


GEOTECHNICAL ENGINEER

ENGINEER



DocuSigned by:  
*Thein Tun Zan* 4/26/2018

A43888C08C19472  
SIGNATURE DATE SIGNATURE DATE

**DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED**

**NOTES:**

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

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

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.

A SEPARATION GEOTEXTILE IS REQUIRED AT THE BACK OF THE REINFORCED ZONE FOR 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 = 5,750 PSF
- 4) MINIMUM REINFORCEMENT LENGTH (L) = 0.8H OR 6 FT, WHICHEVER IS LONGER

5) REINFORCED ZONE AGGREGATE PARAMETERS:

| AGGREGATE TYPE* | UNIT WEIGHT<br>( $\gamma$ )<br>PCF | FRICTION ANGLE<br>( $\phi$ )<br>DEGREES | COHESION<br>(c)<br>PSF |
|-----------------|------------------------------------|---|------------------------|
| COARSE          | 110                                | 38                                      | 0                      |

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

6) IN-SITU ASSUMED MATERIAL PARAMETERS:

| MATERIAL TYPE | UNIT WEIGHT<br>( $\gamma$ )<br>PCF | FRICTION ANGLE<br>( $\phi$ )<br>DEGREES | COHESION<br>(c)<br>PSF |
|---------------|------------------------------------|---|------------------------|
| BACKFILL      | 120                                | 30                                      | 0                      |
| FOUNDATION    | 120                                | 30                                      | 0                      |

DESIGN RETAINING WALL NO.1 AND NO.2 FOR A LIVE LOAD (TRAFFIC) SURCHARGE.

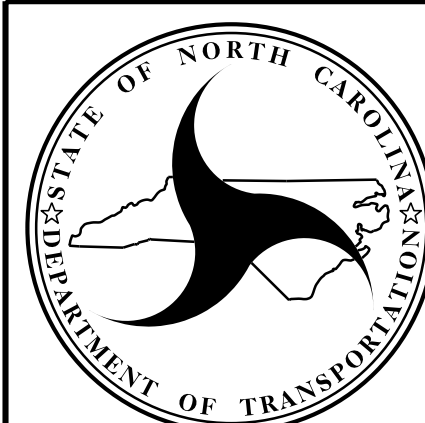
DESIGN REINFORCEMENT CONNECTED TO END BENT CAPS FOR FACTORED LOAD AND LENGTH OF REINFORCEMENT IN ACTIVE ZONE ( $L_d$ ) SHOWN. CAST REINFORCEMENT OR CONNECTORS INTO CAP BACKWALL FOR END BENT NO.1 LOCATED AT STATION 79+60.91 -Y17-, AND END BENT NO.2 LOCATED AT STATION 81+69.73 -Y17-, MAINTAIN A CLEARANCE 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 MAY INTERFERE WITH REINFORCEMENT FOR RETAINING WALL NO.1 AND NO.2.

FOUNDATIONS FOR END BENT NO.1 LOCATED AT STATION 79+60.91 -Y17- AND END BENT NO.2 LOCATED AT STATION 81+69.73 -Y17- MAY INTERFERE WITH REINFORCEMENT FOR RETAINING WALL NO.1 AND NO.2. SEE "FOUNDATION LAYOUT" SHEET FOR FOUNDATION LOCATIONS.

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.

PROJECT NO.: U-2519BB  
 CUMBERLAND COUNTY  
 STATION: 80+65.32 -Y17-, 551+87.81 -L-  
 SHEET 4 OF 4



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

**GEOTECHNICAL  
ENGINEERING UNIT**

**RETAINING WALL NO.1 & NO.2  
NOTES**

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

|                        |              |
|------------------------|--------------|
| PREPARED BY: T. T. ZAN | DATE: 4/2018 |
| REVIEWED BY: J. BATTS  | DATE: 4/2018 |