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DESCRIPTION TITLE SHEET LEGEND (SOIL & ROCK) SITE PLAN PROFILE BORE LOGS

STATE OF NORTH CAROLINA

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

STRUCTURE SUBSURFACE INVESTIGATION

COUNTY NORTHAMPTON

PROJECT DESCRIPTION BRIDGE NO. 14 ON -L-(SR 1500) OVER WICCACANEE SWAMP AT *STA*. *15* + *30*

\mathbf{m} .R02 D R PROJEC

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	SF-650014	1	6

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

GENERAL SOIL AND ROCK STRATA DESCRIPTIONS AND INDICATED BOUNDARIES ARE BASED ON A GEOTECHNICAL INTERPRETATION OF ALL AVAILABLE SUBSURFACE DATA AND MAY NOT NECESSARILY REFLECT THE ACTUAL SUBSURFACE CONDITIONS BETWEEN BORINGS OR BETWEEN SAMPLED STRATA WITHIN THE BOREHOLE. THE LABORATORY SAMPLE DATA AND THE IN SITU UN-FLACE) TEST DATA CAN BE RELIED ON ONLY TO THE DECREE OF RELIABILITY INHERENT IN THE STANDARD TEST METHOD. THE OBSERVED WATER LEVELS OR SOLI MOISTURE CONDITIONS INDICATED IN THE SUBSURFACE INVESTIGATIONS ARE AS RECORDED AT THE TIME OF THE INVESTIGATION. THESE WATER LEVELS OR SOLI MOISTURE CONDITIONS MAY YARY CONSIDERABLY WITH TIME ACCORDING TO CLIMATIC CONDITIONS INCLUDING TEMPERATURES, PRECIPITATION AND WIND, AS WELL AS OTHER NON-CLIMATIC FACTORS.

THE BIDDER OR CONTRACTOR IS CALIFORED THAT DAMAGE AS NOWN 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 MARRANT OR GUARANTEE THE SUFFICIENCY OR ACCURACY OF THE INVESTIGATION MADE, NOR THE INTERPRETATIONS MADE, OR OPNION OF THE DEPARTMENT AS TO THE TYPE OF MATERIALS AND CONDITIONS TO BE ENCOUNTERED. THE BIDDER OR CONTRACTOR IS CAUTIONED TO PERFORM INDEPENDENT SUBSURFACE INVESTIGATIONS AND MAKE INTERPRETATIONS AS NECESSARY TO CONFIRM CONDITIONS ENCOUNTERED ON THE PROJECT. THE CONTRACTOR SHALL HAVE NO CLAIM FOR ADDITIONAL COMPENSATION OR FOR AN EXTENSION OF TIME FOR ANY REASON RESULTING FROM THE ACTUAL CONDITIONS ENCOUNTERED AT THE SITE DIFFERING FROM THOSE INDICATED IN THE SUBSURFACE INFORMATION.

NOTES:

- TES: THE INFORMATION CONTAINED HEREIN IS NOT IMPLIED OR GUARANTEED BY THE N.C. DEPARTMENT OF TRANSPORTATION AS ACCURATE NOR IS IT CONSIDERED PART OF THE PLANS, SPECIFICATIONS OR CONTRACT FOR THE PROJECT. BY HAVING REDUESTED THIS INFORMATION, THE CONTRACTOR SPECIFICALLY WAVES ANY CLAIMS FOR INCREASED COMPENSATION OR STETNSION OF TIME BASED ON DIFFERENCES BETWEEN THE CONDITIONS INDICATED HEREIN AND THE ACTUAL CONDITIONS AT THE PROJECT SITE. 2.

PERSONNEL

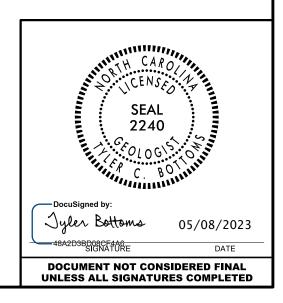
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- INVESTIGATED BY _____. BOTTOMS DRAWN BY _S.N. ZIMARINO CHECKED BY _____. BOTTOMS SUBMITTED BY ______. ARGENBRIGHT

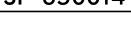


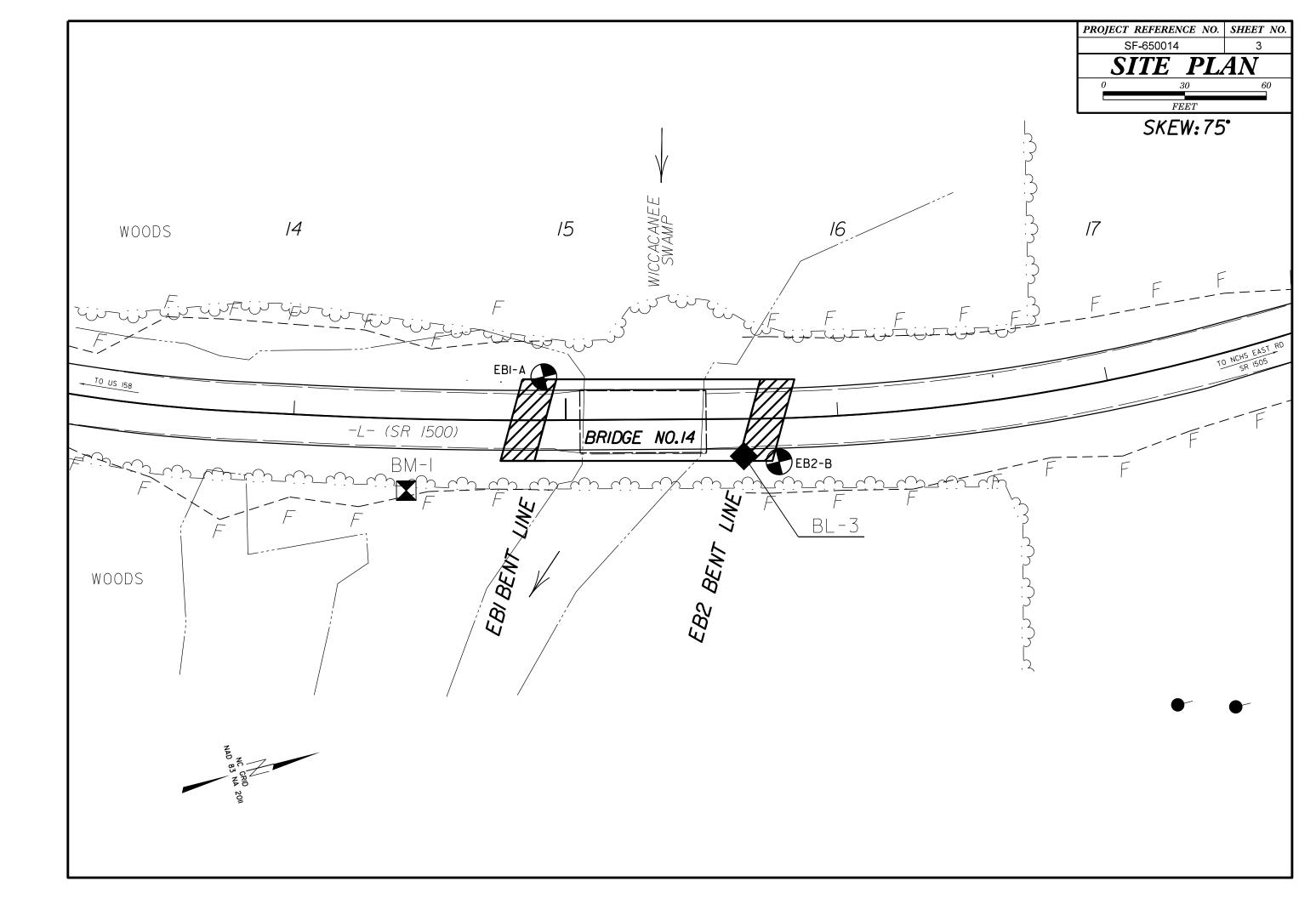
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS GEOTECHNICAL ENGINEERING UNIT SUBSURFACE INVESTIGATION

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 FLICHT POWER AUGER AND VIELD LESS THAN 100 BLOWS PER FOOT ACCORDING TO THE STANDARD PENETRATION TEST (AASHTO T 206, ASTM DI586). SOIL CLASSIFICATION IS BASED ON THE AASHTO SYSTEM. BASIC DESCRIPTIONS GENERALLY INCLUDE THE FOLLOWING; CONSISTENCY, COLOR, TEXTURE, MOISTURE, AASHTO CLASSIFICATION, AND OTHER PERTINENT FACTORS SUCH AS MINERALODICAL COMPOSITION, ANDURATIV, STRUCTURE, PLASTICITY, ETC. FOR EXAMPLE.	WELL GRADED - INDICATES A GOOD REPRESENTATION OF PARTICLE SIZES FROM FINE TO COARSE. UNIFORMLY GRADED - INDICATES THAT SOL PARTICLES ARE ALL APPROXIMATELY THE SAME SIZE. GAP-GRADED - INDICATES THAT SOL PARTICLES ARE ALL APPROXIMATELY THE SAME SIZE. GAP-GRADED - INDICATES THAT SOL PARTICLES ARE ALL APPROXIMATELY THE SAME SIZE. GAP-GRADED - INDICATES A MIXTURE OF UNIFORM PARTICLE SIZES OF TWO OR MORE SIZES. ANGULARITY OF GRAINS - GRAINS THE ANGULARITY OR ROUNDNESS OF SOLL GRAINS IS DESIGNATED BY THE TERMS;	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 PERITRATION BY A SPLIT SPON SAMPLER EQUAL TO OR LESS THAN ØLFOOT PER 60 BLOWS IN NON-COASTAL PLAIN MATERIAL. THE TRANSITION BETWEEN SOIL AND ROCK IS OFTEN REPRESENTED BY A ZONE OF WEATHERED ROCK. ROCK MATERIALS ARE TYPICALLYD UVIDED AS FOLLOWS:	ALLUVIUM (ALLUV.) - SOILS THAT HAVE BEEN TRANSPORTED BY WATER. <u>AQUIFER</u> - A WATER BEARING FORMATION OR STRATA. <u>ARENACEOUS</u> - APPLIED TO ROCKS THAT HAVE BEEN DERIVED FROM SAND OR THAT CONTAIN SAND. <u>ARGILLACEOUS</u> - APPLIED TO ALL ROCKS OR SUBSTANCES COMPOSED OF CLAY MINERALS, OR HAVING
VERY STIFF, GRAY, SILTY CLAY, MOIST WITH INTERBEDDED FINE SAND LAVERS, HIGHLY PLASTIC, A-7-6 SOIL LEGEND AND AASHTO CLASSIFICATION	ANGULAR, SUBANGULAR, SUBROUNDESS DE SUIL GRAINS IS DESIGNATED BY THE TERMS: ANGULAR, SUBANGULAR, SUBROUNDESD, OR ROUNDED. MINERALOGICAL COMPOSITION	WEATHERED NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT N VALUES > ROCK (WR) 100 BLOWS PER FOOT IF TESTED.	A NOTABLE PROPORTION OF CLAY IN THEIR COMPOSITION, SUCH AS SHALE, SLATE, ETC. <u>ARTESIAN</u> - GROUND WATER THAT IS UNDER SUFFICIENT PRESSURE TO RISE ABOVE THE LEVEL AT WHICH IT IS ENCOUNTERED, BUT WHICH DOES NOT NECESSARILY RISE TO OR ABOVE THE GROUND
CENERAL CRANULAR MATERIALS SILT-CLAY MATERIALS ORCANIC MATERIALS CLASS. (≤ 35% PASSING * 200) (> 35% PASSING * 200) ORCANIC MATERIALS CROUP A-1 A-3 A-2 A-4 A-5 A-7 A-1, A-2 A-4, A-5	MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAQLIN, ETC. ARE USED IN DESCRIPTIONS WHEN THEY ARE CONSIDERED OF SIGNIFICANCE.	CRYSTALLINE ROCK (CR) I I I WOULD YIELD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES GRANITE, GNEISS, GABBRO, SCHIST, ETC. NON CRYSTALLINE FINE TO COARSE GRAIN METAMORPHIC AND NON-COASTAL PLAIN	SURFACE. CALCAREOUS (CALC.) - SOILS THAT CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE.
CLASS. A-1-b A-2-4 A-2-5 A-2-6 A-2-7 SYMBOL 000000000000000000000000000000000000	COMPRESSIBILITY SLIGHTLY COMPRESSIBLE LL < 31 MODERATELY COMPRESSIBLE LL = 31 - 50	NORCHTSIHLLINE	COLLUVIUM - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM OF SLOPE. CORE RECOVERY (REC.) - TOTAL LENGTH OF ALL MATERIAL RECOVERED IN THE CORE BARREL DIVIDED
72 PASSING 1/8 58 MX 1/8 20 MX ET MULE 1/8 20 MX		SEDIMENTARY ROCK SPT REFUSAL. ROCK TYPE INCLUDES LIMESTONE, SANDSTONE, CEMENTED	BY TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE. <u>DIKE</u> - A TABULAR BODY OF IGNEOUS ROCK THAT CUTS ACROSS THE STRUCTURE OF ADJACENT
■200 15 MX 25 MX 10 MX 35 MX 35 MX 35 MX 35 MX 36 MN	ORGANIC MATERIAL GRANULAR SOILS SILT - CLAY SOILS OTHER MATERIAL TRACE OF ORGANIC MATTER 2 - 3% 3 - 5% TRACE 1 - 10% LITTLE ORGANIC MATTER 3 - 5% 5 - 12% LITTLE 10 - 20%	FRESH ROCK FRESH, CRYSTALS BRIGHT, FEW JOINTS MAY SHOW SLIGHT STAINING. ROCK RINGS UNDER HAMMER IF CRYSTALLINE.	ROCKS OR CUTS MASSIVE ROCK. <u>DIP</u> - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE HORIZONTAL.
PASSING *40 LL 48 MX 41 MN 48 MX 41 MN 48 MX 41 MN 48 MX 41 MN 50LLS WITH PI 6 MX NP 18 MX 18 MX 11 MN 11 MN 18 MX 19 MX 11 MN 11 MN 11 MN MODERATE HIGHL	MODERATELY ORGANIC 5 10% 12 20% SOME 20 35% HIGHLY ORGANIC > 10% > 20% HIGHLY 35% AND ABOVE	VERY SLIGHT ROCK GENERALLY FRESH, JOINTS STAINED, SOME JOINTS MAY SHOW THIN CLAY COATINGS IF OPEN, (V SLI.) CRYSTALS 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 Ø Ø Ø 4 MXX 8 MX 12 MX 16 MX ND MODULINE ORGANI USUAL TYPES STONE FRAGS. FINE SILTY OR LAYEY SILTY CLAYEY ORGANIC ORGANIC ORGANIC ORGANIC ORGANIC ORGANIC ORGANIC ORGANIC ORGANIC SOILS ORGANIC		SLIGHT ROCK GENERALLY FRESH, JOINTS STAINED AND DISCOLORATION EXTENDS INTO ROCK UP TO (SLI) I INCH. OPEN JOINTS MAY CONTAIN CLAY, IN GRANITOID ROCKS SOME OCCASIONAL FELDSPAR CRYSTALS ARE DULL AND DISCOLORED. CRYSTALLINE ROCKS RING UNDER HAMMER BLOWS.	<u>FAULT</u> - A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE. <u>FISSILE</u> - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES.
MATERIALS SAND SANU UKAVELIANU SANU SULS SULS CEN. RATING EVELLENT TO COOD EALD TO DODD FAIR TO DODD INCLUTAT	The static water level after 24 hours	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 DULL SOUND UNDER HAMMER BLOVE AND SHOWS SIGNIFICANT LOSS OF STRENGTH AS COMPARED	\underline{FLOAT} - ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIG1NAL POSITION AND DISLODGED FROM PARENT MATERIAL.
PI OF A-7-5 SUBGROUP IS ≤ LL - 30 ;PI OF A-7-6 SUBGROUP IS > LL - 30 CONSISTENCY OR DENSENESS	- OM- SPRING OR SEEP MISCELLANEOUS SYMBOLS	WITH FRESH ROCK. MODERATELY ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. IN GRANITOID ROCKS, ALL FELDSPARS DULL SEVERE AND DISCOLORED AND A MAJORITY SHOW KADLINIZATION. ROCK SHOWS SEVERE LOSS OF STRENGTH (MOD. SEV.) AND CAN BE EXCAVATED WITH A GEOLOGIST'S PICK. ROCK GIVES 'CLUWK'SQUND WHEN STRUCK.	FLOOD PLAIN (FP) - LAND BORDERING A STREAM, BUILT OF SEDIMENTS DEPOSITED BY THE STREAM, <u>FORMATION (FM.)</u> - A MAPPABLE GEOLOGIC UNIT THAT CAN BE RECOGNIZED AND TRACED IN THE FIELD. JOINT - FRACTURE IN ROCK ALONG WHICH NO APPRECIABLE MOVEMENT HAS OCCURRED.
PRIMARY SOIL TYPE COMPACTNESS OR CONSISTENCY RANGE OF STANDARD PENETRATION RESISTENCE (N-VALUE) RANGE OF UNCOMFINED COMPRESSIVE STRENGTH (TONS/FT2) GENERALLY VERY LODGE < 4	H ROADWAY EMBANKMENT (RE) WITH SOIL DESCRIPTION SOIL SYMBOL SOIL SYMBOL SYMBOL SOIL SYMBOL SOIL SYMBOL	IF TESTED, WOULD YIELD SPT REFUSAL 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 TO SOME EXTENT. SOME FRAGMENTS OF STRONG ROCK USUALLY REMAIN.	LEDGE - A SHELF-LIKE RIDGE OR PROJECTION OF ROCK WHOSE THICKNESS IS SMALL COMPARED TO ITS LATERAL EXTENT. LENS - A BODY OF SOIL OR ROCK THAT THINS OUT IN ONE OR MORE DIRECTIONS.
OENCIMELAT LOOSE 4 TO 10 GRANULAR MEDIUM DENSE 10 TO 30 N/A MATERIAL DENSE 30 TO 50 VERY DENSE > 50	ARTIFICIAL FILL (AF) OTHER THAN ROADWAY EMBANKMENT 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 SEVERE BUT MASS IS EFFECTIVELY REDUCED TO SOIL STATUS, WITH ONLY FRAGMENTS OF STRONG ROCK	MOTTLED (MOT.) - IRREGULARLY MARKED WITH SPOTS OF DIFFERENT COLORS. MOTTLING IN SOILS USUALLY INDICATES POOR AERATION AND LACK OF GOOD DRAINAGE. <u>PERCHED WATER</u> - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE OF AN UNFERVIEWED WIDE OF DATUM
VERY SOFT < 2 < 0.25 GENERALLY SOFT 2 TO 4 0.25 TO 0.5 SILT-CLAY MEDIUM STIFF 4 TO 8 0.5 TO 1.0 MATERIAL STIFF 8 TO 15 1 TO 2	INFERRED SOIL BOUNDARY	(V SEV.) REMAINING. SAPPOLITE IS AN EXAMPLE OF ROCK WEATHERED TO A DECREE THAT ONLY MINOR VESTIGES OF ORIGINAL ROCK FABRIC REMAIN. <u>IF TESTED, WOULD YIELD SPT N VALUES < 100 BPF</u> COMPLETE ROCK REDUCED TO SOIL. ROCK FABRIC NOT DISCERNIBLE, OR DISCERNIBLE ONLY IN SMALL AND SCATTERED CONCENTRATIONS. OUARTZ MAY BE PRESENT AS DIKES OR STRINGERS. SAPPOLITE IS	OF AN INTERVENING IMPERVIOUS STRATUM. <u>RESIDUAL (RES.)SOIL</u> - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK. <u>ROCK QUALITY DESIGNATION (ROD)</u> - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF
(COHESIVE) VERY STIFF 15 TO 30 2 TO 4 HARD > 30 > 4	TTTTTT ALLUVIAL SOIL BOUNDARY A PIEZOMETER INSTALLATION - SPT N-VALUE	ALSO AN EXAMPLE. ROCK HARDNESS	ROCK SEGMENTS EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE. <u>SAPROLITE (SAP.)</u> - RESIDUAL SOLL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT
TEXTURE OR GRAIN SIZE U.S. STD. SIEVE SIZE 4 10 40 60 200 270	RECOMMENDATION SYMBOLS	VERY HARD CANNOT BE SCRATCHED BY KNIFE OR SHARP PICK. BREAKING OF HAND SPECIMENS REQUIRES SEVERAL HARD BLOWS OF THE GEOLOGIST'S PICK.	ROCK. <u>SILL</u> - 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 (BLDR.) (COB.) (GR.) (GCE. COD.) (GCE. COD.) (GL.) (CL.)	SHALLOW UNCLASSIFIED EXCAVATION - USED IN THE TOP 3 FEET OF UNDERCUT ACCEPTABLE DEGRADABLE ROCK EMBANKMENT OR BACKFILL	HARD CAN BE SCRATCHED BY KNIFE OR PICK ONLY WITH DIFFICULTY. HARD HAMMER BLOWS REQUIRED TO DETACH HAND SPECIMEN. MODERATELY CAN BE SCRATCHED BY KNIFE OR PICK. GOUGES OR GROOVES TO 0.25 INCHES DEEP CAN BE	RELATIVELY THIN COMPARED WITH ITS LATERAL EXTENT, THAT HAS BEEN EMPLACED PARALLEL TO THE BEDDING OR SCHISTOSITY OF THE INTRUDED ROCKS. <u>SLICKENSIDE</u> - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT
GRAIN MM 305 75 2.0 0.25 0.005 0.005 SIZE IN. 12 3	ABBRE VIATIONS AR - AUGER REFUSAL MED MEDIUM VST - VANE SHEAR TEST BT - BORING TERMINATED MICA MICACEOUS WEA WEATHERED	HARD EXCAVATED BY HARD BLOW OF A GEOLOGIST'S PICK. HAND SPECIMENS CAN BE DETACHED BY MODERATE BLOWS. MEDIUM CAN BE GROOVED OR GOUGED 0.05 INCHES DEEP BY FIRM PRESSURE OF KNIFE OR PICK POINT.	OR SLIP PLANE. <u>STANDARD PENETRATION TEST (PENETRATION RESISTANCE)(SPT)</u> - NUMBER OF BLOWS (N OR BPF)OF A 140 LB. HAMMER FALLING 30 INCHES REQUIRED TO PRODUCE A PENETRATION OF 1 FOOT INTO SOL
SOIL MOISTURE - CORRELATION OF TERMS	CL CLAY MOD MODERATELY γ - UNIT WEIGHT CPT - CONE PENETRATION TEST NP - NON PLASTIC γ_d - DRY UNIT WEIGHT CSE COARSE ORG ORGANIC	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.
(ATTERBERG LIMITS) - SATURATED - USUALLY LIQUID; VERY WET, USUALLY	N DAL CONT OBJECT OBJECT OBJECT State SAMPLE ABBREVIATIONS DPT DILATOMETER TEST PART PRESSUREMETER TEST SAMPLE ABBREVIATIONS DPT DVNAMIC PENETRATION TEST SAP. SAPROLITIC S BULK DEV SULK	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 PIECES CAN BE BROKEN BY FINGER PRESSURE.	<u>STRATA CORE RECOVERY (SREC.)</u> - TOTAL LENOTH OF STRATA MATERIAL RECOVERED DIVIDED BY TOTAL LENOTH OF STRATUM AND EXPRESSED AS A PERCENTAGE. <u>STRATA ROCK QUALITY DESIGNATION (SROD)</u> - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL
(SAT.) FROM BELOW THE GROUND WATER TABLE	F - FINE SL - SILT, SILT ST - SHELB FUND F - FINE SL - SILT, SILT ST - SHELB FUND F - FOSSL FOSSILIFEROUS SL - SILT, SL IGHTLY RS - ROCK F - FRACTURED, FRACTURES TCR - TRICONE REFUSAL RT - RECOMPACTED TRIAXIAL	VERY CAN BE CARVED WITH KNIFE. CAN BE EXCAVATED READILY WITH POINT OF PICK. PIECES 1 INCH SOFT OR MORE IN THICKNESS CAN BE BROKEN BY FINGER PRESSURE. CAN BE SCRATCHED READILY BY FINGERNAIL.	LENGTH OF ROCK SEGMENTS WITHIN A STRATUM EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF STRATA AND EXPRESSED AS A PERCENTAGE. T <u>OPSOIL (TS.)</u> - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.
RANGE - WET - (W) SEMISOLID: REQUIRES DRYING TO (PI) PL PLASTIC LIMIT	FRAGS FRAGMENTS W - MOISTURE CONTENT CBR - CALIFORNIA BEARING HI HIGHLY V - VERY RATIO	FRACTURE SPACING BEDDING	BENCH MARK: BL-3 N: 969983.9560
OPTIMUM MOISTURE - MOIST - (M) SOLID; AT OR NEAR OPTIMUM MOISTURE SL SHRINKAGE LIMIT	EQUIPMENT USED ON SUBJECT PROJECT DRILL UNITS: ADVANCING TOOLS: HAMMER TYPE: X CME-45C CLAY BITS X AUTOMATIC MANUAL	VERY WIDE MORE THAN 10 FEET VERY THICKLY BEDDED 4 FEET WIDE 3 TO 10 FEET THICKLY BEDDED 1.5 - 4 FEET MODERATELY CLOSE 1 TO 3 FEET THINLY BEDDED 0.16 - 1.5 FEET CLOSE 0.16 TO 1 FOOT VERY THINLY BEDDED 0.08 - 0.16 FEET	E: 2478834.03I0 ELEVATION: 8I.79 FEET NOTES:
- DRY - (D) REQUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE	CME-55 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	
PLASTICITY		INDURATION	
PLASTICITY INDEX (PI) DRY STRENGTH NON PLASTIC 0-5 VERY LOW SLIGHTLY PLASTIC 6-15 SLIGHT MODERATELY PLASTIC 16-25 MEDIUM	VANE SHEAR TEST UINGCARBIDE INSERTS HAND TOOLS:	FRIABLE RUBBING WITH FINGER FREES NUMEROUS GRAINS: GENTLE BLOW BY HAMMER DISINTEGRATES SAMPLE.	
HIGHLY PLASTIC 26 OR MORE HIGH	PORTABLE HOIST	MODERATELY INDURATED GRAINS CAN BE SEPARATED FROM SAMPLE WITH STEEL PROBE; BREAKS EASILY WHEN HIT WITH HAMMER. GRAINS ARE DIFFICULT TO SEPARATE WITH STEEL PROBE;	
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.		INDURATED DIFFICULT TO BEFARM IN WITH HAMMER. EXTREMELY INDURATED SHARP HAMMER BLOWS REQUIRED TO BREAK SAMPLE; SAMPLE BREAKS ACROSS GRAINS.	DATE: 8-15-14

PROJECT REFERENCE NO. SF-650014





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		i.		PROJECT	REFERENCE NC).	SHEE	ſ NO.
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GEOTECHNICAL BORING REPORT BORE LOG

DRILL RIG/HAMMER EFF./DATE GF00075 CME-45C S DRILLER Walker, C. M. START D/ ELEV DRIVE ELEV (ft) DEPTH (ft) BLOW COUNT (ft) 0.5ft 0.5ft	Isoo) over Wiccacanee Swamp 14+92 OFFSET 16 ft LT EPTH 114.4 ft NORTHING 2,478,788	ALIGNMENT -L- 0 HR. N/A EASTING 969,920 24 HR. 5.0	WBS BP1.R023.1 SITE DESCRIPTION Bridge No. 1 BORING NO. EB1-A COLLAR ELEV. 81.6 ft		OFFSET 16 ft LT	GEOLOGIST Zimarino, S. N. Image: Constraint of the state of
BORING NO. EB1-A STATION COLLAR ELEV. 81.6 ft TOTAL DI DRILL RIGHAMMER EFF./DATE GF00075 CWE-45C S DRILLER Walker, C. M. START DA ELEV DRIVE (ft) DEPTH (ft) BLOW COUNT (ft) 0.5ft 0.5ft	14+92 OFFSET 16 ft LT EPTH 114.4 ft NORTHING 2,478,788 90%11/21/2022 DRILL METHOD ATE 09/19/22 COMP. DATE 09/20/22	ALIGNMENT -L- 0 HR. N/A EASTING 969,920 24 HR. 5.0	BORING NO. EB1-A	STATION 14+92	OFFSET 16 ft LT	、 , ,
COLLAR ELEV. 81.6 ft TOTAL DI DRIL RIG/HAMMER EFF./DATE GFC0075 CVE-45C S DRILER Walker, C. M. START D/ ELEV DRIVE DEPTH BLOW COUNT 0.5ft 0.5ft 0	EPTH 114.4 ft NORTHING 2,478,788 90% 11/21/2022 DRILL METHOD ATE 09/19/22 COMP. DATE 09/20/22	EASTING 969,920 24 HR. 5.0				
DRILL RIG/HAMMER EFF./DATE GF00075 CME-45C S DRILLER Walker, C. M. START D/ ELEV DRIVE ELEV (ft) DEPTH (ft) BLOW COUNT (ft) 0.5ft 0.5ft	90% 11/21/2022 DRILL METHOD ATE 09/19/22 COMP. DATE 09/20/22				NORTHING 2,478,788	EASTING 969,920 24 HR. 5.0
ELEV (ft) DRIVE ELEV (ft) DEPTH (ft) BLOW COUNT 0.5ft 0.5ft 0.5ft 0			DRILL RIG/HAMMER EFF/DATE GFO		DRILL METHOD	
(ft) (ft) 0.5ft 0.5ft 0	BLOWS PER FOOT SAMP.	SURFACE WATER DEPTH N/A	DRILLER Walker, C. M.	START DATE 09/19/22	COMP. DATE 09/20/22	SURFACE WATER DEPTH N/A
(ft) (ft) 0.5ft 0.5ft 0		SOIL AND ROCK DESCRIPTION	ELEV DRIVE DEPTH BLOW COU	INT BLOWS PER FOO	DT SAMP. 0	SOIL AND ROCK DESCRIPTION
	25 50 75 100 NO. MOI	Solic AND ROOR DESCRIPTION S ELEV. (ft)	(ft) (ft) (ft) 0.5ft 0.5ft	0.5ft 0 25 50	75 100 NO. MOI G	
85		_	<u></u>	Match Line		
			3.7 - 77.9 8 10	<u>14</u>		SAND, SATURATED VORKTOWN
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	·· · · · · · · · · · · · · · · · · · ·		<u>-5</u> -6.3 - 87.9			4 4
(3.7 7.9 WOH 2 4		GRAY SILTY SAND, SATURATED		19 · · · · · • • • • · · · · · · · · · ·		
70 +	· · · · · · · · · · · · · · · · · · ·		-10			<u></u>
		GRAY AND TAN SANDY CLAY, WET	<u>-11.3 - 92.9</u> - 6 10	18		\$
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63.7 - 17.9	· · · · · · · · · · · · · · · · · · ·		-16.3 7 97.9			GRAY AND GREEN SAND WITH LIGNITE, SATURATED (CAPE FEAR FORMATION)
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+		GRAY AND GREEN SAND AND SILLY SAND, SATURATED (YORKTOWN FORMATION)				
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45 +	· · · · · · · · · · · · · · · · · · ·					Boring Terminated at Elevation -32.8 ft in Medium Dense Silty Sand
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SHEET 5 OF 6

GEOTECHNICAL BORING REPORT BORE LOG

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WBS	BP1.F	R023.1			T	P SF-650014	COUNT	Y NORTHA	MPTON	l		GEC	LOGIST Zimarino, S. N.	1	WBS	BP1.R023	3.1		Т	IP SF-650	014	COUNT	Y
SITE	DESCR	RIPTION	Brid	ge No.	14 on	-L- (SR 1500) over W	iccacane	e Swamp				_		GROUND WTR (ft)	SITE	DESCRIPT	ON	Bridge I	No. 14 on	-L- (SR 150	00) over Wi	iccacane	e Sv
BOR	ing no.	EB2-I	В		S	FATION 15+78		OFFSET	16 ft RT			ALIC	SNMENT -L-	0 HR. N/A	BOR	Ing no. E	B2-B		s	TATION 1	5+78		0
COLI	LAR EL	EV. 81	.9 ft		Т	OTAL DEPTH 114.5	ft	NORTHING	2,478	3,839		EAS	TING 969,996	24 HR. 4.8	COL	LAR ELEV.	81.9) ft	т	OTAL DEP	TH 114.5	ft	N
DRILL	. RIG/HAI	VIMER EF	Ŧ./Dat	E GFO	, 20075 (ME-45C90%11/21/2022		-1	DRILLI	METHO	D M	ud Rotary	HAMM	ER TYPE Automatic	DRILL	RIG/HAMME	R EFF.	/DATE	GF00075 (DME-45C 90%	511/21/2022		-
DRIL	LER V	Valker, C	С. М.		S	TART DATE 09/15/2	22	COMP. DA	, TE 09/	/19/22		SUR	FACE WATER DEPTH N/	A	DRIL	LER Walk	er, C.	M.	S	TART DATI	E 09/15/2	22	С
ELEV	DRIVE		1	ow co			PER FOO	T	SAMP	. 💙 /	L				ELEV			BLOW				PER FOO	 л
(ft)	ELEV (ft)	(ft)		0.5ft	0.5ft	0 25	50	75 100	NO.	Имо	O I G	ELEV.	SOIL AND ROCK DES	CRIPTION DEPTH (ft)	(ft)	ELEV (ft) (0.5ft 0.	5ft 0.5ft	0	25	50	75
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	73.9	+ 8.0 +	WOH	1	4			· · · · · ·				-	GRAY SILTY SAND, SA	TURATED		<u>-6.1 + 88</u>	3.0	7 1	0 17		↓ • • • • • • • • • • • • • • • • • • •		:
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70	68.9	13.0										<u>69.9</u>		<u> </u>	-10	-11.1 + 9	3.0]	1	+	-
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65		Ŧ										64.9		17.0	-15	I I					/····		
	63.9	18.0	3	4	4							-	TAN SILTY SAND, SA	TURATED		-16.1 - 98	3.0	7 1	0 15		1		
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	58.9	23.0	3	3	3			· · · · · ·					TAN CLAYEY SILT	, WET		-21.1 - 10	3.0	6 1	4 20				:
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55	53.9	T 28.0					+ • • •					<u>54.9</u>	COASTAL PLA	<u> </u>	-25	 	8.0				+++++	+	
		+ 20.0 +	2	1	1			· · · · · ·				F	GRAY AND GREEN SANI	D AND SILTY		-20.1 = 10	0.0	8 1	5 20		· · · · ·		:
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50	48.9	33.0										-			-30	-31.1 + 11	3.0	_			· · · · ·		
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SHEET 6 OF 6

NORTHAI	MPTON			GEOLOGIST Zima	arino, S. N.		
Swamp						GROUN	D WTR (ft)
OFFSET 1	6 ft RT			ALIGNMENT -L-		0 HR.	N/A
NORTHING	2,478,	839		EASTING 969,996	5	24 HR.	4.8
	DRILL N	iethod	Mu	ld Rotary	HAMME	RTYPE	Automatic
COMP. DAT	FE 09/ ²	19/22		SURFACE WATER	DEPTH N/A	A	
	SAMP.		L O	SOIL AND	O ROCK DESC	RIPTION	
75 100	NO.	ИОІ	G				
	+				GREEN SAND		
				SAND, SAT	TURATED (YC MATION) (cont	RKTOWI	
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						<u>Y SII T W</u>	/FT 97.0
					FEAR FORM		_ .
				-20.1			102.0
				GRAY MICA	CEOUS SAND H LIGNITE, SA		TY 7
					FEAR FORM		0
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				-			
				30.1			112.0
			0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	-			
	-		••••	32.6 Boring Termin	nated at Eleva	tion -32.6	114.5 ft in
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