

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:

Abner Riggs Jr. 7/7/2026

C2F6ACA84D274B1... 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 DISLOGGED 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												ANGULARITY OF GRAINS												WEATHERED ROCK (WR)												CRYSTALLINE ROCK (CR)											
GENERAL CLASS.		GRANULAR MATERIALS (≤ 35% PASSING #200)						SILT-CLAY MATERIALS (> 35% PASSING #200)						ORGANIC MATERIALS				FINE TO COARSE GRAIN IGNEOUS AND METAMORPHIC ROCK THAT WOULD YIELD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES GRANITE, GNEISS, GABBRO, SCHIST, ETC.																													
GROUP CLASS.	A-1-a	A-1-b	A-3	A-2-4	A-2	A-2-5	A-2-6	A-2-7	A-4	A-5	A-6	A-7	A-1-A-2	A-3	A-4, A-5	A-6, A-7	NON-CRYSTALLINE ROCK (NCR)																														
SYMBOL																	COASTAL PLAIN SEDIMENTARY ROCK (CP)																														
% PASSING #10 #40 #200	50 MX 30 MX 15 MX	50 MX 25 MX 10 MX	51 MN 10 MX	35 MX 35 MX	35 MX 35 MX	35 MX 35 MX	36 MN 36 MN	36 MN 36 MN	36 MN 36 MN																																						
MATERIAL PASSING #40 LL PI	-		-	40 MX 10 MX	41 MN 10 MX	40 MX 11 MN	41 MN 11 MN	40 MX 10 MX	41 MN 10 MX	40 MX 11 MN	41 MN 11 MN																																				
GROUP INDEX	0		0	0		4 MX		8 MX 12 MX		16 MX		NO MX																																			
USUAL TYPES OF MAJOR MATERIALS	STONE FRAGS, GRAVEL, AND SAND		FINE SAND	SILTY OR CLAYEY GRAVEL AND SAND				SILTY SOILS		CLAYEY SOILS		SOILS WITH LITTLE OR MODERATE AMOUNTS OF ORGANIC MATTER		HIGHLY ORGANIC SOILS																																	
GEN. RATING AS SUBGRADE	EXCELLENT TO GOOD						FAIR TO POOR						FAIR TO POOR		POOR		UNSATURABLE																														
PI OF A-7-5 SUBGROUP IS ≤ LL - 30; PI OF A-7-6 SUBGROUP IS > LL - 30																																															
CONSISTENCY OR DENSENESS												MISCELLANEOUS SYMBOLS												ROCK HARDNESS																							
PRIMARY SOIL TYPE		COMPACTNESS OR CONSISTENCY		RANGE OF STANDARD PENETRATION RESISTANCE (N-VALUE)				RANGE OF UNCONFINED COMPRESSIVE STRENGTH (TONS/FT ²)				ROADWAY EMBANKMENT (RE) WITH SOIL DESCRIPTION		25/025 DIP & DIP DIRECTION OF ROCK STRUCTURES		SLOPE INDICATOR INSTALLATION		SEVERE (SEV.)																													
GENERAL		VERY LOOSE		< 4								SOIL SYMBOL		TEST BORING		CONE PENETROMETER TEST		VERY SEVERE (V SEV.)																													
GRANULAR MATERIAL (NON-COHESIVE)		LOOSE		4 TO 10								ARTIFICIAL FILL (AF) OTHER THAN ROADWAY EMBANKMENT		AUGER BORING		TEST		COMPLETE																													
		MEDIUM DENSE		10 TO 30								INFERRED SOIL BOUNDARY		CORE BORING		SOUNDING ROD																															
		DENSE		30 TO 50								INFERRED ROCK LINE		MONITORING WELL		TEST BORING WITH CORE																															
		VERY DENSE		> 50								ALLUVIAL SOIL BOUNDARY		PIEZOMETER INSTALLATION		SPT N-VALUE																															
GENERAL		VERY SOFT		< 2				< 0.25																																							
SILT-CLAY MATERIAL (COHESIVE)		SOFT		2 TO 4				0.25 TO 0.5																																							
		MEDIUM STIFF		4 TO 8				0.5 TO 1.0																																							
		STIFF		8 TO 15				1 TO 2																																							
		VERY STIFF		15 TO 30				2 TO 4																																							
		HARD		> 30				> 4																																							
TEXTURE OR GRAIN SIZE												RECOMMENDATION SYMBOLS												ROCK HARDNESS																							
U.S. STD. SIEVE SIZE OPENING (MM)		4		10		40		60		200		270		UNCLASSIFIED EXCAVATION - UNSUITABLE WASTE		UNCLASSIFIED EXCAVATION - ACCEPTABLE, BUT NOT TO BE USED IN THE TOP 3 FEET OF EMBANKMENT OR BACKFILL		VERY HARD																													
		4.76		2.00		0.42		0.25		0.075		0.053		UNCLASSIFIED EXCAVATION - ACCEPTABLE DEGRADABLE ROCK				HARD																													
BOULDER (BLDR.)		COBBLE (COB.)		GRAVEL (GR.)		COARSE SAND (CSE. SD.)		FINE SAND (F SD.)		SILT (SL.)		CLAY (CL.)						MODERATELY HARD																													
GRAIN SIZE		305 IN.		75		2.0		0.25		0.05		0.005						MEDIUM HARD																													
SOIL MOISTURE - CORRELATION OF TERMS												ABBREVIATIONS												ROCK HARDNESS																							
SOIL MOISTURE SCALE (ATTERBERG LIMITS)		FIELD MOISTURE DESCRIPTION		GUIDE FOR FIELD MOISTURE DESCRIPTION								AR - AUGER REFUSAL		MED. - MEDIUM		VST - VANE SHEAR TEST		VERY HARD																													
												BT - BORING TERMINATED		MICA - MICACEOUS		WEA - WEATHERED		HARD																													
												CL - CLAY		MOD. - MODERATELY		7 - UNIT WEIGHT																															
												CPT - CONE PENETRATION TEST		NP - NON PLASTIC		7 _g - DRY UNIT WEIGHT																															
												CSE. - COARSE		ORG. - ORGANIC		SAMPLE ABBREVIATIONS																															
												DMT - DILATOMETER TEST		PMT - PRESSUREMETER TEST																																	
												DPT - DYNAMIC PENETRATION TEST		SAP. - SAPROLITIC		S - BULK																															
												e - VOID RATIO		SD. - SAND, SANDY		SS - SPLIT SPOON																															
												F - FINE		SL. - SILT, SILTY		ST - SHELBY TUBE																															
												FOSS. - FOSSILIFEROUS		SLI. - SLIGHTLY		RS - ROCK																															
												FRAC. - FRACTURED, FRACTURES		TRIC. - TRICONE REFUSAL		RT - RECOMPACTED TRIAXIAL																															
												FRAGS. - FRAGMENTS		w - MOISTURE CONTENT		CBR - CALIFORNIA BEARING RATIO																															
												HL. - HIGHLY		V - VERY																																	
PLASTICITY												EQUIPMENT USED ON SUBJECT PROJECT												ROCK HARDNESS																							
PLASTICITY INDEX (PI)		DRY STRENGTH		DRILL UNITS:								ADVANCING TOOLS:				HAMMER TYPE:				BEDDING																											

PROJECT REFERENCE NO.

I-2513AC

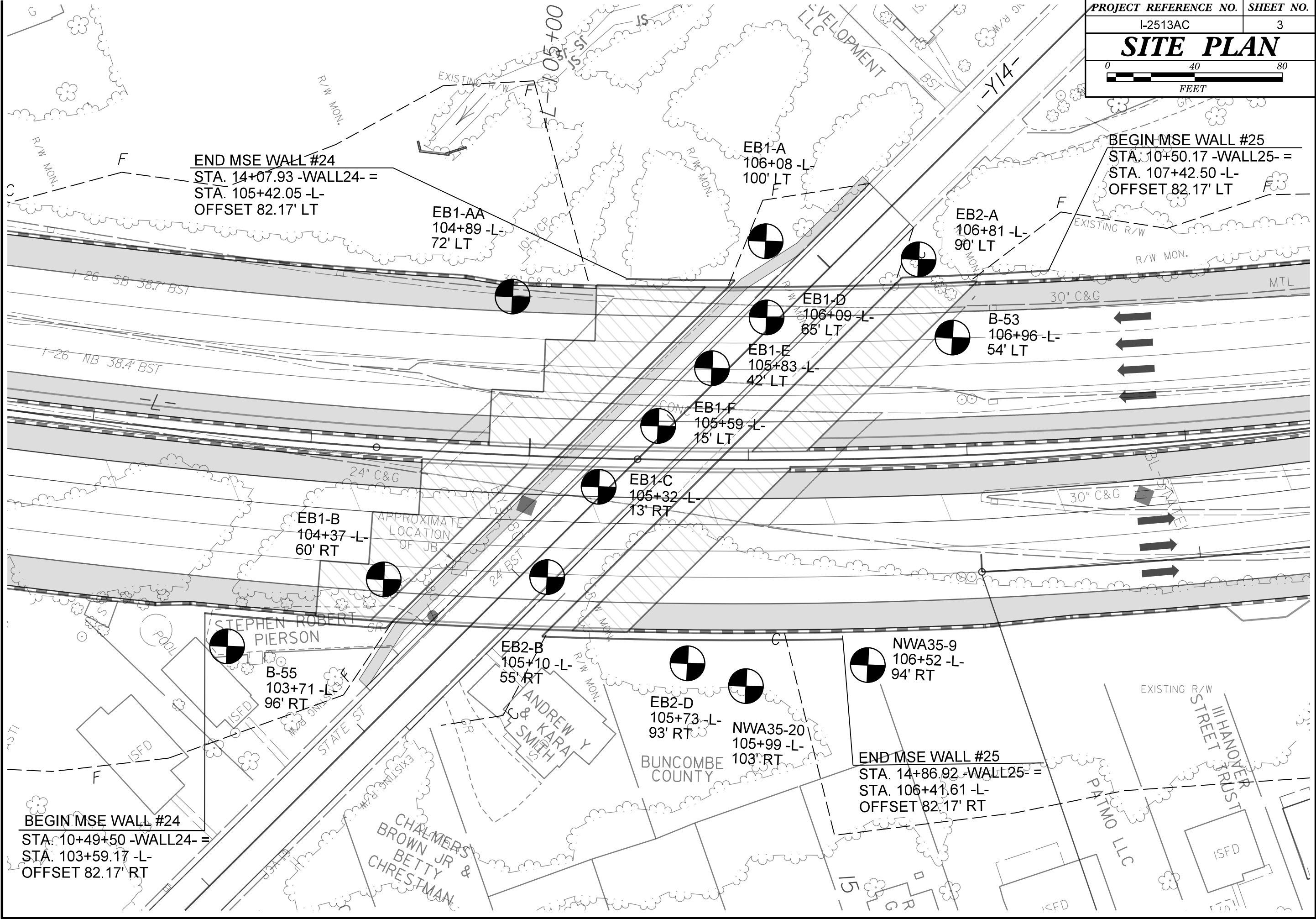
SHEET NO.

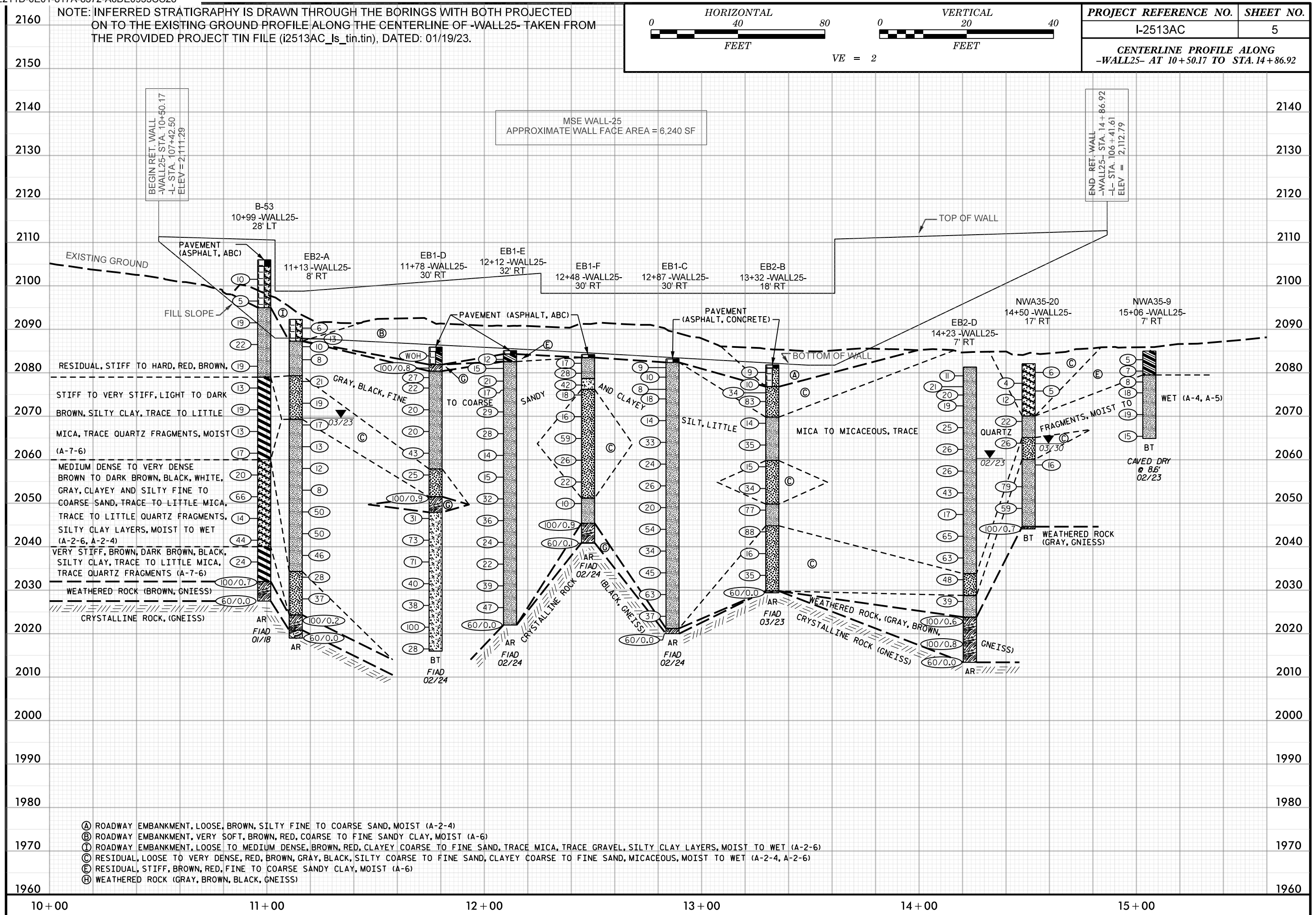
3

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				
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				ELEV. (ft)	DEPTH (ft)			
2085																		
2080														2,080.0 GROUND SURFACE 0.0				
2075	2,079.0	1.0		2	4	5									RESIDUAL LOOSE TO MEDIUM DENSE, RED, BROWN, CLAYEY COARSE TO FINE SAND, MOIST (A-2-6)			
	2,076.5	3.5		4	4	6							M					
	2,074.6	5.4		11	11	13							M					
2070	2,072.1	7.9		8	11	13							M			2,072.5	7.5	VERY STIFF, BROWN, RED, FINE TO COARSE, SANDY SILT, MICACEOUS, MOIST (A-4)
	2,067.1	12.9		11	14	20							M			2,067.5	12.5	DENSE, BROWN, GRAY, SILTY COARSE TO FINE SAND, MOIST (A-2-4)
2065	2,062.1	17.9		12	14	35							M					
2060	2,057.1	22.9		2	5	7							M			2,057.5	22.5	STIFF, BROWN, GRAY, FINE TO COARSE, SANDY SILT, MICACEOUS, MOIST (A-4)
2055	2,052.1	27.9		43	20	10							M			2,052.5	27.5	DENSE TO VERY DENSE, BROWN, GRAY, SILTY COARSE TO FINE SAND, MOIST (A-2-4)
2050	2,047.1	32.9		17	70	30/0.1										2,046.6	33.4	WEATHERED ROCK (BROWN, GRAY, GNEISS)
2045	2,042.1	37.9		20	80/0.4													
2040	2,037.1	42.9		16	16	27							M			2,039.0	41.0	RESIDUAL DENSE TO VERY DENSE, BROWN, GRAY, SILTY COARSE TO FINE SAND, MOIST (A-2-4)
2035	2,032.1	47.9		49	36	28							M					
2030	2,027.1	52.9		90	10/0.1											2,027.5	52.5	WEATHERED ROCK (BROWN, GRAY, GNEISS)
2025	2,022.1	57.9		60/0.1												2,022.1	57.9	CRYSTALLINE ROCK (GNEISS) Boring Terminated WITH STANDARD PENETRATION TEST REFUSAL at Elevation 2,022.0 ft IN CRYSTALLINE ROCK (GNEISS)
															2,022.0	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.		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																					2,083.2 GROUND SURFACE 0.0																																		
		2,082.2		1.0																					2,082.4 0.8																																		
2080		2,080.0		3.2		3 4 5			9																PAVEMENT																																		
		2,080.0		3.2		3 4 6			10																(0.3' ASPHALT, 0.5' CONCRETE)																																		
		2,077.2		6.0		2 2 6			8																RESIDUAL																																		
2075		2,075.0		8.2		4 9 9			18																STIFF TO HARD, BROWN, RED, FINE TO																																		
		2,075.0		8.2																					COARSE SANDY SILT, WITH ROCK																																		
2070		2,070.0		13.2		5 7 7			14																FRAGMENTS, MOIST (A-4)																																		
		2,070.0		13.2																																																							
2065		2,065.0		18.2		3 10 23			33																																																		
		2,065.0		18.2																																																							
2060		2,060.0		23.2		5 9 15			24																																																		
		2,060.0		23.2																																																							
2055		2,055.0		28.2		6 9 17			26																																																		
		2,055.0		28.2																																																							
2050		2,050.0		33.2		4 7 13			20																																																		
		2,050.0		33.2																																																							
2045		2,045.0		38.2		19 23 31			54																																																		
		2,045.0		38.2																																																							
2040		2,040.0		43.2		13 16 18			34																																																		
		2,040.0		43.2																																																							
2035		2,035.0		48.2		5 19 26			45																																																		
		2,035.0		48.2																																																							
2030		2,030.0		53.2		44 30 33			63																																																		
		2,030.0		53.2																																																							
2025		2,025.0		58.2		12 13 24			37																																																		
		2,025.0		58.2																																																							
2020		2,020.0		63.2		60/0.0			60/0.0																2,021.2 62.0																																		
		2,020.0		63.2																					2,020.0 63.2																																		
																									WEATHERED ROCK (BLACK, GNEISS)																																		
																									Boring Terminated WITH STANDARD PENETRATION TEST REFUSAL at Elevation 2,020.0 ft ON CRYSTALLINE ROCK (GNEISS)																																		

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 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 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-B			STATION 105+10			OFFSET 55 ft RT			ALIGNMENT -L-			0 HR.	N/A		
COLLAR ELEV. 2,081.8 ft			TOTAL DEPTH 52.4 ft			NORTHING 682,771			EASTING 934,626			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 03/07/23			COMP. DATE 03/07/23			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															
2080	2,081.1	0.7	3	4	5									2,081.8 2,081.1	0.0 0.7
	2,078.3	3.5	6	4	6										
2075	2,076.4	5.4	13	15	19									2,076.8	5.0
	2,074.4	7.4	14	31	52										
2070	2,069.4	12.4	6	9	5									2,069.8	12.0
2065	2,064.4	17.4	7	11	24										
2060	2,059.4	22.4	5	5	10									2,059.8	22.0
2055	2,054.4	27.4	10	14	20										
2050	2,049.4	32.4	16	33	44									2,049.8	32.0
2045	2,044.4	37.4	16	56	32									2,044.8	37.0
2040	2,039.4	42.4	5	7	9										
2035	2,034.4	47.4	6	13	22										
2030	2,029.4	52.4	60/0.0											2,029.8 2,029.4	52.0 52.4
			</												

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-D						STATION 105+73				OFFSET 93 ft RT				ALIGNMENT -L-				0 HR. N/A	
COLLAR ELEV. 2,081.3 ft						TOTAL DEPTH 67.9 ft				NORTHING 682,814				EASTING 934,688				24 HR. 21.0	
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 02/20/23				COMP. DATE 02/20/23				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	2,080.3	1.0												2,081.3	0.0	GROUND SURFACE			
2075	2,077.8	3.5										M		RESIDUAL STIFF TO HARD, BROWN, FINE TO COARSE SANDY SILT, MOIST, MICACEOUS (A-4)					
	2,075.9	5.4										M							
	2,073.4	7.9										M							
2070	2,068.4	12.9										M							
	2065	2,063.4	17.9													M			
		2060	2,058.4	22.9													M		
2055			2,053.4	27.9													M		
	2050		2,048.4	32.9													M		
		2045	2,043.4	37.9													M		
2040			2,038.4	42.9													M		
	2035		2,033.4	47.9										M					
		2030	2,028.4	52.9										M					
2025			2,023.4	57.9										M					
	2020		2,018.4	62.9										M					
		2015	2,013.4	67.9										M					
												</							

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. 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															
	2,081.1	1.0												2,082.1 GROUND SURFACE 0.0	
2080	2,078.6	3.5		5	3	3									RESIDUAL LOOSE TO MEDIUM DENSE, RED, BROWN, COARSE TO FINE CLAYEY SAND (A-2-6)
	2,078.6			3	2	2									
	2,076.8	5.3		3	2	2									
2075	2,074.8	7.3		2	2	3									
	2,074.8			4	5	7									
2070	2,069.8	12.3		6	9	13									2,070.1 12.0
															VERY STIFF, BROWN, MICACEOUS, FINE TO COARSE SANDY SILT (A-4)
2065	2,064.8	17.3		8	11	15									2,065.1 17.0
															MEDIUM DENSE, BROWN, FINE TO COARSE SILTY SAND (A-2-4)
2060	2,059.8	22.3		5	9	7									2,060.1 22.0
															VERY STIFF, BROWN, MICACEOUS FINE TO COARSE SANDY SILT (A-4)
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 37.5
															2,044.1 38.0
															WEATHERED ROCK (GRAY, GNEISS) Boring Terminated at Elevation 2,044.1 ft IN WEATHERED 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. 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_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)
2110															
2105														2,106.0	0.0
														2,104.5	1.5
	2,102.5	3.5	4	5	5										
2100															
	2,097.5	8.5	2	2	3										
2095														2,095.0	11.0
	2,092.5	13.5	6	8	11										
2090															
	2,087.5	18.5	7	11	11										
2085															
	2,082.5	23.5	7	9	10										
2080														2,079.0	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	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	66.0
	2,037.5	68.5	6	9	15										
2035															
	2,032.5	73.5	23	52	48/0.2									2,032.0	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-						
COLLAR ELEV. 2,106.0 ft			TOTAL DEPTH 78.5 ft			NORTHING 682,985			EASTING 934,601						
									0 HR. 38.0						
									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.		LOG	SOIL AND ROCK DESCRIPTION	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					ELEV. (ft)
2030						Match Line									
	2,027.5	78.5												2,027.5	78.5
		</													

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-55				STATION				103+71				OFFSET				96 ft RT				ALIGNMENT				-L-				0 HR.		23.0																									
COLLAR ELEV.				2,071.7 ft				TOTAL DEPTH				53.5 ft				NORTHING				682,625				EASTING				934,596				24 HR.		FIAD																									
DRILL RIG/HAMMER EFF./DATE										TER1974 CME-45B 93% 08/10/2017										DRILL METHOD										H.S. Augurs										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																																																											
		2,068.2		3.5		50 15 17														2,071.7 GROUND SURFACE 0.0																																							
2065																				RESIDUAL																																							
		2,063.2		8.5		7 11 11														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)																																							
2060																																																											
		2,058.2		13.5		15 12 13																																																					
2055																																																											
		2,053.2		18.5		9 16 17																																																					
2050																																																											
		2,048.2		23.5		16 17 28														2,050.7 DENSE, DARK GRAY AND DARK BROWN, SILTY FINE TO COARSE SAND, TRACE MICA, TRACE QUARTZ FRAGMENTS, WET (A-2-4) 21.0																																							
2045																																																											
		2,043.2		28.5		11 14 12														2,044.7 VERY STIFF, DARK BROWN, BROWN, AND DARK GRAY, FINE TO COARSE SANDY SILT, TRACE TO LITTLE MICA, TRACE QUARTZ SEAMS, MOIST (A-4) 27.0																																							
2040																																																											
		2,038.2		33.5		100/0.5														2,039.7 WEATHERED ROCK (BROWN, GRAY, MICA-SCHIST) 32.0																																							
2035																																																											
		2,033.2		38.5		7 7 14														2,034.7 RESIDUAL 37.0																																							
2030																																																											
		2,028.2		43.5		4 6 6														2,030.7 VERY STIFF, BROWN AND GRAY, FINE TO COARSE SANDY SILT, TRACE TO LITTLE MICA, TRACE QUARTZ FRAGMENTS, MOIST (A-4) 41.0																																							
2025																																																											
		2,023.2		48.5		14 32 45														2,024.7 STIFF, LIGHT GRAY, LIGHT BROWN, WHITE, CLAYEY SILT, MOIST (A-5) 47.0																																							
2020																																																											
		2,018.2		53.5		60/0.0														2,019.2 HARD, BROWN AND DARK BROWN, FINE TO COARSE SANDY SILT, LITTLE MICA, TRACE QUARTZ FRAGMENTS, MOIST (A-4) 52.5																																							
																				2,018.2 CRSTALLINE ROCK (BLUE-BLACK, WHITE, GNEISS) 53.5																																							
																				Boring Terminated WITH STANDARD PENETRATION TEST REFUSAL at Elevation 2,018.2 ft IN CRYSTALLINE ROCK (GNEISS)																																							