STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-5863	1	6

### STATE OF NORTH CAROLINA

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

## **STRUCTURE** SUBSURFACE INVESTIGATION

COUNTY CLAY	
PROJECT DESCRIPTION US 64 BUSINESS FROM	US 64
TO SR 1307 (MAIN STREET)	
SITE DESCRIPTION <u>RETAINING WALL 1</u>	

#### **CONTENTS**

REFERENCE: R-5863

SHEET NO. **DESCRIPTION** TITLE SHEET 2, 2A LEGEND (SOIL & ROCK) SITE PLAN 3 **PROFILE** 

SOIL TEST RESULTS

INVESTIGATED BY A. BLACKMORE DRAWN BY K. DEMONTBRUN, P.E. CHECKED BY M. WALKO, P.E. SUBMITTED BY ECS SOUTHEAST, LLP DATE OCTOBER 2022

PERSONNEL A. BLACKMORE

ELITE TECHNIQUES

#### **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 1999 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 BOREHOLE. THE LABORATORY SAMPLE DATA AND THE IN SITU (IN-PLACE) TEST DATA CAN BE RELIED ON ONLY TO THE DECREE OF RELIABILITY INHERENT IN THE STANDARD TEST METHOTHE OBSERVED WATER LEVELS OR SOIL MOISTURG CONDITIONS INDICATED IN THE SUBSURFACE INVESTIGATIONS ARE AS RECORDED AT THE TIME OF THE INVESTIGATIONS THE SUBSURFACE ONLY CONSIDERABLY WITH TIME ACCORDING TO CLIMATIC CONDITION INCLUDING CONDITIONS MAY VARY CONSIDERABLY WITH TIME ACCORDING TO CLIMATIC CONDITION INCLUDING TEMPERATURES, PRECIPITATION AND WIND, AS WELL AS OTHER NON-CLIMATIC FACTORS.

THE BIDDER OR CONTRACTOR IS CAUTIONED THAT DETAILS SHOWN ON THE SUBSURFACE PLANS ARE PRELIMINARY ONLY AND IN MANY CASES THE FINAL DESIGN DETAILS ARE DIFFERENT. FOR BIDDING AND CONSTRUCTION PURPOSES, REFER TO THE CONSTRUCTION PLANS AND DOCUMENTS FOR FINAL DESIGN INFORMATION ON THIS PROJECT. THE DEPARTMENT DOES NOT WARRANT OR GUARANTEE THE SUFFICIENCY OR ACCURACY OF THE INVESTIGATION MADE, NOR THE INTERPRETATIONS MADE, OR OPINION OF THE DEPARTMENT AS TO THE TYPE OF MATERIALS AND CONDITIONS TO BE ENCOUNTERED. THE BIDDER OR CONTRACTOR IS CAUTIONED TO MAKE SUCH INDEPENDENT SUBSURFACE INVESTIGATIONS AS HE DEEM NECESSARY TO SATISFY HIMSELF AS TO CONDITIONS TO BE ENCOUNTERED TO 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:

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

  BY HAVING REQUESTED THIS INFORMATION, THE CONTRACTOR SPECIFICALLY MAIVES 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.

#### Prepared in the Office of:



ECS SOUTHEAST, LLP 1812 CENTER PARK DRIVE, SUITE D CHARLOTTE, NC 28217 (704) 525-5152 [PHONE] (704) 357-0023 [FAX] NC REGISTERED FIRM # F-1078



kelly de Montbrun 10/3/2022

7BDD9975E22G480 SIGNATÜRE

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

PROJECT REFERENCE NO. SHEET NO.

R-5863

2

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

## SUBSURFACE INVESTIGATION

SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS (PAGE 1 OF 2)

	(I'MGL I OI 2)																					
	SOIL DESCRIPTION												GRADATION									
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 (AASHTO T 206, ASTM DIS66). SOIL CLASSIFICATION IS BASED ON THE AGSHTO SYSTEM. BASIC DESCRIPTIONS GENERALLY INCLUDE THE FOLLOWING: CONSISTENCY, COLOR, TEXTURE, MOSTURE, AASHTO CLASSIFICATION, AND OTHER PERTINENT FACTORS SUCH											THAN 100 1586). SOIL NCLUDE TH	WELL GRADED - INDICATES A GOOD REPRESENTATION OF PARTICLE SIZES FROM FINE TO COARSE. UNIFORMLY GRADED - INDICATES THAT SOIL PARTICLES ARE ALL APPROXIMATELY THE SAME SIZE. GAP-GRADED - INDICATES A MIXTURE OF UNIFORM PARTICLE SIZES OF TWO OR MORE SIZES.  ANGULARITY OF GRAINS										
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											Y, ETC. FOR	THE ANGULARITY OR ROUNDNESS OF SOIL GRAINS IS DESIGNATED BY THE TERMS:										
SOIL LEGEND AND AASHTO CLASSIFICATION												ANGULAR, SUBANGULAR, SUBROUNDED, OR ROUNDED.										
GENERAL GRANULAR MATERIALS SILT-CLAY MATERIALS ORGANIC MATERIALS CLASS, (\$352 PASSING *200) (>352 PASSING *200)  ORGANIC MATERIALS											ORO	MINERALOGICAL COMPOSITION  MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC.										
GROUP	D A-1 A-3 A-2 A-4 A-5 A-6 A-7 A-1, A-2 A-4, A-5									_	A-1, A-2	A-4, A-5	ARE USED IN DESCRIPTIONS WHEN THEY ARE CONSIDERED OF SIGNIFICANCE.									
CLASS.	A-1-a	A-1-b	<del> </del>	A-2-4 A-2-	5 A-2-6	A-2-7				1-7-5 1-7-6	A-3	A-6, A-7		COMPRESSIBILITY								
SYMBOL.	00000	00000						777		S				SLIGHTLY COMPRESSIBLE LL < 31 MODERATELY COMPRESSIBLE LL = 31 - 50 HIGHLY COMPRESSIBLE LL > 50								
	50 MX										GRANULAR	SILT- CLAY	MUCK,	PERCENTAGE OF MATERIAL								
	30 MX !			35 MX 35 N	IX 35 M	( 35 MX	36 MN	36 MN	36 MN :	6 MN	SOILS	SOILS	PEAT	GRANULAR SILT - CLAY ORGANIC MATERIAL SOILS SOILS OTHER MATERIAL								
MATERIAL BASSING #40														TRACE OF ORGANIC MATTER 2 - 3%, 3 - 5%, TRACE 1 - 10%, LITTLE ORGANIC MATTER 3 - 5%, 5 - 12%, LITTLE 10 - 20%								
PASSING *40 LL	_		-	40 MX 41 M							SOILS LITTL			MODERATELY ORGANIC 5 - 10% 12 - 20% SOME 20 - 35% HIGHLY ORGANIC > 10% > 20% HIGHLY 35% AND ABOVE								
PI GROUP INDEX	6 M		NP Ø	10 MX 10 N	_	MX MX			11 MN 16 MX I	_	MODE	RATE	HIGHLY ORGANIC	GROUND WATER								
	STONE F										ORG	ANIC	SOILS	✓ WATER LEVEL IN BORE HOLE IMMEDIATELY AFTER DRILLING								
OF MAJOR MATERIALS	GRAVEL SAN		FINE		OR CLAY AND SA		SIL SOI			CLAYEY SOILS		TER		STATIC WATER LEVEL AFTER 24 HOURS								
GEN. RATING			EXCEL	LENT TO GOO	D			FAIR T	O POOR		FAIR TO	POOR	UNSUITABLE	√PW  PERCHED WATER, SATURATED ZONE, OR WATER BEARING STRATA  Output  Description  Perched Water, Saturated Zone, OR Water Bearing Strata  Description  Perched Water, Saturated Zone, OR Water Bearing Strata  Description  Perched Water, Saturated Zone, OR Water Bearing Strata  Description  Perched Water, Saturated Zone, OR Water Bearing Strata  Description  Perched Water, Saturated Zone, OR Water Bearing Strata  Perched W								
AS SUBGRADE				A-7-5 SUBGRI		S 11 -				IIP IS	P00R			O→MG→ SPRING OR SEEP								
				CONS					SEN		- 11 00			MISCELLANEOUS SYMBOLS								
PRIMARY :	SOIL T	TYPE	COMPACTNESS OR CONSISTENCY			RAN PENETI	RANGE OF STANDARD RETRATION RESISTENCE (N-VALUE) RANGE OF UNCONF COMPRESSIVE STRI (TONS/FT <sup>2</sup> )				RESSIVE S	TRENGTH	ROADWAY EMBANKMENT (RE) 25/825 DIP & DIP DIRECTION WITH SOIL DESCRIPTION DF ROCK STRUCTURES									
GENERA				VERY LOOS					4 0 10					SOIL SYMBOL  SOIL SYMBOL  SPT DMT TEST BORING  SLOPE INDICATOR INSTALLATION								
GRANUL MATERI (NON-CC	AL	MEDIUM DENSE				10 TO 30 N/A 30 TO 50 > 50						ARTIFICIAL FILL (AF) OTHER AUGER BORING CONE PENETROMETER THAN ROADWAY EMBANKMENT AUGER BORING TEST										
0511504				VERY S					2			< 0.25		— — INFERRED SOIL BOUNDARY — CORE BORING ■ SOUNDING ROD								
GENERA SILT-CL		SOF MEDIUM			1 STIFF			2 TO 4				0.5 TO	1.0	INFERRED ROCK LINE  MWO MONITORING WELL  TEST BORING WITH CORE								
MATERI (COHESI		STIFF VERY STIFF			8 TO 15 15 TO 30					1 TO 2 2 TO 4		↑↑↑↑↑↑ ALLUVIAL SOIL BOUNDARY △ PIEZOMETER INSTALLATION — SPT N-VALUE										
				HAR(		RF N	IR GE	<u> </u>	зø SIZ	-		> 4		RECOMMENDATION SYMBOLS								
U.S. STD. SI	EVE SI	17F			4	10	40		60	200	270			TOTAL LINES ACCIFIED EXCAVATION DEED LINES ACCIFIED EXCAVATION								
OPENING (M		126				2.00	0.42			0.075				UNDERCUT  UNCLASSIFIED EXCHAPATION -  UNCLASSIFIED EXCHAPA								
BOULDE (BLDR.			OBBLE		GRAVEL (GR.)			COARSE FINE SAND (CSE. SD.) (F SD.)				SILT SL.)	CLAY (CL.)	UNDERCUT ONCERSIFIED EXCHANGING BACKFILL  ACCEPTABLE DEGRADABLE ROCK  ABBREVIATIONS								
GRAIN MN		Ø5		75		2.0			<b>2.</b> 25		0.05	0.005	5	AR - AUGER REFUSAL MED MEDIUM VST - VANE SHEAR TEST BT - BORING TERMINATED MICA MICACEOUS WEA WEATHERED								
SIZE IN		12	2011	3	LIDE			-1 47	TON	0-	TEDMC			CL CLAY MOD MODERATELY								
SOIL	MOIST		SOIL SCALI				STURE				TERMS	27.105.05	COLOTION	CPT - CONE PENETRATION TEST NP - NON PLASTIC , OR UNIT WEIGHT CSE COARSE ORG ORGANIC								
(AT	TERBER	RG LI	MITS)			SCRIP					TIELD MOIS			DMT - DILATOMETER TEST PMT - PRESSUREMETER TEST SAMPLE ABBREVIATIONS DPT - DYNAMIC PENETRATION TEST SAP SAPROLITIC S - BULK								
				_		TURAT	ED -				OUID; VERY THE GRO			e - VOID RATIO         SD SAND, SANDY         SS - SPLIT SPOON           F - FINE         SL SILT, SILTY         ST - SHELBY TUBE								
PLASTIC RANGE			LIQUID LIMIT _		- WET - (W			SEMISOLID;			REQUIRES I		)	FOSS FOSSILIFEROUS SLI SLIGHTLY RS - ROCK FRAC FRACTURED, FRACTURES TOR - TRICONE REFUSAL RT - RECOMPACTED TRIAXIAL FRAGS FRAGMENTS #/- MOISTURE CONTENT CBR - CALIFORNIA BEARING								
(PI) PL	→ Pl	LASTI	IC LIM	4IT _						· · · ·				HI HIGHLY V - VERY RATIO								
OM SL		OPTIMUM MOISTUF							(M) SOLID; AT OR NEA				DISTURE	DRILL UNITS: ADVANCING TOOLS: HAMMER TYPE:								
				- 0			))			QUIRES ADDITIONAL WATER TO TAIN OPTIMUM MOISTURE				CME-45C CAY BITS X AUTOMATIC MANUAL  G. CONTINUOUS FLIGHT AUGER  CORE SIZE:								
	PLASTICITY											X 8 HOLLOW AUGERS										
					PL	ASTIC	ITY IN	IDEX (	PI)		DF	RY STRENC		CME-550 HARD FACED FINGER BITS -N								
SLI	I PLAS GHTLY	PLAS					0-5 6-15					VERY LOW SLIGHT	'	VANE SHEAR TEST Under the second state of the second secon								
	MODERATELY PLASTIC 16-25 MEDIUM HIGHLY PLASTIC 26 OR MORE HIGH									CASING W/ ADVANCER POST HOLE DIGGER												
	COLOR												PORTABLE HOIST TRICONE STEEL TEETH HAND AUGER TRICONE TRICONE TUNGCARB. SOUNDING POR									
UECCBID.	DESCRIPTIONS MAY INCLUDE COLOR OR COLOR COMBINATIONS (TAN, RED, YELLOW-BROWN, BLUE-GRAY).									RED	YFII NW-PI	ROWN RIII	F-GRAY)	X SEOPROBE 7822 CORE BIT SOUNDING ROD VANE SHEAR TEST								
	MODIFIERS SUCH AS LIGHT, DARK, STREAKED, ETC. ARE USED TO DESCRIBE APPEARANCE.																					

PROJECT REFERENCE NO. SHEET NO.

R—5863

2A

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

## SUBSURFACE INVESTIGATION

SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS (PAGE 2 OF 2)

	(PAGE 2 0	OF 2)							
BUCK DE	SCRIPTION	TERMS AND DEFINITIONS							
HARD ROCK IS NON-COASTAL PLAIN MATERIAL THAT	WOULD YIELD SPT REFUSAL IF TESTED. AN INFERRED ASTAL PLAIN MATERIAL WOULD YIELD SPT REFUSAL. AAMPLER EQUAL TO OR LESS THAN Ø1 FOOT PER 60 ANSITION BETWEEN SOIL AND ROCK IS OFTEN	ALLUVIUM (ALLUV.) - SOILS THAT HAVE BEEN TRANSPORTED BY WATER.  AQUIFER - A WATER BEARING FORMATION OR STRATA.  ARENACEOUS - APPLIED TO ROCKS THAT HAVE BEEN DERIVED FROM SAND OR THAT CONTAIN SAND.							
50//650//6	NIN MATERIAL THAT WOULD YIELD SPT N VALUES >	ARGILACEOUS - 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. ARTESIAN - GROUND WATER THAT IS UNDER SUFFICIENT PRESSURE TO RISE ABOVE THE LEVEL AT							
CRYSTALLINE ROCK (CR)  FINE TO COARSE WOULD YIELD SP! GNEISS, GABBRO, S	GRAIN IGNEOUS AND METAMORPHIC ROCK THAT REFUSAL IF TESTED. ROCK TYPE INCLUDES GRANITE.	ARTIESIAN - GROUND WATER THAT IS UNDER SUFFICIANT PRESSURE TO RISE ABOVE THE LEVEL AT WHICH IT IS ENCOUNTERED, BUT WHICH ID SESSARILY RISE TO OR ABOVE THE GROUND SURFACE.  CALCAREOUS (CALC.) - SOILS THAT CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE.							
ROCK (NCR) SEDIMENTARY ROCK ROCK TYPE INCLU  COASTAL PLAIN COASTAL PLAIN S	CHAIN METHIODERIL HIND NOT CONSTITUTE TENTO  KE THAT WOULD YELLD SPT REFUSAL IF TESTED.  JDES PHYLLITE, SLATE, SANDSTONE, ETC.  JDES PHYLLITE, SLATE, SANDSTONE, ETC.  JOEC HYPE INCLUDES LIMESTONE, SANDSTONE, CEMENTED  JOEC TYPE INCLUDES LIMESTONE, SANDSTONE, CEMENTED	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 BY TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE.							
(CP) SHELL BEDS, ETC.		DIKE - A TABULAR BODY OF IGNEOUS ROCK THAT CUTS ACROSS THE STRUCTURE OF ADJACENT							
FRESH ROCK FRESH, CRYSTALS BRIGHT, FEW JOIN HAMMER IF CRYSTALLINE.	NTS MAY SHOW SLIGHT STAINING. ROCK RINGS UNDER	ROCKS OR CUTS MASSIVE ROCK. <u>DIP</u> - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE HORIZONTAL.							
	), SOME JOINTS MAY SHOW THIN CLAY COATINGS IF OPEN, SHINE BRIGHTLY. ROCK RINGS UNDER HAMMER BLOWS IF	<u>DIP DIRECTION (DIP AZIMUTH)</u> - THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF THE LINE OF DIP, MEASURED CLOCKWISE FROM NORTH.							
(SLI.) 1 INCH. OPEN JOINTS MAY CONTAIN CLAY	O AND DISCOLORATION EXTENDS INTO ROCK UP TO . IN GRANITOID ROCKS SOME OCCASIONAL FELDSPAR RYSTALLINE ROCKS RING UNDER HAMMER BLOWS.	FAULT - A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE.  FISSILE - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES.							
MODERATE SIGNIFICANT PORTIONS OF ROCK SHOW D (MOD.) GRANITOID ROCKS, MOST FELDSPARS ARE	ISCOLORATION AND WEATHERING EFFECTS. IN DULL AND DISCOLORED, SOME SHOW CLAY, ROCK HAS SHOWS SIGNIFICANT LOSS OF STRENGTH AS COMPARED	FLOAT - ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLODGED FROM PARENT MATERIAL.							
	DR STAINED. IN GRANITOID ROCKS, ALL FELDSPARS DULL KAOLINIZATION. ROCK SHOWS SEVERE LOSS OF STRENGTH	FLOOD PLAIN (FP) - LAND BORDERING A STREAM, BUILT OF SEDIMENTS DEPOSITED BY THE STREAM.  FORMATION (FM.) - A MAPPABLE GEOLOGIC UNIT THAT CAN BE RECOGNIZED AND TRACED IN THE FIELD.							
<u>IF TESTED, WOULD YIELD SPT REFUSAL</u>	IST'S PICK, ROCK GIVES "CLUNK" SOUND WHEN STRUCK.  OR STAINED, ROCK FABRIC CLEAR AND EVIDENT BUT	JOINT - FRACTURE IN ROCK ALONG WHICH NO APPRECIABLE MOVEMENT HAS OCCURRED.  LEDGE - A SHELF-LIKE RIDGE OR PROJECTION OF ROCK WHOSE THICKNESS IS SMALL COMPARED TO ITS LATERAL EXTENT.							
	IN GRANITOID ROCKS ALL FELDSPARS ARE KAOLINIZED 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							
SEVERE BUT MASS IS EFFECTIVELY REDUCED TO (V SEV.) REMAINING. SAPROLITE IS AN EXAMPLE OF	OR STAINED. ROCK FABRIC ELEMENTS ARE DISCERNIBLE SOIL STATUS, WITH ONLY FRAGMENTS OF STRONG ROCK JOF ROCK WEATHERED TO A DEGREE THAT ONLY MINOR MAIN. IF TESTED, WOULD YIELD SPT N VALUES < 180 BPF	USUALLY INDICATES POOR AERATION AND LACK OF GOOD DRAINAGE.  PERCHED WATER - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE OF AN INTERVENING IMPERVIOUS STRATUM.							
COMPLETE ROCK REDUCED TO SOIL. ROCK FABRIC N	OT DISCERNIBLE, OR DISCERNIBLE ONLY IN SMALL AND AY BE PRESENT AS DIKES OR STRINGERS, SAPROLITE IS	RESIDUAL (RES.) SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK.  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							
	HARDNESS	RUN AND EXPRESSED AS A PERCENTAGE.  SAPROLITE (SAP.) - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT							
VERY HARD CANNOT BE SCRATCHED BY KNIFE OR SHI SEVERAL HARD BLOWS OF THE GEOLOGIS	ARP PICK. BREAKING OF HAND SPECIMENS REQUIRES	ROCK.  SILL - AN INTRUSIVE BODY OF IGNEOUS ROCK OF APPROXIMATELY UNIFORM THICKNESS AND							
HARD CAN BE SCRATCHED BY KNIFE OR PICK O TO DETACH HAND SPECIMEN.	ONLY WITH DIFFICULTY. HARD HAMMER BLOWS REQUIRED	RELATIVELY THIN COMPARED WITH ITS LATERAL EXTENT, THAT HAS BEEN EMPLACED PARALLEL TO THE BEDDING OR SCHISTOSITY OF THE INTRUDED ROCKS.							
	GOUGES OR GROOVES TO 0.25 INCHES DEEP CAN BE SIST'S PICK. HAND SPECIMENS CAN BE DETACHED	SLICKENSIDE - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT OR SLIP PLANE.  STANDARD PENETRATION TEST (PENETRATION RESISTANCE) (SPT) - NUMBER OF BLOWS (N OR BPF) OF							
	S DEEP BY FIRM PRESSURE OF KNIFE OR PICK POINT. PEICES 1 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 PENETRATION EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS.							
	KNIFE OR PICK. CAN BE EXCAVATED IN FRAGMENTS E BY MODERATE BLOWS OF A PICK POINT. SMALL, THIN SSURE.	STRATA CORE RECOVERY (SREC.) - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE.  STRATA ROCK QUALITY DESIGNATION (SRQD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL							
VERY CAN BE CARVED WITH KNIFE. CAN BE EX	CAVATED READILY WITH POINT OF PICK. PIECES I INCH BY FINGER PRESSURE. CAN BE SCRATCHED READILY BY	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.  TOPSOIL (TS.) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.							
FRACTURE SPACING	BEDDING								
TERM SPACING	TERM THICKNESS	BENCH MARK: N/A							
VERY WIDE MORE THAN 10 FEET WIDE 3 TO 10 FEET	VERY THICKLY BEDDED 4 FEET THICKLY BEDDED 1.5 - 4 FEET	ELEVATION: FEET							
MODERATELY CLOSE 1 TO 3 FEET CLOSE 0.16 TO 1 FOOT	THINLY BEDDED 0.16 - 1.5 FEET VERY THINLY BEDDED 0.03 - 0.16 FEET	NOTES:							
VERY CLOSE LESS THAN 0.16 FEET	THICKLY LAMINATED 0.008 - 0.03 FEET	ROADWAY DESIGN FILES, .TIN, AND GPK FILE PROVIDED BY V&M.							
ΙΝΙΟΙ Ι	THINLY LAMINATED < 0.008 FEET  RATION	NORTHING AND EASTING OBTAINED USING A TRIMBLE GEOTX.							
	NING OF MATERIAL BY CEMENTING, HEAT, PRESSURE, ETC.	TOTAL CASTING OBTAINED CONTO A TRIMBLE CECTA.							
	EINCED EDEEC NUMEROUS CRAINS.								

RUBBING WITH FINGER FREES NUMEROUS GRAINS;

GENTLE BLOW BY HAMMER DISINTEGRATES SAMPLE.

GRAINS CAN BE SEPARATED FROM SAMPLE WITH STEEL PROBE;
BREAKS EASILY WHEN HIT WITH HAMMER.

SHARP HAMMER BLOWS REQUIRED TO BREAK SAMPLE; SAMPLE BREAKS ACROSS GRAINS.

GRAINS ARE DIFFICULT TO SEPARATE WITH STEEL PROBE; DIFFICULT TO BREAK WITH HAMMER.

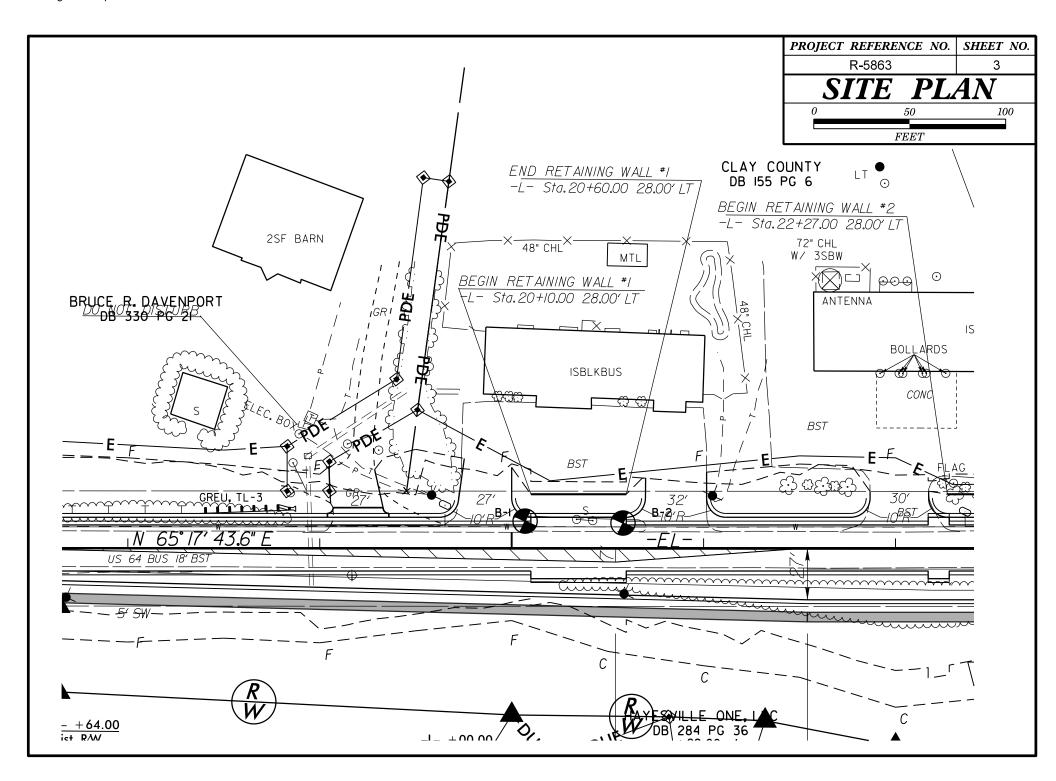
FRIABLE

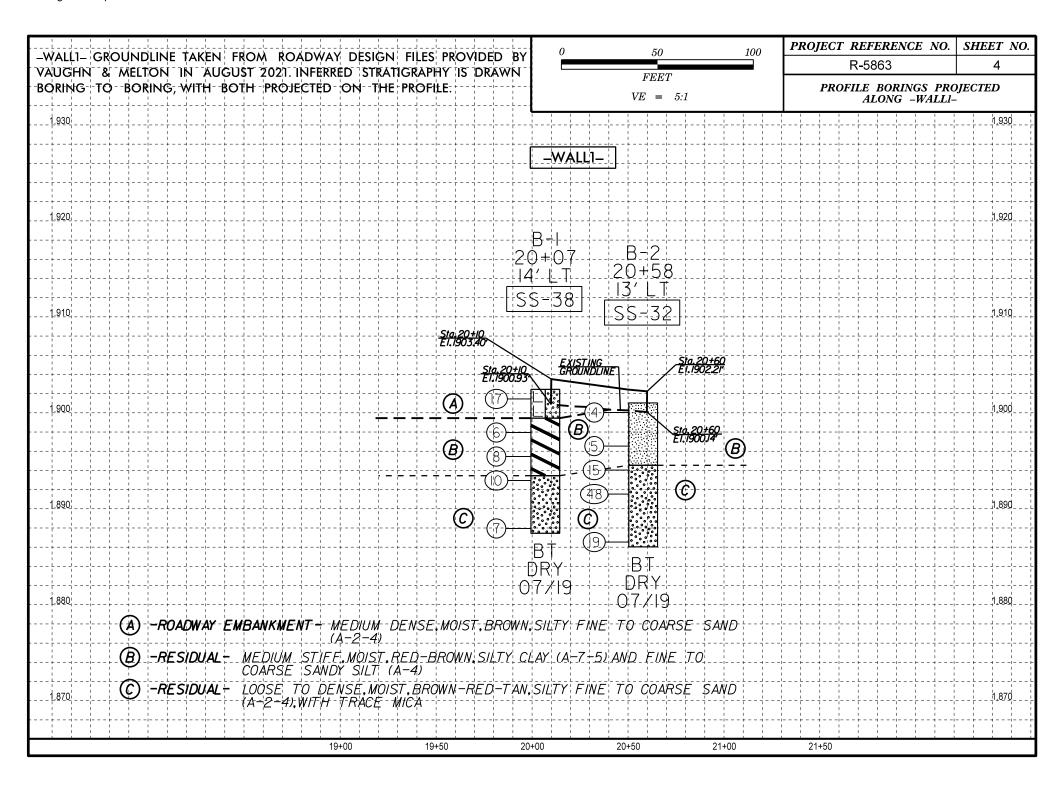
INDURATED

MODERATELY INDURATED

EXTREMELY INDURATED

DATE: 8-15-14





PROJECT REFERENCE NO	SHEET NO.
R-5863	5

		SOIL TEST RESULTS															
BORING	BORING SAMPLE ALIGNMENT OFFSET STATION DEPTH AASHTO L.L. P.L. % BY WEIGHT % PASSING (SIEVES) %											%					
ID	NO.	ALIGNMENT	OFFSET	STATION	INTERVAL	CLASS.	L.L.	P.1.	C. SAND	F. SAND	SILT	CLAY	10	40	200	MOISTURE	ORGANIC
B-1	SS-38	-L-	14' LT	20+07	6.0-7.5'	A-7-5(2)	44	13	22.7	28.7	9.2	39.4	74.7	64.6	40.7	22.9	-
B-2	SS-32	-L-	13' LT	20+58	3.5-5.0'	A-4(3)	33	10	19.3	29.3	11.6	39.8	99.4	91.9	56.3	23.3	-

LAB TECHNICIAN: DILLON KESTNER

NCDOT CERTIFICATION NO.

135-01-0816