

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	38476.1.1 B-4701	1	17

**STATE OF NORTH CAROLINA**  
**DEPARTMENT OF TRANSPORTATION**  
**DIVISION OF HIGHWAYS**  
**GEOTECHNICAL ENGINEERING UNIT**

**STRUCTURE**  
**SUBSURFACE INVESTIGATION**

PROJ. REFERENCE NO. 38476.1.1 B-4701 F.A. PROJ. BRZ-1341(2)  
COUNTY ALLEGHANY  
PROJECT DESCRIPTION BRIDGE NO. 15 ON SR 1341 OVER ELK CREEK

SITE DESCRIPTION \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

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**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 1919 250-4088. NEITHER THE SUBSURFACE PLANS AND REPORTS, NOR THE FIELD BORING LOGS, ROCK CORES, OR SOIL TEST DATA ARE 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 OBSERVED WATER LEVELS OR SOIL MOISTURE CONDITIONS INDICATED IN THE SUBSURFACE INVESTIGATIONS ARE AS RECORDED AT THE TIME OF THE INVESTIGATION. THESE WATER LEVELS OR SOIL MOISTURE CONDITIONS MAY 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 DOES NOT WARRANT OR GUARANTEE THE SUFFICIENCY OR ACCURACY OF THE INVESTIGATION MADE, NOR THE INTERPRETATIONS MADE, OR OPINION OF THE DEPARTMENT AS TO THE TYPE OF MATERIALS AND CONDITIONS TO BE ENCOUNTERED. THE BIDDER OR CONTRACTOR IS CAUTIONED TO MAKE SUCH INDEPENDENT SUBSURFACE INVESTIGATIONS AS HE DEEMS NECESSARY TO SATISFY HIMSELF AS TO CONDITIONS TO BE ENCOUNTERED ON THIS 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.

**PROJECT: 38476.1.1 ID: B-4701**

PERSONNEL

D.C. ELLIOTT

D.O. CHEEK

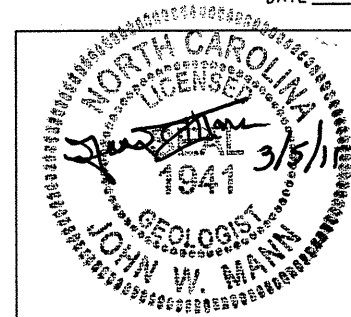
C.J. COFFEY

INVESTIGATED BY J.W. MANN

CHECKED BY J.L. PILIPCHUK

SUBMITTED BY J.L. PILIPCHUK

DATE MARCH 2013



DRAWN BY: J.T. WILLIAMS, J.W. MANN

NOTE - THE INFORMATION CONTAINED HEREIN IS NOT IMPLIED OR GUARANTEED BY THE N. C. DEPARTMENT OF TRANSPORTATION AS BEING ACCURATE NOR IS IT CONSIDERED TO BE PART OF THE PLANS, SPECIFICATIONS, OR CONTRACT FOR THE PROJECT.

NOTE - 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.

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
GEOTECHNICAL ENGINEERING UNIT

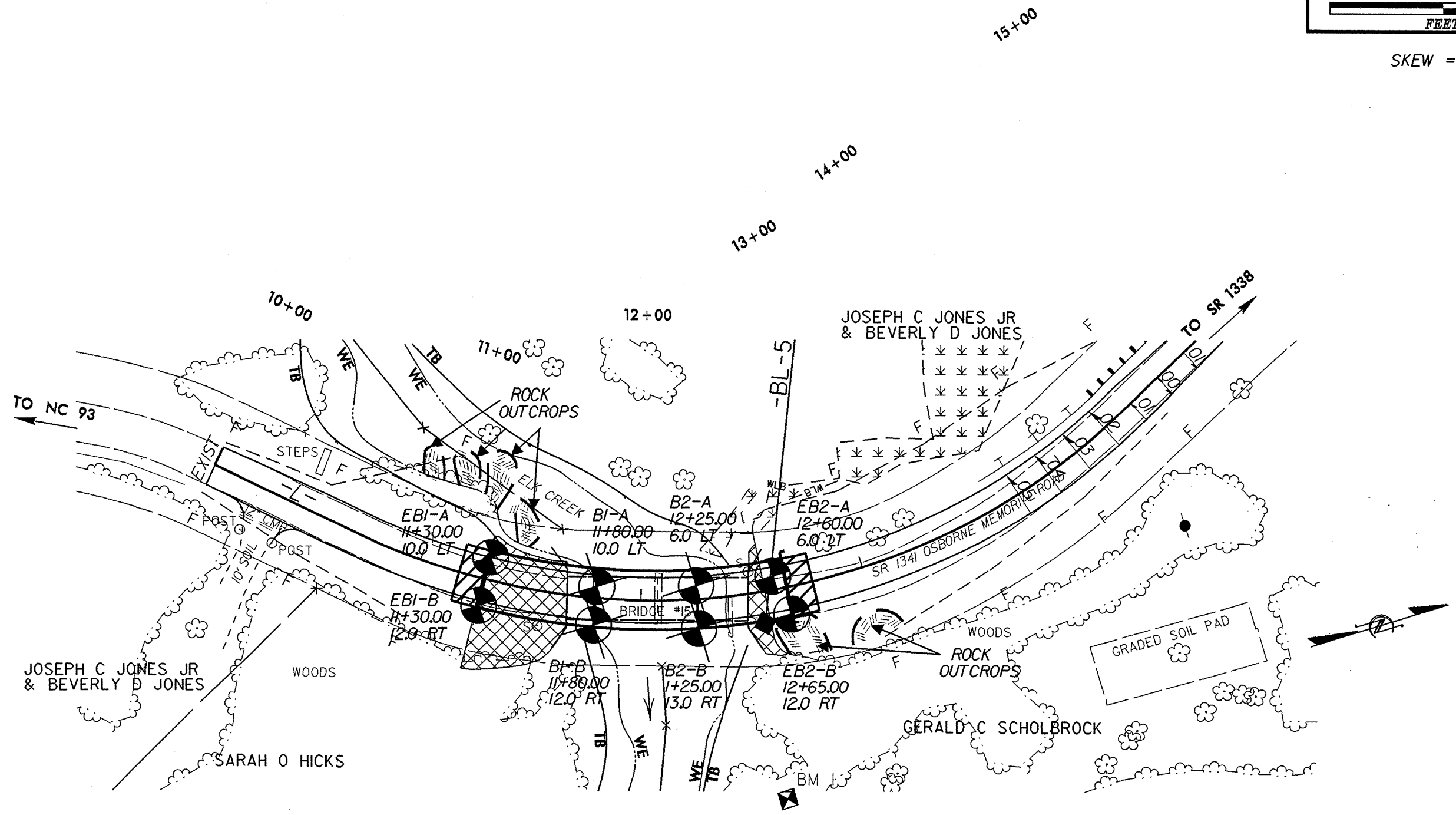
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## SUBSURFACE INVESTIGATION

### SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

SOIL DESCRIPTION	GRADATION	ROCK DESCRIPTION	TERMS AND DEFINITIONS
SOIL IS CONSIDERED TO BE THE 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 ACCORDING TO STANDARD PENETRATION TEST (AASHTO T206, ASTM D-1586). SOIL CLASSIFICATION IS BASED ON THE AASHTO SYSTEM. BASIC DESCRIPTIONS GENERALLY SHALL INCLUDE: CONSISTENCY, COLOR, TEXTURE, MOISTURE, AASHTO CLASSIFICATION, AND OTHER PERTINENT FACTORS SUCH AS MINERALOGICAL COMPOSITION, ANGULARITY, STRUCTURE, PLASTICITY, ETC. EXAMPLE: <i>VERY STIFF, GRAY, SILTY CLAY, MOST WITH INTERBEDDED FINE SAND LAYERS, HIGHLY PLASTIC, A-7-6</i>	WELL GRADED - INDICATES A GOOD REPRESENTATION OF PARTICLE SIZES FROM FINE TO COARSE. UNIFORM - INDICATES THAT SOIL PARTICLES ARE ALL APPROXIMATELY THE SAME SIZE. (ALSO POORLY GRADED) GAP-GRADED - INDICATES A MIXTURE OF UNIFORM PARTICLES OF TWO OR MORE SIZES. <b>ANGULARITY OF GRAINS</b> THE ANGULARITY OR ROUNDNESS OF SOIL GRAINS IS DESIGNATED BY THE TERMS: ANGULAR, SUBANGULAR, SUBROUNDED, OR ROUNDED.	HARD ROCK IS NON-COASTAL PLAIN MATERIAL THAT IF TESTED, WOULD YIELD SPT REFUSAL, 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 EQUAL 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: NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT N VALUES > 100 BLOWS PER FOOT IF TESTED. FINE TO COARSE GRAIN IGNEOUS AND METAMORPHIC ROCK THAT WOULD YIELD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES GRANITE, GNEISS, GABBRO, SCHIST, ETC. FINE TO COARSE GRAIN METAMORPHIC AND NON-COASTAL PLAIN SEDIMENTARY ROCK THAT WOULD YIELD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES PHYLLITE, SLATE, SANDSTONE, ETC. COASTAL PLAIN SEDIMENTS CEMENTED INTO ROCK, BUT MAY NOT YIELD SPT REFUSAL. ROCK TYPE INCLUDES LIMESTONE, SANDSTONE, CEMENTED SHELL BEDS, ETC.	<b>ALLUVIUM (ALLUV.)</b> - SOILS THAT HAVE BEEN TRANSPORTED BY WATER. <b>AQUIFER</b> - A WATER BEARING FORMATION OR STRATA. <b>ARENACEOUS</b> - APPLIED TO ROCKS THAT HAVE BEEN DERIVED FROM SAND OR THAT CONTAIN SAND. <b>ARGILLACEOUS</b> - APPLIED TO ALL ROCKS OR SUBSTANCES COMPOSED OF CLAY MINERALS, OR HAVING A NOTABLE PROPORTION OF CLAY IN THEIR COMPOSITION, AS SHALE, SLATE, ETC. <b>ARTESIAN</b> - 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. <b>CALCAREOUS (CALC.)</b> - SOILS THAT CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE. <b>COLLUVIUM</b> - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM OF SLOPE. <b>CORE RECOVERY (REC.)</b> - TOTAL LENGTH OF ALL MATERIAL RECOVERED IN THE CORE BARREL DIVIDED BY TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE. <b>DIKE</b> - A TABULAR BODY OF IGNEOUS ROCK THAT CUTS ACROSS THE STRUCTURE OF ADJACENT ROCKS OR CUTS MASSIVE ROCK. <b>DIP</b> - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE HORIZONTAL. <b>DIP DIRECTION (DIP AZIMUTH)</b> - THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF THE LINE OF DIP, MEASURED CLOCKWISE FROM NORTH. <b>FAULT</b> - A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE. <b>FISSILE</b> - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES. <b>FLOAT</b> - ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLODGED FROM PARENT MATERIAL. <b>FLOOD PLAIN (FP)</b> - LAND BORDERING A STREAM, BUILT OF SEDIMENTS DEPOSITED BY THE STREAM. <b>FORMATION (FM)</b> - A MAPPABLE GEOLOGIC UNIT THAT CAN BE RECOGNIZED AND TRACED IN THE FIELD. <b>JOINT</b> - FRACTURE IN ROCK ALONG WHICH NO APPRECIABLE MOVEMENT HAS OCCURRED. <b>LEDGE</b> - A SHELF-LIKE RIDGE OR PROJECTION OF ROCK WHOSE THICKNESS IS SMALL COMPARED TO ITS LATERAL EXTENT. <b>LENS</b> - A BODY OF SOIL OR ROCK THAT THINS OUT IN ONE OR MORE DIRECTIONS. <b>MOTTLED (MOT.)</b> - IRREGULARLY MARKED WITH SPOTS OF DIFFERENT COLORS, MOTTLING IN SOILS USUALLY INDICATES POOR AERATION AND LACK OF GOOD DRAINAGE. <b>PERCHED WATER</b> - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE OF AN INTERVENING IMPERVIOUS STRATUM. <b>RESIDUAL (RES.) SOIL</b> - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK. <b>ROCK QUALITY DESIGNATION (RQD)</b> - 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. <b>SAPROLITE (SAP.)</b> - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT ROCK. <b>SILL</b> - AN INTRUSIVE BODY OF IGNEOUS ROCK OF APPROXIMATELY UNIFORM THICKNESS AND RELATIVELY THIN COMPARED WITH ITS LATERAL EXTENT, THAT HAS BEEN EMPLACED PARALLEL TO THE BEDDING OR SCHISTOSITY OF THE INTRUDED ROCKS. <b>SLICKENSIDE</b> - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT OR SLIP PLANE. <b>STANDARD PENETRATION TEST (PENETRATION RESISTANCE) (SPT)</b> - NUMBER OF BLOWS IN OR BPF OF 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. <b>STRATA CORE RECOVERY (SREC.)</b> - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE. <b>STRATA ROCK QUALITY DESIGNATION (SROD)</b> - 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. <b>TOPSOIL (TS.)</b> - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.
<b>SOIL LEGEND AND AASHTO CLASSIFICATION</b>	<b>MINERALOGICAL COMPOSITION</b>	<b>WEATHERING</b>	
GENERAL CLASS. GRANULAR MATERIALS (< 35% PASSING #200) SILT-CLAY MATERIALS (> 35% PASSING #200) ORGANIC MATERIALS	MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICAL, TALC, KAOLIN, ETC. ARE USED IN DESCRIPTIONS WHENEVER THEY ARE CONSIDERED OF SIGNIFICANCE.	FRESH ROCK FRESH, CRYSTALS BRIGHT, FEW JOINTS MAY SHOW SLIGHT STAINING, ROCK RINGS UNDER HAMMER IF CRYSTALLINE. VERY SLIGHT (V SLI.) ROCK GENERALLY FRESH, JOINTS STAINED, SOME JOINTS MAY SHOW THIN CLAY COATINGS IF OPEN, CRYSTALS ON A BROKEN SPECIMEN FACE SHINE BRIGHTLY, ROCK RINGS UNDER HAMMER BLOWS IF OF A CRYSTALLINE NATURE. SLIGHT (SLI.) ROCK GENERALLY FRESH, JOINTS STAINED AND DISCOLORATION EXTENDS INTO ROCK UP TO 1 INCH. OPEN JOINTS MAY CONTAIN CLAY. IN GRANITOID ROCKS SOME OCCASIONAL FELDSPAR CRYSTALS ARE DULL AND DISCOLORED, CRYSTALLINE ROCKS RING UNDER HAMMER BLOWS. MODERATE (MOD.) SIGNIFICANT PORTIONS OF ROCK SHOW DISCOLORATION AND WEATHERING EFFECTS. IN GRANITOID ROCKS, MOST FELDSPARS ARE DULL AND DISCOLORED, SOME SHOW CLAY. ROCK HAS DULL SOUND UNDER HAMMER BLOWS AND SHOWS SIGNIFICANT LOSS OF STRENGTH AS COMPARED WITH FRESH ROCK. MODERATELY SEVERE (MOD. SEV.) ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. IN GRANITOID ROCKS, ALL FELDSPARS DULL 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. IF TESTED, WOULD YIELD SPT REFUSAL. SEVERE (SEV.) ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED, ROCK FABRIC CLEAR AND EVIDENT BUT REDUCED IN STRENGTH TO STRONG SOIL. IN GRANITOID ROCKS ALL FELDSPARS ARE KAOLINIZED TO SOME EXTENT. SOME FRAGMENTS OF STRONG ROCK USUALLY REMAIN. IF TESTED, YIELDS SPT N VALUES > 100 BPF. VERY SEVERE (V SEV.) ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED, ROCK FABRIC ELEMENTS ARE DISCERNIBLE BUT THE MASS IS EFFECTIVELY REDUCED TO SOIL STATUS, WITH ONLY FRAGMENTS OF STRONG ROCK REMAINING. SAPROLITE IS AN EXAMPLE OF ROCK WEATHERED TO A DEGREE SUCH THAT ONLY MINOR VESTIGES OF THE ORIGINAL ROCK FABRIC REMAIN. IF TESTED, YIELDS SPT N VALUES < 100 BPF. 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.	
GROUP CLASS. A-1, A-3, A-2, A-4, A-5, A-6, A-7, A-1, A-2, A-3, A-4, A-5, A-6, A-7	<b>COMPRESSIBILITY</b> SLIGHTLY COMPRESSIBLE LIQUID LIMIT LESS THAN 31 MODERATELY COMPRESSIBLE LIQUID LIMIT EQUAL TO 31-50 HIGHLY COMPRESSIBLE LIQUID LIMIT GREATER THAN 50		
SYMBOL	<b>PERCENTAGE OF MATERIAL</b>		
% PASSING #10, #40, #200	ORGANIC MATERIAL GRANULAR SOILS SILT-CLAY SOILS OTHER MATERIAL		
LIQUID LIMIT PLASTIC INDEX	TRACE OF ORGANIC MATTER 2-3% LITTLE ORGANIC MATTER 3-5% MODERATELY ORGANIC 5-10% HIGHLY ORGANIC >10%		
GROUP INDEX			
USUAL TYPES OF MAJOR MATERIALS			
GEN. RATING AS A SUBGRADE			
PI OF A-7-5 SUBGROUP IS ≤ LL - 30; PI OF A-7-6 SUBGROUP IS > LL - 30			
<b>CONSISTENCY OR DENSENESS</b>	<b>MISCELLANEOUS SYMBOLS</b>	<b>GROUND WATER</b>	
PRIMARY SOIL TYPE COMPACTNESS OR CONSISTENCY RANGE OF STANDARD PENETRATION RESISTANCE (N-VALUE) RANGE OF UNCONFINED COMPRESSIVE STRENGTH (TONS/FT <sup>2</sup> )	ROADWAY EMBANKMENT (RE) WITH SOIL DESCRIPTION SOIL SYMBOL ARTIFICIAL FILL (AF) OTHER THAN ROADWAY EMBANKMENT INFERRED SOIL BOUNDARY INFERRED ROCK LINE ALLUVIAL SOIL BOUNDARY DIP & DIP DIRECTION OF ROCK STRUCTURES	WATER LEVEL IN BORE HOLE IMMEDIATELY AFTER DRILLING STATIC WATER LEVEL AFTER 24 HOURS PERCHED WATER, SATURATED ZONE, OR WATER BEARING STRATA SPRING OR SEEP	
GENERALLY GRANULAR MATERIAL (NON-COHESIVE) VERY LOOSE LOOSE MEDIUM DENSE DENSE VERY DENSE	SPT TEST BORING AUGER BORING CORE BORING MONITORING WELL PIEZOMETER INSTALLATION SLOPE INDICATOR INSTALLATION CONE PENETROMETER TEST SOUNDING ROD		
GENERALLY SILT-CLAY MATERIAL (COHESIVE) VERY SOFT SOFT MEDIUM STIFF STIFF VERY STIFF HARD			
<b>TEXTURE OR GRAIN SIZE</b>	<b>ABBREVIATIONS</b>	<b>ROCK HARDNESS</b>	
U.S. STD. SIEVE SIZE OPENING (MM) 4, 10, 40, 60, 200, 270	AR - AUGER REFUSAL BT - BORING TERMINATED CL - CLAY CPT - CONE PENETRATION TEST CSE - COARSE DMT - DILATOMETER TEST DPT - DYNAMIC PENETRATION TEST e - VOID RATIO F - FINE FOSS. - FOSSILIFEROUS FRAC. - FRACTURED, FRACTURES FRAGS. - FRAGMENTS HL - HIGHLY MED. - MEDIUM MICAL - MICACEOUS MOD. - MODERATELY NP - NON PLASTIC ORG. - ORGANIC PMT - PRESSUREMETER TEST SAP. - SAPROLITIC SD. - SAND, SANDY SL. - SILT, SILTY SLI. - SLIGHTLY TCR - TRICONE REFUSAL w - MOISTURE CONTENT v - VERY VST - VANE SHEAR TEST WEA. - WEATHERED w - UNIT WEIGHT w <sub>d</sub> - DRY UNIT WEIGHT	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 TO DETACH HAND SPECIMEN. MODERATELY HARD CAN BE SCRATCHED BY KNIFE OR PICK, GOUGES OR GROOVES TO 0.25 INCHES DEEP CAN BE EXCAVATED BY HARD BLOW OF A GEOLOGIST'S PICK. HAND SPECIMENS CAN BE DETACHED BY MODERATE BLOWS. MEDIUM HARD 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 1 INCH MAXIMUM SIZE BY HARD BLOWS OF THE POINT OF A GEOLOGIST'S PICK. 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 PIECES CAN BE BROKEN BY FINGER PRESSURE. VERY SOFT CAN BE CARVED WITH KNIFE. CAN BE EXCAVATED READILY WITH POINT OF PICK. PIECES 1 INCH OR MORE IN THICKNESS CAN BE BROKEN BY FINGER PRESSURE. CAN BE SCRATCHED READILY BY FINGER NAIL.	<b>SAPROLITE (SAP.)</b> - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT ROCK. <b>SILL</b> - AN INTRUSIVE BODY OF IGNEOUS ROCK OF APPROXIMATELY UNIFORM THICKNESS AND RELATIVELY THIN COMPARED WITH ITS LATERAL EXTENT, THAT HAS BEEN EMPLACED PARALLEL TO THE BEDDING OR SCHISTOSITY OF THE INTRUDED ROCKS. <b>SLICKENSIDE</b> - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT OR SLIP PLANE. <b>STANDARD PENETRATION TEST (PENETRATION RESISTANCE) (SPT)</b> - NUMBER OF BLOWS IN OR BPF OF 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. <b>STRATA CORE RECOVERY (SREC.)</b> - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE. <b>STRATA ROCK QUALITY DESIGNATION (SROD)</b> - 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. <b>TOPSOIL (TS.)</b> - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.
BOULDER (BLDR.) COBBLE (COB.) GRAVEL (GR.) COARSE SAND (CSE, SD.) FINE SAND (F SD.) SILT (SL.) CLAY (CL.)			
GRAIN SIZE MM 305, 75, 2.0, 0.25, 0.05, 0.005			
<b>SOIL MOISTURE - CORRELATION OF TERMS</b>	<b>EQUIPMENT USED ON SUBJECT PROJECT</b>	<b>FRACTURE SPACING</b>	<b>BEDDING</b>
SOIL MOISTURE SCALE (ATTERBERG LIMITS) FIELD MOISTURE DESCRIPTION GUIDE FOR FIELD MOISTURE DESCRIPTION	DRILL UNITS: MOBILE B- BK-51 CME-45C CME-550 PORTABLE HOIST	TERM SPACING VERY WIDE MORE THAN 10 FEET WIDE 3 TO 10 FEET MODERATELY CLOSE 1 TO 3 FEET CLOSE 0.16 TO 1 FEET VERY CLOSE LESS THAN 0.16 FEET	TERM THICKNESS VERY THICKLY BEDDED > 4 FEET THICKLY BEDDED 1.5 - 4 FEET THINLY BEDDED 0.16 - 1.5 FEET VERY THINLY BEDDED 0.03 - 0.16 FEET THICKLY LAMINATED 0.008 - 0.03 FEET THINLY LAMINATED < 0.008 FEET
LL LIQUID LIMIT - SATURATED - (SAT.) USUALLY LIQUID; VERY WET, USUALLY FROM BELOW THE GROUND WATER TABLE	ADVANCING TOOLS: CLAY BITS 6" CONTINUOUS FLIGHT AUGER 8" HOLLOW AUGERS HARD FACED FINGER BITS TUNG-CARBIDE INSERTS CASING w/ ADVANCER TRICONE STEEL TEETH TRICONE TUNG-CARB. CORE BIT		
PLASTIC RANGE (PI) PLASTIC LIMIT - WET - (W) SEMISOLID; REQUIRES DRYING TO ATTAIN OPTIMUM MOISTURE	HAMMER TYPE: AUTOMATIC MANUAL CORE SIZE: B N XL H HAND TOOLS: POST HOLE DIGGER HAND AUGER SOUNDING ROD VANE SHEAR TEST		
OM OPTIMUM MOISTURE - MOIST - (M) SOLID; AT OR NEAR OPTIMUM MOISTURE			
SL SHRINKAGE LIMIT - DRY - (D) REQUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE			
<b>PLASTICITY</b>			
NONPLASTIC LOW PLASTICITY MED. PLASTICITY HIGH PLASTICITY			
<b>COLOR</b>			
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.			
		<b>INDURATION</b>	
		FOR SEDIMENTARY ROCKS, INDURATION IS THE HARDENING OF THE MATERIAL BY CEMENTING, HEAT, PRESSURE, ETC. FRIABLE RUBBING WITH FINGER FREES NUMEROUS GRAINS; GENTLE BLOW BY HAMMER DISINTEGRATES SAMPLE. MODERATELY INDURATED GRAINS CAN BE SEPARATED FROM SAMPLE WITH STEEL PROBE; BREAKS EASILY WHEN HIT WITH HAMMER. INDURATED GRAINS ARE DIFFICULT TO SEPARATE WITH STEEL PROBE; DIFFICULT TO BREAK WITH HAMMER. EXTREMELY INDURATED SHARP HAMMER BLOWS REQUIRED TO BREAK SAMPLE; SAMPLE BREAKS ACROSS GRAINS.	
			<b>NOTES:</b> BENCH MARK: RR SPIKE IN BASE OF 16' OAK TREE, -L- STA. 12+51.79 92.92' RT ELEVATION: 2469.29 FT.

SKEW = 90°



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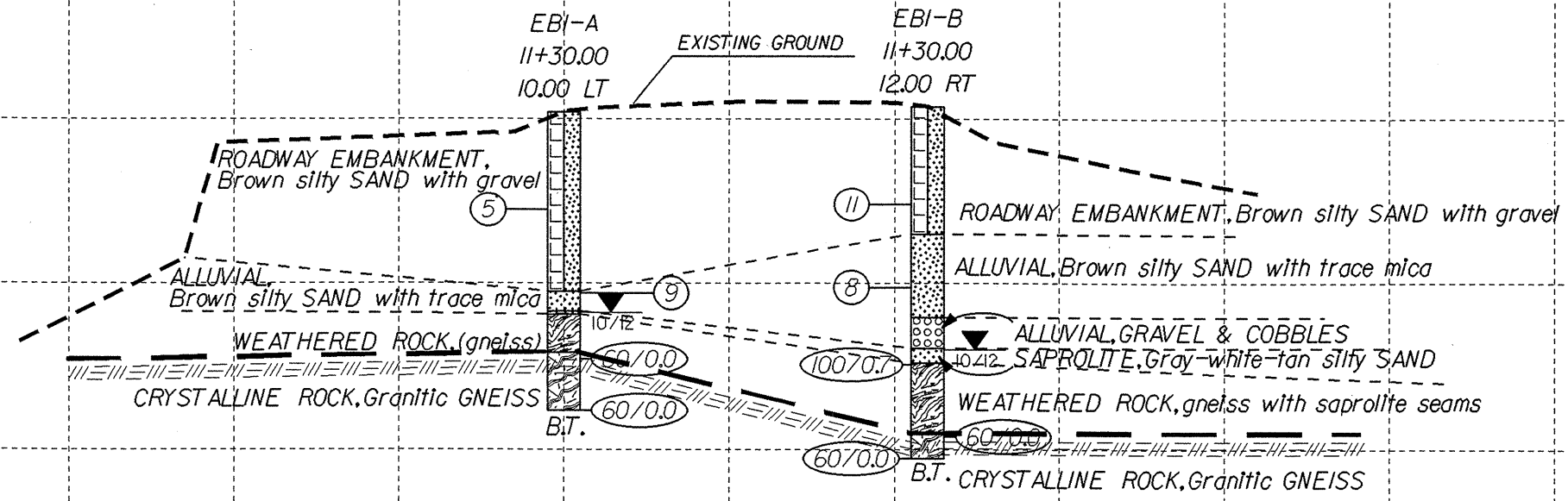
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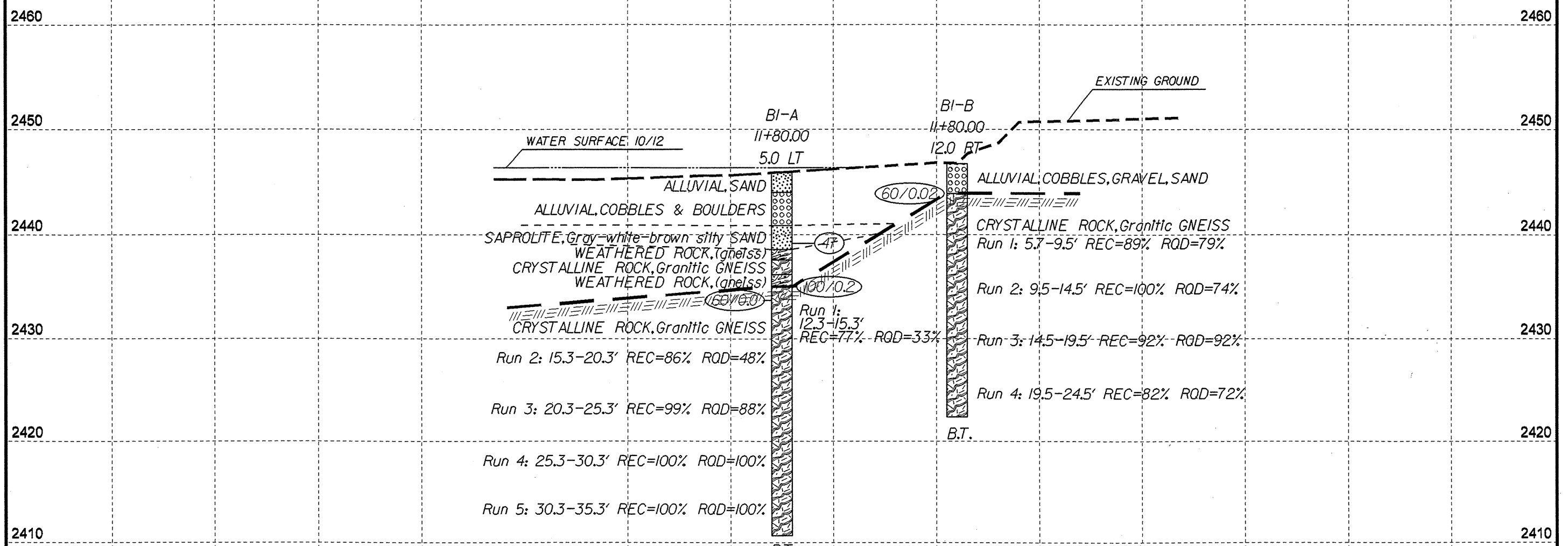
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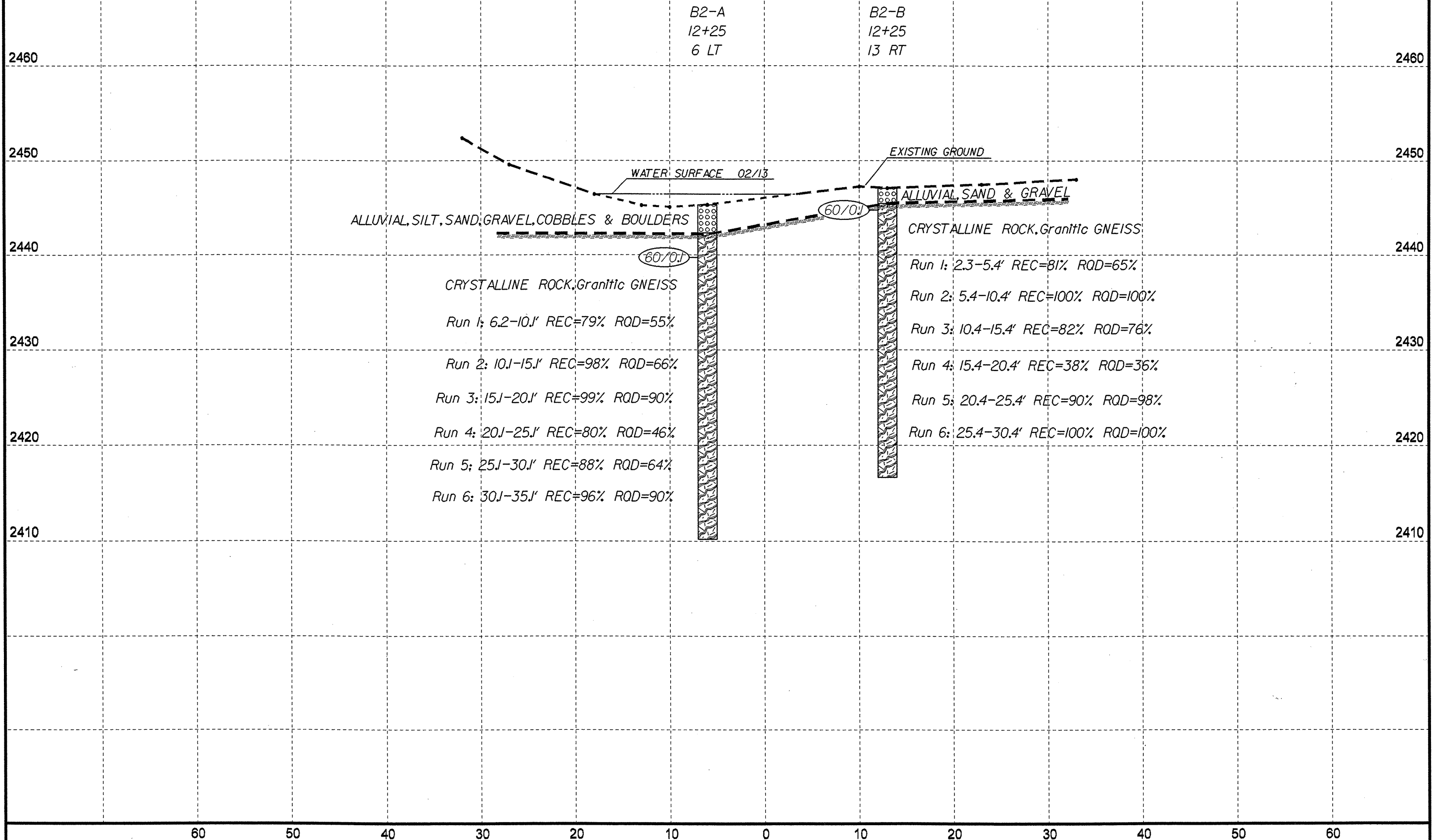
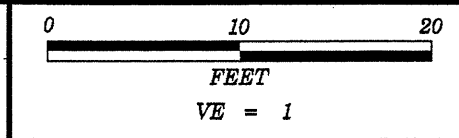
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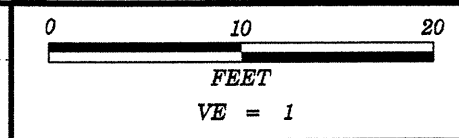
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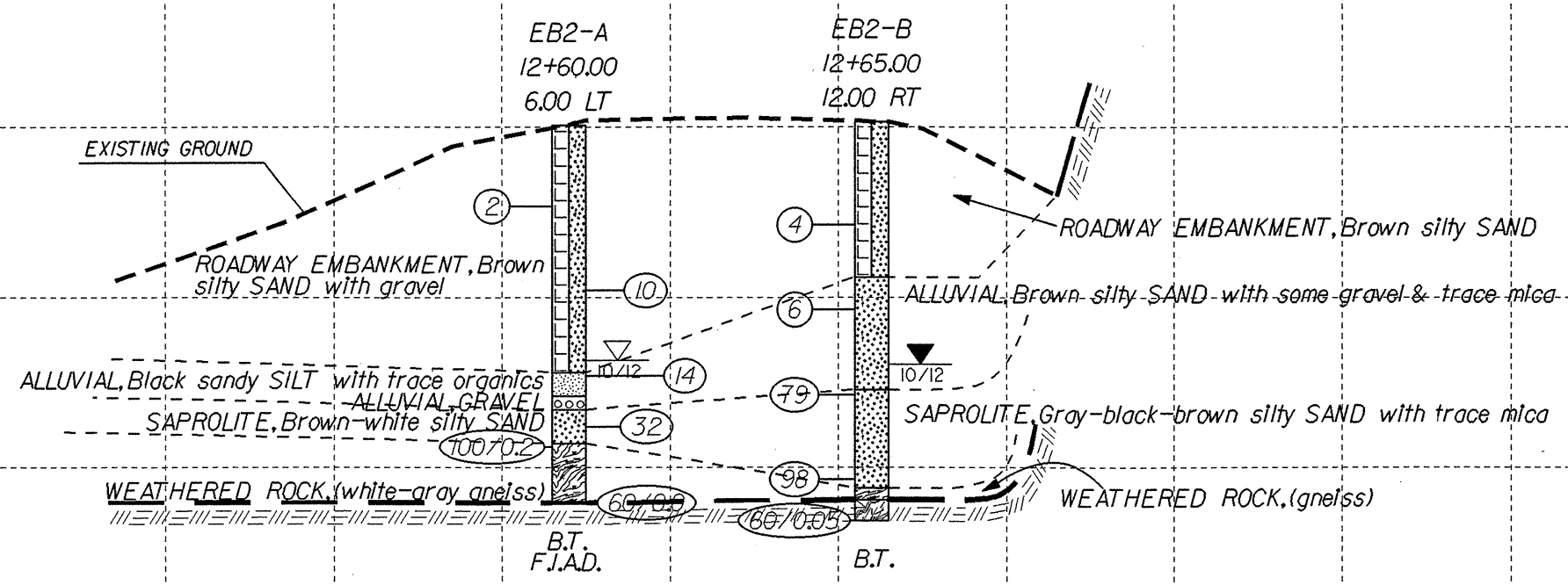
2450 2450

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2430 2430

2420 2420

2410 2410



60 50 40 30 20 10 0 10 20 30 40 50 60

WBS 38476.1.1		TIP B-4701		COUNTY ALLEGHANY		GEOLOGIST Elliott, D. C.									
SITE DESCRIPTION Bridge No. 15 on SR 1341 over Elk Creek							GROUND WTR (ft)								
BORING NO. EB1-A		STATION 11+30		OFFSET 10 ft LT		ALIGNMENT -L-									
COLLAR ELEV. 2,460.7 ft		TOTAL DEPTH 18.1 ft		NORTHING 1,029,179		EASTING 1,348,824									
DRILL RIG/HAMMER EFF./DATE AFO0070 CME-550X 81% 09/03/2009		DRILL METHOD NW Casing w/ SPT		HAMMER TYPE Automatic											
DRILLER Cheek, D. O.		START DATE 10/17/12		COMP. DATE 10/17/12		SURFACE WATER DEPTH N/A									
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
2465															
2460														2,460.7	GROUND SURFACE
															ROADWAY EMBANKMENT Brown silty SAND with gravel
2455	2,455.7	5.0	4	2	3										
2450	2,450.7	10.0	4	4	5										
2445	2,445.7	15.0	60/0.0												
	2,442.6	18.1	60/0.0												
														2,449.8	ALLUVIAL Brown silty SAND with trace mica
														2,448.6	
														2,448.4	
														2,446.1	SAPROLITE SAND
														2,442.6	WEATHERED ROCK (gneiss)
															CRYSTALLINE ROCK Granitic GNEISS
															Boring Terminated at Elevation 2,442.6 ft In Crystalline Rock: Granitic GNEISS

NCDOT BORE SINGLE B4701\_GEO\_BH\_BRDG0015.GPJ NC\_DOT\_GDT 11/6/12

WBS 38476.1.1		TIP B-4701		COUNTY ALLEGHANY		GEOLOGIST Elliott, D. C.									
SITE DESCRIPTION Bridge No. 15 on SR 1341 over Elk Creek							GROUND WTR (ft)								
BORING NO. EB1-B		STATION 11+30		OFFSET 12 ft RT		ALIGNMENT -L-									
COLLAR ELEV. 2,461.0 ft		TOTAL DEPTH 21.3 ft		NORTHING 1,029,167		EASTING 1,348,844									
DRILL RIG/HAMMER EFF./DATE AFO0070 CME-550X 81% 09/03/2009		DRILL METHOD NW Casing w/ SPT		HAMMER TYPE Automatic											
DRILLER Cheek, D. O.		START DATE 10/17/12		COMP. DATE 10/17/12		SURFACE WATER DEPTH N/A									
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
2465															
2460														2,461.0	GROUND SURFACE
															ROADWAY EMBANKMENT Brown silty SAND with gravel
2455	2,456.0	5.0	7	7	4										
2450	2,451.0	10.0	4	3	5										
2445	2,446.0	15.0	12	88/0.2											
	2,441.0	20.0	60/0.0												
2440	2,439.7	21.3	60/0.0												
														2,453.2	ALLUVIAL Brown silty SAND with trace mica
														2,448.2	
														2,446.3	ALLUVIAL GRAVEL & COBBLES
														2,445.4	SAPROLITE
														2,442.6	WEATHERED ROCK Gray-white-tan silty SAND
														2,441.2	WEATHERED ROCK gneiss with saprolite seams
														2,439.7	CRYSTALLINE ROCK Granitic GNEISS
															Boring Terminated at Elevation 2,439.7 ft In Crystalline Rock: Granitic GNEISS

NCDOT BORE SINGLE B4701\_GEO\_BH\_BRDG0015.GPJ NC\_DOT\_GDT 11/6/12

WBS 38476.1.1		TIP B-4701		COUNTY ALLEGHANY		GEOLOGIST Elliott, D. C.										
SITE DESCRIPTION Bridge No. 15 on SR 1341 over Elk Creek							GROUND WTR (ft)									
BORING NO. B1-A		STATION 11+80		OFFSET 5 ft LT		ALIGNMENT -L-										
COLLAR ELEV. 2,446.0 ft		TOTAL DEPTH 35.3 ft		NORTHING 1,029,220		EASTING 1,348,851										
DRILL RIG/HAMMER EFF./DATE AFO0070 CME-550X 81% 09/03/2009		DRILL METHOD NW Casing W/SPT & Core		HAMMER TYPE Automatic												
DRILLER Cheek, D. O.		START DATE 10/18/12		COMP. DATE 10/18/12		SURFACE WATER DEPTH N/A										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION		
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				ELEV. (ft)	DEPTH (ft)	
2450																
2445															2,446.0	GROUND SURFACE 0.0
															2,444.1	ALLUVIAL SAND 1.9
															2,440.9	ALLUVIAL COBBLES & BOULDERS 5.1
2440	2,440.2	5.8													2,438.6	SAPROLITE Gray-white-brown silty SAND 7.4
			13	18	29										2,437.6	WEATHERED ROCK (gneiss) 8.4
															2,436.2	WEATHERED ROCK (gneiss) 9.8
2435	2,435.2	10.8													2,435.0	CRYSTALLINE ROCK Granitic GNEISS 11.0
	2,433.7	12.3	100/0.2													
			60/0.0													
2430																RS-1
2425																RS-2
2420																
2415																
															2,410.7	Boring Terminated at Elevation 2,410.7 ft In Crystalline Rock: Granitic GNEISS 35.3

NCDOT BORE SINGLE B4701\_GEO\_BH\_BRD0015.GPJ NC\_DOT.GDT 11/5/12

WBS 38476.1.1		TIP B-4701		COUNTY ALLEGHANY		GEOLOGIST Elliott, D. C.					
SITE DESCRIPTION Bridge No. 15 on SR 1341 over Elk Creek							GROUND WTR (ft)				
BORING NO. B1-A		STATION 11+80		OFFSET 5 ft LT		ALIGNMENT -L-					
COLLAR ELEV. 2,446.0 ft		TOTAL DEPTH 35.3 ft		NORTHING 1,029,220		EASTING 1,348,851					
DRILL RIG/HAMMER EFF./DATE AFO0070 CME-550X 81% 09/03/2009		DRILL METHOD NW Casing W/SPT & Core		HAMMER TYPE Automatic							
DRILLER Cheek, D. O.		START DATE 10/18/12		COMP. DATE 10/18/12		SURFACE WATER DEPTH N/A					
CORE SIZE NXWL			TOTAL RUN 23.0 ft								
ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		SAMP. NO.	STRATA		LOG	DESCRIPTION AND REMARKS
					REC. (ft)	RQD (ft)		REC. (ft)	RQD (ft)		
2433.67											
	2,433.7	12.3	3.0	N=60/0.0 0:49/1.0 0:51/1.0 0:52/1.0	(2.3) 77%	(1.0) 33%					Begin Coring @ 12.3 ft.
2430	2,430.7	15.3	5.0	1:06/1.0 1:01/1.0 0:55/1.0 0:53/1.0 1:02/1.0	(4.3) 86%	(2.4) 48%	RS-1				12.3-13.6': Rock is brown-gray, slightly to very slightly weathered and hard with close fracture spacing. Joints are near horizontal.
											13.6-14.3': Unrecovered moderately weathered zone
	2,425.7	20.3									14.3-17.6': Rock is tan-white-gray, slightly to very slightly weathered and hard. Fracture spacing is very close to close with discontinuity angles from 0 to 75°.
2425			5.0	1:37/1.0 1:26/1.0 1:41/1.0 1:39/1.0 1:31/1.0	(5.0) 99%	(4.4) 88%	RS-2				17.6-20.7': Zone is dark gray-black with weathering moderate to moderately severe. Hardness is silt to moderately hard. Fracture spacing is very close to close with angle from 0 to 75°.
	2,420.7	25.3									20.7-35.3': Rock is light gray, generally fresh, and hard to very hard. Fractures are moderately close to wide with joint angles ~30° with one high angle discontinuity from 31.8-33.4'. (continued)
2420			5.0	1:49/1.0 1:50/1.0 1:41/1.0 1:54/1.0 1:48/1.0	(5.0) 100%	(5.0) 100%					
2415			5.0	1:58/1.0 1:46/1.0 1:52/1.0 1:54/1.0 1:47/1.0	(5.0) 100%	(5.0) 100%					
	2,410.7	35.3									Boring Terminated at Elevation 2,410.7 ft In Crystalline Rock: Granitic GNEISS

NCDOT CORE SINGLE B4701\_GEO\_BH\_BRD0015.GPJ NC\_DOT.GDT 11/5/12



WBS 38476.1.1		TIP B-4701		COUNTY ALLEGHANY		GEOLOGIST Elliott, D. C.										
SITE DESCRIPTION Bridge No. 15 on SR 1341 over Elk Creek							GROUND WTR (ft)									
BORING NO. B2-A		STATION 12+25		OFFSET 6 ft LT		ALIGNMENT -L-										
COLLAR ELEV. 2,445.3 ft		TOTAL DEPTH 35.1 ft		NORTHING 1,029,262		EASTING 1,348,863										
DRILL RIG/HAMMER EFF./DATE AFO0071 CME-550X 72% 09/03/2009		DRILL METHOD NW Casing W/SPT & Core		HAMMER TYPE Automatic												
DRILLER Cheek, D. O.		START DATE 02/18/13		COMP. DATE 02/18/13		SURFACE WATER DEPTH 0.6ft										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	L O G	SOIL AND ROCK DESCRIPTION	ELEV. (ft)	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
2450																
2445														2,445.3	0.0	WATER BOTTOM
2440	2,439.8	5.5	60/0.1											2,442.3	3.0	ALLUVIAL SILT, SAND, GRAVEL, COBBLES & BOULDERS
2435																CRYSTALLINE ROCK Granitic GNEISS Run 1: 6.2-10.1' REC=79% RQD=55% Run 2: 10.1-15.1' REC=98% RQD=66% Run 3: 15.1-20.1' REC=99% RQD=90% Run 4: 20.1-25.1' REC=80% RQD=46% Run 5: 25.1-30.1' REC=88% RQD=64% Run 6: 30.1-35.1' REC=96% RQD=90%
2430																
2425																
2420																
2415																
														2,410.2	35.1	Boring Terminated with Standard Penetration Test Refusal at Elevation 2,410.2 ft In Crystalline Rock: Granitic GNEISS

NCDOT BORE SINGLE B4701\_GEO\_BH\_BRDG0015\_REV.GPJ NC\_DOT.GDT 3/5/13

WBS 38476.1.1		TIP B-4701		COUNTY ALLEGHANY		GEOLOGIST Elliott, D. C.						
SITE DESCRIPTION Bridge No. 15 on SR 1341 over Elk Creek							GROUND WTR (ft)					
BORING NO. B2-A		STATION 12+25		OFFSET 6 ft LT		ALIGNMENT -L-						
COLLAR ELEV. 2,445.3 ft		TOTAL DEPTH 35.1 ft		NORTHING 1,029,262		EASTING 1,348,863						
DRILL RIG/HAMMER EFF./DATE AFO0071 CME-550X 72% 09/03/2009		DRILL METHOD NW Casing W/SPT & Core		HAMMER TYPE Automatic								
DRILLER Cheek, D. O.		START DATE 02/18/13		COMP. DATE 02/18/13		SURFACE WATER DEPTH 0.6ft						
ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		SAMP. NO.	STRATA		L O G	DESCRIPTION AND REMARKS	DEPTH (ft)
					REC. (%)	ROD (ft)		REC. (%)	RQD (ft)			
2439.12	2,439.1	6.2	3.9	1:14/0.9 1:27/1.0 1:00/1.0 1:02/1.0	(3.1) 79%	(2.2) 55%					Begin Coring @ 6.2 ft	
2435	2,435.2	10.1	5.0	1:21/1.0 1:17/1.0 1:26/1.0 1:09/1.0 1:06/1.0	(4.9) 98%	(3.3) 66%	RS-7				6.2-10.1': Recovered rock is mostly granitic, white, very slightly weathered to fresh, very hard with very to moderately close fracture spacing.	
2430	2,430.2	15.1	5.0	1:19/1.0 1:30/1.0 1:26/1.0 1:34/1.0 1:19/1.0	(5.0) 99%	(4.5) 90%	RS-8				10.1-15.1': Rock is white-dark gray and mostly micaceous. Core is slightly weathered to fresh and moderately hard to hard with very to moderately close fracture spacing from 0-30°.	
2425	2,425.2	20.1	5.0	0:48/1.0 0:37/1.0 1:21/1.0 1:25/1.0 1:09/1.0	(4.0) 80%	(2.3) 46%					15.1-20.1': Interlayered hard to very hard granitic and dark gray gneissic rock. Weathering is very slight to fresh. Fractures are from 30 to 45° with very close to wide spacing.	
2420	2,420.2	25.1	5.0	1:11/1.0 1:23/1.0 1:12/1.0 0:59/1.0 1:01/1.0	(4.4) 88%	(3.2) 64%					20.1-25.1': Core is white to dark gray, severely weathered to mostly fresh and very soft to very hard. Severely weathered zone from ~21 to 22'. Joints are from 30-50° and are spaced very close to close.	
2415	2,415.2	30.1	5.0	1:48/1.0 1:58/1.0 2:04/1.0 2:17/1.0 2:05/1.0	(4.8) 96%	(4.5) 90%					25.1-30.1': Rock is white and dark gray, gneissic and micaceous. Weathering is slight to fresh. Core is hard to very hard with very close to close fracture spacing. Several high angle joints cut across foliation.	
	2,410.2	35.1									30.1-35.1': Rock core is white, fresh and very hard with widely spaced fractures. (continued)	
											Boring Terminated with Standard Penetration Test Refusal at Elevation 2,410.2 ft In Crystalline Rock: Granitic GNEISS	35.1

NCDOT CORE SINGLE B4701\_GEO\_BH\_BRDG0015.GPJ NC\_DOT.GDT 3/5/13



WBS 38476.1.1		TIP B-4701		COUNTY ALLEGHANY		GEOLOGIST Elliott, D. C.										
SITE DESCRIPTION Bridge No. 15 on SR 1341 over Elk Creek							GROUND WTR (ft)									
BORING NO. B2-B		STATION 12+25		OFFSET 13 ft RT		ALIGNMENT -L-										
COLLAR ELEV. 2,447.1 ft		TOTAL DEPTH 30.4 ft		NORTHING 1,029,258		EASTING 1,348,882										
DRILL RIG/HAMMER EFF./DATE AFO0071 CME-550X 72% 09/03/2009		DRILL METHOD NW Casing W/SPT & Core		HAMMER TYPE Automatic												
DRILLER Cheek, D. O.		START DATE 02/18/13		COMP. DATE 02/18/13		SURFACE WATER DEPTH N/A										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
2450																
															2,447.1	0.0
															2,445.5	1.6
2445	2,444.9	2.2	60/0.1													
2440																
2435																
2430																
2425																
2420																
															2,416.7	30.4
Boring Terminated at Elevation 2,416.7 ft In Crystalline Rock: Granitic GNEISS																

NCDOT BORE SINGLE B4701\_GEO\_BH\_BRDG0015.GPJ\_NC\_DOT.GDT\_3/5/13

WBS 38476.1.1		TIP B-4701		COUNTY ALLEGHANY		GEOLOGIST Elliott, D. C.					
SITE DESCRIPTION Bridge No. 15 on SR 1341 over Elk Creek							GROUND WTR (ft)				
BORING NO. B2-B		STATION 12+25		OFFSET 13 ft RT		ALIGNMENT -L-					
COLLAR ELEV. 2,447.1 ft		TOTAL DEPTH 30.4 ft		NORTHING 1,029,258		EASTING 1,348,882					
DRILL RIG/HAMMER EFF./DATE AFO0071 CME-550X 72% 09/03/2009		DRILL METHOD NW Casing W/SPT & Core		HAMMER TYPE Automatic							
DRILLER Cheek, D. O.		START DATE 02/18/13		COMP. DATE 02/18/13		SURFACE WATER DEPTH N/A					
ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		STRATA		L O G	DESCRIPTION AND REMARKS	DEPTH (ft)
					REC. (ft)	RQD (ft)	REC. (ft)	RQD (ft)			
	2,444.77	2.3	3.1	0:12/0.1 1:41/1.0 1:53/1.0 1:31/1.0	(2.5) 81%	(2.0) 65%					
	2,441.7	5.4	5.0	1:53/1.0 2:00/1.0 1:42/1.0 1:56/1.0 1:49/1.0	(5.0) 100%	(5.0) 100%					
2440											
	2,436.7	10.4	5.0	1:19/1.0 1:07/1.0 0:51/1.0 0:26/1.0 0:31/1.0	(4.1) 82%	(3.8) 76%					
2435											
	2,431.7	15.4	5.0	0:19/1.0 0:28/1.0 0:20/1.0 0:52/1.0 1:08/1.0	(1.9) 38%	(1.8) 36%					
2430											
	2,426.7	20.4	5.0	1:53/1.0 1:49/1.0 1:52/1.0 2:03/1.0 1:57/1.0	(4.5) 90%	(4.4) 88%					
2425											
	2,421.7	25.4	5.0	1:44/1.0 1:55/1.0 2:00/1.0 2:07/1.0 1:56/1.0	(5.0) 100%	(5.0) 100%					
2420											
	2,416.7	30.4									
Boring Terminated at Elevation 2,416.7 ft In Crystalline Rock: Granitic GNEISS											30.4

NCDOT BORE SINGLE B4701\_GEO\_BH\_BRDG0015.GPJ\_NC\_DOT.GDT\_3/5/13



38476.1.1 (B-4701)  
ALLEGHANY COUNTY  
BRIDGE # 15 ON SR 1341 OVER ELK CREEK

CORE PHOTOS

B1-A



B1-A

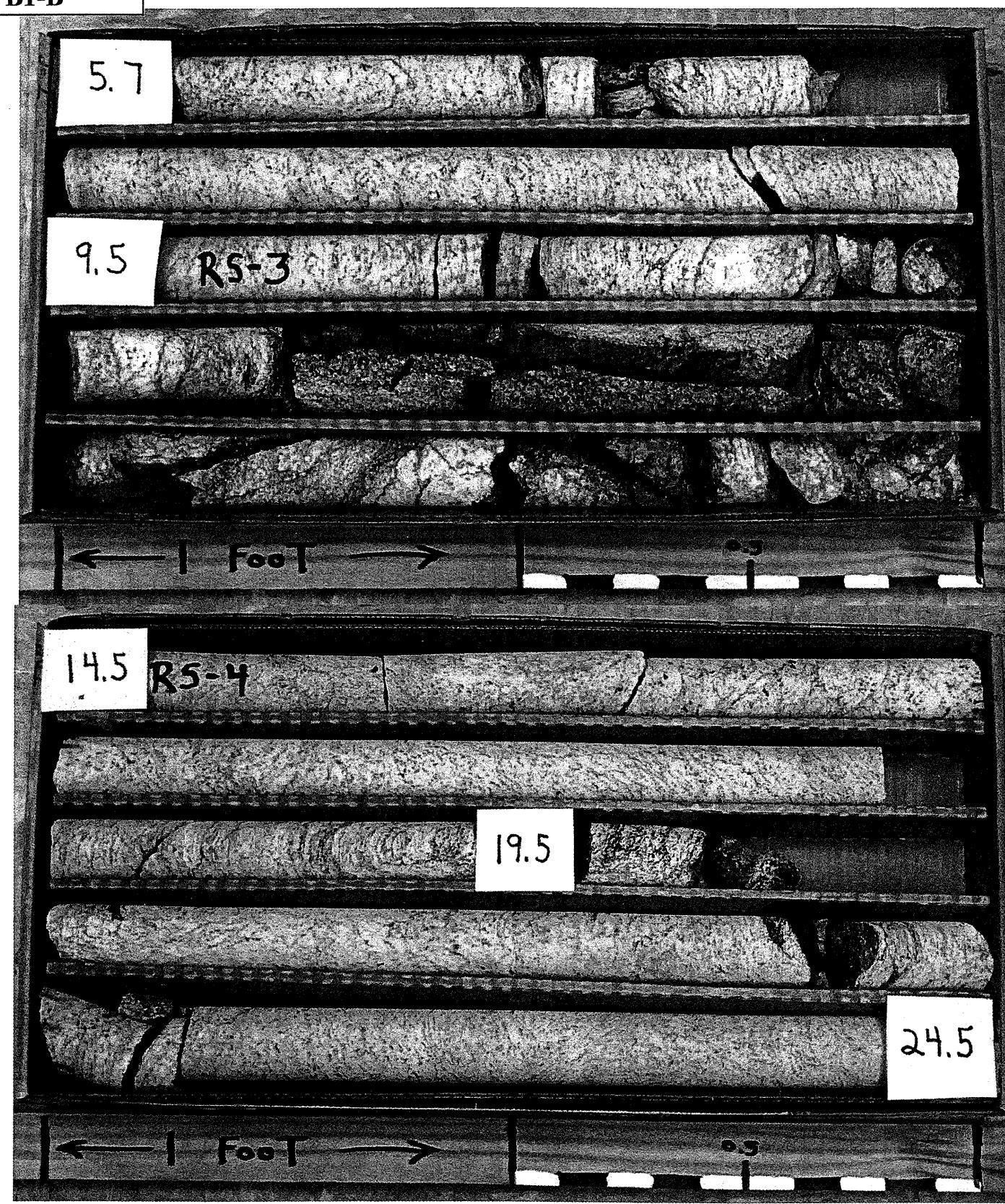




38476.1.1 (B-4701)  
ALLEGHANY COUNTY  
BRIDGE # 15 ON SR 1341 OVER ELK CREEK

CORE PHOTOS

B1-B



38476.1.1 (B-4701)  
ALLEGHANY COUNTY  
BRIDGE # 15 ON SR 1341 OVER ELK CREEK

CORE PHOTOS

B2-A



B2-A

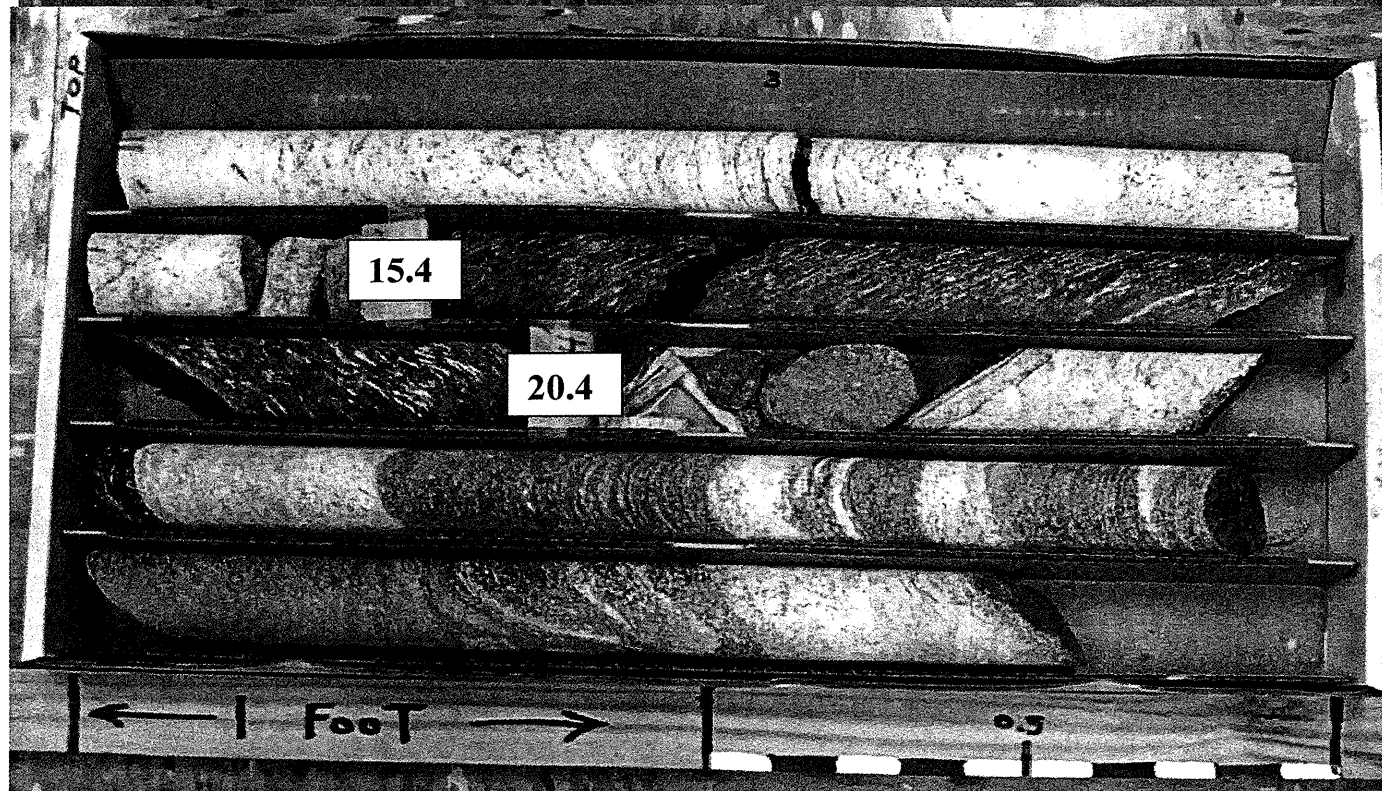
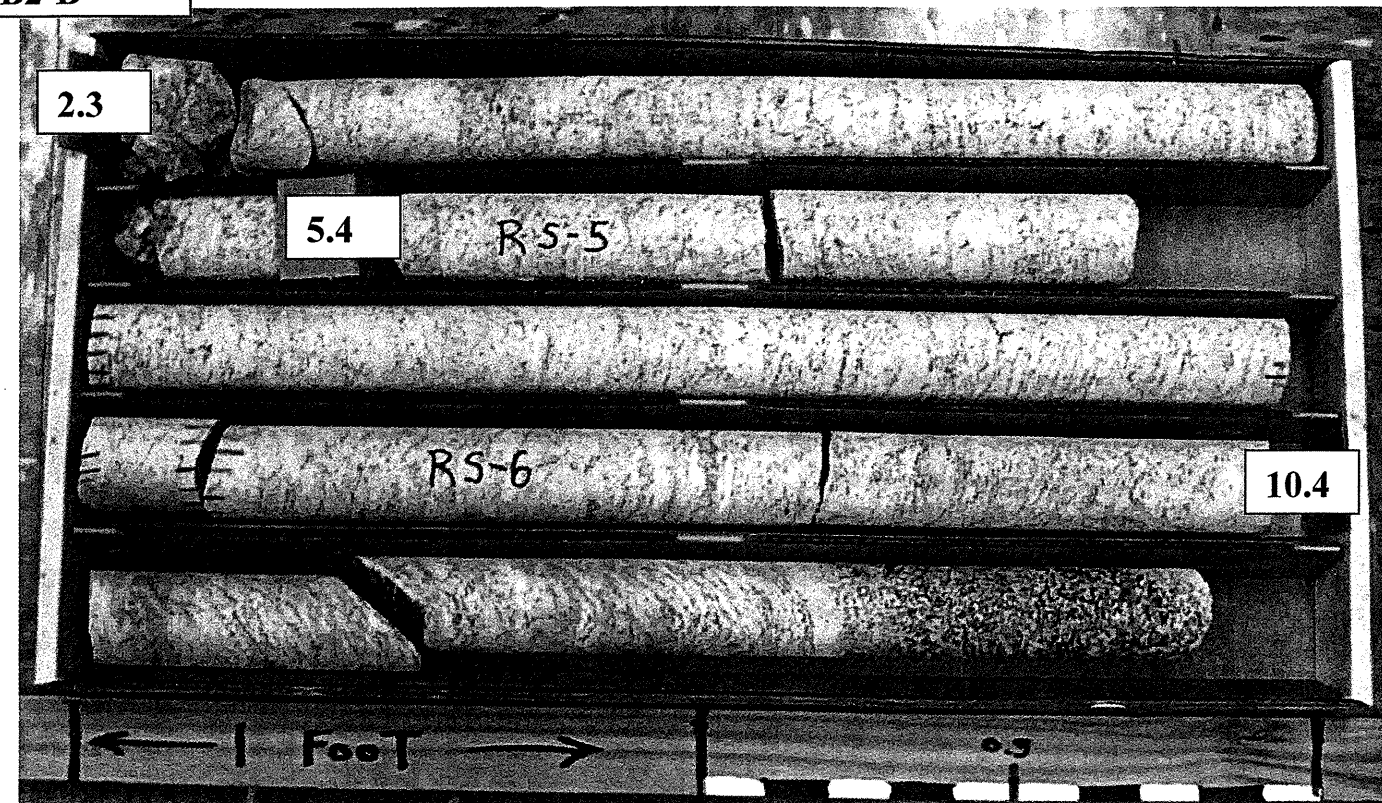




38476.1.1 (B-4701)  
ALLEGHANY COUNTY  
BRIDGE # 15 ON SR 1341 OVER ELK CREEK

CORE PHOTOS

B2-B



B2-B

