REFERENCE

CONTENTS

DESCRIPTION

LEGEND (SOIL & ROCK)

SUPPLEMENTAL LEGEND (GSI)

BORE LOGS, CORE REPORTS, AND CORE PHOTOS

TITLE SHEET

SITE PLAN PROFIL F

CROSS SECTION

SITE PHOTOGRAPHS

SHEET NO.

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5-8

9-18

P4.R0088

STATE OF NORTH CAROLINA

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

STRUCTURE SUBSURFACE INVESTIGATION

COUNTY NASH /HALIFAX

PROJECT DESCRIPTION BRIDGE NO. 630129 ON BELLAMY MILL RD. (SR 1518) OVER FISHING CREEK AT **STATION** 14+65

STATE PROJECT REFERENCE NO. TOTAL SHEETS 19 BP4.R008

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 BORINGS OR BETWEEN SAMPLED STRATA WITHIN THE BOREHOLE. THE LABORATORY SAMPLE DATA AND THE IN SITU (IN-PLACE) TEST DATA CAN BE RELIED ON ONLY TO THE DEGREE OF RELIABILITY INHERENT IN THE STANDARD TEST METHOD. THE DESCREE OF RELIABILITY INHERENT IN THE STANDARD TEST METHOD. THE DESCREED WASTENCED WASTENCED TO MINISTED FOR THE STANDARD TEST METHOD. THE SUBSURFACE INVESTIGATIONS ARE AS RECORDED AT THE TIME OF THE INVESTIGATION, THESE WATER LEVELS OR SOIL 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 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 DOS 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 PERFORM INDEPENDENT SUBSURFACE INVESTIGATIONS AND MAKE INTERPRETATIONS AS NECESSARY TO CONFIRM CONDITIONS ENCOUNTERED ON THE PROJECT. THE CONTRACTOR SHALL HAVE NO CLAIM FOR ADDITIONAL COMPENSATION OR FOR AN EXTENSION OF TIME FOR ANY REASON RESULTING FROM THE ACTUAL CONDITIONS ENCOUNTERED AT THE SITE DIFFERING FROM THOSE INDICATED IN THE SUBSURFACE INFORMATION.

- NOTES:

 1. 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.

B. WORLEY, PG M. DANIELS, GIT M.B. MOSELEY C. BOWEN

INVESTIGATED BY B. WORLEY, PG

DRAWN BY _B. WORLEY, PG

CHECKED BY __D. DEWEY, PE

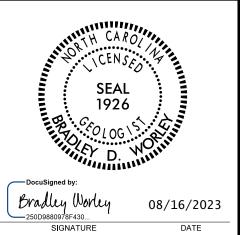
SUBMITTED BY B. WORLEY, PG

DATE __*JUNE*, 2023

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FROJECT REFERENCE NO. SHEET NO.

SF-630129

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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

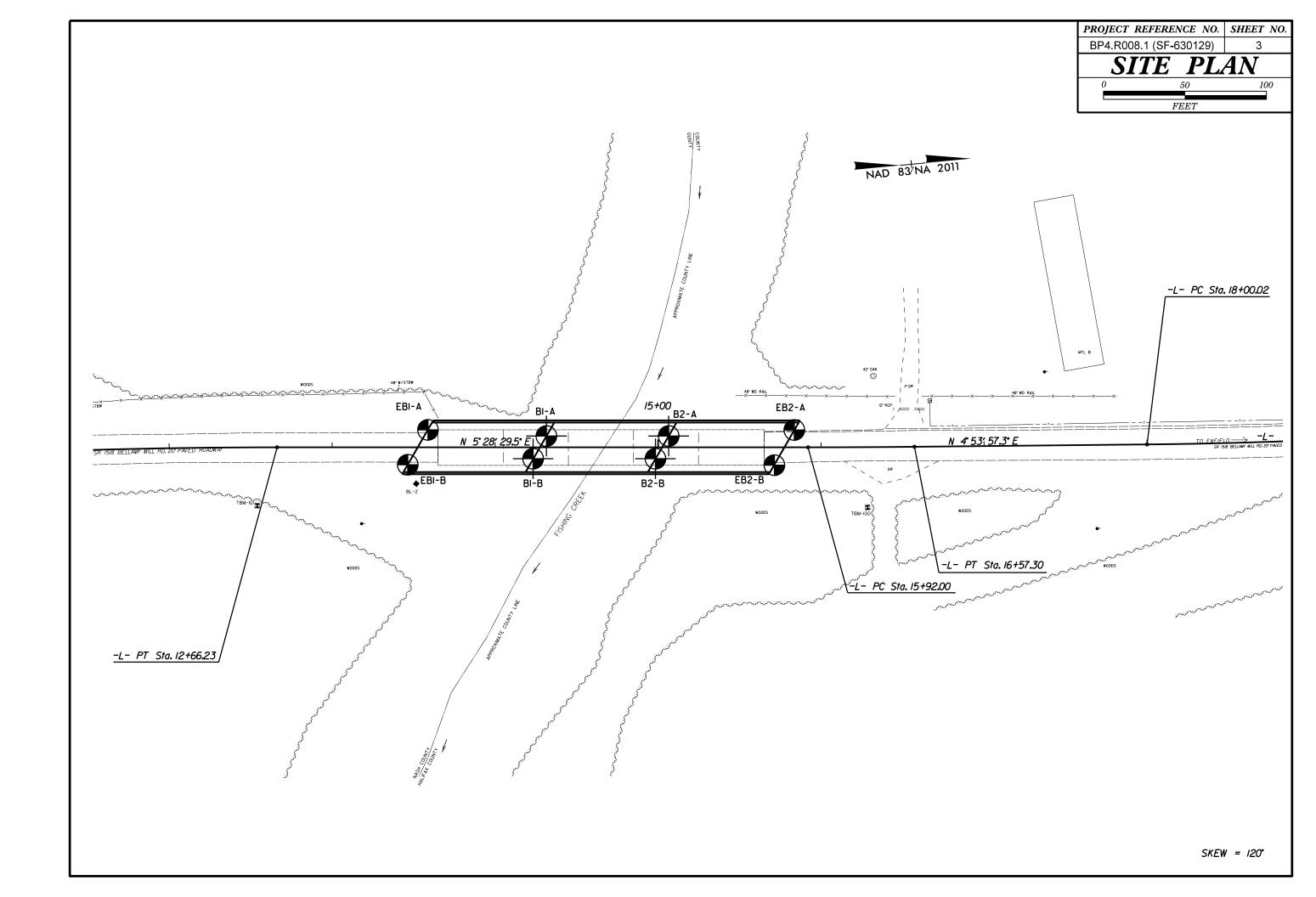
SOIL DESCRIPTION	GRADATION	ROCK DESCRIPTION	TERMS AND DEFINITIONS
SOIL IS CONSIDERED UNCONSOLIDATED, SEMI-CONSOLIDATED, OR WEATHERED EARTH MATERIALS THAT CAN BE PEWEITATED WITH A CONTINUOUS FLIGHT POWER AUGER AND YIELD LESS THAN 100 BLOWS PER FOOT ACCORDING TO THE STANDARD PEWEITATION TEST MASKITO T 206, ASTM DIS60, SOIL CLASSIFICATION IS BASED ON THE AASHTO SYSTEM, BASIC DESCRIPTIONS GENERALLY INCLUDE THE FOLLOWING; CONSISTENCY, COLOR, TEXTURE, MOISTURE, AASHTO LCASSIFICATION, AND OTHER PERTINENT FACTORS SUCH AS MINERALOGICAL COMPOSITION, ANGULARITY, STRUCTURE, PLASTICITY, ETC. FOR EXAMPLE,	WELL GRADED - INDICATES A GOOD REPRESENTATION OF PARTICLE SIZES FROM FINE TO COARSE. UNIFORMLY GRADED - INDICATES THAT SOIL PARTICLES ARE ALL APPROXIMATELY THE SAME SIZE. GAP-GRADED - INDICATES A MIXTURE OF UNIFORM PARTICLE SIZES OF TWO OR MORE SIZES. ANGULARITY OF GRAINS	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. SPT REFUSAL IS PENETRATION BY A SPLIT SPOON SAMPLER EDUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS IN NON-COASTAL PLAIN MATERIAL. THE TRANSITION BETWEEN SOIL AND ROCK IS OFTEN REPRESENTED BY A ZONE OF WEATHERED ROCK. ROCK MATERIALS ARE TYPICALLY DIVIDED AS FOLLOWS:	ALLUVIUM (ALLUV.) - SOILS THAT HAVE BEEN TRANSPORTED BY WATER. AQUIFER - A WATER BEARING FORMATION OR STRATA, ARENACEOUS - APPLIED TO ROCKS THAT HAVE BEEN DERIVED FROM SAND OR THAT CONTAIN SAND. 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	THE ANGULARITY OR ROUNDNESS OF SOIL GRAINS IS DESIGNATED BY THE TERMS: 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.
SOIL LEGEND AND AASHTO CLASSIFICATION	MINERALOGICAL COMPOSITION MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC.	ROCK (WR) 100 BLOWS PER FOOT IF TESTED. CRYSTALLINE CRYSTALLINE WOULD YIELD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES GRANITE.	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 SURFACE.
CROUP 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 A-1-b A-2-4 A-2-5 A-2-6 A-2-7 A-2-7 A-3-7-5 A-6, A-7 A-1-a A-1-b A-2-4 A-2-5 A-2-6 A-2-7 A-3-7-5 A-6, A-7	ARE USED IN DESCRIPTIONS WHEN THEY ARE CONSIDERED OF SIGNIFICANCE. COMPRESSIBILITY	ROCK (CR) GNEISS, GABBRO, SCHIST, ETC. NON-CRYSTALLINE ROCK (NCR) FINE TO COARSE GRAIN METAMORPHIC AND NON-COASTAL PLAIN SEDIMENTARY ROCK THAT WOULD YELLO SPT REFUSAL IF TESTED.	CALCAREOUS (CALC.) - SOILS THAT CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE. COLLUYIUM - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM
SYMBOL 000000000000000000000000000000000000	SLIGHTLY COMPRESSIBLE LL < 31 MODERATELY COMPRESSIBLE LL = 31 - 50 HIGHLY COMPRESSIBLE LL > 50	COASTAL PLAIN COASTAL PLAIN SEDIMENTARY ROCK PT REFUSAL. ROCK TYPE INCLUDES LIMESTONE, SANDSTONE, CEMENTED SEDIMENTARY ROCK PT REFUSAL. ROCK TYPE INCLUDES LIMESTONE, SANDSTONE, CEMENTED	OF SLOPE. CORE RECOVERY (REC.) - TOTAL LENGTH OF ALL MATERIAL RECOVERED IN THE CORE BARREL DIVIDED BY TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE.
*10 50 MX GRANULAR CLLY MUCK, *40 30 MX 50 MX 51 MN S1 MN SOILS CON SOILS CO	PERCENTAGE OF MATERIAL GRANULAR SILT - CLAY SOILS SOILS OTHER MATERIAL	(CP) SHELL BEDS, ETC. WEATHERING	DIKE - A TABULAR BODY OF IGNEOUS ROCK THAT CUTS ACROSS THE STRUCTURE OF ADJACENT ROCKS OR CUTS MASSIVE ROCK.
MATERIAL PASSING: #40	ORGANIC MATERIAL SOILS SOILS OTHER MATERIAL TRACE OF ORGANIC MATTER 2 - 3% 3 - 5% TRACE 1 - 10% LITTLE ORGANIC MATTER 3 - 5% 5 - 12% LITTLE 10 - 20%	FRESH ROCK FRESH, CRYSTALS BRIGHT, FEW JOINTS MAY SHOW SLIGHT STAINING, ROCK RINGS UNDER HAMMER IF CRYSTALLINE. VERY SLIGHT ROCK GENERALLY FRESH, JOINTS STAINED, SOME JOINTS MAY SHOW THIN CLAY COATINGS IF OPEN,	$\overline{ ext{DIP}}$ - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE HORIZONTAL.
LL - 48 MX 41 MN L1 MN L	MODERATELY ORGANIC 5 - 10% 12 - 20% SOME 20 - 35% HIGHLY ORGANIC > 10% > 20% HIGHLY 35% AND ABOVE	(V SLI) CRYSTALLINE NATURE. OF A CRYSTALLINE NATURE.	DIP DIRECTION (DIP AZIMUTH) - THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF THE LINE OF DIP, MEASURED CLOCKWISE FROM NORTH.
USUAL TYPES STONE FRAGS. EINE CITY OF CLAYEY CITY CLAYEY MATTER	GROUND WATER WATER LEVEL IN BORE HOLE IMMEDIATELY AFTER DRILLING	SLIGHT ROCK GENERALLY FRESH, JOINTS STAINED AND DISCOLORATION EXTENDS INTO ROCK UP TO (SLI,) I INCH. OPEN JOINTS MAY CONTAIN CLAY. IN GRANITOID ROCKS SOME OCCASIONAL FELDSPAR CRYSTALS ARE DULL AND DISCOLORED, CRYSTALLINE ROCKS RING UNDER HAMMER BLOWS.	FAULT - A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE. FISSILE - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES.
MATERIALS SAND SAND GRAVEL AND SAND SOILS SOILS	STATIC WATER LEVEL AFTER 24 HOURS \times 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.
GEN.RATING	SPRING OR SEEP	DULL SOUND UNDER HAMMER BLOWS AND SHOWS SIGNIFICANT LOSS OF STRENGTH AS COMPARED WITH FRESH ROCK. MODERATELY ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. IN GRANITOID ROCKS, ALL FELDSPARS DULL	FLOOD PLAIN (FP) - LAND BORDERING A STREAM, BUILT OF SEDIMENTS DEPOSITED BY THE STREAM. FORMATION (FM.) - A MAPPABLE GEOLOGIC UNIT THAT CAN BE RECOGNIZED AND TRACED IN THE
CONSISTENCY OR DENSENESS COMPACTNESS OR RANGE OF STANDARD RANGE OF UNCONFINED	MISCELLANEOUS SYMBOLS	SEVERE AND DISCOLORED AND A MAJORITY SHOW KAOLINIZATION. ROCK SHOWS SEVERE LOSS OF STRENGTH AND CAN BE EXCAVATED WITH A GEOLOGIST'S PICK, ROCK GIVES "CLUNK" SOUND WHEN STRUCK.	FIELD.
PRIMARY SOIL TYPE CONSISTENCY PENETRATION RESISTENCE COMPRESSIVE STRENGTH CONSISTENCY (N-VALUE) (TONS/FT ²) VERY LOOSE < 4	ROADWAY EMBANKMENT (RE) ### OF DIP & DIP DIRECTION WITH SOIL DESCRIPTION ### OF ROCK STRUCTURES ### AFT TEST PORTING SLOPE INDICATOR	IF TESTED, WOULD YIELD SPT REFUSAL SEVERE ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED, ROCK FABRIC CLEAR AND EVIDENT BUT (SEV.) REDUCED IN STRENGTH TO STRONG SOIL. IN GRANITOID ROCKS ALL FELDSPARS ARE KAQLINIZED	LEDGE - A SHELF-LIKE RIDGE OR PROJECTION OF ROCK WHOSE THICKNESS IS SMALL COMPARED TO ITS LATERAL EXTENT.
GRANULAR LOOSE 4 TO 10 GRANULAR MEDIUM DENSE 10 TO 30 N/A	ARTIFICIAL FILL (AF) OTHER AUGED PORTING CONE PENETROMETER	TO SOME EXTENT. SOME FRAGMENTS OF STRONG ROCK USUALLY REMAIN. IF TESTED, WOULD YIELD SPT N VALUES > 100 BPF	LEMS - A BODY OF SOIL OR ROCK THAT THINS OUT IN ONE OR MORE DIRECTIONS. MOTILED (MOT.) - IRREGULARLY MARKED WITH SPOTS OF DIFFERENT COLORS. MOTILING IN SOILS USUALLY INDICATES POOR AERATION AND LACK OF GOOD DRAINAGE.
DENSE 30 TO 50	ARTIFICIAL FILL (AF) OTHER THAN ROADWAY EMBANKMENT AUGER BORING CONE PENETROMETER TEST TOTAL SOUNDING ROD	VERY ALL ROCK EXCEPT QUARITZ DISCOLORED OR STAINED. ROCK FABRIC ELEMENTS ARE DISCERNIBLE 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	PERCHED WATER - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE 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 MATERIAL STIFF 8 TO 15 1 TO 2 (COHESIVE) VERY STIFF 15 TO 30 2 TO 4	INFERRED ROCK LINE MMO MONITORING WELL TEST BORING WITH CORE WITH CORE PIEZOMETER INSTALLATION SPT N-VALUE	VESTIGES OF ORIGINAL ROCK FABRIC REMAIN. <u>IF TESTED, WOULD YIELD SPT N VALUES < 100 BPF</u> 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 ALSO AN EXAMPLE.	RESIDUAL (RES.) SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK. ROCK QUALITY DESIGNATION (RQD) - 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 RUN AND EXPRESSED AS A PERCENTAGE.
HARD > 30 > 4 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 OPENING (MM) 4.76 2.00 0.42 0.25 0.075 0.053	UNCLASSIFIED EXCAVATION - UNCLASSIFIED EXCAVATION - UNCLASSIFIED EXCAVATION - ACCEPTABLE, BUT NOT TO BE	VERY HARD CANNOT BE SCRATCHED BY KNIFE OR SHARP PICK, BREAKING OF HAND SPECIMENS REQUIRES SEVERAL HARD BLOWS OF THE GEOLOGIST'S PICK. HARD CAN BE SCRATCHED BY KNIFE OR PICK ONLY WITH DIFFICULTY, HARD HAMMER BLOWS REQUIRED	ROCK. <u>SILL</u> - AN INTRUSIVE BODY OF IGNEOUS ROCK OF APPROXIMATELY UNIFORM THICKNESS AND RELATIVELY THIN COMPARED WITH ITS LATERAL EXTENT, THAT HAS BEEN EMPLACED PARALLEL TO
BOULDER	SHALLOW UNCLASSIFIED EXCAVATION - UNDERCUT UNCLASSIFIED EXCAVATION - ACCEPTABLE DEGRAPABLE ROCK 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	THE BEDDING OR SCHISTOSITY OF THE INTRUDED ROCKS. SLICKENSIDE - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT
GRAIN MM 305 75 2.0 0.25 0.05 0.005	ABBREVIATIONS 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.	OR SLIP PLANE. STANDARD PENETRATION TEST (PENETRATION RESISTANCE) (SPT) - NUMBER OF BLOWS (N OR BPF) OF
SIZE IN. 12 3 SOIL MOISTURE - CORRELATION OF TERMS	BT - BORING TERMINATED MICA MICACEOUS WEA WEATHERED CL CLAY MOD MODERATELY 7 - UNIT WEIGHT CPT - CONE PENETRATION TEST NP - NON PLASTIC 7 - DRY UNIT WEIGHT	MEDIUM CAN BE GROOVED OR GOUGED 0.05 INCHES DEEP BY FIRM PRESSURE OF KNIFE OR PICK POINT. CAN BE EXCAVATED IN SMALL CHIPS TO PEICES I INCH MAXIMUM SIZE BY HARD BLOWS OF THE POINT OF A GEOLOGIST'S PICK.	A 140 LB. HAMMER FALLING 30 INCHES REQUIRED TO PRODUCE A PENETRATION OF 1 FOOT INTO SOIL WITH A 2 INCH OUTSIDE DIAMETER SPLIT SPOON SAMPLER. SPT REFUSAL IS PENETRATION EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS.
SOIL MOISTURE SCALE FIELD MOISTURE GUIDE FOR FIELD MOISTURE DESCRIPTION	CSE COARSE ORG ORGANIC DMT - DILATOMETER TEST PMT - PRESSUREMETER TEST SAMPLE ABBREVIATIONS DPT - DYNAMIC PENETRATION TEST SAP SAPROLITIC S - BULK	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 (SAT.) FROM BELOW THE GROUND WATER TABLE	e - VOID RATIO SD SAND, SANDY SS - SPLIT SPOON F - FINE SL SILT, SILTY ST - SHELBY TUBE	PIECES CAN BE BROKEN BY FINGER PRESSURE. 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	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 THE TOTAL LENGTH OF STRATA AND EXPRESSED AS A PERCENTAGE.
PLASTIC SEMISOLID; REQUIRES DRYING TO	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 (PI) PL PLASTIC LIMIT	FRAGS FRAGMENTS	FRACTURE SPACING BEDDING TERM SPACING TERM THICKNESS	BENCH MARK: BL-2
- MOTET - (M) COLIDANT OR NEAR ORTHUM MOTETURE	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	N 877632 E 2371869 ELEVATION: 103.4 FEET
OM OPTIMUM MOISTURE SL SHRINKAGE LIMIT PEQUIDES ADDITIONAL WATER TO	DRILL UNITS: ADVANCING TOOLS: CME-45C CLAY BITS HAMMER TYPE: X AUTOMATIC MANUAL	MIDERATELY CLOSE	NOTES:
- DRY - (U) ATTAIN OPTIMUM MOISTURE	CME-55	VERT CLUSE LESS THAN \$1.5 FEET THINKET LAMINATED	FIAD = Filled In After Drilling
PLASTICITY PLASTICITY INDEX (P) DRY STRENGTH	X	FOR SEDIMENTARY ROCKS, INDURATION IS THE HARDENING OF MATERIAL BY CEMENTING, HEAT, PRESSURE, ETC.	1
NON PLASTIC	VANE SHEAR TEST TUNGCARBIDE INSERTS HAND TOOLS:	RUBBING WITH FINGER FREES NUMEROUS GRAINS: FRIABLE GENTLE BLOW BY HAMMER DISINTEGRATES SAMPLE.	
MODERATELY PLASTIC 16-25 MEDIUM HIGHLY PLASTIC 26 OR MORE HIGH	X CASING X W/ ADVANCER POST HOLE DIGGER *STEEL TEETH POST HOLE DIGGER	MODERATELY INDURATED GRAINS CAN BE SEPARATED FROM SAMPLE WITH STEEL PROBE: BREAKS EASILY WHEN HIT WITH HAMMER.	
COLOR	TRICONE TUNG,-CARB SOUNDING ROD	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.	X CORE BIT VANE SHEAR TEST	EXTREMELY INDURATED SHARP HAMMER BLOWS REQUIRED TO BREAK SAMPLE: SAMPLE BREAKS ACROSS GRAINS.	DATE: 8-15-1

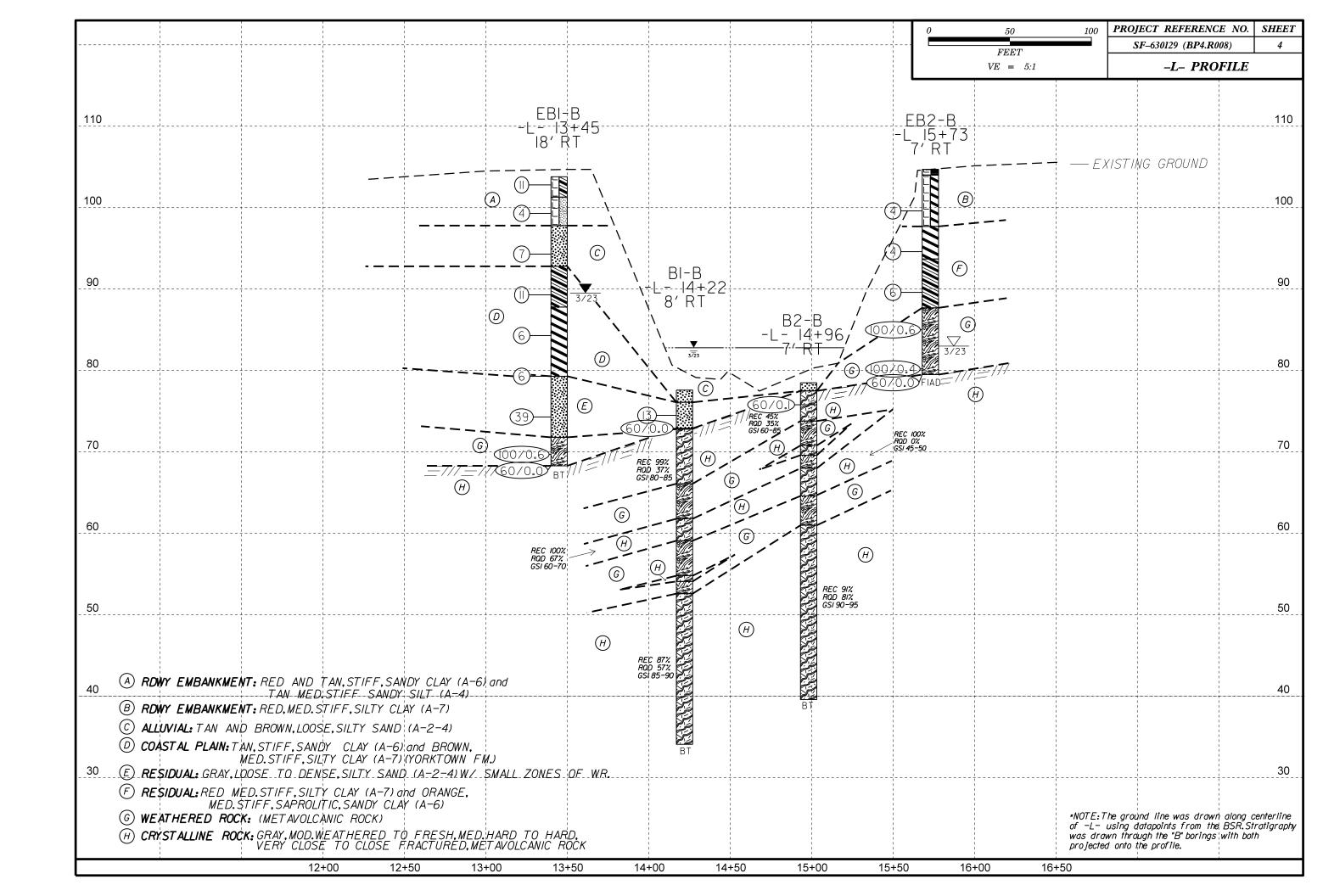
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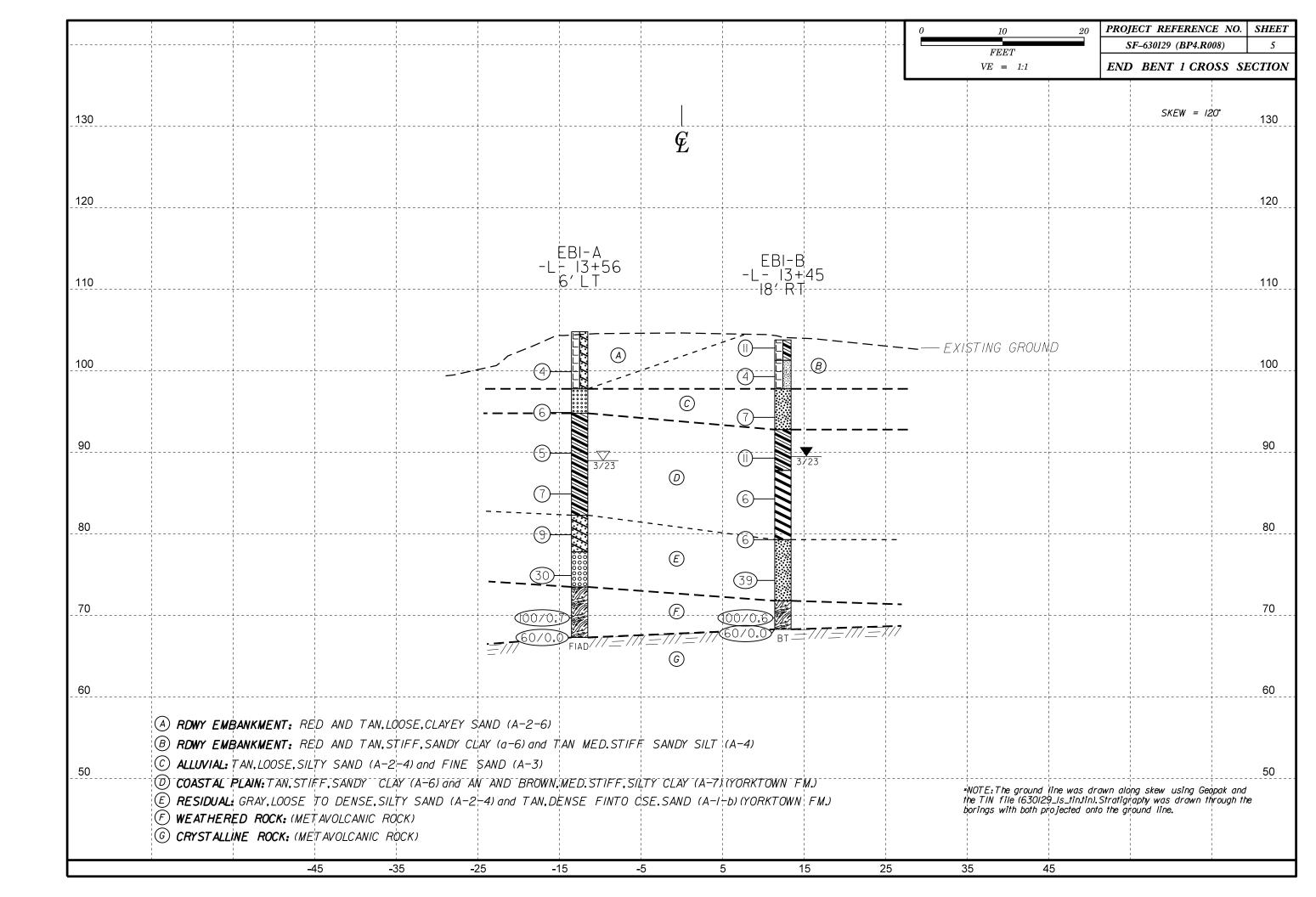
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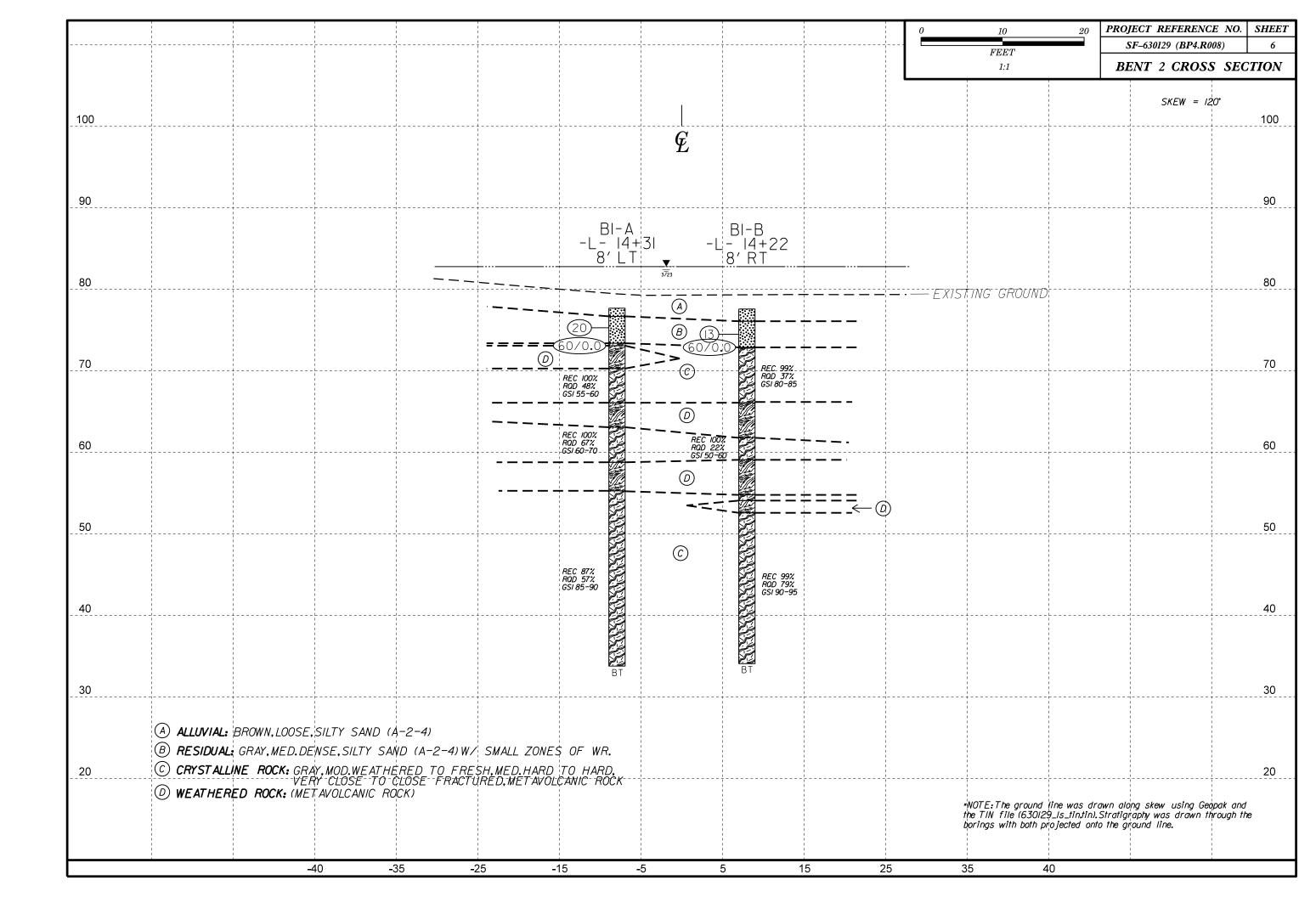
SUBSURFA<u>CE INVE</u>STIGATION

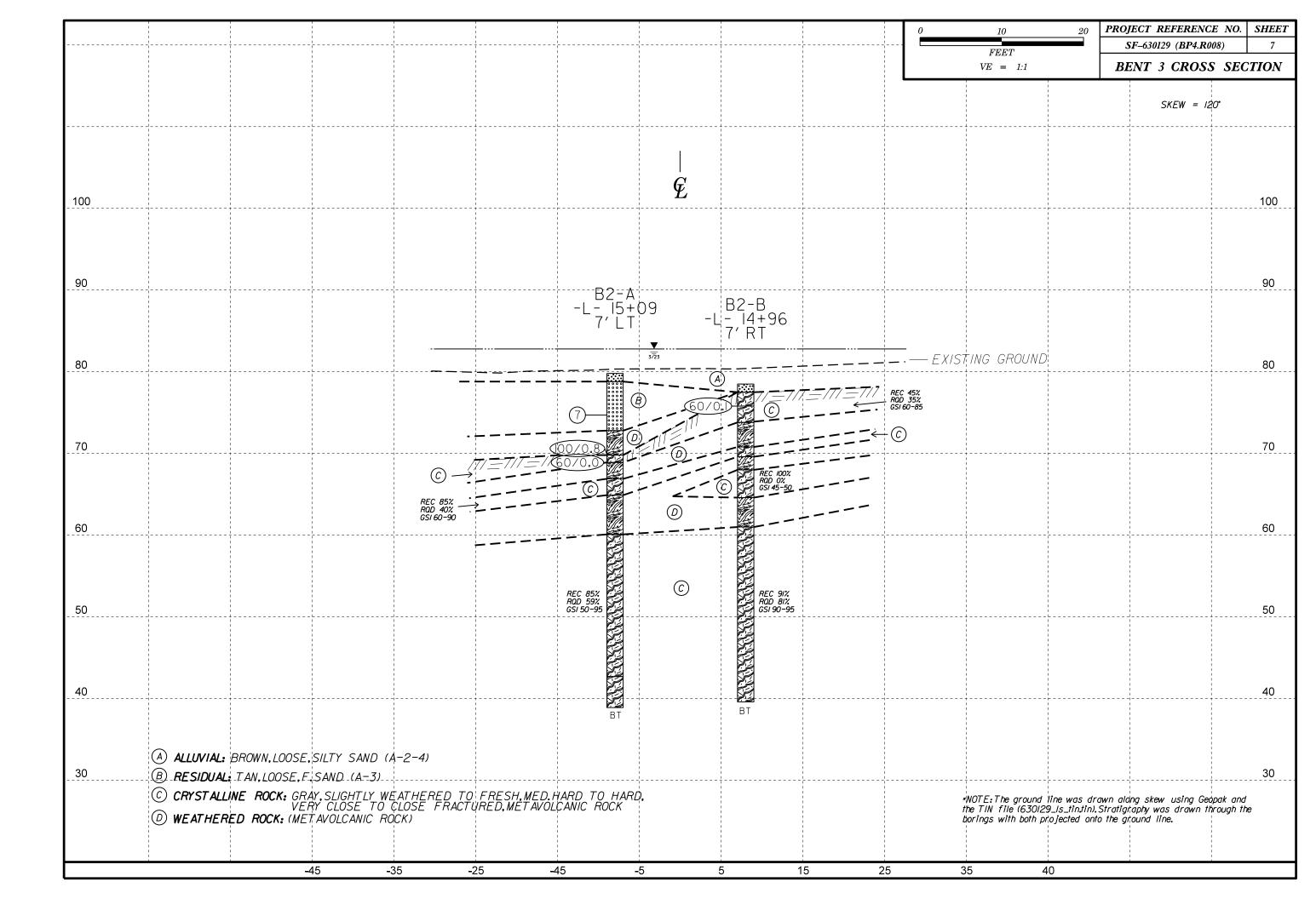
	SUPPLEMENTAL LEGEND, GEOLO FROM AASHTO LRFD BRI	 GICAL STRENGTH INDEX (GSI) TABLES DGE DESIGN SPECIFICATIONS	
AASHTO LRFD Figure 10.4.6.4-1 — Determination of GSI for Join	ed Rock Mass (Marinos and Hoek, 2000)	AASHTO LRFD Figure 10.4.6.4-2 — Determination of GSI for Tectonically Def	ormed Heterogeneous Rock Masses (Marinos and Hoek, 2000)
GEOLOGICAL STRENGTH INDEX (GSI) FOR JOINTED ROCKS (Hoek and Marinos, 2000) From the lithology, structure and surface conditions of the discontinuities, estimate the average value of GSI. Do not try to be too precise. Quoting a range from 33 to 37 is more realistic than stating that GSI = 35. Note that the table does not apply to structurally controlled failures. Where weak planar structural planes are present in an unfavorable orientation with respect to the excavation face, these will dominate the rock mass behaviour. The shear strength of surfaces in rocks that are prone to deterioration as a result of changes in moisture content will be reduced if water is present. When working with rocks in the fair to very poor categories, a shift to the right may be made for wet conditions. Water pressure is dealt with by effective stress analysis.	SURFACE CONDITIONS VERY GOOD Very rough, fresh unweathered surfaces GOOD Rough, slightly weathered, iron stained surfaces Smooth, moderately weathered and altered surfaces Sinckensided, highly weathered surfaces with compact coatings or fillings or angular fragments VERY POOR Slickensided, highly weathered surfaces with soft clay coatings or fillings	GSI FOR HETEROGENEOUS ROCK MASSES SUCH AS FLYSCH (Marinos. P and Hoek E., 2000) From a description of the lithology, structure and surface conditions (particularly of the bedding planes), choose a box in the chart. Locate the position in the box that corresponds to the condition of the discontinuities and estimate the average value of GSI from the contours. Do not attempt to be too precise. Quoting a range from 33 to 37 is more realistic than giving GSI = 35. Note that the Hoek-Brown criterion does not apply to structurally controlled failures. Where unfavourably oriented continuous weak planar discontinuities are present, these will dominate the behaviour of the rock mass. The strength of some rock masses is reduced by the presence of groundwater and this can be allowed for by a slight shift to the right in the columns for fair, poor and very poor conditions. Water pressure does not change the value of GSI and it is dealt with by using effective stress analysis.	VERY GOOD - Very Rough, fresh unweathered surfaces GOOD - Rough, slightly weathered surfaces Surfaces FAIR - Smooth, moderately weathered and altered surfaces POOR - Very smooth, occasionally slickensided surfaces with compact coatings or fillings with angular fragments VERY POOR - Very smooth, slickensided or highly weathered surfaces with soft clay coatings or fillings
STRUCTURE	DECREASING SURFACE QUALITY	COMPOSITION AND STRUCTURE	
INTACT OR MASSIVE - intact rock specimens or massive in situ rock with few widely spaced discontinuities BLOCKY - well interlocked undisturbed rock mass consisting	90 N/A N/A N/A N/A N/A	A. Thick bedded, very blocky sandstone The effect of pelitic coatings on the bedding planes is minimized by the confinement of the rock mass, in shallow tunnels or slopes these bedding planes may cause structurally controlled instability.	70 A A
of cubical blocks formed by three intersecting discontinuity sets VERY BLOCKY - interlocked, partially disturbed mass with multi-faceted angular blocks formed by 4 or more joint sets	INTERLOCKING OF ROCK IN PAGE 100 PM	B. Sand- stone with stone and siltstone layers of siltstone amounts D. Siltstone or silty shale with sand- stone layers shale with sandstone layers	50 B C D E
BLOCKY/DISTURBED/SEAMY - folded with angular blocks formed by many intersecting discontinuity sets. Persistence of bedding planes or schistosity	DAIS A 30	C.D.E. and G - may be more or less folded than illustrated but this does not change the strength. Tectonic deformation, faulting and loss of continuity moves these categories to F and H.	30 F 20
DISINTEGRATED - poorly inter- locked, heavily broken rock mass with mixture of angular and rounded rock pieces	20	G. Undisturbed silty or clayey shale with or without a few very thin sandstone layers G. Undisturbed silty or clayey shale forming a chaotic structure with pockets of clay. Thin layers of sandstone are transformed into small rock pieces.	# 10 /
LAMINATED/SHEARED - Lack of blockiness due to close spacing of weak schistosity or shear planes	N/A N/A	— Means deformation after tectonic disturbance	DATE: 8-19-16

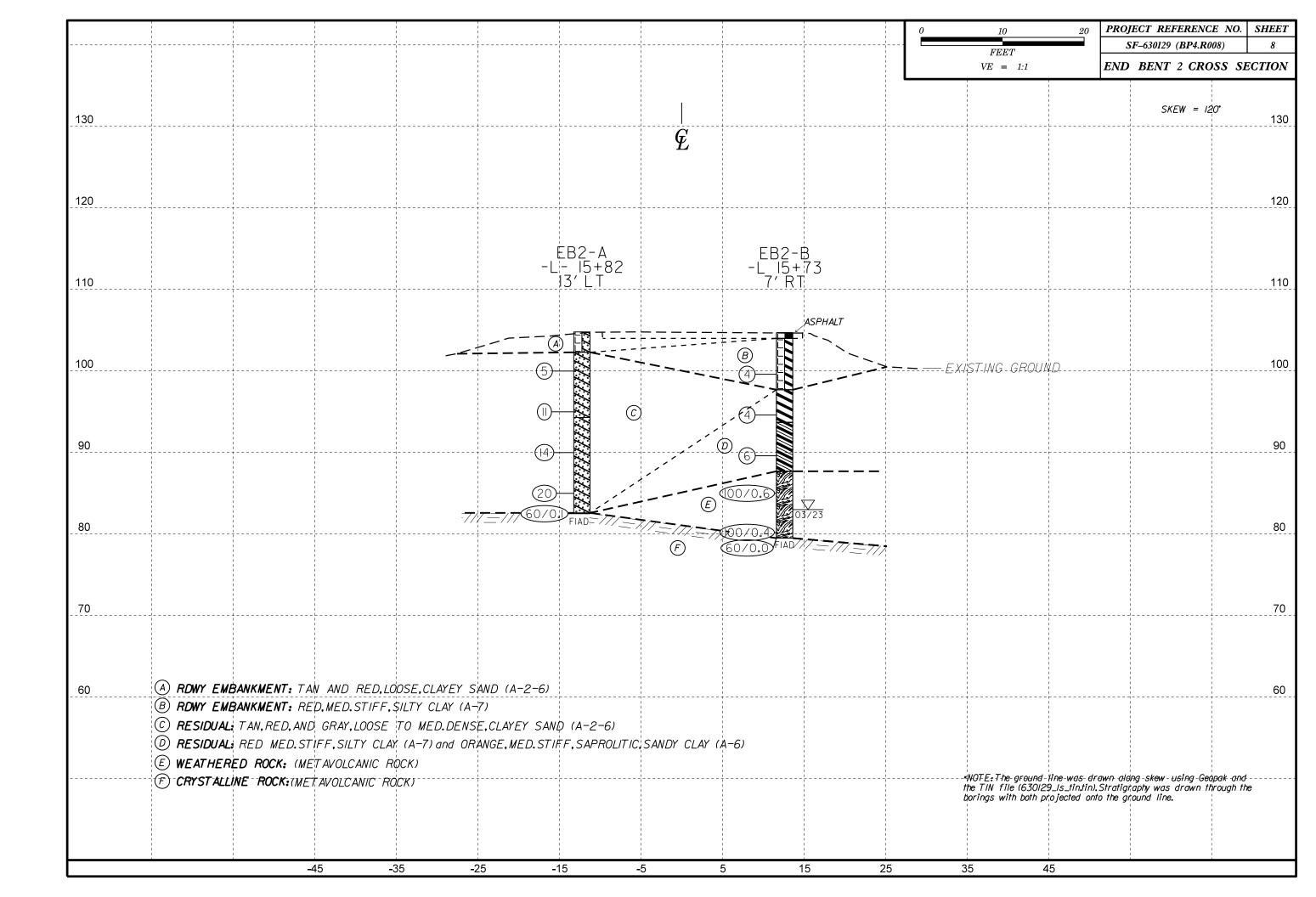












									UKE L	.00				
WBS	BP4.F	R008.1			T	IP	SF-630129	COUNT	Y NASH				GEOLOGIST M. Daniels, GIT;	
SITE	DESCR	IPTION	I Brid	lge No	6301	129	9 on SR 1518 over	Fishing C	r on the Na	sh Co/Ha	alifax Co	Line)	GROUND WTR (1
BORI	NG NO.	EB1-	-A		S	TΑ	TION 13+56		OFFSET	6 ft LT			ALIGNMENT -L-	0 HR. 15.
OLL	AR ELI	EV. 10)4.8 ft		T	ОТ	TAL DEPTH 37.5 f	t	NORTHING	3 877,5	607		EASTING 2,371,845	24 HR . FIA
RILL	.RIG/HA	MMER E	FF./DA	TE SI	UM3123	3 C 1	ME-550X 86% 11/12/20)21		DRILL N	/IETHOD	H.S		ER TYPE Automatic
RIL	LER M	I B Mo	selev		S	TA	ART DATE 03/20/2	3	COMP. DA	TE 03/	20/23		SURFACE WATER DEPTH N/	A
LEV	DRIVE	DEPTH		OW CO		П		PER FOOT		SAMP.		L		
(ft)	ELEV (ft)	(ft)	0.5ft	0.5ft			0 25	50	75 100	NO.) 3	SOIL AND ROCK DESC ELEV. (ft)	CRIPTION DEPTH
							<u>'</u>		l.					
105													104.8 GROUND SURFA	ACE
	-	-				Ħ						Ņ.	ROADWAY EMBANI	KMENT
												// //	Red and tan, loose, Clayey	SAND (A-2-6)
00	100.9	3.9	2	2	2	1	<u> </u>					 		
		‡					ļ : : : : : : : :					<u> </u>	97.8	
95	95.9	8.9					1::: ::::				0 0	-	ALLUVIAL Tan, loose, fine SAN	D (A-3)
95	-	-	3	3	3		•6 · · · · · · · ·		1		M		94.8 COASTAL PLA	
		_					3::: ::::						(Yorktown Fm Tan, m. stiff, Sandy CL	
90	90.9	_ 13.9	3	2	3	łL	1					3	, , , , , ,	(-7
	-	l					1::::							
	85.9 -	18.9					1::: ::::					3		
35	_	-	2	3	4	1 -	7	1	+		w			
	-	F					1	: : : :				廴	82.3	
30	80.9	23.9	4	4	5	$\ \cdot\ $: : : :	: : : :		W %	\	RESIDUAL Gray, loose, Clayey SAN	ND (A-2-6)
	-	F		'							VV %	<u> </u>	77.8	
	75.9	28.9									200		Tan, dense, fine to cse., S	AND (A-1-b)
'5	75.9 -	20.9	9	15	15	1	Q 30				Sat.			
		‡						+	+÷÷:-:-			<u> </u>	73.5WEATHERED RO	<u>ск</u> — — — ³
70	70.9	33.9	28	63	37/0.2								(metavolcanic ro	ck)
,,,	-	-	20	03	31/0.2				. 100/0.7	•				
ŀ	67.3	37.5	60/0.0			Н			60/0.0	artheta		-	67.3 CRYSTALLINE R	OCK
	-	 										L	(metavolcanic ro	ck)
	-	‡										þ	Boring Terminated with Penetration Test Refusal at E	Elevation 67.3 ft
		<u> </u>										þ	on Crystaline Rock (metav	olcanic rock)
	-	-										F		
		<u> </u>										F		
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GEOTECHNICAL BORING REPORT BORE LOG

								B	<u>ORE L</u>	UG				
WBS	BP4.F	R008.1			TIE	P SF-630129	co	UNTY	NASH				GEOLOGIST M. Daniels, GIT	
SITE	DESCR	IPTION	I Brid	dge No	. 63012	29 on SR 1518 o	over Fish	ing Cr	on the Na	sh Co/F	Halifax (Co Lir	ne Gl	ROUND WTR (ft)
BOR	ING NO.	EB1	-B		ST	ATION 13+45			OFFSET	18 ft R	Т		ALIGNMENT -L- 0	HR. 19.0
COL	LAR ELE	EV . 10	03.8 ft		TC	TAL DEPTH 3	5.5 ft		NORTHING	877	,525		EASTING 2,371,864 24	HR. 14.3
DRILI	L RIG/HAI	VIMER E	FF./DA	TE SU	JM3123	CME-550X 86% 11	/12/2021	•		DRILL	. METHO	D H.	S. Augers HAMMER	TYPE Automatic
DRIL	LER M	. B. Mo	oseley		ST	ART DATE 03	/27/23		COMP. DA	TE 03	3/27/23		SURFACE WATER DEPTH N/A	
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	0.5ft	0.5ft	JNT 0.5ft	0 25	OWS PER 50		75 100	SAMF NO.	P. MOI	L O G	SOIL AND ROCK DESCRIF	PTION DEPTH (ft)
105		_											ODOUND OUDS AGS	
	103.8 -	- 0.0	2	4	7	. •11 · · ·					М		103.8 GROUND SURFACE - ROADWAY EMBANKME	
100	100 2 -	3.5				:/::: ::							Red and tan, stiff, Sandy CLA Tan, m. stiff, Sandy SILT (
100	100.3	3.5	3	2	2	4					D		Tan, m. sun, sandy sict ((A-4)
	-	_											97.8ALLUVIAL	6.0
95	95.3	8.5											Tan, loose, Silty SAND (A	-2-4)
	-	-	3	4	3	• 7					D			11.0
	-	-				: ; : : : :							COASTAL PLAIN	
90	90.3	13.5	4	5	6	11							- (Yorktown Fm) – Tan, stiff, Sandy CLAY (A-6
	-	_											- _ 87.8	16.0
	050	40.5				:/: : : : :							Brown, m. stiff, Silty CLAY (strat. change in sample	
85	85.3	10.5	3	3	3	6					D		_	, l
	-	_											-	
80	80.3	23.5											-	
	1 -	-	3	3	3	6 6					Sat.		79.3 RESIDUAL	24.5
	-	-				::::\\]::							Gray, loose to dense, Silty SAN	ND (A-2-4)
75	75.3	28.5	12	13	26								- -	
	-	E	'2	13	20		39				Sat.		<u>.</u>	
	-	-					I					477	. 71.8 WEATHERED ROCK	32.0
70	70.3	33.5	27	73/0.1					100/0.6				– (metavolcanic rock)	
	68.3	35.5	60/0.0						60/0.0	•		<u> </u>	- 68.3 CRYSTALLINE ROCK	35.5
			60/0.0						00/0.0				CRYSTALLINE ROCK (metavolcanic rock) Boring Terminated with Sta Penetration Test Refusal at Eleva on Crystaline Rock (metavolca	andard ation 68.3 ft

WBS	BP4.R	2008.1			ТІ	P SF	-630	129				ORE NASH					GEO	LOGIST M. Daniels, G	T; B. Worley	, PG
SITE	DESCR	IPTION	I Brid	lge No	. 6301	29 on	SR 1	518	over F	ishing	g Cr	on the	Nas	n Co/Ha	lifax (Co Lir			GROUNE	
	NG NO.					TATIC						OFFSE						NMENT -L-	0 HR.	N/
	AR ELE				-				13.9 ft		\rightarrow			877,6	14		+	ΓΙΝG 4,377,847	24 HR.	N/
	. RIG/HAN			TE SI							L		1	DRILL N		D M			IMER TYPE	
RII	LER M	B Mo	nselev		S	TART	DATE	- 03	3/23/23	3		COMP	DΔI	E 03/2	23/23		1	FACE WATER DEPTH	5.0ft	
EV	ם אינ	DEPTH	T	OW CO					OWS P		_			SAMP.	V /		Joon	AGE WATER DEF III	0.010	
ft)	ELEV (ft)	(ft)	0.5ft	0.5ft	0.5ft	О	2	25	5			75 <i>^</i>	100	NO.	MOI	0	ELEV. (1	SOIL AND ROCK DE	SCRIPTION	DEPTH
	()								-						V			WATER SURFACE	(03/23/23)	
30																				
,,,		-															-	CDOLIND CLIE	FACE	
	76.3	1.4				-	ļ										77.7 76.7	GROUND SUR ALLUVIA	L	
75	70.0	- 1. 1	20	14	6	<u> </u>	2	· · 20		- :			-		М	 	-	Brown, loose, Silty S.	A <u>ND (A-2-4) </u>	_/
	73.1	4.6	60/0.0			- :	: <u>i</u> _		÷÷	-:-:-	: :	60/	· /0.0				73.4 73.1	Gray, med. dense, Silty	SAND (A-2-4)	<u> </u>
	‡	-	00/0.0			: :		: :									70.3	CRYSTALLINE (Very hard drilling	g at 4.6')	<u> </u>
0	_	-						<u> </u>				<u> </u>					= 10.0	Netavolcanic WEATHERED		- 기;
	1	-				- :		: :										(Metavolcanic REC=0%	Rock)	į
5	1	_						<u>.</u>					·				66.1	CRYSTALLINE	ROCK	— J:
	1	-				: :										7	63.1	Gray, mod. weathered to fragiliary, mod. weathered, mod. hard, close-fractured, mod.	etavolcanic roc	
	-	-																REC=1009 RQD=489	6	ï
0		-						<u> </u>					\dashv				_ 58.8	GSI=55-6 WEATHERED		_
	1	-						: :					-					(Metavolcanic REC=0%	Rock)	_ <u>i</u>
5	1	-						: :									55.3	CRYSTALLINE	ROCK	_ J
_	7	-																Dark gray, mod. weathere hard to hard, close-fractur		
	‡	-						: :										rock REC=100°	%	1
0	‡						· · ·			- :	· ·						-	RQD=67% GSI=60-7	6	- }
	‡	-	[: :				: : :						WEATHERED	ROCK	- <u>†</u>
_	‡	-						: :										(Metavolcanic REC=0%		_i
5		-						 				 	\exists				-	CRYSTALLINE Dark gray, fresh, med. ha	ROCK ard to very hard	 d.
	1	-	[: :					:					close-fractured, meta REC=87%	volcanic rock	,
10		_	[<u> : :</u>					·				-	RQD=57% GSI=85-9	6	
	}	_	[: :										GOI-00-9	•	
	-	_	[: :					:							
35	-	_	[· ·	 	\exists				33.8			
İ	1	-							-				']		F		Boring Terminated at Ele Crystaline Rock (meta	vation 33.8 ft i	
		-														F		orystaline rook (meta	voloariio rook)	
	7	-														l	-			
	1	-																		
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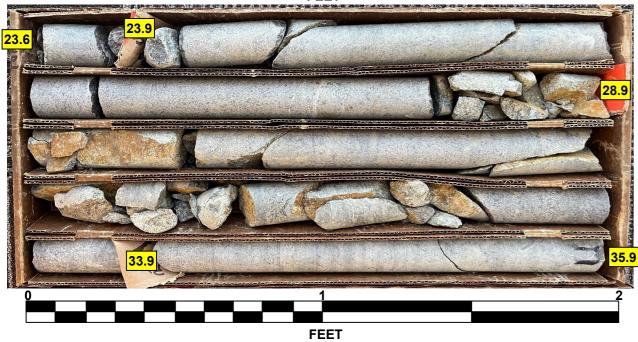
GEOTECHNICAL BORING REPORT CORE LOG

SHEET 10

SITE							0129	1 -		ΥN		GEOLOGIST M. Danie	,, .	J. 110110	у, г С
	DESCR	IPTION	l Brid	lge No. 6	30129	on SR	1518 ov	er Fish	hing C	r on	the Nash Co/Halifax Co Lin	e	(GROUN	D WTR (ft)
BORI	NG NO.	B1-A			STAT	ΓΙΟΝ	14+31			OFI	SET 8ft LT	ALIGNMENT -L-		0 HR.	N/A
COLL	AR ELE	EV . 77	'.7 ft		TOT	AL DEI	PTH 43.	.9 ft		NO	RTHING 877,614	EASTING 4,377,847	2	4 HR.	N/A
DRILL	. RIG/HAI	MMER E	FF./DA	TE SUM	123 CN	/IE-550X	(86% 11/1)	2/2021			DRILL METHOD NA	Casing W/SPT & Core	HAMME	RTYPE	Automatic
DRILI	LER M	l. B. Mc	seley		STA	RT DA	TE 03/2	3/23		СО	MP. DATE 03/23/23	SURFACE WATER DEP	TH 5.0f	t	
CORE	E SIZE	NQ-2					N 39.3 f								
ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	REC. (ft)	JN RQD (ft) %	SAMP. NO.	STR REC. (ft) %	RQD (ft) %	L O G	ELEV. (ft)	DESCRIPTION AND REMARKS	3		DEPTH (ft)
73.1	(11)			(IVIIII/IL)	70	70		70	70		ELEV. (II)	Begin Coring @ 4.6 ft			DEFIN (II.)
13.1	73.1	4.6	4.3	N=60/0.0	(1.5)	(0.7)		(0.0)		10	73.1	WEATHERED ROCK			4.6
70		<u> </u>		N=60/0.0 0:15/1.0 1:44/1.0 1:48/1.0 1:05/0.3	35%	16%		(4.2)	(2.0)		70.3	(Metavolcanic Rock) CRYSTALLINE ROCK			
-	68.8 _	8.9	5.0	1:48/1.0 1:05/0.3	(2.7)	(1.3)		100%	48%		Gray, mod. weath	nered to fresh, med. hard to ha	ırd, close-fi	ractured,	
	-			1:20/1.0 3:22/1.0 1:46/1.0 2:10/1.0	54%	26%		(2.2)			66.1	metavolcanic rock GSI = 55-60			11.6
65	63.8	13.9		2:10/1.0 1:55/1.0				(0.0) 0%			_	WEATHERED ROCK (Metavolcanic Rock)			
	-		5.0	1:58/1.0 1:48/1.0	(4.3)	(2.9) 58%		(4.3)	(2.9)		63.1	CRYSTALLINE ROCK			14.6
60	-	F		1:42/1.0		3070		(4.3) 100%	(2.9) 67%		Dark gray, mod. we	athered to fresh, med. hard to metavolcanic rock	hard, close	e-fracture	ed,
-	58.8	18.9	50	2:01/1.0		(0.0)		(0.0)				GSI = 60-70			18.9
	-	‡	5.0	0:56/1.0 0:53/1.0		(0.0) 0%		(0.0) 0%			•	WEATHERED ROCK (Metavolcanic Rock)			
55		.		1:17/1.0 1:37/1.0				(18.6)	(12.3)		55.3	CRYSTALLINE ROCK			22.4
H	53.8 _	23.9	5.0	1:22/1.0 1:32/1.0	(3.7)	(2.4)		87%	57%		Dark gray, fresh, med	. hard to very hard, close-fract	ured, meta	volcanic	rock
	-	t		1:55/1.0 1:38/1.0	74%	48%						GSI = 85-90			
50	48.8	28.9		1:45/1.0 2:05/1.0							_				
	-		5.0	1:50/1.0 2:31/1.0	(4.4)	(1.6) 32%					•				
45	-	F		2:47/1.0		3270					•				
	43.8	33.9		1:05/1.0 1:30/1.0		(1.5)					- ·				
	-	‡	5.0	1:59/1.0 1:07/1.0		(4.3) 86%									
40	_	L		1:52/1.0							-				
-	38.8	38.9	5.0	1:38/1.0 2:11/1.0		(4.0)									
	-	-		2:28/1.0 2:12/1.0		80%					•				
35	33.8	43.9		2:37/1.0 3:36/1.0							_ . 33.8				43.9
	-	- 10.0		3.30/1.0								at Elevation 33.8 ft in Crystalin	e Rock (m	etavolcar	
	-	‡									•	rock)			
	-	-									- ·				
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B1-ABOXES 1 & 2: 4.6 - 35.9 FEET





B1-A BOX 3: 35.9 - 43.9 FEET



SHEET 12

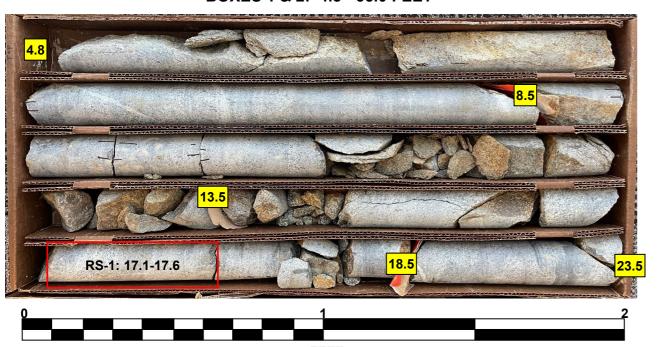
GEOTECHNICAL BORING REPORT BORE LOG

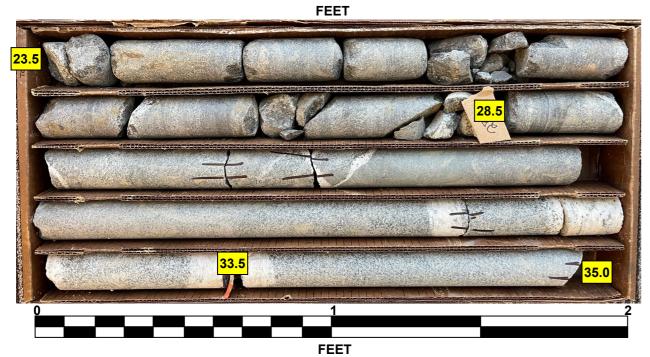
										D	<u> </u>	RE L	UG					
WBS	BP4.R	2008.1			TI	P S	F-630	129	(COUNT	ΤΥ	NASH				GEOLOGIST M. Daniels, GIT	B. Worle	y, PG
SITE	DESCR	IPTION	I Brid	lge No	. 6301	29 o	n SR 1	518 ov	er Fi	shing (Cr o	n the Nas	sh Co/Ha	alifax (Co Li	ne	GROUNI	D WTR (ft)
BORI	NG NO.	B1-E	3		S	TATI	ON 14	4+22			0	FFSET	8 ft RT			ALIGNMENT -L-	0 HR.	N/A
COLL	AR ELE	V . 77	7.6 ft		T	DTAL	DEPT	H 43	.5 ft		N	IORTHING	877,6	03		EASTING 2,371,861	24 HR.	N/A
DRILL	. RIG/HAI	VIMER E	FF./DA	TE S	UM3123	3 CME	-550X 8	6% 11/1	2/202	1			DRILL N	/IETHO	DΝ	W Casing W/SPT & Core HAMM	ER TYPE	Automatic
DRIL	LER M	. B. Mo	seley		S	TAR	DATE	03/2	4/23		С	OMP. DA	TE 03/	24/23		SURFACE WATER DEPTH 5.	Oft	
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLC 0.5ft	0.5ft	UNT 0.5ft	0	2	BLOV	VS PE	R F00	T 75	5 100	SAMP.	MOI	L O G	SOIL AND ROCK DESC	CRIPTION	DEPTH (f
80		-													-	WATER SURFACE (C	3/24/23)	
75	75.5 -	- - - 2.1 -	10	9	4	-	.		-		:			w		77.6 GROUND SURFA 76.1 Brown, loose, Silty SAN RESIDUAL	ID (A-2-4)	0. 1.
70	72.9 - - -	<u>4.7</u> - -	60/0.0			-					-	60/0.0				72.9 Gray, med. dense, Silty SAN small zones of V CRYSTALLINE R (metavolcanic ro Gray, mod. weathered to free	VR OCK ck)	
65	- - -	- - -							-							- hard, close-fractured, meta - 66.1 REC=99% RQD=37% - GSI=80-85	volcanic roo	ck <u>11</u> . J
60	-	- - -									-		RS-1			MEATHERED RO 61.8 (Metavolcanic Ro REC=0% CRYSTALLINE R 59.1 Gray, mod. weathered to free	ock) OCK — —	
55	-	- - - -							-							hárd, close-fractured, meta REC=100% RQD=22% SSI=50-60	volcanic roo	u 10 ,/
50	-	- - - -								· · · ·						— 52.6 — (Metavolcanic Ro REC=0% CRYSTALLINE R	ock) OCK	- 4 - 25 4
45	-	- - - -				-			-							Gray, mod. weathered to fres hard, close-fractured, meta REC=100% RQD=100% GSI=85-90		
40	-	- - -				-			-							WEATHERED RO (Metavolcanic Ro REC=0% CRYSTALLINE R	ock) OCK	
35		- - -				-			-							Dark gray, fresh, hard to close-fractured, metavo REC=99% RQD=79% GSI=90-95	very hard, canic rock	
		- - -														Boring Terminated at Eleva Crystaline Rock (metavo		43 in
	- - -	- - -														- - -		
	-	-																
		- - - -														- - - -		
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GEOTECHNICAL BORING REPORT CORE LOG

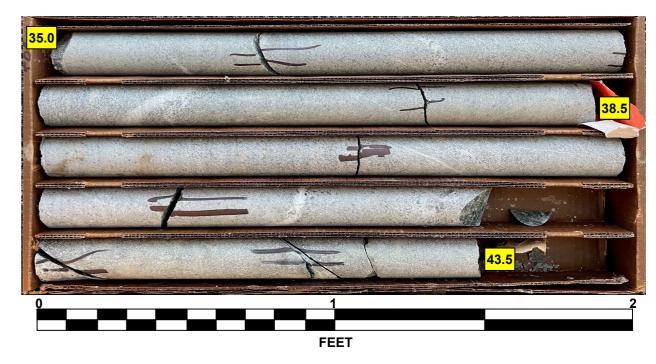
SITE DESCRIPTION Bridge No. 630129 on SR 1518 over Fishing Cr on the Nash Co/Halifax Co Line GROUND V	PG
COLLAR ELEV. 77.6 ft TOTAL DEPTH	/TR (ft)
DRILL RIGH-NAMMER EFF/DATE SUM3123 CM-5500 x 89% 11/1/22021 DRILL METHOD MV Casing WSPT & Core HAMMER TYPE Aut	N/A
DRILLER M. B. Moseley	N/A
CORE SIZE NQ-2 SUN CITY CIT	omatic
ELEV (ft) C(ft)	
ELEV CHT	
10	
72.8	DEPTH (ft)
Fig.	4.8
5.0	
60	
64.1 13.5 1:02/1.0 2.7 (0.6) 54% 12% (2.7) (0.6) 1:25/1.0 1:55/1.0 1:55/1.0 1:55/1.0 1:55/1.0 1:23/1.0 1:33/1.0 1:23/1.0 1:33/1.0 1:23/1.0 1:33/1.0 1	11.5
18.5 18.5 1.591.0 1.551.0	
1.55/1.0 RS-1 18.5 5.35/1.0 RS-1 100% 22% FS-1 100% 22% FS-1 100% 22% FS-1 100% 22% FS-1 100% 123/1.0 123/	15.8
5.0	18.5
55 54.1 23.5 1:44/1.0 4:06/1.0 (3.5) (0.8) 2:38/1.0 70% 16% 1:30/1.0 (3.5) (3.5) (1.4.7) (0.0) (1.5.7) (0.7)	<i>j</i>
5.0 2:17/1.0 (3.5) (100% (100% 2 52.6 Gray, mod. weathered to fresh, med. hard to hard, close-fractured, metavolcanic rock GSI = 85-90 (10.0) (14.7) (18.4) 99% (18.4) 99% (18.4) 99% (18.4) 99% (18.4) 99% (18.4) 99% (18.4) 99% (18.4) 99% (18.4) 99% (18.4) 100% (10.0) (14.7) (18.4) 99% (22.8
1.30/1.0 3:27/1.0 3:27/1.0 3:27/1.0 3:27/1.0 3:27/1.0 3:27/1.0 3:27/1.0 3:27/1.0 3:27/1.0 3:27/1.0 3:27/1.0 3:27/1.0 3:27/1.0 3:27/1.0 3:27/1.0 3:37/1.0	22.8 23.5 25.0
49.1 28.5 5.15/1.0 (4.9) (4.3) (4.8) (4.1 33.5 2:36/1.0 2:36/1.0 3:20/1.0 5.0 4:25/1.0 3:31/1.0 3:31/1.0 3:31/1.0 3:31/1.0 3:31/1.0 3:35/1.0 3:19/1.0 3:55/1.0 3:19/1.0 3:43/1.0 3:19/1.0 3:55/1.0 3:19/1.0 3:43/1.0 3:19/1.0 3:55/1.0 3:19/1.0 3:55/1.0 3:19/1.0 3:43/1.0 3:19/1.0 3:55/1.0 3:19/1.0 3:55/1.0 3:19/1.0 3:55/1.0 3:19/1.0 3:00/1.0 (5.0) 4:22/1.0 5.0 3:19/1.0 3:00/1.0 (5.0) 4:22/1.0 5.0 3:19/1.0 3:00/1.0 (5.0) 4:22/1.0 5.0 3:19/1.0 3:00/1.0 (5.0) 4:22/1.0 5.0 3:19/1.0 3:00/1.0 (5.0) 4:22/1.0 5.0 3:00/1.0 (5.0) 4:22/1.0 5.0 3:00/1.0 (5.0) 4:22/1.0 5.0 3:00/1.0 (5.0) 4:22/1.0 5.0 (4.6) 2:15/1.0 100% 3:55/1.0 3:19/1.0 3:00/1.0 (5.0) 4:22/1.0 5.0 (5.	1-20.5
2:40/1.0 2:36/1.0 2:45/1.0 2:45/1.0 2:45/1.0 3.320/1.0 (5.0) 3.43/1.0 3.31/1.0 3.34/1.0 3.34/1.0 3.34/1.0 3.35/	7
45 44.1 33.5 2:45/1.0 3:20/1.0 5.0 (5.0) 3:20/1.0 100% 3:31/1.0 3:34/1.0 3:31/1.0 3:34/1.0 100% 3:31/1.0 3:34/1.0 100% 3:31/1.0 100% 3:35/1.0 3:55/1.0 3:55/1.0 3:19/1.0 2:29/1.0 100% 3:41 43.5 2:29/1.0 100% 3:41 Boring Terminated at Elevation 34.1 ft in Crystaline Rock (metavolcanic	,
40 39.1 38.5 5.0 4:25/1.0 (5.0) (5.0) 3:43/1.0 3:31/1.0 3:34/1.0 4:22/1.0 (5.0) 4:22/1.0 (5.0) 4:22/1.0 3:55/1.0 3:55/1.0 3:19/1.0 3:55/1.0 3:19/1.0 3:19/1.0 3:43/1.0 43.5 2:29/1.0 Boring Terminated at Elevation 34.1 ft in Crystaline Rock (metavolcanic	
33.31/1.0 33.34/1.0 33.34/1.0 33.34/1.0 4.22/1.0 5.0 2:41/1.0 (5.0) (4.6) 2:15/1.0 3:55/1.0 3:19/1.0 2:29/1.0 34.1 Boring Terminated at Elevation 34.1 ft in Crystaline Rock (metavolcanic	
39.1 38.5 4:22/1.0	
35 34.1 43.5 2:29/1.0 2:29/1.0 33.19/1.0 34.1 Boring Terminated at Elevation 34.1 ft in Crystaline Rock (metavolcanic	
35 3:19/1.0 34.1 43.5 2:29/1.0 34.1 Boring Terminated at Elevation 34.1 ft in Crystaline Rock (metavolcanic	
Boring Terminated at Elevation 34.1 ft in Crystaline Rock (metavolcanic	40.5
	43.5

B1-BBOXES 1 & 2: 4.8 - 35.0 FEET





B1-BBOX 3: 35.0 - 43.5 FEET

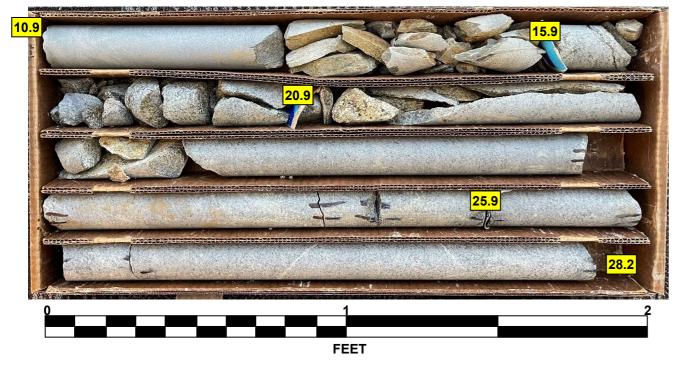


	Worley, PG ROUND WTR
BORING NO. B2-A STATION 15+09 OFFSET 7 ft LT ALIGNMENT -L-	RUIND WTR
COLLAR ELEV. 79.8 ft TOTAL DEPTH 40.9 ft NORTHING 877.691 EASTING 2,371,853 24	
RILL RIGHAMMER EFF/DATE SUM3123 CWE-550X 899%11/12/2021 DRILL METHOD NW Casing WSPT & Core HAMMER TO	HR.
RILLER M. B. Moseley START DATE 03/22/23 COMP. DATE 03/22/23 SURFACE WATER DEPTH 2.9ft	
DRIVE CHILD DEPTH SLOW COUNT CHILD DEPTH	TYPE Automat
City	
80	DEPT
75 75 7 4.1	2/23)
Brown, loose, Silty SAND (A-RESIDUAL Tan, loose, fine SAND (A-RESIDUAL T	
75.	<u>A-2-4</u>)
70. 70. 7 9.1 59 41/0.3 68.9 10.9 60/0.0 68.9 10.9 60/0.	\-3)
WEATHERED ROCK (metavolcanic rock) Section	
100/0.8 68.9 10.9 60/0.0 68.9 10.9 60/0.0 68.9 10.9 60/0.0 68.9 10.9 60/0.0 68.9 10.9 60/0.0 68.9 10.9 60/0.0 68.9 10.9 60/0.0 68.9 10.9 60/0.0 68.9 10.9 60/0.0 68.9 CRYSTALLINE ROCK (Metavolcanic Rock) REC=0% RQD=0% CRYSTALLINE ROCK (Metavolcanic Rock) REC=0% RQD=0% CRYSTALLINE ROCK (Metavolcanic Rock) REC=0% RQD=0% RQD=0	[
60/0.0 60/0.0 60/0.0 66.9 (metavolcanic rock) 66.9 WEATHERED ROCK (Metavolcanic Rock) REC=0% RQD=0% RQD=40% GSI=60.9 (Gray, mod. weathered to fresh, me hard, close-fractured, metavolcanic Rock) REC=85% RQD=40% REC=0% RQD=0% CRYSTALLINE ROCK (Metavolcanic Rock) REC=85% RQD=40% GSI=60.90 CRYSTALLINE ROCK (Metavolcanic Rock) REC=0% RCD=0% CRYSTALLINE ROCK (Metavolcanic Rock) RCD=0% CRYSTALINE ROCK RCD=0%	
### ### ##############################	í
REC=0% RQD=0% RQD=0% RQD=0% RQD=0% RQD=0% RQD=0% RQD=40% RQD=40% RQD=40% RQD=090 RQD=090 RQD=0% RQD=40% RQD=4	1
CRYSTALLINE ROCK Gray, mod. weathered to fresh, me hard, close-fractured, metavolcal REC=85% RQD=40% GSI=60-90 WEATHERED ROCK (Metavolcanic Rock) RCD=0% RQD=0% Gray, slightly weathered to fresh, no to hard, modclose to close-fractured metavolcanic rock REC=85% RQD=49% GSI=50-95 42.7 (*No recovery of Crystalline rock)	<u> </u> -
hard, close-fractured, metavolcal REC=85% RQD=40% GSI=60-90 WEATHERED ROCK (Metavolcanic Rock) REC=0% RQD=0% CRYSTALLINE ROCK Gray, slightly weathered to fresh, not o hard, modclose to close-fract metavolcanic rock REC=85% RQD=49% GSI=50-95 42.7 (metavolcanic rock) (*No recovery of Crystalline roc 37, 1-40,9 due to core harrel material rock) (*No recovery of Crystalline roc 37, 1-40,9 due to core harrel material	
REC=85% RQD=40% GSI=60-90 WEATHERED ROCK (Metavolcanic Rock) REC=0% RQD=0% CRYSTALLINE ROCK Gray, slightly weathered to fresh, not hard, modclose to close-frad metavolcanic rock REC=85% RCD=49% GSI=50-95 42.7 (metavolcanic rock) (*No recovery of Crystalline roc	ned. hard to leanic rock
GSI=60-90 WEATHERED ROCK ((Metavolcanic Rock)) REC=0% RQD=0% CRYSTALLINE ROCK Gray, slightly weathered to fresh, rot to hard, modclose to close-frad metavolcanic rock REC=85% RCD=49% GSI=50-95 42.7 (metavolcanic rock) (*No recovery of Crystalline roc	¦
(Metavolcanic Rock) REC=0% RQD=0% CRYSTALINE ROCK Gray, slightly weathered to fresh, in to hard, modclose to close-frad metavolcanic rock REC=85% REC=85% RQD=49% GSI=50-95 42.7 (metavolcanic rock) (*No recovery of Crystalline roc	
RQD=0% CRYSTALLINE ROCK Gray, slightly weathered to fresh, not hard, modclose to close-fract metavolcanic rock REC=85% RQD=49% GSI=50-95 42.7 (metavolcanic rock) (*No recovery of Crystalline rock) 37 1-40 9 due to core harrie malfa	
CRYSTALLINE ROCK Gray, slightly weathered to fresh, not to hard, modclose to close-frad metavolcanic rock REC=85% RQD=49% GSI=50-95 42.7 (metavolcanic rock) (*No recovery of Crystalline roc	
to hard, modclose to close-frad metavolcanic rock REC=85% RQD=49% GSI=50-95 42.7 (metavolcanic rock) (*No recovery of Crystalline roc	
REC=85% RQD=49% GSI=50-95 42.7 (metavolcanic rock) (*No recovery of Crystalline roc	
45 GSI=50-95 42.7 (metavolcanic rock) (*No recovery of Crystalline roc 37 1-40 9 due to core barrel malfi	
42.7 (metavolcanic rock) (*No recovery of Crystalline roc 37 1-40 9 due to core barrel malfi	
(metavolcanic rock) (*No recovery of Crystalline roc 37 1-40 9 due to core barrel malfi	
40 4 37 1-40 9 due to core barrel malfu	
	ock from alfunction.)
Boring Terminated at Elevation 3 Crystaline Rock (metavolcanic	38.9 ft in

GEOTECHNICAL BORING REPORT CORE LOG

									<u></u>	<u>Ui</u>	KE L	JG				
WBS	BP4.F	R008.1			TIP	SF-63	30129	C	OUNT	Y١	NASH			GEOLOGIST M. Daniels, GI	Γ; B. Worl	ley, PG
SITE	DESCR	IPTION	l Brid	lge No. 6	30129	on SF	R 1518 ov	er Fisl	hing C	r on	the Nash	Co/Halifax C	Co Line	e	GROUN	ND WTR (ft)
BOR	ING NO.	. B2-A			STA	TION	15+09			OF	FSET 7	ft LT		ALIGNMENT -L-	0 HR.	N/A
COLI	LAR ELI	EV . 79	9.8 ft		тот	AL DE	PTH 40	.9 ft		NO	RTHING	877,691		EASTING 2,371,853	24 HR.	N/A
DRILL	RIG/HA	MMER E	FF./DA	TE SUM	3123 CN	/IE-550)	< 86% 11/1	2/2021			1	DRILL METHO	D NW	V Casing W/SPT & Core HAM	VIER TYPE	Automatic
DRII	LER M	1 B Mc	nselev		STAI	RT DA	TE 03/2	2/23		CO	MP DAT	E 03/22/23		SURFACE WATER DEPTH 2	Off	
	E SIZE		, , , , , , , , , , , , , , , , , , ,		Ь—		N 30.0 f			-		- 00/22/20		OOR AGE WATER BEI III 2	.010	
	RUN			DRILL	RI	JN		STR	ATA	L						
ELEV (ft)	ELEV	DEPTH (ft)	RUN (ft)	RATE	REC. (ft) %	RQD (ft) %	SAMP. NO.	REC. (ft) %	RQD (ft) %	0			D	DESCRIPTION AND REMARKS		
	(ft)		(/	(Min/ft)	%	%		%	%	G	ELEV. (ft)					DEPTH (ft)
68.9	68.9	10.9	5.0	N=60/0.0	(1.7)	(0.8)		(0.0)	(0.0)	471	_ 68.9			Begin Coring @ 10.9 ft WEATHERED ROCK		10.9
		Ŧ		N=60/0.0 0:12/1.0 3:51/1.0 2:14/1.0 3:37/1.0 1:48/1.0	34%	16%		0%	0%		66.9			(metavolcanic rock)		
65	63.9	15.9		2:14/1.0 3:37/1.0				(1.7) 85%	(0.8) 40%		64.9	Gray, mod	d. weath	CRYSTALLINE ROCK hered to fresh, med. hard to hard, clos	e-fractured	I, <u>– 14.9</u>
	00.9	13.9	5.0	1:26/1.0	(1.2)	(0.0)		(0.0)	(0.0)		ļ '			metavolcanic rock GSI = 60-90		!
		t		0:40/1.0 0:38/1.0	24%	0%		070	070		<u> </u>			WEATHERED ROCK		'
60	58.9	20.9		3:25/1.0 1:52/1.0				(14.8)	(10.2)		60.1			(metavolcanic rock) CRYSTALLINE ROCK		 19.7
		-	5.0	1:41/1.0 1:32/1.0		(2.8) 56%		85%	59%		F	Gray, sligh		athered to fresh, med. hard to hard, molose-fractured, metavolcanic rock	odclose to	
55	:	‡		2:09/1.0	00%	30%					-		CI	GSI = 50-95		
33	53.9	25.9		2:35/1.0 1:41/1.0							<u> </u>					
		ł	5.0	2:40/1.0 2:00/1.0	(4.3) 86%	(3.7)					_					
50		+		3:26/1.0 5:58/1.0							-					
	48.9	30.9	5.0	7:08/1.0 8:01/1.0	(5.0)	(3.7)					F					
	:	‡	3.0	9:01/1.0							-					
45		‡ <u></u> .		8:24/1.0 7:14/1.0							_					
	43.9	35.9	5.0	12:10/1.0 2:43/1.0		(1.2)					- - 42.7					37.1
		ł		3:51/1.0 2:07/1.0	24%	24%					_	(*No recov	very of (Crystalline rock from 37.1-40.9 due to malfunction.)	core barre	·I
40	38.9	40.9		2:19/1.0 3:34/1.0							38.9			mailunction.)		40.9
	- 00.0	10.0		3.34/1.0						127	_ 00.0	Boring Term	inated a	at Elevation 38.9 ft in Crystaline Rock	(metavolca	
	:	‡												rock)		
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		Ŧ									F					
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B2-ABOX 1: 10.9 - 28.2 FEET



B2-ABOX 2: 28.2 - 37.1 FEET

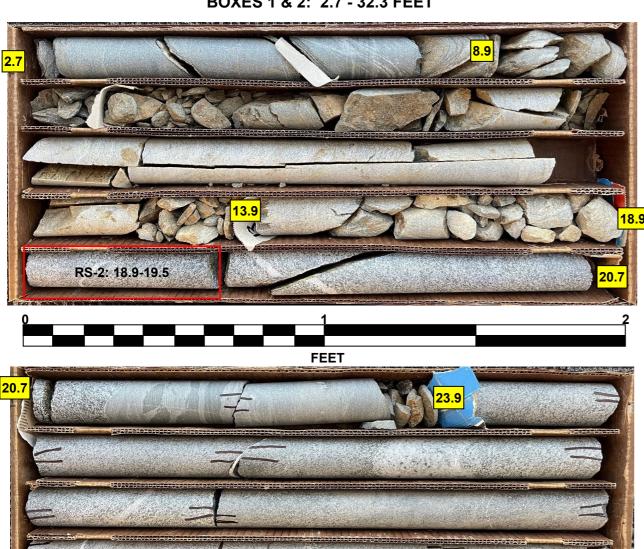


WBS BP4.R008.1 **TIP** SF-630129 COUNTY NASH GEOLOGIST M. Daniels, GIT; B. Worley, PG SITE DESCRIPTION Bridge No. 630129 on SR 1518 over Fishing Cr on the Nash Co/Halifax Co Line **GROUND WTR (ft)** BORING NO. B2-B STATION 14+96 OFFSET 7 ft RT ALIGNMENT -L-0 HR. TOTAL DEPTH 38.9 ft **NORTHING** 877,681 COLLAR ELEV. 78.5 ft **EASTING** 2,371,867 24 HR. N/A **DRILL RIG/HAMMER EFF./DATE** SUN3123 CWE-550X 86% 11/12/2021 DRILL METHOD NW Casing W/SPT & Core HAMMER TYPE Automatic DRILLER M. B. Moseley **START DATE** 03/21/23 **COMP. DATE** 03/21/23 SURFACE WATER DEPTH 4.4ft DRIVE DEPTH BLOW COUNT **BLOWS PER FOOT** SOIL AND ROCK DESCRIPTION (ft) 0.5ft 0.5ft 0.5ft 75 100 NO. ELEV. (ft) WATER SURFACE (03/21/23) 80 **GROUND SURFACE** 77.5 75.8 73.8 70.8 69.6 64.6 ALLUVIAL Brown, loose, Silty SAND (A-2-4) 75.9 2.6 60/0.1 CRYSTALLINE ROCK 75 60/0.1 (metavolcanic rock) Dark gray, slighty weathered, hard, close-fractured, hard, metavolcanic rock REC=45% 70 RQD=35% 8.9 GSI=60-85 WEATHERED ROCK (Metavolcanic Rock) REC=0% 65 CRYSTALLINE ROCK Dark gray, slightly weathered, close-fractured, hard, metavolcanic rock 60 REC=100% RS-2 RQD=73% GSI=70-75 WEATHERED ROCK (Metavolcanic Rock) 55 REC=0% . . . RQD=0% CRYSTALLINE ROCK . . . Dark gray, slightly weathered, very 50 close-fractured, med. hard, metavolcanic REC=100% ROD=0% GSI=45-50 45 WEATHERED ROCK . . . (Metavolcanic Rock) REC=0% RQD=0% CRYSTALLINE ROCK 40 Dark gray, slightly weathered to fresh, very close to wide-fractured, med. hard to very hard, metavolcanic rock GSI=90-95 Boring Terminated at Elevation 39.6 ft in Crystaline Rock (metavolcanic rock)

GEOTECHNICAL BORING REPORT CORE LOG

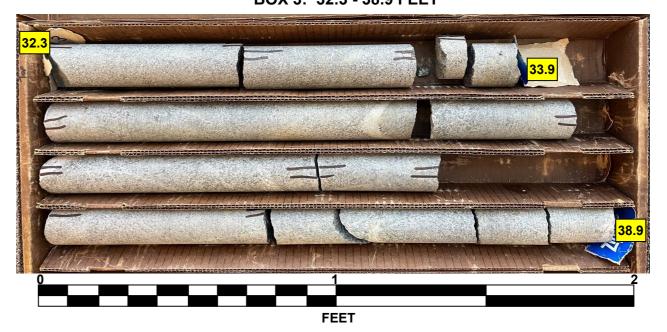
									<u></u>	<u>UI</u>	RE LOG		
WBS	BP4.F	R008.1			TIP	SF-63	30129	C	OUNT	Y١	ASH	GEOLOGIST M. Daniels, GIT;	B. Worley, PG
SITE	DESCR	RIPTION	I Brid	lge No. 6	30129	on SF	R 1518 ov	er Fisl	hing C	r on	the Nash Co/Halifax Co Line	•	GROUND WTR (ft)
BOR	ING NO	. B2-B	3		STA	TION	14+96			OF	FSET 7 ft RT	ALIGNMENT -L-	0 HR. N/A
COLI	LAR ELI	EV. 78	3.5 ft		тот	AL DE	PTH 38	.9 ft		NO	RTHING 877,681	EASTING 2,371,867	24 HR . N/A
DRILL	RIG/HA	MMER E	FF./DA	TE SUM	3123 CN	/E-550>	X 86% 11/1:	2/2021			DRILL METHOD NW	/Casing W/SPT & Core HAMM	ER TYPE Automatic
DRIL	LER N	1. B. Mc	seley		STAI	RT DA	TE 03/2	1/23		СО	MP. DATE 03/21/23	SURFACE WATER DEPTH 4.4	4ft
COR	E SIZE	NQ-2			TOTA	AL RU	N 36.2 f	t					
ELEV	RUN ELEV	DEPTH	RUN	DRILL	REC.	JN RQD	SAMP.	STR REC.	ROD	L	D	ECODIDITION AND DEMARKS	
(ft)	(ft)	(ft)	(ft)	RATE (Min/ft)	(ft) %	(ft) %	NO.	(ft) %	(ft) %	G	ELEV. (ft)	ESCRIPTION AND REMARKS	DEPTH (ft)
7 <u>5.</u> 8												Begin Coring @ 2.7 ft	
75	75.8 <u>-</u> 74.6 -	3:9	1.2 5.0	2:00/1.0 0:21/0.2	(0.9) 175%	(0.7) (58%	ļ	(0.9) 45%	(0.7) 35%		75.8 Dark gray, slighty wea 73.8	thered, hard, close-fractured, hard, me GSI = 60-85	tavolcanic rock 2.7
		<u> </u>	0.0	2:21/1.0 1:57/1.0	(1.2) 24%	(0.4)		(0.0)	(0.0)			WEATHERED ROCK (metavolcanic rock)	
70	69.6 -	8.9		2:21/1.0 1:57/1.0 1:34/1.0 1:45/1.0 3:26/1.0	2470	070		(1.2)	(0.4)			CRYSTALLINE ROCK	<u>7.7</u> 8.9
	3	1	5.0	1:22/1.0 1:59/1.0	(3.4) 68%	(0.0) 0%		(0.0)	(0.0)		Dark gray, slightly w	veathered, close-fractured, hard, metav GSI = 70-75	volcanic rock / 10.5
		-		2:14/1.0 2:39/1.0	0070	070		0%	0%			WEATHERED ROCK	
65	64.6 -	13.9	5.0	2:10/1.0	(1.4)	(0.0)		(3.4)	(0.0)		_64.6	(metavolcanic rock) CRYSTALLINE ROCK	<u></u>
		ĺ	3.0	1:00/1.0	(1.4) 28%	(0.0) 0%		(0.0)	(0.0)	1//	Dark gray, slightly wea	athered, very close-fractured, med. hard rock	d, metavolcanic
60	59.6 -	18.9		1:40/1.0				(19.5)	(17.3)		- - 61.0 - 7	GSI = 45-50 WEATHERED ROCK	
	39.0 -	10.9	5.0	1:11/1.0	(3.3)	(2.5)	RS-2	91%	81%			(metavolcanic rock)	i
		Ŧ		1:10/1.0 2:09/1.0	66%	50%						CRYSTALLINE ROCK eathered to fresh, very close to wide-fra	actured, med.
55	54.6 -	23.9	<u> </u>	1:45/1.0 1:33/1.0							- ha	rd to very hard, metavolcanic rock GSI = 90-95	
		‡	5.0	1:52/1.0 2:07/1.0	(4.9) 98%	(4.9) 98%					- -		
50		‡		2:41/1.0 1:11/1.0							- -		
30	49.6 -	28.9	5.0	2:02/1.0 1:52/1.0	(5.0)	(5.0)					- -		
	:	‡		2:08/1.0 1:35/1.0	100%	100%					• •		
45	44.6 -	33.9		3:02/1.0 1:43/1.0							- -		
	:	‡	5.0	2:11/1.0 2:02/1.0	(4.9) 98%	(4.9) 98%					- -		
40		‡		2:22/1.0 2:14/1.0							<u>-</u> -		
40	39.6 -	38.9		2:07/1.0		_				SA	- 39.6 Boring Terminated a	at Elevation 39.6 ft in Crystaline Rock (38.9 metavolcanic
		<u> </u>									- -	rock)	
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B2-BBOXES 1 & 2: 2.7 - 32.3 FEET



FEET

B2-BBOX 3: 32.3 - 38.9 FEET



	<u>_</u>	ORE LOG		
NBS BP4.R008.1	TIP SF-630129 COUNT	Y NASH GEOLOGIST M. Daniels, GI	Γ; B. Worley, PG	
SITE DESCRIPTION Bridge No. 63			GROUND WTR (ff)	
BORING NO. EB2-A	STATION 15+82	OFFSET 13 ft LT ALIGNMENT -L-	0 HR . Dry	
COLLAR ELEV. 104.8 ft	TOTAL DEPTH 22.3 ft	NORTHING 877,764 EASTING 2,371,856	24 HR. FIAD	
DRILL RIG/HAMMER EFF./DATE SUM3	3123 CME-550X 86% 11/12/2021	DRILL METHOD H.S. Augers HAMI	IMER TYPE Automatic	
DRILLER M. B. Moseley	START DATE 03/20/23	COMP. DATE 03/20/23 SURFACE WATER DEPTH N	N/A	
ELEV (ft) DEPTH BLOW COUNT (ft) 0.5ft 0.5ft 0.5ft 0.5ft		SAMP. L O SOIL AND ROCK DES	SCRIPTION DEPTH	
105 Control of the		O SOIL AND ROCK DES	PACE (CINKMENT (SAND (A-2-6)) 2 To med. dense, ND (A-2-6) ROCK (Ock) h Standard Elevation 82.5 ft	

GEOTECHNICAL BORING REPORT BORE LOG

COLLAR ELEV. 104.7 ft TOTAL DEPTH 25.2 ft NORTHING 877,754 EASTING 2,371,875 24 HR. FIAE	BORING COLLAI DRILLE ELEV (ft) 105	ESCRI G NO. AR ELE RIG/HAW ER M. DRIVE ELEV (ft)	EB2-IV. 10 IMER EI B. Mo DEPTH (ft)	B 4.7 ft FF/DAT seley BLO 0.5ft	TE SUM W COUN 0.5ft	63012 ST TO W3123 (ST NT 0.5ft	29 on SR 1518 of TATION 15+73 DTAL DEPTH 2 CME-550X 86% 11. FART DATE 03. BLC	5.2 ft 12/2021 20/23 WS PER FOOT	OFFSET NORTHING COMP. DA	7 ft RT 3 877,7 DRILL I TE 03/ SAMP.	754 METHO 20/23	D H.S	ALIGNMENT -L- EASTING 2,371,875 S. Augers HAMIN SURFACE WATER DEPTH N SOIL AND ROCK DES	GROUN 0 HR. 24 HR. MER TYPE	D WTR (ft) 21.7 FIAD
BORING NO. EB2-B STATION 15+73 OFFSET 7 ft RT ALIGNMENT -L- 0 HR. 21.7 COLLAR ELEV. 104.7 ft TOTAL DEPTH 25.2 ft NORTHING 877,754 EASTING 2,371,875 24 HR. FIAL DRILL RIGHAMMER EFF./DATE SUM3123 CM=550X 88% 11/12/2021 DRILL METHOD H.S. Auges HAMMER TYPE Autoresic DRILLER M. B. Moseley START DATE 03/20/23 COMP. DATE 03/20/23 SURFACE WATER DEPTH N/A ELEV DRIVE DRIVE DRIVE (ft) 0.5ft 0.5f	BORING COLLAI DRILL R DRILLE ELEV (ft) 105	G NO. AR ELE RIG/HAN ER M. DRIVE ELEV (ff) 1100.6	EB2-I	B 4.7 ft FF/DAT seley BLO 0.5ft	TE SUM W COUN 0.5ft	ST TO M3123 ST NT 0.5ft	TATION 15+73 OTAL DEPTH 2 CME-550X 86% 11. TART DATE 03. BLC	5.2 ft 112/2021 120/23 DWS PER FOOT	OFFSET NORTHING	7 ft RT 3 877,7 DRILL I TE 03/ SAMP.	754 METHO 20/23	D H.S	ALIGNMENT -L- EASTING 2,371,875 Augers HAMIN SURFACE WATER DEPTH N SOIL AND ROCK DES	0 HR. 24 HR. //ER TYPE	21.7 FIAD Automatic
COLLAR ELEV. 104.7 ft TOTAL DEPTH 25.2 ft NORTHING 877,754 EASTING 2,371,875 24 HR. FIAL	DRILLE ELEV (ft) 105	R ELE RIG/HAN ER M. DRIVE ELEV (ft) 100.6	. B. Mo DEPTH (ft) - 4.1 - 9.1	4.7 ft FF/DAT seley BLO 0.5ft	0.5ft 0	TO V/3123 0 ST NT 0.5ft	OTAL DEPTH 2 CME-550X 86% 11 CART DATE 03. BLC	12/2021 20/23 DWS PER FOOT	NORTHING	9 877,7 DRILL I TE 03/	VIETHO 220/23 ▼/	1 L	EASTING 2,371,875 Augers HAMIN SURFACE WATER DEPTH N SOIL AND ROCK DES	24 HR. MER TYPE	FIAD Automatic
DRILL RIGH-NAMMER EFF/DATE SUM3122 CME-550X 86% 11/1/22/021 DRILL METHOD H.S. Augers HAMMER TYPE Autoriatic	DRILL RI DRILLE ELEV (ft) E 105	RIG/HAN ER M. DRIVE ELEV (ft) 100.6	MER EI B. Mo DEPTH (ft)	seley BLO 0.5ft	0.5ft 0	VI3123 (ST NT 0.5ft	CME-550X 86% 11. CART DATE 03. BLC	12/2021 20/23 DWS PER FOOT	COMP. DA	TE 03/	VIETHO 220/23 ▼/	1 L	SURFACE WATER DEPTH N SOIL AND ROCK DES	MER TYPE	Automatic
DRILLER M. B. Moseley	DRILLE ELEV DE 105 100 100	DRIVE ELEV (ft)	B. Mo DEPTH (ft)	BLO 0.5ft	0.5ft 0	NT 0.5ft	PART DATE 03	20/23 WS PER FOOT	Γ	TE 03/	20/23	1 L	SURFACE WATER DEPTH N	/A	
DRIVE (ft) DRI	105 D E	DRIVE ELEV (ft)	DEPTH (ft)	BLO 0.5ft	0.5ft	NT 0.5ft	BLC	WS PER FOOT	Ţ	SAMP.	V /	0	SOIL AND ROCK DES		DEPTH (ft)
Columb C	105 100 1	ELEV (ft)	(ft)	0.5ft 3	0.5ft	0.5ft	1				MOI	0		CRIPTION	DEPTH (ft)
105	105	100.6 95.6	- - - - - - - - - - - - - - - - - -	3	2		0 25	50	75 100	NO.	МОІ				DEPTH (ft)
100	100 1	95.6	- - - - - 9.1 - -			2									
100.6	100	95.6	- - - - - 9.1 - -			2					1				
100 100.6 4.1 3 2 2 2 95.6 9.1 1 1 3 90 90.6 14.1 3 2 4 99.0 6 14.1 3 2 4 90 90.0 14.1 3 2 4 90 90.0 14.1 3 2 4 90 90.0 14.1 3 2 4 90 90.0 14.1 3 2 4 90 90.0 14.1 3 2 4 90 90.0 14.1 3 2 4 90 90.0 14.1 3 2 4 90 90.0 14.1 3 2 4 90 90.0 14.1 3 2 4 90 90.0 14.1 3 2 4 90 90.0 14.1 3 2 4 90 90.0 14.1 3 2 4 90 90.0 14.1 3 2 4 90 90.0 14.1 3 2 4 90.0 14.1 3 2 4 90.0 14.1 3 2 4 90.0 14.1 3 2 4 90.0	100	95.6	- - - - - 9.1 - -			2									0.0
100	100	95.6	- - - - - 9.1 - -			2			.					IKMENT	
95 95.6 9.1 1 1 3 97.7 RESIDUAL Red, med. stiff, Silty CLAY (A-7) 90 90.6 14.1 3 2 4 6	100	95.6	- - - - - 9.1 - -			2			.					LAY (A-7)	
95.6 9.1 1 1 3	95	+	- - -	1			• 4				D				
95.6 9.1 1 1 3 3 4	95	+	- - -	1		- 1									
90 90.6 14.1 3 2 4 66 WW 87.7 Orange, med. stiff, saprolitic, Sandy CLAY (A-6) 85 85.6 19.1 68 32/0.1 100/0.6 80 80.6 24.1 100/0.4 79.5 25.2 100/0.4 (metavolcanic rock) CRYSTALLINE ROCK (metavolcanic rock) Boring Terminated with Standard Penetration Test Refusal at Elevation 79.5 ft		90.6	- - - - 14.1	'	1 1				.		_	1			
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- CRYSTALLINE ROCK (metavolcanic rock) Boring Terminated with Standard Penetration Test Refusal at Elevation 79.5 ft				100/0.4									70.5		05.0
Boring Terminated with Standard Penetration Test Refusal at Elevation 79.5 ft		79.5				\neg			100/0.4	5		-	CRYSTALLINE F		25.2

SITE PHOTOGRAPHS

Bridge No. 630129 on SR1518 over Fishing Creek, on the Nash/Halifax Co. Line



