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SHEET NO. 5624 5-7

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REFERENCE

DESCRIPTION TITLE SHEET LEGEND (SOIL & ROCK) SITE PLAN PROFILE BORE LOGS

STATE OF NORTH CAROLINA

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

STRUCTURE SUBSURFACE INVESTIGATION

COUNTY BRUNSWICK

PROJECT DESCRIPTION BRIDGE NO. 57 ON -L- (NC 211) OVER DRIVING CREEK AT STA. 17+46

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-5624	1	7

CAUTION NOTICE

THE SUBSURFACE INFORMATION AND THE SUBSURFACE INVESTIGATION ON WHICH IT IS BASED WERE MADE FOR THE PURPOSE OF STUDY, PLANNIKG AND DESIGN, AND NOT FOR CONSTRUCTION OR PAY PURPOSES. THE VARIOUS FIELD BORING LOGS, ROCK CORES AND SOLI TEST DATA AVAILABLE MAY BE REVEWED OR INSPECTED IN RALEICH BY CONTACTING THE N.C. DEPARTMENT OF TRANSPORTATION, GEOTECHNICAL ENGINEERING UNIT AT 1991 707-6860. THE SUBSIFACE PLANS AND REPORTS, FIELD BORING LOGS, ROCK CORES AND SOIL TEST DATA ARE NOT PART OF THE CONTRACT.

GENERAL SOIL AND ROCK STRATA DESCRIPTIONS AND INDICATED BOUNDARIES ARE BASED ON A GEOTECHNICAL INTERPRETATION OF ALL AVAILABLE SUBSURFACE DATA AND MAY NOT NECESSARILY REFLECT THE ACTUAL SUBSURFACE CONDITIONS BETWEEN BORINGS OR BETWEEN SAMPLED STRATA WITHIN THE BOREHOLE. THE LABORATORY SAMPLE DATA AND THE IN SITU UNPELACED TEST DATA CAN BE RELIED ON ONLY TO THE DEGREE OF RELIABILITY INHERENT IN THE STANDARD TEST METHOD. THE OBSERVED WATER LEVELS OR SOLI MOISTURE CONDITIONS INDICATED IN THE SUBSURFACE INVESTIGATIONS ARE AS RECORDED AT THE TIME OF THE INVESTIGATION. THESE WATER LEVELS OR SOLI 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 INTERPRETATIONS MADE, OR OPHIONO 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 OF FOR ANY 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 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.

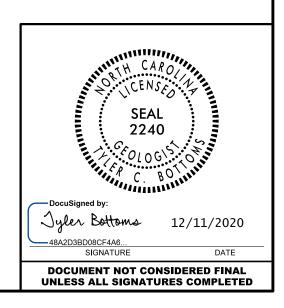
PERSONNEL

S.N. ZIMARINO

R.E. SMITH

C.M. WALKER

INVESTIGATED BY T.C. BOTTOMS
DRAWN BYS.N. ZIMARINO
CHECKED BY D.N. ARGENBRIGHT
SUBMITTED BY D.N. ARGENBRIGHT
DATE OCTOBER 2020



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

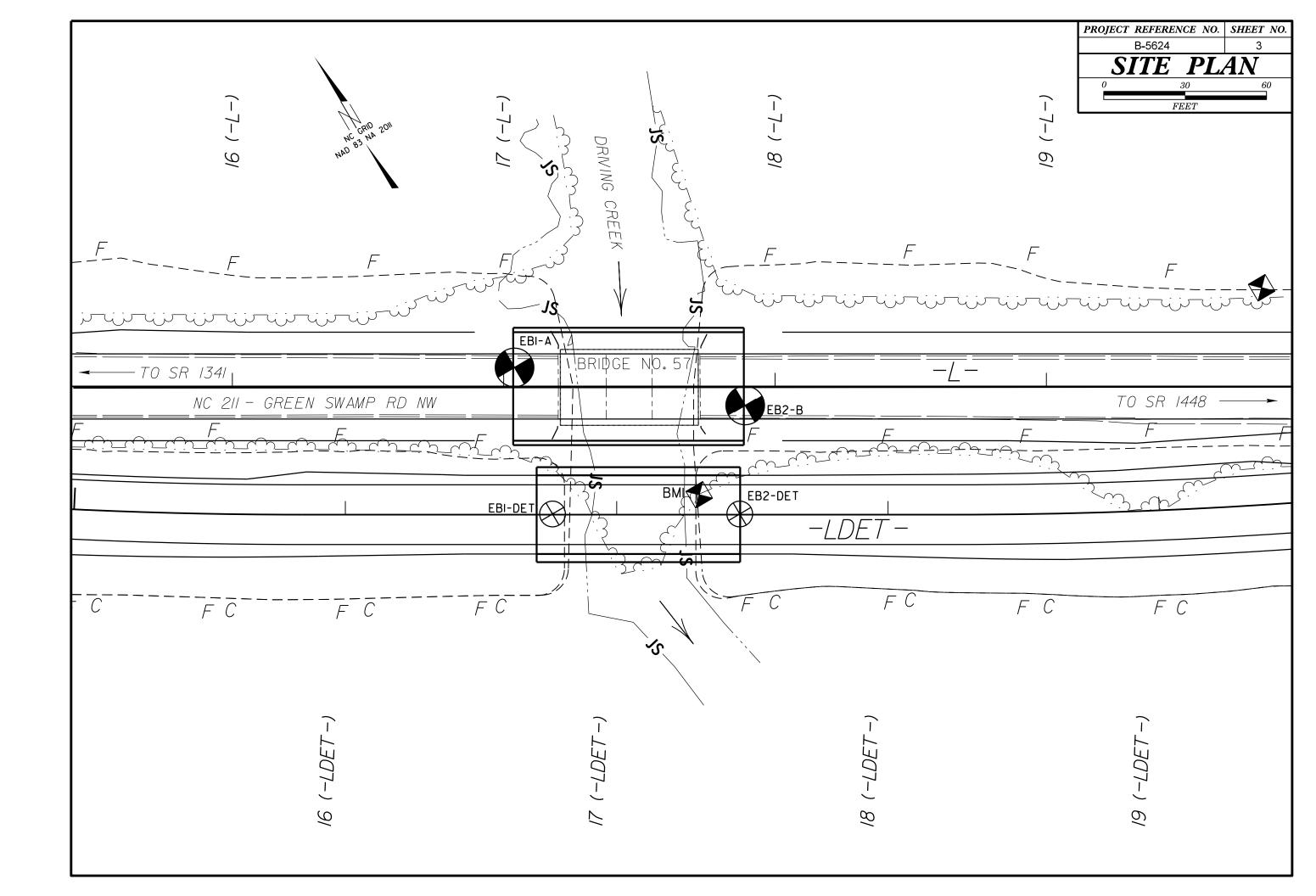
SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

SOIL DESCRIPTION	GRADATION		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	<u>GAP-GRADED</u> - 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 > ROCK (WR)	ARTESIAN - GROUND WATER THAT IS UNDER SUFFICIENT PRESSURE TO RISE ABOVE THE LEVEL AT
	MINERALOGICAL COMPOSITION	THE TO COARSE 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) ORGANIC MATERIALS	MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC.	ROCK (CR) WOULD YELD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES GRANITE, ROCK (CR) 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 A-2 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.	NON-CRYSTALLINE	CALCAREOUS (CALC.) - SOILS THAT CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE.
CLH33. A-1-8 A-1-6 A-2-4 A-2-5 A-2-6 A-2-7 A-726 H-3 H-6 H-7	COMPRESSIBILITY	ROCK (NCR) ROCK TYPE INCLUDES PHYLLITE, SLATE, SANDSTONE, ETC.	COLLUVIUM - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM OF SLOPE.
SYMBOL	MODERATELY COMPRESSIBLE LL = 31 - 50	COASTAL PLAIN COASTAL PLAIN SEDIMENTS CEMENTED INTO ROCK, BUT MAY NOT YIELD	<u>CORE RECOVERY (REC.)</u> - TOTAL LENGTH OF ALL MATERIAL RECOVERED IN THE CORE BARREL DIVIDED
7. PASSING Still 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, *40 30 MX 50 MX 51 MN S0 MX 51 MN	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.	<u>DIP</u> - 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,	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 1	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 0 0 0 4 MX 8 MX 12 MX 16 MX NO MX AMOUNTS OF SOILS	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 FRAGS. 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	SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE.
OF MAJUR GRAVEL, AND SAND GRAVEL AND SAND SOLIS SOLIS	STATIC WATER LEVEL AFTER <u>24</u> HOURS	CRYSTALS ARE DULL AND DISCOLORED. CRYSTALLINE ROCKS RING UNDER HAMMER BLOWS. MODERATE SIGNIFICANT PORTIONS OF ROCK SHOW DISCOLORATION AND WEATHERING EFFECTS. IN	FISSILE - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES.
MATERIALS SAND SHID CURLE HIG SHID SUIS SUIS SUIS	∇PW PERCHED WATER, SATURATED ZONE, OR WATER BEARING STRATA	MODERATE SIGNIFICANT PORTIONS OF ROCK SHOW DISCOLORATION AND WEATHERING EFFECTS. IN (MOD.) GRANITOID ROCKS, MOST FELDSPARS ARE DULL AND DISCOLORED, SOME SHOW CLAY. ROCK HAS	FLOAT - ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLODGED FROM PARENT MATERIAL.
AS SUBGRADE EXCELLENT TO GOOD FAIR TO POOR POOR UNSUITABL		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	- O-M- Spring or seep	WINF FRESH RULK. 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	FIELD.
COMPACTNESS OR RANGE OF STANDARD RANGE OF UNCONFINED	25/825	(MOD.SEV.) AND CAN BE EXCAVATED WITH A GEOLOGIST'S PICK. ROCK GIVES "CLUNK" SOUND WHEN STRUCK. <u>IF TESTED, WOULD YIELD SPT REFUSAL</u>	JOINT - FRACTURE IN ROCK ALONG WHICH NO APPRECIABLE MOVEMENT HAS OCCURRED.
PRIMARY SOIL TYPE CONSISTENCY PENETRATION RESISTENCE COMPRESSIVE STRENGTH CONSISTENCY (N-VALUE) (TONS/FT ²)	ROADWAY EMBANKMENT (RE) 25/025 DIP & DIP DIRECTION	SEVERE ALL ROCK EXCEPT QUARTZ DISCOLORED OR 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		(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.
GRANILAR LOOSE 4 TO 10	SOIL SYMBOL SUBSTITUT TEST BORING SLOPE INDICATOR	TO SOME EXTENT. SOME FRAGMENTS OF STRONG ROCK USUALLY REMAIN. <u>IF TESTED, WOULD YIELD SPT N VALUES > 100 BPF</u>	MOTTLED (MOT.) - IRREGULARLY MARKED WITH SPOTS OF DIFFERENT COLORS. MOTTLING IN SOILS
MATERIAL MEDIUM DENSE 10 10 30 N/A	ARTIFICIAL FILL (AF) OTHER THAN ROADWAY EMBANKMENT AUGER BORING CONE PENETROMETER TEST	VERY ALL ROCK EXCEPT OUARTZ DISCOLORED OR STAINED. ROCK FABRIC ELEMENTS ARE DISCERNIBLE	USUALLY INDICATES POOR AERATION AND LACK OF GOOD DRAINAGE.
(NON-COHESIVE) VERY DENSE > 50		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 O 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		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		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	TTTTT ALLUVIAL SOIL BOUNDARY A FIELOWEIER OF SPT N-VALUE	ALSO AN EXAMPLE.	RUN AND EXPRESSED AS A PERCENTAGE.
TEXTURE OR GRAIN SIZE	RECOMMENDATION SYMBOLS	ROCK HARDNESS	SAPROLITE (SAP.) - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT
U.S. STD. SIEVE SIZE 4 10 40 60 200 270		VERY HARD CANNOT BE SCRATCHED BY KNIFE OR SHARP PICK. BREAKING OF HAND SPECIMENS REQUIRES SEVERAL HARD BLOWS OF THE GEOLOGIST'S PICK.	ROCK. 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	LXXI CONSTITUE UNSUITABLE WASTE	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
BOULDER COBBLE GRAVEL COARSE FINE SILT CLAY	SHALLOW UNCLASSIFIED EXCAVATION - USED IN THE TOP 3 FEET OF UNDERCUT ACCEPTABLE DEGRADABLE ROCK EMBANKMENT OR BACKFILL	TO DETACH HAND SPECIMEN.	THE BEDDING OR SCHISTOSITY OF THE INTRUDED ROCKS.
(BLDR.) (COB.) (GR.) (SAND SAND (SL.) (CL.)	ABBREVIATIONS	MODERATELY CAN BE SCRATCHED BY KNIFE OR PICK, GOUGES OR GROOVES TO 0.25 INCHES DEEP CAN BE	<u>SLICKENSIDE</u> - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT OR SLIP PLANE.
GRAIN MM 305 75 2.0 0.25 0.05 0.005	AR - AUGER REFUSAL MED MEDIUM VST - VANE SHEAR TEST	HARD EXCAVATED BY HARD BLOW OF A GEOLOGIST'S PICK. HAND SPECIMENS CAN BE DETACHED BY MODERATE BLOWS.	STANDARD PENETRATION TEST (PENETRATION RESISTANCE) (SPT) - NUMBER OF BLOWS (N OR BPF) OF
SIZE IN. 12 3	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.	A 140 LB. HAMMER FALLING 30 INCHES REQUIRED TO PRODUCE A PENETRATION OF 1 FOOT INTO SOIL
SOIL MOISTURE - CORRELATION OF TERMS	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 TO OR LESS THAN 0.1 FOOT PER 60 BLOWS.
	_ CPT - CONE PENETRATION TEST NP - NON PLASTIC $\gamma_{\rm d}$ - DRY UNIT WEIGHT CSE COARSE ORG ORGANIC	POINT OF A GEOLOGIST'S PICK. SOFT CAN BE GROVED OR GOUGED READILY BY KNIFE OR PICK. CAN BE EXCAVATED IN FRAGMENTS	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>	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.	<u>STRATA ROCK QUALITY DESIGNATION (SROD)</u> - 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 - WET - (W) SEMISOLID; REQUIRES DRYING TO	FRAGS FRAGMENTS W - MOISTURE CONTENT CBR - CALIFORNIA BEARING	FRACTURE SPACING BEDDING	BENCH MARK: BMI
	HI HIGHLY V - VERY RATIO	TERM SPACING TERM THICKNESS	N: 128815.7422
- 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	E: 2209947.6390 ELEVATION: 62.57 FEET
OM _ OPTIMUM MOISTURE _ MOIST - NN _ SOLIDERT ON NEW MOISTONE	DRILL UNITS: ADVANCING TOOLS: HAMMER TYPE:	MODERATELY CLOSE 1 TO 3 FEET THINLY BEDDED Ø.16 - 1.5 FEET	NOTES:
	X CME-45C CLAY BITS X AUTOMATIC MANUAL	CLOSE 0.16 TO 1 FOOT VERY THINLY BEDDED 0.03 - 0.16 FEET VERY CLOSE LESS THAN 0.16 FEET THICKLY LAMINATED 0.008 - 0.03 FEET	FIAD: FILLED IMMEDIATELY AFTER DRILLING
- DRY - (D) ATTAIN OPTIMUM MOISTURE	CME-55 6' CONTINUOUS FLIGHT AUGER CORE SIZE:	THINLY LAMINATED < 0.008 FEET	
PLASTICITY		INDURATION	
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	UING-CARBIDE INSERTS	FRIABLE RUBBING WITH FINGER FREES NUMEROUS GRAINS;	
SLIGHTLY PLASTIC 6-15 SLIGHT MODERATELY PLASTIC 16-25 MEDIUM	VANE SHEAR TEST X CASING W/ ADVANCER HAND TOOLS:	GENILE BLUW BY HAMMER DISINIEGRATES SAMPLE.	
HIGHLY PLASTIC 26 OR MORE HIGH		MODERATELY INDURATED GRAINS CAN BE SEPARATED FROM SAMPLE WITH STEEL PROBE; BREAKS EASILY WHEN HIT WITH HAMMER.	
COLOR		CRAINS ARE DISCIPLET TO SERADATE WITH STEEL PROPE.	
		INDURATED 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.	CORE BIT	EXTREMELY INDURATED SHARP HAMMER BLOWS REQUIRED TO BREAK SAMPLE;	
		SAMPLE BREAKS ACROSS GRAINS.	DATE: 8-15-14

PROJECT REFERENCE NO.



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30				VERY L	OOSE TO	MEDIUM DENSE GRAY	(<u>]</u>	SIL	TY SAND	WITH WOOD	• • • • •	F	RAGMEN	TS, SATL	RATED (CAPE
40			SILTY		Ĩ <u>Ħ</u> ŴOŌD	FRAGMENTS, WET (AL	®	N			- ()- N ()	MEDIUM	STIFF G	RAY_SIL	TY CLAY WITH
50		SA	ND, MOIST	TO SA	URATED	(ROADWAY EMBANKME) VERY LOOSE TO	- ÷ ¥ ÷		LOOSE	GRAY SILTY	· - - - - - -	SAN(ATED (4	+ + \LLUVIAL\ +
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IGN REPORT DATED 9	24/20	20								
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GEOTECHNICAL BORING REPORT BORE LOG

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WBS	45579	9.1.1			ד	IP B-5624	COUNTY	BRUNSW	ICK		GEOLOGIST Zimarino, S. N.	
SITE	DESCR	IPTION	BRI	DGE N	IO. 57	ON -L- (NC 211) OVE		G CREEK				GROUND WTR (ft)
BOR	NG NO.	EB1-/	A		S	TATION 17+04		OFFSET 7	ft LT		ALIGNMENT -L-	0 HR. N/A
COLI	LAR ELI	EV. 64	I.2 ft		т	OTAL DEPTH 68.2 f		NORTHING	128,8	91	EASTING 2,209,913	24 HR. FIAD
RILL	. RIG/HAN	/IMER EF	F./DAT	E GFO	20075 C	DME-45C 92%08/13/2020			DRILL N	IETHOD Mu	d Rotary HAMM	ER TYPE Automatic
DRIL	LER S	mith, R	. E.		S	TART DATE 10/01/2	0	COMP. DAT	TE 10/0	01/20	SURFACE WATER DEPTH N/	A
ELEV	DRIVE ELEV	DEPTH	' 	ow co	UNT	4	PER FOOT		SAMP.		SOIL AND ROCK DES	CRIPTION
(ft)	(ft)	(ft)	0.5ft	0.5ft	0.5ft	0 25	50	75 100	NO.	MOI G	ELEV. (ft)	DEPTH (ft
65		Ļ									-64.2 GROUND SURF.	ACE 0.
	63.2	1.0	38	55	45/0.4						63.2 PAVEMENT	
60	- 60.2	+ + + 4.0						100/0.9			TAN AND BROWN SILTY	SAND, MOIST
60		4.0 -	3	3	3	• <u>6:</u>					TO SATURATI	ED
	- 	7.8				{:::: ::::						
55	56.4		1	1	2	4 <u>3</u>	· · · ·	· · · ·			-	
	-	ŧ									<u></u> ALLUVIAL	<u> </u>
	51.4	† 12.8		L,							GRAY SILTY SAND, SA	TURATED
50		‡ ¯	1		2	4 ³	+ • • • •	+ • • • • •			- 	
	-	‡				$\left \left \begin{array}{c} \mathbf{k} \\ \mathbf{k} $						
45	46.4	17.8	3	5	3	:						
45		ŧ	Ĭ	Ĭ	Ĭ		+	+			_	
		+						••••			43.2 GRAY SILTY CLAY WI	
40	41.4	<u>† 22.8</u> †	WOH	2	5						40.6 FRAGMENTS, V	23.
+0	-	ŧ									- COASTAL PLA GRAY SILTY SAND WI	
	- 36.4 -	-									FRAGMENTS, SATURATE	
35	- 50.4	1 27.0	5	6	7	13					-	/
	-	ł				. /						
	31.4	32.8									•	
30	-	‡	1	1	1	2	· · · ·	· · · ·			_	
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	26.4	37.8	1	3	4						GIAT AND TELEOW SILT	I CLAI, WEI
25	-	ł	'		–	-••• ⁷	+	+			_	
	-	Ŧ										
20	21.4	<u>† 42.8</u> †	3	6	7							
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	16.4	47.8					<u> </u>	\downarrow \vdots \vdots \vdots \downarrow				
15	- 10.4	1 47.0 L	68	100/0.:	3			100/0.3			15.9 GRAY SAND AND SILTY	48. SAND WITH
	-	ł						$ \cdots $			LIMESTONE FRAGMENTS	
	11.4	52.8	100/2									
10	-	‡	100/0.4	4				100/0.4			- 	
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_	6.4	57.8	36	15	16	: : : : : : : / :				0000		
5	-	ŧ				● ³¹	<u></u>	+		0000	-	
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0	1.4	<u>† 62.8</u> 	100/0.3	3		: : : : : : : :	: : : :	100/0.3		0000	-	
<u> </u>	-	ŧ					<u> </u>	<u> </u>		0000	-	
	-3.6	- - 67.8								0000		
	-0.0		100/0.4	1			1	100/0.4	1	0000	Boring Terminated at Elev	68 ation -4.0 ft in
	-	t									Very Dense Sa	nd
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SHEET 5 OF 7

GEOTECHNICAL BORING REPORT BORE LOG

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WBS	45579	9.1.1			ד	P B-5624	COUNT	Y BRUNSV	VICK			GEOLOGIST Zimarino, S. N.		WBS	4 5579.	.1.1			TIF	P B-5624		COUNTY	Y
SITE	DESCR	IPTION	BRID	GE NO	D. 57	ON -L- (NC 211) OVE	R DRIVIN	IG CREEK					GROUND WTR (ft)	SITE	DESCRI	PTION	BRID	GE N	0. 57 0	ON -L- (NC	211) OVEF	R DRIVIN	G
BORI	NG NO.	EB2-E	3		S	TATION 17+89		OFFSET	7 ft RT			ALIGNMENT -L-	0 HR. N/A	BOR	ING NO.	EB2-	В		ST	TATION 1	7+89		0
	AR ELE				_	OTAL DEPTH 89.5	ft	NORTHING		226		EASTING 2,209,979	24 HR. 5.9		LAR ELE						TH 89.5 ft		N
						ME-45C 92% 08/13/2020				METHO			JER TYPE Automatic							ME-45C 92%			
				= GFC				1				· · · · ·						GFC	-				-
	LER SI	,				TART DATE 10/02/2		COMP. DA				SURFACE WATER DEPTH N	/A	DRIL	LER Sr					ART DATE	E 10/02/20		С
ELEV	DRIVE ELEV	DEPTH		W COL		4	PER FOO		SAMP	. 🔨		SOIL AND ROCK DES	SCRIPTION	ELEV	DRIVE ELEV	DEPTH	BLO	w col				PER FOOT	
(ft)	(ft)	(ft)	0.5ft	0.5ft	0.5ft	0 25	50	75 100	NO.	Имо		ELEV. (ft)	DEPTH (ft)	(ft)	(ft)	(ft)	0.5ft	0.5ft	0.5ft	0 :	25 5	50	75
65												64.5 GROUND SURF		-15							Matc	h Line	
	63.5 -	- 1.0										64.5 GROUND SURF 63.3 PAVEMENT			+		+		+		· · · · /	1	.
	-	t	10	17	22	.						ROADWAY EMBAN	IKMENT		-18.5	- 83.0							
60	60.5	4.0	14	19	20	· · · · · ·					L	GRAY, BROWN, AND TAI MOIST TO SATUI	N SILTY SAND, RATED	-20	- 10.0	-	12	13	15		•28 · · ·		
	-	Ŧ	14	19	20	39			1		LF				1 7	-							
	- 56.5 -	+ - 8.0				· · · · · / · · · · ·		· · · · · ·							-23.5	- - 88 0							
55			2	1	4	• <u>•</u> •					L	54.5	10.0			-	32	22	36			58	•
	-	ł														-							
	51.5	+ + 13.0				i		· · · · · ·				GRAY SILTY SAND, S	ATURATED		1	-							
50	-	‡	3	3	3							49.5	15.0		_	-							
	-	t				;					N	GRAY SILTY CLAY W	<u> ITH WOOD — — — — – -</u>	1	+	-							
	46.5	18.0									N	FRAGMENTS,]	-							
45	-	ŧ	WOH	2	5	1						45.4 COASTAL PL	19.1 AIN		_	-							
	-	t				- \						GRAY SILTY SAND, SATU FEAR FORMAT	JRATED (CAPE			-							
-	41.5	23.0	5	7	9	`\					-	FEAR FORMAT	ION)		-	-							
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	31.5	33.0	1	1	0	[/:::: ::::										-							
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25	26.5	+ 38.0 +	woн	WOH	3										1	-							
_25	-	ŧ										23.5	41.0			-							
	-	1 42 0				.\ . \					N	GRAY AND TAN SILTY	CLAY, WET			-							
20	21.5	43.0	5	6	7						N				-	-							
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	- 16.5 -	48.0				::::::::::		.			N				1	-							
15		10.0	5	5	6						N				_+	-							
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	- 11.5	+ - 53.0] ::::`:::					0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	GRAY SAND AND SILTY LIMESTONE FRAGMENTS	SAND WITH		1	-							
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-15	-13.5	+ 10.0	17	26	28	1	\ <u></u>								1	-							

SHEET 6 OF 7

UNT	/ BR	UNSV	VIC	СК			GEOLOG	ST	Zimarino,	S. N.		
IVIN	G CRE	EK									GROUN	ID WTR (ft)
	OFFS	SET	7 f	ft RT			ALIGNME	NT	-L-		0 HR.	N/A
	NOR	THING		128,83			EASTING	2,	209,979		24 HR.	5.9
			1	DRILL M	ETHOD	Mu	d Rotary			HAMM	ER TYPE	Automatic
	СОМ	P. DA	TE	E 10/0)2/20		SURFACE	w	ATER DEP		4	
-00T				SAMP.		L O		so	IL AND ROC	K DESC		
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58	<u> </u>					F	-25.0					89.5
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GEOTECHNICAL BORING REPORT BORE LOG

١	VBS	45579.	1.1			ТІ	P B-5	624		CC	DUNTY	/ BR	UNSV	VICK			GEO	LOGIS	st Zi	marino	o, S. N	l.				W	BS 4	45579	9.1.1				TIP	B-56	624		(COUN	ITY E	BRUNS	SWICI	ĸ			GE	OLO	GIST	Zim	arino,	S. N.	_		
ŝ	ITE D	ESCRIF	TION	BRID	GE N	0. 57 (DN -L-	(NC 2	11) OV	'ER DI		G CRE	EEK									G	ROUI	ND W	TR (ft)	SI	re di	ESCR		N BR	IDGE	E NO.	57 OI	N -L- (NC 2	11) O	VER	DRIV	ING C	REEK											GRO	JND W	/TR (ft)
		g no.					OITA						SET					NMEN) HR.		N/A				EB2-					ATION					_	FSET					_			-LD			0 HR		N/A
		RELE					DTAL [DEPTH	I 9.0 f	ft		NOR	THINC					TING	2,209	,906			HR.		1.2				EV. 6				ТОТ	TAL D	EPTH	8.5	ft		NC	ORTHI							G 2	,209,9			24 HR		0.8
_		ig/hami			E N/A				DRILL METHOD H ATE 09/29/20 COMP. DATE 09/29/20 BLOWS PER FOOT SAMP.				Har	-					VIMER .	TYPE	Autor	matic				/IMER E			WA										RILL M) Ha		-					ER TYPI	E Auto	matic			
		ER Sm											IP. DA				SURF	FACE	WATE	R DE	PTH	N/A							mith, F					ART D						omp. C			9/20		SU	RFAC	CE W	ATER	DEP	TH N/	Ą		
E	_EV	ORIVE ELEV (ft)	EPTH (ft)	BLO 0.5ft	W CO 0.5ft	UNT 0.5ft	0						100		· /	()	ELEV. ((ft)	SOIL A	ND RO	DCK DI	ESCRI	PTION		EPTH (ft)	ELE (ft		DRIVE ELEV (ft)	DEPTI (ft)	H BL 0.5f	.OW 0	COUN 5ft 0	IT .5ft	0	25		VS PE 50	R FO	OT 75	1(amp. No.	моі	L O G			SC	DIL AN	D ROO	K DES	CRIPTIC	ON	
	65 60							• •									61.7			AL	ND SUI	٩L			0.0	65			+						1			<u></u>	-		-		▼		61.2			GF) SURF	ACE		0.0
	55	+++++++++++++++++++++++++++++++++++++++						· · ·	· · · · · · · · · · · · · · · · · · ·	· · ·	· · · ·	· · · · · · · · · · · · · · · · · · ·	· · · ·				53.7 52.7		FT BRO	Т	OWE	Т			8.0	55		 - - - -	+ + + + + + + + + + + + + + + + + + + +									· · · ·							<u> </u>				WN CL TO	AYEY I WET	IUCK, N		7.5
NCDOT BORE DOUBLE B5624_GEO_BRDG.GPJ_NC_DOT.GDT_10/9/20																			BRAY S	minate		levatio			9.0																								inated		RATED ation 52		

SHEET 7 OF 7