700-BR REFERENCE

CONTENTS

DESCRIPTION

LEGEND (SOIL & ROCK)

TITLE SHEET

SITE PLAN

BORE LOGS

PROFILE

SHEET NO.

5-8

67073

STATE OF NORTH CAROLINA

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

STRUCTURE SUBSURFACE INVESTIGATION

COUNTY <u>COLUMBUS</u>

PROJECT DESCRIPTION BRIDGE NO. 5 ON -L- (US 76) OVER GAPWAY SWAMP AT STA. 18 + 24.5

STATE PROJECT REFERENCE NO. BR-0073 8

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 707-6550. 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 BORNDS 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 DEGREE OF RELIABILITY INHERENT IN THE STANDARD TEST METHOD. THE DESTREED HAVE THE VELVELS OR SOIL MOISTURE CONDITIONS INDICATED IN THE SUBSURFACE INVESTIGATIONS ARE AS RECORDED AT THE TIME OF THE INVESTIGATION. THESE WATER LEVELS OR SOIL MOISTURE CONDITIONS MAY YARY CONSIDERABLY WITH TIME ACCORDING TO CLIMATIC CONDITIONS INCLUDING TEMPERATURES, PRECIPITATION AND WIND, AS WELL AS OTHER NON-CLIMATIC FACTORS,

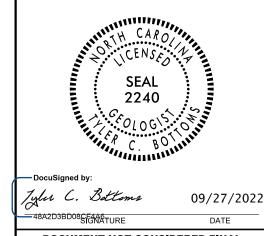
THE BIDDER OR CONTRACTOR IS CAUTIONED THAT DETAILS SHOWN ON THE SUBSURFACE PLANS ARE PRELIMINARY ONLY AND IN MANY CASES THE FINAL DESIGN DETAILS ARE DIFFERENT. FOR BIDDING AND CONSTRUCTION PURPOSES, REFER TO THE CONSTRUCTION PLANS AND DOCUMENTS FOR FINAL DESIGN INFORMATION ON THIS PROJECT. THE DEPARTMENT DOES NOT WARRANT OR GUARANTEE THE SUFFICIENCY OR ACCURACY OF THE INVESTIGATION MADE, NOR THE INTERRETATIONS 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 DEEMS NECESSARY TO SATISFY HINSELF AS TO CONDITIONS TO BE ENCOUNTERED OF 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.

- IES:
 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 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.

S.N. ZIMARINO R.E. SMITH D.G. PINTER C.M. WALKER T.W. MILLER

PERSONNEL

INVESTIGATED BY __T.C. BOTTOMS DRAWN BY _T.C. BOTTOMS DATE APRIL 2022



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

PROJECT REFERENCE NO. SHEET NO.

BR-0073

2

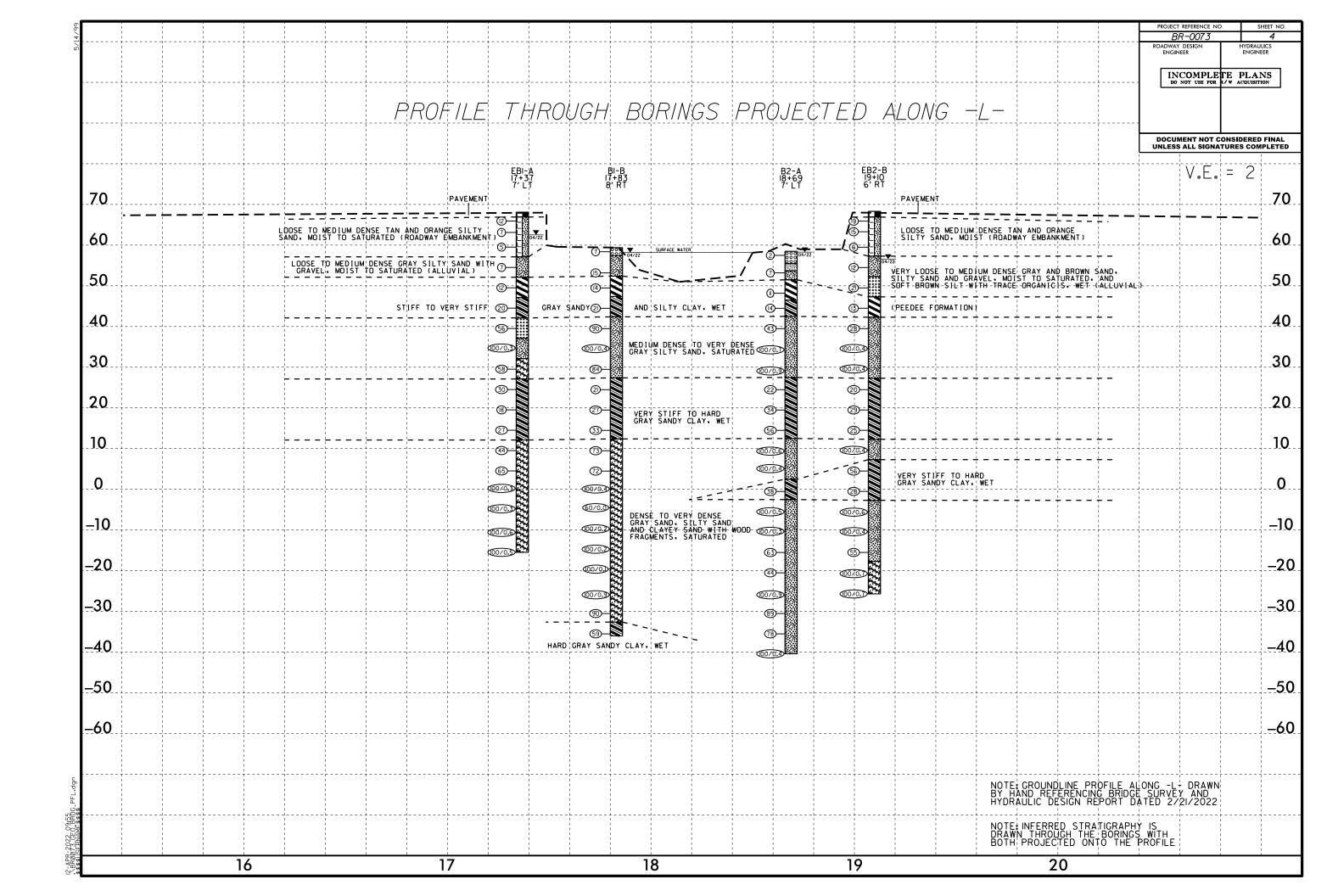
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS GEOTECHNICAL ENGINEERING UNIT

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 FLIGHT POWER AUGER AND YIELD LESS THAN 100 BLOWS PER FOOT	WELL GRADED - INDICATES A GOOD REPRESENTATION OF PARTICLE SIZES FROM FINE TO COARSE. UNIFORMLY GRADED - INDICATES THAT SOIL PARTICLES ARE ALL APPROXIMATELY THE SAME SIZE.	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 CLASSIFICATION	GAP-GRADED - INDICATES A MIXTURE OF UNIFORM PARTICLE SIZES OF TWO OR MORE SIZES.	SPT REFUSAL IS PENETRATION BY A SPLIT SPOON SAMPLER EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS IN NON-COASTAL PLAIN MATERIAL, THE TRANSITION BETWEEN SOIL AND ROCK IS OFTEN	AQUIFER - A WATER BEARING FORMATION OR STRATA.							
IS BASED ON THE AASHTO SYSTEM. BASIC DESCRIPTIONS GENERALLY INCLUDE THE FOLLOWING: CONSISTENCY, COLOR, TEXTURE, MOISTURE, AASHTO CLASSIFICATION, AND OTHER PERTINENT FACTORS SUCH	ANGULARITY OF GRAINS	REPRESENTED BY A ZONE OF WEATHERED ROCK.	ARENACEOUS - APPLIED TO ROCKS THAT HAVE BEEN DERIVED FROM SAND OR THAT CONTAIN SAND.							
AS MINERALOGICAL COMPOSITION, ANGULARITY, STRUCTURE, PLASTICITY, ETC. FOR EXAMPLE, VERY STIFF, GRAY, SILTY CLAY, MOIST WITH INTERBEDDED FINE SAND LAYERS, HIGHLY PLASTIC, A-7-6	THE ANGULARITY OR ROUNDNESS OF SOIL GRAINS IS DESIGNATED BY THE TERMS:	ROCK MATERIALS ARE TYPICALLY DIVIDED AS FOLLOWS:	ARGILLACEOUS - APPLIED TO ALL ROCKS OR SUBSTANCES COMPOSED OF CLAY MINERALS, OR HAVING A NOTABLE PROPORTION OF CLAY IN THEIR COMPOSITION, SUCH AS SHALE, SLATE, ETC.							
SOIL LEGEND AND AASHTO CLASSIFICATION	ANGULAR, SUBANGULAR, SUBROUNDED, OR ROUNDED.	WEATHERED NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT N VALUES > 100 BLOWS PER FOOT IF TESTED.	ARTESIAN - GROUND WATER THAT IS UNDER SUFFICIENT PRESSURE TO RISE ABOVE THE LEVEL AT							
GENERAL GRANULAR MATERIALS SILT-CLAY MATERIALS ORGANIC MATERIALS	MINERALOGICAL COMPOSITION	CRYSTALLINE TO COARSE GRAIN IGNEOUS AND METAMORPHIC ROCK THAT	WHICH IT IS ENCOUNTERED, BUT WHICH DOES NOT NECESSARILY RISE TO OR ABOVE THE GROUND							
LLASS. (≤ 35% PASSING "200) (> 35% PASSING "200)	MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC. ARE USED IN DESCRIPTIONS WHEN THEY ARE CONSIDERED OF SIGNIFICANCE.	ROCK (CR) WOULD YIELD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES GRANITE, GNEISS, GABBRO, SCHIST, ETC.	SURFACE.							
GROUP A-1 A-3 A-2 A-4 A-5 A-6 A-7 A-1, A-2 A-4, A-5 CLASS. A-1-0 A-1-1-0 A-1-1-0 A-2-4 A-2-5 A-2-6 A-2-7 A-2-7 A-3-3 A-6, A-7	COMPRESSIBILITY	NON-CRYSTALLINE FINE TO COARSE GRAIN METAMORPHIC AND NON-COASTAL PLAIN SEDIMENTARY ROCK THAT WOULD YEILD SPT REFUSAL IF TESTED.	CALCAREOUS (CALC.) - SOILS THAT CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE. COLLUVIUM - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM							
SYMBOL COCOGOGOGO	SLIGHTLY COMPRESSIBLE LL < 31	ROCK TYPE INCLUDES PHYLLITE, SLATE, SANDSTONE, ETC.	OF SLOPE.							
	MODERATELY COMPRESSIBLE LL = 31 - 50 HIGHLY COMPRESSIBLE LL > 50	COASTAL PLAIN COASTAL PLAIN SEDIMENTS CEMENTED INTO ROCK, BUT MAY NOT YIELD SEDIMENTARY ROCK SPT REFUSAL. ROCK TYPE INCLUDES LIMESTONE, SANDSTONE, CEMENTED	CORE RECOVERY (REC.) - TOTAL LENGTH OF ALL MATERIAL RECOVERED IN THE CORE BARREL DIVIDED							
7. PASSING SILT-GRANULAR SILT-GRANULAR CLAY MUCK,	PERCENTAGE OF MATERIAL	(CP) SHELL BEDS, ETC.	BY TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE. DIKE - A TABULAR BODY OF IGNEOUS ROCK THAT CUTS ACROSS THE STRUCTURE OF ADJACENT							
#40 30 MX 50 MX 51 MN PEAT SOILS SOILS SOILS SOILS SOILS SOILS	GRANULAR SILT - CLAY ORGANIC MATERIAL SOILS SOILS OTHER MATERIAL	WEATHERING	ROCKS OR CUTS MASSIVE ROCK.							
MATERIAL .	TRACE OF ORGANIC MATTER 2 - 3% 3 - 5% TRACE 1 - 10%	FRESH ROCK FRESH, CRYSTALS BRIGHT, FEW JOINTS MAY SHOW SLIGHT STAINING. ROCK RINGS UNDER HAMMER IF CRYSTALLINE.	DIP - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE HORIZONTAL.							
PASSING *40 SOILS WITH	LITTLE ORGANIC MATTER 3 - 5% 5 - 12% LITTLE 10 - 20% 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,	DIP DIRECTION (DIP AZIMUTH) - THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF THE							
LL 40 MX 41 MN LITTLE OR P1 6 MX NP 10 MX 10 MX 11 MN 11 MN 10 MX 10 MX 11 MN 11 MN MODERATE HIGHLY	HIGHLY ORGANIC > 10% > 20% HIGHLY 35% AND ABOVE	(V SLI.) CRYSTALS ON A BROKEN SPECIMEN FACE SHINE BRIGHTLY. ROCK RINGS UNDER HAMMER BLOWS IF OF A CRYSTALLINE NATURE.	LINE OF DIP, MEASURED CLOCKWISE FROM NORTH.							
GROUP INDEX A A A A AMX 8 MX 12 MX 16 MX NO MX AMOUNTS OF URGANIC	GROUND 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 FRACS. FINE SILTY OR CLAYEY SILTY CLAYEY MATTER	▼ WATER LEVEL IN BORE HOLE IMMEDIATELY AFTER DRILLING	(SLI.) 1 INCH, OPEN JOINTS MAY CONTAIN CLAY. IN GRANITOID ROCKS SOME OCCASIONAL FELDSPAR CRYSTALS ARE DULL AND DISCOLORED, CRYSTALLINE ROCKS RING UNDER HAMMER BLOWS.	SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE.							
OF MAJOR GRAVEL, AND SAND GRAVEL AND SAND SOILS SOILS	▼ STATIC WATER LEVEL AFTER 24 HOURS	MODERATE SIGNIFICANT PORTIONS OF ROCK SHOW DISCOLORATION AND WEATHERING EFFECTS. IN	FISSILE - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES. FLOAT - ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLODGED FROM							
CEN PATING		(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 UNSUITABLE	SPRING OR SEEP	DULL SOUND UNDER HAMMER BLOWS AND SHOWS SIGNIFICANT LOSS OF STRENGTH AS COMPARED WITH FRESH ROCK,	FLOOD PLAIN (FP) - LAND BORDERING A STREAM, BUILT OF SEDIMENTS DEPOSITED BY THE STREAM.							
PI OF A-7-5 SUBGROUP IS ≤ LL - 30 ;PI OF A-7-6 SUBGROUP IS > LL - 30		MODERATELY ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. IN GRANITOID ROCKS, ALL FELDSPARS DULL	FORMATION (FM.) - A MAPPABLE GEOLOGIC UNIT THAT CAN BE RECOGNIZED AND TRACED IN THE FIELD.							
CONSISTENCY OR DENSENESS	MISCELLANEOUS SYMBOLS	SEVERE AND DISCOLORED AND A MAJORITY SHOW KAOLINIZATION. ROCK SHOWS SEVERE LOSS OF STRENGTH (MOD. SEV.) AND CAN BE EXCAVATED WITH A GEOLOGIST'S PICK, ROCK GIVES "CLUNK" SOUND WHEN STRUCK.	JOINT - FRACTURE IN ROCK ALONG WHICH NO APPRECIABLE MOVEMENT HAS OCCURRED.							
PRIMARY SOIL TYPE COMPACTNESS OR CONSISTENCY PENETRATION RESISTENCE COMPRESSIVE 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							
(N-VALUE) (TUNS/FT-)	WITH SOIL DESCRIPTION → OF ROCK STRUCTURES	SEVERE ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED, ROCK FABRIC CLEAR AND EVIDENT BUT	ITS LATERAL EXTENT.							
GENERALLY VERY LOOSE	SOIL SYMBOL Opt ont test boring SLOPE INDICATOR INSTALLATION	(SEV.) REDUCED IN STRENGTH TO STRONG SOIL. IN GRANITOID ROCKS ALL FELDSPARS ARE KAOLINIZED TO SOME EXTENT. SOME FRAGMENTS OF STRONG ROCK USUALLY REMAIN.	LENS - A BODY OF SOIL OR ROCK THAT THINS OUT IN ONE OR MORE DIRECTIONS.							
MEDIUM DENSE 10 TO 30 N/A	ARTIFICIAL FILL (AF) OTHER AUGER BORING CONE PENETROMETER	IF TESTED, WOULD YIELD SPT N VALUES > 100 BPF	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 VERY DENSE > 50	THAN ROADWAY EMBANKMENT AUGER BORING CONE PENETROMETER	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	PERCHED WATER - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE							
VERY SOFT < 2 < 0.25	— — INFERRED SOIL BOUNDARY — CORE BORING ■ SOUNDING ROD	(V SEV.) REMAINING, SAPROLITE IS AN EXAMPLE OF ROCK WEATHERED TO A DEGREE THAT ONLY MINOR VESTIGES OF ORIGINAL ROCK FABRIC REMAIN. <u>IF TESTED, WOULD YIELD SPT N VALUES < 100 BPF</u>	OF AN INTERVENING IMPERVIOUS STRATUM.							
GENERALLY SOFT 2 TO 4 0.25 TO 0.5 SILT-CLAY MEDIUM STIFF 4 TO 8 0.5 TO 1.0	INFERRED ROCK LINE MN MONITORING WELL TEST BORING	COMPLETE ROCK REDUCED TO SOIL. ROCK FABRIC NOT DISCERNIBLE, OR DISCERNIBLE ONLY IN SMALL AND	RESIDUAL (RES.) SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK.							
MATERIAL STIFF 8 TO 15 1 TO 2	WITH CORE	SCATTERED CONCENTRATIONS. QUARTZ MAY BE PRESENT AS DIKES OR STRINGERS. SAPROLITE IS	ROCK QUALITY DESIGNATION (ROD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF CORE							
(COHESIVE) VERY STIFF 15 TO 30 2 TO 4 HARD > 30 > 4	****** ALLUVIAL SOIL BOUNDARY \(\triangle \tr	ALSO AN EXAMPLE.	RUN AND EXPRESSED AS A PERCENTAGE.							
TEXTURE OR GRAIN SIZE	RECOMMENDATION SYMBOLS	ROCK HARDNESS VERY HARD CANNOT BE SCRATCHED BY KNIFE OR SHARP PICK, BREAKING OF HAND SPECIMENS REQUIRES	SAPROLITE (SAP.) - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT ROCK.							
U.S. STD. SIEVE SIZE 4 10 40 60 200 270	UNDERCUT UNCLASSIFIED EXCAVATION - UNCLASSIFIED EXCAVATION - ACCEPTABLE, BUT NOT TO BE	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	LICED IN THE TOP 2 FEET OF	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 PARALLEI THE BEDDING OR SCHISTOSITY OF THE INTRUDED ROCKS.							
BOULDER COBBLE GRAVEL COARSE FINE SILT CLAY	SHALLOW UNDERCUT UNCLASSIFIED EXCAVATION - EMBANKMENT OR BACKFILL	TO DETACH HAND SPECIMEN. 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 FAUL							
(BLDR.) (COB.) (GR.) (CSE. SD.) (F SD.) (SL.) (CL.)	ABBREVIATIONS	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 SIZE IN. 12 3	AR - AUGER REFUSAL MED MEDIUM VST - VANE SHEAR TEST BT - BORING TERMINATED MICA MICACEOUS WEA WEATHERED	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 BPF) OF A 140 LB, HAMMER FALLING 30 INCHES REQUIRED TO PRODUCE A PENETRATION OF 1 FOOT INTO SOIL							
	CL CLAY MOD MODERATELY 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							
SOIL MOISTURE - CORRELATION OF TERMS SOIL MOISTURE SCALE FIELD MOISTURE COURS FOR FIELD MOISTURE	CPT - CONE PENETRATION TEST NP - NON PLASTIC 7d - DRY UNIT WEIGHT CSE COARSE ORG ORGANIC	POINT OF A GEOLOGIST'S PICK.	TO OR LESS THAN 0.1 FOOT PER 60 BLOWS.							
(ATTERBERG LIMITS)	DMT - DILATOMETER TEST PMT - PRESSUREMETER TEST SAMPLE ABBREVIATIONS	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	STRATA CORE RECOVERY (SREC.) - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE.							
- SATURATED - USUALLY LIQUID; VERY WET, USUALLY	DPT - DYNAMIC PENETRATION TEST SAP SAPROLITIC S - BULK e - VOID RATIO SD SAND, SANDY SS - SPLIT SPOON	PIECES CAN BE BROKEN BY FINGER PRESSURE.	STRATA ROCK QUALITY DESIGNATION (SROD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS WITHIN A STRATUM EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY							
(SAT.) FROM BELOW THE GROUND WATER TABLE	F - FINE SL SILT, SILTY ST - SHELBY TUBE	VERY CAN BE CARVED WITH KNIFE. CAN BE EXCAVATED READILY WITH POINT OF PICK. PIECES I INCH 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 COMMON TO SERVICE OF THE PLASTIC CONTROL TO	FOSS FOSSILIFEROUS SLI SLIGHTLY RS - ROCK FRACT - FRACTURED, FRACTURES TCR - TRICONE REFUSAL RT - RECOMPACTED TRIAXIAL	FINGERNAIL.	TOPSOIL (TS.) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.							
RAINGE - WEI - (W) ATTAIN OPTIMUM MOISTURE	FRAGS FRAGMENTS	FRACTURE SPACING BEDDING	BENCH MARK: BL-3							
" '' PL L + PLASTIC LIMIT -	EQUIPMENT USED ON SUBJECT PROJECT	TERM SPACING TERM THICKNESS VERY WIDE MORE THAN 10 FEET VERY THICKLY BEDDED 4 FEET	N 191272.9037 E 1987458.6758							
OM _ OPTIMUM MOISTURE - MOIST - (M) SOLID; AT OR NEAR OPTIMUM MOISTURE	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	ELEVATION: 68.23 FEET							
SL SHRINKAGE LIMIT	X CME-45C CLAY BITS X AUTOMATIC MANUAL	CLOSE 0.16 TO 1 FOOT VERY THINLY BEDDED 0.03 - 0.16 FEET	NOTES:							
- DRY - (D) REQUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE	6 CONTINUOUS ELIGHT AUGER	VERY CLOSE LESS THAN 0.16 FEET THICKLY LAMINATED 0.008 - 0.03 FEET THINLY LAMINATED < 0.008 FEET								
PLASTICITY	CME-55 CORE SIZE: CORE SIZE: -BH	INDURATION	1							
PLASTICITY INDEX (PI) DRY STRENGTH	CME-550 HARD FACED FINGER BITS	FOR SEDIMENTARY ROCKS, INDURATION IS THE HARDENING OF MATERIAL BY CEMENTING, HEAT, PRESSURE, ETC.]							
NON PLASTIC 0-5 VERY LOW	TUNGCARBIDE INSERTS	RUBBING WITH FINGER FREES NUMEROUS GRAINS; FRIABLE GENTLE BLOW BY HAMMER DISINTEGRATES SAMPLE.								
SLIGHTLY PLASTIC 6-15 SLIGHT MODERATELY PLASTIC 16-25 MEDIUM	VANE SHEAR TEST X CASING W/ ADVANCER HAND TOOLS: POST HOLE DIGGER	GENICE BLOW BY HAMMER DISINIEGRATES SAMPLE.								
HIGHLY PLASTIC 26 OR MORE HIGH	POST HOLE DIGGER POST HOLE DIGGER POST HOLE DI	MODERATELY INDURATED GRAINS CAN BE SEPARATED FROM SAMPLE WITH STEEL PROBE; BREAKS EASILY WHEN HIT WITH HAMMER.								
COLOR	TRICONE TUNG,-CARB. SOUNDING ROD	INDURATED CRAINS ARE DIFFICULT TO SEPARATE WITH STEEL PROBE;								
DESCRIPTIONS MAY INCLUDE COLOR OR COLOR COMBINATIONS (TAN, RED, YELLOW-BROWN, BLUE-GRAY).	CORE BIT SOCIOENTO TOST	DIFFICULT TO BREAK WITH HAMMER.								
MODIFIERS SUCH AS LIGHT, DARK, STREAKED, ETC. ARE USED TO DESCRIBE APPEARANCE.		EXTREMELY INDURATED SHARP HAMMER BLOWS REQUIRED TO BREAK SAMPLE; SAMPLE BREAKS ACROSS GRAINS.	DATE: 8-15-14							
		OFFICE DILETTO HOLIOSO OLIMINO.	DH1E: 0-13-14							





MIDS STOTE A 4	OFOLOGIOT AND TANK	WDQ 07070 4.4	ETV. COLUMBIA
WBS 67073.1.1 TIP BR-0073 COUNTY COLUMBUS	GEOLOGIST Miller, T. W.		ITY COLUMBUS GEOLOGIST Miller, T. W.
SITE DESCRIPTION BRIDGE NO. 5 ON -L- (US 76) OVER GAPWAY SWAMP	GROUND WTR (ft)	SITE DESCRIPTION BRIDGE NO. 5 ON -L- (US 76) OVER GAPWA	
BORING NO. EB1-A STATION 17+37 OFFSET 7 ft LT	ALIGNMENT -L- 0 HR. N/A	BORING NO. EB1-A STATION 17+37	OFFSET 7 ft LT ALIGNMENT -L- 0 HR. N/A
COLLAR ELEV. 68.1 ft TOTAL DEPTH 83.6 ft NORTHING 191,274	EASTING 1,987,432 24 HR. 5.6	COLLAR ELEV. 68.1 ft TOTAL DEPTH 83.6 ft	NORTHING 191,274 EASTING 1,987,432 24 HR. 5.6
DRILL RIG/HAMMER EFF/DATE GF00075 CWE-45C 87% 11/23/2021 DRILL METHOD	Mud Rotary HAMMER TYPE Automatic	DRILL RIG/HAMMER EFF./DATE GF00075 CME-45C 87%11/23/2021	DRILL METHOD Mud Rotary HAMMER TYPE Automatic
DRILLER Walker, C. M. START DATE 04/04/22 COMP. DATE 04/04/22	SURFACE WATER DEPTH N/A	DRILLER Walker, C. M. START DATE 04/04/22	COMP. DATE 04/04/22 SURFACE WATER DEPTH N/A
ELEV DRIVE DEDTH BLOW COUNT BLOWS PER FOOT SAMP. V		ELEV DRIVE DEPTH BLOW COUNT BLOWS PER FO	OT SAMP. / L
(ft) ELEV (ft) 0.5ft 0.5ft 0.5ft 0 25 50 75 100 NO. MOI G	SOIL AND ROCK DESCRIPTION DEPTH (ft)	(ft) ELEV (ft) 0.5ft 0.5ft 0.5ft 0	75 100 NO. MOI G SOIL AND ROCK DESCRIPTION
The state of the s	DEI III (II)		, work
		Match Line	
	-	-10 10 20 90 10/0.1	GRAY AND GREEN CLAYEY SAND WITH
66.9 1.2	68.1 GROUND SURFACE 0.0 66.9 PAVEMENT 1.2		WOOD FRAGMENTS, SATURATED
	ROADWAY EMBANKMENT	-15 -14.5 82.6 40 100/0 5	
	TAN AND ORANGE SILTY SAND, MOIST TO SATURATED	-15 -14.5 02.0 40 100/0.5	-15.5 83.6 Boring Terminated at Elevation -15.5 ft in
			Very Dense Clayey Sand
60 60.5 + 7.6	<u>;</u>		-
T 2 2 3 A5 1 1 1 1 1 1 1 1 1	;;;		
	57.111.0 ALLUVIAL		
55 55.5 12.6 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	GRAY SILTY SAND, SATURATED		
$oxed{ \left[\begin{array}{cccccccccccccccccccccccccccccccccccc$	81 31		
	52.1		
50 50.5 + 17.6 4 5 7	GRAY SANDY AND SILTY CLAY WITH		
	SHELL FRAGMENTS, WET (PEEDEE FORMATION)		
	47.1 21.0		
45 45.5 + 22.6 6 8 12			
		±	
	42.1 — GRAY SILTY AND CLAYEY SAND AND — 26.0		
40 40.5 + 27.6 11 24 32	SAND, SATURATED		
40 40.5 + 27.6			
	31.0		
35 35.5 + 32.6 58 100/0.3	ÿ <u>-</u>		
	36.0		
30 30.5 + 37.6	30.0		
+ 15 36 22	% -		
	27.1		
055 400	27.1 — — GRAY SANDY CLAY, WET — — 41.0		
25 25.5 7 42.6 8 12 18		±	
$oxed{\mid} oxed{\mid} oxen{\mid} $	3		
20 20.5 + 47.6 7 7 44	¥		
$\begin{bmatrix} -\frac{1}{2} \\ \frac{1}{2} \end{bmatrix}$	<u> </u>		
	*		[
15 15.5 52.6 0 12 15	<u>*</u>		
	\	Ŧ	
	12.1 56.0		
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	GRAY AND GREEN CLAYEY SAND WITH WOOD FRAGMENTS, SATURATED		
	,		
	,		
b 5 5.5 + 62.6	* 		
	1		
	}		
<u>6 0 0 0 100/0.3 </u>	[
	** 		‡
	1	†	
₩ -5 	 		
	;		‡
	" ,		
0 -10 -9.5 77.6 -10	4		

											OKE														. —																						
WB	670	073.1.1			1	IP BR	-0073		C	DUNTY	COLU	JMBU	S			GE	OLO	GIST	Mille	r, T. W					WB	S 67	073.1.	1			TII	I P BF	R-0073		CC	DUNTY	COLU	JMBU:	S		(GEOLO	GIST	Miller, 7	T. W.		
SITI	DES	CRIPTI	ON BR	IDGE N	NO. 5 (ON -L- (US 76) OVE	R GAP	WAY S	SWAMF											GROU	ND WT	R (ft)	SIT	E DES	CRIPT	TION	BRID	GE N	O. 5 O	N -L-	(US 76	OVE	R GAP	WAY S	SWAMP)								GROUND	WTR (ft)
BOF	ING N	Ю . В1	-B		5	OITAT	N 17	+83			OFFSE	T 8	ft RT			AL	IGNM	IENT	-L-			0 HR.		N/A	BOI	RING I	10. E	31-B			Sī	TATIC	N 17-	+83			OFFSE	T 8 f	ft RT			ALIGN	MENT	-L-		0 HR.	N/A
COI	LAR E	ELEV.	59.4 ft		_ 1	OTAL	DEPTI	H 95.4	1 ft		NORTH							G 1,9	987,43			24 HR.		1.2	COI	LLAR	ELEV.	59.	4 ft		TC	OTAL	DEPT	H 95.4	4 ft		NORTH						IG 1,	987,437		24 HR.	1.2
DRIL	_RIG/H	-IAMMEF	R EFF./DA	TE GF	- C00075	CME-450	287%1	1/23/202	21				DRILL N	IETHC	D M	ud Rota	ary			ŀ	AMME	RTYPE	Autom	natic	DRIL	⊥L RIG/I	-IAMME	REFF	/DATE	GFC	0075 C	ME-45	C87%1	11/23/20	21				DRILL M	ETHOD	Mud R	Rotary			HAM	VIERTYPE AL	ıtomatic
DRI	LER		er, C. M.			TART	DATE	04/06	6/22		COMP.	DATI	= 04/	06/22		SU	RFAC	CE WA	ATER	DEPTH	l N/A	Ą			DRI	LLER	Walk	ker, C.	M.		ST	TART	DATE	04/06	6/22		COMP.	DATE	E 04/0	6/22	:	SURFA	CE W	ATER DE	PTH N	/A	
ELE\ (ft)	DRI\ ELE (ft)	-V /£	t) 0.5	OW CO	OUNT t 0.5ft	0	2	BLOW 5	S PER 50			100	SAMP. NO.	'/	О	ELE	/. (ft)	SOI	IL AND) ROCK	DESC	RIPTION		PTH (ft)	ELE\ (ft)	V DRI ELE (ft	VE V)	EPTH_ (ft)	BLOV 0.5ft	N COL	JNT 0.5ft	0	2 <u></u>		S PER 50				SAMP. NO.	MOI	L O G		SO	IL AND R	OCK DES	SCRIPTION	
60	59.4	4 0.	0 2	5	2	i i			- -			-		•	000	— 59.4 -				OUND S	VIAL			0.0	1		-+	₁	00/0.1	- – –		 		<u>M</u>	atch Lir	ne 	T						GRA FRAGN	Y CLAYE	Y SAND V	WITH WOOD ED (continued	
55	54.3	2 5	2 7	8	7	<u> </u>	\		: :			-			000	- 57.4 - -						SAND W TURATE	ĒD	2.0	-25	24	5 = 8	33.9	39	46	54/0.4	-					100	: 		%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%					,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	(00/10/1000)	,
50	50.5	5 = 8.	9 5	6	8		→15 									- <u>52.4</u> - - - -		GRAY SHELL	SAND L FRA	OASTA OY AND GMENT FORMA	SILTY S, WE	CLAY W	/ITH	<u>7.0</u>	-30	-29	5 = 8	38.9	34	35	55	1 1					: : : : : : • • • • • • • • • • • • • •	/. /. 190		°%°%°%°%°%							
45	45.	5 + 13 +	.9 7	9	12	$ \cdot \cdot $.\.	1				· ·				- 47.4 - - - -					ŕ			12.0	-35	34	5 = 9	93.9	40	35	24	:			: : : :	59		- 11				32. <u>6</u>		GRAY SA		XY, WET	92.0
40	40.	5 + 18 + + + + + + + + + + + + + + + + + + +	.9 21	39	51	· · · · · · ·			I .	· · · · · · · · · · · · · · · · · · ·		90				<u>- 42.4</u> - - - -		GRA	AY SIL	TY SAN	ID, SAT	TURATE	<u>D</u> — —	<u> </u>			+														-		Domg	Hard	Sandy C	lay	
35	35.	5 - 23	.9 98	100/0	.4				· ·		. 100	/0.4				- - - -											+														-						
30	30.	5 + 28 +	.9 40	38	46				: :			/. - -				- - - -											†														-						
25	25.	5 - 33	.9 7	10	11		2	· · · · · · · · · · · · · · · · · · ·	; ; ; ;	.;. ^. 		-				- 27.4 - - -		-	GRAY	SANDY	CLAY	, WET		32.0			+														-						
20	20.	5 + 38	.9 9	12	15		\	27				-				- - - -											+														-						
15	15.5	5 <u>43</u>	.9 11	13	20	1 ├──		33				· ·				- - - -											+														-						
10	10.	5 + 48	.9 19	50	23	: : : : : :			`.\ \		73.	-				<u>12.4</u> - - -				YEYSA MENTS,		ITH WOO	ŌD [—] —	<u>47.0</u>			+														-						
:GDT 4/12/2	5.5	5 53	.9 24	43	29	: : : : : :			· · ·		72	-				- - - -											+														-						
SPJ NC_DOT	0.5	5 + 58	.9 100/0).4							100	/0.4				- - - -											+														-						
SEO_BRDG.0	4.5	5 + 63 +	.9 60/0	.0					: :		60	/0.0 -				- - - -											†														<u> </u>						
10 BR0073 C	-9.	5 + 68 +	.9 100/0	0.2					· · ·		100	/0.2 •				- - - -											†														<u> </u>						
BORE DOUB	-14.	.5 - 7 3	.9 100/0	0.2					· · ·		100	/0.2∳				- - - -											†														<u> </u>						
-20	-19.	.5 + 78	.9						- -	: : :	100	/0.1				<u> </u>											<u> </u>														<u> </u>						

