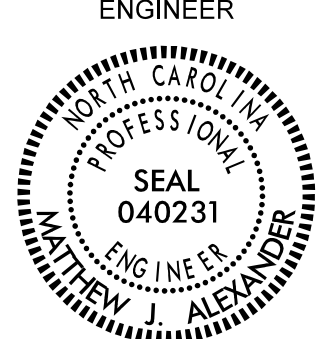



GEOTECHNICAL ENGINEER  SEAL 040231 ENGINEER MATTHEW J. ALEXANDER	ENGINEER
DocuSigned by:  SIGNATURE	11/8/2017 DATE
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

NOTES:

FOR MECHANICALLY STABILIZED EARTH (MSE) RETAINING WALLS, SEE MECHANICALLY STABILIZED EARTH RETAINING WALLS SPECIAL PROVISION.
 FOR STEEL BEAM GUARDRAIL, SEE ROADWAY PLANS AND SECTION 862 OF THE STANDARD SPECIFICATIONS.
 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 WALLS NO. 3 AND NO. 4.
 A SEPARATION GEOTEXTILE IS REQUIRED AT THE BACK OF THE REINFORCED ZONE FOR RETAINING WALLS NO. 3 AND NO. 4.
 A DRAIN IS NOT REQUIRED FOR RETAINING WALLS NO. 3 AND NO. 4.
 PILE SLEEVES ARE REQUIRED AROUND PILES FOR END BENTS NO. 1 LOCATED AT STATION 106+18.10 -L1- AND NO. 2 LOCATED AT STATION 107+17.10 -L1-.
 PILE SLEEVES ARE REQUIRED AROUND PILES FOR END BENTS NO. 1 LOCATED AT STATION 106+76.15 -L2- AND NO. 2 LOCATED AT STATION 107+75.15 -L2-.
 BEFORE BEGINNING MSE WALL DESIGN FOR RETAINING WALLS NO. 3 AND NO. 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 NO. FOR THE FOLLOWING:
 1) H = DESIGN HEIGHT + EMBEDMENT
 2) DESIGN LIFE = 100 YEARS
 3) MAXIMUM FACTORED VERTICAL PRESSURE ON FOUNDATION MATERIAL = 6,010 LB/SF
 4) MINIMUM REINFORCEMENT LENGTH (L) = 0.7H OR 17.5 FT, WHICHEVER IS LONGER
 5) MINIMUM EMBEDMENT DEPTH = 2 FT BELOW FINISHED GRADE
 6) REINFORCED ZONE AGGREGATE PARAMETERS:

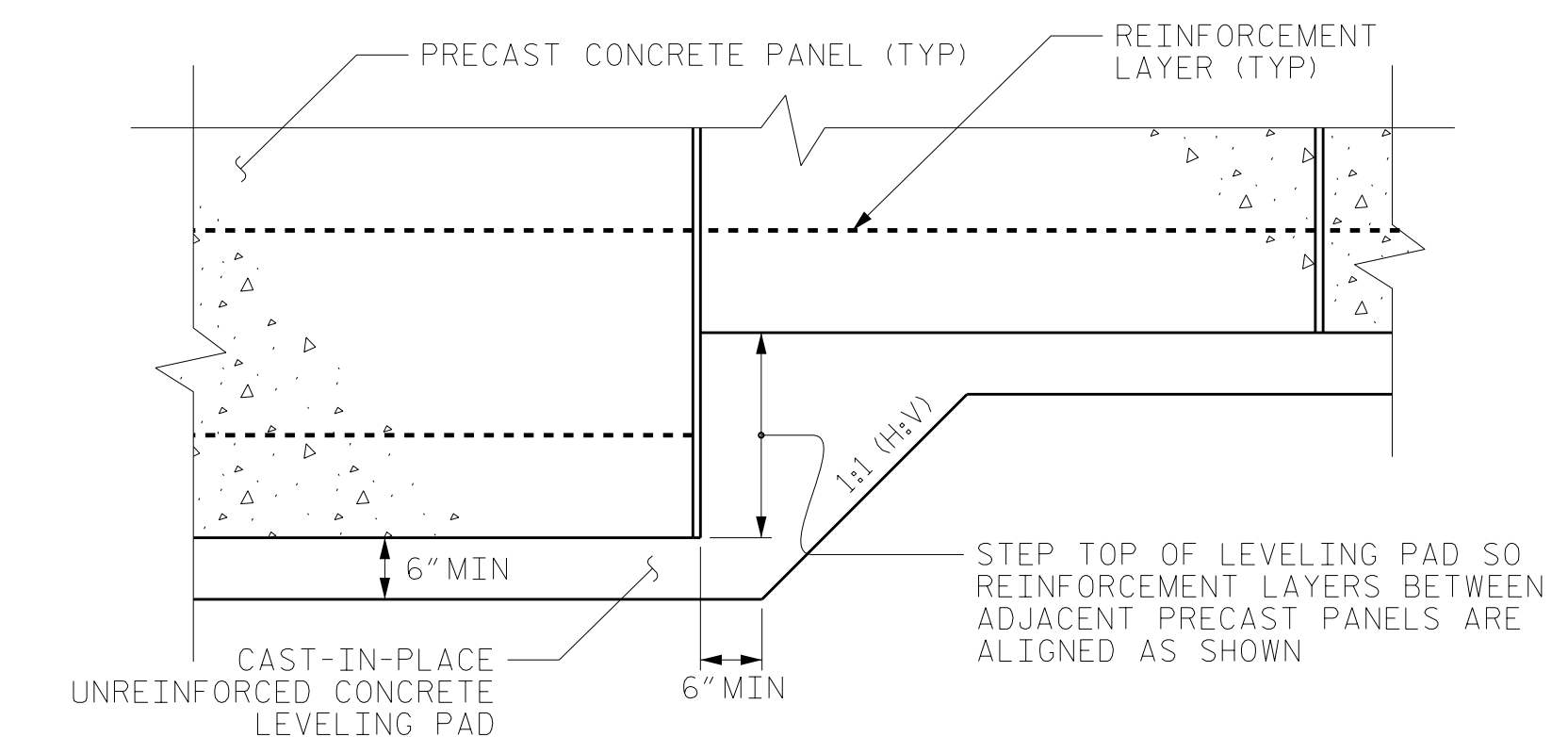
AGGREGATE TYPE*	UNIT WEIGHT (γ) LB/CF	FRICTION ANGLE (φ) DEGREES	COHESION (c) LB/SF
COARSE	110	38	0
FINE	115	34	0

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

7) IN-SITU ASSUMED MATERIAL PARAMETERS:

MATERIAL TYPE	UNIT WEIGHT (γ) LB/CF	FRICTION ANGLE (φ) DEGREES	COHESION (c) LB/SF
BACKFILL	120	32	0
FOUNDATION	110	28	0

DESIGN RETAINING WALLS NO. 3 AND NO. 4 FOR A LIVE LOAD (TRAFFIC) SURCHARGE.
 DESIGN REINFORCEMENT CONNECTED TO END BENT CAPS FOR FACTORED LOAD AND LENGTH OF REINFORCEMENT IN ACTIVE ZONE (L) SHOWN IN THE STRUCTURE PLANS. CAST REINFORCEMENT OR CONNECTORS INTO CAP BACKWALL FOR END BENT NO. 1 LOCATED AT 106+18.10 -L1- AND END BENT NO. 2 LOCATED AT STATION 22+06.12 -L1-. MAINTAIN A CLEARANCE OF AT LEAST 3" BETWEEN REINFORCEMENT OR CONNECTORS AND REINFORCING STEEL IN CAP.
 DESIGN REINFORCEMENT CONNECTED TO END BENT CAPS FOR FACTORED LOAD AND LENGTH OF REINFORCEMENT IN ACTIVE ZONE (L) SHOWN IN THE STRUCTURE PLANS. CAST REINFORCEMENT OR CONNECTORS INTO CAP BACKWALL FOR END BENT NO. 1 LOCATED AT 106+76.15 -L2- AND END BENT NO. 2 LOCATED AT STATION 107+75.15 -L2-. MAINTAIN A CLEARANCE OF AT LEAST 3" BETWEEN REINFORCEMENT OR CONNECTORS AND REINFORCING STEEL IN CAP.
 EXISTING OR FUTURE OBSTRUCTIONS SUCH AS FOUNDATIONS, GUARDRAIL, FENCE OR HANDRAIL POSTS, PAVEMENTS, PIPES, INLETS OR UTILITIES WILL INTERFERE WITH REINFORCEMENT FOR RETAINING WALLS NO. 1 AND NO. 2.
 FOUNDATIONS FOR END BENTS NO. 1 LOCATED AT STATION 106+18.10 -L1- AND NO. 2 LOCATED AT 107+17.10 -L1- WILL INTERFERE WITH REINFORCEMENT FOR RETAINING WALLS NO. 3 AND NO. 4. SEE "FOUNDATION LAYOUT" SHEET FOR FOUNDATION LOCATIONS.
 FOUNDATIONS FOR END BENTS NO. 1 LOCATED AT STATION 106+76.15 -L2- AND NO. 2 LOCATED AT 107+75.15 -L2- WILL INTERFERE WITH REINFORCEMENT FOR RETAINING WALLS NO. 3 AND NO. 4. SEE "FOUNDATION LAYOUT" SHEET FOR FOUNDATION LOCATIONS.
 INSTALL PILE SLEEVES FOR END BENTS NO. 1 LOCATED AT STATION 106+18.10 -L1- AND NO. 2 LOCATED AT STATION 107+17.10 -L1- WHILE CONSTRUCTING RETAINING WALLS NO. 3 AND NO. 4. AFTER CONSTRUCTING THE MSE ABUTMENT WALL TO WITHIN 1 FT OF THE BOTTOM OF CAP ELEVATION INSTALL PILES THROUGH THE CORRUGATED STEEL PIPES AND FILL PIPES WITH LOOSE UNCOMPACTED SAND BEFORE CONSTRUCTING END BENT CAPS.
 INSTALL PILE SLEEVES FOR END BENTS NO. 1 LOCATED AT STATION 106+76.15 -L2- AND NO. 2 LOCATED AT STATION 107+75.15 -L2- WHILE CONSTRUCTING RETAINING WALLS NO. 3 AND NO. 4. AFTER CONSTRUCTING THE MSE ABUTMENT WALL TO WITHIN 1 FT OF THE BOTTOM OF CAP ELEVATION INSTALL PILES THROUGH THE CORRUGATED STEEL PIPES AND FILL PIPES WITH LOOSE UNCOMPACTED SAND BEFORE CONSTRUCTING END BENT CAPS.
 DO NOT PLACE LEVELING PAD CONCRETE, AGGREGATE OR REINFORCEMENT FOR RETAINING WALLS NO. 3 AND NO. 4 UNTIL EXCAVATION DIMENSIONS AND FOUNDATION MATERIAL ARE APPROVED.
 AT THE CONTRACTOR'S OPTION, "TEMPORARY SHORING FOR WALL CONSTRUCTION" MAY BE USED TO CONSTRUCT RETAINING WALLS NO. 1 AND NO. 2. SEE MSE RETAINING WALLS PROVISION FOR TEMPORARY SHORING FOR WALL CONSTRUCTION.



**PRECAST PANELS
LEVELING PAD STEP DETAIL**

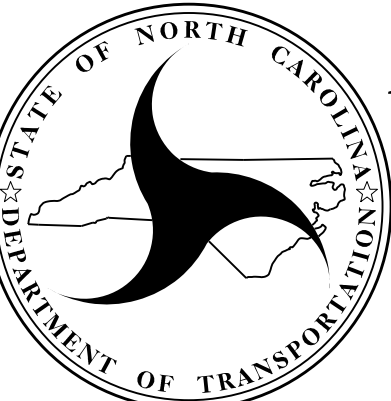
PROJECT NO.: 41665.7A
 CUMBERLAND COUNTY
 STATION: 14+10.22 -Y-

SHEET 5 OF 5

PREPARED BY: M. J. ALEXANDER	DATE: 10/31/17
REVIEWED BY: A. F. RIGGS	DATE: 11/1/17

Prepared in the Office of:

Terracon
 Consulting Engineers & Scientists
 2401 BRENTWOOD ROAD, SUITE 107
 RALEIGH, NORTH CAROLINA 27604
 PHONE: (919) 873-2211 FAX: (919) 873-9555
 NC REGISTERED ENGINEERING FIRM: F-0869
 NC REGISTERED GEOLOGIC FIRM: C-367


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

**GEOTECHNICAL
ENGINEERING UNIT**

**MSE RETAINING WALLS
NO. 3 AND NO. 4
NOTES AND STEP DETAILS**

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	
1			3			W-9
2			4			