

**PROJECT: 48081**

**DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED**

B-5888

2

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

# SUBSURFACE INVESTIGATION

## SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS (PAGE 1 OF 2)

**SOIL DESCRIPTION**

SOIL IS CONSIDERED 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 THE STANDARD PENETRATION TEST (AASHTO T 206, ASTM D1586). SOIL CLASSIFICATION IS BASED ON THE AASHTO SYSTEM. BASIC DESCRIPTIONS GENERALLY INCLUDE THE FOLLOWING: CONSISTENCY, COLOR, TEXTURE, MOISTURE, AASHTO CLASSIFICATION, AND OTHER PERTINENT FACTORS SUCH AS MINERALOGICAL COMPOSITION, ANGULARITY, STRUCTURE, PLASTICITY, ETC. FOR EXAMPLE, VERY STIFF, GRAY, SILTY CLAY, MOIST WITH INTERBEDDED FINE SAND LAYERS, HIGHLY PLASTIC, A-7-6

**SOIL LEGEND AND AASHTO CLASSIFICATION**

| GENERAL CLASS.                   | GRANULAR MATERIALS<br>( $\leq 35\%$ PASSING #200) |                         |                                 |                         |                         |                         | SILT-CLAY MATERIALS<br>( $> 35\%$ PASSING #200) |                         |                         |                         |                         |                         | ORGANIC MATERIALS                                       |                 |                      |
|----------------------------------|---------------------------------------------------|-------------------------|---------------------------------|-------------------------|-------------------------|-------------------------|-------------------------------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|---------------------------------------------------------|-----------------|----------------------|
| GROUP CLASS.                     | A-1                                               | A-3                     | A-2                             | A-4                     | A-5                     | A-6                     | A-7                                             | A-1, A-2                | A-3                     | A-4, A-5                | A-6, A-7                |                         |                                                         |                 |                      |
| SYMBOL                           |                                                   |                         |                                 |                         |                         |                         |                                                 |                         |                         |                         |                         |                         |                                                         |                 |                      |
| % PASSING                        | 50 MX<br>30 MX<br>15 MX                           | 50 MX<br>25 MX<br>10 MX | 50 MN<br>35 MX<br>10 MX         | 35 MX<br>35 MX<br>10 MX | 35 MX<br>35 MX<br>10 MX | 35 MX<br>35 MX<br>10 MX | 35 MX<br>35 MX<br>10 MX                         | 35 MN<br>35 MN<br>10 MN | 35 MN<br>35 MN<br>10 MN | 35 MN<br>35 MN<br>10 MN | 35 MN<br>35 MN<br>10 MN | 35 MN<br>35 MN<br>10 MN | GRANULAR SOILS                                          | SILT-CLAY SOILS | MUCK, PEAT           |
| MATERIAL PASSING #40<br>LL<br>PI | —<br>6 MX                                         | —<br>NP                 | 40 MX<br>10 MX                  | 41 MN<br>10 MX          | 40 MX<br>11 MN          | 41 MN<br>11 MN          | 40 MX<br>10 MX                                  | 41 MN<br>10 MX          | 40 MX<br>11 MN          | 41 MN<br>11 MN          | 40 MX<br>10 MX          | 41 MN<br>10 MX          | SOILS WITH LITTLE OR MODERATE AMOUNTS OF ORGANIC MATTER |                 |                      |
| GROUP INDEX                      | 0                                                 | 0                       | 0                               | 4 MX                    | 8 MX                    | 12 MX                   | 16 MX                                           | NO MX                   |                         |                         |                         |                         |                                                         |                 |                      |
| USUAL TYPES OF MAJOR MATERIALS   | STONE FRAGS, GRAVEL, AND SAND                     | FINE SAND               | SILTY OR CLAYEY GRAVEL AND SAND | SILTY SOILS             | CLAYEY SOILS            |                         |                                                 |                         |                         |                         |                         |                         |                                                         |                 | HIGHLY ORGANIC SOILS |
| GEN. RATING AS SUBGRADE          | EXCELLENT TO GOOD                                 |                         |                                 |                         |                         |                         | FAIR TO POOR                                    |                         |                         |                         |                         |                         | FAIR TO POOR                                            | POOR            | UNSATISFACTORY       |

PI OF A-7-5 SUBGROUP IS  $\leq$  LL - 30 ; PI OF A-7-6 SUBGROUP IS  $>$  LL - 30

**CONSISTENCY OR DENSENESS**

| PRIMARY SOIL TYPE                          | COMPACTNESS OR CONSISTENCY                                       | RANGE OF STANDARD PENETRATION RESISTANCE (N-VALUE)         | RANGE OF UNCONFINED COMPRESSIVE STRENGTH (TONS/FT <sup>2</sup> )   |
|--------------------------------------------|------------------------------------------------------------------|------------------------------------------------------------|--------------------------------------------------------------------|
| GENERALLY GRANULAR MATERIAL (NON-COHESIVE) | VERY LOOSE<br>LOOSE<br>MEDIUM DENSE<br>DENSE<br>VERY DENSE       | $< 4$<br>4 TO 10<br>10 TO 30<br>30 TO 50<br>$> 50$         | N/A                                                                |
| GENERALLY SILT-CLAY MATERIAL (COHESIVE)    | VERY SOFT<br>SOFT<br>MEDIUM STIFF<br>STIFF<br>VERY STIFF<br>HARD | $< 2$<br>2 TO 4<br>4 TO 8<br>8 TO 15<br>15 TO 30<br>$> 30$ | $< 0.25$<br>0.25 TO 0.5<br>0.5 TO 1.0<br>1 TO 2<br>2 TO 4<br>$> 4$ |

**TEXTURE OR GRAIN SIZE**

| U.S. STD. SIEVE SIZE<br>OPENING (MM) | 4             | 10           | 40                     | 60                | 200        | 270        |
|--------------------------------------|---------------|--------------|------------------------|-------------------|------------|------------|
|                                      | 4.76          | 2.00         | 0.42                   | 0.25              | 0.075      | 0.053      |
| BOULDER (BLDR.)                      | COBBLE (COB.) | GRAVEL (GR.) | COARSE SAND (CSE, SD.) | FINE SAND (F SD.) | SILT (SL.) | CLAY (CL.) |

| GRAIN SIZE | MM  | 305 | 75 | 2.0 | 0.25 | 0.05 | 0.005 |
|------------|-----|-----|----|-----|------|------|-------|
|            | IN. | 12  | 3  |     |      |      |       |

**SOIL MOISTURE - CORRELATION OF TERMS**

| SOIL MOISTURE SCALE (ATTERBERG LIMITS) | FIELD MOISTURE DESCRIPTION | GUIDE FOR FIELD MOISTURE DESCRIPTION                                |
|----------------------------------------|----------------------------|---------------------------------------------------------------------|
| LL<br>PLASTIC RANGE (PI)<br>PL         | - SATURATED - (SAT.)       | USUALLY LIQUID; VERY WET, USUALLY FROM BELOW THE GROUND WATER TABLE |
|                                        | - WET - (W)                | SEMISOLID; REQUIRES DRYING TO ATTAIN OPTIMUM MOISTURE               |
| OM<br>SL                               | - MOIST - (M)              | SOLID; AT OR NEAR OPTIMUM MOISTURE                                  |
|                                        | - DRY - (D)                | REQUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE                |

**PLASTICITY**

|                    | PLASTICITY INDEX (PI) | DRY STRENGTH |
|--------------------|-----------------------|--------------|
| NON PLASTIC        | 0-5                   | VERY LOW     |
| SLIGHTLY PLASTIC   | 6-15                  | SLIGHT       |
| MODERATELY PLASTIC | 16-25                 | MEDIUM       |
| HIGHLY PLASTIC     | 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.

**GRADATION**

**WELL GRADED** - INDICATES A GOOD REPRESENTATION OF PARTICLE SIZES FROM FINE TO COARSE.  
**UNIFORMLY GRADED** - INDICATES THAT SOIL PARTICLES ARE ALL APPROXIMATELY THE SAME SIZE.  
**GAP-GRADED** - INDICATES A MIXTURE OF UNIFORM PARTICLE SIZES OF TWO OR MORE SIZES.

**ANGULARITY OF GRAINS**

THE ANGULARITY OR ROUNDNESS OF SOIL GRAINS IS DESIGNATED BY THE TERMS: ANGULAR, SUBANGULAR, SUBROUNDED, OR ROUNDED.

**MINERALOGICAL COMPOSITION**

MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC. ARE USED IN DESCRIPTIONS WHEN THEY ARE CONSIDERED OF SIGNIFICANCE.

**COMPRESSIBILITY**

SLIGHTLY COMPRESSIBLE LL  $<$  31  
MODERATELY COMPRESSIBLE LL = 31 - 50  
HIGHLY COMPRESSIBLE LL  $>$  50

**PERCENTAGE OF MATERIAL**

| ORGANIC MATERIAL        | GRANULAR SOILS | SILT - CLAY SOILS | OTHER MATERIAL       |
|-------------------------|----------------|-------------------|----------------------|
| TRACE OF ORGANIC MATTER | 2 - 3%         | 3 - 5%            | TRACE 1 - 10%        |
| LITTLE ORGANIC MATTER   | 3 - 5%         | 5 - 12%           | LITTLE 10 - 20%      |
| MODERATELY ORGANIC      | 5 - 10%        | 12 - 20%          | SOME 20 - 35%        |
| HIGHLY ORGANIC          | $>$ 10%        | $>$ 20%           | HIGHLY 35% AND ABOVE |

**GROUND WATER**

WATER LEVEL IN BORE HOLE IMMEDIATELY AFTER DRILLING  
 STATIC WATER LEVEL AFTER 24 HOURS  
 PERCHED WATER, SATURATED ZONE, OR WATER BEARING STRATA  
 SPRING OR SEEP

**MISCELLANEOUS SYMBOLS**

|  |                                                    |  |                                        |
|--|----------------------------------------------------|--|----------------------------------------|
|  | ROADWAY EMBANKMENT (RE) WITH SOIL DESCRIPTION      |  | DIP & DIP DIRECTION OF ROCK STRUCTURES |
|  | SOIL SYMBOL                                        |  | TEST BORING                            |
|  | ARTIFICIAL FILL (AF) OTHER THAN ROADWAY EMBANKMENT |  | AUGER BORING                           |
|  | INFERRED SOIL BOUNDARY                             |  | CORE BORING                            |
|  | INFERRED ROCK LINE                                 |  | MONITORING WELL                        |
|  | ALLUVIAL SOIL BOUNDARY                             |  | PIEZOMETER INSTALLATION                |
|  |                                                    |  | SLOPE INDICATOR INSTALLATION           |
|  |                                                    |  | CONE PENETROMETER TEST                 |
|  |                                                    |  | SOUNDING ROD                           |
|  |                                                    |  | TEST BORING WITH CORE                  |
|  |                                                    |  | SPT N-VALUE                            |

**RECOMMENDATION SYMBOLS**

|  |                  |  |                                                      |  |                                                                                                      |
|--|------------------|--|------------------------------------------------------|--|------------------------------------------------------------------------------------------------------|
|  | UNDERCUT         |  | UNCLASSIFIED EXCAVATION - UNSUITABLE WASTE           |  | UNCLASSIFIED EXCAVATION - ACCEPTABLE, BUT NOT TO BE USED IN THE TOP 3 FEET OF EMBANKMENT OR BACKFILL |
|  | SHALLOW UNDERCUT |  | UNCLASSIFIED EXCAVATION - ACCEPTABLE DEGRADABLE ROCK |  |                                                                                                      |

**ABBREVIATIONS**

|                                |                          |                                  |
|--------------------------------|--------------------------|----------------------------------|
| AR - AUGER REFUSAL             | MED. - MEDIUM            | VST - VANE SHEAR TEST            |
| BT - BORING TERMINATED         | MICA - MICACEOUS         | WEA. - WEATHERED                 |
| CL - CLAY                      | MOD. - MODERATELY        | γ - UNIT WEIGHT                  |
| CPT - CONE PENETRATION TEST    | NP - NON PLASTIC         | γ <sub>d</sub> - DRY UNIT WEIGHT |
| CSE. - COARSE                  | ORG. - ORGANIC           |                                  |
| DMT - DILATOMETER TEST         | PMT - PRESSUREMETER TEST | <b>SAMPLE ABBREVIATIONS</b>      |
| DPT - DYNAMIC PENETRATION TEST | SAP. - SAPROLITIC        | S - BULK                         |
| e - VOID RATIO                 | SD. - SAND, SANDY        | SS - SPLIT SPOON                 |
| F - FINE                       | SL. - SILT, SILTY        | ST - SHELBY TUBE                 |
| FOSS. - FOSSILIFEROUS          | SLI. - SLIGHTLY          | RS - ROCK                        |
| FRAC. - FRACTURED, FRACTURES   | TCR - TRICONE REFUSAL    | RT - RECOMPACTED TRIAXIAL        |
| FRAGS. - FRAGMENTS             | w - MOISTURE CONTENT     | CBR - CALIFORNIA BEARING RATIO   |
| HL - HIGHLY                    | V - VERY                 |                                  |

**EQUIPMENT USED ON SUBJECT PROJECT**

|                                                    |                                                                      |                                                                               |
|----------------------------------------------------|----------------------------------------------------------------------|-------------------------------------------------------------------------------|
| DRILL UNITS:                                       | ADVANCING TOOLS:                                                     | HAMMER TYPE:                                                                  |
| <input type="checkbox"/> CME-45C                   | <input type="checkbox"/> CLAY BITS                                   | <input checked="" type="checkbox"/> AUTOMATIC <input type="checkbox"/> MANUAL |
| <input type="checkbox"/> CME-55                    | <input type="checkbox"/> 6" CONTINUOUS FLIGHT AUGER                  |                                                                               |
| <input type="checkbox"/> CME-550                   | <input checked="" type="checkbox"/> 8" HOLLOW AUGERS                 | CORE SIZE:                                                                    |
| <input type="checkbox"/> VANE SHEAR TEST           | <input type="checkbox"/> HARD FACED FINGER BITS                      | <input type="checkbox"/> -B _____ <input type="checkbox"/> -H _____           |
| <input type="checkbox"/> PORTABLE HOIST            | <input type="checkbox"/> TUNG-CARBIDE INSERTS                        | <input type="checkbox"/> -N _____                                             |
| <input checked="" type="checkbox"/> ACKER RENEGADE | <input type="checkbox"/> CASING <input type="checkbox"/> W/ ADVANCER | HAND TOOLS:                                                                   |
| <input type="checkbox"/>                           | <input type="checkbox"/> TRICONE _____ * STEEL TEETH                 | <input type="checkbox"/> POST HOLE DIGGER                                     |
| <input type="checkbox"/>                           | <input type="checkbox"/> TRICONE _____ * TUNG.-CARB.                 | <input type="checkbox"/> HAND AUGER                                           |
| <input type="checkbox"/>                           | <input type="checkbox"/> CORE BIT                                    | <input type="checkbox"/> SOUNDING ROD                                         |
|                                                    |                                                                      | <input type="checkbox"/> VANE SHEAR TEST                                      |
|                                                    |                                                                      | <input type="checkbox"/>                                                      |

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

# SUBSURFACE INVESTIGATION

## SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS (PAGE 2 OF 2)

| ROCK DESCRIPTION                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                              | TERMS AND DEFINITIONS                                                                                                                                                                                                                                                                                                |                   |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|
| HARD ROCK IS NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT REFUSAL IF TESTED. AN INFERRED ROCK LINE INDICATES THE LEVEL AT WHICH NON-COASTAL PLAIN MATERIAL WOULD YIELD SPT REFUSAL. SPT REFUSAL IS PENETRATION BY A SPLIT SPOON SAMPLER 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: |                                                                                                                                                                                                              | <b>ALLUVIUM (ALLUV.)</b> - SOILS THAT HAVE BEEN TRANSPORTED BY WATER.                                                                                                                                                                                                                                                |                   |
| WEATHERED ROCK (WR)                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                              | <b>AQUIFER</b> - A WATER BEARING FORMATION OR STRATA.                                                                                                                                                                                                                                                                |                   |
| CRYSTALLINE ROCK (CR)                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                              | <b>ARENACEOUS</b> - APPLIED TO ROCKS THAT HAVE BEEN DERIVED FROM SAND OR THAT CONTAIN SAND.                                                                                                                                                                                                                          |                   |
| NON-CRYSTALLINE ROCK (NCR)                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                              | <b>ARGILLACEOUS</b> - APPLIED TO ALL ROCKS OR SUBSTANCES COMPOSED OF CLAY MINERALS, OR HAVING A NOTABLE PROPORTION OF CLAY IN THEIR COMPOSITION, SUCH AS SHALE, SLATE, ETC.                                                                                                                                          |                   |
| COASTAL PLAIN SEDIMENTARY ROCK (CP)                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                              | <b>ARTESIAN</b> - GROUND WATER THAT IS UNDER SUFFICIENT PRESSURE TO RISE ABOVE THE LEVEL AT WHICH IT IS ENCOUNTERED, BUT WHICH DOES NOT NECESSARILY RISE TO OR ABOVE THE GROUND SURFACE.                                                                                                                             |                   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                              | <b>CALCAREOUS (CALC.)</b> - SOILS THAT CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE.                                                                                                                                                                                                                             |                   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                              | <b>COLLUVIUM</b> - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM OF SLOPE.                                                                                                                                                                                                               |                   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                              | <b>CORE RECOVERY (REC.)</b> - TOTAL LENGTH OF ALL MATERIAL RECOVERED IN THE CORE BARREL DIVIDED BY TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE.                                                                                                                                                           |                   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                              | <b>DIKE</b> - A TABULAR BODY OF IGNEOUS ROCK THAT CUTS ACROSS THE STRUCTURE OF ADJACENT ROCKS OR CUTS MASSIVE ROCK.                                                                                                                                                                                                  |                   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                              | <b>DIP</b> - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE HORIZONTAL.                                                                                                                                                                                                                     |                   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                              | <b>DIP DIRECTION (DIP AZIMUTH)</b> - THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF THE LINE OF DIP, MEASURED CLOCKWISE FROM NORTH.                                                                                                                                                                             |                   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                              | <b>FAULT</b> - A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE.                                                                                                                                                                    |                   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                              | <b>FISSILE</b> - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES.                                                                                                                                                                                                                                       |                   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                              | <b>FLOAT</b> - ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLODGED FROM PARENT MATERIAL.                                                                                                                                                                                                            |                   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                              | <b>FLOOD PLAIN (FP)</b> - LAND BORDERING A STREAM, BUILT OF SEDIMENTS DEPOSITED BY THE STREAM.                                                                                                                                                                                                                       |                   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                              | <b>FORMATION (FM.)</b> - A MAPPABLE GEOLOGIC UNIT THAT CAN BE RECOGNIZED AND TRACED IN THE FIELD.                                                                                                                                                                                                                    |                   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                              | <b>JOINT</b> - FRACTURE IN ROCK ALONG WHICH NO APPRECIABLE MOVEMENT HAS OCCURRED.                                                                                                                                                                                                                                    |                   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                              | <b>LEDGE</b> - A SHELF-LIKE RIDGE OR PROJECTION OF ROCK WHOSE THICKNESS IS SMALL COMPARED TO ITS LATERAL EXTENT.                                                                                                                                                                                                     |                   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                              | <b>LENS</b> - A BODY OF SOIL OR ROCK THAT THINS OUT IN ONE OR MORE DIRECTIONS.                                                                                                                                                                                                                                       |                   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                              | <b>MOTTLED (MOT.)</b> - IRREGULARLY MARKED WITH SPOTS OF DIFFERENT COLORS. MOTTLING IN SOILS USUALLY INDICATES POOR AERATION AND LACK OF GOOD DRAINAGE.                                                                                                                                                              |                   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                              | <b>PERCHED WATER</b> - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE OF AN INTERVENING IMPERVIOUS STRATUM.                                                                                                                                                                                    |                   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                              | <b>RESIDUAL (RES.) SOIL</b> - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK.                                                                                                                                                                                                                                        |                   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                              | <b>ROCK QUALITY DESIGNATION (RQD)</b> - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE.                                                                                                |                   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                              | <b>SAPROLITE (SAP.)</b> - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT ROCK.                                                                                                                                                                                                               |                   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                              | <b>SILL</b> - AN INTRUSIVE BODY OF IGNEOUS ROCK OF APPROXIMATELY UNIFORM THICKNESS AND RELATIVELY THIN COMPARED WITH ITS LATERAL EXTENT, THAT HAS BEEN EMPLACED PARALLEL TO THE BEDDING OR SCHISTOSITY OF THE INTRUDED ROCKS.                                                                                        |                   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                              | <b>SLICKENSIDE</b> - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT OR SLIP PLANE.                                                                                                                                                                                                           |                   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                              | <b>STANDARD PENETRATION TEST (PENETRATION RESISTANCE) (SPT)</b> - NUMBER OF BLOWS IN OR BPF) OF A 140 LB. HAMMER FALLING 30 INCHES REQUIRED TO PRODUCE A PENETRATION OF 1 FOOT INTO SOIL WITH A 2 INCH OUTSIDE DIAMETER SPLIT SPOON SAMPLER. SPT REFUSAL IS PENETRATION EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS. |                   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                              | <b>STRATA CORE RECOVERY (SREC.)</b> - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE.                                                                                                                                                                    |                   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                              | <b>STRATA ROCK QUALITY DESIGNATION (SROD)</b> - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS WITHIN A STRATUM EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF STRATA AND EXPRESSED AS A PERCENTAGE.                                                                         |                   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                              | <b>TOPSOIL (TS.)</b> - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.                                                                                                                                                                                                                                              |                   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                              | <b>BENCH MARK: BL-1 NEAR NORTH WEST CORNER OF BRIDGE</b>                                                                                                                                                                                                                                                             |                   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                              | <b>AT STA. 13+02.64; 121.5 FEET LEFT</b>                                                                                                                                                                                                                                                                             |                   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                              | <b>ELEVATION: 2,223.83 FEET</b>                                                                                                                                                                                                                                                                                      |                   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                              | <b>NOTES:</b>                                                                                                                                                                                                                                                                                                        |                   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                              | FIAD - FILLED IMMEDIATELY AFTER DRILLING                                                                                                                                                                                                                                                                             |                   |
| ROCK HARDNESS                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                      |                   |
| VERY HARD                                                                                                                                                                                                                                                                                                                                                                                                                                                     | CANNOT BE SCRATCHED BY KNIFE OR SHARP PICK. BREAKING OF HAND SPECIMENS REQUIRES SEVERAL HARD BLOWS OF THE GEOLOGIST'S PICK.                                                                                  |                                                                                                                                                                                                                                                                                                                      |                   |
| HARD                                                                                                                                                                                                                                                                                                                                                                                                                                                          | CAN BE SCRATCHED BY KNIFE OR PICK ONLY WITH DIFFICULTY. HARD HAMMER BLOWS REQUIRED TO DETACH HAND SPECIMEN.                                                                                                  |                                                                                                                                                                                                                                                                                                                      |                   |
| MODERATELY HARD                                                                                                                                                                                                                                                                                                                                                                                                                                               | CAN BE SCRATCHED BY KNIFE OR PICK. GOUGES OR GROOVES TO 0.25 INCHES DEEP CAN BE EXCAVATED BY HARD BLOW OF A GEOLOGIST'S PICK. HAND SPECIMENS CAN BE DETACHED BY MODERATE BLOWS.                              |                                                                                                                                                                                                                                                                                                                      |                   |
| 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 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.                         |                                                                                                                                                                                                                                                                                                                      |                   |
| FRACTURE SPACING                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                              | BEDDING                                                                                                                                                                                                                                                                                                              |                   |
| TERM                                                                                                                                                                                                                                                                                                                                                                                                                                                          | SPACING                                                                                                                                                                                                      | TERM                                                                                                                                                                                                                                                                                                                 | THICKNESS         |
| VERY WIDE                                                                                                                                                                                                                                                                                                                                                                                                                                                     | MORE THAN 10 FEET                                                                                                                                                                                            | VERY THICKLY BEDDED                                                                                                                                                                                                                                                                                                  | 4 FEET            |
| WIDE                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 3 TO 10 FEET                                                                                                                                                                                                 | THICKLY BEDDED                                                                                                                                                                                                                                                                                                       | 1.5 - 4 FEET      |
| MODERATELY CLOSE                                                                                                                                                                                                                                                                                                                                                                                                                                              | 1 TO 3 FEET                                                                                                                                                                                                  | THINLY BEDDED                                                                                                                                                                                                                                                                                                        | 0.16 - 1.5 FEET   |
| CLOSE                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 0.16 TO 1 FOOT                                                                                                                                                                                               | VERY THINLY BEDDED                                                                                                                                                                                                                                                                                                   | 0.03 - 0.16 FEET  |
| VERY CLOSE                                                                                                                                                                                                                                                                                                                                                                                                                                                    | LESS THAN 0.16 FEET                                                                                                                                                                                          | THICKLY LAMINATED                                                                                                                                                                                                                                                                                                    | 0.008 - 0.03 FEET |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                              | THINLY LAMINATED                                                                                                                                                                                                                                                                                                     | < 0.008 FEET      |
| INDURATION                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                      |                   |
| FOR SEDIMENTARY ROCKS, INDURATION IS THE HARDENING OF 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.                                                                                                                                    |                                                                                                                                                                                                                                                                                                                      |                   |

| PROJECT REFERENCE NO.                                                                                                                             | SHEET NO. |
|---------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| B-5888                                                                                                                                            | 3         |
| SITE PLAN                                                                                                                                         |           |
| 0                      50                      100<br><br>FEET |           |



# GEOTECHNICAL BORING REPORT

## BORE LOG

SHEET 4 OF 6

|                                                                                             |  |  |                            |  |  |                            |  |  |                                 |                                 |  |                              |  |
|---------------------------------------------------------------------------------------------|--|--|----------------------------|--|--|----------------------------|--|--|---------------------------------|---------------------------------|--|------------------------------|--|
| <b>WBS</b> 48081                                                                            |  |  | <b>TIP</b> B-5888          |  |  | <b>COUNTY</b> BUNCOMBE     |  |  | <b>GEOLOGIST</b> Tidmore, Z. R. |                                 |  |                              |  |
| <b>SITE DESCRIPTION</b> Replace Bridge No. 100 on SR 2815 (Village Rd.) over Ashworth Creek |  |  |                            |  |  |                            |  |  |                                 | <b>GROUND WTR (ft)</b>          |  |                              |  |
| <b>BORING NO.</b> EB1-B                                                                     |  |  | <b>STATION</b> N/A         |  |  | <b>OFFSET</b> N/A          |  |  | <b>ALIGNMENT</b> -L-            |                                 |  |                              |  |
| <b>COLLAR ELEV.</b> 2,225.0 ft                                                              |  |  | <b>TOTAL DEPTH</b> 21.0 ft |  |  | <b>NORTHING</b> 659,962    |  |  | <b>EASTING</b> 989,269          |                                 |  |                              |  |
| <b>DRILL RIG/HAMMER EFF./DATE</b> TER92-0 ACKER RENEGADE 86% 03/21/2016                     |  |  |                            |  |  |                            |  |  |                                 | <b>DRILL METHOD</b> H.S. Augers |  | <b>HAMMER TYPE</b> Automatic |  |
| <b>DRILLER</b> Duggins, W.                                                                  |  |  | <b>START DATE</b> 04/09/16 |  |  | <b>COMP. DATE</b> 04/09/16 |  |  | <b>SURFACE WATER DEPTH</b> N/A  |                                 |  |                              |  |

| ELEV<br>(ft) | DRIVE<br>ELEV<br>(ft) | DEPTH<br>(ft) | BLOW COUNT |       |       | BLOWS PER FOOT |    |    |    |     | SAMP.<br>NO. | LOG<br>MOI | SOIL AND ROCK DESCRIPTION | DEPTH (ft) |                                                                                                     |      |
|--------------|-----------------------|---------------|------------|-------|-------|----------------|----|----|----|-----|--------------|------------|---------------------------|------------|-----------------------------------------------------------------------------------------------------|------|
|              |                       |               | 0.5ft      | 0.5ft | 0.5ft | 0              | 25 | 50 | 75 | 100 |              |            |                           |            |                                                                                                     |      |
| 2225         |                       |               |            |       |       |                |    |    |    |     |              |            |                           | 2,225.0    | GROUND SURFACE                                                                                      | 0.0  |
| 2220         | 2,222.1               | 2.9           | 4          | 1     | 2     |                |    |    |    |     |              |            |                           |            | ROADWAY EMBANKMENT<br>soft to very soft, reddish brown, clayey silt                                 |      |
| 2215         | 2,217.1               | 7.9           | WOH        | WOH   | WOH   |                |    |    |    |     |              |            |                           |            |                                                                                                     |      |
| 2210         | 2,212.1               | 12.9          | 13         | 45    | 32    |                |    |    |    |     |              |            |                           |            |                                                                                                     |      |
| 2205         | 2,207.1               | 17.9          | 100/0.4    |       |       |                |    |    |    |     |              |            |                           |            |                                                                                                     |      |
|              |                       |               |            |       |       |                |    |    |    |     |              |            |                           | 2,215.0    | RESIDUAL                                                                                            | 10.0 |
|              |                       |               |            |       |       |                |    |    |    |     |              |            |                           | 2,210.0    | very dense, brown, saprolitic, silty sand                                                           |      |
|              |                       |               |            |       |       |                |    |    |    |     |              |            |                           | 2,210.0    | WEATHERED ROCK<br>(phyllite)                                                                        | 15.0 |
|              |                       |               |            |       |       |                |    |    |    |     |              |            |                           | 2,204.0    | Boring Terminated by Auger Refusal at<br>Elevation 2,204.0 ft on non-crystalline rock<br>(phyllite) | 21.0 |

# GEOTECHNICAL BORING REPORT

## BORE LOG

SHEET 5 OF 6

|                                                                                             |  |                            |  |                                |  |                                 |                                 |
|---------------------------------------------------------------------------------------------|--|----------------------------|--|--------------------------------|--|---------------------------------|---------------------------------|
| <b>WBS</b> 48081                                                                            |  | <b>TIP</b> B-5888          |  | <b>COUNTY</b> BUNCOMBE         |  | <b>GEOLOGIST</b> Tidmore, Z. R. |                                 |
| <b>SITE DESCRIPTION</b> Replace Bridge No. 100 on SR 2815 (Village Rd.) over Ashworth Creek |  |                            |  |                                |  |                                 | <b>GROUND WTR (ft)</b>          |
| <b>BORING NO.</b> EB2-A                                                                     |  | <b>STATION</b> N/A         |  | <b>OFFSET</b> N/A              |  | <b>ALIGNMENT</b> -L-            |                                 |
| <b>COLLAR ELEV.</b> 2,223.2 ft                                                              |  | <b>TOTAL DEPTH</b> 27.1 ft |  | <b>NORTHING</b> 659,929        |  | <b>EASTING</b> 989,354          |                                 |
| <b>DRILL RIG/HAMMER EFF./DATE</b> TER92-0 ACKER RENEGADE 86% 03/21/2016                     |  |                            |  |                                |  |                                 | <b>DRILL METHOD</b> H.S. Augers |
| <b>DRILLER</b> Duggins, W.                                                                  |  |                            |  |                                |  |                                 | <b>HAMMER TYPE</b> Automatic    |
| <b>START DATE</b> 04/11/16                                                                  |  | <b>COMP. DATE</b> 04/11/16 |  | <b>SURFACE WATER DEPTH</b> N/A |  |                                 |                                 |

  

| ELEV<br>(ft) | DRIVE<br>ELEV<br>(ft) | DEPTH<br>(ft) | BLOW COUNT |       |        | BLOWS PER FOOT |    |    |    |     | SAMP.<br>NO. | LOG<br>MOI | SOIL AND ROCK DESCRIPTION | DEPTH (ft)                                                                                         |      |
|--------------|-----------------------|---------------|------------|-------|--------|----------------|----|----|----|-----|--------------|------------|---------------------------|----------------------------------------------------------------------------------------------------|------|
|              |                       |               | 0.5ft      | 0.5ft | 0.5ft  | 0              | 25 | 50 | 75 | 100 |              |            |                           |                                                                                                    |      |
| 2225         |                       |               |            |       |        |                |    |    |    |     |              |            |                           |                                                                                                    |      |
|              |                       |               |            |       |        |                |    |    |    |     |              |            |                           | 2,223.2                                                                                            | 0.0  |
|              |                       |               |            |       |        |                |    |    |    |     |              |            |                           | <b>GROUND SURFACE</b>                                                                              |      |
|              |                       |               |            |       |        |                |    |    |    |     |              |            |                           | <b>ROADWAY EMBANKMENT</b><br>very loose to medium dense, reddish brown, sandy silt                 |      |
| 2220         | 2,220.1               | 3.1           | 2          | WOH   | 1      |                |    |    |    |     |              |            | M                         |                                                                                                    |      |
| 2215         | 2,215.1               | 8.1           | 3          |       | 13     |                |    |    |    |     |              |            | M                         | 2,214.1                                                                                            | 9.1  |
|              |                       |               |            |       |        |                |    |    |    |     |              |            |                           | <b>ALLUVIAL</b><br>very stiff, gray to black, clayey silt with wood and rock fragments             |      |
| 2210         | 2,210.1               | 13.1          | 1          | 8     | 11     |                |    |    |    |     |              |            | ▽                         | 2,209.2                                                                                            | 14.0 |
|              |                       |               |            |       |        |                |    |    |    |     |              |            | Sat.                      | 2,208.2                                                                                            | 15.0 |
|              |                       |               |            |       |        |                |    |    |    |     |              |            |                           | <b>RESIDUAL</b><br>medium dense, tan, coarse sand with some gravel                                 |      |
| 2205         | 2,205.1               | 18.1          | 21         | 55    | 24/0.1 |                |    |    |    |     |              |            | Sat.                      | 2,204.6                                                                                            | 18.6 |
|              |                       |               |            |       |        |                |    |    |    |     |              |            |                           | <b>WEATHERED ROCK</b><br>(phylite)                                                                 |      |
| 2200         | 2,200.1               | 23.1          | 100/0.4    |       |        |                |    |    |    |     |              |            |                           |                                                                                                    |      |
|              |                       |               |            |       |        |                |    |    |    |     |              |            |                           | 2,196.1                                                                                            | 27.1 |
|              |                       |               |            |       |        |                |    |    |    |     |              |            |                           | Boring Terminated by Auger Refusal at<br>Elevation 2,196.1 ft on non-crystalline rock<br>(phylite) |      |

# GEOTECHNICAL BORING REPORT

## BORE LOG

SHEET 6 OF 6

|                                                                                             |  |  |                            |  |  |                            |  |  |                                 |                                 |  |                              |  |
|---------------------------------------------------------------------------------------------|--|--|----------------------------|--|--|----------------------------|--|--|---------------------------------|---------------------------------|--|------------------------------|--|
| <b>WBS</b> 48081                                                                            |  |  | <b>TIP</b> B-5888          |  |  | <b>COUNTY</b> BUNCOMBE     |  |  | <b>GEOLOGIST</b> Tidmore, Z. R. |                                 |  |                              |  |
| <b>SITE DESCRIPTION</b> Replace Bridge No. 100 on SR 2815 (Village Rd.) over Ashworth Creek |  |  |                            |  |  |                            |  |  |                                 | <b>GROUND WTR (ft)</b>          |  |                              |  |
| <b>BORING NO.</b> EB2-B                                                                     |  |  | <b>STATION</b> N/A         |  |  | <b>OFFSET</b> N/A          |  |  | <b>ALIGNMENT</b> -L-            |                                 |  |                              |  |
| <b>COLLAR ELEV.</b> 2,223.7 ft                                                              |  |  | <b>TOTAL DEPTH</b> 23.5 ft |  |  | <b>NORTHING</b> 659,923    |  |  | <b>EASTING</b> 989,328          |                                 |  |                              |  |
| <b>DRILL RIG/HAMMER EFF./DATE</b> TER92-0 ACKER RENEGADE 86% 03/21/2016                     |  |  |                            |  |  |                            |  |  |                                 | <b>DRILL METHOD</b> H.S. Augers |  | <b>HAMMER TYPE</b> Automatic |  |
| <b>DRILLER</b> Duggins, W.                                                                  |  |  | <b>START DATE</b> 04/09/16 |  |  | <b>COMP. DATE</b> 04/09/16 |  |  | <b>SURFACE WATER DEPTH</b> N/A  |                                 |  |                              |  |

  

| ELEV<br>(ft) | DRIVE<br>ELEV<br>(ft) | DEPTH<br>(ft) | BLOW COUNT |        |       | BLOWS PER FOOT |    |    |    |     | SAMP.<br>NO. | MOI | LOG | SOIL AND ROCK DESCRIPTION |            |                                                  |
|--------------|-----------------------|---------------|------------|--------|-------|----------------|----|----|----|-----|--------------|-----|-----|---------------------------|------------|--------------------------------------------------|
|              |                       |               | 0.5ft      | 0.5ft  | 0.5ft | 0              | 25 | 50 | 75 | 100 |              |     |     | ELEV. (ft)                | DEPTH (ft) |                                                  |
| 2225         |                       |               |            |        |       |                |    |    |    |     |              |     |     |                           |            |                                                  |
|              |                       |               |            |        |       |                |    |    |    |     |              |     |     |                           | 2,223.7    | GROUND SURFACE                                   |
|              |                       |               |            |        |       |                |    |    |    |     |              |     |     |                           |            | ROADWAY EMBANKMENT                               |
|              |                       |               |            |        |       |                |    |    |    |     |              |     |     |                           |            | soft, brown, sandy silt                          |
| 2220         | 2,220.5               | 3.2           | 5          | 2      | 2     |                |    |    |    |     |              |     |     |                           |            |                                                  |
|              |                       |               |            |        |       |                |    |    |    |     |              |     |     |                           |            |                                                  |
| 2215         | 2,215.5               | 8.2           | 2          | WOH    | WOH   |                |    |    |    |     |              |     |     |                           | 2,215.4    | 8.3                                              |
|              |                       |               |            |        |       |                |    |    |    |     |              |     |     |                           |            |                                                  |
|              |                       |               |            |        |       |                |    |    |    |     |              |     |     |                           | 2,212.7    | 11.0                                             |
|              |                       |               |            |        |       |                |    |    |    |     |              |     |     |                           |            | ALLUVIAL                                         |
|              |                       |               |            |        |       |                |    |    |    |     |              |     |     |                           |            | very loose, yellowish tan, silty sand            |
| 2210         | 2,210.5               | 13.2          | 22         | 78/0.5 |       |                |    |    |    |     |              |     |     |                           | 2,209.5    | 14.2                                             |
|              |                       |               |            |        |       |                |    |    |    |     |              |     |     |                           |            | RESIDUAL                                         |
|              |                       |               |            |        |       |                |    |    |    |     |              |     |     |                           |            | stiff to very stiff, gray, saprolitic sandy silt |
|              |                       |               |            |        |       |                |    |    |    |     |              |     |     |                           | 2,205.5    | 18.2                                             |
| 2205         | 2,205.5               | 18.2          | 60/0.0     |        |       |                |    |    |    |     |              |     |     |                           |            | WEATHERED ROCK                                   |
|              |                       |               |            |        |       |                |    |    |    |     |              |     |     |                           |            | (phyllite)                                       |
|              |                       |               |            |        |       |                |    |    |    |     |              |     |     |                           |            | NON-CRYSTALLINE ROCK                             |
|              |                       |               |            |        |       |                |    |    |    |     |              |     |     |                           |            | (phyllite)                                       |
|              |                       |               |            |        |       |                |    |    |    |     |              |     |     |                           | 2,200.5    | 23.2                                             |
|              |                       |               |            |        |       |                |    |    |    |     |              |     |     |                           | 2,200.2    | 23.5                                             |
|              |                       |               |            |        |       |                |    |    |    |     |              |     |     |                           |            | WEATHERED ROCK                                   |
|              |                       |               |            |        |       |                |    |    |    |     |              |     |     |                           |            | (phyllite)                                       |
|              |                       |               |            |        |       |                |    |    |    |     |              |     |     |                           |            | Boring Terminated at Elevation 2,200.2 ft in     |
|              |                       |               |            |        |       |                |    |    |    |     |              |     |     |                           |            | weathered rock (phyllite)                        |