

REFERENCE: I-2513AC

PROJECT: 34165

CONTENTS

SHEET NO.	DESCRIPTION
1	TITLE SHEET
2	LEGEND (SOIL & ROCK)
3	SITE PLAN
4	PROFILE
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8	SOIL TEST RESULTS

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

STRUCTURE
SUBSURFACE INVESTIGATION

COUNTY BUNCOMBE

PROJECT DESCRIPTION I-26I-40I-240 INTERCHANGE
TO SR 3548 (HAYWOOD ROAD)

SITE DESCRIPTION RETAINING WALL NO. 21
-WALL2I- STA. 10 + 01.00 (-Y3- STA. 28 + 48.16) TO
-WALL2I- STA. 11 + 07.47 (-Y3- 29 + 54.63)

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	I-2513AC	1	8

CAUTION NOTICE

THE SUBSURFACE INFORMATION AND THE SUBSURFACE INVESTIGATION ON WHICH IT IS BASED WERE MADE FOR THE PURPOSE OF STUDY, PLANNING AND DESIGN, AND NOT FOR CONSTRUCTION OR PAY PURPOSES. THE VARIOUS FIELD BORING LOGS, ROCK CORES AND SOIL TEST DATA AVAILABLE MAY BE REVIEWED OR INSPECTED IN RALEIGH BY CONTACTING THE N.C. DEPARTMENT OF TRANSPORTATION, GEOTECHNICAL ENGINEERING UNIT, AT (919) 707-6850. THE SUBSURFACE PLANS AND REPORTS, FIELD BORING LOGS, ROCK CORES AND SOIL TEST DATA ARE NOT PART OF THE CONTRACT.

GENERAL SOIL AND ROCK STRATA DESCRIPTIONS AND INDICATED BOUNDARIES ARE BASED ON A GEOTECHNICAL INTERPRETATION OF ALL AVAILABLE SUBSURFACE DATA AND MAY NOT NECESSARILY REFLECT THE ACTUAL SUBSURFACE CONDITIONS BETWEEN BORINGS OR BETWEEN SAMPLED STRATA WITHIN THE BOREHOLE. THE LABORATORY SAMPLE DATA AND THE IN SITU (IN-PLACE) TEST DATA CAN BE RELIED ON ONLY TO THE DEGREE OF RELIABILITY INHERENT IN THE STANDARD TEST METHOD. THE OBSERVED WATER LEVELS OR SOIL MOISTURE CONDITIONS INDICATED IN THE SUBSURFACE INVESTIGATIONS ARE AS RECORDED AT THE TIME OF THE INVESTIGATION. THESE WATER LEVELS OR SOIL MOISTURE CONDITIONS MAY VARY CONSIDERABLY WITH TIME ACCORDING TO CLIMATIC CONDITIONS INCLUDING TEMPERATURES, PRECIPITATION AND WIND, AS WELL AS OTHER NON-CLIMATIC FACTORS.

THE BIDDER OR CONTRACTOR IS CAUTIONED THAT DETAILS SHOWN ON THE SUBSURFACE PLANS ARE PRELIMINARY ONLY AND IN MANY CASES THE FINAL DESIGN DETAILS ARE DIFFERENT. FOR BIDDING AND CONSTRUCTION PURPOSES, REFER TO THE CONSTRUCTION PLANS AND DOCUMENTS FOR FINAL DESIGN INFORMATION ON THIS PROJECT. THE DEPARTMENT DOES NOT WARRANT OR GUARANTEE THE SUFFICIENCY OR ACCURACY OF THE INVESTIGATION MADE, NOR THE INTERPRETATIONS MADE, OR OPINION OF THE DEPARTMENT AS TO THE TYPE OF MATERIALS AND CONDITIONS TO BE ENCOUNTERED. THE BIDDER OR CONTRACTOR IS CAUTIONED TO PERFORM INDEPENDENT SUBSURFACE INVESTIGATIONS AND MAKE INTERPRETATIONS AS NECESSARY TO CONFIRM CONDITIONS ENCOUNTERED ON THE PROJECT. THE CONTRACTOR SHALL HAVE NO CLAIM FOR ADDITIONAL COMPENSATION OR FOR AN EXTENSION OF TIME FOR ANY REASON RESULTING FROM THE ACTUAL CONDITIONS ENCOUNTERED AT THE SITE DIFFERING FROM THOSE INDICATED IN THE SUBSURFACE INFORMATION.

NOTES:
1. THE INFORMATION CONTAINED HEREIN IS NOT IMPLIED OR GUARANTEED BY THE N.C. DEPARTMENT OF TRANSPORTATION AS ACCURATE NOR IS IT CONSIDERED PART OF THE PLANS, SPECIFICATIONS OR CONTRACT FOR THE PROJECT.
2. BY HAVING REQUESTED THIS INFORMATION, THE CONTRACTOR SPECIFICALLY WAIVES ANY CLAIMS FOR INCREASED COMPENSATION OR EXTENSION OF TIME BASED ON DIFFERENCES BETWEEN THE CONDITIONS INDICATED HEREIN AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

PERSONNEL
A. BLACKMORE
J. MESSICK

GEOLOGIC EXPLORATION

INVESTIGATED BY ECS SOUHTHEAST, LLC
DRAWN BY A. SUTTLE, P.G.
CHECKED BY M. MULLA
SUBMITTED BY ECS SOUTHEAST, LLC
DATE APRIL 2024

Prepared in the Office of:



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NC REGISTERED
ENGINEERING
FIRM # F-1519



Signed by: Amanda R. Suttle, P.G. 6/30/2026
BDAF14CESIGNATURE DATE

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

PROJECT REFERENCE NO.

I-2513AC

SHEET NO.

2

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

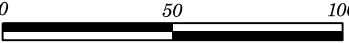
GEOTECHNICAL ENGINEERING UNIT

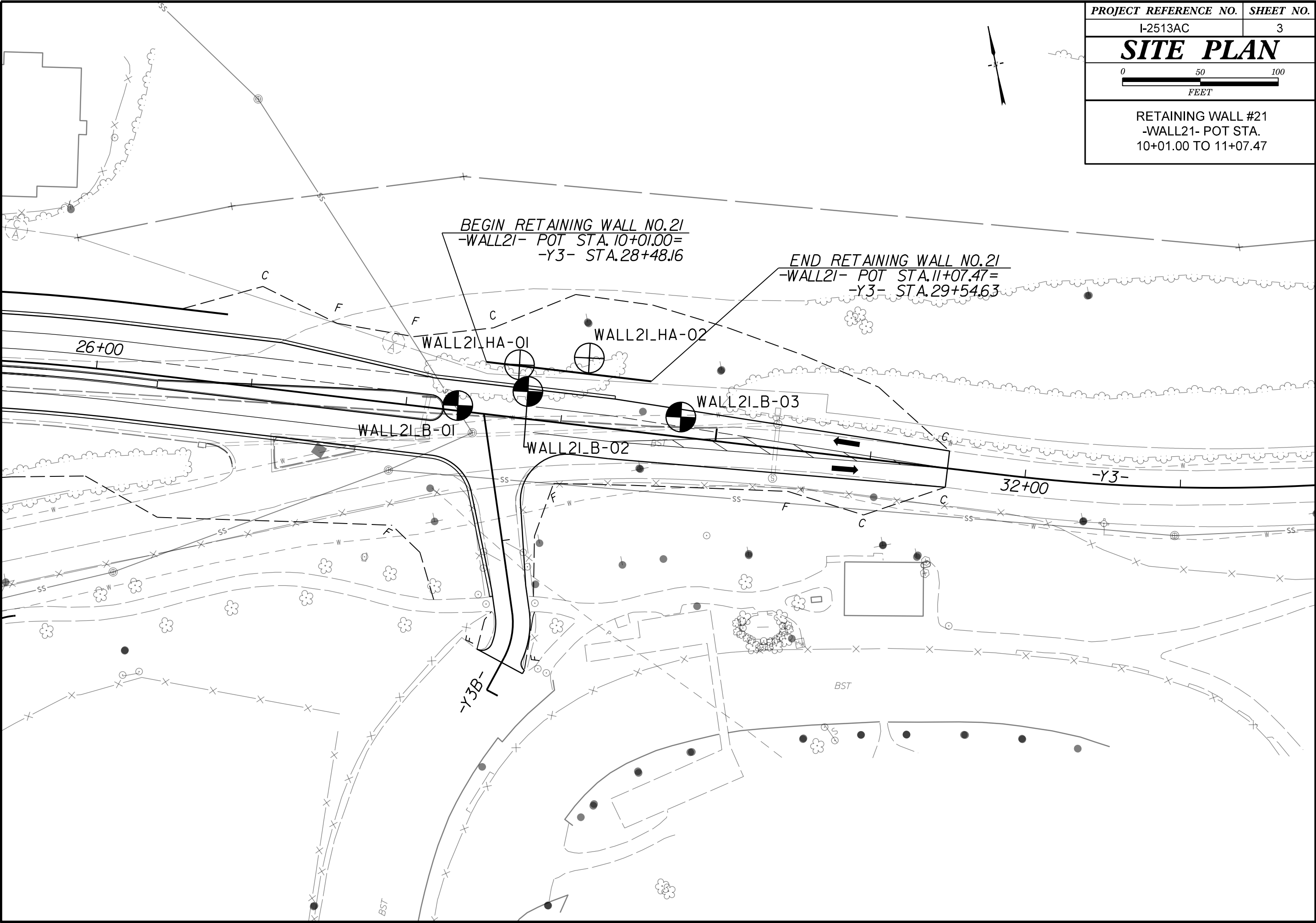
SUBSURFACE INVESTIGATION

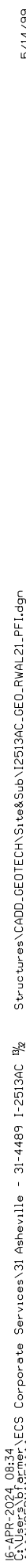
SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

SOIL DESCRIPTION										GRADATION										ROCK DESCRIPTION										TERMS AND DEFINITIONS									
SOIL IS CONSIDERED UNCONSOLIDATED, SEMI-CONSOLIDATED, OR WEATHERED EARTH MATERIALS THAT CAN BE PENETRATED WITH A CONTINUOUS FLIGHT POWER AUGER AND YIELD LESS THAN 100 BLOWS PER FOOT ACCORDING TO THE STANDARD PENETRATION TEST (AASHTO T 206, ASTM D1586). SOIL CLASSIFICATION IS BASED ON THE AASHTO SYSTEM. BASIC DESCRIPTIONS GENERALLY INCLUDE THE FOLLOWING: CONSISTENCY, COLOR, TEXTURE, MOISTURE, AASHTO CLASSIFICATION, AND OTHER PERTINENT FACTORS SUCH AS MINERALOGICAL COMPOSITION, ANGULARITY, STRUCTURE, PLASTICITY, ETC. FOR EXAMPLE, <i>VERY STIFF, GRAY, SILTY CLAY, MOIST WITH INTERBEDDED FINE SAND LAYERS, HIGHLY PLASTIC, A-7-6</i>										WELL GRADED - INDICATES A GOOD REPRESENTATION OF PARTICLE SIZES FROM FINE TO COARSE. UNIFORMLY GRADED - INDICATES THAT SOIL PARTICLES ARE ALL APPROXIMATELY THE SAME SIZE. GAP-GRADED - INDICATES A MIXTURE OF UNIFORM PARTICLE SIZES OF TWO OR MORE SIZES.										HARD ROCK IS NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT REFUSAL IF TESTED. AN INFERRED ROCK LINE INDICATES THE LEVEL AT WHICH NON-COASTAL PLAIN MATERIAL WOULD YIELD SPT REFUSAL. SPT REFUSAL IS PENETRATION BY A SPLIT SPOON SAMPLER EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS IN NON-COASTAL PLAIN MATERIAL. THE TRANSITION BETWEEN SOIL AND ROCK IS OFTEN REPRESENTED BY A ZONE OF WEATHERED ROCK. ROCK MATERIALS ARE TYPICALLY DIVIDED AS FOLLOWS:										ALLUVIUM (ALLUV.) - SOILS THAT HAVE BEEN TRANSPORTED BY WATER. AQUIFER - A WATER BEARING FORMATION OR STRATA. ARENACEOUS - APPLIED TO ROCKS THAT HAVE BEEN DERIVED FROM SAND OR THAT CONTAIN SAND. ARGILLACEOUS - APPLIED TO ALL ROCKS OR SUBSTANCES COMPOSED OF CLAY MINERALS, OR HAVING A NOTABLE PROPORTION OF CLAY IN THEIR COMPOSITION, SUCH AS SHALE, SLATE, ETC. ARTESIAN - GROUND WATER THAT IS UNDER SUFFICIENT PRESSURE TO RISE ABOVE THE LEVEL AT WHICH IT IS ENCOUNTERED, BUT WHICH DOES NOT NECESSARILY RISE TO OR ABOVE THE GROUND SURFACE. CALCAREOUS (CALC.) - SOILS THAT CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE. COLLUVIUM - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM OF SLOPE. CORE RECOVERY (REC.) - TOTAL LENGTH OF ALL MATERIAL RECOVERED IN THE CORE BARREL DIVIDED BY TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE. DIKE - A TABULAR BODY OF IGNEOUS ROCK THAT CUTS ACROSS THE STRUCTURE OF ADJACENT ROCKS OR CUTS MASSIVE ROCK. DIP - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE HORIZONTAL. DIP DIRECTION (DIP AZIMUTH) - THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF THE LINE OF DIP, MEASURED CLOCKWISE FROM NORTH. FAULT - A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE. FISSILE - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES. FLOAT - ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLODGED FROM PARENT MATERIAL. FLOOD PLAIN (FP) - LAND BORDERING A STREAM, BUILT OF SEDIMENTS DEPOSITED BY THE STREAM. FORMATION (FM) - A MAPPABLE GEOLOGIC UNIT THAT CAN BE RECOGNIZED AND TRACED IN THE FIELD. JOINT - FRACTURE IN ROCK ALONG WHICH NO APPRECIABLE MOVEMENT HAS OCCURRED. LEDGE - A SHELF-LIKE RIDGE OR PROJECTION OF ROCK WHOSE THICKNESS IS SMALL COMPARED TO ITS LATERAL EXTENT. LENS - A BODY OF SOIL OR ROCK THAT THINS OUT IN ONE OR MORE DIRECTIONS. MOTTLED (MOT.) - IRREGULARLY MARKED WITH SPOTS OF DIFFERENT COLORS. MOTTLING IN SOILS USUALLY INDICATES POOR AERATION AND LACK OF GOOD DRAINAGE. PERCHED WATER - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE OF AN INTERVENING IMPERVIOUS STRATUM. RESIDUAL (RES.) SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK. ROCK QUALITY DESIGNATION (RQD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE. SAPROLITE (SAP.) - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT ROCK. SILL - AN INTRUSIVE BODY OF IGNEOUS ROCK OF APPROXIMATELY UNIFORM THICKNESS AND RELATIVELY THIN COMPARED WITH ITS LATERAL EXTENT, THAT HAS BEEN EMPLACED PARALLEL TO THE BEDDING OR SCHISTOSITY OF THE INTRUDED ROCKS. SLICKENSIDE - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT OR SLIP PLANE. STANDARD PENETRATION TEST (PENETRATION RESISTANCE) (SPT) - NUMBER OF BLOWS (N OR BPF) OF A 140 LB. HAMMER FALLING 30 INCHES REQUIRED TO PRODUCE A PENETRATION OF 1 FOOT INTO SOIL WITH A 2 INCH OUTSIDE DIAMETER SPLIT SPOON SAMPLER. SPT REFUSAL IS PENETRATION EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS. STRATA CORE RECOVERY (ISRC) - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE. STRATA ROCK QUALITY DESIGNATION (SRQD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS WITHIN A STRATUM EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF STRATA AND EXPRESSED AS A PERCENTAGE. TOPSOIL (TS.) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.									
SOIL LEGEND AND AASHTO CLASSIFICATION										MINERALOGICAL COMPOSITION										WEATHERING																			
GENERAL CLASS.										MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC. ARE USED IN DESCRIPTIONS WHEN THEY ARE CONSIDERED OF SIGNIFICANCE.										FRESH																			
GROUP CLASS.										COMPRESSIBILITY										CRYSTALLINE ROCK (CR)																			
SYMBOL										PERCENTAGE OF MATERIAL										NON-CRYSTALLINE ROCK (NCR)																			
% PASSING										GROUND WATER										COASTAL PLAIN SEDIMENTARY ROCK (CP)																			
MATERIAL										MISCELLANEOUS SYMBOLS										VERY SLIGHT (V SL.)																			
GROUP INDEX										RECOMMENDATION SYMBOLS										SLIGHT (SL.)																			
USUAL TYPES OF MAJOR MATERIALS										ABBREVIATIONS										MODERATE (MOD.)																			
GEN. RATING AS SUBGRADE										EQUIPMENT USED ON SUBJECT PROJECT										SEVERE (SEV.)																			
PI OF A-7-5 SUBGROUP IS ≤ LL - 30 ; PI OF A-7-6 SUBGROUP IS > LL - 30																				SEVERE (SEV.)																			
CONSISTENCY OR DENSENESS																				VERY SEVERE (IV SEV.)																			
PRIMARY SOIL TYPE																				COMPLETE																			
GENERALITY GRANULAR MATERIAL (NON-COHESIVE)																				ROCK HARDNESS																			
GENERALITY SILT-CLAY MATERIAL (COHESIVE)																																							
TEXTURE OR GRAIN SIZE																																							
U.S. STD. SIEVE SIZE OPENING (MM)																																							
BOULDER (BLDR.)																																							
GRAIN SIZE																																							
SOIL MOISTURE - CORRELATION OF TERMS																																							
SOIL MOISTURE SCALE (ATTERBERG LIMITS)																																							
FIELD MOISTURE DESCRIPTION																																							
GUIDE FOR FIELD MOISTURE DESCRIPTION																																							
LL - LIQUID LIMIT																																							
PL - PLASTIC LIMIT																																							
OM - OPTIMUM MOISTURE																																							
SL - SHRINKAGE LIMIT																																							
PLASTICITY																																							
NON PLASTIC																																							
SLIGHTLY PLASTIC																																							
MODERATELY PLASTIC																																							
HIGHLY PLASTIC																																							
COLOR																																							
DESCRIPTIONS MAY INCLUDE COLOR OR COLOR COMBINATIONS (TAN, RED, YELLOW-BROWN, BLUE-GRAY). MODIFIERS SUCH AS LIGHT, DARK, STREAKED, ETC. ARE USED TO DESCRIBE APPEARANCE.																																							

DATE: 8-15-14

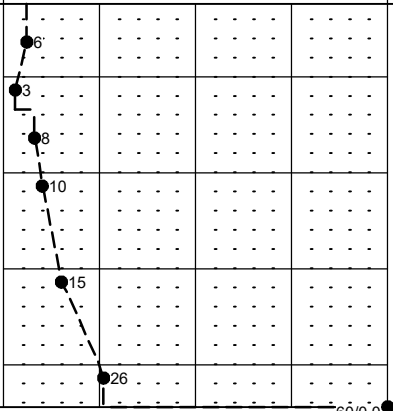
PROJECT REFERENCE NO.	SHEET NO.
I-2513AC	3
SITE PLAN	
 FEET	
RETAINING WALL #21 -WALL21- POT STA. 10+01.00 TO 11+07.47	





GEOTECHNICAL BORING REPORT

BORE LOG

WBS			34165.1.13			TIP			I-2513AC			COUNTY			BUNCOMBE			GEOLOGIST			A. Blackmore																																
SITE DESCRIPTION																		I-26/I-40/I-240 Interchange to SR 3548 (Haywood Road)																		GROUND WTR (ft)																	
BORING NO.						WALL21_B-01						STATION						9+86						OFFSET						30 ft RT						ALIGNMENT						-WALL21-						0 HR.		10.2			
COLLAR ELEV.						1,983.8 ft						TOTAL DEPTH						21.0 ft						NORTHING						680,503						EASTING						935,012						24 HR.		FIAD			
DRILL RIG/HAMMER EFF./DATE												GEO047 Diedrich D-70 90% 02/09/2024												DRILL METHOD						H.S. Augers						HAMMER TYPE						Automatic											
DRILLER						J. Messick						START DATE						01/31/24						COMP. DATE						01/31/24						SURFACE WATER DEPTH												N/A					
ELEV (ft)		DRIVE ELEV (ft)		DEPTH (ft)		BLOW COUNT			BLOWS PER FOOT															SAMP. NO.		MOI		LOG		SOIL AND ROCK DESCRIPTION																							
						0.5ft 0.5ft 0.5ft			0 25 50 75 100																					ELEV. (ft) DEPTH (ft)																							
1985																																																					
		1,982.8		1.0		4 4 2																								1,983.8 GROUND SURFACE 0.0																							
1980		1,980.3		3.5		2 2 1																				M				ROADWAY EMBANKMENT Soft to Medium Stiff, Brown, Fine to Coarse Sandy CLAY (A-6)																							
		1,977.8		6.0		3 3 5																				M				1,978.3 5.5																							
1975		1,975.3		8.5		7 4 6																				M				RESIDUAL Loose to Medium Dense, Brown-Gray to Tan-Brown, Clayey Fine to Coarse SAND (A-2-6)																							
		1,970.3		13.5		10 8 7																				M				1,970.8 13.0																							
1970		1,970.3		13.5		10 8 7																				M				Medium Dense, Brown, Silty Fine to Coarse SAND (A-2-4), with trace mica																							
1965		1,965.3		18.5		6 4 22																				M				1,970.8 13.0																							
		1,962.8		21.0		60/0.0			60/0.0																	M				1,962.8 21.0																							
																														Boring Terminated with Standard Penetration Test Refusal at Elevation 1,962.8 ft On Crystalline Rock (GNEISS)																							

[illegible]

NC DOT BORE DOUBLE I2513AC_GEO_GTM.GPJ NC_DOT.GDT 4/16/24

WBS 34165.1.13			TIP I-2513AC			COUNTY BUNCOMBE			GEOLOGIST A. Blackmore				
SITE DESCRIPTION I-26/I-40/I-240 Interchange to SR 3548 (Haywood Road)									GROUND WTR (ft)				
BORING NO. WALL21_HA-01			STATION 10+22			OFFSET 1 ft LT			ALIGNMENT -WALL21-			0 HR. Dry	
COLLAR ELEV. 1,993.3 ft			TOTAL DEPTH 7.0 ft			NORTHING 680,521			EASTING 935,056			24 HR. FIAD	
DRILL RIG/HAMMER EFF./DATE GEO047 Diedrich D-70 90% 02/09/2024						DRILL METHOD Hand Auger			HAMMER TYPE N/A				
DRILLER N/A			START DATE 02/09/24			COMP. DATE 02/09/24			SURFACE WATER DEPTH N/A				
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION
			0.5ft	0.5ft	0.5ft	0	25	50	75	100			
1995													
	1,993.3	0.0											1,993.3 GROUND SURFACE 0.0
	1,992.3	1.0	N/A	2	2	4					M		RESIDUAL
	1,991.3	2.0	N/A	2	2	4					M		Soft to Medium Stiff, Red-Brown, Fine to Coarse Sandy CLAY (A-6)
	1,990.3	3.0	N/A	2	3	5					M		1,989.3 4.0
	1,989.3	4.0	N/A	3	3	6					M		Medium Stiff, Brown-Tan, Fine to Coarse Sandy SILT (A-4)
1,988.3	5.0	N/A	3	4	7					M	1,986.3 7.0		
1990	1,987.3	6.0	N/A	3	4	7					M		Boring Terminated at Elevation 1,986.3 ft In Residual Sandy SILT (A-4)
			N/A	3	4	7							

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 34165.1.13			TIP I-2513AC			COUNTY BUNCOMBE			GEOLOGIST A. Blackmore							
SITE DESCRIPTION I-26/I-40/I-240 Interchange to SR 3548 (Haywood Road)									GROUND WTR (ft)							
BORING NO. WALL21_HA-02			STATION 10+66			OFFSET 10 ft LT			ALIGNMENT -WALL21-			0 HR. Dry				
COLLAR ELEV. 1,996.8 ft			TOTAL DEPTH 7.0 ft			NORTHING 680,516			EASTING 935,101			24 HR. FIAD				
DRILL RIG/HAMMER EFF./DATE GE0047 Diedrich D-70 90% 02/09/2024						DRILL METHOD Hand Auger			HAMMER TYPE N/A							
DRILLER N/A			START DATE 02/09/24			COMP. DATE 02/09/24			SURFACE WATER DEPTH N/A							
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	L O G	SOIL AND ROCK DESCRIPTION	ELEV. (ft)	DEPTH (ft)
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
2000																
1995	1,996.8	0.0													1,996.8	GROUND SURFACE 0.0
	1,995.8	1.0	N/A	1	2	3	- - -	- - - -	- - - -	- - - -		M				
	1,994.8	2.0	N/A	3	3	6	- - -	- - - -	- - - -	- - - -		M		RESIDUAL		
	1,993.8	3.0	N/A	3	3	6	- - -	- - - -	- - - -	- - - -		M		Soft to Medium Stiff, Red-Brown, Fine to Coarse Sandy CLAY (A-6)		
	1,992.8	4.0	N/A	3	3	6	- - -	- - - -	- - - -	- - - -		M		1,992.3 4.5		
1,991.8	5.0	N/A	3	4	7	- - -	- - - -	- - - -	- - - -		M	Medium Stiff to Stiff, Brown-Tan, Fine to Coarse Sandy SILT (A-4)				
1990	1,990.8	6.0	N/A	3	4	7	- - -	- - - -	- - - -	- - - -		M		1,989.8	7.0	Boring Terminated at Elevation 1,989.8 ft In Residual Sandy SILT (A-4)
			N/A	4	4	8	- - -	- - - -	- - - -	- - - -						

NCDOT BORE DOUBLE I2513AC_GEO_GTM.GPJ NC_DOT.GDT 4/16/24

SOIL TEST RESULTS															
BORING NO.	SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE
								C. SAND	F. SAND	SILT	CLAY	10	40	200	
WALL21_B-02	SS-1052	16' RT	-WALL21- 10+30	0.0-1.5	A-2-7(0)	45	13	47.1	20.7	21.0	11.3	71.5	43.9	26.4	21.5
															-

LAB TECHNICIAN: DANIEL REEVE

NCDOT CERTIFICATION NO. 135-03-0816

REFERENCE: I-2513AC

PROJECT: 34165

CONTENTS

<u>SHEET NO.</u>	<u>DESCRIPTION</u>
1	TITLE SHEET
2	LEGEND (SOIL & ROCK)
3	SITE PLAN
4 - 5	PROFILES
6 - 14	BORE LOGS

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

STRUCTURE
SUBSURFACE INVESTIGATION

COUNTY BUNCOMBE
PROJECT DESCRIPTION I-26 CONNECTOR (I-40 TO
US 19 – US 23 – US 70 NORTH TO ASHEVILLE)
SITE DESCRIPTION MSE WALL-24 AT STA. 103 + 59.17 TO
STA. 105 + 42.05 –L– & WALL-25 AT STA. 107 + 42.50 TO
STA. 106 + 41.61 –L– ON I-26 /I-240 OVER STATE STREET
BETWEEN SR 3556 (AMBOY ROAD) AND US 23
BUSINESS (HAYWOOD ROAD)

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	I-2513AC	1	14

CAUTION NOTICE

THE SUBSURFACE INFORMATION AND THE SUBSURFACE INVESTIGATION ON WHICH IT IS BASED WERE MADE FOR THE PURPOSE OF STUDY, PLANNING AND DESIGN, AND NOT FOR CONSTRUCTION OR PAY PURPOSES. THE VARIOUS FIELD BORING LOGS, ROCK CORES AND SOIL TEST DATA AVAILABLE MAY BE REVIEWED OR INSPECTED IN RALEIGH BY CONTACTING THE N.C. DEPARTMENT OF TRANSPORTATION, GEOTECHNICAL ENGINEERING UNIT, AT (919) 707-6850. THE SUBSURFACE PLANS AND REPORTS, FIELD BORING LOGS, ROCK CORES AND SOIL TEST DATA ARE NOT PART OF THE CONTRACT.

GENERAL SOIL AND ROCK STRATA DESCRIPTIONS AND INDICATED BOUNDARIES ARE BASED ON A GEOTECHNICAL INTERPRETATION OF ALL AVAILABLE SUBSURFACE DATA AND MAY NOT NECESSARILY REFLECT THE ACTUAL SUBSURFACE CONDITIONS BETWEEN BORINGS OR BETWEEN SAMPLED STRATA WITHIN THE BOREHOLE. THE LABORATORY SAMPLE DATA AND THE IN SITU (IN-PLACE) TEST DATA CAN BE RELIED ON ONLY TO THE DEGREE OF RELIABILITY INHERENT IN THE STANDARD TEST METHOD. THE OBSERVED WATER LEVELS OR SOIL MOISTURE CONDITIONS INDICATED IN THE SUBSURFACE INVESTIGATIONS ARE AS RECORDED AT THE TIME OF THE INVESTIGATION. THESE WATER LEVELS OR SOIL MOISTURE CONDITIONS MAY VARY CONSIDERABLY WITH TIME ACCORDING TO CLIMATIC CONDITIONS INCLUDING TEMPERATURES, PRECIPITATION AND WIND, AS WELL AS OTHER NON-CLIMATIC FACTORS.

THE BIDDER OR CONTRACTOR IS CAUTIONED THAT DETAILS SHOWN ON THE SUBSURFACE PLANS ARE PRELIMINARY ONLY AND IN MANY CASES THE FINAL DESIGN DETAILS ARE DIFFERENT. FOR BIDDING AND CONSTRUCTION PURPOSES, REFER TO THE CONSTRUCTION PLANS AND DOCUMENTS FOR FINAL DESIGN INFORMATION ON THIS PROJECT. THE DEPARTMENT DOES NOT WARRANT OR GUARANTEE THE SUFFICIENCY OR ACCURACY OF THE INVESTIGATION MADE, NOR THE INTERPRETATIONS MADE, OR OPINION OF THE DEPARTMENT AS TO THE TYPE OF MATERIALS AND CONDITIONS TO BE ENCOUNTERED. THE BIDDER OR CONTRACTOR IS CAUTIONED TO PERFORM INDEPENDENT SUBSURFACE INVESTIGATIONS AND MAKE INTERPRETATIONS AS NECESSARY TO CONFIRM CONDITIONS ENCOUNTERED ON THE PROJECT. THE CONTRACTOR SHALL HAVE NO CLAIM FOR ADDITIONAL COMPENSATION OR FOR AN EXTENSION OF TIME FOR ANY REASON RESULTING FROM THE ACTUAL CONDITIONS ENCOUNTERED AT THE SITE DIFFERING FROM THOSE INDICATED IN THE SUBSURFACE INFORMATION.

- NOTES:
- THE INFORMATION CONTAINED HEREIN IS NOT IMPLIED OR GUARANTEED BY THE N.C. DEPARTMENT OF TRANSPORTATION AS ACCURATE NOR IS IT CONSIDERED PART OF THE PLANS, SPECIFICATIONS OR CONTRACT FOR THE PROJECT.
 - BY HAVING REQUESTED THIS INFORMATION, THE CONTRACTOR SPECIFICALLY WAIVES ANY CLAIMS FOR INCREASED COMPENSATION OR EXTENSION OF TIME BASED ON DIFFERENCES BETWEEN THE CONDITIONS INDICATED HEREIN AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

PERSONNEL

MARPLES, Z. J.

BUNCH, C. M.

SCHLEMM, T. S.

TURNAGE, J. R.

OXENDINE, J.

WHITEHEAD, T.

DUGGINS, W. T.

INVESTIGATED BY MARPLES, Z. J.

DRAWN BY ALMULLA, H.

CHECKED BY RIGGS, Jr., A. F.

SUBMITTED BY RIGGS, Jr., A. F.

DATE MARCH 2026

Prepared in the Office of:



3150 SPRING FOREST ROAD, SUITE 100
RALEIGH, NORTH CAROLINA 27616
NC REGISTERED ENGINEERING FIRM: E-0969
NC REGISTERED GEOLOGIC FIRM: C-367



DocuSigned by:

C2F6ACA84D274B1...

7/7/2026

SIGNATUREDATE

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

PROJECT REFERENCE NO.

I-2513AC

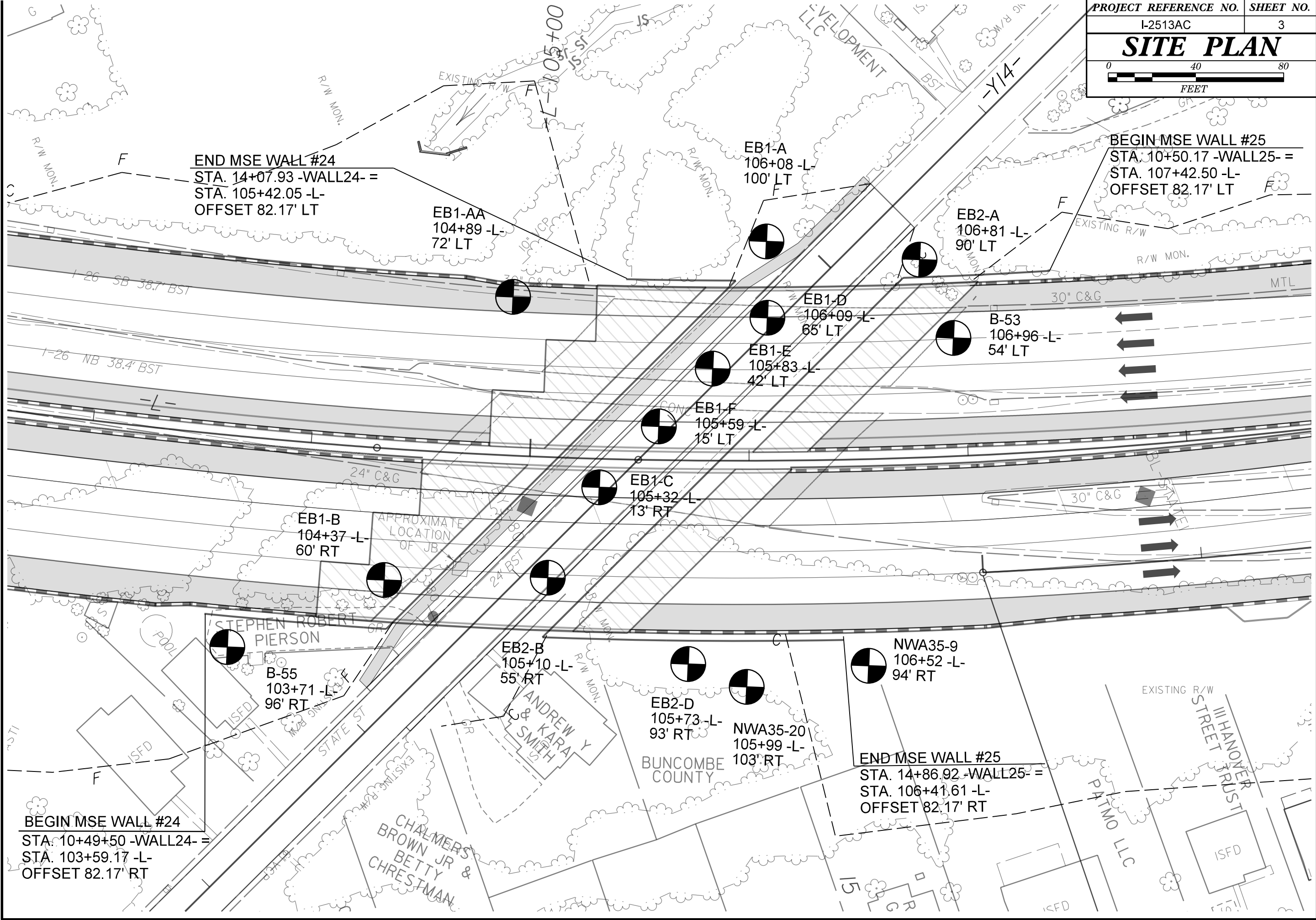
SHEET NO.

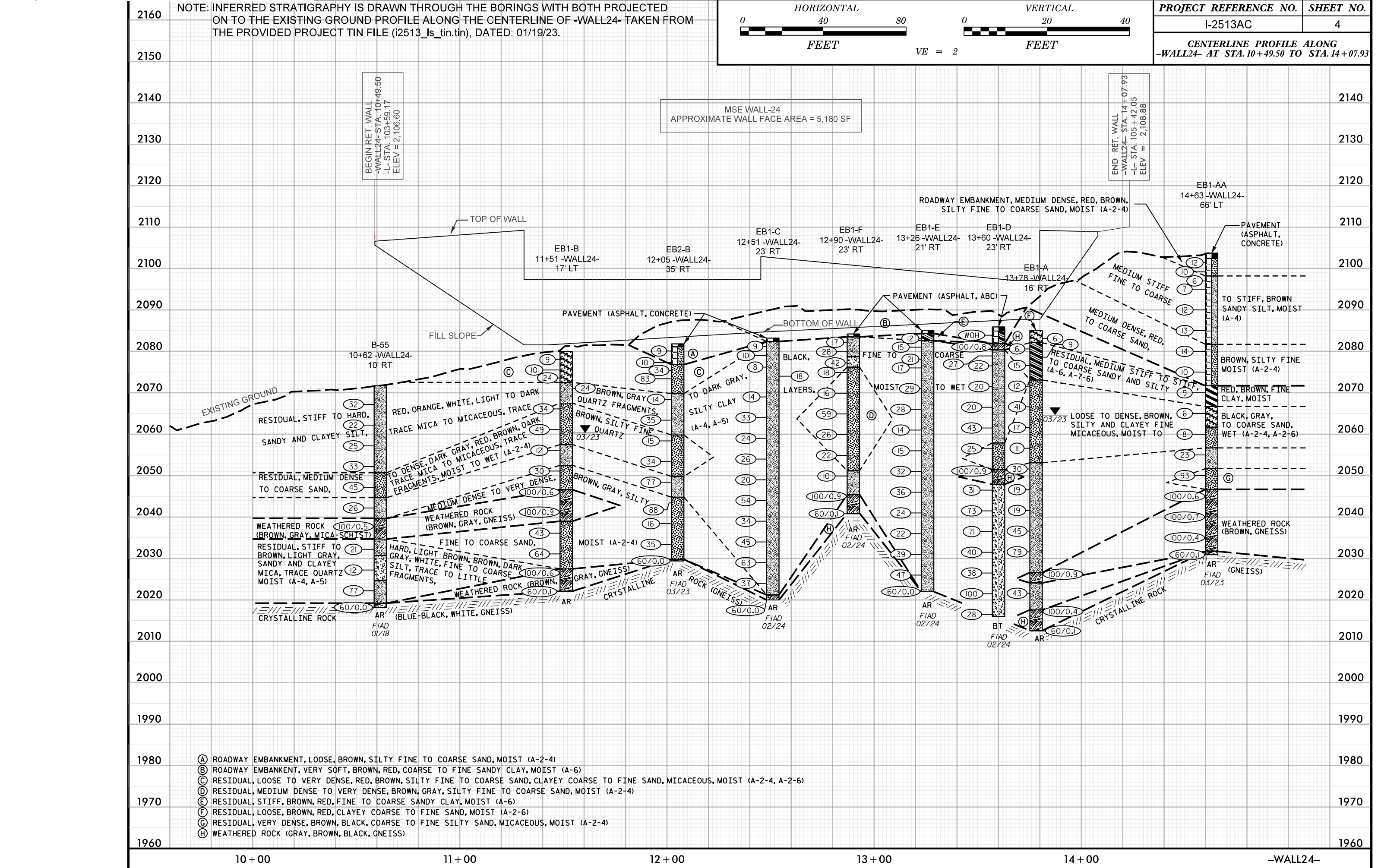
3

SITE PLAN

04080

FEET





NCDOT BORE SINGLE E 12513AC GEO BWA1 STATE STREET GP1 NC DOT GDT 5/15/24

NCDOT BORE SINGLE E 12513AC GEO BWA1 STATE STREET GP1 NC DOT GDT 5/15/24

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 34165.1.6					TIP I-2513AC			COUNTY BUNCOMBE			GEOLOGIST MARPLES, Z. J.			
SITE DESCRIPTION MSE WALLS ON I-26 OVER STATE ST. BETWEEN SR 3556 (AMBOY RD.) AND US 23 BUS. (HAYWOOD RD.)												GROUND WTR (ft)		
BORING NO. EB1-B					STATION 104+37			OFFSET 60 ft RT			ALIGNMENT -L-		0 HR.	N/A
COLLAR ELEV. 2,080.0 ft					TOTAL DEPTH 58.0 ft			NORTHING 682,703			EASTING 934,597		24 HR.	19.7
DRILL RIG/HAMMER EFF./DATE TER373 DIEDRICH D-50 93% 01/28/2022									DRILL METHOD Mud Rotary			HAMMER TYPE Automatic		
DRILLER TURNAGE, J. R.					START DATE 02/28/23			COMP. DATE 02/28/23			SURFACE WATER DEPTH N/A			
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	▼ MOI	L O G	SOIL AND ROCK DESCRIPTION ELEV. (ft) DEPTH (ft)
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				
2085														
2080	2,079.0	1.0												2,080.0 GROUND SURFACE 0.0
2075	2,076.5	3.5	2	4	5	9						M		RESIDUAL LOOSE TO MEDIUM DENSE, RED, BROWN, CLAYEY COARSE TO FINE SAND, MOIST (A-2-6)
	2,074.6	5.4	4	4	6	10						M		
2070	2,072.1	7.9	11	11	13	24						M		VERY STIFF, BROWN, RED, FINE TO COARSE, SANDY SILT, MICACEOUS, MOIST (A-4)
	2,067.1	12.9	8	11	13	24						M		
2065	2,062.1	17.9	11	14	20	34						M		DENSE, BROWN, GRAY, SILTY COARSE TO FINE SAND, MOIST (A-2-4)
2060	2,057.1	22.9	12	14	35	49						M		
2055	2,052.1	27.9	2	5	7	12						M		2,057.5 STIFF, BROWN, GRAY, FINE TO COARSE, SANDY SILT, MICACEOUS, MOIST (A-4) 22.5
2050	2,047.1	32.9	43	20	10	30						M		2,052.5 DENSE TO VERY DENSE, BROWN, GRAY, SILTY COARSE TO FINE SAND, MOIST (A-2-4) 27.5
2045	2,042.1	37.9	17	70	30/0.1									2,046.6 WEATHERED ROCK (BROWN, GRAY, GNEISS) 33.4
2040	2,037.1	42.9	20	80/0.4										2,039.0 RESIDUAL 41.0
2035	2,032.1	47.9	16	16	27	43						M		DENSE TO VERY DENSE, BROWN, GRAY, SILTY COARSE TO FINE SAND, MOIST (A-2-4)
2030	2,027.1	52.9	49	36	28	64						M		
2025	2,022.1	57.9	90	10/0.1										2,027.5 WEATHERED ROCK (BROWN, GRAY, GNEISS) 52.5
														2,022.1 CRYSTALLINE ROCK (GNEISS) 57.9
														2,022.0 Boring Terminated WITH STANDARD PENETRATION TEST REFUSAL at Elevation 2,022.0 ft IN CRYSTALLINE ROCK (GNEISS) 58.0

NC DOT BORE SINGLE I2513AC_GEO_RWAL_STATE STREET.GPJ NC_DOT.GDT 5/15/24

GEOTECHNICAL BORING REPORT
BORE LOG

WBS		34165.1.6		TIP		I-2513AC		COUNTY		BUNCOMBE		GEOLOGIST		Marples, Z. J.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
SITE DESCRIPTION												MSE WALLS ON I-26 OVER STATE ST. BETWEEN SR 3556 (AMBOY RD.) AND US 23 BUS. (HAYWOOD RD.)				GROUND WTR (ft)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
BORING NO.				EB1-C				STATION				105+32				OFFSET				13 ft RT				ALIGNMENT				-L-				0 HR.		N/A																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
COLLAR ELEV.				2,083.2 ft				TOTAL DEPTH				63.2 ft				NORTHING				682,810				EASTING				934,598				24 HR.		FIAD																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
DRILL RIG/HAMMER EFF./DATE										TER1006 Geoprobe 7822DT 90% 01/20/2023										DRILL METHOD										Mud Rotary										HAMMER TYPE										Automatic																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
DRILLER						WHITEHEAD, T.						START DATE						02/22/24						COMP. DATE						02/22/24						SURFACE WATER DEPTH												N/A																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	▼	L O G	SOIL AND ROCK DESCRIPTION																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
			0.5ft	0.5ft	0.5ft	0	25	50	75	100																ELEV. (ft)	DEPTH (ft)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
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NC DOT BORE SINGLE I2513AC_GEO_RWAL_STATE STREET.GPJ NC_DOT.GDT 5/15/24

NCDOT BOB SINGLE E 12513AC GEO BWA STATE STREET GP1 NC DOT GDT 5/16/24

NCDOT BOBE SINGLE E 125134C GEO BWA1 STATE STREET GP1 NC DOT GDT 5/16/24

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 34165.1.6			TIP I-2513AC			COUNTY BUNCOMBE			GEOLOGIST MARPLES, Z. J.						
SITE DESCRIPTION MSE WALLS ON I-26 OVER STATE ST. BETWEEN SR 3556 (AMBOY RD.) AND US 23 BUS. (HAYWOOD RD.)									GROUND WTR (ft)						
BORING NO. EB1-F			STATION 105+59			OFFSET 15 ft LT			ALIGNMENT -L-			0 HR. N/A			
COLLAR ELEV. 2,084.2 ft			TOTAL DEPTH 43.4 ft			NORTHING 682,846			EASTING 934,584			24 HR. FIAD			
DRILL RIG/HAMMER EFF./DATE TER1006 Geoprobe 7822DT 90% 01/20/2023						DRILL METHOD Mud Rotary			HAMMER TYPE Automatic						
DRILLER WHITEHEAD, T.			START DATE 02/21/24			COMP. DATE 02/21/24			SURFACE WATER DEPTH N/A						
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				ELEV. (ft)	DEPTH (ft)
2085														2,084.2	0.0
	2,083.2	1.0												2,083.5	0.7
2080	2,080.9	3.3	6	6	11								W	PAVEMENT (0.3' ASPHALT, 0.4' ABC)	
			9	14	14								W	RESIDUAL	
	2,078.2	6.0												VERY STIFF, BROWN, RED, FINE TO COARSE SANDY SILT, WET (A-4)	
			9	20	22								M	HARD, BROWN, RED, CLAYEY SILT, MOIST (A-5)	
2075	2,075.9	8.3	5	8	10								M	MEDIUM DENSE TO VERY DENSE, BROWN, GRAY, SILTY FINE TO COARSE SAND, MOIST (A-2-4)	
2070	2,070.9	13.3	4	6	10								M		
2065	2,065.9	18.3	11	23	36								M		
2060	2,060.9	23.3	9	15	11								M		
2055	2,055.9	28.3	5	9	13								M		
2050	2,050.9	33.3	3	4	6								M	2,051.2 33.0	
														STIFF, BROWN, BLACK, FINE TO COARSE SANDY SILT, MOIST (A-4)	
2045	2,045.9	38.3	12	88/0.4										2,045.4 38.8	
														WEATHERED ROCK (BLACK, GNEISS)	
	2,040.9	43.3	60/0.1											2,040.9 43.3	
														2,040.8 43.4	
														CRYSTALLINE ROCK (BLACK, GNEISS)	
														Boring Terminated WITH STANDARD PENETRATION TEST REFUSAL at Elevation 2,040.8 ft IN CRYSTALLINE ROCK (GNEISS)	

NC DOT BORE SINGLE I2513AC_GEO_RVAL_STATE STREET.GPJ NC_DOT.GDT 5/16/24

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 34165.1.6			TIP I-2513AC			COUNTY BUNCOMBE			GEOLOGIST MARPLES, Z. J.						
SITE DESCRIPTION MSE WALLS ON I-26 OVER STATE ST. BETWEEN SR 3556 (AMBOY RD.) AND US 23 BUS. (HAYWOOD RD.)									GROUND WTR (ft)						
BORING NO. EB1-AA			STATION 104+89			OFFSET 72 ft LT			ALIGNMENT -L-						
COLLAR ELEV. 2,103.7 ft			TOTAL DEPTH 72.8 ft			NORTHING 682,809			EASTING 934,503						
0 HR. N/A			24 HR. FIAD			DRILL RIG/HAMMER EFF./DATE TER373 DIEDRICH D-50 93% 01/28/2022									
DRILL METHOD Mud Rotary			HAMMER TYPE Automatic												
DRILLER TURNAGE, J. R.			START DATE 03/09/23			COMP. DATE 03/09/23			SURFACE WATER DEPTH N/A						
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
2105															
	2,102.4	1.3	11	7	5									2,103.7	0.0
2100	2,100.2	3.5	5	5	5									PAVEMENT (0.3' ASPHALT, 1.0' CONCRETE)	1.3
	2,098.0	5.7	3	3	3									ROADWAY EMBANKMENT MEDIUM DENSE, RED, BROWN, SILTY FINE TO COARSE SAND, MOIST (A-2-4)	
2095	2,096.0	7.7	4	3	4									2,098.2	5.5
	2,091.0	12.7	4	5	7									MEDIUM STIFF TO STIFF, BROWN, FINE TO COARSE SANDY SILT, MOIST (A-4)	
2085	2,086.0	17.7	4	6	7										
2080	2,081.0	22.7	5	6	8										
2075	2,076.0	27.7	3	5	5										
2070	2,071.0	32.7	4	3	6										
2065	2,066.0	37.7	2	3	3										
2060	2,061.0	42.7	3	3	5										
2055	2,056.0	47.7	6	10	13										
2050	2,051.0	52.7	51	36	57										
2045	2,046.0	57.7	90	10/0.1											
2040	2,041.0	62.7	50	50/0.2											
2035	2,036.0	67.7	100/0.4												
	2,031.0	72.7	60/0.1												
														2,031.7 2,030.9	72.0 72.8
														CRYSTALLINE ROCK (GNEISS)	
														Boring Terminated WITH STANDARD PENETRATION TEST REFUSAL at Elevation 2,030.9 ft IN CRYSTALLINE ROCK (GNEISS)	

NC DOT BORE SINGLE I2513AC_GEO_RVAL_STATE STREET.GPJ NC_DOT.GDT 5/16/24

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 34165.1.6			TIP I-2513AC			COUNTY BUNCOMBE			GEOLOGIST MARPLES, Z. J.							
SITE DESCRIPTION MSE WALLS ON I-26 OVER STATE ST. BETWEEN SR 3556 (AMBOY RD.) AND US 23 BUS. (HAYWOOD RD.)									GROUND WTR (ft)							
BORING NO. EB2-A			STATION 106+81			OFFSET 90 ft LT			ALIGNMENT -L-			0 HR.	N/A			
COLLAR ELEV. 2,092.3 ft			TOTAL DEPTH 73.3 ft			NORTHING 682,985			EASTING 934,562			24 HR.	22.7			
DRILL RIG/HAMMER EFF./DATE TER373 DIEDRICH D-50 93% 01/28/2022						DRILL METHOD Mud Rotary				HAMMER TYPE Automatic						
DRILLER TURNAGE, J. R.			START DATE 03/01/23			COMP. DATE 03/01/23			SURFACE WATER DEPTH N/A							
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	▼	MOI	LOG	SOIL AND ROCK DESCRIPTION	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					ELEV. (ft)	DEPTH (ft)
2095																
	2,091.3	1.0	2	3	3	6									2,092.3	GROUND SURFACE 0.0
2090	2,088.8	3.5	6	6	7	13							M			
	2,087.0	5.3	3	5	5	10							M		2,087.3	ROADWAY EMBANKMENT LOOSE TO MEDIUM DENSE, BROWN, RED, CLAYEY COARSE TO FINE SAND, MOIST (A-2-6) 5.0
2085	2,084.0	8.3	3	2	6	8							M			RESIDUAL STIFF, RED, BROWN, FINE TO COARSE SANDY SILT, MICACEOUS, MOIST (A-4)
2080	2,079.0	13.3	7	9	12	21							M		2,079.3	13.0 MEDIUM DENSE, BROWN, GRAY, SILTY COARSE TO FINE SAND, MOIST (A-2-4)
2075	2,074.0	18.3	9	9	10	19							M			
2070	2,069.0	23.3	7	8	9	17							M		2,069.3	23.0 STIFF TO HARD, BROWN, GRAY, FINE TO COARSE SANDY SILT, MICACEOUS, MOIST (A-4)
2065	2,064.0	28.3	5	5	8	13							M			
2060	2,059.0	33.3	4	5	7	12							M			
2055	2,054.0	38.3	4	5	3	8							M			
2050	2,049.0	43.3	13	16	34	50							M			
2045	2,044.0	48.3	30	22	28	50							M			
2040	2,039.0	53.3	10	16	30	46							M			
2035	2,034.0	58.3	2	10	18	28							M		2,034.3	58.0 MEDIUM DENSE TO DENSE, BROWN, GRAY, SILTY COARSE TO FINE SAND, MOIST (A-2-4)
2030	2,029.0	63.3	30	21	16	37							M			
2025	2,024.0	68.3	100/0.2												2,024.3	68.0 WEATHERED ROCK (GNEISS)
															2,020.8	71.5 CRYSTALLINE ROCK (GNEISS)
2020	2,019.0	73.3	60/0.0												2,019.0	73.3 Boring Terminated WITH STANDARD PENETRATION TEST REFUSAL at Elevation 2,019.0 ft IN CRYSTALLINE

NC DOT BORE SINGLE I2513AC_GEO_RWAL_STATE STREET.GPJ NC_DOT.GDT 5/15/24

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 34165.1.6						TIP I-2513AC			COUNTY BUNCOMBE			GEOLOGIST MARPLES, Z. J.						
SITE DESCRIPTION MSE WALLS ON I-26 OVER STATE ST. BETWEEN SR 3556 (AMBOY RD.) AND US 23 BUS. (HAYWOOD RD.)											GROUND WTR (ft)							
BORING NO. EB2-A						STATION 106+81				OFFSET 90 ft LT				ALIGNMENT -L-			0 HR. N/A	
COLLAR ELEV. 2,092.3 ft						TOTAL DEPTH 73.3 ft				NORTHING 682,985				EASTING 934,562			24 HR. 22.7	
DRILL RIG/HAMMER EFF./DATE TER373 DIEDRICH D-50 93% 01/28/2022									DRILL METHOD Mud Rotary					HAMMER TYPE Automatic				
DRILLER TURNAGE, J. R.						START DATE 03/01/23				COMP. DATE 03/01/23				SURFACE WATER DEPTH N/A				
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	▼ MOI	L O G	SOIL AND ROCK DESCRIPTION				
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				ELEV. (ft)	DEPTH (ft)			
2015						Match Line								ROCK (GNEISS)				

NC DOT BORE SINGLE I2513AC_GEO_RWAL_STATE STREET.GPJ NC_DOT.GDT 5/15/24

NCDOT BORE SINGLE E 12513AC GEO BWA1 STATE STREET GP1 NC DOT GDT 5/16/24

NCDOT BORE SINGLE I2513AC GEO RWAL STATE STREET.GPJ NC DOT.GDT 5/16/24

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 34165.1.6			TIP I-2513AC			COUNTY BUNCOMBE			GEOLOGIST MARPLES, Z. J.					
SITE DESCRIPTION MSE WALLS ON I-26 OVER STATE ST. BETWEEN SR 3556 (AMBOY RD.) AND US 23 BUS. (HAYWOOD RD.)									GROUND WTR (ft)					
BORING NO. NWA35-20			STATION 105+99			OFFSET 103 ft RT			ALIGNMENT -L-					
COLLAR ELEV. 2,082.1 ft			TOTAL DEPTH 38.0 ft			NORTHING 682,834			EASTING 934,708					
0 HR.			N/A			24 HR.			18.4					
DRILL RIG/HAMMER EFF./DATE TER373 DIEDRICH D-50 93% 01/28/2022						DRILL METHOD Mud Rotary			HAMMER TYPE Automatic					
DRILLER TURNAGE, J. R.			START DATE 03/06/23			COMP. DATE 03/06/30			SURFACE WATER DEPTH N/A					
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	▼ MOI	L O G	SOIL AND ROCK DESCRIPTION ELEV. (ft) DEPTH (ft)
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				
2085														
2080	2,081.1	1.0	5	3	3									2,082.1 GROUND SURFACE 0.0
	2,078.6	3.5	3	2	2									RESIDUAL LOOSE TO MEDIUM DENSE, RED, BROWN, COARSE TO FINE CLAYEY SAND (A-2-6)
	2,076.8	5.3	2	2	3									
2075	2,074.8	7.3	4	5	7									
2070	2,069.8	12.3	6	9	13									2,070.1 VERY STIFF, BROWN, MICACEOUS, FINE TO COARSE SANDY SILT (A-4) 12.0
2065	2,064.8	17.3	8	11	15									2,065.1 MEDIUM DENSE, BROWN, FINE TO COARSE SILTY SAND (A-2-4) 17.0
2060	2,059.8	22.3	5	9	7									2,060.1 VERY STIFF, BROWN, MICACEOUS FINE TO COARSE SANDY SILT (A-4) 22.0
2055	2,054.8	27.3	18	29	50									
2050	2,049.8	32.3	29	27	32									
2045	2,044.8	37.3	50	50/0.2										2,044.6 WEATHERED ROCK (GRAY, GNEISS) 37.5
														2,044.1 Boring Terminated at Elevation 2,044.1 ft IN WEATHERED ROCK (GNEISS) 38.0

NC DOT BORE SINGLE I2513AC_GEO_RWAL_STATE STREET.GPJ NC_DOT.GDT 5/15/24

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 34165.1.6			TIP I-2513AC			COUNTY BUNCOMBE			GEOLOGIST MARPLES, Z. J.						
SITE DESCRIPTION MSE WALLS ON I-26 OVER STATE ST. BETWEEN SR 3556 (AMBOY RD.) AND US 23 BUS. (HAYWOOD RD.)									GROUND WTR (ft)						
BORING NO. NWA35-9			STATION 106+52			OFFSET 94 ft RT			ALIGNMENT -L-						
COLLAR ELEV. 2,085.0 ft			TOTAL DEPTH 20.1 ft			NORTHING 682,889			EASTING 934,722						
0 HR.			Caved			24 HR.			Caved						
DRILL RIG/HAMMER EFF./DATE TER373 DIEDRICH D-50 93% 01/28/2022						DRILL METHOD H.S. Augers			HAMMER TYPE Automatic						
DRILLER TURNAGE, J. R.			START DATE 02/21/23			COMP. DATE 02/21/23			SURFACE WATER DEPTH N/A						
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				ELEV. (ft)	DEPTH (ft)
2085														2,085.0	GROUND SURFACE 0.0
2080	2,084.0	1.0	3	2	3										

NC DOT BORE SINGLE I2513AC_GEO_RWAL_STATE STREET.GPJ NC_DOT.GDT 5/15/24

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 34165.1.6			TIP I-2513AC			COUNTY BUNCOMBE			GEOLOGIST SCHLEMM, T.S.						
SITE DESCRIPTION MSE WALLS ON I-26 OVER STATE ST. BETWEEN SR 3556 (AMBOY RD.) AND US 23 BUS. (HAYWOOD RD.)									GROUND WTR (ft)						
BORING NO. B-53			STATION 106+96			OFFSET 54 ft LT			ALIGNMENT -L-			0 HR. 38.0			
COLLAR ELEV. 2,106.0 ft			TOTAL DEPTH 78.5 ft			NORTHING 682,985			EASTING 934,601			24 HR. FIAD			
DRILL RIG/HAMMER EFF./DATE TER1974 CME-45B 93% 08/10/2017						DRILL METHOD H.S. Augers			HAMMER TYPE Automatic						
DRILLER TURNAGE, J.R.			START DATE 01/15/18			COMP. DATE 01/15/18			SURFACE WATER DEPTH N/A						
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				ELEV. (ft)	DEPTH (ft)
2110															
2105														2,106.0	0.0
														2,104.5	1.5
2100	2,102.5	3.5	4	5	5								M	PAVEMENT SURFACE	
														PAVEMENT (0.5' ASPHALT, 1.0' ABC)	
2095	2,097.5	8.5	2	2	3								W	ROADWAY EMBANKMENT	
														LOOSE, RED-BROWN, CLAYEY FINE TO COARSE SAND, TRACE MICA, TRACE GRAVEL, SILTY CLAY LAYERS, MOIST TO WET (A-2-6)	
2090	2,092.5	13.5	6	8	11								M	RESIDUAL	
														VERY STIFF, RED-BROWN, BROWN, FINE TO COARSE SANDY SILT, LITTLE MICA, TRACE QUARTZ FRAGMENTS, MOIST (A-4)	
2085	2,087.5	18.5	7	11	11								M		
2080	2,082.5	23.5	7	9	10								M		
														2,079.0	27.0
2075	2,077.5	28.5	5	6	7								M	STIFF TO VERY STIFF, LIGHT TO DARK BROWN, SILTY CLAY, TRACE TO LITTLE MICA, TRACE QUARTZ FRAGMENTS, MOIST (A-7-6)	
2070	2,072.5	33.5	7	8	11								M		
2065	2,067.5	38.5	4	6	7								M		
2060	2,062.5	43.5	5	7	10								M		
2055	2,057.5	48.5	9	9	11								M	MEDIUM DENSE TO VERY DENSE, BROWN TO DARK BROWN, BLACK, WHITE, CLAYEY FINE SAND, TRACE TO LITTLE MICA, TRACE TO LITTLE QUARTZ FRAGMENTS, SILTY CLAY LAYERS, MOIST TO WET (A-2-6)	
2050	2,052.5	53.5	15	30	36								M		
2045	2,047.5	58.5	8	6	8								W		
2040	2,042.5	63.5	10	15	29								M		
2035	2,037.5	68.5	6	9	15								M	VERY STIFF, BROWN, DARK BROWN, BLACK, SILTY CLAY, TRACE TO LITTLE MICA, TRACE QUARTZ FRAGMENTS, MOIST (A-7-6)	
2030	2,032.5	73.5	23	52	48/0.2									2,032.0	74.0
														WEATHERED ROCK (BROWN, GNEISS)	

NC DOT BORE SINGLE I2513AC_GEO_RVAL_STATE STREET.GPJ NC_DOT.GDT 5/15/24

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 34165.1.6			TIP I-2513AC			COUNTY BUNCOMBE			GEOLOGIST SCHLEMM, T.S.						
SITE DESCRIPTION MSE WALLS ON I-26 OVER STATE ST. BETWEEN SR 3556 (AMBOY RD.) AND US 23 BUS. (HAYWOOD RD.)									GROUND WTR (ft)						
BORING NO. B-53			STATION 106+96			OFFSET 54 ft LT			ALIGNMENT -L-			0 HR. 38.0			
COLLAR ELEV. 2,106.0 ft			TOTAL DEPTH 78.5 ft			NORTHING 682,985			EASTING 934,601			24 HR. FIAD			
DRILL RIG/HAMMER EFF./DATE TER1974 CME-45B 93% 08/10/2017						DRILL METHOD H.S. Augers			HAMMER TYPE Automatic						
DRILLER TURNAGE, J.R.			START DATE 01/15/18			COMP. DATE 01/15/18			SURFACE WATER DEPTH N/A						
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				ELEV. (ft)	DEPTH (ft)
2030						Match Line									
	2,027.5	78.5												2,027.5	78.5
														WEATHERED ROCK (BROWN, GNEISS) (continued)	
														Boring Terminated WITH STANDARD PENETRATION TEST REFUSAL at Elevation 2,027.5 ft ON CRYSTALLINE ROCK (GNEISS)	

NC DOT BORE SINGLE I2513AC_GEO_RVAL_STATE STREET.GPJ NC_DOT.GDT 5/15/24

GEOTECHNICAL BORING REPORT

BORE LOG

WBS 34165.1.6		TIP I-2513AC		COUNTY BUNCOMBE		GEOLOGIST SCHLEMM, T.S.											
SITE DESCRIPTION MSE WALLS ON I-26 OVER STATE ST. BETWEEN SR 3556 (AMBOY RD.) AND US 23 BUS. (HAYWOOD RD.)						GROUND WTR (ft)											
BORING NO. B-55		STATION 103+71		OFFSET 96 ft RT		ALIGNMENT -L-											
COLLAR ELEV. 2,071.7 ft		TOTAL DEPTH 53.5 ft		NORTHING 682,625		EASTING 934,596											
DRILL RIG/HAMMER EFF./DATE TER1974 CME-45B 93% 08/10/2017				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic											
DRILLER TURNAGE, J.R.		START DATE 01/08/18		COMP. DATE 01/08/18		SURFACE WATER DEPTH N/A											
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION			
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				ELEV. (ft)	DEPTH (ft)		
2075																	
2070														2,071.7	GROUND SURFACE 0.0		
	2,068.2	3.5		50	15	17							M		RESIDUAL VERY STIFF TO HARD, LIGHT TO DARK BROWN, FINE TO COARSE SANDY SILT, TRACE TO LITTLE MICA, TRACE QUARTZ FRAGMENTS, SILTY SAND LAYERS, MOIST TO WET (A-4)		
2065	2,063.2	8.5		7	11	11							M				
2060	2,058.2	13.5		15	12	13							W				
2055	2,053.2	18.5		9	16	17							W				
2050	2,048.2	23.5		16	17	28							W	▽	2,050.7	21.0	DENSE, DARK GRAY AND DARK BROWN, SILTY FINE TO COARSE SAND, TRACE MICA, TRACE QUARTZ FRAGMENTS, WET (A-2-4)
2045	2,043.2	28.5		11	14	12									2,044.7	27.0	VERY STIFF, DARK BROWN, BROWN, AND DARK GRAY, FINE TO COARSE SANDY SILT, TRACE TO LITTLE MICA, TRACE QUARTZ SEAMS, MOIST (A-4)
2040	2,038.2	33.5	100/0.5				100/0.5								2,039.7	32.0	WEATHERED ROCK (BROWN, GRAY, MICA-SCHIST)
2035	2,033.2	38.5		7	7	14							M		RESIDUAL VERY STIFF, BROWN AND GRAY, FINE TO COARSE SANDY SILT, TRACE TO LITTLE MICA, TRACE QUARTZ FRAGMENTS, MOIST (A-4) STIFF, LIGHT GRAY, LIGHT BROWN, WHITE, CLAYEY SILT, MOIST (A-5)		
2030	2,028.2	43.5		4	6	6							M				
2025	2,023.2	48.5		14	32	45							M				
2020	2,018.2	53.5	60/0.0				60/0.0									2,024.7	47.0
															2,019.2	52.5	CRYSTALLINE ROCK (BLUE-BLACK, WHITE, GNEISS) Boring Terminated WITH STANDARD PENETRATION TEST REFUSAL at Elevation 2,018.2 ft IN CRYSTALLINE ROCK (GNEISS)
															2,018.2	53.5	

REFERENCE: I-2513AC

PROJECT: 34165

CONTENTS

SHEET NO.	DESCRIPTION
1	TITLE SHEET
2	LEGEND (SOIL & ROCK)
3	SITE PLAN
4 - 5	PROFILES
6 - 14	BORE LOGS

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

STRUCTURE
SUBSURFACE INVESTIGATION

COUNTY BUNCOMBE
PROJECT DESCRIPTION I-26 CONNECTOR (I-40 TO
US 19 – US 23 – US 70 NORTH TO ASHEVILLE)
SITE DESCRIPTION MSE WALL-24 AT STA. 103 + 59.17 TO
STA. 105 + 42.05 –L– & WALL-25 AT STA. 107 + 42.50 TO
STA. 106 + 41.61 –L– ON I-26 /I-240 OVER STATE STREET
BETWEEN SR 3556 (AMBOY ROAD) AND US 23
BUSINESS (HAYWOOD ROAD)

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	I-2513AC	1	14

CAUTION NOTICE

THE SUBSURFACE INFORMATION AND THE SUBSURFACE INVESTIGATION ON WHICH IT IS BASED WERE MADE FOR THE PURPOSE OF STUDY, PLANNING AND DESIGN, AND NOT FOR CONSTRUCTION OR PAY PURPOSES. THE VARIOUS FIELD BORING LOGS, ROCK CORES AND SOIL TEST DATA AVAILABLE MAY BE REVIEWED OR INSPECTED IN RALEIGH BY CONTACTING THE N.C. DEPARTMENT OF TRANSPORTATION, GEOTECHNICAL ENGINEERING UNIT, AT (919) 707-6850. THE SUBSURFACE PLANS AND REPORTS, FIELD BORING LOGS, ROCK CORES AND SOIL TEST DATA ARE NOT PART OF THE CONTRACT.

GENERAL SOIL AND ROCK STRATA DESCRIPTIONS AND INDICATED BOUNDARIES ARE BASED ON A GEOTECHNICAL INTERPRETATION OF ALL AVAILABLE SUBSURFACE DATA AND MAY NOT NECESSARILY REFLECT THE ACTUAL SUBSURFACE CONDITIONS BETWEEN BORINGS OR BETWEEN SAMPLED STRATA WITHIN THE BOREHOLE. THE LABORATORY SAMPLE DATA AND THE IN SITU (IN-PLACE) TEST DATA CAN BE RELIED ON ONLY TO THE DEGREE OF RELIABILITY INHERENT IN THE STANDARD TEST METHOD. THE OBSERVED WATER LEVELS OR SOIL MOISTURE CONDITIONS INDICATED IN THE SUBSURFACE INVESTIGATIONS ARE AS RECORDED AT THE TIME OF THE INVESTIGATION. THESE WATER LEVELS OR SOIL MOISTURE CONDITIONS MAY VARY CONSIDERABLY WITH TIME ACCORDING TO CLIMATIC CONDITIONS INCLUDING TEMPERATURES, PRECIPITATION AND WIND, AS WELL AS OTHER NON-CLIMATIC FACTORS.

THE BIDDER OR CONTRACTOR IS CAUTIONED THAT DETAILS SHOWN ON THE SUBSURFACE PLANS ARE PRELIMINARY ONLY AND IN MANY CASES THE FINAL DESIGN DETAILS ARE DIFFERENT. FOR BIDDING AND CONSTRUCTION PURPOSES, REFER TO THE CONSTRUCTION PLANS AND DOCUMENTS FOR FINAL DESIGN INFORMATION ON THIS PROJECT. THE DEPARTMENT DOES NOT WARRANT OR GUARANTEE THE SUFFICIENCY OR ACCURACY OF THE INVESTIGATION MADE, NOR THE INTERPRETATIONS MADE, OR OPINION OF THE DEPARTMENT AS TO THE TYPE OF MATERIALS AND CONDITIONS TO BE ENCOUNTERED. THE BIDDER OR CONTRACTOR IS CAUTIONED TO PERFORM INDEPENDENT SUBSURFACE INVESTIGATIONS AND MAKE INTERPRETATIONS AS NECESSARY TO CONFIRM CONDITIONS ENCOUNTERED ON THE PROJECT. THE CONTRACTOR SHALL HAVE NO CLAIM FOR ADDITIONAL COMPENSATION OR FOR AN EXTENSION OF TIME FOR ANY REASON RESULTING FROM THE ACTUAL CONDITIONS ENCOUNTERED AT THE SITE DIFFERING FROM THOSE INDICATED IN THE SUBSURFACE INFORMATION.

- NOTES:
- THE INFORMATION CONTAINED HEREIN IS NOT IMPLIED OR GUARANTEED BY THE N.C. DEPARTMENT OF TRANSPORTATION AS ACCURATE NOR IS IT CONSIDERED PART OF THE PLANS, SPECIFICATIONS OR CONTRACT FOR THE PROJECT.
 - BY HAVING REQUESTED THIS INFORMATION, THE CONTRACTOR SPECIFICALLY WAIVES ANY CLAIMS FOR INCREASED COMPENSATION OR EXTENSION OF TIME BASED ON DIFFERENCES BETWEEN THE CONDITIONS INDICATED HEREIN AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

PERSONNEL

MARPLES, Z. J.

BUNCH, C. M.

SCHLEMM, T. S.

TURNAGE, J. R.

OXENDINE, J.

WHITEHEAD, T.

DUGGINS, W. T.

INVESTIGATED BY MARPLES, Z. J.

DRAWN BY ALMULLA, H.

CHECKED BY RIGGS, Jr., A. F.

SUBMITTED BY RIGGS, Jr., A. F.

DATE MARCH 2026

Prepared in the Office of:


3150 SPRING FOREST ROAD, SUITE 100
RALEIGH, NORTH CAROLINA 27616
NC REGISTERED ENGINEERING FIRM: E-0969
NC REGISTERED GEOLOGIC FIRM: C-367



DocuSigned by:


C2F6ACA84D274B1...

7/7/2026

SIGNATURE DATE

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

PROJECT REFERENCE NO.

I-2513AC

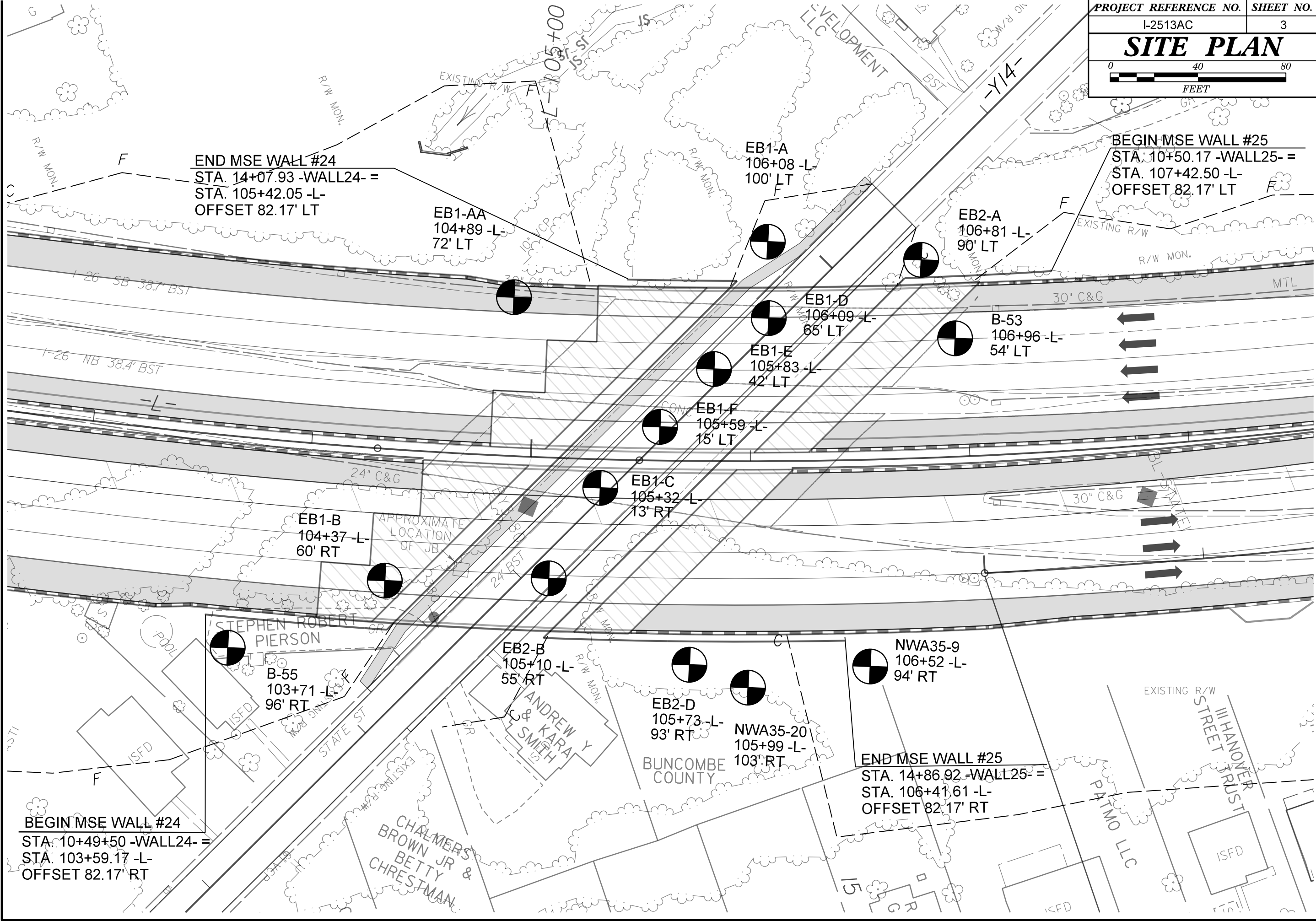
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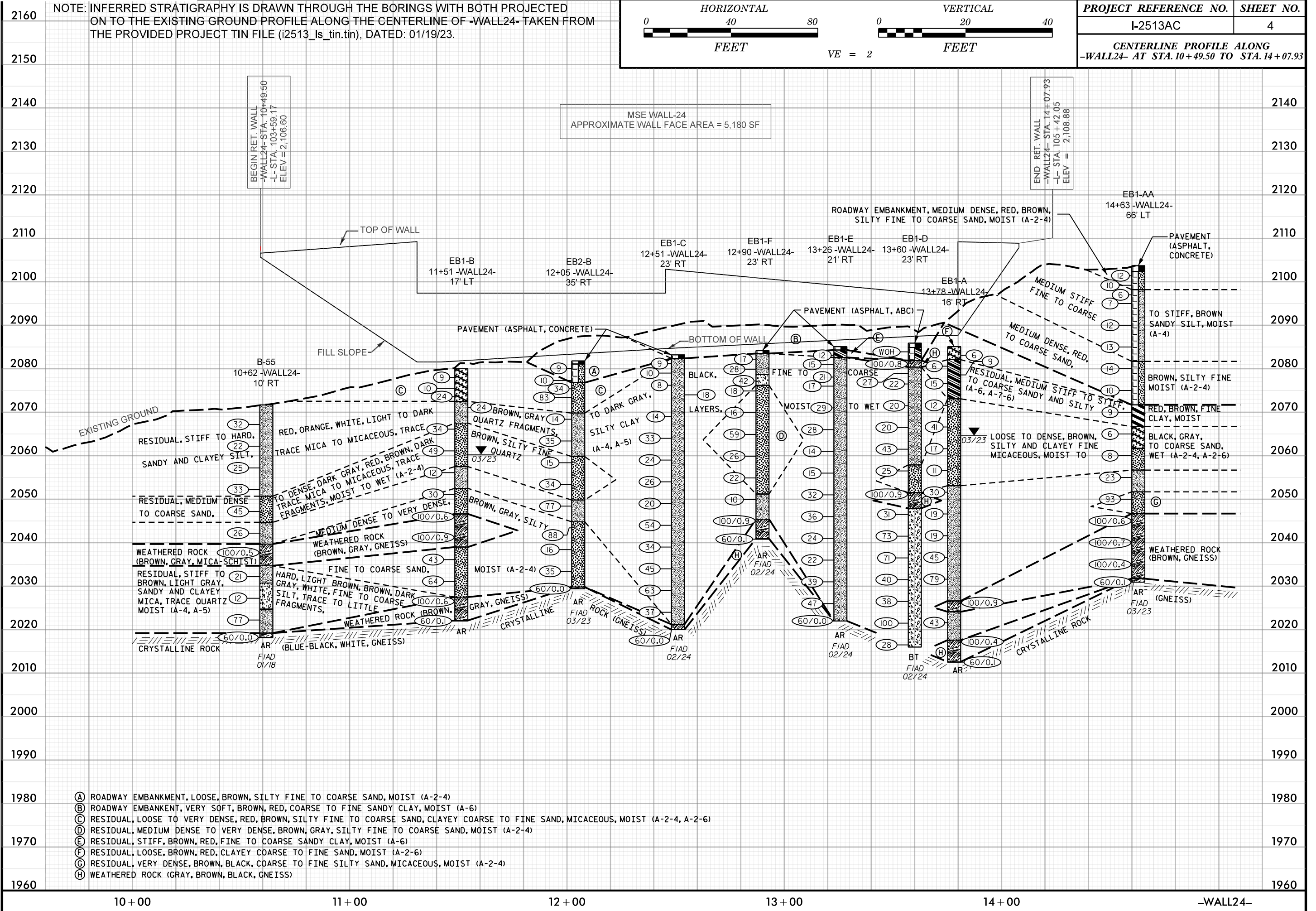
3

SITE PLAN

04080

FEET





GEOTECHNICAL BORING REPORT
BORE LOG

WBS 34165.1.6			TIP I-2513AC			COUNTY BUNCOMBE			GEOLOGIST MARPLES, Z. J.						
SITE DESCRIPTION MSE WALLS ON I-26 OVER STATE ST. BETWEEN SR 3556 (AMBOY RD.) AND US 23 BUS. (HAYWOOD RD.)									GROUND WTR (ft)						
BORING NO. EB1-A			STATION 106+09			OFFSET 100 ft LT			ALIGNMENT -L-			0 HR.	N/A		
COLLAR ELEV. 2,085.1 ft			TOTAL DEPTH 72.6 ft			NORTHING 682,925			EASTING 934,526			24 HR.	20.5		
DRILL RIG/HAMMER EFF./DATE TER373 DIEDRICH D-50 93% 01/28/2022						DRILL METHOD Mud Rotary			HAMMER TYPE Automatic						
DRILLER TURNAGE, J. R.			START DATE 03/01/23			COMP. DATE 03/01/23			SURFACE WATER DEPTH N/A						
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				ELEV. (ft)	DEPTH (ft)
2090															
2085														2,085.1	GROUND SURFACE 0.0
	2,084.1	1.0		6	2	4									
	2,081.6	3.5		4	3	3								2,082.1	RESIDUAL LOOSE, BROWN, RED, CLAYEY COARSE TO FINE SAND, MOIST (A-2-6) 3.0
2080	2,079.6	5.5		3	4	5									MEDIUM STIFF TO STIFF, RED, BROWN, FINE TO COARSE SANDY CLAY, MOIST (A-6)
	2,077.6	7.5		4	6	9									
2075														2,073.1	MEDIUM DENSE TO DENSE, BROWN, GRAY, SILTY FINE TO COARSE SAND, MOIST (A-2-4) 12.0
	2,072.6	12.5		4	4	8									
2070															
	2,067.6	17.5		16	22	19									
2065															
	2,062.6	22.5		7	8	9									
2060															
	2,057.6	27.5		4	4	7									
2055														2,053.1	VERY STIFF TO HARD, BROWN, FINE TO COARSE SANDY SILT, MICACEOUS, MOIST (A-4) 32.0
	2,052.6	32.5		14	16	14									
2050															
	2,047.6	37.5		8	7	12									
2045															
	2,042.6	42.5		10	9	10									
2040															
	2,037.6	47.5		11	21	24									
2035															
	2,032.6	52.5		14	28	51									
2030															
	2,027.6	57.5		15	32	68/0.4								2,026.6	WEATHERED ROCK (BROWN, GNEISS) 58.5
2025														2,024.1	RESIDUAL HARD, BROWN, FINE TO COARSE SANDY SILT, MICACEOUS, MOIST (A-4) 61.0
	2,022.6	62.5		8	17	26									
2020														2,017.6	WEATHERED ROCK (BROWN, GNEISS) 67.5
	2,017.6	67.5	100/0.4												
2015														2,012.6	72.5
	2,012.6	72.5	60/0.1											2,012.5	CRYSTALLINE ROCK (GNEISS) 72.6

NC DOT BORE SINGLE I2513AC_GEO_RVAL_STATE STREET.GPJ NC_DOT.GDT 5/15/24

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 34165.1.6			TIP I-2513AC			COUNTY BUNCOMBE			GEOLOGIST MARPLES, Z. J.						
SITE DESCRIPTION MSE WALLS ON I-26 OVER STATE ST. BETWEEN SR 3556 (AMBOY RD.) AND US 23 BUS. (HAYWOOD RD.)									GROUND WTR (ft)						
BORING NO. EB1-A			STATION 106+09			OFFSET 100 ft LT			ALIGNMENT -L-			0 HR.	N/A		
COLLAR ELEV. 2,085.1 ft			TOTAL DEPTH 72.6 ft			NORTHING 682,925			EASTING 934,526			24 HR.	20.5		
DRILL RIG/HAMMER EFF./DATE TER373 DIEDRICH D-50 93% 01/28/2022						DRILL METHOD Mud Rotary				HAMMER TYPE Automatic					
DRILLER TURNAGE, J. R.			START DATE 03/01/23			COMP. DATE 03/01/23			SURFACE WATER DEPTH N/A						
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				ELEV. (ft)	DEPTH (ft)
2010						Match Line									
														Boring Terminated WITH STANDARD PENETRATION TEST REFUSAL at Elevation 2,012.5 ft IN CRYSTALLINE ROCK (GNEISS)	

NC DOT BORE SINGLE I2513AC_GEO_RVAL_STATE STREET.GPJ NC_DOT.GDT 5/15/24

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 34165.1.6					TIP I-2513AC					COUNTY BUNCOMBE					GEOLOGIST MARPLES, Z. J.						
SITE DESCRIPTION MSE WALLS ON I-26 OVER STATE ST. BETWEEN SR 3556 (AMBOY RD.) AND US 23 BUS. (HAYWOOD RD.)															GROUND WTR (ft)						
BORING NO. EB1-B					STATION 104+37					OFFSET 60 ft RT					ALIGNMENT -L-					0 HR. N/A	
COLLAR ELEV. 2,080.0 ft					TOTAL DEPTH 58.0 ft					NORTHING 682,703					EASTING 934,597					24 HR. 19.7	
DRILL RIG/HAMMER EFF./DATE TER373 DIEDRICH D-50 93% 01/28/2022										DRILL METHOD Mud Rotary					HAMMER TYPE Automatic						
DRILLER TURNAGE, J. R.					START DATE 02/28/23					COMP. DATE 02/28/23					SURFACE WATER DEPTH N/A						
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	▼	MOI	L O G	SOIL AND ROCK DESCRIPTION						
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					ELEV. (ft)	DEPTH (ft)					
2085																					
2080																					
2075	2,079.0	1.0		2	4	5										2,080.0	GROUND SURFACE 0.0				
	2,076.5	3.5		4	4	6							M								
	2,074.6	5.4		11	11	13							M		2,072.5	7.5					
2,072.1	7.9		8	11	13							M	2,067.5		12.5						
2070	2,067.1	12.9		11	14	20							M			2,062.1	17.9				
	2,062.1	17.9		12	14	35							M			2,057.1	22.9				
2060	2,057.1	22.9		2	5	7							M			2,052.1	27.9				
	2,052.1	27.9		43	20	10							M			2,047.1	32.9				
2045	2,047.1	32.9		17	70	30/0.1										2,042.1	37.9				
	2,042.1	37.9		20	80/0.4										2,037.1	42.9					
2040	2,037.1	42.9		16	16	27							M			2,032.1	47.9				
	2,032.1	47.9		49	36	28							M			2,027.1	52.9				
2030	2,027.1	52.9		90	10/0.1										2,022.1	57.9					
	2,022.1	57.9		60/0.1										2,022.0	58.0						
															CRYSTALLINE ROCK (GNEISS) Boring Terminated WITH STANDARD PENETRATION TEST REFUSAL at Elevation 2,022.0 ft IN CRYSTALLINE ROCK (GNEISS)						

NC DOT BORE SINGLE I2513AC_GEO_RWAL_STATE STREET.GPJ NC_DOT.GDT 5/15/24

GEOTECHNICAL BORING REPORT
BORE LOG

WBS		34165.1.6		TIP		I-2513AC		COUNTY		BUNCOMBE		GEOLOGIST		Marples, Z. J.																																													
SITE DESCRIPTION													MSE WALLS ON I-26 OVER STATE ST. BETWEEN SR 3556 (AMBOY RD.) AND US 23 BUS. (HAYWOOD RD.)			GROUND WTR (ft)																																											
BORING NO.				EB1-C				STATION				105+32				OFFSET				13 ft RT				ALIGNMENT				-L-				0 HR.		N/A																									
COLLAR ELEV.				2,083.2 ft				TOTAL DEPTH				63.2 ft				NORTHING				682,810				EASTING				934,598				24 HR.		FIAD																									
DRILL RIG/HAMMER EFF./DATE										TER1006 Geoprobe 7822DT 90% 01/20/2023										DRILL METHOD										Mud Rotary										HAMMER TYPE										Automatic									
DRILLER						WHITEHEAD, T.						START DATE						02/22/24						COMP. DATE						02/22/24						SURFACE WATER DEPTH												N/A											
ELEV (ft)		DRIVE ELEV (ft)		DEPTH (ft)		BLOW COUNT			BLOWS PER FOOT										SAMP. NO.		MOI		LOG		SOIL AND ROCK DESCRIPTION																																		
						0.5ft 0.5ft 0.5ft			0 25 50 75 100																ELEV. (ft) DEPTH (ft)																																		
2085																																																											
		2,082.2		1.0																					GROUND SURFACE 0.0																																		
		2,082.2		1.0																					PAVEMENT 0.8																																		
2080		2,080.0		3.2		3 4 5			9																(0.3' ASPHALT, 0.5' CONCRETE)																																		
		2,077.2		6.0		2 2 6			10																RESIDUAL																																		
2075		2,075.0		8.2		4 9 9			18																STIFF TO HARD, BROWN, RED, FINE TO																																		
																									COARSE SANDY SILT, WITH ROCK																																		
2070		2,070.0		13.2		5 7 7			14																FRAGMENTS, MOIST (A-4)																																		
2065		2,065.0		18.2		3 10 23			33																																																		
2060		2,060.0		23.2		5 9 15			24																																																		
2055		2,055.0		28.2		6 9 17			26																																																		
2050		2,050.0		33.2		4 7 13			20																																																		
2045		2,045.0		38.2		19 23 31			54																																																		
2040		2,040.0		43.2		13 16 18			34																																																		
2035		2,035.0		48.2		5 19 26			45																																																		
2030		2,030.0		53.2		44 30 33			63																																																		
2025		2,025.0		58.2		12 13 24			37																																																		
2020		2,020.0		63.2		60/0.0			60/0.0																																																		

NC DOT BORE SINGLE I2513AC_GEO_RWAL_STATE STREET.GPJ NC_DOT.GDT 5/15/24

NCDOT BORE SINGLE I2513AC GEO RWAL STATE STREET.GPJ NC DOT.GDT 5/16/24

NCDOT BORE SINGLE I2513AC GEO RWAL STATE STREET.GPJ NC DOT.GDT 5/16/24

NCDOT BORE SINGLE I2513AC GEO RWAL STATE STREET.GPJ NC DOT.GDT 5/16/24

NCDOT BORE SINGLE I2513AC GEO RWAL STATE STREET.GPJ NC DOT.GDT 5/16/24

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 34165.1.6			TIP I-2513AC			COUNTY BUNCOMBE			GEOLOGIST MARPLES, Z. J.							
SITE DESCRIPTION MSE WALLS ON I-26 OVER STATE ST. BETWEEN SR 3556 (AMBOY RD.) AND US 23 BUS. (HAYWOOD RD.)									GROUND WTR (ft)							
BORING NO. EB2-A			STATION 106+81			OFFSET 90 ft LT			ALIGNMENT -L-			0 HR.	N/A			
COLLAR ELEV. 2,092.3 ft			TOTAL DEPTH 73.3 ft			NORTHING 682,985			EASTING 934,562			24 HR.	22.7			
DRILL RIG/HAMMER EFF./DATE TER373 DIEDRICH D-50 93% 01/28/2022						DRILL METHOD Mud Rotary				HAMMER TYPE Automatic						
DRILLER TURNAGE, J. R.			START DATE 03/01/23			COMP. DATE 03/01/23			SURFACE WATER DEPTH N/A							
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	▼	MOI	LOG	SOIL AND ROCK DESCRIPTION	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					ELEV. (ft)	DEPTH (ft)
2095																
	2,091.3	1.0	2	3	3	6									2,092.3	GROUND SURFACE 0.0
2090	2,088.8	3.5	6	6	7	13										
	2,087.0	5.3	3	5	5	10									2,087.3	ROADWAY EMBANKMENT 5.0
2085	2,084.0	8.3	3	2	6	8										RESIDUAL
																STIFF, RED, BROWN, FINE TO COARSE SANDY SILT, MICACEOUS, MOIST (A-4)
2080	2,079.0	13.3	7	9	12	21									2,079.3	13.0
																MEDIUM DENSE, BROWN, GRAY, SILTY COARSE TO FINE SAND, MOIST (A-2-4)
2075	2,074.0	18.3	9	9	10	19										
2070	2,069.0	23.3	7	8	9	17									2,069.3	23.0
																STIFF TO HARD, BROWN, GRAY, FINE TO COARSE SANDY SILT, MICACEOUS, MOIST (A-4)
2065	2,064.0	28.3	5	5	8	13										
2060	2,059.0	33.3	4	5	7	12										
2055	2,054.0	38.3	4	5	3	8										
2050	2,049.0	43.3	13	16	34	50										
2045	2,044.0	48.3	30	22	28	50										
2040	2,039.0	53.3	10	16	30	46										
2035	2,034.0	58.3	2	10	18	28									2,034.3	58.0
																MEDIUM DENSE TO DENSE, BROWN, GRAY, SILTY COARSE TO FINE SAND, MOIST (A-2-4)
2030	2,029.0	63.3	30	21	16	37										
2025	2,024.0	68.3	100/0.2												2,024.3	68.0
																WEATHERED ROCK (GNEISS)
2020	2,019.0	73.3	60/0.0												2,020.8	71.5
															2,019.0	73.3
																Boring Terminated WITH STANDARD PENETRATION TEST REFUSAL at Elevation 2,019.0 ft IN CRYSTALLINE

NC DOT BORE SINGLE I2513AC_GEO_RWAL_STATE STREET.GPJ NC_DOT.GDT 5/15/24

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 34165.1.6			TIP I-2513AC			COUNTY BUNCOMBE			GEOLOGIST MARPLES, Z. J.						
SITE DESCRIPTION MSE WALLS ON I-26 OVER STATE ST. BETWEEN SR 3556 (AMBOY RD.) AND US 23 BUS. (HAYWOOD RD.)									GROUND WTR (ft)						
BORING NO. EB2-A			STATION 106+81			OFFSET 90 ft LT			ALIGNMENT -L-			0 HR.	N/A		
COLLAR ELEV. 2,092.3 ft			TOTAL DEPTH 73.3 ft			NORTHING 682,985			EASTING 934,562			24 HR.	22.7		
DRILL RIG/HAMMER EFF./DATE TER373 DIEDRICH D-50 93% 01/28/2022						DRILL METHOD Mud Rotary				HAMMER TYPE Automatic					
DRILLER TURNAGE, J. R.			START DATE 03/01/23			COMP. DATE 03/01/23			SURFACE WATER DEPTH N/A						
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	▼ MOI	L O G	SOIL AND ROCK DESCRIPTION	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				ELEV. (ft)	DEPTH (ft)
2015						Match Line								ROCK (GNEISS)	

NC DOT BORE SINGLE I2513AC_GEO_RWAL_STATE STREET.GPJ NC_DOT.GDT 5/15/24

NCDOT BORE SINGLE E 12513AC GEO BWA1 STATE STREET GP1 NC DOT GDT 5/16/24

NCDOT BORE SINGLE I2513AC GEO RWAL STATE STREET.GPJ NC DOT.GDT 5/16/24

NCDOT BORE SINGLE I2513AC GEO RWAL STATE STREET.GPJ NC DOT.GDT 5/15/24

NCDOT BORE SINGLE I2513AC GEO RWAL STATE STREET.GPJ NC DOT.GDT 5/15/24

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 34165.1.6			TIP I-2513AC			COUNTY BUNCOMBE			GEOLOGIST SCHLEMM, T.S.						
SITE DESCRIPTION MSE WALLS ON I-26 OVER STATE ST. BETWEEN SR 3556 (AMBOY RD.) AND US 23 BUS. (HAYWOOD RD.)										GROUND WTR (ft)					
BORING NO. B-53			STATION 106+96			OFFSET 54 ft LT			ALIGNMENT -L-			0 HR.	38.0		
COLLAR ELEV. 2,106.0 ft			TOTAL DEPTH 78.5 ft			NORTHING 682,985			EASTING 934,601			24 HR.	FIAD		
DRILL RIG/HAMMER EFF./DATE TER1974 CME-45B 93% 08/10/2017						DRILL METHOD H.S. Augers				HAMMER TYPE Automatic					
DRILLER TURNAGE, J.R.			START DATE 01/15/18			COMP. DATE 01/15/18			SURFACE WATER DEPTH N/A						
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				ELEV. (ft)	DEPTH (ft)
2110															
2105														2,106.0	PAVEMENT SURFACE 0.0
														2,104.5	PAVEMENT 1.5
	2,102.5	3.5	4	5	5										ROADWAY EMBANKMENT
2100															LOOSE, RED-BROWN, CLAYEY FINE TO COARSE SAND, TRACE MICA, TRACE GRAVEL, SILTY CLAY LAYERS, MOIST TO WET (A-2-6)
	2,097.5	8.5	2	2	3										
2095														2,095.0	RESIDUAL 11.0
	2,092.5	13.5	6	8	11										VERY STIFF, RED-BROWN, BROWN, FINE TO COARSE SANDY SILT, LITTLE MICA, TRACE QUARTZ FRAGMENTS, MOIST (A-4)
2090															
	2,087.5	18.5	7	11	11										
2085															
	2,082.5	23.5	7	9	10										
2080														2,079.0	STIFF TO VERY STIFF, LIGHT TO DARK BROWN, SILTY CLAY, TRACE TO LITTLE MICA, TRACE QUARTZ FRAGMENTS, MOIST (A-7-6) 27.0
	2,077.5	28.5	5	6	7										
2075															
	2,072.5	33.5	7	8	11										
2070															
	2,067.5	38.5	4	6	7										
2065															
	2,062.5	43.5	5	7	10										
2060														2,060.0	MEDIUM DENSE TO VERY DENSE, BROWN TO DARK BROWN, BLACK, WHITE, CLAYEY FINE SAND, TRACE TO LITTLE MICA, TRACE TO LITTLE QUARTZ FRAGMENTS, SILTY CLAY LAYERS, MOIST TO WET (A-2-6) 46.0
	2,057.5	48.5	9	9	11										
2055															
	2,052.5	53.5	15	30	36										
2050															
	2,047.5	58.5	8	6	8										
2045															
	2,042.5	63.5	10	15	29										
2040														2,040.0	VERY STIFF, BROWN, DARK BROWN, BLACK, SILTY CLAY, TRACE TO LITTLE MICA, TRACE QUARTZ FRAGMENTS, MOIST (A-7-6) 66.0
	2,037.5	68.5	6	9	15										
2035															
	2,032.5	73.5	23	52	48/0.2									2,032.0	WEATHERED ROCK (BROWN, GNEISS) 74.0
2030															

NC DOT BORE SINGLE I2513AC_GEO_RWAL_STATE STREET.GPJ NC_DOT.GDT 5/15/24

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 34165.1.6			TIP I-2513AC			COUNTY BUNCOMBE			GEOLOGIST SCHLEMM, T.S.						
SITE DESCRIPTION MSE WALLS ON I-26 OVER STATE ST. BETWEEN SR 3556 (AMBOY RD.) AND US 23 BUS. (HAYWOOD RD.)									GROUND WTR (ft)						
BORING NO. B-53			STATION 106+96			OFFSET 54 ft LT			ALIGNMENT -L-			0 HR. 38.0			
COLLAR ELEV. 2,106.0 ft			TOTAL DEPTH 78.5 ft			NORTHING 682,985			EASTING 934,601			24 HR. FIAD			
DRILL RIG/HAMMER EFF./DATE TER1974 CME-45B 93% 08/10/2017						DRILL METHOD H.S. Augers			HAMMER TYPE Automatic						
DRILLER TURNAGE, J.R.			START DATE 01/15/18			COMP. DATE 01/15/18			SURFACE WATER DEPTH N/A						
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				ELEV. (ft)	DEPTH (ft)
2030						Match Line									
	2,027.5	78.5												2,027.5	78.5
														WEATHERED ROCK (BROWN, GNEISS) (continued)	
														Boring Terminated WITH STANDARD PENETRATION TEST REFUSAL at Elevation 2,027.5 ft ON CRYSTALLINE ROCK (GNEISS)	

NC DOT BORE SINGLE I2513AC_GEO_RWAL_STATE STREET.GPJ NC_DOT.GDT 5/15/24

GEOTECHNICAL BORING REPORT

BORE LOG

[illegible]

REFERENCE: I-2513AC

PROJECT: 34165

CONTENTS

SHEET NO.	DESCRIPTION
1	TITLE SHEET
2	LEGEND (SOIL & ROCK)
3	SITE PLAN
4	PROFILE
5 - 9	BORE LOGS
10	LABORATORY TESTING SUMMARY

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

STRUCTURE
SUBSURFACE INVESTIGATION

COUNTY BUNCOMBE
PROJECT DESCRIPTION I-26 CONNECTOR (I-40 TO US 19 – US 23 – US 70 NORTH TO ASHEVILLE)
SITE DESCRIPTION RETAINING WALL NO. 7, STA. 10 + 00.00 –WALL7– (STA. 115 + 44.83 –L–) TO STA. 12 + 74.25 –WALL7– (STA. 118 + 19.53 –L–)

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	I-2513AC	1	10

CAUTION NOTICE

THE SUBSURFACE INFORMATION AND THE SUBSURFACE INVESTIGATION ON WHICH IT IS BASED WERE MADE FOR THE PURPOSE OF PREPARING THE SCOPE OF WORK TO BE INCLUDED IN THE REQUEST FOR PROPOSAL. THE VARIOUS FIELD BORING LOGS, ROCK CORES AND SOIL TEST DATA AVAILABLE MAY BE REVIEWED OR INSPECTED IN RALEIGH BY CONTACTING THE N. C. DEPARTMENT OF TRANSPORTATION, GEOTECHNICAL ENGINEERING UNIT AT (919) 707-6850. THE SUBSURFACE PLANS AND REPORTS, FIELD BORING LOGS, ROCK CORES AND SOIL TEST DATA ARE NOT PART OF THE CONTRACT.

SOIL AND ROCK BOUNDARIES WITHIN A BOREHOLE ARE BASED ON GEOTECHNICAL INTERPRETATION UNLESS ENCOUNTERED IN A SAMPLE. INTERPRETED BOUNDARIES MAY NOT NECESSARILY REFLECT ACTUAL SUBSURFACE CONDITIONS BETWEEN SAMPLED STRATA AND BOREHOLE INFORMATION MAY NOT NECESSARILY REFLECT ACTUAL SUBSURFACE CONDITIONS BETWEEN BORINGS. THE LABORATORY SAMPLE DATA AND THE IN SITU (IN-PLACE) TEST DATA CAN BE RELIED ON ONLY TO THE DEGREE OF RELIABILITY INHERENT IN THE STANDARD TEST METHOD. THE OBSERVED WATER LEVELS OR SOIL MOISTURE CONDITIONS INDICATED IN THE SUBSURFACE INVESTIGATIONS ARE AS RECORDED AT THE TIME OF THE INVESTIGATION. THESE WATER LEVELS OR SOIL MOISTURE CONDITIONS MAY VARY CONSIDERABLY WITH TIME ACCORDING TO CLIMATIC CONDITIONS INCLUDING TEMPERATURES, PRECIPITATION AND WIND, AS WELL AS OTHER NON-CLIMATIC FACTORS.

THE BIDDER OR CONTRACTOR IS CAUTIONED THAT DETAILS SHOWN ON THE SUBSURFACE PLANS ARE PRELIMINARY ONLY AND IN MANY CASES THE FINAL DESIGN DETAILS ARE DIFFERENT. FOR BIDDING AND CONSTRUCTION PURPOSES, REFER TO THE CONSTRUCTION PLANS AND DOCUMENTS FOR FINAL DESIGN INFORMATION ON THIS PROJECT. THE DEPARTMENT DOES NOT WARRANT OR GUARANTEE THE SUFFICIENCY OR ACCURACY OF THE INVESTIGATION MADE, NOR THE INTERPRETATIONS MADE, OR OPINION OF THE DEPARTMENT AS TO THE TYPE OF MATERIALS AND CONDITIONS TO BE ENCOUNTERED. THE BIDDER OR CONTRACTOR IS CAUTIONED TO PERFORM INDEPENDENT SUBSURFACE INVESTIGATIONS AND MAKE INTERPRETATIONS AS NECESSARY TO CONFIRM CONDITIONS ENCOUNTERED ON THE PROJECT. THE CONTRACTOR SHALL HAVE NO CLAIM FOR ADDITIONAL COMPENSATION OR FOR AN EXTENSION OF TIME FOR ANY REASON RESULTING FROM THE ACTUAL CONDITIONS ENCOUNTERED AT THE SITE DIFFERING FROM THOSE INDICATED IN THE SUBSURFACE INFORMATION.

- NOTES:
- THE INFORMATION CONTAINED HEREIN IS NOT IMPLIED OR GUARANTEED BY THE N. C. DEPARTMENT OF TRANSPORTATION AS ACCURATE NOR IS IT CONSIDERED PART OF THE PLANS, SPECIFICATIONS OR CONTRACT FOR THE PROJECT.
 - BY HAVING REQUESTED THIS INFORMATION, THE CONTRACTOR SPECIFICALLY WAIVES ANY CLAIMS FOR INCREASED COMPENSATION OR EXTENSION OF TIME BASED ON DIFFERENCES BETWEEN THE CONDITIONS INDICATED HEREIN AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

PERSONNEL

MARPLES, Z. J.

TURNAGE, J. R.

OXENDINE, J.

INVESTIGATED BY MARPLES, Z. J.

DRAWN BY FIELDS, W. D.

CHECKED BY RIGGS, Jr., A. F.

SUBMITTED BY TERRACON CONSULTANTS

DATE JANUARY 2026

Prepared in the Office of:



3150 SPRING FOREST ROAD, SUITE 100
RALEIGH, NORTH CAROLINA 27616
NC REGISTERED ENGINEERING FIRM: E-0869
NC REGISTERED GEOLOGIC FIRM: C-367



DocuSigned by:


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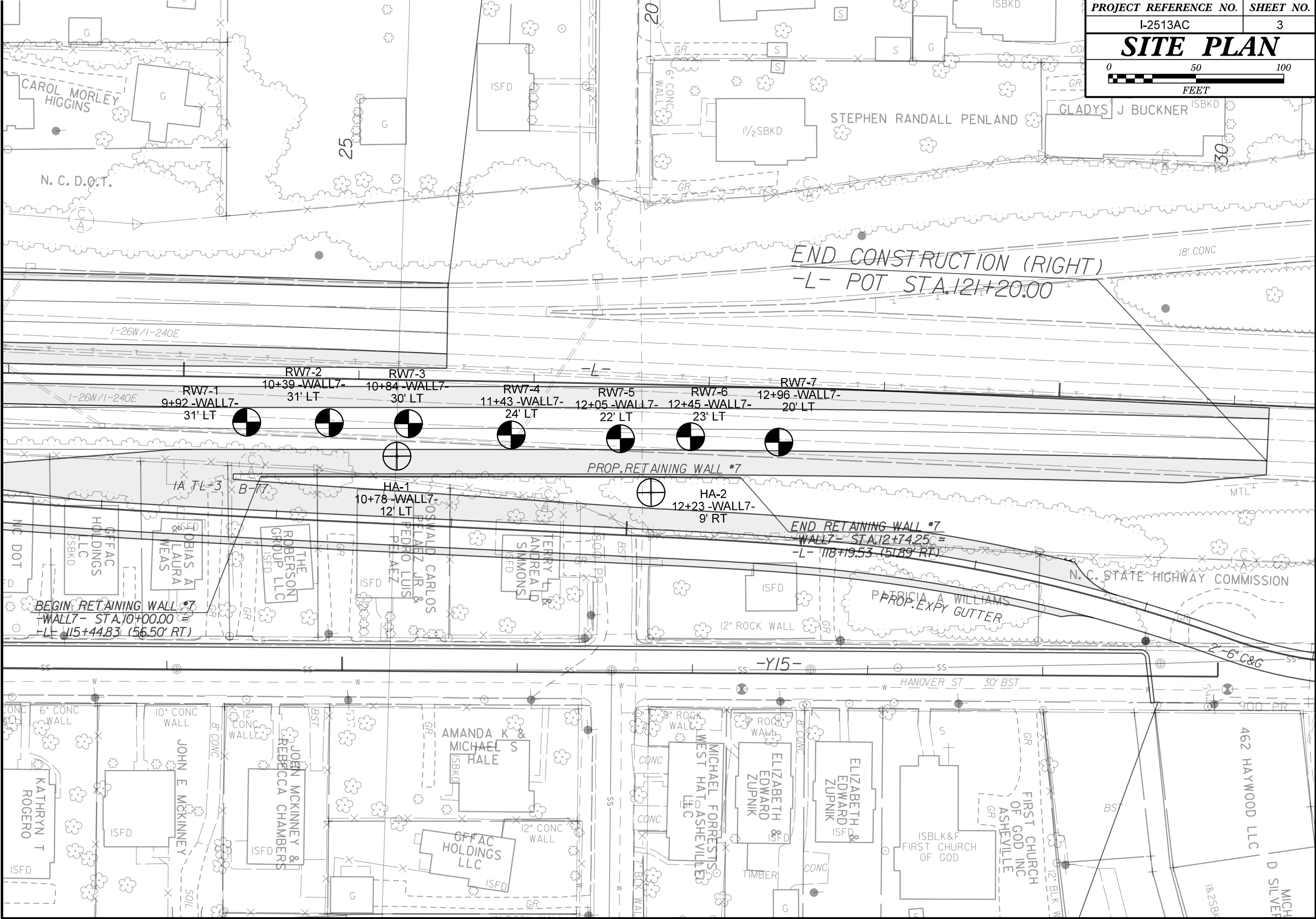
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6/17/2026

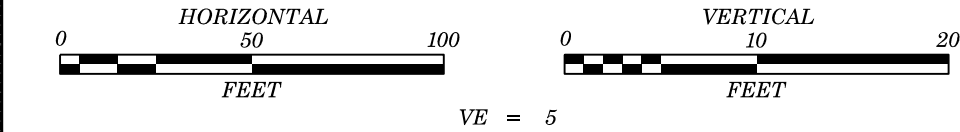
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UNLESS ALL SIGNATURES COMPLETED

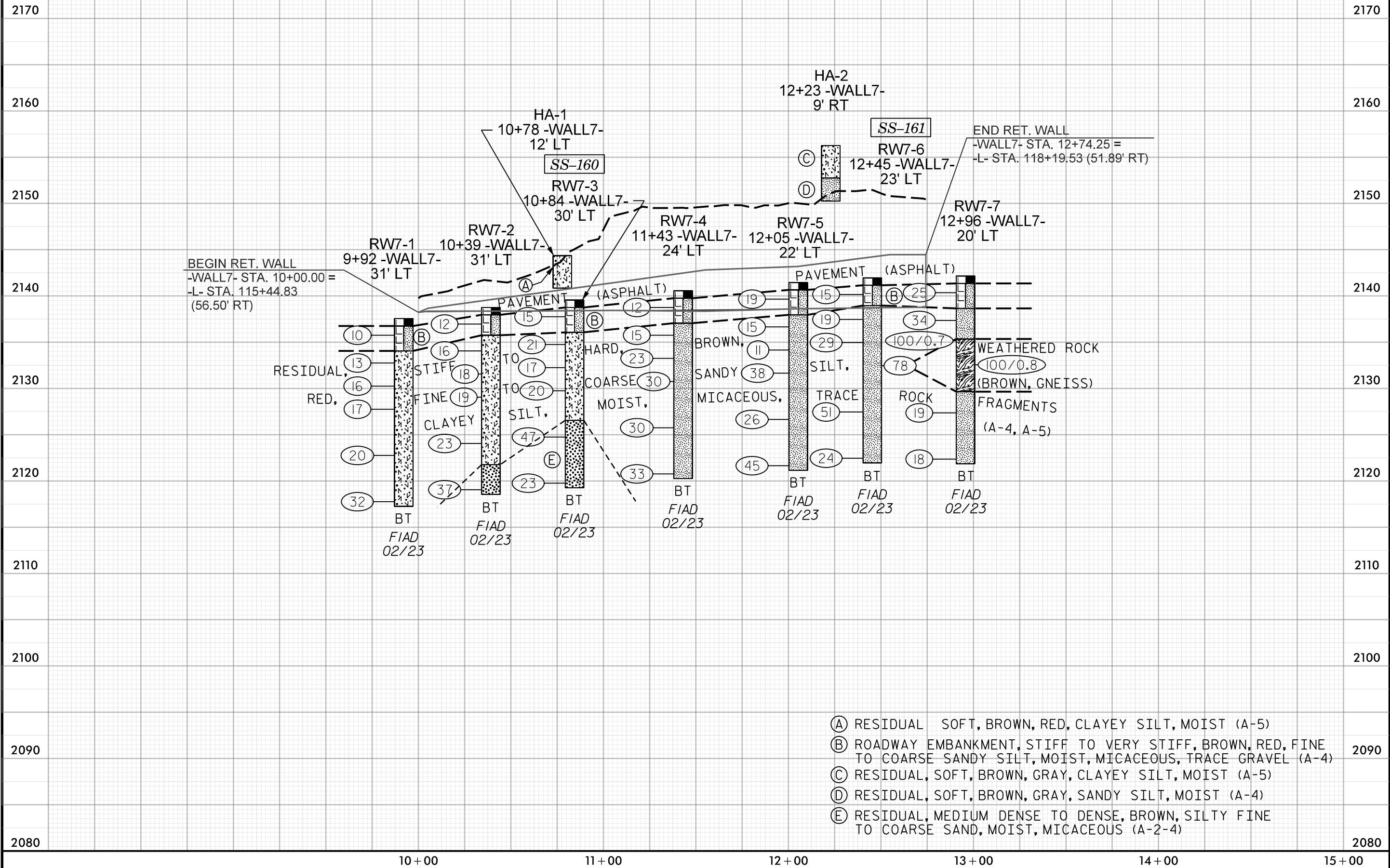
PROJECT REFERENCE NO.	SHEET NO.
I-2513AC	3
SITE PLAN	
0 50 100 FEET	



NOTE: INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ON TO THE EXISTING GROUND PROFILE ALONG THE CENTERLINE OF -WALL7- TAKEN FROM THE PROVIDED PROJECT TIN FILE i2513_ls_tin.tin, DATED: 09/05/2023.



PROJECT REFERENCE NO.	SHEET NO.
I-2513AC	4
CENTERLINE PROFILE ALONG -WALL7- AT STA 10+00 -WALL7- (STA. 115+44.86 -L-) TO STA. 12+74.25 -WALL7- (STA. 118+19.53 -L-)	



GEOTECHNICAL BORING REPORT
BORE LOG

WBS 34165.1.6			TIP I-2513AC			COUNTY BUNCOMBE			GEOLOGIST MARPLAES, Z. J.						
SITE DESCRIPTION RETAINING WALL NO. 7, I-26 Connector (I-40 to US-19-23-70 North of Asheville)												GROUND WTR (ft)			
BORING NO. RW7-1			STATION 9+92			OFFSET 31 ft LT			ALIGNMENT -WALL7-			0 HR. Dry			
COLLAR ELEV. 2,137.3 ft			TOTAL DEPTH 20.3 ft			NORTHING 683,783			EASTING 934,846			24 HR. FIAD			
DRILL RIG/HAMMER EFF./DATE TER373 DIEDRICH D-50 93% 01/28/2022						DRILL METHOD H.S. Augers			HAMMER TYPE Automatic						
DRILLER TURNAGE, J. R.			START DATE 02/08/23			COMP. DATE 02/08/23			SURFACE WATER DEPTH N/A						
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				ELEV. (ft)	DEPTH (ft)
2140															
2135	2,136.5	0.8	7	5	5									2,137.3	0.0
2130	2,133.5	3.8	5	5	8									2,136.5	0.8
	2,131.0	6.3	6	6	10									2,133.8	3.5
	2,128.5	8.8	5	7	10										
2125	2,123.5	13.8	8	9	11										
2120	2,118.5	18.8	13	14	18										

NCDOT BORE SINGLE I2513AC_GEO_RWAL7.GPJ NC_DOT.GDT 11/13/25

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 34165.1.6			TIP I-2513AC			COUNTY BUNCOMBE			GEOLOGIST MARPLAES, Z. J.						
SITE DESCRIPTION RETAINING WALL NO. 7, I-26 Connector (I-40 to US-19-23-70 North of Asheville)												GROUND WTR (ft)			
BORING NO. RW7-2			STATION 10+39			OFFSET 31 ft LT			ALIGNMENT -WALL7-			0 HR. Dry			
COLLAR ELEV. 2,138.5 ft			TOTAL DEPTH 20.2 ft			NORTHING 683,830			EASTING 934,850			24 HR. FIAD			
DRILL RIG/HAMMER EFF./DATE TER373 DIEDRICH D-50 93% 01/28/2022						DRILL METHOD H.S. Augers				HAMMER TYPE Automatic					
DRILLER TURNAGE, J. R.			START DATE 02/08/23			COMP. DATE 02/08/23			SURFACE WATER DEPTH N/A						
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				ELEV. (ft)	DEPTH (ft)
2140															
2135	2,137.7	0.8												2,138.5 GROUND SURFACE 0.0	
			7	5	7									2,137.7 PAVEMENT (0.8' ASPHALT) 0.8	
2130	2,134.8	3.7												2,135.5 ROADWAY EMBANKMENT 3.0	
			5	6	10									STIFF, BROWN, FINE TO COARSE SANDY SILT, MOIST, MICACEOUS (A-4)	
2125	2,132.3	6.2												RESIDUAL	
			5	7	11									VERY STIFF, BROWN, CLAYEY SILT, MOIST, MICACEOUS (A-5)	
2120	2,129.8	8.7													
			7	9	10										
2115	2,124.8	13.7												2,121.5 17.0	
			7	10	13									DENSE, BROWN, SILTY FINE SAND, MOIST (A-2-4)	
2110	2,119.8	18.7												2,118.3 20.2	
			12	16	21									Boring Terminated at Elevation 2,118.3 ft IN RESIDUAL SANDY SILT	

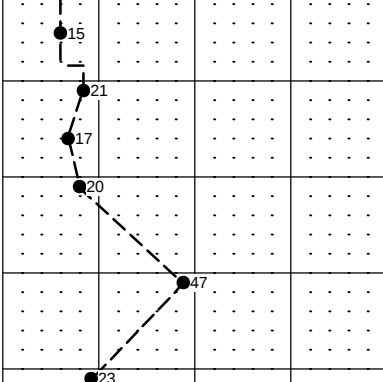
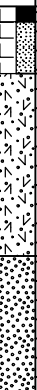
NCDOT BORE SINGLE I2513AC_GEO_RWAL7.GPJ NC_DOT.GDT 11/13/25

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 34165.1.6			TIP I-2513AC			COUNTY BUNCOMBE			GEOLOGIST MARPLES, Z. J.						
SITE DESCRIPTION RETAINING WALL 7, I-26 Connector (I-40 to US 19- US 23- US 70 North of Asheville)												GROUND WTR (ft)			
BORING NO. HA-1			STATION 10+78			OFFSET 12 ft LT			ALIGNMENT -WALL7-			0 HR. Dry			
COLLAR ELEV. 2,144.1 ft			TOTAL DEPTH 3.5 ft			NORTHING 693,867			EASTING 934,872			24 HR. FIAD			
DRILL RIG/HAMMER EFF./DATE N/A						DRILL METHOD Hand Auger				HAMMER TYPE N/A					
DRILLER N/A			START DATE 02/20/24			COMP. DATE 02/20/24			SURFACE WATER DEPTH N/A						
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	▼ MOI	L O G	SOIL AND ROCK DESCRIPTION	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				ELEV. (ft)	DEPTH (ft)
2145														2,144.1	0.0
												M		2,140.6	3.5
														Boring Terminated at Elevation 2,140.6 ft IN RESIDUAL CLAYEY SILT	

NCDOT BORE SINGLE I2513AC_GEO_RWAL7.GPJ NC_DOT.GDT 11/13/25

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 34165.1.6			TIP I-2513AC			COUNTY BUNCOMBE			GEOLOGIST MARPLAES, Z. J.						
SITE DESCRIPTION RETAINING WALL NO. 7, I-26 Connector (I-40 to US-19-23-70 North of Asheville)												GROUND WTR (ft) 0 HR. Dry 24 HR. FIAD			
BORING NO. RW7-3			STATION 10+84			OFFSET 30 ft LT			ALIGNMENT -WALL7-						
COLLAR ELEV. 2,139.3 ft			TOTAL DEPTH 20.3 ft			NORTHING 683,875			EASTING 934,854						
DRILL RIG/HAMMER EFF./DATE TER373 DIEDRICH D-50 93% 01/28/2022						DRILL METHOD H.S. Augers				HAMMER TYPE Automatic					
DRILLER TURNAGE, J. R.			START DATE 02/08/23			COMP. DATE 02/08/23			SURFACE WATER DEPTH N/A						
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
2140															
2135	2,138.5	0.8	5	6	9							M		2,139.3 GROUND SURFACE 0.0 2,138.5 PAVEMENT (0.8' ASPHALT) 0.8 2,135.8 ROADWAY EMBANKMENT 3.5 VERY STIFF, BROWN, RED, FINE TO COARSE SANDY SILT, MOIST, MICACEOUS (A-4) RESIDUAL VERY STIFF, BROWN, RED, CLAYEY SILT, MOIST, MICACEOUS (A-5) 2,126.3 MEDIUM DENSE TO DENSE, BROWN, SILTY FINE TO COARSE SAND, MOIST, MICACEOUS (A-2-4) 13.0 2,119.0 Boring Terminated at Elevation 2,119.0 ft IN RESIDUAL SANDY SILT 20.3	
	2,135.5	3.8	6	9	12							M			
2130	2,133.0	6.3	5	7	10						SS-160	21%			
	2,130.5	8.8	6	9	11							M			
2125	2,125.5	13.8	20	23	24							M			
2120	2,120.5	18.8	9	10	13							M			

NCDOT BORE SINGLE I2513AC_GEO_RWAL7.GPJ NC_DOT.GDT 11/13/25

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 34165.1.6			TIP I-2513AC			COUNTY BUNCOMBE			GEOLOGIST MARPLAES, Z. J.						
SITE DESCRIPTION RETAINING WALL NO. 7, I-26 Connector (I-40 to US-19-23-70 North of Asheville)												GROUND WTR (ft)			
BORING NO. RW7-4			STATION 11+43			OFFSET 24 ft LT			ALIGNMENT -WALL7-			0 HR. Dry			
COLLAR ELEV. 2,140.3 ft			TOTAL DEPTH 20.3 ft			NORTHING 683,933			EASTING 934,865			24 HR. FIAD			
DRILL RIG/HAMMER EFF./DATE TER373 DIEDRICH D-50 93% 01/28/2022						DRILL METHOD H.S. Augers			HAMMER TYPE Automatic						
DRILLER TURNAGE, J. R.			START DATE 02/09/23			COMP. DATE 02/09/23			SURFACE WATER DEPTH N/A						
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				ELEV. (ft)	DEPTH (ft)
2145															
2140															
2135	2,139.5	0.8												2,140.3 GROUND SURFACE 0.0	
														2,139.5 PAVEMENT (0.8" ASPHALT) 0.8	
	2,136.5	3.8	5	6	6						M			ROADWAY EMBANKMENT	
2130	2,134.0	6.3	6	6	9						M			STIFF, RED, BROWN, FINE TO COARSE SANDY SILT, MOIST, MICACEOUS (A-4) 3.5	
	2,131.5	8.8	8	10	13						M			RESIDUAL	
2125	2,126.5	13.8	8	11	19						M			VERY STIFF TO HARD, RED, BROWN, FINE TO COARSE SANDY SILT, MOIST, MICACEOUS (A-4)	
											M				
2120	2,121.5	18.8	11	12	18						M				
			12	14	19						M			2,120.0 20.3	
														Boring Terminated at Elevation 2,120.0 ft IN RESIDUAL SANDY SILT	

NCDOT BORE SINGLE I2513AC_GEO_RWAL7.GPJ NC_DOT.GDT 11/13/25

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 34165.1.6			TIP I-2513AC			COUNTY BUNCOMBE			GEOLOGIST MARPLAES, Z. J.						
SITE DESCRIPTION RETAINING WALL NO. 7, I-26 Connector (I-40 to US-19-23-70 North of Asheville)												GROUND WTR (ft)			
BORING NO. RW7-5			STATION 12+05			OFFSET 22 ft LT			ALIGNMENT -WALL7-			0 HR. Dry			
COLLAR ELEV. 2,141.2 ft			TOTAL DEPTH 20.3 ft			NORTHING 683,995			EASTING 934,872			24 HR. FIAD			
DRILL RIG/HAMMER EFF./DATE TER373 DIEDRICH D-50 93% 01/28/2022						DRILL METHOD H.S. Augers			HAMMER TYPE Automatic						
DRILLER TURNAGE, J. R.			START DATE 02/09/23			COMP. DATE 02/09/23			SURFACE WATER DEPTH N/A						
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				ELEV. (ft)	DEPTH (ft)
2145															
2140	2,140.4	0.8													
2135	2,137.4	3.8	4	10	9						M			2,141.2 GROUND SURFACE 0.0	
	2,134.9	6.3	4	6	9						M			2,140.4 PAVEMENT (0.8" ASPHALT) 0.8	
2130	2,132.4	8.8	4	5	6						M			2,137.7 ROADWAY EMBANKMENT 3.5	
	2,127.4	13.8	14	18	20						M			VERY STIFF, BROWN, FINE TO COARSE SANDY SILT, MOIST, MICACEOUS (A-4)	
2125	2,122.4	18.8	10	12	14						M			RESIDUAL	
			7	13	32						M			STIFF TO HARD, BROWN, BLACK, RED, FINE TO COARSE SANDY SILT, MOIST, MICACEOUS, TRACE ROCK FRAGMENTS (A-4)	
											M			2,120.9 20.3	
														Boring Terminated at Elevation 2,120.9 ft IN RESIDUAL SANDY SILT	

NCDOT BORE SINGLE I2513AC_GEO_RWAL7.GPJ NC_DOT.GDT 11/13/25

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 34165.1.6			TIP I-2513AC			COUNTY BUNCOMBE			GEOLOGIST MARPLAES, Z. J.						
SITE DESCRIPTION RETAINING WALL NO. 7, I-26 Connector (I-40 to US-19-23-70 North of Asheville)											GROUND WTR (ft)				
BORING NO. HA-2			STATION 12+23			OFFSET 9 ft RT			ALIGNMENT -WALL7-			0 HR.	Dry		
COLLAR ELEV. 2,156.0 ft			TOTAL DEPTH 6.0 ft			NORTHING 684,010			EASTING 934,904			24 HR.	FIAD		
DRILL RIG/HAMMER EFF./DATE N/A							DRILL METHOD Hand Auger				HAMMER TYPE N/A				
DRILLER N/A			START DATE 02/20/25			COMP. DATE 02/20/25			SURFACE WATER DEPTH N/A						
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				ELEV. (ft)	DEPTH (ft)
2160															
2155														2,156.0	GROUND SURFACE 0.0
											M			2,152.5	RESIDUAL SOFT, BROWN, GRAY, CLAYEY SILT, MOIST (A-5) 3.5
2150											M			2,150.0	SOFT, BROWN, GRAY, SANDY SILT, MOIST (A-4) 6.0
														Boring Terminated at Elevation 2,150.0 ft IN RESIDUAL SANDY SILT	

NCDOT BORE SINGLE I2513AC_GEO_RVAL7.GPJ NC_DOT.GDT 11/13/25

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 34165.1.6			TIP I-2513AC			COUNTY BUNCOMBE			GEOLOGIST MARPLAES, Z. J.						
SITE DESCRIPTION RETAINING WALL NO. 7, I-26 Connector (I-40 to US-19-23-70 North of Asheville)									GROUND WTR (ft)						
BORING NO. RW7-6			STATION 12+45			OFFSET 23 ft LT			ALIGNMENT -WALL7-						
COLLAR ELEV. 2,141.7 ft			TOTAL DEPTH 20.0 ft			NORTHING 684,035			EASTING 934,874						
DRILL RIG/HAMMER EFF./DATE TER373 DIEDRICH D-50 93% 01/28/2022						DRILL METHOD H.S. Augers				HAMMER TYPE Automatic					
DRILLER TURNAGE, J. R.			START DATE 02/09/23			COMP. DATE 02/09/23			SURFACE WATER DEPTH N/A						
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				ELEV. (ft)	DEPTH (ft)
2145															
2140	2,140.9	0.8												2,141.7	GROUND SURFACE 0.0
			5	7	8									2,140.9	PAVEMENT (0.8' ASPHALT) 0.8
	2,138.2	3.5	6	7	12									2,138.7	ROADWAY EMBANKMENT STIFF, BROWN, FINE TO COARSE SANDY SILT, MOIST, MICACEOUS (A-4) 3.0
2135	2,135.7	6.0	5	11	18										RESIDUAL VERY STIFF TO HARD, FINE TO COARSE SANDY SILT, MOIST, MICACEOUS (A-4)
	2,133.2	8.5	19	32	46										
2130	2,128.2	13.5	12	20	31										
2125	2,123.2	18.5	7	9	15										
														2,121.7	Boring Terminated at Elevation 2,121.7 ft IN RESIDUAL SANDY SILT 20.0

NCDOT BORE SINGLE I2513AC_GEO_RVAL7.GPJ NC_DOT.GDT 11/13/25

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 34165.1.6			TIP I-2513AC			COUNTY BUNCOMBE			GEOLOGIST MARPLAES, Z. J.						
SITE DESCRIPTION RETAINING WALL NO. 7, I-26 Connector (I-40 to US-19-23-70 North of Asheville)												GROUND WTR (ft)			
BORING NO. RW7-7			STATION 12+96			OFFSET 20 ft LT			ALIGNMENT -WALL7-			0 HR. Dry			
COLLAR ELEV. 2,141.9 ft			TOTAL DEPTH 20.3 ft			NORTHING 684,085			EASTING 934,881			24 HR. FIAD			
DRILL RIG/HAMMER EFF./DATE TER373 DIEDRICH D-50 93% 01/28/2022						DRILL METHOD H.S. Augers			HAMMER TYPE Automatic						
DRILLER TURNAGE, J. R.			START DATE 02/09/23			COMP. DATE 02/09/23			SURFACE WATER DEPTH N/A						
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				ELEV. (ft)	DEPTH (ft)
2145															
2140	2,141.1	0.8	9	8	17									2,141.9	0.0
														2,141.1	0.8
2135	2,138.1	3.8	5	14	20						M			2,138.4	3.5
	2,135.6	6.3	21	65	35/0.2						M			2,135.1	6.8
2130	2,133.1	8.8	42	58/0.3										2,135.1	6.8
														2,129.4	12.5
2125	2,128.1	13.8	6	7	12						M			2,129.4	12.5
	2,123.1	18.8	9	7	11						M			2,121.6	20.3
														Boring Terminated at Elevation 2,121.6 ft IN RESIDUAL SANDY SILT	

NCDOT BORE SINGLE I2513AC_GEO_RWAL7.GPJ NC_DOT.GDT 11/13/25

REFERENCE: I-25I3AC

PROJECT: 34I65

CONTENTS

SHEET NO.	DESCRIPTION
I	TITLE SHEET
2	LEGEND (SOIL & ROCK)
3	SITE PLAN
3	PROFILE
4-I0	BORE LOGS
II	SOIL TEST RESULTS

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

STRUCTURE
SUBSURFACE INVESTIGATION

COUNTY BUNCOMBE
PROJECT DESCRIPTION I-26I-40I-240 INTERCHANGE
TO SR 3548 (HAYWOOD ROAD)

SITE DESCRIPTION NOISE WALL NO. 5A, FROM
STA. 10 + 00 (-RP32- STA. 11 + 52.05) TO STA. 20 + 85.00
(-RP32- STA. 22 + 43.5I)

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	I-25I3AC	1	11

CAUTION NOTICE

THE SUBSURFACE INFORMATION AND THE SUBSURFACE INVESTIGATION ON WHICH IT IS BASED WERE MADE FOR THE PURPOSE OF PREPARING THE SCOPE OF WORK TO BE INCLUDED IN THE REQUEST FOR PROPOSAL. THE VARIOUS FIELD BORING LOGS, ROCK CORES AND SOIL TEST DATA AVAILABLE MAY BE REVIEWED OR INSPECTED IN RALEIGH BY CONTACTING THE N. C. DEPARTMENT OF TRANSPORTATION, GEOTECHNICAL ENGINEERING UNIT AT (919) 707-6850. THE SUBSURFACE PLANS AND REPORTS, FIELD BORING LOGS, ROCK CORES AND SOIL TEST DATA ARE NOT PART OF THE CONTRACT.

SOIL AND ROCK BOUNDARIES WITHIN A BOREHOLE ARE BASED ON GEOTECHNICAL INTERPRETATION UNLESS ENCOUNTERED IN A SAMPLE. INTERPRETED BOUNDARIES MAY NOT NECESSARILY REFLECT ACTUAL SUBSURFACE CONDITIONS BETWEEN SAMPLED STRATA AND BOREHOLE INFORMATION MAY NOT NECESSARILY REFLECT ACTUAL SUBSURFACE CONDITIONS BETWEEN BORINGS. THE LABORATORY SAMPLE DATA AND THE IN SITU (IN-PLACE) TEST DATA CAN BE RELIED ON ONLY TO THE DEGREE OF RELIABILITY INHERENT IN THE STANDARD TEST METHOD. THE OBSERVED WATER LEVELS OR SOIL MOISTURE CONDITIONS INDICATED IN THE SUBSURFACE INVESTIGATIONS ARE AS RECORDED AT THE TIME OF THE INVESTIGATION. THESE WATER LEVELS OR SOIL MOISTURE CONDITIONS MAY VARY CONSIDERABLY WITH TIME ACCORDING TO CLIMATIC CONDITIONS INCLUDING TEMPERATURES, PRECIPITATION AND WIND, AS WELL AS OTHER NON-CLIMATIC FACTORS.

THE BIDDER OR CONTRACTOR IS CAUTIONED THAT DETAILS SHOWN ON THE SUBSURFACE PLANS ARE PRELIMINARY ONLY AND IN MANY CASES THE FINAL DESIGN DETAILS ARE DIFFERENT. FOR BIDDING AND CONSTRUCTION PURPOSES, REFER TO THE CONSTRUCTION PLANS AND DOCUMENTS FOR FINAL DESIGN INFORMATION ON THIS PROJECT. THE DEPARTMENT DOES NOT WARRANT OR GUARANTEE THE SUFFICIENCY OR ACCURACY OF THE INVESTIGATION MADE, NOR THE INTERPRETATIONS MADE, OR OPINION OF THE DEPARTMENT AS TO THE TYPE OF MATERIALS AND CONDITIONS TO BE ENCOUNTERED. THE BIDDER OR CONTRACTOR IS CAUTIONED TO PERFORM INDEPENDENT SUBSURFACE INVESTIGATIONS AND MAKE INTERPRETATIONS AS NECESSARY TO CONFIRM CONDITIONS ENCOUNTERED ON THE PROJECT. THE CONTRACTOR SHALL HAVE NO CLAIM FOR ADDITIONAL COMPENSATION OR FOR AN EXTENSION OF TIME FOR ANY REASON RESULTING FROM THE ACTUAL CONDITIONS ENCOUNTERED AT THE SITE DIFFERING FROM THOSE INDICATED IN THE SUBSURFACE INFORMATION.

- NOTES:
- THE INFORMATION CONTAINED HEREIN IS NOT IMPLIED OR GUARANTEED BY THE N. C. DEPARTMENT OF TRANSPORTATION AS ACCURATE NOR IS IT CONSIDERED PART OF THE PLANS, SPECIFICATIONS OR CONTRACT FOR THE PROJECT.
 - BY HAVING REQUESTED THIS INFORMATION, THE CONTRACTOR SPECIFICALLY WAIVES ANY CLAIMS FOR INCREASED COMPENSATION OR EXTENSION OF TIME BASED ON DIFFERENCES BETWEEN THE CONDITIONS INDICATED HEREIN AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

PERSONNEL

A. BLACKMORE

R. BLACKSTOCK

C. OSBORNE

GEOLOGIC EXPLORATION

INVESTIGATED BY ECS SOUTHEAST, LLC

DRAWN BY A. SUTTLE, P.G.

CHECKED BY M. MULLA, P.E.

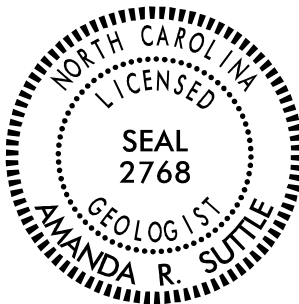
SUBMITTED BY ECS SOUTHEAST, LLC

DATE JULY 2024

Prepared in the Office of:



ECS SOUTHEAST, LLC
1812 CENTER PARK DRIVE, SUITE D
CHARLOTTE, NC 28217
(704) 525-5152 [PHONE]
(704) 357-0023 [FAX]
NC REGISTERED
ENGINEERING
FIRM # F-1519



Signed by: Amanda R. Suttle, P.G. 6/30/2026
SIGNATURE DATE

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

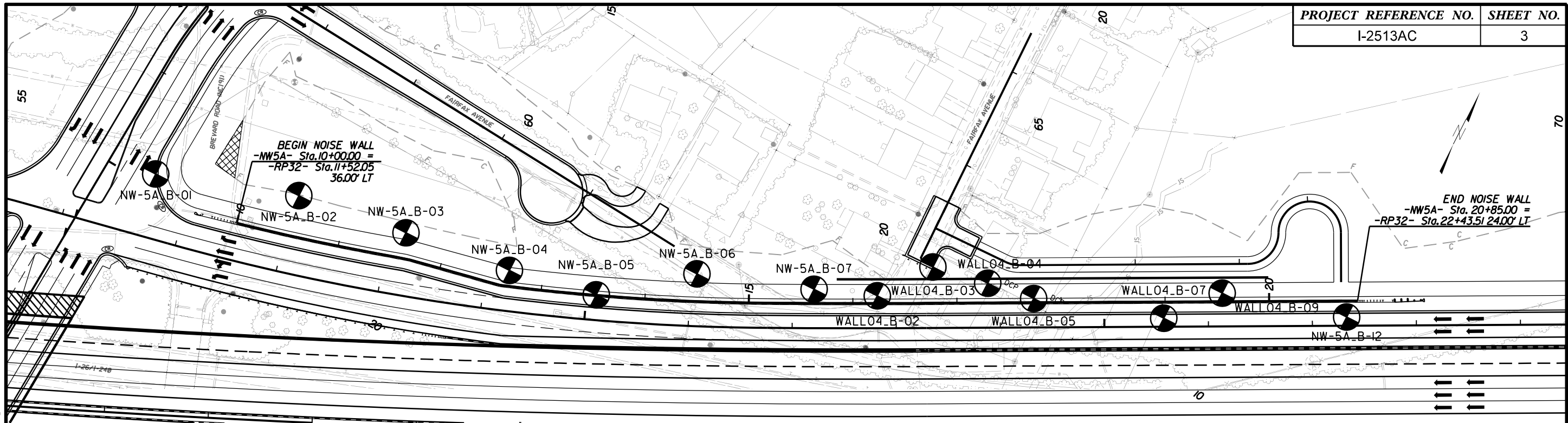
DIVISION OF HIGHWAYS

GEOTECHNICAL ENGINEERING UNIT

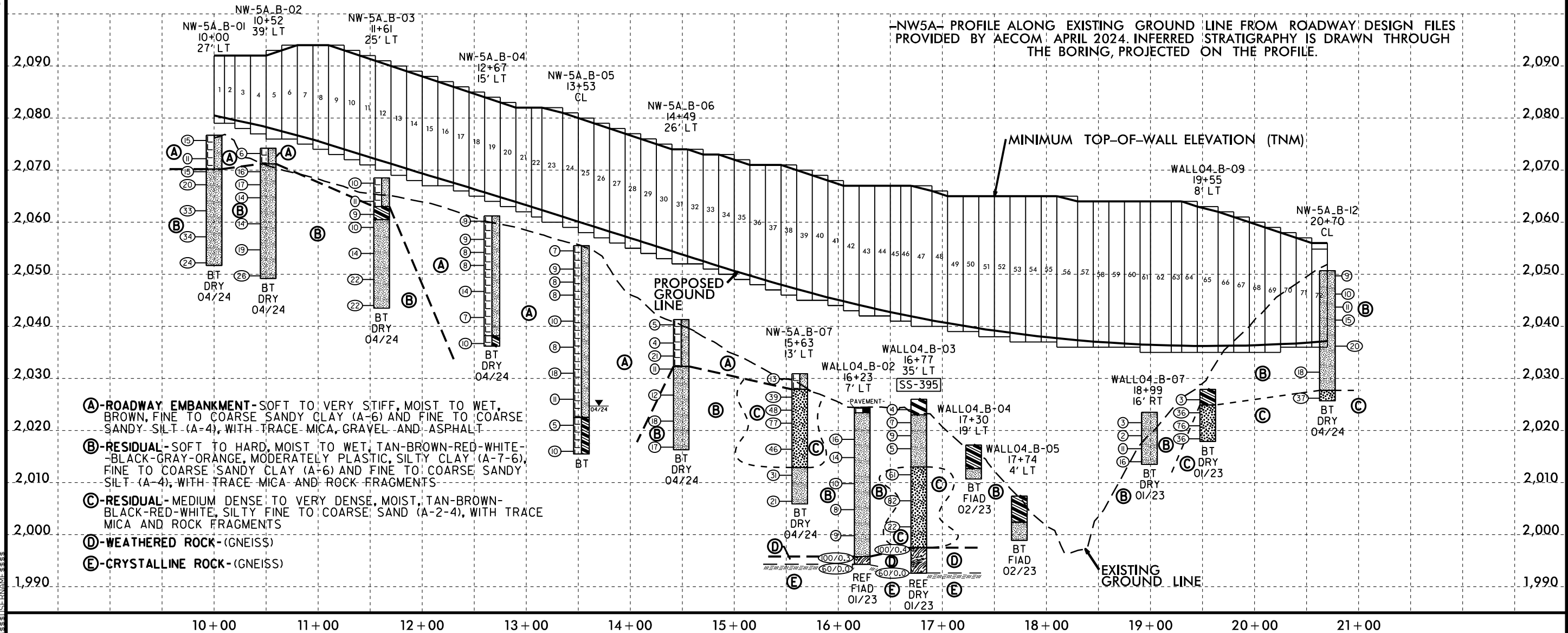
SUBSURFACE INVESTIGATION

SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

SOIL DESCRIPTION										GRADATION										ROCK DESCRIPTION										TERMS AND DEFINITIONS									
SOIL IS CONSIDERED UNCONSOLIDATED, SEMI-CONSOLIDATED, OR WEATHERED EARTH MATERIALS THAT CAN BE PENETRATED WITH A CONTINUOUS FLIGHT POWER AUGER AND YIELD LESS THAN 100 BLOWS PER FOOT ACCORDING TO THE STANDARD PENETRATION TEST (AASHTO T 206, ASTM D1586). SOIL CLASSIFICATION IS BASED ON THE AASHTO SYSTEM. BASIC DESCRIPTIONS GENERALLY INCLUDE THE FOLLOWING: CONSISTENCY, COLOR, TEXTURE, MOISTURE, AASHTO CLASSIFICATION, AND OTHER PERTINENT FACTORS SUCH AS MINERALOGICAL COMPOSITION, ANGULARITY, STRUCTURE, PLASTICITY, ETC. FOR EXAMPLE, <i>VERY STIFF, GRAY, SILTY CLAY, MOIST WITH INTERBEDDED FINE SAND LAYERS, HIGHLY PLASTIC, A-7-6</i>										WELL GRADED - INDICATES A GOOD REPRESENTATION OF PARTICLE SIZES FROM FINE TO COARSE. UNIFORMLY GRADED - INDICATES THAT SOIL PARTICLES ARE ALL APPROXIMATELY THE SAME SIZE. GAP-GRADED - INDICATES A MIXTURE OF UNIFORM PARTICLE SIZES OF TWO OR MORE SIZES.										HARD ROCK IS NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT REFUSAL IF TESTED. AN INFERRED ROCK LINE INDICATES THE LEVEL AT WHICH NON-COASTAL PLAIN MATERIAL WOULD YIELD SPT REFUSAL. SPT REFUSAL IS PENETRATION BY A SPLIT SPOON SAMPLER EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS IN NON-COASTAL PLAIN MATERIAL. THE TRANSITION BETWEEN SOIL AND ROCK IS OFTEN REPRESENTED BY A ZONE OF WEATHERED ROCK. ROCK MATERIALS ARE TYPICALLY DIVIDED AS FOLLOWS:										ALLUVIUM (ALLUV.) - SOILS THAT HAVE BEEN TRANSPORTED BY WATER. AQUIFER - A WATER BEARING FORMATION OR STRATA. ARENACEOUS - APPLIED TO ROCKS THAT HAVE BEEN DERIVED FROM SAND OR THAT CONTAIN SAND. ARGILLACEOUS - APPLIED TO ALL ROCKS OR SUBSTANCES COMPOSED OF CLAY MINERALS, OR HAVING A NOTABLE PROPORTION OF CLAY IN THEIR COMPOSITION, SUCH AS SHALE, SLATE, ETC. ARTESIAN - GROUND WATER THAT IS UNDER SUFFICIENT PRESSURE TO RISE ABOVE THE LEVEL AT WHICH IT IS ENCOUNTERED, BUT WHICH DOES NOT NECESSARILY RISE TO OR ABOVE THE GROUND SURFACE. CALCAREOUS (CALC.) - SOILS THAT CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE. COLLUVIUM - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM OF SLOPE. CORE RECOVERY (REC.) - TOTAL LENGTH OF ALL MATERIAL RECOVERED IN THE CORE BARREL DIVIDED BY TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE. DIKE - A TABULAR BODY OF IGNEOUS ROCK THAT CUTS ACROSS THE STRUCTURE OF ADJACENT ROCKS OR CUTS MASSIVE ROCK. DIP - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE HORIZONTAL. DIP DIRECTION (DIP AZIMUTH) - THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF THE LINE OF DIP, MEASURED CLOCKWISE FROM NORTH. FAULT - A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE. FISSILE - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES. FLOAT - ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLODGED FROM PARENT MATERIAL. FLOOD PLAIN (FP) - LAND BORDERING A STREAM, BUILT OF SEDIMENTS DEPOSITED BY THE STREAM. FORMATION (FM.) - A MAPPABLE GEOLOGIC UNIT THAT CAN BE RECOGNIZED AND TRACED IN THE FIELD. JOINT - FRACTURE IN ROCK ALONG WHICH NO APPRECIABLE MOVEMENT HAS OCCURRED. LEDGE - A SHELF-LIKE RIDGE OR PROJECTION OF ROCK WHOSE THICKNESS IS SMALL COMPARED TO ITS LATERAL EXTENT. LENS - A BODY OF SOIL OR ROCK THAT THINS OUT IN ONE OR MORE DIRECTIONS. MOTTLED (MOT.) - IRREGULARLY MARKED WITH SPOTS OF DIFFERENT COLORS. MOTTLING IN SOILS USUALLY INDICATES POOR AERATION AND LACK OF GOOD DRAINAGE. PERCHED WATER - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE OF AN INTERVENING IMPERVIOUS STRATUM. RESIDUAL (RES.) SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK. ROCK QUALITY DESIGNATION (ROQ) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE. SAPROLITE (SAP.) - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT ROCK. SILL - AN INTRUSIVE BODY OF IGNEOUS ROCK OF APPROXIMATELY UNIFORM THICKNESS AND RELATIVELY THIN COMPARED WITH ITS LATERAL EXTENT, THAT HAS BEEN EMPLACED PARALLEL TO THE BEDDING OR SCHISTOSITY OF THE INTRUDED ROCKS. SLICKENSIDE - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT OR SLIP PLANE. STANDARD PENETRATION TEST (PENETRATION RESISTANCE) (SPT) - NUMBER OF BLOWS (N OR BPF) OF A 140 LB. HAMMER FALLING 30 INCHES REQUIRED TO PRODUCE A PENETRATION OF 1 FOOT INTO SOIL WITH A 2 INCH OUTSIDE DIAMETER SPLIT SPOON SAMPLER. SPT REFUSAL IS PENETRATION EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS. STRATA CORE RECOVERY (SREC.) - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE. STRATA ROCK QUALITY DESIGNATION (SROQ) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS WITHIN A STRATUM EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF STRATA AND EXPRESSED AS A PERCENTAGE. TOPSOIL (TS.) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATERIAL.									
SOIL LEGEND AND AASHTO CLASSIFICATION										MINERALOGICAL COMPOSITION										WEATHERING																			
GENERAL CLASS.										MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC. ARE USED IN DESCRIPTIONS WHEN THEY ARE CONSIDERED OF SIGNIFICANCE.										FRESH ROCK FRESH, CRYSTALS BRIGHT, FEW JOINTS MAY SHOW SLIGHT STAINING. ROCK RINGS UNDER HAMMER IF CRYSTALLINE.																			
GROUP CLASS.										COMPRESSIBILITY										VERY SLIGHT (V SL.) ROCK GENERALLY FRESH, JOINTS STAINED, SOME JOINTS MAY SHOW THIN CLAY COATINGS IF OPEN, CRYSTALS ON A BROKEN SPECIMEN FACE SHINE BRIGHTLY. ROCK RINGS UNDER HAMMER BLOWS IF OF A CRYSTALLINE NATURE.																			
SYMBOL										PERCENTAGE OF MATERIAL										SLIGHT (SL.) ROCK GENERALLY FRESH, JOINTS STAINED AND DISCOLORATION EXTENDS INTO ROCK UP TO 1 INCH. OPEN JOINTS MAY CONTAIN CLAY. IN GRANITOID ROCKS SOME OCCASIONAL FELDSPAR CRYSTALS ARE DULL AND DISCOLORED. CRYSTALLINE ROCKS RING UNDER HAMMER BLOWS.																			
%										GROUND WATER										MODERATE (MOD.) SIGNIFICANT PORTIONS OF ROCK SHOW DISCOLORATION AND WEATHERING EFFECTS. IN GRANITOID ROCKS, MOST FELDSPARS ARE DULL AND DISCOLORED, SOME SHOW CLAY. ROCK HAS DULL SOUND UNDER HAMMER BLOWS AND SHOWS SIGNIFICANT LOSS OF STRENGTH AS COMPARED WITH FRESH ROCK.																			
MATERIAL PASSING #40 LL PI										MISCELLANEOUS SYMBOLS										MODERATELY SEVERE (MOD. SEV.) ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. IN GRANITOID ROCKS, ALL FELDSPARS DULL AND DISCOLORED AND A MAJORITY SHOW KAOLINIZATION. ROCK SHOWS SEVERE LOSS OF STRENGTH AND CAN BE EXCAVATED WITH A GEOLOGIST'S PICK. ROCK GIVES "CLUNK" SOUND WHEN STRUCK. IF TESTED, WOULD YIELD SPT REFUSAL																			
GROUP INDEX										RECOMMENDATION SYMBOLS										SEVERE (SEV.) ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC CLEAR AND EVIDENT BUT REDUCED IN STRENGTH TO STRONG SOIL. IN GRANITOID ROCKS ALL FELDSPARS ARE KAOLINIZED TO SOME EXTENT. SOME FRAGMENTS OF STRONG ROCK USUALLY REMAIN. IF TESTED, WOULD YIELD SPT N VALUES > 100 BPF																			
USUAL TYPES OF MAJOR MATERIALS										ABBREVIATIONS										VERY SEVERE (V SEV.) ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC ELEMENTS ARE DISCERNIBLE BUT MASS IS EFFECTIVELY REDUCED TO SOIL STATUS, WITH ONLY FRAGMENTS OF STRONG ROCK REMAINING. SAPROLITE IS AN EXAMPLE OF ROCK WEATHERED TO A DEGREE THAT ONLY MINOR VESTIGES OF ORIGINAL ROCK FABRIC REMAIN. IF TESTED, WOULD YIELD SPT N VALUES < 100 BPF																			
GEN. RATING AS SUBGRADE										EQUIPMENT USED ON SUBJECT PROJECT										COMPLETE ROCK REDUCED TO SOIL. ROCK FABRIC NOT DISCERNIBLE, OR DISCERNIBLE ONLY IN SMALL AND SCATTERED CONCENTRATIONS. QUARTZ MAY BE PRESENT AS DIKES OR STRINGERS. SAPROLITE IS ALSO AN EXAMPLE.																			
PI OF A-7-5 SUBGROUP IS ≤ LL - 30 ; PI OF A-7-6 SUBGROUP IS > LL - 30																				ROCK HARDNESS																			
CONSISTENCY OR DENSENESS																				VERY HARD CANNOT BE SCRATCHED BY KNIFE OR SHARP PICK. BREAKING OF HAND SPECIMENS REQUIRES SEVERAL HARD BLOWS OF THE GEOLOGIST'S PICK.																			
PRIMARY SOIL TYPE																				HARD CAN BE SCRATCHED BY KNIFE OR PICK ONLY WITH DIFFICULTY. HARD HAMMER BLOWS REQUIRED TO DETACH HAND SPECIMEN.																			
COMPACTNESS OR CONSISTENCY																				MODERATELY HARD CAN BE SCRATCHED BY KNIFE OR PICK, GOUGES OR GROOVES TO 0.25 INCHES DEEP CAN BE EXCAVATED BY HARD BLOW OF A GEOLOGIST'S PICK. HAND SPECIMENS CAN BE DETACHED BY MODERATE BLOWS.																			
RANGE OF STANDARD PENETRATION RESISTANCE (N-VALUE)																				MEDIUM HARD CAN BE GROUVED OR GOUGED 0.05 INCHES DEEP BY FIRM PRESSURE OF KNIFE OR PICK POINT. CAN BE EXCAVATED IN SMALL CHIPS TO PIECES 1 INCH MAXIMUM SIZE BY HARD BLOWS OF THE POINT OF A GEOLOGIST'S PICK.																			
RANGE OF UNCONFINED COMPRESSIVE STRENGTH (TONS/FT ²)																				SOFT CAN BE GROUVED OR GOUGED READILY BY KNIFE OR PICK. CAN BE EXCAVATED IN FRAGMENTS FROM CHIPS TO SEVERAL INCHES IN SIZE BY MODERATE BLOWS OF A PICK POINT. SMALL, THIN PIECES CAN BE BROKEN BY FINGER PRESSURE.																			
																				VERY SOFT CAN BE CARVED WITH KNIFE. CAN BE EXCAVATED READILY WITH POINT OF PICK. PIECES 1 INCH OR MORE IN THICKNESS CAN BE BROKEN BY FINGER PRESSURE. CAN BE SCRATCHED READILY BY FINGER NAIL.																			
TEXTURE OR GRAIN SIZE																				FRACTURE SPACING																			
U.S. STD. SIEVE SIZE OPENING (MM)																				BEDDING																			
BOULDER (BLDR.) COBBLE (COB.) GRAVEL (GR.) COARSE SAND (CSE. SD.) FINE SAND (F SD.) SILT (SL.) CLAY (CL.)																				TERM THICKNESS																			
GRAIN SIZE MM IN.																				VERY WIDE MORE THAN 10 FEET 4 FEET																			
																				WIDE 3 TO 10 FEET 1.5 - 4 FEET																			
																				MODERATELY CLOSE 1 TO 3 FEET 0.16 - 1.5 FEET																			
																				CLOSE 0.16 TO 1 FOOT 0.03 - 0.16 FEET																			
																				VERY CLOSE LESS THAN 0.16 FEET 0.008 - 0.03 FEET																			
																				THINLY LAMINATED < 0.008 FEET																			
SOIL MOISTURE - CORRELATION OF TERMS																				INDURATION																			
SOIL MOISTURE SCALE (ATTERBERG LIMITS)																				FOR SEDIMENTARY ROCKS, INDURATION IS THE HARDENING OF MATERIAL BY CEMENTING, HEAT, PRESSURE, ETC.																			
FIELD MOISTURE DESCRIPTION																				FRIABLE RUBBING WITH FINGER FREES NUMEROUS GRAINS; GENTLE BLOW BY HAMMER DISINTEGRATES SAMPLE.																			
GUIDE FOR FIELD MOISTURE DESCRIPTION																				MODERATELY INDURATED GRAINS CAN BE SEPARATED FROM SAMPLE WITH STEEL PROBE; BREAKS EASILY WHEN HIT WITH HAMMER.																			
LL LIQUID LIMIT																				INDURATED GRAINS ARE DIFFICULT TO SEPARATE WITH STEEL PROBE; DIFFICULT TO BREAK WITH HAMMER.																			
PLASTIC RANGE (PI)																				EXTREMELY INDURATED SHARP HAMMER BLOWS REQUIRED TO BREAK SAMPLE; SAMPLE BREAKS ACROSS GRAINS.																			
PLASTIC LIMIT																																							
OM OPTIMUM MOISTURE SHRINKAGE LIMIT																																							
SL SHRINKAGE LIMIT																																							
PLASTICITY																																							
NON PLASTIC																																							
SLIGHTLY PLASTIC																																							
MODERATELY PLASTIC																																							
HIGHLY PLASTIC																																							
COLOR																																							
DESCRIPTIONS MAY INCLUDE COLOR OR COLOR COMBINATIONS (TAN, RED, YELLOW-BROWN, BLUE-GRAY). MODIFIERS SUCH AS LIGHT, DARK, STREAKED, ETC. ARE USED TO DESCRIBE APPEARANCE.																																							



NOISE WALL -NW5A- STA 10+00.00 TO -NW5A- STA 20+85.00



NCDOT BORE DOUBLE I2513AC GEO GTM.GPJ NC DOT.GDT 7/24/24

WBS		34165.1.13		TIP		I-2513AC		COUNTY		BUNCOMBE		GEOLOGIST		A. Blackmore											
SITE DESCRIPTION												I-26/I-40/I-240 Interchange to SR 3548 (Haywood Road)				GROUND WTR (ft)									
BORING NO.		NW-5A_B-02		STATION		10+52		OFFSET		39 ft LT		ALIGNMENT		-NW5A-		0 HR.	Dry								
COLLAR ELEV.		2,074.2 ft		TOTAL DEPTH		25.0 ft		NORTHING		679,744		EASTING		931,422		24 HR.	Dry								
DRILL RIG/HAMMER EFF./DATE								ECS049Diedrich D-70 94% 04/24/2024				DRILL METHOD				H.S. Augers		HAMMER TYPE		Automatic					
DRILLER				R. Blackstock				START DATE				04/16/24		COMP. DATE				04/16/24		SURFACE WATER DEPTH				N/A	
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	L O G	SOIL AND ROCK DESCRIPTION											
			0.5ft	0.5ft	0.5ft	0	25	50	75	100															
2075																									
	2,073.2	1.0	2	2	4	6 16 17 14 14 19 26					M		2,074.2 GROUND SURFACE 0.0												
2070	2,070.7	3.5	4	7	9									ROADWAY EMBANKMENT Medium Stiff, Brown, Fine to Coarse Sandy SILT (A-4) 3.0											
	2,068.2	6.0	6	7	10									Stiff to Very Stiff, Tan-Brown, Fine to Coarse Sandy SILT (A-4), with trace mica											
2065	2,065.7	8.5	4	6	8																				
2060	2,060.7	13.5	3	6	8																				
2055	2,055.7	18.5	5	8	11																				
2050	2,050.7	23.5	8	10	16																				
														Boring Terminated at Elevation 2,049.2 ft In Residual Sandy SILT (A-4) Surficial Organic Soil 0.0 to 0.3 feet											

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 34165.1.13				TIP I-2513AC		COUNTY BUNCOMBE		GEOLOGIST A. Blackmore						
SITE DESCRIPTION I-26/I-40/I-240 Interchange to SR 3548 (Haywood Road)										GROUND WTR (ft) 0 HR. Dry 24 HR. Dry				
BORING NO. NW-5A_B-03		STATION 11+61		OFFSET 25 ft LT		ALIGNMENT -NW5A-								
COLLAR ELEV. 2,068.5 ft		TOTAL DEPTH 25.0 ft		NORTHING 679,759		EASTING 931,530								
DRILL RIG/HAMMER EFF./DATE ECS049Diedrich D-70 94% 04/24/2024					DRILL METHOD H.S. Augers			HAMMER TYPE Automatic						
DRILLER R. Blackstock			START DATE 04/16/24		COMP. DATE 04/16/24		SURFACE WATER DEPTH N/A							
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				ELEV. (ft) DEPTH (ft)
2070														
	2,067.5	1.0												2,068.5 GROUND SURFACE 0.0
2065	2,065.0	3.5	2	4	6	10						M		ROADWAY EMBANKMENT Stiff, Brown, Fine to Coarse Sandy SILT (A-4)
	2,062.5	6.0	3	5	6	11						M		
2060	2,060.0	8.5	3	4	5	9						M		2,063.0 RESIDUAL 5.5 Stiff, Red-Brown, Fine to Coarse Sandy CLAY (A-6)
			3	4	6	10						M		2,060.5 Stiff to Very Stiff, Brown-Tan, Fine to Coarse Sandy SILT (A-4), with trace mica 8.0
2055	2,055.0	13.5	4	6	8	14						M		
2050	2,050.0	18.5	9	9	13	22						M		
2045	2,045.0	23.5	10	10	12	22						M		2,043.5 25.0
														Boring Terminated at Elevation 2,043.5 ft In Residual Sandy SILT (A-4)
														Surficial Organic Soil 0.0 to 0.3 feet

WBS 34165.1.13		TIP I-2513AC		COUNTY BUNCOMBE		GEOLOGIST A. Blackmore							
SITE DESCRIPTION I-26/I-40/I-240 Interchange to SR 3548 (Haywood Road)							GROUND WTR (ft)						
BORING NO. NW-5A_B-04		STATION 12+67		OFFSET 15 ft LT		ALIGNMENT -NW5A-		0 HR. Dry					
COLLAR ELEV. 2,061.2 ft		TOTAL DEPTH 25.0 ft		NORTHING 679,772		EASTING 931,635		24 HR. Dry					
DRILL RIG/HAMMER EFF./DATE ECS049Diedrich D-70 94% 04/24/2024				DRILL METHOD H.S. Augers			HAMMER TYPE Automatic						
DRILLER R. Blackstock		START DATE 04/16/24		COMP. DATE 04/16/24		SURFACE WATER DEPTH N/A							
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION
			0.5ft	0.5ft	0.5ft	0	25	50	75	100	MOI		
2065													2,061.2 GROUND SURFACE 0.0
2060	2,060.2	1.0											ROADWAY EMBANKMENT Medium Stiff to Stiff, Brown, Fine to Coarse Sandy SILT (A-4), with trace gravel
	2,057.7	3.5	4	4	5						M		
2055	2,055.2	6.0											M
	2,052.7	8.5	4	4	5						M		
2050													M
	2,047.7	13.5	3	4	4						M		
2045													M
	2,042.7	18.5	2	4	4						M		
2040													W
	2,037.7	23.5	7	7	7						M		
													M
											M		
													2,038.2 23.0 2,036.2 25.0
											M		
													Stiff, Brown, Fine to Coarse Sandy CLAY (A-6)
													Boring Terminated at Elevation 2,036.2 ft In Roadway Embankment Sandy CLAY (A-6)
													Surficial Organic Soil 0.0 to 0.3 feet

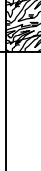
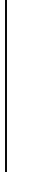
NCDOT BORE DOUBLE I2513AC_GEO_GTM.GPJ NC_DOT.GDT 7/24/24

NCDOT BORE DOUBLE I2513AC GEO GTM.GPJ NC DOT.GDT 7/24/24

WBS 34165.1.13		TIP I-2513AC		COUNTY BUNCOMBE		GEOLOGIST A. Blackmore								
SITE DESCRIPTION I-26/I-40/I-240 Interchange to SR 3548 (Haywood Road)								GROUND WTR (ft)						
BORING NO. NW-5A_B-06		STATION 14+49		OFFSET 26 ft LT		ALIGNMENT -NW5A-		0 HR.	Dry					
COLLAR ELEV. 2,041.3 ft		TOTAL DEPTH 25.0 ft		NORTHING 679,851		EASTING 931,797		24 HR.	Dry					
DRILL RIG/HAMMER EFF./DATE ECS049Diedrich D-70 94% 04/24/2024				DRILL METHOD H.S. Augers			HAMMER TYPE Automatic							
DRILLER C. Osborne			START DATE 04/16/24		COMP. DATE 04/16/24		SURFACE WATER DEPTH N/A							
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				
2045														
2040	2,040.3	1.0												2,041.3 GROUND SURFACE 0.0
2035	2,037.8	3.5	2	2	3							M		ROADWAY EMBANKMENT Soft to Very Stiff, Brown, Fine to Coarse Sandy SILT (A-4), with trace asphalt
	2,035.3	6.0	4	2	2							M		
2030	2,032.8	8.5	2	6	15							M		RESIDUAL Stiff to Very Stiff, White-Tan-Brown-Black, Fine to Coarse Sandy SILT (A-4), with trace mica
	2,027.8	13.5	5	5	6							M		
2025	2,022.8	18.5	4	8	4							M		Boring Terminated at Elevation 2,016.3 ft In Residual Sandy SILT (A-4) Surficial Organic Soil 0.0 to 0.2 feet
2020	2,017.8	23.5	6	8	10							M		
			6	7	10							M		2,016.3 25.0

WBS 34165.1.13		TIP I-2513AC		COUNTY BUNCOMBE		GEOLOGIST A. Blackmore							
SITE DESCRIPTION I-26/I-40/I-240 Interchange to SR 3548 (Haywood Road)							GROUND WTR (ft)						
BORING NO. WALL04_B-02		STATION 16+23		OFFSET 7 ft LT		ALIGNMENT -NW5A-		0 HR. Dry					
COLLAR ELEV. 2,024.3 ft		TOTAL DEPTH 30.0 ft		NORTHING 679,911		EASTING 931,961		24 HR. FIAD					
DRILL RIG/HAMMER EFF./DATE GEO366 Diedrich D-50 80% 03/18/2022				DRILL METHOD H.S. Augers			HAMMER TYPE Automatic						
DRILLER J. Messick		START DATE 01/24/23		COMP. DATE 01/24/23		SURFACE WATER DEPTH N/A							
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION
			0.5ft	0.5ft	0.5ft	0	25	50	75	100			
2025													
													GROUND SURFACE 2,024.3 0.0
													2,023.4 0.9
													ROADWAY EMBANKMENT
													Asphalt (0.4'), Stonebase (0.5')
													RESIDUAL
													Medium Stiff to Very Stiff,
													Brown-Orange-Gray-Tan, Fine to Coarse
													Sandy SILT (A-4), with trace mica and rock
													fragments
2020	2,019.3	5.0	5	6	10							M	
2015	2,015.8	8.5	6	7	7							M	
2010	2,010.8	13.5	3	4	6							M	
2005	2,005.8	18.5	5	3	5							M	
2000	2,000.8	23.5	4	4	5							W	
1995	1,995.8	28.5	100/0.3										1,995.8 28.5
	1,994.3	30.0	60/0.0										1,994.3 30.0
													WEATHERED ROCK
													Gray-White (GNEISS)
													Boring Terminated with Standard
													Penetration Test Refusal at Elevation
													1,994.3 ft On Crystalline Rock (GNEISS)
													Hand Auger Probe from 0.0 to 5.0 feet due
													to close proximity to underground utilities
													and drill rig access.

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 34165.1.13			TIP I-2513AC			COUNTY BUNCOMBE			GEOLOGIST A. Blackmore							
SITE DESCRIPTION I-26/I-40/I-240 Interchange to SR 3548 (Haywood Road)									GROUND WTR (ft)							
BORING NO. WALL04_B-03			STATION 16+77			OFFSET 35 ft LT			ALIGNMENT -NW5A-			0 HR. Dry				
COLLAR ELEV. 2,026.0 ft			TOTAL DEPTH 33.4 ft			NORTHING 679,960			EASTING 931,996			24 HR. Dry				
DRILL RIG/HAMMER EFF./DATE GEO366 Diedrich D-50 80% 03/18/2022						DRILL METHOD H.S. Augers			HAMMER TYPE Automatic							
DRILLER J. Messick			START DATE 01/25/23			COMP. DATE 01/25/23			SURFACE WATER DEPTH N/A							
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION		
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				ELEV. (ft)	DEPTH (ft)	
2030																
2025	2,025.0	1.0												2,026.0	GROUND SURFACE 0.0	
2020	2,022.5	3.5	1	2	2						SS-395	26%		2,023.0	RESIDUAL Soft, Red-Brown, Moderately Plastic Silty CLAY (A-7-6(10)), with trace mica	3.0
	2,020.0	6.0	3	4	3							M			Medium Stiff to Stiff, Red-Orange-Brown-Black, Fine to Coarse Sandy SILT (A-4), with trace mica	
2015	2,017.5	8.5	3	4	5							M				
			4	3	2							M				
2010	2,012.5	13.5										M		2,013.0	Medium Dense to Very Dense, Brown-Tan-Black, Silty Fine to Coarse SAND (A-2-4), with trace mica and rock fragments	13.0
2005	2,007.5	18.5	33	27	34											
			22	45	37							M				
2000	2,002.5	23.5														
			12	11	11											
1995	1,997.5	28.5												1,997.5	WEATHERED ROCK Brown (GNEISS)	28.5
			100/0.4													
	1,992.6	33.4												1,992.6	Boring Terminated with Standard Penetration Test Refusal at Elevation 1,992.6 ft On Crystalline Rock (GNEISS) Surficial Organic Soil from 0.0 to 0.2 feet.	33.4
			60/0.0													

WBS 34165.1.13			TIP I-2513AC		COUNTY BUNCOMBE		GEOLOGIST A. Blackmore								
SITE DESCRIPTION I-26/I-40/I-240 Interchange to SR 3548 (Haywood Road)								GROUND WTR (ft)							
BORING NO. WALL04_B-04			STATION 17+30		OFFSET 19 ft LT		ALIGNMENT -NW5A-		0 HR. Dry						
COLLAR ELEV. 2,017.2 ft			TOTAL DEPTH 6.5 ft		NORTHING 679,970		EASTING 932,050		24 HR. FIAD						
DRILL RIG/HAMMER EFF./DATE G. Sowers Dynamic Cone Penetrometer					DRILL METHOD Hand Auger/DCP			HAMMER TYPE N/A							
DRILLER N/A			START DATE 02/13/23		COMP. DATE 02/13/23		SURFACE WATER DEPTH N/A								
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT				SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION		
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				ELEV. (ft)	DEPTH (ft)
2020															
	2,017.2	0.0	0	0	4									2,017.2	GROUND SURFACE 0.0
	2,016.2	1.0	0	0	3										RESIDUAL
2015	2,015.2	2.0	0	0	6										Soft to Medium Stiff, Red-Brown, Fine to Coarse Sandy CLAY (A-6)
	2,014.2	3.0	0	0	6										
	2,013.2	4.0	0	0	7									2,012.7	Medium Stiff to Stiff, Brown, Fine to Coarse Sandy SILT (A-4) 4.5
	2,012.2	5.0	0	0	7										
	2,011.2	6.0	0	0	9									2,010.7	Boring Terminated at Elevation 2,010.7 ft In Residual Sandy SILT (A-4) 6.5
															Surficial Organic Soil from 0.0 to 0.2 feet.

NCDOT BORE DOUBLE I2513AC_GEO_GTM.GPJ NC_DOT.GDT 7/24/24

GEOTECHNICAL BORING REPORT

BORE LOG

WBS 34165.1.13			TIP I-2513AC			COUNTY BUNCOMBE			GEOLOGIST A. Blackmore						
SITE DESCRIPTION I-26/I-40/I-240 Interchange to SR 3548 (Haywood Road)									GROUND WTR (ft)						
BORING NO. WALL04_B-05			STATION 17+74			OFFSET 4 ft LT			ALIGNMENT -NW5A-			0 HR.	Dry		
COLLAR ELEV. 2,007.4 ft			TOTAL DEPTH 8.5 ft			NORTHING 679,977			EASTING 932,096			24 HR.	FIAD		
DRILL RIG/HAMMER EFF./DATE G. Sowers Dynamic Cone Penetrometer						DRILL METHOD Hand Auger/DCP			HAMMER TYPE N/A						
DRILLER N/A			START DATE 02/13/23			COMP. DATE 02/13/23			SURFACE WATER DEPTH N/A						
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				ELEV. (ft)	DEPTH (ft)
2010															
2005	2,007.4	0.0												2,007.4	0.0
	2,006.4	1.0	0	0	2	2	- - -	- - - -	- - - -	- - - -				GROUND SURFACE	
	2,006.4	1.0	0	0	4	4	- - -	- - - -	- - - -	- - - -				RESIDUAL	
	2,005.4	2.0	0	0	5	5	- - -	- - - -	- - - -	- - - -				Soft to Medium Stiff, Red-Brown, Fine to Coarse Sandy CLAY (A-6)	
	2,004.4	3.0	0	0	6	6	- - -	- - - -	- - - -	- - - -		M			
	2,003.4	4.0	0	0	7	7	- - -	- - - -	- - - -	- - - -					
	2,002.4	5.0	0	0	5	5	- - -	- - - -	- - - -	- - - -				2,002.4	5.0
	2,001.4	6.0	0	0	10	5	- - -	- - - -	- - - -	- - - -				Medium Stiff to Stiff, Brown-Tan-Orange, Fine to Coarse Sandy SILT (A-4)	
2000	2,000.4	7.0	0	0	8	10	- - -	- - - -	- - - -	- - - -		M			
	1,999.4	8.0	0	0	9	8	- - -	- - - -	- - - -	- - - -				1,998.9	8.5
						9	- - -	- - - -	- - - -	- - - -				Boring Terminated at Elevation 1,998.9 ft In Residual Sandy SILT (A-4)	
														Surficial Organic Soil from 0.0 to 0.2 feet.	

WBS 34165.1.13			TIP I-2513AC			COUNTY BUNCOMBE			GEOLOGIST A. Blackmore				
SITE DESCRIPTION I-26/I-40/I-240 Interchange to SR 3548 (Haywood Road)									GROUND WTR (ft)				
BORING NO. WALL04_B-07			STATION 18+99			OFFSET 16 ft RT			ALIGNMENT -NW5A-				
COLLAR ELEV. 2,023.5 ft			TOTAL DEPTH 10.0 ft			NORTHING 680,017			EASTING 932,216				
									0 HR. Dry				
									24 HR. Dry				
DRILL RIG/HAMMER EFF./DATE GEO366 Diedrich D-50 80% 03/18/2022						DRILL METHOD H.S. Augers			HAMMER TYPE Automatic				
DRILLER J. Messick			START DATE 01/27/23			COMP. DATE 01/27/23			SURFACE WATER DEPTH N/A				
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION
			0.5ft	0.5ft	0.5ft	0	25	50	75	100			
2025													
	2,022.5	1.0											2,023.5 GROUND SURFACE 0.0
2020	2,020.0	3.5	2	1	2						M		RESIDUAL Soft to Very Stiff, Brown-Tan, Fine to Coarse Sandy SILT (A-4), with trace rock fragments
	2,017.5	6.0	1	1	1						M		
2015	2,015.0	8.5	7	7	4						M		
			9	7	9						M		
Boring Terminated at Elevation 2,013.5 ft In Residual Sandy SILT (A-4)													
Surficial Organic Soil from 0.0 to 0.3 feet.													
Boring location appears to be along an old abandoned roadbed.													

NCDOT BORE DOUBLE I2513AC GEO GTM.GPJ NC DOT.GDT 7/24/24

WBS 34165.1.13				TIP I-2513AC				COUNTY BUNCOMBE				GEOLOGIST A. Blackmore					
SITE DESCRIPTION I-26/I-40/I-240 Interchange to SR 3548 (Haywood Road)												GROUND WTR (ft)					
BORING NO. NW-5A_B-12				STATION 20+70				OFFSET 16 ft RT				ALIGNMENT -NW5A-				0 HR. Dry	
COLLAR ELEV. 2,050.7 ft				TOTAL DEPTH 25.0 ft				NORTHING 680,098				EASTING 932,372				24 HR. Dry	
DRILL RIG/HAMMER EFF./DATE ECS049 Diedrich D-70 94% 04/24/2024								DRILL METHOD H.S. Augers				HAMMER TYPE Automatic					
DRILLER R. Blackstock				START DATE 04/16/24				COMP. DATE 04/16/24				SURFACE WATER DEPTH N/A					
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION			
			0.5ft	0.5ft	0.5ft	0	25	50	75	100							
2055																	
2050	2,049.7	1.0	5	5	4									2,050.7 GROUND SURFACE 0.0			
2045	2,047.2	3.5	7	5	5							M		RESIDUAL Stiff to Very Stiff, Red-Tan-White-Brown, Fine to Coarse Sandy SILT (A-4), with trace mica			
	2,044.7	6.0	4	5	6							M					
2040	2,042.2	8.5	5	7	8							M					
	2,037.2	13.5	6	9	11							M					
2035	2,032.2	18.5	5	7	11							M					
2030	2,027.2	23.5	5	13	24							M		2,027.7 23.0			
														2,025.7 25.0			
														Dense, Tan-Brown, Silty Fine to Coarse SAND (A-2-4)			
														Boring Terminated at Elevation 2,025.7 ft In Residual Silty SAND (A-2-4)			
														Surficial Organic Soil 0.0 to 0.1 feet			

SOIL TEST RESULTS																
BORING NO.	SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
								C. SAND	F. SAND	SILT	CLAY	10	40	200		
WALL04 B-04	SS-395	35' LT	16 + 77 -NW5A-	1.0 - 2.5	A-7-6(10)	52	25	24.9	17.2	16.3	41.6	86.1	71.9	53.1	25.6	-

LAB TECHNICIAN: DANIEL REEVE

NCDOT CERTIFICATION NO. 135-03-0816

REFERENCE: I-2513AC

PROJECT: 34165

CONTENTS

SHEET NO.	DESCRIPTION
1	TITLE SHEET
2	LEGEND (SOIL & ROCK)
3	SITE PLAN
3	PROFILE
4-5	BORE LOGS

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

STRUCTURE
SUBSURFACE INVESTIGATION

COUNTY BUNCOMBE
PROJECT DESCRIPTION I-26I-40I-240 INTERCHANGE
TO SR 3548 (HAYWOOD ROAD)

SITE DESCRIPTION NOISE WALL NO. 7A, FROM
STA. 10+00 (-RP32- STA. 30+55.05) TO STA. 13+75.00
(-RP32- STA. 34+36.60)

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	I-2513AC	1	5

CAUTION NOTICE

THE SUBSURFACE INFORMATION AND THE SUBSURFACE INVESTIGATION ON WHICH IT IS BASED WERE MADE FOR THE PURPOSE OF PREPARING THE SCOPE OF WORK TO BE INCLUDED IN THE REQUEST FOR PROPOSAL. THE VARIOUS FIELD BORING LOGS, ROCK CORES AND SOIL TEST DATA AVAILABLE MAY BE REVIEWED OR INSPECTED IN RALEIGH BY CONTACTING THE N. C. DEPARTMENT OF TRANSPORTATION, GEOTECHNICAL ENGINEERING UNIT AT (919) 707-6850. THE SUBSURFACE PLANS AND REPORTS, FIELD BORING LOGS, ROCK CORES AND SOIL TEST DATA ARE NOT PART OF THE CONTRACT.

SOIL AND ROCK BOUNDARIES WITHIN A BOREHOLE ARE BASED ON GEOTECHNICAL INTERPRETATION UNLESS ENCOUNTERED IN A SAMPLE. INTERPRETED BOUNDARIES MAY NOT NECESSARILY REFLECT ACTUAL SUBSURFACE CONDITIONS BETWEEN SAMPLED STRATA AND BOREHOLE INFORMATION MAY NOT NECESSARILY REFLECT ACTUAL SUBSURFACE CONDITIONS BETWEEN BORINGS. THE LABORATORY SAMPLE DATA AND THE IN SITU (IN-PLACE) TEST DATA CAN BE RELIED ON ONLY TO THE DEGREE OF RELIABILITY INHERENT IN THE STANDARD TEST METHOD. THE OBSERVED WATER LEVELS OR SOIL MOISTURE CONDITIONS INDICATED IN THE SUBSURFACE INVESTIGATIONS ARE AS RECORDED AT THE TIME OF THE INVESTIGATION. THESE WATER LEVELS OR SOIL MOISTURE CONDITIONS MAY VARY CONSIDERABLY WITH TIME ACCORDING TO CLIMATIC CONDITIONS INCLUDING TEMPERATURES, PRECIPITATION AND WIND, AS WELL AS OTHER NON-CLIMATIC FACTORS.

THE BIDDER OR CONTRACTOR IS CAUTIONED THAT DETAILS SHOWN ON THE SUBSURFACE PLANS ARE PRELIMINARY ONLY AND IN MANY CASES THE FINAL DESIGN DETAILS ARE DIFFERENT. FOR BIDDING AND CONSTRUCTION PURPOSES, REFER TO THE CONSTRUCTION PLANS AND DOCUMENTS FOR FINAL DESIGN INFORMATION ON THIS PROJECT. THE DEPARTMENT DOES NOT WARRANT OR GUARANTEE THE SUFFICIENCY OR ACCURACY OF THE INVESTIGATION MADE, NOR THE INTERPRETATIONS MADE, OR OPINION OF THE DEPARTMENT AS TO THE TYPE OF MATERIALS AND CONDITIONS TO BE ENCOUNTERED. THE BIDDER OR CONTRACTOR IS CAUTIONED TO PERFORM INDEPENDENT SUBSURFACE INVESTIGATIONS AND MAKE INTERPRETATIONS AS NECESSARY TO CONFIRM CONDITIONS ENCOUNTERED ON THE PROJECT. THE CONTRACTOR SHALL HAVE NO CLAIM FOR ADDITIONAL COMPENSATION OR FOR AN EXTENSION OF TIME FOR ANY REASON RESULTING FROM THE ACTUAL CONDITIONS ENCOUNTERED AT THE SITE DIFFERING FROM THOSE INDICATED IN THE SUBSURFACE INFORMATION.

- NOTES:
- THE INFORMATION CONTAINED HEREIN IS NOT IMPLIED OR GUARANTEED BY THE N. C. DEPARTMENT OF TRANSPORTATION AS ACCURATE NOR IS IT CONSIDERED PART OF THE PLANS, SPECIFICATIONS OR CONTRACT FOR THE PROJECT.
 - BY HAVING REQUESTED THIS INFORMATION, THE CONTRACTOR SPECIFICALLY WAIVES ANY CLAIMS FOR INCREASED COMPENSATION OR EXTENSION OF TIME BASED ON DIFFERENCES BETWEEN THE CONDITIONS INDICATED HEREIN AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

PERSONNEL

A. BLACKMORE

C. OSBORNE

INVESTIGATED BY ECS SOUTHEAST, LLC

DRAWN BY A. SUTTLE, P.G.

CHECKED BY M. MULLA, P.E.

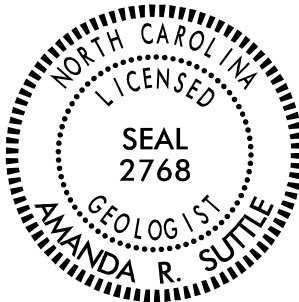
SUBMITTED BY ECS SOUTHEAST, LLC

DATE JULY 2024

Prepared in the Office of:



ECS SOUTHEAST, LLC
1812 CENTER PARK DRIVE, SUITE D
CHARLOTTE, NC 28217
(704) 525-5152 [PHONE]
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NC REGISTERED
ENGINEERING
FIRM # F-1519



Signed by: Amanda R. Suttle, P.G. 6/30/2026
BDAF14C SIGNATURE DATE

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

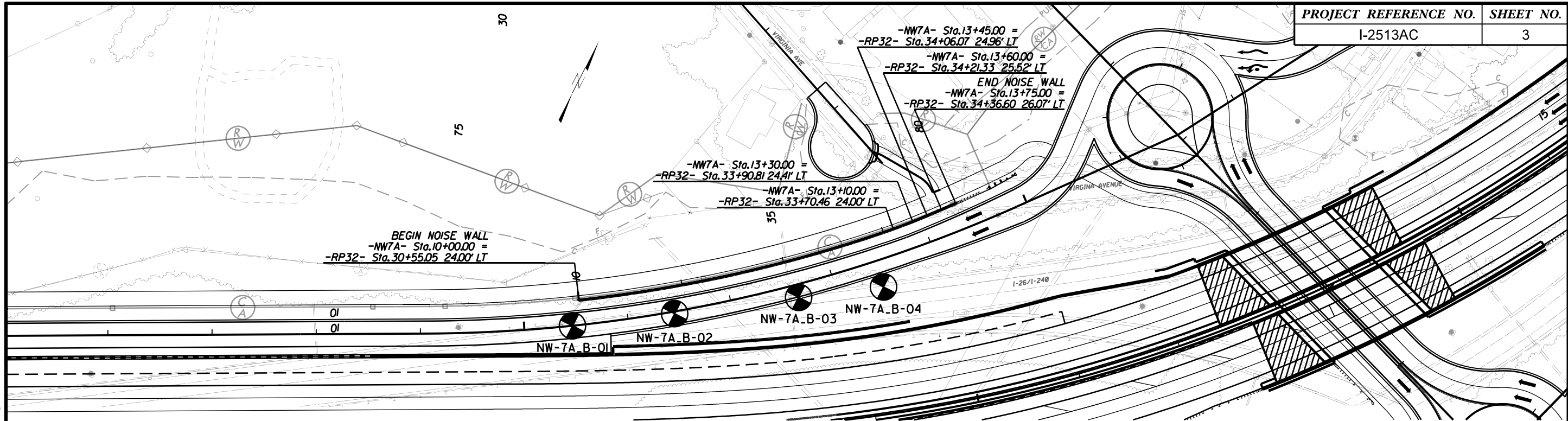
DIVISION OF HIGHWAYS

GEOTECHNICAL ENGINEERING UNIT

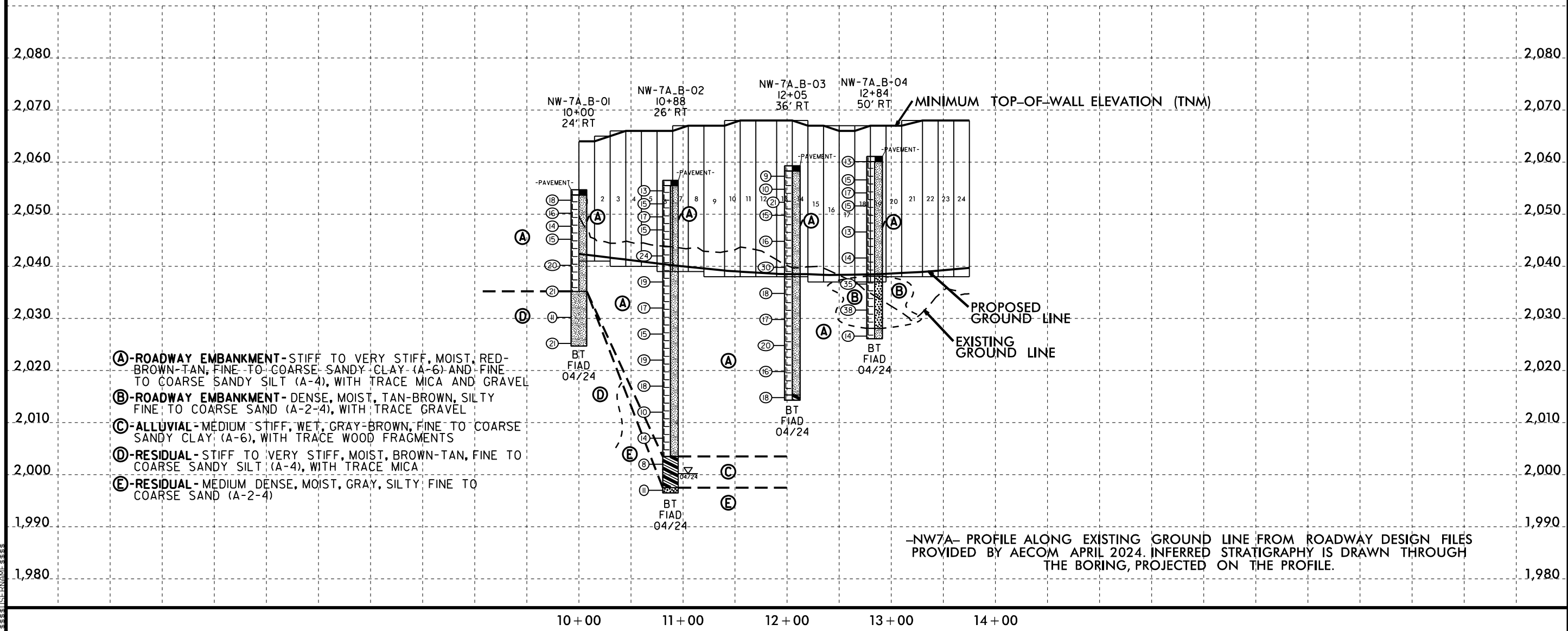
SUBSURFACE INVESTIGATION

SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

SOIL DESCRIPTION										GRADATION										ROCK DESCRIPTION										TERMS AND DEFINITIONS									
SOIL IS CONSIDERED UNCONSOLIDATED, SEMI-CONSOLIDATED, OR WEATHERED EARTH MATERIALS THAT CAN BE PENETRATED WITH A CONTINUOUS FLIGHT POWER AUGER AND YIELD LESS THAN 100 BLOWS PER FOOT ACCORDING TO THE STANDARD PENETRATION TEST (AASHTO T 206, ASTM D1586). SOIL CLASSIFICATION IS BASED ON THE AASHTO SYSTEM. BASIC DESCRIPTIONS GENERALLY INCLUDE THE FOLLOWING: CONSISTENCY, COLOR, TEXTURE, MOISTURE, AASHTO CLASSIFICATION, AND OTHER PERTINENT FACTORS SUCH AS MINERALOGICAL COMPOSITION, ANGULARITY, STRUCTURE, PLASTICITY, ETC. FOR EXAMPLE, <i>VERY STIFF, GRAY, SILTY CLAY, MOIST WITH INTERBEDDED FINE SAND LAYERS, HIGHLY PLASTIC, A-7-6</i>										WELL GRADED - INDICATES A GOOD REPRESENTATION OF PARTICLE SIZES FROM FINE TO COARSE. UNIFORMLY GRADED - INDICATES THAT SOIL PARTICLES ARE ALL APPROXIMATELY THE SAME SIZE. GAP-GRADED - INDICATES A MIXTURE OF UNIFORM PARTICLE SIZES OF TWO OR MORE SIZES.										HARD ROCK IS NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT REFUSAL IF TESTED. AN INFERRED ROCK LINE INDICATES THE LEVEL AT WHICH NON-COASTAL PLAIN MATERIAL WOULD YIELD SPT REFUSAL. SPT REFUSAL IS PENETRATION BY A SPLIT SPOON SAMPLER EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS IN NON-COASTAL PLAIN MATERIAL. THE TRANSITION BETWEEN SOIL AND ROCK IS OFTEN REPRESENTED BY A ZONE OF WEATHERED ROCK. ROCK MATERIALS ARE TYPICALLY DIVIDED AS FOLLOWS:										ALLUVIUM (ALLUV.) - SOILS THAT HAVE BEEN TRANSPORTED BY WATER. AQUIFER - A WATER BEARING FORMATION OR STRATA. ARENACEOUS - APPLIED TO ROCKS THAT HAVE BEEN DERIVED FROM SAND OR THAT CONTAIN SAND. ARGILLACEOUS - APPLIED TO ALL ROCKS OR SUBSTANCES COMPOSED OF CLAY MINERALS, OR HAVING A NOTABLE PROPORTION OF CLAY IN THEIR COMPOSITION, SUCH AS SHALE, SLATE, ETC. ARTESIAN - GROUND WATER THAT IS UNDER SUFFICIENT PRESSURE TO RISE ABOVE THE LEVEL AT WHICH IT IS ENCOUNTERED, BUT WHICH DOES NOT NECESSARILY RISE TO OR ABOVE THE GROUND SURFACE. CALCAREOUS (CALC.) - SOILS THAT CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE. COLLUVIUM - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM OF SLOPE. CORE RECOVERY (REC.) - TOTAL LENGTH OF ALL MATERIAL RECOVERED IN THE CORE BARREL DIVIDED BY TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE. DIKE - A TABULAR BODY OF IGNEOUS ROCK THAT CUTS ACROSS THE STRUCTURE OF ADJACENT ROCKS OR CUTS MASSIVE ROCK. DIP - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE HORIZONTAL. DIP DIRECTION (DIP AZIMUTH) - THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF THE LINE OF DIP, MEASURED CLOCKWISE FROM NORTH. FAULT - A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE. FISSILE - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES. FLOAT - ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLOADED FROM PARENT MATERIAL. FLOOD PLAIN (FP) - LAND BORDERING A STREAM, BUILT OF SEDIMENTS DEPOSITED BY THE STREAM. FORMATION (FM.) - A MAPPABLE GEOLOGIC UNIT THAT CAN BE RECOGNIZED AND TRACED IN THE FIELD. JOINT - FRACTURE IN ROCK ALONG WHICH NO APPRECIABLE MOVEMENT HAS OCCURRED. LEDGE - A SHELF-LIKE RIDGE OR PROJECTION OF ROCK WHOSE THICKNESS IS SMALL COMPARED TO ITS LATERAL EXTENT. LENS - A BODY OF SOIL OR ROCK THAT THINS OUT IN ONE OR MORE DIRECTIONS. MOTTLED (MOT.) - IRREGULARLY MARKED WITH SPOTS OF DIFFERENT COLORS. MOTTLING IN SOILS USUALLY INDICATES POOR AERATION AND LACK OF GOOD DRAINAGE. PERCHED WATER - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE OF AN INTERVENING IMPERVIOUS STRATUM. RESIDUAL (RES.) SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK. ROCK QUALITY DESIGNATION (ROD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE. SAPROLITE (SAP.) - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT ROCK. SILL - AN INTRUSIVE BODY OF IGNEOUS ROCK OF APPROXIMATELY UNIFORM THICKNESS AND RELATIVELY THIN COMPARED WITH ITS LATERAL EXTENT, THAT HAS BEEN EMPLACED PARALLEL TO THE BEDDING OR SCHISTOSITY OF THE INTRUDED ROCKS. SLICKENSIDE - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT OR SLIP PLANE. STANDARD PENETRATION TEST (PENETRATION RESISTANCE) (SPT) - NUMBER OF BLOWS (N OR BPF) OF A 140 LB. HAMMER FALLING 30 INCHES REQUIRED TO PRODUCE A PENETRATION OF 1 FOOT INTO SOIL WITH A 2 INCH OUTSIDE DIAMETER SPLIT SPOON SAMPLER. SPT REFUSAL IS PENETRATION EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS. STRATA CORE RECOVERY (SREC.) - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE. STRATA ROCK QUALITY DESIGNATION (SROD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS WITHIN A STRATUM EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF STRATA AND EXPRESSED AS A PERCENTAGE. TOPSOIL (TS.) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATERIAL.									
SOIL LEGEND AND AASHTO CLASSIFICATION										MINERALOGICAL COMPOSITION										WEATHERING																			
GENERAL CLASS.										MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC. ARE USED IN DESCRIPTIONS WHEN THEY ARE CONSIDERED OF SIGNIFICANCE.										FRESH ROCK FRESH, CRYSTALS BRIGHT, FEW JOINTS MAY SHOW SLIGHT STAINING. ROCK RINGS UNDER HAMMER IF CRYSTALLINE.																			
GROUP CLASS.										COMPRESSIBILITY										VERY SLIGHT (V SL.) ROCK GENERALLY FRESH, JOINTS STAINED, SOME JOINTS MAY SHOW THIN CLAY COATINGS IF OPEN, CRYSTALS ON A BROKEN SPECIMEN FACE SHINE BRIGHTLY. ROCK RINGS UNDER HAMMER BLOWS IF OF A CRYSTALLINE NATURE.																			
SYMBOL										PERCENTAGE OF MATERIAL										SLIGHT (SL.) ROCK GENERALLY FRESH, JOINTS STAINED AND DISCOLORATION EXTENDS INTO ROCK UP TO 1 INCH. OPEN JOINTS MAY CONTAIN CLAY. IN GRANITOID ROCKS SOME OCCASIONAL FELDSPAR CRYSTALS ARE DULL AND DISCOLORED. CRYSTALLINE ROCKS RING UNDER HAMMER BLOWS.																			
%										GROUND WATER										MODERATE (MOD.) SIGNIFICANT PORTIONS OF ROCK SHOW DISCOLORATION AND WEATHERING EFFECTS. IN GRANITOID ROCKS, MOST FELDSPARS ARE DULL AND DISCOLORED, SOME SHOW CLAY. ROCK HAS DULL SOUND UNDER HAMMER BLOWS AND SHOWS SIGNIFICANT LOSS OF STRENGTH AS COMPARED WITH FRESH ROCK.																			
MATERIAL PASSING #40 LL PI										MISCELLANEOUS SYMBOLS										MODERATELY SEVERE (MOD. SEV.) ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. IN GRANITOID ROCKS, ALL FELDSPARS DULL AND DISCOLORED AND A MAJORITY SHOW KAOLINIZATION. ROCK SHOWS SEVERE LOSS OF STRENGTH AND CAN BE EXCAVATED WITH A GEOLOGIST'S PICK. ROCK GIVES "CLUNK" SOUND WHEN STRUCK. IF TESTED, WOULD YIELD SPT REFUSAL																			
GROUP INDEX										RECOMMENDATION SYMBOLS										SEVERE (SEV.) ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC CLEAR AND EVIDENT BUT REDUCED IN STRENGTH TO STRONG SOIL. IN GRANITOID ROCKS ALL FELDSPARS ARE KAOLINIZED TO SOME EXTENT. SOME FRAGMENTS OF STRONG ROCK USUALLY REMAIN. IF TESTED, WOULD YIELD SPT N VALUES > 100 BPF																			
USUAL TYPES OF MAJOR MATERIALS										ABBREVIATIONS										VERY SEVERE (V SEV.) ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC ELEMENTS ARE DISCERNIBLE BUT MASS IS EFFECTIVELY REDUCED TO SOIL STATUS, WITH ONLY FRAGMENTS OF STRONG ROCK REMAINING. SAPROLITE IS AN EXAMPLE OF ROCK WEATHERED TO A DEGREE THAT ONLY MINOR VESTIGES OF ORIGINAL ROCK FABRIC REMAIN. IF TESTED, WOULD YIELD SPT N VALUES < 100 BPF																			
GEN. RATING AS SUBGRADE										EQUIPMENT USED ON SUBJECT PROJECT										COMPLETE ROCK REDUCED TO SOIL. ROCK FABRIC NOT DISCERNIBLE, OR DISCERNIBLE ONLY IN SMALL AND SCATTERED CONCENTRATIONS. QUARTZ MAY BE PRESENT AS DIKES OR STRINGERS. SAPROLITE IS ALSO AN EXAMPLE.																			
PI OF A-7-5 SUBGROUP IS ≤ LL - 30 ; PI OF A-7-6 SUBGROUP IS > LL - 30																				ROCK HARDNESS																			
CONSISTENCY OR DENSENESS																				VERY HARD CANNOT BE SCRATCHED BY KNIFE OR SHARP PICK. BREAKING OF HAND SPECIMENS REQUIRES SEVERAL HARD BLOWS OF THE GEOLOGIST'S PICK.																			
PRIMARY SOIL TYPE																				HARD CAN BE SCRATCHED BY KNIFE OR PICK ONLY WITH DIFFICULTY. HARD HAMMER BLOWS REQUIRED TO DETACH HAND SPECIMEN.																			
COMPACTNESS OR CONSISTENCY																				MODERATELY HARD CAN BE SCRATCHED BY KNIFE OR PICK, GOUGES OR GROOVES TO 0.25 INCHES DEEP CAN BE EXCAVATED BY HARD BLOW OF A GEOLOGIST'S PICK. HAND SPECIMENS CAN BE DETACHED BY MODERATE BLOWS.																			
RANGE OF STANDARD PENETRATION RESISTANCE (N-VALUE)																				MEDIUM HARD CAN BE GROUVED OR GOUGED 0.05 INCHES DEEP BY FIRM PRESSURE OF KNIFE OR PICK POINT. CAN BE EXCAVATED IN SMALL CHIPS TO PIECES 1 INCH MAXIMUM SIZE BY HARD BLOWS OF THE POINT OF A GEOLOGIST'S PICK.																			
RANGE OF UNCONFINED COMPRESSIVE STRENGTH (TONS/FT ²)																				SOFT CAN BE GROUVED OR GOUGED READILY BY KNIFE OR PICK. CAN BE EXCAVATED IN FRAGMENTS FROM CHIPS TO SEVERAL INCHES IN SIZE BY MODERATE BLOWS OF A PICK POINT. SMALL, THIN PIECES CAN BE BROKEN BY FINGER PRESSURE.																			
TEXTURE OR GRAIN SIZE																				VERY SOFT CAN BE CARVED WITH KNIFE. CAN BE EXCAVATED READILY WITH POINT OF PICK. PIECES 1 INCH OR MORE IN THICKNESS CAN BE BROKEN BY FINGER PRESSURE. CAN BE SCRATCHED READILY BY FINGER NAIL.																			
U.S. STD. SIEVE SIZE OPENING (MM)																				FRACTURE SPACING																			
BOULDER (BLDR.)																				BEDDING																			
COBBLE (COB.)																																							
GRAVEL (GR.)																																							
COARSE SAND (CSE. SD.)																																							
FINE SAND (F SD.)																																							
SILT (SL.)																																							
CLAY (CL.)																																							
GRAIN SIZE																																							
SOIL MOISTURE - CORRELATION OF TERMS																																							
SOIL MOISTURE SCALE (ATTERBERG LIMITS)																																							
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GUIDE FOR FIELD MOISTURE DESCRIPTION																																							
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MODERATELY PLASTIC																																							
HIGHLY PLASTIC																																							
COLOR																																							
DESCRIPTIONS MAY INCLUDE COLOR OR COLOR COMBINATIONS (TAN, RED, YELLOW-BROWN, BLUE-GRAY). MODIFIERS SUCH AS LIGHT, DARK, STREAKED, ETC. ARE USED TO DESCRIBE APPEARANCE.																																							



NOISE WALL –NW7A– STA 10+00.00 TO –NW7A– STA 13+75.00



25 JUL 2024 12:08
C:\Users\jgromer\OneDrive - ECS Corporate Services\31-4489 I-2513AC 1/2
Structures\CADD_GEO TECH\Site&Sub\Noise Wall\I2513AC_rdy.psh.2N2.dgn

NCDOT BORE DOUBLE I2513AC_GEO_GTM.GPJ NC_DOT.GDT 7/12/24

NCDOT BORE DOUBLE I2513AC_GEO_GTM.GPJ NC_DOT.GDT 7/12/24

WBS 34165.1.13			TIP I-2513AC			COUNTY BUNCOMBE			GEOLOGIST A. Blackmore					
SITE DESCRIPTION I-26/I-40/I-240 Interchange to SR 3548 (Haywood Road)									GROUND WTR (ft)					
BORING NO. NW-7A_B-04			STATION 12+84			OFFSET 50 ft RT			ALIGNMENT -NW7A-			0 HR. Dry		
COLLAR ELEV. 2,061.1 ft			TOTAL DEPTH 35.0 ft			NORTHING 680,639			EASTING 933,344			24 HR. FIAD		
DRILL RIG/HAMMER EFF./DATE ECS049 Diedrich D-70 94% 04/02/20204						DRILL METHOD H.S. Augers			HAMMER TYPE Automatic					
DRILLER C. Osborne			START DATE 04/17/24			COMP. DATE 04/17/24			SURFACE WATER DEPTH N/A					
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				
2065														
2060	2,061.1	0.0	6	7	6	13								2,061.1 GROUND SURFACE 0.0
	2,057.6	3.5	6	6	9	15								2,060.1 ROADWAY EMBANKMENT 1.0
2055	2,055.1	6.0	6	12	5	17								Asphalt (0.7'), Stonebase (0.3')
	2,052.6	8.5	6	8	7	15								Stiff to Very Stiff, Brown, Fine to Coarse Sandy SILT (A-4)
2050														
	2,047.6	13.5	4	6	7	13								
2045														
	2,042.6	18.5	5	6	8	14								
2040														
	2,037.6	23.5	12	20	15	35								2,038.1 Dense, Tan-Brown, Silty Fine to Coarse SAND (A-2-4), with trace gravel 23.0
2035														
	2,032.6	28.5	19	26	12	38								
2030														
	2,027.6	33.5	9	8	6	14								2,028.1 Stiff, Brown, Fine to Coarse Sandy SILT (A-4) 33.0
														2,026.1 Boring Terminated at Elevation 2,026.1 ft In Roadway Embankment Sandy SILT (A-4) 35.0

REFERENCE: I-25I3AC

PROJECT: 34I65

CONTENTS

SHEET NO.	DESCRIPTION
1	TITLE SHEET
2	LEGEND (SOIL & ROCK)
3	SITE PLAN
3	PROFILE
4-9	BORE LOGS
10	SOIL TEST RESULTS

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

STRUCTURE
SUBSURFACE INVESTIGATION

COUNTY BUNCOMBE
PROJECT DESCRIPTION I-26I-40I-240 INTERCHANGE
TO SR 3548 (HAYWOOD ROAD)

SITE DESCRIPTION NOISE WALL NO. 7B, FROM
STA. 10+00 (-L- STA. 76+50.19) TO STA. 20+90.95
(-L- STA. 87+91.61)

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	I-25I3AC	1	10

CAUTION NOTICE

THE SUBSURFACE INFORMATION AND THE SUBSURFACE INVESTIGATION ON WHICH IT IS BASED WERE MADE FOR THE PURPOSE OF PREPARING THE SCOPE OF WORK TO BE INCLUDED IN THE REQUEST FOR PROPOSAL. THE VARIOUS FIELD BORING LOGS, ROCK CORES AND SOIL TEST DATA AVAILABLE MAY BE REVIEWED OR INSPECTED IN RALEIGH BY CONTACTING THE N. C. DEPARTMENT OF TRANSPORTATION, GEOTECHNICAL ENGINEERING UNIT AT (919) 707-6850. THE SUBSURFACE PLANS AND REPORTS, FIELD BORING LOGS, ROCK CORES AND SOIL TEST DATA ARE NOT PART OF THE CONTRACT.

SOIL AND ROCK BOUNDARIES WITHIN A BOREHOLE ARE BASED ON GEOTECHNICAL INTERPRETATION UNLESS ENCOUNTERED IN A SAMPLE. INTERPRETED BOUNDARIES MAY NOT NECESSARILY REFLECT ACTUAL SUBSURFACE CONDITIONS BETWEEN SAMPLED STRATA AND BOREHOLE INFORMATION MAY NOT NECESSARILY REFLECT ACTUAL SUBSURFACE CONDITIONS BETWEEN BORINGS. THE LABORATORY SAMPLE DATA AND THE IN SITU (IN-PLACE) TEST DATA CAN BE RELIED ON ONLY TO THE DEGREE OF RELIABILITY INHERENT IN THE STANDARD TEST METHOD. THE OBSERVED WATER LEVELS OR SOIL MOISTURE CONDITIONS INDICATED IN THE SUBSURFACE INVESTIGATIONS ARE AS RECORDED AT THE TIME OF THE INVESTIGATION. THESE WATER LEVELS OR SOIL MOISTURE CONDITIONS MAY VARY CONSIDERABLY WITH TIME ACCORDING TO CLIMATIC CONDITIONS INCLUDING TEMPERATURES, PRECIPITATION AND WIND, AS WELL AS OTHER NON-CLIMATIC FACTORS.

THE BIDDER OR CONTRACTOR IS CAUTIONED THAT DETAILS SHOWN ON THE SUBSURFACE PLANS ARE PRELIMINARY ONLY AND IN MANY CASES THE FINAL DESIGN DETAILS ARE DIFFERENT. FOR BIDDING AND CONSTRUCTION PURPOSES, REFER TO THE CONSTRUCTION PLANS AND DOCUMENTS FOR FINAL DESIGN INFORMATION ON THIS PROJECT. THE DEPARTMENT DOES NOT WARRANT OR GUARANTEE THE SUFFICIENCY OR ACCURACY OF THE INVESTIGATION MADE, NOR THE INTERPRETATIONS MADE, OR OPINION OF THE DEPARTMENT AS TO THE TYPE OF MATERIALS AND CONDITIONS TO BE ENCOUNTERED. THE BIDDER OR CONTRACTOR IS CAUTIONED TO PERFORM INDEPENDENT SUBSURFACE INVESTIGATIONS AND MAKE INTERPRETATIONS AS NECESSARY TO CONFIRM CONDITIONS ENCOUNTERED ON THE PROJECT. THE CONTRACTOR SHALL HAVE NO CLAIM FOR ADDITIONAL COMPENSATION OR FOR AN EXTENSION OF TIME FOR ANY REASON RESULTING FROM THE ACTUAL CONDITIONS ENCOUNTERED AT THE SITE DIFFERING FROM THOSE INDICATED IN THE SUBSURFACE INFORMATION.

- NOTES:
- THE INFORMATION CONTAINED HEREIN IS NOT IMPLIED OR GUARANTEED BY THE N. C. DEPARTMENT OF TRANSPORTATION AS ACCURATE NOR IS IT CONSIDERED PART OF THE PLANS, SPECIFICATIONS OR CONTRACT FOR THE PROJECT.
 - BY HAVING REQUESTED THIS INFORMATION, THE CONTRACTOR SPECIFICALLY WAIVES ANY CLAIMS FOR INCREASED COMPENSATION OR EXTENSION OF TIME BASED ON DIFFERENCES BETWEEN THE CONDITIONS INDICATED HEREIN AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

PERSONNEL

A. BLACKMORE

A. WEST

C. OSBORNE

TOTAL DEPTH DRILLING

INVESTIGATED BY ECS SOUTHEAST, LLC

DRAWN BY A. SUTTLE, P.G.

CHECKED BY M. MULLA, P.E.

SUBMITTED BY ECS SOUTHEAST, LLC

DATE JULY 2024

Prepared in the Office of:



ECS SOUTHEAST, LLC
1812 CENTER PARK DRIVE, SUITE D
CHARLOTTE, NC 28217
(704) 525-5152 [PHONE]
(704) 357-0023 [FAX]
NC REGISTERED
ENGINEERING
FIRM # F-1519



Signed by: Amanda R. Suttle, P.G. 6/30/2026

BDAFT4CE334124 SIGNATURE DATE

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

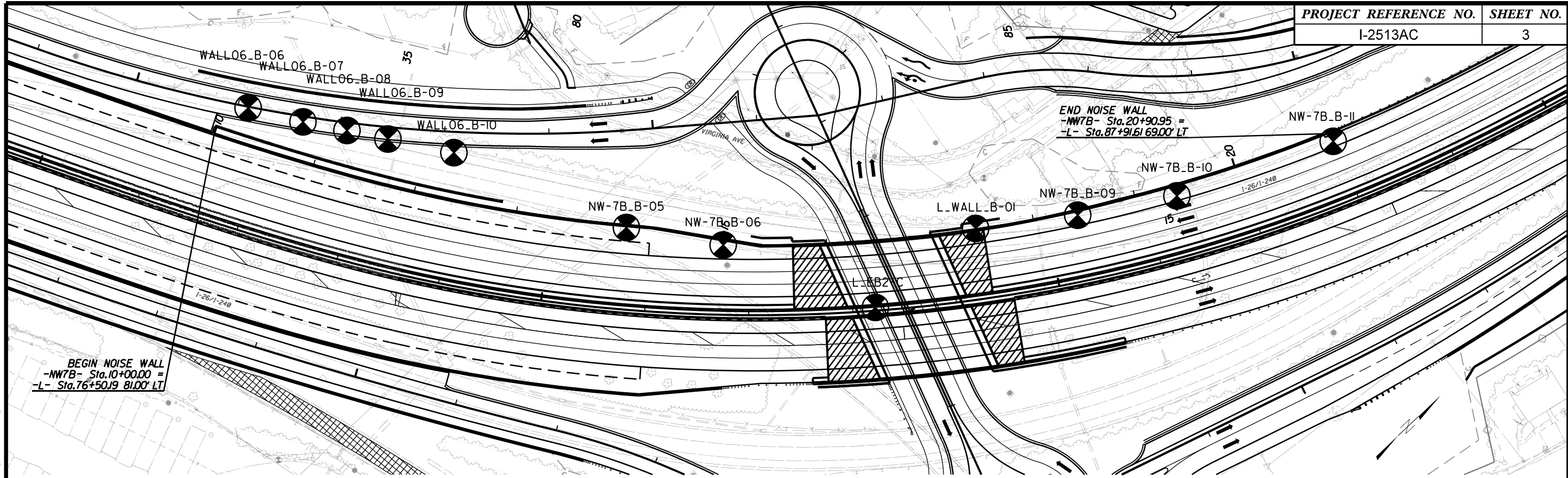
DIVISION OF HIGHWAYS

GEOTECHNICAL ENGINEERING UNIT

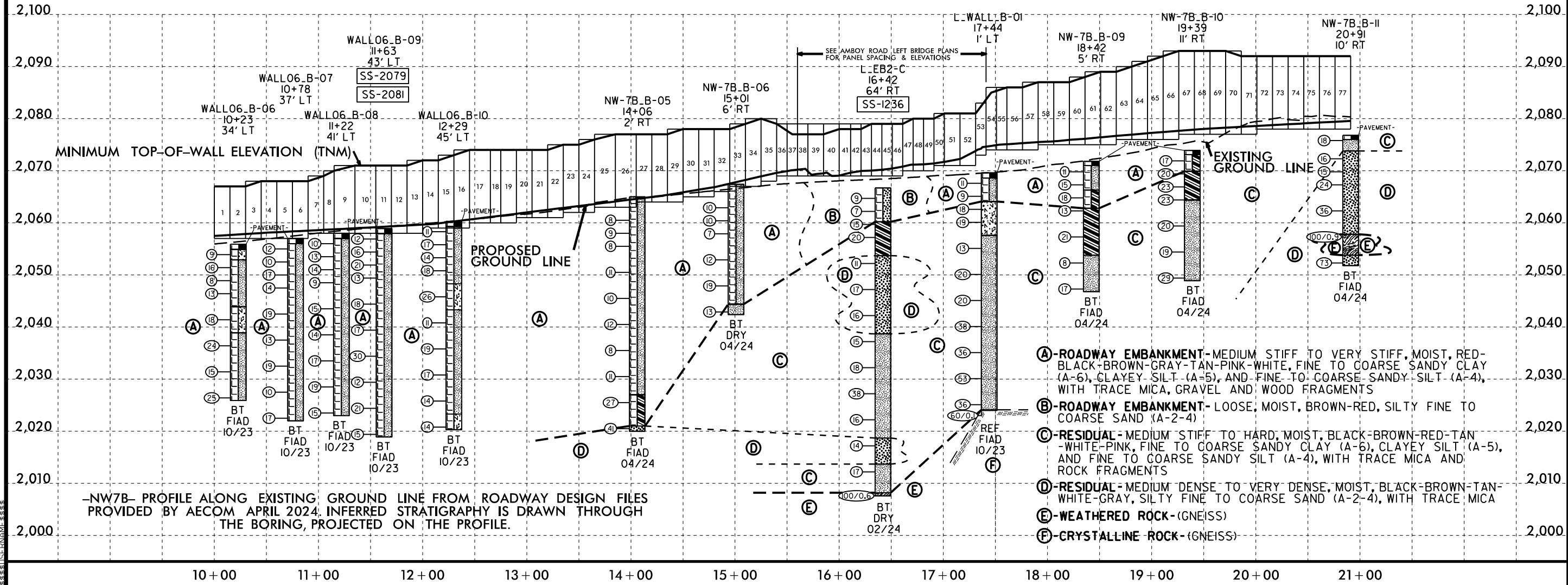
SUBSURFACE INVESTIGATION

SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

SOIL DESCRIPTION										GRADATION										ROCK DESCRIPTION										TERMS AND DEFINITIONS									
SOIL IS CONSIDERED UNCONSOLIDATED, SEMI-CONSOLIDATED, OR WEATHERED EARTH MATERIALS THAT CAN BE PENETRATED WITH A CONTINUOUS FLIGHT POWER AUGER AND YIELD LESS THAN 100 BLOWS PER FOOT ACCORDING TO THE STANDARD PENETRATION TEST (AASHTO T 206, ASTM D1586). SOIL CLASSIFICATION IS BASED ON THE AASHTO SYSTEM. BASIC DESCRIPTIONS GENERALLY INCLUDE THE FOLLOWING: CONSISTENCY, COLOR, TEXTURE, MOISTURE, AASHTO CLASSIFICATION, AND OTHER PERTINENT FACTORS SUCH AS MINERALOGICAL COMPOSITION, ANGULARITY, STRUCTURE, PLASTICITY, ETC. FOR EXAMPLE, <i>VERY STIFF, GRAY, SILTY CLAY, MOIST WITH INTERBEDDED FINE SAND LAYERS, HIGHLY PLASTIC, A-7-6</i>										WELL GRADED - INDICATES A GOOD REPRESENTATION OF PARTICLE SIZES FROM FINE TO COARSE. UNIFORMLY GRADED - INDICATES THAT SOIL PARTICLES ARE ALL APPROXIMATELY THE SAME SIZE. GAP-GRADED - INDICATES A MIXTURE OF UNIFORM PARTICLE SIZES OF TWO OR MORE SIZES.										HARD ROCK IS NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT REFUSAL IF TESTED. AN INFERRED ROCK LINE INDICATES THE LEVEL AT WHICH NON-COASTAL PLAIN MATERIAL WOULD YIELD SPT REFUSAL. SPT REFUSAL IS PENETRATION BY A SPLIT SPOON SAMPLER EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS IN NON-COASTAL PLAIN MATERIAL. THE TRANSITION BETWEEN SOIL AND ROCK IS OFTEN REPRESENTED BY A ZONE OF WEATHERED ROCK. ROCK MATERIALS ARE TYPICALLY DIVIDED AS FOLLOWS:										ALLUVIUM (ALLUV.) - SOILS THAT HAVE BEEN TRANSPORTED BY WATER. AQUIFER - A WATER BEARING FORMATION OR STRATA. ARENACEOUS - APPLIED TO ROCKS THAT HAVE BEEN DERIVED FROM SAND OR THAT CONTAIN SAND. ARGILLACEOUS - APPLIED TO ALL ROCKS OR SUBSTANCES COMPOSED OF CLAY MINERALS, OR HAVING A NOTABLE PROPORTION OF CLAY IN THEIR COMPOSITION, SUCH AS SHALE, SLATE, ETC. ARTESIAN - GROUND WATER THAT IS UNDER SUFFICIENT PRESSURE TO RISE ABOVE THE LEVEL AT WHICH IT IS ENCOUNTERED, BUT WHICH DOES NOT NECESSARILY RISE TO OR ABOVE THE GROUND SURFACE. CALCAREOUS (CALC.) - SOILS THAT CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE. COLLUVIUM - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM OF SLOPE. CORE RECOVERY (REC.) - TOTAL LENGTH OF ALL MATERIAL RECOVERED IN THE CORE BARREL DIVIDED BY TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE. DIKE - A TABULAR BODY OF IGNEOUS ROCK THAT CUTS ACROSS THE STRUCTURE OF ADJACENT ROCKS OR CUTS MASSIVE ROCK. DIP - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE HORIZONTAL. DIP DIRECTION (DIP AZIMUTH) - THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF THE LINE OF DIP, MEASURED CLOCKWISE FROM NORTH. FAULT - A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE. FISSILE - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES. FLOAT - ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLOOGED FROM PARENT MATERIAL. FLOOD PLAIN (FP) - LAND BORDERING A STREAM, BUILT OF SEDIMENTS DEPOSITED BY THE STREAM. FORMATION (FM.) - A MAPPABLE GEOLOGIC UNIT THAT CAN BE RECOGNIZED AND TRACED IN THE FIELD. JOINT - FRACTURE IN ROCK ALONG WHICH NO APPRECIABLE MOVEMENT HAS OCCURRED. LEDGE - A SHELF-LIKE RIDGE OR PROJECTION OF ROCK WHOSE THICKNESS IS SMALL COMPARED TO ITS LATERAL EXTENT. LENS - A BODY OF SOIL OR ROCK THAT THINS OUT IN ONE OR MORE DIRECTIONS. MOTTLED (MOT.) - IRREGULARLY MARKED WITH SPOTS OF DIFFERENT COLORS. MOTTLING IN SOILS USUALLY INDICATES POOR AERATION AND LACK OF GOOD DRAINAGE. PERCHED WATER - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE OF AN INTERVENING IMPERVIOUS STRATUM. RESIDUAL (RES.) SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK. ROCK QUALITY DESIGNATION (ROD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE. SAPROLITE (SAP.) - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT ROCK. SILL - AN INTRUSIVE BODY OF IGNEOUS ROCK OF APPROXIMATELY UNIFORM THICKNESS AND RELATIVELY THIN COMPARED WITH ITS LATERAL EXTENT, THAT HAS BEEN EMPLACED PARALLEL TO THE BEDDING OR SCHISTOSITY OF THE INTRUDED ROCKS. SLICKENSIDE - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT OR SLIP PLANE. STANDARD PENETRATION TEST (PENETRATION RESISTANCE) (SPT) - NUMBER OF BLOWS (N OR BPF) OF A 140 LB. HAMMER FALLING 30 INCHES REQUIRED TO PRODUCE A PENETRATION OF 1 FOOT INTO SOIL WITH A 2 INCH OUTSIDE DIAMETER SPLIT SPOON SAMPLER. SPT REFUSAL IS PENETRATION EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS. STRATA CORE RECOVERY (SREC.) - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE. STRATA ROCK QUALITY DESIGNATION (SROD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS WITHIN A STRATUM EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF STRATA AND EXPRESSED AS A PERCENTAGE. TOPSOIL (TS.) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATERIAL.									
SOIL LEGEND AND AASHTO CLASSIFICATION										MINERALOGICAL COMPOSITION										WEATHERING																			
GENERAL CLASS.										MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC. ARE USED IN DESCRIPTIONS WHEN THEY ARE CONSIDERED OF SIGNIFICANCE.										FRESH ROCK FRESH, CRYSTALS BRIGHT, FEW JOINTS MAY SHOW SLIGHT STAINING. ROCK RINGS UNDER HAMMER IF CRYSTALLINE.																			
GROUP CLASS.										COMPRESSIBILITY										VERY SLIGHT (V SL.) ROCK GENERALLY FRESH, JOINTS STAINED, SOME JOINTS MAY SHOW THIN CLAY COATINGS IF OPEN, CRYSTALS ON A BROKEN SPECIMEN FACE SHINE BRIGHTLY. ROCK RINGS UNDER HAMMER BLOWS IF OF A CRYSTALLINE NATURE.																			
SYMBOL										PERCENTAGE OF MATERIAL										SLIGHT (SL.) ROCK GENERALLY FRESH, JOINTS STAINED AND DISCOLORATION EXTENDS INTO ROCK UP TO 1 INCH. OPEN JOINTS MAY CONTAIN CLAY. IN GRANITOID ROCKS SOME OCCASIONAL FELDSPAR CRYSTALS ARE DULL AND DISCOLORED. CRYSTALLINE ROCKS RING UNDER HAMMER BLOWS.																			
%										GROUND WATER										MODERATE (MOD.) SIGNIFICANT PORTIONS OF ROCK SHOW DISCOLORATION AND WEATHERING EFFECTS. IN GRANITOID ROCKS, MOST FELDSPARS ARE DULL AND DISCOLORED, SOME SHOW CLAY. ROCK HAS DULL SOUND UNDER HAMMER BLOWS AND SHOWS SIGNIFICANT LOSS OF STRENGTH AS COMPARED WITH FRESH ROCK.																			
MATERIAL PASSING #40 LL PI										MISCELLANEOUS SYMBOLS										MODERATELY SEVERE (MOD. SEV.) ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. IN GRANITOID ROCKS, ALL FELDSPARS DULL AND DISCOLORED AND A MAJORITY SHOW KAOLINIZATION. ROCK SHOWS SEVERE LOSS OF STRENGTH AND CAN BE EXCAVATED WITH A GEOLOGIST'S PICK. ROCK GIVES "CLUNK" SOUND WHEN STRUCK. IF TESTED, WOULD YIELD SPT REFUSAL																			
GROUP INDEX										RECOMMENDATION SYMBOLS										SEVERE (SEV.) ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC CLEAR AND EVIDENT BUT REDUCED IN STRENGTH TO STRONG SOIL. IN GRANITOID ROCKS ALL FELDSPARS ARE KAOLINIZED TO SOME EXTENT. SOME FRAGMENTS OF STRONG ROCK USUALLY REMAIN. IF TESTED, WOULD YIELD SPT N VALUES > 100 BPF																			
USUAL TYPES OF MAJOR MATERIALS										ABBREVIATIONS										VERY SEVERE (V SEV.) ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC ELEMENTS ARE DISCERNIBLE BUT MASS IS EFFECTIVELY REDUCED TO SOIL STATUS, WITH ONLY FRAGMENTS OF STRONG ROCK REMAINING. SAPROLITE IS AN EXAMPLE OF ROCK WEATHERED TO A DEGREE THAT ONLY MINOR VESTIGES OF ORIGINAL ROCK FABRIC REMAIN. IF TESTED, WOULD YIELD SPT N VALUES < 100 BPF																			
GEN. RATING AS SUBGRADE										EQUIPMENT USED ON SUBJECT PROJECT										COMPLETE ROCK REDUCED TO SOIL. ROCK FABRIC NOT DISCERNIBLE, OR DISCERNIBLE ONLY IN SMALL AND SCATTERED CONCENTRATIONS. QUARTZ MAY BE PRESENT AS DIKES OR STRINGERS. SAPROLITE IS ALSO AN EXAMPLE.																			
PI OF A-7-5 SUBGROUP IS ≤ LL - 30 ; PI OF A-7-6 SUBGROUP IS > LL - 30																				ROCK HARDNESS																			
CONSISTENCY OR DENSENESS																				VERY HARD CANNOT BE SCRATCHED BY KNIFE OR SHARP PICK. BREAKING OF HAND SPECIMENS REQUIRES SEVERAL HARD BLOWS OF THE GEOLOGIST'S PICK.																			
PRIMARY SOIL TYPE																				HARD CAN BE SCRATCHED BY KNIFE OR PICK ONLY WITH DIFFICULTY. HARD HAMMER BLOWS REQUIRED TO DETACH HAND SPECIMEN.																			
COMPACTNESS OR CONSISTENCY																				MODERATELY HARD CAN BE SCRATCHED BY KNIFE OR PICK, GOUGES OR GROOVES TO 0.25 INCHES DEEP CAN BE EXCAVATED BY HARD BLOW OF A GEOLOGIST'S PICK. HAND SPECIMENS CAN BE DETACHED BY MODERATE BLOWS.																			
RANGE OF STANDARD PENETRATION RESISTANCE (N-VALUE)																				MEDIUM HARD CAN BE GROOVED OR GOUGED 0.05 INCHES DEEP BY FIRM PRESSURE OF KNIFE OR PICK POINT. CAN BE EXCAVATED IN SMALL CHIPS TO PIECES 1 INCH MAXIMUM SIZE BY HARD BLOWS OF THE POINT OF A GEOLOGIST'S PICK.																			
RANGE OF UNCONFINED COMPRESSIVE STRENGTH (TONS/FT ²)																				SOFT CAN BE GROVED OR GOUGED READILY BY KNIFE OR PICK. CAN BE EXCAVATED IN FRAGMENTS FROM CHIPS TO SEVERAL INCHES IN SIZE BY MODERATE BLOWS OF A PICK POINT. SMALL, THIN PIECES CAN BE BROKEN BY FINGER PRESSURE.																			
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TEXTURE OR GRAIN SIZE																				FRACTURE SPACING																			
U.S. STD. SIEVE SIZE OPENING (MM)																				BEDDING																			
BOULDER (BLDR.) COBBLE (COB.) GRAVEL (GR.) COARSE SAND (CSE. SD.) FINE SAND (F SD.) SILT (SL.) CLAY (CL.)																				TERM THICKNESS																			
GRAIN SIZE MM IN.																				VERY WIDE MORE THAN 10 FEET 4 FEET																			
																				WIDE 3 TO 10 FEET 1.5 - 4 FEET																			
																				MODERATELY CLOSE 1 TO 3 FEET 0.16 - 1.5 FEET																			
																				CLOSE 0.16 TO 1 FOOT 0.03 - 0.16 FEET																			
																				VERY CLOSE LESS THAN 0.16 FEET < 0.008 FEET																			
SOIL MOISTURE - CORRELATION OF TERMS																				INDURATION																			
SOIL MOISTURE SCALE (ATTERBERG LIMITS)																				FOR SEDIMENTARY ROCKS, INDURATION IS THE HARDENING OF MATERIAL BY CEMENTING, HEAT, PRESSURE, ETC.																			
FIELD MOISTURE DESCRIPTION																				FRIABLE RUBBING WITH FINGER FREES NUMEROUS GRAINS; GENTLE BLOW BY HAMMER DISINTEGRATES SAMPLE.																			
GUIDE FOR FIELD MOISTURE DESCRIPTION																				MODERATELY INDURATED GRAINS CAN BE SEPARATED FROM SAMPLE WITH STEEL PROBE; BREAKS EASILY WHEN HIT WITH HAMMER.																			
LL LIQUID LIMIT																				INDURATED GRAINS ARE DIFFICULT TO SEPARATE WITH STEEL PROBE; DIFFICULT TO BREAK WITH HAMMER.																			
PLASTIC RANGE (PI)																				EXTREMELY INDURATED SHARP HAMMER BLOWS REQUIRED TO BREAK SAMPLE; SAMPLE BREAKS ACROSS GRAINS.																			
PL																																							
OM OPTIMUM MOISTURE SHRINKAGE LIMIT																																							
SL																																							
PLASTICITY																																							
NON PLASTIC																																							
SLIGHTLY PLASTIC																																							
MODERATELY PLASTIC																																							
HIGHLY PLASTIC																																							
COLOR																																							
DESCRIPTIONS MAY INCLUDE COLOR OR COLOR COMBINATIONS (TAN, RED, YELLOW-BROWN, BLUE-GRAY). MODIFIERS SUCH AS LIGHT, DARK, STREAKED, ETC. ARE USED TO DESCRIBE APPEARANCE.																																							



NOISE WALL -NW7B- STA 10+00.00 TO -NW7B- STA 20+90.95



-NW7B- PROFILE ALONG EXISTING GROUND LINE FROM ROADWAY DESIGN FILES PROVIDED BY AECOM APRIL 2024. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, PROJECTED ON THE PROFILE.

- (A)-ROADWAY EMBANKMENT-MEDIUM STIFF TO VERY STIFF, MOIST, RED-BLACK-BROWN-GRAY-TAN-PINK-WHITE, FINE TO COARSE SANDY CLAY (A-6), CLAYEY SILT (A-5), AND FINE TO COARSE SANDY SILT (A-4), WITH TRACE MICA, GRAVEL AND WOOD FRAGMENTS
- (B)-ROADWAY EMBANKMENT- LOOSE, MOIST, BROWN-RED, SILTY FINE TO COARSE SAND (A-2-4)
- (C)-RESIDUAL-MEDIUM STIFF TO HARD, MOIST, BLACK-BROWN-RED-TAN-WHITE-PINK, FINE TO COARSE SANDY CLAY (A-6), CLAYEY SILT (A-5), AND FINE TO COARSE SANDY SILT (A-4), WITH TRACE MICA AND ROCK FRAGMENTS
- (D)-RESIDUAL-MEDIUM DENSE TO VERY DENSE, MOIST, BLACK-BROWN-TAN-WHITE-GRAY, SILTY FINE TO COARSE SAND (A-2-4), WITH TRACE MICA
- (E)-WEATHERED ROCK-(GNEISS)
- (F)-CRYSTALLINE ROCK-(GNEISS)

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Structures\CADD\GEOTECH\Site&Sub\Noise Wall\I2513AC_rdy_psh_2N3.dgn

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 34165.1.13			TIP I-2513AC			COUNTY BUNCOMBE			GEOLOGIST A. West						
SITE DESCRIPTION I-26/I-40/I-240 Interchange to SR 3548 (Haywood Road)										GROUND WTR (ft)					
BORING NO. WALL06_B-06			STATION 10+23			OFFSET 34 ft LT			ALIGNMENT -NW7B-		0 HR. Dry				
COLLAR ELEV. 2,055.9 ft			TOTAL DEPTH 30.0 ft			NORTHING 680,505			EASTING 933,148		24 HR. FIAD				
DRILL RIG/HAMMER EFF./DATE ECS1390 AMS PowerProbe 9410-D 97% 12/20/2022						DRILL METHOD H.S. Augers				HAMMER TYPE Automatic					
DRILLER C. Osborne			START DATE 10/11/23			COMP. DATE 10/12/23			SURFACE WATER DEPTH N/A						
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				ELEV. (ft)	DEPTH (ft)
2060															
2055	2,054.9	1.0												2,055.9 GROUND SURFACE 0.0	
														2,054.9 ROADWAY EMBANKMENT 1.0	
														Asphalt (0.7'), Stonebase (0.3')	
	2,052.4	3.5	3	4	5	9								2,052.9 Stiff, Pink-Brown-White, Clayey SILT (A-5), with trace mica 3.0	
2050	2,049.9	6.0	5	7	9									Medium Stiff to Very Stiff, Pink-Brown-Black-White, Fine to Coarse Sandy SILT (A-4), with trace mica	
			3	4	4										
	2,047.4	8.5													
2045			4	6	7									2,043.9 Very Stiff, Red-Brown-White, Clayey SILT (A-5), with trace mica 12.0	
	2,042.4	13.5													
2040			9	9	9										
	2,037.4	18.5												2,038.9 Stiff to Very Stiff, Pink-Brown-Black, Fine to Coarse Sandy SILT (A-4), with trace mica 17.0	
2035			9	12	12										
	2,032.4	23.5													
2030			7	7	8										
	2,027.4	28.5													
			12	12	13									2,025.9 Boring Terminated at Elevation 2,025.9 ft In Roadway Embankment Sandy SILT (A-4) 30.0	

WBS 34165.1.13			TIP I-2513AC			COUNTY BUNCOMBE			GEOLOGIST A. West				
SITE DESCRIPTION I-26/I-40/I-240 Interchange to SR 3548 (Haywood Road)									GROUND WTR (ft)				
BORING NO. WALL06_B-07			STATION 10+78			OFFSET 37 ft LT			ALIGNMENT -NW7B-			0 HR. Dry	
COLLAR ELEV. 2,057.0 ft			TOTAL DEPTH 35.0 ft			NORTHING 680,534			EASTING 933,194			24 HR. FIAD	
DRILL RIG/HAMMER EFF./DATE ECS1390 AMS PowerProbe 9410-D 97% 12/20/2022						DRILL METHOD H.S. Augers			HAMMER TYPE Automatic				
DRILLER C. Osborne			START DATE 10/11/23			COMP. DATE 10/11/23			SURFACE WATER DEPTH N/A				
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION
			0.5ft	0.5ft	0.5ft	0	25	50	75	100	MOI		
2060													
	2,056.0	1.0	3	7	5	12	.	.	.	.			2,057.0 GROUND SURFACE 0.0
2055						10	.	.	.	.			2,056.0 ROADWAY EMBANKMENT 1.0
	2,053.5	3.5	12	5	5	17	.	.	.	.			Asphalt (0.7'), Stonebase (0.3')
	2,051.0	6.0	11	9	8	14	.	.	.	.			Stiff to Very Stiff, Pink-Brown-White-Black,
2050						17	.	.	.	.			Fine to Coarse Sandy SILT (A-4), with trace
	2,048.5	8.5	13	9	5	19	.	.	.	.			mica and gravel
							.	.	.	.			
2045							.	.	.	.			
	2,043.5	13.5	12	9	10	13	.	.	.	.			
							.	.	.	.			
2040							.	.	.	.			
	2,038.5	18.5	5	5	8	19	.	.	.	.			
							.	.	.	.			
2035							.	.	.	.			
	2,033.5	23.5	11	8	11	10	.	.	.	.			
							.	.	.	.			
2030							.	.	.	.			
	2,028.5	28.5	7	6	4	17	.	.	.	.			
							.	.	.	.			
2025							.	.	.	.			
	2,023.5	33.5	7	7	10		.	.	.	.			
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NCDOT BORE DOUBLE I2513AC_GEO_GTM.GPJ NC_DOT.GDT 7/24/24

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 34165.1.13			TIP I-2513AC			COUNTY BUNCOMBE			GEOLOGIST A. West						
SITE DESCRIPTION I-26/I-40/I-240 Interchange to SR 3548 (Haywood Road)									GROUND WTR (ft)						
BORING NO. WALL06_B-08			STATION 11+22			OFFSET 41 ft LT			ALIGNMENT -NW7B-			0 HR. Dry			
COLLAR ELEV. 2,058.0 ft			TOTAL DEPTH 35.0 ft			NORTHING 680,559			EASTING 933,229			24 HR. FIAD			
DRILL RIG/HAMMER EFF./DATE ECS1390 AMS PowerProbe 9410-D 97% 12/20/2022						DRILL METHOD H.S. Augers			HAMMER TYPE Automatic						
DRILLER C. Osborne			START DATE 10/11/23			COMP. DATE 10/11/23			SURFACE WATER DEPTH N/A						
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				ELEV. (ft)	DEPTH (ft)
2060															
														2,058.0	GROUND SURFACE 0.0
	2,057.0	1.0												2,057.0	ROADWAY EMBANKMENT 1.0
2055	2,054.5	3.5	5	5	5	10						M			Asphalt (0.7'), Stonebase (0.3')
	2,054.5														Stiff to Very Stiff,
	2,052.0	6.0	10	9	4							M			Pink-Brown-White-Gray-Black, Fine to
2050	2,052.0		7	7	7										Coarse Sandy SILT (A-4), with trace mica
	2,049.5	8.5										M			and gravel
	2,049.5		4	4	5										
2045	2,044.5	13.5													
	2,044.5		5	6	9							M			
2040	2,039.5	18.5													
	2,039.5		6	7	7										
2035	2,034.5	23.5													
	2,034.5		8	8	9										
2030	2,029.5	28.5													
	2,029.5		7	9	10										
2025	2,024.5	33.5													
	2,024.5		6	6	9										
														2,023.0	35.0
														Boring Terminated at Elevation 2,023.0 ft In Roadway Embankment Sandy SILT (A-4)	

WBS 34165.1.13			TIP I-2513AC			COUNTY BUNCOMBE			GEOLOGIST A. West					
SITE DESCRIPTION I-26/I-40/I-240 Interchange to SR 3548 (Haywood Road)									GROUND WTR (ft)					
BORING NO. WALL06_B-09			STATION 11+63			OFFSET 43 ft LT			ALIGNMENT -NW7B-			0 HR. Dry		
COLLAR ELEV. 2,058.9 ft			TOTAL DEPTH 40.0 ft			NORTHING 680,582			EASTING 933,262			24 HR. FIAD		
DRILL RIG/HAMMER EFF./DATE ECS1390 AMS PowerProbe 9410-D 97% 12/20/2022						DRILL METHOD H.S. Augers			HAMMER TYPE Automatic					
DRILLER C. Osborne			START DATE 10/11/23			COMP. DATE 10/11/23			SURFACE WATER DEPTH N/A					
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				
2060														
	2,057.9	1.0	5	5	7									2,058.9 GROUND SURFACE 0.0
	2,057.9													2,057.9 ROADWAY EMBANKMENT 1.0
2055	2,055.4	3.5	5	6	10							M		Asphalt (0.7'), Stonebase (0.3')
	2,052.9	6.0	10	10	11							M		Stiff to Very Stiff,
	2,052.9											M		Brown-Pink-Black-Gray-Red, Fine to
2050	2,050.4	8.5	6	6	7							M		Coarse Sandy SILT (A-4(0)), with trace
	2,050.4											M		mica
2045	2,045.4	13.5	9	9	9						SS-2079	18%		
	2,045.4													
2040	2,040.4	18.5	8	6	11							M		
	2,040.4													
2035	2,035.4	23.5	9	15	15						SS-2081	15%		
	2,035.4													
2030	2,030.4	28.5	5	6	6							M		
	2,030.4													
2025	2,025.4	33.5	10	10	11							M		
	2,025.4													
2020	2,020.4	38.5	9	8	7							M		
	2,020.4													
														2,018.9 40.0
														Boring Terminated at Elevation 2,018.9 ft In Roadway Embankment Sandy SILT (A-4)

NCDOT BORE DOUBLE I2513AC_GEO_GTM.GPJ NC_DOT.GDT 7/24/24

NCDOT BORE DOUBLE I2513AC_GEO_GTM.GPJ NC_DOT.GDT 7/24/24

WBS 34165.1.13				TIP I-2513AC				COUNTY BUNCOMBE				GEOLOGIST A. Blackmore											
SITE DESCRIPTION I-26/I-40/I-240 Interchange to SR 3548 (Haywood Road)												GROUND WTR (ft)											
BORING NO. NW-7B_B-05				STATION 14+06				OFFSET 2 ft RT				ALIGNMENT -NW7B-				0 HR. Dry							
COLLAR ELEV. 2,065.0 ft				TOTAL DEPTH 45.0 ft				NORTHING 680,690				EASTING 933,481				24 HR. Dry							
DRILL RIG/HAMMER EFF./DATE TDD417 CME75 82.7% 06/15/2021								DRILL METHOD H.S. Augers				HAMMER TYPE Automatic											
DRILLER D. Hamilton				START DATE 02/22/24				COMP. DATE 02/22/24				SURFACE WATER DEPTH N/A											
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION									
			0.5ft	0.5ft	0.5ft	0	25	50	75	100													
2065															2,065.0	GROUND SURFACE	0.0						
2060	2,061.5	3.5														ROADWAY EMBANKMENT Medium Stiff to Stiff, Brown-Tan-Black, Fine to Coarse Sandy SILT (A-4), with trace mica and gravel							
	2,059.0	6.0																					
2055	2,056.5	8.5																					
	2,051.5	13.5																					
2050	2,046.5	18.5																					
	2,041.5	23.5																					
2045	2,036.5	28.5																					
	2,031.5	33.5																					
2040	2,026.5	38.5																					
	2,021.5	43.5																					
2035																							
2030																							
2025																							
2020																							

NCDOT BORE DOUBLE I2513AC_GEO_GTM.GPJ NC_DOT.GDT 7/24/24

WBS 34165.1.13			TIP I-2513AC			COUNTY BUNCOMBE			GEOLOGIST A. Blackmore					
SITE DESCRIPTION I-26/I-40/I-240 Interchange to SR 3548 (Haywood Road)									GROUND WTR (ft)					
BORING NO. L_EB2-C			STATION 16+42			OFFSET 64 ft RT			ALIGNMENT -NW7B-			0 HR. Dry		
COLLAR ELEV. 2,066.7 ft			TOTAL DEPTH 59.1 ft			NORTHING 680,811			EASTING 933,701			24 HR. Dry		
DRILL RIG/HAMMER EFF./DATE TDD417 CME75 82.7% 06/15/2021						DRILL METHOD H.S. Augers			HAMMER TYPE Automatic					
DRILLER D. Hamilton			START DATE 02/22/24			COMP. DATE 02/22/24			SURFACE WATER DEPTH N/A					
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				
2070														
2065	2,065.7	1.0	2	4	5	9								2,066.7 GROUND SURFACE 0.0
2060	2,063.2	3.5	2	3	4	7								ROADWAY EMBANKMENT
	2,060.7	6.0	4	6	9	15								Loose, Brown-Red, Silty Fine to Coarse SAND (A-2-4(0))
	2,058.2	8.5	7	10	10	20								2,060.2 6.5
2055	2,053.2	13.5	2	5	6	11								RESIDUAL
	2,048.2	18.5	5	9	8	17								Stiff to Very Stiff, Red-Brown, Fine to Coarse Sandy CLAY (A-6)
2050	2,043.2	23.5	7	8	8	16								2,053.7 13.0
	2,038.2	28.5	6	8	7	15								Medium Dense, Brown-Gray, Silty Fine to Coarse SAND (A-2-4), with trace mica
2045	2,033.2	33.5	8	8	10	18								2,048.2 18.5
	2,028.2	38.5	12	17	21	38								2,043.2 23.5
2040	2,023.2	43.5	6	7	9	16								2,038.2 28.5
	2,018.2	48.5	8	8	6	14								Stiff to Hard, Brown-Tan, Fine to Coarse Sandy SILT (A-4), with trace mica
2035	2,013.2	53.5	8	7	10	17								2,033.2 33.5
	2,008.2	58.5	35	65/0.1		100/0.6								2,028.2 38.5
2030														2,023.2 43.5
														2,018.2 48.5
2025														2,013.2 53.0
														2,008.2 58.5
2020														2,007.6 59.1
														WEATHERED ROCK
2015														Brown (GNEISS)
														Boring Terminated at Elevation 2,007.6 ft In Weathered Rock (GNEISS)
2010														Surficial Organic Soil 0.0 to 0.2 feet

NCDOT BORE DOUBLE I2513AC GEO GTM.GPJ NC DOT.GDT 7/24/24[illegible]

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 34165.1.13			TIP I-2513AC			COUNTY BUNCOMBE			GEOLOGIST A. Blackmore						
SITE DESCRIPTION I-26/I-40/I-240 Interchange to SR 3548 (Haywood Road)										GROUND WTR (ft)					
BORING NO. NW-7B_B-10			STATION 19+39			OFFSET 11 ft LT			ALIGNMENT -NW7B-			0 HR. Dry			
COLLAR ELEV. 2,073.9 ft			TOTAL DEPTH 25.0 ft			NORTHING 681,095			EASTING 933,822			24 HR. FIAD			
DRILL RIG/HAMMER EFF./DATE ECS049Diedrich D-70 94% 04/02/2024						DRILL METHOD H.S. Augers			HAMMER TYPE Automatic						
DRILLER C. Osborne			START DATE 04/16/24			COMP. DATE 04/16/24			SURFACE WATER DEPTH N/A						
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				ELEV. (ft)	DEPTH (ft)
2075															
2070	2,072.9	1.0	5	7	10	<									

WBS 34165.1.13			TIP I-2513AC			COUNTY BUNCOMBE			GEOLOGIST A. Blackmore							
SITE DESCRIPTION I-26/I-40/I-240 Interchange to SR 3548 (Haywood Road)									GROUND WTR (ft)							
BORING NO. NW-7B_B-11			STATION 20+91			OFFSET 10 ft RT			ALIGNMENT -NW7B-			0 HR. Dry				
COLLAR ELEV. 2,076.8 ft			TOTAL DEPTH 25.0 ft			NORTHING 681,240			EASTING 933,887			24 HR. FIAD				
DRILL RIG/HAMMER EFF./DATE ECS049Diedrich D-70 94% 04/02/2024						DRILL METHOD H.S. Augers			HAMMER TYPE Automatic							
DRILLER C. Osborne			START DATE 04/16/24			COMP. DATE 04/16/24			SURFACE WATER DEPTH N/A							
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION		
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
2080																
	2,076.8	0.0		5	8	10								2,076.8	GROUND SURFACE	0.0
2075													M	2,076.0	ROADWAY EMBANKMENT	0.8
															Asphalt (0.4'), Stonebase (0.4')	
	2,073.3	3.5		6	10	6							M	2,073.8	RESIDUAL	3.0
2070															Very Stiff, Tan-Brown, Fine to Coarse Sandy SILT (A-4), with trace mica	
	2,070.8	6.0		8	7	8							M		Medium Dense to Dense, Tan-Gray, Silty Fine to Coarse SAND (A-2-4)	
	2,068.3	8.5		6	11	13							M			
2065																
	2,063.3	13.5		12	15	21							M			
2060																
	2,058.3	18.5		30	62	38/0.4							M	2,057.8	WEATHERED ROCK	19.0
2055															Tan-Brown (GNEISS)	
	2,053.3	23.5		14	28	45							M	2,053.8	RESIDUAL	23.0
														2,051.8	Very Dense, Brown-Tan, Silty Fine to Coarse SAND (A-2-4)	25.0
															Boring Terminated at Elevation 2,051.8 ft In Residual Silty SAND (A-2-4)	

NCDOT BORE DOUBLE I2513AC_GEO_GTM.GPJ NC_DOT.GDT 7/24/24

SOIL TEST RESULTS																
BORING NO.	SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
								C. SAND	F. SAND	SILT	CLAY	10	40	200		
WALL06_B-09	SS-2079	43' LT	11+63 -NW7B-	13.5 - 15.0	A-4(0)	35	3	34.3	29.7	19.3	16.7	97.8	76.8	41.5	18.3	—
WALL06_B-09	SS-2081	43' LT	11+63 -NW7B-	23.5 - 25.0	A-4(0)	34	2	27.3	38.0	26.1	8.7	95.3	80.7	41.6	14.6	—
L_EB2-C	SS-1236	64' RT	16+42 -NW7B-	1.0 - 2.5	A-2-4(0)	39	6	34.5	29.9	26.3	9.2	80.0	60.9	32.6	18.1	—

LAB TECHNICIAN: DANIEL REEVE

NCDOT CERTIFICATION NO. 135-03-0816

REFERENCE: I-25I3AC

PROJECT: 34I65

CONTENTS

SHEET NO.	DESCRIPTION
1	TITLE SHEET
2	LEGEND (SOIL & ROCK)
3	SITE PLAN
3	PROFILE
4-8	BORE LOGS

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

STRUCTURE
SUBSURFACE INVESTIGATION

COUNTY BUNCOMBE
PROJECT DESCRIPTION I-26I-40I-240 INTERCHANGE
TO SR 3548 (HAYWOOD ROAD)

SITE DESCRIPTION NOISE WALL NO. 7C, FROM
STA. 10+00 (-Y3RPA- STA. 17+35.29) TO STA. 20+00
(-L- STA. 100+16.II)

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	I-25I3AC	1	8

CAUTION NOTICE

THE SUBSURFACE INFORMATION AND THE SUBSURFACE INVESTIGATION ON WHICH IT IS BASED WERE MADE FOR THE PURPOSE OF PREPARING THE SCOPE OF WORK TO BE INCLUDED IN THE REQUEST FOR PROPOSAL. THE VARIOUS FIELD BORING LOGS, ROCK CORES AND SOIL TEST DATA AVAILABLE MAY BE REVIEWED OR INSPECTED IN RALEIGH BY CONTACTING THE N. C. DEPARTMENT OF TRANSPORTATION, GEOTECHNICAL ENGINEERING UNIT AT (919) 707-6850. THE SUBSURFACE PLANS AND REPORTS, FIELD BORING LOGS, ROCK CORES AND SOIL TEST DATA ARE NOT PART OF THE CONTRACT.

SOIL AND ROCK BOUNDARIES WITHIN A BOREHOLE ARE BASED ON GEOTECHNICAL INTERPRETATION UNLESS ENCOUNTERED IN A SAMPLE. INTERPRETED BOUNDARIES MAY NOT NECESSARILY REFLECT ACTUAL SUBSURFACE CONDITIONS BETWEEN SAMPLED STRATA AND BOREHOLE INFORMATION MAY NOT NECESSARILY REFLECT ACTUAL SUBSURFACE CONDITIONS BETWEEN BORINGS. THE LABORATORY SAMPLE DATA AND THE IN SITU (IN-PLACE) TEST DATA CAN BE RELIED ON ONLY TO THE DEGREE OF RELIABILITY INHERENT IN THE STANDARD TEST METHOD. THE OBSERVED WATER LEVELS OR SOIL MOISTURE CONDITIONS INDICATED IN THE SUBSURFACE INVESTIGATIONS ARE AS RECORDED AT THE TIME OF THE INVESTIGATION. THESE WATER LEVELS OR SOIL MOISTURE CONDITIONS MAY VARY CONSIDERABLY WITH TIME ACCORDING TO CLIMATIC CONDITIONS INCLUDING TEMPERATURES, PRECIPITATION AND WIND, AS WELL AS OTHER NON-CLIMATIC FACTORS.

THE BIDDER OR CONTRACTOR IS CAUTIONED THAT DETAILS SHOWN ON THE SUBSURFACE PLANS ARE PRELIMINARY ONLY AND IN MANY CASES THE FINAL DESIGN DETAILS ARE DIFFERENT. FOR BIDDING AND CONSTRUCTION PURPOSES, REFER TO THE CONSTRUCTION PLANS AND DOCUMENTS FOR FINAL DESIGN INFORMATION ON THIS PROJECT. THE DEPARTMENT DOES NOT WARRANT OR GUARANTEE THE SUFFICIENCY OR ACCURACY OF THE INVESTIGATION MADE, NOR THE INTERPRETATIONS MADE, OR OPINION OF THE DEPARTMENT AS TO THE TYPE OF MATERIALS AND CONDITIONS TO BE ENCOUNTERED. THE BIDDER OR CONTRACTOR IS CAUTIONED TO PERFORM INDEPENDENT SUBSURFACE INVESTIGATIONS AND MAKE INTERPRETATIONS AS NECESSARY TO CONFIRM CONDITIONS ENCOUNTERED ON THE PROJECT. THE CONTRACTOR SHALL HAVE NO CLAIM FOR ADDITIONAL COMPENSATION OR FOR AN EXTENSION OF TIME FOR ANY REASON RESULTING FROM THE ACTUAL CONDITIONS ENCOUNTERED AT THE SITE DIFFERING FROM THOSE INDICATED IN THE SUBSURFACE INFORMATION.

- NOTES:
- THE INFORMATION CONTAINED HEREIN IS NOT IMPLIED OR GUARANTEED BY THE N. C. DEPARTMENT OF TRANSPORTATION AS ACCURATE NOR IS IT CONSIDERED PART OF THE PLANS, SPECIFICATIONS OR CONTRACT FOR THE PROJECT.
 - BY HAVING REQUESTED THIS INFORMATION, THE CONTRACTOR SPECIFICALLY WAIVES ANY CLAIMS FOR INCREASED COMPENSATION OR EXTENSION OF TIME BASED ON DIFFERENCES BETWEEN THE CONDITIONS INDICATED HEREIN AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

PERSONNEL

A. BLACKMORE

INVESTIGATED BY ECS SOUTHEAST, LLC

DRAWN BY A. SUTTLE, P.G.

CHECKED BY M. MULLA, P.E.

SUBMITTED BY ECS SOUTHEAST, LLC

DATE JULY 2024

Prepared in the Office of:



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(704) 525-5152 [PHONE]
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NC REGISTERED
ENGINEERING
FIRM # F-1519



Signed by: Amanda R. Suttle, P.G. 6/30/2026

7CDF469A SIGNATURE DATE

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

GEOTECHNICAL ENGINEERING UNIT

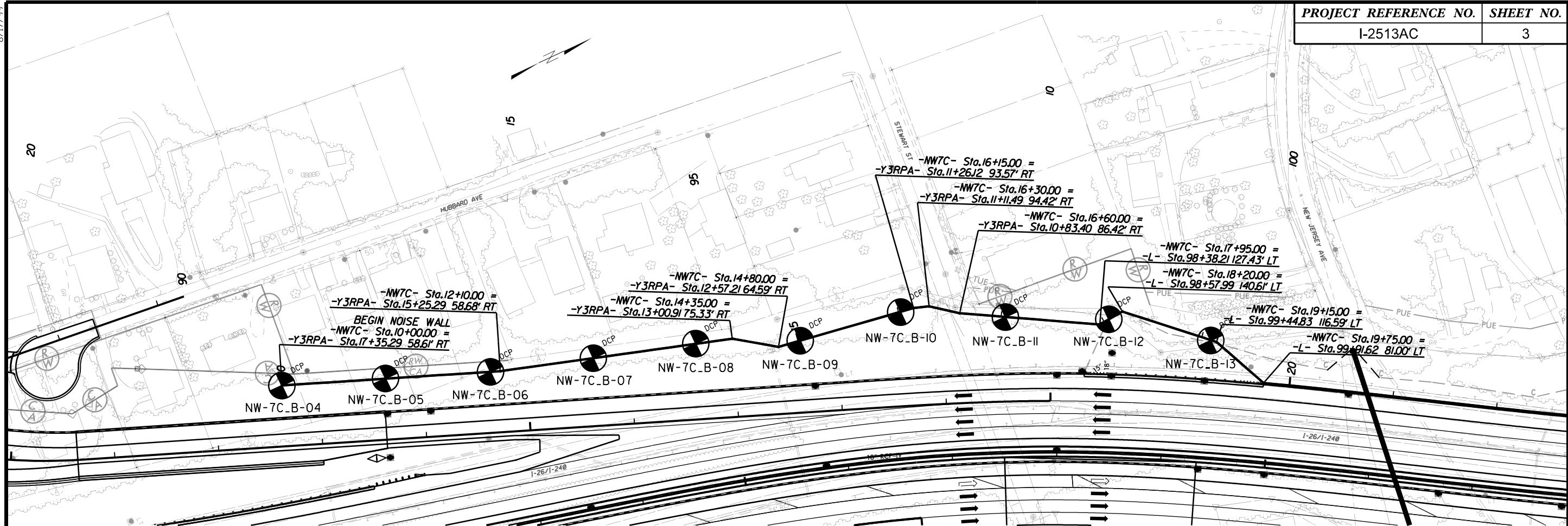
SUBSURFACE INVESTIGATION

SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

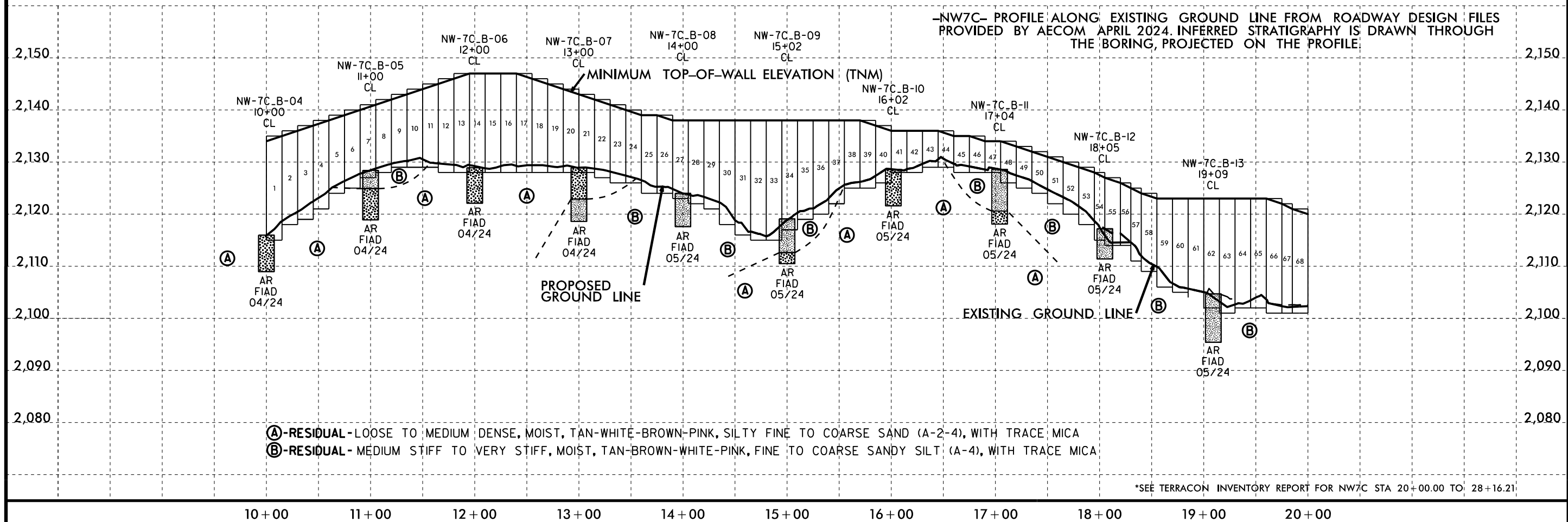
SOIL DESCRIPTION										GRADATION										ROCK DESCRIPTION										TERMS AND DEFINITIONS									
SOIL IS CONSIDERED UNCONSOLIDATED, SEMI-CONSOLIDATED, OR WEATHERED EARTH MATERIALS THAT CAN BE PENETRATED WITH A CONTINUOUS FLIGHT POWER AUGER AND YIELD LESS THAN 100 BLOWS PER FOOT ACCORDING TO THE STANDARD PENETRATION TEST (AASHTO T 206, ASTM D1586). SOIL CLASSIFICATION IS BASED ON THE AASHTO SYSTEM. BASIC DESCRIPTIONS GENERALLY INCLUDE THE FOLLOWING: CONSISTENCY, COLOR, TEXTURE, MOISTURE, AASHTO CLASSIFICATION, AND OTHER PERTINENT FACTORS SUCH AS MINERALOGICAL COMPOSITION, ANGULARITY, STRUCTURE, PLASTICITY, ETC. FOR EXAMPLE, <i>VERY STIFF, GRAY, SILTY CLAY, MOIST WITH INTERBEDDED FINE SAND LAYERS, HIGHLY PLASTIC, A-7-6</i>										WELL GRADED - INDICATES A GOOD REPRESENTATION OF PARTICLE SIZES FROM FINE TO COARSE. UNIFORMLY GRADED - INDICATES THAT SOIL PARTICLES ARE ALL APPROXIMATELY THE SAME SIZE. GAP-GRADED - INDICATES A MIXTURE OF UNIFORM PARTICLE SIZES OF TWO OR MORE SIZES.										HARD ROCK IS NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT REFUSAL IF TESTED. AN INFERRED ROCK LINE INDICATES THE LEVEL AT WHICH NON-COASTAL PLAIN MATERIAL WOULD YIELD SPT REFUSAL. SPT REFUSAL IS PENETRATION BY A SPLIT SPOON SAMPLER EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS IN NON-COASTAL PLAIN MATERIAL. THE TRANSITION BETWEEN SOIL AND ROCK IS OFTEN REPRESENTED BY A ZONE OF WEATHERED ROCK. ROCK MATERIALS ARE TYPICALLY DIVIDED AS FOLLOWS:										ALLUVIUM (ALLUV.) - SOILS THAT HAVE BEEN TRANSPORTED BY WATER. AQUIFER - A WATER BEARING FORMATION OR STRATA. ARENACEOUS - APPLIED TO ROCKS THAT HAVE BEEN DERIVED FROM SAND OR THAT CONTAIN SAND. ARGILLACEOUS - APPLIED TO ALL ROCKS OR SUBSTANCES COMPOSED OF CLAY MINERALS, OR HAVING A NOTABLE PROPORTION OF CLAY IN THEIR COMPOSITION, SUCH AS SHALE, SLATE, ETC. ARTESIAN - GROUND WATER THAT IS UNDER SUFFICIENT PRESSURE TO RISE ABOVE THE LEVEL AT WHICH IT IS ENCOUNTERED, BUT WHICH DOES NOT NECESSARILY RISE TO OR ABOVE THE GROUND SURFACE. CALCAREOUS (CALC.) - SOILS THAT CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE. COLLUVIUM - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM OF SLOPE. CORE RECOVERY (REC.) - TOTAL LENGTH OF ALL MATERIAL RECOVERED IN THE CORE BARREL DIVIDED BY TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE. DIKE - A TABULAR BODY OF IGNEOUS ROCK THAT CUTS ACROSS THE STRUCTURE OF ADJACENT ROCKS OR CUTS MASSIVE ROCK. DIP - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE HORIZONTAL. DIP DIRECTION (DIP AZIMUTH) - THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF THE LINE OF DIP, MEASURED CLOCKWISE FROM NORTH. FAULT - A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE. FISSILE - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES. FLOAT - ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLOOGED FROM PARENT MATERIAL. FLOOD PLAIN (FP) - LAND BORDERING A STREAM, BUILT OF SEDIMENTS DEPOSITED BY THE STREAM. FORMATION (FM.) - A MAPPABLE GEOLOGIC UNIT THAT CAN BE RECOGNIZED AND TRACED IN THE FIELD. JOINT - FRACTURE IN ROCK ALONG WHICH NO APPRECIABLE MOVEMENT HAS OCCURRED. LEDGE - A SHELF-LIKE RIDGE OR PROJECTION OF ROCK WHOSE THICKNESS IS SMALL COMPARED TO ITS LATERAL EXTENT. LENS - A BODY OF SOIL OR ROCK THAT THINS OUT IN ONE OR MORE DIRECTIONS. MOTTLED (MOT.) - IRREGULARLY MARKED WITH SPOTS OF DIFFERENT COLORS. MOTTLING IN SOILS USUALLY INDICATES POOR AERATION AND LACK OF GOOD DRAINAGE. PERCHED WATER - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE OF AN INTERVENING IMPERVIOUS STRATUM. RESIDUAL (RES.) SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK. ROCK QUALITY DESIGNATION (ROD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE. SAPROLITE (SAP.) - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT ROCK. SILL - AN INTRUSIVE BODY OF IGNEOUS ROCK OF APPROXIMATELY UNIFORM THICKNESS AND RELATIVELY THIN COMPARED WITH ITS LATERAL EXTENT, THAT HAS BEEN EMPLACED PARALLEL TO THE BEDDING OR SCHISTOSITY OF THE INTRUDED ROCKS. SLICKENSIDE - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT OR SLIP PLANE. STANDARD PENETRATION TEST (PENETRATION RESISTANCE) (SPT) - NUMBER OF BLOWS (N OR BPF) OF A 140 LB. HAMMER FALLING 30 INCHES REQUIRED TO PRODUCE A PENETRATION OF 1 FOOT INTO SOIL WITH A 2 INCH OUTSIDE DIAMETER SPLIT SPOON SAMPLER. SPT REFUSAL IS PENETRATION EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS. STRATA CORE RECOVERY (SREC.) - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE. STRATA ROCK QUALITY DESIGNATION (SROD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS WITHIN A STRATUM EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF STRATA AND EXPRESSED AS A PERCENTAGE. TOPSOIL (TS.) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.									
SOIL LEGEND AND AASHTO CLASSIFICATION										MINERALOGICAL COMPOSITION										WEATHERING																			
GENERAL CLASS.										MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC. ARE USED IN DESCRIPTIONS WHEN THEY ARE CONSIDERED OF SIGNIFICANCE.										FRESH ROCK FRESH, CRYSTALS BRIGHT, FEW JOINTS MAY SHOW SLIGHT STAINING. ROCK RINGS UNDER HAMMER IF CRYSTALLINE.																			
GROUP CLASS.										COMPRESSIBILITY										VERY SLIGHT (V SL.) ROCK GENERALLY FRESH, JOINTS STAINED, SOME JOINTS MAY SHOW THIN CLAY COATINGS IF OPEN, CRYSTALS ON A BROKEN SPECIMEN FACE SHINE BRIGHTLY. ROCK RINGS UNDER HAMMER BLOWS IF OF A CRYSTALLINE NATURE.																			
SYMBOL										PERCENTAGE OF MATERIAL										SLIGHT (SL.) ROCK GENERALLY FRESH, JOINTS STAINED AND DISCOLORATION EXTENDS INTO ROCK UP TO 1 INCH. OPEN JOINTS MAY CONTAIN CLAY. IN GRANITOID ROCKS SOME OCCASIONAL FELDSPAR CRYSTALS ARE DULL AND DISCOLORED. CRYSTALLINE ROCKS RING UNDER HAMMER BLOWS.																			
%										GROUND WATER										MODERATE (MOD.) SIGNIFICANT PORTIONS OF ROCK SHOW DISCOLORATION AND WEATHERING EFFECTS. IN GRANITOID ROCKS, MOST FELDSPARS ARE DULL AND DISCOLORED, SOME SHOW CLAY. ROCK HAS DULL SOUND UNDER HAMMER BLOWS AND SHOWS SIGNIFICANT LOSS OF STRENGTH AS COMPARED WITH FRESH ROCK.																			
MATERIAL PASSING #40 LL PI										MISCELLANEOUS SYMBOLS										MODERATELY SEVERE (MOD. SEV.) ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. IN GRANITOID ROCKS, ALL FELDSPARS DULL AND DISCOLORED AND A MAJORITY SHOW KAOLINIZATION. ROCK SHOWS SEVERE LOSS OF STRENGTH AND CAN BE EXCAVATED WITH A GEOLOGIST'S PICK. ROCK GIVES "CLUNK" SOUND WHEN STRUCK. IF TESTED, WOULD YIELD SPT REFUSAL																			
GROUP INDEX										RECOMMENDATION SYMBOLS										SEVERE (SEV.) ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC CLEAR AND EVIDENT BUT REDUCED IN STRENGTH TO STRONG SOIL. IN GRANITOID ROCKS ALL FELDSPARS ARE KAOLINIZED TO SOME EXTENT. SOME FRAGMENTS OF STRONG ROCK USUALLY REMAIN. IF TESTED, WOULD YIELD SPT N VALUES > 100 BPF																			
USUAL TYPES OF MAJOR MATERIALS										ABBREVIATIONS										VERY SEVERE (V SEV.) ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC ELEMENTS ARE DISCERNIBLE BUT MASS IS EFFECTIVELY REDUCED TO SOIL STATUS, WITH ONLY FRAGMENTS OF STRONG ROCK REMAINING. SAPROLITE IS AN EXAMPLE OF ROCK WEATHERED TO A DEGREE THAT ONLY MINOR VESTIGES OF ORIGINAL ROCK FABRIC REMAIN. IF TESTED, WOULD YIELD SPT N VALUES < 100 BPF																			
GEN. RATING AS SUBGRADE										EQUIPMENT USED ON SUBJECT PROJECT										COMPLETE ROCK REDUCED TO SOIL. ROCK FABRIC NOT DISCERNIBLE, OR DISCERNIBLE ONLY IN SMALL AND SCATTERED CONCENTRATIONS. QUARTZ MAY BE PRESENT AS DIKES OR STRINGERS. SAPROLITE IS ALSO AN EXAMPLE.																			
PI OF A-7-5 SUBGROUP IS ≤ LL - 30 ; PI OF A-7-6 SUBGROUP IS > LL - 30																				ROCK HARDNESS																			
CONSISTENCY OR DENSENESS																				VERY HARD CANNOT BE SCRATCHED BY KNIFE OR SHARP PICK. BREAKING OF HAND SPECIMENS REQUIRES SEVERAL HARD BLOWS OF THE GEOLOGIST'S PICK.																			
PRIMARY SOIL TYPE																				HARD CAN BE SCRATCHED BY KNIFE OR PICK ONLY WITH DIFFICULTY. HARD HAMMER BLOWS REQUIRED TO DETACH HAND SPECIMEN.																			
COMPACTNESS OR CONSISTENCY																				MODERATELY HARD CAN BE SCRATCHED BY KNIFE OR PICK, GOUGES OR GROOVES TO 0.25 INCHES DEEP CAN BE EXCAVATED BY HARD BLOW OF A GEOLOGIST'S PICK. HAND SPECIMENS CAN BE DETACHED BY MODERATE BLOWS.																			
RANGE OF STANDARD PENETRATION RESISTANCE (N-VALUE)																				MEDIUM HARD CAN BE GROOVED OR GOUGED 0.05 INCHES DEEP BY FIRM PRESSURE OF KNIFE OR PICK POINT. CAN BE EXCAVATED IN SMALL CHIPS TO PIECES 1 INCH MAXIMUM SIZE BY HARD BLOWS OF THE POINT OF A GEOLOGIST'S PICK.																			
RANGE OF UNCONFINED COMPRESSIVE STRENGTH (TONS/FT ²)																				SOFT CAN BE GROVED OR GOUGED READILY BY KNIFE OR PICK. CAN BE EXCAVATED IN FRAGMENTS FROM CHIPS TO SEVERAL INCHES IN SIZE BY MODERATE BLOWS OF A PICK POINT. SMALL, THIN PIECES CAN BE BROKEN BY FINGER PRESSURE.																			
TEXTURE OR GRAIN SIZE																				VERY SOFT CAN BE CARVED WITH KNIFE. CAN BE EXCAVATED READILY WITH POINT OF PICK. PIECES 1 INCH OR MORE IN THICKNESS CAN BE BROKEN BY FINGER PRESSURE. CAN BE SCRATCHED READILY BY FINGER NAIL.																			
U.S. STD. SIEVE SIZE OPENING (MM)																				FRACTURE SPACING																			
BOULDER (BLDR.) COBBLE (COB.) GRAVEL (GR.) COARSE SAND (CSE. SD.) FINE SAND (F SD.) SILT (SL.) CLAY (CL.)																				BEDDING																			
GRAIN SIZE																																							
SOIL MOISTURE - CORRELATION OF TERMS																																							
SOIL MOISTURE SCALE (ATTERBERG LIMITS)																																							
FIELD MOISTURE DESCRIPTION																																							
GUIDE FOR FIELD MOISTURE DESCRIPTION																																							
LL - LIQUID LIMIT																																							
PL - PLASTIC LIMIT																																							
OM - OPTIMUM MOISTURE SHRINKAGE LIMIT																																							
SL - SHRINKAGE LIMIT																																							
PLASTICITY																																							
NON PLASTIC																																							
SLIGHTLY PLASTIC																																							
MODERATELY PLASTIC																																							
HIGHLY PLASTIC																																							
COLOR																																							
DESCRIPTIONS MAY INCLUDE COLOR OR COLOR COMBINATIONS (TAN, RED, YELLOW-BROWN, BLUE-GRAY). MODIFIERS SUCH AS LIGHT, DARK, STREAKED, ETC. ARE USED TO DESCRIBE APPEARANCE.																																							

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
I-2513AC	3



NOISE WALL -NW7C- STA 10+00.00 TO -NW7C- STA 20+00.00*



*SEE TERRACON INVENTORY REPORT FOR NW7C STA 20+00.00 TO 28+16.21

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 34165.1.13			TIP I-2513AC			COUNTY BUNCOMBE			GEOLOGIST A. Blackmore						
SITE DESCRIPTION I-26/I-40/I-240 Interchange to SR 3548 (Haywood Road)									GROUND WTR (ft)						
BORING NO. NW-7C_B-04			STATION 10+00			OFFSET CL			ALIGNMENT -NW7C-			0 HR. Dry			
COLLAR ELEV. 2,115.9 ft			TOTAL DEPTH 14.0 ft			NORTHING 681,533			EASTING 933,850			24 HR. FIAD			
DRILL RIG/HAMMER EFF./DATE WILDCAT Dynamic Cone Penetrometer						DRILL METHOD Hand Auger/DCP			HAMMER TYPE N/A						
DRILLER N/A			START DATE 04/19/24			COMP. DATE 04/19/24			SURFACE WATER DEPTH N/A						
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				ELEV. (ft)	DEPTH (ft)
2120															
2115	2,115.9	0.0												2,115.9 GROUND SURFACE 0.0	
	2,114.9	1.0	0	0	7	7									
	2,113.9	2.0	0	0	8	8									
	2,112.9	3.0	0	0	13	13									
	2,111.9	4.0	0	0	14	14									
2110	2,111.9	4.0	0	0	15	15									
	2,110.9	5.0	0	0	17	17									
	2,109.9	6.0	0	0	17	17									
	2,108.9	7.0	0	0	20	20								2,108.9 7.0	
	2,107.9	8.0	0	0	22	22									
2105	2,106.9	9.0	0	0	15	15									
	2,105.9	10.0	0	0	19	19									
	2,104.9	11.0	0	0	21	21									
	2,103.9	12.0	0	0	22	22									
	2,102.9	13.0	0	0	25	25								2,101.9 14.0	
														Boring Terminated at Elevation 2,101.9 ft	

WBS 34165.1.13			TIP I-2513AC			COUNTY BUNCOMBE			GEOLOGIST A. Blackmore				
SITE DESCRIPTION I-26/I-40/I-240 Interchange to SR 3548 (Haywood Road)									GROUND WTR (ft)				
BORING NO. NW-7C_B-05			STATION 11+00			OFFSET CL			ALIGNMENT -NW7C-			0 HR. Dry	
COLLAR ELEV. 2,128.4 ft			TOTAL DEPTH 14.0 ft			NORTHING 681,626			EASTING 933,886			24 HR. FIAD	
DRILL RIG/HAMMER EFF./DATE WILDCAT Dynamic Cone Penetrometer						DRILL METHOD Hand Auger/DCP			HAMMER TYPE N/A				
DRILLER N/A			START DATE 04/19/24			COMP. DATE 04/19/24			SURFACE WATER DEPTH N/A				
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION
			0.5ft	0.5ft	0.5ft	0	25	50	75	100			
2130													
	2,128.4	0.0											2,128.4 GROUND SURFACE 0.0
	2,127.4	1.0	0	0	7	7						M	RESIDUAL Medium Stiff to Stiff, Tan-Brown, Fine to Coarse Sandy SILT (A-4)
	2,126.4	2.0	0	0	9	9							
	2,126.4	2.0	0	0	9	9							
2125	2,125.4	3.0	0	0	17	9							
	2,124.4	4.0	0	0	11	17							
	2,123.4	5.0	0	0	16	11						M	Medium Dense, Tan-White-Pink, Silty Fine to Coarse SAND (A-2-4), with trace mica
	2,122.4	6.0	0	0	16	16							
	2,122.4	6.0	0	0	14	16							
	2,121.4	7.0	0	0	15	14							
2120	2,120.4	8.0	0	0	16	15							
	2,119.4	9.0	0	0	15	16							Hand Auger Refusal encountered at Elevation 2,118.9 feet. To evaluate the subsurface conditions below, DCP testing continued until Elevation 2,114.4 feet.
	2,118.4	10.0	0	0	18	15							
	2,117.4	11.0	0	0	21	18							
	2,116.4	12.0	0	0	22	21							
2115	2,115.4	13.0	0	0	21	22							
						21							2,114.4 14.0
													Boring Terminated at Elevation 2,114.4 ft

NCDOT BORE DOUBLE I2513AC_GEO_GTM.GPJ NC_DOT.GDT 7/24/24

NCDOT BORE DOUBLE I2513AC GEO GTM.GPJ NC DOT.GDT 7/24/24

WBS 34165.1.13			TIP I-2513AC			COUNTY BUNCOMBE			GEOLOGIST A. Blackmore					
SITE DESCRIPTION I-26/I-40/I-240 Interchange to SR 3548 (Haywood Road)									GROUND WTR (ft)					
BORING NO. NW-7C_B-07			STATION 13+00			OFFSET CL			ALIGNMENT -NW7C-			0 HR. Dry		
COLLAR ELEV. 2,128.9 ft			TOTAL DEPTH 14.0 ft			NORTHING 681,815			EASTING 933,953			24 HR. FIAD		
DRILL RIG/HAMMER EFF./DATE WILDCAT Dynamic Cone Penetrometer						DRILL METHOD Hand Auger/DCP			HAMMER TYPE N/A					
DRILLER N/A			START DATE 04/19/24			COMP. DATE 04/19/24			SURFACE WATER DEPTH N/A					
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				
2130														
	2,128.9	0.0	0	0	6									2,128.9 GROUND SURFACE 0.0
	2,127.9	1.0	0	0	9									RESIDUAL Loose to Medium Dense, Brown-Tan-White, Silty Fine to Coarse SAND (A-2-4)
	2,126.9	2.0	0	0	11									
	2,125.9	3.0	0	0	11									
2125	2,124.9	4.0	0	0	12									
	2,123.9	5.0	0	0	15									
	2,122.9	6.0	0	0	13									2,122.9
	2,121.9	7.0	0	0	18									Stiff to Very Stiff, Tan-White, Fine to Coarse Sandy SILT (A-4)
	2,120.9	8.0	0	0	24									
2120	2,119.9	9.0	0	0	24									
	2,118.9	10.0	0	0	25									
	2,117.9	11.0	0	0	24									
	2,116.9	12.0	0	0	25									Hand Auger Refusal encountered at Elevation 2,118.6 feet. To evaluate the subsurface conditions below, DCP testing continued until Elevation 2,114.9 feet.
	2,115.9	13.0	0	0	25									
2115														2,114.9
														14.0
														Boring Terminated at Elevation 2,114.9 ft

NCDOT BORE DOUBLE I2513AC GEO GTM.GPJ NC DOT.GDT 7/24/24

WBS 34165.1.13			TIP I-2513AC			COUNTY BUNCOMBE			GEOLOGIST A. Blackmore					
SITE DESCRIPTION I-26/I-40/I-240 Interchange to SR 3548 (Haywood Road)									GROUND WTR (ft)					
BORING NO. NW-7C_B-09			STATION 15+02			OFFSET CL			ALIGNMENT -NW7C-			0 HR. Dry		
COLLAR ELEV. 2,119.1 ft			TOTAL DEPTH 14.0 ft			NORTHING 682,002			EASTING 934,022			24 HR. FIAD		
DRILL RIG/HAMMER EFF./DATE WILDCAT Dynamic Cone Penetrometer						DRILL METHOD Hand Auger/DCP			HAMMER TYPE N/A					
DRILLER N/A			START DATE 05/03/24			COMP. DATE 05/03/24			SURFACE WATER DEPTH N/A					
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				
2120														
	2,119.1	0.0	0	0	6									2,119.1 GROUND SURFACE 0.0
	2,118.1	1.0	0	0	7	6							RESIDUAL Medium Stiff to Very Stiff, White-Brown-Pink, Fine to Coarse Sandy SILT (A-4)	
	2,117.1	2.0	0	0	13	7								
	2,116.1	3.0	0	0	16	13								
	2,115.1	4.0	0	0	18	16								
2115	2,114.1	5.0	0	0	19	18							Medium Dense, Brown-Tan, Silty Fine to Coarse SAND (A-2-4)	
	2,113.1	6.0	0	0	19	19								
	2,112.1	7.0	0	0	21	19								
	2,111.1	8.0	0	0	22	21								
2110	2,110.1	9.0	0	0	25	22							2,110.5	
	2,109.1	10.0	0	0	22	25							Hand Auger Refusal encountered at Elevation 2,110.5 feet. To evaluate the subsurface conditions below, DCP testing continued until Elevation 2,105.1 feet.	
	2,108.1	11.0	0	0	25	22								
	2,107.1	12.0	0	0	25	25								
	2,106.1	13.0	0	0	25	25								
						25							2,105.1	
													14.0	
													Boring Terminated at Elevation 2,105.1 ft	

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 34165.1.13			TIP I-2513AC			COUNTY BUNCOMBE			GEOLOGIST A. Blackmore						
SITE DESCRIPTION I-26/I-40/I-240 Interchange to SR 3548 (Haywood Road)									GROUND WTR (ft)						
BORING NO. NW-7C_B-10			STATION 16+02			OFFSET CL			ALIGNMENT -NW7C-			0 HR. Dry			
COLLAR ELEV. 2,128.6 ft			TOTAL DEPTH 14.0 ft			NORTHING 682,101			EASTING 934,038			24 HR. FIAD			
DRILL RIG/HAMMER EFF./DATE WILDCAT Dynamic Cone Penetrometer						DRILL METHOD Hand Auger/DCP			HAMMER TYPE N/A						
DRILLER N/A			START DATE 05/03/24			COMP. DATE 05/03/24			SURFACE WATER DEPTH N/A						
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				ELEV. (ft)	DEPTH (ft)
2130															
2125	2,128.6	0.0	0	0	8	● 8	- - - -	- - - -	- - - -		M		2,128.6	0.0	GROUND SURFACE
	2,127.6	1.0	0	0	9	● 9	- - - -	- - - -	- - - -				RESIDUAL Loose to Medium Dense, Brown-Pink, Silty Fine to Coarse SAND (A-2-4), with trace mica		
	2,126.6	2.0	0	0	14	● 14	- - - -	- - - -	- - - -						
	2,125.6	3.0	0	0	15	● 14	- - - -	- - - -	- - - -						
	2,124.6	4.0	0	0	14	● 15	- - - -	- - - -	- - - -						
2120	2,123.6	5.0	0	0	15	● 14	- - - -	- - - -	- - - -				2,121.6	7.0	Hand Auger Refusal encountered at Elevation 2,121.6 feet. To evaluate the subsurface conditions below, DCP testing continued until Elevation 2,114.6 feet.
	2,122.6	6.0	0	0	16	● 15	- - - -	- - - -	- - - -						
	2,121.6	7.0	0	0	12	● 16	- - - -	- - - -	- - - -						
	2,120.6	8.0	0	0	21	● 12	- - - -	- - - -	- - - -						
	2115	2,119.6	9.0	0	0	24	● 21	- - - -	- - - -	- - - -				Boring Terminated at Elevation 2,114.6 ft	
2,118.6		10.0	0	0	19	● 24	- - - -	- - - -	- - - -						
2,117.6		11.0	0	0	20	● 19	- - - -	- - - -	- - - -						
2,116.6		12.0	0	0	25	● 20	- - - -	- - - -	- - - -						
2,115.6		13.0	0	0	25	● 25	- - - -	- - - -	- - - -						
						● 25	- - - -	- - - -	- - - -				2,114.6	14.0	

WBS 34165.1.13			TIP I-2513AC			COUNTY BUNCOMBE			GEOLOGIST A. Blackmore					
SITE DESCRIPTION I-26/I-40/I-240 Interchange to SR 3548 (Haywood Road)									GROUND WTR (ft)					
BORING NO. NW-7C_B-11			STATION 17+04			OFFSET CL			ALIGNMENT -NW7C-			0 HR.	Dry	
COLLAR ELEV. 2,128.6 ft			TOTAL DEPTH 14.0 ft			NORTHING 682,190			EASTING 934,085			24 HR.	FIAD	
DRILL RIG/HAMMER EFF./DATE WILDCAT Dynamic Cone Penetrometer						DRILL METHOD Hand Auger/DCP			HAMMER TYPE N/A					
DRILLER N/A			START DATE 05/03/24			COMP. DATE 05/03/24			SURFACE WATER DEPTH N/A					
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				
2130														
	2,128.6	0.0	0	0	7									2,128.6 GROUND SURFACE 0.0
	2,127.6	1.0	0	0	7	7								RESIDUAL Medium Stiff to Very Stiff, White-Tan, Fine to Coarse Sandy SILT (A-4), with trace mica
	2,126.6	2.0	0	0	8	7								
	2,125.6	3.0	0	0	10	8								
	2,124.6	4.0	0	0	12	10								
	2,123.6	5.0	0	0	15	12								
	2,122.6	6.0	0	0	22	15								Medium Dense, Brown-Tan, Silty Fine to Coarse SAND (A-2-4)
	2,121.6	7.0	0	0	24	22								
	2,120.6	8.0	0	0	24	24								
	2,119.6	9.0	0	0	24	22								
	2,118.6	10.0	0	0	19	24								
	2,117.6	11.0	0	0	21	19								Hand Auger Refusal encountered at Elevation 2,118.1 feet. To evaluate the subsurface conditions below, DCP testing continued until Elevation 2,114.6 feet.
	2,116.6	12.0	0	0	25	21								
	2,115.6	13.0	0	0	25	25								
2115						25								2,114.6 Boring Terminated at Elevation 2,114.6 ft 14.0

NCDOT BORE DOUBLE I2513AC_GEO_GTM.GPJ NC_DOT.GDT 7/24/24

NCDOT BORE DOUBLE I2513AC GEO GTM.GPJ NC DOT.GDT 7/24/24

WBS 34165.1.13			TIP I-2513AC			COUNTY BUNCOMBE			GEOLOGIST A. Blackmore					
SITE DESCRIPTION I-26/I-40/I-240 Interchange to SR 3548 (Haywood Road)									GROUND WTR (ft)					
BORING NO. NW-7C_B-13			STATION 19+09			OFFSET CL			ALIGNMENT -NW7C-			0 HR. Dry		
COLLAR ELEV. 2,104.7 ft			TOTAL DEPTH 14.0 ft			NORTHING 682,359			EASTING 934,189			24 HR. FIAD		
DRILL RIG/HAMMER EFF./DATE WILDCAT Dynamic Cone Penetrometer						DRILL METHOD Hand Auger/DCP			HAMMER TYPE N/A					
DRILLER N/A			START DATE 05/10/24			COMP. DATE 05/10/24			SURFACE WATER DEPTH N/A					
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				
2105	2,104.7	0.0	0	0	8									—2,104.7 GROUND SURFACE 0.0
	2,103.7	1.0	0	0	11									RESIDUAL Medium Stiff to Very Stiff, White-Brown, Fine to Coarse Sandy SILT (A-4)
	2,102.7	2.0	0	0	15									
	2,101.7	3.0	0	0	16									
	2,100.7	4.0	0	0	15									
2100	2,099.7	5.0	0	0	18									
	2,098.7	6.0	0	0	25									Hand Auger Refusal encountered at Elevation 2,095.4 feet. To evaluate the subsurface conditions below, DCP testing continued until Elevation 2,090.7 feet.
	2,097.7	7.0	0	0	24									
	2,096.7	8.0	0	0	25									
2095	2,095.7	9.0	0	0	25									
	2,094.7	10.0	0	0	24									
	2,093.7	11.0	0	0	23									Boring Terminated at Elevation 2,090.7 ft
	2,092.7	12.0	0	0	25									
	2,091.7	13.0	0	0	25									
	</													