

| STATE | STATE PROJECT REFERENCE NO. | SHEET NO. | TOTAL SHEETS |
|-------|-----------------------------|-----------|--------------|
| N.C. | 33796.1.1 (B-4613) | 1 | 22 |

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

STRUCTURE
SUBSURFACE INVESTIGATION

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PROJ. REFERENCE NO. 33796.1.1 (B-4613) F.A. PROJ. BRZ-2873 (1)
COUNTY RANDOLPH
PROJECT DESCRIPTION BRIDGE NO. 415 ON SR 2873 OVER
FORK CREEK

SITE DESCRIPTION _____

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) 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.

PERSONNEL

J.K. STICKNEY

G.L. SMITH

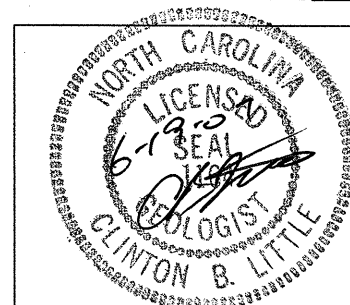
H.K. WISE

INVESTIGATED BY J.E. BEVERLY

CHECKED BY C.B. LITTLE

SUBMITTED BY C.B. LITTLE

DATE JUNE 2007



ID: B-4613

PROJECT: 33796.1.1

DRAWN BY: J.K. McCLURE

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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|---|----------------|
| PROJECT REFERENCE NO. 33796.11(B-4613) | SHEET NO. 2 |
|---|----------------|

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, 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) POORLY GRADED GAP-GRADED - INDICATES A MIXTURE OF UNIFORM PARTICLES OF TWO OR MORE SIZES. 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 (ROD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF CORE 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 INTRODUCED 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 (N 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 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. <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. | | COMPRESSIBILITY SLIGHTLY COMPRESSIBLE LIQUID LIMIT LESS THAN 31 MODERATELY COMPRESSIBLE LIQUID LIMIT EQUAL TO 31-50 HIGHLY COMPRESSIBLE LIQUID LIMIT GREATER THAN 50 | | FRESH VERY SLIGHT (V SLI.) SLIGHT (SLI.) MODERATE (MOD.) MODERATELY SEVERE (MOD. SEV.) SEVERE (SEV.) VERY SEVERE (V SEV.) COMPLETE | | | |
| PERCENTAGE OF MATERIAL | | GROUND WATER | | ROCK HARDNESS | | | | | | | |
| 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 | | 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 | | 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. | | | | | | | |
| MISCELLANEOUS SYMBOLS | | ABBREVIATIONS | | FRACTURE SPACING | | BEDDING | | | | | |
| 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 | | AR - AUGER REFUSAL BT - BORING TERMINATED CL - CLAY CPT - CONE PENETRATION TEST CSE - COARSE DNT - DILATOMETER TEST DPT - DYNAMIC PENETRATION TEST e - VOID RATIO F - FINE FOSS. - FOSSILIFEROUS FRAC. - FRACTURED, FRACTURES FRAGS. - FRAGMENTS HL - HIGHLY MED. - MEDIUM 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 # - MOISTURE CONTENT V - VERY VST - VANE SHEAR TEST WEA. - WEATHERED W - UNIT WEIGHT W _d - DRY UNIT WEIGHT | | 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 | | | | | |
| TEXTURE OR GRAIN SIZE | | EQUIPMENT USED ON SUBJECT PROJECT | | INDURATION | | | | | | | |
| U.S. STD. SIEVE SIZE 4 10 40 60 200 270 OPENING (MM) 4.76 2.00 0.42 0.25 0.075 0.053 | | DRILL UNITS: <input type="checkbox"/> MOBILE B- <input type="checkbox"/> BK-51 <input type="checkbox"/> CME-45C <input checked="" type="checkbox"/> CME-550 <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 checked="" type="checkbox"/> TUNG-CARBIDE INSERTS <input checked="" type="checkbox"/> CASING [X] W/ ADVANCER <input type="checkbox"/> TRICONE _____ * STEEL TEETH <input checked="" type="checkbox"/> TRICONE 2 5/16" * TUNG-CARB. <input checked="" type="checkbox"/> CORE BIT | | 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. | | | | | |
| SOIL MOISTURE - CORRELATION OF TERMS | | SOIL MOISTURE SCALE (ATTERBERG LIMITS) | | SOIL MOISTURE SCALE (ATTERBERG LIMITS) | | SOIL MOISTURE SCALE (ATTERBERG LIMITS) | | | | | |
| FIELD MOISTURE DESCRIPTION GUIDE FOR FIELD MOISTURE DESCRIPTION | | FIELD MOISTURE DESCRIPTION GUIDE FOR FIELD MOISTURE DESCRIPTION | | FIELD MOISTURE DESCRIPTION GUIDE FOR FIELD MOISTURE DESCRIPTION | | FIELD MOISTURE DESCRIPTION GUIDE FOR FIELD MOISTURE DESCRIPTION | | | | | |
| - SATURATED - (SAT.) USUALLY LIQUID; VERY WET, USUALLY FROM BELOW THE GROUND WATER TABLE | | - SATURATED - (SAT.) USUALLY LIQUID; VERY WET, USUALLY FROM BELOW THE GROUND WATER TABLE | | - SATURATED - (SAT.) USUALLY LIQUID; VERY WET, USUALLY FROM BELOW THE GROUND WATER TABLE | | - SATURATED - (SAT.) USUALLY LIQUID; VERY WET, USUALLY FROM BELOW THE GROUND WATER TABLE | | | | | |
| - WET - (W) SEMISOLID; REQUIRES DRYING TO ATTAIN OPTIMUM MOISTURE | | - WET - (W) SEMISOLID; REQUIRES DRYING TO ATTAIN OPTIMUM MOISTURE | | - WET - (W) SEMISOLID; REQUIRES DRYING TO ATTAIN OPTIMUM MOISTURE | | - WET - (W) SEMISOLID; REQUIRES DRYING TO ATTAIN OPTIMUM MOISTURE | | | | | |
| - MOIST - (M) SOLID; AT OR NEAR OPTIMUM MOISTURE | | - MOIST - (M) SOLID; AT OR NEAR OPTIMUM MOISTURE | | - MOIST - (M) SOLID; AT OR NEAR OPTIMUM MOISTURE | | - MOIST - (M) SOLID; AT OR NEAR OPTIMUM MOISTURE | | | | | |
| - DRY - (D) REQUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE | | - DRY - (D) REQUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE | | - DRY - (D) REQUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE | | - DRY - (D) REQUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE | | | | | |
| PLASTICITY | | PLASTICITY | | PLASTICITY | | PLASTICITY | | | | | |
| NONPLASTIC 0-5 VERY LOW LOW PLASTICITY 6-15 SLIGHT MED. PLASTICITY 16-25 MEDIUM HIGH PLASTICITY 26 OR MORE HIGH | | NONPLASTIC 0-5 VERY LOW LOW PLASTICITY 6-15 SLIGHT MED. PLASTICITY 16-25 MEDIUM HIGH PLASTICITY 26 OR MORE HIGH | | NONPLASTIC 0-5 VERY LOW LOW PLASTICITY 6-15 SLIGHT MED. PLASTICITY 16-25 MEDIUM HIGH PLASTICITY 26 OR MORE HIGH | | NONPLASTIC 0-5 VERY LOW LOW PLASTICITY 6-15 SLIGHT MED. PLASTICITY 16-25 MEDIUM HIGH PLASTICITY 26 OR MORE HIGH | | | | | |
| COLOR | | COLOR | | COLOR | | 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. | | 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. | | 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. | | 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. | | | | | |
| | | NOTES: | | NOTES: | | NOTES: | | | | | |
| | | BENCH MARK; CONTROL POINTS SET AT EACH BENT LOCATION BY THE NCDOT LOCATION SURVEYS DEPT. ELEVATION: FT. | | BENCH MARK; CONTROL POINTS SET AT EACH BENT LOCATION BY THE NCDOT LOCATION SURVEYS DEPT. ELEVATION: FT. | | BENCH MARK; CONTROL POINTS SET AT EACH BENT LOCATION BY THE NCDOT LOCATION SURVEYS DEPT. ELEVATION: FT. | | | | | |



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY P.O. BOX 25201, RALEIGH, N.C. 27611-5201 LYNDO TIPPETT
GOVERNOR SECRETARY

June 7, 2007

STATE PROJECT: 33796.1.1 (B-4613)
COUNTY: Randolph
DESCRIPTION: Bridge No. 415 on SR 2873 over Fork Creek
(-L- Sta. 30+85)

SUBJECT: Geotechnical Report – Bridge Foundation Investigation

This is a proposed bridge replacement for existing bridge number 415 on SR 2873 over Fork Creek. The proposed structure will be located approximately 680 feet upstream from the current bridge. The bridge and its approaches will be realigned in a more efficient design with Riverside Road (SR 2873). The proposed structure is on a 100 degree skew and is comprised of 3 spans at 40', 90', and 40' respectively. Total bridge width appears to be 26'.

A total of 8 holes, 2 per bent location, were performed for this investigation. Equipment used for this investigation was a CME 550X drill machine, hollow stem augers, NW casing, NXWL and an automatic drop hammer.

Physiography/Geology

The bridge project is located in the southeastern corner of Randolph County. Geologically this site falls within the Carolina Slate Belt and underlain by Cenozoic age phyllite and rhyolitic meta-volcanic rock. Rock was encountered at all boring locations.

Foundation Materials

End Bent 1:

Two borings performed for this bent location encountered 8.4 to 9.1 feet of very soft sandy clayey silty alluvium (A-4) overlying residual soil. The residual boundary begins between elevation 338.7 – 339.7 feet and consists of 6 to 6.5 feet of stiff to hard clayey sandy silt (A-4) and very dense silty coarse sand (A-1-b) with rock fragments. A thin layer of weathered rock lies below residual soil in boring EB1-A. Both borings achieved auger refusal on crystalline rock. Following is a listing of weathered and crystalline rock elevations at each boring location:

| <u>Boring Location</u> | <u>Weathered Rock Elev. (feet)</u> | <u>Crystalline Rock Elev. (ft.)</u> |
|------------------------|------------------------------------|-------------------------------------|
| EB1-A | 333.2 | 332.8 |
| EB1-B | N/A | 332.3 |

Bent 1:

A pair of borings performed for this bent location encountered 8.1 to 8.5 feet of very soft to soft clayey silty alluvium (A-4) overlying residual soil. The residual horizon occurs around elevation 336 – 336.6 feet and is comprised of approximately 5.5 feet of stiff to hard sandy clayey silt (A-4). A thin layer of weathered rock is followed quickly by crystalline rock. Each of these boring was cored to evaluate the rock properties. Crystalline rock was further determined to be phyllite and rhyolitic meta-volcanic. Following is a listing of weathered and crystalline rock elevations at each boring location:

| <u>Boring Location</u> | <u>Weathered Rock Elev. (feet)</u> | <u>Crystalline Rock Elev. (ft.)</u> |
|------------------------|------------------------------------|-------------------------------------|
| B1-A | 331.3 | 330.6 |
| B1-B | 331.5 | 328.7 |

Bent 2:

Two borings performed at this bent location encountered just over 11 feet of very soft to soft sandy clayey silty alluvium (A-4) overlying residual soil. Elevation 333.4 feet marks the beginning of residual material which consists of about 2 feet of stiff to hard sandy clayey silt (A-4). Between 1 and 2.8 feet of weathered rock is then found overlying crystalline rock. Each boring was cored for evaluation purposes. Rock was determined to be phyllite. Following is a listing of weathered and crystalline rock elevations at each boring location:

| <u>Boring Location</u> | <u>Weathered Rock Elev. (feet)</u> | <u>Crystalline Rock Elev. (ft.)</u> |
|------------------------|------------------------------------|-------------------------------------|
| B2-A | 331.5 | 328.7 |
| B2-B | 331.4 | 330.4 |

End Bent 2:

The 2 borings performed at this bent location encountered just over 9 feet of soft to medium stiff sandy clayey silty alluvium (A-4) overlying residual soil. Within the alluvial layer at EB2-A a 1 foot layer of dense gravel was encountered around elevation 341 feet. Residual soil begins around elevation 337 feet and consists of up to 5.5 feet of stiff to hard sandy clayey silt (A-4). A thin unit of weathered rock was next in sequence followed by auger refusal on crystalline rock. Following is a listing of weathered and crystalline rock elevations at each boring location:

| <u>Boring Location</u> | <u>Weathered Rock Elev. (feet)</u> | <u>Crystalline Rock Elev. (ft.)</u> |
|------------------------|------------------------------------|-------------------------------------|
| EB2-A | 331.7 | 329.6 |
| EB2-B | 331.4 | 330.8 |

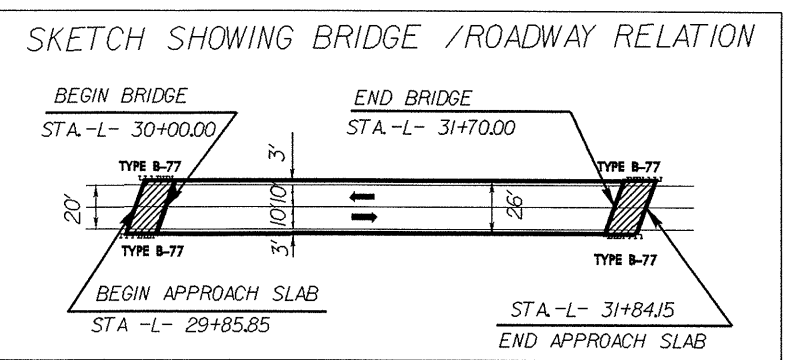
Groundwater

Static groundwater readings taken at boring locations across the site places the groundwater table within elevation range 339 – 344 feet.

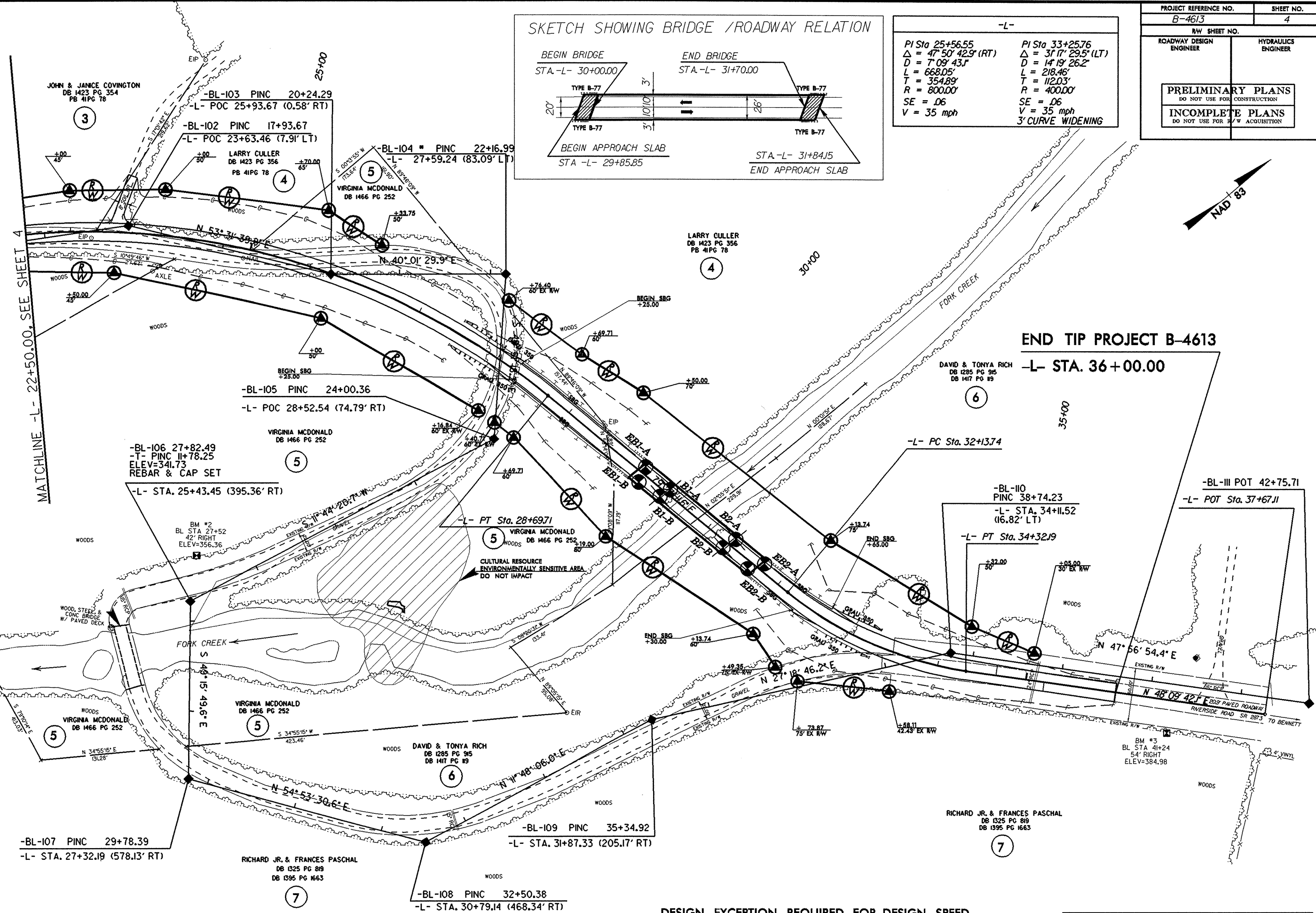
Respectfully submitted,

J.E. Beverly, Project Geologic Engineer

A handwritten signature in cursive script, reading "J E Beverly". The signature is written in black ink and is positioned below the typed name.



| -L- | |
|--|--|
| PI Sta 25+56.55 Δ = 47° 50' 42.9" (RT) D = 7° 09' 43.1" L = 668.05' T = 354.89' R = 800.00' SE = .06 V = 35 mph | PI Sta 33+25.76 Δ = 31° 17' 29.5" (LT) D = 14° 19' 26.2" L = 218.46' T = 112.03' R = 400.00' SE = .06 V = 35 mph 3' CURVE WIDENING |

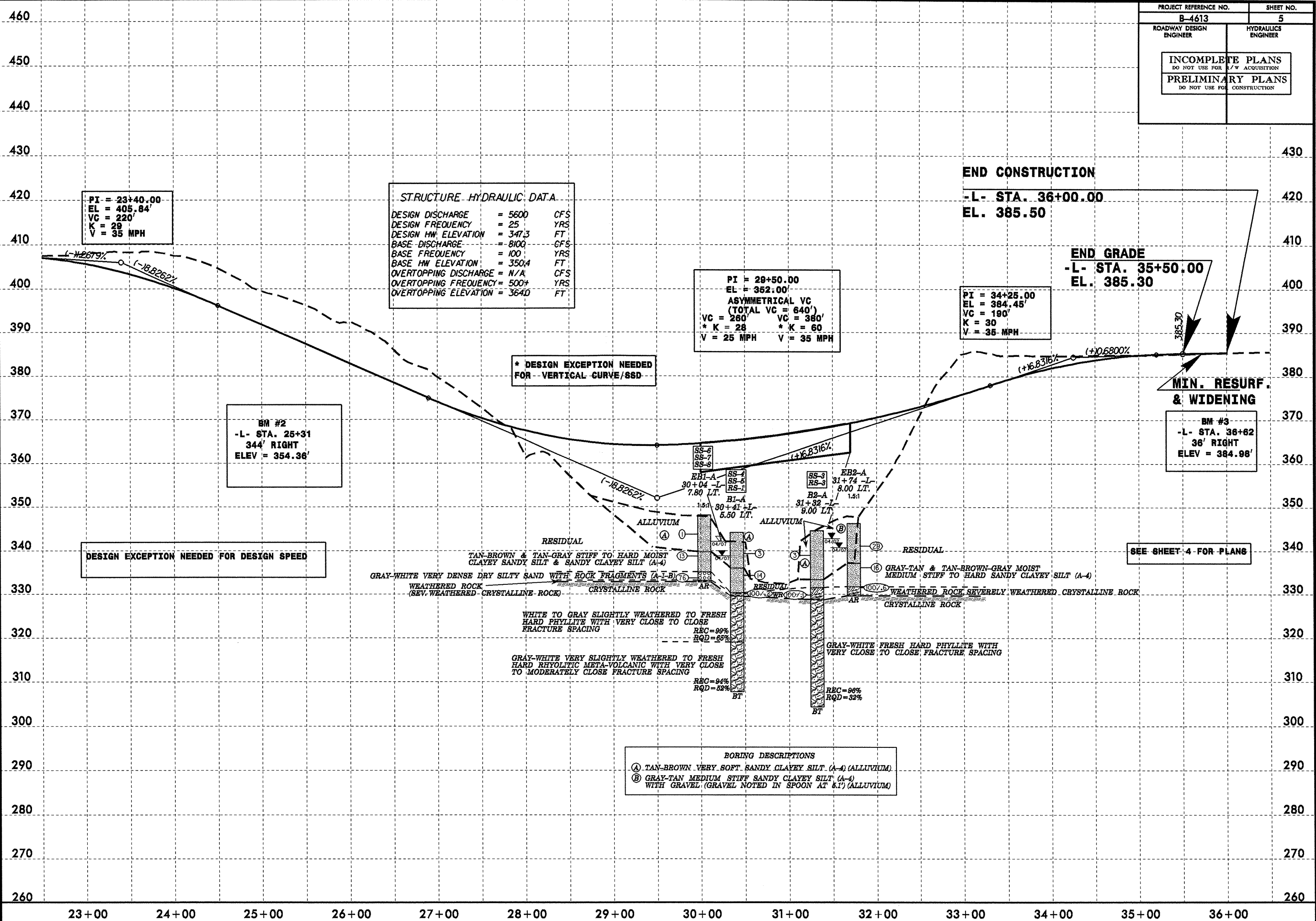


END TIP PROJECT B-4613
-L- STA. 36+00.00

DESIGN EXCEPTION REQUIRED FOR DESIGN SPEED AND VERTICAL CURVE / STOPPING SIGHT DISTANCE (SSD)

FOR PROFILE, SEE SHEET 5.

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PI = 23+40.00
 EL = 405.84'
 VC = 220'
 * K = 29 * K = 35
 V = 25 MPH V = 35 MPH

STRUCTURE HYDRAULIC DATA

DESIGN DISCHARGE = 5600 CFS
 DESIGN FREQUENCY = 25 YRS
 DESIGN HW ELEVATION = 347.3 FT
 BASE DISCHARGE = 8100 CFS
 BASE FREQUENCY = 100 YRS
 BASE HW ELEVATION = 350.4 FT
 OVERTOPPING DISCHARGE = N/A CFS
 OVERTOPPING FREQUENCY = 500+ YRS
 OVERTOPPING ELEVATION = 364.0 FT

PI = 29+50.00
 EL = 352.00'
 ASYMMETRICAL VC
 (TOTAL VC = 640')
 VC = 260' * K = 28 VC = 380' * K = 60
 V = 25 MPH V = 35 MPH

END CONSTRUCTION
 -L- STA. 36+00.00
 EL. 385.50

END GRADE
 -L- STA. 35+50.00
 EL. 385.30

MIN. RESURF. & WIDENING

BM #3
 -L- STA. 36+62
 36' RIGHT
 ELEV = 384.98'

* DESIGN EXCEPTION NEEDED FOR VERTICAL CURVE/SSD

DESIGN EXCEPTION NEEDED FOR DESIGN SPEED

SEE SHEET 4 FOR PLANS

RESIDUAL
 TAN-BROWN & TAN-GRAY STIFF TO HARD MOIST CLAYEY SANDY SILT & SANDY CLAYEY SILT (A-4)

RESIDUAL
 GRAY-TAN & TAN-BROWN-GRAY MOIST MEDIUM STIFF TO HARD SANDY CLAYEY SILT (A-4)

WEATHERED ROCK (SEV. WEATHERED - CRYSTALLINE ROCK)
 CRYSTALLINE ROCK

WEATHERED ROCK SEVERELY WEATHERED CRYSTALLINE ROCK
 CRYSTALLINE ROCK

WHITE TO GRAY SLIGHTLY WEATHERED TO FRESH HARD PHYLLITE WITH VERY CLOSE TO CLOSE FRACTURE SPACING
 REC=99%
 RQD=85%

GRAY-WHITE VERY SLIGHTLY WEATHERED TO FRESH HARD RHYOLITIC META-VOLCANIC WITH VERY CLOSE TO MODERATELY CLOSE FRACTURE SPACING
 REC=94%
 RQD=52%

GRAY-WHITE FRESH HARD PHYLLITE WITH VERY CLOSE TO CLOSE FRACTURE SPACING
 REC=96%
 RQD=32%

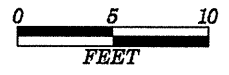
BORING DESCRIPTIONS

(A) TAN-BROWN VERY SOFT SANDY CLAYEY SILT (A-4) (ALLUVIUM)

(B) GRAY-TAN MEDIUM STIFF SANDY CLAYEY SILT (A-4) WITH GRAVEL (GRAVEL NOTED IN SPOON AT 5.1') (ALLUVIUM)

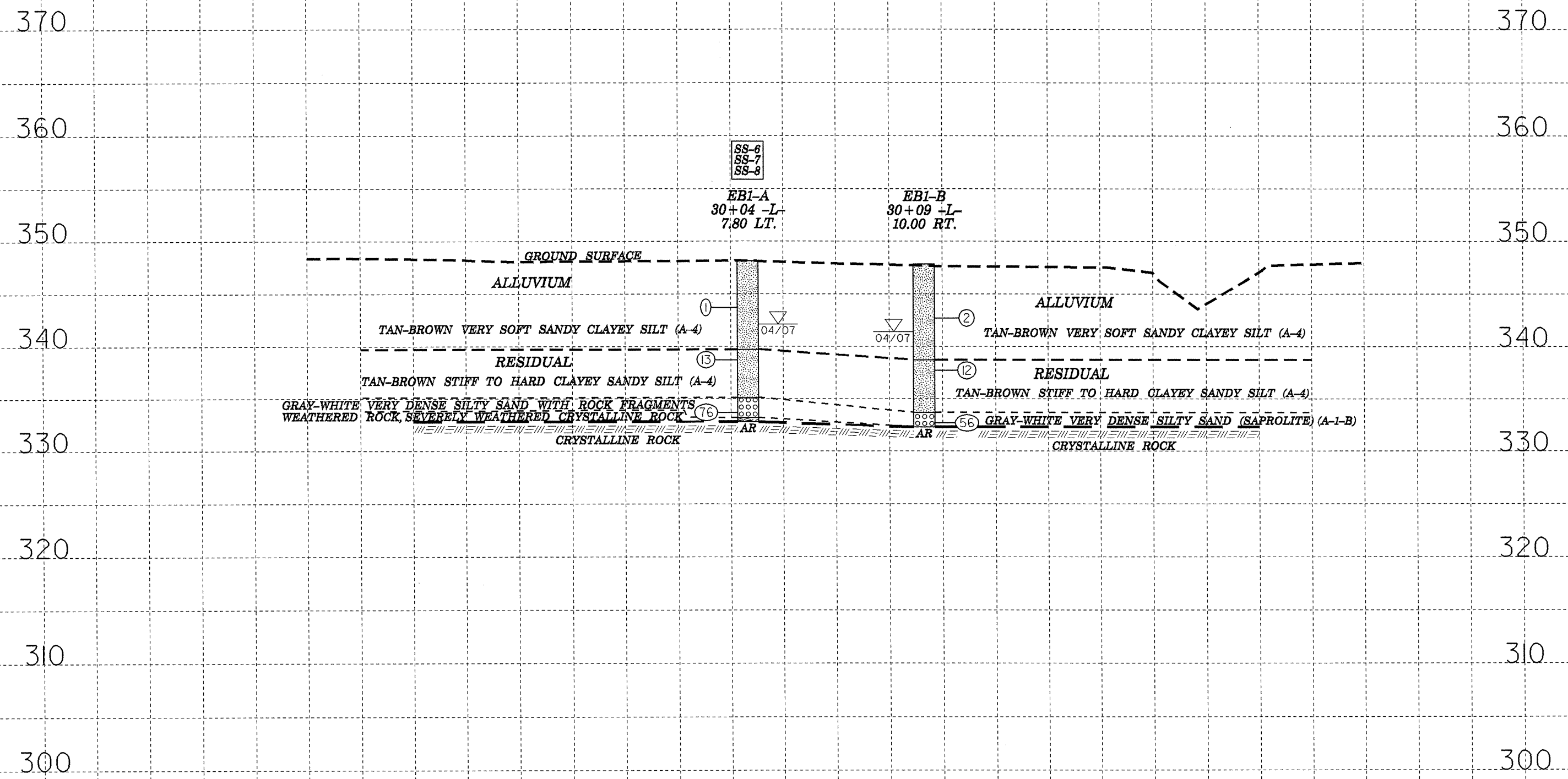
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5/28/99



| PROJECT REFERENCE NO. | SHEET |
|---|-------|
| 33796.1.1 (B-4613) | 6 |
| Section Thru End Bent One Sta. 30+00 -L- 100' Skew | |

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5/28/99



| | |
|---|-------|
| PROJECT REFERENCE NO. | SHEET |
| 33796.1.1 (B-4613) | 7 |
| Section Thru Bent One Sta. 30+40 -L- 100' Skew | |

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370

370

360

360

350

350

340

340

330

330

320

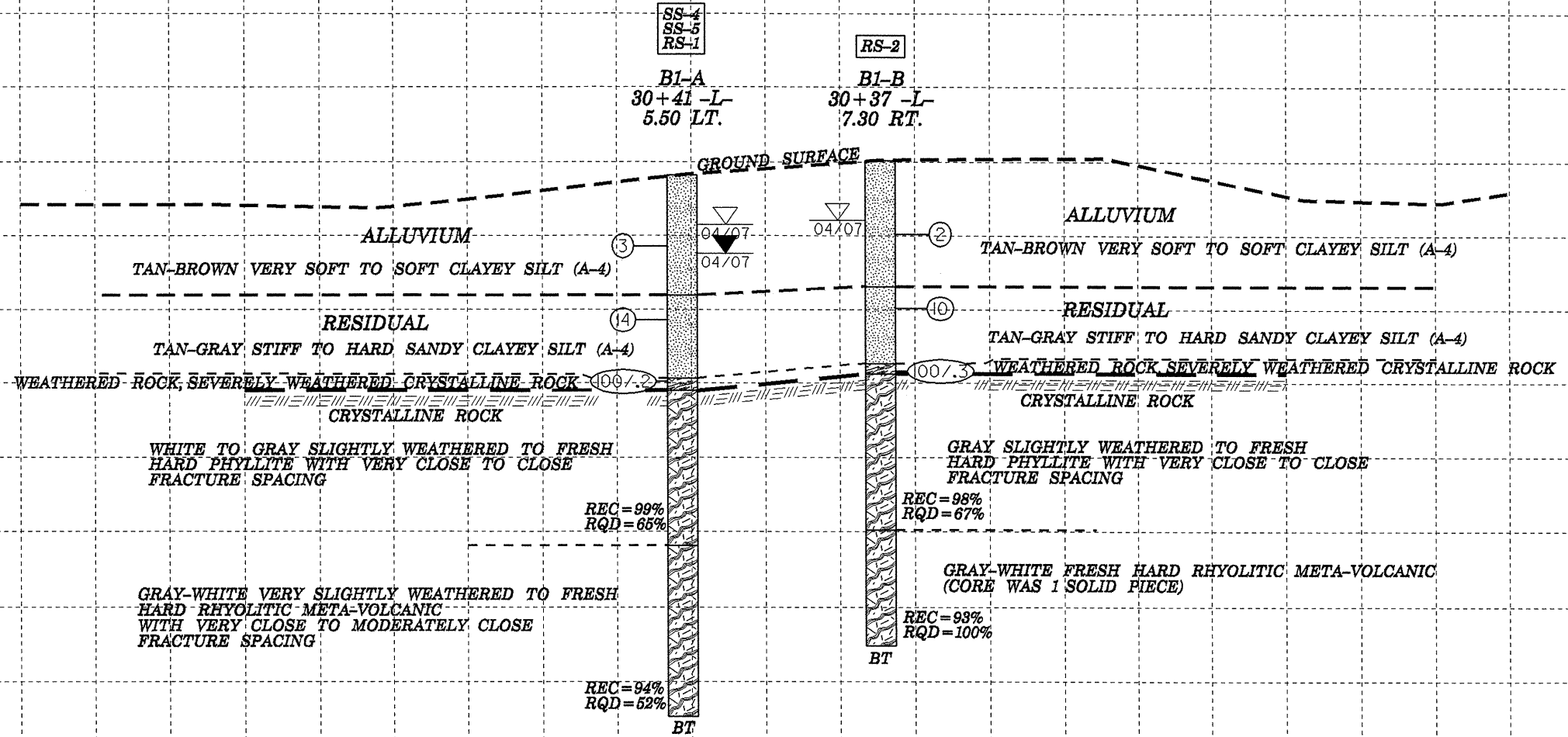
320

310

310

300

300





| | |
|---|-------|
| PROJECT REFERENCE NO. | SHEET |
| 33796.1.1 (B-4613) | 8 |
| Section Thru Bent Two Sta. 31+30 -L- 100' Skew | |

370

370

360

360

350

350

340

340

330

330

320

320

310

310

300

300

SS-4
RS-3

B2-A
31+32 -L-
9.00 LT.

B2-B
31+27 -L-
7.20 RT.

GROUND SURFACE

▽
04/07

▽
04/07

▽
04/07

▽
04/07

ALLUVIUM

TAN-BROWN VERY SOFT TO SOFT SANDY CLAYEY SILT (A-4)

TAN-BROWN VERY SOFT SANDY CLAYEY SILT (A-4)

TAN-BROWN-GRAY STIFF TO HARD SANDY CLAYEY SILT (A-4)

RESIDUAL

TAN-BROWN-GRAY STIFF TO HARD SANDY CLAYEY SILT (A-4)

WEATHERED ROCK, SEVERELY WEATHERED CRYSTALLINE ROCK
CRYSTALLINE ROCK

WEATHERED ROCK, SEVERELY WEATHERED CRYSTALLINE ROCK
CRYSTALLINE ROCK

GRAY-WHITE FRESH HARD PHYLLITE WITH
VERY CLOSE TO CLOSE FRACTURE SPACING

CRYSTALLINE ROCK

GRAY-WHITE FRESH HARD PHYLLITE WITH
VERY CLOSE TO CLOSE FRACTURE SPACING

REC = 96%
RQD = 32%

BT

REC = 99%
RQD = 9%

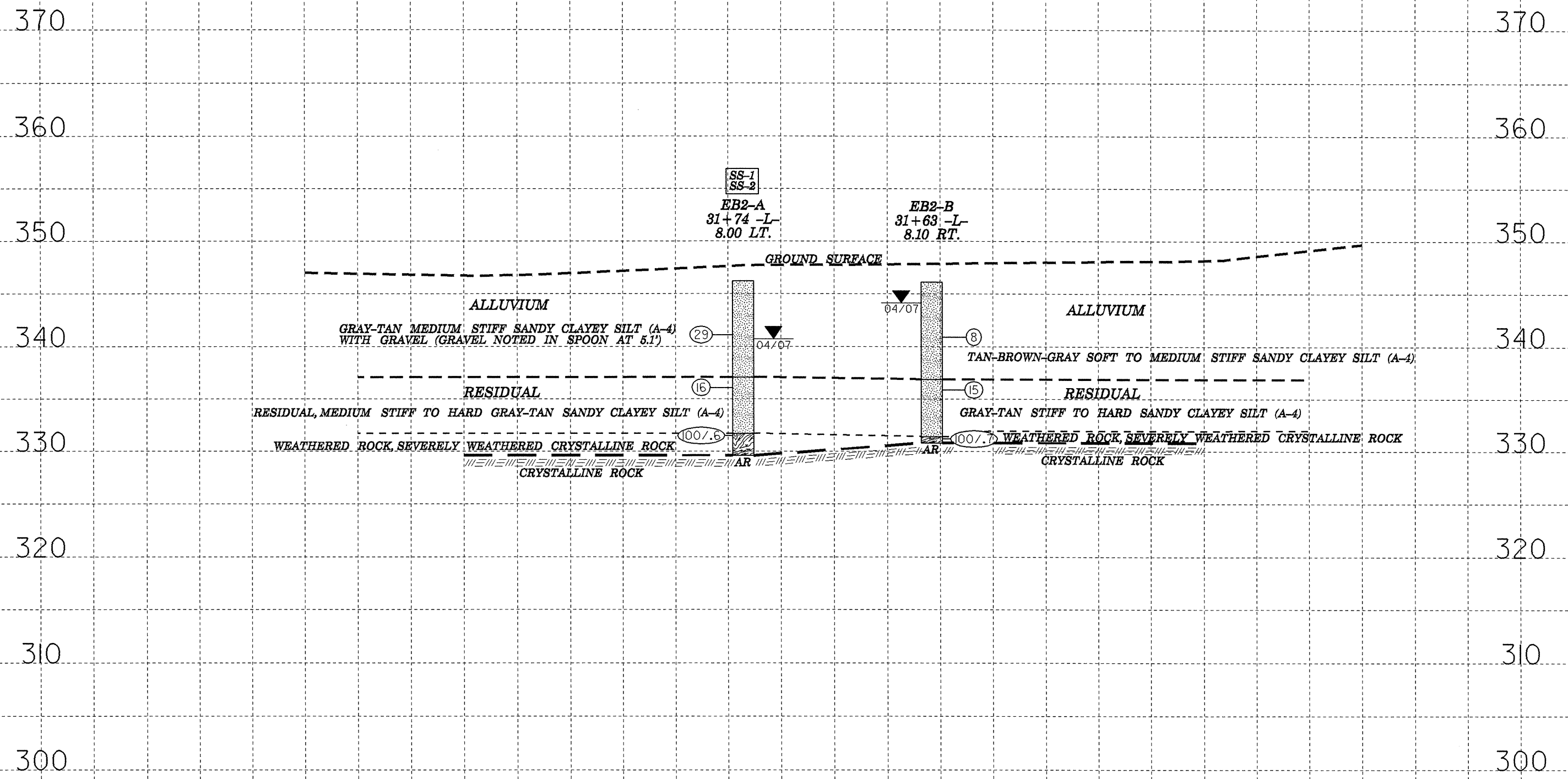
BT

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|---|-------|
| PROJECT REFERENCE NO. | SHEET |
| 33796.1.1 (B-4613) | 9 |
| Section Thru End Bent Two Sta. 31+70 -L- 100' Skew | |



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 33796.1.1 (B-4613) 9

| | | | |
|--|--------------------------|-------------------------|---------------------------|
| PROJECT NO. 33796.1.1 | ID. B-4613 | COUNTY RANDOLPH | GEOLOGIST Stickney, J. K. |
| SITE DESCRIPTION BRIDGE NO. 415 ON SR 2873 OVER FORK CREEK | | | GROUND WTR (ft) |
| BORING NO. EB1-A | STATION 30+04 | OFFSET 8ft LT | ALIGNMENT -L- |
| COLLAR ELEV. 348.1 ft | TOTAL DEPTH 15.3 ft | NORTHING 646,619 | EASTING 1,815,840 |
| DRILL MACHINE CME-550X | DRILL METHOD H.S. Augers | HAMMER TYPE Automatic | |
| START DATE 04/17/07 | COMP. DATE 04/17/07 | SURFACE WATER DEPTH N/A | DEPTH TO ROCK 15.3 ft |

| 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 | | | | | |
| 350 | | | | | | | | | | | | 348.1 | GROUND SURFACE | 0.0 |
| 344.7 | 3.4 | 0 | 0 | 1 | | | | | | SS-6 | W | | ALLUVIAL VERY SOFT TAN-BROWN SANDY CLAYEY SILT (A-4) | |
| 339.7 | 8.4 | 5 | 6 | 7 | | | | | | SS-7 | M | | RESIDUAL STIFF TO HARD TAN-BROWN CLAYEY SANDY SILT (A-4) | 8.4 |
| 334.7 | 13.4 | 10 | 32 | 44 | | | | | | SS-8 | D | | RESIDUAL VERY DENSE GRAY-WHITE SILTY SAND WITH ROCK FRAGMENTS | 13.0 |
| | | | | | | | | | | | | | WEATHERED ROCK SEVERELY WEATHERED CRYSTALLINE ROCK | 14.9 |
| | | | | | | | | | | | | | Boring Terminated by Auger Refusal at Elevation 332.8 ft ON CRYSTALLINE ROCK | 15.3 |

| | | | |
|--|--------------------------|-------------------------|---------------------------|
| PROJECT NO. 33796.1.1 | ID. B-4613 | COUNTY RANDOLPH | GEOLOGIST Stickney, J. K. |
| SITE DESCRIPTION BRIDGE NO. 415 ON SR 2873 OVER FORK CREEK | | | GROUND WTR (ft) |
| BORING NO. EB1-B | STATION 30+29 | OFFSET 10ft RT | ALIGNMENT -L- |
| COLLAR ELEV. 347.8 ft | TOTAL DEPTH 15.5 ft | NORTHING 646,602 | EASTING 1,815,848 |
| DRILL MACHINE CME-550X | DRILL METHOD H.S. Augers | HAMMER TYPE Automatic | |
| START DATE 04/17/07 | COMP. DATE 04/17/07 | SURFACE WATER DEPTH N/A | DEPTH TO ROCK 15.5 ft |

| 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 | | | | | |
| 350 | | | | | | | | | | | | 347.8 | GROUND SURFACE | 0.0 |
| 343.7 | 4.1 | 0 | 1 | 1 | | | | | | | W | | ALLUVIAL VERY SOFT TAN-BROWN SANDY CLAYEY SILT (A-4) | |
| 338.7 | 9.1 | 4 | 6 | 6 | | | | | | | M | | RESIDUAL STIFF TO HARD TAN-BROWN CLAYEY SANDY SILT (A-4) | 9.1 |
| 333.7 | 14.1 | 8 | 25 | 31 | | | | | | | | | RESIDUAL VERY DENSE GRAY-WHITE SILTY SAND (SAPROLITE) (A-1-B) | 14.1 |
| | | | | | | | | | | | | | Boring Terminated by Auger Refusal at Elevation 332.3 ft ON CRYSTALLINE ROCK | 15.5 |

| PROJECT NO. 33796.1.1 | | ID. B-4613 | | COUNTY RANDOLPH | | GEOLOGIST Stickney, J. K. | | | | | | | | | |
|--|------------|--------------------------------|-------|-------------------------|-----------------------|---------------------------|-----------------|----|-----|-----------|---------|---------------------------|------------|--|------|
| SITE DESCRIPTION BRIDGE NO. 415 ON SR 2873 OVER FORK CREEK | | | | | | | GROUND WTR (ft) | | | | | | | | |
| BORING NO. B1-A | | STATION 30+41 | | OFFSET 6ft LT | | ALIGNMENT -L- | | | | | | | | | |
| COLLAR ELEV. 344.1 ft | | TOTAL DEPTH 36.4 ft | | NORTHING 646,623 | | EASTING 1,815,877 | | | | | | | | | |
| DRILL MACHINE CME-550X | | DRILL METHOD NW Casing w/ Core | | | HAMMER TYPE Automatic | | | | | | | | | | |
| START DATE 04/16/07 | | COMP. DATE 04/16/07 | | SURFACE WATER DEPTH N/A | | DEPTH TO ROCK 14.6 ft | | | | | | | | | |
| 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 | | | | | | |
| 345 | | | | | | | | | | | | | 344.1 | GROUND SURFACE | 0.0 |
| 340.3 | 3.8 | | | | | | | | | | | | 336.0 | ALLUVIAL VERY SOFT TO SOFT TAN-BROWN CLAYEY SILT (A-4) | 8.1 |
| 335.3 | 8.8 | 0 | 1 | 2 | | | | | | | | | 330.3 | RESIDUAL STIFF TO HARD TAN-GRAY SANDY CLAYEY SILT (A-4) | 13.8 |
| 330.3 | 13.8 | 5 | 6 | 8 | | | | | | | | | 329.5 | WEATHERED ROCK SEVERELY WEATHERED CRYSTALLINE ROCK | 14.6 |
| | | 100/2 | | | | | | | | | | | 319.1 | CRYSTALLINE ROCK WHITE TO GRAY SLIGHTLY WEATHERED TO FRESH, HARD PHYLLITE WITH VERY CLOSE TO CLOSE FRACTURE SPACING | 25.0 |
| | | | | | | | | | | | | | 307.7 | CRYSTALLINE ROCK GRAY-WHITE VERY SLIGHTLY WEATHERED TO FRESH, HARD RHYOLITIC META-VOLCANIC WITH VERY CLOSE TO MODERATELY CLOSE FRACTURE SPACING | 36.4 |
| | | | | | | | | | | | | | | Boring Terminated at Elevation 307.7 ft IN CRYSTALLINE ROCK | |

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL UNIT CORE BORING REPORT

| | | | |
|---|----------------------------------|-------------------------|--------------------------|
| PROJECT NO: 33796.1.1 | PROJECT ID: B-4613 | COUNTY: Randolph | GEOLOGIST: J.K. STICKNEY |
| SITE DESCRIPTION: Bridge No. 415 on SR 2873 over Fork Creek | BORING LOCATION (STA): 30+41 | DRILLER: C.L. SMITH | OFFSET: 5.5' LT |
| BORING NO: B1-A | PERSONNEL: H.K. Wise | CORE SIZE: NXWL | DATE STARTED: 4-16-07 |
| TOTAL DEPTH: 36.4 | DRILL MACHINE: CME-550 | DATE COMPLETED: 4-16-07 | |
| TOTAL RUN: 21.8 | DRILL EQUIP: Tri-Cone, NW Casing | | |

| ELEV. (FT) | RUN DEPTH | RUN REC | RUN RQD | STRATA DEPTH | STRATA REC | STRATA RQD | STRATA ELEV | SAMP NO. | FIELD CLASSIFICATION AND REMARKS |
|------------|-----------|---------|---------|--------------|------------|------------|-------------|----------|---|
| 329.5 | 14.6 | 100 | 60 | 14.6 | 99 | 65 | 329.5 | | WHITE TO GRAY SLIGHTLY WEATHERED TO FRESH, HARD, PHYLLITE WITH VERY CLOSE TO CLOSE FRACTURE SPACING |
| 324.7 | 19.4 | 97 | 70 | | | | | | AS ABOVE TO 25.0' |
| 319.7 | 24.4 | 96 | 60 | 25.0 | | | 319.1 | | GRAY-WHITE VERY SLIGHTLY WEATHERED TO FRESH, HARD, RHYOLITIC META-VOLCANIC WITH VERY CLOSE TO MODERATELY CLOSE FRACTURE SPACING |
| | | | | 25.0 | 94 | 52 | 319.1 | | GRAY-WHITE, FRESH, HARD, RHYLOTIC META-VOLCANIC (3 SOLID PIECES OF CORE) |
| 314.7 | 29.4 | 100 | 95 | | | | | RS-1 | GRAY-WHITE, FRESH, HARD, RHYLOTIC META-VOLCANIC (3 SOLID PIECES OF CORE) |
| 309.7 | 34.4 | 85 | 0 | | | | | | AS ABOVE BUT CORE RUN HAD VERTICAL FRACTURE DOWN ITS ENTIRE LENGTH |
| 307.7 | 36.4 | | | 36.4 | | | 307.7 | | |

NOTES

| PROJECT NO. 33796.1.1 | | ID. B-4613 | | COUNTY RANDOLPH | | GEOLOGIST Stickney, J. K. | | | | | | | | | |
|--|------------|--------------------------------|-------|-------------------------|----------------|---------------------------|----|----|-----|-----------|---------|--|------------|----------------|-----|
| SITE DESCRIPTION BRIDGE NO. 415 ON SR 2873 OVER FORK CREEK | | | | | | GROUND WTR (ft) | | | | | | | | | |
| BORING NO. B1-B | | STATION 30+37 | | OFFSET 7ft RT | | ALIGNMENT -L- | | | | | | | | | |
| COLLAR ELEV. 345.1 ft | | TOTAL DEPTH 32.7 ft | | NORTHING 646,610 | | EASTING 1,815,876 | | | | | | | | | |
| DRILL MACHINE CME-550X | | DRILL METHOD NW Casing w/ Core | | | | HAMMER TYPE Automatic | | | | | | | | | |
| START DATE 04/16/07 | | COMP. DATE 04/17/07 | | SURFACE WATER DEPTH N/A | | DEPTH TO ROCK 14.5 ft | | | | | | | | | |
| 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 | | | | | | |
| 350 | | | | | | | | | | | | | 345.1 | GROUND SURFACE | 0.0 |
| 341.1 | 4.0 | 1 | 1 | 1 | | | | | | | M | ALLUVIAL VERY SOFT TO SOFT TAN-BROWN CLAYEY SILT (A-4) | 8.5 | | |
| 336.1 | 9.0 | 4 | 4 | 6 | | | | | | | M | RESIDUAL STIFF TO HARD TAN-GRAY SANDY CLAYEY SILT (A-4) | 13.8 | | |
| 331.1 | 14.0 | | | | | | | | | | | WEATHERED ROCK SEVERELY WEATHERED CRYSTALLINE ROCK | 14.5 | | |
| | | | | | | | | | | | | CRYSTALLINE ROCK GRAY SLIGHTLY WEATHERED TO FRESH, HARD PHYLLITE WITH VERY CLOSE TO CLOSE FRACTURE SPACING | 25.0 | | |
| | | | | | | | | | | | | CRYSTALLINE ROCK GRAY-WHITE FRESH, HARD RHYOLITIC META-VOLCANIC (CORE WAS 1 SOLID PIECE) | 32.7 | | |
| | | | | | | | | | | | | Boring Terminated at Elevation 312.4 ft IN CRYSTALLINE ROCK | | | |

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL UNIT CORE BORING REPORT

| | | | |
|---|----------------------------------|-------------------------|--------------------------|
| PROJECT NO: 33796.1.1 | PROJECT ID: B-4613 | COUNTY: Randolph | GEOLOGIST: J.K. STICKNEY |
| SITE DESCRIPTION: Bridge No. 415 on SR 2873 over Fork Creek | BORING LOCATION (STA): 30+37 | DRILLER: C.L. SMITH | OFFSET: 7.3' RT |
| BORING NO: B1-B | PERSONNEL: H.K. Wise | CORE SIZE: NXWL | DATE STARTED: 4-16-07 |
| COLLAR ELEV: 345.12 | DRILL MACHINE: CME-550 | DATE COMPLETED: 4-17-07 | |
| TOTAL DEPTH: 32.7' | DRILL EQUIP: Tri-Cone, NW Casing | | |
| TOTAL RUN: 18.2 | | | |

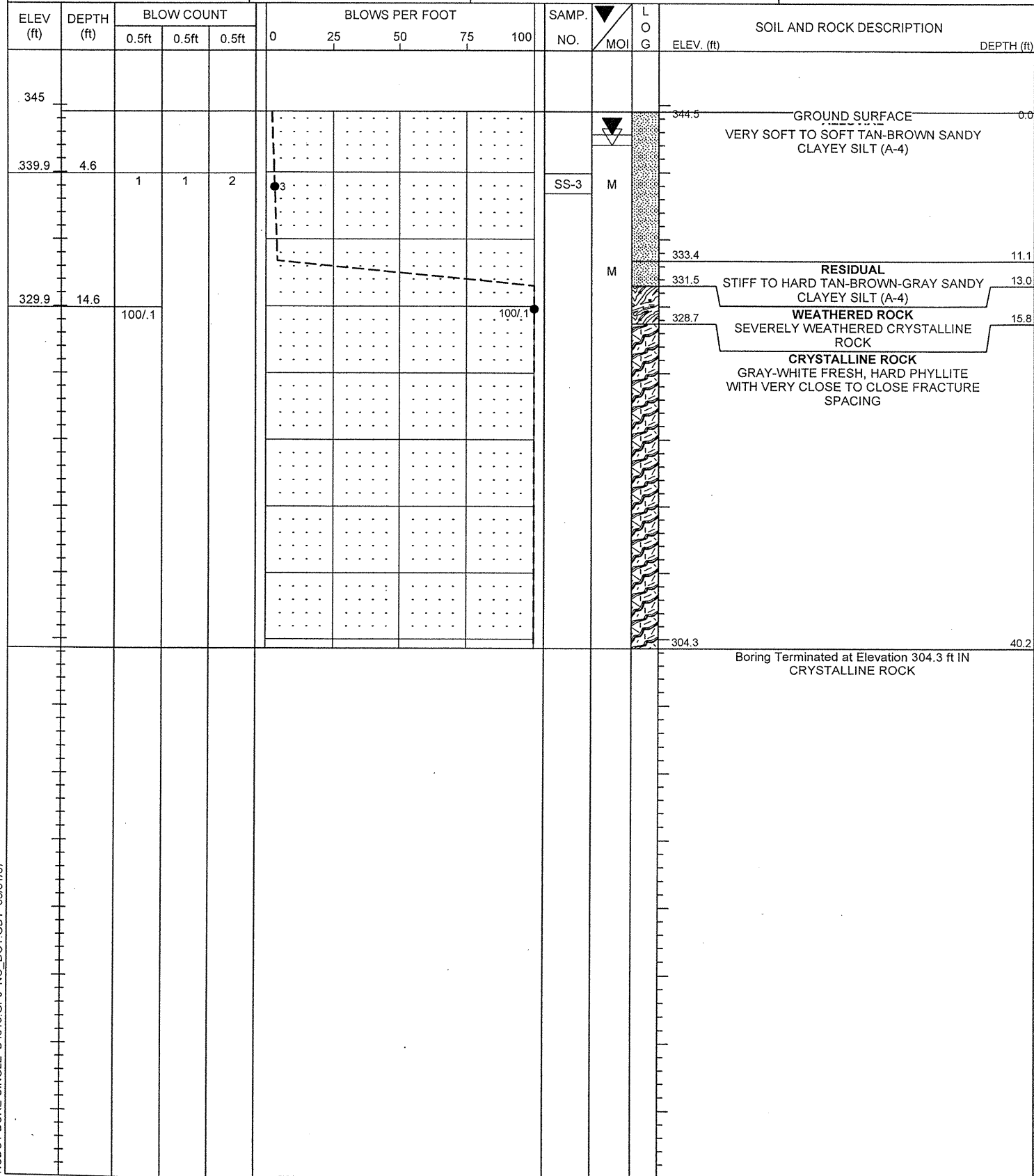
| ELEV. (FT) | RUN DEPTH | RUN REC | RUN RQD | STRATA DEPTH | STRATA REC | STRATA RQD | STRATA ELEV | SAMP NO. | FIELD CLASSIFICATION AND REMARKS |
|------------|-----------|---------|---------|--------------|------------|------------|-------------|----------|--|
| 330.6 | 14.5 | 100 | 42 | 14.5 | 98 | 67 | 330.6 | | GRAY SLIGHTLY WEATHERED TO FRESH, HARD, PHYLLITE WITH VERY CLOSE TO CLOSE FRACTURE SPACING |
| 325.4 | 19.7 | 96 | 92 | | | | | RS-2 | GRAY FRESH, HARD, PHYLLITE WITH CLOSE FRACTURE SPACING (TO 25.0') |
| 320.4 | 24.7 | 86 | 80 | 25.0 | | | 320.1 | | GRAY-WHITE FRESH, HARD, RHYOLITIC META-VOLCANIC (1 SOLID PIECE OF CORE) |
| 315.4 | 29.7 | 100 | 100 | | 93 | 100 | 320.1 | | AS ABOVE (1 SOLID PIECE) |
| 312.4 | 32.7 | | | 32.7 | | | 312.4 | | |

NOTES

| | | | |
|--|--------------------------------|-------------------------|---------------------------|
| PROJECT NO. 33796.1.1 | ID. B-4613 | COUNTY RANDOLPH | GEOLOGIST Stickney, J. K. |
| SITE DESCRIPTION BRIDGE NO. 415 ON SR 2873 OVER FORK CREEK | | | GROUND WTR (ft) |
| BORING NO. B2-A | STATION 31+32 | OFFSET 9ft LT | ALIGNMENT -L- |
| COLLAR ELEV. 344.5 ft | TOTAL DEPTH 40.2 ft | NORTHING 646,643 | EASTING 1,815,966 |
| DRILL MACHINE CME-550X | DRILL METHOD NW Casing w/ Core | HAMMER TYPE Automatic | |
| START DATE 04/12/07 | COMP. DATE 04/12/07 | SURFACE WATER DEPTH N/A | DEPTH TO ROCK 15.8 ft |

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL UNIT CORE BORING REPORT

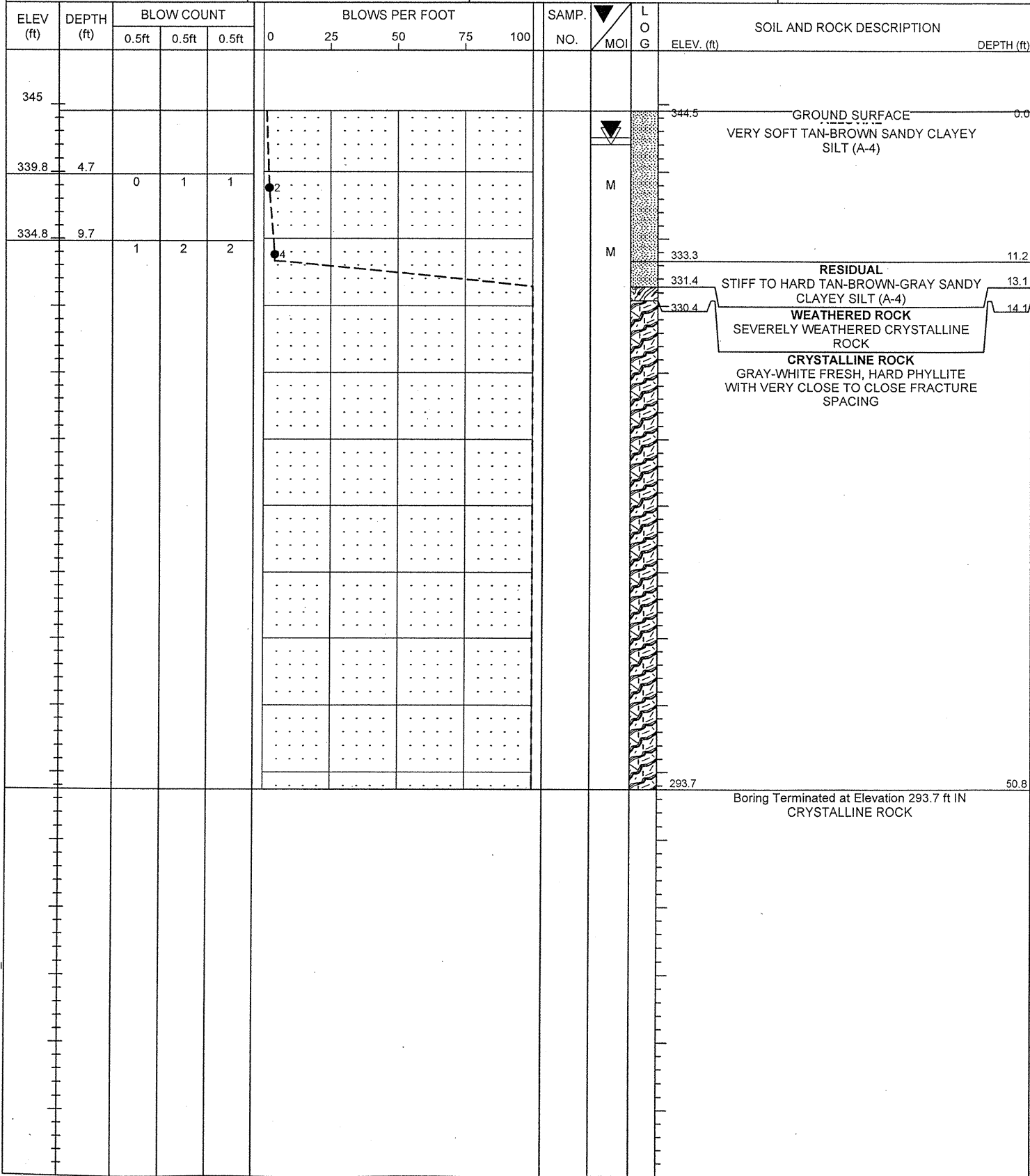
PROJECT NO: 33796.1.1 PROJECT ID: B-4613 COUNTY: Randolph GEOLOGIST: J.K. STICKNEY
 SITE DESCRIPTION: Bridge No. 415 on SR 2873 over Fork Creek DRILLER: C.L. SMITH
 BORING NO: B2-A BORING LOCATION (STA): 30+42 OFFSET: 9' LT
 COLLAR ELEV: 344.52 PERSONNEL: H.K. Wise CORE SIZE: NXWL
 TOTAL DEPTH: 40.2 DRILL MACHINE: CME-550 DATE STARTED: 4-12-07
 TOTAL RUN: 24.4' DRILL EQUIP: Tri-Cone, NW Casing DATE COMPLETED: 4-12-07



| ELEV. (FT) | RUN DEPTH | RUN REC | RUN RQD | STRATA DEPTH | STRATA REC | STRATA RQD | STRATA ELEV | SAMP NO. | FIELD CLASSIFICATION AND REMARKS |
|------------|-----------|---------|---------|--------------|------------|------------|-------------|----------|--|
| 328.7 | 15.8 | 100 | 32 | 15.8 | 96 | 32 | 328.7 | | GRAY-WHITE FRESH, HARD, PHYLLITE WITH VERY CLOSE TO CLOSE FRACTURE SPACING |
| 308.5 | 20.2 | 96 | 84 | | | | | | AS ABOVE |
| 303.5 | 25.2 | 92 | 10 | | | | | RS-3 | AS ABOVE BUT FRACTURE SPACING IS MOSTLY VERY CLOSE |
| 298.5 | 30.2 | 100 | 18 | | | | | | AS ABOVE |
| 293.5 | 35.2 | 92 | 15 | | | | | | AS ABOVE |
| 288.5 | 40.2 | | | 40.2 | | | 288.5 | | |

NOTES

| | | | |
|--|--------------------------------|-------------------------|---------------------------|
| PROJECT NO. 33796.1.1 | ID. B-4613 | COUNTY RANDOLPH | GEOLOGIST Stickney, J. K. |
| SITE DESCRIPTION BRIDGE NO. 415 ON SR 2873 OVER FORK CREEK | | | GROUND WTR (ft) |
| BORING NO. B2-B | STATION 31+27 | OFFSET 7ft RT | ALIGNMENT -L- |
| COLLAR ELEV. 344.5 ft | TOTAL DEPTH 50.8 ft | NORTHING 646,627 | EASTING 1,815,964 |
| DRILL MACHINE CME-550X | DRILL METHOD NW Casing w/ Core | HAMMER TYPE Automatic | |
| START DATE 04/13/07 | COMP. DATE 04/13/07 | SURFACE WATER DEPTH N/A | DEPTH TO ROCK 14.1 ft |



NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL UNIT CORE BORING REPORT

PROJECT NO: 33796.1.1 PROJECT ID: B-4613 COUNTY: Randolph GEOLOGIST: J.K. STICKNEY
 SITE DESCRIPTION: Bridge No. 415 on SR 2873 over Fork Creek DRILLER: C.L. SMITH
 BORING NO: B2-B BORING LOCATION (STA): 31+27 OFFSET: 7.2' RT
 COLLAR ELEV: 344.51 PERSONNEL: H.K. Wise CORE SIZE: NXWL
 TOTAL DEPTH: 50.8 DRILL MACHINE: CME-550 DATE STARTED: 04-13-07
 TOTAL RUN: 36.7' DRILL EQUIP: Tri-Cone, NW Casing DATE COMPLETED: 4-13-07

| ELEV. (FT) | RUN DEPTH | RUN REC | RUN RQD | STRATA DEPTH | STRATA REC | STRATA RQD | STRATA ELEV | SAMP NO. | FIELD CLASSIFICATION AND REMARKS |
|------------|-----------|---------|---------|--------------|------------|------------|-------------|----------|---|
| 330.4 | 14.1 | 100 | 53 | 14.1 | 99 | 9 | 330.4 | | GRAY-WHITE FRESH, HARD PHYLLITE WITH VERY CLOSE TO CLOSE FRACTURE SPACING |
| 328.7 | 15.8 | 100 | 0 | | | | | | AS ABOVE BUT FRACTURES ARE VERY CLOSE |
| 323.7 | 20.8 | 88 | 20 | | | | | | AS ABOVE WITH VERY CLOSE TO CLOSE FRACTURE SPACING |
| 318.7 | 25.8 | 100 | 0 | | | | | | AS ABOVE WITH VERY CLOSE FRACTURE SPACING |
| 314.7 | 29.8 | 100 | 0 | | | | | | AS ABOVE |
| 309.7 | 34.8 | 100 | 0 | | | | | | AS ABOVE |
| 304.2 | 40.3 | 100 | 0 | | | | | | AS ABOVE |
| 298.7 | 45.8 | 100 | 0 | | | | | | AS ABOVE |
| 293.7 | 50.8 | | | 293.7 | | | 293.7 | | |

NOTES

NC DOT BORE SINGLE B4613.GPJ NC_DOT.GDT 05/31/07

| | | | |
|--|--------------------------|-------------------------|---------------------------|
| PROJECT NO. 33796.1.1 | ID. B-4613 | COUNTY RANDOLPH | GEOLOGIST Stickney, J. K. |
| SITE DESCRIPTION BRIDGE NO. 415 ON SR 2873 OVER FORK CREEK | | | GROUND WTR (ft) |
| BORING NO. EB2-A | STATION 31+74 | OFFSET 8ft LT | ALIGNMENT -L- |
| COLLAR ELEV. 346.2 ft | TOTAL DEPTH 16.6 ft | NORTHING 646,650 | EASTING 1,816,007 |
| DRILL MACHINE CME-550X | DRILL METHOD H.S. Augers | HAMMER TYPE Automatic | |
| START DATE 04/12/07 | COMP. DATE 04/12/07 | SURFACE WATER DEPTH N/A | DEPTH TO ROCK 16.6 ft |

| 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 | | | | |
| 350 | | | | | | | | | | | | | |
| | | | | | | | | | | | | 346.2 | GROUND SURFACE 0.0 |
| 342.1 | 4.1 | 3 | 5 | 24 | | | | | | | | | ALLUVIAL MEDIUM STIFF GRAY-TAN SANDY CLAYEY SILT (A-4) WITH GRAVEL (GRAVEL NOTED IN SPOON AT 5.1') |
| 337.1 | 9.1 | 5 | 8 | 8 | | | | | | | | | RESIDUAL MEDIUM STIFF TO HARD GRAY-TAN SANDY CLAYEY SILT (A-4) |
| 332.1 | 14.1 | 40 | 60/1 | | | | | | | | | | WEATHERED ROCK SEVERELY WEATHERED CRYSTALLINE ROCK |
| | | | | | | | | | | | | | Boring Terminated by Auger Refusal at Elevation 329.6 ft ON CRYSTALLINE ROCK |

| | | | |
|--|--------------------------|-------------------------|---------------------------|
| PROJECT NO. 33796.1.1 | ID. B-4613 | COUNTY RANDOLPH | GEOLOGIST Stickney, J. K. |
| SITE DESCRIPTION BRIDGE NO. 415 ON SR 2873 OVER FORK CREEK | | | GROUND WTR (ft) |
| BORING NO. EB2-B | STATION 31+63 | OFFSET 8ft RT | ALIGNMENT -L- |
| COLLAR ELEV. 346.1 ft | TOTAL DEPTH 15.3 ft | NORTHING 646,632 | EASTING 1,816,000 |
| DRILL MACHINE CME-550X | DRILL METHOD H.S. Augers | HAMMER TYPE Automatic | |
| START DATE 04/12/07 | COMP. DATE 04/12/07 | SURFACE WATER DEPTH N/A | DEPTH TO ROCK 15.3 ft |

| 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 | | | | |
| 350 | | | | | | | | | | | | | |
| | | | | | | | | | | | | 346.1 | GROUND SURFACE 0.0 |
| 341.9 | 4.2 | 3 | 3 | 5 | | | | | | | | | ALLUVIAL SOFT TO MEDIUM STIFF TAN-BROWN-GRAY SANDY CLAYEY SILT (A-4) |
| 336.9 | 9.2 | 5 | 8 | 7 | | | | | | | | | RESIDUAL STIFF TO HARD GRAY-TAN SANDY CLAYEY SILT (A-4) |
| 331.9 | 14.2 | 31 | 69/2 | | | | | | | | | | WEATHERED ROCK SEVERELY WEATHERED CRYSTALLINE ROCK |
| | | | | | | | | | | | | | Boring Terminated by Auger Refusal at Elevation 330.8 ft ON CRYSTALLINE ROCK |



FIELD SCOUR REPORT

WBS: 33796.1.1 TIP: B-4613 COUNTY: Randolph

DESCRIPTION(1): Bridge # 415 on SR 2873 over Fork Creek

EXISTING BRIDGE

Information from: Field Inspection Microfilm _____ (reel _____ pos: _____)
 Other (explain) _____

Bridge No.: 415 Length: 71' Total Bents: 3 Bents in Channel: 3 Bents in Floodplain: 3
 Foundation Type: Bridge has timber deck on steel girders with concrete piers.

EVIDENCE OF SCOUR(2)

Abutments or End Bent Slopes: Scour / erosion around both end bents on upstream side.

Interior Bents: None

Channel Bed: None

Channel Bank: Some undercutting where stream meanders, banks are very steep but appear stable.

EXISTING SCOUR PROTECTION

Type(3): None

Extent(4): N/A

Effectiveness(5): N/A

Obstructions(6): Trees, limbs, sediment buildup along entire length of existing bridge. DOT frequently removes debris.

INSTRUCTIONS

- 1 Describe the specific site's location, including route number and body of water crossed.
- 2 Note scour evidence at existing end bents or abutments (e.g. undermining, sloughing, degradations).
- 3 Note existing scour protection (e.g. rip rap).
- 4 Describe extent of existing scour protection.
- 5 Describe whether or not the scour protection appears to be working.
- 6 Note obstructions such as dams, fallen trees, debris at bents, etc.
- 7 Describe the channel bed material based on observation and/or samples. Include any lab results with report.
- 8 Describe the channel bank material based on observation and/or samples. Include any lab results with report.
- 9 Describe the material covering the banks (e.g. grass, trees, rip rap, none).
- 10 Determine the approximate floodplain width from field observation or a topographic map.
- 11 Describe the material covering the floodplain (e.g. grass, trees, crops).
- 12 Use professional judgement to specify if the stream is degrading, aggrading, or static.
- 13 Describe potential and direction of the stream to migrate laterally during the bridge's life (approx. 100 years).
- 14 Give the design scour elevation (DSE) expected over the life of the bridge (approx. 100 years). This elevation can be given as a range across the site, or for each bent. Discuss the relationship between the Hydraulics Unit theoretical scour and the DSE. If the DSE is dependent on scour counter measures, explain (e.g. rip rap armoring on slopes). The DSE is based on the erodability of materials, giving consideration to the influence of joints, foliation, bedding characteristics, % core recovery, % RQD, differential weathering, shear strength, observations at existing structures, other tests deemed appropriate, and overall geologic conditions at the site.

DESIGN INFORMATION

Channel Bed Material(7): Hard silt (A-4) / Weathered Crystalline Rock

Channel Bank Material(8): Sandy silt (A-4), Reference SS-1 and SS-2

Channel Bank Cover(9): Mature trees and shrubs

Floodplain Width(10): appx. 300'

Floodplain Cover(11): Mature trees and shrubs

Stream is(12): Aggrading _____ Degrading Static _____

Channel Migration Tendency(13): Slight

Observations and Other Comments: _____

DESIGN SCOUR ELEVATIONS(14)

Feet Meters _____

BENTS

| B1 | B2 | B3 | B4 | | | | | | |
|------|------|----|----|--|--|--|--|--|--|
| 336' | 338' | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |

Comparison of DSE to Hydraulics Unit theoretical scour:
 DSE is equivalent to hydro predicted scour.

SOIL ANALYSIS RESULTS FROM CHANNEL BED AND BANK MATERIAL

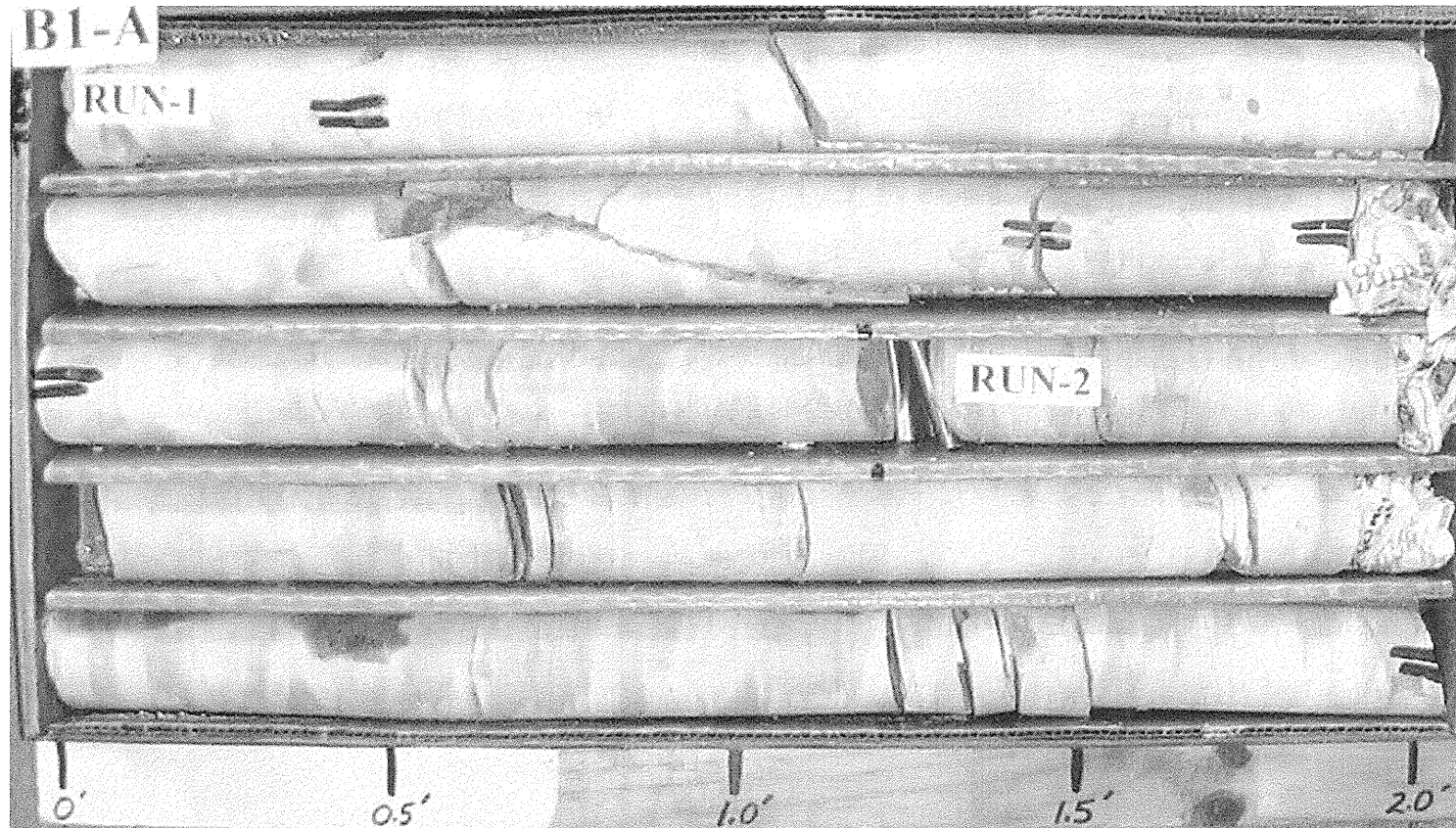
| | | | | | | | | | |
|-------------|-----------------------------------|--|--|--|--|--|--|--|--|
| Bed or Bank | | | | | | | | | |
| Sample No. | | | | | | | | | |
| Retained #4 | See sheet # 16 for sample results | | | | | | | | |
| Passed #10 | | | | | | | | | |
| Passed #40 | | | | | | | | | |
| Passed #200 | | | | | | | | | |
| Coarse Sand | | | | | | | | | |
| Fine Sand | | | | | | | | | |
| Silt | | | | | | | | | |
| Clay | | | | | | | | | |
| LL | | | | | | | | | |
| PI | | | | | | | | | |
| AASHTO | | | | | | | | | |
| Station | | | | | | | | | |
| Offset | | | | | | | | | |
| Depth | | | | | | | | | |

Reported by: JEB JKs

Date: 6/12/2007

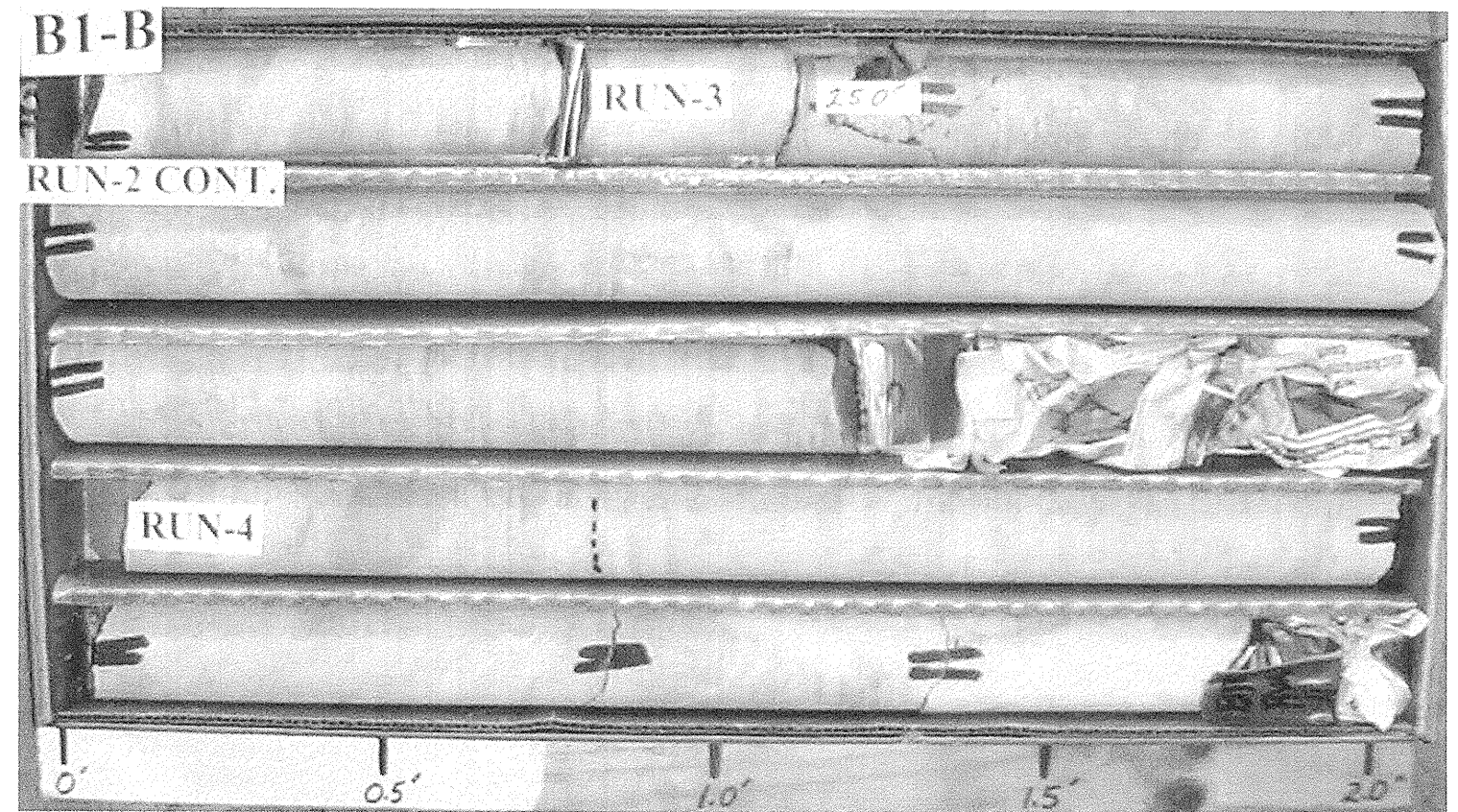
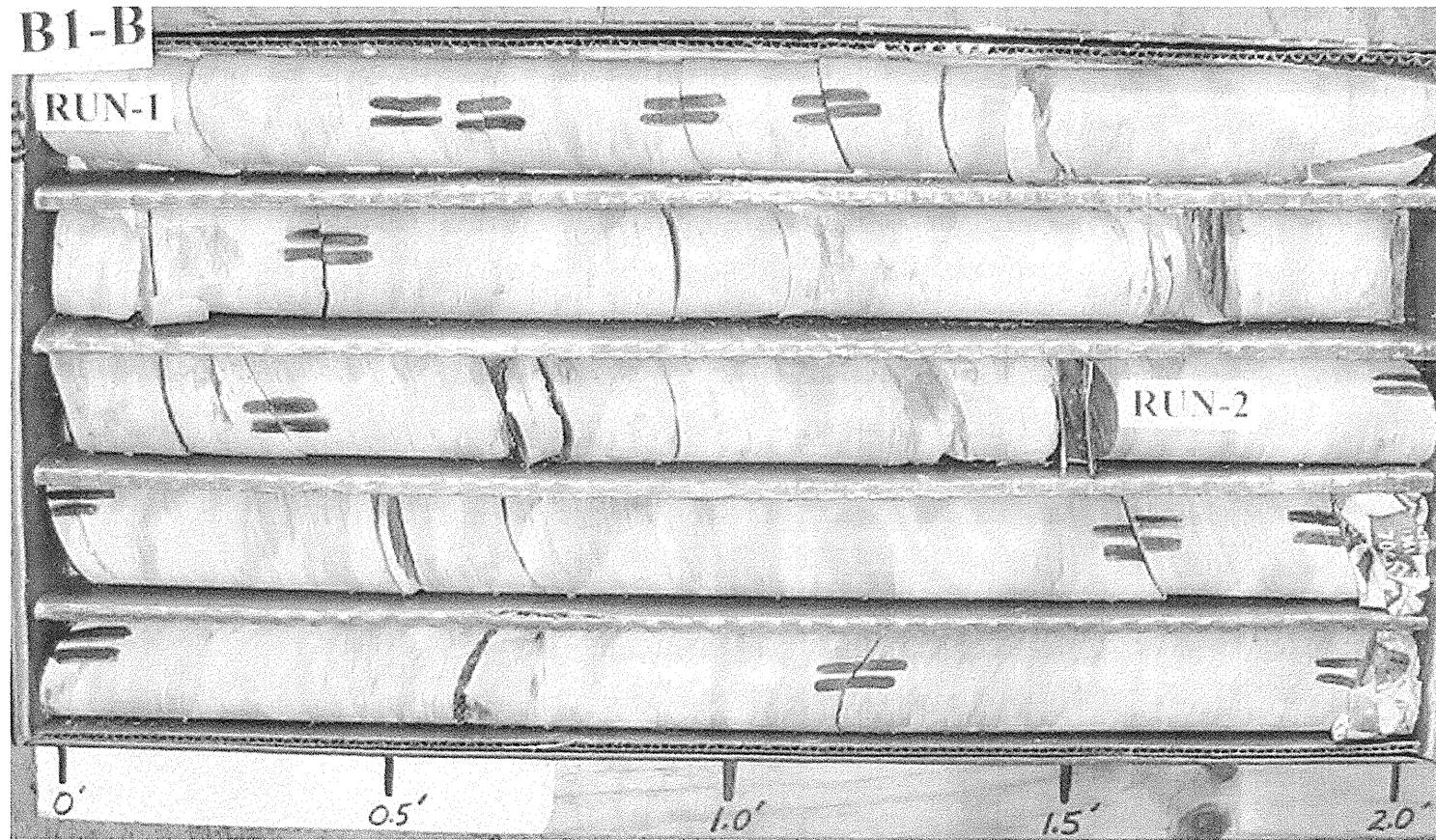
33796.1.1 B-4613
RANDOLPH COUNTY
BRIDGE NO. 415 ON SR 2873 OVER FORK CREEK

CORE PHOTOS



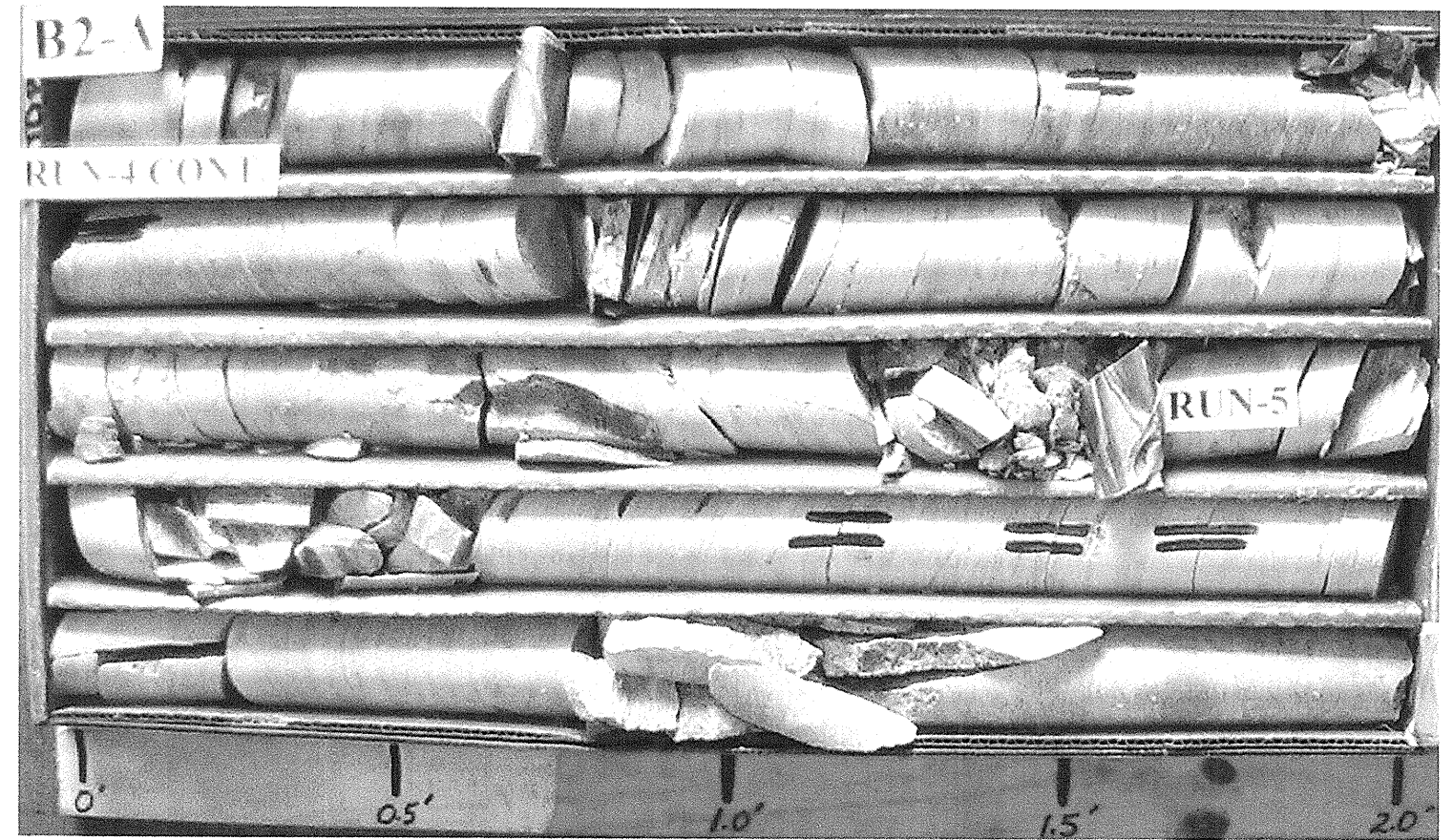
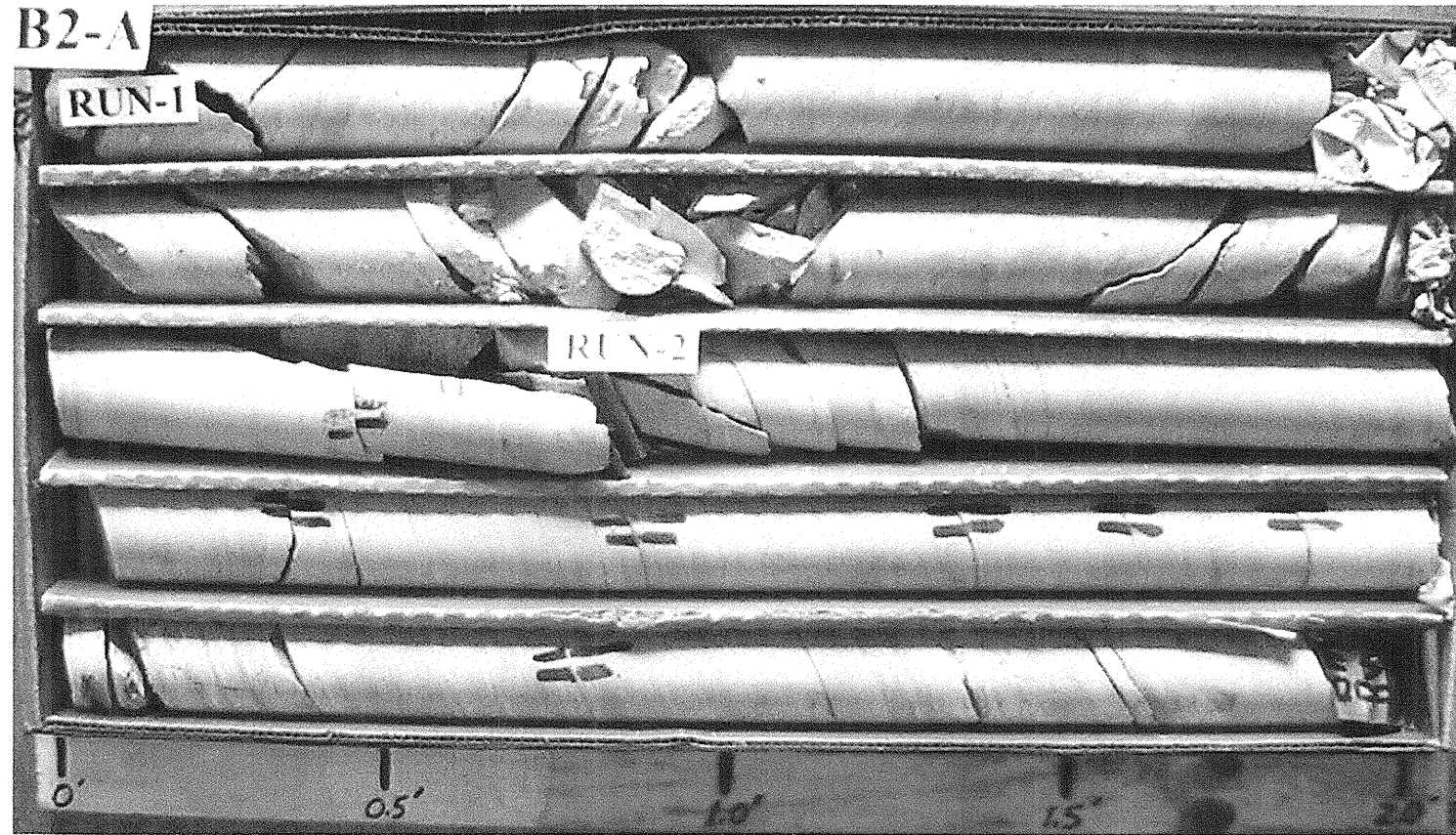
33796.1.1 B-4613
RANDOLPH COUNTY
BRIDGE NO. 415 ON SR 2873 OVER FORK CREEK

CORE PHOTOS



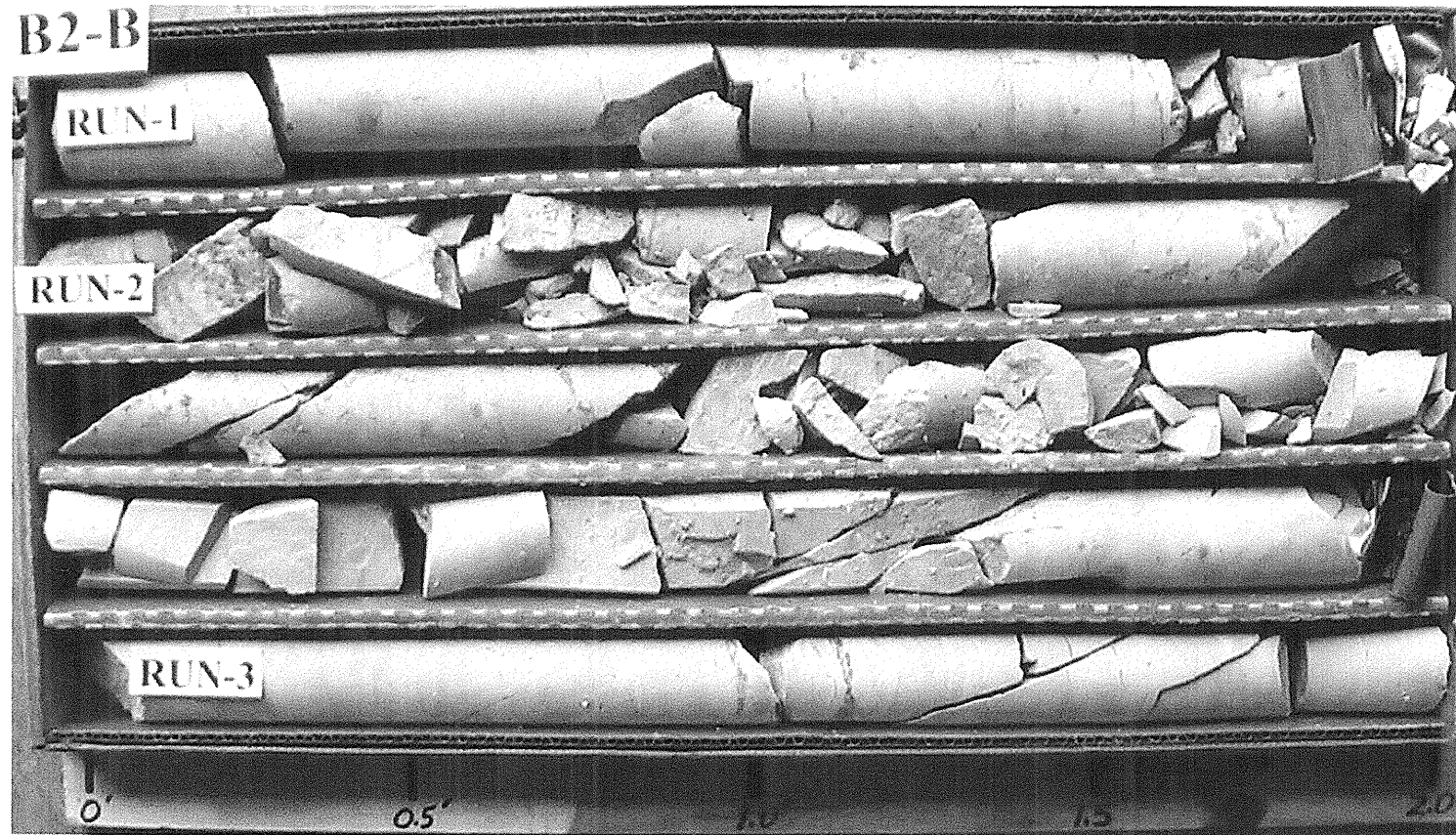
33796.1.1 B-4613
RANDOLPH COUNTY
BRIDGE NO. 415 ON SR 2873 OVER FORK CREEK

CORE PHOTOS



33796.1.1 B-4613
RANDOLPH COUNTY
BRIDGE NO. 415 ON SR 2873 OVER FORK CREEK

CORE PHOTOS



33796.1.1 B-4613
RANDOLPH COUNTY
BRIDGE NO. 415 ON SR 2873 OVER FORK CREEK

CORE PHOTOS



33796.1.1 B-4613
RANDOLPH COUNTY
BRIDGE NO. 415 ON SR 2873 OVER FORK CREEK

SITE PHOTOS



33796.1.1 B-4613
RANDOLPH COUNTY
BRIDGE NO. 415 ON SR 2873 OVER FORK CREEK

SITE PHOTOS
(Existing Bridge)

