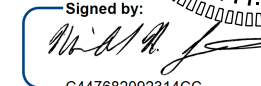


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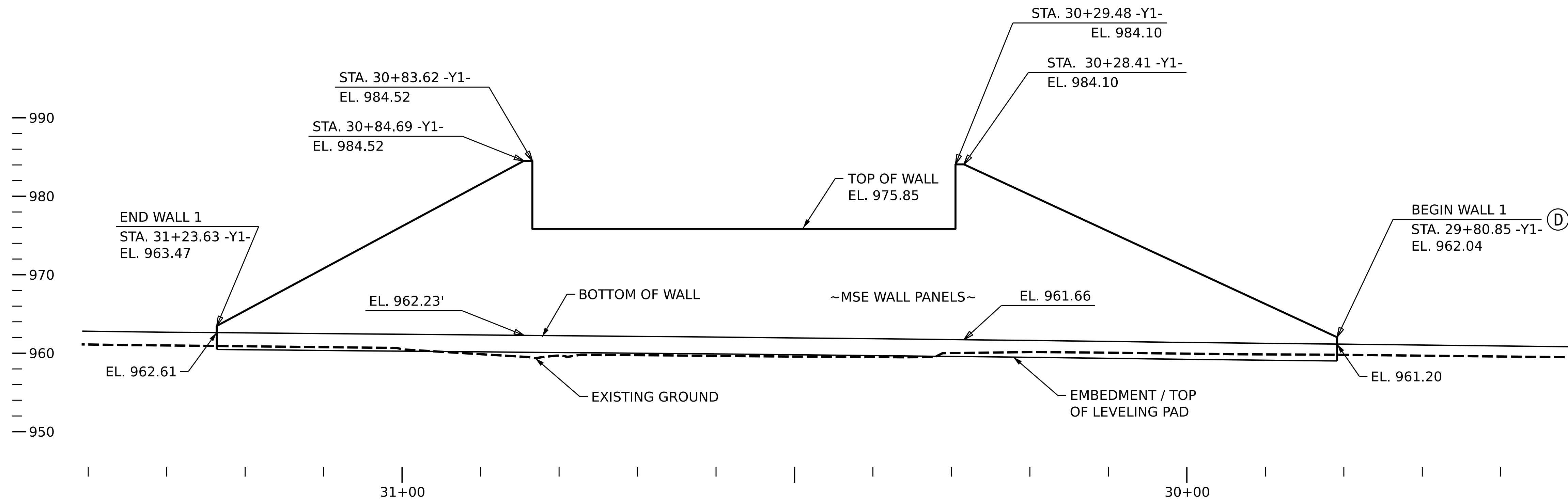
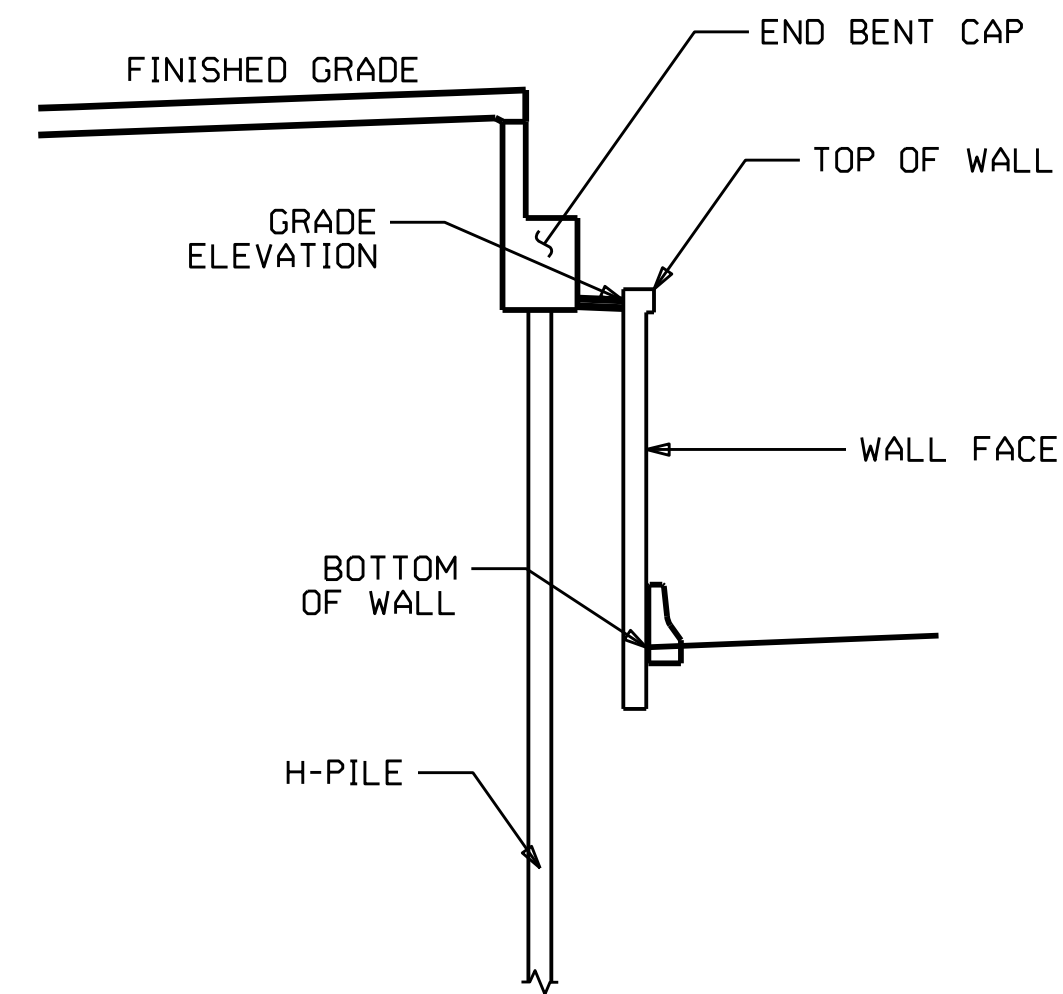
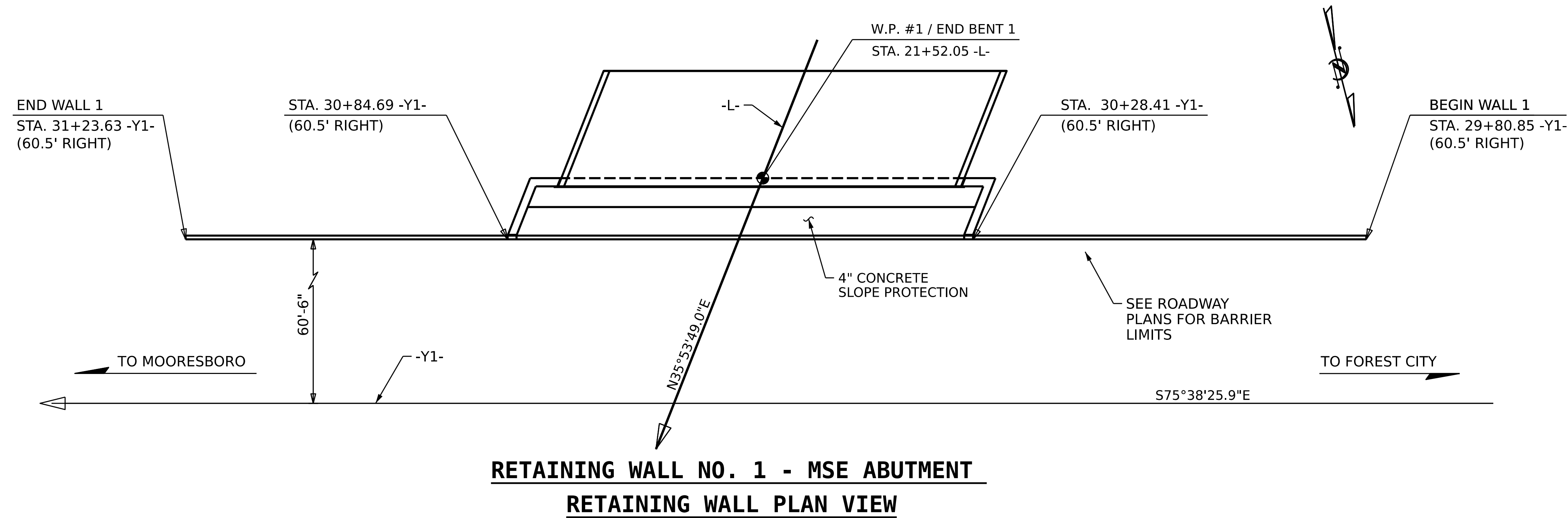


Signed by:  10/02/2024
C44768202344CC
SIGNATURE DATE

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SIGNATURE DATE

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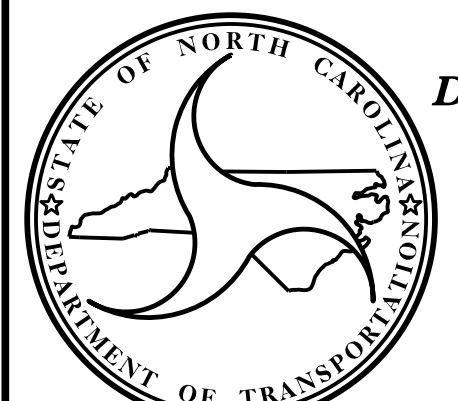
SECTION @ END BENT 1

RETAINING WALL NO. 1 - MSE ABUTMENT
RETAINING WALL ENVELOPE VIEW

PROJECT NO.: BR-0099
RUTHERFORD COUNTY
STATION: 29+80.85 -Y1- TO 31+23.63 -Y1-
SHEET 1 OF 5

ESTIMATED MSE WALL QUANTITIES (SQUARE FEET)	
MSE RETAINING WALL NO. 1	2,110 SF

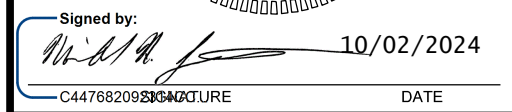
PREPARED BY: MHS	DATE: 10/24
REVIEWED BY: SY	DATE: 10/24



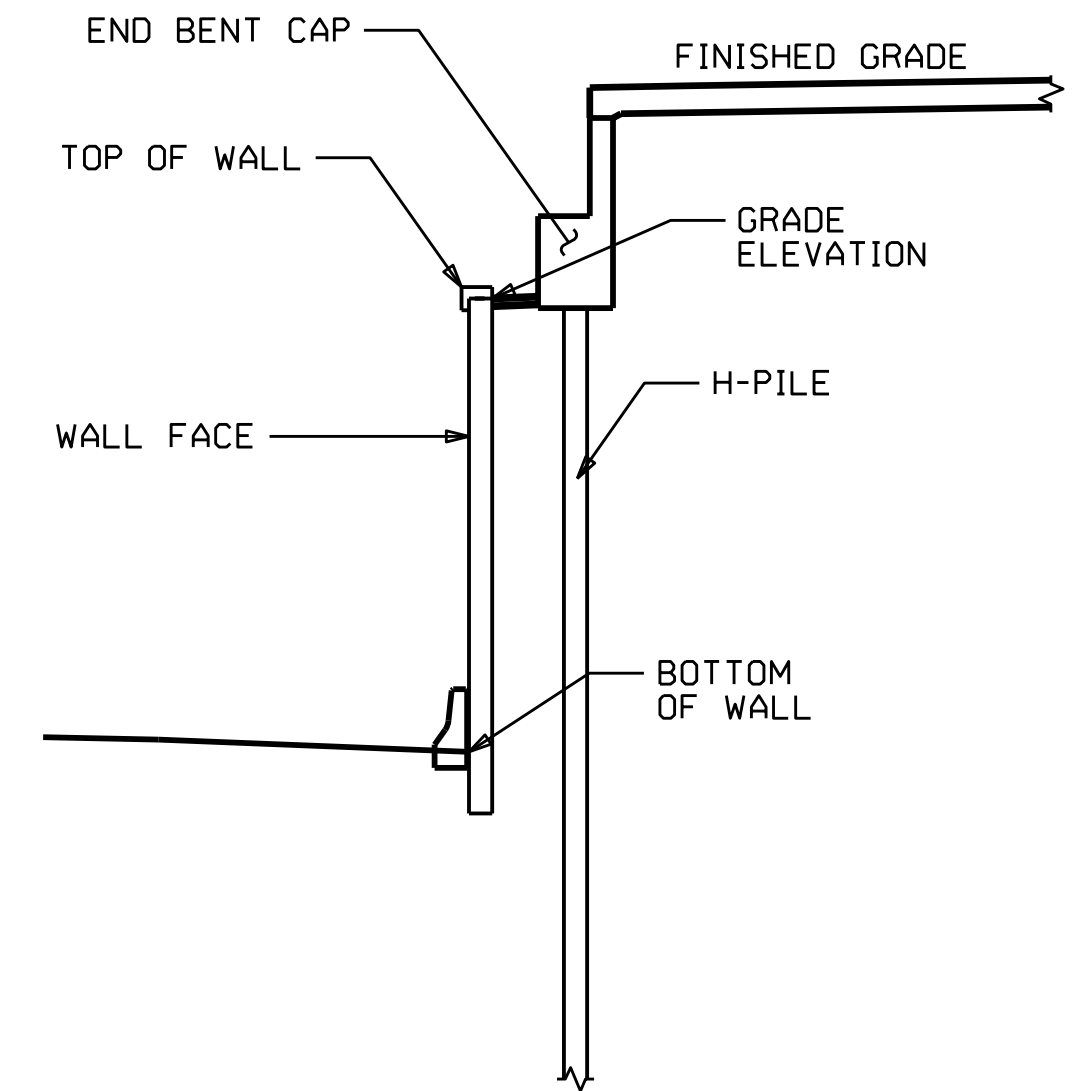
NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

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ENGINEERING UNIT

RETAINING WALL NO. 1 MSE RETAINING WALL PLAN AND ENVELOPE VIEWS						
REVISIONS						
NO.	BY	DATE	NO.	BY	DATE	SHEET NO.
1	-	-	3	-	-	W-1
2	-	-	4	-	-	

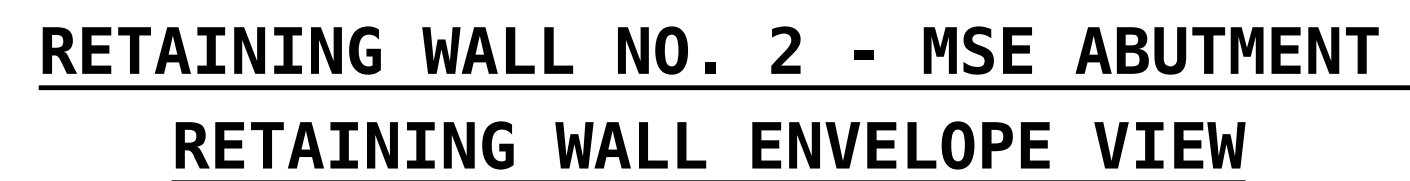


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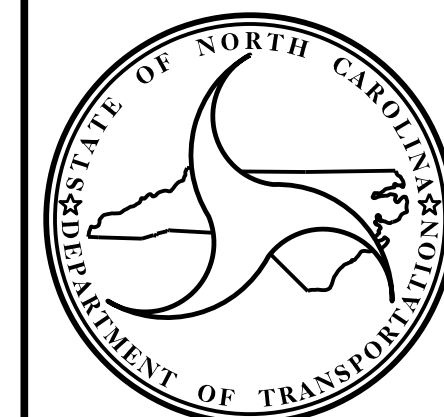


SECTION @ END BENT 2

ESTIMATED MSE WALL QUANTITIES (SQUARE FEET)	
MSE RETAINING WALL NO. 2	2,465 SF



PROJECT NO.: BR-0099
RUTHERFORD COUNTY
 STATION: 30+31.44 -Y1- TO 31+82.65 -Y1-
 SHEET 2 OF 5



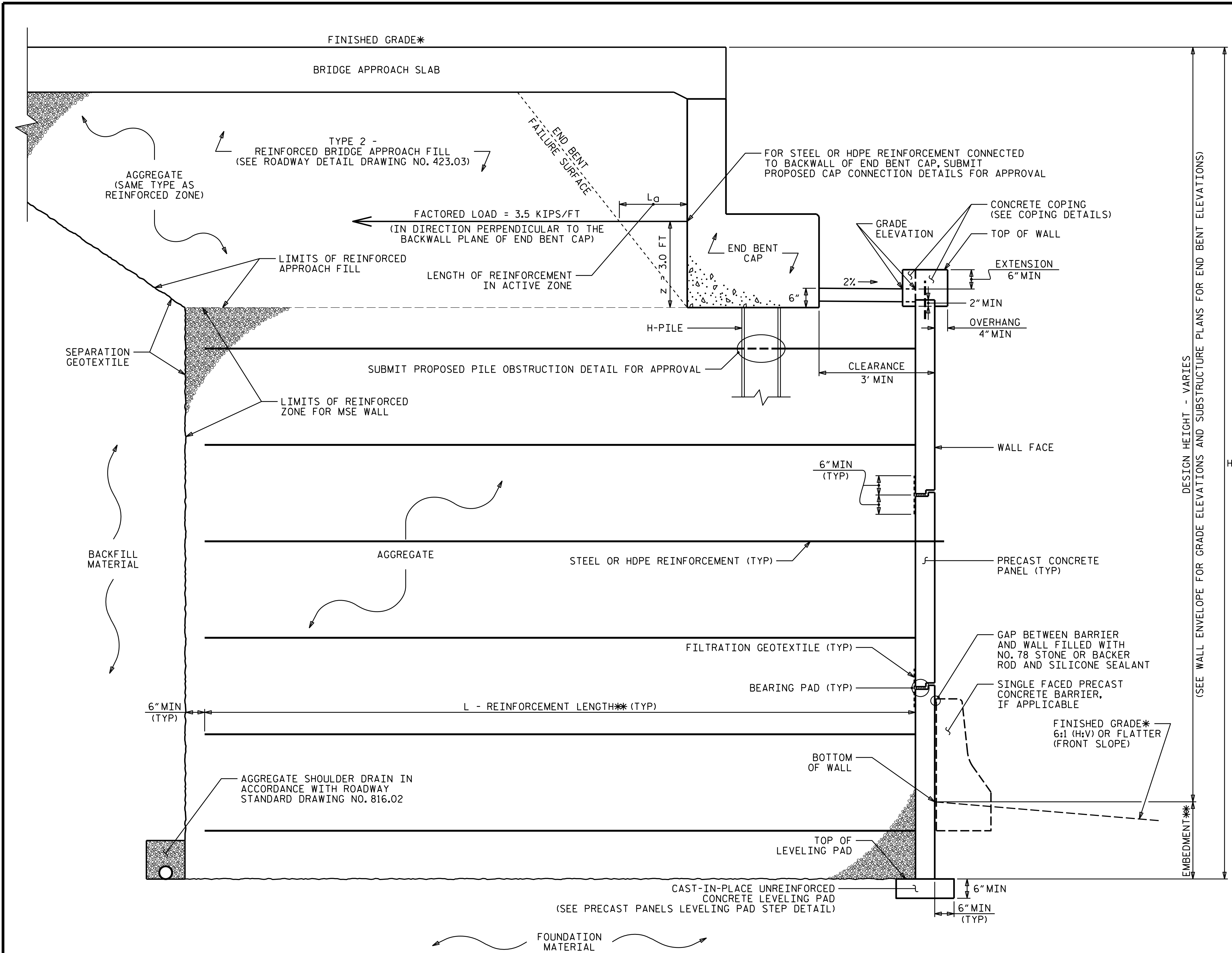
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DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS**

**GEOTECHNICAL
ENGINEERING UNIT**

W

RETAINING WALL NO. 2 MSE RETAINING WALL PLAN AND ENVELOPE VIEWS						
REVISIONS						SHEET NO. W-2
NO.	BY	DATE	NO.	BY	DATE	
1	-	-	3	-	-	
2	-	-	4	-	-	

PREPARED BY: MHS	DATE: 10/24
REVIEWED BY: SY	DATE: 10/24



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 EMBEDMENT AND REINFORCEMENT LENGTH REQUIREMENTS.

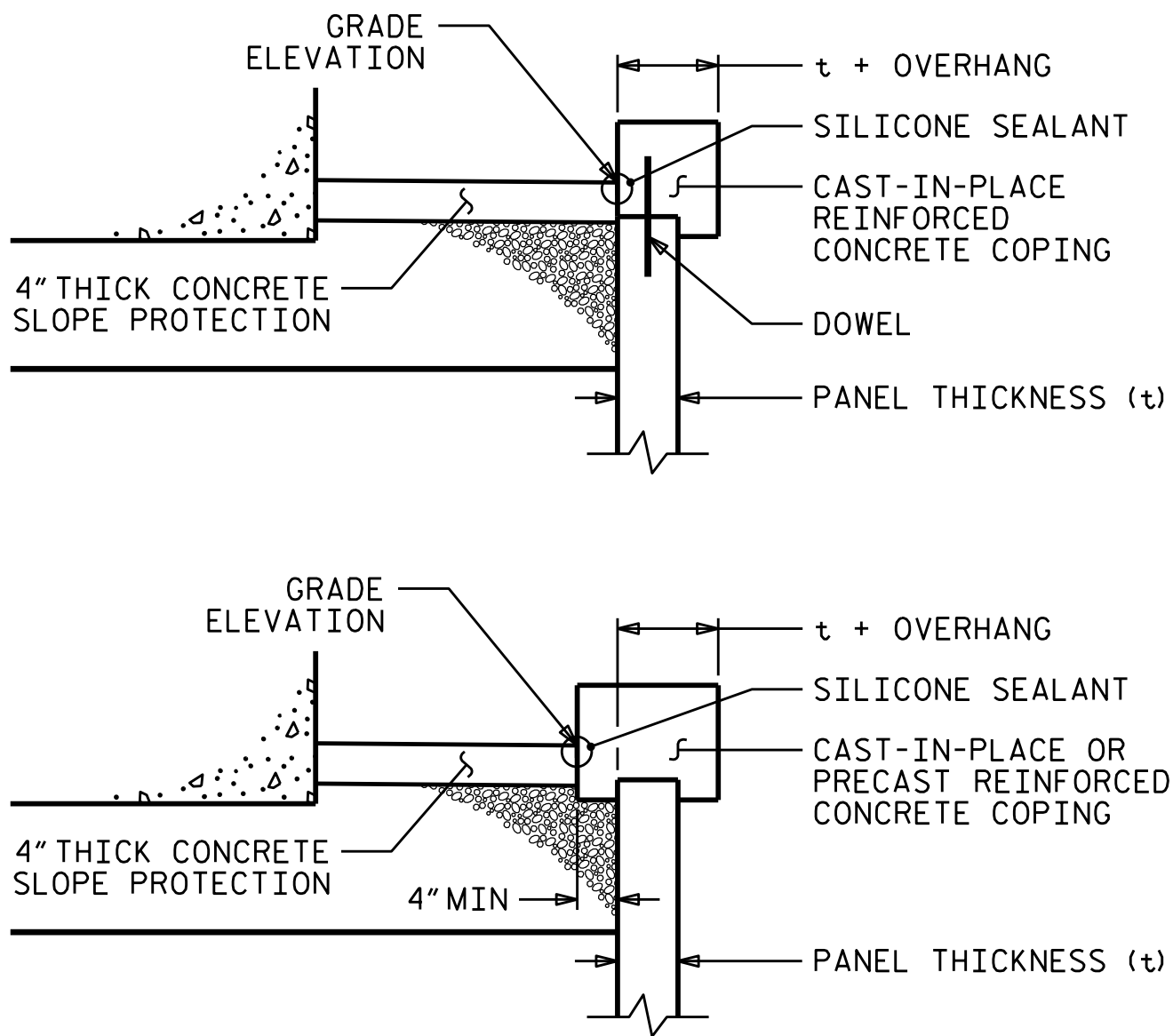
GEOTECHNICAL
ENGINEER

Signed by: *Michael H. Stephens* 10/02/2024
C44768295234CC
SIGNATURE DATE

ENGINEER

SIGNATURE DATE

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COPING DETAILS

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

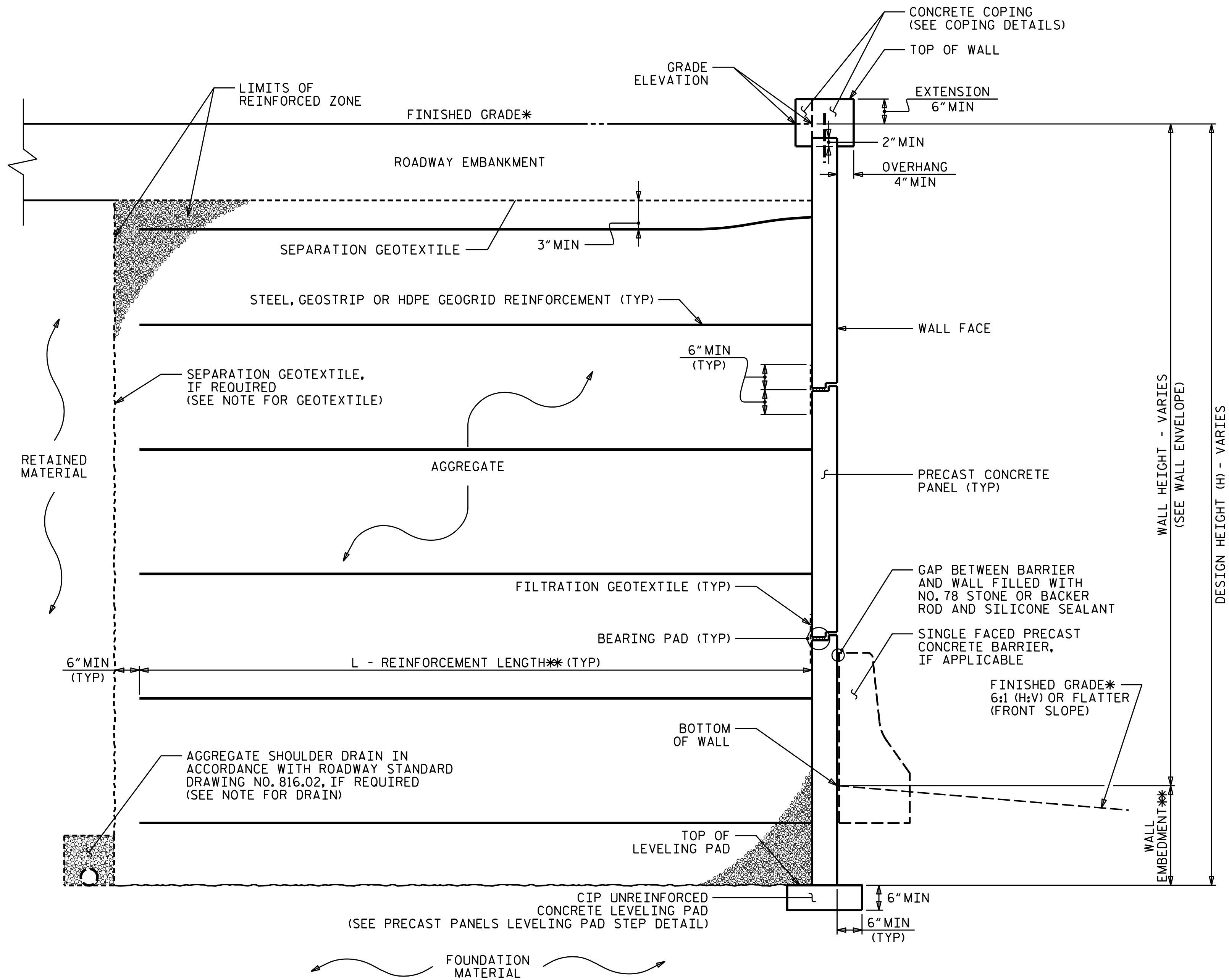
PROJECT NO.: BR-0099
RUTHERFORD COUNTY
STATION: --
SHEET 3 OF 5

NORTH CAROLINA
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DIVISION OF HIGHWAYS

GEOTECHNICAL
ENGINEERING UNIT

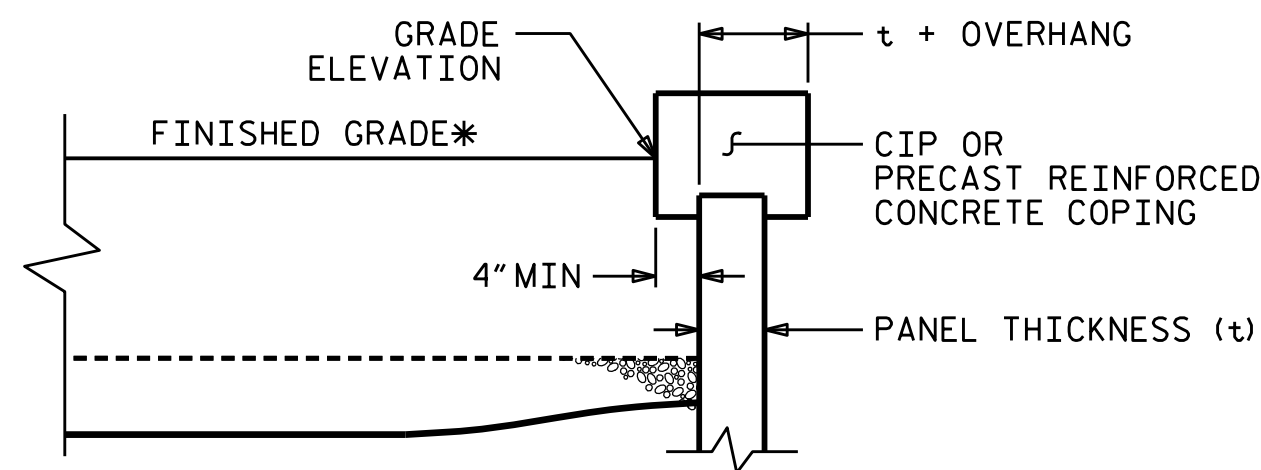
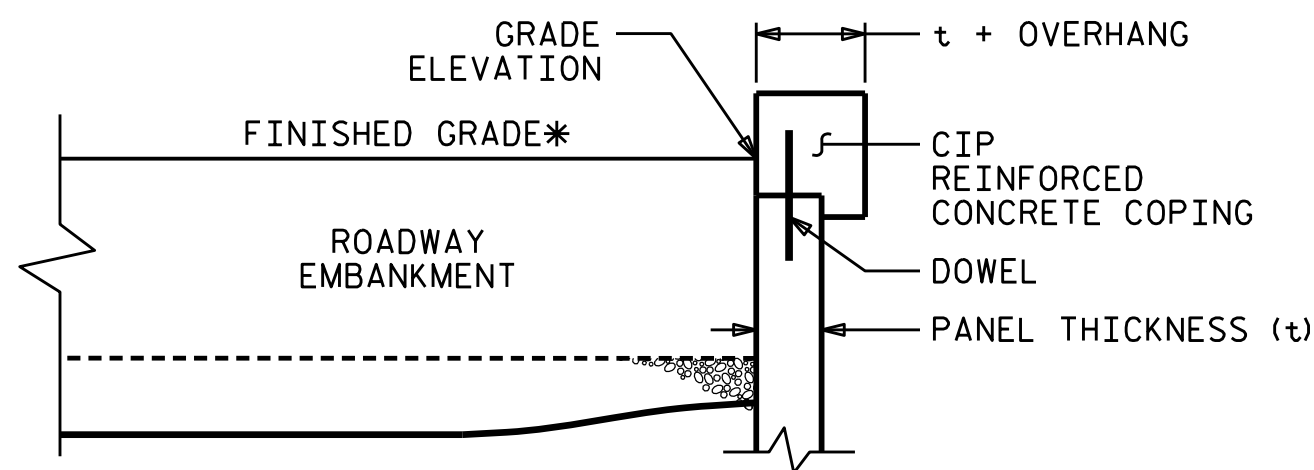
REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	
1	-	-	3	-	-	W-3
2	-	-	4	-	-	

PREPARED BY: MHS	DATE: 10/24
REVIEWED BY: SY	DATE: 10/24



MSE WALL WITH PRECAST PANELS - TYPICAL SECTION

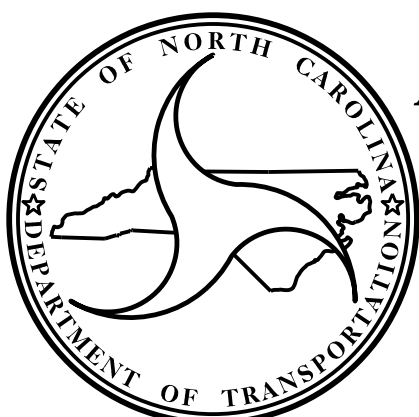
*SEE ROADWAY PLANS FOR FINISHED GRADE DETAILS.
*SEE MSE RETAINING WALLS PROVISION AND IF APPLICABLE, MSE WALL NOTES FOR WALL EMBEDMENT AND REINFORCEMENT LENGTH REQUIREMENTS.



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.: BR-0099
RUTHERFORD COUNTY
STATION: --
SHEET 4 OF 5



NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
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GEOTECHNICAL
ENGINEERING UNIT

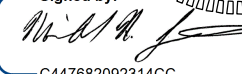
RETAINING WALL NOS. 1 AND 2
MSE RETAINING WALL TYPICAL
SECTION AND COPING DETAILS

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

PREPARED BY: MHS	DATE: 10/24
REVIEWED BY: SY	DATE: 10/24

GEOTECHNICAL
ENGINEER



Signed by: 
10/02/2024

C447082002346CC
SIGNATUREDATE

ENGINEER

SIGNATUREDATE

DOCUMENT NOT CONSIDERED FINAL
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NOTES:

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

FOR TYPE 2 REINFORCED BRIDGE APPROACH FILL, SEE BRIDGE APPROACH FILLS PROVISION AND ROADWAY DETAIL DRAWING NO. 423.03

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

AT THE CONTRACTOR'S OPTION, USE FINE AGGREGATE IN THE REINFORCED ZONE OF RETAINING WALL NOS.1 AND 2.

A SEPARATION GEOTEXTILE IS REQUIRED AT THE BACK OF THE REINFORCED ZONE FOR RETAINING WALL NOS.1 AND 2.

A DRAIN IS REQUIRED FOR RETAINING WALL NOS.1 AND 2.

BEFORE BEGINNING MSE WALL DESIGN FOR RETAINING WALL NOS.1 AND 2, SURVEY WALL LOCATION AND SUBMIT A REVISED WALL PROFILE VIEW (WALL ENVELOPE) FOR REVIEW. DO NOT START WALL DESIGN OR CONSTRUCTION UNTIL THE REVISED WALL ENVELOPE IS ACCEPTED.

DESIGN RETAINING WALL NO. FOR THE FOLLOWING:

- 1) H = DESIGN HEIGHT + EMBEDMENT
- 2) DESIGN LIFE = 100 YEARS
- 3) MAXIMUM FACTORED VERTICAL PRESSURE ON FOUNDATION MATERIAL = 5,000 PSF
- 4) MINIMUM REINFORCEMENT LENGTH (L) = 0.8H OR 6 FT, WHICHEVER IS LONGER
- 5) MINIMUM EMBEDMENT ELEVATION = 2 FT OR H/10, WHICHEVER IS DEEPER
- 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:

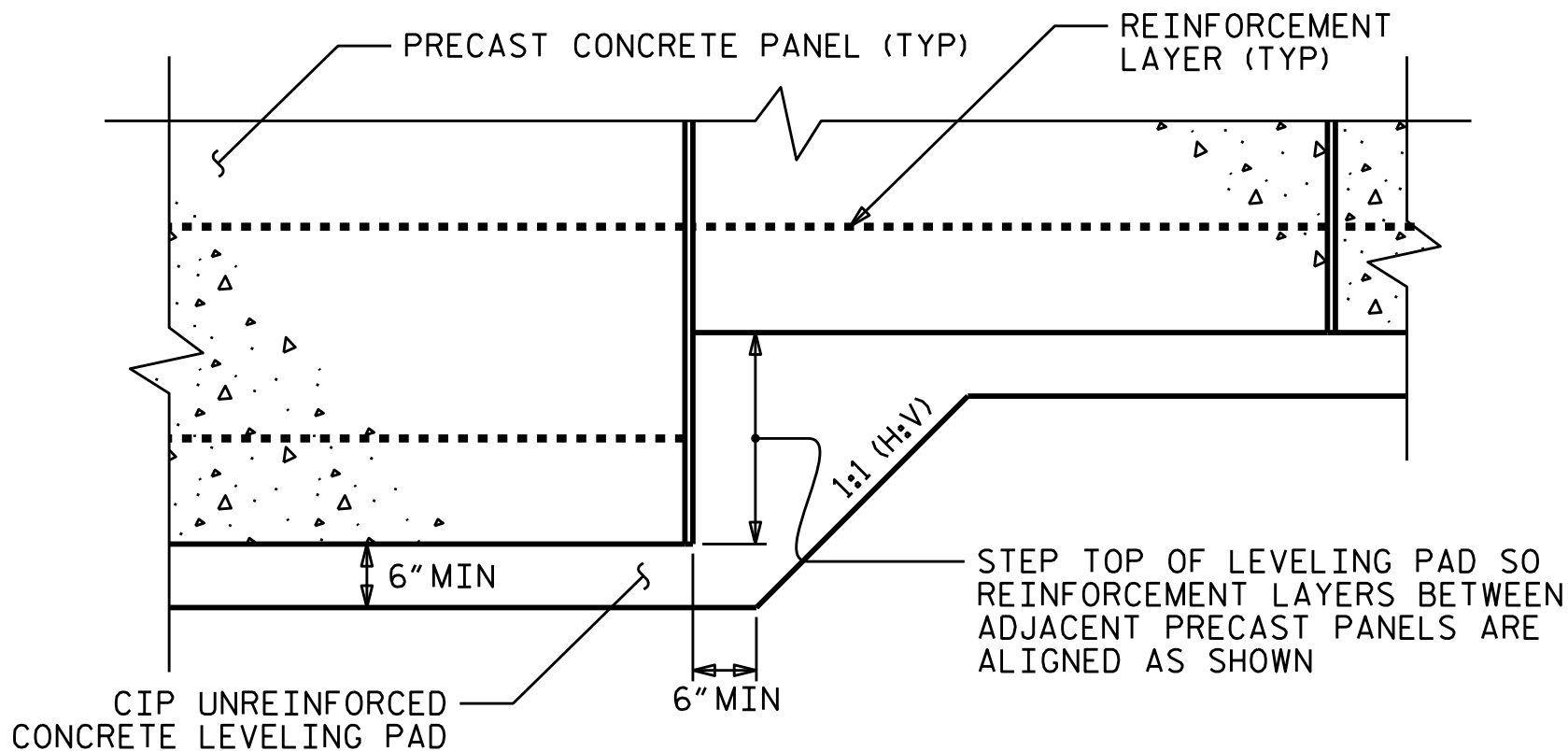
MATERIAL TYPE	UNIT WEIGHT (γ) PCF	FRICTION ANGLE (ϕ) DEGREES	COHESION (c) PSF
BACKFILL	120	30	0
FOUNDATION	120	30	0

DESIGN RETAINING WALL NOS.1 AND 2 FOR A LIVE LOAD (TRAFFIC) SURCHARGE.

DESIGN REINFORCEMENT CONNECTED TO END BENT CAPS FOR FACTORED LOAD AND LENGTH OF REINFORCEMENT IN ACTIVE ZONE (L_a) SHOWN. CAST REINFORCEMENT OR CONNECTORS INTO CAP BACKWALL FOR END BENT NOS.1 AND 2, MAINTAIN A CLEARANCE OF AT LEAST 3" BETWEEN REINFORCEMENT OR CONNECTORS AND REINFORCING STEEL IN CAP.

FOUNDATIONS FOR END BENT NOS.1 AND 2 WILL INTERFERE WITH REINFORCEMENT FOR RETAINING WALL NOS.1 AND 2. SEE "FOUNDATION LAYOUT" SHEET FOR FOUNDATION LOCATIONS.

DO NOT PLACE LEVELING PAD CONCRETE, AGGREGATE OR REINFORCEMENT FOR RETAINING WALL NOS.1 AND 2 UNTIL EXCAVATION DIMENSIONS AND FOUNDATION MATERIAL ARE APPROVED.



PRECAST PANELS
LEVELING PAD STEP DETAIL

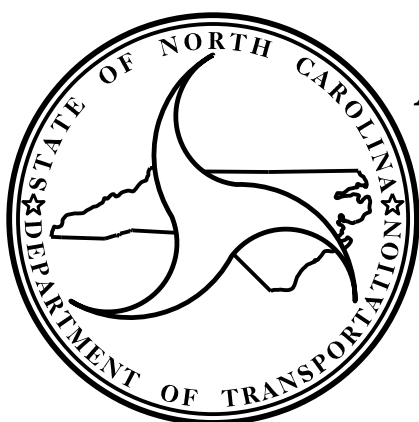
PROJECT NO.: BR-0099

RUTHERFORD COUNTY

STATION: --

SHEET 5 OF 5

PREPARED BY: MHS	DATE: 10/24
REVIEWED BY: SY	DATE: 10/24



NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

GEOTECHNICAL
ENGINEERING UNIT

RETAINING WALL NOS. 1 AND 2
MSE RETAINING WALL NOTES
AND LEVELING PAD DETAIL

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

SHEET NO.
W-5