GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 026917 ENGINEER MICHAEL J WALKO

DocuSigned by: Michael J. Walko, PE 3/21/2016
54E1EBE352D2406...

SIGNATURE DATE

ENGINEER

SIGNATURE DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

MSE RETAINING WALL NO. 1 AND NO. 2 GENERAL NOTES:

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

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 MSE RETAINING WALL NO. 1 AND NO. 2.

A DRAIN IS REQUIRED FOR MSE RETAINING WALL NO. 1 AND NO. 2.

AT THE CONTRACTOR'S OPTION, USE FINE AGGREGATE IN THE REINFORCED ZONE OF MSE RETAINING WALL NO.1 AND MSE RETAINING WALL NO. 2.

DESIGN MSE 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 = 5,000 LB/SF
4) MINIMUM REINFORCEMENT LENGTH (L) FOR RETAINING WALL NO. 1 = 1.2H OR 6 FT, WHICHEVER IS LONGER
   MINIMUM REINFORCEMENT LENGTH (L) FOR RETAINING WALL NO. 2 = 1.0H OR 6 FT, WHICHEVER IS LONGER
5) MINIMUM EMBEDMENT DEPTH FOR ABUTMENT FRONT FACE = H/7 OR 2 FEET BELOW PROPOSED GRADE, WHICHEVER IS GREATER
6) MINIMUM EMBEDMENT DEPTH FOR SIDE WALLS SHALL BE AS SHOWN BELOW, EMBEDMENT DEPTH SHALL BE MEASURED BELOW A THEORETICAL 4 FT WIDE HORIZONTAL BENCH, SEE STRUCTURE PLANS

SLOPE IN FRONT OF WALL	MIN. EMBEDMENT DEPTH
3H:1V OR FLATTER	H/10 OR 2 FT
2H:1V	H/7 OR 2 FT

7) REINFORCED ZONE AGGREGATE PARAMETERS:

AGGREGATE TYPE*	UNIT WEIGHT (γ) LB/CF	FRICTION ANGLE (ϕ) LB/CF	COHESION (C) LB/SF
COARSE	110	38	0
FINE	115	34	0
*SEE MSE RETAINING WALLS PROVISION FOR COARSE AND FINE AGGREGATE MATERIAL REQUIREMENTS.			

8) IN-SITU ASSUMED MATERIAL PARAMETERS:

MATERIAL TYPE	UNIT WEIGHT (γ) LB/CF	FRICTION ANGLE (ϕ) LB/CF	COHESION (C) LB/SF
BACKFILL	120	30	0
FOUNDATION	120	32	0

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

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.

FOUNDATIONS FOR SIGNS OR LIGHTING MAY BE LOCATED BEHIND MSE RETAINING WALL NO. 1 AND NO. 2 AND MAY INTERFERE WITH REINFORCEMENT. BEFORE BEGINNING MSE WALL CONSTRUCTION, SUBMIT PROPOSED CONSTRUCTION METHODS FOR THESE FOUNDATIONS FOR APPROVAL.

EXISTING OR FUTURE OBSTRUCTIONS SUCH AS FOUNDATIONS, GUARDRAIL, FENCE OR HANDRAIL POSTS, PAVEMENTS, PIPES, INLETS OR UTILITIES MAY INTERFERE WITH REINFORCEMENT FOR MSE RETAINING WALL NO. 1 AND NO. 2.

FOUNDATIONS FOR END BENT NO. 1 LOCATED AT STATION 31+06.09 -L- MAY INTERFERE WITH REINFORCEMENT FOR MSE RETAINING WALL NO. 1. SEE "FOUNDATION LAYOUT" SHEET FOR FOUNDATION LOCATIONS.

FOUNDATIONS FOR END BENT NO. 2 LOCATED AT STATION 32+18.51 -L- MAY INTERFERE WITH REINFORCEMENT FOR MSE RETAINING WALL NO. 2. SEE "FOUNDATION LAYOUT" SHEET FOR FOUNDATION LOCATIONS.

CONSTRUCT MSE RETAINING WALL NO. 1 BEFORE INSTALLING FOUNDATIONS FOR END BENT NO. 1 LOCATED AT STATION 31+06.09 -L-.

CONSTRUCT MSE RETAINING WALL NO. 2 BEFORE INSTALLING FOUNDATIONS FOR END BENT NO. 2 LOCATED AT STATION 32+18.51 -L-.

DO NOT PLACE LEVELING PAD CONCRETE, AGGREGATE OR REINFORCEMENT FOR MSE RETAINING WALL NO. 1 AND NO. 2 UNTIL EXCAVATION DIMENSIONS AND FOUNDATION MATERIAL ARE APPROVED.

DESIGN REINFORCEMENT CONNECTED TO END BENT CAPS FOR FACTORED LOAD AND LENGTH OF REINFORCEMENT IN ACTIVE ZONE (L_A) SHOWN. CAST REINFORCEMENT CONNECTORS INTO CAP BACKWALL FOR END BENT NO. 1 LOCATED AT STATION 31+06.09 -L-. MAINTAIN A CLEARANCE OF AT LEAST 3"BETWEEN CONNECTORS AND REINFORCING STEEL IN CAP.

DESIGN REINFORCEMENT CONNECTED TO END BENT CAPS FOR FACTORED LOAD AND LENGTH OF REINFORCEMENT IN ACTIVE ZONE (L_A) SHOWN. CAST REINFORCEMENT CONNECTORS INTO CAP BACKWALL FOR END BENT NO. 2 LOCATED AT STATION 32+18.51 -L-. MAINTAIN A CLEARANCE OF AT LEAST 3"BETWEEN CONNECTORS AND REINFORCING STEEL IN CAP.

PREPARED BY: M. BREWER	DATE: 3/7/16
REVIEWED BY: M. WALKO	DATE: 3/7/16

MSE RETAINING WALL NO. 1 AND NO. 2 SPECIAL NOTES:

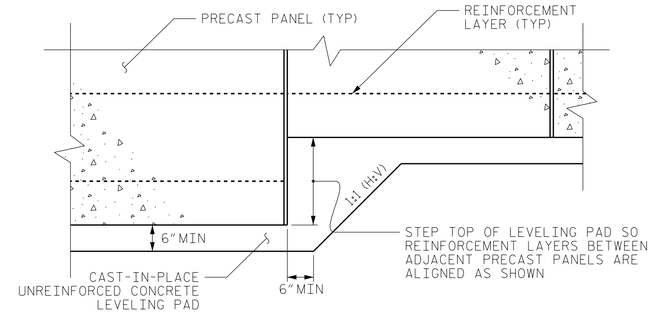
USE AN MSE WALL SYSTEM WITH PRECAST CONCRETE PANELS THAT MEET SECTION 1077 OF THE STANDARD SPECIFICATIONS FOR MSE RETAINING WALL NO. 1 AND NO. 2.

CAST-IN-PLACE REINFORCED CONCRETE COPING IS REQUIRED AT VERTICAL EDGES ONLY OF MSE RETAINING WALL NO. 1 AND NO. 2.

INSTALL 16 GAGE 24-INCH DIAMETER CORRUGATED STEEL PIPES FOR HP 12X53 STEEL PILE FOUNDATIONS FOR END BENT NO. 1 LOCATED AT STATION 31+06.09 -L- AND END BENT NO. 2 LOCATED AT STATION 32+18.51 -L-, WHICH WILL INTERFERE WITH THE REINFORCEMENT FOR THE MSE RETAINING WALL NO. 1 AND NO. 2. SEE "FOUNDATION LAYOUT" SHEET FOR FOUNDATION LOCATIONS. FILL THE PIPES WITH SAND AFTER COMPLETION OF THE INSTALLATION OF HP12X53 STEEL PILES THROUGH THE PIPES.

FOR MSE WALLS LOCATED ON LEVEL GROUND, DESIGN HEIGHT IS MEASURED AS THE DIFFERENCE BETWEEN PROPOSED FINAL GRADE ELEVATION BEHIND THE TOP OF THE WALL AND THE PROPOSED FINAL GRADE IN FRONT OF THE WALL.

INSTALL GEOTEXTILE FOR SEPARATION BETWEEN THE COARSE OR FINE AGGREGATE IN THE MSE REINFORCED ZONE AND THE RETAINED ROADWAY EMBANKMENT SOIL. THE GEOTEXTILE SHALL MEET THE REQUIREMENTS OF STANDARD SPECIFICATION SECTION 1056, TYPE 2.



PRECAST CONCRETE PANELS

LEVELING PAD STEP DETAILS

PROJECT NO.: B-4616

ROBESON COUNTY

STATION: 31+55.47 -L- & 12+10.30 -Y1-

SHEET 3 OF 5

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS

GEOTECHNICAL ENGINEERING UNIT

MSE RETAINING WALLS - Notes and Details
BRIDGE NO. 18 ON NC 211 OVER CSX RAILROAD

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