DESCRIPTION

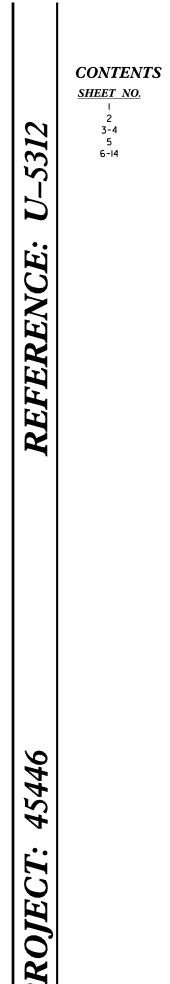
LEGEND (SOIL & ROCK)

TITLE SHEET

SITE PLAN

BORE LOGS

PROFILES



STATE OF NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS GEOTECHNICAL ENGINEERING UNIT

STRUCTURE SUBSURFACE INVESTIGATION

COUNTY WILKES

PROJECT DESCRIPTION US 421 FROM NC 16 TO US 421 **BUSINESS IN WILKESBORO**

SITE DESCRIPTION <u>RW1 -L- STA. 91+50, 82'LT</u> TO -L-STA.95+00,82'LT*RW2* -*L*- *STA*. 95 + 50, 66.8' *RT TO* -*L*- *STA*. 97 + 70, 90.9' *RT* -L-STA. 97 + 70, 90.9'RT*RW3 –L– STA. 100 + 00, 51.417' LT TO –L– STA.* 107 + 50, 51.417' LT

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N	.C.

STATE PROJECT REFERENCE NO. U-5312

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	SHEETS
	14

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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 LOSS, ROCK CORES AND SOL TEST DATA AVAILABLE MAY BE REVIEWED OR INSPECTED IN RALEIGH BY CONTACTING THE N.C. DEPARTMENT OF TRANSPORTATION, GEOTECHMICAL ENGINEERING UNIT AT (9)9) TO7-6850. THE SUBSURFACE PLANS AND REPORTS, FIELD BORING LOGS, ROCK CORES AND SOL 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 SAMPLED DATA AND THE IN STUI (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 AND YARY CONSIDERABLY WITH TIME ACCORDING TO CLIMATIC CONDITIONS INCLUENCE ENDERDATIONS AND WAY VARY CONSIDERABLY WITH TIME ACCORDING TO CLIMATIC CONDITIONS INCLUENCE TOREORDED ERFERIENTION AND WITH SO THE ONLICE MATTE CARTORS INCLUDING TEMPERATURES, PRECIPITATION AND WIND, AS WELL AS OTHER NON-CLIMATIC FACTORS.

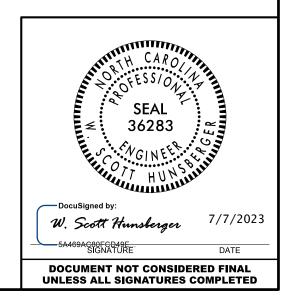
THE BIDDER OR CONTRACTOR IS CAUTIONED THAT DETAILS SHOWN ON THE SUBSURFACE PLANS ARE PRELIMINARY ONLY AND IN MANY CASES THE FINAL DESIGN DETAILS ARE DIFFERENT, FOR BIDDING AND CONSTRUCTION PURPOSES, REFER TO THE CONSTRUCTION PLANS AND DOCUMENTS FOR FINAL DESIGN INFORMATION ON THIS PROJECT. THE DEPARTMENT DOES NOT WARRANT OR GUARANTEE THE SUFFICIENCY OR ACCURACY OF THE INVESTIGATION MADE, NOR THE INTERPRETATIONS MADE, OR OPINION OF THE DEPARTMENT AS TO THE TYPE OF MATERIALS AND CONDITIONS TO BE ENCOUNTERED. THE BIDDER OR CONTRACTOR IS CAUTIONED TO PERFORM INDEPENDENT SUBSURFACE INVESTIGATIONS AND MAKE INTERPRETATIONS AS NECESSARY TO CONFIRM CONDITIONS ENCOUNTERED ON THE EXTENSION OF TIME FOR ANY REASON RESULTING FROM THE ACTUAL CONDITIONS ENCOUNTERED AT THE SIDER FOR ANY REASON RESULTING FROM THE ACTUAL CONDITIONS ENCOUNTERED AT 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. BY HAVING REQUESTED THS 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

TRIGON EXPLORATION

	ANE, R.W.
—	
INVESTIGATED BY	FALCON ENG.
DRAWN BY	LL, M.J.
CHECKED BY H	UNSBERGER, W.S.
SUBMITTED BY _	FALCON ENG.
DATE JULY	2023



NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS GEOTECHNICAL ENGINEERING UNIT SUBSURFACE INVESTIGATION

SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

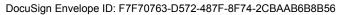
SOIL (DESCRIPTION	GRADATION	ROCK DESCRIPTION
BE PENETRATED WITH A CONTINUOUS FLIGHT PO ACCORDING TO THE STANDARD PENETRATION TE	ISOLIDATED, OR WEATHERED EARTH MATERIALS THAT CAN WER AUGER AND YIELD LESS THAN 100 BLOWS PER FOOT ST (AASHTO T 206, ASTM DI586), SOIL CLASSIFICATION DESCRIPTIONS GENERALLY 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 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 RITY, 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 INT	ERBEDDED FINE SAND LAYERS, HIGHLY PLASTIC, A-7-6 AASHTO CLASSIFICATION	THE ANGULARITY OR ROUNDNESS OF SOIL GRAINS IS DESIGNATED BY THE TERMS: ANGULAR, SUBANGULAR, SUBROUNDED, OR ROUNDED.	WEATHERED NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT ROCK (WR) 100 BLOWS PER FOOT IF TESTED.
GENERAL GRANULAR MATERIALS	SILT-CLAY MATERIALS	MINERALOGICAL COMPOSITION	CRYSTALLINE FINE TO COARSE GRAIN IGNEOUS AND METAMORPHIC RO
CLASS. (≤ 35% PASSING ■200) GROUP A-1 A-3 A-2	(> 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 INC
CLASS. A-1-0 A-1-b A-2-4 A-2-5 A-2-6 A-2	-7 A-75 A-3 A-6, A-7	COMPRESSIBILITY	NON-CRYSTALLINE
SYMBOL 000000000000000000000000000000000000		SLIGHTLY COMPRESSIBLE LL < 31 MODERATELY COMPRESSIBLE LL = 31 - 50	ROCK (NCR) ROCK TYPE INCLUDES PHYLLITE, SLATE, SANDSTONE, ETC COASTAL PLAIN COASTAL PLAIN SEDIMENTS CEMENTED INTO ROCK, BUT
2 PASSING		HIGHLY COMPRESSIBLE LL > 50	SEDIMENTARY ROCK SEDIMENTARY ROCK TYPE INCLUDES LIMESTONE, SANDS
■10 50 MX ■40 30 MX 50 MX 51 MN	GRANULAR SILT- MUCK, SOILS CLAY PEAT	PERCENTAGE OF MATERIAL	
*200 15 MX 25 MX 10 MX 35 MX 35 MX 35 MX 35		GRANULAR SILT - CLAY ORGANIC MATERIAL <u>SOILS OTHER MATERIAL</u>	FRESH ROCK FRESH, CRYSTALS BRIGHT, FEW JOINTS MAY SHOW SLIGHT STAINING. ROCK
	1N 48 MX 41 MN 48 MX 41 MN SOILS WITH LITTLE OR N 18 MX 19 MX 11 MN 11 MN DIFFORT	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% HIGHLY ORGANIC > 10% > 20% HIGHLY 35% AND ABOVE	HAMMER IF CRYSTALLINE. VERY SLIGHT ROCK GENERALLY FRESH, JOINTS STAINED, SOME JOINTS MAY SHOW THIN CLAY CO (V SLI.) CRYSTALS ON A BROKEN SPECIMEN FACE SHINE BRIGHTLY. ROCK RINGS UNDER HA
GROUP INDEX Ø Ø Ø Ø Ø Ø Ø A MX		GROUND WATER	OF A CRYSTALLINE NATURE. SLIGHT ROCK GENERALLY FRESH, JOINTS STAINED AND DISCOLORATION EXTENDS INTO RO
USUAL TYPES STONE FRAGS. 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.) 1 INCH. OPEN JOINTS MAY CONTAIN CLAY. IN GRANITOID ROCKS SOME OCCASIONAL CRYSTALS ARE DULL AND DISCOLORED. CRYSTALLINE ROCKS RING UNDER HAMMER
MATERIALS SAND SHILD CHARLE HILD SHILD	FAIR TO FOOD FAIR TO FOOD UNCULARD	∇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 GOOD	FAIR TO POOR POOR UNSUITABL		DULL SOUND UNDER HAMMER BLOWS AND SHOWS SIGNIFICANT LOSS OF STRENGTH WITH FRESH ROCK.
	- 30 ; PI OF A-7-6 SUBGROUP IS > LL - 30		MODERATELY ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. IN GRANITOID ROCKS, ALL F
CONSISTENC	Y OR DENSENESS	MISCELLANEOUS SYMBOLS	SEVERE AND DISCOLORED AND A MAJORITY SHOW KAOLINIZATION. ROCK SHOWS SEVERE L((MOD, SEV.) AND CAN BE EXCAVATED WITH A GEOLOGIST'S PICK. ROCK GIVES "CLUNK" SOUND V
PRIMARY SOIL TYPE COMPACTNESS OR CONSISTENCY VERY LOOSE	RANGE OF STANDARD PENETRATION RESISTENCE (N-VALUE) COMPRESSIVE STRENGTH (TONS/FT ²) < 4	ROADWAY EMBANKMENT (RE) 25/025 DIP & DIP DIRECTION WITH SOIL DESCRIPTION OF ROCK STRUCTURES	IF TESTED, WOULD YIELD SPT REFUSAL 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
	4 TO 1Ø	SOIL SYMBOL	TO SOME EXTENT. SOME FRAGMENTS OF STRONG ROCK USUALLY REMAIN.
MATERIAL DENSE (NON-COHESIVE) VERY DENSE	10 TO 30 N/A 30 TO 50 > 50	ARTIFICIAL FILL (AF) OTHER AUGER BORING OC CONE PENETROMETER	IF TESTED, WOULD YIELD SPT. N YALUES > 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 (V SEV.) REMAINION. SAPROLITE IS AN EXAMPLE OF ROCK WEATHERED TO A DEGREE THAT
VERY SOFT GENERALLY SOFT	< 2 < 0.25 2 TO 4 0.25 TO 0.5	INFERRED SOIL BOUNDARY O CORE BORING SOUNDING ROD	VESTIGES OF ORIGINAL ROCK FABRIC REMAIN. IF TESTED, WOULD YIELD SPT N V
SILT-CLAY MEDIUM STIFF MATERIAL STIFF (COHESIVE) VERY STIFF	4 TO 8 0.5 TO 1.0 8 TO 15 1 TO 2 15 TO 30 2 TO 4	INFERRED ROCK LINE MONITORING WELL TEST BORING WITH CORE INFERRED ROCK LINE PIEZOMETER INSTALLATION SPT N-VALUE	COMPLETE ROCK REDUCED TO SOIL, ROCK FABRIC NOT DISCERNIBLE, OR DISCERNIBLE ONLY SCATTERED CONCENTRATIONS, QUARTZ MAY BE PRESENT AS DIKES OR STRINGERS ALSO AN EXAMPLE.
	> 30 > 4 OR GRAIN SIZE	RECOMMENDATION SYMBOLS	ROCK HARDNESS
			VERY HARD CANNOT BE SCRATCHED BY KNIFE OR SHARP PICK, BREAKING OF HAND SPECIMENS
U.S. STD. SIEVE SIZE 4 10 OPENING (MM) 4.76 2.00	40 60 200 270 0.42 0.25 0.075 0.053	ACCEPTABLE, BUT NOT TO BE	SEVERAL HARD BLOWS OF THE GEOLOGIST'S PICK. HARD CAN BE SCRATCHED BY KNIFE OR PICK ONLY WITH DIFFICULTY, HARD HAMMER BI
BOULDER COBBLE GRAVEL	COARSE FINE SILT CLAY	SHALLOW UNCLASSIFIED EXCAVATION - UNCLASSIFIED EXCAVATION - UNDERCUT UNDERCUT UNCLASSIFIED EXCAVATION - EMBANKMENT OR BACKFILL	TO DETACH HAND SPECIMEN.
(BLDR.) (COB.) (GR.) GRAIN MM 305 75 2.0	SAND SAND STET CENT (CSE, SD.) (F SD.) (SL.) (CL.) 0.25 0.05 0.005	ABBREVIATIONS AR - AUGER REFUSAL MED MEDIUM VST - VANE SHEAR TEST	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 DE 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 O HARD CAN BE EXCAVATED IN SMALL CHIPS TO PEICES 1 INCH MAXIMUM SIZE BY HARD
	CORRELATION OF TERMS	CPT - CONE PENETRATION TEST NP - NON PLASTIC $\dot{\gamma}_{ m d}$ - DRY UNIT WEIGHT	POINT OF A GEOLOGIST'S PICK.
SOIL MOISTURE SCALE FIELD M (ATTERBERG LIMITS) DESCR:	PTION GUIDE FOR FIELD MUISTURE DESCRIPTION	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.
		e - VOID RATIO SD SAND, SANDY SS - SPLIT SPOON F - FINE SL SILT, SILTY ST - SHELBY TUBE FOSS FOSSILIFEROUS SLI SLICHTLY 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 FINGERRAIL.
PLASTIC 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
	HITHIN OFTIMOM MOISTORE	HI HIGHLY V - VERY RATIO	TERM SPACING TERM
OM OPTIMUM MOISTURE - MOIST SL SHRINKAGE LIMIT	- (M) SOLID; AT OR NEAR OPTIMUM MOISTURE	EQUIPMENT USED ON SUBJECT PROJECT DRILL UNITS: ADVANCING TOOLS: HAMMER TYPE:	VERY WIDE MORE THAN 10 FEET VERY THICKLY BEODED WIDE 3 TO 10 FEET THICKLY BEODED 1. MODERATELY CLOSE 1 TO 3 FEET THINLY BEODED 0.1
- DRY -	(D) REQUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE	CME-45C CLAY BITS X AUTOMATIC MANUAL	CLOSE 0.16 TO 1 FOOT VERY THINLY BEDDED 0.0.0 VERY CLOSE LESS THAN 0.16 FEET THICKLY LAMINATED 0.000 THINLY LAMINATED <
PL:	ASTICITY	■	INDURATION
	ICITY INDEX (PI) DRY STRENGTH	CME-550 HARD FACED FINGER BITS	FOR SEDIMENTARY ROCKS, INDURATION IS THE HARDENING OF MATERIAL BY CEMENTING, HER
NON PLASTIC SLIGHTLY PLASTIC	0-5 VERY LOW 6-15 SLIGHT	VANE SHEAR TEST	FRIABLE RUBBING WITH FINGER FREES NUMEROUS GRAINS; GENTLE BLOW BY HAMMER DISINTEGRATES SAMPLE.
	16-25 MEDIUM 26 OR MORE HIGH	PORTABLE HOIST CASING W/ ADVANCER POST HOLE DIGGER PORTABLE HOIST TRICONE STEEL TEETH X HAND AUGER	MODERATELY INDURATED GRAINS CAN BE SEPARATED FROM SAMPLE WITH STI BREAKS EASILY WHEN HIT WITH HAMMER.
	COLOR	X MOBILE B-57	INDURATED GRAINS ARE DIFFICULT TO SEPARATE WITH STEEL DIFFICULT TO BREAK WITH HAMMER.
	COMBINATIONS (TAN, RED, YELLOW-BROWN, BLUE-GRAY). AKED, ETC. ARE USED TO DESCRIBE APPEARANCE.	CORE BIT VANE SHEAR TEST	EXTREMELY INDURATED SHARP HAMMER BLOWS REQUIRED TO BREAK SAMPLE SAMPLE BREAKS ACROSS GRAINS.

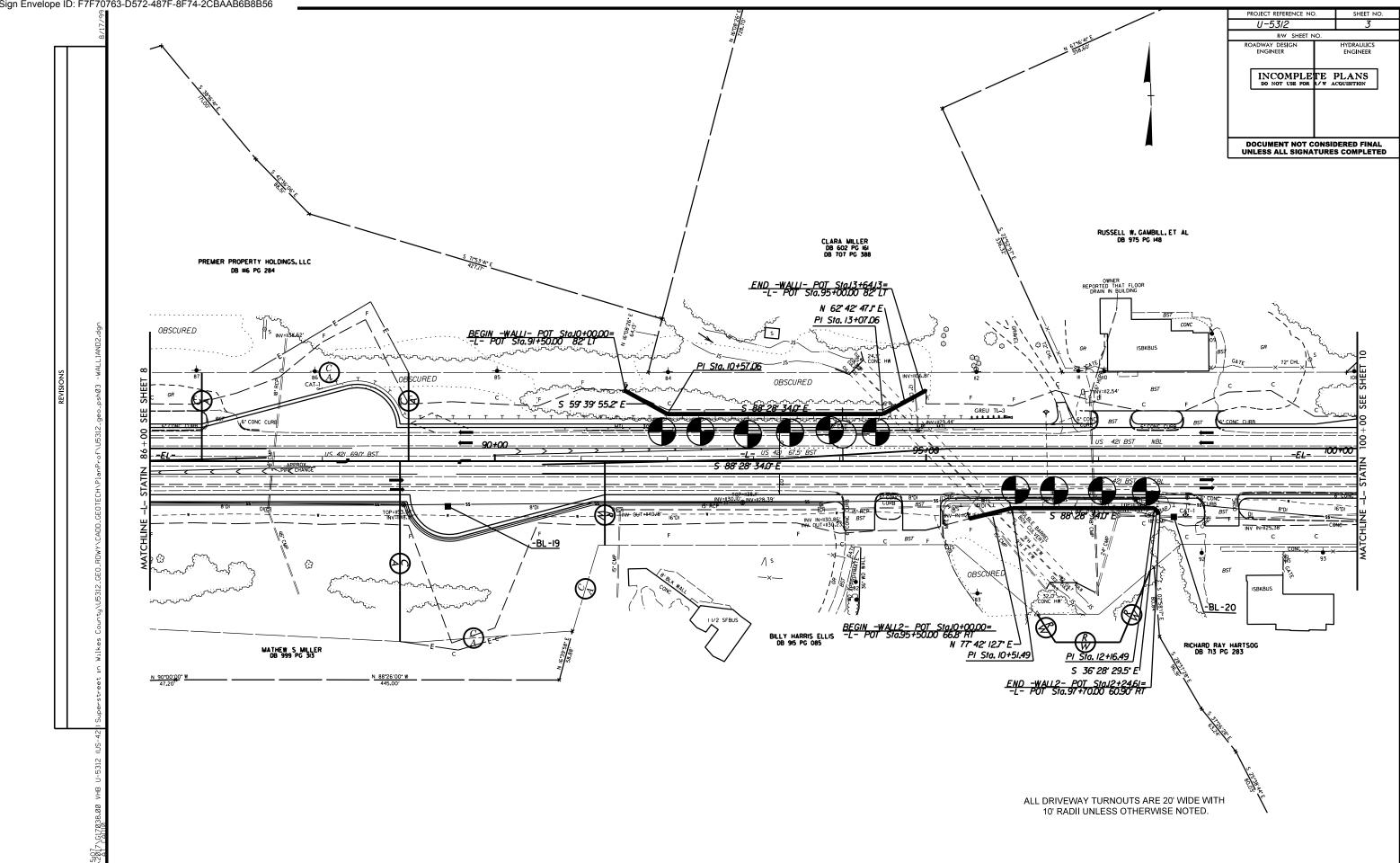
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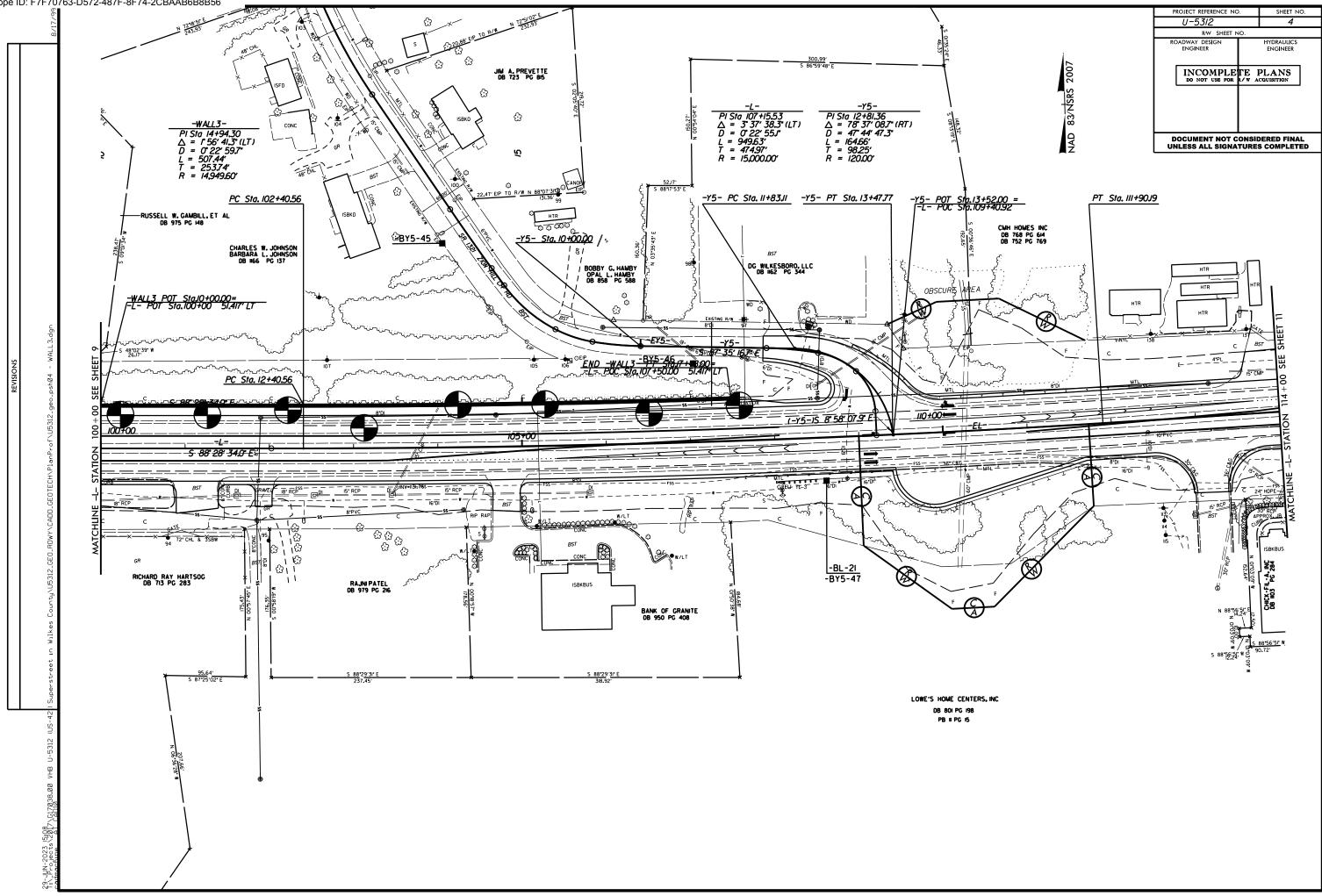
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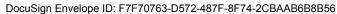
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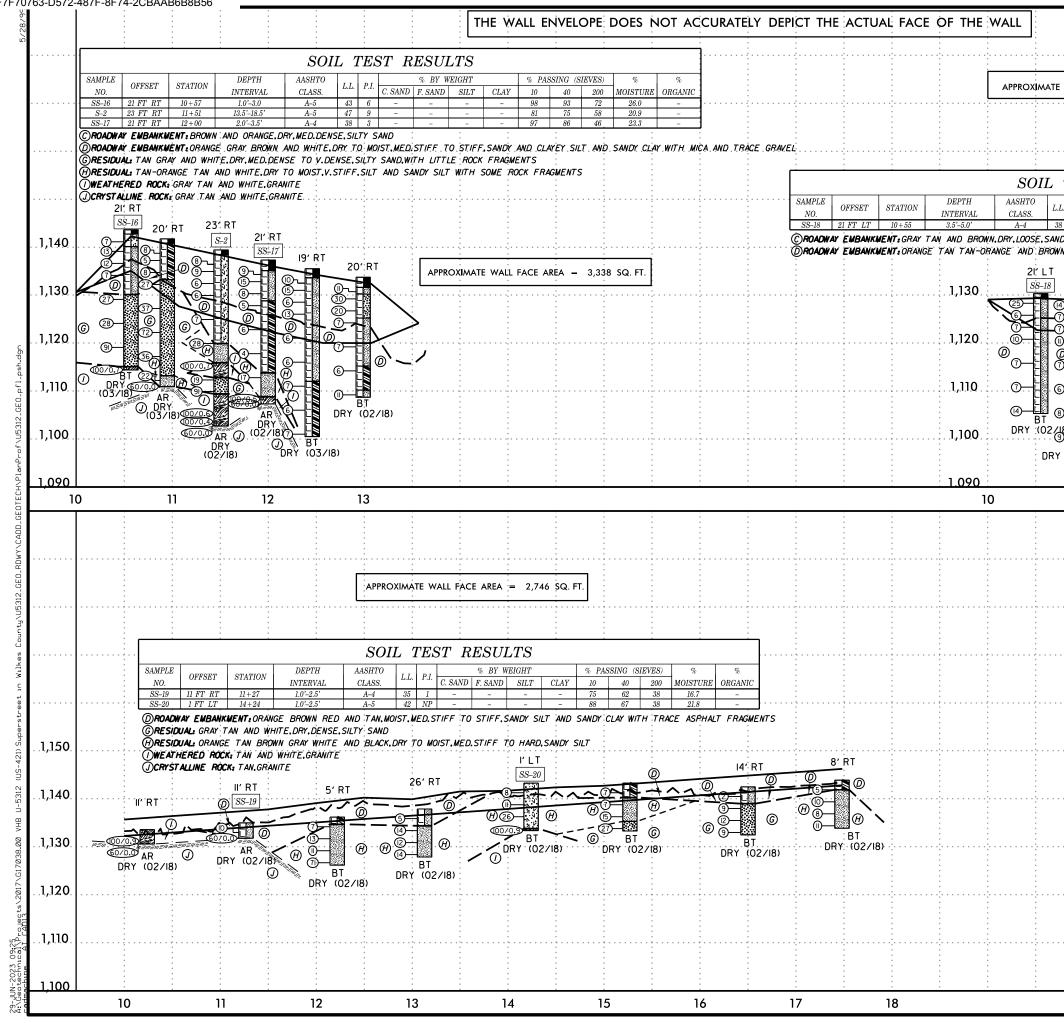
D. AN INFERRED	
SPT REFUSAL.	ALLUVIUM (ALLUV.) - SOILS THAT HAVE BEEN TRANSPORTED BY WATER.
FOOT PER 60 IS OFTEN	ADUIFER - A WATER BEARING FORMATION OR STRATA.
	ARENACEOUS - APPLIED TO ROCKS THAT HAVE BEEN DERIVED FROM SAND OR THAT CONTAIN SAND.
N VALUES >	ARGILLACEOUS - APPLIED TO ALL ROCKS OR SUBSTANCES COMPOSED OF CLAY MINERALS, OR HAVING A NOTABLE PROPORTION OF CLAY IN THEIR COMPOSITION, SUCH AS SHALE, SLATE, ETC.
N VHLUES /	ARTESIAN - GROUND WATER THAT IS UNDER SUFFICIENT PRESSURE TO RISE ABOVE THE LEVEL AT
СК ТНАТ	WHICH IT IS ENCOUNTERED, BUT WHICH DOES NOT NECESSARILY RISE TO OR ABOVE THE GROUND
CLUDES GRANITE.	SURFACE. CALCAREOUS (CALC.) - SOILS THAT CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE.
L PLAIN	<u>LALLAREOUS (LALL)</u> - SUILS THAT CUNTAIN APPRECIABLE AMOUNTS OF CALLIOM CARBONATE. COLLUVIUM - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM
IF TESTED. C.	CULLUYIUM - ROCK FRAGMENTS MIXED WITH SUIL DEPUSITED BY GRAVITY UN SLOPE OR AT BUTTUM 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	$\overline{\text{DIP}}$ - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE HORIZONTAL.
DATINGS 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.
CK UP TO L 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.	FISSILE - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES.
S. IN Y ROCK HAS	FLOAT - ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLODGED FROM
Y. ROCK HAS AS COMPARED	PARENT MATERIAL.
	FLOOD PLAIN (FP) - LAND BORDERING A STREAM, BUILT OF SEDIMENTS DEPOSITED BY THE STREAM. FORMATION (FM.) - A MAPPABLE GEOLOGIC UNIT THAT CAN BE RECOGNIZED AND TRACED IN THE
ELDSPARS DULL OSS OF STRENGTH	FIELD.
WHEN STRUCK.	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
VIDENT BUT RE KAOLINIZED	ITS LATERAL EXTENT.
	LENS - A BODY OF SOIL OR ROCK THAT THINS OUT IN ONE OR MORE DIRECTIONS.
	MOTTLED (MOT.) - IRREGULARLY MARKED WITH SPOTS OF DIFFERENT COLORS. MOTTLING IN SOILS USUALLY INDICATES POOR AERATION AND LACK OF GOOD DRAINAGE.
E DISCERNIBLE F STRONG ROCK	PERCHED WATER - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE
ONLY MINOR	OF AN INTERVENING IMPERVIOUS STRATUM.
<u>'ALUES < 100 BPF</u> IN SMALL AND	RESIDUAL (RES.) SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK.
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.
5 REQUIRES	SAPROLITE (SAP.) - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT 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.
EP CAN BE ETACHED	<u>SLICKENSIDE</u> - 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)(SPI) - 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 T. SMALL, THIN	STRATA CORE RECOVERY (SREC.) - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE.
PIECES 1 INCH	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
ED READILY BY	THE TOTAL LENGTH OF STRATA AND EXPRESSED AS A PERCENTAGE.
	TOPSOIL (TS.) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.
THICKNESS	BENCH MARK:
4 FEET	BORING ELEVATIONS TAKEN FROM MULTIPLE .TIN FILES DATED 09/15-09/22 2018 ELEVATION: FEET
.5 - 4 FEET .6 - 1.5 FEET	
3 - 0.16 FEET	NOTES:
8 - 0.03 FEET 0.008 FEET	FIAD - FILLED IMMEDIATELY AFTER DRILLING
AT, PRESSURE, ETC.	
EEL PROBE;	
PROBE:	
:	
.,	DATE: 1-XX-17







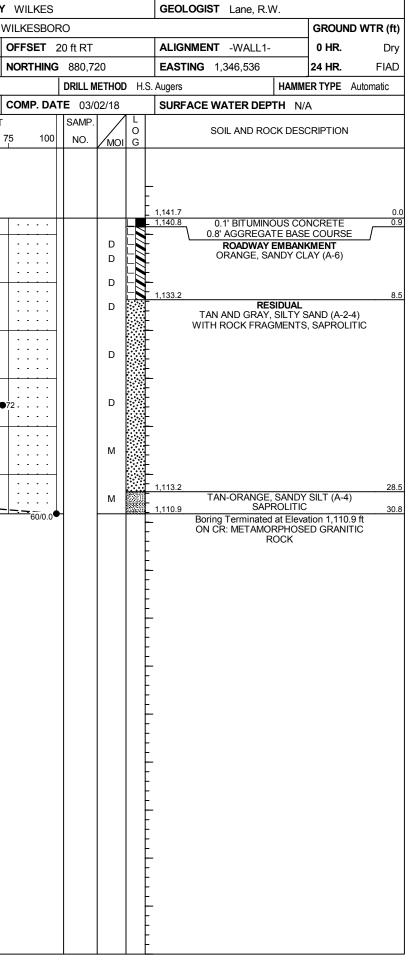




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TEST R	% BY WEIGH		% PASSIN	C (SIEVES)	%		
L. P.I. C. SAND			10 4	10 200	MOISTURE	ORGANIC	
8 NP - ID AND SILTY SA	- - wD wITH SO	ME GRAVEL		36 <u>52</u>	23.2	-	1140
IN DRY TO MOIST					RACE GRAVI	£L	.1,140
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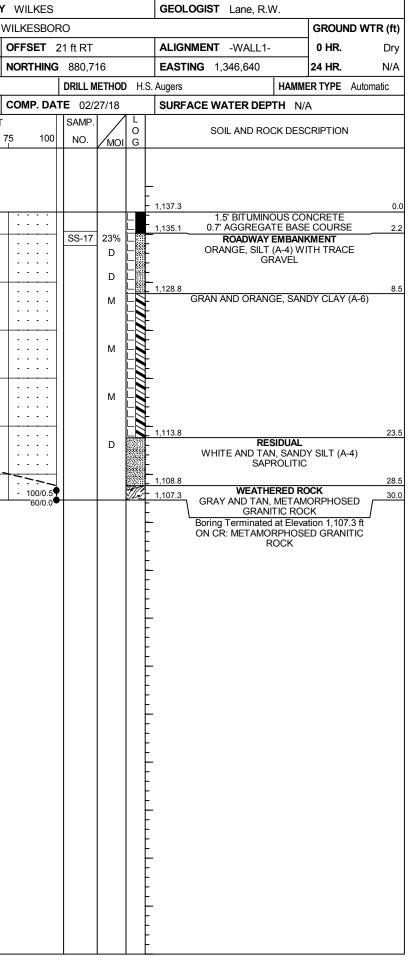
GEOTECHNICAL BORING REPORT BORE LOG

ſ	WBS	4544	6.1.1			Т	IP U-531	2		COUNT	Y WILKES					GEOLOGIST Lane, R.W	/.		WBS	45446	6.1.1			TIF	v U-5312	2	COUNTY
Ī	SITE	DESCF	IPTION	US 4	21 FR	OM N	С 16 ТО І	JS 421	BUSIN	IESS IN	WILKESBO	20						GROUND WTR (ft)	SITE	DESCR		US 42	21 FR(OM NC	: 16 TO U	S 421 BUS	INESS IN \
	BORI	NG NO	RW1	·1		S	TATION	10+57			OFFSET	21 ft RT				ALIGNMENT -WALL1-		0 HR. Dry	BOR	ing no.	RW1	-2		ST	ATION [·]	10+95	
Ī	COLL	AR EL	EV. 1,	143.6 f	ť	Т	OTAL DE	PTH 2	9.2 ft		NORTHING	880,7	21			EASTING 1,346,492		24 HR. N/A	COL	LAR ELI	EV. 1,	141.7 ft	ι	то	TAL DEP	TH 30.8 f	t
	DRILL	RIG/HA	/MER EF	F./DATI	E TRI8	3016 M	IOBILE B-57	95% 03	3/19/20 ⁻	18	•	DRILL	IETHO	D H	H.S. A	Augers	HAMM	ER TYPE Automatic	DRIL	RIG/HAN	/MER EF	F./DATE	TRI8	016 MC	BILE B-57	95% 03/19/2	018
ſ			step, J.			S	TART DA	TE 03/	/02/18		COMP. DA	TE 03/	02/18			SURFACE WATER DEPT	TH N/	A	DRIL	LER E				ST	ART DAT	E 03/02/1	8
Γ	ELEV	DRIVE	DEPTH		W CO			BLC	WS P	ER FOOT	r i i	SAMP.						CRIPTION	ELEV	DRIVE FLEV	DEPTH	BLO	w cou	JNT		BLOWS	PER FOOT
_	(ft)	(ft)	(ft)	0.5ft	0.5ft	0.5ft	0	25	50)	75 100	NO.	Имо			ELEV. (ft)		DEPTH (ft)	(ft)	(ft)	(ft)	0.5ft	0.5ft	0.5ft	0	25	50
	ELEV (ft) <u>1145</u> <u>1140</u> <u>1135</u> <u>1130</u> <u>1125</u> <u>1120</u>	DRIVE ELEV (ft) 1,142.1 1,140.1 1,137.6 1,135.1 1,130.1	DEPTH (ft) 1.5 3.5 6.0 8.5 13.5 18.5 18.5	BLC 0.5ft 6 2 11 4 14 9 9	W COI 0.5ft 4 7 6 3 14 13 21 37/0.2	JNT		BLC 25 	SP SP S	ER FOOT	75 100	SAMP.	MC			SOIL AND ROC ELEV. (ft) 1,143.6 1,142.7 0.9' A: ROADWAY E 1,140.1 ORANGE, CL/ ORANGE, SILT (A- TRACE 1,130.1 RES 1,130.1 RES 1,130.1 RES 1,115.1 L 114.4 WEATHE GRAY, METAMOR Boring Terminated at WR: METAMOR	SPHAL SP	CRIPTION 0.0 T 0.9 KMENT 3.5 ACEOUS AND 5 EL 13.5 LITTLE ROCK PROLITIC 28.5 29.2 ED GRANITIC 29.2 ion 1,114.4 ft IN 10		DRIVE ELEV (ft) -1,139.7- 1,138.2 -1,138.2 -1,138.2 	DEPTH (ft) 2.0 3.5 6.0 8.5 13.5 18.5 23.5 28.5	BLO	W COU 0.5ft 4 2 3 13 11 49 17 7	JNT		BLOWS	
NCDOT BORE DOUBLE G17038.GPJ NC_DOT.GDT 6/29/23		-																									



GEOTECHNICAL BORING REPORT BORE LOG

										D	JRE	_00																1	
WBS 4	45446.	1.1			T	TIP U-	5312		cc	DUNTY	WILKES	5			GEC	LOGIST Lane, R.W.	1	WE	8S 45	446.1.´	1			Т	IP U-S	5312		COUN	TΥ
SITE DE	ESCRI	PTION	US	421 FF		NC 16 T	O US	421 BL	ISINES	SS IN V	VILKESBO	RO) SIT	E DES	CRIPT	ION	US 42	21 FR	OM N	C 16 T	O US /	421 BUSI	INESS I	NN
BORING	g no.	RW1	-3		S	STATIO	N 11	1+51			OFFSET	23 ft RT			ALIC	SNMENT -WALL1-	0 HR. Dr	BO	ring i	10 . R	RW1-4	1		S	TATIO	N 12 [.]	+00		0
COLLA	RELE	V. 1,	139.4	ft	Т	OTAL	DEPT	H 36.7	7 ft		NORTHIN	G 880,7	' 15		EAS	TING 1,346,591	24 HR. FIA		LLAR	ELEV.	1,1	37.3 ft		Т	OTAL	DEPTI	- 30.0 ft	t	r
DRILL RI	G/HAM	MER EF	F./DAT	E TR	8016 N	MOBILE E	B-57 9	5% 03/1	9/2018			DRILL	METHO	OD H	.S. Augers	s HAMM	IER TYPE Automatic	DRI	LL RIG/	AMME	R EFF	./DATE	TRI8	3016 N	IOBILE E	3-57 95	5% 03/19/2	018	
DRILLE	R Es	tep, J.	E.		s	START	DATE	02/27	7/18		COMP. D	ATE 02/	/27/18	3	SUR	FACE WATER DEPTH N/	Ά	DR	ILLER	Estep	p, J. E	Ξ.		s	TART I	DATE	02/27/1	8	0
	RIVE	DEPTH	1	ow co	UNT			BLOW	S PER	FOOT		SAMP						ELE	V DRI				w cou	JNT			BLOWS	PER FO	тс
/ft)	ELEV	(ft)		0.5ft	0.5ft	0	2	25	50	7	75 10	NO.	Им	0 0 G	ELEV.	SOIL AND ROCK DES	CRIPTION DEPTH	(ft)		- / /		0.5ft	0.5ft	0.5ft	0	25	5	50	75
1																													
1140																		114	0										
						++ -1-			- -		· · · ·	+	+		- 1,139.4 - 1,138.4			.0	<u> </u>										
	137.4		5	4	4	- · · - · •				· · · · · ·	- · · · ·		D		-	ROADWAY EMBAN ORANGE, CLAYEY S	KMENT			<u></u>	_				. _I .	<u> </u>		1	
1135 1,	135.9	. <u>3.5</u>	4	5	4		⁵ 19		· ·				D	LV	<u>}</u>	UNANCE, CEATER C		113	5 1,13		2.0	8	5	4	.i				-
1,	133.4	6.0	3	2	4		· · ·		: :	· · ·			D		1				1,13	3.8 <u>+</u> 3	3.5	7	8	7	.♥) 15	· · · ·		:
	130.9	8.5					· · ·	· · ·		· · ·	· · · ·									1.3 6	6.0	3	4	4					
1130	+	-	2	3	3	6			: :				D		ŀ			113		н 8.8 8	8.5	Ĵ	~	-				<u> </u>	
	Ŧ													Ľ	-					+	0.0	3	3	2	●5.	•••			
1125 1,	125.9	13.5	3	3	4	$\left \left \begin{array}{c} 1 \\ 1 \end{array} \right \right $							-		F			112	5	Ŧ									:
	1											S-2	21%		<u>⊨</u>					3.8 1	3.5	3	3	3					
	‡						ĽŊ.	· · · · · ·	: :	· · · · · ·	· · · ·	0-2		° L'' L''	ŀ					‡		3	3	3	 ● 6 [·]		· · · · ·		
1120	120.9	. 18.5	9	9	19	1	· · ·`	••••	· ·				- D		1,119.9		19	5 112		‡							<u> </u>		·
	1						· · ·		-+	· · · ·					F	RESIDUAL TAN, SILT (A-4) WIT	HROCK		1,11	8.8 <u>+</u> 1; +	8.5	3	2	2	:	· ·	· · · ·		:
1.	115.9	23.5							: :		†;				1,115.9		23	5		t					\ \. . \.	· ·			:
1115	+	-	55	45/0.2	2				· ·		100/0.	••			-	WEATHERED RO GRAY AND TAN, METAN		111		3.8 2	3.5					$\overline{\mathbf{x}}$		<u> </u>	
-1,	113.3	_26.1	85	14	5				-+-					11	1,112.8		20	.6		+		4	6	11	1 : :	L			•
1110 1,	<u>110.9</u>	28.5	15	29	62								D		-	TAN, SILTY SAND (A-2-4)) SAPROLITIC	111	0	Ŧ					::			+	
	Ŧ										91	1		Th	- 1,109.4 -	WEATHERED R		.0	1,10	8.8 2		00/0.5							
	105.9									· · · ·					Ē.	TAN GRAY AND W METAMORPHOSED GRA			1,10	7.3 <u>† 3</u>	0.0	60/0.0				• •	• • • •		·
1105	105.9		63	37/0.1	Г						100/0.0	; •			-					‡									
	104.0		100/0.				· · ·	· · · ·		· · ·	100/0.4				- 1,102.7		36	.7		‡									
1	1		60/0.0								60/0.0				È	Boring Terminated at Eleva ON CR: METAMORPHOS	ation 1,102.7 ft ED GRANITIC			‡									
1	+	<u>.</u>													F	ROCK				+									
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GEOTECHNICAL BORING REPORT BORE LOG

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WBS	45446	5.1.1				TIP	U-53	12			COU	NTY	WIL	KES					GEC	DLO	GIST	Lane	, R.W					WBS	4544	6.1.1				1	TIP	U-531	2		COU	JNTY	V
SITE	DESCR	IPTION	US	421 F	ROM	NC 1	16 TO	US 4	421 B	USIN	IESS	IN W	/ILKE	SBO	20										GRC	DUND	WTR (ft)	SITE	DESC	RIPTIC	ΟΝ Ι	JS 42	21 FR	NON N	NC 1	16 TO I	US 42	21 BUS	INESS	S IN V	VIL
BOR	NG NO.	RW1-	-5		:	STA	TION	12-	+46			0	OFFS	ET	19 ft R	Т			ALIO	GNM	IENT	-WA	_L1-		ОН	IR.	Dry	BOR	ing no). RV	V1-6			5	STA	TION	12+9	99			OF
COLI	AR ELE	EV. 1,*	135.5	ft	•	тот		EPTH	I 35.	.0 ft		١	NORT	HING	880	,717			EAS	STIN	G 1,:	346,68	36		24 H	IR.	FIAD	COL	LAR EI	EV.	1,13	3.7 ft		1	тот	AL DE	PTH	25.01	ť	1	NO
DRILL	RIG/HAN	IMER EF	F./DA	TE TR	18016	MOB	ILE B-	57 95	% 03/	19/20	18				DRILL	. METH	HOD	Н.	.S. Auger	s				НАММ	ER TYF	PE Au	utomatic	DRILI	. RIG/HA	MMER	EFF./I	DATE	TRI	8016 I	MOB	ILE B-57	7 95%	6 03/19/2	2018		
DRIL	LER E	step, J.	E.		:	STA	RT D	ATE	02/2	27/18		0	COMF	P. DA	TE 02	2/27/1	18		SUR	RFAC	CE WA	TER	DEPT	H N/	A			DRIL	LER	Estep,	J. E.			5	STA	RT DA	TE	02/27/	18		со
ELEV	DRIVE ELEV			OW CO	DUNT	Т			BLOV	VS P	ER FC	ТОС			SAM	P.		L										ELEV	DRIVE		_		N CO	UNT	\square		E	BLOWS	PER F	00T	
(ft)	ELEV (ft)	(ft)	0.5f	t 0.5f	0.5f	ft (0	25	5	50	0	7	5	100	NO	. / n	/ 101	O G	ELEV.	(ft)	SO	IL AND	ROCI	K DES	CRIPT	ION	DEPTH (ft)	(ft)	ELEV (ft)	(ft	. —).5ft	0.5ft	0.5ft	ft)	25		50	7	75 I
1140																												1135													
	-	l L																	Ē										1 131	7- 2.0	0				+			· · · ·		· · · ·	<u> </u>
1135	-			_	_														- 1,135.	5				10.00	NODE		0.0	1130	1,131.		5	9	6	5		• •11				•••	
	1,133.5	2.0	<u> </u>			\Box		-									L	_	- 1,133.0	6	0.4'	5' BITU AGGR	EGATI	E BAS	E COU	JRSE	1.9		1 1 1 7 7	7 6.0		6	9	21				30			—
	1,132.0	3.5	7	5	5		. • • 10						· · · ·					-8	F			roadv Ige an				T Y SILT			<u> </u>	/ <u>+ 0.(</u> +		23	12	8	11		2 0				-
1130	1,129.5	6.0				┛┝		15						• •		'			F			4-4) W						1125	1,125.	2 <u>† 8.</u> {	5	6	4	3			·		· ·	· · ·	<u> </u> -
	-	t	7	3	3		.	-	• • • • • •		•••		••• •••			[DL		F											‡						. ₽ (. .	•	· · · · ·		•••	:
1405	1,127.0	8.5	3	4	9			- 13-	· · ·		•••	· · ·	•••			N	мL		F									1100	1 1 2 0	, †	_					ij::	· ·	· · · · ·	: :	· · · ·	:
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	1,117.0	18.5	2	3	3	_	1:	-			· · · ·		· · · ·				M L	-0	F											Ŧ						·/· ·		· · · · ·		- · - ·	:
1115	-	ŧ	-				• 6	-										-8	F									1110	1,110.	2 <u>† 23</u> .	.5	4	5	6		· · ·	· ·				<u> </u> -
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1110	-	Ł					<u> </u>	-									L		F			TI	RACE	GRAV	EL					Ŧ											
	1.107.0	285						-					• •				L		-											Ŧ											
1105	-1,107.0	- 20.0	4	3	3		• 6	-			· · · ·		•••				мĬ		F											Ŧ											
1100	-	+					<u>†</u> .							•••			L		<u>}</u>											‡											
	1,102.0	33.5					- -	•			· · · ·		· · · ·				L		L											‡											
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WILKESB	OR	0									GROUN	ID WT	R (ft)
OFFSET	2	0 ft RT			Τ	ALIG	ME	NT -\	VALL1-		0 HR.		Dry
NORTHIN	١G	880,71	14		╡	EAST	ING	1,340	5,739		24 HR.		N/A
		DRILL M	ETHOD	н.	 S. /	Augers				НАММЕ	ER TYPE	Automa	atic
COMP. D							ACE	WAT	ER DEP				
<u>т</u> ооми . е		SAMP.		L		5014				III IN//	٦		
75 10	00	NO.		O G				SOIL	AND ROO	CK DESC	CRIPTION	l	
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					F,	1,133.7							0.0
	.				-						NCRETE		
	:		D			1,131.6 1,130.2			GREGA		COURS	E	2.1 3.5
			D	L	F	1,130.2	OR		AND WH	IITE, SIL	T (A-4) W	/ітн Г	3.5
	·				\vdash		LB	ROWN		E GRAVE SAND (A	-2-4) WI	ГН	
			D		F1	1,125.2			TRACE	GRAVE	EL		8.5
			D		F		(ORANG	E, SANE	DY SILT E GRAVE	(A-4) WIT	Ή	
	:				È				110.01				
					F								
	·		D		F								
	:				F								
						1,115.2			DRANGE		A 6)		18.5
	:		М		E				JINANGL	, CLAT (A-0)		
	•				╞								
	4		D		_	1,110.2 1,108.7			ORANGE	E, SILT (/	A-4)		23.5 25.0
· · · · ·	•			1	F	1,100.7	Bori	ng Terr	ninated a	t Elevati	on 1,108.	7 ft IN	23.0
					È		RO	ADWA	Y EMBAN	IKMENI	: SANDY	SILT	
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GEOTECHNICAL BORING REPORT BORE LOG

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WBS	45446	.1.1			1	TIP U-5312		COUNT	Y WILKES	;			GEOL	OGIST Lane, R.W				WBS	45446	.1.1			TI	IP U-5312		COUNT	ΥV
SITE	DESCR	PTION	US 4	21 FR	1 MO	NC 16 TO US	3 421 BUS	INESS IN	WILKESBC)RO						GROUND WTR	(ft)	SITE	DESCRI	PTION	US 4	21 FR	OM N	C 16 TO US	421 BUSI	NESS IN	WIL
BORI	NG NO.	RW2-	·1		5	STATION 1	0+55		OFFSET	21 ft LT			ALIG	MENT -WALL2-		0 HR. [Dry	BORI	NG NO.	RW2-	·2		S	TATION 11	+00		OF
COLI	AR ELE	EV. 1,*	130.3 f	ť	1	TOTAL DEP	FH 25.0 f	t	NORTHIN	G 880,6	42		EAST	ING 1,346,899		24 HR.	I/A	COLL	AR ELE	:V. 1,1	129.9 f	ťt	Т	OTAL DEPT	H 30.0 ft		NO
DRILL	. RIG/HAM	MER EF	F./DATE	E TRI8	016 I	MOBILE B-57	95% 03/19/2	2018			IETHO	DН	I.S. Augers		HAMME	RTYPE Automatio	;	DRILL	RIG/HAM	MER EF	F./DATE	E TRI8	3016 M	IOBILE B-57 9	5% 03/19/20	018	-
DRIL	LER Es	step, J.	E.		5	START DAT	E 02/23/1	18	COMP. D	ATE 02/	23/18		SURF	ACE WATER DEPT	TH N/A	A		DRILI	LER Es	step, J.	E.		S	TART DATE	02/23/18	8	cc
ELEV	DRIVE ELEV	DEPTH	BLO	W COL	JNT		BLOWS	PER FOO	T	SAMP.				SOIL AND ROC				ELEV	DRIVE ELEV	DEPTH	BLO	W CO	UNT		BLOWS F	PER FOO	r
(ft)	(ft)	(ft)	0.5ft	0.5ft	0.5f	t O	25	50	75 100	0 NO.	МО) G				DEPT	H (ft)	(ft)	(ft)	(ft)	0.5ft	0.5ft	0.5ft	0 2	25 5	50	75 I
1135		_											L					1130									
	-	-											Ł					-	1,128.9	<u>1.0</u>	14	9	5				· ·
	-	-																	1,126.4	- 3.5	3	2	4				
1130	1,129.3	1.0					+	+		<u>+</u> +	+		- 1,130.3 - 1,129.5	0.8' BITUMINO	OUS COM	NCRETE	0.0 0.8	1125	1,123.9	60	S S	3	4	• ⁷			+
	1 100 0	-	16	17	8		4 25				D		F	ROADWAY E ORANGE AND TA						-	2	3	4	• • • • •			
1125	1,126.8-	- 3.5	3	3	3				· · · · · ·		23%		F		GRAVE			1120	1,121.4	- 8.5 F	3	4	7				: :
1120	1,124.3	6.0	3	3	4		<u> </u>			1	D		F					1120	-	- -							
	- 1,121.8-	- 8.5											-						1,116.4	- 13 5					· · · · ·		
1120	-	-	4	5	5	- 10 -	<u> </u>			_	D		L					1115			2	3	4				· ·
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	1,116.8-	- 13.5	2	3	4						D		Ļ						1,111.4	18.5	3	2	4				: :
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	- 1.111.8-	18.5											Ľ						-								. .
1110		-	3	3	4	•••••••••••••					D		F					1105	1,106.4	23.5	3	3	5	8			. .
	-	-											F						7	- F							
	1,106.8-	23.5	11	9	5								F						1,101.4	- 28.5			_				
		-		9	5	• • 14	<u> </u>			4	D	_L	<u> </u>	Boring Terminated at	t Elevatio		25.0	1100		-	5	4	5	9			<u> </u>

NT	WILKES				GEOLO	DGIST L	ane, R.V	V.	_	
IN	WILKESBOR	ર૦							GROUN	ND WTR (ft)
	OFFSET	21 ft LT			ALIGN	MENT -	WALL2-		0 HR.	Dry
	NORTHING		1		EASTI	NG 1,34	6,944		24 HR.	N/A
		DRILL M		H.S.	. Augers			НАММ	ER TYPE	Automatic
	COMP. DA				-	CE WAT	ER DEP			
тос		SAMP.	/	L						
	75 100	NO.	моі	O G		SOIL	AND RO	CK DESC	CRIPTION	1
			/ 10101							
					4 400 0					
		+ +		800-	1,129.9 1,129.2	0.7' E	BITUMINO	OUS CO	NCRETE	0.0 0.7
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			D	L	_		TRACE	E GRAVE	EL	
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		-	101	-	<u>1,099.9</u>	Boring Terr	minated a	at Elevati	on 1,099.	30.0 9 ft IN
						ROADWA	Y EMBAN	NKMENT	: SANDY	SILT
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GEOTECHNICAL BORING REPORT BORE LOG

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	45446					P U-5312			WILKES				GEO	LOGIST La	ne, R.W.		┥┝───	S 4544	-				P U-5312		COUNTY
SITE	DESCR	PTION	US 4	21 FR	OM NO	C 16 TO U	S 421 BUS	INESS IN	WILKESBO	RO						GROUND WTR (ft)	SIT	E DESCF	RIPTION	US 4	21 FR		C 16 TO US	421 BUSI	NESS IN W
BORI	ng no.	RW2-	.3		S	TATION [·]	11+56		OFFSET	20 ft LT			ALIG	NMENT -W	/ALL2-	0 HR. 17.0	BO	ring no	. RW2	2-4		S	TATION 12	+07	(
COLI	AR ELE	I . 1,1	129.8 f	t	т	OTAL DEP	TH 30.0 f	t	NORTHING	880,6	38		EAS	FING 1,347	,000	24 HR. FIAD	CO	LLAR EL	EV. 1,	,130.0 f	ť	т	OTAL DEPT	H 25.0 ft	: I
DRILL	RIG/HAM	MER EF	F./DATE	TRI	3016 M	OBILE B-57	95% 03/19/2	2018	DRILL METHOD H.S.			S. Augers		HAMM	IER TYPE Automatic	DRII	L RIG/HA	MMER EI	EFF./DATE TRI8016			MOBILE B-57 95% 03/19/2018			
DRIL	LER Es	step, J.	E.		S	TART DAT	E 02/23/1	18	COMP. DA	TE 02/2	23/18		SURFACE WATER DEPTH N/A				DRI	LLER E	Estep, J.	Е.		S	FART DATE	02/22/18	8 0
ELEV	DRIVE ELEV	· ·		w co	UNT		BLOWS	PER FOOT		SAMP.		11					ELE	-	DEPTH		W CO	UNT		BLOWS F	PER FOOT
(ft)	ELEV (ft)	(ft)	0.5ft	0.5ft	0.5ft	0	25	50	75 100	NO.	MO	O I G	ELEV. (ND ROCK DES	CRIPTION DEPTH (f	(ft)	ELEV (ft)	(ft)	0.5ft	0.5ft	0.5ft	0 2	5 5	50 7
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1130																	1130								
	1,128.8-	- - 1.0				<u></u>					-		1,129.8 1,128.9		TUMINOUS CO	0. DNCRETE0.		1,129.0	1.0			_			
	4 400 0		10	7	4	: •11 :					D		-		DWAY EMBAN			1 126 5	+ ;- 3.5	2	3	5	.•8 · ·	· · · ·	
1125	1,126.3	3.5	3	4	4						D		-		WITH TRACE		112	5	t	8	4	4			
	1,123.8-	- 6.0	3	4	5	.					D		-					1,124.0	6.0	2	4	3	<u> </u>		
	1,121.3	8.5				- 9 9 - 1							-					1,121.5	8.5				. .		
1120	-	-	3	4	4						D		-				1120) .	Ŧ	2	2	3	• 5		
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111-	1,116.3	13.5	5	3	4	: : : :							-						<u>;+ 13.5</u> +	3	2	4		· · · ·	
1115	-				-	 ₽7		<u> </u>					-				1115	2	‡				9 6		
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1110	1,111.3	18.5	2	2	2						D		-				1110	· ·	<u>;+ 18.5</u> +	3	2	3	↓ ●5		
	-	-				<u>[</u>							-] .	Ŧ				1		
	- 1,106.3	23.5											-					1,106.5	+ + 23.5				· · · · ·	· · · ·	
1105		-	2	1	1	• <u>2</u>					м		-				110		<u>†</u>	5	5	5	• 10		
	-	-											-						‡						
	1,101.3	28.5	4	25	8								1,101.3		E, SANDY CLAY	28.4			ŧ						
1100			4	25	0						M		1,099.8	∼	TRACE GRAV	'EL			ŧ						
	-	-											-			tion 1,099.8 ft IN -: SANDY CLAY			Ŧ						
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' WILKI	ES				GEOLOGIST Lane, R.W.							
VILKES	BOF	20				GROUN	ND WTR (ft)					
OFFSE	τ	19 ft LT			ALIGNMENT -WALL2-	0 HR. Dry						
NORTH			36		EASTING 1,347,051	24 HR.	FIAD					
		DRILL M		н		ER TYPE	Automatic					
COMP	אם.	TE 02/2		11.			Automatic					
COMP.		SAMP.		L	SURFACE WATER DEFTH IN	•						
75 ²	100	NO.	моі	O G	SOIL AND ROCK DES	CRIPTION	I					
				0								
	_				1,130.0 1,129.5 0.5' BITUMINOUS CO	NCRETE	0.0					
	•		D		- ROADWAY EMBAN	KMENT						
			D		- GRAVEL							
			D		GRAY, SAND (A-1-b) WI BROWN, SILTY SAN		EL 6.0					
	:				- 1,121.5		8.5					
	:		м		TAN AND BROWN, S	ILT (A-4)						
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					Boring Terminated at Elevat ROADWAY EMBANKMEN	on 1,105.0 : SANDY	SILT					
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GEOTECHNICAL BORING REPORT BORE LOG

WBS 45446.1.1	TIP U-5312 COUNT	COUNTY WILKES GEOLOGIST Lane, R.W.					3S 45446.1.1			IP U-5312	COUN	TY WILKES		GEOLOGIST Lane, R.W.			
SITE DESCRIPTION US 421 FRO	M NC 16 TO US 421 BUSINESS IN	I WILKESBORO		ft) SITE DESCRIPTION US 421 FROM NC 16 TO US 421 BUSINESS IN						1 BUSINESS I	N WILKESBOR	20		GROUND WT			
BORING NO. RW3-1	STATION 10+24	OFFSET 11 ft RT ALIGNMENT -WALL3- 0 HR.			BOF	ring no.	RW3-2	2	S	TATION 11+2	.7	OFFSET	11 ft RT		ALIGNMENT -WALL3-	0 HR.	Dry
COLLAR ELEV. 1,133.6 ft	TOTAL DEPTH 3.0 ft	NORTHING 880,704	EASTING 1,347,321	24 HR. Dry	COL	LAR ELE	EV. 1,13	35.0 ft	Т	OTAL DEPTH	3.2 ft	NORTHING	880,701		EASTING 1,347,424	24 HR.	Dry
DRILL RIG/HAMMER EFF./DATE TRI80	16 MOBILE B-57 95% 03/19/2018	DRILL METHOD H.S	Augers HAMM	ER TYPE Automatic	DRIL	DRILL RIG/HAMMER EFF./DATE TRI80			TRI8016 M	10BILE B-57 95%	DRILL METHOD H.			S. Augers	HAMMER TYPE Au	tomatic	
DRILLER Estep, J. E.	START DATE 02/15/18	COMP. DATE 02/15/18	SURFACE WATER DEPTH N/A			DRILLER Estep, J. E.				START DATE 02/15/18			TE 02/15/ ⁻	18	SURFACE WATER DEPTH N/A		
ELEV (ft) DRIVE ELEV (ft) DEPTH (ft) BLOW COUNT 0.5ft 0.5ft 0.5ft 0.5ft	NT BLOWS PER FOC 0.5ft 0 25 50	T SAMP. ▼ L 0 75 100 NO. MOI G			ELEV (ft)	/ DRIVE ELEV (ft)	DEPTH	BLOW 0.5ft 0	COUNT .5ft 0.5ft	NT BLOWS PER FOO 0.5ft 0 25 50		OT SAMP. 75 100 NO. MOI		L O MOI G			
1135	NT 0 25 50 370.4	75 100 NO. MOI G	SOIL AND ROCK DES	DEPTH (ft) L 0.0 OCK D GRANITIC 3.0 ation 1,130.6 ft	ELEV (ft)	(ft)	1.0	0.511 0.	COUNT 5ft 0.5ft 3 7 3 7	0 25		75 100	NO.	MOI G		MBANKMENT IDY SILT (A-4) t Elevation 1,131.8 f 2HOSED GRANITIC	0.0 3.2 t
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GEOTECHNICAL BORING REPORT BORE LOG

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WBS	3 4	5446.1	.1				TI	P U-53	12			COL	JNTY	WI	KES					GEOLO	GIST	Lane, F	R.W.				WBS	45446	5.1.1				TIP	U-531	2		COUN	TY \
SITE	DE	SCRIP	TION	US	421 I	FRO	MNC	C 16 TO	US 4	421 E	BUSIN	NESS	S IN V	VILK	ESBOR	20								G	ROUN	D WTR (ft)	SITE	DESCR	RIPTIO	N US	421 F	ROM	NC	16 TO	US 42	21 BUS	INESS II	
BOR	RING	i NO.	RW3	-3			ST	TATION	12-	+22				OFF	SET :	5 ft RT				ALIGN	IENT -	WALL	3-		0 HR.	Dry	BOR	NG NO	. RW	3-4			STA	ATION	13+1	13		OF
COL	LAF	R ELE\	/. 1,	136.2	ft		тс	DTAL DE	EPTH	H 10	0.0 ft			NORTHING 880,705			EASTING 1,347,520 24 HR. DI			Dry	ry COLLAR ELEV. 1,137.9 ft						TOTAL DEPTH 10.0 ft				NC							
DRILI	L RIC	G/HAMM	IER EF	F./DAT	ΈT	RI80	16 MC	OBILE B-5	57 95	5% 03	8/19/20	18		DRILL METHOD H.S.			S. Augers HAMMER TYPE Automatic				Automatic	DRILL	. RIG/HAI	MMER E	FF./DA	TE TR	18016	MOE	3ILE B-5	7 95%	6 03/19/2	018						
DRIL	LE	R Est	ep, J.	E.			ST	ART DA	ATE	02/	15/18	3		COMP. DATE 02/15/18				SURFA		FER DE	EPTH	N/A			DRIL	LER E	step, .	J. E.			STA	ART DA	TE	02/15/1	8	CC		
ELEV		RIVE LEV D	EPTH	BLO	ow c	OUN	NT			BLO	WS P	PER F	001			SAMP			-	1	801		OCK DI				ELEV	DRIVE ELEV	DEPT	H BL	ow co	JUNT	·		E	3LOWS	PER FOO)T
(ft)		(ft)	(ft)	0.5ft	0.5	ift ().5ft	0	25	5	5	0	7	5	100	NO.	Имс	DI G		ELEV. (ft)	30iL			ESCK	FION	DEPTH (ft)	(ft)	(ft)	(ft)	0.5f	0.5ft	t 0.5	ōft	0	25		50	75
1140																											1140											
		Ŧ																	F	-									Ŧ									
		E																	F	1,136.2						0.0		1,136.9	1.0	3	2	3						
1135	1,1	135.2	1.0	2	3		4		•				· ·				м			.1,134.7	R		Y EMB/ /N, CLA			1.5	1135	1,134.4	- 3.5					4 5	· ·	· · · ·		·
	1,1	132.7	3.5				_		-	•••	•••									<u> </u>	BBO	R	RESIDUA D WHIT	AL .		/		1,131.9	t	1	6	8		• 1				
1130	1 1	130.2	60	8	9		4		13						::		M				BRO	S/	APROLI	TIC	- (/-+)		1130		ł	4	5	7		•• / • •• 1 2				
1100		Ŧ		4	4		7	. ●11	1								D										1100	1,129.4	+ 8.5 +	4	6	8		· · · · ·				
1	1,1	127.7+	8.5	12	27	,	44	· · ·		·	· :	· /	· · ·				D			1,126.2						10.0			<u>†</u>			-	+	¶	4	<u> </u>		- -
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TY WILKES	GEOLOGIST Lane, R.W.	
N WILKESBORO		GROUND WTR (ft)
OFFSET 26 ft RT	ALIGNMENT -WALL3-	0 HR. Dry
NORTHING 880,681	EASTING 1,347,610 2	AHR. Dry
DRILL METHOD H.	S. Augers HAMMER	TYPE Automatic
COMP. DATE 02/15/18	SURFACE WATER DEPTH N/A	
75 100 NO. MOI G	SOIL AND ROCK DESCR	RIPTION
	-	
· · · · ·	1,137.9 ROADWAY EMBANKN	
· · · · · · M L	BROWN AND RED, SIL	T (A-4) 3.5
: : : : : М	RESIDUAL	
· · · · · · M	BROWN AND WHITE, SI SAPROLITIC	LT (A-4)
	-	
<u> </u>	1,127.9 Boring Terminated at Elevatior	10.0 1 127 9 ft IN
	RESIDUAL: SANDY S	SILT
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GEOTECHNICAL BORING REPORT BORE LOG

GEOTECHNICAL BORING REPORT BORE LOG

BORING NO. RW3-7 STATION 16+50 OFFSET 14 ft RT ALIGNMENT -WALL3- 0 HR. Dry BORING NO. RW3-8 STATION 17+48 OFFSET 8 ft RT ALIGNMENT N/A 0 COLLAR ELEV. 1,142.5 ft TOTAL DEPTH 10.0 ft NORTHING 880,690 EASTING 1,347,948 24 HR. Dry BORING NO. RW3-8 STATION 17+48 OFFSET 8 ft RT ALIGNMENT N/A 0	WBS 45446.1.1	TIP U-5312 COUNTY WILKES GEOLOGIST Lane, R.W.				WBS	S 45446.1.1		Т	IP U-5312	COUN	TY WILKES		GEOL	OGIST Lane, R.W.		
COLLAR ELEV. 1,142.5 ft TOTAL DEPTH 10.0 ft NORTHING 880,690 EASTING 1,347,948 24 HR Dry DRILL RIGHAMMER EFF.DATE TRIBO16 MOBILE B-57 95% 03/192018 DRILL METHOD H.S. Augers HAMMER TYPE Automatic DRILL RIGHAMMER EFF.DATE TRIB016 MOBILE B-57 95% 03/192018 DRILL METHOD H.S. Augers HAMMER TYPE Automatic DRILL RIGHAMMER EFF.DATE TRIB016 MOBILE B-57 95% 03/192018 DRILL METHOD H.S. Augers HAMMER TYPE Automatic DRILL RIGHAMMER EFF.DATE TRIB016 MOBILE B-57 95% 03/192018 DRILL METHOD H.S. Augers HAMMER TYPE LEV DFIL START DATE 02/15/18 SURFACE WATER DEPTH N/A BILOW COUNT BLOW COUNT					GROUND WTR (ft)	SITE	E DESCRIPTIO	N US 42	1 FROM N	NC 16 TO US	6 421 BUSINESS I	WILKESBO	RO			GROUND W	VTR (ft)
DRILL RIGHAMMER EFF./DATE TRIB016 MOBILE B-57 95% 03/19/2018 DRILL METHOD H.S. Augers HAMMER TYPE Automatic DRILL RGHAMMER EFF./DATE TRIB016 MOBILE B-57 95% 03/19/2018 DRILL METHOD H.S. Augers HAMMER TYPE Automatic DRILL RGHAMMER EFF./DATE TRIB016 MOBILE B-57 95% 03/19/2018 DRILL METHOD H.S. Augers HAMMER TYPE DRILL RGHAMMER EFF./DATE TRIB016 MOBILE B-57 95% 03/19/2018 DRILL METHOD H.S. Augers HAMMER TYPE UPUE DEPTH BLOW COUNT BLOW SPER FOOT SAMP N.G. SOIL AND ROCK DESCRIPTION BELTY BLOW SPER FOOT SAMP N.G. SOIL AND ROCK DESCRIPTION 1145 -	BORING NO. RW3-7 STATION 16+50 OFFSET 14 ft RT			ALIGNMENT -WALL3- 0 HR. Dry			ring no . Rw	'3-8	s	STATION 1	7+48	OFFSET	8 ft RT	ALIGNMENT N/A		0 HR.	Dry
DRILLER START DATE 02/15/18 COMP. DATE 02/15/18 SURFACE WATER DEPTH N/A ELEV DRIVE DEPTH BLOW COUNT BLOW SPER FOOT SAMP 0 25 50 75 100 NO. NO. 0 27 50 75 100 NO. NO. 0 27 50 75 100 NO. NO. NO. NO. 0 27 0 NO. NO	COLLAR ELEV. 1,142.5 ft	COLLAR ELEV. 1,142.5 ft TOTAL DEPTH 10.0 ft NORTHING 880,690			24 HR. Dry	COLLAR ELEV. 1,143.9 ft		Т	TOTAL DEPTH 10.0 ft		NORTHING 880,696		EAST	ING 1,348,056	24 HR.	Dry	
ELEV DRVE ELEV DEPTH (ft) BLOW COUNT BLOWS PER FOOT (ft) SAMP (ft) NO. NO. NO. SOIL AND ROCK DESCRIPTION OF ELEV. (ft) BLOW COUNT BLOWS PER FOOT (ft) BLOWS PER FOOT (ft) SAMP. (ft) L (ft) Soil AND ROCK DESCRIPTION (ft) BLOW COUNT BLOWS PER FOOT (ft) SAMP. (ft) L (ft) Cold AND ROCK DESCRIPTION (ft) 1145	DRILL RIG/HAMMER EFF./DATE TRI801	6 MOBILE B-57 95% 03/19/2018	DRILL METHOD H.	S. Augers HAMN	IER TYPE Automatic	DRIL	l Rig/Hammer I	EFF./DATE	TRI8016 N	MOBILE B-57 9	95% 03/19/2018		DRILL METHO	OD H.S. Augers	ŀ	IAMMER TYPE Auto	omatic
(if)				SURFACE WATER DEPTH N	/A	DRI	•			START DATE	0 2/15/18	COMP. DA	TE 02/15/18	3 SURF	ACE WATER DEPTH	I N/A	
Image: Normal state in the imag	ELEV (ft)DRIVE ELEV (ft)DEPTHBLOW COUNT 0.5ft0.5ft0.5ft0.5ft0.5ft	IT BLOWS PER FOO .5ft 0 25 50		SOIL AND ROCK DESCRIPTION ELEV. (ft) DEPTH (ft)			/ DRIVE ELEV (ft) DEPT (ft)	-H BLOW	V COUNT 0.5ft 0.5ft	BLOWS PER FOOT ft 0.5ft 0 25 50		75 400			SOIL AND ROCK	DESCRIPTION	
	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$		75 100 NO. MOI G	ELEV. (ft) - 1,142.5 - ROADWAY EMBAN - ORANGE, SANDY S 1,139.0 - RESIDUAL GRAY TAN AND ORANGI (A-2-4) SAPROI	0.0 IKMENT SILT (A-4) E, SILTY SAND LITIC 10.0	(ft) 1145 1140	(ft) (1) 1,142.9 1.0 1,140.4 3.5 1,137.9 6.0	0.5tt 0	0.5tt 0.5tt 2 3 5 5 4 4			75 100		DI G 1,143.9 1,141.9 1,141.9 1,133.9	0.2' TO ROADWAY EN ORANGE, CLAY (A ASPAHLT RESIL ORANGE AND B SAPRC Boring Terminated at B	PSOIL IBANKMENT -6) WITH TRACE PIECES DUAL ACK, SILT (A-4) DLITIC Elevation 1,133.9 ft IN	0.0 2.0 10.0 V