



STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION

ROY COOPER  
GOVERNOR

JAMES H. TROGDON, III  
SECRETARY

October 14, 2019

**Addendum No. 3**

RE: Contract # C204368

WBS # 34542.3.6, 34542.3.7

STATE FUNDED

**Richmond County (R-3421A, R-3421B)**

I-73/74 FROM US-74 BYPASS WEST OF ROCKINGHAM AT SR-1109  
(ZION CHURCH RD) TO NORTH OF SR-1304 (HARRINGTON RD).

**October 15, 2019 Letting**

To Whom It May Concern:

Reference is made to the plans furnished to you on this project.

The following revisions have been made to the Roadway plans.

Sheet No.	Revision
(R-3421A) 2G-3	Revised Geogrid summary table (Min. Ultimate Tensile Strength)
(R-3421B) 2G-1	Revised Geogrid summary table (Min. Ultimate Tensile Strength)

Please void the above listed existing Sheet in your plans and staple the revised Sheet thereto.

The contract will be prepared accordingly.

Sincerely,

DocuSigned by:  
*Ronald E. Davenport, Jr.*  
F81B8038A47A442...

Ronald E. Davenport, Jr., PE  
State Contract Officer

RED/jjr  
Attachments

cc: Mr. Lamar Sylvester, PE  
Mr. Brandon H. Jones, PE  
Mr. Ron Hancock, PE  
Mr. Chris Peoples, PE  
Mr. Jon Weathersbee, PE  
Mr. Ken Kennedy, PE  
Project File (2)

Mr. Ray Arnold, PE  
Ms. Jaci Kincaid  
Ms. Lori Strickland  
Mr. Mike Gwyn  
Ms. Penny Higgins  
Mr. Mitchell Dixon  
Mr. Kyle Kempf

ESTIMATED QUANTITIES	
SLOPE HEIGHT, H (FT)	SQUARE YDS
< 20	3000
20-40	4000
40 +	4000

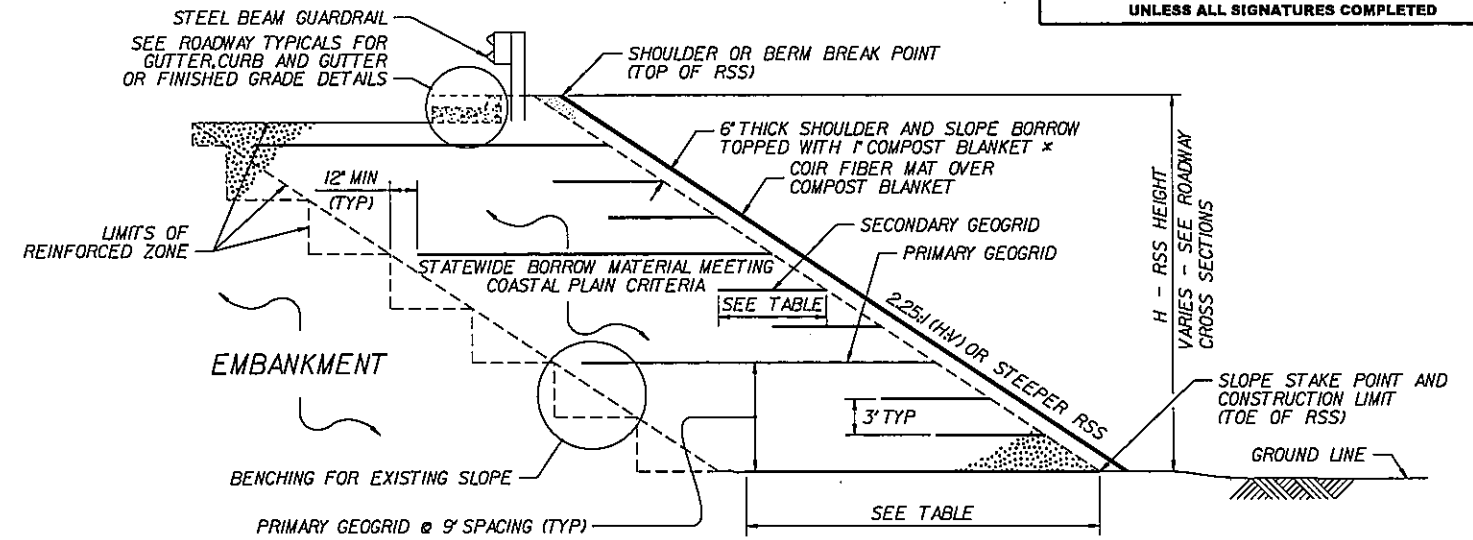
SLOPE HEIGHT, H (FT)	MIN. ULTIMATE TENSILE STRENGTH (---)	PRIMARY GEOGRID LENGTH (FT)	SECONDARY GEOGRID LENGTH (FT)
< 20 **	600	10	5
20-40	900	15	5
40+	1200	25	10

\*\* - SLOPES 10 FT OR LESS IN HEIGHT USE SECONDARY GEOGRIDS ONLY

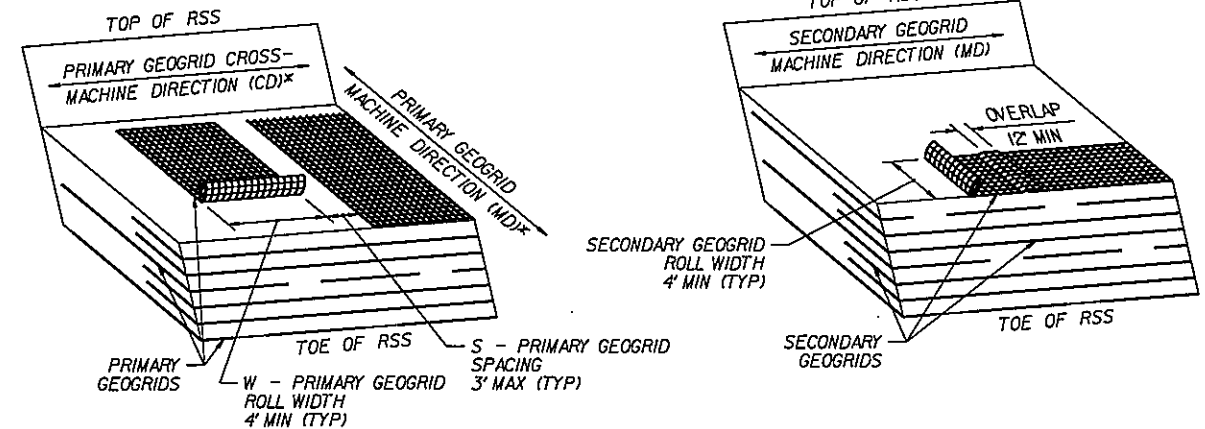
**LTDS - MINIMUM REQUIRED LONG-TERM DESIGN STRENGTH (LB/FT)**  
 (LTDS IS BASED ON 100% COVERAGE FOR PRIMARY GEOGRID.  
 SEE NOTE 9 FOR LESS THAN 100% COVERAGE.)

**NOTES:**

- SEE EROSION CONTROL AND ROADWAY PLANS AND SUMMARY SHEETS FOR REINFORCED SOIL SLOPE (RSS) AND SLOPE EROSION CONTROL LOCATIONS.
- FOR REINFORCED SOIL SLOPES, SEE REINFORCED SOIL SLOPES PROVISION. FOR STEEL BEAM GUARDRAIL, SEE SECTION 862 OF THE STANDARD SPECIFICATIONS.
- FOR SHOULDER AND SLOPE BORROW, SEE ARTICLE 1019-2 OF THE STANDARD SPECIFICATIONS. FOR COIR FIBER MAT, MATTING FOR EROSION CONTROL AND COMPOST BLANKET, SEE EROSION CONTROL PROVISIONS, SECTION 1631 OF THE STANDARD SPECIFICATIONS AND ROADWAY STANDARD DRAWING NO. 1631.01. FOR COMPOST BLANKET SEE COMPOST BLANKET PROVISION.
- RSS SLOPE DESIGNS ARE BASED ON THE FOLLOWING IN-SITU ASSUMED SOIL PARAMETERS:  
 UNIT WEIGHT,  $\gamma = 120$  PCF  
 FRICTION ANGLE,  $\phi = 30$  DEGREES  
 COHESION,  $c = 10$  PSF
- GEOGRIDS ARE TYPICALLY APPROVED FOR ULTIMATE TENSILE STRENGTHS IN THE MACHINE DIRECTION (MD) AND CROSS-MACHINE DIRECTION (CD) OR LONG-TERM DESIGN STRENGTHS FOR A 75-YEAR DESIGN LIFE IN THE MD BASED ON MATERIAL TYPE. THE LIST OF APPROVED GEOGRIDS WITH DESIGN STRENGTHS IS AVAILABLE FROM: [connect.ncdot.gov/resources/Materials/Pages/Materials-Manual-by-Material.aspx](http://connect.ncdot.gov/resources/Materials/Pages/Materials-Manual-by-Material.aspx)
- CONSTRUCT EMBANKMENT SLOPES WITH COASTAL PLAIN MATERIALS MEETING THE STATEWIDE BORROW CRITERIA AS DEFINED IN CURRENT ISSUE OF THE ROADWAY STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES.
- IF THE WEBSITE DOES NOT LIST A LONG-TERM DESIGN STRENGTH FOR AN APPROVED GEOGRID IN THE MD, DO NOT USE THE GEOGRID FOR PRIMARY GEOGRID. IF THE WEBSITE DOES NOT LIST A LONG-TERM DESIGN STRENGTH FOR AN APPROVED GEOGRID IN THE CD, USE A LONG-TERM DESIGN STRENGTH EQUAL TO THE ULTIMATE TENSILE STRENGTH DIVIDED BY 7 FOR THE SECONDARY GEOGRID.
- DO NOT OVERLAP PRIMARY GEOGRIDS IN THE MD SO OVERLAPS ARE PARALLEL TO THE TOE OF RSS. POLYOLEFIN (e.g., HDPE OR PP) GEOGRIDS MAY BE SPLICED ONCE PER PRIMARY GEOGRID LENGTH IN ACCORDANCE WITH THE GEOGRID MANUFACTURER'S INSTRUCTIONS. USE POLYOLEFIN GEOGRID PIECES AT LEAST 4' LONG. DO NOT SPLICE POLYESTER TYPE (PET) GEOGRIDS.
- FOR PRIMARY GEOGRIDS WITH 100% COVERAGE, PLACE PRIMARY GEOGRIDS SO GEOGRIDS ARE ADJACENT TO EACH OTHER IN THE CD. FOR PRIMARY GEOGRIDS WITH 75% TO LESS THAN 100% COVERAGE,  
 MINIMUM REQUIRED LONG-TERM DESIGN STRENGTH = LTDS BASED ON 100% COVERAGE  $\times (W + S) / W$
- SEE TABLE FOR LTDS BASED ON 100% COVERAGE AND GEOGRID PLACEMENT DETAILS FOR PRIMARY GEOGRID ROLL WIDTH (W) AND SPACING (S). FOR PRIMARY GEOGRIDS WITH LESS THAN 100% COVERAGE, STAGGER PRIMARY GEOGRIDS SO GEOGRIDS ARE CENTERED OVER GAPS IN THE PRIMARY GEOGRID LAYER BELOW. DO NOT USE LESS THAN 75% COVERAGE FOR PRIMARY GEOGRIDS.
- DO NOT PLACE ANY GEOGRIDS UNTIL EXCAVATION DIMENSIONS AND IN-SITU MATERIAL ARE APPROVED.
- FOR SLOPE EROSION CONTROL, USE COIR FIBER MATTING ON SLOPE FACES OF RSS AS SHOWN IN THE DETAILS.



**MATTING WITH SHOULDER AND SLOPE BORROW**

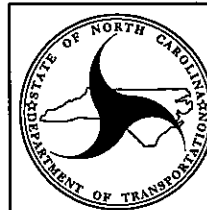


**GEOGRID PLACEMENT DETAILS**

(% COVERAGE =  $\frac{W}{W+S} \times 100 \geq 75\%$ )

\*SEE NOTES 8 AND 9 ON SHEET 2.

PREPARED BY: MHS	DATE: 6-10-19
REVIEWED BY: SCC	DATE: 6-12-19



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 DIVISION OF HIGHWAYS  
  
 GEOTECHNICAL  
 ENGINEERING UNIT

**REINFORCED SOIL SLOPE (RSS) DETAILS FOR SLOPES 2.25:1 OR STEEPER**

REVISIONS					
NO.	BY	DATE	NO.	BY	DATE
1	SCC	10/11/19	3		
2			4		

ESTIMATED QUANTITIES	
SLOPE HEIGHT, H (FT)	SQUARE YDS
< 20	7500
20-40	7500
40 +	89000



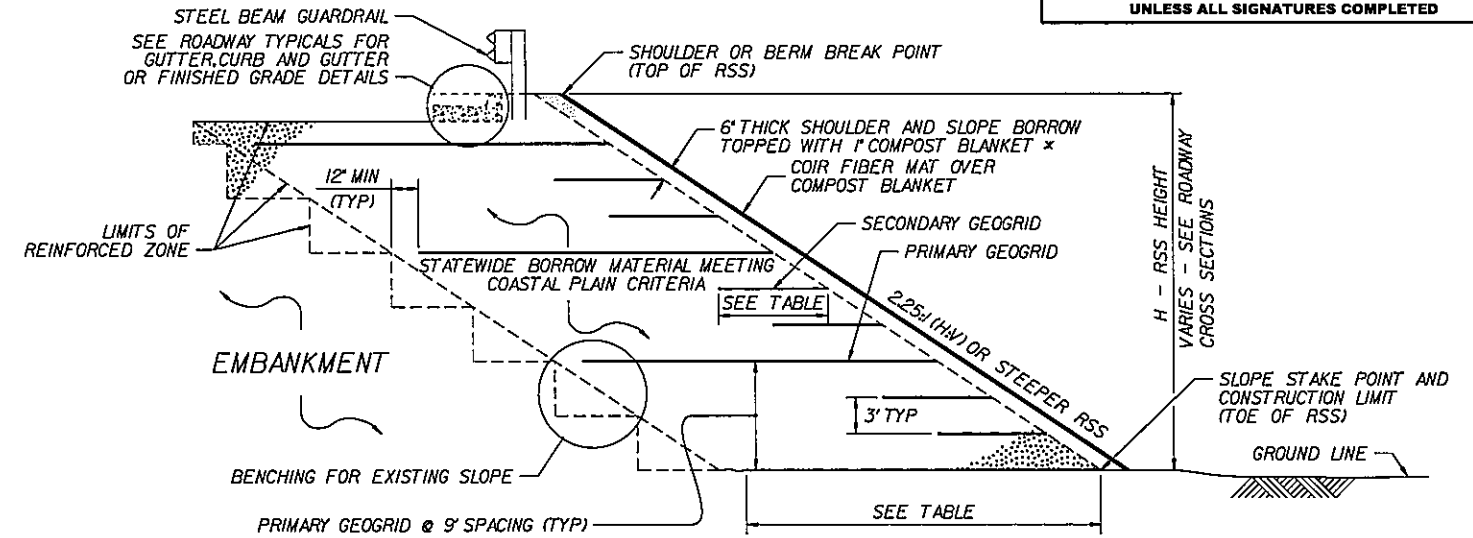
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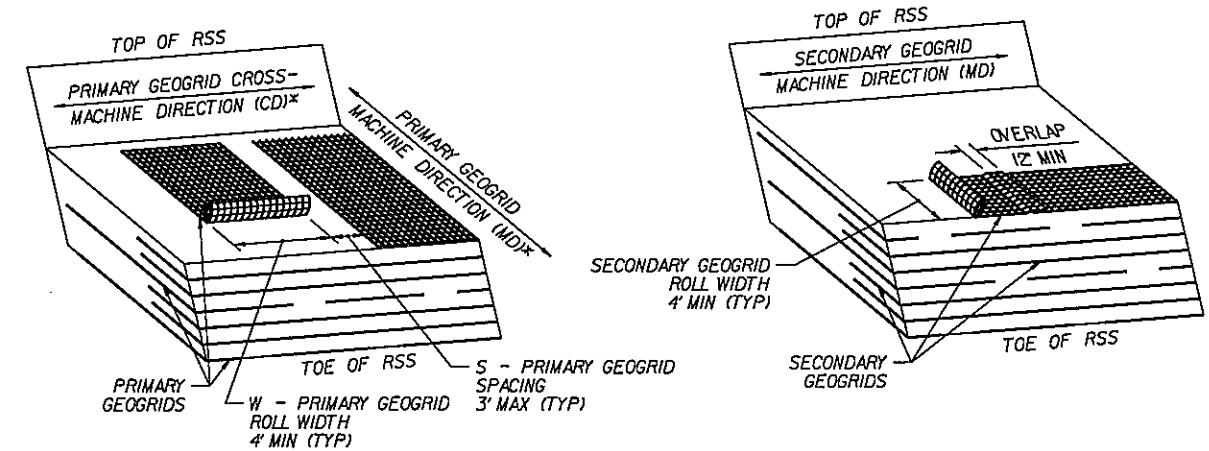
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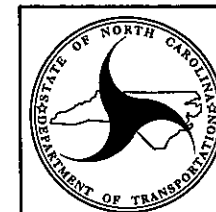


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