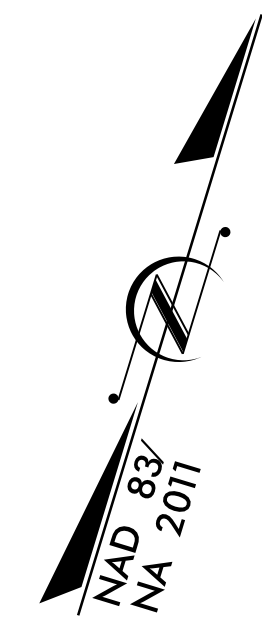
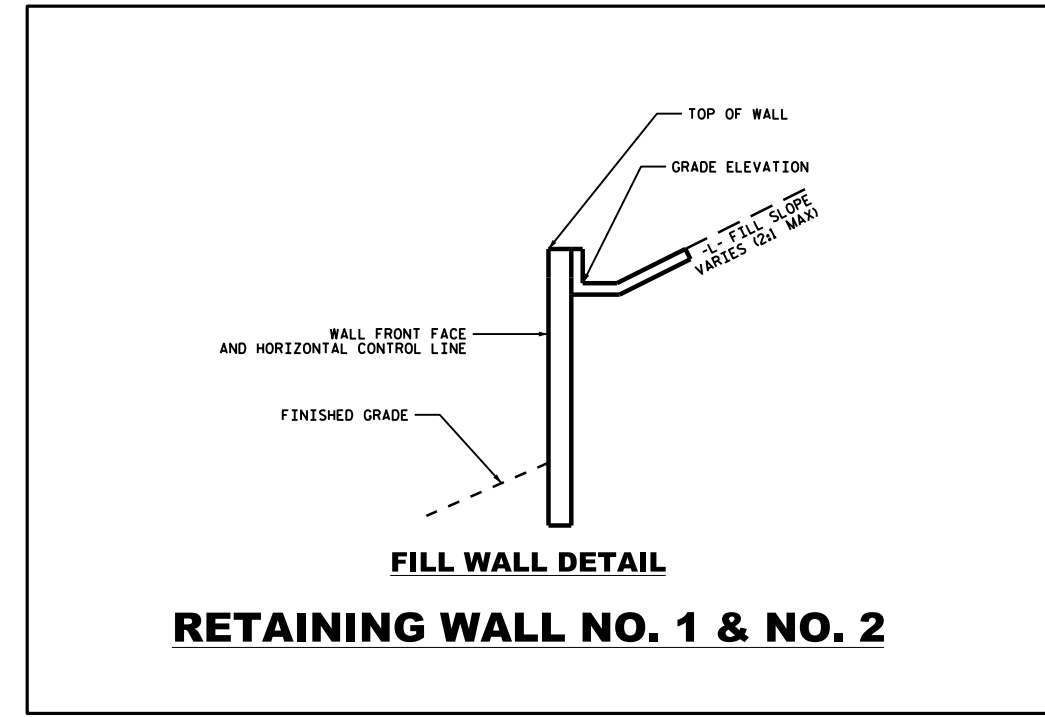


PLAN VIEW - RETAINING WALL NOS. 1&2



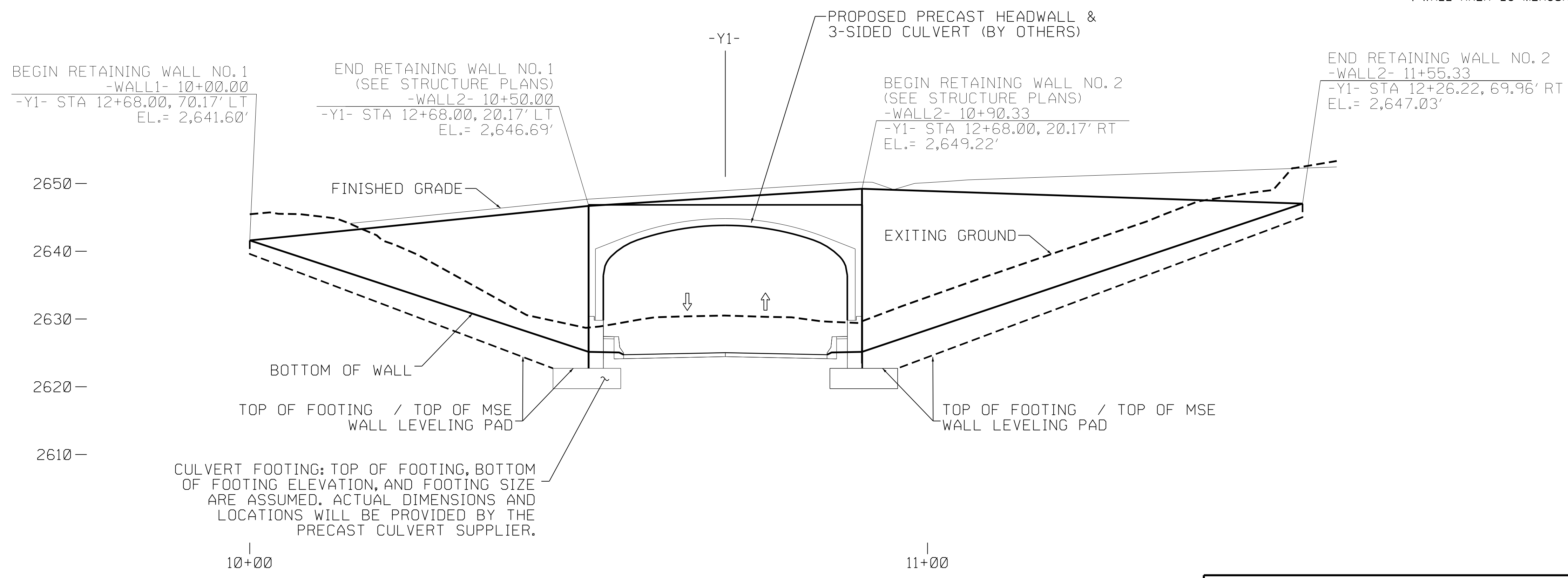
GEOTECHNICAL ENGINEER  Shipping Yang 12/20/2023 SIGNATURE DATE	ENGINEER SIGNATURE DATE
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>	



MSE RETAINING WALL QUANTITIES		
RETAINING WALL NO. 1	-WALL1-	* 693.3 SQUARE FEET

MSE RETAINING WALL QUANTITIES		
RETAINING WALL NO. 2	-WALL2-	* 984.5 SQUARE FEET

\* WALL AREA IS MEASURED USING THE DESIGN HEIGHT "H"



FRONT SLOPE WALL EMBEDMENT		
SLOPE IN FRONT OF STRUCTURES		MINIMUM EMBEDMENT DEPTH
HORIZONTAL	FOR WALLS	H/20
3.0H:1.0V	WALLS	H/10
2.5H:1.0V	WALLS	H/8.5
2.0H:1.0V	WALLS	H/7
1.5H:1.0V	WALLS	H/5
1.25H:1.0V	WALLS	H/4
1.0H:1.0V	WALLS	H/3

NOTE:  
 1) MAINTAIN A MINIMUM BENCH WIDTH OF 4.0 IN FRONT OF THE WALL FOR ITS ENTIRE LENGTH.  
 2) MINIMUM EMBEDMENT DEPTH OF 2 FT. UNLESS LARGER DEPTHS DICTATED BY THE ABOVE TABLE.  
 3) MAXIMUM SLOPE OF 2H:1V WILL BE MAINTAINED ON FRONT SLOPES FOR THE ENTIRE LENGTH OF THE WALL.  
 4) SUBMIT WITH THE WALL DESIGN INTERNAL, EXTERNAL, AND GLOBAL STABILITY ANALYSES.

WALL ENVELOPE - RETAINING WALL NOS. 1&2

NOTE: 1) OFFSET DIMENSIONS ARE FROM FACE OF WALL  
 2) THE WALL ENVELOPE DOES NOT ACCURATELY DEPICT THE ACTUAL FACE OF THE WALL

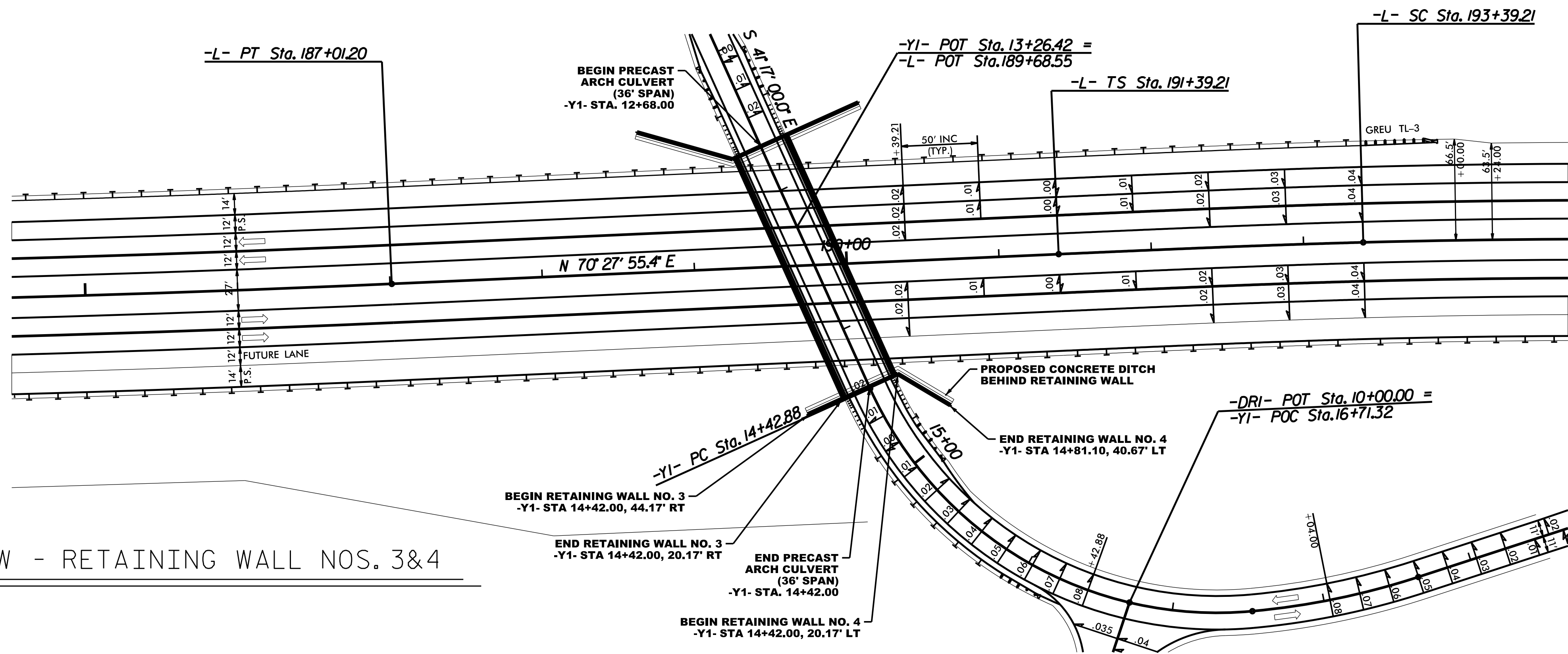
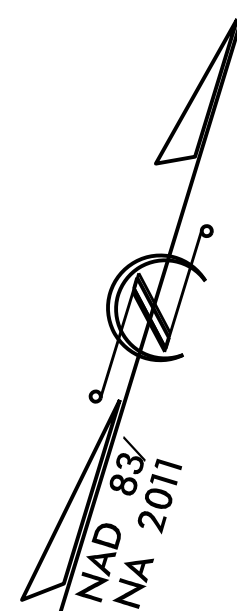
PREPARED BY: SY	DATE: 12/2023
REVIEWED BY: SCC	DATE: 12/2023

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

PROJECT NO.: HB-0003  
 HAYWOOD COUNTY  
 STATION: RW1: 10+00 TO 10+50.00 -WALL1-  
 RW2: 10+90.33 TO 11+55.33 -WALL2-  
 SHEET 1 OF 4

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

SHEET NO. W-1



PLAN VIEW - RETAINING WALL NOS. 3&4

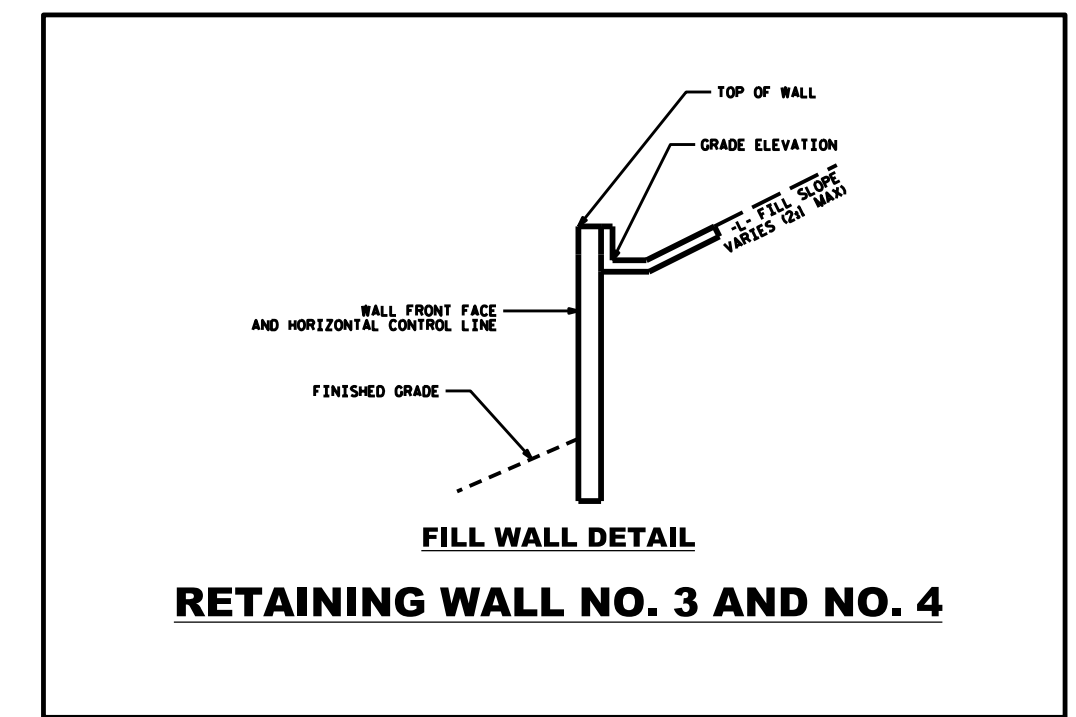
GEOTECHNICAL ENGINEER

ENGINEER

Shipping Yang 04/12/2024

7473106776411

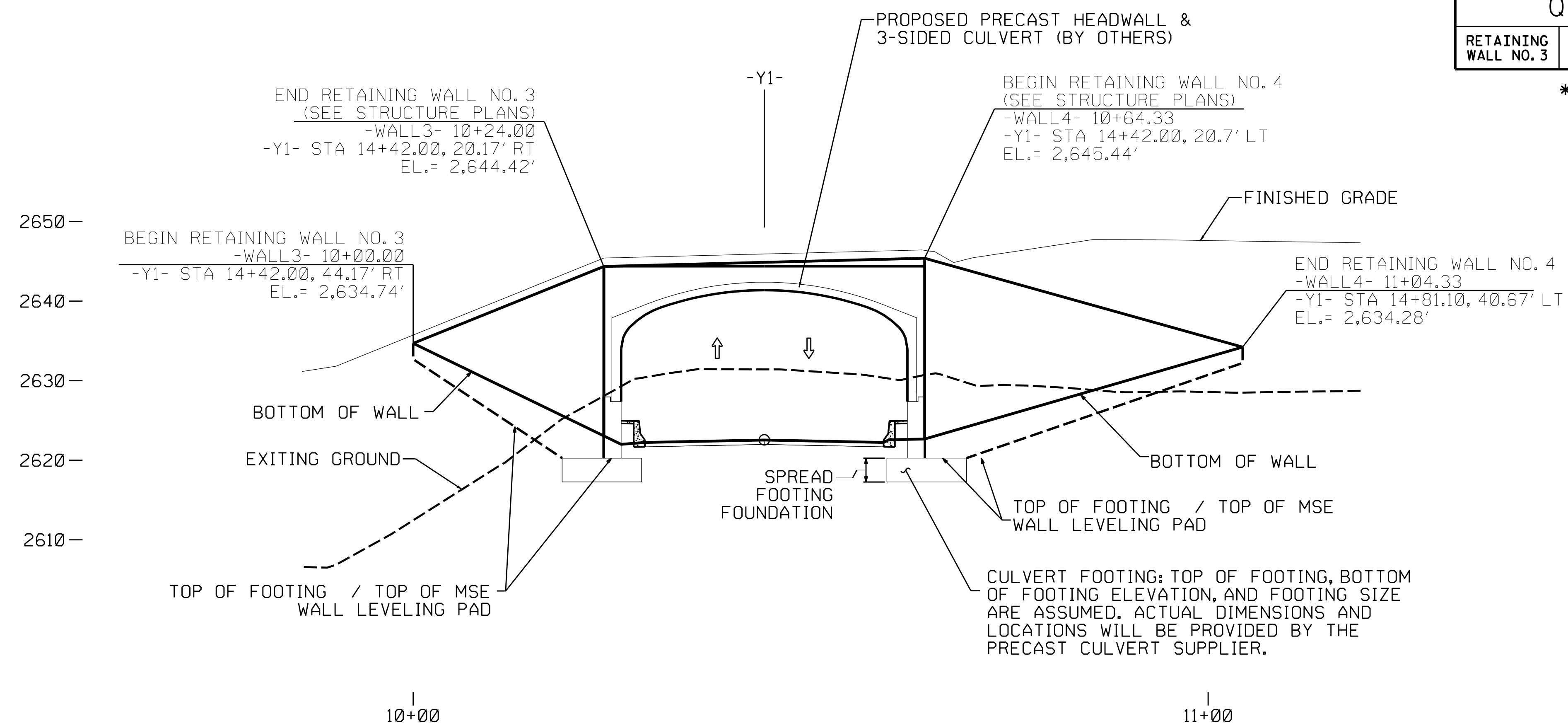
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



MSE RETAINING WALL QUANTITIES		
RETAINING WALL NO. 3	-WALL3-	* 345.7 SQUARE FEET

MSE RETAINING WALL QUANTITIES		
RETAINING WALL NO. 4	-WALL4-	* 573.7 SQUARE FEET

\* WALL AREA IS MEASURED USING THE DESIGN HEIGHT "H"



WALL ENVELOPE - RETAINING WALL NOS. 3&4

NOTE: 1) OFFSET DIMENSIONS ARE FROM FACE OF WALL  
2) THE WALL ENVELOPE DOES NOT ACCURATELY DEPICT THE ACTUAL FACE OF THE WALL

FRONT SLOPE WALL EMBEDMENT		
SLOPE IN FRONT OF STRUCTURES		MINIMUM EMBEDMENT DEPTH
HORIZONTAL	FOR WALLS	H/20
3.0H:1.0V	WALLS	H/10
2.5H:1.0V	WALLS	H/8.5
2.0H:1.0V	WALLS	H/7
1.5H:1.0V	WALLS	H/5
1.25H:1.0V	WALLS	H/4
1.0H:1.0V	WALLS	H/3

NOTE:  
1) MAINTAIN A MINIMUM BENCH WIDTH OF 4.0 IN FRONT OF THE WALL FOR ITS ENTIRE LENGTH.  
2) MINIMUM EMBEDMENT DEPTH OF 2 FT. UNLESS LARGER DEPTHS DICTATED BY THE ABOVE TABLE.  
3) MAXIMUM SLOPE OF 2H:1V WILL BE MAINTAINED ON FRONT SLOPES FOR THE ENTIRE LENGTH OF THE WALL.  
4) SUBMITT WITH THE WALL DESIGN INTERNAL, EXTERNAL, AND GLOBAL STABILITY ANALYSES.

PROJECT NO.: HB-0003  
HAYWOOD COUNTY  
STATION: RW3: 10+00 TO 10+24.00 -WALL3-  
RW4: 10+64.33 TO 11+04.33 -WALL4-  
SHEET 2 OF 4

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS

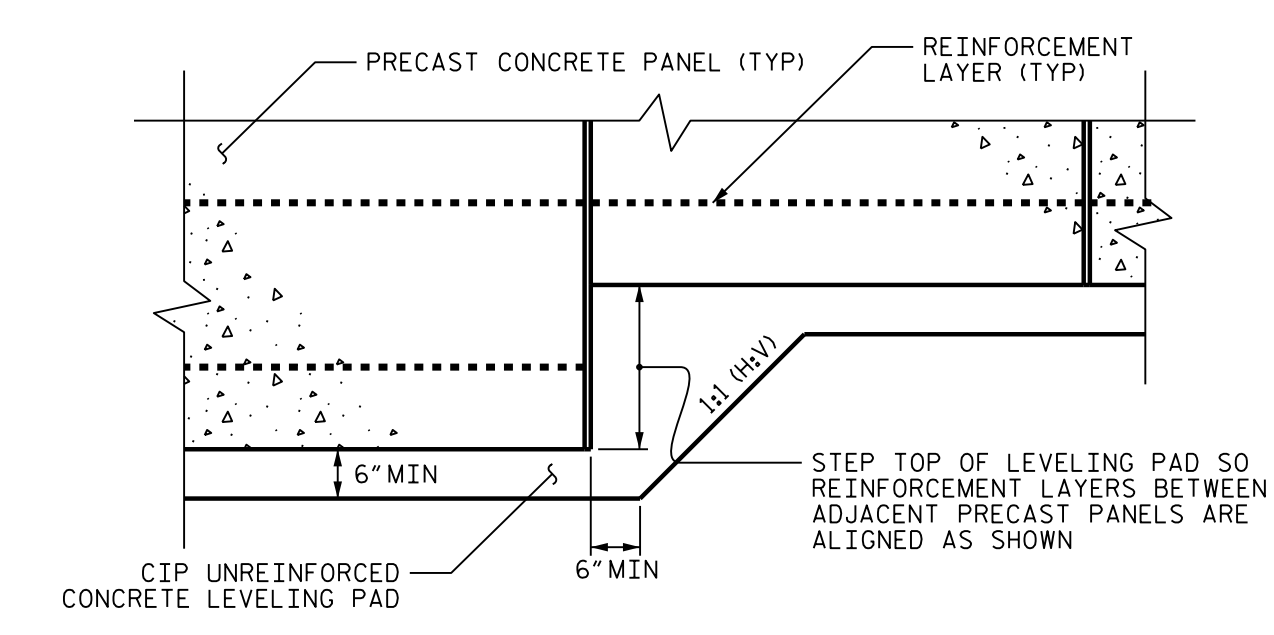
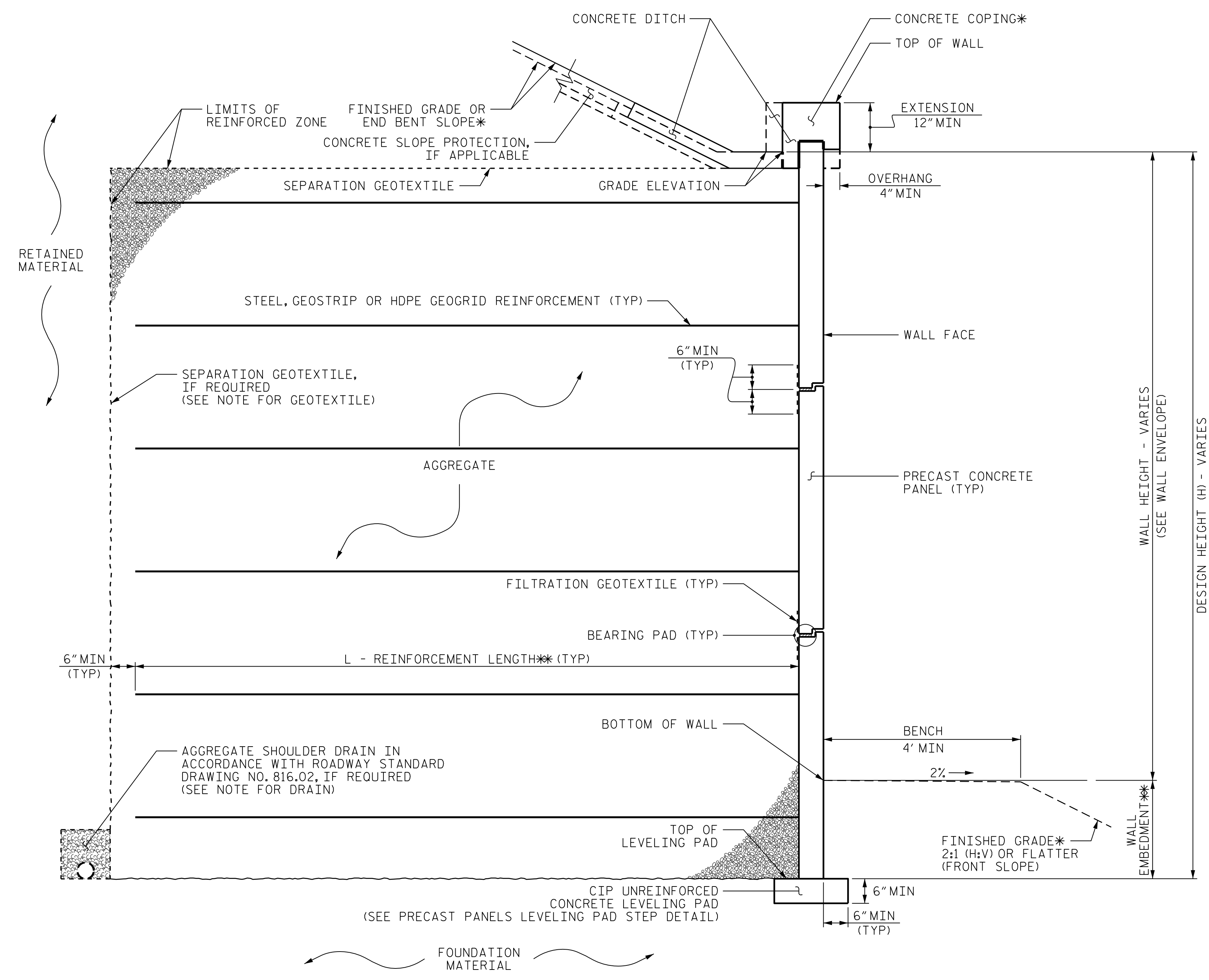
GEOTECHNICAL ENGINEERING UNIT

REVISIONS					
NO.	BY	DATE	NO.	BY	DATE
1	SY		3		2/2023
2			4		

SHEET NO. W-2

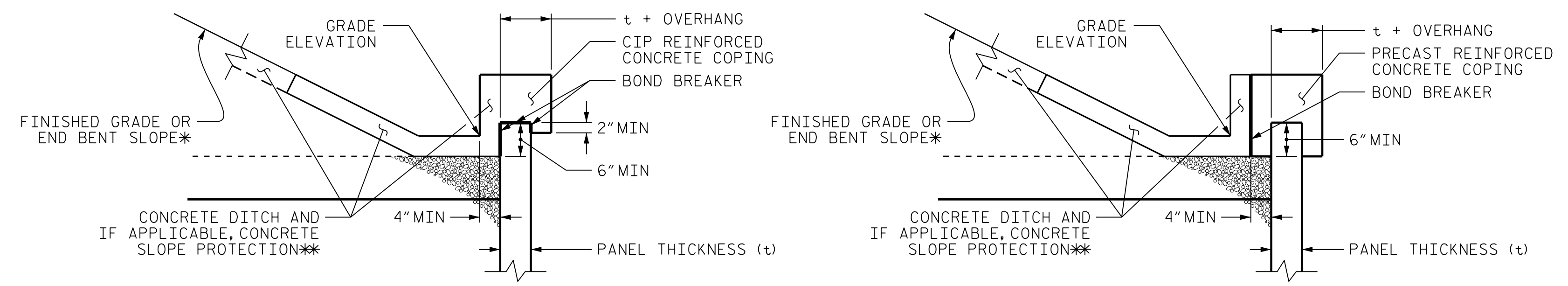
PREPARED BY: SY	DATE: 12/2023
REVIEWED BY: SCC	DATE: 12/2023





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

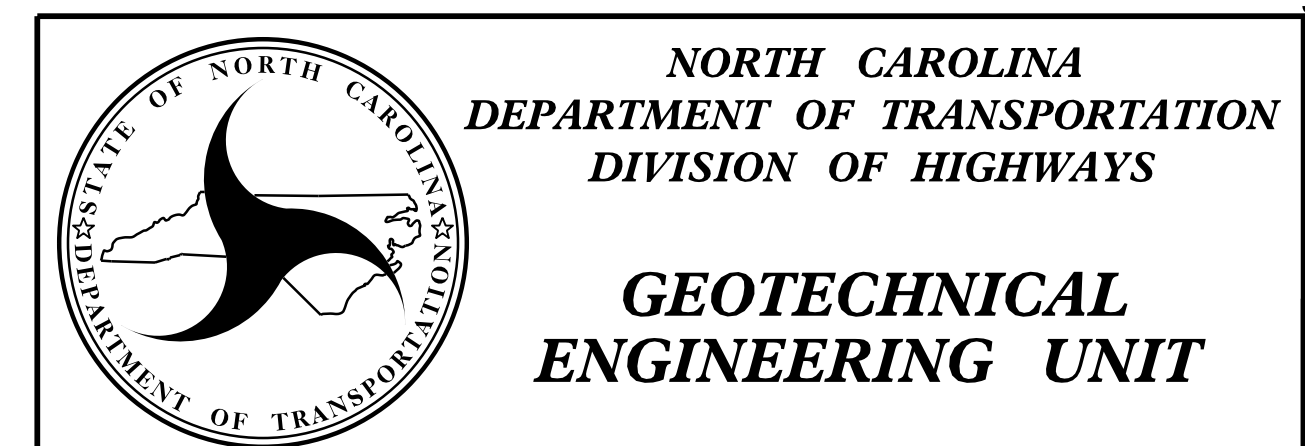
\*SEE COPING DETAILS AND PLANS FOR FINISHED GRADE OR END BENT SLOPE DETAILS.  
 \*\*SEE MSE RETAINING WALLS PROVISION AND IF APPLICABLE, MSE WALL NOTES FOR WALL EMBEDMENT AND REINFORCEMENT LENGTH REQUIREMENTS.



**COPING DETAILS**

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

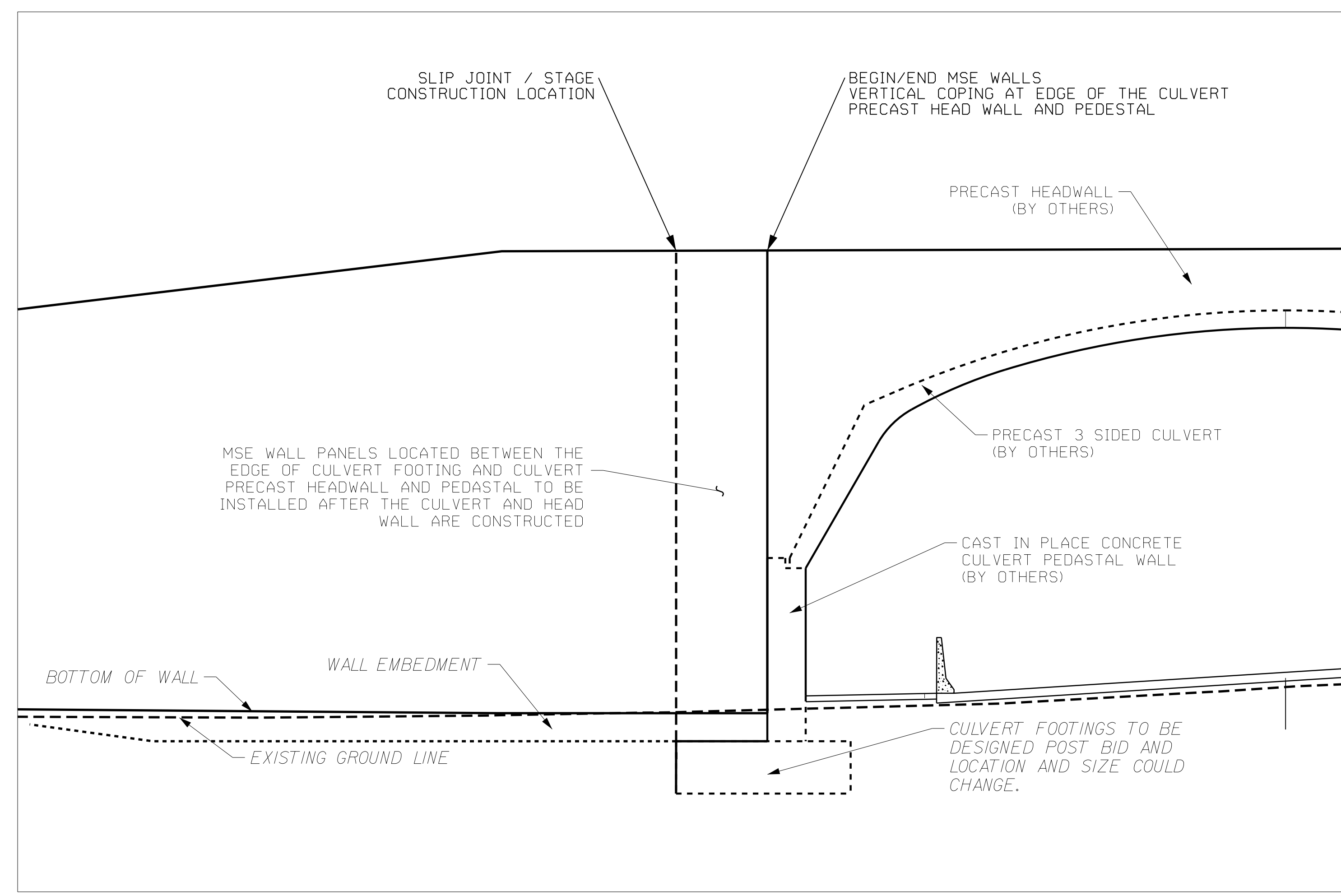
PROJECT NO.: HB-0003  
 HAYWOOD COUNTY  
 STATION: SEE SHEETS W-1 & W-2  
 SHEET 3 OF 4



**RETAINING WALL NOS. 1 TO 4  
 TYPICAL SECTION, COPING  
 DETAILS, & STEP DETAIL**

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

PREPARED BY: SY DATE: 12/2023  
 REVIEWED BY: SCC DATE: 12/2023



**RETAINING WALLS NOS, 1 TO 4  
CULVERT TO MSE WALL TYPICAL DETAIL**

**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.

AT THE CONTRACTOR'S OPTION, USE FINE AGGREGATE IN THE REINFORCED ZONE OF RETAINING WALL NOS. 1 TO 4.

A SEPARATION GEOTEXTILE IS REQUIRED AT THE BACK OF THE REINFORCED ZONE FOR RETAINING WALL NOS. 1 TO 4.

A DRAIN IS REQUIRED FOR RETAINING WALL NOS. 1 TO 4.

BEFORE BEGINNING MSE WALL DESIGN FOR RETAINING WALL NOS. 1 TO 4, SURVEY WALL LOCATION AND SUBMIT A REVISED WALL PROFILE VIEW (WALL ENVELOPE) FOR REVIEW. DO NOT START WALL DESIGN OR CONSTRUCTION UNTIL THE REVISED WALL ENVELOPE IS ACCEPTED.

DESIGN RETAINING WALL NOS. 1 TO 4 FOR THE FOLLOWING:

- 1) DESIGN HEIGHT (H) = WALL HEIGHT + WALL EMBEDMENT
- 2) DESIGN LIFE = 100 YEARS
- 3) MAXIMUM FACTORED VERTICAL PRESSURE ON FOUNDATION MATERIAL = 6500 PSF
- 4) MINIMUM REINFORCEMENT LENGTH (L) = 0.8 H OR 6 FT, WHICHEVER IS LONGER
- 5) MINIMUM EMBEDMENT DEPTH = 2 FT
- 6) REINFORCED ZONE AGGREGATE PARAMETERS:

AGGREGATE TYPE*	UNIT WEIGHT (g) PCF	FRICTION ANGLE (f) 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 (g) PCF	FRICTION ANGLE (f) DEGREES	COHESION (c) PSF
RETAINED	120	30	0
FOUNDATION	120	28	0

DESIGN RETAINING WALL NOS. 1 TO 4 FOR A LIVE LOAD (TRAFFIC) SURCHARGE.

FOR RETAINING WALL NOS. 1 TO 4, DESIGN TRANSITIONS BETWEEN CULVERT HEAD WALL AND MSE WALL LOCATIONS. SEE POST BID CULVERT DESIGN FOR CULVERT LOCATION, FOOTING LOCATION, AND DEPTH.

DO NOT PLACE LEVELING PAD CONCRETE, AGGREGATE OR REINFORCEMENT FOR RETAINING WALLS NOS. 1 TO 4 UNTIL EXCAVATION DIMENSIONS AND FOUNDATION MATERIAL ARE APPROVED.

START RETAINING WALL CONSTRUCTION AFTER SURCHARGING HAS BEEN REMOVED AND CULVERT HAS BEEN CONSTRUCTED.

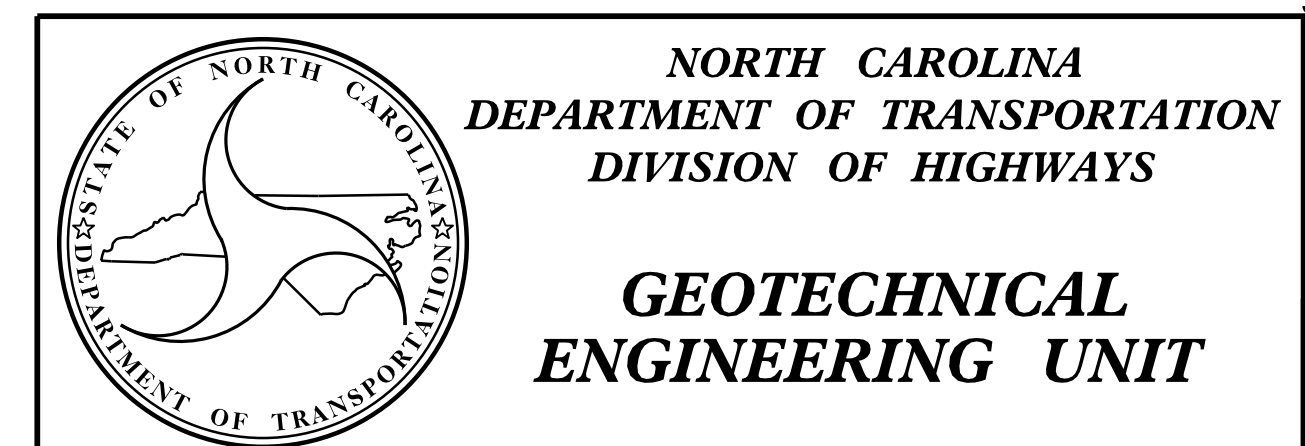
AT THE CONTRACTOR'S OPTION, "TEMPORARY SHORING FOR WALL CONSTRUCTION" MAY BE USED TO CONSTRUCT RETAINING WALL NOS. 1 TO 4. SEE MSE RETAINING WALLS PROVISION FOR TEMPORARY SHORING FOR WALL CONSTRUCTION.

PROJECT NO.: HB-0003

HAYWOOD COUNTY

STATION: SEE SHEETS W-1 & W-2

SHEET 4 OF 4



**RETAINING WALL NOS. 1 TO 4  
CULVERT TO MSE WALL  
TYPICAL DETAIL & NOTES**

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