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-5020B

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REFERENCE

DESCRIPTION TITLE SHEET LEGEND (SOIL & ROCK) SITE PLAN PROFILE SOIL TEST RESULTS

STATE OF NORTH CAROLINA

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

STRUCTURE SUBSURFACE INVESTIGATION

COUNTY COLUMBUS

PROJECT DESCRIPTION US 701 BYPASS FROM SR 1437 (VIRGIL AVENUE) TO US 74/76

SITE DESCRIPTION <u>**RETAINING**</u> WALL (WALL-1) **RIGHT OF -L- STA. 251+50**

41499 PROJEC

STATE PROJECT REFERENCE NO. STATE SHEETS 5 N.C R-5020B 1

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 (919) TOT-6850. THE SUBSURFACE PLANS AND REPORTS, FIELD BORING LOGS, ROCK CORES AND SOIL TEST DATA AVAIL

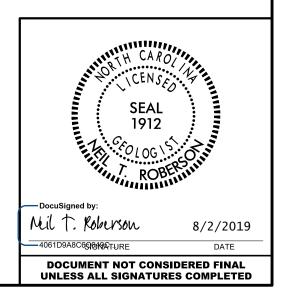
GENERAL SOIL AND ROCK STRATA DESCRIPTIONS AND INDICATED BOUNDARIES ARE BASED ON A GEOTECHNICAL INTERPRETATION OF ALL AVAILABLE SUBSURFACE DATA AND MAY NOT NECESSARILY REFLECT THE ACTUAL SUBSURFACE CONDITIONS BETWEEN BORINGS OR BETWEEN SAMPLED STRATA WITHIN THE BOREHOLE. THE LABORATORY SAMPLE DATA AND THE IN SITU (IN-FLACE) TEST DATA CAN BE RELIED ON ONLY TO THE DEGREE OF RELIABILITY INHERENT IN THE STANDARD TEST METHOD. THE OBSERVED WATER LEVELS OR SOLL MOISTURE CONDITIONS INDICATED IN THE SUBSURFACE INVESTIGATIONS ARE AS RECORDED AT THE TIME OF THE INVESTIGATION. THESE WATER LEVELS OR SOLL 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 CAUTIONED THAT DETAILS SHOWN ON THE UBSURFACE 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 WADE, NOR THE INTERPRETATIONS MADE, OR OPNION OF THE DEPARTMENT AS TO THE TYPE OF MATERIALS AND CONSTRUCTIONS TO BE ENCOUNTERED. THE BIDDER OR CONTRACTOR IS CAUTIONED TO MAKE SUCH INDEPENDENT SUBSURFACE INVESTIGATIONS AS HE DEEMS NECESSARY TO SATISFY HIMSELF AS TO CONDITIONS TO BE ENCOUNTERED ON THE PROJECT. THE CONTRACTOR SHALL HAVE NO CLAIM FOR ADDITIONAL COMPENSATION OR FOR ANN EXTENSION OF TIME FOR ANY REASON RESULTING FROM THE ACTUAL CONTENS 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. 2. BY HAIVING 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.

PERSONNEL

N.O. MOORE
D.G. PINTER
INVESTIGATED BY N.O. MOORE
DRAWN BY N.O. MOORE
CHECKED BY N.T. ROBERSON
SUBMITTED BY
DATEFEBRUARY 2019



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

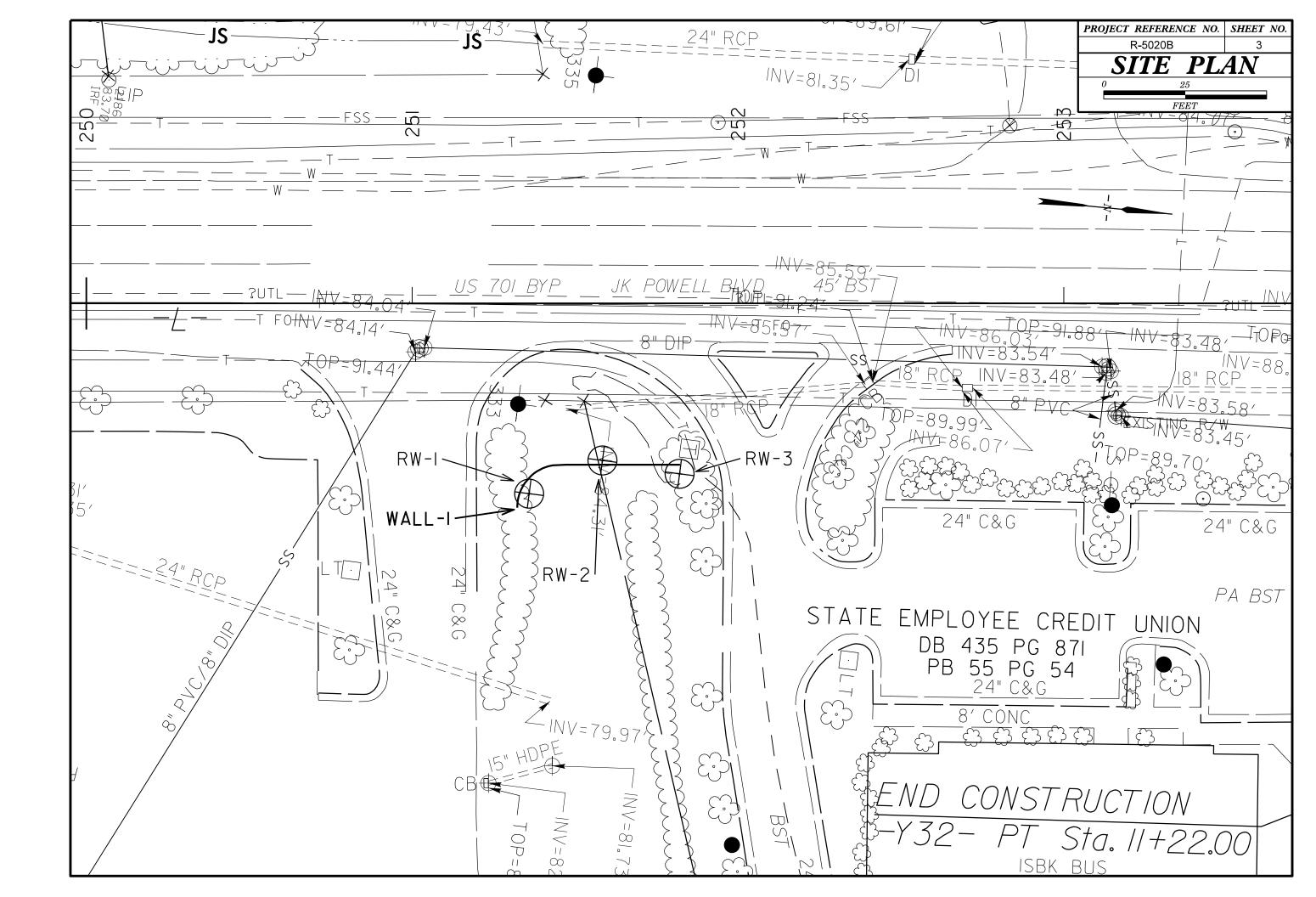
SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

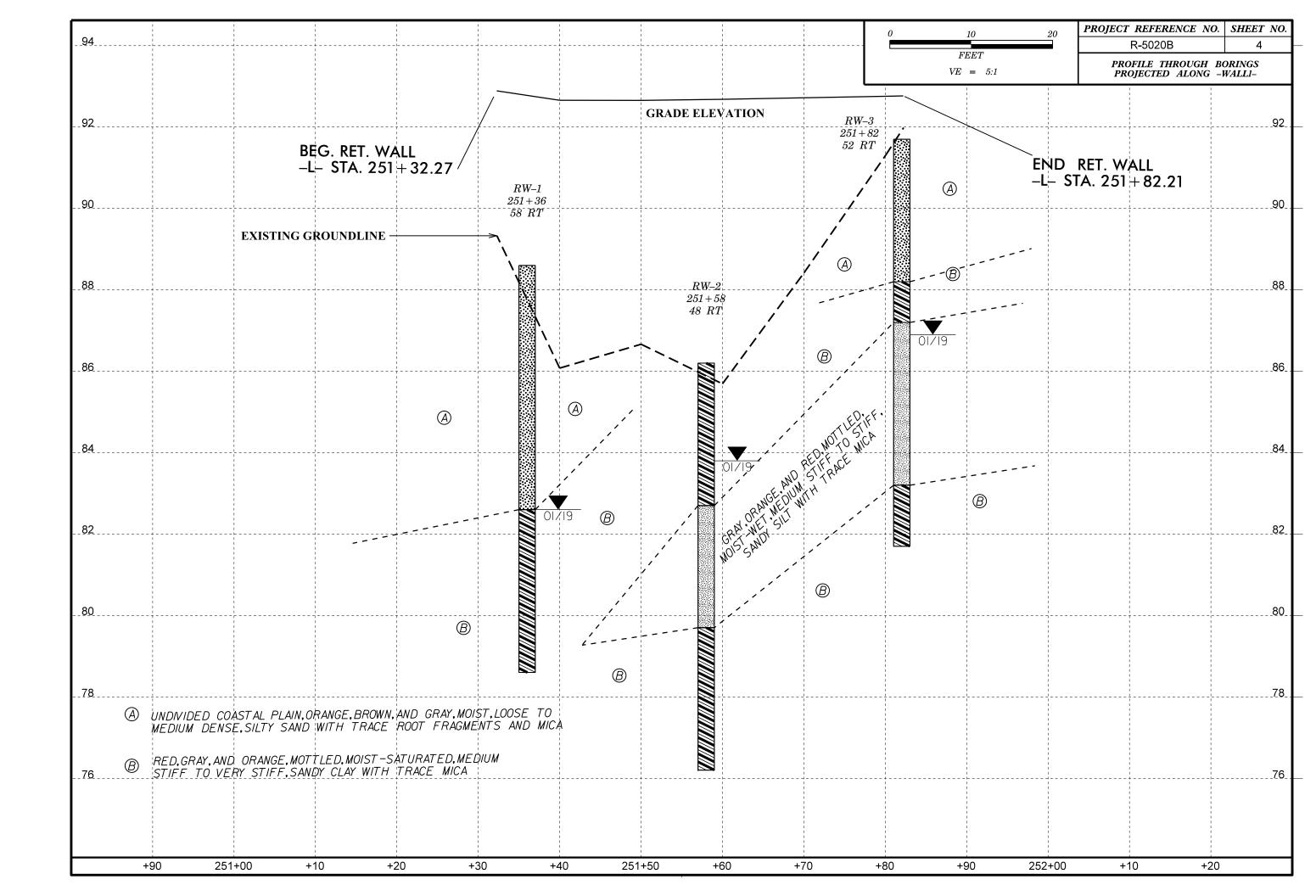
103	DECODIDITION			CDADATION		1		COIDTION	
	DESCRIPTION			GRADATION		HARD ROCK IS NON-COASTAL PLAT		SCRIPTION WOULD YIELD SPT REFUSAL IF TESTED. AN INFE	TERMS AND DEFINITIONS
SOIL IS CONSIDERED UNCONSOLIDATED, SEMI-CO BE PENETRATED WITH A CONTINUOUS FLIGHT PO				ES A GOOD REPRESENTATION OF PARTICL DICATES THAT SOIL PARTICLES ARE ALL		ROCK LINE INDICATES THE LEVEL	AT WHICH NON-COAS	STAL PLAIN MATERIAL WOULD YIELD SPT REFUS	AL. <u>ALLOVIUM (ALLOV.)</u> - SUILS THAT HAVE BEEN TRANSPORTED BY WATER.
ACCORDING TO THE STANDARD PENETRATION T IS BASED ON THE AASHTO SYSTEM. BASIC				A MIXTURE OF UNIFORM PARTICLE SIZE		SPT REFUSAL IS PENETRATION BY BLOWS IN NON-COASTAL PLAIN M	A SPLIT SPOON SAU	MPLER EQUAL TO OR LESS THAN 0.1 FOOT PER NSITION BETWEEN SOIL AND ROCK IS OFTEN	
CONSISTENCY, COLOR, TEXTURE, MOISTURE, AASHT	O CLASSIFICATION, AND OTHER PE	PERTINENT FACTORS SUCH		ANGULARITY OF GRAIN	S	REPRESENTED BY A ZONE OF WEA	THERED ROCK.		ARENACEOUS - APPLIED TO ROCKS THAT HAVE BEEN DERIVED FROM SAND OR THAT CONTAIN SAND.
AS MINERALOGICAL COMPOSITION, ANGULA VERY STIFF, GRAY, SILTY CLAY, MOIST WITH IN			THE ANGULARITY	OR ROUNDNESS OF SOIL GRAINS IS DES	SIGNATED BY THE TERMS:	ROCK MATERIALS ARE TYPICALLY			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.
	AASHTO CLASSIFICA		ANGULAR, SUBANO	GULAR, SUBROUNDED, OR ROUNDED.		WEATHERED V	NON-COASTAL PLAIN 100 BLOWS PER FO	N MATERIAL THAT WOULD YIELD SPT N VALUES	ARTESIAN - GROUND WATER THAT IS UNDER SUFFICIENT PRESSURE TO RISE ABOVE THE LEVEL AT
GENERAL GRANULAR MATERIALS	SILT-CLAY MATERIALS			MINERALOGICAL COMPOSI	TION	2.2		RAIN IGNEOUS AND METAMORPHIC ROCK THAT	WHICH IT IS ENCOUNTERED, BUT WHICH DOES NOT NECESSARILY RISE TO OR ABOVE THE GROUND
CLASS. (≤ 35% PASSING *200)	(> 35% PASSING *200)	ORGANIC MATERIALS		ES SUCH AS QUARTZ, FELDSPAR, MICA, TA			WOULD YIELD SPT	REFUSAL IF TESTED, ROCK TYPE INCLUDES GRA	NITE, SURFACE.
GROUP A-1 A-3 A-2		1, A-2 A-4, A-5	ARE USED IN	DESCRIPTIONS WHEN THEY ARE CONSIDE	RED OF SIGNIFICANCE.	من الله بنه الله	GNEISS, GABBRO, SCI	HIST.ETC. RAIN METAMORPHIC AND NON-COASTAL PLAIN	CALCAREOUS (CALC.) - SOILS THAT CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE.
CLASS. A-1-a A-1-b A-2-4 A-2-5 A-2-6 A-2	2-7 A-7-5, A	A-3 A-6, A-7		COMPRESSIBILITY		NON-CRYSTALLINE	SEDIMENTARY ROCK	THAT WOULD YEILD SPT REFUSAL IF TESTED.	COLLUVIUM - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM
SYMBOL 000000000				TLY COMPRESSIBLE ATELY COMPRESSIBLE	LL < 31 LL = 31 - 50	COASTAL PLAIN		ES PHYLLITE, SLATE, SANDSTONE, ETC. DIMENTS CEMENTED INTO ROCK, BUT MAY NOT Y	
7. PASSING				Y COMPRESSIBLE	LL > 50	SEDIMENTARY ROCK	SPT REFUSAL. ROCH	K TYPE INCLUDES LIMESTONE, SANDSTONE, CEME	
*10 50 MX		ANULAR SILT- CLAY MUCK,		PERCENTAGE OF MATERI	IAL	(CP)	SHELL BEDS, ETC.	IERING	DIKE - A TABULAR BODY OF IGNEOUS ROCK THAT CUTS ACROSS THE STRUCTURE OF ADJACENT
*40 30 MX 50 MX 51 MN *200 15 MX 25 MX 10 MX 35 MX 35 MX 35 MX 35		SOILS SOILS PEAT		GRANULAR SILT - CLAY	OTHER MATERIAL				ROCKS OR CUTS MASSIVE ROCK.
MATERIAL			ORGANIC MATERIAL TRACE OF ORGANIC MA	<u>SOILS</u> <u>SOILS</u> TTER 2 - 3% 3 - 5%	TRACE 1 - 10%	FRESH ROCK FRESH, CRYSTAL HAMMER IF CRYSTALL		IS MAY SHOW SLIGHT STAINING. ROCK RINGS UNDE	UP - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE
PASSING #40		SOILS WITH	LITTLE ORGANIC MATT	ER 3 - 5% 5 - 12%	LITTLE 10 - 20%			SOME JOINTS MAY SHOW THIN CLAY COATINGS IF	HORIZONTAL.
	MN 40 MX 41 MN 40 MX 41 MN		MODERATELY ORGANIC HIGHLY ORGANIC	5 - 10% 12 - 20% > 10% > 20%	SOME 20 - 35% HIGHLY 35% AND ABOVE	(V SLI.) CRYSTALS ON A BROK	EN SPECIMEN FACE S	SHINE BRIGHTLY. ROCK RINGS UNDER HAMMER BLOW	
	MN 10 MX 10 MX 11 MN 11 MN	MODERATE ORGANIC		GROUND WATER		OF A CRYSTALLINE N			FAULT - A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE
GROUP INDEX 0 0 0 4 MX	8 MX 12 MX 16 MX NO MX	AMOUNTS OF SOILS						AND DISCOLORATION EXTENDS INTO ROCK UP TO 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	∇	WATER LEVEL IN BORE HOLE IMMEDIAT	ELY AFTER DRILLING			YSTALLINE 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 24 HO	OURS			COLORATION AND WEATHERING EFFECTS. IN	FLOAT - ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLODGED FROM
GEN. RATING EXCELLENT TO GOOD	FAIR TO POOR FAI	NIR TO POOR UNSUITABLE	VPW.	PERCHED WATER, SATURATED ZONE, OR	WATER BEARING STRATA			NULL AND DISCOLORED, SOME SHOW CLAY. ROCK HAS HOWS SIGNIFICANT LOSS OF STRENGTH AS COMPAR	PARENT MATERIAL.
AS SUBGRADE	PAIR TO POOR PC	POOR		SPRING OR SEEP		WITH FRESH ROCK.	HMMER BLOWS HIND SI	NUWS SIGNIFICANT LUSS OF STRENGTH AS COMPAR	FLOOD PLAIN (FP) - LAND BORDERING A STREAM, BUILT OF SEDIMENTS DEPOSITED BY THE STREAM.
	- 30 ; PI OF A-7-6 SUBGROUP IS > LL	L - 30					JARTZ DISCOLORED OR	R STAINED. IN GRANITOID ROCKS, ALL FELDSPARS [LL FORMATION (FM.) - A MAPPABLE GEOLOGIC UNIT THAT CAN BE RECOGNIZED AND TRACED IN THE
CONSISTEN	CY OR DENSENESS			MISCELLANEOUS SYMBO	LS	SEVERE AND DISCOLORED AND	A MAJORITY SHOW K	AOLINIZATION. ROCK SHOWS SEVERE LOSS OF STR	NGTH FIELD.
PRIMARY SOIL TYPE COMPACTNESS OR	RANGE OF STANDARD PENETRATION RESISTENCE	RANGE OF UNCONFINED	ROADWAY EMBA	NKMENT (RE) 25/025 DIP & DIP DIRE	CTION	(MOD. SEV.) AND CAN BE EXCAVAT IF TESTED, WOULD YIL		T'S PICK. ROCK GIVES "CLUNK" SOUND WHEN STRUC	
CONSISTENCY	(N-VALUE)	COMPRESSIVE STRENGTH (TONS/FT ²)	WITH SOIL DES		TURES			R STAINED. ROCK FABRIC CLEAR AND EVIDENT BUT	LEDGE - A SHELF-LIKE RIDGE OR PROJECTION OF ROCK WHOSE THICKNESS IS SMALL COMPARED TO ITS LATERAL EXTENT.
VERY LOOSE	< 4			SPT DEL DEL DODI	SLOPE INDICATOR	(SEV.) REDUCED IN STRENGT	H TO STRONG SOIL. I	IN GRANITOID ROCKS ALL FELDSPARS ARE KAOLINI	
GENERALLY LOOSE GRANULAR NEDVEL	4 TO 10		SOIL SYMBOL	OPT DMT TEST BORI	INSTALLATION	TO SOME EXTENT. SO IF TESTED, WOULD YI		TRONG ROCK USUALLY REMAIN.	MOTTLED (MOT.) - IRREGULARLY MARKED WITH SPOTS OF DIFFERENT COLORS. MOTTLING IN SOILS
MATERIAL DENSE	10 TO 30 30 TO 50	N/A	ARTIFICIAL FI		CONE PENETROMETER			R STAINED. ROCK FABRIC ELEMENTS ARE DISCERNI	USUALLY INDICATES POOR AFRATION AND LACK OF GOOD DRAINAGE.
(NON-COHESIVE) VERY DENSE	> 50							COLL STATUS, WITH ONLY FRAGMENTS OF STRONG R	CK 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 			ROCK WEATHERED TO A DEGREE THAT ONLY MINO	
GENERALLY SOFT SILT-CLAY MEDIUM STIFF	2 TO 4 4 TO 8	0.25 TO 0.5 0.5 TO 1.0		<pre>LINE T MONITORING WEL</pre>	TEST BORING			AIN. <u>IF TESTED, WOULD YIELD SPT N VALUES < 100</u>	ALE STREET ALE STREET AND ALE
MATERIAL STIFF	8 TO 15	1 TO 2	SWEWE INFERRED ROOM		WITH CORE			T DISCERNIBLE, OR DISCERNIBLE ONLY IN SMALL A BE PRESENT AS DIKES OR STRINGERS, SAPROLITE	
(COHESIVE) VERY STIFF	15 TO 30	2 TO 4	ALLUVIAL SOIL	BOUNDARY A PIEZOMETER INSTALLATION	- SPT N-VALUE	ALSO AN EXAMPLE.			RUN AND EXPRESSED AS A PERCENTAGE.
HARD	OR GRAIN SIZE	> 4		RECOMMENDATION SYMBO	2	-	ROCK HA	ARDNESS	SAPROLITE (SAP.) - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT
TEXTORE	UN UNHIN SIZE					VERY HARD CANNOT BE SCRATCHE	D BY KNIFE OR SHAR	RP PICK. BREAKING OF HAND SPECIMENS REQUIRES	ROCK.
U.S. STD. SIEVE SIZE 4 10 OPENING (MM) 4.76 2.00		270 0.053		UNCLASSIFIED EXCAVATION - T	ACCEPTABLE, BUT NOT TO BE	SEVERAL HARD BLOWS			SILL - AN INTRUSIVE BODY OF IGNEOUS ROCK OF APPROXIMATELY UNIFORM THICKNESS AND
UPENING (MM) 4.76 2.00		0.053	SHALLOW	UNCLASSIFIED EXCAVATION - ACCEPTABLE DEGRADABLE ROCK	USED IN THE TOP 3 FEET OF	HARD CAN BE SCRATCHED B TO DETACH HAND SPE		LY WITH DIFFICULTY. HARD HAMMER BLOWS REQUI	D RELATIVELY THIN COMPARED WITH ITS LATERAL EXTENT, THAT HAS BEEN EMPLACED PARALLEL TO THE BEDDING OR SCHISTOSITY OF THE INTRUDED ROCKS.
BOULDER COBBLE GRAVEL	COARSE FINE SAND SAND	SILT CLAY		ACCEPTABLE DEGRADABLE ROCK	EMBANKMENT OR BACKFILL			DUGES OR GROOVES TO 0.25 INCHES DEEP CAN BE	SLICKENSIDE - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT
(BLDR.) (COB.) (GR.)	(CSE. SD.) (F SD.)	(SL.) (CL.)		ABBREVIATIONS				ST'S PICK, HAND SPECIMENS CAN BE DETACHED	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		WEA WEATHERED			DEEP BY FIRM PRESSURE OF KNIFE OR PICK POIN	
SOIL MOISTURE -	CORRELATION OF TEL	RMS	CL CLAY CPT - CONE PENETRATION	MOD MODERATELY TEST NP - NON PLASTIC	γ - UNIT WEIGHT γ - DRY UNIT WEIGHT	HARD CAN BE EXCAVATED IN POINT OF A GEOLOGIS		EICES 1 INCH MAXIMUM SIZE BY HARD BLOWS OF	TO OR LESS THAN 0.1 FOOT PER 60 BLOWS.
		_D MOISTURE DESCRIPTION	CSE COARSE	ORG ORGANIC				NIFE OR PICK. CAN BE EXCAVATED IN FRAGMENTS	STRATA CORE RECOVERY (SREC.) - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY
(ATTERBERG LIMITS) DESCR	RIPTION	LE STOTORE DESCRIPTION	DMT - DILATOMETER TEST DPT - DYNAMIC PENETRAT		ST <u>SAMPLE ABBREVIATIONS</u> S - BULK	FROM CHIPS TO SEVE	RAL INCHES IN SIZE	BY MODERATE BLOWS OF A PICK POINT. SMALL, TH	
- SATUR		D: VERY WET, USUALLY	e - VOID RATIO	SD SAND, SANDY	S - BOLK SS - SPLIT SPOON	PIECES CAN BE BROKI			<u>STRATA ROCK QUALITY DESIGNATION (SROD)</u> - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL H LENGTH OF ROCK SEGMENTS WITHIN A STRATUM EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY
	I.) FROM BELOW TH	HE GROUND WATER TABLE	F - FINE	SL SILT, SILTY	ST - SHELBY TUBE			AVATED READILY WITH POINT OF PICK. PIECES 1 IN IY FINGER PRESSURE. CAN BE SCRATCHED READILY	THE TOTAL LENCTH OF STRATA AND EVADESSED AS A REDSENTAGE
		UIRES DRYING TO	FOSS FOSSILIFEROUS FRAC FRACTURED, FRACT	URES TCR - TRICONE REFUSAL	RS – ROCK RT – RECOMPACTED TRIAXIAL	FINGERNAIL.			TOPSOIL (TS.) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.
RANGE - WET -	- (W) SEMISULID: REUU ATTAIN OPTIMUM		FRAGS FRAGMENTS	w - MOISTURE CONTENT	CBR - CALIFORNIA BEARING	FRACTURE SPAC	CING	BEDDING	BENCH MARK: N/A
			HI HIGHLY	V - VERY	RATIO		SPACING	TERM THICKNESS	
- MOIST	- (M) SOLID: AT OR NE	EAR OPTIMUM MOISTURE		IPMENT USED ON SUBJECT	PROJECT		THAN 10 FEET TO 10 FEET	VERY THICKLY BEDDED 4 FEET THICKLY BEDDED 1.5 - 4 FEE	ELEVATION: N/A FEET
OM OPTIMUM MOISTURE MOIST SL SHRINKAGE LIMIT			DRILL UNITS:	ADVANCING TOOLS:	HAMMER TYPE:	MODERATELY CLOSE 1	TO 3 FEET	THINLY BEDDED 0.16 - 1.5 FE	
	REQUIRES ADDIT	TIONAL WATER TO	CME-45C	CLAY BITS	AUTOMATIC MANUAL		5 TO 1 FOOT THAN 0.16 FEET	VERY THINLY BEDDED 0.03 - 0.16 FE THICKLY LAMINATED 0.008 - 0.03 F	
- DRY -	- (D) ATTAIN OPTIMUM		CME-55	6 CONTINUOUS FLIGHT AUGER	CORE SIZE:		0.10 I LEI	THICKLY LAMINATED 0.008 - 0.03 FE	
PI	ASTICITY			8 HOLLOW AUGERS	В		INDUR	ATION	
			CME-550	HARD FACED FINGER BITS		FOR SEDIMENTARY ROCKS, INDURAT	ION IS THE HARDEN	ING OF MATERIAL BY CEMENTING, HEAT, PRESSU	ETC.
NON PLASTIC	0-5	DRY STRENGTH VERY LOW		TUNGCARBIDE INSERTS	□-N	FRIABLE	RUBBING WITH F	FINGER FREES NUMEROUS GRAINS;	
SLIGHTLY PLASTIC	6-15	SLIGHT	VANE SHEAR TEST		HAND TOOLS:	FRIMOLE	GENTLE BLOW E	BY HAMMER DISINTEGRATES SAMPLE.	
MODERATELY PLASTIC HIGHLY PLASTIC	16-25 26 OR MORE	MEDIUM HIGH			POST HOLE DIGGER	MODERATELY INDURATED		SEPARATED FROM SAMPLE WITH STEEL PROBE	
			PORTABLE HOIST	TRICONE STEEL TEETH	X HAND AUGER			WHEN HIT WITH HAMMER.	
	COLOR			TRICONE TUNGCARB.	SOUNDING ROD	INDURATED		FFICULT TO SEPARATE WITH STEEL PROBE: BREAK WITH HAMMER.	
DESCRIPTIONS MAY INCLUDE COLOR OR COLOR			⊔ ———	CORE BIT	VANE SHEAR TEST				
MODIFIERS SUCH AS LIGHT, DARK, STRE	AKED, ETC. ARE USED TO DESCR	RIBE APPEARANCE.		□		EXTREMELY INDURATED		BLOWS REQUIRED TO BREAK SAMPLE; 5 ACROSS GRAINS.	DATE: 8-15-14
]						

PROJECT REFERENCE NO.



2





PROJ. NO. - 41499.1.3 ID NO. - R-5020B COUNTY - COLUMBUS

<i>RW-2</i>															
	SOIL TEST RESULTS														
SAMPLE			DEPTH	AASHTO				% BY W	/EIGHT		% PAS	SING (S	IEVES)	%	%
NO.	OFFSET	STATION	INTERVAL	CLASS.	L.L.	P.I.	C.SAND	F.SAND	SILT	CLAY	10	40	200	MOISTURE	ORGANIC
S-1	251+58	48' RT	0.5-1.0	A-6(5)	33	15	0.8	53.3	15.6	30.3	100	100	52	-	-
S-2	251+58	48' RT	4.0-4.5	A-4(0)	25	6	0.6	64.4	14.8	20.2	100	100	42	-	-

<u>RW-1</u>															
	SOIL TEST RESULTS														
SAMPLE	SAMPLE DEPTH AASHTO % BY WEIGHT % PASSING (SIEVES) % %													%	
NO.	OFFSET	STATION	INTERVAL	CLASS.	L.L.	P.I.	C.SAND	F.SAND	SILT	CLAY	10	40	200	MOISTURE	ORGANIC
S-3	251+36	58' RT	6.5-7.0	A-6(8)	33	20	0.8	48.0	20.9	30.3	100	100	57	-	-

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- 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. 2. BY HAIVING 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.

PERSONNEL

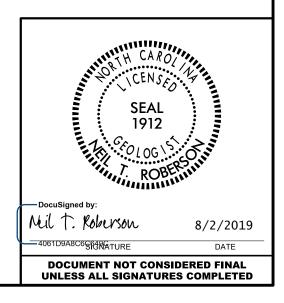
N.O. MOORE

D.G. PINTER

P.T. NEUMANN

INVESTIGATED BY ____. MOORE DRAWN BY __N.O. MOORE CHECKED BY ______ N.T. ROBERSON SUBMITTED BY <u>N.T. ROBERSON</u>

DATE MARCH 2019



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

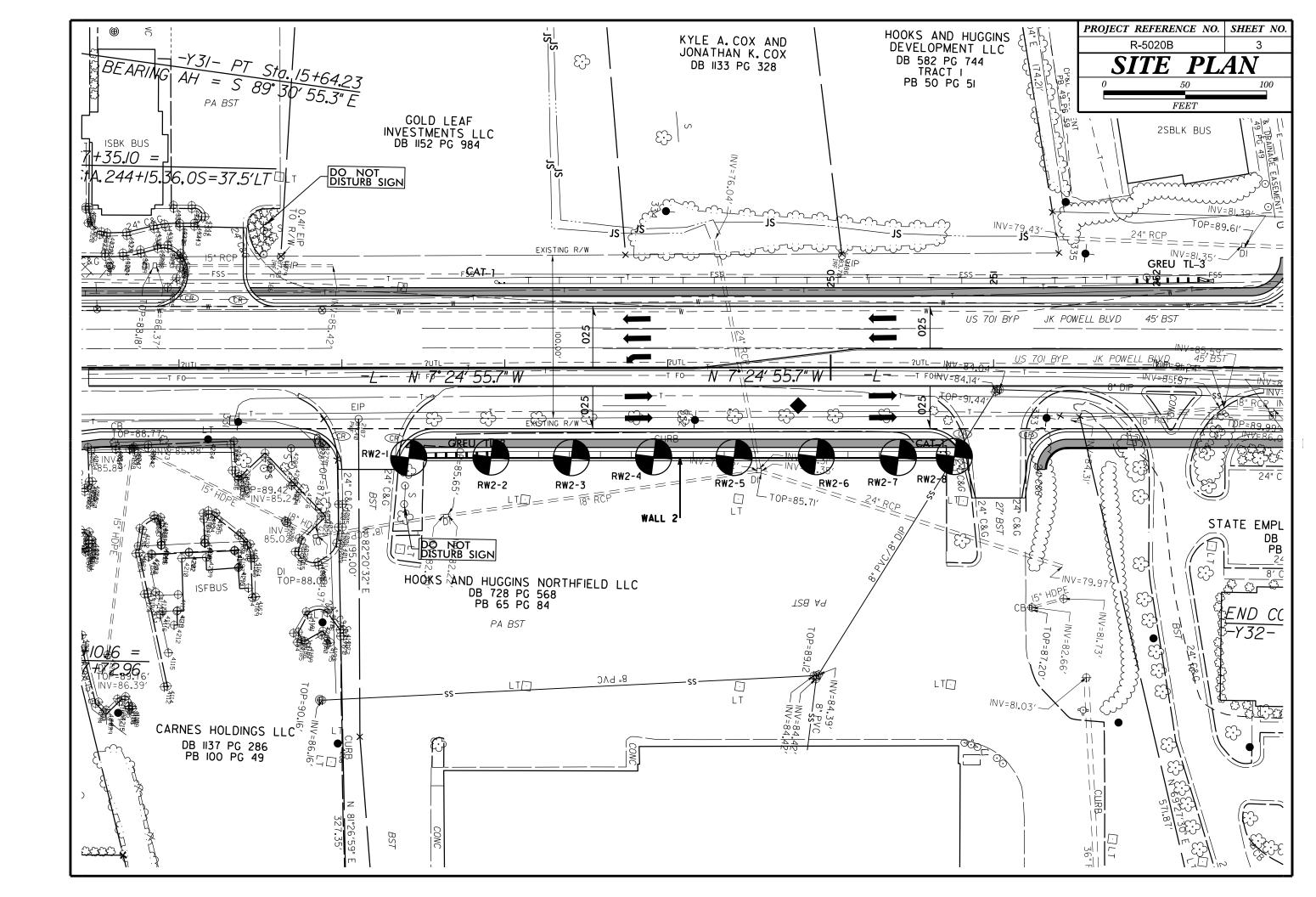
SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

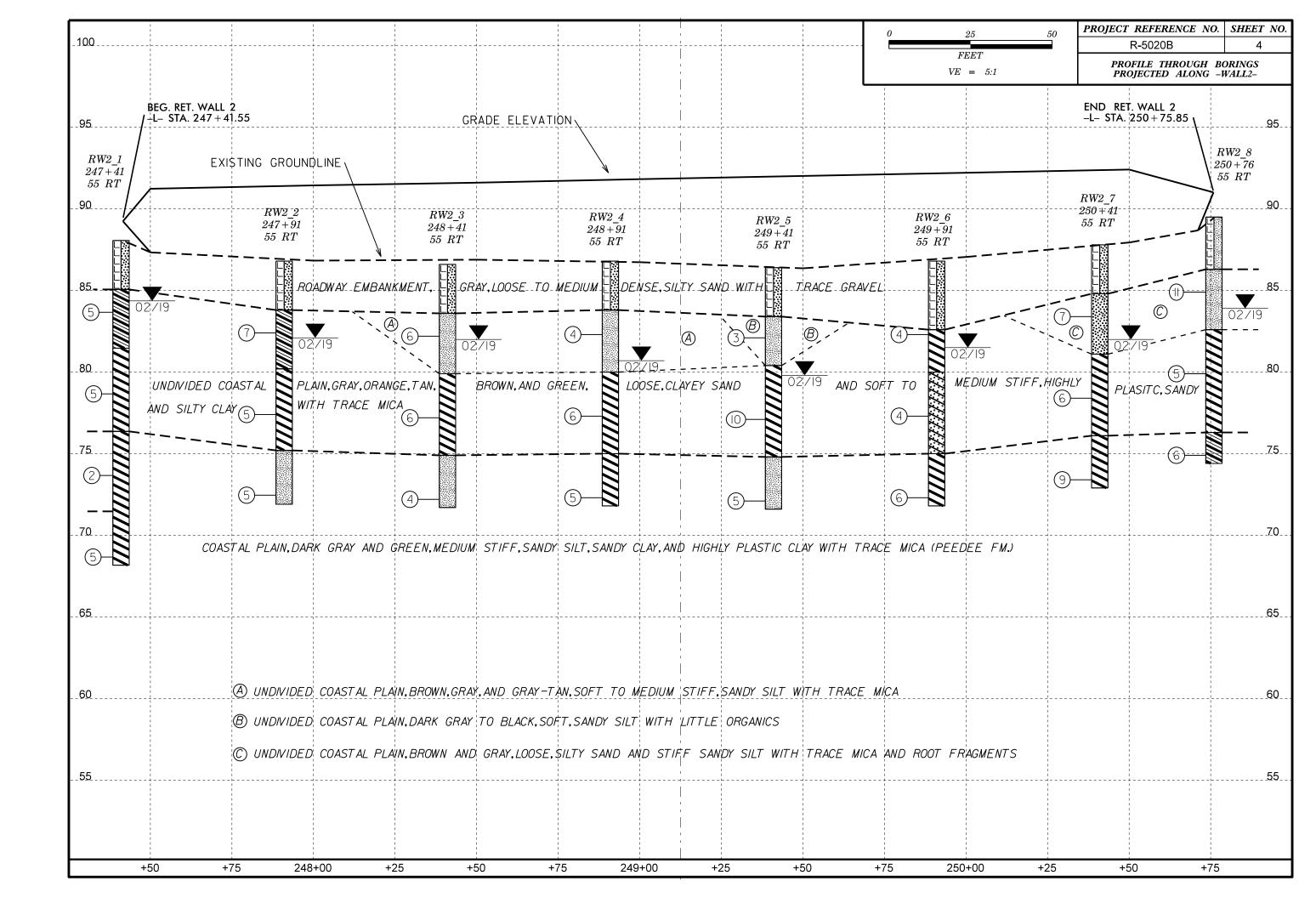
		684	DATION		
SOIL DESCRIPTION			DATION		TERMS AND DEFINITIONS
SOIL IS CONSIDERED UNCONSOLIDATED, SEMI-CONSOLIDATED, OR WEATHERED EARTH MATER BE PENETRATED WITH A CONTINUOUS FLIGHT POWER AUGER AND YIELD LESS THAN 100 B			ATION OF PARTICLE SIZES FROM FINE TO COARSE.	HARD ROCK IS NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT REFUSAL IF TESTED. AN INFERRED ROCK LINE INDICATES THE LEVEL AT WHICH NON-COASTAL PLAIN MATERIAL WOULD YIELD SPT REFUSAL.	ALLUVIUM (ALLUV.) - SOILS THAT HAVE BEEN TRANSPORTED BY WATER.
ACCORDING TO THE STANDARD PENETRATION TEST (AASHTO T 206, ASTM D1586). SOIL C		GAP-GRADED - INDICATES THAT SULL PA	ARTICLES ARE ALL APPROXIMATELY THE SAME SIZE.	SPT REFUSAL IS PENETRATION BY A SPLIT SPOON SAMPLER EQUAL TO OR LESS THAN 0.1 FOOT PER 60	AQUIFER - A WATER BEARING FORMATION OR STRATA.
IS BASED ON THE AASHTO SYSTEM. BASIC DESCRIPTIONS GENERALLY INCLUDE THE I	FOLLOWING:			BLOWS IN NON-COASTAL PLAIN MATERIAL, THE TRANSITION BETWEEN SOIL AND ROCK IS OFTEN	ARENACEOUS - APPLIED TO ROCKS THAT HAVE BEEN DERIVED FROM SAND OR THAT CONTAIN SAND.
CONSISTENCY, COLOR, TEXTURE, MOISTURE, AASHTO CLASSIFICATION, AND OTHER PERTINENT AS MINERALOGICAL COMPOSITION, ANGULARITY, STRUCTURE, PLASTICITY, ETC. FOR E			TY OF GRAINS	REPRESENTED BY A ZONE OF WEATHERED ROCK. ROCK MATERIALS ARE TYPICALLY DIVIDED AS FOLLOWS:	ARGILLACEOUS - APPLIED TO ALL ROCKS OR SUBSTANCES COMPOSED OF CLAY MINERALS, OR HAVING
VERY STIFF, GRAY, SILTY CLAY, MOIST WITH INTERBEDDED FINE SAND LAYERS, HIGHLY PLASTI			OIL GRAINS IS DESIGNATED BY THE TERMS:	NI//AI//A	A NOTABLE PROPORTION OF CLAY IN THEIR COMPOSITION, SUCH AS SHALE, SLATE, ETC.
SOIL LEGEND AND AASHTO CLASSIFICATION		ANGULAR, SUBANGULAR, SUBROUNDED, OR	ROUNDED.	WEATHERED NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT N VALUES > ROCK (WR)	ARTESIAN - GROUND WATER THAT IS UNDER SUFFICIENT PRESSURE TO RISE ABOVE THE LEVEL AT
		MINERALOGIC	AL COMPOSITION	FINE TO COARCE CRAIN ICHEOUS AND METAMORPHIC POCK THAT	WHICH IT IS ENCOUNTERED, BUT WHICH DOES NOT NECESSARILY RISE TO OR ABOVE THE GROUND
CLASS. (≤ 35% PASSING #200) (> 35% PASSING #200) ORGAN	ANIC MATERIALS	MINERAL NAMES SUCH AS QUARTZ, P	FELDSPAR, MICA, TALC, KAOLIN, ETC.	URISTALLINE	SURFACE.
	A-4, A-5		THEY ARE CONSIDERED OF SIGNIFICANCE.	GNEISS, GABBRO, SCHIST, ETC.	CALCAREOUS (CALC.) - SOILS THAT CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE.
	A-6, A-7	COMPRE	ESSIBILITY	NON-CRYSTALLINE FINE TO COARSE GRAIN METAMORPHIC AND NON-COASTAL PLAIN	
		SLIGHTLY COMPRESSIBLE	LL < 31	ROCK (NCR) BOCK TYPE INCLUDES PHYLLITE, SANDETONE, ETC.	OF SLOPE.
SYMBOL 6000080000		MODERATELY COMPRESSIBLE	LL = 31 - 50	COASTAL PLAIN COASTAL PLAIN SEDIMENTS CEMENTED INTO ROCK, BUT MAY NOT YIELD	CORE RECOVERY (REC.) - TOTAL LENGTH OF ALL MATERIAL RECOVERED IN THE CORE BARREL DIVIDED
% PASSING	CIL T	HIGHLY COMPRESSIBLE	LL > 50	SEDIMENTARY ROCK SANDSTONE, CEMENTED SPT REFUSAL. ROCK TYPE INCLUDES LIMESTONE, SANDSTONE, CEMENTED (CP) SHELL BEDS, ETC.	BY TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE.
*10 50 MX GRANULAR	CLAY MUCK.	PERCENTAGE	E OF MATERIAL	WEATHERING	DIKE - A TABULAR BODY OF IGNEOUS ROCK THAT CUTS ACROSS THE STRUCTURE OF ADJACENT
	SOILS	GRANULAR	SILT - CLAY		ROCKS OR CUTS MASSIVE ROCK.
		ORGANIC MATERIAL SOILS TRACE OF ORGANIC MATTER 2 - 3%	<u>SOILS</u> <u>OTHER MATERIAL</u> 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%		HORIZONTAL.
		MODERATELY ORGANIC 5 - 10%	12 - 20% SOME 20 - 35%	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	DIP DIRECTION (DIP AZIMUTH) - THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF THE
PI 6 MX NP 10 MX 10 MX 11 MN 11 MN 10 MX 10 MX 11 MN 11 MN 10 MX 10 MX 11 MN 11 MN		HIGHLY ORGANIC > 10%	> 20% HIGHLY 35% AND ABOVE	OF A CRYSTALLINE NATURE.	LINE OF DIP, MEASURED CLOCKWISE FROM NORTH.
GROUP INDEX Ø Ø Ø 4 MX 8 MX 12 MX 16 MX NO MX AMOUNTS	IS OF URGANIC	GROUN	ND WATER	SLIGHT ROCK GENERALLY FRESH, JOINTS STAINED AND DISCOLORATION EXTENDS INTO ROCK UP TO	FAULT - A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE
USUAL TYPES STONE FRAGS.				(SLI) 1 INCH. OPEN JOINTS MAY CONTAIN CLAY. IN GRANITOID ROCKS SOME OCCASIONAL FELDSPAR	SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE.
OF MATOR GRAVEL AND FINE SILTY OR CLAYEY SILTY CLAYEY MATTER	ER	WATER LEVEL IN BO	RE 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 LEVE	L AFTER 24 HOURS	MODERATE SIGNIFICANT PORTIONS OF ROCK SHOW DISCOLORATION AND WEATHERING EFFECTS. IN	FLOAT - ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLODGED FROM
		✓ PW PERCHED WATER, SAT	URATED ZONE, OR WATER BEARING STRATA	(MOD.) GRANITOID ROCKS, MOST FELDSPARS ARE DULL AND DISCOLORED, SOME SHOW CLAY. ROCK HAS	PARENT MATERIAL.
AS SUBGRADE EXCELLENT TO GOOD FAIR TO POOR POOR	POOR UNSUITABLE			DULL SOUND UNDER HAMMER BLOWS AND SHOWS SIGNIFICANT LOSS OF STRENGTH AS COMPARED	FLOOD PLAIN (FP) - LAND BORDERING A STREAM, BUILT OF SEDIMENTS DEPOSITED BY THE STREAM.
PIOF A-7-5 SUBGROUP IS ≤ LL - 30 ; PIOF A-7-6 SUBGROUP IS > LL - 30		O-MA- SPRING OR SEEP		WITH FRESH ROCK.	FORMATION (FM.) - A MAPPABLE GEOLOGIC UNIT THAT CAN BE RECOGNIZED AND TRACED IN THE
			EOUS 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.
		HIJELLAN	2003 3100023	(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.
DDIMARY SOTI TYPE COMPACINESS OR DENETRATION DESISTENCE COMPRES	E OF UNCONFINED RESSIVE STRENGTH	ROADWAY EMBANKMENT (RE) 25/025	DIP & DIP DIRECTION	IF TESTED, WOULD YIELD SPT REFUSAL	LEDGE - A SHELF-LIKE RIDGE OR PROJECTION OF ROCK WHOSE THICKNESS IS SMALL COMPARED TO
CONSISTENCY (N-VALUE) ((TONS/FT ²)		OF ROCK STRUCTURES	SEVERE ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC CLEAR AND EVIDENT BUT	ITS LATERAL EXTENT.
VERY LOOSE < 4			SPT SLOPE INDICATOR	(SEV.) REDUCED IN STRENGTH TO STRONG SOIL. IN GRANITOID ROCKS ALL FELDSPARS ARE KAOLINIZED	LENS - A BODY OF SOIL OR ROCK THAT THINS OUT IN ONE OR MORE DIRECTIONS.
GENERALLY LOOSE 4 TO 10		SOIL SYMBOL	VST PMT TEST BORING SLOPE INDICATOR VST PMT INSTALLATION	TO SOME EXTENT. SOME FRAGMENTS OF STRONG ROCK USUALLY REMAIN.	
MATERIAL MEDIUM DENSE 10 TO 30	N/A	ARTIFICIAL FILL (AF) OTHER	AUGER BORING CONE PENETROMETER	<u>IF TESTED, WOULD YIELD SPT N VALUES > 100 BPF</u>	MOTTLED (MOT.) - IRREGULARLY MARKED WITH SPOTS OF DIFFERENT COLORS. MOTTLING IN SOILS USUALLY INDICATES POOR AERATION AND LACK OF GOOD DRAINAGE.
(NON-COHESIVE) DENSE 30 TO 50 (NON-COHESIVE) VERY DENSE > 50		THAN ROADWAY EMBANKMENT	TEST	VERY ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED, ROCK FABRIC ELEMENTS ARE DISCERNIBLE	PERCHED WATER - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE
	1.0.05			SEVERE BUT MASS IS EFFECTIVELY REDUCED TO SOIL STATUS, WITH ONLY FRAGMENTS OF STRONG ROCK (V SEV.) REMAINING, SAPROLITE IS AN EXAMPLE OF ROCK WEATHERED TO A DEGREE THAT ONLY MINOR	OF AN INTERVENING IMPERVIOUS STRATUM.
GENERALLY SOFT < 2 GENERALLY SOFT 2 TO 4	< 0.25 0.25 TO 0.5	- INFERRED SOIL BOUNDARY	- CORE BORING SOUNDING ROD	VESTIGES OF ORIGINAL ROCK FABRIC REMAIN. <u>IF TESTED, WOULD YIELD SPT N VALUES < 100 BPF</u>	RESIDUAL (RES.) SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK.
	0.5 TO 1.0		MONITORING WELL	COMPLETE ROCK REDUCED TO SOIL. ROCK FABRIC NOT DISCERNIBLE, OR DISCERNIBLE ONLY IN SMALL AND	
	1 TO 2	0	WITH LURE	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
	2 TO 4	ALLUVIAL SOIL BOUNDARY	PIEZOMETER OF SPT N-VALUE	ALSO AN EXAMPLE.	RUN AND EXPRESSED AS A PERCENTAGE.
HARD > 30	> 4			ROCK HARDNESS	SAPROLITE (SAP.) - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT
TEXTURE OR GRAIN SIZE		RECOMMEND	ATION SYMBOLS	VERY HARD CANNOT BE SCRATCHED BY KNIFE OR SHARP PICK. BREAKING OF HAND SPECIMENS REQUIRES	ROCK.
U.S. STD. SIEVE SIZE 4 10 40 60 200 270			AVATION - TAN UNCLASSIFIED EXCAVATION -	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			ACCEPTABLE, BUT NOT TO BE	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
COARSE FINE		SHALLOW UNCLASSIFIED EXC UNDERCUT ACCEPTABLE DEGR	AVATION - USED IN THE TOP 3 FEET OF EMBANKMENT OR BACKFILL	TO DETACH HAND SPECIMEN.	THE BEDDING OR SCHISTOSITY OF THE INTRUDED ROCKS.
BUULDER LUBBLE GRAVEL SAND SAND (COR) (COR) (COR)				MODERATELY CAN BE SCRATCHED BY KNIFE OR PICK. GOUGES OR GROOVES TO 0.25 INCHES DEEP CAN BE	SLICKENSIDE - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT
(CSE, SD.) (F SD.)		ABBRE	EVIATIONS	HARD EXCAVATED BY HARD BLOW OF A GEOLOGIST'S PICK. HAND SPECIMENS CAN BE DETACHED	OR SLIP PLANE.
GRAIN MM 305 75 2.0 0.25 0.05	0.005	AR - AUGER REFUSAL MED ME		BY MODERATE BLOWS.	STANDARD PENETRATION TEST (PENETRATION RESISTANCE) (SPT) - NUMBER OF BLOWS (N OR BPF) OF
SIZE IN. 12 3			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
SOIL MOISTURE - CORRELATION OF TERMS			ODERATELY γ - UNIT WEIGHT	HARD CAN BE EXCAVATED IN SMALL CHIPS TO PEICES 1 INCH MAXIMUM SIZE BY HARD BLOWS OF THE	WITH A 2 INCH OUTSIDE DIAMETER SPLIT SPOON SAMPLER. SPT REFUSAL IS PENETRATION EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS.
		CPT - CONE PENETRATION TEST NP - NON CSE COARSE ORG OF	N PLASTIC $\gamma_{\rm d}$ - DRY UNIT WEIGHT	POINT OF A GEOLOGIST'S PICK.	STRATA CORE RECOVERY (SREC.) - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY
(ATTERBERG LIMITS) DESCRIPTION GUIDE FOR FIELD MOISTONE	TURE DESCRIPTION		RESSUREMETER TEST <u>SAMPLE ABBREVIATIONS</u>	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	TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE.
		DPT - DYNAMIC PENETRATION TEST SAP SA	APROLITIC S - BULK	PIECES CAN BE BROKEN BY FINGER PRESSURE.	STRATA ROCK QUALITY DESIGNATION (SROD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL
- SATURATED - USUALLY LIQUID; VERY W		e - VOID RATIO SD SAN		VERY CAN BE CARVED WITH KNIFE. CAN BE EXCAVATED READILY WITH POINT OF PICK. PIECES 1 INCH	LENGTH OF ROCK SEGMENTS WITHIN A STRATUM EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY
(SAT.) FROM BELOW THE GROUN	WHICK TABLE	F - FINE SL SIL FOSS FOSSILIFEROUS SLI SL		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 SEMICOLID. DEGUIDES, DD			RICONE REFUSAL RT - RECOMPACTED TRIAXIAL	FINGERNAIL.	TOPSOIL (TS.) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.
RANGE < - WET - (W)		FRAGS FRAGMENTS W - MOIS	STURE CONTENT CBR - CALIFORNIA BEARING	FRACTURE SPACING BEDDING	BENCH MARK: N/A
		HIHIGHLY V-VERY	Y RATIO	TERM SPACING TERM THICKNESS	
		EQUIPMENT USED	ON SUBJECT PROJECT	VERY WIDE MORE THAN 10 FEET VERY THICKLY BEDDED 4 FEET	ELEVATION: N/A FEET
OM _ OPTIMUM MOISTURE - MOIST - (M) SOLID; AT OR NEAR OPTI	IMUM MUISTURE	DRILL UNITS: ADVANCING TOOLS:	HAMMER TYPE:	WIDE 3 TO 10 FEET THICKLY BEDDED 1.5 - 4 FEET MODERATELY CLOSE 1 TO 3 FEET THINLY BEDDED 0.16 - 1.5 FEET	
SL SHRINKAGE LIMIT		CME-45C CLAY BITS		MODERATELY CLOSE 1 TO 3 FEET THINLY BEDDED 0.16 - 1.5 FEET CLOSE 0.16 TO 1 FOOT VERY THINLY BEDDED 0.03 - 0.16 FEET	NOTES:
- DRY - (D) REQUIRES ADDITIONAL W				VERY CLOSE LESS THAN 0.16 FEET THICKLY LAMINATED 0.008 - 0.03 FEET	BORINNG LOCATIONS AND ELEVATION TAKEN FROM ROADWAY
- UKY - (U) ATTAIN OPTIMUM MOISTU	TURE	X CME-55	LURE SIZE:	THINLY LAMINATED < 0.008 FEET	BORINNG LOCATIONS AND ELEVATION TAKEN FROM ROADWAY TIN (7/25/18) AND GPK FILE
PLASTICITY		8" HOLLOW AUGE	:RSВн	INDURATION	
	Y CIDENCI!	CME-550 HARD FACED FIN		FOR SEDIMENTARY ROCKS, INDURATION IS THE HARDENING OF MATERIAL BY CEMENTING, HEAT, PRESSURE, ETC.	
	Y <u>STRENGTH</u> VERY LOW		∐-∾	RUBRING WITH FINGER EDEES NUMEROUS CRAINS.	
	SLIGHT	VANE SHEAR TEST	HAND TOOLS.	FRIABLE GENTLE BLOW BY HAMMER DISINTEGRATES SAMPLE.	
MODERATELY PLASTIC 16-25	MEDIUM		N/ ADVANCER	GRAINS CAN BE SEPARATED FROM SAMPLE WITH STEEL PROBE;	
	HIGH			MODERATELY INDURATED BREAKS EASILY WHEN HIT WITH HAMMER.	
COLOR			HAND AUGER	CRAINS ARE DISCICULT TO SERADATE WITH STEEL PRODE.	
002011			SOUNDING ROD	INDURATED ORAINS ARE DIFFICULT TO SEPARATE WITH STELL PROBE:	
DESCRIPTIONS MAY INCLUDE COLOR OR COLOR COMBINATIONS (TAN, RED, YELLOW-BRO			VANE SHEAR TEST		
MODIFIERS SUCH AS LIGHT, DARK, STREAKED, ETC. ARE USED TO DESCRIBE APP	PEARANCE.			EXTREMELY INDURATED SHARP HAMMER BLOWS REQUIRED TO BREAK SAMPLE; SAMPLE BREAKS ACROSS GRAINS.	DATE: 8-15-14

PROJECT REFERENCE NO.



2





PROJ. NO. - 41499.1.3 ID NO. - R-5020B COUNTY - COLUMBUS

<u>RW2 8</u>

	SOIL TEST RESULTS														
SAMPLE			DEPTH	AASHTO				% BY V	VEIGHT		% PAS	SING (S	IEVES)	%	%
NO.	OFFSET	STATION	INTERVAL	CLASS.	L.L.	P.I.	C.SAND	F.SAND	SILT	CLAY	10	40	200	MOISTURE	ORGANIC
SS-1	55' RT	250+76	3.6-5.1	A-4(0)	21	3	1.8	66.8	11.3	20.1	100	100	37	-	-
SS-2	55' RT	250+76	8.6-10.1	A-7-6(36)	61	43	2.2	20.3	27.2	50.3	100	100	82	-	-
SS-3	55' RT	250+76	13.6-15.1	A-6(4)	33	14	16.1	47.9	15.9	20.1	100	92	49	-	-

<u>RW2</u> 7

	SOIL TEST RESULTS														
SAMPLE			DEPTH	AASHTO				% BY V	/EIGHT		% PAS	SING (S	IEVES)	%	%
NO.	OFFSET	STATION	INTERVAL	CLASS.	L.L.	P.I.	C.SAND	F.SAND	SILT	CLAY	10	40	200	MOISTURE	ORGANIC
SS-4	55' RT	250+41	3.4-4.9	A-2-4(0)		NP	15.9	56.1	17.9	10.1	98	90	33	-	-
SS-5	55' RT	250+41	8.4-9.9	A-7-6(21)	45	31	5.0	29.6	25.2	40.2	100	99	74	-	-
SS-6	55' RT	250+41	13.4-14.9	A-7-6(42)	59	42	1.0	11.3	33.4	54.3	100	99	93	-	-

<u>RW2 6</u>	í														
	SOIL TEST RESULTS														
SAMPLE			DEPTH	AASHTO				% BY V	VEIGHT		% PAS	SING (S	IEVES)	%	%
NO.	OFFSET	STATION	INTERVAL	CLASS.	L.L.	P.I.	C.SAND	F.SAND	SILT	CLAY	10	40	200	MOISTURE	ORGANIC
SS-7	55' RT	249+91	8.5-10.0	A-2-6(1)	32	15	18.5	47.9	9.5	24.1	100	95	35	-	-

<u>RW2 5</u>

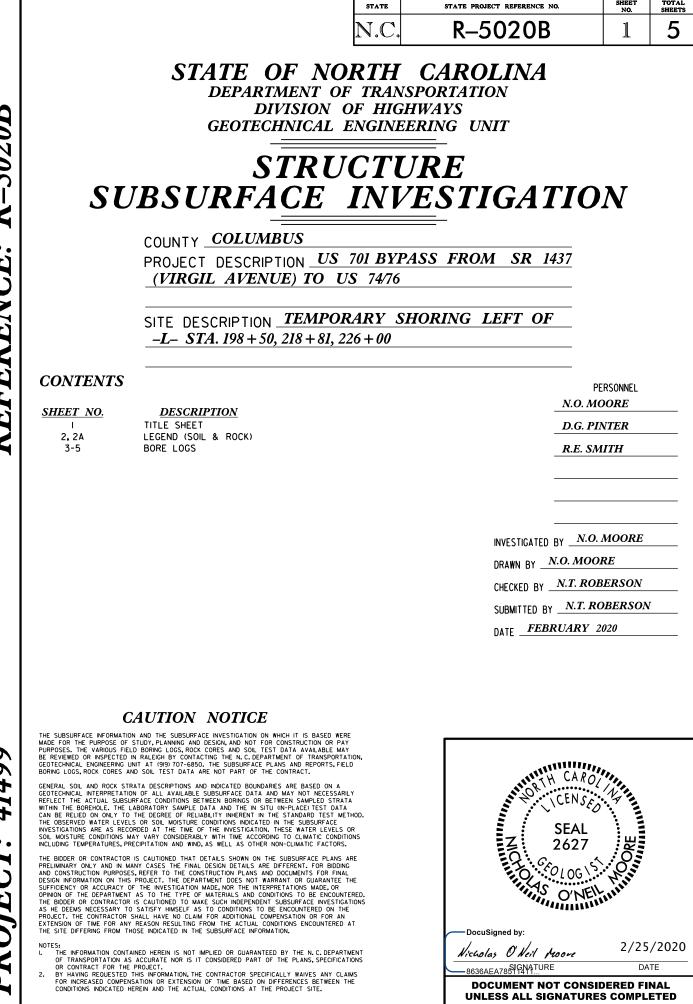
	SOIL TEST RESULTS														
SAMPLE			DEPTH	AASHTO				% BY V	/EIGHT		% PAS	SING (S	IEVES)	%	%
NO.	OFFSET	STATION	INTERVAL	CLASS.	L.L.	P.I.	C.SAND	F.SAND	SILT	CLAY	10	40	200	MOISTURE	ORGANIC
SS-8	55' RT	249+41	3.3-4.8	A-4(0)		NP	4.4	62.0	23.5	10.1	99	97	39	-	5.2
SS-9	55' RT	249+41	13.3-14.8	A-4(1)	31	5	6.6	53.7	29.6	10.1	100	98	58	-	-

<u>RW2 4</u>

			S	OIL 1	TE:	ST ST	RE	SUI	LTS											
SAMPLE			DEPTH	AASHTO				AASHTO % BY WEIGHT %					% BY WEIGHT				ING (SIEVES) % %			
NO.	OFFSET	STATION	INTERVAL	CLASS.	L.L.	P.I.	C.SAND	F.SAND	SILT	CLAY	10	40	200	MOISTURE	ORGANIC					
SS-10	55' RT	249+91	3.5-5.0	A-4(0)	25	6	2.8	62.6	10.5	24.1	100	99	40	-	-					
SS-11	55' RT	249+91	8.5-10.0	A-7-6(76)	90	69	0.0	4.2	27.4	68.4	100	100	97	-	-					
SS-12	55' RT	249+91	13.5-15.0	A-7-6(45)	63	39	0.0	1.0	46.7	52.3	100	100	100	-	-					

<u>RW2 1</u>

			S	OIL 7	TE:	ST	RE,	SUI	LTS						
SAMPLE			DEPTH	AASHTO				% BY V	VEIGHT		% PAS	SING (S	IEVES)	%	%
NO.	OFFSET	STATION	INTERVAL	CLASS.	L.L.	P.I.	C.SAND	F.SAND	SILT	CLAY	10	40	200	MOISTURE	ORGANIC
SS-13	55' RT	247+41	3.4-4.9	A-6(3)	33	16	1.6	56.9	13.3	28.2	100	100	45	-	-
SS-14	55' RT	247+41	13.4-14.9	A-7-6(71)	90	63	0.8	0.8	21.9	76.5	98	98	97	-	-



41499 •) | H

	PROJECT REFERENCE NO. SHEET NO.							
	R-5020B 2							
NORTH CAROLINA DEPARTM DIVISION OF GEOTECHNICAL EN	HIGHWAYS							
SUBSURFACE I	NVESTIGATION							
SOIL AND ROCK LEGEND, TERMS (PAGE 1								
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	WELL GRADED - INDICATES A GOOD REPRESENTATION OF PARTICLE SIZES FROM FINE TO COAR UNIFORMLY GRADED - INDICATES THAT SOIL PARTICLES ARE ALL APPROXIMATELY THE SAME S							
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.							
CONSISTENCY, COLOR, TEXTURE, MOISTURE, AASHTO CLASSIFICATION, AND OTHER PERTINENT FACTORS SUCH AS MINERALOGICAL COMPOSITION, ANDULARITY, STRUCTURE, PLASTICITY, ETC. FOR EXAMPLE, VERY STREE CON SUTY OF WORTH WERE NEEDE WERE SUPL VERY BURGE WICH AT A	ANGULARITY OF GRAINS THE ANGULARITY OR ROUNDNESS OF SOIL GRAINS IS DESIGNATED BY THE TERMS:							
VERY STIFF.GRAY.SILTY CLAY,MOIST WITH INTERBEDDED FINE SAND LAYERS,HIGHLY PLASTIC,A-7-6 SOIL LEGEND AND AASHTO CLASSIFICATION	ANGULAR, SUBANGULAR, SUBROUNDED, OR ROUNDED.							
GENERAL GRANULAR MATERIALS SILT-CLAY MATERIALS ORGANIC MATERIALS CLASS. (≤ 35%, PASSING *200) (> 35%, PASSING *200) ORGANIC MATERIALS	MINERALOGICAL COMPOSITION MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC.							
GROUP A-1 A-3 A-2 A-4 A-5 A-6 A-7 A-1, A-2 A-4, A-5	ARE USED IN DESCRIPTIONS WHEN THEY ARE CONSIDERED OF SIGNIFICANCE.							
CLASS. A-1-6 A-1-6 A-2-4 A-2-5 A-2-6 A-2-7 A-7 A-7 A-7 A-7 A-7 A-7 A-7 A-7 A-7 A	COMPRESSIBILITY SLIGHTLY COMPRESSIBLE LL < 31]						
	MODERATELY COMPRESSIBLE LL = 31 - 50 HIGHLY COMPRESSIBLE LL > 50							
7. PASSING 10 50 MX CLAY MUCK, CRANULAR SILT- CLAY MUCK, CLAY MUCK,	PERCENTAGE OF MATERIAL							
*40 30 MX 50 MX 51 MN *200 15 MX 25 MX 10 MX 35 MX 35 MX 35 MX 35 MX 35 MX 36 MN 36 MN 36 MN 36 MN 36 MN	GRANULAR SILT - CLAY <u>ORGANIC MATERIAL SOILS SOILS OTHER MATERIAL</u>							
MATERIAL PASSING *40	TRACE OF OF <tho< td=""><td></td></tho<>							
LL – – 40 MX 41 MN 48 MX 41 MN 40 MX 41 MN 40 MX 41 MN 40 MX 41 MN LITTLE OR LICULY	MODERATELY ORGANIC 5 - 10% 12 - 20% SOME 20 - 35% HIGHLY ORGANIC > 10% > 20% HIGHLY 35% AND ABOV	VE						
GROUP INDEX Ø Ø Ø 4 MX 8 MX 12 MX 16 MX NO MX AMOUNTS OF	GROUND WATER							
USUAL TYPES STONE FRAGS. FINE SILTY OR CLAVEY SILTY CLAVEY MATTER	WATER LEVEL IN BORE HOLE IMMEDIATELY AFTER DRILLING							
OF MAJOR GRAVEL, AND SAND GRAVEL AND SAND SOILS SOILS	▼ STATIC WATER LEVEL AFTER 24 HOURS							
GEN.RATING AS SUBGRADE EXCELLENT TO GOOD FAIR TO POOR POOR UNSUITABLE	∑PW PERCHED WATER, SATURATED ZONE, OR WATER BEARING STRATA							
PI OF A-7-5 SUBGROUP IS ≤ LL - 30 ;PI OF A-7-6 SUBGROUP IS > LL - 30	O-M- Spring or SEEP							
CONSISTENCY OR DENSENESS	MISCELLANEOUS SYMBOLS							
PRIMARY SOIL TYPE COMPACTNESS OR PENETRATION RESISTENCE COMPRESSIVE STRENGTH CONSISTENCY (N-VALUE) (TONS/FT ²)	Image: Product of the section of the secccoordinate section of the section of the section of th							
CENERALLY VERY LOOSE < 4	SPT DAT TEST BORING SLOPE INDICATO	OR						
OCNOME LOOSE 4 TO 10 GRANULAR MEDIUM DENSE 10 TO 30 N/A	R1	METER						
(NON-COHESIVE) DENSE 30 TO 50 (NON-COHESIVE) VERY DENSE > 50	ARTIFICIAL FILL (AF) OTHER THAN ROADWAY EMBANKMENT AUGER BORING CONE PENETROM							
VERY SOFT < 2 < 0.25 GENERALLY SOFT 2 TO 4 0.25 TO 0.5	- INFERRED SOIL BOUNDARY - CORE BORING SOUNDING ROD							
SILT-CLAY MEDIUM STIFF 4 TO 8 0.5 TO 1.0 MATERIAL STIFF 8 TO 15 1 TO 2	TEST BORING WITH CORE							
(COHESIVE) VERY STIFF 15 TO 30 2 TO 4 HARD > 30 > 4								
TEXTURE OR GRAIN SIZE	RECOMMENDATION SYMBOLS							
U.S. STD. SIEVE SIZE 4 10 40 60 200 270	UNCLASSIFIED EXCAVATION - TO UNCLASSIFIED EXCAVATION - UNCLASSIFIED EXCAVATION - CONTROL OF A CO							
OPENING (MM) 4.76 2.00 0.42 0.25 0.075 0.053 DOW DED CODDUC CDARSE FINE CLAX	UNCLASSIFIED EXCAVATION - SHALLOW UNCLASSIFIED EXCAVATION - UNCLASSIFIED EXCAVATION - ACCEPTABLE DECEMPABLE ROCK EMBANKMENT OR BACKFILL							
BOULDER COBBLE GRAVEL SAND SAND SILT CLAY (BLDR.) (COB.) (GR.) (CSE. SD.) (F SD.) (SL.) (CL.) -								
GRAIN MM 305 75 2.0 0.25 0.05 0.005 SIZE IN. 12 3	AR - AUGER REFUSAL MED MEDIUM VST - VANE SHEAR TEST BT - BORING TERMINATED MICA MICACEOUS WEA WEATHERED	л						
SIZE IN. 12 3 SOIL MOISTURE - CORRELATION OF TERMS	CL CLAY MOD MODERATELY γ - UNIT WEIGHT							
SOIL MOISTURE SCALE FIELD MOISTURE CUIDE FOR FIELD MOISTURE DESCRIPTION	CPT - CONE PENETRATION TEST NP - NON PLASTIC γ_{d}^{-} DRY UNIT WEIGHT CSE COARSE ORG ORGANIC							
(ATTERBERG LIMITS) DESCRIPTION	DMT - DILATOMETER TEST PMT - PRESSUREMETER TEST SAMPLE ABBREVIATION DPT - DYNAMIC PENETRATION TEST SAP SAPROLITIC S - BULK	<u>- 115</u>						
- SATURATED - USUALLY LIQUID; VERY WET, USUALLY (SAT.) FROM BELOW THE GROUND WATER TABLE	e - VOID RATIO SD SAND, SANDY SS SPLIT SPOON F - FINE SL SILT, SILTY ST SHELBY TUBE							
LL LIDUID LIMIT	FOSS FOSSILIFEROUS SLI SLIGHTLY RS - ROCK FRAC FRACTURED, FRACTURES TCR - TRICONE REFUSAL RT - RECOMPACTED TRIA	AXIAL						
RANCE < - WET - (W) ATTAIN OPTIMUM MOISTURE	FRAGS FRAGMENTS ω - MOISTURE CONTENT CBR - CALIFORNIA BEAR HI HIGHLY V - VERY RATIO	₹ING						
	EQUIPMENT USED ON SUBJECT PROJECT							
OM _ OPTIMUM MOISTURE HOLST WAY SOLLD, HI ON HEAR OF THOM HOLSTONE	DRILL UNITS: ADVANCING TOOLS: HAMMER TYPE: X CME-45C CLAY BITS X AUTOMATIC MANI							
- DRY - (D) REQUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE								
PLASTICITY	CME-55 X 8' HOLLOW AUGERS CURE SIZE:							
PLASTICITY INDEX (PI) DRY STRENGTH	□ CME-550 □ HARD FACED FINGER BITS □ -N	-						
NON PLASTIC 0-5 VERY LOW SLIGHTLY PLASTIC 6-15 SLIGHT	VANE SHEAR TEST UK CARBIDE INSERTS HAND TOOLS:							
MODERATELY PLASTIC 16-25 MEDIUM HIGHLY PLASTIC 26 OR MORE HIGH	CASING W/ ADVANCER POST HOLE DIGGER							
COLOR	HAND AUGER TRICONE							
DESCRIPTIONS MAY INCLUDE COLOR OR COLOR COMBINATIONS (TAN, RED, YELLOW-BROWN, BLUE-GRAY).	CORE BIT							
MODIFIERS SUCH AS LIGHT, DARK, STREAKED, ETC. ARE USED TO DESCRIBE APPEARANCE.								
		_						

				PROJECT REFERENCE NO.	SHEET NO.
				R-5020B	2A
	NORTH	CAROLINA DEPARTM DIVISION OF			Į
	GEOT	ECHNICAL EN			7
	SUBSU	URFACE I	NVE.	STIGATIO	DN
	SOIL AND R	OCK LEGEND, TERMS, (PAGE 2		 LS, AND ABBREVIA	TIONS
		CRIPTION DULD YIELD SPT REFUSAL IF TESTED. AN INFERRED		TERMS AND DEFINIT	
ROCK LINE I SPT REFUSA BLOWS IN N REPRESENTE ROCK MATER WEATHERED	INDICATES THE LEVEL AT WHICH NON-COAS AL IS PERETRATION BY A SPLIT SPOON SAM NON-COASTAL PLAIN MATERIAL, THE TRAN ID BY A ZONE OF WEATHERED ROCK. NALS ARE TYPICALLY DIVIDED AS FOLLOWS NON-COASTAL PLAIN	TAL PLAIN MATERIAL WOULD YIELD SPT REFUSAL. MPLER EDUAL TO OR LESS THAN 0.15 FOOT PER 60 SITION BETWEEN SOIL AND ROCK IS OFTEN MATERIAL THAT WOULD YIELD SPT N VALUES >	AQUIFER - A WA ARENACEOUS - A ARGILLACEOUS - A NOTABLE PROF	<u>IV</u> . SOILS THAT HAVE BEEN TRANSPORTED BY STER BEARING FORMATION OR STRATA. APPLIED TO ROCKS THAT HAVE BEEN DERIVED I - APPLIED TO ALL ROCKS OR SUBSTANCES COM PORTION OF CLAY IN THEIR COMPOSITION, SUCH	FROM SAND OR THAT CONTAIN SAND. MPOSED OF CLAY MINERALS, OR HAVING H AS SHALE, SLATE, ETC.
ROCK (WR) CRYSTALLIN ROCK (CR)		AIN IGNEOUS AND METAMORPHIC ROCK THAT REFUSAL IF TESTED. ROCK TYPE INCLUDES GRANITE.	WHICH IT IS EN SURFACE.	NUND WATER THAT IS UNDER SUFFICIENT PRESS COUNTERED, BUT WHICH DOES NOT NECESSARILY	Y RISE TO OR ABOVE THE GROUND
NON-CRYSTA ROCK (NCR) COASTAL PL	AIN COASTAL PLAIN SED	AIN METAMORPHIC AND NON-COASTAL PLAIN THAT WOULD YEILD SPT REFUSAL IF TESTED. S PHYLLITE, SLATE, SANDSTONE, ETC. IMENTS CEMENTED INTO ROCK, BUT MAY NOT YIELD	<u>COLLUVIUM</u> - RO OF SLOPE.	ILLE SUITS THAT CONTAIN AFFRECTABLE AMOUNT OCK FRAGMENTS MIXED WITH SOIL DEPOSITED E (REC.) - TOTAL LENGTH OF ALL MATERIAL REC	BY GRAVITY ON SLOPE OR AT BOTTOM
SEDIMENTAR (CP)	Y ROCK SPT REFUSAL, ROCK SHELL BEDS, ETC. WEATH	TYPE INCLUDES LIMESTONE, SANDSTONE, CEMENTED	BY TOTAL LENG	TH OF CORE RUN AND EXPRESSED AS A PERCE AR BODY OF IGNEOUS ROCK THAT CUTS ACROS	INTAGE.
FRESH	HAMMER IF CRYSTALLINE.	S MAY SHOW SLIGHT STAINING. ROCK RINGS UNDER		E AT WHICH A STRATUM OR ANY PLANAR FEAT	IURE IS INCLINED FROM THE
(V SLI.)		OME JOINTS MAY SHOW THIN CLAY COATINGS IF OPEN, HINE BRIGHTLY. ROCK RINGS UNDER HAMMER BLOWS IF	LINE OF DIP, ME	(DIP AZIMUTH) - THE DIRECTION OR BEARING OF ASURED CLOCKWISE FROM NORTH.	
SLIGHT (SLI.)	1 INCH. OPEN JOINTS MAY CONTAIN CLAY. I	ND DISCOLORATION EXTENDS INTO ROCK UP TO N GRANITOID ROCKS SOME OCCASIONAL FELDSPAR STALLINE ROCKS RING UNDER HAMMER BLOWS.	SIDES RELATIVE	CTURE OR FRACTURE ZONE ALONG WHICH THERE TO ONE ANOTHER PARALLEL TO THE FRACTUR OPERTY OF SPLITTING ALONG CLOSELY SPACED	RE.
MODERATE (MOD.)	SIGNIFICANT PORTIONS OF ROCK SHOW DISC GRANITOID ROCKS, MOST FELDSPARS ARE DU		FLOAT - ROCK F PARENT MATERIA	FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL	POSITION AND DISLODGED FROM
MODERATELY SEVERE (MOD. SEV.)	ALL ROCK EXCEPT QUARTZ DISCOLORED OR AND DISCOLORED AND A MAJORITY SHOW KA AND CAN BE EXCAVATED WITH A GEOLOGIST	STAINED, IN GRANITOID ROCKS, ALL FELDSPARS DULL AQLINIZATION, ROCK SHOWS SEVERE LOSS OF STRENGTH 'S PICK, ROCK GIVES 'CLUNK' SOUND WHEN STRUCK.	FIELD.	2 - A MAPPABLE GEOLOGIC UNIT THAT CAN BE JRE IN ROCK ALONG WHICH NO APPRECIABLE MO	
SEVERE (SEV.)	REDUCED IN STRENGTH TO STRONG SOIL. IN TO SOME EXTENT. SOME FRAGMENTS OF STI		ITS LATERAL EX LENS - A BODY	OF SOIL OR ROCK THAT THINS OUT IN ONE OF	R MORE DIRECTIONS.
VERY SEVERE (V SEV.)	BUT MASS IS EFFECTIVELY REDUCED TO SO	<u>100 BPF</u> STAINED, ROCK FABRIC ELEMENTS ARE DISCERNIBLE DIL STATUS, WITH ONLY FRAGMENTS OF STRONG ROCK ROCK WEATHERED TO A DEGREE THAT ONLY MINOR	USUALLY INDICA PERCHED WATER	 IRREGULARLY MARKED WITH SPOTS OF DIFFE ITES POOR AERATION AND LACK OF GOOD DRAIN - WATER MAINTAINED ABOVE THE NORMAL GRO VING IMPERVIOUS STRATUM. 	NAGE.
COMPLETE	VESTIGES OF ORIGINAL ROCK FABRIC REMAI ROCK REDUCED TO SOIL. ROCK FABRIC NOT	N. <u>IF TESTED, WOULD YIELD SPT N VALUES < 100 BPF</u> DISCERNIBLE, OR DISCERNIBLE ONLY IN SMALL AND BE PRESENT AS DIKES OR STRINGERS. SAPROLITE IS	RESIDUAL (RES.) ROCK QUALITY D ROCK SEGMENTS	<u>SOIL</u> - SOIL FORMED IN PLACE BY THE WEATH <u>JESIGNATION (ROD)</u> - A MEASURE OF ROCK QUAL EQUAL TO OR GREATER THAN 4 INCHES DIVID	ITY DESCRIBED BY TOTAL LENGTH OF
	ROCK HA			SSED AS A PERCENTAGE. $\underline{\partial}$ - RESIDUAL SOIL THAT RETAINS THE RELIC	STRUCTURE OR FABRIC OF THE PARENT
VERY HARD HARD	SEVERAL HARD BLOWS OF THE GEOLOGIST'S CAN BE SCRATCHED BY KNIFE OR PICK ONL	PICK. BREAKING OF HAND SPECIMENS REQUIRES PICK. Y WITH DIFFICULTY. HARD HAMMER BLOWS REQUIRED	<u>SILL</u> - AN INTRU RELATIVELY THI	USIVE BODY OF IGNEOUS ROCK OF APPROXIMAT IN COMPARED WITH ITS LATERAL EXTENT, THAT & SCHISTOSITY OF THE INTRUDED ROCKS.	
MODERATELY HARD	EXCAVATED BY HARD BLOW OF A GEOLOGIS	JGES OR GROOVES TO 0.25 INCHES DEEP CAN BE T'S PICK. HAND SPECIMENS CAN BE DETACHED	SLICKENSIDE - F OR SLIP PLANE.	POLISHED AND STRIATED SURFACE THAT RESUL	
MEDIUM HARD		DEEP BY FIRM PRESSURE OF KNIFE OR PICK POINT. ICES I INCH MAXIMUM SIZE BY HARD BLOWS OF THE	A 140 LB. HAMME WITH A 2 INCH	TRATION TEST (PENETRATION RESISTANCE) (SPT ER FALLING 30 INCHES REQUIRED TO PRODUCE OUTSIDE DIAMETER SPLIT SPOON SAMPLER. SP AN 0.1 FOOT PER 60 BLOWS.	A PENETRATION OF 1 FOOT INTO SOIL
SOFT	CAN BE GROVED OR GOUGED READILY BY KN	NIFE OR PICK. CAN BE EXCAVATED IN FRAGMENTS BY MODERATE BLOWS OF A PICK POINT. SMALL, THIN	STRATA CORE RE TOTAL LENGTH (ECOVERY (SREC.) - TOTAL LENGTH OF STRATA M OF STRATUM AND EXPRESSED AS A PERCENTAG	GE.
VERY SOFT	CAN BE CARVED WITH KNIFE. CAN BE EXCA	NC. VATED READILY WITH POINT OF PICK. PIECES I INCH FINGER PRESSURE. CAN BE SCRATCHED READILY BY	LENGTH OF ROCH THE TOTAL LENG	UALITY DESIGNATION (SROD) - A MEASURE OF R K SEGMENTS WITHIN A STRATUM EQUAL TO OR GTH OF STRATA AND EXPRESSED AS A PERCEN SURFACE SOILS USUALLY CONTAINING ORGANIC	R GREATER THAN 4 INCHES DIVIDED BY
TERM	FRACTURE SPACING	BEDDING TERM THICKNESS	BENCH_MAR	:K:	
VERY WID	DE MORE THAN 10 FEET 3 TO 10 FEET	VERY THICKLY BEDDED 4 FEET THICKLY BEDDED 1.5 - 4 FEET			ELEVATION: FEET
MODERATI CLOSE VERY CLO	ELY CLOSE 1 TO 3 FEET Ø.16 TO 1 FOOT OSE LESS THAN Ø.16 FEET	THINLY BEDDED 0.16 -1.5 FEET VERY THINLY BEDDED 0.03 -0.16 FEET THICKLY LAMINATED 0.008 -0.03 FEET THINLY LAMINATED < 0.008	NOTES: ROADWAY B r5020_ls_tr	ORING ELEVATIONS TAKEN FROM ⁻ nl_180725.†in DATED 01/24/2019	TIN FILE
FOR SEDIME	INDURA				
FRIAE	RUBBING WITH F	INGER FREES NUMEROUS GRAINS: Y HAMMER DISINTEGRATES SAMPLE.			
MODE		SEPARATED FROM SAMPLE WITH STEEL PROBE: WHEN HIT WITH HAMMER.			
INDUF	DIFFICULT TO B	FICULT TO SEPARATE WITH STEEL PROBE; REAK WITH HAMMER.			
EXTR		BLOWS REQUIRED TO BREAK SAMPLE; ACROSS GRAINS.			DATE: 8-15-1

GEOTECHNICAL BORING REPORT BORE LOG

WBS																
	41499	.1.3			Т	P R-5020	В	COUNT	COLL	IMBL	IS			GEOLOGIST Moore, N. O.		
SITE I	DESCR	PTION	US 7	701 By	pass fr	om SR 143	87 to US 74/	76							GROUND WT	R (ft
BORIN	NG NO.	TS 19	9850	LT	S	TATION 1	98+50		OFFSE	T 14	4 ft LT			ALIGNMENT -L-	0 HR.	11.6
	AR ELE						TH 16.1 ft		NORTH			30		EASTING 2,088,154		8.5
	RIG/HAN			E N/A							DRILL M		D HS		VIER TYPE Automa	
	.ER Sr						E 02/05/20	<u>, </u>	COMP.							
LEV	DD1 (5	DEPTH		w co			BLOWS F				SAMP.	V	L	SURFACE WATER DEPTH N		
(ft)	(ft)	(ft)	0.5ft	0.5ft	0.5ft	0	25 5	0	75	100	NO.	<u>/ MOI</u>	G	ELEV. (ft)		<u>PTH (</u> 1
80		-														
75	75.7 -	- 00	1	3	2	\$ ⁵				-				75.7 GROUND SUR ROADWAY EMBAR 73.7 ORANGE AND BROWN,	NKMENT CLAYEY SAND	2
70	- 	4.6	1	2	1	· · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·	· · · · ·	· · · · · · ·	• • •				WITH TRACE ROOT F UNDIVIDED COAST GRAY, ORANGE, AN MOTTLED, HIGHLY PL	AL PLAIN D BROWN,	
	- - - 66.1	9.6			5			· · · · ·		•		▼		CLAY WITH TRACE MIC FRAGMENT	CA AND ROOT	
65	-	-	2	3	5	· · · · · · · · · · · · · · · · · · ·	· · · · ·	· · · · ·	· · · ·	•				62.8 GRAY, COARSE	SAND	12
60	61.1	14.6	2	2	4									-59.6	0,110	16
	4 · · · · 4 · · · · 4 · · · · 4 · · · ·															

GEOTECHNICAL BORING REPORT BORE LOG

WBS 41499	9.1.3			Т	IP	R-5020E	3	COU	NTY	COLUME	BUS			GEOLOGIST Moore, N. O.		
SITE DESCR		US 7	701 By								-				GROUND V	VTR (ft)
BORING NO.	TS_2	1865_	LT	S	TAT	ION 21	8+81		0	FFSET	16 ft LT			ALIGNMENT -L-	0 HR.	8.8
	EV . 72	2.5 ft		Т	ΟΤΑ	AL DEPT	H 16.0	ft	N	ORTHING	3 213,5	10		EASTING 2,088,027	24 HR.	8.3
DRILL RIG/HAN	VIMER EF	F./DATI	E N/A	\							DRILL	/IETHO	DHS	S. Augers HAMIN	ALER TYPE Auto	omatic
DRILLER S	mith, R.	. E.		S	TAR		02/05	20	С	omp. Da	TE 02/	05/20		SURFACE WATER DEPTH N	/A	
ELEV (ft) DRIVE ELEV (ft)	DEPTH (ft)	BLC 0.5ft	OW CO 0.5ft	1	0	2	BLOWS	50 50	OOT 75	100	SAMP. NO.	моі	L O I G	Soil and Rock des Elev. (ft)		DEPTH (1
(fft) ELEV	(ft)	' 	1	1		2 3 2 2 4 • • • • • • • • • • • • • • • • • •		50 				1.7			ACE IKMENT Y SAND WITH FRAGMENTS AL PLAIN 'FY SAND WITH MENTS AND LASTIC, SILTY A AND ROOT S AND SAND WITH RETIONS ration 56.5 ft IN	0 2. H 10. 12. 16.

GEOTECHNICAL BORING REPORT BORE LOG

