


GEOTECHNICAL ENGINEER



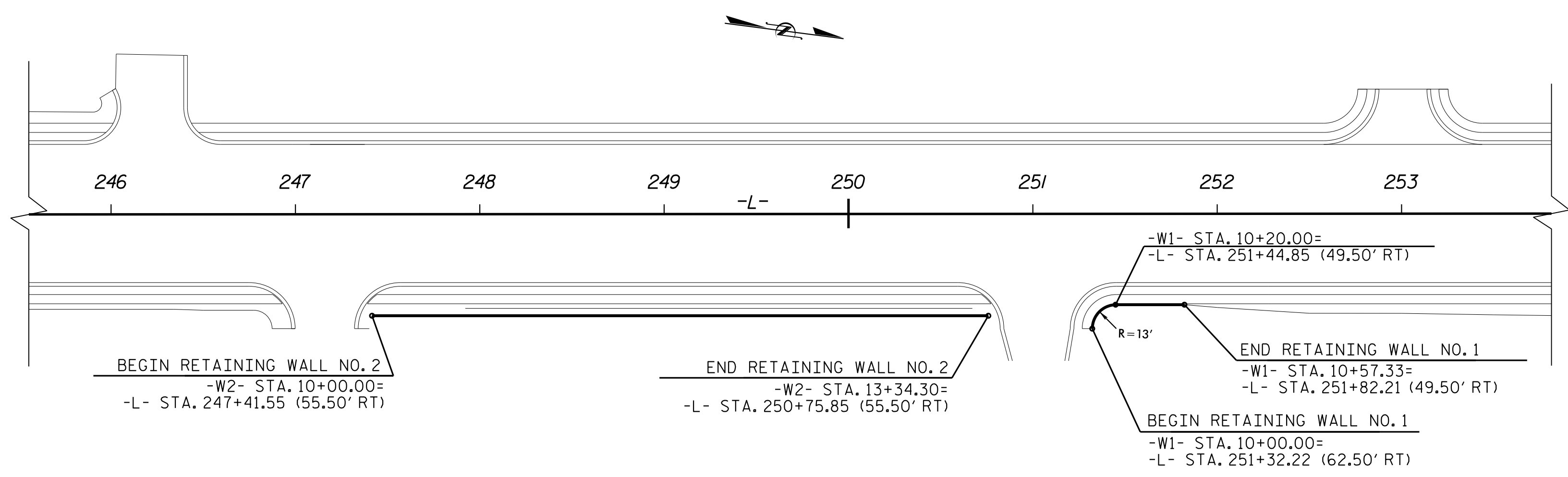
SEAL
032171
ENGINEER
WINNOUNG PARK

ENGINEER

DocuSigned by: *J. Park* 8/2/2019

SIGNATURE DATE

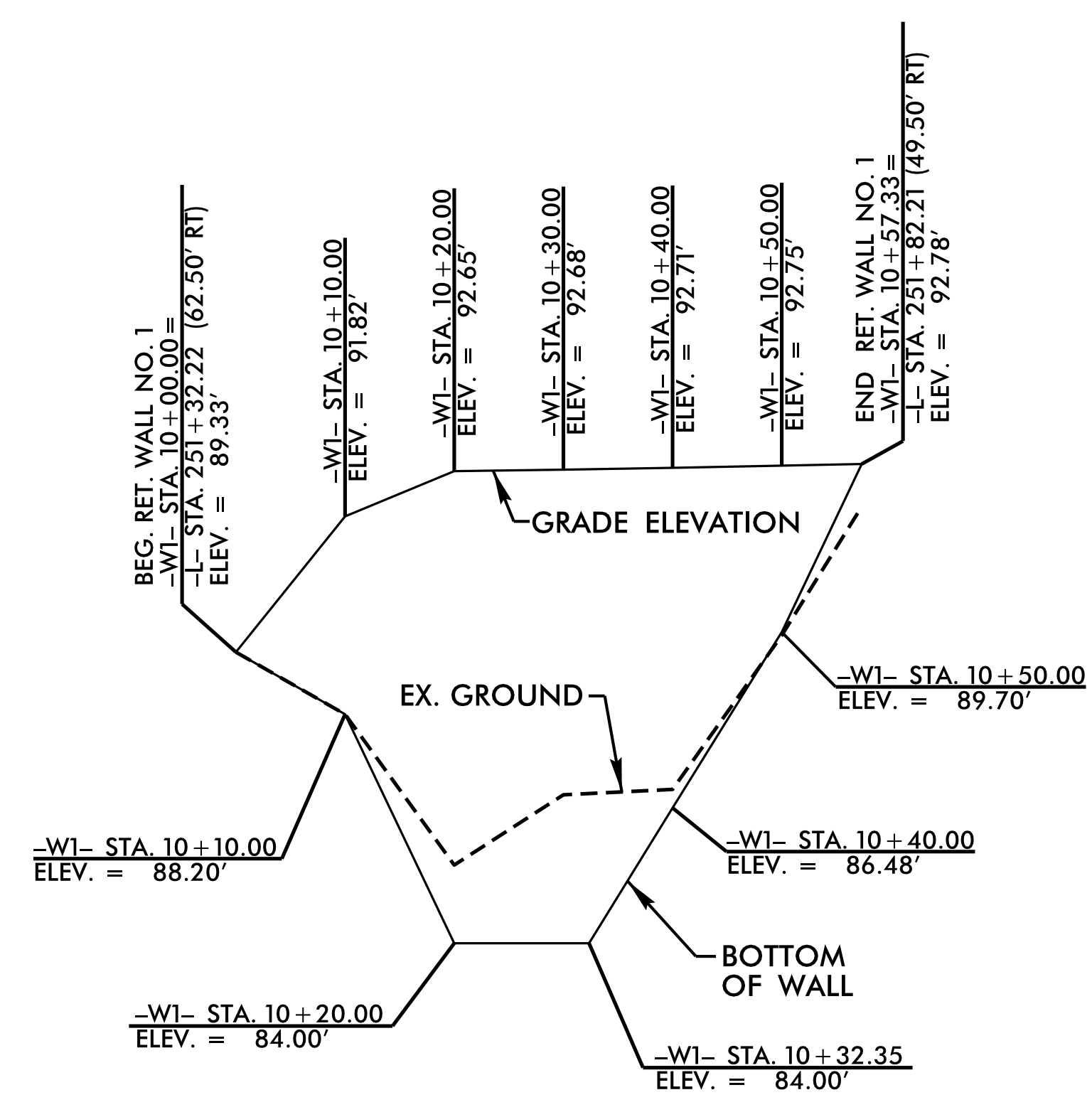
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PLAN VIEW FOR RETAINING WALL NO. 1 AND NO. 2

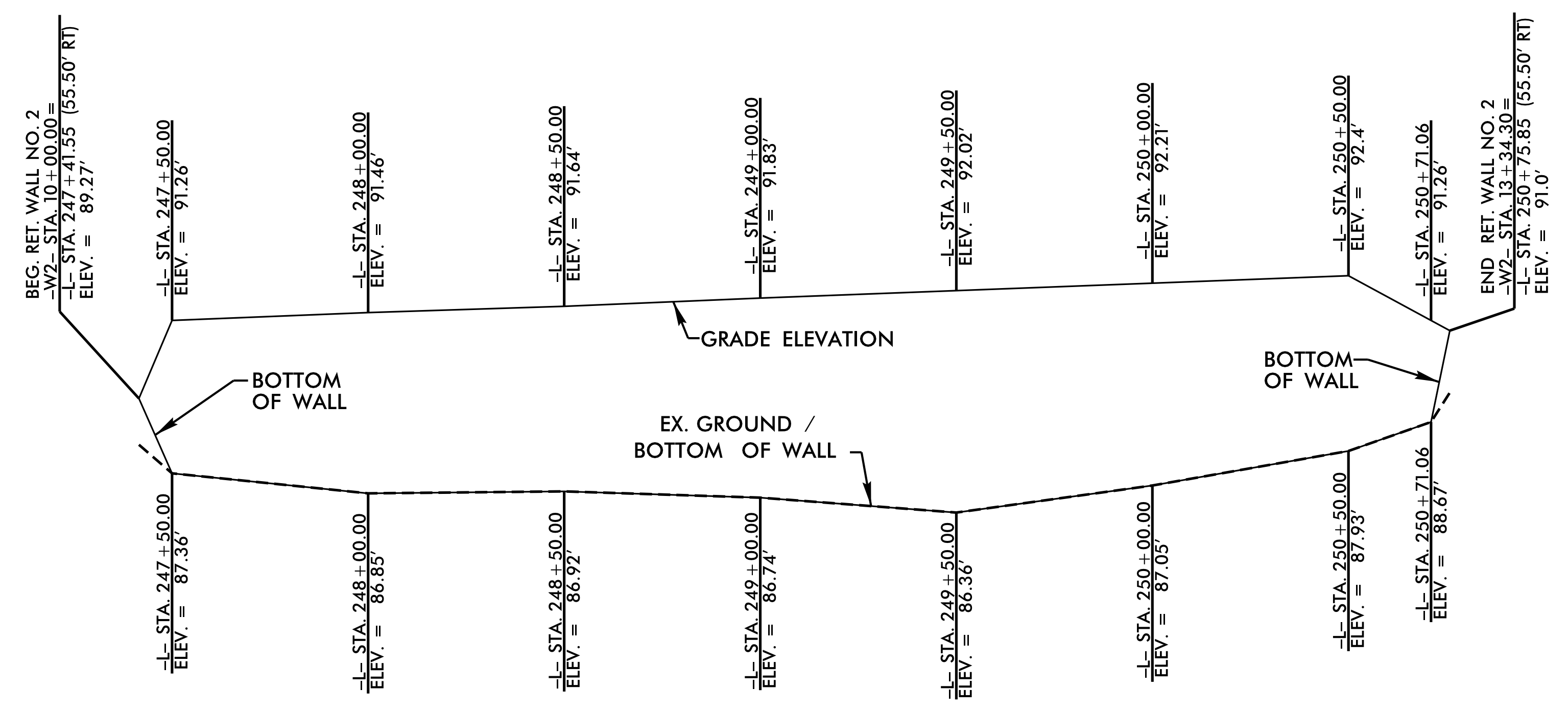
ESTIMATED MSE WALL QUANTITIES*	
MSE RETAINING WALL NO. 1	400 SF
MSE RETAINING WALL NO. 2	2,100 SF

* WALL QUANTITIES INCLUDE EMBEDMENT AND EXTENSION



WALL ENVELOPE FOR RETAINING WALL NO. 1

EXPOSED WALL FACE VIEW, N.T.S.
THE WALL ENVELOPE DOES NOT ACCURATELY
DEPICT THE ACTUAL FACE OF THE WALL.

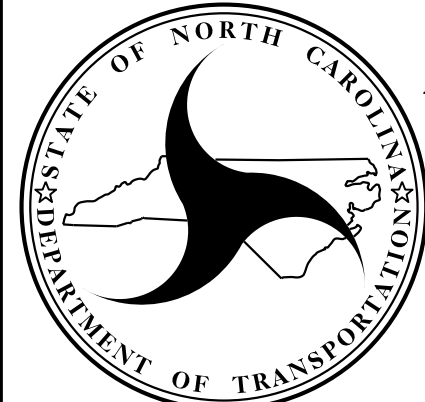


WALL ENVELOPE FOR RETAINING WALL NO. 2

EXPOSED WALL FACE VIEW, N.T.S.

PROJECT NO.: 41499.1.3 (R-5020B)
COLUMBUS COUNTY
STATION: -L- 247+50.00 / -L- 251+50.00
SHEET 1 OF 3

PREPARED BY: J. PARK	DATE: 08 / 2019
REVIEWED BY: J. BATTS	DATE: 08 / 2019



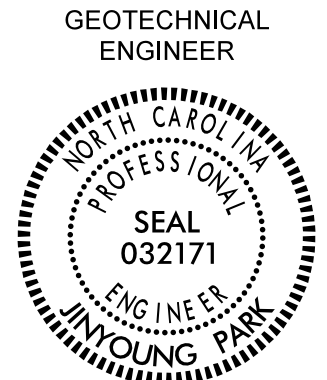
**NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS**

**GEOTECHNICAL
ENGINEERING UNIT**

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

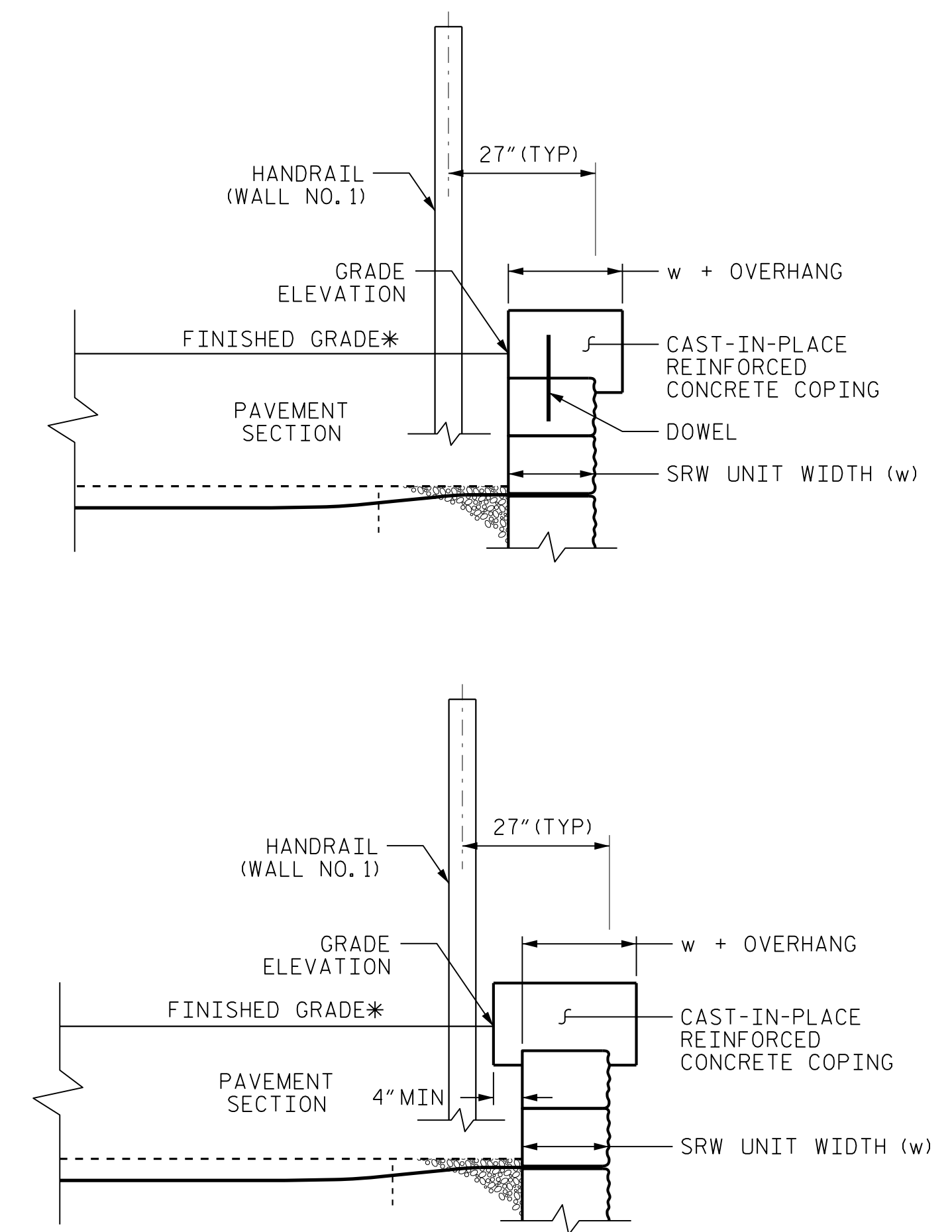
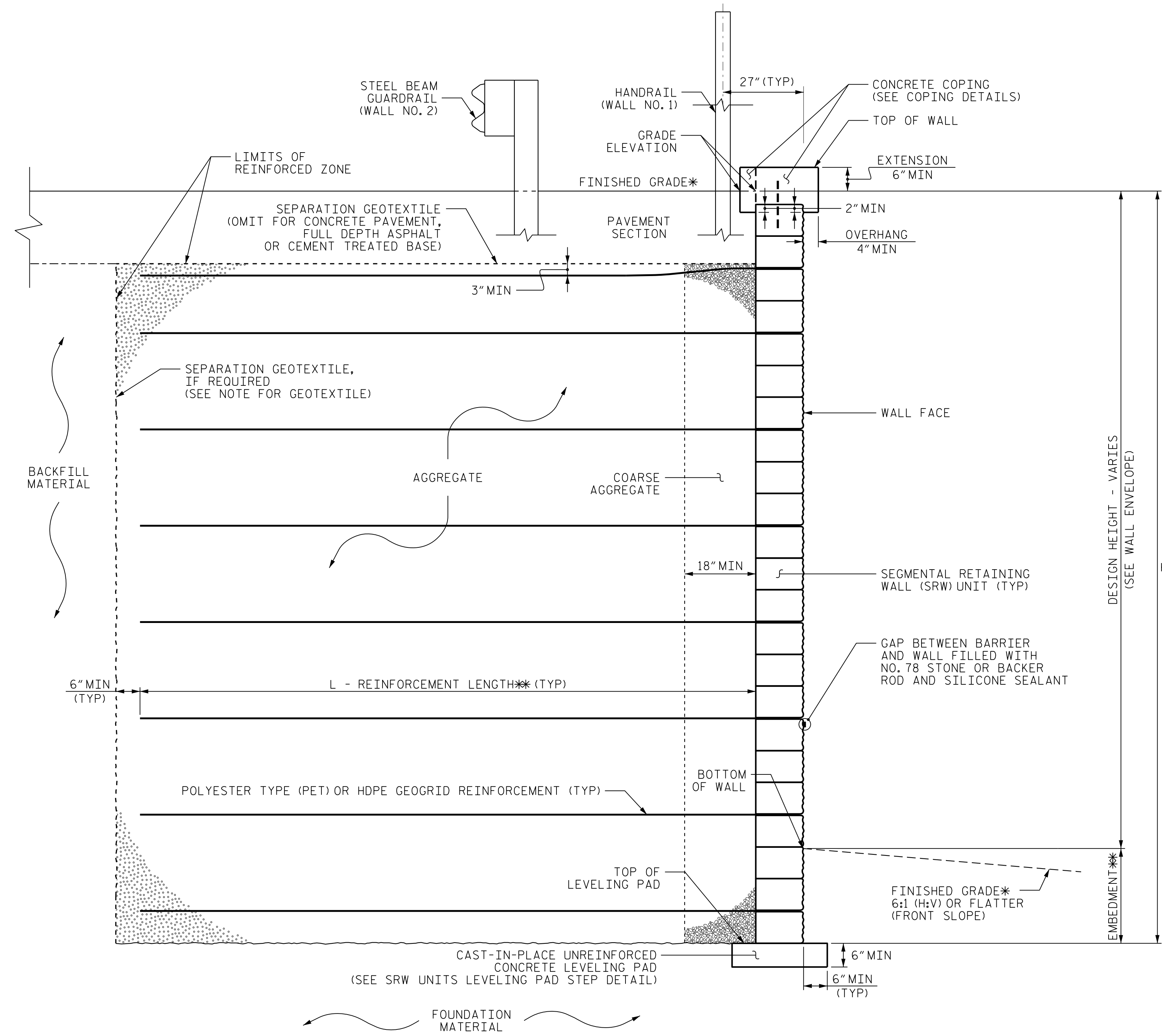
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COPING DETAILS

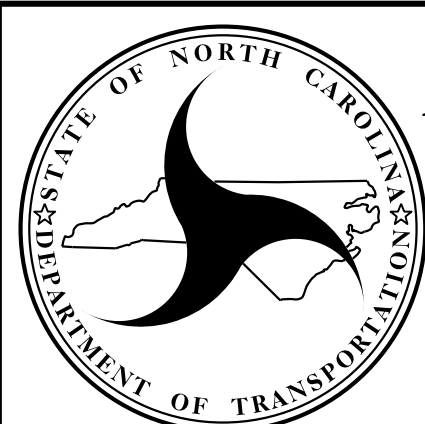
AT THE CONTRACTOR'S OPTION, CONNECT COPING TO SRW UNITS WITH DOWELS OR EXTEND COPING DOWN BACK OF SRW UNITS.
*SEE ROADWAY PLANS FOR FINISHED GRADE DETAILS.

MSE WALL WITH SRW UNITS - 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.: 41499.1.3 (R-5020B)
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SHEET 2 OF 3

PREPARED BY: J. PARK	DATE: 08 / 2019
REVIEWED BY: J. BATTS	DATE: 08 / 2019



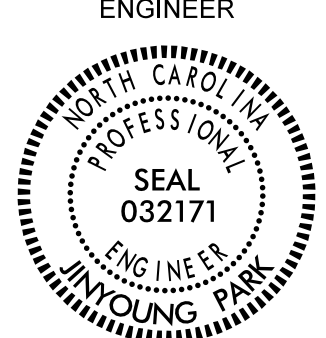
**NORTH CAROLINA
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**GEOTECHNICAL
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REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	
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2	-	-	4	-	-	

GEOTECHNICAL ENGINEER

ENGINEER



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J. Park
8/2/2019

DATE SIGNATURE DATE

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NOTES:

- FOR MECHANICALLY STABILIZED EARTH (MSE) RETAINING WALLS, SEE MECHANICALLY STABILIZED EARTH RETAINING WALLS PROVISION.
- FOR HANDRAILS BEHIND THE TOP OF WALL NO.1, SEE ROADWAY PLANS FOR HANDRAIL DETAILS.
- FOR STEEL BEAM GUARDRAIL ON TOP OF WALL NO.2, SEE ROADWAY PLANS AND SECTION 862 OF THE STANDARD SPECIFICATIONS.
- USE AN MSE WALL SYSTEM WITH SEGMENTAL RETAINING WALL UNITS (SRW) UNITS THAT MEET ARTICLE 1040-4 OF THE STANDARD SPECIFICATIONS FOR RETAINING WALL NO.1 AND NO.2.
- AT THE CONTRACTOR'S OPTION, USE FINE AGGREGATE IN THE REINFORCED ZONE OF RETAINING WALL NO.1 AND NO.2.
- CIP REINFORCED CONCRETE COPING IS REQUIRED FOR RETAINING WALL NO.1 AND NO.2.
- A SEPARATION GEOTEXTILE IS REQUIRED AT THE BACK OF THE REINFORCED ZONE FOR RETAINING WALL NO.1 AND NO.2 WHEN COARSE AGGREGATE IS USED IN THE REINFORCED ZONE OF RETAINING WALL NO.1 AND NO.2.
- A DRAIN IS NOT REQUIRED FOR RETAINING WALL NO.1 AND NO.2.
- BEFORE BEGINNING MSE WALL DESIGN FOR RETAINING WALL NO.1 AND NO.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.1 AND NO.2 FOR THE FOLLOWING:

- 1) H = DESIGN HEIGHT + EMBEDMENT
- 2) DESIGN LIFE = 100 YEARS
- 3) MAXIMUM FACTORED VERTICAL PRESSURE ON FOUNDATION MATERIAL = 2,600 PSF (WALL NO.1), 2,150 PSF (WALL NO.2)
- 4) MINIMUM REINFORCEMENT LENGTH (L) = 6 FT MIN. OR 0.85H (WALL NO.1), 6 FT (WALL NO.2)
- 5) REINFORCED ZONE AGGREGATE PARAMETERS:

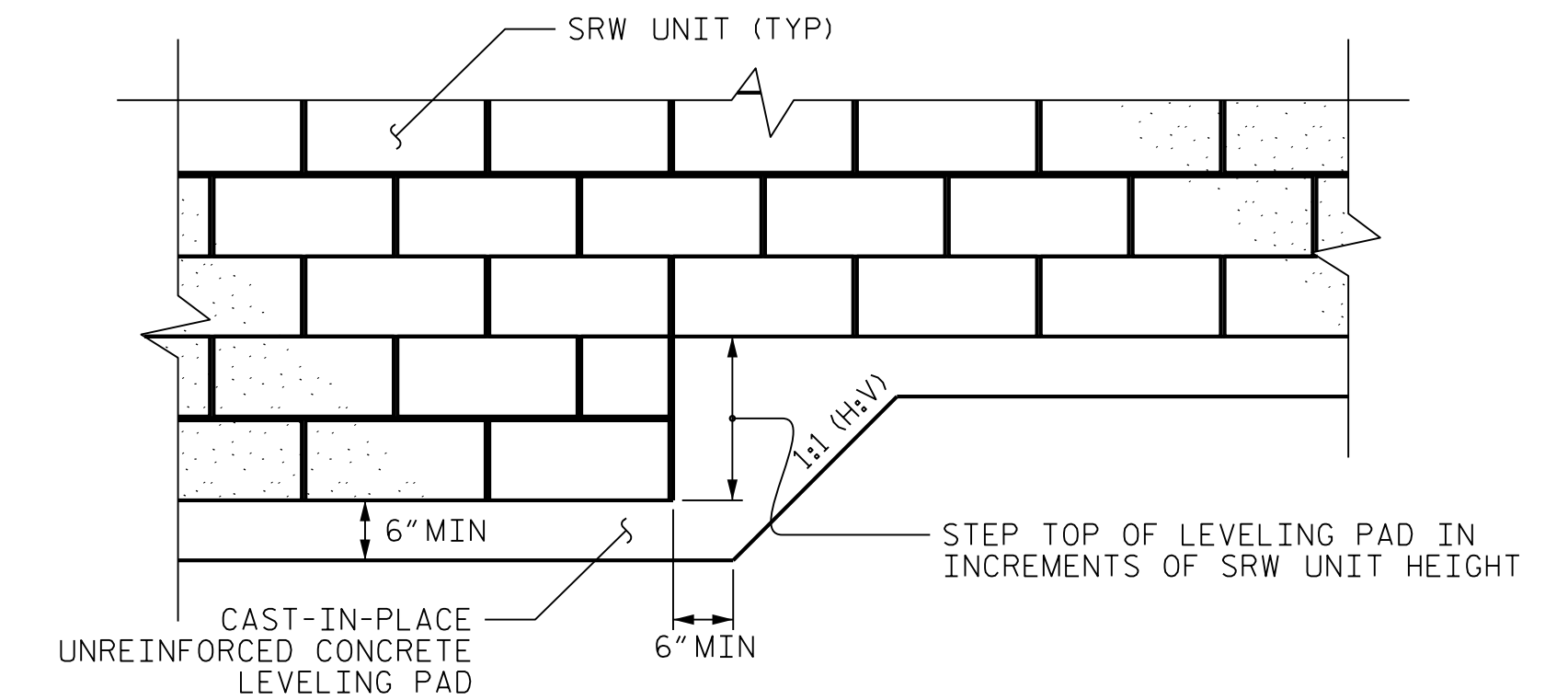
AGGREGATE TYPE*	UNIT WEIGHT (γ) LB/CF	FRICTION ANGLE (ϕ) DEGREES	COHESION (c) LB/SF
COARSE	110	38	0
FINE	115	34	0

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

6) 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 NO.1 AND NO.2 FOR A LIVE LOAD (TRAFFIC) SURCHARGE.
- EXISTING OR FUTURE OBSTRUCTIONS SUCH AS FOUNDATIONS, GUARDRAIL, FENCE OR HANDRAIL POSTS, PAVEMENTS, PIPES, INLETS OR UTILITIES MAY INTERFERE WITH REINFORCEMENT FOR RETAINING WALL NO.1 AND NO.2.
- DO NOT PLACE LEVELING PAD CONCRETE, AGGREGATE OR REINFORCEMENT FOR RETAINING WALL NO.1 AND NO.2 UNTIL EXCAVATION DIMENSIONS AND FOUNDATION MATERIAL ARE APPROVED.



LEVELING PAD STEP DETAILS FOR
SEGMENTAL RETAINING WALL (SRW) UNITS

PROJECT NO.: 41499.1.3 (R-5020B)
COLUMBUS COUNTY
STATION: -L- 247+50.00 / -L- 251+50.00
SHEET 3 OF 3



**NORTH CAROLINA
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DIVISION OF HIGHWAYS**

**GEOTECHNICAL
ENGINEERING UNIT**

**MSE RETAINING WALL
NOTES AND LEVELING
PAD STEP DETAIL**

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	
1	-	-	3	-	-	W-3
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REVIEWED BY: J. BATTS	DATE: 08 / 2019