



June 02, 2021

Memorandum to: John Abel, Jr.
Project Engineer – Division 1
113 Airport Drive, Suite 100
Edenton, NC 27932

From: Gary R. Taylor, PE
Senior Manager, Geotechnical

WBS Number: 35494
TIP Number: R-2511
County: Beaufort and Martin
Description: US 17 From North of NC 171 to existing multi-lanes south of Williamston

Subject: **Geotechnical Report – Revised Roadway Design and Construction Recommendations**

RK&K has completed the subsurface investigation for this project and submits the following recommendations. These recommendations are based on soil borings performed by RK&K, laboratory testing of select soil samples, and roadway plans. This report includes recommendations for the following design segments:

<u>Line</u>	<u>Stations (±)</u>
-L-	7+75 – 568+50
-Y1-	10+50 – 13+71
-Y2-	15+00 – 17+86
-Y3-	10+47 – 13+10
-Y4-	17+00 – 20+46
-Y5-	12+00 – 18+45
-Y6-	17+70 – 23+95
-Y7-	17+50 – 20+94
-Y8-	10+47 – 14+50
-Y9-	10+48 – 13+05
-Y10-	12+20 – 14+80
-Y11-	10+80 – 12+81

I. SLOPE AND EMBANKMENT STABILITY

A. Slope Design

It is recommended that all fill and cut slopes be constructed at a ratio of 3:1 (H:V) or flatter as shown on the roadway plans.



It is recommended that embankment preparation and benching be in accordance with Section 235-3(A) of the Standard Specifications where embankment fill will be placed on existing slopes steeper than 4:1 (H:V).

B. Undercut for Embankment Stability

Soils unsuitable for embankment construction should be undercut. Backfill all embankment undercut areas with Select Granular Material, Class II or III. Unsuitable material should be wasted or used in landscape areas.

Any soft or loose alluvial soils encountered within the limits of proposed embankments should be undercut to firm material or to a minimum depth of 3 feet. A contingency quantity of 2,000 cubic yards of Undercut Excavation for embankment stability is recommended to be used at the discretion of the Engineer.

C. Rock Embankment

Rock embankment is recommended for the following locations where embankments may be exposed to water, even though the ponds are planned to be drained:

<u>Line</u>	<u>Stations</u>	<u>Offset</u>
-L-	355+40 – 355+75	LT
-L-	510+70 – 512+40	LT

Class 2 Rip Rap shall be used for rock embankments. Rock embankments are recommended to be installed with a minimum thickness of 5 ft, or with top of class 2 Rip Rap at 1 ft above the water level, whichever is greater. Place 1 ft of #57 stone (Select Material, Class VI) above the rip rap class 2. Recommend 2,000 tons of Rip Rap Class 2, 1,000 tons of Rip Rap Class A, 500 tons of #57 stone, and 500 square yards of Geotextile for Rock Embankment.

D. Geotextile for Soil Stabilization

Geotextile for Soil Stabilization may be needed to establish a working platform for embankment construction due to soft/wet soils in the following areas:

<u>Line</u>	<u>Station</u>	<u>Offset</u>
-L-	37+00 – 39+00	LT & RT
-L-	53+00 – 57+00	LT & RT
-L-	68+50 – 69+50	LT & RT
-L-	75+00 – 77+00	LT & RT
-L-	79+00 – 81+00	LT & RT
-L-	103+00 – 105+00	LT & RT
-L-	117+00 – 119+00	LT & RT
-L-	120+75 – 123+25	LT
-L-	171+00 – 173+00	LT & RT
-L-	185+00 – 193+00	LT & RT
-L-	205+00 – 211+00	LT & RT
-L-	235+00 – 237+00	LT & RT



-L-	280+50 – 281+50	LT & RT
-L-	319+00 – 321+00	LT & RT
-L-	364+75 – 367+25	LT
-L-	399+00 – 401+00	LT & RT
-L-	453+00 – 455+00	LT & RT
-L-	511+10 – 512+40	LT

A contingency quantity of 21,000 square yards of Geotextile for Soil Stabilization is recommended to be included in the contract. Geotextile for Soil Stabilization should be Type 4 in accordance with Section 1056 of the Standard Specifications.

E. Embankment Settlement

The recommended waiting periods and areas where settlement gauges are required are included in the table below.

<u>Line</u>	<u>Stations (±)</u>	<u>Estimated Consolidation Settlement 11</u>	<u>Waiting Period</u>	<u>Settlement Gauges</u>
-L-	154+50 – 157+05 (LT)	in	6 months	Yes (6 gauges)
-L-	156+00 – 157+20 (RT)	9 in	4 months	Yes (4 gauges)

Embankment Settlement Gauges should be in accordance with Roadway Standard Drawing 235.01. The Gauges should be placed at the following locations:

SETTLEMENT GAUGE LOCATIONS					
GAUGE NO.	LINE	STATION (+/-)	OFFSET (+/-)	LOCATION	ESTIMATED WAITING PERIOD (MONTHS)
1	-L-	154+50	20' LT	Roadway	6
2	-L-	154+50	55' LT	Roadway	6
3	-L-	155+95	20' LT	Left Bridge EB 1	6
4	-L-	155+90	55' LT	Left Bridge EB 1	6
5	-L-	157+05	20' LT	Left Bridge EB 2	6
6	-L-	157+00	55' LT	Left Bridge EB 2	6
7	-L-	156+00	20' RT	Right Bridge EB 1	4
8	-L-	156+05	55' RT	Right Bridge EB 1	4
9	-L-	157+15	20' RT	Right Bridge EB 2	4
10	-L-	157+20	55' RT	Right Bridge EB 2	4



II. SUBGRADE STABILITY

A. Undercut for Subgrade Stability

Cohesive soils with plasticity indices (PI) greater than 20, greater than 50 percent passing the No. 200 sieve, and soft or wet soils should be undercut to a depth of 3 feet below subgrade. Backfill all subgrade stability undercut areas with Select Granular Material, Class II or III.

Recommend 21,600 cubic yards of Undercut Excavation for subgrade stability be used in the following areas:

<u>Line</u>	<u>Station</u>	<u>Offset</u>
-L-	24+75 – 29+25	LT & RT
-L-	30+75 – 39+25	LT & RT
-L-	40+75 – 42+25	LT & RT
-L-	49+75 – 51+25	RT
-L-	58+20 – 58+80	RT
-L-	72+75 – 85+75	LT & RT
-L-	92+25 – 99+25	LT & RT
-L-	101+25 – 105+00	LT
-L-	106+75 – 109+75	LT & RT
-L-	119+75 – 120+25	LT
-L-	132+50 – 135+25	LT & RT
-L-	137+00 – 139+50	RT
-L-	143+75 – 147+25	LT & RT
-L-	161+00 – 163+75	RT
-L-	164+75 – 165+25	RT
-L-	166+75 – 176+75	LT & RT
-L-	178+75 – 180+25	LT & RT
-L-	190+75 – 191+25	LT & RT
-L-	194+75 – 200+20	LT & RT
-L-	201+20 – 205+25	LT & RT
-L-	214+75 – 223+25	LT & RT
-L-	261+75 – 267+25	LT
-L-	276+25 – 279+25	LT & RT
-L-	281+75 – 290+25	LT & RT
-L-	304+75 – 307+75	LT & RT
-L-	315+25 – 317+25	LT
-L-	396+75 – 401+75	LT & RT
-L-	409+75 – 411+25	RT
-L-	425+25 – 426+25	LT
-L-	492+75 – 495+25	LT & RT
-L-	503+75 – 504+75	LT
-L-	505+25 – 507+75	LT & RT



-L-	513+75 – 514+25	LT
-L-	514+75 – 517+00	LT
-L-	519+00 – 521+25	LT & RT

It is recommended that Geotextile for Soil Stabilization be placed in the base of undercut sections. Geotextile for Soil Stabilization should be Type 4 in accordance with Section 1056 of the Standard Specifications.

A contingency quantity of 3,000 cubic yards of Undercut Excavation for subgrade stability is recommended to be used at the discretion of the Engineer. Subgrade undercut material should be wasted or used in landscape areas.

B. Aggregate Subgrade

Shallow undercut for Aggregate Subgrade is recommended to a depth of 1 foot in areas where existing pavement will be retained due to traffic control limitations. The shallow undercut procedure should be completed in accordance with Section 505-3 of the Standard Specifications. Recommend 1,000 cubic yards of Shallow Undercut to be used in the following areas:

<u>Line</u>	<u>Station</u>	<u>Offset</u>
-L-	7+75 – 13+00	LT & RT
-L-	198+75 – 201+75	LT & RT
-L-	334+25 – 335+25	RT
-Y1-	10+75 – 13+25	LT & RT
-Y3-	10+75 – 11+25	RT
-Y4-	17+00 – 18+25	LT & RT
-Y5-	12+00 – 13+25	LT & RT
-Y5-	13+75 – 14+50	LT
-Y5-	16+50 – 18+40	LT & RT

A contingency quantity of 500 cubic yards of Shallow Undercut is recommended to be used at the discretion of the Engineer.

Backfill to replace shallow undercut material should be Select Material, Class IV, on top of Geotextile for Soil Stabilization, Type 4.

C. Geotextile for Soil Stabilization

Recommend 40,000 and 3,000 square yards of Geotextile for Soil Stabilization to be used with Items II.A and II.B, respectively. A contingency quantity of 4,500 square yards of Geotextile for Soil Stabilization is recommended to be used with contingency Items II.A and II.B.

D. Special Ditches

Recommend special ditches a minimum of 6-ft below the proposed subgrade, or as deep as outfall will allow, at the following locations:



<u>Line</u>	<u>Stations (±)</u>	<u>Offset</u>
-L-	7+50 – 35+00	LT & RT
-L-	37+00 – 47+00	LT & RT
-L-	51+00 – 111+00	LT & RT
-L-	115+00 – 130+00	LT & RT
-L-	133+00 – 209+00	LT & RT
-L-	212+50 – 225+00	LT & RT
-L-	230+00 – 243+00	LT & RT
-L-	263+00 – 266+00	LT & RT
-L-	277+00 – 280+50	LT
-L-	280+50 – 291+00	LT & RT
-L-	291+00 – 327+50	LT
-L-	327+50 – 346+50	LT & RT
-L-	355+00 – 357+00	RT
-L-	357+00 – 365+50	LT & RT
-L-	389+00 – 432+00	LT & RT
-L-	441+00 – 449+00	LT & RT
-L-	453+00 – 457+00	LT & RT
-L-	473+00 – 479+00	RT
-L-	479+00 – 498+50	LT & RT
-L-	517+00 – 521+00	LT & RT
-L-	555+00 – 559+00	LT
-L-	559+00 – 568+00	LT & RT
-Y1-	11+00 – 13+00	LT & RT
-Y5-	12+00 – 14+50	LT & RT

E. Subsurface Drainage

A contingency quantity of 4,000 linear feet of 6-inch Perforated Subdrain Pipe per Roadway Standard Drawing 815.02 – Subsurface Drain is recommended to be used at the discretion of the Engineer.

F. Grade Point Undercut

A contingency quantity of 1,000 cubic yards of Undercut Excavation for grade point is recommended to be used at the discretion of the Engineer.

III. BORROW SPECIFICATIONS

A. Borrow Criteria

Common Borrow for embankment construction shall meet the borrow criteria outlined in Section 1018-2 (B) of the Standard Specifications.

B. Shrinkage Factor

A shrinkage factor of 30 percent is recommended for calculation of earthwork on this project.



C. Select Granular Material

Select Granular Material for backfill over Geotextile over Soil Stabilization shall be Select Material, Class II and/or Class III. Select Granular Material for backfill in water shall be Select Material, Class III. The Select Granular Material should be placed to a height of 3 feet above Geotextile for Soil Stabilization and/or water level whichever is higher.

Recommend 40,000 cubic yards of Select Granular Material, Class II and/or Class III, to be used with item II.A. A contingency quantity of 26,000 cubic yards of Select Granular Material, Class II and/or Class III, to be used with contingency items in I.B, I.D, and II.A is recommended.

D. Class IV Subgrade Stabilization

Recommend 1,910 tons of Class IV Subgrade Stabilization to be used with Item II.B. A contingency quantity of 950 tons of Class IV Subgrade Stabilization Material to be used with contingency item II.B.

IV. MISCELLANEOUS

A. Reduction of Unclassified Excavation – Clearing and Grubbing

No significant loss of unclassified excavation is anticipated due to clearing and grubbing.

B. Unsuitable Unclassified Excavation

Soils within shallow cut and ditch excavations with plasticity indices (PI) greater than 20 were encountered in the following areas. These materials should be wasted or used in landscape areas. These areas are represented on the cross sections by a single hatch pattern.

<u>Line</u>	<u>Station</u>	<u>Offset</u>
-L-	24+75 – 29+25	LT & RT
-L-	30+75 – 33+25	LT & RT
-L-	40+75 – 42+75	LT & RT
-L-	46+75 – 51+25	LT & RT
-L-	60+75 – 67+75	LT & RT
-L-	70+75 – 72+75	LT & RT
-L-	76+75 – 80+75	LT & RT
-L-	88+75 – 91+25	LT & RT
-L-	94+75 – 97+25	LT & RT
-L-	99+25 – 101+25	LT & RT
-L-	108+75 – 115+25	LT & RT
-L-	118+75 – 124+75	LT & RT
-L-	131+25 – 132+75	RT
-L-	137+00 – 141+25	LT & RT
-L-	165+25 – 166+75	LT & RT
-L-	172+75 – 179+25	LT & RT
-L-	196+75 – 199+25	LT & RT



-L-	199+25 – 200+25	RT
-L-	246+75 – 251+25	LT & RT
-L-	252+75 – 257+25	LT & RT
-L-	290+75 – 297+25	LT & RT
-L-	300+75 – 303+25	LT & RT
-L-	304+75 – 307+25	LT & RT
-L-	314+75 – 317+25	LT & RT
-L-	326+75 – 329+25	LT & RT
-L-	332+75 – 335+25	LT & RT
-L-	378+75 – 381+25	LT
-L-	392+75 – 394+50	LT & RT
-L-	394+25 – 395+25	RT
-L-	396+75 – 399+25	LT & RT
-L-	400+75 – 403+25	LT & RT
-L-	406+75 – 411+25	LT & RT
-L-	424+75 – 427+25	LT & RT
-L-	498+25 – 499+75	LT & RT
-L-	501+16 – 503+25	LT & RT
-L-	504+75 - 509+25	LT & RT
-Y3-	10+75 – 12+50	LT & RT

A quantity of 35,000 cubic yards of Unclassified Excavation – Unsuitable Waste is recommended to be included in earthwork calculations.

C. Acceptable Unclassified Excavation

Soils within excavations with plasticity indices (PI) between 15 and 20 were encountered in the following areas. These soils are acceptable for use as borrow material but should not be placed within the top 3 feet of the embankment or backfill in accordance with Section 1018-2 of the Standard Specifications. These areas are represented on the cross sections by an asterisk pattern.

<u>Line</u>	<u>Station</u>	<u>Offset</u>
-L-	9+25 – 11+25	LT & RT
-L-	42+75 – 45+25	LT & RT
-L-	75+25 – 76+75	LT & RT
-L-	82+75 – 84+75	LT & RT
-L-	91+25 – 94+75	LT & RT
-L-	158+40 – 159+75	LT
-L-	162+75 – 165+25	LT & RT
-L-	232+75 – 236+75	LT & RT
-L-	239+25 – 241+25	LT & RT
-L-	244+75 – 246+75	LT & RT
-L-	251+25 – 252+75	LT & RT
-L-	257+25 – 259+75	LT & RT
-L-	262+75 – 267+25	LT & RT



-L-	270+75 – 272+75	LT & RT
-L-	276+75 – 278+75	LT & RT
-L-	286+75 – 289+25	LT & RT
-L-	307+25 – 313+25	LT & RT
-L-	375+25 – 377+25	LT & RT
-L-	417+75 – 419+25	LT
-L-	461+75 – 463+90	RT
-L-	463+90 – 465+25	LT & RT
-L-	488+75 – 491+25	LT & RT
-L-	518+75 – 521+25	LT & RT
-Y6-	17+70 – 19+90	LT & RT
-Y6-	21+70 – 23+95	LT & RT

A quantity of 15,400 cubic yards of Unclassified Excavation - Acceptable is estimated.

D. Culverts

Three reinforced concrete box culverts (RCBC) are proposed along the project corridor. The proposed culvert locations and recommendations are as follows:

-L- STA. 69+25.5 – Single 8'x6' RCBC

Excavate 1-ft below culvert bearing elevation and replace with foundation conditioning material (Select Material, Class VI).

-L- STA. 345+79.0 – Single 10'x5' RCBC

Excavate 1-ft below culvert bearing elevation and replace with foundation conditioning material (Select Material, Class VI). Undercut an additional 2-ft and replace with foundation conditioning material.

-L- STA. 365+81.0 – Double 11'x8' RCBC

Excavate 1-ft below culvert bearing elevation and replace with foundation conditioning material (Select Material, Class VI).

Geotextile for Soil Stabilization is required below the foundation conditioning material. Undercut any soft/loose alluvial soils that may be encountered beneath the bottom of the foundation conditioning material. Backfill undercut area with foundation conditioning material.

E. Water Wells

Water wells and monitoring wells were not observed during the subsurface investigation. Water wells may be encountered during construction due to the presence of dwellings and businesses. Any wells encountered during construction should be sealed in accordance with Section 205 of the Standard Specifications.



F. Ponds

Two ponds which will be drained are located within earthwork limits as follows:

<u>Line</u>	<u>Stations</u>	<u>Offset</u>
-L-	355+40 – 355+75	LT
-L-	510+70 – 512+40	LT

Since water will remain in the ponds after draining, recommend rock embankments in lieu of mucking out. See sheet 2G-1.

Prepared by,

Gary R. Taylor, P.E.
 Senior Manager, Geotechnical
 Registered, North Carolina 018580

Gregory K. Goins, P.E.
 Project Manager, Geotechnical
 Registered, North Carolina 041709





NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

GEOTECHNICAL ENGINEERING UNIT

Summary of Quantities

WBS Number: 35494

County: Beaufort & Martin

Project Engineer: A. Bozorgi

TIP Number: R-2511

Field Office: N/A

Project Geologist: N/A

Description: US 17 From North of NC 171 to existing multi-lanes south of Williamston

Pay Item No.	Pay Item/ Quantity Adjustment	Spec Book Section No. or Special Provision (SP) Reference	Report Section	Alignment	Begin Station	End Station	Quantity	Units / %
0036000000-E	Undercut Excavation	225 - Roadway Excavation	I. B	Contingency	N/A	N/A	2,000	CY
0036000000-E	Undercut Excavation	225 - Roadway Excavation	II. A	Varies	N/A	N/A	21,600	CY
0036000000-E	Undercut Excavation	225 - Roadway Excavation	II. A	Contingency	N/A	N/A	3,000	CY
0036000000-E	Undercut Excavation	225 - Roadway Excavation	II. F	Contingency	N/A	N/A	1,000	CY
Total Quantity of Undercut Excavation =							27,600	CY
0127000000-N	Embankment Settlement Gauges	235 - Embankments	I. E	Varies	N/A	N/A	10	EA
Total Quantity of Embankment Settlement Gauges =							10	EA
0195000000-E	Select Granular Material	265 - Select Granular Material	III. C	Varies	N/A	N/A	40,000	CY
0195000000-E	Select Granular Material	265 - Select Granular Material	III. C	Contingency	N/A	N/A	26,000	CY
Total Quantity of Select Granular Material =							66,000	CY
0196000000-E	Geotextile for Soil Stabilization	270 - Geotextile for Soil Stabilization	I. D	Contingency	N/A	N/A	21,000	SY
0196000000-E	Geotextile for Soil Stabilization	270 - Geotextile for Soil Stabilization	II. C	Varies	N/A	N/A	43,000	SY
0196000000-E	Geotextile for Soil Stabilization	270 - Geotextile for Soil Stabilization	II. C	Contingency	N/A	N/A	4,500	SY
Total Quantity of Geotextile for Soil Stabilization =							68,500	SY
0220000000-E	Rock Embankments	SP - Rock Embankments	I. C	Varies	N/A	N/A	2,000	TON
Total Quantity of Rock Embankments =							2,000	TON
0222000000-E	Geotextile for Rock Embankments	SP - Rock Embankments	I. C	Varies	N/A	N/A	500	SY
Total Quantity of Geotextile for Rock Embankments =							500	SY
1077000000-E	#57 Stone	SP - Rock Embankments	I. C	Varies	N/A	N/A	1,000	TON
Total Quantity of #57 Stone =							1,000	TON
1099500000-E	Shallow Undercut	505 - Aggregate Subgrade	II. B	Varies	N/A	N/A	1,000	CY
1099500000-E	Shallow Undercut	505 - Aggregate Subgrade	II. B	Contingency	N/A	N/A	500	CY
Total Quantity of Shallow Undercut =							1,500	CY
1099700000-E	Class IV Subgrade Stabilization	505 - Aggregate Subgrade	III. D	Varies	N/A	N/A	1,910	TON
1099700000-E	Class IV Subgrade Stabilization	505 - Aggregate Subgrade	III. D	Contingency	N/A	N/A	950	TON
Total Quantity of Class IV Subgrade Stabilization =							2,860	TON



NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
GEOTECHNICAL ENGINEERING UNIT

Summary of Quantities

WBS Number: 35494

County: Beaufort & Martin

Project Engineer: A. Bozorgi

TIP Number: R-2511

Field Office: N/A

Project Geologist: N/A

Description: US 17 From North of NC 171 to existing multi-lanes south of Williamston

Pay Item No.	Pay Item/ Quantity Adjustment	Spec Book Section No. or Special Provision (SP) Reference	Report Section	Alignment	Begin Station	End Station	Quantity	Units / %
2044000000-E	6" Perforated Subdrain Pipe	815 - Subsurface Drainage	II. E	Contingency	N/A	N/A	4,000	LF
Total Quantity of 6" Perforated Subdrain Pipe =							4,000	LF
3642000000-E	Rip Rap, Class A	SP - Rock Embankments	I. C	Varies	N/A	N/A	500	TON
Total Quantity of Rip Rap, Class A =							500	TON
N/A	Unclassified Excavation - Acceptable, but not to be used in top 3 ft of embankment or backfill	225 - Roadway Excavation	IV. C	Varies	N/A	N/A	15,400	CY
Total Quantity of Unclassified Excavation - Acceptable, but not to be used in top 3 ft of embankment or backfill =							15,400	CY

These Items Only Impact Earthwork Totals								
N/A	Shrinkage Factor	235 - Embankments	III. B	N/A	N/A	N/A	30	%
N/A	Unclassified Excavation - Unsuitable Waste	225 - Roadway Excavation	IV. B	N/A	N/A	N/A	35,000	CY

ROCK EMBANKMENTS:**(SPECIAL)****Description**

Construct rock embankments in accordance with the contract. Rock embankments are required to construct embankments in water at locations shown in the plans and as directed.

Materials

Refer to Division 10 of the *Standard Specifications*.

Item	Section
Geotextile for Rock Embankments, Type 2	1056
Rip Rap Materials	1042
Select Materials	1016

Provide Type 2 geotextile for filtration geotextiles. Use Class 2 rip rap material for rock embankments. Use Class A rip rap and No. 57 stone to fill voids in rock embankments. Obtain aggregates from sources participating in the Department's Aggregate QC/QA Program in accordance with Section 1006 of the *Standard Specifications* or use similar size onsite material approved by the engineer.

Construction Methods

Construct rock embankments in accordance with the slopes, dimensions and elevations shown in the plans and Section 235 of the *Standard Specifications*. Place Class 2 so smaller rocks are uniformly distributed throughout rock embankments. Provide a uniform surface free of obstructions, debris and groups of large rocks that could cause voids in embankments.

Before placing embankment fill material or filtration geotextiles over rock embankments, fill voids in the top of rock embankments with Class A rip rap and No. 57 stone. Place and compact Class A rip rap first. Then, fill any remaining voids with No. 57 stone so geotextiles are not torn, ripped or otherwise damaged when installed and covered. Compact rip rap and No. 57 stone with tracked equipment or other approved methods. Install filtration geotextiles on top of Class 2, rip rap and No. 57 stone in accordance with Article 270-3 of the *Standard Specifications* before placing embankment fill material.

Measurement and Payment

Rip Rap, Class 2, Rip Rap, Class A and *#57 Stone* will be measured and paid in tons. Select material and rip rap will be measured by weighing material and rip rap in trucks in accordance with Article 106-7 of the *Standard Specifications*. The contract unit prices for *Rip Rap, Class 2, Rip Rap, Class A* and *#57 Stone* will be full compensation for providing, hauling, handling, placing, compacting and maintaining select material and rip rap.

Geotextile for Rock Embankments will be measured and paid in square yards. Geotextiles will be measured along the top of rock embankments as the square yards of exposed geotextiles before placing embankment fill material. No measurement will be made for overlapping geotextiles. The contract unit price for *Geotextile for Rock Embankments* will be full compensation for providing, transporting and installing geotextiles.

R-2511

GT-1.2

Beaufort and Martin Counties

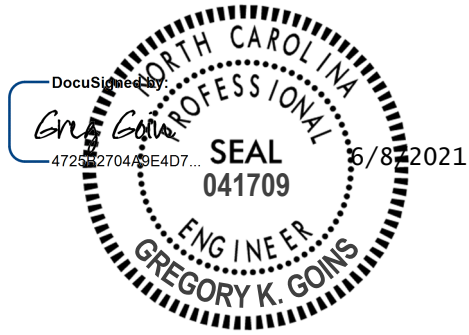
Payment will be made under:

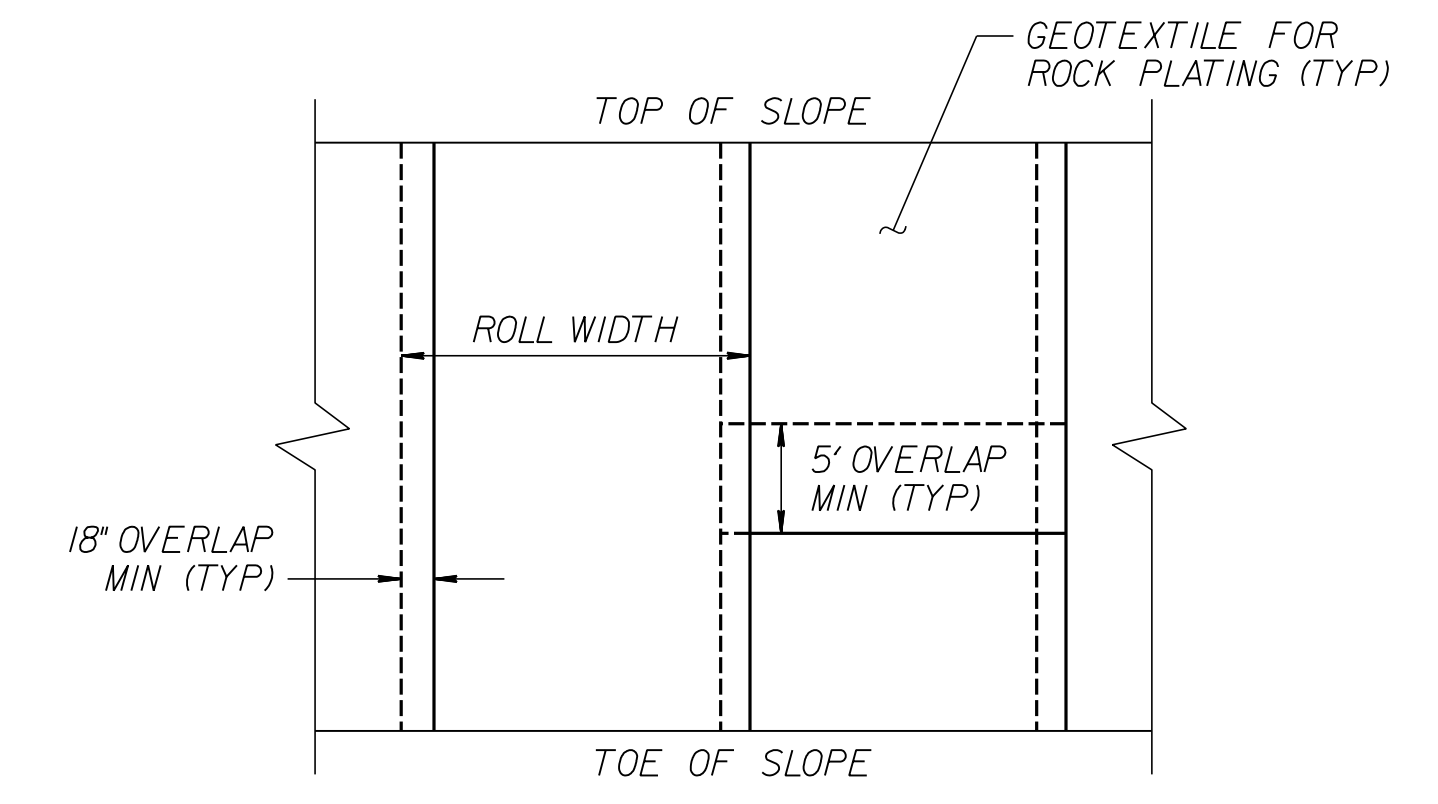
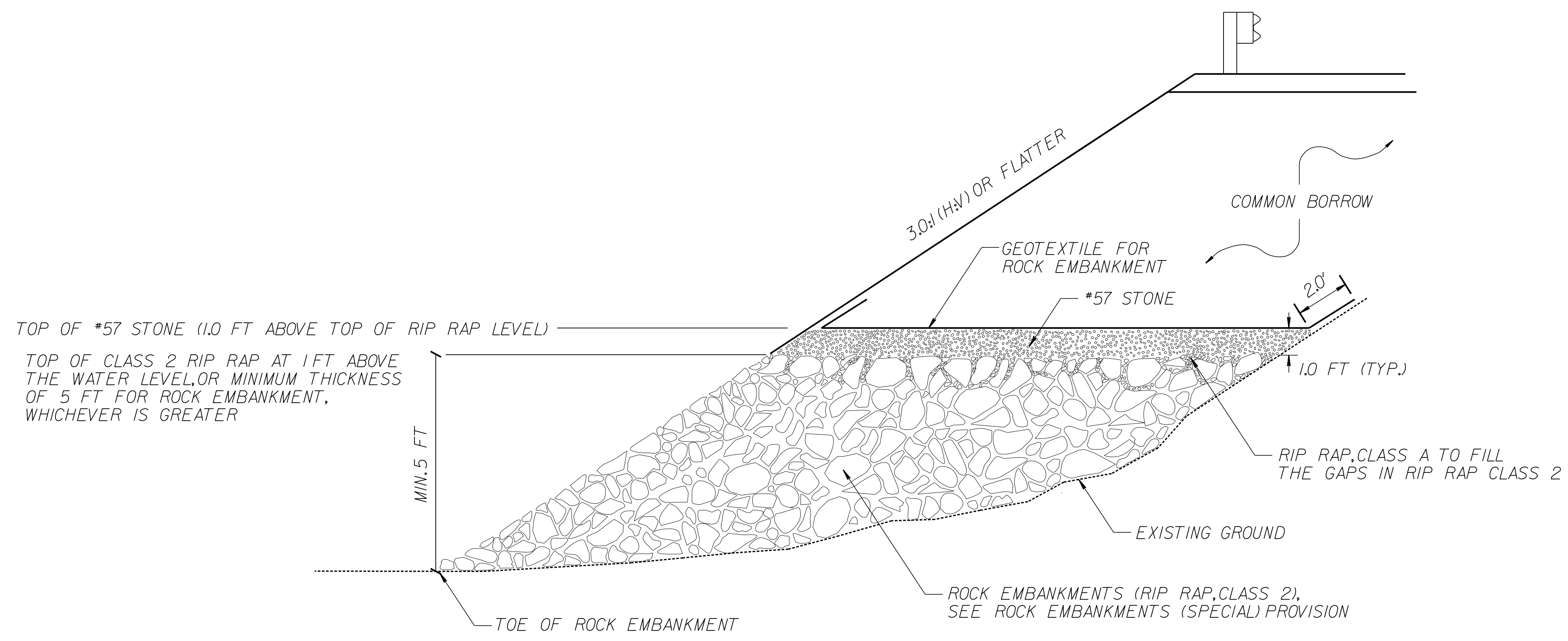
Pay Item

Rip Rap, Class 2
Rip Rap, Class A
#57 Stone
Geotextile for Rock Embankments

Pay Unit

Ton
Ton
Ton
Square Yard





ROCK EMBANKMENT TYPICAL SECTION
(NOT TO SCALE)

GEOTEXTILE OVERLAP DETAIL
(PLAN VIEW)

ROCK EMBANKMENT			
LINE	BEGIN	END	LOCATION
-L-	355+40 +/-	355+75 +/-	LEFT
-L-	510+70 +/-	512+40 +/-	LEFT

NOTES

1. FOR ROCK EMBANKMENTS, SEE ROCK EMBANKMENTS (SPECIAL) PROVISION.
2. USE CLASS 2 RIP RAP FOR ROCK EMBANKMENTS.
3. INSTALL ROCK EMBANKMENTS USING CLASS 2 RIP RAP AS SHOWN IN THE PLAN
4. FILL VOIDS IN THE TOP OF ROCK EMBANKMENTS WITH RIP RAP, CLASS A.
5. PLACE #57 STONE (SELECT MATERIAL, CLASS VI) 1 FT. (TYP.) ABOVE RIP RAP, CLASS 2, AS SHOWN IN THE PLAN.
6. INSTALL GEOTEXTILE FOR ROCK EMBANKMENT ON TOP OF # 57 STONE.

ESTIMATED QUANTITIES	
RIP RAP, CLASS 2	2,000 TONS
RIP RAP CLASS A	500 TONS
#57 STONE (SELECT MATERIAL, CLASS VI)	1,000 TONS
GEOTEXTILE FOR ROCK EMBANKMENT	500 SY

ROCK EMBANKMENTS DETAIL & NOTES					
REVISIONS					
NO.	BY	DATE	NO.	BY	DATE