

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

STRUCTURE
SUBSURFACE INVESTIGATION

CONTENTS

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PROJ. REFERENCE NO. 38569.1.1 (B-4799) F.A. PROJ. BRZ-1311(8)
COUNTY Randolph
PROJECT DESCRIPTION Bridge No. 37 on SR 1311 (Bescher Chapel Rd.)
over Jackson Creek

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 (919) 707-6850. 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.

PERSONNEL

J. Gilchrist

M. Renza

M. Brewer

INVESTIGATED BY F&R, Inc.

CHECKED BY P. Alton, P.E.

SUBMITTED BY F&R, Inc.

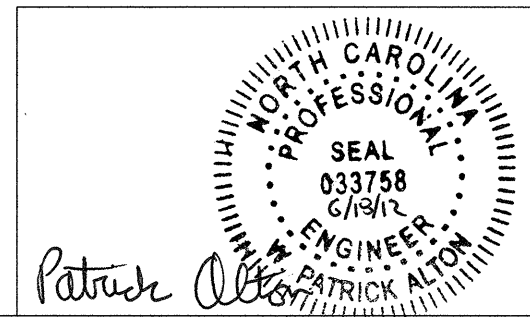
DATE June 2012

PROJECT: 38569.1.1
ID: B-4799

DRAWN BY: D. Racey

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.



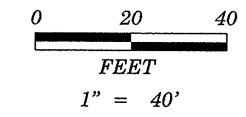
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

PROJECT REFERENCE NO. B-4799	SHEET NO. 2
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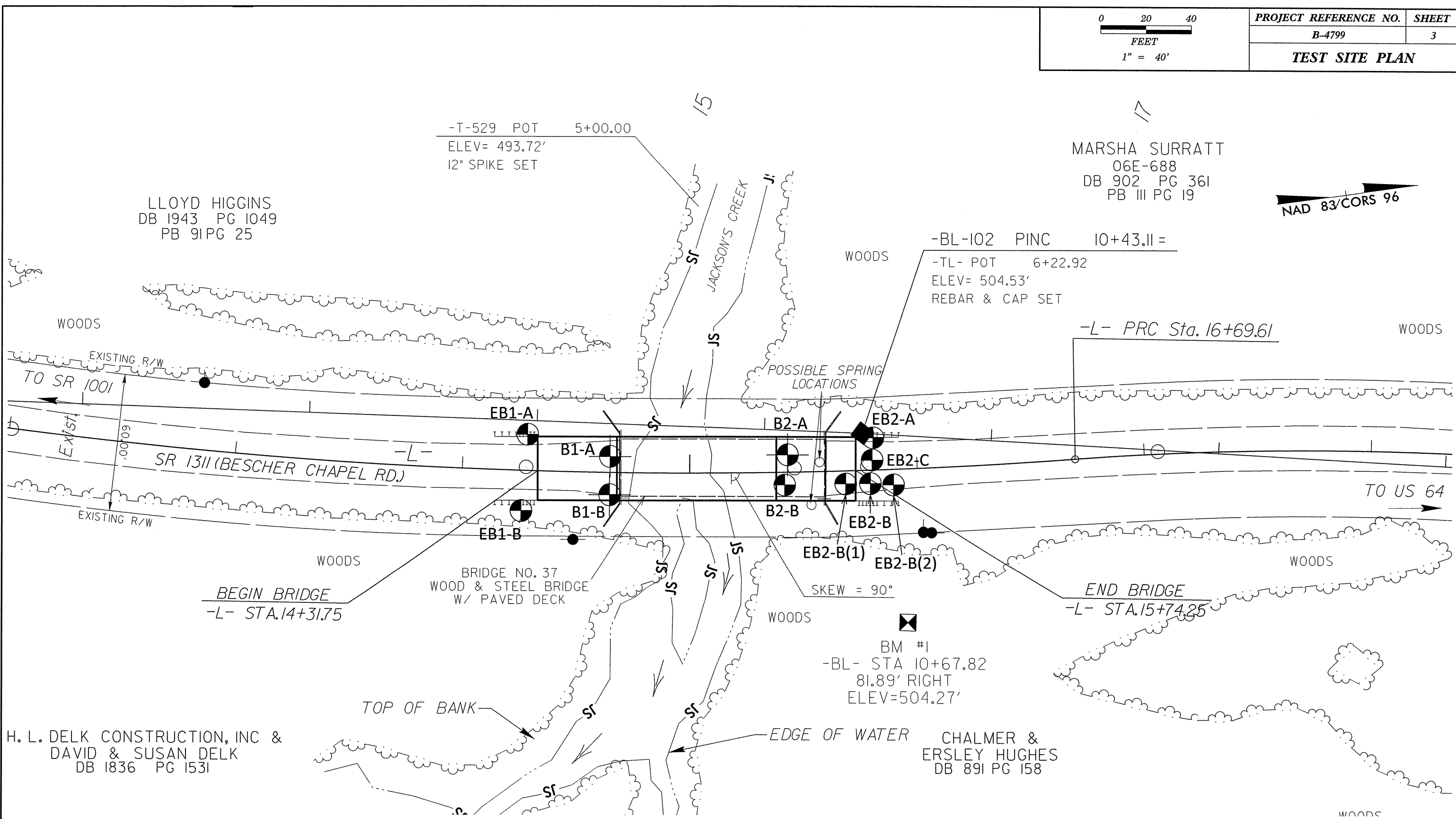
SUBSURFACE INVESTIGATION

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, 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) POORLY 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) - NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT N VALUES > 100 BLOWS PER FOOT IF TESTED. CRYSTALLINE ROCK (CR) - FINE TO COARSE GRAIN IGNEOUS AND METAMORPHIC ROCK THAT WOULD YIELD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES GRANITE, GNEISS, GABBRO, SCHIST, ETC. NON-CRYSTALLINE ROCK (NCR) - 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 SEDIMENTARY ROCK (CP) - COASTAL PLAIN SEDIMENTS CEMENTED INTO ROCK, BUT MAY NOT YIELD SPT REFUSAL. ROCK TYPE INCLUDES LIMESTONE, SANDSTONE, CEMENTED SHELL BEDS, ETC.	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 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	MINERALOGICAL COMPOSITION	WEATHERING	
GENERAL CLASS. GRANULAR MATERIALS (<= 35% PASSING #200) SILT-CLAY MATERIALS (> 35% PASSING #200) ORGANIC MATERIALS	MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, 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 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 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. <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.	
COMPRESSIONIBILITY	PERCENTAGE OF MATERIAL	GROUND WATER	
SLIGHTLY COMPRESSIBLE LIQUID LIMIT LESS THAN 31 MODERATELY COMPRESSIBLE LIQUID LIMIT EQUAL TO 31-50 HIGHLY COMPRESSIBLE LIQUID LIMIT GREATER THAN 50	ORGANIC MATERIAL TRACE OF ORGANIC MATTER 2 - 3% LITTLE ORGANIC MATTER 3 - 5% MODERATELY ORGANIC 5 - 10% HIGHLY ORGANIC >10% SILT - CLAY SOILS 3 - 5% 5 - 12% 12 - 20% >20% OTHER MATERIAL TRACE 1 - 10% LITTLE 10 - 20% SOME 20 - 35% HIGHLY 35% AND ABOVE	▽ WATER LEVEL IN BORE HOLE IMMEDIATELY AFTER DRILLING ▽ STATIC WATER LEVEL AFTER 24 HOURS ▽PW PERCHED WATER, SATURATED ZONE, OR WATER BEARING STRATA ○ SPRING OR SEEP	
CONSISTENCY OR DENSENESS	MISCELLANEOUS SYMBOLS	ROCK HARDNESS	
PRIMARY SOIL TYPE COMPACTNESS OR CONSISTENCY RANGE OF STANDARD PENETRATION RESISTANCE (N-VALUE) RANGE OF UNCONFINED COMPRESSIVE STRENGTH (TONS/FT ²)	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	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 PIECES 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	ABBREVIATIONS	FRACTURE SPACING	BEDDING
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	AR - AUGER REFUSAL BT - BORING TERMINATED CL - CLAY CPT - CONE PENETRATION TEST CSE - COARSE DMT - DILATOMETER TEST DPT - DYNAMIC PENETRATION TEST e - VOID RATIO FIAD - FILLED IMMEDIATELY AFTER DRILLING FRAGS. - FRAGMENTS HL - HIGHLY MD - MEDIUM MICA - MICA 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 UNIT WEIGHT DRY UNIT WEIGHT SAMPLE ABBREVIATIONS S - BULK SS - SPLIT SPOON ST - SHELBY TUBE RS - ROCK RT - RECOMPACTED TRIAXIAL CBR - CALIFORNIA BEARING RATIO	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	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
SOIL MOISTURE - CORRELATION OF TERMS	EQUIPMENT USED ON SUBJECT PROJECT	INDURATION	
SOIL MOISTURE SCALE (ATTERBERG LIMITS) FIELD MOISTURE DESCRIPTION GUIDE FOR FIELD MOISTURE DESCRIPTION	DRILL UNITS: <input type="checkbox"/> MOBILE B- <input type="checkbox"/> BK-51 <input type="checkbox"/> CME-45C <input checked="" type="checkbox"/> CME-55 <input type="checkbox"/> PORTABLE HOIST ADVANCING TOOLS: <input type="checkbox"/> CLAY BITS <input type="checkbox"/> 6" CONTINUOUS FLIGHT AUGER <input checked="" type="checkbox"/> 8" HOLLOW AUGERS <input type="checkbox"/> HARD FACED FINGER BITS <input type="checkbox"/> TUNG-CARBIDE INSERTS <input checked="" type="checkbox"/> CASING <input type="checkbox"/> W/ ADVANCER <input type="checkbox"/> TRICONE _____ *STEEL TEETH <input type="checkbox"/> TRICONE _____ *TUNG.-CARB. <input checked="" type="checkbox"/> CORE BIT HAMMER TYPE: <input checked="" type="checkbox"/> AUTOMATIC <input type="checkbox"/> MANUAL CORE SIZE: <input type="checkbox"/> B- <input checked="" type="checkbox"/> N-03 <input type="checkbox"/> H- HAND TOOLS: <input type="checkbox"/> POST HOLE DIGGER <input type="checkbox"/> HAND AUGER <input type="checkbox"/> SOUNDING ROD <input type="checkbox"/> VANE SHEAR TEST	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.	FRAC. SPACING TERM THICKNESS
PLASTICITY			NOTES:
PLASTICITY INDEX (PI) DRY STRENGTH			BENCH MARK: TBM: BL-102 N: 708,819.4 E: 1,699,395.8 ELEVATION: 504.53 FT.
NONPLASTIC 0-5 VERY LOW LOW PLASTICITY 6-15 SLIGHT MED. PLASTICITY 16-25 MEDIUM HIGH PLASTICITY 26 OR MORE HIGH			
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.			



PROJECT REFERENCE NO.	SHEET
B-4799	3
TEST SITE PLAN	



LLOYD HIGGINS
DB 1943 PG 1049
PB 91 PG 25

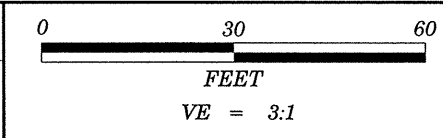
MARSHA SURRETT
06E-688
DB 902 PG 361
PB III PG 19

NAD 83/CORS 96

H. L. DELK CONSTRUCTION, INC &
DAVID & SUSAN DELK
DB 1836 PG 1531

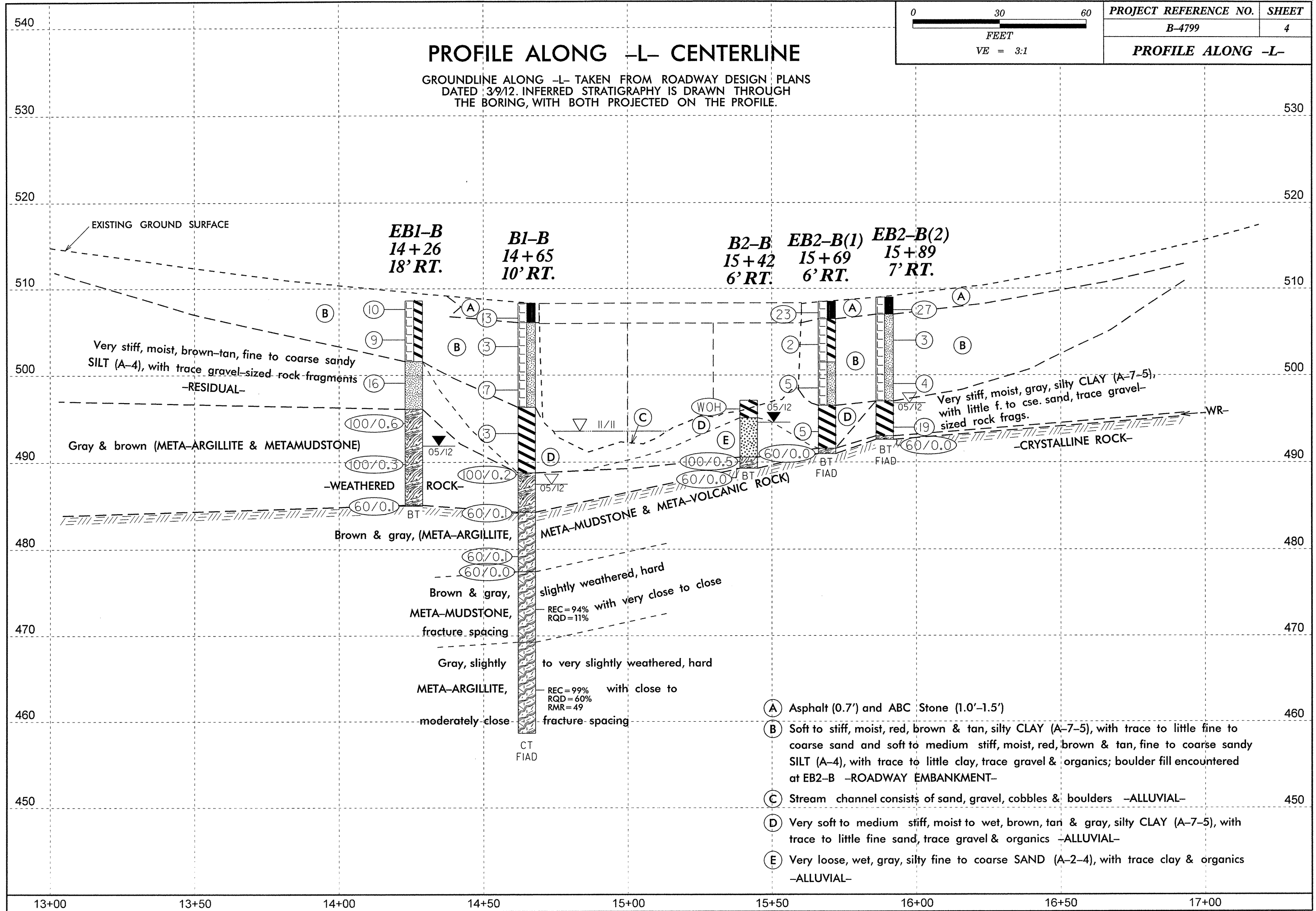
CHALMER &
ERSLEY HUGHES
DB 891 PG 158

	FROEHLING & ROBERTSON, INC.		TEST SITE PLAN	
	Engineering Stability Since 1881			
	310 Hubert Street Raleigh, North Carolina 27603-2302 USA T 919.828.3441 F 919.828.5751 www.fandr.com			
			PROJECT REFERENCE NO.: 38569.1.1	F&R PROJECT NO.: 66N-0221
			I.D. NO.: B-4799	F.A. PROJECT NO.: BRZ-1311(8)
		PROJECT DESCRIPTION: Bridge No. 37 on SR 1311 (Bescher Chapel Rd.) over Jackson Creek		
		SITE DESCRIPTION: Bridge No. 37 on SR 1311 over Jackson Creek		
		DRAWN BY: D. Racey	CHECKED BY: P. Alton, P.E.	
		DATE: June 2012	SCALE: 1"=40'	



PROFILE ALONG -L- CENTERLINE

GROUNDLINE ALONG -L- TAKEN FROM ROADWAY DESIGN PLANS DATED 3/9/12. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE PROFILE.



EXISTING GROUND SURFACE

EB1-B
14+26
18' RT.

B1-B
14+65
10' RT.

B2-B
15+42
6' RT.

EB2-B(1)
15+69
6' RT.

EB2-B(2)
15+89
7' RT.

Very stiff, moist, brown-tan, fine to coarse sandy SILT (A-4), with trace gravel-sized rock fragments -RESIDUAL-

Gray & brown (META-ARGILLITE & METAMUDSTONE)

-WEATHERED ROCK-

Brown & gray, (META-ARGILLITE,

Brown & gray, META-MUDSTONE, fracture spacing

Gray, slightly META-ARGILLITE, moderately close

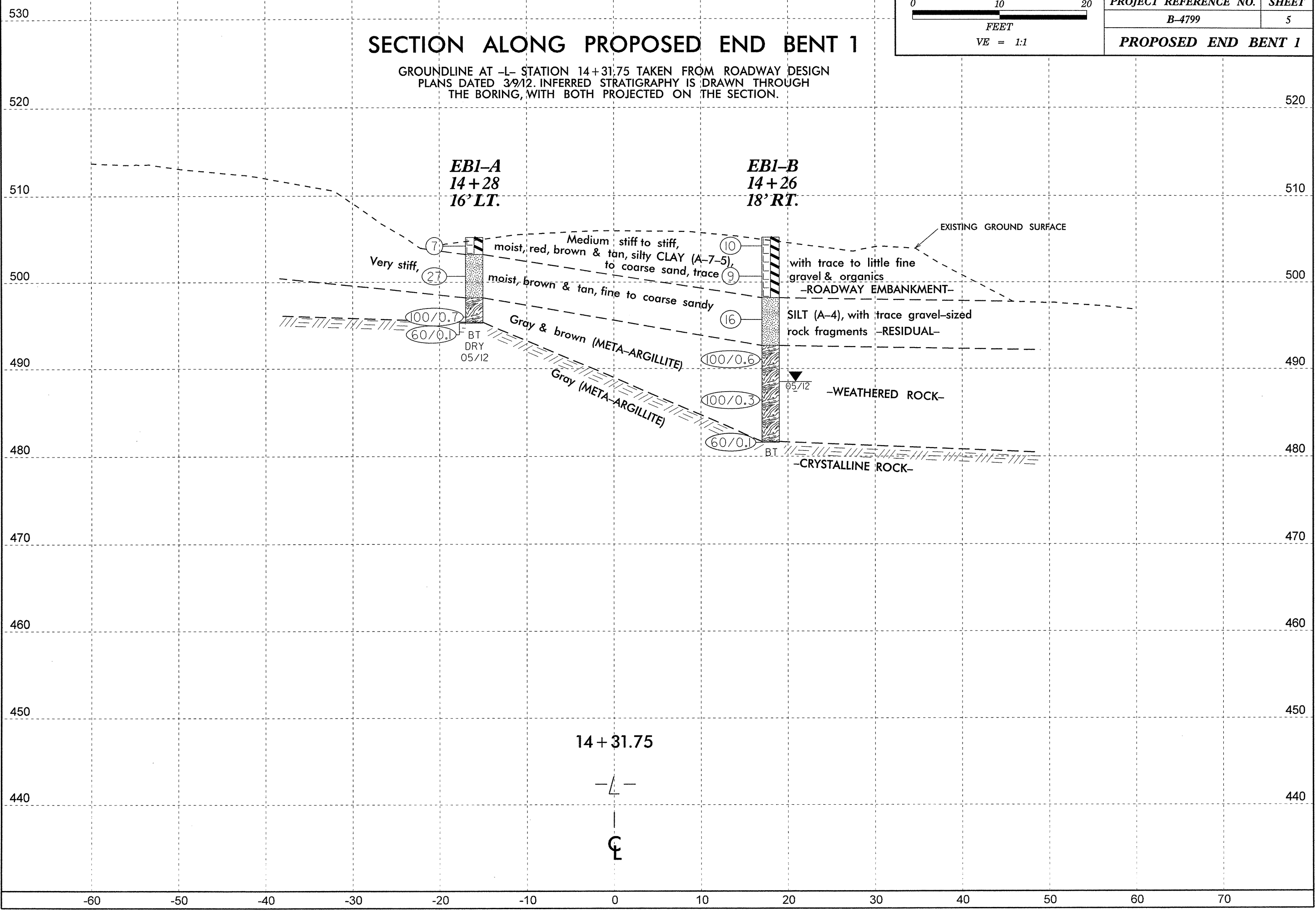
slightly weathered, hard
REC=94% with very close to close
RQD=11%

to very slightly weathered, hard
REC=99% with close to
RQD=60%
RMR=49
fracture spacing

Very stiff, moist, gray, silty CLAY (A-7-5), with little f. to cse. sand, trace gravel-sized rock frags.

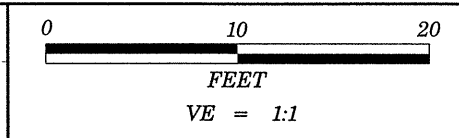
-CRYSTALLINE ROCK-

- (A) Asphalt (0.7') and ABC Stone (1.0'-1.5')
- (B) Soft to stiff, moist, red, brown & tan, silty CLAY (A-7-5), with trace to little fine to coarse sand and soft to medium stiff, moist, red, brown & tan, fine to coarse sandy SILT (A-4), with trace to little clay, trace gravel & organics; boulder fill encountered at EB2-B -ROADWAY EMBANKMENT-
- (C) Stream channel consists of sand, gravel, cobbles & boulders -ALLUVIAL-
- (D) Very soft to medium stiff, moist to wet, brown, tan & gray, silty CLAY (A-7-5), with trace to little fine sand, trace gravel & organics -ALLUVIAL-
- (E) Very loose, wet, gray, silty fine to coarse SAND (A-2-4), with trace clay & organics -ALLUVIAL-



SECTION ALONG PROPOSED END BENT 1

GROUNDLINE AT -L- STATION 14+31.75 TAKEN FROM ROADWAY DESIGN PLANS DATED 3/9/12. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE SECTION.



PROJECT REFERENCE NO.	SHEET
B-4799	5
PROPOSED END BENT 1	

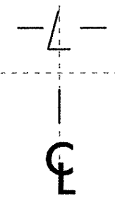
EBI-A
14+28
16' LT.

EBI-B
14+26
18' RT.

EXISTING GROUND SURFACE

Very stiff, (7)
 (27) moist, red, brown & tan, silty CLAY (A-7-5), to coarse sand, trace
 (10) Medium stiff to stiff, moist, brown & tan, fine to coarse sandy
 (9) with trace to little fine gravel & organics
 (16) SILT (A-4), with trace gravel-sized rock fragments
 (100/0.7) Gray & brown (META-ARGILLITE)
 (60/0.1) Gray (META-ARGILLITE)
 BT DRY 05/12
 (100/0.6)
 (100/0.3)
 (60/0.1) BT
 -ROADWAY EMBANKMENT-
 -RESIDUAL-
 -WEATHERED ROCK-
 -CRYSTALLINE ROCK-

14 + 31.75



530

520

510

500

490

480

470

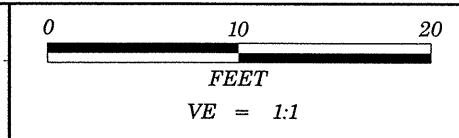
460

450

440

SECTION ALONG PROPOSED BENT 2

GROUNDLINE AT -L- STATION 15+38.06 TAKEN FROM ROADWAY DESIGN PLANS DATED 3/9/12. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE SECTION.



PROJECT REFERENCE NO.	SHEET
B-4799	7
PROPOSED BENT 2	

520

510

500

490

480

470

460

450

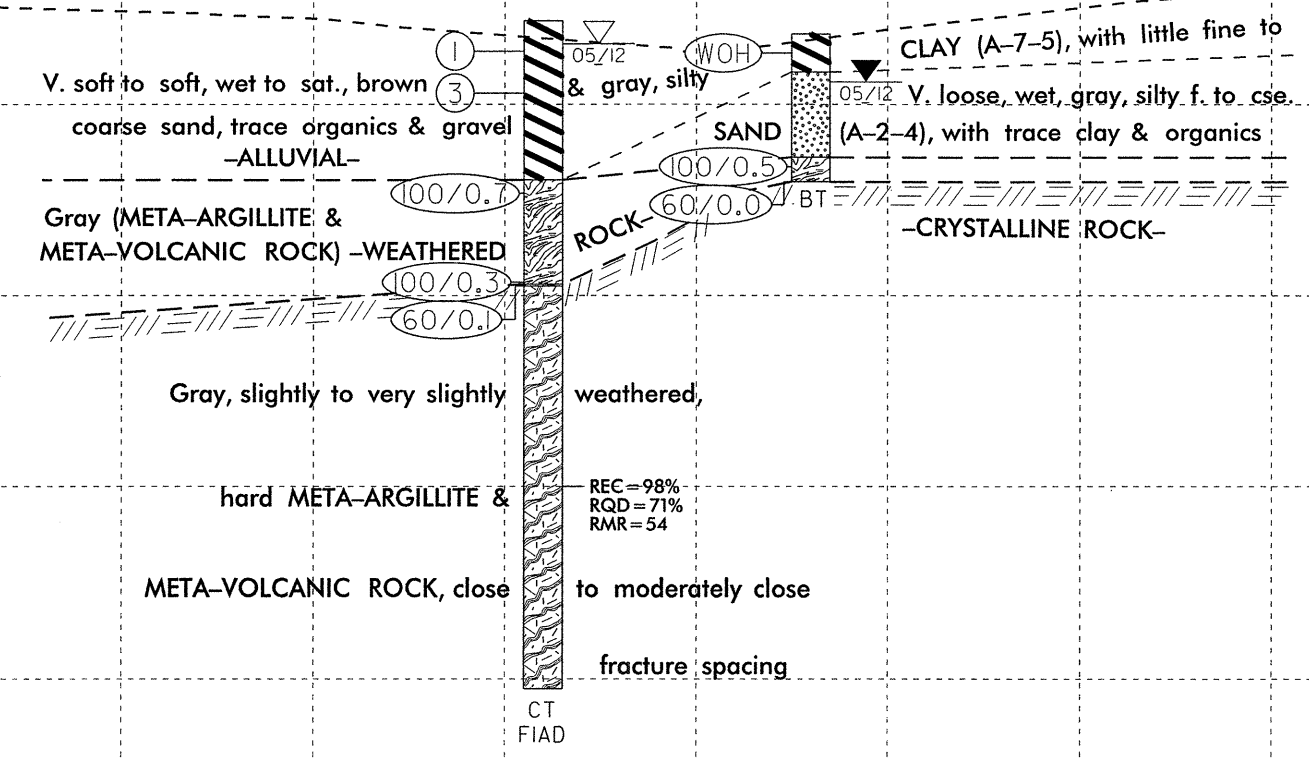
440

-60 -50 -40 -30 -20 -10 0 10 20 30 40 50 60 70

EXISTING GROUND SURFACE

B2-A
15+43
8' LT.

B2-B
15+42
6' RT.



530

520

510

500

490

480

470

460

450

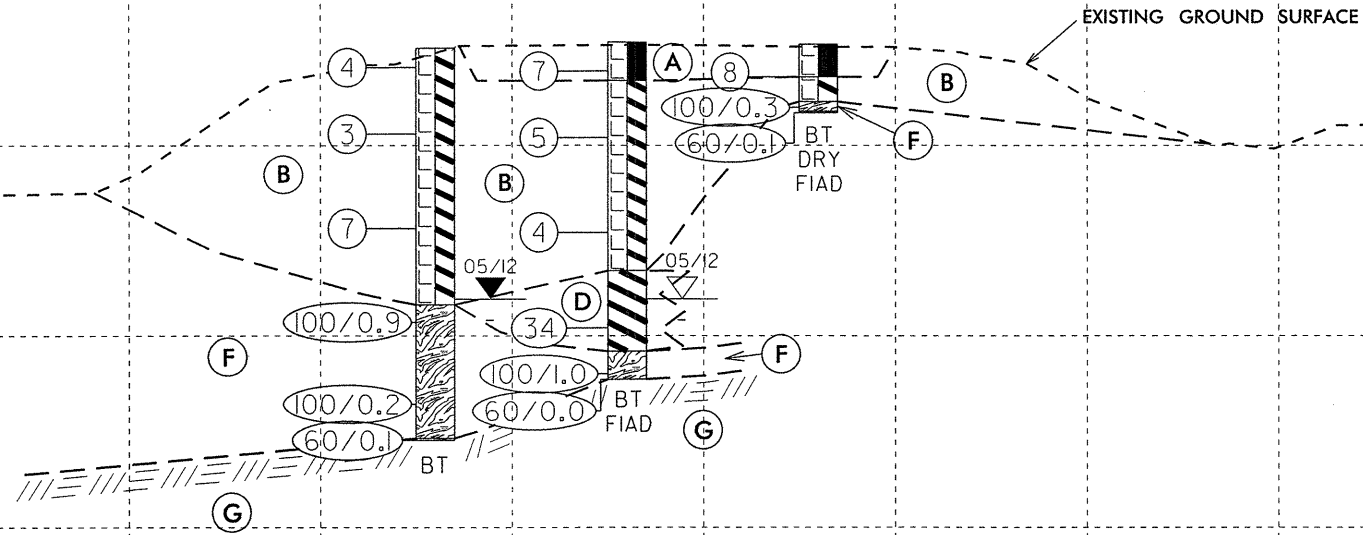
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SECTION ALONG PROPOSED END BENT 2

GROUNDLINE AT -L- STATION 15+74.25 TAKEN FROM ROADWAY DESIGN PLANS DATED 3/9/12. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE SECTION.

	PROJECT REFERENCE NO.	SHEET
	B-4799	8
PROPOSED END BENT 2		

EB2-A **EB2-C** **EB2-B**
 15+81 15+80 15+79
 14' LT. 4' LT. 6' RT.



- (A) Asphalt (0.7') and ABC Stone (1.0'-1.3')
- (B) Soft to medium stiff, moist, red, brown & tan, silty CLAY (A-7-5), with trace to little fine to coarse sand, trace gravel & organics; boulder fill encountered at EB2-B -ROADWAY EMBANKMENT-
- (D) Hard, moist, brown-gray, silty CLAY (A-7-5), with little fine sand, trace gravel-sized rock fragments -RESIDUAL-
- (F) Gray & brown (META-ARGILLITE & META-VOLCANIC ROCK) -WEATHERED ROCK-
- (G) Gray & brown (META-ARGILLITE & META-VOLCANIC ROCK) -CRYSTALLINE ROCK-

15+74.25

-L-

⊕

-60 -50 -40 -30 -20 -10 0 10 20 30 40 50 60 70

520

510

500

490

480

470

460

450

440



NCDOT GEOTECHNICAL ENGINEERING UNIT

BORELOG REPORT

WBS 38569.1.1	TIP B-4799	COUNTY RANDOLPH	GEOLOGIST M. Brewer
SITE DESCRIPTION Bridge No. 37 on SR 1311 (Bescher Chapel Rd.) over Jackson Creek			GROUND WTR (ft)
BORING NO. EB1-A	STATION 14+28	OFFSET 16 ft LT	ALIGNMENT -L-
COLLAR ELEV. 505.2 ft	TOTAL DEPTH 9.9 ft	NORTHING 708,674	EASTING 1,699,376
DRILL RIG/HAMMER EFF./DATE F&R2175 CME-55 83% 12/15/2011		DRILL METHOD H.S. Augers	HAMMER TYPE Automatic
DRILLER J. Gilchrist	START DATE 05/09/12	COMP. DATE 05/09/12	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				
510														
505	505.2	0.0											GROUND SURFACE	0.0
			1	3	4								ROADWAY EMBANKMENT	
	501.7	3.5											Brown-tan-red, silty CLAY (A-7-5), with little fine sand & trace gravel	2.0
500			11	13	14								RESIDUAL	
													Tan, fine to coarse sandy SILT (A-4), with trace gravel-sized rock fragments	7.0
	496.7	8.5											WEATHERED ROCK	
	495.4	9.8	70	30/0.2									Gray, (META-ARGILLITE)	9.8
			60/0.1										CRYSTALLINE ROCK	
													Gray, (META-ARGILLITE)	9.9
													Boring Terminated with Standard Penetration Test Refusal at Elevation 495.3 ft in CRYSTALLINE ROCK (META-ARGILLITE)	

WBS 38569.1.1	TIP B-4799	COUNTY RANDOLPH	GEOLOGIST M. Brewer
SITE DESCRIPTION Bridge No. 37 on SR 1311 (Bescher Chapel Rd.) over Jackson Creek			GROUND WTR (ft)
BORING NO. EB1-B	STATION 14+26	OFFSET 18 ft RT	ALIGNMENT -L-
COLLAR ELEV. 505.2 ft	TOTAL DEPTH 23.6 ft	NORTHING 708,666	EASTING 1,699,408
DRILL RIG/HAMMER EFF./DATE F&R2175 CME-55 83% 12/15/2011		DRILL METHOD H.S. Augers	HAMMER TYPE Automatic
DRILLER J. Gilchrist	START DATE 05/09/12	COMP. DATE 05/09/12	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				
510														
505	505.2	0.0											GROUND SURFACE	0.0
			2	5	5								ROADWAY EMBANKMENT	
	501.7	3.5											Red & brown, silty CLAY (A-7-5), with trace to little fine to coarse sand, trace gravel & trace organics from 3.5-5.0'	2.0
500			2	3	6								RESIDUAL	
													Brown-tan, fine to coarse sandy SILT (A-4), with trace gravel-sized rock fragments	7.0
	496.7	8.5											WEATHERED ROCK	
	495.4	9.8	5	7	9								Gray, (META-ARGILLITE)	9.8
495													CRYSTALLINE ROCK	
	491.7	13.5	84	16/0.1									Gray, (META-ARGILLITE)	9.9
													Boring Terminated with Standard Penetration Test Refusal at Elevation 481.6 ft in CRYSTALLINE ROCK (META-ARGILLITE)	
	486.7	18.5											WEATHERED ROCK	
	481.7	23.5	60/0.1										Gray & brown, (META-ARGILLITE)	12.5
													CRYSTALLINE ROCK	
	481.6	23.6											Gray, (META-ARGILLITE)	23.6
													Boring Terminated with Standard Penetration Test Refusal at Elevation 481.6 ft in CRYSTALLINE ROCK (META-ARGILLITE)	

WBS 38569.1.1		TIP B-4799		COUNTY RANDOLPH		GEOLOGIST M. Brewer							
SITE DESCRIPTION Bridge No. 37 on SR 1311 (Bescher Chapel Rd.) over Jackson Creek							GROUND WTR (ft)						
BORING NO. B1-A		STATION 14+65		OFFSET 7 ft LT		ALIGNMENT -L-							
COLLAR ELEV. 504.9 ft		TOTAL DEPTH 27.4 ft		NORTHING 708,708		EASTING 1,699,390							
DRILL RIG/HAMMER EFF./DATE F&R2175 CME-55 83% 12/15/2011		DRILL METHOD NW Casing W/SPT & Core		HAMMER TYPE Automatic									
DRILLER J. Gilchrist		START DATE 05/10/12		COMP. DATE 05/10/12		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				
505	504.5	0.4	29	12	5						M	504.9 GROUND SURFACE 0.0	
											M	502.9 ASPHALT (0.4') & ABC STONE (1.6')	2.0
500	501.4	3.5	2	2	3						M	ROADWAY EMBANKMENT Tan-brown & red, fine to coarse sandy SILT (A-4), with trace gravel, little clay & trace organics from 13.5-15.0'	
495	496.4	8.5	2	2	3						M		
490	491.4	13.5	2	2	3						M		
485	487.5	17.4	60/0.1								RS-2	487.8 CRYSTALLINE ROCK 17.1 487.4 Gray & white, (META-ARGILLITE) 17.5	
480												482.5 Gray & white, (META-ARGILLITE) 22.4 479.0 Gray & white, (META-ARGILLITE) 25.9 477.5 Gray & white, (META-ARGILLITE) 27.4	
Boring Terminated at Elevation 477.5 ft In CRYSTALLINE ROCK (META-ARGILLITE)													
NOTES: 1: Coring terminated at 27.4' due to loss of water circulation 2: Boring backfilled upon completion due to location in the road													

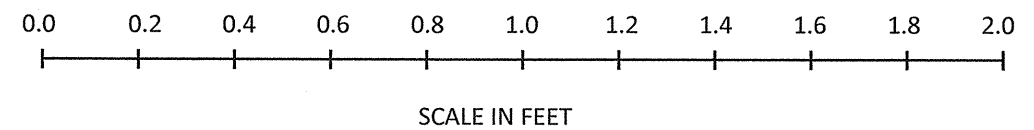
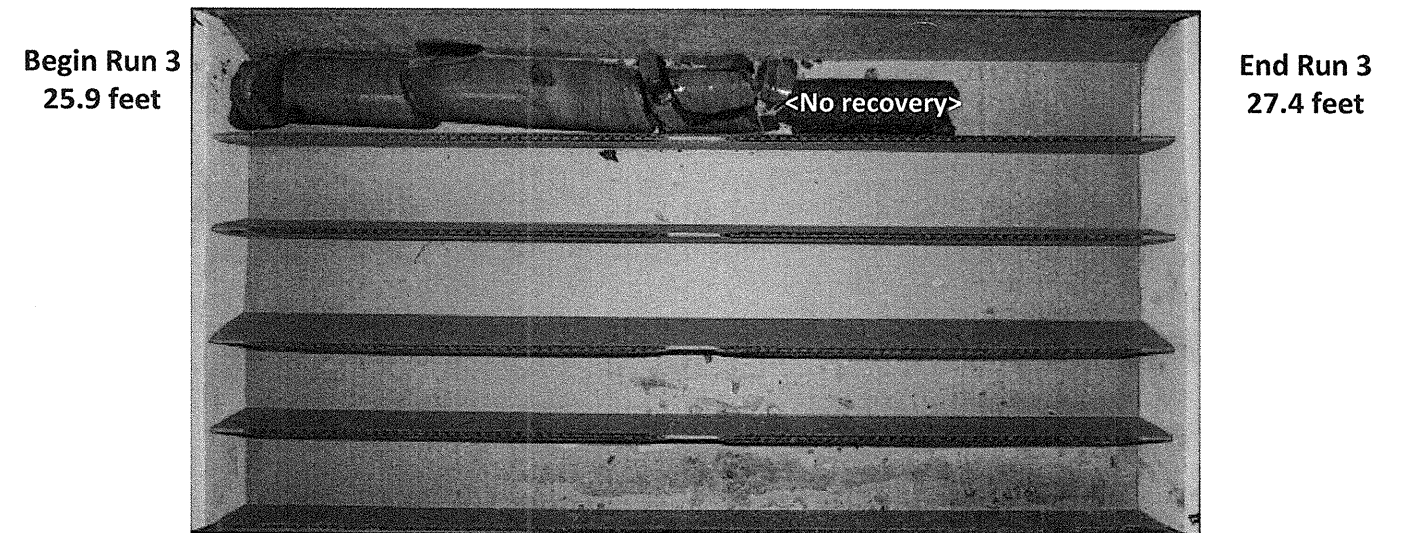
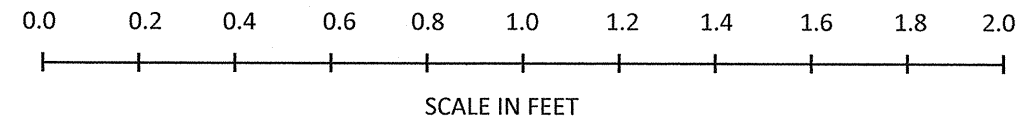
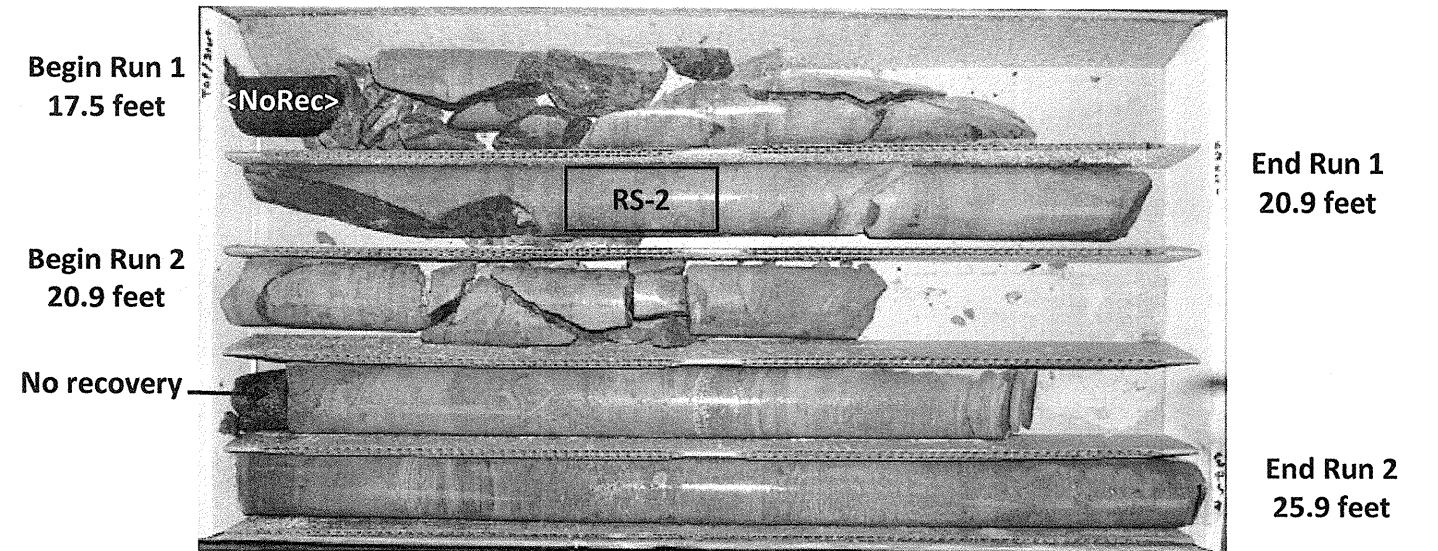
NCDOT BORE SINGLE B4799_GEO_BORELOGS_BRDGO037.GPJ NC_DOT_GDT 6/18/12

WBS 38569.1.1		TIP B-4799		COUNTY RANDOLPH		GEOLOGIST M. Brewer					
SITE DESCRIPTION Bridge No. 37 on SR 1311 (Bescher Chapel Rd.) over Jackson Creek							GROUND WTR (ft)				
BORING NO. B1-A		STATION 14+65		OFFSET 7 ft LT		ALIGNMENT -L-					
COLLAR ELEV. 504.9 ft		TOTAL DEPTH 27.4 ft		NORTHING 708,708		EASTING 1,699,390					
DRILL RIG/HAMMER EFF./DATE F&R2175 CME-55 83% 12/15/2011		DRILL METHOD NW Casing W/SPT & Core		HAMMER TYPE Automatic							
DRILLER J. Gilchrist		START DATE 05/10/12		COMP. DATE 05/10/12		SURFACE WATER DEPTH N/A					
ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		STRATA		LOG MOI	DESCRIPTION AND REMARKS	DEPTH (ft)
					REC. (%)	RQD (%)	REC. (%)	RQD (%)			
487.4	487.4	17.5	3.4	6:33/1.0 4:56/1.0 4:58/1.0 1:37/0.4	(3.2) 94%	(2.2) 65%	(4.7) 96%	(2.6) 53%		Begin Coring @ 17.5 ft	
485	484.0	20.9	5.0	4:39/1.0 5:41/1.0 5:23/1.0 7:09/1.0 4:45/1.0	(4.9) 98%	(3.8) 76%	(3.4) 97%	(3.4) 97%		CRYSTALLINE ROCK Gray & white, slightly to very slightly weathered, hard META-ARGILLITE, with very close to close fracture spacing RS-2: 19.5'-19.9' qu = 4,545 psi R ₁ = 4, R ₂ = 13, R ₃ = 10, R ₄ = 12, R ₅ = 7 RMR = 46, Rock Type = B	17.5
480	479.0	25.9	1.5	5:27/1.0 5:41/0.5	(1.2) 80%	(0.5) 33%	(1.2) 80%	(0.5) 33%		Gray & white, fresh, hard META-ARGILLITE, with moderately close fracture spacing	22.4
	477.5	27.4								Gray & white, slightly to very slightly weathered, hard META-ARGILLITE, with close fracture spacing	25.9
										Boring Terminated at Elevation 477.5 ft In CRYSTALLINE ROCK (META-ARGILLITE)	27.4
NOTES: 1: Coring terminated at 27.4' due to loss of water circulation 2: Boring backfilled upon completion due to location in the road											

NCDOT BORE SINGLE B4799_GEO_BORELOGS_BRDGO037.GPJ NC_DOT_GDT 6/18/12

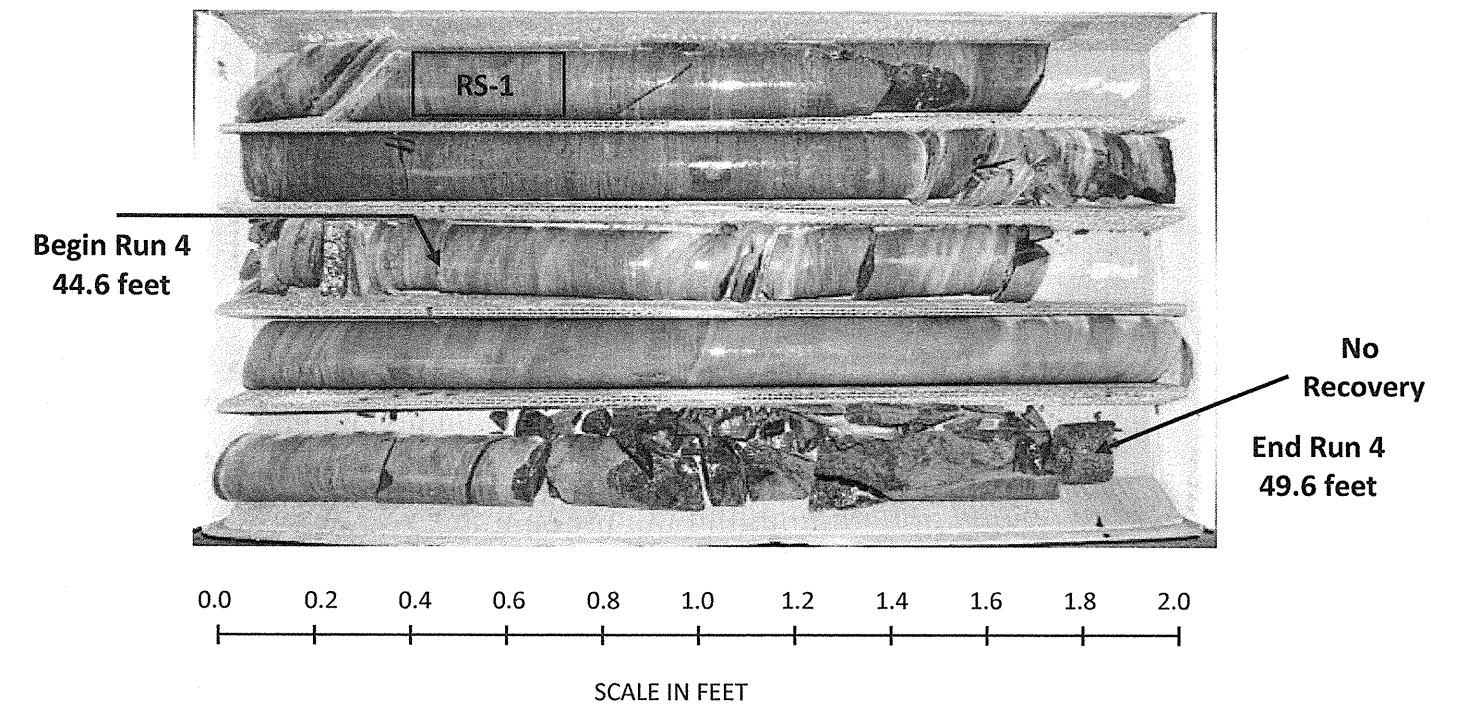
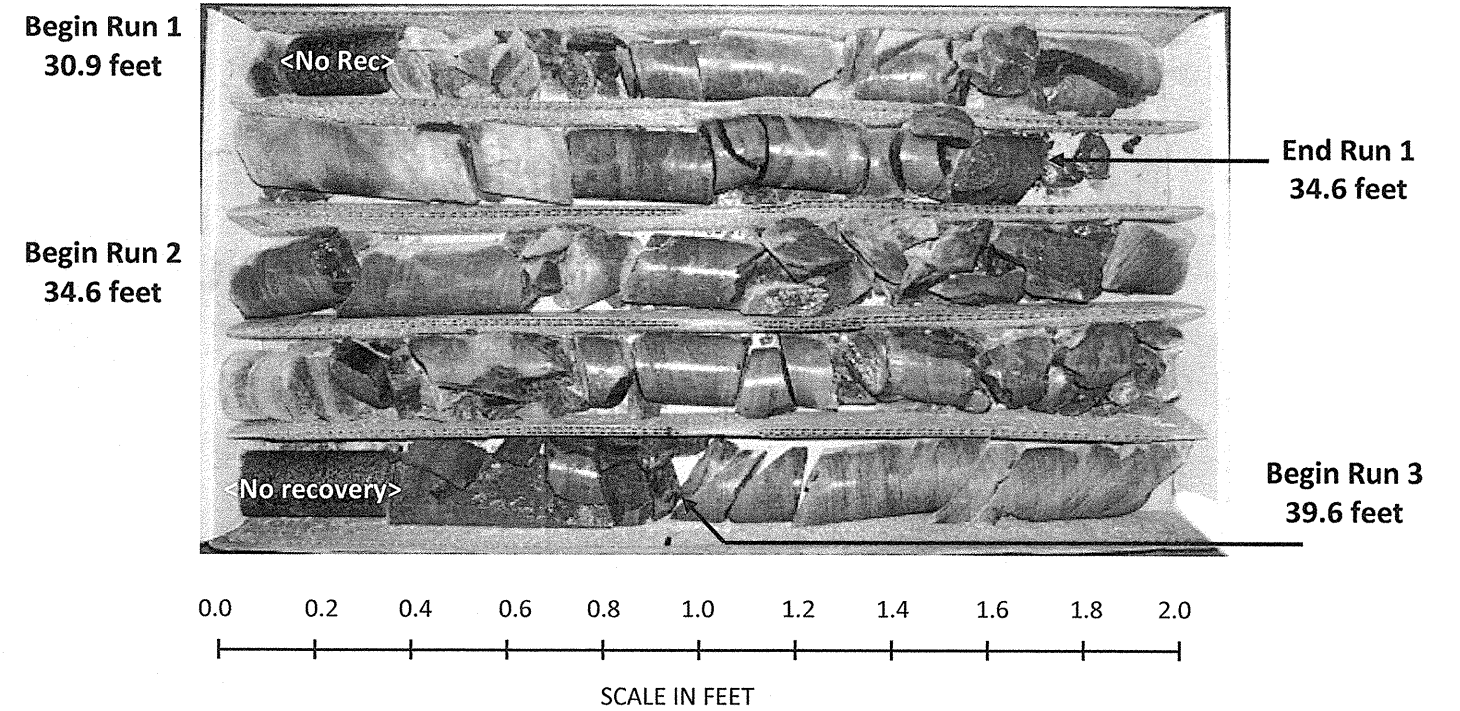


CORE PHOTOGRAPHS: Bridge No. 37 on SR 1311 over Jackson Creek, B1-A: Station 14+65, 7 feet Left





CORE PHOTOGRAPHS: Bridge No. 37 on SR 1311 over Jackson Creek, B1-B: Station 14+65, 10' Right



WBS 38569.1.1		TIP B-4799		COUNTY RANDOLPH		GEOLOGIST M. Brewer									
SITE DESCRIPTION Bridge No. 37 on SR 1311 (Bescher Chapel Rd.) over Jackson Creek							GROUND WTR (ft)								
BORING NO. B2-A		STATION 15+43		OFFSET 8 ft LT		ALIGNMENT -L-									
COLLAR ELEV. 494.4 ft		TOTAL DEPTH 35.0 ft		NORTHING 708,786		EASTING 1,699,401									
DRILL RIG/HAMMER EFF./DATE F&R2175 CME-55 83% 12/15/2011		DRILL METHOD NW Casing W/SPT & Core		HAMMER TYPE Automatic											
DRILLER J. Gilchrist		START DATE 05/16/12		COMP. DATE 05/16/12		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					
495	493.8	0.6	1	1	WOH									494.4	0.0
490	491.6	2.8	1	2	1									488.0	8.4
485	486.0	8.4	69	31/0.2										480.6	13.8
480	481.0	13.4	100/0.3											480.5	13.9
475	480.6	13.8	60/0.1												
470															
465															
460															
Boring Terminated at Elevation 459.4 ft In CRYSTALLINE ROCK (META-ARGILLITE & META-VOLCANIC ROCK)															

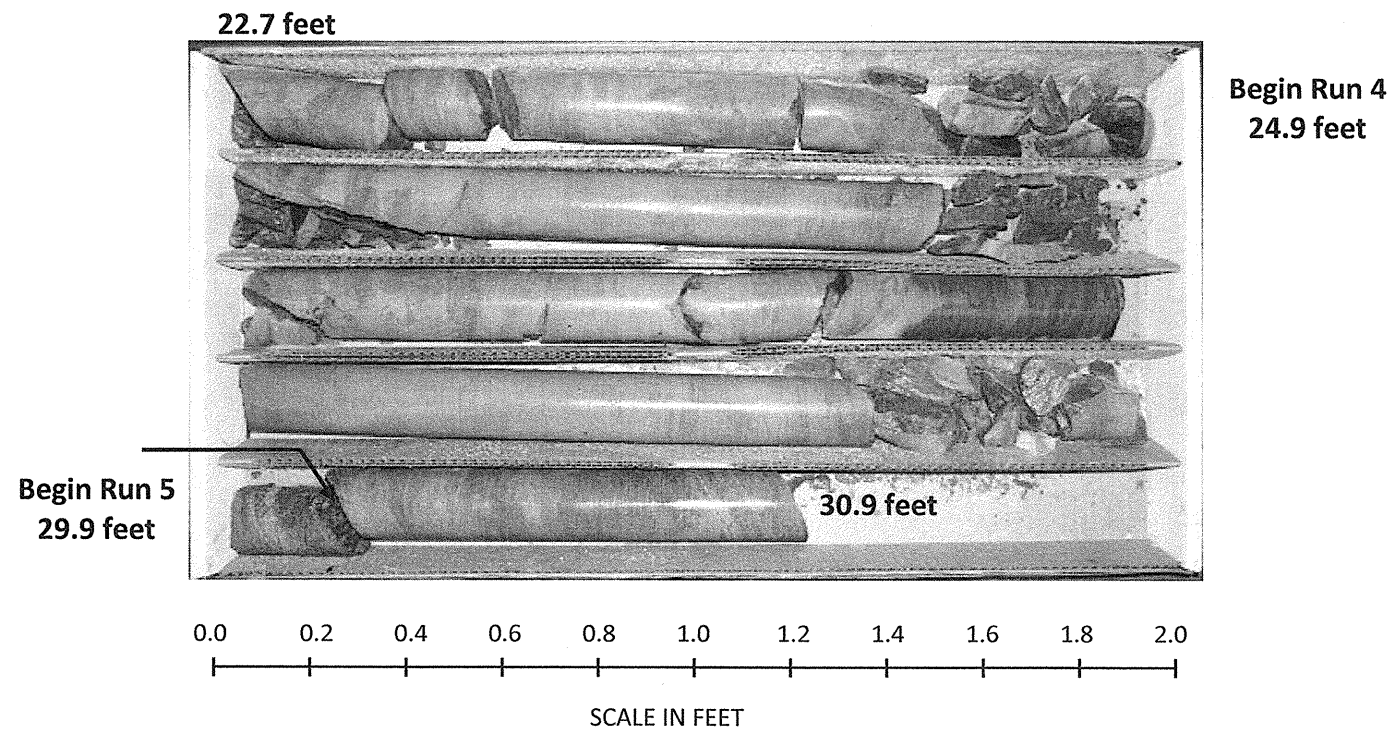
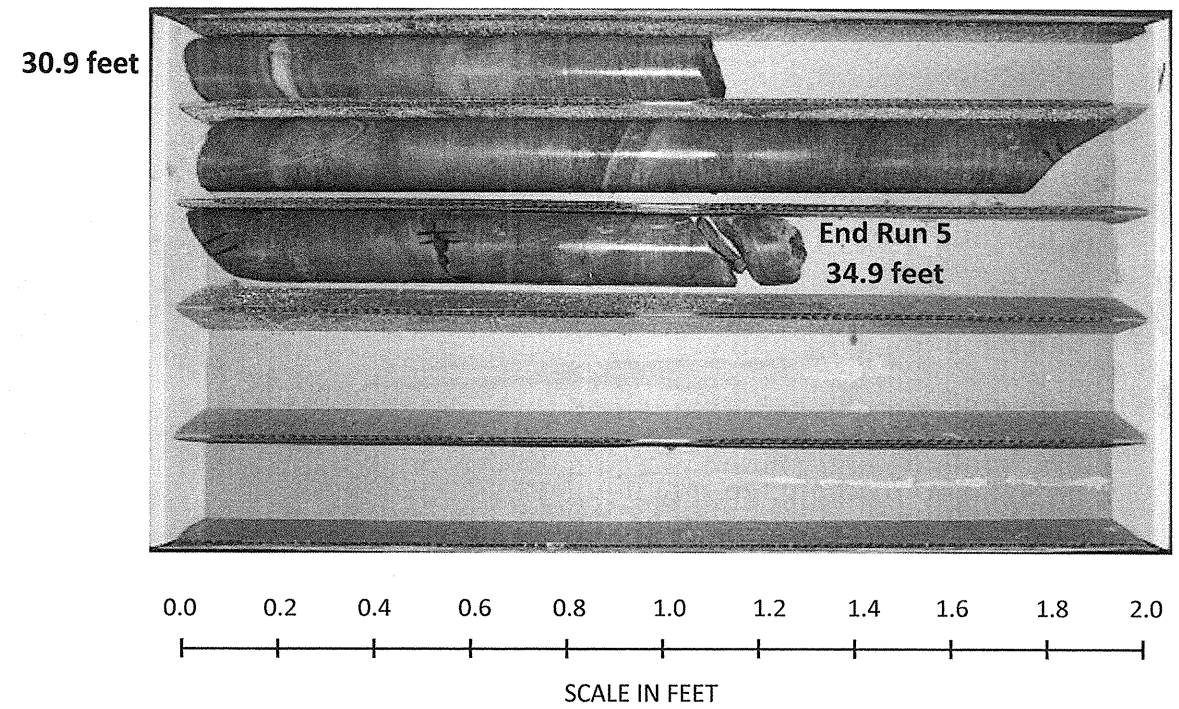
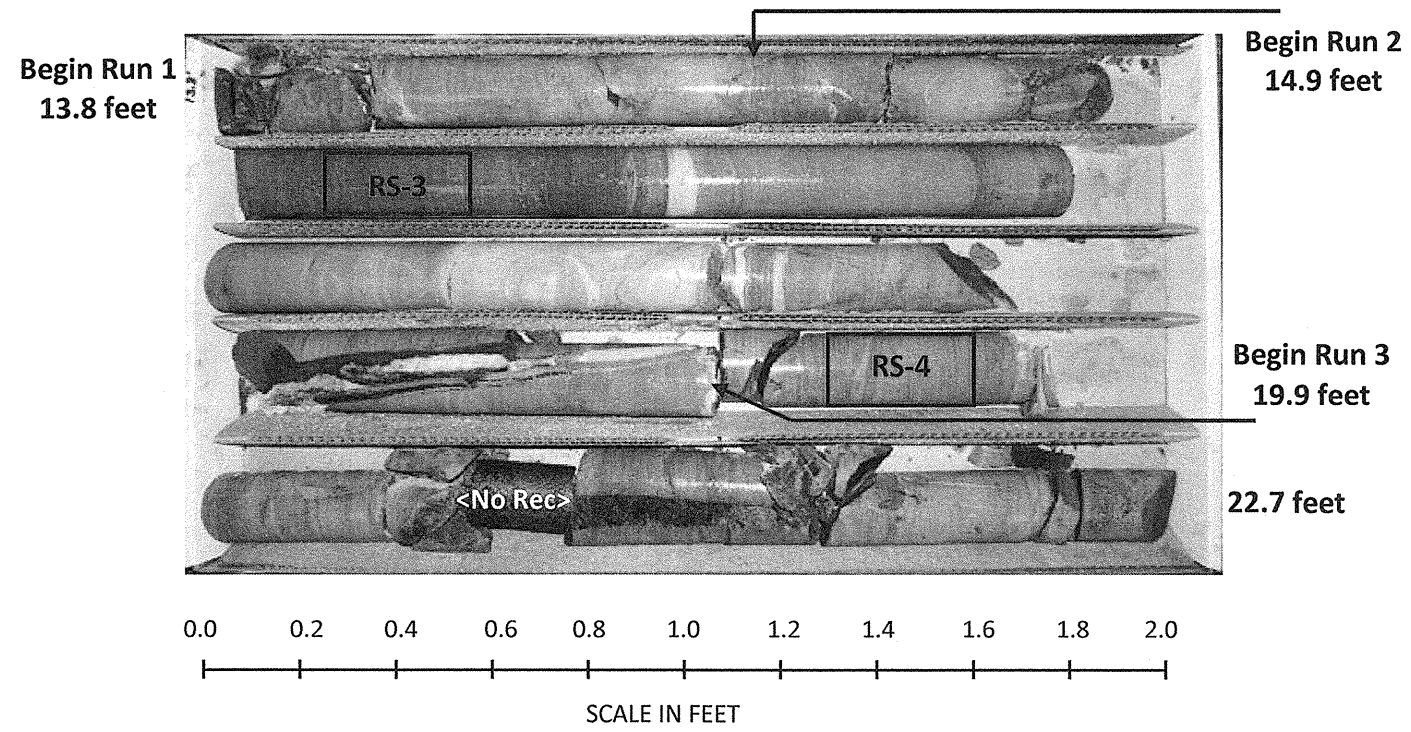
NCDOT BORE SINGLE B4799 GEO_BORELOGS_BRDG0037.GPJ NC_DOT.GDT 6/18/12

WBS 38569.1.1		TIP B-4799		COUNTY RANDOLPH		GEOLOGIST M. Brewer						
SITE DESCRIPTION Bridge No. 37 on SR 1311 (Bescher Chapel Rd.) over Jackson Creek							GROUND WTR (ft)					
BORING NO. B2-A		STATION 15+43		OFFSET 8 ft LT		ALIGNMENT -L-						
COLLAR ELEV. 494.4 ft		TOTAL DEPTH 35.0 ft		NORTHING 708,786		EASTING 1,699,401						
DRILL RIG/HAMMER EFF./DATE F&R2175 CME-55 83% 12/15/2011		DRILL METHOD NW Casing W/SPT & Core		HAMMER TYPE Automatic								
DRILLER J. Gilchrist		START DATE 05/16/12		COMP. DATE 05/16/12		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 (%)			
480.5	480.5	13.9	1.1	3:52/1.0	(1.1)	(0.8)		(20.6)	(14.9)		Begin Coring @ 13.9 ft	13.9
475	479.4	15.0	5.0	0:31/0.1	100%	73%	RS-3	98%	71%		CRYSTALLINE ROCK Gray, slightly to very slightly weathered, hard META-ARGILLITE & META-VOLCANIC ROCK, with close to moderately close fracture spacing	
470	474.4	20.0	5.0	3:46/1.0	(5.0)	(3.7)	RS-4				RS-3: 15.9'-16.3' qu = 26,306 psi RS-4: 19.9'-20.3' qu = 21,131 psi R ₁ = 12, R ₂ = 13, R ₃ = 10, R ₄ = 12, R ₅ = 7 RMR = 54, Rock Type = B	
465	469.4	25.0	5.0	3:17/1.0	(4.5)	(1.9)						
460	464.4	30.0	5.0	3:06/1.0	90%	38%						
	459.4	35.0	5.0	2:57/1.0	(5.0)	(3.7)						
				2:57/1.0	100%	74%						
				2:50/1.0								
				2:59/1.0								
				3:11/1.0								
				2:49/1.0	(5.0)	(4.8)						
				2:37/1.0								
				2:48/1.0								
				2:49/1.0								
				3:03/1.0								
Boring Terminated at Elevation 459.4 ft In CRYSTALLINE ROCK (META-ARGILLITE & META-VOLCANIC ROCK)												

NCDOT CORE SINGLE B4799 GEO_BORELOGS_BRDG0037.GPJ NC_DOT.GDT 6/18/12



CORE PHOTOGRAPHS: Bridge No. 37 on SR 1311 over Jackson Creek, B2-A: Station 15+43, 8' Left





NCDOT GEOTECHNICAL ENGINEERING UNIT

BORELOG REPORT

WBS 38569.1.1	TIP B-4799	COUNTY RANDOLPH	GEOLOGIST M. Brewer
SITE DESCRIPTION Bridge No. 37 on SR 1311 (Bescher Chapel Rd.) over Jackson Creek			GROUND WTR (ft)
BORING NO. EB2-B(1)	STATION 15+69	OFFSET 6 ft RT	ALIGNMENT -L-
COLLAR ELEV. 505.1 ft	TOTAL DEPTH 17.5 ft	NORTHING 708,809	EASTING 1,699,417
DRILL RIG/HAMMER EFF./DATE F&R2175 CME-55 83% 12/15/2011		DRILL METHOD H.S. Augers	HAMMER TYPE Automatic
DRILLER J. Gilchrist	START DATE 05/16/12	COMP. DATE 05/16/12	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				
510														
505	504.6	0.5											505.1 GROUND SURFACE 0.0	
													503.1 ASPHALT (0.7') & ABC STONE (1.3') 2.0	
													ROADWAY EMBANKMENT Red-brown, silty CLAY (A-7-5), with little fine to coarse sand & trace gravel	
500	501.1	4.0											498.1 Tan-brown, fine to coarse sandy SILT (A-4), with little clay & trace gravel 7.0	
													493.1 ALLUVIAL Gray, silty CLAY (A-7-5), with little fine sand 12.0	
495	496.1	9.0											488.2 WEATHERED ROCK (META-ARGILLITE) 16.9	
													487.6 WEATHERED ROCK (META-ARGILLITE) 17.5	
490	491.1	14.0											Boring Terminated with Standard Penetration Test Refusal at Elevation 487.6 ft On CRYSTALLINE ROCK (META-ARGILLITE)	
													NOTES: 1: Boring backfilled upon completion due to location in the road	
	487.6	17.5												

WBS 38569.1.1	TIP B-4799	COUNTY RANDOLPH	GEOLOGIST M. Brewer
SITE DESCRIPTION Bridge No. 37 on SR 1311 (Bescher Chapel Rd.) over Jackson Creek			GROUND WTR (ft)
BORING NO. EB2-B(2)	STATION 15+89	OFFSET 7 ft RT	ALIGNMENT -L-
COLLAR ELEV. 505.6 ft	TOTAL DEPTH 16.4 ft	NORTHING 708,830	EASTING 1,699,420
DRILL RIG/HAMMER EFF./DATE F&R2175 CME-55 83% 12/15/2011		DRILL METHOD H.S. Augers	HAMMER TYPE Automatic
DRILLER J. Gilchrist	START DATE 05/16/12	COMP. DATE 05/16/12	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				
510														
505	505.1	0.5											505.6 GROUND SURFACE 0.0	
													503.6 ASPHALT (0.7') & ABC STONE (1.3') 2.0	
													ROADWAY EMBANKMENT Tan, fine to coarse, sandy SILT (A-4), with trace gravel, trace to little clay	
500	501.6	4.0											493.6 RESIDUAL Gray, silty CLAY (A-7-5), with little fine to coarse sand & trace gravel-sized rock fragments 12.0	
													489.6 WEATHERED ROCK (META-ARGILLITE) 16.0	
495	496.6	9.0											489.2 WEATHERED ROCK (META-ARGILLITE) 16.4	
													Boring Terminated with Standard Penetration Test Refusal at Elevation 489.2 ft On CRYSTALLINE ROCK (META-ARGILLITE)	
490	491.6	14.0											NOTES: 1: Boring backfilled upon completion due to location in the road	
	489.2	16.4												

NCDOT BORE DOUBLE B4799 GEO BORELOGS BRD00037.GPJ NC_DOT.GDT 6/18/12

LABORATORY SUMMARY SHEET FOR ROCK CORE SAMPLES

PROJECT NO.: 38569.1.1
TIP NO.: B-4799
COUNTY: Randolph
DESCRIPTION: Bridge No. 37 on SR 1311 (Bescher Chapel Road) over Jackson Creek

Sample #	Boring #	Depth (ft)	Rock Type	Geologic Map Unit	Run RQD	Length (in)	Diameter (in)	Unit Weight (pcf)	Unconfined Compressive Strength (psi)	Young's Modulus, E (ksf)
RS-1	B1-B	40.9 - 41.3	Meta-Argillite	CZmd ₁	64%	4.40	1.76	151.7	9,888	262,967
RS-2	B1-A	19.5 - 19.9	Meta-Argillite	CZmd ₁	65%	4.40	1.76	163.2	4,545	330,605
RS-3	B2-A	15.9 - 16.3	Meta-Argillite	CZmd ₁	74%	4.00	1.76	178.5	26,306	409,970
RS-4	B2-A	19.9 - 20.3	Meta-Argillite	CZmd ₁	74%	3.83	1.76	179.2	21,131	379,096



Bridge No. 37 on SR 1311 (Bescher Chapel Road) over Jackson Creek
SITE PHOTOGRAPHS



Photograph No. 1: General view of the bridge site looking north



Photograph No. 3: View looking downstream towards existing Bents 1 and 2



Photograph No. 2: View looking downstream towards existing End Bent 1



Photograph No. 4: View looking upstream towards existing Bents 1 and 2 and End Bent 2