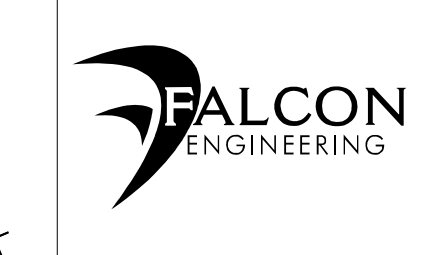
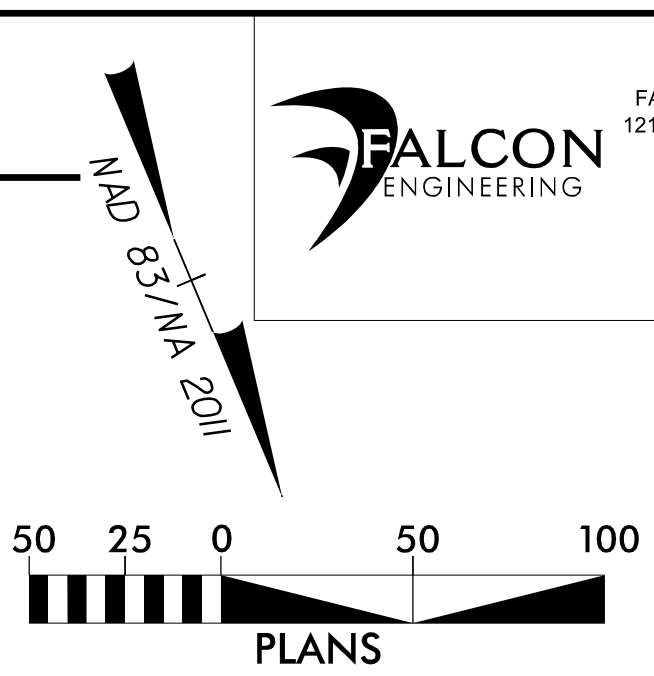
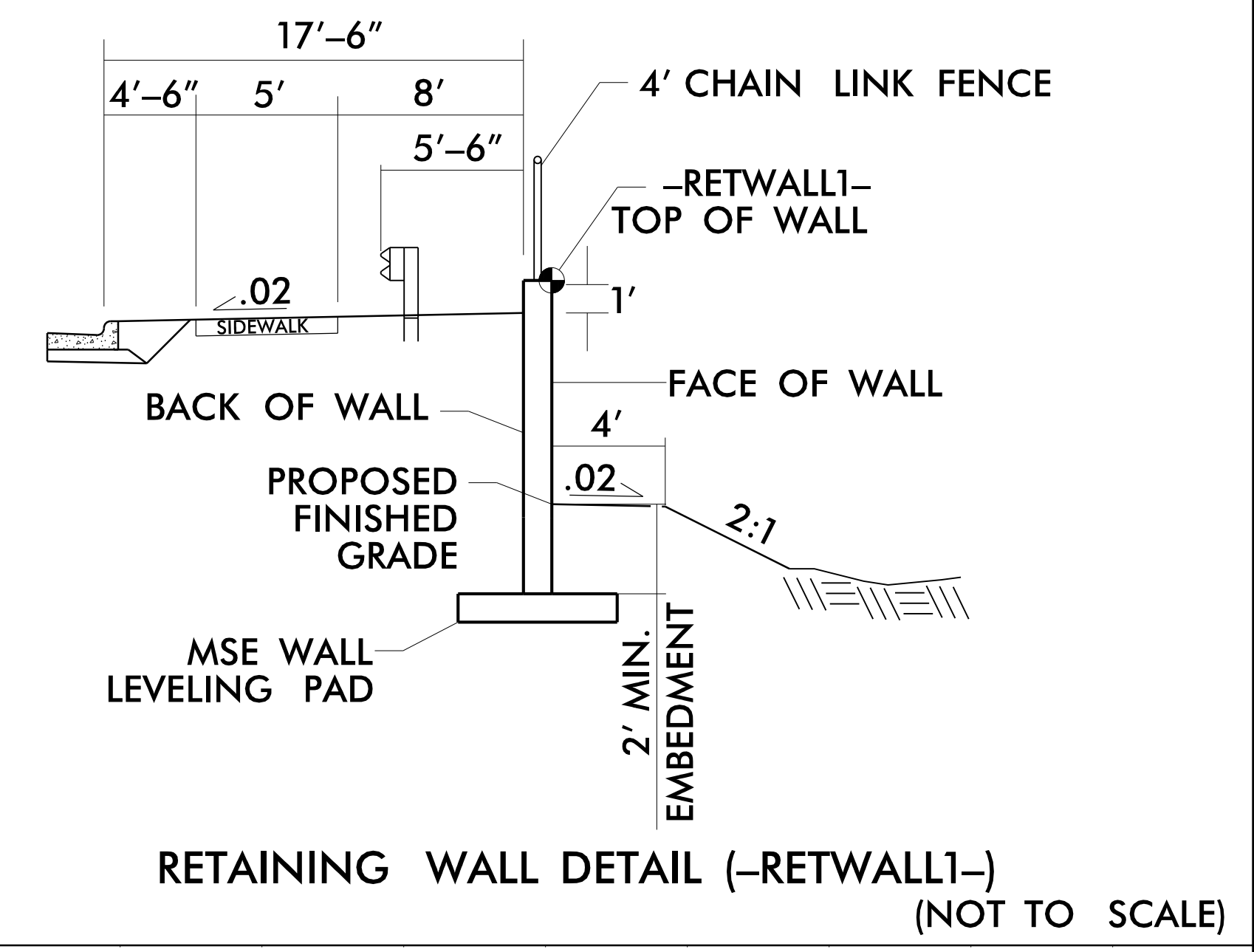
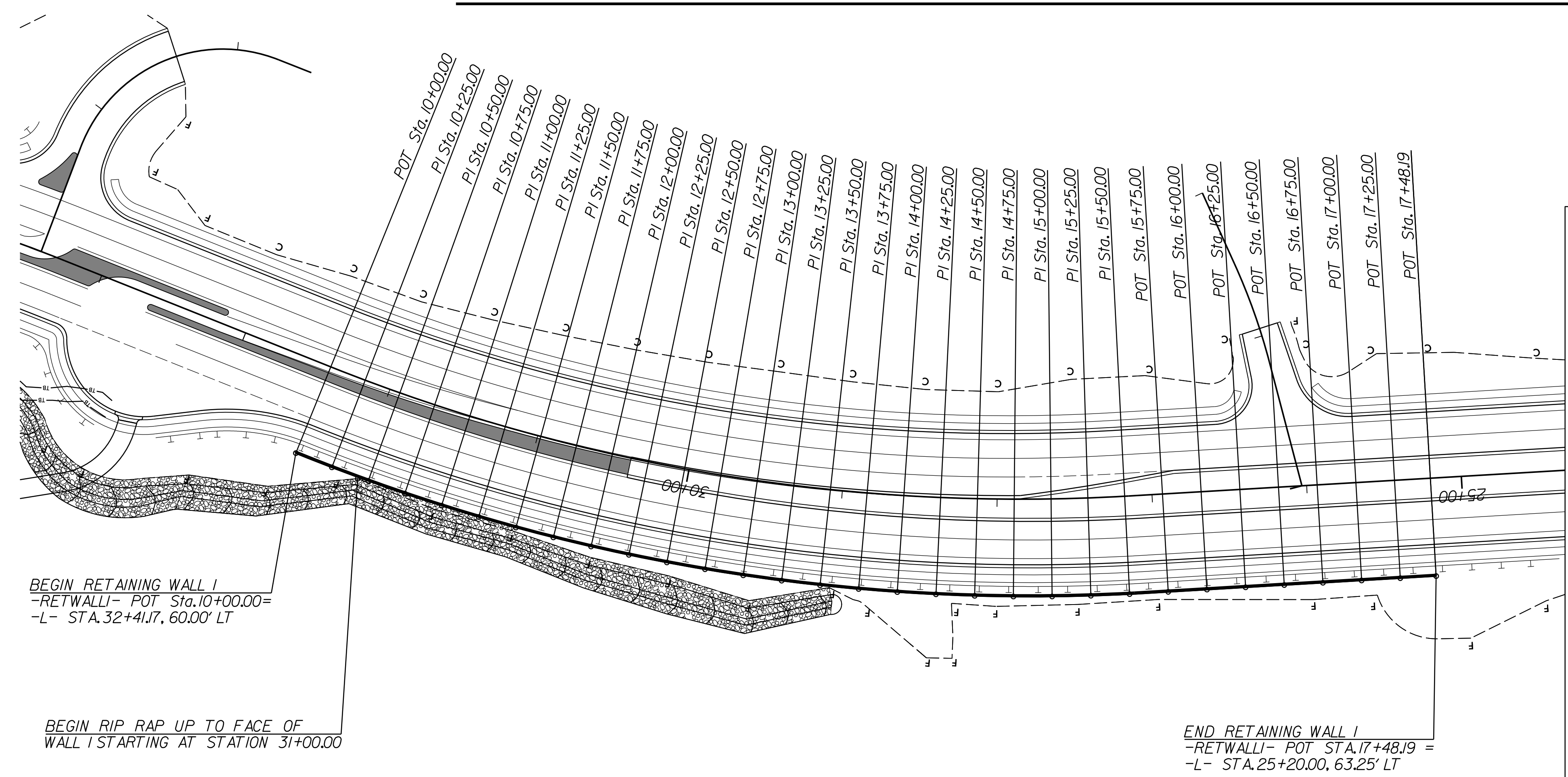


# RETAINING WALL ENVELOPE WALL 1



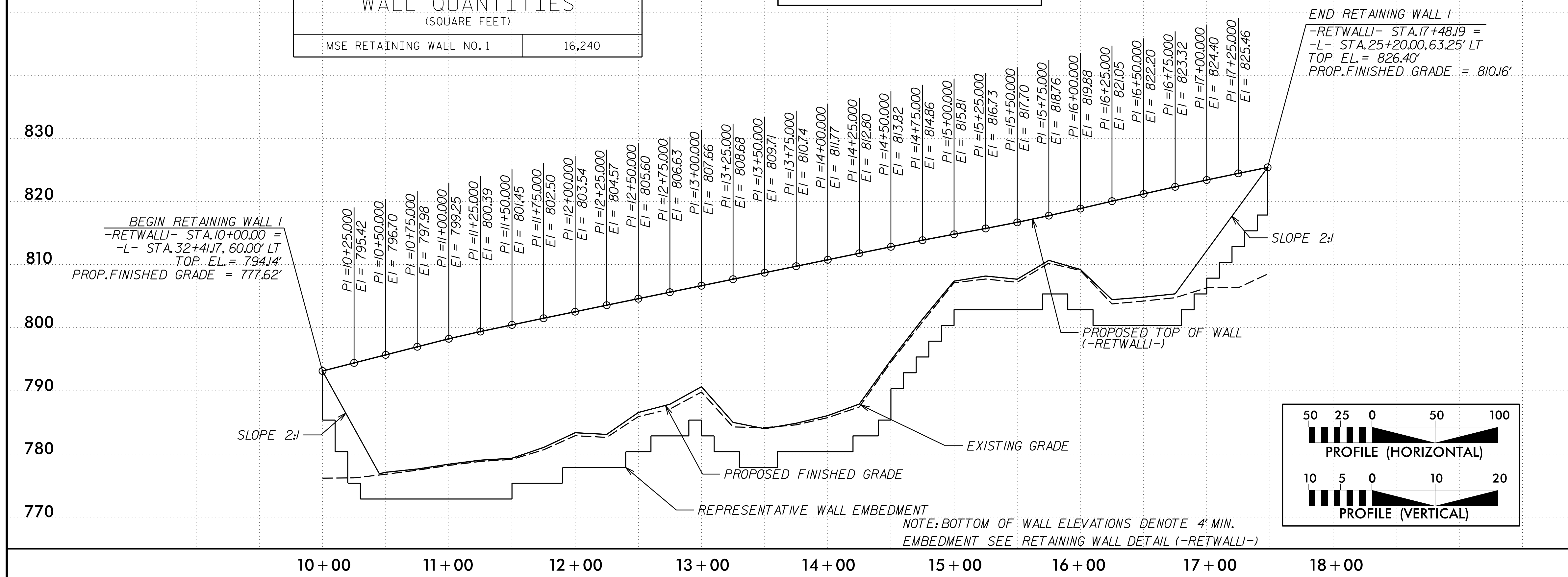
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CARY, NC 27513  
PHONE: 919.871.0800  
www.falconengineers.com  
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PROJECT REFERENCE NO. <i>R-3833C</i>	SHEET NO. <i>W-1</i>
GEOTECHNICAL ENGINEER	HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



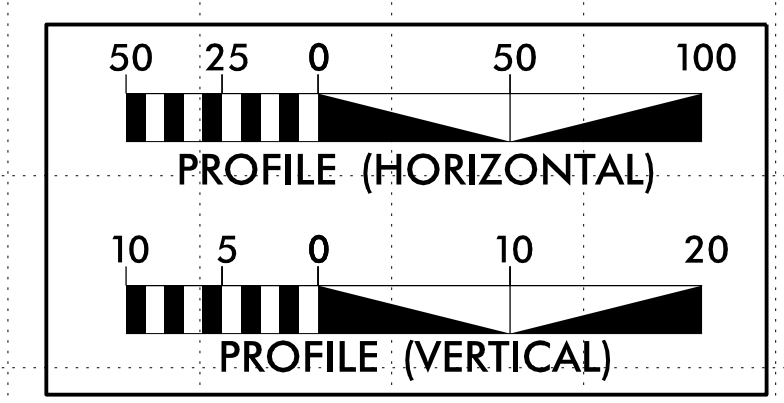
ESTIMATED MSE WALL QUANTITIES (SQUARE FEET)	
MSE RETAINING WALL NO. 1	16,240

## -RETWALL1-



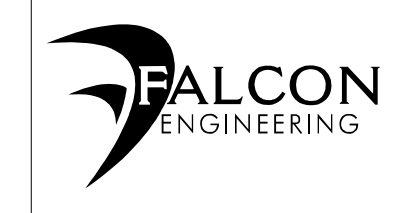
STATION (-WALL1-)	OFFSET (-L-)
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PI Sta. 10+50.00	60.2909 LT
PI Sta. 10+75.00	60.4368 LT
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PI Sta. 11+25.00	60.7298 LT
PI Sta. 11+50.00	60.8770 LT
PI Sta. 11+75.00	61.0244 LT
PI Sta. 12+00.00	61.1720 LT
PI Sta. 12+25.00	61.3199 LT
PI Sta. 12+50.00	61.4678 LT
PI Sta. 12+75.00	61.6159 LT
PI Sta. 13+00.00	61.7639 LT
PI Sta. 13+25.00	61.9120 LT
PI Sta. 13+50.00	62.0599 LT
PI Sta. 13+75.00	62.2076 LT
PI Sta. 14+00.00	62.3551 LT
PI Sta. 14+25.00	62.5024 LT
PI Sta. 14+50.00	62.6493 LT
PI Sta. 14+75.00	62.7958 LT
PI Sta. 15+00.00	62.9419 LT
PI Sta. 15+25.00	63.0874 LT
PI Sta. 15+50.00	63.2324 LT
PI Sta. 15+75.00	63.2500 LT
PI Sta. 16+00.00	63.2500 LT
PI Sta. 16+25.00	63.2500 LT
PI Sta. 16+50.00	63.2500 LT
PI Sta. 16+75.00	63.2500 LT
PI Sta. 17+00.00	63.2500 LT
PI Sta. 17+25.00	63.2500 LT
PI Sta. 17+48.19	63.2500 LT

NOTE: OFFSET TO FACE OF WALL






# RETAINING WALL ENVELOPE WALL 2 & 3



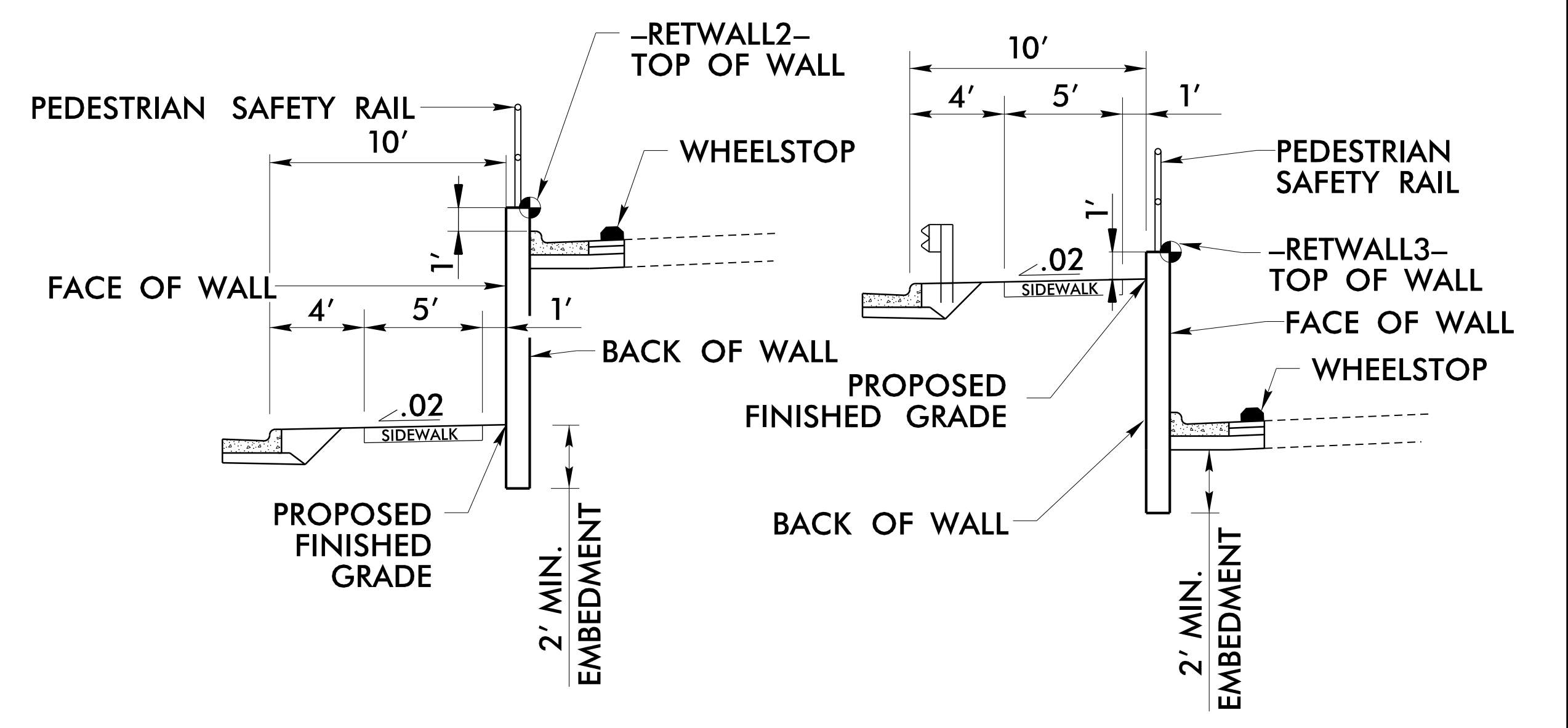
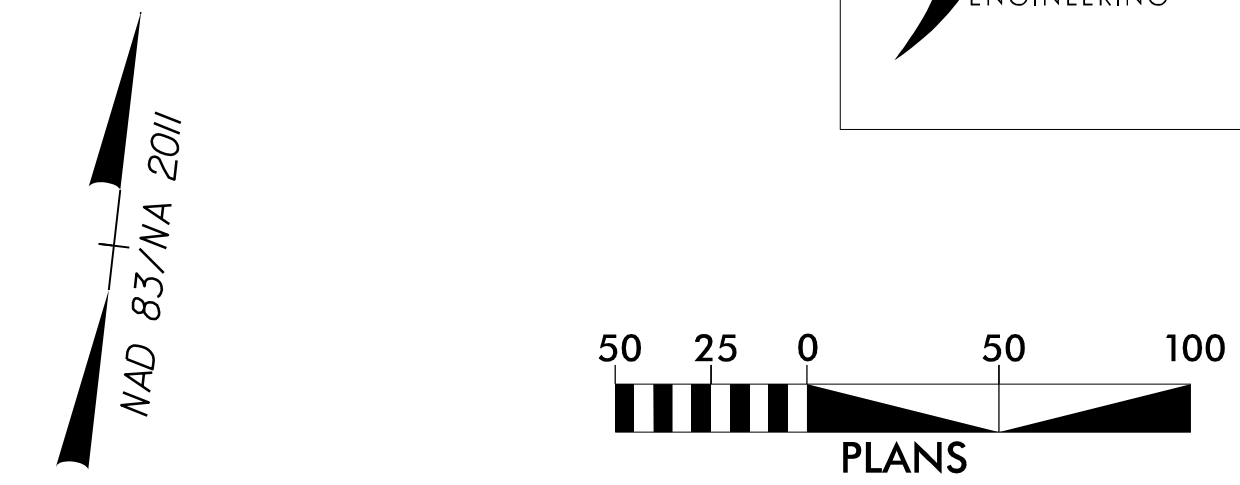
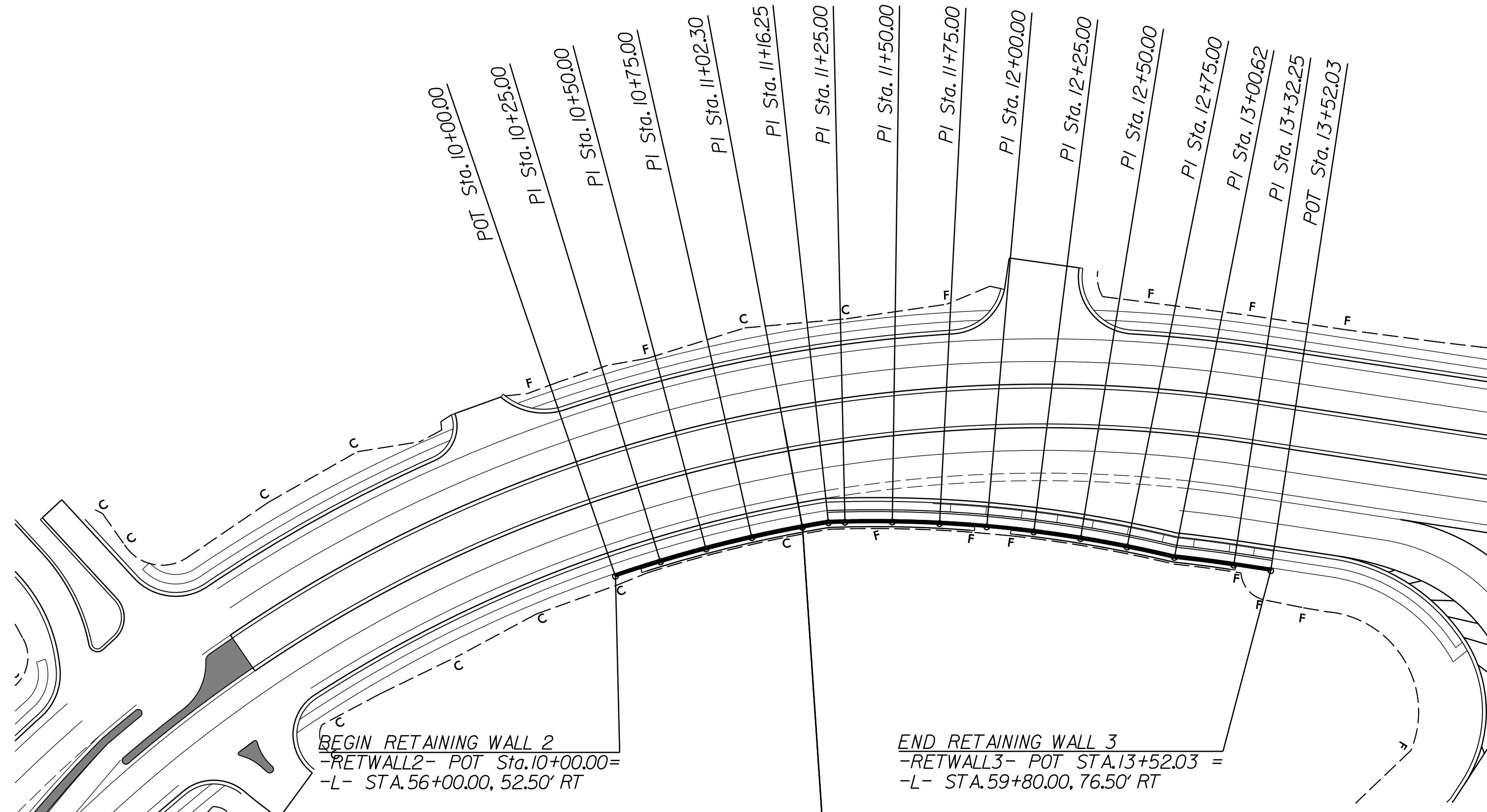
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PROJECT REFERENCE NO. <i>R-3833C</i>	SHEET NO. <i>W-2</i>
GEOTECHNICAL ENGINEER	HYDRAULICS ENGINEER

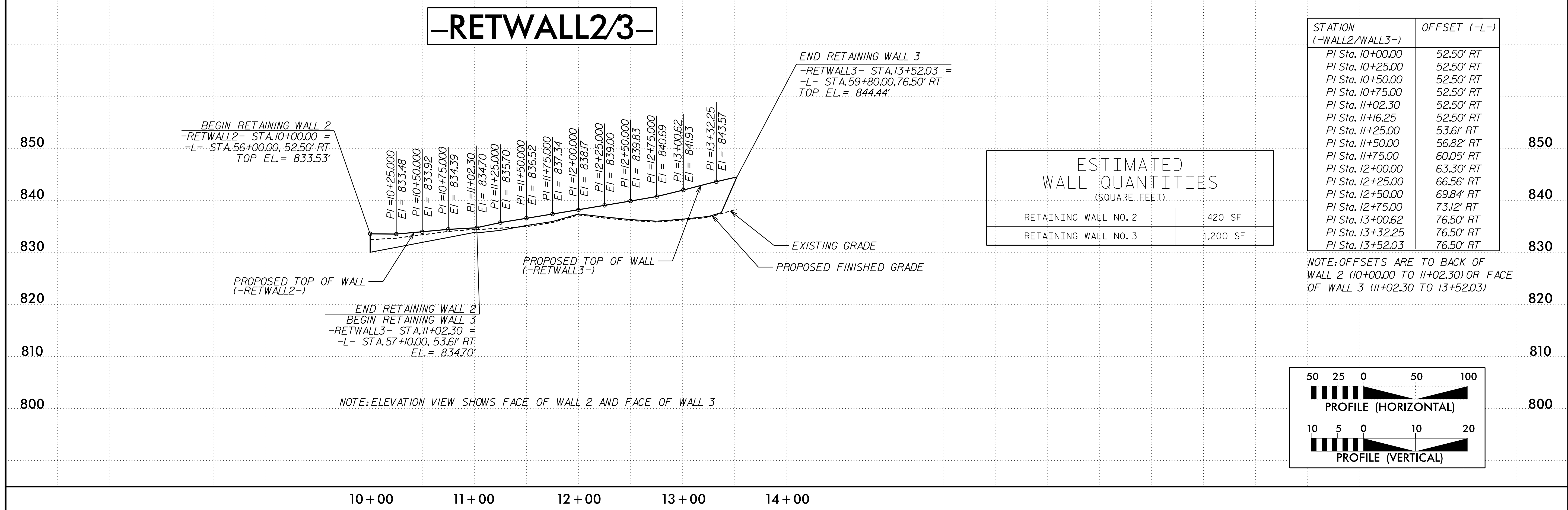


Seal No. 39779  
1/7/2022

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UNLESS ALL SIGNATURES COMPLETED

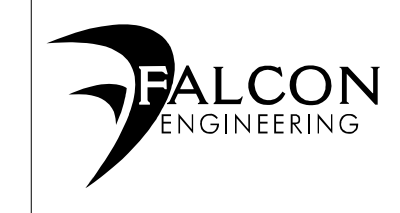


RETAINING WALL DETAILS (-RETWALL2- & -RETWALL3-) (NOT TO SCALE)





# RETAINING WALL ENVELOPE WALL 4



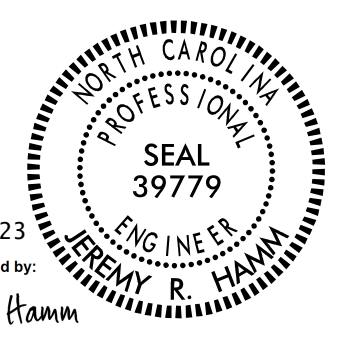
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CARY, NC 27513  
PHONE: 919.871.0800  
www.falconengineers.com  
Firm License No. C-3193

PROJECT REFERENCE NO.  
*R-3833C*

SHEET NO.  
*W-3*

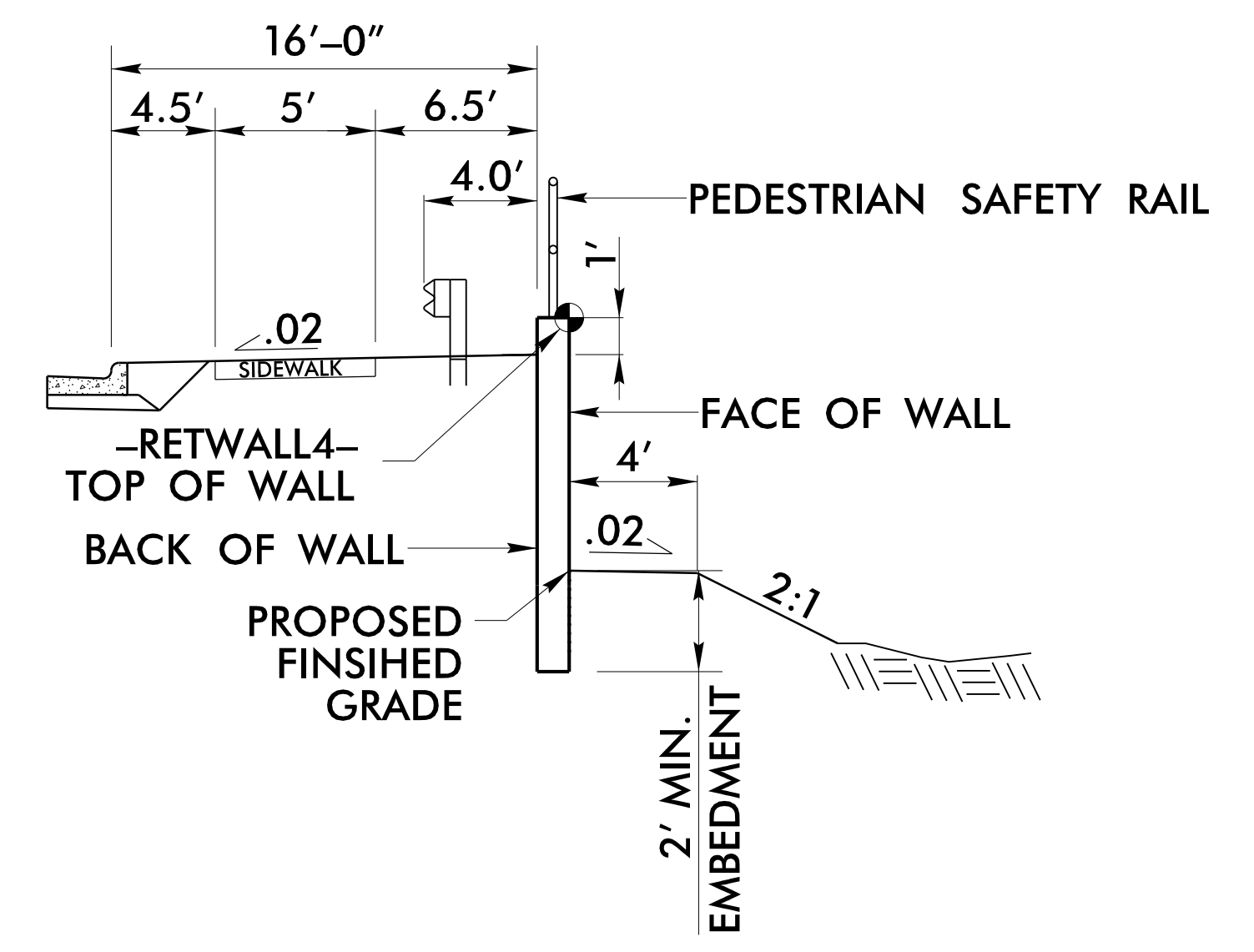
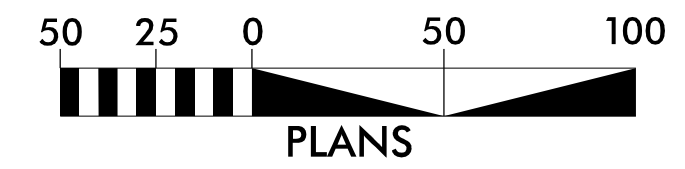
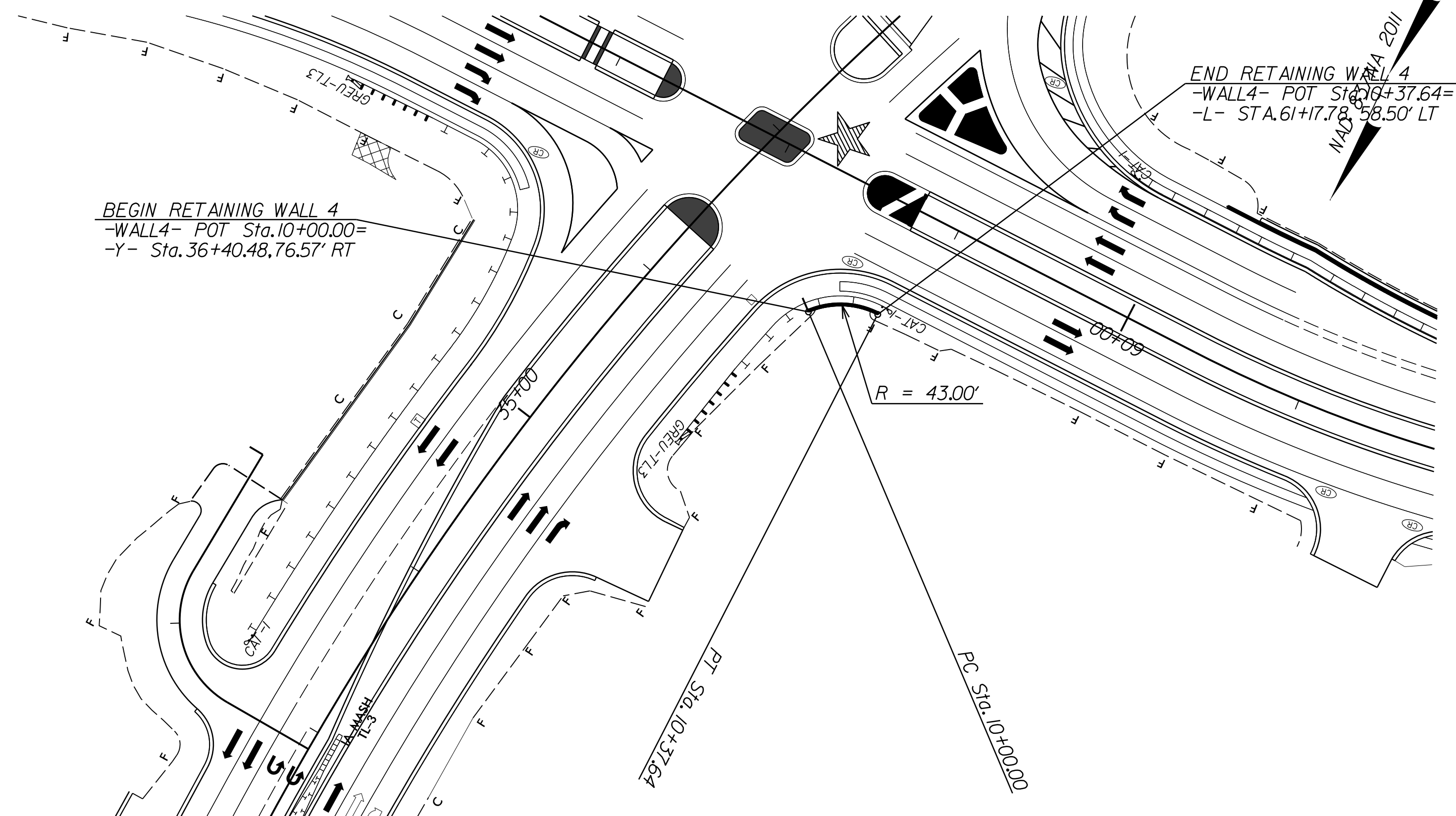
ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER



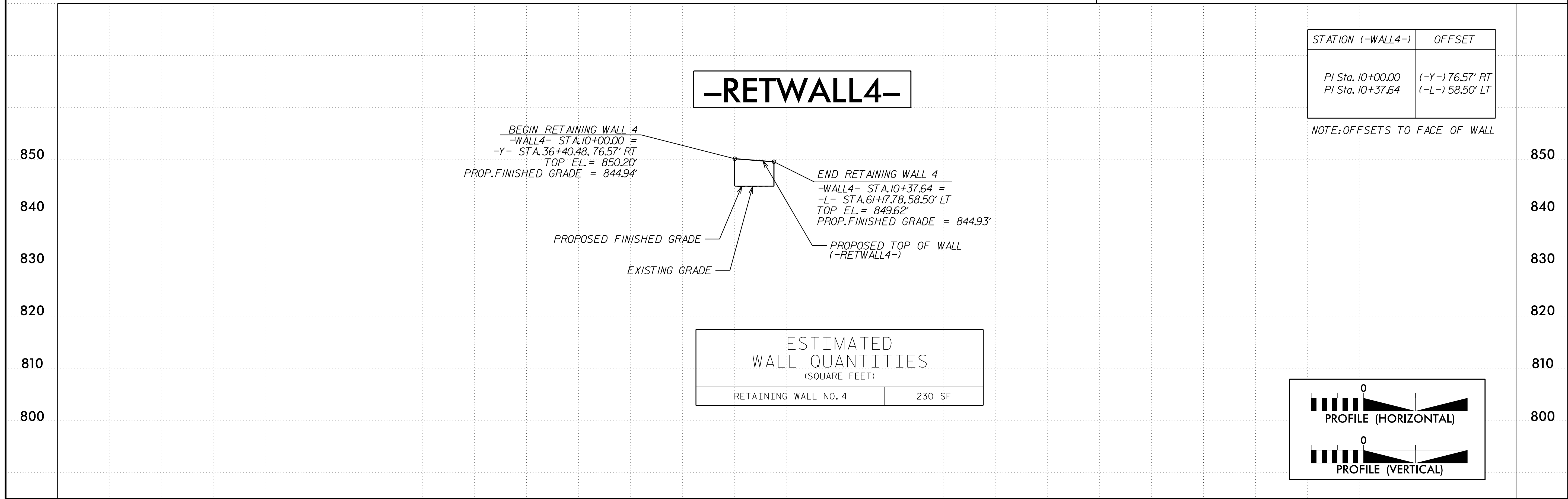
5/22/2023  
DocuSigned by:  
Jeremy R. Hamm  
4622022458545A

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RETAINING WALL DETAIL (-RETWALL4-)

(NOT TO SCALE)

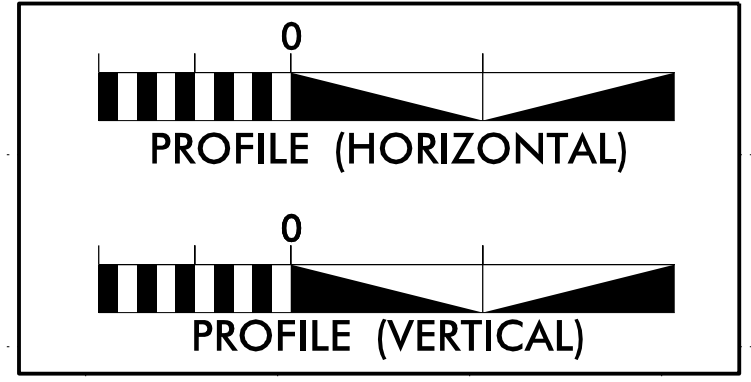


## -RETWALL4-

STATION (-WALL4-)	OFFSET
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PI Sta. 10+37.64	(-L-) 58.50' LT

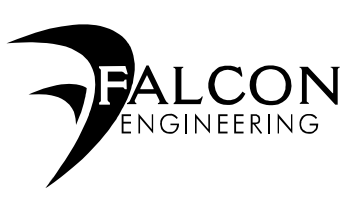
NOTE: OFFSETS TO FACE OF WALL

ESTIMATED WALL QUANTITIES (SQUARE FEET)	
RETAINING WALL NO. 4	230 SF



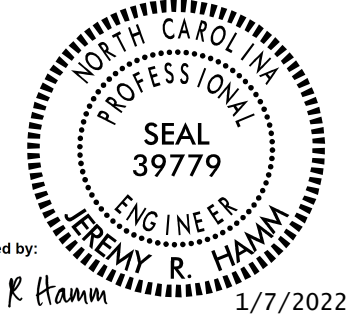
10+00      11+00

# RETAINING WALL ENVELOPE WALL 5



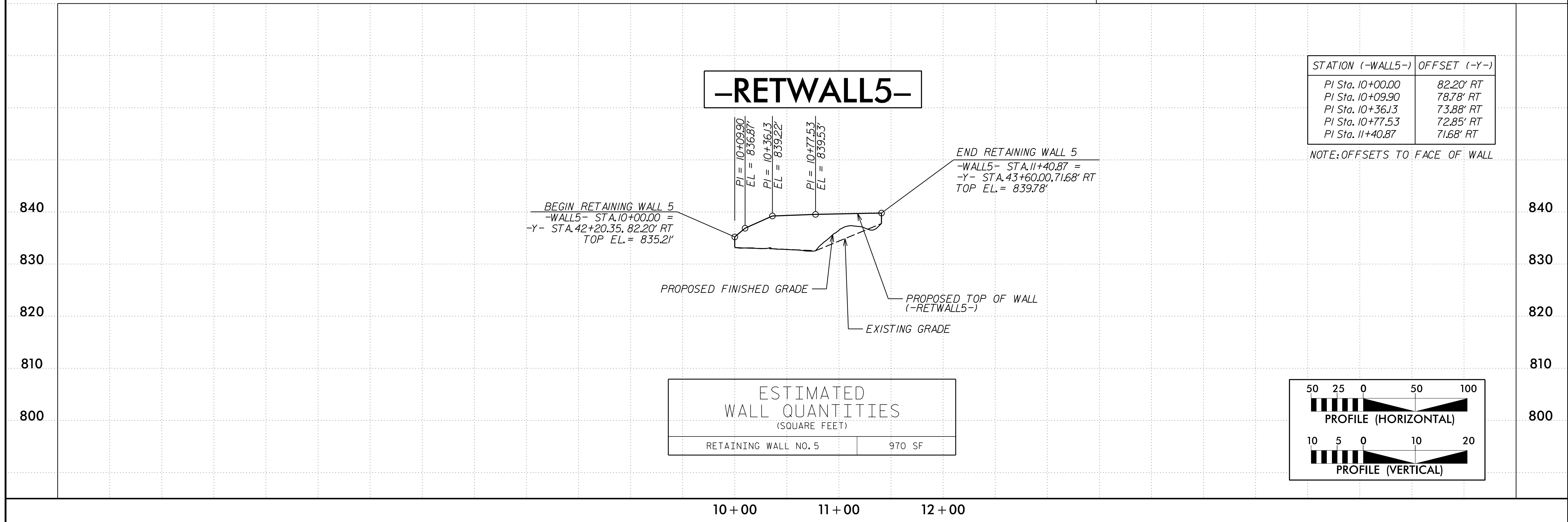
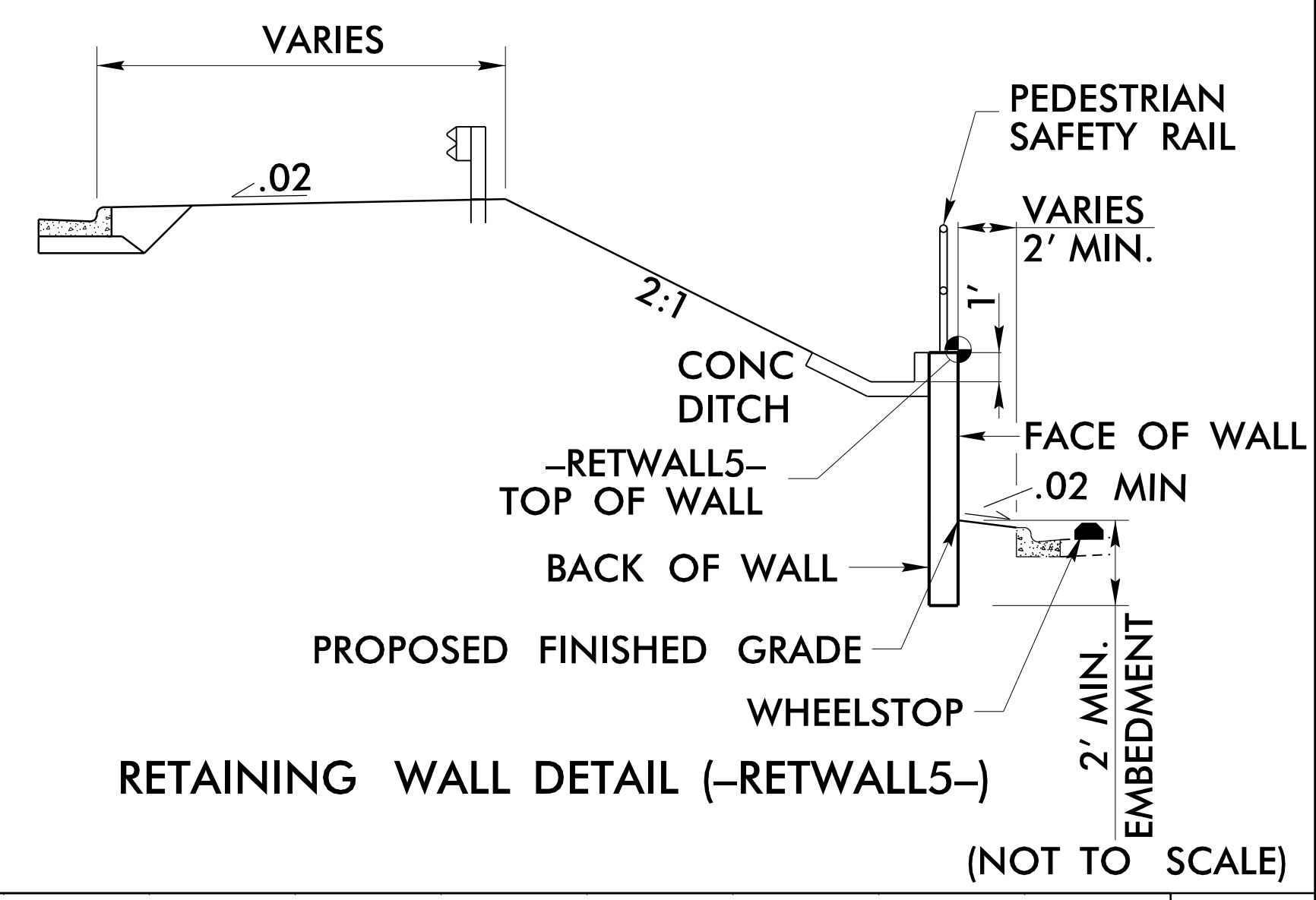
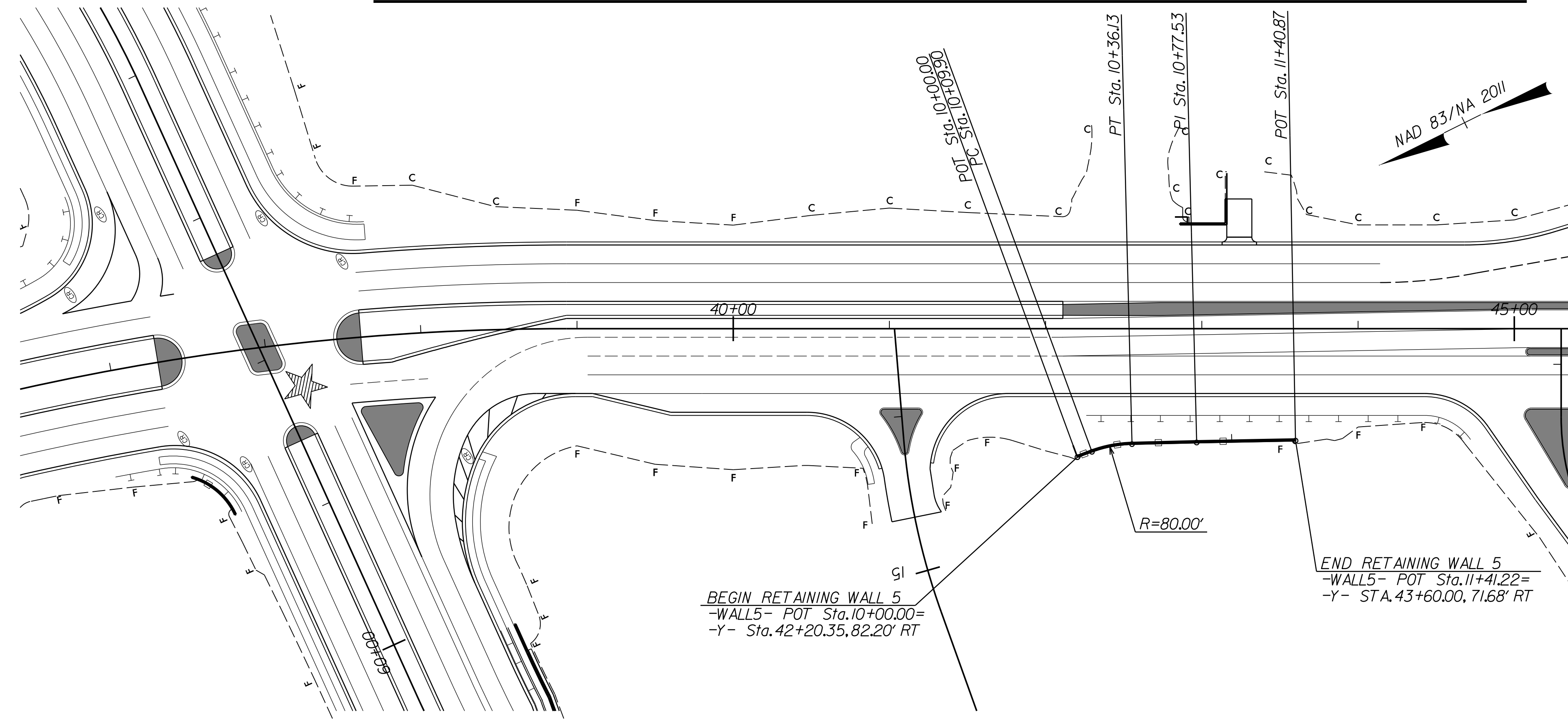
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PROJECT REFERENCE NO. <i>R-3833C</i>	SHEET NO. <i>W-4</i>
GEOTECHNICAL ENGINEER	HYDRAULICS ENGINEER



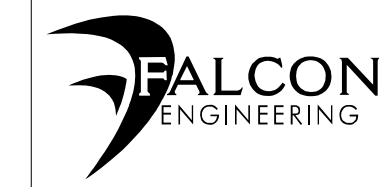
Seal No. 39779  
1/7/2022

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# RETAINING WALL ENVELOPE WALL 6



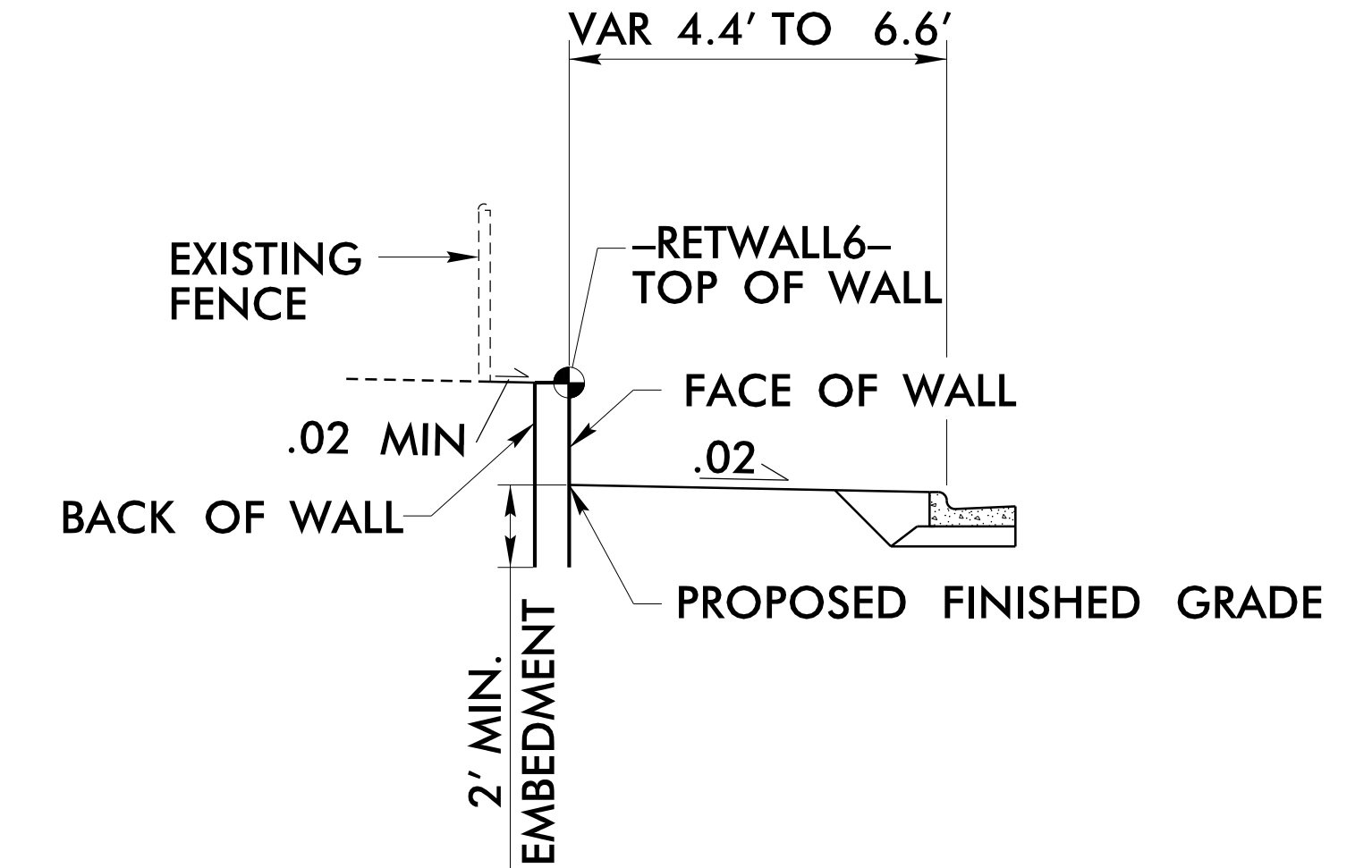
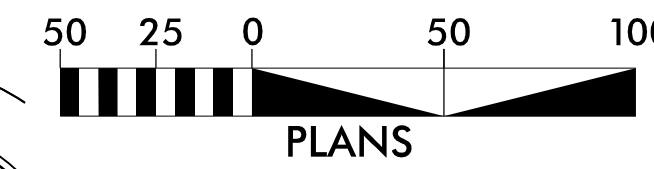
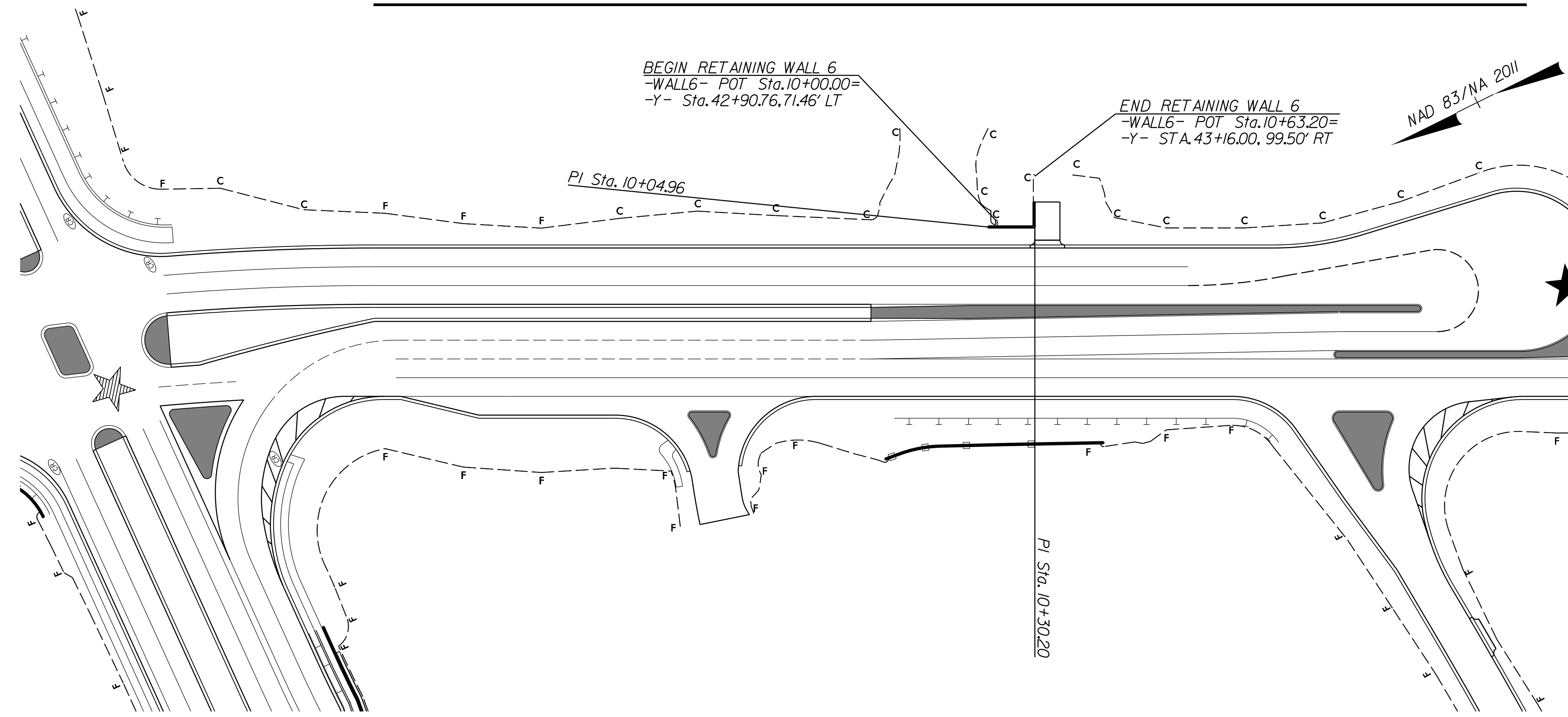
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PROJECT REFERENCE NO. **R-3833C** SHEET NO. **W-5**

GEOTECHNICAL ENGINEER HYDRAULICS ENGINEER

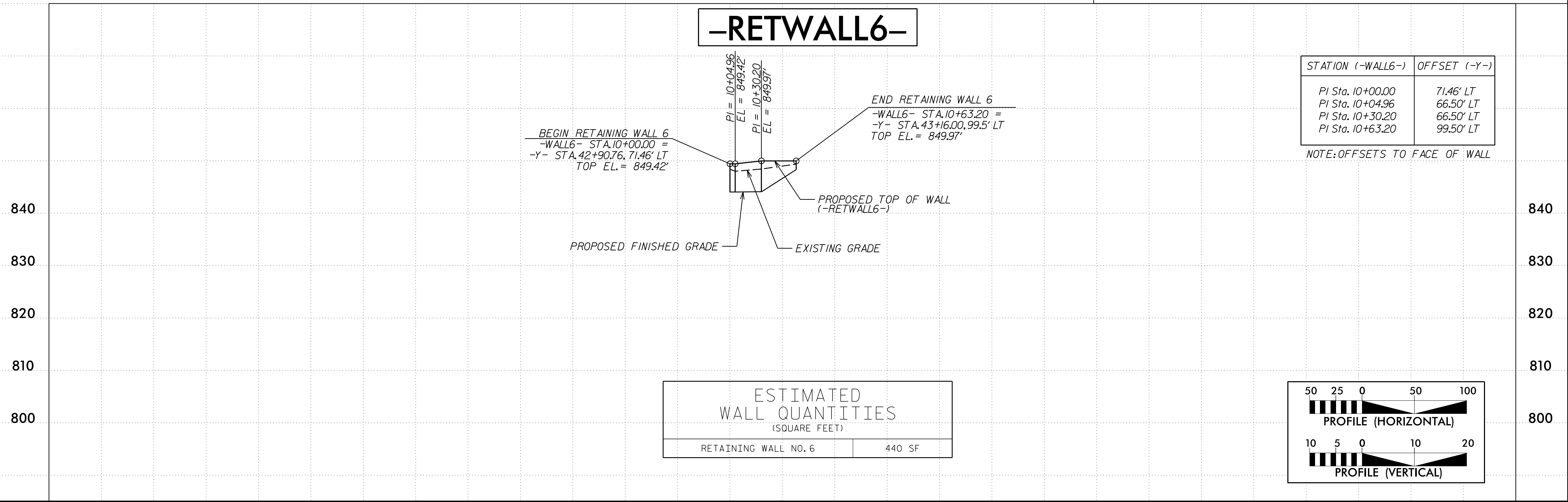


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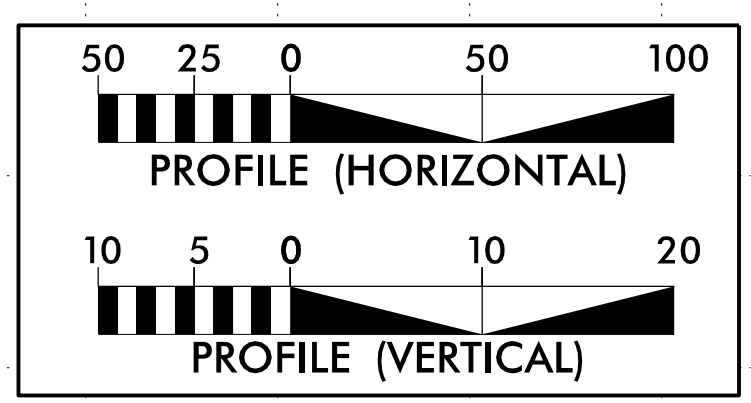


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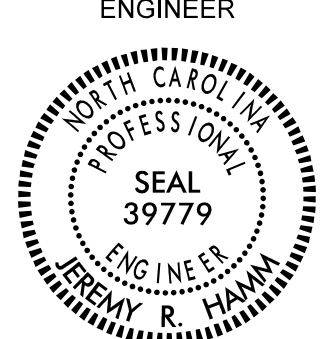
## -RETWALL6-

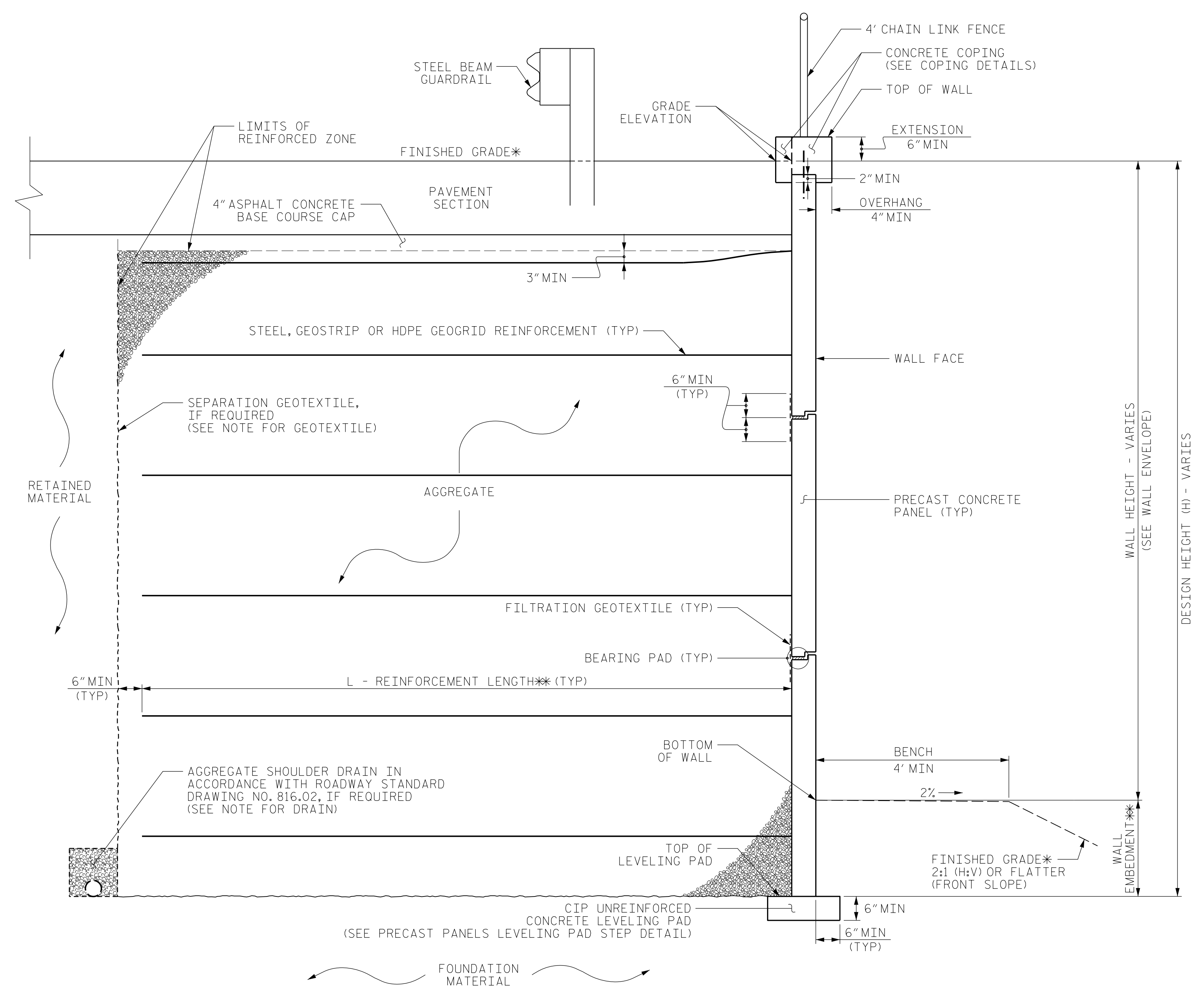


ESTIMATED WALL QUANTITIES (SQUARE FEET)	
RETAINING WALL NO. 6	440 SF



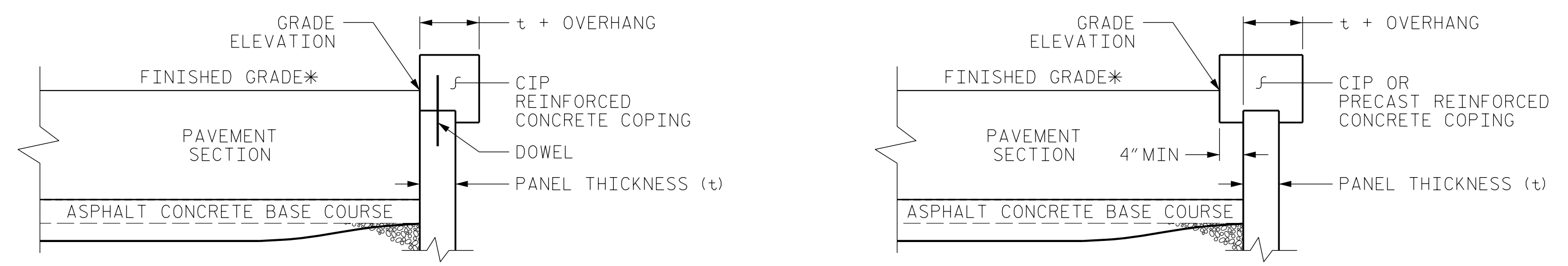
10+00 11+00 12+00

GEOTECHNICAL ENGINEER  DocuSigned by: Jeremy R Hamm 46220230488C4EA SIGNATURE	ENGINEER DATE: 1/7/2022 SIGNATURE: _____ DATE: _____
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>	



### 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 WALL EMBEDMENT AND REINFORCEMENT LENGTH REQUIREMENTS.

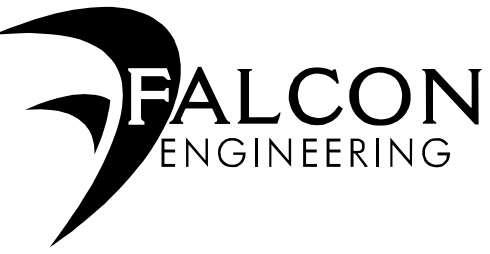


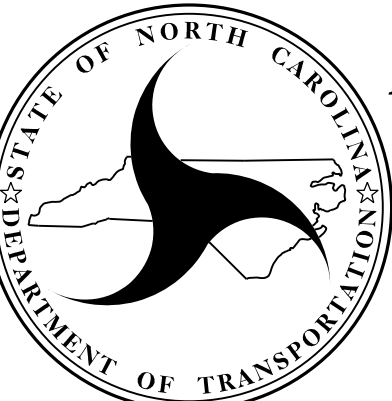
### COPING DETAILS

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.

PROJECT NO.: R-3833C  
 IREDELL COUNTY  
 STATION: -RETWALL1- 10+00 - 17+48.19  
 SHEET 6 OF 10 WALL ID RW-1

PREPARED BY:	DATE:
REVIEWED BY:	DATE:

  
 FALCON ENGINEERING, INC.  
 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		

**RETAINING WALL NO. 1  
MSE WALL  
WITH PANELS AND GUARDRAIL  
TYPICAL AND COPING DETAIL**

SHEET NO. W-6



**NOTES:**

- FOR MECHANICALLY STABILIZED EARTH (MSE) RETAINING WALLS, SEE MECHANICALLY STABILIZED EARTH RETAINING WALLS PROVISION.
- FOR 4' CHAIN LINK FENCE, SEE ROADWAY PLANS AND SECTION 866 OF THE STANDARD SPECIFICATIONS.
- 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.
- 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.
- MSE WALL SYSTEM WITH RECTANGULAR PANELS WITH VERTICAL JOINTS LINED UP FROM TOP TO BOTTOM SHALL BE USED FOR RETAINING WALL NO.1.
- BEFORE BEGINNING MSE WALL DESIGN FOR RETAINING WALL NO. , 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. FOR THE FOLLOWING:
  - 1) DESIGN HEIGHT (H) = WALL HEIGHT + WALL EMBEDMENT
  - 2) DESIGN LIFE = 100 YEARS
  - 3) MAXIMUM FACTORED VERTICAL PRESSURE ON FOUNDATION MATERIAL = 4,500 PSF
  - 4) MINIMUM REINFORCEMENT LENGTH (L) = 1.0H.
  - 5) MINIMUM EMBEDMENT ELEVATION = 4 FT
  - 6) REINFORCED ZONE AGGREGATE PARAMETERS:

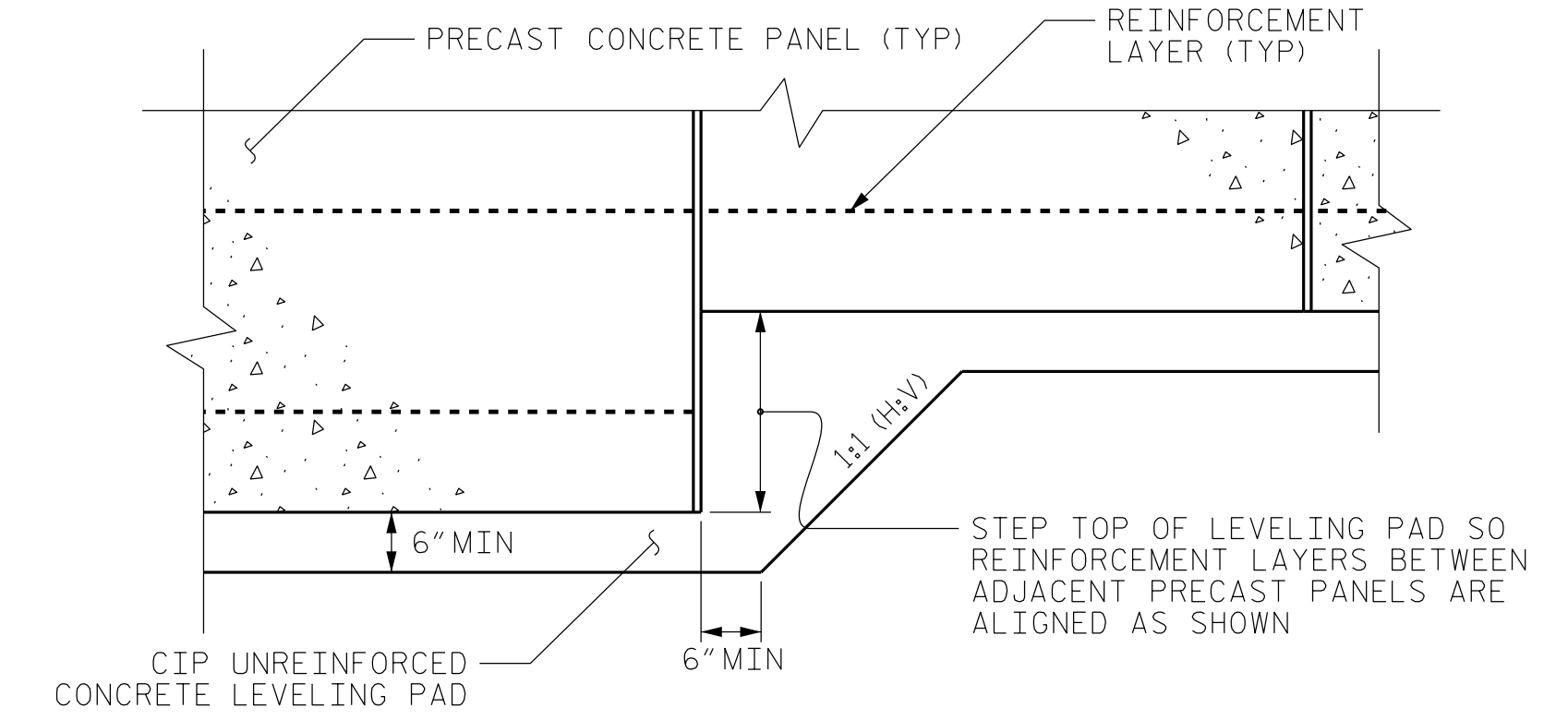
AGGREGATE TYPE*	UNIT WEIGHT ( $\gamma$ ) PCF	FRICTION ANGLE ( $\phi$ ) DEGREES	COHESION (c) PSF
COARSE	110	38	0
FINE	115	34	0

\*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
RETAINED	120	30	0
FOUNDATION	115	26	0

- THE MINIMUM WALL EMBEDMENT ELEVATION FOR RETAINING WALL NO.1 INCLUDES EMBEDMENT FOR SCOUR.
- DESIGN RETAINING WALL NO.1 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 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.
- 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.



PRECAST PANELS  
LEVELING PAD STEP DETAIL

GEOTECHNICAL ENGINEER   DocuSigned by: <b>Jeremy R Hamm</b> 48220234850C46A SIGNATURE	ENGINEER  1/7/2022 DATE SIGNATURE
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PREPARED BY:	DATE:
REVIEWED BY:	DATE:

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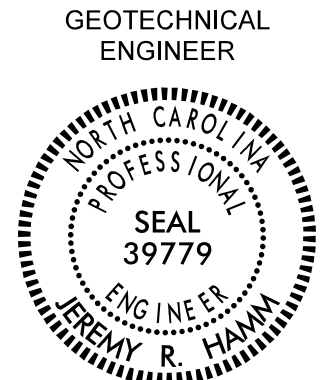
**NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
DIVISION OF HIGHWAYS**

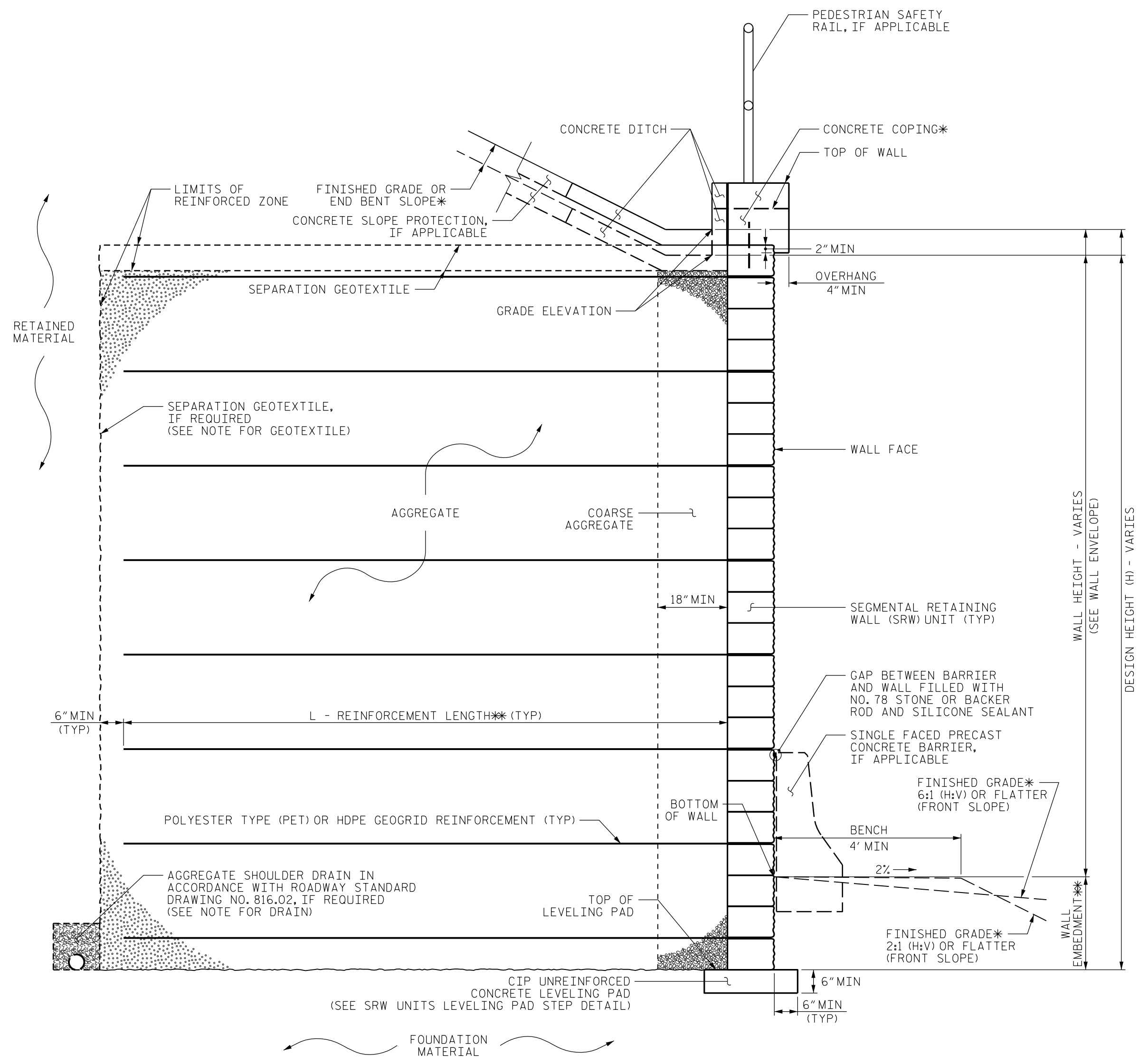
**GEOTECHNICAL  
ENGINEERING UNIT**

PROJECT NO.: R-3833C  
IREDELL COUNTY  
STATION: -RETWALL1- 10+00 - 17+48.19  
SHEET 7 OF 10 WALL ID RW-1

**RETAINING WALL NO. 1  
MSE WALL  
NOTES AND PRECAST PANELS  
LEVELING PAD STEP DETAILS**

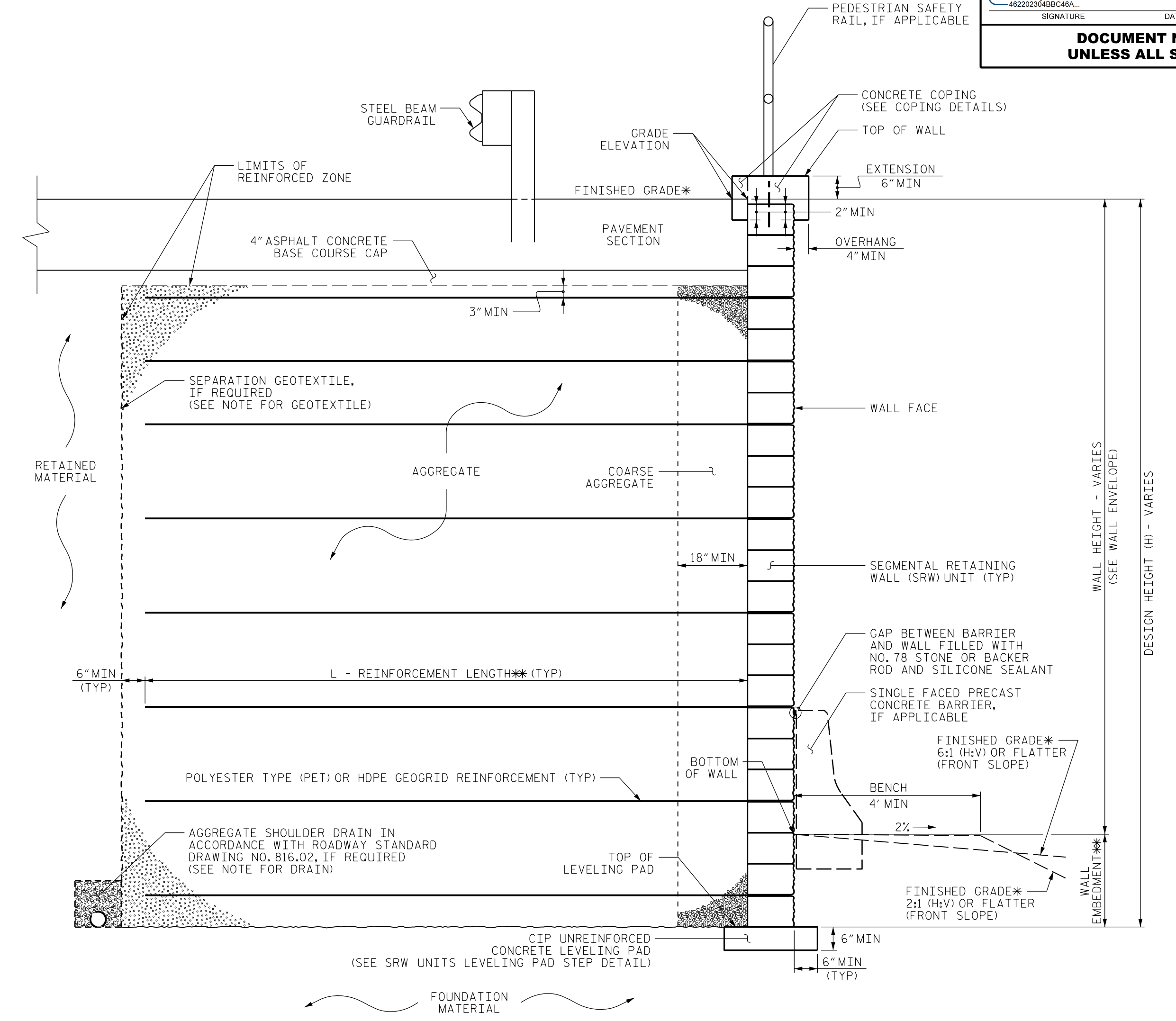
REVISIONS						SHEET NO. W-7
NO.	BY	DATE	NO.	BY	DATE	
1			3			
2			4			

GEOTECHNICAL ENGINEER  SEAL 39779 JEREMY R. HAMM	ENGINEER  DATE SIGNATURE
DocuSigned by: Jeremy R Hamm 462202344B8C46A...	1/7/2022 DATE
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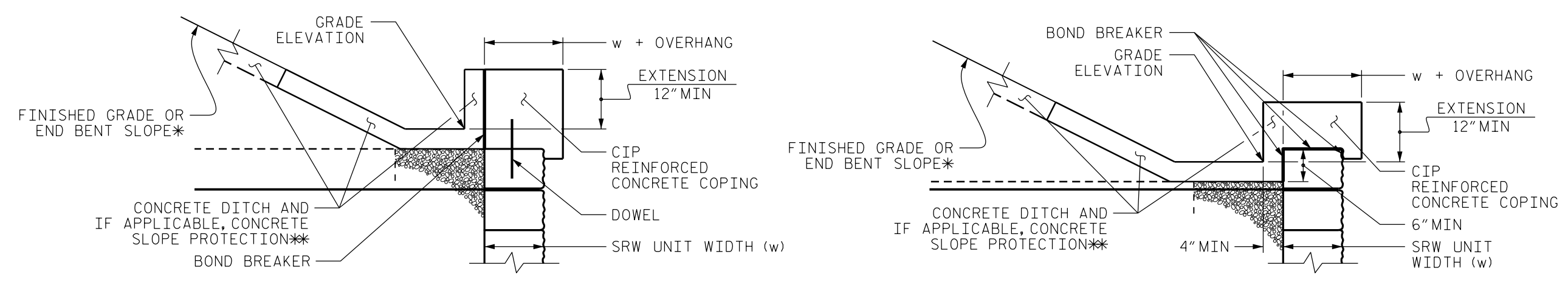
**MSE WALL WITH SRW UNITS - TYPICAL SECTION**

\*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 WALL EMBEDMENT AND REINFORCEMENT LENGTH REQUIREMENTS.



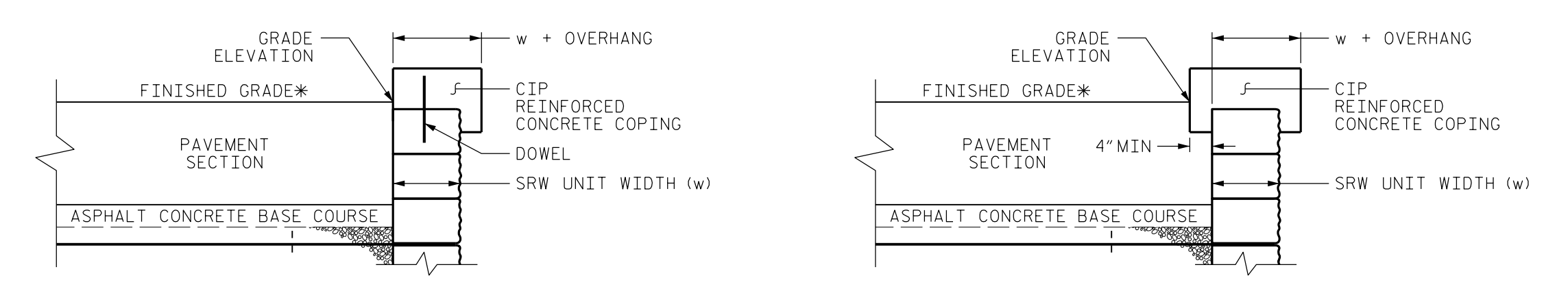
**MSE WALL WITH SRW UNITS - TYPICAL SECTION**

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



**COPING DETAILS**

AT THE CONTRACTOR'S OPTION, CONNECT COPING TO SRW UNITS WITH DOWELS OR EXTEND COPING DOWN BACK OF SRW UNITS.  
 \*SEE PLANS FOR FINISHED GRADE OR END BENT SLOPE DETAILS.  
 \*\*SEE CONCRETE DITCH BEHIND WALL DETAILS.



**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.

PROJECT NO.: R-3833C  
 IREDELL COUNTY  
 STATION: WALLS 2, 3, 4, 5, AND 6  
 SHEET 8 OF 10 WALL ID RW-2 THROUGH RW-6

**FALCON ENGINEERING**

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

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

SHEET NO. W-3



**NOTES:**

FOR MECHANICALLY STABILIZED EARTH (MSE) RETAINING WALLS, SEE MECHANICALLY STABILIZED EARTH RETAINING WALLS PROVISION.  
 FOR STEEL BEAM GUARDRAIL, SEE ROADWAY PLANS AND SECTION 862 OF THE STANDARD SPECIFICATIONS.  
 USE AN MSE WALL SYSTEM WITH SEGMENTAL RETAINING WALL UNITS (SRW) UNITS THAT MEET ARTICLE 1040-4 OF THE STANDARD SPECIFICATIONS FOR RETAINING WALLS NO. 2, 3, 4, 5, AND 6.  
 AT THE CONTRACTOR'S OPTION, USE FINE AGGREGATE IN THE REINFORCED ZONE OF RETAINING WALLS NO. 2, 3, 4, 5, AND 6.

BEFORE BEGINNING MSE WALL DESIGN FOR RETAINING WALLS NO. 2, 3, 4, 5, AND 6., 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. FOR THE FOLLOWING:  
 1) DESIGN HEIGHT (H) = WALL HEIGHT + WALL EMBEDMENT  
 2) DESIGN LIFE = 100 YEARS  
 3) MAXIMUM FACTORED VERTICAL PRESSURE ON FOUNDATION MATERIAL = 2,500 PSF  
 4) MINIMUM REINFORCEMENT LENGTH (L) = 0.8H OR 6 FT, WHICHEVER IS LONGER  
 5) MINIMUM EMBEDMENT ELEVATION = 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	26	0

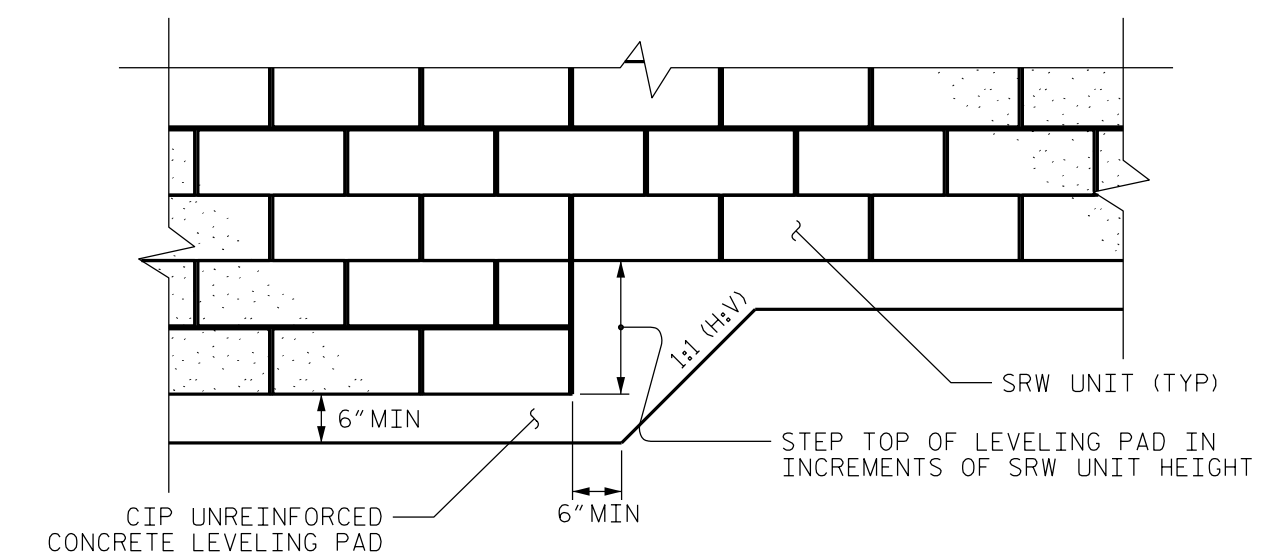
DESIGN RETAINING WALLS NO. 2, 3, 4, 5, AND 6 FOR A LIVE LOAD (TRAFFIC) SURCHARGE.

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. 2, 3, 4, 5, AND 6.

DO NOT PLACE LEVELING PAD CONCRETE, AGGREGATE OR REINFORCEMENT FOR RETAINING WALLS NO. 2, 3, 4, 5, AND 6 UNTIL EXCAVATION DIMENSIONS AND FOUNDATION MATERIAL ARE APPROVED.

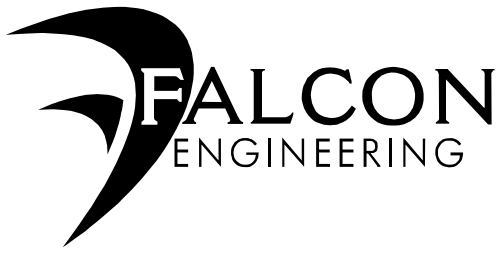
AT THE CONTRACTOR'S OPTION, "TEMPORARY SHORING FOR WALL CONSTRUCTION" MAY BE USED TO CONSTRUCT RETAINING WALLS NO. 2, 3, 4, 5, AND 6. SEE MSE RETAINING WALLS PROVISION FOR TEMPORARY SHORING FOR WALL CONSTRUCTION.

GEOTECHNICAL ENGINEER  SEAL 39779 JEREMY R. HAMM	ENGINEER
DocuSigned by: Jeremy R Hamm 462202348BC46A SIGNATURE	1/7/2022 DATE
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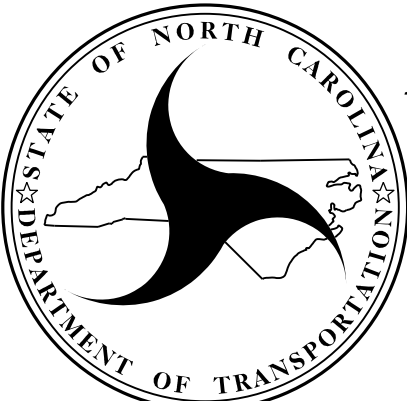


SRW UNITS LEVELING PAD STEP DETAIL

PROJECT NO.: R-3833C  
 IREDELL COUNTY  
 STATION: WALLS 2, 3, 4, 5, AND 6  
 SHEET 9 OF 10 WALL ID RW-2 THROUGH RW-6



FALCON ENGINEERING, INC.  
 1210 TRINITY ROAD, SUITE 110  
 CARY, NC 27513  
 PHONE: 919.871.0800  
 www.falconengineers.com  
 Firm License No. C-3193



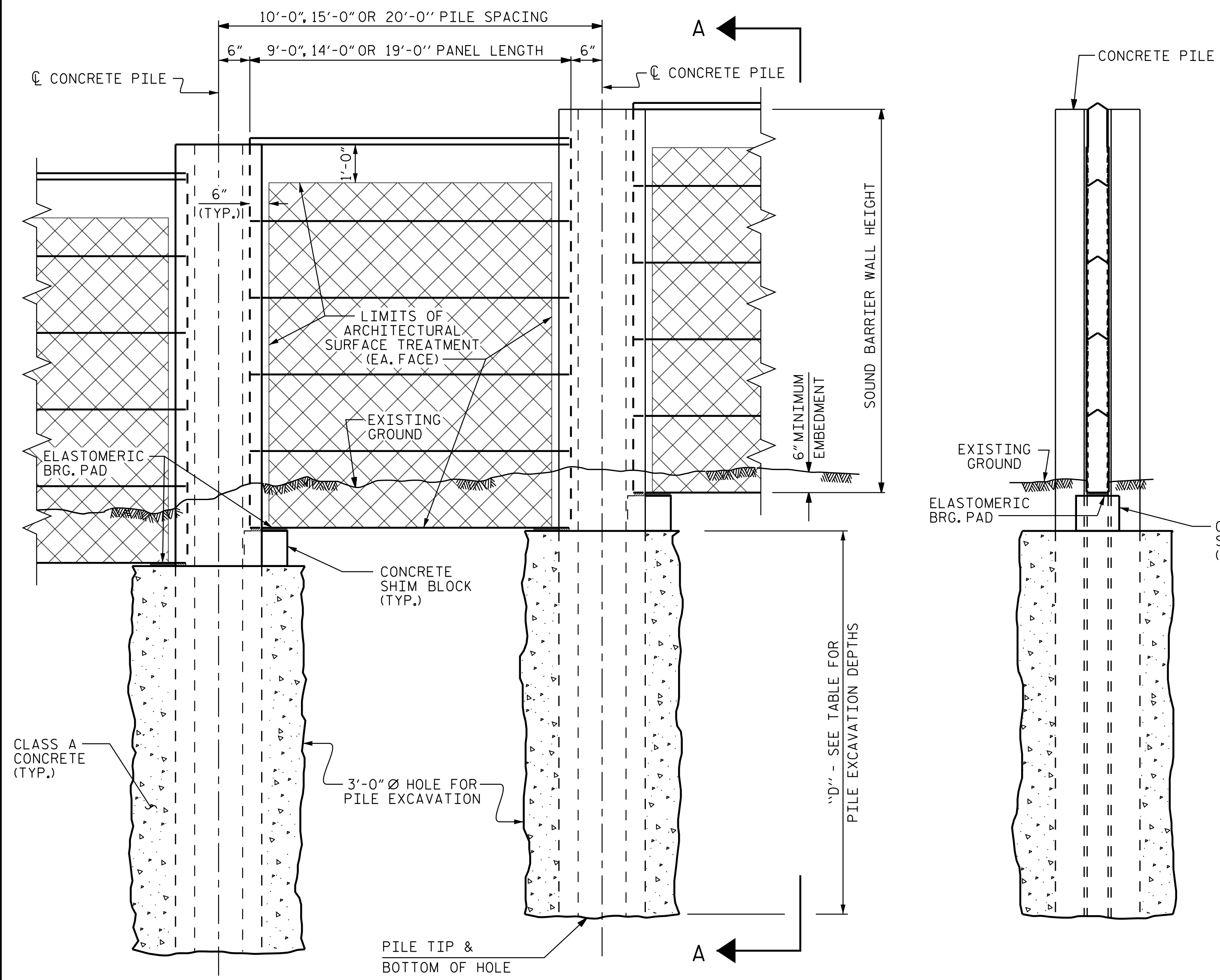
NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 DIVISION OF HIGHWAYS  
**GEOTECHNICAL  
 ENGINEERING UNIT**

RETAINING WALLS NO. 2, 3, 4, 5,  
 AND 6 MSE WALL  
 NOTES AND PRECAST PANELS  
 LEVELING PAD STEP DETAILS

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

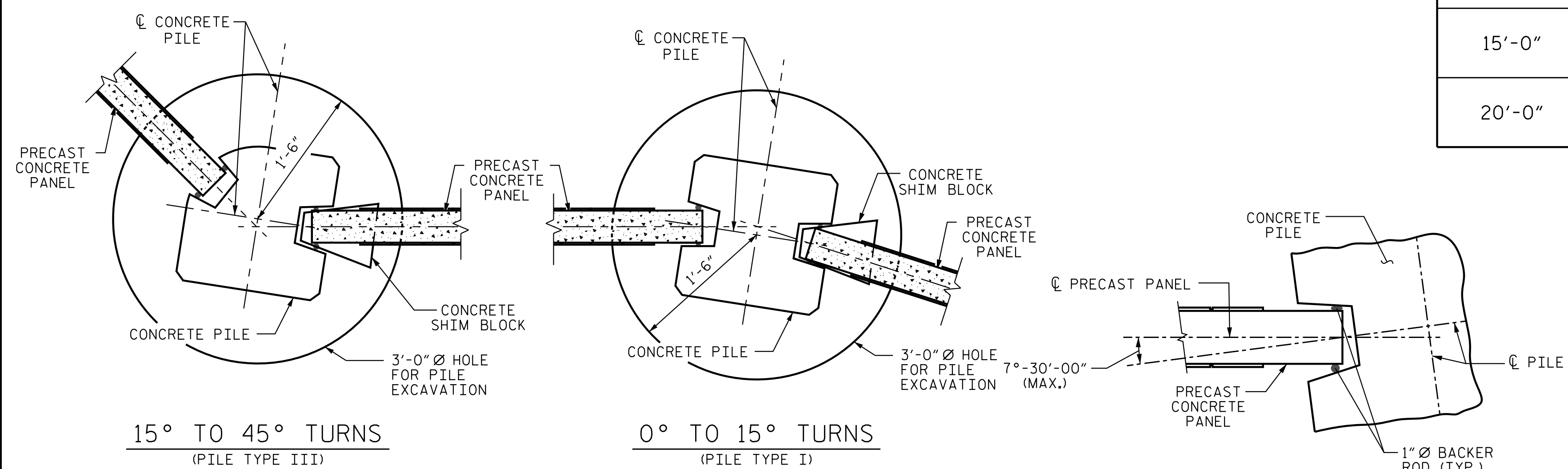
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**ELEVATION**

**SECTION A-A**



**TYPICAL WALL TURN DETAILS**

**PILE ROTATION LIMIT FOR WALL TURN**

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

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CHECKED BY :	GM	6/11	REV. 10/17	MAA/THC
			REV. 5/18	MAA/THC

**PILE EXCAVATION DEPTHS "D"**

WALL NW2		FROM : STA. 10+00.00 = -L- STA 42+50.63 (63.08' LT)		TO : STA. 20+04.75 = -L- STA. 53+00.00 (55.50' LT)		EXCAVATION DEPTHS		
3'-0" Ø HOLE	-NW2- BEGIN STA.	-NW2- END STA.	MAX. FRONT SLOPE	WALL HEIGHT (FT)	S = 10FT	S = 15FT	S = 20FT	
		10+00	12+25	6:1	7	8	9	10
	12+25	12+85	3:1	8	8	10	11	
	12+85	13+00	3:1	9	9	12	11	
	13+00	14+65	2:1	10-11	10	12	13	
	14+65	14+95	2:1	12	11	12	13	
	14+95	15+10	2:1	11	10	12	13	
	15+10	15+55	2:1	12	11	12	13	
	15+55	17+35	2:1	13	11	12	14	
	17+35	17+95	3:1	12	9	10	12	
	17+95	18+40	4:1	11	9	10	11	
	18+40	20+05	NONE	10-11	8	9	10	

**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.
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	
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.
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	
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.				

**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.

**BILL OF MATERIAL**

SOUND BARRIER WALL	10,365 S.F.
ARCHITECTURAL SURFACE TREATMENT	16,224 S.F.
QUANTITIES PROVIDED ARE APPROXIMATE AND ARE FOR BID PURPOSES ONLY.	
<b>ARCHITECTURAL SURFACE TREATMENT</b>	
TEXTURE OPTION:	ASHLAR STONE
STAIN OPTION:	NONE

PROJECT NO. R-3833C  
IREDELL COUNTY  
 STATION: 42+50.63 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

STANDARD  
 SOUND BARRIER WALL  
 -NW2-

DRAWN BY : J. B. GETILE DATE : 05/11/2021  
 CHECKED BY : M. B. ISENHOUR DATE : 11/10/2021  
 DESIGN ENGINEER OF RECORD : M. B. ISENHOUR DATE : 05/04/23

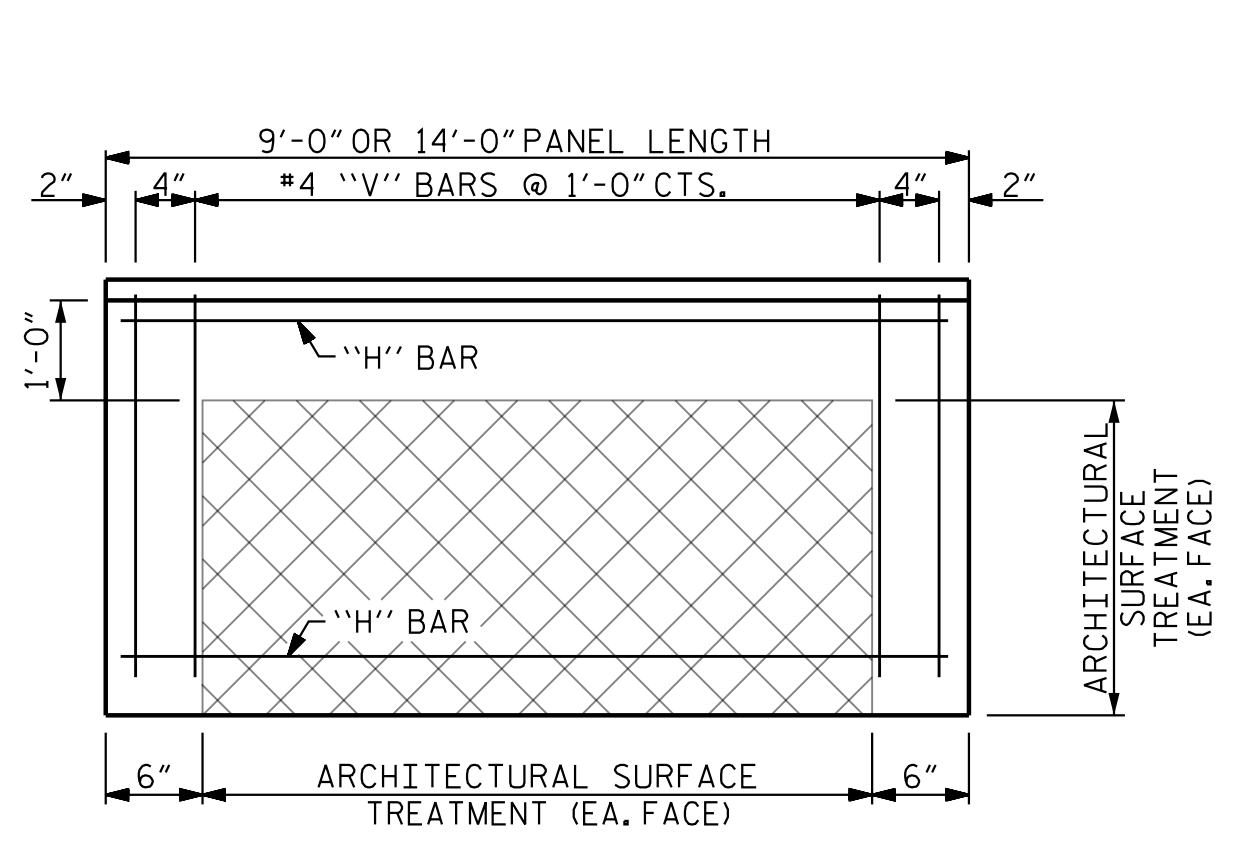


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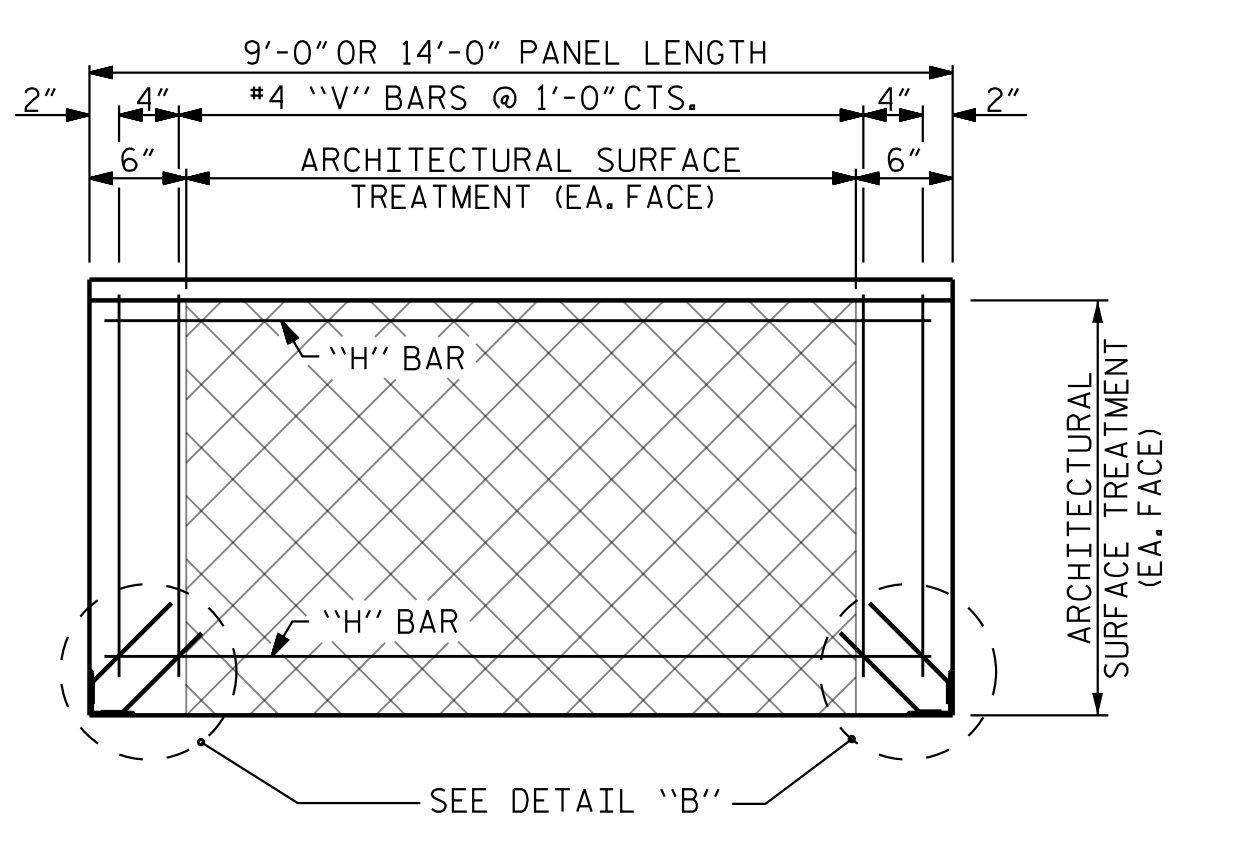
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NO.	BY:	DATE:	NO.	BY:	DATE:	
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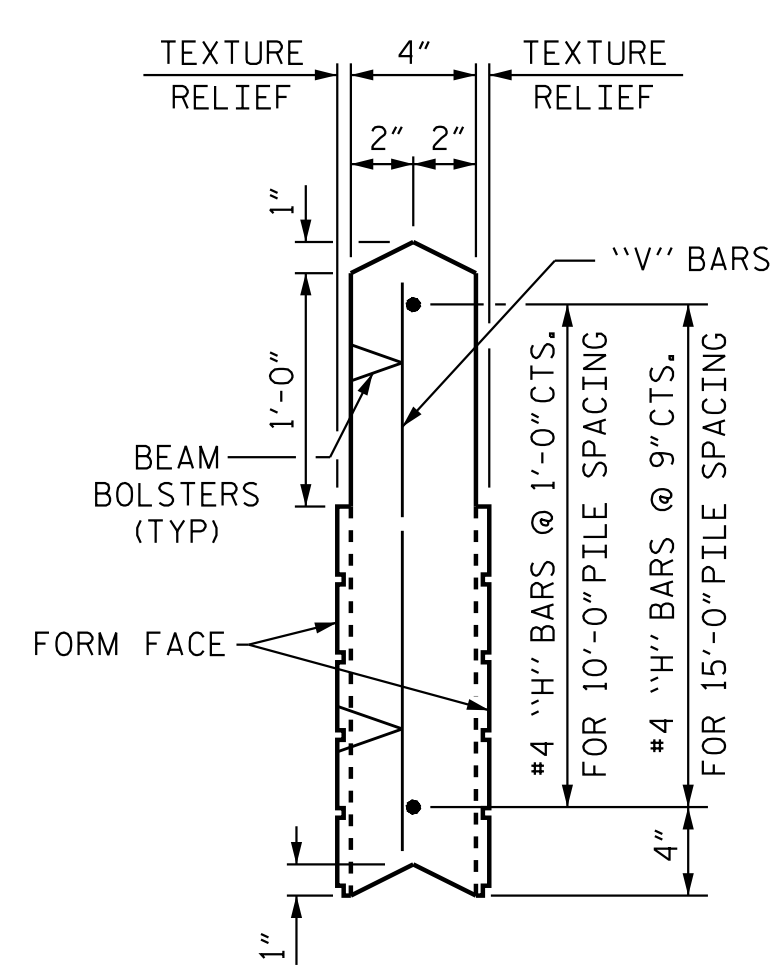
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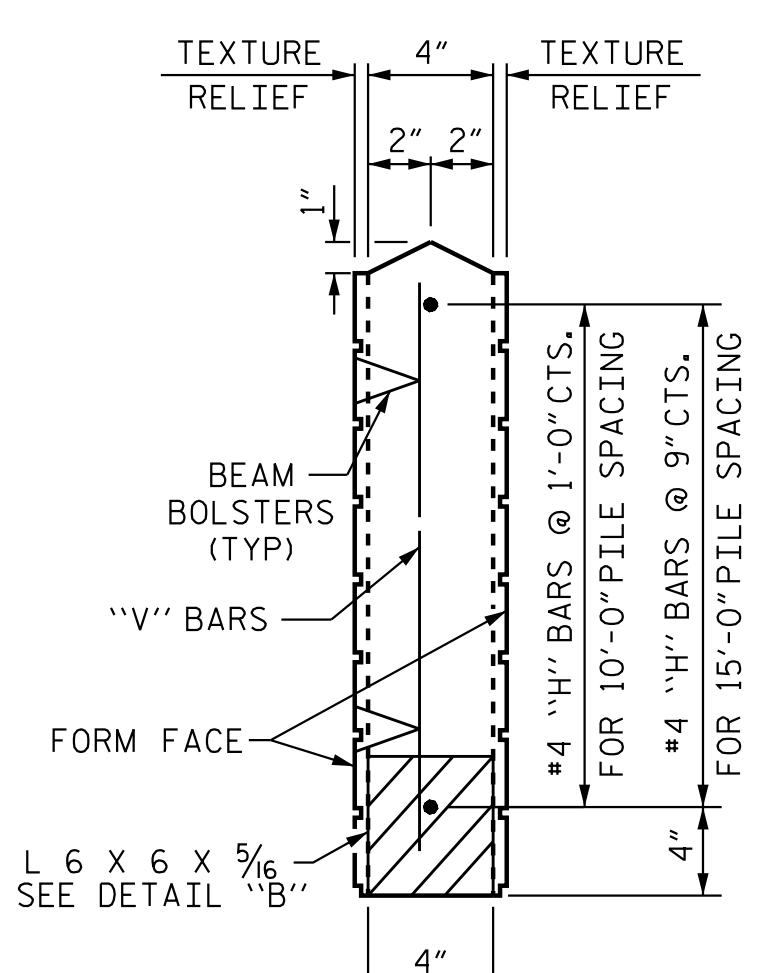
**FRONT ELEVATION OF UPPER PRECAST PANEL**



**FRONT ELEVATION OF BOTTOM PRECAST PANEL**

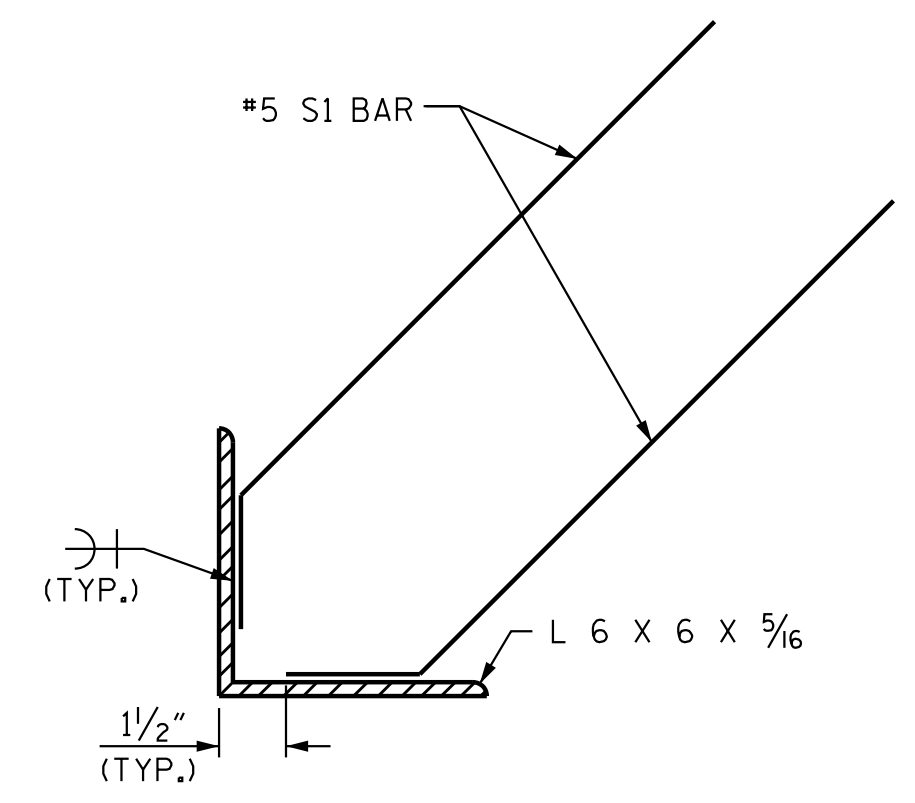


**UPPER PANEL**



**BOTTOM PANEL**

**SECTION THROUGH PRECAST PANELS**



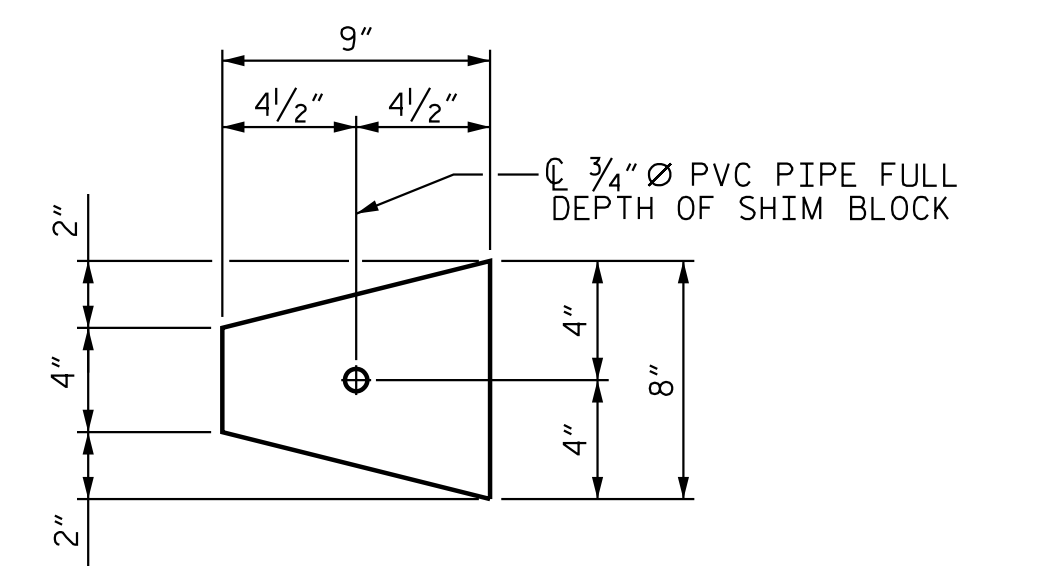
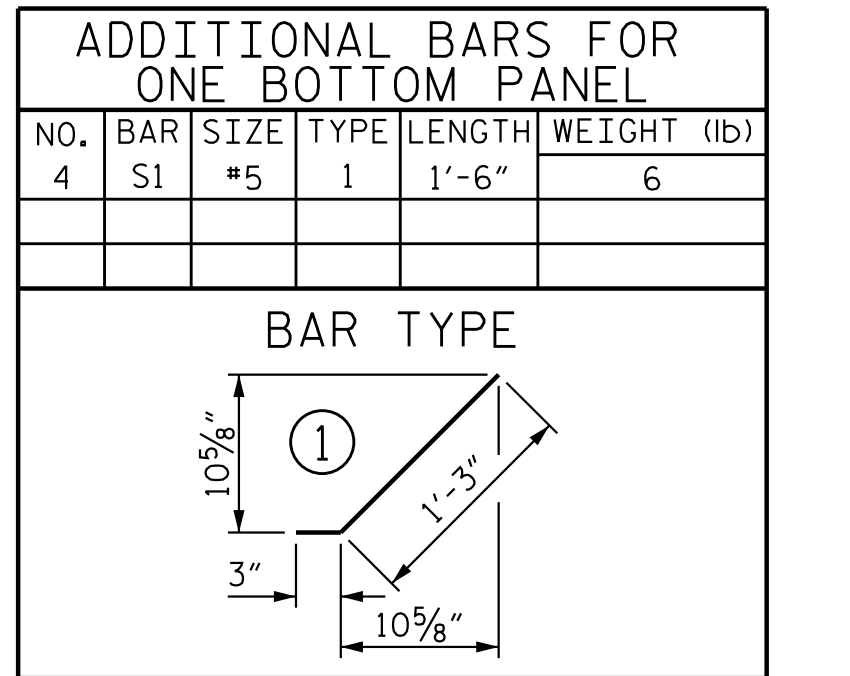
**DETAIL "B"**

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

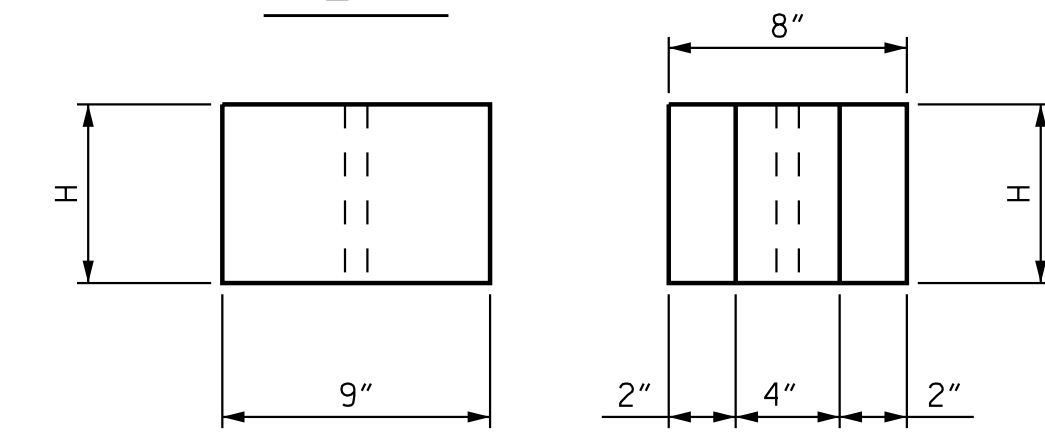
PANEL HEIGHT	CLASS AA CONCRETE C.Y.	BAR TYPES											
		HORIZONTAL						VERTICAL					
		NO.	BAR	SIZE	TYPE	LENGTH	WEIGHT (lb)	NO.	BAR	SIZE	TYPE	LENGTH	WEIGHT (lb)
2'-0"	0.22	3	H1	#4	STR	8'-8"	17	11	V1	#4	STR	1'-8"	12
3'-0"	0.33	4	H2	#4	STR	8'-8"	23	11	V2	#4	STR	2'-8"	20
4'-0"	0.44	5	H3	#4	STR	8'-8"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



**PLAN**

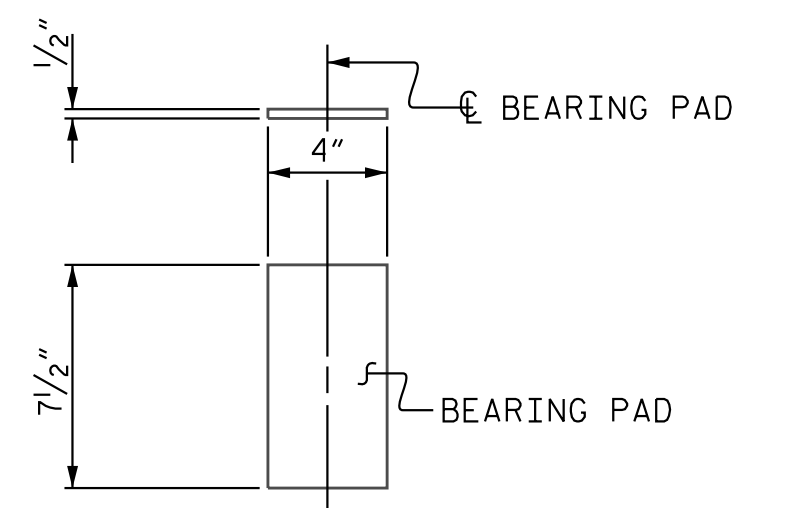


**ELEVATION**

**END**

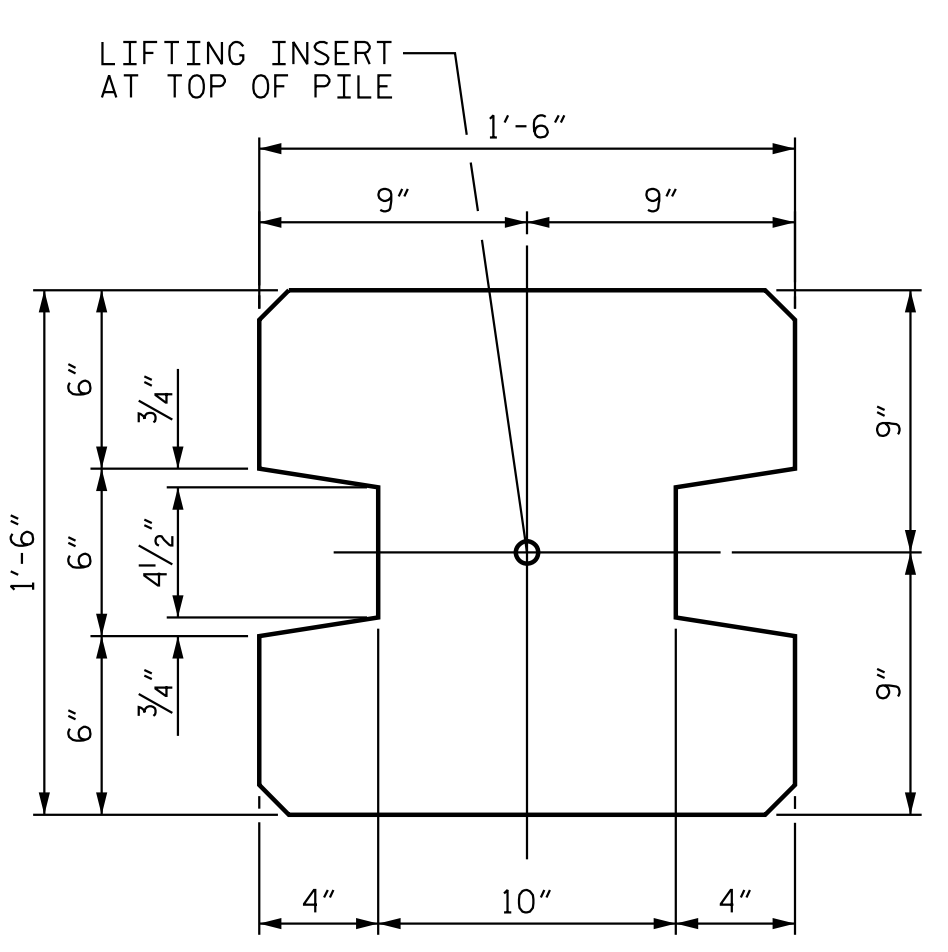
**CONCRETE SHIM BLOCK**

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

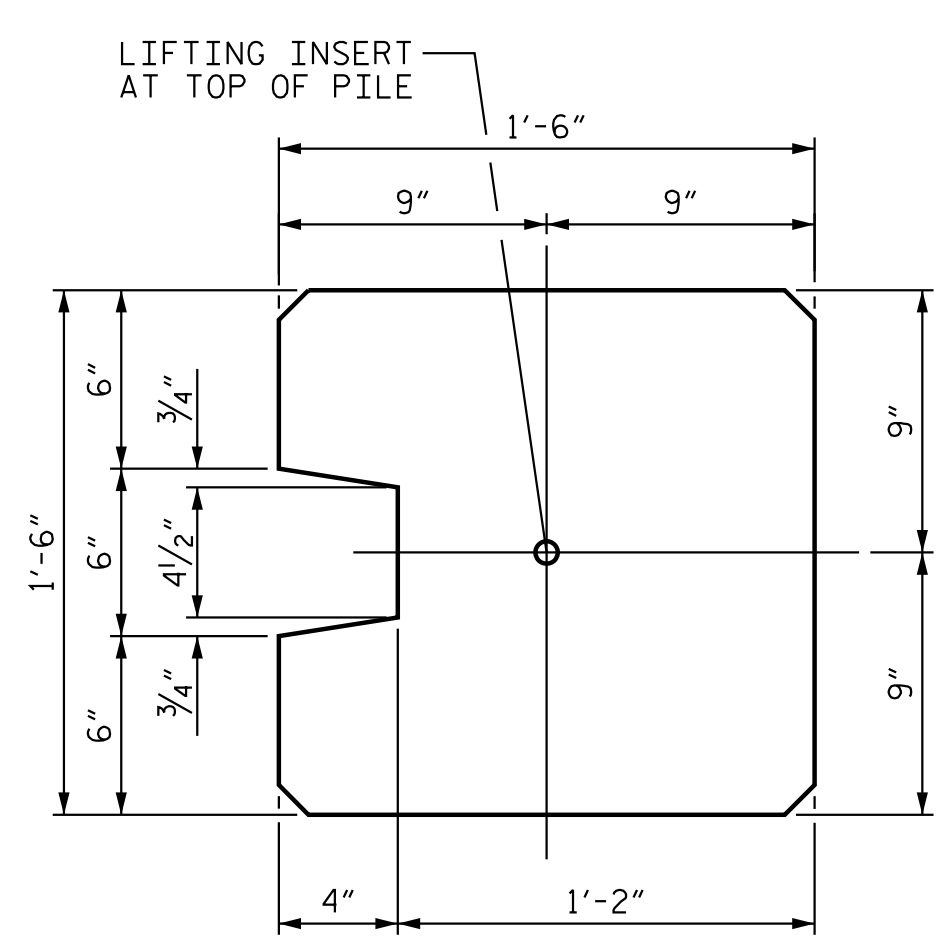


**ELASTOMERIC BEARING DETAILS**

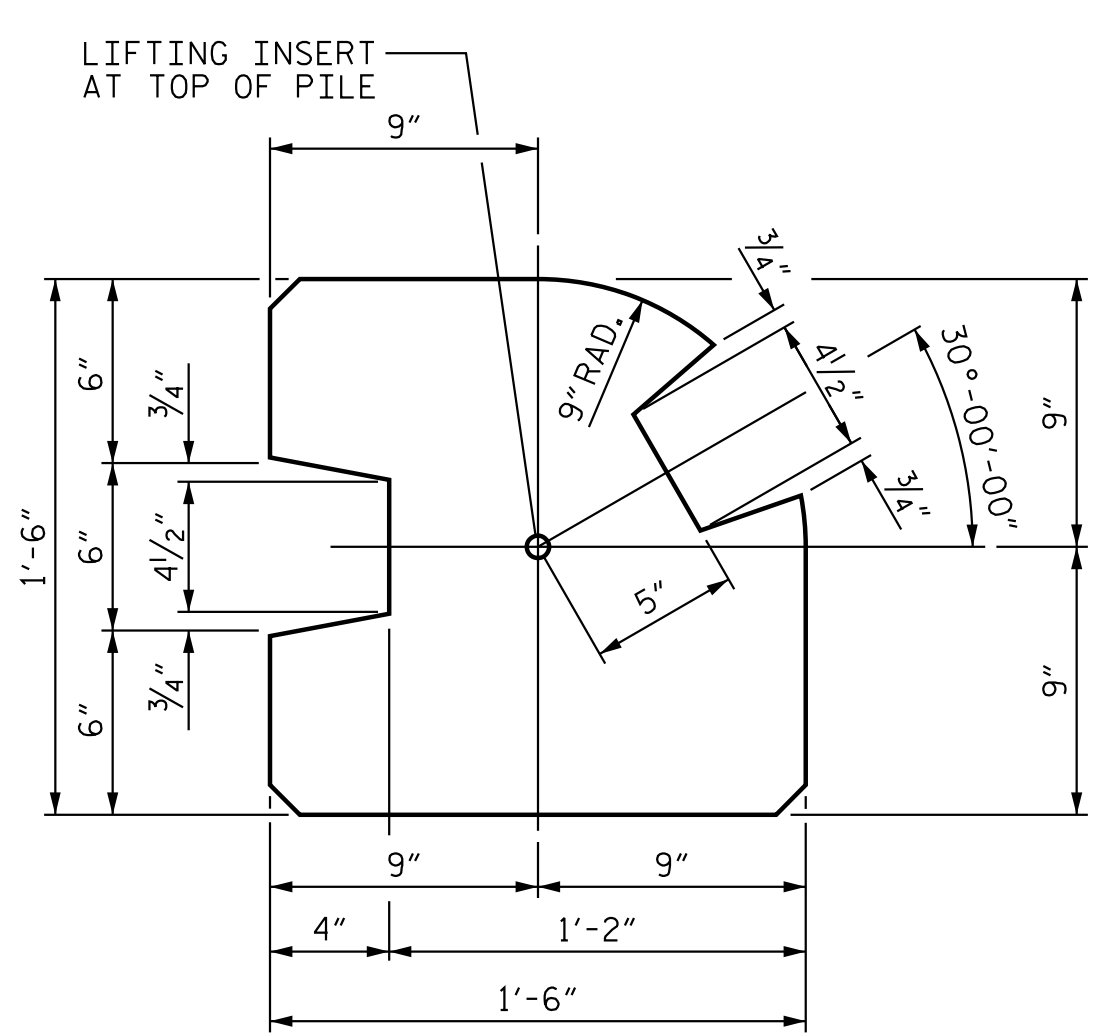
ELASTOMER IN BEARINGS SHALL BE 50 DUROMETER HARDNESS.



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



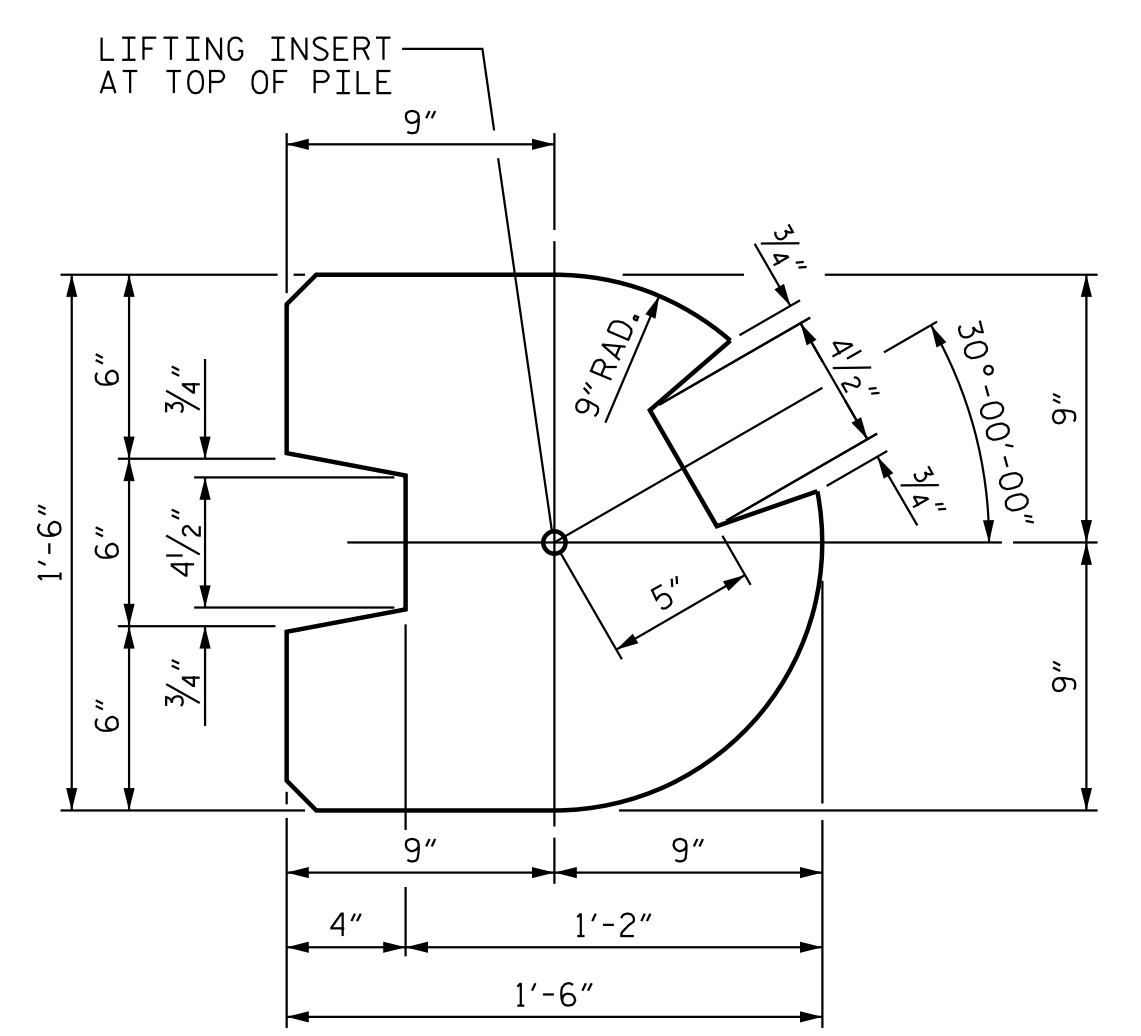
**TYPE - II**  
(AREA = 2.0903 SQ. FT.)



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

**PILE DETAIL**

(ALL CORNERS TO BE CHAMFERED 1")



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

PROJECT NO. R-3833C  
IREDELL COUNTY  
 STATION: 42+50.63 -L-

SHEET 2 OF 3

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

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

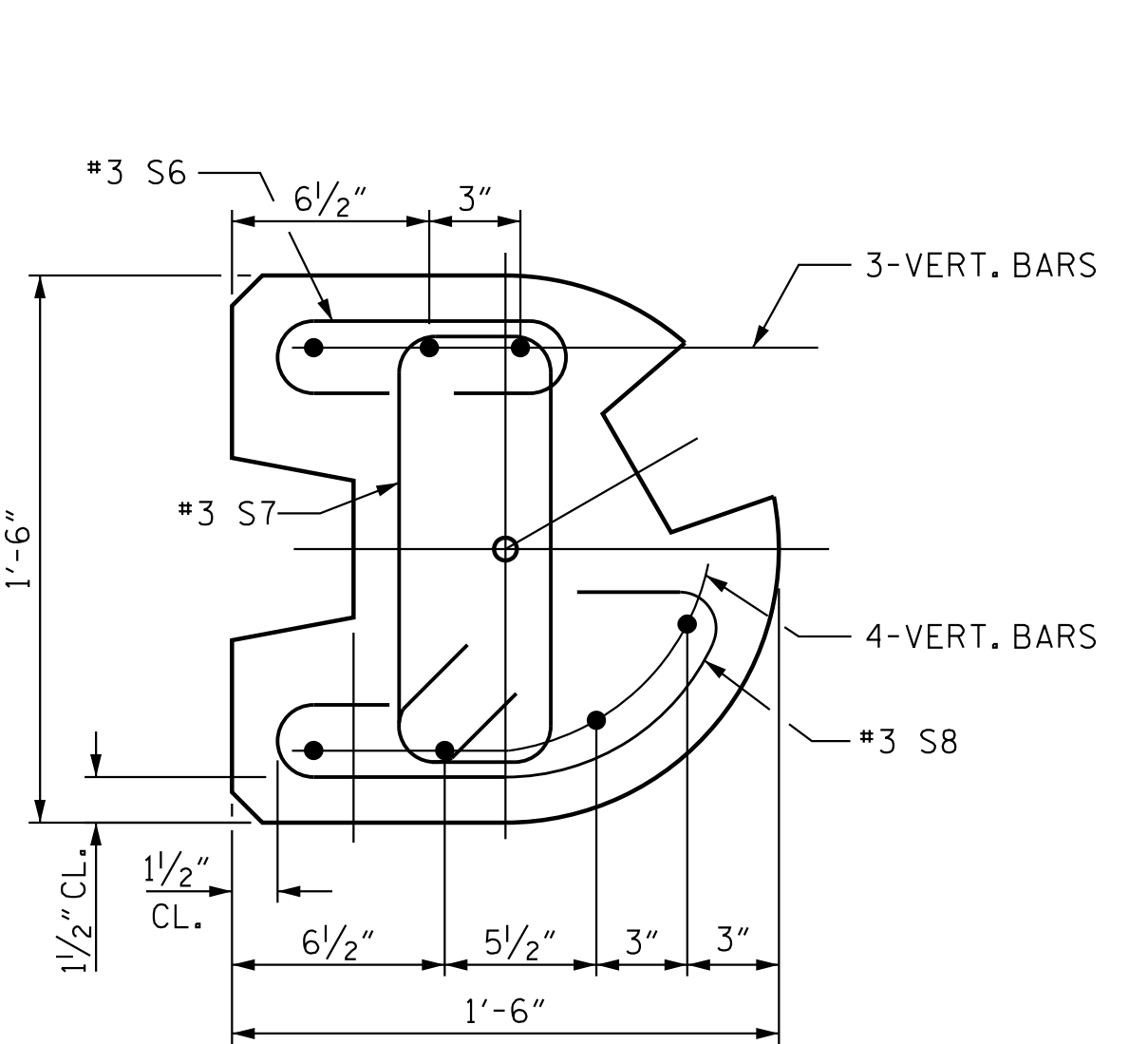
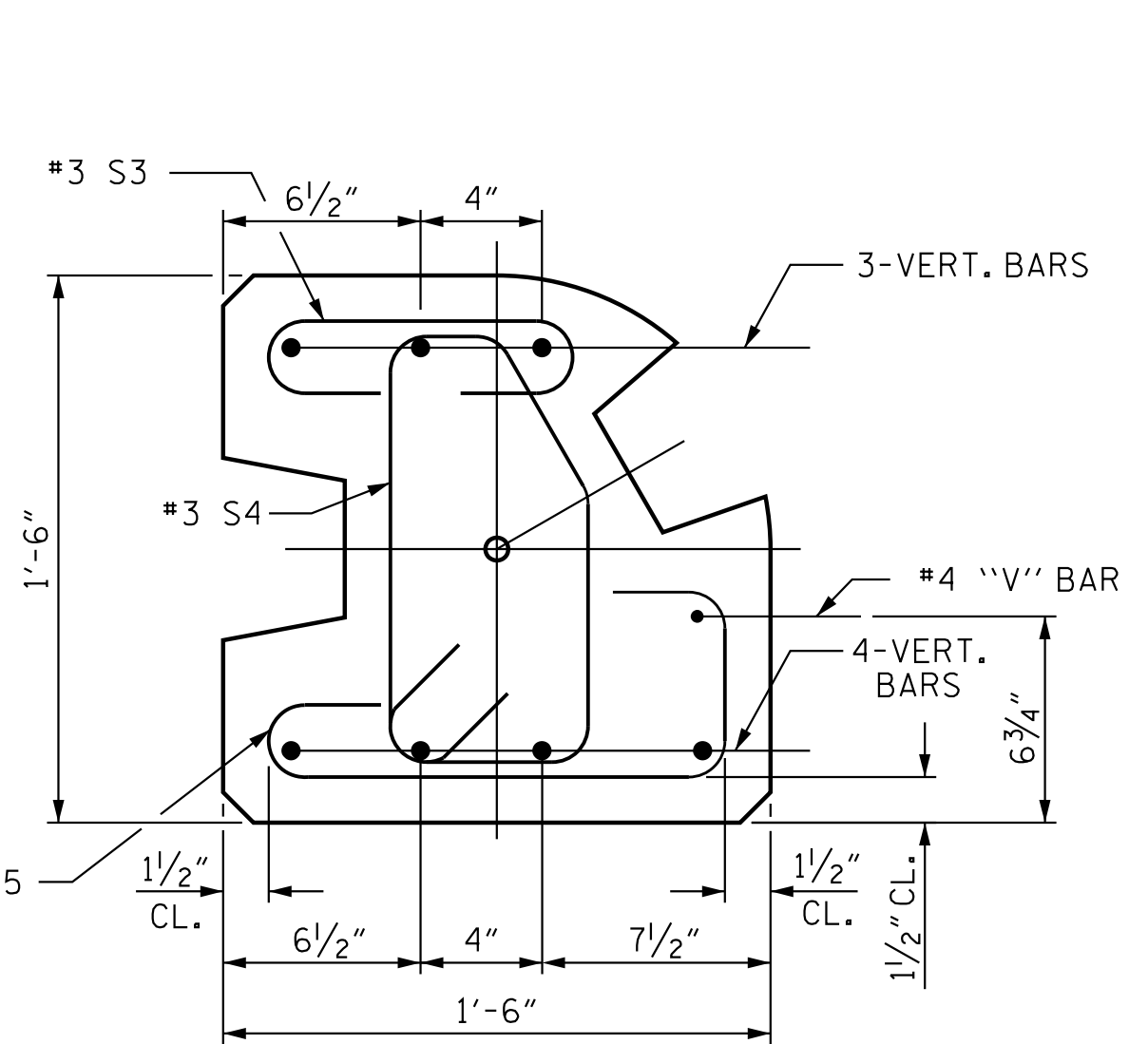
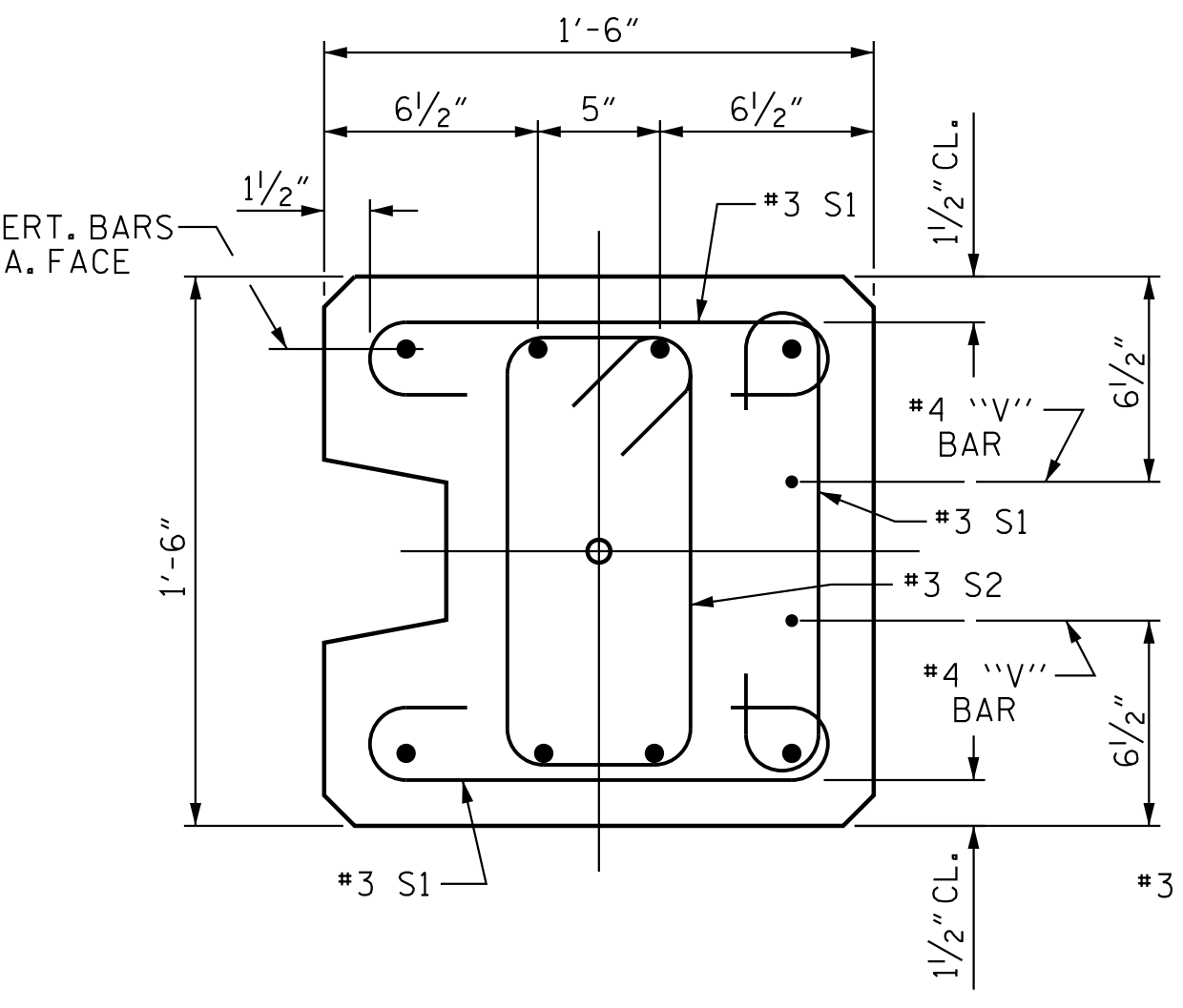
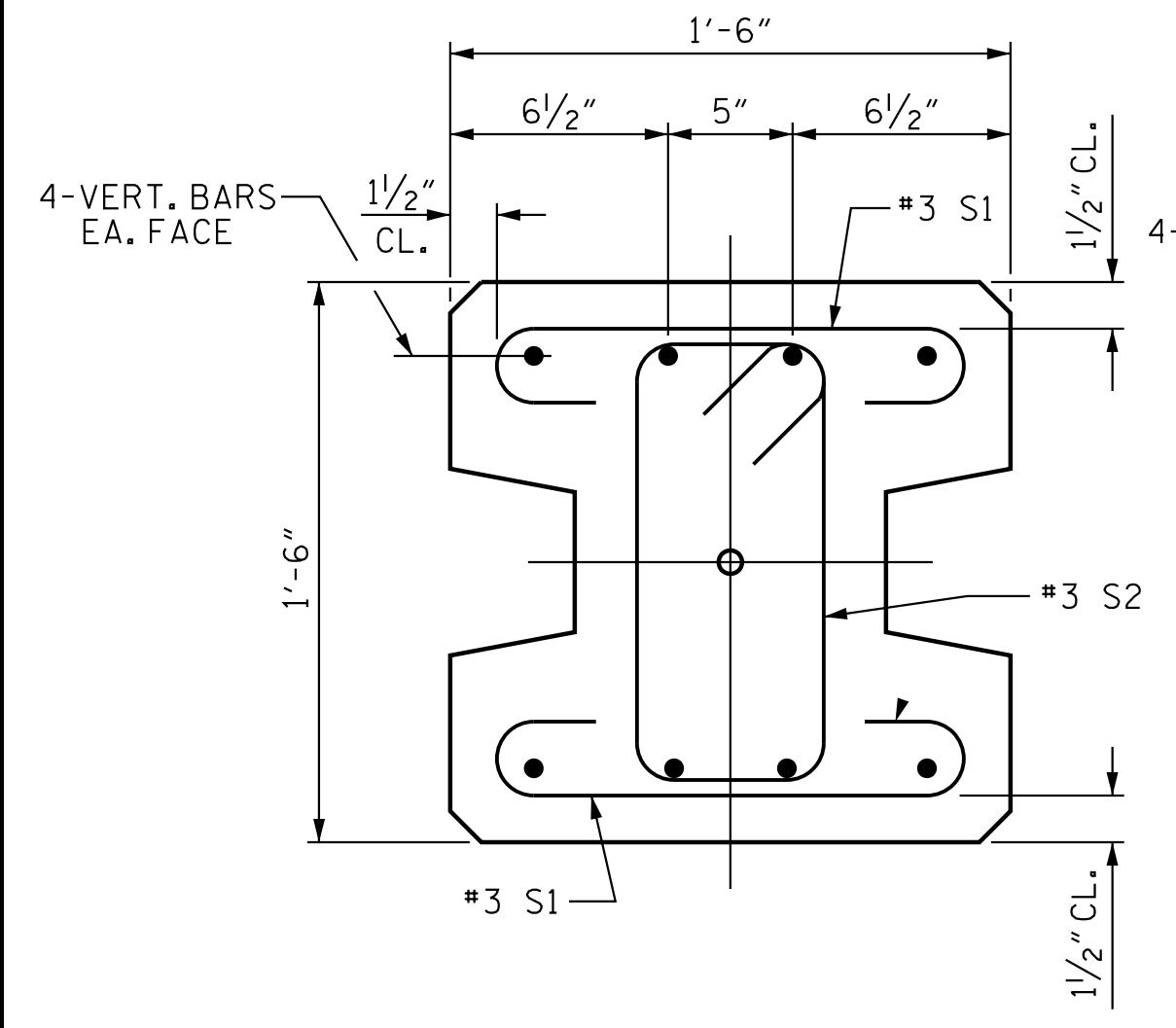
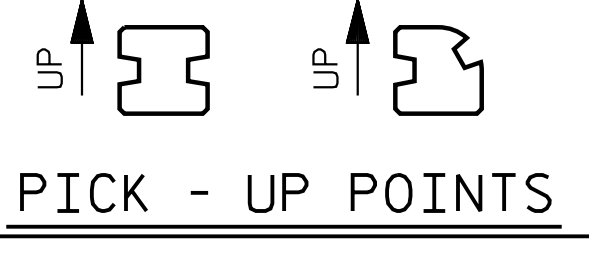
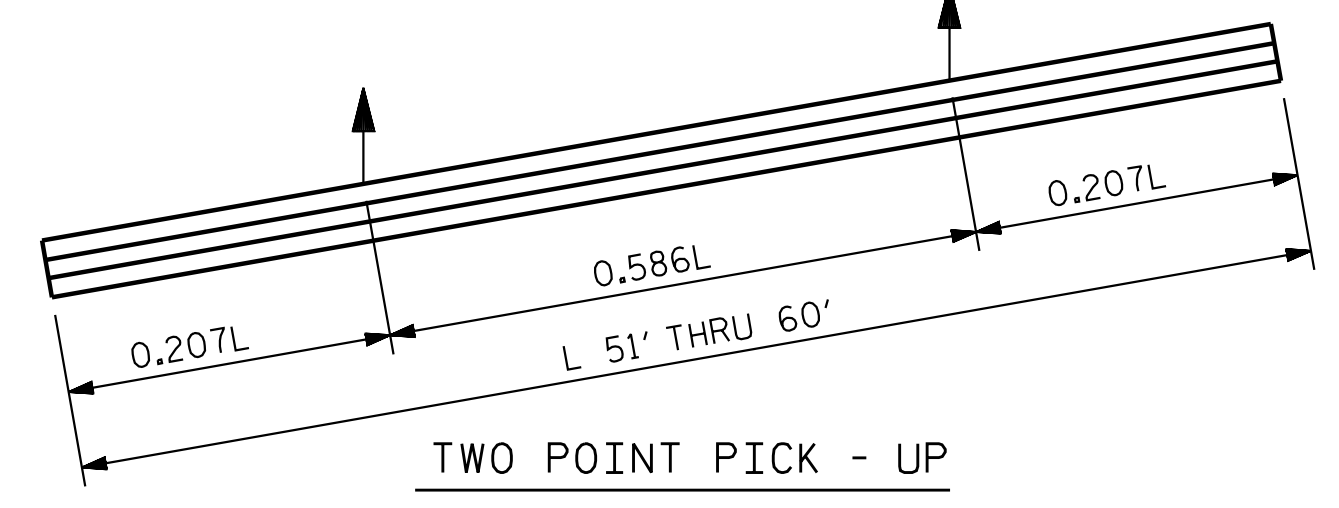
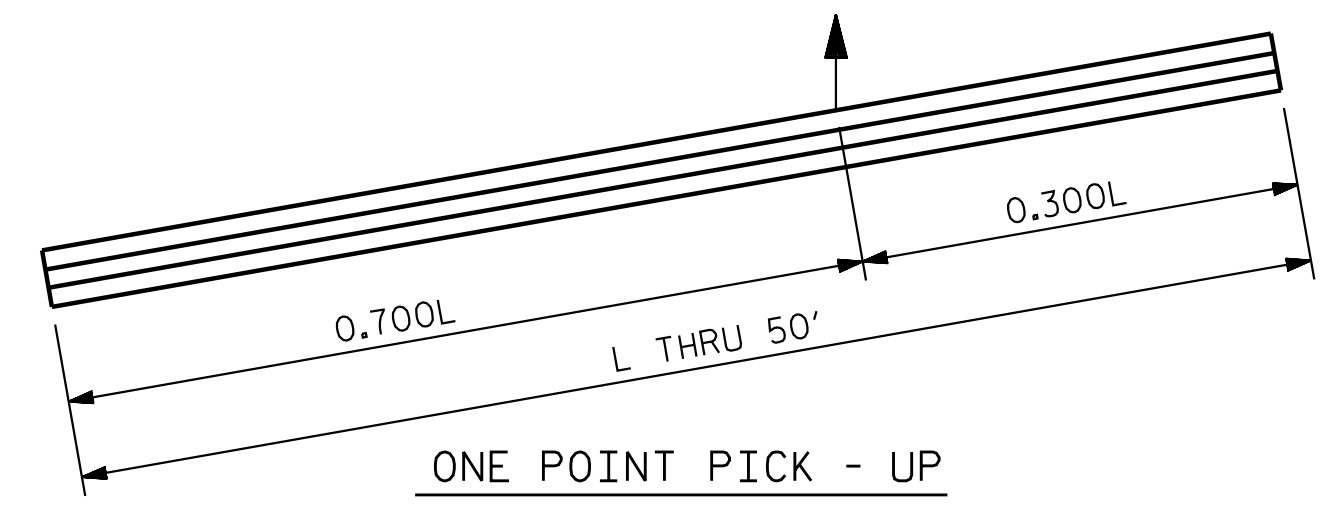
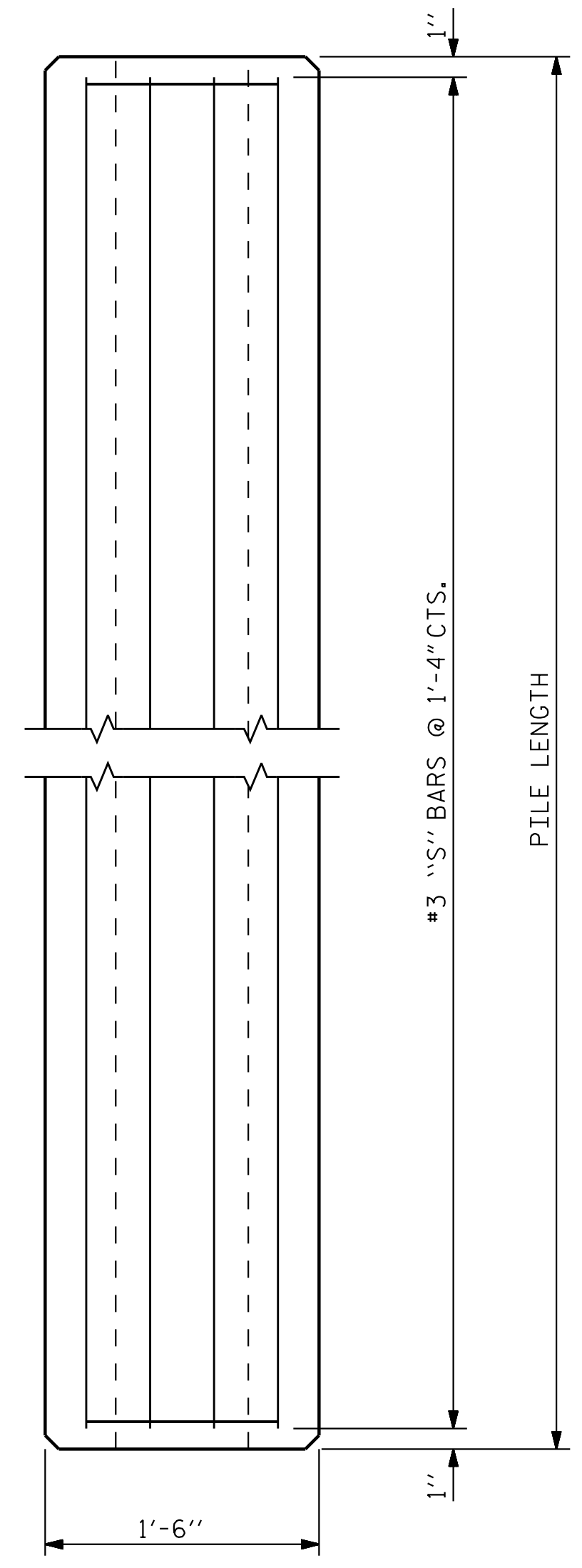
DRAWN BY: J. B. GETILE DATE: 05/11/2021  
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 DESIGN ENGINEER OF RECORD: M. B. ISENHOUR DATE: 05/04/23

Stantec Consulting Services Inc.  
 801 Jones Franklin Road  
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 Raleigh, NC 27806  
 Tel. (919) 851-6866  
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			REV. 5/18	MAA/THC

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PILE DETAIL

FOR VERTICAL BAR PILE REINFORCING, SEE SHEET 1 OF 3

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.

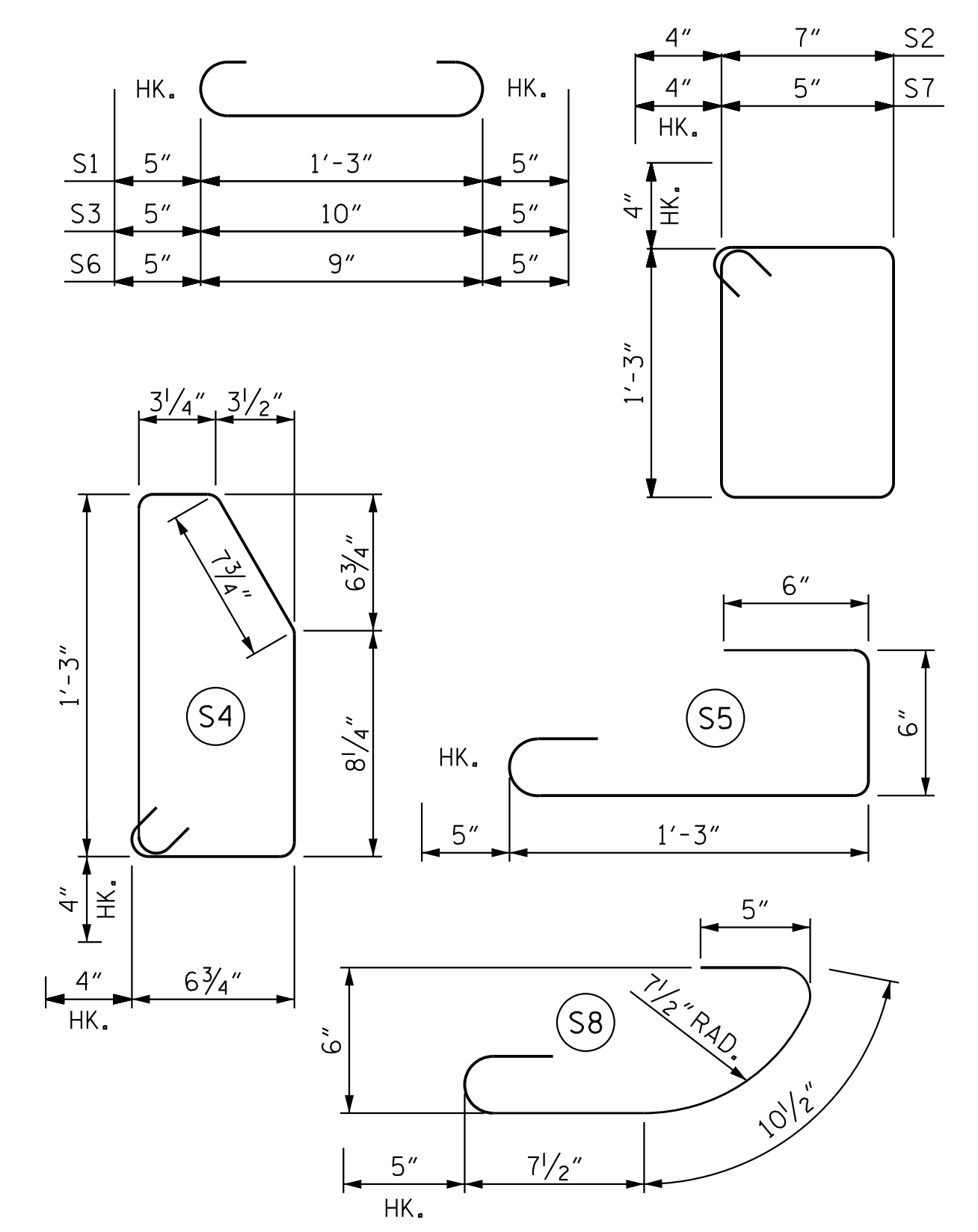
WHERE CAST-IN-PLACE LIFTING DEVICES ARE NOT USED, PICK-UP POINTS TO BE INDICATED WITH A BLACK MARK 2" WIDE.

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

ALL CORNERS TO BE CHAMFERED 1".

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"

BAR TYPES

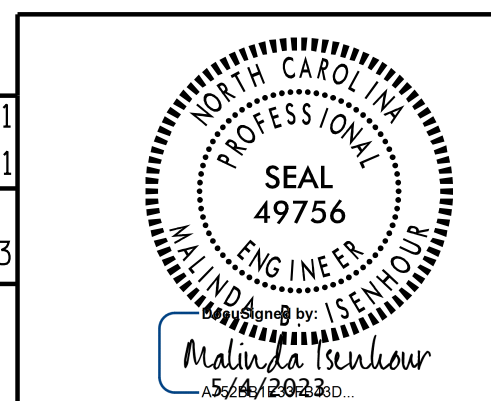


ALL BAR DIMENSIONS ARE OUT TO OUT.

PROJECT NO. R-3833C  
IREDELL COUNTY  
STATION: 42+50.63 -L-

SHEET 3 OF 3

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



DRAWN BY : J. B. GETILE DATE : 05/11/2021  
CHECKED BY : M. B. ISENHOUR DATE : 11/10/2021  
DESIGN ENGINEER OF RECORD : M. B. ISENHOUR DATE : 05/04/23



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

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

STD. NO. SBW3