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

STRUCTURE
SUBSURFACE INVESTIGATION

PROJ. REFERENCE NO. B-4159 33507.1.1 F.A. PROJ. BRZ-1002(13)
 COUNTY JACKSON
 PROJECT DESCRIPTION BRIDGE NO. 108 ON SR 1002 OVER THE
TUCKASEGEE RIVER

SITE DESCRIPTION _____

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PERSONNEL
 AMEC CONSULTANTS

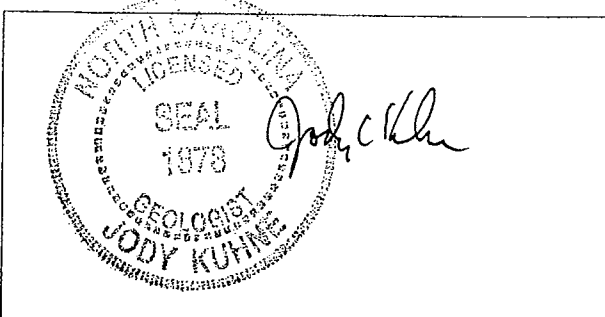
DC ELLIOTT NCDOT

INVESTIGATED BY JC KUHNE

CHECKED BY _____

SUBMITTED BY JC KUHNE

DATE 2/18/2014



PROJECT: 33507.1.1 ID: B-4159

DRAWN BY: JC KUHNE CJ COFFEY

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NOTE - BY HAVING REQUESTED THIS INFORMATION, THE CONTRACTOR SPECIFICALLY TAKES ANY CLAIM FOR INCREASED COMPENSATION OR EXTENSION OF TIME RESULTING FROM DIFFERENCES BETWEEN THE CONDITIONS INDICATED HEREIN AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

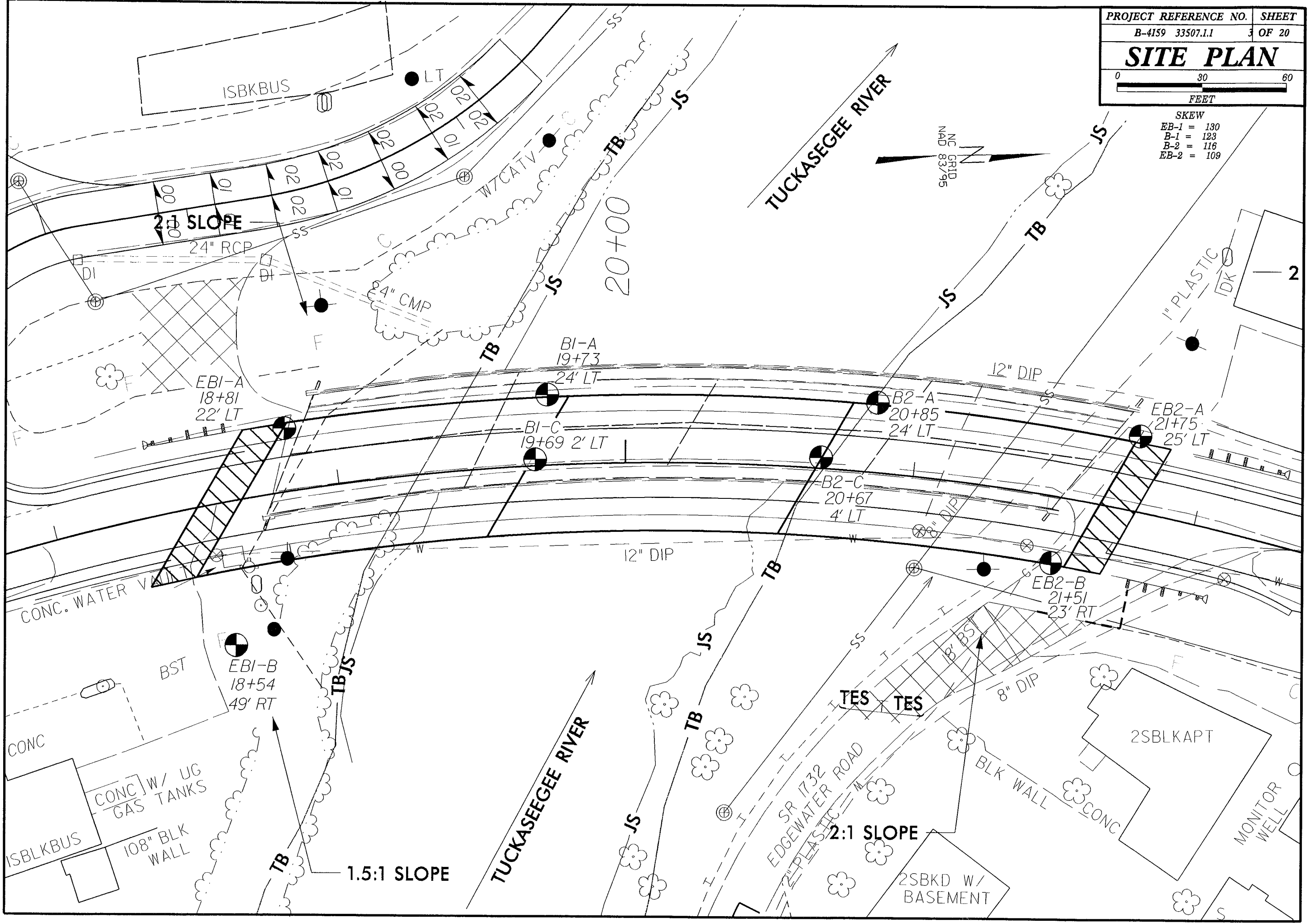
SUBSURFACE INVESTIGATION

SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

| SOIL DESCRIPTION | | GRADATION | | ROCK DESCRIPTION | | TERMS AND DEFINITIONS | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| <p>SOIL IS CONSIDERED TO BE THE UNCONSOLIDATED, SEMI-CONSOLIDATED, OR WEATHERED EARTH MATERIALS THAT CAN BE PENETRATED WITH A CONTINUOUS FLIGHT POWER AUGER, AND YIELD LESS THAN 100 BLOWS PER FOOT ACCORDING TO STANDARD PENETRATION TEST (AASHTO T206, ASTM D-1586). SOIL CLASSIFICATION IS BASED ON THE AASHTO SYSTEM. BASIC DESCRIPTIONS GENERALLY SHALL INCLUDE: CONSISTENCY, COLOR, TEXTURE, MOISTURE, AASHTO CLASSIFICATION, AND OTHER PERTINENT FACTORS SUCH AS MINERALOGICAL COMPOSITION, ANGULARITY, STRUCTURE, PLASTICITY, ETC. EXAMPLE:</p> <p style="text-align: center;"><i>VERY STIFF, GRAY, SILTY CLAY, MOST WITH INTERBEDDED FINE SAND LAYERS, HEAVY PLASTIC, A-7-6</i></p> | | <p>WELL GRADED - INDICATES A GOOD REPRESENTATION OF PARTICLE SIZES FROM FINE TO COARSE. UNIFORM - INDICATES THAT SOIL PARTICLES ARE ALL APPROXIMATELY THE SAME SIZE. (ALSO POORLY GRADED)</p> <p>POORLY GRADED - INDICATES A MIXTURE OF UNIFORM PARTICLES OF TWO OR MORE SIZES.</p> <p>THE ANGULARITY OR ROUNDNESS OF SOIL GRAINS IS DESIGNATED BY THE TERMS: ANGULAR, SUBANGULAR, SUBROUNDED, OR ROUNDED.</p> | | <p>HARD ROCK IS NON-COASTAL PLAIN MATERIAL THAT IF TESTED, WOULD YIELD SPT REFUSAL. AN INFERRED ROCK LINE INDICATES THE LEVEL AT WHICH NON-COASTAL PLAIN MATERIAL WOULD YIELD SPT REFUSAL. SPT REFUSAL IS PENETRATION BY A SPLIT SPOON SAMPLER EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS. IN NON-COASTAL PLAIN MATERIAL, THE TRANSITION BETWEEN SOIL AND ROCK IS OFTEN REPRESENTED BY A ZONE OF WEATHERED ROCK. ROCK MATERIALS ARE TYPICALLY DIVIDED AS FOLLOWS:</p> | | <p>ALLUVIUM (ALLUV.) - SOILS THAT HAVE BEEN TRANSPORTED BY WATER.</p> <p>AQUIFER - A WATER BEARING FORMATION OR STRATA.</p> <p>ARENACEOUS - APPLIED TO ROCKS THAT HAVE BEEN DERIVED FROM SAND OR THAT CONTAIN SAND.</p> <p>ARGILLACEOUS - APPLIED TO ALL ROCKS OR SUBSTANCES COMPOSED OF CLAY MINERALS, OR HAVING A NOTABLE PROPORTION OF CLAY IN THEIR COMPOSITION, AS SHALE, SLATE, ETC.</p> <p>ARTESIAN - GROUND WATER THAT IS UNDER SUFFICIENT PRESSURE TO RISE ABOVE THE LEVEL AT WHICH IT IS ENCOUNTERED, BUT WHICH DOES NOT NECESSARILY RISE TO OR ABOVE THE GROUND SURFACE.</p> <p>CALCAREOUS (CALC.) - SOILS THAT CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE.</p> <p>COLLUVIUM - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM OF SLOPE.</p> <p>CORE RECOVERY (REC.) - TOTAL LENGTH OF ALL MATERIAL RECOVERED IN THE CORE BARREL DIVIDED BY TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE.</p> <p>DIKE - A TABULAR BODY OF IGNEOUS ROCK THAT CUTS ACROSS THE STRUCTURE OF ADJACENT ROCKS OR CUTS MASSIVE ROCK.</p> <p>DIP - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE HORIZONTAL.</p> <p>DIP DIRECTION (DIP AZIMUTH) - THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF THE LINE OF DIP, MEASURED CLOCKWISE FROM NORTH.</p> <p>FAULT - A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE.</p> <p>FISSILE - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES.</p> <p>FLOAT - ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLODGED FROM PARENT MATERIAL.</p> <p>FLOOD PLAIN (FP) - LAND BORDERING A STREAM, BUILT OF SEDIMENTS DEPOSITED BY THE STREAM.</p> <p>FORMATION (FM) - A MAPPABLE GEOLOGIC UNIT THAT CAN BE RECOGNIZED AND TRACED IN THE FIELD.</p> <p>JOINT - FRACTURE IN ROCK ALONG WHICH NO APPRECIABLE MOVEMENT HAS OCCURRED.</p> <p>LEDGE - A SHELF-LIKE RIDGE OR PROJECTION OF ROCK WHOSE THICKNESS IS SMALL COMPARED TO ITS LATERAL EXTENT.</p> <p>LENS - A BODY OF SOIL OR ROCK THAT THINS OUT IN ONE OR MORE DIRECTIONS.</p> <p>MOTTLED (MOT.) - IRREGULARLY MARKED WITH SPOTS OF DIFFERENT COLORS. MOTTLING IN SOILS USUALLY INDICATES POOR AERATION AND LACK OF GOOD DRAINAGE.</p> <p>PERCHED WATER - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE OF AN INTERVENING IMPERVIOUS STRATUM.</p> <p>RESIDUAL (RES.) SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK.</p> <p>ROCK QUALITY DESIGNATION (RQD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE.</p> <p>SAPROLITE (SAP.) - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT ROCK.</p> <p>SILL - AN INTRUSIVE BODY OF IGNEOUS ROCK OF APPROXIMATELY UNIFORM THICKNESS AND RELATIVELY THIN COMPARED WITH ITS LATERAL EXTENT, THAT HAS BEEN EMPLACED PARALLEL TO THE BEDDING OR SCHISTOSITY OF THE INTRODED ROCKS.</p> <p>SLICKENSIDE - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT OR SLIP PLANE.</p> <p>STANDARD PENETRATION TEST (PENETRATION RESISTANCE) (SPT) - NUMBER OF BLOWS IN OR BPF OF A 140 LB. HAMMER FALLING 30 INCHES REQUIRED TO PRODUCE A PENETRATION OF 1 FOOT INTO SOIL WITH A 2 INCH OUTSIDE DIAMETER SPLIT SPOON SAMPLER. SPT REFUSAL IS PENETRATION EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS.</p> <p>STRATA CORE RECOVERY (SREC.) - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE.</p> <p>STRATA ROCK QUALITY DESIGNATION (SRQD) - 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.</p> <p>TOPSOIL (TS.) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>SOIL LEGEND AND AASHTO CLASSIFICATION</p> | | <p>MINERALOGICAL COMPOSITION</p> | | <p>WEATHERING</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th>GENERAL CLASS.</th> <th colspan="4">GRANULAR MATERIALS (<= 35% PASSING #200)</th> <th colspan="4">SILT-CLAY MATERIALS (> 35% PASSING #200)</th> <th colspan="3">ORGANIC MATERIALS</th> </tr> <tr> <th>GROUP CLASS.</th> <th>A-1</th> <th>A-3</th> <th colspan="2">A-2</th> <th>A-4</th> <th>A-5</th> <th>A-6</th> <th>A-7</th> <th>A-1, A-2</th> <th>A-4, A-5</th> <th>A-6, A-7</th> <th colspan="3"></th> </tr> <tr> <th>SYMBOL</th> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td colspan="3"></td> </tr> <tr> <th>% PASSING</th> <td>10 40 200</td> <td>10 40 200</td> <td>10 40 200</td> <td>10 40 200</td> <td>10 40 200</td> <td>10 40 200</td> <td>10 40 200</td> <td>10 40 200</td> <td>10 40 200</td> <td>10 40 200</td> <td>10 40 200</td> <td colspan="3"></td> </tr> <tr> <th>LIQUID LIMIT PLASTIC INDEX</th> <td colspan="2">6 MX NP</td> <td colspan="2">40 MX 10 MX</td> <td colspan="2">40 MX 10 MX</td> <td colspan="2">40 MX 10 MX</td> <td colspan="2">40 MX 10 MX</td> <td colspan="2">40 MX 10 MX</td> <td colspan="3"></td> </tr> <tr> <th>USUAL TYPES OF MAJOR MATERIALS</th> <td colspan="2">FINE SAND</td> <td colspan="2">SILTY OR CLAYEY GRAVEL AND SAND</td> <td colspan="2">SILTY SOILS</td> <td colspan="2">CLAYEY SOILS</td> <td colspan="2">SOILS WITH LITTLE OR MODERATE AMOUNTS OF ORGANIC MATTER</td> <td colspan="2">MUCK, PEAT</td> <td colspan="3">HIGHLY ORGANIC SOILS</td> </tr> <tr> <th>GENERATING AS A SUBGRADE</th> <td colspan="2">EXCELLENT TO GOOD</td> <td colspan="2">FAIR TO POOR</td> <td colspan="2">FAIR TO POOR</td> <td colspan="2">POOR</td> <td colspan="3">UNSATURABLE</td> <td colspan="3"></td> </tr> </table> | | GENERAL CLASS. | GRANULAR MATERIALS (<= 35% PASSING #200) | | | | SILT-CLAY MATERIALS (> 35% PASSING #200) | | | | ORGANIC MATERIALS | | | GROUP CLASS. | A-1 | A-3 | A-2 | | A-4 | A-5 | A-6 | A-7 | A-1, A-2 | A-4, A-5 | A-6, A-7 | | | | SYMBOL | | | | | | | | | | | | | | | % PASSING | 10 40 200 | 10 40 200 | 10 40 200 | 10 40 200 | 10 40 200 | 10 40 200 | 10 40 200 | 10 40 200 | 10 40 200 | 10 40 200 | 10 40 200 | | | | LIQUID LIMIT PLASTIC INDEX | 6 MX NP | | 40 MX 10 MX | | 40 MX 10 MX | | 40 MX 10 MX | | 40 MX 10 MX | | 40 MX 10 MX | | | | | USUAL TYPES OF MAJOR MATERIALS | FINE SAND | | SILTY OR CLAYEY GRAVEL AND SAND | | SILTY SOILS | | CLAYEY SOILS | | SOILS WITH LITTLE OR MODERATE AMOUNTS OF ORGANIC MATTER | | MUCK, PEAT | | HIGHLY ORGANIC SOILS | | | GENERATING AS A SUBGRADE | EXCELLENT TO GOOD | | FAIR TO POOR | | FAIR TO POOR | | POOR | | UNSATURABLE | | | | | | <p>MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC. ARE USED IN DESCRIPTIONS WHENEVER THEY ARE CONSIDERED OF SIGNIFICANCE.</p> | | <p>COMPRESSIBILITY</p> <p>SLIGHTLY COMPRESSIBLE LIQUID LIMIT LESS THAN 31 MODERATELY COMPRESSIBLE LIQUID LIMIT EQUAL TO 31-50 HIGHLY COMPRESSIBLE LIQUID LIMIT GREATER THAN 50</p> | | <p>WEATHERING</p> <p>FRESH ROCK FRESH, CRYSTALS BRIGHT, FEW JOINTS MAY SHOW SLIGHT STAINING, ROCK RINGS UNDER HAMMER IF CRYSTALLINE.</p> <p>VERY SLIGHT (V SL.) ROCK GENERALLY FRESH, JOINTS STAINED, SOME JOINTS MAY SHOW THIN CLAY COATINGS IF OPEN, CRYSTALS ON A BROKEN SPECIMEN FACE SHINE BRIGHTLY, ROCK RINGS UNDER HAMMER BLOWS IF OF A CRYSTALLINE NATURE.</p> <p>SLIGHT (SL.) ROCK GENERALLY FRESH, JOINTS STAINED AND DISCOLORATION EXTENDS INTO ROCK UP TO 1/2 INCH. OPEN JOINTS MAY CONTAIN CLAY. IN GRANITOID ROCKS SOME OCCASIONAL FELDSPAR CRYSTALS ARE DULL AND DISCOLORED, CRYSTALLINE ROCKS RING UNDER HAMMER BLOWS.</p> <p>MODERATE (MOD.) SIGNIFICANT PORTIONS OF ROCK SHOW DISCOLORATION AND WEATHERING EFFECTS. IN GRANITOID ROCKS, MOST FELDSPARS ARE DULL AND DISCOLORED, SOME SHOW CLAY. ROCK HAS DULL SOUND UNDER HAMMER BLOWS AND SHOWS SIGNIFICANT LOSS OF STRENGTH AS COMPARED WITH FRESH ROCK.</p> <p>MODERATELY SEVERE (MOD. SEV.) ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. IN GRANITOID ROCKS, ALL FELDSPARS DULL AND DISCOLORED AND A MAJORITY SHOW KAOLINIZATION. ROCK SHOWS SEVERE LOSS OF STRENGTH AND CAN BE EXCAVATED WITH A GEOLOGIST'S PICK. ROCK GIVES 'CLUNK' SOUND WHEN STRUCK. <i>IF TESTED, WOULD YIELD SPT REFUSAL</i></p> <p>SEVERE (SEV.) ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED, ROCK FABRIC CLEAR AND EVIDENT BUT REDUCED IN STRENGTH TO STRONG SOIL. IN GRANITOID ROCKS ALL FELDSPARS ARE KAOLINIZED TO SOME EXTENT. SOME FRAGMENTS OF STRONG ROCK USUALLY REMAIN. <i>IF TESTED, YIELDS SPT N VALUES > 100 BPF</i></p> <p>VERY SEVERE (V SEV.) ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED, ROCK FABRIC ELEMENTS ARE DISCERNIBLE BUT THE MASS IS EFFECTIVELY REDUCED TO SOIL STATUS, WITH ONLY FRAGMENTS OF STRONG ROCK REMAINING. SAPROLITE IS AN EXAMPLE OF ROCK WEATHERED TO A DEGREE SUCH THAT ONLY MINOR VESTIGES OF THE ORIGINAL ROCK FABRIC REMAIN. <i>IF TESTED, YIELDS SPT N VALUES < 100 BPF</i></p> <p>COMPLETE ROCK REDUCED TO SOIL, ROCK FABRIC NOT DISCERNIBLE, OR DISCERNIBLE ONLY IN SMALL AND SCATTERED CONCENTRATIONS. QUARTZ MAY BE PRESENT AS DIKES OR STRINGERS. SAPROLITE IS ALSO AN EXAMPLE.</p> | | <p>GROUND WATER</p> <p> WATER LEVEL IN BORE HOLE IMMEDIATELY AFTER DRILLING</p> <p> STATIC WATER LEVEL AFTER 24 HOURS</p> <p> PERCHED WATER, SATURATED ZONE, OR WATER BEARING STRATA</p> <p> SPRING OR SEEP</p> | |
| GENERAL CLASS. | GRANULAR MATERIALS (<= 35% PASSING #200) | | | | SILT-CLAY MATERIALS (> 35% PASSING #200) | | | | ORGANIC MATERIALS | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| GROUP CLASS. | A-1 | A-3 | A-2 | | A-4 | A-5 | A-6 | A-7 | A-1, A-2 | A-4, A-5 | A-6, A-7 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SYMBOL | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| % PASSING | 10 40 200 | 10 40 200 | 10 40 200 | 10 40 200 | 10 40 200 | 10 40 200 | 10 40 200 | 10 40 200 | 10 40 200 | 10 40 200 | 10 40 200 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| LIQUID LIMIT PLASTIC INDEX | 6 MX NP | | 40 MX 10 MX | | 40 MX 10 MX | | 40 MX 10 MX | | 40 MX 10 MX | | 40 MX 10 MX | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| GENERATING AS A SUBGRADE | EXCELLENT TO GOOD | | FAIR TO POOR | | FAIR TO POOR | | POOR | | UNSATURABLE | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>CONSISTENCY OR DENSENESS</p> | | <p>MISCELLANEOUS SYMBOLS</p> | | <p>ROCK HARDNESS</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th>PRIMARY SOIL TYPE</th> <th>COMPACTNESS OR CONSISTENCY</th> <th>RANGE OF STANDARD PENETRATION RESISTANCE (N-VALUE)</th> <th>RANGE OF UNCONFINED COMPRESSIVE STRENGTH (TONS/FT²)</th> </tr> <tr> <td>GENERALLY GRANULAR MATERIAL (NON-COHESIVE)</td> <td>VERY LOOSE LOOSE MEDIUM DENSE DENSE VERY DENSE</td> <td>< 4 4 TO 10 10 TO 30 30 TO 50 > 50</td> <td>N/A</td> </tr> <tr> <td>GENERALLY SILT-CLAY MATERIAL (COHESIVE)</td> <td>VERY SOFT SOFT MEDIUM STIFF STIFF VERY STIFF HARD</td> <td>< 2 2 TO 4 4 TO 8 8 TO 15 15 TO 30 > 30</td> <td>< 0.25 0.25 TO 0.50 0.5 TO 1.0 1 TO 2 2 TO 4 > 4</td> </tr> </table> | | PRIMARY SOIL TYPE | COMPACTNESS OR CONSISTENCY | RANGE OF STANDARD PENETRATION RESISTANCE (N-VALUE) | RANGE OF UNCONFINED COMPRESSIVE STRENGTH (TONS/FT ²) | GENERALLY GRANULAR MATERIAL (NON-COHESIVE) | VERY LOOSE LOOSE MEDIUM DENSE DENSE VERY DENSE | < 4 4 TO 10 10 TO 30 30 TO 50 > 50 | N/A | GENERALLY SILT-CLAY MATERIAL (COHESIVE) | VERY SOFT SOFT MEDIUM STIFF STIFF VERY STIFF HARD | < 2 2 TO 4 4 TO 8 8 TO 15 15 TO 30 > 30 | < 0.25 0.25 TO 0.50 0.5 TO 1.0 1 TO 2 2 TO 4 > 4 | <p> ROADWAY EMBANKMENT (RE) WITH SOIL DESCRIPTION</p> <p> SOIL SYMBOL</p> <p> ARTIFICIAL FILL (AF) OTHER THAN ROADWAY EMBANKMENT</p> <p> INFERRED SOIL BOUNDARY</p> <p> INFERRED ROCK LINE</p> <p> ALLUVIAL SOIL BOUNDARY</p> <p> DIP & DIP DIRECTION OF ROCK STRUCTURES</p> <p> SOUNDING ROD</p> <p> SPT TEST BORING</p> <p> AUGER BORING</p> <p> CORE BORING</p> <p> MONITORING WELL</p> <p> PIEZOMETER INSTALLATION</p> <p> SLOPE INDICATOR INSTALLATION</p> <p> SPT N-VALUE</p> <p> SPT REFUSAL</p> | | <p>VERY HARD CANNOT BE SCRATCHED BY KNIFE OR SHARP PICK. BREAKING OF HAND SPECIMENS REQUIRES SEVERAL HARD BLOWS OF THE GEOLOGIST'S PICK.</p> <p>HARD CAN BE SCRATCHED BY KNIFE OR PICK ONLY WITH DIFFICULTY. HARD HAMMER BLOWS REQUIRED TO DETACH HAND SPECIMEN.</p> <p>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.</p> <p>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.</p> <p>SOFT CAN BE GROOVED OR GOUGED READILY BY KNIFE OR PICK. CAN BE EXCAVATED IN FRAGMENTS FROM CHIPS TO SEVERAL INCHES IN SIZE BY MODERATE BLOWS OF A PICK POINT. SMALL, THIN PIECES CAN BE BROKEN BY FINGER PRESSURE.</p> <p>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.</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| PRIMARY SOIL TYPE | COMPACTNESS OR CONSISTENCY | RANGE OF STANDARD PENETRATION RESISTANCE (N-VALUE) | RANGE OF UNCONFINED COMPRESSIVE STRENGTH (TONS/FT ²) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| GENERALLY GRANULAR MATERIAL (NON-COHESIVE) | VERY LOOSE LOOSE MEDIUM DENSE DENSE VERY DENSE | < 4 4 TO 10 10 TO 30 30 TO 50 > 50 | N/A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| <p>TEXTURE OR GRAIN SIZE</p> | | <p>ABBREVIATIONS</p> | | <p>EQUIPMENT USED ON SUBJECT PROJECT</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th>U.S. STD. SIEVE SIZE OPENING (MM)</th> <th>4</th> <th>10</th> <th>40</th> <th>60</th> <th>200</th> <th>270</th> </tr> <tr> <td></td> <td>4.75</td> <td>2.00</td> <td>0.42</td> <td>0.25</td> <td>0.075</td> <td>0.053</td> </tr> </table> | | U.S. STD. SIEVE SIZE OPENING (MM) | 4 | 10 | 40 | 60 | 200 | 270 | | 4.75 | 2.00 | 0.42 | 0.25 | 0.075 | 0.053 | <p>AR - AUGER REFUSAL BT - BORING TERMINATED CL - CLAY CPT - CONE PENETRATION TEST CSE - COARSE DMT - DILATOMETER TEST DPT - DYNAMIC PENETRATION TEST e - VOID RATIO F - FINE FOSS. - FOSSILIFEROUS FRAC. - FRACTURED, FRACTURES FRAGS. - FRAGMENTS</p> <p>HL - HIGHLY MED. - MEDIUM MICA - MICACEOUS MOD. - MODERATELY NP - NON PLASTIC ORG. - ORGANIC PMT - PRESSUREMETER TEST SAP. - SAPROLITIC SD. - SAND, SANDY SL. - SILT, SILTY SLI. - SLIGHTLY TCR - TRICONE REFUSAL</p> | | <p><input type="checkbox"/> MOBILE B-_____</p> <p><input type="checkbox"/> BK-51</p> <p><input type="checkbox"/> CME-45C</p> <p><input checked="" type="checkbox"/> CME-550</p> <p><input type="checkbox"/> PORTABLE HOIST</p> <p><input type="checkbox"/> _____</p> <p><input type="checkbox"/> _____</p> <p><input type="checkbox"/> _____</p> | | <p>HI - HIGHLY MED. - MEDIUM MICA - MICACEOUS MOD. - MODERATELY NP - NON PLASTIC ORG. - ORGANIC PMT - PRESSUREMETER TEST SAP. - SAPROLITIC SD. - SAND, SANDY SL. - SILT, SILTY SLI. - SLIGHTLY TCR - TRICONE REFUSAL</p> <p>w - MOISTURE CONTENT v - VERY VST - VANE SHEAR TEST WEA. - WEATHERED % - UNIT WEIGHT %_d - DRY UNIT WEIGHT</p> | | <p><input checked="" type="checkbox"/> AUTOMATIC <input type="checkbox"/> MANUAL</p> <p>CORE SIZE: <input type="checkbox"/> B-_____ <input checked="" type="checkbox"/> N-0.3 <input type="checkbox"/> H-_____ <input type="checkbox"/> _____</p> <p>HAND TOOLS: <input type="checkbox"/> POST HOLE DIGGER <input type="checkbox"/> HAND AUGER <input type="checkbox"/> SOUNDING ROD <input type="checkbox"/> VANE SHEAR TEST <input type="checkbox"/> _____</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| U.S. STD. SIEVE SIZE OPENING (MM) | 4 | 10 | 40 | 60 | 200 | 270 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 4.75 | 2.00 | 0.42 | 0.25 | 0.075 | 0.053 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>SOIL MOISTURE - CORRELATION OF TERMS</p> | | <p>ROCK QUALITY DESIGNATION (RQD)</p> | | <p>INDURATION</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th>SOIL MOISTURE SCALE (ATTERBERG LIMITS)</th> <th>FIELD MOISTURE DESCRIPTION</th> <th>GUIDE FOR FIELD MOISTURE DESCRIPTION</th> </tr> <tr> <td rowspan="3">LL - LIQUID LIMIT PL - PLASTIC LIMIT OH - OPTIMUM MOISTURE SL - SHRINKAGE LIMIT</td> <td>- SATURATED - (SAT.)</td> <td>USUALLY LIQUID; VERY WET, USUALLY FROM BELOW THE GROUND WATER TABLE</td> </tr> <tr> <td>- WET - (W)</td> <td>SEMISOLID; REQUIRES DRYING TO ATTAIN OPTIMUM MOISTURE</td> </tr> <tr> <td>- MOIST - (M)</td> <td>SOLID; AT OR NEAR OPTIMUM MOISTURE</td> </tr> <tr> <td></td> <td>- DRY - (D)</td> <td>REQUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE</td> </tr> </table> | | SOIL MOISTURE SCALE (ATTERBERG LIMITS) | FIELD MOISTURE DESCRIPTION | GUIDE FOR FIELD MOISTURE DESCRIPTION | LL - LIQUID LIMIT PL - PLASTIC LIMIT OH - OPTIMUM MOISTURE SL - SHRINKAGE LIMIT | - SATURATED - (SAT.) | USUALLY LIQUID; VERY WET, USUALLY FROM BELOW THE GROUND WATER TABLE | - WET - (W) | SEMISOLID; REQUIRES DRYING TO ATTAIN OPTIMUM MOISTURE | - MOIST - (M) | SOLID; AT OR NEAR OPTIMUM MOISTURE | | - DRY - (D) | REQUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE | <p>FRACTURE SPACING</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th>TERM</th> <th>SPACING</th> <th>THICKNESS</th> </tr> <tr> <td>VERY WIDE</td> <td>MORE THAN 10 FEET</td> <td>> 4 FEET</td> </tr> <tr> <td>WIDE</td> <td>3 TO 10 FEET</td> <td>1.5 - 4 FEET</td> </tr> <tr> <td>MODERATELY CLOSE</td> <td>1 TO 3 FEET</td> <td>0.16 - 1.5 FEET</td> </tr> <tr> <td>CLOSE</td> <td>0.16 TO 1 FEET</td> <td>0.03 - 0.16 FEET</td> </tr> <tr> <td>VERY CLOSE</td> <td>LESS THAN 0.16 FEET</td> <td>0.008 - 0.03 FEET</td> </tr> </table> | | TERM | SPACING | THICKNESS | VERY WIDE | MORE THAN 10 FEET | > 4 FEET | WIDE | 3 TO 10 FEET | 1.5 - 4 FEET | MODERATELY CLOSE | 1 TO 3 FEET | 0.16 - 1.5 FEET | CLOSE | 0.16 TO 1 FEET | 0.03 - 0.16 FEET | VERY CLOSE | LESS THAN 0.16 FEET | 0.008 - 0.03 FEET | <p>INDURATION</p> <p>FRIABLE RUBBING WITH FINGER FREES NUMEROUS GRAINS; GENTLE BLOW BY HAMMER DISINTEGRATES SAMPLE.</p> <p>MODERATELY INDURATED GRAINS CAN BE SEPARATED FROM SAMPLE WITH STEEL PROBE; BREAKS EASILY WHEN HIT WITH HAMMER.</p> <p>INDURATED GRAINS ARE DIFFICULT TO SEPARATE WITH STEEL PROBE; DIFFICULT TO BREAK WITH HAMMER.</p> <p>EXTREMELY INDURATED SHARP HAMMER BLOWS REQUIRED TO BREAK SAMPLE; SAMPLE BREAKS ACROSS GRAINS.</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SOIL MOISTURE SCALE (ATTERBERG LIMITS) | FIELD MOISTURE DESCRIPTION | GUIDE FOR FIELD MOISTURE DESCRIPTION | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| LL - LIQUID LIMIT PL - PLASTIC LIMIT OH - OPTIMUM MOISTURE SL - SHRINKAGE LIMIT | - SATURATED - (SAT.) | USUALLY LIQUID; VERY WET, USUALLY FROM BELOW THE GROUND WATER TABLE | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | - WET - (W) | SEMISOLID; REQUIRES DRYING TO ATTAIN OPTIMUM MOISTURE | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | - MOIST - (M) | SOLID; AT OR NEAR OPTIMUM MOISTURE | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| TERM | SPACING | THICKNESS | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| VERY WIDE | MORE THAN 10 FEET | > 4 FEET | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| WIDE | 3 TO 10 FEET | 1.5 - 4 FEET | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| MODERATELY CLOSE | 1 TO 3 FEET | 0.16 - 1.5 FEET | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CLOSE | 0.16 TO 1 FEET | 0.03 - 0.16 FEET | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| VERY CLOSE | LESS THAN 0.16 FEET | 0.008 - 0.03 FEET | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>PLASTICITY</p> | | <p>INDURATION</p> | | <p>INDURATION</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| NONPLASTIC | PLASTICITY INDEX (PI) | DRY STRENGTH | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| LOW PLASTICITY | 0-5 | VERY LOW | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| MED. PLASTICITY | 6-15 | SLIGHT | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| HIGH PLASTICITY | 16-25 | MEDIUM | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 26 OR MORE | HIGH | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>COLOR</p> | | <p>INDURATION</p> | | <p>INDURATION</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>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.</p> | | <p>INDURATION</p> <p>FRIABLE RUBBING WITH FINGER FREES NUMEROUS GRAINS; GENTLE BLOW BY HAMMER DISINTEGRATES SAMPLE.</p> <p>MODERATELY INDURATED GRAINS CAN BE SEPARATED FROM SAMPLE WITH STEEL PROBE; BREAKS EASILY WHEN HIT WITH HAMMER.</p> <p>INDURATED GRAINS ARE DIFFICULT TO SEPARATE WITH STEEL PROBE; DIFFICULT TO BREAK WITH HAMMER.</p> <p>EXTREMELY INDURATED SHARP HAMMER BLOWS REQUIRED TO BREAK SAMPLE; SAMPLE BREAKS ACROSS GRAINS.</p> | | <p>INDURATION</p> <p>FRIABLE RUBBING WITH FINGER FREES NUMEROUS GRAINS; GENTLE BLOW BY HAMMER DISINTEGRATES SAMPLE.</p> <p>MODERATELY INDURATED GRAINS CAN BE SEPARATED FROM SAMPLE WITH STEEL PROBE; BREAKS EASILY WHEN HIT WITH HAMMER.</p> <p>INDURATED GRAINS ARE DIFFICULT TO SEPARATE WITH STEEL PROBE; DIFFICULT TO BREAK WITH HAMMER.</p> <p>EXTREMELY INDURATED SHARP HAMMER BLOWS REQUIRED TO BREAK SAMPLE; SAMPLE BREAKS ACROSS GRAINS.</p> | | <p>BENCH MARK: BM #2, -BL- STA 16+30.63 22.25' RT</p> <p style="text-align: right;">ELEVATION: 2077.06 FT.</p> <p>NOTES:</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

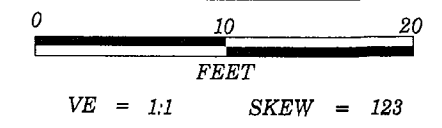
SKEW
 EB-1 = 130
 B-1 = 123
 B-2 = 116
 EB-2 = 109

NC GRID
 NAD 83/95



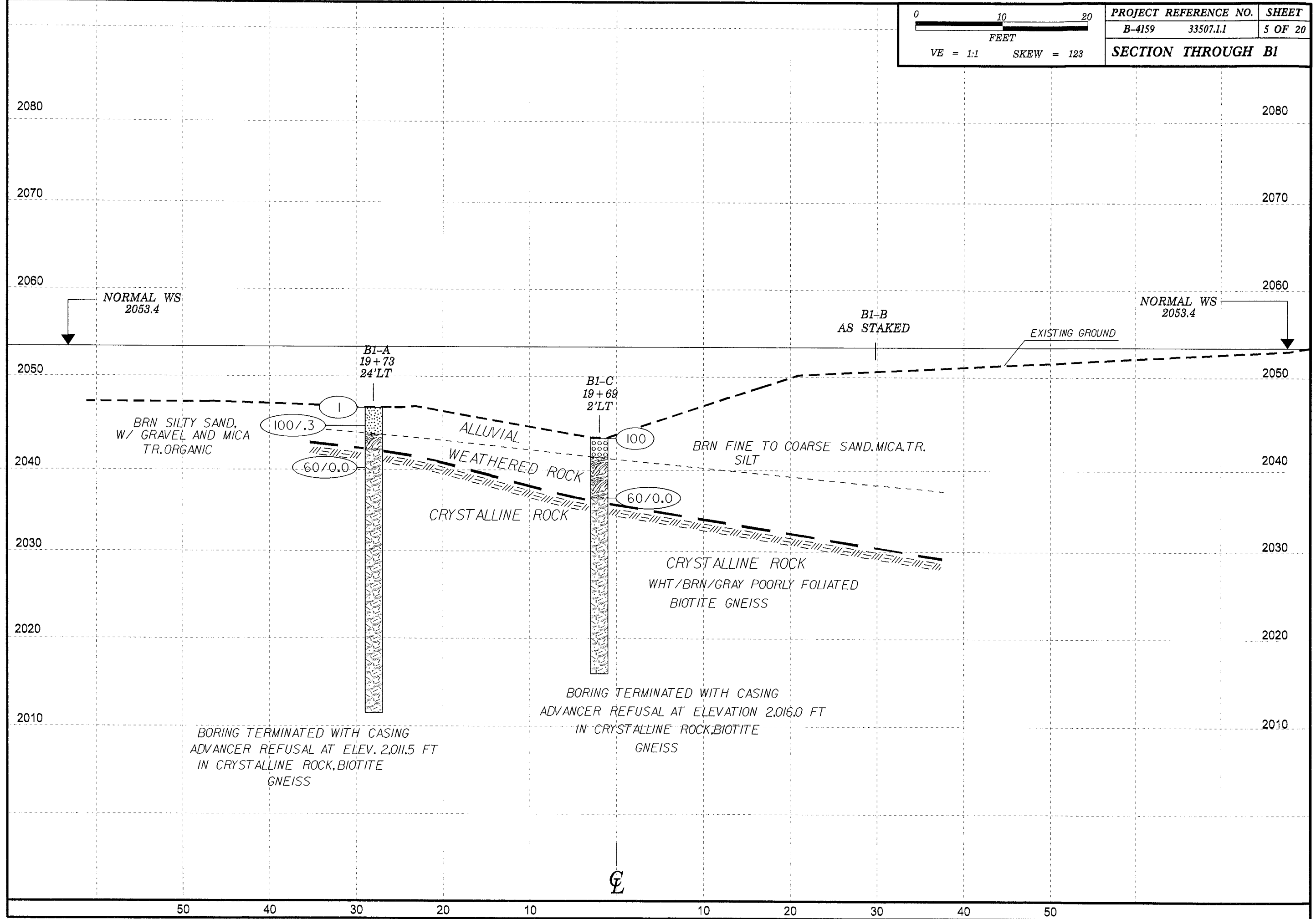
2

MONITOR WELL



| PROJECT REFERENCE NO. | SHEET |
|-----------------------|---------|
| B-4159 33507.1.1 | 5 OF 20 |

SECTION THROUGH B1



2080

2080

2070

2070

2060

2060

2050

2050

2040

2040

2030

2030

2020

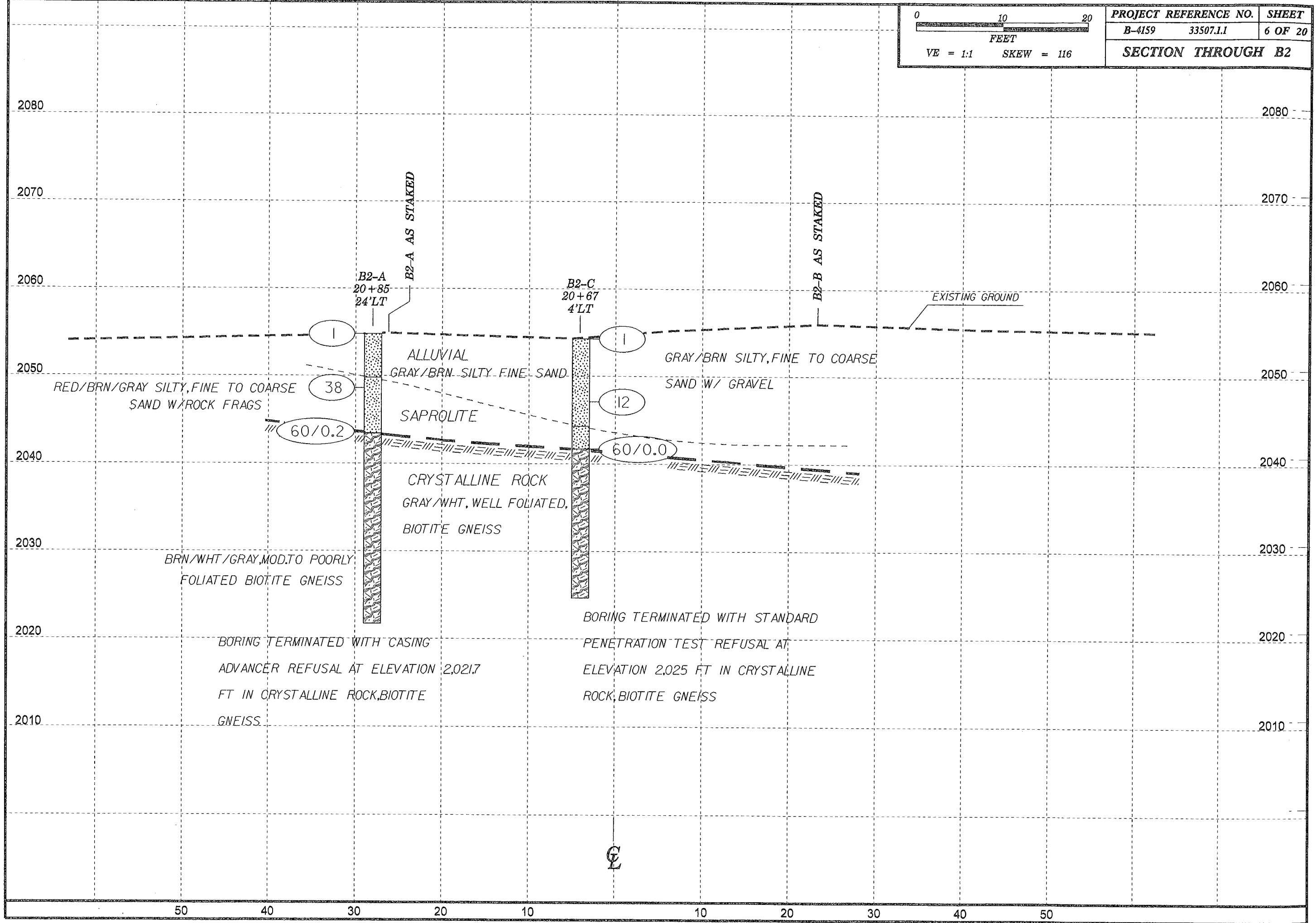
2020

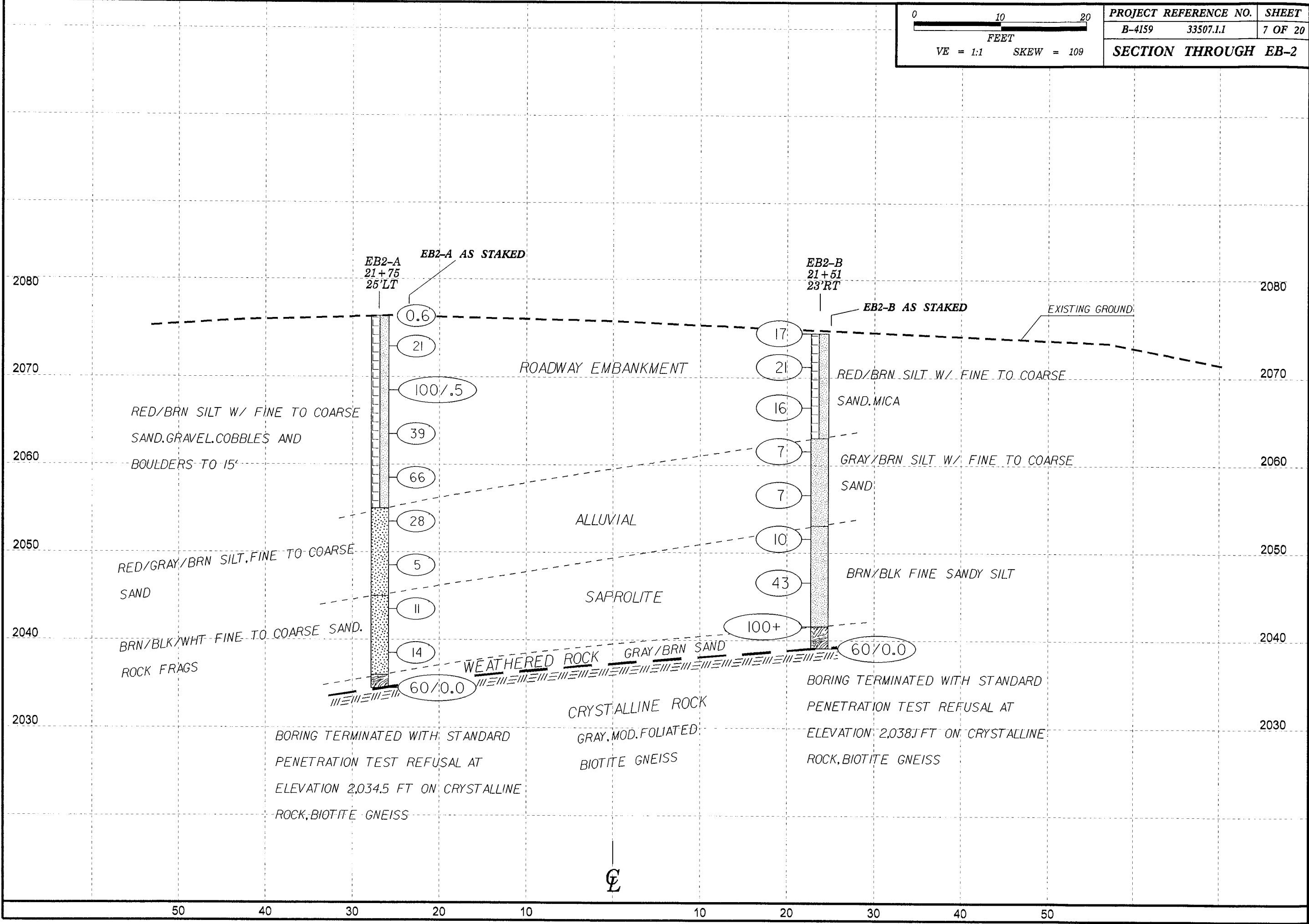
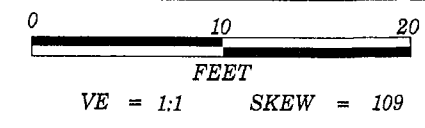
2010

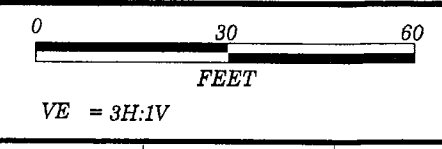
2010

50 40 30 20 10 10 20 30 40 50



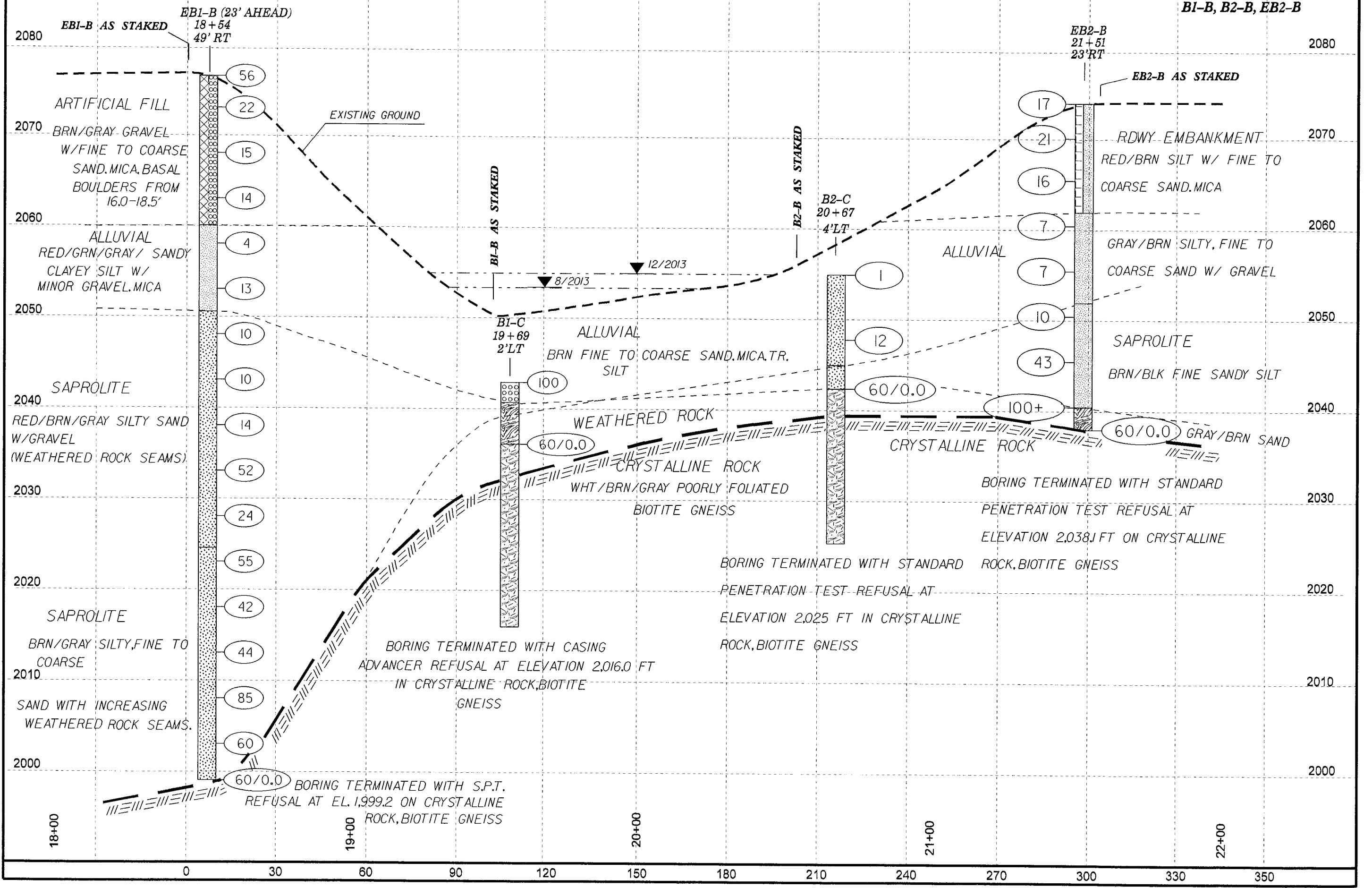


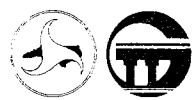




| PROJECT REFERENCE NO. | SHEET |
|-----------------------|---------|
| B-4159 33507.1.1 | 8 OF 20 |

PROFILE THROUGH: EB1-B, BI-B, B2-B, EB2-B





NCDOT GEOTECHNICAL ENGINEERING UNIT

BORELOG REPORT

| WBS 33507.1.1 | | TIP B-4159 | | COUNTY JACKSON | | GEOLOGIST C BALDWIN | | | | | | | | | | | |
|--|-----------------|-------------------------|------------|-----------------------|--------|-------------------------|-----------------|----|----|-----|-----------|-----|-----|---------------------------|------------|------------|---|
| SITE DESCRIPTION BRIDGE NO. 108 ON SR 1002 OVER THE TUCKASEGEE RIVER | | | | | | | GROUND WTR (ft) | | | | | | | | | | |
| BORING NO. EB1-A | | STATION 18+81 | | OFFSET 22 ft LT | | ALIGNMENT -L- | | | | | | | | | | | |
| COLLAR ELEV. 2,076.9 ft | | TOTAL DEPTH 67.5 ft | | NORTHING 595,922 | | EASTING 754,056 | | | | | | | | | | | |
| DRILL RIG/HAMMER EFF./DATE CME-55 LC 331145 | | DRILL METHOD Mud Rotary | | HAMMER TYPE Automatic | | | | | | | | | | | | | |
| DRILLER D WHITE | | START DATE 12/17/13 | | COMP. DATE 12/18/13 | | SURFACE WATER DEPTH N/A | | | | | | | | | | | |
| ELEV (ft) | DRIVE ELEV (ft) | DEPTH (ft) | BLOW COUNT | | | BLOWS PER FOOT | | | | | SAMP. NO. | MOI | LOG | SOIL AND ROCK DESCRIPTION | ELEV. (ft) | DEPTH (ft) | |
| | | | 0.5ft | 0.5ft | 0.5ft | 0 | 25 | 50 | 75 | 100 | | | | | | | |
| 2080 | | | | | | | | | | | | | | | | | |
| | 2,076.9 | 0.0 | 7 | 8 | 9 | | | | | | | | | | 2,076.9 | 0.0 | GROUND SURFACE |
| 2075 | 2,073.4 | 3.5 | 9 | 31 | 21 | | | | | | | | | | | | ROADWAY EMBANKMENT BRN/RED FINE SANDY SILT W/ MICA AND GRAVEL. BOULDERS FROM 8.5 TO 12.5 |
| 2070 | 2,068.4 | 8.5 | 60/0.0 | | | | | | | | | | | | | | ON BLDR |
| 2065 | 2,063.4 | 13.5 | 2 | 2 | 2 | | | | | | | | | | | | BLDRS |
| 2060 | 2,058.4 | 18.5 | 3 | 3 | 3 | | | | | | | | | | | | |
| 2055 | 2,053.4 | 23.5 | 3 | 2 | 4 | | | | | | | | | | | | |
| 2050 | 2,048.4 | 28.5 | 2 | 2 | 2 | | | | | | | | | | | | |
| 2045 | 2,043.4 | 33.5 | 3 | 2 | 3 | | | | | | | | | | | | |
| 2040 | 2,038.4 | 38.5 | 2 | 4 | 5 | | | | | | | | | | | | |
| 2035 | 2,033.4 | 43.5 | 10 | 14 | 15 | | | | | | | | | | | | |
| 2030 | 2,028.4 | 48.5 | 5 | 5 | 10 | | | | | | | | | | | | |
| 2025 | 2,023.4 | 53.5 | 7 | 9 | 9 | | | | | | | | | | | | |
| 2020 | 2,018.4 | 58.5 | 16 | 52 | 37 | | | | | | | | | | | | |
| 2015 | 2,013.4 | 63.5 | 60/0.1 | | 60/0.1 | | | | | | | | | | | | |
| 2010 | 2,009.4 | 67.5 | 60/0.0 | | 60/0.0 | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |

| WBS 33507.1.1 | | TIP B-4159 | | COUNTY JACKSON | | GEOLOGIST C BALDWIN | | | | | | | | | | | |
|--|-----------------|-------------------------|------------|-----------------------|-------|-------------------------|-----------------|----|----|-----|-----------|-----|-----|---------------------------|------------|------------|---|
| SITE DESCRIPTION BRIDGE NO. 108 ON SR 1002 OVER THE TUCKASEGEE RIVER | | | | | | | GROUND WTR (ft) | | | | | | | | | | |
| BORING NO. EB1-B | | STATION 18+63 | | OFFSET 49 ft RT | | ALIGNMENT -L- | | | | | | | | | | | |
| COLLAR ELEV. 2,076.7 ft | | TOTAL DEPTH 77.5 ft | | NORTHING 595,917 | | EASTING 754,143 | | | | | | | | | | | |
| DRILL RIG/HAMMER EFF./DATE CME-55 LC 331145 | | DRILL METHOD Mud Rotary | | HAMMER TYPE Automatic | | | | | | | | | | | | | |
| DRILLER D WHITE | | START DATE 12/13/13 | | COMP. DATE 12/13/13 | | SURFACE WATER DEPTH N/A | | | | | | | | | | | |
| ELEV (ft) | DRIVE ELEV (ft) | DEPTH (ft) | BLOW COUNT | | | BLOWS PER FOOT | | | | | SAMP. NO. | MOI | LOG | SOIL AND ROCK DESCRIPTION | ELEV. (ft) | DEPTH (ft) | |
| | | | 0.5ft | 0.5ft | 0.5ft | 0 | 25 | 50 | 75 | 100 | | | | | | | |
| 2080 | | | | | | | | | | | | | | | | | |
| | 2,076.7 | 0.0 | 9 | 12 | 44 | | | | | | | | | | 2,076.7 | 0.0 | GROUND SURFACE |
| 2075 | 2,073.2 | 3.5 | 47 | 12 | 10 | | | | | | | | | | | | ARTIFICIAL FILL BRN/GRAY GRAVEL W/ FINE TO COARSE SAND. MICA. BASAL BOULDERS FROM 16.0-18.5' |
| 2070 | 2,068.2 | 8.5 | 4 | 6 | 9 | | | | | | | | | | | | |
| 2065 | 2,063.2 | 13.5 | 6 | 5 | 9 | | | | | | | | | | | | |
| 2060 | 2,058.2 | 18.5 | 4 | 2 | 2 | | | | | | | | | | | | |
| 2055 | 2,053.2 | 23.5 | 11 | 7 | 6 | | | | | | | | | | | | |
| 2050 | 2,048.2 | 28.5 | 4 | 5 | 5 | | | | | | | | | | | | |
| 2045 | 2,043.2 | 33.5 | 5 | 5 | 5 | | | | | | | | | | | | |
| 2040 | 2,038.2 | 38.5 | 7 | 7 | 7 | | | | | | | | | | | | |
| 2035 | 2,033.2 | 43.5 | 25 | 27 | 25 | | | | | | | | | | | | |
| 2030 | 2,028.2 | 48.5 | 12 | 12 | 12 | | | | | | | | | | | | |
| 2025 | 2,023.2 | 53.5 | 31 | 25 | 30 | | | | | | | | | | | | |
| 2020 | 2,018.2 | 58.5 | 9 | 25 | 17 | | | | | | | | | | | | |
| 2015 | 2,013.2 | 63.5 | 9 | 17 | 27 | | | | | | | | | | | | |
| 2010 | 2,008.2 | 68.5 | 9 | 34 | 51 | | | | | | | | | | | | |
| 2005 | 2,003.2 | 73.5 | 46 | 29 | 31 | | | | | | | | | | | | |
| 2000 | | | | | | | | | | | | | | | | | |

NCDOT BORE DOUBLE B-4159 GEO BORELOGS GPJ NC_DOT_GDT_2/12/14

| WBS 33507.1.1 | | TIP B-4159 | | COUNTY JACKSON | | GEOLOGIST C BALDWIN | | | | | | | | | |
|--|-----------------|-------------------------|------------|-----------------------|-------|-------------------------|-----------------|----|----|-----|-----------|-------|---------------------------|--|------|
| SITE DESCRIPTION BRIDGE NO. 108 ON SR 1002 OVER THE TUCKASEGEE RIVER | | | | | | | GROUND WTR (ft) | | | | | | | | |
| BORING NO. B1-A | | STATION 19+84 | | OFFSET 24 ft LT | | ALIGNMENT -L- | | | | | | | | | |
| COLLAR ELEV. 2,046.4 ft | | TOTAL DEPTH 34.9 ft | | NORTHING 596,029 | | EASTING 754,058 | | | | | | | | | |
| DRILL RIG/HAMMER EFF./DATE CME-55 LC 331145 | | DRILL METHOD Mud Rotary | | HAMMER TYPE Automatic | | | | | | | | | | | |
| DRILLER D WHITE | | START DATE 12/11/13 | | COMP. DATE 12/11/13 | | SURFACE WATER DEPTH N/A | | | | | | | | | |
| ELEV (ft) | DRIVE ELEV (ft) | DEPTH (ft) | BLOW COUNT | | | BLOWS PER FOOT | | | | | SAMP. NO. | L O G | SOIL AND ROCK DESCRIPTION | DEPTH (ft) | |
| | | | 0.5ft | 0.5ft | 0.5ft | 0 | 25 | 50 | 75 | 100 | | | | | |
| 2050 | | | | | | | | | | | | | | | |
| 2045 | 2,046.4 | 0.0 | WOH | WOH | 1 | | | | | | | | 2,046.4 | GROUND SURFACE | 0.0 |
| | 2,044.3 | 2.1 | | | | | | | | | | | 2,043.3 | ALLUVIAL BRN SILTY SAND, W/ GRAVEL AND MICA. TR. ORGANIC | 3.1 |
| | 2,041.6 | 4.8 | WOH | 1 | 100.3 | | | | | | | | 2,041.6 | SAPROLITE WEATHERED BIOTITE GNEISS | 4.8 |
| 2040 | | | | | | | | | | | | | | CRYSTALLINE ROCK GRAY/WHITE, POORLY TO MOD. FOLIATED BIOTITE GNEISS | |
| 2035 | | | | | | | | | | | | | | | |
| 2030 | | | | | | | | | | | | | | | |
| 2025 | | | | | | | | | | | | | | | |
| 2020 | | | | | | | | | | | | | | | |
| 2015 | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | 2,011.5 | Boring Terminated WITH CASING ADVANCER REFUSAL at Elevation 2,011.5 ft IN CRYSTALLINE ROCK, BIOTITE GNEISS | 34.9 |

NCDOT BORE SINGLE B-4159_GEO_BORELOGS.GPJ NC_DOT.GDT 2/12/14

| WBS 33507.1.1 | | TIP B-4159 | | COUNTY JACKSON | | GEOLOGIST C BALDWIN | | | | | | | |
|--|--------------------|-------------------------|----------|--|---------------|-------------------------|-----------------|-------------|------------|-------|-------------------------|--|------|
| SITE DESCRIPTION BRIDGE NO. 108 ON SR 1002 OVER THE TUCKASEGEE RIVER | | | | | | | GROUND WTR (ft) | | | | | | |
| BORING NO. B1-A | | STATION 19+84 | | OFFSET 24 ft LT | | ALIGNMENT -L- | | | | | | | |
| COLLAR ELEV. 2,046.4 ft | | TOTAL DEPTH 34.9 ft | | NORTHING 596,029 | | EASTING 754,058 | | | | | | | |
| DRILL RIG/HAMMER EFF./DATE CME-55 LC 331145 | | DRILL METHOD Mud Rotary | | HAMMER TYPE Automatic | | | | | | | | | |
| DRILLER D WHITE | | START DATE 12/11/13 | | COMP. DATE 12/11/13 | | SURFACE WATER DEPTH N/A | | | | | | | |
| ELEV (ft) | RUN ELEV (ft) | DEPTH (ft) | RUN (ft) | DRILL RATE (Min/ft) | RUN | | SAMP. NO. | STRATA | | L O G | DESCRIPTION AND REMARKS | DEPTH (ft) | |
| | | | | | REC. (ft) % | RQD (ft) % | | REC. (ft) % | RQD (ft) % | | | | |
| | | | | | | | | | | | | | |
| 2040 | 2,041.6 | 4.8 | 5.0 | N=60/0.0 3:03/1.0 2:50/1.0 3:03/1.0 2:49/1.0 4:26/1.0 | (2.4) 48% | (1.6) 32% | | | | | 2,041.6 | Begin Coring @ 4.8 ft CRYSTALLINE ROCK | 4.8 |
| 2035 | 2,036.6 | 9.8 | 5.0 | 3:00/1.0 4:02/1.0 3:27/1.0 3:39/1.0 3:45/1.0 | (2.2) 44% | (0.0) 0% | | | | | | | |
| 2030 | 2,031.6 | 14.8 | 5.0 | 2:12/1.0 2:30/1.0 2:40/1.0 4:49/1.0 5:30/1.0 | (5.0) 100% | (3.2) 64% | | | | | | | |
| 2025 | 2,026.6 | 19.8 | 5.0 | 3:52/1.0 4:10/1.0 3:56/1.0 3:49/1.0 | (4.8) 96% | (4.5) 90% | | | | | | | |
| 2020 | 2,021.8 2,021.6 | 24.6 24.8 | 5.3 | 3:27/0.8 3:37/1.0 4:06/1.0 3:59/1.0 4:15/1.0 5:24/1.3 | (5.3) 100% | (4.3) 81% | | | | | | | |
| 2015 | 2,016.5 | 29.9 | 5.0 | 4:02/1.0 3:56/1.0 4:10/1.0 3:49/1.0 4:07/1.0 | (4.9) 98% | (4.6) 92% | | | | | | | |
| | 2,011.5 | 34.9 | | | | | | | | | 2,011.5 | Boring Terminated WITH CASING ADVANCER REFUSAL at Elevation 2,011.5 ft IN CRYSTALLINE ROCK, BIOTITE GNEISS | 34.9 |

NCDOT CORE SINGLE B-4159_GEO_BORELOGS.GPJ NC_DOT.GDT 2/12/14

| WBS 33507.1.1 | | TIP B-4159 | | COUNTY JACKSON | | GEOLOGIST C BALDWIN | | | | | | | | | | |
|--|-----------------|--------------------------|------------|-----------------------|-------|-------------------------|-----------------|----|----|-----|-----------|-----|---------------------------|---|--|------|
| SITE DESCRIPTION BRIDGE NO. 108 ON SR 1002 OVER THE TUCKASEGEE RIVER | | | | | | | GROUND WTR (ft) | | | | | | | | | |
| BORING NO. B1-C | | STATION 19+54 | | OFFSET 2 ft LT | | ALIGNMENT -L- | | | | | | | | | | |
| COLLAR ELEV. 2,042.9 ft | | TOTAL DEPTH 26.9 ft | | NORTHING 596,005 | | EASTING 754,079 | | | | | | | | | | |
| DRILL RIG/HAMMER EFF./DATE CME-55 LC 331145 | | DRILL METHOD Core Boring | | HAMMER TYPE Automatic | | | | | | | | | | | | |
| DRILLER D WHITE | | START DATE 12/12/13 | | COMP. DATE 12/12/13 | | SURFACE WATER DEPTH N/A | | | | | | | | | | |
| ELEV (ft) | DRIVE ELEV (ft) | DEPTH (ft) | BLOW COUNT | | | BLOWS PER FOOT | | | | | SAMP. NO. | LOG | SOIL AND ROCK DESCRIPTION | DEPTH (ft) | | |
| | | | 0.5ft | 0.5ft | 0.5ft | 0 | 25 | 50 | 75 | 100 | | | | | | |
| 2045 | 2,042.9 | 0.0 | | | | | | | | | | | | 2,042.9 | GROUND SURFACE | 0.0 |
| 2040 | 2,040.7 | 2.2 | 63 | 37 | 0.1 | | | | | | | | 2,040.7 | ALLUVIAL BRN FINE TO COARSE SAND. MICA. TR. SILT | 2.2 | |
| 2035 | 2,038.1 | 6.8 | 60 | 0 | 0 | | | | | | | | 2,038.1 | WEATHERED ROCK BRN/GRAY SAND | 6.8 | |
| 2030 | | | | | | | | | | | | | | | CRYSTALLINE ROCK WHT/BRN/GRAY POORLY FOLIATED BIOTITE GNEISS | |
| 2025 | | | | | | | | | | | | | | | | |
| 2020 | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | 2,016.0 | Boring Terminated WITH CASING ADVANCER REFUSAL at Elevation 2,016.0 ft IN CRYSTALLINE ROCK, BIOTITE GNEISS | 26.9 |

NCDOT BORE SINGLE B-4159 GEO_BORELOGS.GPJ NC_DOT.GDT 2/12/14

| WBS 33507.1.1 | | TIP B-4159 | | COUNTY JACKSON | | GEOLOGIST C BALDWIN | | | | | | | | |
|--|---------------|--------------------------|-------------------|--|---------------|-------------------------|-----------------|-------------|------------|-----|-------------------------|---|--|------|
| SITE DESCRIPTION BRIDGE NO. 108 ON SR 1002 OVER THE TUCKASEGEE RIVER | | | | | | | GROUND WTR (ft) | | | | | | | |
| BORING NO. B1-C | | STATION 19+54 | | OFFSET 2 ft LT | | ALIGNMENT -L- | | | | | | | | |
| COLLAR ELEV. 2,042.9 ft | | TOTAL DEPTH 26.9 ft | | NORTHING 596,005 | | EASTING 754,079 | | | | | | | | |
| DRILL RIG/HAMMER EFF./DATE CME-55 LC 331145 | | DRILL METHOD Core Boring | | HAMMER TYPE Automatic | | | | | | | | | | |
| DRILLER D WHITE | | START DATE 12/12/13 | | COMP. DATE 12/12/13 | | SURFACE WATER DEPTH N/A | | | | | | | | |
| CORE SIZE NQ3 | | | TOTAL RUN 20.1 ft | | | | | | | | | | | |
| ELEV (ft) | RUN ELEV (ft) | DEPTH (ft) | RUN (ft) | DRILL RATE (Min/ft) | RUN | | SAMP. NO. | STRATA | | LOG | DESCRIPTION AND REMARKS | DEPTH (ft) | | |
| | | | | | REC. (ft) % | RQD (ft) % | | REC. (ft) % | RQD (ft) % | | | | | |
| 2036.1 | 2,036.1 | 6.8 | 5.0 | N=60/0.0 3:25/1.0 3:20/1.0 2:54/1.0 2:53/1.0 2:56/1.0 | (4.4) 88% | (3.6) 72% | | | | | 2,036.1 | Begin Coring @ 6.8 ft CRYSTALLINE ROCK | 6.8 | |
| 2030 | 2,031.1 | 11.8 | 5.0 | 3:00/1.0 2:56/1.0 2:37/1.0 2:40/1.0 2:29/1.0 | (5.0) 100% | (4.0) 80% | | | | | | | | |
| 2025 | 2,026.1 | 16.8 | 5.1 | 4:57/1.0 3:34/1.0 2:37/1.0 2:49/1.0 3:20/1.1 | (5.1) 100% | (4.1) 80% | | | | | | | | |
| 2020 | 2,021.0 | 21.9 | 5.0 | 2:41/1.0 2:37/1.0 2:50/1.0 2:26/1.0 2:49/1.0 | (4.7) 94% | (3.5) 70% | | | | | | | | |
| | 2,016.0 | 26.9 | | | | | | | | | | 2,016.0 | Boring Terminated WITH CASING ADVANCER REFUSAL at Elevation 2,016.0 ft IN CRYSTALLINE ROCK, BIOTITE GNEISS | 26.9 |

NCDOT CORE SINGLE B-4159 GEO_BORELOGS.GPJ NC_DOT.GDT 2/12/14

| WBS 33507.1.1 | | TIP B-4159 | | COUNTY JACKSON | | GEOLOGIST C BALDWIN | | | | | | | | | | |
|--|-----------------|---------------------|------------|--------------------------|-------|-------------------------|----|----|----|-----|-----------|-----|---------------------------|------------|------|---|
| SITE DESCRIPTION BRIDGE NO. 108 ON SR 1002 OVER THE TUCKASEGEE RIVER | | | | | | | | | | | | | | | | |
| BORING NO. B2-A | | STATION 20+85 | | OFFSET 24 ft LT | | ALIGNMENT -L- | | | | | | | | | | |
| COLLAR ELEV. 2,054.8 ft | | TOTAL DEPTH 33.1 ft | | NORTHING 596,133 | | EASTING 754,062 | | | | | | | | | | |
| DRILL RIG/HAMMER EFF./DATE CME-55 LC 331145 | | | | DRILL METHOD Core Boring | | HAMMER TYPE Automatic | | | | | | | | | | |
| DRILLER D WHITE | | START DATE 12/16/13 | | COMP. DATE 12/16/13 | | SURFACE WATER DEPTH N/A | | | | | | | | | | |
| ELEV (ft) | DRIVE ELEV (ft) | DEPTH (ft) | BLOW COUNT | | | BLOWS PER FOOT | | | | | SAMP. NO. | LOG | SOIL AND ROCK DESCRIPTION | DEPTH (ft) | | |
| | | | 0.5ft | 0.5ft | 0.5ft | 0 | 25 | 50 | 75 | 100 | | | | | | |
| 2055 | 2,054.8 | 0.0 | WOH | WOH | 1 | | | | | | | | | 2,054.8 | 0.0 | GROUND SURFACE |
| 2050 | | | | | | | | | | | | | | 2,049.8 | 5.0 | ALLUVIAL GRAY/BRN SILTY FINE SAND |
| 2045 | 2,048.6 | 6.2 | 12 | 18 | 20 | | | | | | | | | 2,043.4 | 11.4 | SAPROLITE RED/BRN/GRAY SILTY, FINE TO COARSE SAND W/ ROCK FRAGS |
| 2040 | 2,043.6 | 11.2 | 60/0.2 | | | | | | | | | | | 2,021.7 | 33.1 | CRYSTALLINE ROCK BRN/WHT/GRAY, MOD. TO POORLY FOLIATED BIOTITE GNEISS |
| 2035 | | | | | | | | | | | | | | | | |
| 2030 | | | | | | | | | | | | | | | | |
| 2025 | | | | | | | | | | | | | | | | |
| Boring Terminated WITH CASING ADVANCER REFUSAL at Elevation 2,021.7 ft IN CRYSTALLINE ROCK, BIOTITE GNEISS | | | | | | | | | | | | | | | | |

NCDOT BORE SINGLE B-4159_GEO_BORELOGS.GPJ NC_DOT.GDT 2/12/14

| WBS 33507.1.1 | | TIP B-4159 | | COUNTY JACKSON | | GEOLOGIST C BALDWIN | | | | | | |
|--|---------------|---------------------|----------|--------------------------|----------|-------------------------|-----------|----------|---------|-----|-------------------------|------------|
| SITE DESCRIPTION BRIDGE NO. 108 ON SR 1002 OVER THE TUCKASEGEE RIVER | | | | | | | | | | | | |
| BORING NO. B2-A | | STATION 20+85 | | OFFSET 24 ft LT | | ALIGNMENT -L- | | | | | | |
| COLLAR ELEV. 2,054.8 ft | | TOTAL DEPTH 33.1 ft | | NORTHING 596,133 | | EASTING 754,062 | | | | | | |
| DRILL RIG/HAMMER EFF./DATE CME-55 LC 331145 | | | | DRILL METHOD Core Boring | | HAMMER TYPE Automatic | | | | | | |
| DRILLER D WHITE | | START DATE 12/16/13 | | COMP. DATE 12/16/13 | | SURFACE WATER DEPTH N/A | | | | | | |
| CORE SIZE NQ3 | | | | TOTAL RUN 21.7 ft | | | | | | | | |
| ELEV (ft) | RUN ELEV (ft) | DEPTH (ft) | RUN (ft) | DRILL RATE (Min/ft) | RUN | | SAMP. NO. | STRATA | | LOG | DESCRIPTION AND REMARKS | DEPTH (ft) |
| | | | | | REC. (%) | RQD (%) | | REC. (%) | RQD (%) | | | |
| 2043.4 | 2,043.4 | 11.4 | 1.6 | 3:44/1.0 | (1.6) | (0.3) | | | | | 2,043.4 | |
| | 2,041.8 | 13.0 | 5.0 | 1:59/0.6 | 100% | 19% | | | | | | 11.4 |
| 2040 | | | | 2:25/1.0 | (4.3) | (2.8) | | | | | | |
| | | | | 2:11/1.0 | 86% | 56% | | | | | | |
| | | | | 3:14/1.0 | | | | | | | | |
| | | | | 2:12/1.0 | | | | | | | | |
| 2035 | 2,036.8 | 18.0 | 5.0 | 2:37/1.0 | (5.0) | (5.0) | | | | | | |
| | | | | 3:10/1.0 | 100% | 100% | | | | | | |
| | | | | 3:21/1.0 | | | | | | | | |
| | | | | 2:45/1.0 | | | | | | | | |
| | | | | 2:51/1.0 | | | | | | | | |
| 2030 | 2,031.8 | 23.0 | 5.0 | 2:40/1.0 | (4.7) | (4.5) | | | | | | |
| | | | | 2:47/1.0 | 94% | 90% | | | | | | |
| | | | | 3:03/1.0 | | | | | | | | |
| | | | | 3:15/1.0 | | | | | | | | |
| | | | | 2:56/1.0 | | | | | | | | |
| 2025 | | | 5.1 | 2:47/1.0 | (5.1) | (4.9) | | | | | | |
| | | | | 2:53/1.0 | 100% | 96% | | | | | | |
| | | | | 3:07/1.0 | | | | | | | | |
| | | | | 3:00/1.0 | | | | | | | | |
| | | | | 2:57/1.1 | | | | | | | | |
| Boring Terminated WITH CASING ADVANCER REFUSAL at Elevation 2,021.7 ft IN CRYSTALLINE ROCK, BIOTITE GNEISS | | | | | | | | | | | | |

NCDOT CORE SINGLE B-4159_GEO_BORELOGS.GPJ NC_DOT.GDT 2/12/14



NCDOT GEOTECHNICAL ENGINEERING UNIT

BORELOG REPORT

SHEET

| WBS 33507.1.1 | | TIP B-4159 | | COUNTY JACKSON | | GEOLOGIST C BALDWIN | | | | | | | | | | |
|--|-----------------|---------------------|------------|-------------------------|-------|-------------------------|-----------------|------------|----|-----|-----------|-------|---------------------------|------------|--|------|
| SITE DESCRIPTION BRIDGE NO. 108 ON SR 1002 OVER THE TUCKASEGEE RIVER | | | | | | | GROUND WTR (ft) | | | | | | | | | |
| BORING NO. B2-C | | STATION 20+73 | | OFFSET 4 ft LT | | ALIGNMENT -L- | | 0 HR. N/A | | | | | | | | |
| COLLAR ELEV. 2,054.7 ft | | TOTAL DEPTH 29.6 ft | | NORTHING 596,119 | | EASTING 754,081 | | 24 HR. 0.5 | | | | | | | | |
| DRILL RIG/HAMMER EFF./DATE CME-55 LC 331145 | | | | DRILL METHOD Mud Rotary | | HAMMER TYPE Automatic | | | | | | | | | | |
| DRILLER D WHITE | | START DATE 12/17/13 | | COMP. DATE 12/17/13 | | SURFACE WATER DEPTH N/A | | | | | | | | | | |
| ELEV (ft) | DRIVE ELEV (ft) | DEPTH (ft) | BLOW COUNT | | | BLOWS PER FOOT | | | | | SAMP. NO. | L O G | SOIL AND ROCK DESCRIPTION | DEPTH (ft) | | |
| | | | 0.5ft | 0.5ft | 0.5ft | 0 | 25 | 50 | 75 | 100 | | | | | | |
| 2055 | 2,054.7 | 0.0 | WOH | WOH | 1 | | | | | | | | | 2,054.7 | GROUND SURFACE | 0.0 |
| 2050 | | | | | | | | | | | | | | | ALLUVIAL GRAY/BRN SILTY, FINE TO COARSE SAND W/ GRAVEL | |
| 2045 | 2,047.5 | 7.2 | 9 | 5 | 7 | | | | | | | | | 2,044.7 | SAPROLITE NO DESC. | 10.0 |
| 2040 | 2,042.1 | 12.6 | 60/0.0 | | | | | | | | | | | 2,042.1 | CRYSTALLINE ROCK GRAY/WHT, WELL FOLIATED, BIOTITE GNEISS | 12.6 |
| 2035 | | | | | | | | | | | | | | | | |
| 2030 | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | 2,025.1 | Boring Terminated WITH STANDARD PENETRATION TEST REFUSAL at Elevation 2,025.1 ft IN CRYSTALLINE ROCK, BIOTITE GNEISS | 29.6 |

NCDOT BORE SINGLE B-4159_GEO_BORELOGS.GPJ NC_DOT.GDT 2/12/14



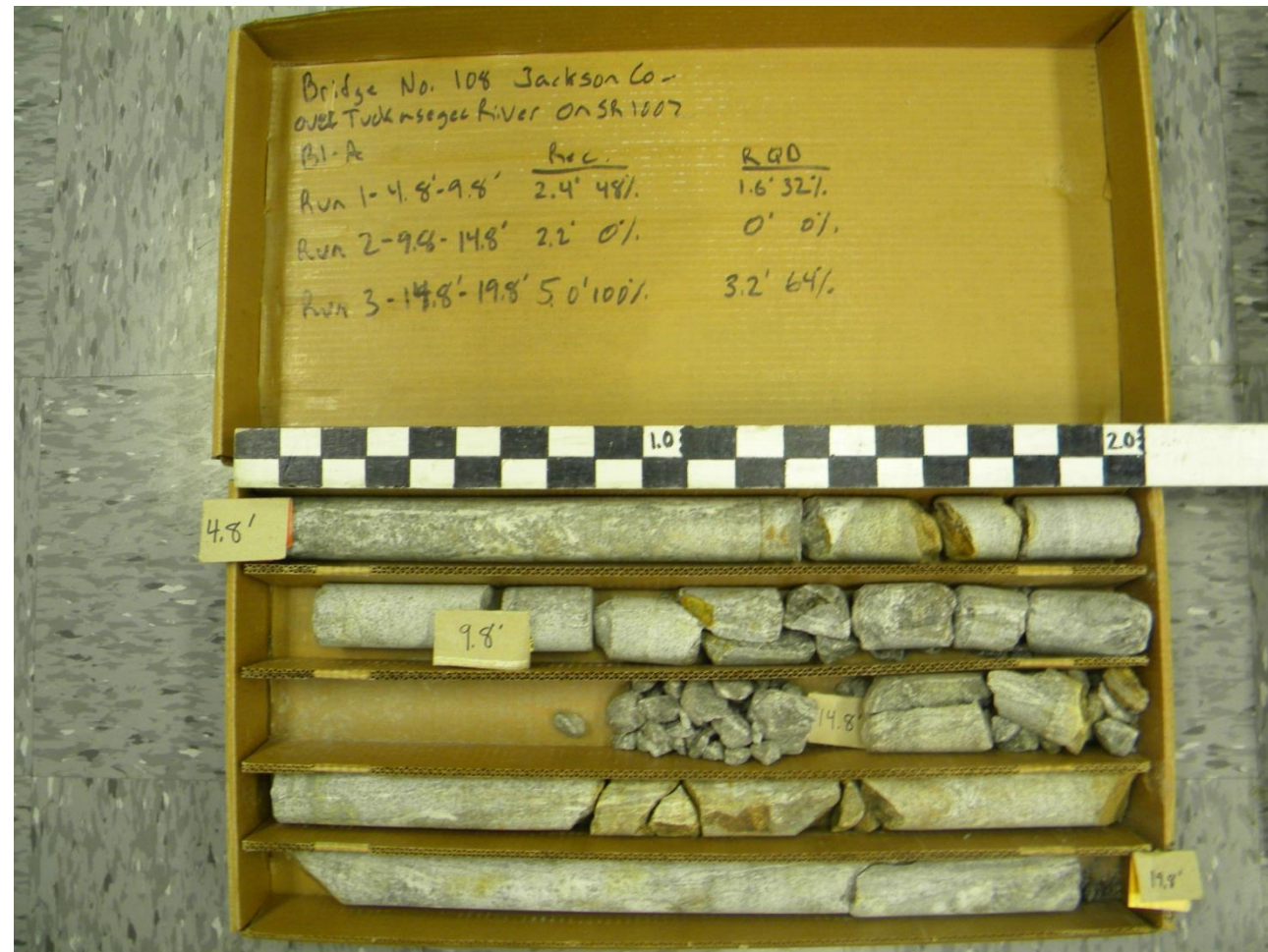
NCDOT GEOTECHNICAL ENGINEERING UNIT

CORE BORING REPORT

SHEET
14/20

| WBS 33507.1.1 | | TIP B-4159 | | COUNTY JACKSON | | GEOLOGIST C BALDWIN | | | | | | | | |
|--|---------------|---------------------|----------|--|----------|-------------------------|-----------------|------------|---------|-------|-------------------------|---|--|------|
| SITE DESCRIPTION BRIDGE NO. 108 ON SR 1002 OVER THE TUCKASEGEE RIVER | | | | | | | GROUND WTR (ft) | | | | | | | |
| BORING NO. B2-C | | STATION 20+73 | | OFFSET 4 ft LT | | ALIGNMENT -L- | | 0 HR. N/A | | | | | | |
| COLLAR ELEV. 2,054.7 ft | | TOTAL DEPTH 29.6 ft | | NORTHING 596,119 | | EASTING 754,081 | | 24 HR. 0.5 | | | | | | |
| DRILL RIG/HAMMER EFF./DATE CME-55 LC 331145 | | | | DRILL METHOD Mud Rotary | | HAMMER TYPE Automatic | | | | | | | | |
| DRILLER D WHITE | | START DATE 12/17/13 | | COMP. DATE 12/17/13 | | SURFACE WATER DEPTH N/A | | | | | | | | |
| ELEV (ft) | RUN ELEV (ft) | DEPTH (ft) | RUN (ft) | DRILL RATE (Min/ft) | RUN | | SAMP. NO. | STRATA | | L O G | DESCRIPTION AND REMARKS | DEPTH (ft) | | |
| | | | | | REC. (%) | RQD (%) | | REC. (%) | RQD (%) | | | | | |
| 2042.1 | 2,042.1 | 12.6 | 2.0 | N=60/0.0 4:19/1.0 3:05/1.0 | (2.0) | (1.7) | | | | | 2,042.1 | Begin Coring @ 12.6 ft CRYSTALLINE ROCK | 12.6 | |
| 2040 | 2,040.1 | 14.6 | 5.0 | 2:58/1.0 3:10/1.0 2:49/1.0 2:51/1.0 3:00/1.0 | (5.0) | (5.0) | | | | | | | | |
| 2035 | 2,035.1 | 19.6 | 5.0 | 3:16/1.0 3:08/1.0 2:56/1.0 3:03/1.0 3:10/1.0 | (5.0) | (4.8) | | | | | | | | |
| 2030 | 2,030.1 | 24.6 | 5.0 | 2:47/1.0 3:06/1.0 2:51/1.0 2:45/1.0 2:59/1.0 | (5.0) | (4.9) | | | | | | | | |
| | 2,025.1 | 29.6 | | | | | | | | | | | Boring Terminated WITH STANDARD PENETRATION TEST REFUSAL at Elevation 2,025.1 ft IN CRYSTALLINE ROCK, BIOTITE GNEISS | 29.6 |

NCDOT CORE SINGLE B-4159_GEO_BORELOGS.GPJ NC_DOT.GDT 2/12/14



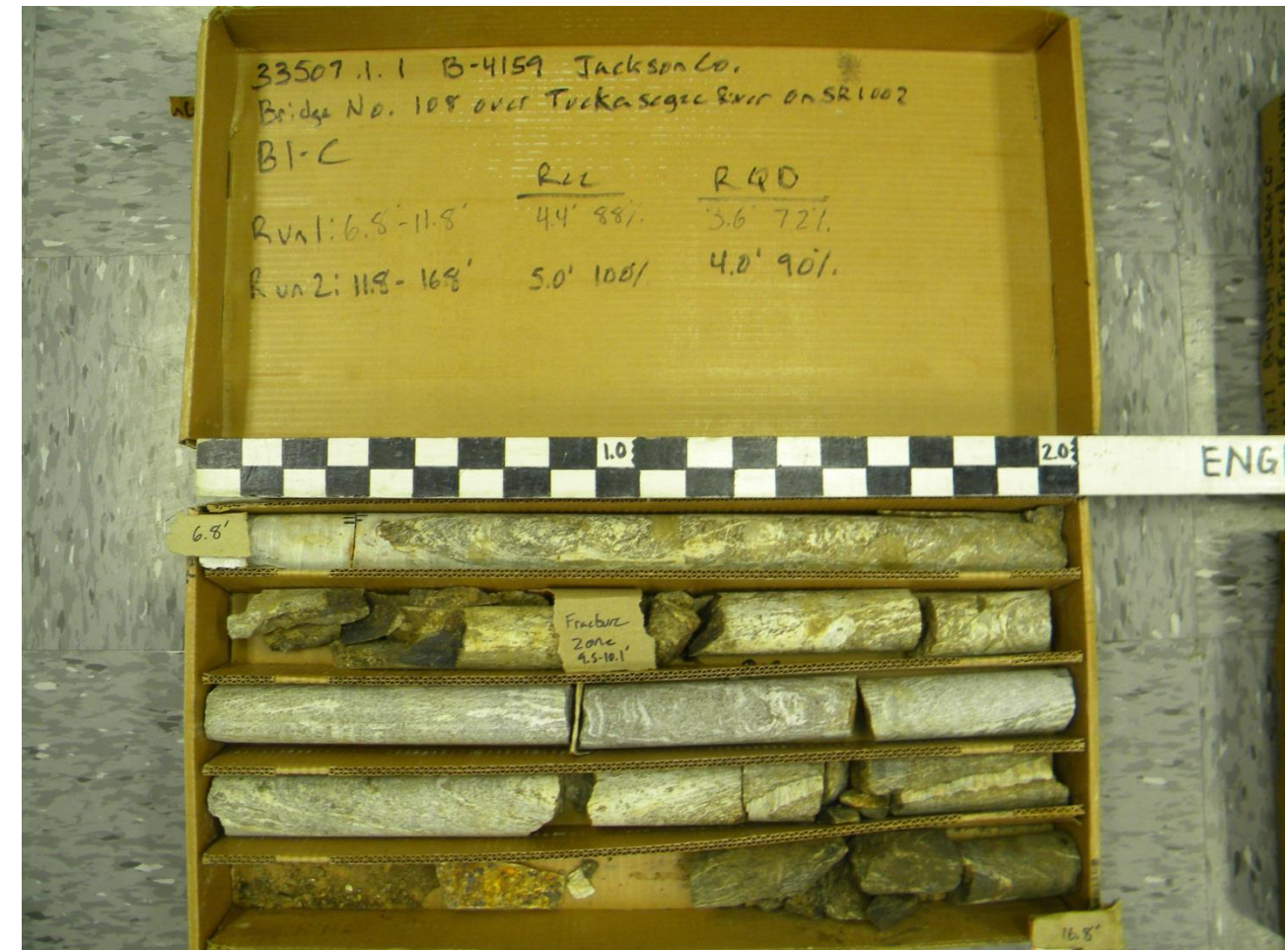
B-4159 33507.1.1
BORING B1-A
BOX 1 OF 3, 4.8 – 19.8'



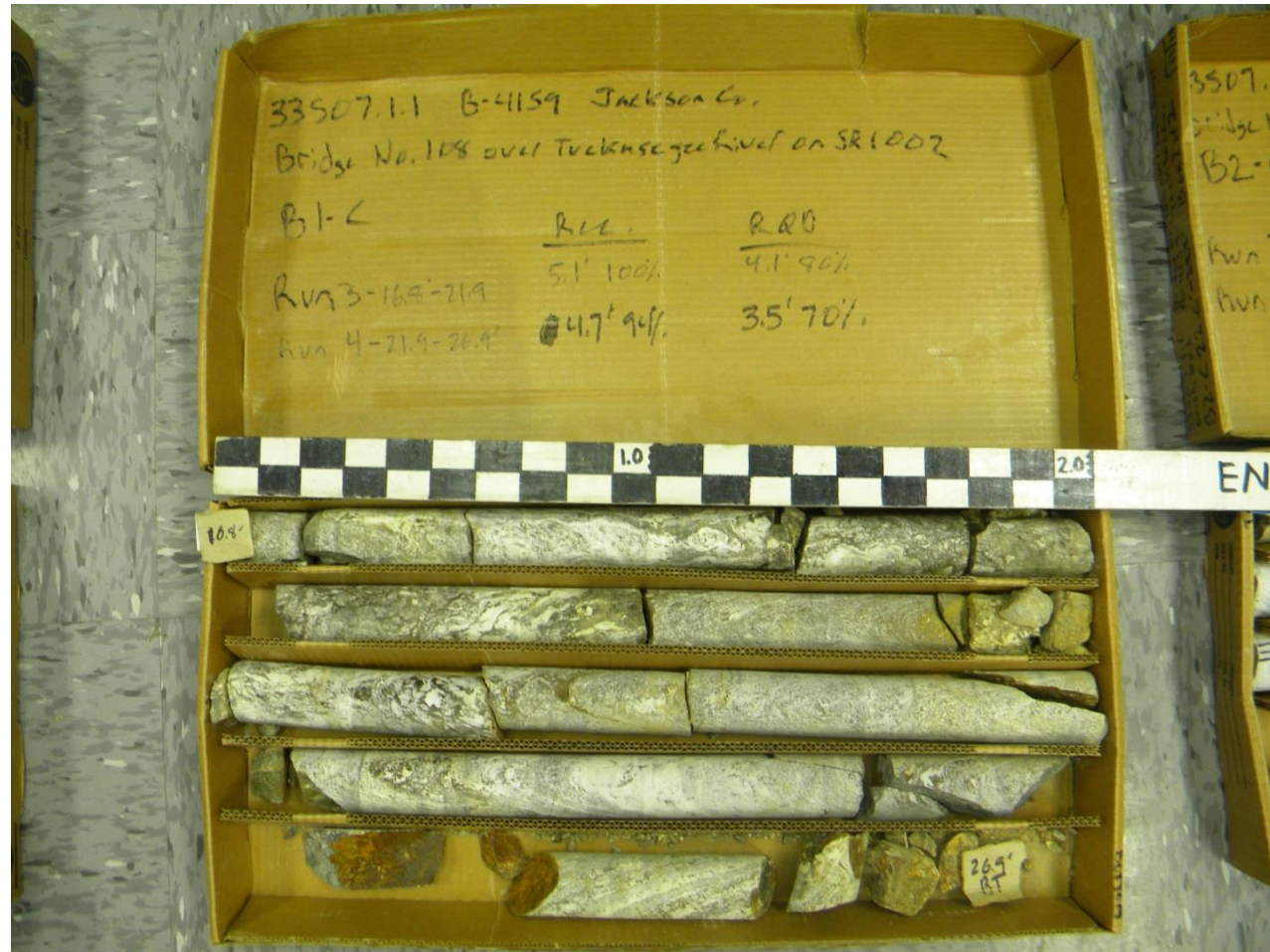
B-4159 33507.1.1
BORING B1-A
BOX 2 OF 3, 19.8 – 25.9'



B-4159 33507.1.1
 BORING B1-A
 BOX 3 OF 3, 25.9 – 34.9'



B-4159 33507.1.1
 BORING B1-C
 BOX 1 OF 2, 6.8 – 16.8'



B-4159 33507.1.1
 BORING B1-C
 BOX 2 OF 2, 16.8 – 26.9'



B-4159 33507.1.1
 BORING B2-A
 BOX 1 OF 3, 11.4 – 22.1'



B-4159 33507.1.1
BORING B2-A
BOX 2 OF 3, 22.1 – 32.3'



B-4159 33507.1.1
BORING B2-A
BOX 3 OF 3, 32.3 – 33.1'



B-4159 33507.1.1
 BORING B2-C
 BOX 1 OF 2, 12.6 – 22.6'



B-4159 33507.1.1
 BORING B2-C
 BOX 2 OF 2, 22.6 – 29.6'