

STATE	STATE PROJECT REFERENCE NO.	SHEET	TOTAL SHEETS
N.C.	42296.1.1 (B-5137)	1	16

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

**STRUCTURE**  
**SUBSURFACE INVESTIGATION**

PROJ. REFERENCE NO. 42296.1.1 (B-5137) F.A. PROJ. BRZ-1542(7)  
COUNTY STANLY  
PROJECT DESCRIPTION BRIDGE NO. 215 OVER LITTLE MOUNTAIN  
CREEK ON SR 1542 (RIDGE ROAD)

SITE DESCRIPTION \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

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**CAUTION NOTICE**

THE SUBSURFACE INFORMATION AND THE SUBSURFACE INVESTIGATION ON WHICH IT IS BASED WERE MADE FOR THE PURPOSE OF STUDY, PLANNING, AND DESIGN, AND NOT FOR CONSTRUCTION OR PAY PURPOSES. THE VARIOUS FIELD BORING LOGS, ROCK CORES, AND SOIL TEST DATA AVAILABLE MAY BE REVIEWED OR INSPECTED IN RALEIGH BY CONTACTING THE N. C. DEPARTMENT OF TRANSPORTATION, GEOTECHNICAL ENGINEERING UNIT AT (919) 250-4088. NEITHER THE SUBSURFACE PLANS AND REPORTS, NOR THE FIELD BORING LOGS, ROCK CORES, OR SOIL TEST DATA ARE PART OF THE CONTRACT.

GENERAL SOIL AND ROCK STRATA DESCRIPTIONS AND INDICATED BOUNDARIES ARE BASED ON A GEOTECHNICAL INTERPRETATION OF ALL AVAILABLE SUBSURFACE DATA AND MAY NOT NECESSARILY REFLECT THE ACTUAL SUBSURFACE CONDITIONS BETWEEN BORINGS OR BETWEEN SAMPLED STRATA WITHIN THE BOREHOLE. THE LABORATORY SAMPLE DATA AND THE IN SITU (IN-PLACE) TEST DATA CAN BE RELIED ON ONLY TO THE DEGREE OF RELIABILITY INHERENT IN THE STANDARD TEST METHOD. THE OBSERVED WATER LEVELS OR SOIL MOISTURE CONDITIONS INDICATED IN THE SUBSURFACE INVESTIGATIONS ARE AS RECORDED AT THE TIME OF THE INVESTIGATION. THESE WATER LEVELS OR SOIL MOISTURE CONDITIONS MAY VARY CONSIDERABLY WITH TIME ACCORDING TO CLIMATIC CONDITIONS INCLUDING TEMPERATURES, PRECIPITATION, AND WIND, AS WELL AS OTHER NON-CLIMATIC FACTORS.

THE BIDDER OR CONTRACTOR IS CAUTIONED THAT DETAILS SHOWN ON THE SUBSURFACE PLANS ARE PRELIMINARY ONLY AND IN MANY CASES THE FINAL DESIGN DETAILS ARE DIFFERENT. FOR BIDDING AND CONSTRUCTION PURPOSES, REFER TO THE CONSTRUCTION PLANS AND DOCUMENTS FOR FINAL DESIGN INFORMATION ON THIS PROJECT. THE DEPARTMENT DOES NOT WARRANT OR GUARANTEE THE SUFFICIENCY OR ACCURACY OF THE INVESTIGATION MADE, NOR THE INTERPRETATIONS MADE, OR OPINION OF THE DEPARTMENT AS TO THE TYPE OF MATERIALS AND CONDITIONS TO BE ENCOUNTERED. THE BIDDER OR CONTRACTOR IS CAUTIONED TO MAKE SUCH INDEPENDENT SUBSURFACE INVESTIGATIONS AS HE DEEMS NECESSARY TO SATISFY HIMSELF AS TO CONDITIONS TO BE ENCOUNTERED ON THIS PROJECT. THE CONTRACTOR SHALL HAVE NO CLAIM FOR ADDITIONAL COMPENSATION OR FOR AN EXTENSION OF TIME FOR ANY REASON RESULTING FROM THE ACTUAL CONDITIONS ENCOUNTERED AT THE SITE DIFFERING FROM THOSE INDICATED IN THE SUBSURFACE INFORMATION.

PERSONNEL

J.K. STICKNEY

C.L. SMITH

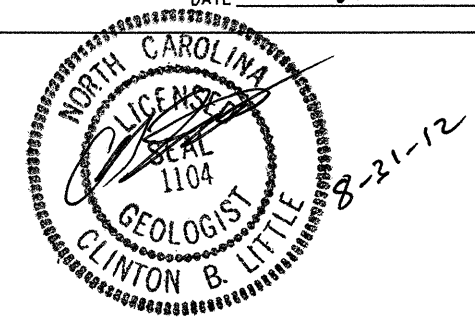
D.K. BRATTON

INVESTIGATED BY J.E. BEVERLY

CHECKED BY C.B. LITTLE

SUBMITTED BY C.B. LITTLE

DATE JULY 2012



**PROJECT: 42296.1.1**  
**ID: B-5137**

DRAWN BY: J.K. McCLURE

NOTE - THE INFORMATION CONTAINED HEREIN IS NOT IMPLIED OR GUARANTEED BY THE N. C. DEPARTMENT OF TRANSPORTATION AS BEING ACCURATE NOR IS IT CONSIDERED TO BE PART OF THE PLANS, SPECIFICATIONS, OR CONTRACT FOR THE PROJECT.

NOTE - BY HAVING REQUESTED THIS INFORMATION THE CONTRACTOR SPECIFICALLY WAIVES ANY CLAIMS FOR INCREASED COMPENSATION OR EXTENSION OF TIME BASED ON DIFFERENCES BETWEEN THE CONDITIONS INDICATED HEREIN AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

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

**SUBSURFACE INVESTIGATION**

**SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS**

SOIL DESCRIPTION	GRADATION	ROCK DESCRIPTION	TERMS AND DEFINITIONS																																																																																																																																																																																	
<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 (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, GRAV. SILTY CLAY, MOST WITH INTERBEDDED FINE SAND LAYERS, HIGH PLASTIC, A-7-6</i></p>	<p><b>WELL GRADED</b> - INDICATES A GOOD REPRESENTATION OF PARTICLE SIZES FROM FINE TO COARSE. <b>UNIFORM</b> - INDICATES THAT SOIL PARTICLES ARE ALL APPROXIMATELY THE SAME SIZE. (ALSO POORLY GRADED)</p> <p><b>GAP-GRADED</b> - INDICATES A MIXTURE OF UNIFORM PARTICLES OF TWO OR MORE SIZES.</p> <p style="text-align: center;"><b>ANGULARITY OF GRAINS</b></p> <p>THE ANGULARITY OR ROUNDNESS OF SOIL GRAINS IS DESIGNATED BY THE TERMS: <b>ANGULAR</b>, <b>SUBANGULAR</b>, <b>SUBROUNDED</b>, OR <b>ROUNDED</b>.</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><b>WEATHERED ROCK (WR)</b>  NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT N VALUES &gt; 100 BLOWS PER FOOT IF TESTED.</p> <p><b>CRYSTALLINE ROCK (CR)</b>  FINE TO COARSE GRAIN IGNEOUS AND METAMORPHIC ROCK THAT WOULD YIELD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES GRANITE, GNEISS, GABBRO, SCHIST, ETC.</p> <p><b>NON-CRYSTALLINE ROCK (NCR)</b>  FINE TO COARSE GRAIN METAMORPHIC AND NON-COASTAL PLAIN SEDIMENTARY ROCK THAT WOULD YIELD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES PHYLLITE, SLATE, SANDSTONE, ETC.</p> <p><b>COASTAL PLAIN SEDIMENTARY ROCK (CP)</b>  COASTAL PLAIN SEDIMENTS CEMENTED INTO ROCK, BUT MAY NOT YIELD SPT REFUSAL. ROCK TYPE INCLUDES LIMESTONE, SANDSTONE, CEMENTED SHELL BEDS, ETC.</p>	<p><b>ALLUVIUM (ALLUV.)</b> - SOILS THAT HAVE BEEN TRANSPORTED BY WATER.</p> <p><b>AQUIFER</b> - A WATER BEARING FORMATION OR STRATA.</p> <p><b>ARENACEOUS</b> - APPLIED TO ROCKS THAT HAVE BEEN DERIVED FROM SAND OR THAT CONTAIN SAND.</p> <p><b>ARGILLACEOUS</b> - 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><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.</p> <p><b>CALCAREOUS (CALC.)</b> - SOILS THAT CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE.</p> <p><b>COLLUVIUM</b> - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM OF SLOPE.</p> <p><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.</p> <p><b>DIKE</b> - A TABULAR BODY OF IGNEOUS ROCK THAT CUTS ACROSS THE STRUCTURE OF ADJACENT ROCKS OR CUTS MASSIVE ROCK.</p> <p><b>DIP</b> - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE HORIZONTAL.</p> <p><b>DIP DIRECTION (DIP AZIMUTH)</b> - THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF THE LINE OF DIP, MEASURED CLOCKWISE FROM NORTH.</p> <p><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.</p> <p><b>FISSILE</b> - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES.</p> <p><b>FLOAT</b> - ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLODGED FROM PARENT MATERIAL.</p> <p><b>FLOOD PLAIN (FP)</b> - LAND BORDERING A STREAM, BUILT OF SEDIMENTS DEPOSITED BY THE STREAM.</p> <p><b>FORMATION (FM)</b> - A MAPPABLE GEOLOGIC UNIT THAT CAN BE RECOGNIZED AND TRACED IN THE FIELD.</p> <p><b>JOINT</b> - FRACTURE IN ROCK ALONG WHICH NO APPRECIABLE MOVEMENT HAS OCCURRED.</p> <p><b>LEDGE</b> - A SHELF-LIKE RIDGE OR PROJECTION OF ROCK WHOSE THICKNESS IS SMALL COMPARED TO ITS LATERAL EXTENT.</p> <p><b>LENS</b> - A BODY OF SOIL OR ROCK THAT THINS OUT IN ONE OR MORE DIRECTIONS.</p> <p><b>MOTTLED (MOT.)</b> - IRREGULARLY MARKED WITH SPOTS OF DIFFERENT COLORS. MOTTLING IN SOILS USUALLY INDICATES POOR AERATION AND LACK OF GOOD DRAINAGE.</p> <p><b>PERCHED WATER</b> - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE OF AN INTERVENING IMPERVIOUS STRATUM.</p> <p><b>RESIDUAL (RES.) SOIL</b> - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK.</p> <p><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.</p> <p><b>SAPROLITE (SAP.)</b> - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT ROCK.</p> <p><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.</p> <p><b>SLICKENSIDE</b> - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT OR SLIP PLANE.</p> <p><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.</p> <p><b>STRATA CORE RECOVERY (SCREC.)</b> - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE.</p> <p><b>STRATA ROCK QUALITY DESIGNATION (SRQD)</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.</p> <p><b>TOPSOIL (TS.)</b> - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.</p>																																																																																																																																																																																	
<p style="text-align: center;"><b>SOIL LEGEND AND AASHTO CLASSIFICATION</b></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th rowspan="2">GENERAL CLASS.</th> <th colspan="7">GRANULAR MATERIALS (&lt;= 35% PASSING #200)</th> <th colspan="7">SILT-CLAY MATERIALS (&gt; 35% PASSING #200)</th> <th rowspan="2">ORGANIC MATERIALS</th> </tr> <tr> <th>A-1-a</th> <th>A-1-b</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></th> </tr> </thead> <tbody> <tr> <td>GROUP CLASS.</td> <td>A-1-a</td> <td>A-1-b</td> <td>A-3</td> <td>A-2-4</td> <td>A-2-5</td> <td>A-2-6</td> <td>A-2-7</td> <td>A-4</td> <td>A-5</td> <td>A-6</td> <td>A-7</td> <td>A-1, A-2</td> <td>A-4, A-5</td> <td>A-6, A-7</td> <td></td> </tr> <tr> <td>SYMBOL</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>% PASSING</td> <td>50</td> <td>30</td> <td>10</td> <td>10</td> <td>10</td> <td>10</td> <td>10</td> <td>10</td> <td>10</td> <td>10</td> <td>10</td> <td>10</td> <td>10</td> <td>10</td> <td>10</td> </tr> <tr> <td>LIQUID LIMIT</td> <td>50</td> <td>30</td> <td>10</td> <td>40</td> <td>40</td> <td>40</td> <td>40</td> <td>40</td> <td>40</td> <td>40</td> <td>40</td> <td>40</td> <td>40</td> <td>40</td> <td>40</td> </tr> <tr> <td>PLASTIC INDEX</td> <td>5</td> <td>10</td> <td>10</td> <td>10</td> <td>10</td> <td>10</td> <td>10</td> <td>10</td> <td>10</td> <td>10</td> <td>10</td> <td>10</td> <td>10</td> <td>10</td> <td>10</td> </tr> <tr> <td>GROUP INDEX</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> </tr> <tr> <td>USUAL TYPES OF MAJOR MATERIALS</td> <td>STONE FRAGS, GRAVEL, AND SAND</td> <td>FINE SAND</td> <td>SILT OR CLAYEY GRAVEL AND SAND</td> <td>SILT SOILS</td> <td>CLAYEY SOILS</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>GEN. RATING AS A SUBGRADE</td> <td colspan="3">EXCELLENT TO GOOD</td> <td colspan="3">FAIR TO POOR</td> <td colspan="3">FAIR TO POOR</td> <td colspan="3">POOR</td> <td colspan="3">UNSATISFACTORY</td> </tr> </tbody> </table> <p style="text-align: center;">PI OF A-7-5 SUBGROUP IS ≤ LL - 30 ; PI OF A-7-6 SUBGROUP IS &gt; LL - 30</p>	GENERAL CLASS.	GRANULAR MATERIALS (<= 35% PASSING #200)							SILT-CLAY MATERIALS (> 35% PASSING #200)							ORGANIC MATERIALS	A-1-a	A-1-b	A-3	A-2		A-4	A-5	A-6	A-7	A-1, A-2	A-4, A-5	A-6, A-7		GROUP CLASS.	A-1-a	A-1-b	A-3	A-2-4	A-2-5	A-2-6	A-2-7	A-4	A-5	A-6	A-7	A-1, A-2	A-4, A-5	A-6, A-7		SYMBOL																% PASSING	50	30	10	10	10	10	10	10	10	10	10	10	10	10	10	LIQUID LIMIT	50	30	10	40	40	40	40	40	40	40	40	40	40	40	40	PLASTIC INDEX	5	10	10	10	10	10	10	10	10	10	10	10	10	10	10	GROUP INDEX	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	USUAL TYPES OF MAJOR MATERIALS	STONE FRAGS, GRAVEL, AND SAND	FINE SAND	SILT OR CLAYEY GRAVEL AND SAND	SILT SOILS	CLAYEY SOILS											GEN. 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ARE USED IN DESCRIPTIONS WHENEVER THEY ARE CONSIDERED OF SIGNIFICANCE.</p> <p style="text-align: center;"><b>COMPRESSIBILITY</b></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 style="text-align: center;"><b>PERCENTAGE OF MATERIAL</b></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th>GRANULAR SOILS</th> <th>SILT - CLAY SOILS</th> <th>OTHER MATERIAL</th> </tr> </thead> <tbody> <tr> <td>TRACE OF ORGANIC MATTER</td> <td>2 - 3%</td> <td>3 - 5%</td> <td>TRACE</td> </tr> <tr> <td>LITTLE ORGANIC MATTER</td> <td>3 - 5%</td> <td>5 - 12%</td> <td>LITTLE</td> </tr> <tr> <td>MODERATELY ORGANIC</td> <td>5 - 10%</td> <td>12 - 20%</td> <td>SOME</td> </tr> <tr> <td>HIGHLY ORGANIC</td> <td>&gt;10%</td> <td>&gt;20%</td> <td>HIGHLY</td> </tr> </tbody> </table> <p style="text-align: center;"><b>GROUND WATER</b></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> <p style="text-align: center;"><b>MISCELLANEOUS SYMBOLS</b></p> <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 &amp; DIP DIRECTION OF ROCK STRUCTURES</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> CONE PENETROMETER TEST</p> <p> SOUNDING ROD</p>		GRANULAR SOILS	SILT - CLAY SOILS	OTHER MATERIAL	TRACE OF ORGANIC MATTER	2 - 3%	3 - 5%	TRACE	LITTLE ORGANIC MATTER	3 - 5%	5 - 12%	LITTLE	MODERATELY ORGANIC	5 - 10%	12 - 20%	SOME	HIGHLY ORGANIC	>10%	>20%	HIGHLY	<p style="text-align: center;"><b>ROCK HARDNESS</b></p> <p><b>VERY HARD</b> - CANNOT BE SCRATCHED BY KNIFE OR SHARP PICK. BREAKING OF HAND SPECIMENS REQUIRES SEVERAL HARD BLOWS OF THE GEOLOGIST'S PICK.</p> <p><b>HARD</b> - CAN BE SCRATCHED BY KNIFE OR PICK ONLY WITH DIFFICULTY. HARD HAMMER BLOWS REQUIRED TO DETACH HAND SPECIMEN.</p> <p><b>MODERATELY HARD</b> - 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><b>MEDIUM HARD</b> - 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><b>SOFT</b> - 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><b>VERY SOFT</b> - CAN BE CARVED WITH KNIFE. CAN BE EXCAVATED READILY WITH POINT OF PICK. 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BREAKING OF HAND SPECIMENS REQUIRES SEVERAL HARD BLOWS OF THE GEOLOGIST'S PICK.</p> <p><b>HARD</b> - CAN BE SCRATCHED BY KNIFE OR PICK ONLY WITH DIFFICULTY. HARD HAMMER BLOWS REQUIRED TO DETACH HAND SPECIMEN.</p> <p><b>MODERATELY HARD</b> - 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><b>MEDIUM HARD</b> - 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><b>SOFT</b> - 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><b>VERY SOFT</b> - 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>	<p style="text-align: center;"><b>EQUIPMENT USED ON SUBJECT PROJECT</b></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>DRILL UNITS:</th> <th>ADVANCING TOOLS:</th> <th>HAMMER TYPE:</th> </tr> </thead> <tbody> <tr> <td><input type="checkbox"/> MOBILE B- _____</td> <td><input type="checkbox"/> CLAY BITS</td> <td><input checked="" type="checkbox"/> AUTOMATIC    <input type="checkbox"/> MANUAL</td> </tr> <tr> <td><input type="checkbox"/> BK-51</td> <td><input type="checkbox"/> 6" CONTINUOUS FLIGHT AUGER</td> <td><b>CORE SIZE:</b></td> </tr> <tr> <td><input type="checkbox"/> CME-45C</td> <td><input type="checkbox"/> 8" HOLLOW AUGERS</td> <td><input type="checkbox"/> B- _____</td> </tr> <tr> <td><input checked="" type="checkbox"/> CME-550</td> <td><input type="checkbox"/> HARD FACED FINGER BITS</td> <td><input checked="" type="checkbox"/> N- O/NQ</td> </tr> <tr> <td><input type="checkbox"/> PORTABLE HOIST</td> <td><input type="checkbox"/> TUNG.-CARBIDE INSERTS</td> <td><input type="checkbox"/> H- _____</td> </tr> <tr> <td><input type="checkbox"/> _____</td> <td><input type="checkbox"/> CASING    <input checked="" type="checkbox"/> w/ ADVANCER</td> <td><b>HAND TOOLS:</b></td> </tr> <tr> <td><input type="checkbox"/> _____</td> <td><input type="checkbox"/> TRICONE _____ * STEEL TEETH</td> <td><input type="checkbox"/> POST HOLE DIGGER</td> </tr> <tr> <td><input type="checkbox"/> _____</td> <td><input checked="" type="checkbox"/> TRICONE 2 1/8" * TUNG.-CARB.</td> <td><input type="checkbox"/> HAND AUGER</td> </tr> <tr> <td><input type="checkbox"/> _____</td> <td><input checked="" type="checkbox"/> CORE BIT</td> <td><input type="checkbox"/> SOUNDING ROD</td> </tr> <tr> <td><input type="checkbox"/> _____</td> <td><input type="checkbox"/> _____</td> <td><input type="checkbox"/> VANE SHEAR TEST</td> </tr> </tbody> </table>	DRILL UNITS:	ADVANCING TOOLS:	HAMMER TYPE:	<input type="checkbox"/> MOBILE B- _____	<input type="checkbox"/> CLAY BITS	<input checked="" type="checkbox"/> AUTOMATIC <input type="checkbox"/> MANUAL	<input type="checkbox"/> BK-51	<input type="checkbox"/> 6" CONTINUOUS FLIGHT AUGER	<b>CORE SIZE:</b>	<input type="checkbox"/> CME-45C	<input type="checkbox"/> 8" HOLLOW AUGERS	<input type="checkbox"/> B- _____	<input checked="" type="checkbox"/> CME-550	<input type="checkbox"/> HARD FACED FINGER BITS	<input checked="" type="checkbox"/> N- O/NQ	<input type="checkbox"/> PORTABLE HOIST	<input type="checkbox"/> TUNG.-CARBIDE INSERTS	<input type="checkbox"/> H- _____	<input type="checkbox"/> _____	<input type="checkbox"/> CASING <input checked="" type="checkbox"/> w/ ADVANCER	<b>HAND TOOLS:</b>	<input type="checkbox"/> _____	<input type="checkbox"/> TRICONE _____ * STEEL TEETH	<input type="checkbox"/> POST HOLE DIGGER	<input type="checkbox"/> _____	<input checked="" type="checkbox"/> TRICONE 2 1/8" * TUNG.-CARB.	<input type="checkbox"/> HAND AUGER	<input type="checkbox"/> _____	<input checked="" type="checkbox"/> CORE BIT	<input type="checkbox"/> SOUNDING ROD	<input type="checkbox"/> _____	<input type="checkbox"/> _____	<input type="checkbox"/> VANE SHEAR TEST	<p style="text-align: center;"><b>FRACTURE SPACING</b></p> <table border="1" style="width: 100%; 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GENTLE BLOW BY HAMMER DISINTEGRATES SAMPLE.</p> <p><b>MODERATELY INDURATED</b> - GRAINS CAN BE SEPARATED FROM SAMPLE WITH STEEL PROBE; BREAKS EASILY WHEN HIT WITH HAMMER.</p> <p><b>INDURATED</b> - GRAINS ARE DIFFICULT TO SEPARATE WITH STEEL PROBE; DIFFICULT TO BREAK WITH HAMMER.</p> <p><b>EXTREMELY INDURATED</b> - SHARP HAMMER BLOWS REQUIRED TO BREAK SAMPLE; SAMPLE BREAKS ACROSS GRAINS.</p>	TERM	SPACING	VERY WIDE	MORE THAN 10 FEET	WIDE	3 TO 10 FEET	MODERATELY CLOSE	1 TO 3 FEET	CLOSE	0.16 TO 1 FEET	VERY CLOSE	LESS THAN 0.16 FEET	TERM	THICKNESS	VERY THICKLY BEDDED	> 4 FEET	THICKLY BEDDED	1.5 - 4 FEET	THINLY BEDDED	0.16 - 1.5 FEET	VERY THINLY BEDDED	0.03 - 0.16 FEET	THICKLY LAMINATED	0.008 - 0.03 FEET	THINLY LAMINATED	< 0.008 FEET																																																																																									
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# SITE PLAN



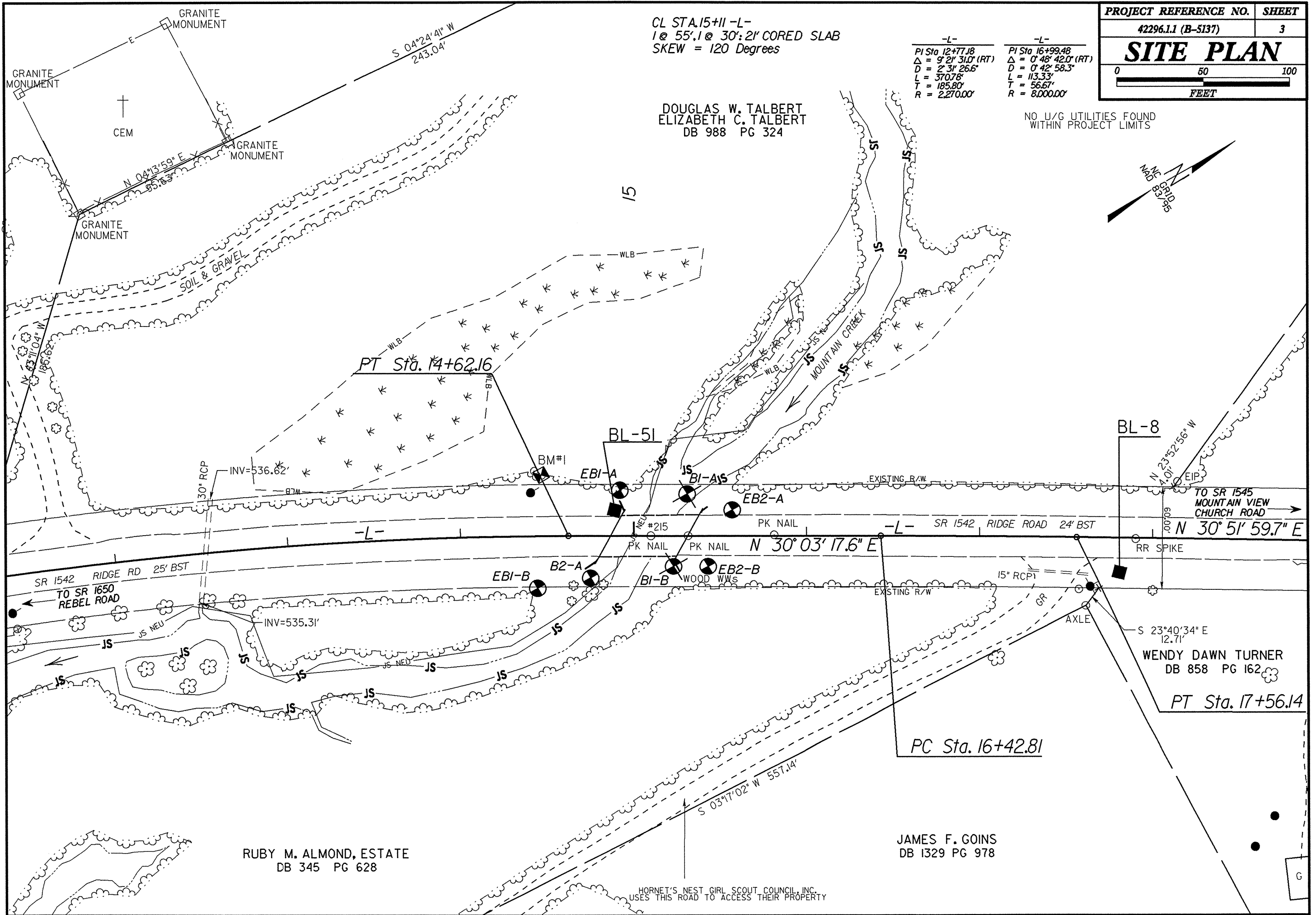
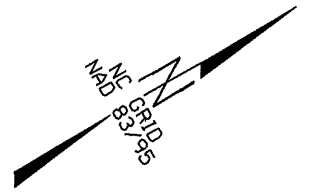
CL STA. 15+11 -L-  
1 @ 55'.1 @ 30':21" CORED SLAB  
SKEW = 120 Degrees

-L-  
PI Sta 12+77.18  
Δ = 9° 21' 31.0" (RT)  
D = 2° 31' 26.6"  
L = 370.78'  
T = 185.80'  
R = 2,270.00'

-L-  
PI Sta 16+99.48  
Δ = 0° 48' 42.0" (RT)  
D = 0° 42' 56.3"  
L = 113.33'  
T = 56.67'  
R = 8,000.00'

DOUGLAS W. TALBERT  
ELIZABETH C. TALBERT  
DB 988 PG 324

NO U/G UTILITIES FOUND  
WITHIN PROJECT LIMITS



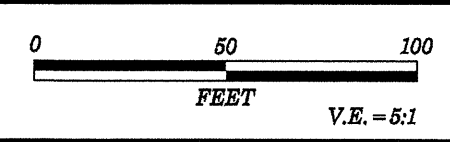
RUBY M. ALMOND, ESTATE  
DB 345 PG 628

JAMES F. GOINS  
DB 1329 PG 978

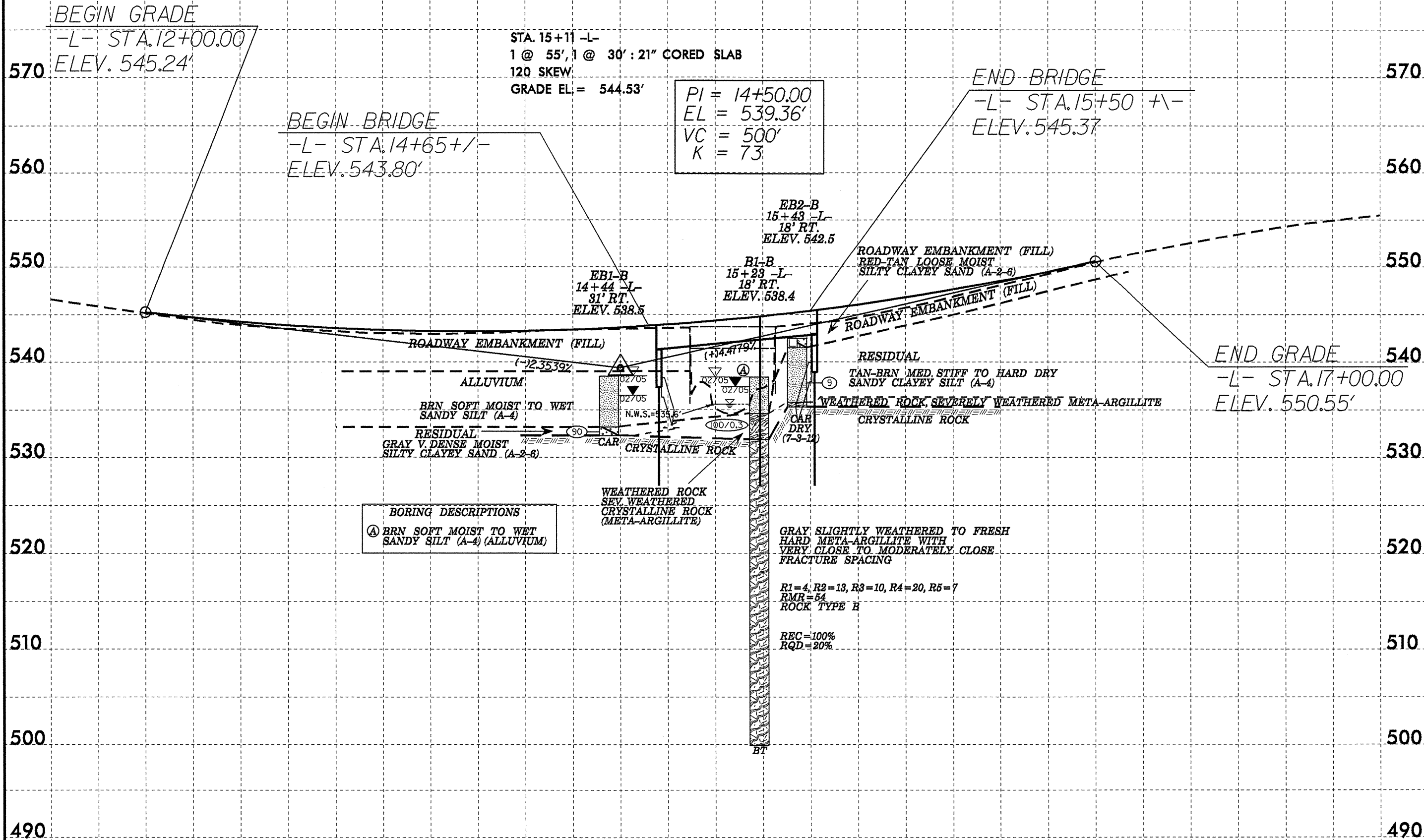
HORNET'S NEST GIRL SCOUT COUNCIL, INC.  
USES THIS ROAD TO ACCESS THEIR PROPERTY

G

BM\* 1 ELEV.=540.82'  
 DESCRIPTION: RR SPIKE IN 20" OAK  
 35.64' ON THE RT OF -L- STA.14+46.72



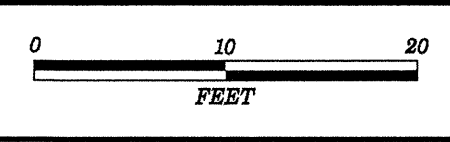
PROJECT REFERENCE NO.	SHEET
42296.1.1 (B-5137)	4
Profile -L- Bridge No. 215 over Little Mountain Creek on SR 1542 (Ridge Road)	



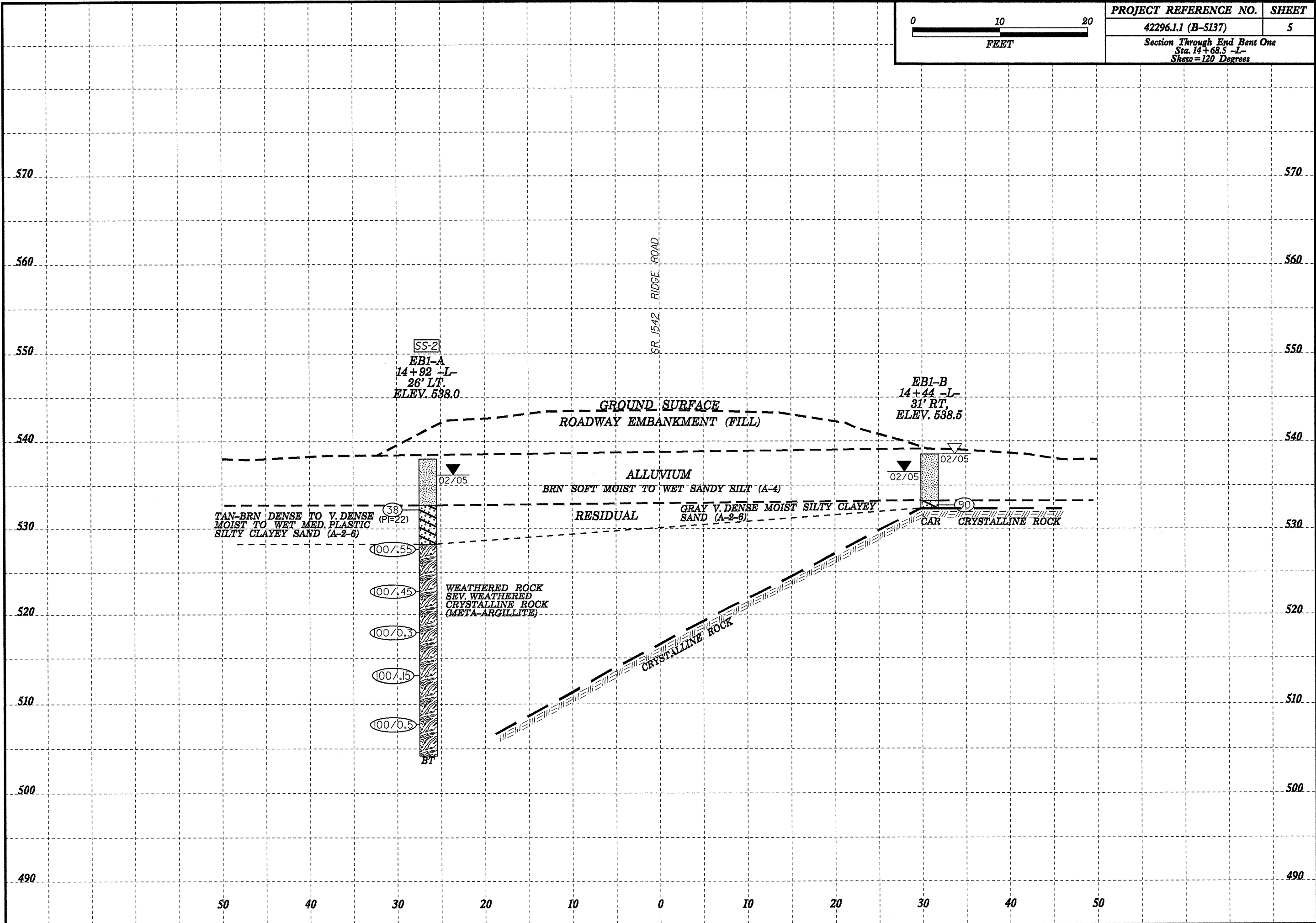
**BORING DESCRIPTIONS**  
 (A) BRN SOFT MOIST TO WET  
 SANDY SILT (A-4) (ALLUVIUM)

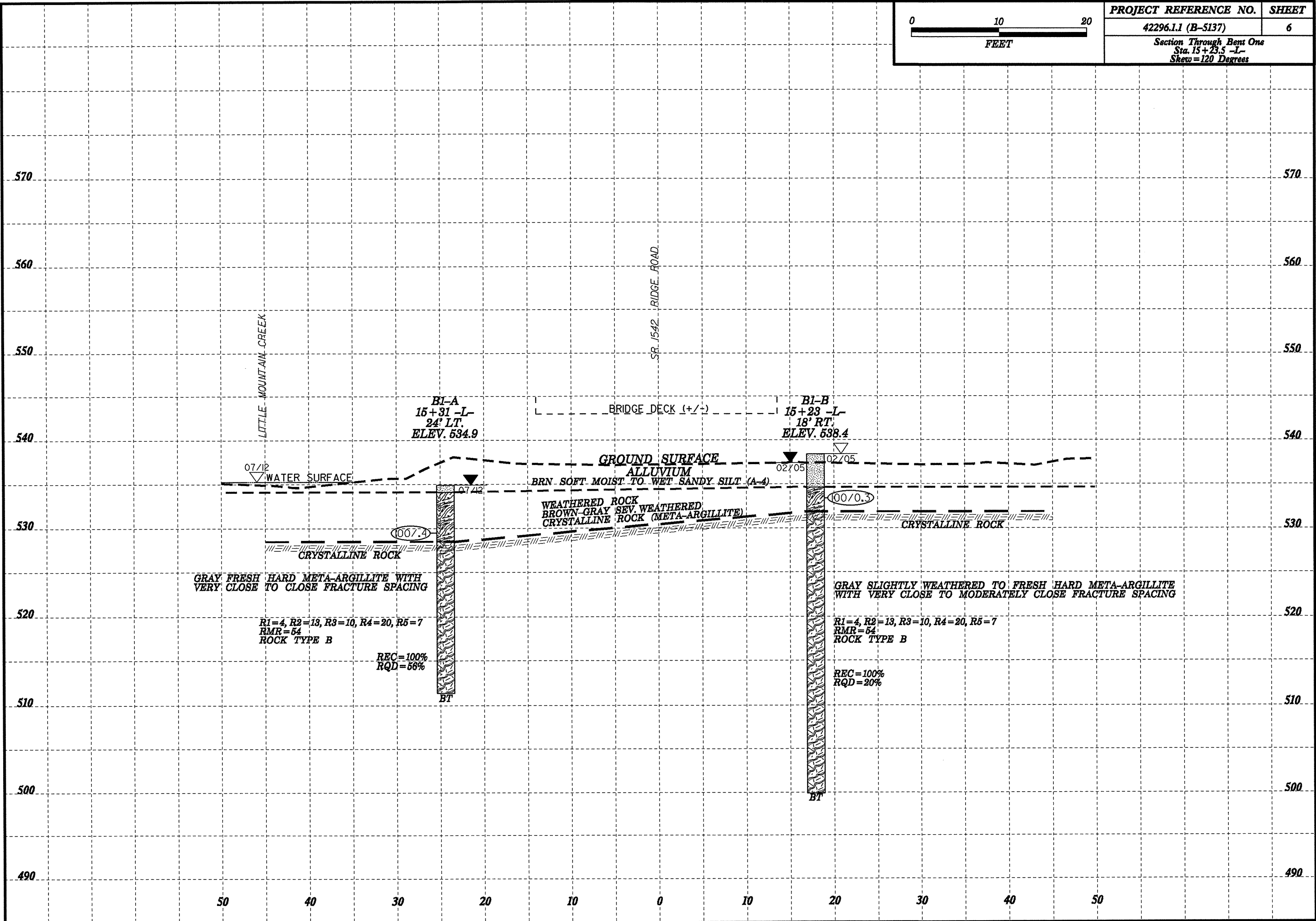
GRAY SLIGHTLY WEATHERED TO FRESH  
 HARD META-ARGILLITE WITH  
 VERY CLOSE TO MODERATELY CLOSE  
 FRACTURE SPACING  
 R1=4, R2=13, R3=10, R4=20, R5=7  
 RMR=54  
 ROCK TYPE B  
 REC=100%  
 RQD=20%

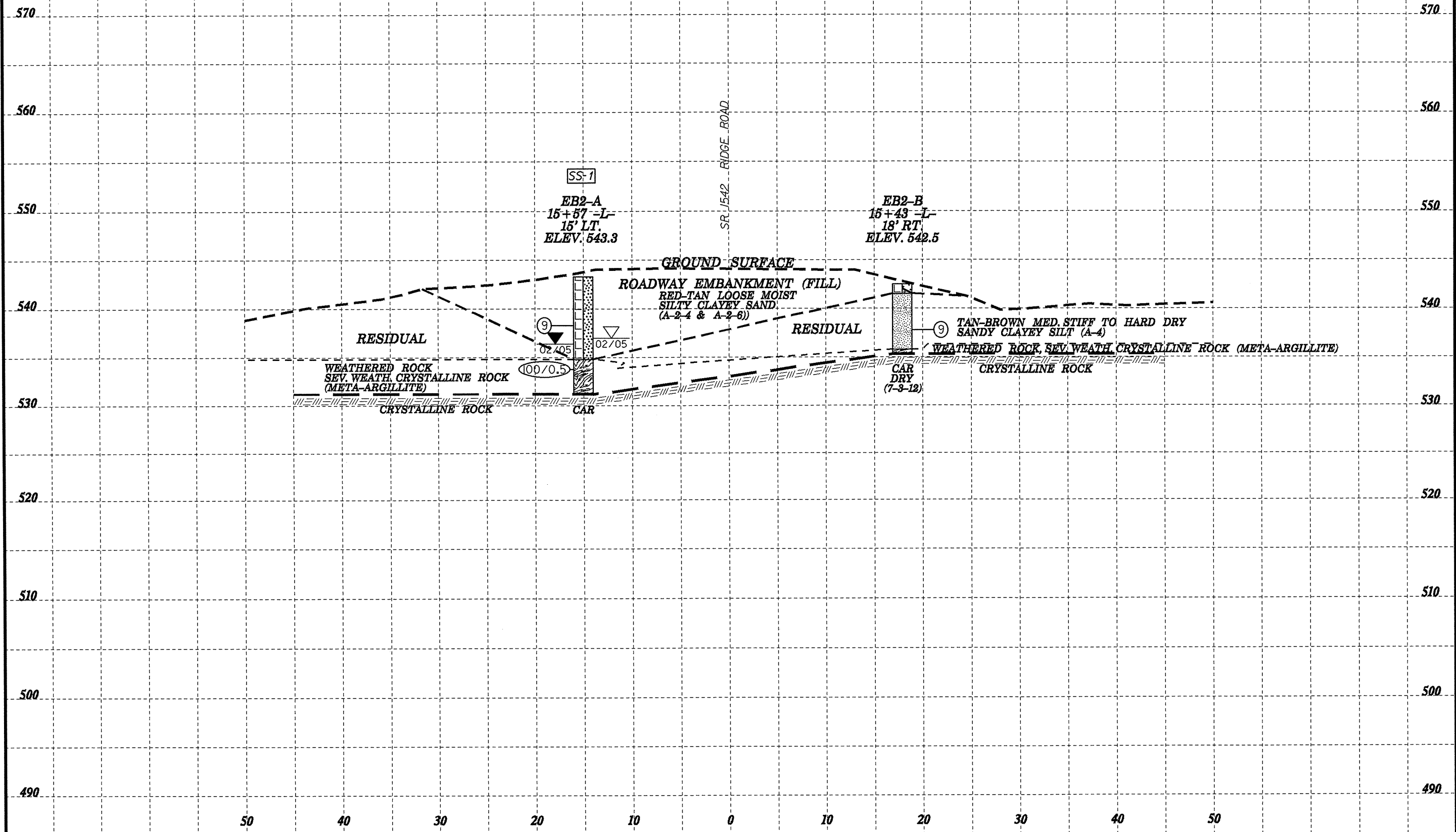




<b>PROJECT REFERENCE NO.</b>	<b>SHEET</b>
42296.1.1 (B-5137)	5
Section Through End Bent One Sta. 14+68.5 -L- Skew = 120 Degrees	









WBS 42296.1.1		TIP B-5137		COUNTY STANLY		GEOLOGIST Stickney, J. K.									
SITE DESCRIPTION BRIDGE #215 OVER LITTLE MOUNTAIN CREEK ON SR 1542 (RIDGE RD)							GROUND WTR (ft)								
BORING NO. B1-A		STATION 15+31		OFFSET 24 ft LT		ALIGNMENT -L-									
COLLAR ELEV. 534.9 ft		TOTAL DEPTH 23.5 ft		NORTHING 598,060		EASTING 1,653,745									
DRILL RIG/HAMMER EFF./DATE HFO0072 CME-550 89% 09/02/2009		DRILL METHOD NW Casing W/SPT & Core		HAMMER TYPE Automatic											
DRILLER Smith, C. L.		START DATE 07/02/12		COMP. DATE 07/02/12		SURFACE WATER DEPTH N/A									
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
535														534.9 GROUND SURFACE 0.0	
														534.1 ALLUVIAL SOFT BROWN SANDY SILT, MOIST (A-4) 0.8	
530	529.9	5.0												528.5 WEATHERED ROCK SEVERELY WEATHERED BROWN-GRAY META-ARGILLITE 6.4	
525		100/4												525.5 CRYSTALLINE ROCK GRAY FRESH, HARD META-ARGILLITE WITH VERY CLOSE TO CLOSE FRACTURE SPACING 6.4	
520															
515														511.4 Boring Terminated at Elevation 511.4 ft IN CRYSTALLINE ROCK (META-ARGILLITE) 23.5	

NCDOT BORE SINGLE B5137\_GEO\_BH\_BRD0215\_STANLY.GPJ NC\_DOT.GDT 7/12/12

WBS 42296.1.1		TIP B-5137		COUNTY STANLY		GEOLOGIST Stickney, J. K.						
SITE DESCRIPTION BRIDGE #215 OVER LITTLE MOUNTAIN CREEK ON SR 1542 (RIDGE RD)							GROUND WTR (ft)					
BORING NO. B1-A		STATION 15+31		OFFSET 24 ft LT		ALIGNMENT -L-						
COLLAR ELEV. 534.9 ft		TOTAL DEPTH 23.5 ft		NORTHING 598,060		EASTING 1,653,745						
DRILL RIG/HAMMER EFF./DATE HFO0072 CME-550 89% 09/02/2009		DRILL METHOD NW Casing W/SPT & Core		HAMMER TYPE Automatic								
DRILLER Smith, C. L.		START DATE 07/02/12		COMP. DATE 07/02/12		SURFACE WATER DEPTH N/A						
ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	TOTAL RUN 17.1 ft		SAMP. NO.	STRATA		LOG	DESCRIPTION AND REMARKS	DEPTH (ft)
					REC. (%)	RQD (%)		REC. (%)	RQD (%)			
528.5	528.5	6.4	4.3	1:25/1.0	(4.3)	(1.7)		(17.1)	(9.6)		528.5 Begin Coring @ 6.4 ft CRYSTALLINE ROCK 6.4	
525	524.2	10.7	5.0	1:10/1.0	(4.8)	(4.2)		100%	84%		GRAY FRESH, HARD META-ARGILLITE WITH VERY CLOSE TO CLOSE FRACTURE SPACING R1=4, R2=13, R3=10, R4=20, R5=7, RMR=54, ROCK TYPE B	
520	519.2	15.7	5.0	1:20/1.0	(5.0)	(3.2)		100%	64%			
515	514.2	20.7	2.8	1:27/1.0	(2.2)	(0.5)		79%	18%			
	511.4	23.5									511.4 Boring Terminated at Elevation 511.4 ft IN CRYSTALLINE ROCK (META-ARGILLITE) 23.5	

NCDOT CORE SINGLE B5137\_GEO\_BH\_BRD0215\_STANLY.GPJ NC\_DOT.GDT 7/12/12



WBS 42296.1.1	TIP B-5137	COUNTY STANLY	GEOLOGIST Stickney, J. K.
SITE DESCRIPTION BRIDGE #215 OVER LITTLE MOUNTAIN CREEK ON SR 1542 (RIDGE RD)			GROUND WTR (ft)
BORING NO. B1-B	STATION 15+23	OFFSET 18 ft RT	ALIGNMENT -L-
COLLAR ELEV. 538.4 ft	TOTAL DEPTH 38.5 ft	NORTHING 598,032	EASTING 1,653,778
DRILL RIG/HAMMER EFF./DATE HFO0064 CME-550 88% 09/02/2009		DRILL METHOD NW Casing W/SPT & Core	HAMMER TYPE Automatic
DRILLER Smith, C. L.	START DATE 02/23/05	COMP. DATE 02/23/05	SURFACE WATER DEPTH N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	SOIL AND ROCK DESCRIPTION	ELEV. (ft)	DEPTH (ft)
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
540													GROUND SURFACE	538.4	0.0
535	533.7	4.7											ALLUVIAL BRN SOFT MOIST TO WET SANDY SILT (A-4)	534.6	3.8
530		100/0.3											WEATHERED ROCK SEV. WEATH. CRYSTALLINE ROCK (META-ARGILLITE)	531.9	6.5
525													CRYSTALLINE ROCK GRAY SLIGHTLY WEATHERED TO FRESH, HARD META-ARGILLITE WITH VERY CLOSE TO MODERATELY CLOSE FRACTURE SPACING		
520															
515															
510															
505															
500															

Boring Terminated at Elevation 499.9 ft IN CRYSTALLINE ROCK (META-ARGILLITE)  
NOTE: THIS BORING WAS ORIGINALLY B1-A, STA. 10+08 -L- 18' LT., FOR PROJECT 10B.200411.

NCDOT BORE SINGLE B5137\_GEO\_BH\_BRD0215\_STANLY.GPJ NC\_DOT.GDT 7/12/12

WBS 42296.1.1	TIP B-5137	COUNTY STANLY	GEOLOGIST Stickney, J. K.
SITE DESCRIPTION BRIDGE #215 OVER LITTLE MOUNTAIN CREEK ON SR 1542 (RIDGE RD)			GROUND WTR (ft)
BORING NO. B1-B	STATION 15+23	OFFSET 18 ft RT	ALIGNMENT -L-
COLLAR ELEV. 538.4 ft	TOTAL DEPTH 38.5 ft	NORTHING 598,032	EASTING 1,653,778
DRILL RIG/HAMMER EFF./DATE HFO0064 CME-550 88% 09/02/2009		DRILL METHOD NW Casing W/SPT & Core	HAMMER TYPE Automatic
DRILLER Smith, C. L.	START DATE 02/23/05	COMP. DATE 02/23/05	SURFACE WATER DEPTH N/A

ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		SAMP. NO.	STRATA		LOG	DESCRIPTION AND REMARKS	DEPTH (ft)
					REC. (%)	RQD (%)		REC. (%)	RQD (%)			
531.9								(32.0)	(6.4)		Begin Coring @ 6.5 ft	
530	531.9	6.5	2.9		(1.4)	(0.9)		100%	20%		CRYSTALLINE ROCK GRAY SLIGHTLY WEATHERED TO FRESH, HARD META-ARGILLITE WITH VERY CLOSE TO MODERATELY CLOSE FRACTURE SPACING R1=4, R2=13, R3=10, R4=20, R5=7, RMR=54, ROCK TYPE B	6.5
	529.0	9.4			(3.9)	(2.6)						
			4.5		(86%)	(57%)						
525	524.5	13.9										
			5.5		(5.5)	(0.8)						
520	519.0	19.4			100%	15%						
			5.0		(5.0)	(0.0)						
515	514.0	24.4			100%	0%						
			5.0		(5.0)	(0.4)						
510	509.0	29.4			100%	8%						
			5.0		(4.5)	(0.5)						
505	504.0	34.4			90%	10%						
			4.1		(3.4)	(1.2)						
500	499.9	38.5			82%	30%						

Boring Terminated at Elevation 499.9 ft IN CRYSTALLINE ROCK (META-ARGILLITE)  
NOTE: THIS BORING WAS ORIGINALLY B1-A, STA. 10+08 -L- 18' LT., FOR PROJECT 10B.200411.

NCDOT CORE SINGLE B5137\_GEO\_BH\_BRD0215\_STANLY.GPJ NC\_DOT.GDT 7/12/12



**NCDOT GEOTECHNICAL ENGINEERING UNIT**  
**BORELOG REPORT**

WBS 42296.1.1		TIP B-5137		COUNTY STANLY		GEOLOGIST Stickney, J. K.										
SITE DESCRIPTION BRIDGE #215 OVER LITTLE MOUNTAIN CREEK ON SR 1542 (RIDGE RD)							GROUND WTR (ft)									
BORING NO. B2-A		STATION 14+75		OFFSET 25 ft RT		ALIGNMENT -L-										
COLLAR ELEV. 538.1 ft		TOTAL DEPTH 9.5 ft		NORTHING 597,987		EASTING 1,653,760										
DRILL RIG/HAMMER EFF./DATE HFO0064 CME-550 88% 09/02/2009				DRILL METHOD NW Casing w/ SPT		HAMMER TYPE Automatic										
DRILLER Smith, C. L.		START DATE 02/25/05		COMP. DATE 02/25/05		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						
540														538.1	GROUND SURFACE	0.0
535	534.0	4.1	100/0.5											533.8	ALLUVIAL BRN SOFT MOIST TO WET SANDY SILT (A-4)	4.3
530	529.0	9.1	100/0.1											529.0	WEATHERED ROCK SEV. WEATH. CRYSTALLINE ROCK (META-ARGILLITE)	9.1
														528.6	CRYSTALLINE ROCK (META-ARGILLITE)	9.5
Boring Terminated WITH CASING ADVANCER REFUSAL at Elevation 528.6 ft ON CRYSTALLINE ROCK (META-ARGILLITE) NOTE: THIS BORING WAS ORIGINALLY B2-A, STA. 10+56 -L- 25' LT., FOR PROJECT 10B.200411.																

NCDOT BORE DOUBLE B5137\_GEO\_BH\_BRD60215\_STANLY.GPJ NC\_DOT.GDT 7/12/12

*TEST RESULTS*

PROJECT: 42296.1.1 (B-5137)

COUNTY: STANLY

SITE DESCRIPTION: BRIDGE NO. 215 OVER LITTLE MOUNTAIN CREEK ON SR 1542 (RIDGE ROAD)

SHEET  
13

**SOIL SAMPLE RESULTS**

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS	N	L.L.	P.I.	% BY WEIGHT				% PASSING SIEVES			% MOISTURE	% ORGANIC	UNIT WT. (d)	VOID RATIO
								C. SAND	F. SAND	SILT	CLAY	10	40	200				
<b>EB1-A</b>																		
SS-2	26 LT.	14+92 -L-	4.8-5.3	A-2-6(1)	38	39	22	38.8	13.9	19.1	28.2	52	36	25				
<b>EB2-A</b>																		
SS-1	15 LT.	15+57 -L-	4.5-5.5	A-2-4(0)	9	33	7	45.9	9.9	20.1	24.1	61	37	28				

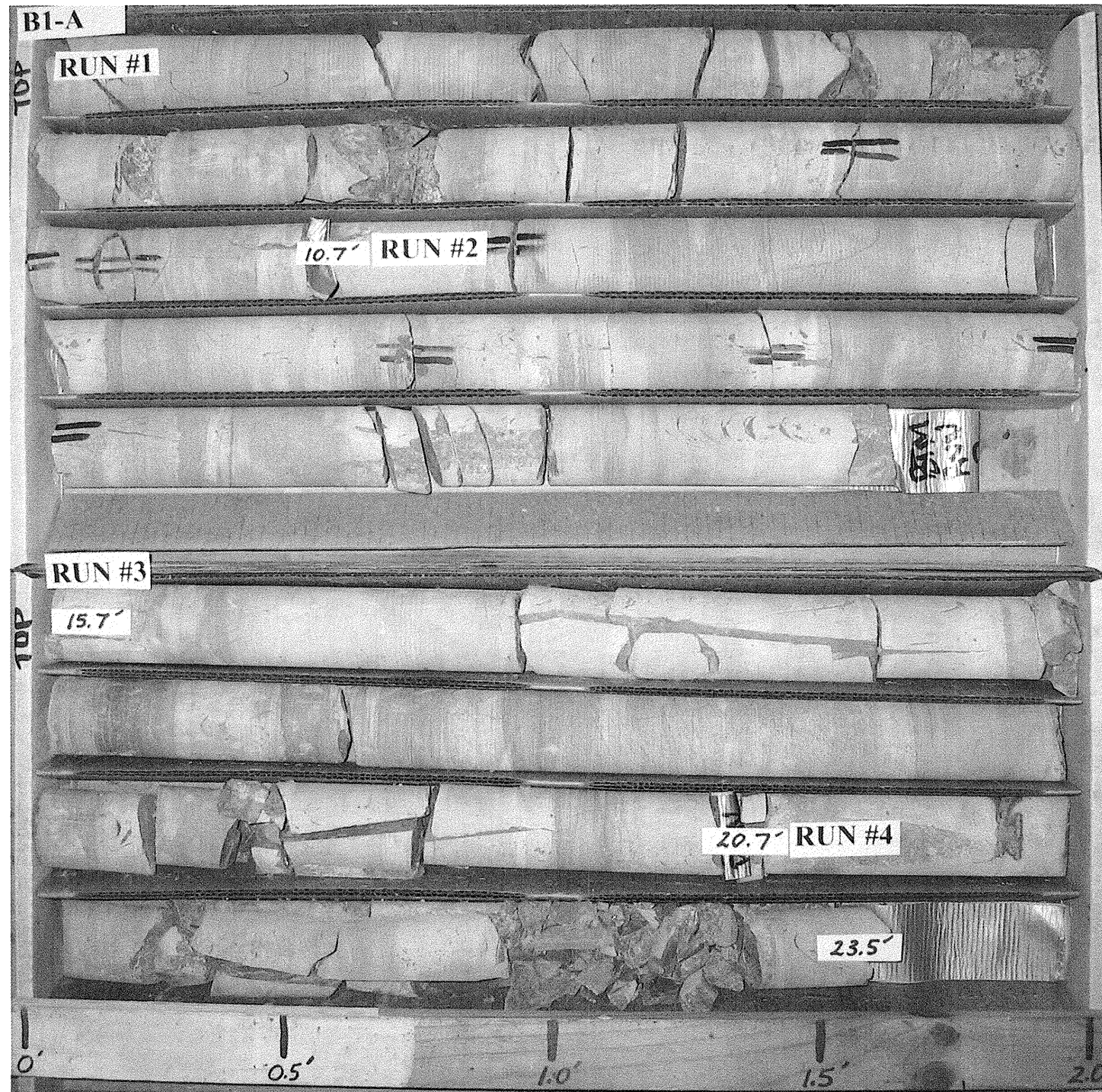
**ROCK SAMPLE RESULTS**

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	RQD	UNIT WT (pcf)	Q(ksf)	E(MPsi)
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42296.1.1 B-5137  
STANLY COUNTY  
BRIDGE NO. 215 OVER LITTLE MOUNTAIN CREEK ON SR 1542 (RIDGE ROAD).

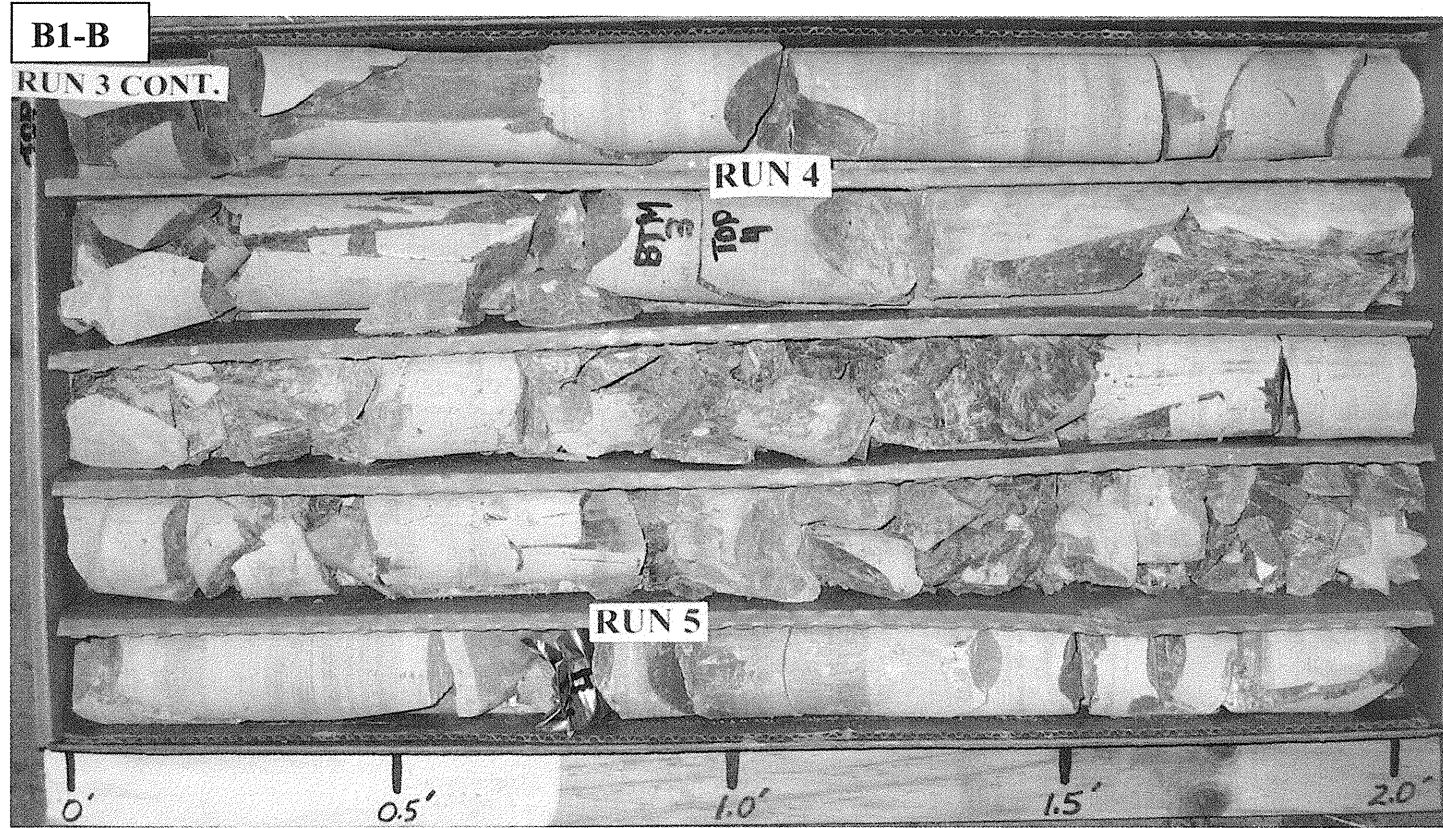
PHOTOS



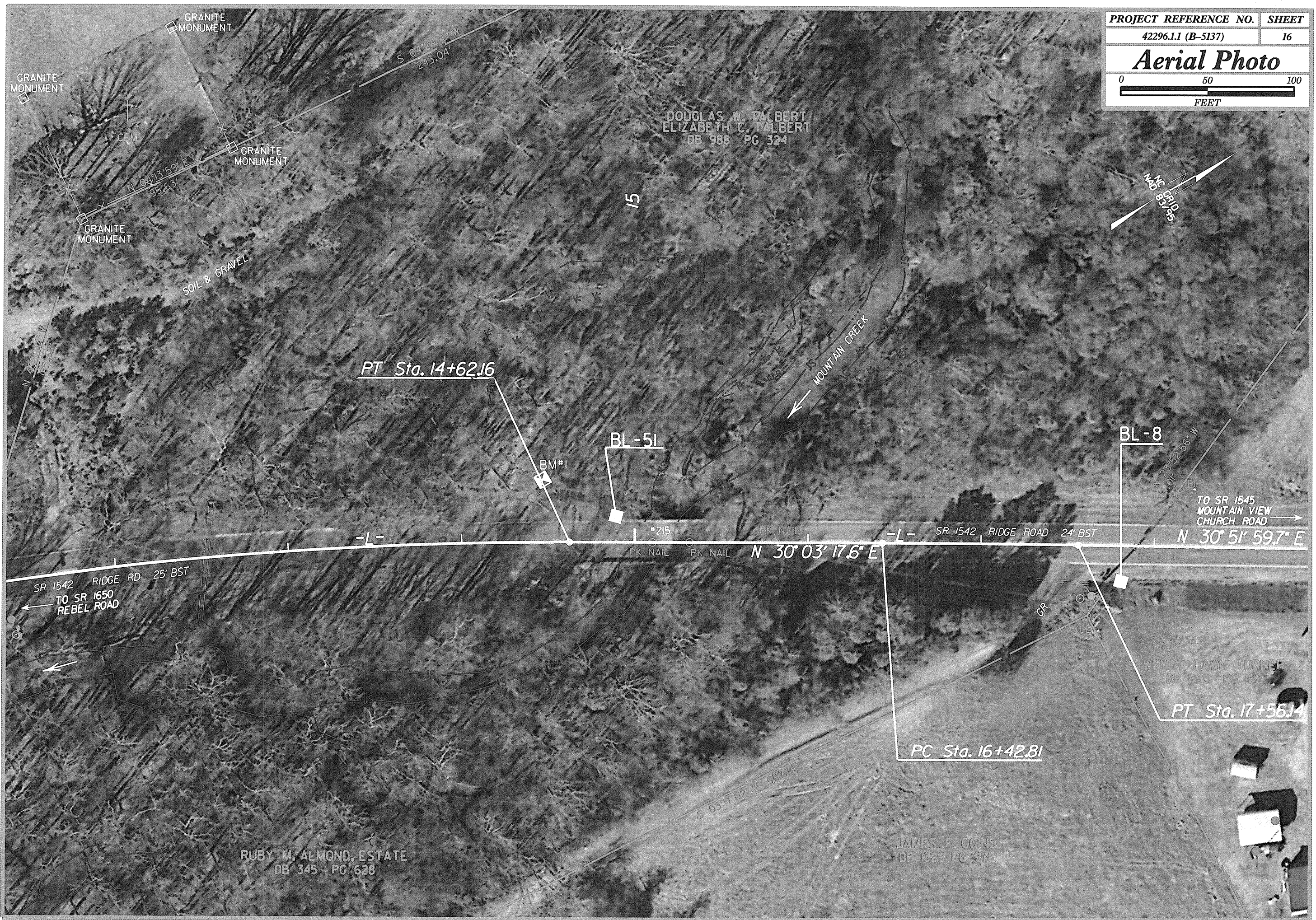


42296.1.1 B-5137  
STANLY COUNTY  
BRIDGE NO. 215 OVER LITTLE MOUNTAIN CREEK ON SR 1542 (RIDGE ROAD).

PHOTOS







GRANITE MONUMENT

GRANITE MONUMENT

GRANITE MONUMENT

GRANITE MONUMENT

SOIL & GRAVEL

S 04° 28' 41\"

N 03° 13' 59\"

95.63

DOUGLAS W. TALBERT  
ELIZABETH C. TALBERT  
DB 988 PG 324

N 46° 09' 10\"

83.10

PT Sta. 14+62.16

BL-51

BL-8

SR 1542 RIDGE RD 25' BST  
TO SR 1650 REBEL ROAD

SR 1542 RIDGE ROAD 24' BST

TO SR 1545 MOUNTAIN VIEW CHURCH ROAD  
N 30° 51' 59.7\"

N 30° 03' 17.6\"

PT Sta. 17+56.14

PC Sta. 16+42.81

RUBY M. ALMOND, ESTATE  
DB 345 PG 628

JAMES E. GOINS  
DB 1323 PG 378