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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

NORTH CAROLINA PROFESSIONAL SEAL Ø23481 ENGINEER J. DEAN HARDISTER

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Dean Hardister
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11/21/2024

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HELENE EMERGENCY REPAIRS

COUNTY TRANSYLVANIA

PROJECT DESCRIPTION 1 SITE ON US 64 AND 1 SITE ON NC 215

ROUTE	SITE #	SITE LATITUDE	SITE LONGITUDE	REPAIR OPTION 1	REPAIR OPTION 2	REPAIR OPTION 3
US 64	330	35.13645286	-82.8592656	1.25:1 Rock Embankment with Toe Key		
NC 215	707	35.15729254	-82.83155174	Shotcrete Slope Stabilization		

CONTRACT: DN01076

WHEN MULTIPLE REPAIR OPTIONS ARE AVAILABLE AT A SITE LOCATION, THE CONTRACTOR SHALL PROCEED IN SEQUENTIAL ORDER AND CHOOSE THE FIRST OPTION THAT FITS WITHIN SITE CONSTRAINTS

PRIOR TO CONSTRUCTING THE GEOTECHNICAL REPAIRS, AN ON-SITE MEETING WITH THE PRIME CONTRACTOR, THE GEOTECHNICAL SPECIALTY SUBCONTRACTOR (IF APPLICABLE), THE DIVISION CONSTRUCTION REPRESENTATIVE AND THE GEOTECHNICAL OPERATIONS GROUP REPRESENTATIVE SHALL BE CONDUCTED

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 023481 ENGINEER J. DEAN HARDISTER

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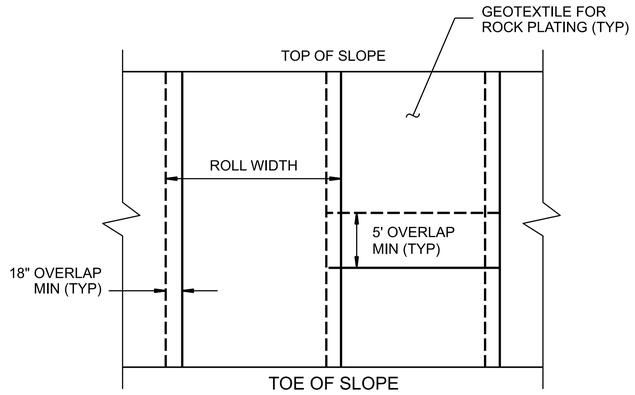
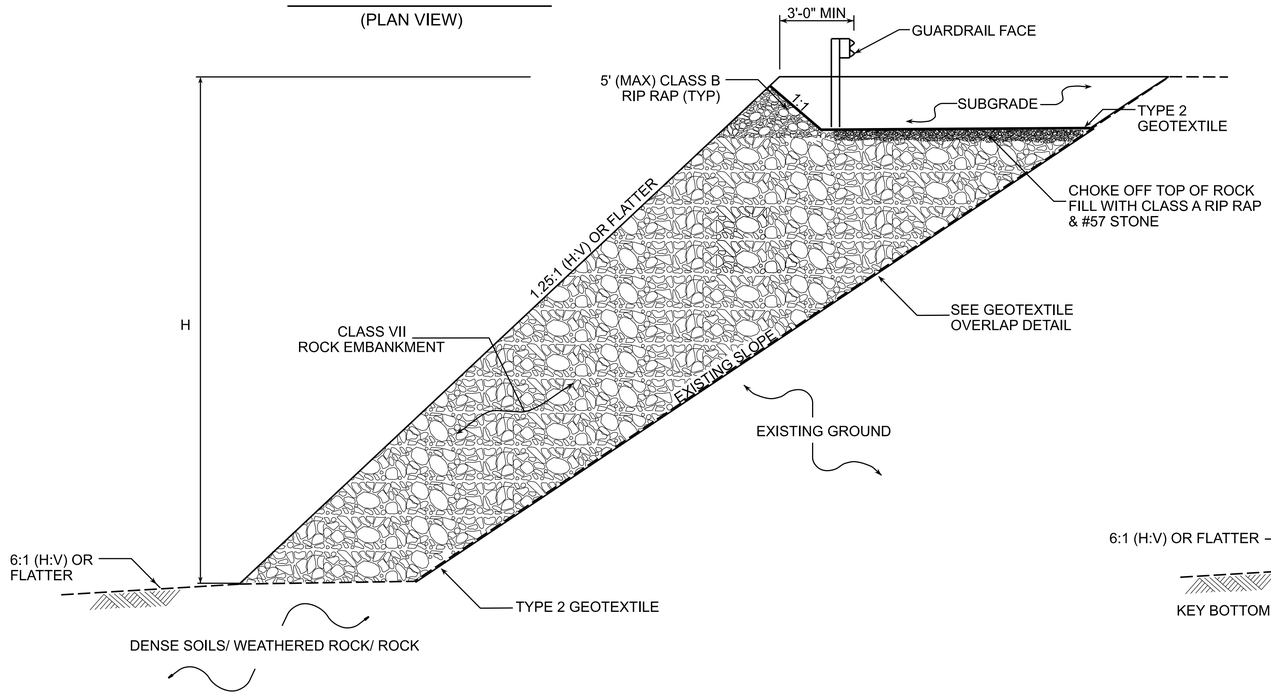
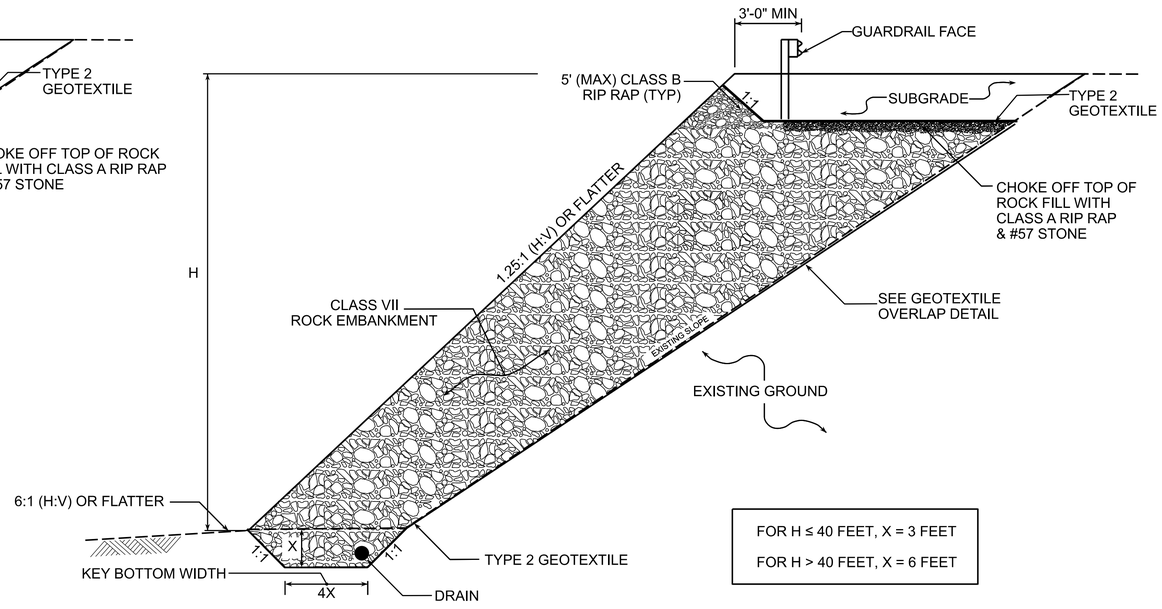


GEOTEXTILE OVERLAP DETAIL

(PLAN VIEW)



ROCK EMBANKMENT DETAIL



FOR H ≤ 40 FEET, X = 3 FEET

FOR H > 40 FEET, X = 6 FEET

ROCK EMBANKMENT WITH TOE KEY DETAIL

NOTES:

1. THE MAXIMUM ALLOWABLE HEIGHT FOR THE ROCK EMBANKMENT DETAIL IS 80'.
2. FOR ROCK EMBANKMENT, BENCH EXISTING SLOPE IN ACCORDANCE WITH SECTION 235 OF THE STANDARD SPECIFICATIONS, WHERE POSSIBLE.

CONTRACT NO.: DN01076

PREPARED BY: DP	DATE: 10/24
REVIEWED BY:	DATE:

DO NOT USE THESE DETAILS UNLESS DIRECTED BY THE ENGINEER

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

GEOTECHNICAL ENGINEERING UNIT

HURRICANE HELENE EMERGENCY REPAIRS

ROCK EMBANKMENT

REVISIONS					
NO.	BY	DATE	NO.	BY	DATE
1			3		
2			4		

SHEET NO. 1 OF 1

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 023481 ENGINEER DEAN HARDISTER

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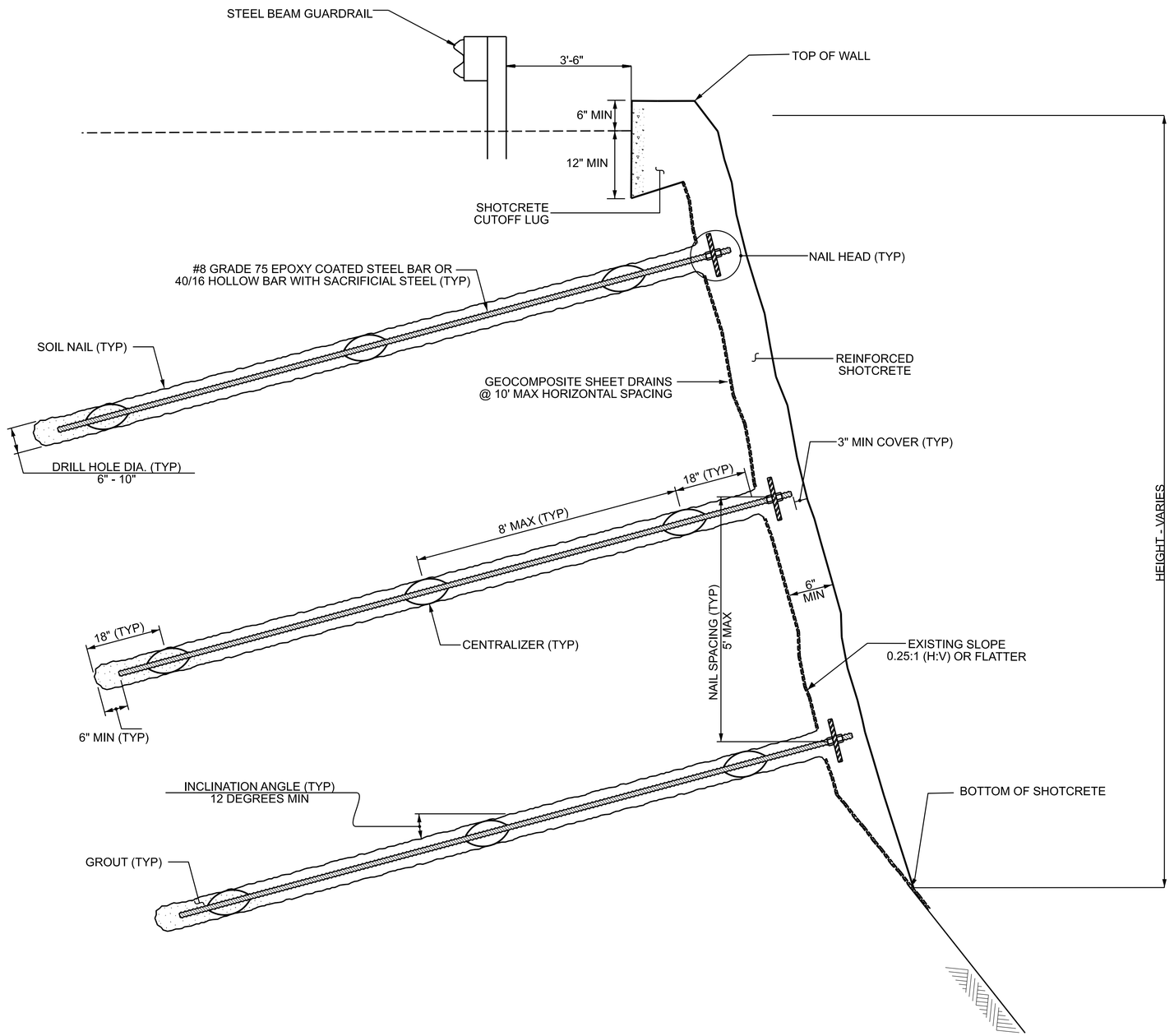
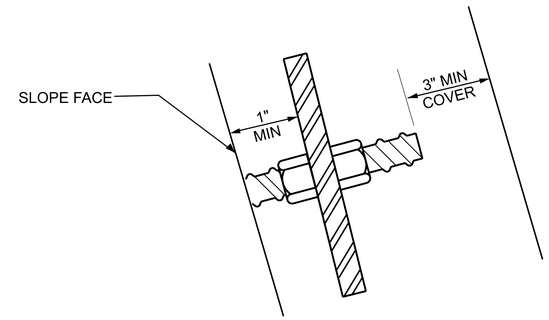


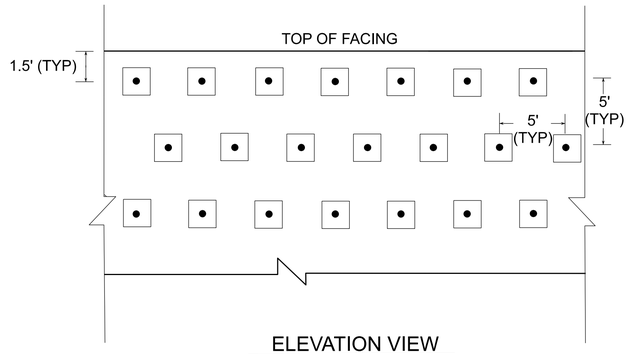
SHOTCRETE SLOPE STABILIZATION - TYPICAL SECTION

NOTES:

1) FOR SHOTCRETE SLOPE STABILIZATION, SEE PROVISION.
2) SOIL NAIL AVERAGE LENGTH = 40 FEET.
3) SOIL NAIL SHALL BE #8 GRADE 75 EPOXY COATED STEEL BAR OR 40/16 HOLLOW BAR.
4) DESIGN FACING FOR MAXIMUM To OF 39 KIPS.
5) FOR TESTING, REQUIRED PROOF TEST LOAD = BONDED LENGTH (FT) x 2.4 KIPS/FT x 0.75.
6) IF GUARDRAIL IS CLOSER THAN SHOWN, CONTACT THE ENGINEER.



NAIL HEAD DETAIL



ELEVATION VIEW

CONTRACT NO.: DN01076

PREPARED BY: DP	DATE: 10/24
REVIEWED BY:	DATE:

DO NOT USE THESE DETAILS UNLESS DIRECTED BY THE ENGINEER

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS

GEOTECHNICAL ENGINEERING UNIT

HURRICANE HELENE EMERGENCY REPAIRS

SHOTCRETE SLOPE STABILIZATION

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	1 OF 1
1			3			
2			4			

PROJECT REFERENCE NO.	SHEET NO.
DN01076	2G-1

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022246 ENGINEER SCOTT A. HIDDEN

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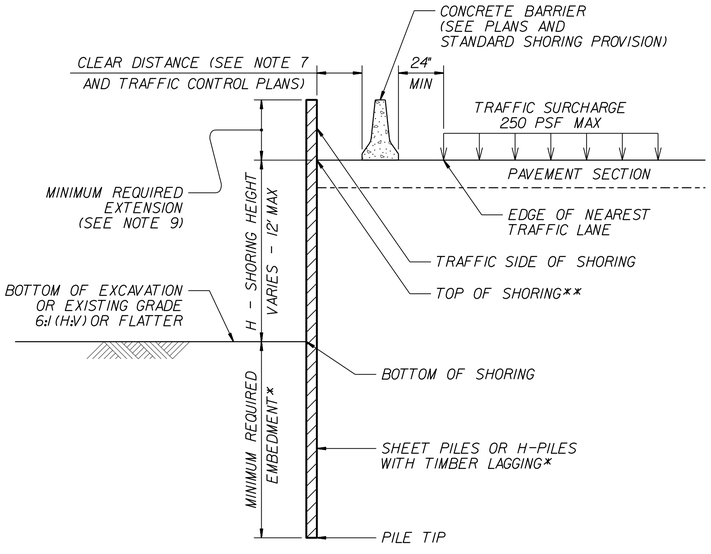
GROUNDWATER CONDITION (SEE NOTE 6)	H SHORING HEIGHT (FT)	SLOPE OR SURCHARGE CASE WITH NO TRAFFIC IMPACT					SURCHARGE CASE WITH TRAFFIC IMPACT				
		SHEET PILES		H-PILES WITH TIMBER LAGGING			SHEET PILES		H-PILES WITH TIMBER LAGGING		
		MINIMUM REQUIRED EMBEDMENT (FT)	MINIMUM REQUIRED SECTION MODULUS (IN^3/FT)	MINIMUM REQUIRED EMBEDMENT* (FT) (SEE NOTE 10)			MINIMUM REQUIRED EMBEDMENT (FT)	MINIMUM REQUIRED SECTION MODULUS (IN^3/FT)	MINIMUM REQUIRED EMBEDMENT* (FT) (SEE NOTE 10)		
				HP 10x42	HP 12x53	HP 14x73			HP 10x42	HP 12x53	HP 14x73
GROUNDWATER ELEVATION BEWTEEN BOTTOM OF SHORING AND PILE TIP	< 6	11.5	4.5	11.5	11.5	11.5	16.0	12.0	13.0	13.0	13.0
	7	13.0	7.0	13.0	13.0	13.0	17.0	14.5	14.5	14.5	14.5
	8	15.0	10.0	--	15.0	15.0	18.0	17.0	--	15.5	15.5
	9	17.0	14.0	--	17.0	17.0	19.0	20.0	--	17.0	17.0
	10	18.5	19.5	--	--	18.5	20.0	23.5	--	--	18.5
	11	20.5	26.0	--	--	--	21.0	28.0	--	--	20.0
	12	22.5	33.0	--	--	--	22.0	33.0	--	--	21.5
GROUNDWATER ELEVATION BELOW PILE TIP	< 6	7.5	3.0	8.0	8.0	8.0	11.0	10.0	9.5	9.5	9.5
	7	8.5	4.5	9.5	9.5	9.5	12.0	12.0	10.5	10.5	10.5
	8	10.0	6.5	10.5	10.5	10.5	12.5	14.0	11.5	11.5	11.5
	9	11.0	9.5	--	12.0	12.0	13.5	16.5	--	12.5	12.5
	10	12.5	13.0	--	--	13.5	14.0	19.5	--	13.5	13.5
	11	13.5	17.0	--	--	14.5	15.0	22.5	--	--	14.5
	12	15.0	21.5	--	--	16.0	16.0	25.5	--	--	15.5

MINIMUM REQUIRED EMBEDMENT AND SECTION MODULUS

*DO NOT USE H-PILES WITH TIMBER LAGGING FOR GROUNDWATER CONDITION, SHORING HEIGHT AND H-PILE SIZE SHOWN IF MINIMUM REQUIRED EMBEDMENT IS "--".

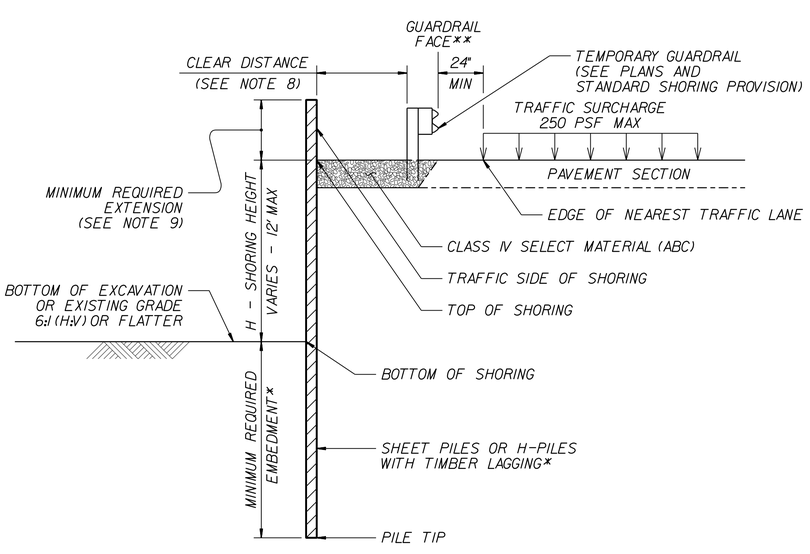
NOTES:

1. AT THE CONTRACTOR'S OPTION, USE STANDARD TEMPORARY SHORING AS NOTED IN THE PLANS.
2. FOR STANDARD TEMPORARY SHORING, SEE STANDARD SHORING PROVISION.
3. STANDARD TEMPORARY SHORING IS BASED ON THE FOLLOWING IN-SITU ASSUMED SOIL PARAMETERS:
   UNIT WEIGHT, γ = 120 PCF
   FRICTION ANGLE, ϕ = 30 DEGREES
   COHESION, c = 0 PSF
4. DO NOT USE STANDARD TEMPORARY SHORING IF ASSUMED SOIL PARAMETERS ARE NOT APPLICABLE.
5. DO NOT USE STANDARD TEMPORARY SHORING WHEN VERY LOOSE OR SOFT SOIL OR MUCK IS WITHIN THE EMBEDMENT DEPTH.
6. USE GROUNDWATER ELEVATION NOTED IN THE PLANS. IF NO GROUNDWATER ELEVATION IS SHOWN IN THE PLANS, USE "GROUNDWATER ELEVATION BETWEEN BOTTOM OF SHORING AND PILE TIP" FOR GROUNDWATER CONDITION. DO NOT USE STANDARD TEMPORARY SHORING IF GROUNDWATER IS ABOVE BOTTOM OF SHORING.
7. AT THE CONTRACTOR'S OPTION OR IF AVAILABLE CLEAR DISTANCE IS LESS THAN THE MINIMUM REQUIRED FOR CONCRETE BARRIER, SET BARRIER NEXT TO AND UP AGAINST TRAFFIC SIDE OF PILES AND USE "SURCHARGE CASE WITH TRAFFIC IMPACT".
8. AT THE CONTRACTOR'S OPTION OR IF AVAILABLE CLEAR DISTANCE IS LESS THAN 4' FOR TEMPORARY GUARDRAIL, ATTACH GUARDRAIL TO TRAFFIC SIDE OF PILES AS SHOWN IN THE PLANS AND USE "SURCHARGE CASE WITH TRAFFIC IMPACT".
9. MINIMUM REQUIRED EXTENSION IS 6" FOR "SLOPE OR SURCHARGE CASE WITH NO TRAFFIC IMPACT" AND 32" FOR "SURCHARGE CASE WITH TRAFFIC IMPACT".
10. MINIMUM REQUIRED EMBEDMENT FOR H-PILES WITH TIMBER LAGGING IS BASED ON DRIVEN H-PILES AT MAXIMUM 6' SPACING. AT THE CONTRACTOR'S OPTION, EMBEDMENT DEPTHS MAY BE REDUCED BY 25% FOR DRILLED-IN H-PILES.
11. SUBMIT A "STANDARD TEMPORARY SHORING SELECTION FORM" AT LEAST 7 DAYS BEFORE STARTING TEMPORARY SHORING CONSTRUCTION. UP TO 3 SHORING LOCATIONS MAY BE INCLUDED ON EACH FORM. STANDARD SHORING SELECTION FORMS ARE AVAILABLE FROM: connect.ncdot.gov/resources/Geological/Pages/Geotech_Forms_Details.aspx
12. CONTACT THE ENGINEER IF PILES DO NOT ATTAIN THE MINIMUM REQUIRED EMBEDMENT.



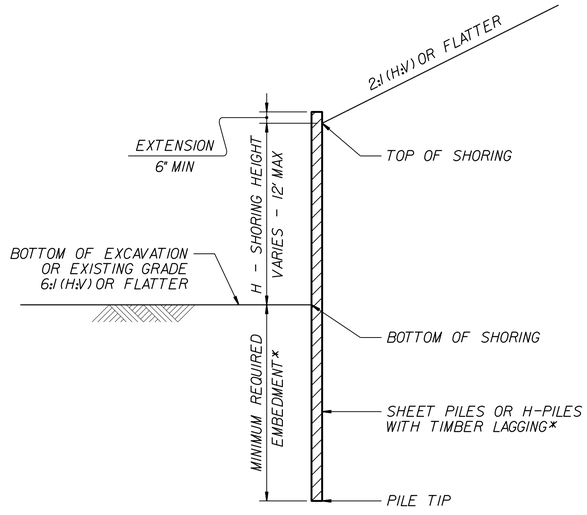
CONCRETE BARRIER

**TOP OF SHORING = EDGE OF PAVEMENT



TEMPORARY GUARDRAIL

**GUARDRAIL FACE = EDGE OF PAVEMENT



STANDARD TEMPORARY SHORING

(SLOPE CASE)

*SEE TABLE ABOVE.

STANDARD TEMPORARY SHORING

(SURCHARGE CASE)

*SEE TABLE ABOVE.

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

GEOTECHNICAL ENGINEERING UNIT

STANDARD DETAIL NO. 1801.01

STANDARD TEMPORARY SHORING

DATE: 11-19-13

PROJECT REFERENCE NO.	SHEET NO.
DN01076	2G-2

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022246 ENGINEER SCOTT A. HIDDEN

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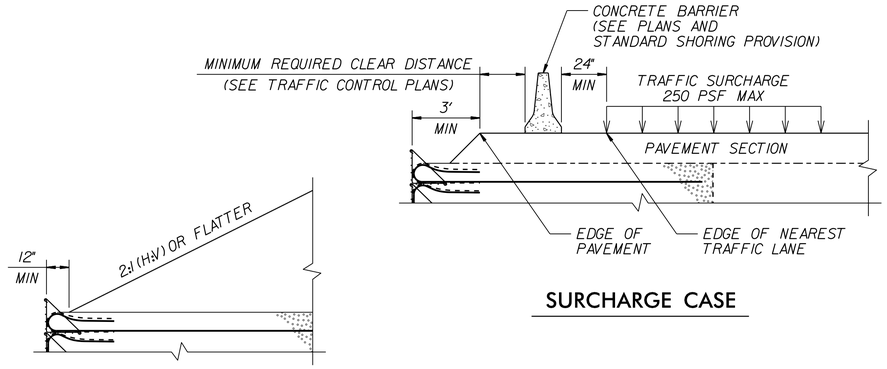
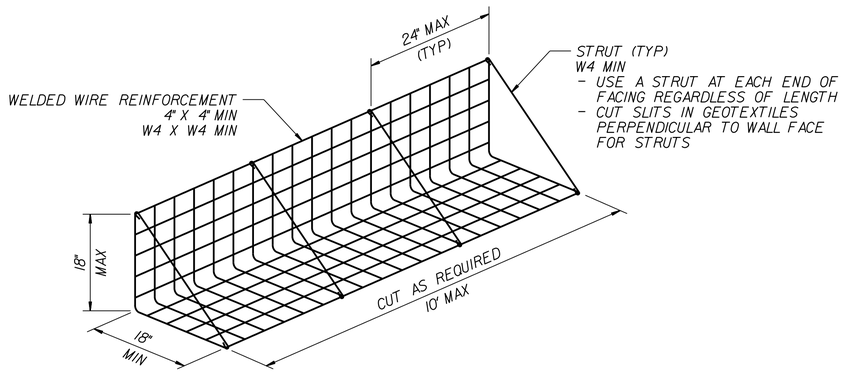
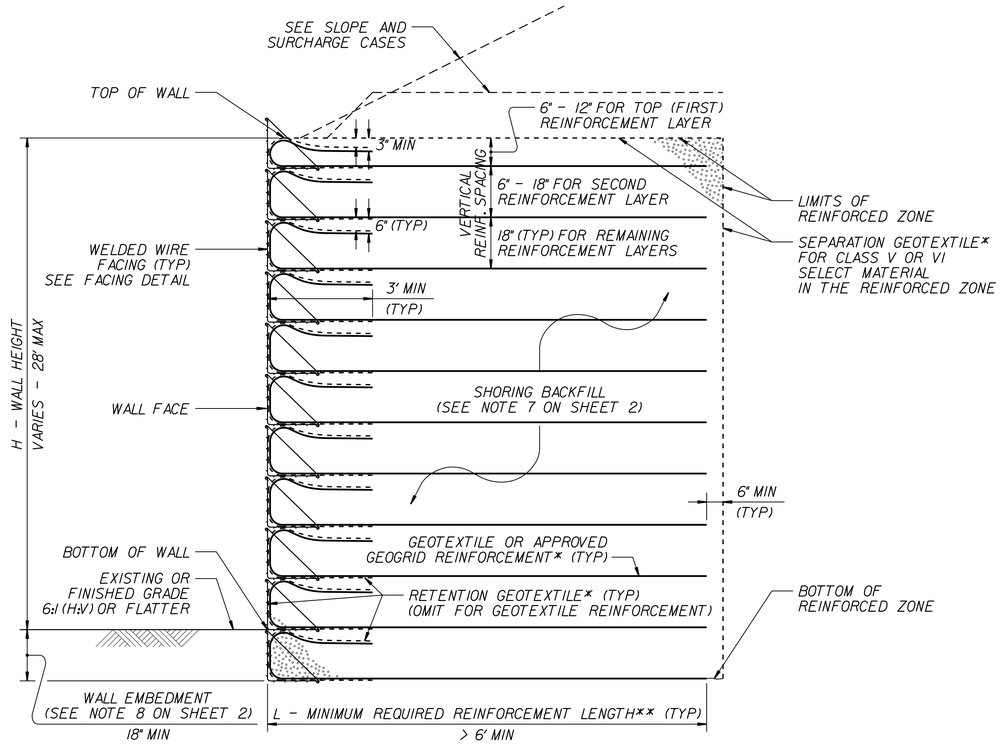


SURCHARGE CASE

SLOPE CASE

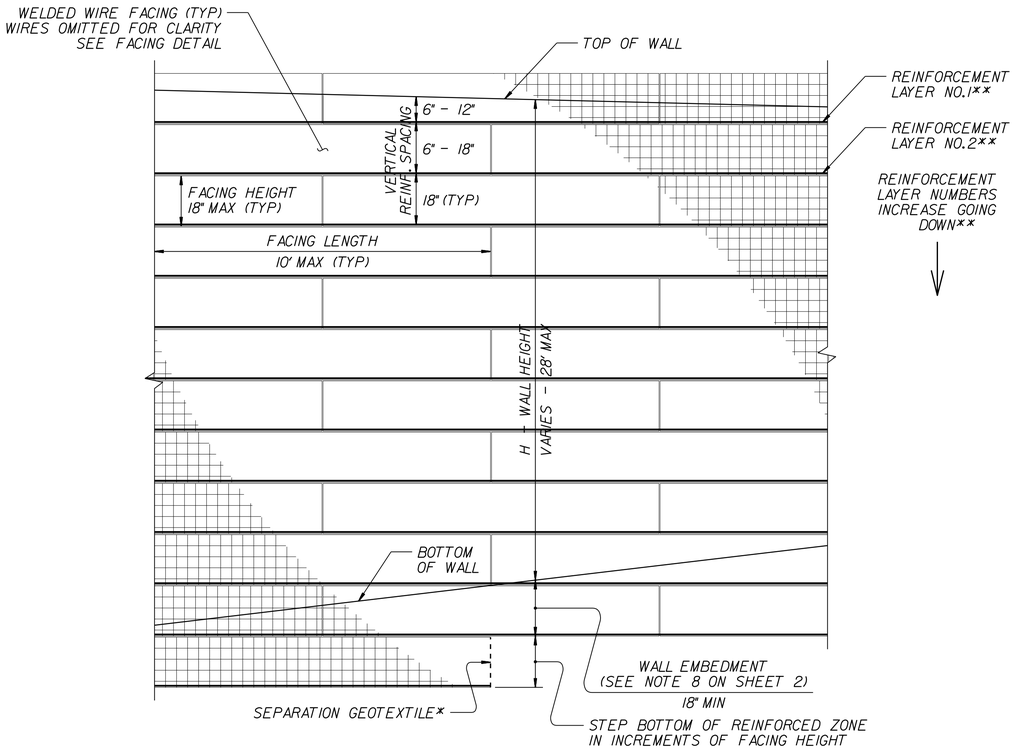


FACING DETAIL



STANDARD TEMPORARY WALL

(FOR STANDARD TEMPORARY WALLS ON STRUCTURES, SEE TEMPORARY WALL ON STRUCTURE DETAIL ON SHEET 2.)
*SEE GEOSYNTHETIC PLACEMENT DETAILS ON SHEET 2.
**SEE REINFORCEMENT TABLES ON SHEET 3.



STANDARD TEMPORARY WALL – PARTIAL ELEVATION

*SEE GEOSYNTHETIC PLACEMENT DETAILS ON SHEET 2.
**SEE REINFORCEMENT TABLES ON SHEET 3.

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS

GEOTECHNICAL ENGINEERING UNIT

STANDARD DETAIL NO. 1801.02

STANDARD TEMPORARY WALL SHEET 1 OF 3

DATE: 11-19-13

PROJECT REFERENCE NO.	SHEET NO.
DN01076	2G-3

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022246 ENGINEER SCOTT A. HIDDEN

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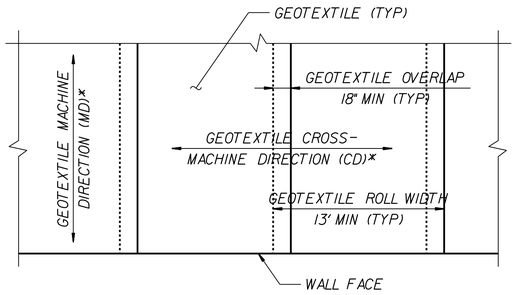
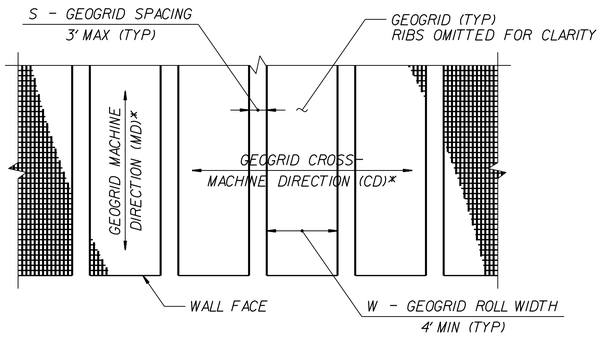


GEOTEXTILE PLACEMENT

(100% COVERAGE MIN FOR GEOTEXTILE REINFORCEMENT)

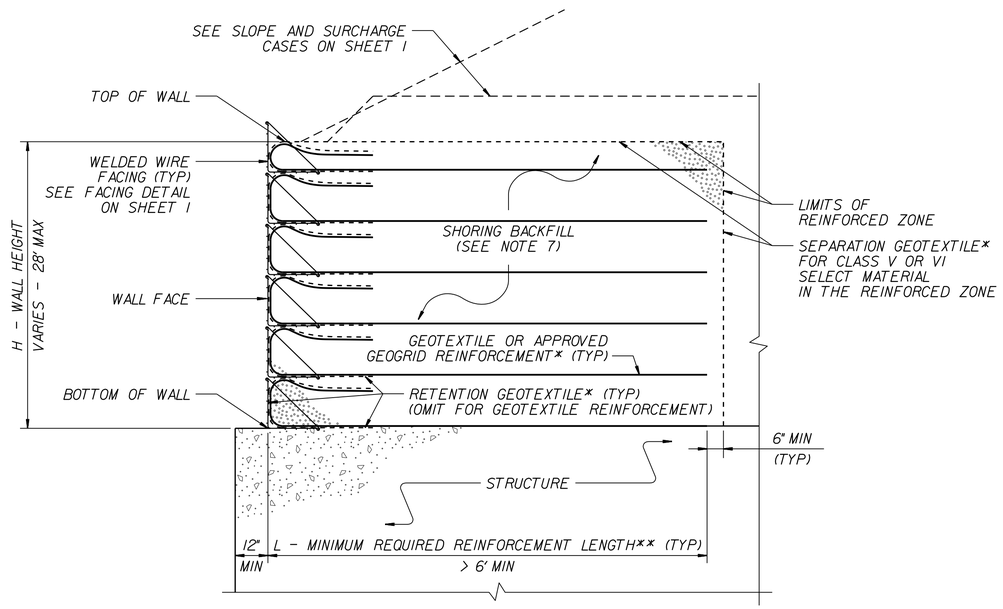


GEOGRID PLACEMENT

(80% COVERAGE MIN FOR GEOGRID REINFORCEMENT – $\frac{W}{W+S}$ x 100 $\geq$ 80%, SEE NOTE 11)

GEOSYNTHETIC PLACEMENT DETAILS

(PLAN VIEW)
*SEE NOTE 12.



TEMPORARY WALL ON STRUCTURE DETAIL

*SEE GEOSYNTHETIC PLACEMENT DETAILS.
**SEE REINFORCEMENT TABLES ON SHEET 3.

NOTES:

1. AT THE CONTRACTOR'S OPTION, USE STANDARD TEMPORARY WALLS AS NOTED IN THE PLANS.
2. FOR STANDARD TEMPORARY WALLS, SEE STANDARD SHORING PROVISION.
3. STANDARD TEMPORARY WALLS ARE BASED ON THE FOLLOWING IN-SITU ASSUMED SOIL PARAMETERS:
   UNIT WEIGHT, γ = 120 PCF
   FRICTION ANGLE, ϕ = 30 DEGREES
   COHESION, c = 0 PSF
4. DO NOT USE STANDARD TEMPORARY WALLS IF ASSUMED SOIL PARAMETERS ARE NOT APPLICABLE.
5. DO NOT USE STANDARD TEMPORARY WALLS WHEN VERY LOOSE OR SOFT SOIL OR MUCK IS BELOW TEMPORARY WALLS.
6. USE GROUNDWATER ELEVATION NOTED IN THE PLANS. IF NO GROUNDWATER ELEVATION IS SHOWN IN THE PLANS, ASSUME GROUNDWATER DEPTH IS LESS THAN 7' BELOW BOTTOM OF REINFORCED ZONE. DO NOT USE STANDARD TEMPORARY WALLS IF GROUNDWATER OR FLOOD ELEVATION IS ABOVE BOTTOM OF REINFORCED ZONE.
7. DO NOT USE A-2-4 SOIL FOR STANDARD TEMPORARY WALLS AROUND CULVERTS OR IN THE REINFORCED ZONE OF STANDARD TEMPORARY WALLS FOR SLOPE CASES. DO NOT USE CLASS VI SELECT MATERIAL IN THE REINFORCED ZONE OF STANDARD TEMPORARY WALLS WITH GEOTEXTILE REINFORCEMENT.
8. WALL EMBEDMENT IS NOT REQUIRED FOR STANDARD TEMPORARY WALLS ON STRUCTURES OR ROCK AS DETERMINED BY THE ENGINEER.
9. DO NOT USE MORE THAN 4 DIFFERENT REINFORCEMENT STRENGTHS FOR EACH STANDARD TEMPORARY WALL.
10. GEOGRIDS FOR GEOGRID REINFORCEMENT ARE APPROVED FOR SHORT TERM DESIGN STRENGTHS (3-YEAR DESIGN LIFE) IN THE MD AND CD BASED ON MATERIAL TYPE. THE LIST OF APPROVED GEOGRIDS WITH DESIGN STRENGTHS IS AVAILABLE FROM: connect.ncdot.gov/resources/Geological/Pages/Products.aspx
    DEFINE MATERIAL TYPE FROM THE WEBSITE ABOVE FOR SHORING BACKFILL AS FOLLOWS:

MATERIAL TYPE	SHORING BACKFILL
BORROW	A-2-4 SOIL
FINE AGGREGATE	CLASS II, TYPE I OR CLASS III SELECT MATERIAL
COARSE AGGREGATE	CLASS V OR VI SELECT MATERIAL

11. FOR GEOGRID REINFORCEMENT WITH LESS THAN 100% COVERAGE, STAGGER REINFORCEMENT SO GEOGRIDS ARE CENTERED OVER GAPS IN THE REINFORCEMENT LAYER BELOW.
12. AT THE CONTRACTOR'S OPTION, REINFORCEMENT MAY BE INSTALLED WITH THE MD PARALLEL TO THE WALL FACE IF BOTH OF THE FOLLOWING CONDITIONS OCCUR:
    - W (REINFORCEMENT ROLL WIDTH) $\geq$ (MINIMUM REQUIRED REINFORCEMENT LENGTH) + 4.5' AND
    - REINFORCEMENT STRENGTH IN CD $\geq$ MINIMUM REQUIRED REINFORCEMENT STRENGTH IN MD.
13. SUBMIT A "STANDARD TEMPORARY WALL SELECTION FORM" AT LEAST 7 DAYS BEFORE STARTING TEMPORARY WALL CONSTRUCTION. STANDARD SHORING SELECTION FORMS ARE AVAILABLE FROM: connect.ncdot.gov/resources/Geological/Pages/Geotech_Forms_Details.aspx
14. DO NOT PLACE SHORING BACKFILL OR REINFORCEMENT UNTIL EXCAVATION DIMENSIONS AND FOUNDATION MATERIAL ARE APPROVED.
15. FOR STANDARD TEMPORARY WALLS WITH PILE FOUNDATIONS IN THE REINFORCED ZONE, DRIVE PILES THROUGH REINFORCEMENT AFTER CONSTRUCTING TEMPORARY WALLS.
16. DO NOT SPLICE OR OVERLAP REINFORCEMENT SO SEAMS ARE PARALLEL TO THE WALL FACE.
17. CONTACT THE ENGINEER WHEN EXISTING OR FUTURE OBSTRUCTIONS SUCH AS FOUNDATIONS, PAVEMENTS, PIPES, INLETS OR UTILITIES WILL INTERFERE WITH REINFORCEMENT.
18. FOR STANDARD TEMPORARY WALLS WITH INTERIOR ANGLES LESS THAN 90 DEGREES, WRAP GEOSYNTHETICS AT ACUTE CORNERS AS DIRECTED BY THE ENGINEER.
19. FOR STANDARD TEMPORARY WALLS WITH TOP OF WALL WITHIN 5' OF FINISHED GRADE, REMOVE TOP FACING AND INCORPORATE TOP REINFORCEMENT LAYER INTO FILL WHEN PLACING FILL IN FRONT OF WALL.

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS

GEOTECHNICAL ENGINEERING UNIT

STANDARD DETAIL NO. 1801.02

STANDARD TEMPORARY WALL
SHEET 2 OF 3

DATE: 10-19-21

PROJECT REFERENCE NO.	SHEET NO.
DN01076	2G-4

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022246 ENGINEER SCOTT A. HIDDEN

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SLOPE OR SURCHARGE CASE	GROUNDWATER DEPTH BELOW BOTTOM OF REINFORCED ZONE (SEE NOTE 6 ON SHEET 2) (FT)	SHORING BACKFILL TYPE IN THE REINFORCED ZONE (SEE NOTE 7 ON SHEET 2)	H - WALL HEIGHT (FT)																								
			< 4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
SLOPE CASE	> 0	CLASS II,TYPE I, CLASS III,CLASS V OR CLASS VI SELECT MATERIAL	6	6	7	8	9	11	12	13	13	14	15	16	17	18	19	20	21	22	23	24	24	25	26	27	27
SURCHARGE CASE	> 0 TO 7 FOR H < 20' > 0 TO 10 FOR H ≥ 20'	ALL SHORING BACKFILL TYPES	6	7	7	8	8	9	9	10	11	11	12	12	13	14	14	15	16	17	17	18	19	19	20	21	22
	> 7 FOR H < 20' > 10 FOR H ≥ 20'	A-2-4 SOIL	6	6	7	8	8	9	9	10	11	11	12	12	13	14	14	15	16	16	17	18	18	19	20	20	21
		CLASS II,TYPE I OR CLASS III SELECT MATERIAL	6	6	7	7	8	8	9	10	10	11	11	12	12	13	14	15	15	16	16	17	17	18	18	19	20
		CLASS V OR CLASS VI SELECT MATERIAL	6	6	7	7	7	8	8	9	9	10	10	11	12	13	13	14	14	15	15	16	17	17	18	19	19

L – MINIMUM REQUIRED REINFORCEMENT LENGTH (FT)

(FOR ALL REINFORCEMENT TYPES)

REINFORCEMENT LAYER NUMBER*	SHORING BACKFILL TYPE IN THE REINFORCED ZONE (SEE NOTE 7 ON SHEET 2)				
	SLOPE CASE		SURCHARGE CASE		
	CLASS II,TYPE I OR CLASS III SELECT MATERIAL	CLASS V SELECT MATERIAL	A-2-4 SOIL	CLASS II,TYPE I OR CLASS III SELECT MATERIAL	CLASS V SELECT MATERIAL
1	2400	2400	2400	2400	2400
2	2400	2400	2400	2400	2400
3	2400	2400	2400	2400	2400
4	2400	2400	2500	2400	2400
5	2500	2400	3000	2400	2400
6	3000	2400	3500	2800	2400
7	3500	2700	4000	3200	2600
8	4000	3100	4500	3600	2900
9	4500	3500	5000	4000	3200
10	5000	3900	5500	4400	3500
11	5500	4300	6000	4800	3800
12	6000	4700	6500	5200	4100
13	6500	5100	7000	5600	4400
14	7000	5400	7500	6000	4700
15	7500	5800	8000	6400	5000
16	8000	6200	8500	6800	5300
17	8500	6600	9000	7200	5600
18	9000	7000	9500	7600	5900
19	9500	7400	10000	8000	6200
20	10000	7800	10500	8400	6500

GEOTEXTILE REINFORCEMENT
ULTIMATE TENSILE STRENGTH (LB/FT)

REINFORCEMENT LAYER NUMBER*	SHORING BACKFILL TYPE IN THE REINFORCED ZONE (SEE NOTE 7 ON SHEET 2)				
	SLOPE CASE		SURCHARGE CASE		
	CLASS II,TYPE I OR CLASS III SELECT MATERIAL	CLASS V OR CLASS VI SELECT MATERIAL	A-2-4 SOIL	CLASS II,TYPE I OR CLASS III SELECT MATERIAL	CLASS V OR CLASS VI SELECT MATERIAL
1	240	200	340	290	240
2	380	310	520	430	350
3	530	420	700	570	460
4	690	550	870	720	570
5	860	690	1050	860	680
6	1030	830	1220	1000	790
7	1200	970	1400	1150	900
8	1370	1110	1580	1290	1010
9	1550	1240	1750	1430	1120
10	1720	1380	1930	1580	1230
11	1890	1520	2100	1720	1340
12	2060	1660	2280	1860	1450
13	2240	1800	2450	2010	1560
14	2410	1940	2630	2150	1670
15	2580	2080	2800	2290	1780
16	2750	2220	2980	2440	1890
17	2930	2360	3160	2580	2000
18	3100	2500	3330	2720	2110
19	3270	2640	3510	2860	2220
20	3440	2780	3690	3000	2330

GEOGRID REINFORCEMENT
SHORT–TERM DESIGN STRENGTH (LB/FT)
(SEE NOTE 10 ON SHEET 2.)

WALL HEIGHT (H) + WALL EMBEDMENT (FT)	NUMBER OF REINFORCEMENT LAYERS*
2.5 - 4	3
4 - 5.5	4
5.5 - 7	5
7 - 8.5	6
8.5 - 10	7
10 - 11.5	8
11.5 - 13	9
13 - 14.5	10
14.5 - 16	11
16 - 17.5	12
17.5 - 19	13
19 - 20.5	14
20.5 - 22	15
22 - 23.5	16
23.5 - 25	17
25 - 26.5	18
26.5 - 28	19
28 - 29.5	20

*BASED ON VERTICAL REINFORCEMENT SPACING SHOWN ON SHEET 1.

MINIMUM REQUIRED REINFORCEMENT STRENGTH IN MD

(SEE NOTE 9 ON SHEET 2.)
*SEE PARTIAL ELEVATION ON SHEET 1
FOR REINFORCEMENT LAYER NUMBERING.

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

GEOTECHNICAL ENGINEERING UNIT

STANDARD DETAIL NO. 1801.02

STANDARD
TEMPORARY WALL
SHEET 3 OF 3

DATE: 11-19-13

SUMMARY OF QUANTITIES

								6000000000-E	6006000000-E	6009000000-E	6012000000-E	6029000000-E	6036000000-E	6042000000-E	6071010000-E	6084000000-E	6117000000-N	6117500000-N
PROJECT NO	COUNTY	MAP NO	ROUTE	LENGTH	WIDTH	BEGIN MP	END MP	TEMPORARY SILT FENCE	STONE FOR EROSION CONTROL, CLASS A	STONE FOR EROSION CONTROL, CLASS B	SEDIMENT CONTROL STONE	SAFETY FENCE	MATTING FOR EROSION CONTROL	1/4" HARDWARE CLOTH	WATTLE	SEED & MULCHING	RESPONSE FOR EROSION CONTROL	CONCRETE WASHOUT STRUCTURE
				MI	FT			LF	TON	TON	TON	LF	SY	LF	LF	AC	EA	EA
18314.1088011	Transylvania	1	US-64	0.06	22	10.9	10.96	200			15					0.1	1	
TOTAL FOR MAP NO. 1				**0.06**				**200**			**15**					**0.1**	**1**	
TOTAL FOR PROJ NO. 18314.1088011				**0.06**				**200**			**15**					**0.1**	**1**	
18314.1088015	Transylvania	2	US-64	0.05	22	6.58	6.63	150	20	20	20		100	20	50	0.1	1	
TOTAL FOR MAP NO. 2				**0.05**				**150**	**20**	**20**	**20**		**100**	**20**	**50**	**0.1**	**1**	
TOTAL FOR PROJ NO. 18314.1088015				**0.05**				**150**	**20**	**20**	**20**		**100**	**20**	**50**	**0.1**	**1**	
18314.1088038	Transylvania	3	NC-215	0.06	20	1.32	1.38	100				100					1	1
TOTAL FOR MAP NO. 3				**0.06**				**100**				**100**					**1**	**1**
TOTAL FOR PROJ NO. 18314.1088038				**0.06**				**100**				**100**					**1**	**1**
GRAND TOTAL				**0.17**				**450**	**20**	**20**	**35**	**100**	**100**	**20**	**50**	**0.2**	**3**	**1**

SUMMARY OF QUANTITIES

								3642000000-E	3649000000-E	8834000000-N		8839000000-E		8853000000-E
PROJECT NO	COUNTY	MAP NO	ROUTE	LENGTH	WIDTH	BEGIN MP	END MP	RIP RAP, CLASS A	RIP RAP, CLASS B	SOIL NAIL, AVERAGE LENGTH	SOIL NAIL PROOF TESTS	SOIL NAIL, ADDITIONAL LENGTH OVER AVERAGE	GEOCOMPOSITE DRAINS	SHOTCRETE
				MI	FT			TON	TON	EA	EA	LF	LF	CY
18314.1088011	Transylvania	1	US-64	0.06	22	10.9	10.96	300	300					
TOTAL FOR MAP NO. 1				**0.06**				**300**	**300**					
TOTAL FOR PROJ NO. 18314.1088011				**0.06**				**300**	**300**					
18314.1088015	Transylvania	2	US-64	0.05	22	6.58	6.63							
TOTAL FOR MAP NO. 2				**0.05**										
TOTAL FOR PROJ NO. 18314.1088015				**0.05**										
18314.1088038	Transylvania	3	NC-215	0.06	20	1.32	1.38			429	22	858	450	125
TOTAL FOR MAP NO. 3				**0.06**						**429**	**22**	**858**	**450**	**125**
TOTAL FOR PROJ NO. 18314.1088038				**0.06**						**429**	**22**	**858**	**450**	**125**
GRAND TOTAL				**0.17**				**300**	**300**	**429**	**22**	**858**	**450**	**125**

SUMMARY OF QUANTITIES

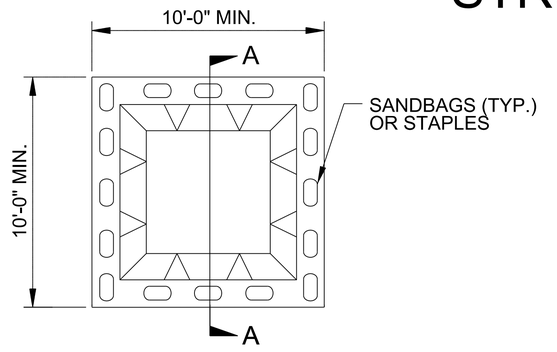
								0000400000-N	0043000000-N	0196000000-E	0314000000-E	0222000000-E	0996000000-N	1111000000-E	1491000000-E	1523000000-E	1575000000-E	2556000000-E	3030000000-E	3360000000-E	3420000000-E
PROJECT NO	**COUNTY**	**MAP NO**	**ROUTE**	**LENGTH**	**WIDTH**	**BEGIN MP**	**END MP**	**CONSTRUCTION SURVEYING**	**GRADING**	**GEOTEXTILE FOR SOIL STABILIZATION**	**SELECT MATERIAL, CLASS VII**	**GEOTEXTILE FOR ROCK EMBANKMENTS**	**PIPE CLEAN OUT**	**CLASS IV AGGREGATE STABILIZATION**	**BASE COURSE, B25.0C**	**SURFACE COURSE, S9.5C**	**ASPHALT BINDER FOR PLANT MIX**	**SHOULDER BERM GUTTER**	**STEEL BEAM GUARDRAIL**	**REMOVE EXISTING GUARDRAIL**	**WEATHERING STEEL BEAM GUARDRAIL**
				MI	**FT**			**LS**	**LS**	**SY**	**TON**	**SY**	**EA**	**TON**	**TONS**	**TONS**	**TONS**	**LF**	**LF**	**LF**	**LF**
18314.1088011	Transylvania	1	US-64	0.06	22	10.9	10.96	0.33	0.33		1,800	200		300					100	100	
TOTAL FOR MAP NO. 1				**0.06**				**0.33**	**0.33**		**1,800**	**200**		**300**					**100**	**100**	
TOTAL FOR PROJ NO. 18314.1088011				**0.06**				**0.33**	**0.33**		**1,800**	**200**		**300**					**100**	**100**	
18314.1088015	Transylvania	2	US-64	0.05	22	6.58	6.63	0.33	0.33	100			1	350	21	9	1	175	200	200	
TOTAL FOR MAP NO. 2				**0.05**				**0.33**	**0.33**	**100**			**1**	**350**	**21**	**9**	**1**	**175**	**200**	**200**	
TOTAL FOR PROJ NO. 18314.1088015				**0.05**				**0.33**	**0.33**	**100**			**1**	**350**	**21**	**9**	**1**	**175**	**200**	**200**	
18314.1088038	Transylvania	3	NC-215	0.06	20	1.32	1.38	0.34	0.34											125	125
TOTAL FOR MAP NO. 3				**0.06**				**0.34**	**0.34**											**125**	**125**
TOTAL FOR PROJ NO. 18314.1088038				**0.06**				**0.34**	**0.34**											**125**	**125**
GRAND TOTAL				**0.17**				**1.00**	**1.00**	**100**	**1,800**	**200**	**1**	**650**	**21**	**9**	**1**	**175**	**300**	**425**	**125**

THERMOPLASTIC AND PAINT QUANTITIES

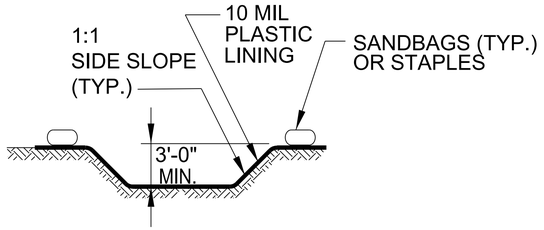
									4457000000-N	4688000000-E	4688000000-E
PROJECT NO	COUNTY	MAP NO	ROUTE	LANES	LENGTH	WIDTH	BEGIN MP	END MP	TEMPORARY TRAFFIC CONTROL	6" X 90 M WHITE THERMO	6" X 90 M YELLOW THERMO
					MI	FT			LS	LF	LF
18314.1088011	Transylvania	1	US-64	2	0.06	22	10.9	10.96	0.33		
TOTAL FOR MAP NO. 1					**0.06**				**0.33**		
TOTAL FOR PROJ NO. 18314.1088011					**0.06**				**0.33**		
18314.1088015	Transylvania	2	US-64	2	0.05	22	6.58	6.63	0.33	250	250
TOTAL FOR MAP NO. 2					**0.05**				**0.33**	**250**	**250**
TOTAL FOR PROJ NO. 18314.1088015					**0.05**				**0.33**	**250**	**250**
18314.1088038	Transylvania	3	NC-215	2	0.06	20	1.32	1.38	0.34		
TOTAL FOR MAP NO. 3					**0.06**				**0.34**		
TOTAL FOR PROJ NO. 18314.1088038					**0.06**				**0.34**		
GRAND TOTAL					**0.17**				**1**	**250**	**250**

PROJECT REFERENCE NO.	SHEET NO.
X-XXXX	EC-XX
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

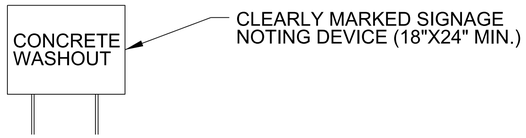
ONSITE CONCRETE WASHOUT STRUCTURE WITH LINER



PLAN



SECTION A-A



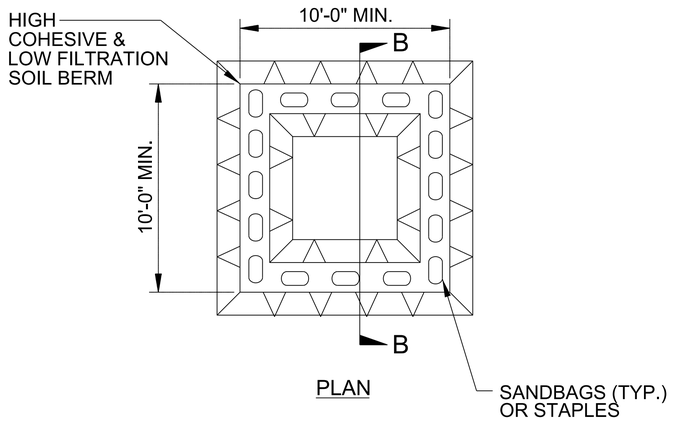
NOTES:
1. ACTUAL LOCATION DETERMINED IN FIELD

2. THE CONCRETE WASHOUT STRUCTURES SHALL BE MAINTAINED WHEN THE LIQUID AND/OR SOLID REACHES 75% OF THE STRUCTURES CAPACITY TO PROVIDE ADEQUATE HOLDING CAPACITY WITH A MINIMUM 12 INCHES OF FREEBOARD.

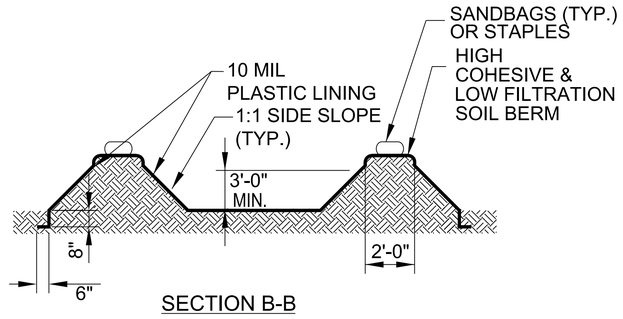
3.CONCRETE WASHOUT STRUCTURE NEEDS TO BE CLEARY MARKED WITH SIGNAGE NOTING DEVICE.

BELOW GRADE WASHOUT STRUCTURE

NOT TO SCALE



PLAN



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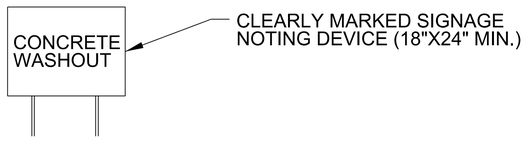

NOTES:
1. ACTUAL LOCATION DETERMINED IN FIELD

2. THE CONCRETE WASHOUT STRUCTURES SHALL BE MAINTAINED WHEN THE LIQUID AND/OR SOLID REACHES 75% OF THE STRUCTURES CAPACITY TO PROVIDE ADEQUATE HOLDING CAPACITY WITH A MINIMUM 12 INCHES OF FREEBOARD.

3.CONCRETE WASHOUT STRUCTURE NEEDS TO BE CLEARY MARKED WITH SIGNAGE NOTING DEVICE.

ABOVE GRADE WASHOUT STRUCTURE

NOT TO SCALE