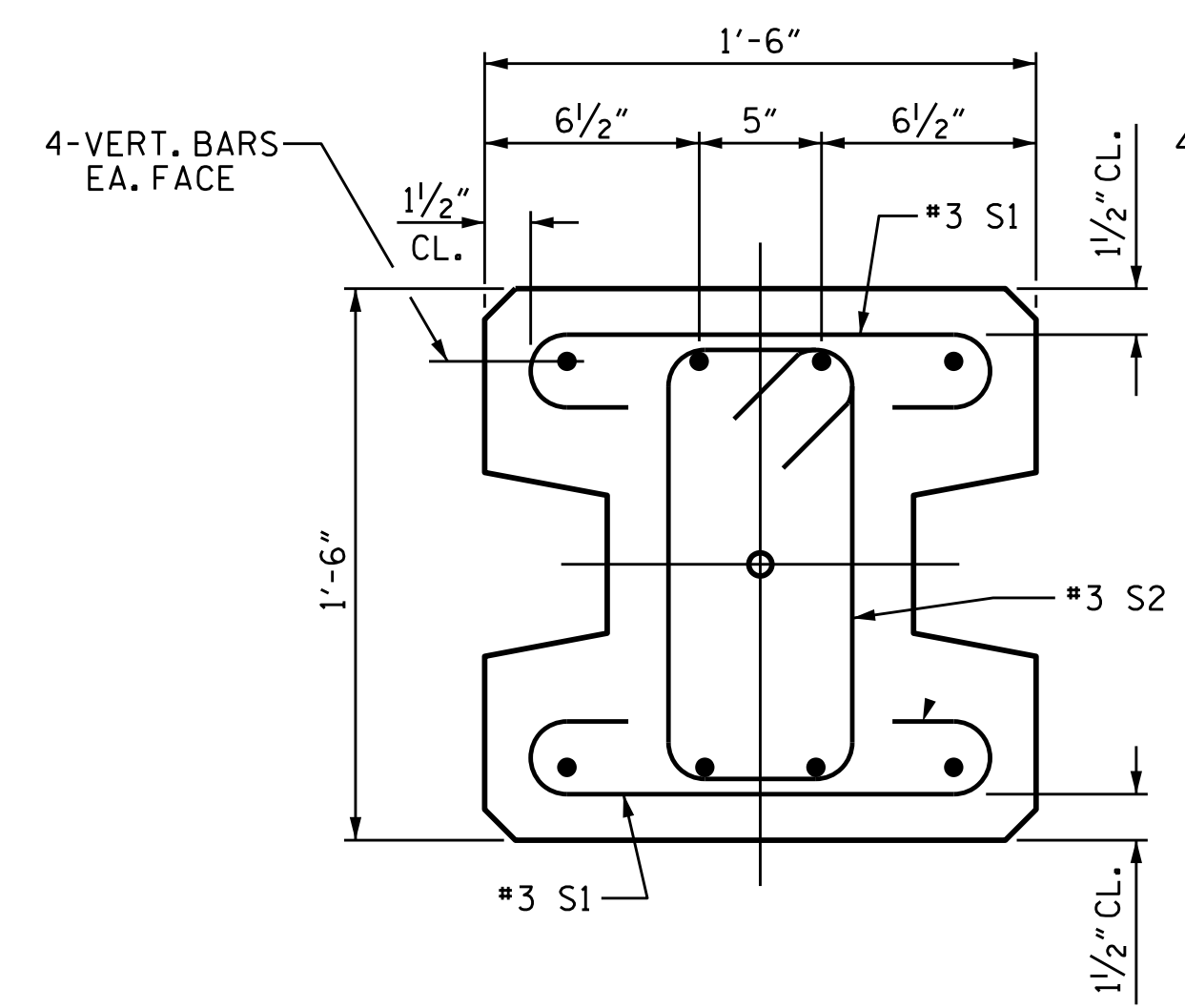
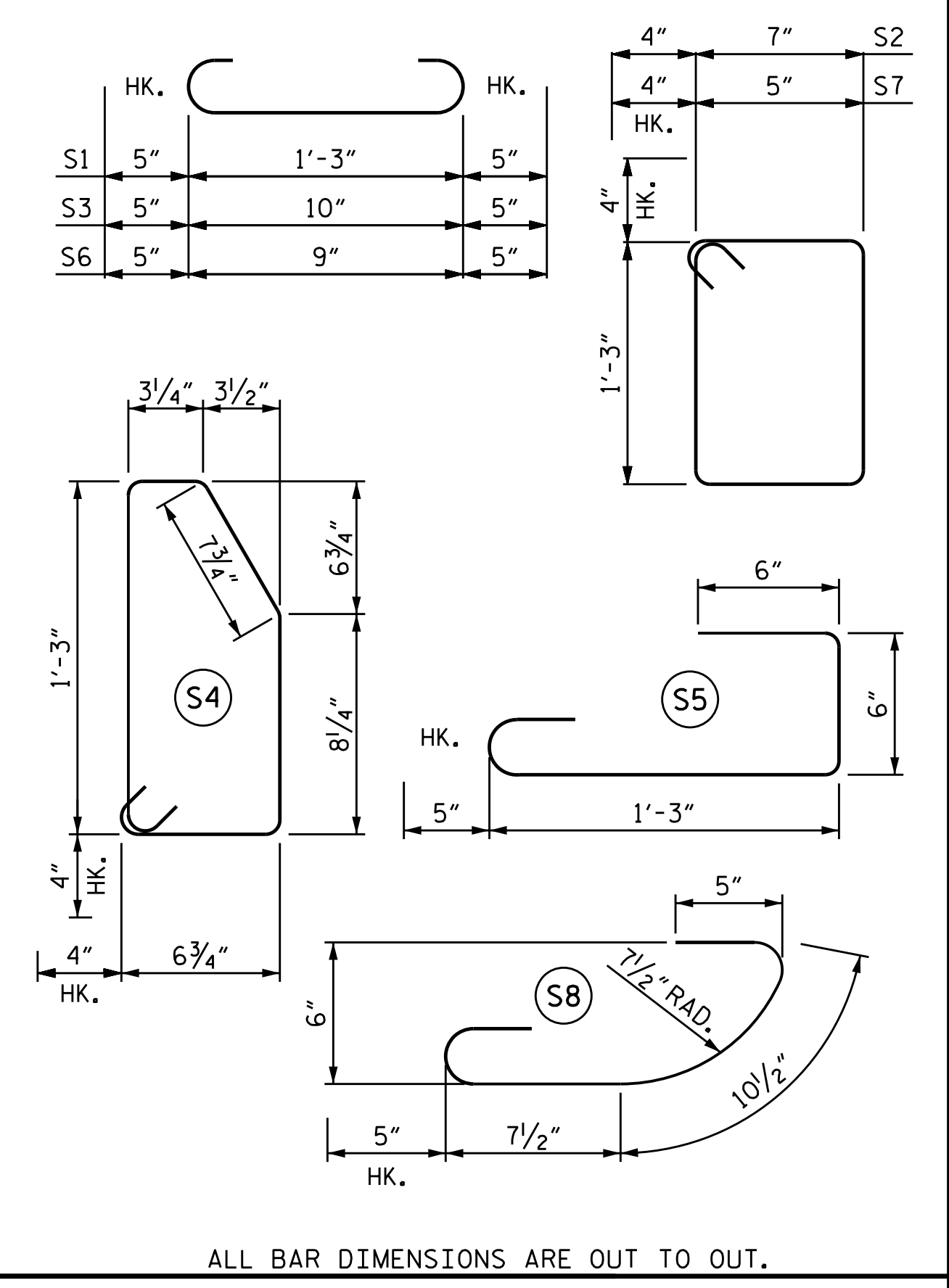
PROPOSED DEVICES FOR LIFTING PILES, RECESS DETAILS, AND PATCHING MATERIAL SHALL BE DETAILED IN SHOP DRAWINGS. AFTER ATTACHMENTS HAVE BEEN REMOVED, OPENINGS SHALL BE REPAIRED SUCH THAT THE APPEARANCE OF THE PILE IS UNIFORM.

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

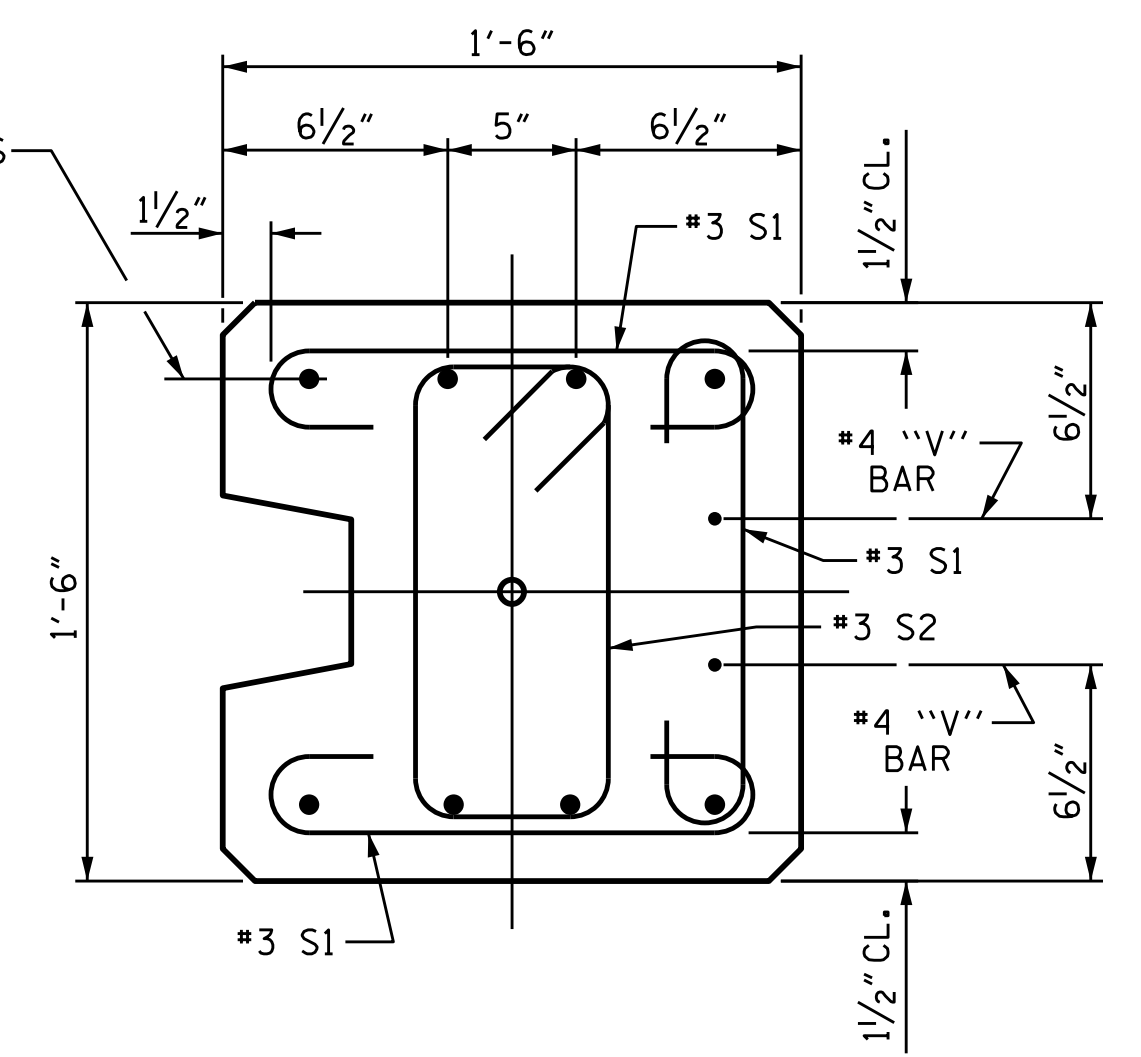
THE SLIP-FORM METHOD OF CASTING PILES WILL NOT BE PERMITTED.

ALL CORNERS TO BE CHAMFERED 1".

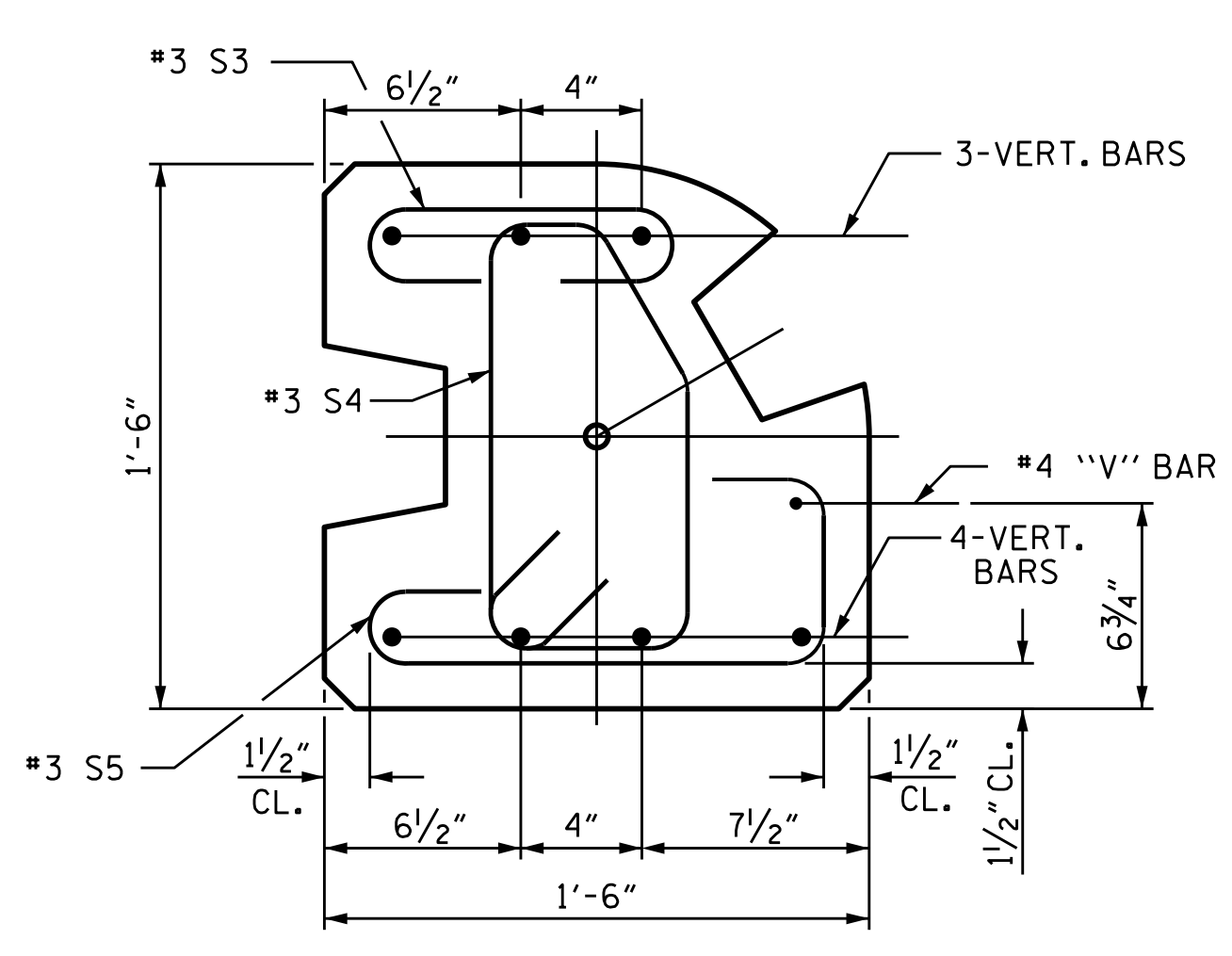
BAR TYPES



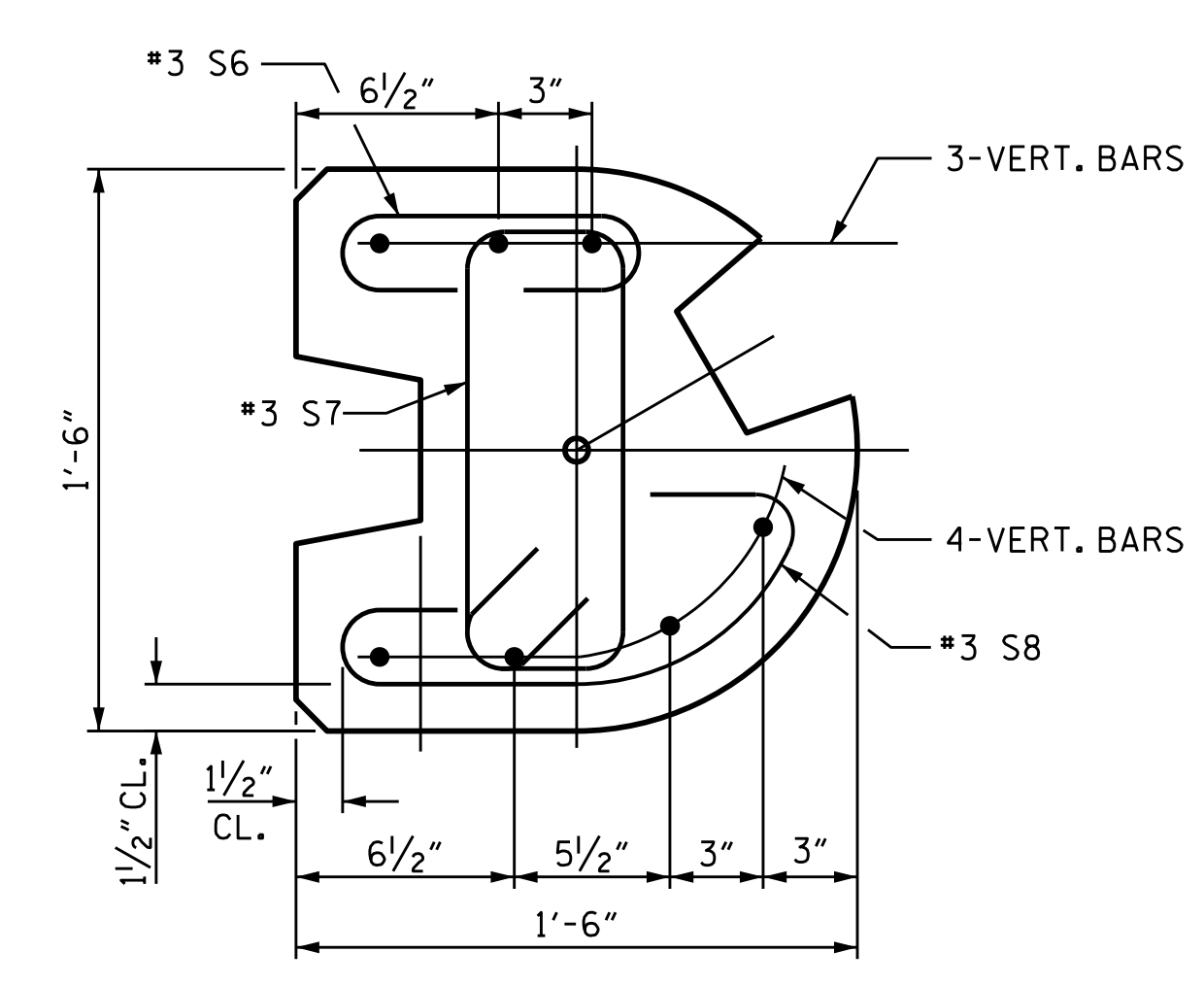
TYPE - I



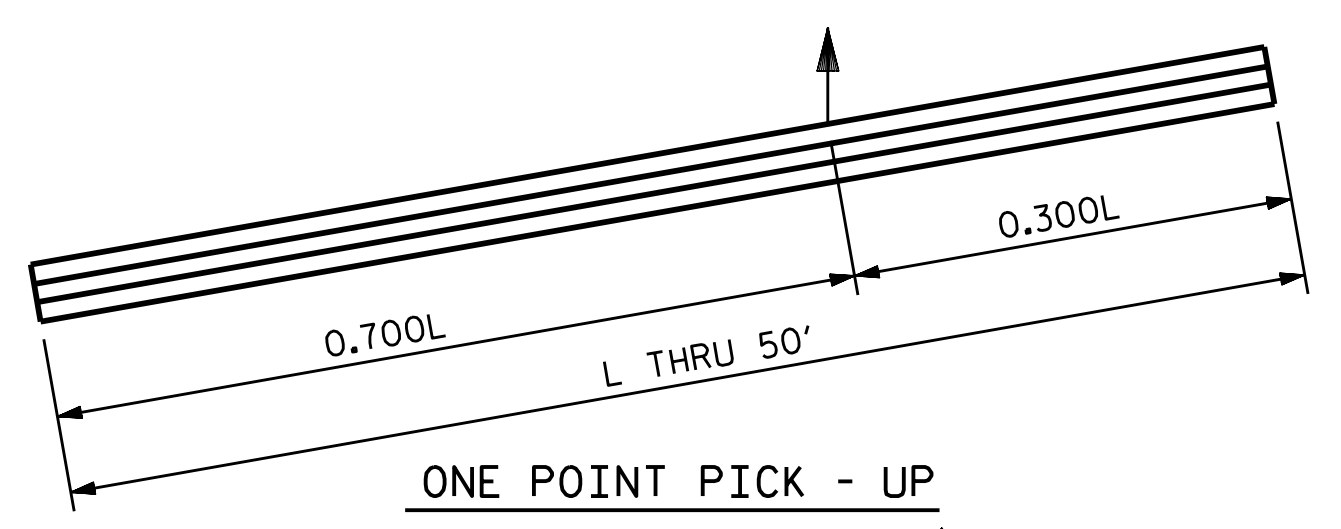
TYPE - II



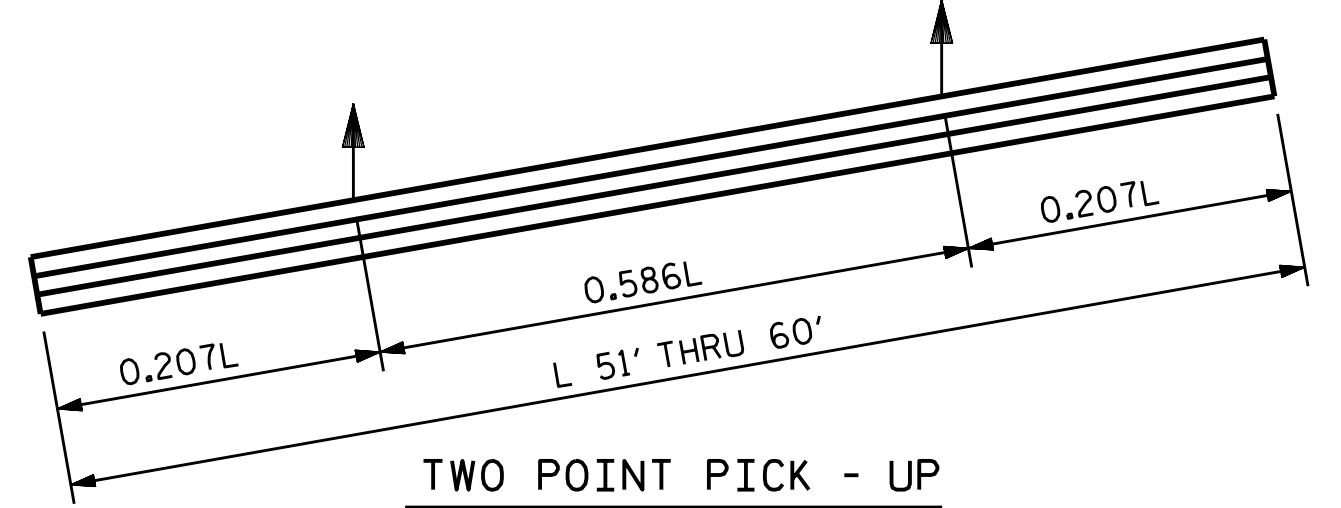
TYPE - III



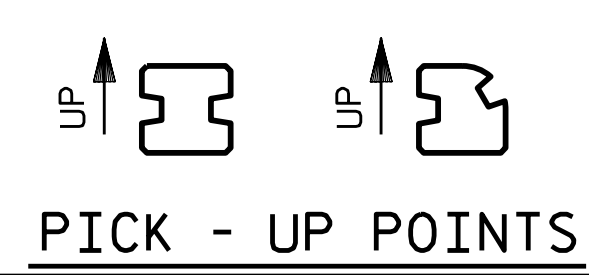
TYPE - III (ALT.)



ONE POINT PICK - UP



TWO POINT PICK - UP



PICK - UP POINTS

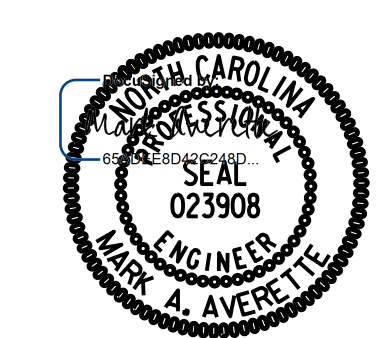
PILE DETAIL

FOR VERTICAL BAR PILE REINFORCING, SEE SHEET 1 OF 3

PROJECT NO. I-2513AA/AB
 BUNCOMBE COUNTY
 STATION: 63+46.57 -Y-
 SHEET 3 OF 5 10+00.00 -NW5A-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SOUND BARRIER WALL
 DETAILS
 -NW5A- AND -NW5B-**



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

DRAWN BY : T. BANKOVICH DATE : 7-23
 CHECKED BY : M.A. AVERETTE DATE : 7-23
 DESIGN ENGINEER OF RECORD: M.A. AVERETTE DATE : 7-23

LICENSURE NO. C-4434
**DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED**

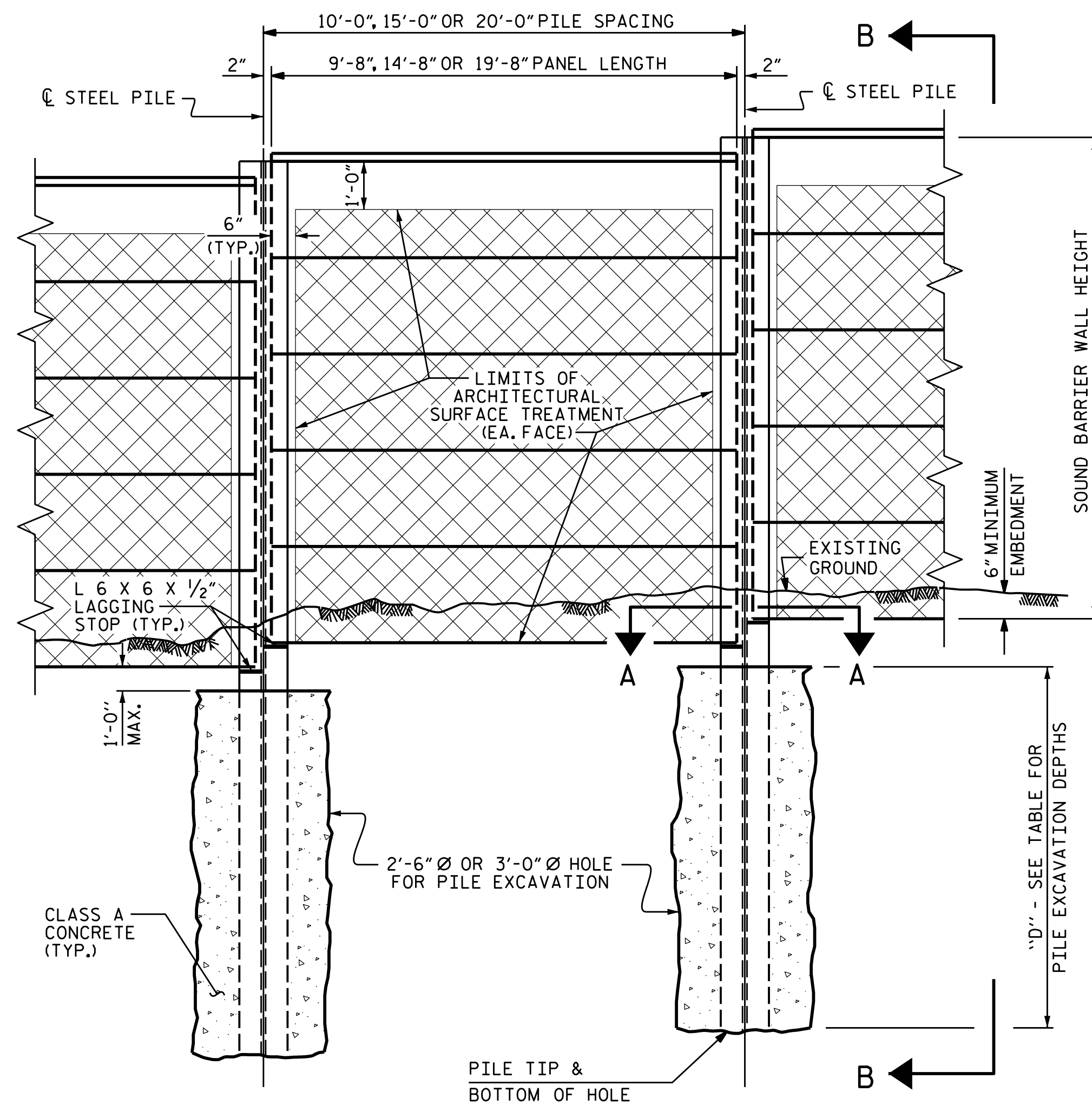
TOTAL SHEETS
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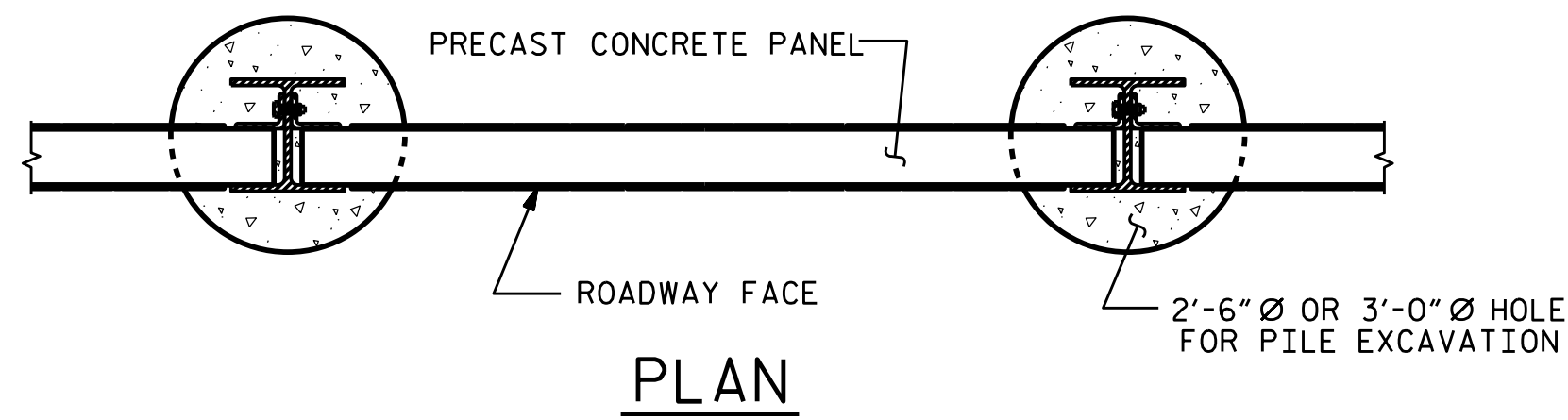
BILL OF MATERIAL	
SOUND BARRIER WALL	1605 S.F.
ARCHITECTURAL SURFACE TREATMENT	
WALL -NW5C-	2788 S.F.
EXIST. WALL EAST OF SMOKEY PACK HIGHWAY	9465 S.F.
EXIST. WALL WEST OF SAND HILL ROAD	11450 S.F.
APPLICATION OF SOUND BARRIER WALL COATING	LUMP SUM
QUANTITIES PROVIDED ARE APPROXIMATE AND ARE FOR BID PURPOSES ONLY.	
ARCHITECTURAL SURFACE TREATMENT	
TEXTURE OPTION:	DRystack
STAIN OPTION:	FED. COLORS # 26420/36373/36173/26081

BEGIN WALL STATION	END WALL STATION	SLOPE	MAX. WALL HEIGHT (ft)	PILE EXCAVATION DEPTHS, "D" (ft)		
				S = 10ft	S = 15ft	S = 20ft
-NW5C- 43+10	-NW5C- 43+85*	6:1	23	9	10	11

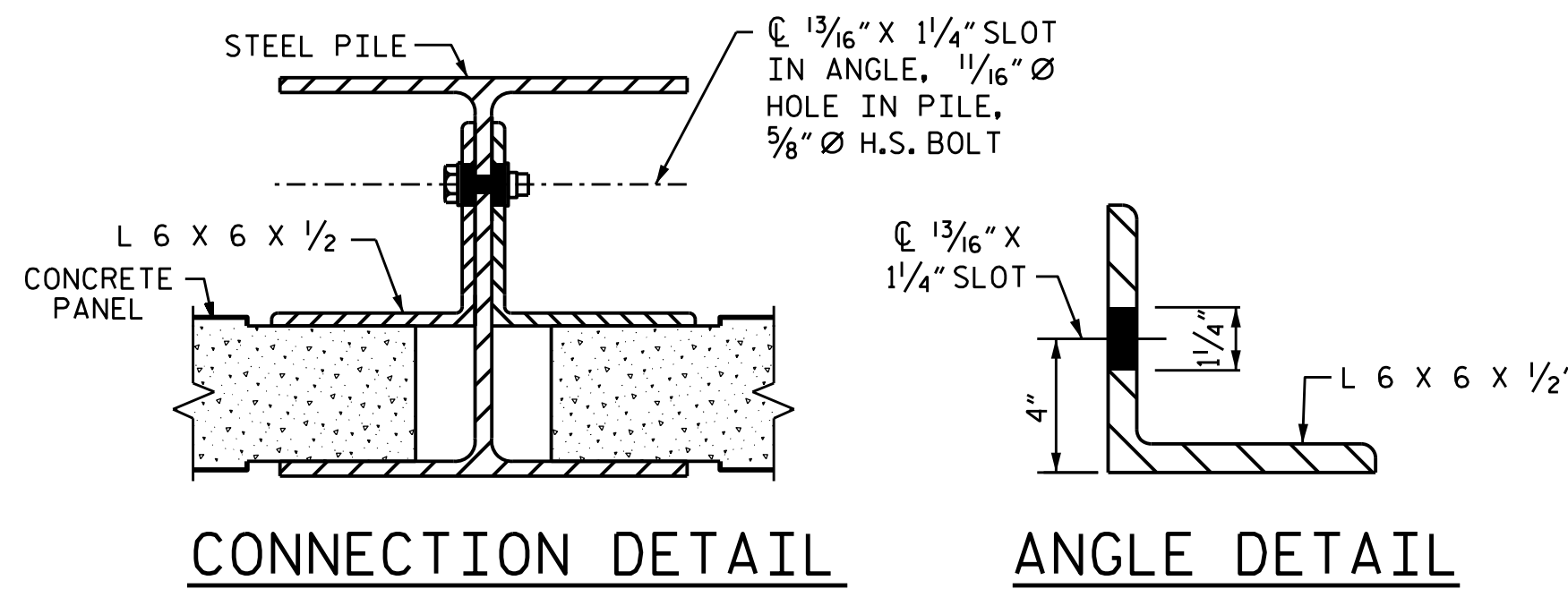
STEEL PILES DESIGN WIND PRESSURE = 40 PSF			
PILE SPACING	MAXIMUM WALL HEIGHT (H)	MINIMUM W SIZE STEEL PILES	MINIMUM HP SIZE STEEL PILES
10'-0"	H ≤ 15'	W 12 X 40 W 14 X 48	HP 12 X 53 HP 14 X 73
	15' < H ≤ 20'	W 12 X 45 W 14 X 48	HP 12 X 53 HP 14 X 73
	20' < H ≤ 25'	W 12 X 65 W 14 X 61	HP 12 X 53 HP 14 X 73
	25' < H ≤ 29'	W 12 X 87 W 14 X 90	HP 14 X 73
15'-0"	H ≤ 15'	W 12 X 40 W 14 X 48	HP 12 X 53 HP 14 X 73
	15' < H ≤ 20'	W 12 X 53 W 14 X 61	HP 12 X 53 HP 14 X 73
	20' < H ≤ 25'	W 12 X 72 W 14 X 90	HP 12 X 74 HP 14 X 73
	25' < H ≤ 29'	W 12 X 120 W 14 X 90	HP 14 X 89
20'-0"	H ≤ 15'	W 12 X 40 W 14 X 48	HP 12 X 53 HP 14 X 73
	15' < H ≤ 20'	W 12 X 58 W 14 X 61	HP 12 X 63 HP 14 X 73
	20' < H ≤ 25'	W 12 X 96 W 14 X 90	HP 14 X 89
	25' < H ≤ 29'	W 12 X 152 W 14 X 109	HP 14 X 117



ELEVATION

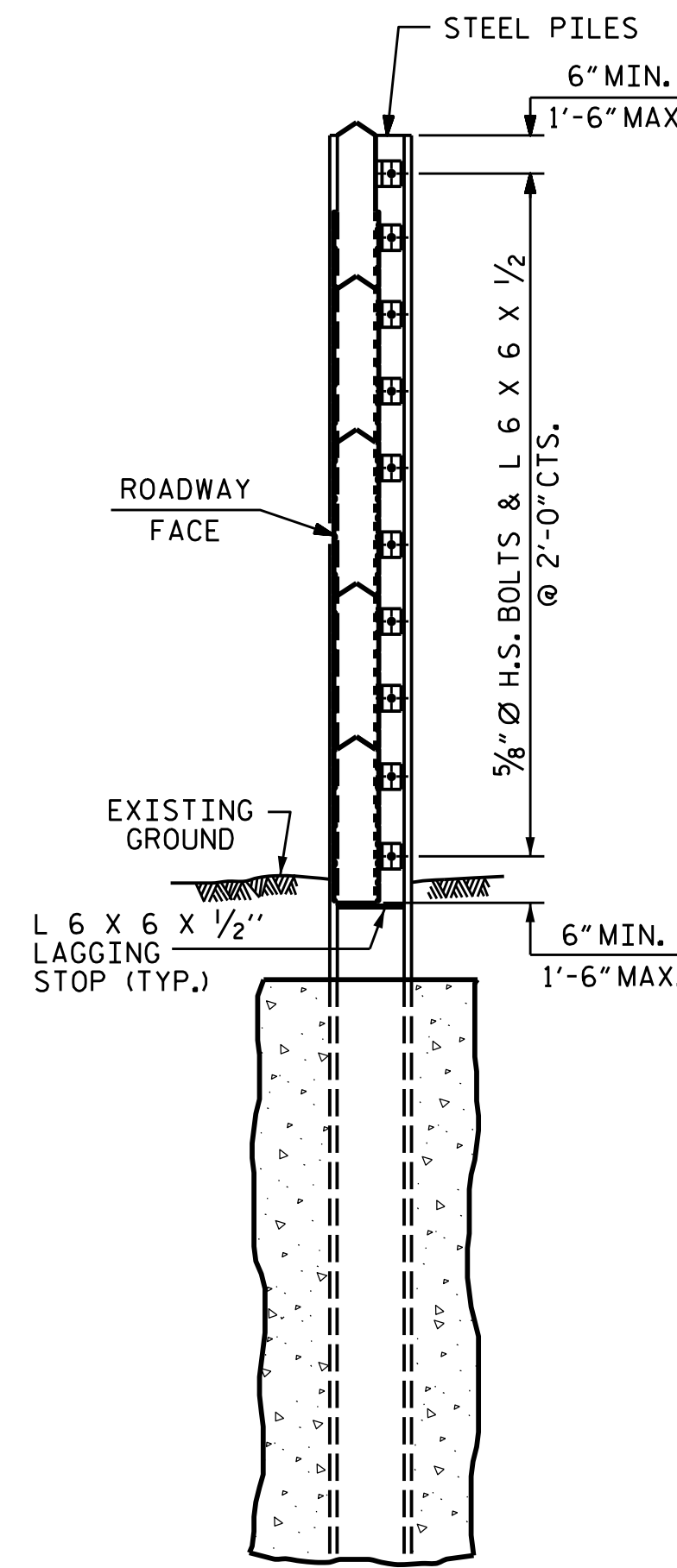


PLAN

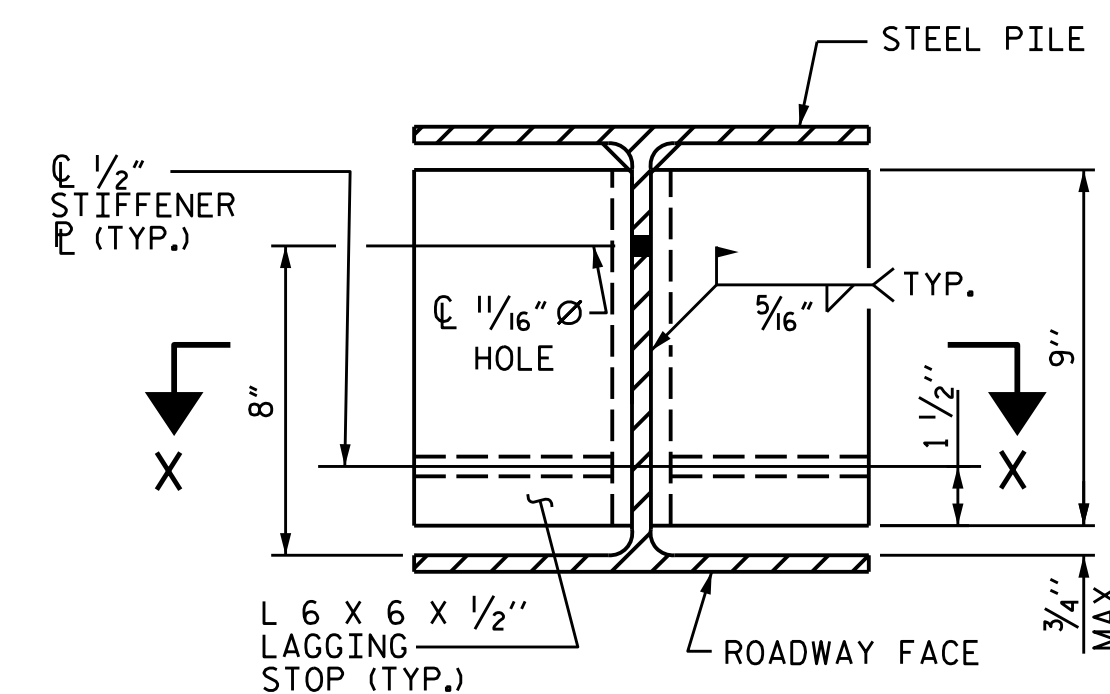


CONNECTION DETAIL

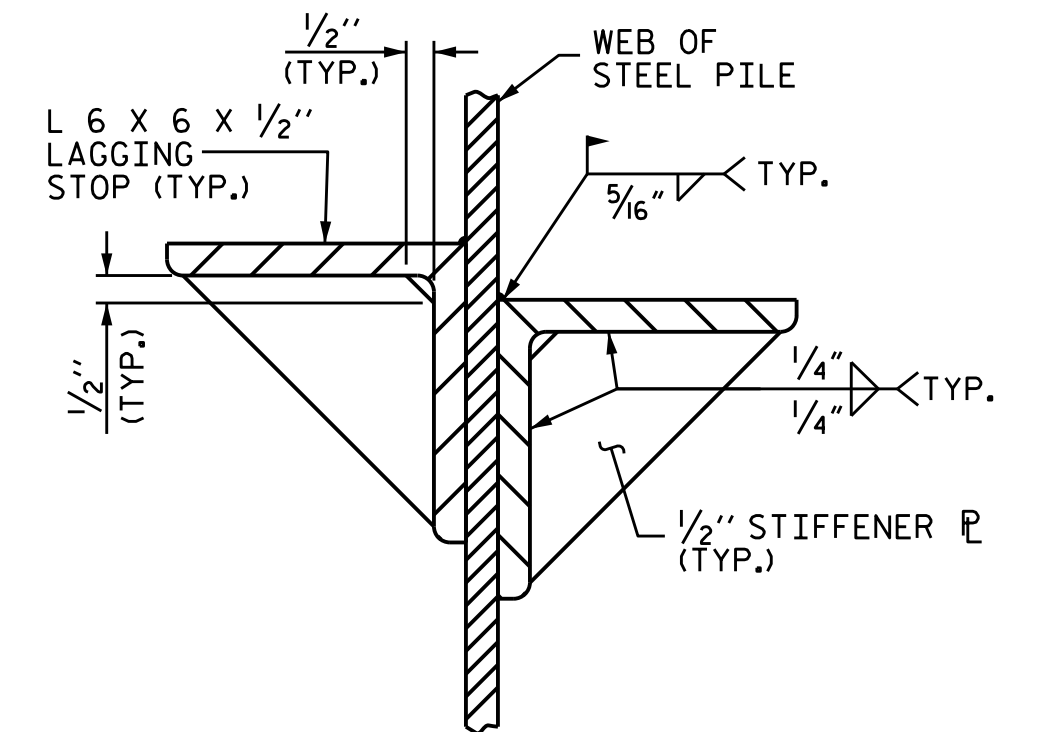
ANGLE DETAIL



SECTION B-B



SECTION A-A



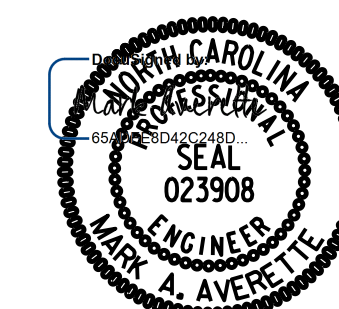
SECTION X-X

PROJECT NO. **I-2513AA/AB**
BUNCOMBE COUNTY
 STATION: **63+46.57 -Y-**

SHEET 4 OF 5

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SOUND BARRIER WALL
 (STEEL PILES)
 -NW5C-**



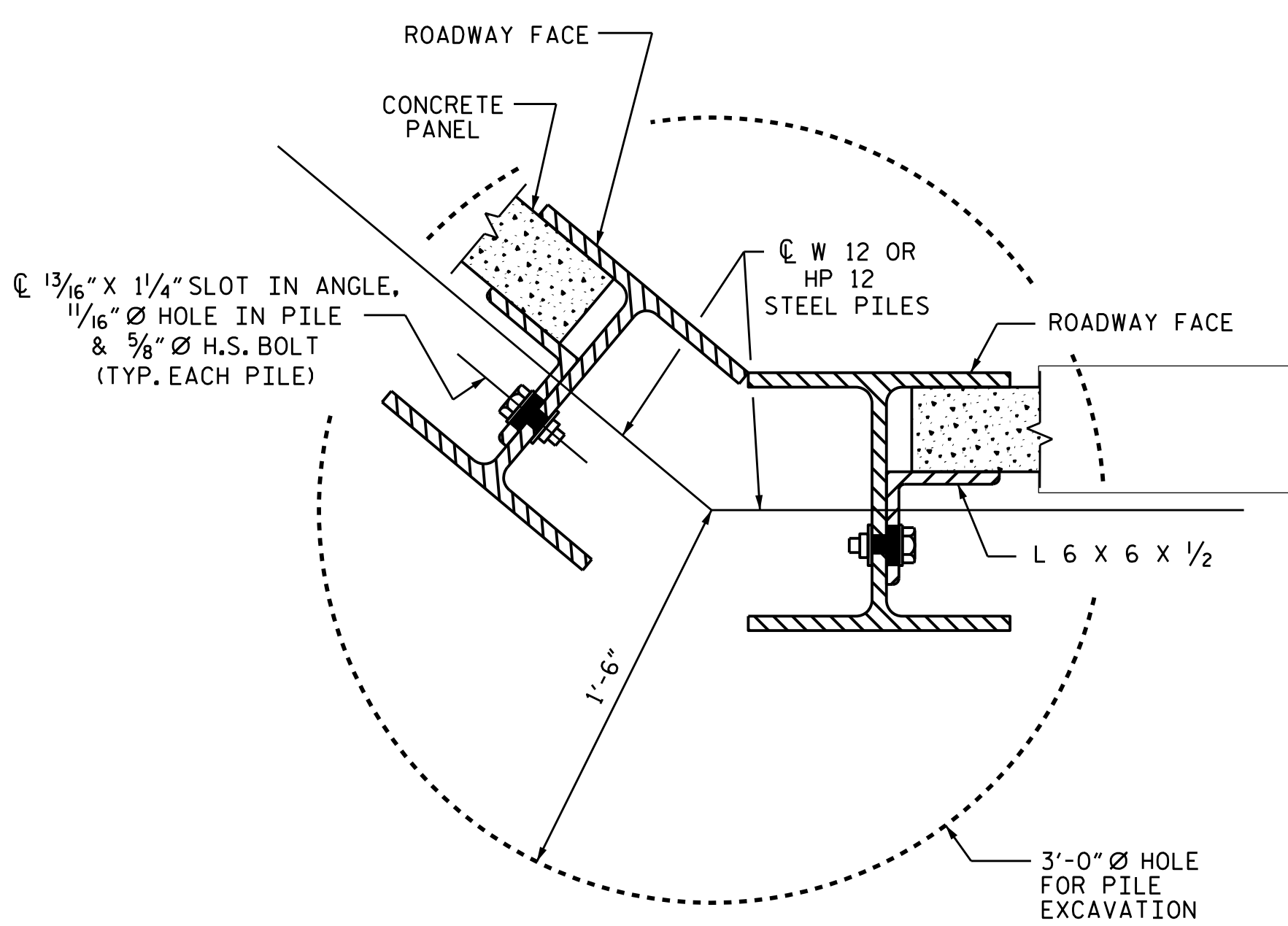
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DRAWN BY: **T. BANKOVICH** DATE: **7-23**
 CHECKED BY: **M.A. AVERETTE** DATE: **7-23**
 DESIGN ENGINEER OF RECORD: **M.A. AVERETTE** DATE: **7-23**

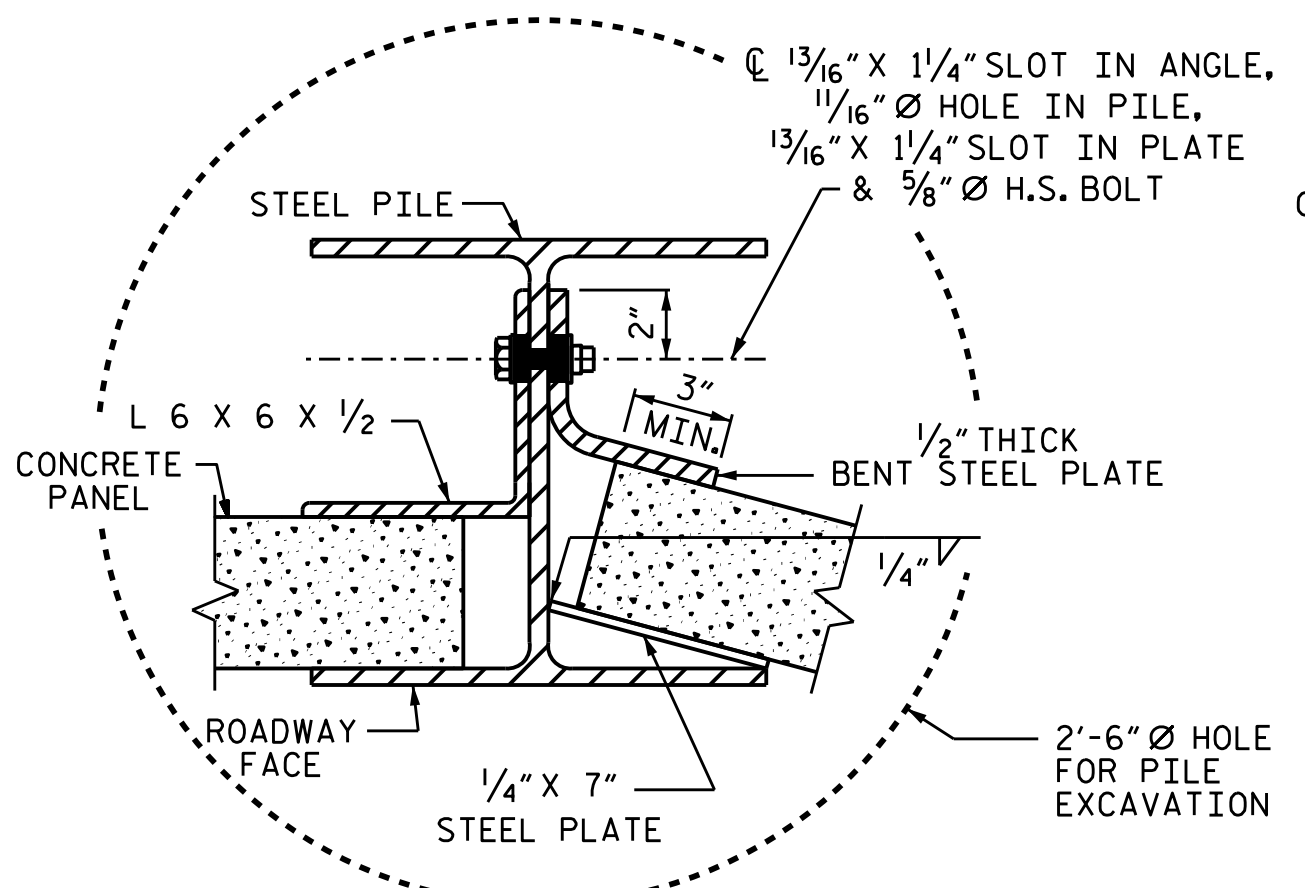
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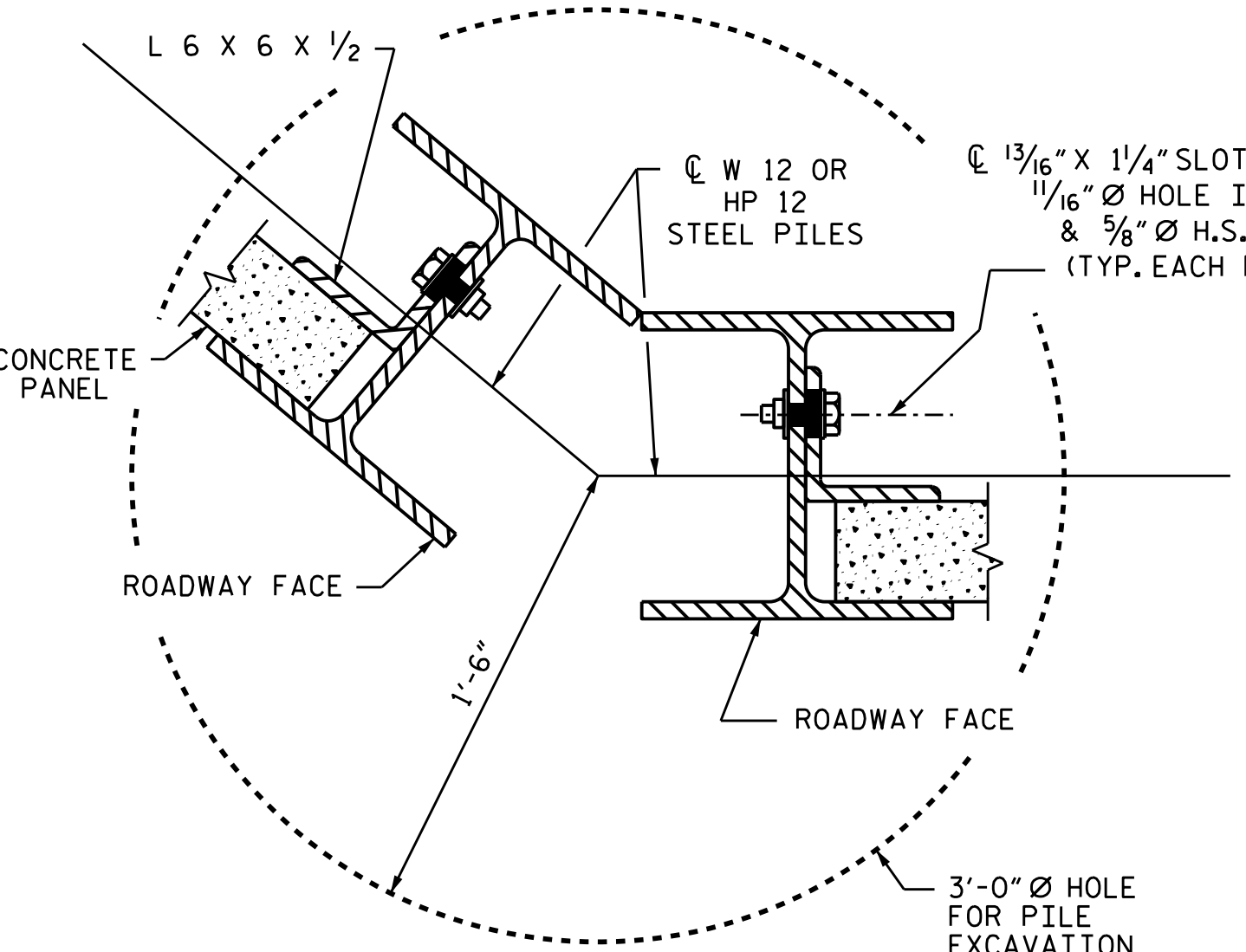
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NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 5
2			4			



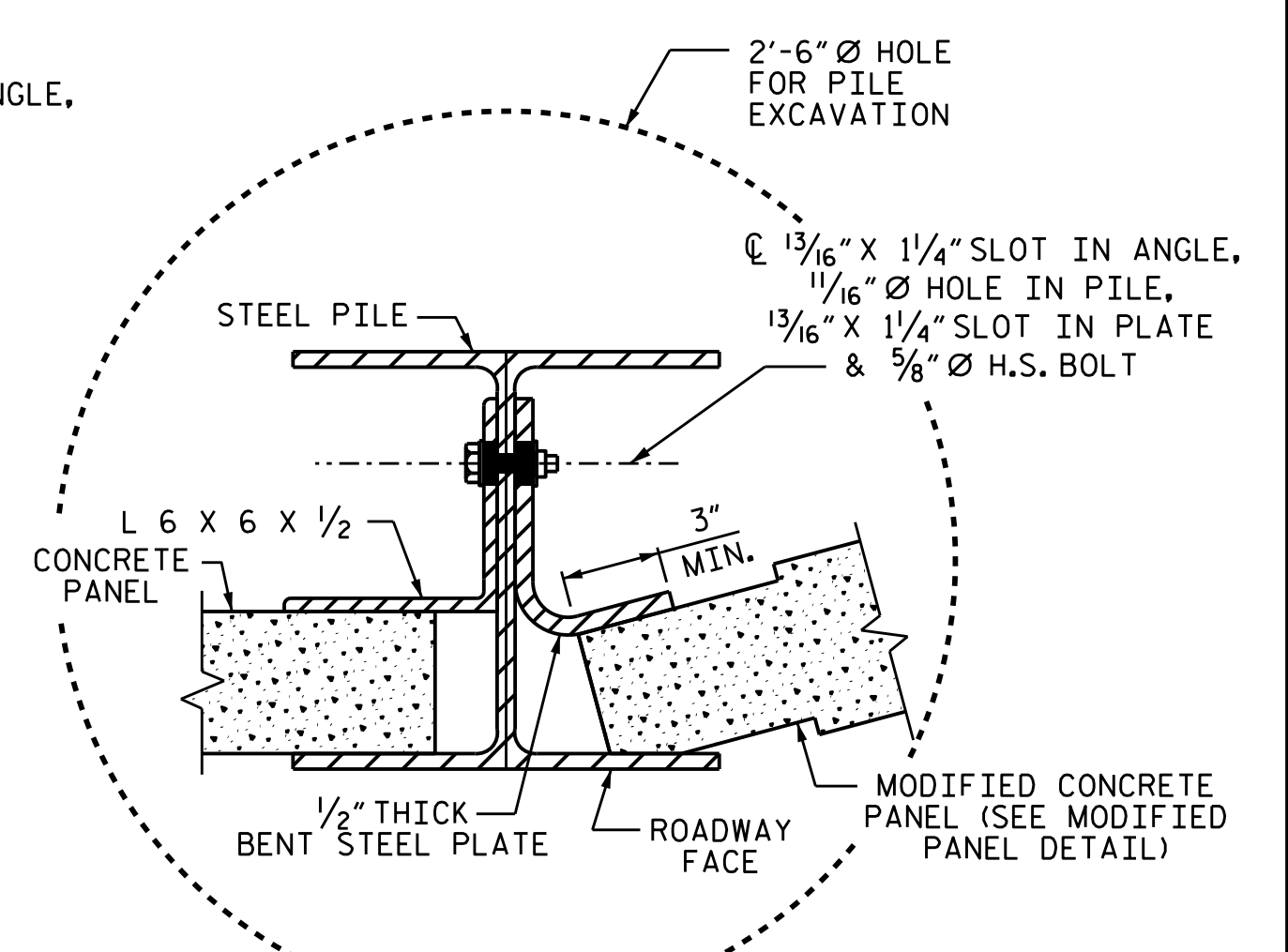
TYPICAL WALL TURN DETAIL
(FOR GREATER THAN 15° TURNS, CONCAVE TOWARD ROADWAY)



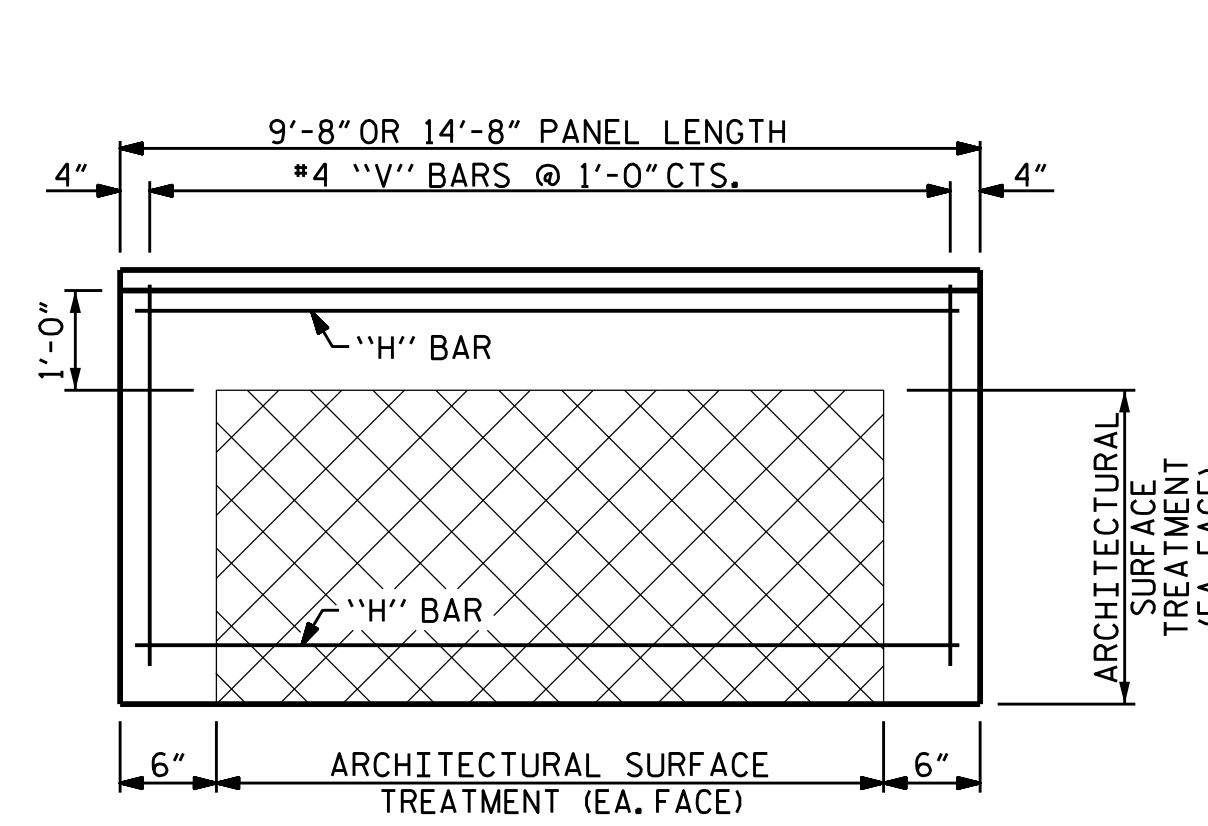
TYPICAL WALL TURN DETAIL
(USE ONLY FOR TURNS 15° OR LESS, CONCAVE TOWARD ROADWAY)



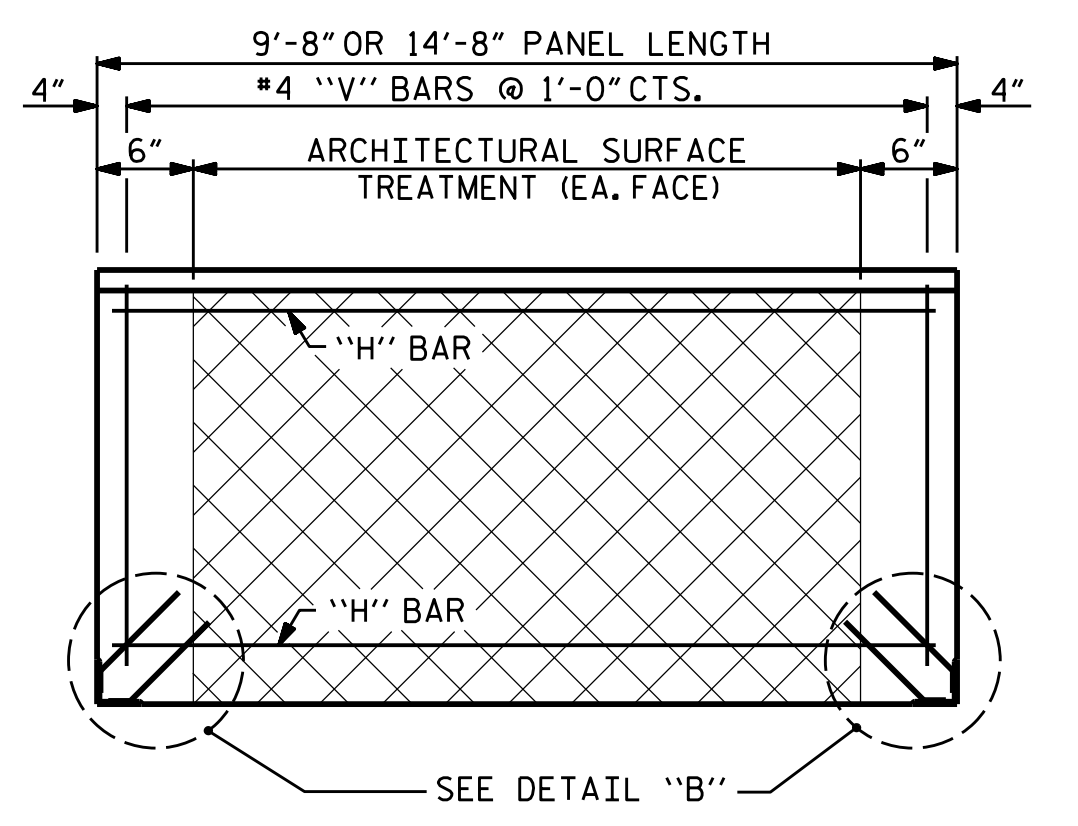
TYPICAL WALL TURN DETAIL
(FOR GREATER THAN 15° TURNS, CONVEX TOWARD ROADWAY)



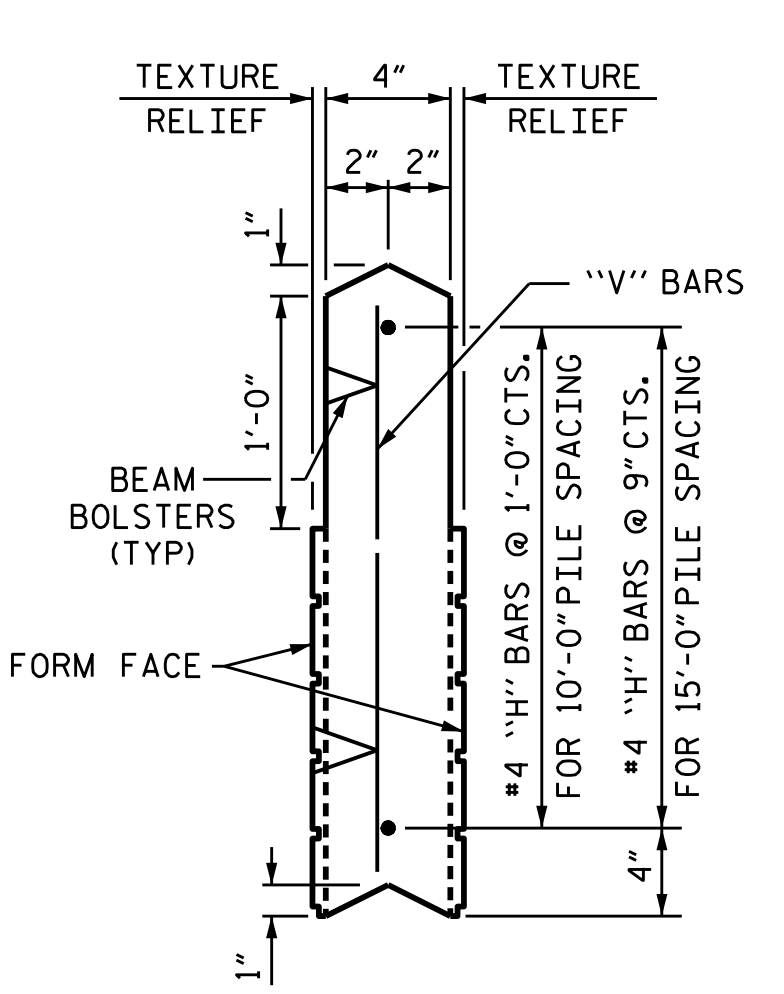
TYPICAL WALL TURN DETAIL
(USE ONLY FOR TURNS 15° OR LESS, CONVEX TOWARD ROADWAY)



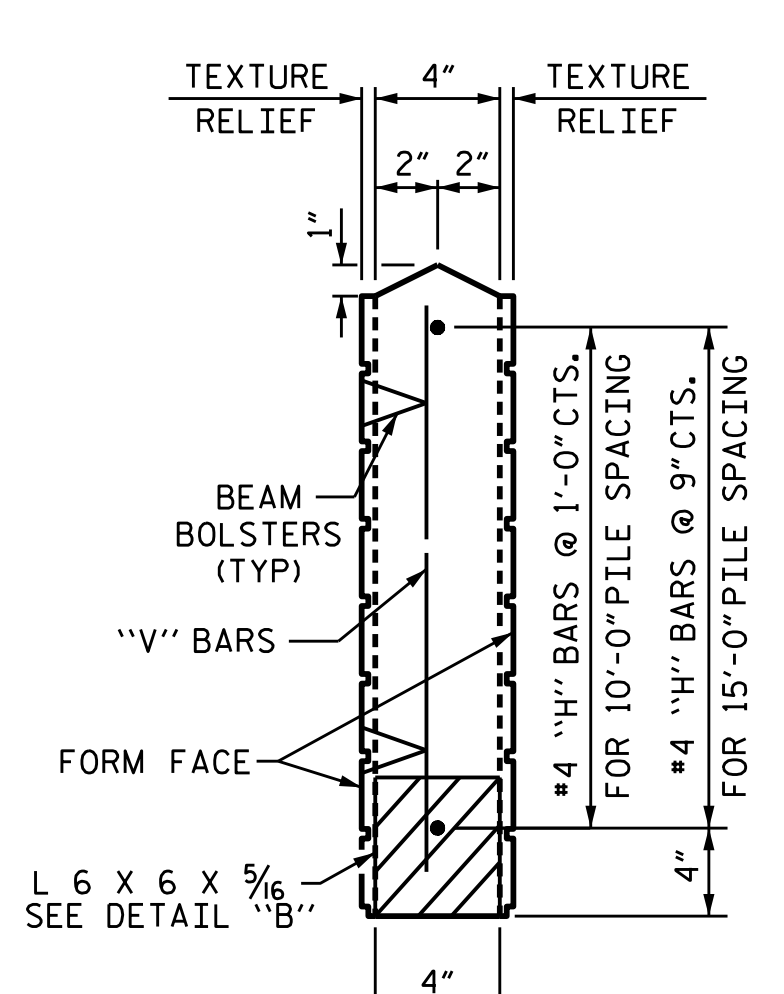
FRONT ELEVATION OF UPPER PRECAST PANEL



FRONT ELEVATION OF BOTTOM PRECAST PANEL

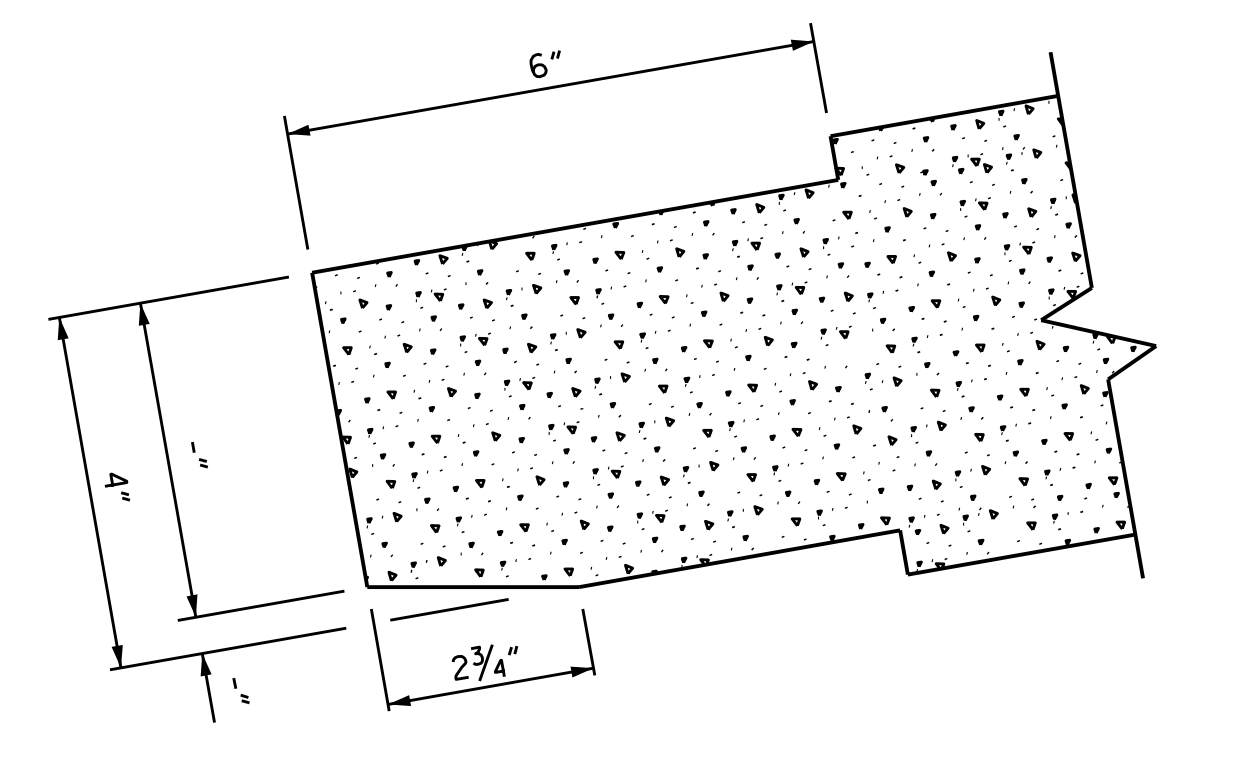


UPPER PANEL

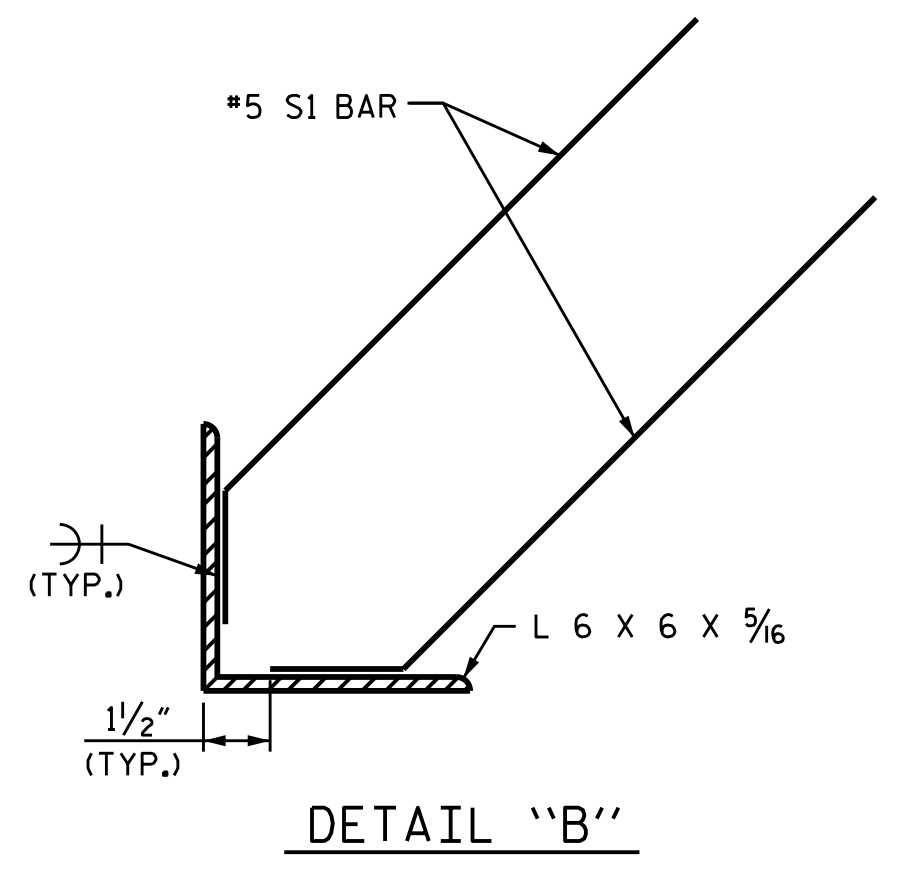


BOTTOM PANEL

SECTION THROUGH PRECAST PANELS



MODIFIED PANEL DETAIL
(USE ONLY FOR TURNS 15° OR LESS, CONVEX TOWARD ROADWAY)



DETAIL "B"

ADDITIONAL BARS FOR ONE BOTTOM PANEL

NO.	BAR	SIZE	TYPE	LENGTH	WEIGHT (lb)
4	S1	#5	1	1'-6"	6

BAR TYPE

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

PANEL HEIGHT	CLASS AA CONCRETE	BAR TYPES											
		HORIZONTAL						VERTICAL					
C.Y.	NO.	BAR	SIZE	TYPE	LENGTH	WEIGHT (lb)	NO.	BAR	SIZE	TYPE	LENGTH	WEIGHT (lb)	
2'-0"	0.24	3	H1	#4	STR	9'-4"	19	10	V1	#4	STR	1'-8"	11
3'-0"	0.36	4	H2	#4	STR	9'-4"	25	10	V2	#4	STR	2'-8"	18
4'-0"	0.48	5	H3	#4	STR	9'-4"	31	10	V3	#4	STR	3'-8"	24

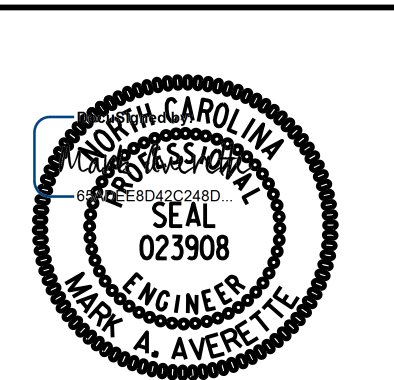
QUANTITIES FOR ONE PRECAST PANEL (FOR 15'-0" PILE SPACING)

PANEL HEIGHT	CLASS AA CONCRETE	BAR TYPES											
		HORIZONTAL						VERTICAL					
C.Y.	NO.	BAR	SIZE	TYPE	LENGTH	WEIGHT (lb)	NO.	BAR	SIZE	TYPE	LENGTH	WEIGHT (lb)	
3'-0"	0.54	5	H1	#4	STR	14'-4"	48	15	V1	#4	STR	2'-8"	27
4'-0"	0.72	6	H2	#4	STR	14'-4"	57	15	V2	#4	STR	3'-8"	37
5'-0"	0.91	7	H3	#4	STR	14'-4"	67	15	V3	#4	STR	4'-8"	47
6'-0"	1.09	8	H4	#4	STR	14'-4"	77	15	V4	#4	STR	5'-8"	57

PROJECT NO. I-2513AA/AB
BUNCOMBE COUNTY
 STATION: 63+46.57 -Y-
 SHEET 5 OF 5

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SOUND BARRIER WALL DETAILS (STEEL PILES) -NW5C-



REVISIONS

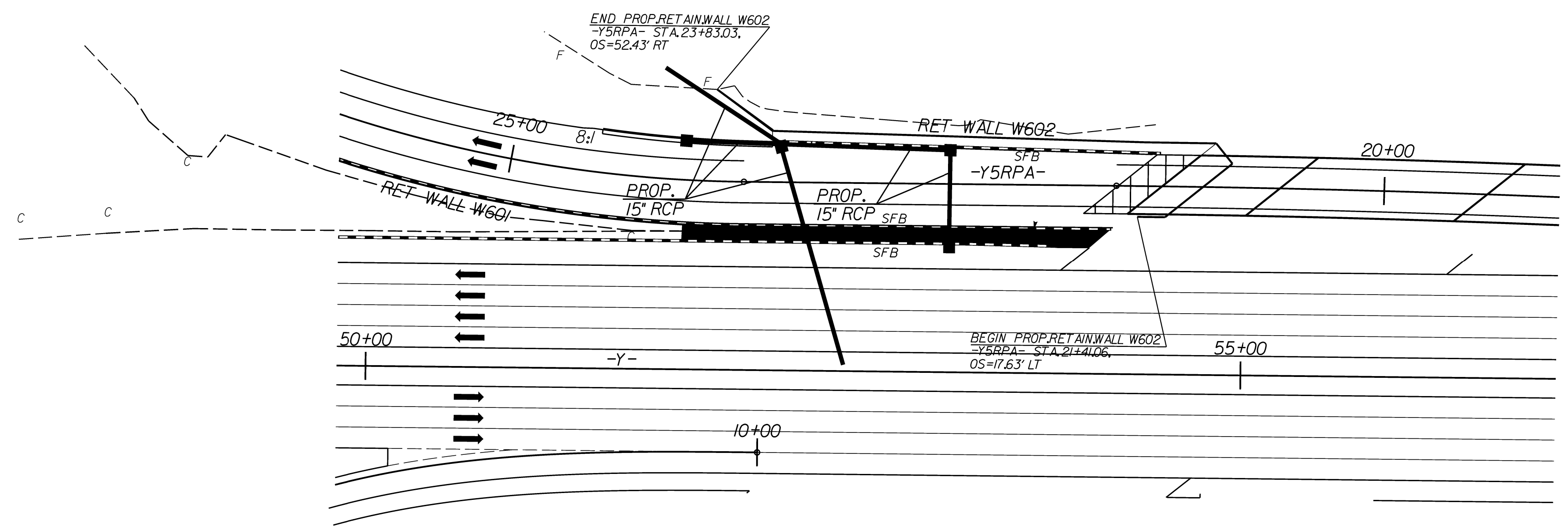
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SHEET NO. **NW-5**
 TOTAL SHEETS **5**

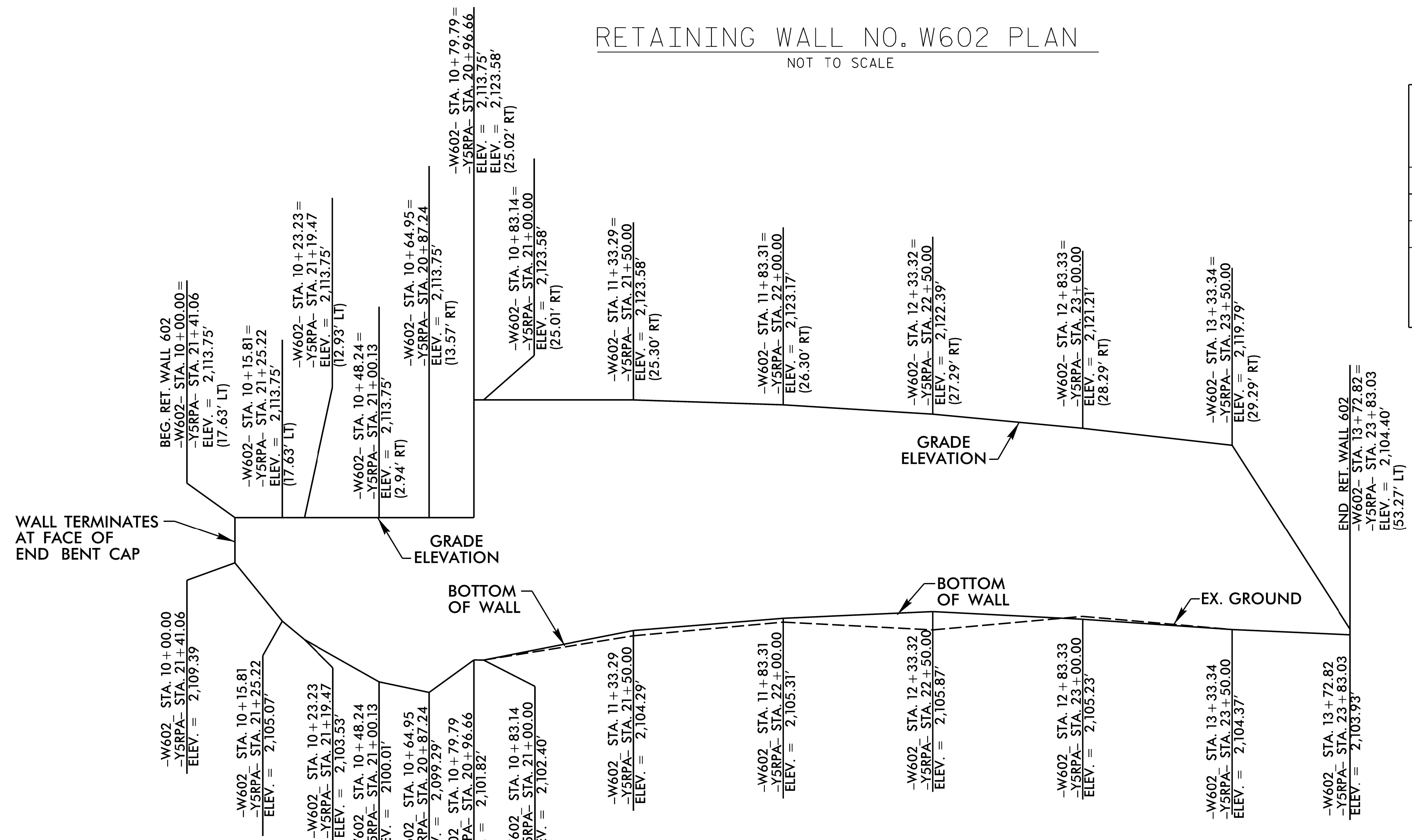
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DRAWN BY: T. BANKOVICH DATE: 7-23
 CHECKED BY: M.A. AVERETTE DATE: 7-23
 DESIGN ENGINEER OF RECORD: M.A. AVERETTE DATE: 7-23

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



RETAINING WALL NO. W602 PLAN
NOT TO SCALE



RETAINING WALL NO. W602 ENVELOPE
DIMENSIONS OF WALL TAKEN ALONG FRONT FACE OF MSE WALL
NOT TO SCALE

GEOTECHNICAL ENGINEER

ENGINEER

SEAL 048207

STEPHEN C. CROCKETT

DocuSigned by: Stephen Crockett 5/14/2024

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ESTIMATED MSE WALL QUANTITIES

MSE RETAINING WALL NO. W602	6,450 SF	
PAY ITEM	QUANTITY	
ARCHITECTURAL CONCRETE SURFACE TREATMENT	6,450 SF	
BLACK VINYL CHAIN LINK FENCE, 48" FABRIC -Y5RPA- STA. 21+05.17 TO STA. 23+83.03	FABRIC (LF)	310
	4" POSTS (EA)	26
	5" POSTS (EA)	5

PREPARED BY: S. CROCKETT DATE: 9/5/23
REVIEWED BY: J. HAMM DATE: 9/7/23

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS

GEOTECHNICAL ENGINEERING UNIT

PROJECT NO.: I-2513AA/AB
BUNCOMBE COUNTY
STATION: -Y5RPA- 21+41.06 TO 23+83.03
SHEET 1 OF 11 WALL ID W602

RETAINING WALL NO. W602 WALL PLAN AND ENVELOPE

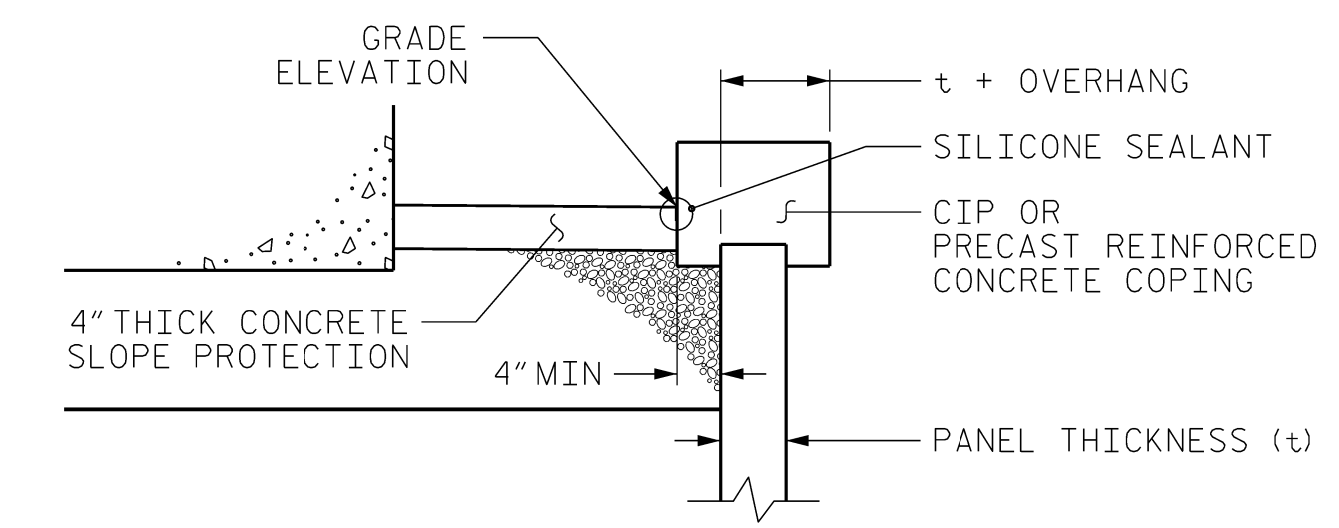
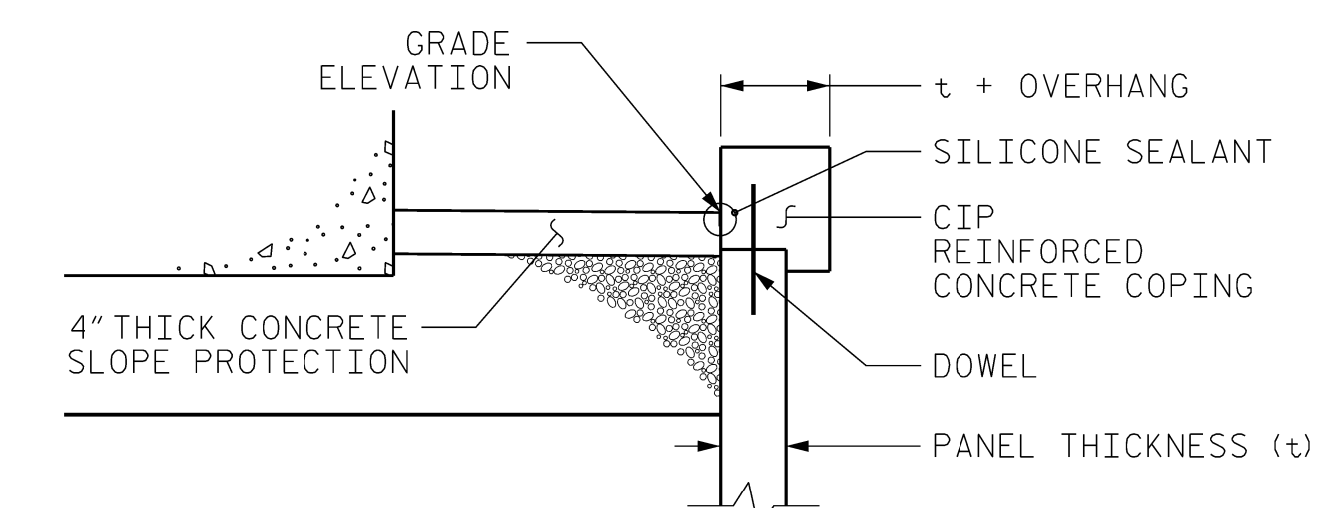
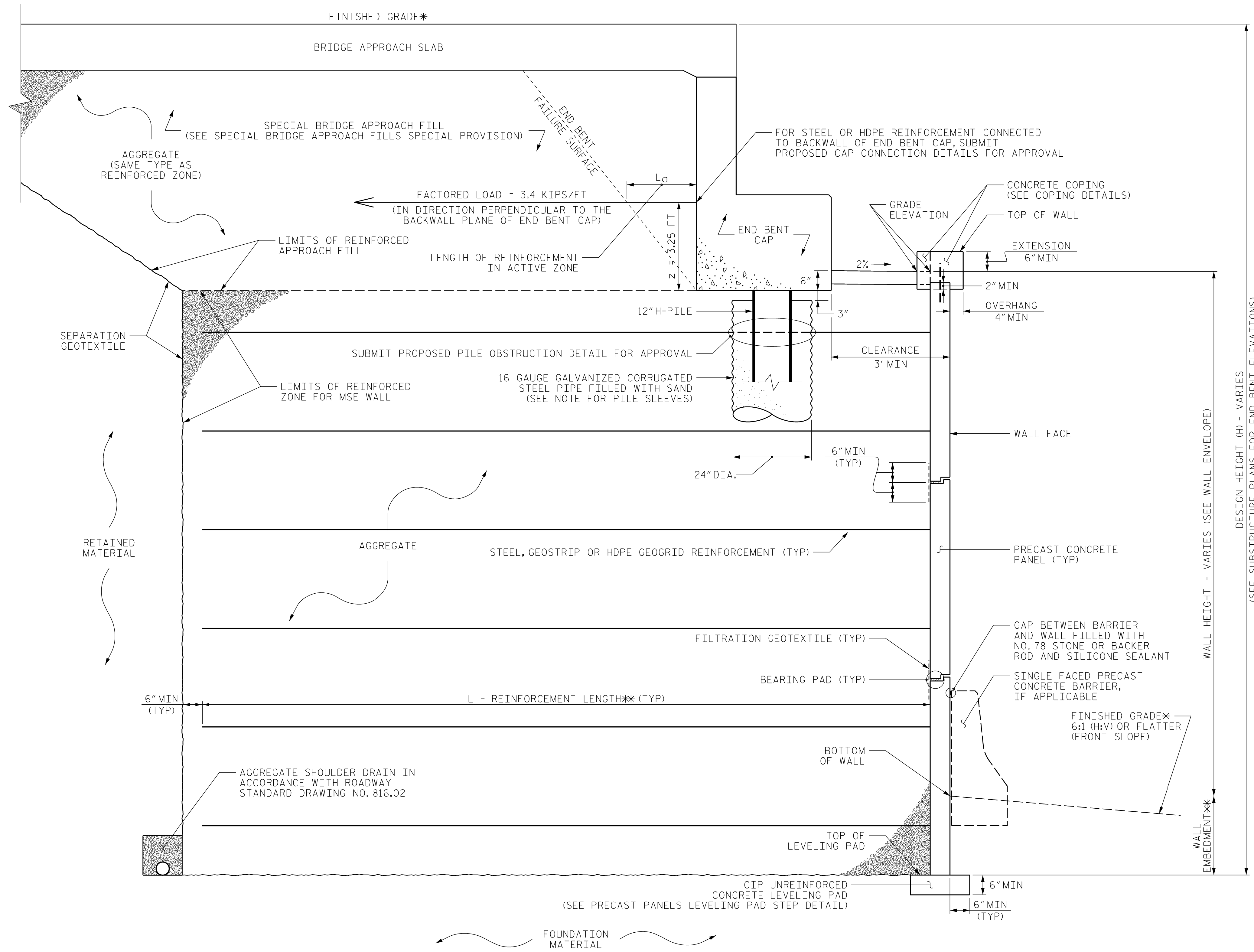
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NO.	BY	DATE	NO.	BY	DATE	
1			3			W-1
2			4			

GEOTECHNICAL ENGINEER

ENGINEER

DocuSigned by: *Stephen Crockett* 5/14/2024

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COPING DETAILS

AT THE CONTRACTOR'S OPTION, CONNECT COPING TO PANELS WITH DOWELS OR EXTEND COPING DOWN BACK OF PANELS.

MSE ABUTMENT 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 WALL EMBEDMENT AND REINFORCEMENT LENGTH REQUIREMENTS.

PROJECT NO.: I-2513AA/AB
 BUNCOMBE COUNTY
 STATION: -Y5RPA- 21+41.06 TO 23+83.03
 SHEET 2 OF 11 WALL ID W602

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

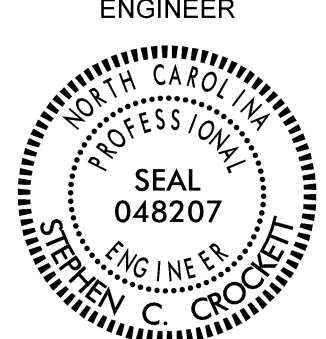
**GEOTECHNICAL
ENGINEERING UNIT**

REVISIONS					
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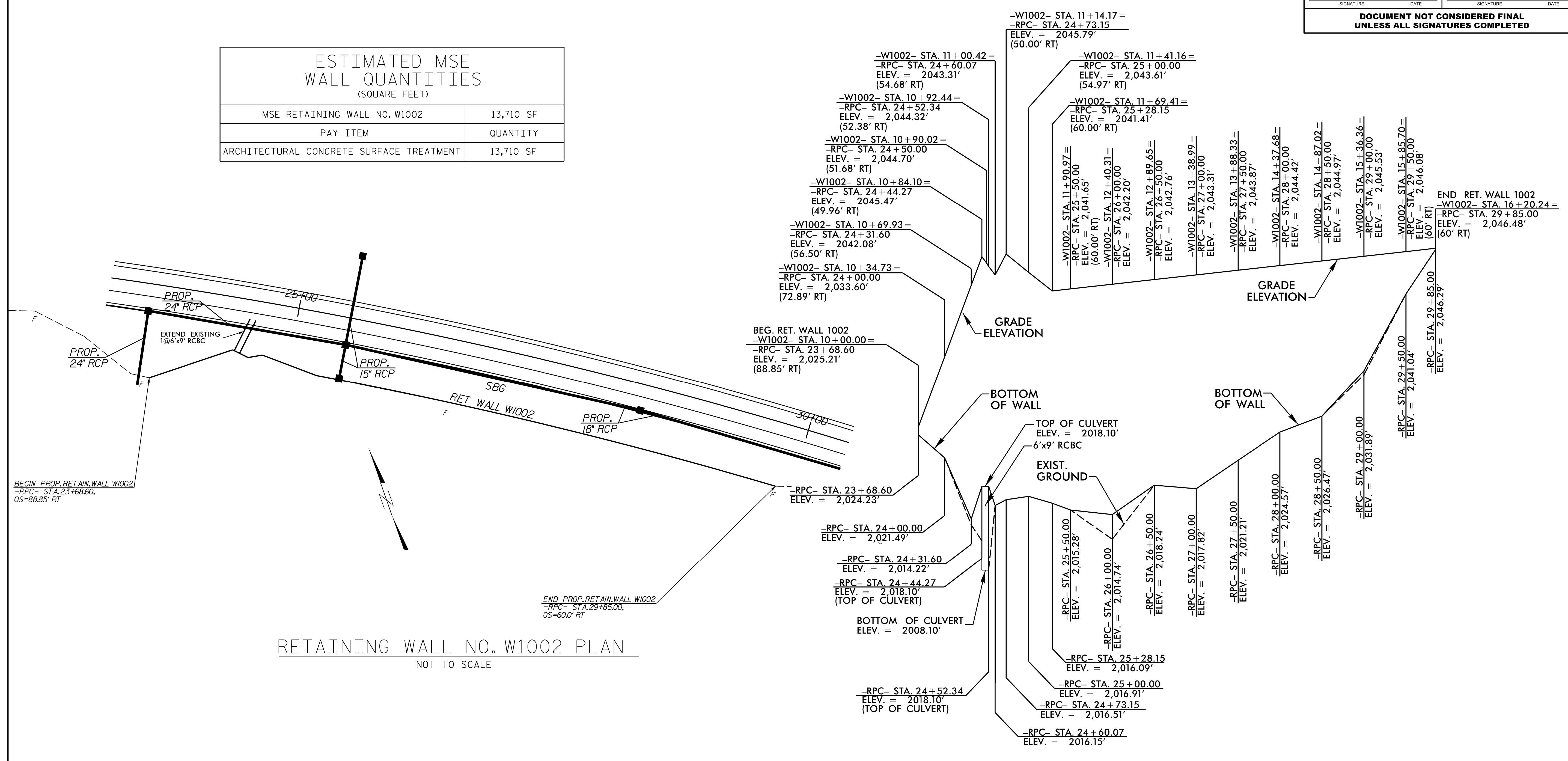
**MSE ABUTMENT WALL WITH
PANELS TYPICAL AND COPING
DETAILS FOR RETAINING WALL
NO. W602**

PREPARED BY: S. CROCKETT	DATE: 9/5/23
REVIEWED BY: J. HAMM	DATE: 9/7/23

SHEET NO. W-2

GEOTECHNICAL ENGINEER  SEAL 048207 ENGINEER STEPHEN C. CROCKETT	ENGINEER
DocuSigned by: Stephen Crockett CS0AFED48E0435	5/14/2024
SIGNATURE	DATE
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

ESTIMATED MSE WALL QUANTITIES (SQUARE FEET)	
MSE RETAINING WALL NO. W1002	13,710 SF
PAY ITEM	QUANTITY
ARCHITECTURAL CONCRETE SURFACE TREATMENT	13,710 SF

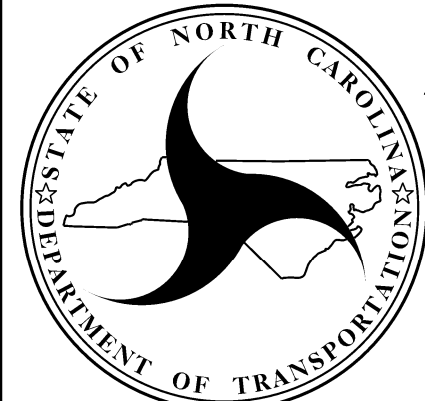


RETAINING WALL NO. W1002 PLAN
NOT TO SCALE

RETAINING WALL NO. W1002 ENVELOPE
DIMENSIONS OF WALL TAKEN ALONG FRONT FACE OF MSE WALL
NOT TO SCALE

PROJECT NO.: I-2513AA/AB
 BUNCOMBE COUNTY
 STATION: -RPC- 23+68.60 TO 29+85.00
 SHEET 3 OF 11 WALL ID W1002

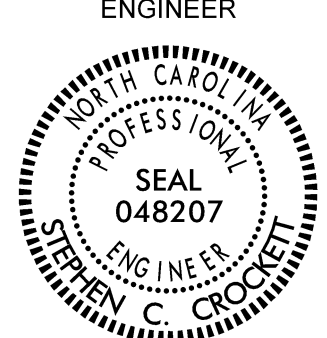
PREPARED BY: S. CROCKETT	DATE: 9/5/23
REVIEWED BY: J. HAMM	DATE: 9/7/23

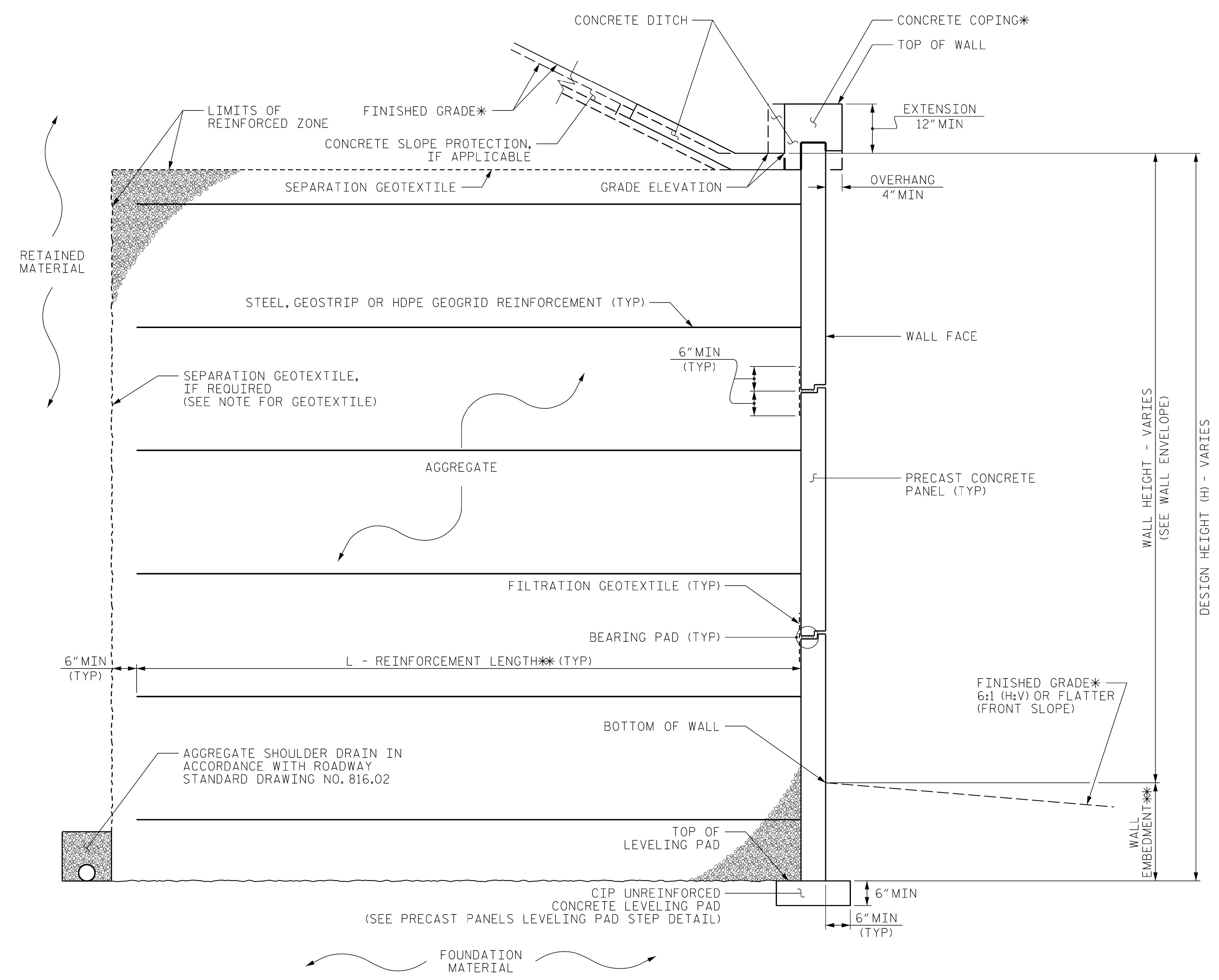


**NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS**

**GEOTECHNICAL
ENGINEERING UNIT**

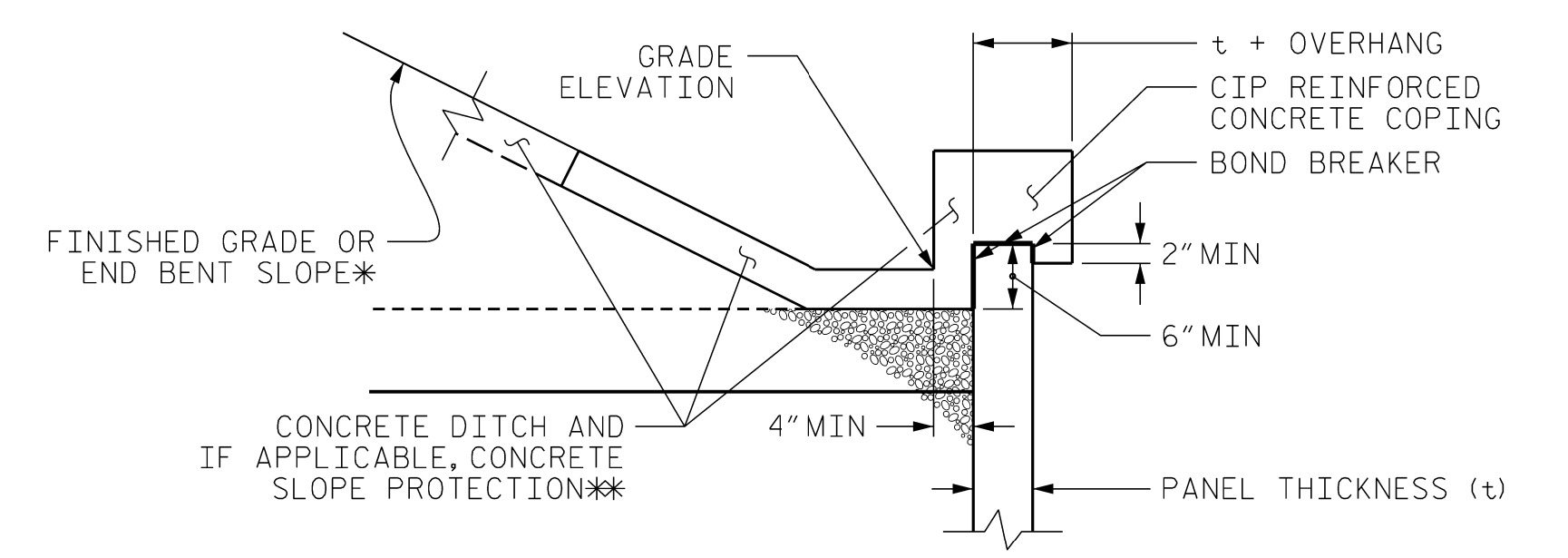
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NO.	BY	DATE	NO.	BY	DATE	
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GEOTECHNICAL ENGINEER  SEAL 048207 ENGINEER STEPHEN C. CROCKETT	ENGINEER _____ DATE
DocuSigned by: Stephen Crockett CS-CASPE4848433 5/14/2024	
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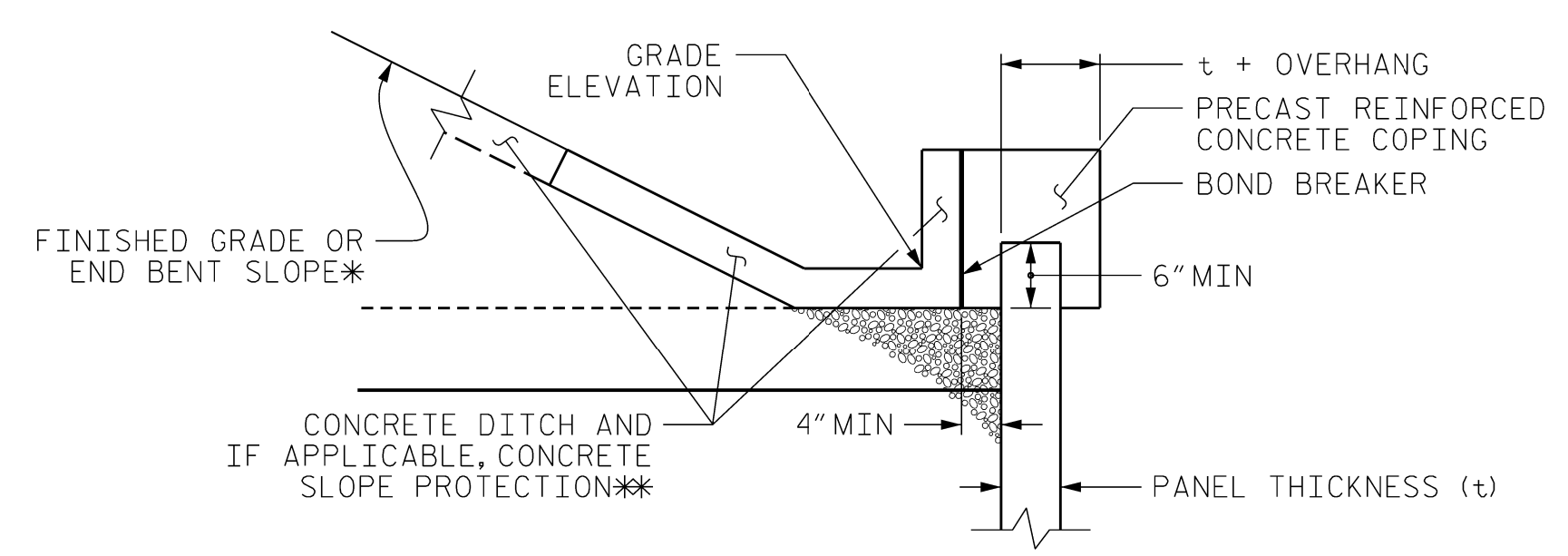
MSE WALL WITH PRECAST PANELS - TYPICAL SECTION

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



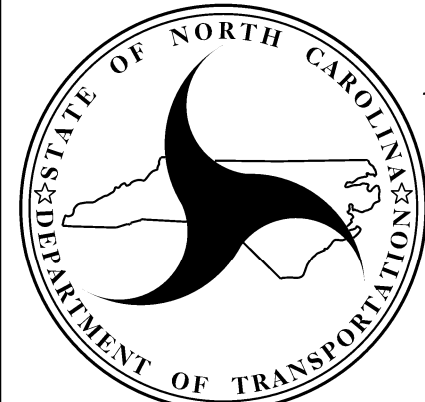
COPING DETAILS

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



CULVERT DETAIL

PROJECT NO.: I-2513AA/AB
 BUNCOMBE COUNTY
 STATION: -RPC- 23+68.60 TO 29+85.00
 SHEET 4 OF 11 WALL ID W1002



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

**GEOTECHNICAL
ENGINEERING UNIT**

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

PREPARED BY: S. CROCKETT	DATE: 9/5/23
REVIEWED BY: J. HAMM	DATE: 9/7/23

NOTES:

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

FOR SPECIAL BRIDGE APPROACH FILL, SEE SPECIAL BRIDGE APPROACH FILLS SPECIAL PROVISION.

A FENCE IS REQUIRED ON TOP OF RETAINING WALL NO. W602. SEE ROADWAY PLANS FOR FENCE LOCATION AND CONTRACTOR SHOULD SUBMIT FENCE DETAIL.

AT THE CONTRACTOR'S OPTION, USE FINE AGGREGATE IN THE REINFORCED ZONE OF RETAINING WALLS NO. W602 AND W1002.

AN ASHLAR ARCHITECTURAL FINISH IS REQUIRED FOR PRECAST CONCRETE PANELS FOR RETAINING WALL NO. W602.

A DRYSTACK ARCHITECTURAL FINISH IS REQUIRED FOR PRECAST CONCRETE PANELS FOR RETAINING WALL NO. W1002.

A SEPARATION GEOTEXTILE IS REQUIRED AT THE BACK OF THE REINFORCED ZONE FOR RETAINING WALLS NO. W602 AND W1002.

A DRAIN IS REQUIRED FOR RETAINING WALLS NO. W602 AND W1002.

PILE SLEEVES ARE REQUIRED AROUND PILES FOR END BENT NO. 2 LOCATED AT STATION -Y5RPA- 21+27.10.

BEFORE BEGINNING MSE WALL DESIGN FOR RETAINING WALLS NO. W602 AND W1002, 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. W602 FOR THE FOLLOWING:
 1) DESIGN HEIGHT (H) = WALL HEIGHT + WALL EMBEDMENT
 2) DESIGN LIFE = 100 YEARS
 3) MAXIMUM FACTORED VERTICAL PRESSURE ON FOUNDATION MATERIAL = 3,900 PSF
 4) MINIMUM REINFORCEMENT LENGTH (L) = 1.0H OR 6 FT, WHICHEVER IS LONGER
 5) MINIMUM EMBEDMENT DEPTH = 2 FT
 6) 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.

7) IN-SITU ASSUMED MATERIAL PARAMETERS:

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

DESIGN RETAINING WALL NO. W1002 FOR THE FOLLOWING:
 1) DESIGN HEIGHT (H) = WALL HEIGHT + WALL EMBEDMENT
 2) DESIGN LIFE = 100 YEARS
 3) MAXIMUM FACTORED VERTICAL PRESSURE ON FOUNDATION MATERIAL = 6,400 PSF
 4) MINIMUM REINFORCEMENT LENGTH (L) = 0.85H OR 6 FT, WHICHEVER IS LONGER
 5) MINIMUM EMBEDMENT DEPTH = 2 FT
 6) 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.

7) IN-SITU ASSUMED MATERIAL PARAMETERS:

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

DESIGN RETAINING WALLS NO. W602 AND W1002 FOR A LIVE LOAD (TRAFFIC) SURCHARGE.

DESIGN RETAINING WALL NO. W1002 FOR A CULVERT EXTENDING THROUGH THE WALL AS SHOWN. VERIFY CULVERT LOCATION AND ELEVATION BEFORE BEGINNING MSE WALL DESIGN OR CONSTRUCTION.

DESIGN REINFORCEMENT CONNECTED TO END BENT CAPS FOR FACTORED LOAD AND LENGTH OF REINFORCEMENT IN ACTIVE ZONE (L_o) SHOWN. CAST REINFORCEMENT OR CONNECTORS INTO CAP BACKWALL FOR END BENT NO. W602 LOCATED AT STATION -Y5RPA- 21+27.10. MAINTAIN A CLEARANCE OF AT LEAST 3" BETWEEN REINFORCEMENT OR CONNECTORS AND REINFORCING STEEL IN CAP.

FOUNDATIONS FOR SIGNS OR LIGHTING MAY BE LOCATED BEHIND RETAINING WALLS NO. W602 AND W1002 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 WILL INTERFERE WITH REINFORCEMENT FOR RETAINING WALL NO. W602.

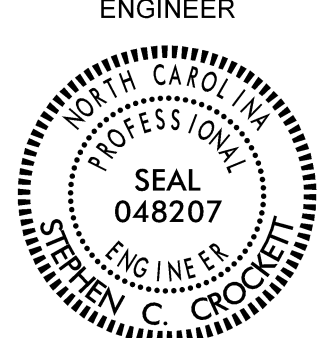

FOUNDATIONS FOR END BENT NO. 2 LOCATED AT STATION -Y5RPA- 21+27.10 WILL INTERFERE WITH REINFORCEMENT FOR RETAINING WALL NO. W602. SEE "FOUNDATION LAYOUT" SHEET FOR FOUNDATION LOCATIONS.

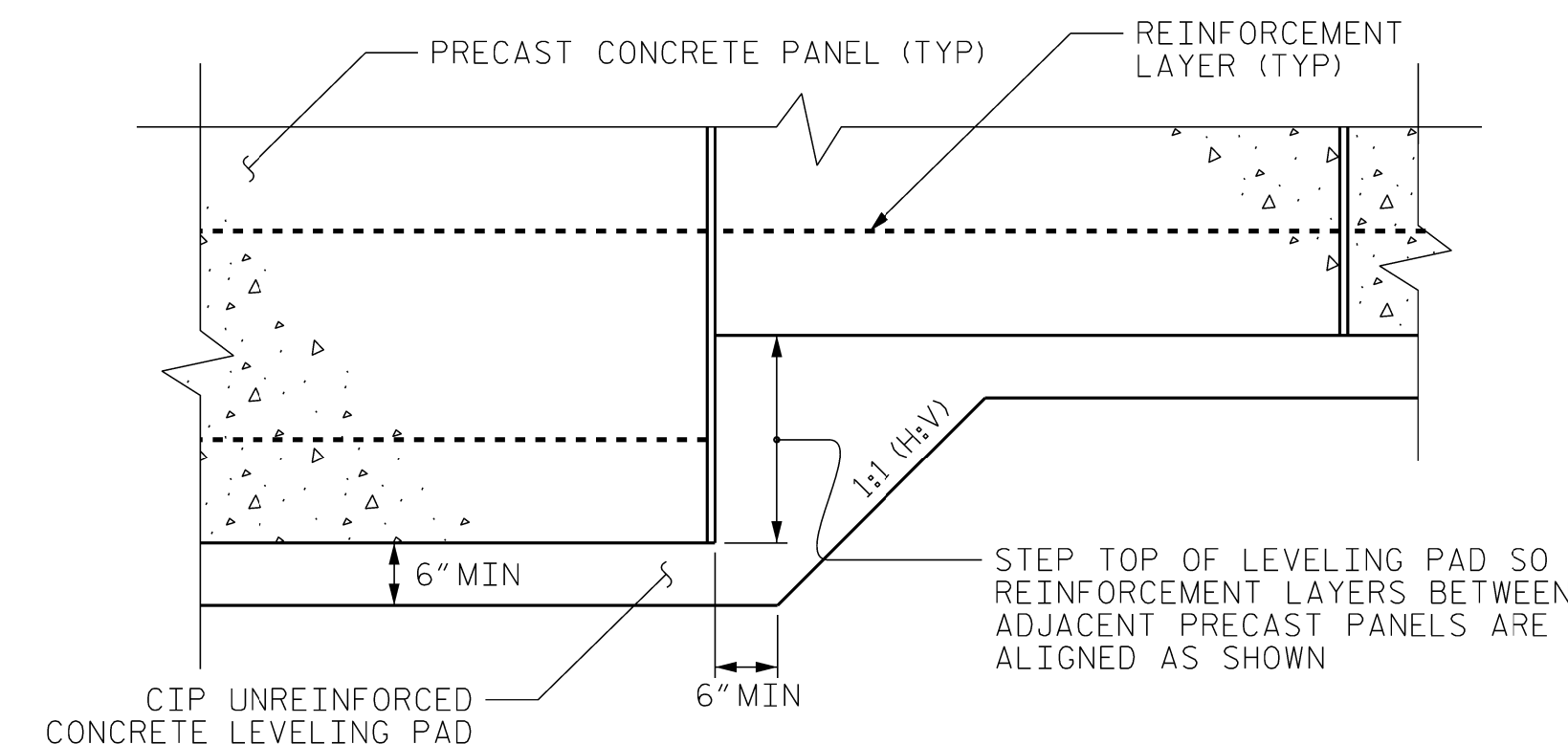
DO NOT PLACE LEVELING PAD CONCRETE, AGGREGATE OR REINFORCEMENT FOR RETAINING WALLS NO. W602 AND W1002 UNTIL EXCAVATION DIMENSIONS AND FOUNDATION MATERIAL ARE APPROVED.

"TEMPORARY SHORING" MAY BE REQUIRED FOR RETAINING WALLS NO. W602 AND W1002 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 WALLS NO. W602 AND W1002. SEE MSE RETAINING WALLS PROVISION FOR TEMPORARY SHORING FOR WALL CONSTRUCTION.

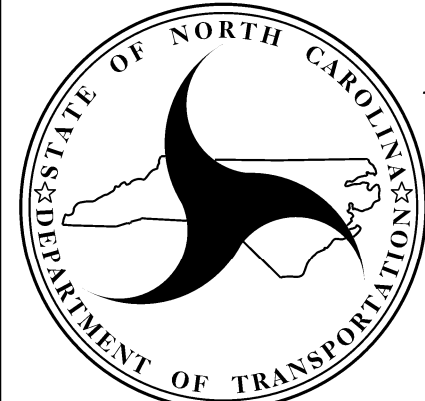
PREPARED BY: S. CROCKETT	DATE: 9/5/23
REVIEWED BY: J. HAMM	DATE: 9/7/23

GEOTECHNICAL ENGINEER  SEAL 048207 ENGINEER STEPHEN C. CROCKETT	ENGINEER
Date Signed by:  Stephen Crockett SIGNATURE	5/14/2024 DATE
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PRECAST PANELS
LEVELING PAD STEP DETAIL

PROJECT NO.: I-2513AA/AB
 BUNCOMBE COUNTY
 STATION: VARIES
 SHEET 5 OF 11 WALL ID W602, W1002

	NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS
	GEOTECHNICAL ENGINEERING UNIT

**MSE WALL WITH PANELS NOTES
AND LEVELING PAD STEP DETAIL
FOR RETAINING WALLS NO. W602
AND W1002**

REVISIONS						SHEET NO. W-5
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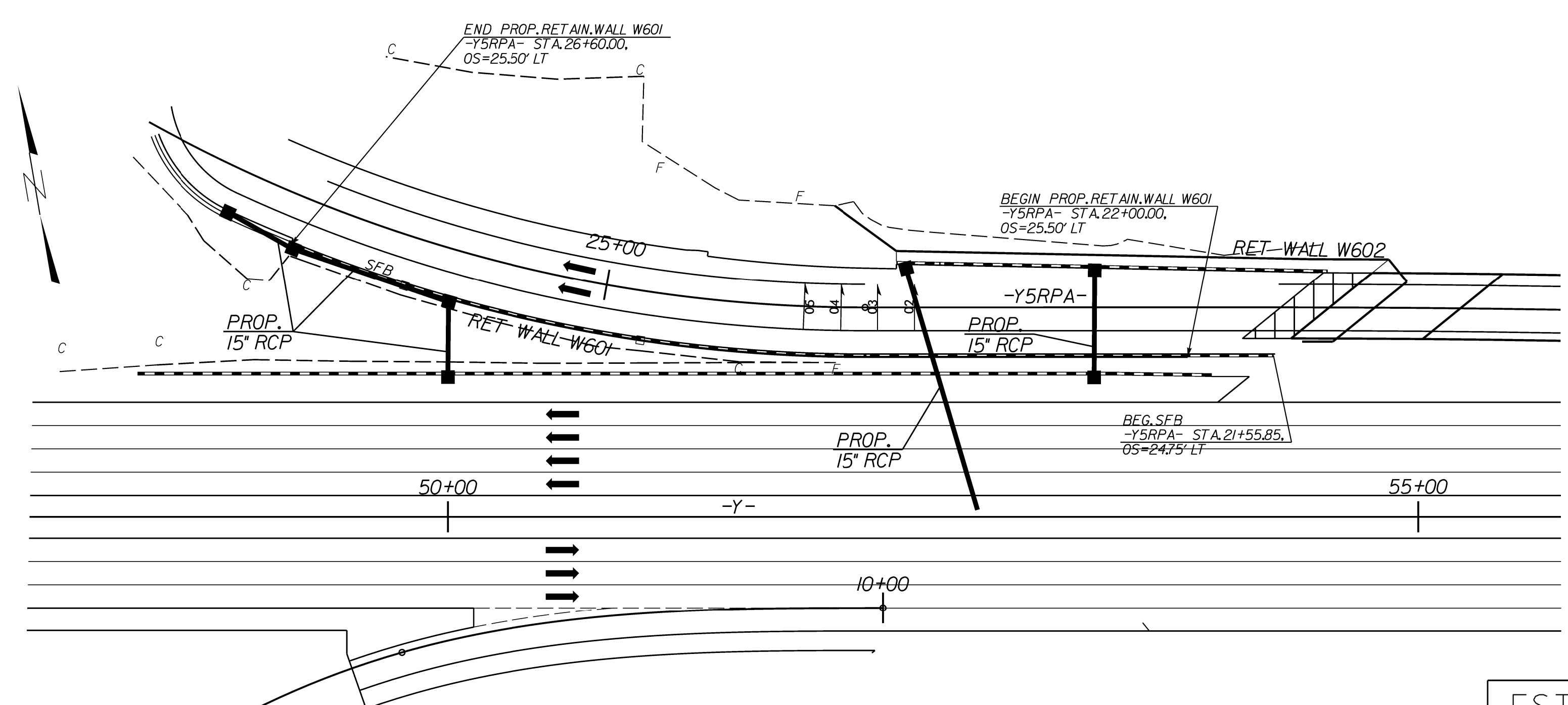
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DocuSigned by:
Stephen Crockett
5/14/2024

ENGINEER

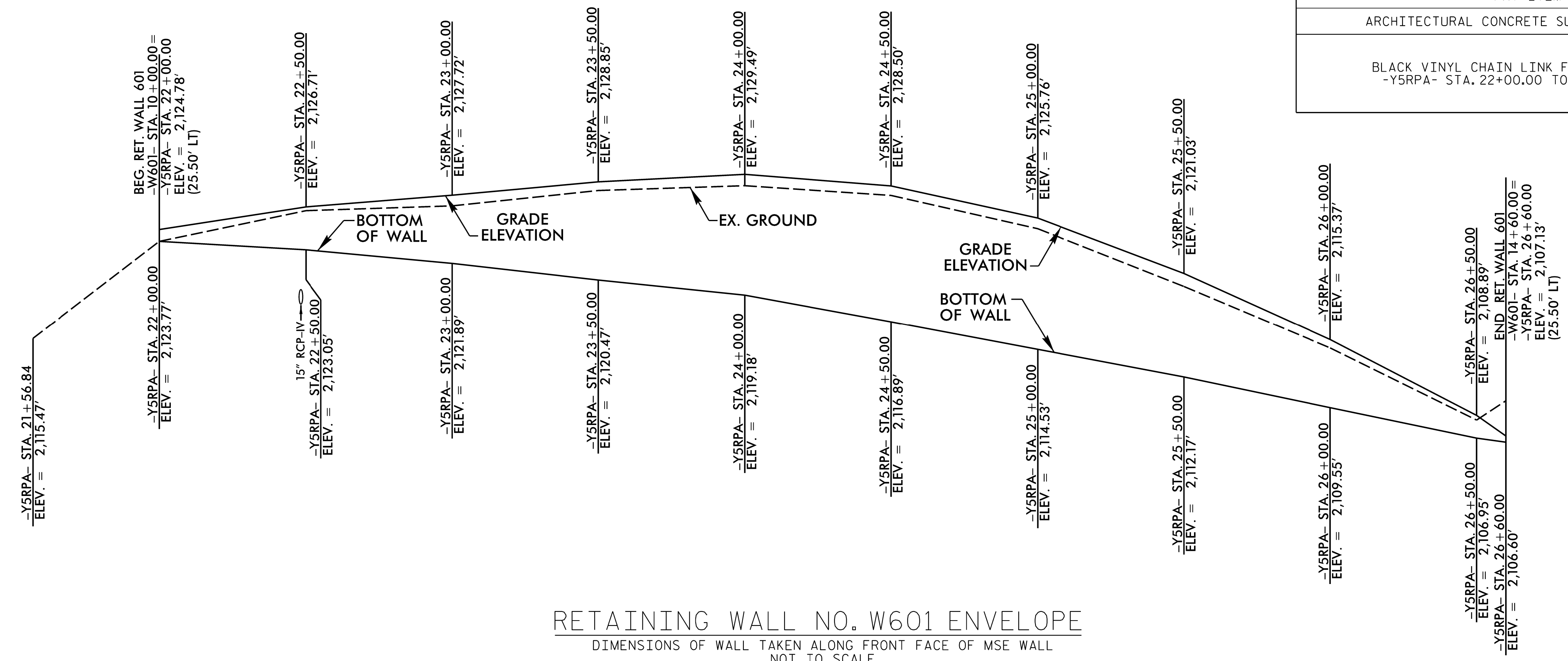
SIGNATURE DATE

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UNLESS ALL SIGNATURES COMPLETED**



RETAINING WALL NO. W601 PLAN
NOT TO SCALE

ESTIMATED SOIL NAIL WALL QUANTITIES			
RETAINING WALL NO.	SOIL NAIL RETAINING WALLS (SQ. FEET)	SOIL NAIL VERIFICATION TESTS	SOIL NAIL PROOF TESTS
W601	3,850	2	8
PAY ITEM		QUANTITY	
ARCHITECTURAL CONCRETE SURFACE TREATMENT		3,850 SQ FT	
BLACK VINYL CHAIN LINK FENCE, 48" FABRIC -Y5RPA- STA. 22+00.00 TO STA. 26+60.00		FABRIC (LF)	470
		4" POSTS (EA)	39
		5" POSTS (EA)	5



RETAINING WALL NO. W601 ENVELOPE
DIMENSIONS OF WALL TAKEN ALONG FRONT FACE OF MSE WALL
NOT TO SCALE

PROJECT NO.: I-2513AA/AB
BUNCOMBE COUNTY
STATION: -Y5RPA- 22+00.00 TO 26+60.00
SHEET 6 OF 11 WALL ID W601

PREPARED BY: S. CROCKETT DATE: 9/5/23
REVIEWED BY: J. HAMM DATE: 9/7/23

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

**GEOTECHNICAL
ENGINEERING UNIT**

REVISIONS					
NO.	BY	DATE	NO.	BY	DATE
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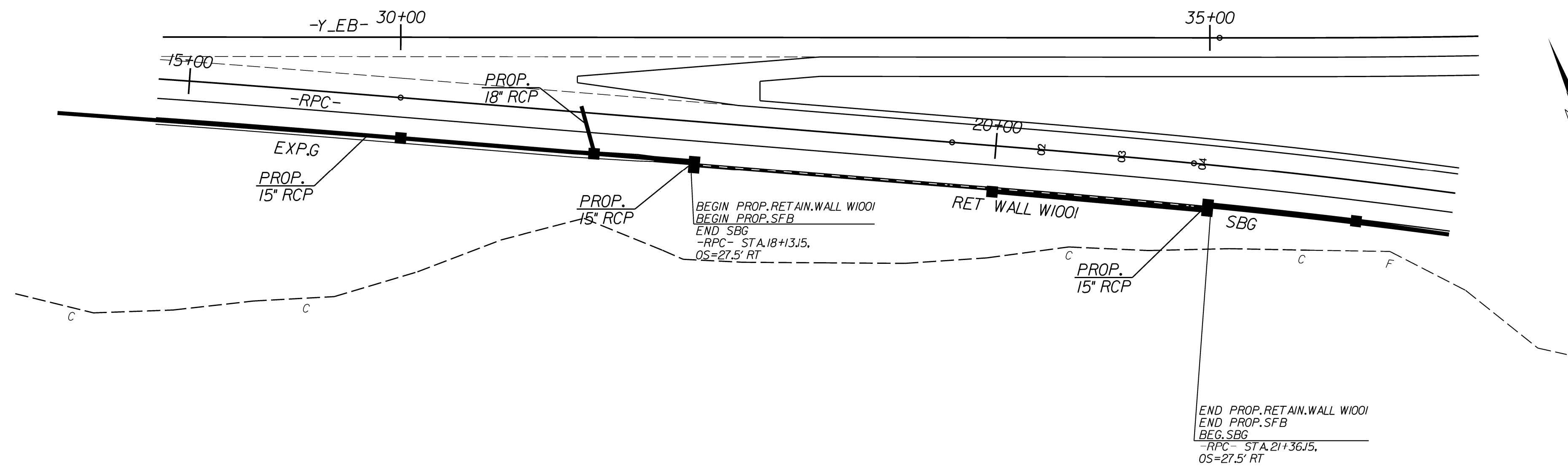
SHEET NO. W-6

GEOTECHNICAL ENGINEER

ENGINEER

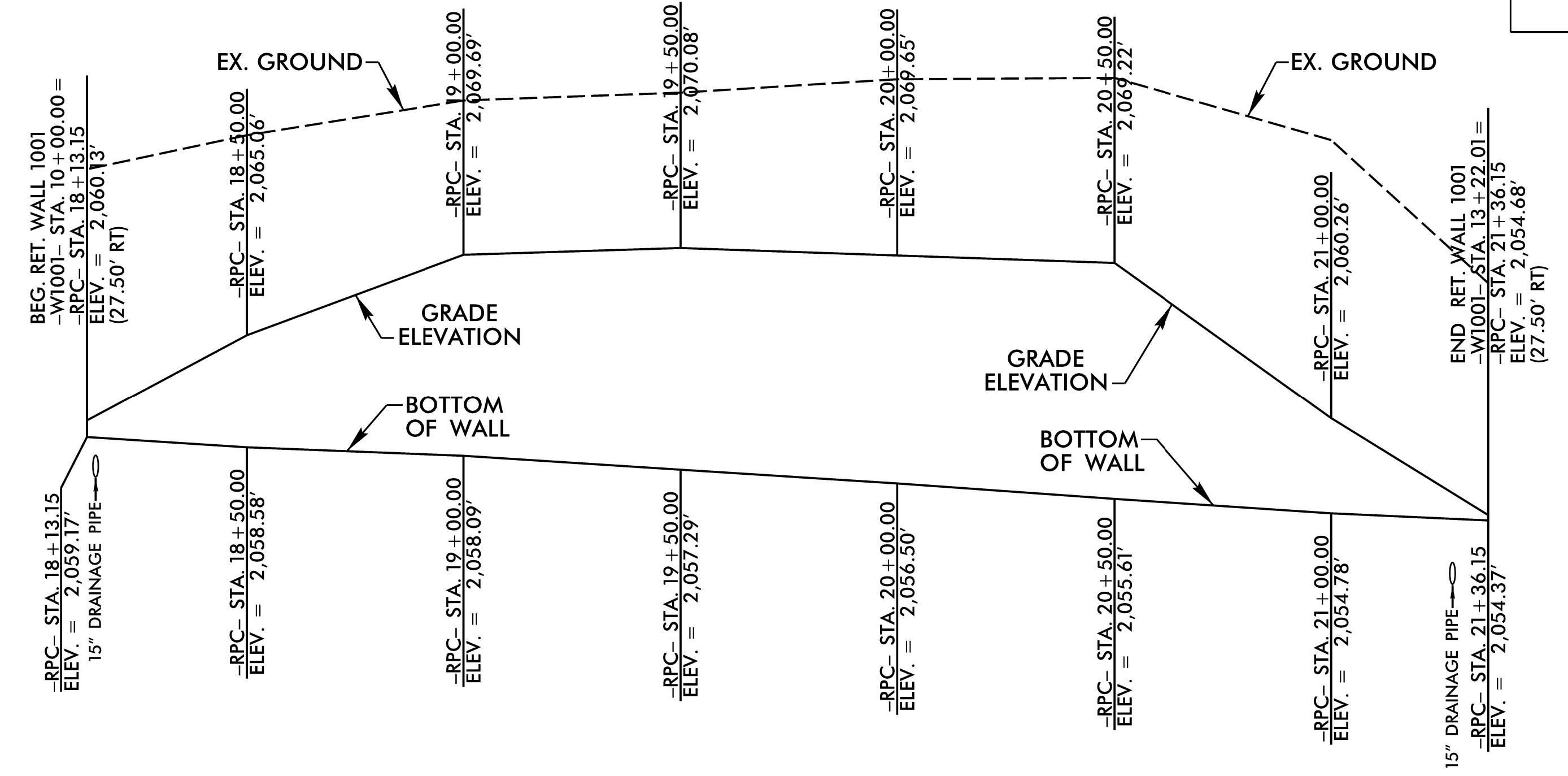
DocuSigned by:
Stephen Crockett 5/14/2024
CSCASFD48E0435
 SIGNATURE DATE SIGNATURE DATE

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 UNLESS ALL SIGNATURES COMPLETED**



RETAINING WALL NO. W1001 PLAN
 NOT TO SCALE

ESTIMATED SOIL NAIL WALL QUANTITIES			
RETAINING WALL NO.	SOIL NAIL RETAINING WALLS (SQUARE FEET)	SOIL NAIL VERIFICATION TESTS	SOIL NAIL PROOF TESTS
W1001	3,400	2	7
PAY ITEM			QUANTITY
ARCHITECTURAL CONCRETE SURFACE TREATMENT			3,400 SQ FT



RETAINING WALL NO. W1001 ENVELOPE
 DIMENSIONS OF WALL TAKEN ALONG FRONT FACE OF MSE WALL
 NOT TO SCALE

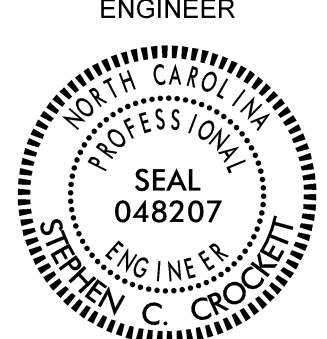
PROJECT NO.: I-2513AA/AB
 BUNCOMBE COUNTY
 STATION: -RPC- 18+13.15 TO 21+36.15
 SHEET 7 OF 11 WALL ID W1001

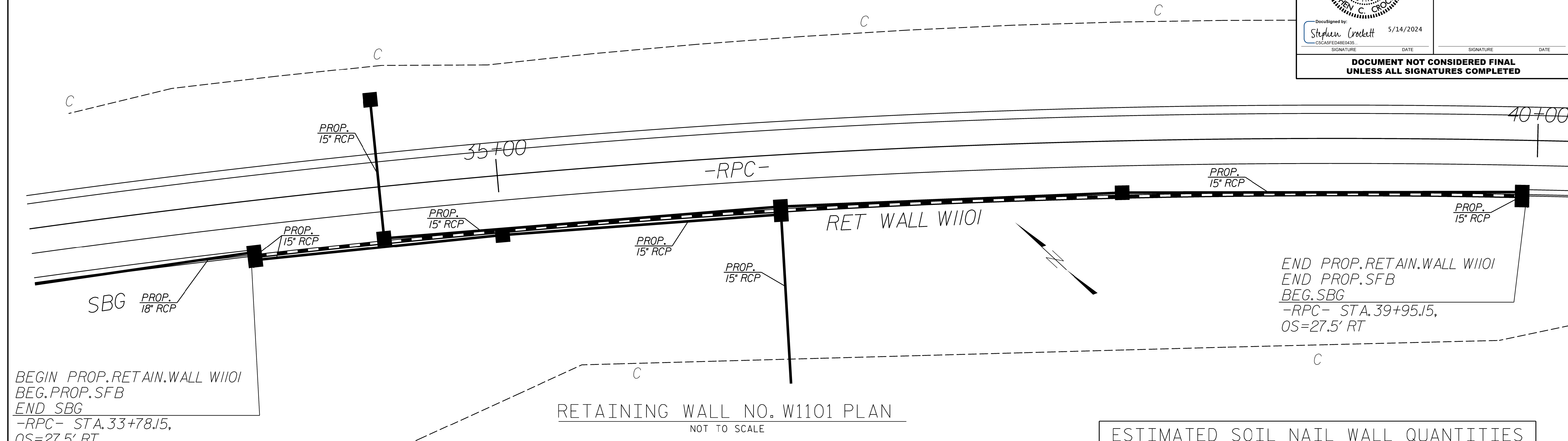
PREPARED BY: S. CROCKETT	DATE: 9/5/23
REVIEWED BY: J. HAMM	DATE: 9/7/23

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

**GEOTECHNICAL
 ENGINEERING UNIT**

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

GEOTECHNICAL ENGINEER  SEAL 048207 ENGINEER STEPHEN C. CROCKETT	ENGINEER SIGNATURE: _____ DATE: _____
DocuSigned by: Stephen Crockett 5/14/2024 SIGNATURE: _____ DATE: _____	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

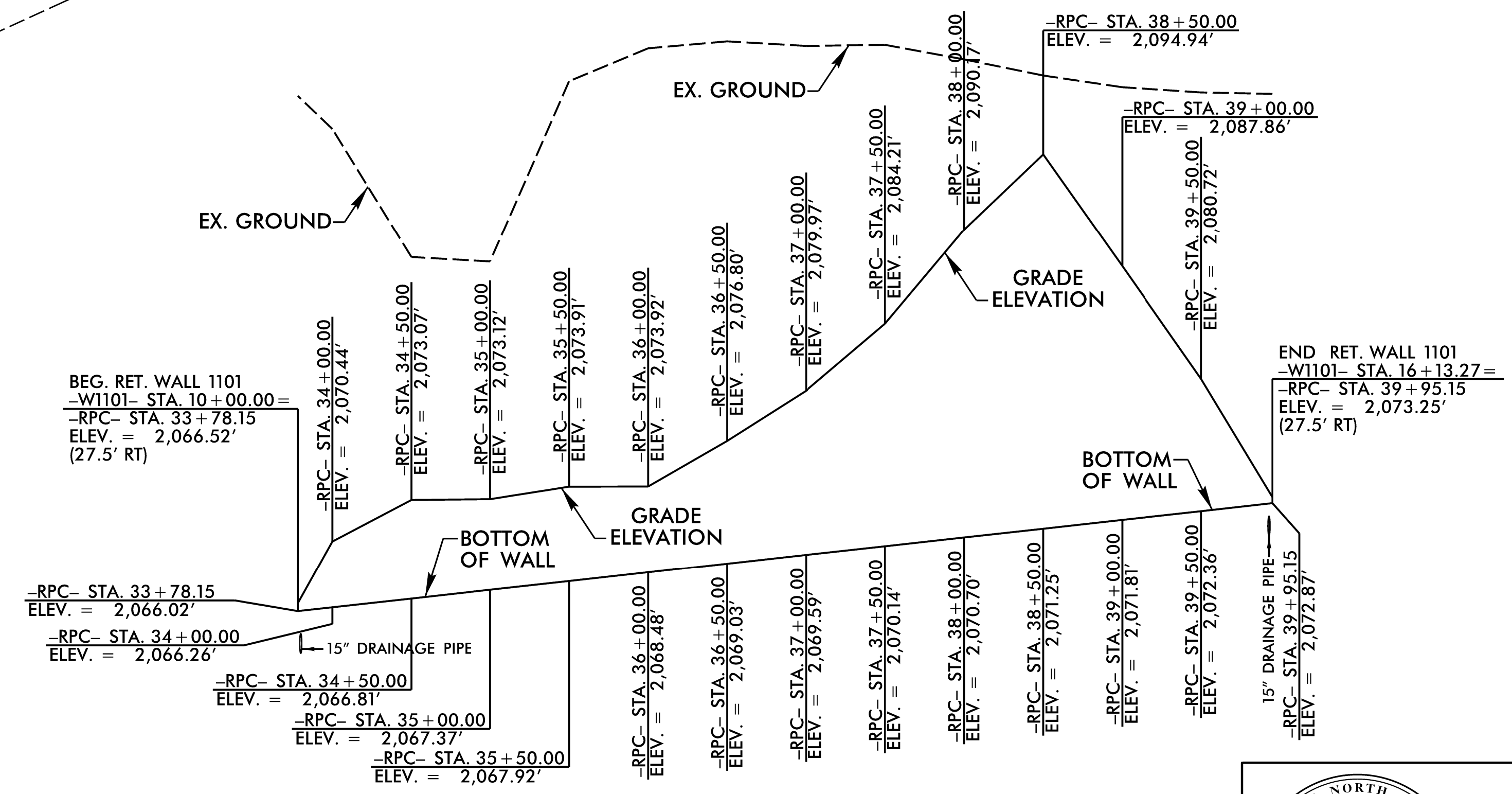


BEGIN PROP. RETAIN. WALL W1101
 BEG. PROP. SFB
 END SBG
 -RPC- STA. 33+78.15,
 OS=27.5' RT

END PROP. RETAIN. WALL W1101
 END PROP. SFB
 BEG. SBG
 -RPC- STA. 39+95.15,
 OS=27.5' RT

RETAINING WALL NO. W1101 PLAN
 NOT TO SCALE

ESTIMATED SOIL NAIL WALL QUANTITIES			
RETAINING WALL NO.	SOIL NAIL RETAINING WALLS (SQ. FEET)	SOIL NAIL VERIFICATION TESTS	SOIL NAIL PROOF TESTS
W1101	6,925	2	14
PAY ITEM			QUANTITY
ARCHITECTURAL CONCRETE SURFACE TREATMENT			6,925 SQ FT



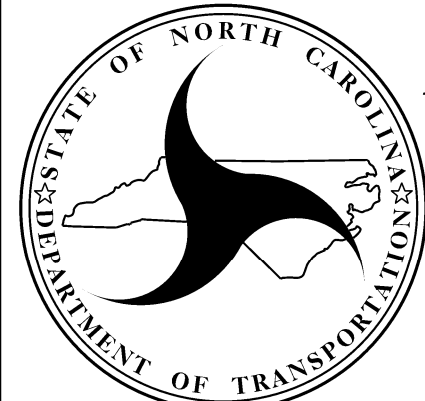
BEG. RET. WALL 1101
 -W1101- STA. 10+00.00=
 -RPC- STA. 33+78.15
 ELEV. = 2,066.52'
 (27.5' RT)

END RET. WALL 1101
 -W1101- STA. 16+13.27=
 -RPC- STA. 39+95.15
 ELEV. = 2,073.25'
 (27.5' RT)

RETAINING WALL NO. W1101 ENVELOPE
 DIMENSIONS OF WALL TAKEN ALONG FRONT FACE OF MSE WALL
 NOT TO SCALE

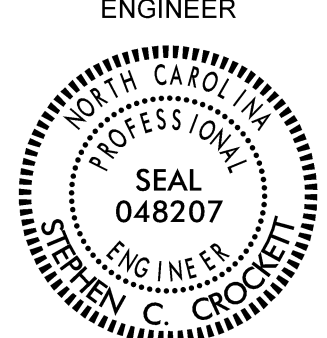
PROJECT NO.: I-2513AA/AB
 BUNCOMBE COUNTY
 STATION: -RPC- 33+78.15 TO 39+95.15
 SHEET 8 OF 11 WALL ID W1101

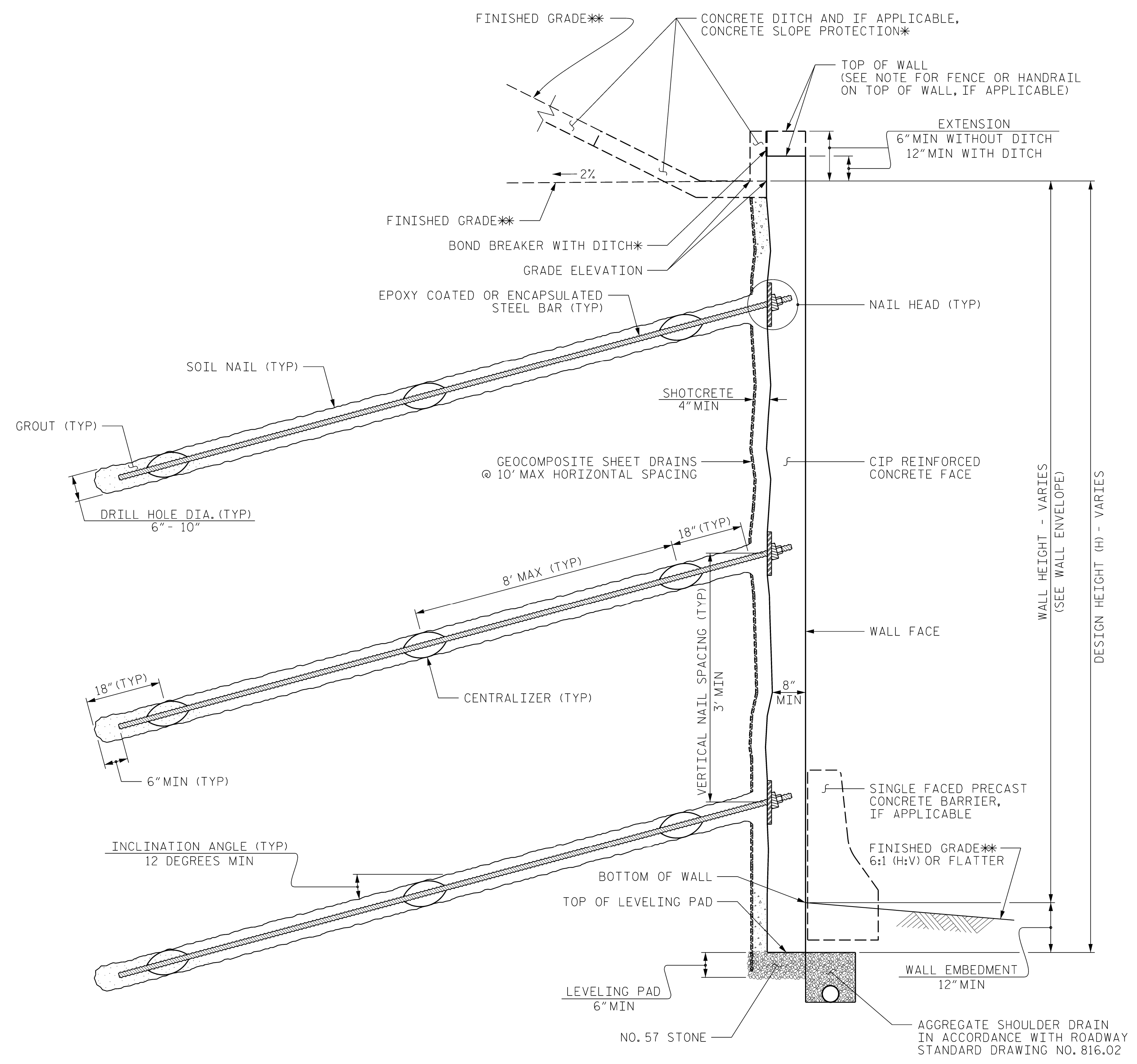
PREPARED BY: S. CROCKETT DATE: 9/5/23
 REVIEWED BY: J. HAMM DATE: 9/7/23


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

**GEOTECHNICAL
 ENGINEERING UNIT**

REVISIONS						SHEET NO. W-8
NO.	BY	DATE	NO.	BY	DATE	
1			3			
2			4			

GEOTECHNICAL ENGINEER  SEAL 048207 ENGINEER STEPHEN C. CROCKETT	ENGINEER _____ SIGNATURE DATE
Designed by: <u>Stephen Crockett</u> 5/14/2024 SIGNATURE DATE	_____ SIGNATURE DATE
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



SOIL NAIL WALL - TYPICAL SECTION

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

NOTES:

FOR SOIL NAIL RETAINING WALLS, SEE SOIL NAIL RETAINING WALLS PROVISION.

FOR STEEL BEAM GUARDRAIL, SEE ROADWAY PLANS AND SECTION 862 OF THE STANDARD SPECIFICATIONS.

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

A FENCE IS REQUIRED ON TOP OF RETAINING WALL NO. W601. SEE ROADWAY PLANS FOR FENCE OR HANDRAIL ATTACHMENT DETAILS.

AN ASHLAR ARCHITECTURAL FINISH IS REQUIRED FOR THE CIP REINFORCED CONCRETE FACE FOR RETAINING WALL NO. W601.

A DRystack ARCHITECTURAL FINISH IS REQUIRED FOR THE CIP REINFORCED CONCRETE FACE FOR RETAINING WALLS NO. W1001, AND W1101.

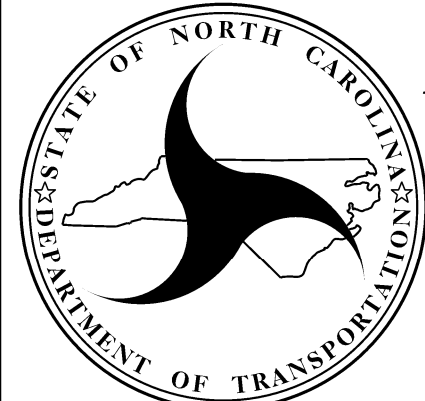
BEFORE BEGINNING SOIL NAIL WALL DESIGN FOR RETAINING WALLS NO. W601, W1001, AND W1101, SURVEY WALL LOCATION AND SUBMIT A REVISED WALL PROFILE VIEW (WALL ENVELOPE) FOR REVIEW. DO NOT START WALL DESIGN OR CONSTRUCTION UNTIL THE REVISED WALL ENVELOPE IS ACCEPTED.

DESIGN RETAINING WALL NO. W601, W1001, AND W1101 FOR THE FOLLOWING:

- 1) DESIGN HEIGHT (H) = WALL HEIGHT + WALL EMBEDMENT
- 2) DESIGN LIFE = 100 YEARS
- 3) MINIMUM WALL EMBEDMENT DEPTH = 1.0 FT
- 4) W601 IN-SITU ASSUMED MATERIAL PARAMETERS:
 UNIT WEIGHT, $\gamma = 120$ PCF
 FRICTION ANGLE, $\phi = 30$ DEGREES
 COHESION, $c = 0$ PSF
- 5) W1001 IN-SITU ASSUMED MATERIAL PARAMETERS:
 UNIT WEIGHT, $\gamma = 125$ PCF
 FRICTION ANGLE, $\phi = 32$ DEGREES
 COHESION, $c = 0$ PSF
- 6) W1101 IN-SITU ASSUMED MATERIAL PARAMETERS -W1101- STA.10+00 TO 13+00:
 UNIT WEIGHT, $\gamma = 130$ PCF
 FRICTION ANGLE, $\phi = 34$ DEGREES
 COHESION, $c = 0$ PSF
- W1101 IN-SITU ASSUMED MATERIAL PARAMETERS -W1101- STA.13+00 TO 16+13.27:
 UNIT WEIGHT, $\gamma = 125$ PCF
 FRICTION ANGLE, $\phi = 32$ DEGREES
 COHESION, $c = 0$ PSF

EXISTING OR FUTURE OBSTRUCTIONS SUCH AS FOUNDATIONS, GUARDRAIL, FENCE OR HANDRAIL POSTS, PAVEMENTS, PIPES, INLETS OR UTILITIES WILL INTERFERE WITH SOIL NAILS FOR RETAINING WALL NO. W601.

PREPARED BY: S. CROCKETT	DATE: 9/5/23
REVIEWED BY: J. HAMM	DATE: 9/7/23



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

**GEOTECHNICAL
ENGINEERING UNIT**

PROJECT NO.: I-2513AA/AB
 BUNCOMBE COUNTY
 STATION: VARIES
 SHEET 9 OF 11 WALL ID W601, W1001, W1101

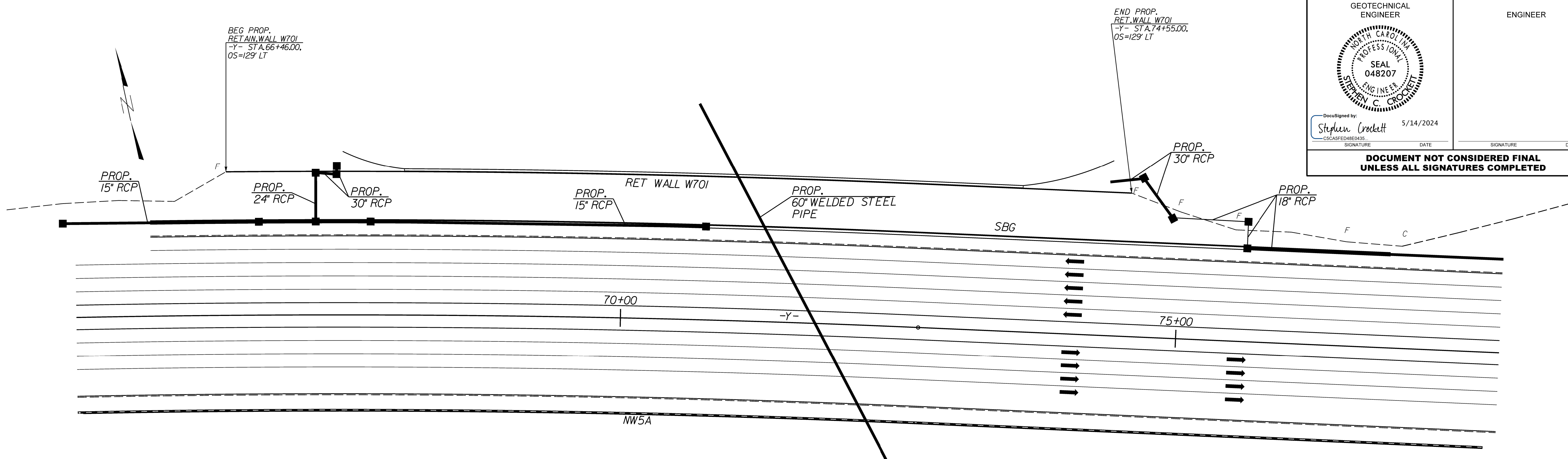
REVISIONS						SHEET NO. W-9
NO.	BY	DATE	NO.	BY	DATE	
1			3			
2			4			

ENGINEER

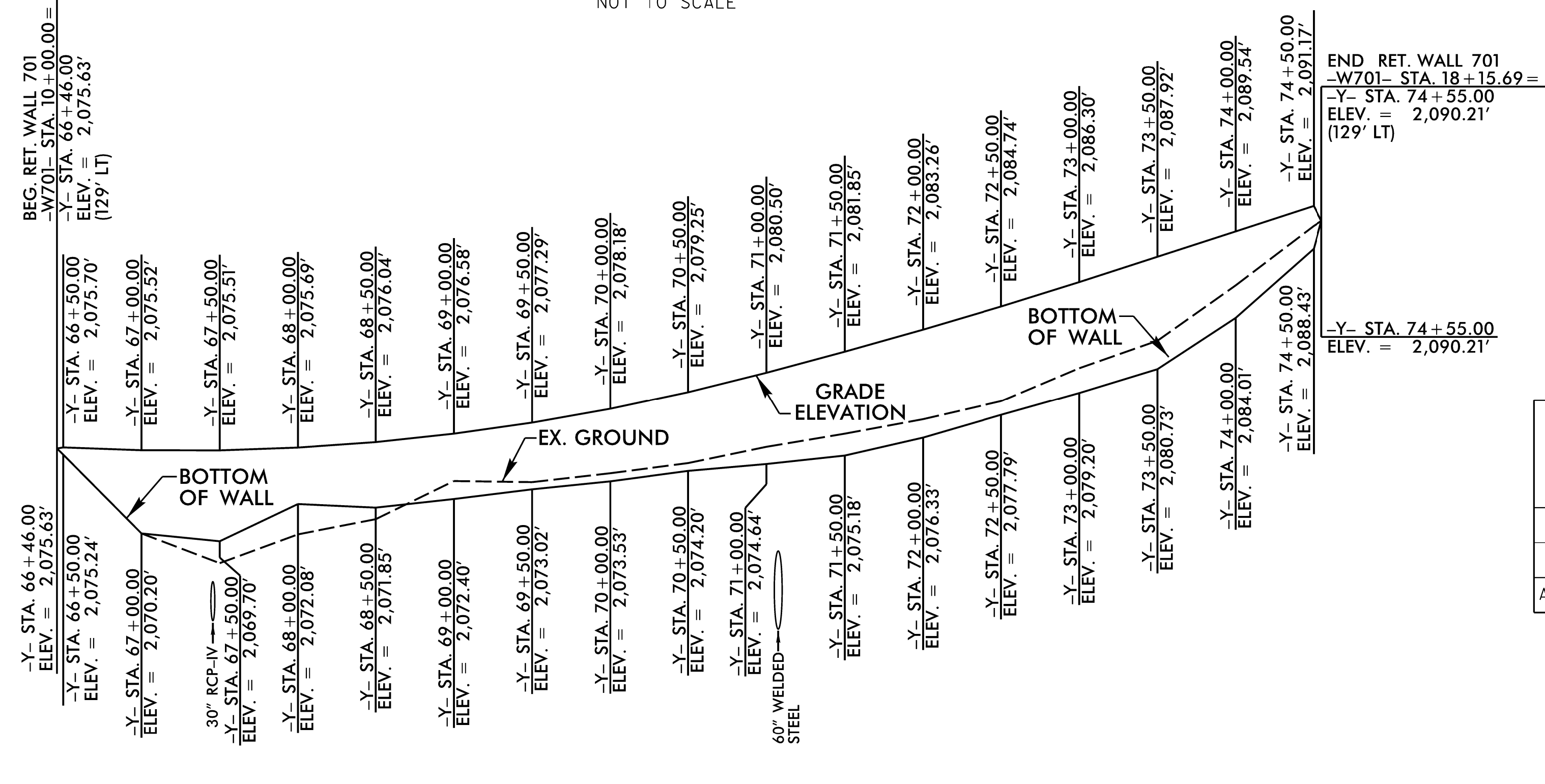
DocuSigned by:
Stephen Crockett
5/14/2024

DATE: 5/14/2024

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RETAINING WALL NO. W701 PLAN
NOT TO SCALE



ESTIMATED SOLDIER PILE WALL QUANTITIES (SQ. FEET)	
SOLDIER PILE RETAINING WALL	5,050 SF
PAY ITEM	QUANTITY
ARCHITECTURAL CONCRETE SURFACE TREATMENT	5,050 SF

RETAINING WALL NO. W701 ENVELOPE
DIMENSIONS OF WALL TAKEN ALONG FRONT FACE OF MSE WALL
NOT TO SCALE

PROJECT NO.: I-2513AA/AB
BUNCOMBE COUNTY
STATION: -Y- 66+46.00 TO 74+55.00
SHEET 10 OF 11 WALL ID W701

PREPARED BY: S. CROCKETT DATE: 9/5/23
REVIEWED BY: J. HAMM DATE: 9/7/23

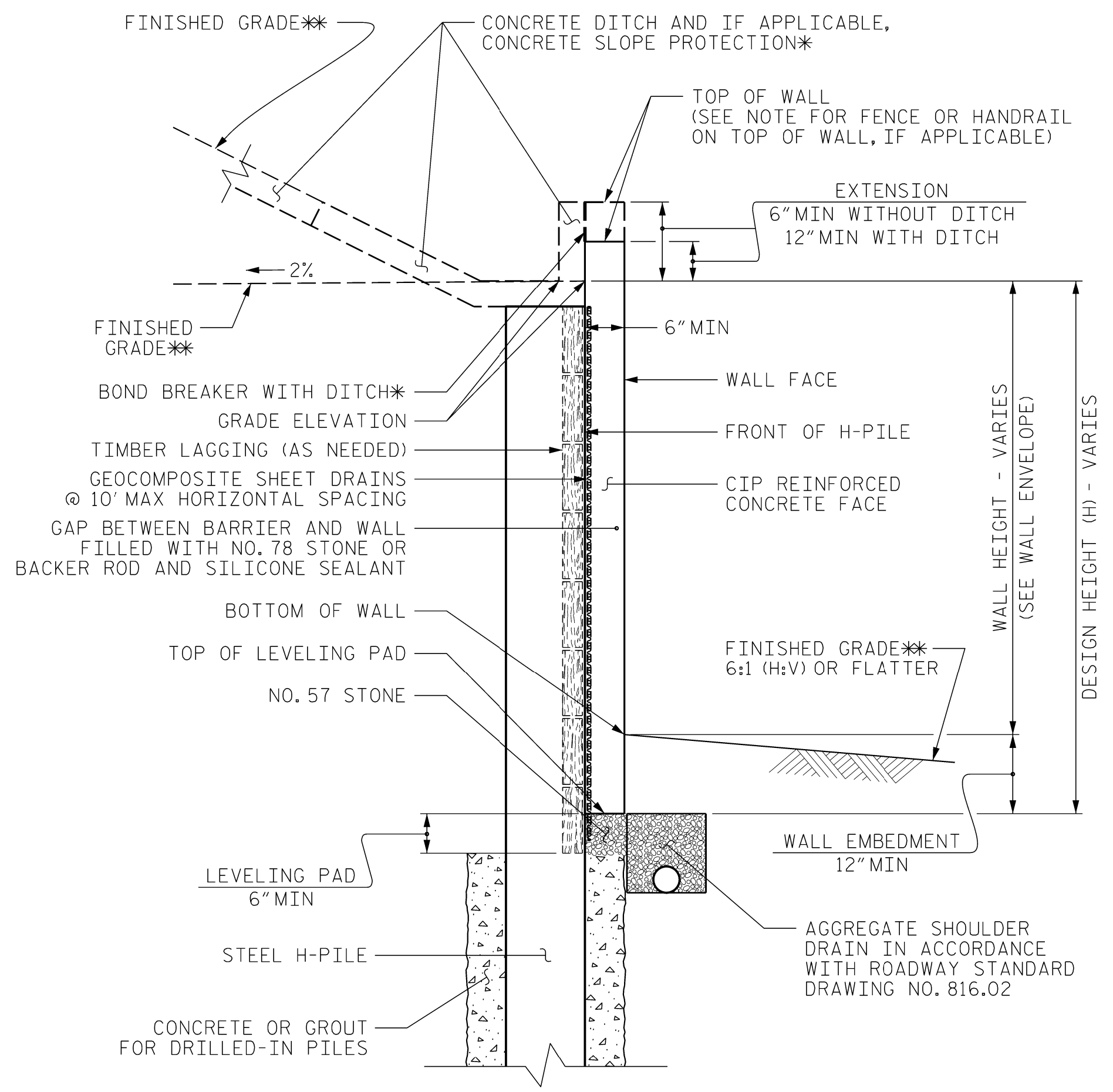
**NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS**

**GEOTECHNICAL
ENGINEERING UNIT**

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

**RETAINING WALL NO. W701
WALL PLAN AND ENVELOPE**

SHEET NO.
W-10



SOLDIER PILE WALL WITH CIP FACE - TYPICAL SECTION

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

NOTES:

FOR SOLDIER PILE RETAINING WALLS, SEE SOLDIER PILE RETAINING WALLS PROVISION.
 A FENCE IS REQUIRED ON TOP OF RETAINING WALL NO. W701. SEE ROADWAY PLANS FOR FENCE ATTACHMENT DETAILS.
 AT THE CONTRACTOR'S OPTION, USE DRIVEN H-PILES FOR RETAINING WALL NO. W701.
 USE A SOLDIER PILE RETAINING WALL WITH A CIP REINFORCED CONCRETE FACE FOR RETAINING WALL NO. W701.
 A DRYSTACK ARCHITECTURAL FINISH IS REQUIRED FOR CIP REINFORCED CONCRETE FACE FOR RETAINING WALL NO. W701.
 BEFORE BEGINNING SOLDIER PILE WALL DESIGN FOR RETAINING WALL NO. W701, 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. W701 FOR THE FOLLOWING:
 1) DESIGN HEIGHT (H) = WALL HEIGHT + WALL EMBEDMENT
 2) DESIGN LIFE = 100 YEARS
 3) MINIMUM WALL EMBEDMENT DEPTH = 1.0 FT
 4) IN-SITU ASSUMED MATERIAL PARAMETERS:
 UNIT WEIGHT, $\gamma = 120$ PCF
 FRICTION ANGLE, $\phi = 30$ DEGREES
 COHESION, $c = 0$ PSF

GEOTECHNICAL ENGINEER DocuSigned by: Stephen Crockett SIGNATURE	ENGINEER DATE: 5/14/2024
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PREPARED BY: S. CROCKETT	DATE: 9/5/23
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 DEPARTMENT OF TRANSPORTATION
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**GEOTECHNICAL
 ENGINEERING UNIT**

PROJECT NO.: I-2513AA/AB
 BUNCOMBE COUNTY
 STATION: VARIES
 SHEET 11 OF 11 WALL ID W701

REVISIONS						SHEET NO. W-11
NO.	BY	DATE	NO.	BY	DATE	
1			3			
2			4			

SOLDIER PILE WALL TYPICAL AND NOTES FOR RETAINING WALL NO. W701