

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-2915B 34518.1.3	1	27

STATE OF NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

GEOTECHNICAL ENGINEERING UNIT

STRUCTURE SUBSURFACE INVESTIGATION

PROJ. REFERENCE NO. R-2915B F.A. PROJ. STP - 0221 (40)

COUNTY ASHE

PROJECT DESCRIPTION BRIDGE #10 ON US221 OVER SOUTH FORK
NEW RIVER

SITE DESCRIPTION NB + SB BRIDGE, STA. 242 + 67

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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 1989 ZEPHORUS, EITHER THE SUBSURFACE PLANS AND REPORTS, FOR 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 BORDERS OR BETWEEN SAMPLED STRATA WITHIN THE BOREHOLE. THE LABORATORY SAMPLE DATA AND THE IN-SITU TEST DATA CAN BE RELIED ON ONLY TO THE DEGREE OF RELIABILITY PRESENT 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 METEOROLOGICAL 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.

PERSONNEL

B. SMITH G.I.T.

B. WORLEY P.G.

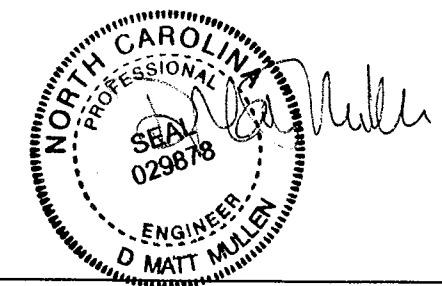
J. BARE

INVESTIGATED BY DMM

CHECKED BY JCK

SUBMITTED BY DMM

DATE 12/11/2013



ID: R-2915B BR. 10

PROJECT: 34518.1.3

DRAWN BY: DM MULLEN

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

PROJECT REFERENCE NO. R-2915B 34518.1.3	SHEET NO. 2
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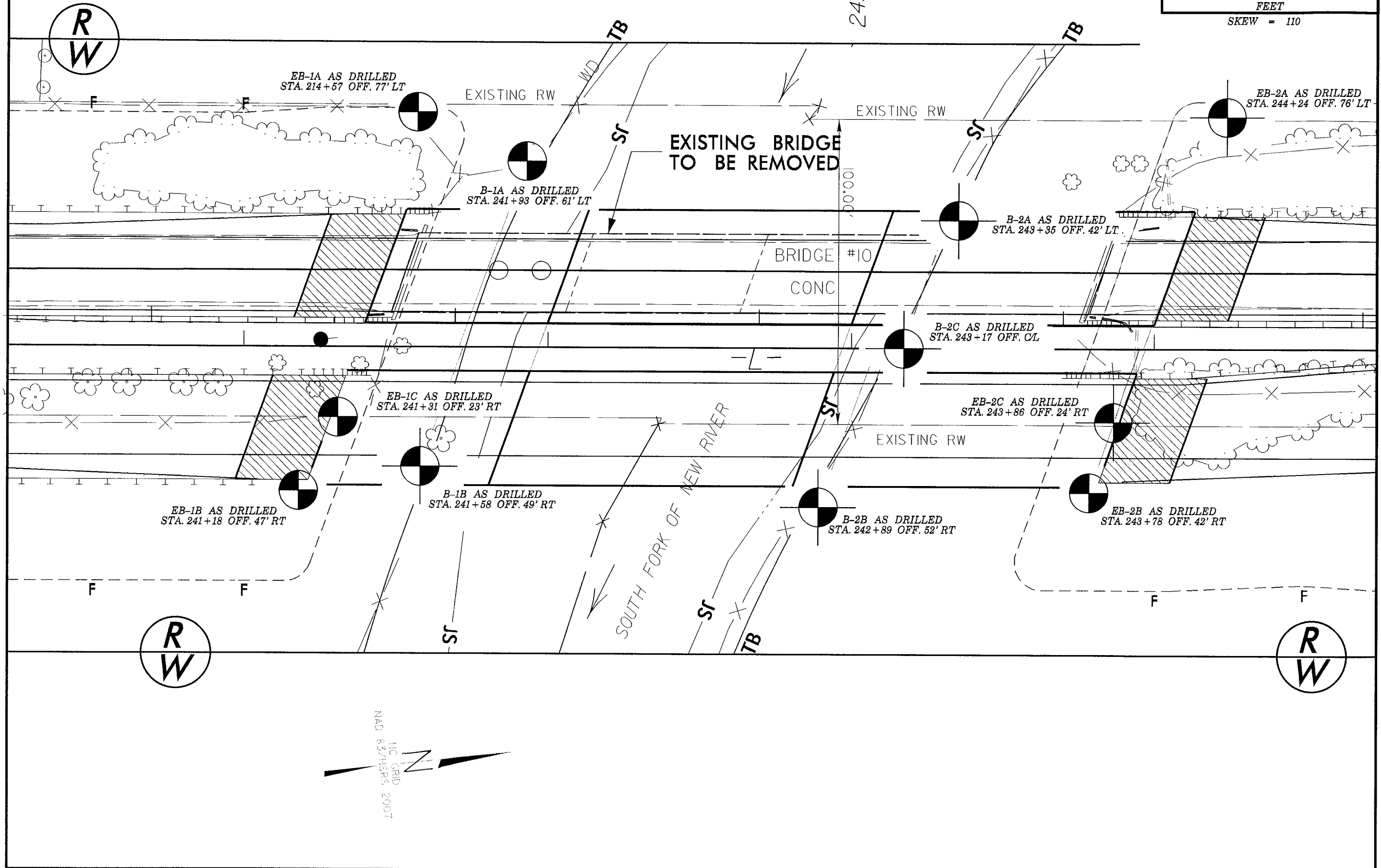
SUBSURFACE INVESTIGATION

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 (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, HIGH 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. ANGULARITY OF GRAINS 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: WEATHERED ROCK (WR) CRYSTALLINE ROCK (CR) NON-CRYSTALLINE ROCK (NCR) COASTAL PLAIN SEDIMENTARY ROCK (CPS)	ALLUVIUM (ALLOUV.) - 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 A NOTABLE PROPORTION OF CLAY IN THEIR COMPOSITION, AS SHALE, SLATE, ETC. 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. CALCAREOUS (CALC.) - SOILS THAT CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE. COLLUVIUM - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM 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. DIKE - A TABULAR BODY OF IGNEOUS ROCK THAT CUTS ACROSS THE STRUCTURE OF ADJACENT ROCKS OR CUTS MASSIVE ROCK. DIP - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE HORIZONTAL. DIP DIRECTION (DIP AZIMUTH) - THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF THE LINE OF DIP, MEASURED CLOCKWISE FROM NORTH. 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. FLOAT - ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLOGGED FROM PARENT MATERIAL. 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 FIELD. JOINT - FRACTURE IN ROCK ALONG WHICH NO APPRECIABLE MOVEMENT HAS OCCURRED. LEDGE - A SHELF-LIKE RIDGE OR PROJECTION OF ROCK WHOSE THICKNESS IS SMALL COMPARED TO ITS LATERAL EXTENT. LENS - A BODY OF SOIL OR ROCK THAT THINS OUT IN ONE OR MORE DIRECTIONS. MOTTLED (MOT.) - IRREGULARLY MARKED WITH SPOTS OF DIFFERENT COLORS. MOTTLING IN SOILS USUALLY INDICATES POOR AERATION AND LACK OF GOOD DRAINAGE. PERCHED WATER - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE OF AN INTERVENING IMPERVIOUS STRATUM. 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. SAPROLITE (SAP.) - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT ROCK. SILL - AN INTRUSIVE BODY OF IGNEOUS ROCK OF APPROXIMATELY UNIFORM THICKNESS AND RELATIVELY THIN COMPARED WITH ITS LATERAL EXTENT, THAT HAS BEEN EMPLACED PARALLEL TO THE BEDDING OR SCHISTOSITY OF THE INTRUDED ROCKS. SLICKENSIDE - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT OR SLIP PLANE. STANDARD PENETRATION TEST (PENETRATION RESISTANCE) (SPT) - 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. STRATA CORE RECOVERY (SREC.) - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE. 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. TOPSOIL (TS.) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.
SOIL LEGEND AND AASHTO CLASSIFICATION GENERAL CLASS. GRANULAR MATERIALS (<= 35% PASSING #200) SILT-CLAY MATERIALS (> 35% PASSING #200) ORGANIC MATERIALS GROUP CLASS. A-1, A-3, A-2, A-4, A-5, A-6, A-7, A-1, A-2, A-4, A-5, A-6, A-7 SYMBOL [Grid of soil symbols] % PASSING: 10, 40, 200 LIQUID LIMIT PLASTIC INDEX: 6, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 65, 70, 75, 80, 85, 90, 95, 100 GROUP INDEX: 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100 USUAL TYPES OF MAJOR MATERIALS: STONE FRAGS., GRAVEL, SAND, FINE SAND, SILTY OR CLAYEY GRAVEL AND SAND, SILTY SOILS, CLAYEY SOILS GENERATING AS A SUBGRADE: EXCELLENT TO GOOD, FAIR TO POOR, FAIR TO POOR, POOR, UNSUITABLE PI OF A-7-5 SUBGROUP IS <= LL - 30 ; PI OF A-7-6 SUBGROUP IS > LL - 30	MINERALOGICAL COMPOSITION MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC. ARE USED IN DESCRIPTIONS WHENEVER THEY ARE CONSIDERED OF SIGNIFICANCE. COMPRESSIBILITY SLIGHTLY COMPRESSIBLE LIQUID LIMIT LESS THAN 31 MODERATELY COMPRESSIBLE LIQUID LIMIT EQUAL TO 31-50 HIGHLY COMPRESSIBLE LIQUID LIMIT GREATER THAN 50 PERCENTAGE OF MATERIAL ORGANIC MATERIAL GRANULAR SOILS SILT-CLAY SOILS OTHER MATERIAL TRACE OF ORGANIC MATTER 2 - 3% 3 - 5% TRACE 1 - 10% LITTLE ORGANIC MATTER 3 - 5% 5 - 12% LITTLE 10 - 20% MODERATELY ORGANIC 5 - 10% 12 - 20% SOME 20 - 35% HIGHLY ORGANIC >10% >20% HIGHLY 35% AND ABOVE	WEATHERING FRESH ROCK FRESH, CRYSTALS BRIGHT, FEW JOINTS MAY SHOW SLIGHT STAINING, ROCK RINGS UNDER HAMMER IF CRYSTALLINE. VERY SLIGHT (V SL.) 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 (SL.) 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 GLAY. 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 'CLUNKY' SOUND WHEN STRUCK. <i>IF TESTED, WOULD YIELD SPT REFUSAL</i> 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. <i>IF TESTED, YIELDS SPT N VALUES > 100 BPF</i> 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. <i>IF TESTED, YIELDS SPT N VALUES < 100 BPF</i> 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.	SOILS WITH LITTLE OR MODERATE AMOUNTS OF ORGANIC MATTER HIGHLY ORGANIC SOILS GROUND WATER 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 MISCELLANEOUS SYMBOLS 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 SOUNDING ROD SPT TEST BORING AUGER BORING CORE BORING MONITORING WELL PIEZOMETER INSTALLATION SLOPE INDICATOR INSTALLATION SPT N-VALUE SPT REFUSAL SAMPLE DESIGNATIONS S - BULK SAMPLE SS - SPLIT SPOON SAMPLE ST - SHELBY TUBE SAMPLE RS - ROCK SAMPLE RT - RECOMPACTED TRIAXIAL SAMPLE CBR - CALIFORNIA BEARING RATIO SAMPLE
CONSISTENCY OR DENSENESS PRIMARY SOIL TYPE COMPACTNESS OR CONSISTENCY RANGE OF STANDARD PENETRATION RESISTANCE (N-VALUE) RANGE OF UNCONFINED COMPRESSIVE STRENGTH (TONS/FT ²) GENERALLY GRANULAR MATERIAL (NON-COHESIVE) VERY LOOSE, LOOSE, MEDIUM DENSE, DENSE, VERY DENSE N/A GENERALLY SILT-CLAY MATERIAL (COHESIVE) VERY SOFT, SOFT, MEDIUM STIFF, STIFF, VERY STIFF, HARD <2, 2 TO 4, 4 TO 8, 8 TO 15, 15 TO 30, >30 <0.25, 0.25 TO 0.50, 0.5 TO 1.0, 1 TO 2, 2 TO 4, >4	ABBREVIATIONS 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 HJ. - HIGHLY MED. - MEDIUM MICA - MICAEOUS 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 % - UNIT WEIGHT %d - DRY UNIT WEIGHT	ROCK HARDNESS 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. 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 GROOVED 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.	TEXTURE OR GRAIN SIZE U.S. STD. SIEVE SIZE OPENING (MM) 4, 10, 40, 60, 200, 270 4.75, 2.00, 0.42, 0.25, 0.075, 0.053 BOULDER (BLDR.) COBBLE (COB.) GRAVEL (GRV.) 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 IN. 12, 3
SOIL MOISTURE - CORRELATION OF TERMS SOIL MOISTURE SCALE (ATTERBERG LIMITS) FIELD MOISTURE DESCRIPTION GUIDE FOR FIELD MOISTURE DESCRIPTION LL LIQUID LIMIT - SATURATED - (SAT.) USUALLY LIQUID; VERY WET, USUALLY FROM BELOW THE GROUND WATER TABLE PL PLASTIC LIMIT - WET - (W) SEMISOLID; REQUIRES DRYING TO ATTAIN OPTIMUM MOISTURE OM OPTIMUM MOISTURE - MOIST - (M) SOLID; AT OR NEAR OPTIMUM MOISTURE SL SHRINKAGE LIMIT - DRY - (D) REQUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE	EQUIPMENT USED ON SUBJECT PROJECT DRILL UNITS: MOBILE B-51, CME-45C, CME-550, PORTABLE HOIST, SUM93 D-50 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 HAMMER TYPE: AUTOMATIC, MANUAL CORE SIZE: B, N 0-2, H HAND TOOLS: POST HOLE DIGGER, HAND AUGER, SOUNDING ROD, VANE SHEAR TEST	FRACTURE SPACING 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 BEDDING TERM THICKNESS VERY THICKLY BEDDED > 4 FEET THICKLY BEDDED 1.5 - 4 FEET MODERATELY 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	INTEGRATION FOR SEDIMENTARY ROCKS, INTEGRATION 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 INTEGRATED GRAINS CAN BE SEPARATED FROM SAMPLE WITH STEEL PROBE; BREAKS EASILY WHEN HIT WITH HAMMER. INTEGRATED GRAINS ARE DIFFICULT TO SEPARATE WITH STEEL PROBE; DIFFICULT TO BREAK WITH HAMMER. EXTREMELY INTEGRATED SHARP HAMMER BLOWS REQUIRED TO BREAK SAMPLE; SAMPLE BREAKS ACROSS GRAINS.
PLASTICITY NONPLASTIC 0-5 VERY LOW LOW PLASTICITY 6-15 SLIGHT MED. PLASTICITY 16-25 MEDIUM HIGH PLASTICITY 26 OR MORE HIGH			NOTES: BENCH MARK: -BL- 57 ELEVATION: 2670.93 FT.
COLOR 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.			

BORINGS AS DRILLED, 10/2013

PROJECT REFERENCE NO.	SHEET
R-2915B 34518.1.3	3
SITE PLAN	
FEET	
SKEW = 110	



2880

2870

2860

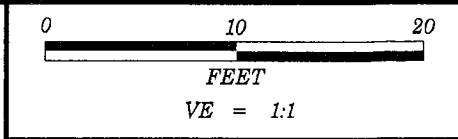
2850

2840

2810

2800

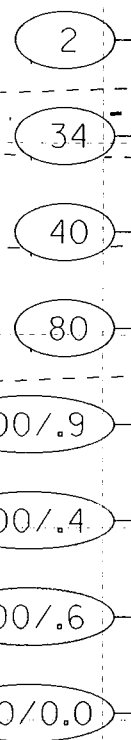
2790



PROJECT REFERENCE NO.	SHEET
R-2915B	4
BR#10 ON US221 OVER SOUTH FORK NEW RIVER	

SKEW = 110 DEG.

EB1-A SB AD
STA. 241+57
OFF. 77' RT



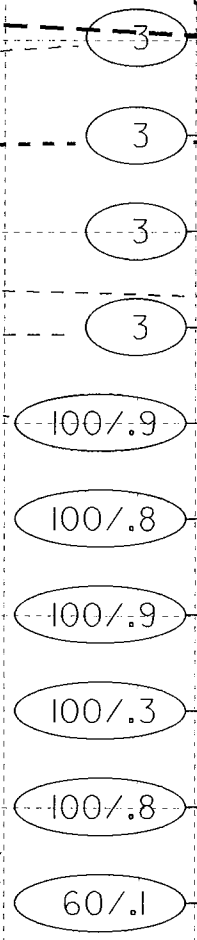
B.T. @ 40.2'
ON CRYSTALLINE ROCK

EB1-A SB AS

- EOP
EB1-B SB AS

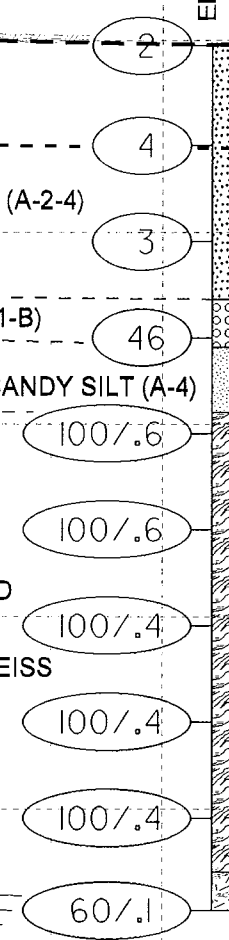
EB1-A NB AS

EB1-C AD
STA. 241+31
OFF. 23' RT



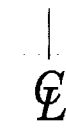
B.T. @ 45.2'
IN CRYSTALLINE ROCK

EB1-B NB AD/AS
STA. 241+18
OFF. 47' RT



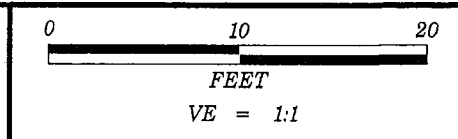
B.T. @ 45.0'
IN CRYSTALLINE ROCK

EXISTING GROUND



SECTION THROUGH EB-1

2880



PROJECT REFERENCE NO.	SHEET
R-2915B	5
BR#10 ON US221 OVER SOUTH FORK NEW RIVER	

2870

2860

2850

2840

2830

2820

2810

2800

2790

B1-A SBAD
STA. 241+93
OFF. 61' LT

B1-A AS

B1-C AS

B1-B SBAD
STA. 241+58
OFF. 49' RT

B1-B AS

2870

2860

2850

2840

2830

2820

2810

2800

2790

EXISTING GROUND

WATER SURFACE 10/13

ALLUVIAL SILTY SAND (A-2-4)

ALLUVIAL SANDY SILT (A-4)

RESIDUAL SANDY SILT (A-4)

WEATHERED BIOTITE GNEISS

CRYSTALLINE BIOTITE GNEISS

SILTY SAND (A-4)

GRAVEL (A-1-A)

SANDY SILT (A-4)

WEATHERED BIOTITE GNEISS

CRYSTALLINE BIOTITE GNEISS

B.T. @ 67.0'
IN CRYSTALLINE ROCK

B.T. @ 65.9'
IN CRYSTALLINE ROCK

60/0.0

60/0.0

3

WOH

77

100/.5

100/.5

100/.5

100/.5

100/.5

100/.5

100/.5

100/.5

100/.5

100/.5

3

WOH

77

100/.5

100/.5

100/.5

100/.5

100/.5

100/.5

100/.5

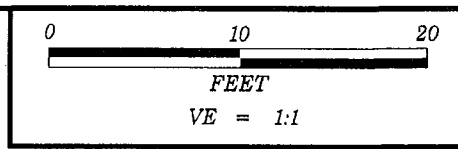
100/.5

100/.5

100/.5

SECTION THROUGH B-1

2870
2860
2850
2840
2830
2820
2810
2800
2790
2780



PROJECT REFERENCE NO.	SHEET
R-2915B	ψ
BR#10 ON US221 OVER SOUTH FORK NEW RIVER	

SKEW = 110 DEG.

B2-A AS
B2-A AD
STA. 243+35
OFF. 42' LT

B2-C AD
STA. 243+17
OFF. CIL

B2-B AS
B2-B AD
STA. 242+89
OFF. 52' RT

2860

2850

2840

2830

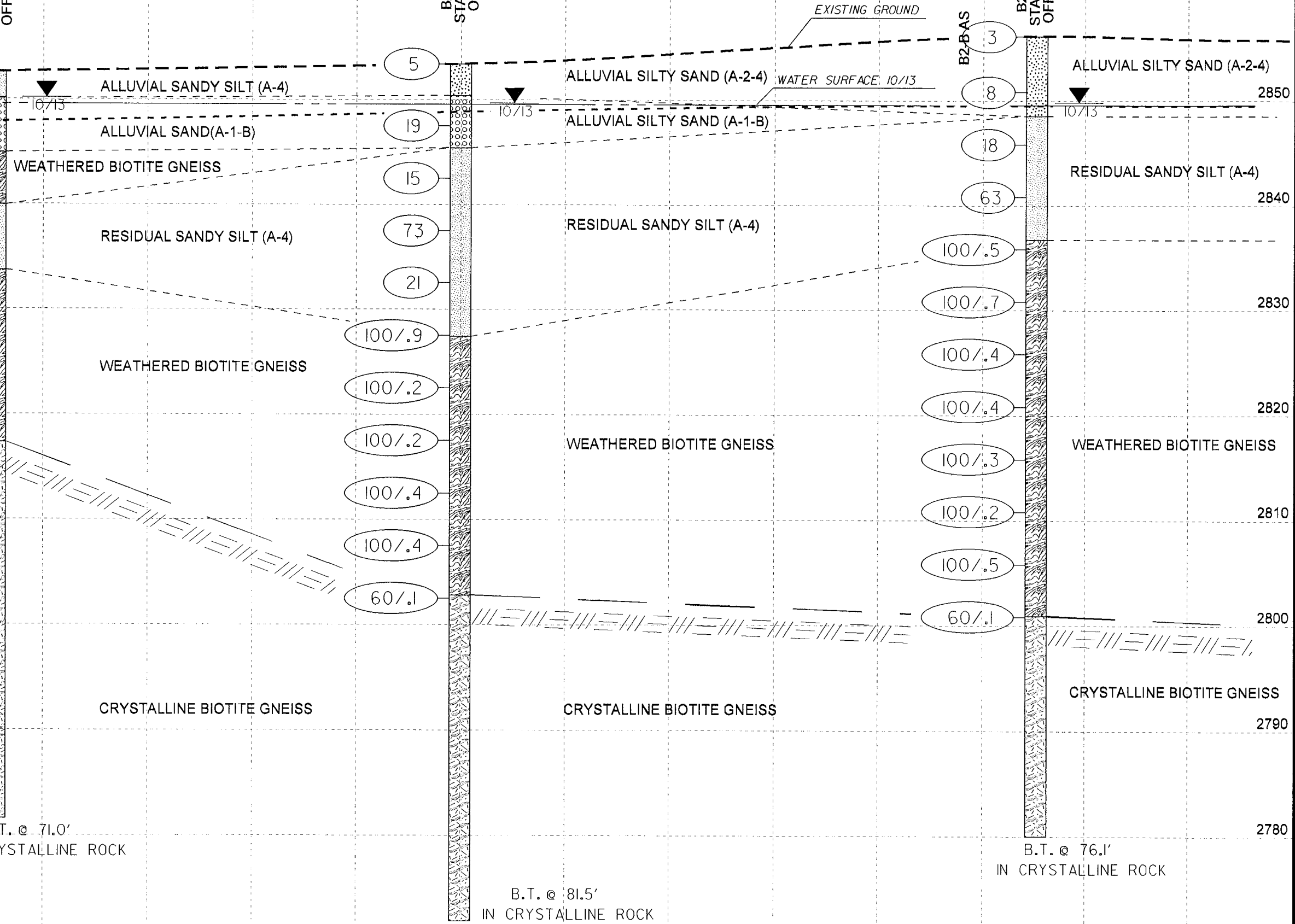
2820

2810

2800

2790

2780



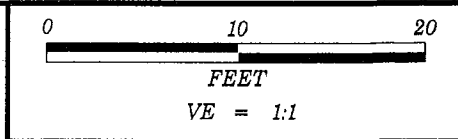
B.T. @ 71.0'
IN CRYSTALLINE ROCK

B.T. @ 81.5'
IN CRYSTALLINE ROCK

B.T. @ 76.1'
IN CRYSTALLINE ROCK

SECTION THROUGH B-2

2880



PROJECT REFERENCE NO.	SHEET
R-2915B	1
BR#10 ON US221 OVER SOUTH FORK NEW RIVER	

2870

2860

2850

2840

2830

2820

2810

2800

2790

EB2-A AD
STA. 244+24
OFF. 76' LT

5

0

20

47

48

98

100/.4

100/.5

70

100/.3

60/.1

B.T. @ 45.2'

IN CRYSTALLINE ROCK

EB2-A AS

ALLUVIAL SANDY SILT (A-4)

ALLUVIAL SILTY SAND (A-2-4)

RESIDUAL SANDY SILT (A-4)

WEATHERED BIOTITE GNEISS

RESIDUAL SANDY SILT (A-4)

WEATHERED BIOTITE GNEISS

CRYSTALLINE BIOTITE GNEISS

EXISTING GROUND

EB2-C AD
STA. 243+86
OFF. 24' RT

7

0

17

45

100/.9

100/.9

100/.9

100/.9

60/.1

B.T. @ 46.3'
IN CRYSTALLINE ROCK

SANDY SILT (A-4)

SAND (A-1-B)

SANDY SILT (A-4)

WEATHERED BIOTITE GNEISS

CRYSTALLINE BIOTITE GNEISS

EB2-B AS
STA. 243+78
OFF. 42' RT

7

0

22

40

100/.4

100/.9

100/.4

100/.4

100/.3

60/.1

B.T. @ 41.1'
ON CRYSTALLINE ROCK

2870

2860

2850

2840

2830

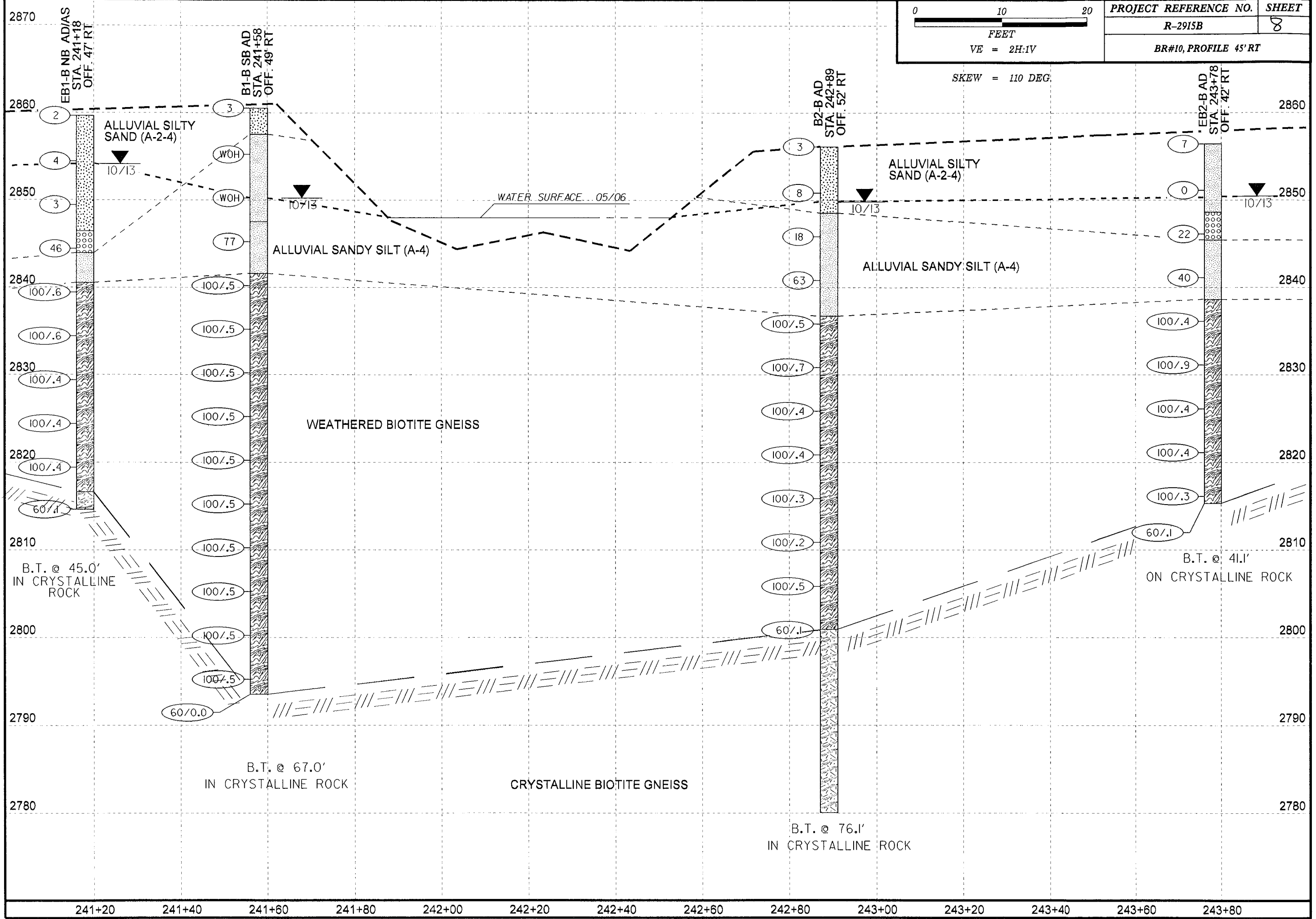
2820

2810

2800

2790

SECTION THROUGH EB-2



WBS 34518.1.3		TIP R-2915B		COUNTY ASHE		GEOLOGIST B. Smith, G.I.T.									
SITE DESCRIPTION Bridge 10 over South Fork of New River on							GROUND WTR (ft)								
BORING NO. EB1-A		STATION 241+57		OFFSET 77 ft LT		ALIGNMENT -L-									
COLLAR ELEV. 2,860.5 ft		TOTAL DEPTH 40.2 ft		NORTHING 935,013		EASTING 1,263,735									
DRILL RIG/HAMMER EFF./DATE SUM0093 DIEDRICH D-50 86% 08/15/2013		DRILL METHOD NW Casing w/ Advancer		HAMMER TYPE Automatic											
DRILLER J. Bare		START DATE 10/08/13		COMP. DATE 10/08/13		SURFACE WATER DEPTH N/A									
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	L O G	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
2865															
2860														GROUND SURFACE	0.0
2855	2,855.3	5.2	WOH	1	1									ALLUVIAL	
														Brown to dark brown, soft, mod. organic, f. SANDY SILT (A-4) w/ some mica	
2850	2,850.3	10.2	WOH	4	30									Brown to dark gray, loose, mod. organic, SILTY f. SAND (A-2-4) w/ some mica	7.7
2845	2,845.3	15.2		4	14	26								Brown and gray, dense to v. dense, gravel w/ f. to cse. SAND (A-1-a)	11.3
2840	2,840.3	20.2		12	23	57								Light gray, med. dense, f. to cse. SAND (A-1-b) w/ little gravel	12.7
2835	2,835.3	25.2		63	37/0.4									RESIDUAL	15.9
2830	2,830.3	30.2												Brown to orange-brown, hard, highly micaceous, saprolitic, SANDY SILT (A-4)	22.7
2825	2,825.3	35.2		70	30.0/1									WEATHERED ROCK	
														(biotite gneiss)	
	2,820.3	40.2		60/0.0										Boring Terminated with Standard Penetration Test Refusal at Elevation 2,820.3 ft ON CRYSTALLINE ROCK (GNEISS)	40.2

NCDOT BORE SINGLE R2915B_GEO_BRD0010_SUMMIT_PRELIM_GINT.GPJ_NC_DOT_GDT 11/14/13

WBS 34518.1.3		TIP R-2915B		COUNTY ASHE		GEOLOGIST B. Worley, P.G.									
SITE DESCRIPTION Bridge 10 over South Fork of New River on							GROUND WTR (ft)								
BORING NO. EB1-B		STATION 241+18		OFFSET 47 ft RT		ALIGNMENT -L-									
COLLAR ELEV. 2,859.6 ft		TOTAL DEPTH 45.0 ft		NORTHING 934,961		EASTING 1,263,853									
DRILL RIG/HAMMER EFF./DATE SUM0093 DIEDRICH D-50 86% 08/15/2013		DRILL METHOD NW Casing w/ Advancer		HAMMER TYPE Automatic											
DRILLER J. Bare		START DATE 10/03/13		COMP. DATE 10/03/13		SURFACE WATER DEPTH N/A									
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	L O G	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
2860															
2855	2,859.6	0.0	WOH	1	1									GROUND SURFACE	0.0
														ALLUVIAL	
														Brown to dark brown, v. loose to loose, moderately organic to slightly organic, SILTY f. SAND (A-2-4), slightly micaceous to micaceous	
2850	2,854.4	5.2		1	1	3									
2845	2,849.4	10.2	WOH	1	2										
2840	2,844.4	15.2		13	17	29								Dense cse SAND and GRAVEL (A-1-b)	13.2
2835	2,839.4	20.2		18	64	36/0.1								RESIDUAL	15.7
														Brown, hard, micaceous, saprolitic, f. SANDY SILT (A-4)	19.1
2830	2,834.4	25.2		60	40/0.1									WEATHERED ROCK	
														(biotite gneiss)	
2825	2,829.4	30.2													
2820	2,824.4	35.2													
2815	2,819.4	40.2													
	2,814.7	44.9		60/0.1										CRYSTALLINE ROCK	43.0
														(biotite gneiss)	45.0
														Boring Terminated with Standard Penetration Test Refusal at Elevation 2,814.6 ft IN CRYSTALLINE ROCK (BIOTITE GNEISS)	

NCDOT BORE SINGLE R2915B_GEO_BRD0010_SUMMIT_PRELIM_GINT.GPJ_NC_DOT_GDT 11/14/13

WBS 34518.1.3		TIP R-2915B		COUNTY ASHE		GEOLOGIST B. Smith, G.I.T.										
SITE DESCRIPTION Bridge 10 over South Fork of New River on							GROUND WTR (ft)									
BORING NO. B1-B		STATION 241+58		OFFSET 49 ft RT		ALIGNMENT -L-										
COLLAR ELEV. 2,860.5 ft		TOTAL DEPTH 65.9 ft		NORTHING 935,001		EASTING 1,263,850										
DRILL RIG/HAMMER EFF./DATE SUM0093 DIEDRICH D-50 86% 08/15/2013		DRILL METHOD NW Casing w/ Advancer		HAMMER TYPE Automatic												
DRILLER J. Bare		START DATE 10/02/13		COMP. DATE 10/02/13		SURFACE WATER DEPTH N/A										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	SOIL AND ROCK DESCRIPTION	DEPTH (ft)		
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
2865																
2860	2,860.5	0.0	1	1	2									2,860.5	GROUND SURFACE	0.0
2855	2,855.4	5.1	1	2	2										ALLUVIAL	
Brown to dark brown and gray, v. loose to loose, moderately to highly organic, SILTY f. SAND, with mica																
2850	2,850.4	10.1	WOH	1	1											
2845	2,845.4	15.1	22	40	18									2,846.9	Brown, v. dense, GRAVEL with coarse sand (A-1-a)	13.6
2840	2,840.4	20.1	89	11/0.1										2,844.0	RESIDUAL	16.5
Brown, hard, highly micaceous, saprolitic, f. SANDY SILT (A-4)																
2835	2,835.4	25.1	30	45	55/0.2									2,842.6	WEATHERED ROCK	17.9
(biotite gneiss)																
2830	2,830.4	30.1	62	38/0.2												
2825	2,825.4	35.1	100/0.2													
2820	2,820.4	40.1	60/0.1											2,820.3	CRYSTALLINE ROCK	40.2
(biotite gneiss)																
2815																
2810																
2805																
2800																
2795														2,794.6	Boring Terminated at Elevation 2,794.6 ft IN	65.9

NCDOT BORE SINGLE R2915B_GEO_BRDGG0010_SUMMIT_PRELIM_GINT.GPJ_NC_DOT.GDT 11/14/13

WBS 34518.1.3		TIP R-2915B		COUNTY ASHE		GEOLOGIST B. Smith, G.I.T.						
SITE DESCRIPTION Bridge 10 over South Fork of New River on							GROUND WTR (ft)					
BORING NO. B1-B		STATION 241+58		OFFSET 49 ft RT		ALIGNMENT -L-						
COLLAR ELEV. 2,860.5 ft		TOTAL DEPTH 65.9 ft		NORTHING 935,001		EASTING 1,263,850						
DRILL RIG/HAMMER EFF./DATE SUM0093 DIEDRICH D-50 86% 08/15/2013		DRILL METHOD NW Casing w/ Advancer		HAMMER TYPE Automatic								
DRILLER J. Bare		START DATE 10/02/13		COMP. DATE 10/02/13		SURFACE WATER DEPTH N/A						
ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		SAMP. NO.	STRATA		LOG	DESCRIPTION AND REMARKS	DEPTH (ft)
					REC. (%)	RQD (%)		REC. (%)	RQD (%)			
2820.3	2,820.3	40.2	0.7	1:17/0.7	(0.6)	(0.0)		(25.3)	(10.0)		Begin Coring @ 40.2 ft	40.2
2815	2,819.6	40.9	5.0	1:36/1.0 1:28/1.0 1:22/1.0 0:50/1.0	86%	0%		98%	39%		CRYSTALLINE ROCK	
Very dark gray and black, mod. severely weathered to v. slightly weathered, med. hard to hard, close-fractured, biotite gneiss												
2810	2,814.6	45.9	5.0	1:02/1.0	(4.9)	(2.6)						
2805	2,809.6	50.9	5.0	1:14/1.0 1:17/1.0 1:07/1.0 1:23/1.0 1:22/1.0	98%	52%						
2800	2,804.6	55.9	5.0	1:18/1.0 1:25/1.0 1:29/1.0 1:09/1.0 1:22/1.0	(5.0)	(1.3)						
2795	2,799.6	60.9	5.0	1:15/1.0 2:08/1.0 1:00/1.0 0:55/1.0 1:03/1.0	100%	26%						
2795	2,794.6	65.9	5.0	1:00/1.0 1:38/1.0 1:01/1.0 1:10/1.0 1:45/1.0	(5.0)	(1.9)						
Boring Terminated at Elevation 2,794.6 ft IN												

NCDOT CORE SINGLE R2915B_GEO_BRDGG0010_SUMMIT_PRELIM_GINT.GPJ_NC_DOT.GDT 11/14/13

WBS 34518.1.3	TIP R-2915B	COUNTY ASHE	GEOLOGIST B. Smith, G.I.T.
SITE DESCRIPTION Bridge 10 over South Fork of New River on			GROUND WTR (ft)
BORING NO. B2-B	STATION 242+89	OFFSET 52 ft RT	ALIGNMENT -L-
COLLAR ELEV. 2,856.1 ft	TOTAL DEPTH 76.1 ft	NORTHING 935,130	EASTING 1,263,876
DRILL RIG/HAMMER EFF./DATE SUM0093 DIEDRICH D-50 86% 08/15/2013		DRILL METHOD NW Casing w/ Advancer	HAMMER TYPE Automatic
DRILLER J. Bare	START DATE 10/01/13	COMP. DATE 10/01/13	SURFACE WATER DEPTH N/A
CORE SIZE NQ-2		TOTAL RUN 20.9 ft	
ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)
2800.93	2,800.9	55.2	0.9
2800	2,800.0	56.1	5.0
2795	2,795.0	61.1	5.0
2790	2,790.0	66.1	5.0
2785	2,785.0	71.1	5.0
	2,780.0	76.1	
DRILL RATE (Min/ft)			SAMP. NO.
1:38/0.9	(0.8)	(0.5)	
1:30/1.0	89%	56%	
1:36/1.0	(4.2)	(3.0)	
1:17/1.0	84%	60%	
1:20/1.0			
0:53/1.0			
1:18/1.0	(4.6)	(3.5)	
1:23/1.0	92%	70%	
1:14/1.0			
1:31/1.0			
2:06/1.0			
2:33/1.0	(4.8)	(4.8)	
2:38/1.0	96%	96%	
2:30/1.0			
2:35/1.0			
2:30/1.0	(4.8)	(3.5)	
2:14/1.0	96%	70%	
2:44/1.0			
1:50/1.0			
2:01/1.0			
2:17/1.0			
STRATA REC. (%)			RQD (%)
(19.2)	(15.3)		
92%	73%		
SOIL AND ROCK DESCRIPTION			DEPTH (ft)
Begin Coring @ 55.2 ft			
CRYSTALLINE ROCK			55.2
Black, white, light to dark gray, with dark green and brown, v. sli. to sli. weathered with two mod. weathered zones, mod. close to close fracture spacing, gneiss			
Boring Terminated at Elevation 2,780.0 ft IN			76.1

NCDOT CORE SINGLE R2915B_GEO_BRD0010_SUMMIT_PRELIM_GINT.GPJ NC_DOT.GDT 11/14/13

WBS 34518.1.3	TIP R-2915B	COUNTY ASHE	GEOLOGIST B. Smith, G.I.T.
SITE DESCRIPTION Bridge 10 over South Fork of New River on			GROUND WTR (ft)
BORING NO. B2-C	STATION 243+17	OFFSET CL	ALIGNMENT -L-
COLLAR ELEV. 2,853.4 ft	TOTAL DEPTH 81.5 ft	NORTHING 935,163	EASTING 1,263,827
DRILL RIG/HAMMER EFF./DATE SUM0093 DIEDRICH D-50 86% 08/15/2013		DRILL METHOD NW Casing w/ Advancer	HAMMER TYPE Automatic
DRILLER J. Bare	START DATE 09/30/13	COMP. DATE 10/01/13	SURFACE WATER DEPTH N/A
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT
2855	2,853.4	0.0	0.5ft 0.5ft 0.5ft
2850	2,847.9	5.5	8 10 9
2845	2,842.9	10.5	4 7 8
2840	2,837.9	15.5	20 31 42
2835	2,832.9	20.5	5 10 11
2830	2,827.9	25.5	9 32 68/0.4
2825	2,822.9	30.5	100/0.2
2820	2,817.9	35.5	100/0.2
2815	2,812.9	40.5	100/0.4
2810	2,807.9	45.5	100/0.4
2805	2,802.9	50.5	60/0.1
2800			
2795			
2790			
2785			
2780			
2775			
SOIL AND ROCK DESCRIPTION			DEPTH (ft)
GROUND SURFACE			0.0
ALLUVIAL			
Brown, loose, moderately organic, SILTY f. SAND (A-2-4), with mica, trace gravel			3.0
Tan-brown to brown, med. dense, f. to cse SAND (A-1-b), with gravel			8.0
RESIDUAL			
Brown to orange-brown, stiff to hard, highly micaceous, saprolitic, f. SANDY SILT (A-4)			
WEATHERED ROCK			26.0
(biotite gneiss)			
CRYSTALLINE ROCK			50.6
(biotite gneiss)			

NCDOT BORE SINGLE R2915B_GEO_BRD0010_SUMMIT_PRELIM_GINT.GPJ NC_DOT.GDT 11/14/13

WBS 34518.1.3		TIP R-2915B		COUNTY ASHE		GEOLOGIST B. Smith, G.I.T.									
SITE DESCRIPTION Bridge 10 over South Fork of New River on							GROUND WTR (ft)								
BORING NO. EB2-A		STATION 244+24		OFFSET 76 ft LT		ALIGNMENT -L-									
COLLAR ELEV. 2,856.2 ft		TOTAL DEPTH 61.6 ft		NORTHING 935,278		EASTING 1,263,762									
DRILL RIG/HAMMER EFF./DATE SUM0093 DIEDRICH D-50 86% 08/15/2013		DRILL METHOD NW Casing w/ Advancer		HAMMER TYPE Automatic											
DRILLER J. Bare		START DATE 09/24/13		COMP. DATE 09/25/13		SURFACE WATER DEPTH N/A									
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	L O G	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
2860															
2855	2,856.2	0.0	1	2	3								M	2,856.2	0.0
2850	2,850.8	5.4	WOH	WOH	WOH									2,853.7	2.5
2845	2,845.8	10.4												2,848.6	7.6
2840	2,840.8	15.4													
2835	2,835.8	20.4													
2830	2,830.8	25.4													
2825	2,825.8	30.4	100/0.4												
2820	2,820.8	35.4	100/0.5												
2815	2,815.8	40.4	18	15	55										
2810	2,810.8	45.4	100/0.3												
	2,809.5	46.7	60/0.0												
2805															
2800															
2795															

NCDOT BORE SINGLE R2915B_GEO_BRDG0010_SUMMIT_PRELIM_GINT.GPJ NC_DOT_GDT 11/14/13



WBS 34518.1.3		TIP R-2915B		COUNTY ASHE		GEOLOGIST B. Smith, G.I.T.					
SITE DESCRIPTION Bridge 10 over South Fork of New River on							GROUND WTR (ft)				
BORING NO. EB2-A		STATION 244+24		OFFSET 76 ft LT		ALIGNMENT -L-					
COLLAR ELEV. 2,856.2 ft		TOTAL DEPTH 61.6 ft		NORTHING 935,278		EASTING 1,263,762					
DRILL RIG/HAMMER EFF./DATE SUM0093 DIEDRICH D-50 86% 08/15/2013		DRILL METHOD NW Casing w/ Advancer		HAMMER TYPE Automatic							
DRILLER J. Bare		START DATE 09/24/13		COMP. DATE 09/25/13		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. (%)	ROD (%)	REC. (%)	ROD (%)			
2809.53	2,809.5	46.7	4.4	N=60/0.0 1:01/0.4 2:34/1.0 2:19/1.0 1:49/1.0 1:21/1.0	(4.4)	(1.2)	(13.4)	(3.7)		Begin Coring @ 46.7 ft	
2805	2,805.1	51.1	5.0	2:17/1.0 1:58/1.0 2:36/1.0 2:05/1.0 1:45/1.0	(4.8)	(1.2)				CRYSTALLINE ROCK	46.7
										Gray, brown and orange-brown, mod. to mod. sev. weathering, med. hard to soft, close to v. close fracture spacing, gneiss	
2800	2,800.1	56.1	5.0	1:51/1.0 2:39/1.0 1:05/1.0 1:12/1.0	(4.2)	(1.3)					
2795	2,795.1	61.1									61.1
										Boring Terminated at Elevation 2,794.6 ft	

NCDOT CORE SINGLE R2915B_GEO_BRDG0010_SUMMIT_PRELIM_GINT.GPJ NC_DOT_GDT 11/14/13

WBS 34518.1.3		TIP R-2915B		COUNTY ASHE		GEOLOGIST B. Smith, G.I.T.										
SITE DESCRIPTION Bridge 10 over South Fork of New River on							GROUND WTR (ft)									
BORING NO. EB2-C		STATION 243+86		OFFSET 24 ft RT		ALIGNMENT -L-										
COLLAR ELEV. 2,856.5 ft		TOTAL DEPTH 46.3 ft		NORTHING 935,230		EASTING 1,263,859										
DRILL RIG/HAMMER EFF./DATE SUM0093 DIEDRICH D-50 86% 08/15/2013		DRILL METHOD NW Casing w/ Advancer		HAMMER TYPE Automatic												
DRILLER J. Bare		START DATE 09/26/13		COMP. DATE 09/27/13		SURFACE WATER DEPTH N/A										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	L O G	SOIL AND ROCK DESCRIPTION	DEPTH (ft)		
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
2860																
2855	2,856.5	0.0	2	2	5											
2850	2,851.1	5.4	WOH	WOH	WOH											
2845	2,846.1	10.4	3	7	10											
2840	2,841.1	15.4	17	20	25											
2835	2,836.1	20.4	24	42	58/0.4											
2830	2,831.1	25.4	26	51	49/0.4											
2825	2,826.1	30.4	33	55	42/0.2											
2820	2,821.1	35.4														
	2,820.2	36.3	100/0.3													
			60/0.0													
2815																

NCDOT BORE SINGLE R2915B_GEO_BRDGG0010_SUMMIT_PRELIM_GINT.GPJ NC_DOT.GDT 11/14/13

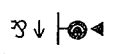
WBS 34518.1.3		TIP R-2915B		COUNTY ASHE		GEOLOGIST B. Smith, G.I.T.						
SITE DESCRIPTION Bridge 10 over South Fork of New River on							GROUND WTR (ft)					
BORING NO. EB2-C		STATION 243+86		OFFSET 24 ft RT		ALIGNMENT -L-						
COLLAR ELEV. 2,856.5 ft		TOTAL DEPTH 46.3 ft		NORTHING 935,230		EASTING 1,263,859						
DRILL RIG/HAMMER EFF./DATE SUM0093 DIEDRICH D-50 86% 08/15/2013		DRILL METHOD NW Casing w/ Advancer		HAMMER TYPE Automatic								
DRILLER J. Bare		START DATE 09/26/13		COMP. DATE 09/27/13		SURFACE WATER DEPTH N/A						
CORE SIZE NQ-2			TOTAL RUN 10.0 ft					L O G	DESCRIPTION AND REMARKS	DEPTH (ft)		
ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN REC. (%)	RUN ROD (%)	SAMP. NO.				STRATA REC. (%)	STRATA ROD (%)
2820.2	2,820.2	36.3	5.0	N=60/0.0 2:29/1.0 2:08/1.0 1:28/1.0 1:36/1.0 1:19/1.0	(4.5)	(3.3)		(9.5)	(6.7)	2,820.2	Begin Coring @ 36.3 ft CRYSTALLINE ROCK	
2815	2,815.2	41.3	5.0	1:44/1.0 1:22/1.0 1:43/1.0 1:30/1.0 1:29/1.0	(5.0)	(3.4)				2,810.2	light to dark gray and brown, v. sli. to mod. weathering, mostly hard with mod. weathered zones med. hard, close fracture spacing, gneiss	
											2,810.2	Boring Terminated at Elevation 2,810.2 ft IN

NCDOT CORE SINGLE R2915B_GEO_BRDGG0010_SUMMIT_PRELIM_GINT.GPJ NC_DOT.GDT 11/14/13

WBS 34518.1.3	TIP R-2915B	COUNTY ASHE	GEOLOGIST B. Smith, G.I.T.
SITE DESCRIPTION Bridge 10 over South Fork of New River on			GROUND WTR (ft)
BORING NO. EB2-B	STATION 243+78	OFFSET 42 ft RT	ALIGNMENT -L-
COLLAR ELEV. 2,856.4 ft	TOTAL DEPTH 41.1 ft	NORTHING 935,220	EASTING 1,263,881
DRILL RIG/HAMMER EFF./DATE SUM0093 DIEDRICH D-50 86% 08/15/2013		DRILL METHOD NW Casing w/ Advancer	HAMMER TYPE Automatic
DRILLER J. Bare	START DATE 09/27/13	COMP. DATE 09/27/13	SURFACE WATER DEPTH N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	L O G	SOIL AND ROCK DESCRIPTION	DEPTH (ft)
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
2860															
2855	2,856.4	0.0												2,856.4	0.0
2850	2,851.1	5.3	WOH	WOH	WOH										
2845	2,846.1	10.3												2,848.6	7.8
2840	2,841.1	15.3												2,845.4	11.0
2835	2,836.1	20.3												2,838.6	17.8
2830	2,831.1	25.3													
2825	2,826.1	30.3													
2820	2,821.1	35.3													
	2,816.1	40.3													
	2,815.3	41.1												2,815.3	41.1

NCDOT BORE SINGLE R2915B_GEO_BRDGC010_SUMMIT_PRELIM_GINT.GPJ NC_DOT_GDT 11/14/13



R-2915 B 34518.1.3

BORING B1-B

BOX 1 OF 3

DEPTH: 40.2-49.4



R-2915 B 34518.1.3

BORING B1-B

BOX 2 OF 3

DEPTH: 49.4-58.8



R-2915 B 34518.1.3

BORING B1-B

BOX 3 OF 3

DEPTH: 58.8-65.9



R-2915 B 34518.1.3

BORING B2-A

BOX 1 OF 4

DEPTH: 35.3-45.3



R-2915 B 34518.1.3

BORING B2-A

BOX 2 OF 4

DEPTH: 45.3-55.3



R-2915 B 34518.1.3

BORING B2-A

BOX 3 OF 4

DEPTH: 55.3-65.3



R-2915 B 34518.1.3

BORING B2-A

BOX 4 OF 4

DEPTH: 65.3-71.0



R-2915 B 34518.1.3

BORING B2-B

BOX 1 OF 3

DEPTH: 55.2-65.2



R-2915 B 34518.1.3

BORING B2-B

BOX 2 OF 3

DEPTH: 65.2-75.2



R-2915 B 34518.1.3

BORING B2-B

BOX 3 OF 3

DEPTH: 75.2-76.1



R-2915 B 34518.1.3

BORING B2-C

BOX 1 OF 4

DEPTH: 50.6-60.6



R-2915 B 34518.1.3

BORING B2-C

BOX 2 OF 4

DEPTH: 60.6-70.6



R-2915 B 34518.1.3

BORING B2-C

BOX 3 OF 4

DEPTH: 70.6-80.6



R-2915 B 34518.1.3

BORING B2-C

BOX 4 OF 4

DEPTH: 80.6-81.5



R-2915 B 34518.1.3

BORING EB2-A

BOX 1 OF 2

DEPTH: 46.7-56.7



R-2915 B 34518.1.3

BORING EB2-A

BOX 1 OF 2

DEPTH: 46.7-56.7



R-2915 B 34518.1.3

BORING EB2-C

BOX 1 OF 1

DEPTH: 36.5-46.3

