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**CONTENTS** 

**DESCRIPTION** 

LEGEND (SOIL & ROCK)

TITLE SHEET

SITE PLAN

PROFILE(S) CROSS SECTION(S)

BORE LOG(S) SOIL TEST RESULTS

SITE PHOTOGRAPH(S)

SHEET NO.

6-11

# 3485

#### STATE OF NORTH CAROLINA

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

#### **STRUCTURE** SUBSURFACE INVESTIGATION

COUNTY FORSYTH

PROJECT DESCRIPTION <u>SR 1672 (HANES MILL ROAD)</u> FROM MUSEUM DRIVE TO NC 66 (UNIVERSITY PARKWAY) IN WINSTON-SALEM SITE DESCRIPTION BRIDGE NO. 290 ON SR 1672 (HANES MILL ROAD) OVER US 52

STATE PROJECT REFERENCE NO. 13 U-2729

#### **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 707-6850. 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 BORCHOLE. THE LABORATORY SAMPLE DATA AND THE IN SITU (INF-PLACE) TEST DATA CAN BE RELIED ON ONLY TO THE DEGREE OF RELIABILITY INHERENT IN THE STANDARD TEST METHOD. THE OBSERVED MATER LEVELS OR SOIL MOISTURE CONDITIONS NDICATED IN THE SUBSURFACE INVESTIGATIONS ARE AS RECORDED AT THE TIME OF THE INVESTIGATION. THESE WATER LEVELS OR SOIL MOISTURE CONDITIONS MOY CONSIDERABLY WITH TIME ACCORDING TO CLIMATIC CONDITIONS INCLUDING TEMPERATURES, PRECIPITATION AND WIND, AS WELL AS OTHER NON-CLIMATIC FACTORS.

THE BIDDER OR CONTRACTOR IS CAUTIONED THAT DETAILS SHOWN ON THE SUBSURFACE PLANS ARE PRELIMINARY ONLY AND IN MANY CASES THE FINAL DESIGN DETAILS ARE DIFFERENT. FOR BIDDING AND CONSTRUCTION PURPOSES, REFER TO THE CONSTRUCTION PLANS AND DOCUMENTS FOR FINAL DESIGN INFORMATION ON THIS PROJECT. THE DEPARTMENT DOES NOT WARRANT OR GUARANTEE THE SUFFICIENCY OR ACCURACY OF THE INVESTIGATION MADE, NOR THE INTERPRETATIONS MADE, OR OPINION OF THE DEPARTMENT AS TO THE TYPE SAME 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 OR FOR AN EXTENSION OF TIME FOR ANY REASON RESULTING FROM THE ACTUAL CONJOITIONS ENCOUNTERED AT THE SITE DIFFERING FROM THOSE INDICATED IN THE SUBSURFACE INFORMATION.

- NOTES:

  1. THE INFORMATION CONTAINED HEREIN IS NOT IMPLIED OR GUARANTEED BY THE N. C. DEPARTMENT OF TRANSPORTATION AS ACCURATE NOR IS IT CONSIDERED PART OF THE PLANS, SPECIFICATIONS OR CONTRACT FOR THE PROJECT.

  2. BY HAVING REQUESTED THIS INFORMATION, THE CONTRACTOR SPECIFICALLY WAIVES ANY CLAIMS FOR INCREASED COMPENSATION OR EXTENSION OF TIME BASED ON DIFFERENCES BETWEEN THE CONDITIONS INDICATED HEREIN AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

P. ZHANG C. TREMBLAY R.W. TODD R.J. TUCKER

INVESTIGATED BY WOOD E&IS, INC. DRAWN BY <u>P. ZHAN</u>G CHECKED BY M. LEAR SUBMITTED BY P. ZHANG

DATE NOVEMBER, 2018

C.E. BURRIS



**DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED** 

PROJECT REPERENCE NO. SHEET NO.

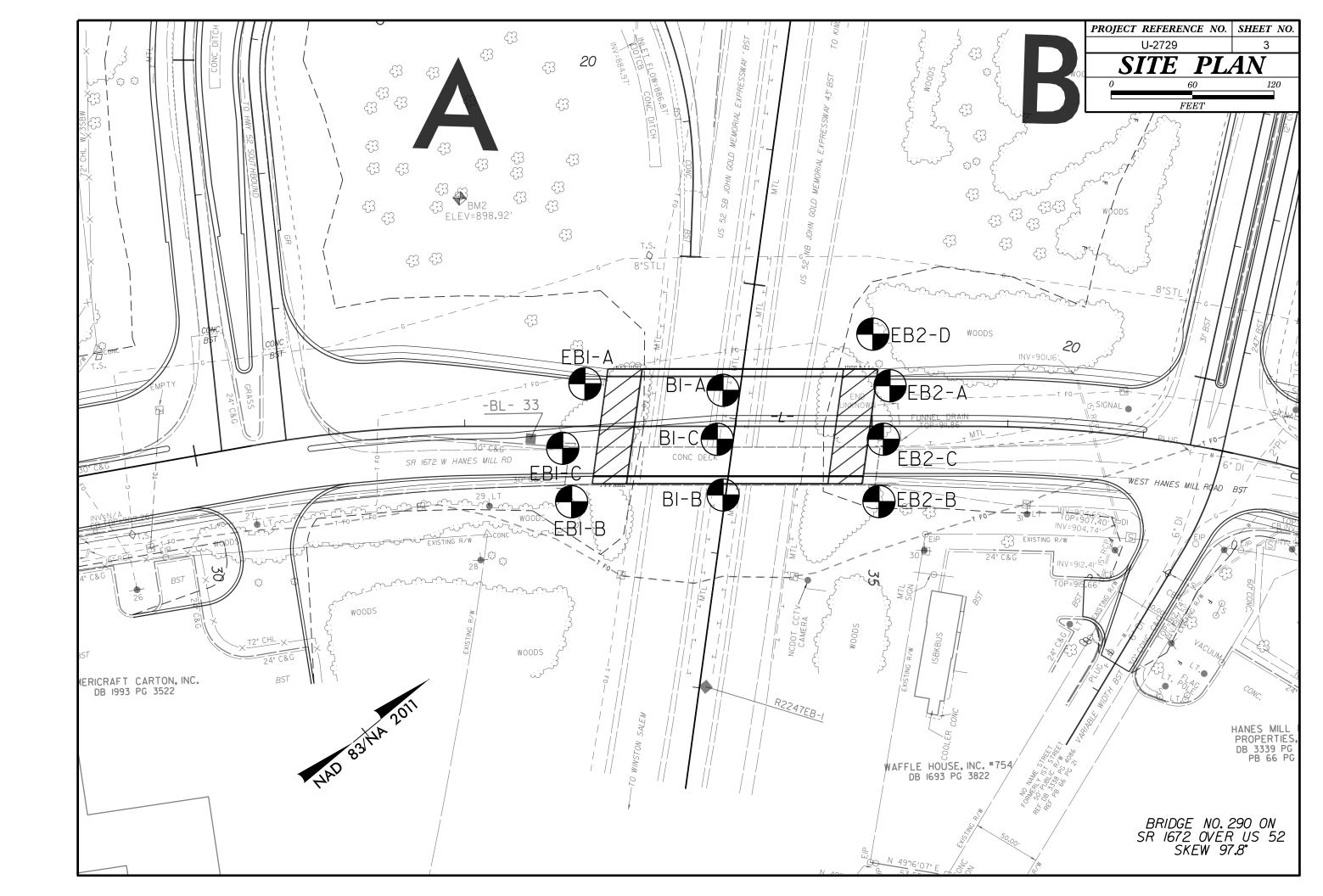
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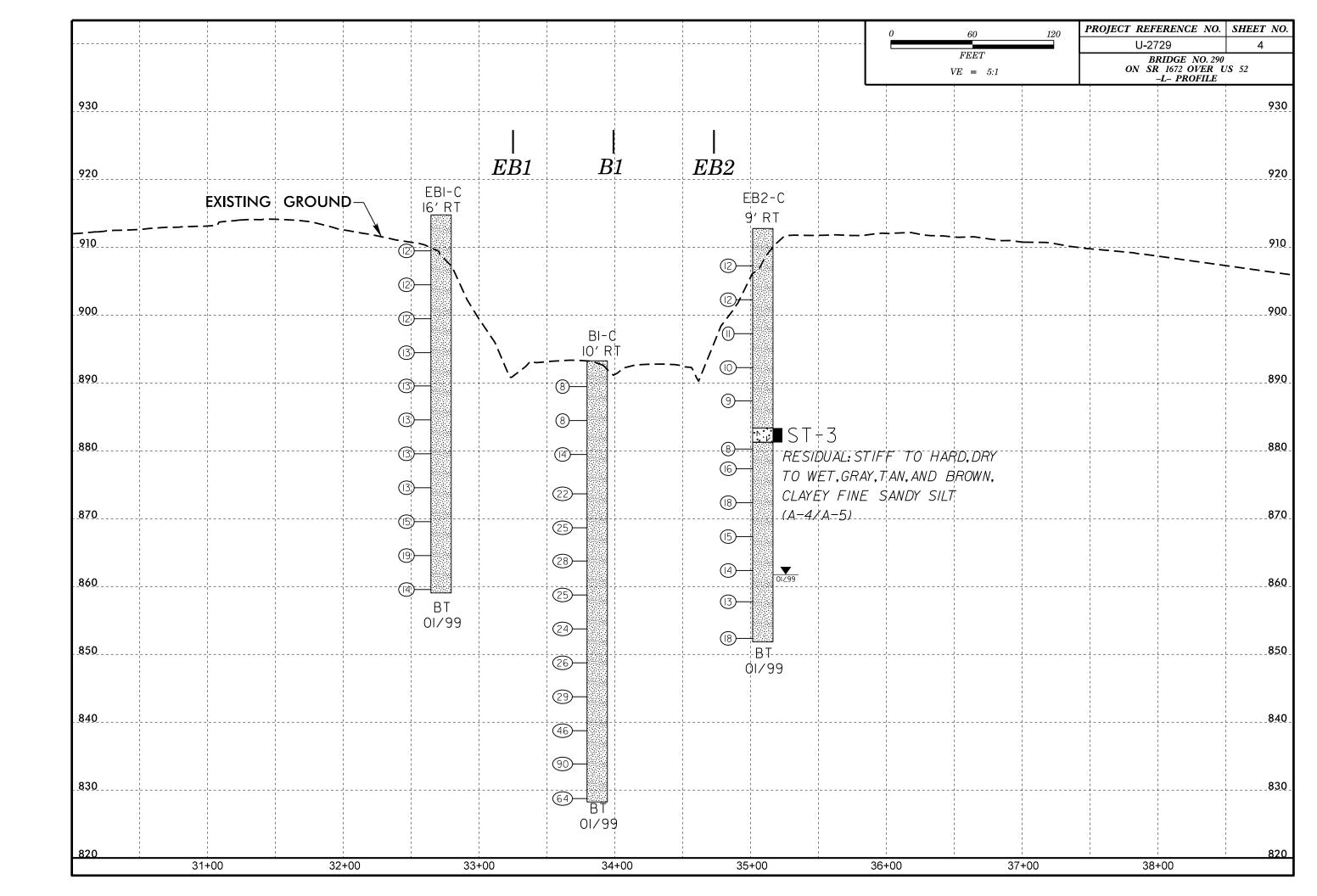
## NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS GEOTECHNICAL ENGINEERING UNIT

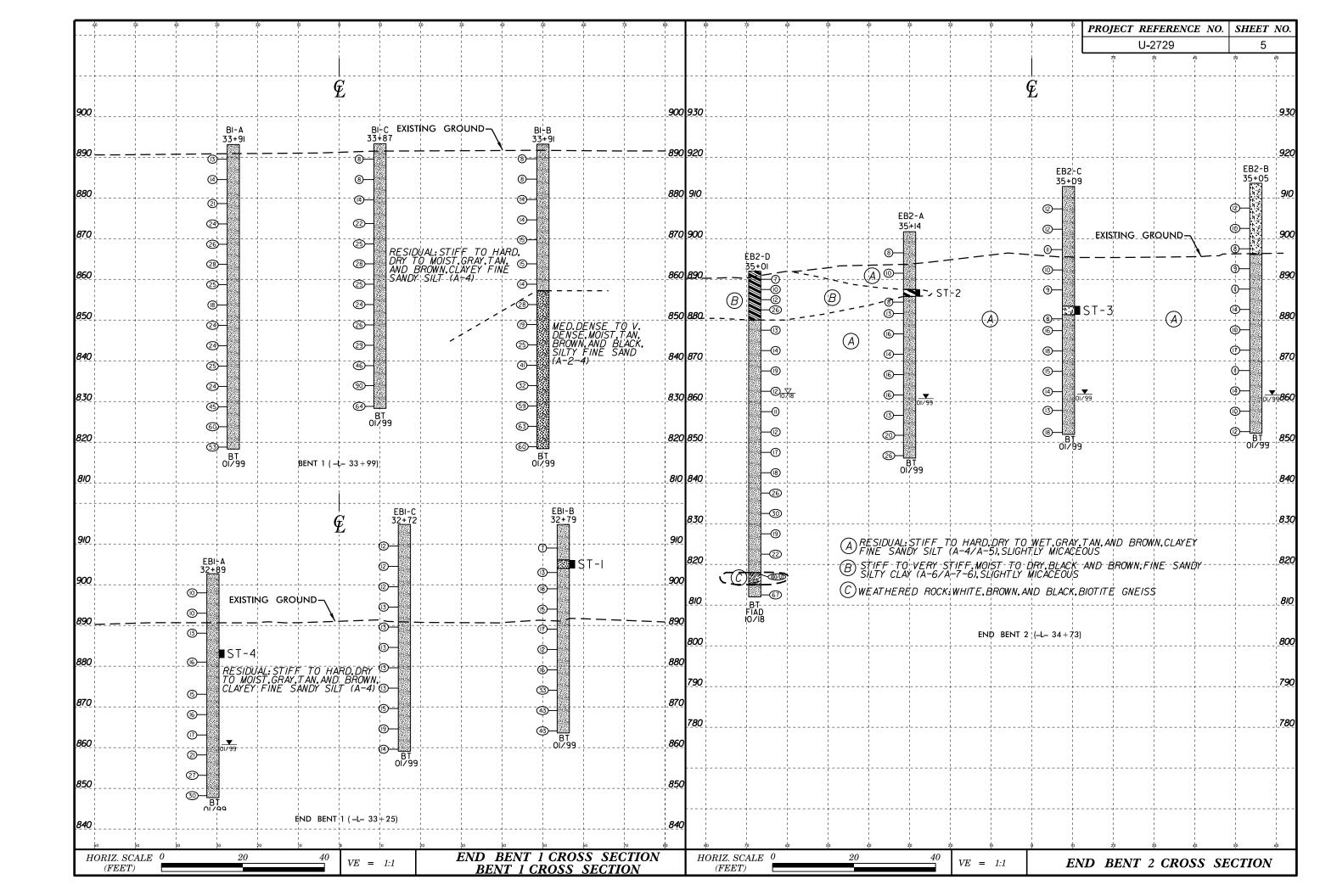
### SUBSURFACE INVESTIGATION

SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

001, 05000101101	201017101	D004 0500017104	TERMS AND DEFINITIONS		
SOIL DESCRIPTION	GRADATION	ROCK DESCRIPTION  HARD ROCK IS NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT REFUSAL IF TESTED. AN INFERRED	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	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.	ROCK LINE INDICATES THE LEVEL AT WHICH NON-COASTAL PLAIN MATERIAL WOULD YIELD SPT REFUSAL.	ALLUVIUM (ALLUV.) - SOILS THAT HAVE BEEN TRANSPORTED BY WATER.		
ACCORDING TO THE STANDARD PENETRATION TEST (AASHTO T 206, ASTM D1586). SOIL CLASSIFICATION IS BASED ON THE AASHTO SYSTEM. BASIC DESCRIPTIONS GENERALLY INCLUDE THE FOLLOWING:	GAP-GRADED - INDICATES A MIXTURE OF UNIFORM PARTICLE SIZES OF TWO OR MORE SIZES.	SPT REFUSAL IS PENETRATION BY A SPLIT SPOON SAMPLER EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS IN NON-COASTAL PLAIN MATERIAL, THE TRANSITION BETWEEN SOIL AND ROCK IS OFTEN	AQUIFER - A WATER BEARING FORMATION OR STRATA.		
CONSISTENCY, COLOR, TEXTURE, MOISTURE, AASHTO CLASSIFICATION, AND OTHER PERTINENT FACTORS SUCH	ANGULARITY OF GRAINS	REPRESENTED BY A ZONE OF WEATHERED ROCK, ROCK MATERIALS ARE TYPICALLY DIVIDED AS FOLLOWS:	ARENACEOUS - APPLIED TO ROCKS THAT HAVE BEEN DERIVED FROM SAND OR THAT CONTAIN SAND.		
AS MINERALOGICAL COMPOSITION, ANGULARITY, STRUCTURE, PLASTICITY, ETC. FOR EXAMPLE, 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:	51//E1//A	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.		
SOIL LEGEND AND AASHTO CLASSIFICATION	ANGULAR, SUBANGULAR, SUBROUNDED, OR ROUNDED.	WEATHERED VIELD SPT N VALUES > NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT N VALUES > 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 ORGANIC MATERIALS	MINERALOGICAL COMPOSITION	CRYSTALLINE CRYSTA	WHICH IT IS ENCOUNTERED, BUT WHICH DOES NOT NECESSARILY RISE TO OR ABOVE THE GROUND		
LLASS. (\$\infty\$ 39% PASSING "200) (> 39% 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 INCLUDES GRANITE, GNEISS, GABBRO, SCHIST, ETC.	SURFACE.		
GROUP A-1 A-3 A-2 A-4 A-5 A-6 A-7 A-1, A-2 A-4, A-5 CLASS. A-1-0 A-1-1-0 A-2-4 A-2-5 A-2-6 A-2-7 A-3-6, A-7-8 A-3 A-6, A-7	COMPRESSIBILITY	NON-CRYSTALLINE - FINE TO COARSE GRAIN METAMORPHIC AND NON-COASTAL PLAIN	CALCAREOUS (CALC.) - SOILS THAT CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE.  COLLUVIUM - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM		
000000000	SLIGHTLY COMPRESSIBLE LL < 31	ROCK (NCR)  SEDIMENTARY ROCK THAT WOULD YEILD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES PHYLLITE, SLATE, SANDSTONE, ETC.	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		
7. PASSING     GRANULAR SILT- MUCK,	PERCENTAGE OF MATERIAL	(CP) SHELL BEDS, ETC.	BY TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE.		
#40 30 MX 50 MX 51 MN SOILS CLAY PEAT	GRANULAR SILT - CLAY	- WEATHERING	DIKE - A TABULAR BODY OF IGNEOUS ROCK THAT CUTS ACROSS THE STRUCTURE OF ADJACENT ROCKS OR CUTS MASSIVE ROCK.		
אורים פל אור	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		
MATERIAL PASSING *40	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 40 MX 41 MN 40 MX 41 MN 40 MX 41 MN LITTLE OR	MODERATELY ORGANIC 5 - 10% 12 - 20% SOME 20 - 35% HIGHLY ORGANIC > 10% > 20% HIGHLY 35% 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.		
PI 6 MX NP 18 MX 18 MX 11 MN 11 MN 18 MX 18 MX 11 MN 11 MN 11 MN MX	GROUND WATER	OF A CRYSTALLINE NATURE.	FAULT - A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE		
ORGANIC SUILS		SLIGHT ROCK GENERALLY FRESH, JOINTS STAINED AND DISCOLORATION EXTENDS INTO ROCK UP TO  (SLI.) 1 INCH. OPEN JOINTS MAY CONTAIN CLAY. IN GRANITOID ROCKS SOME OCCASIONAL FELDSPAR	SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE.		
USUAL TYPES STONE FRAGS. FINE SILTY OR CLAYEY SILTY CLAYEY MATTER  OF MAJOR GRAVEL, AND CAND SOULS SOULS	WATER LEVEL IN BORE HOLE IMMEDIATELY AFTER DRILLING	CRYSTALS ARE DULL AND DISCOLORED. CRYSTALLINE ROCKS RING UNDER HAMMER BLOWS.	FISSILE - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES.		
MATERIALS SAND SAND GRAVEL AND SAND SOILS SOILS	STATIC WATER LEVEL AFTER <u>24</u> HOURS	MODERATE SIGNIFICANT PORTIONS OF ROCK SHOW DISCOLORATION AND WEATHERING EFFECTS. IN 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		
GEN. RATING AS SUBGRADE EXCELLENT TO GOOD FAIR TO POOR POOR UNSUITABLE	<u>√PW</u> PERCHED WATER, SATURATED ZONE, OR WATER BEARING STRATA	DULL SOUND UNDER HAMMER BLOWS AND SHOWS SIGNIFICANT LOSS OF STRENGTH AS COMPARED	PARENT MATERIAL.  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	- SPRING OR SEEP	WITH FRESH ROCK.	FORMATION (FM.) - A MAPPABLE GEOLOGIC UNIT THAT CAN BE RECOGNIZED AND TRACED IN THE		
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	FIELD.		
PANCE OF CTANDARD PANCE OF UNICONEINED		(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	ROADWAY EMBANKMENT (RE)  25/025  DIP & DIP DIRECTION  OF ROCK STRUCTURES	IF TESTED, WOULD YIELD SPT REFUSAL	LEDGE - A SHELF-LIKE RIDGE OR PROJECTION OF ROCK WHOSE THICKNESS IS SMALL COMPARED TO		
(N-VALUE) (TONS/FT <sup>2</sup> )  VERY LOOSE < 4	-  <sup>1</sup>	SEVERE ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC CLEAR AND EVIDENT BUT (SEV.) REDUCED IN STRENGTH TO STRONG SOIL. IN GRANITOID ROCKS ALL FELDSPARS ARE KAOLINIZED	ITS LATERAL EXTENT.		
CRANIII AR LOOSE 4 TO 10	SOIL SYMBOL  SOIL SYMBOL  SLOPE INDICATOR INSTALLATION	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.  MOTTLED (MOT.) - IRREGULARLY MARKED WITH SPOTS OF DIFFERENT COLORS, MOTTLING IN SOILS		
MATERIAL DENSE 30 TO 50	ARTIFICIAL FILL (AF) OTHER AUGER BORING CONE PENETROMETER	IF TESTED, WOULD YIELD SPT N VALUES > 100 BPF  VERY ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED, ROCK FABRIC ELEMENTS ARE DISCERNIBLE	USUALLY INDICATES POOR AERATION AND LACK OF GOOD DRAINAGE.		
(NON-COHESIVE) VERY DENSE > 50	THAN ROADWAY EMBANKMENT TEST	VERY ALL ROCK EXCEPT OUARTZ DISCOLORED OR STAINED. ROCK FABRIC ELEMENTS ARE DISCERNIBLE SEVERE BUT MASS IS EFFECTIVELY 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 VESTIGES OF ORIGINAL ROCK FABRIC REMAIN. <u>IF TESTED, WOULD YIELD SPT N VALUES &lt; 100 BPF</u>	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 MN MONITORING WELL TEST BORING	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	WITH CORE	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 ROCK SEGMENTS EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF CORE		
(COHESIVE) VERY STIFF 15 TO 30 2 TO 4 HARD > 30 > 4	TTTTT ALLUVIAL SOIL BOUNDARY ALLUVIAL SOIL BOUNDARY INSTALLATION SPT N-VALUE	ALSO AN EXAMPLE.	RUN AND EXPRESSED AS A PERCENTAGE.		
TEXTURE OR GRAIN SIZE	RECOMMENDATION SYMBOLS	ROCK HARDNESS	SAPROLITE (SAP.) - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT ROCK.		
U.S. STD. SIEVE SIZE 4 10 40 60 200 270	UNCLASSIFIED EXCAVATION - TO 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.	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	UNDERCUT UNDERCUT UNSUITABLE WASTE  UNSUITABLE WASTE  USUAL ON USUAL SESSIONE EXCAVATION - USUAL ON USUAL SESSIONE EXCAVATION - USUAL SESSIONE	HARD CAN BE SCRATCHED BY KNIFE OR PICK ONLY WITH DIFFICULTY. HARD HAMMER BLOWS REQUIRED	RELATIVELY THIN COMPARED WITH ITS LATERAL EXTENT, THAT HAS BEEN EMPLACED PARALLEL TO		
BOULDER COBBLE GRAVEL COARSE FINE SILT CLAY	SHALLOW UNCLASSIFIED EXCAVATION - UNDERCUT UNCLASSIFIED EXCAVATION - EMBANKMENT OR BACKFILL	TO DETACH HAND SPECIMEN.	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 HARD 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	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 WITH A 2 INCH OUTSIDE DIAMETER SPLIT SPOON SAMPLER. SPT REFUSAL IS PENETRATION EQUAL		
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.	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		
(ATTERBERG LIMITS) DESCRIPTION GOIDE FOR FIELD MOISTORE DESCRIPTION	DMT - DILATOMETER TEST PMT - PRESSUREMETER TEST SAMPLE ABBREVIATIONS 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 PRESSURE.	TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE.		
- SATURATED - USUALLY LIQUID; VERY WET, USUALLY (SAT.) FROM BELOW THE GROUND WATER TABLE	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	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		
LL LIOUID LIMIT	F - FINE SL SILT, SILTY ST - SHELBY TUBE FOSS FOSSILIFEROUS SLI SLIGHTLY RS - ROCK	SOFT OR MORE IN THICKNESS CAN BE BROKEN BY FINGER PRESSURE. CAN BE SCRATCHED READILY BY	THE TOTAL LENGTH OF STRATA AND EXPRESSED AS A PERCENTAGE.		
PLASTIC   SEMISOLID; REQUIRES DRYING TO	FRAC FRACTURED, FRACTURES TCR - TRICONE REFUSAL RT - RECOMPACTED TRIAXIAL	FINGERNAIL.	TOPSOIL (TS.) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.		
(PI) PL PLASTIC LIMIT ATTAIN OPTIMUM MOISTURE	FRAGS FRAGMENTS	FRACTURE SPACING BEDDING  TERM SPACING TERM THICKNESS	BENCH MARK: TBM: ORANGE DOT IN CIRCLE, STA, 50+20, 30 FT RT		
	EQUIPMENT USED ON SUBJECT PROJECT	VERY WIDE MORE THAN 10 FEET VERY THICKLY BEDDED 4 FEET	ELEVATION: 913.15 FEET		
OM OPTIMUM MOISTURE - MOIST - (M) SOLID; AT OR NEAR OPTIMUM MOISTURE	DRILL UNITS: ADVANCING TOOLS: HAMMER TYPE:	WIDE			
SL SHRINKAGE LIMIT	CLAY BITS X AUTOMATIC MANUAL	CLOSE 0.16 TO 1 FOOT VERY THINLY BEDDED 0.03 - 0.16 FEET	NOTES:		
- DRY - (D) REQUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE	6° CONTINUOUS FLIGHT AUGER CORE SIZE:	VERY CLOSE LESS THAN 0.16 FEET THICKLY LAMINATED 0.008 - 0.03 FEET THINLY LAMINATED < 0.008 FEET	FIAD - FILLED IMMEDIATELY AFTER DRILLING		
PLASTICITY	CORE SIZE:    CME-55   X 8*HOLLOW AUGERS  BH	INDURATION	COLLAR ELEVATION FOR EB2-D WAS OBTAINED FROM THE		
PLASTICITY INDEX (PI) DRY STRENGTH		FOR SEDIMENTARY ROCKS, INDURATION IS THE HARDENING OF MATERIAL BY CEMENTING, HEAT, PRESSURE, ETC.	PROJECT tin FILE, U2729_Ls_tin.tin.		
NON PLASTIC 0-5 VERY LOW	TUNGCARRIDE INSERTS	RUBBING WITH FINGER FREES NUMEROUS GRAINS;			
SLIGHTLY PLASTIC 6-15 SLIGHT MODERATELY PLASTIC 16-25 MEDIUM	VANE SHEAR TEST CASING WY ADVANCER HAND TOOLS:	GENILE BLUW BY HAMMER DISTNIEGRATES SAMPLE.			
HIGHLY PLASTIC 26 OR MORE HIGH	POST HOLE DIGGER	MODERATELY INDURATED GRAINS CAN BE SEPARATED FROM SAMPLE WITH STEEL PROBE; BREAKS EASILY WHEN HIT WITH HAMMER.			
COLOR	HAND AUGER	CRAINS ARE DISEIGNET TO CERARATE WITH CIEFL PROPE.			
	X   CME-550X	INDURATED 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;			
1.55. IENS SOCIERS EIGHT, DANK, STREMED, ETC. HILL OSED TO DESCRIBE HIT EMPHRICE.	X NW CASING	SAMPLE BREAKS ACROSS GRAINS.	DATE: 8-15-1-		







	BURE LUG									1	
	ITY FORSYTH GEOLOGIST Todd R.W.			34853.1.2				TY FORSYTH		GEOLOGIST Todd R.W.	
SITE DESCRIPTION Bridge No. 290 on SR 1672 (Hanes Mill Road	<u> </u>	-1 1					on SR 1672 (Hanes Mill Road	<del></del>			GROUND WTR (ft)
BORING NO. EB1-A STATION 32+89		<b>∔</b> I					<b>TATION</b> 32+72	OFFSET 16 ft RT		ALIGNMENT -L-	<b>0 HR.</b> N/A
COLLAR ELEV. 902.7 ft TOTAL DEPTH 55.0 ft	NORTHING 889,682 EASTING 1,622,206	<b>24 HR.</b> 42.0	COLLA	AR ELEV. 9	14.8 ft	T	OTAL DEPTH 55.7 ft	NORTHING 889,6	39	<b>EASTING</b> 1,622,232	<b>24 HR.</b> N/A
DRILL RIG/HAMMER EFF./DATE CME-550	DRILL METHOD H.S. Augers HAMME	ER TYPE Automatic	DRILL R	RIG/HAMMER E	FF./DATE	CME-550		DRILL M	METHOD	H.S. Augers HAN	IMER TYPE Automatic
DRILLER Tucker, R.J. START DATE 01/25/99	COMP. DATE 01/26/99 SURFACE WATER DEPTH N/A			ER Tucker,			<b>TART DATE</b> 01/26/99	COMP. DATE 01/2	26/99	SURFACE WATER DEPTH	N/A
ELEV DRIVE DEPTH BLOW COUNT BLOWS PER FOO	OT SAMP. L SOIL AND ROCK DESC	CRIPTION	ELEV C	DRIVE DEPTH	BLOW (	COUNT	BLOWS PER FOO	OT SAMP.	L	SOIL AND ROCK DE	SCRIPTION
(ft) ELEV (ft) 0.5ft 0.5ft 0.5ft 0 25 50	75 100 NO. MOI G ELEV. (ft)	DEPTH (ft)	(ft)	(ft) (ft)	0.5ft 0.5	5ft 0.5ft	0 25 50	75 100 NO.	MOI Ğ		.com non
905			915							914.8 GROUND SUR	RFACE 0.0
	902.7 GROUND SURFA	ACE 0.0		+						RESIDUA  Brown, tan, and white, cla	\L
‡	· · · · · RESIDUAL			Ŧ						(A-4)	ayey sandy SIL1
900 899.0 3.7	Brown, tan, and white, claye (A-4)	ey sandy SILT	910	910.5 + 4.3	2 5	5 7	<u> </u>		D	- -	
2 5 5	SS-24 D			‡						_	
			005	905.5 + 9.3						_	
895 894.0 8.7	<del>  </del>		905		2 6	6	12			_	
2 5 5 . • 10				İ						<u>}</u>	
890	.		900	900.5 + 14.3		_   -				-	
889.1 13.6 2 5 8	·   · · · ·			Ŧ	3 5		•12			F	
				‡						_	
885	<u> </u>		895	895.5 + 19.3	5 5	5 8	1	SS-27	D	<u>-</u>	
	28%			‡			· ·     · · ·   · · · ·   · · · ·			)]- 8-	
882.0 20.7 2 9 7 16	SS-25   D			890.6 <del>+</del> 24.2			:::::::::::::::::::::::::::::::::::::				
880			890	+ 24.2	3 5	5 8	13	<del>.    </del>		_	
				Ŧ				1 1 1		-	
875			885	885.6 + 29.2			] :::::::::::::::::::::::::::::::::::::				
874.1 28.6 4 7 8	<del>-  </del>             <del> </del>		000	‡	3 6	j /	• 13		D	<del>-</del> -	
				‡						-	
870	·   · · · · ·		880	880.6 + 34.2	5 6	3 7	<u> </u>			<u>-</u>	
869.1 33.6 2 7 9 16	SS-26 D			İ			$\begin{bmatrix} & & & & & & & & & & & & & & & & & & &$			<u></u>	
	.			075 0 1 00 0						_	
865 864.1 38.6	<u></u>		875	875.6 + 39.2	6 7	7 6	<u> </u>	SS-28	м	<u>-</u>	
$\begin{vmatrix} 1 & 1 & 1 & 1 & 1 & 1 & 1 & 1 & 1 & 1 $				Ŧ				.		<u>-</u>	
860			870	870.6 <del>+</del> 44.2			] :::::::::::::::::::::::::::::::::::::			<u> </u>	
859.2 43.5 3 9 12	<del>-    </del>		070	‡	3 7	7   8	15			_	
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$				‡						_	
855	<u>· ···</u>		865	865.6 + 49.2	3 6	6 13	<u> </u>			<u>L</u>	
854.2 48.5 3 13 14 •27	: ::::			‡			1			_	
	: ::::       <b> </b>   <b> </b>   <b> </b>			960 6 - 54.3						_	
850 849.2 53.5	_ <del> </del>		860	860.6 + 54.2	4 6	6 8	14		М	859.1	55.7
3 13 17	.       D   847.7	55.0		Ŧ						Boring Terminated at Ele Residual: clayey sand	vation 859.1 ft in
	- Boring Terminated at Elevati - Residual: clayey sandy S	SILT (A-4)		‡						- I Solidadi. Siayoy Sant	-, ( ,
	- Other Samples:			‡						F	
	Other Samples: ST-4 (18.6 - 20.7)			‡						-	
				土						Ł	
				+						-	
<u> </u>				Ŧ						-	
				‡						F	
	‡			‡						‡	
				‡						‡	
뷩   士				+						<u> </u>	
				1						Ł	
				Ŧ						-	
·							t .			<u> </u>	

BURE LUC					
WBS         34853.1.2         TIP         U-2729         COUNTY         FORSYTH	GEOLOGIST Todd R.W.	<b>WBS</b> 34853.1.2	TIP U-2729 COUNT	Y FORSYTH	GEOLOGIST Todd R.W.
SITE DESCRIPTION Bridge No. 290 on SR 1672 (Hanes Mill Road) over US 52	GROUND WTR (ft)	SITE DESCRIPTION Bridge No.	290 on SR 1672 (Hanes Mill Road)	over US 52	GROUND WTR (ft)
BORING NO. EB1-B STATION 32+79 OFFSET 55 ft F	ALIGNMENT -L- 0 HR. N/A	BORING NO. B1-A	STATION 33+91	OFFSET 26 ft LT	ALIGNMENT -L- 0 HR. N/A
COLLAR ELEV. 914.8 ft TOTAL DEPTH 51.2 ft NORTHING 88	EASTING 1,622,266 24 HR. N/A	COLLAR ELEV. 893.1 ft	TOTAL DEPTH 74.8 ft	<b>NORTHING</b> 889,757	<b>EASTING</b> 1,622,275 <b>24 HR.</b> N/A
	THOD H.S. Augers HAMMER TYPE Automatic	DRILL RIG/HAMMER EFF./DATE CM		DRILL METHOD	
DRILLER Tucker, R.J. START DATE 01/21/99 COMP. DATE 0			1	COMP. DATE 01/21/99	<u> </u>
	/99 SURFACE WATER DEPTH N/A	DRILLER Tucker, R.J.		11 1 1.	SURFACE WATER DEPTH N/A
ELEV (ft)         DRIVE ELEV (ft)         DEPTH (ft)         BLOW COUNT (ft)         BLOWS PER FOOT         SAM NO           0         25         50         75         100         NO	O SOIL AND ROCK DESCRIPTION  MOI G ELEV. (ft) DEPTH (ft)	ELEV (ft) DRIVE ELEV (ft) DEPTH BLOW COU	NT         BLOWS PER FOOT           0.5ft         0         25         50	75 100 NO. MOI G	SOIL AND ROCK DESCRIPTION
915	914.8 GROUND SURFACE 0.0	895			
	RESIDUAL				F 893.1 GROUND SURFACE 0.0
	L Brown, tan and white, clayey fine sandy SILT (A-4)				RESIDUAL Proven top, and gray alexandration conductions
910 910.0 4.8		890 890.5 + 2.6 5 6	7	SS-8 M	Brown, tan, and gray, clayey fine sandy SILT (A-4)
3 4 3 4 7	D			33-3   1	- -
+	906.1 8.7		-    : :i: :  : : : :   : : : :		_
905 904.0 10.8	4% Brown, tan and white, silty SAND (A-2-4) 10.8	885 885.5 + 7.6 6 6	8		_
5 5 8 13 SS-	D Brown, tan, and white, clayey fine sandy SILT (A-4)	11   ‡			_
900 900.0 14.8	J. SILI (A-4)	880 970 6 43 5			
900 900.0 14.8 4 8 10 • 18		0/9.0 T 13.5 1	11	SS-9 M	<del>-</del> -
	<u> </u>		$\left  \begin{array}{cccccccccccccccccccccccccccccccccccc$		_
895 895.0 19.8	-	875 874 9 40 5	$  \cdot \cdot \cdot $		-
4 7 8	F	874.6 18.5 6 12	12		-
					<del>-</del>
890 890.1 24.7		870 869.6 23.5			_
4 7 10 17 SS-	D	7 12	14		_
	-				_
885 885.1 29.7 2 5 7	_	865 864.7 28.4	10	<del>                                     </del>	_
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			16 28	· · · ·     SS-10   M	_
			-   ::::  <u>!</u> :::: ::::		-
880 880.1 34.7 4 7 9	-	860 859.7 33.4 6 10	15	<del> </del>	_
	<b>F</b>		25		-
875 875.1 39.7					-
5 15 18 33	D F	855 854.7 38.4 5 8	10	<del>   </del>	<del>-</del> -
	<u> </u>		: : : \( \)   : : : :   : : : : :		
870   870.1 + 44.7	-	850 849.7 43.4	1		_
7 19 24	F		14	· · · ·   M	-
					-
865 865.1 49.7 7 19 24		845 844.7 48.4		<u> </u>	<del> </del>
8	D 863.6 51.2  - Boring Terminated at Elevation 863.6 ft in	5 12	12		<del>-</del>
	Residual: clayey sandy SILT (A-4)				<del> </del>
[a]   <del> </del>	Other Samples: - ST-1 (8.7 - 10.8)	840 839.7 53.4 5 10	15	<del> </del>	_
	51-1 (8.7 - 10.8)		$\begin{vmatrix} & & & & & & & & & & & & & & & & & & &$		-
		835 834 7 58 4			-
		034.7 + 30.4	15	· · · · ·   SS-11   M	<del>-</del>
					-
	-	830 829.7 63.4			_
	-	629.7 + 63.4 12 21	24	D	-
	F				F
		825 824.8 68.3	33	<u> </u>	_
쁿   ‡	‡	15 28	32		<u>-</u>
			: : : :   : : : :   : /: : :		-
	-	820 819.8 73.3 15 24		<del>  </del>	_
<u>ĕ</u>	[-		<b>—</b>		818.3 74.8  Boring Terminated at Elevation 818.3 ft in
ğ	F				Residual: clayey sandy SILT (A-4)
<u> </u>	1 1				

BORE LOG					
WBS         34853.1.2         TIP         U-2729         COUNTY         FORSYTH	GEOLOGIST Todd R.W.	WBS 34853.1.2	TIP U-2729 COUN	ITY FORSYTH	GEOLOGIST Todd R.W.
SITE DESCRIPTION Bridge No. 290 on SR 1672 (Hanes Mill Road) over US 52	GROUND WTR (ft)	SITE DESCRIPTION Bridge No. 2	290 on SR 1672 (Hanes Mill Roa	<del></del>	GROUND WTR (ft)
BORING NO. B1-C STATION 33+87 OFFSET 10 ft RT	ALIGNMENT -L- 0 HR. N/A	BORING NO. B1-B	STATION 33+91	OFFSET 50 ft RT	ALIGNMENT -L- 0 HR. N/A
COLLAR ELEV. 893.3 ft         TOTAL DEPTH 65.0 ft         NORTHING 889,731	<b>EASTING</b> 1,622,300 <b>24 HR.</b> N/A	COLLAR ELEV. 893.2 ft	TOTAL DEPTH 74.8 ft	<b>NORTHING</b> 889,708	<b>EASTING</b> 1,622,334 <b>24 HR.</b> N/A
DRILL RIG/HAMMER EFF./DATE CME-550 DRILL MET	HOD NW Casing w/ SPT HAMMER TYPE Automatic	DRILL RIG/HAMMER EFF./DATE CME-	-550	DRILL METHOD	NW Casing w/ SPT HAMMER TYPE Automatic
DRILLER Tucker, R.J. START DATE 01/20/99 COMP. DATE 01/20/	99 SURFACE WATER DEPTH N/A	DRILLER Tucker, R.J.	<b>START DATE</b> 01/20/99	<b>COMP. DATE</b> 01/20/99	SURFACE WATER DEPTH N/A
ELEV DRIVE DEPTH BLOW COUNT BLOWS PER FOOT SAMP.	L SOIL AND ROCK DESCRIPTION	ELEV DRIVE DEPTH BLOW COUN'		OT SAMP.	L SOIL AND ROCK DESCRIPTION
(ft) CHEV (ft) 0.5ft 0.5	MOI G ELEV. (ft) DEPTH (ft)	(ft) (ft) (ft) 0.5ft 0.5ft 0.	0.5ft 0 25 50	75 100 NO. MOI	G
895		895			
<u> </u>	- 893.3 GROUND SURFACE 0.0				893.2 GROUND SURFACE 0.0
890 890.5 + 2.8	Brown, tan, and white, clayey sandy SILT (A-4)	890.6 + 2.6			RESIDUAL Brown, tan, and white, clayey fine sandy
	м ( <sup>А-4)</sup>	890 890.6 7 2.6 3 4	4	SS-1 M	SILT (A-4)
	<u>_</u>				t
885 885.5 7.8	Ł	885 885.6 7.6 3 4	4   1	·   · · · ·	Ł
	_			SS-2 M	t
9905 - 129		880.6 + 12.6			t
880 880.5 + 12.8 5 7 7	и	880 880.6 + 12.6 4 5	9 14	<del>- </del>	H
					Ł
875 874.7 18.6	-	875 875.6 17.6 4 5	9		-
	- F		14	SS-3 M	F
	<u>-</u>				F
870 869.7 23.6 7 11 14	<u></u>	870 870.7 + 22.5 3 6	9 15	<del>-    </del>	F
\$\frac{1}{4}  \frac{1}{4}   \frac{1}{4}  \frac{1}{4}  \frac{1}{4}  \frac{1}{4}  \frac{1}{4}  \frac{1}{4}  \frac{1}{4}  \frac{1}{4}  \frac{1}{4}  \frac{1}{4}  \frac{1}{4}  \frac{1}{4}  \frac{1}{4}  \frac{1}{4}  \frac{1}{4}  \frac{1}{4}  \frac{1}{4}  \frac{1}{4}   \frac{1}{4}   \frac{1}{4}	<u> </u>				F
865 864.8 28.5	-	865 864.8 28.4			F
		864.8 28.4 3 6	9 • 15	·   · · · ·     M	F
860 859.8 - 33.5 7 11 14		860 859.8 33.4			-
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	И		9		F 857.2 36.0
855	-				Brown, tan, and black, silty fine SAND (A-2-4)
855 854.8 38.5 6 11 13	и 🔭	855 854.8 38.4 6 13 1	15	· · · · · SS-4 M	
	-		::::/:::: :::		
850 849.8 43.5	_	850 849.9 43.3	12		
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$			12		
845 844 8 48 5		845 844.9 48.3			** <del>*</del>
<sub>∞</sub> 7 9 20 •29	и -	844.9 48.3 6 12 1	13 25	-       M	
840 839.8 53.5		840 839.9 53.3	24		<u></u>
			24		
835 834.9 58.4					
$\begin{bmatrix} 1 \\ 6 \end{bmatrix}$	и 🔭	835 834.9 58.3 7 16 1	16	· · · · · SS-5 M	<del>-</del>
					**
830 829.8 63.5		830 829.9 63.3	22		<u></u>
11 22 42	M 828.3 65.0 Boring Terminated at Elevation 828.3 ft in	15 26 3	33	·   · · · · ·       M	*
	Residual: clayey sandy SILT (A-4)				*
		825 824.9 68.3 15 21 4	42	33.	<b>-</b>
					*
		820 819.9 73.3	20		- - - - 818.4 74.8
		17 21 3	39       . •	.     M	818.4 74.8  Boring Terminated at Elevation 818.4 ft in
					Residual: silty fine SAND (A-2-4)
Z			L		

	BURE LUG					T
<b>WBS</b> 34853.1.2 <b>TIP</b> U-		GEOLOGIST Todd R.W.	WBS 34853.1.2		TY FORSYTH	GEOLOGIST Todd R.W.
SITE DESCRIPTION Bridge No. 290 on SR	R 1672 (Hanes Mill Road) over US 52	GROUND WTR	(ft) SITE DESCRIPTION Bridge No.	290 on SR 1672 (Hanes Mill Road	I) over US 52	GROUND WTR (ft)
BORING NO. EB2-A STATIC	ON 35+14 OFFSET 30 ft LT	ALIGNMENT -L- 0 HR. N	ENT -L-         0 HR.         N/A         BORING NO. EB2-C         STATION 35+09		OFFSET 9 ft RT	ALIGNMENT -L- 0 HR. N/A
COLLAR ELEV. 901.7 ft TOTAL	<b>DEPTH</b> 55.6 ft <b>NORTHING</b> 889,854	<b>EASTING</b> 1,622,351 <b>24 HR.</b> 41	1.0 <b>COLLAR ELEV.</b> 912.8 ft	TOTAL DEPTH 60.9 ft	NORTHING 889,825	<b>EASTING</b> 1,622,378 <b>24 HR.</b> 51.0
DRILL RIG/HAMMER EFF./DATE CME-550	DRILL METH				DRILL METHOD	
	T DATE 01/22/99			START DATE 01/25/99	COMP. DATE 01/25/99	
		SURFACE WATER DEPTH N/A	DRILLER Tucker, R.J.		1 7.	SURFACE WATER DEPTH N/A
DRIVE   DEPTH   BLOW COUNT		O SOIL AND ROCK DESCRIPTION G ELEV. (ft) DEPTH	ELEV   DRIVE   ELEV   (ft)   DEPTH   BLOW COUL	NT BLOWS PER FOO 0.5ft 0 25 50	75 100 NO. MOI G	
905			915			
		901.7 GROUND SURFACE	0.0		.	912.8 GROUND SURFACE 0.0 RESIDUAL
900		- RESIDUAL  Brown and tan, clavey fine sandy SILT	910			- Brown and tan, clayey fine sandy SILT (A-4)
		Brown and tan, clayey fine sandy SILT (A-4)	908.3 + 4.5	· .; · ·   · · · ·   · · ·	.	- "
897.5 + 4.2   3   3   5	is SS-20 D	<b>*</b>	3 6	6	[	[
895	8		905		·   · · · · ·	
	<b>:</b> :: :::: ::::	t l	903.3	6	:   : : : :	Ŀ
892.5 + 9.2	in	F-	3 6	6 12	.	[-
890	[		900 +		·   · · · · ·	
±         ·!	l	- - 887.5	898.3 + 14.5   2   5	6		<u></u>
	25%	Brown and tan, silty fine sandy CLAY	14.2	6 11	.	F-
885 885.4 + 16.3 2 4 4		885.8 (A-7-6) 1 Brown, tan, and gray, clayey fine sandy	895		·   · · · · ·	_
882.6 + 19.1	\\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\	SILT (A-4), slightly micaceous	893.3 + 19.5   2   5	5		-
2   6   7	. 13.	-		<sup>3</sup>     . • 10 .	.	-
880 +	<u>. f </u>	<u>F</u>	890		·   · · · · ·	_
877.6 + 24.1	:\: :::: ::::		888.4 + 24.4   2   4	5		
7   8   8	16	-		9	.	-
875	1	<b>*</b> _	885 +		·   · · · · ·	<u></u>
872.6 + 29.1		<u> </u>				- 883.4 29.4 N- Brown and tan, sandy SILT (A-5)
4   6   8     • •	. ♣14	-	881.3 + 31.5		.     <u>23% </u>	<i>V</i> ► 881.3 31.5
870	1	<u></u>	880	5 8	SS-23 D	T Brown, tan, and white, clayey fine sandy SILT (A-4)
867.6 + 34.1	: i :   : : : :   : : : :		878.4 + 34.4   4   7	9	1 1 1 1 1000	JET (X 4)
4   7   9	. 16	-		•   16	.	<b>}</b> -
865		<u> </u>	875	1	·   · · · · ·	<u></u>
862.6 + 39.1			873.4 + 39.4   5   8	10		_
+   4   7   9     • •	• • • • • • • • • • • • • • • • • • • •	<b>-</b>		10     • • • • • • • • • • • • • • •		-
860	· · · · · · · · · · · · · · · · · · ·	<b>~</b>	870		·   · · · · ·	[-
857.6 + 44.1	: <u> </u>	-	868.4 + 44.4   4   7	$\frac{1}{8}$		
3   6   7	<u>1</u> 413:         M	t		□ • 15	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	<u> </u>
855		F	865			F-
852.7 + 49.0			863.4 + 49.4   3   6	8     : : 1   : : :   : : :		<u> </u>
	20			□ • 14		<u>t</u>
850	<del></del>	<del>-</del>	858.8 + 54.0	<del>                                  </del>		<u> </u>
	· · · · · · · · · · · · · · · · · · ·	<b></b>	858.8 + 54.0 3 6	7		-
3 7 19	M	846.1 5	55.6	: : : :   : : :   : : :	- 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1	
		Boring Terminated at Elevation 846.1 ft in Residual: clayey sandy SILT (A-4)	855			<u> </u>
			853.4 + 59.4   4   7	11		- 054.0
		Other Samples: ST-2 (14.2 - 15.9)			.	851.9 60.9 Boring Terminated at Elevation 851.9 ft in
		<u> </u>				Residual: clayey sandy SILT (A-4)
ij   Ţ     I		-				Other Samples: ST-3 (29.4 - 31.5)
		ţ.				S1-3 (29.4 - 31.5)
		F				t
		-				F
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SHEET 10

					_			ORE L				1			
WBS 34853.1.2						P U-2729		FY FORSY				GEOLOGIST Todd R.W.	1	ROUND WTR (ft)	
				lge No		on SR 1672 (Hane	s Mill Road					T	-		
	ING NO				_	TATION 35+05		OFFSET				ALIGNMENT -L-	0 HR.	N/A	
COLLAR ELEV. 913.6 ft TO  DRILL RIG/HAMMER EFF./DATE CME-550			OTAL DEPTH 61.	4 ft	NORTHIN				<b>EASTING</b> 1,622,411	24 HR.	52.0				
				IE CI								<del>,                                    </del>	MER TYPE	Automatic	
	LER TO			NA/ 001		FART DATE 01/2	2/99 S PER FOO	COMP. DA		22/99   <b></b> /	<i>a</i>	SURFACE WATER DEPTH	N/A		
This I ELEV Philippe				0 25	75 100 100 17 0				SOIL AND ROCK DE ELEV. (ft)	SCRIPTION	RIPTION DEPTH (ft)				
915		-										_ - - 913.6 GROUND SUR	EACE	0.0	
	_	-										- RESIDUA	<u>L</u>		
910	_	-						.			111	Brown, clayey fine sand slightly micace		),	
	908.5	5.1	4	6	6				00.45		1,1	-			
	-		4	"		1. 12.			SS-15	D	1,1	-			
905	002.5	- 10 1				1.1					1,1	- - -			
	903.5	- 10.1	2	4	6	. •10 · · · ·					1,1,1	•			
900	_	_									111	- - <del>-</del>			
	898.5	15.1	2	3	5	: <u> </u> : : :   : : :		.				• •			
	-	-	-			.•8						896.1		17.5	
895	893.6 -	- 20.0										Brown, tan, and gray, cla SILT (A-4)		ndy	
	-	-	2	4	5	9			SS-16	D					
890	-	_										- -			
	888.6 -	- 25.0 -	2	5	6	.		.				- -			
	-	_				1		.				• •			
885		- - 30.0										<u> </u>			
	-	-	3	6	8	14						• •			
880	_	_				· · j · ·   · · ·						=			
	878.6 -	35.0	2	4	6	: <b>/</b> :::::		.				- -			
075	-	-				10									
875	873.6 -	- - 40 0				· · \ ·   · · ·						<del>-</del> •			
	-		4	7	10	17			SS-17	D		• •			
870	_	-				/ .						<u>.</u>			
	868.6 -	- 45.0 -	2	4	7	/			SS-18	М		•			
865	-	-				: \' : : : :						•			
000	863.6 -	- - 50.0				j						<del>_</del> •			
	-	-	3	6	8	14						•			
860	-	- -				1						• <del>-</del>			
	858.6 -	- 55.0 -	2	5	5	$  \dot{j}_{10}  $			SS-19	М		• •			
855	-	-				-   -						• •			
000	853.6 -	- - 60.0				- 1						<del>-</del> -			
	-	-	3	5	7	12						852.2 Boring Terminated at Elev	ration 852.2	61.4	
	-											Residual: clayey sand	y SILT (A-4)		

GROUND WTR (ft)

30.0

FIAD

HAMMER TYPE Automatic

		BURE LUG					
<b>WBS</b> 34853.1.2	<b>TIP</b> U-2729 <b>COU</b>	INTY FORSYTH	GEOLOGIST C. Tremblay	<b>WBS</b> 34853.1.2	TIP U-2729 COUN	ITY FORSYTH	GEOLOGIST C. Tremblay
SITE DESCRIPTION Bridge N	o. 290 on SR 1672 (Hanes Mill Ro	oad) over US 52	GROUND WTR (ft)	SITE DESCRIPTION Bridge No	o. 290 on SR 1672 (Hanes Mill Roa	d) over US 52	GROUND WTR
BORING NO. EB2-D	STATION 35+01	OFFSET 68 ft LT	<b>ALIGNMENT</b> -L- <b>0 HR.</b> 30.0	BORING NO. EB2-D	STATION 35+01	OFFSET 68 ft LT	ALIGNMENT -L- 0 HR. 3
COLLAR ELEV. 892.0 ft	TOTAL DEPTH 80.0 ft	NORTHING 889,868	<b>EASTING</b> 1,622,313 <b>24 HR.</b> FIAD	COLLAR ELEV. 892.0 ft	TOTAL DEPTH 80.0 ft	NORTHING 889,868	<b>EASTING</b> 1,622,313 <b>24 HR.</b> FI
DRILL RIG/HAMMER EFF./DATE	SUM3123 CME-550X 95% 11/30/2017	DRILL METHOD H	I.S. Augers HAMMER TYPE Automatic	DRILL RIG/HAMMER EFF./DATE SU	JM3123 CME-550X 95% 11/30/2017	DRILL METHOD H.	S. Augers HAMMER TYPE Automat
DRILLER L. Gonzalez-Castill	START DATE 10/25/18	COMP. DATE 10/29/18	SURFACE WATER DEPTH N/A	DRILLER L. Gonzalez-Castillo	<b>START DATE</b> 10/25/18	COMP. DATE 10/29/18	SURFACE WATER DEPTH N/A
ELEV DRIVE DEPTH BLOW C	DUNT BLOWS PER FO	DOT SAMP. V	SOIL AND ROCK DESCRIPTION	ELEV DRIVE DEPTH BLOW COU	UNT BLOWS PER FO	OT SAMP.	SOIL AND ROCK DESCRIPTION
(ft) (ft) (ft) 0.5ft 0.5f	0.5ft 0 25 50		ELEV. (ft) DEPTH (ft)	(ft) (ft) (ft) 0.5ft 0.5ft	0.5ft 0 25 50	75 100 NO. MOI G	SOIL AND NOOK DESCRIPTION
895				815	Match Line		
			_	813.5 + 78.5   13   21	46	[ ] <sub>M</sub>	RESIDUAL White, brown, and black, sandy SILT (A-4)
891.0 1.0	<del>                                     </del>		892.0 GROUND SURFACE 0.0  RESIDUAL	13 21	40	67 W	Boring Terminated at Elevation 812.0 ft in
890   2   3	4	SS-154 25%	Black and brown, fine sandy silty CLAY (A-6), slightly micaceous				Residual: sandy SILT (A-4)
888.5 + 3.5 + 5 5	5	·· ···     M	- (A-0), siighiiy micaceous				- -
885 886.0 6.0 4 6							- -
883 5 + 8 5	12	M	<del> -</del>  -				<del>-</del> •
11 12	14		-				<del>-</del> -
880 +			880.0 12.0				- <del>-</del>
878.5 + 13.5 4 6	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Brown, tan, and gray, fine sandy SILT (A-4), slightly micaceous				- -
	: : \frac{1}{2} : : : :   : : :		-				<u>.</u>
875 T 18.5		<del>  </del>		+			_
73.5 10.5 4 5		I I I I I I I I I I I I I I I I I I I					<u>.</u>
870 +	· · · / ·   · · · ·   · ·		-				-
868.5 23.5 7 9	10		-				-
	10 • 19		-	‡			- -
865			-				- <del>-</del>
863.5 + 28.5   3   5	7		-				- -
860 + +			-				- -
858 5 + 33 5			<del> -</del>  -				<del>_</del> -
2 4	7   : • 11 :   : : : :   : :	:: ::::   D	-				- -
855		··   · · · ·	<u>-</u>				- <del>-</del>
853.5 + 38.5   5   5	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	· ·   · · · ·	-				- -
	1		_				- -
850 T		<del>  </del>					_ -
43.3 4 7	10	:: ::::   M					- -
845		· ·   · · · ·	_				<u>-</u>
843.5 + 48.5 4 8	10						-
1/28/	10   • 18	M					-
843.5 + 48.5							
인 838.5 + 53.5 - 5 11	15	· ·   · · · ·					- -
Ö 835 T							- -
2 833.5 + 58.5			-				<del>-</del> -
9 8 12	18     •30	:: ::::   W					- -
830			<del>-</del>				<u>-</u>
828.5 + 63.5   5   8	$\frac{1}{11}$ $\begin{vmatrix} \vdots & \vdots & \ddots & \ddots \\ \vdots & \ddots & \ddots & \vdots \\ 1 & \ddots & \ddots & \vdots \end{vmatrix}$	: :   : : : :	-				<del>-</del> -
65/28			-				- -
823.5 T 68.5			<del> -</del>  -				_ -
11g	15	: :   : : : :					- -
833.5 + 58.5 8 12 90 8830 - 828.5 + 63.5 5 8 90 828.5 + 63.5 5 8 90 828.5 + 68.5 5 8 90 8		··   · · · ·	<u> </u>				<u>-</u>
818.5 + 73.5	68		818.0 74.0				<u>-</u> -
		100/1.0 W	WEATHERED ROCK White, brown, and black, BIOTITE GNEISS				- -
≯I 815			<b>1</b> 815.0 77.0		1		

PROJECT NO.	SHEET NO.
U-2729	12

						SO	IL TE	ST RI	ESULT	S						•	
SAMPLE	DODINO	OTATION	OFFOFT	LINIT	DEPTH	AASHTO	1.1	D.I		% BY WE	EIGHT		% PA	SSING S	IEVES	%	%
NO.	BORING	STATION	OFFSET	LINE	INTERVAL	CLASS.	L.L.	P.I.	C. SAND	F. SAND	SILT	CLAY	10.0	40	200.0	Moisture	ORGANIC
SS-24	EBI-A	32+89	31' LT	-L-	3.7-5.2	A-4(1)	38	8	27.3	38.8	21.8	12.1	97.0	79.0	41.0	-	-
ST-4	EBI-A	32+89	31' LT	-L-	18.6-20.7	A-4(3)	39	6	12.0	41.2	34.7	12.0	100.0	94.0	60.0	27.8	-
SS-25	EBI-A	32+89	31' LT	-L-	20.7-22.2	A-4(1)	33	6	22.2	38.6	25.1	14.1	94.0	81.0	46.0	-	-
SS-26	EBI-A	32+89	31' LT	-L-	33.6-35.1	A-4(0)	35	8	36.8	30.1	21.0	12.1	91.0	66.0	37.0	-	-
SS-27	EBI-C	32+72	16' RT	-L-	19.3-20.8	A-4(0)	35	5	32.9	36.4	20.6	10.1	98.0	76.0	38.0	-	-
SS-28	EBI-C	32+72	16' RT	-L-	39.2-40.7	A-4(1)	32	7	23.8	32.7	27.3	16.2	98.0	82.0	51.0	-	-
SS-12	EBI-B	32+79	55' RT	-L-	4.8-6.3	A-4(1)	34	5	29.7	26.3	23.8	20.2	97.0	77.0	49.0	-	-
ST-1	EBI-B	32+79	55' RT	-L-	8.7-10.8	A-2-4(0)	36	NP	38 8	36.8	18.4	6.0	96.0	70.0	32.0	14.0	-
SS-13	EBI-B	32+79	55' RT	-L-	10.8-12.3	A-4(0)	26	NP	33.3	36.2	18.4	12.1	97.0	75.0	37.0	-	-
SS-14	EBI-B	32+79	55' RT	-L-	24.7-26.2	A-4(2)	35	9	21.8	35.6	28.5	14.1	96.0	84.0	49.0	-	-
SS-8	BI-A	33+91	26' LT	-L-	2.6-4.1	A-4(1)	32	6	25.1	36.4	24.4	14.1	98.0	83.0	47.0	-	-
SS-9	BI-A	33+91	26' LT	-L-	13.5-15.0	A-4(0)	31	5	28.1	35.2	22.6	14.1	97.0	80.0	44.0	-	-
SS-10	BI-A	33+91	26' LT	-L-	28.4-29.9	A-4(0)	33	6	21.6	48.5	17.8	12.1	100.0	88.0	39.0	-	-
SS-11	BI-A	33+91	26' LT	-L-	58.4-59.9	A-4(0)	36	5	23.4	43.8	22.6	10.1	98.0	85.0	41.0	-	-
SS-6	BI-C	33+87	10' RT	-L-	18.6-20.1	A-4(1)	32	6	21.0	37.0	23.8	18.2	100.0	98.0	50.0	-	-
SS-7	BI-C	33+87	10' RT	-L-	38.5-40.0	A-4(0)	29	6	36.6	30.1	21.2	12.1	93.0	68.0	37.0	-	-
SS-1	BI-B	33+91	50' RT	-L-	2.6-4.1	A-4(4)	39	8	20.0	28.7	31.1	20.2	97.0	83.0	58.0	-	-
SS-2	BI-B	33+91	50' RT	-L-	7.6-9.1	A-4(5)	40	9	17.2	31.3	33.3	18.2	100.0	90.0	61	-	-
SS-3	BI-B	33+91	50' RT	-L-	17.6-19.1	A-4(1)	33	5	20.6	33.7	29.5	16.2	100.0	88.0	55.0	-	-
SS-4	BI-B	33+91	50' RT	-L-	38.4-39.9	A-2-4(0)	32	NP	27.7	46.1	18.2	8.1	96.0	80.0	34.0	-	-
SS-5	BI-B	33+91	50' RT	-L-	58.3-59.8	A-2-4(0)	30	NP	33.5	41.8	16.6	8.1	99.0	77.0	31.0	-	-
SS-20	EB2-A	35+14	30' LT	-L-	4.2-5.7	A-4(1)	39	8	18.4	46.7	20.8	14.1	99.0	90.0	43.0	-	-
ST-2	EB2-A	35+14	30' LT	-L-	14.2-15.9	A-7-6(3)	42	l3	20.3	42.2	23.4	14.1	100.0	85.0	47.0	25.4	-
SS-21	EB2-A	35+14	30' LT	-L-	16.3-17.8	A-4(1)	37	5	23.2	35.6	25.1	16.2	100.0	87.0	50.0	-	-
SS-22	EB2-A	35+14	30' LT	-L-	29.1-30.6	A-4(0)	39	7	27.1	41.2	19 6	12.1	98.0	81.0	41.0	-	-
ST-3	EB2-C	35+09	9' RT	-L-	29.4-31.5	A-5(0)	43	8	26.7	42.2	23.0	8.1	99.0	82.0	39.0	23.2	-
SS-23	EB2-C	35+09	9' RT	-L-	31.5-33.0	A-4(1)	38	8	24.6	37.8	25.5	12.1	100.0	84.0	45.0	-	-
SS-15	EB2-B	35+05	55' RT	-L-	5.1-6.6	A-5(0)	42	7	23.2	45.3	17.4	14.1	99.0	86.0	40.0	-	-
SS-16	EB2-B	35+05	55' RT	-L-	20.0-21.5	A-4(0)	37	7	24.2	43.8	17.8	14.1	100.0	93.0	41.0	-	-
SS-17	EB2-B	35+05	55' RT	-L-	40.0-41.5	A-4(1)	36	7	24.0	42.0	23.8	10.1	100.0	86.0	45.0	-	-
SS-18	EB2-B	35+05	55' RT	-L-	45.0-46.5	A-4(1)	39	9	25.9	40.4	23.6	10.1	99.0	83.0	42.0	-	-
SS-19	EB2-B	35+05	55' RT	-L-	55.0-56.5	A-4(1)	37	8	23.6	41.6	18.6	16.2	100.0	87.0	44.0	-	-
SS-154	EB2-D	35+01	68' LT	-L-	1.0-2.5	A-6(7)	39	12	17.7	15.3	44.3	21.2	98.5	86.4	67.7	25.4	-



PROFILE (-L2-), LOOKING UPSTATION FROM END BENT 1.



END BENT 1, LOOKING FROM LT TO RT.

WBS NO.: 34853.1.2 TIP NO.: U-2729 BRIDGE NO. 290 ON SR 1672 OVER US 52 FORSYTH COUNTY, NORTH CAROLINA



BENT 1, LOOKING FROM RT TO LT.



END BENT 2, LOOKING FROM LT TO RT.

APHS WOOD

Wood Environment & Infrastructure Solutions, Inc.1600 4021 Stirrup Creek Drive, Suite 100 Durham, North Carolina 27703 Tel:(919) 381-9900 Fax: (919) 381-9901