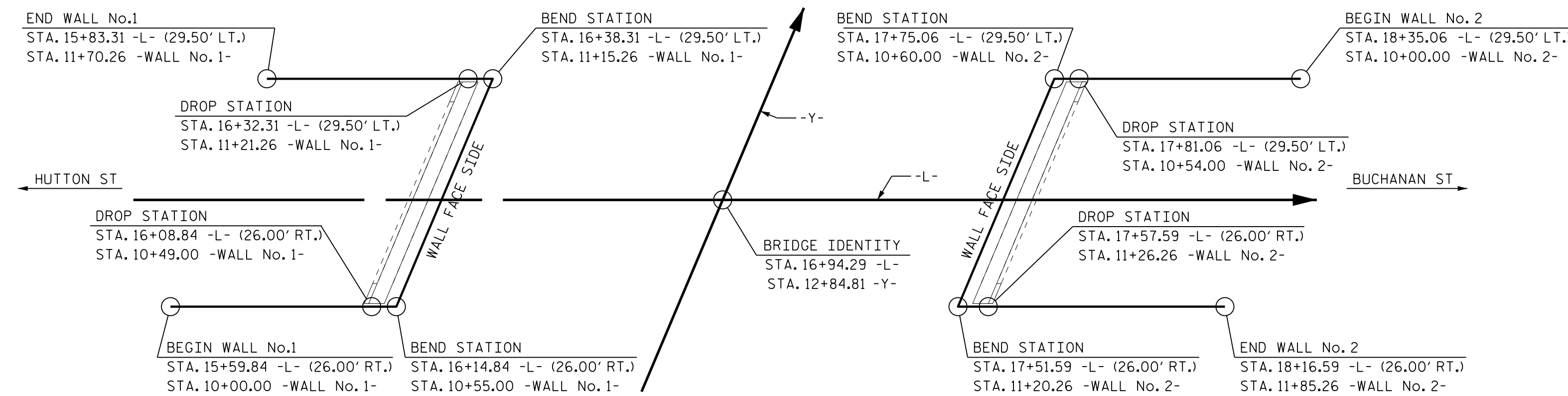


GEOTECHNICAL ENGINEER

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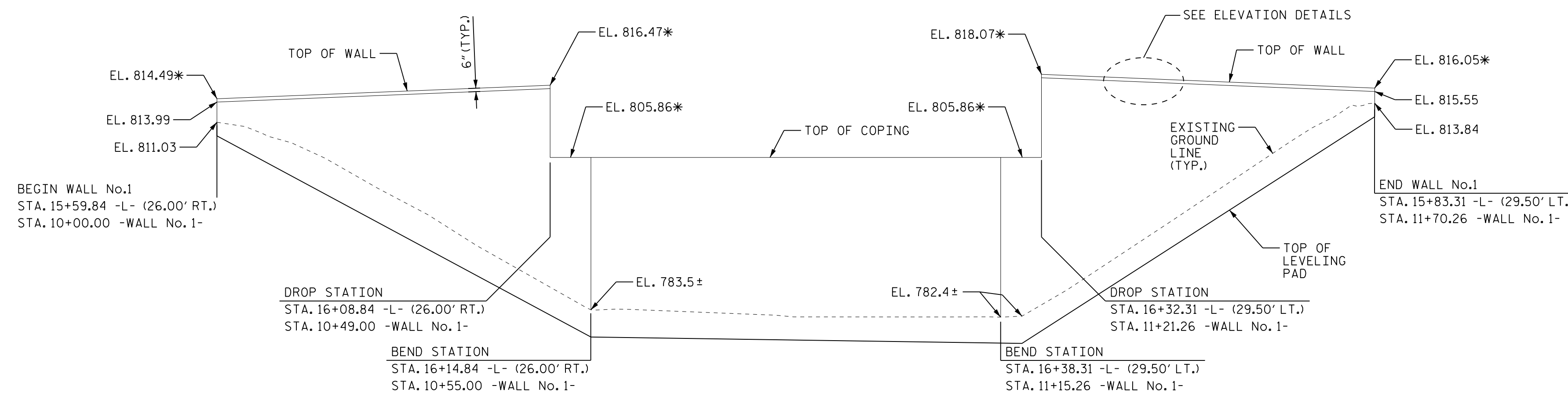
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PLAN VIEW FOR WALL No.1 AND No.2

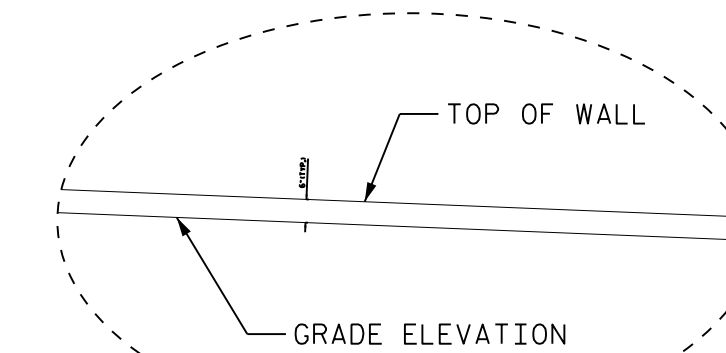
MSE RETAINING WALL QUANTITIES		
RETAINING WALL NO. 1	-WL1-	* 3,915 SQUARE FEET
RETAINING WALL NO. 2	-WL2-	* 5,170 SQUARE FEET

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



MSE WALL No. 1 - EXPOSED WALL FACE ENVELOPE

(\* TOP OF WALL ELEVATIONS)

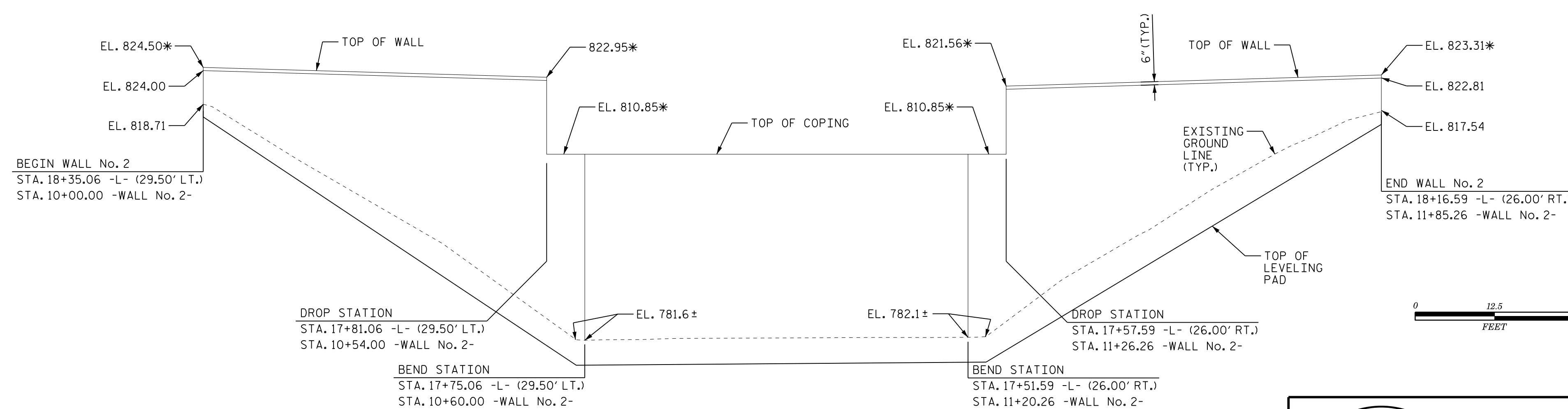


ELEVATION DETAILS

(NOT TO SCALE)

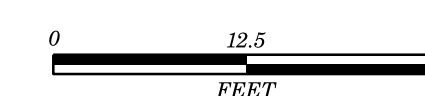
NOTES:

1. PROVIDE MINIMUM WALL EMBEDMENT AS PER GEOTECHNICAL STANDARDS.
2. PLAN VIEW SHOWS STATIONS ALONG -L- LINE. BRIDGE PLANS SHOW EBL AND WBL STATIONING WHICH DOES NOT MATCH -L- STATIONING.



MSE WALL No. 2 - EXPOSED WALL FACE ENVELOPE

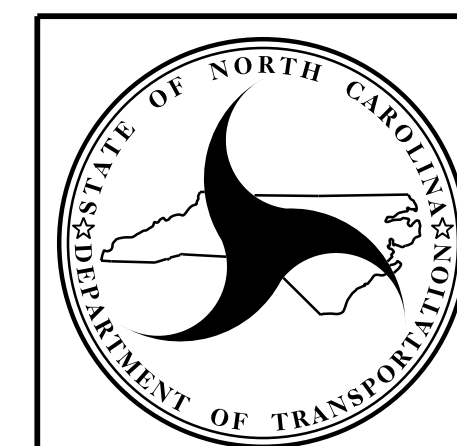
(\* TOP OF WALL ELEVATIONS)



MSE WALL 1 & 2 ELEVATION

- NOTES:
- 1) ELEVATION SHOWN LOOKING UP STATION
  - 2) ELEVATION VIEWED FROM THE BACK FACE OF THE WALL

PREPARED BY: QSE	DATE: 8/2019
REVIEWED BY: SY	DATE: 8/2019



NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
DIVISION OF HIGHWAYS

GEOTECHNICAL  
ENGINEERING UNIT

PROJECT NO.: B-5770

FORSYTH COUNTY

STATION: MSE WALL NO. 1: 15+59.84 TO 15+83.31 -L-

SHEET 2 OF 5 MSE WALL NO. 2: 18+35.06 TO 18+16.59 -L-

RETAINING WALL NO. 1 AND 2  
MSE RETAINING WALL

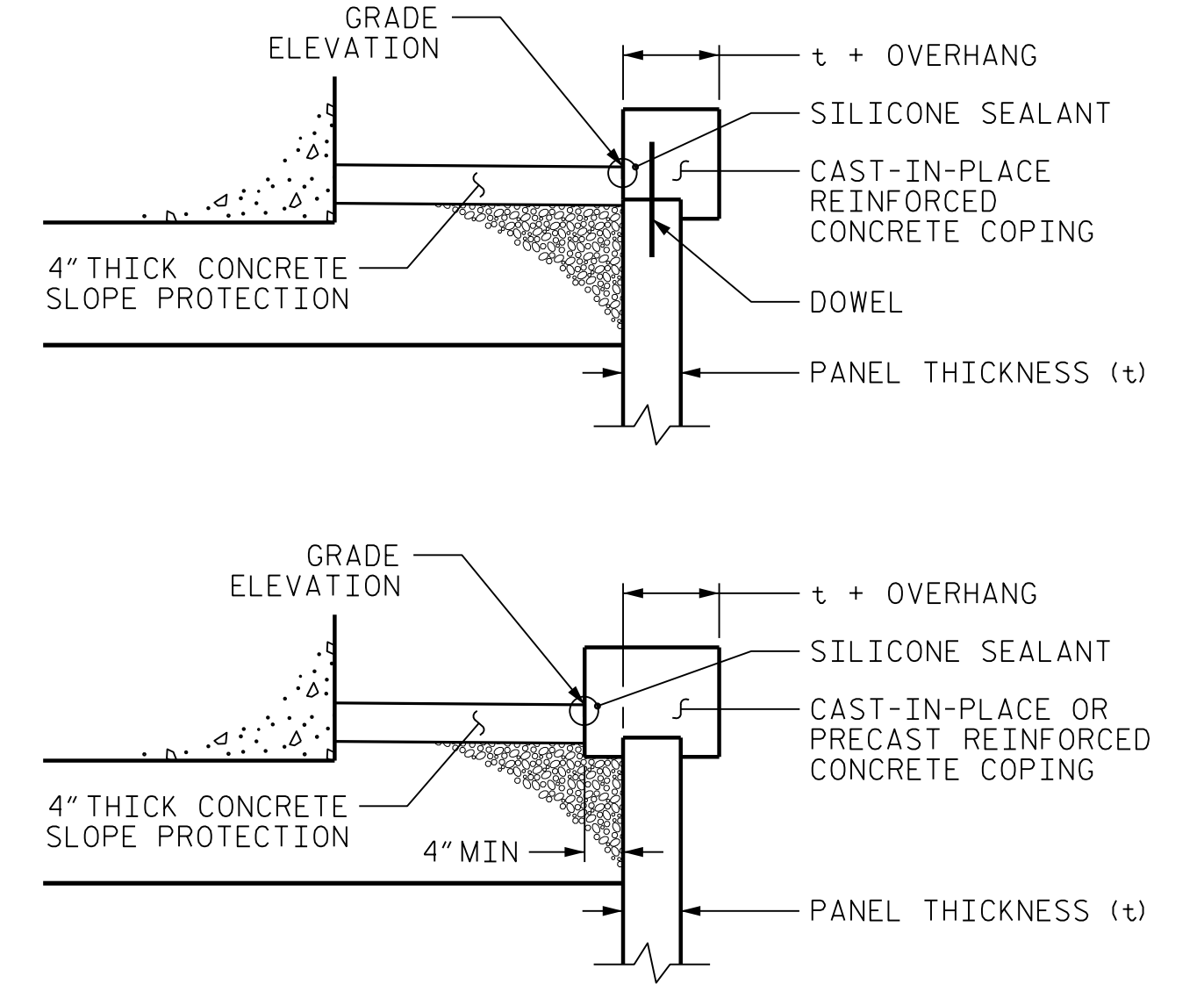
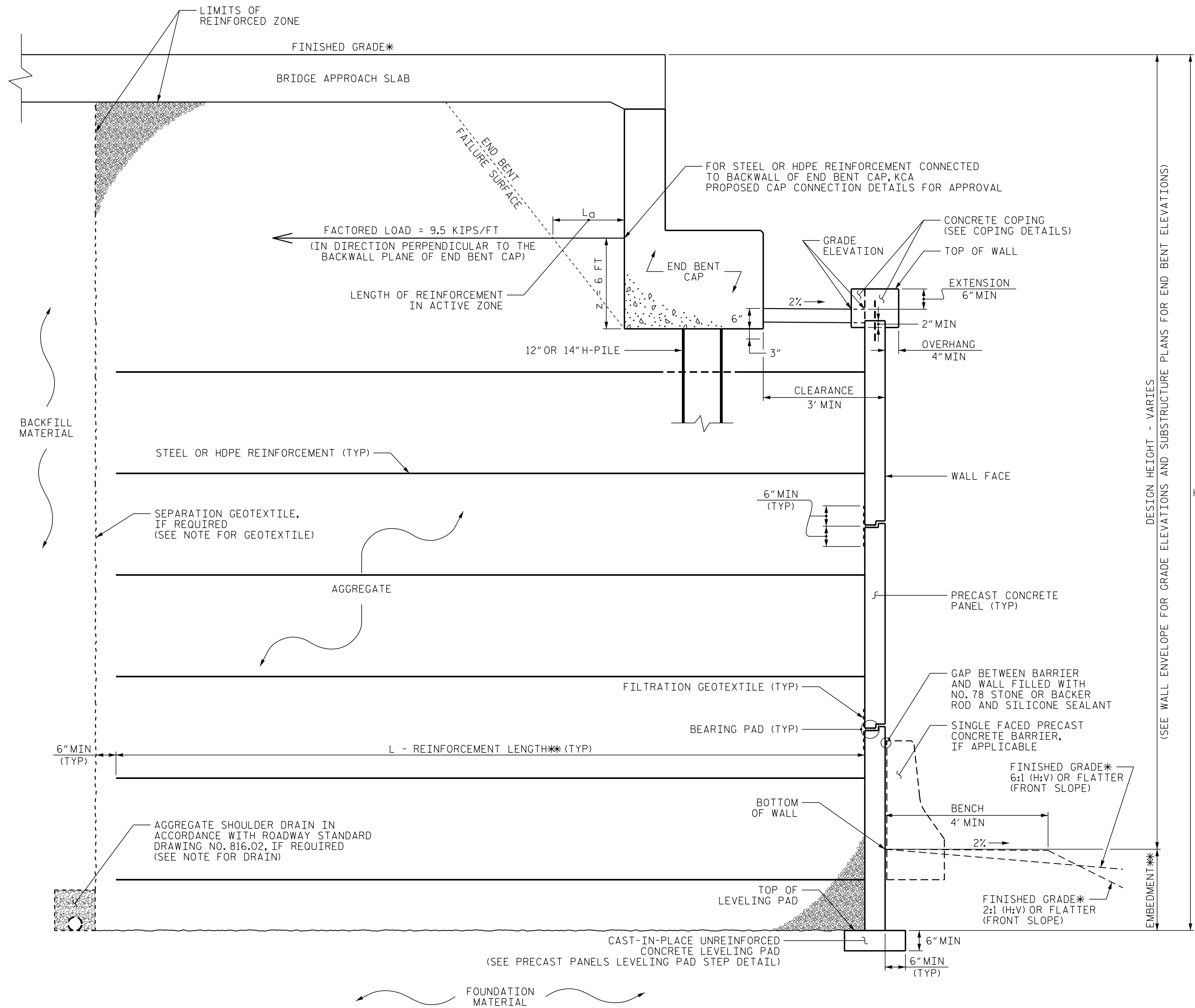
REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	
1	SY	12/2020	3			W-1
2			4			

GEOTECHNICAL ENGINEER

ENGINEER

Shipping Yang 3/5/2021

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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 EMBEDMENT AND REINFORCEMENT LENGTH REQUIREMENTS.

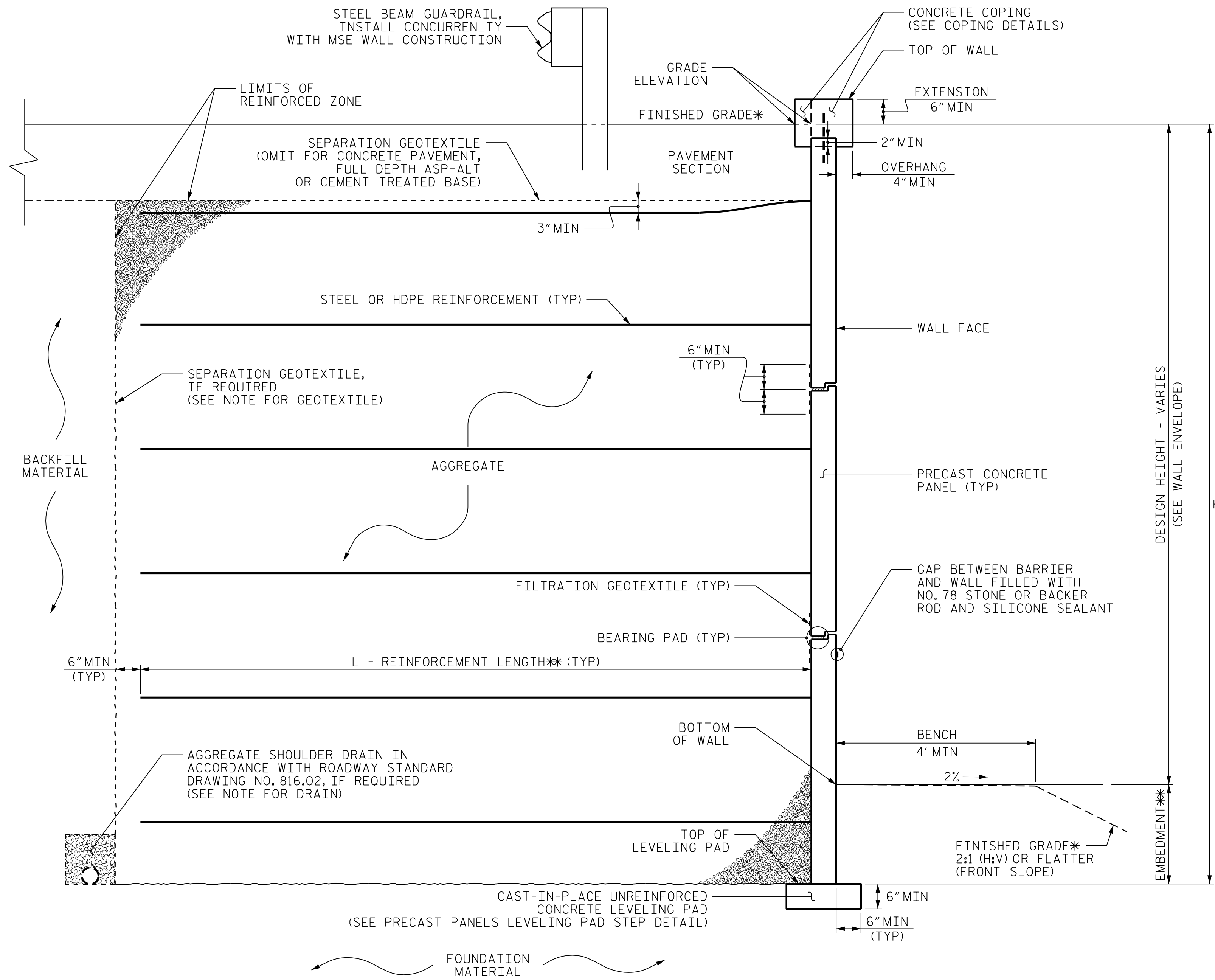
PROJECT NO.: B-5770  
 FORSYTH COUNTY  
 STATION: MSE WALL NO. 1: 15+59.84 TO 15+83.31 -L  
 SHEET 2 OF 4 MSE WALL NO. 2: 18+35.06 TO 18+16.59 -L

**NORTH CAROLINA**  
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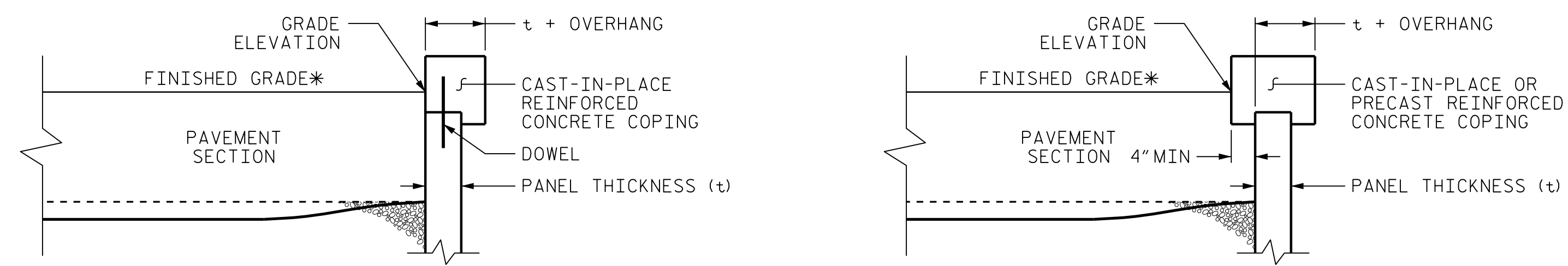
REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	
1	SY	12/2020	3			W-2
2			4			

PREPARED BY: QSE	DATE: 8/2019
REVIEWED BY: SY	DATE: 8/2019



**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 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.

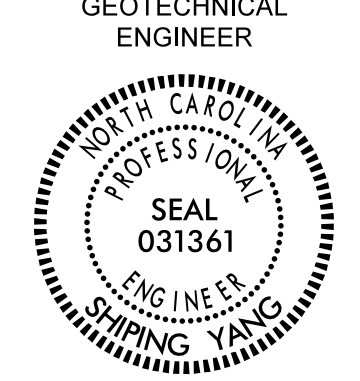
PROJECT NO.: B-5770  
 FORSYTH COUNTY  
 STATION: MSE WALL NO. 1: 15+59.84 TO 15+83.31 -L-  
 SHEET 3 OF 4 MSE WALL NO. 2: 18+35.06 TO 18+16.59 -L-

NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
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**RETAINING WALL NO. 1 AND 2  
MSE RETAINING WALL**

REVISIONS					
NO.	BY	DATE	NO.	BY	DATE
1	SY	12/2020	3		
2			4		

ENGINEER



DocuSigned by:  
*Shipping Yang* 3/5/2021

DATE: 3/5/2021

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**NOTES:**

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

FOR TYPE III BRIDGE APPROACH FILL, SEE BRIDGE APPROACH FILLS PROVISION AND ROADWAY DETAIL DRAWING NO. 422.D10.

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

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

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.

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

- 1) H = DESIGN HEIGHT + EMBEDMENT
- 2) DESIGN LIFE = 100 YEARS
- 3) MAXIMUM FACTORED VERTICAL PRESSURE ON FOUNDATION MATERIAL = 8,800 LB/SF
- 4) MINIMUM REINFORCEMENT LENGTH (L) = 0.7H OR 6 FT, WHICHEVER IS LONGER
- 5) MINIMUM EMBEDMENT ELEVATION = SEE WALL EMBEDMENT TABLE
- 6) REINFORCED ZONE AGGREGATE PARAMETERS:

AGGREGATE TYPE*	UNIT WEIGHT ( $\gamma$ ) LB/CF	FRICTION ANGLE ( $\phi$ ) DEGREES	COHESION (c) LB/SF
FINE	115	34	0
COARSE	110	38	0

\*SEE MSE RETAINING WALLS PROVISION FOR COARSE AND FINE AGGREGATE MATERIAL REQUIREMENTS.

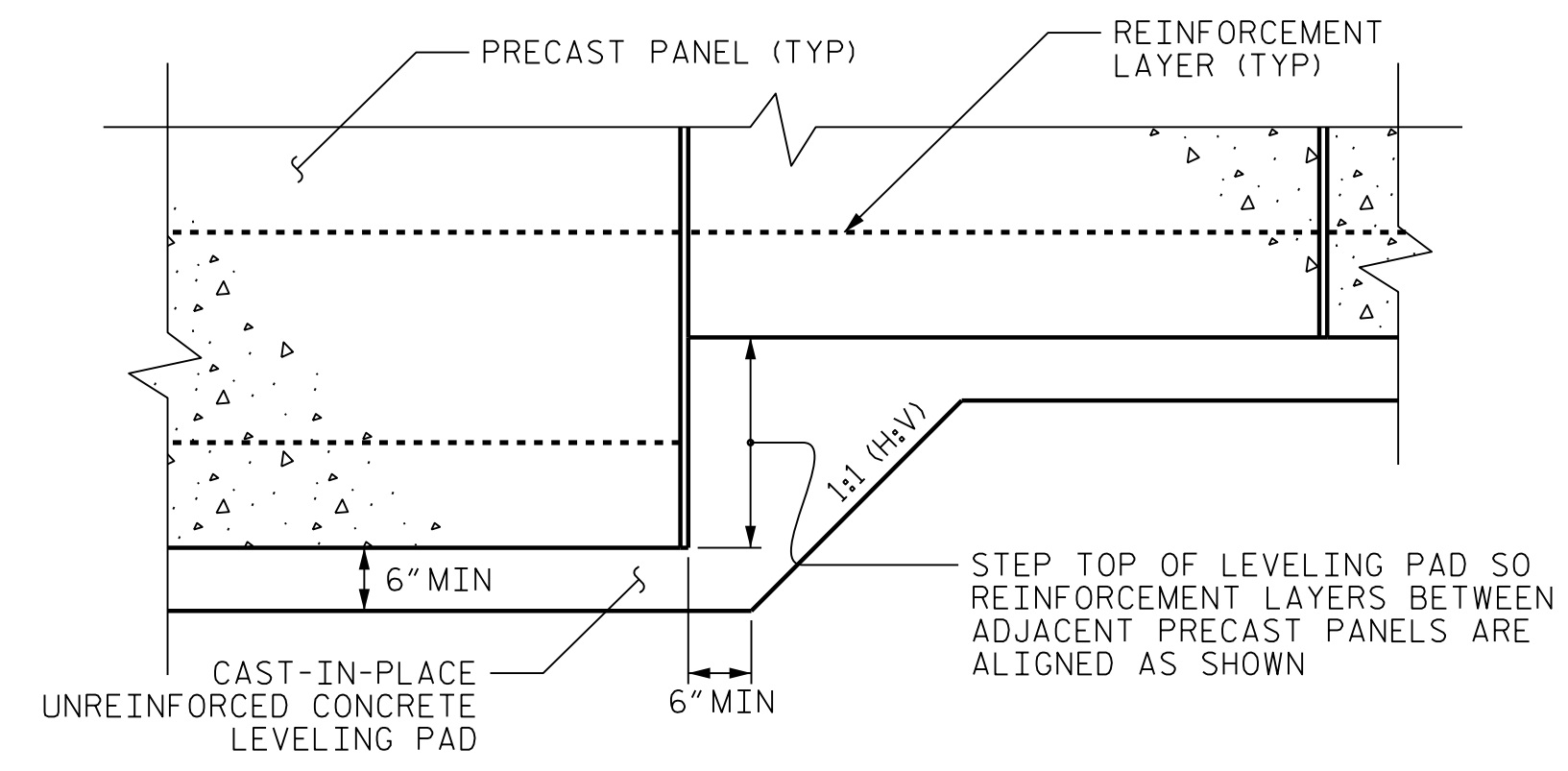
7) IN-SITU ASSUMED MATERIAL PARAMETERS:

MATERIAL TYPE	UNIT WEIGHT ( $\gamma$ ) LB/CF	FRICTION ANGLE ( $\phi$ ) DEGREES	COHESION (c) LB/SF
BACKFILL	120	30	0
FOUNDATION	120	30	0

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

EXISTING OR FUTURE OBSTRUCTIONS SUCH AS FOUNDATIONS, GUARDRAIL, FENCE OR HANDRAIL POSTS, PAVEMENTS, PIPES, INLETS OR UTILITIES WILL INTERFERE WITH REINFORCEMENT FOR RETAINING WALL NOS. 1 AND 2.

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 CONCRETE PANELS


LEVELING PAD STEP DETAILS

FRONT SLOPE WALL EMBEDMENT

SLOPE IN FRONT OF STRUCTURES	MINIMUM EMBEDMENT DEPTH	
	FOR WALLS	FOR ABUTMENTS
HORIZONTAL	H/20	H/10
3.0H:1.0V	H/10	
2.5H:1.0V	H/8.5	
2.0H:1.0V	H/7	
1.5H:1.0V	H/5	
1.25H:1.0V	H/4	
1.0H:1.0V	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 1H: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.

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**NORTH CAROLINA  
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**RETAINING WALL NO. 1 AND 2  
MSE RETAINING WALL**

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	
1	SY	12/2020	3			W-4
2			4			

PREPARED BY: QSE	DATE: 8/2019
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