CONTENTS

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-0009C

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REFERENCE

SHEET NO.	DESCRIPTION
I.	TITLE SHEET
2	LEGEND (SOIL & ROCK)
3	SITE PLAN
4	WALL ENVELOPE
5-7	BORE LOGS

STATE OF NORTH CAROLINA

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

STRUCTURE SUBSURFACE INVESTIGATION

COUNTY GRAHAM

PROJECT DESCRIPTION UPGRADE NC 143 FROM SR 1223 (BEECH CREEK ROAD) TO 0.5 MILES NORTH OF APPALACHIAN TRAIL SITE DESCRIPTION **RETAINING WALL #7**: CAST-IN-PLACE CONCRETE WALL ON -L- FROM 269+25 RT TO 272+19 RT

.FS10 572. N m PROIEC

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	A-0009CB	1	7

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

CENERAL SOL AND ROCK STRATA DESCRIPTIONS AND INDICATED BOUNDARIES ARE BASED ON A GEOTECHNICAL INTERPRETATION OF ALL AVAILABLE SUBSURFACE DATA AND MAY NOT NECESSARILY REFLECT THE ACTUAL SUBSURFACE CONDITIONS BETWEEN BORINGS OR BETWEEN SAMPLED STRATA WITHIN THE BOREHOLE. THE LABORATORY SAMPLE DATA AND THE IN SITU UN-PLACED TEST DATA CAN BE RELIED ON ONLY TO THE DECREE 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 VARY 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 VIBSURFACE 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 WARANT OR GUARANTEE THE SUFFICIENCY OR ACCURACY OF THE INVESTIGATION MADE, NOR THE INTERPRETATIONS MADE, OR OPNION OF THE DEPARTMENT AS TO THE TYPE OF MATERIALS AND CONSTRUCTION STO BE ENCOUNTERED. THE BIDDER OR CONTRACTOR IS CAUTIONED TO MAKE SUCH INDEPENDENT SUBSURFACE INVESTIGATIONS AS HE DEEMS NECESSARY TO SATISY HIMSELF AS TO CONDITIONS TO BE ENCOUNTERED ON THE PROJECT. THE CONTRACTOR SHALL HAVE NO CLAIM FOR ADDITIONAL COMPENSATION OF FOR AN EXTENSION OF TIME FOR ANY REASON RESULTING FOM THE ACTUAL CONDENSATION.

- NOTES: I. THE INFORMATION CONTAINED HEREIN IS NOT IMPLIED OR CUARANTEED 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 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.

	PERSONNEL
CG2	EXPLORATION

S. BRAUN
N. MCLAREN
INVESTIGATED BY <u>CG2</u>
DRAWN BY <u>M. BREWER, P.E.</u>
CHECKED BY <u>R. KRAL, P.E.</u>
SUBMITTED BY <u>M. BREWER, P.E.</u>
DATE <u>MAY 2022</u>
Prepared in the Office of:
CAROLINAS
GEOTECHNICAL
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Donald Brewer 05/06/2022
<u>386129C0A4C1462</u> 03/06/2022 SIGNATURE DATE
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
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NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS GEOTECHNICAL ENGINEERING UNIT SUBSURFACE INVESTIGATION

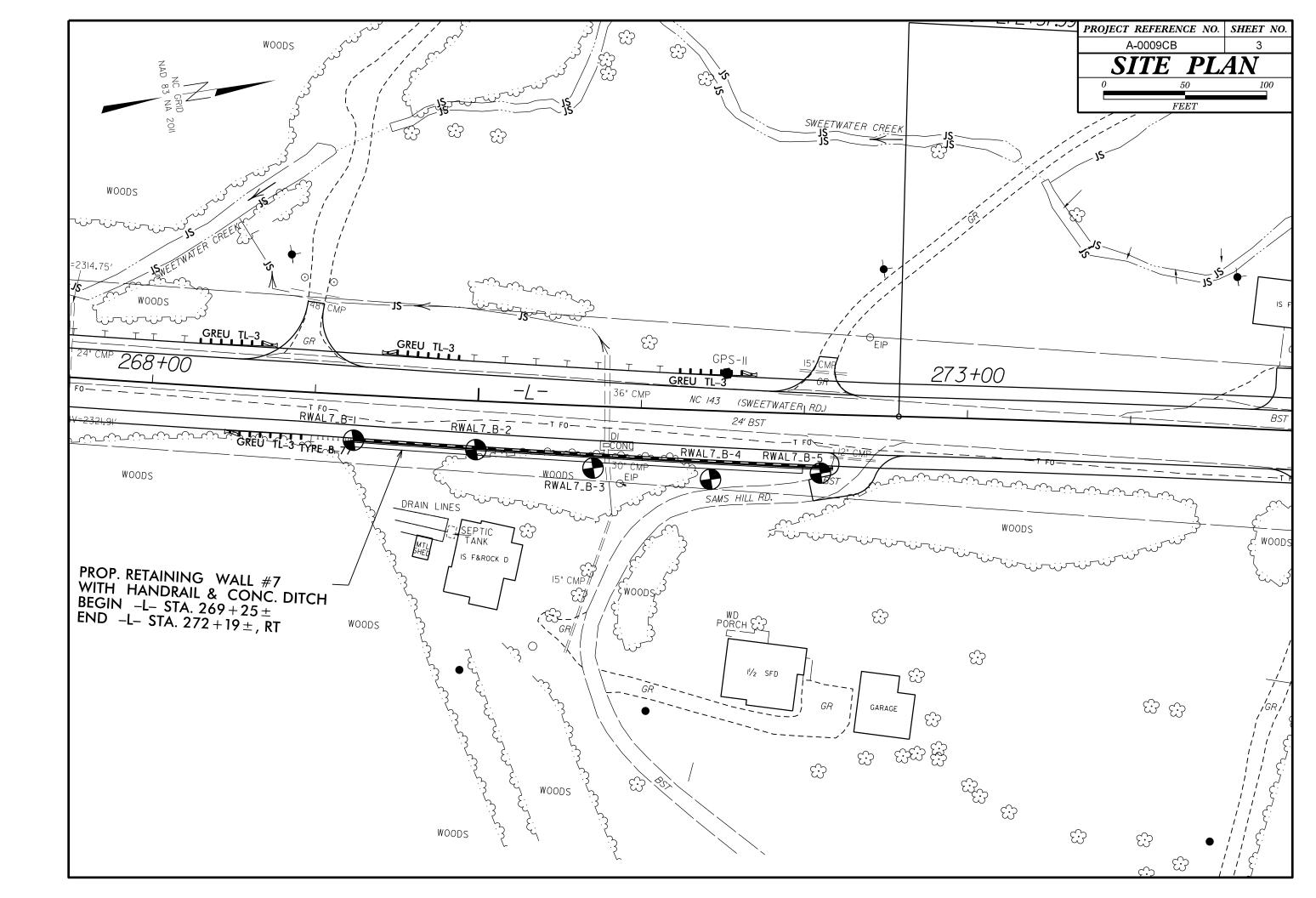
SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

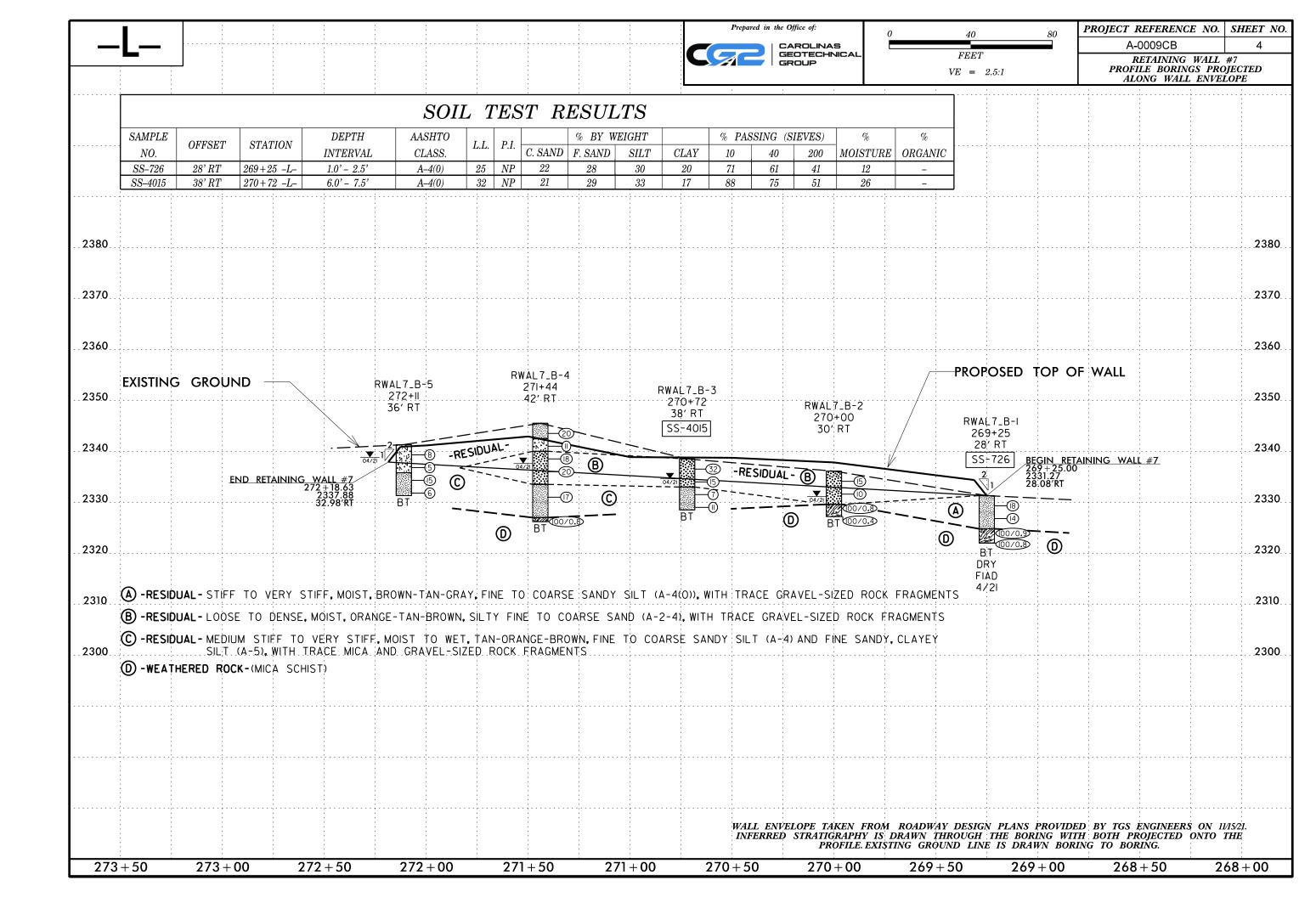
SOIL DESCRIPTION	GRADATION	ROCK DESCRIPTION	TERMS AND DEFINITIONS
SOIL IS CONSIDERED UNCONSOLIDATED, SEMI-CONSOLIDATED, OR WEATHERED EARTH MATERIALS THAT CAN	WELL GRADED - INDICATES A GOOD REPRESENTATION OF PARTICLE SIZES FROM FINE TO COARSE.	HARD ROCK IS NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT REFUSAL IF TESTED. AN INFERRED	ALLUVIUM (ALLUV.) - SOILS THAT HAVE BEEN TRANSPORTED BY WATER.
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 D1586), SOIL CLASSIFICATION	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.	ROCK LINE INDICATES THE LEVEL AT WHICH NON-COASTAL PLAIN MATERIAL WOULD YIELD SPT REFUSAL. SPT REFUSAL IS PENETRATION BY A SPLIT SPOON SAMPLER EOUAL TO OR LESS THAN 0.1 FOOT PER 60	ADUIFER - 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	BLOWS IN NON-COASTAL PLAIN MATERIAL, THE TRANSITION BETWEEN SOIL AND ROCK IS OFTEN 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,	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
VERY STIFF.GRAY, SILTY CLAY, MOIST WITH INTERBEDDED FINE SAND LAYERS, HIGHLY PLASTIC, A-7-6	ANGULAR, SUBANGULAR, SUBROUNDED, OR ROUNDED.	WEATHERED NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT N VALUES >	A NOTABLE PROPORTION OF CLAY IN THEIR COMPOSITION, SUCH AS SHALE, SLATE, ETC.
GENERAL GRANULAR MATERIALS SILT-CLAY MATERIALS OPENNIC MATERIALS	MINERALOGICAL COMPOSITION	ROCK (WR) 100 BLOWS PER FOOT IF TESTED.	ARTESIAN - GROUND WATER THAT IS UNDER SUFFICIENT PRESSURE TO RISE ABOVE THE LEVEL AT WHICH IT IS ENCOUNTERED, BUT WHICH DOES NOT NECESSARILY RISE TO OR ABOVE THE GROUND
CLASS. (≤ 35%, PASSING *200) (> 35%, PASSING *200) ORGANIC MATERIALS	MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC.	DOCK TSTALLINE WOULD YIELD SPT REFUSAL IF TESTED, ROCK TYPE INCLUDES GRANITE,	SURFACE.
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.	EINE TO COARSE CRAIN METAMORPHIC AND NON-COASTAL PLAIN	CALCAREOUS (CALC.) - SOILS THAT CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE.
CLASS. A-1-8 A-1-6 A-2-4 A-2-5 A-2-6 A-2-7 A-7-5 A-3 A-6 A-7		POCK (MCR)	COLLUVIUM - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM
SYMBOL COCOCOCOCOCOCOCOCOCOCOCOCOCOCOCOCOCOC	SLIGHTLY COMPRESSIBLE LL < 31 MODERATELY COMPRESSIBLE LL = 31 - 50	COASTAL PLAIN COASTAL PLAIN SEDIMENTS CEMENTED INTO ROCK, BUT MAY NOT YIELD	OF SLOPE. <u>CORE RECOVERY (REC.)</u> - TOTAL LENGTH OF ALL MATERIAL RECOVERED IN THE CORE BARREL DIVIDED
7. PASSING	HIGHLY COMPRESSIBLE LL > 50	SEDIMENTARY ROCK	BY TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE.
1/0 50 MX UHANULAR MULEL HUL SOUTH STOLEN CLAY MULK,	PERCENTAGE OF MATERIAL	WEATHERING	DIKE - A TABULAR BODY OF IGNEOUS ROCK THAT CUTS ACROSS THE STRUCTURE OF ADJACENT
*200 15 MX 25 MX 10 MX 35 MX 35 MX 35 MX 35 MX 36 MN 36 MN 36 MN 36 MN 36 MN	GRANULAR SILT - CLAY ORGANIC MATERIAL SOILS OTHER MATERIAL	FRESH ROCK FRESH, CRYSTALS BRIGHT, FEW JOINTS MAY SHOW SLIGHT STAINING. ROCK RINGS UNDER	ROCKS OR CUTS MASSIVE ROCK.
MATERIAL	TRACE OF ORGANIC MATTER 2 - 3% 3 - 5% TRACE 1 - 10%	HAMMER IF CRYSTALLINE.	DIP - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE HORIZONTAL.
PASSING *40	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, (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 11 MN 11 MN 11 MN MODEPATE HIGHLY	HIGHLY ORGANIC > 10% > 20% HIGHLY 35% AND ABOVE	OF A CRYSTALLINE NATURE.	LINE OF DIP, MEASURED CLOCKWISE FROM NORTH.
GROUP INDEX 0 0 0 4 MX 8 MX 12 MX 16 MX NO MX AMOUNTS OF SOLLS	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 SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE.
USUAL TYPES STONE FRAGS. FINE STITY OR CLOVEY STITY CLOVEY 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.	FISSILE - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES.
OF MAJOR GRAVEL, AND SAND GRAVEL AND SAND SOILS SOILS	▼ STATIC WATER LEVEL AFTER <u>24</u> HOURS	MODERATE SIGNIFICANT PORTIONS OF ROCK SHOW DISCOLORATION AND WEATHERING EFFECTS. IN	FLOAT - ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLODGED FROM
CEN RATING	∇PW PERCHED WATER, SATURATED 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 UNSUITABLE		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 \leq 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
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.	FIELD. J <u>OINT</u> - FRACTURE IN ROCK ALONG WHICH NO APPRECIABLE MOVEMENT HAS OCCURRED.
PRIMARY SOIL TYPE COMPACTNESS OR 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
CONSISTENCY (N-VALUE) (TONS/FT ²)	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 < 4 DEVICE 4 TO 10	SOIL SYMBOL	(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.
GRANULAR MEDIUM DENSE 10 TO 30 N/A		IF TESTED, WOULD YIELD SPT N VALUES > 100 BPF	MOTTLED (MOT.) - IRREGULARLY MARKED WITH SPOTS OF DIFFERENT COLORS. MOTTLING IN SOILS
(NON-COHESIVE) DENSE 30 TO 50 VERY DENSE > 50	THAN ROADWAY EMBANKMENT CAUGER BORING	VERY ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC ELEMENTS ARE DISCERNIBLE	USUALLY INDICATES POOR AERATION AND LACK OF GOOD DRAINAGE. 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	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 TO 4 0.25 TO 0.5		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.
SILT-CLAY MEDIUM STIFF 4 TO 8 0.5 TO 1.0 MATERIAL STIFF 8 TO 15 1 TO 2	THE INFERRED ROCK LINE MONITORING WELL WITH CORE	COMPLETE ROCK REDUCED TO SOIL. ROCK FABRIC NOT DISCERNIBLE, OR DISCERNIBLE ONLY IN SMALL AND 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
(COHESIVE) VERY STIFF 15 TO 30 2 TO 4	TTTTT ALLUVIAL SOIL BOUNDARY A PIEZOMETER OF SPT N-VALUE	ALSO AN EXAMPLE.	ROCK SEGMENTS EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE.
		ROCK HARDNESS	SAPROLITE (SAP.) - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT
TEXTURE OR GRAIN SIZE		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 DPENING (MM) 4.76 2.00 0.42 0.25 0.075 0.053	UNDERCUT UNCLASSIFIED EXCAVATION - UNSUITABLE WASTE 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 RELATIVELY THIN COMPARED WITH ITS LATERAL EXTENT, THAT HAS BEEN EMPLACED PARALLEL TO
	SHALLOW UNCLASSIFIED EXCAVATION - USED IN THE TOP 3 FEET OF EMBANKMENT OR BACKFILL	HARD CAN BE SCRATCHED BY KNIFE OR PICK ONLY WITH DIFFICULTY. HARD HAMMER BLOWS REQUIRED TO DETACH HAND SPECIMEN.	THE BEDDING OR SCHISTOSITY OF THE INTRUDED ROCKS.
(PDP.) (CDP.) (CDP.) (CD.) (CD.) (CD.)		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
(LSE, SU,) (F SU,)	ABBREVIATIONS	HARD EXCAVATED BY HARD BLOW OF A GEOLOGIST'S PICK. HAND SPECIMENS CAN BE DETACHED BY MODERATE BLOWS.	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	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
SOIL MOISTURE - CORRELATION OF TERMS	CLCLAY MODMODERATELY 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
	CPT - CONE PENETRATION TEST NP - NON PLASTIC γ_d - DRY UNIT WEIGHT CSE COARSE ORG ORGANIC	POINT OF A GEOLOGIST'S PICK.	TO OR LESS THAN 0.1 FOOT PER 60 BLOWS. STRATA CORE RECOVERY (SREC.) - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY
(ATTERBERG LIMITS) DESCRIPTION GUIDE FOR FIELD MOISTURE DESCRIPTION	DMT - DILATOMETER TEST PMT - PRESSUREMETER 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.
- 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 (SRQD) - 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 1 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.
	FOSS FOSSILIFEROUS SLI SLIGHTLY RS - ROCK FRAC FRACTURED, FRACTURES TCR - TRICONE REFUSAL RT - RECOMPACTED TRIAXIAL	FINGERNAIL.	TOPSOIL (TS.) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.
RANGE S - WEI - (W)	FRAGS FRAGMENTS W - MOISTURE CONTENT CBR - CALIFORNIA BEARING	FRACTURE SPACING BEDDING	BENCH MARK: N/A
	HI HIGHLY V - VERY RATIO	TERM SPACING TERM THICKNESS	
OM _ OPTIMUM MOISTURE - MOIST - (M) SOLID; AT OR NEAR OPTIMUM MOISTURE	EQUIPMENT USED ON SUBJECT PROJECT	VERY WIDE MORE THAN 10 FEET VERY THICKLY BEDDED 4 FEET WIDE 3 TO 10 FEET THICKLY BEDDED 1.5 - 4 FEET	ELEVATION: FEET
SL_SHRINKAGE LIMIT	DRILL UNITS: ADVANCING TOOLS: HAMMER TYPE: CME-45C CLAY BITS X AUTOMATIC MANUAL	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 WATER TO		VERY CLOSE LESS THAN 0.16 FEET THICKLY LAMINATED 0.008 - 0.03 FEET	SURVEY AND ROADWAY DESIGN FILES PROVIDED BY TGS ENGINEERS ON 11/15/2021
AITAIN UPTIMUM MUISTURE		THINLY LAMINATED < 0.008 FEET	ON 11/15/2021
PLASTICITY			4
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. RUBBING WITH FINGER FREES NUMEROUS GRAINS;	
NON PLASTIC Ø-5 VERY LOW SLIGHTLY PLASTIC 6-15 SLIGHT	VANE SHEAR TEST	FRIABLE GENTLE BLOW BY HAMMER DISINTEGRATES SAMPLE.	
MODERATELY PLASTIC 16-25 MEDIUM	CASING W/ ADVANCER POST HOLE DIGGER	MODERATELY INDURATED GRAINS CAN BE SEPARATED FROM SAMPLE WITH STEEL PROBE:	
HIGHLY PLASTIC 26 OR MORE HIGH	PORTABLE HOIST	BREAKS EASILY WHEN HIT WITH HAMMER.	
COLOR	X DIEDRICH D50	INDURATED GRAINS ARE DIFFICULT TO SEPARATE WITH STEEL PROBE; DIFFICULT TO BREAK WITH HAMMER.	
DESCRIPTIONS MAY INCLUDE COLOR OR COLOR COMBINATIONS (TAN, RED, YELLOW-BROWN, BLUE-GRAY).			
MODIFIERS SUCH AS LIGHT, DARK, STREAKED, ETC. ARE USED TO DESCRIBE APPEARANCE.		EXTREMELY INDURATED SHARP HAMMER BLOWS REQUIRED TO BREAK SAMPLE; SAMPLE BREAKS ACROSS GRAINS.	DATE: 8-15-14

PROJECT REFERENCE NO.



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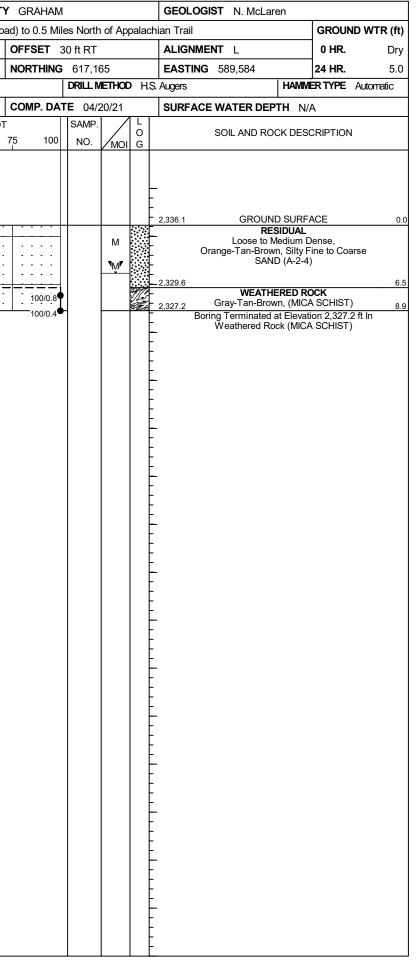




GEOTECHNICAL BORING REPORT BORE LOG

	WBS	32572	2.1.FS1	2.1.FS10 TIP A-0009CB COUNTY GRAHAM GEOLOGIST S. B												T S. Br	aun			WBS	3 32572	2.1.FS1	0	TI	TIP A-0009CB COU				Г			
	SITE	DESCR	RIPTION	Upgr	ade N	2 143 1	from SR 1	1223 (E	Beech C	reek Ro	ad) to 0.5	Miles	s North	n of Ap	palac	hian Tra	ail			GROUN	ND WTR (ft)	SITE	DESCR	IPTION	Upg	rade N	C 143 f	from SF	R 1223	; (Beech	Creek R	C
	BORI	NG NO.	. RWA	L7_B-´	1	ST	ATION	269+2	25		OFFSE	T 28	8 ft RT			ALIG	GNMEN	ΠL		0 HR.	Dry	BOF	ring no.	RWA	L7_B-	2	ST	TATION	270	+00		
L			EV. 2,				DTAL DE				NORTH							589,567		24 HR.	FIAD		LAR EL							8.9 ft		
	DRILL	. RIG/HAI	VIMER EF	F./DATI	E CG2	0446 D	iedrich D50	83%06	6/16/2020)			DRILL N	/IETHOI	р на	S. Augers	S		HAN	/IMER TYPE	Automatic	DRIL	l Rig/Hai	/IMER EF	F./DAT	E CG	20446 D	iedrich D	50 83%	506/16/20)20	
		LER J				ST	ART DA	TE 04	4/13/21		COMP.	DATE	E 04/ ⁻	13/21		SUR	FACE	WATER	DEPTH	N/A		DRI	LER C	. Odom			ST		ATE	04/20/2	21	
	ELEV	DRIVE ELEV	DEPTH	·	W COL					ER FOOT			SAMP.	▼∕			5	SOIL AND	ROCK DE	ESCRIPTION	N	ELEV	DRIVE ELEV	DEPTH	·						PER FOC)
-	(ft)	(ft)	(ft)	0.5ft	0.5ft	0.5ft	0	25	50)	75	100	NO.	Имо	G	ELEV.	(ft)				DEPTH (ft)	(ft)	(ft)	(ft)	0.5ft	0.5ft	0.5ft	0	25		50	_
	<u>2335</u> 2330	2,330.3	- - - - - - -	8	11	7	· · · ·	18	· · · ·	<u> </u>	_ <u></u>	-	SS-726	12%		 	Stiff	to Very Sti	DUND SUF RESIDUA ff, Brown-T	L Tan-Gray, Fi	0.0		2,335.1	- 1.0	7	8	7		15		<u> </u>	_
		2,327.8	<u> </u>	2	7	7	1:17					· F		1		-	Coa	arse Sand gravel-s	y SILT (A-	4(0)), with tra fragments	ace		2,332.6	3.5	5	5	5					
	2325	2,325.3	<u>+</u> 6.0		,	,		4				:		M			3	0		U	6.5	2330	2,330.1	T 6.0				 	0			
		2,322.8	T	34	48	52/0.4	· · ·		· · ·		100/	0.9				-				ROCK ICA SCHIST				ł	3	17	83/0.3				· · ·	
		2,022.0	- 0.5	50	50/0.3				•••			0.8			<i>911</i>	2,322.0	Borin	a Termina	ted at Elev	vation 2.322.	<u>9.3</u> .0 ft In		2,327.6	<u>- 8.5</u>	100/0.4	4	┝──┦	• •	•••			_
VCDOT BORE DOUBLE A-0000CB_GEO_RDY_GTM.GPJ_NC_DOT.GDT_4/26/22		-			20/0.3						100/	0.8					Borin	g Termina Weathered	ted at Elev	vation 2,322. ICA SCHIST	.0 ft In											
ICDOI B			+ + +													- -								+ + +								

SHEET 5



GEOTECHNICAL BORING REPORT BORE LOG

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WBS	s 3	32572.	1.FS1	0			TIP A	-0009	9CB		C	OUNT	Υœ	GRAH	AM					GEC	COLC	GIST N	N. McLa	aren					WBS	325	72.1	.FS1(C			TIP	A-000)9CB		CO	UNTY
SITE	E DE	SCRI	PTION	Upg	rade N	IC 14	3 from	SR 1	223 (Beech	h Cre	ek Ro	oad) t	to 0.5	Mile	s Nort	h of <i>i</i>	Appa	alach	nian Tr	ail				G	ROUN	ND WTR	(ft)	SITE	DESC	CRIP	TION	Upg	rade l	NC 1	43 fr	om SR	1223	(Beec	h Cree	k Road
BOR	RING	NO.	RWA	L7_B-	3	:	STATI	ON 2	270+7	72			OF	FSET	- 38	B ft RT	-			ALI	GNM	ENT L	-		0) HR.		7.1	BOR	ing n	O .	RWA	L7_B-	4		ST	ATION	271-	+44		C
COL	LA	R ELE	V. 2	338.5	ft		ΤΟΤΑΙ	DEF	тн	10.0	ft		NO	RTH	NG	617,2	234			EAS	STINC	G 589,	606		24	4 HR.		3.9	COL	LAR E	LEV	. 2,3	345.5	ft		то	TAL DE	PTH	19.3	ft	N
							Diedrid									DRILL	METH	ЮD	нs	. Auger	s			HAN	/IMER 1	TYPE	Automat	с							32044		drich D50				
DRII	LLE	R C.	Odom				STAR		TE 0	4/20/	21		co	MP. I		E 04	/20/2	<u>۱</u>		SUF	REAC	E WAT		PTH	N/A				DRIL	LER	JE	sten				ST	ART DA	TE	04/06	21	c
ELEV			DEPTH	1	DW CC							R FOO				SAMP		7	L	100.									ELEV	DRIV ELE		EPTH	BLO	OW C	OUN					B PER F	
(ft)		LEV (ft)	(ft)	·	0.5ft		t 0		25		50		75	1	00	NO.	1 1	101	0	ELEV.	(ft)	SOIL	AND R	OCK DE	ESCRI	IPTION	l DEP1	Ή (ft)	(ft)	ELE (ft)		(ft)		0.5f			0	25		50	75
		. ,																	Ť		(11)						DLI	11 (11)													
2340)		-																E	- 2,338.	5		GROU	ND SUF	RFACE	E		0.0	2350		\pm										
	2,3	337.5	- 1.0	4	7	25		• • •			- -	• •							-	2,000.			R	ESIDUA	L			0.0			ł										
2335	5 2.	335.0	- 35	4	'	25		· · ·		32		· · · ·		•••					F		۲	an-Orar	nge-Bro	Dense te wn, Silt	y Fine	to Coa	arse		2345		Ŧ										
	Í	7	-	4	7	8		- 🗩18											F			AND (A-2	2-4), wi fi	th trace agment	gravel s	l-sized	l rock	5.5		2,344	-5+	1.0	7	10	1	0		a 20			
	2,3	332.5	6.0	4	3	4		·/· ·	: :	· · · ·	: :	· ·		•••		SS-401	5 26	%	İ.		N	Aedium S	Stiff to S	Stiff, Tar	n-Oran	nge-Bro	own,			2,342		3.5	6	6		5	 <i> </i>		· · · · · ·		
2330) 2,3	330.0	8.5					7							-		1	0053	8£	_	F	ine to Co	oarse s tr	andy Si ace mic	LI (A- a	-4(0)),	with		2340	2.339	5	60					•11	•	· · ·		
			-	5	5	6	<u> ·</u>	♦ 11 ·	. .	•••				•••	•		N	1	<u></u>	2,328.	5 Br	oring Ter	minate	d at Elav	vation	2 328	5 ft In	10.0		,	1		3	2	1	6		18	· · ·	.	
		+	-																┝		DU			Sandy S			JILIII			2,337	.0	8.5	6	8	1	2	 			.	
		-	-																F	-									2335	-	Ŧ							T ²⁰			
		1	-																F											2.332	, ŧ	10 E					· · · ·	ŀ.	· · ·	.	
		‡	-																Ę										2330	,	-	13.5	6	8		9		17	· · · · · ·		
		4	-																F	-									2330		+										
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אלטטו פטרב א-טטפרב א-טטפטים הבטראטירט וויטרט וויטרט וויטרט איגמונג																				-											*************************										
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SHEET 6

GRAHAM		GEOLOGIST S. Braun			
d) to 0.5 Miles North of Appal	lachia	an Trail		GROUN	D WTR (ft)
OFFSET 42 ft RT		ALIGNMENT L		0 HR.	Dry
NORTHING 617,305		EASTING 589,624		24 HR.	7.9
DRILL METHOD	H.S. /	Augers	HAMME	RTYPE	Automatic
COMP. DATE 04/06/21		SURFACE WATER DEPT	H N/A	١	
SAMP.					
75 100 NO. MOI G		SOIL AND ROC	K DESC	RIPTION	
SAMP.		SOIL AND ROC 2,345.5 GROUND 2,345.5 SILT 2,342.5 SLT 3,342.0 Stiff, Tan-Brown-Or 2,340.0 Sandy, Clay Medium Dense, Tar SAND (A-2-4), with t	K DESC SURFA IDUAL ine to C (A-4) ange, Fi rey SILT , Silty F race gra ments ine Sand	CE oarse Sar ne to Coa (A-5) jine to Coa vel-sized dy SILT (A CHIST) on 2,326.2	0.0 ndy
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GEOTECHNICAL BORING REPORT BORE LOG

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WBS	32572	.1.FS1(0		T	IP A-	00090	В		COU	NTY	GR/	AHAN	1				GEOLOG	IST S. Bra	un	-	
SITE	DESCRI	PTION	Upgi	rade N	C 143	from	SR 122	23 (Be	ech C	reek	Road	d) to ().5 Mi	les N	lorth	of Ap	palac	hian Trail			GROUND	WTR (ft
BOR	NG NO.	RWA	L7_B-	5	S	ΤΑΤΙΟ	DN 27	2+11			0	OFFS	ΒET	36 ft	RT			ALIGNME	ENT L		0 HR.	Dry
COLI	LAR ELE	V. 2,	341.3	ft	Т	OTAL	DEPT	H 10	.0 ft		1	NORT	THING	6 1	7,37	2		EASTING	589,630		24 HR.	2.5
RILL	. RIG/HAM	MER EF	-F./DAT	E CG	20446 C	Diedrich	D50 83	3%06/16	6/2020)				DR	LL M	ethod	D HS	S. Augers		HAMI	NER TYPE A	utomatic
RIL	LER J.	Estep			S	TART	DATE	04/0	6/21		0	COM	P. DA	TE	04/0	6/21		SURFAC	E WATER D	EPTH N	/A	
LEV (ft)		DEPTH (ft)	BLC 0.5ft	OW CO 0.5ft	-	0	2	BLOV 25	VS PE 50	ER FC)	DOT	5	100		.MP. 10.	моі	L O G	ELEV. (ft)	SOIL AND I			DEPTH (
45		-																-	CRO	UND SURF		
340	2,340.3	1.0				<u> · </u>]	••••		•••	• •	•••	• •	• •				, N	2,341.3		RESIDUAL		C
	2,337.8-	- 25	3	3	5	•	8								ŀ	M	∧ ↓ \ \		Medium Stiff t Cla	to Stiff, Tar yey SILT (A	n, Fine Sandy, A-5)	
		-	3	3	2	1				•••			•••			М	∧ ↓ ↓	2,335.8				
35	2,335.3	6.0	10	10	5	`	. 15									М			Medium	n Stiff to Ve	ery Stiff, Fine Sandy SI	
	2,332.8-	- - 8.5	2	2	4			· · · · · · · · · · · · · · · · · · ·	· ·	· · · · · · · · · · · · · · · · · · ·	· · · ·	· · · ·	· · · ·			М		2,331.3	(A-4), with t	race grave fragments	I-sized rock	1
)							4	ŀ			Bo	ring Terminat	ed at Eleva	tion 2,331.3 f	t In
		-																	Residu	al Sandy S	III (A-4)	
		-																				
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SHEET 7