3 S X REFERENCE

**CONTENTS** 

**DESCRIPTION** TITLE SHEET

LEGEND (SOIL & ROCK)

SITE PLANS

BORE LOGS

SHEET NO.

3-9

5019

### STATE OF NORTH CAROLINA

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

## **STRUCTURE** SUBSURFACE INVESTIGATION

COUNTY NORTHAMPTON

PROJECT DESCRIPTION

-L- (NC 46) FROM NC 48 IN GASTON TO

VIRGINIA STATE LINE

SITE DESCRIPTION TEMPORARY SHORING

INVESTIGATION FOR CULVERTS AT -L- STA.

*38* + *74*, *280* + *87*, *324* + *26*, *451* + *96*, *499* + *65*, *520* + *60*, *529* + *00* 

**REVISED** 

STATE PROJECT REFERENCE NO. R = 573916

#### **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 1991 707-6550. 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 SORINGS OR BETWEEN SAMPLED STRATA WITHIN THE BOREHOLE. THE LABORATORY SAMPLE DATA AND THE IN SITU INN-PLACE) TEST DATA CAN BE RELIED ON ONLY TO THE DEGREE OF RELIABILITY INHERENT IN THE STANDARD TEST METHOD. THE OBSERVED WATER LEVELS OR SOIL MOISTURE CONDITIONS INDICATED IN THE SUBSURFACE INVESTIGATIONS ARE AS RECORDED AT THE TIME OF THE INVESTIGATION. THESE WATER LEVELS OR SOIL MOISTURE CONDITIONS MAY VARY CONSIDERABLY WITH TIME ACCORDING TO CLIMATIC CONDITIONS INCLUDING TEMPERATURES, PRECIPITATION AND WIND, AS WELL AS OTHER NON-CLIMATIC FACTORS,

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

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

S.N. ZIMARINO T.W. MILLER

PERSONNEL

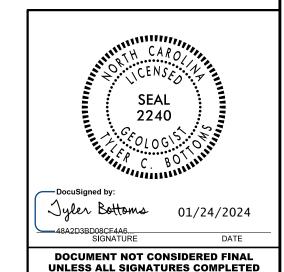
J.M. EDMONDSON C.M. WALKER

INVESTIGATED BY \_\_T.C. BOTTOMS

DRAWN BY \_ T.W. MILLER

CHECKED BY \_\_D.N. ARGENBRIGHT

DATE JANUARY 2024



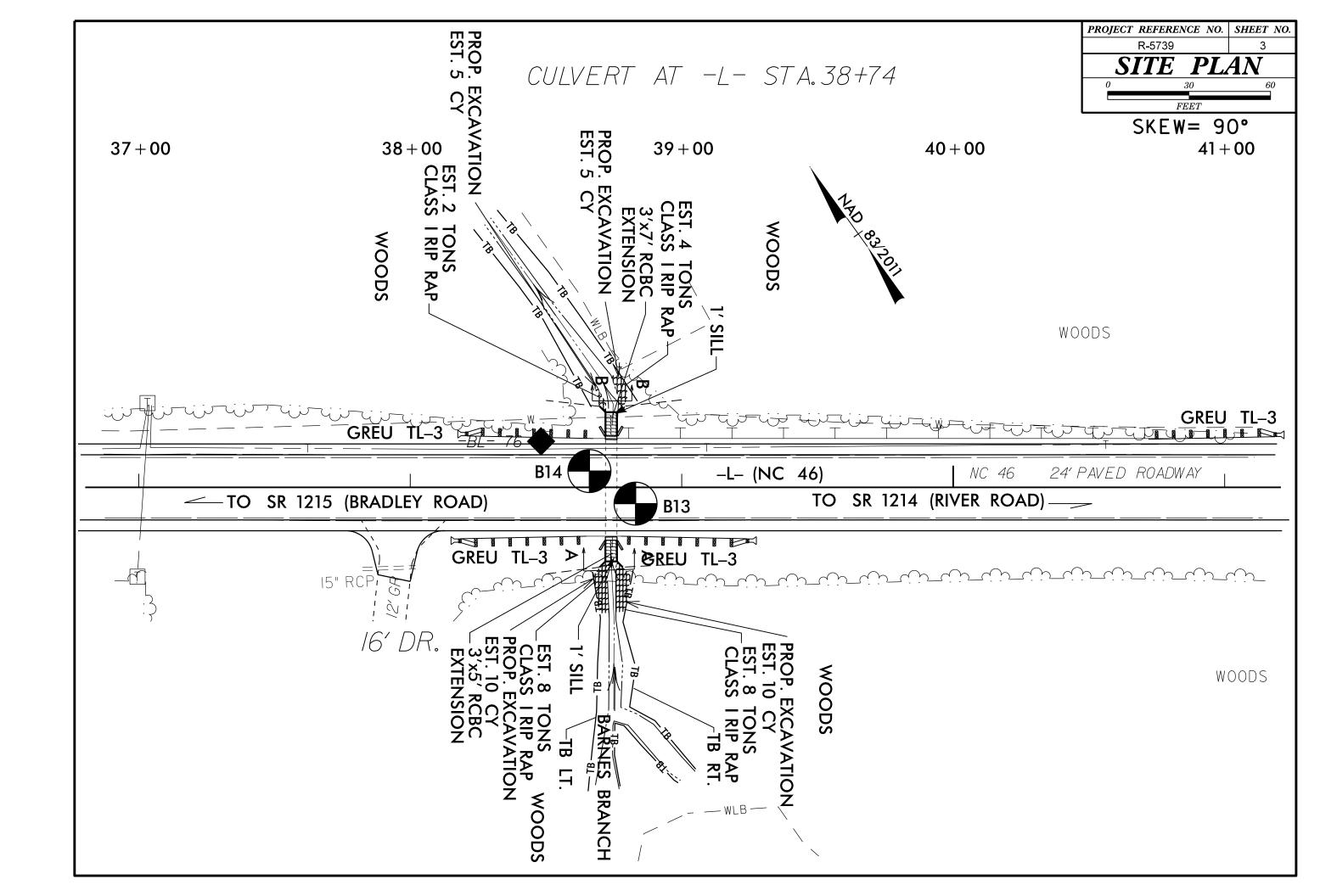
PROJECT REPERENCE NO. SHEET NO. 2

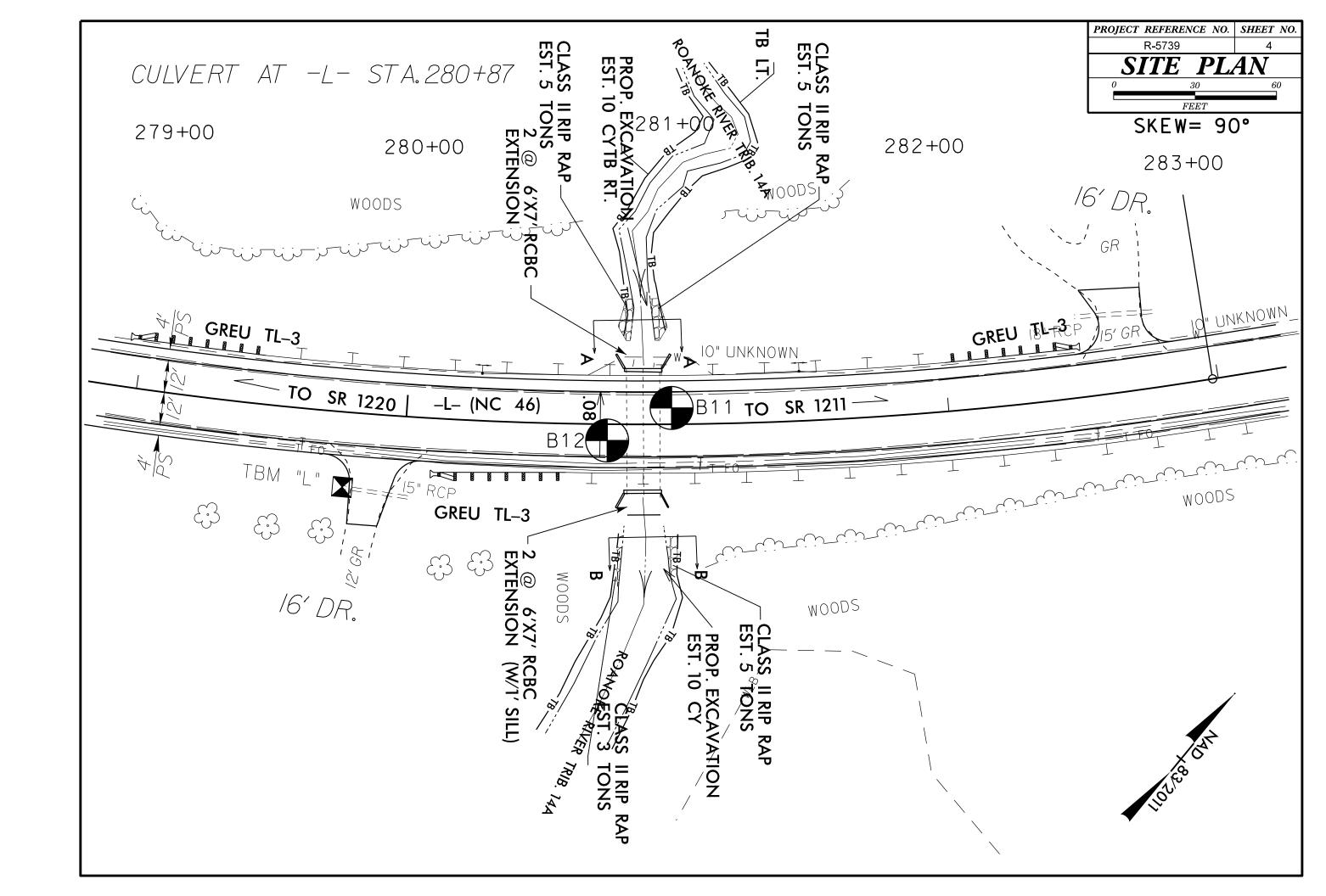
# NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS GEOTECHNICAL ENGINEERING UNIT

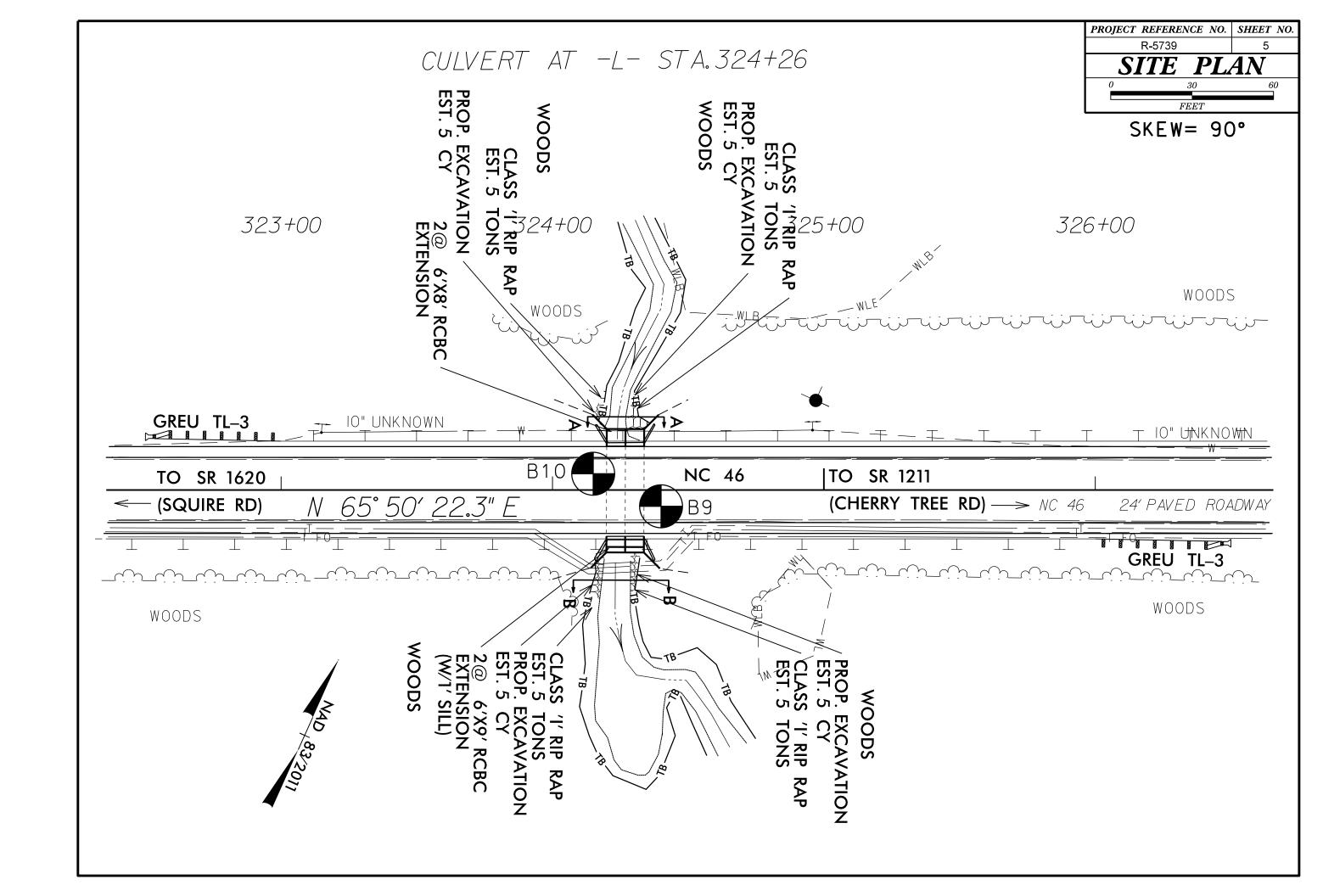
# SUBSURFACE INVESTIGATION

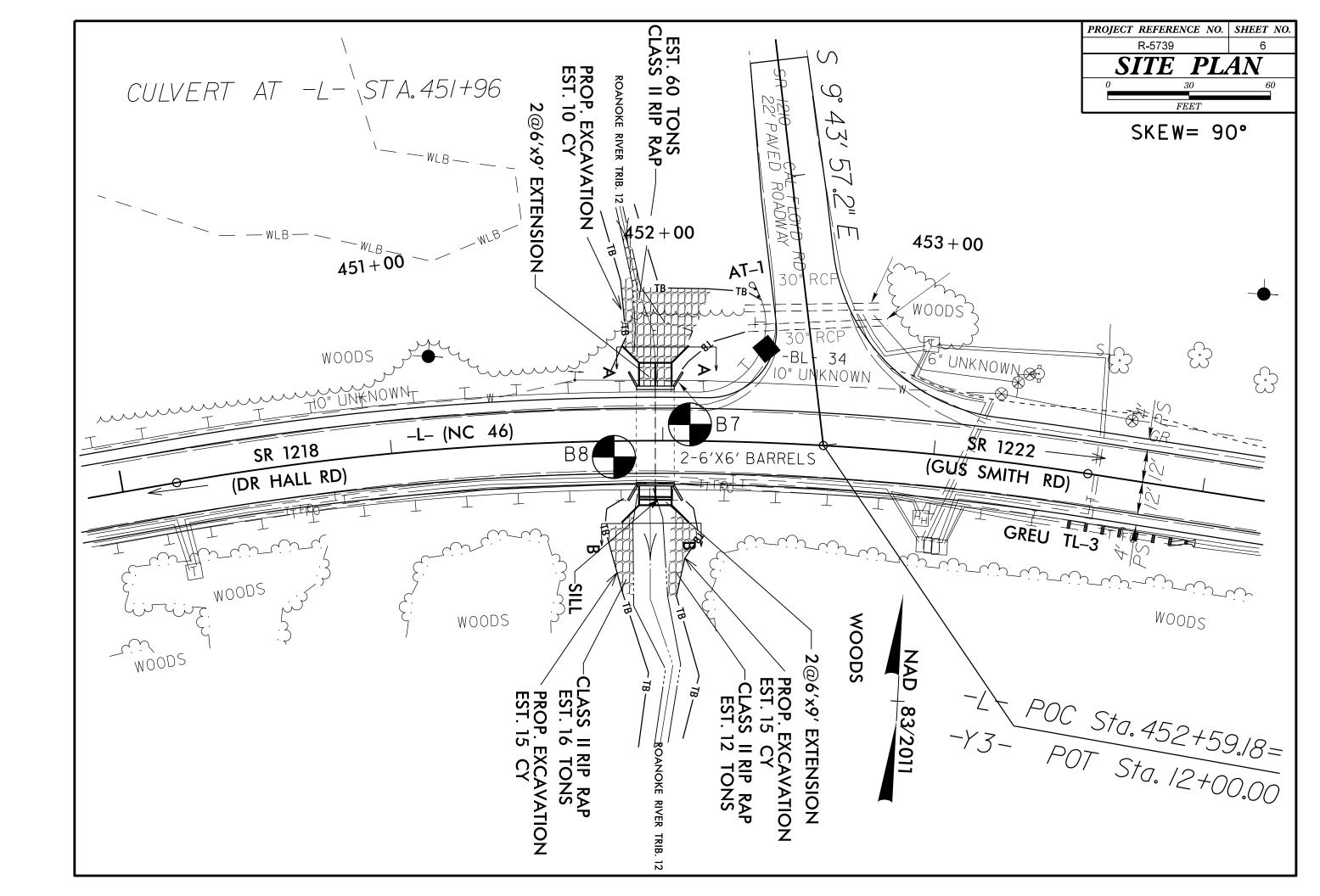
SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

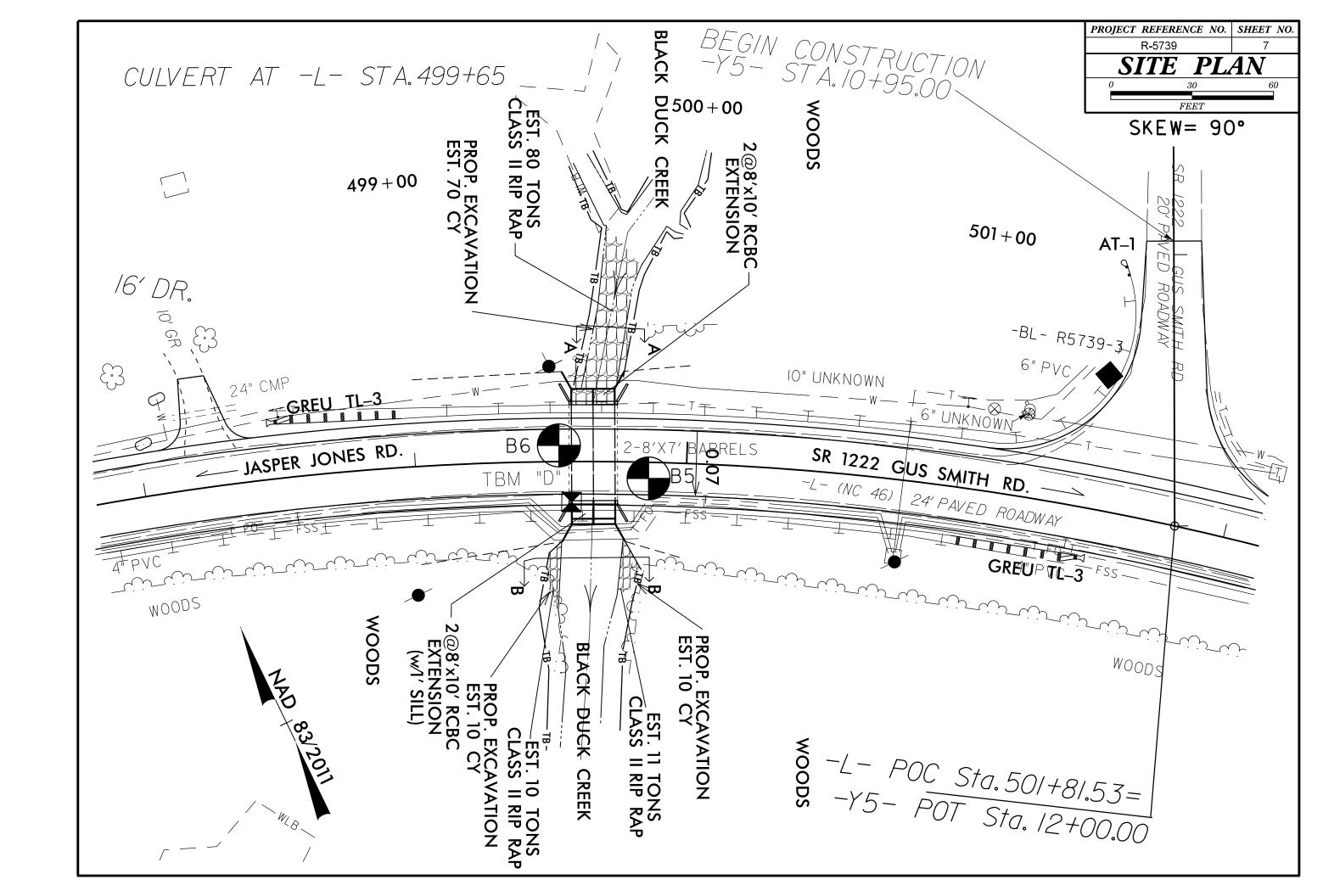
SOIL DESCRIPTION	GRADATION	ROCK DESCRIPTION	TERMS AND DEFINITIONS		
SOIL IS CONSIDERED UNCONSOLIDATED, SEMI-CONSOLIDATED, OR WEATHERED EARTH MATERIALS THAT CAN BE PENETRATED WITH A CONTINUOUS FLIGHT POWER AUGER AND YIELD LESS THAN 100 BLOWS PER FOOT ACCORDING TO THE STANDARD PENETRATION TEST (AASHIOT Z 206, ASTM D1586, SOIL (LASSIFICATION	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.	HARD ROCK IS NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT REFUSAL IF TESTED, AN INFERRED ROCK LINE INDICATES THE LEVEL AT WHICH NON-COASTAL PLAIN MATERIAL WOULD YIELD SPT REFUSAL. SPT REFUSAL IS PENETRATION BY A SPLIT SPOON SAMPLER EQUAL TO OR LESS THAN 0.1 FOOT PER 60	ALLUVIUM (ALLUV.) - SOILS THAT HAVE BEEN TRANSPORTED BY WATER.  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 REPRESENTED BY A ZONE OF WEATHERED ROCK.	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, ANDULARITY, STRUCTURE, PLASTICITY, ETC. FOR EXAMPLE,  MEDICAL COLOR CITY OF MORE WITH THE PROPERTY OF THE PROPERT	ANGULARITY OF GRAINS  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,SILTY CLAY,WOIST WITH INTERBEDDED FINE SAND LAYERS,HIGHLY PLASTIC,A-7-6 SOIL LEGEND AND AASHTO CLASSIFICATION	ANGULAR, SUBANGULAR, SUBROUNDED, OR ROUNDED.	WEATHERED NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT N VALUES > 100 BLOWS PER FOOT IF TESTED.	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		
GENERAL GRANULAR MATERIALS SILT-CLAY MATERIALS ORGANIC MATERIALS CLASS. (≤35% PASSING *200) (>35% PASSING *200) ORGANIC MATERIALS	MINERALOGICAL COMPOSITION  MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC.	CRYSTALLINE FINE TO COARSE GRAIN IGNEOUS AND METAMORPHIC ROCK THAT WOULD YIELD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES GRANITE,	WHICH IT IS ENCOUNTERED, BUT WHICH DOES NOT NECESSARILY RISE TO OR ABOVE THE GROUND 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.	GNEISS, GABBRO, SCHIST, ETC.	CALCAREOUS (CALC.) - SOILS THAT CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE.		
CLASS. A-1-6 A-1-6 A-2-4 A-2-5 A-2-6 A-2-7 A-7-5 A-3 A-6, A-7	COMPRESSIBILITY  SLIGHTLY COMPRESSIBLE LL < 31	NON-CRYSTALLINE ROCK (NCR)  ROCK TYPE INCLUDES PHYLLITE, SLATE, SANDSTONE, ETC.	COLLUVIUM - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM OF SLOPE.		
SYMBOL 000000000000000000000000000000000000	MODERATELY COMPRESSIBLE LL = 31 - 50 HIGHLY COMPRESSIBLE LL > 50	COASTAL PLAIN COASTAL PLAIN SEDIMENTS CEMENTED INTO ROCK, BUT MAY NOT YIELD SEDIMENTARY ROCK SPT REFUSAL. ROCK TYPE INCLUDES LIMESTONE, SANDSTONE, 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.		
**18 58 MX   GRANULAR   SILT- GRANULAR   CLAY   MUCK, CLAY   SOILS   SILS   PEAT	PERCENTAGE OF MATERIAL  GRANULAR SILT - CLAY	CP) SHELL BEDS, ETC. WEATHERING	DIKE - A TABULAR BODY OF IGNEOUS ROCK THAT CUTS ACROSS THE STRUCTURE OF ADJACENT ROCKS OR CUTS MASSIVE ROCK.		
1-80 JS MA JS MA JS MX JS MN J	ORGANIC MATERIAL SOILS SOILS OTHER MATERIAL  TRACE OF ORGANIC MATTER 2 - 3% 3 - 5% TRACE 1 - 10%	FRESH ROCK FRESH, CRYSTALS BRIGHT, FEW JOINTS MAY SHOW SLIGHT STAINING, ROCK RINGS UNDER HAMMER IF CRYSTALLINE.	DIP - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE HORIZONTAL.		
PASSING *40	LITTLE ORGANIC MATTER	VERY SLIGHT ROCK GENERALLY FRESH, JOINTS STAINED, SOME JOINTS MAY SHOW THIN CLAY COATINGS IF OPEN, (V SLI.) CRYSTALLS ON A BROKEN SPECIMEN FACE SHINE BRIGHTLY, ROCK RINGS UNDER HAMMER BLOWS IF OF A CRYSTALLINE NATURE.	DIP DIRECTION (DIP AZIMUTH) - THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF THE LINE OF DIP, MEASURED CLOCKWISE FROM NORTH.		
GROUP INDEX 0 0 0 4 MX 8 MX 12 MX 16 MX NO MX MULENATE ORGANIC SOILS	GROUND WATER	SLIGHT ROCK GENERALLY FRESH, JOINTS STAINED AND DISCOLORATION EXTENDS INTO ROCK UP TO  (SLI,) 1 INCH, DPEN JOINTS MAY CONTAIN CLAY, IN GRANITOID ROCKS SOME OCCASIONAL FELDSPAR	FAULT - A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE.		
USUAL TYPES STONE FRAGS. OF MAJOR GRAVEL, AND SAND GRAVEL AND SAND GRAVEL AND SAND SOILS  OF MAJOR GRAVEL, AND SAND GRAVEL AND SAND SOILS  OF MAJOR GRAVEL AND SAND SOILS		CRYSTALS ARE DULL AND DISCOLORED. CRYSTALLINE ROCKS RING UNDER HAMMER BLOWS.	FISSILE - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES.		
MATERIALS SANU  CEN RATING  FAIR TO		MODERATE SIGNIFICANT PORTIONS OF ROCK SHOW DISCOLORATION AND WEATHERING EFFECTS. IN (MOD.) GRANITOID ROCKS, MOST FELDSPARS ARE DULL AND DISCOLORED, SOME SHOW CLAY, ROCK HAS	FLOAT - ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLODGED FROM PARENT MATERIAL.		
AS SUBGRADE EXCELLENT TO GOOD FAIR TO POUR POUR UNSUITABLE	SPRING OR SEEP	DULL SOUND UNDER HAMMER BLOWS AND SHOWS SIGNIFICANT LOSS OF STRENGTH AS COMPARED WITH FRESH ROCK.	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  CONSISTENCY OR DENSENESS	MISCELLANEOUS SYMBOLS	MODERATELY ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. IN GRANITOID ROCKS, ALL FELDSPARS DULL SEVERE AND DISCOLORED AND A MAJORITY SHOW KAOLINIZATION. ROCK SHOWS SEVERE LOSS OF STRENGTH	FORMATION (FM.) - A MAPPABLE GEOLOGIC UNIT THAT CAN BE RECOGNIZED AND TRACED IN THE FIELD.		
COMPACTNESS OF RANGE OF STANDARD RANGE OF UNCONFINED	ETT 25/425	(MOD.SEV.) AND CAN BE EXCAVATED WITH A GEOLOGIST'S PICK. ROCK GIVES 'CLUNK' SOUND WHEN STRUCK.	JOINT - FRACTURE IN ROCK ALONG WHICH NO APPRECIABLE MOVEMENT HAS OCCURRED.		
PRIMARY SOIL TYPE CONSISTENCY PENETRATION RESISTENCE COMPRESSIVE STRENGTH (TONS/FT <sup>2</sup> )	ROADWAY EMBANKMENT (RE)  OF ROCK STRUCTURES  ROADWAY EMBANKMENT (RE)  OF ROCK STRUCTURES	IF TESTED, WOULD YIELD SPT REFUSAL  SEVERE ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED, ROCK FABRIC CLEAR AND EVIDENT BUT	LEDGE - A SHELF-LIKE RIDGE OR PROJECTION OF ROCK WHOSE THICKNESS IS SMALL COMPARED TO ITS LATERAL EXTENT.		
GENERALLY VERY LOOSE < 4  CONTROL CONT	SOIL SYMBOL  SOIL SYMBOL  SPI OMT TEST BORING  INSTALLATION  STATEMENT TEST BORING  SUPERINTERS OF THE STATEMENT OF THE STATE	(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 DENSE 10 TO 30 N/A MATERIAL DENSE 30 TO 50	ARTIFICIAL FILL (AF) OTHER AND AND AND CONE PENETROMETER	IF TESTED, WOULD YIELD SPT N VALUES > 100 BPF  VERY ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED, ROCK FABRIC ELEMENTS ARE DISCERNIBLE	MOTTLED (MOT.) - IRREGULARLY MARKED WITH SPOTS OF DIFFERENT COLORS. MOTTLING IN SOILS USUALLY INDICATES POOR AERATION AND LACK OF GOOD DRAINAGE.		
(NON-COHESIVE)	THAN ROADWAY EMBANKMENT AUGEN BURING TEST  — INFERRED SOIL BOUNDARY — CORE BORING SOUNDING ROD	SEVERE BUT MASS IS EFFECTIVELY REDUCED TO SOIL STATUS, WITH ONLY FRAGMENTS OF STRONG ROCK (V SEV.) REMAINING. SAPROLITE IS AN EXAMPLE OF ROCK WEATHERED TO A DEGREE THAT ONLY MINOR	PERCHED WATER - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE OF AN INTERVENING IMPERVIOUS STRATUM.		
GENERALLY SOFT 2 TO 4 0.25 TO 0.5 SILT-CLAY MEDIUM STIFF 4 TO 8 0.5 TO 1.0	INFERRED ROCK LINE MONITORING WELL TEST BORING	VESTIGES OF ORIGINAL ROCK FABRIC REMAIN. <u>IF TESTED, WOULD YIELD SPT N VALUES &lt; 100 BPF</u> COMPLETE ROCK REDUCED TO SOIL. ROCK FABRIC NOT DISCERNIBLE, OR DISCERNIBLE ONLY IN SMALL AND	RESIDUAL (RES.) SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK.		
MATERIAL STIFF 8 TO 15 1 TO 2 (COHESIVE) VERY STIFF 15 TO 30 2 TO 4	WITH CORE  TTT	SCATTERED CONCENTRATIONS, QUARTZ MAY BE PRESENT AS DIKES OR STRINGERS, SAPROLITE IS ALSO AN EXAMPLE.	ROCK QUALITY DESIGNATION (RQD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE.		
HARD 30 > 4  TEXTURE OR GRAIN SIZE	RECOMMENDATION SYMBOLS	ROCK HARDNESS	SAPROLITE (SAP.) - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT		
U.S. STD. SIEVE SIZE 4 10 40 60 200 270	UNDERCHT UNCLASSIFIED EXCAVATION - TOTAL UNCLASSIFIED EXCAVATION -	VERY HARD CANNOT BE SCRATCHED BY KNIFE OR SHARP PICK. BREAKING OF HAND SPECIMENS REQUIRES SEVERAL HARD BLOWS OF THE GEOLOGIST'S PICK.	ROCK.  SILL - AN INTRUSIVE BODY OF IGNEOUS ROCK OF APPROXIMATELY UNIFORM THICKNESS AND		
OPENING (MM)         4.76         2.00         0.42         0.25         0.075         0.053           BOULDER         COBBLE         GRAVEL         COARSE         FINE         SILT         CLAY	UNCLASSIFIED EXCAVATION UNDERCUT  UN	HARD CAN BE SCRATCHED BY KNIFE OR PICK ONLY WITH DIFFICULTY, HARD HAMMER BLOWS REQUIRED TO DETACH HAND SPECIMEN.	RELATIVELY THIN COMPARED WITH ITS LATERAL EXTENT, THAT HAS BEEN EMPLACED PARALLEL TO THE BEDDING OR SCHISTOSITY OF THE INTRUDED ROCKS.		
(BLDR.) (COB.) (GR.) (CSE. SD.) (F SD.) (SL.) (CL.)	ABBREVIATIONS	MODERATELY CAN BE SCRATCHED BY KNIFE OR PICK. GOUGES OR GROOVES TO 0.25 INCHES DEEP CAN BE EXCAVATED BY HARD BLOW OF A GEOLOGIST'S PICK. HAND SPECIMENS CAN BE DETACHED	SLICKENSIDE - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT OR SLIP PLANE.		
GRAIN MM 305 75 2.0 0.25 0.05 0.005 SIZE IN. 12 3	AR - AUGER REFUSAL MED MEDIUM VST - VANE SHEAR TEST BT - BORING TERMINATED MICA MICACEOUS WEA WEATHERED	BY MODERATE BLOWS.  MEDIUM CAN BE GROOVED OR GOUGED 0.05 INCHES DEEP BY FIRM PRESSURE OF KNIFE OR PICK POINT.	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		
SOIL MOISTURE - CORRELATION OF TERMS	CL CLAY MOD MODERATELY 7 - UNIT WEIGHT CPT - CONE PENETRATION TEST NP - NON PLASTIC 7, - DRY UNIT WEIGHT	HARD CAN BE EXCAVATED IN SMALL CHIPS TO PEICES I INCH MAXIMUM SIZE BY HARD BLOWS OF THE POINT OF A GEOLOGIST'S PICK.	WITH A 2 INCH OUTSIDE DIAMETER SPLIT SPOON SAMPLER, SPT REFUSAL IS PENETRATION EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS.		
SOIL MOISTURE SCALE FIELD MOISTURE GUIDE FOR FIELD MOISTURE DESCRIPTION	CSE COARSE ORG ORGANIC DMT - DILATOMETER TEST PMT - PRESSUREMETER TEST SAMPLE ABBREVIATIONS	SOFT CAN BE GROVED OR GOUGED READILY BY KNIFE OR PICK. CAN BE EXCAVATED IN FRAGMENTS FROM CHIPS TO SEVERAL INCHES IN SIZE BY MODERATE BLOWS OF A PICK POINT. SMALL, THIN	STRATA CORE RECOVERY (SREC.) - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE.		
- 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, SAND, SANDY   SS - SPLIT SPOON     F - FINE   SL SILT, SILTY   ST - SHELBY TUBE	PIECES CAN BE BROKEN BY FINGER PRESSURE.  VERY CAN BE CARVED WITH KNIFE, CAN BE EXCAVATED READILY WITH POINT OF PICK, 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		
LL _ LIOUID LIMIT	FOSS FOSSILIFEROUS SLI SLIGHTLY RS - ROCK	SOFT OR MORE IN THICKNESS CAN BE BROKEN BY FINGER PRESSURE. CAN BE SCRATCHED READILY BY FINGERNAIL.	THE TOTAL LENGTH OF STRATA AND EXPRESSED AS A PERCENTAGE.  TOPSOIL (TS.) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.		
RANGE / - WET - (W) SEMISULID; REGUIRES DRYING TO	FRAC FRACTURED, FRACTURES TCR - TRICONE REFUSAL RT - RECOMPACTED TRIAXIAL FRAGS FRAGMENTS W - MOISTURE CONTENT CBR - CALIFORNIA BEARING	FRACTURE SPACING BEDDING	BENCH MARK: N/A		
(PI) PL PLASTIC LIMIT ATTAIN OPTIMUM MOISTURE	HI HIGHLY V - VERY RATIO  EQUIPMENT USED ON SUBJECT PROJECT	IERM         SPACING         TERM         THICKNESS           VERY WIDE         MORE THAN 10 FEET         VERY THICKLY BEDDED         4 FEET	ELEVATION: FEET		
OM OPTIMUM MOISTURE - MOIST - (M) SOLID; AT OR NEAR OPTIMUM MOISTURE SL SHRINKAGE LIMIT	DRILL UNITS: ADVANCING TOOLS: HAMMER TYPE:	WIDE 3 TO 10 FEET THICKLY BEDDED 1.5 - 4 FEET MODERATELY CLOSE 1 TO 3 FEET THINLY BEDDED 0.16 - 1.5 FEET			
- DBY - (D) REQUIRES ADDITIONAL WATER TO	CME-45C CLAY BITS X AUTOMATIC MANUAL	CLOSE 0.16 TO 1 FOOT VERY THINLY BEDDED 0.03 - 0.16 FEET VERY CLOSE LESS THAN 0.16 FEET THICKLY LAMINATED 0.008 - 0.03 FEET	NOTES:  ELEVATIONS TAKEN FROM R5739_Is_tin.tin FILE		
ATTAIN OPTIMUM MUISTURE	X CME-55  S' HOLLOW AUGERS  CORE SIZE:	THINLY LAMINATED < 0.008 FEET  INDURATION			
PLASTICITY		INDUKATION  FOR SEDIMENTARY ROCKS, INDURATION IS THE HARDENING OF MATERIAL BY CEMENTING, HEAT, PRESSURE, ETC.			
PLASTICITY INDEX (PI)  NON PLASTIC 0-5 VERY LOW	X TUNGCARBIDE INSERTS	FRIABLE RUBBING WITH FINGER FREES NUMEROUS GRAINS:			
SLIGHTLY PLASTIC 6-15 SLIGHT MODERATELY PLASTIC 16-25 MEDIUM	VANE SHEAR TEST CASING W/ ADVANCER HAND TOOLS:  POST HOLE DIGGER	GENILE BLOW BY HAMMER DISINIEGHATES SAMPLE.			
HIGHLY PLASTIC 26 OR MORE HIGH	PORTABLE HOIST TRICONESTEEL TEETH HAND AUGER	BREAKS EASILY WHEN HIT WITH HAMMER.			
COLOR	TRICONE TUNG,-CARB, SOUNDING ROD	INDURATED GRAINS ARE DIFFICULT TO SEPARATE WITH STEEL PROBE; 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.	CORE BIT VANE SHEAR TEST	EXTREMELY INDURATED SHARP HAMMER BLOWS REQUIRED TO BREAK SAMPLE:	0.15 0.5.		
		SAMPLE BREAKS ACROSS GRAINS.	DATE: 8-15-1-		

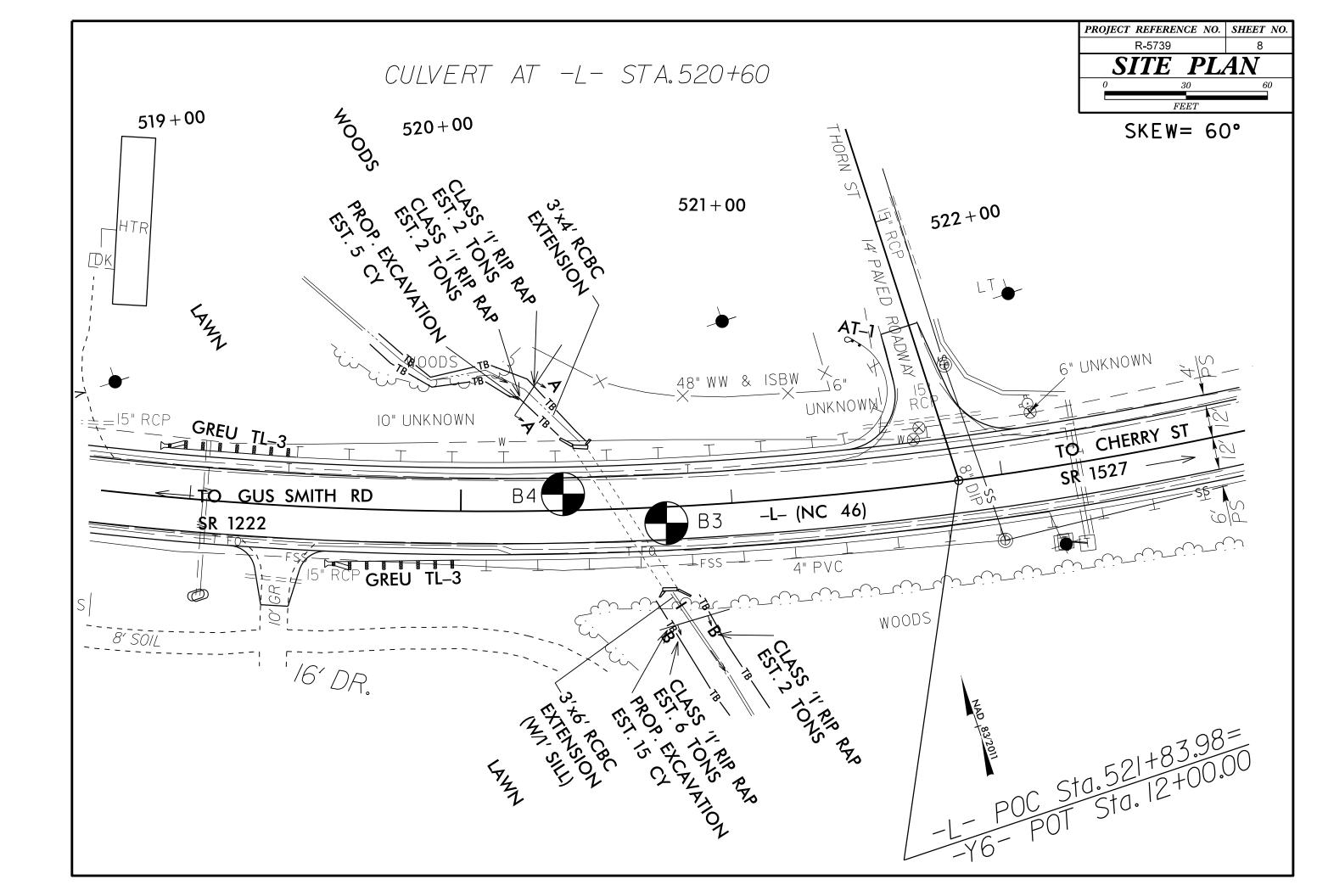


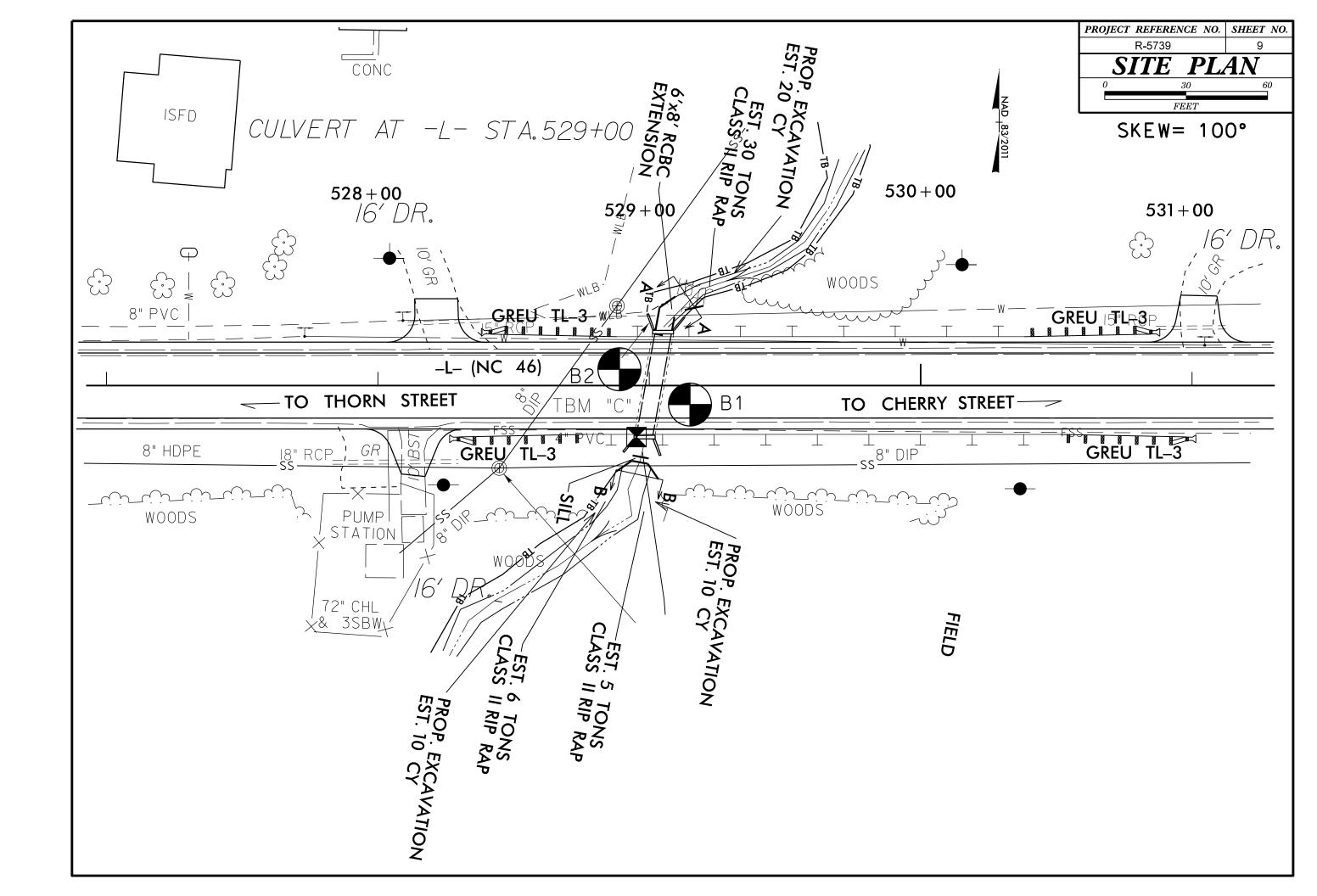


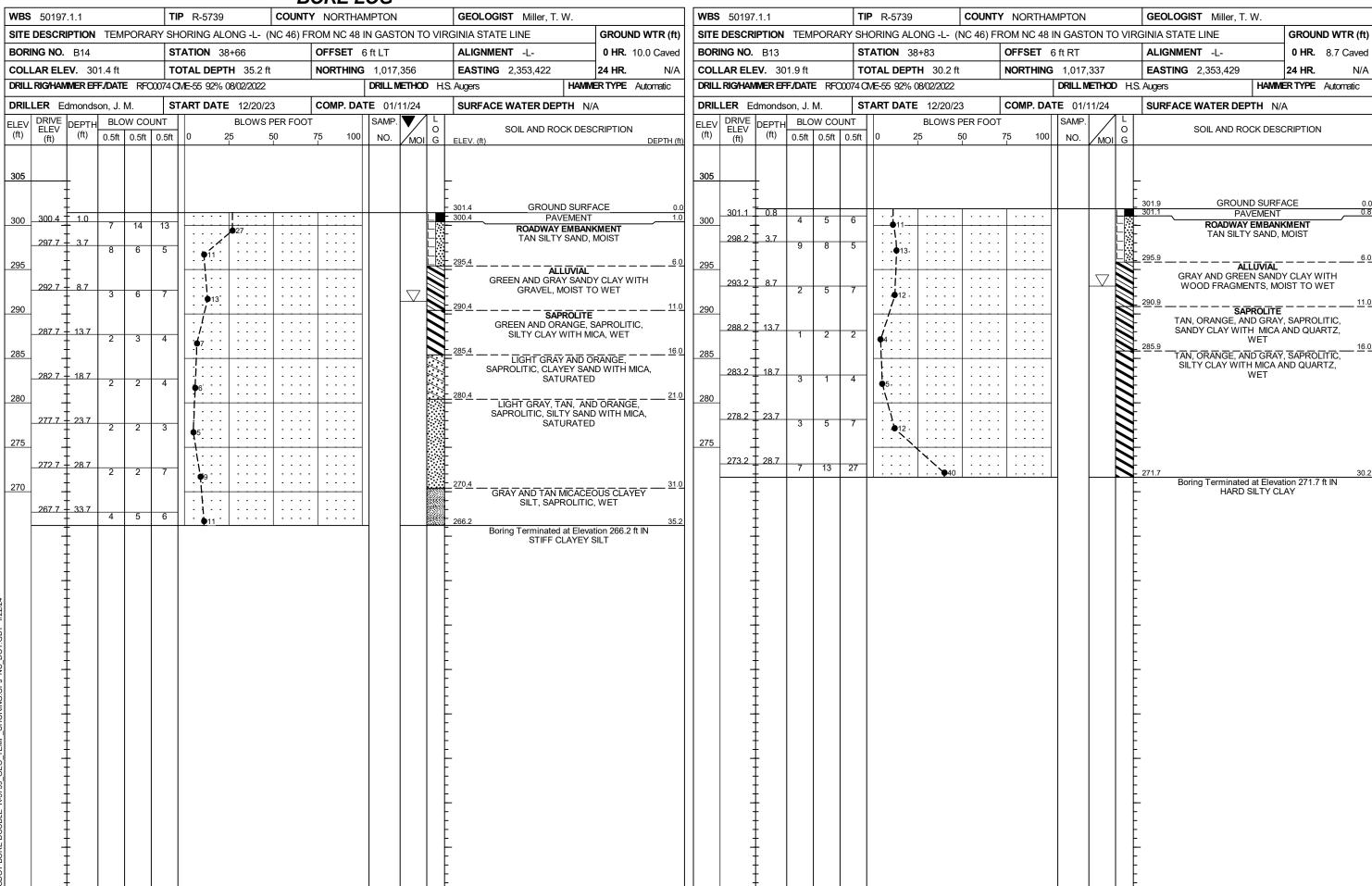












BORE LOG				
WBS 50197.1.1 TIP R-5739 COUNTY NORTHAMPTON	GEOLOGIST Miller, T. W.	<b>WBS</b> 50197.1.1 <b>TIP</b> R	R-5739 COUNTY NORTHAMPTON	GEOLOGIST Miller, T. W.
SITE DESCRIPTION TEMPORARY SHORING ALONG -L- (NC 46) FROM NC 48 IN GASTON TO VIRO	GINIA STATE LINE GROUND WTR (ft)	SITE DESCRIPTION TEMPORARY SHORII	ING ALONG -L- (NC 46) FROM NC 48 IN GASTON TO	VIRGINIA STATE LINE GROUND WTR (ft)
BORING NO. B12 STATION 280+74 OFFSET 6 ft RT	ALIGNMENT -L- 0 HR. 15.5 Caved	BORING NO. B11 STATIO	ION 280+98	ALIGNMENT -L- 0 HR. 15.9 Caved
COLLAR ELEV.         213.9 ft         TOTAL DEPTH         40.2 ft         NORTHING         1,004,744	<b>EASTING</b> 2,371,972 <b>24 HR.</b> N/A		<b>L DEPTH</b> 24.9 ft <b>NORTHING</b> 1,004,768	<b>EASTING</b> 2,371,983 <b>24 HR.</b> N/A
DRILL RIG/HAMMER EFF/DATE RF00074 CME-55 92% 08/02/2022 DRILL METHOD H.S	Augers HAMMER TYPE Automatic	DRILL RIG/HAMMER EFF/DATE RF00074 CME-5	55 92% 08/02/2022 <b>DRILL METHOD</b>	H.S. Augers HAMMER TYPE Automatic
DRILLEREdmondson, J. M.START DATE12/20/23COMP. DATE01/11/24	SURFACE WATER DEPTH N/A	•	T DATE 12/20/23 COMP. DATE 12/20/23	SURFACE WATER DEPTH N/A
ELEV DRIVE ELEV DEPTH BLOW COUNT BLOWS PER FOOT SAMP.	SOIL AND ROCK DESCRIPTION	ELEV DRIVE DEPTH BLOW COUNT ELEV (ft)	BLOWS PER FOOT SAMP.	L SOIL AND ROCK DESCRIPTION
(ft) (ft) (ft) 0.5ft 0.5ft 0.5ft 0 25 50 75 100 NO. MOI G	ELEV. (ft) DEPTH (ft)	(ft) (ft) (ft) 0.5ft 0.5ft 0.5ft 0	25 50 75 100 NO. MOI	G
215	213.9 GROUND SURFACE 0.0	215		-
213.1 0.8 8 8 10	213.1 PAVEMENT 0.8	212.2 0.8		213.0 GROUND SURFACE 0.0 212.2 PAVEMENT 0.8
210 210.2 3.7	ROADWAY EMBANKMENT TAN AND ORANGE SILTY SAND, MOIST	210 5 6 7		
T   8   8   7   • 15	207.9 6.0	209.3	/	ROADWAY EMBANKMENT TAN SILTY SAND, MOIST 207.0 6.0
	ALLUVIAL  GRAY SILTY SAND, MOIST TO			207.0
205 205 2 7 8.7 2 2 1 2 2 1	SATURATED	205 204.3 8.7		GRAY, GREEN, RED, SAPROLITIC, SILTY CLAY, MOIST TO WET
	202.9 11.0 SAPROLITE	20 17 15	32	GEAT, MOIST TO WET
200 200.2 13.7	WHITE, GRAY, RED, TAN, GREEN,	200		\$
WOH 2 2   4   \( \sqrt{2} \)	ORANGE, BROWN, PURPLE, SAPROLITIC, MICACEOUS SILTY CLAY,	199.3 13.7		\$
	WET		43	197.0 16.0 16.0
195 195.2 18.7 4 6 7		195 194.3 18.7		(GRANITE)
		21 87 13/0.0	100/0.5	188.1 24.9
190 190.2 23.7		190		
4 8 14 22		189.3 23.7 33 57 43/0.2		188.1 24.9
			100/0.7	Boring Terminated at Elevation 188.1 ft IN WEATHERED ROCK
185 185.2 28.7 12 19 33				- WEATHERED ROOK
				ļ.
180 180 2 33.7				ļ.
10 14 18 32				F
				ļ.
175 175.2 38.7 22 30 56	470.7			<u> </u>
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Boring Terminated at Elevation 173.7 ft IN			F
	HARD SILTY CLAY			F
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	BORE L	OG										
<b>WBS</b> 50197.1.1 <b>TIP</b>	R-5739 COUNTY NORTHAI	MPTON GEOLOGIS	Miller, T. W.		<b>WBS</b> 50197	.1.1		TIP R-5739 COUNT	TY NORTHA	MPTON	GEOLOGIST Miller, T.	W.
SITE DESCRIPTION TEMPORARY SHO	DRING ALONG -L- (NC 46) FROM NC 48 I	N GASTON TO VIRGINIA STATE	ELINE GROUN	D WTR (ft)	SITE DESCR	IPTION TE	EMPORARY S	SHORING ALONG -L- (NC 46) F	ROM NC 48	IN GASTON TO	VIRGINIA STATE LINE	GROUND WTR (ft)
BORING NO. B10 STA	<b>ATION</b> 324+15 <b>OFFSET</b> 6	S ft LT ALIGNMEN	IT -L- 0 HR.	7.7 Caved	BORING NO.	B9	;	<b>STATION</b> 324+40	OFFSET	6 ft RT	ALIGNMENT -L-	<b>0 HR.</b> 7.0 Caved
	TAL DEPTH 14.7 ft NORTHING	1,006,956 <b>EASTING</b>		*	COLLAR ELI			TOTAL DEPTH 14.1 ft	NORTHING	1,006,955	<b>EASTING</b> 2,375,675	<b>24 HR</b> . N/A
DRILL RIG/HAMMER EFF/DATE RFC0074 CM	1E-55 92% 08/02/2022	DRILL METHOD H.S. Augers	HAMMER TYPE	Automatic	DRILL RIG/HAN	MER EFF./D	ATE RF00074	4 CME-55 92% 08/02/2022		DRILL METHOD	H.S. Augers	HAMMER TYPE Automatic
			WATER DEPTH N/A		DRILLER E			<b>START DATE</b> 12/19/23	-	TE 12/19/23	SURFACE WATER DEF	PTH N/A
ELEV DRIVE ELEV (ft) DEPTH BLOW COUNT (ft) 0.5ft 0.5ft 0.5ft			SOIL AND ROCK DESCRIPTION		ELEV DRIVE ELEV	DEPTH E	SLOW COUNT oft 0.5ft 0.5f	BLOWS PER FOC	75 100	SAMP.	O SOIL AND RO	OCK DESCRIPTION
(ft) (ft) 0.5ft 0.5ft 0.5ft	0 25 50 75 100	NO. MOI G ELEV. (ft)		DEPTH (ft)	(II) (ft)	(14) 0.8	0.511 0.51	π 0 25 30	75 100	NO. MOI	G	
190 188.7 + 1.0	.	189.7 188.7	GROUND SURFACE PAVEMENT	0.0 1.0	188.6	- 0.8					- 188.6 PA	ID SURFACE 0 VEMENT 0
11 20 15	35	TAN	ROADWAY EMBANKMENT SILTY SAND WITH GRAVEL, MO	DIST		1	2 5 6	: <b>, •</b> 11 :   : : : :   : : : :			ROADWAY	EMBANKMENT Y SAND, MOIST
185 4 6 13	□ · · · · □ · · · · · · · · · · · · · ·		OILT FOR WELL, INC		185.7	3.7	3 2				TAN SILI	I SAND, MOIST
		183.7	ALLUVIAL	6.0							AL AL	.LUVIAL6.
180.9 ± 8.8 WOH WOH 1	<i> </i> /:::: :::::		GRAY SILTY SAND, MOIST TO SATURATED		180.7	8.7 W	DH 4 8					SAND, MOIST TO URATED
Ţ   "•" "•"  ·		178.7	WEATHERED ROCK	11.0	-	F  ''`		12			178.4	11.
175.9 + 13.8 175.1 14.6 46 100/0.2			(GRANITE)		175.7	137						RANITE)
175 175.1 14.6 46 100/0.2	100/0.2	175.2 175.0	CRYSTALLINE ROCK	14.5	175.3	13.7 14.1 100,	/0.4 0.0		100/0.4		CRYSTA	ALLINE ROCK
			(GRANITE) ring Terminated WITH STANDAR								Boring Terminat	RANITE) ed WITH STANDARD
			ENETRATION TEST REFUSAL a ation 175.0 ft IN CRYSTALLINE RO		-	-					Elevation 175.3	N TEST REFUSAL at ft ON CRYSTALLINE
											<u> </u>	ROCK
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