

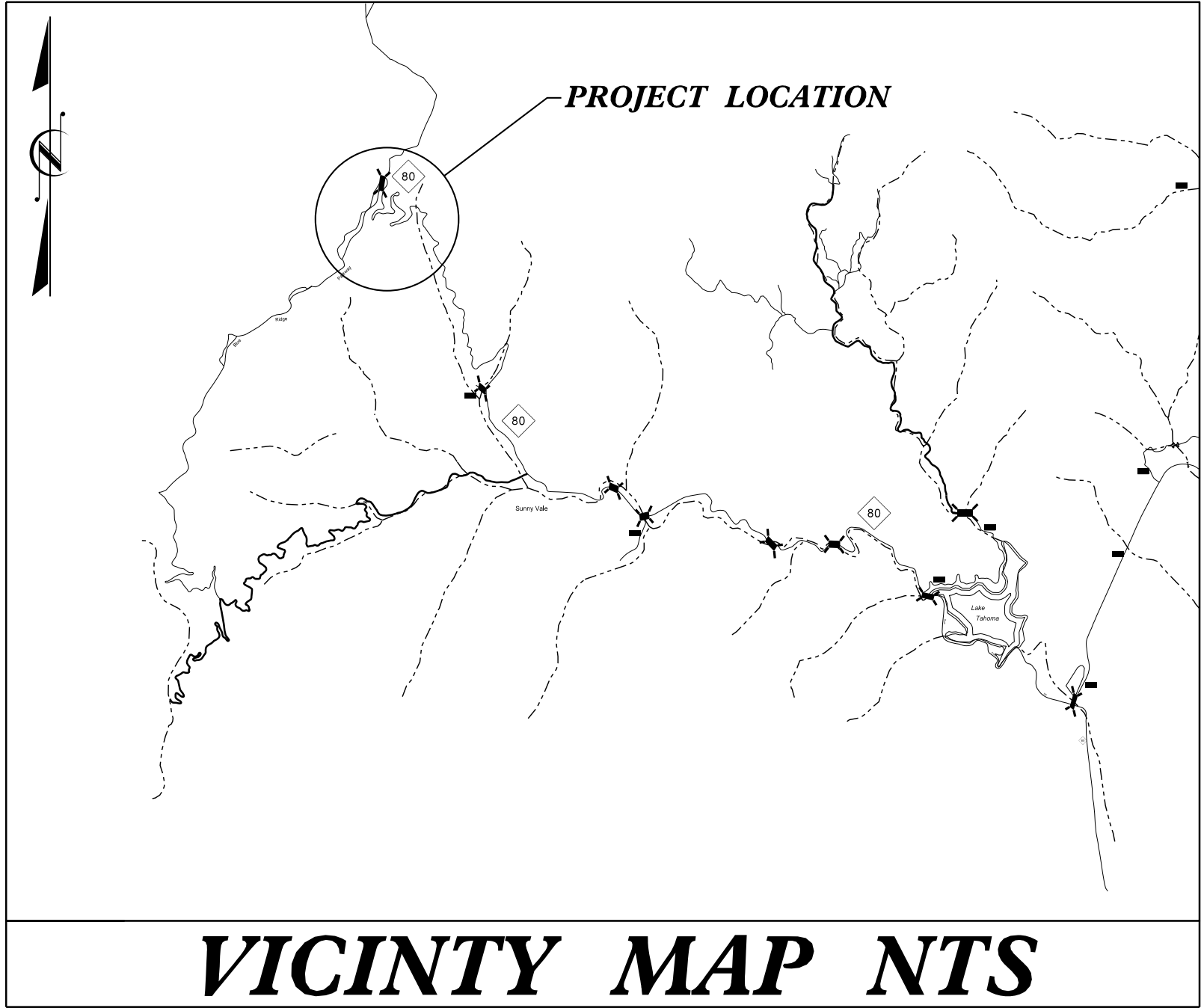
05-MAR-2025 14:27
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\$\$\$\$\$USERNAME\$\$\$\$

09.08/99

CONTRACT: DM00477

TIP PROJECT: 18313.1059065

See Sheet 1A For Index of Sheets



VICINTY MAP NTS

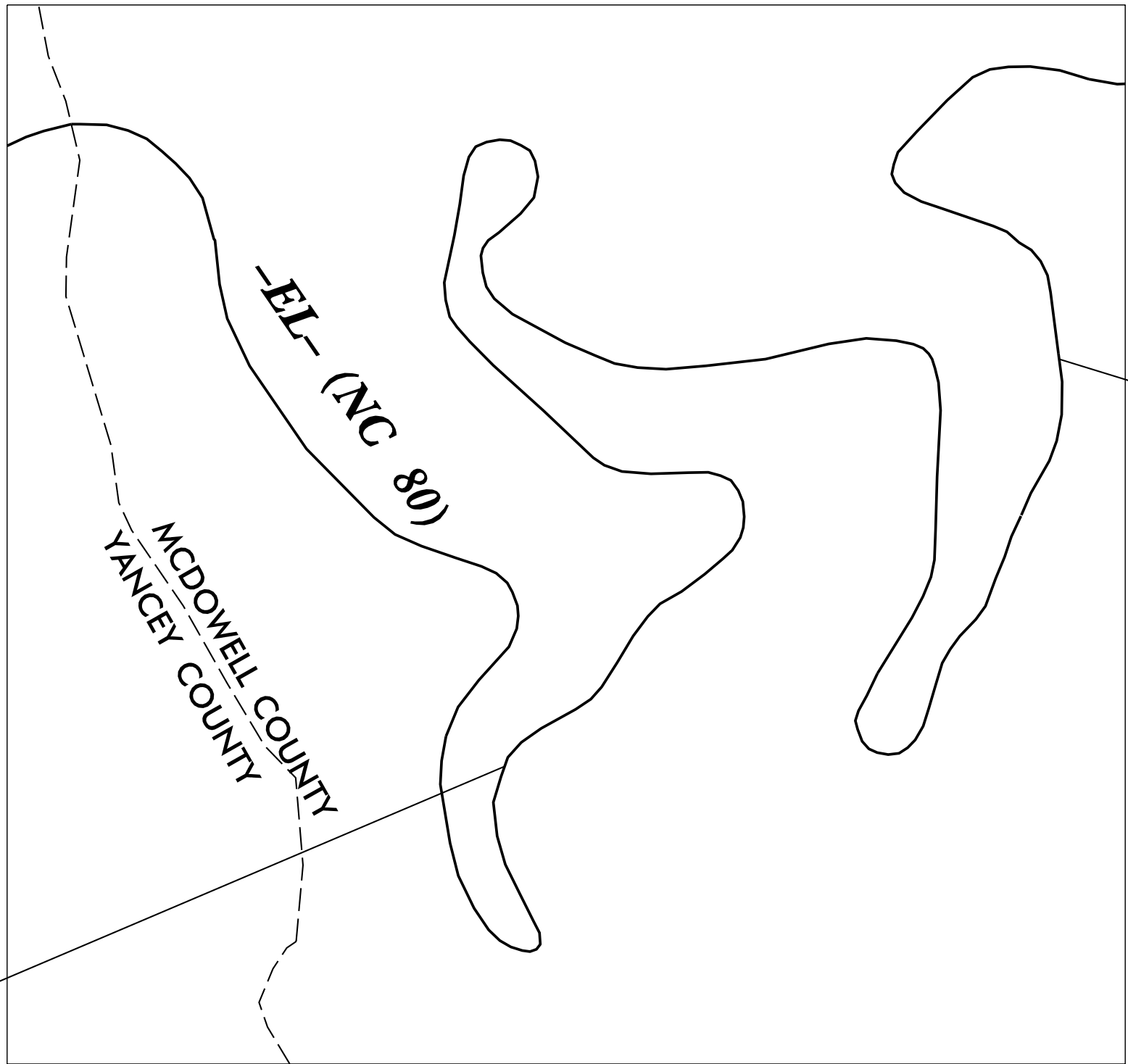
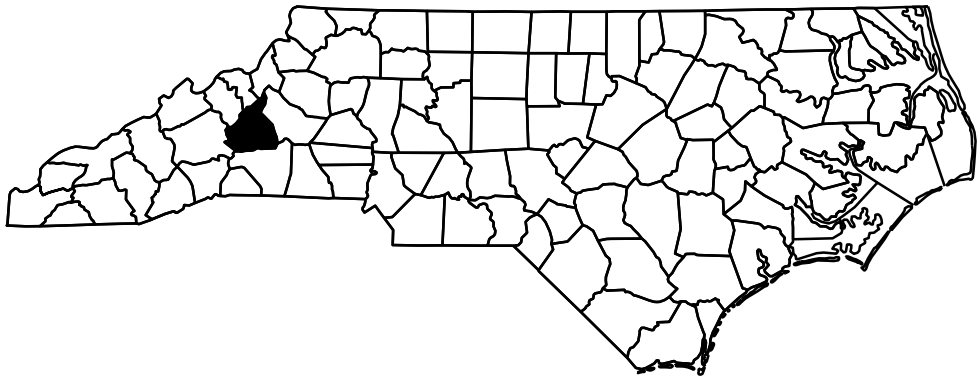
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

MCDOWELL COUNTY

LOCATION: NC 80 FROM MILE POST 11.72
TO MILE POST 10.87

TYPE OF WORK: PAVING, GUARDRAIL, AND ROCK EMBANKMENTS

STATE	STATE PROJECT REFERENCE NO.		SHEET NO.	TOTAL SHEETS
N.C.	18313.1059065		1	
STATE PROJ. NO.	F. A. PROJ. NO.		DESCRIPTION	
18313.1059123			CONST.	
18313.1059122			CONST.	
18313.1059121			CONST.	
18313.1059120			CONST.	
18313.1059119			CONST.	
18313.1059118			CONST.	
18313.1059065			CONST.	



BEGIN PROJECT 18313.1059065
-EL- MILE POST 11.72

END PROJECT 18313.1059065
-EL- MILE POST 10.87

GRAPHIC SCALES



PLANS

Prepared In the Office of:
DIVISION OF HIGHWAYS
55 ORANAGE ST. ASHEVILLE, NC 28801

2024 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:

LETTING DATE:
MARCH 19, 2025

PROJECT ENGINEER

PROJECT DESIGN ENGINEER

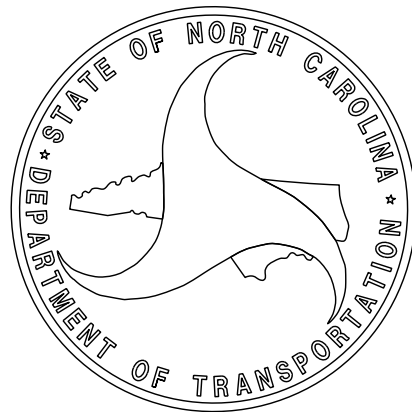
HYDRAULICS ENGINEER

SIGNATURE: P.E.

ROADWAY DESIGN
ENGINEER

SIGNATURE: P.E.

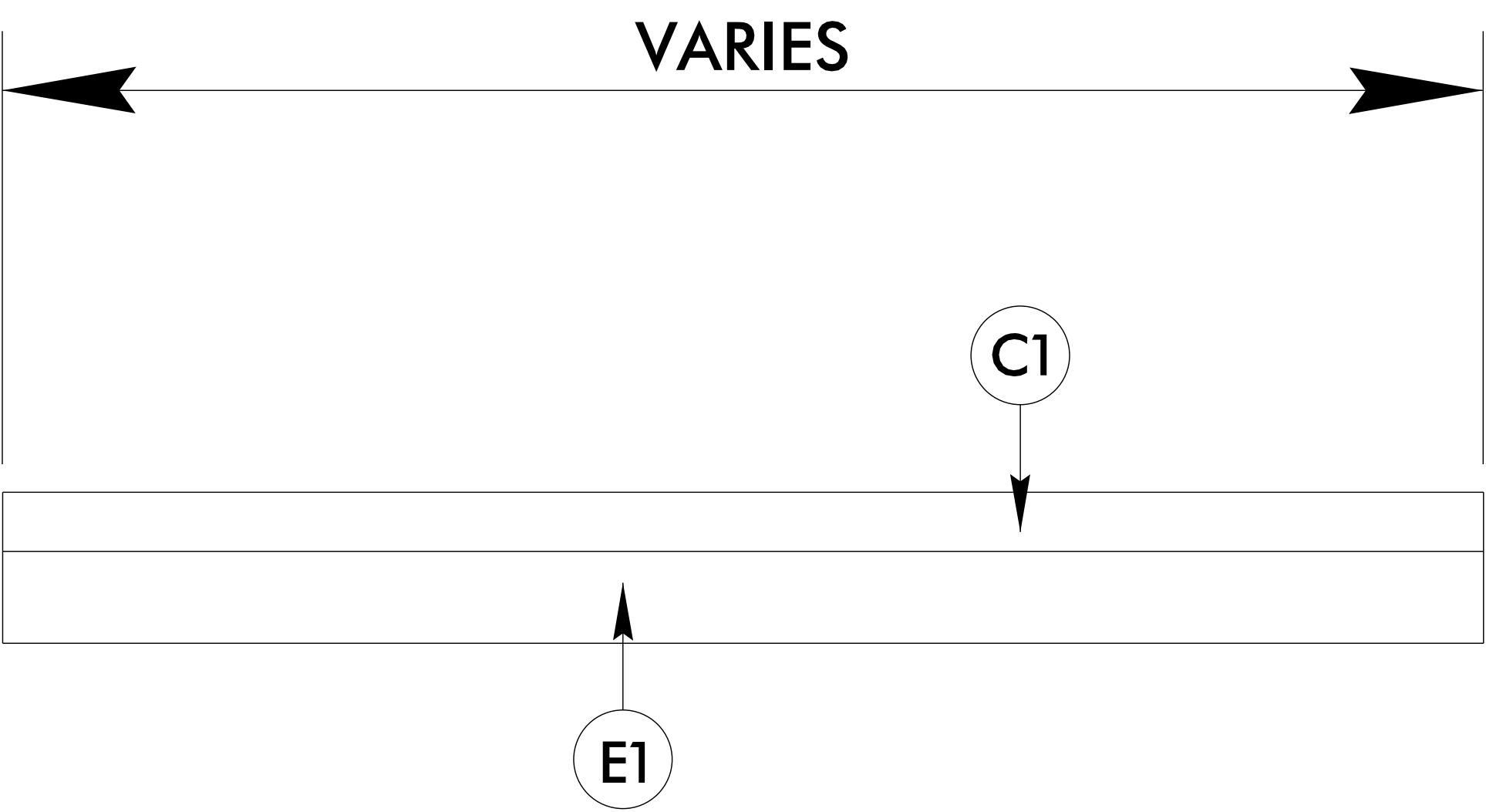
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6/2/99

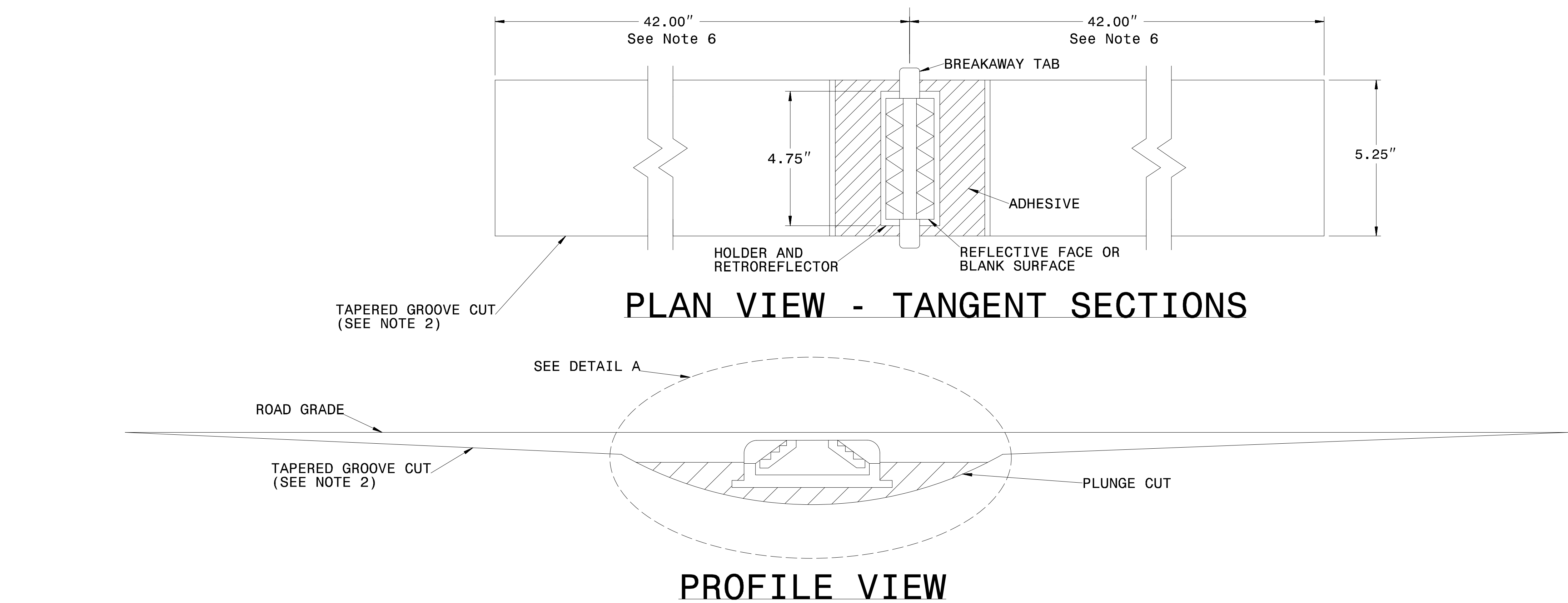
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PROJECT REFERENCE NO.		SHEET NO.
18313.1059065		2A-1
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER	
	<div><div><div>Professional Seal</div><div>Seal</div><div>024964</div><div>Joseph T. Holland</div><div>7198538196ED44E...</div></div><div>Signature</div></div>	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED		



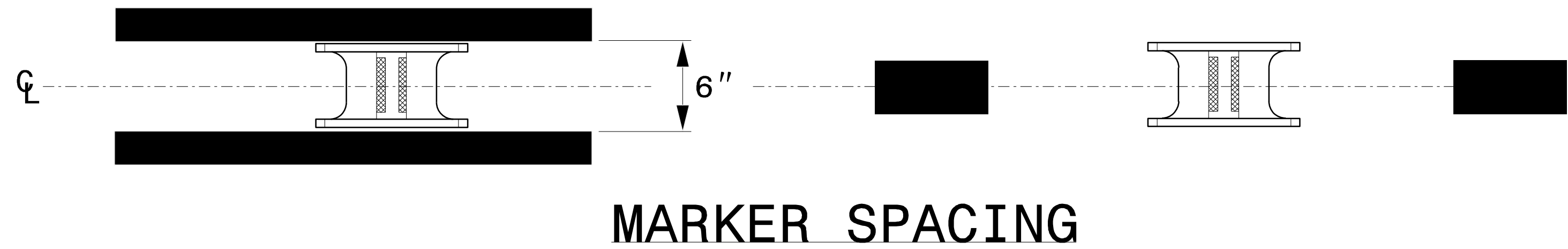
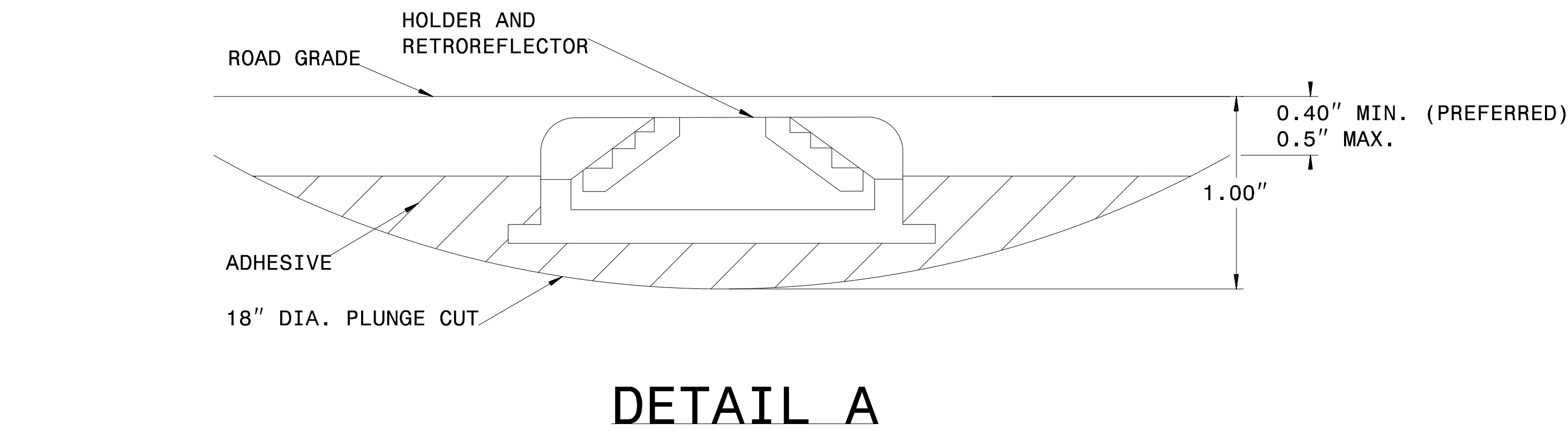
TYPICAL SECTION NO. 1

ITEM NO.	DESCRIPTION
C1	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 336 LBS. PER SQ. YARD
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.



NOTES:

1. ALL GROOVE EDGES SHALL BE AT LEAST 2 INCHES FROM ANY SEAM OR PAVEMENT JOINT
2. GROOVE CUTS MAY BE TAPERED OR BEVELED. TAPERED CUTS SHALL START AT ROAD LEVEL ON EACH END AND TAPER AT A FIXED RATE AS SHOWN ON THE PROFILE VIEW. BEVELED GROOVE CUTS SHALL BE 0.5" MAXIMUM DEPTH (0.4" PREFERRED), AND SHALL BE 0.4" MINIMUM DEPTH AT BOTH ENDS OF THE PLUNGE CUT.
3. GROOVE AND PLUNGE CUT SHALL BE CLEAN AND DRY PRIOR TO PLACEMENT OF ADHESIVE.
4. THE EPOXY ADHESIVE SHALL BE THOROUGHLY MIXED UNTIL IT IS UNIFORM IN COLOR, AND APPLIED IN COLOR, AND APPLIED IN ACCORDANCE WITH THE MANUFACTURER'S INSTALLATION INSTRUCTIONS.
5. MARKER SHALL BE INSTALLED AS PER MANUFACTURER'S INSTALLATION INSTRUCTIONS WITH THE BREAKWAY TABS RESTING ON THE PAVEMENT SURFACE. THE EPOXY SHALL BE FILLED TO THE LEVEL OF THE TOP OF THE MARKER HOLDER. EPOXY SHALL NOT TOUCH THE RETROREFELCTOR.
6. TOTAL GROOVE LENGTH MAY BE SHORTENED TO 54" ON SHARP CURVES IF APPROVED BY THE ENGINEER. GROOVES SHALL NOT OVERLAP WITH LOOP DETECTOR WIRES.



6/2/99

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CONTRACT: DM00477

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



Signed by: J. Dean Hardister 03/05/2025
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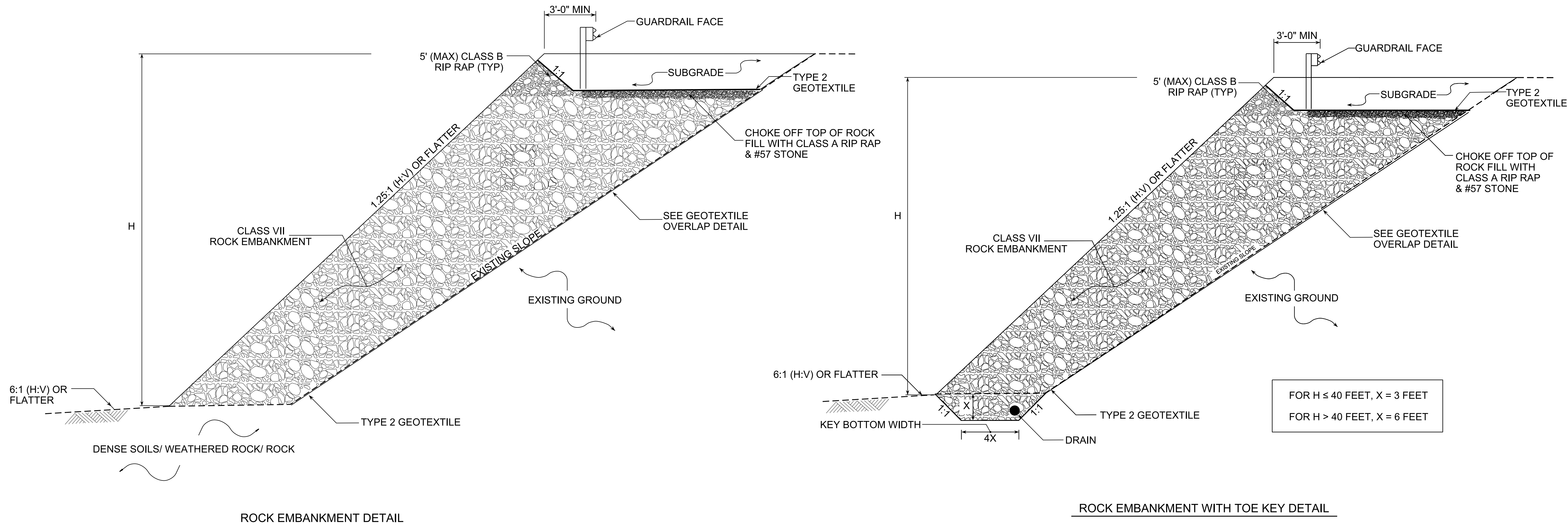
HELENE EMERGENCY REPAIRS

COUNTY: McDOWELL
PROJECT DESCRIPTION: 7 REPAIR SITES ON NC 80

ROUTE	SITE #	WBS ELEMENT	RECOMMENDED REPAIR #1	RECOMMENDED REPAIR #2
NC 80	37	18313.1059065	1.25:1 ROCK EMBANKMENT + MICROPILE KNEE WALL	
NC 80	38	18313.1059118	1.25:1 ROCK EMBANKMENT with TOE KEY	1.25:1 ROCK EMBANKMENT
NC 80	39	18313.1059119	1.25:1 ROCK EMBANKMENT + MICROPILE KNEE WALL	
NC 80	40	18313.1059120	1.25:1 ROCK EMBANKMENT with TOE KEY	1.25:1 ROCK EMBANKMENT
NC 80	41	18313.1059121	1.25:1 ROCK EMBANKMENT with TOE KEY	1.25:1 ROCK EMBANKMENT
NC 80	43	18313.1059122	1.25:1 ROCK EMBANKMENT with TOE KEY	1.25:1 ROCK EMBANKMENT
NC 80	44	18313.1059123	1.25:1 ROCK EMBANKMENT with TOE KEY	1.25:1 ROCK EMBANKMENT

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



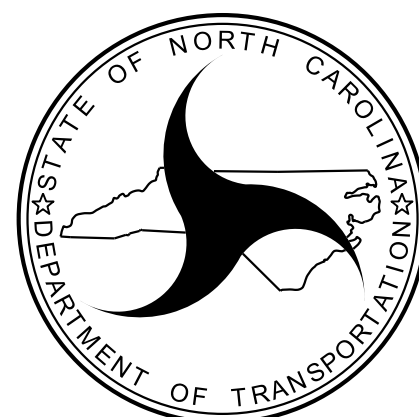
NOTES:

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.
3. FOR ROCK PLATING, SEE SECTION 275 OF THE STANDARD SPECIFICATIONS.
4. FOR MICROPILE KNEE WALL, SEE MICROPILE AND KNEE WALL DETAILS AND PROVISIONS.

CONTRACT NO.: DM00477

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

DO NOT USE THESE DETAILS UNLESS
DIRECTED BY THE ENGINEER

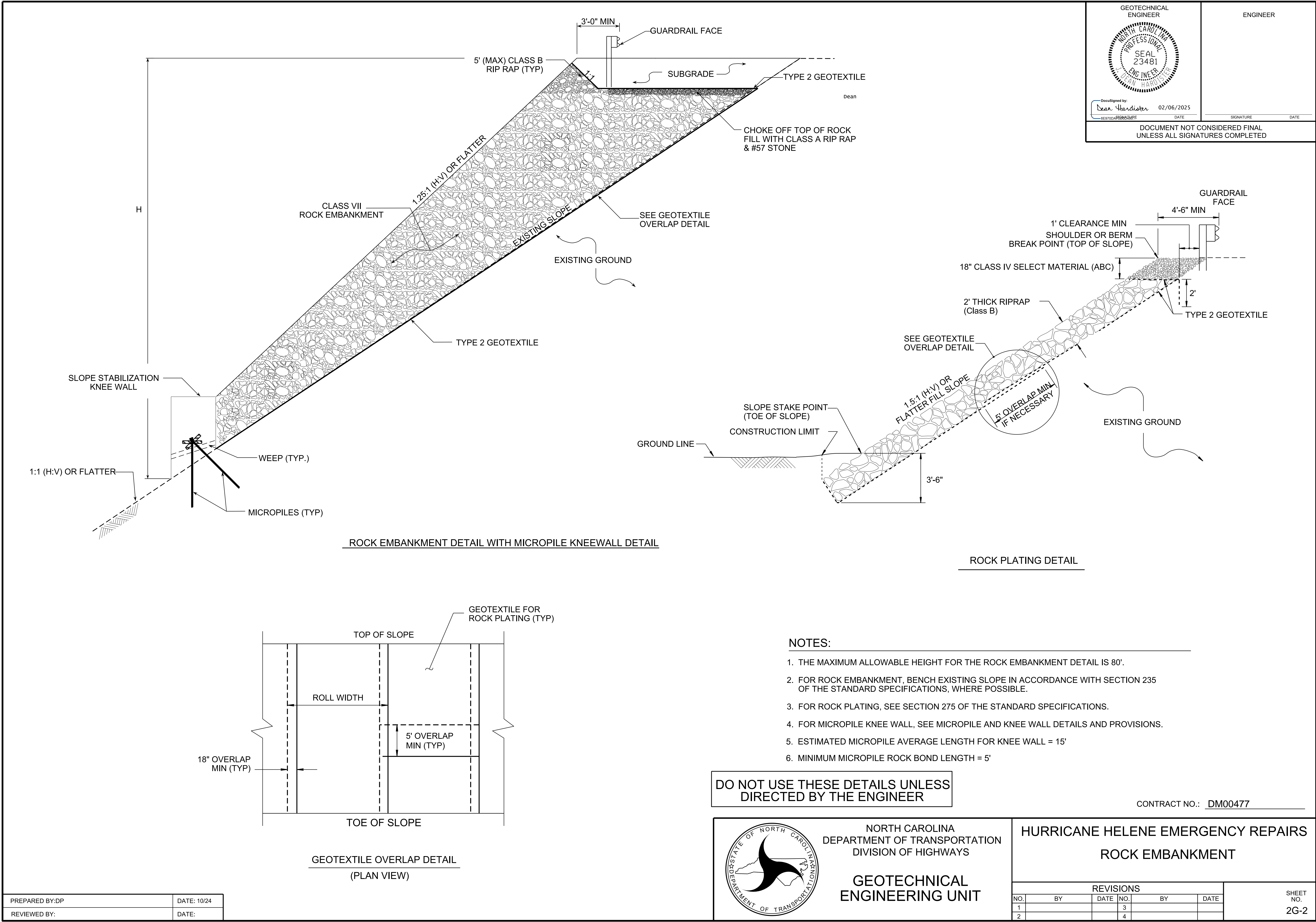


NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

GEOTECHNICAL
ENGINEERING UNIT

HURRICANE HELENE EMERGENCY REPAIRS
ROCK EMBANKMENT

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



GEOTECHNICAL
ENGINEER

DocuSigned by:
Dean Hardister 02/06/2025

SIGNATURE DATE

ENGINEER

SIGNATURE DATE

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

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

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

GEOTECHNICAL
ENGINEERING UNIT

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

HURRICANE HELENE EMERGENCY REPAIRS

ROCK EMBANKMENT

CONTRACT NO.: DM00477



NOTES

DESIGN ASSUMPTIONS:

- ANCHOR/VERTICAL MICROPILE LOAD OF 55 KIPS.
- VERTICAL LOAD OF 4.6 KIPS/SQFT.
- LATERAL LOAD OF 4.9 KIPS/SQFT.

INVERT ALTERNATE STIRRUPS AS SHOWN.

STIRRUPS MAY BE SHIFTED SLIGHTLY AS NECESSARY TO CLEAR MICROPILES.

FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE MCP
DETAILS.

BEARING PLATES SHALL BE GRADE 50 STEEL.

Diagram illustrating the dimensions of two types of reinforcement bars (Bar 1 and Bar 2) used in the construction of the concrete slab.

Bar 1 Dimensions:

- Width: 2'-6"
- Height: 3'-6"
- Ends: HK. (Hook)

Bar 2 Dimensions:

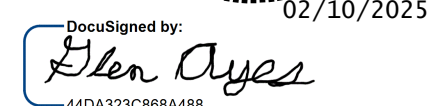
- Segment 1: 5 1/2"
- Segment 2: 2'-6"
- Segment 3: 5 1/2"
- Ends: HK. (Hook)

ALL BAR DIMENSIONS ARE OUT TO OUT

CONTRACT NO.: _____

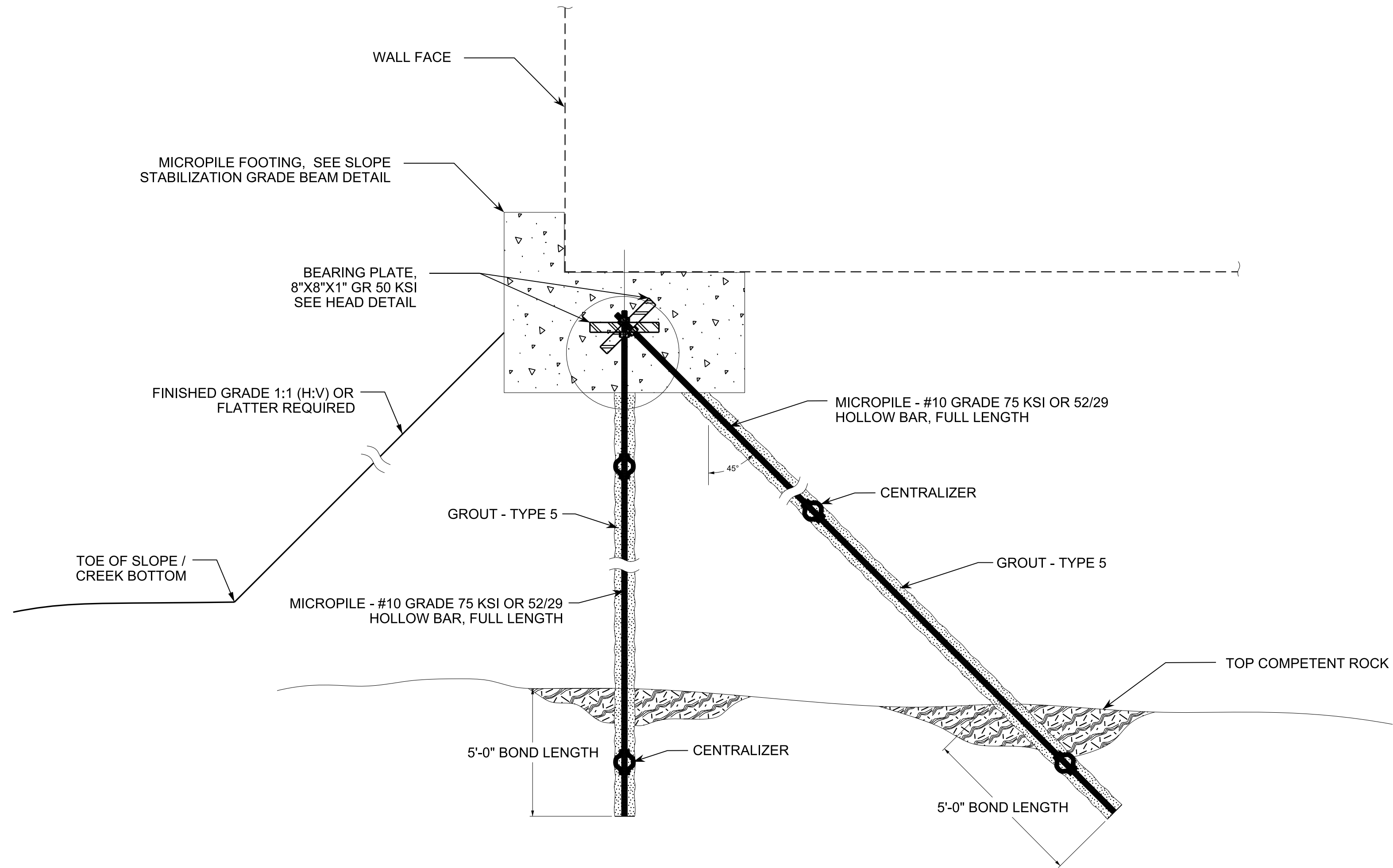
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SLOPE STABILIZATION KNEE WALL

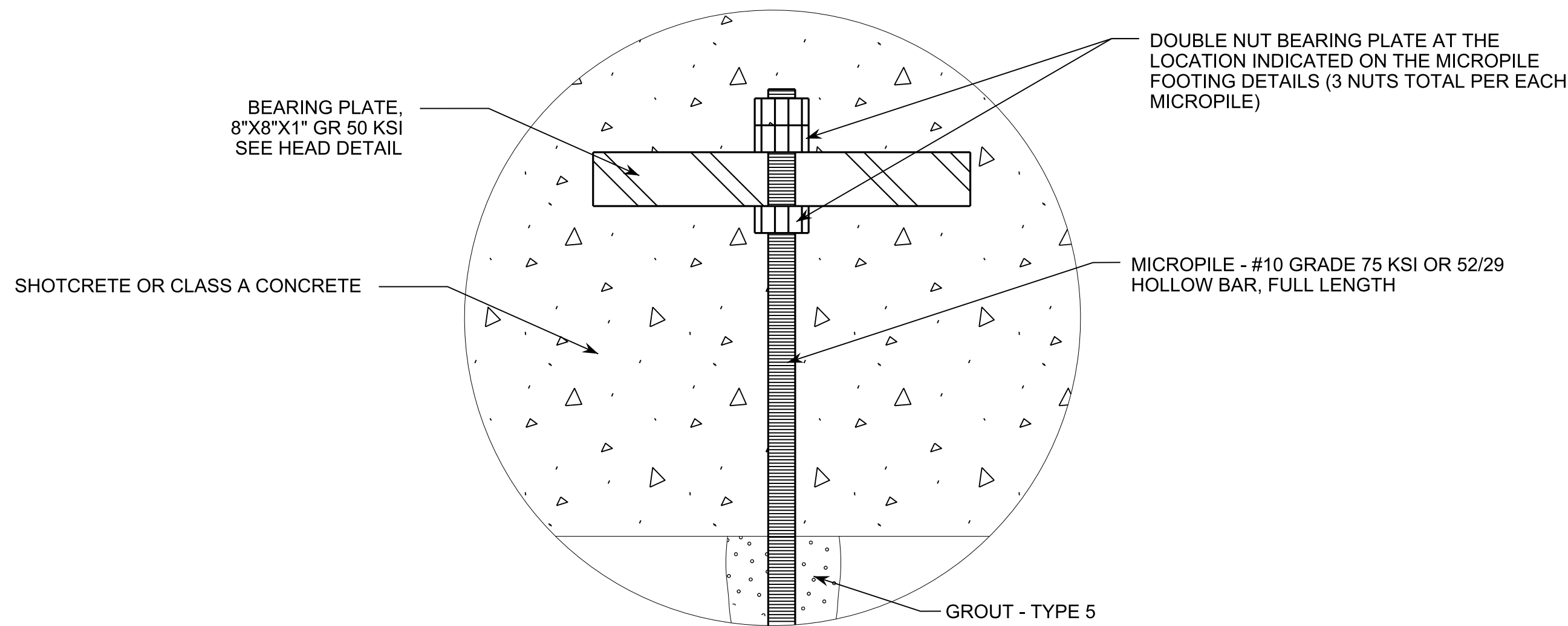


REVISIONS						SHEET NO.
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1			3			TOTAL SHEETS
2			4			

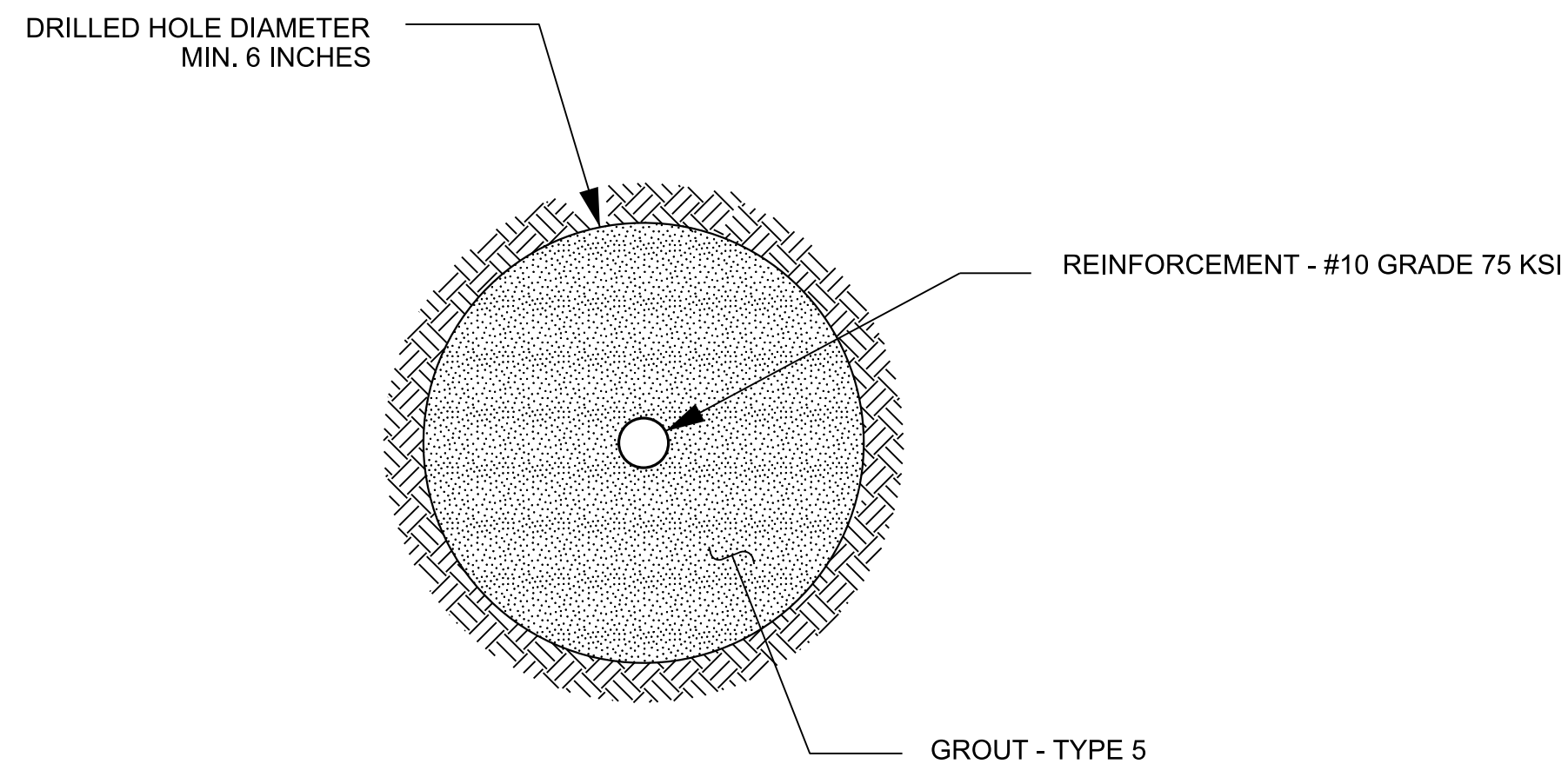
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MICROPILE DETAIL



MICROPILE HEAD DETAIL



MICROPILE SECTION

NOTES:

GENERAL NOTES:

1. THE MICROPILES HAVE BEEN DESIGNED IN GENERAL ACCORDANCE WITH AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS. THE MICROPILE FOUNDATIONS HAVE BEEN DESIGNED TO SUPPORT A LOAD OF 60 KIPS IN COMPRESSION AND TENSION.
2. LAYOUT OF THE PILES SHALL BE BY THE GENERAL CONTRACTOR. MICROPILE LAYOUT IS BASED ON PILE LOCATION AT THE BOTTOM OF THE MICROPILE CAP. GENERAL CONTRACTOR SHALL LAY OUT PILES BASED ON DRILLING ELEVATION SUCH THAT THE MICROPILE LOCATION WILL BE AT THE PLANNED LOCATION AT THE BOTTOM OF THE PILE CAP.

MATERIAL SPECIFICATIONS:

1. FOR MICROPILE USE TYPE 5 GROUT, SEE SECTION 1003 OF THE STANDARD SPECIFICATIONS.
2. PROVIDE STEEL PLATES THAT MEET ASTM A572 GRADE 50 KSI.
3. ALL THREAD MICROPILE REINFORCEMENT SHALL BE MINIMUM GRADE 75 KSI.
4. MICROPILE NUTS WILL BE MANUFACTURED BY THE BAR MANUFACTURER AND COMPATIBLE WITH THE BAR TYPE SPECIFIED.
5. CENTRALIZERS- PLASTIC, STAINLESS STEEL, OR OTHER NON-DELETERIOUS MATERIAL WHICH WILL MAINTAIN SHAPE AND LOCATION TO KEEP REINFORCEMENT BAR IN CENTRAL PORTION OF THE DRILL HOLE.

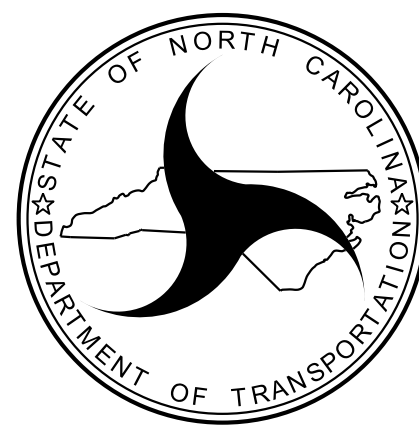
TYPICAL MICROPILE CONSTRUCTION SEQUENCE:

1. WHERE POSSIBLE LEVEL AREA OF MICROPILE FOOTING PRIOR TO DRILLING.
2. IF REQUIRED, INSTALL AND TEST PILES IN ACCORDANCE AASHTO GUIDLINES AS DIRECTED BY THE ENGINEER.
3. ROTARY FLUSH TEMPORARY CASING TO TOP OF ROCK USING AIR OR WATER AS FLUSHING MEDIUM. CARE SHALL BE TAKEN SO MINIMAL LOSS OF MATERIALS OUTSIDE THE THE TEMPORARY CASING OCCURS.
4. USE ROTARY PERCUSSIVE DRILLING TO DRILL ROCK SOCKET TO REQUIRED DEPTH. MINIMUM BOND LENGTH IS 5 FEET INTO COMPETENT ROCK, WITH A MINUMU OVERALL LENGTH OF AT LEAST 15 FT.
5. PLACE GROUT FOR MICROPILES BY TREMIE METHOD FROM BOTTOM OF THE HOLE.
6. FOR SOLID BAR MICROPILES, INSTALL CENTER CORE REINFORCEMENT STEEL (STEEL MAY BE PLACED PRIOR TO OR IMMEDIATELY AFTER GROUTING).
7. CUT TOPS OF PILES TO FINAL ELEVATION AND INSTALL PLATES. FOR MICROPILES AND MICROPILE FOOTING, SEE MICROPILE SLOPE STABILIZATION PROVISION.

CONTRACT NO.: DM00477

PREPARED BY:	DATE:
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					
MICROPILES					
REVISIONS					
NO.	BY	DATE	NO.	BY	DATE
1			3		
2			4		

SHEET NO.
2G-4

PROJECT NO.	SHEET NO.
18313.10592065, ETC.	38-1

SUMMARY OF QUANTITIES

				0022000000-E	0241000000-E	0314000000-E		0372000000-E	0378000000-E	0995000000-E	1099700000-E	1112000000-E	1491000000-E	1523000000-E	1575000000-E	2044000000-E	2077000000-E	3030000000-E	3287000000-N	3360000000-E	3420000000-E	3642000000-E	3649000000-E	3656000000-E
SITE NO	WBS	MILEPOST	SHOULDER LT/RT	UNCLASSIFIED EXCAVATION	GEOTEXTILE FOR ROCK EMBANKMENTS (TYPE 2)	SELECT MATERIAL, CLASS ***** (CLASS VI)	SELECT MATERIAL, CLASS ***** (CLASS VII)	18" RC PIPE CULVERTS, CLASS III	24" RC PIPE CULVERTS, CLASS III	PIPE REMOVAL	CLASS IV SUBGRADE STABILIZATION	GEOTEXTILE FOR SUBGRADE STABILIZATION	ASPHALT CONC BASE COURSE, TYPE B25.0C	ASPHALT CONC SURFACE COURSE, TYPE S9.5C	ASPHALT BINDER FOR PLANT MIX	6" PERFORATED SUBDRAIN PIPE	6" OUTLET PIPE	STEEL BEAM GUARDRAIL	GUARDRAIL END UNITS, TYPE TL-3	REMOVE EXISTING GUARDRAIL	STEEL BEAM GUARDRAIL, 2'-1" HEIGHT TRANSITION	RIP RAP, CLASS A	RIP RAP, CLASS B	GEOTEXTILE FOR DRAINAGE
				CY	SY	TON	TON	LF	LF	LF	TON	SY	TON	TON	TON	LF	LF	LF	EA	LF	LF	TON	TON	SY
NC 80 Site 37	18313.1059065	10.88	LT/RT	100	1,500	50	10,000				100	120	50	50	3	100	20	100		100	75	50	50	150
NC 80 Site 38	18313.1059118	10.98	LT/RT	3,000	1,000	50	9,000		60	60	350	200	125	50	3	250	50	250	2	250	75	50	50	300
NC 80 Site 39	18313.1059119	11.21	LT/RT	50	1,000	40	6,000				50	25	50	30	3			150	2	150	75	50	50	200
NC 80 Site 40	18313.1059120	11.26	LT/RT	50	400	25	1,500	40		40	20	20	30	30	3			200	2	200	75	50	50	
NC 80 Site 41	18313.1059121	11.31	LT/RT	400	2,500	50	10,000						30	30	3			365	2	365		50	50	
NC 80 Site 43	18313.1059122	11.54	LT/RT		500	25	1,500						20	20	2			100	2		75	50	50	
NC 80 Site 44	18313.1059123	11.71	LT/RT	50	1000	40	6,500				20	20	50	30	2			250	2	250	75	50	50	
GRAND TOTAL				3,650	7,900	280	44,500	40	60	100	540	385	355	240	19	350	70	1,415	12	1,315	450	350	350	650

NOTES: QUANTITIES ARE ESTIMATED AND MAY CHANGE ACCORDING TO ACTUAL FIELD CONDITIONS.
THE ENGINEER SHALL FIELD MARK ALL SITE LOCATIONS AND LIMITS PRIOR TO BEGINNING CONSTRUCTION AT EACH LOCATION.

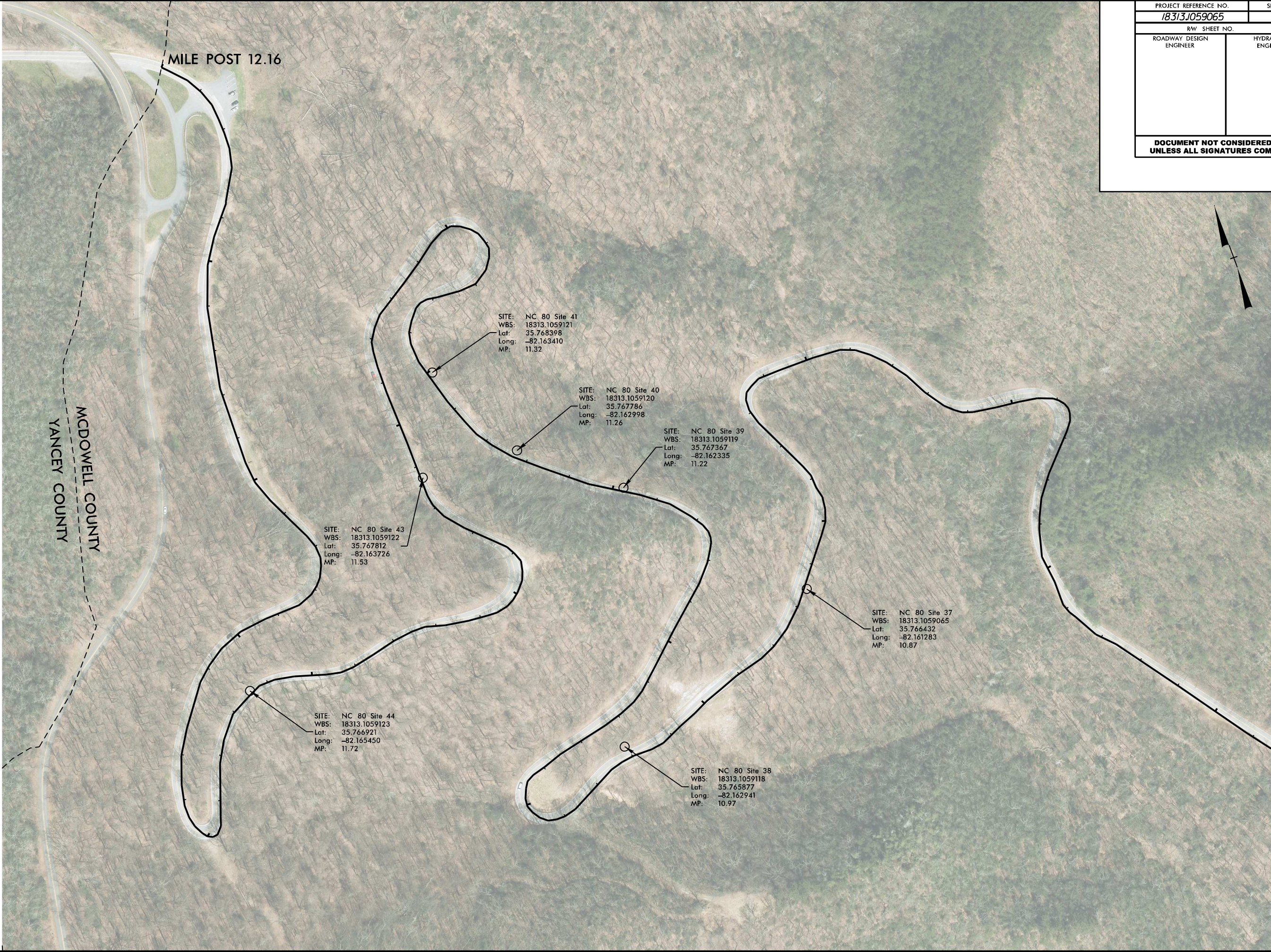
PROJECT NO.	SHEET NO.
18313.10592065, ETC.	3B-2

SUMMARY OF QUANTITIES

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SITE NO	WBS	MILEPOST	SHOULDER LT/RT	WORK ZONE SIGNS (STATIONARY)	WORK ZONE SIGNS (PORTABLE)	WORK ZONE SIGNS (BARRICADE MOUNTED)	BARRICADES (TYPE III)	PAINT PAVEMENT MARKING LINES (4", WHITE)	PAINT PAVEMENT MARKING LINES (4", YELLOW)	INLAID CRADLE MARKER	TEMPORARY SILT FENCE	SEDIMENT CONTROL STONE	MATTING FOR EROSION CONTROL	SEEDING & MULCHING	RESPONSE FOR EROSION CONTROL	SELECTIVE TREE REMOVAL, *** (13" TO 24.99")	SELECTIVE TREE REMOVAL, *** (25" TO 36.99")	SELECTIVE TREE REMOVAL, *** (37" TO 48.99")	SELECTIVE TREE REMOVAL, *** (6" TO 12.99")	VEGETATIVE DEBRIS REMOVAL AND DISPOSAL	REINFORCING STEEL (RETAINING WALL)	MICROPILE PROOF TESTS	MICROPILE, AVERAGE LENGTH	MICROPILE, ADDITIONAL LENGTH OVER AVERAGE	SHOTCRETE
				SF	SF	SF	SF	LF	LF	EA	LF	TON	SY	ACRE	EA					CY	LB	EA	EA	LF	CY
NC 80 Site 37	18313.1059065	10.88	LT/RT	88	88	35	96	500	500	2	200	20	200	0.5	1					100	5,300	1	50		40
NC 80 Site 38	18313.1059118	10.98	LT/RT					1,000	1,000	7	300		200	1	1	2	6	1	2	3000					
NC 80 Site 39	18313.1059119	11.21	LT/RT					500	500	4	200	25	200	0.25	1					15	2650	1	25	10	20
NC 80 Site 40	18313.1059120	11.26	LT/RT					1,000	1,000	7	200	30	200	0.25	1					25					
NC 80 Site 41	18313.1059121	11.31	LT/RT					1,600	1,600	5	300	50	200	0.5	1	10	4	2	12	300					
NC 80 Site 43	18313.1059122	11.54	LT/RT					500	500	3	200	25	200	1	1					25					
NC 80 Site 44	18313.1059123	11.71	LT/RT	88	88	35	96	500	500	3	250	25	200	0.25	1					30					
								5,600	5,600																
GRAND TOTAL				176	176	70	192	11,200		31	1,650	175	1,400	3.75	7	12	10	3	14	3,495	7,950	2	75	10	60

NOTES: QUANTITIES ARE ESTIMATED AND MAY CHANGE ACCORDING TO ACTUAL FIELD CONDITIONS.
THE ENGINEER SHALL FIELD MARK ALL SITE LOCATIONS AND LIMITS PRIOR TO BEGINNING CONSTRUCTION AT EACH LOCATION.

REVISIONS	



PROJECT REFERENCE NO.		SHEET NO.
18313.1059065		4
RW SHEET NO.		
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED		