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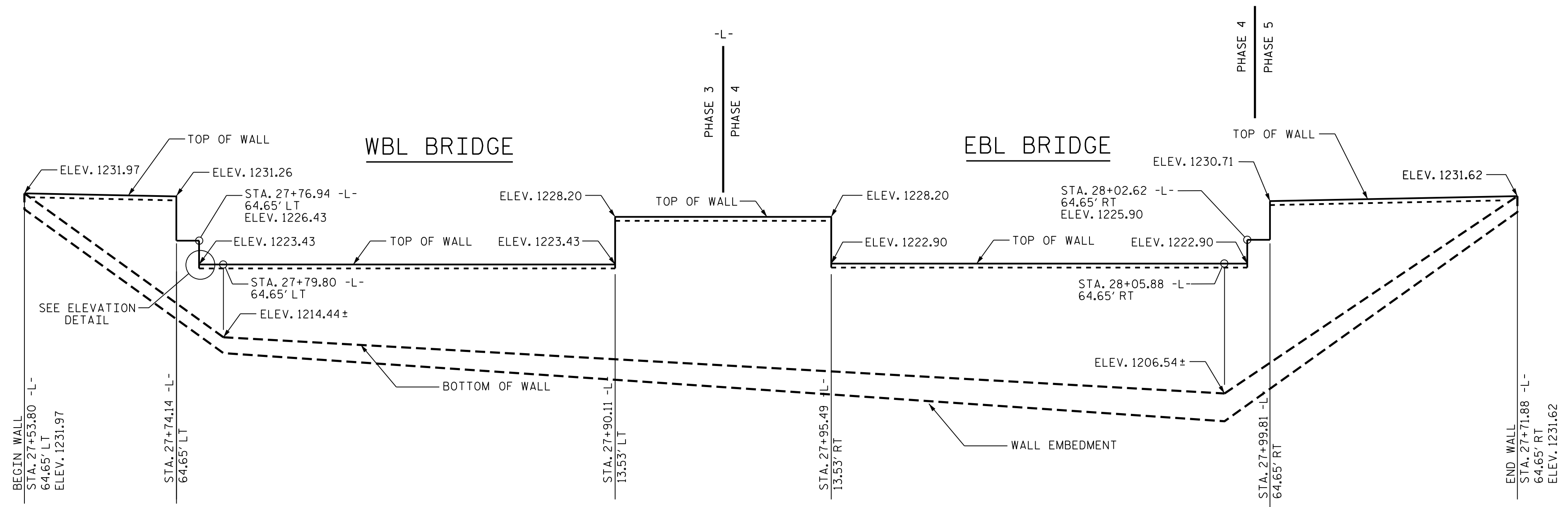
GEOTECHNICAL ENGINEER

ENGINEER

SEAL 028893

4/12/2018

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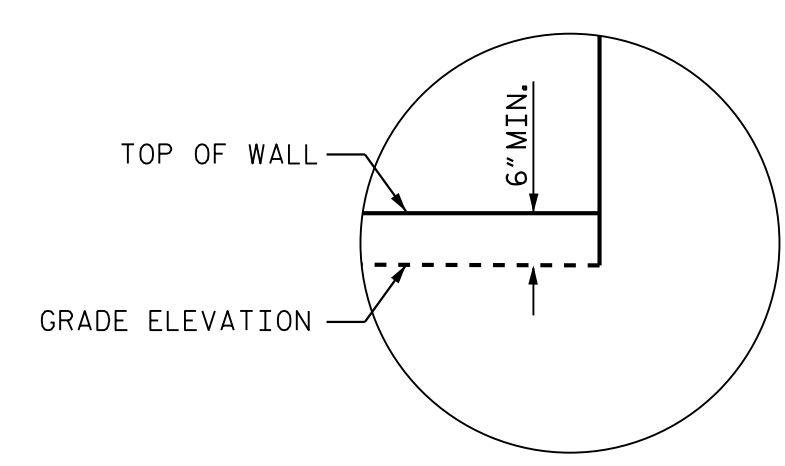
MSE RETAINING WALL QUANTITIES

RETAINING WALL NO. 1	-WL1-	* 2,855 SQUARE FEET
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* WALL AREA IS MEASURED USING THE DESIGN HEIGHT "H"

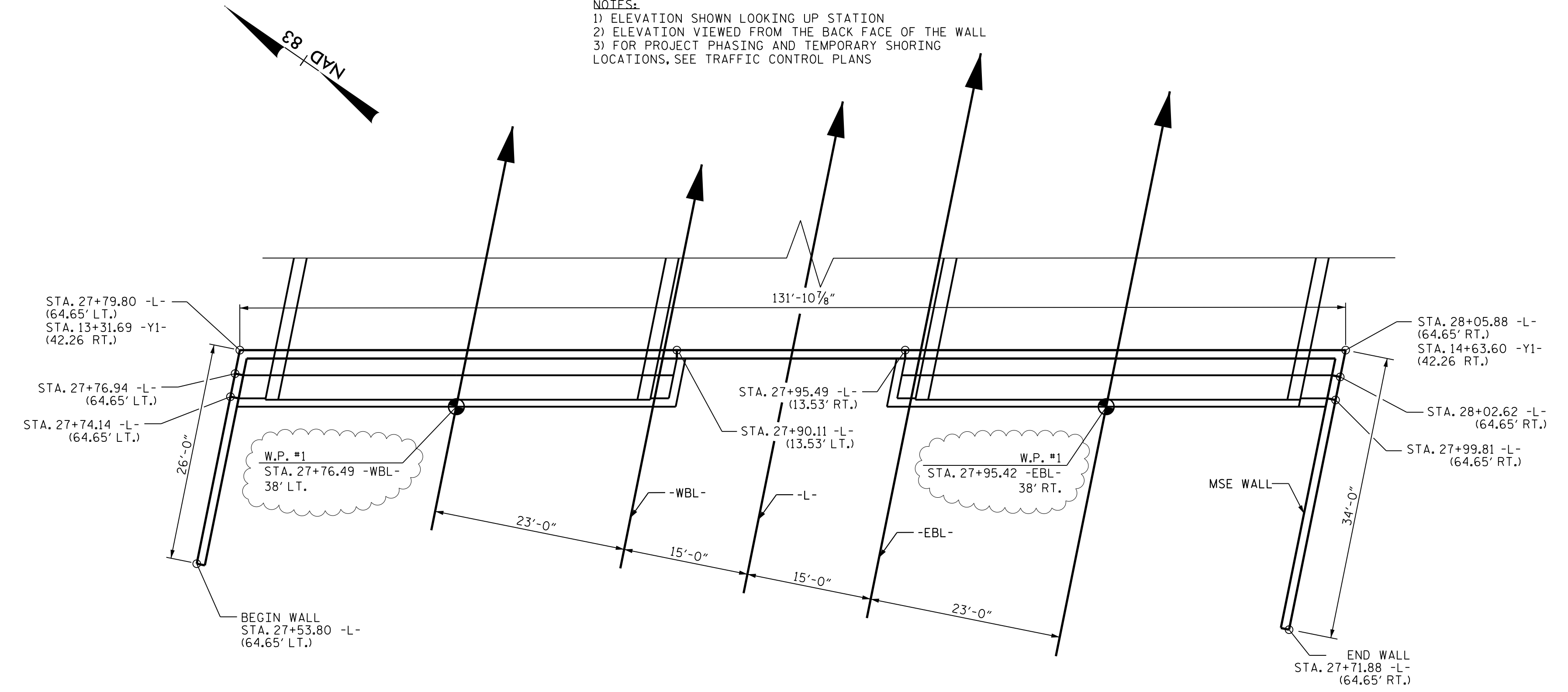
MSE WALL 1 ELEVATION

- NOTES:
- ELEVATION SHOWN LOOKING UP STATION
 - ELEVATION VIEWED FROM THE BACK FACE OF THE WALL
 - FOR PROJECT PHASING AND TEMPORARY SHORING LOCATIONS, SEE TRAFFIC CONTROL PLANS



ELEVATION DETAIL

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



MSE WALL 1 PLAN VIEW

PROJECT NO.: B-4448

BURKE COUNTY

STATION: RWALL1: 27+71.88 TO 27+53.80 -L-
RWALL2: 28+91.03 TO 29+28.11 -L-

SHEET 1 OF 6

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS

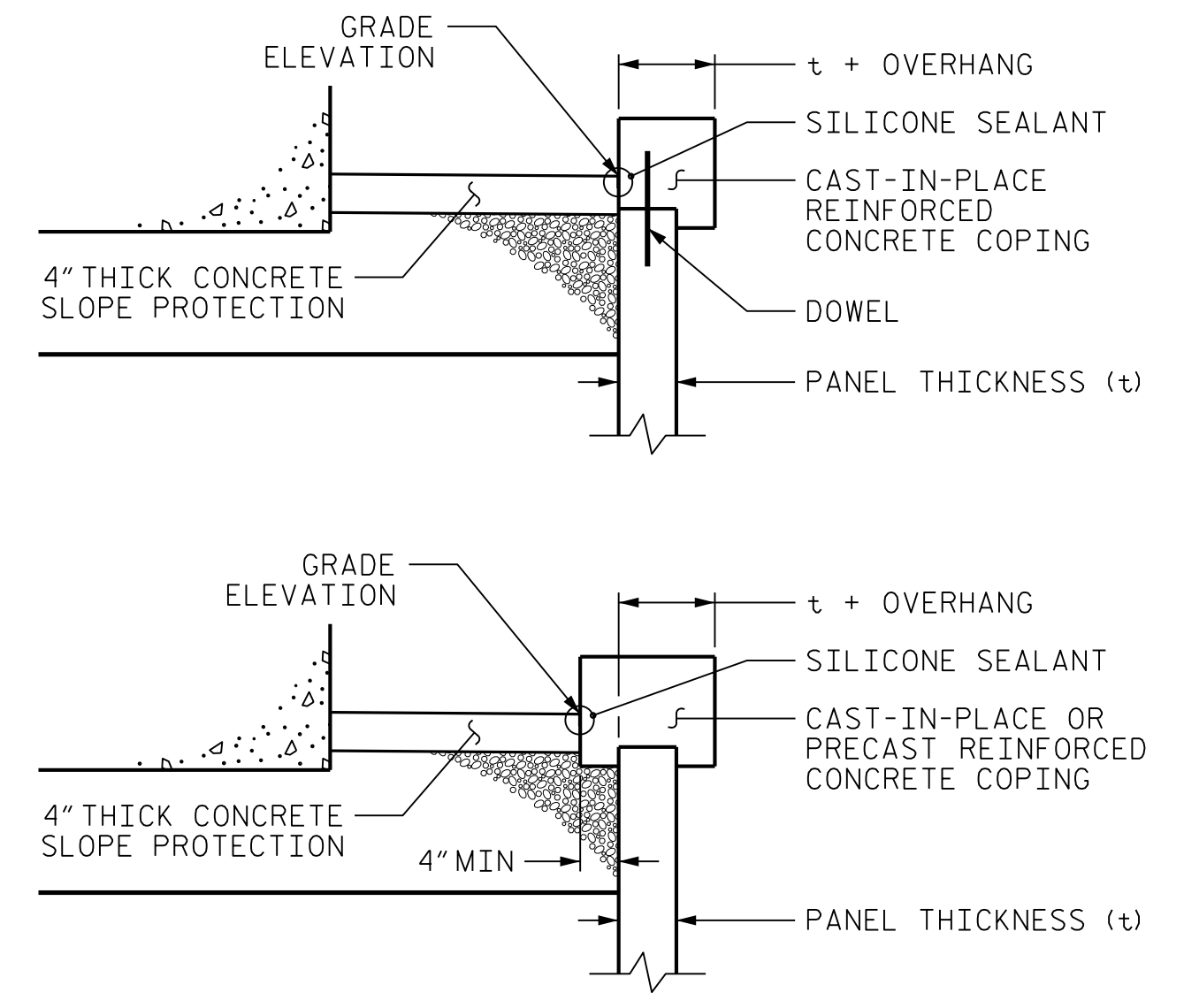
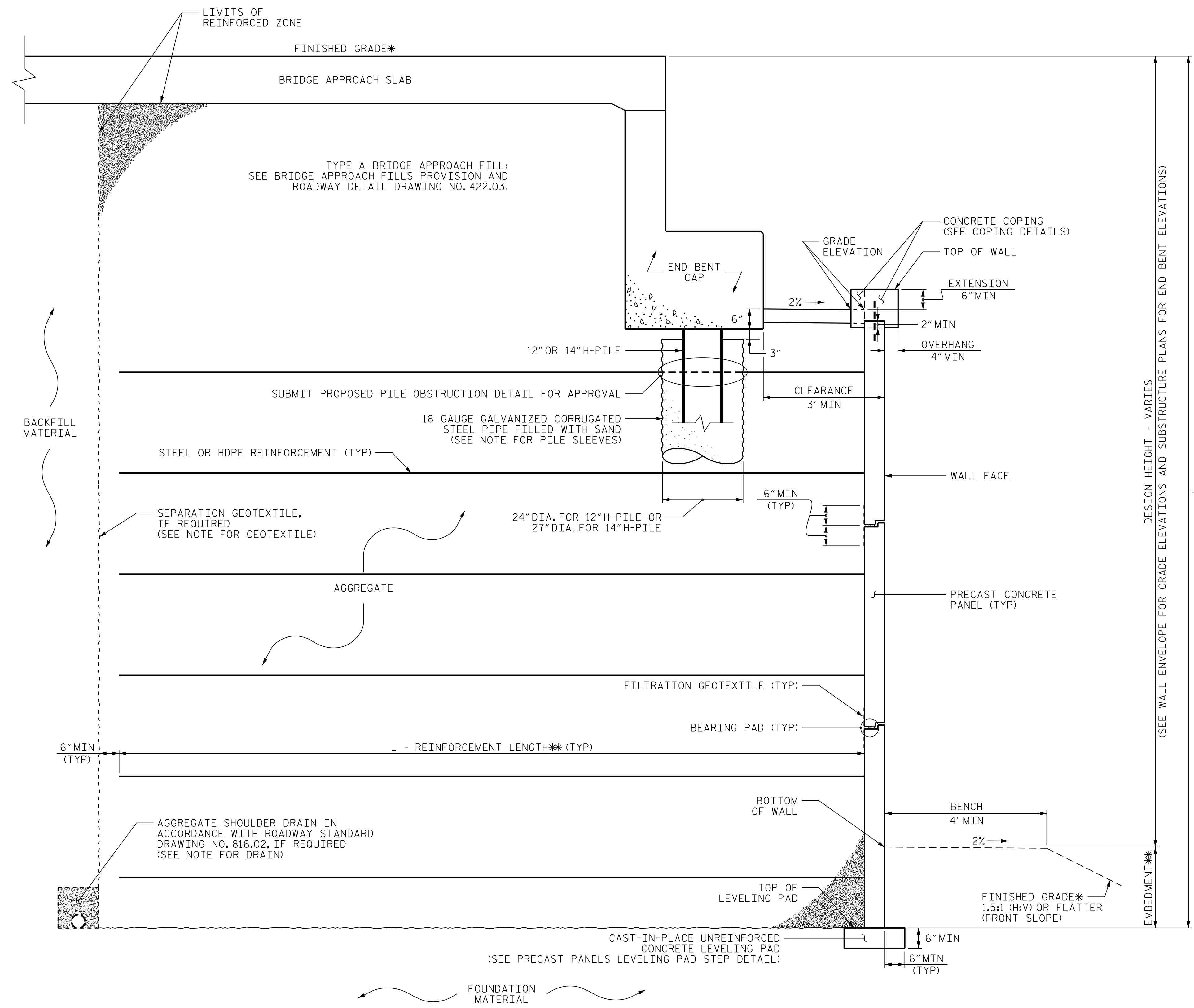
GEOTECHNICAL ENGINEERING UNIT

RETAINING WALL NO. 1 MSE RETAINING WALL

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	
1	MHS	4-12-18	3			W-1
2			4			

PREPARED BY: SY/MHS	DATE: 3/8/18
REVIEWED BY: SCC	DATE: 3/8/18

GEOTECHNICAL ENGINEER
 SEAL 028893
 MICHAEL H. STEPHENS
 4/12/2018
 ENGINEER
 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.

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-4448
 BURKE COUNTY
 STATION: RWALL1: 27+71.88 TO 27+53.80 -L-
 SHEET 3 OF 6 RWALL2: 28+91.03 TO 29+28.11 -L-

NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
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 GEOTECHNICAL
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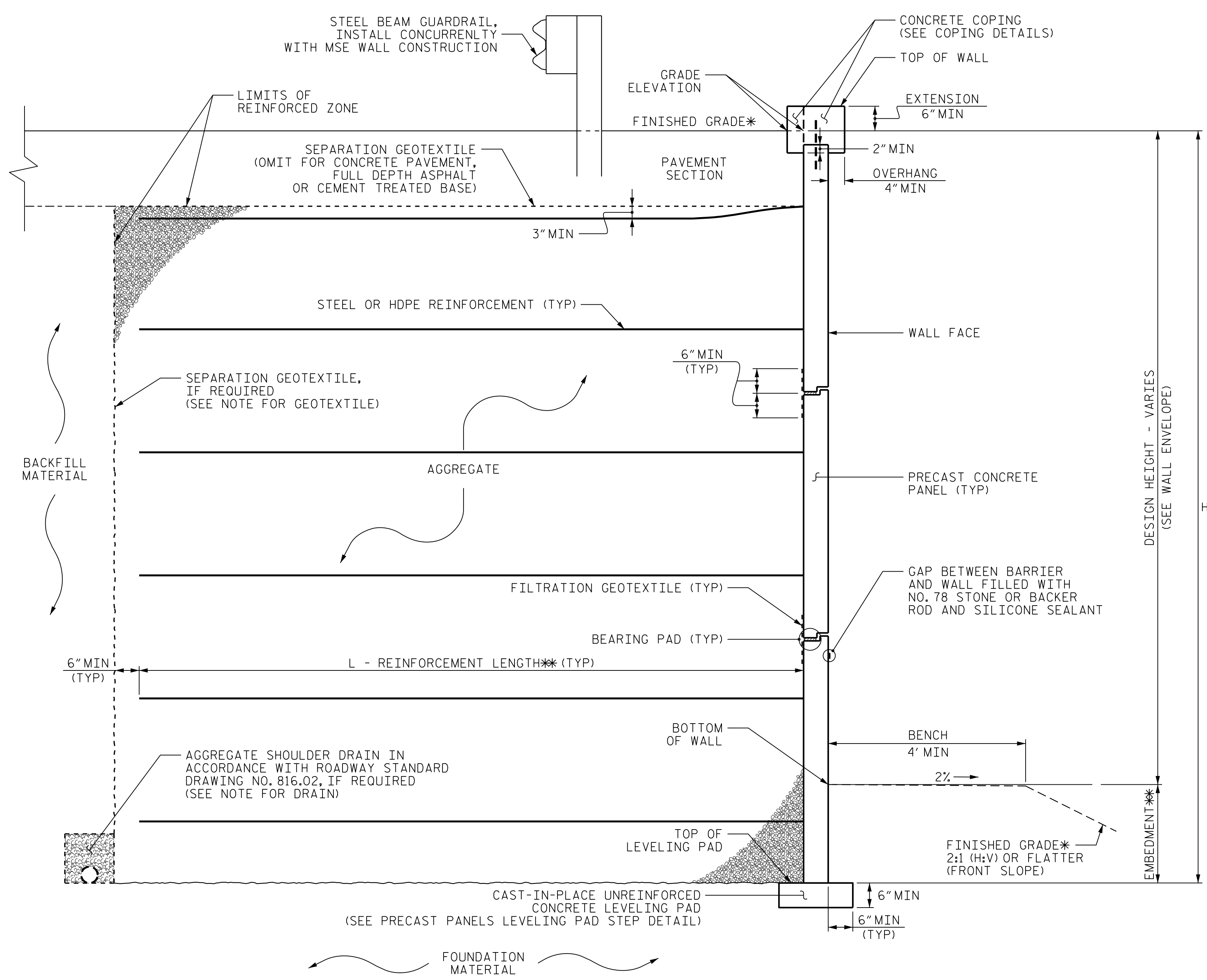
RETAINING WALL NOS. 1 AND 2 MSE RETAINING WALL

REVISIONS					
NO.	BY	DATE	NO.	BY	DATE
1	MHS	4-12-18	3		
2			4		

PREPARED BY: SY/MHS	DATE: 3/8/18
REVIEWED BY: SCC	DATE: 3/8/18

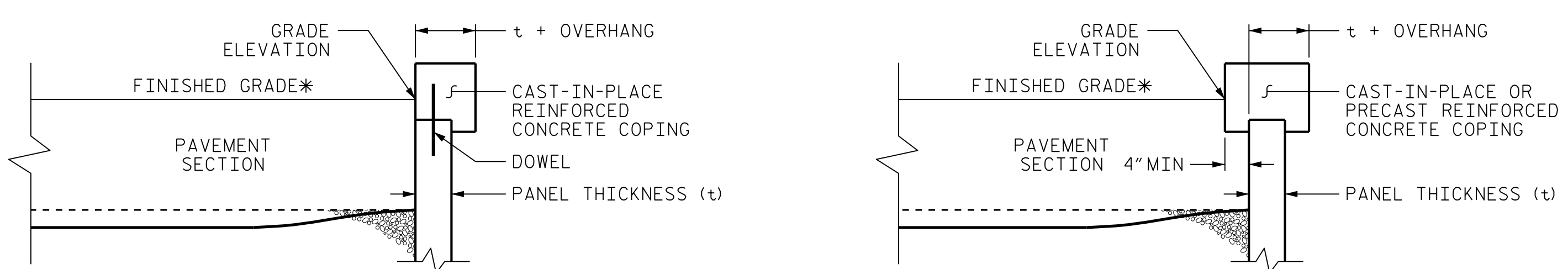
SHEET NO. W-3

GEOTECHNICAL ENGINEER
 ENGINEER
 SEAL 028893
 4/12/2018
 DATE
 SIGNATURE
 DATE
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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-4448
 BURKE COUNTY
 STATION: RWALL1: 27+71.88 TO 27+53.80 -L-
 RWALL2: 28+91.03 TO 29+28.11 -L-
 SHEET 4 OF 6

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

**RETAINING WALL NOS. 1 AND 2
 MSE RETAINING WALL**

REVISIONS					
NO.	BY	DATE	NO.	BY	DATE
1	MHS	4-12-18	3		
2			4		

PREPARED BY: SY/MHS	DATE: 3/8/18
REVIEWED BY: SCC	DATE: 3/8/18

SHEET NO. W-4

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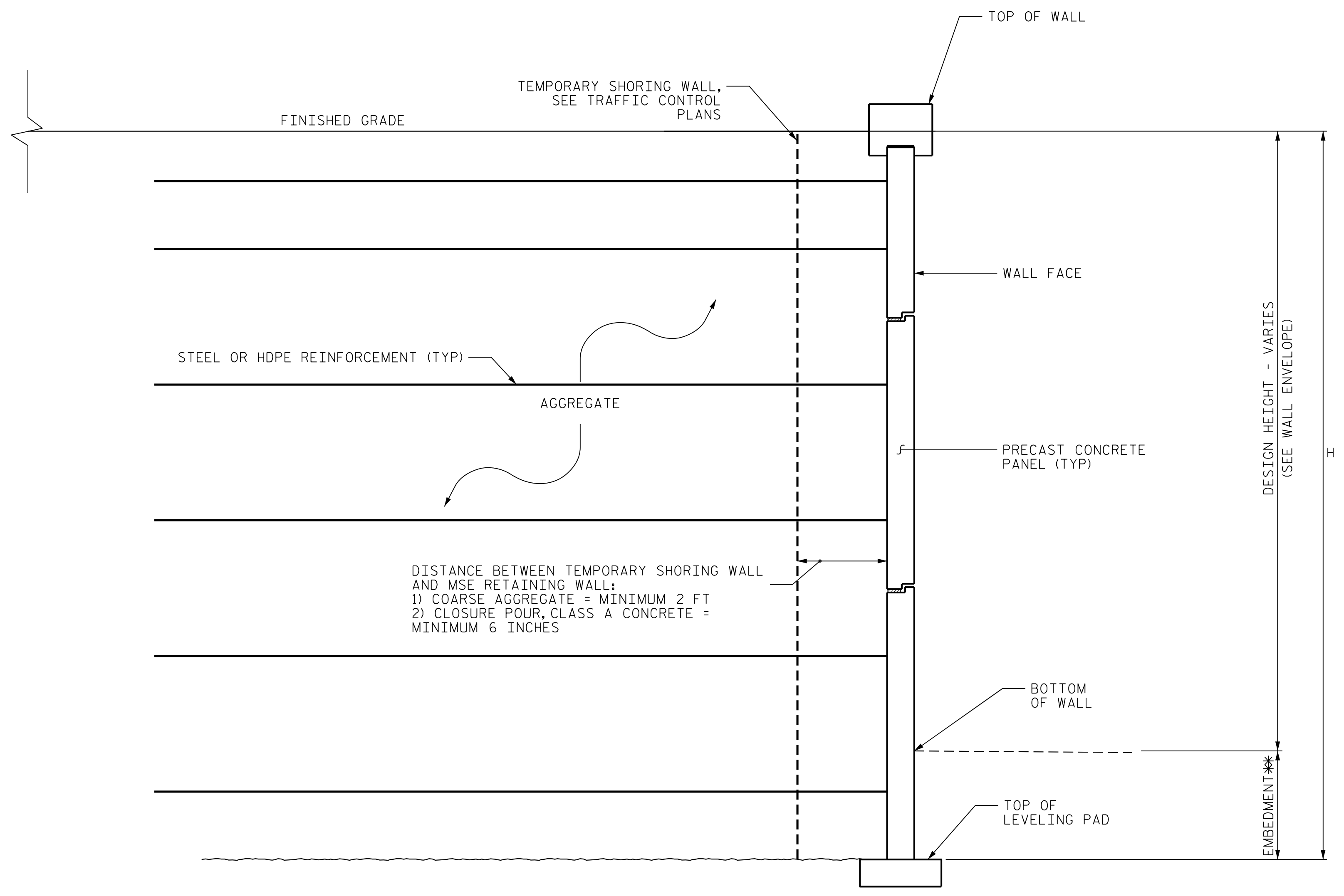
ENGINEER

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**MSE WALL AND STANDARD TEMPORARY WALL -
PHASE 4 CONSTRUCTION TYPICAL**

DETAIL REQUIRED FOR PHASE CONSTRUCTION BETWEEN
EBL AND DETOUR LANE FOR MSE RETAINING WALLS 1 AND 2.

PROJECT NO.: B-4448
 BURKE COUNTY
 STATION: RWALL1: 27+71.88 TO 27+53.80 -L-
 SHEET 5 OF 6 RWALL2: 28+91.03 TO 29+28.11 -L-

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

**GEOTECHNICAL
 ENGINEERING UNIT**

REVISIONS						SHEET NO. W-5
NO.	BY	DATE	NO.	BY	DATE	
1	MHS	4-12-18	3			
2			4			

PREPARED BY: SY/MHS	DATE: 3/8/18
REVIEWED BY: SCC	DATE: 3/8/18

GEOTECHNICAL ENGINEER

ENGINEER

SEAL
028893
ENGINEER
MICHAEL H. STEPHENS

4/12/2018

4/12/2018

SIGNATURE DATE SIGNATURE DATE

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NOTES:

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

FOR TYPE A BRIDGE APPROACH FILL, SEE BRIDGE APPROACH FILLS PROVISION AND ROADWAY DETAIL DRAWING NO. 422.03.

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.

PILE SLEEVES ARE REQUIRED AROUND PILES FOR END BENT NO. 1 LOCATED AT STATION 27+81.13.

PILE SLEEVES ARE REQUIRED AROUND PILES FOR END BENT NO. 2 LOCATED AT STATION 28+81.13.

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 = 5,600 LB/SF
- 4) MINIMUM REINFORCEMENT LENGTH (L) = 0.8H OR 6 FT, WHICHEVER IS LONGER
- 5) MINIMUM EMBEDMENT ELEVATION = SEE WALL EMBEDMENT TABLE
- 6) REINFORCED ZONE AGGREGATE PARAMETERS:

AGGREGATE TYPE*	UNIT WEIGHT (γ) LB/CF	FRICTION ANGLE (ϕ) DEGREES	COHESION (c) LB/SF
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 (γ) LB/CF	FRICTION ANGLE (ϕ) DEGREES	COHESION (c) LB/SF
BACKFILL	120	30	0
FOUNDATION	120	30	0

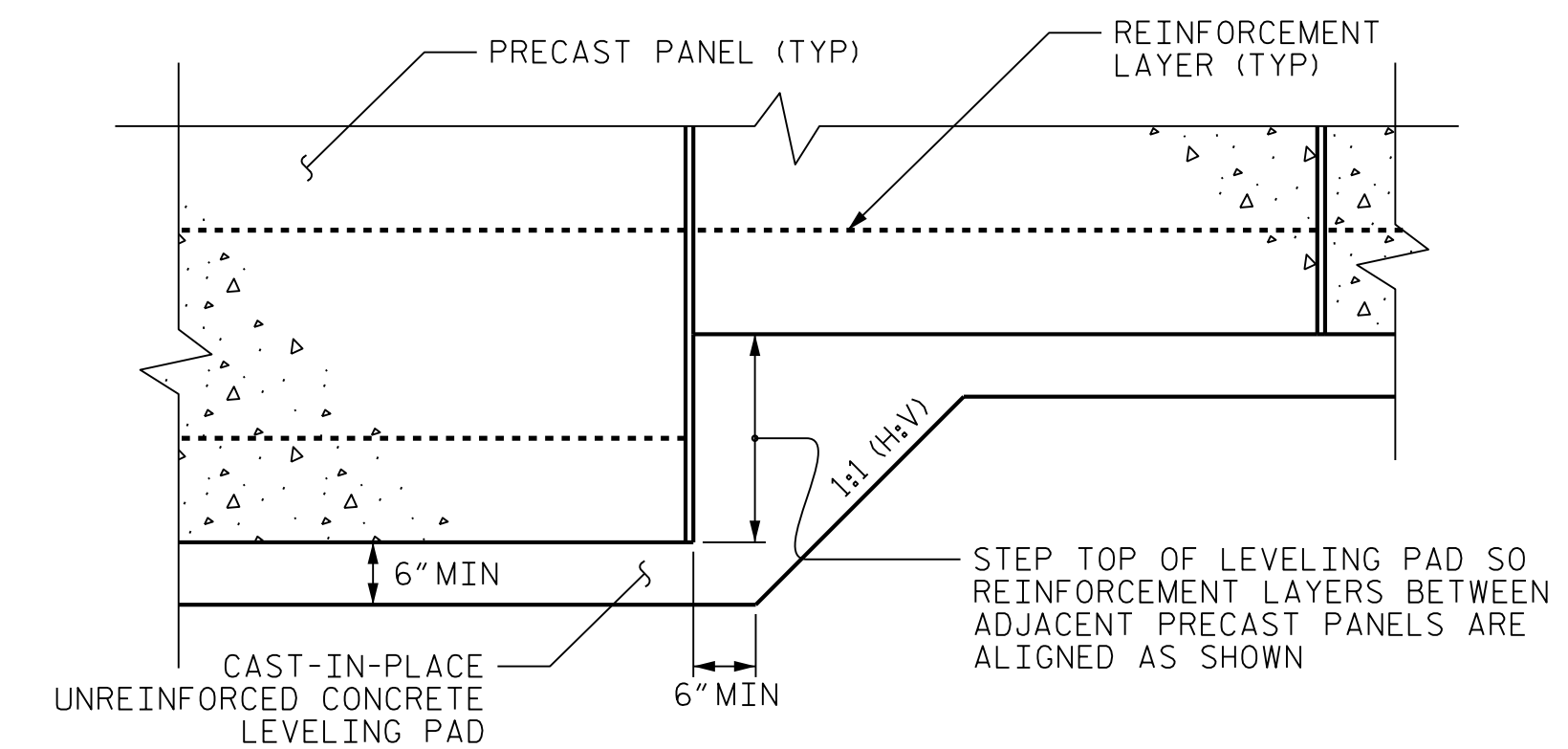
DESIGN RETAINING WALL NOS. 1 AND 2 FOR A LIVE LOAD (TRAFFIC) SURCHARGE.

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.

CONSTRUCT STEEL BEAM GUARDRAIL CONCURRENTLY WITH RETAINING WALL NOS. 1 AND 2 CONSTRUCTION.

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

"TEMPORARY SHORING" WILL BE REQUIRED FOR RETAINING WALLS NO. 1 AND 2 IN ACCORDANCE WITH THE TEMPORARY SHORING PROVISION. SEE ROADWAY, STRUCTURE OR TRAFFIC CONTROL PLANS.



PRECAST CONCRETE PANELS

LEVELING PAD STEP DETAILS

FRONT SLOPE WALL EMBEDMENT

SLOPE IN FRONT OF STRUCTURES		MINIMUM EMBEDMENT DEPTH
HORIZONTAL	FOR WALLS	H/20
	FOR ABUTMENTS	H/10
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 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.

PROJECT NO.: B-4448

BURKE COUNTY

STATION: RWALL1: 27+71.88 TO 27+53.80 -L-
 RWALL2: 28+91.03 TO 29+28.11 -L-
 SHEET 6 OF 6

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

**GEOTECHNICAL
ENGINEERING UNIT**

**RETAINING WALL NOS. 1 AND 2
MSE RETAINING WALL**

REVISIONS						SHEET NO. W-6
NO.	BY	DATE	NO.	BY	DATE	
1	MHS	4-12-18	3			
2			4			

PREPARED BY: SY/MHS	DATE: 3/8/18
REVIEWED BY: SCC	DATE: 3/8/18