NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS GEOTECHNICAL UNIT

ID .	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
B-3906	33341.1.1	2	12

SUBSURFACE INVESTIGATION

SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

						CA LEGEND, IERM	.5, 51 MBOLS	, AND ABBREV	IATIONS		
	SOIL DESCRIPTIO	N		WELL CRAPED INDICATES A CO	GRADATION	TOOM EINE TO COARCE	HADD BOCK IS NO		DESCRIPTION	T DECICAL AN INCORP.	TERMS AND DEFINITIONS
SOIL IS CONSIDERED TO BE THE UNCONSOLIDATED, SEMI-CONSOLIDATED OR WEATHERED EARTH MATERIALS WHICH CAN BE PENETRATED WITH A CONTINUOUS FLIGHT POWER AUGER, AND WHICH YIELDS LESS THAN		s	WELL GRADED- INDICATES A GOOD REPRESENTATION OF PARTICLE SIZES FROM FINE TO COARSE UNIFORM- INDICATES THAT SOIL PARTICLES ARE ALL APPROXIMATELY THE SAME SIZE, (ALSO		HARD ROCK IS NON-COASTAL PLAIN MATERIAL THAT WHEN TESTED, WOULD YIELD SPT REFUSAL. AN INFERRED ROCK LINE INDICATES THE LEVEL AT WHICH NON-COASTAL PLAIN MATERIAL WOULD YIELD SPT REFUSAL.				ALLUVIUM (ALLUV.) - SOILS WHICH HAVE BEEN TRANSPORTED BY WATER.		
100 BLOWS PER FOOT ACCORDING TO ST	ANDARD PENETRATION TEST (AASHTO T206, ASTM D-1586), SOIL	_	POORLY GRADED) GAP-GRADED- INDICATES A MIX	TURE OF UNIFORM PARTICLES OF TWO OR M	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 REPRESENTED BY A ZONE				AQUIFER - A WATER BEARING FORMATION OR STRATA.
CLASSIFICATION IS BASED ON THE AASHTO SYSTEM AND BASIC DESCRIPTIONS GENERALLY SHALL INCLUDE: CONSISTENCY, COLOR, TEXTURE, MOISTURE, AASHTO CLASSIFICATION, AND OTHER PERTINENT FACTORS SUCH		ANGULARITY OF GRAINS			OF WEATHERED ROCK, ROCK MATERIALS ARE TYPICALLY DIVIDED AS FOLOWS:				ARENACEOUS - APPLIED TO ROCKS THAT HAVE BEEN DERIVED FROM SAND OR THAT CONTAIN SAND.		
AS MINERALOGICAL COMPOSITION, ANGULA					S OF SOIL GRAINS ARE DESIGNATED BY TH	E TERMS; ANGULAR,	WEATHERED	2222	· · · · · · · · · · · · · · · · · · ·	N VALUES > 100 DLOVS	ARGILLACEOUS - APPLIED TO ALL ROCKS OR SUBSTANCES COMPOSED OF CLAY MINERALS, OR HAVING A NOTABLE PROPORTION OF CLAY IN THEIR COMPOSITION, AS SHALE, SLATE, ETC.
VERY STIFF, GRAY SULY CLAY, MOST WITH INTERGEDOED FINE SANDLANERS, HIGHLY PLASTIC, A-7-6 SOIL LEGEND AND AASHTO CLASSIFICATION				SUBANGULAR, SUBROUNDED, OR ROUNDED. MINERALOGICAL COMPOSITION			WEATHERED ROCK (WR) PER FOOT.			M AHEOES > IND DEGMS	ARTESIAN - GROUND WATER THAT IS UNDER SUFFICIENT PRESSURE TO RISE ABOVE THE LEVEL
GENERAL GRANULAR MATERI		ATERIAL C		MINERAL NAMES SUCH AS QUAR			CRYSTALLINE ROCK (CR)	FINE TO COAR	SE GRAIN IGNEOUS AND METAMORPH		AT WHICH IS IS ENCOUNTERED, BUT WHICH DOES NOT NECESSARILY RISE TO OR ABOVE THE GROUND SURFACE.
CLASS. (\$5% PASSING *20			IALS	MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAQLIN, ETC. ARE USED IN DESCRIPTIONS WHENEVER THEY ARE CONSIDERED OF SIGNIFICANCE.				GNEISS, GABBRU, SCHIST, ETC.			CALCAREOUS (CALC.) - SOILS WHICH CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE.
UNUUF 110		A-6 A-7 A-1, A-2 A-4, A-5			COMPRESSIBILITY		NON-CRYSTALLINE ROCK (NCR)	SEDIMENTARY I	SE GRAIN METAMORPHIC AND NON-C ROCK THAT WOULD YEILD SPT REFU	DASTAL PLAIN USAL IF TESTED. ROCK TYPE	COLLUVIUM - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM
	2-5 A-2-6 A-2-7	A-7-5 A-7-6 A-3 A-6, A-7		SLIGHTLY COMPRESS MODERATELY COMPRE		T LESS THAN 30 T 31-50	COASTAL PLAIN		LLITE, SLATE, SANDSTONE, ETC. N SEDIMENTS CEMENTED INTO ROCK	BUT MAY NOT YIFLD	OF SLOPE,
SYMBOL B00000000000000000000000000000000000				HIGHLY COMPRESSIBL	E LIQUID LIMI1	T GREATER THAN 50	SEDIMENTARY ROCK	COASTAL PLAIN SEDIMENTS CEMENTED INTO ROCK, BUT MAY NOT YIELD SPT REFUSAL, ROCK TYPE INCLUDES LIMESTONE, SANDSTONE, CEMENTED SHELL BEDS, ETC.			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.
% PASSING * 10 50 MX		SILT-	MUCK,		PERCENTAGE OF MATERIA GRANULAR SILT- CLAY	<u> </u>	1017		EATHERING		DIKE - A TABULAR BODY OF IGNEOUS ROCK THAT CUTS ACROSS THE STRUCTURE OF ADJACENT
# 40 30 MX 50 MX 51 MN SOILS COILS PEAT				ORGANIC MATERIAL	SOILS SOILS	OTHER MATERIAL	FRESH ROCK	ROCK FRESH, CRYSTALS BRIGHT, FEW JOINTS MAY SHOW SLIGHT STAINING, ROCK RINGS UNDER			ROCKS OR CUTS MASSIVE ROCK.
	MX 35 MX 35 MX 36 MN 36 MN	36 MN36 MN		TRACE OF ORGANIC MATTER LITTLE ORGANIC MATTER		RACE 1 - 10% ITTLE 10 - 20%		R IF CRYSTALLINE.	COLUMN THE CHOICE CELOTE CHARACTER	OFFICER TRACE CADER	DIP - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE HORIZONTAL.
	MN 40 MX41 MN 40 MX 41 MN MX 11 MN 11 MN 10 MX 10 MX	TOTAL MILL		MODERATELY ORGANIC	5 - 10% 12 - 20% 50	DME 20 - 35%			INED, SOME JOINTS MAY SHOW THIN FACE SHINE BRIGHTLY, ROCK RINGS		DIP DIRECTION (DIP AZIMUTH) - THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF
GROUP INDEX 0 0 0	4 MX 8 MX 12 MX		HIGHLY ORGANIC	HIGHLY ORGANIC	SROUND WATER	IGHLY 35% AND ABOVE		CRYSTALLINE NATURE.	HEL SHINE BRIGHTET, NOCK KINGS	ONDER PHIMICK BLOWS IF	THE LINE OF DIP, MEASURED CLOCKWISE FROM NORTH,
LIGIDAL TYPES STONE FRAGS.		AMOUNTS OF	SOILS	✓ WATER L	EVEL IN BORE HOLE IMMEDIATELY AFTER	P DRILL THIC			INED AND DISCOLORATION EXTENDS		FAULT - A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE.
OF MAJOR GRAVEL AND FINE SILIT	OR CLAYEY SILTY SILTY SOILS	SOILS MATTER		_		DRIECINO.			CLAY, IN GRANITOID ROCKS SOME OF ID, CRYSTALLINE ROCKS RING UNDER		FISSILE - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES.
MATERIALS SAND SHIND SHIND GENERATING				∇n.	ATER LEVEL AFTER 24 HOURS.				W DISCOLORATION AND WEATHERING		FLOAT - ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLODGED FROM
AS A EXCELLENT TO GO	DOD FAIR T	O POOR FAIR TO POOR	UNSUITABLE	<u> </u>	WATER, SATURATED ZONE OR WATER BEA	RING STRATA		(MOD.) GRANITOID ROCKS, MOST FELDSPARS ARE DULL AND DISCOLORED, SOME SHOW CLAY, ROCK HAS DULL SOUND UNDER HAMMER BLOWS AND SHOWS SIGNIFICANT LOSS OF STRENGTH AS COMPARED			PARENT MATERIAL.
SUBGRADE P. I. OF A-7-5	 ≤ L.L 30 : P.I. 0F A-	7-6 >1.1 30	1	O-MI► SPRING OF	R SEEPAGE			FRESH ROCK.			FLOOD PLAIN (F.P.) - LAND BORDERING A STREAM, BUILT OF SEDIMENTS DEPOSITED BY THE STREAM.
<u> </u>	SISTENCY OR DEN				MISCELLANEOUS SYMBOL	S			ED OR STAINED, IN GRANITOID ROCK HOW KAOLINIZATION, ROCK SHOWS S		FORMATION (FM.) - A MAPPABLE GEOLOGIC UNIT THAT CAN BE RECOGNIZED AND TRACED IN
COMPACTA	PANCE OF C	STANDARD RANGE OF UNCONF		☐ ROADWAY EMBANKI	MENT SPT CPT DPT DMT TEST BORI	THE CAMPLE	(MOD. SEV.) AND C		LOGIST'S PICK. ROCK GIVES *CLUNK		THE FIELD.
PRIMARY SOIL TYPE CONSIS	TENCY (N-VALI			WITH SOIL DESCR	IPTION VST PHT	ING SAMPLE DESIGNATIONS			EL IRED OR STAINED.ROCK FABRIC CLE	CAD AND EVIDENT DUT DEDUCE	JOINT - FRACTURE IN ROCK ALONG WHICH NO APPRECIABLE MOVEMENT HAS OCCURRED.
GENERALLY VERY LO				SOIL SYMBOL	AUGER BORING	S- BULK SAMPLE	(SEV.) IN ST	RENGTH TO STRONG SOIL. IN G	RANITOID ROCKS ALL FELDSPARS A		LEDGE - A SHELF-LIKE RIDGE OR PROJECTION OF ROCK WHOSE THICKNESS IS SMALL COMPARED TO ITS LATERAL EXTENT.
GRANULAR MEDIUM MATERIAL MEDIUM				ARTIFICIAL FILL	OTHER THAN	SS- SPLIT SPOON		IT. SOME FRAGMENTS OF STRON STED.YIELDS SPT N VALUES >			LENS - A BODY OF SOIL OR ROCK THAT THINS OUT IN ONE OR MORE DIRECTIONS.
(NON-COHESIVE) DENSE VERY DE				ROADWAY EMBANKI		SAMPLE	VERY SEVERE ALL F	OCK EXCEPT QUARTZ DISCOLOR	ED OR STAINED. ROCK FABRIC ELEM		MOTTLED (MOT.) - IRREGULARLY MARKED WITH SPOTS OF DIFFERENT COLORS, MOTTLING IN
VERY SO		<0,25		INFERRED SOIL B		ST- SHELBY TUBE SAMPLE			TO SOIL STATUS, WITH ONLY FRAG LE OF ROCK WEATHERED TO A DEGR		SOILS USUALLY INDICATES POOR AERATION AND LACK OF GOOD DRAINAGE. PERCHED WATER - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE OF AN
GENERALLY SOFT	2 10	4 0.25 TO 0.	5	SINE INFERRED ROCK L	NE NONITORING WE	RS- ROCK SAMPLE			ABRIC REMAIN. IF TESTED, YIELDS		INTERVENING IMPERVIOUS STRATUM.
SILT-CLAY MEDIUM MATERIAL STIFF				A PIEZOMETER			COMPLETE ROCK REDUCED TO SOIL. ROCK FABRIC NOT DISCERNIBLE, OR DISCERNIBLE ONLY IN SMALL AND				RESIDUAL SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK.
(COHESIVE) VERY ST		30 2 TO 4		SLOPE INDICATOR TRIAXIAL SAMPLE			SCATTERED CONCENTRATIONS. QUARTZ MAY BE PRESENT AS DIKES OR STRINGERS. SAPROLITE IS ALSO AN EXAMPLE.			TRINGERS. SAPROLITE IS	ROCK QUALITY DESIGNATION (R.O.D.) - A MEASURE OF ROCK QUALITY DESCRIBED BY: TOTAL LENGTH OF
HARD >30 >4			25/825 DIP/DIP DIRECTION OF SAMPLE ROCK STRUCTURES INSTALLATION CBR - CBR SAMPLE			ROCK HARDNESS				ROCK SEGMENTS EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE.	
TEXTURE OR GRAIN SIZE			SPT N-VALUE			VERY HARD CANNOT BE SCRATCHED BY KNIFE OR SHARP PICK, BREAKING OF HAND SPECIMENS REQUIRES				SAPROLITE (SAP.) - RESIDUAL SOIL WHICH RETAINS THE RELIC STRUCTURE OR FABRIC OF THE	
U.S. STD. SIEVE SIZE OPENING (MM)		60 200 270 1,25 0,075 0,053		- SOUNDING ROD	REF SPT REFUSAL		SEVERAL HARD BLOWS OF THE GEOLOGISTS PICK.				PARENT ROCK,
O ENTRO WITH	COARSE	FINE OT T			ABBREVIATIONS			HARD CAN BE SCRATCHED BY KNIFE OR PICK ONLY WITH DIFFICULTY, HARD HAMMER BLOWS REQUIRED TO DETACH HAND SPECIMEN,			SILL - AN INTRUSIVE BODY OF IGNEOUS ROCK OF APPROXIMATELY UNIFORM THICKNESS AND RELATIVELY THIN COMPARED WITH ITS LATERAL EXTENT, WHICH HAS BEEN EMPLACED PARALLEL
	KAVEL SAND	SAND SILI	CLAY (CL.)	AR - AUGER REFUSAL PMT - PRESSUREMETER TEST BT - BORING TERMINATED SD SAND, SANDY CL CLAY SL SILT, SILTY CPT - COME PENETRATION TEST SLI SLIGHTLY			MODERATELY CAN BE SCRATCHED BY KNIFE OR PICK, GOUGES OR GROOVES TO 0.25 INCHES DEEP CAN BE			INCHES DEEP CAN BE	TO THE BEDDING OR SCHISTOSITY OF THE INTRUDED ROCKS
	1 (C3E, 30.)	(F. 30.7)					HARD EXCAVATED BY HARD BLOW OF A GEOLOGISTS 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 SIZE IN 12" 3"	2.0	0.25					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 B.P.F.) OF
SOIL MOISTURE - CORRELATION OF TERMS			CSE COARSE TCR - TRICONE REFUSAL DMT - DILATOMETER TEST 7 - UNIT WEIGHT			HARD CAN BE EXCAVATED IN SMALL CHIPS TO PEICES I INCH MAXIMUM SIZE BY HARD BLOWS OF THE				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 LESS THAN 0.1 FOOT PENETRATION	
SOIL MOISTURE SCALE	FIELD MOISTURE	GUIDE FOR FIELD MOISTURE DES	CRIPTION	DPT - DYNAMIC PE → - VOID RATIO	ENETRATION TEST / - DRY U	NIT WEIGHT	f-	T OF A GEOLOGISTS PICK. BE GROVED OR COUGED READ!!	Y BY KNIFE OR PICK, CAN BE EXC	AVATED IN ERAGMENTS	WITH 60 BLOWS.
(ATTERBERG LIMITS)	DESCRIPTION			F FINE	W - MOISTUR	E CONTENT	FROM	CHIPS TO SEVERAL INCHES IN	N SIZE BY MODERATE BLOWS OF A		STRATA CORE RECOVERY (SREC.) - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE.
		USUALLY LIQUID: VERY WET, USU FROM BELOW THE GROUND WATE		FOSS FOSSILIFE FRAC FRACTURE		SHEAR TEST	ì	ES CAN BE BROKEN BY FINGER		OF DICK DIFORM CINON	STRATA ROCK QUALITY DESIGNATION (S.R.Q.D.) - A MEASURE OF ROCK QUALITY DESCRIBED BY:
LL_ LIQUID LIMIT		. TABLE	FRAGS FRAGMENTS MED MEDIUM			SOFT OR MORE IN THICKNESS CAN BE BROKEN BY FINGER PRESSURE. CAN BE SCRATCHED READILY BY				TOTAL LENGTH OF ROCK SEGMENTS WITHIN A STRATUM EQUAL TO OR GREATER THAN 10 CENTIMETERS DIVIDED BY THE TOTAL LENGTH OF STRATA AND EXPRESSED AS A PERCENTAGE.	
PLASTIC RANGE <	- WET - (W)	SEMISOLID; REQUIRES DRYING TO)		IPMENT USED ON SUBJECT	PRO IECT		ERNAIL. URE SPACING	DEDO	TNC	TOPSOIL (T.S.) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER,
(PI) PL PLASTIC LIMIT		ATTAIN OPTIMUM MOISTURE				HAMMER TYPE:	TERM	SPACING	TERM BEDD	THICKNESS	DM #22 DATEDOAD COIVE DA 1/2 DDVE TOUT
	- MOIST - (M)	SOLID; AT OR NEAR OPTIMUM	MOTOTLIDE	DRILL UNITS:	ADVANCING TOOLS:	AUTOMATIC MANUAL	VERY WIDE	MORE THAN 10 FEET	VERY THICKLY BEDDED	> 4 FEET	BENCH MARK: BM #22 RAILROAD SPIKE IN 24" PINE TREE 44.38 FEET LEFT OF -BL- STA.16+47.75
OM OPTIMUM MOISTURE SL SHRINKAGE LIMIT	- 10131 - (1-1)	SOCIE, AT ON NEAR OF THOSE	TOISTONE	MOBILE B-47	CLAY BITS	HOTOPHTIC PHINORE	WIDE MODERATELY CLO	3 TO 10 FEET OSE 1 TO 3 FEET	THICKLY BEDDED THINLY BEDDED	1.5 - 4 FEET 0.16 - 1.5 FEET	ELEVATION: 108.72 FEET
		REQUIRES ADDITIONAL WATER T	0		6' CONTINUOUS FLIGHT AUGER	CORE SIZE:	CLOSE	0.16 TO 1 FEET	VERY THINLY BEDDED THICKLY LAMINATED	0.03 - 0.16 FEET 0.008 - 0.03 FEET	NOTES:
	- DRY - (D)	ATTAIN OPTIMUM MOISTURE		BK-51	8 HOLLOW AUGERS		VERY CLOSE	LESS THAN 0.16 FEET	THINLY LAMINATED	< 0.008 FEET	
PLASTICITY		CME-45B HARD FACED FINGER BITS N-N		INDURATION							
	PLASTICITY INDEX (PI)	DRY STRENGTH		_	TUNGCARBIDE INSERTS		FOR SEDIMENTARY RO		ENING OF THE MATERIAL BY CEMEN		
LASTIC PLASTICITY	0-5 6-15	VERY LOW SLIGHT		CME-550	CASING W/ ADVANCER		FRIABLE		NG WITH FINGER FREES NUMEROUS (E BLOW BY HAMMER DISINTEGRATES		
MED. PLASTICITY	16-25	MEDIUM		PORTABLE HOIST	TRICONE 2 15/16 STEEL TEETH	HAND TOOLS: POST HOLE DIGGER		00.00	CAN BE SEPARATED FROM SAMPLE		
HIGH PLASTICITY	26 OR MORE	HIGH				HAND AUGER	MODERATE		S EASILY WHEN HIT WITH HAMMER.	THE SICEL PRODES	
COLOR		- OTHER OTHER		INDURATE	INDURATED GRAINS ARE DIFFICULT TO SEPARATE WITH STEEL PROBE		TH STEEL PROBE;				
DESCRIPTIONS MAY INCLUDE COLOR OR COLOR COMBINATIONS (TAN, RED, YEL-BRN, BLUE-GRAY) MODIFIERS SUCH AS LIGHT, DARK, STREAKED, ETC. ARE USED TO DESCRIBE APPEARANCE.		OTHER	CORE BIT	VANE SHEAR TEST			CULT TO BREAK WITH HAMMER.				
MUDIFIERS SUCH AS LIGHT, DARK	K, STHEAKED, ETC. ARE USE	U TO DESCRIBE APPEARANCE.		LJ UINEN	OTHER	OTHER	EXTREMEL		HAMMER BLOWS REQUIRED TO BREA E BREAKS ACROSS GRAINS.	AK SAMPLE;	
							1	OTH II C			