DESCRIPTION

TITLE SHEET

CROSS SECTIONS

LEGEND

SITE PLAN

BORE LOGS

PROFILE

CONTENTS SHEET NO. $\overline{\mathbf{V}}$ 2 3 513, 5-7 8-14 N REFERENCE 0 m 34165. Ë PROJEC

STATE OF NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION **DIVISION OF HIGHWAYS** GEOTECHNICAL ENGINEERING UNIT

STRUCTURE SUBSURFACE INVESTIGATION

COUNTY BUNCOMBE

PROJECT DESCRIPTION BRIDGE NO. 902 ON -Y5RPA-OVER BLUE RIDGE SOUTHERN RAILROAD

STATE	TOWN OF HOLLY SPRINGS PROJECT NO.	SHEET NO.	TOTAL SHEETS
N.C.	I–2513AA	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 SOLI TEST DATA AVAILABLE MAY BE REVIEWED OR INSPECTED IN RALEIGH BY CONTACTING THE N.C. DEPARTMENT OF TRANSPORTATION, GEOTECHNICAL ENGINEERING UNIT AT 1991 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 CONSDERABLY WITH TWE ACCORDING TO CLIMATIC CONDITIONS INVESTIGATION CHANGE OBCORDING AND AND AND AS WELL AS COMEN DATA 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 OPNION OF THE DEPARTMENT AS TO THE TYPE OF MATERIALS AND CONSTRUCTIONS TO BE ENCOUNTERED. THE BIDDER OR CONTRACTOR IS CAUTIONED TO MAKE SUCH INDEPENDENT SUBSURFACE INVESTIGATIONS AS HE DEEMS NECESSARY TO SATISFY HIMSELF AS TO CONDITIONS TO BE 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 ON OF OR AN THE SITE DIFFERING FROM THOSE INDICATED IN THE SUBSURFACE INFORMATION.

NOTES

- TES: 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 REDUESTED 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.
- 2.

PERSONNEL

CG2

GOODNIGHT, D.J.

INVESTIGATED BY _____FALCON ENG.

DRAWN BY <u>CROCKETT</u>, S.C.

CHECKED BY _______ HUNSBERGER, W.S.

SUBMITTED BY _____ FALCON ENG.

DATE MARCH 2023



SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

	GRADATION		TERMS AND DEFINITIONS
SOIL IS CONSIDERED UNCONSOLIDATED, SEMI-CONSOLIDATED, OR WEATHERED EARTH MATERIALS THAT CAN	WELL GRADED - INDICATES A GOOD REPRESENTATION OF PARTICLE SIZES FROM FINE TO COARSE.	HARD ROCK IS NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT REFUSAL IF TESTED, AN INFERRED	ALLUVIUM (ALLUV.) - SOILS THAT HAVE BEEN TRANSPORTED BY WATER.
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	UNIFORMLY GRADED - INDICATES THAT SOIL PARTICLES ARE ALL APPROXIMATELY THE SAME SIZE.	ROCK LINE INDICATES THE LEVEL AT WHICH NON-CUASTAL 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	AQUIFER - A WATER BEARING FORMATION OR STRATA.
IS BASED ON THE AASHTO SYSTEM, BASIC DESCRIPTIONS GENERALLY INCLUDE THE FOLLOWING:		BLOWS IN NON-COASTAL PLAIN MATERIAL, THE TRANSITION BETWEEN SOIL AND ROCK IS OFTEN REPRESENTED BY A ZONE OF WEATHERED ROCK.	ARENACEOUS - APPLIED TO ROCKS THAT HAVE BEEN DERIVED FROM SAND OR THAT CONTAIN SAND.
AS MINERALOGICAL COMPOSITION, ANGULARITY, STRUCTURE, PLASTICITY, ETC. FOR EXAMPLE,	THE ANGULARITY OR ROUNDNESS OF SOIL GRAINS IS DESIGNATED BY THE TERMS:	ROCK MATERIALS ARE TYPICALLY DIVIDED AS FOLLOWS:	ARGILLACEOUS - APPLIED TO ALL ROCKS OR SUBSTANCES COMPOSED OF CLAY MINERALS, OR HAVING
VERY STIFF, GRAY, SILLY CLAY, MOIST WITH INTERBEDDED FINE SAND LAYERS, HIGHLY PLASTIC, A-7-6	ANGULAR, SUBANGULAR, SUBROUNDED, OR ROUNDED.	WEATHERED NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT N VALUES >	A NUTABLE PROPORTION OF CLAY IN THEIR COMPOSITION, SUCH AS SHALE, SLATE, ETC.
GENERAL GRANULAR MATERIALS SILT-CLAY MATERIALS	MINERALOGICAL COMPOSITION		WHICH IT IS ENCOUNTERED, BUT WHICH DOES NOT NECESSARILY RISE TO OR ABOVE THE LEVEL AT
CLASS. (≤ 35% PASSING *200) (> 35% PASSING *200) ORGANIC MATERIALS	MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC.	CRYSTALLINE ROCK (CR) WOULD YIELD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES GRANITE,	SURFACE.
GROUP A-1 A-3 A-2 A-4 A-5 A-6 A-7 A-1, A-2 A-4, A-5	ARE USED IN DESCRIPTIONS WHEN THEY ARE CONSIDERED OF SIGNIFICANCE.	NON-CRYSTALLINE FINE TO COARSE GRAIN METAMORPHIC AND NON-COASTAL PLAIN	CALCAREOUS (CALC.) - SOILS THAT CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE.
ULASS. A-1-a A-1-b A-2-4 A-2-5 A-2-6 A-2-7 A-76 A-3 A-6 A-7		ROCK (NCR) SEDIMENTARY ROCK THAT WOULD YEILD SPT REFUSAL IF TESTED.	COLLUVIUM - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM OF SLOPE.
SYMBOL DOOD OC COOL COULD STATE ST	MODERATELY COMPRESIBLE LL = 31 - 50	COASTAL PLAIN COASTAL PLAIN SEDIMENTS CEMENTED INTO ROCK, BUT MAY NOT YIELD	CORE RECOVERY (REC.) - TOTAL LENGTH OF ALL MATERIAL RECOVERED IN THE CORE BARREL DIVIDED
		(CP) SHELL BEDS, ETC.	BY TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE.
*40 30 MX 50 MX 51 MN S0 LAY PEAT	GRANULAR SILT - CLAY	WEATHERING	DIKE - A TABULAR BODY OF IGNEOUS ROCK THAT CUTS ACROSS THE STRUCTURE OF ADJACENT ROCKS OR CUTS MASSIVE ROCK.
*200 15 MX 25 MX 10 MX 35 MX 35 MX 35 MX 35 MX 36 MN 36 MN 36 MN	ORGANIC MATERIAL SOILS OTHER MATERIAL TRACE OF ORGANIC MATER 2 - 37 3 - 57 TRACE 1 - 107	FRESH ROCK FRESH, CRYSTALS BRIGHT, FEW JOINTS MAY SHOW SLIGHT STAINING, ROCK RINGS UNDER	DIP - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE
PASSING #40 SOLICE MITH	LITTLE ORGANIC MATTER 3 - 5% 5 - 12% LITTLE 10 - 20%	VERY SLIGHT ROCK GENERALLY FRESH, JOINTS STAINED, SOME JOINTS MAY SHOW THIN CLAY COATINGS IF OPEN.	HORIZONTAL.
LL 40 MX 41 MN 500L3 W111 PT C MY NP 10 MY 10 MY 11 MN 10 MY 10 MY 10 MY 10 MY 11 MN LITTLE OR	MUDERATELY ORGANIC 5 - 107, 12 - 207, SUME 20 - 357, HIGHLY ORGANIC > 107, > 207, HIGHLY 357, AND ABOVE	(V SLI.) CRYSTALS ON A BROKEN SPECIMEN FACE SHINE BRIGHTLY, ROCK RINGS UNDER HAMMER BLOWS IF	DIP DIRECTION (DIP AZIMUTH) - THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF THE LINE OF DIP, MEASURED CLOCKWISE FROM NORTH.
	GROUND WATER	UF A CRISIALLINE NATURE.	FAULT - A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE
USUAL TYPES STONE FRAGS.	WATER LEVEL IN BORE HOLE IMMEDIATELY AFTER DRILLING	(SLI.) 1 INCH. OPEN JOINTS MAY CONTAIN CLAY. IN GRANITOID ROCKS SOME OCCASIONAL FELDSPAR	SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE.
OF MAJOR GRAVEL, AND SAND GRAVEL AND SAND SOILS SOILS		CRYSTALS ARE DULL AND DISCOLORED. CRYSTALLINE ROCKS RING UNDER HAMMER BLOWS.	FISSILE - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES.
MATERIALS SANU	∇ PW PERCHED WATER SATURATED ZONE OR WATER REARING STRATA	(MOD.) GRANITOID ROCKS, MOST FELDSPARS ARE DULL AND DISCOLORED, SOME SHOW CLAY. ROCK HAS	PARENT MATERIAL.
AS SUBGRADE EXCELLENT TO GOOD FAIR TO POOR POOR UNSUITABL		DULL SOUND UNDER HAMMER BLOWS AND SHOWS SIGNIFICANT LOSS OF STRENGTH AS COMPARED	FLOOD PLAIN (FP) - LAND BORDERING A STREAM, BUILT OF SEDIMENTS DEPOSITED BY THE STREAM.
PI OF A-7-5 SUBGROUP IS ≤ LL - 30 ; PI OF A-7-6 SUBGROUP IS > LL - 30		MODERATELY ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. IN GRANITOID ROCKS. ALL FEI DSPARS DUIL	FORMATION (FM.) - A MAPPABLE GEOLOGIC UNIT THAT CAN BE RECOGNIZED AND TRACED IN THE
CONSISTENCY OR DENSENESS	MISCELLANEOUS SYMBOLS	SEVERE AND DISCOLORED AND A MAJORITY SHOW KAOLINIZATION. ROCK SHOWS SEVERE LOSS OF STRENGTH	
PRIMARY SOLI TYPE COMPACTNESS OR RANGE OF STANDARD RANGE OF UNCONFINED		(MUU.SEV.) AND CAN BE EXCAVATED WITH A GEULUGIST'S PICK. RUCK GIVES "CLUNK" SOUND WHEN STRUCK. IF TESTED, WOULD YIELD SPT REFUSAL	JUINI - FRACTURE IN RUCK ALUNG WHICH NU APPRELIABLE MUVEMENT HAS UCCURRED.
CONSISTENCY (N-VALUE) (TONS/FT ²)	WITH SOIL DESCRIPTION OF ROCK STRUCTURES	SEVERE ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC CLEAR AND EVIDENT BUT	ITS LATERAL EXTENT.
GENERALLY VERY LOOSE < 4		(SEV.) REDUCED IN STRENGTH TO STRONG SOIL, IN GRANITOID ROCKS ALL FELDSPARS ARE KAOLINIZED TO SOME EXTENT, SOME FRAGMENTS OF STRONG ROCK USUALLY REMAIN.	LENS - A BODY OF SOIL OR ROCK THAT THINS OUT IN ONE OR MORE DIRECTIONS.
GRANULAR MEDIUM DENSE 10 TO 30 N/A		IF TESTED, WOULD YIELD SPT N VALUES > 100 BPF	MOTTLED (MOT.) - IRREGULARLY MARKED WITH SPOTS OF DIFFERENT COLORS. MOTTLING IN SOILS
(NON-COHESIVE) DENSE 30 TO 50		VERY ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC ELEMENTS ARE DISCERNIBLE	USUALLY INDICATES FUUR AERATIUN AND LACK OF GUUD DRAINAGE.
VERY SOFT < 2 < 0.25	- INFERRED SOIL BOUNDARY - CORE BORING • SOUNDING ROD	(V SEV.) REMAINING, SAPROLITE IS AN EXAMPLE OF ROCK WEATHERED TO A DEGREE THAT ONLY MINOR	OF AN INTERVENING IMPERVIOUS STRATUM.
GENERALLY SOFT 2 TO 4 0.25 TO 0.5		VESTIGES OF ORIGINAL ROCK FABRIC REMAIN. <u>IF TESTED, WOULD YIELD SPT N VALUES < 100 BPF</u>	RESIDUAL (RES.) SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK.
SILT-CLAY MEDIUM STIFF 4 TO 8 0.5 TO 1.0 MATERIAL STIFF 8 TO 15 1 TO 2	TITE INFERRED ROCK LINE O MONITORING WELL T WITH CORE	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	ROCK QUALITY DESIGNATION (ROD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF
(COHESIVE) VERY STIFF 15 TO 30 2 TO 4	TTTTT ALLUVIAL SOIL BOUNDARY A PIEZOMETER - SPT N-VALUE	ALSO AN EXAMPLE.	RUCK SEGMENTS EDUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE.
	RECOMMENDATION SYMBOLS	ROCK HARDNESS	SAPROLITE (SAP.) - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT
		VERY HARD CANNOT BE SCRATCHED BY KNIFE OR SHARP PICK. BREAKING OF HAND SPECIMENS REQUIRES	
U.S. STU, STU, STUE 4 10 40 60 200 270 OPENING (MM) 4.76 2.00 0.42 0.25 0.075 0.053	EXCAVATION UNSUITABLE WASTE	HARD CAN BE SCRATCHED BY KNIFE OR PICK ONLY WITH DIFFICULTY, HARD HAMMER BLOWS REQUIRED	SILL - AN INTRUSIVE BOUY OF IGNEOUS RUCK OF APPROXIMATELY UNIFORM THICKNESS AND RELATIVELY THIN COMPARED WITH ITS LATERAL EXTENT, THAT HAS BEEN EMPLACED PARALLEL TO
	SHALLOW UNCLASSIFIED EXCAVATION - EMBANKMENT OR BACKFILL	TO DETACH HAND SPECIMEN.	THE BEDDING OR SCHISTOSITY OF THE INTRUDED ROCKS.
(BLDR.) (COB.) (GR.) (CSE.SD.) (E.SD.) (SL.) (CL.)		MODERATELY CAN BE SCRATCHED BY KNIFE OR PICK, GOUGES OR GROOVES TO 0.25 INCHES DEEP CAN BE	SLICKENSIDE - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT
GRAIN MM 305 75 2.0 0.25 0.05 0.005	AR - AUGER REFUSAL MED MEDIUM VST - VANE SHEAR TEST	BY MODERATE BLOWS.	STANDARD PENETRATION TEST (PENETRATION RESISTANCE) (SPT) - NUMBER OF BLOWS (N OR BPF) OF
SIZE IN. 12 3	BT - BORING TERMINATED MICA MICACEOUS WEA WEATHERED	MEDIUM CAN BE GROOVED OR GOUGED 0.05 INCHES DEEP BY FIRM PRESSURE OF KNIFE OR PICK POINT.	A 140 LB. HAMMER FALLING 30 INCHES REQUIRED TO PRODUCE A PENETRATION OF 1 FOOT INTO SOIL
SOIL MOISTURE - CORRELATION OF TERMS	UL ULAY MOD MODERATELY γ - UNIT WEIGHT CPT - CONE PENETRATION TEST NP - NON PLASTIC γ DRY UNIT WEIGHT	HARD CAN BE EXCAVATED IN SMALL CHIPS TO PEICES 1 INCH MAXIMUM SIZE BY HARD BLOWS OF THE POINT OF A GEOLOGIST'S PICK.	TO OR LESS THAN 0.1 FOOT PER 60 BLOWS.
SOIL MOISTURE SCALE FIELD MOISTURE GUIDE FOR FIELD MOISTURE DESCRIPTION	CSE COARSE ORG ORGANIC	SOFT CAN BE GROVED OR GOUGED READILY BY KNIFE OR PICK. CAN BE EXCAVATED IN FRAGMENTS	STRATA CORE RECOVERY (SREC.) - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY
(ATTEMBERG LIMITS) DESCRIPTION	DPT - DYNAMIC PENETRATION TEST SAP SAPROLITIC S - BULK	FROM CHIPS TO SEVERAL INCHES IN SIZE BY MODERATE BLOWS OF A PICK POINT. SMALL, THIN PIECES CAN BE BROKEN BY FINGER PRESSURF.	IUTAL LENGTH UF STRATUM AND EXPRESSED AS A PERCENTAGE.
- SATURATED - USUALLY LIQUID; VERY WET, USUALLY	e - VOID RATIO SD SAND, SANDY SS - SPLIT SPOON	VERY CAN BE CARVED WITH KNIFE, CAN BE EXCAVATED READILY WITH POINT OF PICK, PIECES 1 INCH	LENGTH OF ROCK SEGMENTS WITHIN A STRATUM EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY
	F - FINE SL SLI, SLIT SI - SHELBY TOBE	SOFT OR MORE IN THICKNESS CAN BE BROKEN BY FINGER PRESSURE. CAN BE SCRATCHED READILY BY	THE TUTAL LENGTH OF STRATA AND EXPRESSED AS A PERCENTAGE.
PLASTIC SEMISOLID: REQUIRES DRYING TO	FRAC FRACTURED, FRACTURES TCR - TRICONE REFUSAL RT - RECOMPACTED TRIAXIAL		TO SUL 1157 SURFACE SULS USUALLI CUNIMININU UKUANIC MATTER.
	HI HIGHLY V - VERY RATIO	TERM SPACING TERM THICKNESS	BENCH MARK:BL-3, -L- STA. 14+55, 29' RT
	EQUIPMENT USED ON SUBJECT PROJECT	VERY WIDE MORE THAN 10 FEET VERY THICKLY BEDDED 4 FEET	ELEVATION: 2039.89 FEET
	DRILL UNITS: ADVANCING TOOLS: HAMMER TYPE:	MODERATELY CLOSE 1 TO 3 FEET THINLY BEDDED 0.16 - 1.5 FEET	NOTES.
		CLOSE 0.16 TO 1 FOOT VERY THINLY BEDDED 0.03 - 0.16 FEET	
- URY - (U) ATTAIN OPTIMUM MOISTURE	CME-55 6° CONTINUOUS FLIGHT AUGER CORE SIZE:	THINLY LAMINATED < 0.008 FEET	
PLASTICITY	☐ B H	INDURATION	
PLASTICITY INDEX (PI) DRY STRENGTH	X CME-550X HARD FACED FINGER BITS	FOR SEDIMENTARY ROCKS, INDURATION IS THE HARDENING OF MATERIAL BY CEMENTING, HEAT, PRESSURE, ETC.	
NON PLASTIC 0-5 VERY LOW		FRIABLE RUBBING WITH FINGER FREES NUMEROUS GRAINS: GENTLE BLOW BY HAMMER DISINTEGRATES SAMPLE.	
MODERATELY PLASTIC 16-25 MEDIUM		GRAINS CAN BE SEPARATED FROM SAMPLE WITH STEEL PRORE	
HIGHLY PLASTIC 26 OR MORE HIGH	PORTABLE HOIST TRICONE'STEEL TEETH HAND AUGER	MUDERATELY INDURATED BREAKS EASILY WHEN HIT WITH HAMMER.	
COLOR	- TRICONE' TUNGCARB.	INDURATED GRAINS ARE DIFFICULT TO SEPARATE WITH STEEL PROBE:	
DESCRIPTIONS MAY INCLUDE COLOR OR COLOR COMBINATIONS (TAN, RED, YELLOW-BROWN, BLUE-GRAY).		UIFFICULI TO BREAK WITH HAMMER.	
MODIFIERS SUCH AS LIGHT, DARK, STREAKED, ETC. ARE USED TO DESCRIBE APPEARANCE.		EXTREMELY INDURATED START THAMMER BLOWS REQUIRED TO BREAK SAMPLE: SAMPLE BREAKS ACROSS GRAINS.	DATE: 8-15-14
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TOWN OF HOLLY SPRINGS PROJECT NO.



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.2150					(A) ROAD	WAY ENBANKNE		DWN AND GRAY, MOIST	V.LOOSE TO MED.DEN	ISE, SILTY SA	ND (A-2-4)	WITH TRAC	É TO LITTLE MICA AND	GRAVEL			
.2140					©RESI @WEAT	DUAL: BROWN W DUAL: BROWN T HERED ROCK:	AN AND BROWN	AND WHITE CNEISS	MED.STIFF TO STIFF	, SANDY SILT	(A-2-4) WI (A-4) AND	SANDY - GLAY	(LITTLE MICA			
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						(A) ROADWAY EMBANKI	VENT : TAN AND	BROWN, MOIST, LOOSI	TO MED.	DENSE,SI	TY SAND (A-2-4	WITH TRACE	TO LITTLE MICA A	ND TRACE O	RGANICS		
							MENT:BROWN.M TAN AND RED	OIST.MED.STIFF.SAN	DY CLAY (A .STIFF TO	-6) WITH { V.STIFF.	LITTLE GRAVEL SANDY SILT (A-4)	AND SANDY S	SILTY CLAY (A-7) WIT	H'LITTLE MI	ĊA		
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GEOTECHNICAL BORING REPORT BORE LOG

WBS 34165.1.2 TIP 1-2513AA COUNTY BUNCOMBE GEOLOGIST Goodnight, D.J. SITE DESCRIPTION BRIDGE ON - Y5RPA- OVER BLUE RIDGE SOUTHERN RAILROAD BETWEEN I-26 AND ALT. US-74 **GROUND WTR (ft)** BORING NO. EB1-A **STATION** 18+55 OFFSET 30 ft LT ALIGNMENT -Y5RPA-0 HR. 50.0 TOTAL DEPTH 103.8 ft **NORTHING** 678,192 **EASTING** 919,187 **COLLAR ELEV.** 2,116.4 ft 24 HR. 47.0 DRILL RIG/HAMMER EFF./DATE CG20446 Diedrich D50 87% 05/10/2022 HAMMER TYPE Automatic DRILL METHOD H.S. Augers DRILLER Odom, C. **START DATE** 10/18/22 COMP. DATE 10/19/22 SURFACE WATER DEPTH N/A ELEV DRIVE DEPTH BLOW COUNT **BLOWS PER FOOT** SAMP. SOIL AND ROCK DESCRIPTION ELEV 0 (ft) (ft) 0.5ft 0.5ft 0.5ft 50 25 75 100 NO. (ft) MOIL G ELEV. (ft) DEPTH (2120 GROUND SURFACE 2,116.4 ASPHALT PAVEMENT 2,115.1 2115 ROADWAY EMBANKMENT - -- -BROWN AND GRAY, V. LOOSE TO MED. 2.112.93 5 10 12 11 DENSE, SILTY SAND (A-2-4) WITH М . . . TRACE GRAVEL AND TRACE TO LITTLE - -. . . - -2110 MICA 2 107 -3 4 2 М . . . - -. . 2105 2 102 9-13.5 2 М 2100 2.097.9**I** 18.5 Μ . . . • ┢14 2095 2.092.9 5 5 Μ . . . **6**10 . . . 2090 2.087.9 28.5 . . . 4 6 М ••13-. 2085 . . . - -2,082.9-33.5 . . . 6 М ••13• 2080 2,079.4 37.0 - ٦ RESIDUAL 2,077.9 38.5 BROWN, STIFF TO V. STIFF, SANDY . . . 3 6 9 . . . Μ **•**18 CLAY (A-6) WITH TRACE ORGANICS AND ROCK FRAGMENTS 2075 2,072.9 43.5 WITH TRACE MICA 2 3 4 М 2070 2,069.4 <u>____ 47.0</u> . . . BROWN AND WHITE, LOOSE TO MED. 2,067.9_ DENSE, SILTY SAND (A-2-4) WITH 3 5 М LITTLE TO SOME MICA ଞ୍ଚି 2065 2.062.9 53.5 . . . 2 3 6 W - -5 2060 2,057. 58.5 4 6 W . . . 10 2055 2.052.9. . 63 5 - - -. . . 3 4 W 2050 $2.047.9 \pm 68.5$ W 2045 2,042.9 73. . . . 4 2 W . . . ¥I 2040

BORE LOG WBS 34165.1.2 **TIP** 1-2513AA COUNTY BUNCOMBE GEOLOGIST Goodnight, D.J. SITE DESCRIPTION BRIDGE ON -Y5RPA- OVER BLUE RIDGE SOUTHERN RAILROAD BETWEEN I-26 AND ALT. US-74 **GROUND WTR (ft)** BORING NO. EB1-A **STATION** 18+55 OFFSET 30 ft LT ALIGNMENT -Y5RPA-0 HR. 50.0 COLLAR ELEV. 2,116,4 ft TOTAL DEPTH 103.8 ft **NORTHING** 678,192 EASTING 919,187 24 HR. 47.0 DRILL RIG/HAMMER EFF./DATE CG20446 Diedrich D50 87% 05/10/2022 HAMMER TYPE Automatic DRILL METHOD H.S. Augers DRILLER Odom, C. **START DATE** 10/18/22 COMP. DATE 10/19/22 SURFACE WATER DEPTH N/A ELEV DRIVE DEPTH BLOW COUNT (ft) (ft) 0.5ft 0.5ft 0.5ft **BLOWS PER FOOT** SAMP. SOIL AND ROCK DESCRIPTION 0 0.5ft 0.5ft 0.5ft 50 25 75 100 NO. MOIL G ELEV. (ft DEPTH Match Line 2040 BROWN AND WHITE, LOOSE TO MED. DENSE, SILTY SAND (A-2-4) WITH 2,037.9 78.5 LITTLE TO SOME MICA (continued) 8 М - -- -2035 . . . • • 2 032 9⊥ 83 5 5 8 13 М . . - -- -2030 . 1 . . 027 88.5 -1 6 10 4 М 2025 2.022.9 93.5 . . 20 28 38 М €66 2,021.4 WEATHERED ROCK 2020 BROWN AND WHITE, GNEISS 2.017.9 J 98.5 . . 50 50/0.2 16 100/0.7 . . 2015 2,012.6 2,012.9 103.5 103.8 00/0. 100/0 3 Boring Terminated at Elevation 2,012.6 ft in WR: GNEISS

GEOTECHNICAL BORING REPORT

GEOTECHNICAL BORING REPORT BORE LOG

WBS	34165	.1.2			Т	IP 1-25	13AA	۸	COL	JNTY	BUNG	СОМ	BE			GEOLOGIST Goodnight, D.	J.	
SITE	DESCR	IPTION	BRI	DGE O	N -Y5	RPA- O	/ER E	BLUE RI	DGE S	SOUT	HERN I	RAIL	ROAD E	BETWE	EN I	-26 AND ALT. US-74	GROUND WTR	(ft)
BOR	ING NO.	EB1-	3		S	TATION	18-	+46			OFFSE	T 7	'4 ft RT			ALIGNMENT -Y5RPA-	0 HR. 16	6.9
COL		EV . 20	- 088.21	ft	Т		EPTH	i 65.01	ft		NORTH	ling	678.29	91		EASTING 919 217	24 HR. 17	7.0
DRILI	RIG/HAN		F /DAT	F CG	<u>г</u> 20446 Г)iedrich D	50 87%	6 05/10/20	122					IFTHOD) Н.9	Augers HA	MMER TYPE Automatic	
DRI		dom C		2 000	s			03/06/2	23		COMP		F 03/0	16/23	- 11.0		N/A	
	DRIVE		BLC	ow co				BLOWS	PER F	<u> </u> тоот			SAMP.		L			
(ft)	ELEV (ft)	(ft)	0.5ft	0.5ft	0.5ft	0	25	5	50	7	75	100	NO.	MOI	0 G	SOIL AND ROCK D	ESCRIPTION	Ή (ft)
											1							<u></u> (11)
2090																		
2000	-	F F														– 2,088.2 GROUND SL	RFACE	0.0
	2,087.2	1.0	3	3	4											2,087.2 ROADWAY EME	ANKMENT	1.0
2085	2.084.7-	- 3.5	Ŭ	Ŭ	·	₽ 7	•••		· ·			•				RED-TAN AND BROWN	N, MED. STIFF TO	
	-		3	5	4	1					· · ·	-		м		. STIFF, SANDY SILT (A 2,082.7_ MICA AND G	-4) WITH LITTLE RAVEL	5.5
	2,082.2	6.0	3	5	5	:	· · ·		· ·		· · ·	•		м		BROWN, LOOSE TO M	ED. DENSE, SILTY	
2080	2,079.7-	8.5	1	2	3				+		<u></u>					TRACE TO LITTI	E GRAVEL	
	-	Ł			-	¶ ⁵ .	•••					•			E E			
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2070	2,069.7	18.5					•••					•		_		TAN-BROWN, SOFT	TO MED. STIFF,	
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2025		F										-				TAN WHITE AND BR	OWN, GNEISS	
	2,024.7	- <u>63.5</u> 65.0	100/0.8	5							• 100	/0.5				- 2.023.2		65.0
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GEOTECHNICAL BORING REPORT POPEIOC

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WBS	34165	.1.2			TIF	• 1-2513A	A	COUNT	Y BUNCON	1BE			GEOLOGIST Goodnight, D).J.
SITE	DESCR	IPTION	BRID	GE ON	-Y5R	PA- OVER	BLUE RIC	GE SOU	THERN RAII	ROAD E	BETWE	EN I-	26 AND ALT. US-74	GROUND WTR (ft)
BOR	NG NO.	B1-A			ST	ATION 19	9+35		OFFSET	30 ft LT			ALIGNMENT -Y5RPA-	0 HR. 48.8
COLI		V 2	118 7 f	t	То		H 96.4.ft		NORTHING	678.2	07		FASTING 919 109	
								20						
DRILL	RIG/HAW		F./DAT	: CG20	446 DI	earich D50 87	% 05/10/202	22			IETHOD	н.э.	Augers H	
DRIL	LER O	dom, C	•		ST		10/19/2	2	COMP. DA	TE 10/2	20/22		SURFACE WATER DEPTH	N/A
	ELEV	DEPTH	BLO	W COU	NT		BLOWS	PER FOOT	Г	SAMP.	▼∕	0	SOIL AND ROCK I	DESCRIPTION
(π)	(ft)	(π)	0.5ft	0.5ft	0.5ft	0 2	25 5	50	75 100	NO.	Имог	G	ELEV. (ft)	DEPTH (ft)
2120														
2120	_	-										_		JRFACE 0.0
	2,117.6-	1.1	100/0.3								м		2,117.2 CONCRETE P	AVEMENT 1.5
2115		-	100/0.0								l		ABC ST	ONE
	2,114.7-	- 4.0	2	3	5		+	+	+		м		ROADWAY EMI	BANKMENT4.0
	2,112.7-	6.0	3	1	4						M		GRAY TAN AND BROV	NN, LOOSE, F. TO
2110	- 400 -	-			·	•••••••••••••••••••••••••••••••••••••••							_2,110.7 GRAVEL AN	ID_MICA
	2,109.7-	- <u>9.0</u> -	3	4	5						м		TAN AND BROWN, I	
	-												TRACE TO LITTLE N	ICA AND TRACE
2105	-					· ¦ · ·					l		ORGAN	ICS
	2,104.7	- 14.0	3	6	6	· • • 12					м	_ -	-	
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2065	2,064.7-	54.0				<u> </u>		+				_	-	
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	-	L										Ł	2,061.7 TAN V STIEF SAND	
2060	2,059.7	- 59.0	2	0	12							SS -	- LITTLE	MICA
	-	ļ.	3	9	13	: : : •	22				м	88 E		
	-					::: <i>i</i>							2,056.7 BROWN AND WHIT	62.0 E MED DENSE
2055	2,054.7-	64.0	2		10			+ • • • •				F	- SILTY SAND (A-2-4) W	VITH LITTLE MICA
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SITE DESCRIPTION BRIDGE ON -Y5RPA- OVER BLUE RIDG BORING NO. B1-A STATION 19+35 COLLAR ELEV. 2,118.7 ft TOTAL DEPTH 96.4 ft DRILL RIG/HAMMER EFF./DATE CG20446 Diedrich D50 87% 05/10/2022 DRILLER Odom, C. START DATE 10/19/22 ELEV DRIVE ELEV DEPTH (ft) BLOW COUNT BLOWS P 0 25 51	GE SOU
BORING NO. B1-A STATION 19+35 COLLAR ELEV. 2,118.7 ft TOTAL DEPTH 96.4 ft DRILL RIG/HAMMER EFF./DATE CG20446 Diedrich D50.87% 05/10/2022 DRILLER Odom, C. START DATE 10/19/22 ELEV (ft) DEPTH (ft) BLOW COUNT (ft) BLOWS P O 25 51	
COLLAR ELEV. 2,118.7 ft TOTAL DEPTH 96.4 ft DRILL RIG/HAMMER EFF/DATE CG20446 Diedrich D50 87% 05/10/2022 DRILL RIG/HAMMER EFF/DATE CG20446 Diedrich D50 87% 05/10/2022 DRILL RIG/HAMMER EFF/DATE Odom, C. START DATE 10/19/22 ELEV (ft) DEPTH (ft) BLOW COUNT BLOWS P (ft) 0.5ft 0.5ft 0.5ft 0 25 51	
DRILL RIG/HAMMER EFF./DATE CG20446 Diedrich D50 87% 05/10/2022 DRILLER Odom, C. START DATE 10/19/22 ELEV (ft) DEPTH (ft) BLOW COUNT (ft) BLOWS P	
DRILLER Odom, C. START DATE 10/19/22 ELEV (ft) DRIVE ELEV (ft) DEPTH (ft) BLOW COUNT 0.5ft 0 25 5	2
ELEV (ft) DRIVE ELEV (ft) DEPTH (ft) BLOW COUNT BLOWS P 0.5ft 0.5ft 0.5ft 0 25 51	
(ft) ELEV (ft) (ft) 0.5ft 0.5ft 0.5ft 0 25 51 Image: Image of the state of the stat	ER FOO
	C
2040 Match	Line
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2035 2,034 7 84.0	
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<u></u> 2,024.7 <u>+</u> 94.0 <u>-</u> 21 79/0.4	
2,022.3 96.4 96.4	•••

GEOTECHNICAL BORING REPORT

BORE LOG



GEOTECHNICAL BORING REPORT BORE LOG

WBS	3 34165	.1.2			ТІ	P 1-2513A	A	COUNT	Y BUNCO	DMB	E			GEOLOGIST Goodnight, D.J.	
SITE	DESCR	PTION	BRID	GE O	и N -Y5F	RPA- OVER	BLUE RIC	GE SOU	THERN R/	۹ILR	OAD B	ETWEE	EN I	-26 AND ALT. US-74	GROUND WTR (ft)
BOR	ING NO.	B1-B			S	TATION 19	+22		OFFSET	39	ft RT			ALIGNMENT -Y5RPA-	0 HR. 18.8
COL	LAR ELE	EV. 2,0	090.0 f	ť	т	OTAL DEPT	H 71.7 ft		NORTHI	١G	678,27	2		EASTING 919,135	24 HR. 15.5
DRIL	L RIG/HAM	MER EF	F./DATE	E CG2	20446 D	iedrich D50 87	% 05/10/202	22		1	ORILL M	ethod	H.S	S. Augers HAMM	ER TYPE Automatic
DRIL	LER O	dom, C	-		S	FART DATE	03/06/2	3	COMP. D	ATE	E 03/0	6/23		SURFACE WATER DEPTH N//	۹
ELEV	DRIVE ELEV		BLO	W CO	JNT		BLOWS	PER FOOT	Г 		SAMP.		L O	SOIL AND ROCK DESC	CRIPTION
(11)	(ft)	(11)	0.5ft	0.5ft	0.5ft	0 2	5	50 I	/5 10	0	NO.	/моі	G	ELEV. (ft)	DEPTH (ft)
2090	2 089 0	10								++		L	20	2,090.0 GROUND SURF/ 2,089.0 ROADWAY EMBAN	ACE 0.0 KMENT 1.0
	-	_	2	3	4	•7 • •						M		RAILROAD BALLAST	
2085	2,086.0	4.0	2	3	5							м	J		AVEL
	2,084.0	6.0	4	9	13							м	Y	RED-BROWN, MED. STIF	F TO STIFF,
0000	2,081.0	9.0												RED BROWN TAN AND W	HITE, LOOSE <u>8.0</u>
2080	-	-	4	4	4	••• • 8				-		М		TO MED. DENSE, SILTY S TRACE TO HIGHLY MIC	SAND (A-2-4) CACEOUS
	-	-					· · · · ·	· · · · ·							
2075	2,076.0	_ 14.0 -	2	3	3	- 							-	_	
	-	-				; : : :	· · · ·	· · · · ·							
2070	2,071.0	19.0		2	2			· · · · ·					-		
2070	-	-		2	3							М		<u>-</u>	
		-				i : : :	· · · · ·						-		
2065		- 24.0	2	3	3	↓ <u> </u>						w	-	_	
	-	-											-		
2060	2,061.0	29.0	2	2	5							\v/	-		
	-	-											-		
	2.056.0	34.0													
2055	-	-	2	3	5	8						W		- 	
	-	-													
2050	2,051.0	_ 39.0 -	2	2	5							w		_	
	-	-					· · · ·								
2045	2,046.0	44.0					· · · ·						-		
2045	-	-		3	ю	9						W		_ ·	
		-					· · · · ·	· · · · ·							
2040	2,041.0	<u>49.0</u>	3	4	7			· · · ·				W	-	-	
	-	-					· · · · ·							2 037 0	53.0
2035	2,036.0	54.0	5	5	8								j,	TAN, STIFF, SANDY S	GILT (A-4) <u>53.0</u>
		-			J							vv	斜	- 2.033.0	57 0
9	2 031 0	59.0				\-									MED. DENSE
2030		-	6	10	13		23					W	F	LITTLE TO HIGHLY MIC	CACEOUS
	-	_													
5 2025	2,026.0	64.0	10	30	58							м	E	- 2 024 5	65 5
	-	_													
AVCIN	2,021.0	69.0												. White and tan, G	INEISS
<u>-</u> 2020		-	100/0.3					<u> </u>	100/0	3			Ø	- 2.018.3	74 7
	2,018.3		60/0.0				1	1	60/0	₀♠			# -	Boring Terminated WITH	STANDARD
Ч		-											F	Elevation 2,018.3 ft on C	R: GNEISS
		-											þ		
		-											þ	- -	
< L	1														

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GEOTECHNICAL BORING REPORT PODEIOC

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WBS	34165	.1.2			TI	Ρ	1-2513A	A		COUNT	Y BL	JNCON	IBE			GEOLOG	GIST Goodnigh	nt, D.J.		
SITE	DESCR	IPT I ON	BRID	DGE ON	N -Y5F	RΡ	A- OVER	BLUE	RID	GE SOL	THEF	RN RAIL	.ROAD E	ETWE	EEN I-	26 AND AL	_T. US-74		GROUND	WTR (ft)
BOR	NG NO.	B2-A			S	ΤА	TION 20)+79			OFF	SET	16 ft LT			ALIGNM	ENT -Y5RPA-		0 HR.	18.5
0		V 20	104 6 1	F+		ОТ		u 52	6 ft		NO		679.2/	10		EASTING	3 018 076		24 UD	18.0
		- v. 2,0			<u> </u>			11 00	.0 n				070,2-				310,970	1		10.0
DRILL	. RIG/HAM	MER EF	F./DATI	E CG20	0446 D	ied	drich D50 87	/% 05/1	0/2022	2				ETHOD) H.S.	Augers			ERTYPE A	utomatic
DRIL	LER O	dom, C			S	TΑ	RT DATE	02/2	28/23	;	CO	MP. DA	TE 02/2	28/23		SURFAC	E WATER DEP	TH N//	4	
ELEV	DRIVE	DEPTH	BLC	W COL	JNT			BLO	WSP	ER FOO	т		SAMP.	▼∕					RIPTION	
(ft)	(ft)	(ft)	0.5ft	0.5ft	0.5ft		0 2	25	5	0	75	100	NO.	/моі	G	ELEV. (ft)		ONDEO		DEPTH (ft)
2005																				
2095	2 093 6-	- 10				H										2,094.6	GROUN RF	D SURF/ SIDUAI	ACE	0.0
	- 2,095.0	-	2	2	5	1	.				- -			М		RI	ED-BROWN, ME	D. STIFF	TO V. STIF	F,
2000	2,091.1	3.5	6		15									м	N	S	QUARTZ	ay (a-7) Fragme	WITH LITTL ENTS	.E
2090	2 088 6-	- 60	Ũ		10			26						IVI		2,089.1				5.5
	- 2,000.0	-	2	4	4	1			•••		. .			М	-	R	ED-TAN AND BH SAND (A-2-4) V	NITH LIT	TLE MICA	Y
2085	2,086.1	8.5	2	3	5									M	F		· · · ·			
2005	-	-	_		Ū		• • 8							IVI						
	-	-					·¦···	• •			. .									
2080	2,081.1	13.5	2	2	4		1							M	F					
2000		-	_				6 							IVI						
	-	-					<u>.</u>				• •				-	2,077.6				<u> </u>
2075	2,076.1	18.5	2		3										E I	D	SILT (A-4) HIG	SHLY MIC	CACEOUS	
2010	-	-			-		•4 <u></u> · · · ·							vv						
	-	_					<u>+</u> · · · ·	· ·	•••						<u> </u>	2,072.6				<u> 22.0</u>
2070	2,071.1	_ 23.5	2	2	3				• •	• • •				\M/	-		DENSE, SIL	TY SANE) (A-2-4)	
2010	-	-			-		••••••••••••••••••••••••••••••••••••••							vv						
	-	-									• •				-					
2065	2,066.1	28.5	4	6	12									14/	F					
2005		-					•18 •••• •	· · ·						vv	_					
	-	-					· · · ·								-	2,062.1				32.5
2060	2,061.1	33.5	33	67/0.4																
2000		-	00	01/0.4		╎┝					·	-100/0.9			H	2,059.1			JINEI33	35.5
	-	-						- ·							-		BROWN, MED, D	SIDUAL DENSE. S	SILTY SAND	
2055	2,056.1	38.5	6	12	16		· · · · · · · ·	i: :							Ē		(A-2-4) WIT	H LITTL	E MICA	
2055			0	12	10	╽┝		\$ 28-			· ·			vv						
	-	-						 			. .				-	0.054.0				10.0
2050	2,051.1	43.5	60/0 0F				· · · ·	<u></u>	<u> </u>	$\frac{\cdot}{\cdot}$		60/0 05				2,051.6			OCK	<u> </u>
2050	-	_	00/0.00	1				<u> </u>								<u>2,030.</u>	TAN AND BI	ROWN, (
	-	-									- -						GRAN AND	D TAN, G	NEISS	
2045	2,046.1	48.5	100/0 2									100/0.2								
2045	_	-	100/0.2	1																
	-	Ł							•••											
	2.041.1	53.5	60/0.1	\vdash		μ			-			- _{60/0 1}				2,041.1 2,041.0 /1	CRYSTA	LLINE R	оск	53.5 53.6
		F		1											-		GRAY	′, GNEIS	S	
	-	_															Boring Terminate PENETRATION	ed WITH I TEST R	STANDARD	
	-	-													-		Elevation 2,041	0 ft in Cl	R: GNEISS	
	-	-																		
	-	-																		
	-	-																		
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WBS	34165	.1.2			Т	IP	1-2513A	A		COUN	١T	(
SITE	DESCR	PTION	BRID	GE O	N -Y5	R	PA- OVER	BLUE	RID	GE SC	יטכ	THE
BOR	NG NO.	B2-B			s	T.	ATION 20)+40				0
COLI	AR ELE	IV. 2,0	093.6 f	t	Т	0	TAL DEPT	H 59	.0 ft			N
DRILL	RIG/HAM	MER EF	F./DATE	E CG2	0446 [Die	drich D50 87	'% 05/1)/202	2		
DRII		dom C			s	T.		02/2	8/2	3		С
	DRIVE		BLO			Т		BL O	NSE			
:LEV (ft)	ELEV	(ft)	0.5ft	0.5ft	0.5ft	1	0 2	25	5	50		75
	(11)					t		1		1		
2095												
	2,092.6-	- 1.0	3	1	3	t						
2090	2 090 1	35	5	4	5							
	- 1000.	- 0.0	2	3	5	1	· • 8 · ·			· ·		╈
	2,087.6-	- 6.0	3	3	5	+						
2085	2,085.1	8.5						· ·		<u> </u>		
	-	-	2	3	3		6					
	-	-							· ·	· · ·	· ·	
2080	2,080.1	13.5			-		<u>i</u>	· ·		· ·		\downarrow
	-	L	2	3	3		6		 	· •		
	-	-							• •			
2075	2,075.1	18.5	1	1	2	+		· ·		···		_
	-		'		2		●3 · · ·	: :			: :	
	-	Ł					1		 		· ·	
2070	2,070.1	_ 23.5	1	2	2	+		· · ·		· ·		+
	-	F						: :			· ·	
005	-							: :				
005	2,065.1_	_ 28.5	2	2	4	+	6	· · ·		· · ·		+
	-	-					1	• •			•••	
060	2 060 1	33 5						::				
	,UOU. [- 33.5	2	5	8	1	13-					+
	-								· ·		 	
2055	2.055.1	38.5										
	-		5	6	8	1	●14					ϯ
	-						:::.					
2050	2,050.1	43.5			- 00			· · · ·	•••	• •	•••	\downarrow
	-	-	11	20	26			• •	: \ P 4	16 · ·		
	-	-						: :	1	↓ <u>.</u> .		↓.
2045	2,045.1	48.5	65	35/0 1					· ·	· ·	· ·	\downarrow
	-	-		55/0.1					· ·	· · ·	· ·	
	-								<u>-</u> :-	<u></u>	<u>-</u> -	_ -
2040	2,040.1	_ 53.5	16	18	22	+		· · ·		· ·		+
	-	-						(40		· ·	
0005	-	-							! <u>-</u>	╞╧╧	<u> </u>	+.
2035	2,035.1	<u>58.5</u> 59.0	100/0.2			╀						
	-	-	60/0.0									
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GEOTECHNICAL BORING REPORT

BORE LOG



GEOTECHNICAL BORING REPORT BORE I OG

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WBS	34165	.1.2			Т	1-2513AA COUNT	Y BUNCOM	BE	GEOLOGIST Goodnight, D.J	•
SITE	DESCR	IPTION	BRII	DGE O	N -Y5F	- OVER BLUE RIDGE SOU	THERN RAIL	ROAD BETWEEN I-	26 AND ALT. US-74	GROUND WTR (ft)
BOR	NG NO.	FB2-	Δ		s	ION 21+86	OFFSET 3	37 ft T	ALIGNMENT -Y5RPA-	0 HR. 48.0
		·	10/ 0	ft				679.245		
		. 2,	124.0	n.	<u> </u>			070,243		
DRILL	. RIG/HAN	IMER EF	F./DAT	E CG2	20446 D	ich D50 87% 05/10/2022		DRILL METHOD H.S	. Augers HAM	MER TYPE Automatic
DRIL	LER O	dom, C	·		S	RT DATE 10/20/22	COMP. DAT	TE 10/20/22	SURFACE WATER DEPTH	N/A
ELEV	DRIVE	DEPTH	BLC	ow co	UNT	BLOWS PER FOOT	-			SCRIPTION
(ft)	(ft)	(ft)	0.5ft	0.5ft	0.5ft	25 50	75 100	NO. MOI G	ELEV. (ft)	DEPTH (f
0405										
2125									_2,124.8 GROUND SUR CONCRETE PA\	/EMENT
	-	-							ABC STON	IE
2120	2,120.8-	4.0				· · · · · · · · · · · ·			2,120.8	4.0
2120	2.118.8-	6.0	3	3	4	•			- ROADWAY EMBA GRAY, LOOSE, F. TO CS	NKMENT SE. SAND (A-1-a)
	-	-	2	4	4	••••••••••••••••••••••••••••••••••••••			WITH LITTLE G	RAVEL
0115	2,115.8-	9.0	_						BROWN, LOOSE TO MEL	D. DENSE, SILTY
2115	-	E	5	′	15	22	+ • • • • •		- SAND (A-2-4) WITH LI	TTLE GRAVEL
	-									
	- 2,110.8-	14.0								
2110	· –	-	3	2	4	• 6		м	-	
	-	F				<u>.</u>			2,107.8	<u>17</u> .
	- 2 105 8-	190				· · · · · · · · · · ·			BROWN, MED. STIFF, SA WITH TRACE GRAVE	ANDY SILT (A-4) FL AND MICA
2105		- 10.0	2	2	3	5		м Ц —	-	
	-	t i				<u>.</u>			_2,102.8	22.
	2 100 9	24.0]			RESIDUA	
2100	2,100.8-	- 24.0	2	3	4	▲7			- SANDY CLAY	(A-6)
	-					· · · · · · · · · · · · · · · · · · ·				
		-								
2095	2,095.8-	- 29.0	4	7	10	· · · · · · · · · · · · · · · · · · ·			_	
	-	-				· · / · · · · · · · ·			2 092 8	32
	-	ļ.				/ .			BROWN AND WHITE,	LOOSE TO V.
2090	2,090.8-	- 34.0	4	5	6	· ./ ·				(A-2-4) WITH
	-	F			-	· · · · · · · · · · · · · · · · · · ·				
	-									
2085	2,085.8-	- 39.0	2	4	5	. ¦				
		F	-	·		· ¶ ⁹ · · · · · · · · · · · · · · · · · · ·			-	
	-									
080	2,080.8-	- 44.0	2	3	3	·¦ · · · · · · · · · · ·				
		Ē.	2						-	
	-	-								
2075	2,075.8-	49.0				$\left \left \left$				
	-	ţ.	_	_		•	<u> </u>		-	
	-	Ł				· k · · · · · · · · · · · ·	• • • •			
070	2,070.8-	54.0		_ <u>_</u>						
.570	-	t	3	5	∣ ⁸		<u> </u>		-	
	-	ł					• • • •			
065	2,065.8-	59.0		<u> </u>		j .				
2005	-	È	5	7	10	••••••••••••••••••••••••••••••••••••••	+ • • • • •	M	-	
	-	F								
	2.060.8-	64.0				\vdots \vdots \dot{j} $ $ \vdots \vdots \vdots $ $ \vdots \vdots \vdots				
:060	-	-	8	10	14	\	+ • • • •	М	-	
	-	F								
	- 2 055 8	690								
2055		- 03.0	8	11	76			м	2,054.3	70.
	-	t				· · · · · · · · · · · ·	· · · · · · ·			
	2 050 0	740							2 050 8	E, GNEISS
		<u>+ (4.0</u>	60/0.0				60/0.0		- Boring Terminated WIT	H STANDARD
	-	t							PENETRATION TEST	REFUSAL at
	-	ł						F	Lievation 2,000.0 It Off	SIX. ONLIGO
	-	ł								

WB	S 34165	.1.2			Т	P 1-2	513A	A	COUNTY	BUNCON	ИВЕ			GEOLO	GIST Goodnigh	t, D.J.		
SITE	E DESCR	IPTION	BRID	DGE O	N -Y5	RPA- O	VER	BLUE RIC	GE SOUT	THERN RAI	LROAD	BETW	'EEN I	-26 AND A	ALT. US-74		GROUN	D WTR (ft)
BOF	RING NO.	EB2-E	3		S	TATIO	N 20	+97		OFFSET	8 ft RT			ALIGN	MENT -Y5RPA-		0 HR.	22.5
COL	LAR EL	EV. 2,0	098 . 3 f	ft	Т	OTAL [DEPT	H 56.0 ft		NORTHING	NORTHING 678,274			EASTING 918,957			24 HR.	19.8
DRIL	L RIG/HAN	IMER EF	F./DATI	E CG2	20446 C)iedrich D	050 87	% 05/10/202	22		DRILL	METHO	DD H.S	6. Augers		НАММЕ	ER TYPE	Automatic
DRI	LLER O	dom, C			s	TART [DATE	03/02/2	3	COMP. DA	TE 03	8/02/23		SURFACE WATER DEPTH N/A				
ELE\ (ft)	/ DRIVE ELEV (ft)	DEPTH (ft)	BLC 0.5ft	0.5ft	UNT 0.5ft	0	2	BLOWS F	PER FOOT 50	75 100	SAMF NO.	[•] .		SOIL AND ROCK DESCRIPTIO			CRIPTION	DEPTH (ft)
2100	,	-												-	0.001			
	2,097.3	1.0	-			<u> </u>	• • •							2,098.3	GROUNI RES	SURFA	ACE	0.0
2095	-	F	3	3	3	♦ 6.	•••					М			RED-BROWN, ME SANDY SIL	ED. STIF TY CLA`	F TO STIF ((A-7)	FF,
	2,094.3	<u>4.0</u>	2	5	7		12]	м		- . 2.092.8				5.5
	2,092.3	<u> 6.0 </u>	4	8	11		\					м		· · · · · · · ·	TAN, V. STIFF,	SANDY	CLAY (A-6	;) — — <u> </u>
2090	2,089.3	9.0												2,090.3	BROWN AND WI		NSE, SIL	Γ <u>Υ</u>
	-	F	8	14	24		•••	•38.				М			SAND (A-2-4) WI FRAC	TH LITTI GMENTS	LE QUAR ⁻	ΓZ
2085	-	F					.,							2,086.3			VHITE, SC	DFT <u>12.0</u>
	2,084.3	14.0	1	1	2						1	w			TO MED. STIFF LITTLE TO HIG	, SANDY GHLY MIO	′ SILT (A-4 CACEOUS	•)
	-	F				T	•••											
2080	2,080.3	<u> 18.0 </u>	1	1	1		· ·					NVF		_				
	-	F											-889	•				
2075	-	ŧ					•••											
	2,074.3	24.0	1	1	2		•••					W						
	-	ŧ				4 3 .						1		•				
2070	2 069 3	29.0				::	•••			· · · · ·								
	2,000.0	23.0	1	2	3	 ↓ . ↓ 5.	· · · ·	· · · ·	· · · · ·			w						
		ł				\.	· · ·	· · · · ·						2,066.3				32.0
2065	2,064.3	34.0	2		6	<u> -</u> †								<u> </u>	SAND (A-2-4) L		O HIGHLY	L /
	-	t i	2			. ♦ 	10.	· · · ·				VV			MICA	CEOUS		
2060	-						<u>۸</u> .											
	2,059.3	39.0	7	10	16	11 : :	\	26				м						
	-	Ł					· ·/											
2055	2,054.3	44.0					-/							_				
	-	F	3	4	12		(16					М						
2050		F					.\ \											
	2,049.3	49.0	5	8	16		\				1	м						
	-	ŧ					· · ·							2,046.3				52.0
2045	2.044.3	54.0								+ • • • •				-	TAN AND BE	RED RO	JOCK GNEISS	
3	2.042.5	55.8	100/0.4				· · · ·	• • • •		100/0.4	Ì			2,042.3		,		56.0
2		-	100/0.2			[.				100/0.2				E	Boring Terminated a	at Elevati	on 2,042.3	3 ft in
3	-	t i													vvi.			
	-	ŧ.																
	-	L																
	-	Ł																
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GEOTECHNICAL BORING REPORT

BORE LOG

PROJECT

CONTENTS SHEET NO. **DESCRIPTION** TITLE SHEET 2513A LEGEND 2 SITE PLAN PROFILE 5 BORE LOGS COUNTY BUNCOMBE REFERENCE (SMOKEY PARK HIGHWAY) \mathbf{v} 3416

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS GEOTECHNICAL ENGINEERING UNIT

STRUCTURE SUBSURFACE INVESTIGATION

PROJECT DESCRIPTION <u>I-40 FROM</u> EAST OF SR 1224 (MONTE VISTA RD) TO PAVEMENT JOINT WEST OF SR 3412 (SAND HILL RD). INCLUDES INITIAL IMPROVEMENTS AT I-40EB TO I-26EB AT US 19/23

SITE DESCRIPTION CULVERT EXTENSION ON -Y-(I-40) AT STATION 59+50 OVER RAGSDALE CREEK

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	I–2513AA	1	5

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 RALFICH BY CONTACTING THE N.C. DEPARTMENT OF TRANSPORTATION, GEOTECHNICAL ENGINEERING UNIT AT (1991) 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 UNI-FLACE) TEST DATA CAN BE RELIED ON ONLY TO THE DEGREE OF RELIABILITY INHERENT IN THE STANDARD TEST WETHOD. THE OBSERVED WATER LEVELS OR SOLI MOISTURE CONDITIONS INDICATED IN THE SUBSURFACE INVESTIGATIONS ARE AS RECORDED AT THE TIME OF THE INVESTIGATION. THESE WATER LEVELS OR SOLI MOISTURE CONDITIONS MAY YARY 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 WARANT OR GUARANTEE THE SUFFICIENCY OF ACCURACY OF THE INVESTIGATION MADE, NOR THE INTERPRETATIONS MADE, OR OPNION OF THE DEPARTMENT AS TO THE TYPE OF MATERIALS AND CONSTRUCTIONS TO BE ENCOUNTERED. THE BIDDER OR CONTRACTOR IS CAUTIONED TO MAKE SUCH INDEPENDENT SUBSURFACE INVESTIGATIONS AS HE DEEMS NECESSARY TO SATISFY HIMSELF AS TO CONDITIONS TO BE ENCOUNTERED ON THE PROJECT. THE CONTRACTOR SHALL HAVE NO CLAIM FOR ADDITIONAL COMPENSATION OF FOR AN EXTENSION OF TIME FOR ANY REASON RESULTING FOR MIT ACTUAL CONDITIONS ENCOUNTERED AT THE SITE DIFFERING FROM THOSE INDICATED IN THE SUBSURFACE INFORMATION.

- NOTES: I. 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

CG2
GOODNIGHT, D.J.
BY FALCON ENG.
CROCKETT, S.C.
HAMM. I.R.
, y
FALCON ENG.
JARY 2024



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	WELL GRADED - INDICATES A GOOD REPRESENTATION OF PARTICLE SIZES FROM FINE TO COARSE.	HARD ROCK IS NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT REFUSAL IF TESTED. AN INFERRED	ALLUVIUM (ALLUV.) - SOILS THAT HAVE BEEN TRANSPORTED BY WATER.
ACCORDING TO THE STANDARD PENETRATION TEST (AASHTO T 206, ASTM DI586). SOIL CLASSIFICATION	UNIFORMLY GRADED - INDICATES THAT SOIL PARTICLES ARE ALL APPROXIMATELY THE SAME SIZE.	SPT REFUSAL IS PENETRATION BY A SPLIT SPON SAMPLER EQUAL TO OR LESS THAN 0.1 FOOT PER 60	AQUIFER - A WATER BEARING FORMATION OR STRATA.
IS BASED ON THE AASHTO SYSTEM. BASIC DESCRIPTIONS GENERALLY INCLUDE THE FOLLOWING:	GAP-GRADED - INDICATES A MIXTURE OF UNIFORM PARTICLE SIZES OF TWO OR MORE SIZES.	BLOWS IN NON-COASTAL PLAIN MATERIAL, THE TRANSITION BETWEEN SOIL AND ROCK IS OFTEN	ARENACEOUS - APPLIED TO ROCKS THAT HAVE BEEN DERIVED FROM SAND OR THAT CONTAIN SAND.
CONSISTENCY, COLOR, TEXTURE, MOISTURE, AASHTO CLASSIFICATION, AND OTHER PERTINENT FACTORS SUCH AS MINERALOGICAL COMPOSITION, ANGULABILY, STRUCTURE, PLASTICITY, FTC, FOR EXAMPLE.	ANGULARITY UF GRAINS	ROCK MATERIALS ARE TYPICALLY DIVIDED AS FOLLOWS:	ARGILLACEOUS - APPLIED TO ALL BOCKS OR SUBSTANCES COMPOSED OF CLAY MINERALS, OR HAVING
VERY STIFF, GRAY, SILTY CLAY, MOIST WITH INTERBEDDED FINE SAND LAYERS, HIGHLY PLASTIC, A-7-6	THE ANGULARITY OR ROUNDNESS OF SOIL GRAINS IS DESIGNATED BY THE TERMS:		A NOTABLE PROPORTION OF CLAY IN THEIR COMPOSITION, SUCH AS SHALE, SLATE, ETC.
SOIL LEGEND AND AASHTO CLASSIFICATION		ROCK (WR) 100 BLOWS PER FOOT IF TESTED.	ARTESIAN - GROUND WATER THAT IS UNDER SUFFICIENT PRESSURE TO RISE ABOVE THE LEVEL AT
GENERAL GRANULAR MATERIALS SILT-CLAY MATERIALS OPCOMIC MATERIALS		CONSTALLINE FINE TO COARSE GRAIN IGNEOUS AND METAMORPHIC ROCK THAT	WHICH IT IS ENCOUNTERED, BUT WHICH DOES NOT NECESSARILY RISE TO OR ABOVE THE GROUND
CLASS. (≤ 35% PASSING *200) (> 35% PASSING *200) UNUMILE MITEMINES	MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC.	ROCK (CR) WOULD YIELD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES GRANITE,	SURFACE.
GROUP A-1 A-3 A-2 A-4 A-5 A-6 A-7 A-1, A-2 A-4, A-5	ARE USED IN DESCRIPTIONS WHEN THEY ARE CONSIDERED OF SIGNIFICANCE.	FINE TO COARSE GRAIN METAMORPHIC AND NON-COASTAL PLAIN	CALCAREOUS (CALC.) - SOILS THAT CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE.
CLASS. A-1-0 A-1-b A-2-4 A-2-5 A-2-6 A-2-7 A-7-5 A-3 A-6, A-7		BOCK (NCR)	COLLUVIUM - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM
SYMBOL DODOGODOOOG	SLIGHTLY COMPRESSIBLE LL < 31	COASTAL PLAIN ROCK TYPE INCLUDES PHYLLITE, SLATE, SANDSTONE, ETC.	OF SLOPE.
	HIGHLY COMPRESSIBLE LL > 50	SEDIMENTARY ROCK SPT REFUSAL. ROCK TYPE INCLUDES LIMESTONE, SANDSTONE, CEMENTED	CORE RECOVERY (REC.) - TOTAL LENGTH OF ALL MATERIAL RECOVERED IN THE CORE BARREL DIVIDED
*10 50 MX GRANULAR SILT-	PERCENTAGE OF MATERIAL		
*40 30 MX 50 MX 51 MN SOILS SOILS SOILS SOILS	GRANULAR SILT - CLAY	WEATHERING	ROCKS OR CUTS MASSIVE ROCK.
*200 15 MX 25 MX 10 MX 35 MX 35 MX 35 MX 36 MN 36 MN 36 MN 36 MN	ORGANIC MATERIAL SOILS OTHER MATERIAL	FRESH ROCK FRESH, CRYSTALS BRIGHT, FEW JOINTS MAY SHOW SLIGHT STAINING, ROCK RINGS UNDER	DIP - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE
MATERIAL	I ITTLE OF ORGANIC MATTER 2 - 3% 3 - 5% TRACE 1 - 10%	HAMMER IF URYSTALLINE.	HORIZONTAL.
HISSING 40 40 MX 41 MN 40 MX 41 MN 40 MX 41 MN 40 MX 41 MN 501LS WITH	MODERATELY ORGANIC 5 - 10% 12 - 20% SOME 20 - 35%	VERY SLIGHT ROCK GENERALLY FRESH, JOINTS STAINED, SOME JOINTS MAY SHOW THIN CLAY COATINGS IF OPEN,	DIP DIRECTION (DIP AZIMUTH) - THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF THE
PI 6 MX NP 10 MX 10 MX 11 MN 11 MN 10 MX 10 MX 11 MN 11 MN LITTLE OR HIGHLY	HIGHLY ORGANIC > 10% > 20% HIGHLY 35% AND ABOVE	OF A CRYSTALLINE NATURE.	LINE OF DIP, MEASURED CLOCKWISE FROM NORTH.
CROUP INDEX 0 0 0 4 MX 8 MX 12 MX 16 MX NO MX AMOUNTS OF	GROUND WATER	SLIGHT ROCK GENERALLY FRESH, JOINTS STAINED AND DISCOLORATION EXTENDS INTO ROCK UP TO	FAULT - A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE
USUAL TYPES STORE FRAGS. ORGANIC	✓ WATER LEVEL IN BORE HOLE IMMEDIATELY AFTER DRILLING	(SLI.) 1 INCH. OPEN JOINTS MAY CONTAIN CLAY. IN GRANITOID ROCKS SOME OCCASIONAL FELDSPAR	SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE.
OF MAJOR GRAVEL, AND SAND CRAVEL AND SAND SOULS SOULS		CRYSTALS ARE DULL AND DISCOLORED. CRYSTALLINE ROCKS RING UNDER HAMMER BLOWS.	FISSILE - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES.
MATERIALS SAND SINNE SINNE SOLES SOLES		MODERATE SIGNIFICANT PORTIONS OF ROCK SHOW DISCOLORATION AND WEATHERING EFFECTS. IN	FLOAT - ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLODGED FROM
GEN, RATING EXCELLENT TO GOOD FAIR TO POOR UNSUITABLE	PERCHED WATER, SATURATED ZONE, OR WATER BEARING STRATA	DULL SOUND UNDER HAMMER BLOWS AND SHOWS SIGNIFICANT LOSS OF STRENGTH AS COMPARED	PARENI MAIERIAL.
AS SUBUKAUE POOR POOR POOR		WITH FRESH ROCK.	FLUOU PLAIN (FP) - LAND BURDERING A STREAM, BUILT OF SEDIMENTS DEPOSITED BY THE STREAM.
PI OF A-7-5 SUBGROUP IS \leq LL - 30 ; PI OF A-7-6 SUBGROUP IS > LL - 30	0.00	MODERATELY ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. IN GRANITOID ROCKS, ALL FELDSPARS DULL	FORMATION (FM.) - A MAPPABLE GEOLOGIC UNIT THAT CAN BE RECOGNIZED AND TRACED IN THE
CONSISTENCY OR DENSENESS	MISCELLANEOUS SYMBOLS	SEVERE AND DISCOLORED AND A MAJORITY SHOW KAOLINIZATION. ROCK SHOWS SEVERE LOSS OF STRENGTH	
DEIMARY COLL TYPE COMPACTNESS OR RANGE OF STANDARD RANGE OF UNCONFINED		IF TESTED, WOULD YIELD SPT REFUSAL	JOINT - TRACTORE IN NOCK REUNO WRITER NO HERRELINDEE MOVEMENT RAS OCCORRED.
CONSISTENCY (N-VALUE) (TONS/FT ²)	WITH SOIL DESCRIPTION FOR ROCK STRUCTURES	SEVERE ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED, ROCK FABRIC CLEAR AND EVIDENT BUT	ITS LATERAL EXTENT.
VERY LOOSE < 4		(SEV.) REDUCED IN STRENGTH TO STRONG SOIL. IN GRANITOID ROCKS ALL FELDSPARS ARE KAOLINIZED	LENS - & RODY OF SOLL OR ROCK THAT THINS OUT IN ONE OR MORE DIRECTIONS
GRANIII AR LOOSE 4 TO 10		TO SOME EXTENT. SOME FRAGMENTS OF STRONG ROCK USUALLY REMAIN.	
MATERIAL MEDIUM DENSE 10 TO 30 N/A		IF TESTED, WUOLU TIELU SPT N VALUES > 100 BPF	USUALLY INDICATES POOR AERATION AND LACK OF GOOD DRAINAGE.
(NON-COHESIVE) VERY DENSE > 50		VERY ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED, ROCK FABRIC ELEMENTS ARE DISCERNIBLE SEVERE BUT MASS IS FEFECTIVELY REDUCED TO SOIL STATUS, WITH ONLY FRAGMENTS OF STRONG ROCK	PERCHED WATER - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE
VERY SOFT < 2 < 0.25	INFERRED SOIL BOUNDARY - CORE BORING • SOUNDING ROD	(V SEV.) REMAINING, SAPROLITE IS AN EXAMPLE OF ROCK WEATHERED TO A DEGREE THAT ONLY MINOR	OF AN INTERVENING IMPERVIOUS STRATUM.
GENERALLY SOFT 2 TO 4 0.25 TO 0.5		VESTIGES OF ORIGINAL ROCK FABRIC REMAIN. <u>IF TESTED, WOULD YIELD SPT N VALUES < 100 BPF</u>	RESIDUAL (RES.) SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK.
SILT-CLAY MEDIUM STIFF 4 TO 8 0.5 TO 1.0	TEST BURING WELL	COMPLETE ROCK REDUCED TO SOIL. ROCK FABRIC NOT DISCERNIBLE, OR DISCERNIBLE ONLY IN SMALL AND	ROCK QUALITY DESIGNATION (ROD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF
(COHESIVE) VERY STIFF 15 TO 30 2 TO 4		SCATTERED CONCENTRATIONS. QUARIZ MAY BE PRESENT AS DIKES OR STRINGERS. SAPROLITE IS	ROCK SEGMENTS EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF CORE
HARD > 30 > 4			RUN AND EXPRESSED AS A PERCENTAGE.
TEXTURE OR GRAIN SIZE	RECOMMENDATION SYMBOLS		SAPROLITE (SAP.) - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT
U.S. STD. SIEVE SIZE 4 10 40 50 200 270	TXX UNDERCUT TXX UNCLASSIFIED EXCAVATION - TXXX UNCLASSIFIED EXCAVATION -	VERY HARD CANNOT BE SCRATCHED BY KNIFE OR SHARP PICK, BREAKING OF HAND SPECIMENS REQUIRES	
OPENING (MM) 4.76 2.00 0.42 0.25 0.075 0.053	EXAMPLE ACCEPTABLE, BUT NOT TO BE		RELATIVELY THIN COMPARED WITH ITS LATERAL EXTENT, THAT HAS BEEN EMPLACED PARALLEL TO
COARSE FINE	SHALLOW UNCLASSIFIED EXCAVATION - EMBANKMENT OR BACKFILL	TO DETACH HAND SPECIMEN.	THE BEDDING OR SCHISTOSITY OF THE INTRUDED ROCKS.
BOULDER COBBLE GRAVEL SAND SAND SILT CLAY		MODERATELY CAN BE SCRATCHED BY KNIFE OR PICK. GOUGES OR GROOVES TO 0.25 INCHES DEEP CAN BE	SLICKENSIDE - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT
(CSE. SD.) (F SD.)	ABBREVIATIONS	HARD EXCAVATED BY HARD BLOW OF A GEOLOGIST'S PICK. HAND SPECIMENS CAN BE DETACHED	OR SLIP PLANE.
GRAIN MM 305 75 2.0 0.25 0.05 0.005	AR - AUGER REFUSAL MED MEDIUM VST - VANE SHEAR TEST	BY MODERATE BLOWS.	STANDARD PENETRATION TEST (PENETRATION RESISTANCE) (SPT) - NUMBER OF BLOWS (N OR BPF) OF
SIZE IN. 12 3	BT - BORING TERMINATED MICA MICACEOUS WEA WEATHERED	MEDIUM CAN BE GROOVED OR GOUGED 0.05 INCHES DEEP BY FIRM PRESSURE OF KNIFE OR PICK POINT.	A 140 LB. HAMMER FALLING 30 INCHES REQUIRED TO PRODUCE A PENETRATION OF I FOOT INTO SUIL
SOIL MOISTURE - CORRELATION OF TERMS	CPT - CONE PENETRATION TEST NP - NON PLASTIC χ - DRY UNIT WEIGHT	POINT OF A GEOLOGIST'S PICK.	TO OR LESS THAN 0.1 FOOT PER 60 BLOWS.
SOIL MOISTURE SCALE FIELD MOISTURE CUIDE FOR FIELD MOISTURE DESCRIPTION	CSE COARSE ORG ORGANIC	SOFT CAN BE GROVED OR GOUGED READILY BY KNIFE OR PICK. CAN BE EXCAVATED IN FRAGMENTS	STRATA CORE RECOVERY (SREC.) - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY
(ATTERBERG LIMITS) DESCRIPTION ON PRED MOTOR DESCRIPTION	DMT - DILATOMETER TEST PMT - PRESSUREMETER TEST SAMPLE ABBREVIATIONS	FROM CHIPS TO SEVERAL INCHES IN SIZE BY MODERATE BLOWS OF A PICK POINT. SMALL, THIN	TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE.
- SATURATED - USUALLY LIQUID; VERY WET, USUALLY	e - VOID RATIO SD SAPROLITIC S - BULK	PIECES CAN BE BROKEN BY FINGER PRESSURE.	STRATA ROCK QUALITY DESIGNATION (SROD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL
(SAT.) FROM BELOW THE GROUND WATER TABLE	F - FINE SL SILT, SILTY ST - SHELBY TUBE	VERY CAN BE CARVED WITH KNIFE. CAN BE EXCAVATED READILY WITH POINT OF PICK, PIECES 1 INCH	THE TOTAL LENGTH OF STRATA AND EXPRESSED AS A PERCENTAGE.
	- FOSS FOSSILIFEROUS SLI SLIGHTLY RS - ROCK	FINGERNAIL.	TOPSOIL (TS.) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.
RANGE < - WET - (W) SEMISOLID; REQUIRES DRYING TO	FRAU FRAUTURED, FRAUTURES TUR - TRICUNE REFUSAL RT - RECOMPACTED TRIAXIAL -		
	HI HIGHLY V - VERY RATIO	TERM SPACING TERM THICKNESS	DATE-04/15/2022
	EQUIPMENT USED ON SUBJECT PROJECT	VERY WIDE MORE THAN 10 FEET VERY THICKLY BEDDED 4 FEET	FLEVATION: FEET
OM _ OPTIMUM MOISTURE - MUIST - (M) SULID; AT UK NEAR OPTIMUM MOISTURE	DRILL UNITS: ADVANCING TOOLS: HAMMER TYPE:		
SL SHRINKAGE LIMIT		CLOSE Ø.16 TO 1 FOOT VERY THINLY BEDDED Ø.03 - 0.16 FEET	NOTES:
- DRY - (D) REQUIRES ADDITIONAL WATER TO		VERY CLOSE LESS THAN 0.16 FEET THICKLY LAMINATED 0.008 - 0.03 FEET	FIAD - FILLED IMMEDIATELY AFTER DRILLING
		THINLY LAMINATED < 0.008 FEET	
PLASTICITY			
PLASTICITY INDEX (PI) DRY STRENGTH	X CME-550X HARD FACED FINGER BITS	FOR SEDIMENTARY ROCKS, INDURATION IS THE HARDENING OF MATERIAL BY CEMENTING, HEAT, PRESSURE, ETC.	
NON PLASTIC 0-5 VERY LOW	TUNGCARBIDE INSERTS	FRIABLE RUBBING WITH FINGER FREES NUMEROUS GRAINS;	
SLIGHTLY PLASTIC 6-15 SLIGHT MODERATELY PLASTIC 16-25 MEDIUM	HAND TOOLS:	DENTLE DEUN DI AMMINER DISINIEURMIES SHMIFLE.	
HIGHLY PLASTIC 26 OR MORE HIGH		MODERATELY INDURATED GRAINS CAN BE SEPARATED FROM SAMPLE WITH STEEL PROBE;	
		INDURATED ORAINS ARE DIFFICULT TO SEPARATE WITH STELL PROBE; DIFFICULT TO BREAK WITH HAMMER.	
DESCRIPTIONS MAY INCLUDE COLOR OR COLOR COMBINATIONS (TAN, RED, YELLOW-BROWN, BLUE-GRAY).	VANE SHEAR TEST		
MODIFIERS SUCH AS LIGHT, DARK, STREAKED, ETC. ARE USED TO DESCRIBE APPEARANCE.		EXTREMELY INDURATED SAMPLE BREAKS ACROSS GRAINS.	DATE: 8-15-14

TOWN OF HOLLY SPRINGS PROJECT NO.



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GEOTECHNICAL BORING REPORT BORE LOG

	WBS	3416	5.1.2			ТІ	P I-2513	3AA		COUNT	Y BUNCC	MBE			GEO	LOGIST	Goodnią	ght, D.J.			WBS 34165.1.2 T			TIP I-2513AA COUNT			COUNT		
	SITE	DESCR	RIPTION	I CUL	VERT	EXTEN	NSION O	N -Y- ((I-40) A1	T STATIO	ON 59+50 (OVER RA	GSDA	LE C	REEK				GROUND WTR	(ft)	SITE	DESCR	IPTION	CUL	VERT F	EXTEN	SION ON	-Y- (I-40)	AT STATIC
	BORI	NG NO	. C-1			S	TATION	59+82	2		OFFSET	133 ft L	Т		ALIG	IGNMENT -Y- 0 HR. 8.1 BORING NO. C-2 STATION 59+11													
	COLL	AR EL	EV. 2,	066.8	ft	т	OTAL DE	PTH	23.4 ft		NORTHIN	G 678,2	218		EASTING 919,478 24 HR. 7.5 COLLAR ELEV. 2,064.1 ft TOTAL DEPTH 10.0 ft					COLLAR ELEV. 2,064.1 ft				ft					
	DRILL	rig/hai	MMER EI	FF./DAT	E CG2	4113 C	ME-550X 7	74% 04/0	08/2022			DRILL METHOD H.S. Augers HAMMER TYPE Automatic DRILL RIG/HAMMER EFF./DATE N/A							DRILL RIG/HAMMER EFF./DATE N/A										
	DRILI	ER (Ddom, C			S	TART DA	TE 1	0/17/22		COMP. D	ATE 10	/17/22		SURF	URFACE WATER DEPTH N/A DRILLER GOODNIGHT, D.J.						IT, D.J. START DATE 10/13/22							
E	LEV	DRIVE ELEV	DEPTH	H BLC		JNT		BL	LOWS P	ER FOO	Т	SAMP	.▼∕			SC		OCK DES	CRIPTION		ELEV	DRIVE ELEV	DEPTH	BLO		JNT		BLOWS	PER FOOT
-	(11)	(ft)	(11)	0.5ft	0.5ft	0.5ft	0	25	5	0	75 10	NO.	И) G	ELEV. (1	ft)			DEP	TH (ft)	(11)	(ft)	(11)	0.5ft	0.5ft	0.5ft	0	25	50
1213AA_GEO.GPJ_NC_DDT.GDT 9/21/23	2070 2065 - 2055 2050 2045	ER (DRIVE ELEV (ft) 2,065.8 2,063.3 2,060.8 2,058.3 2,058.3 2,058.3 2,058.3 2,048.3 2,048.3 2,048.3	Depth (ft) DEPth (ft) 3.5 6.0 8.5 13.5 13.5 13.5 18.5 23.4 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7		DW CO 0.5ft 6 4 2 2 3 28	S JNT 0.5ft 9 4 3 2 16 34	0 0 	IE 1 BL 25 115 - 1 - - - <t< td=""><td>0/17/22 -OWS P 5 </td><td>ER FOO 0</td><td>COMP. D</td><td>A I E 10 SAMP 0 NO.</td><td>M M M Sat. M</td><td></td><td>2.066.8 2.066.8 2.066.8 2.061.3 2.061.3 2.061.3 2.044.0 2.049.8 2.049.8 2.044.0 2.044.0 2.044.4 2.044.4 2.044.4 2.044.4 2.044.4 2.044.4 2.044.0 2.0</td><td>-ACE W. SC SC TAN DEN TRACE GRAY SILT WOOD GRAY SUT WOOD BROW SAN BROW SAN BROW SAN BROW SAN BROW</td><td>GROU GROU ARTI A AND GR. NAND GR. NSE, SILTY A AND GR. NSE, SILTY (A-4) WIT (A-4) WIT (A-4) WIT M AND G ND (A-2-4) TR WEATING ROWN AN G Termina ROWN AN G Termina ROWN AN G Termina ROWN AN CASA</td><td>ND SURFA FICIAL FIL AY, LOOS (SAND (A SCAVEL) LIUVIAL ODD FRAGE SCAVEL LIVIAL ODD FRAGE SCAVEL LIVIAL ODD FRAGE SCAVEL DOD FRAGE SCAVEL LIVIAL ODD FRAGE SCAVEL DOD SCAVEL DOD SC</td><td>A CRIPTION DEP ACE L E TO MED. -2-4) WITH GMENTS AND TIFF, SANDY TO LITLE TRACE MICA Y F. TO CSE. ME GRAVEL ENSE, SILTY ACE MICA CA STANDARD STANDARD EFUSAL at R: GNEISS</td><td>0.0 0.0 . 5.5 . 14.0 . 17.0 . 22.8 23.4</td><td>DRIL ELEV 2065 2060 2055</td><td>LER G DRIVE ELEV (ff)</td><td></td><td>BLO 0.5ft</td><td>J.J. W COU 0.5ft</td><td>SI JNT </td><td></td><td>E 10/13/ BLOWS 25</td><td>22 ; PER FOOT 50 </td></t<>	0/17/22 -OWS P 5 	ER FOO 0	COMP. D	A I E 10 SAMP 0 NO.	M M M Sat. M		2.066.8 2.066.8 2.066.8 2.061.3 2.061.3 2.061.3 2.044.0 2.049.8 2.049.8 2.044.0 2.044.0 2.044.4 2.044.4 2.044.4 2.044.4 2.044.4 2.044.4 2.044.0 2.0	-ACE W. SC SC TAN DEN TRACE GRAY SILT WOOD GRAY SUT WOOD BROW SAN BROW SAN BROW SAN BROW SAN BROW	GROU GROU ARTI A AND GR. NAND GR. NSE, SILTY A AND GR. NSE, SILTY (A-4) WIT (A-4) WIT (A-4) WIT M AND G ND (A-2-4) TR WEATING ROWN AN G Termina ROWN AN G Termina ROWN AN G Termina ROWN AN CASA	ND SURFA FICIAL FIL AY, LOOS (SAND (A SCAVEL) LIUVIAL ODD FRAGE SCAVEL LIVIAL ODD FRAGE SCAVEL LIVIAL ODD FRAGE SCAVEL DOD FRAGE SCAVEL LIVIAL ODD FRAGE SCAVEL DOD SCAVEL DOD SC	A CRIPTION DEP ACE L E TO MED. -2-4) WITH GMENTS AND TIFF, SANDY TO LITLE TRACE MICA Y F. TO CSE. ME GRAVEL ENSE, SILTY ACE MICA CA STANDARD STANDARD EFUSAL at R: GNEISS	0.0 0.0 . 5.5 . 14.0 . 17.0 . 22.8 23.4	DRIL ELEV 2065 2060 2055	LER G DRIVE ELEV (ff)		BLO 0.5ft	J.J. W COU 0.5ft	SI JNT 		E 10/13/ BLOWS 25	22 ; PER FOOT 50
NCDOT BORE DOUBLE 1-12															- - - - - - - - - - -							- - - - - - - - - - - - - - - - - - -							

BUNCOME	BE			GEOLOGIST Goodnight, D.J	
N 59+50 OVE	ER RAG	SDAL	E CRI	EEK	GROUND WTR (ft)
OFFSET 19	97 ft LT			ALIGNMENT -Y-	0 HR. 4.0
NORTHING	678,28	5		EASTING 919,391	24 HR. 4.0
	DRILL MI	ETHOD	Han	d Auger HAM	MER TYPE N/A
COMP. DAT	E 10/1	3/22			J/A
	SAMP.		L		
75 100	NO.	моі	O G	SOIL AND ROCK DE	SCRIPTION
	f				
	NO.	MOI M W W Sat.		2,064.1 GROUND SUR ALLUVIA 2,061.6 BROWN, LOOSE, SILTY 2,060.6 WITH TRACE F 2,059.6 BROWN AND GRAY, SC GRAY, SOFT, SANDY CL 2,054.6 GRAY, SOFT, SANDY CL 2,054.6 WITH TRACE RO TANA ND GRAY, LOOS (A-1-a) WITH SOM Boring Terminated at Elev ALLUVIAL: (A	FACE 0.0 (SAND (A-2-4) 2.5 OOTS 3.5 DFT, MOTTLED (4.5 TRACE ROOTS (4.5 SAND (A-2-4) 1 MICA AYEY SILT (A-5) 9.5 OTLETS 9.5 GRAVEL ation 2,054.1 ft in 1-a)
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2513/

REFERENCE

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION **DIVISION OF HIGHWAYS CONTENTS GEOTECHNICAL ENGINEERING UNIT** SHEET NO. **DESCRIPTION STRUCTURE** TITLE SHEET LEGEND 2 SITE PLAN SUBSURFACE INVESTIGATION PROFILE 5 BORE LOGS COUNTY BUNCOMBE PROJECT DESCRIPTION <u>I-40 FROM</u> EAST OF SR 1224 (MONTE VISTA RD) TO PAVEMENT JOINT WEST OF SR 3412 (SAND HILL RD). INCLUDES INITIAL IMPROVEMENTS AT I-40EB TO I-26EB AT US 19/23 (SMOKEY PARK HIGHWAY) SITE DESCRIPTION <u>CULVERT EXTENSION ON</u> -RPC-(I-40 EASTBOUND RAMP TO I-26 EASTBOUND) AT STATION 24+64 OVER UNNAMED TRIBUTARY TO HOMINY CREEK

S 3416 PROJEC

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	I–2513AA	1	5

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 RALFICH BY CONTACTING THE N.C. DEPARTMENT OF TRANSPORTATION, GEOTECHNICAL ENGINEERING UNIT AT (1991) 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 UNI-FLACE) TEST DATA CAN BE RELIED ON ONLY TO THE DEGREE OF RELIABILITY INHERENT IN THE STANDARD TEST WETHOD. THE OBSERVED WATER LEVELS OR SOLI MOISTURE CONDITIONS INDICATED IN THE SUBSURFACE INVESTIGATIONS ARE AS RECORDED AT THE TIME OF THE INVESTIGATION. THESE WATER LEVELS OR SOLI MOISTURE CONDITIONS MAY YARY 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 OPHION OF THE DEPARTMENT AS TO THE TYPE OF MATERIALS AND COCUMTERED. THE BIDDER OR CONTRACTOR IS CAUTIONED TO MAKE SUCH INDEPENDENT SUBSURFACE INVESTIGATIONS AS HE DEEMS NECESSARY TO SATISFY HIMSELF AS TO CONDITIONS TO BE ENCOUNTERED ON THE PROJECT. THE CONTRACTOR SHALL HAVE NO CLAIM FOR ADDITIONAL COMPENSATION OF FOR AN EXTENSION OF TIME FOR ANY REASON RESULTING FROM THE ACTUAL CONDENSATIONS FOR ANY THE SITE DIFFERING FROM THOSE INDICATED IN THE SUBSURFACE INFORMATION.

- NOTES: I. 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

CG2
GOODNIGHT, D.J.
INVESTIGATED BY FALCON ENG.
DRAWN BYCROCKETT, S.C.
CHECKED BY HAMM. I.R.
SUBMITTED BY FALCON ENG.
DATE JANUARY 2024



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	WELL GRADED - INDICATES A GOOD REPRESENTATION OF PARTICLE SIZES FROM FINE TO COARSE.	HARD ROCK IS NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT REFUSAL IF TESTED. AN INFERRED	ALLUVIUM (ALLUV.) - SOILS THAT HAVE BEEN TRANSPORTED BY WATER.
ACCORDING TO THE STANDARD PENETRATION TEST (AASHTO T 206, ASTM DI586). SOIL CLASSIFICATION	UNIFORMLY GRADED - INDICATES THAT SOIL PARTICLES ARE ALL APPROXIMATELY THE SAME SIZE.	SPT REFUSAL IS PENETRATION BY A SPLIT SPON SAMPLER EQUAL TO OR LESS THAN 0.1 FOOT PER 60	AQUIFER - A WATER BEARING FORMATION OR STRATA.
IS BASED ON THE AASHTO SYSTEM. BASIC DESCRIPTIONS GENERALLY INCLUDE THE FOLLOWING:	GAP-GRADED - INDICATES A MIXTURE OF UNIFORM PARTICLE SIZES OF TWO OR MORE SIZES.	BLOWS IN NON-COASTAL PLAIN MATERIAL, THE TRANSITION BETWEEN SOIL AND ROCK IS OFTEN	ARENACEOUS - APPLIED TO ROCKS THAT HAVE BEEN DERIVED FROM SAND OR THAT CONTAIN SAND.
CONSISTENCY, COLOR, TEXTURE, MOISTURE, AASHTO CLASSIFICATION, AND OTHER PERTINENT FACTORS SUCH AS MINERALOGICAL COMPOSITION, ANGULABILY, STRUCTURE, PLASTICITY, FTC, FOR EXAMPLE.	ANGULARITY UF GRAINS	ROCK MATERIALS ARE TYPICALLY DIVIDED AS FOLLOWS:	ARGILLACEOUS - APPLIED TO ALL BOCKS OR SUBSTANCES COMPOSED OF CLAY MINERALS, OR HAVING
VERY STIFF, GRAY, SILTY CLAY, MOIST WITH INTERBEDDED FINE SAND LAYERS, HIGHLY PLASTIC, A-7-6	THE ANGULARITY OR ROUNDNESS OF SOIL GRAINS IS DESIGNATED BY THE TERMS:		A NOTABLE PROPORTION OF CLAY IN THEIR COMPOSITION, SUCH AS SHALE, SLATE, ETC.
SOIL LEGEND AND AASHTO CLASSIFICATION		ROCK (WR) 100 BLOWS PER FOOT IF TESTED.	ARTESIAN - GROUND WATER THAT IS UNDER SUFFICIENT PRESSURE TO RISE ABOVE THE LEVEL AT
GENERAL GRANULAR MATERIALS SILT-CLAY MATERIALS OPCOMIC MATERIALS		CONSTALLINE FINE TO COARSE GRAIN IGNEOUS AND METAMORPHIC ROCK THAT	WHICH IT IS ENCOUNTERED, BUT WHICH DOES NOT NECESSARILY RISE TO OR ABOVE THE GROUND
CLASS. (≤ 35% PASSING *200) (> 35% PASSING *200) UNUMILE MITEMINES	MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC.	ROCK (CR) WOULD YIELD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES GRANITE,	SURFACE.
GROUP A-1 A-3 A-2 A-4 A-5 A-6 A-7 A-1, A-2 A-4, A-5	ARE USED IN DESCRIPTIONS WHEN THEY ARE CONSIDERED OF SIGNIFICANCE.	FINE TO COARSE GRAIN METAMORPHIC AND NON-COASTAL PLAIN	CALCAREOUS (CALC.) - SOILS THAT CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE.
CLASS. A-1-0 A-1-b A-2-4 A-2-5 A-2-6 A-2-7 A-7-5 A-3 A-6, A-7		BOCK (NCR)	COLLUVIUM - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM
SYMBOL DODOGODOOOG	SLIGHTLY COMPRESSIBLE LL < 31	COASTAL PLAIN ROCK TYPE INCLUDES PHYLLITE, SLATE, SANDSTONE, ETC.	OF SLOPE.
	HIGHLY COMPRESSIBLE LL > 50	SEDIMENTARY ROCK SPT REFUSAL. ROCK TYPE INCLUDES LIMESTONE, SANDSTONE, CEMENTED	CORE RECOVERY (REC.) - TOTAL LENGTH OF ALL MATERIAL RECOVERED IN THE CORE BARREL DIVIDED
*10 50 MX GRANULAR SILT-	PERCENTAGE OF MATERIAL		
*40 30 MX 50 MX 51 MN SOILS SOILS SOILS SOILS	GRANULAR SILT - CLAY	WEATHERING	ROCKS OR CUTS MASSIVE ROCK.
*200 15 MX 25 MX 10 MX 35 MX 35 MX 35 MX 36 MN 36 MN 36 MN 36 MN	ORGANIC MATERIAL SOILS OTHER MATERIAL	FRESH ROCK FRESH, CRYSTALS BRIGHT, FEW JOINTS MAY SHOW SLIGHT STAINING, ROCK RINGS UNDER	DIP - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE
MATERIAL	I ITTLE OF ORGANIC MATTER 2 - 3% 3 - 5% TRACE 1 - 10%	HAMMER IF URYSTALLINE.	HORIZONTAL.
HISSING 40 40 MX 41 MN 40 MX 41 MN 40 MX 41 MN 40 MX 41 MN 501LS WITH	MODERATELY ORGANIC 5 - 10% 12 - 20% SOME 20 - 35%	VERY SLIGHT ROCK GENERALLY FRESH, JOINTS STAINED, SOME JOINTS MAY SHOW THIN CLAY COATINGS IF OPEN,	DIP DIRECTION (DIP AZIMUTH) - THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF THE
PI 6 MX NP 10 MX 10 MX 11 MN 11 MN 10 MX 10 MX 11 MN 11 MN LITTLE OR HIGHLY	HIGHLY ORGANIC > 10% > 20% HIGHLY 35% AND ABOVE	OF A CRYSTALLINE NATURE.	LINE OF DIP, MEASURED CLOCKWISE FROM NORTH.
CROUP INDEX 0 0 0 4 MX 8 MX 12 MX 16 MX NO MX AMOUNTS OF	GROUND WATER	SLIGHT ROCK GENERALLY FRESH, JOINTS STAINED AND DISCOLORATION EXTENDS INTO ROCK UP TO	FAULT - A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE
USUAL TYPES STORE FRAGS. ORGANIC	✓ WATER LEVEL IN BORE HOLE IMMEDIATELY AFTER DRILLING	(SLI.) 1 INCH. OPEN JOINTS MAY CONTAIN CLAY. IN GRANITOID ROCKS SOME OCCASIONAL FELDSPAR	SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE.
OF MAJOR GRAVEL, AND SAND CRAVEL AND SAND SOULS SOULS		CRYSTALS ARE DULL AND DISCOLORED. CRYSTALLINE ROCKS RING UNDER HAMMER BLOWS.	FISSILE - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES.
MATERIALS SAND SINNE SINNE SOLES SOLES		MODERATE SIGNIFICANT PORTIONS OF ROCK SHOW DISCOLORATION AND WEATHERING EFFECTS. IN	FLOAT - ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLODGED FROM
GEN, RATING EXCELLENT TO GOOD FAIR TO POOR UNSUITABLE	PERCHED WATER, SATURATED ZONE, OR WATER BEARING STRATA	DULL SOUND UNDER HAMMER BLOWS AND SHOWS SIGNIFICANT LOSS OF STRENGTH AS COMPARED	PARENI MAIERIAL.
AS SUBUKAUE POOR POOR POOR		WITH FRESH ROCK.	FLUOU PLAIN (FP) - LAND BURDERING A STREAM, BUILT OF SEDIMENTS DEPOSITED BY THE STREAM.
PI OF A-7-5 SUBGROUP IS \leq LL - 30 ; PI OF A-7-6 SUBGROUP IS > LL - 30	0.00	MODERATELY ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. IN GRANITOID ROCKS, ALL FELDSPARS DULL	FORMATION (FM.) - A MAPPABLE GEOLOGIC UNIT THAT CAN BE RECOGNIZED AND TRACED IN THE
CONSISTENCY OR DENSENESS	MISCELLANEOUS SYMBOLS	SEVERE AND DISCOLORED AND A MAJORITY SHOW KAOLINIZATION. ROCK SHOWS SEVERE LOSS OF STRENGTH	
DEIMARY COLL TYPE COMPACTNESS OR RANGE OF STANDARD RANGE OF UNCONFINED		IF TESTED, WOULD YIELD SPT REFUSAL	JOINT - TRACTORE IN NOCK REUNO WRITER NO HERRELINDEE MOVEMENT RAS OCCORRED.
CONSISTENCY (N-VALUE) (TONS/FT ²)	WITH SOIL DESCRIPTION FOR ROCK STRUCTURES	SEVERE ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED, ROCK FABRIC CLEAR AND EVIDENT BUT	ITS LATERAL EXTENT.
VERY LOOSE < 4		(SEV.) REDUCED IN STRENGTH TO STRONG SOIL. IN GRANITOID ROCKS ALL FELDSPARS ARE KAOLINIZED	LENS - & RODY OF SOLL OR ROCK THAT THINS OUT IN ONE OR MORE DIRECTIONS
GRANIII AR LOOSE 4 TO 10		TO SOME EXTENT. SOME FRAGMENTS OF STRONG ROCK USUALLY REMAIN.	
MATERIAL MEDIUM DENSE 10 TO 30 N/A		IF TESTED, WUOLU TIELU SPT N VALUES > 100 BPF	USUALLY INDICATES POOR AERATION AND LACK OF GOOD DRAINAGE.
(NON-COHESIVE) VERY DENSE > 50		VERY ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED, ROCK FABRIC ELEMENTS ARE DISCERNIBLE SEVERE BUT MASS IS FEFECTIVELY REDUCED TO SOIL STATUS, WITH ONLY FRAGMENTS OF STRONG ROCK	PERCHED WATER - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE
VERY SOFT < 2 < 0.25	INFERRED SOIL BOUNDARY - CORE BORING • SOUNDING ROD	(V SEV.) REMAINING, SAPROLITE IS AN EXAMPLE OF ROCK WEATHERED TO A DEGREE THAT ONLY MINOR	OF AN INTERVENING IMPERVIOUS STRATUM.
GENERALLY SOFT 2 TO 4 0.25 TO 0.5		VESTIGES OF ORIGINAL ROCK FABRIC REMAIN. <u>IF TESTED, WOULD YIELD SPT N VALUES < 100 BPF</u>	RESIDUAL (RES.) SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK.
SILT-CLAY MEDIUM STIFF 4 TO 8 0.5 TO 1.0	TEST BURING WELL	COMPLETE ROCK REDUCED TO SOIL. ROCK FABRIC NOT DISCERNIBLE, OR DISCERNIBLE ONLY IN SMALL AND	ROCK QUALITY DESIGNATION (ROD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF
(COHESIVE) VERY STIFF 15 TO 30 2 TO 4		SCATTERED CONCENTRATIONS. QUARIZ MAY BE PRESENT AS DIKES OR STRINGERS. SAPROLITE IS	ROCK SEGMENTS EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF CORE
HARD > 30 > 4			RUN AND EXPRESSED AS A PERCENTAGE.
TEXTURE OR GRAIN SIZE	RECOMMENDATION SYMBOLS		SAPROLITE (SAP.) - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT
U.S. STD. SIEVE SIZE 4 10 40 50 200 270	TXX UNDERCUT TXX UNCLASSIFIED EXCAVATION - TXXX UNCLASSIFIED EXCAVATION -	VERY HARD CANNOT BE SCRATCHED BY KNIFE OR SHARP PICK, BREAKING OF HAND SPECIMENS REQUIRES	
OPENING (MM) 4.76 2.00 0.42 0.25 0.075 0.053	EXAMPLE ACCEPTABLE, BUT NOT TO BE		RELATIVELY THIN COMPARED WITH ITS LATERAL EXTENT, THAT HAS BEEN EMPLACED PARALLEL TO
COARSE FINE	SHALLOW UNCLASSIFIED EXCAVATION - EMBANKMENT OR BACKFILL	TO DETACH HAND SPECIMEN.	THE BEDDING OR SCHISTOSITY OF THE INTRUDED ROCKS.
BOULDER COBBLE GRAVEL SAND SAND SILT CLAY		MODERATELY CAN BE SCRATCHED BY KNIFE OR PICK. GOUGES OR GROOVES TO 0.25 INCHES DEEP CAN BE	SLICKENSIDE - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT
(CSE. SD.) (F SD.)	ABBREVIATIONS	HARD EXCAVATED BY HARD BLOW OF A GEOLOGIST'S PICK. HAND SPECIMENS CAN BE DETACHED	OR SLIP PLANE.
GRAIN MM 305 75 2.0 0.25 0.05 0.005	AR - AUGER REFUSAL MED MEDIUM VST - VANE SHEAR TEST	BY MODERATE BLOWS.	STANDARD PENETRATION TEST (PENETRATION RESISTANCE) (SPT) - NUMBER OF BLOWS (N OR BPF) OF
SIZE IN. 12 3	BT - BORING TERMINATED MICA MICACEOUS WEA WEATHERED	MEDIUM CAN BE GROOVED OR GOUGED 0.05 INCHES DEEP BY FIRM PRESSURE OF KNIFE OR PICK POINT.	A 140 LB. HAMMER FALLING 30 INCHES REQUIRED TO PRODUCE A PENETRATION OF I FOUT INTO SUIL
SOIL MOISTURE - CORRELATION OF TERMS	CPT - CONE PENETRATION TEST NP - NON PLASTIC χ - DRY UNIT WEIGHT	POINT OF A GEOLOGIST'S PICK.	TO OR LESS THAN 0.1 FOOT PER 60 BLOWS.
SOIL MOISTURE SCALE FIELD MOISTURE CUIDE FOR FIELD MOISTURE DESCRIPTION	CSE COARSE ORG ORGANIC	SOFT CAN BE GROVED OR GOUGED READILY BY KNIFE OR PICK. CAN BE EXCAVATED IN FRAGMENTS	STRATA CORE RECOVERY (SREC.) - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY
(ATTERBERG LIMITS) DESCRIPTION ON PRED MOTOR DESCRIPTION	DMT - DILATOMETER TEST PMT - PRESSUREMETER TEST SAMPLE ABBREVIATIONS	FROM CHIPS TO SEVERAL INCHES IN SIZE BY MODERATE BLOWS OF A PICK POINT. SMALL, THIN	TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE.
- SATURATED - USUALLY LIQUID; VERY WET, USUALLY	e - VOID RATIO SD SAPROLITIC S - BULK	PIECES CAN BE BROKEN BY FINGER PRESSURE.	STRATA ROCK QUALITY DESIGNATION (SROD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL
(SAT.) FROM BELOW THE GROUND WATER TABLE	F - FINE SL SILT, SILTY ST - SHELBY TUBE	VERY CAN BE CARVED WITH KNIFE. CAN BE EXCAVATED READILY WITH POINT OF PICK, PIECES 1 INCH	THE TOTAL LENGTH OF STRATA AND EXPRESSED AS A PERCENTAGE.
	- FOSS FOSSILIFEROUS SLI SLIGHTLY RS - ROCK	FINGERNAIL.	TOPSOIL (TS.) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.
RANGE < - WET - (W) SEMISOLID; REQUIRES DRYING TO	FRAU FRAUTURED, FRAUTURES TUR - TRICUNE REFUSAL RT - RECOMPACTED TRIAXIAL -		
	HI HIGHLY V - VERY RATIO	TERM SPACING TERM THICKNESS	DATE-04/15/2022
	EQUIPMENT USED ON SUBJECT PROJECT	VERY WIDE MORE THAN 10 FEET VERY THICKLY BEDDED 4 FEET	FLEVATION: FEET
OM _ OPTIMUM MOISTURE - MUIST - (M) SULID; AT UK NEAR OPTIMUM MOISTURE	DRILL UNITS: ADVANCING TOOLS: HAMMER TYPE:		
SL SHRINKAGE LIMIT		CLOSE Ø.16 TO 1 FOOT VERY THINLY BEDDED Ø.03 - 0.16 FEET	NOTES:
- DRY - (D) REQUIRES ADDITIONAL WATER TO		VERY CLOSE LESS THAN 0.16 FEET THICKLY LAMINATED 0.008 - 0.03 FEET	FIAD - FILLED IMMEDIATELY AFTER DRILLING
		THINLY LAMINATED < 0.008 FEET	
PLASTICITY			
PLASTICITY INDEX (PI) DRY STRENGTH	X CME-550X HARD FACED FINGER BITS	FOR SEDIMENTARY ROCKS, INDURATION IS THE HARDENING OF MATERIAL BY CEMENTING, HEAT, PRESSURE, ETC.	
NON PLASTIC 0-5 VERY LOW	TUNGCARBIDE INSERTS	FRIABLE RUBBING WITH FINGER FREES NUMEROUS GRAINS;	
SLIGHTLY PLASTIC 6-15 SLIGHT MODERATELY PLASTIC 16-25 MEDIUM	HAND TOOLS:	DENTLE DEUN DI AMMINER DISINIEURMIES SHMIFLE.	
HIGHLY PLASTIC 26 OR MORE HIGH		MODERATELY INDURATED GRAINS CAN BE SEPARATED FROM SAMPLE WITH STEEL PROBE;	
		INDURATED ORAINS ARE DIFFICULT TO SEPARATE WITH STELL PROBE; DIFFICULT TO BREAK WITH HAMMER.	
DESCRIPTIONS MAY INCLUDE COLOR OR COLOR COMBINATIONS (TAN, RED, YELLOW-BROWN, BLUE-GRAY).	VANE SHEAR TEST		
MODIFIERS SUCH AS LIGHT, DARK, STREAKED, ETC. ARE USED TO DESCRIBE APPEARANCE.		EXTREMELY INDURATED SAMPLE BREAKS ACROSS GRAINS.	DATE: 8-15-14

TOWN OF HOLLY SPRINGS PROJECT NO.



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GEOTECHNICAL BORING REPORT BORE LOG

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2513A

REFERENCE

CONTENTS SHEET NO.

2

- 3

TITLE SHEET LEGENDS SITE PLAN PROFILE 5-7 BORE LOGS

DESCRIPTION

STATE OF NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION **DIVISION OF HIGHWAYS GEOTECHNICAL ENGINEERING UNIT**

STRUCTURE SUBSURFACE INVESTIGATION

COUNTY BUNCOMBE

PROJE	СТ [DESCRIF	TION	_ I _40	FR	ОМ	EAS	ST C	DF S	SR 1	224
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STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	I–2513AA	1	7

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 SOLI TEST DATA AVAILABLE MAY BE REVIEWED OR INSPECTED IN RALEIGH BY CONTACTING THE N.C. DEPARTMENT OF TRANSPORTATION, GEOTECHNICAL ENGINEERING UNIT AT 1991 707-680. THE SUBSIFICACE PLANS AND REPORTS, FIELD BORING LOGS, ROCK CORES AND SOIL TEST DATA ARE NOT PART OF THE CONTRACT.

CENERAL 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 UNI-FLACE) TEST DATA CAN BE RELIED ON ONLY TO THE DECREE OF RELIABILITY INHERENT IN THE STANDARD TEST METHOD. THE OBSERVED WATER LEVELS OR SOL MOISTURE CONDITIONS INDICATED IN THE SUBSURFACE INVESTIGATIONS ARE AS RECORDED AT THE TIME OF THE INVESTIGATION. THESE WATER LEVELS OR SOL MOISTURE CONDITIONS MAY YARY CONSIDERABLY WITH TIME ACCORDING TO CLIMATIC CONDITIONS INCLUDING TEMPERATURES, PRECIPITATION AND WIND, AS WELL AS OTHER NON-CLIMATIC FACTORS.

THE BIDDER OF CONTRACTOR IS CALITORED THAT OW HILD, AS HELLE AS OTHER HOW CLIMATION FACTORS. THE BIDDER OF CONTRACTOR IS CALITORED THAT DETAILS SKOWN 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 WARANT OR GUARANTEE THE SUFFICIENCY OR ACCURACY OF THE INVESTIGATION MADE, NOR THE INTERPRETATIONS MADE, OR OPHION OF THE DEPARTMENT AS TO THE TYPE OF MATERIALS AND CONDITIONS TO BE ENCOUNTERED. THE BIDDER OR CONTRACTOR IS CAUTIONED TO MAKE SUCH INDEPENDENT SUBSURFACE INVESTIGATIONS AS HE DEEMS NECESSARY TO SATISTY HIMSELF AS TO CONDITIONS TO BE ENCOUNTERED ON THE PROJECT. THE CONTRACTOR SHALL HAVE NO CLAIM FOR ADDITIONAL COMPENSATION OF FOR AN EXTENSION OF TIME FOR ANY REASON RESULTING FOM THE ACTUAL CONDENSATION.

- NOTES: I. 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	
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_	GOODNIGHT, D.J.
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INVESTIGATED B	Y FALCON ENG.
DRAWN BY CA	ROCKETT, S.C.
	HUNSBERGER. W.S.
CHECKED BY	
SUBMITTED BY .	FALCON ENG.
DATE	EMBER 2023



SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

SOIL DESCRIPTION	GRADATION	ROCK DESCRIPTION							
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 01586). SOIL CLASSIFICATION IS BASED ON THE AASHTO SYSTEM. BASIC DESCRIPTIONS GENERALLY INCLUDE THE FOLLOWING:	<u>WELL GRADED</u> - INDICATES A GOOD REPRESENTATION OF PARTICLE SIZES FROM FINE TO COARSE. <u>UNIFORMLY GRADED</u> - INDICATES THAT SOIL PARTICLES ARE ALL APPROXIMATELY THE SAME SIZE. <u>GAP-GRADED</u> - 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 TESTE ROCK LINE INDICATES THE LEVEL AT WHICH NON-COASTAL PLAIN MATERIAL WOULD YIELD SPT REFUSAL IS PERETRATION BY A SPLIT SPOON SAMPLER EQUAL TO OR LESS THAN 0.1 BLOWS IN NON-COASTAL PLAIN MATERIAL, THE TRANSITION BETWEEN SOIL AND ROCK							
CONSISTENCY, COLOR, TEXTURE, MOISTURE, AASHTO CLASSIFICATION, AND OTHER PERTINENT FACTORS SUCH AS MINERALOGICAL COMPOSITION, ANGULARITY, STRUCTURE, PLASTICITY, ETC. FOR EXAMPLE,	ANGULARITY OF GRAINS	REPRESENTED BY A ZONE OF WEATHERED ROCK. ROCK MATERIALS ARE TYPICALLY DIVIDED AS FOLLOWS:							
VERY STIFF, GRAY, SILTY CLAY, MOIST WITH INTERBEDDED FINE SAND LAYERS, HIGHLY PLASTIC, A-7-6	ANGULARITY OR ROUNDINGSS OF SUIL GRAINS IS DESIGNATED BY THE TERMS: ANGULAR, SUBANGULAR, SUBROUNDED, OR ROUNDED.	WEATHERED NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT							
GENERAL GRANULAR MATERIALS SILT-CLAY MATERIALS OPPANIC MATERIALS	MINERALOGICAL COMPOSITION	CRYCTALLINE JE JEW STER TO COARSE GRAIN IGNEOUS AND METAMORPHIC RO							
CLASS. (≤ 35% PASSING *200) (> 35% PASSING *200) 000HILL HHILEHILLS	MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC. ARE USED IN DESCRIPTIONS WHEN THEY ARE CONSIDERED OF SIGNIFICANCE.	ROCK (CR) WOULD YIELD SPT REFUSAL IF TESTED. ROCK TYPE IN GNEISS, GABBRO, SCHIST, ETC.							
CHOUP H-1 H-3 H-2 H-4 H-3 H-6 H-7 A-1, A-2 A-4, A-5 CLASS. A-1-b A-2-4 A-2-5 A-2-6 A-2-7 A-7, A-3 A-6, A-7	COMPRESSIBILITY	NON-CRYSTALLINE FINE TO COARSE GRAIN METAMORPHIC AND NON-COASTA							
	SLIGHTLY COMPRESSIBLE LL < 31 MODERATELY COMPRESSIBLE LL = 31 - 50	COASTAL PLAIN							
7 PASSING SILT-	HIGHLY COMPRESSIBLE LL > 50	SEDIMENTARY ROCK SEDIMENTARY ROCK SEDIMENTARY ROCK SANDS							
*40 30 MX 50 MX 51 MN S0 IX 51 MN		WEATHERING							
*200 15 MX 25 MX 10 MX 35 MX 35 MX 35 MX 35 MX 36 MN 36 MN 36 MN 36 MN	<u>ORGANIC MATERIAL</u> <u>SOILS</u> <u>OTHER MATERIAL</u> TRACE OF ORGANIC MATTER 2 - 3% 3 - 5% TRACE 1 - 10%	FRESH ROCK FRESH, CRYSTALS BRIGHT, FEW JOINTS MAY SHOW SLIGHT STAINING. ROCK HAMMER IF CRYSTALLINE.							
PASSING *40 LL 40 MX 41 MN 46 MX 41 MN 46 MX 41 MN 50LLS WITH PI 6 MX NP 18 MX 18 MX 11 MN 11 MN 18 MX 18 MX 11 MN 11 MN 10 MX 10 MX 10 MX 11 MN 11 MN	LITTLE ORGANIC MATTER 3 - 5% 5 - 12% LITTLE 10 - 20% MODERATELY ORGANIC 5 - 10% 12 - 20% SOME 20 - 35% HIGHLY ORGANIC > 10% > 20% HIGHLY 35% AND ABOVE	VERY SLIGHT ROCK GENERALLY FRESH, JOINTS STAINED, SOME JOINTS MAY SHOW THIN CLAY C (V SLI.) CRYSTALS ON A BROKEN SPECIMEN FACE SHINE BRIGHTLY. ROCK RINGS UNDER H OF A CRYSTALLINE NATURE.							
GROUP INDEX 0 0 0 4 MX 8 MX 12 MX 16 MX ND MX AMOUNTS OF SOLI S	GROUND WATER	SLIGHT ROCK GENERALLY FRESH, JOINTS STAINED AND DISCOLORATION EXTENDS INTO RO							
USUAL TYPES STONE FRAGS. FINE SILTY OR CLAYEY SILTY CLAYEY MATTER OF MAJOR GRAVEL, AND SAND GRAVEL AND SAND SOILS SOILS SOILS	✓ WATER LEVEL IN BORE HOLE IMMEDIATELY AFTER DRILLING ✓ STATIC WATER LEVEL AFTER <u>24</u> HOURS	(SLI.) I INCH. OPEN JOINTS MAY CONTAIN CLAY. IN GRANITOL ROCKS SOME OCCASIONA CRYSTALS ARE DULL AND DISCOLORED. CRYSTALLINE ROCKS RING UNDER HAMMER SIGNIFICANT PORTIONS OF ROCK SHOW DISCOLORATION AND WEATHERING FEFETY							
GEN. RATING EVELUENT TO COOD EAID TO DOOD FAIR TO DOOD INSULTABLE	. ∇ PW PERCHED WATER, SATURATED ZONE, OR WATER BEARING STRATA	(MOD.) GRANITOID ROCKS, MOST FELDSPARS ARE DULL AND DISCOLORED, SOME SHOW CLA							
AS SUBGRADE POOR FUNCTION POOR FOR UNSUITABLE	- O-M- Spring or Seep	WITH FRESH ROCK.							
CONSISTENCY OR DENSENESS	MISCELLANEOUS SYMBOLS	MODERATELY ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. IN GRANITOID ROCKS, ALL F SEVERE AND DISCOLORED AND A MAJORITY SHOW KAOLINIZATION. ROCK SHOWS SEVERE L							
DEMARY SOLL TYPE COMPACTNESS OR RANGE OF STANDARD RANGE OF UNCONFINED		(MOD.SEV.) AND CAN BE EXCAVATED WITH A GEOLOGIST'S PICK. ROCK GIVES "CLUNK" SOUND " IF TESTED, WOULD YIELD SPT REFUSAL							
CONSISTENCY TELEUMENTIALUES CONTROLLES (TONS/FT2) CONSISTENCY CONSISTENCY (N-VALUE) CONTROLLES (TONS/FT2) CONSISTENCY CONSISTENCY (TONS/FT2)	SIDE ENDICATOR	SEVERE ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC CLEAR AND E (SEV.) REDUCED IN STRENGTH TO STRONG SOIL. IN GRANITOID ROCKS ALL FELDSPARS A TO SOME EXTENT. SOME FRAGMENTS OF STRONG ROCK USUALLY REMAILS							
GRANULAR MEDIUM DENSE 10 TO 30 N/A		IF TESTED, WOULD YIELD SPT N VALUES > 100 BPF							
(NDN-COHESIVE) DENSE 30 10 50 VERY DENSE > 50 VERY SOFT < 2	THAN ROADWAY EMBANKMENT U ROCK BORING TEST	VERY ALL ROCK EXCEPT OUARTZ DISCOLORED OR STAINED, ROCK FABRIC ELEMENTS AR SEVERE BUT MASS IS EFFECTIVELY REDUCED TO SOIL STATUS, WITH ONLY FRAGMENTS OF (V SEV.) REMAINING, SAPROLITE IS AN EXAMPLE OF ROCK WEATHERED TO A DEGREE THAT VESTIFES OF ORIGINAL ROCK FARBIC REMAIN. IF TESTED, WOULD YIELD SET N.							
LENERALLY SUFI 2 10 4 62.5 10 6.5 SILT-CLAY MODIUM STIFF 4 10 8 0.5 T0 1.0 MATERIAL STIFF 8 T0 15 1 T0 2 (CDHESUE) VERP STIFF 15 T0 30 2 T0 4		COMPLETE ROCK REDUCED TO SOIL. ROCK FABRIC NOT DISCERNIBLE OR DISCERNIBLE ONLY SCATTERED CONCENTRATIONS, QUARTZ MAY BE PRESENT AS DIKES OR STRINGERS							
HARD > 30 > 4		ROCK HARDNESS							
TEXTURE OR GRAIN SIZE		VERY HARD CANNOT BE SCRATCHED BY KNIFE OR SHARP PICK, BREAKING OF HAND SPECIMEN							
U.S. STD. SIEVE SIZE 4 10 40 60 200 270 OPENING (MM) 4.76 2.00 0.42 0.25 0.075 0.053	EXCAVATION UNSUITABLE WASTE	SEVERAL HARD BLOWS OF THE GEOLOGIST'S PICK.							
BOULDER COBBLE GRAVEL COARSE FINE SILT CLAY	SHALLOW UNDERCUT UNCLASSIFIED EXCAVATION - COSED IN THE TOP'S FEEL OF ACCEPTABLE DEGRADABLE ROCK EMBANKMENT OR BACKFILL	TO DETACH HAND SPECIMEN.							
(BLDR.) (COB.) (GR.) SANU (CSE. SD.) SANU (F SD.) SANU (F SD.) CL.) (CL.) GRAIN MM 305 75 2.0 0.25 0.05 0.005	ABBREVIATIONS AR - AUGER REFUSAL MED MEDIUM VST - VANE SHEAR TEST	MODERATELY CAN BE SCRATCHED BY KNIFF OR PICK. GOUGES OR GROOVES TO 0.25 INCHES DE HARD EXCAVATED BY HARD BLOW OF A GEOLOGIST'S PICK. HAND SPECIMENS CAN BE D BY MODERATE BLOWS.							
SIZE IN. 12 3	BT - BORING TERMINATED MICA MICACEOUS WEA WEATHERED CL CLAY MOD MODERATELY γ - UNIT WEIGHT	MEDIUM CAN BE GROOVED OR GOUGED 0.05 INCHES DEEP BY FIRM PRESSURE OF KNIFE C HARD CAN BE EXCAVATED IN SMALL CHIPS TO PEICES 1 INCH MAXIMUM SIZE BY HARD							
SOIL MOISTURE - CORRELATION OF TERMS SOIL MOISTURE SCALE FIELD MOISTURE (ATTERBERG LIMITS) DESCRIPTION GUIDE FOR FIELD MOISTURE DESCRIPTION	$\begin{array}{c} \mbox{CPT} - \mbox{CONE} \mbox{PRESTRATION TEST} & \mbox{NP} - \mbox{NON PLASTIC} & \mbox{γ_d^- DRY UNIT WEIGHT} \\ \mbox{CSE.} - \mbox{COARSE} & \mbox{ORG.} - \mbox{ORGANIC} \\ \mbox{DMT} - \mbox{DLATOMETER TEST} & \mbox{PMT} - \mbox{PRESSURMETER TEST} & \mbox{SAMPLE ABBREVIATIONS} \end{array}$	POINT OF A GEOLOGIST'S PICK. SOFT CAN BE GROVED OR GOUGED READILY BY KNIFE OR PICK. CAN BE EXCAVATED IN DEPENDENT OF STATE OF A PICK POINT							
- SATURATED - USUALLY LIQUID:VERY WET.USUALLY (SAT.) FROM BELOW THE GROUND WATER TABLE	DPT - DYNAMIC PENETRATION TEST SAP SAPROLITIC S - BULK e - VOID RATIO SD SAND, SANDY SS - SPLIT SPOON F - FINF SI SI I. SU I. Y ST - SHE IS TUBE	VERY CAN BE CARVED WITH KNIFE. CAN BE EXCAVATED READILY WITH POINT OF PICK.							
	FOS FOSSILIFEROUS SLI SLIDHTLY RS - ROCK FRAC FRACTURED, FRACTURES TCR - TRICONE REFUSAL RT - RECOMPACTED TRIAXIAL	SOFT OR MORE IN THICKNESS CAN BE BROKEN BY FINGER PRESSURE. CAN BE SCRATCH FINGERNAIL.							
RANGE - WET - (W) ATTAIN OPTIMUM MOISTURE	FRAGS FRAGMENTS W - MOISTURE CONTENT CBR - CALIFORNIA BEARING HI HIGHLY V - VERY RATIO	FRACTURE SPACING BEDDING							
OM _ OPTIMUM MOISTURE - MOIST - (M) SOLID: AT OR NEAR OPTIMUM MOISTURE	EQUIPMENT USED ON SUBJECT PROJECT DRILL UNITS: ADVANCING TOOLS: HAMMER TYPE:	LEMM STRUM LEMM VERY WIDE MORE THAN 10 FEET VERY WIDE WIDE MORE 3 TO 10 FEET THICKLY BEDDED MOREPATELY CLOSE 1 TO 3 FEET THINK SEDDED 0							
SL SHRINKAGE LIMIT	CME-45C CLAY BITS X AUTOMATIC MANUAL	CLOSE 0.16 TO 1 FOOT VERY THINLY BEDDED 0.0 VERY CLOSE LESS THAN 0.16 FFFT THICKLY LAMINATED 0.00							
- UKT - (U) ATTAIN OPTIMUM MOISTURE	CME-55 CONTINUOUS FLIGHT AUGER CORE SIZE:	THINLY LAMINATED <							
PLASTICITY		INDUKATION IS THE HADDENING OF MATERIAL BY COMPATING UP							
PLASTICITY_INDEX_(P)) DRY_STRENGTH NON_PLASTIC 0-5 VERY_LOW SLIGHTLY_PLASTIC 6-15 STICHT		FRIABLE RUBBING WITH FINCER FREES NUMEROUS GRAINS, FRIABLE GENTLE BLOW BY HAMMER DISINTEGRATES SAMPLE.							
MODERATELY PLASTIC 16-25 MEDIUM HIGHLY PLASTIC 26 OR MORE HIGH	PORTABLE HOIST CASING W/ ADVANCER POST HOLE DIGGER TRICONE STEEL TEETH HAND AUGER	MODERATELY INDURATED GRAINS CAN BE SEPARATED FROM SAMPLE WITH ST BREAKS EASILY WHEN HIT WITH HAMMER.							
COLOR		INDURATED GRAINS ARE DIFFICULT TO SEPARATE WITH STEEL DIFFICULT TO BREAK WITH HAMMER.							
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.	│	EXTREMELY INDURATED SHAPP HAMMER BLOWS REQUIRED TO BREAK SAMPLE SAMPLE BREAKS ACROSS GRAINS.							

TOWN OF HOLLY SPRINGS PROJECT NO.



	TERMS AND DEFINITIONS
ED. AN INFERRED	ALLUVIUM (ALLUV.) - SOILS THAT HAVE BEEN TRANSPORTED BY WATER.
1 FOOT PER 60	AQUIFER - A WATER BEARING FORMATION OR STRATA.
15 OF TEN	ARENACEOUS - APPLIED TO ROCKS THAT HAVE BEEN DERIVED FROM SAND OR THAT CONTAIN SAND.
T N VALUES >	A NOTABLE PROPORTION OF CLAY IN THEIR COMPOSITION, SUCH AS SHALE, SLATE, ETC.
OCK THAT ICLUDES GRANITE,	ANTESIAN - ONUND 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.
AL PLAIN IF TESTED.	<u>CALCAREOUS (CALC.)</u> - SOILS THAT CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE. COLLUVIUM - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM
C. MAY NOT YIELD	OF SLOPE.
STONE, CEMENTED	BY TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE.
RINGS UNDER	ROCKS OR CUTS MASSIVE ROCK.
DATINGS IE OPEN	<u>DIP</u> - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE HORIZONTAL.
AMMER BLOWS IF	<u>DIP DIRECTION (DIP AZIMUTH)</u> - THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF THE LINE OF DIP, MEASURED CLOCKWISE FROM NORTH.
ick up to Il Feldspar	FAULT - A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE.
R BLOWS.	FISSILE - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES.
S. IN AY. ROCK HAS	<u>FLOAT</u> - ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLODGED FROM PARENT MATERIAL.
1 AS COMPARED	FLOOD PLAIN (FP) - LAND BORDERING A STREAM, BUILT OF SEDIMENTS DEPOSITED BY THE STREAM.
FELDSPARS DULL OSS OF STRENGTH	FIELD.
WHEN STRUCK.	JUINI - FRACIONE IN ROLK ALONG WHICH NO APPRECIABLE MOVEMENT HAS OCCURRED. LEDGE - A SHELF-LIKE RIDGE OR PROJECTION OF ROCK WHOSE THICKNESS IS SMALL COMPARED TO
VIDENT BUT ARE KAOLINIZED	TTS LATERAL EXTENT.
	MOTILE (MOT.) - IRREGULARLY MARKED WITH SPOTS OF DIFFERENT COLORS. MOTILING IN SOILS
RE DISCERNIBLE F STRONG ROCK	<u>PERCHED WATER - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE</u>
ONLY MINOR ALUES < 100 BPF	OF AN INTERVENING IMPERVIOUS STRATUM. R <u>ESIDUAL (RES.)SOIL</u> - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK.
IN SMALL AND 5. SAPROLITE IS	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. <u>SAPROLITE (SAP.)</u> - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT
S REQUIRES	ROCK.
LOWS REQUIRED	THE MAINTENENT BOOT INTEGED WITH ITS LATERAL EXTENT, THAT HAS BEEN EMPLACED PARALLEL TO THE BEDDING OR SCHISTOSITY OF THE INTRUDED ROCKS.
EEP CAN BE ETACHED	<u>SLICKENSIDE</u> - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT OR SLIP PLANE.
DR PICK POINT. BLOWS OF THE	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 I 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.
FRAGMENTS	STRATA CORE RECOVERY (SREC.) - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE.
PIECES 1 INCH HED READILY BY	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.
THICKNESS	BENCH MARK:ELEVATIONS TAKEN FROM 12513_Is_tnl.tin
4 FEET	ELEVATION: FEET
16 - 1.5 FEET	NOTES:
0.008 FEET	FIAD - FILLED IMMEDIATELY AFTER DRILLING
AT, PRESSURE, ETC.	
EEL PROBE:	
PROBE:	



(F) RESIDUAL: BROWN TAI G RESIDUAL: TAN AND L	BROWN, MOIST. T.O. WET, LOOSE. T.O. MED.	DENSE, SILTY . SAND . (A-2-4	9	
(F) RESIDUAL: BROWN I A	RROWN MOIST TO WET LOOSE TO MED	DENSE SILTY SAND (A-2-A		
	(1: BROWN AND TAN, MOIST, LOOSE TO L	UENSE.SILTY_SAND (A-2-4) FF.SANDY_SILT_AND_SANDY	YWILH_LERACE_GRAVEL.MIC ′CLAY (A-4,A-6)	A AND COBBLES
AROADWAY EMBANKMEN	VT:TAN BROWN GRAY AND RED, MIOST, I	HARD TO STIFF, SANDY CLA	Y (A-6) WITH TRACE GRAV	/EL
			FIAD @	BT FIAD
			© ₍₇ BT	
	· · · · · · · · · · · · · · · · · · ·	© ^(b) BT FIAD		<u> </u>
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······	II' É T			
		W601_2 9' L T	₩60I_3 I51 LT	3l' LT
				W60I_4
			W60L1 W60L2 YET YET IVENT YET IVENT YET IVENT IVENT IVENT	W60L1 W60L2 W60L3 I'r LT 3' LT I'r LT I'r LT 9' LT I'r LT I'r LT 9' LT I'r LT I'r LT 0 0 I'r LT 0

50	100	PROJECT REFERENCE NO.	SHEET NO.
FEET		I-2513AA RETAINING WALL NO W	4 501 FROM
VE = 4		-Y5RPA- STA. 22+00.00, 25.3 -Y5RPA- STA. 26+60.00, 2	50'LT TO 5.50'LT
			2,170
, , , , ,			2,165
			2,160
			2,155
, , , , ,			2,150
			2,145
			2,140
, , , ,			2,135
	· · · · · · · · · · · · · · · · · · ·		2,130
			2,125
			2,120
	We	501_5	2,115
		4' RT	2,110
) 			2,105
	() 		2,100
			2,095
)			2,090
	6 5-	-623	2,085
	NOTES		2,080
	PLANS A FILES RE	- NDOPTED FROM ELECTRONIC ECEIVED FROM DATED APRII 2022	2,075
		ED STRATIGRAPHY IS DRAWN	2,070
	PROJEC	TED ONTO THE PROFILE.	2,065
			2,060
		5100	
	1	00+0	

GEOTECHNICAL BORING REPORT BORE LOG

WB	3 34165	5.1.2			TIF	1 -2513	AA	COL	JNTY E	BUNCON	/IBE			GEOL	OGIST (Goodnight	, D.J.			WBS	34165	5.1.2			TIP	1-2513	BAA	C	OUNTY	BUNCON	/IBE			GEOLO	GIST Go	odnight, D.	•	
SIT	DESCR	IPTION	RETA		WALL	NO. W60	01, FROM	1 -Y5RF	PA- STA	. 22+00.	00, 25.5	0' LT 1	O -Y5	RPA- ST	A. 26+60	.00, 25.50)' LT	GROUND W	TR (ft)	SITE	DESCR	RIPTION	RETA	INING	WALL	. NO. W6	601, FR	OM -Y5	RPA- S	TA. 22+00.	00, 25.50	' LT T(O -Y5	RPA- STA	. 26+60.00), 25.50' LT	GROUNE	OWTR (ft)
BOF	Ring No.	W601	_1		ST	ATION 2	2+55		OF	FSET	36 ft LT			ALIGN	IMENT -	Y5RPA-		0 HR.	Dry	BORI	NG NO.	W601	l_2		ST	ATION :	23+54			OFFSET	35 ft LT			ALIGNN	IENT -YS	RPA-	0 HR.	Dry
COL	LAR ELI	EV. 2,1	26.4 ft	t	то	TAL DEP	TH 20.0	ft	NC	ORTHING	6 78,2	257		EAST	NG 918	,795	2	24 HR.	FIAD	COLL	LAR ELI	EV. 2, ²	128.6 ft		ТО	TAL DEF	PTH 30).0 ft		NORTHING	678,27	75		EASTIN	G 918,69	7	24 HR.	FIAD
DRIL	L RIG/HAN	MMER EFF	./DATE	CG2	0446 Die	edrich D50 8	7% 05/10/2	022			DRILL	METHO	D H.S.	Augers			HAMMER	R TYPE Autor	natic	DRILL	RIG/HAN	MMER EF	F./DATE	CG20	446 Die	drich D50	87% 05/1	0/2022			DRILL M	ETHOD	D H.S.	. Augers		HAN	MER TYPE	Automatic
DRI	LER O	dom, C.			ST		E 10/19/	/22	CC	omp. Da	TE 10	/19/22		SURF	ACE WAT	ER DEP	TH N/A			DRIL	LER O	dom, C			ST	ART DAT	FE 10/	19/22		COMP. DA	TE 10/1	9/22		SURFAC	CE WATE	R DEPTH	N/A	
ELE\	DRIVE		BLO			0	BLOWS	S PER F	OOT	100	SAMP	. V			SOIL	AND ROC	K DESCI	RIPTION		ELEV	DRIVE ELEV	DEPTH	BLOV		NT		BLO	WS PEF	R FOOT	7E 400	SAMP.				SOIL AN	ID ROCK DI	SCRIPTION	
(11)	(ft)	(11)	0.5π	0.5π	0.5π	0	25	50	/5	100	NO.	/мо	I G	ELEV. (ft	<u>(</u>			D	EPTH (ft)	(11)	(ft)	(11)	0.5π	0.5π	0.5ft	0	25	50		5 100	NO.	/MOI	G					
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		ΕI											ΙE	2 126 4				°E	0.0			Ī				· · •								2,127.5		ASPHAL		1.1
2125		E												2,120.4		ASF	PHALT		1.2	2125	2,125.1	I 3.5				· · · ·		-							AGGR ROA	EGATE BAS	E COURSE	
	2.122.9	3.5													RC BROW	DADWAY E N, LOOSE	TO DEN	MENT ISE, SILTY			2 122 6	I co	5	7	7	• 14	ι <u>·</u>					М	L		BROWN A DENSE, 3	ND TAN, LO SILTY SAND	OSE TO MED (A-2-4) WITH). I
	-		20	26	19		· · · ·	45				М			SAND (A-2	2-4) WITH M	LITTLE (IICA	GRAVEL AND			2,122.0	1 0.0	5	9	7	: :) 1	6					М	ĿĿ		TRA	CE TO LITT	LE MICA	
2120	2,120.4	0.0	5	3	4							м		-						2120	_2,120.1_	8.5	2	2	4	6						м	LL	<u> </u>				
	2,117.9	8.5	3	3	5	.l						М										ŧ				$\left \begin{array}{c} \tilde{1} \\ \cdot \\ \cdot \\ \cdot \\ \cdot \end{array} \right $							ĿĿ					
2115	-	Ł				• 1 ••••								_						2115	2,115.1	13.5		_	_	· <u>`</u> ·							LL	_				
	2.112.9	13.5				: : : :	· · ·														-	ŧ	4	5	<i>(</i>	• • 12		· · ·				М	LĿ					
	· ·	ŧ	3	3	4	•7		: : :				М										ŧ				· . .		:: :					LL					
2110		±					· · · ·							2,109.4					<u> </u>	2110	<u>2,110.1</u>	<u> 18.5</u> 	3	6	8	· · •	. µ					м	L	<u> </u>				
	2,107.9.	18.5	3	3	6		· · · ·					м		2 106 4	BROWN V	WITH TRA	CE GRA	VEL	20.0			ŧ						· · ·										
	-					V								-	Boring Ter	rminated a	t Elevatio	n 2,106.4 ft in	20.0	2105	2,105.1	23.5	5	5										_				
		‡														·	(/(0)					ŧ		5	5	· • 10	· · · ·	· · ·	· · · ·			М						
		‡																		2100		‡						:: :						2,101.6		RESIDUA		<u> </u>
		ŧ												-						2100	_2,100.1_	<u> 28.5</u> -	5	7	8	· · •	 5					М	-	– T. 2,098.6 (AN-BROW A-2-4) SAP	N, MED. DEN ROLITIC WI	ISE, SILTY SA TH LITTLE MI	AND CA <u>30.0</u>
		‡																			-	ŧ											Ē	B	oring Term	nated at Ele	vation 2,098.6	ft in
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GEOTECHNICAL BORING REPORT BORE LOG

WB	3 34165	5.1.2			Т	IP 1-2513	AA	COUNT	Y BUNCO	MBE			G	Goodnight, D.J.			WBS	34165	.1.2			TIF	• 1-2513A	A	COUNTY
SITE	DESCR	IPTION	RET	AININ	G WAI	LL NO. W6	01, FROM	-Y5RPA-	STA. 22+00	.00, 25.5	0' LT 1	ГО - Ү	/5RP/	PA- STA. 26+60.00, 25.50' LT	GROUND	WTR (ft)	SITE	DESCR	IPTION	RETA	AINING	G WAL	L NO. W60	1, FROM -	-Y5RPA- S
BOF	NG NO.	W601	_3		S	TATION 2	24+51		OFFSET	40 ft LT			A	LIGNMENT -Y5RPA-	0 HR.	Dry	BOR	ing no.	W601	1_4		ST	ATION 25	5+40	
COL	LAR EL	EV. 2, ⁻	130.6 f	ť	Т	OTAL DEP	TH 40.51	ť	NORTHIN	G 678,2	292		E	ASTING 918,597	24 HR.	FIAD	COL	LAR ELE	EV. 2,	132.0 ft	t	тс	TAL DEPT	H 45.0 ft	t l
DRIL	L RIG/HAN	MMER EF	F./DATE	E CG2	20446 C	Diedrich D50 8	37% 05/10/20	22		DRILL	METHO	DD H	I.S. Au	ugers HAM	MER TYPE AU	utomatic	DRILI	. RIG/HAM	IMER EF	F./DATE	CG2	0446 Di	edrich D50 87	% 05/10/202	22
DRI	LER C	dom, C			S	TART DAT	E 10/21/2	22	COMP. DA	ATE 10/	/21/22		S	SURFACE WATER DEPTH	I/A		DRIL	LER O	dom, C	-		ST	ART DATE	10/19/2	2
ELE\	DRIVE	DEPTH	BLO	w co	UNT		BLOWS	PER FOO	Г	SAMP	. ▼/		SOIL AND ROCK DESCRIPTION				ELEV	DRIVE ELEV	DEPTH	BLO	w col	JNT		BLOWS F	PER FOOT
(π)	(ft)	(π)	0.5ft	0.5ft	0.5ft	0	25	50	75 100) NO.	Имо	I G	ELE	EV. (ft)		DEPTH (ft)	(π)	(ft)	(π)	0.5ft	0.5ft	0.5ft	0 2	:5 5	50 7
2135		Ļ											F				2135		Ļ						
		ŧ											F					-	t t						
2130		<u> </u>											2,1	GROUND SURI	FACE	0.0	2130	-					<u> </u>		· · · · ·
2100	-	ŧ					· · ·							129.2 ASPHALT ROADWAY EMBAN		1.4	2100	2,128.5	- 3.5				!		· · · · ·
	2,126.6	4.0											-	BROWN, MEDIUM DENS	SE TO DENSE	.,)		-		5	6	14			
2125	2,124.6	6.0	14	11	19		Q 30				M		-	SOME GRAVEL & COBBL	ES AND TRAC	CE	2125	2,120.0	- 0.0	8	9	9	18	,	
		ŧ	15	22	16		•38				M			TO LITTLE M	ICA			2,123.5	8.5	2	2	3			· · · · ·
2120	2,121.6	+ 9.0 +	7	8	9		7				м		-				2120	-	+				· · · · ·		
2120	-	ŧ					· · · · ·						-				2120	2.118.5	- 13.5						
	2,116.6	+ + 14.0					N											-	-	100/0.2					· · · · ·
2115	´ -	ŧ	19	18	15		33				M		-				2115		÷					· · · ·	
		ŧ					<i>[i</i> : : : :											2,113.5	18.5	10	13	17		· · · ·	
2110	2,111.6	+ 19.0 +	5	8	15		22				М		-				2110	-	ł						
2110	-	ŧ								-11			-				2110	2 108 5	23.5				· · · · /		
	2.106.6	24.0]	: : : :											-	-	7	6	11	• • 17		
2105	´ -	ŧ	5	8	14		22				M		-				2105		÷					· · · ·	· · · ·
		ŧ																2,103.5	28.5	3	7	10			
2100	2,101.6	29.0	7	13	19		h · · · ·				М		2,1			29.5	2100	-	+				:: <i>i</i> ''		
2100	-	ŧ					/			-				HARD, SANDY CL	AY (A-6)		2100	2.098.5	33.5				· · · / · ·		
	2,096.6	- 34.0					/ · · · · ·											-	-	5	5	5	<u></u>		· · · · ·
2095		ŧ	4	5	8	13				41	M						2095		+						+ • • • •
		ŧ				· · · · ·			· · · · · ·				<u>2,0</u>	193.6 RESIDUAL		<u> </u>		2,093.5	38.5	3	4	8			· · · · ·
	2,091.6	+ 39.0 +	7	8	9	:::i	7				М		- 20	TAN-BROWN, MED. DENS (A-2-4) WITH TRA	SE, SILTY SAN CE MICA	ND 40.5	2000	-	ł				· / · ·		
		ŧ				_ ↓ •	,			-		• • • •	<u> </u>	Boring Terminated at Eleva	ation 2,090.1 ft	in	2030	2.088.5	43.5				·····		
		ŧ											F	RESIDUAL. (A	-2-4)				-	2	2	3	♦ 5		· · · ·
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BUNCOMBE		GEOLOGIST	Goodnight, D.J.	-
TA. 22+00.00, 25.50'	LT TO -Y5	RPA- STA. 26+6	60.00, 25.50' LT	GROUND WTR (ft)
OFFSET 57 ft LT		ALIGNMENT	0 HR. Drv	
NORTHING 678 30	8		8 503	
	HOD H.S	Augers		EKITPE Automatic
COMP. DATE 10/1	9/22	SURFACE WA	ATER DEPTH N//	4
75 100 NO.	MOI G	SO	IL AND ROCK DESC	CRIPTION
	M L L L L L L L L L L L L L L L L L L L	- 2,132.0 2,130.9 2.130.7 TAN / DEN TRACE - -	GROUND SURF/ ASPHALT GGREGATE BASE (ROADWAY EMBANI AND BROWN, LOOS SE, SILTY SAND (A MICA AND CONCF TRACE TO LITTLE	ACE 0.0 1.1 COURSE 1.3 (MENT SE TO MED. -2-4) WITH RETE DEBRIS E GRAVEL
		- 2,095.0 GRA ¹ 2,090.0 TAN-BF	RESIDUAL Y AND BROWN, ST CLAY (A-6) ROWN, MED. STIFF	37.0 IFF, SANDY 42.0 SANDY SILT
	M	2,087.0 Boring T - - -	(A-4) WITH LITTLE erminated at Elevati RESIDUAL: (A-	1 MICA 45.0 on 2,087.0 ft in 4)

GEOTECHNICAL BORING REPORT BORE LOG

WBS	34165	.1.2			Т	IP 1-	2513A	A	COUNT	Y BU	NCON	/IBE			GEOLOGIST Goodnigh	it, D.J.									
SITE	DESCR	IPTION	RET	AININ	G WAI	LL NO	. W60	1, FROM	I -Y5RPA-	STA. 2	2+00.0	00, 25.50)' LT 1	TO -Y	5RPA- STA. 26+60.00, 25.5	0' LT	GROU	ND WTR (ft)							
BOR	ing no.	W601	5		S	ΤΑΤΙΟ	DN 26	6+56		OFF	SET	11 ft LT			ALIGNMENT -Y5RPA-		0 HR.	Dry							
COL	LAR ELE	EV. 2,		ft	т	OTAL	DEPT	H 20.0	ft	NOR	THING	678,4	04		EASTING 918,415		24 HR.	FIAD							
DRILI	RIG/HAM	IMER EF	F./DATI	E CG2	24113 0	CME-55	0X 74%	6 04/08/202	22	1			IETHO	DD H.	S. Augers	НАММ	LER TYPE	Automatic							
DRIL	LER 0	dom, C			s	TART	DATE	10/06/	22	СОМ	IP. DA	TE 10/0	06/22		SURFACE WATER DEP	TH N/	A								
FI FV	DRIVE	DEPTH	BLC	w co	UNT	П		BLOWS	PER FOO	T		SAMP.													
(ft)	ELEV (ft)	(ft)	0.5ft	0.5ft	0.5ft	0	2	25	50	75	100	NO.	Имо	0 I G	SOIL AND RO	CK DES	CRIPTION	N DEPTH (ft)							
								•																	
2110																									
	-	F																							
	-					11	_	1							2,106.8 GROUN			0.0							
2105	2,105.8-	- 1.0	3	4	8	1					· · ·		м		BROWN, LOOSE T	O MED.	DENSE, S	SILTY							
	2,103.3	3.5	2	2	2	12				.			м		- SAND (A-2-4) WI	IHIRA	CE GRAV	/EL							
2100	2,100.8-	6.0				╡╵╼╵				.					<u>2,101.3</u> BROWN AND G	RAY. ST	IFF. SAN	DY							
2100	2 008 3	85	4	4	8		•12 •						M		2,098.8 CLAY (A-6) WIT	HTRAC	CE GRAVE	EL8.0							
	-2,030.0		3	3	3	•	 3			.			м		TAN, MED. STIFF	SIDUAL ^E , SAND	Y CLAY (A	\ -6)							
2095		L.								· · ·					2,094.8			<u>12.0</u>							
	2,093.3	13.5	2	2	2	4 į	· · ·			.					TAN, LOOSE, S	SILTY SA	AND (A-2-4	4)							
	-	Ł		2	2	• 4 •				.					-										
2090	-	<u> </u>				 i									-										
	2,088.3	18.5 [2	2	3					.			w		2,086.8			20.0							
	-	E													Boring Terminated a	at Elevat	ion 2,086. 2-4)	8 ft in							
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STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION **DIVISION OF HIGHWAYS CONTENTS GEOTECHNICAL ENGINEERING UNIT** SHEET NO. **DESCRIPTION** $\overline{\mathbf{v}}$ TITLE SHEET **STRUCTURE** 2513A LEGENDS 2 SITE PLAN SUBSURFACE INVESTIGATION PROFILE BORE LOGS 5 COUNTY BUNCOMBE PROJECT DESCRIPTION <u>I-40 FROM</u> EAST OF SR 1224 h (MONTE VISTA RD) TO PAVEMENT JOINT WEST OF SR 3412 (SAND HILL RD). INCLUDES INITIAL REFERENCE IMPROVEMENTS AT I-40EB TO I-26EB AT US 19/23 (SMOKEY PARK HIGHWAY) SITE DESCRIPTION <u>RETAINING</u> WALL NO. W602, FROM -Y5RPA- STATION 21+41.06, 17.63'LT TO -Y5RPA-STATION 23+83.03, 52.43' RT

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STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	I–2513AA	1	5

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 RALFICH BY CONTACTING THE N.C. DEPARTMENT OF TRANSPORTATION, GEOTECHNICAL ENCINEERING UNIT AT (1991) 707-8650. 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 BORNICS OR BETWEEN SAMPLED STRATA WITHIN THE BOREHOLE. THE LABORATORY SAMPLE DATA AND THE IN SITU UN-FLACED TEST DATA CAN BE RELIED ON ONLY TO THE DEGREE OF RELIABILITY INHERENT IN THE STANDARD TEST METHOD. THE ONSERVED WATER LEVELS OR SOL MOISTURE CONDITIONS MOLATED IN THE SUBSURFACE RELIVESTIGATIONS AND REAS RECORDED AT THE TIME OF THE INVESTIGATION. THES WATER LEVELS OR SOL MOISTURE CONDITIONS MAY LARY CONSIDERABLY WITH THE ACCORDING TO CLIMATIC CONDITIONS NICLUDING TEMPERATURES, PRECIPITATION AND WIND, AS WELL AS OTHER NON-CLIMATIC FACTORS.

THE BIDDER OF 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 WARANT OR GUARANTEE THE SUFFICIENCY OR ACCURACY OF THE INVESTIGATION MADE, NOR THE INTERPRETATIONS MADE, OR OPHION OF THE DEPARTMENT AS TO THE TYPE OF MATERIALS AND CONDITIONS TO BE ENCOUNTERED. THE BIDDER OR CONTRACTOR IS CAUTIONED TO MAKE SUCH INDEPENDENT SUBSURFACE INVESTIGATION AS HE DEEMS NECESSARY TO SATISY HIMSELF AS TO CONDITIONS TO BE ENCOUNTERED ON THE PROJECT. THE CONTRACTOR SHALL HAVE NO CLAIM FOR ADDITIONAL COMPENSATION OF FOR AN EXTENSION OF TIME FOR ANY REASON RESULTING FROM THE ACTUAL CONDENTIONS OF CONTANT THE SIDE DIFFERING FROM THOSE INDICATED IN THE SUBSURFACE INFORMATION.

- NOTES: I. 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. 2.

PERSONNEL	
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_	CG2
_	GOODNIGHT, D.J.
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-	EALCON ENC
INVESTIGATED B	Y FALCON ENG.
DRAWN BY	ROCKETT, S.C.
CHECKED BY	HUNSBERGER, W.S.
	FALCON ENG
SORWILLED BY .	THEORY ENG.
DATE SEPT	EMBER 2023



SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

SOIL DESCRIPTION	GRADATION	ROCK DESCRIPTION
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 I 206, ASTM D1586). SOIL CLASSIFICATION IS BASED ON THE AASHTO SYSTEM, BASIC DESCRIPTIONS GENERALLY INCLUDE THE FOLLOWING:	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 TESTE ROCK LINE INDICATES THE LEVEL AT WHICH NON-COASTAL PLAIN MATERIAL WOULD YIELD SPT REFUSAL IS PERETRATION BY A SPLIT SPON SAMPLER EQUAL TO OR LESS THAN 0.1 BLOWS IN NON-COASTAL PLAIN MATERIAL. THE TRANSITION BETWEEN SOIL AND ROCK
CONSISTENCY, COLOR, TEXTURE, MOISTURE, AASHTO CLASSIFICATION, AND OTHER PERTINENT FACTORS SUCH AS MINERALOGICAL COMPOSITION, ANGULARITY, STRUCTURE, PLASTICITY, ETC. FOR EXAMPLE,	ANGULARITY OF GRAINS	REPRESENTED BY A ZONE OF WEATHERED ROCK. ROCK MATERIALS ARE TYPICALLY DIVIDED AS FOLLOWS:
VERY STIFF, GRAY, SILTY CLAY, MOIST WITH INTERBEDDED FINE SAND LAYERS, HIGHLY PLASTIC, A-7-6	ANGULAR, SUBANGULAR, SUBROUNDED, OR ROUNDED.	WEATHERED NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT
GENERAL GRANULAR MATERIALS SILT-CLAY MATERIALS OPCOMIC MATERIALS	MINERALOGICAL COMPOSITION	CRYSTALLINE FINE TO COARSE GRAIN IGNEOUS AND METAMORPHIC RO
CLASS. (≤ 35% PASSING *200) (> 35% PASSING *200)	MINERAL NAMES SUCH AS OUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC. ARE USED IN DESCRIPTIONS WHEN THEY ARE CONSIDERED OF SIGNIFICANCE.	ROCK (CR) WOULD YIELD SPT REFUSAL IF TESTED. ROCK TYPE IN
CLASS. A-1-6 A-1-6 A-2-4 A-2-5 A-2-6 A-2-7 A-3 A-6 A-7	COMPRESSIBILITY	NON-CRYSTALLINE FINE TO COARSE GRAIN METAMORPHIC AND NON-COASTA
SYMBOL BOOCDOODCO	SLIGHTLY COMPRESSIBLE LL < 31 MODERATELY COMPRESSIBLE LL = 31 - 50	COASTAL PLAIN COASTAL PLAIN SEDIMENTS CEMENTED INTO ROCK. BUT
Z PASSING		SEDIMENTARY ROCK SPT REFUSAL. ROCK TYPE INCLUDES LIMESTONE, SANDS (CP) SHELL BEDS, ETC.
*40 30 MX 50 MX 51 MN 50 LS SOILS SOILS SOILS SOILS SOILS		WEATHERING
Court 13 Fra 23 Fra 33 Fra 33 Fra 33 Fra 35 Fra 36 Fra 36 Fra 36 Fra 35 Fra 36 37 37 37 36 37 36 37	UHGANIC MATERIAL <u>SUILS</u> <u>UTHER MATERIAL</u> TRACE OF ORGANIC MATTER 2 - 3% 3 - 5% TRACE 1 - 10% LITTLE ORGANIC MATTER 3 - 5% 5 - 12% LITTLE 10 - 20% MODERATELY ORGANIC 5 - 10% 12 - 20% SOME 20 - 35%	FRESH ROCK FRESH, CRYSTALS BRIGHT, FEW JOINTS MAY SHOW SLIGHT STAINING, ROCK HAMMER IF CRYSTALLINE. VERY SLIGHT ROCK GENERALLY FRESH, JOINTS STAINED, SOME JOINTS MAY SHOW THIN CLAY CR
PI 6 MX NP 18 MX 11 MN 11 MN 18 MX 11 MN 11 MN 18 MX 11 MN 11 MN MODERATE ORGANIC	HIGHLY ORGANIC > 10% > 20% HIGHLY 35% AND ABOVE	OF A CRYSTALLINE NATURE.
LHOUTINDEX 0 0 0 0 4 MX 8 MX 12 MX 16 MX NU MX ANDUNIS UP USUAL TYPES STOME FRAGS. FINE SILTY OR CLAYEY SILTY CLAYEY MATTER DF MAJOR GRAVEL AND SAND (FRAVE) AND SAND SOLIS SOLIS	WATER LEVEL IN BORE HOLE IMMEDIATELY AFTER DRILLING	SLIGHT ROCK GENERALLY FRESH, JOINTS STAINED AND DISCOLORATION EXTENDS INTO ROC (SLL) I INCH. OPEN JOINTS MAY CONTAIN CLAY. IN GRANITOID ROCKS SOME OCCASIONAL CRYSTALS ARE DULL AND DISCOLORED. CRYSTALLINE ROCKS RING UNDER HAMMER
MATERIALS SAND CHE CHECK CONTROL NO CHECK CONTROL CONT	∇PW PERCHED WATER, SATURATED ZONE, OR WATER BEARING STRATA	MODERATE SIGNIFICANT PORTIONS OF ROCK SHOW DISCOLORATION AND WEATHERING EFFECTS (MOD.) GRANITOID ROCKS, MOST FELDSPARS ARE DULL AND DISCOLORED, SOME SHOW CLA
AS SUBGRADE EXCELLENT TO COOD FAIR TO POOR POOR ONSULTABLE	O→MG SPRING OR SEEP	DULL SOUND UNDER HAMMER BLOWS AND SHOWS SIGNIFICANT LOSS OF STRENGTH WITH FRESH ROCK.
	MISCELLANEOUS SYMBOLS	MODERATELY ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. IN GRANITOID ROCKS, ALL F SEVERE AND DISCOLORED AND A MAJORITY SHOW KAOLINIZATION. ROCK SHOWS SEVERE LI
PRIMARY SDIL TYPE COMPACTNESS OR RANGE OF STANDARD RANGE OF UNCONFINED		(MOD. SEV.) AND CAN BE EXCAVATED WITH A GEOLOGIST'S PICK. ROCK GIVES "CLUNK" SOUND V IF TESTED, WOULD YIELD SPT REFUSAL
CONSISTENCY (N-VALUE) (TONS/FT ²) GENERALLY VERY LOOSE < 4	↓ WITH SOIL DESCRIPTION → OF ROCK STRUCTURES ↓ SOIL SYMBOL ● SOIL SYMBOL ● ↓ SOIL SYMBOL ● SOIL SYMBOL ●	SEVERE ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC CLEAR AND E (SEV.) REDUCED IN STRENGTH TO STRONG SOIL. IN GRANITOID ROCKS ALL FELDSPARS A TO SOME EXTENT. SOME FRAGMENTS OF STRONG ROCK USUALLY REMAIN.
ORANOLAR MEDIUM DENSE 10 TO 30 N/A MATERIAL DENSE 30 TO 50 (NON-COHESIVE) VERY DENSE >50	ARTIFICIAL FILL (AF) OTHER THAN ROADWAY EMBANKMENT AUGER BORING CONE PENETROMETER TEST	IF TESTED, WOULD YIELD SPT N VALUES > 100 BPF VERY ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC ELEMENTS AR SEVERE BUT MASS IS EFFECTIVELY REDUCED TO SOIL STATUS, WITH ONLY FRAGMENTS OF
VERY SOFT < 2 < 0.25 GENERALLY SOFT 2 T0 4 0.25 T0 0.5 SILT-CLAY MEDIUM STIFF 4 T0 8 0.5 T0 1.0	INFERRED SOIL BOUNDARY	(V SEV.) REMAINING, SAPROLITE IS AN EXAMPLE OF ROCK WEATHERED TO A DECREE THAT VESTIGES OF ORGINAL ROCK FABRIC REMAIN. I <u>F TESTED, WOULD YIELD SPT N Y</u> COMPLETE ROCK REDUCED TO SOIL. ROCK FABRIC NOT DISCERNIBLE, OR DISCERNIBLE ONLY
MALEXIAL STIFF 8 10 15 1 10 2 (COHESIVE) VERY STIFF 15 T0 30 2 T0 4 HAPD 2 30 2 4	TTTTT ALLUVIAL SOIL BOUNDARY A PIEZOMETER - SPT N-VALUE	SCATTERED CONCENTRATIONS. QUARTZ MAY BE PRESENT AS DIKES OR STRINGERS ALSO AN EXAMPLE.
TEXTURE OR GRAIN SIZE	RECOMMENDATION SYMBOLS	ROCK HARDNESS
U.S. STD. SIEVE SIZE 4 10 40 60 200 270		VERY HARD CANNOT BE SCRATCHED BY KNIFE OR SHARP PICK. BREAKING OF HAND SPECIMENS SEVERAL HARD BLOWS OF THE GEOLOGIST'S PICK.
OPENING (MM) 4.76 2.00 0.42 0.25 0.075 0.053 BOULDER COBBLE GRAVEL COARSE FINE SILT CLAY	SHALLOW UNCLASSIFIED EXCAVATION - UNDERCUT UNCLASSIFIED EXCAVATION - ACCEPTABLE DEGRADABLE ROCK USED IN THE TOP 3 FEET OF EMBANKMENT OR BACKFILL	HARD CAN BE SCRATCHED BY KNIFE OR PICK ONLY WITH DIFFICULTY. HARD HAMMER BI TO DETACH HAND SPECIMEN.
(BLDR.) (COB.) (GR.) (CSE. SD.) (F SD.) (SL.) (CL.) GRAIN MM 305 75 2.0 0.25 0.05 0.005	ABBREVIATIONS AR - AUGER REFUSAL MED MEDIUM VST - VANE SHEAR TEST	HARD EXCAVETE BY HARD BLOW OF A GEOLOGIST'S PICK, HAND SPECIMENS CAN BE DI BY MODERATE BLOWS.
SIZE IN. 12 3 SOIL MOISTURE - CORRELATION OF TERMS	BT - BORING TERMINATED MICA MICACECOUS WEA WEATHERED CL CLAY MOD MODERATELY γ - UNIT WEIGHT CPT - CONE PENETRATION TEST NP - NON PLASTIC χ - DRY UNIT WEIGHT	MEDIUM CAN BE GROOVED OR GOUGED 0.05 INCHES DEEP BY FIRM PRESSURE OF KNIFE O HARD CAN BE EXCAVATED IN SMALL CHIPS TO PEICES 1 INCH MAXIMUM SIZE BY HARD POINT OF A GEOLOGIST'S PICK.
SOIL MOISTURE SCALE FIELD MOISTURE (ATTERBERG LIMITS) FIELD MOISTURE DESCRIPTION UNDESCRIPTION	CSE COARSE ORG ORGANIC DMT - DILATOMETER TEST PMT - PRESSURMETER TEST <u>SAMPLE ABBREVIATIONS</u> DPT - DVNAMIC PENETRATION TEST SAP. SAPROLITIC S - BULK	SOFT CAN BE GROVED OR GOUGED READILY BY KNIFE OR PICK. CAN BE EXCAVATED IN FROM CHIPS TO SEVERAL INCHES IN SIZE BY MODERATE BLOWS OF A PICK POIN PIECES CAN BE BROKEN BY FINGER PRESSURE.
- SATURATED - USUALLY LIQUID: VERY WET, USUALLY (SAT.) FROM BELOW THE GROUND WATER TABLE	e - VOID RATIO SD SAND, SANDY SS - SPLIT SPOON F - FINE SL SIL T, SILTY ST - SHELBY TUBE FOSS FOSSILIFEROUS SLI SLIGHTLY RS - ROCK	VERY CAN BE CARVED WITH KNIFE. CAN BE EXCAVATED READILY WITH POINT OF PICK. SOFT OR MORE IN THICKNESS CAN BE BROKEN BY FINGER PRESSURE. CAN BE SCRATCH FINGERNALL.
RANGE - WET - (W) SEMISOLID; REQUIRES DRYING TO ATTAIN OPTIMUM MOISTURE	FRAC FRACTURED, FRACTURES TCR - TRICONE REFUSAL RT - RECOMPACTED TRIAXIAL FRAGS FRAGMENTS W - MOISTURE CONTENT CBR - CALIFORNIA BEARING	FRACTURE SPACING BEDDING
^{VET} PL L _ PLASTIC LIMIT		TERM SPACING TERM VERY WIDE MORE THAN 10 FEET VERY THICKLY BEDDED
OM OPTIMUM MOISTURE MOIST - (M) SOLID; AT OR NEAR OPTIMUM MOISTURE SL SHRINKAGE LIMIT	DRILL UNITS: ADVANCING TOOLS: HAMMER TYPE: CME-45C CLAY BITS IX AUTOMATIC MANUAL	WIDE 3 TO 10 FEET THICKLY BEDDED 1. MODERATELY CLOSE 1 TO 3 FEET THINLY BEDDED 0.1 CLOSE 0.16 TO 1 FOOT VERY THINLY BEDDED 0.1
- DRY - (D) REDUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE	6° CONTINUOUS FLIGHT AUGER	VERY CLOSE LESS THAN 0.16 FEET THICKLY LAMINATED 0.00 THINLY LAMINATED <
PLASTICITY	В ноцьом AUGERS П-Вн	INDURATION
NON PLASTIC PLASTICITY INDEX (PI) DRY STRENGTH	X CME-550X HARD FACED FINGER BITS	FOR SEDIMENTARY ROCKS, INDURATION IS THE HARDENING OF MATERIAL BY CEMENTING, HEI
NUN FLASTIC 6-15 VERY LUW SLIGHTLY PLASTIC 6-15 SLIGHT MODEPATELY PLASTIC 16-25 MEDDINA	VANE SHEAR TEST	FRIABLE GENTLE BLOW BY HAMMER DISINTEGRATES SAMPLE.
HIGHLY PLASTIC 26 OR MORE HIGH	PORTABLE HOIST	MODERATELY INDURATED GRAINS CAN BE SEPARATED FROM SAMPLE WITH ST BREAKS EASILY WHEN HIT WITH HAMMER.
		INDURATED GRAINS ARE DIFFICULT TO SEPARATE WITH STEEL DIFFICULT TO BREAK WITH HAMMER.
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.		EXTREMELY INDURATED SHARP HAMMER BLOWS REQUIRED TO BREAK SAMPLE SAMPLE BREAKS ACROSS GRAINS.

TOWN OF HOLLY SPRINGS PROJECT NO.



	TERMS AND DEFINITIONS
ED. AN INFERRED	ALLUVIUM (ALLUV.) - SOILS THAT HAVE BEEN TRANSPORTED BY WATER.
1 FOOT PER 60	AQUIFER - A WATER BEARING FORMATION OR STRATA.
13 01 1214	<u>ARENACEOUS</u> - APPLIED TO ROCKS THAT HAVE BEEN DERIVED FROM SAND OR THAT CONTAIN SAND. <u>ARGILLACEOUS</u> - APPLIED TO ALL ROCKS OR SUBSTANCES COMPOSED OF CLAY MINERALS, OR HAVING
T N VALUES >	A NOTABLE PROPORTION OF CLAY IN THEIR COMPOSITION, SUCH AS SHALE, SLATE, ETC. <u>ARTESIAN</u> - GROUND WATER THAT IS UNDER SUFFICIENT PRESSURE TO RISE ABOVE THE LEVEL AT
OCK THAT ICLUDES GRANITE,	WHICH IT IS ENCOUNTERED, BUT WHICH DOES NOT NECESSARILY RISE TO OR ABOVE THE GROUND SURFACE.
AL PLAIN IF TESTED.	CALCUAREDUS (CALCU) - SULS THAT CUNTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE. COLLUVIUM - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM
MAY NOT YIELD STONE, CEMENTED	OF SLOFE. <u>CORE RECOVERY (REC.)</u> - 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.
RINGS UNDER	$\underline{\text{DIP}}$ - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE HORIZONTAL.
OATINGS IF OPEN, AMMER BLOWS IF	DIP DIRECTION (DIP AZIMUTH) - THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF THE LINE OF DIP, MEASURED CLOCKWISE FROM NORTH.
ICK UP TO IL FELDSPAR	FAULT - A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE.
R BLOWS.	FISSILE - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES.
AY. ROCK HAS	FLOME - ROLE FRAMMENTS ON SOMPHIE MEAN THEIN UNIGHAAL PUSITION AND DISLODGED FROM PARENT MATERIAL. ELOND DIAIN (ED LAND DODREDING A STREAM DIHLT OF SEDIMENTS DEDOSITED BY THE STREAM
FELDSPARS DULL	FORMATION (FM.) - A MAPPABLE GEOLOGIC UNIT THAT CAN BE RECOGNIZED AND TRACED IN THE FIFID.
OSS OF STRENGTH WHEN STRUCK.	JOINT - FRACTURE IN ROCK ALONG WHICH NO APPRECIABLE MOVEMENT HAS OCCURRED.
VIDENT BUT	LEDGE - A SHELF-LIKE RIDGE OR PROJECTION OF ROCK WHOSE THICKNESS IS SMALL COMPARED TO ITS LATERAL EXTENT.
HRE KHOLINIZED	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
RE DISCERNIBLE F STRONG ROCK	USUALLY INDICATES POOR AERATION AND LACK OF GOOD DRAINAGE. <u>PERCHED WATER</u> - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE
f only minor /Alues < 100 BPF	OF AN INTERVENING IMPERVIOUS STRATUM. RESIDUAL (RES)SOTH - SOTH FORMED IN PLACE BY THE WEATHERING OF BOCK
IN SMALL AND 5. SAPROLITE IS	ROCK QUALITY DESIGNATION (ROD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SCHEMENTS EQUAL TO OR CREATER THAN A INFERS DIVIDED BY THE TOTAL LENGTH OF CORE
	RUN AND EXPRESSED AS A PERCENTAGE.
S REQUIRES	ROCK.
LOWS REQUIRED	<u>SILL</u> - 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.
EEP CAN BE ETACHED	<u>SLICKENSIDE</u> - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT OR SLIP PLANE.
DR PICK POINT. BLOWS OF THE	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 I 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.
FRAGMENTS IT. SMALL, THIN	<u>STRATA CORE RECOVERY (SREC.)</u> - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE.
PIECES 1 INCH ED READILY BY	STRATA ROCK QUALITY DESIGNATION (SRQD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS WITHIN A STRATUM EQUAL TO OR CREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF STRATA AND EXPRESSED AS A PERCENTAGE.
	TOPSOIL (TS.) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.
THICKNESS	BENCH MARK:ELEVATIONS TAKEN FROM 12513_Is_tnl.tin
4 FEET	ELEVATION: FEET
16 - 1.5 FEET	NOTES:
08 - 0.03 FEET 0.008 FEET	FIAD - FILLED IMMEDIATELY AFTER DRILLING
AT PRESSURE ETC	
EEL PROBE;	
PROBE:	





50 100	PROJECT REFERENCE NO.	SHEET NO.
FEET	I-2513AA RETAINING WALL NO. WO	4 602. FROM
VE = 4	-Y5RPA- STA. 21 + 41.06, 17.6 -Y5RPA- STA. 23 + 83.03, 5	3'LT TO 2.43'RT
		2,155
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		2,145
		2,140
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		2,095
		2,090
		2,085
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		2,070
		2,065
NOTE PLANS		2,060
AECON	A, DATED APRIL 2022.	
INFERI THROU PROJE	RED STRATIGRAPHY IS DRAWN JGH THE BORINGS WITH BOTH CTED ONTO THE PROFILE.	
4+00		:

GEOTECHNICAL BORING REPORT BORE LOG

WBS	3 3416	5.1.2			Т	IP 1-2513	AA	COUNT	Y BUNCON	1BE			GEO	OLOGIST Goodnight	t, D.J.		WE	S 3416	5.1.2			TI	P 1-251	3AA	COUNTY
SITE	DESCR	IPTION	BRID	DGE O	N -Y5	RPA- OVE	R BLUE RII	DGE SOU	THERN RAIL	ROAD	BETW	EEN	I-26 AN	ND ALT. US-74		GROUND WTR (ft)	SIT	E DESCI	RIPTION	RET	AINING	G WAL	L NO. W	602, FROI	И -Y5RPA- S
BOR	NG NO	EB2-A	4		s	TATION 2	21+86		OFFSET :	37 ft LT			ALI	GNMENT -Y5RPA-		0 HR. 48.0	BO	ring no	. W602	2_3		SI	ATION	22+66	
COL	LAR EL	EV. 2, ⁻	124.8 f	ť	Т	OTAL DEP	TH 74.0 f	t	NORTHING 678,245			EAS	STING 918,862	11NG 918,862 24 HR. FIAD			COLLAR ELEV. 2,105.8 ft TOTAL DEPTH 35.0 ft) ft		
DRIL	L RIG/HAI	/MER EF	F./DATE	E CG2	20446 [Diedrich D50 8	37% 05/10/20	22		DRILL	NETHO	DH.	I.S. Auger	rs	HAMM	ER TYPE Automatic	DR	DRILL RIG/HAMMER EFF./DATE CG204					edrich D50	87% 05/10/	2022
DRI	LER (dom, C			S	TART DAT	E 10/20/2	2	COMP. DA	TE 10/	20/22		SUF	RFACE WATER DEP	TH N/	A	DR	ILLER (Ddom, C			ST	ART DA	TE 08/17	/23
ELEV	DRIVE	DEPTH	BLO	W CO	JNT		BLOWS	PER FOO	Т	SAMP	· \			SOIL AND ROC	CK DES	CRIPTION	ELE	V DRIVE ELEV	DEPTH	BLC		UNT		BLOW	S PER FOOT
(11)	(ft)	(11)	0.5ft	0.5ft	0.5ft	0	25	50	75 100	NO.	Имо	I G	ELEV.	. (ft)		DEPTH (f) (11)	(ft)	(11)	0.5ft	0.5ft	0.5ft	0	25	50
2125		╞───				<u> </u>							2,124.	8 GROUNE		ACE 0.	211	0	+						
		Ŧ											<u>2,123.</u>	AGGREGATE	BASE	COURSE 1.	5		Ŧ						
2120	2,120.8	4.0	3	3	4								2,120.			4.	210	5	Ŧ						
	2,118.8	6.0	2	4	4	- • • • • • • • • • • • • • • • • • • •								GRAY, LOOSE, F. T	TO CSE	. SAND (A-1-a)		2,103.6	3 2.2		1		1		
	0 1 1 5 0	Ŧ	-										2,116.					2,101.8	3 4.0	2	3	2	• 3		
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BUNCOMBE		GEC	DLOGIST G	oodnight, D.J.		
TA, 21+41.06, 17.63	5' LT TO -	Y5RPA- \$	STA. 23+83.	03, 52.43' RT	GROUND W	TR (ft)
OFFSET 44 ft RT		ALIC	GNMENT -	(5RPA-	0 HR.	27.6
NORTHING 678.32	22	EAS	TING 918.7	791	24 HR.	FIAD
	FTHOD		s	НАММЕ	R TYPE Auto	matic
	17/23					
		.			1	
75 100 NO.	MOI G) 3	SOIL	AND ROCK DESC	RIPTION	
75 100 NO. 75 100 NO.		2,105.8 -2,104.5 -2,104.5 -2,104.5 -2,104.5 -2,104.5 -2,102.0 -2,009.0 -2,009.0 -2,009.0 -2,009.0 -2,009.0 -2,009.0 -2,009.0 -2,009.0 -2,009.0 -2,007.	SOIL A	GROUND SURFA ASPHALT REGATE BASE (ADWAY EMBANI D BLACK, V. LO(2-4) WITH LITTL TRACE ORGANI RESIDUAL BROWN, MED. S SILT (A-4) D BROWN, LOOS , SILTY SAND (A CACE TO LITTLE BROWN, MED. T (A-2-4) WITH TR MINING AND A BROWN, MED. T (A-2-4) WITH TR	CRIPTION	0.0 1.3
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REFERENCE

CONTENTS SHEET NO. **DESCRIPTION** TITLE SHEET LEGENDS 2 SITE PLAN 3 PROFILE 5-9 BORE LOGS

STATE OF NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION **DIVISION OF HIGHWAYS GEOTECHNICAL ENGINEERING UNIT**

STRUCTURE SUBSURFACE INVESTIGATION

COUNTY BUNCOMBE

PROJECT DESCRIPTION <u>I-40 FROM</u> EAST OF SR 1224 (MONTE VISTA RD) TO PAVEMENT JOINT WEST OF SR 3412 (SAND HILL RD). INCLUDES INITIAL IMPROVEMENTS AT I-40EB TO I-26EB AT US 19/23 (SMOKEY PARK HIGHWAY) SITE DESCRIPTION RETAINING WALL NO. W701, FROM -Y- STATION 66+46.00, 129.00'LT TO -Y-STATION 74+55.00, 129.00'LT

 \mathbf{v} 3416 PROJECT

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	I–2513AA	1	9

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 RALFICH BY CONTACTING THE N.C. DEPARTMENT OF TRANSPORTATION, GEOTECHNICAL ENGINEERING UNIT AT (1991) 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 UNI-FLACE) TEST DATA CAN BE RELIED ON ONLY TO THE DEGREE OF RELIABILITY INHERENT IN THE STANDARD TEST WETHOD. THE OBSERVED WATER LEVELS OR SOLI MOISTURE CONDITIONS INDICATED IN THE SUBSURFACE INVESTIGATIONS ARE AS RECORDED AT THE TIME OF THE INVESTIGATION. THESE WATER LEVELS OR SOLI MOISTURE CONDITIONS MAY YARY 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 OPHION OF THE DEPARTMENT AS TO THE TYPE OF MATERIALS AND COCUMTERED. THE BIDDER OR CONTRACTOR IS CAUTIONED TO MAKE SUCH INDEPENDENT SUBSURFACE INVESTIGATIONS AS HE DEEMS NECESSARY TO SATISFY HIMSELF AS TO CONDITIONS TO BE ENCOUNTERED ON THE PROJECT. THE CONTRACTOR SHALL HAVE NO CLAIM FOR ADDITIONAL COMPENSATION OF FOR AN EXTENSION OF TIME FOR ANY REASON RESULTING FROM THE ACTUAL CONDENSATIONS FOR ANY THE SITE DIFFERING FROM THOSE INDICATED IN THE SUBSURFACE INFORMATION.

- NOTES: I. 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

CG 2
GOODNIGHT, D.J.
INVESTIGATED BY FALCON ENG.
DRAWN BY CROCKETT, S.C.
OUTOWED DY HUNSBERGER WS
CHECKED BY
SUBMITTED BY FALCON ENG.
DATE



SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

		SO	IL DESCR	RIPTIO	1				GRADATION					ROCK DE	SCRIPTION
SOIL IS	CONSIDERED	UNCONSOLIDATED, SE	MI-CONSOLIDA	TED, OR WE	ATHERED E	ARTH MATERIAL	s that can	WELL GRADED - INDICA	TES A GOOD REPRESENTATION OF	PARTICLE SIZES F	ROM FINE TO COARSE.	HARD ROCK IS ROCK LINE IND	NON-COASTAL P	_AIN MATERIAL THAT W /EL AT WHICH NON-COA	WOULD YIELD SPT REFUSAL IF TESTE STAL PLAIN MATERIAL WOULD YIELD
ACCORD	ING TO THE	STANDARD PENETRATI	ION TEST (AAS	SHTO T 20	6, ASTM DI	586). SOIL CLA	SIFICATION	GAP-GRADED - INDICATE	S A MIXTURE OF UNIFORM PARTI	LE SIZES OF TW	OR MORE SIZES.	SPT REFUSAL I	S PENETRATION	BY A SPLIT SPOON SA	AMPLER EQUAL TO OR LESS THAN 0.1
CONSIST	ENCY, COLOR,	TEXTURE, MOISTURE, A	AASHTO CLASS	SIFICATION	, AND OTHE	R PERTINENT FA	CTORS SUCH		ANGULARITY OF	RAINS		REPRESENTED E	Y A ZONE OF V	/EATHERED ROCK.	IS THE REPORT OF THE REPORT
A	S MINERALOO VERY STIFF.G	GICAL COMPOSITION,A RAY.SILTY CLAY.MOIST W	ANGULARITY,S1 <i>NTH INTERBEDD</i>	FRUCTURE,	PLASTICITY AND LAYERS.	,ETC. FOR EXA HIGHLY PLASTIC.A	1PLE, -7-6	THE ANGULARI	Y OR ROUNDNESS OF SOIL GRAINS	IS DESIGNATED	BY THE TERMS:	RUCK MATERIAL	SARE TYPICALI	A NON COACTAL DIA	
	S	OIL LEGEND A	AND AASH	ITO CL	ASSIFIC	CATION		ANGULAR, SUBA	MINERAL OCICAL CON			ROCK (WR)		100 BLOWS PER FC	IN MATERIAL THAT WOULD FIELD SPT DOT IF TESTED.
GENERAL	,	GRANULAR MATERIALS	SI	LT-CLAY MA	ERIALS	ORGANIC I	ATERIALS	MINERAL NA		TUSTION	FTC	CRYSTALLINE		FINE TO COARSE C	GRAIN IGNEOUS AND METAMORPHIC RO
GROUP	A-1	A-3 A-2	A-4	A-5 A	-6 A-7	Δ-1 Δ-2 Δ-4	A-5	ARE USED I	N DESCRIPTIONS WHEN THEY ARE	CONSIDERED OF S	GNIFICANCE.	ROCK (CR)		GNEISS, GABBRO, SC	CHIST, ETC.
CLASS.	A-1-a A-1-b	A-2-4 A-2-5 A-2	2-6 A-2-7		A-7-5 A-7-6	A-3 A-6	A-7		COMPRESSIBIL	ÍTY		NON-CRYSTALLI	√E	SEDIMENTARY ROCH	GRAIN METAMORPHIC AND NON-COASTA < THAT WOULD YEILD SPT REFUSAL
SYMBOL								SLIG	HTLY COMPRESSIBLE	LL < 31	- 50			COASTAL PLAIN SE	DES PHYLLITE, SLATE, SANDSTONE, ETO TOIMENTS CEMENTED INTO ROCK, BUT
% PASSING	10000000000						-	HIGH	LY COMPRESSIBLE	LL > 50		SEDIMENTARY R	оск	SPT REFUSAL. ROC	K TYPE INCLUDES LIMESTONE, SANDS
*10	50 MX	51 Mai				GRANULAR CL	AY MUCK		PERCENTAGE OF M	<u>ATERIAL</u>				WEATH	HERING
*200	15 MX 25 MX	10 MX 35 MX 35 MX 35	MX 35 MX 36 M	N 36 MN 36	MN 36 MN	SUILS SO		ORGANIC MATERIAL	GRANULAR SILT - CLA	.Y OTHE	R MATERIAL	FRESH R	OCK FRESH. CRYS	TALS BRIGHT.FEW JOIN	TS MAY SHOW SLIGHT STAINING. ROCK
MATERIAL								TRACE OF ORGANIC M	ATTER 2 - 3% 3 - 5%	TRACE	1 - 10%	н	AMMER IF CRYST	ALLINE.	
PASSING •40 LL	-	- 40 MX 41 MN 40	MX 41 MN 40 M	x 41 MN 40	MX 41 MN	SOILS WITH		MODERATELY ORGANIC	5 - 10% 12 - 20%	SOME	20 - 35%	VERY SLIGHT R	JCK GENERALLY RYSTALS ON A F	FRESH, JOINTS STAINED,	SOME JOINTS MAY SHOW THIN CLAY CO SHINE BRIGHTLY, BOCK BINGS UNDER H
PI	6 MX	NP 10 MX 10 MX 11 M	MN 11 MN 10 M>	(10 MX 11	MN 11 MN	MODERATE	HIGHLY	HIGHLY ORGANIC	> 10% > 20%	HIGHLY	35% AND ABOVE	0	A CRYSTALLIN	E NATURE.	
GROUP INDEX	Ø	0 0	4 MX 8 MX	12 MX 16	MX NO MX	AMOUNTS OF	SOILS		GROUND WAT	R		SLIGHT R	JCK GENERALLY	FRESH, JOINTS STAINED	AND DISCOLORATION EXTENDS INTO RO
USUAL TYPES	STONE FRAGS.	FINE SILTY OR CL	AYEY S	ILTY	CLAYEY	MATTER		∇	WATER LEVEL IN BORE HOLE I	IMEDIATELY AFTER	R DRILLING	C C	RYSTALS ARE DU	ILL AND DISCOLORED. CF	RYSTALLINE ROCKS RING UNDER HAMMER
MATERIALS	SAND	SAND GRAVEL AND	SAND SI	OILS	SOILS				STATIC WATER LEVEL AFTER .	<u>24</u> HOURS		MODERATE S	IGNIFICANT PORT	IONS OF ROCK SHOW DIS	SCOLORATION AND WEATHERING EFFECTS
GEN. RATING		EXCELLENT TO GOOD		FAIR TO P	OOR	FAIR TO PC	DR UNSULTABL	E PW	PERCHED WATER, SATURATED ZO	NE, OR WATER BEA	ARING STRATA	(MOD.) G	ANITOID ROCKS, ULL SOUND UNDE	.R HAMMER BLOWS AND S	DULL AND DISCOLORED,SOME SHOW CLA SHOWS SIGNIFICANT LOSS OF STRENGTH
AS SUBGRADE			C 11 20 0	05 4 7 6 6		POUR		- 0-00-	SPRING OR SEEP			W	ITH FRESH ROCK	•	
	r				FNFSS	- LL - 30			MISCELLANEOUS S			MODERATELY A	L ROCK EXCEPT	QUARTZ DISCOLORED OF	R STAINED. IN GRANITOID ROCKS.ALL F KANLINIZATION, ROCK SHOWS SEVERE LI
		COMPACTNESS		NGE OF ST	ANDARD	RANGE OF	UNCONFINED					(MOD. SEV.) A	ND CAN BE EXCA	VATED WITH A GEOLOGIS	ST'S PICK. ROCK GIVES "CLUNK" SOUND
PRIMARY S	SOIL TYPE	CONSISTENCY	PENE	TRATION RI	SISTENCE	COMPRESSI (TON	VE STRENGTH S/FT ²)	L ROADWAY EME	ANKMENT (RE)	IP DIRECTION STRUCTURES			IESTED, WOULD	<u>YIELD SPI REFUSAL</u>	
051504		VERY LOOSE		< 4					SPT OUT TE		SLOPE INDICATOR	(SEV.) R	EDUCED IN STRE	NGTH TO STRONG SOIL.	IN GRANITOID ROCKS ALL FELDSPARS A
GRANUL	AR	LOOSE	_	4 TO 1	0		1/6				INSTALLATION	T II) SOME EXTENT. - TESTED. WOULD	SOME FRAGMENTS OF S	TRONG ROCK USUALLY REMAIN.
MATERIA (NON-CO		DENSE	-	30 TO	50		17 H	X ARTIFICIAL F	ILL (AF) OTHER	.ORING 🙆	CONE PENETROMETER TEST	VERY A	LL ROCK EXCEPT	QUARTZ DISCOLORED OF	R STAINED. ROCK FABRIC ELEMENTS AR
	HESTTE,	VERY DENSE		> 50							COUNDING DOD	SEVERE B	JT MASS IS EFF	ECTIVELY REDUCED TO S	SOIL STATUS, WITH ONLY FRAGMENTS OF
GENERAL	LY	VERY SOFT SOFT		< 2 2 TO	4	Ø.25	0.25 TO 0.5	INFERRED SU			SUUNDING RUD	V SEV./ V	ESTIGES OF ORIC	JINAL ROCK FABRIC REM	AIN. IF TESTED, WOULD YIELD SPT N V
SILT-CL	AY.	MEDIUM STIFF	-	4 TO	8	0.5	TO 1.0	INFERRED RO	CK LINE MW MONITOF	ING WELL -	WITH CORE	COMPLETE R	JCK REDUCED TO	SOIL. ROCK FABRIC NO	T DISCERNIBLE, OR DISCERNIBLE ONLY
(COHESI	VE)	VERY STIFF		15 TO	30	2	TO 4	ALLUVIAL SO			← SPT N-VALUE	A	LSO AN EXAMPLE		T BE PRESENT AS DIKES OR STRINGERS
				> 30			• 4							ROCK H	ARDNESS
		IEXIL	JRE UR U	RAIN :	MZE							VERY HARD C	ANNOT BE SCRAT	CHED BY KNIFE OR SHAF	RP PICK. BREAKING OF HAND SPECIMENS
U.S. STD. SIE OPENING (MI	EVE SIZE M)	4 4.76	10 41 2.00 0.4	0 60 42 0.2	200 5 0.075	270 0.053		EXCAVATION	UNSUITABLE WASTE		PTABLE, BUT NOT TO BE	S NARD C	EVERAL HARD BL	OWS OF THE GEOLOGIST	'S PICK.
BOUL DE			COAI	RSE	FINE	CTL T	CLAY	SHALLOW		. USED DCK EMBA	NKMENT OR BACKFILL	T	J DETACH HAND	SPECIMEN.	NET WITH DIFFICUETT. HERD HEMMER DI
(BLDR.)		COB.) (GR.)	SAI		SAND	(SL.)	(CL.)					MODERATELY C	AN BE SCRATCHE	D BY KNIFE OR PICK. G	OUGES OR GROOVES TO 0.25 INCHES DE
	305	75	20	0 2	5	0.05 0	005	AR - AUGER REFUSAL	MED MEDIUM	VST	- VANE SHEAR TEST	HARU E	Y MODERATE BLC	RU BLUW OF A GEULUGI: JWS.	ST'S PICK. HAND SPECIMENS CAN BE DI
SIZE IN	12	3	210	012	-			BT - BORING TERMINATE	D MICA MICACEOUS	WEA.	- WEATHERED	MEDIUM C	AN BE GROOVED	OR GOUGED 0.05 INCHES	DEEP BY FIRM PRESSURE OF KNIFE O
	S	OIL MOISTURE	E - CORR	ELATIO	IN OF	TERMS		CPT - CLAY	N TEST NP - NON PLASTIC	7-	DRY UNIT WEIGHT	HARD C	AN BE EXCAVATE	D IN SMALL CHIPS TO P OGIST'S PICK.	PEICES 1 INCH MAXIMUM SIZE BY HARD
SOIL	MOISTURE	SCALE FIE	ELD MOISTUR	E GU	IDE FOR F	IELD MOISTURE	DESCRIPTION	CSE COARSE	ORG ORGANIC			SOFT C	AN BE GROVED C	R GOUGED READILY BY	KNIFE OR PICK. CAN BE EXCAVATED IN
	ERBERG LIN	MI15) L	DESCRIPTION					DPT - DYNAMIC PENETRA	TION TEST SAP SAPROLITIC	.ER IESI <u>5</u>	BULK	F	ROM CHIPS TO S IECES CAN BE B	EVERAL INCHES IN SIZE ROKEN BY FINGER PRESS	BY MODERATE BLOWS OF A PICK POIN SURE.
		- 9	SATURATED -	US	JALLY LID	UID: VERY WET, THE GROUND	USUALLY	e - VOID RATIO	SD SAND, SANDY	SS -	SPLIT SPOON	VERY C	AN BE CARVED W	/ITH KNIFE. CAN BE EXC	AVATED READILY WITH POINT OF PICK.
		LIMIT						FOSS FOSSILIFEROUS	SLI SLIGHTLY	RS ·	ROCK	SOFT O	₹ MORE IN THICK INGERNATI.	NESS CAN BE BROKEN E	BY FINGER PRESSURE. CAN BE SCRATCH
RANGE <		- \	WET - (W)	SE	MISOLID: R	EQUIRES DRYIN	G ТО	FRAC FRACTURED, FRAC FRAGS FRAGMENTS	TURES TCR - TRICONE REF W - MOISTURE CON	USAL RT -	RECOMPACTED TRIAXIAL				BEDDING
(PI) PL		С LIMIT		A1		NUM MUISTURE		HI HIGHLY	V - VERY		RATIO	TERM		SPACING	TERM
		- 1	MOIST - (M)	SO		NEAR OPTIMU	1 MOISTURE	EO	UIPMENT USED ON SUB	JECT PROJE	СТ	VERY WIDE	MOR	RE THAN 10 FEET	VERY THICKLY BEDDED
OM SL		M MOISTURE						DRILL UNITS:	ADVANCING TOOLS:	HAMMER	TYPE:	MODERATELY	CLOSE	1 TO 3 FEET	THINLY BEDDED 0.1
				RE	OUIRES AD	DITIONAL WATE	R TO	CME-45C	CLAY BITS		TOMATIC MANUAL	CLOSE VERY CLOSE	LES	0.16 TO 1 FOOT S THAN 0.16 FEET	VERY THINLY BEDDED 0.0 THICKLY LAMINATED 0.00
		- [URT - (U)	AT	TAIN OPTIM	MUM MOISTURE		CME-55	6' CONTINUOUS FLIGHT AUG	ER CORE SI	ZE:				THINLY LAMINATED <
	•		PLASTIC	CITY				1	8 HOLLOW AUGERS	🗌 - В _	н			INDUF	RATION
		1	PLASTICITY I	NDEX (PI)		DRY ST	RENGTH	X CME-550X	HARD FACED FINGER BITS	-N _		FOR SEDIMENTA	RY ROCKS, INDU	RATION IS THE HARDEN	NING OF MATERIAL BY CEMENTING, HE
NON SI 11	PLASTIC	STIC	0-5 6-15	i		VERY SUT	LOW	VANE SHEAR TEST	TUNGCARBIDE INSERTS		IOLS:	FRIABLE		GENTLE BLOW	BY HAMMER DISINTEGRATES SAMPLE.
MOD	ERATELY PL	LASTIC	16-2	5		MED	IUM			.з П РС	ST HOLE DIGGER	NODEDAT		GRAINS CAN BE	E SEPARATED FROM SAMPLE WITH ST
HIG	HLT PLASTI	L	26 UR N			HI	н	PORTABLE HOIST	TRICONE STEEL	^{ГЕЕТН} Н н н н н н н н н н н н н н н н н н н	ND AUGER	MODERAT	LC INDURATED	BREAKS EASILY	Y WHEN HIT WITH HAMMER.
			CULO	ĸ				4 🗆		ARB. SC	UNDING ROD	INDURATI	D	GRAINS ARE DI	FFICULT TO SEPARATE WITH STEEL
DESCRIPT	IONS MAY I	INCLUDE COLOR OR	COLOR COMBI	NATIONS	TAN, RED,	ELLOW-BROWN,	BLUE-GRAY).			V 🗌	NE SHEAR TEST			SHARD HAMMER	BLOWS REQUIRED TO REAK CAMPLE
MC	DIFIERS SU	ICH AS LIGHT, DARK,	STREAKED, ET	TC.ARE US	SED TO DE	SCRIBE APPEAR	ANCE.		🗌			EXTREME	LY INDURATED	SAMPLE BREAK	S ACROSS GRAINS.

TOWN OF HOLLY SPRINGS PROJECT NO.



	TERMS AND DEFINITIONS
ED. AN INFERRED	ALLUVIUM (ALLUV.) - SOILS THAT HAVE BEEN TRANSPORTED BY WATER.
1 FOOT PER 60	AOUIFER - A WATER BEARING FORMATION OR STRATA.
IS OFTEN	ARENACEOUS - APPLIED TO ROCKS THAT HAVE BEEN DERIVED FROM SAND OR THAT CONTAIN SAND.
T N VALUES >	A NOTABLE PROPORTION OF CLAY IN THEIR COMPOSITION, SUCH AS SHALE, SLATE, ETC.
DCK THAT ICLUDES GRANITE,	APTESIAN - 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.
AL PLAIN	CALCAREOUS (CALC.) - SOILS THAT CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE.
IF TESTED. C.	CULLUTIOM - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BUTTOM OF SLOPE.
MAY NOT YIELD STONE, CEMENTED	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.
RINGS UNDER	ROCKS OR CUTS MASSIVE ROCK.
NINGS UNDER	<u>DIP</u> - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE HORIZONTAL.
COATINGS IF OPEN, HAMMER BLOWS IF	DIP DIRECTION (DIP AZIMUTH) - THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF THE LINE OF DIP, MEASURED CLOCKWISE FROM NORTH.
ock up to Al Feldspar	FAULT - A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE.
R BLOWS.	FISSILE - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES.
AY. ROCK HAS	<u>PEDAI</u> - RUCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLUDGED FROM PARENT MATERIAL.
H AS COMPARED	FLOOD PLAIN (FP) - LAND BORDERING A STREAM, BUILT OF SEDIMENTS DEPOSITED BY THE STREAM.
FELDSPARS DULL .OSS OF STRENGTH WHEN STRUCK.	<u>FORMATION (FM.)</u> - A MAPPABLE GEOLOGIC UNIT THAT CAN BE RECOONIZED 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
ARE KAOLINIZED	IIS LATERAL EXTENT. LENS - A BODY OF SOIL OR ROCK THAT THINS OUT IN ONE OR MORE DIRECTIONS.
	MOTILED (MOI) - IRREGULARLY MARKED WITH SPOTS OF DIFFERENT COLORS. MOTILING IN SOILS USUALLY INDICATES POOR AERATION AND LACK OF GOOD DRAINAGE.
IF STRONG ROCK	<u>PERCHED WATER</u> - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE OF AN INTERVENING IMPERVIOUS STRATUM.
IN SMALL AND	RESIDUAL (RES.) SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK.
S. SAPROLITE IS	ROCK SEGMENTS COULD TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE.
IS REQUIRES	SAPROLITE (SAP.) - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT ROCK.
BLOWS REQUIRED	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 REFORME OR SCHWEIDTLY OF THE INTERINGE PORCYS
EEP CAN BE	<u>SLICKENSIDE</u> - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT
DETACHED	OR SLIP PLANE. STANDARD PENETRATION TEST (PENETRATION RESISTANCE)(SPT) - NUMBER OF BLOWS (N OR BPE)OF
DR PICK POINT. BLOWS OF THE	A 140 LB. HAMMER FALLING 30 INCHES REQUIRED TO PRODUCE A PENETRATION OF I 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.
I FRAGMENTS	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.
THICKNESS	BENCH MARK:ELEVATIONS TAKEN FROM 12513_Is_tnl.tin
4 FEET	ELEVATION: FEET
16 - 1.5 FEET	NOTES:
03 - 0.16 FEET 08 - 0.03 FEET	FIAD - FILLED IMMEDIATELY AFTER DRILLING
0.008 FEET	
EAT, PRESSURE, ETC.	
TEEL PROBE;	
BRORE.	
FRUBE:	





GEOTECHNICAL BORING REPORT BORE LOG

WBS 34165.1.2	TIP 1-2513AA COUN	TY BUNCOMBE	GEOLOGIST Goodnight, D.J.	WBS 34165.1.2 TIP 1-2513AA COL	JNTY BUNCOMBE	GEOLOGIST Goodnight, D.J.
SITE DESCRIPTION RETAINING	WALL NO. W701, FROM -Y- STA.	66+46.00, 129.00' LT TO -Y- STA	. 74+55.00, 129.00' LT GROUND WTR (ft)	SITE DESCRIPTION RETAINING WALL NO. W701, FROM -Y- ST	A. 66+46.00, 129.00' LT TO -Y- STA	A. 74+55.00, 129.00' LT GROUND WTR (ft)
BORING NO. W701_1	STATION 66+47	OFFSET 129 ft LT	ALIGNMENT -Y- 0 HR. Dry	BORING NO. W701_2 STATION 67+20	OFFSET 138 ft LT	ALIGNMENT -Y- 0 HR. 8.6
COLLAR ELEV. 2,075.5 ft	TOTAL DEPTH 20.0 ft	NORTHING 678,083	EASTING 920,109 24 HR. 12.4	COLLAR ELEV. 2,070.5 ft TOTAL DEPTH 15.0 ft	NORTHING 678,076	EASTING 920,183 24 HR. 7.0
DRILL RIG/HAMMER EFF./DATE CG24	113 CME-550X 74% 04/08/2022	DRILL METHOD H.S	Augers HAMMER TYPE Automatic	DRILL RIG/HAMMER EFF./DATE CG24113 CME-550X 74% 04/08/2022	DRILL METHOD H.S	S. Augers HAMMER TYPE Automatic
DRILLER Odom, C.	START DATE 10/06/22	COMP. DATE 10/06/22	SURFACE WATER DEPTH N/A	DRILLER Odom, C. START DATE 10/07/22	COMP. DATE 10/07/22	SURFACE WATER DEPTH N/A
ELEV DRIVE DEPTH BLOW COU	NT BLOWS PER FOO		SOIL AND ROCK DESCRIPTION	ELEV DRIVE DEPTH BLOW COUNT BLOWS PER F	OOT SAMP.	SOIL AND ROCK DESCRIPTION
(ft) (ft) 0.5ft 0.5ft	0.5ft 0 25 50	75 100 NO. MOI G	ELEV. (ft) DEPTH (ft)	(ft) (ft) (ft) (ft) (ft) $0.5ft$ $0.5ft$ $0.5ft$ 0 25 50	75 100 NO. MOI G	
(II) (II) 0.5tt 0.5tt 2080	$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	7.5 100 NO. MOI G 	ELEV. (f) DEPTH (f) 2.075.5 GROUND SURFACE 0.0 ROADWAY EMBANKMENT TAN-BROWN, LOOSE, SILTY SAND 2.072.5 (A.2-4) WITH TRACE GRAVEL	(ft) (ft) 0.5ft 0.5ft 0.5ft 0 25 50 2075	75 100 NO. MOI G M M M M M M M M M M	2,070.5 GROUND SURFACE 0.0 ROADWAY EMBANKMENT GRAY-BROWN, LOSE, SILTY SAND 2,065.0 TAN-BROWN, STIFF, SANDY SILT (A-4)

GEOTECHNICAL BORING REPORT BORE LOG

١	VBS	34165	.1.2			Т	IP 1-2	513A	A		COUNT	Y BI	UNCON	MBE				GEOLO	GIST Goodnig	ht, D.J.			WBS	3 3416	5.1.2			TI	P 1-25	513AA		COL	JNT
ŝ	SITE C	ESCR	IPTION	RET	AINING	S WAL	L NO.	W701	I, FRC	DM -Y	- STA.	66+46	5.00, 12	29.00' LT	то -	Y- ST	A.	74+55.00	, 129.00' LT		GROUND V	VTR (ft)	SITE	DESC	RIPTION	RET	AININ	G WAL	L NO. \	N701,	FROM	-Y- S1	Γ Α . 6
E	BORIN	g no.	W701	_3		S	TATIO	N 68	+49			OFF	SET	143 ft L1	Г			ALIGNM	ENT -Y-		0 HR.	12.5	BOR	NO NO	. W70	1_4		SI	ATION	69+	56		
(:OLL/	AR ELE	EV. 2,0	072.4 f	t	T(OTAL [DEPTI	H 15	.0 ft		NOF	RTHING	G 678,0	54			EASTIN	G 920,312		24 HR.	9.1	COL	LAR EL	.EV. 2,	073.4	ft	т	DTAL D	EPTH	15.0	ft	
	RILL F	RIG/HAM	IMER EF	F./DATI	CG2	4113 C	ME-550	X 74%	04/08/2	2022				DRILL N	NETHO	DD H	I.S.	. Augers		HAMN	IER TYPE Aut	omatic	DRIL	l Rig/Ha	MMER EF	F./DAT	E CG2	24113 C	ME-550X	(74%04	4/08/202	2	
0	RILL	ER O	dom, C			S		DATE	10/0)6/22		CO	MP. DA	TE 10/	06/22	2		SURFAC	E WATER DEF	PTH N	/A		DRIL	LER (Odom, C			ST		ATE	10/06/	22	
E	LEV	DRIVE ELEV	DEPTH	BLC	W CO			0	BLOV	NS PE	ER FOO	T 75	100	SAMP.					SOIL AND RC	OCK DES	SCRIPTION		ELEV	DRIVE ELEV						E	BLOWS	PER F	001
_	(11)	(ft)	(11)	0.5ft	0.5ft	0.5ft		2	5	50		/5	100	NO.	/мс) G	_	ELEV. (ft)				DEPTH (ft)	(11)	(ft)	(11)	0.5ft	0.5ft	0.5ft	0	25		50	
2	075	- 2,071.4 ⁻		4	3	2		•••	•••	 		· ·	••••		м			2,072.4	GROUN ROADWAY BROWN AND G	ID SURF EMBAN GRAY, LO	FACE IKMENT DOSE, SILTY	0.0	<u>2075</u>	2,072.4	1.0	8	7	8		15	· · · ·	· · ·	
	<u> </u>	2,068.9	3.5	3	3	1								1			F	- 5	AND (A-2-4) WI	TH TRAC	CE TO LITTLE RAVEL AND		2070	2,069.9	1 3.5 +	5	5	6	,			+	
	2	- 2.066.4	6.0		3	4	 † 7	· · · ·	•••		· · · · · ·	· · ·	· · · · · ·		M		ļ		OR	GANICS	8			2,067.4	1 <u>+ 6.0</u>	2	2	3	./.		· · ·		
2	065			2	2	3] • 5_					· ·			M		Ŀ	2,064.4				8.0	2065	2,064.9	<u>1 8.5</u>		2		₩ ³ .				
			<u> 8.5 </u>	2	2	2		•••	•••	•••	· · · · · ·	· · ·	• • • • • •		—м-	-E	F	- — — — E	BROWN, SOFT T CLAY (A-7) WITI	TO MED. H TRAC	. STIFF, SILTY E ORGANICS				‡			4	• 6'		· · ·		
2	060	-	+					::	: :		· · ·	: :	· · ·			E		2,060.4	()			12.0	2060		<u>+</u>				5		· · ·		
	2000	2,058.9_	13.5	3	2	1	│ <mark>│</mark> ╄╼		•••								F		RED-TAN, MED.	STIFF,	SANDY CLAY		2000	2,059.9	<u>1 13.5</u> +	3	4	5	· •				
ORE DOUBLE 1-1213AA_GEO.GPJ NC_DOT.GDT 9/8/23				3	2	4									<u>M</u>			2,057.4 Bo	RED-TAN, MED.	STIFF, : (A-6) at Eleva JUAL: (A	SANDY CLAY tion 2,057.4 ft i \-6)	15.0 1							_ · ● 9				
DOT		-	Ē														Ē								Ŧ								
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GEOTECHNICAL BORING REPORT BORE LOG

WB	S 3416	5.1.2		TI	I P 1-2	2513A	A		COU	NTY	BUNCON	IBE			GEC	LOGIST Goodnig	ht, D.J.		WBS	34165	.1.2			TIF	1 -251	3AA	COUNT	
SIT	E DESCF	IPTION	RET	AININ	G WAL	L NO.	. W70)1, FR	ROM -'	Y- ST/	4. 66+	46.00, 12	9.00' LT	TO -	Y- ST	A. 74+5	5.00, 129.00' LT		GROUND WTR (ft)	SITE	DESCRI	PTION	RET	AINING	G WAL	L NO. W	701, FRO	/I -Y- STA. 6
BO	ring no	W70 ⁻	1_5		S	ΤΑΤΙΟ	DN 70	0+39			С	FFSET	138 ft L ⁻	Г		ALIO	SNMENT -Y-		0 HR. Dry	BOR	NG NO.	W701	1_6		ST	ATION	71+43	
со	LLAR EL	EV. 2,	074.51	ft	т	OTAL	DEPT	TH 1	5.0 ft		N	ORTHING	678,0	05		EAS	TING 920,498		24 HR. 13.0	COL	LAR ELE	IV. 2,0	075.2	ft	тс	DTAL DE	PTH 20.0	ft
DRI	LL RIG/HAI	MMER EF	F./DAT	E CG2	4113 C	ME-550	0X 74%	6 04/08	8/2022		•		DRILL	NETHO	DD H	.S. Auger	3	HAMM	ER TYPE Automatic	DRILL	. RIG/HAM	MER EF	F./DAT	E CG2	4113 CM	ME-550X 7	4% 04/08/20	22
DR	LLER (odom, C			S	TART	DATE	E 10	/06/22	2	C	OMP. DA	TE 10/	06/22	2	SUR	FACE WATER DE	PTH N/	A	DRIL	LER O	dom, C			ST	ART DA	TE 10/06	/22
ELE		DEPTH	BLC	ow co	JNT			BLC	OWS F	PER FC	DOT		SAMP						CRIPTION	ELEV	DRIVE ELEV	DEPTH	BLC	ow col	JNT		BLOW	S PER FOOT
(ft)	(ft)	(ft)	0.5ft	0.5ft	0.5ft	0	2	25	5	0	75	5 100	NO.	Имс) G	ELEV.	(ft)		DEPTH (ft)	(ft)	(ft)	(ft)	0.5ft	0.5ft	0.5ft	0	25	50
207	5	Ļ														2,074.	GROUN	ND SURF	ACE 0.0	2080		_						
	2,073.5	1.0	1	1	4									м		ŀ	Roadway Tan-Brown. Me	EMBANI	KMENT F. SANDY SILT		-	-						
207	2,071.0	3.5	2	2	2	•	· · ·	· ·	· · ·	· · · ·						<u>- 2,071.</u>	A-4) WITH LITT	LE MICA	AND TRACE3.0	2075	-	-						
2010	2.068.5	+ + 6.0		5	5		; <u> </u>	· ·						M		2,069.0		LOOSE, S	SILTY SAND5.5	2013	2,074.2	1.0	2	2	5			
	0.000.0	‡	3	3	5	: 	8		· · ·	· · · ·	· ·	· · · · ·		M		-	BROWN, MED. S	TIFF TO S	STIFF, SANDY		- 2,071.7-	- - 3.5					· · · · ·	· · · · · ·
206	5	+ 8.5	3	5	5	1	10				•••			м		+ 	CLAY (A-6) WI	THTRAC	E GRAVEL	2070	2 060 2	60	4	4	5	. 9 9		· · · · ·
		ŧ				:		· ·	•••	· · · ·	•••	· · · · ·				2,062.5	<u>. </u>		12.0		- 2,000.2	- 0.0	2	3	3	6 . −	· · · · ·	· · · · · ·
2060	2,061.0	13.5	3	2	4	[]	· · ·									- -	RE TAN, MED. STIFF	SIDUAL SANDY	CLAYEY SILT	2065	2,066.7-	- 8.5 -	2	2	3	j · · ·		
2000	<u> </u>	+	Ŭ	2	-	 		· · ·			•••		-		N	- 2,059.5 -	(A-5) WIT	H TRACE	E MICA 15.0	2000	-	-				· ·		
		ŧ														F	RESI	DUAL: (A-	-5)		2,061.7-	- - 13.5					· · · · ·	
		ŧ														È.				2060	-	-		2	2	• 4	· · · · ·	· · · · ·
		ŧ														F					-	-					· · · · ·	· · · · · ·
		ŧ														F					2,056.7-	- 18.5	8	1	1	1 ···· ● 2 ···		
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NC		ŧ														-					-	-						
O.GP.		ŧ														F					-	-						
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I-12 [.]	.	‡														F					4	-						
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DOTE		‡														F						-						
NCF		†												1		F					-	F						



GEOTECHNICAL BORING REPORT BORE LOG

WBS 34165.1.2 TIP 1-2513AA	COUNTY BUNCOMBE	GEOLOGIST Goodnight, D.J.		WBS	34165.1.2		TIP	• 1-2513AA COUN	ITY BUNCON	1BE	GEOLOGIST Goodni	ght, D.J.
SITE DESCRIPTION RETAINING WALL NO. W701	FROM -Y- STA. 66+46.00, 129.00' LT	T TO -Y- STA. 74+55.00, 129.00' LT GI	ROUND WTR (ft)	SITE	DESCRIPTION	RETAINING	G WALL	_ NO. W701, FROM -Y- STA	. 66+46.00, 12	9.00' LT TO -Y- S	TA. 74+55.00, 129.00' LT	GROUND WTR (ft)
BORING NO. W701_7 STATION 72-	41 OFFSET 139 ft LT	T ALIGNMENT -Y- 0	DHR. Dry	BORI	NG NO. W701	_8	ST	ATION 73+37	OFFSET	143 ft LT	ALIGNMENT -Y-	0 HR. Dry
COLLAR ELEV. 2,078.0 ft TOTAL DEPTH	15.0 ft NORTHING 677,95	956 EASTING 920,696 24	HR. Dry	COLL	AR ELEV. 2,0	80.7 ft	то	TAL DEPTH 15.0 ft	NORTHING	677,936	EASTING 920,790	24 HR. Dry
DRILL RIG/HAMMER EFF./DATE CG24113 CME-550X 74% (4/08/2022 DRILL M	METHOD H.S. Augers HAMMER T	TYPE Automatic	DRILL	RIG/HAMMER EFF	./DATE CG24	4113 CN	/IE-550X 74% 04/08/2022		DRILL METHOD	H.S. Augers	HAMMER TYPE Automatic
DRILLER Odom, C. START DATE	10/06/22 COMP. DATE 10/0	06/22 SURFACE WATER DEPTH N/A		DRILL	LER Odom, C.		ST	ART DATE 10/06/22	COMP. DA	TE 10/06/22	SURFACE WATER DE	EPTH N/A
	BLOWS PER FOOT SAMP.		PTION	ELEV	DRIVE ELEV DEPTH	BLOW COL	JNT	BLOWS PER FO	ОТ	SAMP.	SOIL AND R	OCK DESCRIPTION
(π) (ft) (π) 0.5ft 0.5ft 0.5ft 0 25	50 75 100 NO.	MOI G ELEV. (ft)	DEPTH (ft)	(π)	(ft) ^(ft)	0.5ft 0.5ft	0.5ft	0 25 50	75 100	NO. MOI G	;	
2080				2085							-	
		2,078.0 GROUND SURFACE	E 0.0		‡						F	
2075 8 8 10 • 18		M L BROWN, V. STIFF, SANDY S	SILT (A-4)	2080	+						2,080.7 GROU	IND SURFACE 0.0
	· · · · · · · · · · · · · · · · · · ·	M 2,074.0 RESIDUAL	=L 4.0	2000	2,079.7+ 1.0	5 5	6	· • • · · · · · · · · · · · · · · · · ·		м	WHITE AND 1	TAN, LOOSE TO MED.
		TAN AND TAN-BROWN, LOOS	SE TO MED.		2,077.2 3.5	5 6	6			м	DENSE, SILTY S/	AND (A-2-4)WITH LITTLE SOME MICA
2070 2,069.5 8.5		MICA		2075	2,074.7 6.0	_	7					
					2 072 2 85	5 0				M		
				2070	+	5 6	7			М	₩- ₩-	
2,064.5 13.5 4 2 3 4	· · · · · · · · · · · · ·	M	15.0	2010	†			<u> </u>			*	
		Boring Terminated at Elevation 2	2,063.0 ft in		2,067.2 13.5	3 5	4			м	** - - -	
											Boring Terminate	d at Elevation 2,065.7 ft in
					‡						- RESI	DUAL: (A-2-4)
					‡						F	
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GEOTECHNICAL BORING REPORT BORE LOG

WB	S 34165	.1.2			Т	P	1-25	13A/	4		cou	NTY	BUI	NCOM	BE			GEOLOGIST Goodnight, D.J.	
SIT	E DESCR	IPTION	RET	AINING	G WAL	LN	NO. V	V701	, FRC	י. אר- M	/- ST	A. 66	+46.0	00, 129	9.00' LT	TO -Y	- STA	A. 74+55.00, 129.00' LT GROUND WTF	(ft)
BO	RING NO.	W701	_9		S	TA	TION	74	+42				OFFS	SET 1	151 ft LT	-		ALIGNMENT -Y- 0 HR.	Dry
со	LAR ELE	EV. 2,0	084.7 f	ť	т	от	AL D	EPTH	H 10.	.0 ft			NOR	THING	677,9 [.]	17		EASTING 920,893 24 HR.	Dry
DRII	L RIG/HAM	IMER EF	F./DATE	CG2	4113 C	ME	-550X	74%	04/08/2	022					DRILL M	IETHO	о н.	.S. Augers HAMMER TYPE Automa	ic
DRI	LLER O	dom, C			S	TA	rt d	ATE	10/0	6/22			сом	P. DA	FE 10/0	06/22		SURFACE WATER DEPTH N/A	
ELE ^v (ft)	/ DRIVE ELEV (ft)	DEPTH (ft)	BLC 0.5ft	W CO 0.5ft	JNT 0.5ft	0)	25	BLOV 5	VS P 50	ER FO	тос 7	75	100	SAMP. NO.		L O G	SOIL AND ROCK DESCRIPTION	TH (ff)
208	2,092,7																	2,084.7 GROUND SURFACE	0.0
2080	2,083.7-	- 1.0 - - 3.5 - - 6.0	4	6 5	8		···/	14		· ·	· · ·	· · ·	· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·		M M		TAN-BROWN, MED. DENSE, SILTY SAND 2.081.7 (A-2-4) BROWN AND RED, STIFF, SANDY CLAY (A-6) WITH TRACE ORGANICS AND GRAVEL	3.0
207	2,076.2	- 8.5 -	2	2	3		• • 1। Γ • • 5	D 		· ·	 	· · ·		· · ·	-	м м		2,076.7 	<u>8.0</u> 10.0
NCDOT BORE DOUBLE 1-1213AA_GEO.GPU NC_DOT.GDT 9/8/23																		RESIDUAL: (A-4)	

 $\overline{\mathbf{A}}$

513,

N

REFERENCE

CONTENTS SHEET NO.

2

3

5-7

TITLE SHEET LEGENDS SITE PLAN PROFILE BORE LOGS

DESCRIPTION

STATE OF NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION **DIVISION OF HIGHWAYS GEOTECHNICAL ENGINEERING UNIT**

STRUCTURE SUBSURFACE INVESTIGATION

COUNTY BUNCOMBE

PROJECT DESCRIPTION <u>I-40 FROM</u> EAST OF SR 1224 (MONTE VISTA RD) TO PAVEMENT JOINT WEST OF SR 3412 (SAND HILL RD). INCLUDES INITIAL IMPROVEMENTS AT I-40EB TO I-26EB AT US 19/23 (SMOKEY PARK HIGHWAY) SITE DESCRIPTION <u>RETAINING</u> WALL NO. W1001, FROM -RPC- STATION 18+13.15, 27.50'RT TO -RPC-STATION 21+36.15, 27.50'RT

 \mathbf{v} 3416 PROJECT

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	I–2513AA	1	7

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 RALFICH BY CONTACTING THE N.C. DEPARTMENT OF TRANSPORTATION, GEOTECHNICAL ENGINEERING UNIT AT (1991) 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 UNI-FLACE) TEST DATA CAN BE RELIED ON ONLY TO THE DEGREE OF RELIABILITY INHERENT IN THE STANDARD TEST WETHOD. THE OBSERVED WATER LEVELS OR SOLI MOISTURE CONDITIONS INDICATED IN THE SUBSURFACE INVESTIGATIONS ARE AS RECORDED AT THE TIME OF THE INVESTIGATION. THESE WATER LEVELS OR SOLI MOISTURE CONDITIONS MAY YARY 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 OPHION OF THE DEPARTMENT AS TO THE TYPE OF MATERIALS AND COCUMTERED. THE BIDDER OR CONTRACTOR IS CAUTIONED TO MAKE SUCH INDEPENDENT SUBSURFACE INVESTIGATIONS AS HE DEEMS NECESSARY TO SATISFY HIMSELF AS TO CONDITIONS TO BE ENCOUNTERED ON THE PROJECT. THE CONTRACTOR SHALL HAVE NO CLAIM FOR ADDITIONAL COMPENSATION OF FOR AN EXTENSION OF TIME FOR ANY REASON RESULTING FROM THE ACTUAL CONDENSATIONS FOR ANY THE SITE DIFFERING FROM THOSE INDICATED IN THE SUBSURFACE INFORMATION.

- NOTES: I. 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

CG2
GOODNIGHT, D.J.
INVESTIGATED BYFALCON_ENG.
DRAWN BY CROCKETT, S.C.
CHECKED BY HUNSBERGER, W.S.
SUBMITTED BYFALCON_ENG.
DATE JANUARY 2024



SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

		SO	IL DESCR	RIPTIO	1				GRADATION					ROCK DE	SCRIPTION
SOIL IS	CONSIDERED	UNCONSOLIDATED, SE	MI-CONSOLIDA	TED, OR WE	ATHERED E	ARTH MATERIAL	s that can	WELL GRADED - INDICA	TES A GOOD REPRESENTATION OF	PARTICLE SIZES F	ROM FINE TO COARSE.	HARD ROCK IS ROCK LINE IND	NON-COASTAL P	_AIN MATERIAL THAT W /EL AT WHICH NON-COA	WOULD YIELD SPT REFUSAL IF TESTE STAL PLAIN MATERIAL WOULD YIELD
ACCORD	ING TO THE	STANDARD PENETRATI	ION TEST (AAS	SHTO T 20	6, ASTM DI	586). SOIL CLA	SIFICATION	GAP-GRADED - INDICATE	S A MIXTURE OF UNIFORM PARTI	LE SIZES OF TW	OR MORE SIZES.	SPT REFUSAL I	S PENETRATION	BY A SPLIT SPOON SA	AMPLER EQUAL TO OR LESS THAN 0.1
CONSIST	ENCY, COLOR,	TEXTURE, MOISTURE, A	AASHTO CLASS	SIFICATION	, AND OTHE	R PERTINENT FA	CTORS SUCH		ANGULARITY OF	RAINS		REPRESENTED E	Y A ZONE OF V	/EATHERED ROCK.	IS THE REPORT OF THE REPORT
A	S MINERALOO VERY STIFF.G	GICAL COMPOSITION,A RAY.SILTY CLAY.MOIST WI	ANGULARITY,S1 <i>NTH INTERBEDD</i>	FRUCTURE,	PLASTICITY AND LAYERS.	,ETC. FOR EXA HIGHLY PLASTIC.A	1PLE, -7-6	THE ANGULARI	Y OR ROUNDNESS OF SOIL GRAINS	IS DESIGNATED	BY THE TERMS:	RUCK MATERIAL	SARE TYPICALI	A NON COACTAL DIAL	
	S	OIL LEGEND A	AND AASH	ITO CL	ASSIFIC	CATION		ANGULAR, SUBA	MINERAL OCICAL CON			ROCK (WR)		100 BLOWS PER FC	IN MATERIAL THAT WOULD FIELD SPT DOT IF TESTED.
GENERAL	,	GRANULAR MATERIALS	SI	LT-CLAY MA	ERIALS	ORGANIC I	ATERIALS	MINERAL NA		TUSTION	FTC	CRYSTALLINE		FINE TO COARSE C	CRAIN IGNEOUS AND METAMORPHIC RO
GROUP	A-1	A-3 A-2	A-4	A-5 A	-6 A-7	Δ-1 Δ-2 Δ-4	A-5	ARE USED I	N DESCRIPTIONS WHEN THEY ARE	CONSIDERED OF S	GNIFICANCE.	ROCK (CR)		GNEISS, GABBRO, SC	CHIST, ETC.
CLASS.	A-1-a A-1-b	A-2-4 A-2-5 A-2	2-6 A-2-7		A-7-5 A-7-6	A-3 A-6	A-7		COMPRESSIBIL	ÍTY		NON-CRYSTALLI	√E	SEDIMENTARY ROCH	GRAIN METAMORPHIC AND NON-COASTA < THAT WOULD YEILD SPT REFUSAL
SYMBOL								SLIG	HTLY COMPRESSIBLE	LL < 31	- 50			COASTAL PLAIN SE	DES PHYLLITE, SLATE, SANDSTONE, ETO TOIMENTS CEMENTED INTO ROCK, BUT
% PASSING	10000000000						-	HIGH	LY COMPRESSIBLE	LL > 50		SEDIMENTARY R	оск	SPT REFUSAL. ROC	K TYPE INCLUDES LIMESTONE, SANDS
*10	50 MX	51 Mai				GRANULAR CL	AY MUCK		PERCENTAGE OF M	<u>ATERIAL</u>				WEATH	HERING
*200	15 MX 25 MX	10 MX 35 MX 35 MX 35	MX 35 MX 36 M	N 36 MN 36	MN 36 MN	SUILS SO		ORGANIC MATERIAL	GRANULAR SILT - CLA	.Y OTHE	R MATERIAL	FRESH R	OCK FRESH. CRYS	TALS BRIGHT.FEW JOIN	TS MAY SHOW SLIGHT STAINING. ROCK
MATERIAL								TRACE OF ORGANIC M	ATTER 2 - 3% 3 - 5%	TRACE	1 - 10%	н	AMMER IF CRYST	ALLINE.	
PASSING •40 LL	-	- 40 MX 41 MN 40	MX 41 MN 40 M	x 41 MN 40	MX 41 MN	SOILS WITH		MODERATELY ORGANIC	5 - 10% 12 - 20%	SOME	20 - 35%	VERY SLIGHT R	JCK GENERALLY RYSTALS ON A F	FRESH, JOINTS STAINED,	SOME JOINTS MAY SHOW THIN CLAY CO SHINE BRIGHTLY, BOCK BINGS UNDER H
PI	6 MX	NP 10 MX 10 MX 11 M	MN 11 MN 10 M>	(10 MX 11	MN 11 MN	MODERATE	HIGHLY	HIGHLY ORGANIC	> 10% > 20%	HIGHLY	35% AND ABOVE	0	A CRYSTALLIN	E NATURE.	
GROUP INDEX	Ø	0 0	4 MX 8 MX	12 MX 16	MX NO MX	AMOUNTS OF	SOILS		GROUND WAT	R		SLIGHT R	JCK GENERALLY	FRESH, JOINTS STAINED	AND DISCOLORATION EXTENDS INTO RO
USUAL TYPES	STONE FRAGS.	FINE SILTY OR CL	AYEY S	ILTY	CLAYEY	MATTER		∇	WATER LEVEL IN BORE HOLE I	IMEDIATELY AFTER	R DRILLING	C C	RYSTALS ARE DU	ILL AND DISCOLORED. CF	RYSTALLINE ROCKS RING UNDER HAMMER
MATERIALS	SAND	SAND GRAVEL AND	SAND SI	OILS	SOILS				STATIC WATER LEVEL AFTER .	<u>24</u> HOURS		MODERATE S	IGNIFICANT PORT	IONS OF ROCK SHOW DIS	SCOLORATION AND WEATHERING EFFECTS
GEN. RATING		EXCELLENT TO GOOD		FAIR TO P	OOR	FAIR TO PC	DR UNSULTABL	E PW	PERCHED WATER, SATURATED ZO	NE, OR WATER BEA	ARING STRATA	(MOD.) G	ANITOID ROCKS, ULL SOUND UNDE	.R HAMMER BLOWS AND S	DULL AND DISCOLORED,SOME SHOW CLA SHOWS SIGNIFICANT LOSS OF STRENGTH
AS SUBGRADE			C 11 20 0	05 4 7 6 6		POUR		- 0-00-	SPRING OR SEEP			W	ITH FRESH ROCK	•	
	r				FNFSS	- LL - 30			MISCELLANEOUS S			MODERATELY A	L ROCK EXCEPT	QUARTZ DISCOLORED OF	R STAINED. IN GRANITOID ROCKS.ALL F KANLINIZATION, ROCK SHOWS SEVERE LI
		COMPACTNESS		NGE OF ST	ANDARD	RANGE OF	UNCONFINED					(MOD. SEV.) A	ND CAN BE EXCA	VATED WITH A GEOLOGIS	ST'S PICK. ROCK GIVES "CLUNK" SOUND
PRIMARY S	SOIL TYPE	CONSISTENCY	PENE	TRATION RI	SISTENCE	COMPRESSI (TON	VE STRENGTH S/FT ²)	L ROADWAY EME	ANKMENT (RE)	IP DIRECTION STRUCTURES			IESTED, WOULD	<u>YIELD SPI REFUSAL</u>	
051504		VERY LOOSE		< 4					SPT OUT TE		SLOPE INDICATOR	(SEV.) R	EDUCED IN STRE	NGTH TO STRONG SOIL.	IN GRANITOID ROCKS ALL FELDSPARS A
GRANUL	AR	LOOSE	_	4 TO 1	0		1/6				INSTALLATION	T II) SOME EXTENT. - TESTED. WOULD	SOME FRAGMENTS OF S	TRONG ROCK USUALLY REMAIN.
MATERIA (NON-CO		DENSE	-	30 TO	50		17 H	X ARTIFICIAL F	ILL (AF) OTHER	.ORING 🙆	CONE PENETROMETER TEST	VERY A	LL ROCK EXCEPT	QUARTZ DISCOLORED OF	R STAINED. ROCK FABRIC ELEMENTS AR
	HESTTE,	VERY DENSE		> 50							COUNDING DOD	SEVERE B	JT MASS IS EFF	ECTIVELY REDUCED TO S	SOIL STATUS, WITH ONLY FRAGMENTS OF
GENERAL	LY	VERY SOFT SOFT		< 2 2 TO	4	Ø.25	0.25 TO 0.5	INFERRED SU			SUUNDING RUD	V SEV./ V	ESTIGES OF ORIC	JINAL ROCK FABRIC REM	AIN. IF TESTED, WOULD YIELD SPT N V
SILT-CL	AY.	MEDIUM STIFF	-	4 TO	8	0.5	TO 1.0	INFERRED RO	CK LINE MW MONITOF	ING WELL -	WITH CORE	COMPLETE R	JCK REDUCED TO	SOIL. ROCK FABRIC NO	T DISCERNIBLE, OR DISCERNIBLE ONLY
(COHESI	VE)	VERY STIFF		15 TO	30	2	TO 4	ALLUVIAL SO	IL BOUNDARY A PIEZOME		← SPT N-VALUE	A	LSO AN EXAMPLE		T BE PRESENT AS DIKES OR STRINGERS
				> 30			• 4							ROCK H	ARDNESS
		IEXIL	JRE UR U	RAIN :	MZE							VERY HARD C	ANNOT BE SCRAT	CHED BY KNIFE OR SHAF	RP PICK. BREAKING OF HAND SPECIMENS
U.S. STD. SIE OPENING (MI	EVE SIZE M)	4 4.76	10 41 2.00 0.4	0 60 42 0.2	200 5 0.075	270 0.053		EXCAVATION	UNSUITABLE WASTE		PTABLE, BUT NOT TO BE	S NARD C	EVERAL HARD BL	OWS OF THE GEOLOGIST	'S PICK.
BOUL DE			COAI	RSE	FINE	CTL T	CLAY	SHALLOW		. USED DCK EMBA	NKMENT OR BACKFILL	T	J DETACH HAND	SPECIMEN.	NET WITH DIFFICUETT. HERD HEMMER DI
(BLDR.)		COB.) (GR.)	SAI		SAND	(SL.)	(CL.)					MODERATELY C	AN BE SCRATCHE	D BY KNIFE OR PICK. G	OUGES OR GROOVES TO 0.25 INCHES DE
	305	75	20	0 2	5	0.05 0	005	AR - AUGER REFUSAL	MED MEDIUM	VST	- VANE SHEAR TEST	HARU E	Y MODERATE BLC	RU BLUW OF A GEULUGI: JWS.	ST'S PICK. HAND SPECIMENS CAN BE DI
SIZE IN	12	3	210	012	-			BT - BORING TERMINATE	D MICA MICACEOUS	WEA.	- WEATHERED	MEDIUM C	AN BE GROOVED	OR GOUGED 0.05 INCHES	DEEP BY FIRM PRESSURE OF KNIFE O
	S	OIL MOISTURE	E - CORR	ELATIO	IN OF	TERMS		CPT - CLAY	N TEST NP - NON PLASTIC	7-	DRY UNIT WEIGHT	HARD C	AN BE EXCAVATE	D IN SMALL CHIPS TO P OGIST'S PICK.	PEICES 1 INCH MAXIMUM SIZE BY HARD
SOIL	MOISTURE	SCALE FIE	ELD MOISTUR	E GU	IDE FOR F	IELD MOISTURE	DESCRIPTION	CSE COARSE	ORG ORGANIC			SOFT C	AN BE GROVED C	R GOUGED READILY BY	KNIFE OR PICK. CAN BE EXCAVATED IN
	ERBERG LIP	MI15) L	DESCRIPTION					DPT - DYNAMIC PENETRA	TION TEST SAP SAPROLITIC	.ER IESI <u>5</u>	BULK	F	ROM CHIPS TO S IECES CAN BE B	EVERAL INCHES IN SIZE ROKEN BY FINGER PRESS	BY MODERATE BLOWS OF A PICK POIN SURE.
		- 9	SATURATED -	US	JALLY LID	UID: VERY WET, THE GROUND	USUALLY	e - VOID RATIO	SD SAND, SANDY	SS -	SPLIT SPOON	VERY C	AN BE CARVED W	/ITH KNIFE. CAN BE EXC	AVATED READILY WITH POINT OF PICK.
		LIMIT						FOSS FOSSILIFEROUS	SLI SLIGHTLY	RS ·	ROCK	SOFT O	₹ MORE IN THICK INGERNATI.	NESS CAN BE BROKEN E	BY FINGER PRESSURE. CAN BE SCRATCH
RANGE <		- \	WET - (W)	SE	MISOLID: R	EQUIRES DRYIN	G ТО	FRAC FRACTURED, FRAC FRAGS FRAGMENTS	TURES TCR - TRICONE REF W - MOISTURE CON	USAL RT -	RECOMPACTED TRIAXIAL		ACTURE SE		BEDDING
(PI) PL		С LIMIT		A1		NUM MUISTURE		HI HIGHLY	V - VERY		RATIO	TERM		SPACING	TERM
		- 1	MOIST - (M)	SO		NEAR OPTIMU	1 MOISTURE	EO	UIPMENT USED ON SUB	JECT PROJE	СТ	VERY WIDE	MOR	RE THAN 10 FEET	VERY THICKLY BEDDED
OM SL		M MOISTURE						DRILL UNITS:	ADVANCING TOOLS:	HAMMER	TYPE:	MODERATELY	CLOSE	1 TO 3 FEET	THINLY BEDDED 0.1
				RE	OUIRES AD	DITIONAL WATE	R TO	CME-45C	CLAY BITS		TOMATIC MANUAL	CLOSE VERY CLOSE	LES	0.16 TO 1 FOOT S THAN 0.16 FEET	VERY THINLY BEDDED 0.0 THICKLY LAMINATED 0.00
		- [URT - (U)	AT	TAIN OPTIM	MUM MOISTURE		CME-55	6' CONTINUOUS FLIGHT AUG	ER CORE SI	ZE:				THINLY LAMINATED <
	•		PLASTIC	CITY				1	8 HOLLOW AUGERS	🗌 - В _	н			INDUF	RATION
I		1	PLASTICITY I	NDEX (PI)		DRY ST	RENGTH	X CME-550X	HARD FACED FINGER BITS	-N _		FOR SEDIMENTA	RY ROCKS, INDU	RATION IS THE HARDEN	NING OF MATERIAL BY CEMENTING, HE
NON SI 11	PLASTIC	STIC	0-5 6-15	i		VERY SUT	LOW	VANE SHEAR TEST	TUNGCARBIDE INSERTS		IOLS:	FRIABLE		GENTLE BLOW	BY HAMMER DISINTEGRATES SAMPLE.
MOD	ERATELY PL	LASTIC	16-2	5		MED	IUM			.з П РС	ST HOLE DIGGER	NODEDAT		GRAINS CAN BE	E SEPARATED FROM SAMPLE WITH ST
HIG	HLT PLASTI	L	26 UR N			HI	н	PORTABLE HOIST	TRICONE STEEL	^{ГЕЕТН} Н н н н н н н н н н н н н н н н н н н	ND AUGER	MODERAT	LC INDURATED	BREAKS EASILY	Y WHEN HIT WITH HAMMER.
			CULO	ĸ				4 🗆		ARB. SC	UNDING ROD	INDURATI	D	GRAINS ARE DI	FFICULT TO SEPARATE WITH STEEL
DESCRIPT	IONS MAY I	INCLUDE COLOR OR	COLOR COMBI	NATIONS	TAN, RED,	ELLOW-BROWN,	BLUE-GRAY).			V 🗌	NE SHEAR TEST			SHARD HAMMER	BLOWS REQUIRED TO REAK CAMPLE
MC	DIFIERS SU	ICH AS LIGHT, DARK,	STREAKED, ET	TC.ARE US	SED TO DE	SCRIBE APPEAR	ANCE.		🗌			EXTREME	LY INDURATED	SAMPLE BREAK	S ACROSS GRAINS.

TOWN OF HOLLY SPRINGS PROJECT NO.



	TERMS AND DEFINITIONS
ED. AN INFERRED	ALLUVIUM (ALLUV.) - SOILS THAT HAVE BEEN TRANSPORTED BY WATER.
1 FOOT PER 60	AOUIFER - A WATER BEARING FORMATION OR STRATA.
IS OFTEN	ARENACEOUS - APPLIED TO ROCKS THAT HAVE BEEN DERIVED FROM SAND OR THAT CONTAIN SAND.
T N VALUES >	A NOTABLE PROPORTION OF CLAY IN THEIR COMPOSITION, SUCH AS SHALE, SLATE, ETC.
DCK THAT ICLUDES GRANITE,	APTESIAN - 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.
AL PLAIN	CALCAREOUS (CALC.) - SOILS THAT CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE.
IF TESTED. C.	CULLUTIOM - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BUTTOM OF SLOPE.
MAY NOT YIELD STONE, CEMENTED	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.
RINGS UNDER	ROCKS OR CUTS MASSIVE ROCK.
NINGS UNDER	<u>DIP</u> - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE HORIZONTAL.
COATINGS IF OPEN, HAMMER BLOWS IF	DIP DIRECTION (DIP AZIMUTH) - THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF THE LINE OF DIP, MEASURED CLOCKWISE FROM NORTH.
ock up to Al Feldspar	FAULT - A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE.
R BLOWS.	FISSILE - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES.
AY. ROCK HAS	<u>PEDAI</u> - RUCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLUDGED FROM PARENT MATERIAL.
H AS COMPARED	FLOOD PLAIN (FP) - LAND BORDERING A STREAM, BUILT OF SEDIMENTS DEPOSITED BY THE STREAM.
FELDSPARS DULL .OSS OF STRENGTH WHEN STRUCK.	<u>FORMATION (FM.)</u> - A MAPPABLE GEOLOGIC UNIT THAT CAN BE RECOONIZED 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
ARE KAOLINIZED	IIS LATERAL EXTENT. LENS - A BODY OF SOIL OR ROCK THAT THINS OUT IN ONE OR MORE DIRECTIONS.
	MOTILED (MOI) - IRREGULARLY MARKED WITH SPOTS OF DIFFERENT COLORS. MOTILING IN SOILS USUALLY INDICATES POOR AERATION AND LACK OF GOOD DRAINAGE.
IF STRONG ROCK	<u>PERCHED WATER</u> - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE OF AN INTERVENING IMPERVIOUS STRATUM.
IN SMALL AND	RESIDUAL (RES.) SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK.
S. SAPROLITE IS	ROCK SEGMENTS COULD TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE.
IS REQUIRES	SAPROLITE (SAP.) - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT ROCK.
BLOWS REQUIRED	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 REFORME OR SCHUETOLIV, OF THE INTERINGE PORCYS
EEP CAN BE	<u>SLICKENSIDE</u> - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT
DETACHED	OR SLIP PLANE. STANDARD PENETRATION TEST (PENETRATION RESISTANCE)(SPT) - NUMBER OF BLOWS (N OR BPE)OF
DR PICK POINT. BLOWS OF THE	A 140 LB. HAMMER FALLING 30 INCHES REQUIRED TO PRODUCE A PENETRATION OF I 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.
I FRAGMENTS	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.
THICKNESS	BENCH MARK:ELEVATIONS TAKEN FROM 12513_Is_tnl.tin
4 FEET	ELEVATION: FEET
16 - 1.5 FEET	NOTES:
03 - 0.16 FEET 08 - 0.03 FEET	FIAD - FILLED IMMEDIATELY AFTER DRILLING
0.008 FEET	
EAT, PRESSURE, ETC.	
TEEL PROBE;	
BRORE.	
FRUBE:	





50	100	PROJECT REFERENCE NO.	SHEET NO.
FEET		I-2013AA RETAINING WALL NO. WI	4 001, FROM
E = 4		-RPC- STA. 18+13.15, 27.50 ³ -RPC- STA. 21+36.15, 27.5	'RT TO 50'RT
			2,100
			2,095
DI RI			
			2,090
			2 0 9 5
			2,005
			2.080
			2,075
)			2,070
			2,065
			2,060
BT			0.055
(10/22)			2,055
			2 050
			2,000
			2.045
			2,040
			2,035
			2,035
			2,035
	NOTES	:	0.007
	PLANS A FILES RE	DOPTED FROM ELECTRONIC	2,035
	AECOM,	DATED APRIL 2022.	2 025
		USIRAHGRAPHY IS DRAWN H THE BORINGS WITH BOTH	2,030
	FRUJEC	TED UNTO THE PROFILE.	
10+00			

GEOTECHNICAL BORING REPORT BORE LOG

WBS 34165.1.2	S 34165.1.2 TIP 1-2513AA COUNTY BUNCOMBE GEOLOGIST Goodnight, D.J.										TIP	1-2513A	¥A	COUNTY E	BUNCOM	BE		GEOL	DGIST Goodnight, D.	l.	
SITE DESCRIPTION RETAINING	WALL NO. W1001, FROM	-RPC- STA. 18+13.15, 27.	.50' RT TO -RP	C- STA. 21+36.15, 27.50' RT	GROUND WTR (ft)	SITE	E DESC	RIPTION	RETA	AINING	WALL	NO. W10	01, FROM	-RPC- STA.	18+13.15	5, 27.50' RT	TO -RI	PC- STA. 2	21+36.15, 27.50' RT	GROUND	WTR (ft)
BORING NO. W1001_1	STATION 18+16	OFFSET 65 ft l	RT	ALIGNMENT -RPC-	0 HR. Dry	BOF	ring no	D. W100)1_2		STA	ATION 19	9+10	OF	FSET (63 ft RT			MENT -RPC-	0 HR.	Dry
COLLAR ELEV. 2,087.3 ft	TOTAL DEPTH 29.2 ft	NORTHING 67	6,494	EASTING 924,576	24 HR. Dry	COL	LLAR EI	LEV. 2,0	094.8 ft		ТОТ	TAL DEPT	TH 38.5 ft	NC	ORTHING	676,457		EASTI	NG 924,662	24 HR.	Dry
DRILL RIG/HAMMER EFF./DATE CG241	13 CME-550X 74% 04/08/2022		LL METHOD H.S	6. Augers HAMN	IER TYPE Automatic	DRIL	L RIG/HA	AMMER EF	F./DATE	CG24	4113 CM	E-550X 74%	6 04/08/2022			DRILL MET	HOD H	.S. Augers	HAI	IMER TYPE Au	utomatic
DRILLER Odom, C.	START DATE 10/10/22		10/10/22	SURFACE WATER DEPTH N	/A	DRI	LLER	Odom, C.			STA	ART DATE	E 10/07/22		OMP. DA	FE 10/07/	22		ACE WATER DEPTH	N/A	
ELEV (ft) DRIVE ELEV (ft) DEPTH BLOW COUN (ft) 0.5ft 0.5ft 0	IT BLOWS F 0.5ft 0 25 5	PER FOOT SAM 0 75 100 NO	MP. U 0 0. MOI G	SOIL AND ROCK DES	SCRIPTION DEPTH (ft)	ELE\ (ft)	V DRIVE ELEV (ft)	E DEPTH (ft)	BLOV 0.5ft	W COU 0.5ft	JNT 0.5ft	0 2	BLOWS F	PER FOOT	100	SAMP. NO.	MOI G		SOIL AND ROCK D	ESCRIPTION	
2090				_		2095	5											2,094.8	GROUND SU	RFACE	0.0
				GROUND SURF	ACE 0.0		2,093.	.8- 1.0	6	8	9	· · · ·	,				M		RESIDUA BROWN, V. STIFF, SA	L NDY SILT (A-4))
2,086.3 1.0 5 6	10 · · · · · · · · ·		м	RED-TAN AND TAN. ME	D. DENSE TO	2090	2,091.	3 3.5	6	7	7						м	<u><u><u></u></u><u>2,091.8</u></u>	BROWN, MED. DENS	E MICA E, SILTY SAND	<u></u>
2,083.8 3.5				DENSE, SILTY SAND (A TRACE TO LITTL	A-2-4) WITH E MICA	2000	2,088.	8 6.0	4	5	5	···/					M	2,089.3	(A-2-4) WITH LIT TAN, STIFF TO V. STI	TLE MICA	T
2,081.3 6.0 11 11							2,086.	3 8.5		7								E	(A-4) WITH TRA	CE MICA	
2080		· · · · · · · · · · · · · · · · · · ·	D	<u>-</u>		2085	5	+	4	1	°	@ 15					M	t i			
	¹⁵	· · · · · · · ·	D -				2 081	3 135							 			2,082.8	TAN-BROWN, MED. DEI	NSE, SILTY SAM	<u>ND</u> <u>12.0</u>
2075		· · · · · · · · · · · · · · · · · · ·		-		2080)	+	3	5	6	11		-	••••		м	<u>}</u>	(A-2-4) WITH LIT	TLE MICA	
$\frac{2,073.8+13.5}{7}$ 7 10	14 · · · · · · · · · · · · · · · · · · ·		D					Ŧ				· · · · · ·						ŧ.			
2070						2075	2,076.3 5	.3 18.5	4	6	9						м	£			
2,068.8 18.5	9		м	- • •				Ŧ				· · [·						2,072.8			22.0
		· · · · · · · · ·				2070	2,071.	3 23.5	3	6	7	· · [· · · · [· ·					м	Ļ	TAN, STIFF, SANDY S TRACE M	ILT (A-4) WITH CA	1
2,063.8 23.5	7	· · · · · · · · · · · ·		<u>-</u>		2070	<u>,</u>	+		-								-			27.0
							2,066.	3 28.5										<u> </u>	TAN-BROWN, V. DENS	E, SILTY SAND	D 27.0
		· · · · · · · · · · · · · · · · · · ·		- 2,059.3	28.0	2065	5	Ŧ	14	33	21			9 54			М	2,063.8	(//2 4) WIIII II		31.0
60 40/0.2		100/0.7		2,058.1 TAN AND WHITE,	GNEISS		2.061	+				· · · ·							GRAY AND WHIT	ROCK E, GNEISS	
				Boring Terminated at Eleva WR: GNEIS	stion 2,058.1 ft in	2060)		100/0.3				· · · ·	-	100/0.3						
								‡				· · · · ·	· · · · ·								
							2,056.	<u>3 38.5</u>	60/0.0			••••			60/0.0	┥ ├-		2,056.3	Boring Terminated WI	TH STANDARD	38.5
								Ŧ										Ē	PENETRATION TES Elevation 2,056.3 ft o	FREFUSAL at CR: GNEISS	
								Ī										E			
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GEOTECHNICAL BORING REPORT BORE LOG

١	NBS	34165	.1.2			ТІ	IP 1-	-2513A	A	COL	UNTY	BUNCON	/IBE				GEOLO	GIST Goodr	ight, D.J.			WBS	3416	5.1.2			TIF	• 1-2513/	A	COUNTY
;	SITE	DESCRI	PTION	RETA		S WAL	LL NC	D. W10	01, FRC	M -RPC	C- STA	. 18+13.1	5, 27.50	RT T	0 -RI	PC-	- STA. 21	+36.15, 27.5)' RT	GROUND WTR (ft)	SITE	DESCR	RIPTION	RET	AININ	G WALI	_ NO. W10	01, FRON	I -RPC- ST
I	BORI	NG NO.	W100	1_2A		S	TATIO	ON 19)+22		C	FFSET	6 ft LT				ALIGN	IENT -RPC-		0 HR. D	ry	BOR	ING NO.	. W100	01_3		ST	ATION 2)+03	
	COLL	AR ELE	V. 2,0	61.8 f	t	т	OTAL	L DEPT	H 2.01	ft	N	IORTHING	6 76,5	515			EASTIN	G 924,701		24 HR. FIA	D	COL	LAR EL	EV. 2,	089.4	ft	тс	TAL DEP	H 36.7 f	ť
I	ORILL	RIG/HAM	MER EF	./DATE	N/A								DRILL	METHO	DH	land /	Auger		HAMN	IER TYPE N/A		DRILI	RIG/HAN	MMER EF	F./DAT	E CG2	24113 CN	/IE-550X 74%	6 04/08/2022	2
I	DRILL	ER G	DODNI	GHT, C).	S	TART	T DATE	10/28	3/22	C	OMP. DA	TE 10/	28/22		:	SURFA	CE WATER D	EPTH N	/A		DRIL	LER C	dom, C			ST	ART DAT	10/07/2	22
E	LEV	DRIVE	DEPTH	BLO	w cou	JNT			BLOW	S PER F	TOOT		SAMP	. 💙/	L	Т						ELEV	DRIVE	DEPTH	BLC	OW CO	UNT		BLOWS	PER FOOT
	(ft)	elev (ft)	(ft)	0.5ft	0.5ft	0.5ft	0	2	25	50	75	5 100	NO.	Имо	I G	E	ELEV. (ft)	SUIL AND	KUCK DES	DEPTH	(ft)	(ft)	(ft)	(ft)	0.5ft	0.5ft	0.5ft	0	25	50
2	2065																					2090								
		-	-													F							2,088.4	1.0				+ • • • •		· · · ·
		-	-											<u> </u>			2,061.8	GRO		ACE	0.0 0.5		2.095.0	† <u>,</u> _	11	11	10	: : : •	1 · · · · · 21 · · · ·	
2	2060	-	-				Ŀ	· · ·						M		2	2,059.8		RESIDUAL	/	2.0	2085	-2,085.9	+ 3.5	6	9	8	· · · · ·		
		-	-													F		TAN, LOOSE SAND (A-2-4	TO MED. D) WITH TR	DENSE, SILTY RACE ROCK			2,083.4	<u>† 6.0</u>	6	5	8			
		-	-													F	L	F		S		2000	2,080.9	8.5				· · • • ·		
		-	-													F		CR/BC	ULDER: G	NEISS		2000		‡	4	0	°	• • • 14-		
		-	-													Ę		Boring Termin PENETRAT	ated WIT⊢ ON TEST I	I STANDARD REFUSAL at				‡						
		-	-													Ł		Elevation 2,05	9.8 ft on Cl GNEISS	R/BOULDER:		2075	2,075.9	<u> </u>	6	7	6	· · · · ·		
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		-	-													F							2 070 9	1 18 5				:::		
		_	-													F						2070	-	ł	10	11	12		23	<u> </u>
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		-	-													F						2065	2,065.9	23.5	4	6	7			
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		-	-													F							2 060 0	T 28 5						
		-	-													F						2060	- 2,000.9	+ 20.5	4	5	8	•13		+ • • • •
		-	-													F								Ŧ						
		-	-													F						2055	2,055.9	33.5	12	10	60			
		-	-													F						2000	-	‡	12	10	00			
		-	-													F							2,052.7	+ <u>36.7</u> +	60/0.0					
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GEOTECHNICAL BORING REPORT BORE LOG

WBS 34165.1.2	TIP 1-2513AA COUNT	Y BUNCOMBE	GEOLOGIST Goodnight, D.J.		WBS	S 3416	65.1.2			TIP	1-2513A	A	COUNTY BUNCO	MBE		GEOLOGIST Goodnight, D.J.		
SITE DESCRIPTION RETAINING	WALL NO. W1001, FROM -RPC- S	TA. 18+13.15, 27.50' RT TO -RP0	- STA. 21+36.15, 27.50' RT	GROUND WTR (ft)	SITE	E DESCI	RIPTION	RET		G WALL	NO. W10	01, FROM -	-RPC- STA. 18+13.	15, 27.50' RT T	TO -RPC-	· STA. 21+36.15, 27.50' RT	GROUND W	/TR (ft)
BORING NO. W1001_3A	STATION 20+18	OFFSET 30 ft LT	ALIGNMENT -RPC-	0 HR. Dry	BOR	RING NO). W100	01_4		STA	TION 21	1+23	OFFSET	23 ft RT		ALIGNMENT -RPC-	0 HR.	Dry
COLLAR ELEV. 2,056.3 ft	TOTAL DEPTH 6.0 ft	NORTHING 676,498	EASTING 924,799	24 HR. FIAD	COL	LAR EL	L EV. 2,	.071.31	ft	тот	AL DEPT	H 30.0 ft	NORTHIN	G 676,407		EASTING 924,872	24 HR.	Dry
DRILL RIG/HAMMER EFF./DATE CG204	46 Diedrich D50 87% 05/10/2022	DRILL METHOD H.S	Augers HAMM	ER TYPE Automatic	DRIL	L RIG/HA	MMER EF	FF./DATI	E CG2	24113 CME	E-550X 74%	6 04/08/2022		DRILL METHO	DD H.S.A	Augers	LI IER TYPE Autor	omatic
DRILLER Odom, C.	START DATE 10/27/22	COMP. DATE 10/27/22		A	DRIL	LLER	Odom, C).		STA		10/10/22	COMP. D	ATE 10/10/22	2		/A	
ELEV DRIVE DEPTH BLOW COUN (ft) (ft) 0.5ft 0.5ft 0	NT BLOWS PER FOO 0.5ft 0 25 50	T SAMP. ▼ C O 75 100 NO. MOI G	SOIL AND ROCK DES	CRIPTION DEPTH (ft)	ELEV (ft)	/ DRIVE ELEV (ft)	, DEPTH	BLC	OW COU 0.5ft	UNT 0.5ft	0 2	BLOWS PI	ER FOOT 0 75 100	NO. MC		SOIL AND ROCK DE	SCRIPTION	
(ff) LLLU (ff) 0.5ft 0.5ft 0 2060 -	0 25 50 6 10 10 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	75 100 NO. MOI G	LEV. (ft) 2,056.3 GROUND SURF ROADWAY EMBAN TAN-BROWN, LOOSE TO 2,052.8 SILTY SAND (A- CRYSTALLINE R 2,050.3 GRAY, GNEIS Boring Terminated at Elevat CR: GNEISS CR:	ACE 0.0 KMENT MED. DENSE, 2-4) 3.5 OCK 35 6.0 ion 2,050.3 ft in	(ft) 2075 2070 2065 2060 2055 2050 2045	2,070.3 2,067.8 2,067.8 2,065.3 2,052.8 2,052.8 2,047.8 2,047.8	(ft) 1.0 3.1 1.0 3.1 4.3 5.3 6.0 5.3 6.0 6.3 7.4 7.4 7.4 7.4 7.4 7.4 7.4 7.4	0.5ft 14 5 3 3 4 4 5 4	0.5ft 11 9 5 3 5 6 7 8	0.5ft 9 10 5 4 4 8 11 11				D NO. MC I I M <		2,071.3 GROUND SUR RESIDUAL BROWN, MED. DENSE (A-2-4) RED-BROWN, MED. DENSE SILTY SAND (/ BROWN TAN AND WHI MED. DENSE, SILTY SAN TRACE ROCK FRAMGEN MICA	ACE SILTY SAND NSE, CLAYEY T, LOOSE TO D (A-2-4) WITH TS AND LITTLE tion 2,041.3 ft in 2-4)	

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C.

REFERENCE

CONTENTS SHEET NO.

2

3

5-7

LEGENDS SITE PLAN PROFILE BORE LOGS

TITLE SHEET

DESCRIPTION

STATE OF NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION **DIVISION OF HIGHWAYS GEOTECHNICAL ENGINEERING UNIT**

STRUCTURE SUBSURFACE INVESTIGATION

COUNTY BUNCOMBE

PROJECT DESCRIPTION <u>I-40 FROM EAST OF SR 1224</u>
(MONTE VISTA RD) TO PAVEMENT JOINT WEST
OF SR 3412 (SAND HILL RD). INCLUDES INITIAL
IMPROVEMENTS AT I-40EB TO I-26EB AT US 19/23
(SMOKEY PARK HIGHWAY)
SITE DESCRIPTION RETAINING WALL NO. W1002, FROM
-RPC- STATION 23+68.60, 88.85' RT TO -RPC-
STATION 29+85.00, 60.00' RT

S 3416 PROJEC

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	I–2513AA	1	7

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 (99) 707-6850. THE SUBSURFACE PLANS AND REPORTS, FIELD BORING LOGS, ROCK CORES AND SOIL TEST DATA AVAIL

CENERAL SOL 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 BORNOS OR BETWEEN SAMPLED STRATA WITHIN THE BOREHOLE. THE LABORATORY SAMPLE DATA AND THE IN SITU UN-FLACE) TEST DATA CAN BE RELIED ON ONLY TO THE DECREE OF RELIABILITY INHERENT IN THE STANDARD TEST WETHOD. THE OBSERVED WATER LEVELS OR SOL MOISTURE CONDITIONS INDICATED IN THE SUBSURFACE INVESTIGATIONS ARE AS RECORDED AT THE TIME OF THE INVESTIGATION. THESE WATER LEVELS OR SOL MOISTURE CONDITIONS MAY YARY CONSIDERABLY WITH THE ACCORDING TO CLIMATIC CONDITIONS INCLUDING TEMPERATURES, PRECIPITATION AND WIND, AS WELL AS OTHER NON-CLIMATIC FACTORS.

THE BIDDER OR CONTRACTOR IS CALITONED THAT DETAILS SHOWN ON THE VIBSURFACE 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 OPHION OF THE DEPARTMENT AS TO THE TYPE OF MATERIALS AND CONDITIONS TO BE ENCOUNTERED. THE BIDDER OR CONTRACTOR IS CAUTIONED TO MAKE SUCH INDEPENDENT SUBSURFACE INVESTIGATIONS AS HE DEEMS NECESSARY TO SATISY HIMSELF AS TO CONDITIONS TO BE ENCOUNTERED ON THE REVIENT OF THE CONTRACTOR SHALL HAVE NO CLAIM FOR ADDITIONAL COMPENSATION OF FOR AN EXTENSION OF TIME FOR ANY REASON RESULTING FOM THE ACTUAL CONDENSATION.

- NOTES: I. 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 CLAMS FOR INCREASED COMPENSATION OR EXTENSION OF TIME BASED ON DIFFERENCES BETWEEN THE CONDITIONS INDICATED HEREIN AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

PERSONNEL

CG2
GOODNIGHT, D.J.
INVESTIGATED BYFALCON ENG.
DRAWN BYCROCKETT, S.C.
CHECKED BY HUNSBERGER, W.S.
SUBMITTED BY FALCON ENG.
DATE JANUARY 2024



SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

		SO	IL DESCR	RIPTIO	1				GRADATION					ROCK DE	SCRIPTION
SOIL IS	CONSIDERED	UNCONSOLIDATED, SE	MI-CONSOLIDA	TED, OR WE	ATHERED E	ARTH MATERIAL	s that can	WELL GRADED - INDICA	TES A GOOD REPRESENTATION OF	PARTICLE SIZES F	ROM FINE TO COARSE.	HARD ROCK IS ROCK LINE IND	NON-COASTAL P	_AIN MATERIAL THAT W /EL AT WHICH NON-COA	WOULD YIELD SPT REFUSAL IF TESTE STAL PLAIN MATERIAL WOULD YIELD
ACCORD	ING TO THE	STANDARD PENETRATI	ION TEST (AAS	SHTO T 20	6, ASTM DI	586). SOIL CLA	SIFICATION	GAP-GRADED - INDICATE	S A MIXTURE OF UNIFORM PARTI	LE SIZES OF TW	OR MORE SIZES.	SPT REFUSAL I	S PENETRATION	BY A SPLIT SPOON SA	AMPLER EQUAL TO OR LESS THAN 0.1
CONSIST	ENCY, COLOR,	TEXTURE, MOISTURE, A	AASHTO CLASS	SIFICATION	, AND OTHE	R PERTINENT FA	CTORS SUCH		ANGULARITY OF	RAINS		REPRESENTED E	Y A ZONE OF V	/EATHERED ROCK.	IS THE REPORT OF THE REPORT
A	S MINERALOO VERY STIFF.G	GICAL COMPOSITION,A RAY.SILTY CLAY.MOIST W	ANGULARITY,S1 <i>NTH INTERBEDD</i>	FRUCTURE,	PLASTICITY AND LAYERS.	,ETC. FOR EXA HIGHLY PLASTIC.A	1PLE, -7-6	THE ANGULARI	Y OR ROUNDNESS OF SOIL GRAINS	IS DESIGNATED	BY THE TERMS:	RUCK MATERIAL	SARE TYPICALI	A NON COACTAL DIAL	
	S	OIL LEGEND A	AND AASH	ITO CL	ASSIFIC	CATION		ANGULAR, SUBA	MINERAL OCICAL CON			ROCK (WR)		100 BLOWS PER FC	IN MATERIAL THAT WOULD FIELD SPT DOT IF TESTED.
GENERAL	,	GRANULAR MATERIALS	SI	LT-CLAY MA	ERIALS	ORGANIC I	ATERIALS	MINERAL NA		TUSTION	FTC	CRYSTALLINE		FINE TO COARSE C	CRAIN IGNEOUS AND METAMORPHIC RO
GROUP	A-1	A-3 A-2	A-4	A-5 A	-6 A-7	Δ-1 Δ-2 Δ-4	A-5	ARE USED I	N DESCRIPTIONS WHEN THEY ARE	CONSIDERED OF S	GNIFICANCE.	ROCK (CR)		GNEISS, GABBRO, SC	CHIST, ETC.
CLASS.	A-1-a A-1-b	A-2-4 A-2-5 A-2	2-6 A-2-7		A-7-5 A-7-6	A-3 A-6	A-7		COMPRESSIBIL	ÍTY		NON-CRYSTALLI	√E	SEDIMENTARY ROCH	GRAIN METAMORPHIC AND NON-COASTA < THAT WOULD YEILD SPT REFUSAL
SYMBOL								SLIG	HTLY COMPRESSIBLE	LL < 31	- 50			COASTAL PLAIN SE	DES PHYLLITE, SLATE, SANDSTONE, ETO TOIMENTS CEMENTED INTO ROCK, BUT
% PASSING	10000000000						-	HIGH	LY COMPRESSIBLE	LL > 50		SEDIMENTARY R	оск	SPT REFUSAL. ROC	K TYPE INCLUDES LIMESTONE, SANDS
*10	50 MX	51 Mai				GRANULAR CL	AY MUCK		PERCENTAGE OF M	<u>ATERIAL</u>				WEATH	HERING
*200	15 MX 25 MX	10 MX 35 MX 35 MX 35	MX 35 MX 36 M	N 36 MN 36	MN 36 MN	SUILS SO		ORGANIC MATERIAL	GRANULAR SILT - CLA	.Y OTHE	R MATERIAL	FRESH R	OCK FRESH. CRYS	TALS BRIGHT.FEW JOIN	TS MAY SHOW SLIGHT STAINING. ROCK
MATERIAL								TRACE OF ORGANIC M	ATTER 2 - 3% 3 - 5%	TRACE	1 - 10%	н	AMMER IF CRYST	ALLINE.	
PASSING •40 LL	-	- 40 MX 41 MN 40	MX 41 MN 40 M	x 41 MN 40	MX 41 MN	SOILS WITH		MODERATELY ORGANIC	5 - 10% 12 - 20%	SOME	20 - 35%	VERY SLIGHT R	JCK GENERALLY RYSTALS ON A F	FRESH, JOINTS STAINED,	SOME JOINTS MAY SHOW THIN CLAY CO SHINE BRIGHTLY, BOCK BINGS UNDER H
PI	6 MX	NP 10 MX 10 MX 11 M	MN 11 MN 10 M>	(10 MX 11	MN 11 MN	MODERATE	HIGHLY	HIGHLY ORGANIC	> 10% > 20%	HIGHLY	35% AND ABOVE	0	A CRYSTALLIN	E NATURE.	
GROUP INDEX	Ø	0 0	4 MX 8 MX	12 MX 16	MX NO MX	AMOUNTS OF	SOILS		GROUND WAT	R		SLIGHT R	JCK GENERALLY	FRESH, JOINTS STAINED	AND DISCOLORATION EXTENDS INTO RO
USUAL TYPES	STONE FRAGS.	FINE SILTY OR CL	AYEY S	ILTY	CLAYEY	MATTER		∇	WATER LEVEL IN BORE HOLE I	IMEDIATELY AFTER	R DRILLING	C C	RYSTALS ARE DU	ILL AND DISCOLORED. CF	RYSTALLINE ROCKS RING UNDER HAMMER
MATERIALS	SAND	SAND GRAVEL AND	SAND SI	OILS	SOILS				STATIC WATER LEVEL AFTER .	<u>24</u> HOURS		MODERATE S	IGNIFICANT PORT	IONS OF ROCK SHOW DIS	SCOLORATION AND WEATHERING EFFECTS
GEN. RATING		EXCELLENT TO GOOD		FAIR TO P	OOR	FAIR TO PC	DR UNSULTABL	E PW	PERCHED WATER, SATURATED ZO	NE, OR WATER BEA	ARING STRATA	(MOD.) G	ANITOID ROCKS, ULL SOUND UNDE	.R HAMMER BLOWS AND S	DULL AND DISCOLORED,SOME SHOW CLA SHOWS SIGNIFICANT LOSS OF STRENGTH
AS SUBGRADE			C 11 20 0	05 4 7 6 6		POUR		- 0-00-	SPRING OR SEEP			W	ITH FRESH ROCK	•	
	r				FNFSS	- LL - 30			MISCELLANEOUS S			MODERATELY A	L ROCK EXCEPT	QUARTZ DISCOLORED OF	R STAINED. IN GRANITOID ROCKS.ALL F KANLINIZATION, ROCK SHOWS SEVERE LI
		COMPACTNESS		NGE OF ST	ANDARD	RANGE OF	UNCONFINED					(MOD. SEV.) A	ND CAN BE EXCA	VATED WITH A GEOLOGIS	ST'S PICK. ROCK GIVES "CLUNK" SOUND
PRIMARY S	SOIL TYPE	CONSISTENCY	PENE	TRATION RI	SISTENCE	COMPRESSI (TON	VE STRENGTH S/FT ²)	L ROADWAY EME	ANKMENT (RE)	IP DIRECTION STRUCTURES			IESTED, WOULD	<u>YIELD SPI REFUSAL</u>	
051504		VERY LOOSE		< 4					SPT OUT TE		SLOPE INDICATOR	(SEV.) R	EDUCED IN STRE	NGTH TO STRONG SOIL.	IN GRANITOID ROCKS ALL FELDSPARS A
GRANUL	AR	LOOSE	_	4 TO 1	0		1/6				INSTALLATION	T II) SOME EXTENT. - TESTED. WOULD	SOME FRAGMENTS OF S	TRONG ROCK USUALLY REMAIN.
MATERIA (NON-CO		DENSE	-	30 TO	50		17 H	X ARTIFICIAL F	ILL (AF) OTHER	.ORING 🙆	CONE PENETROMETER TEST	VERY A	LL ROCK EXCEPT	QUARTZ DISCOLORED OF	R STAINED. ROCK FABRIC ELEMENTS AR
	HESTTE,	VERY DENSE		> 50							COUNDING DOD	SEVERE B	JT MASS IS EFF	ECTIVELY REDUCED TO S	SOIL STATUS, WITH ONLY FRAGMENTS OF
GENERAL	LY	VERY SOFT SOFT		< 2 2 TO	4	Ø.25	0.25 TO 0.5	INFERRED SU			SUUNDING RUD	V SEV./ V	ESTIGES OF ORIC	JINAL ROCK FABRIC REM	AIN. IF TESTED, WOULD YIELD SPT N V
SILT-CL	AY.	MEDIUM STIFF	-	4 TO	8	0.5	TO 1.0	INFERRED RO	CK LINE MW MONITOF	ING WELL -	WITH CORE	COMPLETE R	JCK REDUCED TO	SOIL. ROCK FABRIC NO	T DISCERNIBLE, OR DISCERNIBLE ONLY
(COHESI	VE)	VERY STIFF		15 TO	30	2	TO 4	ALLUVIAL SO	IL BOUNDARY A PIEZOME		← SPT N-VALUE	A	LSO AN EXAMPLE		T BE PRESENT AS DIKES OR STRINGERS
				> 30			• 4							ROCK H	ARDNESS
		IEXIL	JRE UR U	RAIN :	MZE							VERY HARD C	ANNOT BE SCRAT	CHED BY KNIFE OR SHAF	RP PICK. BREAKING OF HAND SPECIMENS
U.S. STD. SIE OPENING (MI	EVE SIZE M)	4 4.76	10 41 2.00 0.4	0 60 42 0.2	200 5 0.075	270 0.053		EXCAVATION	UNSUITABLE WASTE		PTABLE, BUT NOT TO BE	S NARD C	EVERAL HARD BL	OWS OF THE GEOLOGIST	'S PICK.
BOUL DE			COAI	RSE	FINE	CTL T	CLAY	SHALLOW		. USED DCK EMBA	NKMENT OR BACKFILL	T	J DETACH HAND	SPECIMEN.	NET WITH DIFFICUETT. HERD HEMMER DI
(BLDR.)		COB.) (GR.)	SAI		SAND	(SL.)	(CL.)					MODERATELY C	AN BE SCRATCHE	D BY KNIFE OR PICK. G	OUGES OR GROOVES TO 0.25 INCHES DE
	305	75	20	0 2	5	0.05 0	005	AR - AUGER REFUSAL	MED MEDIUM	VST	- VANE SHEAR TEST	HARU E	Y MODERATE BLC	RU BLUW OF A GEULUGI: JWS.	ST'S PICK. HAND SPECIMENS CAN BE DI
SIZE IN	12	3	210	012	-			BT - BORING TERMINATE	D MICA MICACEOUS	WEA.	- WEATHERED	MEDIUM C	AN BE GROOVED	OR GOUGED 0.05 INCHES	DEEP BY FIRM PRESSURE OF KNIFE O
	S	OIL MOISTURE	E - CORR	ELATIO	IN OF	TERMS		CPT - CLAY	N TEST NP - NON PLASTIC	7-	DRY UNIT WEIGHT	HARD C	AN BE EXCAVATE	D IN SMALL CHIPS TO P OGIST'S PICK.	PEICES 1 INCH MAXIMUM SIZE BY HARD
SOIL	MOISTURE	SCALE FIE	ELD MOISTUR	E GU	IDE FOR F	IELD MOISTURE	DESCRIPTION	CSE COARSE	ORG ORGANIC			SOFT C	AN BE GROVED C	R GOUGED READILY BY	KNIFE OR PICK. CAN BE EXCAVATED IN
	ERBERG LIP	MI15) L	DESCRIPTION					DPT - DYNAMIC PENETRA	TION TEST SAP SAPROLITIC	.ER IESI <u>5</u>	BULK	F	ROM CHIPS TO S IECES CAN BE B	EVERAL INCHES IN SIZE ROKEN BY FINGER PRESS	BY MODERATE BLOWS OF A PICK POIN SURE.
		- 9	SATURATED -	US	JALLY LID	UID: VERY WET, THE GROUND	USUALLY	e - VOID RATIO	SD SAND, SANDY	SS -	SPLIT SPOON	VERY C	AN BE CARVED W	/ITH KNIFE. CAN BE EXC	AVATED READILY WITH POINT OF PICK.
		LIMIT						FOSS FOSSILIFEROUS	SLI SLIGHTLY	RS ·	ROCK	SOFT O	₹ MORE IN THICK INGERNATI.	NESS CAN BE BROKEN E	BY FINGER PRESSURE. CAN BE SCRATCH
RANGE <		- \	WET - (W)	SE	MISOLID: R	EQUIRES DRYIN	G ТО	FRAC FRACTURED, FRAC FRAGS FRAGMENTS	TURES TCR - TRICONE REF W - MOISTURE CON	USAL RT -	RECOMPACTED TRIAXIAL				BEDDING
(PI) PL		С LIMIT		AI		NUM MUISTURE		HI HIGHLY	V - VERY		RATIO	TERM		SPACING	TERM
		- 1	MOIST - (M)	SO		NEAR OPTIMU	1 MOISTURE	EO	UIPMENT USED ON SUB	JECT PROJE	СТ	VERY WIDE	MOR	RE THAN 10 FEET	VERY THICKLY BEDDED
OM SL		M MOISTURE						DRILL UNITS:	ADVANCING TOOLS:	HAMMER	TYPE:	MODERATELY	CLOSE	1 TO 3 FEET	THINLY BEDDED 0.1
				RE	OUIRES AD	DITIONAL WATE	R TO	CME-45C	CLAY BITS		TOMATIC MANUAL	CLOSE VERY CLOSE	LES	0.16 TO 1 FOOT S THAN 0.16 FEET	VERY THINLY BEDDED 0.0 THICKLY LAMINATED 0.00
		- [URT - (U)	AT	TAIN OPTIM	MUM MOISTURE		CME-55	6' CONTINUOUS FLIGHT AUG	ER CORE SI	ZE:				THINLY LAMINATED <
	•		PLASTIC	CITY				1	8 HOLLOW AUGERS	🗌 - В _	н			INDUF	RATION
I		1	PLASTICITY I	NDEX (PI)		DRY ST	RENGTH	X CME-550X	HARD FACED FINGER BITS	-N _		FOR SEDIMENTA	RY ROCKS, INDU	RATION IS THE HARDEN	NING OF MATERIAL BY CEMENTING, HE
NON SI 11	PLASTIC	STIC	0-5 6-15	i		VERY SUT	LOW	VANE SHEAR TEST	TUNGCARBIDE INSERTS		IOLS:	FRIABLE		GENTLE BLOW	BY HAMMER DISINTEGRATES SAMPLE.
MOD	ERATELY PL	LASTIC	16-2	5		MED	IUM			.з П РС	ST HOLE DIGGER	NODEDAT		GRAINS CAN BE	E SEPARATED FROM SAMPLE WITH ST
HIG	HLT PLASTI	L	26 UR N			HI	н	PORTABLE HOIST	TRICONE STEEL	^{ГЕЕТН} Н н н н н н н н н н н н н н н н н н н	ND AUGER	MODERAT	LC INDURATED	BREAKS EASILY	Y WHEN HIT WITH HAMMER.
			CULO	ĸ				4 🗆		ARB. SC	UNDING ROD	INDURATI	D	GRAINS ARE DI	FFICULT TO SEPARATE WITH STEEL
DESCRIPT	IONS MAY I	INCLUDE COLOR OR	COLOR COMBI	NATIONS	TAN, RED,	ELLOW-BROWN,	BLUE-GRAY).			V 🗌	NE SHEAR TEST			SHARD HAMMER	BLOWS REQUIRED TO REFAM CAMPIE
MC	DIFIERS SU	ICH AS LIGHT, DARK,	STREAKED, ET	TC.ARE US	SED TO DE	SCRIBE APPEAR	ANCE.		🗌			EXTREME	LY INDURATED	SAMPLE BREAK	S ACROSS GRAINS.

TOWN OF HOLLY SPRINGS PROJECT NO.



	TERMS AND DEFINITIONS
ED. AN INFERRED	ALLUVIUM (ALLUV.) - SOILS THAT HAVE BEEN TRANSPORTED BY WATER.
1 FOOT PER 60	AOUIFER - A WATER BEARING FORMATION OR STRATA.
IS OFTEN	ARENACEOUS - APPLIED TO ROCKS THAT HAVE BEEN DERIVED FROM SAND OR THAT CONTAIN SAND.
T N VALUES >	A NOTABLE PROPORTION OF CLAY IN THEIR COMPOSITION, SUCH AS SHALE, SLATE, ETC.
DCK THAT ICLUDES GRANITE,	APTESIAN - 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.
AL PLAIN	CALCAREOUS (CALC.) - SOILS THAT CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE.
IF TESTED. C.	CULLUTIOM - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BUTTOM OF SLOPE.
MAY NOT YIELD STONE, CEMENTED	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.
RINGS UNDER	ROCKS OR CUTS MASSIVE ROCK.
NINGS UNDER	<u>DIP</u> - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE HORIZONTAL.
COATINGS IF OPEN, HAMMER BLOWS IF	DIP DIRECTION (DIP AZIMUTH) - THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF THE LINE OF DIP, MEASURED CLOCKWISE FROM NORTH.
ock up to Al Feldspar	FAULT - A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE.
R BLOWS.	FISSILE - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES.
AY. ROCK HAS	<u>PEDAI</u> - RUCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLUDGED FROM PARENT MATERIAL.
H AS COMPARED	FLOOD PLAIN (FP) - LAND BORDERING A STREAM, BUILT OF SEDIMENTS DEPOSITED BY THE STREAM.
FELDSPARS DULL .OSS OF STRENGTH WHEN STRUCK.	<u>FORMATION (FM.)</u> - A MAPPABLE GEOLOGIC UNIT THAT CAN BE RECOONIZED 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
ARE KAOLINIZED	IIS LATERAL EXTENT. LENS - A BODY OF SOIL OR ROCK THAT THINS OUT IN ONE OR MORE DIRECTIONS.
	MOTILED (MOI) - IRREGULARLY MARKED WITH SPOTS OF DIFFERENT COLORS. MOTILING IN SOILS USUALLY INDICATES POOR AERATION AND LACK OF GOOD DRAINAGE.
IF STRONG ROCK	<u>PERCHED WATER</u> - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE OF AN INTERVENING IMPERVIOUS STRATUM.
IN SMALL AND	RESIDUAL (RES.) SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK.
S. SAPROLITE IS	ROCK SEGMENTS COULD TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE.
IS REQUIRES	SAPROLITE (SAP.) - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT ROCK.
BLOWS REQUIRED	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 REFORME OR SCHUSTOLITY, OF THE INTERINGE PORCYS
EEP CAN BE	<u>SLICKENSIDE</u> - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT
DETACHED	OR SLIP PLANE. STANDARD PENETRATION TEST (PENETRATION RESISTANCE)(SPT) - NUMBER OF BLOWS (N OR BPE)OF
DR PICK POINT. BLOWS OF THE	A 140 LB. HAMMER FALLING 30 INCHES REQUIRED TO PRODUCE A PENETRATION OF I 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.
I FRAGMENTS	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.
THICKNESS	BENCH MARK:ELEVATIONS TAKEN FROM 12513_Is_tnl.tin
4 FEET	ELEVATION: FEET
16 - 1.5 FEET	NOTES:
03 - 0.16 FEET 08 - 0.03 FEET	FIAD - FILLED IMMEDIATELY AFTER DRILLING
0.008 FEET	
EAT, PRESSURE, ETC.	
TEEL PROBE;	
BRORE.	
FRUBE:	





GEOTECHNICAL BORING REPORT BORE LOG

SITE DESC BORING NC COLLAR EI DRILL RIG/HA DRILLER ELEV (ft) 2025	CRIPTION IO. W100 ELEV. 2,0 IAMMER EFI Odom, C. Odom, C. (ft) 2.7 1.0 0.2 3.5 7.7 6.0	RETA 2_1 23.7 ft F./DATE BLOV 0.5ft	INING CG24 W COUI 0.5ft	WALI ST TO 113 CM ST 0.5ft	L NO. W10 TATION 2 DTAL DEP1 ME-550X 749 TART DATI 0	002, FROI 3+72 FH 10.0 6 04/08/202 E 10/07/ BLOWS 25	M -RPC ft 22 /22 S PER F	C- STA	23+68.60 DFFSET S IORTHING), 88.85' 90 ft RT 6 676,2 DRILL N TE 10/	RT TC 37 METHOD) -RP	C- STA. 29+85.00, 60.00 ALIGNMENT -RPC- EASTING 925,063	RT	GROUND WTR (ft) 0 HR. Dry 24 HR. Dry	SITE BORI COLI	DESCRI NG NO. _AR ELE	PTION W100	RETA 02_2 016.1 ft	AINING '	WALL STA TOT	NO. W1002 TION 24+ FAL DEPTH	2, FROM 80 42.5 ft 4/08/2022	-RPC- S
BORING NO COLLAR EL DRILL RIG/HA DRILLER ELEV (ft) DRIVE ELEV (ft) 2025	IO. W100 ELEV. 2,C IAMMER EFI Odom, C. VE DEPTH (ft) 2.7 1.0 0.2 3.5 7.7 6.0	2_1 023.7 ft F./DATE BLOV 0.5ft 6	CG24 N COU 0.5ft	ST. TO 113 CM ST. NT 0.5ft	ATION 2 DTAL DEPT ME-550X 749 CART DATE	3+72 FH 10.0 6 04/08/202 E 10/07/ BLOWS 25	ft 22 /22 3 PER F		OFFSET	90 ft RT 676,2 DRILL N TE 10/0	37 Nethod) H.S	ALIGNMENT -RPC- EASTING 925,063	1	0 HR. Dry 24 HR. Dry	BORI	NG NO. _ar ele	W100)2_2)16.1 ft	t	STA TO	TION 24+	80 42.5 ft	
COLLAR EI DRILL RIG/HA DRILLER ELEV (ft) DRIVE ELEV (ft) 2025	ELEV. 2,0 IAMMER EFI Odom, C. VE DEPTH (ft) 2.7 1.0 0.2 3.5 7.7 6.0	D23.7 ft F./DATE BLOV 0.5ft	CG24 W COU 0.5ft	TO 113 CM ST NT 0.5ft	DTAL DEP ME-550X 749 CART DATE 0	 FH 10.0 6 04/08/202 E 10/07/ BLOWS 25 	ft 22 /22 6 PER F		ORTHING	676,2	37 Method	он.	EASTING 925,063	1	24 HR. Dry	COLI	AR ELE	IV. 2,0	016.1 ft	t	TO		42.5 ft	
DRILL RIG/HA DRILLER ELEV (ft) DRIVE ELEV (ft) 2025	HAMMER EFI Odom, C. VE DEPTH (ft) 2.7 1.0 2.7 3.5 7.7 6.0	BLOV 0.5ft	CG24 W COUI	113 CN ST NT 0.5ft	ME-550X 749	6 04/08/202 10/07/ BLOWS 25	22 /22 6 PER F		COMP. DA	DRILLN	IETHOD) Н.S		1							113 CM	E 550X 74% 0	4/08/2022	
DRILLER ELEV DRIVE (ft) DRIVE 2025 2022	Odom, C. VE DEPTH (ft) 2.7 1.0 0.2 3.5 7.7 6.0	BLOV 0.5ft	V COUI	NT 0.5ft	O	E 10/07/ BLOWS 25	'22 6 PER F		OMP. DA	TE 10/			S. Augers	HAMM	IER TYPE Automatic	DRILL	RIG/HAM	MER EF	F./DATE	CG241	113 0101	L-JJUA 14/00		
ELEV DRIVE (ft) C(ft) 2025	VE DEPTH (ft) 2.7 1.0 0.2 3.5 7.7 6.0	BLOV 0.5ft 6	0.5ft	NT 0.5ft	0	BLOWS	PER F				07/22		SURFACE WATER DI		Ά	DRIL	LER O	dom, C.			STA	ART DATE	10/10/2	2
2025	(ft) (ft) 2.7 1.0 0.2 3.5 7.7 6.0	0.5ft	0.5ft	0.5ft	0	25		-001		SAMP.	▼/					FI FV	DRIVE	DEPTH	BLO	W COUN	NT		BLOWS	PER FOOT
2025	2.7- 1.0 	6					50	75	5 100	NO.	мо	G	SOIL AND F	OCK DES	DEPTH (ft)	(ft)	ELEV (ft)	(ft)	0.5ft	0.5ft (0.5ft	0 25	į	50
2020 2,020. 2,017. 2015 2,015.		5 4 3	6 7 5	8 12 8 6	· · · · · · · · · · · · · · · · · · ·					SAMP. NO.	07/22 MOI M M M		SOIL AND F ELEV. (ft) 2.023.7 GROU 2.023.7 GROU 2.020.7 BROWN, STII TAN-BROWN A V. STIFF, SAN 2.015.7 TAN-GRAY, STI 2.013.7 Boring Terminate RES	PTH N/ OCK DES	A CRIPTION DEPTH (ft) ACE 0.0 0.8 (CLAY (A-6) - 3.0 AN, STIFF TO FY SILTY CLAY 10.0 tion 2,013.7 ft in -7)	DRIL ELEV 2020 2015 2010 2010 2000 1900 1995 1990 1985 1980 1975	LER O DRIVE ELEV (ft) 2,015.1 2,012.6 2,012.6 2,012.6 2,007.6 2,007.6 1,997.6 1,977.6	dom, C. DEPTH (ft) 10 3.5 6.0 8.5 13.5 18.5 23.5 28.5 33.5 33.5	BLO 0.5ft 3 3 3 3 3 3 3 3 3 3 4 60/0.0	W COUN 0.5ft 0 8 2 4 7 1 3 4 5 6 7 1 7 1 3 4 7 1 1 1 1 1 1 1 1 1 1 1 1 1	STA NT D.5ft 0.5ft 1 1 1 3 7 5 17 17	ART DATE 0 25	10/10/2 BLOWS I	2 PER FOOT 30
													-					-						



GEOTECHNICAL BORING REPORT BORE LOG

WB	IS 3	34165	.1.2			Т	IP 1-2513	AA	COUNT	Y BUNCC	MBE			GEC	LOGIST Goodnig	ht, D.J.		WB	3 34165	5.1.2			ТІ	P 1-2513	4A	COUNTY
SIT	E DE	SCRI	PTION	RET	AINING	G WAL	L NO. W1	002, FRON	I-RPC-S	TA. 23+68.	60, 88.85	" RT T() -RF	PC- STA	. 29+85.00, 60.00'	RT	GROUND WTR (ft)	SITE	DESCR		I RET	AINING	G WAL	L NO. W10	02, FRON	I-RPC-ST
BO	ring) NO.	W100	02_3		S	TATION 2	25+66		OFFSET	53 ft RT	-		ALIC	GNMENT -RPC-		0 HR. 4.6	BOF	NG NO.	W10	02_4		S	TATION 2	6+71	
CO	LLAF	R ELE	V. 2,0)15.4 f	ť	т	OTAL DEP	TH 44.9 f	t	NORTHIN	IG 676, ²	177		EAS	TING 925,248		24 HR. 3.6	COL	LAR ELI	EV. 2,	016.11	ft	т	OTAL DEP	ГН 39.9 f	t
DRI	LL RIC	G/HAM	MER EF	F./DATE	E CG2	24113 C	ME-550X 74	% 04/08/202		•	DRILL	METHO	DH.	.S. Augers	6	HAMM	ER TYPE Automatic	DRIL	L RIG/HAN	IMER EF	F./DATI	E CG2	4113 C	ME-550X 749	/6 04/08/2022	
DR	ILLE	R O	dom, C			S	TART DAT	E 10/11/2	2	COMP. D	ATE 10	/11/22		SUR	FACE WATER DE	PTH N/	Ά	DRI	LER O	dom, C).		S	ART DAT	E 10/11/2	2
ELE			DEPTH	BLO	W CO	UNT		BLOWS	PER FOO	T	SAMP	. V /		[ELEV		DEPTH	BLC	ow co	UNT		BLOWS	PER FOOT
(ft)		(ft)	(ft)	0.5ft	0.5ft	0.5ft	0	25	50	75 10	0 NO.	Имо	I G	ELEV.	(ft)	OR DE3	DEPTH (ft)	(ft)	(ft)	(ft)	0.5ft	0.5ft	0.5ft	0	25	50 7
<u>202</u>	0 5 2,0 2.0	014.4	- 1.0	2	2	2	• •	· · · · · · · · · · · · · · · · · · ·	 			M		- 2,015.4	GROUN ARTII BROWN, LOOSE	ID SURF ICIAL FI , CLAYE A-2-5)	ACE 0.0 LL Y SILTY SAND	<u>2020</u> 2015	2,015.1	1.0	2	1	1	•2 · · · ·	 	
2010	0		-	WOH	1	2	•					W		2,009.9	AL BROWN, SOFT, S	ANDY S	ILT (A-4) WITH5.5	2010	2,010.1	6.0				7 ⁶ · · ·		
200	2,0	009.4 006.9 -	- <u>6.0</u> - <u>8.5</u> -	3 WOH	3 WOH	5				· · · · · · · · · · · · · · · · · · ·		W Sat.		2,007.4	GRAY, LOOSE GRAY, LOOSE GRAY, V. SOFT	E ORGAN SILTY S OME GRJ FO SOFT (A-7)	IICS // // // // // // // // // // // // //	2005	2,007.6	8.5	WOH 3	2 2	2	•2 · · · · · · · · · · · · · · · · · · ·		
	2,0	001.9	- 13.5 -	1	2	2						Sat.							2,002.0	 	WOH	1	3	4		
2000	0 1,9	- 996.9-	- - - 18.5	WOH	WOH	WOH						W		 			19.0	2000	 1,997.6 [.]	- - - 18.5	6	7	5			
199	5	-	-					<u> </u>					N N V	· •		E, STIFF	, CLAYEY SILT	1995		ŧ					+	+ • • • • •
1990	_1,9 0	991.9- 	23.5	3	4	5	• • • • •			· · · · · · · · · · · · · · · · · · ·		w	アンフ	1,990.9	(A-5) WITH TRAC GRAY AND WHIT (A-4) WITH TRAC	E ROCK E, STIFF E ROCK	FRAGMENTS 24.5 , SANDY SILT , FRAGMENTS 27.0	1990	_1,992.6	23.5	3	2	2	₹ 		
198	<u>1,9</u>	986.9	- <u>28.5</u> -	3	6	9	\ \ \ \			· · · · · ·	_	м			WHITE AND GRA DENSE, SILTY TRA	N, MED. SAND (A CE MICA	DENSE TO V A-2-4) WITH A	1985		<u>28.5</u>	3	4	6			
	1,9	981.9	33.5	8	13	13								-					1,982.6	<u>+ 33.5</u> 	3	5	12	· · · •	,	
1980	0	-	-		10			Q 26				IVI						1980	-	Ŧ				· · · · · ·	+	+ • • • •
	1.0		-							· · · · · ·				<u>-</u>					1,977.6 [.]	38.5	100/0			· · ·' <u>·</u>	· - · · ·	
197	5	970.9-	- 30.5	8	15	36			<u>51</u>	<u> </u>		м		- 1,975.4	1		40.0		1,976.2	<u>+ 39.9</u>	60/0.0	•			· · · ·	
NCDOT BORE DOUBLE 1-1213AA_GEO.GPJ NC_DOT.GDT 9/8/23	1.5 5 1.9 1.9	970.9	43.5	8	15	36					20	M		- 1,975.4 1,970.5 - - - - - - - - - - - - -	Boring Terminat PENETRATION Elevation 1,970	ed WITH N TEST F .5 ft on C	40.0 OCK GNEISS 1STANDARD REFUSAL at R: GNEISS		1,976 2 		60/0.0					

BUNCOM	BE			GEOLOGIST Goodnight, D.J.										
A. 23+68.60	, 88.85'	RT TC	-RP	C- STA. 29+85.00, 60.00' RT	GROUND WTR (ft)									
OFFSET 5	5 ft RT			ALIGNMENT -RPC-	0 HR.	8.9								
NORTHING	676.12	22		EASTING 925,336	24 HR.	2.9								
		IFTHOD	н	Augers HAMM	FR TYPE Autom	atic								
	E 10/	11/22												
		/22 	L	SURFACE WATER DEFTH IN/	A									
75 100	NO		0	SOIL AND ROCK DES	CRIPTION									
1			0											
				_										
+ • • • • +			\sim	2,016.1 GROUND SURF/ ALLUVIAL	ACE	0.0								
			///	TAN-BROWN, V. LOOSE, (2.013.1 (A-2-6)	CLAYEY SAND	3.0								
		M	N	TAN AND GRAY, SOFT TO	MED. STIFF,									
				- SANDY SILTY CLA	Y (A-7)									
						8.0								
		w		SAND (A-1-b))									
<u> </u>				2,004.1		12.0								
				GRAY, SOFT TO MED. S SILTY CLAY (A-7) WITH	TIFF, SANDY LENSES OF									
			\mathbf{N}	ČSE. SAND										
				GRAY MED DENSE SILT	(SAND (A-2-4)	17.0								
		w		-	(, (<u></u>))									
				-										
				-		22.0								
		w	- - - -	1,992.3 1,991.1 DARK GRAY, SOFT TO I	MED. STIFF,	25.0								
				SANDY CLAYEY SILT (A-5) MICA	WITHLITTLE									
				TAN STIFF SANDY SILT	- (A-4) WITH									
				TRACE MICA	(, , , , , , , , , , , , , , , , , , ,									
				1,984.1 TAN AND BROWN MED I	DENSE SILTY	32.0								
		w		SAND (A-2-4)									
				-										
+			977	- 1,978.8 - WEATHERED RO	DCK	37.3								
- 100/0.4 60/0.0	4		Gin	- 1,976.2 TAN AND WHITE, C		39.9								
				PENETRATION TEST R	REFUSAL at									
				Elevation 1,976.2 ft on C	R: GNEISS									
				-										
				-										
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GEOTECHNICAL BORING REPORT BORE LOG

WBS 34165.1.2 TIP 1-2513AA COUNT	Y BUNCOMBE	GEOLOGIST Goodnight, D.J.	WBS 34165.1.2	TIP 1-2513AA COUNTY
SITE DESCRIPTION RETAINING WALL NO. W1002, FROM -RPC- S	STA. 23+68.60, 88.85' RT TO -RPC	C- STA. 29+85.00, 60.00' RT GROUND WTR (ft)	SITE DESCRIPTION RETAINING W	ALL NO. W1002, FROM -RPC- ST
BORING NO. W1002_5 STATION 27+61	OFFSET 64 ft RT	ALIGNMENT -RPC- 0 HR. 8.0	BORING NO. W1002_6	STATION 28+46
COLLAR ELEV. 2,022.1 ft TOTAL DEPTH 28.6 ft	NORTHING 676,067	EASTING 925,406 24 HR. 8.0	COLLAR ELEV. 2,026.2 ft	TOTAL DEPTH 10.0 ft
DRILL RIG/HAMMER EFF./DATE CG24113 CME-550X 74% 04/08/2022	DRILL METHOD H.S	Augers HAMMER TYPE Automatic	DRILL RIG/HAMMER EFF./DATE CG2411	3 CME-550X 74% 04/08/2022
DRILLER Odom, C. START DATE 10/12/22	COMP. DATE 10/12/22	SURFACE WATER DEPTH N/A	DRILLER Odom, C.	START DATE 10/10/22
ELEV DRIVE DEPTH BLOW COUNT BLOWS PER FOC	T SAMP.	SOIL AND ROCK DESCRIPTION	ELEV DRIVE DEPTH BLOW COUNT	BLOWS PER FOOT
	75 100 NO. / MOI G	ELEV. (ft) DEPTH (ft		5ft 0 25 50 7
		-		
		2,022.1 GROUND SURFACE 0.0		
		RESIDUAL TAN, LOOSE TO MED. DENSE, CLAYEY	2025 2,025.2 1.0	
2,018.6 3.5 5 4 5		SILTY SAND (A-2-5)		
2,016.1 6.0				
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$. М	TAN, LOOSE,SILTY CLAYEY SAND (A-2-5)	2,017.7 8.5 3 5 6	$ \frac{1}{5} $
2010		2,010.1 12.0		
2,008.6 13.5		TAN AND BROWN, MED. STIFF TO V. STIFF, SANDY SILT (A-4) WITH TRACE		
	:	MICA		
		-		
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	· · · · · · Sat.			
2000 +	· · · · · ·	2,000.122.0		
1,998.6 23.5 1	· · · · ·	TAN AND BROWN, GNEISS		
	. 100/0.7			
		- 1,993.6 28.5		
60/0.1	60/0.1	1,993.5 CRYSTALLINE ROCK		
		Boring Terminated WITH STANDARD		
		Elevation 1,993.5 ft In CR: GNEISS		
		-		
		-		
		-		
		-		
		-		
		-		

TY BUNCOMBE	GEOLOGIST Goodnight, D.J.									
STA. 23+68.60, 88.85' RT TO -RPC	- STA. 29+85.00, 60.00' RT GROUND WTR (ft)									
OFFSET 57 ft RT	ALIGNMENT -RPC- 0 HR. Dry									
NORTHING 676,027	EASTING 925,480 24 HR. Dry									
DRILL METHOD H.S.	Augers HAMMER TYPE Automatic									
COMP. DATE 10/10/22	SURFACE WATER DEPTH N/A									
DT SAMP. L 0 75 100 NO. MOI G	SOIL AND ROCK DESCRIPTION									
COMP. DATE 10/10/22 75 100 NO. MOI G 1 1 1 0 G 1 1 1 M M 1 1 1 M M 1 1 1 M M 1 1 1 M M 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 </td <td>SURFACE WATER DEPTH N/A SOIL AND ROCK DESCRIPTION 2.026.2 GROUND SURFACE 0.0 RESIDUAL TAN, LOOSE TO MED. DENSE, SILTY SAND (A-2-4) 2.020.7 - TAN, STIFF, SANDY CLAY (A-6) - 5.5 2.016.2 10.0 Boring Terminated at Elevation 2,016.2 ft in RESIDUAL: (A-6)</td>	SURFACE WATER DEPTH N/A SOIL AND ROCK DESCRIPTION 2.026.2 GROUND SURFACE 0.0 RESIDUAL TAN, LOOSE TO MED. DENSE, SILTY SAND (A-2-4) 2.020.7 - TAN, STIFF, SANDY CLAY (A-6) - 5.5 2.016.2 10.0 Boring Terminated at Elevation 2,016.2 ft in RESIDUAL: (A-6)									

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C.

REFERENCE

CONTENTS SHEET NO. 2

3

5-8

TITLE SHEET LEGENDS SITE PLAN PROFILE BORE LOGS

DESCRIPTION

STATE OF NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION **DIVISION OF HIGHWAYS GEOTECHNICAL ENGINEERING UNIT**

STRUCTURE SUBSURFACE INVESTIGATION

COUNTY BUNCOMBE

PROJECT DESCRIPTION <u>I-40 FROM EAST OF SR 1224</u>
(MONTE VISTA RD) TO PAVEMENT JOINT WEST
OF SR 3412 (SAND HILL RD). INCLUDES INITIAL
IMPROVEMENTS AT I-40EB TO I-26EB AT US 19/23
(SMOKEY PARK HIGHWAY)
SITE DESCRIPTION RETAINING WALL NO. W1101, FROM
-RPC- STATION 33 + 78.15, 27.50' RT TO -RPC-
STATION 39+95.15, 27.50' RT

S 3416 PROJEC

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	I–2513AA	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 (99) 707-6850. THE SUBSURFACE PLANS AND REPORTS, FIELD BORING LOGS, ROCK CORES AND SOIL TEST DATA AVAIL

CENERAL SOL 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 BORNOS OR BETWEEN SAMPLED STRATA WITHIN THE BOREHOLE. THE LABORATORY SAMPLE DATA AND THE IN SITU UN-FLACE) TEST DATA CAN BE RELIED ON ONLY TO THE DECREE OF RELIABILITY INHERENT IN THE STANDARD TEST WETHOD. THE OBSERVED WATER LEVELS OR SOL MOISTURE CONDITIONS INDICATED IN THE SUBSURFACE INVESTIGATIONS ARE AS RECORDED AT THE TIME OF THE INVESTIGATION. THESE WATER LEVELS OR SOL MOISTURE CONDITIONS MAY YARY CONSIDERABLY WITH THE ACCORDING TO CLIMATIC CONDITIONS INCLUDING TEMPERATURES, PRECIPITATION AND WIND, AS WELL AS OTHER NON-CLIMATIC FACTORS.

THE BIDDER OR CONTRACTOR IS CALITONED THAT DETAILS SHOWN ON THE VIBSURFACE 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 OPHION OF THE DEPARTMENT AS TO THE TYPE OF MATERIALS AND CONDITIONS TO BE ENCOUNTERED. THE BIDDER OR CONTRACTOR IS CAUTIONED TO MAKE SUCH INDEPENDENT SUBSURFACE INVESTIGATIONS AS HE DEEMS NECESSARY TO SATISY HIMSELF AS TO CONDITIONS TO BE ENCOUNTERED ON THE REVIENT OF THE CONTRACTOR SHALL HAVE NO CLAIM FOR ADDITIONAL COMPENSATION OF FOR AN EXTENSION OF TIME FOR ANY REASON RESULTING FOM THE ACTUAL CONDENSATION.

- NOTES: I. 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 CLAMS FOR INCREASED COMPENSATION OR EXTENSION OF TIME BASED ON DIFFERENCES BETWEEN THE CONDITIONS INDICATED HEREIN AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

PERSONNEL

CG 2
GOODNIGHT, D.J.
INVESTIGATED BY FALCON ENG.
DRAWN BY CROCKETT, S.C.
OUTOWED DY HUNSBERGER WS
CHECKED BY
SUBMITTED BY FALCON ENG.
DATE



SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

		SO	IL DESCR	RIPTIO	1				GRADATION		ROCK DESCRIPTION								
SOIL IS	CONSIDERED	UNCONSOLIDATED, SE	MI-CONSOLIDA	TED, OR WE	ATHERED E	ARTH MATERIAL	s that can	WELL GRADED - INDICA	TES A GOOD REPRESENTATION OF	PARTICLE SIZES F	ROM FINE TO COARSE.	HARD ROCK IS NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT REFUSAL IF TEST ROCK LINE INDICATES THE LEVEL AT WHICH NON-COASTAL PLAIN MATERIAL WOULD YIEL'							
ACCORD	ING TO THE	STANDARD PENETRATI	ION TEST (AAS	SHTO T 20	6, ASTM DI	586). SOIL CLA	SIFICATION	GAP-GRADED - INDICATE	S A MIXTURE OF UNIFORM PARTI	LE SIZES OF TWO	OR MORE SIZES.	SPT REFUSAL IS PENETRATION BY A SPLIT SPOON SAMPLER EQUAL TO OR LESS THAN 0.1 BLOWS IN NON-COASTAL PLAIN MATERIAL. THE TRANSITION RETWEEN SOLL AND RECOM							
CONSIST	ENCY, COLOR,	TEXTURE, MOISTURE, A	AASHTO CLASS	SIFICATION	, AND OTHE	R PERTINENT FA	CTORS SUCH		ANGULARITY OF	RAINS		REPRESENTED E	Y A ZONE OF V	/EATHERED ROCK.	IS THE REPORT OF THE REPORT				
A	S MINERALOO VERY STIFF.G	GICAL COMPOSITION,A RAY.SILTY CLAY.MOIST WI	ANGULARITY,S1 <i>NTH INTERBEDD</i>	FRUCTURE,	PLASTICITY AND LAYERS.	,ETC. FOR EXA HIGHLY PLASTIC.A	1PLE, -7-6	THE ANGULARI	Y OR ROUNDNESS OF SOIL GRAINS	IS DESIGNATED	BY THE TERMS:	RUCK MATERIAL	SARE TYPICALI	A NON COACTAL DIAL					
	S	OIL LEGEND A	AND AASH	ITO CL	ASSIFIC	CATION		ANGULAR, SUBA	MINERAL OCICAL CON			ROCK (WR)		100 BLOWS PER FC	IN MATERIAL THAT WOULD FIELD SPT DOT IF TESTED.				
GENERAL	,	GRANULAR MATERIALS	SI	LT-CLAY MA	ERIALS	ORGANIC I	ATERIALS	MINERAL NA		TUSTION	FTC	CRYSTALLINE	CRYSTALLINE						
GROUP	A-1	A-3 A-2	A-4	A-5 A	-6 A-7	Δ-1 Δ-2 Δ-4	A-5	ARE USED I	N DESCRIPTIONS WHEN THEY ARE	CONSIDERED OF S	GNIFICANCE.	ROCK (CR)	CHIST, ETC.						
CLASS.	A-1-a A-1-b	A-2-4 A-2-5 A-2	2-6 A-2-7		A-7-5 A-7-6	A-3 A-6	A-7		COMPRESSIBIL	ÍTY		NON-CRYSTALLI	√E	SEDIMENTARY ROCH	GRAIN METAMORPHIC AND NON-COASTA < THAT WOULD YEILD SPT REFUSAL				
SYMBOL								SLIG	HTLY COMPRESSIBLE	LL < 31	- 50			COASTAL PLAIN SE	DES PHYLLITE, SLATE, SANDSTONE, ETO TOIMENTS CEMENTED INTO ROCK, BUT				
% PASSING	10000000000						-	HIGH	LY COMPRESSIBLE	LL > 50		SEDIMENTARY R	оск	SPT REFUSAL. ROC	K TYPE INCLUDES LIMESTONE, SANDS				
*10	50 MX	51 Mai				GRANULAR CL	AY MUCK		PERCENTAGE OF M	<u>ATERIAL</u>				WEATH	HERING				
*200	15 MX 25 MX	10 MX 35 MX 35 MX 35	MX 35 MX 36 M	N 36 MN 36	MN 36 MN	SUILS SO		ORGANIC MATERIAL	GRANULAR SILT - CLA	.Y OTHE	R MATERIAL	FRESH R	OCK FRESH. CRYS	TALS BRIGHT.FEW JOIN	TS MAY SHOW SLIGHT STAINING. ROCK				
MATERIAL								TRACE OF ORGANIC M	ATTER 2 - 3% 3 - 5%	TRACE	1 - 10%	н	AMMER IF CRYST	ALLINE.					
PASSING •40 LL	-	- 40 MX 41 MN 40	MX 41 MN 40 M	x 41 MN 40	MX 41 MN	SOILS WITH		MODERATELY ORGANIC	5 - 10% 12 - 20%	SOME	20 - 35%	VERY SLIGHT R	JCK GENERALLY RYSTALS ON A F	FRESH, JOINTS STAINED,	SOME JOINTS MAY SHOW THIN CLAY CO SHINE BRIGHTLY, BOCK BINGS UNDER H				
PI	6 MX	NP 10 MX 10 MX 11 M	MN 11 MN 10 M>	(10 MX 11	MN 11 MN	MODERATE	HIGHLY	HIGHLY ORGANIC	> 10% > 20%	HIGHLY	35% AND ABOVE	0	A CRYSTALLIN	E NATURE.					
GROUP INDEX	Ø	0 0	4 MX 8 MX	12 MX 16	MX NO MX	AMOUNTS OF	SOILS		GROUND WAT	R		SLIGHT R	JCK GENERALLY	FRESH, JOINTS STAINED	AND DISCOLORATION EXTENDS INTO RO				
USUAL TYPES	STONE FRAGS.	FINE SILTY OR CL	AYEY S	ILTY	CLAYEY	MATTER		∇	WATER LEVEL IN BORE HOLE I	IMEDIATELY AFTER	R DRILLING	C C	RYSTALS ARE DU	ILL AND DISCOLORED. CF	RYSTALLINE ROCKS RING UNDER HAMMER				
MATERIALS	SAND	SAND GRAVEL AND	SAND SI	OILS	SOILS				STATIC WATER LEVEL AFTER .	<u>24</u> HOURS		MODERATE S	IGNIFICANT PORT	IONS OF ROCK SHOW DIS	SCOLORATION AND WEATHERING EFFECTS				
GEN. RATING		EXCELLENT TO GOOD		FAIR TO P	OOR	FAIR TO PC	DR UNSULTABL	E PW	PERCHED WATER, SATURATED ZO	NE, OR WATER BEA	ARING STRATA	(MOD.) G	ANITOID ROCKS, ULL SOUND UNDE	.R HAMMER BLOWS AND S	DULL AND DISCOLORED,SOME SHOW CLA SHOWS SIGNIFICANT LOSS OF STRENGTH				
AS SUBGRADE			C 11 20 0	05 4 7 6 6		POUR		- 0-00-	SPRING OR SEEP			W	ITH FRESH ROCK	•					
	r				FNFSS	- LL - 30			MISCELLANEOUS S			MODERATELY A	L ROCK EXCEPT	QUARTZ DISCOLORED OF	R STAINED. IN GRANITOID ROCKS.ALL F KANLINIZATION, ROCK SHOWS SEVERE LI				
		COMPACTNESS		NGE OF ST	ANDARD	RANGE OF	UNCONFINED					(MOD. SEV.) A	ND CAN BE EXCA	VATED WITH A GEOLOGIS	ST'S PICK. ROCK GIVES "CLUNK" SOUND				
PRIMARY S	SOIL TYPE	CONSISTENCY	PENE	TRATION RI	SISTENCE	COMPRESSI (TON	VE STRENGTH S/FT ²)	L ROADWAY EME	ANKMENT (RE)	IP DIRECTION			IESTED, WOULD	<u>YIELD SPI REFUSAL</u>					
051504		VERY LOOSE		< 4					SPT OUT TE		SLOPE INDICATOR	(SEV.) R	EDUCED IN STRE	NGTH TO STRONG SOIL.	IN GRANITOID ROCKS ALL FELDSPARS A				
GRANUL	AR	LOOSE	_	4 TO 1	0		1/6				INSTALLATION	T II) SOME EXTENT. - TESTED. WOULD	SOME FRAGMENTS OF S	TRONG ROCK USUALLY REMAIN.				
MATERIA (NON-CO		DENSE	-	30 TO	50		17 H	X ARTIFICIAL F	ILL (AF) OTHER	.ORING 🙆	CONE PENETROMETER TEST	VERY A	LL ROCK EXCEPT	QUARTZ DISCOLORED OF	R STAINED. ROCK FABRIC ELEMENTS AR				
	HESTTE,	VERY DENSE		> 50							COUNDING DOD	SEVERE B	JT MASS IS EFF	ECTIVELY REDUCED TO S	SOIL STATUS, WITH ONLY FRAGMENTS OF				
GENERAL	LY	VERY SOFT SOFT		< 2 2 TO	4	Ø.25	0.25 TO 0.5	INFERRED SU			SUUNDING RUD	V SEV./ V	ESTIGES OF ORIC	JINAL ROCK FABRIC REM	AIN. IF TESTED, WOULD YIELD SPT N V				
SILT-CL	AY.	MEDIUM STIFF	-	4 TO	8	0.5	TO 1.0	INFERRED RO	CK LINE MW MONITOF	ING WELL -	COMPLETE R	JCK REDUCED TO	SOIL. ROCK FABRIC NO	T DISCERNIBLE, OR DISCERNIBLE ONLY					
(COHESI	VE)	VERY STIFF		15 TO	30	2	TO 4	ALLUVIAL SO	IL BOUNDARY A PIEZOME		A	LSO AN EXAMPLE		T BE PRESENT AS DIKES OR STRINGERS					
				> 30			• 4						ROCK H	ARDNESS					
		IEXIL	JRE UR U	RAIN :	MZE							VERY HARD C	ANNOT BE SCRAT	CHED BY KNIFE OR SHAF	RP PICK. BREAKING OF HAND SPECIMENS				
U.S. STD. SIE OPENING (MI	EVE SIZE M)	4 4.76	10 41 2.00 0.4	0 60 42 0.2	200 5 0.075	270 0.053		EXCAVATION	UNSUITABLE WASTE		PTABLE, BUT NOT TO BE	S NARD C	EVERAL HARD BL	OWS OF THE GEOLOGIST	'S PICK.				
BOUL DE			COAI	RSE	FINE	CTL T	CLAY	SHALLOW		. USED DCK EMBA	NKMENT OR BACKFILL	T	J DETACH HAND	SPECIMEN.	NET WITH DIFFICUETT. HERD HEMMER DI				
(BLDR.)		COB.) (GR.)	SAI		SAND	(SL.)	(CL.)					MODERATELY C	AN BE SCRATCHE	D BY KNIFE OR PICK. G	OUGES OR GROOVES TO 0.25 INCHES DE				
	305	75	20	0 2	5	0.05 0	005	AR - AUGER REFUSAL	MED MEDIUM	VST	- VANE SHEAR TEST	HARU E	Y MODERATE BLC	RU BLUW OF A GEULUGI: JWS.	ST'S PICK. HAND SPECIMENS CAN BE DI				
SIZE IN	12	3	210	012	-			BT - BORING TERMINATE	D MICA MICACEOUS	WEA.	- WEATHERED	MEDIUM C	AN BE GROOVED	OR GOUGED 0.05 INCHES	DEEP BY FIRM PRESSURE OF KNIFE O				
	S	OIL MOISTURE	E - CORR	ELATIO	IN OF	TERMS		CPT - CLAY	N TEST NP - NON PLASTIC	7-	DRY UNIT WEIGHT	HARD C	AN BE EXCAVATE	D IN SMALL CHIPS TO P OGIST'S PICK.	PEICES 1 INCH MAXIMUM SIZE BY HARD				
SOIL	MOISTURE	SCALE FIE	ELD MOISTUR	E GU	IDE FOR F	IELD MOISTURE	DESCRIPTION	CSE COARSE	ORG ORGANIC			SOFT C	AN BE GROVED C	R GOUGED READILY BY	KNIFE OR PICK. CAN BE EXCAVATED IN				
	ERBERG LIP	MI15) L	DESCRIPTION					DPT - DYNAMIC PENETRA	TION TEST SAP SAPROLITIC	.ER IESI <u>5</u>	BULK	F	ROM CHIPS TO S IECES CAN BE B	EVERAL INCHES IN SIZE ROKEN BY FINGER PRESS	BY MODERATE BLOWS OF A PICK POIN SURE.				
		- 9	SATURATED -	US	JALLY LID	UID: VERY WET, THE GROUND	USUALLY	e - VOID RATIO	SD SAND, SANDY	SS -	SPLIT SPOON	VERY C	AN BE CARVED W	/ITH KNIFE. CAN BE EXC	AVATED READILY WITH POINT OF PICK.				
		LIMIT						FOSS FOSSILIFEROUS	SLI SLIGHTLY	RS ·	ROCK	SOFT O	₹ MORE IN THICK INGERNATI.	NESS CAN BE BROKEN E	BY FINGER PRESSURE. CAN BE SCRATCH				
RANGE <		- \	WET - (W)	SE	MISOLID: R	EQUIRES DRYIN	G ТО	FRAC FRACTURED, FRAC FRAGS FRAGMENTS	TURES TCR - TRICONE REF W - MOISTURE CON	USAL RT -	RECOMPACTED TRIAXIAL				BEDDING				
(PI) PL		С LIMIT		A1		NUM MUISTURE		HI HIGHLY	V - VERY		RATIO	TERM		SPACING	TERM				
		- 1	MOIST - (M)	SO		NEAR OPTIMU	1 MOISTURE	EO	UIPMENT USED ON SUB	JECT PROJE	СТ	VERY WIDE	MOR	RE THAN 10 FEET	VERY THICKLY BEDDED				
OM SL		M MOISTURE						DRILL UNITS:	ADVANCING TOOLS:	HAMMER	TYPE:	MODERATELY	CLOSE	1 TO 3 FEET	THINLY BEDDED 0.1				
				RE	OUIRES AD	DITIONAL WATE	R TO	CME-45C	CLAY BITS		TOMATIC MANUAL	CLOSE VERY CLOSE	LES	0.16 TO 1 FOOT S THAN 0.16 FEET	VERY THINLY BEDDED 0.0 THICKLY LAMINATED 0.00				
		- [URT - (U)	AT	TAIN OPTIM	MUM MOISTURE		CME-55	6' CONTINUOUS FLIGHT AUG	ER CORE SI	ZE:				THINLY LAMINATED <				
	•		PLASTIC	CITY				1	8 HOLLOW AUGERS	🗌 - В _	н			INDUF	RATION				
		1	PLASTICITY I	NDEX (PI)		DRY ST	RENGTH	X CME-550X	HARD FACED FINGER BITS	-N _		FOR SEDIMENTA	RY ROCKS, INDU	RATION IS THE HARDEN	NING OF MATERIAL BY CEMENTING, HE				
NON SI 11	PLASTIC	STIC	0-5 6-15	i		VERY SUT	LOW	VANE SHEAR TEST	TUNGCARBIDE INSERTS		IOLS:	FRIABLE		GENTLE BLOW	BY HAMMER DISINTEGRATES SAMPLE.				
MOD	ERATELY PL	LASTIC	16-2	5		MED	IUM			.з П РС	ST HOLE DIGGER	NODEDAT		GRAINS CAN BE	E SEPARATED FROM SAMPLE WITH ST				
HIG	HLT PLASTI	L	26 UR N			HI	н	PORTABLE HOIST	TRICONE STEEL	^{ГЕЕТН} Н н н н н н н н н н н н н н н н н н н	ND AUGER	MODERAT	LC INDURATED	BREAKS EASILY	Y WHEN HIT WITH HAMMER.				
			CULO	ĸ				4 🗆		ARB. SC	UNDING ROD	INDURATI	D	GRAINS ARE DI	FFICULT TO SEPARATE WITH STEEL				
DESCRIPT	IONS MAY I	INCLUDE COLOR OR	COLOR COMBI	NATIONS	TAN, RED,	ELLOW-BROWN,	BLUE-GRAY).			VP	NE SHEAR TEST			SHARD HAMMER	BLOWS REQUIRED TO REFAM CAMPIE				
MC	DIFIERS SU	ICH AS LIGHT, DARK,	STREAKED, ET	TC.ARE US	SED TO DE	SCRIBE APPEAR	ANCE.		🗌			EXTREME	LY INDURATED	SAMPLE BREAK	S ACROSS GRAINS.				

TOWN OF HOLLY SPRINGS PROJECT NO.



	TERMS AND DEFINITIONS
ED. AN INFERRED	ALLUVIUM (ALLUV.) - SOILS THAT HAVE BEEN TRANSPORTED BY WATER.
1 FOOT PER 60	AOUIFER - A WATER BEARING FORMATION OR STRATA.
IS OFTEN	ARENACEOUS - APPLIED TO ROCKS THAT HAVE BEEN DERIVED FROM SAND OR THAT CONTAIN SAND.
T N VALUES >	A NOTABLE PROPORTION OF CLAY IN THEIR COMPOSITION, SUCH AS SHALE, SLATE, ETC.
DCK THAT ICLUDES GRANITE,	APTESIAN - 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.
AL PLAIN	CALCAREOUS (CALC.) - SOILS THAT CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE.
IF TESTED. C.	CULLUTIOM - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BUTTOM OF SLOPE.
MAY NOT YIELD STONE, CEMENTED	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.
RINGS UNDER	ROCKS OR CUTS MASSIVE ROCK.
NINGS UNDER	<u>DIP</u> - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE HORIZONTAL.
COATINGS IF OPEN, HAMMER BLOWS IF	DIP DIRECTION (DIP AZIMUTH) - THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF THE LINE OF DIP, MEASURED CLOCKWISE FROM NORTH.
ock up to Al Feldspar	FAULT - A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE.
R BLOWS.	FISSILE - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES.
AY. ROCK HAS	<u>PEDAI</u> - RUCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLUDGED FROM PARENT MATERIAL.
H AS COMPARED	FLOOD PLAIN (FP) - LAND BORDERING A STREAM, BUILT OF SEDIMENTS DEPOSITED BY THE STREAM.
FELDSPARS DULL .OSS OF STRENGTH WHEN STRUCK.	<u>FORMATION (FM.)</u> - A MAPPABLE GEOLOGIC UNIT THAT CAN BE RECOONIZED 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
ARE KAOLINIZED	IIS LATERAL EXTENT. LENS - A BODY OF SOIL OR ROCK THAT THINS OUT IN ONE OR MORE DIRECTIONS.
	MOTILED (MOI) - IRREGULARLY MARKED WITH SPOTS OF DIFFERENT COLORS. MOTILING IN SOILS USUALLY INDICATES POOR AERATION AND LACK OF GOOD DRAINAGE.
IF STRONG ROCK	<u>PERCHED WATER</u> - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE OF AN INTERVENING IMPERVIOUS STRATUM.
IN SMALL AND	RESIDUAL (RES.) SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK.
S. SAPROLITE IS	ROCK SEGMENTS COULD TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE.
IS REQUIRES	SAPROLITE (SAP.) - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT ROCK.
BLOWS REQUIRED	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 REFORME OR SCHWEIDTLY OF THE INTERINGE PORCYS
EEP CAN BE	<u>SLICKENSIDE</u> - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT
DETACHED	OR SLIP PLANE. STANDARD PENETRATION TEST (PENETRATION RESISTANCE)(SPT) - NUMBER OF BLOWS (N OR BPE)OF
DR PICK POINT. BLOWS OF THE	A 140 LB. HAMMER FALLING 30 INCHES REQUIRED TO PRODUCE A PENETRATION OF I 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.
I FRAGMENTS	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.
THICKNESS	BENCH MARK:ELEVATIONS TAKEN FROM 12513_Is_tnl.tin
4 FEET	ELEVATION: FEET
16 - 1.5 FEET	NOTES:
03 - 0.16 FEET 08 - 0.03 FEET	FIAD - FILLED IMMEDIATELY AFTER DRILLING
0.008 FEET	
EAT, PRESSURE, ETC.	
TEEL PROBE;	
BRORE.	
FRUBE:	







GEOTECHNICAL BORING REPORT BORE LOG

WBS 34165.1.2 TIP 1-2513AA COU						UNTY	TY BUNCOMBE G					GEOLOGIST Goodnight, D.J.			WBS 34165.1.2						TIP 1-2513AA CC							
SITI	E DESCR	RIPTION	RET	AINING	g wal	LL NO. W	1101, FR	DM -RP	C- STA	۹. 33+78.1	5, 27.50'	RT T	0 -RF	PC- STA	A. 39+95.15, 27.50' RT	C	GROUND WTR (ff	t) SITE DESCRIPTION RETAININ						WALL NO. W1101, FROM -RPC- ST				
BOF	ring no	. W110	1_1		S	TATION	33+96		(OFFSET	37 ft RT			ALI	GNMENT -RPC-		OHR. Dr	/ B(oring N	O. W1	101_2		S	TATION	34+73			
COL	LAR EL	EV. 2,	100.6 f	ťt	Т	OTAL DE	PTH 43.	5 ft	1	NORTHING	G 675,7	12		EAS	STING 925,925	2	4 HR. 17.		OLLAR E	LEV.	2,085.	0 ft	Т	OTAL DE	PTH 30.0	ft		
DRIL	l Rig/Ha	MMER EF	F./DATE	E CG2	24113 C	CME-550X 7	4% 04/08/2)22			DRILL N	IETHO	DH.	S. Auger	s HA	AMMER	TYPE Automatic	DF	ILL RIG/H	AMMER	EFF./DA	TE CO	20446 E	46 Diedrich D50 87% 05/10/2022				
DRI	LLER (Ddom, C			S	TART DA	TE 10/12	2/22	0	COMP. DA	TE 10/	12/22		SUF	FACE WATER DEPTH	N/A		D	RILLER	Odom,	C.		S	START DATE 10/24/22				
ELE\	/ DRIVE ELEV	DEPTH	BLO	W CO	UNT		BLOW	'S PER F	=00T		SAMP.				SOIL AND ROCK D	DESCR	RIPTION	EL			гн В		DUNT		BLOWS	PER FOOT		
(11)	(ft)	(11)	0.5ft	0.5ft	0.5ft	0	25	50	1	5 100	NO.	Имо	I G	ELEV.	(ft)		DEPTH	(i	(ft)		0.5	ft 0.5ft	0.5ft			50		
2105	<u>;</u>	+												F				20	85	0 10				<u> </u>	<u> </u>			
		Ŧ												F					2.082		5	8	9		 17			
2100		ŧ											•••••	2,100.	6 GROUND SL	JRFAC	E C	.0 20	80	+	9	10	12					
	- 2,099.6	+ <u>1.0</u> +	6	6	8		4					м		F	BROWN, LOOSE TO M	ied. De	ENSE, SILTY		2,079	.0 6.0	23	18	25					
	2,097.1	3.5	5	5	5				· · ·			M		F	SAND (A-2-4) WITE		LE MICA		2,077	.07 8.0) 12	18	20		: : . . .	43		
2095	<u>.</u>	Ŧ												F				20	75	Ŧ								
	2 092 1	+ + 85				: [: :			· · ·					- 2,092.			8	0	2 072	13								
2090	, 2,002.	+ 0.0	2	3	4							м		F	TAN, MED. STIFF, SA WITH TRAC	ANDY CE MIC	SILT (A-4) A	20	70	+ 10.	8	10	15		• • 25 • • •			
		Ŧ												<u> </u>			12	0		Ŧ					/			
	2,087.1	13.5	6	6	7		· · · ·		· · ·					F	DENSE, SILTY SAN	ed. de D (A-2	-4) WITH		2,067	.0 18.	0 5	4	8					
2085	<u>.</u>	Ŧ	-	-							-			F	TRACE TO SOME RO	OCK FR	RAGMENTS	20	65	Ŧ					· · · · · ·			
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2075	<u>.</u>	Ŧ							•••••) 	-			F				20	55 2,055	.0 30.	0 60/0	00						
	2 072 1	+					· · · · ·		::Ì					F						Ŧ								
2070	, 2,012.	+	35	46	24				• • • 70	 D		D		F						Ŧ								
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	2,067.1	33.5	30	70/0.4					· · ·		<u>i</u>			F	TAN, GN	EISS	ĸ			Ŧ								
2065	<u>.</u>	Ŧ								- 100/0.9	Ĩ			F						Ŧ								
	2 062 1	$\frac{1}{385}$::i-	+÷÷÷:-				<u>- 2,063.</u> -			<u>3/</u>	<u> </u>		Ŧ								
2060	, ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	-	37	25	45	1			+70	0		м		F	(A-2-4) WITH LITTLE R	OCK F	RAGMENTS			Ŧ								
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	2,057.1	43.5	60/0.0				• • • • •	• • • •	•••	60/0.0	•		977	2,057			K 43	5		Ŧ								
		Ŧ												F	Boring Terminated W	ITH S	TANDARD			Ŧ								
		Ŧ												F	PENETRATION TES Elevation 2,057.1 ft c	ST REF on CR:	FUSAL at GNEISS			Ŧ								
23		Ŧ												F						Ŧ								
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GEOTECHNICAL BORING REPORT BORE LOG

WBS 34165.1.2 **TIP** 1-2513AA COUNTY BUNCOMBE GEOLOGIST Goodnight, D.J. GROUND WTR (ft) SITE DESCRIPTION RETAINING WALL NO. W1101, FROM -RPC- STA. 33+78.15, 27.50' RT TO -RPC- STA. 39+95.15, 27.50' RT OFFSET 31 ft RT ALIGNMENT -RPC-**BORING NO.** W1101_3 **STATION** 35+78 0 HR. Dry **COLLAR ELEV.** 2,102,7 ft TOTAL DEPTH 39.3 ft **NORTHING** 675,596 **EASTING** 926,063 24 HR. Dry DRILL RIG/HAMMER EFF./DATE CG20446 Diedrich D50 87% 05/10/2022 DRILL METHOD NW Casing W/SPT & Core HAMMER TYPE Automatic DRILLER Odom, C. **START DATE** 10/27/22 **COMP. DATE** 10/27/22 SURFACE WATER DEPTH N/A ELEV DRIVE DEPTH BLOW COUNT (ft) (ft) 0.5ft 0.5ft 0.5ft **BLOWS PER FOOT** SAMP. SOIL AND ROCK DESCRIPTION 0 0.5ft 0.5ft 0.5ft 50 75 25 100 NO. MOI G ELEV. (ft) DEPTH (f 2105 GROUND SURFACE 3,102.7 2.101.7 - 1.0 TOPSOIL - -15 13 D RESIDUAL **6**28⁻ 2100 TAN TO BROWN AND WHITE, MEDIUM 2,099.2 . . . 12 . . . • • DENSE TO V. DENSE, SILTÝ SAND М . . . (A-2-4) WITH TRACE MICA AND TRACE 2,096.7 6.0 TO SOME ROCK FRAGMENTS 25 12 14 Μ 2095 2,094.2 85 16 8 9 М 25 . 2090 2.089.2 13.5 2,089.2 ------- - .--. 20 80/0.4 . . . 2,085.1 2,085.1 2,085.1 2,072.9 2,072.9 2,068.1 WEATHERED ROCK 2.087.7 15.0 20 100/0.9 100/0.2 ______60/0.0 TAN, GRAY, AND WHITE, GNEISS 15.6 CRYSTALLINE ROCK 60/0 0 2085 17.6 TAN-GRAY TO BROWN-GRAY AND WHITE GNEISS - - -- - -<u>2,083.1</u> 19.6 WEATHERED ROCK . . . 10 57 43/0.3 TAN TO BROWN AND WHITE, GNEISS 100/0.8 2080 2,078.7 24.0 100/0.2 100/0.4 . 2075 2,073,7-29,0 2,072.9-29.8 100/0.2 100/0.2 29.8 CRYSTALLINE ROCK 60/0.0 BROWN AND GRAY, GNEISS 2070 34.6 GRAY AND WHITE, GNEISS . • • 2065 39 Boring Terminated at Elevation 2,063.4 ft in CR: GNEISS

WBS	34165	.1.2			TIP	1-251	3AA	С	OUNT	YВ	UNCON	BE		GEOLOGIST Goodnight, D.J.							
SITE	DESCR	PTION	RET	AINING V	/ALL N	10. W	1101, FR	OM -R	PC-S	TA. 3	3+78.15	5, 27.50' RT TO	-RPC	- STA. 39+95.15, 27.50' RT GROUND WTR (ft)							
BOR	NG NO.	W110	01_3		STA	FION	35+78			OF	FSET (31 ft RT		ALIGNMENT -RPC-		0 HR.	Dry				
COLI	LAR ELE	EV. 2,	102.7 1	ît 🛛	тот	AL DE	PTH 39.	3 ft		NO	rthing	675,596		EASTING 926,063		24 HR.	Dry				
DRILL	. RIG/HAN	IMER EF	F./DAT	E CG2044	6 Diedr	ich D50	87% 05/10	/2022				DRILL METHOD	NW (Casing W/SPT & Core HAMMER TYPE Automatic							
DRIL	LER O	dom, C			STA	RT DA	TE 10/2	7/22		со	MP. DA	TE 10/27/22		SURFACE WATER DEPTH N/A							
COR	E SIZE	NQ			TOT	AL RUI	N 13.5 ft														
ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	REC. (ft) %	JN RQD (ft) %	SAMP. NO.	STR REC. (ft) %	ATA RQD (ft) %	L O G	ELEV. (ft)	DI	ESCRIPTION AND REMARK	S		DEPTH (ft)				
2087.1	0.007.11													Begin Coring @ 15.6 ft							
2085	2,087.1	- 15.6	4.0	<i>N=60/0.0</i> 1:31/1.0 1:15/1.0	(0.5) 13%	(0.0) 0%		(0.5) 25%	(0.0) 0%		2,087.1 2,085.1	MOD. SEVE		CRYSTALLINE ROCK EATHERING, MED. HARD, C		ID BROWN,	15.6 17.6				
	2,083.1	19.6		0:51/1.0							-	GNEISS	WITH	WEATHERED ROCK	TURES	PACING					
2090	-	-		N=100/0.8							-										
2000	-	-									-										
	-	-		N=100/0.4							-										
2075	-										-										
	2,072.9	29.8		N=100/0.2	(2.2)						2,072.9						29.8				
0070	-	-	4.5	N=60/0.0	(2.6) 58%	(1.0) 22%		(2.6) 54%	(1.0) 21%		-	MOD. SEVE	ERE TO	CRYSTALLINE ROCK D MOD. WEATHERING, MOI	D. HARD	TO HARD,					
2070	2 068 4-	- 34.3		2:31/1.0							-	BROWN AND	OWN AND GRAY, GNEISS WITH V. CLOSE TO CLOSE FRA SPACING								
	-	-	5.0	<u>1:07/0.5</u> 3:11/1.0	(4.8)	(3.8)		(4.8)	(3.8)	É.	2,068.1	SLIGHT TO	V. SLI	GHT WEATHERING, MOD.	HARD T	O V. HARD,	34.0				
2065	-	-		5:14/1.0 3·28/1.0	5070	1070		102%	81%		-	GRAY AN		FRACTURE SPACING		D. CLOSE					
	2,063.4-	- 39.3		5:45/1.0							2,063.4	Boring	Termi	nated at Elevation 2 063 4 ft	in CR [.] G	NEISS	39.3				
	-										-	Dornig	, renni			NEIOO					
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GEOTECHNICAL BORING REPORT CORE LOG

GEOTECHNICAL BORING REPORT BORE LOG

WBS 34165.1.2 TIP 1-	1-2513AA COUNTY BUNCOMBE	E G	GeoLogist Goodnight, D.J.	WB	S 34165.	1.2	TIP 1-2513AA	COUNTY
SITE DESCRIPTION RETAINING WALL NO	O. W1101, FROM -RPC- STA. 33+78.15, 2	27.50' RT TO -RPC- S	STA. 39+95.15, 27.50' RT GROUND WTR (ft)	SIT	E DESCRIF	TION RETAINING	WALL NO. W1101, FROM	I-RPC-ST
BORING NO. W1101_4 STATIC	ION 36+63 OFFSET 521	ft RT A	ALIGNMENT -RPC- 0 HR. Dry	BO	ring no.	W1101_5	STATION 37+67	
COLLAR ELEV. 2,112.1 ft TOTAL	L DEPTH 43.3 ft NORTHING 6	675,523 E	EASTING 926,110 24 HR. Dry	CO	LLAR ELE	V. 2,121.4 ft	TOTAL DEPTH 59.0 ff	t
DRILL RIG/HAMMER EFF./DATE CG20446 Diedrich	ch D50 87% 05/10/2022 DF	RILL METHOD H.S. Au	ugers HAMMER TYPE Automatic	DRIL	L RIG/HAMN	IER EFF./DATE CG20	446 Diedrich D50 87% 05/10/20	22
DRILLER Odom, C. START	T DATE 10/25/22 COMP. DATE	10/25/22 S	SURFACE WATER DEPTH N/A	DRI	LLER Od	om, C.	START DATE 10/25/2	2
ELEV DRIVE DEPTH BLOW COUNT	BLOWS PER FOOT S		SOIL AND ROCK DESCRIPTION	ELE		DEPTH BLOW COU	NT BLOWS	PER FOOT
(ft) (ft) (ft) 0.5ft 0.5ft 0.5ft 0	25 50 75 100	NO. MOI G ELI	.EV. (ft) DEPTH (ft)) (ft)	(ft)	(ft) 0.5ft 0.5ft	0.5ft 0 25	50 7
2115				2125	5			
					‡			
2,111.1 1.0 11 10 14		- 2;1		2	. ‡		<u> </u>	· · · · ·
		M	RESIDUAL TAN-BROWN, MEDIUM DENSE TO		2,119.4	2.0 6 7	9	+ · · · ·
		M	DENSE, SILTY SAND (A-2-4) WITH TRACE MICA		2,117.4	4.0 6 7	$\begin{array}{c c} \bullet & \bullet & \bullet \\ \hline 11 & \bullet & \bullet & \bullet \\ \hline 11 & \bullet & \bullet & \bullet \\ \hline \end{array}$	
2105 6 7 8	• • • • • • • • • • • • • • • • • • •	м		2115	2 1 14 4	70	· · · • • • • • • • • • • • • • • • • •	· · · ·
2,103.6 8.5	\cdots	м –			2 1 1 2 4	7.0 7 9	10 1	
	\cdots	-			2,112.4	6 9	10	
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	$\cdot \cdot $	м			2,107.4	14.0 8 11	<u>14</u>	
2095	· · · · \ · · · · · · · · · · 	_		2105	5 1		• • • • • • • • • • • • • • • • • • • •	
2,093.6+18.5	\ldots $\left \left\langle \chi_{2}, \chi_{2} \right\rangle \right $	M						
	\cdots				2,102.4	7 11	15 · · · · · · · · · · · · · · · · · · ·	
	· · · · · /			2100	° <u>+</u>			<u> </u>
	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	м			2,097.4	24.0	<u> </u>	
2085		2,0	085.127.0	2095	5 1			
2,083.6 28.5			WEATHERED ROCK TAN-BROWN, GNEISS]			
					2,092.4	29.0 5 7	9	
	·····	2,0	080.1	2090	빅			
2,0/8,6 - 33.5 - 16 - 25 - 69 -		м	BROWN, TAN, AND WHITE, MEDIUM DENSE TO V. DENSE, SILTY SAND		2,087.4	34.0		
2075			(A-2-4)	2085	51 I	8 11	11 2 2	
2,073.6 38.5 11 8 16	· · · · · · · · · · · · · · · · · · ·]		/	
	•24				2,082.4	39.0 2 4	8	
			070.1 42.0 068.8 WEATHERED ROCK 43.3	2080	빅			+
60/0.0	60/0.0 ●		TAN AND WHITE, GNEISS		2,077.4	44.0		
		F	PENETRATION TEST REFUSAL at	2075	5 Ŧ	2 3		
					2,072.4	49.0 3 13	19	
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GEOTECHNICAL BORING REPORT BORE LOG

WBS	3416	5.1.2			Т	IP 1-2513/	٩A	COUNT	Y BUNCON	MBE				GEOLOGIST Goodnight, D.J	l.	W	3S 3416	5.1.2			ТІ	P 1-2513A	A	COUNTY
SITE	DESCR		RET	AINING	g wal	LL NO. W11	101, FROM	I -RPC- S	TA. 33+78.1	5, 27.50	RTT	0 -R	RPC	- STA. 39+95.15, 27.50' RT	GROUND WTR (ft)	SI	E DESCR	RIPTION	RET	AINING	G WAL	L NO. W110)1, FROM	I-RPC-ST
BOR	ing no.	W110	1_6		S	TATION 3	8+84		OFFSET	66 ft RT				ALIGNMENT -RPC-	0 HR. 50.5	BC	RING NO	. W110	01_7		SI	TATION 39	+94	
COL	LAR EL	EV. 2, ²	l 16.7 f	t	Т	OTAL DEP	TH 64.0 f	ť	NORTHING	G 675,3	58			EASTING 926,252	24 HR. 45.0	CC	LLAR EL	EV. 2,	104.91	ft	т	OTAL DEPT	H 49.3 ft	1
DRILL	. RIG/HAI	IMER EF	F./DATE	CG2	20446 D	iedrich D50 8	7% 05/10/20	22		DRILL N	NETHO)D ⊦	H.S.	Augers HAM	IMER TYPE Automatic	DR	ILL RIG/HA	MMER EF	F./DAT	E CG2	20446 Di	edrich D50 87	% 05/10/202	22
DRIL	LER C	dom, C			S	TART DAT	E 10/25/2	22	COMP. DA	TE 10/	25/22	!		SURFACE WATER DEPTH	N/A	DF		Ddom, C			ST	ART DATE	10/26/2	2
ELEV	DRIVE ELEV	DEPTH	BLO	W COI	UNT		BLOWS	PER FOO	т	SAMP				SOIL AND ROCK DE	SCRIPTION	ELE		DEPTH	BLC		UNT		BLOWS	PER FOOT
(11)	(ft)	(11)	0.5ft	0.5ft	0.5ft	0	25	50	75 100	NO.	Имо) G		ELEV. (ft)	DEPTH (f) (11) (ft)	(11)	0.5ft	0.5ft	0.5ft	0 2	5 5	50
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		ŧ											F.				2,102.9	<u> </u>	10	12	15			
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2110	2,109.7	7.0		40	10				 - .				1			209	15 2,095.9	<u>+ 9.0</u> +	7	8	10	· · · · · · · · · · · · · · · · · · ·	· · · · ·	+ • • • •
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REFERENCE

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<u>Г NO.</u> **DESCRIPTION** TITLE SHEET LEGEND SITE PLAN PROFILE BORE LOGS

STATE OF NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION **DIVISION OF HIGHWAYS GEOTECHNICAL ENGINEERING UNIT**

STRUCTURE SUBSURFACE INVESTIGATION

COUNTY BUNCOMBE

PROJECT DESCRIPTION <u>I-40 FROM</u> EAST OF SR 1224 (MONTE VISTA RD) TO PAVEMENT JOINT WEST OF SR 3412 (SAND HILL RD). INCLUDES INITIAL IMPROVEMENTS AT I-40EB TO I-26EB AT US 19/23 (SMOKEY PARK HIGHWAY) SITE DESCRIPTION NOISEWALL 5A, FROM -Y- STA.

63+46.57, 86.50' RT TO -Y- STA. 77+80.27, 86.50' RT

NOISEWALL 5B, FROM -Y- STA. 77 + 14.17, 99.00'RT

TO -Y EB- STA. 13 + 66.36, 51.50' RT

NOISEWALL 5C, FROM -Y EB- STA. 13 + 39.81, 57.30'RT TO -Y EB- STA. 14 + 13.75, 65.92'RT

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	I–2513AA	1	15

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 SOLT TEST DATA AVAILABLE MAY BE REVIEWED OR INSPECTED IN RALEIGH BY CONTACTING THE N.C. DEPARTMENT OF TRANSPORTATION, GEOTECHNICAL ENGINEERING UNIT AT (1991) 707-8050. THE SUBSURFACE PLANS AND REPORTS, FIELD BORING LOGS, ROCK CORES AND SOIL TEST DATA ARE NOT PART OF THE CONTRACT.

CENERAL SOIL AND ROCK STRATA DESCRIPTIONS AND INDICATED BOUNDARIES ARE BASED ON A GEOTECHNICAL INTERPRETATION OF ALL AVAILABLE SUBSUFFACE 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 STIU UN-PLACE) TEST DATA CAN BE RELIED ON ONLY TO THE DECREE OF RELIABILITY INHERENT IN THE STANDARD TEST METHOD. THE OBSERVED WATER LEVELS OR SOL MOISTURE CONDITIONS INDICATED IN THE SUBSURFACE INVESTIGATIONS ARE AS RECORDED AT THE TIME OF THE INVESTIGATION. THESE WATER LEVELS OR SOL MOISTURE CONDITIONS MAY YARY 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 DESIGN INFORMATION ON THIS PROJECT. THE DEPARTMENT DOES NOT WARRANT OR CUARANTEE THE SUFFICIENCY OR ACCURACY OF THE INVESTIGATION MADE, NOR THE INTERPRETATIONS MADE, OR POINION OF THE DEPARTMENT AS TO THE TYPE OF MATERIALS AND CONDITIONS TO BE ENCOUNTERED. THE BIDDER OR CONTRACTOR IS CAUTIONED TO MAKE SUCH INDEPENDENT SUBSURFACE INVESTIGATIONS AS HE DEEMS NECESSARY TO SATISFY HIMSELF AS TO CONDITIONS TO BE 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: I. 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. 2.

PERSONNEL	
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CG2
GOODNIGHT, D.J.
ECS
NCDOT
INVESTIGATED BYFALCON ENG.
DRAWN BYCROCKETT, S.C.
CHECKED BY HAMM, J.R.
SUBMITTED BY FALCON ENG.
DATE SEPTEMBER 2023



SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

SOIL DESCRIPTION	GRADATION	ROCK DESCRIPTION
SOIL IS CONSIDERED UNCONSOLIDATED, SEMI-CONSOLIDATED, OR WEATHERED EARTH MATERIALS THAT CAN BE PENETRATED WITH A CONTINUOUS FLIGHT POWER AUGER AND YELD LESS THAN 100 BLOWS PER FOOT ACCORDING TO THE STANDARD PENETRATION TEST (AGASHTO I 200, ASTM DI586). SOIL CLASSIFICATION IS BASED ON THE AGSHTO SYSTEM, BASIC DESCRIPTIONS GENERALLY INCLUDE THE FOLLOWING:	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 TESTE ROCK LINE INDICATES THE LEVEL AT WHICH NON-COASTAL PLAIN MATERIAL WOULD YIELD SPT REFUSAL IS PENETRATION BY A SPLIT SPOON SAMPLER EQUAL TO RE LESS THAN 0.1 BLOWS IN NON-COASTAL PLAIN MATERIAL. THE TRANSITION BETWEEN SOIL AND ROCK DEPORCENTED BY A STATE OF MATERIAL. THE TRANSITION BETWEEN SOIL AND ROCK
CONSISTENCY, COLOR, TEXTURE, MOISTURE, AASHTO CLASSIFICATION, AND OTHER PERTINENT FACTORS SUCH AS MINERALOGICAL COMPOSITION, ANGULARITY, STRUCTURE, PLASTICITY, ETC. FOR EXAMPLE,	ANGULARITY OF GRAINS	ROCK MATERIALS ARE TYPICALLY DIVIDED AS FOLLOWS:
VERY STIFF, GRAY, SILTY CLAY, MOIST WITH INTERBEDDED FINE SAND LAYERS, HIGHLY PLASTIC, A-7-6	ANGULAR, SUBANGULAR, SUBROUNDED, OR ROUNDED.	WEATHERED NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT
GENERAL GRANULAR MATERIALS SILT-CLAY MATERIALS OPENALIS MATERIALS	MINERALOGICAL COMPOSITION	CONSTRUCTION FILE FOR TO COARSE GRAIN IGNEOUS AND METAMORPHIC RO
CLASS. (≤ 35% PASSING *200) (> 35% PASSING *200) (> 35% PASSING *200)	MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC. ARE USED IN DESCRIPTIONS WHEN THEY ARE CONSIDERED OF SIGNIFICANCE.	ROCK (CR) WOULD YIELD SPT REFUSAL IF TESTED. ROCK TYPE IN GNEISS, GABBRO, SCHIST, ETC.
GROUP A-1 A-3 A-2 A-4 A-3 A-6 A-7 CLASS. A-1-a A-1-b A-2-4 A-2-5 A-2-6 A-2-7 A-7, A-3 A-6, A-7	COMPRESSIBILITY	NON-CRYSTALLINE FINE TO COARSE GRAIN METAMORPHIC AND NON-COASTA
SYMBOL 000000000000000000000000000000000000	SLIGHTLY COMPRESSIBLE LL < 31 MODERATELY COMPRESSIBLE LL = 31 - 50	RUCK (NCR) ROCK TYPE INCLUDES PHYLLITE, SLATE, SANDSTONE, ET(
2 PASSING	HIGHLY COMPRESSIBLE LL > 50	SEDIMENTARY ROCK SPT REFUSAL, ROCK TYPE INCLUDES LIMESTONE, SANDS
*10 50 MX *40 30 MX 50 MX 51 MN GRANULAR CLAY PEAT		WEATHERING
*200 15 MX 25 MX 10 MX 35 MX 35 MX 35 MX 35 MX 36 MN 36 MN 36 MN 36 MN	ORGANIC MATERIAL SOILS OTHER MATERIAL	FRESH ROCK FRESH, CRYSTALS BRIGHT, FEW JOINTS MAY SHOW SLIGHT STAINING, ROCK
MATERIAL PASSING *40 LL 40 MX 41 MN 11TTF 00	Inffector Ordering Participation Participation <td>VERY SLIGHT ROCK GENERALLY FRESH, JOINTS STAINED, SOME JOINTS MAY SHOW THIN CLAY CR (V SLI) CRYSTALS ON A BROKEN SPECIMEN FACE SHINE BRIGHTLY. ROCK RINGS UNDER H</td>	VERY SLIGHT ROCK GENERALLY FRESH, JOINTS STAINED, SOME JOINTS MAY SHOW THIN CLAY CR (V SLI) CRYSTALS ON A BROKEN SPECIMEN FACE SHINE BRIGHTLY. ROCK RINGS UNDER H
PI 6 MX NP 18 MX 18 MX 11 MN 11 MN 18 MX 18 MX 11 MN 11 MN MODERATE ORGANIC	GROUND WATER	OF A CRYSTALLINE NATURE.
USUAL TYPES STONE FRAGS. FINE SILTY OR CLAYEY SILTY CLAYEY MATTER		SLIGHT HOLK GENERALLY FRESH, JUINTS STAINED AND DISCULURATION EXTENDS INTO HO (SLL) I INCH, OPEN JOINTS MAY CONTAIN CLAY. IN GRANITOIR PACKS SOME OCCASIONAL CRYSTALS ARE DULL AND DISCOLORED. CRYSTALLINE ROCKS RING UNDER HAMMEF
Materials Sand Sand Gravel and Sand Suils Suils	STATIC WATER LEVEL AFTER <u>24</u> HOURS	MODERATE SIGNIFICANT PORTIONS OF ROCK SHOW DISCOLORATION AND WEATHERING EFFECTS (MOD.) GRANITOID ROCKS MOST FELOSPARS ARE DUIL AND DISCOLORED SOME SHOW CLA
GEN. RATING EXCELLENT TO GOOD FAIR TO POOR POOR UNSUITABLE	<u>VPW</u> PERCHEU WATER, SATURATED ZUNE, UR WATER BEARING STRATA	DULL SOUND UNDER HAMMER BLOWS AND SHOWS SIGNIFICANT LOSS OF STRENGTH WITH FRESH ROCK.
PI OF A-7-5 SUBGROUP IS ≤ LL - 30 ; PI OF A-7-6 SUBGROUP IS > LL - 30 CONSISTENCY OR DENSENESS		MODERATELY ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. IN GRANITOID ROCKS, ALL F
COMPACTNESS OR RANGE OF STANDARD RANGE OF UNCONFINED		(MOD. SEV.) AND CAN BE EXCAVATED WITH A GEOLOGIST'S PICK. ROCK GIVES "CLUNK" SOUND I
PRIMARY SOIL TYPE CONSISTENCY PENETRATION RESISTENCE (N-VALUE) COMPRESSIVE STRENGTH (TONS/FT2) GENERALLY VERY LOOSE < 4	HOADWAY EMBANKMENT (RE) DIP & DIP & DIP DIRECTION WITH SOIL DESCRIPTION → OF ROCK STRUCTURES SLOPE INDICATOR SPT DWT TEST BORING \ SLOPE INDICATOR	SEVERE ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED, ROCK FABRIC CLEAR AND E (SEV.) REDUCED IN STRENGTH TO STRONG SOLL. IN GRANITOLD ROCKS ALL FELDSPARS A TO SOME EXTENT SOME FRAMEWING OF STRONG ROCK USIALLY REMAIN
GRANULAR LUUSE 4 10 10 MATERIAL MEDIUM DENSE 10 TO 30 N/A		IF TESTED, WOULD YIELD SPT N VALUES > 100 BPF
INFLURE (NON-COHESIVE) DENSE VERY DENSE 30 TO 50 VERY DENSE > 50 VERY SOFT < 2	THAN ROADWAY EMBANKMENT + AUGER BORING + TEST	VERY ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC ELEMENTS AR SEVERE BUT MASS IS EFFECTIVELY REDUCED TO SOIL STATUS, WITH ONLY FRAGMENTS OF (V SEV.) REMAINING. SAPROLITE IS AN EXAMPLE OF ROCK WEATHERED TO A DECREE THAT VESTICES OF ORIGINAL POOR EARLY PERFORMENT OF TESTED AND A DECREE THAT
GENERALLY SOFT 2 T0 4 0.25 T0 0.5 SILT-CLAY MODIUM STIFF 4 T0 8 0.5 T0 1.0 MATERIAL STIFF 8 T0 15 1 T0 2 CONFERIES VERVE FILES 1 T0 2 2 T0 4		COMPLETE ROCK REDUCED TO SOLL. ROCK FRBRIC REDWIN. (<u>P</u>
HARD > 30 > 4	INSTALLATION	
TEXTURE OR GRAIN SIZE	RECOMMENDATION SYMBOLS	VERY HARD CANNOT BE SCRATCHED BY KNIFE OR SHARP PICK. BREAKING OF HAND SPECIMEN:
U.S. STD. SIEVE SIZE 4 10 40 60 200 270 OPENING (MM) 4.76 2.00 0.42 0.25 0.075 0.053	UNDERCUT UNCLASSIFIED EXCAVATION - UNCLASSIFIED EXCAVATION - UNCLASSIFIED EXCAVATION - ACCEPTABLE, BUT NOT TO BE	SEVERAL HARD BLOWS OF THE GEOLOGIST'S PICK.
	SHALLOW UNCLASSIFIED EXCAVATION - USED IN THE TOP 3 FEET OF	TO DETACH HAND SPECIMEN.
BODDEER COBDEL SAND SAND	ABBREVIATIONS	MODERATELY CAN BE SCRATCHED BY KNIFE OR PICK. GOUGES OR GROOVES TO 0.25 INCHES DE HARD EXCAVATED BY HARD BLOW OF A GEOLOGIST'S PICK. HAND SPECIMENS CAN BE D BY MODERATE BLOWS.
	BT - BORING TERMINATED MICA MICACEOUS WEA WEATHERED CL CLAY MOD MODERATELY 7 - UNIT WEIGHT CT SUPER DEPENDENT OF THE SECOND O	MEDIUM CAN BE GROOVED OR GOUGED 0.05 INCHES DEEP BY FIRM PRESSURE OF KNIFE O HARD CAN BE EXCAVATED IN SMALL CHIPS TO PEICES I INCH MAXIMUM SIZE BY HARD
SOIL MOISTURE SCALE FIELD MOISTURE GUIDE FOR FIELD MOISTURE DESCRIPTION	CSE COARSE ORG ORGANIC DMT - DILATOMETER TEST PMT - PRESSUREMETER TEST <u>SAMPLE ABBREVIATIONS</u>	SOFT CAN BE GROVED OR GOUGED READILY BY KNIFE OR PICK. CAN BE EXCAVATED IN FROM CHIPS TO SEVERAL INCHES IN SIZE BY MODERATE BLOWS OF A PICK POIN
- SATURATED - USUALLY LIQUID: YERY WET, USUALLY (SAT.) FROM BELOW THE GROUND WATER TABLE	DFT - DINAMUL FEREINATION TEST SHF- SHF/LUTIL S - BULIT S - BULIT e - VOID RATIO SD SAND, SANDY SS - SPLIT SULT SULT F - FINE SL SILT, SILTY ST - SHELBY TUBE	PIECES CAN BE BROKEN BY FINCER PRESSURE. VERY CAN BE CARVED WITH KNIFE. CAN BE EXCAVATED READILY WITH POINT OF PICK. SOFT OR MORE IN THICKNESS CAN BE BROKEN BY FINCER PRESSURE. CAN BE SCRATCH
PLASTIC SEMISOLID: REQUIRES DRYING TO	FOSS FOSSILIFEROUS SLI SLIGHTLY RS - ROCK FRAC FRACTURED, FRACTURES TCR - TRICONE REFUSAL RT - RECOMPACTED TRIAXIAL	FINGERNAIL.
RANGE - WET - (W) ATTAIN OPTIMUM MOISTURE	FRAGS FRAGMENTS W - MOISTURE CONTENT CBR - CALIFORNIA BEARING	FRACTURE SPACING BEDDING
OM OPTIMUM MOISTURE - MOIST - (M) SOLID; AT OR NEAR OPTIMUM MOISTURE	EQUIPMENT USED ON SUBJECT PROJECT	VERY WIDE MORE THAN 10 FEET VERY THICKLY BEDDED WIDE 3 TO 10 FEET THICKLY BEDDED 1.
SL SHRINKAGE LIMIT		MODERATELY CLOSE 1 TO 3 FEET THINLY BEDDED Ø.1 CLOSE Ø.16 TO 1 FOOT VERY THINLY BEDDED Ø.0
- DRY - (D) REOUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE	6' CONTINUOUS FLIGHT AUGER	. VERY CLOSE LESS THAN 0.16 FEET THICKLY LAMINATED 0.00
PLASTICITY	CME-55	INDURATION
PLASTICITY INDEX (PI) DRY STRENGTH	CME-550 HARD FACED FINGER BITS	FOR SEDIMENTARY ROCKS, INDURATION IS THE HARDENING OF MATERIAL BY CEMENTING, HE
NON PLASTIC 0-5 VERY LOW SLIGHTLY PLASTIC 6-15 SLIGHT MODERATELY ALOSTIC 10 STORE	VANE SHEAR TEST UNG-CARBIDE INSERTS	FRIABLE RUBBING WITH FINGER FREES NUMEROUS GRAINS: GENTLE BLOW BY HAMMER DISINTEGRATES SAMPLE.
HIGHLY PLASTIC 26 OR MORE HIGH		MODERATELY INDURATED GRAINS CAN BE SEPARATED FROM SAMPLE WITH ST BREAKS EASILY WHEN HIT WITH HAMMER.
		INDURATED GRAINS ARE DIFFICULT TO SEPARATE WITH STEEL DIFFICULT TO BREAK WITH HAMMER.
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.	X GEOPROBE 7822 UUME BIT VANE SHEAR TEST	EXTREMELY INDURATED SHARP HAMMER BLOWS REQUIRED TO BREAK SAMPLE SAMPLE BREAKS ACROSS GRAINS,

PROJECT REFERENCE NO.

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	TERMS AND DEFINITIONS
D. AN INFERRED SPT REFUSAL.	ALLUVIUM (ALLUV.) - SOILS THAT HAVE BEEN TRANSPORTED BY WATER.
FOOT PER 60 IS OFTEN	AQUIFER - A WATER BEARING FORMATION OR STRATA.
	ARENALEUUS - APPLIED TO ROCKS THAT HAVE BEEN DERIVED FROM SAND OR THAT CONTAIN SAND. ARGITACEDUS - APPLIED TO ALL ROCKS OR SUBSTANCES COMPOSED OF CLAY MINERALS OR HAVING
N VALUES >	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
CK THAT CLUDES GRANITE,	WHICH IT IS ENCOUNTERED, BUT WHICH DOES NOT NECESSARILY RISE TO OR ABOVE THE GROUND SURFACE.
L PLAIN F TESTED.	<u>CALLAREOUS (CALL)</u> - SOLES THAT CONTAIN APPRECIABLE AMOUNTS OF CALLIOM CARBUNATE. <u>COLLUVIUM</u> - ROCK FRAGMENTS MIXED WITH SOLE DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM OF SLOPE.
MAY NOT YIELD TONE, CEMENTED	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.
	$\underline{\text{DIKE}}$ - A TABULAR BODY OF IGNEOUS ROCK THAT CUTS ACROSS THE STRUCTURE OF ADJACENT ROCKS OR CUTS MASSIVE ROCK.
RINGS UNDER	$\underline{\text{DIP}}$ - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE HORIZONTAL.
AMMER BLOWS IF	DIP DIRECTION (DIP AZIMUTH) - THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF THE LINE OF DIP, MEASURED CLOCKWISE FROM NORTH.
CK UP TO FELDSPAR	FAULT - A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE.
BLOWS. 5. IN	<u>FISSILE</u> - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES. <u>FLOAT</u> - ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLODGED FROM
AS COMPARED	PARENT MATERIAL. FLOOD PLAIN (FP) - LAND RORDERING & STREAM BUILT OF SEDIMENTS DEPOSITED BY THE STREAM
ELDSPARS DULL	FORMATION (FM.) - A MAPPABLE GEOLOGIC UNIT THAT CAN BE RECOGNIZED AND TRACED IN THE FIELD.
WHEN STRUCK.	JOINT - FRACTURE IN ROCK ALONG WHICH NO APPRECIABLE MOVEMENT HAS OCCURRED.
	ITS LATERAL EXTENT.
NE KHOLINIZED	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 POR ACEADING AND LACK OF COOD DEALANCE
E DISCERNIBLE STRONG ROCK	DOULT INDICHTES FOOR HEARTION HND LEAK OF OUDD DHAINHOL. <u>PERCHED WATER</u> - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE DE ANI INTERVENING INDERVING STADTIM
ALUES < 100 BPF	RESIDUAL (RES.) SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK.
IN SMALL AND . SAPROLITE IS	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.
REQUIRES	SAPROLITE (SAP.) - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT ROCK.
OWS REQUIRED	<u>SILL</u> - 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.
EP CAN BE TACHED	$\underline{SLICKENSIDE}$ - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT OR SLIP PLANE.
R PICK POINT. BLOWS OF THE	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 EDUAL TO OR LESS THAN 01 FOOT PER 60 BLOWS.
FRAGMENTS T. SMALL, THIN	<u>STRATA CORE RECOVERY (SREC.)</u> - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE.
PIECES 1 INCH	<u>STRATA ROCK QUALITY DESIGNATION (SRQD)</u> - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SECMENTS 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.
THICKNESS	BENCH MARK: ELEVATIONS TAKEN FROM 12513_LS_TNL.TIN
4 FEET 5 - 4 FEET	ELEVATION: FEET
6 - 1.5 FEET	NOTES:
8 - 0.03 FEET 0.008 FEET	FIAD - FILLED IMMEDIATELY AFTER DRILLING
AT, PRESSURE, ETC.	
EEL PROBE:	
PROBE:	
;	
	DATE: 8-15-14






GEOTECHNICAL BORING REPORT BORE LOG

WE	s :	34165	.1.2			TI	P 1-2513	AA	COUNT	Y BUNCON	MBE			GEO	LOGIST Goodnigh	nt, D.J.		N	BS 34	165.1.2	2			TIF	• 1-2513	3AA	COUN	ТΥ
SIT	E DI	ESCR	IPTION	Nois	ewall 5	A from	-Y- Sta. 6	3+46.57, 8	6.50' RT to	o -Y- Sta. 77	′ +80.27,	86.50'	RT				GROUND WTR	ft) S	TE DE	SCRIPT	ION N	loisew	all 5/	۹ from	-Y- Sta. (3+46.57, 8	6.50' RT	∙to ·
во	RING	g no.	NWA	L_1		ST	TATION [·]	10+67		OFFSET	21 ft LT			ALIG	NMENT -NW5A-		0 HR. [ry B	ORING	NO . В	-23			ST	ATION	12+07		
со	LLA		EV. 2,	098.5 f	t	тс	DTAL DEP	TH 15.0 f	t	NORTHING	G 677,9	937		EAS	FING 919,842		24 HR. FI	.D C	OLLAR	ELEV.	2,102	2.2 ft		то		TH 19.5	ft	
DRI	LL RI	IG/HAM	IMER EF	F./DATE	CG2	0446 Di	edrich D50 8	37% 05/10/20	22		DRILL	METHO	d H.:	S. Augers		HAMME	ER TYPE Automatic	D	RILL RIG	HAMME	R EFF./D	DATE	N/A					
DR	ILLE	ER O	dom, C			ST	ART DAT	E 08/16/2	3	COMP. DA	TE 08/	16/23		SUR	FACE WATER DEP	TH N/A	4	D	RILLEF	N/A				ST	ART DA	E 01/06/0)4	(
ELE		ORIVE ELEV	DEPTH	BLO	w cou	JNT		BLOWS	PER FOOT	-	SAMP.	. V			SOIL AND RO	CK DESC	CRIPTION	EL			ртн і	BLOW	COU	NT		BLOWS	PER FO	ΤС
(π)		(ft)	(π)	0.5ft	0.5ft	0.5ft	0	25	50	75 100	NO.	Имо	I G	ELEV. (ft)		DEPTI	(ft) (⁽¹⁾ (t) (π) 0.	.5ft 0).5ft	0.5ft	0	25	50	7
<u>210</u> 209	0 2, 5 2,	,096.9 ,094.9	1.6	7 7 7	19 3	14	¶5	• • • • • • • • • • • • • • • • • • •	· · · · · · · · · · · · · · · · · · ·		_	M		 - 2,098.5 - 2,097.5 - 2,097.3 	GROUN AS AGGREGATE ROADWAY BROWN AND G SAND (A-2-4), WIT	D SURFA PHALT E BASE C EMBANK RAY, LOO H SOME	ACE COURSE CMENT OSE, SILTY GRAVEL AND	0.0 1.0 1.3 2	05 00 2,0		.0	3	6	10	· · · 1 · · · 1 · · · J · · · •		· · · · ·	- - - -
200	0 2,	,092.0_	6.5	2	3	4	• • • •					м		- 2,090.5	IRA	CE MICA		8.0	0.5	‡								:
203	5 2,	,090.0 - - - ,085.0 - -	 	4	5	6	• • 11 • • • • • • • • • • • • •					M		 	RE: BROWN, STIFF	SIDUAL , SANDY	on 2,083.5 ft In	5.0	<u>2,0</u>	<u>94.2</u> 8 	3.0	16 2 6	21 9	20		4 1 119		· · · · · · · · · · · · · · · · · · ·
		-	L											-	Residual Sa	anuy Sil i	I (A-4)	20	85	<u>+</u>					· · · /			•
		-	l l											-					2,0	34.2 <u>1</u> 1	3.0	5	6	8	↓ 14			•
NCDOT BORE DOUBLE 12513 NOISEWALLS.GPJ NC_DOT.GDT 9/15/23																												

T١	BU	NCON	ЛE	BE				GEOLOGIST	D. Cheek			
to -Y- Sta. 77+80.27, 86.50' RT											GROUN	ID WTR (ft)
	OFFS	SET	18	8 ft RT				ALIGNMENT	-NW5A-		0 HR.	Dry
	NOR	THING	}	677,87	74			EASTING 91	9,964		24 HR.	Drv
			Τ		FTHOD	н	S	Augers			RTYPE	Automatic
	COM	אם פ	<u>т</u>	F 01/0)6/0/							
דר				SAMP	/0/04	L		JUNFAUE WA		III IN/F	`	
וי	75	100				0		SO	IL AND ROC	K DESC	RIPTION	
	<u> </u>			110.		G						
							L					
							È.	2 102 2	GROUNE		CE	0.0
							E	2,102.2	RES	IDUAL		0.0
							┝	Black-	Medium De Orange-Red	nse to D , Silty Fi	ense, ne to Coa	rse
					D		F	SAND	(A-2-4), with	trace ro	ck fragme	ents
	: :						F					
	<u>.</u> .						F					
•		•••			м		F					
-	: :						Ē	2,090.2				12.0
	1		1		N.4		F	Stiff to V	ery Stiff, Bla	ck-Red-E	Brown-Ora	ange, trace
:	: :	· · · ·					F		n an	nica	- , wiu⊺	
•	···	• •					F					
	· ·	• •			м		F	2 0 9 2 7				10.5
•		• •					F	Boring T	erminated a	t Elevatio	on 2,082.	7 ft In
							E		Residual Sa	ndy SILT	(A-4)	
							F	Boring I	Drilled by NC	DOT an	d provide	d for
							╞		Telefel	ice only.		
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GEOTECHNICAL BORING REPORT BORE LOG

1	WBS	34165	.1.2			TI	P 1-25	13AA		COUN	TY BUN	NCON	1BE				GEOLOGIST Goodnight, D.J.			WBS	3 3416	5.1.2			ТІ	P 1-2513A	A	COUNTY	ī
;	SITE	DESCR	IPTION	Noise	ewall 5	A from	ı -Y- Sta	. 63+4	6.57, 8	6.50' RT	to -Y- St	ta. 77 [.]	+80.27,	86.50'	' RT	•		GROUNI	D WTR (ft)	SITE	DESCI	RIPTION	Nois	sewall 5	5A from	ı -Y- Sta. 63	+46.57, 86	3.50' RT to) -
	BORI	ng no.	NWA	3		S	TATION	13+6	62		OFFS	ET :	23 ft LT				ALIGNMENT -NW5A-	0 HR.	Dry	BOR	ing no	. NW/	AL_4		ST	TATION 1	5+62		C
	COLL	AR ELI	EV. 2,0)95.3 f	ť	т	OTAL DE	EPTH	25.0 fl		NORT	HING	677,8	84			EASTING 920,125	24 HR.	FIAD	COL	LAR EL	. EV . 2	,096.5	ft	тс	JTAL DEPT	H 25.0 ft		N
	DRILL	RIG/HAN	IMER EF	F./DATE	CG2	0446 D	iedrich D5	0 87% (05/10/202	22			DRILL	IETHO	DH	H.S.	Augers HAN		Automatic	DRIL	L RIG/HA	MMER E	FF./DAT	E CG2	20446 Di	iedrich D50 87	/% 05/10/202	22	
	DRILI	ER 0	dom, C.			S	TART DA	ATE (08/17/2	3	СОМ	P. DA	TE 08/	17/23			SURFACE WATER DEPTH	N/A		DRIL	LER (Odom, (C.		ST		08/17/2	3	C
E	LEV	DRIVE FLEV	DEPTH	BLO	W CO	JNT		B	BLOWS	PER FO	DT		SAMP.					SCRIPTION		ELEV	DRIVE	DEPT	H BLC	ow co	UNT		BLOWS F	PER FOOT	
	(ft)	(ft)	(ft)	0.5ft	0.5ft	0.5ft	0	25	-	50	75	100	NO.	Имо	I G	<u>;</u>	ELEV. (ft)		DEPTH (ft)	(ft)	(ft)	(ft)	0.5ft	0.5ft	0.5ft	0 2	25 5	50 -	75
	2 100 2095	2.093.2					 										- 2,095.3 GROUND SUF -2,094.2 ASPHAL -2.094.0∕\ AGGREGATE BAS	RFACE T E COURSE	0.0 	<u>2100</u> 2095	2,094.3		2	2	4		<u></u>	<u> </u>	-
		2,091.7-	- 3.6	4	2	2	•4::							м			ROADWAY EMBA				2,092.5	5 <u>† 4.0</u> †	4	4	4				
2	2090		-	2	3	4	•7					•••		M			-2,089.3 BROWN, LOOSE, SILT WITH SOME G	Y SAND (A-2- RAVEL	-4) 6.0	2090	2,090.0	<u>, 6.5</u>	5	6	5		· · · ·	+ • • • •	_
		2,088.8-	- 6.5	2	3	4	 		· · · ·		· · · · · ·	· · · ·		м		<u> </u>	ROADWAY EMBA	NKMENT	A-4) 8.0		2.087.5	+ 5+ 9.0		Ů	Ĵ	• • 11 • • • •	· · · · ·		
-	2085	2,086.8- - -	- 8.5 - -	2	3	4	↓ . T	· · ·	· · · · ·	· · · · · · · ·	· · ·	· · ·		м			WITH TRACE (WITH TRACE (BRAVEL D. DENSE, SI	/ LTY	2085		+	3	5	5	•10 			
		2 081 8	13.5				:\:	: :			: :	•••					SAND (A-2-4) WITH	LITTLE MICA			2,083.0) 13.5	4	5	6				
	2080			4	4	6								м		-				2080		ł							
		-	F													F	-				2 078 ($\frac{1}{185}$							Τ
	-	2,076.8	18.5	5	6	7										F					,	Ŧ	3	5	5	•10			
1	2075	_	F	Ŭ	Ŭ			13-								-	-			2075	-	Ŧ						+	+
		2 071 0					::::														2,073.0) <u> </u>	3	6	7				
		2,071.0-	- 23.5	2	4	4								w			2,070.3		25.0			+				<u> </u>	<u> </u>	<u> </u>	_
NCDOT BORE DOUBLE 12513 NOISEWALLS.GPJ NC_DOT.GDT 9/15/23																	Residual Silty SA	ID (A-2-4)				* * * * * * * * * * * * * * * * * * * *							

IT۱	BUNCON	/IBE			GEOL	OGIST	Goodnight	, D.J.		
Γto	-Y- Sta. 77	+80.27	, 86.50'	RT					GROUN	D WTR (ft)
	OFFSET	23 ft LT	-		ALIG	MENT	-NW5A-		0 HR.	Dry
	NORTHING	6 77,	840		EAST	ING 92	0,320		24 HR.	FIAD
		DRILL	METHOD) H.S	6. Augers			HAMME	RTYPE	Automatic
	COMP. DA	TE 08	8/17/23		SURF	ACE WA	TER DEP	TH N/A	۱	
ОТ		SAMF	P. /	L	1	50				
	75 100	NO.	мо	G		50	IL AND RUC	K DESC	RIPTION	I
					. 2,096.5		GROUNE	SURFA	CE	0.0
					-2,095.5	A	ASF GGREGATE	BASE C	OURSE	<u> </u>
			М		. 2,092.8	BROWI	ROADWAY E	EMBANK		A-4) 3.7
			M		2,090.5	BROW	WITH TRA	CE GRA	AVEL	6.0
		11	м			RED-E	ROWN, ME	DUAL	F TO STI	FF,
			м			RED-	SANDY TAN, LOOS	CLAY (A E TO ME	-6) ED. DENS	E,
	+ • • • •					SILTY	SAND (A-2-4) WITH		/IĆA
•										
			M	-						
					<u> </u>					
			м							
					_					
•			M		2,071.5	Boring T	erminated a	t Elevatio	on 2 071	25.0 5 ft In
					<u> </u>	F	Residual Silt	y SAND	(A-2-4)	
					-					
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GEOTECHNICAL BORING REPORT BORE LOG

ſ	WBS	3416	5.1.2			TI	IP 1-1	2513/	٩A		COUNT	Y BUNCO	MBE			GEO	LOGIST Goodnigh	t, D.J.		WB	3 3416	5.1.2			TI	P 1-251	3AA	COUNT
	SITE	DESCR	IPTION	Nois	ewall 5	A from	n -Y- S	Sta. 63	3+46.	57, 86	.50' RT t	o -Y- Sta. 77	7+80.27,	86.50	' RT				GROUND WTR (ft)	SITE	DESCR	RIPTION	Nois	sewall 5	A from	-Y- Sta.	63+46.57	, 86.50' RT t
	BORI	NG NO.	NWA	L_5		S	TATIC	DN 10	6+62			OFFSET	21 ft LT			ALIG	NMENT -NW5A-		0 HR. Dry	BOF	NO NO	B-24			S	ATION	18+03	
ſ	COLI	LAR EL	EV. 2,	098.1 f	ť	т	OTAL	DEPT	ГН 2	20.0 ft		NORTHING	G 677,8	815		EAS	FING 920,418		24 HR. FIAD	COL	LAR EL	EV. 2,	088.3	ft	т	DTAL DE	. PTH 25.	1 ft
ſ	DRILL	RIG/HAN	MMER EF	F./DATI	E CG2	0446 D	iedrich	D50 8	7% 05/	/10/2022	2		DRILL	METHO	DDH.	S. Augers		НАММ	ER TYPE Automatic	DRIL	L RIG/HAI	MMER EF	F./DAT	E N/A	•			
	DRIL	LER C	dom, C	•		S	TART	DATE	E 08	3/17/23		COMP. DA	TE 08/	/17/23		SUR	FACE WATER DEP	TH N/	Ά	DRI	LER N	I/A			ST	ART DA	TE 01/12	2/04
ſ	ELEV	DRIVE	DEPTH	BLC	W CO	JNT			BLO	OWS P	ER FOO	T	SAMP	· 🔨					CRIPTION	ELEV	DRIVE	DEPTH	BLC	ow co	UNT		BLOW	'S PER FOO
Ļ	(ft)	(ft)	(ft)	0.5ft	0.5ft	0.5ft	0		25	5	0	75 100	NO.	Имс	DI G	ELEV.	ft)		DEPTH (ft)	(ft)	(ft)	(ft)	0.5ft	0.5ft	0.5ft	0	25	50
-	2095 2090 2085 2080	2,095.9 2,095.9 2,094.1 2,091.6 2,089.1 2,084.6 2,079.6		BLC 0.5ft 3 2 1 1 2 2	W CO 0.5ft 3 2 2 4 3				BLC 225	5 17723 OWS P 5 5 	ER FOO 0	T 75 100	SAMP NO.	M M M M		ELEV. 1	GROUND SOIL AND ROO ft) GROUND ASI AGGREGATE ROADWAY I TAN-BROWN, I (A-2-4) WITH TRA TRAC RES TAN-BROWN, MED SANDY BROWN, MED. STI SAND (A-2-4) W BROWN, MED. STI SILT (A-4) WI Boring Terminated a Residual Sa	CK DES CK DES D SURF PHALT BASE EMBAN OOSE, I ACE OR CE MIC/ SIDUAL ED. STIF SILT (/ SILT (/ SILT / VITH TF	A CRIPTION DEPTH (ft) ACE 0.0 1.1 COURSE 1.3 KMENT SILTY SAND GANICS AND A 8.5 FF TO STIFF, A-4) DENSE, SILTY 12.0 A STIFF, SANDY 12.0 STIFF, SANDY 12.0 COURSE 12.0 COURSE 1.3 COURSE 1.3 COU	ELEV (ft) 2090 2085 2080 2075 2070 2065	- 2,084.7 - 2,079.7 - 2,079.7 - 2,079.7 - 2,069.7 - 2,069.7 - 2,064.7	DEPTH (ft) 3.6 3.6 3.6 3.6 3.6 3.6 3.6 3.6 3.6 3.6	4 BLC 0.5ft 3 2 1 WOH 3	2 0.5ft 4 3 2 WOH 2	UNT 0.5ft 4 4 4		IE 01/12 BLOW 25	S PER FOO 50
NCDOT BORE DOUBLE 12513 NOISEWALLS.GPJ NC_DOT.GDT 9/15/23		-																										



GEOTECHNICAL BORING REPORT BORE LOG

SITE DESCRIPTION Noisewall 5A from -Y-Sta. 63+46.57, 86.50' RT to -Y-Sta. 77+80.27, 86.50' RT ALIGNMENT -NW5A- 0 PR 5.3 DORING NO. B-25 STATION 19+28 OFFSET 35 ft RT ALIGNMENT -NW5A- 0 HR 5.3 COLLAR ELEV. 2,087.5 ft TOTAL DEPTH 19.3 ft NORTHING 677,696 EASTING 920,661 24 HR 2.1 TOTAL DEPTH 20.0 ft NORTHING 677,708 EASTING 920,855 4 HR 2.4 DRULE NG/HAMMER EFF.DATE VA STAT DATE 01/12/04 COMP. DATE 01/12/04 SURFACE WATER DEPTH N/A 50 STAT DATE 01/12/04 SURFACE WATER DEPT N/A DEPTH (N/A STAT DATE 01/12/04 SURFACE WATER DEPT N/A DEPTH (N/A SURFACE WATER DEPT N/A SUR	D WTR (ft)
BORING NO. B-25 STATION 19+28 OFFSET 35 ft RT ALIGNMENT -NW5A- 0 HR. 5.3 BORING NO. NWAL8 STATION 21+13 OFFSET 25 ft LT ALIGNMENT -NW5A- 0 HR. 2.1 COLLAR ELEV. 2,087.5 ft TOTAL DEPTH 19.3 ft NORTHING 677,096 EASTING 92,0661 24 HR. 2.1 COLLAR ELEV. 2,111.7 ft TOTAL DEPTH 20.0 ft NORTHING 677,086 EASTING 92,085. 24 HR. 2.1 DRILL RIGHAMMER EFF.JOATE 01/12/04 SUBMENT -NW5A- DRILL RIGHAMMER EFF.JOATE 01/12/04 DRILL METHOD H.S. Augers HAMMER TYPE Automatic DRILL RIGHAMMER EFF.JOATE 08/17/23 COMP. DATE 08/17/23 SUBRACE WATER DEPTH N/- DRILL RIGHAMMER EFF.JOATE 08/17/23 SUBPACE WATER DEPTH N/- DRILL RIGHAMMER EFF.JOATE 08/17/23 SUBPACE WATER DEPTH N/- DRILL RIGHAMMER EFF.JOATE 08/17/23 SUBACE WATER DEPTH N/-	
COLLAR ELEV. 2,087.5 ft TOTAL DEPTH 19.3 ft NORTHING 677,696 EASTING 920,661 24 HR 2.1 COLLAR ELEV. 2,111.7 ft TOTAL DEPTH 20.0 ft NORTHING 677,708 EASTING 920,855 24 HR DRILL RIG/HAMMER EFF./DATE NA START DATE 01/12/04 OMP. DATE 01/12/04 SURFACE WATER DEPTH N/A DRILL RIG/HAMMER EFF./DATE 08/17/23 COMP. DATE 08/17/23 COMP. DATE 08/17/23 SURFACE WATER DEPTH N/A MAMMER TYPE LEV DRIVE 06/11 (11) BLOW S PER FOOT (11) SOIL AND ROCK DESCRIPTION MOI G DEPTH (11) BLOW S PER FOOT (11) SOIL AND ROCK DESCRIPTION DEPTH (11) BLOW S PER FOOT (11) SOIL AND ROCK DESCRIPTION DEPTH (11) BLOW S PER FOOT (11) SOIL AND ROCK DESCRIPTION DEPTH (11) BLOW S PER FOOT (11) SOIL AND ROCK DESCRIPTION DEPTH (11) BLOW S PER FOOT (11) SOIL AND ROCK DESCRIPTION DEPTH (11) BLOW S PER FOOT (11) SOIL AND ROCK DESCRIPTION DEPTH (11) BLOW S PER FOOT (11) SOIL AND ROCK DESCRIPTION DEPTH (11) BLOW S PER FOOT (11) SOIL AND ROCK DESCRIPTION DEPTH (11) BLOW S PER FOOT (11) SOIL AND ROCK DESCRIPTION (11)	Dry
DRILL RIGHAMMER EFF.JATE N/A START DATE 0/1/2/04 COMP. DATE 0/1/2/04 SURFACE WATER DEPTH N/A DRILL RIGHAMMER EFF.JATE COMP. DATE 0/0/1/2/3 COMP. DATE 0/0/1/2/3 SURFACE WATER DEPTH N/A ELEV DRIVE 0.5ft	FIAD
DRILLER N/A START DATE 01/12/04 COMP. DATE 01/12/04 SURFACE WATER DEPTH N/A DRILLER 0dom, C. START DATE 08/17/23 COMP. DATE 08/17/23 SURFACE WATER DEPTH N/A ELEV BLOWS VER FOUT BLOWS VER FOUT BLOWS VER FOUT NO.	Automatic
BLOW COUNT BLOWS PER FOOT SAMP. L SAMP. L SOIL AND ROCK DESCRIPTION C(ft) 0.5ft	
(ft) (ft) (ft) 0.5ft 0.5ft 0.5ft 0.2ft 0.0ft 0.2ft 0.0ft 0.	
2090 2115 2090 2,087.5 GROUND SURFACE 0.0 2085 2.085.5 Very Soft, Brown, Fine to Coarse Sandy 201	
2090 2090 2115 2115 2085 1 2,087.5 GROUND SURFACE 0.0 2085 1 1 1 1 1 1 1 1 2085 1 1 1 1 1 1 1 1 1 1	
2085	
2085 arrest and a construction of the construc	0 (
	1.2
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	
Image: Standy Gravel (A-1-a), with trace mica TAN, LOOSE, SILTY SAND (A-2-4) W Image: Standy Gravel (A-1-a), with trace mica Tank, LOOSE, SILTY SAND (A-2-4) W	ITH 60
	ITH
Image: Solit to Medium Stiff, Brown-Black-Orange, I	
	-4)
Boring Terminated at Elevation 2,068.2 ft In 19.3 2,093.2 18.5 6 6 8	20.0
- Boring Terminated at Elevation 2,091.7 - Residual Sality SAND (A-2-4)	ft In
Boring Drilled by NCDOT and provided for reference only.	

GEOTECHNICAL BORING REPORT BORE LOG

WBS 34165.1.2	TIP 1-2513AA COUN	TY BUNCOMBE	GEOLOGIST A. Blackmore		WBS 34165	.1.2	Т	TIP 1-2513AA COUN	TY BUNCOMB	E	GEOLOGIST A. Blackmore	
SITE DESCRIPTION Noisewall 54	A from -Y- Sta. 63+46.57, 86.50' RT	to -Y- Sta. 77+80.27, 86.50' RT	- 1	GROUND WTR (ft)	SITE DESCRI	PTION Noise	wall 5B from	om -Y- Sta. 77+14.17, 99.00' RT	to -Y_EB- Sta. 1	13+66.36, 51.50' R	RT	GROUND WTR (ft)
BORING NO. Y_7600R	STATION 22+55	OFFSET 16 ft LT	ALIGNMENT -NW5A-	0 HR. Dry	BORING NO.	Y_7800R	s	STATION 25+19	OFFSET 13	3 ft LT	ALIGNMENT -NW5B-	0 HR. Dry
COLLAR ELEV. 2,115.5 ft	TOTAL DEPTH 25.0 ft	NORTHING 677,663	EASTING 920,991	24 HR. Dry	COLLAR ELE	V. 2,123.1 ft	Т	TOTAL DEPTH 25.0 ft	NORTHING	677,593	EASTING 921,179	24 HR. Dry
DRILL RIG/HAMMER EFF./DATE M&W	1032 GeoProbe 7822 DT 88% 04/18/2022	DRILL METHOD H.	S. Augers HAM	MER TYPE Automatic	DRILL RIG/HAM	MER EFF./DATE	M&W1032	2 GeoProbe 7822 DT 88% 04/18/2022]	DRILL METHOD H.S	6. Augers HAN	IMER TYPE Automatic
	START DATE 05/16/22		SURFACE WATER DEPTH	N/A	DRILLER B.					= 05/16/22	SURFACE WATER DEPTH	N/A
ELEV ELEV (ft) (ft) (ft) 0.5ft 0.5ft	0.5ft 0 25 50	75 100 NO. MOLG	SOIL AND ROCK DE		ELEV ELEV (ft) (ft)	(ft) 0.5ft	0.5ft 0.5ft	t 0 25 50	75 100	NO. MOLG	SOIL AND ROCK DE	SCRIPTION
DRILLER B. Lumpkin ELEV (ft) DRIVE ELEV (ft) DEPTH (ft) BLOW COU 0.5ft 2120 - - - 2115 2,115.5 0.0 - 2115 2,115.5 0.0 - 2115 2,115.5 0.0 - 2110 2,112.0 3.5 1 1 2,112.0 3.5 1 1 1 2,107.0 8.5 1 1 1 2,102.0 13.5 - - 1 2,005 - - 4 7 2,092.0 23.5 4 5 - - - 4 5	START DATE 05/16/22 NT BLOWS PER FOR 0.5ft 0 25 50 2 3 - - 3 - - - 7 3 - - 9 - - - 7 $ -$ - 1 0 $-$ - 4 6 - - 9 $ -$ - - 7 $ -$ - - 9 $ -$ - - 9 $ -$ - - 1 $ -$ - - $ -$ - $ -$ - $ -$	COMP. DATE 05/16/22 0T SAMP. 75 100 NO. MOI G SS-310 22% MI · · · · · · · · · · · M · M · M · M · M · M · M · M · M · M · M · M · M · M · M · M	SOIL AND ROCK DE ELEV. (ft) 2,115.5 GROUND SUR ROADWAY EMBA Soft to Medium Stiff, Brow Coarse Sandy SILT (A- mica, little organics, an Organic Content 2,107.5 RESIDUAL Soft, Brown, Fine to Coar (A-6) 2,102.5 Medium Stiff to Very Stiff, to Coarse Sandy SILT (A- little mica 2,090.5 Boring Terminated at Elew Residual Sandy S Surficial Organic Soil fro Boring Drilled by ECS a reference or	N/A SSCRIPTION DEPTH (ft) MINDERT wn-Gray, Fine to 4(2)), with trace nd trace gravel := 4.5% L SS Sandy CLAY Tan-Brown, Fine -4), with trace to a 25.0 ration 2,090.5 ft In ILT (A-4) om 0.0 - 0.3 feet ind provided for nly.	DRILLER B. ELEV (ft) DRIVE ELEV (ft) 2125 2,123.1 2120 2,119.6 2115 2,117.1 2115 2,114.6 2110 2,109.6 2105 2,109.6 2100 2,099.6	Lumpkin DEPTH BLOV (ft) 0.5ft 0.0 1 3.5 3 6.0 4 - 3.5 - - 3.5 - - 3.5 - - 4 - 4 - 4 - 4 - 4 - 4 - 4 -	Y COUNT 0.5ft 0.5ft 1 3 3 4 4 5 3 4 4 5 3 5 6 7	START DATE 05/16/22 BLOWS PER FOC 0 25 50 4	COMP. DATE 75 100 75 100 . . . <td>E 05/16/22 SAMP. L 0 MOI G SS-317 24% M M M M M M M</td> <td>2,123.1 GROUND SUF 2,123.1 GROUND SUF RESIDUA Soft to Medium Stiff, Rec Plastic Silty CLAY 2,117.6 Medium Stiff to Stiff, Brown, S Silty CLAY 2,117.6 Medium Stiff to Stiff, Brown, S 2,100.1 Medium Dense, Brown, S 2,098.1 SAND (A-2 Boring Terminated at Eler Residual Silty SAN Surficial Organic Soil for Boring Drilled by ECS a reference of</td> <td>N/A ESCRIPTION RFACE 0.0 L 3-Brown, Slightly (A-7-5(4)) 5.5 T (A-4), with trace 23.0 24 25.0 24 25.0 24 25.0 25.0 25.0 24 25.0 25.0 26 27 27 28 29 29 20 20 20 20 20 20 20 20 20 20</td>	E 05/16/22 SAMP. L 0 MOI G SS-317 24% M M M M M M M	2,123.1 GROUND SUF 2,123.1 GROUND SUF RESIDUA Soft to Medium Stiff, Rec Plastic Silty CLAY 2,117.6 Medium Stiff to Stiff, Brown, S Silty CLAY 2,117.6 Medium Stiff to Stiff, Brown, S 2,100.1 Medium Dense, Brown, S 2,098.1 SAND (A-2 Boring Terminated at Eler Residual Silty SAN Surficial Organic Soil for Boring Drilled by ECS a reference of	N/A ESCRIPTION RFACE 0.0 L 3-Brown, Slightly (A-7-5(4)) 5.5 T (A-4), with trace 23.0 24 25.0 24 25.0 24 25.0 25.0 25.0 24 25.0 25.0 26 27 27 28 29 29 20 20 20 20 20 20 20 20 20 20

GEOTECHNICAL BORING REPORT BORE LOG

WBS	34165	.1.2			ТІ	P 1-2513A	4A	COUNT	Y BUNCON	1BE			GEO	LOGIST A. Blackmore		WBS	34165	5.1.2			TIF	P 1-2513A	A	COUNTY
SITE	DESCR	IPTION	Noise	ewall 5	B from	n -Y- Sta. 77	7+14.17, 99	9.00' RT t	o -Y_EB- Sta	. 13+66.	36, 51	.50'	RT		GROUND WTR (ft)	SITE	DESCR	IPTION	Noise	wall 5	B from	-Y- Sta. 77	+14.17, 99.	.00' RT to
BOR	NG NO.	Y_800	00R		S	TATION 2	7+27		OFFSET	2 ft LT			ALIG	NMENT -NW5B-	0 HR. Dry	BOR	ing no.	B-26			ST	ATION 29	+78	
COLI	LAR ELE	EV. 2,1	54.8 f	t	Т	OTAL DEPT	FH 45.0 ft	:	NORTHING	677,4	35		EAS	FING 921,357	24 HR. Dry	COL	LAR ELE	EV. 2, ²	165.9 ft		ТС	TAL DEPT	H 59.3 ft	
DRILL	RIG/HAN	IMER EFI	/DATE	M&V	V1032 (GeoProbe 782	22 DT 88% 04	1/18/2022		DRILL N	ETHO	DH.	.S. Augers	HAMM	IER TYPE Automatic	DRILI	_ RIG/HAN	IMER EF	F./DATE	N/A				
DRIL	LER B.	Lumpk	in		S		E 05/13/2	2	COMP. DA	TE 05/	13/22	1 -		ACE WATER DEPTH N/	/Α	DRIL	LER N	/A			ST		01/12/04	
ELEV (ft)	ELEV	DEPTH (ft)	BLO				BLOWS I	PER FOOT 50	75 100	SAMP.		Ō		SOIL AND ROCK DES	CRIPTION	ELEV (ft)	ELEV	DEPTH	BLO		JNT	0 2	BLOWS PI	ER FOOT
(/	(π)	(14)	0.51	0.511	0.511		1		100	NO.	<u>/ MOI</u>	I G	ELEV. (1	ft)	DEPTH (ft)	(14)	(π)	(1)	0.511	0.51	0.511	0 2		0 7
2155	2,154.8	0.0	3	3	1	1					м		2,154.8	GROUND SURF RESIDUAL	ACE 0.0	2170		F						
	-					$\left \left \begin{array}{c} \mathbf{X} \\ \mathbf{N} \end{array} \right \right $								Very Loose to Dense, Bro Fine to Coarse SAND (A-2-	wn-Gray, Silty 4(0)), with trace		-	ŧ						
2150	_2,151.3_	3.5	1	5	8	13.				SS-300	12%		-	mica and rock frag	gments	2165	-	<u> </u>						
	2,148.8-	6.0	8	10	9						м						-	- 26						
2145	2,146.3	8.5	4	8	8	:::/:							-			2160	2,102.5	- 3.0	3	5	7	12		
2145	-	ŧ	-			⊕ 16. \										2100	-	ŧ				<u>. ;</u>	· · · · ·	
	- 2 141 3	135				`											2,157.3	8.6	4	4	6		· · · ·	· · · ·
2140		-	25	18	17		35			SS-303	14%		-			2155		÷				· ¶10 ·		
	-	+					1.1.1.1								10.0		2 152 3	13.6						· · · ·
2135	2,136.3	18.5	9	13	13						М			Stiff to Very Stiff, Brown-Gr	ray-White-Tan,	2150	-	+	4	6	9	• • • 15		
2.00	-	-					<u> </u>						F	mica	(A-4), with trace	2.00	-	ŧ				· · · /·		
	- 2,131.3	23.5											F				2,147.3	18.6	7	8	14			
2130	_	-	15	16	18						м		F			2145	-	F					×	
	-												F				2,142.3	23.6		- 10				
2125	2,126.3	28.5	6	5	7	. 12.					м		E			2140	-	E	12	18	26		44	
	-	E											E					E						
	2,121.3	33.5		0	0								L				2,137.3	28.6	10	11	16		27	· · · ·
2120	-		0	9	9		8				М		F			2135	-	ł						
	-					::::``							ŀ				2,132.3	33.6	11	65	35/0 3		 <u></u>	· · · ·
2115		- 30.5	9	13	15		28				м		F			2130	-	÷		00	00/0.0			
	-	ŧ					1						+				2 127 3	386						· · · ·
2110	2,111.3	43.5	13	17	16		$ \cdot f \cdot \cdot \cdot \cdot $						2,111.8	Dense, Brown, Silty Fine to	Coarse SAND 43.0	2125	-2,127.0	- 30.0	56 4	44/0.3			· · · ·	· · · ·
2110		-	-		-	<u> </u>	33	<u> </u>					<u>2,109.8</u> -	(A-2-4) Boring Terminated at Elevat	tion 2,109.8 ft In	2125	-	+						
	-	ŧ											F	Residual Silty SAND	D (A-2-4)		2,122.3	43.6	29	45	55/0.4			· · · ·
	-	F											F	Surficial Organic Soil from	n 0.0 - 0.2 feet	2120	-	ŧ						
5/23	-	F											F	Boring Drilled by ECS and reference onl	d provided for v.		2,117.3	48.6					┍╺╍╼╺╸┥	- <u>-</u>
F 9/1	-	F											F		,	2115	-	ŧ	6	9	15		24	
L'GD'	-	FI											F				-	F					\mathbf{x}	
B	-	FI											F				2,112.3	53.6	11	15	22		37	
ON L	-	E											E			2110	-	F						
S.GP	-												E				2,107.3	58.6	50 /				· · · · · · · · · · · · · · · · · · ·	
NALL	-												F				-	E .		50/0.2			I	
DISE	-												F				-	Ł						
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GEOTECHNICAL BORING REPORT BORE LOG

WBS	34165.1	.2			TI	> 1-3	2513A	Ą	(COUN	TY E	BUNCO	MBE			GE	EOLO	GIST	A. Black	kmore				WBS	S 3416	65.1.2				TIP	P 1-25	13AA		СО	UNTY	BUNCC	MBE			0	GEOLC	ogis	Г А. E	Blackmo	ore			
SITE	DESCRIP	TION	Noisev	vall 5	3 from	-Y- S	sta. 77 [.]	+14.1	7, 99.0	00' RT	to -Y	_EB- Si	a. 13+6	6.36,	51.50'	' RT					GRO		R (ft)	SITE	E DESC	RIPTI	ON N	loisew	all 58/	B from	-Y- Sta	. 77+1	4.17, 9	99.00'	RT to	-Y_EB- S	a. 13+66	.36,	51.50	'RT						GROUN	ND WI	「R (ft)
BORIN	ng No.	Y_8400)R		ST	ATIC	N 31	+23			OF	FFSET	16 ft F	T		AL	IGNM	MENT	-NW5B	-	0 HF	ર.	Dry	BOR	ring no	D . Y_	_8600F	۲		ST	ATION	33+3	34			OFFSET	13 ft LT			^ #	ALIGN	IMEN	Γ -NV	V5B-		0 HR.		Dry
COLL	AR ELE\	1. 2,15	58.5 ft		ТС	TAL	DEPT	H 45	.0 ft		N	ORTHIN	G 677	,364		EA	ASTIN	IG 92	1,734		24 H	ર.	Dry	COL	LAR E	LEV.	2,140).0 ft		ТО	TAL DI	EPTH	30.0	ft		NORTHIN	G 677,3	867		E	EASTI	NG	921,94	7		24 HR.		Dry
DRILL	rig/hamm	ER EFF.	/DATE	M&W	/1032 G	GeoPro	be 7822	2 DT 88	% 04/1	8/2022			DRIL	METH	HOD	I.S. Aug	ers			HAM	IMER TYP	E Automat	tic	DRIL	L RIG/H/	AMMEF	R EFF./D	DATE	M&W1	1032 Ge	eoProbe	7822 E	DT 88%	04/18/2)22		DRILL	METH	OD H	1.S. Au	ugers				HAMME	R TYPE	Autom	natic
DRILL	.ER B.L	umpkin	ו		ST	ART	DATE	05/1	12/22		C	OMP. D	ATE 0	5/13/2	22	SU	JRFAC	CE WA	TER DE	PTH	N/A			DRIL	LLER	B. Lur	mpkin			ST	ART D	ATE	05/12/	22		COMP. D	ATE 05	/12/2	2	_ <u> </u> s	SURFA	ACE V	VATER	R DEPT	H N/A			
ELEV	DRIVE ELEV		BLOW		NT	0	2	BLO\	NS PE	ER FOC	DT 75	10	SAN	₽. ▼				SOI	L AND R	OCK DE	SCRIPTI	ON		ELEV				BLOW		NT	0	25	BLOWS	S PER I	00T	5 10	SAMP			,		S	OIL AN	D ROCI	K DESC	RIPTION	N	
(,	(ft)	(14)	0.511	J.5IL	0.51	0	2	5	50		13	100		[.] / N	<u>101</u> G	ELE	V. (ft)					DEP	TH (ft)	()	(ft)		0.	.511 0	.511 1	0.511	0	25		50	,	5 10 I	NO.	<u></u> Μ	OI G	+								
2160																2 15	8 5		GROU	ND SUF	REACE		0.0	2140) 2,140.	.0 0.	.0	3	2	3	5.						SS-28	0 19	%	2,1	140.0		GF	ROUND RESI	SURFA	CE		0.0
	2,158.5	0.0	2	2	2	4		•••	•••		:			N	л L 🛛	8 	.0.0	F Soft to	ROADWA	Y EMBA		Eina ta	0.0		0.126	<u>_</u>	_				T [°]			· ·						Ł		Soft to Fine	o Very S to Coar	Stiff, Bro se Sand	wn-Whi dy SILT	e-Tan-B A-4(0)),	Black, with	
2155	2.155.0	3.5				1		• •	•••		•					E	•	Coarse	e Sandy S	Sun, Red SILT (A-4	4(0)), with	trace		2135	2,130.	. <u></u>	.ə	5	2	1	J :							M		£			t	race to I	ittle mic	a		
	1525	60	2	2	5		, 	· ·		· · ·	:		SS-2	89 15	^{5%} [graver					2,134.	.06.	.0	3	2	4				. .			SS-28	2 20	%	Ł								
	2,152.5	0.0	5	5	5		10	•••		· · ·	:			N	1	2,15	2.0		R	ESIDUA	L	,	6.5		2,131.	.5 8.	.5	3	4	3	1°			. .				1.		ł								
2150	2,150.0	8.5	3	3	5		8 • •	<u> </u>				 			Л		l Fi	Medium ine to C	n Stiff to H coarse Sa	Hard, Re Indy SIL	ed-Brown- Γ (A-4), w	White, ith trace		2130)	+				Ĭ	Q 7		 	<u> </u>						ł								
	ŧ					· Ĭ		· ·		· · ·										mica					2 126	+ -+ 12							· · ·	. .						<u> </u>								
2145	2,145.0	13.5		_	_	·					-					L								2125	j <u>2,120</u> .	. <u></u>	5.5	6	9	11		0 20		· ·				M		Ł								
	ŧ		4	5	7		•12 ·	· · · ·		· · ·	•			N	Λ											ŧ							· · ·	. .						L								
	ŧ						<u>\</u>	::		: : :	:														2,121.	.5 18	3.5	7	9	12				: :		· · · ·												
2140	2,140.0	18.5	6	9	10	<u>.</u>								N	1									2120		+					· · · ·	• <u></u> 21		· -						1								
	+						t t	•••	•••	· · ·	:														2 1 1 6	+ 5+ 23	2.5				· · ·		· · ·	· ·		· · · ·												
2135	2,135.0	23.5	_	10		·					•					<u> </u>								2115	j 2 ,110.			6	11	17		· ·)	28	· ·				M		Ł								
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2130	2,130.0	28.5	10	17	19	<u>.</u>			36 •					N	1									2110)	+			-			14								2,1	<u>110.0</u>	Boring	Termir	nated at	Elevatio	n 2,110.	.0 ft In	30.0
	1					:		:/·	•••	· · ·	:					-										ŧ														Ł			Resid	dual Sar	ndy SILT	(A-4)		
2125	2,125.0	33.5	-10			Ŀ		<u>;':</u>			•					2,12	5.5N	Medium	Dense F	Rrown-W	hite Silty	Fine to	<u>33.0</u>			1														Ł		Surf	cial Org	ganic So	oil from	0.0 - 0.4	feet	
	1		13	14	14			•28-		· · ·	•			N	Λ			Coars	e SAND (A-2-4),	with trace	mica				ŧ														Ł		Bori	ng Drill	ed by E referen	CS and ce only.	orovided	for	
	1					1:		· ·		: : :	:					2.12	0.5						38.0			ŧ														Ł					,			
2120	2,120.0	38.5	4	3	3		·							N	л		N	Medium Sar	Stiff, Gra	ay-White	e, Fine to	Coarse				+														F								
	‡							· ·		· · ·	:					- -		oui		<i>(</i> , , , , , , , , , , , , , , , , , , ,						ŧ														F								
2115	2,115.0	43.5		10	-10	Ŀ		· · ·			•					2,11	<u>5.5</u>	Dense	Brown-W	hite Silt	v Fine to	Coarse	<u>43.0</u>			1														F								
	‡		11	16	18			- 🍋 34	4 •	• • •	•			N	Λ	2,11	<u>3.5</u>	SA Doring T	AND (A-2-	-4), with	trace mic	a	45.0			ŧ														Ę								
	1															F	В	F	erminated Residual S	Bilty SAN	D (A-2-4))				ŧ														Ę								
	+															F		Surficia	al Organio	c Soil fro	om 0.0 - 0	.2 feet				+														F								
27/GL	‡															ļ.		Boring	Drilled b	y ECS a	nd provid	ed for				‡														F								
19	‡															F			refe	erence o	nly.					‡														F								
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GEOTECHNICAL BORING REPORT BORE LOG

1	WBS	34165	5.1.2			TI	P 1-2513	AA	COUNT	Y BUNCON	ЛВЕ			GE	OLOGIST A. Blackmore		WBS	3 34165	5.1.2			TI	P 1-251	3AA	C	OUNTY
:	SITE	DESCR	IPTION	Noise	ewall 5	B from	n -Y- Sta. 7	7+14.17, 9	9.00' RT t	o -Y_EB- Sta	a. 13+66	.36, 5´	1.50'	RT		GROUND WTR (ft)	SITE	DESCR	IPTION	Noise	ewall 5	B from	-Y- Sta.	77+14.1	7, 99.00)' RT to -
I	BORI	NG NO.	Y_880	00R		S	TATION 3	5+35		OFFSET	11 ft LT			ALI	GNMENT -NW5B-	0 HR. Dry	BOF	NG NO.	Y_90	00R		ST	ATION	37+37		
1	COLI	AR ELI	EV. 2, ²	130.4 f	t	т	OTAL DEP	TH 25.0 ft	:	NORTHING	6 77,3	26		EA	STING 922,143	24 HR. Dry	COL	LAR ELE	EV. 2,0	097.9 ft		т	DTAL DE	PTH 25	5.0 ft	1
I	DRILL	RIG/HAN	IMER EF	F./DATE	M&V	V1032 (GeoProbe 78	22 DT 88% 04	4/18/2022		DRILL N	IETHO	D H	.S. Auge	rs HAM	MER TYPE Automatic	DRIL	L RIG/HAN	IMER EF	F./DATE	M&V	V1032 C	GeoProbe	7822 DT 88	3% 04/18	/2022
I	DRIL	LER B	. Lumpk	in		S	TART DAT	E 05/12/2	2	COMP. DA	TE 05/	12/22		SU	RFACE WATER DEPTH	J/A	DRI	LER B	. Lumpk	kin		ST	ART DA	TE 05/	12/22	0
E		DRIVE ELEV	DEPTH	BLO	W COL	JNT		BLOWS	PER FOO	Τ	SAMP.				SOIL AND ROCK DE	SCRIPTION	ELEV	DRIVE	DEPTH	BLO	w cou	JNT		BLO	WS PEF	₹FOOT
_	(11)	(ft)	(11)	0.5ft	0.5ft	0.5ft	0	25	50	75 100	NO.	Имо	I G	ELEV	. (ft)	DEPTH (ft)	(11)	(ft)	(11)	0.5ft	0.5ft	0.5ft	0	25	50	/
1	2135		+											F			2100		ł							
		-	ŧ											F				2,097.9	0.0	2	2	3	<u> </u>			
	2130	2,130.4	0.0	-		-								2,130	4 GROUND SUR	FACE 0.0	2095	-	ŧ		-	Ŭ	• 5		.	•••
		-	ŧ	2	4	5	. • 9					M		-	RESIDUAI Medium Stiff to Stiff, Brow	L wn-Tan, Fine to		2,094.4	- <u>3.5</u>	2	3	2	5			
		2,126.9	3.5	4	4	6	:[::							F	Coarse Sandy SI	LT (A-4)		2,091.9	6.0	3	2	2			.	
1	2125	2,124.4	6.0	-	-	0		+ • • • •						F			2090	2,089.4	8.5		2	2	•4			
		2 121 0		3	3	5				· · · · · ·		M		- 2,122	4	8.0		-	ŧ	4	7	8	∶Ì¥	15 .	.	•••
	2120	2,121.9-	- 0.5	6	10	9	× ·	 19		· · · · · ·		м		1	Medium Dense, Brown-T Coarse SAND (A-2-4), v	an, Silty Fine to vith trace mica	2085	-	ŧ				:: i		.	
ſ			ŧ				 							-			2000	2,084.4	<u>13.5</u>	2	5	7	· · · · · · · · · · · · · · · · · · ·			
		2,116.9	13.5	٩	0	11	::::			· · · · · ·				1				-	ŧ				· · ¶"	••• •••	· · ·	
2	2115	-	ŧ	3	3			20						;			2080	2.079.4	18.5				ļ.;	· · · ·		· · · ·
		-					$ \cdot $			· · · · · ·				2,112	4	<u>18.0</u>		-	ŧ	3	5	11	::•	16	.	•••
	2110	2,111.9-	- 10.5	7	7	7	1 4			· · · · · ·		м		F	Stiff, Brown-Tan, Fine to SILT (A-4	Coarse Sandy)	2075	-	ŧ				:: ;		.	
ſ			ŧ				`	× · · · ·						F	•		2010	2,074.4	23.5	8	6	6	·			
		2,106.9	23.5	16	26	26				· · · · · ·				<u>2,107</u>	4	Fine to Coarse23.0		-	ŧ					<u>. </u>	<u>••</u>	<u></u>
		-	+	10					Q 52		Ц			2,105	4 SAND (A-2- Boring Terminated at Elevi	-4)		-	Ŧ							
		-	ŧ											F	Residual Silty SAN	D (A-2-4)		-	Ŧ							
		-	Ŧ											F	Surficial Organic Soil fro	m 0.0 - 0.3 feet		-	Ŧ							
		-	F											F	Boring Drilled by ECS and reference or	nd provided for			Ŧ							
		-	ŧ											F	Telefence of	ny.		-	Ŧ							
		-	F											F				-	Ŧ							
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5/23		-	ŧ											F				-	Ŧ							
9/16		-	ŧ											F				-	ŧ							
.GDT		-	Ŧ											F				-	Ŧ							
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Ŋ.		-	ŧ											F				-	ŧ							
S.GP.		-	ŧ											F				-	ŧ							
/ALLS		-	ŧ											F				-	ŧ							
ISEM		-	ŧ											F				-	ŧ							
3 NO		-	ŧ											F				-	ŧ							
1251		-	ŧ											F				-	ŧ							
JBLE		-	ŧ											F					ŧ							
DOL		-	ŧ											F				-	ŧ							
BORE		-	ŧ											F				-	ŧ							
DOT I		-	ŧ											F				-	ŧ							
Ū N		-	t											t				-	t							

TY BUNCOMBE	GEOLOGIST A. Blackmore
to -Y_EB- Sta. 13+66.36, 51.50' R	GROUND WTR (ft)
OFFSET 24 ft RT	ALIGNMENT -NW5B- 0 HR. Dry
NORTHING 677,270	EASTING 922,334 24 HR. Dry
DRILL METHOD H.S	Augers HAMMER TYPE Automatic
COMP. DATE 05/12/22	SURFACE WATER DEPTH N/A
DT SAMP.	
75 100 NO. MOI G	SOIL AND ROCK DESCRIPTION
	_
	2,097.9 GROUND SURFACE 0.0
	RESIDUAL Medium Stiff. Red-Brown. Fine to Coarse
	– Sandy CLAY (A-6)
М м	Red-Brown-Tan-White-Gray, Fine to
_ м	Coarse Sandy SILT (A-4), with trace mica and rock fragments
	-
: : : : : M M M	
· · · · · · M	-
	_
	2,072.9 25.0 25.0
	Residual Sandy SILT (A-4)
	Surficial Organic Soil from 0.0 - 0.4 feet
	Boring Drilled by ECS and provided for
	- reference only.
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GEOTECHNICAL BORING REPORT BORE LOG

WBS	3416	5.1.2			Т	P 1-251	BAA	COUNT	Y BUNCO	MBE			C	GEOLOGIST D. Cheek			WBS	34165	.1.2			Т	P 1-2513A	A	COUNTY
SITE	DESCR	RIPTION	Nois	ewall 5	B fron	n -Y- Sta.	77+14.17, 9	99.00' RT	to -Y_EB- St	a. 13+66	.36, 5	1.50'	RT			GROUND WTR (ft)	SITE	DESCR	IPTION	Noise	ewall 5	B from	-Y- Sta. 77	/+14.17, 99	9.00' RT to
BOR	ing no	B-27			S	TATION	38+58		OFFSET	44 ft RT			4	ALIGNMENT -NW5B-		0 HR. 10.1	BOR	ing no.	Y_92	00R		SI	ATION 3	9+45	
COL	LAR EL	EV. 2	084.61	ft	т	OTAL DEI	PTH 20.1	ft	NORTHING	G 677,2	222		E	EASTING 922,438		24 HR. 3.1	COL	LAR ELE	EV. 2,	088.1 f	t	т	OTAL DEPT	H 25.0 ft	1
DRILI	RIG/HA	MMER EI	F./DATI	E N/A						DRILL	METHO	DD H	I.S. Au	ugers	НАММ	ER TYPE Automatic	DRILI	RIG/HAN	IMER EF	F./DATE	M&V	N1032 C	GeoProbe 782	2 DT 88% 04	/18/2022
DRIL	LER N	I/A			S	TART DA	FE 01/13/	04	COMP. DA	TE 01/	13/04		S	SURFACE WATER DEP	TH N/	A	DRIL	LER B.	Lumpl	kin		ST		05/12/2	2
ELEV	DRIVE FLEV	DEPTH	BLC	w co	UNT		BLOWS	PER FOC	т	SAMP	· 🔨			SOIL AND ROO		CRIPTION	ELEV	DRIVE FLFV	DEPTH	BLO	w co	UNT		BLOWS F	PER FOOT
(ft)	(ft)	(ft)	0.5ft	0.5ft	0.5ft	0	25	50	75 100	NO.	Имс) G	EL	_EV. (ft)		DEPTH (ft)	(ft)	(ft)	(ft)	0.5ft	0.5ft	0.5ft	0 :	25 5	50 7
2085		<u> </u>											2,0	084.6 GROUNE	O SURF.	ACE 0.0	2090		-						
		ŧ					- -		· · · · · ·			/./.	\$ \$	ALL Very Loose, Brown-C	.UVIAL Gray-Bla	ack, Clayey Fine		2,088.1	0.0	2	2	1	1: • • •		
2080	2,081.0	3.6	 woн	1	1				· · · · · ·				\$ \$	to Coarse SAND organics and) (A-2-6) I rock fra), with trace agments	2085		-				P ³ · · ·		
		Ŧ				¶ ²							* *					2,084.6	- <u>3.5</u>	3	1	3	1 •4		
	2 076 0											·/·/	<u>}</u> _2,0	<u>076.6</u>		8.0		2,082.1	6.0	4	3	4			
2075		+	1	5	4	••9					w	000		Loose, Brown-Gray Sandy Gr	ravel (A-	-1-a)	2080	2,079.6	8.5	2	2	2	–/· ···		
		Ŧ										000		274.6		13.0		-	-		2	3	● 5		
2070	2,071.0	13.6	2	2	2						Sat		<u>- 2,0</u>			<u>13.0</u>	2075	-							
	1	Ŧ				 • 4 • • •				1			F	Red-Brown-Orange-	Black, F	Fine Sandy SILT		2,074.6	- 13.5 -	2	1	3	4 · · ·		
	2 066 0	T 186											F	(A-4), wit	h trace i	mica		-							
2065		+	1	2	3	4 5 				<u> </u>	Sat.		-2,0	064.5		20.1	2070	2,069.6	- 18.5	2	5	6			
		Ŧ											E	Residual Sa	andy SIL	T (A-4)			E		5				
		Ŧ											F	Boring Drilled by NO	CDOT a	nd provided for	2065	2 064 6	225						
		Ŧ											E	refere	nce only	<i>y.</i>		-2,004.0	- 23.5	3	3	6	· • • • • •		
		Ŧ											F					-	-						
		Ŧ											F					-	E						
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5/23		Ŧ											F					-	-						
Г 9/1		Ŧ											E					-	E						
T.GD		Ŧ											E					-	E						
B		Ŧ											F					-	F						
NC NC		Ŧ											F					-	-						
S.GP		Ŧ											F					-	F						
VALLS		Ŧ											F					-							
DISEV		Ŧ											F					-	-						
13 NC		Ŧ											F					-							
1251		Ŧ											F					-	F						
UBLE		Ŧ	1										F					-	F						
DOL		ŧ											F					-	F						
BOR		Ŧ											F					-	F						
DOT		ŧ	1										F					-	F						
NO		<u>†</u>									1		L						t						

١T	BUNCON	IBE			GEOLOGIS	A. Blackm	ore					
T to	o -Y_EB- Sta	a. 13+6	6.36, 51	.50' R	Т			GROUN	D WTR (ft)			
	OFFSET	28 ft R	T		ALIGNMEN	- NW5B-		0 HR. Dr				
	NORTHING	677	,215		EASTING	922,527		24 HR.	Dry			
2		DRILL	METHOD	H.S	. Augers		HAMME	RTYPE	Automatic			
	COMP. DA	TE 0	5/12/22		SURFACE V	VATER DEP	TH N/A	۱				
ОТ		SAM	IP. /	L								
	75 100	NO	. /моі	G	5	OIL AND ROU	K DESC	RIPTION	I			
				F	- 2,088.1	GROUNE) SURFA	CE	0.0			
			М	-8-	Soft	ROADWAY B	Coarse	MENT Sandy S	шт			
					<u>2,085.1</u>	(/	A-4)		<u>3.0</u>			
		SS-2	60 22%	N	S	ALL Soft to Medium	Stiff, Gra	ay-Brown	,			
			м		Mode	erately Plastic with tra	Silty CLA ace mica	AY (A-7-6 1	(9)),			
			м		-							
					2,075.1				<u>13.0</u>			
			w		Soft	RES to Stiff, Gray-E	S IDUAL Brown, Fi	ne to Coa	arse			
• •				-	Sand	ly SILT (A-4), v	with trace	e to little r	nica			
				F	-							
			M	F								
			w		- 2 063 1				25.0			
				-	Boring	Terminated a	t Elevati	on 2,063.	1 ft In			
					- 0			(A-4)	6 I			
					Sur	Wet Spool	n at 23.5	0.0 - 0.3 feet	reet			
				ΙĿ	Bori	ing Drilled by E	ECS and	provided	for			
					-	refere	nce only					
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GEOTECHNICAL BORING REPORT BORE LOG

WBS 34165.1.2 TIP 1-2513AA COU							COUN	TY BUNCOMBE						GEOLOGIST D. Cheek				S 3416	5.1.2		TIP 1-2513AA COUN									
SITE DESCRIPTION Noisewall 5B from -Y- Sta. 77+14.17, 99.00' RT								to -Y_EB-	to -Y_EB- Sta. 13+66.36, 51.50' R					रा (D WTR (ft)	SITE	DESC	RIPTION	I Nois	B from	om -Y- Sta. 77+14.17, 99.00' RT to								
BORING NO. B-28 STATION 41+17							OFFSET 6 ft RT					4	ALIGNMENT -NW5B- 0 HR. Caved		BORING NO. B-29						STATION 42+37									
COLLAR ELEV. 2,095.5 ft TOTAL DEPTH 15.3 ft						NORTH	NORTHING 677,193				E	ASTING 922,698	24 HR.	Caved	COL	LAR EL	.EV. 2,	093.6	ft	т		EPTH [·]	14.5 ft							
1	ORILL	rig/ham	IMER EF	F./DATI	E N/A							DR	RILL M	IETHO	DH.	.S. Aı	gers HAN	MER TYPE	Automatic	DRIL	l Rig/Ha	MMER EI	FF./DAT	E N/A						
I	DRILL	.ER N	Ά			S	TART D	ATE	01/13/0	4	COMP.	DATE	01/1	13/04	4.	s	URFACE WATER DEPTH	N/A		DRI	LER	N/A			ST	START DATE 01/13/03				
E	LEV	DRIVE ELEV	DEPTH	BLC	W CO	JNT			BLOWS	PER FOO	DT	S	amp.				SOIL AND ROCK DE	SCRIPTION		ELE\	/ DRIVE		H BLO		UNT		BL	OWS PE	R F001	
_	(11)	(ft)	(11)	0.5ft	0.5ft	0.5ft	0	25)	50	/5 1	1 00	NO.	/мо	I G	EL	EV. (ft)		DEPTH (ft)	(11)	(ft)	(11)	0.5ft	0.5ft	0.5ft	0	25	50		
2	2100		-																	2095		- 				-1-				
2	2095	- - - 2,091.7-	- 3.8					 	· · · · ·	· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·				_	- 2,0	95.5 GROUND SUF ROADWAY EMBA Very Loose, Red-Brown Coarse SAND (A-2-6),	RFACE NKMENT , Clayey Fine with trace mic	0.0 to ca	2090	2,090.0	6 <u>- 3.0</u>	2	3	4	• • • • • •		· · · ·	· · · · ·	
2	2090	- - 2,086.9-	- 8.6	3	3	5	∮ 3 	· · ·	· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·	- - - - -		м		2,(87.5ALLUVIA Medium Stiff Red-Tan		<u>8.0</u>	2085	2,085.0	<u>6+ 8.0</u> + - - - - - - - - - - - - - - - - - -	2	1	3	• • • • • • • • • • • • • •	· · · · · · · · · · · · · · · · · · ·	· · ·	· · · · ·	
	2085	 - 2,081.7- -	- - - <u>13.8</u>	3	7	7		 			· · · · · · · · · · · · · · · · · · ·	- - - - -		w		- <u>2,(</u> - 2,(- Sandy CLAY (A-6), with t <u>2,082.5</u> RESIDUAL	n trace rocks		2080			2	3	2	\$ 5	<u> </u>	•••+		
		-	- - - -					·			·					-	(A-4), with trac Boring Terminated at Elev Residual Sandy S Boring Drilled by NCDOT	e mica ration 2,080.2 ILT (A-4)	t ft In											
		-	-														reference o	nly.												
		-	- - -													-														
		-	- - -																											
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DT 9/15/23		-	- - - -													-														
NC_DOT.G			- - - -																											
EWALLS.GP.		-	- - - -																											
E 12513 NOIS		-	-																											
DOUBLE		-	-																											
NCDOT BC		-																				‡ +								

