
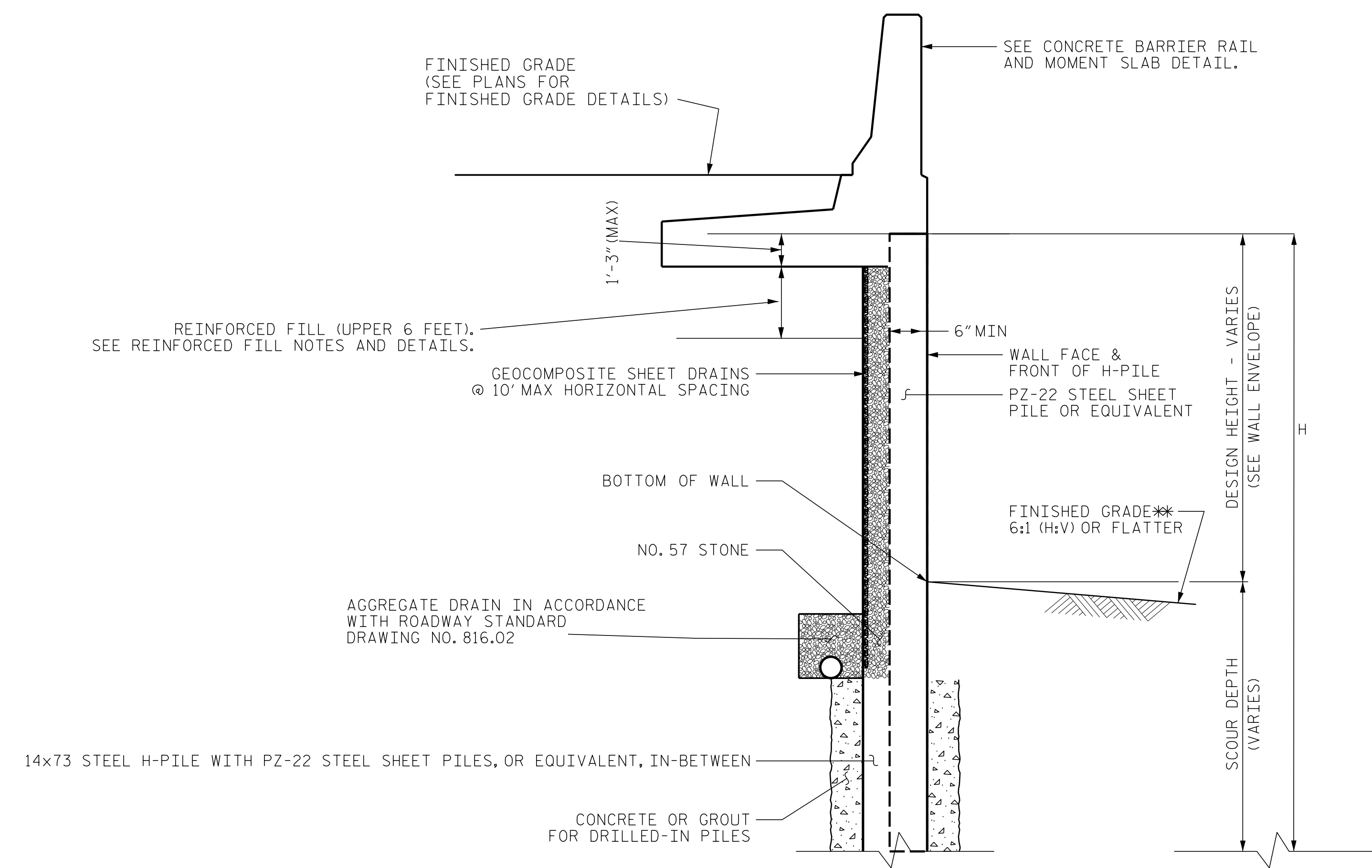


GEOTECHNICAL ENGINEER  DocuSigned by: <i>Kristen Hill</i> E02CECB86224E7 SIGNATURE	ENGINEER Dec 16, 2021 DATE SIGNATURE DATE
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



KING PILE WALL WITH SHEET PILING - TYPICAL SECTIONS

NOTES:

FOR SHEET PILE RETAINING WALLS, SEE SECTION 452 OF THE STANDARD SPECIFICATIONS.

KING PILE WALL SECTIONS WILL BE CONSTRUCTED AS A COMBINATION OF SOLDIER PILES AND SHEET PILES.

PAYMENT FOR KING PILE WALL SECTIONS SHOULD BE PAID ACCORDING TO PILE WALL WITH OPTIONS PAY ITEMS.

FOR CONCRETE BARRIER RAIL WITH MOMENT SLAB, SEE CONCRETE BARRIER RAIL WITH MOMENT SLAB PROVISION.

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

IT IS THE CONTRACTORS OPTION TO USE DRILLED-IN PILES OR DRIVEN PILES EXCEPT FOR APPROXIMATE STATION RANGE 10+50 TO 10+71 AND 13+25 TO 14+06 WHERE DRILLED-IN 14X73 H-PILES ARE REQUIRED.

CONTRACTOR MAY USE PZ-22 STEEL SHEET PILING, OR SHEET PILING WITH A SECTION MODULUS OF 22.0 CUBIC INCHES PER FOOT OR GREATER, IN-BETWEEN DRILLED IN 14X73 H-PILES

STEEL SHEET PILES SHALL MEET ASTM A572 OR A690 SPECIFICATIONS.

USE FULL LENGTH GALVANIZED H-PILES. PAINTING IS NOT REQUIRED.

BEFORE BEGINNING SOLDIER PILE 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.

THE UPPER MOST 6 FEET OF THE STEEL SHEET PILING WALL SECTIONS SHALL BE DESIGNED AS REINFORCED FILL WITH A WRAPPED FACE TO REDUCE LATERAL EARTH PRESSURE ON THE WALL.

DESIGN RETAINING WALL NO. 1 FOR THE FOLLOWING:

- 1) H = DESIGN HEIGHT + SCOUR DEPTH
- 2) DESIGN LIFE = 100 YEARS
- 3) MINIMUM H-PILE TIP ELEVATION, SEE SHEET W-7.
- 4) MINIMUM H-PILE PENETRATION INTO ROCK = 5 FT FROM APPROX. -W1- STA. 10+50 TO 10+71 AND 13+25 TO 14+06
- 5) IN-SITU ASSUMED MATERIAL PARAMETERS ABOVE ELEVATION 805 FT:
 - UNIT WEIGHT, $\gamma = 110$ LB/CF
 - FRICTION ANGLE, $\phi = 30$ DEGREES
 - COHESION, $c = 0$ LB/SF
- 6) IN-SITU ASSUMED MATERIAL PARAMETERS BELOW ELEVATION 805 FT:
 - UNIT WEIGHT, $\gamma = 100$ LB/CF
 - FRICTION ANGLE, $\phi = 0$ DEGREES
 - COHESION, $c = 500$ LB/SF
- 7) IN-SITU ASSUMED MATERIAL PARAMETERS BELOW ELEVATION 795 FT:
 - UNIT WEIGHT, $\gamma = 125$ LB/CF
 - FRICTION ANGLE, $\phi = 30$ DEGREES
 - COHESION, $c = 0$ LB/SF

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 OF 240 PSF.

DESIGN RETAINING WALL NO. 1 FOR A PIPE EXTENDING UNDER OR THROUGH THE WALL AS SHOWN. VERIFY PIPE LOCATION AND ELEVATION BEFORE BEGINNING SOLDIER PILE WALL DESIGN OR CONSTRUCTION.

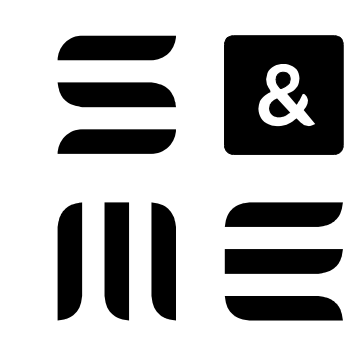
EXACT STATION RANGES MAY VARY DUE TO PILE SPACING.

PROJECT NO.: U-5896

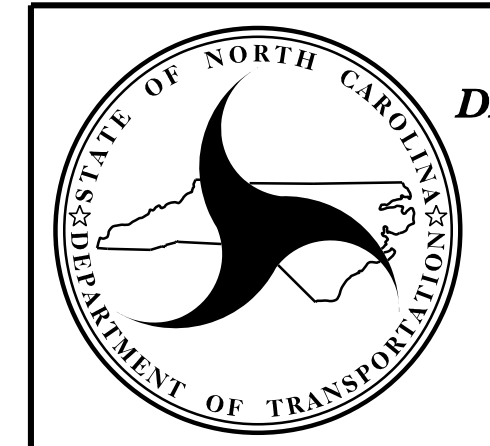
GUILFORD COUNTY

STATION: -W1- 10+50.00 TO 11+50.00

-W1- 12+50.00 TO 14+06.00



9751 SOUTHERN PINE BLVD
CHARLOTTE, NC 28273
(704) 523-4726



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

**GEOTECHNICAL
ENGINEERING UNIT**

**KING PILE WALL
WITH SHEET PILING**

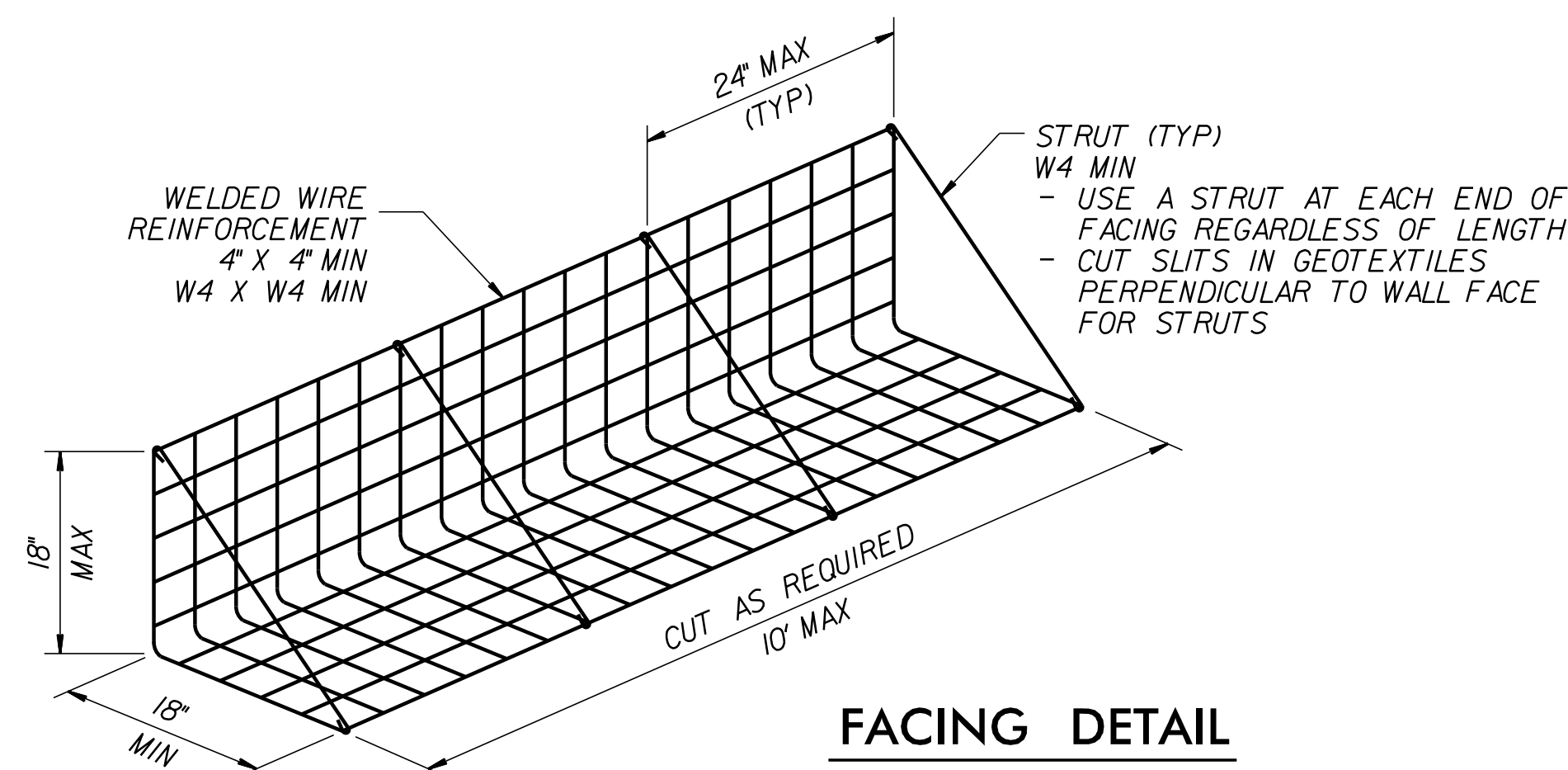
SHEET NO.
W1-1

ANTICIPATED CONSTRUCTION SEQUENCE FOR REINFORCED RETAINING WALL BACKFILL:

1. INSTALL GALVANIZED PZ-22 STEEL SHEET PILING, OR SHEET PILING WITH A SECTION MODULUS OF 22.0 CUBIC INCHES PER FOOT OR GREATER PRIOR TO CONSTRUCTING REINFORCED RETAINING WALL BACKFILL.
2. CONTROL DRAINAGE DURING CONSTRUCTION IN THE VICINITY OF THE REINFORCED RETAINING WALL BACKFILL.
3. COLLECT AND DIRECT RUNOFF AWAY FROM THE RETAINING WALL BACKFILL.
4. EXCAVATE AS NECESSARY TO CONSTRUCT BOTTOM OF REINFORCED RETAINING WALL BACKFILL TO THE ELEVATION SHOWN ON THE PLANS.
5. PLACE GEOTEXTILE OR GEOGRID REINFORCEMENT IN SLIGHT TENSION FREE OF KINKS, FOLDS, WRINKLES OR CREASES.
6. RETENTION GEOTEXTILE SHALL MEET THE REQUIREMENTS OF TYPE 2 GEOTEXTILE AS SHOWN IN TABLE 1056-1 OF THE STANDARD SPECIFICATIONS.
7. ERECT WELDED WIRE FORMS AS SHOWN ON SHEET W-2 AND SHEET W-3.
8. STAGGER VERTICAL JOINTS OF WELDED WIRE FORMS TO CREATE A RUNNING BOND.
9. PLACE WELDED WIRE FORMS AS NEAR TO VERTICAL AS POSSIBLE WITH NO NEGATIVE BATTER. CONSTRUCT REINFORCED RETAINING WALL BACKFILL WITH A MAXIMUM VERTICAL AND HORIZONTAL TOLERANCE OF 3" WHEN MEASURED WITH A 10'-0" STRAIGHT EDGE AND AN OVERALL PLUMBNESS (BATTER) AND HORIZONTAL ALIGNMENT OF LESS THAN 6".
10. DO NOT SPLICE OR OVERLAP GEOTEXTILE REINFORCEMENT IN THE MACHINE DIRECTION (MD), i.e., PERPENDICULAR TO THE REINFORCED RETAINING WALL BACKFILL FACE. OVERLAPS ONLY ARE ALLOWED IN THE CROSS-MACHINE DIRECTIONS (CMD).
11. PLACE BACKFILL WITHIN RETAINING WALL IN 8" TO 10" THICK LIFTS AND COMPACT IN ACCORDANCE WITH SUBARTICLE 235-3(C) OF THE STANDARD SPECIFICATIONS. USE ONLY HAND OPERATED COMPACTION EQUIPMENT WITHIN 3'-0" OF THE REINFORCED RETAINING WALL BACKFILL FACE.
12. WRAP GEOTEXTILE OR GEOGRID REINFORCEMENT AT VERTICAL CORNERS AS DIRECTED BY THE ENGINEER.
13. DO NOT DAMAGE GEOTEXTILE OR GEOGRID REINFORCEMENT OR WELDED WIRE FORMS WHEN PLACING AND COMPACTING BACKFILL. DO NOT OPERATE HEAVY EQUIPMENT ON GEOTEXTILE OR GEOGRID REINFORCEMENT UNTIL IT IS COVERED WITH AS LEAST 8" OF BACKFILL. DO NOT USE SHEEPSFOOT, GRID ROLLERS OR OTHER TYPES OF COMPACTION EQUIPMENT WITH FEET.

NOTES FOR SHEET PILE WALLS:

1. FOR STEEL SHEET PILES SEE SHEET PILE WALL SPECIAL PROVISION.
2. INSTALL SHEET PILING TO THE MINIMUM DEPTH SHOWN ON SHEET W-7 OR AS DIRECTED BY THE ENGINEER.
3. SHEET PILING SHALL BE PZ-22 OR SHEET PILING WITH A SECTION MODULUS OF 22.0 CUBIC INCHES PER FOOT OR GREATER
4. STEEL SHEET PILES SHALL MEET ASTM A572 OR A690 SPECIFICATIONS.
5. STEEL SHEET PILES SHALL BE GALVANIZED IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS.
6. AFTER FIELD WELDING, OR IF GALVANIZING ON MEMBERS IS DAMAGED, REPAIR DAMAGED GALVANIZED SURFACES IN ACCORDANCE WITH ARTICLE 1076-7 OF THE STANDARD SPECIFICATIONS.



NOTES FOR REINFORCED RETAINING WALL BACKFILL:

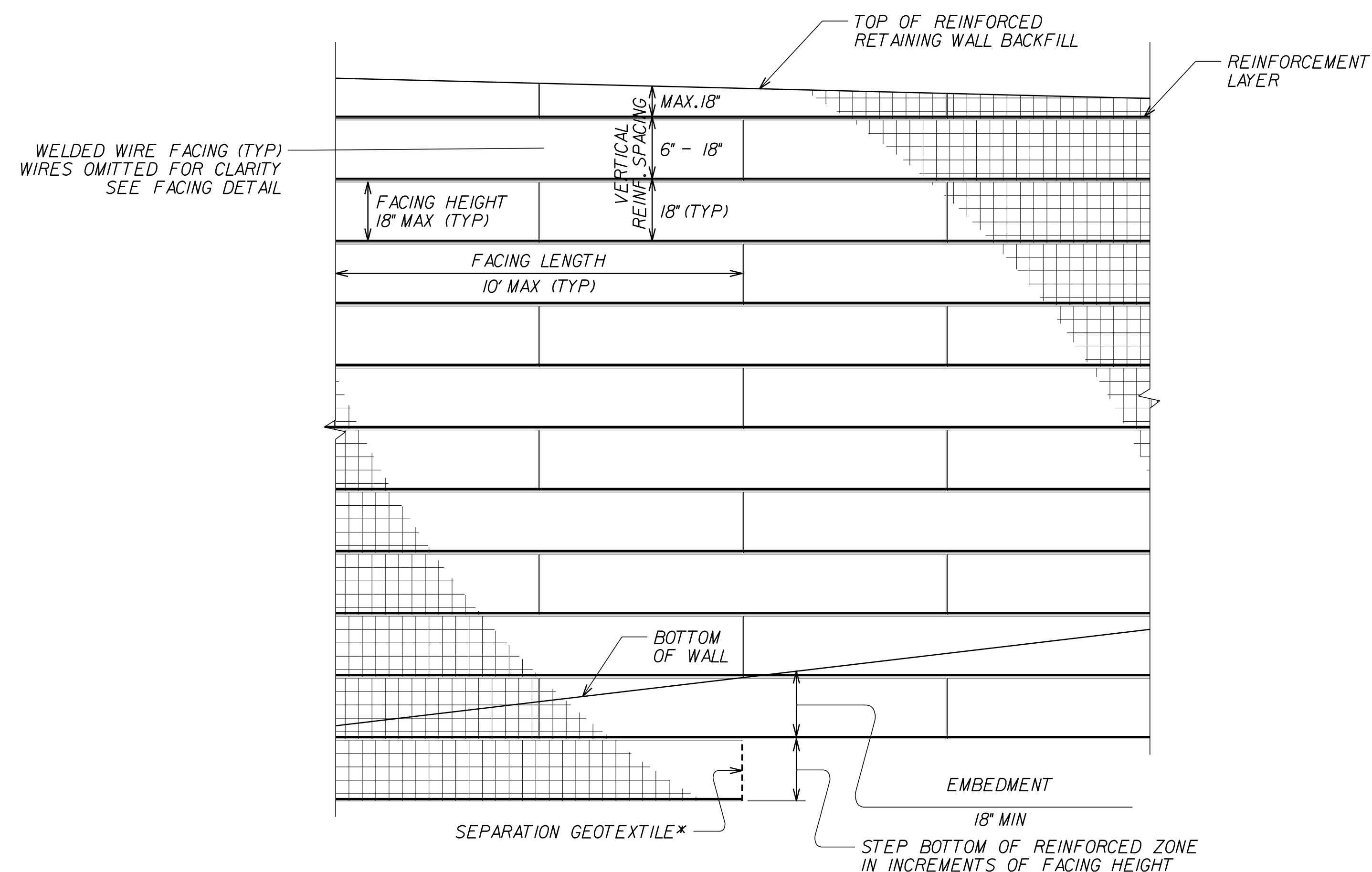
1. FOR REINFORCED RETAINING WALL BACKFILL, SEE REINFORCED RETAINING WALL BACKFILL SPECIAL PROVISIONS.
2. RETAINING WALLS ARE DESIGNED FOR MAXIMUM FACTORED VERTICAL PRESSURE ON FOUNDATION MATERIAL = 1,700 PSF.
3. USE CLASS II, TYPE I, CLASS III, CLASS V, OR CLASS VI SELECT MATERIAL FOR REINFORCED FILLS. DO NOT USE CLASS VI SELECT MATERIAL IN THE REINFORCED RETAINING WALL BACKFILL WITH GEOTEXTILE REINFORCEMENT.
4. 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.
5. DO NOT PLACE WELDED WIRE FACING, BACKFILL OR REINFORCEMENT UNTIL EXCAVATION DIMENSIONS AND FOUNDATION MATERIAL ARE APPROVED.
6. DO NOT SPLICE OR OVERLAP REINFORCEMENT SO SEAMS ARE PARALLEL TO THE WALL FACE.
7. CONTACT THE ENGINEER WHEN EXISTING OR FUTURE OBSTRUCTIONS SUCH AS FOUNDATIONS, PAVEMENTS, PIPES, INLETS OR UTILITIES WILL INTERFERE WITH REINFORCEMENT.

GEOTECHNICAL ENGINEER

ENGINEER

DocuSigned by:
Kristen Hill
ES2CFCE845224F2
SIGNATURE

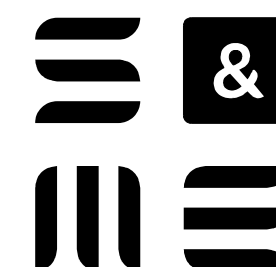
Dec 16, 2021
DATE



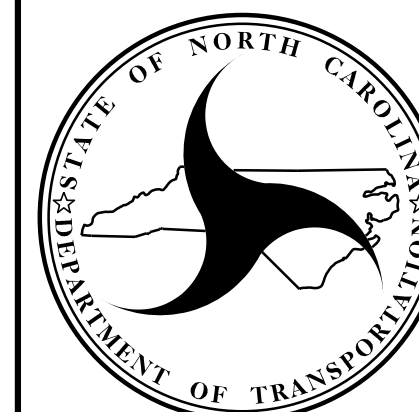
REINFORCED RETAINING WALL BACKFILL – PARTIAL ELEVATION
*SEE GEOSYNTHETIC PLACEMENT DETAILS

PROJECT NO.: U-5896
GUILFORD COUNTY
STATION: -W1- 10+50.00 TO 11+50.00
-W1- 12+50.00 TO 14+06.00

PREPARED BY: JOEY DAILY DATE: 10/7/2021
REVIEWED BY: KRISTEN HILL DATE: 10/7/2021



9751 SOUTHERN PINE BLVD
CHARLOTTE, NC 28273
(704) 523-4726



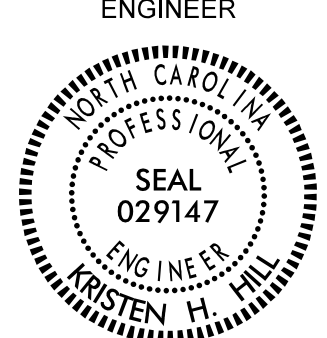
NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
**GEOTECHNICAL
ENGINEERING UNIT**

NOTES FOR SHEET PILE RETAINING WALL AND REINFORCED BACKFILL

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	
1			3			W1-2
2			4			

GEOTECHNICAL ENGINEER

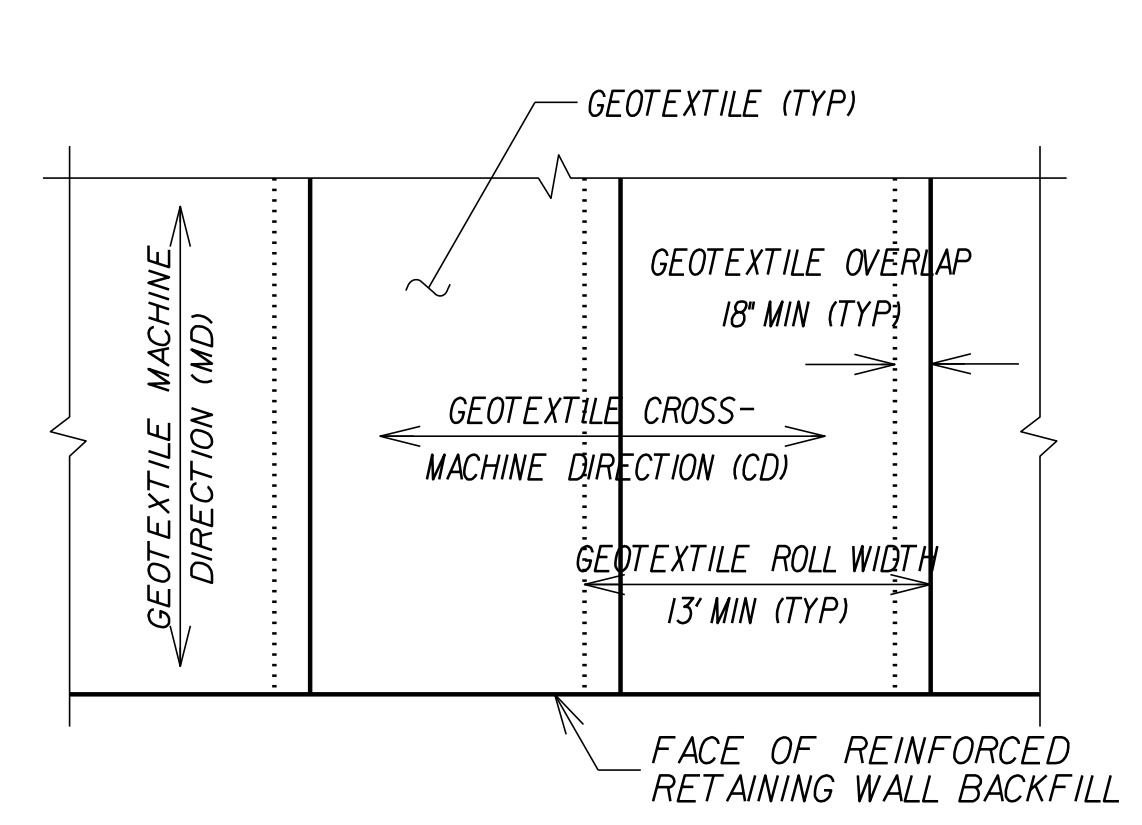
ENGINEER



DocuSigned by:
Kristen Hill
Dec 16, 2021

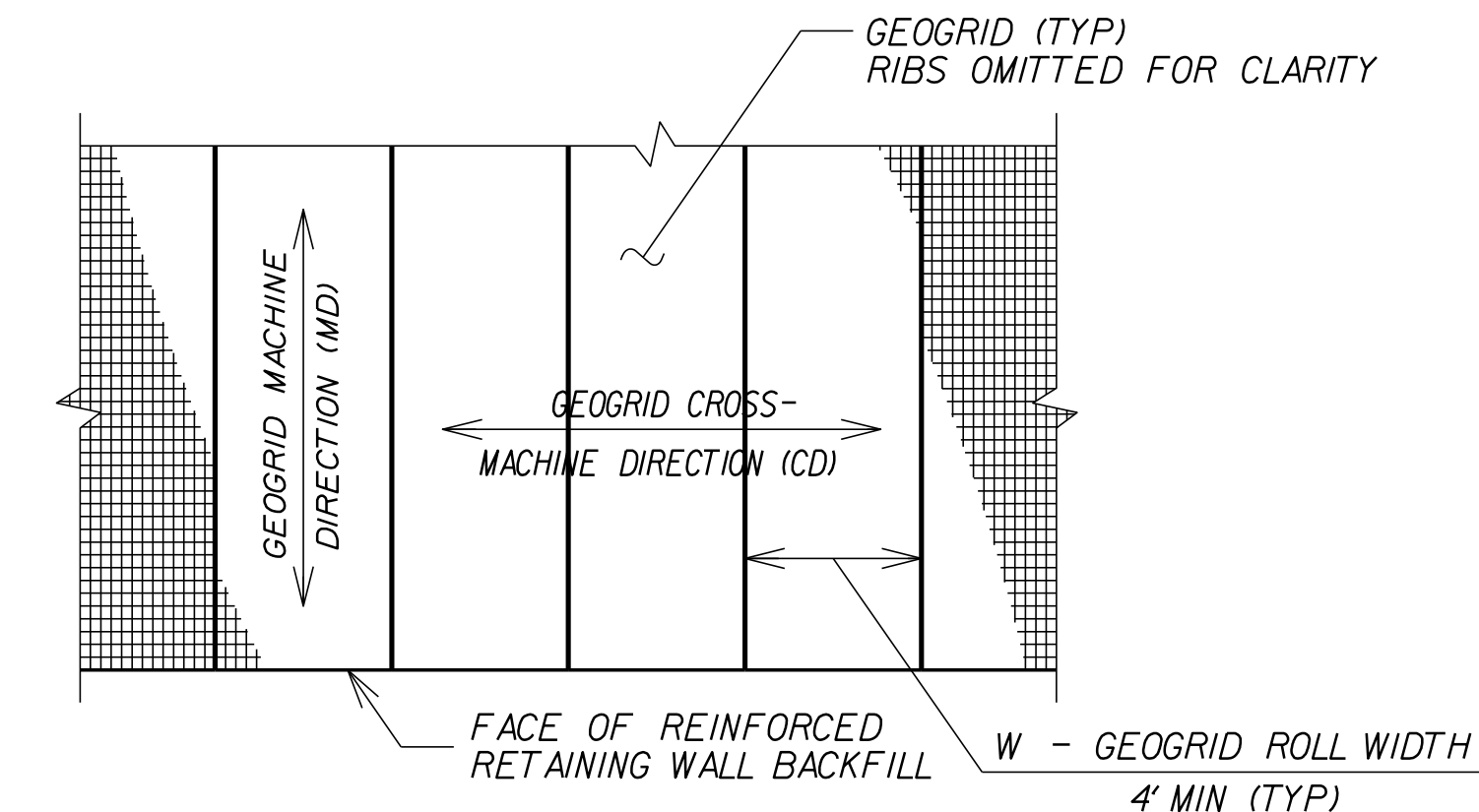
SIGNATURE DATE SIGNATURE DATE

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



GEOTEXTILE PLACEMENT (PLAN VIEW)

(100% COVERAGE MIN FOR
GEOTEXTILE REINFORCEMENT)



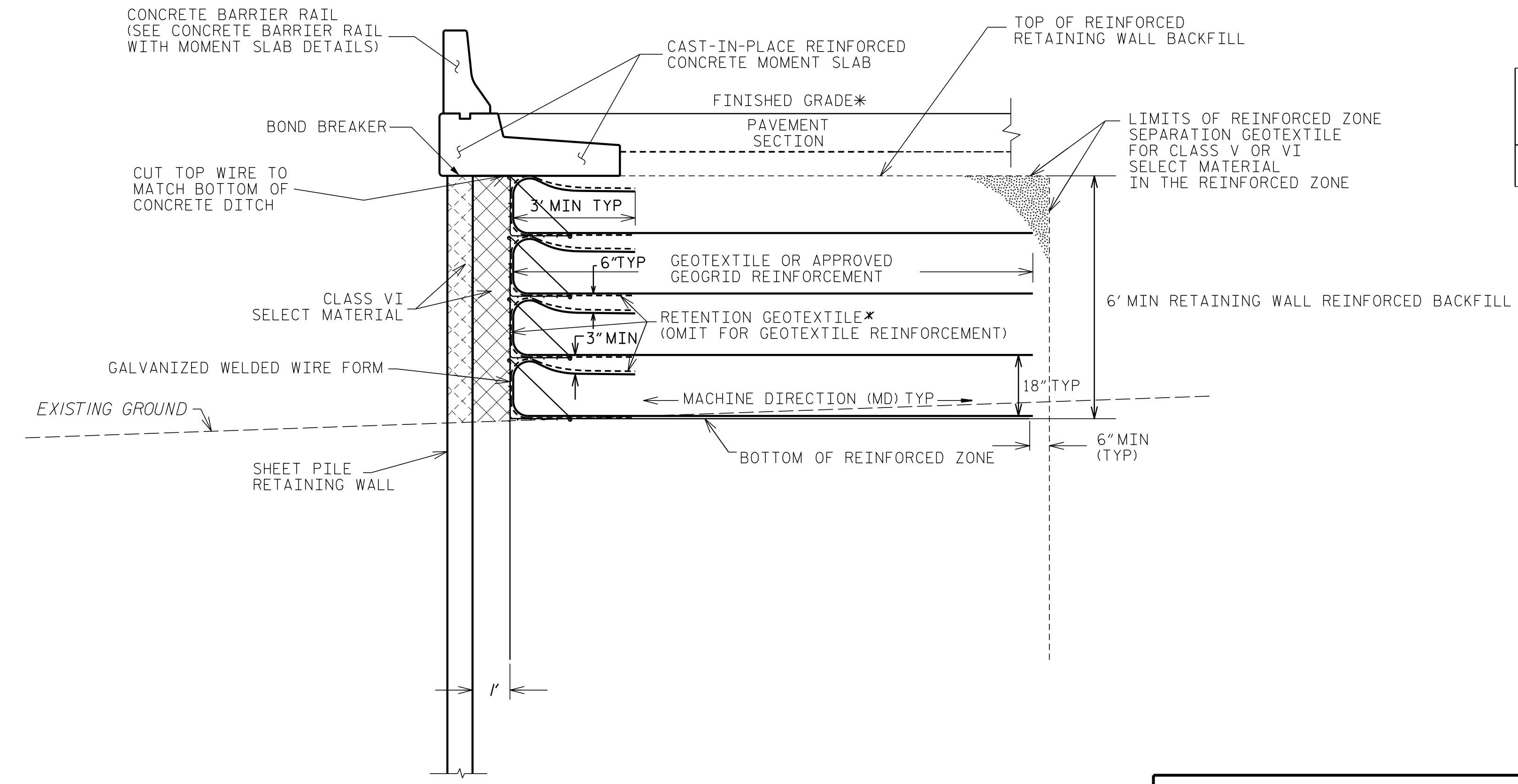
GEOGRID PLACEMENT

(100% COVERAGE MIN FOR
GEOGRID REINFORCEMENT)

GEOSYNTHETIC PLACEMENT DETAILS

(PLAN VIEW)

*SEE REINFORCED RETAINING WALL BACKFILL NOTE 4 ON SHEET W-2.



TYPICAL SECTION FOR SHEET PILE RETAINING WALLS

*SEE GEOSYNTHETIC PLACEMENT DETAILS
FROM -W1- STA. 10+50 TO -W1- STA. 11+50 AND
FROM -W1- STA. 12+50 TO -W1- STA. 14+06

Length (FT)	Geogrid (Ult. Strength) (LBS/FT)
6	1875

MINIMUM REQUIRED GEOGRID

Length (FT)	Geotextile (Ult. Strength) (LBS/FT)
7.5	3600

MINIMUM REQUIRED GEOTEXTILE

MINIMUM REQUIRED REINFORCEMENT

PROJECT NO.: U-5896

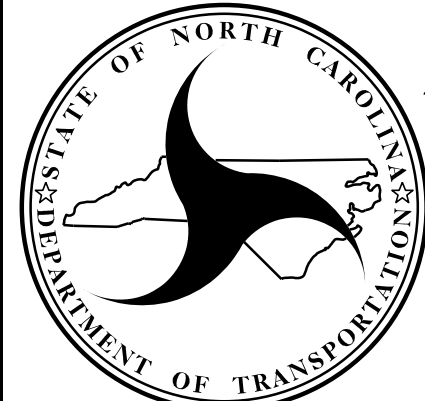
GUILFORD COUNTY

STATION: -W1- 10+50.00 TO 11+50.00
-W1- 12+50.00 TO 14+06.00

PREPARED BY: JOEY DAILY DATE: 10/7/2021
REVIEWED BY: KRISTEN HILL DATE: 10/7/2021



9751 SOUTHERN PINE BLVD
CHARLOTTE, NC 28273
(704) 523-4726

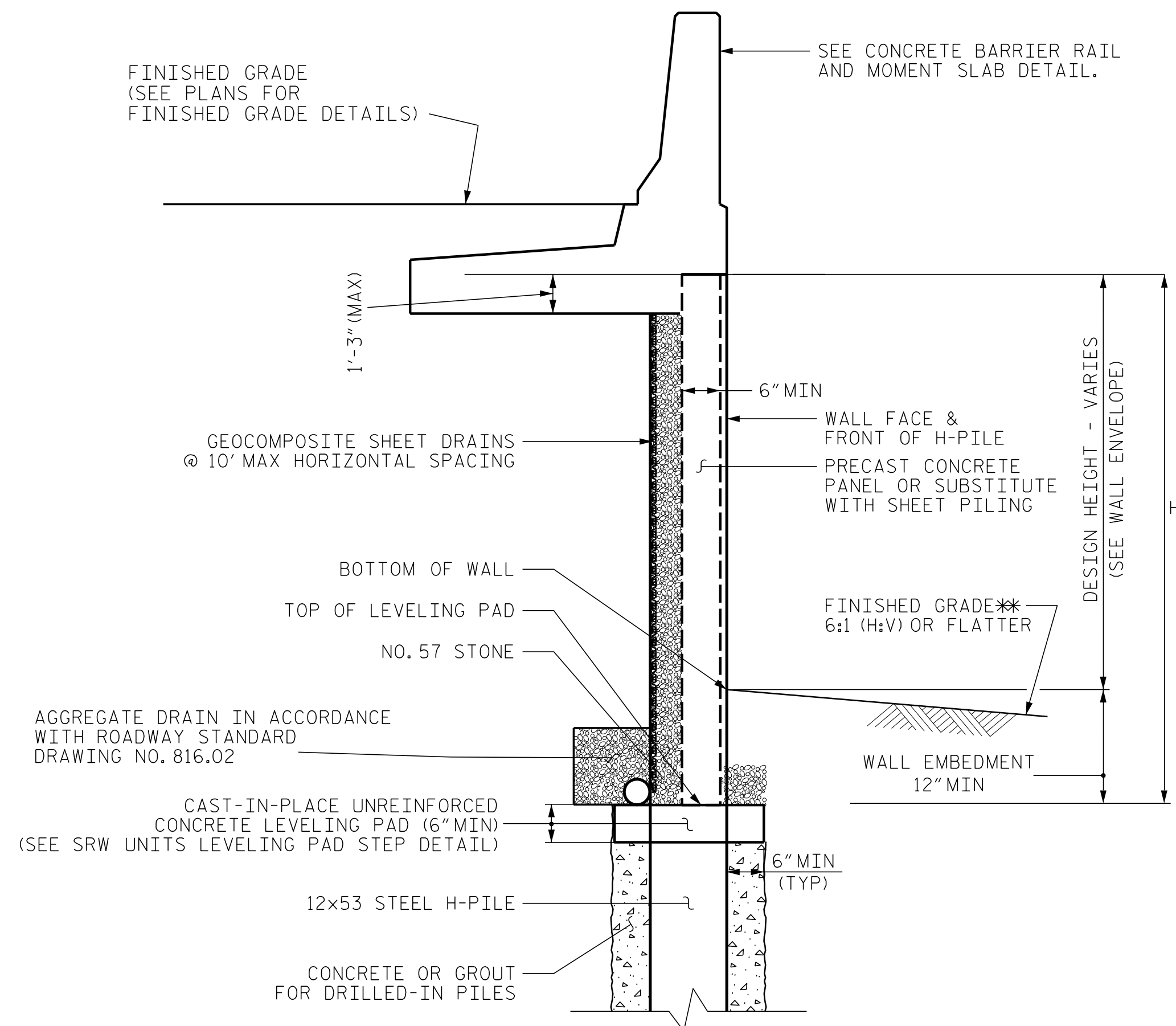


NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

**GEOTECHNICAL
ENGINEERING UNIT**

**SHEET PILE RETAINING WALL
TYPICAL SECTIONS**

REVISIONS						SHEET NO. W1-3
NO.	BY	DATE	NO.	BY	DATE	
1			3			
2			4			




**SOLDIER PILE WALL WITH
PRECAST PANEL - TYPICAL SECTIONS**

NOTES:

- FOR SOLDIER PILE RETAINING WALLS, SEE PILE WALL WITH OPTIONS SPECIAL PROVISION.
- FOR CONCRETE BARRIER RAIL WITH MOMENT SLAB, SEE CONCRETE BARRIER RAIL WITH MOMENT SLAB PROVISION.
- 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 DRIVEN H-PILES FOR RETAINING WALL NO. 1 SOLDIER PILE WALL SECTIONS.
- USE A SOLDIER PILE RETAINING WALL WITH PRECAST CONCRETE PANELS THAT MEET SECTION 1077 OF THE STANDARD SPECIFICATIONS FOR RETAINING WALL NO. 1. THE CONTRACTOR MAY SUBSTITUTE PRECAST CONCRETE PANELS WITH SHEET PILING.
- USE FULL LENGTH GALVANIZED H-PILES. PAINTING IS NOT REQUIRED.
- BEFORE BEGINNING SOLDIER PILE 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 + WALL EMBEDMENT
 - 2) DESIGN LIFE = 100 YEARS
 - 3) MINIMUM WALL EMBEDMENT ELEVATION = 811.0 FT
 - 4) MAXIMUM H-PILE SPACING = 10 FT
 - 5) IN-SITU ASSUMED MATERIAL PARAMETERS ABOVE ELEVATION 805 FT:
UNIT WEIGHT, $\gamma = 110$ LB/CF
FRICTION ANGLE, $\phi = 30$ DEGREES
COHESION, $c = 0$ LB/SF
 - 6) IN-SITU ASSUMED MATERIAL PARAMETERS BELOW ELEVATION 805 FT:
UNIT WEIGHT, $\gamma = 100$ LB/CF
FRICTION ANGLE, $\phi = 0$ DEGREES
COHESION, $c = 500$ LB/SF
 - 7) IN-SITU ASSUMED MATERIAL PARAMETERS BELOW ELEVATION 795 FT:
UNIT WEIGHT, $\gamma = 125$ LB/CF
FRICTION ANGLE, $\phi = 30$ DEGREES
COHESION, $c = 0$ LB/SF
- 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 OF 240 PSF.
- DESIGN RETAINING WALL NO. 1 FOR A PIPE EXTENDING UNDER OR THROUGH THE WALL AS SHOWN. VERIFY PIPE LOCATION AND ELEVATION BEFORE BEGINNING SOLDIER PILE WALL DESIGN OR CONSTRUCTION.
- EXACT STATION RANGES MAY VARY DUE TO PILE SPACING.

<p>GEOTECHNICAL ENGINEER</p>  <p>DocuSigned by: <i>Kristen Hill</i> ES2CF C8548224F2</p> <p>SIGNATURE DATE SIGNATURE DATE</p>	<p>ENGINEER</p> <p>Dec 16, 2021</p>
<p>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</p>	

PROJECT NO.: U-5896

GUILFORD COUNTY

STATION: -W1- 10+00.00 TO 10+50.00

-W1- 11+55.00 TO 12+45.00

-W1- 14+06.00 TO 15+50.00



9751 SOUTHERN PINE BLVD
CHARLOTTE, NC 28273
(704) 523-4726



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

**GEOTECHNICAL
ENGINEERING UNIT**

STD CELL Wall_SoldierPile

**SOLDIER PILE WALL
CONCRETE BARRIER RAIL
WITH MOMENT SLAB -
TYPICALS & NOTES**

SHEET
NO.
W1-4

STRUCTURE ENGINEER	ENGINEER
	
Documented by: 	Dec 16, 2021 DATE
EXP. JTS. SIGNATURE	DATE

NOTES:

FOR CONCRETE BARRIER RAIL WITH MOMENT SLAB, SEE CONCRETE BARRIER RAIL WITH MOMENT SLAB PROVISION.

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

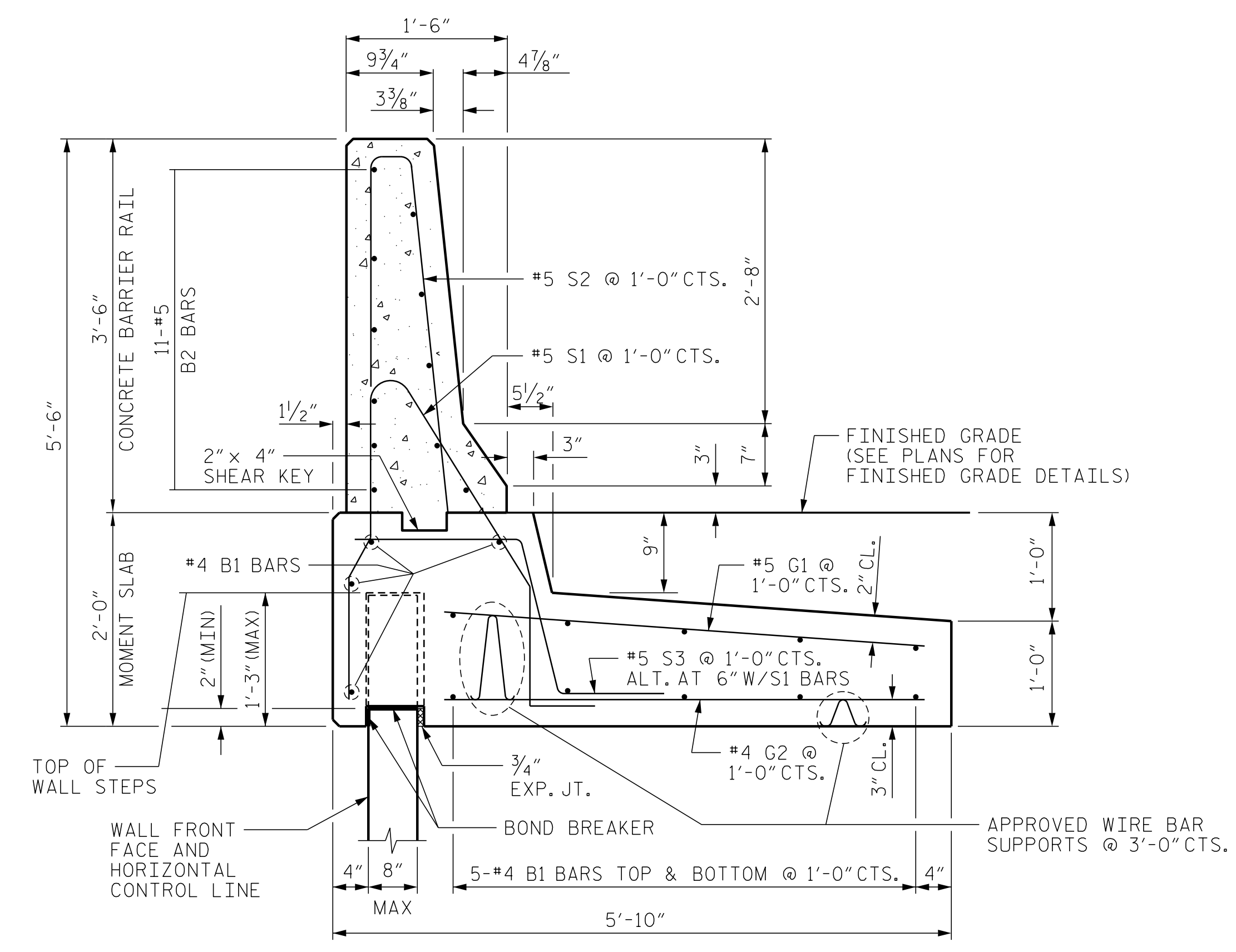
EXPANSION JOINTS SHALL BE PLACED IN THE BARRIER RAIL AND MOMENT SLAB AT A MAXIMUM SPACING OF 30'.

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.

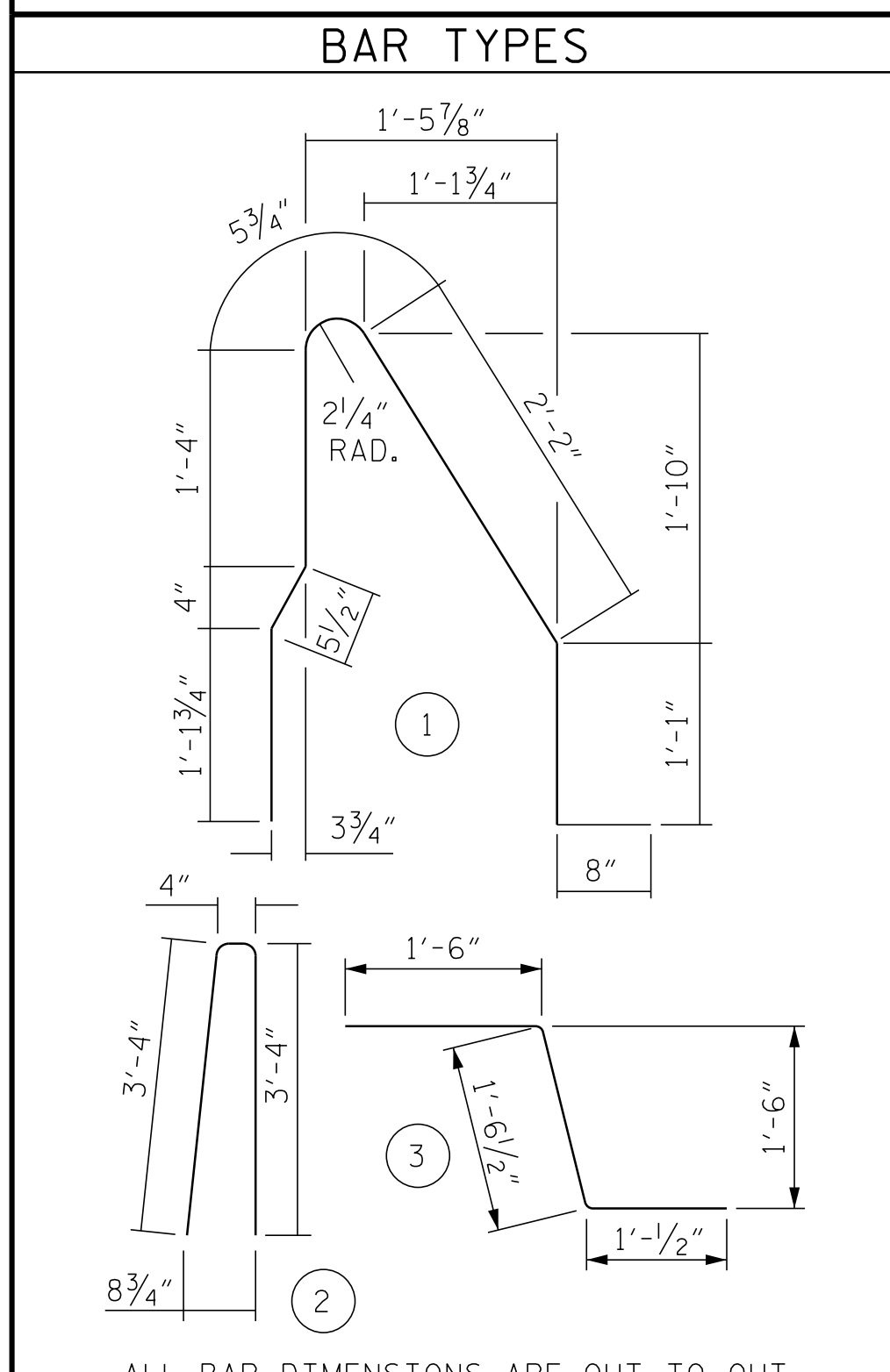
ALL REINFORCING STEEL IN THE BARRIER RAIL SHALL BE EPOXY COATED.

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

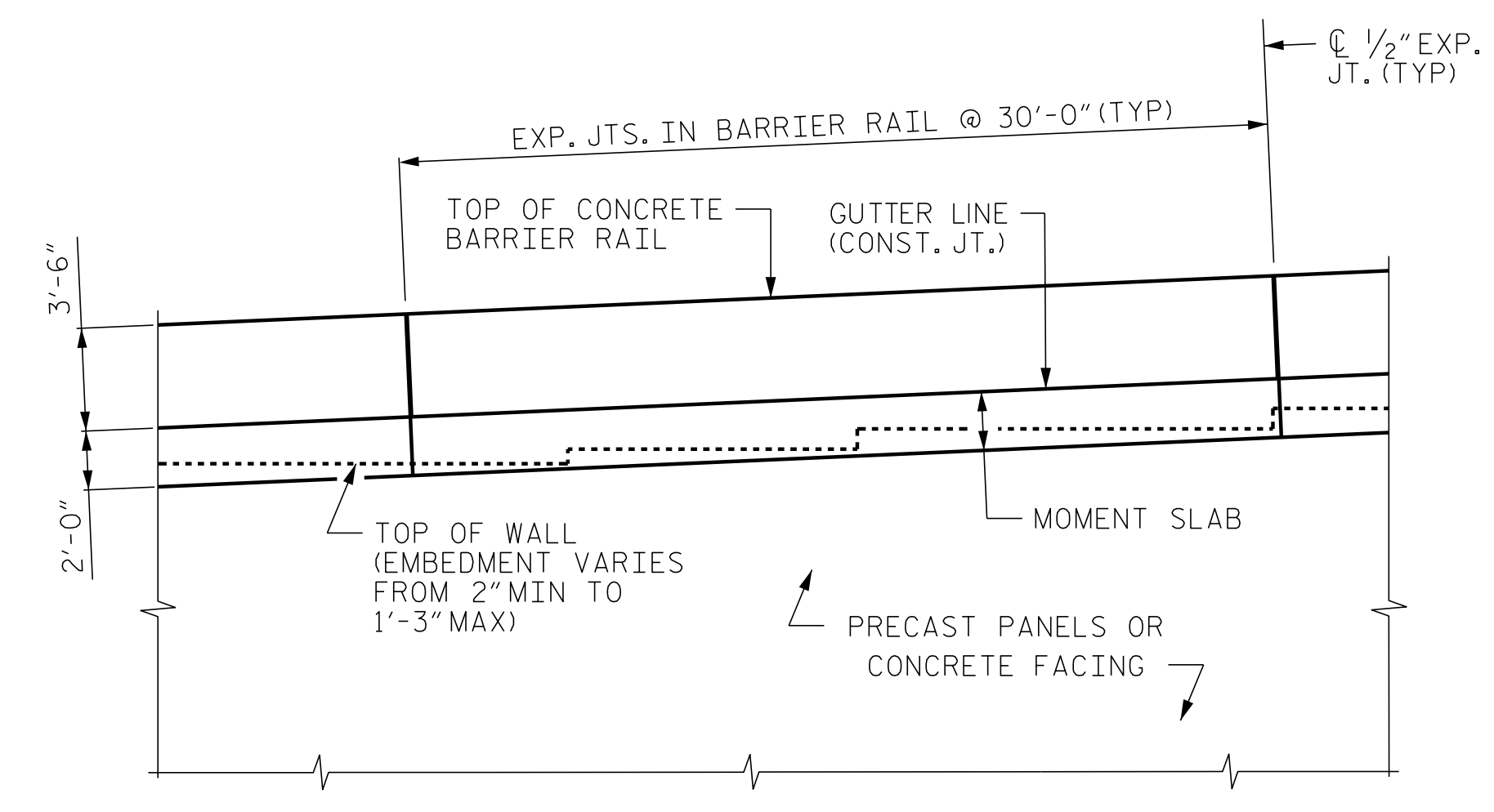
CONCRETE BARRIER RAIL WITH MOMENT SLAB
PAY LENGTH = 550 LIN FT



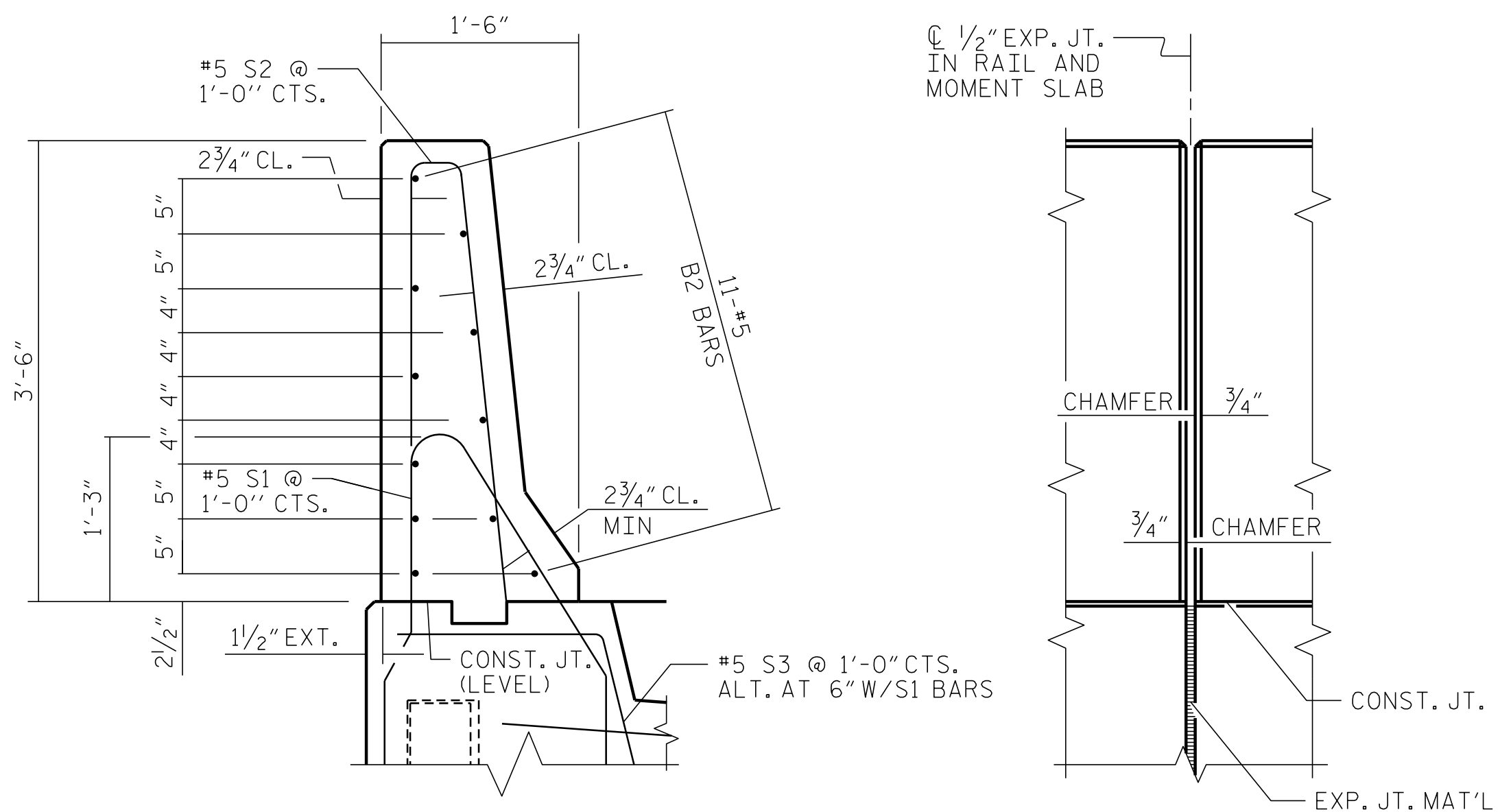
BILL OF MATERIAL

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



CONCRETE BARRIER RAIL WITH MOMENT SLAB - PARTIAL ELEVATION

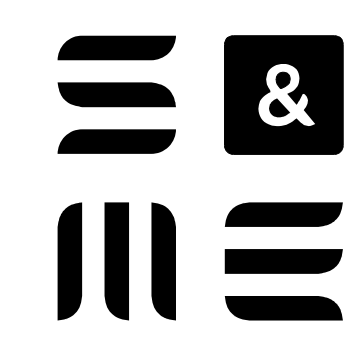


SECTION THRU RAIL ELEV. @ EXP. JOINTS

BARRIER RAIL DETAILS

PROJECT NO.: U-5896
GUILFORD COUNTY
STATION: -L- STA 10+00.00 TO 15+50.00

PREPARED BY: JOEY DAILY DATE: 6/9/2021
REVIEWED BY: KRISTEN HILL DATE: 6/9/2021



9751 SOUTHERN PINE BLVD
CHARLOTTE, NC 28273
(704) 523-4726

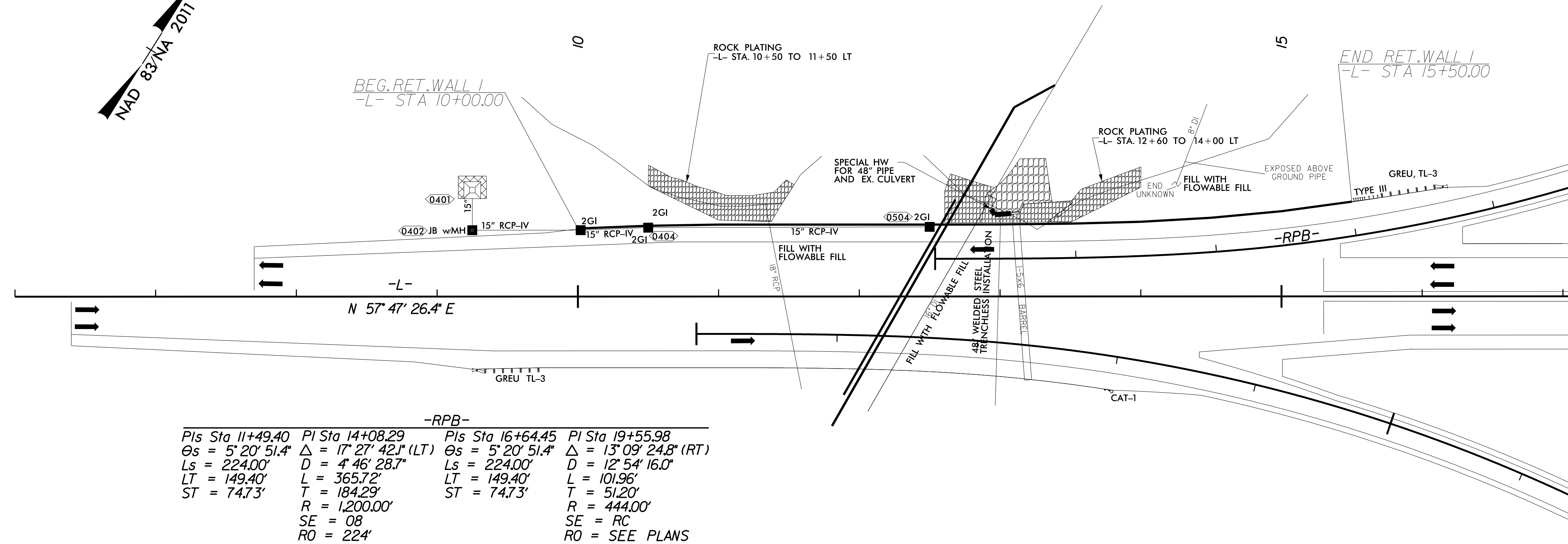
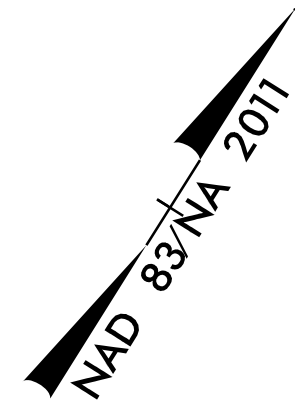
NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

**GEOTECHNICAL
ENGINEERING UNIT**

**CONCRETE BARRIER RAIL
WITH MOMENT SLAB
FOR PRECAST PANELS
AND CONCRETE FACING**

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	
1			3			W1-5
2			4			

RETAINING WALL DETAIL SHEET



-RPB-	
Pls Sta 11+49.40	PI Sta 14+08.29
$\theta_s = 5^\circ 20' 51.4''$	$\Delta = 17^\circ 27' 42.1''$ (LT)
$L_s = 224.00'$	$D = 4^\circ 46' 28.7''$
$LT = 149.40'$	$L = 365.72'$
$ST = 74.73'$	$T = 184.29'$
	$R = 1,200.00'$
	$SE = 08$
	$RO = 224'$

Pls Sta 16+64.45	PI Sta 19+55.98
$\theta_s = 5^\circ 20' 51.4''$	$\Delta = 13^\circ 09' 24.8''$ (RT)
$L_s = 224.00'$	$D = 12^\circ 54' 16.0''$
$LT = 149.40'$	$L = 101.96'$
$ST = 74.73'$	$T = 51.20'$
	$R = 444.00'$
	$SE = RC$
	$RO = SEE PLANS$

SEE SHEET 5 FOR FULL PLAN VIEW

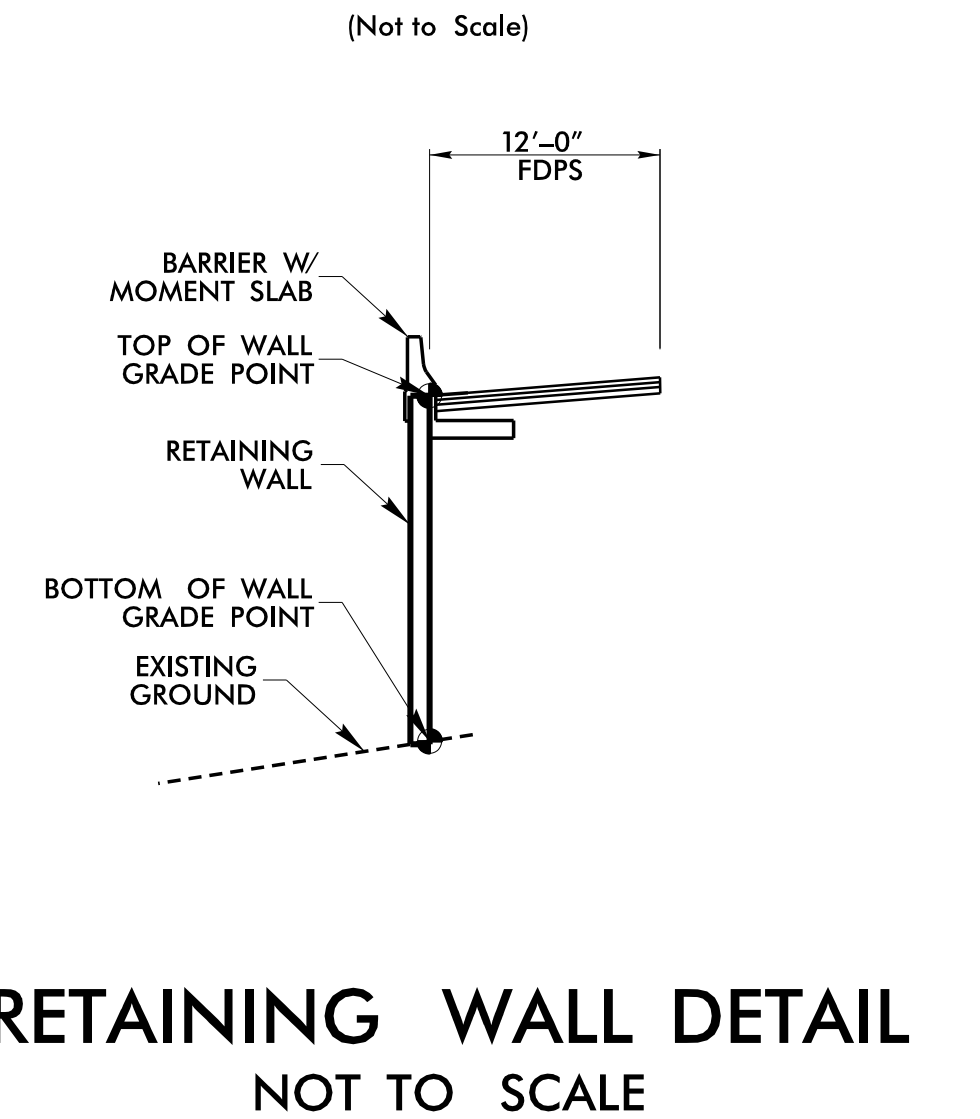
GEOTECHNICAL ENGINEER

DocuSigned by:
Kristen Hill
ES2CF6B4822AF2

ENGINEER

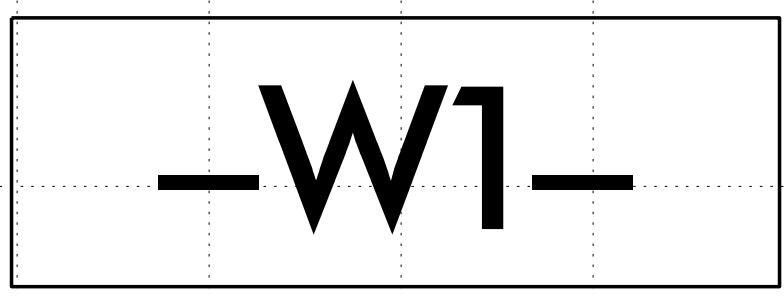
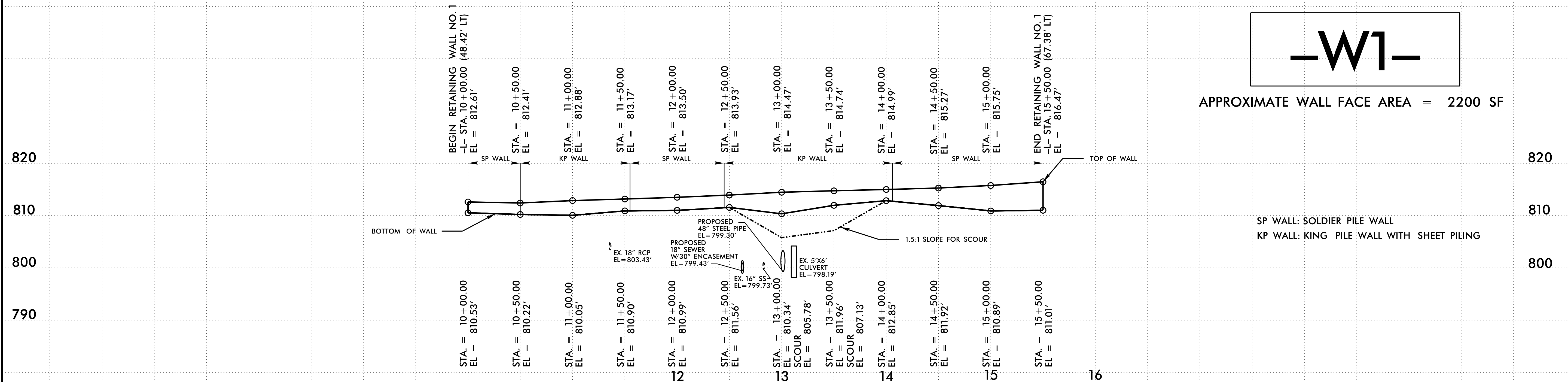
DATE: Dec 16, 2021

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



RETAINING WALL DETAIL
NOT TO SCALE

THE WALL ENVELOPE DOES NOT ACCURATELY DEPICT THE ACTUAL FACE OF THE WALL.

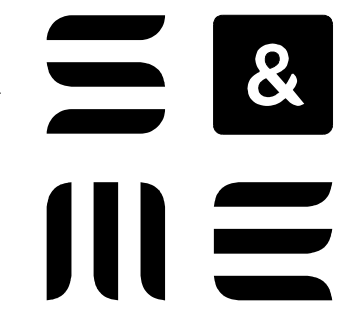


APPROXIMATE WALL FACE AREA = 2200 SF

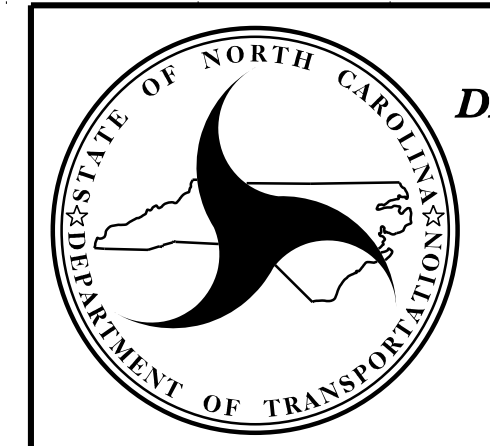
SP WALL: SOLDIER PILE WALL
KP WALL: KING PILE WALL WITH SHEET PILING

PREPARED BY: JOEY DAILY DATE: 10/7/2021
REVIEWED BY: KRISTEN HILL DATE: 10/7/2021

9 10 11 12 13 14 15 16



9751 SOUTHERN PINE BLVD
CHARLOTTE, NC 28273
(704) 523-4726



NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

**GEOTECHNICAL
ENGINEERING UNIT**

**RETAINING WALL NO. 1
LOCATION PLAN & ENVELOPE**

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

SHEET NO.
W1-6

KING PILE WALL WITH SHEET PILING

STATION		PILE SIZE	MAX. PILE SPACING (ft)	MIN H-PILE TIP ELEVATION (ft)	MIN SHEET PILE TIP ELEVATION (ft)	NOTES
FROM	TO					
10+50	10+71	HP 14X73	7	5 ft INTO ROCK	807.0	ROCK IS DEFINED AS 60 BLOWS WITHIN 0.1' OR LESS OF SPLIT SPOON PENETRATION
10+71	11+34	HP 14X73	7	782.0	803.0	
11+34	11+55	HP 14X73	7	782.0	807.0	
12+45	12+66	HP 14X73	6	779.0	808.0	AVOID PROP. 18" SEWER W/ 30" CASING TOP EL. 801.93 ft NEAR STA. 12+62
12+66	12+80	HP 14X73	6	779.0	800.0	
12+80	12+86	HP 14X73	6	779.0	802.0	AVOID EX. 16" SANITARY SEWER TOP EL. 801.06 ft NEAR STA. 12+83
12+86	12+98	HP 14X73	6	779.0	800.0	
12+98	13+04	HP 14X73	6	779.0	804.0	AVOID PROP. 48" STEEL PIPE TOP EL. 803.3 ft NEAR STA. 13+01
13+04	13+08	HP 14X73	4	779.0	800.0	
13+08	13+15	HP 14X73	7	779.0	805.0	AVOID EX. CULVERT TOP EL. 804.9 ft NEAR STA. 13+01
13+15	13+25	HP 14X73	7	779.0	800.0	
13+25	13+85	HP 14X73	7	5 ft INTO ROCK	800.0	ROCK IS DEFINED AS 60 BLOWS WITHIN 0.1' OR LESS OF SPLIT SPOON PENETRATION
13+85	14+06	HP 14X73	7	5 ft INTO ROCK	810.0	ROCK IS DEFINED AS 60 BLOWS WITHIN 0.1' OR LESS OF SPLIT SPOON PENETRATION

SOLDIER PILE WALL

STATION		PILE SIZE	MAX. PILE SPACING (ft)	MIN H-PILE TIP ELEVATION (ft)
FROM	TO			
10+00	10+50	HP 12X53	10	797.0
11+55	12+45	HP 12X53	10	798.0
14+06	15+05	HP 12X53	10	790.0

GEOTECHNICAL ENGINEER

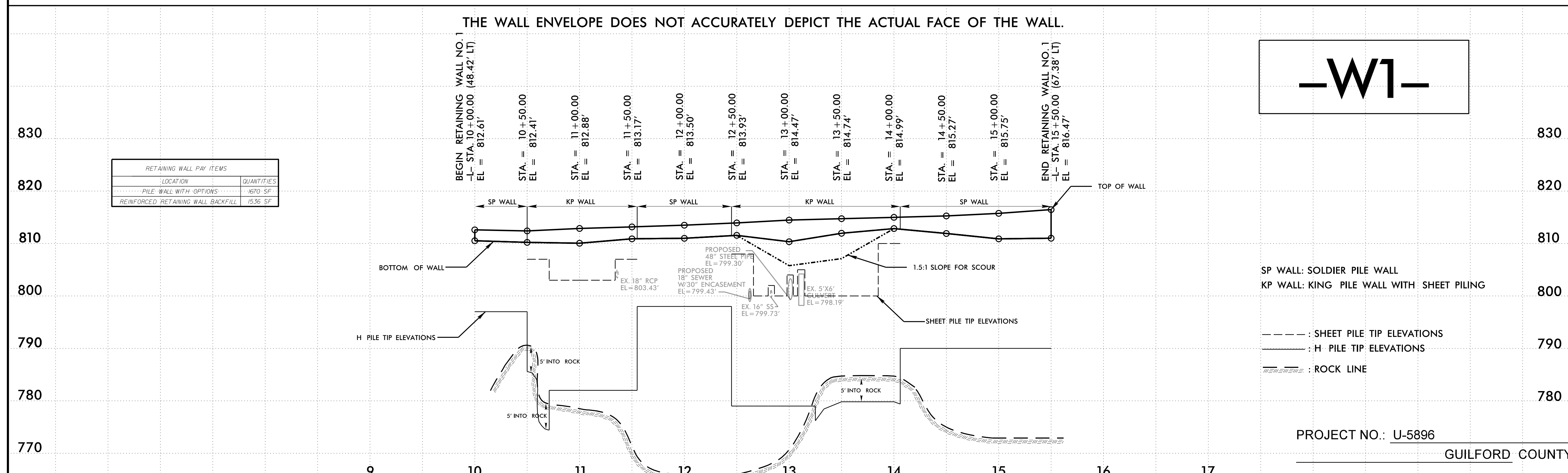
DocuSigned by:
Kristen Hill
ES2CF6B54524E2
SIGNATURE

ENGINEER

Dec 16, 2021

DATE

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



PREPARED BY: JOEY DAILY DATE: 10/7/2021

REVIEWED BY: KRISTEN HILL DATE: 10/7/2021

9751 SOUTHERN PINE BLVD
CHARLOTTE, NC 28273
(704) 523-4726

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

GEOTECHNICAL
ENGINEERING UNIT

KING PILE AND SOLDIER
PILE WALL PROFILE DETAIL

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

SHEET NO.
W1-7